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DESIGN BRIEF

FOR

BARRHAVEN CONSERVANCY DEVELOPMENT CORPORATION

PROPOSED RESIDENTIAL SITE PLAN

CONSERVANCY STACKED TOWNS

CITY OF OTTAWA

PROJECT NO.: 24-1398

SEPTEMBER 2025

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained to prepare a Design Brief in support of a site plan application for the stacked townhouse condo block within Barrhaven Conservancy East on behalf of the Barrhaven Conservancy Development Corporation (BCDC).

The overall Conservancy land area is approximately 139.7 ha (all land use components) and is located within the City of Ottawa urban boundary in the Barrhaven ward. The Conservancy East development area has previously had detailed design prepared and approved with initial phases of servicing/homebuilding currently under construction. The subject site plan block is within Phase 3 of the Conservancy East lands and is bound by the proposed townhomes fronting Les Emmerson (N) to the north, Les Emmerson (N) to the west, Conservancy Drive to the south, and Mineral Street to the east. The site plan block design (Q4 Architects Inc., April 2025) is provided in **Appendix A**.

The objective of this report is to provide sufficient detail with respect to the availability of site services to support the application of site plan control.

1.1 Existing Conditions

The ***Conservancy East*** lands containing the site plan block are relatively flat with the existing elevations ranging from 91.9 m in the north to 91 m in the south. All existing flows are either overland to the Jock River or conveyed to the Jock River by way of the Fraser-Clarke Watercourse (and its tributaries) and Borrisokane Road ditches which run through the subject property. The property is within the Jock River watershed and is under the jurisdiction of the RVCA.

1.2 Site Plan Layout

The proposed project consists of 10 blocks of stacked dwellings, above ground parking, walkways, and amenity space. See proposed site plan in **Appendix A**.

The predicted populations currently associated with the development concept are described in the following table below.

Table 1: Development Statistics for BCDC East Condo Site Plan

Land Use	Total Area (ha)	Projected Residential Units	Residential Population per Unit *	Projected Population
Stacked Townhouses	0.48	196	2.7	529
Parkette/Amenity	0.36			
Roads/parking/walkways	0.92			
Total	**1.76**	**196**		**529**

** NOTE: Population projections may differ from population estimates used in background Transportation Studies, Planning Rationale, and other studies.*

1.3 Consultation Summary

Consultation with the City of Ottawa Planning and Engineering Staff was initiated in July 2024 for the Conservancy East Stacked Condo block to review City Standards, submission requirements, and the availability of background information. The subject Site Plan was contemplated in the servicing of the Conservancy East Phase 3 & 4 subdivision area.

1.4 Required Permits / Approvals

The City of Ottawa must approve detailed engineering design drawings and reports prior to construction of the proposed infrastructure identified in this report.

The following additional approvals and permits listed in **Table 2** are expected to be required prior to construction of the municipal infrastructure detailed herein. Other permits and approvals may be required, as detailed in the other studies submitted as part of the Planning Act applications (e.g. *Tree Conservation Report, Phase 1 Environmental Site Assessment, etc*.).

Table 2: Potential Required Permits/Approvals

Agency	Permit/Approval Required	Trigger	Remarks
MECP / City of Ottawa	Environmental Compliance Approval	Construction of new sanitary & storm sewers.	MECP is expected to review the stormwater collection system and wastewater collection system by transfer of review.

MECP	Permit to Take Water	Construction of proposed land uses (e.g. basements for residential homes) and services.	Pumping of groundwater will be required during construction, given groundwater conditions and proposed land uses/ municipal infrastructure.
City of Ottawa	MOE Form 1 – Record of Watermains Authorized as a Future Alteration	Construction of watermains.	The City of Ottawa is expected to review the watermains on behalf of the MECP.

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following documents were referenced in the preparation of this report:

- **Ottawa Sewer Design Guidelines,**
  City of Ottawa, *SDG002,* October 2012.
  (City Standards)

  - **Technical Bulletin ISDTB-2014-01, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, February 5, 2014.
    (*ISDTB-2014-01*)

  - **Technical Bulletin PIEDTB-2016-01, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, September 6, 2016.
    (*PIEDTB-2016-01*)

  - **Technical Bulletin ISTB-2018-01, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, March 21, 2018.
    (*ISTB-2018-01*)

  - **Technical Bulletin ISTB-2018-03, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, June, 2018.
    (*ISTB-2018-04*)

  - **Technical Bulletin ISTB-2019-02, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, July 8, 2019.
    (*ISTB-2019-02*)

  - **Technical Bulletin IWSTB-2024-04, Screening Criteria – Infiltration-type LIDs for Development,**
    City of Ottawa, September 12, 2024.

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)

  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010.
    (*ISD-2010-2*)

  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014.
    (*ISDTB-2014-02*)

  - **Technical Bulletin ISTB-2018-02**
    City of Ottawa, March 21, 2018.
    (**ISTB-2018-02*****)***

  - **Technical Bulletin ISTB-2021-03**
    City of Ottawa, August 18, 2021
    (ISTB-2021-03)

  - **Technical Bulletin IWSTB-2024-05**
    City of Ottawa, November 18, 2024
    (IWSTB-2024-05)

- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOE **Design Guidelines*****)***

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010 Update.
  (OBC)

- **Mississippi-Rideau Source Water Protection Plan,**
  MVCA & RVCA, August 2014.

- **Erosion & Sediment Control Guidelines for Urban Construction,**
  Greater Golden Horseshoe Area Conservation Authorities, December 2006.

- **Jock River Reach One Subwatershed Study**
  Stantec, 2007
  (Jock River SWS)

- **Design Brief for Barrhaven Conservancy East – Phase 3**
  David Schaeffer Engineering Ltd., August 2025
  (DSEL East Design Brief)

- **Barrhaven Conservancy East Water Distribution System Analysis (Final Report)**
  Stantec, March 11, 2025
  (Stantec Hydraulic Analysis)

- **Barrhaven Conservancy East Site Plan (Conservancy Stacked Towns) – Stormwater Analysis**
  JFSA, August 2025
  (JFSA SWM Analysis)

- **BCDC Phase 3 SWM Quality Control and Treatment Train Analysis**
  JFSA, August 27, 2025
  (JFSA Quality Control Memo)
- **Stormwater Management Report for Phase 3 of the Barrhaven Conservancy East**
  JFSA, August 2025
  (JFSA Ph.3 SWM Analysis)
- **Geotechnical Investigation, Proposed Residential Development, Conservancy Lands East, Ottawa, Ontario**
  Paterson Group, March 14, 2024 (Project No. PG5036-1 Revision 7)
  (Geotechnical Report)
- **Geotechnical Review – Groundwater Infiltration**
  Paterson Group, June 16, 2025 (PG5036-MEMO.42 Revision 1)
  (Paterson GW Infiltration Memo)
- **Compilation of Relevant Geotechnical and Hydrogeological Documents**
  Paterson Group, August 18, 2025 (PG5036-LET.02)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The Conservancy East lands are located adjacent to the City of Ottawa's Pressure Zone (PZ) 3SW (previously known as PZ BARR). PZ SUC services the lands that are east of the subject property, as well as south of the Jock River.

An extension of the watermain network is proposed within the Conservancy East Subdivision, which will also provide a feed for the subject site plan block. The watermains for the subdivision were designed in accordance with the ***Stantec Hydraulic Analysis*** prepared by Stantec (March 2025) included under separate cover.

3.2 Water Supply Servicing Design

As shown in **Drawing 5**, water servicing will be provided internal to the site via 200mm and 150mm watermains that will be looped within the site plan block and connect to the 200mm diameter watermain on Mineral Street and Les Emmerson (N). Units 1-4 within Blocks 1 and units 7-10 within Block 9 will be serviced via 50mm copper watermains fed from the 150mm watermain off Private Street 6 and 4, respectively. The subject lands will be metered at the connections to Les Emerson Drive (N) and Mineral Street, and all mains contained within are private.

The **Stantec Hydraulic Analysis** estimated the required fire flow at 105 L/s (6,300 L/min). The City of Ottawa's recent Technical Bulletin (IWSTB-2024-05) states that the requirement for levels of fire protection on private property in urban areas is covered in Section A-3.2.5.7 of the OBC and as such a fire flow requirement of 6,300 L/min was determined for the subject site plan blocks (Block 10) as outlined in Appendix A of the ***Stantec Hydraulic Analysis***. The updated boundary conditions from the City, received on January 16, 2025, have been used to update the hydraulic model to demonstrate conformance with City guidelines. The updated boundary conditions used in the hydraulic analysis of Conservancy East, which includes the Site Plan block, can be found in Appendix B of the ***Stantec Hydraulic Analysis***.

Table 3: Water Supply Design Criteria

Design Parameter	Value
Extracted from Section 4: Ottawa Design Guidelines, Water Distribution (July 2010)	
Residential – Detached Single	2.3 p/unit
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480kPa
During fire flow operating pressure must not drop below	140 kPa
Stantec Hydraulic Analysis, Stantec, June 2022 for Population Exceeding 3000 Persons	
Residential – SFH, MLT	280 L/cap/day
Residential – Average Day Demand	Population x Demand
Residential – Max Day Demand	AVDY x 2.5

Residential – Peak Hour Demand	MXDY x 2.2
Fire Flow Requirement	13,000 L/min

Table 4 summarizes the estimated water supply demands seen in ***Stantec Hydraulic Analysis*** for the proposed site plan (Phase 4) based on the **Water Supply Guidelines**. Fire flows were estimated for the most constrained blocks within the site plan and yielded a required fire flow of 6,300 L/min.

Table 4: Water Demand Proposed Conditions

Design Parameter	Estimated Demand[1] (L/min)	Boundary Condition (m H_2O / kPa)
Average Daily Demand	103.2	
Max Day + Fire Flow	257.4 + 6,300= 6557.4	
Peak Hour	565.8	

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.

3.3 Water Supply Conclusion

The site plan blocks will be serviced internally with meter chambers installed within the property boundary at the site entrances. The looped watermain network ultimately connects to the Conservancy East subdivision at Les Emmerson Street (N) and Mineral Street. The system has been reviewed for required domestic demand and fire flows and meets all necessary requirements.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site was considered in the design of the Barrhaven Conservancy East Subdivision and will drain to the the existing SNC sanitary sewer which serves as the ultimate outlet for the overall development. Please refer to the **Sanitary Drainage Plan** prepared by DSEL, included as **Drawing 11**.

4.2 Wastewater Design

The site plan blocks fronting the Les Emmerson Drive (N), Conservancy Drive, and Mineral Street will connect directly to the sanitary sewers within the public ROW with one lateral servicing two units (upper and lower). The internal sanitary sewer layout within the site plan will consist of a 200mm PVC sanitary sewer that will follow Lane 1, connecting to Les Emmerson (MH17A) at the west and Mineral Street (MH46A) at the east. Internally, one lateral will service two units (upper and lower).

The site plan has an estimated population of 529 persons and as such total flows to the existing SNC sanitary sewer will be marginally increased, however, capacity is available to accommodate the site plan block as demonstrated in the ***DSEL East Design Brief***. The Conservancy East Subdivision sewer design sheet is included in **Appendix C**.

Table 5 below summarizes the design standards used in the development of the proposed wastewater sewer system for the Barrhaven Conservancy East Subdivision. The sanitary calculation sheets have been updated to reflect the revised population and are included in **Appendix C**.

Table 5: Wastewater Design Criteria

Design Parameter	Value
Current Design Guidelines	
Residential – Stacked TH Condo	2.3 p/unit
Average Daily Demand	280 L/d/person
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Commercial / Institutional Flows	28,000 L/ha/day
Commercial / Institutional Peak Factor	1.5
Infiltration and Inflow Allowance	0.33 L/s/ha
Park Flows	28,000 L/ha/d
Park Peaking Factor	1.0
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} A R^{2/3} S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012, and associated Technical Bulletins.	

4.3 Wastewater Servicing Conclusions

The subject property will be serviced by local sanitary sewers which will outlet to the existing infrastructure. The subject site has been contemplated in the downstream sewers. Sufficient capacity exists to support the development.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

As discussed in the ***DSEL East Design Brief*** the development of the site plan block was considered in the detailed subdivision design.

5.2 Stormwater Management Design and Objectives

The ***DSEL East Design Brief*** and ***JFSA Ph.3 SWM Analysis*** made the following assumptions regarding the proposed site plan block:

- The site plan block has a drainage area of approximately 1.76 hectares with 81% imperviousness.
- As modeled in the ***JFSA SWM Analysis*** the site plan block shows a drainage split where the minor system outlets to MH704 at Les Emmerson Drive (N) and to MH507 on Mineral Street. Flows within the site plan are directed to the two ADS Stormtech Chambers where they receive quality treatment and ultimately outlet to the subdivision minor system.
- The excess major system flows were anticipated to drain east and west overland to Les Emmerson Drive (N) and Mineral Street and subsequently to the Jock River.
- Quality and erosion treatment for the site plan block will be controlled within the site boundaries except for a portion that will drain to nearby roads or rear yard swales within the greater subdivision. These areas have been considered in the overall SWM design using the treatment train approach. Analysis is provided for these areas within the ***JFSA Quality Control Memo***.
- The 100-year Chicago 3 Hour Event & 5-year Jock River Water Level results in a Hydraulic Grade Line (HGL) as reported in *Table 3* of the ***JFSA SWM Analysis***.

On-site storm flows will be captured by local CB infrastructure and allocated to the two Stormtech Isolator Row Plus chambers within the parking areas. **Table 6** below summarizes the design standards used for the proposed on-site storm sewer system. Storm calculation sheets for the subject property have been appended to this technical brief in **Appendix D**.

Table 6: Storm Sewer Design Criteria

Design Parameter	Value
Minor System Design Return Period	1:2 year (PIEDTB-2016-01) for private roads, without ponding
Major System Design Return Period	1:100 year
Intensity Duration Frequency Curve (IDF) 2-year storm event: A=732.951 | B=6.199 | C=0.810 5-year storm event: A = 998.071 | B = 6.053 | C = 0.814	$i = \frac{A}{(t_c + B)^C}$
Minimum Time of Concentration	10 minutes
Rational Method	$Q = CiA$

Storm sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} A R^{2/3} S^{1/2}$
Runoff coefficient for paved and roof areas	0.9
Runoff coefficient for landscaped areas	0.2
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n' for pipe flow	0.013
Minimum Depth of Cover	1.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.8 m/s
Maximum Full Flowing Velocity	6.0 m/s
Clearance from 100-Year Hydraulic Grade Line to Building Opening	0.30 m
Design Parameter	**Value**
Max. Allowable Flow Depth on Municipal Roads	35 cm above gutter (PIEDTB-2016-01)
Extent of Major System	To be contained within the private road and parking areas or adjacent to the ROW provided that the water level must not touch any part of the building envelope and must remain below the lowest building opening during the stress test event (100-year + 20%) and 15cm vertical clearance is maintained between spill elevation on the street and the ground elevation at the nearest building envelope (PIEDTB-2016-01)
Stormwater Management Model	PCSWMM (version 7.4) – See JFSA report File No. 1474(03) in Appx D
Model Parameters	Fo = 76.2 mm/hr, Fc = 13.2 mm/hr, DCAY = 4.14/hr, D.Stor.Imp. = 1.57 mm, D.Stor.Per. = 4.67 mm
Imperviousness	Based on runoff coefficient (C) where Percent Imperviousness = (C - 0.2) / 0.7 x 100%.
Design Storms	Chicago 3-hour Design Storms and 24-hour SCS Type II Design Storms. Maximum intensity averaged over 10 minutes.
Historical Events	July 1st, 1979, August 4th, 1988 and August 8th, 1996
Climate Change Street Test	20% increase in the 100-year, 3-hour Chicago storm

Extracted from City of Ottawa Sewer Design Guidelines, October 2012, and ISSU, and based on recent residential subdivisions in City of Ottawa.

5.3 Hydraulic Grade Line Analysis

A detailed hydraulic grade line (HGL) modelling analysis has been completed for the proposed system based on the 100-year 3-hour Chicago and 24-hour SCS design storms, including historical design storms and climate change stress test as required. The HGL and freeboard clearances are tabled in ***JFSA SWM Analysis*** for reference and submitted under separate cover.

5.4 Minor System Design

The minor stormwater management system conveys internal site runoff to the downstream municipal storm network. Stormwater is collected on-site through a network of catch basins (CBs) and storm sewers, which direct flows to MH704 via a 600 mm diameter storm sewer along Les Emmerson Drive (North) and to MH507 via a 675 mm diameter storm sewer along Mineral Street, both part of the broader Conservancy East Subdivision infrastructure.

Each catch basin in the system is modeled with orifice flow restrictions to simulate the hydraulic performance of CB grates. During significant rainfall events, this can result in minor ponding at CBs due to the grate constriction. Despite this, the system is engineered to ensure that the hydraulic grade line (HGL) for the 100-year design storm remains below ground surface at all maintenance holes. The peak outflows from the site under free outlet conditions are detailed in ***Table 1*** of the ***JFSA SWM Analysis***. Per the JFSA analysis, the minor system peak outflows to MH704 and MH507, using the 100-year 3-hour Chicago design storm, are 222 L/s and 268 L/s, respectively. Overall, the minor system design meets the City of Ottawa's design criteria and ensures effective stormwater conveyance within the site. See storm design sheet within **Appendix D** demonstrating minor system peak flows.

5.5 Major System Design

Major system conveyance, or overland flow (OLF), is provided to accommodate flows in excess of the minor system capacity. OLF is accommodated by generally storing stormwater up to the 100-year design event in road sags then routing additional surface flow along the road network and rear yards storm retention tank between Lane 1 and Private Street 4 & 6, as shown in the Storm Drainage Plans, included as **Drawing 12**.

5.6 Grading and Drainage Design

The following additional grading criteria and guidelines are applied to detailed design, per City of **Ottawa Guidelines** and standard industry practices:

- Slope in grassed areas will be between 2% and 7%;
- Grades in excess of 7% will require terracing to a maximum of a 3:1 slope;
- Swales are to be 0.15m deep with 3:1 side slopes unless otherwise indicated on the drawings; and,
- Perforated pipe will be required for drainage swales if they are less than 1.5% in slope;
- Grades within the roads and parking stalls are limited to min 1% and max 5%.

Drawing 9 illustrates the proposed detailed grading. External areas north of the development will be captured by the proposed system in the interim condition. It is expected that once those parcels are developed, stormwater will be attenuated on-site and directed toward Mineral Street and Les Emmerson Drive (N) per City Standards. Where required, External lands to the east will be conveyed around the development in a cut of swale.

5.7 Quantity Controls

As outlined in ***Section 1.1.4*** of the ***JFSA SWM Analysis***, the site does not have specific quantity control requirements as it will outlet to the lower reaches of the Jock River. However, runoff must be managed to avoid impacting the downstream storm sewer system. To address this, the site plan modeling is integrated into the broader subdivision model, enabling unified assessment of runoff and HGLs. No ICDs are proposed within this development.

5.8 Quality Controls

5.8.1 Controlled Areas

The subject lands are required to provide quality controls prior to directing stormwater to the municipal sewers and ultimately the Jock River. Quality control is provided through two Stormtech Isolator Row Plus chambers which are ETV rated and will provide 80% TSS removal within the site. This system will include CB Shields and deep sump catch basins to minimize the frequency of system maintenance.

Quality control is proposed by filtration through two Stormtech Isolator Row Plus chambers with an underdrain system at strategic locations within the site. The StormTech Isolator Row Plus chambers treat runoff from smaller rain events (up to the 25 mm) by directing flow into the Isolator Row chamber. For larger storms, excess flow bypasses the Isolator Row to prevent disturbance of trapped materials and is directed to the adjacent chamber row. When inflows exceed the Isolator Row's capacity, excess flow passes through the manifold/bypass and spreads into adjacent row both horizontally through the shared stone layer and vertically into neighboring chambers. This design maintains treatment performance while effectively distributing high flows across the chamber bed, protecting the system's long-term function.

This ensures effective treatment of frequent and higher TSS concentrated runoff while maintaining system performance during larger events. **Appendix D** contains the layouts provided by the manufacturer which have been incorporated into the design plans.

Appendix D contains detailed description and calculations demonstrating that 80% TSS removal will be achieved through the Stormtech Isolator Row Plus systems.

5.8.2 Stormtech Isolator Row Plus Drawdown Time

The drawdown time within the StormTech chamber system is ultimately governed by the capacity of the underdrain network and the rate at which volume can be dewatered is dictated by the hydraulic characteristics of the underdrain system that is situated approximately 0.2m below the chamber outlet invert.

The filter fabric and sediment accumulation may add localized resistance to flow; however, this worst-case scenario has been captured within the calculation provided by the manufacturer. Once water has passed through the chamber storage media and reached the underdrain, the drawdown rate is limited by the conveyance capacity of the underdrain.

Correspondence with the manufacturer, ADS, has been provided in Appendix D confirming that the drawdown time below the chamber outlets is approximately 1-2 hours.

5.8.3 Uncontrolled Areas

A 0.53ha of uncontrolled flow due to grading constraints will be treated by the subdivisions treatment train system which are tributary to a downstream OGS units sized with consideration for the subjection lands. Consideration of these areas have been assessed in the ***JFSA Quality Control Memo***. The **Storm Drainage Plan** found in **Appendix D** highlights which downstream OGS unit the uncontrolled flows are tributary to in order to demonstrate that these uncontrolled flows will be treated appropriately.

5.9 Operation and Maintenance

The StormTech SC-800 Isolator Row Plus system requires regular inspection and cleaning to maintain performance. Inspections should occur every six months in the first year and be adjusted based on sediment buildup. If sediment reaches 3 inches, the system is cleaned using a JetVac process until clear water is observed. All covers are then replaced, and observations are recorded. To protect the system, upstream structures should also be cleaned. Filter cloth within CBs are recommended during construction to prevent debris and sediment entry. Furthermore, CB Shields proposed within the site capture debris and sediment in the deep sump catch basins before it enters the Stormtech chambers. They should be inspected every 6 months and after major storms, with debris removed and components cleaned or replaced as needed to maintain flow and performance. A site-specific OM manual has been developed for the site plan block and is provided in attached under separate cover.

5.10 Stormwater Servicing Conclusions

The SWM design for the site plan block assumes that all flow is ultimately directed to the Jock River, with on-site filtration via two Stormtech Isolator Row Plus chambers providing 80% TSS removal, as well as deep sump catchbasins and CB shields providing pretreatment for the site plan area. For uncontrolled drainage areas within the site plan block, the treatment of these areas is in conformance with the overall development treatment train approach for water quality control.

6.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated. Prior to topsoil stripping, earthworks or construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fencing will be installed around the perimeter of the active part of the site (and headwater features) and will be cleaned and maintained throughout construction. The silt fence will remain in place until the working areas have been stabilized and re-vegetated.

Catchbasins will have catchbasin inserts installed during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access to prevent mud tracking onto adjacent roads.

The following additional recommendations to the Contractor will be included in contract documents:

- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering any existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.

The Contractor will be required to complete regular inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers.
- Clean and change inserts at catch basins.

7.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by BCDC to prepare a Design Brief in support of their application for site plan control. The preceding report outlines the following:

- Water – surrounding water main infrastructure within the Conservancy East Subdivision is available to support the subject lands. Sufficient pressure is available within the City’s desired pressure range.
- Wastewater – Sanitary sewers within the development have been proposed or are under construction. The sanitary sewer network will be available and have capacity to support the site plan block.
- Stormwater – Storm servicing was considered in the design of the receiving sewers and downstream storm sewer system. The subject property consists of a series of catchbasins and gravity sewers that allocate flows to two Stromtech Isolator Row Plus chambers that will provide 80% TSS removal. Runoff from the development will be pretreated by CB shields and deep sump CBs and will ultimately outlet to Phase 3 of the Conservancy East subdivision.

The submitted materials demonstrate that the water, sanitary, and storm services currently proposed and/ or under construction can accommodate the contemplated development.

Prepared by,
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Per: Peter Mott, P.Eng.

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APPENDIX A

SITE AREA	17,615.32 m² (1.76 ha)
PAVED AREA	5874m² (33.34%)
LANDSCAPED AREA	7057.08 m² (40.06%)
TOTAL BUILDING COVERAGE	4684.2325 m² (26.592%)
TOTAL GROSS FLOOR AREA	17,617.5428 m²
DENSITY (UPH)	111 UPH
ZONE CATEGORY	R4(Z)

DWELLING BLOCK	DWELLING TYPE	GROSS FLOOR AREA (m²)	UNITS
BLOCKS 8 - 10	24 UNITS STACKED DWELLING		48
BLOCKS 4 - 5 - 6 - 7 - 9	20 UNITS STACKED DWELLING		100
BLOCKS 1 - 2 - 3	16 UNITS STACKED DWELLING		48
		TOTAL UNITS	**196**

ZONE PROVISION - PLANNED UNIT DEVELOPMENT		REQUIRED	PROPOSED
162A(Z)	Min. Lot Area (m2)	1400 m²	17615.32 m²
162A(Z)	Min. Lot Width (m)	18	223.9
162A(Z)	Min. Front Yard Setback (m)	3	>3.4
162B.6	Min. Rear yard setback (m)	6	4.5
162B(Z)	Min. Corner side setback	3	3
162A(Z)	Max Building Height (m	15	13.5
161	Landscaped Area	30%	39%
131.1	Min. Width of Private Way / Parking Aisle (m)	6	6.1
131.4a	Min. Setback for Any Wall of a Residential Buildings Within a Planned Unit Development	1.2	5
131.2	Min. setback for any wall of a residential use building to a private way	1.8	>4.5
137	**AMENITY AREA**		
137.6	Total min. amenity area (6m² per unit)	1176 m²	4903.67 m²
137.6	Min. Communal Amenity Area m² (Min. 50% area)	588 m²	908.42 m²
65	**PERMITTED PROJECTION INTO REQUIRED YARDS**		
65.5.i	Fire escapes, Open Stairways, Stoop (m)	>0.6m to lot line	0.5 m
65.6.a(i)	Covered or Uncovered Balcony, Porch and Deck	2m no closer than 1 to a lot line	2m no closer than 1.74 to a lot line

	PARKING REQUIREMENTS	REQUIRED	PROPOSED
101 (Table R10)	Resident Parking - 1.2 spaces/unit	235	196 (1.0)
102 (Table column III)	Visitor Parking - 0.2 spaces/unit	39	22 (0.11)
106.1	Min. Perpendicular Parking Space Size (m)	2.6 x 5.2	2.6 x 5.2
107 (Table 107.d)	Min. Requires Aisle Width	6.0	6.1
	BARRIER FREE PARKING		
Traffic and Parking Bylaw Section 111	Min. Barrier Free Parking **	1	1
111	**BICYCLE STORAGE**		
111B	Min. bicycle parking space dimension, horizontal (m)	Width: 0.6m Length: 1.8m	0.6 1.8
111A(b)	Min. Bicycle parking space access aisle Width (m)	1.5	1.5
111.11	Min. Bicycle Parking 0.5 spaces/unit	98	100
110(a)(b)	**LANDSCAPE AREA SURROUNDING PARKING LOT**		
110.a	Abutting a Street (m)	3	>16m
110.b	Not Abutting a street (m)	3	>3m
110.1.b	Min. % of parking lot landscape	15%	>19%
110	**REFUSE COLLECTION AREAS**		
110.3b	Min. Waste collection setback to lot line	3	>30m
110.3.c/d	Opaque Screen Min. Height (m)	2	2***

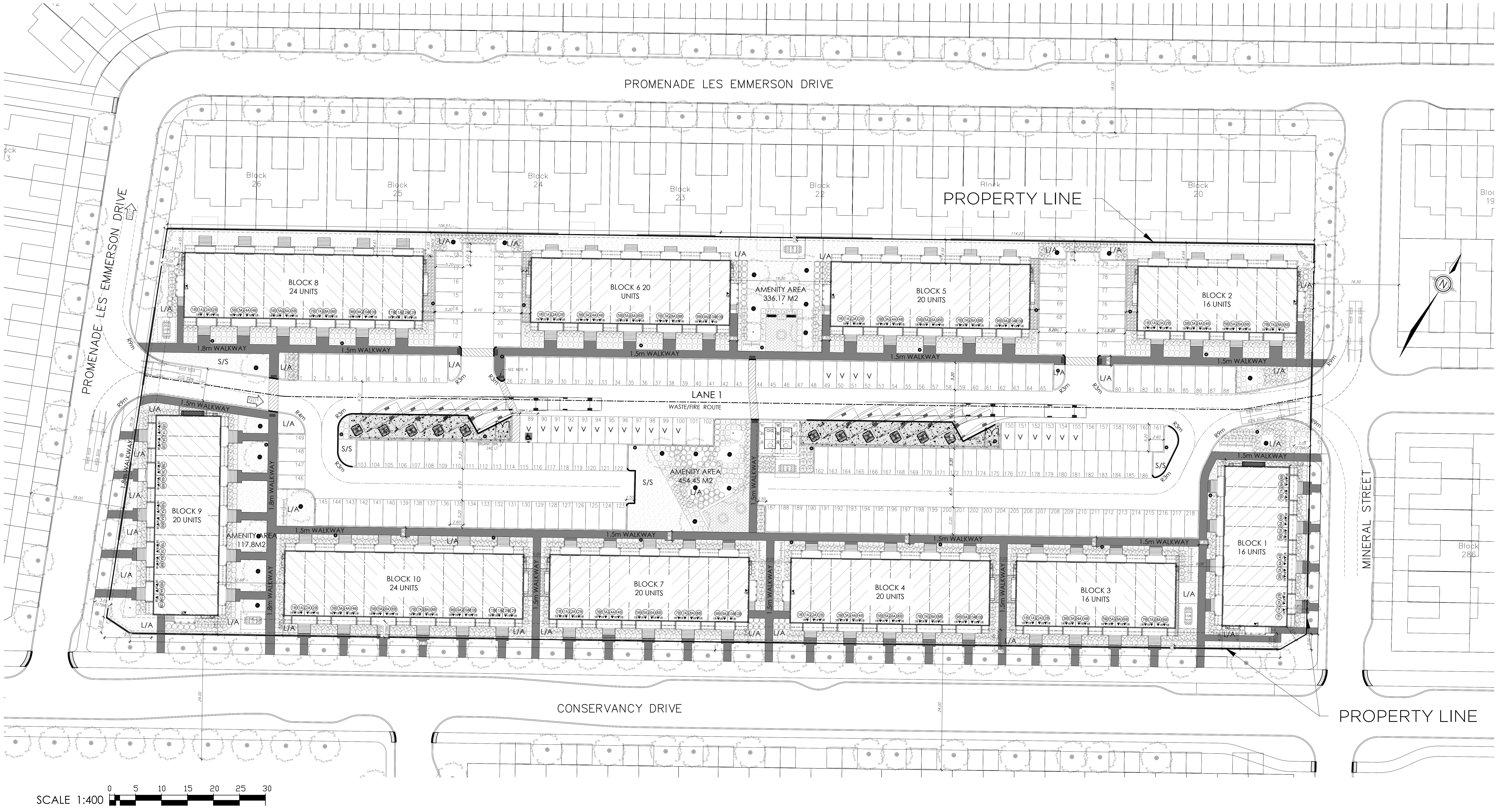
**Per the 2015 Guide Accessibility Design Standards - Section 3.1 Design of Public Parking 4% of parking spaces provided for public use must be accessible. 1 of the provided 21 visitor spaces have been designed to be barrier-free. 1 Type A size provided.

***Section 110(3)(d) where an in-ground refuse container is provide, the screening requirement of Section (3)(c) above may be achieved with soft landscaping (Bylaw 2020-299)

GARBAGE:

REQUESTED BY ZONING:	PH X		
GARBAGE: 0.231 CUBIC YARD /UNIT	0.231 X 196= 45.27 CUBIC YARD (6.5 CU.YD./BIN)	= 7 BINS	PROPOSED: 8 BINS
RECYCLING (GMP) 0.018 CUBIC YARD /UNIT	0.018 X 196 = 0.54 CUBIC YARDS (6.5 CU.YD./BIN)	= 1 BIN	PROPOSED: 1 BINS
RECYCLING (FIBRE) 0.062 CUBIC YARD /UNIT	0.062 X 196 = 12.15 CUBIC YARDS (6.5 CU.YD./BIN)	= 2 BINS	PROPOSED: 2 BINS
ORGANIC 240L PER 50 UNITS	240 L X 3.92 = 940 L (240 L /BIN)	= 4 BINs	PROPOSED: 4 BINS
	TOTAL BINS	= 14 BINS	TOTAL PROPOSED: 15 BINS

SITE PLAN NOTES
1. DO NOT SCALE DRAWINGS FOR PRINT.
2. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF Q4 ARCHITECTS AND CAIVAN . COPYRIGHT RESERVED.
3. WALKWAYS AND CURBS TO BE TIED INTO PUBLIC ROW WHERE APPLICABLE.
4. REFERENCE CITY OF OTTAWA T.W.S.I. DETAIL SC7.3



Q4A
ARCHITECTS

Q4 ARCHITECTS INC.

4110 YONGE STREET
Suite 602, Toronto ON.
M2P 2B7

T. 416.322.6334
F. 416.322.7294
E. info@q4architects.com

The contractor / builder must verify all dimensions on the job and report any discrepancy to the designer before proceeding with the work.

Drawings are NOT to be scaled. All drawings and specifications are instruments of service and the copyright property of the designer and must be returned upon request.

LEGEND

▨	STACKED TOWNS	▨	NO PARKING
▲	ENTRANCE	♿	BARRIER FREE PARKING
⊔	BALCONY	⊖	BARRIER FREE PARKING SIGNAGE
⊔	PORCH	V	VISITOR PARKING
▥	PROJECTION (STAIRS)	▤	BIKE RACKS
▧	PAVERS	▣	EARTH BIN (6.5 yd ³)
▩	HEAVY DUTY CONCRETE PAVING	MS1 ▣	HYDRO TRANSFORMER
▭	LIGHT DUTY ASPHALT PAVING	●	LIGHT POLE
▨	CROSSWALK	S.S	SNOW STORAGE AREA
═	CURB (0.2m)	L/A	LANDSCAPED AREA
▬	DEPRESSED CURB	◌	MEDIUM DECIDUOUS TREE*
▦	TACTILE WALKING SURFACE INDICATOR	○	SMALL DECIDUOUS TREE*
—	BLOCK BOUNDARY	⊛	DECIDUOUS SHRUB*
─	WASTE ENCLOSURE FENCE	⊛	CONIFEROUS SHRUB*
┈	WOOD PRIVACY FENCE	⊛	GRASSES/PERENNIALS *

ATTACHED MPLAN, FROM THE SURVEYED PLAN SEPT 13, XREF INTO DRAWING

*TREES AND SHRUB LOCATIONS TO BE CONFIRMED ON LANDSCAPE PLAN

14	SP1 - CITY RESUBMISSION	2025.04.11	JM
13	SP1 - CITY RESUBMISSION	2025.03.24	SW
12	ADDITIONAL COMMENT-ISSUED TO CLIENT	2024.12.10	JM/CT
11	NEW LAYOUT-ISSUED TO CLIENT	2024.11.27	JM/CT
10	ADDITIONAL COMMENTS-ISSUED TO CLIENT	2024.08.27	JM/CT
9	ADDITIONAL COMMENTS-ISSUED TO CLIENT	2024.08.26	JM/CT
8	ADDITIONAL COMMENTS-ISSUED TO CLIENT	2024.08.16	JM/CT
7	ADDITIONAL COMMENTS-ISSUED TO CLIENT	2024.08.06	JM/CT
6	ADDITIONAL SITE STATS-ISSUED TO CLIENT	2024.07.25	JM/CT
5	REVISED AS PER CITY AND CLIENT COMMENTS	2024.07.17	JM/CT
4	REVISED GARBAGE LAYOUT	2024.07.16	JM/CT
3	SP1-2 AFTER CITY'S COMMENTS	2024.07.15	JM/CT
2	ADD HYDRO TRANSFORMER	2024.07.05	JM/CT
1	Q4A SP1	2024.06.27	JM/CT

Issued / Revision Chart

Project Title

CONSERVANCY STACKED TOWNS

Location
3285 Borrisokane Rd
OTTAWA, ON.

Plan No. 18754 and File No. D07-12-24-0097

Legal Name
Part of Lot 14, Concession 3 (Rideau Front), Geographic Township of Nepean
Part of PIN 04595-4929 (LT)

Client: CAIVAN

Project No.

Scale: **1:500**

Drawn By: **CT**

Checked By: **CT**

OVERALL SITE PLAN

SP1

David Schaeffer Engineering Ltd.
120 Iber Road, Suite 103
Stittsville, ON K2S 1E9
613-836-0856
dsel.ca

APPENDIX B

Caivan
BCDC Site Plan
Required Fire Flow

2025-01-14

Required Fire Flow per IWSTB-2024-05 (OBC A-3.2.5.7)
Block 10

$Q = K\ V\ S_{tot}$

Where,

Q	201,272	minimum supply of water in litres
K	18	water supply coefficient from Table 1
V	7,454.50	total building volume in cubic metres
S_{tot}	1.50	total spacial coefficient from property line exposures

Buidling Volume	Area (m^2)	h (m)	V (m^3)
Basement	45.01	3.05	137.3
Ground	42.09	3.4	143.1
2nd floor	44.71	3.4	152.0
3rd floor	46.65	2.47	115.2
Attic	23.74	3.1	73.6

		units	total vol
621.2	X	12	7454.50 m^3

Required minimum water supply flow rate, L/min

Q (L)		RFF (L/min)
	108,000	2700
108,000	135,000	3600
135,000	162,000	4500
162,000	190,000	5400
190,000	270,000	6300
270,000		9000

<---- Required Fire Flow

Spacial Coefficient

	m	S
North	44.7	0.00
South	30.9	0.00
West	12.7	0.00
East	5	0.50

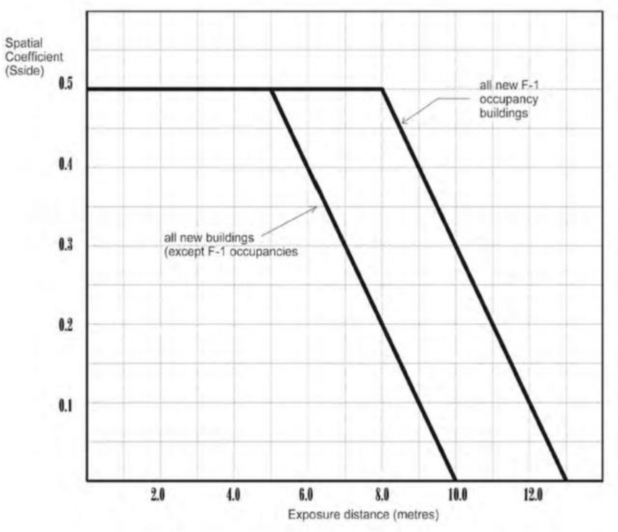


Figure 1
Spatial Coefficient vs Exposure Distance

Caivan
BCDC Site Plan
Required Fire Flow

2025-01-14

Required Fire Flow per IWSTB-2024-05 (OBC A-3.2.5.7)
Block 8

$Q = K\ V\ S_{tot}$

Where,

Q	144,916	minimum supply of water in litres
K	18	water supply coefficient from Table 1
V	7,454.50	total building volume in cubic metres
S_{tot}	1.08	total spacial coefficient from property line exposures

Buidling Volume	Area (m^2)	h (m)	V (m^3)
Basement	45.01	3.05	137.3
Ground	42.09	3.4	143.1
2nd floor	44.71	3.4	152.0
3rd floor	46.65	2.47	115.2
Attic	23.74	3.1	73.6

		units	total vol
621.2	X	12	7454.50 m^3

Required minimum water supply flow rate, L/min

Q (L)		RFF (L/min)
	108,000	2700
108,000	135,000	3600
135,000	162,000	4500 <---- **Required Fire Flow**
162,000	190,000	5400
190,000	270,000	6300
270,000		9000

Spacial Coefficient

	m	S
North	9.2	0.08
South	18.9	0
West	25.1	0
East	20.7	0

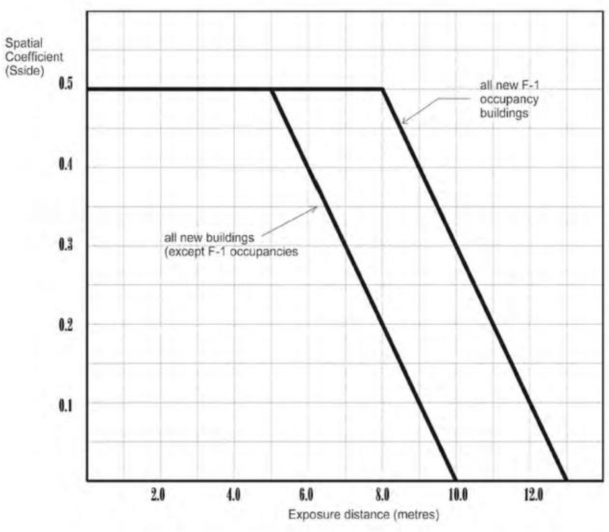


Figure 1
Spatial Coefficient vs Exposure Distance

Caivan
BCDC Site Plan
Required Fire Flow

2025-01-14

Required Fire Flow per IWSTB-2024-05 (OBC A-3.2.5.7)
Block 1

$Q = K\ V\ S_{tot}$

Where,

Q	97,505	minimum supply of water in litres
K	18	water supply coefficient from Table 1
V	4,969.67	total building volume in cubic metres
S_{tot}	1.09	total spacial coefficient from property line exposures

Buidling Volume	**Area (m^2)**	**h (m)**	**V (m^3)**
Basement	45.01	3.05	137.3
Ground	42.09	3.4	143.1
2nd floor	44.71	3.4	152.0
3rd floor	46.65	2.47	115.2
Attic	23.74	3.1	73.6

		units	total vol	
621.2	X	8	4969.67	m^3

Required minimum water supply flow rate, L/min

Q (L)		**RFF (L/min)**
	108,000	2700
108,000	135,000	3600
135,000	162,000	4500
162,000	190,000	5400
190,000	270,000	6300
270,000		9000

<---- Required Fire Flow

Spacial Coefficient

	m	**S**
North	25.8	0
South	31.9	0
West	9.1	0.09
East	23.3	0

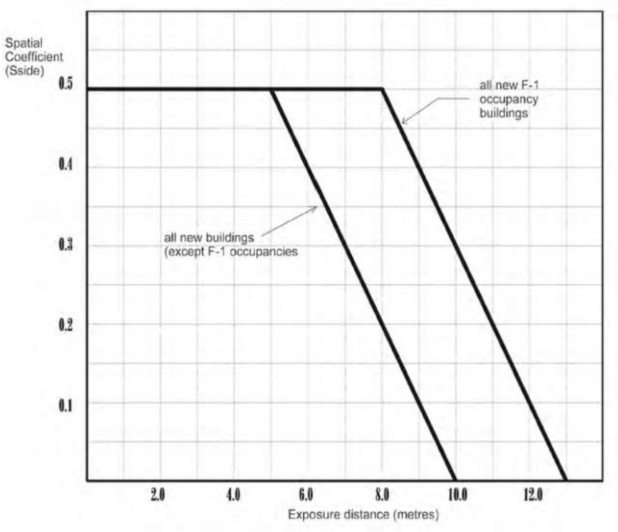
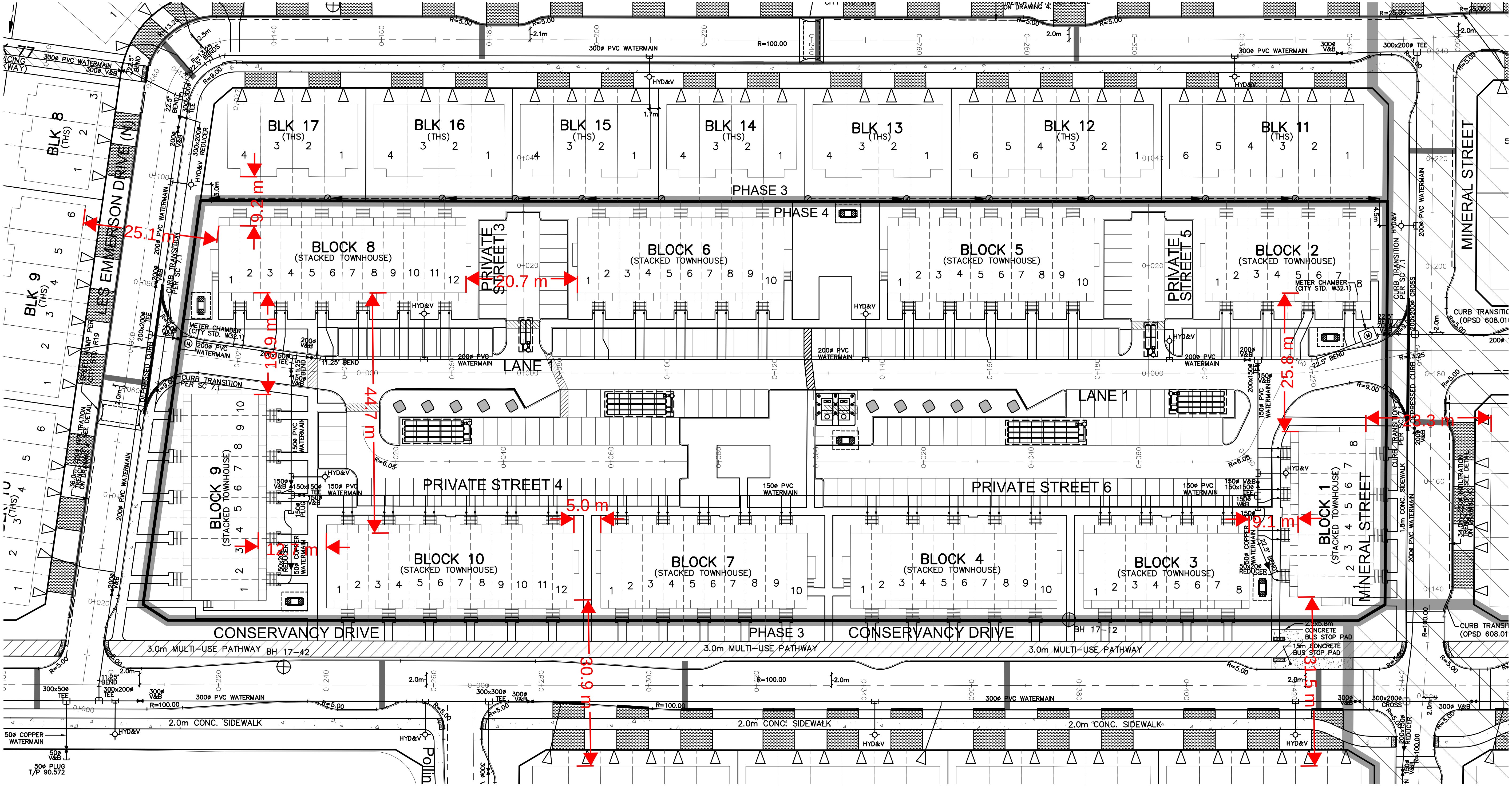


Figure 1
Spatial Coefficient vs Exposure Distance


BLK 17 (THS)
BLK 16 (THS)
BLK 15 (THS)
BLK 14 (THS)
BLK 13 (THS)
BLK 12 (THS)
BLK 11 (THS)
BLK 8 (THS)
BLK 9 (THS)
PHASE 3
PHASE 4
BLOCK 8 (STACKED TOWNHOUSE)
BLOCK 6 (STACKED TOWNHOUSE)
BLOCK 5 (STACKED TOWNHOUSE)
BLOCK 2 (STACKED TOWNHOUSE)
BLOCK 9 (STACKED TOWNHOUSE)
BLOCK 10 (STACKED TOWNHOUSE)
BLOCK 7 (STACKED TOWNHOUSE)
BLOCK 4 (STACKED TOWNHOUSE)
BLOCK 3 (STACKED TOWNHOUSE)
BLOCK 1 (STACKED TOWNHOUSE)
PRIVATE STREET 3
PRIVATE STREET 5
PRIVATE STREET 4
PRIVATE STREET 6
LANE 1
LANE 1
LES EMMERSON DRIVE (N)
MINERAL STREET
MINERAL STREET
CONSERVANCY DRIVE
CONSERVANCY DRIVE
PHASE 3
3.0m MULTI-USE PATHWAY
2.0m CONC. SIDEWALK
300ø PVC WATERMAIN
200ø PVC WATERMAIN
150ø PVC WATERMAIN
HYD&V
METER CHAMBER (CITY STD. W32.1)
CURB TRANSITION PER SC 7.1
CONCRETE BUS STOP PAD
BH 17-42
BH 17-12
R=100.00
25.1 m
9.2 m
20.7 m
11.9 m
44.7 m
5.0 m
12.1 m
30.9 m
25.8 m
23.3 m
9.1 m
33.5 m

BARRHAVEN CONSERVANCY EAST WATER DISTRIBUTION SYSTEM ANALYSIS (FINAL REPORT)

STANTEC, MARCH 2025

(PROVIDED UNDER SEPARATE COVER)

David Schaeffer Engineering Ltd.
120 Iber Road, Suite 103
Stittsville, ON K2S 1E9
613-836-0856
dsel.ca

APPENDIX C

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION									COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Park (Block 103)																													
	930A	93A						0.00					0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	14.0	200	0.65	26.44	0.00	0.84	0.05
To Conservancy Drive, Pipe 93A - 119A								0.00	0				0.00		0.00		0.00			0.00									
Ainsworth Crescent																													
	80A	81A	0.51	10	10		34	0.51	34	3.68	0.41		0.00		0.00		0.00	0.00	0.51	0.51	0.17	0.57	69.0	200	0.65	26.44	0.02	0.84	0.34
	81A	82A	0.38	11	11		38	0.89	72	3.62	0.85		0.00		0.00		0.00	0.00	0.38	0.89	0.29	1.14	70.0	250	0.25	29.73	0.04	0.61	0.29
To Sapling Grove, Pipe 82A - 85A								0.89	72				0.00		0.00		0.00			0.89									
	78A	59A	0.07	1	1		4	0.07	4	3.76	0.05		0.00		0.00		0.00	0.00	0.07	0.07	0.02	0.07	13.0	200	0.65	26.44	0.00	0.84	0.17
	59A	60A	0.45	11	11		38	0.52	42	3.66	0.50		0.00		0.00		0.00	0.00	0.45	0.52	0.17	0.67	76.0	250	0.25	29.73	0.02	0.61	0.24
	60A	61A	0.41	12	12		41	0.93	83	3.61	0.97		0.00		0.00		0.00	0.00	0.41	0.93	0.31	1.28	75.0	250	0.25	29.73	0.04	0.61	0.30
To Sapling Grove, Pipe 61A - 82A								0.93	83				0.00		0.00		0.00			0.93									
Syringa Court																													
	55A	56A	0.14	2	2		7	0.14	7	3.74	0.08		0.00		0.00		0.00	0.00	0.14	0.14	0.05	0.13	11.0	200	0.65	26.44	0.00	0.84	0.22
	56A	57A	0.42	11	11		38	0.56	45	3.66	0.53		0.00		0.00		0.00	0.00	0.42	0.56	0.18	0.72	67.0	250	0.65	47.94	0.01	0.98	0.35
	57A	58A	0.34	10	10		34	0.90	79	3.62	0.93		0.00		0.00		0.00	0.00	0.34	0.90	0.30	1.22	67.5	250	0.25	29.73	0.04	0.61	0.29
To Sapling Grove, Pipe 58A - 61A								0.90	79				0.00		0.00		0.00			0.90									
	55A	53A	0.17	3	3		11	0.17	11	3.73	0.13		0.00		0.00		0.00	0.00	0.17	0.17	0.06	0.19	45.5	200	0.65	26.44	0.01	0.84	0.24
	53A	49A	0.08	1	1		4	0.25	15	3.72	0.18		0.00		0.00		0.00	0.00	0.08	0.25	0.08	0.26	9.0	250	0.25	29.73	0.01	0.61	0.18
	49A	50A	0.44	11	11		38	0.69	53	3.65	0.63		0.00		0.00		0.00	0.00	0.44	0.69	0.23	0.85	68.5	250	0.25	29.73	0.03	0.61	0.27
	50A	51A	0.34	10	10		34	1.03	87	3.61	1.02		0.00		0.00		0.00	0.00	0.34	1.03	0.34	1.36	66.5	250	0.25	29.73	0.05	0.61	0.31
To Sapling Grove, Pipe 51A - 58A								1.03	87				0.00		0.00		0.00			1.03									
Ecology Lane																													
	880A	88A	0.44	10	10		34	0.44	34	3.68	0.41		0.00		0.00		0.00	0.00	0.44	0.44	0.15	0.55	76.0	200	0.65	26.44	0.02	0.84	0.33
Contribution From Sapling Grove, Pipe 85A - 88A								5.48	453				0.00		0.00		0.00		5.48	5.92									
	88A	91A	0.18	4	4		14	6.10	501	3.38	5.49		0.00		0.00		0.00	0.00	0.18	6.10	2.01	7.50	60.0	250	0.25	29.73	0.25	0.61	0.50
Contribution From Peninsula Road, Pipe 90A - 91A								0.78	79				0.00		0.00		0.00		0.78	6.88									
	91A	92A	0.08				0	6.96	580	3.35	6.30		0.00		0.00		0.00	0.00	0.08	6.96	2.30	8.60	62.5	250	0.25	29.73	0.29	0.61	0.52
To Conservancy Drive, Pipe 92A - 93A								6.96	580				0.00		0.00		0.00			6.96									
Les Emmerson Drive (S)																													
	730A	73A	0.50	25		25	68	0.50	68	3.63	0.80		0.00		0.00		0.00	0.00	0.50	0.50	0.17	0.96	88.0	200	0.65	26.44	0.04	0.84	0.40
	73A	74A	0.28	12		12	33	0.78	101	3.59	1.18		0.00		0.00		0.00	0.00	0.28	0.78	0.26	1.43	73.0	250	0.25	29.73	0.05	0.61	0.31
To Anemone Mews, Pipe 74A - 750A								0.78	101				0.00		0.00		0.00			0.78									
	65A	66A	0.17	4		4	11	0.17	11	3.73	0.13		0.00		0.00		0.00	0.00	0.17	0.17	0.06	0.19	37.5	200	0.65	26.44	0.01	0.84	0.24
	66A	67A	0.11	3		3	9	0.28	20	3.70	0.24		0.00		0.00		0.00	0.00	0.11	0.28	0.09	0.33	11.0	250	0.25	29.73	0.01	0.61	0.19
	67A	69A	0.63	31		31	84	0.91	104	3.59	1.21		0.00		0.00		0.00	0.00	0.63	0.91	0.30	1.51	100.0	250	0.25	29.73	0.05	0.61	0.31
	69A	74A	0.39	18		18	49	1.30	153	3.55	1.76		0.00		0.00		0.00	0.00	0.39	1.30	0.43	2.19	93.0	250	0.25	29.73	0.07	0.61	0.35
To Anemone Mews, Pipe 74A - 750A								1.30	153				0.00		0.00		0.00			1.30									

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha					
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph				
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =		0.330	L/s/ha	
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =		0.600	m/s	
Max Res. Peak Factor =	4.00				Manning's n =	(Conc)	0.013	(Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=		2.7		
Institutional =	0.32	l/s/Ha			Single house coeff=		3.4		

Designed: M.S.

Checked: W.L.

Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 11

PROJECT: **BARRHAVEN CONCERVANCY EAST**

LOCATION: **City of Ottawa**

File Ref: 20-1180 & 24-1398

Date: **Aug 2025**

Sheet No. 1 of 7

1398_SAN_Designsheets_Aug1525.xlsx

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION									COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Anemone Mews																													
Contribution From Peninsula Road, Pipe 62A - 63A								0.95	90				0.00		0.00		0.00		0.95	0.95									
Contribution From Peninsula Road, Pipe 89A - 63A								0.17	14				0.00		0.00		0.00		0.17	1.12									
			0.09				0	1.21	104				0.00		0.00		0.00		0.09	1.21									
	63A	75A	0.09				0	1.30	104	3.59	1.21		0.00		0.00		0.00	0.00	0.09	1.30	0.43	1.64	62.5	250	0.25	29.73	0.06	0.61	0.32
To Conservancy Drive, Pipe 75A - 76A								1.30	104				0.00		0.00		0.00			1.30									
Contribution From Les Emmerson Drive (N), Pipe 70A - 72A								1.09	89				0.00		0.00		0.00		1.09	1.09									
Contribution From Les Emmerson Drive (N), Pipe 71A - 72A								2.38	313				0.00		0.00		0.00		2.38	3.47									
	72A	74A	0.27	6	6		21	3.74	423	3.41	4.67		0.00		0.00		0.00	0.00	0.27	3.74	1.23	5.91	58.5	250	0.25	29.73	0.20	0.61	0.47
Contribution From Les Emmerson Drive (S), Pipe 69A - 74A								1.30	153				0.00		0.00		0.00		1.30	5.04									
Contribution From Les Emmerson Drive (S), Pipe 73A - 74A								0.78	101				0.00		0.00		0.00		0.78	5.82									
	74A	750A	0.26	6	6		21	6.08	698	3.32	7.50		0.00		0.00		0.00	0.00	0.26	6.08	2.01	9.51	53.0	250	0.25	29.73	0.32	0.61	0.54
	750A	75A	0.01				0	6.09	698	3.32	7.50		0.00		0.00		0.00	0.00	0.01	6.09	2.01	9.51	9.5	250	0.25	29.73	0.32	0.61	0.54
To Conservancy Drive, Pipe 75A - 76A								6.09	698				0.00		0.00		0.00			6.09									
Gallium Crescent																													
	30A	31A	0.37	10	10		34	0.37	34	3.68	0.41		0.00		0.00		0.00	0.00	0.37	0.37	0.12	0.53	65.0	200	0.65	26.44	0.02	0.84	0.33
	31A	32A	0.34	9	9		31	0.71	65	3.63	0.77		0.00		0.00		0.00	0.00	0.34	0.71	0.23	1.00	64.0	250	0.25	29.73	0.03	0.61	0.28
To Sapling Grove, Pipe 32A - 37A								0.71	65				0.00		0.00		0.00			0.71									
	30A	33A	0.13	2	2		7	0.13	7	3.74	0.08		0.00		0.00		0.00	0.00	0.13	0.13	0.04	0.13	9.5	200	0.65	26.44	0.00	0.84	0.22
	33A	34A	0.16	3	3		11	0.29	18	3.71	0.22		0.00		0.00		0.00	0.00	0.16	0.29	0.10	0.31	43.5	250	0.25	29.73	0.01	0.61	0.19
	34A	35A	0.12	1	1		4	0.41	22	3.70	0.26		0.00		0.00		0.00	0.00	0.12	0.41	0.14	0.40	11.5	250	0.25	29.73	0.01	0.61	0.21
	35A	36A	0.44	11	11		38	0.85	60	3.64	0.71		0.00		0.00		0.00	0.00	0.44	0.85	0.28	0.99	68.5	250	0.25	29.73	0.03	0.61	0.27
	36A	37A	0.31	9	9		31	1.16	91	3.60	1.06		0.00		0.00		0.00	0.00	0.31	1.16	0.38	1.45	61.5	250	0.25	29.73	0.05	0.61	0.31
To Mineral Street, Pipe 37A - 39A								1.16	91				0.00		0.00		0.00			1.16									
Pollination Place																													
	250A	26A	0.11	2	2		7	0.11	7	3.74	0.08		0.00		0.00		0.00	0.00	0.11	0.11	0.04	0.12	25.5	200	0.65	26.44	0.00	0.84	0.20
			0.09	1	1		4	0.20	11				0.00		0.00		0.00		0.09	0.20									
	26A	27A	0.09	1	1		4	0.29	15	3.72	0.18		0.00		0.00		0.00	0.00	0.09	0.29	0.10	0.28	11.0	200	0.65	26.44	0.01	0.84	0.27
	27A	28A	0.39	10	10		34	0.68	49	3.65	0.58		0.00		0.00		0.00	0.00	0.39	0.68	0.22	0.80	63.5	250	0.25	29.73	0.03	0.61	0.26
	28A	29A	0.34	10	10		34	1.02	83	3.61	0.97		0.00		0.00		0.00	0.00	0.34	1.02	0.34	1.31	62.5	250	0.25	29.73	0.04	0.61	0.30
To Sapling Grove, Pipe 29A - 32A								1.02	83				0.00		0.00		0.00			1.02									
	250A	25A	0.09	2	2		7	0.09	7	3.74	0.08		0.00		0.00		0.00	0.00	0.09	0.09	0.03	0.11	19.5	200	0.65	26.44	0.00	0.84	0.20
	25A	19A	0.04				0	0.13	7	3.74	0.08		0.00		0.00		0.00	0.00	0.04	0.13	0.04	0.13	8.0	250	0.25	29.73	0.00	0.61	0.15
			0.27	5	5		17	0.40	24				0.00		0.00		0.00		0.27	0.40									
	19A	20A	0.28	5	5		17	0.68	41	3.67	0.49		0.00		0.00		0.00	0.00	0.28	0.68	0.22	0.71	71.0	250	0.25	29.73	0.02	0.61	0.25
	20A	21A	0.19	4	4		14	0.87	55	3.64	0.65		0.00		0.00		0.00	0.00	0.19	0.87	0.29	0.94	54.5	250	0.25	29.73	0.03	0.61	0.27
To Sapling Grove, Pipe 21A - 29A								0.87	55				0.00		0.00		0.00			0.87									
Sapling Grove																													
Contribution From Pollination Place, Pipe 20A - 21A								0.87	55				0.00		0.00		0.00		0.87	0.87									
	21A	29A	0.24	7	7		24	1.11	79	3.62	0.93		0.00		0.00		0.00	0.00	0.24	1.11	0.37	1.29	59.0	250	0.25	29.73	0.04	0.61	0.30
Contribution From Pollination Place, Pipe 28A - 29A								1.02	83				0.00		0.00		0.00		1.02	2.13									
	29A	32A	0.23	10	10		34	2.36	196	3.52	2.24		0.00		0.00		0.00	0.00	0.23	2.36	0.78	3.02	58.5	250	0.25	29.73	0.10	0.61	0.39

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha
Average Daily Flow =	280	l/p/day		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha
Max Res. Peak Factor =	4.00			
Commercial/Inst./Park Peak Factor =	1.50			
Institutional =	0.32	l/s/Ha		

Industrial Peak Factor = as per MOE Graph

Extraneous Flow =		0.330	L/s/ha	
Minimum Velocity =		0.600	m/s	
Manning's n =	(Conc)	0.013	(Pvc)	0.013
Townhouse coeff=		2.7		
Single house coeff=		3.4		

Designed: M.S.

Checked: W.L.

Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 11

PROJECT: **BARRHAVEN CONCERVANCY EAST**

LOCATION: **City of Ottawa**

File Ref: 20-1180 & 24-1398

Date: **Aug 2025**

Sheet No. 2 of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION									COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Contribution From Gallium Crescent, Pipe 31A - 32A								0.71	65				0.00		0.00		0.00		0.71	3.07									
	32A	37A	0.19	7	7		24	3.26	285	3.47	3.21		0.00		0.00		0.00	0.00	0.19	3.26	1.08	4.28	58.5	250	0.25	29.73	0.14	0.61	0.43
To Mineral Street, Pipe 37A - 39A								3.26	285				0.00		0.00		0.00			3.26									
	510A	51A	0.18	3	3		11	0.18	11	3.73	0.13		0.00		0.00		0.00	0.00	0.18	0.18	0.06	0.19	48.5	200	0.65	26.44	0.01	0.84	0.24
Contribution From Syringa Court, Pipe 50A - 51A								1.03	87				0.00		0.00		0.00		1.03	1.21									
	51A	58A	0.25	5	5		17	1.46	115	3.58	1.33		0.00		0.00		0.00	0.00	0.25	1.46	0.48	1.82	58.5	250	0.25	29.73	0.06	0.61	0.33
Contribution From Syringa Court, Pipe 57A - 58A								0.90	79				0.00		0.00		0.00		0.90	2.36									
	58A	61A	0.19	4	4		14	2.55	208	3.51	2.37		0.00		0.00		0.00	0.00	0.19	2.55	0.84	3.21	58.5	250	0.25	29.73	0.11	0.61	0.39
Contribution From Ainsworth Crescent, Pipe 60A - 61A								0.93	83				0.00		0.00		0.00		0.93	3.48									
	61A	82A	0.22	4	4		14	3.70	305	3.46	3.42		0.00		0.00		0.00	0.00	0.22	3.70	1.22	4.64	60.0	250	0.25	29.73	0.16	0.61	0.44
Contribution From Ainsworth Crescent, Pipe 81A - 82A								0.89	72				0.00		0.00		0.00		0.89	4.59									
	82A	85A	0.18	4	4		14	4.77	391	3.42	4.34		0.00		0.00		0.00	0.00	0.18	4.77	1.57	5.91	58.5	250	0.25	29.73	0.20	0.61	0.47
Contribution From Meander Way, Pipe 84A - 85A								0.50	45				0.00		0.00		0.00		0.50	5.27									
	85A	88A	0.21	5	5		17	5.48	453	3.40	4.99		0.00		0.00		0.00	0.00	0.21	5.48	1.81	6.79	58.5	250	0.25	29.73	0.23	0.61	0.49
To Ecology Lane, Pipe 88A - 91A								5.48	453				0.00		0.00		0.00			5.48									
Mineral Street																													
	430A	46A	0.09				0	0.09	0				0.00		0.00		0.00	0.00	0.09	0.09	0.03	0.03	45.5	200	0.65	26.44	0.00	0.84	0.14
Contribution From BCDC EAST STACKED CONDO SITE PLAN, Pipe 124A - 46A								0.62	84				0.00		0.00		0.00		0.62	0.71									
			0.07	16		16	37	0.78	121				0.00		0.00		0.00	0.00	0.07	0.78									
	46A	47A	0.20	6		6	17	0.98	138	3.56	1.59		0.00		0.00		0.00	0.00	0.20	0.91	0.30	1.89	62.5	250	0.25	29.73	0.06	0.61	0.34
To Conservancy Drive, Pipe 47A - 48A								0.98	138				0.00		0.00		0.00			0.91									
Contribution From Sapling Grove, Pipe 32A - 37A								3.26	285				0.00		0.00		0.00		3.26	3.26									
Contribution From Gallium Crescent, Pipe 36A - 37A								1.16	91				0.00		0.00		0.00		1.16	4.42									
	37A	39A	0.08				0	4.50	376	3.43	4.18		0.00		0.00		0.00	0.00	0.08	4.50	1.49	5.66	60.0	250	0.25	29.73	0.19	0.61	0.47
Contribution From Peninsula Road, Pipe 38A - 39A								1.06	164				0.00		0.00		0.00		1.06	5.56									
	39A	47A	0.08				0	5.64	540	3.37	5.89		0.00		0.00		0.00	0.00	0.08	5.64	1.86	7.75	62.5	250	0.25	29.73	0.26	0.61	0.51
To Conservancy Drive, Pipe 47A - 48A								5.64	540				0.00		0.00		0.00			5.64									
BCDC EAST STACKED CONDO SITE PLAN																													
	126A	130A	0.54	34		34	79	0.54	79	3.62	0.93		0.00		0.00		0.00	0.00	0.54	0.54	0.18	1.10	87.0	200	0.65	26.44	0.04	0.84	0.41
	130A	17A	0.09	10			23	0.63	102	3.59	1.19		0.00		0.00		0.00	0.00	0.09	0.63	0.21	1.40	36.0	200	0.35	19.40	0.07	0.62	0.36
To Les Emmerson Drive (N), Pipe 17A - 18A								0.63	102				0.00		0.00		0.00			0.63									
	132A	123A	0.57	32		32	74	0.57	74	3.62	0.87		0.00		0.00		0.00	0.00	0.57	0.57	0.19	1.06	80.0	200	0.65	26.44	0.04	0.84	0.41
	123A	124A	0.05	4		4	10	0.62	84	3.61	0.98		0.00		0.00		0.00	0.00	0.05	0.62	0.20	1.19	11.5	200	0.35	19.40	0.06	0.62	0.34
	124A	46A						0.62	84	3.61	0.98		0.00		0.00		0.00	0.00	0.00	0.62	0.20	1.19	11.0	250	0.25	29.73	0.04	0.61	0.29
To Mineral Street, Pipe 46A - 47A								0.62	84				0.00		0.00		0.00			0.62									
Les Emmerson Drive (N)																													
	210A	18A						0.00					0.00		0.00	3.22	3.22	0.52	3.22	3.22	1.06	1.58	14.0	200	0.65	26.44	0.06	0.84	0.46
To Conservancy Drive, Pipe 18A - 23A								0.00	0				0.00		0.00		3.22			3.22									
	64A	70A	0.45	10	10		34	0.45	34	3.68	0.41		0.00		0.00		0.00	0.00	0.45	0.45	0.15	0.55	70.5	200	0.65	26.44	0.02	0.84	0.34
	70A	72A	0.64	16	16		55	1.09	89	3.61	1.04		0.00		0.00		0.00	0.00	0.64	1.09	0.36	1.40	119.0	250	0.25	29.73	0.05	0.61	0.31
To Anemone Mews, Pipe 72A - 74A								1.09	89				0.00		0.00		0.00			1.09									
	16A	17A	0.20	7		7	19	0.20	19	3.71	0.23		0.00		0.00		0.00	0.00	0.20	0.20	0.07	0.29	51.5	200	0.65	26.44	0.01	0.84	0.27

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha
Average Daily Flow =	280	l/p/day		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha
Max Res. Peak Factor =	4.00			
Commercial/Inst./Park Peak Factor =	1.50			
Institutional =	0.32	l/s/Ha		

Industrial Peak Factor = as per MOE Graph
Extraneous Flow = 0.330 L/s/ha
Minimum Velocity = 0.600 m/s
Manning's n = (Conc) 0.013 (Pvc) 0.013
Townhouse coeff= 2.7
Single house coeff= 3.4

Designed: M.S.
Checked: W.L.
Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 11

PROJECT: **BARRHAVEN CONCERVANCY EAST**
LOCATION: **City of Ottawa**
File Ref: 20-1180 & 24-1398
Date: **Aug 2025**
Sheet No. 3 of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION									COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Contribution From BCDC EAST STACKED CONDO SITE PLAN, Pipe 130A - 17A								0.63	102				0.00		0.00		0.00		0.63	0.83									
			0.12	20		20	46	0.95	167	2.00	1.08		0.00		0.00		0.00	0.00	0.12	0.95	0.31	1.40							
	17A	18A	0.22	8		8	22	1.17	189	3.53	2.16		0.00		0.00		0.00	0.00	0.22	1.17	0.39	2.55	63.5	250	0.25	29.73	0.09	0.61	0.37
To Conservancy Drive, Pipe 18A - 23A								1.17	189				0.00		0.00		0.00			1.17									
	16A	40A	0.10	3		3	9	0.10	9	3.74	0.11		0.00		0.00		0.00	0.00	0.10	0.10	0.03	0.14	9.5	200	0.65	26.44	0.01	0.84	0.22
	40A	41A	0.35	17		17	46	0.45	55	3.64	0.65		0.00		0.00		0.00	0.00	0.35	0.45	0.15	0.80	54.5	250	0.65	47.94	0.02	0.98	0.35
	41A	42A	0.65	33		33	90	1.10	145	3.56	1.67		0.00		0.00		0.00	0.00	0.65	1.10	0.36	2.03	108.5	250	0.25	29.73	0.07	0.61	0.34
	42A	43A	0.37	18		18	49	1.47	194	3.52	2.21		0.00		0.00		0.00	0.00	0.37	1.47	0.49	2.70	64.5	250	0.25	29.73	0.09	0.61	0.37
	43A	71A	0.53	26		26	71	2.00	265	3.48	2.99		0.00		0.00		0.00	0.00	0.53	2.00	0.66	3.65	98.0	250	0.25	29.73	0.12	0.61	0.41
			0.08	2	2		7	2.08	272				0.00		0.00		0.00		0.08	2.08									
	71A	72A	0.30	15		15	41	2.38	313	3.46	3.51		0.00		0.00		0.00	0.00	0.30	2.38	0.79	4.29	76.5	250	0.25	29.73	0.14	0.61	0.43
To Anemone Mews, Pipe 72A - 74A								2.38	313				0.00		0.00		0.00			2.38									
Deciduous Crescent																													
	8A	9A	0.43	16		16	44	0.43	44	3.66	0.52		0.00		0.00		0.00	0.00	0.43	0.43	0.14	0.66	61.0	200	0.65	26.44	0.03	0.84	0.35
	9A	11A	0.34	16		16	44	0.77	88	3.61	1.03		0.00		0.00		0.00	0.00	0.34	0.77	0.25	1.28	66.5	250	0.25	29.73	0.04	0.61	0.30
To Conservancy Drive, Pipe 11A - 15A								0.77	88				0.00		0.00		0.00			0.77									
	12A	13A	0.12	3		3	9	0.12	9	3.74	0.11		0.00		0.00		0.00	0.00	0.12	0.12	0.04	0.15	10.0	200	0.65	26.44	0.01	0.84	0.22
	13A	14A	0.38	17		17	46	0.50	55	3.64	0.65		0.00		0.00		0.00	0.00	0.38	0.50	0.17	0.81	63.5	250	0.25	29.73	0.03	0.61	0.26
	14A	15A	0.35	16		16	44	0.85	99	3.60	1.15		0.00		0.00		0.00	0.00	0.35	0.85	0.28	1.43	69.5	250	0.25	29.73	0.05	0.61	0.31
To Conservancy Drive, Pipe 15A - 18A								0.85	99				0.00		0.00		0.00			0.85									
Ephemeral Crescent																													
	2A	3A	0.21	2	2		7	0.21	7	3.74	0.08		0.00		0.00		0.00	0.00	0.21	0.21	0.07	0.15	12.0	200	0.65	26.44	0.01	0.84	0.22
	3A	4A	0.62	31		31	84	0.83	91	3.60	1.06		0.00		0.00		0.00	0.00	0.62	0.83	0.27	1.34	107.0	250	0.25	29.73	0.04	0.61	0.30
	4A	15A	0.42	16		16	44	1.25	135	3.56	1.56		0.00		0.00		0.00	0.00	0.42	1.25	0.41	1.97	112.0	250	0.25	29.73	0.07	0.61	0.34
To Conservancy Drive, Pipe 15A - 18A								1.25	135				0.00		0.00		0.00			1.25									
	5A	500A	0.13	6		6	17	0.13	17	3.71	0.20		0.00		0.00		0.00	0.00	0.13	0.13	0.04	0.25	21.0	200	0.65	26.44	0.01	0.84	0.26
	500A	6A	0.44	23		23	63	0.57	80	3.62	0.94		0.00		0.00		0.00	0.00	0.44	0.57	0.19	1.13	78.5	250	0.25	29.73	0.04	0.61	0.29
	6A	11A	0.56	28		28	76	1.13	156	3.55	1.79		0.00		0.00		0.00	0.00	0.56	1.13	0.37	2.17	104.5	250	0.25	29.73	0.07	0.61	0.35
To Conservancy Drive, Pipe 11A - 15A								1.13	156				0.00		0.00		0.00			1.13									
Borrisokane Road																													
	1002A	1001A	0.16	4		4	11	0.16	11	3.73	0.13		0.00		0.00		0.00	0.00	0.16	0.16	0.05	0.19	40.0	200	0.65	26.44	0.01	0.84	0.23
	1001A	10A	0.40	12		12	33	0.56	44	3.66	0.52		0.00		0.00		0.00	0.00	0.40	0.56	0.18	0.71	100.0	250	0.25	29.73	0.02	0.61	0.25
To Conservancy Drive, Pipe 10A - 11A								0.56	44				0.00		0.00		0.00			0.56									
	1004A	1003A	0.50	16		16	44	0.50	44	3.66	0.52		0.00		0.00		0.00	0.00	0.50	0.50	0.17	0.69	98.5	200	0.65	26.44	0.03	0.84	0.36
	1003A	10A	0.40	12		12	33	0.90	77	3.62	0.90		0.00		0.00		0.00	0.00	0.40	0.90	0.30	1.20	100.0	250	0.25	29.73	0.04	0.61	0.29
To Conservancy Drive, Pipe 10A - 11A								0.90	77				0.00		0.00		0.00			0.90									
Conservancy Drive																													
			12.88				1182	12.88	1182			4.21	4.21		0.00	0.58	0.58		17.67	17.67									
	1005A	10A	36.45				3771	49.33	4953	2.80	44.93	13.70	17.91		0.00	3.47	4.05	9.36	53.62	71.29	23.53	77.81	20.5	525	0.10	136.00	0.57	0.63	0.65

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha						
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph					
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =		0.330	L/s/ha		
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =		0.600	m/s		
Max Res. Peak Factor =	4.00				Manning's n =	(Conc)	0.013	(Pvc)	0.013	
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=		2.7			
Institutional =	0.32	l/s/Ha			Single house coeff=		3.4			

Designed:
M.S.

Checked:
W.L.

Dwg. Reference:
Sanitary Drainage Plan, Dwg. No. 11

PROJECT:
BARRHAVEN CONCERVANCY EAST

LOCATION:
City of Ottawa

File Ref: 20-1180 & 24-1398
Date: **Aug 2025**
Sheet No. 4 of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION									COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Contribution From Borrisokane Road, Pipe 1001A - 10A								0.56	44				0.00		0.00		0.00		0.56	71.85									
Contribution From Borrisokane Road, Pipe 1003A - 10A								0.90	77				0.00		0.00		0.00		0.90	72.75									
	10A	11A	0.17				0	50.96	5074	2.79	45.90		17.91		0.00		4.05	9.36	0.17	72.92	24.06	79.32	72.5	525	0.10	136.00	0.58	0.63	0.65
Contribution From Ephemeral Crescent, Pipe 6A - 11A								1.13	156				0.00		0.00		0.00		1.13	74.05									
Contribution From Deciduous Crescent, Pipe 9A - 11A								0.77	88				0.00		0.00		0.00		0.77	74.82									
	11A	15A	0.11				0	52.97	5318	2.78	47.84		17.91		0.00		4.05	9.36	0.11	74.93	24.73	81.93	60.0	525	0.10	136.00	0.60	0.63	0.66
Contribution From Deciduous Crescent, Pipe 14A - 15A								0.85	99				0.00		0.00		0.00		0.85	75.78									
Contribution From Ephemeral Crescent, Pipe 4A - 15A								1.25	135				0.00		0.00		0.00		1.25	77.03									
	15A	18A	0.13				0	55.20	5552	2.76	49.70		17.91		0.00		4.05	9.36	0.13	77.16	25.46	84.52	60.5	525	0.10	136.00	0.62	0.63	0.66
Contribution From Les Emmerson Drive (N), Pipe 17A - 18A								**1.17**	**189**				**0.00**		**0.00**		**0.00**		**1.17**	**78.33**									
Contribution From Les Emmerson Drive (N), Pipe 210A - 18A								0.00	0				0.00		0.00		3.22		3.22	81.55									
			0.05	**14**		**14**	**32**	**56.42**	**5773**				**17.91**		**0.00**		**7.27**		**0.05**	**81.60**									
	18A	23A	0.16				0	56.58	5773	2.75	51.44		17.91		0.00		7.27	9.88	0.16	81.76	26.98	88.30	73.0	525	0.10	136.00	0.65	0.63	0.67
			0.13	**30**		**30**	**69**	**56.71**	**5842**				**17.91**		**0.00**		**10.49**		**0.13**	**81.89**									
	23A	24A	0.34	9	9		31	57.05	5873	2.74	52.22		17.91		0.00		7.27	9.88	0.34	82.23	27.14	89.23	71.0	525	0.10	136.00	0.66	0.63	0.67
			0.14	**36**		**36**	**83**	**57.19**	**5956**				**17.91**		**0.00**		**10.49**		**0.14**	**82.37**									
	24A	47A	0.45	15	15		51	57.64	6007	2.74	53.27		17.91		0.00		7.27	9.88	0.45	82.82	27.33	90.48	106.0	525	0.10	136.00	0.67	0.63	0.67
Contribution From Mineral Street, Pipe 39A - 47A								5.64	540				0.00		0.00		0.00		5.64	88.46									
Contribution From Mineral Street, Pipe 46A - 47A								**0.98**	**138**				**0.00**		**0.00**		**0.00**		**0.91**	**89.37**									
	47A	48A	0.56	14	14		48	64.82	6733	2.70	58.88		17.91		0.00		7.27	9.88	0.56	89.93	29.68	98.43	99.0	525	0.10	136.00	0.72	0.63	0.68
	48A	75A	0.42	10	10		34	65.24	6767	2.70	59.14		17.91		0.00		7.27	9.88	0.42	90.35	29.82	98.83	76.5	525	0.10	136.00	0.73	0.63	0.68
Contribution From Anemone Mews, Pipe 63A - 75A								1.30	104				0.00		0.00		0.00		1.30	91.65									
Contribution From Anemone Mews, Pipe 750A - 75A								6.09	698				0.00		0.00		0.00		6.09	97.74									
	75A	76A	0.31	7	7		24	72.94	7593	2.66	65.40		17.91		0.00		7.27	9.88	0.31	98.05	32.36	107.64	62.0	525	0.10	136.00	0.79	0.63	0.70
	76A	77A	0.39	11	11		38	73.33	7631	2.66	65.69		17.91		0.00		7.27	9.88	0.39	98.44	32.49	108.05	60.0	525	0.10	136.00	0.79	0.63	0.70
	77A	92A	0.33	9	9		31	73.66	7662	2.65	65.92		17.91		0.00		7.27	9.88	0.33	98.77	32.59	108.40	53.0	525	0.10	136.00	0.80	0.63	0.70
Contribution From Ecology Lane, Pipe 91A - 92A								6.96	580				0.00		0.00		0.00		6.96	105.73									
	92A	93A	0.51	12	12		41	81.13	8283	2.63	70.55		17.91		0.00		7.27	9.88	0.51	106.24	35.06	115.49	90.5	525	0.10	136.00	0.85	0.63	0.70
Contribution From Park (Block 103), Pipe 930A - 93A								0.00	0				0.00		0.00		0.00		0.00	106.24									
	93A	119A	0.37	6	6		21	81.50	8304	2.63	70.71		17.91		0.00	0.52	7.79	9.96	0.89	107.13	35.35	116.03	88.0	525	0.10	136.00	0.85	0.63	0.71
To Canoe Street, Pipe 119A - 120A								81.50	8304				17.91		0.00		7.79			107.13									
Meander Way																													
	84A	85A	0.50	13	13		45	0.50	45	3.66	0.53		0.00		0.00		0.00	0.00	0.50	0.50	0.17	0.70	92.5	200	0.65	26.44	0.03	0.84	0.36
To Sapling Grove, Pipe 85A - 88A								0.50	45				0.00		0.00		0.00			0.50									
	84A	86A	0.16	1	1		4	0.16	4	3.76	0.05		0.00		0.00		0.00	0.00	0.16	0.16	0.05	0.10	13.0	200	0.65	26.44	0.00	0.84	0.20
	86A	87A	0.22	4	4		14	0.38	18	3.71	0.22		0.00		0.00		0.00	0.00	0.22	0.38	0.13	0.34	50.5	250	0.65	47.94	0.01	0.98	0.28
	87A	114A	0.23	5	5		17	0.61	35	3.67	0.42		0.00		0.00		0.00	0.00	0.23	0.61	0.20	0.62	58.0	250	0.25	29.73	0.02	0.61	0.24
	114A	115A	0.07	1	1		4	0.68	39	3.67	0.46		0.00		0.00		0.00	0.00	0.07	0.68	0.22	0.69	10.0	250	0.25	29.73	0.02	0.61	0.25
	115A	116A	0.63	17	17		58	1.31	97	3.60	1.13		0.00		0.00		0.00	0.00	0.63	1.31	0.43	1.56	110.5	250	0.25	29.73	0.05	0.61	0.32
To Peninsula Road, Pipe 116A - 117A								1.31	97				0.00		0.00		0.00			1.31									
Peninsula Road																													
	89A	63A	0.17	4	4		14	0.17	14	3.72	0.17		0.00		0.00		0.00	0.00	0.17	0.17	0.06	0.22	41.0	200	0.65	26.44	0.01	0.84	0.26
To Anemone Mews, Pipe 63A - 75A								0.17	14				0.00		0.00		0.00			0.17									
	380A	38A	0.46	18	18		62	0.46	62	3.64	0.73		0.00		0.00		0.00	0.00	0.46	0.46	0.15	0.88	56.5	200	0.65	26.44	0.03	0.84	0.39
	38A	39A	0.60	30	30		102	1.06	164	3.54	1.88		0.00		0.00		0.00	0.00	0.60	1.06	0.35	2.23	108.5	250	0.25	29.73	0.08	0.61	0.36
To Mineral Street, Pipe 39A - 47A								1.06	164				0.00		0.00		0.00			1.06									

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha						
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph					
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =		0.330	L/s/ha		
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =		0.600	m/s		
Max Res. Peak Factor =	4.00				Manning's n =	(Conc)	0.013	(Pvc)	0.013	
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=		2.7			
Institutional =	0.32	l/s/Ha			Single house coeff=		3.4			

Designed: M.S.

Checked: W.L.

Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 11

PROJECT: **BARRHAVEN CONCERVANCY EAST**

LOCATION: **City of Ottawa**

File Ref: 20-1180 & 24-1398

Date: **Aug 2025**

Sheet No. 6 of 7

1398_SAN_Designsheets_Aug25.xlsx

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION									COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
	620A	62A	0.50	13	13		45	0.50	45	3.66	0.53		0.00		0.00		0.00	0.00	0.50	0.50	0.17	0.70	83.0	200	0.65	26.44	0.03	0.84	0.36
	62A	63A	0.45	13	13		45	0.95	90	3.60	1.05		0.00		0.00		0.00	0.00	0.45	0.95	0.31	1.36	82.0	250	0.25	29.73	0.05	0.61	0.31
To Anemone Mews, Pipe 63A - 75A								0.95	90				0.00		0.00		0.00			0.95									
	89A	90A	0.41	13	13		45	0.41	45	3.66	0.53		0.00		0.00		0.00	0.00	0.41	0.41	0.14	0.67	67.0	200	0.65	26.44	0.03	0.84	0.35
	90A	91A	0.37	10	10		34	0.78	79	3.62	0.93		0.00		0.00		0.00	0.00	0.37	0.78	0.26	1.18	68.5	250	0.75	51.50	0.02	1.05	0.42
To Ecology Lane, Pipe 91A - 92A								0.78	79				0.00		0.00		0.00			0.78									
	910A	116A	0.18	4	4		14	0.18	14	3.72	0.17		0.00		0.00		0.00	0.00	0.18	0.18	0.06	0.23	58.5	200	0.65	26.44	0.01	0.84	0.26
Contribution From Meander Way, Pipe 115A - 116A								1.31	97				0.00		0.00		0.00		1.31	1.49									
	116A	117A	0.23	6	6		21	1.72	132	3.57	1.53		0.00		0.00		0.00	0.00	0.23	1.72	0.57	2.09	58.5	250	0.25	29.73	0.07	0.61	0.34
Contribution From Canoe Street, Pipe 109A - 117A								0.74	55				0.00		0.00		0.00		0.74	2.46									
	117A	118A	0.18	3	3		11	2.64	198	3.52	2.26		0.00		0.00		0.00	0.00	0.18	2.64	0.87	3.13	59.0	250	0.25	29.73	0.11	0.61	0.39
To Canoe Street, Pipe 118A - 1180A								2.64	198				0.00		0.00		0.00			2.64									
Jollity Crescent																													
	104A	105A	0.39	10	10		34	0.39	34	3.68	0.41		0.00		0.00		0.00	0.00	0.39	0.39	0.13	0.53	69.0	200	0.80	29.34	0.02	0.93	0.35
To Canoe Street, Pipe 105A - 108A								0.39	34				0.00		0.00		0.00			0.39									
	106A	107A	0.15	1	1		4	0.15	4	3.76	0.05		0.00		0.00		0.00	0.00	0.15	0.15	0.05	0.10	12.0	200	0.70	27.44	0.00	0.87	0.19
	107A	108A	0.48	12	12		41	0.63	45	3.66	0.53		0.00		0.00		0.00	0.00	0.48	0.63	0.21	0.74	87.0	250	0.25	29.73	0.02	0.61	0.25
To Canoe Street, Pipe 108A - 113A								0.63	45				0.00		0.00		0.00			0.63									
Euphoria Crescent																													
	101A	102A	0.36	7	7		24	0.36	24	3.70	0.29		0.00		0.00		0.00	0.00	0.36	0.36	0.12	0.41	62.5	250	0.65	47.94	0.01	0.98	0.30
To Canoe Street, Pipe 102A - 105A								0.36	24				0.00		0.00		0.00			0.36									
	98A	99A	0.28	5	5		17	0.28	17	3.71	0.20		0.00		0.00		0.00	0.00	0.28	0.28	0.09	0.30	41.5	200	1.20	35.93	0.01	1.14	0.33
To Canoe Street, Pipe 99A - 102A								0.28	17				0.00		0.00		0.00			0.28									
Canoe Street																													
	94A	95A	0.52	3	3		11	0.52	11	3.73	0.13		0.00		0.00		0.00	0.00	0.52	0.52	0.17	0.30	38.5	200	0.65	26.44	0.01	0.84	0.28
	95A	96A	0.49	9	9		31	1.01	42	3.66	0.50		0.00		0.00		0.00	0.00	0.49	1.01	0.33	0.83	83.5	250	0.25	29.73	0.03	0.61	0.26
	96A	99A	0.10	2	2		7	1.11	49	3.65	0.58		0.00		0.00		0.00	0.00	0.10	1.11	0.37	0.95	22.0	250	0.25	29.73	0.03	0.61	0.27
Contribution From Euphoria Crescent, Pipe 98A - 99A								0.28	17				0.00		0.00		0.00		0.28	1.39									
	99A	102A	0.18	3	3		11	1.57	77	3.62	0.90		0.00		0.00		0.00	0.00	0.18	1.57	0.52	1.42	58.5	250	0.25	29.73	0.05	0.61	0.31
Contribution From Euphoria Crescent, Pipe 101A - 102A								0.36	24				0.00		0.00		0.00		0.36	1.93									
	102A	105A	0.22	4	4		14	2.15	115	3.58	1.33		0.00		0.00		0.00	0.00	0.22	2.15	0.71	2.04	58.5	250	0.25	29.73	0.07	0.61	0.34
Contribution From Jollity Crescent, Pipe 104A - 105A								0.39	34				0.00		0.00		0.00		0.39	2.54									
	105A	108A	0.21	4	4		14	2.75	163	3.54	1.87		0.00		0.00		0.00	0.00	0.21	2.75	0.91	2.78	58.5	250	0.25	29.73	0.09	0.61	0.38
Contribution From Jollity Crescent, Pipe 107A - 108A								0.63	45				0.00		0.00		0.00		0.63	3.38									
	108A	113A	0.20	4	4		14	3.58	222	3.50	2.52		0.00		0.00		0.00	0.00	0.20	3.58	1.18	3.70	60.0	250	0.25	29.73	0.12	0.61	0.41
To Canoe Street, Pipe 113A - 118A								3.58	222				0.00		0.00		0.00			3.58									
Canoe Street																													
	110A	109A	0.16	1	1		4	0.16	4	3.76	0.05		0.00		0.00		0.00	0.00	0.16	0.16	0.05	0.10	13.5	200	0.65	26.44	0.00	0.84	0.20

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha
Average Daily Flow =	280	l/p/day		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha
Max Res. Peak Factor =	4.00			
Commercial/Inst./Park Peak Factor =	1.50			
Institutional =	0.32	l/s/Ha		

Industrial Peak Factor = as per MOE Graph
Extraneous Flow = 0.330 L/s/ha
Minimum Velocity = 0.600 m/s
Manning's n = (Conc) 0.013 (Pvc) 0.013
Townhouse coeff= 2.7
Single house coeff= 3.4

Designed: M.S.

Checked: W.L.

Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 11

PROJECT: **BARRHAVEN CONCERVANCY EAST**

LOCATION: **City of Ottawa**

File Ref: 20-1180 & 24-1398

Date: **Aug 2025**

Sheet No. 7 of 7

1398_SAN_Designsheets_Aug1525.xlsx

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION									COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
	109A	117A	0.58	15	15		51	0.74	55	3.64	0.65		0.00		0.00		0.00	0.00	0.58	0.74	0.24	0.89	103.0	250	0.25	29.73	0.03	0.61	0.27
To Peninsula Road, Pipe 117A - 118A								0.74	55				0.00		0.00		0.00			0.74									
	112A	113A	0.05	1	1		4	0.05	4	3.76	0.05		0.00		0.00		0.00	0.00	0.05	0.05	0.02	0.07	15.5	200	0.65	26.44	0.00	0.84	0.17
Contribution From Canoe Street, Pipe 108A - 113A								3.58	222				0.00		0.00		0.00		3.58	3.63									
	113A	118A	0.43	10	10		34	4.06	260	3.48	2.94		0.00		0.00		0.00	0.00	0.43	4.06	1.34	4.27	74.0	250	0.25	29.73	0.14	0.61	0.43
Contribution From Peninsula Road, Pipe 117A - 118A								2.64	198				0.00		0.00		0.00		2.64	6.70									
	118A	1180A	0.16	3	3		11	6.86	469	3.39	5.15		0.00		0.00		0.00	0.00	0.16	6.86	2.26	7.42	42.5	250	0.25	29.73	0.25	0.61	0.50
	1180A	119A	0.03				0	6.89	469	3.39	5.15		0.00		0.00		0.00	0.00	0.03	6.89	2.27	7.43	20.0	250	0.25	29.73	0.25	0.61	0.50
Contribution From Conservancy Drive, Pipe 93A - 119A								81.50	8304				17.91		0.00		7.79		107.13	114.02									
	119A	120A	0.17				0	88.56	8773	2.61	74.17		17.91		0.00		7.79	9.96	0.17	114.19	37.68	121.82	75.0	525	0.10	136.00	0.90	0.63	0.71
	120A	121A	0.21	4	4		14	88.77	8787	2.61	74.27		17.91		0.00		7.79	9.96	0.21	114.40	37.75	121.99	87.5	525	0.10	136.00	0.90	0.63	0.71
	121A	122A						88.77	8787	2.61	74.27		17.91		0.00		7.79	9.96	0.00	114.40	37.75	121.99	10.0	525	0.10	136.00	0.90	0.63	0.71

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha					
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph				
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =		0.330	L/s/ha	
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =		0.600	m/s	
Max Res. Peak Factor =	4.00				Manning's n =	(Conc)	0.013	(Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=		2.7		
Institutional =	0.32	l/s/Ha			Single house coeff=		3.4		

Designed: M.S.

Checked: W.L.

Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 11

PROJECT: **BARRHAVEN CONCERVANCY EAST**

LOCATION: **City of Ottawa**

File Ref: 20-1180 & 24-1398

Date: **Aug 2025**

Sheet No. 8 of 7

David Schaeffer Engineering Ltd.
120 Iber Road, Suite 103
Stittsville, ON K2S 1E9
613-836-0856
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APPENDIX D

PROJECT INFORMATION

ENGINEERED PRODUCT MANAGER	HAIDER NASRULLAH 647-850-9417 HAIDER.NASRULLAH@ADSPIPE.COM
ADS SALES REP	BRAD DUNLOP 613-893-7336 BRAD.DUNLOP@ADSPIPE.COM
PROJECT NO.	S430138
ONTARIO SITE COORDINATOR:	RYAN RUBENSTEIN 519-710-3687 RYAN.RUBENSTEIN@ADSPIPE.COM

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR APP

1398 BCDC

OTTAWA, ON, CANADA

SC-800 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-800.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL BE CERTIFIED TO CSA B184, "POLYMERIC SUB-SURFACE STORMWATER MANAGEMENT STRUCTURES", AND MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE CSA S6 CL-625 TRUCK AND THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 750 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 23° C / 73° F), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
10. MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH 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.
11. 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

1. STORMTECH SC-800 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 75 mm (3") SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE; AASHTO M43 #3, 357, 4, 467, 5, 56, OR 57.
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
2. 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 SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
3. FULL 900 mm (36") OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

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

CONTACT STORMTECH AT 1-800-821-6710 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT: C1

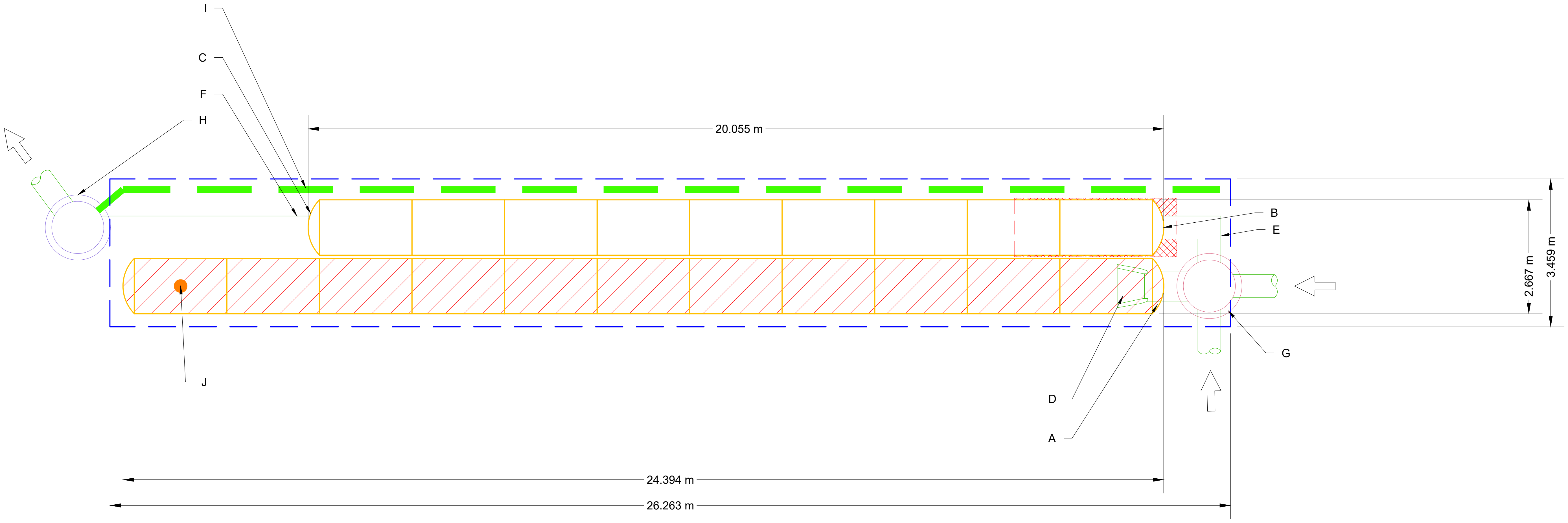
20	STORMTECH SC-800 CHAMBERS
4	STORMTECH SC-800 END CAPS
152	STONE ABOVE (mm)
152	STONE BELOW (mm)
40	% STONE VOID
59.0	**INSTALLED SYSTEM VOLUME (m³) (PERIMETER STONE INCLUDED)**
90.9	SYSTEM AREA (m²)
60.7	SYSTEM PERIMETER (m)

PROPOSED ELEVATIONS: C1

94.178	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
92.273	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
92.121	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
92.121	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
92.121	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
91.892	TOP OF STONE:
91.740	TOP OF SC-800 CHAMBER:
91.105	450 mm TOP MANIFOLD INVERT:
90.960	600 mm ISOLATOR ROW PLUS CONNECTION INVERT:
90.953	450 mm BOTTOM CONNECTION INVERT:
90.902	BOTTOM OF SC-800 CHAMBER:
90.750	UNDERDRAIN INVERT:
90.750	BOTTOM OF STONE:

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
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	58 mm	
PRE-CORED END CAP	B	450 mm TOP PRE-CORED END CAP, PART#: SC800EPE18TPC / TYP OF ALL 450 mm TOP CONNECTIONS	203 mm	
PRE-CORED END CAP	C	450 mm BOTTOM PRE-CORED END CAP, PART#: SC800EPE18BPC / TYP OF ALL 450 mm BOTTOM CONNECTIONS	51 mm	
FLAMP	D	INSTALL FLAMP ON 600 mm ACCESS PIPE / PART#: SC80024RAMP		
MANIFOLD	E	450 mm x 450 mm TOP MANIFOLD, ADS N-12	203 mm	
PIPE CONNECTION	F	450 mm BOTTOM CONNECTION	51 mm	
CONCRETE STRUCTURE	G	MH 617(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		79 L/s IN
CONCRETE STRUCTURE	H	OCS MH 618 (DESIGN BY ENGINEER / PROVIDED BY OTHERS)		113 L/s OUT
UNDERDRAIN	I	150 mm ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		
INSPECTION PORT	J	150 mm SEE DETAIL		



▨	ISOLATOR ROW PLUS (SEE DETAIL)
▩	PLACE MINIMUM 3.810 m OF ADSPLUS625 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS
—	BED LIMITS

1398 BCDC
OTTAWA, ON, CANADA
DATE: 01/14/2025
DRAWN: RT
PROJECT #: S430138
CHECKED: RCT

DATE	DWN	CHK
1/14/2025	JR	JR
4/17/2025	RCT	RCT
5/22/2025	MV	HAK
6/3/2025	RCT	RCT
7/8/25	AP	HAK
8/18/2025	AP	HAK
8/22/2025	AP	JPR

StormTech®
Chamber System

ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

SCALE = 1 : 100

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS/STORMTECH UNDER THE DIRECTION OF THE PROJECT'S ENGINEER OF RECORD ("EOR") OR OTHER PROJECT REPRESENTATIVE. THIS DRAWING IS NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION WITHOUT THE EOR'S PRIOR APPROVAL. EOR SHALL REVIEW THIS DRAWING PRIOR TO BIDDING AND/OR CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

SHEET
2 OF 6

PROPOSED LAYOUT: C2

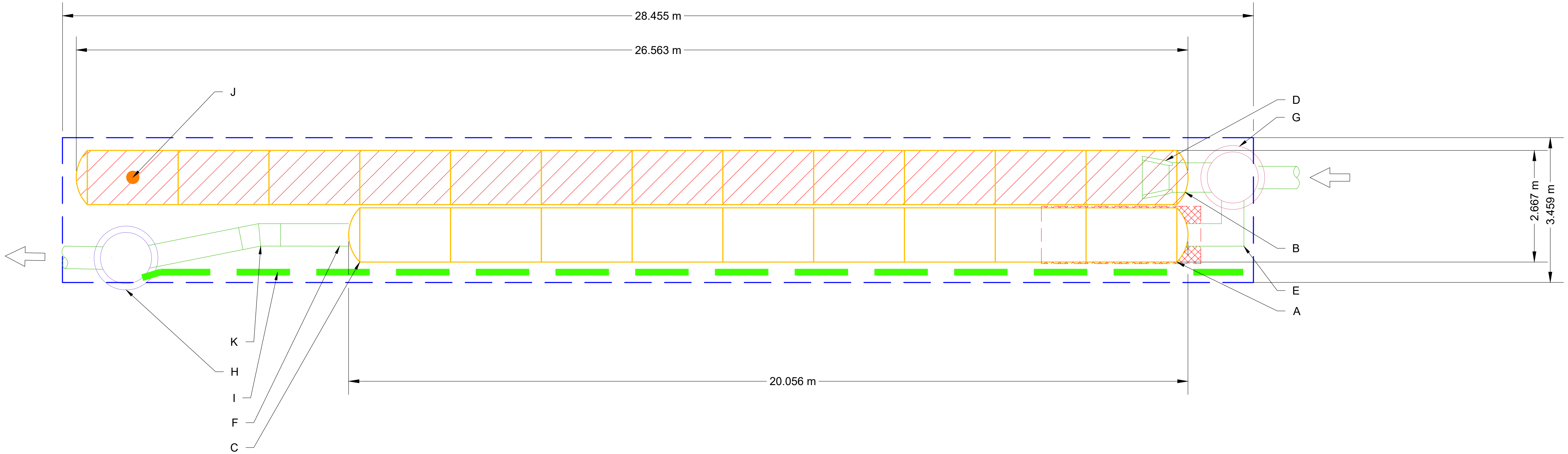
21	STORMTECH SC-800 CHAMBERS
4	STORMTECH SC-800 END CAPS
152	STONE ABOVE (mm)
152	STONE BELOW (mm)
40	% STONE VOID
63.3	**INSTALLED SYSTEM VOLUME (m³) (PERIMETER STONE INCLUDED)**
98.4	SYSTEM AREA (m²)
63.8	SYSTEM PERIMETER (m)

PROPOSED ELEVATIONS: C2

93.884	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
91.979	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
91.827	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
91.827	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
91.827	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
91.598	TOP OF STONE:
91.446	TOP OF SC-800 CHAMBER:
90.811	450 mm TOP MANIFOLD INVERT:
90.666	600 mm ISOLATOR ROW PLUS CONNECTION INVERT:
90.659	450 mm BOTTOM CONNECTION INVERT:
90.608	BOTTOM OF SC-800 CHAMBER:
90.456	UNDERDRAIN INVERT:
90.456	BOTTOM OF STONE:

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PRE-CORED END CAP	A	450 mm TOP PRE-CORED END CAP, PART#: SC800EPE18TPC / TYP OF ALL 450 mm TOP CONNECTIONS	203 mm	
PREFABRICATED EZ END CAP	B	600 mm BOTTOM PREFABRICATED EZ END CAP, PART#: SC800ECEZ / TYP OF ALL 600 mm BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	58 mm	
PRE-CORED END CAP	C	450 mm BOTTOM PRE-CORED END CAP, PART#: SC800EPE18BPC / TYP OF ALL 450 mm BOTTOM CONNECTIONS	51 mm	
FLAMP	D	INSTALL FLAMP ON 600 mm ACCESS PIPE / PART#: SC80024RAMP		
MANIFOLD	E	450 mm x 450 mm TOP MANIFOLD, ADS N-12	203 mm	
PIPE CONNECTION	F	450 mm BOTTOM CONNECTION	51 mm	
CONCRETE STRUCTURE	G	MH 535 (DESIGN BY ENGINEER / PROVIDED BY OTHERS)		79 L/s IN
CONCRETE STRUCTURE	H	OCS MH 536 (DESIGN BY ENGINEER / PROVIDED BY OTHERS)		113 L/s OUT
UNDERDRAIN	I	150 mm ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		
INSPECTION PORT	J	150 mm SEE DETAIL		
PIPE BEND	K	450 mm X 11.25° ADS N-12 BEND		



▨ ISOLATOR ROW PLUS
(SEE DETAIL)

▩ PLACE MINIMUM 3.810 m OF ADSPLUS625 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

— BED LIMITS

DATE	DWN	CHK
1/14/2025	JR	JR
4/17/2025	RCT	RCT
5/22/2025	MV	HAK
6/3/2025	RCT	RCT
7/8/25	AP	HAK
8/18/2025	AP	HAK
8/22/2025	AP	JPR

1398 BCDC
OTTAWA, ON, CANADA
DATE: 01/14/2025
PROJECT #: S430138
DRAWN: RT
CHECKED: RCT

StormTech®
Chamber System

ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

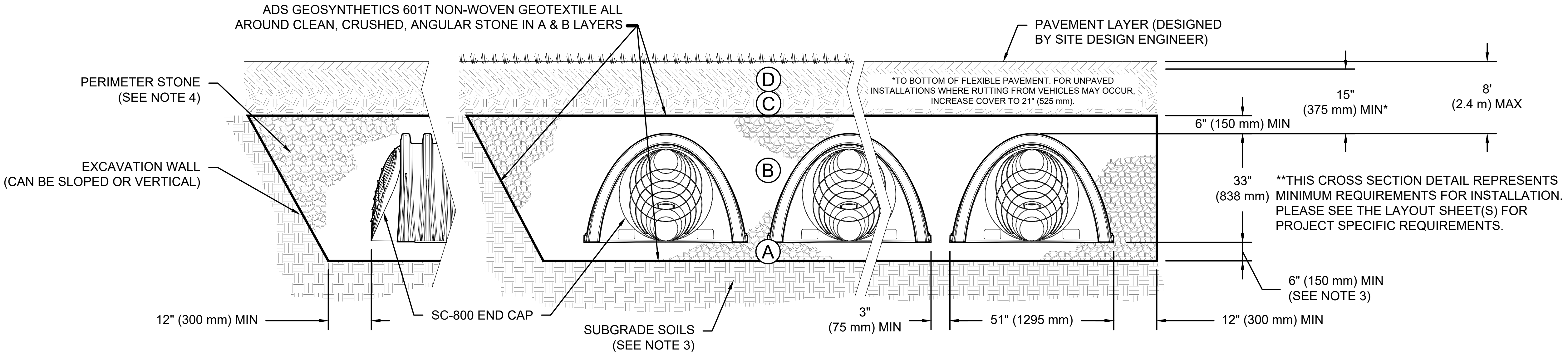
SCALE = 1 : 100

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 15" (375 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE 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 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
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:

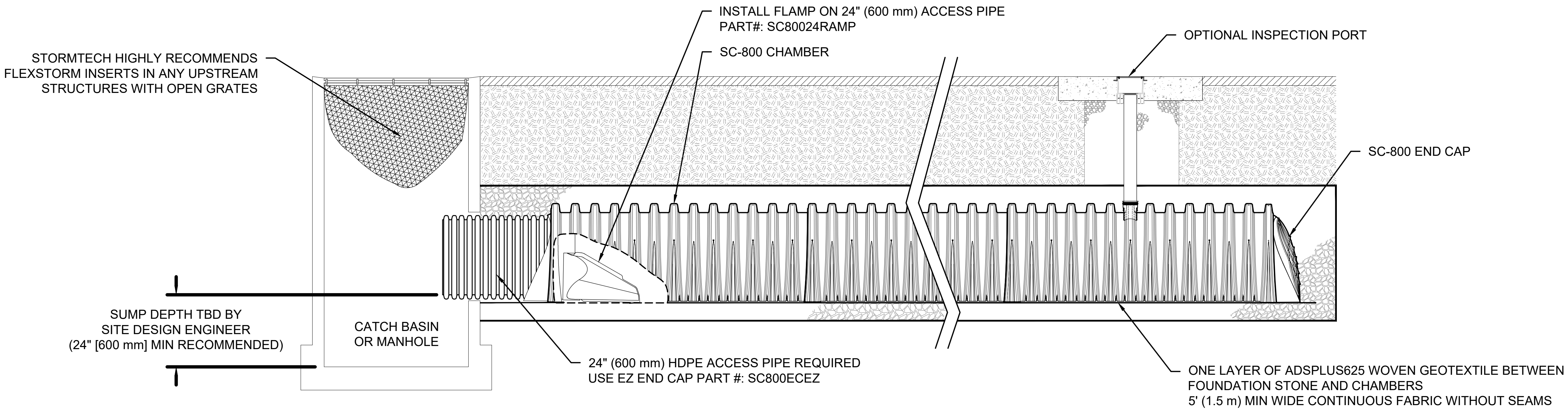
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-800 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. 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 2".
    - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 750 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.

1398 BCDC
OTTAWA, ON, CANADA
DATE: 01/14/2025
DRAWN: RT
PROJECT #: S430138
CHECKED: RCT

DATE	DWN	CHK
1/14/2025	JR	JR
4/17/2025	RCT	RCT
5/22/2025	MV	HAK
6/3/2025	RCT	RCT
7/8/25	AP	HAK
8/18/2025	AP	HAK
8/22/2025	AP	JPR

StormTech®
Chamber System

ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473



SC-800 ISOLATOR ROW PLUS DETAIL

NTS

INSPECTION & MAINTENANCE

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

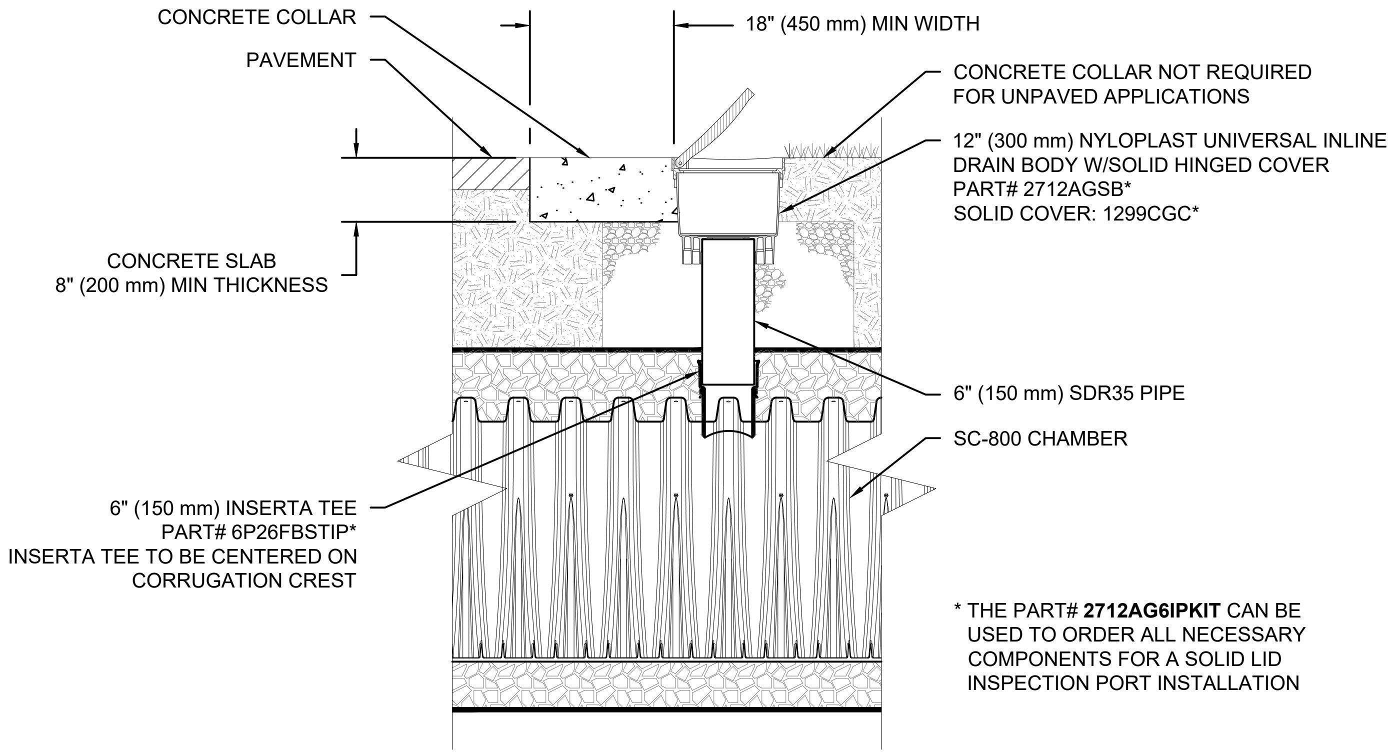
STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

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

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

NOTES

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



* THE PART# **2712AG6IPKIT** CAN BE USED TO ORDER ALL NECESSARY COMPONENTS FOR A SOLID LID INSPECTION PORT INSTALLATION

SC-800 6" (150 mm) INSPECTION PORT DETAIL

NTS

1398 BCDC
OTTAWA, ON, CANADA

DATE: 01/14/2025
DRAWN: RT
PROJECT #: S430138
CHECKED: RCT

DATE	DWN	CHK
1/14/2025	JR	JR
4/17/2025	RCT	RCT
5/22/2025	MV	HAK
6/3/2025	RCT	RCT
7/8/25	AP	HAK
8/18/2025	AP	HAK
8/22/2025	AP	JPR

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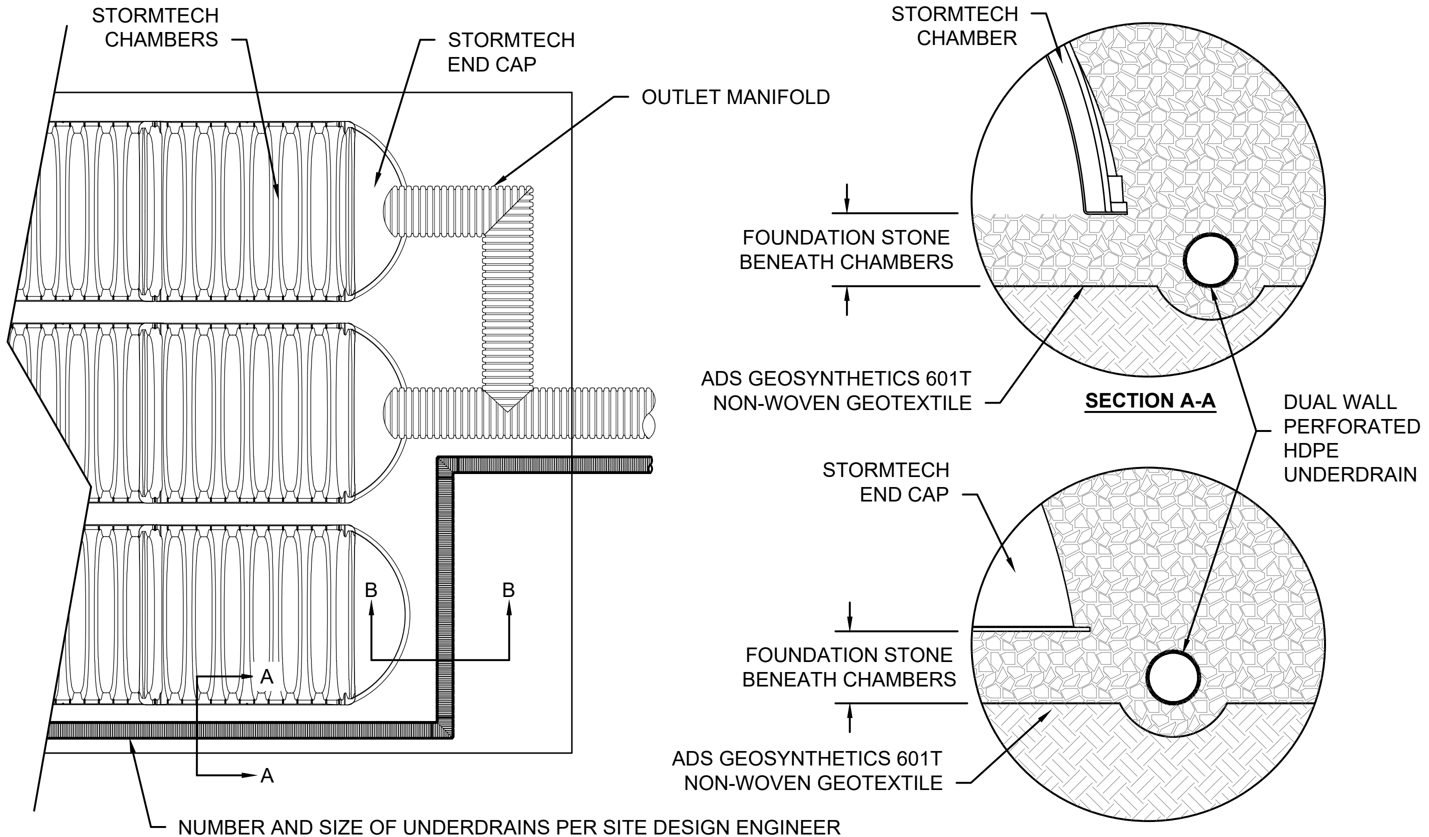
THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS/STORMTECH UNDER THE DIRECTION OF THE PROJECT'S ENGINEER OF RECORD ("EOR") OR OTHER PROJECT REPRESENTATIVE. THIS DRAWING IS NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION WITHOUT THE EOR'S PRIOR APPROVAL. EOR SHALL REVIEW THIS DRAWING PRIOR TO BIDDING AND/OR CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

UNDERDRAIN DETAIL

NTS



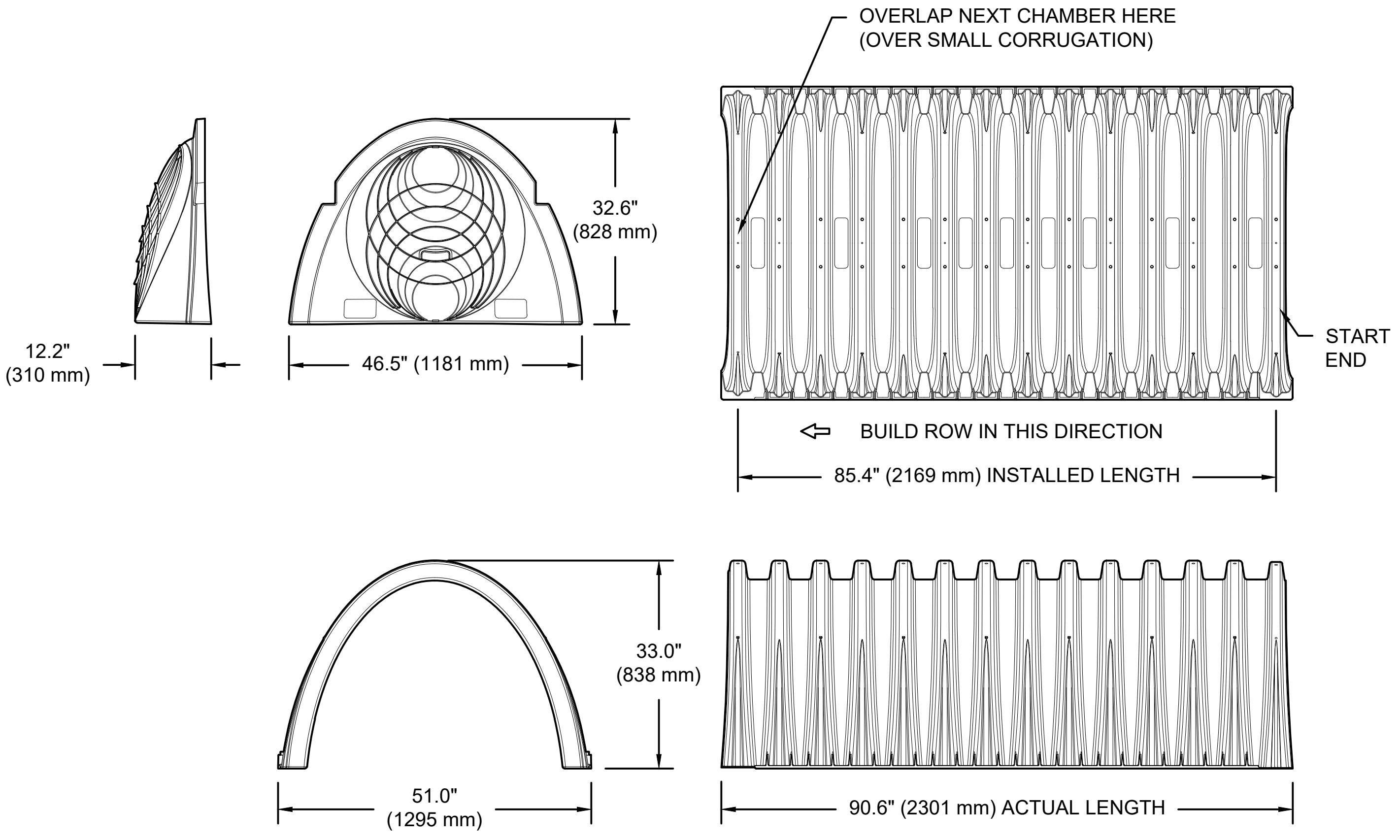
SECTION A-A

SECTION B-B

NUMBER AND SIZE OF UNDERDRAINS PER SITE DESIGN ENGINEER
4" (100 mm) TYP FOR SC-310 & SC-160LP SYSTEMS
6" (150 mm) TYP FOR SC-800, DC-780, MC-3500, MC-4500 & MC-7200 SYSTEMS

SC-800 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 33.0" X 85.4"	(1295 mm X 838 mm X 2169 mm)
CHAMBER STORAGE	50.6 CUBIC FEET	(1.43 m³)
MINIMUM INSTALLED STORAGE*	78.4 CUBIC FEET	(2.22 m³)
WEIGHT	81.8 lbs.	(37.1 kg)

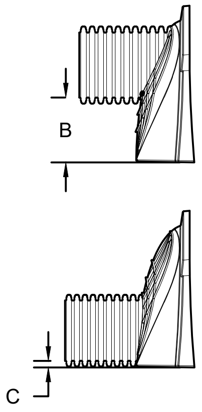
NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	46.5" X 32.6" X 10.5"	(1181 mm X 828 mm X 267 mm)
END CAP STORAGE	3.4 CUBIC FEET	(0.09 m³)
MINIMUM INSTALLED STORAGE**	14.7 CUBIC FEET	(0.42 m³)
WEIGHT	15.7 lbs.	(7.1 kg)

* ASSUMES 6" (150 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS, 3" (75 mm) BETWEEN CHAMBERS
**ASSUMES 6" (150 mm) STONE ABOVE AND BELOW END CAPS, 3" (150 mm) BETWEEN ROWS, 12" (300 mm) 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	6" (150 mm)	21.4" (544 mm)	---
SC800EPE06BPC		---	0.9" (23 mm)
SC800EPE08TPC	8" (200 mm)	19.2" (488 mm)	---
SC800EPE08BPC		---	1.0" (25 mm)
SC800EPE10TPC	10" (250 mm)	17.0" (432 mm)	---
SC800EPE10BPC		---	1.2" (30 mm)
SC800EPE12TPC	12" (300 mm)	14.4" (366 mm)	---
SC800EPE12BPC		---	1.6" (41 mm)
SC800EPE15TPC	15" (375 mm)	11.3" (287 mm)	---
SC800EPE15BPC		---	1.7" (43 mm)
SC800EPE18TPC	18" (450 mm)	8.0" (203 mm)	---
SC800EPE18BPC		---	2.0" (51 mm)
SC800EPE24BPC	24" (600 mm)	---	2.3" (58 mm)
SC800EPE	NONE	SOLID END CAP	



NOTE: ALL DIMENSIONS ARE NOMINAL

1398 BCDC
OTTAWA, ON, CANADA

DATE: 01/14/2025
DRAWN: RT
PROJECT #: S430138
CHECKED: RCT

DATE	DWN	CHK
1/14/2025	JR	JR
4/17/2025	RCT	RCT
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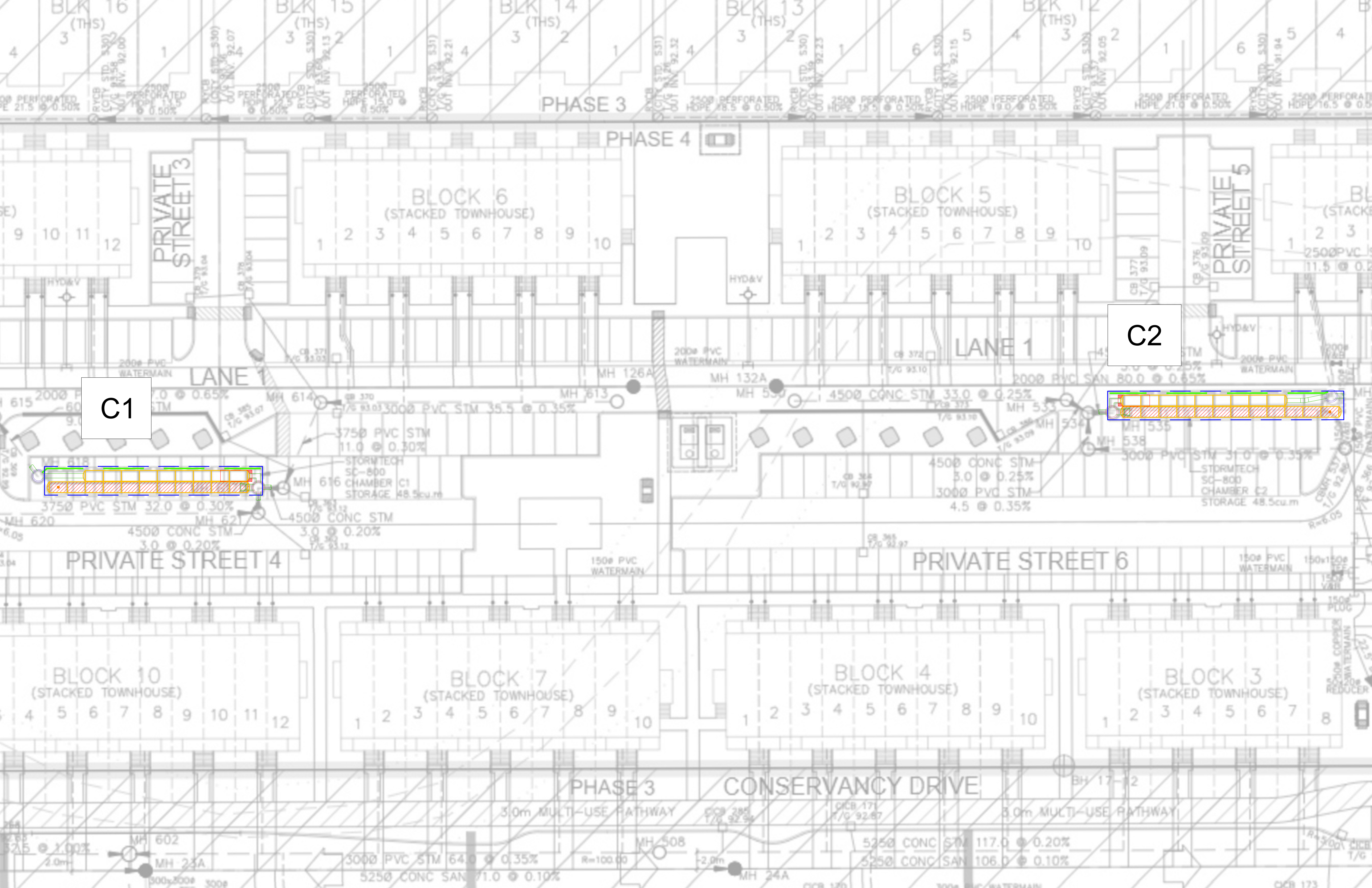

BLK 16 (THS)
BLK 15 (THS)
BLK 14 (THS)
BLK 13 (THS)
BLK 12 (THS)
PHASE 3
PHASE 4
BLOCK 6 (STACKED TOWNHOUSE)
BLOCK 5 (STACKED TOWNHOUSE)
PRIVATE STREET 3
PRIVATE STREET 5
LANE 1
HYD&V
200Ø PVC WATERMAIN
MH 126A
MH 132A
MH 614
MH 613
MH 533
MH 534
MH 535
MH 538
C1
C2
3000 PVC STM 35.5 @ 0.35%
4500 CONC STM 33.0 @ 0.25%
2000 PVC SAN 80.0 @ 0.65%
3750 PVC STM 11.0 @ 0.30%
STORMTECH SC-800 CHAMBER C1 STORAGE 48.5cu.m
STORMTECH SC-800 CHAMBER C2 STORAGE 48.5cu.m
MH 616
MH 620
MH 621
3750 PVC STM 32.0 @ 0.30%
4500 CONC STM 3.0 @ 0.20%
4500 CONC STM 3.0 @ 0.25%
3000 PVC STM 4.5 @ 0.35%
3000 PVC STM 31.0 @ 0.35%
PRIVATE STREET 4
PRIVATE STREET 6
150Ø PVC WATERMAIN
BLOCK 10 (STACKED TOWNHOUSE)
BLOCK 7 (STACKED TOWNHOUSE)
BLOCK 4 (STACKED TOWNHOUSE)
BLOCK 3 (STACKED TOWNHOUSE)
PHASE 3
CONSERVANCY DRIVE
3.0m MULTI-USE PATHWAY
MH 602
MH 23A
MH 508
MH 24A
3000 PVC STM 64.0 @ 0.35%
5250 CONC SAN 71.0 @ 0.10%
5250 CONC STM 117.0 @ 0.20%
5250 CONC SAN 106.0 @ 0.10%
BH 17-12

Version 1.1

Project: C1

☑ Include Perimeter Stone in Calculations

☐ Click for Stage Area Data

☐ Click to Invert Stage Area Data

Click Here for Imperial

Interpolation Tools

☐ Click to Define Top and/or Bottom of storage

☐ Click to Define Target Volume & Reference Elevation

Chamber Model -	SC-800	
Units -	**Metric**	
Number of Chambers -	20	
Number of End Caps -	4	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	90.75	m
Amount of Stone Above Chambers -	152	mm
Amount of Stone Below Chambers -	152	mm

Area of System- 90.8549 sq.meters Min. Area - 62.65 sq.meters

StormTech SC-800 Cumulative Storage Volumes

Height of System (mm)	Incremental Single Chamber (cubic meters)	Incremental Single End Cap (cubic meters)	Incremental Chambers (cubic meters)	Incremental End Cap (cubic meters)	Incremental Stone (cubic meters)	Incremental Ch, EC and Stone (cubic meters)	Cumulative System (cubic	Elevation (meters)
1143	0.000	0.000	0.00	0.00	0.92	0.92	58.97	91.89
1118	0.000	0.000	0.00	0.00	0.92	0.92	58.05	91.87
1092	0.000	0.000	0.00	0.00	0.92	0.92	57.13	91.84
1067	0.000	0.000	0.00	0.00	0.92	0.92	56.20	91.82
1041	0.000	0.000	0.00	0.00	0.92	0.92	55.28	91.79
1016	0.000	0.000	0.00	0.00	0.92	0.92	54.36	91.77
991	0.002	0.000	0.04	0.00	0.91	0.95	53.43	91.74
965	0.006	0.000	0.11	0.00	0.88	0.99	52.49	91.72
940	0.008	0.000	0.16	0.00	0.86	1.02	51.50	91.69
914	0.014	0.000	0.29	0.00	0.81	1.10	50.48	91.66
889	0.021	0.000	0.42	0.00	0.75	1.18	49.38	91.64
864	0.025	0.001	0.51	0.00	0.72	1.23	48.20	91.61
838	0.029	0.001	0.57	0.00	0.69	1.27	46.98	91.59
813	0.032	0.001	0.63	0.00	0.67	1.31	45.71	91.56
787	0.034	0.001	0.69	0.01	0.65	1.34	44.40	91.54
762	0.037	0.002	0.73	0.01	0.63	1.37	43.06	91.51
737	0.039	0.002	0.78	0.01	0.61	1.39	41.69	91.49
711	0.041	0.002	0.82	0.01	0.59	1.42	40.30	91.46
686	0.043	0.002	0.85	0.01	0.58	1.44	38.88	91.44
660	0.044	0.003	0.89	0.01	0.56	1.46	37.44	91.41
635	0.046	0.003	0.92	0.01	0.55	1.48	35.98	91.39
610	0.047	0.003	0.95	0.01	0.54	1.50	34.50	91.36
584	0.049	0.003	0.98	0.01	0.53	1.52	33.00	91.33
559	0.050	0.004	1.00	0.01	0.52	1.53	31.48	91.31
533	0.051	0.004	1.03	0.01	0.51	1.55	29.95	91.28
508	0.052	0.004	1.05	0.02	0.50	1.56	28.40	91.26
483	0.054	0.004	1.07	0.02	0.49	1.58	26.84	91.23
457	0.055	0.004	1.09	0.02	0.48	1.59	25.26	91.21
432	0.056	0.004	1.11	0.02	0.47	1.60	23.68	91.18
406	0.057	0.004	1.13	0.02	0.46	1.61	22.08	91.16
381	0.057	0.005	1.15	0.02	0.46	1.62	20.46	91.13
356	0.058	0.005	1.16	0.02	0.45	1.63	18.84	91.11
330	0.059	0.005	1.18	0.02	0.44	1.64	17.21	91.08
305	0.060	0.005	1.19	0.02	0.44	1.65	15.57	91.05
279	0.060	0.005	1.21	0.02	0.43	1.66	13.91	91.03
254	0.061	0.005	1.22	0.02	0.43	1.67	12.25	91.00
229	0.062	0.005	1.23	0.02	0.42	1.68	10.59	90.98
203	0.062	0.005	1.25	0.02	0.42	1.68	8.91	90.95
178	0.063	0.004	1.26	0.01	0.41	1.69	7.23	90.93
152	0.000	0.000	0.00	0.00	0.92	0.92	5.54	90.90
127	0.000	0.000	0.00	0.00	0.92	0.92	4.62	90.88
102	0.000	0.000	0.00	0.00	0.92	0.92	3.69	90.85
76	0.000	0.000	0.00	0.00	0.92	0.92	2.77	90.83
51	0.000	0.000	0.00	0.00	0.92	0.92	1.85	90.80
25	0.000	0.000	0.00	0.00	0.92	0.92	0.92	90.78

Version 1.1

Project: C2

☑ Include Perimeter Stone in Calculations

☐ Click for Stage Area Data

☐ Click to Invert Stage Area Data

Click Here for Imperial

Interpolation Tools

☐ Click to Define Top and/or Bottom of storage

☐ Click to Define Target Volume & Reference Elevation

Chamber Model -	SC-800	
Units -	**Metric**	
Number of Chambers -	21	
Number of End Caps -	4	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	90.46	m
Amount of Stone Above Chambers -	152	mm
Amount of Stone Below Chambers -	152	mm

Area of System- 98.43969 sq.meters Min. Area - 65.63 sq.meters

StormTech SC-800 Cumulative Storage Volumes

Height of System (mm)	Incremental Single Chamber (cubic meters)	Incremental Single End Cap (cubic meters)	Incremental Chambers (cubic meters)	Incremental End Cap (cubic meters)	Incremental Stone (cubic meters)	Incremental Ch, EC and Stone (cubic meters)	Cumulative System (cubic	Elevation (meters)
1143	0.000	0.000	0.00	0.00	1.00	1.00	63.30	91.60
1118	0.000	0.000	0.00	0.00	1.00	1.00	62.30	91.57
1092	0.000	0.000	0.00	0.00	1.00	1.00	61.30	91.55
1067	0.000	0.000	0.00	0.00	1.00	1.00	60.30	91.52
1041	0.000	0.000	0.00	0.00	1.00	1.00	59.30	91.50
1016	0.000	0.000	0.00	0.00	1.00	1.00	58.30	91.47
991	0.002	0.000	0.04	0.00	0.98	1.03	57.30	91.45
965	0.006	0.000	0.12	0.00	0.95	1.07	56.27	91.42
940	0.008	0.000	0.17	0.00	0.93	1.10	55.20	91.40
914	0.014	0.000	0.30	0.00	0.88	1.18	54.10	91.37
889	0.021	0.000	0.44	0.00	0.82	1.27	52.92	91.35
864	0.025	0.001	0.53	0.00	0.79	1.32	51.65	91.32
838	0.029	0.001	0.60	0.00	0.76	1.36	50.33	91.29
813	0.032	0.001	0.67	0.00	0.73	1.40	48.97	91.27
787	0.034	0.001	0.72	0.01	0.71	1.44	47.57	91.24
762	0.037	0.002	0.77	0.01	0.69	1.47	46.13	91.22
737	0.039	0.002	0.82	0.01	0.67	1.49	44.66	91.19
711	0.041	0.002	0.86	0.01	0.65	1.52	43.17	91.17
686	0.043	0.002	0.90	0.01	0.64	1.54	41.65	91.14
660	0.044	0.003	0.93	0.01	0.62	1.57	40.11	91.12
635	0.046	0.003	0.96	0.01	0.61	1.59	38.54	91.09
610	0.047	0.003	1.00	0.01	0.60	1.60	36.96	91.07
584	0.049	0.003	1.02	0.01	0.59	1.62	35.35	91.04
559	0.050	0.004	1.05	0.01	0.57	1.64	33.73	91.01
533	0.051	0.004	1.08	0.01	0.56	1.66	32.09	90.99
508	0.052	0.004	1.10	0.02	0.55	1.67	30.43	90.96
483	0.054	0.004	1.12	0.02	0.54	1.68	28.76	90.94
457	0.055	0.004	1.15	0.02	0.53	1.70	27.08	90.91
432	0.056	0.004	1.17	0.02	0.53	1.71	25.38	90.89
406	0.057	0.004	1.19	0.02	0.52	1.72	23.67	90.86
381	0.057	0.005	1.21	0.02	0.51	1.73	21.95	90.84
356	0.058	0.005	1.22	0.02	0.50	1.75	20.21	90.81
330	0.059	0.005	1.24	0.02	0.50	1.76	18.47	90.79
305	0.060	0.005	1.25	0.02	0.49	1.76	16.71	90.76
279	0.060	0.005	1.27	0.02	0.48	1.77	14.95	90.74
254	0.061	0.005	1.28	0.02	0.48	1.78	13.17	90.71
229	0.062	0.005	1.30	0.02	0.47	1.79	11.39	90.68
203	0.062	0.005	1.31	0.02	0.47	1.80	9.60	90.66
178	0.063	0.004	1.32	0.01	0.47	1.80	7.80	90.63
152	0.000	0.000	0.00	0.00	1.00	1.00	6.00	90.61
127	0.000	0.000	0.00	0.00	1.00	1.00	5.00	90.58
102	0.000	0.000	0.00	0.00	1.00	1.00	4.00	90.56
76	0.000	0.000	0.00	0.00	1.00	1.00	3.00	90.53
51	0.000	0.000	0.00	0.00	1.00	1.00	2.00	90.51
25	0.000	0.000	0.00	0.00	1.00	1.00	1.00	90.48

August 20, 2025

ADS Isolator Row PLUS Sizing

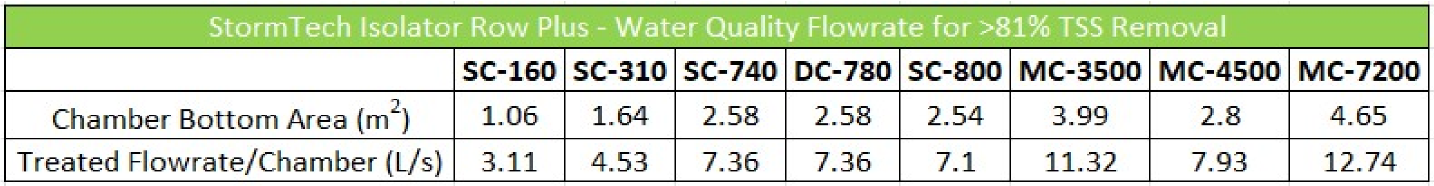
Project Name:	1398 BCDC - System C1		
Consulting Engineer:	DSEL		
Location:	Ottawa, Ontario		
Sizing Completed By:	Haider Nasrullah	**Email:**	haider.nasrullah@ads-pipe.com

Stormtech Details	
Chamber Model	SC-800
No. Chamber in Isolator Row PLUS:	11

Notes: Refer to Stormtech drawings for full IR+ configuration.

Treatment Details	
Water Quality Flow Rate Required	78 L/s
Water Quality Flow Rate Provided	78.1 L/s
TSS Removal Achieved	>81%

StormTech Isolator Row Sizing Chart



StormTech Isolator Row Plus - Water Quality Flowrate for >81% TSS Removal

	SC-160	SC-310	SC-740	DC-780	SC-800	MC-3500	MC-4500	MC-7200
Chamber Bottom Area (m^2)	1.06	1.64	2.58	2.58	2.54	3.99	2.8	4.65
Treated Flowrate/Chamber (L/s)	3.11	4.53	7.36	7.36	7.1	11.32	7.93	12.74

Isolator Row PLUS removal efficiency based on verified ETV test report. For dimensions and configuration of Isolator Row PLUS, please see Stormtech drawing package.

August 20, 2025

ADS Isolator Row PLUS Sizing

Project Name: 1398 BCDC - System C2

Consulting Engineer: DSEL

Location: Ottawa, Ontario

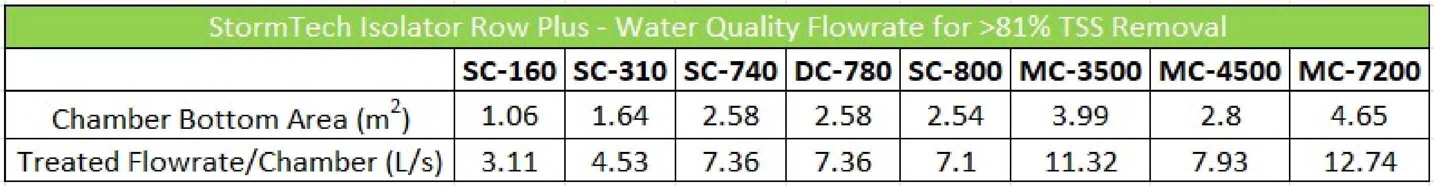
Sizing Completed By: Haider Nasrullah **Email:** haider.nasrullah@ads-pipe.com

Stormtech Details	
Chamber Model	SC-800
No. Chamber in Isolator Row PLUS:	12

Notes: Refer to Stormtech drawings for full IR+ configuration.

Treatment Details	
Water Quality Flow Rate Required	82 L/s
Water Quality Flow Rate Provided	85.2 L/s
TSS Removal Achieved	>81%

StormTech Isolator Row Sizing Chart



StormTech Isolator Row Plus - Water Quality Flowrate for >81% TSS Removal

	SC-160	SC-310	SC-740	DC-780	SC-800	MC-3500	MC-4500	MC-7200
Chamber Bottom Area (m^2)	1.06	1.64	2.58	2.58	2.54	3.99	2.8	4.65
Treated Flowrate/Chamber (L/s)	3.11	4.53	7.36	7.36	7.1	11.32	7.93	12.74

Isolator Row PLUS removal efficiency based on verified ETV test report. For dimensions and configuration of Isolator Row PLUS, please see Stormtech drawing package.

Peter Mott

From: Haider Nasrullah <Haider.Nasrullah@adspipe.com>
Sent: August 20, 2025 3:11 PM
To: Peter Mott
Cc: Adam Fobert
Subject: RE: 1398 BCDC Site Plan - Stormtech Chambers
Attachments: REV6 - 1398 BCDC (S430138) - 8-18-25.pdf; REV6 - 1398 BCDC (S430138) - 8-18-25.dwg; REV6 - 1398 BCDC - Volume - C1.pdf; REV6 - 1398 BCDC - Volume - C2.pdf; DSEL - 1398 BCDC - System C1 - ADS Isolator Row Plus.pdf; DSEL - 1398 BCDC - System C2 - ADS Isolator Row Plus.pdf

Hey Peter,

Please see attached the revised drawing with the new inverts. We have to add 2 more chambers to IR+, I should have those revisions done soon. I have attached the IR+ sizing reports.

For the drawdown time, I used the equation from here
https://wiki.sustainabletechnologies.ca/wiki/Flow_through_perforated_pipe
With 22m of 150mm subdrain, clogging factor of 0.5 as worst-case scenario, Cd as 0.61, opening area of 0.00635m2/m, acting head of 0.2m.
The drain down via the subdrain should around 1-2 hours for the 200mm of storage below the outlet.

Regards,

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

www.ads-pipecanada.ca

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha)																FLOW						SEWER DATA								
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of Conc. (min)	Intensity 2 Year (mm/h)	Intensity 5 Year (mm/h)	Intensity 10 Year (mm/h)	Intensity 100 Year (mm/h)	Peak Flow Q (l/s)	DIA. (mm) (actual)	DIA. (mm) (nominal)	TYPE	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME OF FLOW (min.)	RATIO Q/Q full
Location	From Node	To Node	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC															
BCDC EAST STACKED CONDO SITE PLAN																																	
	613	614	0.13	0.83	0.29	0.29			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	22	300	300	PVC	0.35	35.5	57.2089	0.8093	0.7310	0.390
	614	616	0.09	0.79	0.20	0.49			0.00	0.00			0.00	0.00			0.00	0.00	10.73	74.11	100.48	117.77	172.14	36	375	375	PVC	0.30	11.0	96.0323	0.8695	0.2109	0.377
	616	617	0.04	0.77	0.08	0.57			0.00	0.00			0.00	0.00			0.00	0.00	10.94	73.37	99.47	116.58	170.38	42	450	450	CONC	0.20	3.0	127.5033	0.8017	0.0624	0.329
To Chamber C1						0.57				0.00				0.00				0.00	11.00														
	CBMH 619	620	0.19	0.77	0.40	0.40			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	31	300	300	PVC	0.35	8.5	57.2089	0.8093	0.1750	0.537
	620	621	0.09	0.74	0.18	0.58			0.00	0.00			0.00	0.00			0.00	0.00	10.18	76.14	103.28	121.06	176.97	44	375	375	PVC	0.30	32.0	96.0323	0.8695	0.6134	0.461
	621	617	0.09	0.79	0.20	0.78			0.00	0.00			0.00	0.00			0.00	0.00	10.79	73.90	100.20	117.44	171.66	58	450	450	CONC	0.20	3.0	127.5033	0.8017	0.0624	0.452
To Chamber C1						0.78				0.00				0.00				0.00	10.85														
Contribution from Chamber C1						1.35				0.00				0.00				0.00	11.00														
	618	615			0.00	1.35			0.00	0.00			0.00	0.00			0.00	0.00	11.00	73.15	99.17	116.23	169.87	99	600	600	CONC	0.15	9.0	237.8056	0.8411	0.1783	0.416
	615	704			0.00	1.35			0.00	0.00			0.00	0.00			0.00	0.00	11.18	72.54	98.34	115.24	168.43	98	600	600	CONC	0.15	48.5	237.8056	0.8411	0.9611	0.412
To Les Emmerson Drive (N), Pipe 704 - 705						1.35				0.00				0.00				0.00	12.14														
	CBMH 537	538	0.22	0.82	0.51	0.51			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	39	300	300	PVC	0.35	31.0	57.2089	0.8093	0.6384	0.686
	538	534			0.00	0.51			0.00	0.00			0.00	0.00			0.00	0.00	10.64	74.44	100.94	118.31	172.93	38	300	300	PVC	0.35	4.5	57.2089	0.8093	0.0927	0.664
To Pipe 534 - 535						0.51				0.00				0.00				0.00	10.73														
	530	533	0.33	0.81	0.75	0.75			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	57	450	450	CONC	0.25	33.0	142.5531	0.8963	0.6136	0.402
	533	534	0.06	0.74	0.12	0.86			0.00	0.00			0.00	0.00			0.00	0.00	10.61	74.53	101.06	118.45	173.14	64	450	450	CONC	0.25	3.0	142.5531	0.8963	0.0558	0.451
Contribution From Pipe 538 - 534						0.51				0.00				0.00				0.00	10.73														
	534	535			0.00	1.37			0.00	0.00			0.00	0.00			0.00	0.00	10.73	74.11	100.48	117.77	172.14	102	450	450	CONC	0.25	3.0	142.5531	0.8963	0.0558	0.714
To Chamber C2						1.37				0.00				0.00				0.00	10.79														
Contribution from Chamber C2						1.37				0.00				0.00				0.00	10.79														
	536	531			0.00	1.37			0.00	0.00			0.00	0.00			0.00	0.00	10.79	73.91	100.21	117.45	171.67	101	450	450	CONC	0.25	14.5	142.5531	0.8963	0.2696	0.712
	531	532			0.00	1.37			0.00	0.00			0.00	0.00			0.00	0.00	11.06	72.97	98.93	115.94	169.45	100	450	450	CONC	0.20	13.0	127.5033	0.8017	0.2703	0.786
To Mineral Street, Pipe 532 - 507						1.37				0.00				0.00				0.00	11.33														

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

W. LIU
100167932
25-07-23

Designed: W.L.	PROJECT: BCDC EAST STACKED CONDO SITE PLAN BARRHAVEN CONSERVANCY EAST Ph4		
Checked: W.L.	LOCATION: **City of Ottawa**		
Dwg. Reference: Dwg. 12	File Ref: 20-1180	Date: 23 Jul 2025	Sheet No. SHEET 1 OF 1

PATERSON GROUP

memorandum

re: **Geotechnical Review – Groundwater Infiltration**
Proposed Residential Development – Conservancy Lands East and West
Borrisokane Road – Ottawa, Ontario
to: Caivan Communities – **Hugo Lalonde** – hugo.lalonde@caivan.com
date: October 21, 2024
file: PG5036-MEMO.42

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide a geotechnical review and recommendations with respect to management of groundwater infiltration into the sump pits of townhouse blocks and back-to-back style residential dwellings. This memorandum should be read in conjunction with the Sump Pump Feasibility Report (Paterson Group Report PG5036-LET.01 Revision 3 dated September 5, 2022).

Geotechnical Review & Recommendations

The subject residential development consists of single-family homes, townhouse blocks and back-to-back style residential buildings. Buildings which include a basement level will use sump pump(s) to provide an outlet for stormwater and spring melt water collected from the perimeter foundation drainage system.

Based on the geotechnical investigation completed by others, the subsurface profile at the subject site generally consists of topsoil underlain by a very stiff to stiff, brown silty clay crust, becoming firm to stiff and grey in colour by approximate depths of 2.5 to 3.0 m below the existing ground surface. The silty clay deposit generally extended to the maximum depth of the boreholes. The long-term groundwater elevation at the subject site is expected at an approximate geodetic elevation ranging from 88.3 to 90.0 m.

Hydraulic conductivity (slug) testing was completed by Paterson and by others at select monitoring wells installed during the geotechnical investigation, by others. Based on the results of the slug testing, the silty clay within the subject site has a hydraulic conductivity ranging from 5.0×10^{-8} and 2.0×10^{-5} m/sec.

It is understood that the proposed townhouse blocks may consist of up to 12 units, with an approximate building of footprint of 720 m^2. From the hydraulic conductivity of the in-situ soils and the sizing of the building footprint, sump pumps for the proposed townhouse blocks should be sized to handle an approximate volume of up to 200,000 L/day.

As such, it is recommended that the proposed townhouse blocks be outfitted with a sufficient number of sump pumps to effectively drain this volume of water. The location(s) of the sump pump(s) should be evenly distributed across each building footprint.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Kevin A. Pickard, P.Eng.

LICENSED PROFESSIONAL ENGINEER
Oct. 21, 2024
K. A. PICKARD
100531344
Kevin Pickard
PROVINCE OF ONTARIO

Scott Dennis
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List of Services
Geotechnical Engineering ◊ Environmental Engineering ◊ Hydrogeology
Materials Testing ◊ Retaining Wall Design ◊ Rural Development Design
Temporary Shoring Design ◊ Building Science ◊ Noise and Vibration Studies

patersongroup.ca

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Stittsville, ON K2S 1E9
613-836-0856
dsel.ca

- **STORMWATER MANAGEMENT REPORT FOR PHASE 3 OF THE BARRHAVEN CONSERVANCY EAST (JFSA, AUGUST 2025)**
- **BCDC PHASE 3 SWM QUALITY CONTROL AND TREATMENT TRAIN ANALYSIS (JFSA, AUGUST 2025)**
- **BARRHAVEN CONSERVANCY EAST SITE PLAN (CONSERVANCY STACKED TOWNS) – STORMWATER ANALYSIS (JFSA, AUGUST 2025)**

(PROVIDED UNDER SEPARATE COVER)