

**SERVICING AND STORMWATER
MANAGEMENT REPORT**

FOR

TAGGART GROUP OF COMPANIES
275 CARLING AVENUE

CITY OF OTTAWA

PROJECT NO.: 17-988

JULY 2018 – REV 1
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FOR
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**TAGGART GROUP OF COMPANIES
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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by Taggart Group of Companies to prepare a Servicing and Stormwater Management report in support of the application for Site Plan Control (SPC) at 275 Carling Avenue.

The subject property is located within the City of Ottawa urban boundary, in the Capital ward. As illustrated in **Figure 1**, the subject property is bound by Carling Avenue to the South, Cambridge Street South to the West, and Clemow Avenue to the North. Currently comprised of a single parcel of land (265 Carling Avenue) to be divided into two parcels, the subject property measures approximately **0.38ha** and is zoned Arterial Mainstreet (AM).



Figure 1: Site Location

The proposed SPC would allow for the development of a 16-storey retirement residence/commercial building fronting onto Carling Avenue, Cambridge Street South and Clemow Avenue within **0.21ha** of the subject site. The proposed development would include approximately **2,227m²** of commercial/office space and underground parking, with access from Clemow Avenue. The residential component is comprised of approximately **118** dwelling units and **50** rooming units. A copy of the Site Plan prepared by RLA Architecture is included in **Drawings/Figures**.

The objective of this report is to provide sufficient detail to demonstrate that the proposed development is supported by existing municipal services.

1.1 Existing Conditions

The existing site includes a paved parking area surrounded by vegetated grass areas. The elevations range between 76.22m and 77.41m with a grade change of approximately 0.31m from the Northeast to the Southwest corner of the property.

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:

Clemow Avenue:

- 203mm diameter PVC watermain;
- 300mm diameter PVC SDR 35 combined sewer, tributary to the Rideau Canal Interceptor and tributary to the Ottawa River, in the event of an overflow event.

Cambridge Street South:

- 203mm diameter PVC watermain;
- 300mm diameter PVC SDR 35 combined sewer, tributary to the Rideau Canal Interceptor and tributary to the Ottawa River, in the event of an overflow event.

Carling Avenue:

- 400mm diameter PVC watermain;
- 300mm diameter combined sewer, tributary to the Rideau Canal Interceptor and tributary to the Ottawa River, in the event of an overflow event.

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.

The development is proposed to consist of a single parcel of land that is not industrial, however will outlet to a combined sewer. As a result, the Ministry of the Environment,

Conservation and Parks (MOECP) will require an Environmental Compliance Application (ECA) to be submitted under the Direct Submission process.

1.3 Pre-consultation

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

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

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

- **Ottawa Sewer Design Guidelines,**
City of Ottawa, *SDG002*, October 2012.
(City Standards)
 - **Technical Bulletin ISTB-2018-01**
City of Ottawa, March 21, 2018.
(ISTB-2018-01)
 - **Technical Bulletin ISTB-2018-03**
City of Ottawa, March 21, 2018.
(ISTB-2018-03)
- **Ottawa Design Guidelines – Water Distribution**
City of Ottawa, July 2010.
(Water Supply Guidelines)
 - **Technical Bulletin ISD-2010-2**
City of Ottawa, December 15, 2010.
(ISD-2010-2)
 - **Technical Bulletin ISDTB-2014-02**
City of Ottawa, May 27, 2014.
(ISDTB-2014-02)
 - **Technical Bulletin ISDTB-2018-02**
City of Ottawa, March 21, 2018.
(ISDTB-2018-02)
- **Design Guidelines for Sewage Works,**
Ministry of the Environment, 2008.
(MOE Design Guidelines)
- **Stormwater Planning and Design Manual,**
Ministry of the Environment, March 2003.
(SWMP Design Manual)
- **Ontario Building Code Compendium**
Ministry of Municipal Affairs and Housing Building Development Branch,
January 1, 2010 Update.
(OBC)

-
- **NFPA 13 – Standard for the Installation of Sprinkler Systems**
National Fire Protection Association, 2016.
(NFPA Standards)

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 Water Distribution System map, included in **Appendix B**. Local 200mm diameter watermain exists within the Cambridge South Street and Clemow Avenue right-of-ways and a local 400mm diameter watermain exists within the Carling Avenue right-of way.

3.2 Water Supply Servicing Design

It is proposed that the development be serviced via a 150mm diameter water service to the existing 200mm watermain located within the Clemow Avenue right-of-way. Refer to drawing **SSP-1** for a detailed site servicing layout.

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

Table 1
Water Supply Design Criteria

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	3.6 x Average Daily *
Residential Maximum Hourly	5.4 x Average Daily *
Commercial Retail	2.5 L/m ² /d
Commercial Maximum Daily Demand	1.5 x avg. day
Commercial Maximum Hour Demand	1.8 x max. day
Office Space	75 L/9.3m ³ /d (12-hour Operation)
Nursing/Rest Homes	450 L/bed/d
Housekeeping Facilities	275 L/P/d
Dining Room/Kitchen	115 L/9.3m ³ /d (12-hour Operation)
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350kPa and 480kPa
During normal operating conditions pressure must not drop below	275kPa
During normal operating conditions pressure must not exceed	552kPa
During fire flow operating pressure must not drop below	140kPa
*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	

Table 2 summarizes the estimated water supply demand and boundary conditions for the proposed development based on the development statistics provided by RLA Architecture.

Table 2
Water Demand and Boundary Conditions

Design Parameter	Proposed Demand ¹ (L/min)	Boundary Condition ² Connection 1 (m H ₂ O / kPa)	Boundary Condition ² Connection 2 (m H ₂ O / kPa)
Average Daily Demand	59.3	38.4 / 376.7	39.0 / 382.6
Max Day + Fire Flow	170.2 + 4,150 = 4,320.2	12,900 L/min @ 140 kPa	12,360 L/min @ 140 kPa
Peak Hour	264.5	29.9 / 293.3	30.5 / 299.2
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 77.0m (Connection 1) and 76.4m (Connection 2), respectively. See Appendix B for detailed calculations .			

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**.

The City provided the available fire flow at 140 kPa along with the anticipated minimum and maximum water pressures for the demands, as indicated by the correspondence included in **Appendix B**. The minimum and maximum pressures fall within the required range identified in **Table 1**. Based on the City of Ottawa boundary conditions, the existing municipal infrastructure is capable of providing **12,360 L/min** near the proposed connection at 140 kPa during fire flow demands.

For the purpose of estimating fire flow, the short method within the 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.

In accordance with City of Ottawa technical bulletin ISDTB-2014-02, redundant service connections will be required due to an anticipated design flow of greater than 50 m³/day. A valve box is proposed within the Clemow Avenue right-of-way, east of the proposed connection to the existing watermain to ensure adequate water supply if the watermain within Clemow Avenue need to be closed from the east. An existing valve box exists to

the West of the proposed connection, allowing for a redundant service should the watermain close within Clemow Avenue from the west.

3.3 Water Supply Conclusion

The estimated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions. In accordance with **NFPA Standards, 4,150 L/min** of fire flow is required for the proposed development. As demonstrated by the boundary conditions, the municipal system is capable of delivering water within the **Water Supply Guidelines** pressure range and supply the required fire flow.

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-2018-03. 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 Rideau Canal Interceptor catchment area, as shown by the City sewer mapping included in **Appendix C**. Existing 300mm diameter combined sanitary sewers within the Clemow Avenue, Cambridge Street South, and Carling Avenue right-of-ways are available to service the proposed development.

4.2 Wastewater Design

It is proposed that the development be serviced via a 200mm sanitary service to the existing 300mm diameter combined sanitary sewer located within the Clemow Avenue right-of-way. Refer to drawing **SSP-1** for a detailed site servicing layout.

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

Table 3
Wastewater Design Criteria

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Average Daily Demand	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0 Harmon Correction Factor 0.8
Commercial Floor/Amenity Space	2.5 L/m ² /d
Nursing/Rest Homes	450 L/Bed/d
Housekeeping Facilities	275 L/P/d
Dining Room/Kitchen	115 L/9.3m ³ /d
Office Space	75 L/9.3m ³ /d
Commercial Peaking Factor	1.0
Infiltration and Inflow Allowance	0.28L/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 Sewer Size	200 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012 and Technical Bulletin ISTB-2018-03.	

Table 4 demonstrates the estimated peak flow from the proposed development based on the development statistics provided by RLA Architecture. See **Appendix C** for associated calculations.

Table 4
Summary of Estimated Peak Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	5.57
Estimated Peak Dry Weather Flow	7.20
Estimated Peak Wet Weather Flow	7.26

The peak wet weather sanitary flow based on the Site Plan dated May 15th, 2018, prepared by RLA Architecture and included in ***Drawings/Figures***, is **7.26 L/s**. The increase in wastewater discharge will be compensated for by a reduction in stormwater flow, as discussed in **Section 6.0** of the report.

4.3 Wastewater Servicing Conclusions

The subject site lies within the Rideau Canal Interceptor catchment area. It is proposed that the development be serviced via a 200mm sanitary service to the existing 300mm diameter combined sewer within Clemow Avenue, tributary to the Rideau Canal Interceptor. This increase in wastewater discharge will be compensated for by a reduction in stormwater flow, as discussed in **Section 6.0** of the report.

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 combined sewer system and is located within the Ottawa Central 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**.

It was assumed that the existing development contained no stormwater management controls for flow attenuation. The estimated combined pre-development peak flows for the 2, 5, and 100-year storm events are summarized in **Table 5**:

Table 5
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	55.7
5-year	76.1
100-year	158.0

5.2 Post-development Stormwater Management Target

Stormwater management requirements for the proposed development were reviewed with the City of Ottawa, generating the following requirements for the proposed development:

- Meet a total allowable combined release rate (sanitary and storm) based on a Rational Method Coefficient of 0.50, employing the City of Ottawa IDF parameters for a 5-year storm with a time of concentration equal to or greater than 10 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site;
- Quality controls are not required for the proposed development due to the combined sewer outlet; correspondence with the RVCA is included in **Appendix A**.

Based on the above stated requirements, the allowable release rate for the proposed development is **30.3 L/s**. As discussed in **Section 6.0** of this report and outlined in **Table 7**, stormwater is to be controlled to an allowable release rate of **23.1 L/s** to compensate for the proposed peak dry weather sanitary flow.

5.3 Proposed Stormwater Management System

It is proposed that the stormwater outlet from the development will be to the existing 300mm diameter combined sewer within Clemow Avenue via a 250mm diameter storm service. Refer to drawing **SSP-1** for a detailed site servicing layout.

To meet the stormwater objectives the proposed development will contain flow attenuation via an ICD located within an internal cistern. The internal cistern will be constructed as part of the building structure, detailed design of the cistern will be completed by the architect and the mechanical engineer.

Stormwater runoff collected from the roof area and landscaped areas via area drains will be directed to a **75.5m³** internal stormwater cistern. Cistern flow will be attenuated using an **IPEX Tempest LMF60 ICD** and will outlet to the municipal storm sewer within Clemow Avenue, as shown by **SSP-1**. Foundation drains are to be installed downstream of any cistern controls. Detailed calculations are located in **Appendix D**.

Table 6 summarizes post-development flow rates based on the proposed Site Plan.

Table 6
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage Required	100-Year Storage Available
	(L/s)	(m ³)	(L/s)	(m ³)	(m ³)
Unattenuated Areas	9.1	0.0	19.4	0.0	0.0
Attenuated Areas	2.4	34.1	3.4	75.1	75.5
Total	11.4	34.1	22.8	75.1	75.5

It is calculated that **75.1m³** of storage will be required on site to attenuate flow to the established release rate of **23.1 L/s**.

5.4 Stormwater Quality Control

Quality controls are not required for the proposed development due to the combined sewer outlet; correspondence with the RVCA is included in **Appendix A**.

5.5 Stormwater Servicing Conclusions

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 **City Standards**.

Based on the above stated requirements, the allowable release rate for the proposed development is **30.3 L/s**. As discussed in *Section 6.0* of this report, stormwater is to be controlled to an allowable release rate of **23.1 L/s** to compensate for the proposed peak

dry weather sanitary flow. It is estimated that **75.1m³** of storage is required to meet this release rate, **75.5m³** is provided.

Quality controls are not required for the proposed development due to the combined sewer outlet.

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

6.0 COMBINED SEWER SYSTEM FLOW

Under existing conditions, the site contains no stormwater management system for flow attenuation. Therefore, the pre-development “design” combined flow was estimated to be approximately **76.1 L/s**. The assessment of the pre-development combined flow condition assumes peak wastewater rates during a 5-year storm event.

The post-development combined flow for all storms up to and including a 100-year event will be limited to **30.3 L/s**. This value includes the peak dry weather sanitary flow and both controlled and uncontrolled flows directed from the subject property. **Table 7**, below, summarizes the proposed release rates from the development.

Table 7
Summary of Allowable Release Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
Wastewater	7.2
Stormwater	23.1
Combined	30.3

Therefore, based on the proposed stormwater target, the post-development combined flow will be lower than existing conditions by approximately **45.8 L/s**, a net reduction of approximately **60%** to the combined sewer.

7.0 UTILITIES

Gas and Hydro services currently exist within the Clemow Avenue and Cambridge Street South right-of-ways. Utility servicing will be coordinated with the individual utility companies prior to site development.

8.0 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;
- 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;
- Clean and change filter cloth at catch basins.

9.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by Taggart Group of Companies to prepare a Servicing and Stormwater Management report in support of the application for Site Plan Control (SPC) at 275 Carling Avenue. 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;
- Fire flow requirements were estimated in accordance with **NFPA Standards**. Based on the boundary conditions provided by the City of Ottawa, sufficient flow is available to service the development;
- The proposed development will be required to attenuate post development storm and sanitary flows to an equivalent combined release rate of **30.3 L/s**. The combined release rate of sanitary and stormwater flow from the proposed site provides an approximately **60%** reduction in flow into the combined sewer within Clemow Avenue;
- The proposed development is estimated to have a peak wet weather flow of **7.26 L/s**, the increase in wastewater discharge will be compensated by a reduction in stormwater flow;
- Based on the proposed peak dry weather sanitary flow of **7.20 L/s**, the post development storm allowable release rate was established as **23.1 L/s**;
- It is proposed that stormwater objective be met through storm water retention via cistern storage, it is calculated that **75.1m³** of onsite storage will be required to attenuate flow to the established release rate above, **75.5m³** is provided;
- Quality controls are not required for the proposed development due to the combined sewer outlet, correspondence with the RVCA is included in **Appendix A**;
- The development proposes to outlet to a combined sewer, as a result, the Ministry of the Environment, Conservation and Parks (MOECP) will require an Environmental Compliance Application (ECA) to be submitted under the Direct Submission process.

Prepared by,
David Schaeffer Engineering Ltd.

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Alison J. Gosling, EIT.



Per: Adam D. Fobert, P.Eng.

APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

17-988

28/06/2018

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, EX-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, EX-1
<input type="checkbox"/>	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
<input checked="" type="checkbox"/>	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	GP-1
<input type="checkbox"/>	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
<input type="checkbox"/>	Proposed phasing of the development, if applicable.	N/A
<input 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	SP-1
4.2 Development Servicing Report: Water		
<input type="checkbox"/>	Confirm consistency with Master Servicing Study, if available	N/A
<input checked="" type="checkbox"/>	Availability of public infrastructure to service proposed development	Section 3.1
<input checked="" type="checkbox"/>	Identification of system constraints	Section 3.1
<input checked="" type="checkbox"/>	Identify boundary conditions	Section 3.1, 3.2
<input checked="" type="checkbox"/>	Confirmation of adequate domestic supply and pressure	Section 3.3

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

4.3 Development Servicing Report: Wastewater

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

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

4.4 Development Servicing Report: Stormwater Checklist

<input checked="" type="checkbox"/>	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
<input checked="" type="checkbox"/>	Analysis of available capacity in existing public infrastructure.	Section 5.1, 7.0, Appendix D
<input checked="" type="checkbox"/>	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
<input checked="" type="checkbox"/>	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2, 5.4, 5.5
<input checked="" type="checkbox"/>	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2, 5.4, 5.5
<input checked="" type="checkbox"/>	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
<input type="checkbox"/>	Set-back from private sewage disposal systems.	N/A
<input type="checkbox"/>	Watercourse and hazard lands setbacks.	N/A
<input checked="" type="checkbox"/>	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
<input type="checkbox"/>	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
<input checked="" type="checkbox"/>	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3
<input type="checkbox"/>	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
<input checked="" type="checkbox"/>	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5.1, 5.3
<input type="checkbox"/>	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
<input type="checkbox"/>	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
<input type="checkbox"/>	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
<input type="checkbox"/>	Identification of potential impacts to receiving watercourses	N/A
<input type="checkbox"/>	Identification of municipal drains and related approval requirements.	N/A

<input checked="" type="checkbox"/>	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
<input type="checkbox"/>	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
<input type="checkbox"/>	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
<input checked="" type="checkbox"/>	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 8.0
<input type="checkbox"/>	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
<input type="checkbox"/>	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

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

4.6 Conclusion Checklist

<input checked="" type="checkbox"/>	Clearly stated conclusions and recommendations	Section 9.0
<input type="checkbox"/>	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	
<input type="checkbox"/>	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

Alison Gosling

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: Friday, June 1, 2018 8:41 AM
To: Alison Gosling
Subject: RE: 275 Carling Avenue - Quality Control Requirement

Good Morning Alison,

Stormwater from this site would be directed to a combined storm sewer where water quality treatment is provided by the downstream Robert O. Pickard Environmental Centre. Therefore, the RVCA accepts that there is requirement for additional onsite water quality treatment measures save and except best management practices.

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

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: Thursday, May 31, 2018 4:35 PM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Subject: RE: 275 Carling Avenue - Quality Control Requirement

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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From: Jamie Batchelor [mailto:jamie.batchelor@rvca.ca]
Sent: Thursday, May 31, 2018 4:34 PM
To: Alison Gosling <AGosling@dsel.ca>
Subject: RE: 275 Carling Avenue - Quality Control Requirement

Hi Alison,

I haven't forgot your inquiry. I'm hoping to get to it tomorrow.

From: Alison Gosling [<mailto:AGosling@dsel.ca>]
Sent: Monday, May 28, 2018 11:39 AM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Subject: 275 Carling Avenue - Quality Control Requirement

Good afternoon Jamie,

We wanted to touch base with you regarding a development at 275 Carling Avenue. The development involves the construction of a 16-storey retirement residence and commercial building with associated underground parking. The existing site consists of a paved surface parking lot as demonstrated in **Figure 1** below.

The development proposes to outlet to the existing combined sewer within Clemow Avenue. The existing combined sewer either travels approximately **3.7 km** to an outlet into the Ottawa River during a major storm event, as shown by **Figure 2** below, or travels to the Robert O. Pickard Environmental Centre.

It is anticipated that stormwater quality controls are not required as the development proposes to outlet to the combined sewer within Clemow Avenue. Can you please confirm?



Figure 1: Existing Site



Figure 2: Combined Overflow Path to Ottawa River

Please feel free to contact me to discuss.

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

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APPENDIX B

Water Supply

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	70	98							
2 Bedroom	2.1	48	101							
3 Bedroom	3.1		0							
Average	1.8		0							
				Pop	Avg. Daily		Max Day		Peak Hour	
					m³/d	L/min	m³/d	L/min	m³/d	L/min
Total Domestic Demand				199	55.7	38.7	200.6	139.3	300.9	209.0

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
Nursing / Rest homes †	450 L/bed/d	50	22.50	15.6	33.8	23.4	60.8	42.2
Housekeeping Facilities †	275 L/person/d	186.0	5.50	3.8	8.2	5.7	14.8	10.3
Dining Room/Kitchen*	115 L/seat/d	1085.4	1.12	0.8	1.7	1.2	3.0	2.1
Office Space*	75 L/9.3m ² /d	122.8	0.08	0.1	0.1	0.1	0.2	0.2
Commercial/Amentities Space*	2.5 L/m ² /d	2104.0	0.44	0.3	0.7	0.5	1.2	0.8
Total I/CI Demand			29.6	20.6	44.5	30.9	80.0	55.6
Total Demand			85.4	59.3	245.1	170.2	380.9	264.5

† Flow rates per City of Ottawa Sewer Design Guidelines Appendix 4A

* Assumed 12 Hour operation per day

Boundary Conditions Unit Conversion

Connection 1:

	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa		L/s	L/min
Avg. DD	115.4	77	38.4	54.6	376.7	Fire Flow @ 140kPa	215	12900
Fire Flow			0.0	0.0	0.0			
Peak Hour	106.9	77	29.9	42.5	293.3			

Connection 2:

	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa		L/s	L/min
Avg. DD	115.4	76.4	39.0	55.5	382.6	Fire Flow @ 140kPa	206	12360
Fire Flow			0.0	0.0	0.0			
Peak Hour	106.9	76.4	30.5	43.4	299.2			

Alison Gosling

From: Alison Gosling
Sent: Friday, May 18, 2018 10:18 AM
To: 'Buchanan, Richard'
Cc: Robert Freel
Subject: 275 Carling Avenue - Boundary Condition Request

Good morning Richard,

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

1. Location of Service / Street Number: 275 Carling Avenue
2. Type of development and the amount of fire flow required for the proposed development:
 - The proposed development is mixed use retirement residence/commercial. The full build-out proposes 168 residential units and 1,243 m² of commercial space and medical facilities.
 - It is anticipated that the development will have a dual connection to be services from the existing 203 mm diameter watermain within Clemow Avenue, as shown by the attached map.
 - A maximum fire flow of 14,000L/s is anticipated for the development.

3.

	L/min	L/s
Avg. Daily	68.4	1.14
Max Day	204.2	3.40
Peak Hour	315.3	5.25



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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Alison Gosling

From: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Sent: Tuesday, May 22, 2018 1:27 PM
To: Alison Gosling
Subject: FW: 275 Carling Avenue - Boundary Condition Request
Attachments: 275 Carling May 2018.pdf

Good afternoon Alison,

The following are boundary conditions, HGL, for hydraulic analysis at 275 Carling (zone 1W) assumed to be connected to two locations to the 203 mm on Clemow (see PDF for locations).

Minimum HGL = 106.9 m (Both Connections)

Maximum HGL = 115.4 m (Both Connections)

Available Fire Flow = 215 L/s (Connection 1) assuming a residual of 20 psi and a ground elevation of 77.0 m

Available Fire Flow = 206 L/s (Connection 2) assuming a residual of 20 psi and a ground elevation of 76.4 m

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.

Richard Buchanan, CET

Project Manager, Development Approvals
Planning, Infrastructure and Economic Development Department
Planning & Growth Management Branch
City of Ottawa | Ville d'Ottawa
☎ 613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Alison Gosling <AGosling@dsel.ca>
Sent: Friday, May 18, 2018 10:18 AM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Cc: Robert Freel <RFreel@dsel.ca>
Subject: 275 Carling Avenue - Boundary Condition Request

Good morning Richard,

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

1. Location of Service / Street Number: 275 Carling Avenue
2. Type of development and the amount of fire flow required for the proposed development:
 - The proposed development is mixed use retirement residence/commercial. The full build-out proposes 168 residential units and 1,243 m² of commercial space and medical facilities.
 - It is anticipated that the development will have a dual connection to be services from the existing 203 mm diameter watermain within Clemow Avenue, as shown by the attached map.
 - A maximum fire flow of 14,000L/s is anticipated for the development.

3.

	L/min	L/s
Avg. Daily	68.4	1.14
Max Day	204.2	3.40
Peak Hour	315.3	5.25



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

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'

Boundary Condition for 275 Carling

Connection 2

Connection 1

Legend

Water Pipe Ownership

— Private

— Public

Legend

Water Pipe Ownership

— Private

— Public



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

Table 11.2.2.1, Table 11.2.3.1.2

**National Fire Protection Association 13 - Standard for the Installation
of Sprinkler Systems Report, Table 11.2.2.1**

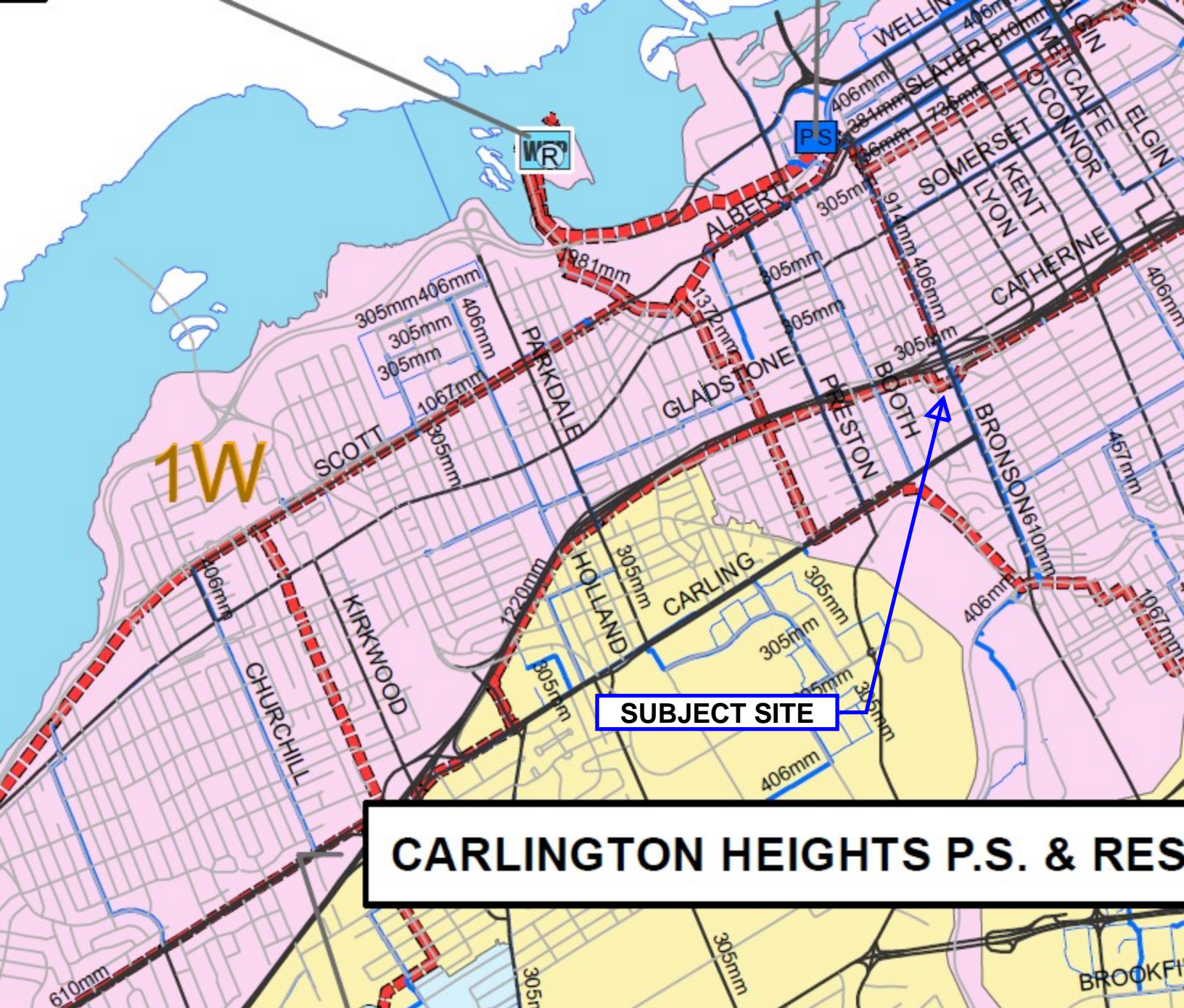
**Table 11.2.2.1 Water Supply Requirements for Pipe
Schedule Sprinkler Systems**

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

National Fire Protection Association 13 - Standard for the Installation of Sprinkler Systems Report, Table 11.2.3.1.2

**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



Water Distribution System Facilities & Feeder mains
City of Ottawa

APPENDIX C

Wastewater Collection

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012



Site Area 0.21 ha

Extraneous Flow Allowances

Infiltration / Inflow 0.06 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	70	98
2 Bedroom	2.1	48	101
3 Bedroom	3.1		0
Average	1.8		0

Total Pop 199

Average Domestic Flow 0.64 L/s

Peaking Factor 3.52

Peak Domestic Flow 2.27 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Nursing / Rest homes †	450 L/bed/d	50	0.52
Housekeeping Facilities †	275 L/person/d	186.0	1.18
Dining Room/Kitchen*	115 L/seat/d	1085.4	2.89
Office Space*	75 L/9.3m ² /d	122.8	0.21
Commercial/Amenity Space*	2.5 L/m ² /d	2104.0	0.12

Average I/C/I Flow 4.93

Peak Institutional / Commercial Flow 4.93

Peak Industrial Flow** 0.00

Peak I/C/I Flow 4.93

* assuming a 12 hour commercial operation

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

Total Estimated Average Dry Weather Flow Rate	5.57 L/s
Total Estimated Peak Dry Weather Flow Rate	7.20 L/s
Total Estimated Peak Wet Weather Flow Rate	7.26 L/s

SANITARY SEWER CALCULATION SHEET

PROJECT: Taggart Group of Companies
LOCATION: 275 Carling Avenue
FILE REF: 17-988
DATE: 28-Jun-18

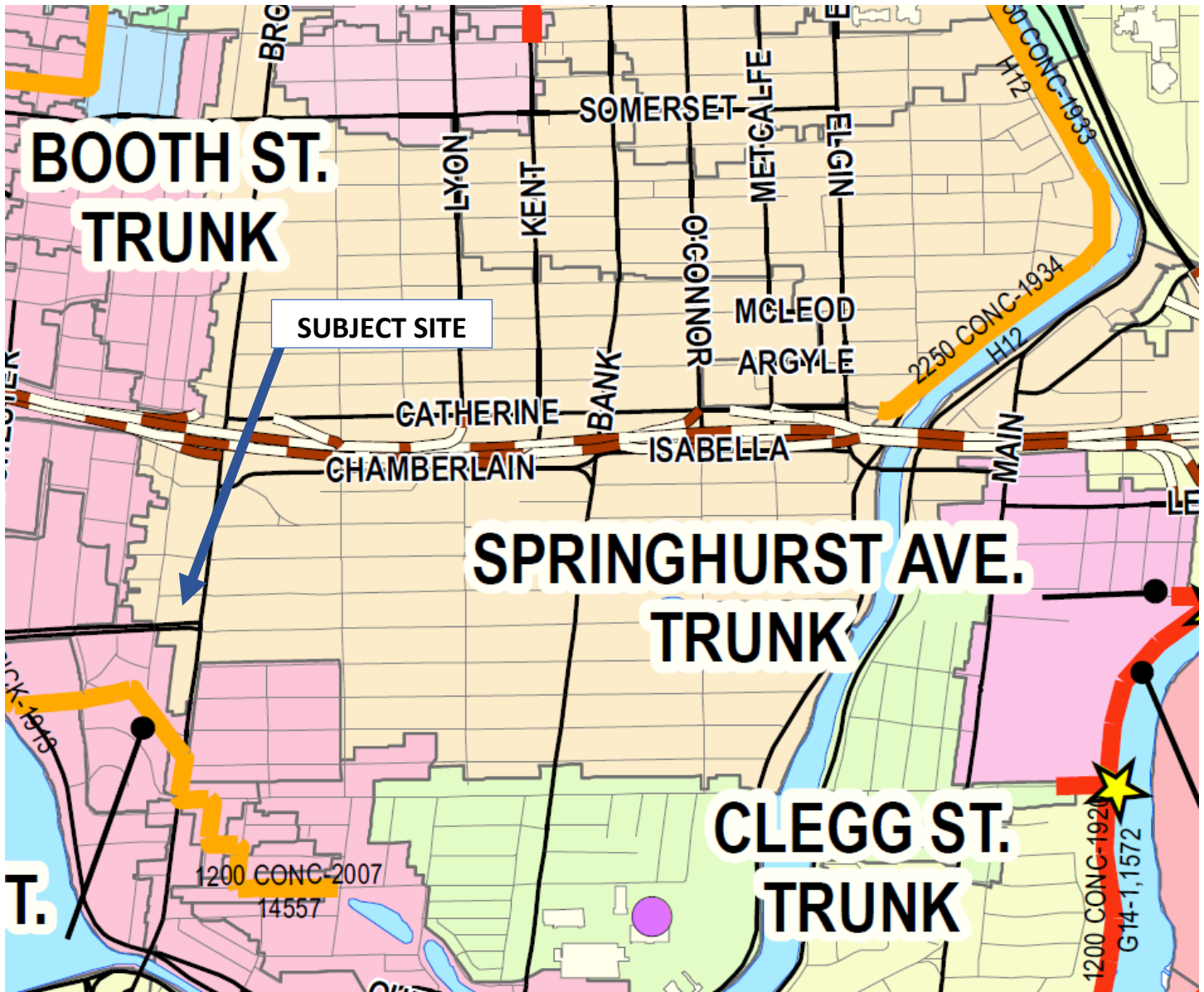
DESIGN PARAMETERS
Avg. Daily Flow Res. 280 L/p/d
Avg. Daily Flow Comm 17,000 L/ha/d
Avg. Daily Flow Instit. 10,000 L/ha/d
Avg. Daily Flow Indust 10,000 L/ha/d
Peak Fact. Res. Per Harmonics: Min = 2.0, Max =4.0
Peak Fact. Comm. 1
Peak Fact. Instit. 1
Peak Fact. Indust. per MOE graph

Infiltration / Inflow 0.28 L/s/ha
Min. Pipe Velocity 0.60 m/s full flowing
Max. Pipe Velocity 3.00 m/s full flowing
Mannings N 0.013



Location			Residential Area and Population									Commercial		Institutional		Industrial		Infiltration				Pipe Data								
Area ID	Up	Down	Area	Number of Units				Pop.	Cumulative	Peak.	Q _{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q _{C_{total}}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	A _{hydraulic}	R	Velocity	Q _{cap}	Q / Q full
				by type					Area	Pop.	Fact.		Area	Area	Area	Area			Area	Area	Flow	Flow								
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m ²)	(m)	(m/s)	(L/s)	(-)
101	1	2	2.220	26		7	84	259.0	2.220	259.0	4.00	3.36	0.12	0.12	0.45	0.45	0.00	0.5	2.790	2.790	0.781	4.63	300	2.15		0.071	0.075	2.01	141.8	0.03
102	2	3	1.560	15				51.0	3.780	310.0	4.00	4.02	0.28	0.40	2.34	2.79	0.00	2.8	4.180	6.970	1.952	8.74	300	0.44	90.7	0.071	0.075	0.91	64.1	0.14
103	3	4	0.000					0.0	3.780	310.0	4.00	4.02	0.61	1.01		2.79	0.00	3.3	0.610	7.580	2.122	9.44	300	0.55	68.5	0.071	0.075	1.01	71.7	0.13
104	4	5	0.000	17				58.0	3.780	368.0	4.00	4.77	0.77	1.78	0.49	3.28	0.00	4.4	1.260	8.840	2.475	11.64	375	1.04	82.4	0.110	0.094	1.62	178.8	0.07
105	5	6	2.060					0.0	5.840	368.0	4.00	4.77	0.56	2.34		3.28	0.00	4.9	2.620	11.460	3.209	12.86	375	4.00	79.6	0.110	0.094	3.17	350.7	0.04
	6	7	0.000					0.0	5.840	368.0	4.00	4.77		2.34		3.28	0.00	4.9	0.000	11.460	3.209	12.86	375	4.41	13.6	0.110	0.094	3.33	368.2	0.03
107	7	8	2.450	57				194.0	8.290	562.0	3.95	7.19	0.22	2.56	0.14	3.42	0.00	5.2	2.810	14.270	3.996	16.38	375	4.23	24.1	0.110	0.094	3.26	360.6	0.05
108	8	9	0.000					0.0	8.290	562.0	3.95	7.19	0.33	2.89		3.42	0.00	5.5	0.330	14.600	4.088	16.76	375	4.23	24.1	0.110	0.094	3.26	360.6	0.05

CITY OF OTTAWA-SANITARY TRUNK AND COLLECTION AREAS



APPENDIX D

Stormwater Management

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



Existing Drainage Characteristics From Internal Site

Area	0.210 ha
C	0.83 Rational Method runoff coefficient
L	35.0 m
Up Elev	77.23 m
Dn Elev	76.16 m
Slope	3.1 %
Tc	3.6 min

	Imp.	Perv.	Total
Area	0.188	0.021	0.210
C	0.9	0.2	0.83

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

C, rational method coefficient, (-)

L, length in ft

S, average watershed slope in %

Estimated Peak Flow

	2-year	5-year	100-year
i	115.4	157.6	271.3 mm/hr
Q	55.7	76.1	158.0 L/s

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)

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



Target Flow Rate

Area	0.210 ha
C	0.50 Rational Method runoff coefficient
t _c	10.0 min

	Imp.	Perv.	Total
Area	0.171	0.039	0.210
C	0.9	0.2	0.77

5-year

i	104.2 mm/hr
Q	30.3 L/s

Ex. Sanitary Flow 0.00 L/s

Total Combined Allowable Release Rate 30.3 L/s <---- 5-Year Release (30.3 L/s) + Ex. Sanitary Flow (0.00 L/s)

Proposed Sanitary Flow 7.2 L/s *NOTE: The peak dry weather flow rate is used as infiltration is accounted for in storm calculations

Total Allowable Stormwater Release Rate 23.1 L/s <---- Total Combined Release (30.3 L/s) - Proposed Sanitary Flow (7.20 L/s)

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID	U1
Total Area	0.059 ha
C	0.53 Rational Method runoff coefficient

	Imp.	Perv.	Total
Area	0.028	0.031	0.059
C	0.9	0.2	0.53

t _c (min)	5-year					100-year				
	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	9.1	9.1	0.0	0.0	178.6	19.4	19.4	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	A1
Available Cistern Storage	
Maintenance Structures	

	Imp.	Perv.	Total
Area	0.140	0.011	0.151
C	0.9	0.2	0.85

Total Subsurface Storage (m³) 75.5

Stage Attenuated Areas Storage Summary

	Stage (m)	Surface Storage			Surface and Subsurface Storage			
		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	64.60		0.00			0.0	0.0	0.00
Cistern Storage SL	65.06		0.46	0.46	37.8	37.8	2.6	4.03
Cistern Storage OBV	65.51		0.91	0.45	37.8	75.5	3.4	6.17

* V=Incremental storage volume

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

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

Taggart Group of Companies
275 Carling Avenue
Proposed Site Conditions

Orifice Location

BLDG

Dia LMF60

Total Area
C

0.151 ha

0.85 Rational Method runoff coefficient

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

t _c (min)	5-year					100-year				
	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	37.1	2.4	34.8	20.9	178.6	74.9	3.4	71.5	42.9
15	83.6	29.8	2.4	27.4	24.7	142.9	60.0	3.4	56.6	50.9
20	70.3	25.0	2.4	22.7	27.2	120.0	50.3	3.4	46.9	56.3
25	60.9	21.7	2.4	19.3	29.0	103.8	43.6	3.4	40.2	60.3
30	53.9	19.2	2.4	16.9	30.4	91.9	38.6	3.4	35.2	63.3
35	48.5	17.3	2.4	14.9	31.4	82.6	34.7	3.4	31.3	65.7
40	44.2	15.7	2.4	13.4	32.1	75.1	31.5	3.4	28.1	67.5
45	40.6	14.5	2.4	12.1	32.7	69.1	29.0	3.4	25.6	69.1
50	37.7	13.4	2.4	11.1	33.2	64.0	26.8	3.4	23.4	70.3
55	35.1	12.5	2.4	10.2	33.5	59.6	25.0	3.4	21.6	71.4
60	32.9	11.7	2.4	9.4	33.8	55.9	23.5	3.4	20.1	72.2
65	31.0	11.1	2.4	8.7	34.0	52.6	22.1	3.4	18.7	72.9
70	29.4	10.5	2.4	8.1	34.1	49.8	20.9	3.4	17.5	73.5
75	27.9	9.9	2.4	7.6	34.1	47.3	19.8	3.4	16.4	74.0
80	26.6	9.5	2.4	7.1	34.1	45.0	18.9	3.4	15.5	74.3
85	25.4	9.0	2.4	6.7	34.1	43.0	18.0	3.4	14.6	74.6
90	24.3	8.7	2.4	6.3	34.0	41.1	17.3	3.4	13.9	74.8
95	23.3	8.3	2.4	6.0	33.9	39.4	16.5	3.4	13.2	75.0
100	22.4	8.0	2.4	5.6	33.8	37.9	15.9	3.4	12.5	75.1
105	21.6	7.7	2.4	5.3	33.6	36.5	15.3	3.4	11.9	75.1
110	20.8	7.4	2.4	5.1	33.4	35.2	14.8	3.4	11.4	75.1

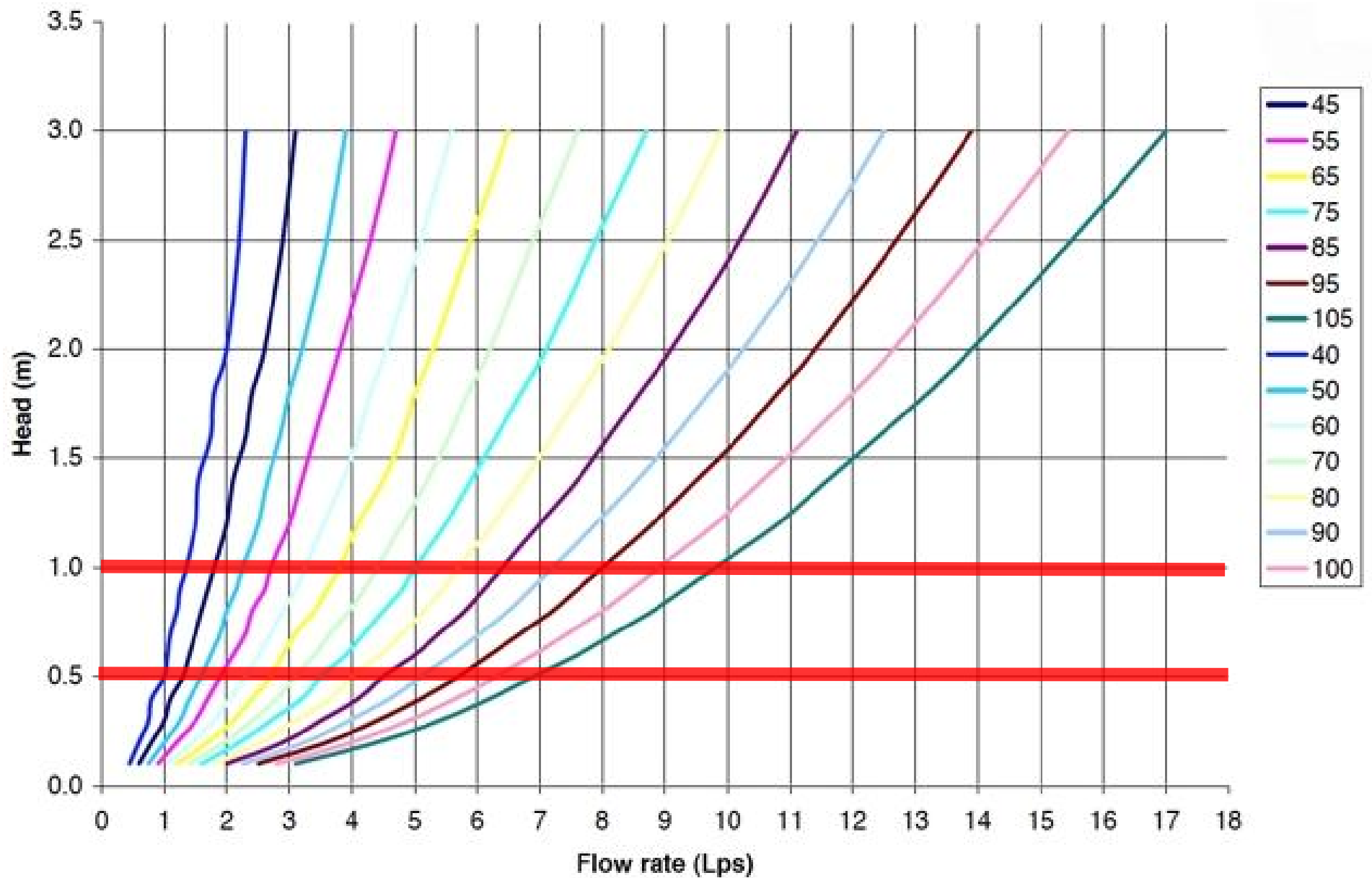
5-year Q_{attenuated} 2.35 L/s
5-year Max. Storage Required 34.1 m³
Est. 5-year Storage Elevation 65.02 m

100-year Q_{attenuated} 3.39 L/s
100-year Max. Storage Required 75.1 m³
Est. 100-year Storage Elevation 65.51 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	9.1	0.0	19.4	0.0	0.0
Attenuated Areas	2.4	34.1	3.4	75.1	75.5
Total	11.4	34.1	22.8	75.1	75.5

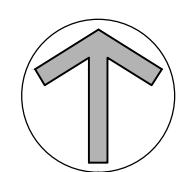
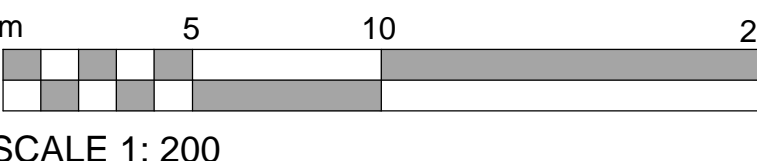
TEMPEST LMF flow curves



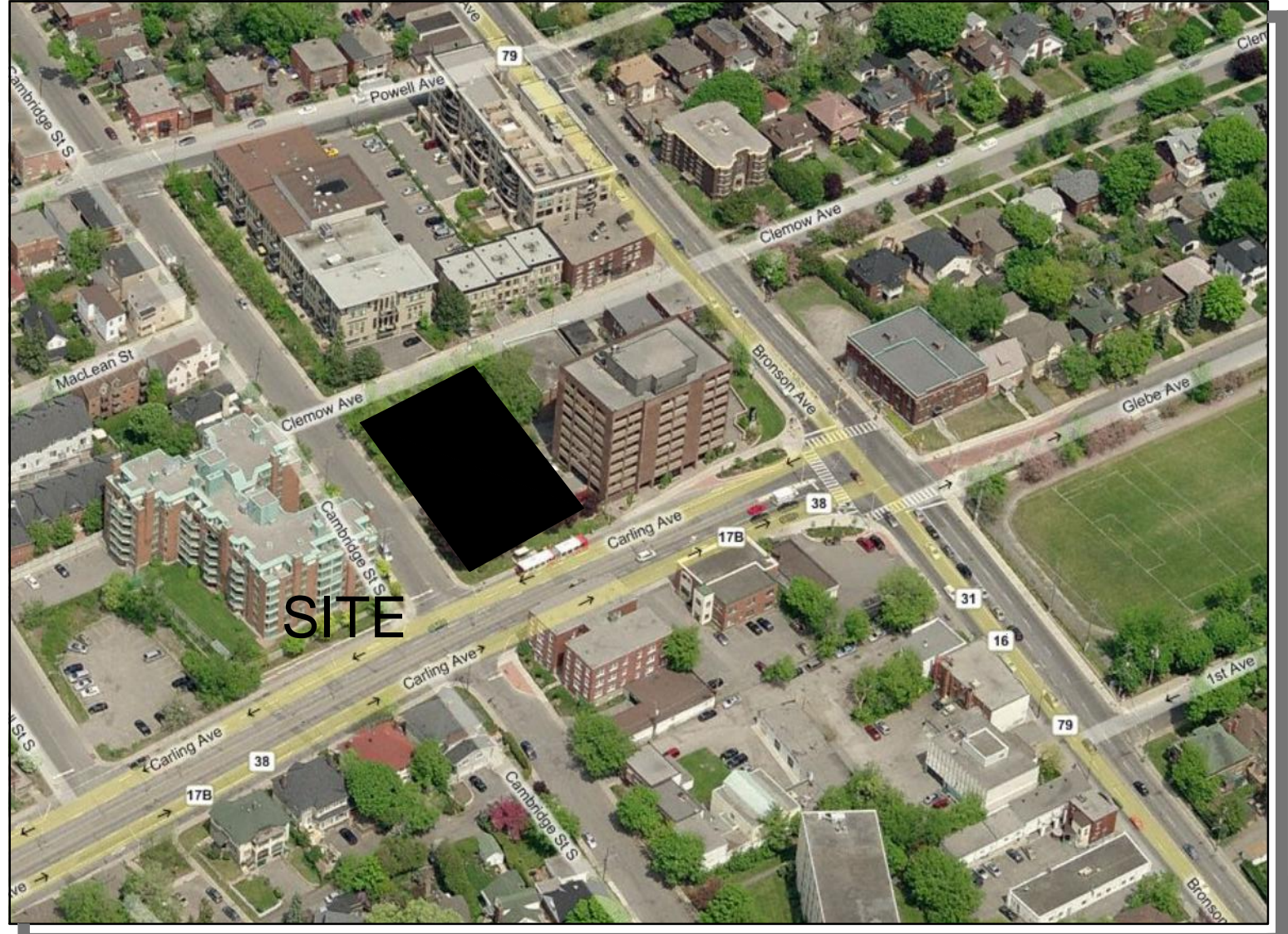
DRAWINGS / FIGURES



SITE PLAN



KEY MAP



SITE PLAN SYMBOLS

- CONCRETE UNIT PAVERS SURFACE
- CONCRETE UNIT PAVERS AT ENTRANCE
- CONCRETE WALKING / DRIVING SURFACE
- SOFT LANDSCAPING
- TEMPORARY ASPHALT SURFACE
- WALL MOUNTED LIGHT
- TWO WAY VEHICLE CIRCULATION
- MAIN ENTRANCE
- COMMERCIAL ENTRANCE AND OR FIRE EXIT
- BOLLARD STYLE BIKE RACK
- PROPERTY LINE

DRAWING NOTES

- HARD SURFACE PAVING. SEE LANDSCAPE PLAN FOR PATTERN AND TYPE
- DEPRESSED CURB AND SIDEWALK TO CITY STANDARDS
- EXISTING CONCRETE CITY SIDEWALK
- PROPERTY LINE
- EXISTING TREES TO BE REMOVED
- VEHICLE ENTRANCE RAMP TO UG PARKING GARAGE WITH TRENCH DRAIN
- OUTLINE OF UNDERGROUND PARKING LEVELS
- EXISTING FIRE HYDRANT
- SIAMSE CONNECTION
- SOFT LANDSCAPING. SEE LANDSCAPE PLAN
- GROUND FLOOR CANOPY'S
- OUTLINE OF TOWER FLOORS 4th TO 15th
- OUTLINE OF 16th FLOOR
- OUTLINE OF PRIVATE TERRACE ABOVE
- BOLLARD STYLE BICYCLE RACKS. SEE LANDSCAPE PLAN FOR EXACT LOCATION AND SPEC
- EXISTING 8 STOREY COMMERCIAL BUILDING
- METAL FRAMED GLASS PRIVACY SCREEN
- EXISTING OVERHEAD HYDRO LINES
- EXISTING UTILITY POLE
- PLANTER BOX. SEE LANDSCAPE PLAN
- CONCRETE WALKWAYS
- WALL MOUNTED LIGHT FIXTURE
- EXISTING RETAINING WALL
- 1800mm HIGH PRIVACY FENCE
- EXISTING ASPHALT PARKING LOT / CURBING TO BE REMOVED
- EXISTING 1200mm HT BRICK WALL TO BE REMOVED

PROJECT INFORMATION

ZONING Zoning By-Law 2008-250 RAT 1530 & AM / AM 1628

SITE AREA 3,781.87 sq. m. (40,708) sq. ft.

BUILDING HEIGHT 52.0 M

CAMBRIDGE STREET YARD SETBACK 3.0 M

CLEWOW AVENUE YARD SETBACK 2.0 M

INTERIOR YARD SETBACK 4.0 M

AVERAGE GRADE 77.20777 GEO. ELEV.

AMENITY SPACE ROOMING UNIT - 10% GFA = 175.2 sq. m. DWELLING UNIT - 6.0 sq. m. PER UNIT = 708.0 sq. m.

PROJECT STATISTICS

F.S.I. AREA 9,871.7 sq. m. (106,258) sq. ft. 2.7

BUILDING HEIGHT 52.0 M

AMENITY SPACE PRIVATE BALCONY = 748.0 sq. m. 1st FLOOR COMMUNAL EXTERIOR = 284.9 sq. m. 1st FLOOR COMMUNAL INTERIOR = 112.1 sq. m. 4th FLOOR COMMUNAL INTERIOR = 701.7 sq. m. 4th FLOOR COMMUNAL EXTERIOR = 448.8 sq. m. TOTAL = 2,295.5 sq. m.

SITE COVERAGE - RETIREMENT HOME LAND ONLY

BUILDING FOOTPRINT = 64.5% 1,369.6 sq. m. DRIVING SURFACE = 2.3% 48.3 sq. m. LANDSCAPE AREA = 33.2% 714.35 sq. m. TOTAL = 100.0% 2,122.25 sq. m.

GROSS BUILDING - AREAS (CITY OF OTTAWA'S ZONING DEFINITION)

PARKING LEVEL (TYPICAL) 0.0 sq. m. (0) sq. ft.

GROUND FLOOR 0.0 sq. m. (0) sq. ft.

2nd & 3rd FLOOR 2 x 875.9 sq. m. 1,751.8 sq. m. (18,855) sq. ft.

4th FLOOR - AMENITY 0.0 sq. m. (0) sq. ft.

TYPICAL FLOORS (5 - 15) 11 x 685.9 sq. m. 7,544.9 sq. m. (81,213) sq. ft.

16th FLOOR 575.0 sq. m. (6,189) sq. ft.

TOTAL AREA (ABOVE GRADE) 9,871.7 sq. m. (106,258) sq. ft.

EXISTING COMMERCIAL 8 STOREY OFFICE BUILDING 4,500.0 sq. m. (48,440) sq. ft.

UNIT STATISTICS

STUDIO - ROOMING UNIT 50
1 BEDROOM - DWELLING UNIT 48
1 BEDROOM + DWELLING UNIT 22
2 BEDROOM - DWELLING UNIT 48
TOTAL 168

MEDICAL HEALTH / PERSONAL SERVICES 1,162.0 sq. m. 12,597 sq. ft.

CAR PARKING ZONING AREA "Y"

REQUIRED

EX OFFICE BLDG. - 1.0 PER 100m² OF G.F.A. 45
RESIDENCE - 0.25 PER UNIT (168 UNITS) 46
VISITOR - NOT REQUIRED 0
MEDICAL HEALTH / PERSONAL SERVICES - 1.0 PER 100m² OF G.F.A. 13
TOTAL 104

PROVIDED

EX OFFICE BLDG. - 1.0 PER 100m² OF G.F.A. 52
RESIDENCE - 0.25 PER UNIT (168 UNITS) 120
VISITOR - NOT REQUIRED 0
MEDICAL HEALTH / PERSONAL SERVICES - 1.0 PER 100m² OF G.F.A. 7
TOTAL 179

LOCATION OF PARKING

EX OFFICE BUILDING AT GRADE 4
EX OFFICE BUILDING P1 LEVEL 26
PROPOSED BUILDING P2 LEVEL 43
PROPOSED BUILDING P3 LEVEL 43
PROPOSED BUILDING P4 LEVEL 43
TOTAL 179

BICYCLE PARKING

REQUIRED

ROOMING UNIT - 0.25 PER UNIT (50 UNITS) 13
DWELLING UNIT - 0.25 PER UNIT (118 UNITS) 30
MEDICAL HEALTH / PERSONAL SERVICES - 1.0 PER 1500m² OF G.F.A. 1
COMMERCIAL - 1.0 PER 250m² OF G.F.A. 22
TOTAL 66

PROVIDED

UNDERGROUND 80
EXTERIOR AT GRADE 5
TOTAL 85

PROJECT DEVELOPER

Taggart Corporation
225 Metcalfe Street, Suite 610
Ottawa, ON. K2P 1P9
Tel: 613-234-7000
Fax: 613-526-7933

LEGAL DESCRIPTION

TOPOGRAPHICAL PLAN OF LOTS 9, 10, 11, 12 and PART OF LOTS 6, 7, 13, 14 and 15 REGISTERED PLAN 54 CITY OF OTTAWA
Prepared by Annis, O'Sullivan, Vollebek Ltd.

GENERAL NOTES:

(A) REFER TO TYPICAL ASSEMBLY SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.

(B) FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A300 SERIES.

(C) ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF DRYWALL.

(D) ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF CLADDING.

(E) ALL EXTERIOR WALLS ARE TO BE TYPE "W1" UNLESS NOTED OTHERWISE.

(F) ALL INTERIOR PARTITIONS ARE TO BE TYPE "P1" UNLESS NOTED OTHERWISE.

SURVEYOR

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E-Mail: carrara@fotenn.com

CIVIL ENGINEER

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120 Iber Road, Unit 203
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Fax: (613) 836-7183
Email: rfrel@DSEL.ca

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Fax: (613) 233 4051
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ARCHITECT

rla/architecture
roderick lahey architect inc.
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t: 613.724.9932 f: 613.724.1209 rlaarchitecture.ca

PROJECT TITLE:

275 CARLING AVENUE

CARLING @ CAMBRIDGE

OTTAWA ONTARIO

SHEET TITLE:

SITE PLAN

DRAWN: RV

CHECKED: R.L.A.

SCALE: 1:200

SHEET NO.: SP-1

PROJECT NO.: 1122

TOPOGRAPHICAL PLAN OF
LOTS 9, 10, 11, 12 and
PART OF LOTS 6, 7, 13, 14 and 15
REGISTERED PLAN 54
CITY OF OTTAWA
Prepared by Annis, O'Sullivan, Vollebakk Ltd.

Scale 1 : 200
8.0 6.0 4.0 2.0 0 2 4 6 8 Metres

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

Jan. 13, 2012
Date
E.H. Herweyer O.L.S.

Notes & Legend

- Denotes
- Deciduous Tree
 - Fire Hydrant
 - Water Valve
 - Maintenance Hole (Storm Sewer)
 - Maintenance Hole (Sanitary)
 - Maintenance Hole (Bell Telephone)
 - Maintenance Hole (Traffic)
 - Maintenance Hole (Hydro)
 - Maintenance Hole (Gas)
 - Maintenance Hole (Unidentified)
 - Valve Chamber (Watermain)
 - Underground Storm Sewer
 - Underground Fibre Optic
 - Underground Power
 - Underground Sanitary Sewer
 - Underground Water
 - Underground Power
 - Underground Gas
 - Underground Traffic
 - Underground Bell
 - Underground Rogers
 - Overhead Wires
 - Catch Basin
 - Handhole
 - Bell Terminal Box
 - Cable Terminal Box
 - Traffic Terminal Box
 - Unidentified Terminal Box
 - Traffic Signal Post
 - Bollard
 - Sign
 - Chain Link Fence
 - Board Fence
 - Post and Wire
 - Traffic Light
 - Utility Pole
 - Anchor
 - Light Standard
 - Traffic Light
 - Diameter
 - Location of Elevations
 - Location of Elevations (Top of Curb)
 - Location of Elevations (Top of Wall)
 - Top of Grate
 - Centreline
 - Invert
 - Concrete Retaining Wall
 - Brick Retaining Wall
 - Property Line
 - Gas Valve
 - Wooden Pole
 - Metal Pole

SITE AREA = 3782 m²

ELEVATION NOTES

- Elevations shown are referred to geodetic datum.
- It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

- This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
- Only visible surface utilities were located.
- A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating, etc.
- Underground services are taken from City of Ottawa Engineering Plans F-10-23, G-10-04, G-11-01, 2909 Sheet 9 of 18, 2907 Sheet 16 of 18 and Plan by (857) dated September 14, 1973.