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SITE SERVICING AND STORMWATER MANAGEMENT REPORT

FOR

RIOCAN HOLDINGS INC.
1910 ST. LAURENT BLVD. – PHASE I

CITY OF OTTAWA

PROJECT NO.: 18-1027
CITY FILE NO.: D07-12-18-0173

MARCH 2019 – REV 3

SITE SERVICING AND STORMWATER MANAGEMENT REPORT
FOR
1910 ST. LAURENT BLVD. – PHASE I
RIOCAN HOLDINGS INC.

FEBRUARY 2019- REV 2

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FOR
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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by RioCan Holdings Inc. to prepare a Site Servicing and Stormwater Management report in support of the application for Site Plan Control (SPC) for Phase I of the Elmvale Acres Shopping Centre redevelopment at 1910 St. Laurent Blvd.

The subject property is located within the City of Ottawa urban boundary, in the Alta Vista ward. As illustrated in ***Figure 1,*** below, the subject property is located south of the intersection of Smyth Road and St. Laurent Blvd and is bordered by Othello Avenue to the East. The subject property measures approximately ***5.7 ha*** and is zoned Arterial Mainstreet Use (AM). The Phase 1 development proposed modifications to approximately ***0.6 ha*** in the site's northern corners where an existing restaurant is presently located.

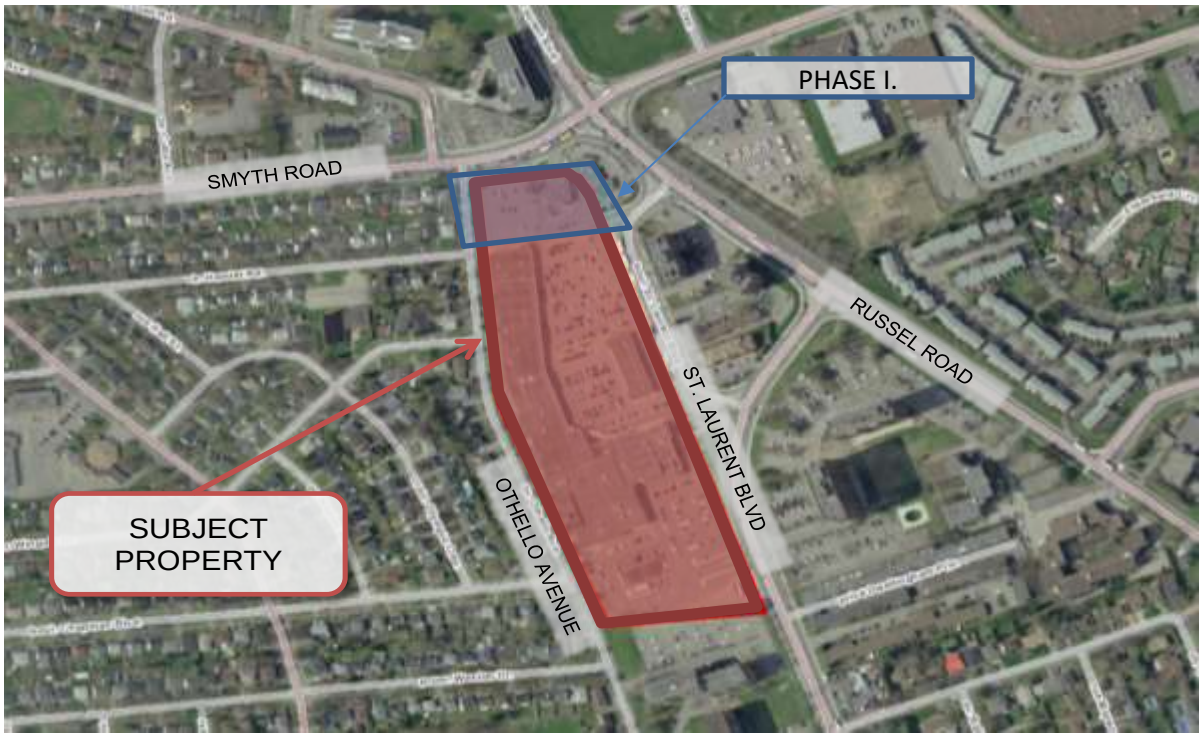


Figure 1: Site Location

An Assessment of Adequacy of Public Services report (***2016 AES***) was prepared by David Schaeffer Engineering Ltd. and approved for the ultimate development. The previously approved ***2016 AES*** contemplated ***2,000 m²*** of commercial space and ***166*** residential units for the Phase I development and ***13,815 m²*** of commercial space and ***713*** residential units for the Ultimate development.

The proposed SPC would allow for the Phase I development of a 9-storey residential /commercial building fronting onto both Othello Avenue and Smyth Road within ***0.58 ha*** of the subject site. The proposed development would include approximately ***1,117 m²*** of ground level retail and ***456 m²*** of amenity space with associated aboveground and underground parking, with access from the existing mall drive aisles. The residential component is comprised of approximately ***168 units***. No change in floor area is proposed to the existing ***14,690 m²*** shopping centre. The existing ***465 m2*** restaurant is proposed to be removed. A copy of the proposed site plan, prepared by Hobin Architecture, is included in ***Drawings/Figures***.

The objective of this report is to provide sufficient detail to demonstrate that both the proposed Phase I development and the contemplated Ultimate development are supported by proposed services in accordance with the ***2016 AES***.

1.1 Existing Conditions

The existing site includes a commercial mall and restaurant, as well as, associated parking consisting of asphalt parking lots. The elevations range between 77.61 m and 78.50 m with a minimal grade change of approximate 0.21% from the Northeast to the Southwest corner of the Phase I limits.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages, within the adjacent municipal right-of-ways:

Smyth Road

- 305 mm diameter unlined cast iron watermain
- 450 concrete storm sewer tributary to South Cyrville Drain ~2 km downstream
- 225 mm diameter concrete sanitary sewer tributary to the Green Creek Trunk Collector North

Othello Avenue

- 305 mm diameter unlined cast iron watermain
- 300 mm diameter concrete storm sewer tributary to the Eastern Walkley Storm Collector
- 225 mm diameter concrete sanitary sewer tributary to the Green Creek Trunk Collector North

St Laurent Blvd.

- 305 mm diameter cast iron watermain
- 375 mm diameter concrete storm sewer tributary to Mather Award Drain
- 250 mm diameter concrete sanitary sewer tributary to the Greens Creek Trunk Collector North

The location of on-site sewers have been by Mark It Locates and is illustrated by drawing ***EX-1***, accompanying this report.

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.

Pursuant to Section 53 (1) of the Ontario Water Resources Act, the proposed development for Phase 1 of the subject property is not subject to approvals from an Environmental Compliance Application, The proposed development meets the definitions under O. Reg 525/98(3), stating that; "*Subsections 53 (1) and (3) of the Act do not apply to the use, operation, establishment, alteration, extension or replacement of or a change in a storm water management facility that,*

(a) is designed to service one lot or parcel of land;

(b) discharges into a storm sewer that is not a combined sewer;

(c) does not service industrial land or a structure located on industrial land; and

(d) is not located on industrial land." O. Reg. 525/98, s. 3; O. Reg. 40/15, s. 4.

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-2018-04**
    City of Ottawa, June 27, 2018.
    (*ISTB-2018-04)*
- **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 Proposed Site Redevelopment**
  Elmvale Mall Phase 1, Ottawa, Ontario,
  Golder Associates Ltd., November 2018.
  (Geotechnical Report)

- **ADDENDUM NO. 1 - Geotechnical Investigation Proposed Site Redevelopment**
  Elmvale Mall Phase 1, Ottawa, Ontario,
  Golder Associates Ltd., February 4,2019.
  (Geotechnical Report)

- **Assessment of Adequacy of Public Services for RIOCAN Management Inc. 1910 St. Laurent Blvd,**
  David Schaeffer Engineering Inc. Project #:15-792, December 2016.
  (2016 AES)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 2W2C pressure zone, as shown by the Pressure Zone map in ***Appendix B***. The site is bounded by 305 mm diameter watermains within the Smyth Road, Othello Avenue and St. Laurent Blvd rights-of-way, as shown by the Pressure Zone map included in ***Appendix B***.

The existing on site restaurant is currently serviced by the 305 mm diameter watermain within Smyth Road. The existing fire hydrants in the vicinity of the Phase I development are currently serviced from the 305 mm diameter watermain within Othello Avenue. Refer to drawing ***EX-1,*** accompanying this report, for the existing site servicing layout.

3.2 Water Supply Servicing Design

In accordance with the ***2016 AES***, the Phase I development is proposed to be serviced by the existing 305 mm diameter watermain within Othello Avenue via a 150 mm diameter water service connection. Refer to drawing ***SSP-1,*** accompanying this report, for a detailed servicing layout.

Table 1, below, summarizes the ***Water Supply Guidelines*** employed in the preparation of the preliminary water demand estimate.

Table 1
Water Supply Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	3.0 x Average Daily *
Residential Maximum Hourly	4.5 x Average Daily *
Commercial/Amenity Space	2.5 L/m^2/d
Commercial Maximum Daily Demand	1.5 x avg. day
Commercial Maximum Hour Demand	1.8 x max. day
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa

Daily Average based on Appendix 4-A from **Water Supply Guidelines*
*** Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.*
-Table updated to reflect ISD-2010-2 and ISTB-2018-02.

Table 2, below, summarizes the estimated water supply demand and boundary conditions for the proposed Phase I development and is based on the ***Water Supply Guidelines***.

Table 2
Water Demand and Boundary Conditions
Proposed Conditions

Design Parameter	Estimated Demand[1] (L/min)	Boundary Condition[2] (m H_2O / kPa)
Average Daily Demand	61.6	130.5/535.1
Max Day + Fire Flow	180.8 + 8,000 = 8,180.8	123.0/461.6
Peak Hour	272.5	123.7/468.4

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions supplied by the City of Ottawa for the demands indicated in the correspondence; assumed ground elevation 75.95 m. See ***Appendix B.***

Fire flow requirements are to be determined in accordance with City of Ottawa ***Water Supply Guidelines*** and the Ontario Building Code.

Fire flow requirements were updated from the ***2016 AES*** in accordance with City of Ottawa Technical Bulletin ***ISTB-2018-02***. The following assumptions were assumed:

- Type of construction – Fire-Resistive Construction;
- Occupancy type – Limited Combustibility; and
- Sprinkler Protection – Supervised Sprinkler System.

The above assumptions result in an estimated fire flow of approximately ***8,000 L/min*** for the Phase I development. A certified fire protection system specialist will need to be employed to design the buildings fire suppression systems and confirm the actual fire flow demand.

The City provided both the anticipated minimum and maximum water pressures, as well as, the estimated water pressure during fire flow demand for the demands as indicated by the correspondence in ***Appendix B***. As shown by ***Table 2***, the minimum and maximum pressures are within the required range identified in ***Table 1***. As indicated by the boundary conditions provided by the City, the municipal system is capable of providing the required fire flow to the Phase I development.

In accordance with City of Ottawa technical bulletin ***ISDTB-2014-02***, the Phase I development with require a redundant service connection due to an estimated design flow of greater than 50 m^3/day. As indicated by drawings ***SSP-1***, a redundant connection to the existing 305 mm diameter watermain within Othello Avenue is provided via the addition of a valve box installed south of the proposed connection A combination of the existing and proposed valves within Othello Avenue will provide adequate isolation to the Phase I development should the need for maintenance be required.

3.3 Water Supply Conclusion

Estimated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions.

As demonstrated by ***Table 2***, which is based on the City's model, the municipal system is within the required ***Water Supply Guidelines*** pressure range. As indicated by the boundary conditions provided by the City, the municipal system is capable of providing the required fire flow to the Phase I development.

DSEL employed a daily consumption rate of 280 L/person/day to align with the revised wastewater rates identified by City of Ottawa Technical Bulletin ***ISTB-2018-01***. As a result, DSEL is submitting for a deviation from the ***Water Supply Guidelines***.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within the Greens Creek Collector Sewer catchment area, as shown by the City sewer mapping included in ***Appendix C***. The existing site consists of a restaurant, currently contributing wastewater to the 250 mm diameter sanitary sewer within Smyth Road via a 150 mm diameter service lateral. The 250 mm diameter sanitary sewer within Smyth Road is tributary to the Greens Creek Collector sewer, which is located approximately 1.5 km downstream of the site.

4.2 Wastewater Design

The proposed development will use the existing 150 mm diameter service lateral to convey flow to the municipally owned sewers within Smyth Road. As indicated by the ***2016 AES*** and illustrated by drawing ***SSP-1***, the Phase I development will be serviced by the 250 mm diameter sanitary sewer within Smyth Road. No changes to the existing internal sanitary sewer network are proposed during Phase I.

Table 3, below***,*** summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 3
Wastewater Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0 Harmon's Correction Factor 0.8
Commercial/Amenity Floor Space	5 L/m^2/d
Infiltration and Inflow Allowance	0.05 L/s/ha (Dry Weather) 0.28 L/s/ha (Wet Weather) 0.33 L/s/ha (Total)
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012 and City of Ottawa ISTB-2018-01.	

Table 4, below, demonstrates the estimated peak flow from the proposed development. See ***Appendix C*** for associated calculations.

Table 4
Summary of Estimated Peak Wastewater Flow

Phase	Design Parameter	Total Flow (L/s)
Phase I	Estimated Average Dry Weather Flow	1.19
	Estimated Peak Dry Weather Flow	3.62
	Estimated Peak Wet Weather Flow	**3.83**

The estimated sanitary peak wet weather flow for the Phase I development based on the site statistics provided by Hobin Architecture is ***3.83 L/s***.

In accordance with the ***2016 AES***, future phases will utilize independent connections to the existing municipally owned sanitary sewer network surrounding the site. Due to the independent connections being proposed for future Phases, an analysis was prepared for the 250 mm diameter sanitary sewer within Smyth Road to ensure adequate capacity to service the Phase I development. Refer to ***Appendix C*** for the detailed sanitary sewer sizing calculation sheet.

As indicated by the ***2016 AES***, the anticipated peak wet weather wastewater discharge from the Phase I development is ***5.25 L/s***. Due to the off-site sanitary capacity analysis completed in ***2016 AES,*** it was determined that the local sewers have sufficient capacity to accommodate the anticipated Phase I wastewater flows. Relevant excerpts from the ***2016 AES*** are included in ***Appendix C.***

Based on **Table 4,** above, the proposed flow has been reduced by approximately 27% from the ***2016 AES***, therefore, indicating that sufficient capacity is available in the local sewers to accommodate the proposed Phase I development.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Greens Creek Collector sewer. Based on the analysis prepared within ***2016 AES***, sufficient capacity is available in the local sewers to accommodate the proposed Phase I development.

The proposed wastewater design conforms to all relevant ***City Standards***.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system and is located within the Greens Creek sub-watershed. As such, approvals for proposed development within this area are under the approval authority of the City of Ottawa.

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 Ottawa River watershed and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). Consultation with the RVCA is located in ***Appendix A***.

The existing commercial building and associated parking areas are currently serviced by the existing internal 500 mm diameter storm sewer network which outlets to the existing 500 mm diameter sewer within Smyth Road. Portions of the exiting storm sewer network are proposed to be removed or relocated during the Phase I development, as shown by the drawing ***EX-1*** and drawing ***SSP-1*** included along with this report.

It is assumed that the existing site does not contain stormwater controls. The pre-development release rate from the Phase 1 area was estimated to be ***233.2 L/s*** during a 100-year event, based on the ***2016 AES***.

5.2 Post-development Stormwater Management Target – Phase I

Stormwater management requirements for the proposed Phase I development were reviewed in accordance with the ***2016 AES***, where the proposed development is required to:

- Attenuate all storms up to and including the City of Ottawa 100-year design event on site to an equivalent rate of ***82.7 L/s/ha***;
- Based on correspondence with the RVCA, quality controls are required for the proposed development if surface parking is proposed. Correspondence with the RVCA is included in ***Appendix A***.

Based on ***2016 AES*** the allowable release rate for the Phase I development is ***50.8 L/s.*** Refer to ***Appendix D*** for associated calculations.

5.3 Proposed Stormwater Management System

To meet the stormwater objectives the proposed development will utilize a combination of surface and subsurface storage. As identified by the ***2016 AES,*** stormwater will outlet from the proposed development to the existing 500 mm diameter storm sewer within the Smyth Road right-of-way. Refer to drawing ***SSP-1,*** accompanying this report, for a detailed layout***.***

Runoff from the drive aisle area southeast of the development (***Area C1***) will be directed to a catchbasin system; ***1.9 m³*** of storage will be provided by surface ponding. An additional ***50.0 m³*** of storage will be provided by subsurface storage using a Soleno Stormchamber System 15 storage system or an approved equivalent. Attenuation will be provided by a ***Tempest LMF40 ICD*** or an approved equivalent located on the outlet side of maintenance structure CICB 102.

Runoff from the parking area and building rooftop (***Area C2+BLDA***) will be directed to a catchbasin system; ***2.2 m³*** of storage will be provided by surface ponding. An additional ***138 m³*** of storage will be provided via a Soleno Hydrostar HS180 System 25 underground storage system or an approved equivalent. Attenuation will be provided by a ***153 mm diameter ICD*** located on the outlet side of maintenance structure STM106.

Runoff from the landscaped area north east of the development (***Area C3***) will be directed to a catchbasin system; ***40.8 m³*** of storage will be provided by surface ponding. Attenuation will be provided by a ***Tempest LMF40 ICD*** or an approved equivalent located on the outlet side of catchbasin CB 103. Refer to ***Appendix D*** for associated calculations.

Uncontrolled areas (***UN1***), as shown by drawing ***SWM-1,*** provided along with this report, will be released uncontrolled to municipal right-of-ways and are compensated for in areas with controls.

Table 5, below, summarizes post-development flow rates.

Table 5
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^3)	(L/s)	(m^3)	(m^3)
Unattenuated Areas (UN1)	5.7	0.0	12.2	0.0	0.0
Attenuated Areas (C1)	0.7	22.7	1.3	49.1	49.5
Attenuated Area (C2+BLDA)	20.6	60.7	33.6	136.6	138.9
Attenuated Area (C3)	1.7	1.5	1.9	23.4	40.8
Total	**28.6**	**85.0**	**48.9**	**209.2**	**231.3**

It is calculated that ***209.2 m³*** of storage will be required on site to attenuate flow to the established release rate of ***50.8 L/s***; ***231.3 m³*** of surface and subsurface storage is provided. Detailed storage calculations are included in ***Appendix D***.

The development proposes to convert an existing parking area within the Phase 1 limits to green space and a building. As indicated by ***Table 5***, ***48.9 L/s*** is proposed to be directed towards the municipal infrastructure and right-of-ways. As a result, there is a net reduction in flow of approximately ***79%*** during a 100-year storm event for the Phase 1 development.

As indicated by drawing ***FIG-2*** included in ***Appendix D***, it is estimated that ***1.21 ha*** (***EX-1***) within the existing parking area will direct unattenuated stormwater towards the proposed storm sewer network and ***0.57 ha*** (***A***) from the Phase 1 development will direct attenuated stormwater towards the proposed storm sewer network. The reduction in flow resulting from the Phase 1 development, will be approximately ***13%*** to the municipal infrastructure from the pre-development conditions. Refer to ***Appendix D*** for detailed calculations.

The ***2016 AES*** demonstrates that the allowable release rate for the ultimate development, tributary to the existing storm sewer within Smyth Road, is ***150.8 L/s***. Each additional phase of development will reduce stormwater flow to the existing infrastructure, improving existing conditions. As indicated by the storm sewer calculation sheets included in ***Appendix D***, the reduction in flow resulting from the ultimate development, will be approximately ***38%*** to the municipal infrastructure from the pre-development conditions. Refer to ***Appendix D*** for detailed calculations.

To meet the specified stormwater quality criteria of providing a TSS reduction of at least 80%, an end of pipe oil/grit separator unit will be installed downstream of the site stormwater collection system to provide water quality treatment prior to release into the Smyth Road sewer. The oil/grit separator has been sized to accommodate the existing parking lot south of the Phase I development and is proposed to support future phases. Details of the end of pipe solution are shown on ***SSP-1*** and documentation related to sizing and the operation and maintenance are provided in ***Appendix D***.

5.4 Stormwater Servicing Conclusions

In accordance with the previously approved ***2016 AES.*** post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm. The post-development allowable release rate for the Phase I development was calculated as ***50.8 L/s***. It is calculated that ***209.2 m^3*** of storage will be required to meet this release rate; and ***231.3 m^3*** is provided.

Stormwater controls are proposed to reduce the stormwater flow rate within the Phase 1 limit by approximately ***79%***.

The reduction in flow resulting from the Phase 1 development, will be approximately ***13%*** to the municipal infrastructure from the pre-development conditions. Refer to ***Appendix D*** for detailed calculations.

Based on consultation with the RVCA, included in ***Appendix A***, stormwater quality controls will be provided via an end of pipe oil/grit separator unit.

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

6.0 UTILITIES

Existing overhead power lines are located along St. Laurent Blvd. and Othello Avenue rights-of-way. Utility servicing will be coordinated with the individual utility companies prior to site development.

Gas services currently exist within the Othello Avenue and Smyth Road right-of-ways. 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 RioCan Holdings Inc. to prepare a Site Servicing and Stormwater Management Report in support of the Site Plan Control (SPC) application for the Phase I development at 1910 St. Laurent Blvd. The preceding report outlines the following:

- Based on boundary conditions provided by the City, residual pressures are within the required range identified by the Water Supply Guidelines;
- The FUS method for estimating fire flow indicated ***8,000 L/min*** is required for the Phase I development. As indicated by the boundary conditions provided by the City, the municipal system is capable of providing the required flow;
- The proposed Phase I development is estimated to have a peak wet weather flow of ***3.83 L/s***; Based on ***2016 AES***, sufficient capacity is available in the local sewers to support the Phase I development;
- Post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm in accordance with the previously approved ***2016 AES***. The post-development allowable release rate for the Phase I development was calculated as ***50.8 L/s***;
- Stormwater objectives will be met through retention via surface and subsurface storage, it is calculated that ***209.2 m^3*** of onsite storage will be required to attenuate flow to the established release rate above; and ***231.3 m^3*** is provided;
- Based on consultation with the RVCA, stormwater quality controls are required and will be provided via an end of pipe oil/grit separator unit providing at least 80% TSS removal.

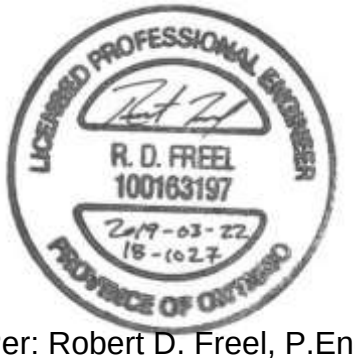
Prepared by,
David Schaeffer Engineering Ltd.

Per: Alison J. Gosling, E.I.T.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Charlotte M. Kelly, E.I.T.

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Robert D. Freel, P.Eng

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

18-1027 20/03/2019

4.1 General Content

☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures, EX-1
☒	Plan showing the site and location of all existing services.	Figure 1, EX-1
☒	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, Section 5.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3, Appendix A
☒	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 defendable design criteria.	Section 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1, EX-1
☐	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
☐	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
☐	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
☐	Proposed phasing of the development, if applicable.	N/A
☐	Reference to geotechnical studies and recommendations concerning servicing.	Section 2.1
☐	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	Drawings/Figures

4.2 Development Servicing Report: Water

☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 3.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2, Appendix B
☒	Confirmation of adequate domestic supply and pressure	Section 3.2, 3.2.1, 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	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, Appendix B
☐	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
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐	Address reliability requirements such as appropriate location of shut-off valves	N/A
☐	Check on the necessity of a pressure zone boundary modification	N/A
☒	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, 3.2.1, 3.3
☐	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.	Section 3.2, SSP-1
☐	Description of off-site required feedermains, 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
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2, Appendix B
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Section 3.2.1, Appendix B

4.3 Development Servicing Report: Wastewater

☒	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
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Section 4.2
☐	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
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1, EX-1
☒	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, Appendix C
☒	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
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2, SSP-1
☐	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

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	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
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

☒	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
☒	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
☒	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
☒	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
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	Set-back from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Section 5.3
☒	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
☐	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
☒	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, Appendix D
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 5.3
☐	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
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
☐	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
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	Section 5.4
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7.0
☐	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
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

☒	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
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 8.0
☐	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.	
☐	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

Charlotte Kelly

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: October 15, 2018 11:17 AM
To: Charlotte Kelly <CKelly@dsel.ca>
Cc: Alison Gosling <AGosling@dsel.ca>
Subject: RE: 1910 St. Laurent Blvd- PHASE 1 - RVCA Requirement

Good Morning Charlotte,

Provided that there are no surface parking spaces provided, then there would be no additional onsite water quality treatment required save and except best management practices as landscaped areas and rooftop drainage is considered clean for the purpose of protecting surface water quality and aquatic habitat.

Jamie Batchelor, MCIP, RPP
Planner
Rideau Valley Conservation Authority
3889 Rideau Valley Drive
613-692-3571 ext 1191
jamie.batchelor@rvca.ca

From: Charlotte Kelly <CKelly@dsel.ca>
Sent: Friday, October 12, 2018 3:33 PM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Cc: Alison Gosling <AGosling@dsel.ca>
Subject: FW: 1910 St. Laurent Blvd- PHASE 1 - RVCA Requirement

Good afternoon Jamie,

We wanted to touch base with you regarding a development at 1910 St. Laurent Blvd.

The existing site conditions consist of paved surface parking lots and a small restaurant as demonstrated in ***Figure 1,*** below.

The development involves the construction of a 9 storey commercial/residential building, a 650m^2 park and additional landscaped areas. In addition, the development proposes to convert above-ground parking areas to an underground parking garage, as shown in the proposed site plan attached. Based on the information available, the development will discharge stormwater to the 450 mm diameter storm sewer within Smyth Road and will travel approximately ***735 m*** to an outlet at Innes Road and St. Laurence Blvd., as shown by ***Figure 2*** below.

We do not anticipate that quality controls will be required as the development proposes to convert an existing parking area to a building, park and landscaped areas. Can you provide review and provide recommendations?

Please feel free to contact me to discuss.

Figure 1: Existing Site

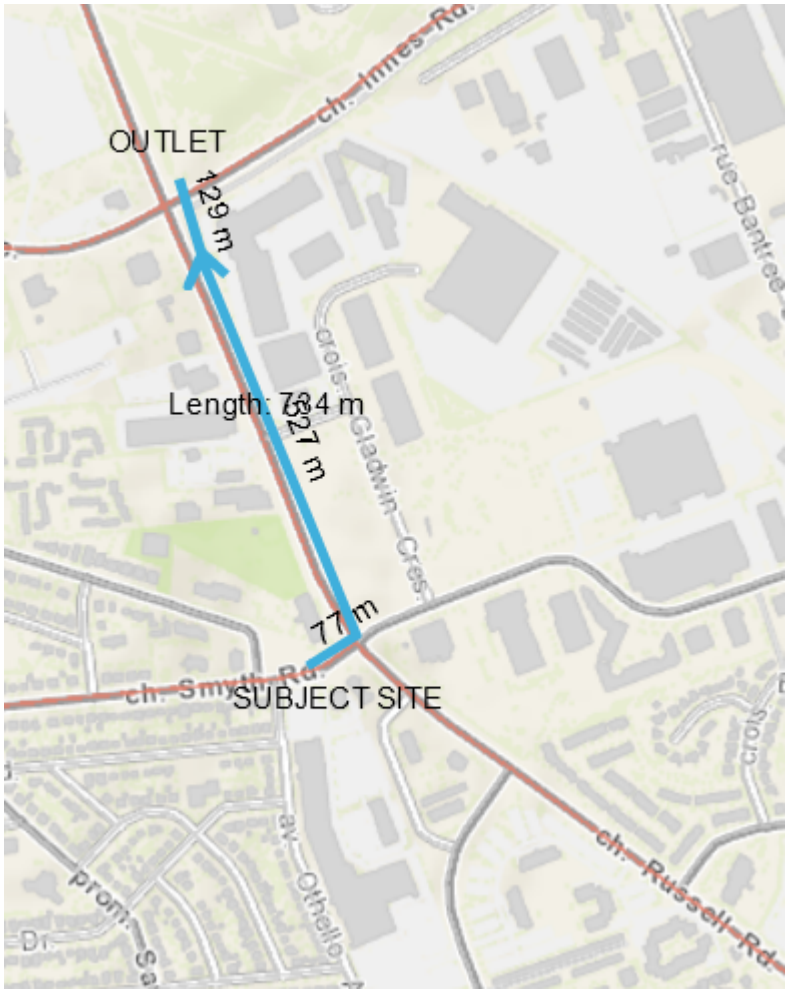

Figure 2: Combined Overflow Path to Outlet

Thank you,

Charlotte Kelly, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

email: ckelly@dsel.ca

Robert Freel

From: Jocelyn Chandler <jocelyn.chandler@rvca.ca>
Sent: October-19-15 3:11 PM
To: Robert Freel
Subject: RE: Elmvale Acres - RVCA

Hello Bobby, storm sewers from this site travel approximately 1.2 km to a direct outlet to the Mather Award Drain with municipal treatment. This receiver requires 80 % TSS removal (enhanced quality control). For a redevelopment of this nature with extensive parking requirement, the RVCA will advise that on-site enhanced stormwater quality control be required for the project.

I note for our reference that 2 km is our standard cut off for quality control considerations, not 1 km. The rest relies on the nature of the development proposal. j

Jocelyn Chandler M.Pl. MCIP, RPP
Planner, RVCA
t) 613-692-3571 x1137
f) 613-692-0831
jocelyn.chandler@rvca.ca
www.rvca.ca
mail: Box 599 3889 Rideau Valley Dr., Manotick, ON K4M 1A5
courier: 3889 Rideau Valley Dr., Nepean, ON K2C 3H1

From: Robert Freel [mailto:rfreel@dsel.ca]
Sent: Friday, October 09, 2015 4:55 PM
To: Jocelyn Chandler <jocelyn.chandler@rvca.ca>
Subject: Elmvale Acres - RVCA

Good afternoon Jocelyn,

We are working on a project at 1910 St. Laurent Blvd. The proposal involves the phased redevelopment of the shopping plaza into a mixed use development. The redevelopment will involve constructing commercial/residential buildings in existing asphalt parking areas. The site currently discharges to storm sewers located within Othello Ave and St. Laurent Blvd and based on the available information appear to travel greater than 1 km to a storm outlet. Can you provide a comment on quality criteria for the site.

Please feel free to give me a call if you have any questions or would like to discuss.

Thank you,

Bobby Freel, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.558
cell: (613) 314-7675
email: rfreel@DSEL.ca

APPENDIX B

Water Supply

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	**m^3/d**	**L/min**	**m^3/d**	**L/min**	**m^3/d**	**L/min**
Restaurant*	125	L/seat/d	465	58.13	40.4	87.2	60.5	156.9	109.0
Industrial - Light	35,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
			Total I/Cl Demand	58.1	40.4	87.2	60.5	156.9	109.0
			Total Demand	**58.1**	**40.4**	**87.2**	**60.5**	**156.9**	**109.0**

** Estimated number of seats at 1 seat per 9.3m^2*

RioCan Holdings Inc.
1910 St. Laurent Blvd. - Phase I
Proposed Site Conditions

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	168	303

	Pop	Avg. Daily		Max Day †		Peak Hour ††	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	303	84.8	58.9	254.5	176.8	381.8	265.1

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate	Units	Avg. Daily m^3/d	Avg. Daily L/min	Max Day † m^3/d	Max Day † L/min	Peak Hour †† m^3/d	Peak Hour †† L/min
Commercial floor space	2.5 $L/m^2/d$	1,117	2.79	1.9	4.2	2.9	7.5	5.2
Amenity floor space	2.5 $L/m^2/d$	456	1.14	0.8	1.7	1.2	3.1	2.1
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			3.9	2.7	5.9	4.1	10.6	7.4
Total Demand			**88.8**	**61.6**	**260.4**	**180.8**	**392.4**	**272.5**

† *Residential Max Day Peaking Factor =* 3
† *Commercial Max Day Peaking Factor =* 1.5
†† *Residential Peak Hour Peaking Factor =* 4.5
†† *Commercial Peak Hour Peaking Factor =* 1.8

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required (Building A)

1. Base Requirement

$$F = 220C\sqrt{A}$$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Fire-Resistive Construction

C	0.6		*Type of Construction Coefficient per FUS Part II, Section 1*
A	8736.7	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	12338.1	L/min	
	12000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%
Fire Flow	**10200.0 L/min**

3. Reduction for Sprinkler Protection

Sprinklered - Supervised	-50%
Reduction	**-5100 L/min**

4. Increase for Separation Distance

	Cons. of Exposed Wall	S.D	Lw	Ha	LH	EC
N	Non-Combustible	>45m	0	0	0	0%
S	Non-Combustible	20.1m-30m	36	1	36	8%
E	Non-Combustible	10.1m-20m	38	1	38	13%
W	Wood Frame	20.1m-30m	23	1	23	8%
		% Increase				**29%** *value not to exceed 75%*

Increase	**2958.0**	**L/min**

Lw = Length of the Exposed Wall
Ha = number of storeys of the adjacent structure. Max 5 stories
LH = Length-height factor of exposed wall. Value rounded up.
EC = Exposure Charge

Total Fire Flow

Fire Flow	8058.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section 4*
	8000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by Hobin Architecture.
-Calculations based on Fire Underwriters Survey - Part II and Technical Bulletin ISTB-2018-02

Boundary Conditions Unit Conversion

Grnd Elev 75.95

	m H_2O	PSI	kPa
Avg. Day	**130.5**	77.6	535.1
Peak Hour	**123.7**	67.9	468.4
Max Day + FF	**123**	66.9	461.6

Charlotte Kelly

From: Shillington, Jeffrey <jeff.shillington@ottawa.ca>
Sent: November 16, 2018 3:18 PM
To: Alison Gosling
Cc: Charlotte Kelly
Subject: RE: 18-1027 Elmvale Acres - Boundary Condition Request
Attachments: 18-1027 Elmdale Acres Nov 2018.pdf

Alison,

Please see below the Boundary Conditions for the above noted address:

******The following information may be passed on to the consultant, but do NOT forward this e-mail directly.******

The following are boundary conditions, HGL, for hydraulic analysis at 18-1027 Elmdale Acres (zone 2C) assumed to be connected to the 305mm on Othello (see attached PDF for location).

Minimum HGL = 123.7m

Maximum HGL = 130.5m

MaxDay + FireFlow (133 L/s) = 123.0m

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Let me know if you require any additional information.

Regards,

Jeff Shillington, P.Eng.
Project Manager, Development Review, South Branch
Planning, Infrastructure and Economic Development
City of Ottawa
tel: 580-2424 x 16960
email: jeff.shillington@ottawa.ca

From: Alison Gosling <AGosling@dsel.ca>
Sent: Monday, October 15, 2018 9:45 AM
To: Shillington, Jeffrey <jeff.shillington@ottawa.ca>
Cc: Charlotte Kelly <CKelly@dsel.ca>
Subject: 18-1027 Elmvale Acres - Boundary Condition Request

Good morning Jeff,

We would like to request water boundary conditions for Othello Avenue using the following proposed development demands:

1. Location of Service / Street Number: Elmvale Acres Mall, 1910 St. Laurent Blvd.

2. Type of development and the amount of fire flow required for the proposed development:

- The proposed development is mixed use consisting of 168 residential units and 2,165 m^2 of amenity/commercial space.
- It is anticipated that the development will have a dual connection to be serviced from the existing 305 mm diameter watermain within Othello Avenue, as shown by the attached map.
- City of Ottawa Technical Bulletin ISTB-2018-02 has been used to calculate an estimated fire demand of approximately 8,000 L/min. Refer to the attached for detailed calculations.

3.

Phase I	L/min	L/s
Avg. Daily	62.7	1.04
Max Day	182.4	3.04
Peak Hour	275.3	4.59

If you have any questions please feel free to contact me.

Thank you,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@dsel.ca

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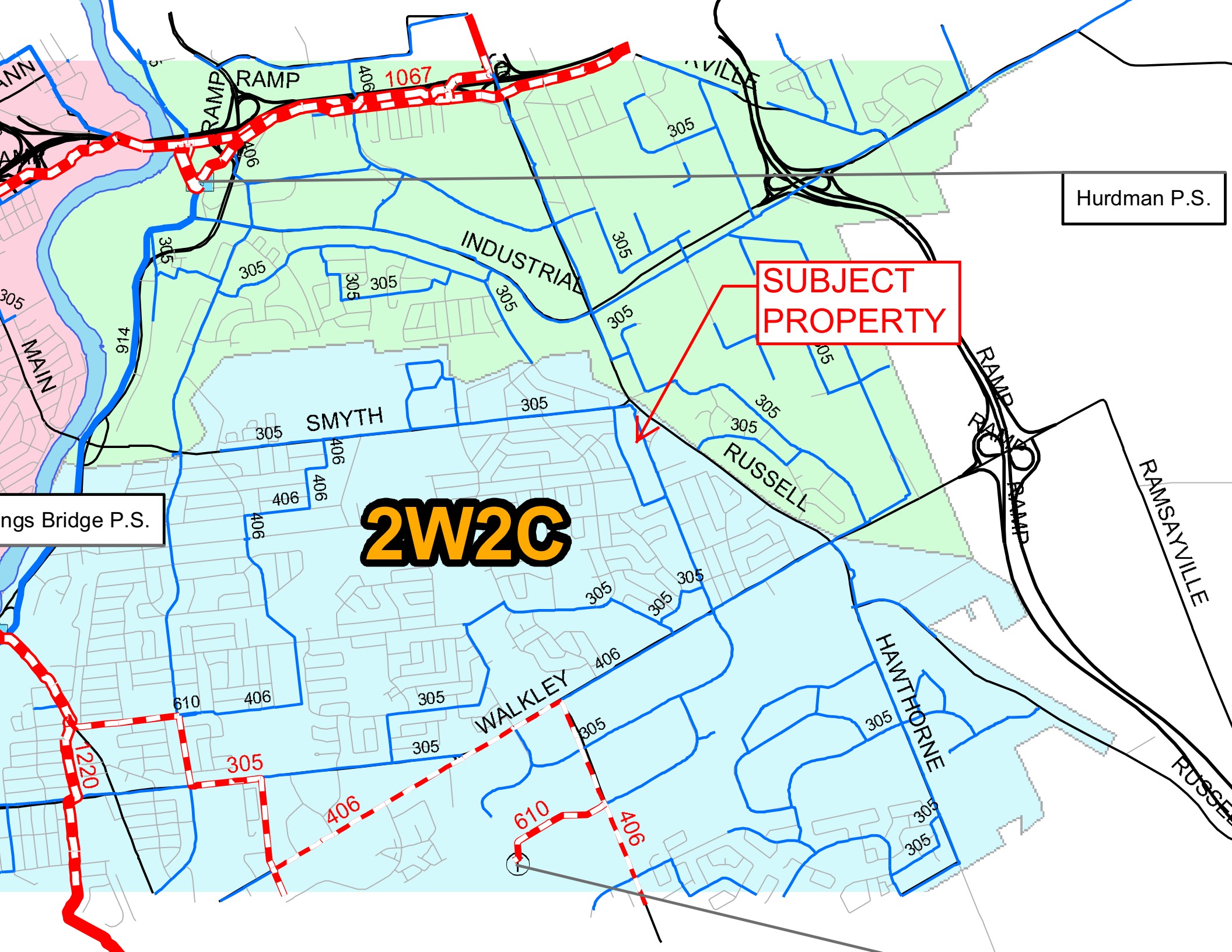

Hurdman P.S.
SUBJECT PROPERTY
2W2C
ngs Bridge P.S.
INDUSTRIAL
SMYTH
RUSSELL
WALKLEY
HAWTHORNE
RAMSAYVILLE
MAIN
RAMP
1067
1220
914
610
406
305

APPENDIX C

Wastewater Collection

RioCan Holdings Inc.
1910 St. Laurent Blvd. - Phase I
Proposed Site Conditions

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area 0.614 **ha**

Extraneous Flow Allowances

Infiltration / Inflow (Dry)	**0.03 L/s**
Infiltration / Inflow (Wet)	**0.17 L/s**
Infiltration / Inflow (Total)	**0.20 L/s**

Domestic Contributions

Unit Type	**Unit Rate**	**Units**	**Pop**
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	168	303
		Total Pop	**303**

Average Domestic Flow	**0.98 L/s**
Peaking Factor	**3.46**
Peak Domestic Flow	**3.40 L/s**

Institutional / Commercial / Industrial Contributions

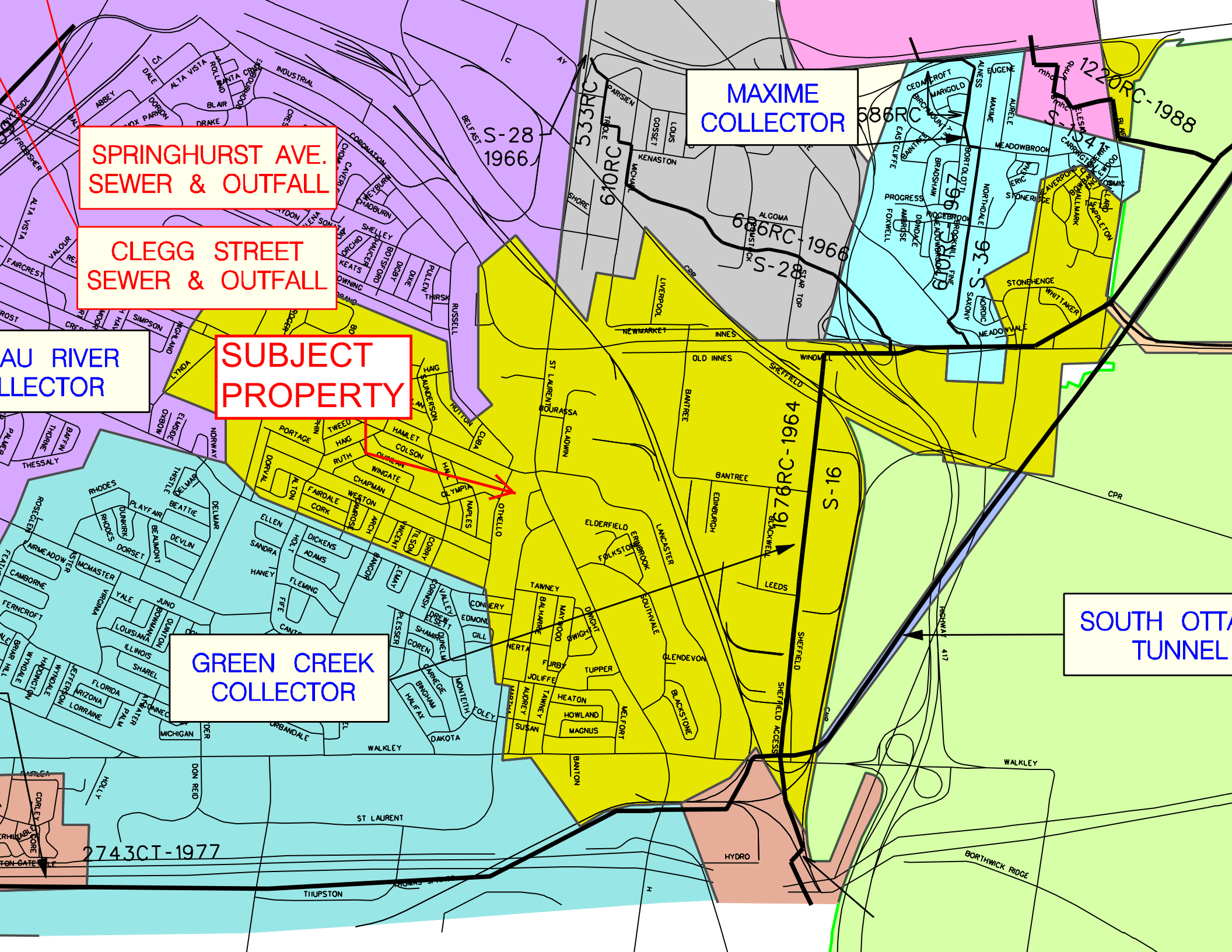
Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Commercial floor space*	5 $L/m^2/d$	1,117	0.13
Amenity floor space*	5 $L/m^2/d$	456	0.05
Industrial - Light	35,000 L/gross ha/d		0.00
Industrial - Heavy	55,000 L/gross ha/d		0.00

Average I/C/I Flow	**0.18**
Peak Institutional / Commercial Flow	0.19
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.19**

** Assuming a 12-Hour per day operation*

Total Estimated Average Dry Weather Flow Rate	**1.19 L/s**
Total Estimated Peak Dry Weather Flow Rate	**3.62 L/s**
Total Estimated Peak Wet Weather Flow Rate	**3.83 L/s**

Residential demands, Harmon's Correction Factor, Extraneous Flow Rates and Commercial Peaking Factor established by the City of Ottawa Technical Bulletin ISTB-2018-01. Commercial demands established by City of Ottawa Sewer Design Guidelines Appendix 4A.


SPRINGHURST AVE.
SEWER & OUTFALL
CLEGG STREET
SEWER & OUTFALL
SUBJECT
PROPERTY
MAXIME
COLLECTOR
GREEN CREEK
COLLECTOR
SOUTH OTTA
TUNNEL
AU RIVER
LLECTOR
S-28
1966
533RC
610RC
686RC
686RC-1966
967
S-36
1220RC-1988
S-134
1676RC-1964
S-16
2743CT-1977
BELFAST
KENASTON
ALGOMA
LIVERPOOL
NEWMARKET
INNES
OLD INNES
WINDMILL
SHEFFIELD
BANTREE
EDINBURGH
ELDERFIELD
FOLKSTON
LANCASTER
BLACKWELL
LEEDS
TAWNEY
SOUTHVALE
GLENDEVON
BLACKSTONE
MELFORT
HEATON
HOWLAND
MAGNUS
SUSAN
AUDREY
FURBY
JOLIFFE
DWIGHT
BALHARRIE
MAYWOOD
NERTA
BANTON
SHEFFIELD ACCESS
CPR
HYDRO
WALKLEY
ST LAURENT
TIIUPSTON
BORTHWICK RIDGE
HIGHWAY 417
STONEHENGE
WHITAKER
MEADOWVALE
STONERIDGE
MEADOWBROOK
NORTHDALE
BROOKWILL
RIDGEBROOK
PROGRESS
FOXWELL
DONDALE
AMBROSE
SAXONY
NORDIC
BONHALLMARK
APPLETON
COSMIC
CARRIGTWIN
CEDARCROFT
MARIGOLD
BIRCHMOUNT
EASTCLIFFE
MAXIME
AURELE
EUGENE
ALNESS
FLESHERTON
CARRIGTWIN
ALTA VISTA
INDUSTRIAL
BLAIR
DRAKE
ABBEY
FAIRCREST
VALOUR
SIMPSON
RUSSELL
SHELLEY
ORCHID
KEATS
BOTSFORD
DIGBY
DYKE
PULTEN
THIRSK
CORPORATION
CHADBURN
KEYBURN
PARISIEN
GOSSET
LOUIS
TABLE
SHORE
MICHAEL
CONSTABLE
STAR TOP
HAIG
SAUNDERSON
TWEED
PORTAGE
RUTTON
CLARA
HAMLET
COLSON
RUTH
CHAPMAN
WINGATE
FAIRDALE
CORK
WESTON
CAMBRIDGE
ARCH
VINCENT
TILSON
CORBY
NAPLES
OLYMPIA
OTHELLO
DAWSON
NELTON
ST LAURENT
BOURASSA
GLADWIN
LYNDA
NORWAY
OSBOURNE
ELMSIDE
THESSALY
BAFFIN
THORNE
PALMER
RHODES
PLAYFAIR
BEATTIE
DELMAR
THISTLE
ROSCLEN
DUNKIRK
BEAUMONT
DORSET
DEVLIN
ELLEN
SANDRA
HOLT
DICKENS
ADAMS
HANEY
FLEMING
FIFE
CANTIN
CAMBORNE
FERNCROFT
ARMEADOW
MCMASTER
ASTER
FEATHERSTON
YALE
JUNO
BOWMANVILLE
OLIVETON
LOUISIANA
ILLINOIS
SHAREL
FLORIDA
ARIZONA
LORRAINE
PAM
WINONA
HOWARD
WESTERTON
MICHIGAN
ORBANDALE
DON REID
HOLLY
CORLEY
MOORE
CARLEA
DAKOTA
HALIFAX
BINGHAM
CARNEGIE
MONTEITH
FOLEY
CONNISH
VALLEY
CONNERY
EDMOND
GILL
PLESSER
SHAMROCK
CORENE
QUINELM
VIRGINIA
MARSHALL
CONNIE

Alison Gosling

To: Robert Freel
Subject: RE: St. Laurent Blvd_1910 - Adequacy of Services Report

From: Robertson, Syd [mailto:Syd.Robertson@ottawa.ca]
Sent: February-04-16 8:03 AM
To: Adam Fobert
Cc: rfreel@dsel.ca; Jort-Conway, Melissa
Subject: RE: St. Laurent Blvd_1910 - Adequacy of Services Report

Hi Adam:

After further review of the sanitary model it was determined that a limit of 10 L/s can be discharged to the Othello system, with the balance of the wastewater flows directed to the sanitary system on St. Laurent Blvd.

Syd Robertson, C.E.T.
Project Manager, Infrastructure Approvals

From: Robertson, Syd
Sent: February 03, 2016 3:32 PM
To: 'Adam Fobert'
Cc: Jort-Conway, Melissa; rfreel@dsel.ca
Subject: RE: St. Laurent Blvd_1910 - Adequacy of Services Report

Hi Adam:

The City's sanitary model assumes that the entire Elmvale Acres site drains to Othello with a max rate of 6 L/s (including peak and I/I). Therefore the flow to the Othello system should be capped at 6 L/s with the remainder going to the sanitary system on St. Laurent Blvd.

As for the storm system, the receiving system is a 2 year system (Constructed prior to 1965), and therefore flows in excess of the 2-yr storm event, up to & including the 100 yr storm event, must be detained on-site. The 5-yr storm event, referenced in the SWM Criteria dated September 10, 2015, was incorrect as per the updated information on the receiving system.

Please call me if you have any questions.

Thanks,

Syd Robertson, C.E.T.
Project Manager, Infrastructure Approvals
Development Review Services Branch, Urban Outer Core
Planning & Growth Management Department
110 Laurier Ave. W., 4th Floor E
Ottawa, ON K1P 1J1

City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27916
ottawa.ca/planning / ottawa.ca/urbanisme

From: Adam Fobert [mailto:afobert@dsel.ca]
Sent: February 03, 2016 8:27 AM
To: Robertson, Syd; rfreel@dsel.ca
Cc: Jort-Conway, Melissa
Subject: RE: St. Laurent Blvd_1910 - Adequacy of Services Report

Hello Syd,

I'm concerned. Comment 1b, the existing site is almost entirely serviced to Othello today. Is the City suggesting that this development loses this available capacity? Comment 2a, is contradictory to the direction given to us at the pre-consult. See attached. Please note that this has a substantial cost implication to RioCAN.

Adam Fobert, P.Eng.
Manager of Site Plan Design

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

office: (613) 836-0856
direct: (613) 836-0626
cell: (613) 222-9493
email: afobert@DSEL.ca

From: Robertson, Syd [mailto:Syd.Robertson@ottawa.ca]
Sent: February-02-16 3:24 PM
To: rfreel@dsel.ca
Cc: Adam Fobert <afobert@dsel.ca>; Jort-Conway, Melissa <Melissa.Jort-Conway@ottawa.ca>
Subject: St. Laurent Blvd_1910 - Adequacy of Services Report

Hi Bobby:

Please address the following comments regarding the Assessment of Adequacy of Public Services Report, DSEL Proj. No. 15-792, Rev 2 (Dec 2015)

1. Wastewater Servicing:
   a. Extend the sanitary capacity analysis to the Walkley Road Trunk Sewer (see attached).

b. Discharging wastewater to sanitary system on Othello will not be permitted. Current modelling indicates problems with this additional flow in a 1:100 year event. Note that there is a sanitary pump station on Sanderson Dr., between Wingate & Olympia, which includes an overflow to the storm system.

c. Discharging wastewater to sanitary system on St. Laurent will be permitted providing the current sanitary flow information is correct. – *Confirm the sanitary flows from the site as per comment 'd'*

d. Commercial wastewater flows include in Phases I to IV were based on a unit rate of 5 L/s/sq.m./d (Retail stores with washrooms only). Please contact the proponent to determine if there are any other proposed uses such as restaurant, medical facilities etc., and if so, recalculate the wastewater flows accordingly.

2. Stormwater Management:

a. This area has a 2 year level of service, therefore revise the SWM Criteria and control the 100 year to 2 year using C=0.5 and a computed TC (10 minutes minimum).

b. Try to maintain the existing drainage patterns with outlets to the storm systems on the various frontages while minimizing the number of required road cuts.

Please call me if you have any questions.

Thanks,

Syd Robertson, C.E.T.
Project Manager, Infrastructure Approvals
Development Review Services Branch, Urban Outer Core
Planning & Growth Management Department
110 Laurier Ave. W., 4th Floor E
Ottawa, ON K1P 1J1

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APPENDIX D

Stormwater Management

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

2016 AES Approved RELEASE RATE

Q **82.6** **L/s/ha**

Phase I Area 0.61 ha
Q **50.8** **L/s**

Estimated Post Development Peak Flow from Unattenuated Areas

UN1	Imp.	Perv.	Total
Area	0.018	0.029	0.047
C	0.9	0.2	0.46

Area ID **UN1**
Total Area 0.047 ha
C 0.46 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
12.2	93.9	5.7	5.7	0.0	0.0	160.7	12.2	12.2	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

Area ID C1

C1	Imp.	Perv.	Total
Area	0.077	0.014	0.090
C	0.9	0.2	0.79

Total Subsurface Storage (m^3) 50.0

Stage Attenuated Areas Storage Summary

		Surface Storage			Surface and Subsurface Storage			
	Stage (m)	Ponding (m^2)	h_o (m)	delta d (m)	V* (m^3)	V_{acc}** (m^3)	$Q_{release}$† (L/s)	$V_{drawdown}$ (hr)
Orifice INV	76.18		0.00			0.0	0	0.00
U/G STORAGE INV	76.22		0.04	0.04	16.5	16.5	0.5	9.17
U/G STORAGE S/L	76.68		0.50	0.46	16.5	33.0	1	9.17
U/G STORAGE OBV	77.13		0.95	0.46	16.5	49.5	1.3	10.58
T/L	77.68	0	1.50	0.55	0.0	49.5	1.75	7.86
0.08m PONDING	77.76	65.5	1.58	0.08	1.9	51.4	1.75	8.16

* V=Incremental storage volume
** V_{acc}=Total surface and sub-surface
† $Q_{release}$ = Release rate calculated from orifice equation

Orifice Location **CICB 102** **Dia** LMF40
Total Area 0.090 ha
C 0.79 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
5	141.2	28.1	0.7	27.5	8.2	242.7	60.5	1.3	59.2	17.8
10	104.2	20.8	0.7	20.1	12.0	178.6	44.5	1.3	43.2	25.9
15	83.6	16.7	0.7	16.0	14.4	142.9	35.6	1.3	34.3	30.9
20	70.3	14.0	0.7	13.3	16.0	120.0	29.9	1.3	28.6	34.3
25	60.9	12.1	0.7	11.4	17.2	103.8	25.9	1.3	24.6	36.9
30	53.9	10.8	0.7	10.1	18.1	91.9	22.9	1.3	21.6	38.9
35	48.5	9.7	0.7	9.0	18.9	82.6	20.6	1.3	19.3	40.5
40	44.2	8.8	0.7	8.1	19.5	75.1	18.7	1.3	17.4	41.8
45	40.6	8.1	0.7	7.4	20.0	69.1	17.2	1.3	15.9	43.0
50	37.7	7.5	0.7	6.8	20.4	64.0	15.9	1.3	14.6	43.9
55	35.1	7.0	0.7	6.3	20.8	59.6	14.9	1.3	13.6	44.7
60	32.9	6.6	0.7	5.9	21.2	55.9	13.9	1.3	12.6	45.5
65	31.0	6.2	0.7	5.5	21.4	52.6	13.1	1.3	11.8	46.1
70	29.4	5.9	0.7	5.2	21.7	49.8	12.4	1.3	11.1	46.7
75	27.9	5.6	0.7	4.9	21.9	47.3	11.8	1.3	10.5	47.2
80	26.6	5.3	0.7	4.6	22.1	45.0	11.2	1.3	9.9	47.6
85	25.4	5.1	0.7	4.4	22.3	43.0	10.7	1.3	9.4	48.0
90	24.3	4.8	0.7	4.1	22.4	41.1	10.2	1.3	8.9	48.3
95	23.3	4.6	0.7	4.0	22.5	39.4	9.8	1.3	8.5	48.6
100	22.4	4.5	0.7	3.8	22.6	37.9	9.4	1.3	8.1	48.9
105	21.6	4.3	0.7	3.6	22.7	36.5	9.1	1.3	7.8	49.1

5-year $Q_{attenuated}$ 0.69 L/s **100-year $Q_{attenuated}$ 1.29 L/s**
5-year Max. Storage Required 22.7 m^3 **100-year Max. Storage Required 49.1 m^3**
Est. 5-year Storage Elevation 76.39 m **Est. 100-year Storage Elevation 77.12 m**

Area ID C2+BLDA

C2	Imp.	Perv.	Total
Area	0.139	0.036	0.175
C	0.9	0.2	0.76

BLDA	Imp.	Perv.	Total
Area	0.254	0.000	0.254
C	0.9	0.2	0.90

C2+BLDA	Imp.	Perv.	Total
Area	0.393	0.036	0.429
C	0.9	0.2	0.84

Total Subsurface Storage (m^3) 138.0

Stage Attenuated Areas Storage Summary

		Surface Storage			Surface and Subsurface Storage			
	Stage	Ponding	h_o	delta d	V*	V_{acc}**	$Q_{release}$†	$V_{drawdown}$
	(m)	(m^2)	(m)	(m)	(m^3)	(m^3)	(L/s)	(hr)
Orifice INV	75.54		0.00			0.0	0	0.00
U/G STORAGE INV	75.62		0.08	0.08	45.5	45.5	14.1	0.90
U/G STORAGE S/L	76.08		0.46	0.38	45.5	91.1	33.6	0.75
U/G STORAGE OBV	76.53		0.46	0.00	45.5	136.6	33.6	1.13
T/L	77.80	0.4	2.26	1.80	0.2	136.9	74.7	0.51
0.10m Ponding	77.90	62.0	2.36	0.10	2.2	139.1	76.3	0.51

* V=Incremental storage volume

**V_{acc}=Total surface and sub-surface

† $Q_{release}$ = Release rate calculated from Tempest LMF Curve

Orifice Location **STM106** **Dia** 153

Total Area 0.429 ha

C 0.84 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

	5-year					100-year				
t_c	i	Q_{actual}‡	$Q_{release}$	Q_{stored}	V_{stored}	i	Q_{actual}‡	$Q_{release}$	Q_{stored}	V_{stored}
(min)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m^3)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m^3)
5	141.2	141.5	20.6	120.9	36.3	242.7	289.3	33.6	255.7	76.7
10	104.2	104.4	20.6	83.9	50.3	178.6	212.8	33.6	179.2	107.5
15	83.6	83.7	20.6	63.2	56.9	142.9	170.3	33.6	136.7	123.0
20	70.3	70.4	20.6	49.9	59.8	120.0	143.0	33.6	109.4	131.2
25	60.9	61.0	20.6	40.5	60.7	103.8	123.8	33.6	90.2	135.3
30	53.9	54.0	20.6	33.5	60.3	91.9	109.5	33.6	75.9	136.6
35	48.5	48.6	20.6	28.1	58.9	82.6	98.4	33.6	64.8	136.1
40	44.2	44.3	20.6	23.7	56.9	75.1	89.6	33.6	56.0	134.3
45	40.6	40.7	20.6	20.2	54.4	69.1	82.3	33.6	48.7	131.5
50	37.7	37.7	20.6	17.2	51.5	64.0	76.2	33.6	42.6	127.9
55	35.1	35.2	20.6	14.6	48.3	59.6	71.1	33.6	37.5	123.7
60	32.9	33.0	20.6	12.5	44.9	55.9	66.6	33.6	33.0	118.9
65	31.0	31.1	20.6	10.6	41.2	52.6	62.7	33.6	29.2	113.7
70	29.4	29.4	20.6	8.9	37.3	49.8	59.3	33.6	25.7	108.1
75	27.9	28.0	20.6	7.4	33.3	47.3	56.3	33.6	22.7	102.3
80	26.6	26.6	20.6	6.1	29.1	45.0	53.6	33.6	20.0	96.1
85	25.4	25.4	20.6	4.9	24.8	43.0	51.2	33.6	17.6	89.8
90	24.3	24.3	20.6	3.8	20.4	41.1	49.0	33.6	15.4	83.2
95	23.3	23.4	20.6	2.8	16.0	39.4	47.0	33.6	13.4	76.4
100	22.4	22.5	20.6	1.9	11.4	37.9	45.2	33.6	11.6	69.5
105	21.6	21.6	20.6	1.1	6.8	36.5	43.5	33.6	9.9	62.4

5-year $Q_{attenuated}$ **20.56 L/s** **100-year $Q_{attenuated}$** **33.59 L/s**

5-year Max. Storage Required **60.7 m^3** **100-year Max. Storage Required** **136.6 m^3**

Est. 5-year Storage Elevation **75.75 m** **Est. 100-year Storage Elevation** **76.00 m**

Estimated Post Development Peak Flow from Attenuated Areas

Area ID **C3**

C3	Imp.	Perv.	Total
Area	0.006	0.045	0.051
C	0.9	0.2	0.28

Stage Attenuated Areas Storage Summary

		Surface Storage			Surface and Subsurface Storage			
	Stage	Ponding	h_o	delta d	V*	V_{acc}**	$Q_{release}$†	$V_{drawdown}$
	(m)	(m^2)	(m)	(m)	(m^3)	(m^3)	(L/s)	(hr)
Orifice INV	76.59		0.00			0.0	0	0.00
Storage Pipe SL	76.72		0.13	0.13	0.0	0.0	0.5	0.00
Storage Pipe OBV	76.84		0.25	0.13	0.0	0.0	0.75	0.00
T/L	78.09	0.4	1.50	1.25	0.2	0.2	1.65	0.03
0.10m Ponding	78.19	91.7	1.60	0.10	3.3	3.4	1.75	0.55
0.20m Ponding	78.29	191.9	1.70	0.10	13.9	17.3	1.85	2.60
0.30m Ponding	78.39	280.5	1.80	0.10	23.5	40.8	1.95	5.81

* V=Incremental storage volume

**V_{acc}=Total surface and sub-surface

† $Q_{release}$ = Release rate calculated from Tempest LMF Curve

Orifice Location **CB103** **Dia** LMF40

Total Area 0.051 ha

C 0.28 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
5	141.2	5.7	1.7	4.0	1.2	242.7	36.3	1.9	34.4	10.3
10	104.2	4.2	1.7	2.5	1.5	178.6	26.7	1.9	24.8	14.9
15	83.6	3.4	1.7	1.7	1.5	142.9	21.4	1.9	19.5	17.5
20	70.3	2.8	1.7	1.1	1.4	120.0	17.9	1.9	16.1	19.3
25	60.9	2.4	1.7	0.8	1.1	103.8	15.5	1.9	13.7	20.5
30	53.9	2.2	1.7	0.5	0.9	91.9	13.7	1.9	11.9	21.4
35	48.5	1.9	1.7	0.3	0.5	82.6	12.4	1.9	10.5	22.0
40	44.2	1.8	1.7	0.1	0.2	75.1	11.2	1.9	9.4	22.5
45	40.6	1.6	1.6	0.0	0.0	69.1	10.3	1.9	8.5	22.8
50	37.7	1.5	1.5	0.0	0.0	64.0	9.6	1.9	7.7	23.1
55	35.1	1.4	1.4	0.0	0.0	59.6	8.9	1.9	7.0	23.2
60	32.9	1.3	1.3	0.0	0.0	55.9	8.4	1.9	6.5	23.3
65	31.0	1.2	1.2	0.0	0.0	52.6	7.9	1.9	6.0	23.4
70	29.4	1.2	1.2	0.0	0.0	49.8	7.4	1.9	5.6	23.4
75	27.9	1.1	1.1	0.0	0.0	47.3	7.1	1.9	5.2	23.4
80	26.6	1.1	1.1	0.0	0.0	45.0	6.7	1.9	4.9	23.3
85	25.4	1.0	1.0	0.0	0.0	43.0	6.4	1.9	4.6	23.2
90	24.3	1.0	1.0	0.0	0.0	41.1	6.1	1.9	4.3	23.1
95	23.3	0.9	0.9	0.0	0.0	39.4	5.9	1.9	4.0	22.9
100	22.4	0.9	0.9	0.0	0.0	37.9	5.7	1.9	3.8	22.8
105	21.6	0.9	0.9	0.0	0.0	36.5	5.5	1.9	3.6	22.6

5-year $Q_{attenuated}$ **1.69 L/s** **100-year $Q_{attenuated}$** **1.88 L/s**

5-year Max. Storage Required **1.5 m^3** **100-year Max. Storage Required** **23.4 m^3**

Est. 5-year Storage Elevation **78.13 m** **Est. 100-year Storage Elevation** **78.32 m**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m^3)	100-Year Release Rate (L/s)	100-Year Required Storage (m^3)	100-Year Available Storage (m^3)
Unattenuated Areas (UN1)	5.7	0.0	12.2	0.0	0.0
Attenutated Area (C1)	0.7	22.7	1.3	49.1	51.4
Attenutated Areas (C2+BLDA)	20.6	60.7	33.6	136.6	139.1
Attenutated Area (C3)	1.7	1.5	1.9	23.4	40.8
Total	**28.6**	**85.0**	**48.9**	**209.2**	**231.3**

RioCan Holdings Inc.
1910 St.Laurent Blvd.
Storm Sewer Design Sheet - Predevelopment 2-Year

										Sewer Data								
Area ID	**Up**	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**$I_{2\text{-year}}$**	**Q**	**DIA**	**Slope**	**Length**	**$A_{hydraulic}$**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
			(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
PREDEV	EX.STMH1	EX.STMH2	0.398	0.85	0.34	0.34	10.0	76.8	72.1	400	0.50	77.4	0.126	0.100	1.17	147.3	1.1	0.49
	EX.STMH2	EX.STMH3	0.398	0.85	0.34	0.68	11.0	73.2	137.3	400	0.70	77.3	0.126	0.100	1.39	174.2	0.9	0.79
	EX.STMH3	EX.STMH4	0.398	0.85	0.34	1.01	12.0	69.9	196.7	500	0.20	64.7	0.196	0.125	0.86	168.9	1.3	1.16
	EX.STMH4	EX.STMH5	0.398	0.85	0.34	1.35	13.0	66.9	251.2	500	0.40	14.4	0.196	0.125	1.22	238.8	0.2	1.05
	EX.STMH5	EX.STMH6	0.398	0.85	0.34	1.69	13.0	66.9	314.0	500	0.20	42.0	0.196	0.125	0.86	168.9	0.8	1.86
	EX.STMH6	EX.STMH7			0.00	1.69	13.0	66.9	314.0	500	0.20	7.2	0.196	0.125	0.86	168.9	0.1	1.86
	EX.STMH7	EX. STMH8			0.00	1.69	13.0	66.9	314.0	500	1.10	15.7	0.196	0.125	2.02	396.0	0.1	0.79
	EX.STMH8	EX. STMH9			0.00	1.69	13.0	66.9	314.0	500	3.40	27.0	0.196	0.125	3.55	696.3	0.1	0.45
			1.990				13.0											

*** Refer to *Pre Development Area to Existing Storm Sewer* figure, FIGURE 3, dated March 2019.**

PREDEV	Imp.	Perv.	Total
Area	1.844	0.146	1.990
C	0.9	0.2	0.85

EX-1	Imp.	Perv.	Total
Area	1.163	0.051	1.213
C	0.9	0.2	0.87

C2+BLDA	Imp.	Perv.	Total
Area	0.393	0.036	0.429
C	0.9	0.2	0.84

C3	Imp.	Perv.	Total
Area	0.006	0.045	0.051
C	0.9	0.2	0.28

C1	Imp.	Perv.	Total
Area	0.077	0.014	0.090
C	0.9	0.2	0.79

RioCan Holdings Inc.
1910 St.Laurent Blvd.
Storm Sewer Design Sheet - Phase I Uncontrolled 2-Year

										Sewer Data								
Area ID	**Up**	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**$I_{2\text{-year}}$**	**Q**	**DIA**	**Slope**	**Length**	**$A_{hydraulic}$**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
			(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
EX-1	EX.STMH1	EX.STMH2	0.404	0.87	0.35	0.35	10.0	76.8	75.1	400	0.50	77.4	0.126	0.100	1.17	147.3	1.1	0.51
	EX.STMH2	EX.STMH3	0.404	0.87	0.35	0.70	11.0	73.2	143.2	400	0.70	77.3	0.126	0.100	1.39	174.2	0.9	0.82
	EX.STMH3	STM101	0.404	0.87	0.35	1.06	12.0	69.9	205.1	500	0.20	42.7	0.196	0.125	0.86	168.9	0.8	1.21
			1.213				12.8											
C2+BLDA	STM106	STM101	0.429	0.84	0.36	0.36	10.0	76.8	77.0	375	0.50	32.4	0.110	0.094	1.12	124.0	0.5	0.62
							10.5											
C1	CICB 102	STM101	0.090	0.79	0.07	0.07	10.0	76.8	15.3	300	1.00	1.5	0.071	0.075	1.37	96.7	0.0	0.16
							10.0											
	STM101	STM102			0.00	1.49	12.8	67.4	278.9	500	0.20	25.7	0.196	0.125	0.86	168.9	0.5	1.65
	STM102	STM103			0.00	1.49	13.3	66.0	273.1	500	0.40	2.2	0.196	0.125	1.22	238.8	0.0	1.14
	STM103	STM104			0.00	1.49	13.4	65.9	272.8	500	0.20	22.3	0.196	0.125	0.86	168.9	0.4	1.62
	STM104	STM105			0.00	1.49	13.8	64.8	268.0	500	0.20	10.8	0.196	0.125	0.86	168.9	0.2	1.59
							14.0											
C3	CB 103	STM105	0.051	0.28	0.01	0.01	10.0	76.8	3.1	250	0.50	6.6	0.049	0.063	0.86	42.0	0.1	0.07
							10.1											
	STM105	EX.STMH6			0.00	1.50	14.0	64.2	268.3	500	0.20	10.2	0.196	0.125	0.86	168.9	0.2	1.59
	EX.STMH6	EX.STMH7			0.00	1.50	14.2	63.7	266.2	500	0.20	7.2	0.196	0.125	0.86	168.9	0.1	1.58
	EX.STMH7	EX. STMH8			0.00	1.50	14.3	63.4	264.7	500	1.10	15.7	0.196	0.125	2.02	396.0	0.1	0.67
	EX.STMH8	EX. STMH9			0.00	1.50	14.5	63.1	263.4	500	3.40	27.0	0.196	0.125	3.55	696.3	0.1	0.38
							14.6											

*** Refer to *Stormwater Management Plan* , SWM-1, dated March 2019.**

PREDEV	**Imp.**	**Perv.**	**Total**
Area	1.844	0.146	1.990
C	0.9	0.2	0.85

EX-1	**Imp.**	**Perv.**	**Total**
Area	1.163	0.051	1.213
C	0.9	0.2	0.87

C2+BLDA	**Imp.**	**Perv.**	**Total**
Area	0.393	0.036	0.429
C	0.9	0.2	0.84

C3	**Imp.**	**Perv.**	**Total**
Area	0.006	0.045	0.051
C	0.9	0.2	0.28

C1	**Imp.**	**Perv.**	**Total**
Area	0.077	0.014	0.090
C	0.9	0.2	0.79

RioCan Holdings Inc.
1910 St.Laurent Blvd.
Storm Sewer Design Sheet - Phase I Controlled

										Sewer Data								
Area ID	**Up**	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**$I_{2\text{-year}}$**	**Q**	**DIA**	**Slope**	**Length**	**$A_{hydraulic}$**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
			(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
EX-1	EX.STMH1	EX.STMH2	0.404	0.87	0.35	0.35	10.0	76.8	75.1	400	0.50	77.4	0.126	0.100	1.17	147.3	1.1	0.51
	EX.STMH2	EX.STMH3	0.404	0.87	0.35	0.70	11.0	73.2	143.2	400	0.70	77.3	0.126	0.100	1.39	174.2	0.9	0.82
	EX.STMH3	STM101	0.404	0.87	0.35	1.06	12.0	69.9	205.1	500	0.20	42.7	0.196	0.125	0.86	168.9	0.8	1.21
			1.213				12.8											
C2+BLDA	STM106	STM101	0.429		0.00	0.00	10.0		33.6	375	0.50	32.4	0.110	0.094	1.12	124.0	0.5	0.27
							10.5											
C1	CICB 102	STM101	0.090		0.00	0.00	10.0		1.3	300	1.00	1.5	0.071	0.075	1.37	96.7	0.0	0.01
							10.0											
	STM101	STM102			0.00	1.06	12.8	67.4	197.9	500	0.20	25.7	0.196	0.125	0.86	168.9	0.5	1.17
	STM102	STM103			0.00	1.06	13.3	66.0	193.8	500	0.40	2.2	0.196	0.125	1.22	238.8	0.0	0.81
	STM103	STM104			0.00	1.06	13.4	65.9	193.5	500	0.20	22.3	0.196	0.125	0.86	168.9	0.4	1.15
	STM104	STM105			0.00	1.06	13.8	64.8	190.1	500	0.20	10.8	0.196	0.125	0.86	168.9	0.2	1.13
							14.0											
C3	CB 103	STM105	0.051		0.00	0.00	10.0		1.9	250	0.50	6.6	0.049	0.063	0.86	42.0	0.1	0.04
							10.1											
	STM105	EX.STMH6			0.00	1.06	14.0	64.2	188.5	500	0.20	10.2	0.196	0.125	0.86	168.9	0.2	1.12
	EX.STMH6	EX.STMH7			0.00	1.06	14.2	63.7	187.0	500	0.20	7.2	0.196	0.125	0.86	168.9	0.1	1.11
	EX.STMH7	EX. STMH8			0.00	1.06	14.3	63.4	186.0	500	1.10	15.7	0.196	0.125	2.02	396.0	0.1	0.47
	EX.STMH8	EX. STMH9			0.00	1.06	14.5	63.1	185.1	500	3.40	27.0	0.196	0.125	3.55	696.3	0.1	0.27
							14.6											

*** Refer to *Stormwater Management Plan* , SWM-1, dated March 2019.**

PREDEV	**Imp.**	**Perv.**	**Total**
Area	1.844	0.146	1.990
C	0.9	0.2	0.85

EX-1	**Imp.**	**Perv.**	**Total**
Area	1.163	0.051	1.213
C	0.9	0.2	0.87

C2+BLDA	**Imp.**	**Perv.**	**Total**
Area	0.393	0.036	0.429
C	0.9	0.2	0.84

C3	**Imp.**	**Perv.**	**Total**
Area	0.006	0.045	0.051
C	0.9	0.2	0.28

C1	**Imp.**	**Perv.**	**Total**
Area	0.077	0.014	0.090
C	0.9	0.2	0.79

RioCan Holdings Inc.
1910 St.Laurent Blvd.
Storm Sewer Design Sheet - Ultimate Controlled Flow

										Sewer Data								
Area ID	**Up**	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**$I_{2\text{-year}}$**	**Q***	**DIA**	**Slope**	**Length**	**$A_{hydraulic}$**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
			(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
EX-1	EX.STMH1	EX.STMH2	0.404	0.87	0.35	0.35	10.0	76.8	33.4	400	0.50	77.4	0.126	0.100	1.17	147.3	1.1	0.23
	EX.STMH2	EX.STMH3	0.404	0.87	0.35	0.70	11.0	73.2	33.4	400	0.70	77.3	0.126	0.100	1.39	174.2	0.9	0.19
	EX.STMH3	STM101	0.404	0.87	0.35	1.06	12.0	69.9	33.4	500	0.20	42.7	0.196	0.125	0.86	168.9	0.8	0.20
			1.213				12.8		100.2									
C2+BLDA	STM106	STM101	0.429		0.00	0.00	10.0		33.6	375	0.50	32.4	0.110	0.094	1.12	124.0	0.5	0.27
							10.5											
C1	CICB 102	STM101	0.090		0.00	0.00	10.0		1.3	300	1.00	1.5	0.071	0.075	1.37	96.7	0.0	0.01
							10.0											
	STM101	STM102			0.00	1.06	12.8	67.4	135.1	500	0.20	25.7	0.196	0.125	0.86	168.9	0.5	0.80
	STM102	STM103			0.00	1.06	13.3	66.0	135.1	500	0.40	2.2	0.196	0.125	1.22	238.8	0.0	0.57
	STM103	STM104			0.00	1.06	13.4	65.9	135.1	500	0.20	22.3	0.196	0.125	0.86	168.9	0.4	0.80
	STM104	STM105			0.00	1.06	13.8	64.8	135.1	500	0.20	10.8	0.196	0.125	0.86	168.9	0.2	0.80
							14.0											
C3	CB 103	STM105	0.051		0.00	0.00	10.0		1.9	250	0.50	6.6	0.049	0.063	0.86	42.0	0.1	0.04
							10.1											
	STM105	EX.STMH6			0.00	1.06	14.0	64.2	137.0	500	0.20	10.2	0.196	0.125	0.86	168.9	0.2	0.81
	EX.STMH6	EX.STMH7			0.00	1.06	14.2	63.7	137.0	500	0.20	7.2	0.196	0.125	0.86	168.9	0.1	0.81
	EX.STMH7	EX.STMH8			0.00	1.06	14.3	63.4	137.0	500	1.10	15.7	0.196	0.125	2.02	396.0	0.1	0.35
	EX.STMH8	EX.STMH9			0.00	1.06	14.5	63.1	137.0	500	3.40	27.0	0.196	0.125	3.55	696.3	0.1	0.20
							14.6											

82.6 L/ha/s attenuated release rate per 1910 St. Laurent AES December 2016

Refer to *Stormwater Management Plan* , SWM-1, dated March 2019.

PREDEV	**Imp.**	**Perv.**	**Total**
Area	1.844	0.146	1.990
C	0.9	0.2	0.85

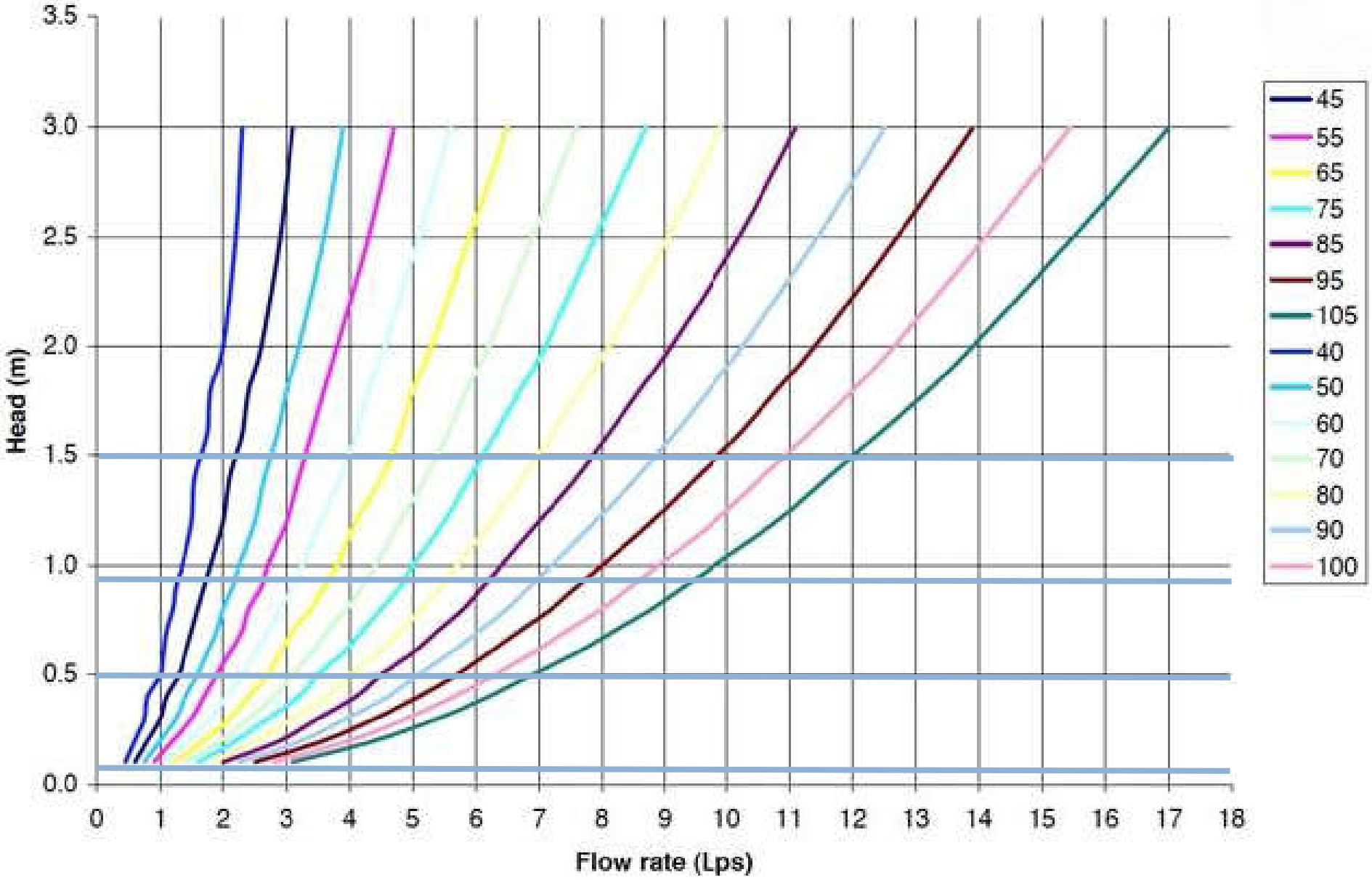
EX-1	**Imp.**	**Perv.**	**Total**
Area	1.163	0.051	1.213
C	0.9	0.2	0.87

C2+BLDA	**Imp.**	**Perv.**	**Total**
Area	0.393	0.036	0.429
C	0.9	0.2	0.84

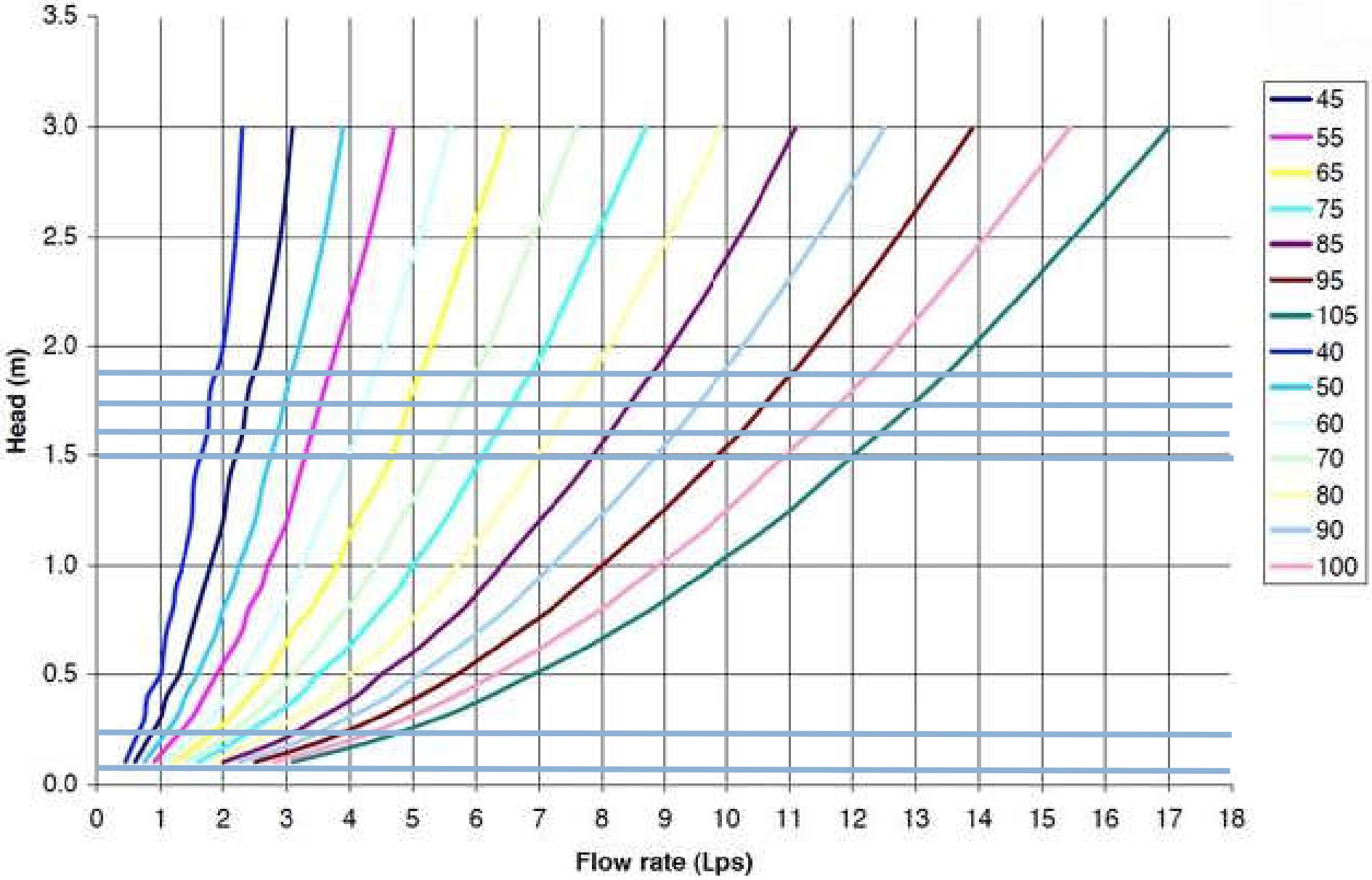
C3	**Imp.**	**Perv.**	**Total**
Area	0.006	0.045	0.051
C	0.9	0.2	0.28

C1	**Imp.**	**Perv.**	**Total**
Area	0.077	0.014	0.090
C	0.9	0.2	0.79

TEMPEST LMF flow curves CICB 102



TEMPEST LMF flow curves CB 103



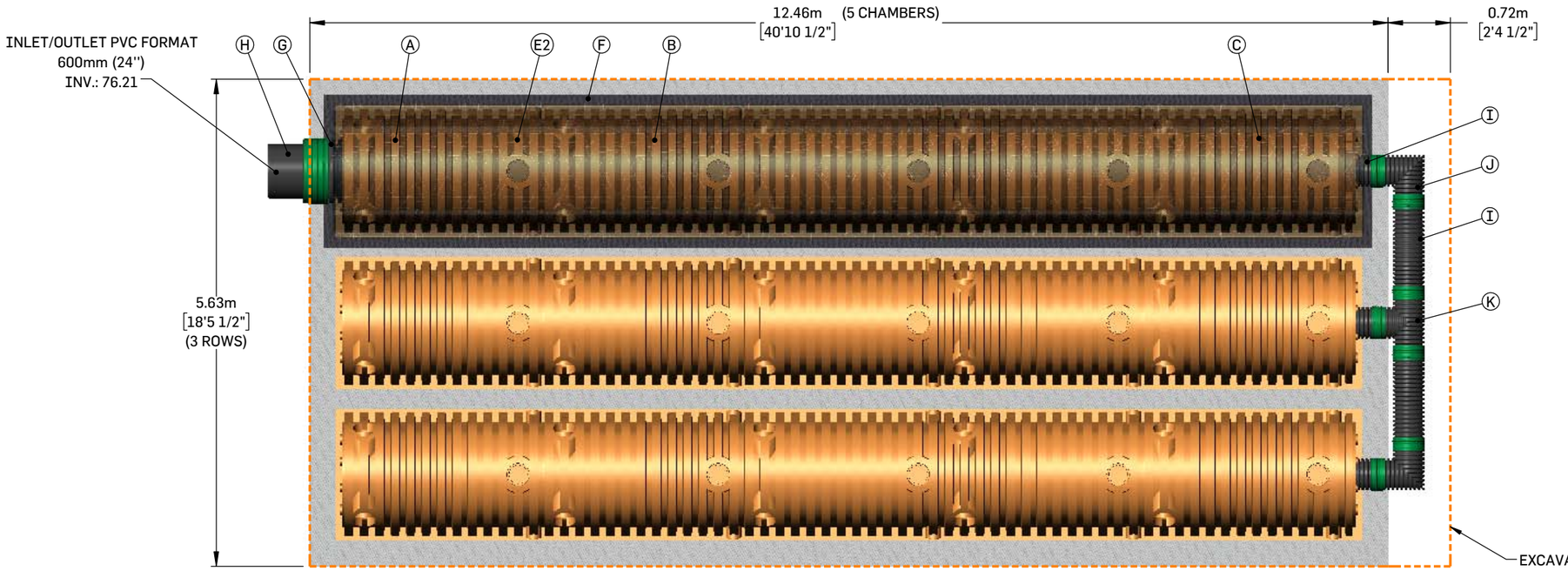
SC00562 SOLENO STORMCHAMBER SYSTEM 15 CHAMBERS 50m³

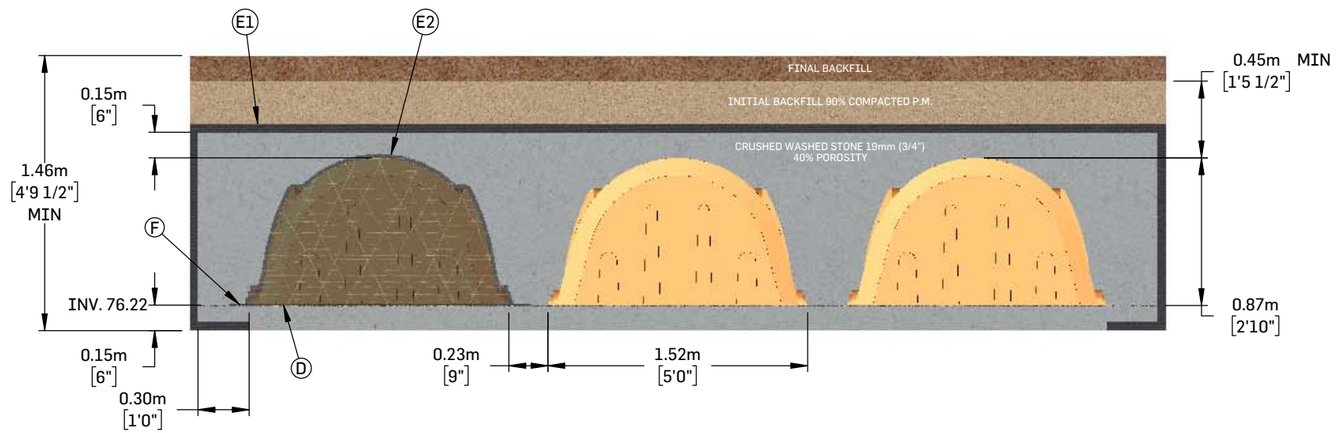
PROJECT: PROJECT 18-1027 BASIN 1
JOB LOCATION: OTTAWA (ON)
CONTACT:
OWNER/ENGINEERING FIRM/CONTRACTOR NAME: DAVID SCHAEFFER ENGINEERING LIMITED

1. INSTALLATION MUST BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. SYSTEM IS DESIGNED TO WITHSTAND TRAFFIC LOAD CSA CL-625 AND AASHTO H-20.
3. THE SYSTEM MUST BE MINIMALLY BACKFILLED WITH 150 mm (6'') OF CRUSHED STONE AND 300 mm (12'') OF GRANULAR MATERIAL COMPACTED AT 90% P.M.
4. STORMCHAMBER GEOGRID FOR FOUNDATION STABILIZATION IS CONSIDERED UNDER ALL THE CHAMBERS. HEAVY DUTY GEOGRID IS ONLY LOCATED UNDER THE CHAMBERS WITH WATER INTAKE AND THOSE WITH SEDIMENT TRAP.
5. STORAGE IN BASE COURSE NOT CONSIDERED

APPROVAL : _____

SC00562 SOLENO STORMCHAMBER SYSTEM 15 CHAMBERS 50m³





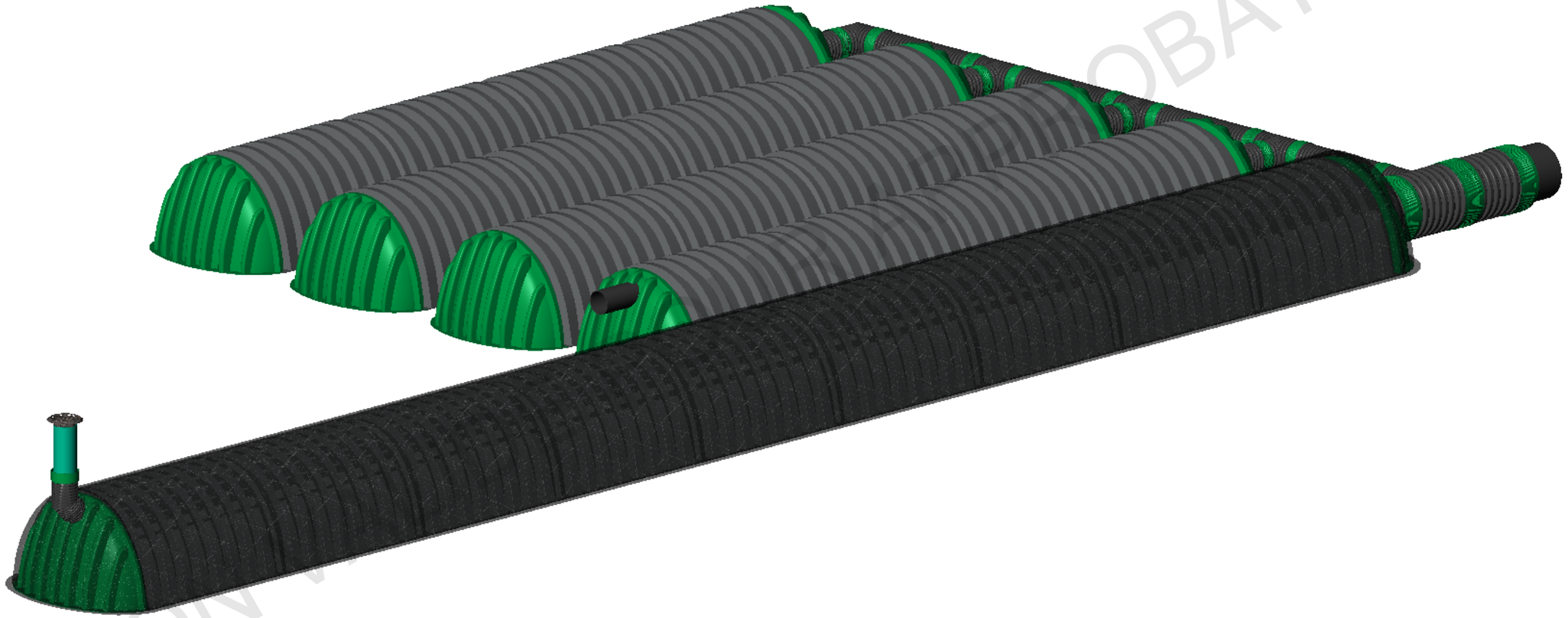
PART	DESCRIPTION	QTY
A	START CHAMBER	3
B	MIDDLE CHAMBER	9
C	END CHAMBER	3
D	LIGHTWEIGHT STABILIZATION NETTING	1
E1	SOLENO TX-90 SEPARATION NONWOVEN GEOTEXTILE, ABOVE AND ON THE SIDES	1
E2	SOLENO TX-90 SEDIMENTATION NONWOVEN GEOTEXTILE, 1 LAYER OVER THE ROW	
F	SOLENO 2006W SEDIMENTATION WOVEN GEOTEXTILE, 2 LAYERS UNDER THE ROW	1
G	STD LENGTH 6m (236") SOLFLO MAX 600mm (24")	1
H	MANHOLE ADAPTER FOR PVC 600mm (24") DR35	1
I	STD LENGTH 6m (236") SOLFLO MAX 300mm (12")	1
J	ELBOW SOLFLO MAX 300mm (12")	2
K	TEE SOLFLO MAX 300mm (12")	1

APPROVAL : _____

2019-02-05

SC00443 SOLENO HYDROSTOR HS180 SYSTEM 25 CHAMBERS 138m³

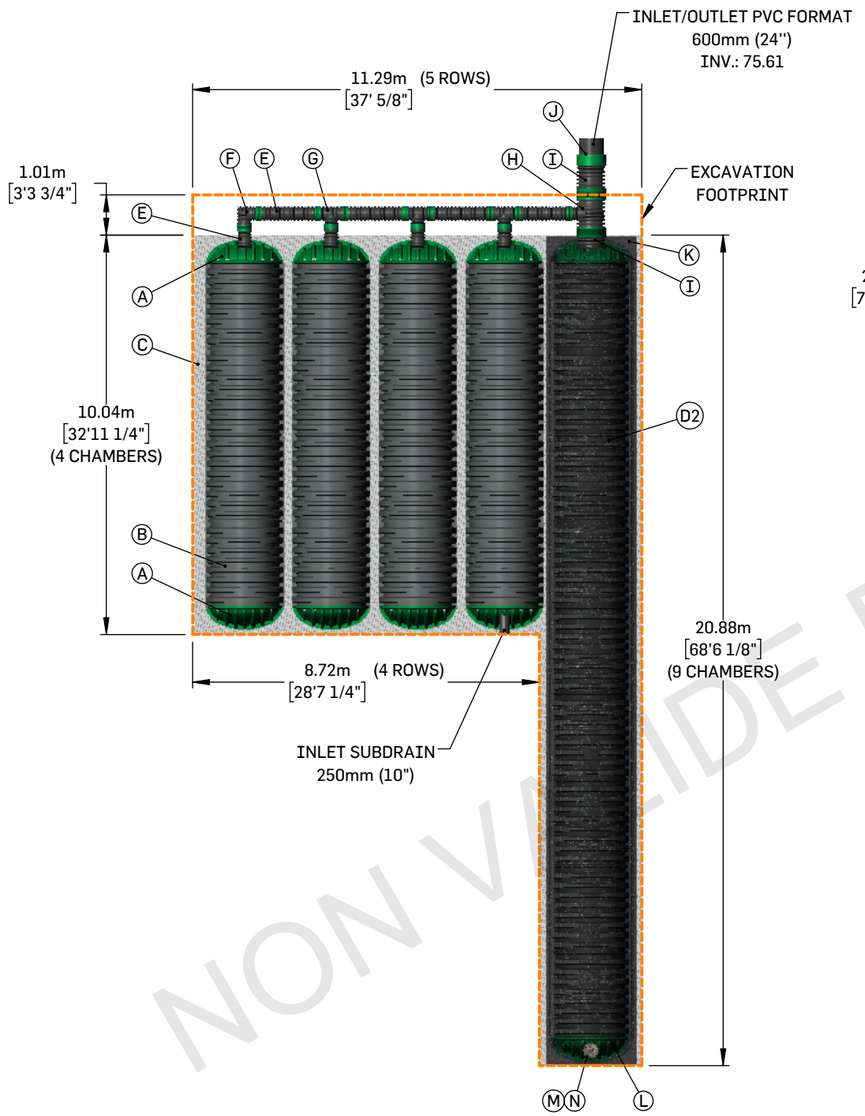
PROJECT: 18-1027 BASIN 2
JOB LOCATION: OTTAWA (ON)
CONTACT:
OWNER/ENGINEERING FIRM/CONTRACTOR NAME: DAVID SCHAEFFER ENGINEERING LIMITED

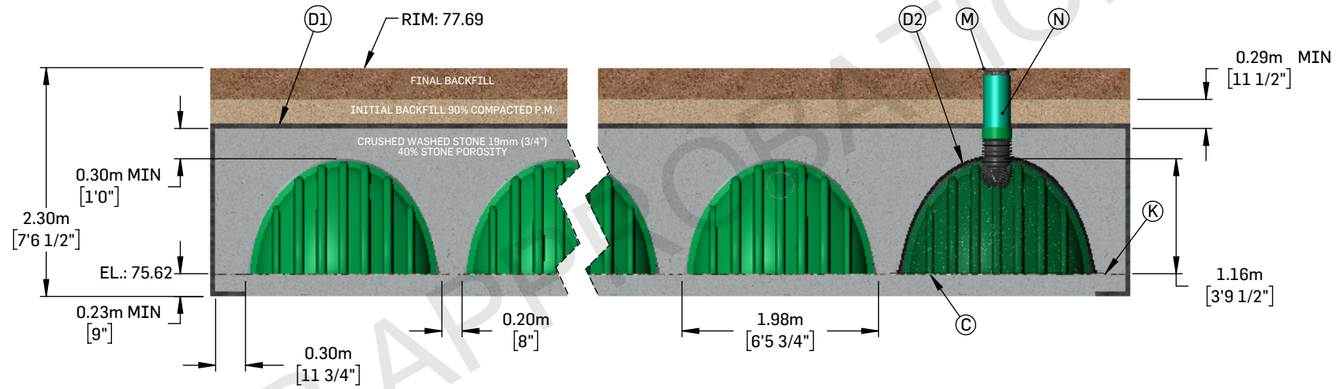


1. INSTALLATION MUST BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. SYSTEM IS DESIGNED TO WITHSTAND TRAFFIC LOAD CSA CL-625 AND AASHTO H-20.
3. HS180 CHAMBERS MUST BE MINIMALLY BACKFILLED WITH 300 mm (12") OF CRUSHED STONE AND 285 mm (11.5") OF GRANULAR MATERIAL COMPACTED AT 90% P.M.
4. HYDROSTOR GEOGRID FOR FOUNDATION STABILIZATION IS CONSIDERED UNDER ALL THE CHAMBERS.
5. STORAGE IN BASE COURSE NOT CONSIDERED

THIS DRAWING IS NOT VALID FOR APPROVAL. DETAILED DRAWINGS WILL BE SUBMITTED FOR APPROVAL AFTER RECEPTION OF PURCHASE ORDER.

SC00443 SOLENO HYDROSTOR HS180 SYSTEM 25 CHAMBERS 138m³





PART	DESCRIPTION	QTY
A	HYDROSTOR END CAP HS180	9
B	HYDROSTOR CHAMBER HS180	25
C	STABILIZATION NETTING HYDROSTOR	2
D1	SOLENO TX-90 SEPARATION NONWOVEN GEOTEXTILE, ABOVE AND ON THE SIDES	1
D2	SOLENO TX-90 SEDIMENTATION NONWOVEN GEOTEXTILE, 1 LAYER OVER THE ROW	
E	STD LENGTH 6m (236") SOLFLO MAX 300mm (12")	2
F	ELBOW SOLFLO MAX 300mm (12")	1
G	TEE SOLFLO MAX 300mm (12")	3
H	REDUCING TEE SOLFLO MAX 600mm (24") - SOLFLO MAX 300mm (12")	1
I	STD LENGTH 6m (236") SOLFLO MAX 600mm (24")	1
J	MANHOLE ADAPTER FOR PVC 600mm (24") DR35	1
K	SOLENO 2006W SEDIMENTATION WOVEN GEOTEXTILE, 2 LAYERS UNDER THE ROW	1
L	HYDROSTOR END CAP HS180 WITH WELDED EBLOW SOLFLO MAX 250mm (10") FOR ACCESS WELL	1
M	ADJUSTABLE FRAME AND COVER 250mm (10")	1
N	PVC PIPE ACCESS WELL 250mm (10") (PROVIDED BY OTHER)	1

THIS DRAWING IS NOT VALID FOR APPROVAL. DETAILED DRAWINGS WILL BE SUBMITTED FOR APPROVAL AFTER RECEPTION OF PURCHASE ORDER.

AquaShield™ STORMWATER TREATMENT SOLUTIONS

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: **1910 St. Laurent Blvd**

Site Area (hectacres): **1.73**

Unit Label: **OGS-1**

Runoff Coeff. : **.86**

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
			Offline	BYP[5]		
AS-6	**86.58 %**	1830 mm.	381 mm.	912 mm.	1478 L	1.82 m^3

Rainfall Information

NCDC Station[1]: **OTTAWA MACDONALD-CARTIER INT'L A**

Data Range[4]: **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^2)	Total Rainfall (%)	Removal Efficiency (%)[2]	Relative Efficiency(%)
02.00 - 03.00	02.50	03.93	44.18	93.75	41.42
03.00 - 04.00	03.50	05.51	21.52	91.25	19.64
04.00 - 05.00	04.50	07.08	11.68	88.33	10.32
05.00 - 06.00	05.50	08.66	06.68	84.99	05.68
06.00 - 07.00	06.50	10.23	04.03	81.23	03.27
07.00 - 08.00	07.50	11.80	01.99	77.05	01.53
08.00 - 09.00	08.50	13.38	01.84	72.45	01.33
09.00 - 10.00	09.50	14.95	01.81	67.43	01.22
10.00 - 15.00	12.50	19.67	04.12	49.86	02.05
15.00 - 20.00	17.50	27.54	01.02	12.18	00.12
		Total Cumulative Rainfall %:	**98.87[3]**	**Net Annual %:**	**86.58**

Sales Agent Information

Agent Name: **Kevin Dutrisac**

Phone: **613-323-0364**

Company Name: **Soleno**

Fax:

Address:

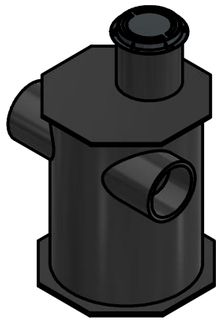
E-mail: **kdutrisac@soleno.com**

City, State Zip: **, QC**

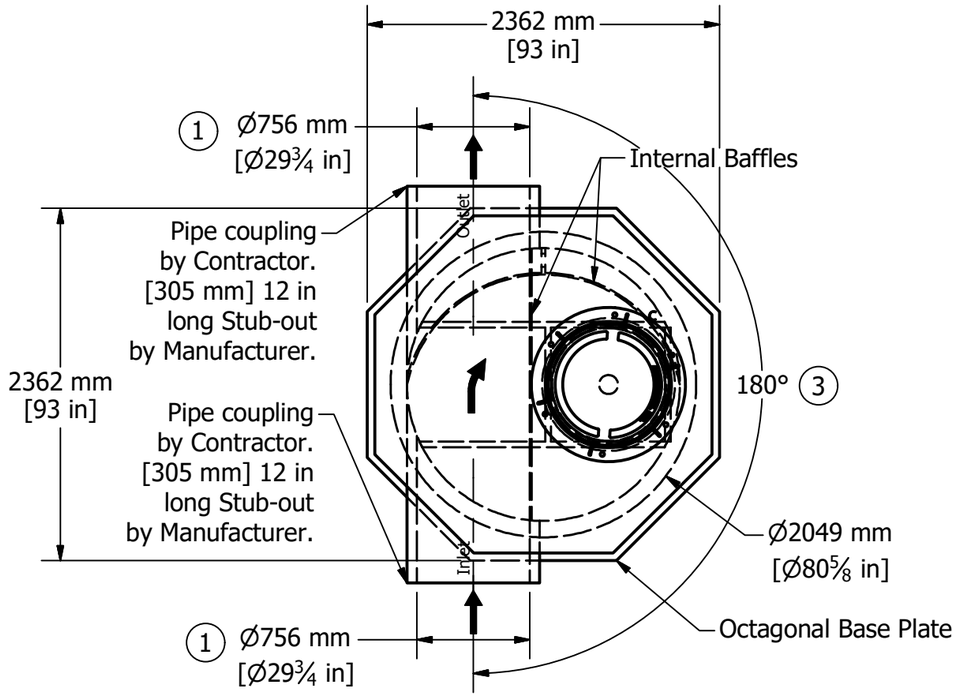
Footnotes

1. Recorded as hourly precipitation rainfall data (inches), National Climatic Data Center (NCDC)
2. Based on Tennessee Tech University laboratory testing of the AquaSwirl™ Model AS-3 for OK-110 silica particles 50-125 microns(Neary, 2002)
3. 90% Rainfall Event, calculated as a cumulative percentile of individual events, www.stormwatercenter.net, sizing criteria (Center for Watershed Protection)
4. NCDC data may not be consecutive, skipping days, months and/or years in the range of dates.
5. 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.
6. When applicable, the performance curve was adjusted via Peclet Scaling to provide estimated sizing per NJDEP PSD (d50 = 67 microns).

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

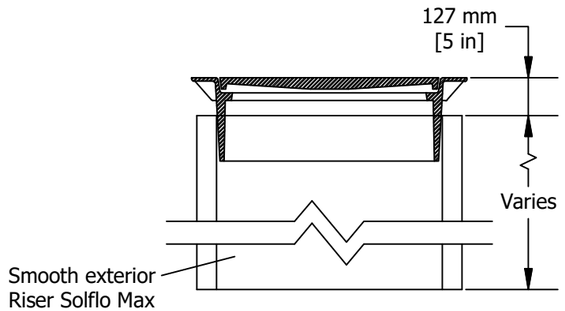


Projected View
SCALE 1:80



Plan View
SCALE 1:40

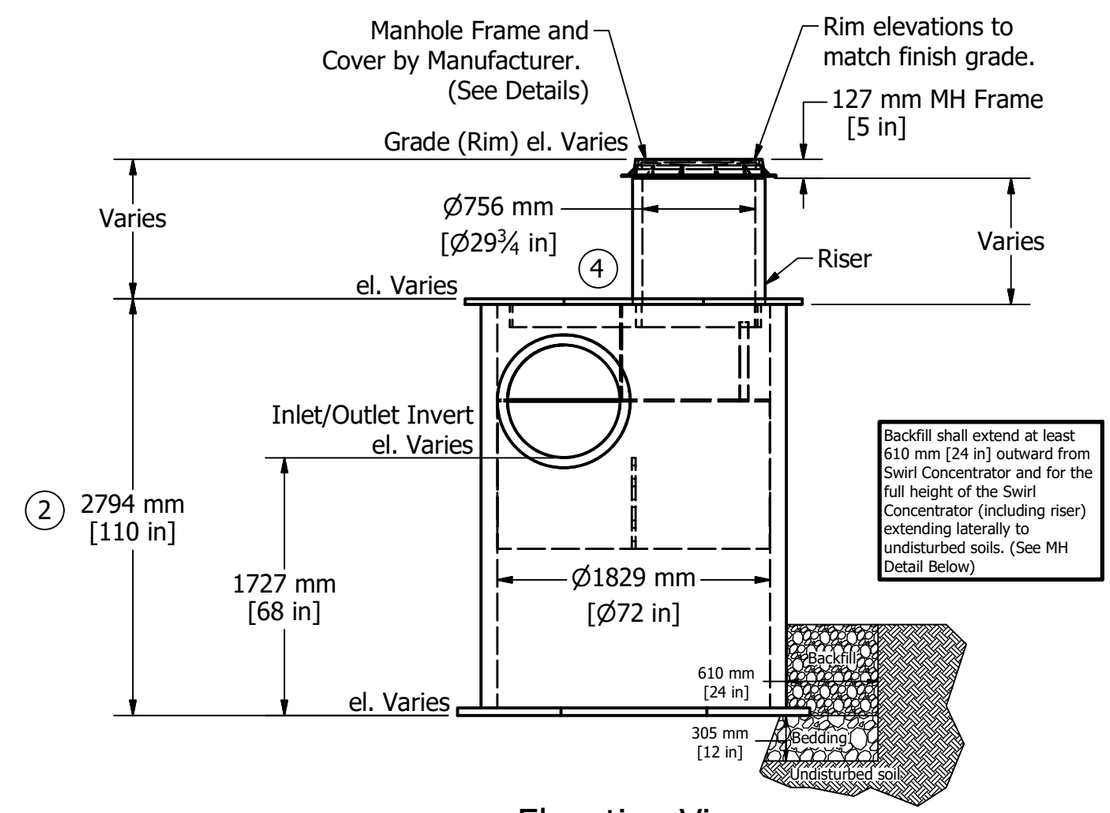
Please see accompanied Aqua-Swirl specification notes. See Site Plan for actual system orientation.
Approximate dry (pick) weight: 1400 kg [3100 lbs].



Adjustable Frame and Cover

System shall be designed for the following capacities:
Swirl Treatment Flow: 178 L/s [6.3 cfs]
Swirl Sediment Storage: 1.84 m³ [65 ft³]
Swirl Oil/Debris Storage: 1476 L [390 gal]

1. AS-6 BYP inlet/outlet pipe size ranges from 381 mm [15 in] to 914 mm [36 in].
2. AS-6 chamber height may vary from 2413 mm [95 in] to 2946 mm [116 in], depending on inlet/outlet pipe size.
3. Orientation may vary from a minimum of 90° to a maximum of 180°.
4. 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

AquaShield
WATER TREATMENT SOLUTIONS
2733 Kanasita Drive, Suite 111, Chattanooga, TN 37343
Phone (888) 344-9044 Fax (423) 826-2112
www.aquashieldinc.com

Aqua-Swirl Concentrator
AS-6 BYP CW STD

Standard Detail

Structure #:	AS-6 STD	Rvwed	Rvw. Date
Drawn By:	OFlores		
Scale:	As Shown		
Date:	3/8/2018		

RUSSEL ROAD

ST. LAURENT BLVD

SMYTH ROAD

OTHELLO AVENUE

1 STOREY CONCRETE BLOCK COMMERCIAL

BLOCK E

PLAN

BRICK, STUCCO & PRECAST CONCRETE BUILDING
"ELMVALE ACRES SHOPPING CENTRE"
No. 1910

1 STOREY BRICK
No. 1901
BAR & GRILL

PROP. BUILDING
FOUNDATION WALL TO BE INSTALLED AT A MINIMUM ELEVATION OF 0.15m ABOVE SURROUNDING GRADE AND WATERPROOFED

OUTLINE OF UNDERGROUND PARKING

PROPERTY LINE

CANOPY

OGS
1.73
0.86

STM 103
T/L=77.96
O/G SEPARATOR
AQUA-SWIRL CONCENTRATOR ASWC-8 (OR STD OR AN APPROVED EQUIVALENT
N.INV=75.29
S.INV=75.29

STM 104 (1200)
T/L=78.52
N.INV=75.25
NW.INV=75.21

STM 102 (1200)
T/L=78.01
W.INV=75.32
N.INV=75.30

STM 101 (1200)
T/L=77.73
S.INV=75.38±
E.INV=75.32
N.INV=76.17
W.INV=75.86

CICB 102
T/L=77.73
S.INV=76.18
C/W LMF40 ICD
5-YEAR FLOW=0.7L/s
100-YEAR FLOW=1.3L/s
5-YEAR ELEV=76.39m
100-YEAR ELEV=77.12m
W.INV=76.21

SOLENO STORMCHAMBER SYSTEM 15 STORAGE UNIT OR AN APPROVED EQUIVALENT
VOL=50.0m³
INV=76.22
OBV=77.13
1.5m SEEPAGE BARRIER TO BE INSTALLED PER GEOTECHNICAL INVESTIGATION PREPARED BY GOLDER ASSOCIATES (18106596-1000)

STM 105 (1200)
T/L=78.19
SE.INV=75.19
S.INV=75.19±
NW.INV=76.53
N.INV=75.16

CB 103
T/L=78.09
SE.INV=75.59
C/W LMF40 ICD
5-YEAR FLOW=1.2L/s
100-YEAR FLOW=1.9L/s
5-YEAR ELEV=78.10m
100-YEAR ELEV=78.62m
W.INV=77.01

CB'L' 103
T/L=78.08
E.INV=77.09

STM 106 (1200)
T/L=77.74
E.INV=75.54
C/W 153mm⌀ ICD
5-YEAR FLOW=20.6L/s
100-YEAR FLOW=33.6L/s
5-YEAR ELEV=75.75m
100-YEAR ELEV=76.00m
N.INV=75.60
C/W BACKWATER VALVE
NW.INV=75.57

1.5m-250mm⌀ PVC STM @ 1.0%
CB 101
T/L=77.69
SE.INV=75.58
W.INV=75.61

2.6-250mm⌀ PVC STM @ 1.0%

6.8m-250mm⌀ PERF HDPE SUBDRAIN @ 0.50%

CB'T' 102
T/L=77.80
W.INV=76.22
E.INV=76.19

SOLENO HYDROSTOR HS180 SYSTEM 25 STORAGE UNIT OR AN APPROVED EQUIVALENT
VOL=138.0m³
INV=75.62
OBV=76.53
1.5m SEEPAGE BARRIER TO BE INSTALLED PER GEOTECHNICAL INVESTIGATION PREPARED BY GOLDER ASSOCIATES (18106596-1000)

18.0m-250mm⌀ PERF HDPE SUBDRAIN @ 0.5%

CB'L' 101
T/L=77.90
E.INV=76.40

AREA DRAIN 103
T/L=77.82
DIRECTED TO STORAGE SYSTEM

AREA DRAIN 104
T/L=77.90
DIRECTED TO STORAGE SYSTEM

78.35

TRENCH DRAINS TO BE SPECIFIED AND ACCOMMODATED BY THE MECHANICAL SYSTEM

CB PER RMA PREPARED BY PARSONS

EXISTING CB TO BE RELOCATED PER RMA PREPARED BY PARSONS

EX. 375mm⌀ STM

EX. 400mm⌀ STM

EX. 300mm⌀ STM

EX. 200mm⌀ STM

EX. 150mm⌀ SAN

EX. CB

EX. STM MH

EX. SAN MH

EX. STMH

EX. CBMH

EX. SANMH

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

LEGEND:

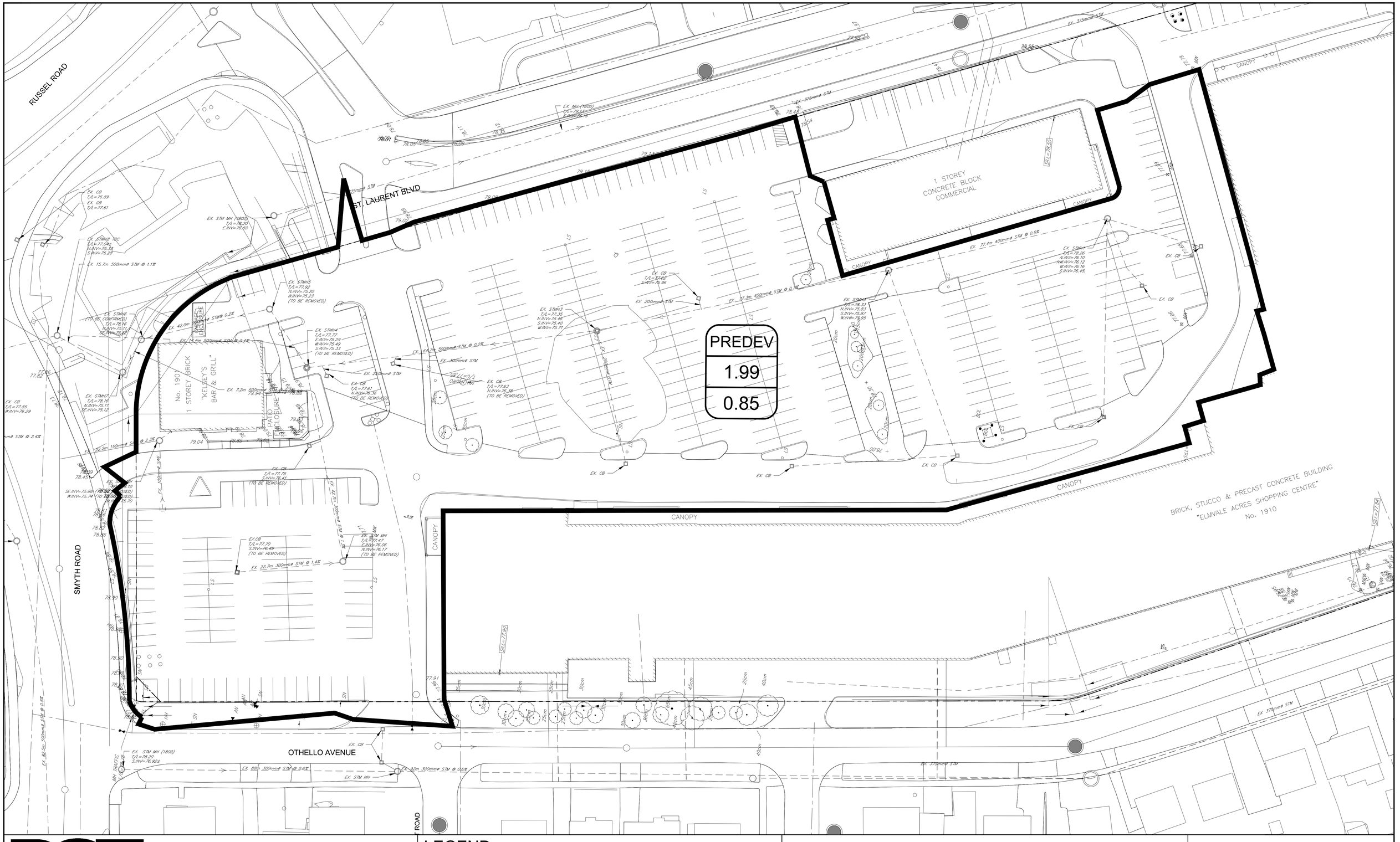
PROPERTY LINE

PARKING AREA TRIBUTARY TO OIL GRIT SEPARATOR

LANDSCAPED AREA

OIL GRIT SEPARATOR SIZING AREA
ELMVALE ACRES SHOPPING CENTRE
1910 ST. LAURENT BLVD. PH1

PROJECT No. : 18-1027
SCALE: N.T.S.
DATE: MARCH 2019
DRAWING No. FIGURE 1



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Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

LEGEND:

PROPERTY LINE

AREA TRIBUTARY EXISTING SMYTH ROAD STORM SEWER

PRE DEVELOPMENT AREA TO EXISTING STORM SEWER ELMVALE ACRES SHOPPING CENTRE 1910 ST. LAURENT BLVD. PH1

PROJECT No. :	18-1027
SCALE:	N.T.S.
DATE:	MARCH 2019
DRAWING No.	FIGURE 3

RUSSEL ROAD

ST. LAURENT BLVD

SMYTH ROAD

OTHELLO AVENUE

ET ROAD

EX-1
1.21
0.87

A
0.57
0.78

STM 104 (1200)
T/L=78.52
S.INV=75.25
NW.INV=75.21

AQUA-SWIRL CONCENTRATOR ASVS BYPASS STD OR AN APPROVED EQUIVALENT
O/G SEPARATOR
STM 103
T/L=77.96
N.INV=75.29
S.INV=75.39

STM 102 (1200)
T/L=78.01
W.INV=75.33
N.INV=75.30

10.8m–500mmø CONC STM @ 0.20%
10.2m–500mmø STM @ 0.20%
32.4m–375mmø PVC STM @ 0.55%
2.2m–500mmø CONC STM @ 0.4%
1.5m–300mmø PVC STM @ 1.0%
1.4m–300mmø PVC STM @ 1.0%
2.4m–250mmø PVC FOUNDATION DRAIN @ 1.0%(MIN)
BLDG. INV=75.23
6.6m–250mmø PVC CB LEAD @ 0.5%
16.8m–250mmø PERF HDPE SUBDRAIN @ 0.5%
7.3m–250mmø PVC STM SERVICE @ 1.0%(MIN)
BLDG. INV=75.69
1.5m–250mmø PVC STM @ 1.0%
2.6–250mmø PVC STM @ 1.0%
6.8m–250mmø PERF HDPE SUBDRAIN @ 0.50%
18.0m–250mmø PERF HDPE SUBDRAIN @ 0.5%
4.7m–500mmø STM @ 0.2%

STM 105 (1200)
T/L=78.19
SE.INV=75.19±
NW.INV=76.53
N.INV=75.16

CB 103
T/L=78.09
SE.INV=75.59
C/W LMF40 ICD
5–YEAR FLOW=1.2L/s
100–YEAR FLOW=1.9L/s
5–YEAR ELEV=78.13m
100–YEAR ELEV=78.62m
W.INV=77.01

CB'L' 103
T/L=78.09
E.INV=77.09

TRENCH DRAINS TO BE SPECIFIED AND ACCOMMODATED BY THE MECHANICAL DIVISION

CB'L' 101
T/L=77.90
E.INV=76.40

AREA DRAIN 103
T/L=77.82
DIRECTED TO STORAGE SYSTEM

AREA DRAIN 104
T/L=77.80
DIRECTED TO STORAGE SYSTEM

STM 101 (1200)
T/L=77.73
S.INV=75.38±
E.INV=75.37
N.INV=76.17
W.INV=75.86

CICB 102
T/L=77.73
S.INV=76.18
C/W LMF40 ICD
5–YEAR FLOW=0.7L/s
100–YEAR FLOW=1.3L/s
5–YEAR ELEV=76.39m
100–YEAR ELEV=77.12m
W.INV=76.21

SOLENO STORMCHAMBER SYSTEM 15 STORAGE UNIT OR AN APPROVED EQUIVALENT
VOL=50.0m³
INV=76.22
OBV=77.13
1.5m SEEPAGE BARRIER TO BE INSTALLED PER GEOTECHNICAL INVESTIGATION PREPARED BY GOLDER ASSOCIATES (18106596–1000)

STM 106 (1200)
T/L=77.74
E.INV=75.54
C/W 153mmø ICD
5–YEAR FLOW=20.6L/s
100–YEAR FLOW=33.6L/s
5–YEAR ELEV=75.75m
100–YEAR ELEV=76.00m
N.INV=75.60
C/W BACKWATER VALVE
NW.INV=75.57

CB 101
T/L=77.69
SE.INV=75.58
W.INV=75.61

CB'T' 102
T/L=77.80
W.INV=76.22
E.INV=76.19

SOLENO HYDROSTOR HS180 SYSTEM 25 STORAGE UNIT OR AN APPROVED EQUIVALENT
VOL=138.0m³
INV=75.62
OBV=76.53
1.5m SEEPAGE BARRIER TO BE INSTALLED PER GEOTECHNICAL INVESTIGATION PREPARED BY GOLDER ASSOCIATES (18106596–1000)

CB PER RMA PREPARED BY PARSONS

EXISTING CB TO BE RELOCATED PER RMA PREPARED BY PARSONS

1 STOREY CONCRETE BLOCK COMMERCIAL

CANOPY

BRICK, STUCCO & PRECAST CONCRETE BUILD
"ELMVALE ACRES SHOPPING CENTRE"
No. 1910

LEGEND:

PROPERTY LINE

AREA TRIBUTARY EXISTING SMYTH ROAD STORM SEWER

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 103
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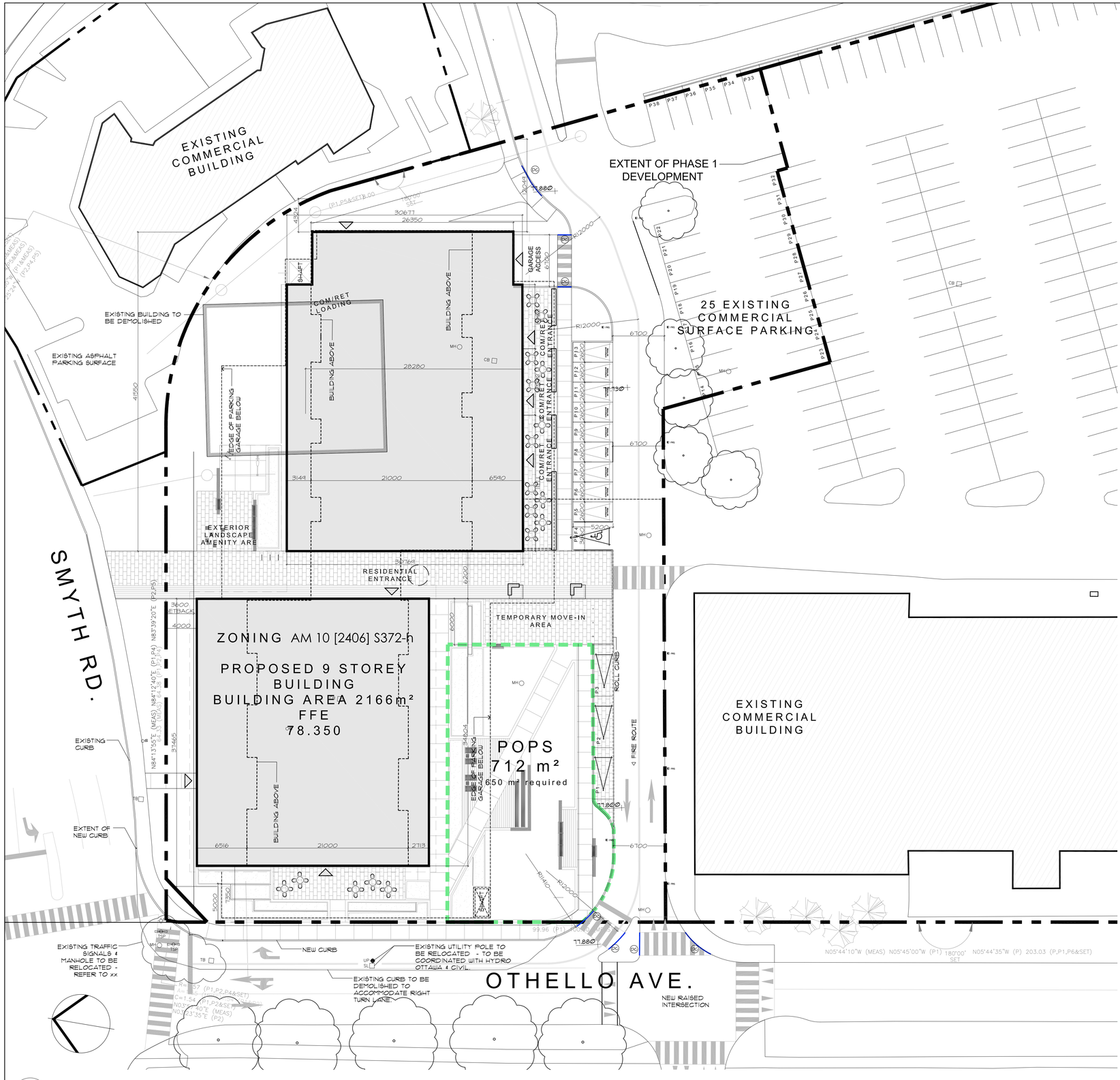
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

POST DEVELOPMENT AREA TO EXISTING STORM SEWER ELMVALE ACRES SHOPPING CENTRE 1910 ST. LAURENT BLVD. PH1

PROJECT No. : 18-1027
SCALE: N.T.S.
DATE: MARCH 2019
DRAWING No. FIGURE 2

DRAWINGS / FIGURES



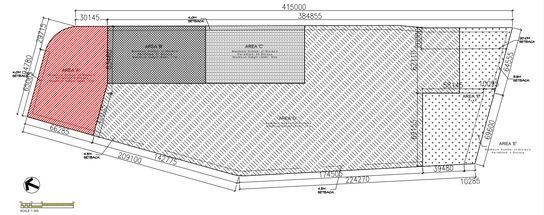
1 / A0.01 SITE PLAN 1 :250

None

LOCATION PLAN

ZONING SCHEDULE S372-h

- AREA 'A' Maximum Number of Storey's Permitted: 9 Storeys; Maximum Height Limit: 32m
- AREA 'B' Maximum Number of Storey's Permitted: 22 Storeys; Maximum Height Limit: 71m
- AREA 'C' Maximum Number of Storey's Permitted: 26 Storeys; Maximum Height Limit: 83m
- AREA 'D' Maximum Height Limit: 20m
- AREA 'E' Maximum Number of Storey's Permitted: 0 Storeys; Maximum Height Limit: 0m



ZONING NOTES:

CURRENT ZONING: **AM 10 [2406] S372-h**

LOT AREA : 54,758 m²

DEVELOPMENT STATS PHASE 1		REQUIRED	PROPOSED
LOT OF AREA 'A'		MIN 450 m²	5,886 m²
LOT WIDTH AREA 'A'			65.2m IRREGULAR
LOT DEPTH AREA 'A'			103.4m IRREGULAR
TOTAL UNITS			168
FRONT YARD SETBACK	ST-LAURENT BLVD.	0 m	Varies
REAR YARD SETBACK	N/A	0 m	5 m
CORNER SIDE YARD SETBACK	SMYTH ROAD	3.6 m	4 m
CORNER SIDE YARD SETBACK	OTHELLO AVE.	0 m	7.35 m
MAXIMUM HEIGHT		32 m	30.4 m
NUMBER OF STOREYS			9
BUILDING AREA			2,244 m²
GROSS FLOOR AREA (city def.)			12,578 m²

PARKING REQUIREMENTS

1. REQUIRED PARKING

LAND USE	REQUIRED	PROVIDED VEHICLE PARKING
APARTMENT	0.5 SPACE PER UNIT 168 UNITS X 0.5 = 84 **84 PARKING SPACES**	109 PARKING SPACES PROVIDED FOR 170 UNITS * LOCATED IN UNDERGROUND PARKING GARAGE
RETAIL	3.4 SPACE /100 GLFA +/- 1117 SQ.M. OF GLFA **11 X 3.4 = 37.4**	38 PARKING SPACES PROVIDED FOR 1100 SQ.M. OF GLFA *SURFACE PARKING

2. REQUIRED VISITOR PARKING

LAND USE	REQUIRED	REQUIRED VISITOR PARKING
APARTMENT	0.1 SPACE PER UNIT 168 -12(ZONNING)= 156 UNITS 156 X 0.2 = 31 31 VISITOR PARKING SPACES REQUIRED	31 VISITOR PARKING SPACES PROVIDED FOR 168 UNITS * LOCATED IN UNDERGROUND PARKING GARAGE
TOTAL PARKING PROVIDED FOR PHASE 1		178 TOTAL PARKING PARKING SPACES 140 INTERIOR 38 SURFACE

3. BICYCLE PARKING

REQUIRED BICYCLE PARKING SPACES
- RESIDENTIAL (0.5 SPACE/UNIT - 84 SPACES REQUIRED)
- COMMERCIAL (1 / 1500 SQ.M. COMMERCIAL GLFA - 3 EXTERIOR SPACES)

PROVIDED BICYCLE PARKING

GROUND LEVEL SPACES - EXTERIOR	5
GROUND LEVEL SPACES - INTERIOR	64
LEVEL P1	11
LEVEL P2	11
TOTAL PROVIDED	91

4. AMENITY SPACE REQUIREMENTS

REQUIRED AMENITY SPACE 6 m² REQUIRED PER UNIT
- 168 UNITS X 6 SQ.M. = 1008 SQ.M. TOTAL AMENITY REQUIRED
- 504 SQ.M. REQUIRED TO BE COMMON AMENITY SPACE

PROVIDED AMENITY SPACE

-GROUND FLOOR COMMON AMENITY -	456m² (INTERIOR)
-ROOF TOP COMMON AMENITY -	371m² (EXTERIOR)
-PRIVATE BALCONY AMENITY -	758m²
TOTAL AMENITY SPACE PROVIDED	1585m²

5. REQUIRED AREA FOR PRIVATELY OWNED PUBLIC SPACE - P.O.P.S
REQUIRED 650m²
PROVIDED 712m²

6. % OF GLAZED WALL REQUIRED TO FACE PUBLIC STREET
REQUIRED 50%
PROVIDED 51.5m²

NOTE: ALL EXISTING SITE INFORMATION AS PER SITE SURVEY PLAN DATED JUNE 12, 2018 AND PREPARED BY STANTEC

LEGEND:

- PROPOSED FIRE ROUTE
- PROPOSED BUILDING
- BUILDING TO BE DEMOLISHED
- MH EXISTING MAN HOLE
- TSP EXISTING TRAFFIC LIGHT
- FH EXISTING FIRE HYDRANT
- CONC. CURB DETAIL TO CITY OF OTTAWA STANDARDS
- BP BIKE PARKING SPACE
- EDGE OF SIDEWALK
- PROPERTY LINE
- SETBACK
- PROPOSED DEPRESSED CURB DETAIL TO CITY OF OTTAWA STANDARD SC-7
- EXTENT OF PRIVATELY OWNED PUBLIC SPACE
- CURB TO BE REBUILT
- ROLL CURB
- UP EXISTING UTILITY POLE
- CB EXISTING CATCH BASIN
- CB PROPOSED CATCH BASIN
- AS SIGNAGE FOR ACCESSIBLE PARKING SPACE
- FRS SIGNAGE FOR FIRE ROUTE ACCESS
- EXISTING SIGN
- EXISTING LIGHT POLE
- NEW LIGHT POLE
- PROPOSED WALL MOUNTED LIGHT
- SL EXISTING STREET LIGHTING BOX
- TB EXISTING TRAFFIC SIGNAL BOX

PROJECT TEAM

ARCHITECT
HOBIN ARCHITECTURE
PATRICK BISSON
T 613.238.7200

PLANING
FOTENN CONSULTANTS INC.
STEPHANIE MORRIS
T 613.730.5709

CIVIL
DAVID SHAEFFER ENGINEERING LTD
ROBERT FREEL, ALISON GOSLING
T 613.836.0856

LANDSCAPE ARCHITECT
CSW LANDSCAPE ARCHITECTS LTD.
SHERI EDWARDS
T 613.729.4536

TRANSPORTATION
PARSONS
RONALD JACK
T 613.738.4160

ENVIRONMENTAL
GRADIENT WIND ENGINEERING
JOSHUA FOSTER
T 613-836-0634

no.	date	revision
3	19.03.18	SITE PLAN CONTROL SUBMISSION #2
2	19.02.01	SITE PLAN CONTROL SUBMISSION #2
1	18.11.14	ISSUED FOR SITE PLAN CONTROL

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

RIO CAN
REAL VISION, SOLID GROUND.

Hobin Architecture Incorporated
63 Parmilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com
HOBIN ARCHITECTURE

PROJECT/LOCATION:
RIOCAN - ELMVALE ACRES PHASE 1
1910 ST-LAURENT BLVD.

DRAWING TITLE:
SITE PLAN PHASE 1

DRAWN BY:	DATE:	SCALE:
A0.01	18.11.02	1:250

PROJECT: 1817

DRAWING NO.: A001

REVISION NO.:

ONTARIO ASSOCIATION OF ARCHITECTS
PATRICK J. HOBIN
LICENCE 3049

Stantec

Stantec Geomatics Ltd.
400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

TOPOGRAPHIC PLAN OF SURVEY

PART OF BLOCKS E AND G AND PART OF DUNNE STREET

(CLOSED BY JUDGE'S ORDER OT22379)

REGISTERED PLAN 643
CITY OF OTTAWA

Scale 1 : 500

20 15 10 5 0 10 20 Metres

METRIC CONVERSION
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING NOTE
BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE NORTHERLY LIMIT OF PART 1 AS SHOWN ON PLAN 4R-421, HAVING A BEARING OF N84°05'30"E.

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT: OTTAWA ELEVATION=95.205.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
NW	"	NAIL & WASHER
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
RPE	"	RADY-PENTEK EDWARDS LTD.
RMOC	"	CITY OF OTTAWA
857	"	FAIRHALL, MOFFATT & WOODLAND LTD.
P	"	REGISTERED PLAN 643
P1	"	PLAN BY 1538 DATED AUGUST 2/95
P2	"	PLAN 5R-1533
P3	"	PLAN 5R-13443
P4	"	EXP. PLAN CT211448
P5	"	PLAN 5R-5380
P6	"	PLAN BY 1479 DATED OCTOBER 16/89
ACU	"	AIR CONDITIONING UNIT
AN	"	ANCHOR
ANT	"	ANTENNA
BH	"	BOREHOLE
BOL	"	BOLLARD
CB	"	CATCH BASIN
CBMH	"	CB MANHOLE
DRN	"	DRAIN
GSR	"	GAS SERVICE REGULATOR
GV	"	GAS VALVE
LS	"	LIGHT STANDARD
HM	"	HYDRO METER
HTN	"	HYDRO TRANSFORMER
HW	"	HAND WELL
HYD	"	FIRE HYDRANT
JBX	"	JUNCTION BOX
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHBELL	"	MAINTENANCE HOLE BELL
MHF	"	MAINTENANCE HOLE FIBRE OPTIC
MHH	"	MAINTENANCE HOLE HYDRO
MHI	"	MAINTENANCE HOLE INVERT
MHSAN	"	MAINTENANCE HOLE SANITARY
MHSTM	"	MAINTENANCE HOLE STORM
MHT	"	MAINTENANCE HOLE TRAFFIC
MW	"	MONITORING WELL
PLR	"	PILLAR
SN	"	SIGN
TB BELL	"	TERMINAL BOX - BELL
TB CATV	"	TERMINAL BOX - CABLE
TCB	"	TRAFFIC CONTROL BOX
TSL	"	TRAFFIC SIGNAL LIGHT
UP	"	UTILITY POLE
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
WV	"	WATER VALVE
	"	TREE CONIFEROUS
	"	TREE DECIDUOUS
▬	"	PROPERTY LINE

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 29th DAY OF MAY, 2018 .

June 12/18
DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

DRAWN: CEC/ME CHECKED: * PM: BW FIELD: SJ PROJECT No.: 161613349-111

RUSSEL ROAD

ST. LAURENT BLVD

SUBJECT SITE

SMYTH ROAD

HAMLET ROAD

WINGATE DRIVE

OTHELLO AVENUE

CYRVILLA PARK BLVD

EX. 600mmØ STM

EX. 375mmØ STM

EX. 375mmØ STM

EX. 375mmØ STM

EX. 300mmØ STM

EX. 305mmØ WATERMAIN

EX. 250mmØ SAN

EX. 250mmØ SAN

EX. 305mmØ WATERMAIN

EX. 250mmØ SAN

EX. 375mmØ STM

EX. 305mmØ WATERMAIN

EX. 450mmØ STM

EX. 150mmØ STM

EX. 150mmØ STM

EX. 406mmØ

EX. 375

EX. 305mmØ WATERMAIN

EX. 305mmØ WATERMAIN

EX. 305mmØ WATERMAIN

EX. 225mmØ SAN

EX. 375mmØ STM

EX. 305mmØ WATERMAIN

EX. 225mmØ SAN

EX. 375mmØ STM

EX. 225mmØ SAN

EX. 375mmØ STM

EX. 225mmØ SAN

EX. 375mmØ STM

EX. 225mmØ SAN

EX. 300mmØ STM

EX. 450mmØ STM

EX. 225mmØ SAN

EX. 450mmØ STM

EX. 450mmØ STM

EX. 152mmØ WATERMAIN

EX. 375mmØ SAN

EX. 300mmØ STM

EX. 225mmØ SAN

EX. 305mmØ WATERMAIN

EX. 300mmØ SAN

EX. 375mmØ SAN

EX. 305mmØ WATERMAIN

EX. 225mmØ SAN

EX. 300mmØ STM

EX. 300mmØ STM

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LEGEND:

- PROPERTY LINE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER

EXISTING CONDITIONS - SERVICING

ELMVALE ACRES SHOPPING CENTRE
1910 ST. LAURENT BLVD.

PROJECT No. :	792
SCALE:	N.T.S.
DATE:	DECEMBER 2016
DRAWING No.	ECS-1