

SITE SERVICING AND STORMWATER MANAGEMENT REPORT

FOR

**1343678 ONTARIO LTD
1330 CARLING AVENUE**

CITY OF OTTAWA

**PROJECT NO.: 19-1144
CITY APPLICATION NO.: D07-12-XX-XXXX**

**APRIL 2020 – REV 1
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FOR
1330 CARLING AVENUE
1343678 ONTARIO LTD**

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by 1343678 Ontario Ltd to prepare a Site Servicing and Stormwater Management report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 1330 Carling Avenue.

The subject property is located within the City of Ottawa urban boundary, in River Ward. As illustrated in **Figure 1**, the subject property is located south of the intersection of Carling Avenue and Archibald Street. Comprised of a single parcel the subject property measures approximately **0.2 ha** and is zoned Arterial Main Street zone (AM10).



Figure 1: Site Location

The proposed ZBLA and SPC would allow for the development of a 24-Storey Mixed Use Residential building fronting onto Carling Avenue and Archibald Street. The proposed development would include approximately **792 m²** of ground level retail and underground parking, with access from Archibald Street. The residential component is comprised of approximately **175 units**. A copy of the Site Plan is included in **Drawings/Figures**.

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

1.1 Existing Conditions

The existing site includes a one-storey commercial building including an asphalt parking lot. The elevations range between 74.30 m and 73.67 m with a grade change of approximately 1.6% from the Northeast to the Southwest corner of the property.

The subject site is located at an existing low point at Archibald Street. Overland flow is directed northeast towards Merivale Road with a spill elevation of 74.47 m.

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:

Archibald Street

- 152 mm diameter unlined cast iron watermain
- 225 mm diameter concrete sanitary sewer tributary to the Cave Creek Collector
- 900 mm diameter concrete storm sewer tributary to the Cave Creek Storm sewer
- 675 mm diameter concrete storm sewer tributary to the Cave Creek Storm sewer

Carling Avenue

- 1220 mm diameter concrete lined steel watermain
- 406 mm diameter PVC watermain
- 900 mm diameter concrete Cave Creek Collector sanitary sewer
- 1800 mm concrete Cave Creek Collector storm tunnel tributary to Ottawa River
- 2100 mm concrete West Hintonburg storm tunnel tributary to Ottawa River

1.2 Required Permits / Approvals

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

The proposed development is a single parcel of land that is not industrial and would outlet to a storm sewer. As a result, the stormwater management system is exempt from sections 53(1) and (3) of the Ontario Water Resources Act under Ontario Regulation 525/98

1.3 Pre-consultation

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

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

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

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

-
- **Geotechnical Investigation**
Paterson Group Inc., PG5157-1, February 27, 2020.
(Geotechnical Report)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 2W pressure zone, as shown by the Pressure Zone map in **Appendix B**. A local 152 mm diameter watermain exists within the Archibald Street right-of-way. In addition to the local 406 mm diameter watermain main exists within the Carling Avenue right-of-way, as shown by the water distribution mapping included in **Appendix B**.

3.2 Water Supply Servicing Design

It is proposed to service the development with two 150 mm diameter service connections. A service connection to the existing 152 mm diameter watermain within Archibald Street and a service connection to the existing 406 mm diameter watermain within Carling Avenue.

In accordance with City of Ottawa technical bulletin ISDTB-2014-02, redundant service connections will be required due to an estimated design flow of greater than 50 m³/day.

Based on As-built drawings provided by the City of Ottawa, it appears that there are two fire hydrants along Archibald Street and one fire hydrant approximately 70 m north of the property along Carling Avenue.

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

Table 1
Water Supply Design Criteria

Design Parameter	Value
Residential 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	3.0 x Average Daily *
Residential Maximum Hourly	4.5 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
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa

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

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

Table 2
Water Demand and Boundary Conditions
Proposed Conditions

Design Parameter	Anticipated Demand ¹ (L/min)	Boundary Condition ² Archibald Street (m H ₂ O / kPa)	Boundary Condition ² Carling Avenue (m H ₂ O / kPa)
Average Daily Demand	63.9	132.3 / 570.9	132.3 / 570.9
Max Day + Fire Flow	184.5+ 13,000= 13,184.5	101.0 / 263.9	120.0 / 450.3
Peak Hour	278.9	123.5 / 484.6	123.5 / 484.6
Water demand calculation per <i>Water Supply Guidelines</i> . See <i>Appendix B</i> for detailed calculations.			

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

Fire flow requirements were estimated per City of Ottawa Technical Bulletin *ISTB-2018-02*. The following parameters were coordinated with the architect:

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

The above assumptions result in an estimated fire flow of approximately **13,000 L/min**, noting that actual building materials selected will affect the estimated flow. A certified fire protection system specialist would need to be employed to design the building fire suppression system and confirm the actual fire flow demand.

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 both the anticipated minimum and maximum water pressures, as well as, the estimated water pressure during fire flow demand for the demands indicated by the correspondence in *Appendix B*. The available pressure for the fire flow demand exceeds the pressure range identified by the *Water Supply Guidelines*. As shown by **Table 2**, the average day demand pressures exceed the recommended range identified in **Table 1**, therefore pressure reducing valves may be required.

3.3 Water Supply Conclusion

The estimated 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 2**, based on the City's model, pressures during average day demands exceed the **Water Supply Guidelines** required pressure range, therefore pressure reducing valves may be required.

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

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 Cave Creek Collector Sewer catchment area, as shown by the City sewer mapping included in **Appendix C**. An existing 225 mm diameter sanitary sewer within Archibald Street is available to service the proposed development.

The existing site consists of one-storey commercial building with an estimated average wastewater flow of 0.04 L/s and a maximum wastewater flow of 0.10 L/s.

4.2 Wastewater Design

It is proposed that the development will be serviced via the existing 225 mm sanitary sewer within Archibald Street via a 250 mm diameter service lateral. Refer to drawing **SSP-1** for a detailed servicing layout.

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

Table 3
Wastewater Design Criteria

Design Parameter	Value
Residential 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's Corrector Factor 0.8
Commercial Floor Space	5 L/m ² /d
Infiltration and Inflow Allowance	0.05 L/s/ha (Dry Weather) 0.28 L/s/ha (Wet Weather) 0.33 L/s/ha (Total)
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
<i>Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.</i>	

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

Table 4
Summary of Estimated Peak Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	1.25
Estimated Peak Dry Weather Flow	3.67
Estimated Peak Wet Weather Flow	3.73

The estimated sanitary flow based on the Site Plan, included in *Drawings/Figures*, results in a peak wet weather flow of **3.73 L/s**.

In order to assess the available capacity, a sanitary analysis was conducted for the local municipal sanitary sewers located across the frontage of the subject property. The catchment area serviced by the Archibald Street sanitary sewer was identified and evaluated by reviewing existing development and zoning within the area. The analysis was conducted from the site to the upstream extents of the drainage area, as shown by the sanitary drainage figure included in *Appendix C*.

Based on the sanitary analysis, the controlling section of the Archibald Street sanitary sewer is located between Node 2A and 2B with an available residual capacity of **17.3 L/s**; detailed calculations are included in *Appendix C*.

The analysis above indicates that sufficient capacity is available in the local sewers to accommodate the proposed development. The site ultimately discharges to the Cave Creek Collector, therefore, the City of Ottawa Water Resources Group will need to confirm the available capacity within the collector sewer.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Cave Creek Collector sewer. It is proposed to discharge wastewater to the existing 225 mm diameter sanitary sewer within Archibald Street via a 250 mm diameter service lateral.

Based on the above sanitary analysis, sufficient capacity is available to accommodate the anticipated **3.73 L/s** peak wet weather flow from the proposed development.

Due to the complexity of the Cave Creek Collector, the existing collector capacity will need to be confirmed by City of Ottawa staff.

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

Table 5
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	37.8
5-year	51.3
100-year	97.7

5.2 Post-development Stormwater Management Target

Stormwater management requirements for the proposed development were reviewed with the City of Ottawa, where the proposed development is required to:

- Meet an allowable release rate based on a Rational Method Coefficient of 0.50, employing the City of Ottawa IDF parameters for a 2-year storm with a calculated time of concentration no less 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 site's distance from the outlet; correspondence with the RVCA is included in **Appendix A**.

Based on the above the allowable release rate for the proposed development is **21.0 L/s**.

5.3 Proposed Stormwater Management System

It is proposed that the stormwater outlet from the development will be to the 675 mm diameter storm sewer within Archibald Street.

To meet the stormwater objectives the proposed development will provide flow attenuation by utilizing an internal cistern.

Stormwater runoff collected from the roof area and surface parking will be directed to a **60 m³** internal stormwater cistern. Cistern flow will be controlled to a maximum release rate of **12.5 L/s** and will outlet to the municipal storm sewer within Archibald Street, as shown by drawing **SSP-1**. Foundation drains are to be connected downstream of any cistern controls.

Table 6, below, summarizes post-development release rates and corresponding storage volume based on the target release rate.

**Table 6
 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	4.0	0.0	8.5	0.0
Attenuated Areas	6.6	28.5	12.5	53.9
Total	10.6	28.5	21.0	53.9

It is anticipated that approximately **53.9 m³** of storage will be required on site to attenuate flow to the established release rate of **21.0 L/s**; storage calculations are contained within **Appendix D**.

5.4 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 of Ottawa **City Standards**. The post-development allowable release rate was calculated as **21.0 L/s** based on consultation with the City of Ottawa. It is estimated that **53.9 m³** will be required to meet this release rate.

Based on consultation with the RVCA, stormwater quality controls are not required.

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

6.0 UTILITIES

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

The proposed development will be coordinated and approved by the utility company having jurisdiction.

7.0 EROSION AND SEDIMENT CONTROL

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

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

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

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

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

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents:

- Limit extent of exposed soils at any given time;
- Re-vegetate exposed areas as soon as possible;
- Minimize the area to be cleared and grubbed;
- Protect exposed slopes with plastic or synthetic mulches;
- Install silt fence to prevent sediment from entering existing ditches;
- No refueling or cleaning of equipment near existing watercourses;
- Provide sediment traps and basins during dewatering;
- Install filter cloth between catch basins and frames;
- Plan construction at proper time to avoid flooding; and
- Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

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

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

8.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by 1343678 Ontario Ltd to prepare a Site Servicing and Stormwater Management report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 1330 Carling Avenue. The preceding report outlines the following:

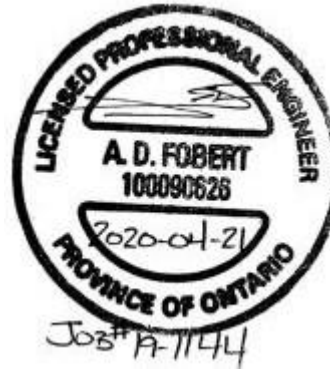
- Based on boundary conditions provided by the City, demands during average day exceed the required pressure range. As a result, pressure reducing valves are required;
- The FUS method for estimating fire flow indicated **7,000 L/min** is required for the contemplated development,
- The proposed development is anticipated to have a peak wet weather flow of **3.73 L/s**; Based on the sanitary analysis conducted the existing municipal sewer infrastructure has sufficient capacity to support the development;
- Based on consultation with the City, the proposed development will be required to attenuate post development flows to an equivalent release rate of **21.0 L/s** for all storms up to and including the 100-year storm event. It is estimated that **53.9 m³** of storage will be required to meet the established release rate;
- Based on consultation with the RVCA, stormwater quality controls are not required;

Prepared by,
David Schaeffer Engineering Ltd.

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Brandon N. Chow



Per: Adam D. Fobert, P.Eng

APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

19-1144

09/04/2020

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

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

4.3 Development Servicing Report: Wastewater

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

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

4.4 Development Servicing Report: Stormwater Checklist

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

<input checked="" type="checkbox"/>	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
<input type="checkbox"/>	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
<input type="checkbox"/>	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
<input checked="" type="checkbox"/>	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 6.0
<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 7.0
<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	

Site Plan Pre- Application Consultation Notes

Date: 30 Dec 2019

Site Location: 1330 Carling Ave, 815 Archibald St

Type of Development: Residential (townhomes, stacked, singles, apartments), Office Space, Commercial, Retail, Institutional, Industrial, Other: N/A

Owner/Agent:

Project Manager:

Assigned Planner:

Attendees:

Infrastructure

Water

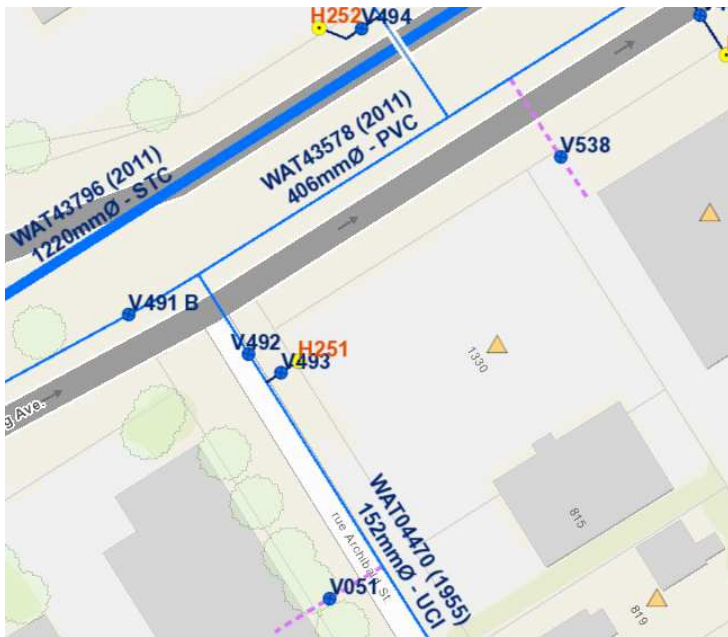
Water District Plan No: 364-027

Existing public services:

- Archibald St – 152mm UCI
- Carling Ave – 406mm PVC
- Carling Ave – 1200mm STC (backbone – connections not permitted)

Existing connection:

- Existing on-site water service must be shown on the plans. The existing on-site water services will be blanked at the watermain if it will not be reused.



Watermain Frontage Fees to be paid (\$190.00 per metre) Yes No

- A water meter sizing questionnaire [water card] will have to be completed prior to receiving a water permit (water card will be provided post approval)
- Service areas with a basic demand greater than 50 m³/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid creation of vulnerable service area.

Boundary conditions:

Civil consultant must request boundary conditions from the City’s assigned Project Manager prior to first submission.

- Water boundary condition requests must include the location of the service(s) and the expected loads required by the proposed developments. Please provide all the following information:

- Location of service(s)
- Type of development and the amount of fire flow required (as per FUS, 1999).
- Average daily demand: ___ l/s.
- Maximum daily demand: ___ l/s.
- Maximum hourly daily demand: ___ l/s.
- Fire protection (Fire demand, Hydrant Locations)
- A water meter sizing questionnaire [water card] will have to be completed prior to receiving a water permit (water card will be provided post approval)

Sanitary Sewer

Existing public services:

- Carling Ave – 900mm Concrete (trunk sewer)
- Archibald St – 225mm Concrete

Existing connection:

- Existing on-site sanitary service must be shown on the plans. If existing sanitary sewer is to be reused, provide CCTV inspection report along with consultant's assessment of the existing sewer conditions. Existing on-site sanitary sewer to be capped and abandoned to City of Ottawa standards at the property line if it will not be reused.



Is a monitoring manhole required on private property? **Yes** **No**

- The designer should be aware there may be limited capacity in the downstream sanitary sewer system to support the proposed change in use. The sanitary demand needs to be coordinated with the City Planning Dept. to determine if the existing sanitary sewer system has sufficient capacity to support the proposed rezoning. Provide sanitary demands to the City project manager for coordination.
- Any premise in which there is commercial or institutional food preparation shall install a grease and oil inceptor on all fixtures.
- Designers and contractors to be aware of potential abandoned sewers along Carling Ave and on-site.
- For concrete sewer pipe, maintenance holes shall be installed when the service is greater than 50% of the diameter of the mainline concrete pipe

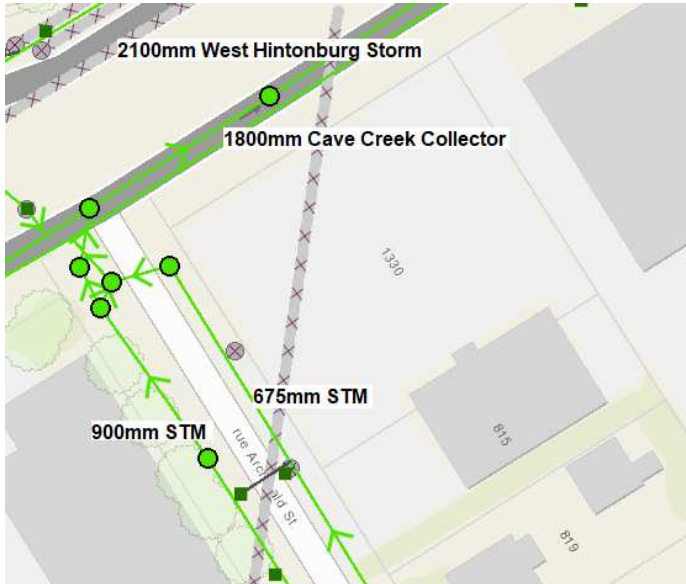
Storm Sewer

Existing public services:

- Carling Ave – 2100mm Concrete “West Hintonburg Storm Trunk” (deep sewer tunnel)
- Carling Ave – 1800mm Concrete “Cave Creek Trunk Collector”
- Archibald St – 675mm Concrete
- Archibald St – 900mm Concrete

Existing connection:

- Existing on-site storm service must be shown on the plans. If existing storm sewer is to be reused, provide CCTV inspection report along with consultant's assessment of the existing sewer conditions. Existing on-site storm sewer to be capped and abandoned to City of Ottawa standards at the property line if it will not be reused.



- There is a low point along Archibald Street that the designer should be cognizant of when preparing the grading design for the site. Ensure that the proposed drive lane entrance to the underground parking garage is protected from the major overland flow route within Archibald and Carling Ave.
- Designers and contractors to be aware of potential abandoned sewers along Carling Ave and on-site.
- The Environmental Site Assessment (ESA) may provide recommendations where site contamination may be present. The recommendations from the ESA need to be coordinated with the servicing report to ensure compliance with the Sewer Use By-Law.

Stormwater Management

Quality Control:

- Rideau Valley Conservation Authority to confirm quality control requirements.

Quantity Control:

- Master Servicing Study: N/A
- Allowable Runoff coefficient (C): C = the lesser of the existing pre-development conditions to a maximum of 0.5.
- Time of concentration (Tc): Tc = pre-development; maximum Tc = 10 min
- Allowable flowrate: Control the 100-year storm events to the 2-year storm event.

Ministry of Environment, Conservation and Parks (MECEP)

All development applications should be considered for an Environmental Compliance Approval, under MECP regulations.

- a. Consultant determines if an approval for sewage works under Section 53 of OWRA is required. Consultant determines what type of application is required and the City's project manager confirms. (If the consultant is not clear if an ECA is required, they will work with the City to determine what is required. If unclear or there is a difference of opinion the City Project Manager will coordinate requirements with MECP).
- b. The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.
- c. Pre-consultation is not required if applying for standard or additional works (Schedule A of the Agreement) under Transfer Review.
- d. Pre-consultation with local District office of MECP is recommended for direct submission.
- e. Consultant completes an MECP request form for a pre-consultation. Sends request to moecottawasewage@ontario.ca

NOTE: Site Plan Approval, or Draft Approval, is required before any Ministry of the Environment and Climate Change (MOECC) application is sent

General Service Design Comments

- The City of Ottawa requests that all new services be located within the existing service trench to minimize necessary road cuts.
- Monitoring manholes should be located within the property near the property line in an accessible location to City forces and free from obstruction (i.e. not a parking).
- Where service length is greater than 30 m between the building and the first maintenance hole / connection, a cleanout is required.
- Manholes are required for connections to sanitary or combined trunk sewers as per City of Ottawa Standards S13.
- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.
- The upstream and downstream manhole top of grate and invert elevations are required for all new sewer connections.
- Services crossing the existing watermain or sewers need to clearly provide the obvert/invert elevations to demonstrate minimum separation distances. A watermain crossing table may be provided.

Other

Are there are Capital Works Projects scheduled that will impact the application? Yes No

References and Resources

- As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.
- All required plans are to be submitted on standard A1 size sheets (594mm x 841mm) sheets, utilizing a reasonable and appropriate metric scale as per City of Ottawa Servicing and Grading Plan Requirements: title blocks are to be placed on the right of the sheets and not along the bottom. Engineering plans may be combined, but the Site Plans must be provided separately. Plans shall include the survey monument used to confirm datum. Information shall be provided to enable a non-surveyor to locate the survey monument presented by the consultant.
- All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)
- Please find relevant City of Ottawa Links to Preparing Studies and Plans below:
<https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines>
- To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:
InformationCentre@ottawa.ca<<mailto:InformationCentre@ottawa.ca>>
(613) 580-2424 ext. 44455
- geoOttawa
<http://maps.ottawa.ca/geoOttawa/>

Brandon Chow

To: Eric Lalande
Subject: RE: 1330 Carling Ave - quality requirement

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: April 9, 2020 9:07 AM
To: Brandon Chow <BChow@dsel.ca>
Subject: Re: 1330 Carling Ave - quality requirement

Hi Brandon,

Upon review of the attached documents the RVCA does not require quality control for the site, however, it is recommended to provide best management practices where available, such as minimizing the number of surface parking spaces.

Thank you,

Eric Lalande, MCIP, RPP

Planner, RVCA

613-692-3571 x1137

From: Brandon Chow <BChow@dsel.ca>
Sent: April 8, 2020 6:07 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: 1330 Carling Ave - quality requirement

Hi Eric,

I hope you are doing well.

We would like to touch base with you regarding a development located at 1330 Carling Avenue.

The proposed development involves the construction of a 24-storey mixed-use residential building as shown by the attached plan.

Stormwater collected from the site will outlet to the existing Carling Avenue storm sewer and travel approximately 4.2 km to an outlet at the Ottawa River.

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



Thank you,

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

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	270	0.68	0.5	1.0	0.7	1.8	1.3
Office	75 L/9.3m ² /d	-	0.00	0.0	0.0	0.0	0.0	0.0
Restaurant*	125 L/seat/d	-	0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d	-	0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d	-	0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			0.7	0.5	1.0	0.7	1.8	1.3
Total Demand			0.7	0.5	1.0	0.7	1.8	1.3

* Estimated number of seats at 1 seat 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	40	56
1 Bedroom	1.4	53	75
2 Bedroom	2.1	82	173
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	304	85.1	59.1	255.4	177.3	383.0	266.0

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	792	1.98	1.4	3.0	2.1	5.3	3.7
Amenity Space	3.5 L/m ² /d	1,403	4.91	3.4	7.4	5.1	13.3	9.2
Total I/CI Demand			6.9	4.8	10.3	7.2	18.6	12.9
Total Demand			92.0	63.9	265.7	184.5	401.6	278.9



Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$$F = 220C\sqrt{A}$$

L/min

Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area

Type of Construction:

Fire-Resistive Construction

C 0.6 Type of Construction Coefficient per FUS Part II, Section 1
A 18890.0 m² Total floor area based on FUS Part II section 1

Fire Flow 18142.2 L/min
18000.0 L/min rounded to the nearest 1,000 L/min

Adjustments

2. Reduction for Occupancy Type

Limited Combustible -15%

Fire Flow 15300.0 L/min

3. Reduction for Sprinkler Protection

Sprinklered - Supervised -50%

Reduction -7650 L/min

4. Increase for Separation Distance

Cons. of Exposed Wall	S.D	Lw	Ha	LH	EC	
N Wood Frame	>45m	0	0	0	0	0%
S Wood Frame	20.1m-30m	20	2	40	40	8%
E Wood Frame	3.1m-10m	28	2	56	56	18%
W Wood Frame	20.1m-30m	34	5	170	170	10%
% Increase						36% value not to exceed 75%

Increase 5508.0 L/min

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

Total Fire Flow

Fire Flow 13158.0 L/min fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section 4
13000.0 L/min rounded to the nearest 1,000 L/min

Notes:

- Type of construction, Occupancy Type and Sprinkler Protection information provided by Figurr.
- Calculations based on Fire Underwriters Survey - Part II

Brandon Chow

From: Alison Gosling
Sent: March 11, 2020 8:41 AM
To: Robert Freel; Brandon Chow
Subject: FW: 1330 Carling Avenue - Boundary Condition Request
Attachments: 1330 Carling March 2020.pdf

FYI

Alison Gosling, E.I.T.
Junior Project Manager

DSEL

david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.542

cell: (343) 542-9218

email: agosling@dsel.ca

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From: Baker, Adam <adam.baker@ottawa.ca>
Sent: March 11, 2020 8:35 AM
To: Charlotte Kelly <CKelly@dsel.ca>
Cc: Alison Gosling <AGosling@dsel.ca>; Oram, Cody <Cody.Oram@ottawa.ca>
Subject: RE: 1330 Carling Avenue - Boundary Condition Request

Hi Charlotte,

Please find attached water boundary conditions –

The following are boundary conditions, HGL, for hydraulic analysis at 1330 Carling (zone 2W2C) assumed to be connected to the 152mm on Archibald and 406mm on Carling (see attached PDF for locations).

Minimum HGL = 123.5

Maximum HGL = 132.3m, The maximum pressure is estimated to be close to 80 psi. A pressure check at completion of construction is recommended to determine if pressure control is required.

MaxDay + FireFlow (217 L/s) = 101.0m at Archibald connection

MaxDay + FireFlow (217 L/s) = 120.0m at Carling connection

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.

Thanks,
Adam

Adam Baker, EIT

Engineering Intern

Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique

Development Review - South Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1

613.580.2424 ext./poste 26552, Adam.Baker@ottawa.ca

From: Charlotte Kelly <CKelly@dsel.ca>

Sent: March 06, 2020 5:37 PM

To: Oram, Cody <Cody.Oram@ottawa.ca>

Cc: Baker, Adam <adam.baker@ottawa.ca>; Alison Gosling <AGosling@dsel.ca>

Subject: 1330 Carling Avenue - Boundary Condition Request

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ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Good afternoon Cody,

We would like to kindly request boundary conditions for the proposed development at 1330 Carling Avenue using the following proposed development demands:

1. Location of Service / Street Number: 1330 Carling Avenue
2. Type of development and the amount of fire flow required for the proposed development:
 - Type of development: The proposed development involves a 24-storey commercial/residential tower. Please see the attached site plan for reference.
 - The apartment buildings are proposed to consist of **190** residential units, **792 m2** of amenity space and **1,110 m2** of amenity space.
 - Proposed Connections:
 - Connection 1 to existing 152 mm diameter watermain within Archibald Street.
 - Connection 2 to existing 406 mm diameter watermain within Carling Avenue.
 - Fire demand based on Technical Bulletin ISTB-2018-02 has been used to estimate a max fire demand of **13,000 L/min**.
 - As a fully-supervised sprinkler system is proposed, the fire flow per the National Fire Protection Association 13 has also been estimated at **4,150 L/min**. Could the pressure at both fire flows please be provided?

Demand	L/min	L/s
Avg. Daily	67.3	1.12
Max Day	195.7	3.26
Peak Hour	295.4	4.92



Please let me know if you have any questions.

Thank-you,

Charlotte Kelly, E.I.T.
Junior Engineering Designer

DSEL

david schaeffer engineering ltd.

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

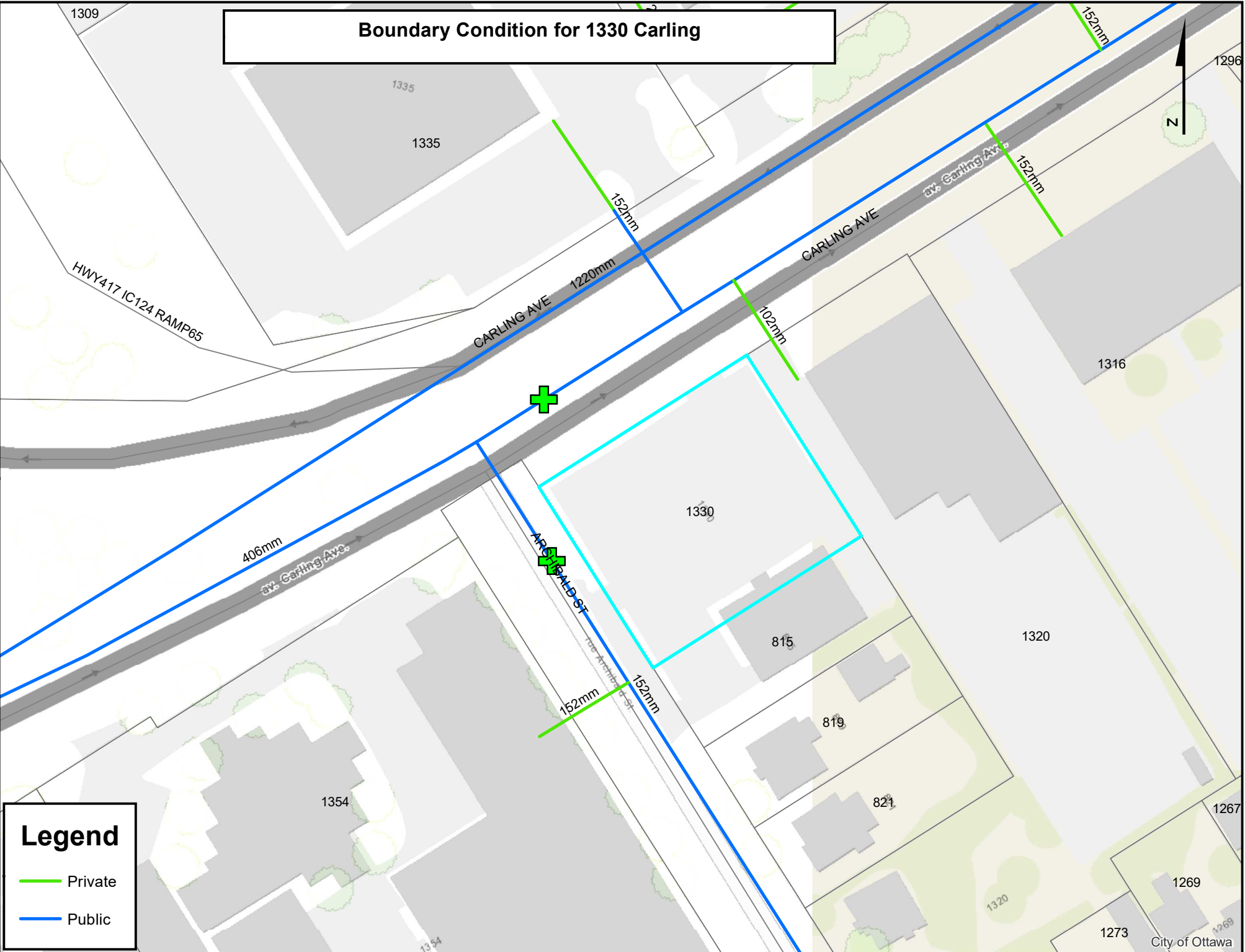
phone: (613) 836-0856 ext.511

email: ckelly@dssel.ca

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Boundary Condition for 1330 Carling



Legend

- Private
- Public

Brandon Chow

From: Melissa du Plessis <mduplessis@figurr.ca>
Sent: March 5, 2020 5:16 PM
To: Charlotte Kelly
Cc: Roberto Campos; Alison Gosling
Subject: Re: 1330 Carling Avenue - Building Construction Inquiry

Follow Up Flag: Follow up
Flag Status: Completed

Charlotte,

This is a concrete structure so we would be considered Fire-resistive construction and will include automatic sprinklers.

Units will fall under non-combustible construction.

Let me know if you need anything else.

Thanks,

Melissa Du Plessis OAA M.Arch B.A.S ORSA
Architect

Figurr
architects collective
figurr.ca

FIG. 1
190 Somerset St W #206
Ottawa ON
K2P 0J4
T 613 695-6122 X 135
C 613 618-3290

FIG. 2
3550, Saint-Antoine O.
Montréal QC
H4C 1A9
T 514 861-5122

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From: Charlotte Kelly <CKelly@dsel.ca>
Sent: March 5, 2020 4:03 PM
To: Melissa du Plessis <mduplessis@figurr.ca>
Cc: Roberto Campos <rcampos@figurr.ca>; Alison Gosling <AGosling@dsel.ca>
Subject: 1330 Carling Avenue - Building Construction Inquiry

Good Afternoon Melissa,

We wanted to touch base with you regarding the development at 1330 Carling Avenue.

In order to complete the Fire Flow estimate for the City of Ottawa boundary condition request we need some particulars on the building construction.

First, please see the attached. What type of construction are we based on the descriptions provided?

Second, can you confirm that the building will be equipped with automatic sprinkler protection?

Lastly, are you able to provide of which of the following categories for occupancy the units fall under:

- Non-combustible
- Limited combustible
- Combustible
- Free burning
- Rapid burning

Please let me know if you have any questions.

Thank you,

Charlotte Kelly, E.I.T.
Junior Engineering Designer

DSEL

david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.511

email: ckelly@dsel.ca

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City of Ottawa - Water Distribution System

WELLS/RESERVOIRS/TREATMENT PLANT & P.S.

FLEET STREET P.S.

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

SUBJECT SITE

ANNIA PURIFICATION PLANT & P.S. & RES.

BILLINGS BRIDGE

CARLINGTON HEIGHTS P.S. & RES.

AMPEAU DR. P.S.

ENERGY MINES & RESOURCES P.S.

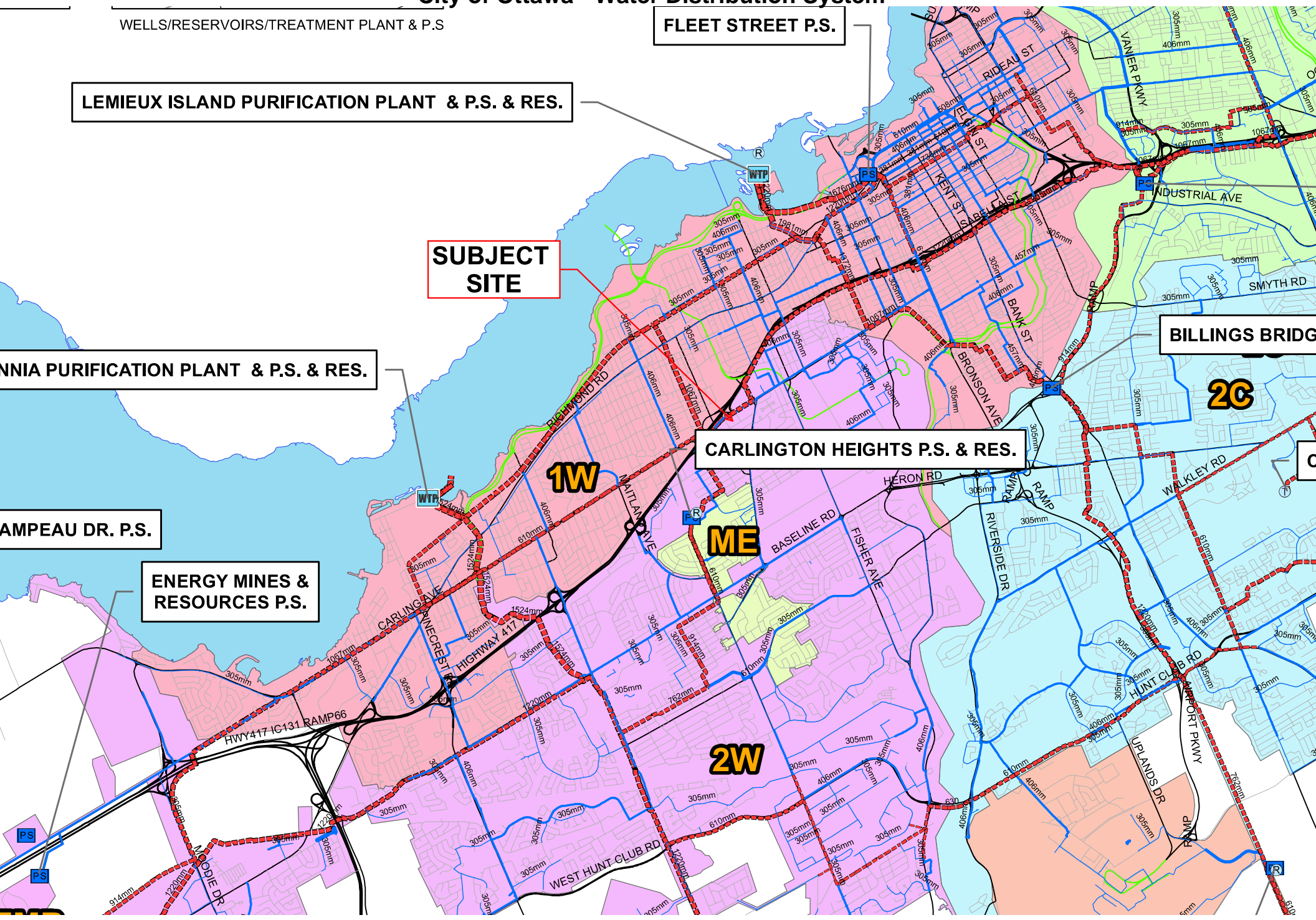
1W

ME

2W

2C

19-1144



APPENDIX C

Wastewater Collection



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

Site Area 0.197 ha

Extraneous Flow Allowances

Infiltration / Inflow (Dry)	0.01 L/s
Infiltration / Inflow (Wet)	0.06 L/s
Infiltration / Inflow (Total)	0.07 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 3.80

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	270	0.03
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00
Industrial - Light**	35,000 L/gross ha/d		0.00
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.03

Peak Institutional / Commercial Flow 0.03

Peak Industrial Flow** 0.00

Peak I/C/I Flow 0.03

* 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	0.04 L/s
Total Estimated Peak Dry Weather Flow Rate	0.04 L/s
Total Estimated Peak Wet Weather Flow Rate	0.10 L/s

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



Site Area 0.197 ha

Extraneous Flow Allowances

Infiltration / Inflow (Dry)	0.01 L/s
Infiltration / Inflow (Wet)	0.06 L/s
Infiltration / Inflow (Total)	0.07 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	40	56
1 Bedroom	1.4	53	75
2 Bedroom	2.1	82	173
3 Bedroom	3.1		0
Average	1.8		0

Total Pop 304

Average Domestic Flow 0.99 L/s

Peaking Factor 3.46

Peak Domestic Flow 3.41 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	792	0.09
Amenity space	5 L/m ² /d	1,403	0.16
School	70 L/student/d		0.00
Industrial - Light**	35,000 L/gross ha/d		0.00
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.25

Peak Institutional / Commercial Flow 0.25

Peak Industrial Flow** 0.00

Peak I/C/I Flow 0.25

* 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	1.25 L/s
Total Estimated Peak Dry Weather Flow Rate	3.67 L/s
Total Estimated Peak Wet Weather Flow Rate	3.73 L/s

SANITARY SEWER CALCULATION SHEET

CLIENT: **Kevlar Developments**
 LOCATION: **1330 Carling Avenue**
 FILE REF: **19-1144**
 DATE: **09-Apr-20**

DESIGN PARAMETERS

Avg. Daily Flow Res.	280 L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0	Infiltration / Inflow	0.33 L/s/ha	
Avg. Daily Flow Comm.	28,000 L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60 m/s full flowing
Avg. Daily Flow Instit.	28,000 L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00 m/s full flowing
Avg. Daily Flow Indust.	35,000 L/ha/d	Peak Fact. Indust. per MOE graph		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+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	A _{hydraulic}	R	Velocity	Q _{cap}	Q / Q full
			(ha)	by type					Area	Pop.	Fact.	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m ²)	(m)	(m/s)	(L/s)	(-)
				Singles	Semi's	Town's	Apt's			(-)																					
ARCHIBALD/THAM	2A	2B	2.900	24	2		58	191.0	2.900	191.0	4.00	2.48	0.66	0.66			0.00	0.00	0.6	3.560	3.560	0.997	4.05	225	0.24	62	0.040	0.056	0.55	22.0	0.18
OUTLET TO CAVE	2B	2C	0.230	1			2	7.0	3.130	198.0	4.00	2.57	0.95	1.61			0.00	0.00	1.4	1.180	4.740	1.327	5.29	225	0.32	108	0.040	0.056	0.64	25.4	0.21



APPENDIX D

Stormwater Management

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012**Existing Drainage Characteristics From Internal Site**

Area	0.20 ha
C	0.90 Rational Method runoff coefficient
L	40 m
Up Elev	74.3 m
Dn Elev	73.67 m
Slope	1.6 %
Tc	10.0 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

C, rational method coefficient, (-)

L, length in ft

S, average watershed slope in %

Estimated Peak Flow

	2-year	5-year	100-year
i	76.8	104.2	178.6 mm/hr
Q	37.8	51.3	97.7 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 0.20 ha
C 0.50 Rational Method runoff coefficient
t_c 10.0 min

2-year
i 76.8 mm/hr
Q 21.0 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area 0.03 ha
C 0.45 Rational Method runoff coefficient

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	4.0	4.0	0.0	0.0	178.6	8.5	8.5	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 0.17 ha
C 0.90 Rational Method runoff coefficient

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	43.3	6.6	36.8	22.1	178.6	82.5	12.5	70.0	42.0
15	83.6	34.8	6.6	28.2	25.4	142.9	66.0	12.5	53.5	48.2
20	70.3	29.2	6.6	22.6	27.2	120.0	55.4	12.5	42.9	51.5
25	60.9	25.3	6.6	18.7	28.1	103.8	48.0	12.5	35.5	53.2
30	53.9	22.4	6.6	15.8	28.5	91.9	42.5	12.5	30.0	53.9
35	48.5	20.2	6.6	13.6	28.5	82.6	38.2	12.5	25.7	53.9
40	44.2	18.4	6.6	11.8	28.2	75.1	34.7	12.5	22.2	53.3
45	40.6	16.9	6.6	10.3	27.7	69.1	31.9	12.5	19.4	52.4
50	37.7	15.7	6.6	9.0	27.1	64.0	29.6	12.5	17.0	51.1
55	35.1	14.6	6.6	8.0	26.3	59.6	27.6	12.5	15.0	49.7
60	32.9	13.7	6.6	7.1	25.4	55.9	25.8	12.5	13.3	48.0
65	31.0	12.9	6.6	6.3	24.5	52.6	24.3	12.5	11.8	46.1
70	29.4	12.2	6.6	5.6	23.4	49.8	23.0	12.5	10.5	44.1
75	27.9	11.6	6.6	5.0	22.3	47.3	21.8	12.5	9.3	42.0
80	26.6	11.0	6.6	4.4	21.1	45.0	20.8	12.5	8.3	39.8
85	25.4	10.6	6.7	3.9	19.9	43.0	19.9	12.5	7.3	37.4
90	24.3	10.1	6.7	3.5	18.6	41.1	19.0	12.5	6.5	35.0
95	23.3	9.7	6.7	3.0	17.3	39.4	18.2	12.5	5.7	32.6
100	22.4	9.3	6.7	2.7	16.0	37.9	17.5	12.5	5.0	30.0
105	21.6	9.0	6.7	2.3	14.6	36.5	16.9	12.5	4.4	27.5
110	20.8	8.7	6.7	2.0	13.2	35.2	16.3	12.5	3.8	24.8

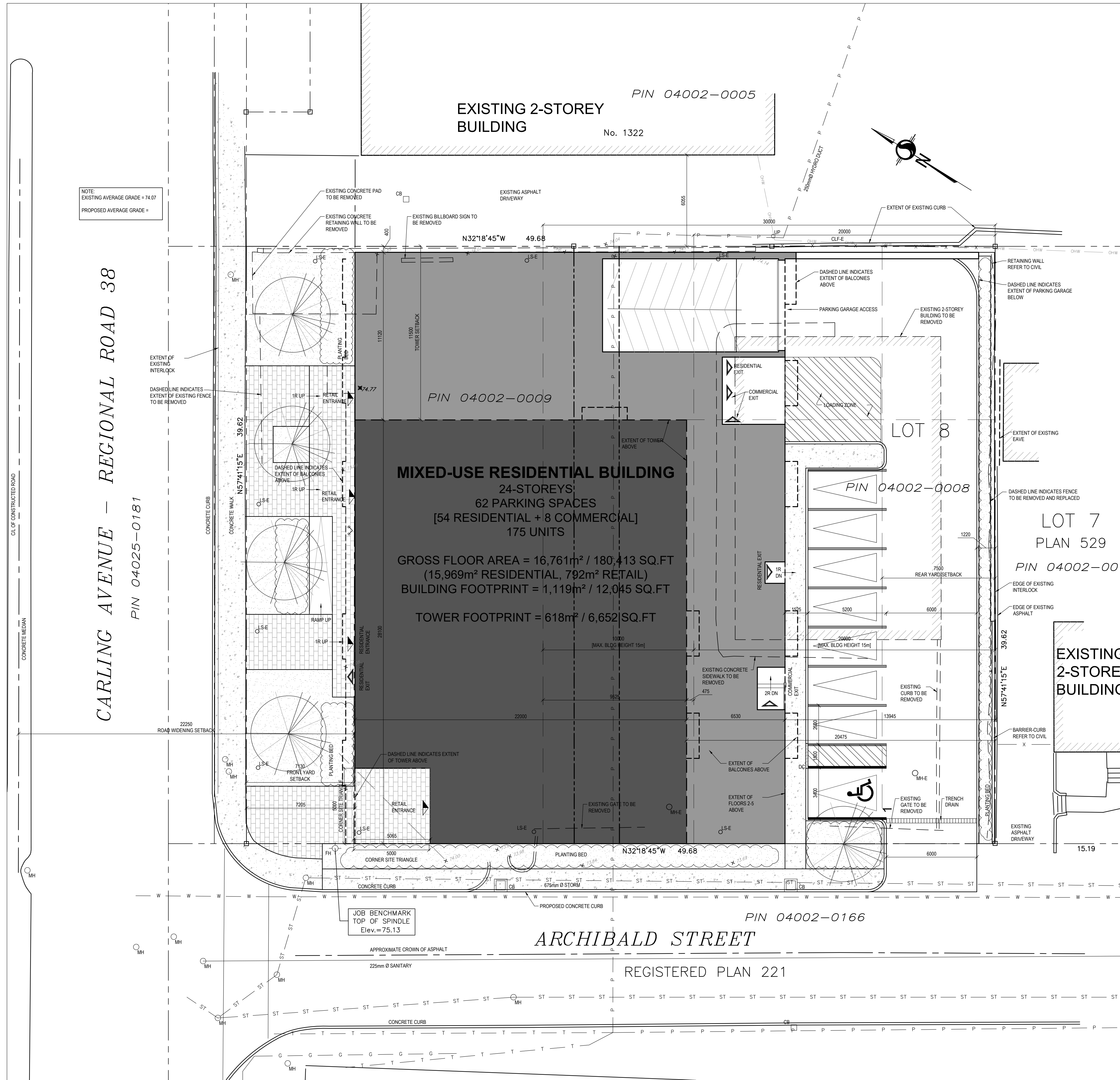
Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year Q_{attenuated} 6.6 L/s 100-year Q_{attenuated} 12.5 L/s
5-year Max. Storage Required 28.5 m³ 100-year Max. Storage Required 53.9 m³

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	4.0	0.0	8.5	0.0
Attenuated Areas	6.6	28.5	12.5	53.9
Total	10.6	28.5	21.0	53.9

DRAWINGS / FIGURES



NOTE:
EXISTING AVERAGE GRADE = 74.07
PROPOSED AVERAGE GRADE =

CARLING AVENUE - REGIONAL ROAD 38
PIN 04025-0181

EXISTING 2-STOREY BUILDING
PIN 04002-0005
No. 1322

MIXED-USE RESIDENTIAL BUILDING
24-STOREYS
62 PARKING SPACES
[54 RESIDENTIAL + 8 COMMERCIAL]
175 UNITS
GROSS FLOOR AREA = 16,761m² / 180,413 SQ.FT
(15,969m² RESIDENTIAL, 792m² RETAIL)
BUILDING FOOTPRINT = 1,119m² / 12,045 SQ.FT
TOWER FOOTPRINT = 618m² / 6,652 SQ.FT

PIN 04002-0166

ARCHIBALD STREET

REGISTERED PLAN 221

KEY PLAN



PROPERTY DESCRIPTION

24-STOREY RESIDENTIAL BUILDING	
CITY OF OTTAWA PIN NUMBER	04002 0008
MUNICIPAL ADDRESS	1330 Carling Avenue

SITE INFORMATION

LOT AREA:	1,968m ²
LOT FRONTAGE:	39.62m
LOT DEPTH:	49.68m

BUILDING INFORMATION

BUILDING AREA:	1,119m ²
BUILDING FLOOR AREA:	16,761m ²
PROPOSED USE:	MIXED-USE RESIDENTIAL, HIGH-RISE
UNIT BREAKDOWN:	
FLOORS 2:	9 UNITS 7-1BD, 2-2BD
FLOORS 3-5:	12 UNITS 1-STUDIO, 3-1 BD, 2-2BD
FLOOR 6:	4 UNITS 1-STUDIO, 1-1BD, 2-2BD
TYPICAL FLOORS 7-24:	7 UNITS 2-STUDIO, 1-1BD, 4-2BD
TOTAL:	175 UNITS 40-STUDIO, 53-1 BD, 82-2 BD

ZONING TABLE

CITY OF OTTAWA ZONING BY-LAW No. 2008-250	REQUIRED	PROPOSED
LOT AREA	No minimum	
LOT WIDTH	No minimum	
FRONT YARD SETBACK	0m	7.21m (as per road widening)
MINIMUM INTERIOR SIDE YARD SETBACK	0m	0.4m
MINIMUM REAR YARD SETBACK	3m for the first 20m from Archibald, 7.5m otherwise	13.9m
MAXIMUM BUILDING HEIGHT	Within 20m of R4 zone: 15m 20-30m from R4 zone: 20m 30-m from R4 zone: 30m (up to 9 storeys)	Commercial Ground Floor 1(5.2m) Residential 24(6.9m) Total 29(12.2m)
MAXIMUM FLOOR SPACE INDEX	N/A	
LANDSCAPED AREA	15% = 295m ² 3m buffer between parking lots and lot lines (10-99 parking spaces)	18.6% = 367m ²
VEHICLE PARKING REQUIREMENTS (AREA Y, SCHEDULE 1A)	Residential: 0.5 spaces/unit after first 12 units [175 x 0.5 = 88] Residential visitor: 0.1/unit after first 12 units [175 x 0.1 = 18] At-grade restaurant use (GFA<350m ²): 0 spaces At-grade non-residential use (GFA<500m ²): 0 spaces Other non-residential: 1-5 spaces/100m ² GFA	62 SPACES TOTAL VISITOR = 18 RESIDENTIAL = 36 COMMERCIAL = 8
LOADING	1 space for 2,000-4,999m ² non-residential GFA	1 SPACE
AMENITY AREA REQUIREMENTS	6m ² per unit 50% communal and at least one area of min. 54m ² Total = 1,110m ²	COMMUNAL AMENITY: 525m ² BALCONIES: 878m ² TOTAL AMENITY: 1,403m ²
BICYCLE PARKING SPACES	0.5 per dwelling unit +93 1/250m ² non-residential GFA	156 SPACES

LEGEND

	SOFT LANDSCAPING REFER TO LANDSCAPE		EXISTING TREE TO REMAIN (REFER TO LANDSCAPE DRAWINGS)
	UNIT PAVERS REFER TO LANDSCAPE		NEW TREE (REFER TO LANDSCAPE DRAWINGS)
	ASPHALT PAVING		NEW SHRUBS (REFER TO LANDSCAPE DRAWINGS)
	CONCRETE		NEW EVERGREEN SHRUB (REFER TO LANDSCAPE DRAWINGS)
	EXISTING BUILDING ELEMENT TO BE REMOVED		FIRE DEPARTMENT CONNECTION
	EXISTING FENCE		EXISTING GROUND ELEVATION (TO DETERMINE EXISTING AVERAGE GRADE)
	NEW BOARD FENCE REFER TO LANDSCAPE		NEW GROUND ELEVATION REFER TO CIVIL
	LOT LINE		DESIGNATED BUILDING ENTRANCE / EXIT
	SETBACK LINE		FIRE HYDRANT, REFER TO CIVIL
	DESIGNATED BUILDING ENTRANCE / EXIT		CATCH BASIN
	FIRE HYDRANT, REFER TO CIVIL		MANHOLE
	CATCH BASIN		FLOOR DRAIN
	MANHOLE		UTILITY POLE
	FLOOR DRAIN		OVERHEAD UTILITY WIRES
	UTILITY POLE		LIGHT STANDARD
	OVERHEAD UTILITY WIRES		DEPRESSED CURB
	LIGHT STANDARD		
	DEPRESSED CURB		

NOTE: 'X'-E INDICATES EXISTING TO REMAIN

No.	Date	Émis pour / Issued for
1	2020-01-24	PRECONSULTATION
2	2020-02-26	COORDINATION
3	2020-03-26	COORDINATION
-	-	-
-	-	-
-	-	-
-	-	-

Ingénieur / Engineer
(Mécanique & Électrique / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Architecte / Architect
(paysagiste / Landscape)

Ingénieur / Engineer
(Civil / Civil)

Client / Client

Architecte / Architect
Fig. 1
3500, Saint-Antoine O.
Montréal QC H4C 1A9
T. 514 881-9122
Fig. 2
190 Somerset St W #206
Ottawa ON K2P 0A4
T. 613 956-6122
www.figur.ca

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Scale / Échelle

Project / Projet

MIXED-USE RESIDENTIAL BUILDING

1330 Carling Avenue
Ottawa, ON

Drawn by / Dessiné par
MD

Checked by / Vérifié par
RC

Scale / Échelle
AS SHOWN

Date de création du dessin / Drawing creation date
2020-01-06

No. projet / Project number
1956

No. dessin / Drawing number

Revision / Révision

Échelle / Scale
AS SHOWN

0



SURVEYOR'S REAL PROPERTY REPORT
PART 1 Plan of
PART OF BLOCK 8
and
REGISTERED PLAN 221
and
LOT 8 and PART OF LOT 7
REGISTERED PLAN 529
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebek Ltd.



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

Surveyor's Certificate

I, **CHRISTY THOMAS**, and plan are correct in accordance with the Surveyors Act and the Land Titles Act and the regulations made under them.
 1. The survey was completed on the 9th day of March, 2020.
 2. The survey was completed on the 9th day of March, 2020.

CHRISTY THOMAS
 Date
 E. H. Hevey
 Ontario Land Surveyor

PART 2
 THIS PLAN MUST BE READ IN CONJUNCTION WITH
 SURVEY REPORT DATED... March 9, 2020

ANNIS O'SULLIVAN VOLLEBEK LTD grants to
 1549572 ONTARIO LTD. (The Client), hereinafter referred to as "The Client", the sole and exclusive right to use and publish the information contained in this report in connection with the Client's real property report in transactions involving The Client.

Bearings are *epid.* derived from eastern limit of Archibald Street shown to be N 32° 18' 45" W on Plan AR-27050 and are referred to as "Reference Bearings".
 Bearings of 170° 30' West Longitudes are referred to as "Original Bearings".
 For bearing comparisons, a rotation of 0° 32' 45" counter-clockwise was applied to bearings on P1 & P3.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum, derived from City of Ottawa vertical control monument No. N-29 having an elevation of 77.247 metres.
 2. It is the responsibility of the user of this information to verify that the job benchmark agrees with the information shown on this drawing.

UTILITY NOTES

1. 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.
 2. All underground utility lines were located.
 3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating, etc.
 4. Underground services on Archibald Street are taken from the City of Ottawa Engineering Plans F-05-22 and G-05-01. Services on Carling Avenue are not shown.

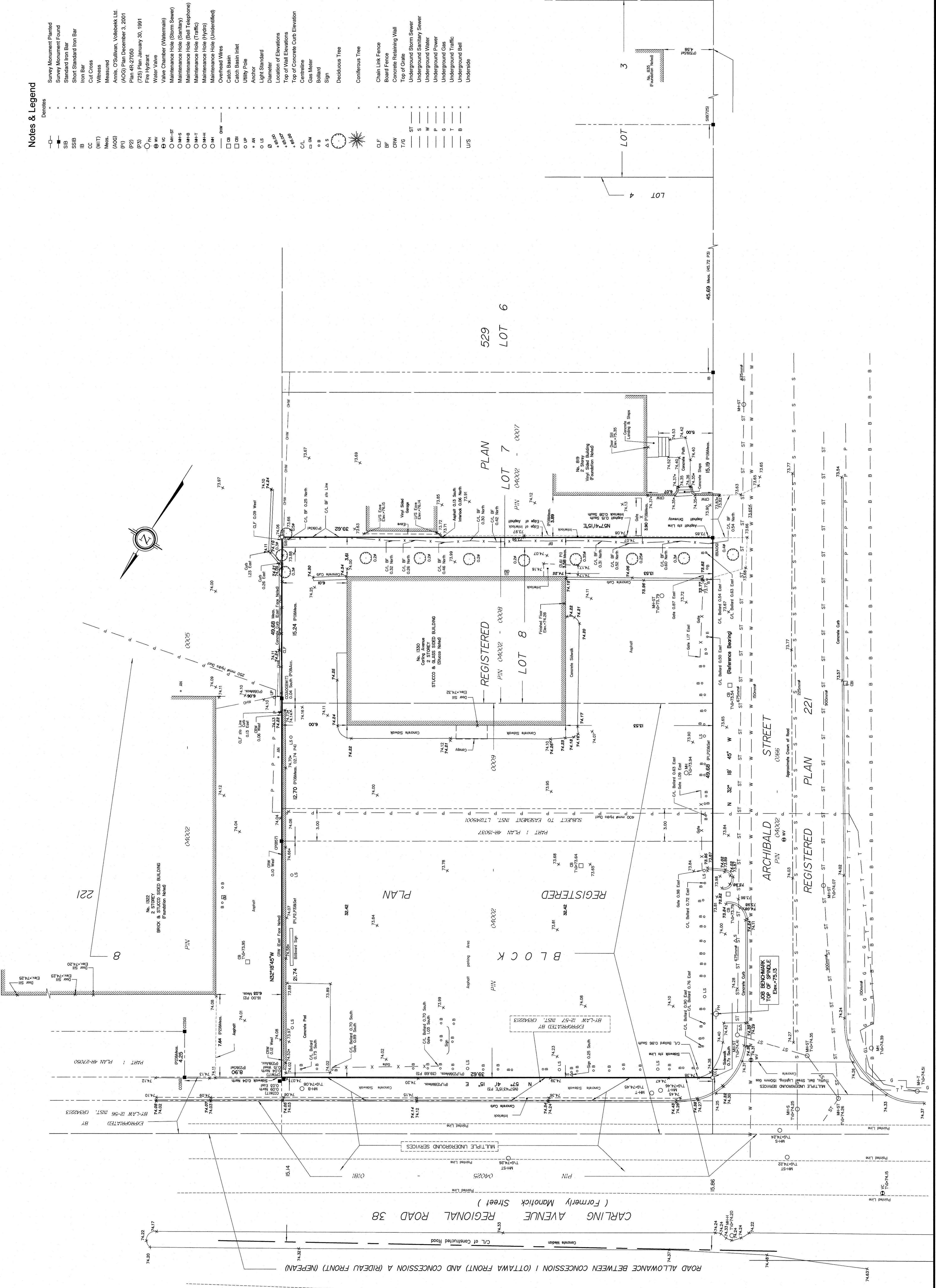
ASSOCIATION OF ONTARIO
 LAND SURVEYORS
 PLAN SUBMISSION FORM
 21714209

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 1549572 ONTARIO LTD.
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 Phone: (613) 777-0850 / Fax: (613) 271-1079
 Land Surveyors Reg. No. 30300-9, 30300-10, 30300-11, 30300-12, 30300-13, 30300-14, 30300-15, 30300-16, 30300-17, 30300-18, 30300-19, 30300-20, 30300-21, 30300-22, 30300-23, 30300-24, 30300-25, 30300-26, 30300-27, 30300-28, 30300-29, 30300-30, 30300-31, 30300-32, 30300-33, 30300-34, 30300-35, 30300-36, 30300-37, 30300-38, 30300-39, 30300-40, 30300-41, 30300-42, 30300-43, 30300-44, 30300-45, 30300-46, 30300-47, 30300-48, 30300-49, 30300-50, 30300-51, 30300-52, 30300-53, 30300-54, 30300-55, 30300-56, 30300-57, 30300-58, 30300-59, 30300-60, 30300-61, 30300-62, 30300-63, 30300-64, 30300-65, 30300-66, 30300-67, 30300-68, 30300-69, 30300-70, 30300-71, 30300-72, 30300-73, 30300-74, 30300-75, 30300-76, 30300-77, 30300-78, 30300-79, 30300-80, 30300-81, 30300-82, 30300-83, 30300-84, 30300-85, 30300-86, 30300-87, 30300-88, 30300-89, 30300-90, 30300-91, 30300-92, 30300-93, 30300-94, 30300-95, 30300-96, 30300-97, 30300-98, 30300-99, 30300-100

Notes & Legend

- Denotes**
- Survey Monument Planted
 - Survey Monument Found
 - Standard Iron Bar
 - Short Standard Iron Bar
 - Iron Bar
 - Cat Cross
 - Witness
 - Measured
 - Annis, O'Sullivan, Vollebek Ltd. (AOC) Plan December 3, 2001
 - (P2) Plan AR-27050
 - (P3) (725) Plan January 30, 1991
 - Fire Hydrant
 - Valve
 - Valve Chamber (Watermain)
 - Valve Chamber (Storm Sewer)
 - Maintenance Hole (Sanitary)
 - Maintenance Hole (Bell Telephone)
 - Maintenance Hole (Bell Telephone)
 - Maintenance Hole (Hydro)
 - Maintenance Hole (Unidentified)
 - Overhead Wires
 - Catch Basin Inlet
 - Utility Pole
 - Anchor
 - Light Standard
 - Diameter
 - Location of Elevations
 - Top of Concrete Curb Elevation
 - Top of Concrete Curb Elevation
 - Gas Meter
 - Sign
 - Deciduous Tree
 - Coniferous Tree
 - Chain Link Fence
 - Board Fence
 - Concrete Retaining Wall
 - Top of Gate
 - Vinyl Siding
 - Undergound Storm Sewer
 - Undergound Sanitary Sewer
 - Undergound Water
 - Undergound Power
 - Undergound Gas
 - Undergound Traffic
 - Undergound Ball
 - Undergound
 - U/S



(Formerly Thomas Street)
 REGISTERED PLAN 221
 THAMES STREET

CARLING AVENUE
 REGIONAL ROAD 38
 (Formerly Manotick Street)

ARCHIBALD STREET
 PIN 04002

529
 LOT 6

PLAN
 LOT 7
 PIN 04002 - 0007

REGISTERED
 LOT 8
 PIN 04002 - 0008

REGISTERED
 BLOCK 8
 PIN 04002

REGISTERED
 PLAN 221