

# **SITE SERVICING AND STORMWATER MANAGEMENT REPORT**

**FOR**

**CAIVAN GREENBANK NORTH INC.  
3713 BORRISOKANE ROAD**

**CITY OF OTTAWA**

**PROJECT NO.: 19-1134**

**JULY 2020 – REV. 5  
© DSEL**



**SITE SERVICING AND STORMWATER MANAGEMENT REPORT  
FOR  
3713 BORRISOKANE ROAD  
CAIVAN GREENBANK NORTH INC.**

**TABLE OF CONTENTS**

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Existing Conditions .....	2
1.2	Required Permits / Approvals .....	3
1.3	Pre-consultation.....	3
<b>2.0</b>	<b>GUIDELINES, PREVIOUS STUDIES, AND REPORTS.....</b>	<b>4</b>
2.1	Existing Studies, Guidelines, and Reports.....	4
<b>3.0</b>	<b>WATER SUPPLY SERVICING .....</b>	<b>6</b>
3.1	Existing Water Supply Services .....	6
3.2	Water Supply Servicing Design .....	6
3.3	Water Supply Conclusion .....	6
<b>4.0</b>	<b>WASTEWATER SERVICING.....</b>	<b>7</b>
4.1	Existing Wastewater Services .....	7
4.2	Wastewater Design .....	7
4.3	Wastewater Servicing Conclusions .....	7
<b>5.0</b>	<b>STORMWATER MANAGEMENT .....</b>	<b>8</b>
5.1	Existing Stormwater Services .....	8
5.2	Post-development Stormwater Management Target .....	8
5.3	Proposed Stormwater Management System .....	8
5.4	Stormwater Management System Maintenance/Best Management Practices ...	10
5.5	Stormwater Servicing Conclusions .....	11
<b>6.0</b>	<b>UTILITIES.....</b>	<b>11</b>
<b>7.0</b>	<b>EROSION AND SEDIMENT CONTROL .....</b>	<b>12</b>
<b>8.0</b>	<b>CONCLUSION AND RECOMMENDATIONS .....</b>	<b>13</b>

## **FIGURES**

Figure 1	Site Location
----------	---------------

## **TABLES**

Table 1	Stormwater Flow Rate Summary
---------	------------------------------

## **APPENDICES**

Appendix A	Pre-consultation Notes
Appendix B	Water Supply
Appendix C	Wastewater Collection
Appendix D	Stormwater Management
Drawings / Figures	Proposed Site Plan
	Topographic Survey



**SITE SERVICING AND STORMWATER MANAGEMENT REPORT  
FOR  
3713 BORRISOKANE ROAD  
CAIVAN GREENBANK NORTH INC.  
JULY 2020 – REV. 5**

**CITY OF OTTAWA  
PROJECT NO.: 19-1134**

## **1.0 INTRODUCTION**

David Schaeffer Engineering Limited (DSEL) has been retained by Caivan Greenbank North Inc. to prepare a Site Servicing and Stormwater Management report in support of the application for Site Plan Control (SPC) at 3713 Borrisokane Road.

The subject property is located within the City of Ottawa, Rideau-Goulbourn Ward. As illustrated in **Figure 1**, the subject property is located approximately 500 m south of the intersection of Borrisokane Road and Cambrian Road. Comprised of a single parcel of land, the subject property measures approximately **31.5 ha** and is zoned Mineral Extraction.



**Figure 1: Site Location**

The proposed SPC would allow for the development of a 1-storey assembly plant. The development includes surface parking areas and drive aisles with access from Borrisokane Road. The development will include a **9380 m<sup>2</sup>** assembly plant proposed to be constructed in Phase I. The proposed development occupies **7.35 ha** of the subject site. A copy of the Site Plan is included in ***Drawings/Figures***.

Based on coordination with the developer, the intended use for the development is light industrial. The proposed activities within the subject site is summarized below.

Proposed activities within the building will include,

- Cutting Lumber, and;
- Assembling lumber into pre-finished panel walls, roof trusses, and floor joists.

Proposed activities outside of the building will include,

- Shipping and receiving; and
- Storage of raw lumber prior to processing/assembly. *\*Note that processing refers to the proposed activities within the building.*

A subsequent SPC application will be submitted in support of a 2-storey administration building, to be constructed in a second phase. The Phase II development contemplates the construction of a **2456 m<sup>2</sup>** administration building. A copy of the Site Plan is included in ***Drawings/Figures***.

The proposed SPC would allow for the development of the assembly plant. Due to the proposed private servicing strategy, the second phase has been incorporated into the stormwater management design.

The objective of this report is to provide detailed engineering in support of the site plan control application.

## **1.1 Existing Conditions**

The existing site includes a rock quarry with vegetated areas and piles of fill. The elevations range between 110.82 m and 99.60 m, with a minimal grade change of approximately 0.50% from the Southeast to the Northwest corner of the property. Stormwater runoff is currently directed towards the existing roadside ditch along Borrisokane Road.

Municipal services are not immediately available to site at the time of application.

---

## 1.2 Required Permits / Approvals

The proposed development is subject to the site plan control approval process. The City of Ottawa must approve the engineering design drawings and reports prior to the issuance of site plan control.

Ontario Water Resources Act (OWRA) s.53 approval will be required from the Ministry of the Environment, Conservation and Parks (MECP) for the stormwater connection to the existing Borrisokane Road drainage ditch. As summarized in *Section 1.0*, the development proposes light industrial activities. The ECA approvals fall under the Direct Submission process due to the industrial zoning.

Ontario Water Resources Act (OWRA) s.53 approval will be required from the MECP in the second phase for wastewater discharge greater than 10,000 L/day. The ECA approvals for the Phase II septic system will be prepared and submitted by Paterson Group during the Phase II detailed design stage.

## 1.3 Pre-consultation

Pre-consultation correspondence, along with the servicing guidelines checklist, is located in **Appendix A**.

## 2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

### 2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report:

- **Ottawa Sewer Design Guidelines,**  
City of Ottawa, *SDG002*, October 2012.  
**(City Standards)**
  - **Technical Bulletin ISTB-2018-01**  
City of Ottawa, March 21, 2018.  
**(ISTB-2018-01)**
  - **Technical Bulletin ISTB-2018-03**  
City of Ottawa, March 21, 2018.  
**(ISTB-2018-03)**
- **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 ISDTB-2018-02**  
City of Ottawa, March 21, 2018.  
**(ISDTB-2018-02)**
- **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)**

- 
- **Geotechnical Investigation**  
Paterson Group, PG5155-1, Rev. 1, December 3, 2019.  
**(Geotechnical Report)**
  - **Geotechnical Investigation – Sewage System Layout Plan**  
Paterson Group, PG3959, Rev. 1, April 15, 2020.
  - **Geotechnical Memo – Groundwater Field Investigation**  
Paterson Group, PG5155-MEMO.04, Rev. 1, May 21, 2020.
  - **Response to Site Plan Comments**  
Paterson Group, PE4810-LET.02, April 22, 2020.
  - **Hydrogeological Study for a Private Well Supply – Proposed Commercial/Industrial Development**  
Paterson Group, PH3959-REP.03, March 18, 2020.
  - **Master Servicing Study – Barrhaven South Urban Expansion Area**  
J.L. Richards & Associates Limited, Revision 2, May 2018.  
**(BSUEA MSS)**

---

### 3.0 WATER SUPPLY SERVICING

#### 3.1 Existing Water Supply Services

Municipal services are not immediately available to site at the time of application. Refer to drawing **EX-1**, accompanying this report, for further details.

#### 3.2 Water Supply Servicing Design

Since the subject property does not have immediate access to municipal service, it is proposed to service the development by connecting to the existing on-site well. As illustrated by drawing **SSP-1**, the well is located east of the future roadway site entrance. A hydrogeological study for a private well supply has been prepared by Paterson Group (PH3959-REP.03) and was submitted to the City of Ottawa under separate cover.

Firefighting water storage tanks and a fire pump house are proposed in order to protect the development during firefighting conditions. As per coordination with Lowe Fire Protection Inc, each storage tank has a volume of **52,000 gal**. The storage tanks and pump house have been designed by Lowe Fire Protection Inc. Refer to design included in **Appendix B** for further details.

#### 3.3 Water Supply Conclusion

Municipal services are not immediately available to site at the time of application, as a result private services are proposed. A hydrogeological study for a private well supply has been prepared by Paterson Group (PH3959-REP.03) and was submitted to the City of Ottawa under separate cover.

Firefighting water storage tanks and a fire pump house are proposed in order to protect the development during firefighting conditions. Refer to Lowe Fire Protection design included in **Appendix B** for further details.

---

## 4.0 WASTEWATER SERVICING

### 4.1 Existing Wastewater Services

Municipal services up to the subject site were not immediately available at the time of application. Refer to drawing **EX-1**, accompanying this report, for further details.

### 4.2 Wastewater Design

Since the subject property does not have immediate access to municipal service, it is proposed that the development will be serviced via a private septic system. Wastewater servicing needs will be provided via a private septic system, designed in accordance with Part 8 of the **OBC**. Detailed septic system designs prepared by Paterson Group (PG3959) are included in **Appendix C**. Refer to drawing **SSP-2** and **SSP-4**, accompanying this report, for the proposed sanitary servicing layout.

### 4.3 Wastewater Servicing Conclusions

Municipal services up to the site were not immediately available at the time of application. Since the subject property does not have immediate access to municipal service, it is proposed that the development will be serviced via a private septic system, designed by Paterson Group. Refer to design details included in **Appendix C** for further details.

## 5.0 STORMWATER MANAGEMENT

### 5.1 Existing Stormwater Services

In accordance with the **BSUEA MSS**, stormwater runoff from the subject property is tributary to the existing Borrisokane roadside ditch, located within the Jock River sub-watershed. As such, approvals for proposed development within this area are under the approval authority of the City of Ottawa.

Based on the **BSUEA MSS**, areas A5 (12.7 ha) and A8 (42.2 ha) are tributary to the existing Borrisokane roadside ditch. It is estimated that **1,300 L/s** of stormwater runoff is tributary to the existing watercourse. The subject site occupies **7.35 ha** of areas A5 and A8, therefore it is estimated that the site contributes runoff at a rate of **174 L/s**. Refer to **Appendix D** for the *SWMHYMO Site Drainage Plan*, included in both the **BSUEA MSS** and **Appendix D**, for an illustration of the local drainage boundaries.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Jock River Subwatershed, and is subject to review by the Rideau Valley Conservation Authority (RVCA).

### 5.2 Post-development Stormwater Management Target

The stormwater management will be required to adhere to the following design criteria:

- Established a post-development release rate based on the calculated 2-year pre-development flow rate;
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site;
- Incorporate Low Impact Development measures (LIDs); and
- Meet the quality control target of 80% TSS removal as per the Jock River Reach One Subwatershed Study (Stantec, 2007); and,

As per the **BSUEA MSS**, the pre-development release rate for the subject site is 174 L/s. Based on coordination with City staff, the release rate from the site is proposed to be **210.4 L/s**.

### 5.3 Proposed Stormwater Management System

To meet the stormwater objectives the proposed development will utilize surface storage.

Runoff collected along the western side of the subject site (U1) will flow to overland towards the existing Borrisokane Road ditch. Once collected within the Borrisokane roadside ditch, stormwater will be conveyed approximately 1 km downstream towards the Jock River. Stormwater runoff within U1 is from landscaped areas and from the



northwestern site entrance. Quality controls will be provided via the existing Borrisokane ditch. Refer to drawing **STM-1**, accompanying this report, for a detailed drainage plan.

Runoff collected along the southern side of the subject site (U2) will flow overland south of the subject site. Stormwater within this area is considered clean as it is landscaping drainage. Pre-treatment is not anticipated to be required. Refer to drawing **STM-1**, accompanying this report, for a detailed drainage plan.

Uncontrolled areas, as shown by drawing **STM-1** provided along with this report, will be released uncontrolled to municipal right-of-ways and will be compensated for in areas with flow attenuation controls. The proposed major system will ultimately be the Borrisokane Road ditch system. As noted by **Table 1**, below, the unattenuated flow rate during a 100-year storm event is estimated to be **99.9 L/s**. The remainder of the site will control stormwater to a rate of **110.5 L/s**. Refer to the stormwater calculations included in **Appendix D** for further details.

Stormwater runoff from the development is proposed to be collected via an internal storm sewer network and conveyed to a stormwater storage area located within the eastern portion of the site. Based on coordination with City staff, the controlled release rate is proposed to be reduced by half to account for the change in head, resulting in an allowable release rate of **55.3 L/s**. It is calculated that **2,900.5 m<sup>3</sup>** of stormwater is required. Refer to drawing **GP-1** and **GP-2**, accompanying this report, and detailed calculations located in **Appendix D** for further details.

Stormwater runoff collected from parking areas and drive aisles will be conveyed via the internal storm sewer network towards the stormwater storage area. As depicted on drawing **SSP-1** and **SSP-2**, stormwater quality controls to an enhanced level of treatment will be achieved with the use of an *Aquashield AS-7* oil/grit separator (OGS) or an approved equivalent. Pre-treatment of stormwater runoff will be treated to an enhanced level (80% TSS removal). Refer to **Appendix D** for detailed sizing report.

Stormwater runoff collected from the assembly building rooftop and foundation will be conveyed to an infiltration system. The infiltration system was sized to store **91.4 m<sup>3</sup>** of runoff prior to overflowing into the stormwater management pond. The infiltration system was designed to include a 450 mm perforated pipe surrounded by 25 mm clearstone in a 1.2 m wide trench, with 0.2 m of stone above and below the pipe. The system, complete with clearstone surrounding, will act as a soakaway pit. Refer to drawing **GP-2** and **SSP-1**, accompanying this report, for further details.

Stormwater runoff collected from landscaped areas will be conveyed directly to the modified stormwater storage area. Stormwater collected by landscaped areas is considered clean and therefore does not require pre-treatment. The stormwater storage area will outlet to a maintenance structure (STM MH 204) equipped with a **226 mm ICD** to attenuate to the allowable release rate.

Stormwater will be conveyed from the storage area to the ditch located north of the site via a **600 mm** diameter outlet pipe and headwall. Stormwater will then travel towards the Borrisokane Road ditch. Refer to detailed drawings, accompanying this report, for further details.

The stormwater management strategy contemplates the Phase II conditions in order to appropriately size the storage area. Refer to drawing **STM-1** for a Phase II drainage plan. **Table 1**, below, summarizes post-development flow rates for the contemplated ultimate development.

**Table 1**  
**Stormwater Flow Rate Summary**

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Required Storage	100-Year Available Storage
	(L/s)	(m <sup>3</sup> )	(L/s)	(m <sup>3</sup> )	(m <sup>3</sup> )
Unattenuated Areas (U1 & U2)	46.8	0.0	99.9	0.0	0.0
Attenuated Areas (L1, L2, CB12, CB8, STM100, STM101, STM200, STM202, BLDG A, BLDG B)	39.1	1235.3	54.8	2900.5	2906.7
<b>Total</b>	<b>85.9</b>	<b>1235.3</b>	<b>154.7</b>	<b>2900.5</b>	<b>2906.7</b>

It was estimated that approximately **2,901 m<sup>3</sup>** of storage is required in the to meet the established allowable release rates outlined in Section 5.2. Storage calculations are contained within **Appendix D**.

#### **5.4 Stormwater Management System Maintenance/Best Management Practices**

The following maintenance and best management practices will be implemented for the proposed development:

- Building rooftop runoff from BLDG B to be directed to the LID system to separate clean roof runoff from general parking lot drainage;
- Regular maintenance of the site stormwater management system, including annual cleaning of the ICD, inlets, outlets, and limiting the use of salt, sand and gravel in parking lots during the winter months, in addition to spring sweeping of parking areas;
- Recommend that grit be used rather than sodium de-icing solutions during winter months; and
- Any material storage (if required) on-site is to be provide adequate protection to ensure any spills do not enter the stormwater storage system.

---

## 5.5 Stormwater Servicing Conclusions

Stormwater is proposed to be conveyed from the infiltration area towards the Borrisokane Road ditch via a swale north of the site. Based on coordination with City staff, post development stormwater runoff will be restricted to a release rate of **210.4 L/s**. The estimated flow rate generated from the subject site during a 100-year storm event is **154.4 L/s**, achieved by the use of a stormwater storage area.

Stormwater runoff from the development is proposed to be collected via an internal storm sewer network and conveyed to a stormwater storage area located within the eastern portion of the site. **2,900.5 m<sup>3</sup>** of stormwater is required to be retained on-site.

Stormwater runoff collected from parking areas and drive aisles will be conveyed via the internal storm sewer network towards the storage area. As depicted by drawing **SSP-1**, stormwater quality controls to an enhanced level of treatment will be achieved with the use of an *Aquashield AS-7 OGS* or an approved equivalent. Remainder of stormwater runoff is considered clean and therefore is not anticipated to require additional quality measures.

Stormwater runoff collected from the assembly building rooftop and foundation will be conveyed to an infiltration system. The infiltration system was sized to store **91.4 m<sup>3</sup>** of runoff prior to overflowing into the stormwater management pond. The infiltration system was designed to include a 450 mm perforated pipe surrounded by 25 mm clearstone in a 1.2 m wide trench, with 0.2 m of stone above and below the pipe. The system, complete with clearstone surrounding, will act as a soakaway pit.

The proposed stormwater design conforms to all relevant **City Standards** and Policies for approval.

## 6.0 UTILITIES

Utility servicing will be coordinated with the individual utility companies prior to site development.

---

## 7.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. During construction the extent of erosion losses is exaggerated due to the removal of vegetation and the top layer of soil becoming agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated.

Catch basins will have SILTSACKS or an approved equivalent installed under the grate during construction to protect from silt entering the storm sewer system.

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

Erosion and sediment controls must be in place during construction. The following 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 existing ditches;
- No refueling or cleaning of equipment near existing watercourses;
- Provide sediment traps and basins during dewatering;
- Install filter cloth between catch basins and frames;
- Plan construction at proper time to avoid flooding; and
- Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

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

## 8.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by Caivan Greenbank North Inc. to prepare a Site Servicing and Stormwater Management Report in support of the application for a Site Plan Control (SPC) at 3713 Borrisokane Road, Phase I. The preceding report outlines the following:

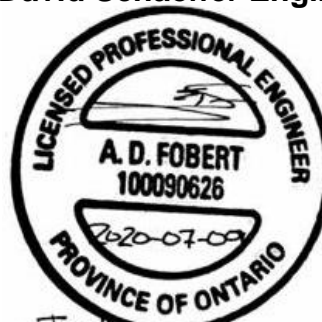
- Municipal services are not immediately available to site at the time of application, as a result private water services are proposed to be provided via an existing well and water storage tanks;
- The subject property does not have immediate access to municipal wastewater service, it is proposed that the development will be serviced via a private septic system;
- Post development stormwater runoff will be restricted to a release rate of **210.4 L/s**, based on the **BSUEA MSS** and coordination with City staff. Stormwater storage will be provided by the use of a depressed storage area;
- Stormwater runoff from the development is proposed to be collected via an internal storm sewer network and conveyed to a stormwater infiltration area located within the eastern portion of the site. In order to control stormwater to the established release rate, **2900.5 m<sup>3</sup>** of stormwater is required;
- Stormwater runoff collected from the assembly building rooftop and foundation will be conveyed to an infiltration system. The infiltration system was sized to store **91.4 m<sup>3</sup>** of runoff prior to overflowing into the stormwater management pond; and
- Stormwater quality controls to an enhanced level of treatment will be achieved with the use of an *Aquashield AS-7* OGS or an approved equivalent and the existing Borrisokane roadside ditch.

Prepared by,  
**David Schaeffer Engineering Ltd.**



Per: Alison J. Gosling, EIT.

Reviewed by,  
**David Schaeffer Engineering Ltd.**



Per: Adam D. Fobert, P.Eng.



---

---

## ***APPENDIX A***

### ***Pre-Consultation***

---

---





# DEVELOPMENT SERVICING STUDY CHECKLIST

19-1134

21/05/2020

4.1 General Content		
<input type="checkbox"/>	Executive Summary (for larger reports only).	N/A
<input checked="" type="checkbox"/>	Date and revision number of the report.	Report Cover Sheet
<input checked="" type="checkbox"/>	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
<input checked="" type="checkbox"/>	Plan showing the site and location of all existing services.	Figure 1
<input checked="" type="checkbox"/>	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
<input checked="" type="checkbox"/>	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
<input checked="" type="checkbox"/>	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria.	Section 2.1
<input checked="" type="checkbox"/>	Statement of objectives and servicing criteria.	Section 1.0
<input checked="" type="checkbox"/>	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
<input type="checkbox"/>	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
<input checked="" type="checkbox"/>	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	GP-1
<input type="checkbox"/>	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
<input type="checkbox"/>	Proposed phasing of the development, if applicable.	N/A
<input checked="" type="checkbox"/>	Reference to geotechnical studies and recommendations concerning servicing.	Section 1.4
<input checked="" type="checkbox"/>	All preliminary and formal site plan submissions should have the following information: -Metric scale -North arrow (including construction North) -Key plan -Name and contact information of applicant and property owner -Property limits including bearings and dimensions -Existing and proposed structures and parking areas -Easements, road widening and rights-of-way -Adjacent street names	SSP-1
4.2 Development Servicing Report: Water		
<input type="checkbox"/>	Confirm consistency with Master Servicing Study, if available	N/A
<input checked="" type="checkbox"/>	Availability of public infrastructure to service proposed development	Section 3.1
<input checked="" type="checkbox"/>	Identification of system constraints	Section 3.1
<input checked="" type="checkbox"/>	Identify boundary conditions	Section 3.1, 3.2
<input checked="" type="checkbox"/>	Confirmation of adequate domestic supply and pressure	Section 3.3

<input checked="" type="checkbox"/>	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 3.2
<input type="checkbox"/>	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
<input type="checkbox"/>	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
<input type="checkbox"/>	Address reliability requirements such as appropriate location of shut-off valves	N/A
<input type="checkbox"/>	Check on the necessity of a pressure zone boundary modification	N/A
<input checked="" type="checkbox"/>	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Section 3.2, 3.3
<input type="checkbox"/>	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	N/A
<input type="checkbox"/>	Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
<input checked="" type="checkbox"/>	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
<input type="checkbox"/>	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

#### 4.3 Development Servicing Report: Wastewater

<input checked="" type="checkbox"/>	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 4.2
<input type="checkbox"/>	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
<input type="checkbox"/>	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
<input checked="" type="checkbox"/>	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
<input checked="" type="checkbox"/>	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2
<input checked="" type="checkbox"/>	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
<input checked="" type="checkbox"/>	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
<input type="checkbox"/>	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A

<input type="checkbox"/>	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
<input type="checkbox"/>	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
<input type="checkbox"/>	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
<input type="checkbox"/>	Special considerations such as contamination, corrosive environment etc.	N/A

#### 4.4 Development Servicing Report: Stormwater Checklist

<input checked="" type="checkbox"/>	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
<input checked="" type="checkbox"/>	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
<input checked="" type="checkbox"/>	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
<input checked="" type="checkbox"/>	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2
<input checked="" type="checkbox"/>	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
<input checked="" type="checkbox"/>	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
<input type="checkbox"/>	Set-back from private sewage disposal systems.	N/A
<input type="checkbox"/>	Watercourse and hazard lands setbacks.	N/A
<input checked="" type="checkbox"/>	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
<input type="checkbox"/>	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
<input checked="" type="checkbox"/>	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3
<input type="checkbox"/>	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
<input checked="" type="checkbox"/>	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5.1, 5.3
<input type="checkbox"/>	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
<input type="checkbox"/>	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
<input type="checkbox"/>	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
<input type="checkbox"/>	Identification of potential impacts to receiving watercourses	N/A
<input type="checkbox"/>	Identification of municipal drains and related approval requirements.	N/A

<input checked="" type="checkbox"/>	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
<input type="checkbox"/>	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
<input type="checkbox"/>	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
<input checked="" type="checkbox"/>	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7.0
<input type="checkbox"/>	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
<input type="checkbox"/>	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

#### 4.5 Approval and Permit Requirements: Checklist

<input checked="" type="checkbox"/>	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement ct. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Section 1.2
<input type="checkbox"/>	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
<input type="checkbox"/>	Changes to Municipal Drains.	N/A
<input type="checkbox"/>	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

#### 4.6 Conclusion Checklist

<input checked="" type="checkbox"/>	Clearly stated conclusions and recommendations	Section 8.0
<input type="checkbox"/>	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	
<input type="checkbox"/>	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

## Alison Gosling

---

**To:** Hugo Lalonde  
**Subject:** RE: ABIC pre-consult

---

**From:** Moore, Sean <[Sean.Moore@ottawa.ca](mailto:Sean.Moore@ottawa.ca)>  
**Sent:** October-30-19 2:20 PM  
**To:** Julie Carrara <[carrara@fotenn.com](mailto:carrara@fotenn.com)>; Frank Cairo <[frank.cairo@caivan.com](mailto:frank.cairo@caivan.com)>  
**Cc:** Shillington, Jeffrey <[jeff.shillington@ottawa.ca](mailto:jeff.shillington@ottawa.ca)>; Rehman, Sami <[Sami.Rehman@ottawa.ca](mailto:Sami.Rehman@ottawa.ca)>; Xu, Lily <[Lily.Xu@ottawa.ca](mailto:Lily.Xu@ottawa.ca)>; Giampa, Mike <[Mike.Giampa@ottawa.ca](mailto:Mike.Giampa@ottawa.ca)>  
**Subject:** 3713 Borrisokane Road

Hi Julie,

Concerning the September 30<sup>th</sup> 2019 preconsultation meeting for 3713 Borrisokane Road please find below the submission requirements for the proposed Site Plan Control, Zoning By-law Amendment and Official Plan Amendment applications. Let me know if you have any questions/clarifications.

**Zoned:** ME2

**Official Plan Designation:** 'Mineral Aggregate Resource' Area

**The project:** A proposal at 3713 Borrisokane for a 125,000 s.f advanced manufacturing building and visitor experience centre. It is understood that the application will now come forward on private services (private water and private wastewater).

### List of required Plans/Reports with your application:

#### Required Plans:

- Site Plan (3 copies)
- Landscape Plan (3 copies)
- Grading Plan (3 copies)
- Site Servicing Plan (3 copies)
- Survey Plan (2 copies)
- Architectural Elevation Plans (3 copies)
- Erosion and Sediment Control Plan (3 copies)
- Roadway Modification (if required through the TIA)

#### Required Reports:

- Planning Rationale, with Integrated Environmental Review (3 copies)
- Hydrogeological Report and Terrain Analysis (3 copies)]
- Groundwater Impact Assessment – concerning Kars Esker
- Stormwater Management Report (3 copies)
- Transportation Impact Assessment (3 copies)
- Detailed Noise Control Study (3 copies) – impact on adjacent residential / urban boundary lands
- Geotechnical Study (3 copies)
- Phase 1 ESA (3 copies) – to conformity with OReg 153/04
- Environmental Impact Statement (2 copies)

- Tree Conservation Report (3 copies) – if trees are identified on the site
- Confirmation from the MNR the Sand and Gravel resource has been depleted and/or the resource is not suitable for exploitation.

\*All required plans & reports are to be provided in digital format (\*.pdf) at application submission in addition to any required hard copies.

**Site Plan Control Fee: \$32,106.89**

Complex (Manager Approval)

Conservation Authority Fee \$995

**Zoning By-law amendment Fee: \$16,960.99**

Complex (Manager Approval)

Conservation Authority Fee \$370

**Official Plan amendment Fee: \$20,760.99**

Complex (Manager Approval)

Conservation Authority Fee \$735

**Planning Policy Comments:**

- The current Official Plan designation is ‘Mineral Aggregate Resources’ area (Section 3.7.4) and the lands are located in the Rural Area of the Official Plan. Section 3.7.4, policy 15 states that:

“Where the sand, gravel or bedrock mineral aggregate resources of a property have been fully extracted, the site fully rehabilitated and an aggregate license surrendered, the property may be used for other purposes. Under this circumstance the City will not require the proponent to amend the Official Plan; instead the Plan will be amended to accurately reflect the new use at the time of the next comprehensive Official Plan update or through a general Official Plan amendment”

However,

- Section 3.7.4, policy 17 states:

In Sand and Gravel Resource Areas where it is shown that resources are depleted or not suitable for exploitation, the property may be used for purposes listed in Section 3.7.3 or additional new uses as follows: [Ministerial Modification 28, November 10, 2003] [Amendment #150, December 21, 2017]

- a. If the lands are predominantly surrounded by an Agriculture Resource designation, the uses identified in Section 3.7.3 for Agricultural Resource Areas may be permitted. Where a pit license has been surrendered and the pit was located on prime agricultural lands, the site will be rehabilitated for productive agricultural use except where extraction has occurred below the water table; or if the lands are predominantly surrounded by designations other than Agricultural Resource, the uses in Section 3.7.2 for the General Rural Area, including farming, may be permitted
- If the use was a ‘General Rural’ or ‘Agricultural’ use, suitable to those applicable designations no applicant driven OPA would be required. However, when we examine the policies of

Sections 3.7.2 and 3.7.3, it is apparent that the proposed office and industrial use are more suited to for the Rural Employment Area (3.7.5). At this time in the City's new OP review we are not in a position to recommend any new Rural Employment Area's, but would suggest a proponent driven OPA to Section 3.7.2 for a site specific policy at 3713 Borrisokane.

- It is our opinion that because an exception policy is required for Section 3.7.2 to permit this type of use, we can not rely on Policy 15 (Section 3.7.4). Therefore an Official Plan Amendment is required to bring in this special policy to the General Rural Area Section.

#### Environmental Comments:

- An EIS will be required as outlined in OP Section 4.7.8. The requirements are outlined in the EIS guidelines:  
[https://documents.ottawa.ca/sites/documents/files/documents/eis\\_guidelines2015\\_en.pdf](https://documents.ottawa.ca/sites/documents/files/documents/eis_guidelines2015_en.pdf)
- There are species at risk identified on the property and within the vicinity. The EIS should also address significant woodlands and other natural features on the subject property. For Site Plan Control, a Tree Conservation Report (TCR) is required, which can be combined with the EIS to reduce duplications.

TCR guidelines are : <https://ottawa.ca/en/living-ottawa/environment/trees-and-forests/tree-protection#tree-conservation-report-guidelines>

- We will require a Groundwater Impact Assessment to understand development impacts on the Kars Esker and potential for interfering with the groundwater regime

#### Engineering Comments:

- The Stormwater Management Report will need to outline the drainage area, storm sewer design and outlet. Including quality and quantity criteria

#### Transportation Comments:

- We will require confirmation on how private development will be permitted to front onto the Borrisokane Road (MTO corridor). This property will need 'public street' frontage, and we should discuss how we are resolving this segment of MTO service corridor/road (do we deal with this through the Zoning By-law Amendment?)

Regards,

**Sean Moore** MCIP, RPP

Planner III | Urbaniste III

Development Review (South Services) | Examen des projets d'aménagement (services sud)

Planning, Infrastructure and Economic Development | Services de planification, d'infrastructure et de développement économique

City of Ottawa | Ville d'Ottawa

 613.580.2424 ext./poste 16481

[ottawa.ca/planning](http://ottawa.ca/planning) / [ottawa.ca/urbanisme](http://ottawa.ca/urbanisme)

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

'  
'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

'



## Alison Gosling

---

**To:** Hugo Lalonde  
**Subject:** RE: 3713 Borrisokane Road - rural servicing

---

**From:** Hugo Lalonde <hugo.lalonde@caivan.com>  
**Sent:** April 14, 2020 1:27 PM  
**To:** Alison Gosling <AGosling@dsel.ca>; Adam Fobert <AFobert@dsel.ca>; Steve Pichette <SPichette@dsel.ca>  
**Subject:** FW: 3713 Borrisokane Road - rural servicing

See below and attached from City on pre-infiltration treatment. Other than typical parking lot run off there is no anticipated pollutants associated with this use.

Thanks

### HUGO LALONDE

Director, Land Development  
2934 Baseline Road, Suite 302  
Ottawa, ON K2H 1B2  
C: 613-295-5082 O: 613-518-1864 ext. 503



**Confidentiality Notice:**  
This e-mail (and attached material) is intended for the use of the individual(s) or institution(s) to which it is addressed. This material may contain privileged, confidential, and/or personal information that may be subject to the provisions of certain laws. It may not be distributed, copied or disclosed to other unauthorized persons or institutions. If you receive this transmission in error, please notify the sender immediately and delete the e-mail and any attachments permanently.

---

**From:** Moore, Sean <[Sean.Moore@ottawa.ca](mailto:Sean.Moore@ottawa.ca)>  
**Sent:** Tuesday, April 14, 2020 1:20 PM  
**To:** Hugo Lalonde <[hugo.lalonde@caivan.com](mailto:hugo.lalonde@caivan.com)>  
**Subject:** FW: 3713 Borrisokane Road - rural servicing

Hi Hugo,

Please find below some comments from John Bougadis with a related attachment

Sean

“Pretreatment off runoff in pollution hot spots and parking lots will be required prior to infiltration (see highlighted text in attached PDF).”

---

**From:** Moore, Sean <[Sean.Moore@ottawa.ca](mailto:Sean.Moore@ottawa.ca)>  
**Sent:** April 09, 2020 16:39  
**To:** [hugo.lalonde@caivan.com](mailto:hugo.lalonde@caivan.com); Michael Killam <[mkillam@patersonsgroup.ca](mailto:mkillam@patersonsgroup.ca)>; [spichette@dsel.ca](mailto:spichette@dsel.ca)  
**Cc:** Kearney, Michel <[Michel.Kearney@ottawa.ca](mailto:Michel.Kearney@ottawa.ca)>; Nielsen, Gen <[Gen.Nielsen@ottawa.ca](mailto:Gen.Nielsen@ottawa.ca)>; Bougadis, John <[John.Bougadis@ottawa.ca](mailto:John.Bougadis@ottawa.ca)>; Rogers, Christopher <[Christopher.Rogers@ottawa.ca](mailto:Christopher.Rogers@ottawa.ca)>; Xu, Lily <[Lily.Xu@ottawa.ca](mailto:Lily.Xu@ottawa.ca)>;

Shillington, Jeffrey <[jeff.shillington@ottawa.ca](mailto:jeff.shillington@ottawa.ca)>

**Subject:** 3713 Borrisokane Road - rural servicing

Hugo,

Please find a key summary of today's meeting. Please advise if you have any questions with the information provided.

There are 4 steps to rural servicing of this property:

1. Septic tank detail is required to understand or confirm that the tanks are above the water and will not draw water
  2. The private well has been addressed through the Hydrogeological Report and no interaction with the leachate plume is expected. It is thought that the water feeding the leaching beds is good for infiltration
  3. The on-site stormwater facility will be an infiltration pond. This will be independent of the suburban SWM facility to the immediate north. We will need to confirm that the bottom of this infiltration facility does not go deeper than the ground water table
  4. An ECA would be required for full build-out of the site (both office and manufacturing facility). This is because the site would have over 10,000 l/day going to the septic system. An ECA could take 8-10 months as a direct submission to the Ministry. There are two ways of dealing with this:
    - A. The City could require the applicant to preconsult with the Ministry now and approve a site plan that deals with the full build-out so we do not piecemeal the ECA requirement. OR
    - B. The City could use a 2 phased approach to the site plan approval process. Phase 1 approval could illustrate the manufacturing facility and the private septic servicing to accommodate that facility. A phase 2 site plan would be required at a later date to come forward with the office and the remainder of the private septic servicing. This means that the site can proceed without the 8-10 month delay and Ministry approval. We could approve an overall Master Site Plan where the office is ghosted out such that we have an idea of what will come forward as a future site plan.
- Note 1: Site Plan would only proceed if it can be demonstrated that the site does not have any potential impact on the plume (by staying above the water table).
  - Note 2: There is a process for an expedited ECA that could be discussed with Jeff Shillington.

The next submission is expected mid to end of next week from Caivan.

Regards,

Sean Moore  
Senior Planner  
City of Ottawa  
Planning, Infrastructure and Economic Development Dept.

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

**Table 2.8.1 Types of stormwater source areas, typical runoff characteristics and opportunities for treatment and use**

Stormwater Source Area	Runoff Characteristics	Opportunities	Principles
Foundation drains, slab underdrains, road or parking lot underdrains	Relatively clean, cool water.	Suitable for infiltration or direct discharge to receiving watercourses.	Should not be directed to stormwater management facility that receives road or parking lot runoff.
Roof drains, roof terrace area drains, overflow from green roofs	Moderately clean water, contaminants may include asphalt granules, low levels of hydrocarbons and metals from decomposition of roofing materials, animal droppings, natural organic matter and fall out from airborne pollutants, potentially warm water.	<ul style="list-style-type: none"> <li>- Infiltration;</li> <li>- Filtration;</li> <li>- Harvesting with rain barrels or cisterns and use for non-potable purposes (e.g., irrigation, toilet flushing) after pretreatment;</li> <li>- Attenuation and treatment in wet pond or wetland detention facility.</li> </ul>	Runoff should be treated with a sedimentation and/or filtration practice prior to infiltration. Where possible, runoff should not be directed to end-of-pipe facilities to capitalize on potential for infiltration or harvesting. Flow moderation (quantity control) prior to discharge to receiving watercourse is required.
Low and medium traffic roads and parking lots, driveways, pedestrian plazas, walkways	Moderately clean water, contaminants may include low levels of sediment, de-icing salt constituents, hydrocarbons, metals and natural organic matter. Typically warm water.	<ul style="list-style-type: none"> <li>- Infiltration after pretreatment;</li> <li>- Filtration after pre-treatment;</li> <li>- Harvesting with cisterns or permeable pavement reservoirs and use for outdoor non-potable purposes (e.g., vehicle washing, irrigation) after pretreatment;</li> <li>- Attenuation and treatment in wet pond or wetland detention facility.</li> </ul>	Runoff should be treated with a sedimentation and/or filtration practice prior to infiltration. Flow moderation (quantity control) prior to discharge to receiving watercourse is required. Water quality should be tested prior to use for non-potable purposes.
High traffic roads and parking lots	Potential for high levels of contamination with sediment, de-icing salt constituents hydrocarbons and metals. Typically warm water.	<ul style="list-style-type: none"> <li>- Filtration after sedimentation pre-treatment;</li> <li>- Attenuation and treatment in wet pond or wetland detention facility;</li> <li>- Infiltration after pretreatment only where groundwater uses are limited.</li> </ul>	Runoff should be treated with a sedimentation and/or filtration pretreatment practice prior to infiltration.
Pollution hot spots* such as vehicle fueling, servicing or demolition areas, outdoor storage and handling areas for hazardous materials, some heavy industry sites	Potential for high levels of contamination with sediment, de-icing salt constituents, hydrocarbons, metals, and other toxicants.	<ul style="list-style-type: none"> <li>- Attenuation and treatment in wet pond, wetland or hybrid detention facility;</li> <li>- Potential requirement for sedimentation pretreatment;</li> <li>- Infiltration and harvesting practices not recommended.</li> </ul>	Runoff from these sources should not be infiltrated or used for irrigation. Spill containment or mitigation devices recommended contingent on size of storage facilities.

\* *Pollution hot spots* are areas where certain land uses or activities have the potential to generate highly contaminated runoff (e.g., vehicle fuelling, service or demolition areas, outdoor storage and handling areas for hazardous materials and some heavy industry sites).



---

---

## ***APPENDIX B***

### ***Water Supply***

---

---



# LOWE FIRE PROTECTION INC.

---

Mike VanAsseldonk  
101-2435 Holly Lane  
Ottawa, Ontario K1V 7P2  
[mike@lowefire.ca](mailto:mike@lowefire.ca)

Telephone: 613-739-5693 (739-LOWE)  
Fax: 613-739-2922

April 22, 2020

REV 1

**BBS Construction**

**ATT:**

**ABIC Water Storage Requirements for Fire Protection  
3713 Borrisokane Road  
Ottawa, Ontario**

Dear Sir:

Please find below our calculations for the water storage requirements for the fire protection systems as per the OBC and NFPA 13 for the above referenced project.

**Assembly Plant Calculation:**

- Ordinary Hazard Group 2 Occupancy
- Design density of 0.20 gpm/1500 sqft = 300 gpm
- 10% sprinkler system overage = 30 gpm
- Inside and outside hoses = 250 gpm
- Total Assembly Plant Demand = 580 gpm.
  
- 580 gpm x 90 minute duration = 52,200 gpm

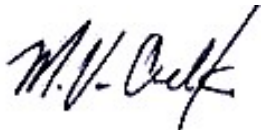
**TOTAL WATER STORAGE REQUIREMENT FOR FIRE PROTECTION = 52,200.00 gallons minimum**

**The above calculation is based on:**

- Off site sprinkler system monitoring of alarms, troubles and supervisory signals is not provided.

We trust the above calculation is satisfactory to your needs. Should we be of any further assistance, please do not hesitate to contact the undersigned.

Yours truly,  
Lowe Fire Protection Inc.



Mike VanAsseldonk









---

---

***APPENDIX C***

***Wastewater Collection***

---

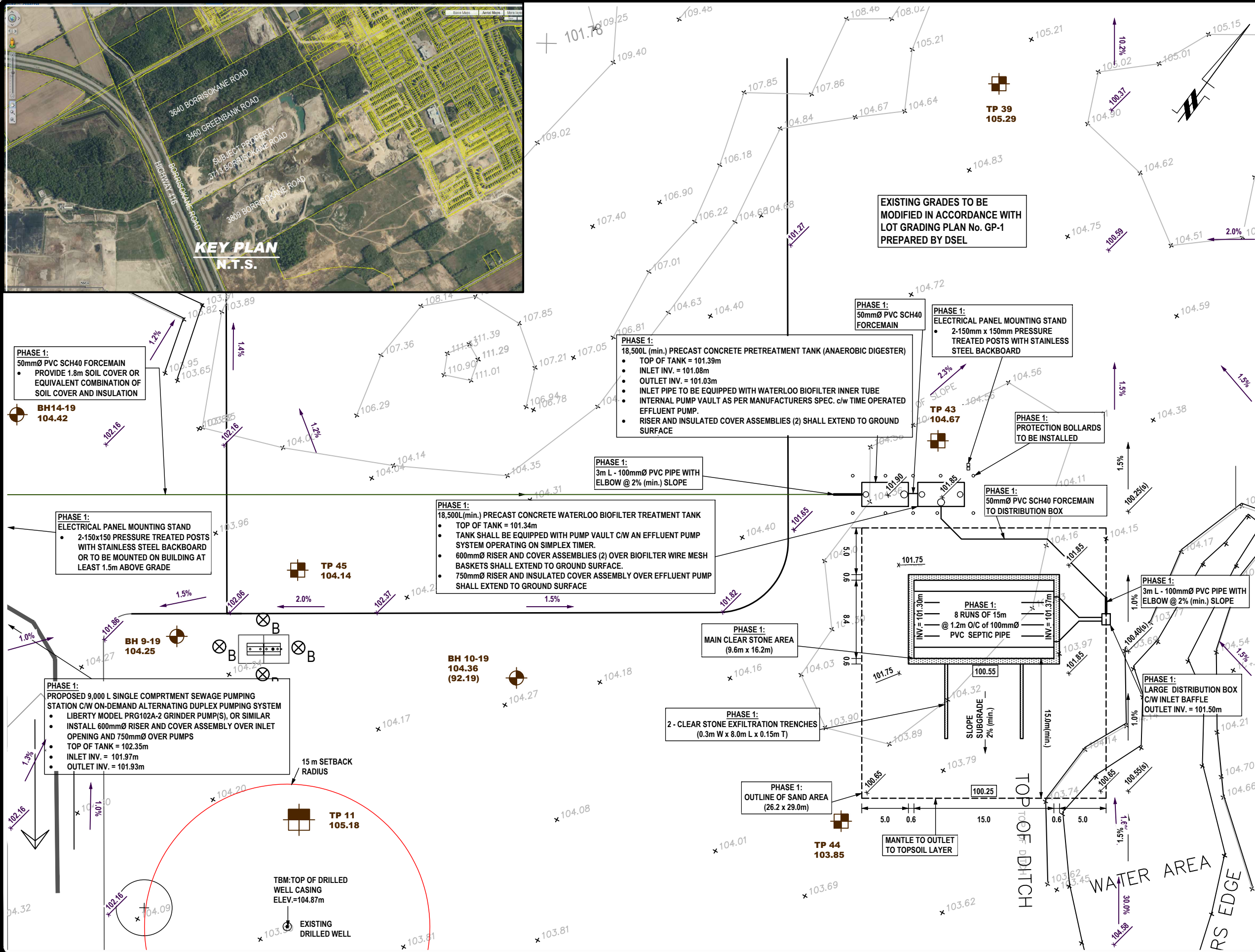
---







**KEY PLAN**  
N.T.S.



LEGEND:	
	Test Pit Location
	Borehole Location
x 100.99	Existing Ground Surface Elev. (m)
x 102.30	Proposed Ground Surface Elev. (m)
x 100.37	Proposed Grounds Surface Elev. (m) as per DSEL
100.25	Proposed Subgrade Elev. (m)
x 100.45	Proposed Swale Elev. (m)
	Proposed Structure

**BENCHMARK INFORMATION:**  
TBM: Top of Drilled Well Casing (See Plan)  
Assumed Elevation = 104.87m

**REFERENCE:**  
Proposed Grading Information obtain from grading plan GP-1, Job No. 19-1134, dated December 2019, by DSEL  
Site Plan Information obtained from Collectif D'Architects, dated November 29, 2019  
Topographic Information obtained from Topographic Survey Job No.18-10-145-00 dated June 10, 2019, By J.D. Barnes Ltd.

DD/MM/YY	DESCRIPTION	REV.
15/04/20	Issued for Septic Permit	1
13/04/20	Issued for Preliminary Review	0

Consultant:  
**paterosgroup**  
consulting engineers

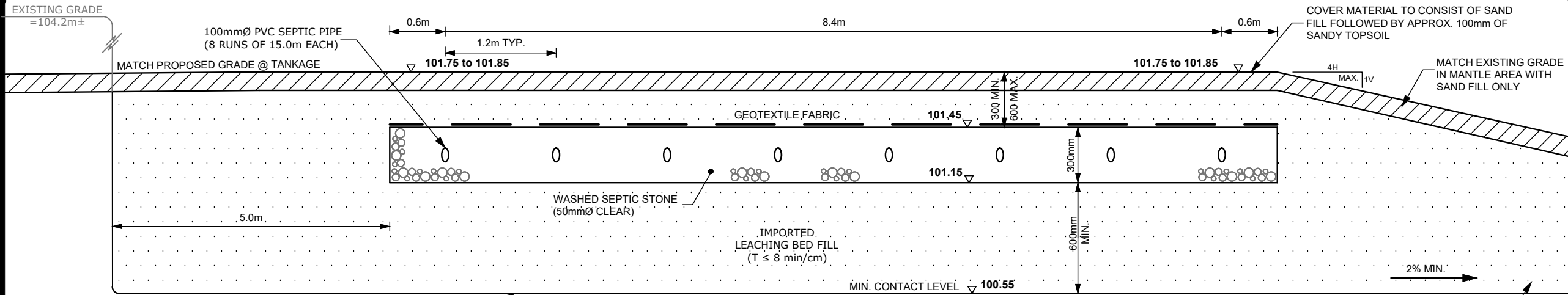
Client:  
**CAIVAN BARRHAVEN RENTAL**

Project:  
**PROPOSED ASSEMBLY BUILDING**  
3713 BORRISOKANE ROAD  
OTTAWA (NEPEAN), ONTARIO

Drawing:  
**PHASE 1:  
SEWAGE SYSTEM  
LAYOUT PLAN**

Scale: 1:400	Drawn by: HV
Date: 04/2020	Checked by: MK

Drawing No.:  
**PH3959-8**



PROFILE

N.T.S.

NOTES:

1) ESTIMATE OF DESIGN SEWAGE FLOW (Q)

PROPOSED SEWAGE FLOWS

FACTORY EMPLOYEES: 40 EMPLOYEES @ 2 SHIFTS X 75 L/D =	6000 L/D
FACTORY OFFICE SPACE: (80m² / 9.3) x 75 L/D =	650 L/D

TOTAL DESIGN DAILY SANITARY SEWAGE FLOW = 6,650 L/D

2) GENERAL REQUIREMENTS FOR TANKAGE

- ALL TANKS SHALL CONSIST OF PRECAST CONCRETE TANKS CONFORMING TO CSA-B66-10.
- THE ACTUAL TANK CONFIGURATION MAY DIFFER FROM THAT SHOWN PROVIDED THE MINIMUM SPECIFIED WORKING CAPACITY OF THE TANK MEET THE DESIGN REQUIREMENTS.
- ALL SEPTIC TANKS MUST BE CPA OR CSA CERTIFIED AND SHALL BE DESIGNED TO WITHSTAND ALL APPLICABLE LOADS. CONTRACTOR TO PROVIDE SHOP DRAWINGS STAMPED BY A STRUCTURAL ENGINEER.
- TANKS SHALL BE BEDDED ON A LAYER OF OPSS GRANULAR A COMPACTED TO AT LEAST 95% OF ITS SPMD.
- TANKS SHALL BE CONNECTED USING SCH 40 PVC SEWER PIPE WITH WATERTIGHT CONNECTIONS USING STAINLESS STEEL LINK SEALS OR APPROVED EQUAL.
- LEAKAGE TEST SHALL BE CARRIED OUT BY THE CONTRACTOR AND OBSERVED BY THE CONSULTANT ON ALL TANKS PRIOR TO BACKFILLING. FILL TANKS TO AT LEAST THE TOP OF THE TANK LID AND ALLOW TO STAND FOR AT LEAST 24 HOURS.
- BACKFILL TANKS USING OPSS GRANULAR B TYPE 1 BACKFILL OR CLEAN SAND FILL. PLACE BACKFILL IN UNIFORM LAYERS NOT EXCEEDING 300MM THICKNESS AND COMPACT TO AT LEAST 90% OF SPMD.
- FINAL GRADING SHALL BE SHAPED TO ENSURE THAT SURFACE WATER IS DIRECTED AWAY FROM ALL TANKS.
- WORK AREA SHALL BE COVERED WITH A LAYER OF TOPSOIL OF AT LEAST 100MM IN THICKNESS AND SEEDED.

3) SEWAGE PUMPING STATION

- INSTALL NEW 9,000L SINGE COMPARTMENT SEWAGE PUMPING STATION.
- 600MMØ RISER AND INSULATED COVER ASSEMBLY SHALL BE INSTALLED OVER TANK INLET ACCESS OPENING AND A 750MMØ RISER AND INSULATED COVER ASSEMBLY SHALL BE INSTALLED OVER THE OPENING TO THE SEWAGE PUMPS. RISERS SHALL EXTEND TO AT LEAST 50MM ABOVE FINISHED GRADE AND MUST BE SECURED OR LOCKABLE.
- THE SEWAGE PUMPING STATION SHALL BE EQUIPPED WITH AN ON-DEMAND, ALTERNATING DUPLEX GRINDER PUMP SYSTEM (I.E. LIBERTY MODEL PRG102A-2 GRINDER PUMP(S), OR SIMILAR).
- THE PUMPS SHALL BE OPERATED BY A WATERLOO SMART PANEL.
- CONTROL PANEL SHALL BE EQUIPPED WITH AN AUDIBLE AND VISUAL HIGH WATER ALARM.
- CONTROL PANEL TO BE MOUNTED ON 2-150MM X 150MM PRESSURE TREATED POSTS WITH STAINLESS STEEL BACKBOARD.
- THE PUMP DOSE VOLUME SHALL BE SET AT 900L.
- INSTALL REQUIRED FITTINGS AND PIPING FROM PUMP DISCHARGE ASSEMBLY AND CONNECT TO A 50MMØ SCH40 PVC FORCEMAIN.

TEST PIT INFORMATION

SOILS INFORMATION GATHERED BY PATERSON GROUP INC. ON OCTOBER 4, 2019 & MARCH 13, 2020.

TP 39, ELEV. 105.29m 0-0.15 FILL: SILTY CLAY, SOME GRAVEL & ORGANICS	TP 43, ELEV. 104.67m 0-0.20 FILL: SILTY CLAY, SOME TOPSOIL, TRACE GRAVEL
0.15-5.50 FILL: BR. SAND, SOME CLAY, GRAVEL, CONST. DEBRIS	0.20-2.90 FILL: BR. SILTY CLAY, SOME SAND GRAVEL, COBBLES, TR. CONSTRUCTION DEBRIS
	2.90-5.20 FILL: GR. SILTY CLAY, SOME SAND GRAVEL, COBBLES

- TP DRY UPON COMPLETION

-GROUNDWATER INFILTRATION @ 4.9m DEPTH (99.77m)

4) FORCEMAIN / DISTRIBUTION BOX

- FORCEMAIN SHALL CONSIST OF 50mm THICK PVC SCH 40 PVC PRESSURE PIPE
- FORCEMAIN TO BE BEDDED ON 150mm THICK LAYER OF GRANULAR 'A' FILL COMPACTED TO AT LEAST 95% OF SPMD.
- FORCEMAIN SHALL BE PROVIDED WITH 1.8M MIN. SOIL COVER OR AN EQUIVALENT COMBINATION OF SOIL COVER AND INSULATION.
- FORCEMAIN SHALL OUTLET TO A (min.) 3.0m LONG 100mmØ PVC SDR 28 SEWER PIPE AT 2.0% (min.) SLOPE TOWARDS THE PRETREATMENT TANK.
- 100mmØ SEWER PIPE TO OUTLET TO THE PRETREATMENT TANK (ANAEROBIC DIGESTER)

5) PRETREATMENT TANK (ANAEROBIC DIGESTER)

- A 18,500 L SINGLE COMPARTMENT PRECAST CONCRETE SEPTIC TANKS SHALL BE INSTALLED. (DESIGNED TO SUPPORT UP TO 7,500 L/DAY)
- A WATERLOO INNER TUBE SHALL BE INSTALLED ON THE INLET PIPE IN THE TANK.
- EFFLUENT FILTERS TO BE INSTALLED ACCORDING TO MANUFACTURER'S GUIDELINES (IF REQUIRED).
- 600mmØ RISER AND INSULATED COVER ASSEMBLY SHALL BE INSTALLED OVER TANK ACCESS OPENING AT INLET, AND 750mmØ RISER AND INSULATED COVER ASSEMBLY SHALL BE INSTALLED OVER PUMP ACCESS OPENING.
- RISERS SHALL EXTEND TO AT LEAST 50MM ABOVE FINISHED GRADE.
- AN INTERNAL PUMP CHAMBER SHALL BE INSTALLED IN THE PRETREATMENT TANK.
- PUMP CHAMBER TO HAVE A 3,750 L (min.) INTERNAL PUMP CAPACITY, 3,750 L (min.) EXTERNAL PUMP CAPACITY AND A 1,500 L(min.) RESERVE CAPACITY.
- THE PUMP VAULT SHALL BE EQUIPPED WITH A TIME CONTROLLED SIMPLEX EFFLUENT PUMP SYSTEM (I.E. LITTLE GIANT MODEL WS50M-12 EFFLUENT PUMP, OR SIMILAR) TO DOSE THE WATERLOO BIOFILTER TREATMENT TANK.
- PUMP & FLOAT TREE TO BE BE INSTALLED AS PER MANFACTURER'S SPECIFICATIONS.
- THE PUMP SHALL BE OPERATED BY A CUSTOM WATERLOO SMART PANEL.
- CONTROL PANEL SHALL BE EQUIPPED WITH AN AUDIBLE AND VISUAL HIGH WATER ALARM AND HAVE REMOTE ALARM CAPABILITIES.
- CONTROL PANEL TO BE MOUNTED ON 2-150MM X 150MM PRESSURE TREATED POSTS WITH STAINLESS STEEL BACKBOARD.

6) BIOFILTER

- THE WATERLOO BIOFILTER TREATMENT TANK SHALL CONSIST OF 18,500L SINGLE-COMPARTMENT PRECAST CONCRETE TANKS (DESIGNED TO SUPPORT UP TO 7,500 L/DAY).
- THE BIOFILTER TANK WILL CONTAIN 2 WIRE MESH BASKETS CONTAINING APPROXIMATELY 10.5M³ (min.) OF BIOFILTER MEDIUM TOTAL.
- THE WASTEWATER FROM THE PUMP VAULT SHALL BE DOSED USING SPRAY NOZZLES OVER EACH OF THE BASKETS IN BIOFILTER TANK AT A LOADING RATE OF APPROXIMATELY 633L/M²/DAY.
- THE TREATED EFFLUENT IS COLLECTED IN THE BOTTOM OF THE TANK.
- BIOFILTER TANK IS EQUIPPED WITH AN EFFLUENT PUMP OPERATING ON SIMPLEX TIMER. THE EFFLUENT PUMP WILL CONSIST OF A LITTLE GIANT MODEL WS50M-12 EFFLUENT PUMP, OR SIMILAR.
- THE EFFLUENT PUMP SHALL BE OPERATED BY THE CUSTOM WATERLOO SMART PANEL.
- 600mmØ RISER AND INSULATED COVER ASSEMBLIES SHALL BE INSTALLED OVER BIOFILTER WIRE MESH BASKETS AND 750mmØ RISER AND INSULATED COVER ASSEMBLY OVER THE OPENINGS TO THE EFFLUENT PUMPS.
- RISERS SHALL EXTEND TO AT LEAST 50MM ABOVE FINISHED GRADE.

7) TREATED EFFLUENT FORCEMAIN

- A 50MMØ (NOMINAL) PVC SCH40 FORCEMAINS SHALL BE USED TO CARRY THE EFFLUENT FROM THE WATERLOO BIOFILTER TREATMENT UNIT TO THE DISTRIBUTION BOX AT THE LEACHING BED.
- FORCEMAINS TO BE PROVIDED WITH 1.2m (min.) OF SOIL COVER AND SHALL GRAVITY DRAIN.
- FORCEMAIN SHALL OUTLET TO A 3.0m L x 100mmØ SOLID PVC SDR 28 SEWER PIPE @ 2.0%(min.) SLOPE TOWARDS THE DISTRIBUTION BOX.
- LARGE 4 OUTLET (min.) DISTRIBUTION BOX SHALL TO BE INSTALLED.
- DISTRIBUTION BOX SHALL CONNECT TO THE LEACHING BED BY WAY OF 100mmØ SOLID PVC SDR 28 SEWER PIPE @ 2.0% (min.) SLOPE.

8) DISPOSAL FIELD CONSTRUCTION GUIDELINES

- THE DISPOSAL FIELD SHALL CONSIST OF A TYPE "A" DISPERSAL BED COMPRISED OF 8 RUNS OF 15M EACH RUN @ 1.2M O/C SPACING OF 100MMØ PERFORATED PVC SEPTIC PIPE.
- CLEAR STONE AREA REQUIRED =  $Q/50 = 6,650/50 = 133M^2$
- CLEAR STONE AREA PROVIDED = 155.5M²
- EXISTING SOILS CONSIST OF SANDY FILL MATERIAL OVER IN SITU SAND MATERIAL, A CONSERVATIVE T TIME OF 40 min./cm. SHALL BE USED
- SAND AREA REQUIRED =  $QT/400 = 6,650(40)/400 = 665M^2$
- SAND AREA PROVIDED = 759.8M²
- HYDRAULIC LOADING RATE = 8.8 L/D/M2
- REMOVE ALL ORGANICS AND SUBEXCAVATE TO AT LEAST ELEVATION 100.55M, WHICHEVER IS GREATER.
- THE SUBGRADE SURFACE SHALL BE SCARIFIED UNDER DRY CONDITIONS.
- THE SPECIFIED TOP OF THE SAND LAYER (ELEV. 101.15M), BELOW THE CLEAR STONE DISTRIBUTION AREA, SHOULD BE ESTABLISHED WITH IMPORTED SAND FILL, HAVING A PERCOLATION RATE OF NOT GREATER THAN 8 MIN/CM (600MM THICKNESS MINIMUM).
- LEACHING BED SAND FILL SHALL BE UNIFORM SAND WITH GRADING LIMITS SIMILAR TO 100% PASSING 13.2MM SIEVE, LESS THAN 5% PASSING 0.075MM SIEVE AND HAVING A PERCOLATION RATE OF 6 TO 8 MIN/CM. LEACHING BED FILL SHALL BE PRE-APPROVED BY THE CONSULTANT.
- THE SAND AREA OUTSIDE OF THE LIMITS OF THE DISTRIBUTION AREA SHALL CONSIST OF A MINIMUM THICKNESS OF 300MM OF UNIFORM SAND HAVING A PERCOLATION RATE OF NOT GREATER THAN 8 MIN/CM. MATCH EXISTING GRADE WITH ADDITIONAL LEACHING BED FILL.
- THE DISTRIBUTION PIPES SHALL BE EMBEDDED IN A 300MM THICK LAYER OF WASHED SEPTIC STONE.
- THE INVERT LEVEL OF THE DISTRIBUTION PIPES SHALL BE SET AT ELEVATION 101.37M AT THE HEADER AND ELEVATION 101.30M AT THE FOOTER.
- THE ENDS OF EACH RUN SHALL BE INTERCONNECTED WITH A SOLID FOOTER PIPE.
- THE MAIN CLEAR STONE LAYER SHALL BE COVERED WITH AN APPROVED GEOTEXTILE FABRIC.
- THE SURFACE OF THE BED SHOULD BE COVERED WITH SAND FILL FOLLOWED BY APPROXIMATELY 100MM OF SANDY TOPSOIL. THE BED AREA SHOULD BE VEGETATED.
- THE TOTAL THICKNESS OF THE COVER OVER THE CLEAR STONE DISTRIBUTION LAYER SHALL RANGE BETWEEN 0.3M AND 0.6M.
- THE SIDES OF THE BED SHOULD BE SLOPED AT 4H:1V OR SHALLOWER.

9) MINIMUM CLEARANCE DISTANCE FROM LEACHING BED

- 6.0M FROM ANY PROPERTY LINE
- 8.0M FROM ANY STRUCTURE
- 15.0M FROM EXISTING DRAINAGE COURSE
- 18.0M FROM ANY DRILLED WELL
- 5.0M FROM ANY TREES UNLESS OTHERWISE APPROVED
- 5.0M FROM DRIVEWAY

10) MINIMUM CLEARANCE DISTANCE FROM TANK(S)

- 1.5M FROM ANY STRUCTURE
- 15.0M FROM ANY DRILLED WELL OR EXISTING DRAINAGE COURSE
- 3.0M FROM ANY PROPERTY LINE

\*\* EXISTING GRADING TO BE DRASTICALLY MODIFIED, IN ACCORDANCE WITH PROPOSED GRADING PROVIDED IN LOT GRADING PLAN GP-1, JOB No. 19-1134, DATED DECEMBER 20,19 BY DSEL\*\*

15/04/20	Issued for Septic Permit	1
13/04/20	Issued for Preliminary Review	0
DD/MM/YY	DESCRIPTION	REV.

Consultant:

paterongroup  
consulting engineers

Client:

CAIVAN BARRHAVEN  
RENTAL

Project:

PROPOSED ASSEMBLY  
BUILDING

3713 BORRISOKANE ROAD  
OTTAWA (NEPEAN), ONTARIO

Drawing:

PHASE 1:  
SEWAGE SYSTEM  
DETAIL & NOTES

Scale: N.T.S.	Drawn by: HV
Date: 04/2020	Checked by: MK

Drawing No.:  
PH3959-9

c:\users\shendrik\desktop\ph3959 - caivan communités-abic - 3713 borrisokane

---

---

***APPENDIX D***

***Stormwater Management***

---

---





Stormwater - Proposed Development  
City of Ottawa Sewer Design Guidelines, 2012



Target Flow Rate

**2-year**  
i 34.2 mm/hr  
Q 210.4 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

**Area ID** U1+U2  
**Total Area** 0.617 ha  
**C** 0.34 Rational Method runoff coefficient

t <sub>c</sub> (min)	5-year					100-year				
	i (mm/hr)	Q <sub>actual</sub> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )	i (mm/hr)	Q <sub>actual</sub> <sup>*</sup> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )
15.9	80.6	46.8	46.8	0.0	0.0	137.8	99.9	99.9	0.0	0.0

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Q (total - uncontrolled) 110.5 L/s  
1/2 Release Rate 55.3 L/s      \*Based on coordination with City staff

**Area ID** STM200, CB12, STM100, STM101, CB8, L2, BUILDA BUILD B, L1  
**Stage Attenuated Areas Storage Summary**

	Stage (m)	Surface Storage			Surface and Subsurface Storage			
		Ponding (m <sup>2</sup> )	h <sub>o</sub> (m)	delta d (m)	V <sup>*</sup> (m <sup>3</sup> )	V <sub>acc</sub> <sup>**</sup> (m <sup>3</sup> )	Q <sub>release</sub> <sup>†</sup> (L/s)	V <sub>drawdown</sub> (hr)
Orifice INV	98.10		0.00			0.0	0.0	0.00
Headwall INV	98.48	0	0.00	0.00	-	0.0	0.0	0.00
0.02m Ponding	98.50	20	0.02	0.02	0.2	0.2	7.0	0.01
0.12m Ponding	98.60	792	0.12	0.10	31.3	31.5	17.2	0.51
0.22m Ponding	98.70	2484.4	0.22	0.10	155.9	187.4	23.3	2.23
0.52m Ponding	99.00	2684.7	0.52	0.30	775.2	962.6	35.8	7.46
0.62m Ponding	99.10	2752.2	0.62	0.10	271.8	1234.4	39.1	8.77
0.92m Ponding	99.40	2960.9	0.92	0.30	815.5	2049.9	47.6	11.95
1.22m Ponding	99.70	3175.8	1.22	0.30	856.8	2906.7	54.9	14.72

\* V=Incremental storage volume

\*\*V<sub>acc</sub>=Total surface and sub-surface

† Q<sub>release</sub> = Release rate calculated from orifice equation

**Caivan**  
**3713 Borrisokane Road**  
**Proposed Site Conditions**

Orifice Location **STM MH 204** Dia **153 \*ICD SIZE OF 226mm TO BE USED. ICD SIZED BASED 110.5 L/s RELEASE RATE.**  
 Total Area **6.707 ha** (ALL ATT)  
**C** **0.58** Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

t <sub>c</sub> (min)	5-year					100-year				
	i (mm/hr)	Q <sub>actual</sub> † (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )	i (mm/hr)	Q <sub>actual</sub> † (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )
100	22.4	241.6	39.1	202.4	1214.7	37.9	510.8	54.8	456.0	2735.9
110	20.8	224.5	39.1	185.4	1223.4	35.2	474.4	54.8	419.6	2769.3
120	19.5	209.9	39.1	170.8	1229.4	32.9	443.3	54.8	388.5	2797.1
130	18.3	197.2	39.1	158.1	1233.3	30.9	416.4	54.8	361.6	2820.3
140	17.3	186.2	39.1	147.0	1235.2	29.2	392.9	54.8	338.0	2839.6
150	16.4	176.4	39.1	137.3	1235.5	27.6	372.1	54.8	317.3	2855.5
160	15.6	167.7	39.1	128.6	1234.4	26.2	353.6	54.8	298.8	2868.4
170	14.8	159.9	39.1	120.8	1232.0	25.0	337.1	54.8	282.2	2878.8
180	14.2	152.9	39.1	113.8	1228.5	23.9	322.1	54.8	267.3	2886.9
190	13.6	146.5	39.1	107.4	1224.0	22.9	308.6	54.8	253.8	2892.9
200	13.0	140.7	39.1	101.6	1218.7	22.0	296.2	54.8	241.4	2897.1
210	12.6	135.4	39.1	96.2	1212.6	21.1	285.0	54.8	230.1	2899.7
220	12.1	130.5	39.1	91.3	1205.7	20.4	274.6	54.8	219.8	2900.8
230	11.7	125.9	39.1	86.8	1198.2	19.7	265.0	54.8	210.2	2900.5
240	11.3	121.8	39.1	82.6	1190.0	19.0	256.1	54.8	201.3	2898.9
250	10.9	117.9	39.1	78.8	1181.3	18.4	247.9	54.8	193.1	2896.2
260	10.6	114.3	39.1	75.1	1172.1	17.8	240.2	54.8	185.4	2892.4
270	10.3	110.9	39.1	71.8	1162.4	17.3	233.1	54.8	178.3	2887.7
280	10.0	107.7	39.1	68.6	1152.3	16.8	226.4	54.8	171.5	2882.0
290	9.7	104.7	39.1	65.6	1141.8	16.3	220.1	54.8	165.3	2875.5
300	9.5	102.0	39.1	62.8	1130.8	15.9	214.2	54.8	159.3	2868.2

<b>5-year Q<sub>attenuated</sub></b>	<b>39.13 L/s</b>	<b>100-year Q<sub>attenuated</sub></b>	<b>54.82 L/s</b>
<b>5-year Max. Storage Required</b>	<b>1235.5 m<sup>3</sup></b>	<b>100-year Max. Storage Required</b>	<b>2900.8 m<sup>3</sup></b>
<b>Est. 5-year Storage Elevation</b>	<b>99.10 m</b>	<b>Est. 100-year Storage Elevation</b>	<b>99.70 m</b>

**Summary of Release Rates and Storage Volumes**

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m <sup>3</sup> )	100-Year Release Rate (L/s)	100-Year Required Storage (m <sup>3</sup> )	100-Year Available Storage (m <sup>3</sup> )
Unattenuated Areas (U1)	46.8	0.0	99.9	0.0	0.0
Attenuated Areas	39.1	1235.5	54.8	2900.8	2906.7
<b>Total</b>	<b>85.9</b>	<b>1235.5</b>	<b>154.7</b>	<b>2900.8</b>	<b>2906.7</b>

Stormwater - Proposed Development  
City of Ottawa Sewer Design Guidelines, 2012



### Target Flow Rate

**2-year**  
i 34.2 mm/hr  
Q 210.4 L/s

### Estimated Post Development Peak Flow from Unattenuated Areas

**Area ID** U1+U2  
**Total Area** 0.617 ha  
**C** 0.34 Rational Method runoff coefficient

t <sub>c</sub> (min)	5-year					100-year				
	i (mm/hr)	Q <sub>actual</sub> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )	i (mm/hr)	Q <sub>actual</sub> <sup>*</sup> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )
15.9	80.6	46.8	46.8	0.0	0.0	137.8	99.9	99.9	0.0	0.0

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

### Estimated Post Development Peak Flow from Attenuated Areas

Q (total - uncontrolled) 110.5 L/s

**Area ID** STM200, CB12, STM100, STM101, CB8, L2, BUILDA BUILD, L1  
**Stage Attenuated Areas Storage Summary**

	Stage (m)	Surface Storage			Surface and Subsurface Storage			
		Ponding (m <sup>2</sup> )	h <sub>o</sub> (m)	delta d (m)	V <sup>*</sup> (m <sup>3</sup> )	V <sub>acc</sub> <sup>**</sup> (m <sup>3</sup> )	Q <sub>release</sub> <sup>†</sup> (L/s)	V <sub>drawdown</sub> (hr)
Orifice INV	98.10		0.00			0.0	0.0	0.00
Headwall INV	98.48	0	0.00	0.00	-	0.0	0.0	0.00
0.02m Ponding	98.50	20	0.02	0.02	0.2	0.2	15.3	0.00
0.12m Ponding	98.60	792	0.12	0.10	31.3	31.5	37.5	0.23
0.22m Ponding	98.70	2484.4	0.22	0.10	155.9	187.4	50.8	1.02
0.52m Ponding	99.00	2684.7	0.52	0.30	775.2	962.6	78.2	3.42
0.62m Ponding	99.10	2752.2	0.62	0.10	271.8	1234.4	85.3	4.02
0.92m Ponding	99.40	2960.9	0.92	0.30	815.5	2049.9	104.0	5.48
1.22m Ponding	99.70	3175.8	1.22	0.30	856.8	2906.7	119.7	6.74

\* V=Incremental storage volume

\*\*V<sub>acc</sub>=Total surface and sub-surface

† Q<sub>release</sub> = Release rate calculated from orifice equation

**Caivan**  
**3713 Borrisokane Road**  
**Proposed Site Conditions - For ICD Size**

Orifice Location      **STM MH 204**      Dia      226

Total Area      6.707 ha      (ALL ATT)

C      0.58 Rational Method runoff coefficient      *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

t <sub>c</sub> (min)	5-year					100-year				
	i (mm/hr)	Q <sub>actual</sub> † (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )	i (mm/hr)	Q <sub>actual</sub> † (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )
100	22.4	241.6	78.6	163.0	978.0	37.9	510.8	110.4	400.4	2402.2
110	20.8	224.5	78.6	145.9	963.1	35.2	474.4	110.4	364.0	2402.2
120	19.5	209.9	78.6	131.3	945.5	32.9	443.3	110.4	332.9	2396.7
130	18.3	197.2	78.6	118.7	925.6	30.9	416.4	110.4	306.0	2386.5
140	17.3	186.2	78.6	107.6	903.9	29.2	392.9	110.4	282.4	2372.4
150	16.4	176.4	78.6	97.8	880.5	27.6	372.1	110.4	261.7	2354.9
160	15.6	167.7	78.6	89.1	855.7	26.2	353.6	110.4	243.2	2334.5
170	14.8	159.9	78.6	81.3	829.7	25.0	337.1	110.4	226.6	2311.5
180	14.2	152.9	78.6	74.3	802.6	23.9	322.1	110.4	211.7	2286.2
190	13.6	146.5	78.6	67.9	774.4	22.9	308.6	110.4	198.1	2258.9
200	13.0	140.7	78.6	62.1	745.4	22.0	296.2	110.4	185.8	2229.7
210	12.6	135.4	78.6	56.8	715.6	21.1	285.0	110.4	174.5	2198.9
220	12.1	130.5	78.6	51.9	685.1	20.4	274.6	110.4	164.1	2166.6
230	11.7	125.9	78.6	47.4	653.9	19.7	265.0	110.4	154.6	2132.9
240	11.3	121.8	78.6	43.2	622.1	19.0	256.1	110.4	145.7	2098.0
250	10.9	117.9	78.6	39.3	589.7	18.4	247.9	110.4	137.5	2061.9
260	10.6	114.3	78.6	35.7	556.8	17.8	240.2	110.4	129.8	2024.7
270	10.3	110.9	78.6	32.3	523.5	17.3	233.1	110.4	122.6	1986.6
280	10.0	107.7	78.6	29.1	489.7	16.8	226.4	110.4	115.9	1947.6
290	9.7	104.7	78.6	26.2	455.5	16.3	220.1	110.4	109.6	1907.7
300	9.5	102.0	78.6	23.4	420.9	15.9	214.2	110.4	103.7	1867.0

**5-year Q<sub>attenuated</sub>      78.57 L/s**  
**5-year Max. Storage Required      978.0 m<sup>3</sup>**  
**Est. 5-year Storage Elevation      99.01 m**

**100-year Q<sub>attenuated</sub>      110.44 L/s**  
**100-year Max. Storage Required      2402.2 m<sup>3</sup>**  
**Est. 100-year Storage Elevation      99.52 m**

**Summary of Release Rates and Storage Volumes**

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m <sup>3</sup> )	100-Year Release Rate (L/s)	100-Year Required Storage (m <sup>3</sup> )	100-Year Available Storage (m <sup>3</sup> )
Unattenuated Areas (U1)	46.8	0.0	99.9	0.0	0.0
Attenuated Areas	78.6	978.0	110.4	2402.2	2906.7
<b>Total</b>	<b>125.3</b>	<b>978.0</b>	<b>210.4</b>	<b>2402.2</b>	<b>2906.7</b>

STORAGE SUMMARY  
ABIC -BUILDING/FOUNDATION DRAINAGE  
STORAGE VOLUME AVAILABLE BELOW OVERFLOW

Total Site		
Rainfall (mm)	Drainage Area (sq.m)	Volume of 10mm (cu.m)
10	11840	118.4

	ID	STM301
Structure Dia./Area (mm/mm <sup>2</sup> )		1200
Max Ponding		99.70
INV		98.76
Depth		0.94
V <sub>structure</sub> (m <sup>3</sup> )		1.1

	ID	450mm	CLEAR STONE
Storage Pipe Dia (mm)		450	0.45
L (m)		218.7	170.2
V <sub>sewer</sub> (m <sup>3</sup> )		34.8	55.5

\*Clear Stone Void Ratio of 40%

Total Subsurface Storage (m<sup>3</sup>) 91.4

**Storm Sewer Calculation Sheet**  
**Ultimate - Phase II Conditions**  
**2 Year Storm Event**

Area ID	Up	Down	Area (ha)	C (-)	Indiv AxC	Acc AxC	T <sub>C</sub> (min)	i <sub>2YR</sub> (mm/hr)	Q (L/s)	Sewer Data								
										DIA (mm)	Slope (%)	Length (m)	A <sub>hydraulic</sub> (m <sup>2</sup> )	R (m)	Velocity (m/s)	Qcap (L/s)	Time Flow (min)	Q / Q full (-)
CB12	CB12	STM100	0.078	0.56	0.04	0.04	10.0	76.8	9.4	200	1.00	59.6	0.031	0.050	1.04	32.8	1.0	0.29
STM100	STM100	STM101	0.769	0.75	0.58	0.62	11.0	73.3	126.3	525	0.20	113.9	0.216	0.131	0.89	192.3	2.1	0.66
STM101	STM101	STM102	1.060	0.63	0.67	1.29	13.1	66.7	239.2	525	0.32	130.5	0.216	0.131	1.12	243.3	1.9	0.98
							15.0											
STM200	STM200	STM201	0.385	0.63	0.24	0.24	10.0	76.8	52.0	450	0.25	34.6	0.159	0.113	0.90	142.6	0.6	0.36
	STM201	STM202			0.00	0.24	10.6	74.4	50.3	450	1.00	10.4	0.159	0.113	1.79	285.1	0.1	0.18
STM202	STM202	STM203	0.352	0.90	0.32	0.56	10.7	74.1	115.3	525	0.20	156.8	0.216	0.131	0.89	192.3	2.9	0.60
CB8	STM203	STM102	0.238	0.90	0.21	0.77	13.7	65.1	139.9	525	0.20	35.7	0.216	0.131	0.89	192.3	0.7	0.73
							14.4											
	STM102	OGS				2.07	15.0	61.7	354.0	600	0.70	1.5	0.283	0.150	1.82	513.7	0.0	0.69
	OGS	SWM AREA				2.07	15.0	61.7	353.9	600	0.60	85.7	0.283	0.150	1.68	475.6	0.8	0.74
							15.9											

<b>CB12</b>				<b>STM100</b>				<b>STM101</b>				<b>STM200</b>			
	Imp.	Perv.	Total						Imp.	Perv.	Total		Imp.	Perv.	Total
Area	0.041	0.038	0.078	Area	0.603	0.166	0.769	Area	0.656	0.405	1.060	Area	0.238	0.148	0.385
C	0.9	0.2	0.56	C	0.9	0.2	0.75	C	0.9	0.2	0.63	C	0.9	0.2	0.63
<b>STM202</b>				<b>CB8</b>				<b>BLDG A</b>				<b>BLDG B</b>			
	Imp.	Perv.	Total		Imp.	Perv.	Total		Imp.	Perv.	Total		Imp.	Perv.	Total
Area	0.352	0.000	0.352	Area	0.238	0.000	0.238	Area	0.246	0.000	0.246	Area	0.938	0.000	0.938
C	0.9	0.2	0.90	C	0.9	0.2	0.90	C	0.9	0.2	0.90	C	0.9	0.2	0.90
<b>U1</b>				<b>U2</b>				<b>L1</b>				<b>L2</b>			
	Imp.	Perv.	Total		Imp.	Perv.	Total		Imp.	Perv.	Total		Imp.	Perv.	Total
Area	0.118	0.275	0.393	Area	0.004	0.220	0.224	Area	0.000	0.435	0.435	Area	0.318	1.887	2.205
C	0.9	0.2	0.41	C	0.9	0.2	0.21	C	0.9	0.2	0.20	C	0.9	0.2	0.30
<b>PARKING</b>				<b>ALL ATT</b>				<b>U1 + U2</b>							
	Imp.	Perv.	Total		Imp.	Perv.	Total		Imp.	Perv.	Total				
Area	2.373	0.756	3.129	Area	3.628	3.079	6.707	Area	0.122	0.495	0.617				
C	0.9	0.2	0.73	C	0.9	0.2	0.58	C	0.9	0.2	0.34				

Storm Sewer Calculation Sheet  
Interim Ditch Calculation

Up	Down	Area	C	Indiv AxC	Acc AxC	T <sub>c</sub>	I	Q	Ditch Data												
									depth	Side Slope	Bot. Width	Mannings	Slope	Length	A <sub>flow</sub>	Wet. Per.	R	Velocity	Qcap	Time Flow	Q / Q full
		(ha)	(-)			(min)	(mm/hr)	(L/s)	(mm)	(X:1)	(m)	n	(%)	(m)	(m <sup>2</sup> )	(m)	(m)	(m/s)	(L/s)	(min)	(-)
		6.707	0.58	3.88	3.88	10.0	104.2	1123.3	1930	3	0.5	0.03	0.25	41.8	12.140	12.706	0.96	1.62	19,626.7	0.4	0.06
				0.00	3.88	10.4	102.0	1099.4	6600	3	0.5	0.03	0.20	20	133.980	42.242	3.17	3.22	431,151.9	0.1	0.00
				0.00	3.88	10.5	101.5	1093.8	5740	3	0.5	0.03	0.30	40	101.713	36.803	2.76	3.60	365,715.7	0.2	0.00
				0.00	3.88	10.7	100.5	1083.9	3020	3	0.5	0.03	0.20	20	28.871	19.600	1.47	1.93	55,718.0	0.2	0.02
				0.00	3.88	10.9	99.7	1074.9	1180	3	0.5	0.03	0.25	60	4.767	7.963	0.60	1.18	5,643.8	0.8	0.19
				0.00	3.88	11.7	95.8	1033.2	550	3	0.5	0.03	0.90	40	1.183	3.979	0.30	1.41	1,665.4	0.5	0.62
				0.00	3.88	12.2	93.8	1011.3	600	3	0.5	0.03	0.50	20	1.380	4.295	0.32	1.11	1,525.9	0.3	0.66







# Sizing Report

2733 Kanasita Drive • Suite 111 • Chattanooga, TN 37343 • Phone: (423) 870-8888 • Fax: (423) 826-2112 • www.aquashieldinc.com

## Site Information

Project Name: 3713 Borrisokane Rd.

Site Area (hectares): 2.976

Unit Label: OGS 1

Runoff Coeff. : .75

Unit Location: Ottawa, ON

Target Removal Efficiency(%): 80% based on NJDEP

## Product Recommendation

Aqua-Swirl™ Model	Net Annual TSS Removal Efficiency	Chamber Diameter	Maximum Inside Diameter (mm)		Oil/Debris Storage Capacity	Sediment Storage Capacity
<b>AS-7</b>	<b>84.96 %</b>	2135 mm.	Offline	BYP <sup>5</sup>	2047 L	2.52 m <sup>3</sup>
			457 mm.	1067 mm.		

## Rainfall Information

NCDC Station<sup>1</sup>: OTTAWA MACDONALD-CARTIER INT'L A Data Range<sup>4</sup>: 261,759 readings taken hourly between 1967 to 2007 (~40 years)

Rainfall Event Range (mm/hre)	Rainfall Interval Point (mm/hre)	Operating Rate (Lps/m <sup>2</sup> )	Total Rainfall (%)	Removal Efficiency (%) <sup>2</sup>	Relative Efficiency(%)
02.00 - 03.00	02.50	04.34	44.18	93.15	41.16
03.00 - 04.00	03.50	06.07	21.52	90.26	19.42
04.00 - 05.00	04.50	07.80	11.68	86.85	10.14
05.00 - 06.00	05.50	09.54	06.68	82.93	05.54
06.00 - 07.00	06.50	11.27	04.03	78.51	03.16
07.00 - 08.00	07.50	13.01	01.99	73.57	01.46
08.00 - 09.00	08.50	14.74	01.84	68.12	01.25
09.00 - 10.00	09.50	16.48	01.81	62.17	01.13
10.00 - 15.00	12.50	21.68	04.12	41.25	01.70
Total Cumulative Rainfall %:			<b>97.85<sup>3</sup></b>	Net Annual %:	<b>84.96</b>

## Sales Agent Information

Agent Name: Dave KanTERS

Phone: 416-347-2799

Company Name: Soleno

Fax: \_\_\_\_\_

Address: 347, 15-75 Bayly St. W.

E-mail: dkanTERS@soleno.com

City, State Zip: Ajax, ON L1S7K7

## Footnotes

- Recorded as hourly precipitation rainfall data (inches), National Climatic Data Center (NCDC)
- Based on Tennessee Tech University laboratory testing of the AquaSwirl™ Model AS-3 for OK-110 silica particles 50-125 microns(Neary, 2002)
- 90% Rainfall Event, calculated as a cumulative percentile of individual events, www.stormwatercenter.net, sizing criteria (Center for Watershed Protection)
- NCDC data may not be consecutive, skipping days, months and/or years in the range of dates.
- The Aqua-Swirl™ Internal Bypass (BYP) provides full treatment of the "first flush," while the peak design storm is diverted and channeled through the main conveyance pipe. Please refer to your local representative for more information.
- When applicable, the performance curve was adjusted via Peclet Scaling to provide estimated sizing per NJDEP PSD (d50 = 67 microns).

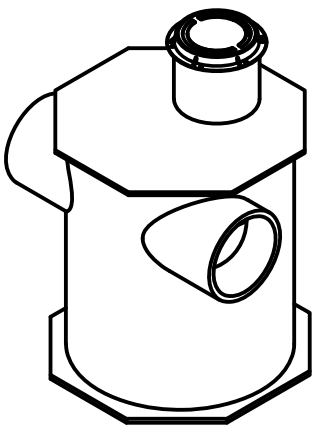
To receive pricing and/or technical support on the Aqua-Swirl, please contact Soleno. (www.Soleno.com)

Paul Antoine  
Sales Representative  
Tel: 613-292-4094  
Email: pantoine@soleno.com

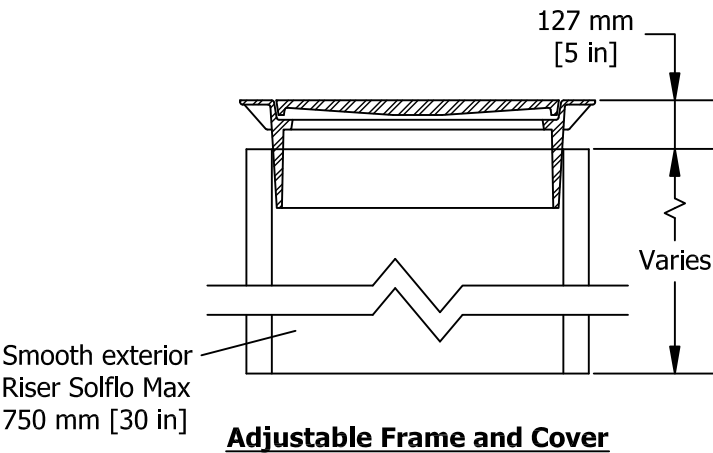
David Kanthers  
Engineer, Technical Service  
Tel: 416-347-2799  
Email: dkanthers@soleno.com

Aqua-Swirl High Density Polyethylene (HDPE)  
Stormwater Treatment System

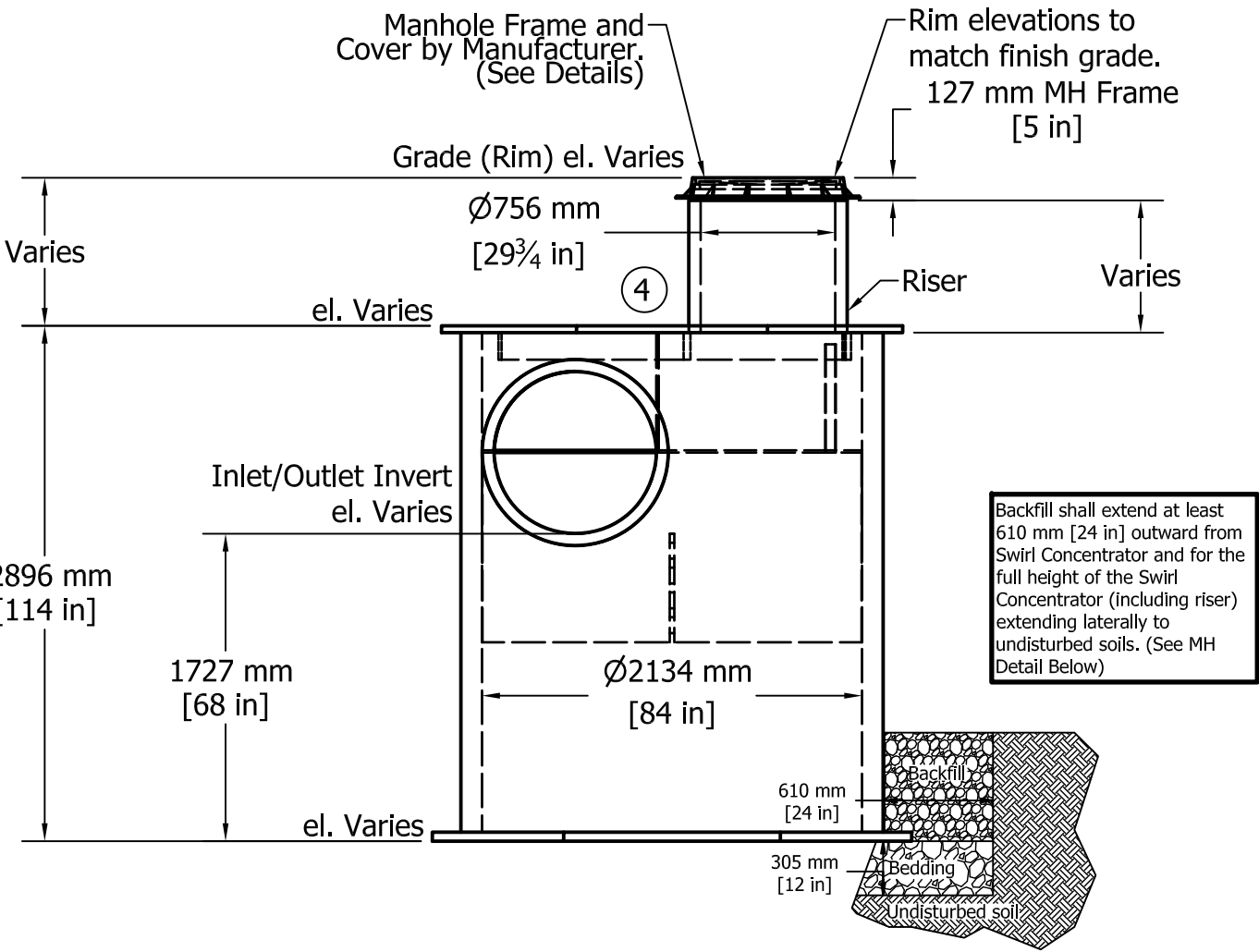
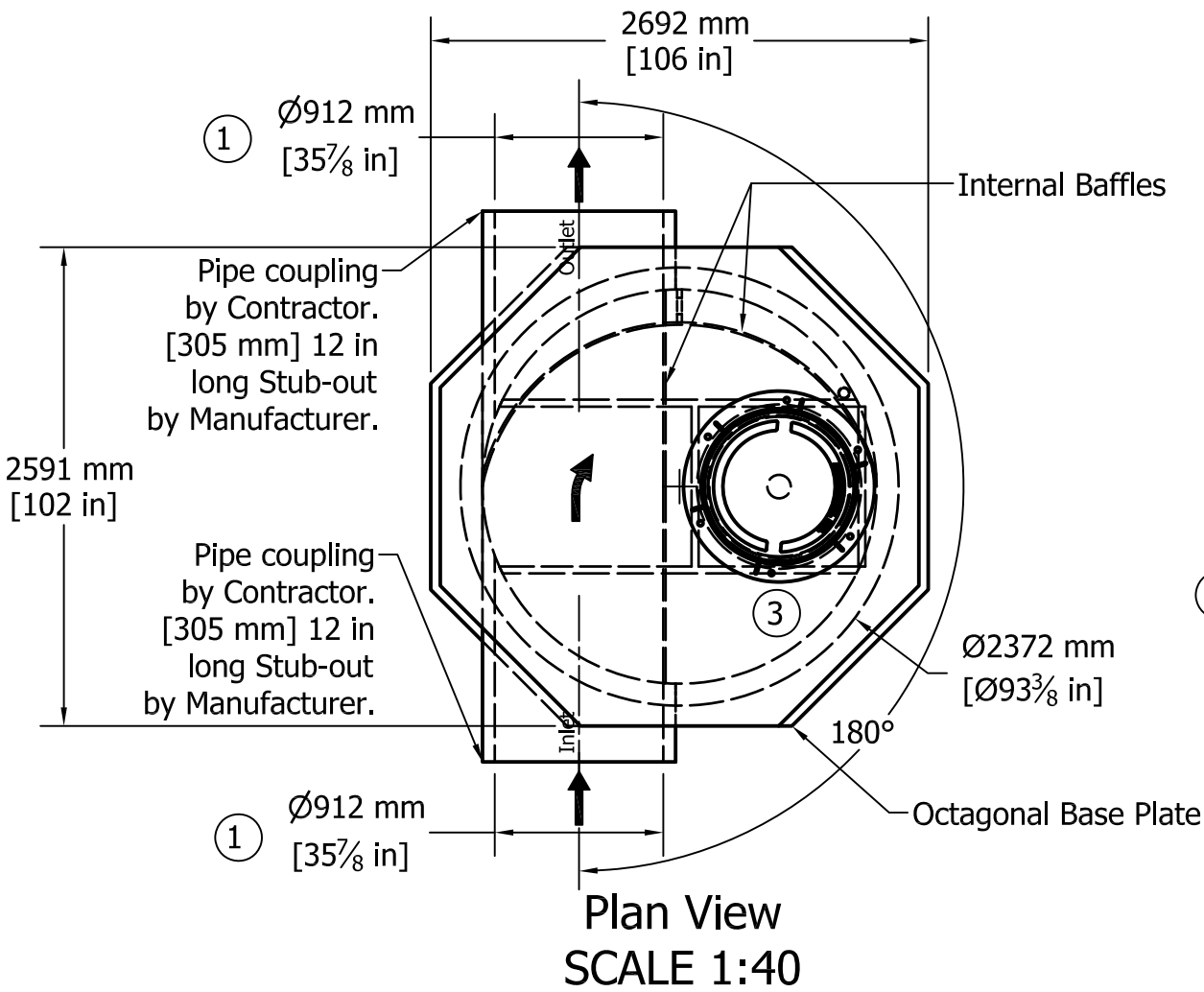
Please see accompanied Aqua-Swirl specification notes. See Site Plan for actual system orientation. Approximate dry (pick) weight: 1700 kg [3800 lbs].



Projected View  
SCALE 1:80



- System shall be designed for the following capacities:  
Swirl Treatment Flow: 244 L/s [8.6 cfs]  
Swirl Sediment Storage: 2.55 m<sup>3</sup> [90 ft<sup>3</sup>]  
Swirl Oil/Debris Storage: 2044 L [540 gal]
- AS-7 BYP inlet/outlet pipe size ranges from 381 mm [15 in] to 1067 mm [42 in].
  - AS-7 chamber height may vary from 2413 mm [95 in] to 3099 mm [122 in], depending on inlet/outlet pipe size.
  - Orientation may vary from a minimum of 90° to a maximum of 180°.
  - A concrete relieving pad (by Contractor) is required for installation of all AS-5 to AS-11 under traffic areas or under non-traffic areas when depth of cover above top of chamber (i.e. riser length) is greater than 2.4 m [8 ft].



Elevation View  
SCALE 1:40

---

---

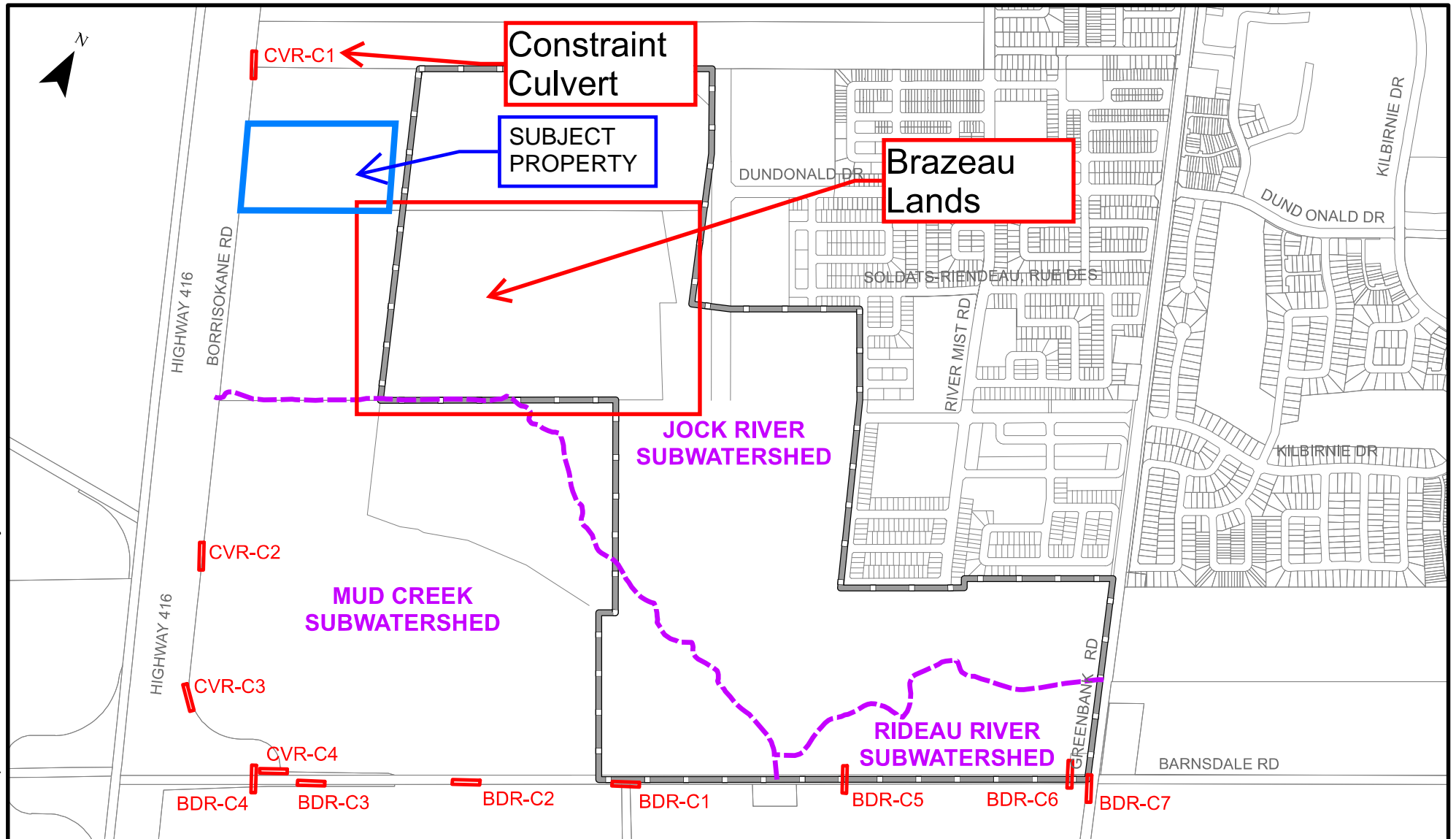
***Barrhaven South Urban Expansion Area Excerpts  
J.L. Richards & Associates Limited***

*JLR No. 26610  
May 4, 2018 Rev2*

---

---





**Legend**

— Culvert

- - - Subwatershed Limits

**Study Area**

PROJECT: **BARRHAVEN SOUTH URBAN EXPANSION AREA**  
OTTAWA, ONTARIO

DRAWING: **BSUEA EXTENTS, DRAINAGE DIVIDE AND CULVERTS**

**JLR J.L.Richards**  
ENGINEERS · ARCHITECTS · PLANNERS  
www.jlrichards.ca

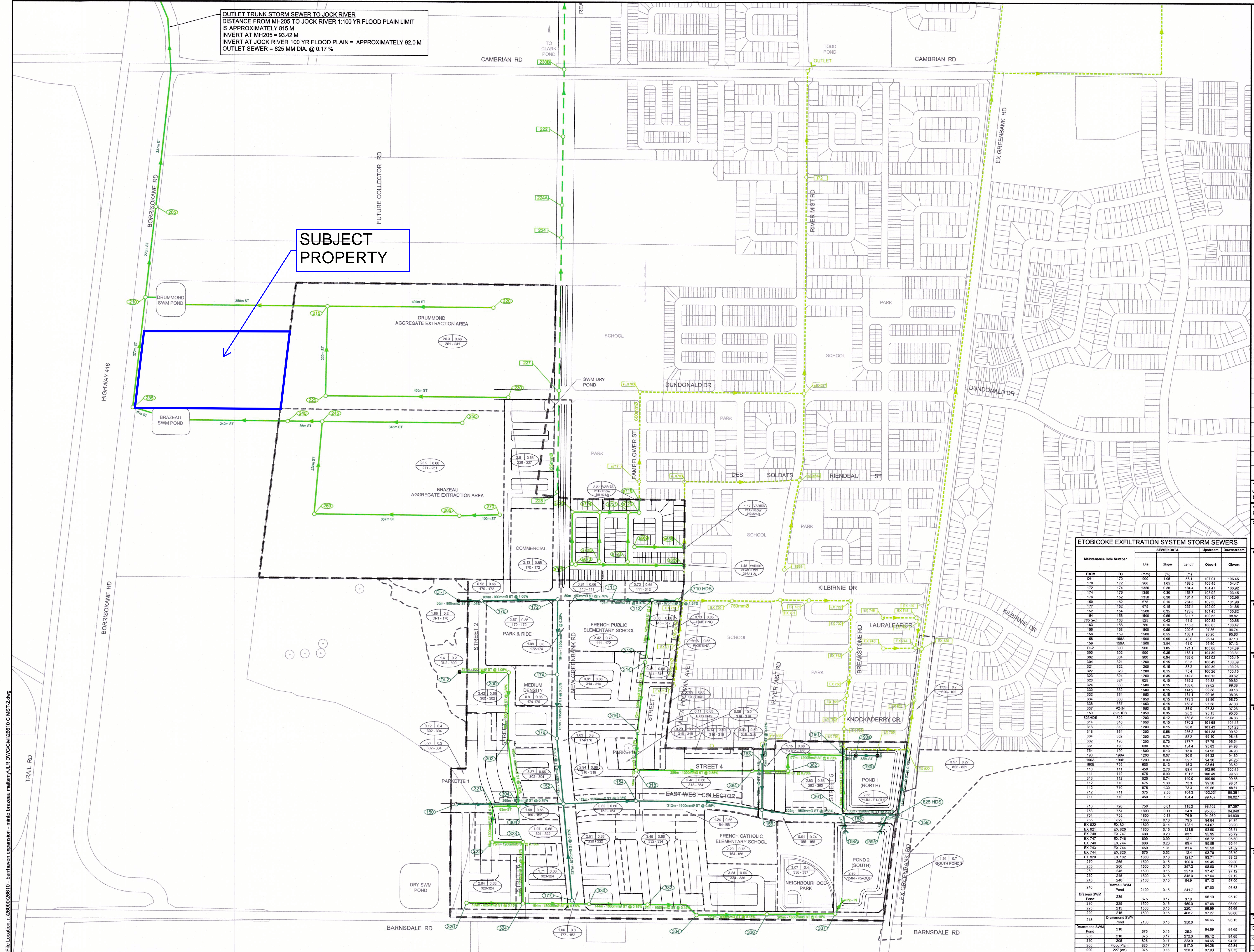
This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.

DESIGN:	BP
DRAWN:	KTK
CHECKED:	GF
JLR #:	26610

DRAWING #: **FIGURE 3-1**







**LEGEND**

- PROPOSED STORM (EES SYSTEM), PER 2018 BSUEA MSS
- PROPOSED STORM (CONVENTIONAL), PER 2018 BSUEA MSS
- FUTURE STORM, PER 2014 BS MSS
- EXISTING STORM
- DRAINAGE BOUNDARY
- LIMIT OF STUDY AREA FOR BSUEA
- HYDROLOGY DYNAMIC SEPARATOR
- AREA IN HECTARES\*
- RUNOFF COEFFICIENT\*
- PIPE REACH UPSTREAM MAINTENANCE HOLE TO DOWNSTREAM MAINTENANCE HOLE

\* IF RED, AREAS DESIGNATED AS COMMERCIAL, SCHOOLS OR PARKS

**NOTE:**

ROADWAYS WITHIN A DRAINAGE AREA WHICH IS TRIBUTARY TO AN EES SEWER, ARE TO BE DESIGNED WITH EES SEWERS. CONVERSELY, ROADWAYS WITHIN A DRAINAGE AREA WHICH IS TRIBUTARY TO A CONVENTIONAL SEWER, ARE TO BE DESIGNED WITH CONVENTIONAL SEWERS.

No.	ISSUE / REVISION	DD/MM/YY
4	ISSUED FOR PLANNING COMMITTEE APPROVAL	04/05/18
3	ADDRESS COMMENTS, RE-ISSUE BSUEA MSS 2ND SUBMISSION	26/02/18
2	ISSUED AS PART OF DRAFT MSS	20/09/17
1	ISSUED FOR PRE-TAC WORKING MEETING	31/08/17

This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.

VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING.

SCALE: 1:4000

CLIENT:

CONSULTANT:

**J.L. Richards**  
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

LICENCED PROFESSIONAL ENGINEER  
W. H. L. DALRYMPLE  
11/1/13  
PROVINCE OF ONTARIO

PROJECT:

**BARRHAVEN SOUTH  
URBAN EXPANSION AREA  
(BSUEA)**

DRAWING:

**MASTER STORM DRAINAGE PLAN  
EES**

DESIGN: JW

DRAWN: CJM

CHECKED: LD

JLR #: 26610

DRAWING #:

**MST-2**

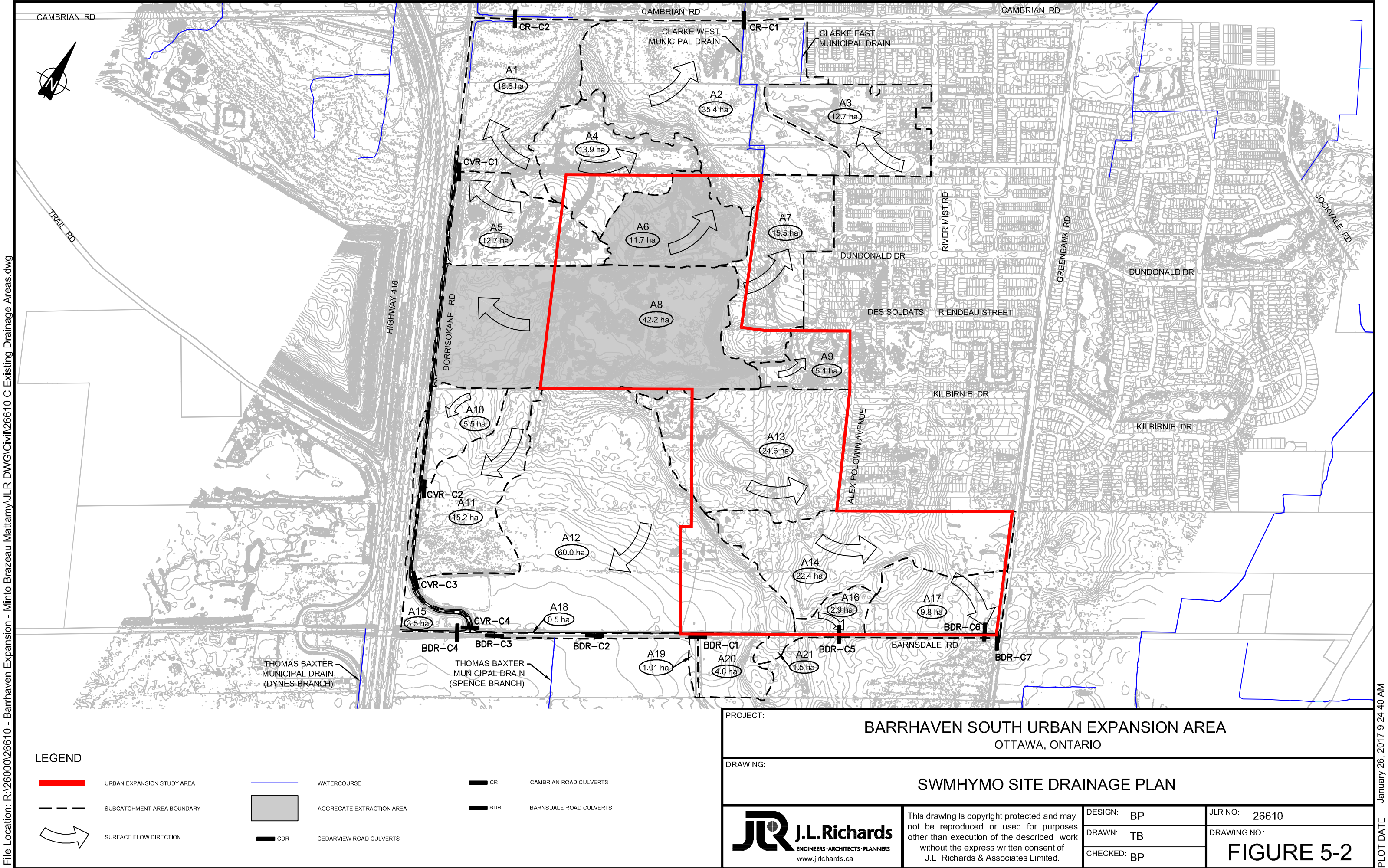
ETOBICOKE EXFILTRATION SYSTEM STORM SEWERS									
		SEWER DATA					Upstream	Downstream	
Maintenance Hole Number		Dis	Slope	Length	Obvert	Obvert			
FROM	TO	(mm)	(%)	(m)					
D-1	170	900	1.05	58.1	107.04	106.45			
170	172	900	1.05	186.5	106.45	104.47			
172	174	1350	0.30	184.4	104.47	103.92			
174	176	1350	0.30	186.7	103.92	103.48			
176	178	1350	0.30	161.4	103.48	102.86			
178	180	875	0.15	264.8	102.86	101.90			
180	182	875	0.15	231.4	101.90	101.05			
182	184	1500	0.35	178.8	101.05	100.22			
184	186	1500	0.35	311.7	100.22	98.82			
186	188	1500	0.35	41.5	100.22	100.55			
188	190	1500	0.35	118.5	100.55	100.47			
190	192	1500	0.35	202.8	97.78	96.74			
192	194	1500	0.35	108.1	96.74	95.60			
194	196	1500	0.35	43.0	95.60	97.13			
D-2	300	900	1.05	121.1	106.88	104.39			
300	302	900	0.35	161.1	104.39	103.81			
302	304	900	0.35	162.8	103.81	103.49			
304	321	1200	0.15	63.3	103.49	103.28			
321	322	1200	0.15	88.2	103.28	103.28			
322	323	1200	0.15	75.4	103.28	103.15			
323	323	1200	0.15	75.4	103.28	103.15			
323	324	1200	0.15	148.8	103.15	102.45			
324	324	825	0.15	136.2	102.45	102.45			
324	330	1500	0.15	160.8	102.45	102.45			
330	334	1500	0.15	144.2	102.45	102.45			
334	334	1500	0.15	131.1	102.45	102.45			
334	336	1500	0.15	168.8	102.45	102.45			
336	337	1500	0.15	131.3	99.96	97.33			
337	337	1500	0.15	168.8	97.33	96.07			
337	337	1500	0.15	26.2	96.07	97.33			
337	337	1500	0.15	26.2	97.33	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			
337	337	1500	0.15	26.2	97.28	97.28			







File Location: R:\26000\26610 - Barrhaven Expansion - Minto Brazeau Mattamy\JLR DWG\Civil\26610 C Existing Drainage Areas.dwg





April 22, 2020  
File: PE4810-LET.02

**Caivan Communities**  
2934 Baseline Road, Suite 204  
Ottawa, Ontario  
K2H 1B2

Attention: **Mr. Hugo Lalonde**

Subject: **Response to Site Plan Comments**  
**City File No. D01-01-20-0001, D02-02-20-0002, D07-12-20-0002**  
**Re: Environmental Comments – 3713 Borisokane Road, Ottawa**

154 Colonnade Road South  
Ottawa, Ontario  
Canada, K2E 7J5  
**Tel: (613) 226-7381**  
**Fax: (613) 226-6344**

Geotechnical Engineering  
Environmental Engineering  
Hydrogeology  
Geological Engineering  
Materials Testing  
Building Science  
Archaeological Services

[www.patersongroup.ca](http://www.patersongroup.ca)

Dear Sir,

Paterson Group (Paterson) have prepared this letter in response to the Environmental Comments issued by the City of Ottawa (City), with regards to the proposed development of 3713 Borisokane Road. More specifically, this letter addresses Comment 1 and the potential for leachate-related groundwater impacts.

### **Comment 1**

The site is located approximately 150 m east and down-gradient of the Trail Rd landfill. The phase one ESA has not considered the landfill as a potentially contaminating activity impacting the site given its distance, and thus, the phase two ESA has not tested groundwater for leachate-related parameter.

### **Response**

The Report for the 2018 Monitoring and Operating Program for the Trail Road Landfill Site, prepared by Dillon Consulting and dated May 2019, was reviewed by Paterson as part of the Phase I ESA, the findings of which are discussed below.



### **Groundwater Leachate-Related Parameters**

The Trail Road Landfill Site and surrounding lands are situated on a northwest-southeast trending ridge of glacially deposited sand and gravel. A deep sand and gravel aquifer is present beneath the entire site, while a shallow sand aquifer is present above a discontinuous clay layer, which has an influence over the local hydrogeology and thereby landfill leachate groundwater influences in the area.

The groundwater flow beneath the eastern portion of the landfill site generally flows to the northwest, towards the dewatering pond, in both the shallow and deep aquifers. The landfill site is therefore oriented down-gradient relative to the subject property.

Based on analytical testing completed as part of the 2018 monitoring program, no volatile organic compounds (VOC) were detected in the shallow aquifer Monitoring Well M8B-2 (situated along the east side of Borisokane Road immediately west of the subject property). While alkalinity and dissolved organic carbon (DOC) parameters were considered to be slightly elevated relative to previous monitoring events, the groundwater at this location was not considered to have been impaired by landfill leachate.

Upper to mid deep aquifer Monitoring Wells M180-1, M79-1 and M8B-1, situated along the east side of Borisokane Road immediately southwest, west and northwest of the subject property, were also sampled as part of the 2018 monitoring program. Several leachate indicator parameter concentrations at each of the monitoring well locations were elevated when compared to reference values, including chloride, calcium, alkalinity and hardness. These parameters were considered to be associated with the use of road salt and not representative of leachate impacts.

No VOC concentrations were identified in monitoring wells M79-1 and M8B-1, while a concentration of m/p-xylene (0.8µg/L) was identified at M180-1, southwest of the subject property. The identified concentration is well below the Ministry of the Environment, Conservation and Parks (MECP) Table 3 concentration of 4,200 µg/L. As noted previously, Dillon identified no interpreted landfill leachate impairment at these locations. Paterson concurs with the opinion presented by Dillon; in our opinion the trace xylene concentration identified is associated with vehicular traffic along Highway No. 416.

Based on the separation distance and down-gradient orientation of the Trail Road Landfill Site relative to the subject property, in combination with the findings of the 2018 Monitoring and Operating Program prepared by Dillon, **it is our opinion that the Trail Road Landfill Site has not impacted the subject property and therefore does not represent an area of potential environmental concern on the subject land.** The findings of the Phase I and Phase II ESA reports prepared by Paterson are considered to satisfy O.Reg.153/04 for the purpose of filing a Record of Site Condition.

Mr. Hugo Lalonde  
Page 3  
File: PE4810-LET.02

We trust this information satisfies your requirements.

**Paterson Group Inc.**



Karyn Munch, P.Eng. QP<sub>ESA</sub>



Mark D'Arcy, P.Eng. QP<sub>ESA</sub>



**Report Distribution:**

- ☐ Caivan Communities
- ☐ City of Ottawa



**re: Groundwater Field Investigation**  
**Proposed Warehouse Complex - 3713 Borrisokane Road - Ottawa**  
**to:** Caivan Greenbank North Inc. - **Mr. Hugo Lalonde** - hugo.lalonde@caivan.com  
**date:** May 20, 2020  
**file:** PG5155-MEMO.04 Revision 1

---

Further to your request, Paterson Group (Paterson) has prepared the following memorandum to provide an overview of the field program to delineate the groundwater elevations at the east side of the subject site. The current memorandum should be read in conjunction with Paterson report PG5155-1 Revision 1, dated February 10, 2020.

## **Background**

It is understood that an infiltration pond is proposed for the subject site as shown on Paterson Drawing PG5016-1 Rev.3 - Test Hole Location Plan. The infiltration gallery is proposed to be placed in proximity to the northeast corner of the site. It is our understanding that the base elevation of the proposed infiltration gallery will be at 97.5 m asl. A field program consisting of test pits left open for 48 hours was completed in the east end of the subject site that extended to a maximum depth of 9 m below ground surface. Additional test pits were completed south of the proposed infiltration pond to delineate further groundwater conditions.

## **Field Investigation**

The majority of the area consists of a silty clay fill material with sand, gravel, and cobbles or a silty sand fill material with clay, gravel and cobbles. The intermixed fill has led to various perched groundwater conditions in the shallow fill material. In order to review the groundwater conditions, eleven test holes were extended to approximately 96 to 99 m asl. See attached Paterson Soil Profile and Test Data sheets for specific profiles at each location. The test hole locations can be found on the attached Paterson Drawing PG5016-1 Rev. 3 - Test Hole Location Plan.

The test holes in proximity to the proposed infiltration pond consisted of TP74, TP75, TP76 and TP77. The test pits were excavated and allowed to remain open for 48 hours to provide stabilized groundwater elevations. It is expected that the open hole water levels provide a slightly higher groundwater elevation due to the reduced restrictions related to the removal of overburden within the test hole.

Table 1: Infiltration Pond Area Groundwater Elevations	
Test Hole	Groundwater Elevation (m asl)
TP74	98.77
TP75	97.01
TP76	Dry to 95.9
TP77	97.51

TP78 was completed in proximity to the proposed septic tankage for the sewage system. The overburden material consisted of a silty sand fill material with some gravel, cobbles, and boulders and trace clay. The test pit was dry to below the underside of the proposed sewage system tankage.

Cross sections of the area have been completed in a north-south (Section D-D') direction and an east-west (Section E-E') direction. The proposed grading and pond cross section have been included in the sections. See attached plan Paterson drawing PG5016-7 - Cross Section D-D' and E-E'.

## Dewatering Review

The sewage system is located above the existing groundwater elevations and would be able to be constructed without requiring pumping activities.

The proposed infiltration pond is located within an area of perched groundwater within the low hydraulic conductivity fill material noted within the test holes, such as TP74 which encountered a higher perched groundwater condition than the adjacent test holes. The groundwater was located at a higher elevation due to a restriction to lateral flow at this location. TP76 was noted to be dry to almost 3 m below the perched groundwater measured in TP74. It is expected that the low hydraulic conductivity fill material in the area of the test holes contains limited groundwater and it is expected that pumping of groundwater will not be required to complete the construction of the proposed infiltration pond.

It should be further noted that the subject site is not considered to be suitable to promote infiltration of stormwater from the proposed development due to the presence of the underlying clay deposit and low hydraulic conductivity fill across the majority of the subject site.



We trust that this information satisfies your requirements.

Best Regards,

**Paterson Group Inc.**



Michael S. Killam, P.Eng.



David J. Gilbert, P.Eng.

Attachments:

- ☐ Soil Profile and Test Data
- ☐ Drawing PG5016-1 Rev.3 - Test Hole Location Plan
- ☐ Drawing PG5016-7 - Cross Section D-D' and E-E'

**Paterson Group Inc.**

**Head Office and Laboratory**  
154 Colonnade Road South  
Ottawa - Ontario - K2E 7J5  
Tel: (613) 226-7381 Fax: (613) 226-6344

**Northern Office and Laboratory**  
63 Gibson Street  
North Bay - Ontario - P1B 8Z4  
Tel: (705) 472-5331 Fax: (705) 472-2334

**St. Lawrence Office**  
993 Princess Street  
Kingston - Ontario - K7L 1H3  
Tel: (613) 542-7381

## SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

**Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

DATUM	Geodetic
-------	----------

FILE NO.

PG5155

REMARKS

HOLE NO.

TP74

### BORINGS BY Excavator

**DATE** May 6, 2020

[illegible]

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario

DATUM Geodetic




REMARKS

BORINGS BY Excavator

DATE May 6, 2020

FILE NO. PG5155

HOLE NO. TP75

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	105.01						
FILL: Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris and organics		G	1			1	104.01						
						2	103.01						
						3	102.01						
FILL: Brown silty sand, some clay and gravel, trace debris		G	2			4	101.01						
						5	100.01						
						6	99.01						
						7	98.01						
						8	97.01						
End of Test Pit						9	96.01						
(Groundwater infiltration at 8.0m depth)								20	40	60	80	100	
								Shear Strength (kPa)					
								▲ Undisturbed    △ Remoulded					

## SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

**Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

**DATUM**      Geodetic

FILE NO.

**PG5155**

REMARKS

HOLE NO.

TP76

### BORINGS BY Excavator

**DATE** May 6, 2020

[illegible]

## SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

**Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

DATUM	Geodetic
-------	----------

FILE NO.

PG5155






REMARKS

HOLE NO.

TP77

**BORINGS BY** Excavator

**DATE** May 6, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	101.51						
FILL: Brown sandy silt, some gravel, occasional cobbles and boulders, trace debris and clay		G	1										
1.20						1	100.51						
FILL: Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris		G	2										
3.90						2	99.51						
FILL: Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris		G	3										
5.60						3	98.51						
5.80						4	97.51						
Compact, brown SILTY SAND		G	3										
Stiff, brown SILTY CLAY		G	4										
End of Test Pit													
(Groundwater infiltration at 4.0m depth)													
			</										

[illegible]

DATUM	Geodetic
-------	----------

FILE NO. PG5155



REMARKS

HOLE NO. TP79

**BORINGS BY** Excavator

**DATE** May 7, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
<b>FILL:</b> Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris and organics		G	1			0	104.07					V
						1	103.07					
----- 1.70 -----												
<b>FILL:</b> Brown silty sand, some gravel, occasional cobbles and boulders, trace clay, debris and organics		G	2			2	102.07					
						3	101.07					

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
<b>FILL:</b> Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris and organics		G	1			0	105.72					
						1	104.72					
						2	103.72					
		G	2			3	102.72					
						4	101.72					
						5	100.72					
		G	4			6	99.72					
				7	98.72							
7.80												
Compact, brown <b>SILTY SAND</b>		G	5			8	97.72					▽
8.50												
End of Test Pit												
(Groundwater infiltration at 8.0m depth)												
										</		






## SOIL PROFILE AND TEST DATA

**Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

FILE NO. PG5155

HOLE NO. TP97

**DATE** May 8, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	103.91						
<b>FILL:</b> Brown sandy silt, some clay and gravel, occasional cobbles and boulders, trace debris and organics		G	1			1	102.91						
		G	2			2	101.91						
		G	3			3	100.91						
		G	4			4	99.91						
<b>FILL:</b> Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris and organics						5	98.91						
		G				6	97.91						
Compact, brown <b>SILTY SAND</b>		G	5			7	96.91						
End of Test Pit													
(Groundwater infiltration at 6.0m depth)													

20406080100

Shear Strength (kPa)

▲ Undisturbed    △ Remoulded

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Excavator



DATE May 8, 2020

FILE NO.

PG5155

HOLE NO.

TP98

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	103.97						
FILL: Brown sandy silt, occasional cobbles and boulders, trace clay, gravel and organics		G	1			1	102.97						
		G	2			2	101.97						
		G	3			3	100.97						
						4	99.97						
						5	98.97						
	6.00					6	97.97						
FILL: Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris and organics		G	4										
						7	96.97						
	8.00												
End of Test Pit  (TP dry upon completion)		G	5			8	95.97						

## SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

**Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

DATUM	Geodetic
-------	----------

FILE NO.

PG5155

REMARKS

HOLE NO.

TP99

**BORINGS BY** Excavator

**DATE** May 8, 2020

[illegible]

## SOIL PROFILE AND TEST DATA

**Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

DATUM	Geodetic
-------	----------

FILE NO. PG5155

REMARKS

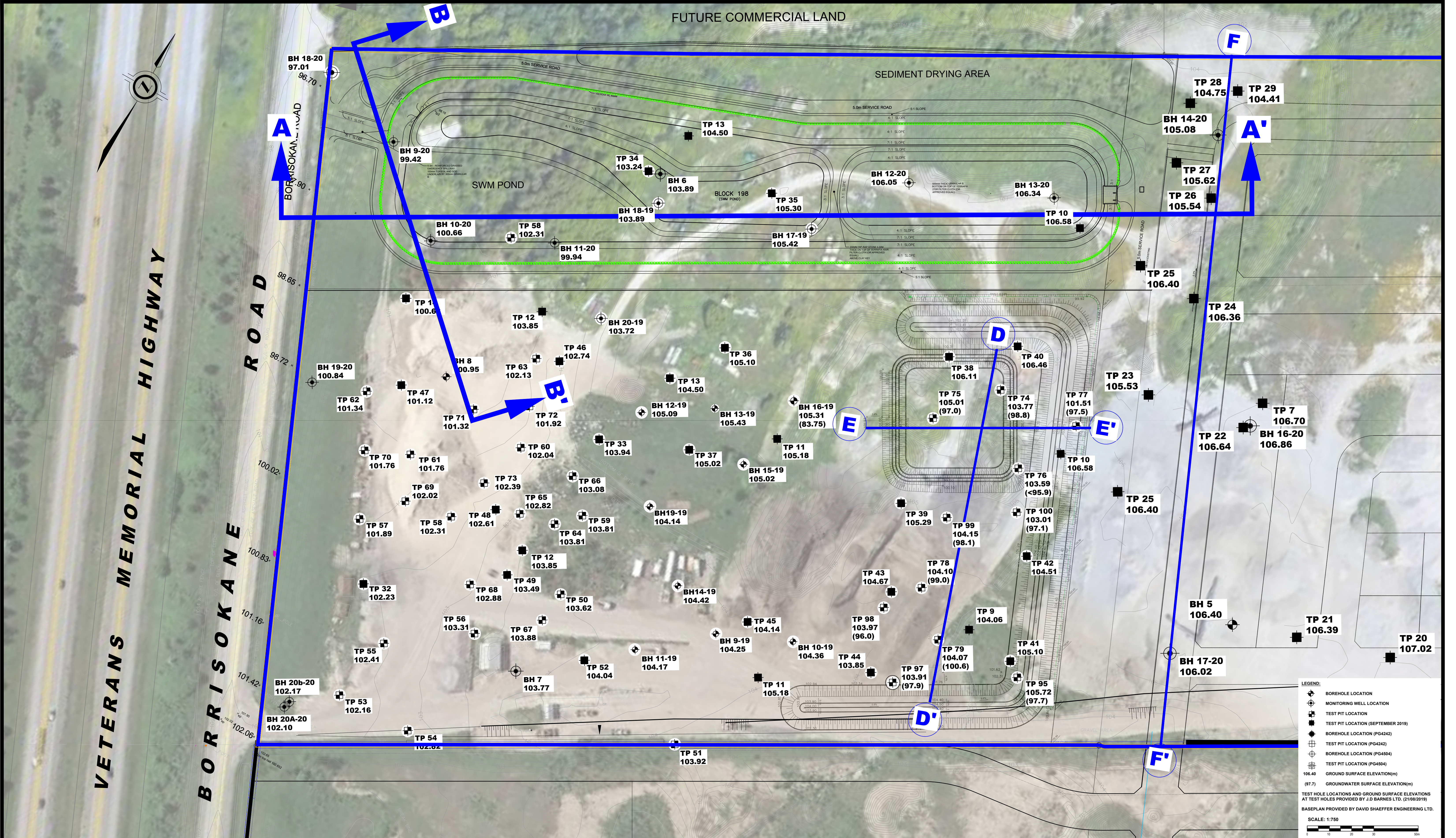
HOLE NO. **TP100**

**BORINGS BY** Excavator

**DATE** May 1, 1985

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	103.01					
<b>FILL:</b> Brown silty clay, some sand and gravel, occasional cobbles and boulders, trace debris and organics		G	1			1	102.01					
		G	2			2	101.01					
		G	3			3	100.01					
		G	4			4	99.01					
		G	5			5	98.01					
5.90 Compact, brown <b>SILTY SAND</b>						6	97.01					
6.40 End of Test Pit  (Groundwater infiltration at 5.9m depth)												
								20	40	60	80	100
								<b>Shear Strength (kPa)</b>				
								▲ Undisturbed    △ Remoulded				





**patersongroup**  
consulting engineers

154 Colonnade Road South  
Ottawa, Ontario K2E 7J5  
Tel: (613) 226-7381 Fax: (613) 226-6344

3	LOCALIZED ABIC SITE VIEW AND CROSS SECTIONS	13/05/2020	DJG
2	TP74 TO TP 100 ADDED	11/05/2020	DJG
1	BH25-20 TO BH28-20 ADDED	23/04/2020	DJG
NO.	REVISIONS	DATE	INITIAL

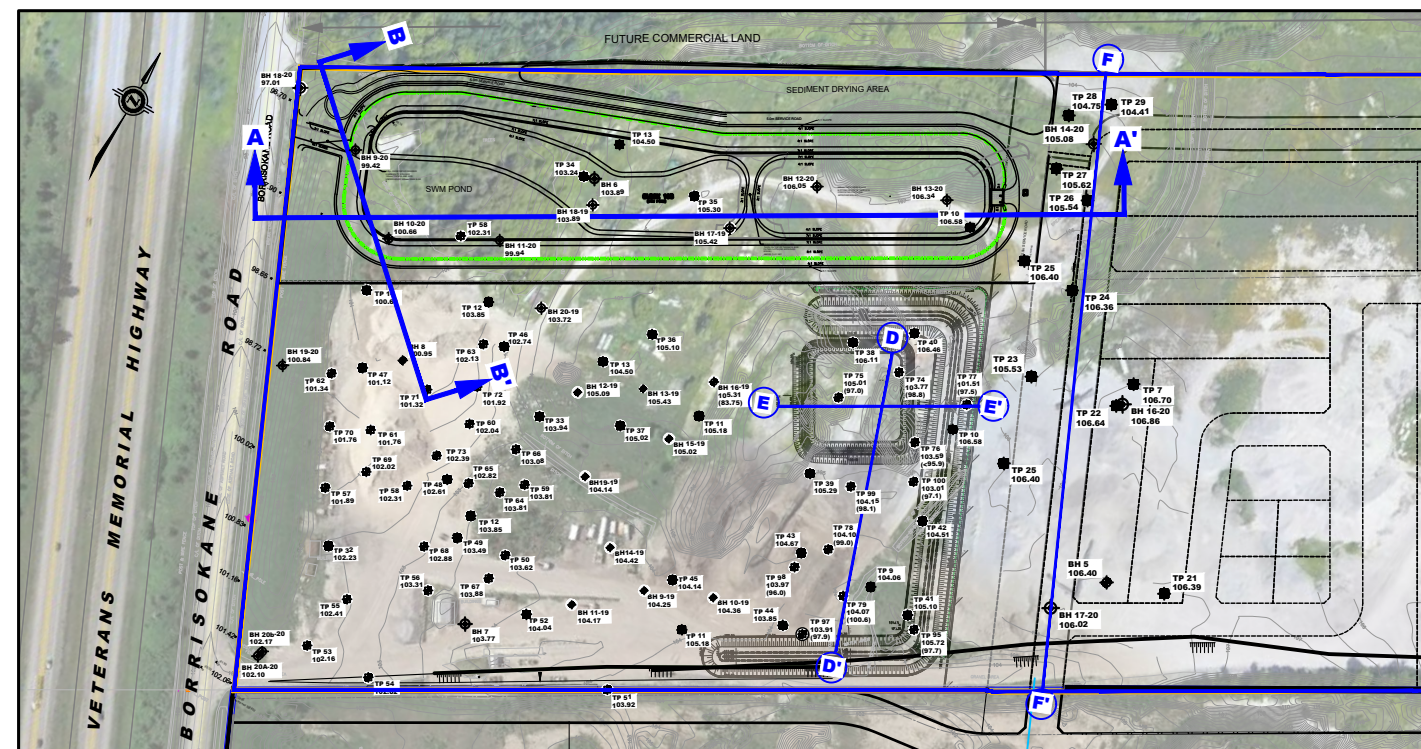
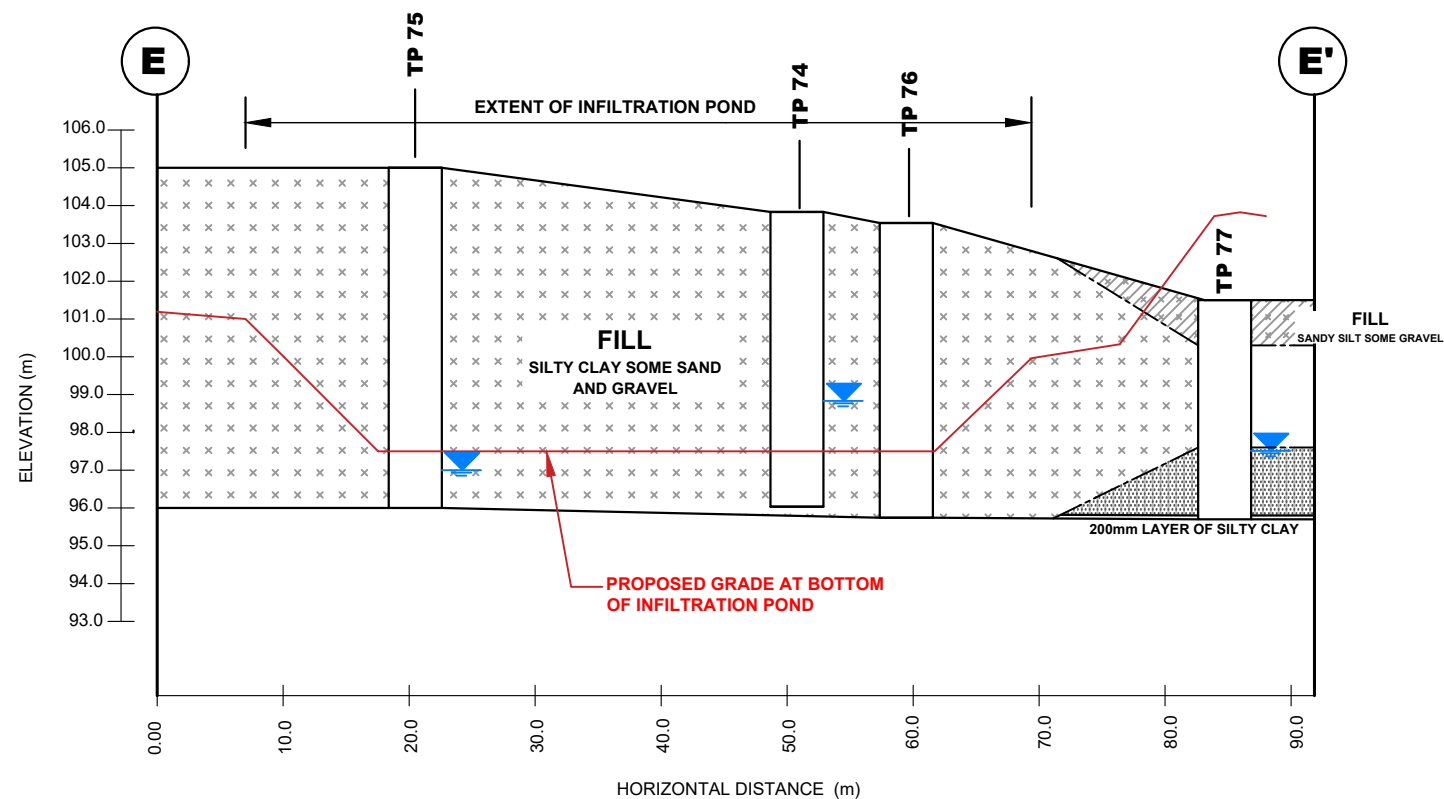
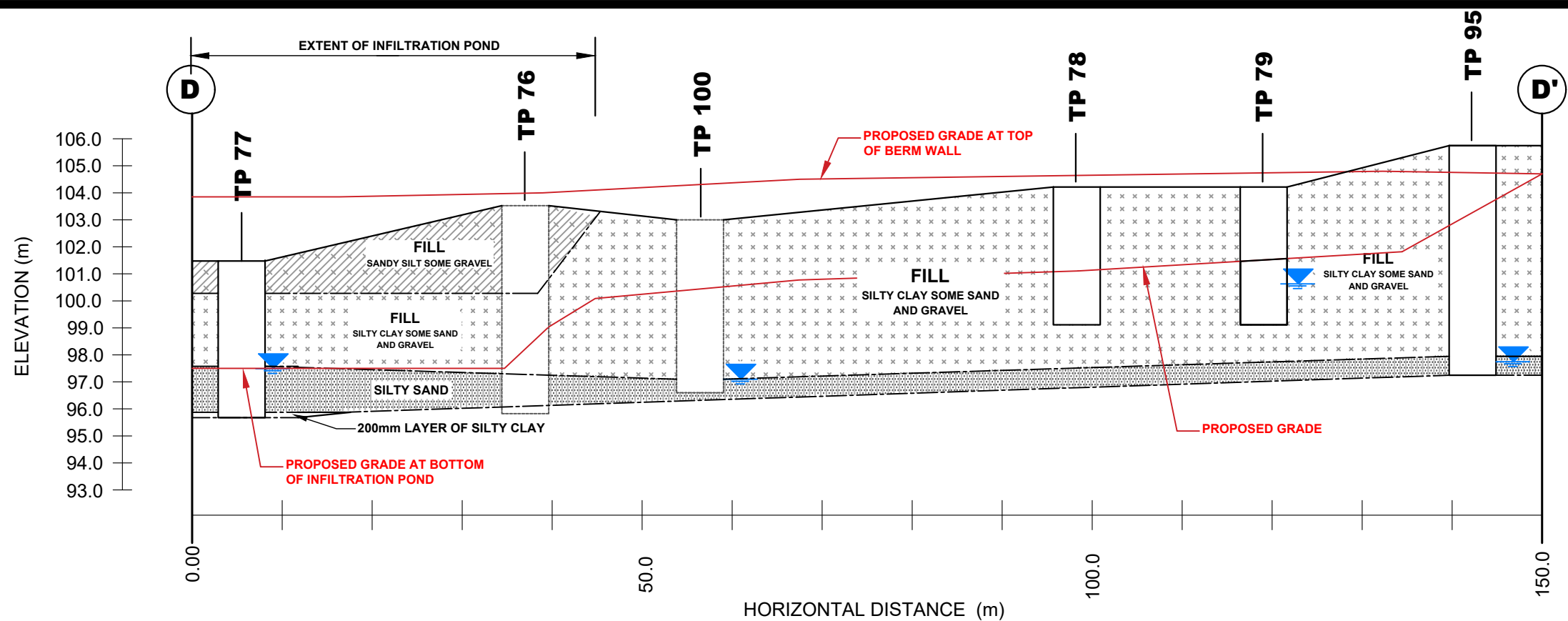
CAIVAN COMMUNITIES  
GEOTECHNICAL INVESTIGATION - PROPOSED DEVELOPMENT  
BORRISOKANE ROAD - DRUMMONDS PIT

TEST HOLE LOCATION PLAN

Scale:	1:750
Drawn by:	RCG
Checked by:	MK
Approved by:	DJG
Date:	03/2020

Report No.:	PG5155-MEMO.04
Drawn No.:	
	PG5016-2
Revision No.:	3





**patersongroup**  
consulting engineers

154 Colonnade Road South  
Ottawa, Ontario K2E 7J5  
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES  
GEOTECHNICAL INVESTIGATION - PROPOSED DEVELOPMENT  
BORRISOKANE ROAD - DRUMMONDS PIT

OTTAWA,  
Title:

ONTARIO

**CROSS SECTION D-D' AND E-E'**

Scale:	V 1:200 H 1:600	Date:	05/2020
Drawn by:	RCG	Report No.:	PG5155-MEMO.04
Checked by:	MK	Dwg. No.:	<b>PG5016-7</b>
Approved by:	DJB	Revision No.:	

---

---

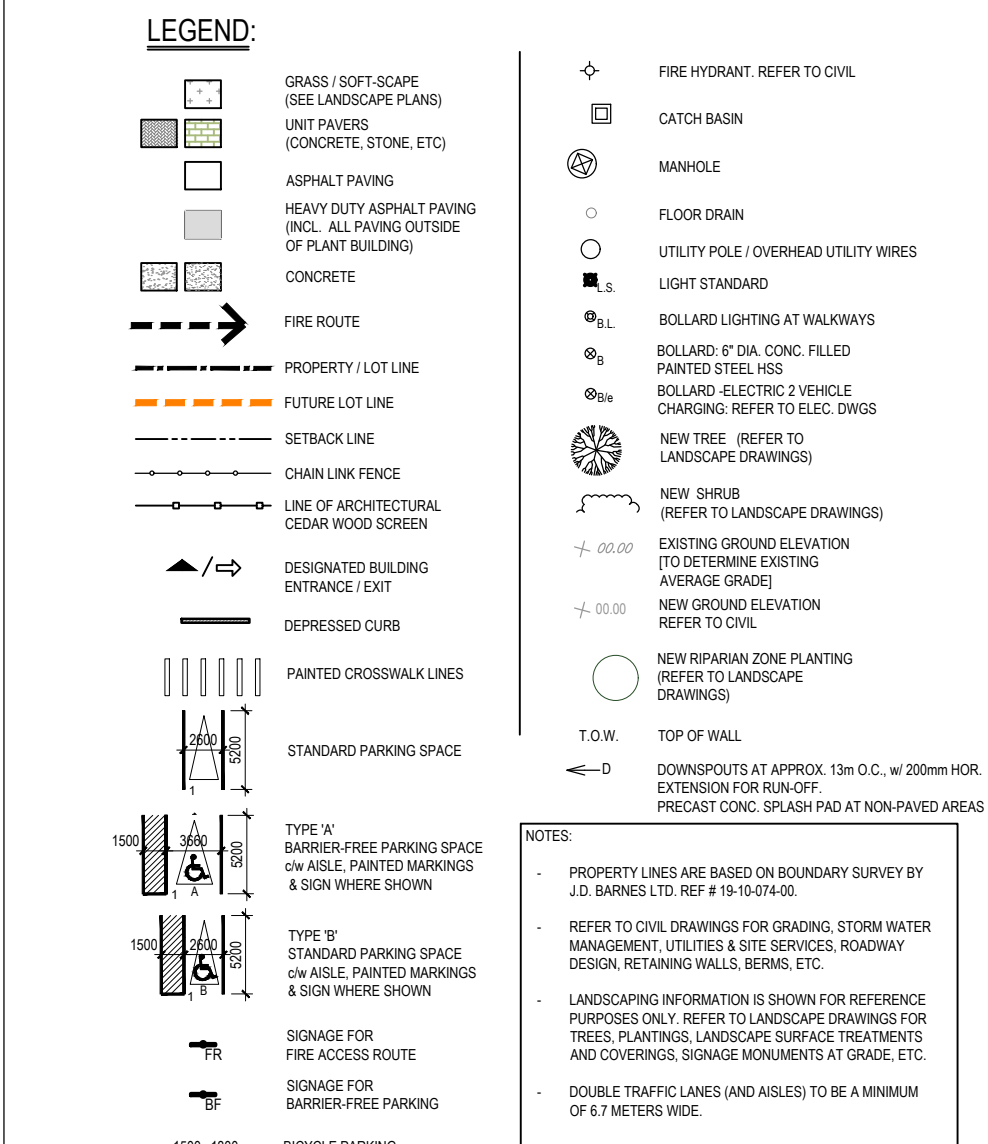
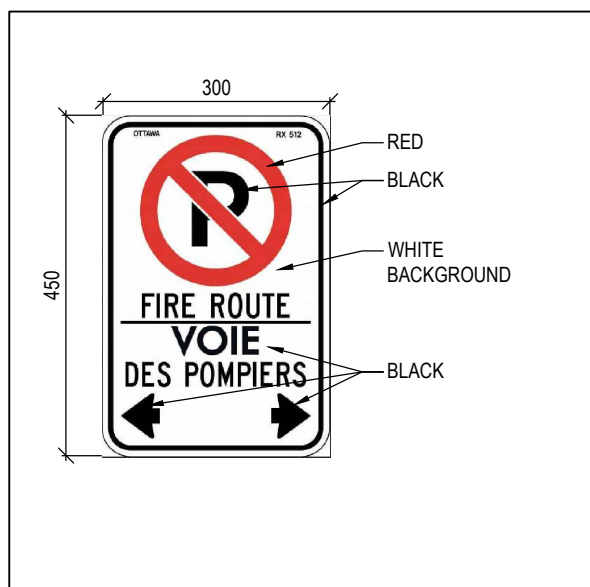
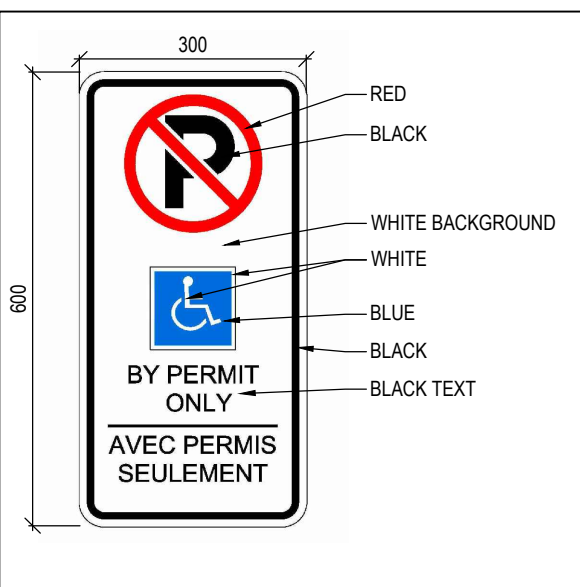
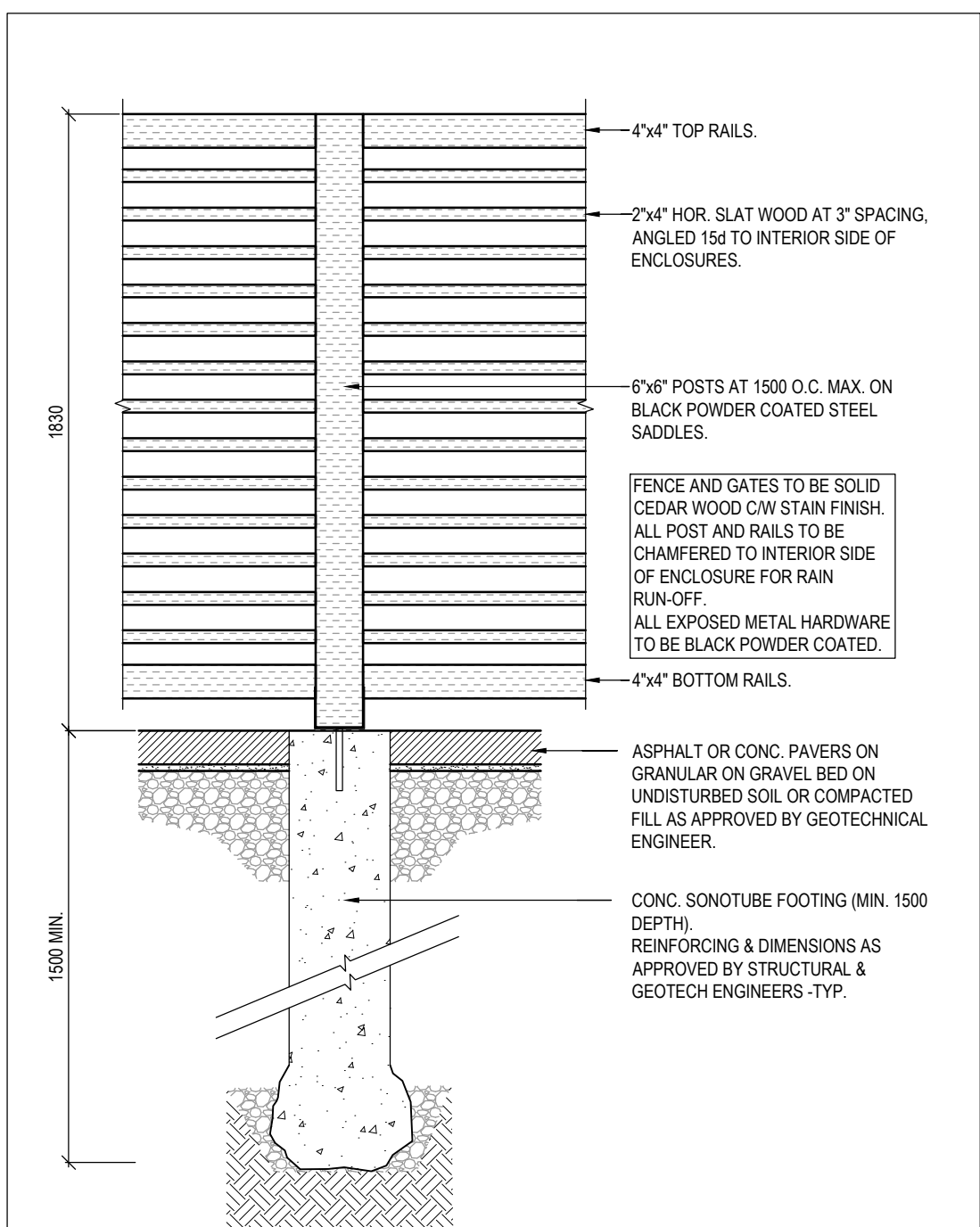
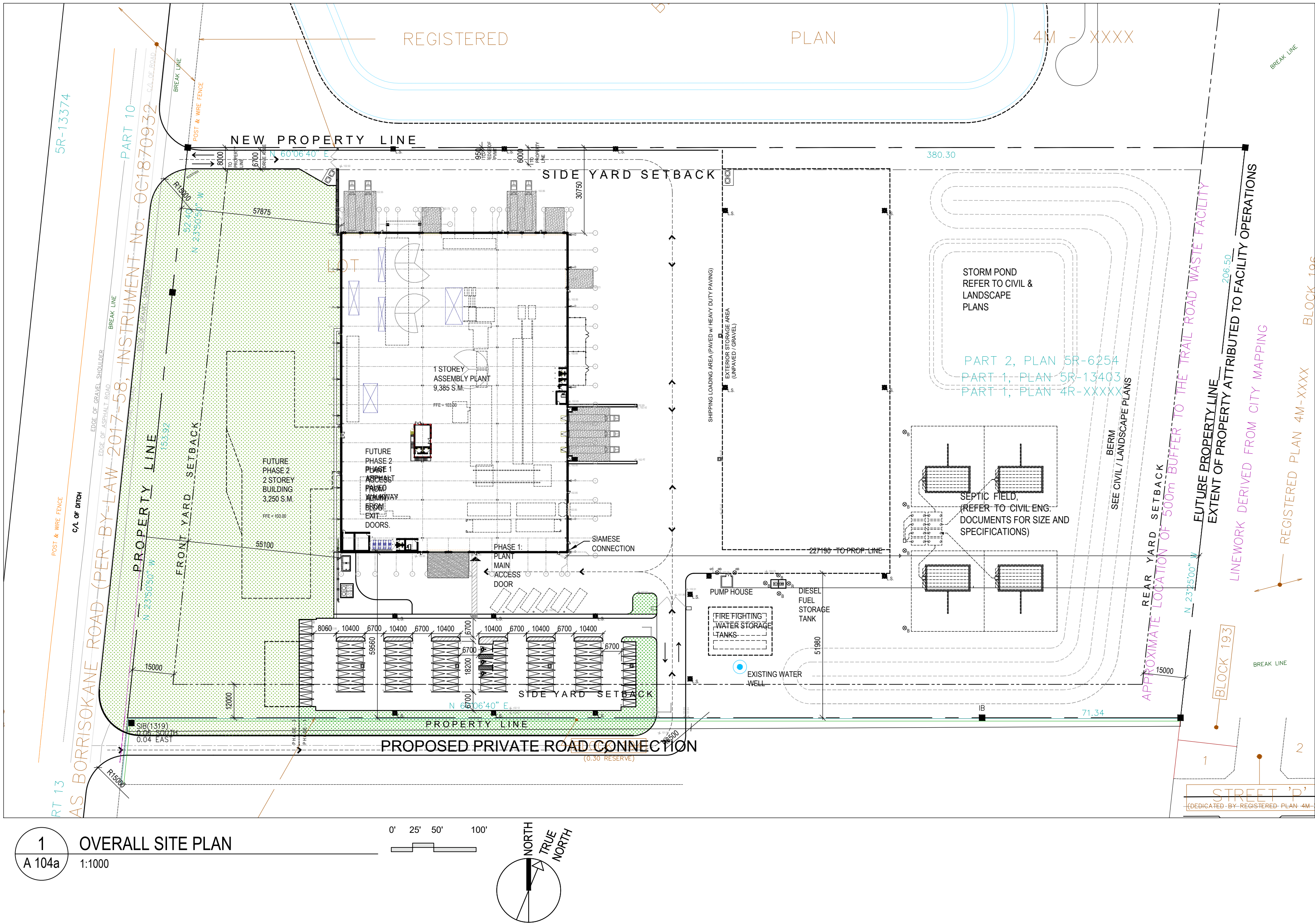
***DRAWINGS / FIGURES***

---

---







KEY PLAN

PROPOSED SITE

PROPERTY DESCRIPTION

TWO STOREY OFFICE BUILDING & ONE STOREY ASSEMBLY PLANT

CITY OF OTTAWA PIN NUMBER 04592 - 0035 ( LT )

MUNICIPAL ADDRESS 3713 BORRISOKANE RD, OTTAWA, ON

SITE INFORMATION

PROPERTY LINES BASED ON BOUNDARY SURVEY BY J.D. BARNES LTD REF# 19-10-074-00 FOR REVISED SITE BOUNDARY PLAN 4R-32754

LOT AREA: 77,858 m<sup>2</sup> new lot area

LOT FRONTAGE: 206.3 m (perpendicular to Borrisokane Rd.), 205.2 m (perpendicular to north boundary)

LOT DEPTH: 379.5m new lot depth

BUILDING INFORMATION

BUILDING AREA: 9,372m<sup>2</sup> for Phase 1: Assembly Plant

BUILDING FLOOR AREA (GFA): 9,385 m<sup>2</sup> for Phase 1: Industrial Assembly Plant

PROPOSED USE: Phase 1: ONE STOREY ASSEMBLY PLANT

ZONING TABLE

CITY OF OTTAWA ZONING BY-LAW No. 2008-250	REQUIRED	PROPOSED
MINIMUM LOT AREA	4,000m <sup>2</sup>	Current: 77,858 m <sup>2</sup>
MINIMUM LOT WIDTH	30m	206.3 m 188.2 m at front yard set back
SETBACKS	Standard for this Zoning	Phase 1
MINIMUM FRONT YARD SETBACK (at Borrisokane Rd)	15m	58.0 m (narrowest)
MINIMUM INTERIOR SIDE YARD SETBACK	8m	8m
MINIMUM CORNER SIDE YARD SETBACK	12m	59.5 m
MINIMUM REAR YARD SETBACK	15m	227.2 m (narrowest)
MAXIMUM BUILDING HEIGHT	15m	Phase 1: 12.6 m
MAXIMUM LOT COVERAGE	50%	Phase 1: 12%
OUTDOOR STORAGE AREA	---	8,252 m <sup>2</sup>
VEHICLE PARKING REQUIREMENTS (AREA D, SCHEDULE 1A)	0.8 per 100m <sup>2</sup> of LL Industr. GFA 75 required for Assembly Plant Bldg	105 Spaces for staff (All Staff are able-bodied for manufacturing plant.)
BARRIER-FREE PARKING REQTS City of Ottawa Part C - Section 111 O.Reg 191/11	Part C -Section 111: 3 per 51-75 O.Reg 191/11: 4% per 13-100	3 SPACES per O.Reg 191/11: (1 type 'A' + 2 type 'B')
BICYCLE PARKING SPACES Part C-Section 111, Table 111A	N/A	To be provided in Phase 2
LOADING SPACE REQUIREMENTS Part C - Section 113, Table 113A	1 space for first 5,000 m <sup>2</sup> plus all required spaces for GFA exceeding 5,000 m <sup>2</sup> .	12 SPACES (all oversized, accessed via Plant)

No. Date Envs pour / Object

1 2020-04-02 COORDINATION

2 2020-04-24 SPC\_CITY\_COMMENTS

3 2020-05-25 SPC\_CITY\_COMMENTS

Engineer / Trade Consultants (Mechanical / Electrical)

Goodkey Weedmark Consulting Engineers

DILFO MECHANICAL | HVAC SERVICES PLUMBING & HEATING

DRYCORE ELECTRIC - ELECTRIQUE

Engineer (Structural)

CLELAND JARDINE ENGINEERING LTD

Landscape Architect

NAK design strategies

Urban Planner

FOTENN PLANNING+DESIGN

Engineer (Civil)

DSEL david schaeffer engineering ltd

Owner

ABIC ADVANCED BUILDING INNOVATION COMPANY

Architect

Collectif d'architectes / Architects Collective

fig. 1 3500, Saint-Antoine O. Montréal QC H4C 1A3 T. 514. 881-9122

fig. 2 190 Somerset St W #206 Ottawa ON K2P 5A4 T. 613. 956-6122

Design Builder

40th BBS CONSTRUCTION (ONTARIO) LTD 1805 WOODWARD DRIVE OTTAWA, ON K2C 0P9 CANADA (613) 226-8830 Fax: (613) 226-7709 www.bbsconstruction.ca

Droit d'auteur / Copyright

Ce dessin est sujet au droit d'auteur. Il ne peut être reproduit pour quelques intentions ou usages que ce soit, il ne peut être utilisé uniquement avec l'approbation de la signature et de l'estampe originale.

This drawing is subject to copyright, it is not to be reproduced for any purpose or by any means, and may only be used if it bears an original stamp and signature.

Scalé / Seal

ONTARIO ASSOCIATION OF ARCHITECTS

ROBERTO CAMPOS LICENCE 7401

Project / Projet

ABIC OFFICE / ASSEMBLY PLANT

3713 BORRISOKANE RD. Ottawa, Ontario

Site Information - Phase 1

Dessiné par / Drawn by GB,TS No. projet / Project number 1944

Vérifié par / Verified by RC No. dessin / Drawing number Revision / Revision

Échelle / Scale 1:250

Date de création du dessin / Drawing creation date 2019-09-19

A104a

PLAN # 18112