

SITE SERVICING AND STORMWATER MANAGEMENT REPORT

FOR

**PRINCE DEVELOPMENTS
201, 207 & 213 RIDEAU STREET**

CITY OF OTTAWA

PROJECT NO.: 18-1072

**DECEMBER 2018
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**DECEMBER 2018
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1.0 INTRODUCTION

David Schaeffer Engineering Ltd. (DSEL) has been retained by Prince Developments to prepare a Functional Servicing and Stormwater Management Report in support of Site Plan Control Application (SPC) for the proposed development at 201, 207 & 213 Rideau Street.

The subject property is located within the City of Ottawa urban boundary, in the Rideau-Vanier ward. As illustrated in **Figure 1**, below, the subject property is bounded by Rideau Street to the south, an existing residential building to the north and existing commercial buildings to the east and west. The subject property measures approximately **0.12 ha** and is designated Mixed-Use Downtown Zone (MD S82) under the current City of Ottawa zoning by-law.

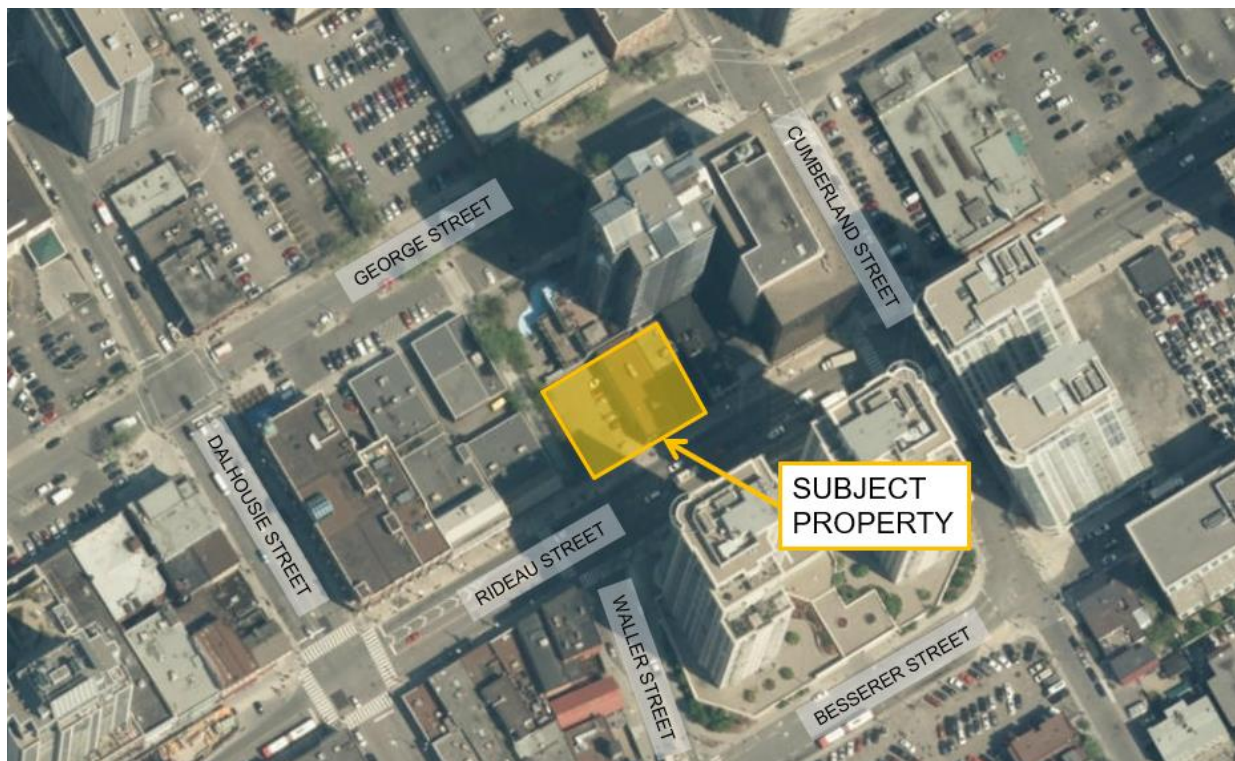


Figure 1: Site Location

The proposed development involves the construction of a 24-storey hotel/residential building, consisting of **208 hotel units and 76 residential units**. 6 levels of underground parking are proposed as shown by the **Site Plan** prepared by RLA included in Drawings and Figures.

The objective of this report is to support the application for Site Plan Control by providing sufficient detail to demonstrate that the proposed development is supported by existing and proposed municipal servicing infrastructure and that the site design conforms to current City of Ottawa design standards.

1.1 Existing Conditions

The subject site currently consists of paved surface parking at 201 Rideau Street, an existing retail building at 207 Rideau St. and an existing 2-storey commercial building at 213 Rideau St.

Sewer system and watermain distribution mapping collected from the City of Ottawa indicate that the following services exist across the property frontage, within the adjacent municipal road:

Rideau Street:

- 406 mm diameter PVC watermain;
- 375 mm diameter concrete sanitary sewer; and
- 1050 mm diameter concrete storm sewer.

1.2 Required Permits / Approvals

Development of the site is subject to the City of Ottawa Planning and Development Approvals process. The City of Ottawa must approve detailed engineering designs, drawings and reports prepared to support the proposed development plan before the issuing of SPC.

1.3 Pre-consultation

Pre-consultation correspondence 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 ISDTB-2014-01**
City of Ottawa, February 5, 2014.
(ITSB-2014-01)
 - **Technical Bulletin PIEDTB-2016-01**
City of Ottawa, September 6, 2016.
(PIEDTB-2016-01)
 - **Technical Bulletin ISTB-2018-01**
City of Ottawa, March 21, 2018.
(ISTB-2018-01)
- **Ottawa Design Guidelines – Water Distribution**
City of Ottawa, October 2012.
(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)
- **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)

- **Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems**
National Fire Protection Association
2016 Edition.
(NFPA 25)

- **Drainage Management Manual**
Ministry of Transportation of Ontario (MTO), 1997.
(MTO Drainage Manual)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1W pressure zone, as shown by the Pressure Zone map, located in **Appendix B**. A 406 mm diameter watermain exists within the Rideau Street right-of-way.

Table 1, below, estimates the water demand of the existing building, assuming the ground floor consists solely of commercial units, and is based on the **Water Supply Guidelines** shown in **Table 2**. See **Appendix B** for detailed calculations.

Table 1
Existing Water Demand

Design Parameter	Anticipated Demand ¹ (L/min)
Average Daily Demand	25.7
Max Day	38.6
Peak Hour	69.4
1) Water demand calculation per Water Supply Guidelines . See Appendix B for detailed calculations.	

3.2 Water Supply Servicing Design

The subject property is proposed to have dual 150 mm diameter service laterals connected to the existing 406 mm municipal watermain located within Rideau Street.

Table 2, below, summarizes the **Water Supply Guidelines** employed in the preparation of the water demand estimate.

Table 2
Water Supply Design Criteria

Design Parameter	Value
Residential Demand	280 L/p/d
Residential Maximum Daily Demand	9.5 x Average Daily *
Residential Maximum Hourly	14.3 x Average Daily *
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 shall not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa
* 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 ISDTB-2018-02	

Table 3, below, summarizes the anticipated water demand and boundary conditions for the proposed development and was calculated using the **Water Supply Guidelines**.

Table 3
Proposed Water Demand

Design Parameter	Anticipated Demand ¹ (L/min)	Boundary Conditions ² (m H ₂ O / kPa)	
Average Daily Demand	75.4	115.0	485.6
Max Day + Fire Flow (per OBC)	203.7 + 4,150 = 4,353.7	106.3	404.2
Peak Hour	328.8	106.7	400.2
2) Water demand calculation per Water Supply Guidelines . See Appendix B for detailed calculations. 3) Boundary conditions above for connection 1 to Rideau Street assumed ground elevation equal to 61.5 m			

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in **Appendix B**.

For the purpose of estimating fire flow, National Fire Protection Association (NFPA) standards were utilized. As indicated by Section 11.2.2 from the **NFPA Standards**, fire flow requirements are to be determined by combining the required flow rate for the sprinkler system, along with the anticipated hose stream. As indicated by Table 11.2.2.1 and Table 11.2.3.1.2 extracted from the **NFPA Standards** and included in **Appendix B**, the anticipated fire flow requirements for the sprinkler system is **3,200 L/min** (850 gpm) and the anticipated internal and external total combined inside and outside hose stream demand is **950 L/min** (250 gpm).

As a result, the total fire flow is anticipated to be **4,150 L/min** (1,100 gpm). Based on the boundary conditions provided by the City of Ottawa, sufficient supply is available for fire flow. A certified fire protection system specialist will need to be employed to design the building fire suppression system 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, as indicated by the correspondence in **Appendix B**. The minimum and maximum pressures fall within the required range identified in **Table 2**.

3.3 Water Supply Conclusion

The subject property is proposed to have dual 150 mm diameter service laterals connected to the existing 406 mm municipal watermain located within Rideau Street.

The anticipated water demand was submitted to the City of Ottawa for establishing boundary conditions. The City provided both the anticipated minimum and maximum water pressures, as well as, the estimated water pressure during fire flow. As demonstrated by **Table 3**, based on the City's model, the municipal system is capable of delivering water within the pressure range prescribed in the **Water Supply Guidelines**. The available pressure during the fire flow scenario, as per the **OBC**, calculations exceeds the minimum required pressure of 140 kPa.

The proposed water supply design conforms to all relevant City Guidelines and Policies.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject property lies within the King Edward Ave Trunk catchment area, as shown by the **Trunk Sanitary Sewers and Collection Areas Map**, included in **Appendix C**. An existing 375 mm sanitary sewer exists within Rideau Street.

Table 4, below, summarizes the estimated wastewater flows for the existing buildings within the subject site.

Table 4
Summary of Estimated Existing Peak Wastewater Flow

Design Parameter	Existing Flow (L/s)
Estimated Average Dry Weather Flow	0.89
Estimated Peak Dry Weather Flow	1.34
Estimated Peak Wet Weather Flow	1.38

The existing buildings are estimated to have a combined peak wastewater flow of **1.38L/s**, and are serviced by the existing 375 mm diameter sewer within Rideau Street.

4.2 Wastewater Design

The development is proposed to connect to the 375 mm sanitary sewer within Rideau Street via a 200 mm sanitary service, refer to **SSP-1**, located in **Drawings/Figures**. Wastewater flow from the development is proposed to ultimately discharge into the King Edward Avenue Trunk within King Edward Avenue via the local sanitary sewer system.

Table 5, below, summarizes the **City Standards** employed in the calculation of wastewater flow rates for the proposed development.

Table 5
Wastewater Design Criteria

Design Parameter	Value
Residential Demand	280 L/p/d
Peaking Factor	Harmon's Peaking Factor. Max 3.8, Min 2.0
Infiltration and Inflow Allowance	0.33 L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{\frac{2}{3}} S^{\frac{1}{2}}$
Minimum Sanitary Sewer Lateral	135 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

Table 6, below, demonstrates the anticipated peak flow from the proposed development, see **Appendix C** for associated calculations.

Table 6
Summary of Proposed Wastewater Flows

Design Parameter	Anticipated Sanitary Flow ¹ (L/s)
Average Dry Weather Flow Rate	2.18
Peak Dry Weather Flow Rate	4.66
Peak Wet Weather Flow Rate	4.69
1) Based on criteria shown in Table 3	

The estimated peak wet weather sanitary flow, based on the **Site Plan**, provided in **Drawings/Figures**, is **4.69 L/s**. This results in a **3.31 L/s** increase to the flow from current conditions. The existing 375 mm sanitary sewer within Rideau Street was calculated to have a full flowing capacity of **178.8 L/s** based on As-Built information. The proposed development represents only **2.6%** of the local sewer's full flowing capacity.

4.3 Wastewater Servicing Conclusions

The site is tributary to the King Edward Avenue Trunk Sewer. The development is anticipated to generate a peak wet weather flow of **4.69 L/s**, to be directed to the 375 mm sanitary sewer within Rideau Street, and ultimately discharging into the King Edward Avenue Trunk. The proposed development wastewater flows represent only **2.6%** of the local sewer capacity.

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 Ottawa River West sub-watershed. As such, approvals for the 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 stormwater runoff from the site area generally drains east. An existing 1050 mm storm sewer exists within Rideau Street.

An estimate of the pre-development peak flow directed from the subject site has been completed. Using the Federal Aviation Administration method, a time of concentration of **4.1 minutes** was calculated, as shown by the figure and calculations found in **Appendix D**. A time of concentration of **20 minutes** was used for calculations, per pre-consultation recommendations provided by the City and included in **Appendix A**.

The estimated pre-development peak flows for the 2, 5, and 100-year storm events are summarized in **Table 7**, below:

Table 7
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	34.3
5-year	46.8
100-year	89.5

5.2 Post-development Stormwater Management Targets

Stormwater management requirements for the proposed development were reviewed with the City of Ottawa and RVCA and are summarized below:

- Meet an allowable release rate based on the existing Rational Method Coefficient no greater than 0.50, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration equal to or greater than 20 minutes;

- Attenuate all storms up to and including the City of Ottawa 100-year design event on site; and
- Based on coordination with the RVCA, no quality control will be required.

Refer to city pre-consultation correspondence in **Appendix A**.

5.3 Proposed Stormwater Management System

The proposed development consists of mostly rooftop and podium level. It is proposed that flow from the roof area and podium be directed to drain to an internal stormwater cistern.

The stormwater cistern is assumed to be pumped with a maximum 5-year release rate of **6.4 L/s** and a maximum 100-year release rate of **12.1 L/s** and proposed to discharge to the 250 mm storm lateral. The 250 mm service is proposed to connect to the 1050 mm storm sewer within Rideau Street. Refer to the drawing **SSP-1**, for connection points.

To meet the stormwater objectives, the proposed development will use cistern storage within the proposed building. **Table 8**, below, estimates post-development flow rates.

Table 8
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m ³)	(L/s)	(m ³)
Unattenuated Areas	0.0	0.0	0.0	0.0
Attenuated Areas	6.4	18.7	12.1	35.5
Total	6.4	18.7	12.1	35.5

Summarized in the table above, the internal cistern will require approximately **35.5 m³** of storage to meet the established release rate of **12.1 L/s**.

5.4 Stormwater Servicing Conclusions

In accordance with City of Ottawa **City Standards**, 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 5-year and 100-year release rates were calculated to be **6.4 L/s** and **12.1 L/s**, respectively. No quality control is required for the proposed development, as per correspondence with RVCA, located in **Appendix A**.

The development is proposed to be serviced by the existing 1050 mm storm sewer within Rideau Street via a 250 mm lateral storm service. It was calculated that **35.5 m³** of cistern storage within the building is required to attenuate flow to the allowable release rate.

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

6.0 UTILITIES

Gas, Hydro, Streetlighting and Bell services exist within Rideau Street right-of-way.

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. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated.

Prior to topsoil stripping, earthworks or 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 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 Prince Developments to prepare a Functional Servicing and Stormwater Management Report in support of Site Plan Control for the proposed development at 201, 207 & 213 Rideau Street. The preceding report outlines the following:

- Based on boundary conditions provided by the City, the existing municipal water infrastructure is capable of providing the proposed development with water within the City's required pressure range;
- The proposed development is anticipated to have a peak wet weather flow of **4.69 L/s** directed to the 375 mm sanitary sewer within Rideau Street, to be ultimately discharged into the King Edward Ave. Trunk. The proposed development wastewater flows represent only **2.6%** of the local sewer capacity.;
- Based on the City of Ottawa's City Standards the proposed development will be required to attenuate post development flows to a release rate of **12.1 L/s** for all storms up to and including the 100-year storm event;
- It is proposed to attenuate flow through an internal cistern. It is anticipated that **35.5m³** of onsite cistern storage will be required to attenuate flow to the established release rate above; and
- No quality control measures are required, per correspondence with the RVCA.

Prepared by,
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Per: Brandon N. Chow

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Robert D. Freel, P.Eng.

APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

18-1072

03/12/2018

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

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

4.3 Development Servicing Report: Wastewater

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

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

4.4 Development Servicing Report: Stormwater Checklist

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

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

4.5 Approval and Permit Requirements: Checklist

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

4.6 Conclusion Checklist

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

Date of pre-consultation meeting; **November 01, 2018**

Use new attached servicing template for preparing a servicing report.

Site: 201 -213 Residential & Commercial

Sanitary: 375 mm concrete sanitary sewer on Rideau Street

Storm: 1050 mm concrete storm sewer on Rideau Street

Water: 406 mm PVC watermain on Rideau Street

Waller street pathway: 900mm concrete public storm live sewer.

Capacity issues for sewers

Please find the Servicing Report Template & Study Guidelines” in the attachment and prepare the servicing study accordingly. For capacity issue, please see section 3.2.1 page 3-3 and follow this section. A completed checklist with corresponding references from the servicing study is mandatory for the completeness of the study. Please add a completed checklist in the report.



ServicingGuidelines_final_Dec...



Servicing Report
Template Final Versi

The allowable sewer release rate should be based on the existing Zoning Designation using the City's Sewer Guidelines. If the proposal requires a greater flow than the allowable, then please do an analysis of the City's sewers system as per servicing guidelines to determine available capacity in the City's sewers system.

Please calculate the sewers demand for the proposed development and send it to us ASAP, if you want to verify whether or not there is enough capacity in the city system. Normally, it takes 10 business days to get response back from the internal circulation.

Required information for Water boundary conditions (not required if you're using existing service)

Boundary conditions are required to confirm that the required fire flows can be achieved as well as availability of the domestic water pressure on the city street in front of the development. Please use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons.

1. Location of Service
2. A sketch of the proposed water service to the city watermain
3. Street Number & Name
4. Type of development and units
5. Amount of fire flow required ____l/s (Calculation as per the FUS Method).
6. Average daily demand: -l/s
7. Maximum daily demand: -l/s
8. Maximum hourly daily demand: -l/s

Please note proposed development will require 2 separate service connections from the city watermain if the basic day demand is greater than 50m³/day to avoid the creation of a vulnerable service area. Two water meters will be required for two service connections and the service connections will have to be looped.

Utility conflict with the proposed servicing

- It is the consultant's sole responsibility to investigate the existing utilities in the proposed servicing area while preparing the Servicing and Grading Plans to avoid any conflict with the proposed services and will require a note stating this on the servicing plan.

Underground and above ground building footprints

All underground and above ground building footprints and permanent walls need to be shown on the plan to confirm that any permanent structure does not extend either above or below into the existing property lines, sight triangles and/or future road widening protection limits.

Grade limitations for underground ramps (Wally)

SWM Criteria for the Catchment Area of the site being redeveloped: (Quantity control criteria)

Stormwater Management criteria for the City separated storm sewer system (please note if the separated storm sewer ultimately drains into combined sewer then please use combined sewer criteria as draining to the combined sewer would require MOE application)

- Allowable release rate will be 5 year pre-development rate for Collectors
- C Coefficient of runoff will need to be determined **as per existing conditions** but in no case more than 0.5
- TC =20 minutes or can be calculated ,
- TC should not be less than 10 minute, since the IDF curves become unrealistic less than 10min.
- Any storm events greater than 5 year, up to 100 year, and including 100-year storm event must be detained on site.

TECHNICAL BULLETIN PIEDTB-2016-01

Section 5.4.9.2,Page 5.31,

While rear yard grading will create low points and storage at each catch basin, the storage will not be considered in the available storage requirements. It will be assumed that all backyard flows in excess of the 2-year will flow towards the roads. Effective available storage will only be considered on streets and open space/park storage. Furthermore, there must be at least 30 cm of vertical clearance between the rear yard spill elevation and the ground elevation at the adjacent building envelope.

Major system storage in backyards is not to be included/accounted for in design computations, however the effect of flow attenuation can now be accounted for by assuming a constant slope ditch/swale draining to the street with the following geometry: a minimum slope of 1.5% and a minimum depth of 150 mm. The maximum allowable depth of a swale/ditch shall be 600 mm. The maximum side slope of swales/ditches shall be 3 horizontal to 1 vertical.

Section 8.3.11.6, Page 8.20:

Rear Yard storage cannot be accounted for in the water storage calculation. It should be assumed that all water in excess of the 2-year event will flow to the street. The maximum depth of flow depth in rear yards is 300 mm. Furthermore, there must be at least 30 cm of vertical clearance between the rear yard spill elevation and the ground elevation at the adjacent building envelope. See Section 5.4.9 for further information. Major system storage in backyards is not to be included/accounted for in design computations, however the effect of flow attenuation can now be accounted for by assuming a constant slope ditch/swale draining to the street.

In addition

If a receiving creek/stream has specific SWM criteria that will supersede the SWM criteria for separated sewer system.

Stormwater management criteria (Quality Control Issues)

Please note there will be a section in the SWM report that will discuss about the quality control requirements for this site. It is consultant's responsibility to check with the Rideau Valley Conservation Authority (RVCA) for quality control issues and include this information in the SWM report under Quality Control Section. Please contact RVCA for further information.

Connection to the existing sewer system

Please make sure that the existing sewer system has enough capacity to handle the proposed development.

Implementation considerations

- Accounting for external overland drainage
- Use of standard ICDs
- Requirement for ICD plans
- Requirement for plans showing 100-year and stress-test ponding limits
- Provide a foundation drain backwater valve installed as per Std Dwg S14.
- Provide a full port backwater valve, in the sanitary building drain, installed as per Std Dwg S14.1.

Monitoring MHs

Onsite Monitoring MHs are required for sewers (sanitary and storm) if there will be commercial component with the residential development.

Sight Triangle and Road widening requirement (By Transportation Project Manager Mr. Wally Dubyk)

Sidewalk Condition/Requirement: if there is no sidewalk, damaged one or asphalt sidewalk which needs to be changed to concrete.

City needs minimum 2.0 m monolithic concrete sidewalk for more information please contact with Wally Dubyk at 613-580-2424 ext. 13783

Studies required for Site Plan application

- Serviceability Study
- Erosion and sediment Control Plan, it can be combined with grading plan
- Stormwater Management Report
- Geotechnical Study
- Transportation Screening checklist
- Phase 2 Noise Control Detailed Study, Rideau Street is an arterial (for condo residential usages).
- Vibration Study
- ESA-Phase 1 Study, needs to be prepared as per current MOE regulation not as per CSA standards
- ESA-Phase 2, Depend on the Phase I recommendation if required needs to be prepared as per current MOE regulation not as per CSA standard
- RSC is needed for more sensitive land usage.
- Wind Analysis(10 storeys or more or a proposed building is more than twice the height of adjacent existing buildings and is greater than five storeys in height)

Plans required;

- a. Site Servicing Plan (Plan and Profile's for all services requiring MOE ECA)
- b. Grade Control and Drainage Plan
- c. Erosion and Sediment Control Plan
- d. Plan and profile for MOE application under transfer of Review program

MOECC SWM Requirement:

- Multiple parcels using same infrastructures also require an MOECC application

Relevant information

1. Servicing & site works shall be in accordance with the following documents:
 - ⇒ Ottawa Sewer Design Guidelines (2012)
 - ⇒ Ottawa Design Guidelines – Water Distribution (2010)
 - ⇒ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
 - ⇒ City of Ottawa Slope Stability Guidelines for Development Applications (2004)
 - ⇒ City of Ottawa Environmental Noise Control Guidelines (2006)
 - ⇒ City of Ottawa Park and Pathway Development Manual (2012)
 - ⇒ City of Ottawa Accessibility Design Standards (2012)
 - ⇒ Ottawa Standard Tender Documents (2015)
 - ⇒ Ontario Provincial Standards for Roads & Public Works (2015)
2. Record drawings and utility plans can be purchased from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).

Regards,

Abdul

Mohammad Abdul Mottalib, M. Sc., M. Eng., P. Eng.

Sr. Engineer Infrastructure Applications

Development Review , Central Group

Planning, Infrastructure and Economic Development Department

Services de la planification, de l'infrastructure et du développement économique

City of Ottawa | Ville d'Ottawa

110 Laurier Ave. West / 110, avenue Laurier Ouest, Ottawa K1P 1J1

Tel. 613-580-2424 ext. 27798 , Fax. 613-560-6006 ,E-mail: Abdul.Mottalib@ottawa.ca

Brandon Chow

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: November 28, 2018 4:33 PM
To: Brandon Chow <BChow@dsel.ca>
Subject: RE: 18-1072_201 Rideau Street - Quality Requirement

Hi Brandon,

The RVCA will not require quality control for the proposed development. The distance from the outlet along with the limited hard surfaces (driveway) would from the RVCA's perspective not require any additional measures to be implemented.

Thanks,

Eric Lalande, MCIP, RPP
Planner, Rideau Valley Conservation Authority
613-692-3571 x1137

From: Brandon Chow <BChow@dsel.ca>
Sent: Wednesday, November 28, 2018 3:25 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: 18-1072_201 Rideau Street - Quality Requirement

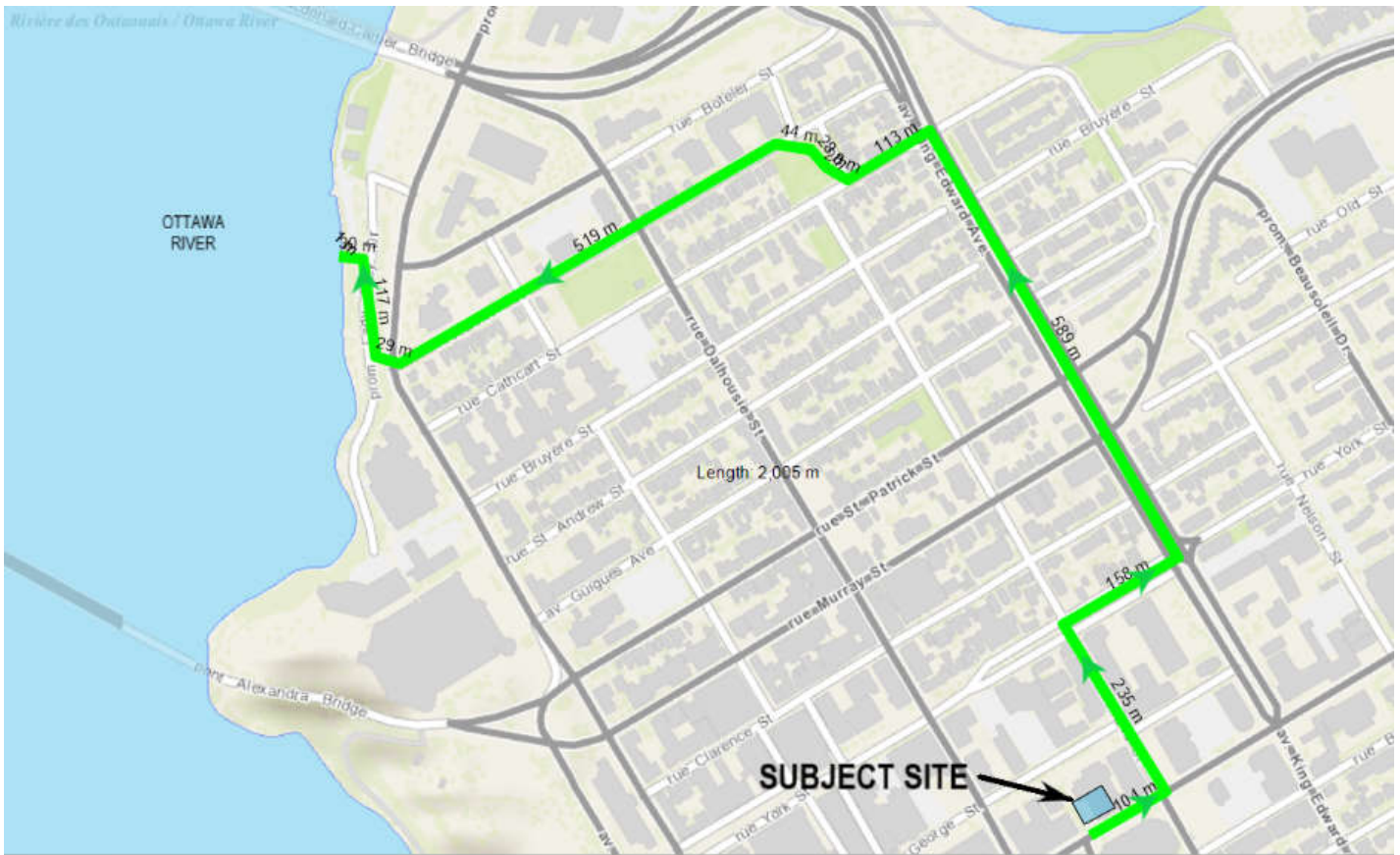
Good afternoon Eric,

We would like to touch base with you regarding a development we are working on located at 201 Rideau Street.

The proposed development involves the construction of a 24-storey hotel/residential building with underground parking as shown by the attached site plan.

Stormwater from the site will discharge to the existing 1050mm storm sewer within Rideau St and travel approximately 2,005m to an outlet to the Ottawa River.

Can you provide any comments regarding quality controls required for this site?



Thanks,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL

david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.532

fax: (613) 836-7183

email: bchow@DSEL.ca

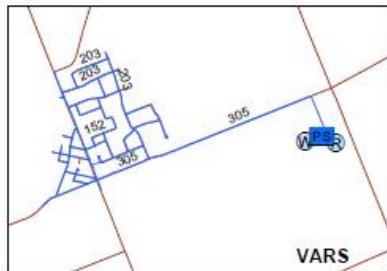
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APPENDIX B

Water Supply



WELLS



VARs

WELLS/RESERVOIRS/TREATMENT PLANT & P.S.

LEMIEUX ISLAND PURIFICATION PLANT & P.S. & RES.

PURIFICATION PLANT & P.S. & RES.

EAU DR. P.S.

ENERGY MINES & RESOURCES P.S.

Ogilvie Rd.
Backup P.S.

ORLEANS RES.

MONTREAL ROAD P.S.

BRITTANY DRIVE P.S.

SUBJECT SITE

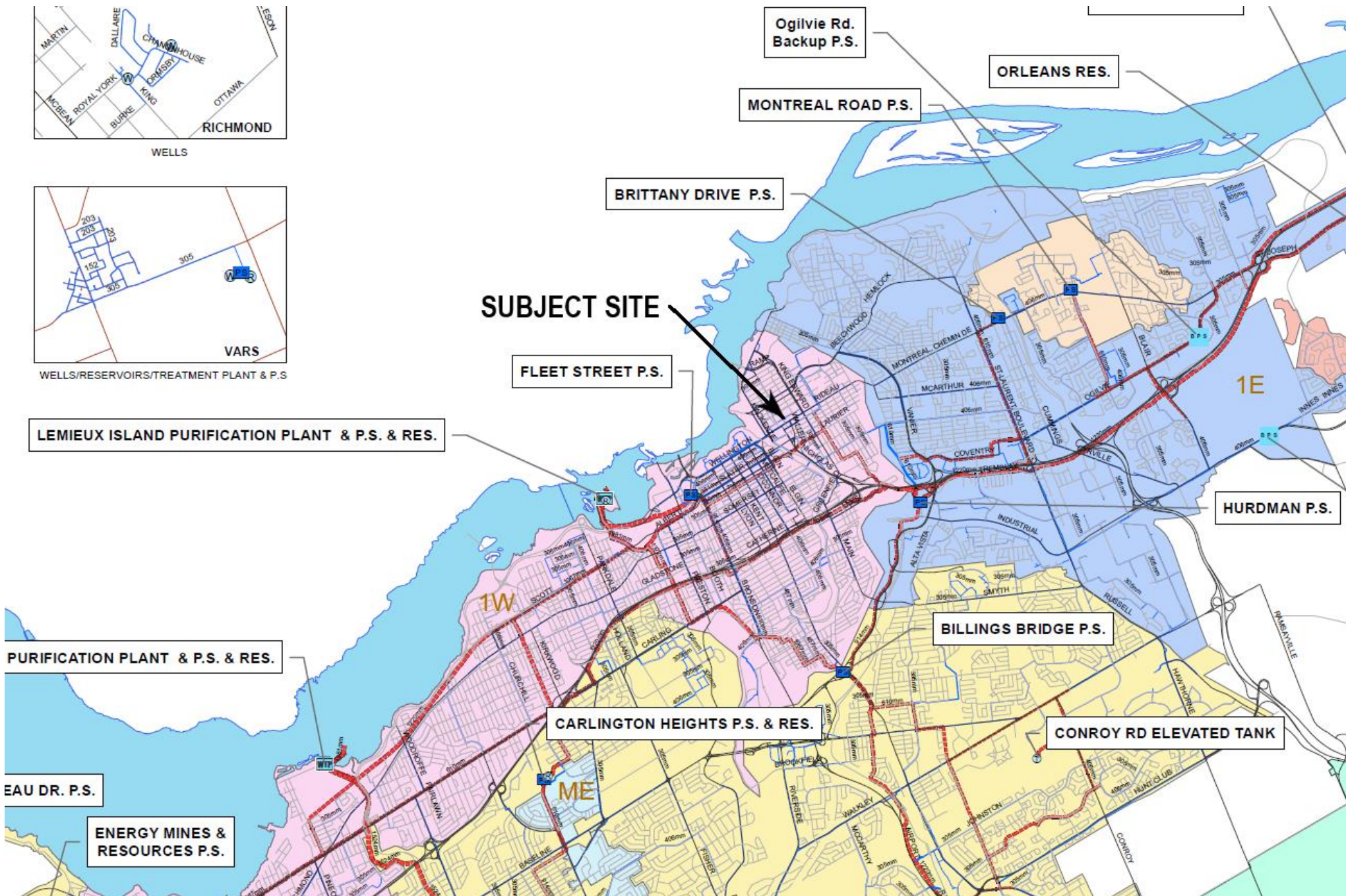
FLEET STREET P.S.

HURDMAN P.S.

BILLINGS BRIDGE P.S.

CARLINGTON HEIGHTS P.S. & RES.

CONROY RD ELEVATED TANK



Brandon Chow

From: Alison Gosling
Sent: November 20, 2018 10:58 AM
To: Brandon Chow
Subject: FW: Rideau Street - Boundary condition request
Attachments: 201 Rideau Nov 2018.pdf

FYI

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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From: Mottalib, Abdul [<mailto:Abdul.Mottalib@ottawa.ca>]
Sent: Tuesday, November 20, 2018 10:57 AM
To: Alison Gosling <AGosling@dsel.ca>
Cc: Mottalib, Abdul <Abdul.Mottalib@ottawa.ca>
Subject: FW: Rideau Street - Boundary condition request

Please see below as requested.

--

Thanks,

Abdul Mottalib, P. Eng.

From:
Sent: November 20, 2018 10:46 AM
To: Mottalib, Abdul <Abdul.Mottalib@ottawa.ca>
Subject: RE: Rideau Street - Boundary condition request

The following are boundary conditions, HGL, for hydraulic analysis at 201 Rideau (zone 1W) assumed to be connected to the 406mm on Rideau (see attached PDF for location). It is anticipated that the development will have a dual connection to be serviced from the existing 406 mm diameter watermain within Rideau Street

Minimum HGL = 106.7m

Maximum HGL = 115.0m

MaxDay + Fireflow (70 L/s) = 106.3m

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.

From: Alison Gosling <AGosling@dsel.ca>

Sent: November 16, 2018 5:30 PM

To: Mottalib, Abdul <Abdul.Mottalib@ottawa.ca>

Subject: Rideau Street - Boundary condition request

Good afternoon Abdul,

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

1. Location of Service / Street Number: 201 Rideau Street
2. Type of development and the amount of fire flow required for the proposed development:
 - The development proposes 76 residential units and 208 hotel rooms.
 - It is anticipated that the development will have a dual connection to be serviced from the existing 406 mm diameter watermain within Rideau Street, as shown by the attached map.
 - As this is an infill development, fire demand was estimated based on Section 11.2.2 from the **NFPA Standards**. Fire flow requirements were determined by combining the required flow rate for the sprinkler system, along with the anticipate hose stream. The anticipated fire flow requirements for the sprinkler system is **3,200 L/min** (850 gpm) and the anticipated internal and external total combined inside and outside hose stream demand is **950 L/min** (250 gpm). As a result, the total fire flow is estimated to be **4,150 L/min** (1,100 gpm). Refer to attached for NFPA tables utilized in the estimation.

3.

	L/min	L/s
Avg. Daily	75.4	1.26
Max Day	203.7	3.39
Peak Hour	328.8	5.48

It 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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Boundary Condition for 201 Rideau



Legend Pipe Ownership

- Private
- Public



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	-	0

	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	0	0.0	0.0	0.0	0.0	0.0	0.0

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			m ³ /d	L/min	m ³ /d	L/min	m ³ /d	L/min
Commercial floor space	2.5 L/m ² /d	655	1.64	1.1	2.5	1.7	4.4	3.1
Office	75 L/9.3m ² /d	-	0.00	0.0	0.0	0.0	0.0	0.0
Restaurant*	125 L/seat/d	283	35.38	24.6	53.1	36.8	95.5	66.3
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			37.0	25.7	55.5	38.6	99.9	69.4
Total Demand			37.0	25.7	55.5	38.6	99.9	69.4

* Estimated number of seats at 1seat per 9.3m²

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	76	137

	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	137	38.4	26.6	188.0	130.5	283.9	197.1

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			m ³ /d	L/min	m ³ /d	L/min	m ³ /d	L/min
Hotel*	225 L/person/d	312	70.2	48.8	105.3	73.1	189.5	131.6
Industrial - Light	35,000 L/gross ha/d		0.0	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.0	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			70.2	48.8	105.3	73.1	189.5	131.6
Total Demand			108.6	75.4	293.3	203.7	473.4	328.8

* Assuming 1.5 persons/room

***National Fire Protection Association (NFPA) 13 – Standard for the
Installation of Sprinkler Systems***

Table 11.2.2.1, Table 11.2.3.1.2

Table 11.2.2.1 Water Supply Requirements for Pipe Schedule Sprinkler Systems

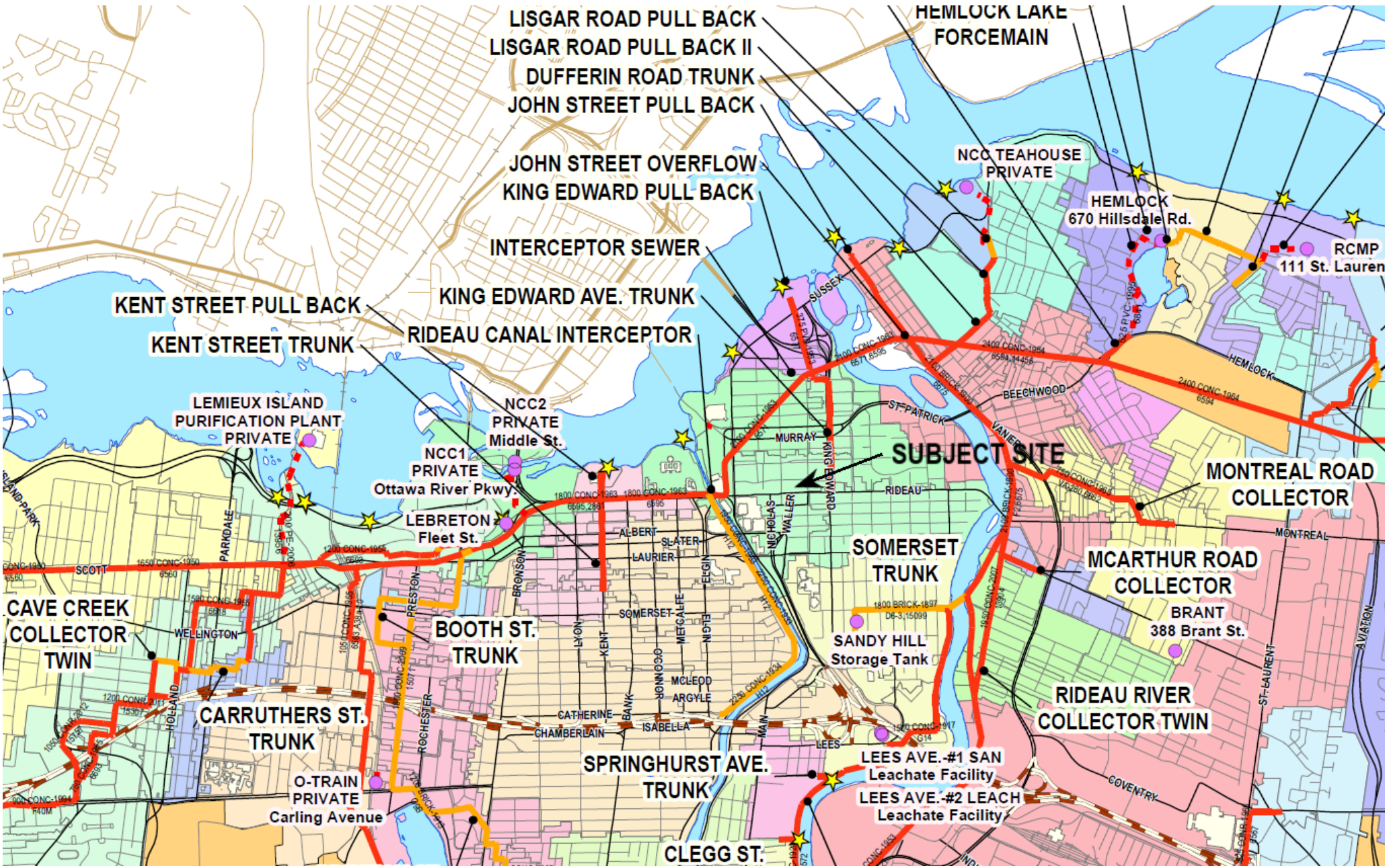
Occupancy Classification	Minimum Residual Pressure Required		Acceptable Flow at Base of Riser (Including Hose Stream Allowance)		Duration (minutes)
	psi	bar	gpm	L/min	
Light hazard	15	1	500–750	1900–2850	30–60
Ordinary hazard	20	1.4	850–1500	3200–5700	60–90

Table 11.2.3.1.2 Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems

Occupancy	Inside Hose		Total Combined Inside and Outside Hose		Duration (minutes)
	gpm	L/min	gpm	L/min	
Light hazard	0, 50, or 100	0, 190, or 380	100	380	30
Ordinary hazard	0, 50, or 100	0, 190, or 380	250	950	60–90
Extra hazard	0, 50, or 100	0, 190, or 380	500	1900	90–120

APPENDIX C

Wastewater Collection



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



Site Area 0.124 ha

Extraneous Flow Allowances

Infiltration / Inflow 0.03 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		0

Total Pop 0

Average Domestic Flow 0.00 L/s

Peaking Factor 4.00

Peak Domestic Flow 0.00 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	655	0.08
Restaurant**	125 L/seat/d	283	0.82

Average I/C/I Flow 0.89

Peak Institutional / Commercial Flow 1.34

Peak I/C/I Flow 1.34

* assuming a 12 hour commercial operation

** Estimated number of seats at 1 seat per 9.3m²

Total Estimated Average Dry Weather Flow Rate	0.89 L/s
Total Estimated Peak Dry Weather Flow Rate	1.34 L/s
Total Estimated Peak Wet Weather Flow Rate	1.38 L/s

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



Site Area 0.124 ha

Extraneous Flow Allowances

Infiltration / Inflow 0.03 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	76	137

Total Pop 137

Average Domestic Flow 0.55 L/s

Peaking Factor 4.00

Peak Domestic Flow 2.22 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Hotel*	225 L/person/d	312	1.63
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 1.63

Peak Institutional / Commercial Flow 2.44

Peak I/C/I Flow 2.44

* assuming 1.5 persons/room

** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B

Total Estimated Average Dry Weather Flow Rate	2.18 L/s
Total Estimated Peak Dry Weather Flow Rate	4.66 L/s
Total Estimated Peak Wet Weather Flow Rate	4.69 L/s

APPENDIX D

Stormwater Management

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012



Existing Drainage Characteristics From Internal Site

Area	0.1240 ha
C	0.90 Rational Method runoff coefficient
L	40 m
Up Elev	61.75 m
Dn Elev	61.35 m
Slope	1.0 %
Tc	4.1 min

1) Time of Concentration per Federal Aviation Administration

$$t_c = \frac{1.8(1.1 - C)L^{0.5}}{S^{0.333}}$$

tc, in minutes 0.000

C, rational method coefficient, (-)

L, length in ft

S, average watershed slope in %

Estimated Peak Flow

	2-year	5-year	100-year
i	110.6	151.0	259.8 mm/hr
Q	34.3	46.8	89.5 L/s

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



Target Flow Rate

Area	0.124 ha
C	0.50 Rational Method runoff coefficient
t _c	20.0 min
5-year	
i	70.3 mm/hr
Q	12.1 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area	0.000 ha
C	0.90 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)
10.0	104.2	0.0	0.0	0.0	0.0	178.6	0.0	0.0	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

Total Area	0.12 ha
C	0.90 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)
10	104.2	32.3	6.4	25.9	15.6	178.6	61.5	12.1	49.4	29.6
15	83.6	25.9	6.4	19.5	17.6	142.9	49.2	12.1	37.1	33.4
20	70.3	21.8	6.4	15.4	18.5	120.0	41.3	12.1	29.2	35.1
25	60.9	18.9	6.4	12.5	18.7	103.8	35.8	12.1	23.7	35.5
30	53.9	16.7	6.4	10.3	18.6	91.9	31.6	12.1	19.5	35.2
35	48.5	15.0	6.4	8.6	18.1	82.6	28.4	12.1	16.3	34.3
40	44.2	13.7	6.4	7.3	17.5	75.1	25.9	12.1	13.8	33.1
45	40.6	12.6	6.4	6.2	16.7	69.1	23.8	12.1	11.7	31.6
50	37.7	11.7	6.4	5.3	15.8	64.0	22.0	12.1	9.9	29.8
55	35.1	10.9	6.4	4.5	14.8	59.6	20.5	12.1	8.4	27.8
60	32.9	10.2	6.4	3.8	13.7	55.9	19.3	12.1	7.2	25.8
65	31.0	9.6	6.4	3.2	12.5	52.6	18.1	12.1	6.0	23.5
70	29.4	9.1	6.4	2.7	11.3	49.8	17.1	12.1	5.1	21.2
75	27.9	8.6	6.4	2.2	10.0	47.3	16.3	12.1	4.2	18.8
80	26.6	8.2	6.4	1.8	8.7	45.0	15.5	12.1	3.4	16.3
85	25.4	7.9	6.4	1.4	7.3	43.0	14.8	12.1	2.7	13.8
90	24.3	7.5	6.4	1.1	5.9	41.1	14.2	12.1	2.1	11.1
95	23.3	7.2	6.4	0.8	4.5	39.4	13.6	12.1	1.5	8.5
100	22.4	6.9	6.4	0.5	3.1	37.9	13.1	12.1	1.0	5.7
105	21.6	6.7	6.4	0.3	1.6	36.5	12.6	12.1	0.5	3.0
110	20.8	6.5	6.4	0.0	0.1	35.2	12.1	12.1	0.0	0.2

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)

5-year Q _{attenuated}	6.39 L/s	100-year Q _{attenuated}	12.10 L/s
5-year Max. Storage Required	18.7 m ³	100-year Max. Storage Required	35.5 m ³

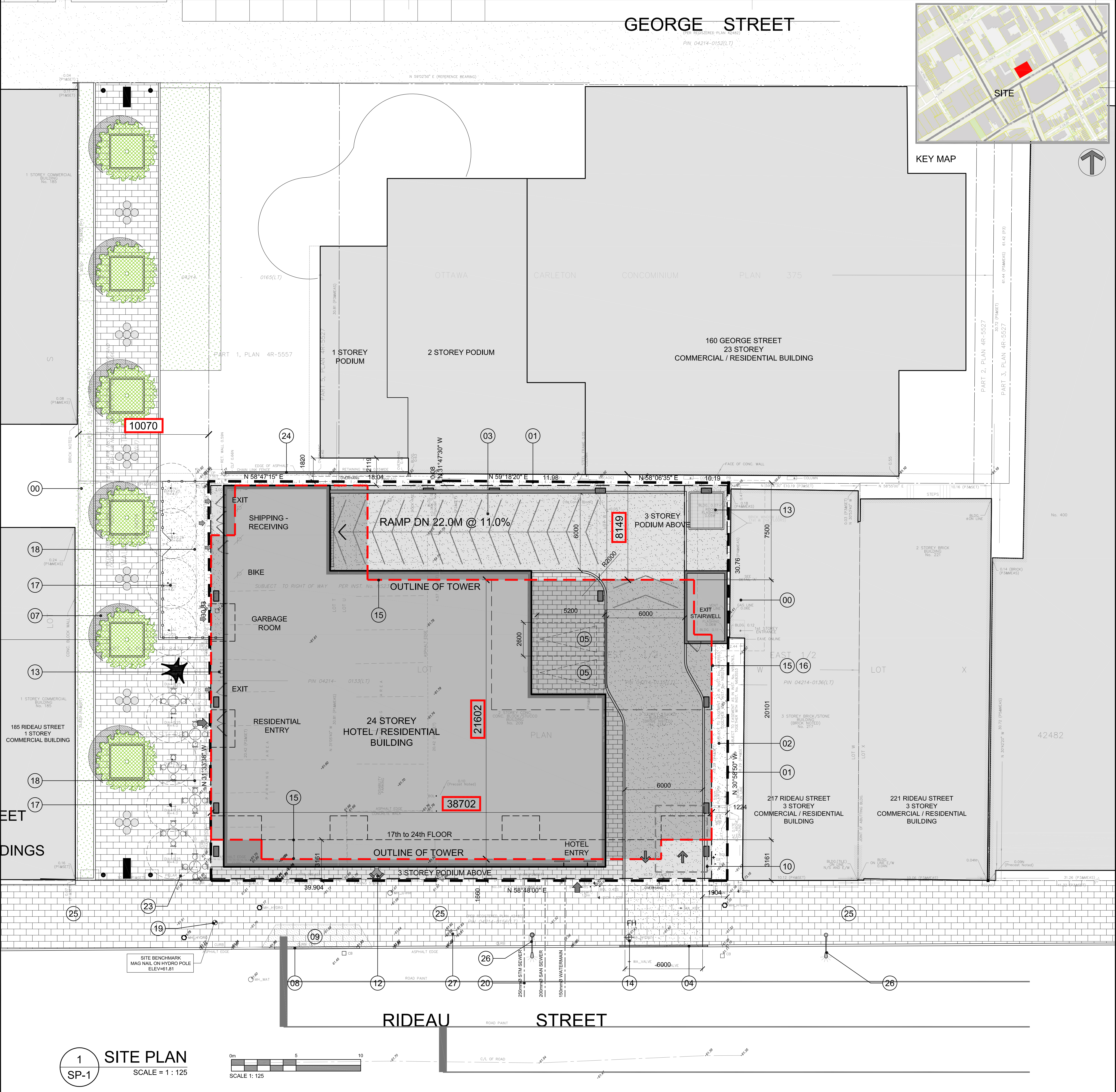
Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m ³)	100-Year Release Rate (L/s)	100-Year Storage (m ³)
Unattenuated Areas	0.0	0.0	0.0	0.0
Attenuated Areas	6.4	18.7	12.1	35.5
Total	6.4	18.7	12.1	35.5

Existing drainage characteristics for Tc calculation.



DRAWINGS / FIGURES



DRAWING NOTES

- PROPERTY LINE
- HARD SURFACE PAVING. SEE LANDSCAPE PLAN FOR PATTERN AND TYPE
- PARKING GARAGE ENTRY DRIVEWAY / RAMP WITH TRENCH DRAIN AND RETAINING WALLS AS REQUIRED
- DEPRESSED CURB TO CITY STANDARDS
- SHORT TERM PARKING SPACE
- 150mm BARRIER CURB
- EXISTING CLOSED OFF LANDSCAPED PATHWAY TO BE OPENED AND REDESIGNED
- REPLACE EXISTING DEPRESSED CURB WITH BARRIER CURB, TO CITY STANDARDS
- EXISTING DEPRESSED PAVEMENT TO BE RE-LEVELLED AS REQUIRED
- STORM WATER TANK (P1 LEVEL) - SEE CIVIL PLAN
- BICYCLE PARKING SPACES WITH BOLLARD STYLE RACK
- SIAMSESE CONNECTION
- AIR INTAKE / EXHAUST GRILL
- EXISTING FIRE HYDRANT TO BE RELOCATED
- OUTLINE OF BUILDING ABOVE
- OUTLINE OF UNDERGROUND PARKING LEVELS
- EXISTING TREE / PLANT MATERIAL TO BE REMOVED
- REMOVE EXISTING 1500mm HT. METAL PICKETS FENCE
- EXISTING TRAFFIC LIGHT POLE
- PROPOSED LOCATION OF UNDERGROUND UTILITIES
- GAS REGULATOR / METER EQUIPMENT AREA
- REMOVE EXISTING 1 & 2 STOREY BUILDINGS
- REMOVE EXISTING PATHWAY ENTRY PILLAR AND METAL GATES
- EXISTING RETAINING / BUILDING WALL ON ADJACENT LAND
- EXISTING CONCRETE UNIT PAVEMENT CITY SIDEWALK
- EXISTING CITY STREET LIGHTING
- EXISTING UTILITY KIOSK

PROJECT INFORMATION

ZONING Zoning By-Law 2017-113 MD S82

SITE AREA 1,230.7 sq. m. (13,344) sq. ft.

BUILDING HEIGHT - AS PER SCHEDULE S82 ± 77.0 - 80.0 m

PROJECT STATISTICS

BUILDING HEIGHT 77.0 M

AVERAGE MEAN GRADE (GEO. ELEV.) 61.90!!!

GROSS BUILDING - AREAS

(CITY OF OTTAWA'S DEFINITION)

PARKING LEVELS (4)	GROUND FLOOR	2nd FLOOR - HOTEL SERVICES	3rd FLOOR - APARTMENT AMENITY	4th to 16th FLOOR	17th FLOOR	18th to 22nd FLOOR	23rd FLOOR	24th FLOOR	MECHANICAL LEVEL
0.0 sq. m.	0.0 sq. m.	0.0 sq. m.	0.0 sq. m.	13 x 658.0 sq. m.	578.3 sq. m.	5 x 618.1 sq. m.	633.2 sq. m.	556.5 sq. m.	0.0 sq. m.
0.0 sq. ft.	0.0 sq. ft.	0.0 sq. ft.	0.0 sq. ft.	13 x 7,083 sq. ft.	6,141 sq. ft.	5 x 6,664 sq. ft.	6,816 sq. ft.	6,007 sq. ft.	0.0 sq. ft.

TOTAL AREA ABOVE GRADE 13,300.7 sq. m. 143,168 sq. ft.

UNIT STATISTICS

RESIDENTIAL UNIT	HOTEL UNIT	TOTAL
76	208	284

CAR PARKING

REQUIRED by ZONING BY-LAW

RESIDENCE	VISITOR	COMMERCIAL HOTEL	TOTAL
- NOT REQUIRED	- 0.1 PER DWELLING UNIT (AFTER 12 UNITS)	- NOT REQUIRED	6

PROVIDED

RESIDENCE	VISITOR	COMMERCIAL HOTEL	TOTAL
0	6	115	121

BICYCLE PARKING

REQUIRED

RESIDENCE	COMMERCIAL HOTEL	TOTAL
- 0.5 PER UNIT (76 UNITS)	- 1.0 PER 1,000m² OF G.F.A.	47

PROVIDED

BASEMENT LEVEL	EXTERIOR (ON CITY LAND)	TOTAL
99	10	109

LOT COVERAGE

PAVED SURFACE	BUILDING FOOTPRINT	LANDSCAPE OPEN SPACE	TOTAL
350.8 sq. m.	694.1 sq. m.	142.4 sq. m.	1,187.3 sq. m.
29.9%	58.8%	12.0%	100.0%

AMENITY SPACE

PRIVATE BALCONIES	3rd FLOOR COMMUNAL INTERIOR	3rd FLOOR COMMUNAL EXTERIOR	TOTAL
392.8 sq. m.	835.0 sq. m.	26.0 sq. m.	1,253.8 sq. m.
34.2%	68.1%	2.1%	104.4%

REQUIRED - 6.0M² PER UNIT (76) = 456.0 sq. m.

REQUIRED COMMUNAL @ 50% = 228.0 sq. m.

SURVEYOR

J.D. Barnes Limited
2430 Don Reid Drive, Suite 204,
Ottawa, Ontario, K1H 1E1
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Fax: (613) 731-8955
Cell: (613) 852-9260
E-Mail: cfox@dbarnes.com

CIVIL ENGINEER

David Schaeffer Engineering Ltd.
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel: (613) 836-0856
Fax: (613) 836-7183
Email: rfrees@DSEL.ca

GEOTECHNICAL ENGINEER

paterson group
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K2E 7J5
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Email: DGilbert@Patersongroup.ca

LANDSCAPE ARCHITECT

James B. Lennox & Associates Inc.
Landscape Architects
3332 Carling Ave.
Ottawa, Ontario K2H 5A8
Tel: 613-722-5168
Fax: 1-866-343-3942
Email: JL@jbla.ca

URBAN PLANNER

FoTenn Consultants Inc.
223 McLeod Street
Ottawa, ON Canada, K2P 0Z8
Tel: (613) 730-5709
Fax: (613) 730-1136
E-Mail: mcolligott@fotenn.com

LEGAL DESCRIPTION

SURVEYOR'S REAL PROPERTY REPORT
PART 1 - PLAN SHOWING
PART OF LOT T, PART OF LOT U
AND PART OF LOT W
(NORTH RIDEAU STREET)
REGISTERED PLAN 42482
CITY OF OTTAWA

PROJECT DEVELOPER

PRINCE DEVELOPMENTS
56 Temperance Street, Suite 700,
Toronto, Canada M5H 3V5
Tel: (416) 903-1377
Email: kvaughn@princedev.com

NOTATION SYMBOLS:

00 INDICATES DRAWING NOTES, LISTED ON EACH SHEET.

01 INDICATES ASSEMBLY TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE.

02 INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A300 SERIES.

03 INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A300 SERIES.

04 TITLE

05 DETAIL NUMBER

06 DETAIL REFERENCE PAGE

07 DETAIL CROSS REFERENCE PAGE

LRT ALIGNMENT DISCLAIMER

APPROXIMATE LRT TUNNEL AND SHORING ALLOWANCE
LOCATION TAKEN FROM CITY OF OTTAWA DRAWINGS
CONFEDERATION LINE WEST LRT EXTENSION - TUNNELS
PASTURE STATION TO BASELINE STATION, PLAN AND PROFILE
NEW ORCHARD STATION 55+170 - 55+770 SHEET 16, DATED
JUNE 2, 2016 & GENERAL ARRANGEMENT - RICHMOND ROAD
TUNNEL SHEET 102, DATED FEBRUARY 10, 2016

ARCHITECT SEAL

OTARIO ASSOCIATION OF ARCHITECTS
RODERICK LAHEY
LICENCE #4275

SEAL DATE: STAMP DATE

CLIENT

PRINCE DEVELOPMENTS
56 Temperance Street, Suite 700, Toronto, ON M5H 3V5

ARCHITECT

rla/architecture
roderick lahey architect inc.
56 beech street, ottawa, ontario K1S 3J6
t. 613.724.9932 f. 613.724.1209 rlaarchitecture.ca

PROJECT TITLE:

201 RIDEAU STREET

OTTAWA ONTARIO

SHEET TITLE:

SITE PLAN

DRAWN:	CHECKED:
RV	M.L.

SCALE:	SHEET No.
1:125	SP-1

PROJECT No. 1826