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Assessment of Adequacy of Public Services

3430 Carling Avenue

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

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1.0 Introduction

1.1 Background

In 2021, J.L. Richards & Associates Limited (JLR) was retained by 3430 Carling Property Inc., herein referred to as the Owner, to prepare an Assessment of Adequacy of Public Services (AAPS) for the development of a mid-rise residential development located at 3430 Carling Avenue, in the City of Ottawa.

The Owner wishes to redevelop an existing commercial property (restaurant) into two (2) mid-rise residential nine-storey buildings, with at-grade parking and soft scaped areas surrounding the buildings. Based on our understanding of the upcoming development, the Owner (3430 Carling Property Inc.) will be the sole owner of this mid-rise residential development which will be operated as apartment rentals.

This Report has been prepared as supporting documentation to an upcoming Planning Rational and Zoning By-Law Application (ZBLA). It has also been prepared to outline the design objectives and criteria, servicing constraints and to present functional-level servicing strategies for developing the subject lands with water, wastewater, storm and stormwater management servicing in accordance with the following documents:

i) the November 2009 Servicing Study Guidelines for Development Applications in the City of Ottawa (City);
ii) the Ottawa Sewer Design Guidelines (2012) and associated Technical Bulletins;
iii) the discussions held during a pre-consultation meeting with City staff, and
iv) subsequent follow-up Email correspondences between JLR and the City of Ottawa.

A copy of the Site Plan and Topographical Survey is included in Appendix A while a copy of the pre-consultation meeting notes and follow-up Email correspondences can also be found in Appendix B.

1.2 Site Description

The subject property was operated as a restaurant in the recent past. However, since 2020, the usage of the property was modified to an overflow parking area mainly for the Department of National Defence (DND), which is located in close proximity. As illustrated on Figure 1 (below), the site consists of a building and a large paved area devoted to parking. Consequently, the subject site consists mostly of impervious surfaces.

Figure 1: Site Plan Location

As shown on "geoOttawa", the subject property accounts for 6,150 m^2 and is currently zoned GM20[2628]H(18.5). It should be noted that the above-noted parcel (6,150 m^2) is inclusive of a block fronting Carling Avenue that will be dedicated as future road widening to the City of Ottawa. When the future road widening is removed from the parcel area, the developable property is ±5,100 m^2.

Given the need for rezoning to a mid-rise residential land use, the project will necessitate a ZBLA. The Owner wishes to develop 3430 Carling Avenue into 216 units in total with the following breakdown (refer to Appendix A for details):

- 29 x 1-BED unit;
- 55 x 1-BED+ unit;
- 96 x 2 BED unit;
- 32 x 2 BED+ unit; and
- 4 x Studios

1.3 Existing Infrastructure and Servicing

A review of existing services was carried out along the Carling Avenue right-of-way (ROW) to assess constraints and opportunities for potential servicing connections for the redevelopment of 3430 Carling Avenue. The following Drawings were obtained from the City of Ottawa's Information Center and included in Appendix C:

- City of Nepean Drawing W8255-3;
- City of Nepean Drawing W8255-4;
- City of Nepean Drawing 706-3;
- City of Nepean Drawing 706-4; and
- City of Nepean Contract Drawing 73-37

To supplement this review, the information contained in the "geoOttawa" platform was also examined to identify linear infrastructure along Carling Avenue. The following infrastructure is existing and available for a future connection (refer to Figure 2):

- 305 mm diameter watermain (circ. 1970);
- 375 mm diameter sanitary sewer (circ. 1982); and
- 600 mm diameter storm sewer (circ. 1982).

The above-noted infrastructure will be the dedicated connection points for the mid-rise residential redevelopment.

Figure 2: Existing Infrastructure

In terms of hydrants, there is one on Carling Avenue within 5 m of the eastern corner of the parcel. There are also two (2) additional hydrants in the vicinity; one on Carling Avenue approximately 50 m from the western corner of the Site and one along Sunny Brae Avenue approximately 100 m from the Site.

1.4 Municipal Design Guidelines

This AAPS Report and associated functional engineering drawings were prepared in accordance with the following:

Ottawa Sewer Design Guidelines (October 2012) complete with the following Technical Bulletins;

- ISTB-2012-01;
- ISTDB-2014-01;
- ISTDB-2016-01;
- ISTDB-2018-01;
- ISTDB-2019-01; and
- ISTDB-2019-02;

City of Ottawa Water Distribution Guidelines complete with the following Technical Bulletins:

- ISTDB-2010-02;
- ISTDB-2014-02; and
- ISTDB-2018-02.

The above-noted documents and Design Guidelines have been referred throughout this document as the OSDG.

2.0 Water Servicing

2.1 Existing Condition

The subject site is located within Pressure Zone 1W of the City of Ottawa's water distribution system. Potable water is supplied to subject property via transmission mains to the Carling 406 mm diameter feedermain which reduces to a 305 mm diameter watermain at the Corkstown Road intersection. From that point, the 305 mm diameter feedrmain extends westerly along Carling Avenue up to the frontage of the subject parcel. Multiple watermain connections to the Carling 305 mm diameter watermain are found in the vicinity of the subject parcel including on Moodie Drive, Ullswater Drive and Crystal Beach Drive which provides redundancy to the Carling 305 mm diameter watermain.

2.2 Water Supply and Design Criteria

Any additions to the City of Ottawa water distribution system are to be designed in accordance with the OSDG (Water Distribution - July 2010), and Technical Bulletins ISDTB-2014-02 and ISTB-2018-02. The proposed system will be designed to satisfy the pressure constraints for the peak hour demand, maximum day demand plus fire flow, and maximum hourly demand. Water demands are to be estimated to the water design criteria listed in Table 1 below.

Table 1: Water Design Criteria

Design Criteria	Design Value
Population > 500	
Residential average demand	280 L/cap/day
Residential maximum demand	2.5 x Avg
Residential peak hour	2.2 x Max Day
Density Single Family	3.4
Density Semi & townhouse	2.7
Density (apt) 1-bedroom	1.4
Density (apt) 2-bedroom	2.1
Density (apt) 3-bedroom	3.1
Population < 500	
Residential average demand	280 L/cap/day
Peaking Factors	MOE Table 3-3
Fire Flow Requirements	
Municipal ROW	F.U.S.
Within Private Property	OBC
Pressure/Flow	
Peak hour	>275 kPa (40 psi)
Maximum day plus fire flow	>140 kPa (20 psi)
Minimum hour (maximum HGL)	<552 kPa (80 psi)

Given that the population for 3430 Carling is less than 500, peaking factors were calculated based on Table 3-3 of the MOE Guidelines. From the average day demand and peaking factors from Table 3-3 of the MOE, domestic demands were calculated as shown in a Table included in Appendix D1.

The proposed development and theoretical population will yield an average day demand that will exceed 50 m^3 per day. Therefore, dual water service lateral with an isolation valve will be required at detailed design. The Functional Drawing F-SGE shows a proposed 200 mm diameter water lateral with an isolation valve next to the existing water lateral. At detailed design, the size of the existing water lateral will be confirmed. If the existing lateral is found to be inadequate to support this development, it will be replaced by a second 200 mm diameter water lateral.

2.3 Required Fire Flow and Boundary Conditions

In terms of the required fire flow (RFF), water supply within the municipal right-of-way (ROW) must be estimated in accordance of the Fire Underwriters Survey (FUS) for the type of development being proposed. The required fire flow (RFF) was calculated for the nine-storey buildings while considering material, height of structure, exposure, etc. in accordance with ISDTB-2018-02 (refer to Appendix D2 for calculations).

Given the site's usage as a mid-rise nine-storey residential buildings and the fact that both buildings will incorporate a sprinkler system, fire flow protection within private properties must comply with the Ontario Building Code (OBC) and NFPA 13 as per the information below.

Private Sites:

The RFF within private sites shall be calculated based on the Ontario Building Code (OBC), which in turn, is based on NFPA 13 when buildings are equipped with a sprinkler system and that there

are no on-site hydrants being proposed (supply for fire protection via the watermain service lateral and hydrant within 45 m). Based on NFPA 13, the fire protection on private property with a building equipped with a sprinkler system should include the following allowances:

1. Pipe Schedule for Sprinkler Systems
2. Hose Stream Allowance for Water Supply

Based on NFPA's Table 11.2.2.1 (Water Supply Requirements for Pipe Schedule Sprinkler Systems) and Table 11.2.3.1.2 (Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems), the RFF within the property for ordinary hazard shall consist of the following:

Sprinkler System: 3,200 L/min (53.3 L/s), and
Combined Hose Allowance: 950 L/min (15.8 L/s)

Total RFF within private property = 4,150 L/min (69.2 L/s)

A copy of NFPA's Table 11.2.2.1 and Table 11.2.3.1.2 is included in Appendix D2.

The City provided supply head (meters) under both peak hour (minimum HGL) and minimum hour (maximum HGL) via an Email correspondence included in Appendix D3.

In terms of the maximum day plus fire flow, the City provided the fire flow (189 L/s) that can be drawn from the 305 mm diameter watermain and the corresponding pressure of 20 psi (140 kPa). This information was converted to a supply head along the Carling 305 mm diameter watermain and was used in the friction loss desktop calculation.

2.4 Headloss Calculations

The proposed Functional Servicing for water, as presented on Drawing F-SGE, was evaluated under the demand scenarios listed in Section 2.3. The proposed servicing to support the nine-storey buildings consists of a dual 200 mm diameter watermain service laterals (with an isolation valve), with reusing the existing lateral to be determined at detailed design. These laterals will span between the Carling 305 mm diameter watermain and will enter the building and enter into the mechanical room, upstream of the water meter, where it will branch into a domestic and sprinkler service lateral. The length of the proposed service lateral to the building is ±14 m. This length has been used to evaluate headloss (per the Hazen-Williams method) along the service lateral for each of the water demand scenarios.

The Headloss Calculation Spreadsheet provides the headloss and corresponding operating pressures estimated in the buildings under the two (2) domestic demand scenarios (Appendix D3). The headloss calculation included in Appendix D4 shows that the minimum and maximum pressure constraints will be met under the peak hour and minimum hour scenarios, respectively.

The headloss calculation was also carried out with the RFF of 69.2 L/s (4,150 L/min) noted in Section 2.3 based on the requirements of NFPA 13 and the OBC. A previously noted, the information provided by the City for the maximum day plus fire flow was converted to a supply head at the Carling 305 mm diameter watermain, which was found to be equivalent to 78.58 m (refer to Appendix D4).

As shown on the headloss calculation (Appendix D4), the pressure in the building entry was found to be 19 psi, slightly below the 20 psi. However, the supply head along the ROW was calculated based on a fire flow of 189 L/s, which is 270% greater than the OBC and NFPA requirements on private property (69.2 L/s for sprinklered buildings). Given that there will be a pump in the building due to its height for both domestic and fire supply, the 19 psi is appropriate as the supply entry pressure to pumps as it can be less than 20 psi. At detailed design, a specialized consultant will carry out testing to size the sprinkler system to meet NFPA 13, the requirement on private property. Thus, the pressure constraints under domestic are met and the pressure under fire flow is adequate (refer to Appendix D4).

2.5 Hydrants

In terms of hydrants, there is one on Carling Avenue within 5 m of the eastern corner of the Site. There are also two (2) additional hydrants in the vicinity; one on Carling Avenue approximately 50 m from the western corner of the Site and one along Sunny Brae Avenue approximately 100 m from the Site

Section 1.3 of this Report summarized the distribution system that is currently bounding the Site. Given that the Building will be sprinklered, the Ontario Building Code (OBC) requires that there is an unobstructed path of travel for the firefighter from the vehicle to the fire department connection is not more 45 m. The hydrant located near the northeastern corner of the property line is within 45 m from the siamese connection. Hence, the OBC criterion is met.

2.6 Summary and Conclusions

Based on the above watermain servicing details, the proposed dual 200 mm diameter watermain service laterals (existing lateral size and re-usage to be confirmed at detailed design) and isolation valve (refer to Drawing F-GSE) can provide supply to meet both domestic and fire protection (OBC and NFPA 13) recognizing that domestic and fire pumps will be sized at detailed design by the Owner's mechanical engineer.

3.0 Wastewater Design

3.1 Background and Design Criteria

Currently, wastewater flows from the subject property is conveyed to the Carling Avenue 375 mm diameter sanitary sewer, which in turn is tributary to the West Nepean Collector. It is proposed that wastewater flows generated by the 3430 Carling Avenue redevelopment be collected by an internal piping system in each building that will convey the captured wastewater flows via a proposed common sanitary sewer lateral to the Carling Avenue 375 mm diameter sanitary sewer as shown on the Functional Drawing F-SGE.

At detailed design, the proposed sanitary service for 3430 Carling Avenue will be sized based on the OSDG and associated Technical Bulletins. Key design parameters have been summarized in Table .

Table 2: Wastewater Servicing Design Criteria

Design Criteria	Design Value	Reference
Residential average flow	280 L per capita/day	ISTB-2018-01
Residential peaking factor	Harmon Formula x 0.8	City Section 4.4.1
Infiltration Allowance 0.05 L/s/ha (dry I/I) 0.28 L/s/ha (wet I/I)	0.33 L/s/ha	ISTB-2018-01
Minimum velocity	0.6 m/s	OSDG Section 6.1.2.2
Maximum velocity	3.0 m/s	OSDG Section 6.1.2.2
Manning Roughness Coefficient (for smooth wall pipes)	0.013	OSDG Section 6.1.8.2
Minimum allowable slopes	Varies	OSDG Table 6.2, Section 6.1.2.2

3.2 Theoretical Wastewater Peak Flow and Sanitary Servicing

Wastewater flows were calculated based on the OSDG. Based on the proposed densities for apartment buildings, the peak wastewater flow was calculated using the unit design value of 280 L/capita/day and on the density per unit noted in Table 2 (above). A peak wastewater flow of 4.35 L/s was calculated for the mid-rise residential redevelopment. As per the OSDG, a combined infiltration allowance of 0.33 L/s/ha (dry and wet) is to be added to the peak wastewater flow of 4.35 L/s. Based on this requirement, the overall peak wastewater flow was estimated at 4.55 L/s (refer to Appendix E for calculations).

During the detailed design stage, CCTV inspection will be carried out to determine the size of the existing sanitary lateral and condition to determined its re-usability to prevent, if possible, a substantial road cut along Carling Avenue to connect with the sanitary sewer in the west bound lanes. Should the existing lateral be in a good condition and have a free-flowing capacity exceeding 4.55 L/s, it could be re-used; however, the re-usability will be discussed with the City during detailed design. If a new sanitary lateral is required, a 200 mm diameter lateral at 0.5% could accommodate the above-noted peak flow. Drawing F-SGE shows the location of the existing sanitary lateral.

During the early stage of this project, the City confirmed via Email correspondence on March 10, 2021 (Appendix B) that a peak wastewater flow of 4.76 L/s could be accommodated by the Carling Avenue 375 mm diameter sanitary sewer and downstream system. Hence, the revised peak wastewater flow of 4.55 L/s is within the above-noted allowance.

3.3 Summary and Conclusions

Based on the above wastewater servicing details, the functional wastewater servicing shown on Drawing F-SGE and described above could accommodate the conveyance of the wastewater

flows to the Carling Avenue 375 mm diameter sanitary sewer. Based on the City of Ottawa's correspondence, the downstream system does have the capacity to accommodate the theoretical peak wastewater flows.

4.0 Storm Servicing and Stormwater Management

4.1 Existing Condition and Proposed Servicing

The site is currently is a commercial development that consist of a building, parking and small landscaped areas. Runoff from the slanted roof sheet flows at the surface while existing grading concentrates most of the parking drainage to an on-site catch basin that intercepts and convey runoff to the Carling 600 mm diameter storm sewer system. There is also some of the parcel that sheets flow uncontrolled to Carling Avenue where it is eventually intercepted by the 600 mm diameter storm sewer system. An Existing Condition Drainage Plan reflecting the current condition is included in Appendix F1.

The proposed development will consist of a mid-rise residential development with areas surrounding each of the building envelope. These surrounding areas consists of at-grade parking, ramp with large landscaped areas at the back and front of the buildings with small hardscaped areas. Runoff from the 9th floor buildings will be retained and controlled on the roofs while runoff from the 4th floor amenity areas will be collected by internal drains and conveyed to underground cisterns to be controlled. Runoff from the parking area and part of the ramp will sheet flow to three (3) catch basins which will provide surface storage while runoff from the areas surrounding the buildings will be collected by a series of drains and storm sewers. There are also two (2) areas fronting Carling Avenue that will sheet flow uncontrolled to Carling Avenue.

4.2 Storm Criteria

This AAPS Report and functional drawings have been prepared based on the discussions held at the pre-consultation meeting and subsequent Email correspondences (Appendix B). The storm design criteria used in this design is based on the following:

- The allowable peak flow shall be estimated based on a 1:5-year intensity IDF which is to be calculated based on the Time of Concentration reflecting existing condition and should not be less than 10 minutes. The allowable peak flow to be set on the existing condition C-Factor and shall not exceed 0.50.

- The post-development peak flows shall be controlled up to the 1:100-year storm by means of on-site storage.

4.3 Allowable Release Rate

Storm servicing and stormwater management for the subject property is to be developed to limit the 1:100-year post-development flow from the subject property to the prescribed allowable peak flow. To evaluate the allowable peak flow, the various areas were delineated based on their surface type as shown on the Existing Condition Drainage Plan (Appendix F1). A Runoff-Coefficient (C-Factor) of 0.20 was assigned to all grassed surfaces while a C-Factor of 0.90 for all other hard surfaces including roof, concrete walkway and asphalt. Based on the information

on this Drawing, an existing condition C-Factor of 0.83 was calculated as shown in the spreadsheet included in Appendix F2.

A time of concentration (Tc) was calculated based on the flow path and existing grades. The Tc was found to ne 2.83 mins from the most remote point at the back of the building to the Carling 600 mm diameter storm sewer system via the catch basin and lead. As per the pre-consult notes, the Tc was set to 10 minutes and was used to calculate the allowable peak flow (1:5-year).

As previously noted, there is land dedication for widening of Carling Avenue. As such, the allowable peak flow calculation (Existing Condition) was carried while excluding the road widening lands as it will be dealt as part of the Carling Avenue Road widening in the future and this strip is excluded from the SWM Calculations. Based on a post-development area of 5,100 m^3 (widening block subtracted), the SWM calculations yielded an allowable peak flow of 73.86 L/s. Supporting calculations for the Tc and allowable peak (1:5-year) is included in Appendix F2.

4.4 Storm Servicing

The general storm and stormwater servicing used to develop the functional storm design for 3430 Carling are summarized in the Table below.

Table 3: Storm Servicing Design Criteria

General Design Criteria
The storm sewers surrounding the building envelope to be designed based on the calculated peak flows which is to be estimated with the Rational Method and the City of Ottawa Intensity-Duration-Frequency (IDF) curves. Rooftop drainage to be conveyed by internal piping sized by the mechanical engineer
Post-development peak flow estimated based on an inlet time of ten (10) minutes and a C-Factor of 0.90 for impervious surfaces and 0.20 for landscaped surface.
The 1:100-year peak flows to be detained by means of on-site retention measures; i) at grade surface ponding, ii) rooftop storage, or iii) stormwater cistern, prior to be released in the storm sewer system.
Provide measures to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

4.5 Proposed Stormwater Management Solution and Calculations

4.5.1 Water Quantity Requirements

Storm servicing and stormwater management for 3430 Carling was developed to limit the 1:100-year post-development flow to the allowable peak flow. As part of the servicing and grading exercise, several low points were introduced in the site's grading within the areas surrounding the building envelope (parking and landscaped areas). These low points will provide surface storage that would be supplemented by the proposed sewers surrounding the building envelope. Rooftop retention supplemented by underground storage (cisterns) is also proposed as stormwater measures. It was assumed that 60% of the rooftop could be used as storage under storage depth

of 150 mm. Thus, the functional stormwater management presented herein is based on various measures including rooftop restriction/retention, underground cisterns, surface and pipe storage. The following Functional Drawings were prepared to support the stormwater management (SWM) calculations:

- A Functional Servicing, Grading and Erosion and Sediment Control Plan (refer to Drawing F-SGE);
- A Functional Post-Development Drainage Plan (refer to Drawing F-DP); and
- A Functional Stormwater Management Plan (refer to Drawing F-SWM).

These Drawings are included at the back of the Report. C-Factors used in the SWM calculations (Appendix F3) have been based on a weighted C-Factor approach; all hard surfaces (building, interlock, asphalt and concrete) have been assigned a Runoff-Coefficient of 0.90 while the grassed area a C-Factor of 0.20. It should be noted that proposed surfaces surrounding the building are mostly grassed except for the parking and ramp areas.

4.5.2 Stormwater Management

To assess storage volume requirements for the rooftops and at-grade areas, the Modified Rational Method (MRM) was used. Given that the proposed stormwater management strategy includes two (2) 4th floor terraces which drain to underground cisterns, the MRM calculation was carried out assuming 50% of the targeted design flow for the area draining to each of the cisterns. All other storage volume calculations were conducted using the full design flow target in the MRM.

An evaluation of the functional level stormwater management system design was carried out under both the 1:100-year and climate change event (CCE). Detailed calculations are found in Appendix F3. Findings are summarized in the Table below:

Area Number	Area (m2)	Controlled Peak Flow	Uncontrolled Peak Flow
West Building (9th floor)	893	5.67	N/A
East Building (9th floor)	893	5.67	N/A
4th floor Terrace West	454	10.00	N/A
4th Floor Terrace East	407	10.00	N/A
Uncontrolled West	103	N/A	2.56
Uncontrolled East	87	N/A	2.16
Southern Mixed	1328	12.00	N/A
Ramp Uncontrolled	190	N/A	8.49
At-grade Parking	749	17.30	N/A

Based on the above controlled and uncontrolled peak flows, the 1:100-year total flow of 73.84 L/s is below the allowable peak flow of 73.86 L/s. As shown in the SWM calculations (Appendix F3), sufficient storage will be provided to contain the flows while releasing to the allowable peak flow rate.

Climate Change Event

The SWM calculations found in Appendix F3 were also carried out to assess the CCE. Findings under the CCDE are summarized below:

- Rooftop for both western and eastern buildings (9th floor) can accommodate the CCE assuming 60% of roofs devoted to storage under 150 mm depth;
- The western and eastern cisterns servicing the 4th floor terraces can be designed to accommodate the increased in peak flows of 5.07 L/s and 4.55 L/s during the CCE. Alternatively, the volume of both cisterns can be increased by about ±5 m^3 to accommodate the increased in peak flows;
- The southern mixed area surrounding the building can accommodate the CCE. Storage volume requirements of 8.6 m^3 and 12.94 m^3 were estimated for the 1:00-year and CCE storms, respectively while the functional grading provides 18.3 m^3;
- The parking area can accommodate the CCE. Storage volume requirements of 9.7 m^3 and 14.72 m^3 were estimated for the 1:00-year and CCE storms, respectively while the functional grading provides 15.7 m^3;
- Two small strips of land will sheet flow uncontrolled towards Carling Avenue. The 1:100-year from both strips have been considered in the SWM calculations. Based on the calculations, there would be a slight increase in the flows beyond the 1:100-year peak flows which were estimated at 0.51 L/s and 0.43 L/s. These flows represent flow depths of less than 0.02 m.

4.6 Water Quality

As shown on the Existing Condition Report, the property consists mostly of hard surfaces; building, parking and concrete walkway and small landscaped areas. Based on the Existing Condition Drainage Plan (Appendix F1), the hard surfaces account for 90% of the area.

Under post-development, there will be a substantial reduction in the parking area, from 4470 m^2 to 939 m^2 (749 m^2 and 190 m^2). This represents a decrease of 79% of the asphalted area.

An E-Mail was sent to the Rideau Valley Conservation Authority (RVC) to determine if water quality is to be provided. A copy of the Email is included at the end of Appendix F3. Pending their response, an oil/grit separator (OGS) may be required which will be sized at detailed design.

4.7 Summary and Conclusions

The storm and stormwater management solution presented in Section 4 was developed at the functional level to demonstrate that the storm discharge criteria can be met. The Functional-level SWM solution hinges of various measures including rooftop restriction/retention, underground cisterns, surface and pipe storage. The Functional-level Drawing F-SWM supplemented by Functional-level Post-Development Drainage Plan and Functional-level Servicing, Grading and Sediment Control Plan are detailing the measures.

5.0 Erosion and Sedimentation Control

During the construction of 3430 Carling Avenue redevelopment, appropriate erosion and sedimentation control measures will be defined during detailed design, as outlined in the Ontario MNRF Guidelines on Erosion and Sediment Control for Urban Construction Sites, are proposed to be implemented to trap sediment on site.

As a minimum, the following erosion and sedimentation control measures are envisioned:

- Supply and installation of a silt fence barrier, as per OPSD 219.110, refer to Drawing F-SGE for silt fence location;
- Supply and installation of filter fabric between the frame and cover of catch basins and maintenance holes adjacent to the project area during construction, to prevent sediment from entering the sewer system. The filter fabric is to be inspected regularly and corrected as required.
- Stockpiling of material during construction is to be located along flat areas away from drainage paths. For material placed on sloped areas, stockpiles are to be enclosed with a silt fence to protect watercourses;
- All catch basins are to be equipped with sumps, inspected frequently, and cleaned as required;
- Straw bale barriers at the bottom of the outlet channel immediately upstream of the watercourse.
- Dust control measures shall be implemented during construction to minimize the impact to adjacent roads and properties.
- A mud mat is to be built at each of the site entranceways to prevent the transport of sediment onto paved surfaces.

The proposed erosion control measures shall conform to the following documents:

i. “Guidelines on Erosion and Sediment Control for Urban Construction Sites” published by Ontario MNRF, Environment, Municipal Affairs, and Transportation & Communication, Association of Construction Authorities of Ontario and Urban Development Institute, Ontario, May 1987.
ii. “MTO Drainage Manual”, Chapter F: “Erosion of Materials and Sediment Control”, Ministry of Transportation & Communications, 1985.
iii. “Erosion and Sediment Control” Training Manual by Ministry of Environment, Spring 1998.
iv. Applicable Regulations and Guidelines of the Ministry of Natural Resources.

This report has been prepared for the exclusive use of 3430 Carling Property Inc., for the stated purpose, for the Assessment of Adequacy of Public Services Report. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of 3430 Carling Property Inc. and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited.

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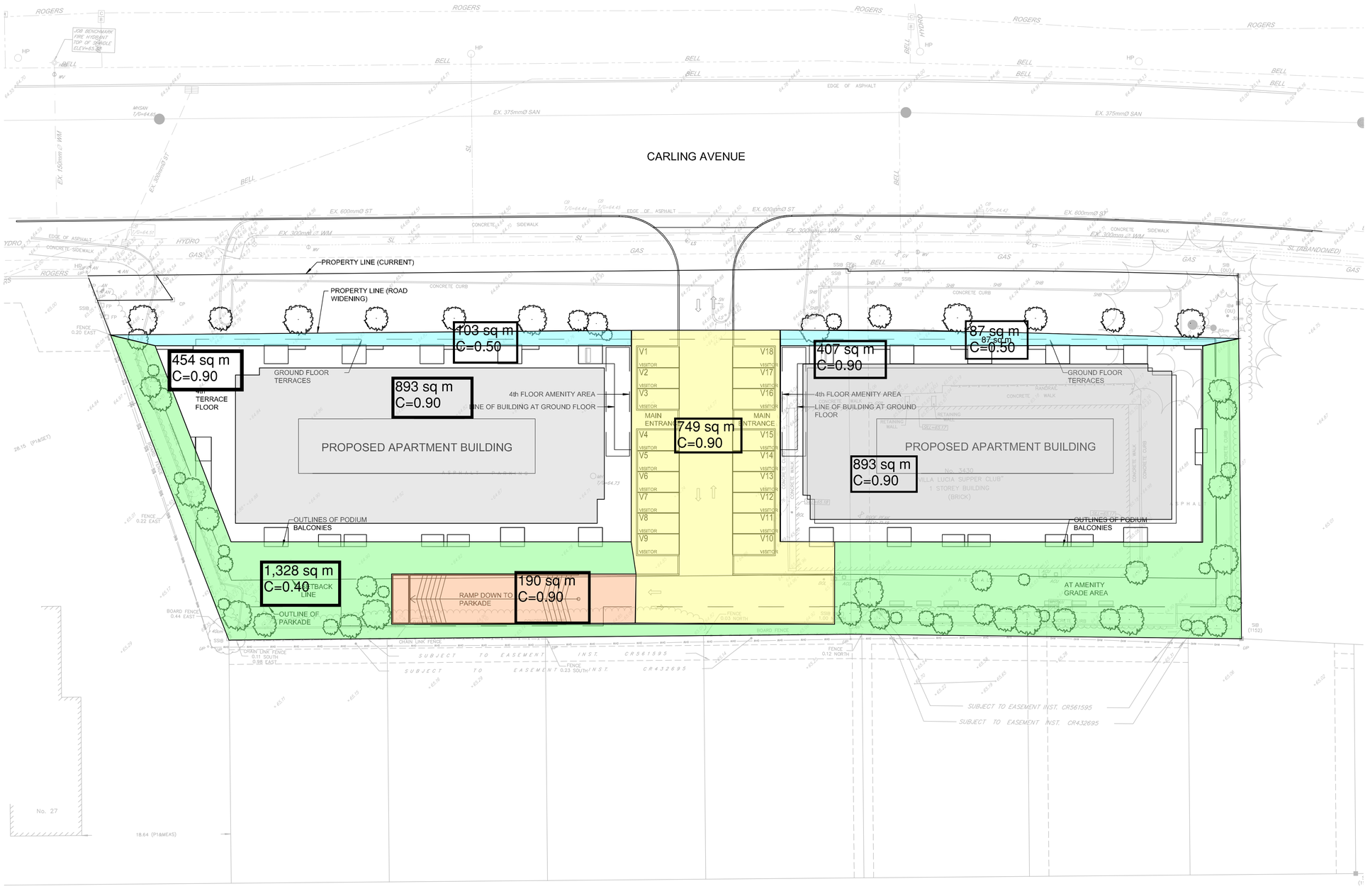

No.	ISSUE / REVISION	DD/MM/YY
1	Submit as part of Adequacy of Public Services	July 31, 2021

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

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CLIENT:

3430 CARLING PROPERTY INC.

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OTTAWA, ONTARIO

DRAWING:

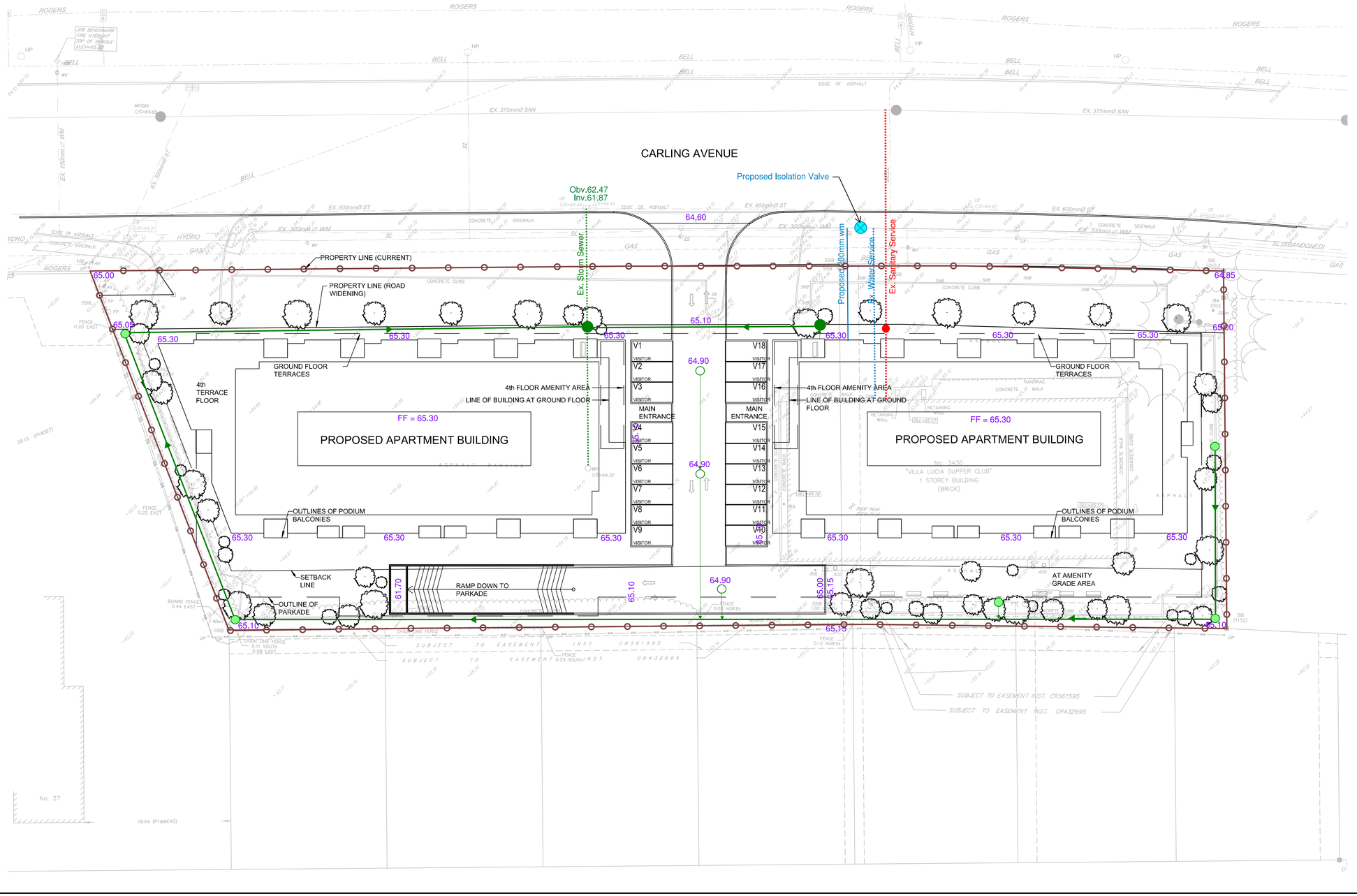
FUNCTIONAL POST-DEVELOPMENT DRAINAGE PLAN

DESIGN:	L.D.
DRAWN:	B.R.
CHECKED:	G.F.
JLR #:	31134

DRAWING #: F-DP

File Location: P:\31000\31134-000 - Site Plan - 3430 Carling Ave\6-Production\1-Civil\31134 C SITE PLAN.dwg

PLOT DATE: Thursday, July 8, 2021 4:43:01 PM



Approximate location of ex. water service proposed to be re-used

Approximate location of ex. sanitary service proposed to be re-used

Proposed Storm sewer

Podium Drains

Landscaping pots

Maintenance Hole (MH)

Erosion and Sedimentation Silt Fence

No.	ISSUE / REVISION	DD/MM/YY
1	Submit as part of Adequacy of Public Services	July 31, 2021

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:250

0 5 10 15 20m

CLIENT:

3430 CARLING PROPERTY INC.

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

3430 CARLING AVENUE

OTTAWA, ONTARIO

DRAWING:

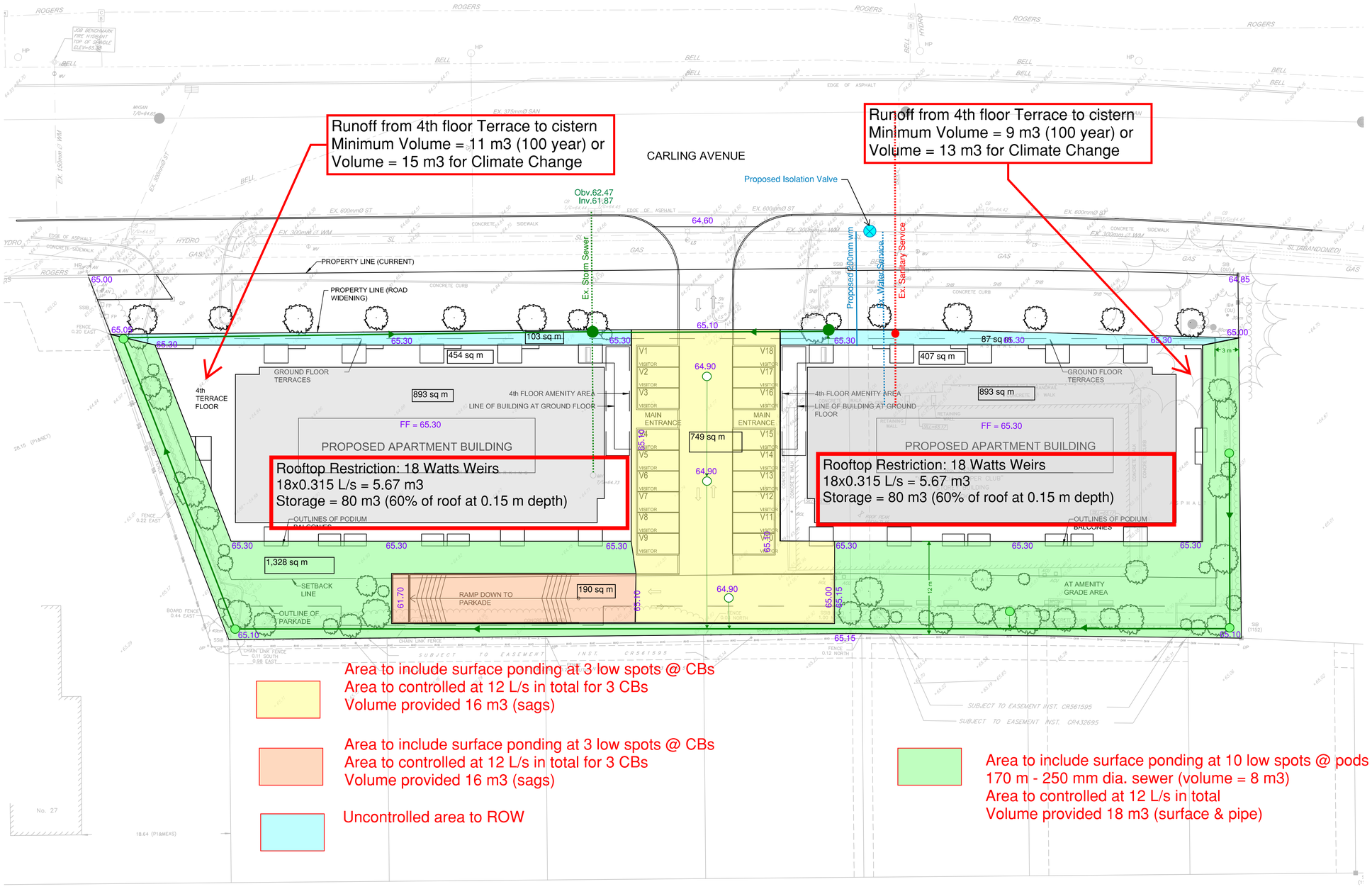
FUNCTIONAL SERVICING, GRADING and EROSION AND SEDIMENT CONTROL PLAN

DESIGN:	L.D.
DRAWN:	B.R.
CHECKED:	G.F.
JLR #:	31134

DRAWING #: F-SGE

File Location: P:\31000\31134-000 - Site Plan - 3430 Carling Ave\5-Production\1-Civil\31134 C SITE PLAN.dwg

PLOT DATE: Thursday, July 8, 2021 4:43:01 PM



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CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

3430 CARLING AVENUE

OTTAWA, ONTARIO

DRAWING:

FUNCTIONAL STORMWATER MANAGEMENT PLAN

DESIGN:	L.D.
DRAWN:	B.R.
CHECKED:	G.F.
JLR #:	31134

DRAWING #: FSCP

File Location: P:\31000\31134-000 - Site Plan - 3430 Carling Ave\5-Production\1-Civil\31134 C SITE PLAN.dwg

PLOT DATE: Thursday, July 8, 2021 4:43:01 PM

Appendix A

Site Plan and Topographical Survey

CARLING AVENUE

CENTERLINE OF ASPHALT

23226

PROPERTY LINE (CURRENT)

PROPERTY LINE (ROAD WIDENING)

7443 (ROAD WIDENING)

7456 (ROAD WIDENING)

7597 (ROAD WIDENING)

7938 (ROAD WIDENING)

1387

1914

1953

1000

1674

3000 (SETBACK)

7817

10058

46188

3350

18712

2778

GROUND FLOOR TERRACES

4th FLOOR TERRACE

4th FLOOR AMENITY AREA

LINE OF BUILDING AT GROUND FLOOR

MAIN ENTRANCE

MAIN ENTRANCE

V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12 V13 V14 V15 V16 V17 V18 VISITOR

PROPOSED 9 STOREY APARTMENT BUILDING

19447

3000 (SETBACK)

1700

6057

OUTLINES OF PODIUM BALCONIES

2327

1901

4805

4339

5200

6700

5200

4148

4573

14636

SETBACK LINE

OUTLINE OF PARKADE

RAMP DOWN TO PARKADE

11648

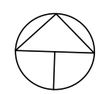
7500 (SETBACK)

6000

11634

AT GRADE AMENITY AREA

14459



3430 CARLING AVE SITE PLAN

|2103|1:400

Project1 Studio Incorporated | mail@project1studio.ca | project1studio.ca

project1 studio

UNIT AREAS		
Name	Count	Area
LEVEL 01		
1 BED	3	531 SF ... 535 SF
1 BED +	7	532 SF ... 787 SF
2 BED	11	727 SF ... 1263 SF
2 BED +	2	992 SF ... 1037 SF
STUDIO	1	412 SF
24		
LEVEL 02		
1 BED	2	654 SF
1 BED +	6	671 SF ... 827 SF
2 BED	15	783 SF ... 1252 SF
2 BED +	4	988 SF ... 1034 SF
STUDIO	1	455 SF
28		
LEVEL 03		
1 BED	2	654 SF
1 BED +	6	671 SF ... 827 SF
2 BED	15	783 SF ... 1252 SF
2 BED +	4	988 SF ... 1034 SF
STUDIO	1	455 SF
28		
LEVEL 04		
1 BED	2	654 SF
1 BED +	6	671 SF ... 827 SF
2 BED	15	783 SF ... 1252 SF
2 BED +	4	988 SF ... 1034 SF
STUDIO	1	455 SF
28		
LEVEL 05		
1 BED	4	571 SF
1 BED +	6	559 SF ... 630 SF
2 BED	8	883 SF ... 946 SF
2 BED +	2	1022 SF
20		

UNIT AREAS		
Name	Count	Area
LEVEL 06		
1 BED	4	571 SF
1 BED +	6	559 SF ... 630 SF
2 BED	8	883 SF ... 946 SF
2 BED +	4	1022 SF ... 1062 SF
22		
LEVEL 07		
1 BED	4	571 SF
1 BED +	6	559 SF ... 630 SF
2 BED	8	883 SF ... 946 SF
2 BED +	4	1022 SF ... 1062 SF
22		
LEVEL 08		
1 BED	4	571 SF
1 BED +	6	559 SF ... 630 SF
2 BED	8	883 SF ... 946 SF
2 BED +	4	1022 SF ... 1062 SF
22		
LEVEL 09		
1 BED	4	571 SF
1 BED +	6	559 SF ... 630 SF
2 BED	8	883 SF ... 946 SF
2 BED +	4	1022 SF ... 1062 SF
22		
Total : 216		

Gross Floor Area		
Level	Area	Area (SF)
LEVEL 01	2431 m²	26171 SF
LEVEL 02	2501 m²	26919 SF
LEVEL 03	2501 m²	26919 SF
LEVEL 04	2501 m²	26919 SF
LEVEL 05	1786 m²	19220 SF
LEVEL 06	1786 m²	19220 SF
LEVEL 07	1786 m²	19220 SF
LEVEL 08	1786 m²	19220 SF
LEVEL 09	1786 m²	19220 SF
Total:	18862 m²	203031 SF

Leasable Floor Area		
Level	Area	Area (SF)
LEVEL 01	1873 m²	20159 SF
LEVEL 02	2320 m²	24967 SF
LEVEL 03	2320 m²	24967 SF
LEVEL 04	2320 m²	24967 SF
LEVEL 05	1419 m²	15275 SF
LEVEL 06	1616 m²	17399 SF
LEVEL 07	1616 m²	17399 SF
LEVEL 08	1616 m²	17399 SF
LEVEL 09	1616 m²	17399 SF
Total:	16716 m²	179933 SF

Unit Breakdown			
Name	Count	Total Area	Percentage
1 BED	29	16938 SF	13%
1 BED +	55	36082 SF	26%
2 BED	96	92362 SF	44%
2 BED +	32	32776 SF	15%
STUDIO	4	1775 SF	2%
Total : 216		179933 SF	

Parking Count	
Level	Count
LEVEL P2	128
LEVEL P1	126
LEVEL 01	18
Total : 272	

Parking Requirement
with Current Bylaw

260 Resident parking stalls
1.2 stalls per unit

43 Visitor parking stalls
0.2 stalls per unit

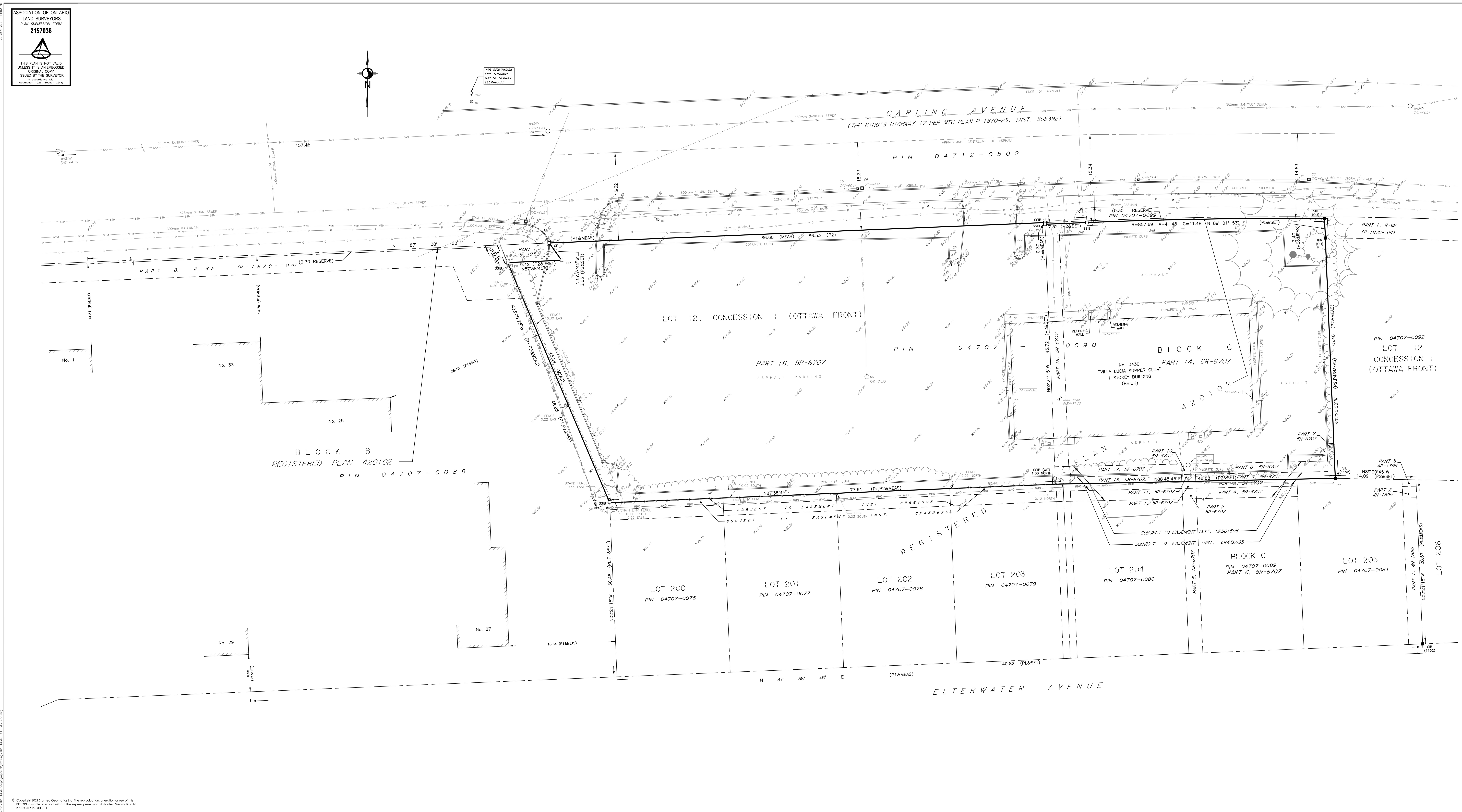
Total : 300

3430 CARLING AVE AREAS AND STATISTICS

|2103| NTS

Project1 Studio Incorporated | mail@project1studio.ca | project1studio.ca

project1 studio



TOPOGRAPHIC PLAN OF SURVEY

PART OF BLOCK C
REGISTERED PLAN 420102
AND
PART OF LOT 12
CONCESSION 1 (OTTAWA FRONT)
(GEOGRAPHIC TOWNSHIP OF NEPEAN)
CITY OF OTTAWA

Scale 1:250

5 0 5 10 15 METRES

METRIC CONVERSION

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

BEARING NOTE

BEARINGS ARE GRID, DERIVED FROM THE CAN-NET VRS NETWORK OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76°30' WEST LONGITUDE MTM ZONE 9. NAD83 (ORGINAL).

19773035 N:5006060.42 E:324888.04
19680191 N:5033564.26 E:388064.94

FOR BEARING COMPARISONS, A ROTATION OF 0° 26'15" COUNTER-CLOCKWISE HAS BEEN APPLIED TO BEARINGS ON PL & P2.

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET NETWORK MONUMENT: OTTAWA ELEVATION=95.230.

UTILITY NOTE

ELEVATION OF UNDERGROUND SERVICES ARE APPROXIMATE AND ARE PER CITY OF OTTAWA SHEETS, AND MUST VERIFIED PRIOR TO CONSTRUCTION.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
PL	"	REGISTERED PLAN 420102
P1	"	PLAN BY SG DATED JUNE 26, 2012
P2	"	PLAN 5R-6707
P3	"	PLAN 4R-193
P4	"	PLAN BY SG DATED JUNE 26, 2012
P5	"	PLAN R-62
ACU	"	AIR CONDITIONING UNIT
AN	"	ANCHOR
AP	"	AIR PUMP
BOL	"	BOLLARD
BOUL	"	BOULDER
CB	"	CATCH BASIN
DCB	"	DOUBLE CB
CBMH	"	CB MANHOLE
DCBMH	"	DOUBLE CB MANHOLE
SICB	"	SIDE INLET CB
CHM	"	CHIMNEY
DRN	"	DRAIN
EPOST	"	ELECTRICAL OUTLET
FP	"	FLAG POLE
FL	"	FLOOD LIGHT
GP	"	POLE GUYWIRE
GSR	"	GAS SERVICE REGULATOR
GV	"	GAS VALVE
HLS	"	HYDRO LIGHT STANDARD
HM	"	HYDRO METER
HTN	"	HYDRO TRANSFORMER
HW	"	HAND WELL
HYD	"	FIRE HYDRANT
JBX	"	JUNCTION BOX
LS	"	LIGHT STANDARD
MB	"	MAILBOX
MP	"	MONITORING PIN
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHB	"	MAINTENANCE HOLE BELL
MHF	"	MAINTENANCE HOLE FIBRE OPTIC
MHH	"	MAINTENANCE HOLE HYDRO
MHSA	"	MAINTENANCE HOLE SANITARY
MHST	"	MAINTENANCE HOLE STORM
MHT	"	MAINTENANCE HOLE TRAFFIC
MW	"	MONITORING WELL
SN	"	SIGN
TB BELL	"	TERMINAL BOX - BELL
TB CATV	"	TERMINAL BOX - CABLE
TCB	"	TRAFFIC CONTROL BOX
UP	"	UTILITY POLE
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
WV	"	WATER VALVE
	"	TREE STUMP
	"	TREE CONIFEROUS
	"	TREE DECIDUOUS

—— T —— T —— T ——
UNDERGROUND TELEPHONE

—— P —— P —— P ——
UNDERGROUND HYDRO

—— WTM —— WTM —— WTM ——
WATERMAIN

—— G —— G —— G ——
GASMAIN

—— STM —— STM —— STM ——
STORM SEWER

—— SAN —— SAN —— SAN ——
SANITARY SEWER

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 19th DAY OF APRIL, 2021.

April 20, 2021
DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

SRO MAP COORD.= 356726.90, 5023786.16

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420
stantec.com

DRAWN: NJ	CHECKED: AB	PM: BW	FIELD: ES/KC	PROJECT No.: 161614346-111

This plan was signed with a scanned signature as a result of the Emergency Order related to the COVID-19 pandemic.

Appendix B

Pre-consultation notes and

Email Correspondences

File No.:
Date: March 2, 2021

3430 Carling
Pre-Consultation Meeting Minutes
Meeting Date: February 22, 2021

Attendee	Role	Organization
Lisa Stern	Planner	City of Ottawa
Randolph Wang	Urban Designer	
Neeti Paudel	Transportation	
Reid Shepherd	Parks Planner	
Jessica Valic	Infrastructure PM	
Mark Richardson	Forester	
Miguel Tremblay	Planner	Fotenn
Nico Church	Planner	
Edward Hayes		
Lucie Dalrymple		
Randy Koolwine		
Guy Forget		
Raphael Esposito		
Mark Baker		

Comments from the Applicant:

1. Develop two 9 storey buildings on a 4 storey podium on the subject lands.

Planning Comments:

1. The proposal is subject to a Major Zoning Bylaw Amendment and Complex Site Plan application. The application form, timeline and fees can be found here.
2. The subject lands are designated General Urban Area in the City's Official Plan and are zoned GM20[2628]H18.5. The site specific exception permits a non-accessory parking lot as a temporary use on the subject lands.
3. The permitted FSI on the site is 2.0, as such Section 37 applies to the proposal.
4. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication Bylaw.
5. The site is not located within a target area of intensification as identified under Section 2.2.2 Policy 3, nor is the site located in proximity to rapid transit. Building heights within the General Urban Area will be predominantly low-rise. High-rise may be considered for sites that are in proximity to frequent transit or are in an area already characterized by taller buildings but still subject to compatibility analysis.
6. Although the larger deep parcels at the west and east ends of block permit heights up to 34m, the property to the east zoned LC (Local Commercial) Zone has a permitted height of 12m.
7. It will be up to the applicant to demonstrate what compatibility measures are put in place such that the proposal fits well with the abutting low-rise residential homes as well as those across Carling.
8. The planning rationale should discuss existing context of the surrounding area and demonstrate compatibility with abutting uses including the low rise residential across Carling and should discuss transitions including landscaping along the northerly property line and access/circulation.
9. Please consult with the Ward Councillor prior to submission.

Urban Design:

1. A Design Brief is required as part of the submission. The Terms of Reference of the Design Brief is attached for convenience. The proposed 9-storey buildings are significantly taller than the surrounding buildings. Therefore, a wind study is required in addition to a shadow study. The standard Terms of Reference for a wind study can be found here.
2. With respect to the design concept presented at the preconsulation meeting:
    a. The narrow bar building (approximately 16m in depth) concept is quite refreshing.
    b. The intent to stagger the two buildings is also appreciated. However, the placement of the buildings should take into considerations a number of factors, including the ability to provide effective built form transition to the low-rise area to the south. While a continuous street wall condition along Carling may not be most desirable at this location, it is conceivable that locating the proposed buildings as further away from the low-rise area will be most effective to address concerns of transition.
    c. Considerations should be given to differentiating the two buildings with respect to both massing and architecture.
    d. The proposed 4-storey podium may be inappropriate for the context. Considerations should be given to a 2 or 3 storey podium to reflect the form of the existing buildings in the vicinities.
    e. Please demonstrate how transition will occur at the back of the site. The 45 degree angular plane is a common tool to use to measure the effectiveness of built form transition.
    f. Please ensure the provision of a landscape buffer along the rear fence as required by zoning to allow for landscape screening and healthy growth of canopy trees.
    g. The site is isolated from the surrounding neighbourhood. Sufficient at grade amenity spaces should be provided at the rear of the property.
3. It is important to explore a few site plan and massing options in the next step. A second preconsultation may be required once these options are developed.

Forestry:

1. a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    a. an approved TCR is a requirement of Site Plan approval.
    b. The TCR may be combines with the Landscape Plan
2. As of January 1 2021, any removal of privately or publicly (City) owned trees 10cm or larger in diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
    a. If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester
    b. Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit
4. the TCR must list all trees on site by species, diameter and health condition
5. the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site

6. Trees should be identified by ownership – Privately owned on-site trees; Privately owned off-site trees; City owned trees; Co-owned trees (growing on a property boundary)
7. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
8. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
    a. the location of tree protection fencing must be shown on a plan
    b. show the critical root zone of the retained trees
    c. if excavation will occur within the critical root zone, please show the limits of excavation
9. the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
10. For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

Transportation:

1. Follow Traffic Impact Assessment Guidelines
    a. Start this process as soon as possible.
    b. Applicant advised that their application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable). Collaboration and communication between development proponents and City staff are required at the end of every step of the TIA process.
    c. Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
2. Noise Impact Studies required for the following:
    a. Road
    b. Stationary (due to the proximity to neighbouring exposed mechanical equipment) or (if there will be any exposed mechanical equipment due to the proximity to neighbouring noise sensitive land uses)
3. Clear throat requirements for more than 250 apartment units on an arterial/major collector is 40m.
4. Right of way protection on Carling Road at this location is 44.5m. Ensure this is protected.
5. On site plan:
    a. Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
    b. Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).
    c. Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
    d. Show lane/aisle widths.
    e. Sidewalk is to be continuous across access as per City Specification 7.1.
6. The City recommends development on private property be in accordance with the Accessibility Design Standards (AODA legislation). As the site proposed is residential, it is suggested that the design conforms to the Site Plan Checklist, which summarizes AODA requirements (attached).

Engineering:

Water

Available Watermain: 305mm (CI)

- Per WDG 4.3.1, where basic demand is greater than 50 m3/day, there shall be a minimum of two water services, separated by an isolation valve, to avoid creation of vulnerable service area
- Per WDG 4.4.7.2, District Meter Area (DMA) Chamber is required for services greater than 150mm in diameter

Boundary Conditions

Request prior to first submission. Contact assigned City Infrastructure Project Manager with the following information:

- Location of service(s)
- Type of development and required fire flow (per FUS method – include FUS calculation sheet with boundary condition request)
- Average Daily Demand (l/s)
- Maximum Hourly Demand (l/s)
- Maximum Daily Demand (l/s)

Sanitary

Available Sanitary Sewer: 375mm PVC

- There may be limited capacity in the downstream sewer system. Coordination will be required to determine if the existing sanitary sewer system has sufficient capacity to support the proposed development. Please confirm the proposed sanitary demands for the proposed development, calculated using the most up to date SDG, and provide to the City of Ottawa Infrastructure Project Manager.

Storm

Available Storm Sewer: 600mm (CONC)

- Roof drains to be connected downstream of any incorporated ICD within the SWM system.
- Where service lateral connection is greater than 50% of the diameter of the main sewer, a maintenance hole will be required at the connection.

Stormwater Management

- Quantity Control
    - Required for the site up to and including the 100-yr storm event.
    - Control to the 2-year storm event
    - Time of Concentration (Tc): pre-development or maximum=10min
    - Allowable runoff coefficient(c): Lesser of pre-development or c=0.5.
    - If underground/inline stormwater storage is proposed, an average release rate equal to 50% of the determined peak allowable rate must be used. Otherwise, disregard the underground/inline storage as available storage or provide modeling to support the proposed design. The reasoning for this restriction is that the discharge rate at full storage is not representative of the discharge rate for more frequent storm events. Halving the discharge rate compensates for the inaccuracies of the modified rational method when underground storage is used.
    - Provide both pre and post development stormwater management plans, showing individual drainage areas and their respective coefficients.
    - If roof storage is proposed, please provide a roof drainage plan showing the 5 and 100-year storm ponding levels. Include the roof drain type, opening settings, and flow rate.

- Quality Control: Please consult with the Mississippi Valley Conservation Authority (MVCA) regarding water quality control restrictions for the subject site. Include correspondence in report.
- Ministry of Environment, Conservation, and Parks (MECP): Designer to determine if approval for sewage works under Section 53 of OWRA is required and to determine the type of application required. Reviews will be done through Transfer of Review or Direct Submission.

Phase I and Phase II ESA

- Phase I ESA is a requirement; Phase II ESA requirement will be dependent on the result of the Phase I ESA.
- Phase I ESA must include Ecolog ERIS Report.
- Phase I ESAs and Phase II ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
- Phase I/II ESA to comment on the need for a Record of Site Condition for property development.

Geotechnical Investigation

- Required for entire development area
- Retaining walls greater than 1.0m must be designed by a Professional Engineer. Plans to be submitted with the Application.

Exterior Lighting

- If exterior light fixtures are proposed, provide a plan showing the location of all exterior fixtures and include a table providing fixture details (make, model, mounting heights). All external light fixtures must meet the criteria for full cut-off classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), resulting in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). Provide certification from a relevant Professional Engineer.

Other

- Road cut moratorium in place on Carling Avenue. Road cuts may be prohibited in upcoming years and/or road cut fees increased. Specifics can be discussed when application is submitted.

General Information

1. The Servicing Study Guidelines for Development Applications are available at the following address: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#servicing-study-guidelines-development-applications
2. Servicing and site works shall be in accordance with the following documents:

- Ottawa Sewer Design Guidelines (October 2012) (including subsequent Technical Bulletins)
- Ottawa Design Guidelines – Water Distribution (2010) (including subsequent Technical Bulletins)
- Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
- Ottawa Standard Tender Documents (latest version)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).

4. Any proposed work in utility easements requires written consent of easement owner.
5. All submitted report and plan pdf documents to be flattened and unsecured to allow for editing.
6. All documents prepared by Engineers shall be signed and dated on the seal.

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.
Please contact me at Lisa.Stern@ottawa.ca or at 613-580-2424 extension 21108 if you have any questions.

Guy Forget

From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: Wednesday, March 10, 2021 9:46 AM
To: Lucie Dalrymple
Cc: Nico Church; Raphaël Esposito; Guy Forget; Edward Hayes; Miguel Tremblay; Stern, Lisa; Valic, Jessica
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Good Morning Lucie,

The sanitary sewer can accommodate the increase. Since this is a partially separated area, the system is impacted during severe wet weather periods. For this reason, a sanitary backwater valve will be a requirement.

Concerning the storm, control to the 5 year will be permitted.

Thanks,

Jessica

From: Lucie Dalrymple <ldalrymple@jlrichards.ca>
Sent: March 03, 2021 9:54 AM
To: Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Nico Church <church@fotenn.com>; Raphaël Esposito <resposito@omnipex.ca>; Guy Forget <gforget@jlrichards.ca>; Edward Hayes <e.hayes@tempbridge.ca>; Miguel Tremblay <tremblay@fotenn.com>; Stern, Lisa <lisa.stern@ottawa.ca>
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Good morning Jessica,

Thank you for the detailed pre-consultation notes. Further to these notes, we wish to obtain confirmation from the City on the following:

Sanitary

In keeping with the recommendation noted in your pre-consultation notes, please find attached sanitary peak flow calculations for the City to review and confirm available residual capacity to accommodate the proposed redevelopment. Please note that the theoretical sanitary calculations were carried out based on a redevelopment of 250 residential units. Given that the unit statistics is unknown, a blended density of 1.8 person per unit (as per Table 4.1 of the OSDG) was used. Based on the assessment of peak flows for a 250-unit development, we have estimated the peak wastewater flows to be 5.16 L/s, an increase of 4.76 L/s compared to the existing theoretical wastewater of 0.20 L/s. Note that these peak flows include dry & wet I/I of 0.33 L/s per the latest Technical Bulletins.

Storm

The notes identifies the need to detain the 1:100 year post-development peak flows to the 1:2 year allowable peak flow. Given that the dedicated storm sewer outlet is the Carling Avenue 600 mm diameter trunk sewer, the design basis of this sewer in the 80's was likely carried out using a greater recurrence (10 year) as Carling Avenue was at the time an arterial. Given that the calculation method was slightly modified since the 80's, would the City accept that the design target for the project be modified to the 1:5 year allowable peak flow (lesser of the pre-development or C of 0.5)? Based on preliminary calculations, the difference between the 1:2 year & 1:5 year at a C of 0.50 is ±18.5 L/s.

Thank you,

Lucie

Lucie Dalrymple, P.Eng.
Associate
Manager, Planning & Development

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-804-5356 Cell: 613-913-4368

J.L. Richards & Associates Limited is proactively doing our part to protect the wellbeing of our staff and communities while improving our communication technology. ***We are pleased to announce that we have implemented direct phone lines for all of our staff, allowing you to connect with us regardless of whether we are working remotely or in the office.*** *We are dedicated to delivering quality services to you through value and commitment, as always. Please reach out to us if you have any questions about your project.*

From: Stern, Lisa <lisa.stern@ottawa.ca>
Sent: Monday, February 22, 2021 3:00 PM
To: Nico Church <church@fotenn.com>; Lucie Dalrymple <ldalrymple@jlrichards.ca>
Cc: Valic, Jessica <jessica.valic@ottawa.ca>
Subject: FW: Questions for Pre-Consult for 3430 Carling Ave

Lucie and Nico,

Further to our preconsultation meeting this afternoon please find Jessica's comments attached. Please feel free to reach out to her directly if you have any questions or concerns. In case any updates are required, I am looking to have the minutes of the meeting/requirements finalized next week.

Lisa Stern MCIP, RPP
Planner
Development Review West

Urbaniste
Examen des demandes d'aménagement ouest

City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 21108
ottawa.ca/planning / ottawa.ca/urbanisme

From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: February 22, 2021 9:29 AM
To: Stern, Lisa <lisa.stern@ottawa.ca>
Cc: Valic, Jessica <jessica.valic@ottawa.ca>
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Hi Lisa,

Unfortunately, I have to take the day off so I'm not going to be able to attend the preconsult this afternoon. Sorry. I've attached my notes in advance for you. The answers to the questions that were posed are found within my notes, but I will email Lucie back directly later this week. You can flag to her that the sanitary sewer capacity might be an issue. What I need from her is to confirm what the expected sanitary demand will be that was calculated using our most recent sewer design guidelines. I'll need to have internal discussions when I get that number.

Something else to mention –this section of Carling was recently redone so there is a road cut moratorium. Restrictions and associated fees for the moratorium will only become clearer once the development moves forward and we have a better idea of timing.

Please do not hesitate to contact me with any questions/concerns.

Regards,

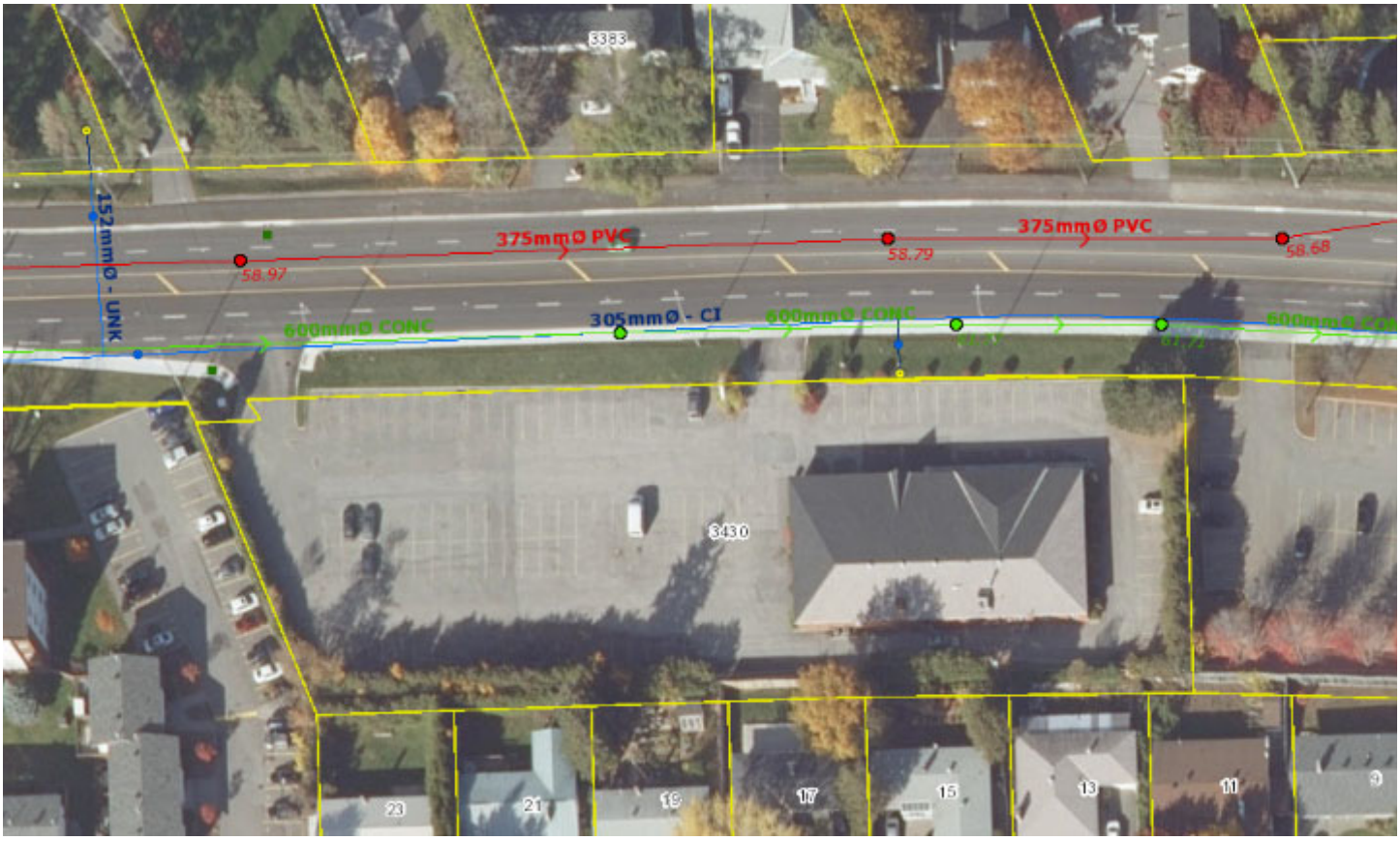
Jessica Valic, E.I.T.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - West
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 15672
jessica.valic@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Stern, Lisa <lisa.stern@ottawa.ca>
Sent: February 19, 2021 1:12 PM
To: Nico Church <church@fotenn.com>; Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Jess – plea see the questions below in advance of our preconsultation on Monday.



Water Servicing Question:

- We anticipate that two domestic water services will be required to service the property, however, could the city confirm if it will be mandatory and also confirm if a valve and valve box in between the two services will be required.

Storm Sewer Servicing Question:

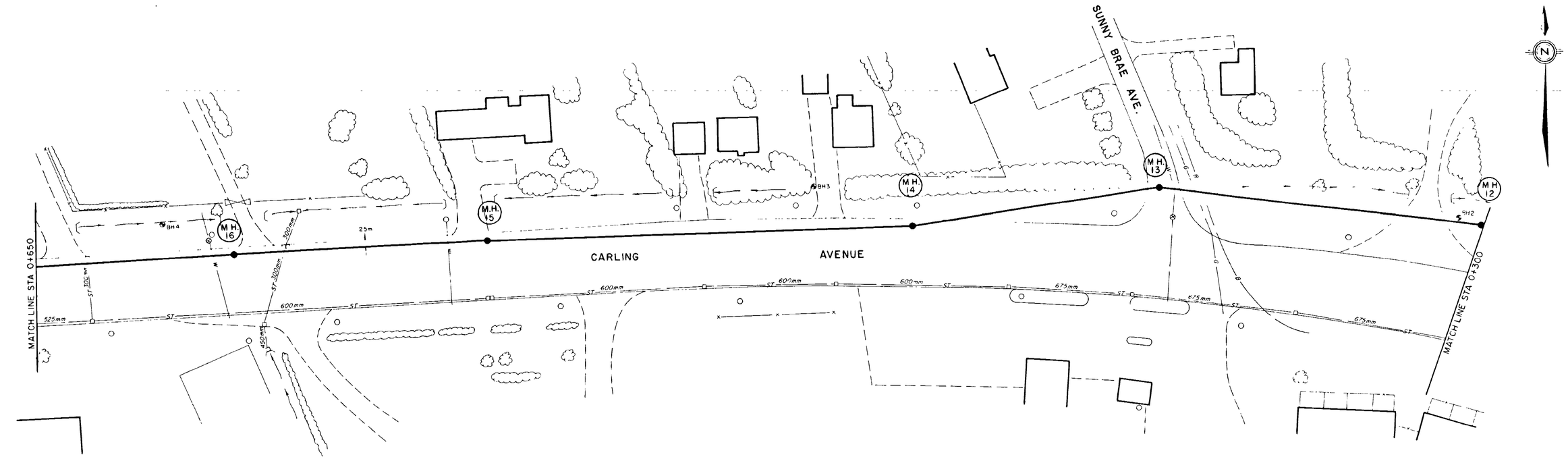
- Given that the existing site condition is mostly all hard surface and that the outlet to the Ottawa River is in close proximity (+/- 450m), can the City confirm the storm discharge criterion that will be imposed for the proposed redevelopment.
- Given the proposed land usage, tower, elevated podium, TSS will be limited to small areas adjacent to the building structure, we assume that there will not be any quality control requirements. Please advise.

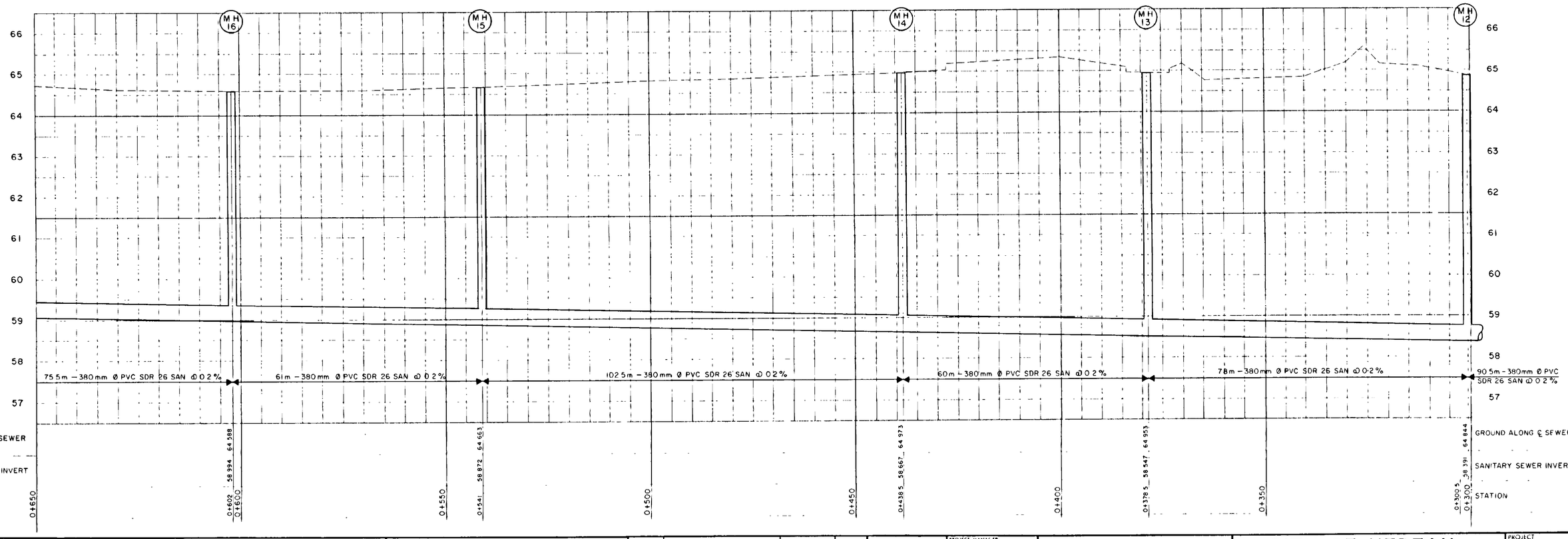
Sanitary Sewer Servicing Question:

- From geoOttawa, we note that the existing 375mm dia sanitary sewer along the property frontage was constructed at a slope of 0.19% and has a capacity of approximately 78 l/s. Given that this sewer was constructed in the 1980s, it is understood that the design guidelines were those prior to the latest 2018 update to the wastewater City guidelines. Furthermore, we determined by using former City design guidelines, that this existing sewer would have had the capacity to accommodate a maximum of 5000 equivalent population for a given tributary area of approximately 44.5 ha. These same parameters (i.e., 375 mm dia at 0.18%, 5000 equivalent population, and tributary area of 44.5 ha) were then re-imputed to calculate today's peak flow based on the City's current design guidelines. These calculations generated a reduced peak flow of 60 l/s. When comparing the peak flows generated from both sets of design guidelines (i.e., former and current), we note that a theoretical residual capacity of 18 l/s (78 l/s – 60 l/s) could potentially be available. At a functional level, this would indicate that the redevelopment of 3430 Carling Ave with a proposed 9-storey residential development of 250 units with a peak flow of approximately 5 l/s could be accommodated by this existing 375 mm dia. sewer. Could the City confirm that this approach is acceptable to evaluate the residual capacity of the existing sanitary sewer to allow the development of 250 units.

Appendix C

Background Drawings





DATE	REVISION	APPROVED	NO
DEC /82	REV. PER CITY OF NEPEAN		1

PROJECT MANAGER	O B J
DEPT. SUPERVISOR	H C M
JOB CAPTAIN	H C M
DRAWN: R H	CHECKED: H C M
APPROVED	DATE

Giffels
(Giffels Associates Limited)
Consulting Engineers

CITY OF NEPEAN

PLAN & PROFILE

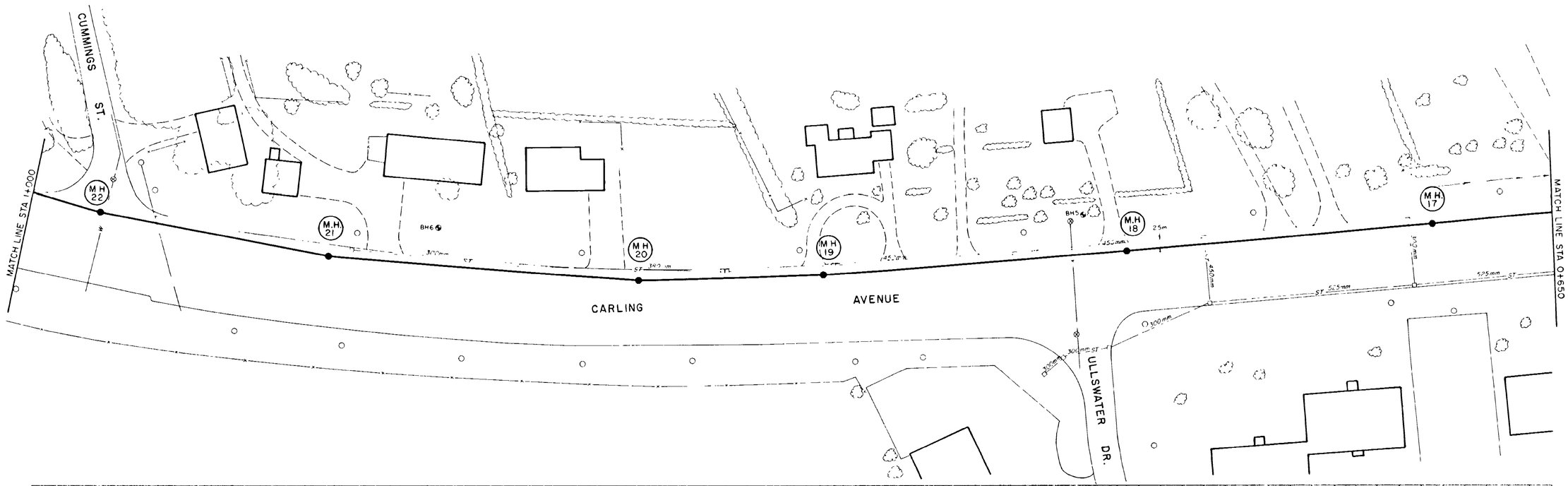
CARLING AVENUE SANITARY SEWER

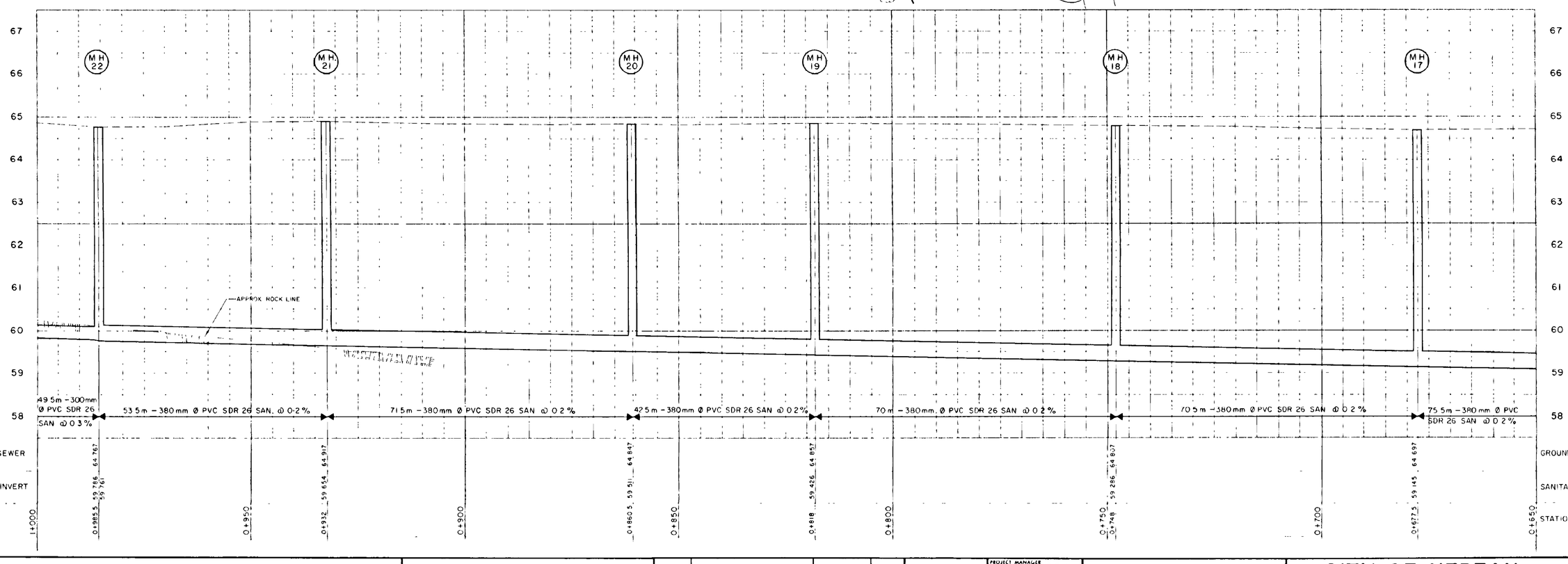
STA 0+300 to STA 0+650

PROJECT W8255

DWG NO 3

SCALE HORIZ – 1:500
VERT – 1:50





DEC/82	REV. PER CITY OF NEPEAN		1	
DATE	REVISION	APPROVED	NO	

PROJECT MANAGER: O B J
DEPT SUPERVISOR: H C M
JOB CAPTAIN: H C M
DRAWN: R H | CHECKED: H C M
APPROVED | DATE

Giffels
Giffels Associates Limited
Consulting Engineers

CITY OF NEPEAN

PLAN & PROFILE

CARLING AVENUE SANITARY SEWER

STA. 0+650 to STA 1+000

PROJECT: W8255
DWG NO: 4
SCALE: HORIZ – 1:500, VERT – 1:50

6692

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
WORKS DEPARTMENT
HIGHWAY No. 17
STA. 80+00 to 95+00
JAN. 27-70
706-
R. C. GODDING
PROVINCE OF ONTARIO
FOR DETAIL SEE 808-P
FOR DETAIL SEE 706-6
SUNNYBRAE AVE.
ROCKY POINT RD.
CRYSTAL BEACH
PRIVATE LANE
FENCE TO BE ERECTED BY OTHERS
CONCRETE SINGING MEDIAN
LIMIT OF PAVING
LIMIT OF PAVING AND CURBS STA 1+00
STORM SEWER
PROPOSED STORM SEWER
6" PERF. SUB DRAIN
100' TAPER
200' TAPER
EXISTING RIGHT OF WAY
PROP. RIGHT OF WAY
COMM. ENT. C.S.-10 (MOD.)
FENCE DD-901
DD-601-B
DD-602-L
DROP CURB
U.B.T.C.
6" W.M.
12" W.M.
DUCTILE IRON
TO CONNECT TO EXIST. W.M.
1+64 1/16 BEND
1+67 1/16
2+03 6" SLEEVE
2+06 8x6" REDUCER
CULV. No. 86 STA 94+22 18" C.S.P.
CULV. No. 90 STA 90+55 18" C.S.P.
CULV. No. 74 STA 81+30 24" C.S.P.
EXISTING ROAD GRADE
PROP. GRADE OVER 12" W.M.
EXIST. GRADE OVER PROP. 12" W.M.
EXIST. 3'x2' CONC. CULV.
21" C.B. LEAD
PROP. 27" C.B. LEAD
CLAY
215.00
210.00
205.00
200.00
12" DUCTILE IRON CLASS 2 WATER MAIN
706-3
APRIL 7/71 AS BUILT
REV. JUNE 29-70. MABEL ST. 6" RELOCATED TO CHAINAGE 81+ V.C. ON 6" W.M. RELOCATED.
WATERMAIN RELOCATED AS MEASUREMENTS.
V.C. RELOCATED TO CHAINAGE
PROFILE REVISED: 93+00 - 95+
ELEVATIONS
SURFACE
ROAD GRADE
D.H.O.
1967
TOP of WATER MAIN
SAN. SEWER INVERT
STATION
DATE
VALVE
HYDRANT
6"x12" S. BR.
95+00
93+25
93+00
92+00
91+00
90+83
90+00
89+00
88+00
87+38
87+00
86+90
86+00
85+00
84+00
83+70
83+50
83+00
82+42
82+17
82+00
81+65
81+32
81+26
81+00
80+00

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
WORKS DEPARTMENT
HIGHWAY No. 17
STA. 95+00 to 110+00
W. L. KEAY
F. F. AYERS
Hor. 1"=50'
Vert. 1"=5'
JAN. 27-70
706-4
R. C. GODDING
PROVINCE OF ONTARIO
FENCE TO BE ERECTED BY OTHERS
CUMMINGS AVE
LIMIT OF PAVING STA. 1+50
6" PERF. SUB DRAIN
CONCRETE SINGING MEDIAN
TERMINAL SECTION DD-642
LIMIT OF CURB AND GUTTER DD-602-L STA 106+50
EXISTING RIGHT OF WAY
FENCE DD-901
PROP. RIGHT OF WAY
TRANSITION SECTION
TS 100+06.51 S. EDGE MED.
=H.O.ST. 100+06.51 O/S 2.0' LINE 'E'
ULLSWATER DR.
MATCH EXISTING CURBS AT LIMIT OF GRADING
TO CONNECT TO EXISTING W.M.
LIMIT OF PAVING STA. 1+50
BC 1+02.90
EC 2+20.25
P.I. 1+62.18
P.I. 105+28.66
S.C. 102+31.51 S. EDGE MED
CUT CROSS ON CONC CURB
EXISTING RD. GRADE
PROP. GRADE OVER 12" W.M.
EXIST. GRADE OVER PROP. 12" W.M.
NO FURTHER PENETRATION
CLAY
EXIST. W.M.
12" STORM
12" DUCTILE IRON CLASS 2 WATER MAIN
VALVE
HYDRANT
APRIL 7/71 AS BUILT
REV. JUNE 29-70 WATERMAIN REL. AS PER MEASUREMENTS
PROFILE REVISED
706-4
ELEVATIONS
SURFACE
ROAD GRADE
D.H.O.
TOP of WATER MAIN
SAN. SEWER INVERT
STATION
DATE
1967

Form DB-RD-41

1020

-1361

CONTRACT No. 73-37 (21)
W.P. No. 224-65

PLAN OF HWY. Nº 17

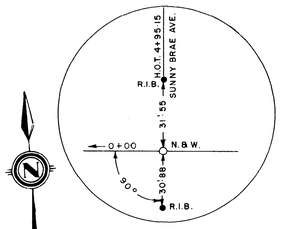
STA. 80+00 TO STA. 95+00

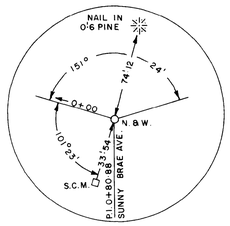
FENCO
FOUNDATION OF CANADA ENGINEERING CORPORATION LIMITED

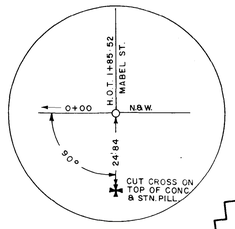
SCALE 25 0 50

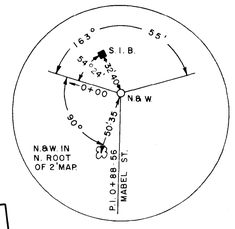
No. 3194-H-21

MANHOLES AND CATCH BASINS						
Nº	STATION	LOCATION	TYPE	TYPE OF COVER	GRATE EL.	LOW INV.
112	80+00	E.P. Lt	DD701A	DD713	212.75	199.97
113	81+45	E.P. Lt	DD701A	DD713	212.76	200.61
114	0+80 SR	E.P. Lt	DD701A	DD713	211.44	201.50
115	0+80 SR	E.P. Rt	DD701A	DD713	211.38	201.70
116	82+50	DITCH Lt	DD707D	DD710	207.00	202.00
117	83+25	E.P. Lt	DD701A	DD713	212.09	201.22
118	85+75	E.P. Lt	DD701A	DD713	212.08	201.62
119	87+10	E.P. Lt	DD701A	DD713	211.83	201.77
120	88+05	E.P. Lt	DD701A	DD713	211.67	201.99
121	89+50	E.P. Lt	DD701A	DD713	211.29	202.49
122	90+50	E.P. Lt	DD701A	DD713	211.30	202.67
123	92+10	E.P. Lt	DD709	DD713	211.39	202.39
124	94+05	E.P. Lt	DD701A'	DD713	211.33	203.39
125	94+05	DITCH Lt	DD707D	DD710	207.00	204.00
126	93+75	E.P. Rt	DD709	DD713	211.59	203.75
126A						
126A	93+60	DITCH Rt	DD7.7D	DD713	208.60	204.10
117A	84+55	E.P. LT.	DD-701 A	DD713	212.28	201.43



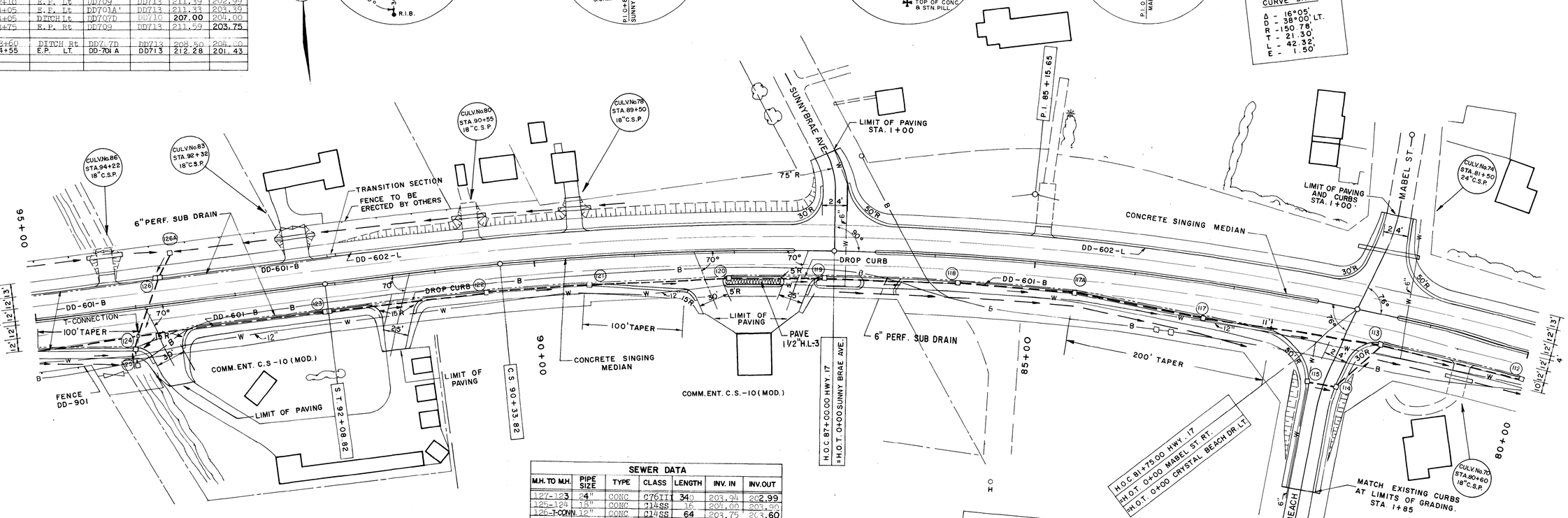






MABEL ST.
CURVE DATA

Δ - 16°05'
D - 38°00' LT.
R - 150.78'
T - 21.30'
L - 42.32'
E - 1.50'



CURVE DATA

Δ - 24°37'
Δc - 21°07'
D - 2°00' LT.
R - 2864.79'
Ts - 712.66'
Lc - 1055.83'
Es - 67.88'
Ls - 175.00'
Qs - 1°45'

SUPERELEVATION DATA
S - 0.039
PROFILE CONTROL ℄

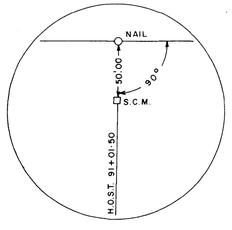
CRYSTAL BEACH DR. CURVE DATA

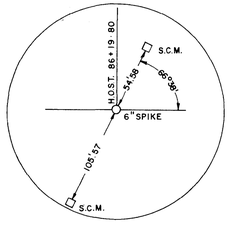
Δ - 14°39'
D - 38°00' LT.
R - 150.78'
T - 19.38'
L - 38.55'
E - 1.24'

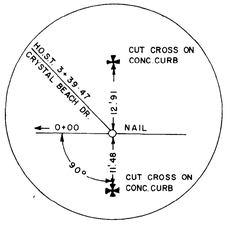
SEWER DATA						
M.H. TO M.H.	PIPE SIZE	TYPE	CLASS	LENGTH	INV. IN	INV. OUT
127-123	24"	CONC	C76III	34	203.94	202.99
125-124	15"	CONC	C14SS	16	204.00	203.90
126-T-CONN	12"	CONC	C14SS	64	203.75	203.60
124-T-CONN	12"		C14SS	14	203.90	203.80
123-122	24"	CONC	C76III	159	202.99	202.67
122-121	24"	CONC	C76III	100	202.67	202.49
121-120	24"	CONC	C76III	148	202.49	202.24
120-119	27"	CONC	C76III	96	201.99	201.77
119-118	27"	CONC	C76III	136	201.77	201.62
118-117A	27"	CONC	C76III	120	201.62	201.43
117-113	27"	CONC	C76III	180	201.22	200.86
116-115	15"	CONC	C14SS	44	204.00	201.70
* 115-114	15"	CONC	C14SS	30	201.70	201.50
114-113	15"	CONC	C14SS	60	201.50	201.00
113-112	30"	CONC	C76III	144	200.61	200.41
126A-126	12"	CONC	C14SS	26	204.00	203.75
117A-117	27"	CONC	C76 III	130	201.43	201.22
* BACKFILL SEWER TRENCH FULL DEPTH WITH GRANULAR						

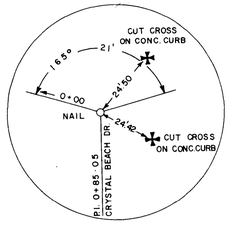
PAVEMENT ELEVATIONS			
STATION	E.P. LT.	CENTRELINE	E.P. RT.
98 + 00	211.81	212.70	213.58
98 + 50	211.81	212.62	213.42
99 + 00	211.84	212.53	213.33
89 + 50	211.50	212.45	213.25
90 + 00	211.58	212.36	213.16
90 + 50	211.50	212.27	213.04
91 + 00	211.58	212.19	212.84
91 + 50	211.50	212.14	212.66
92 + 00	211.82	212.12	212.20
92 + 50	211.50	212.12	212.02
93 + 00	211.58	212.15	211.92
93 + 50	211.65	212.20	211.85
94 + 00	211.53	212.20	211.80
94 + 50	211.83	212.32	211.83
95 + 00	211.70	212.42	211.90

PAVEMENT ELEVATIONS			
STATION	E.P. LT.	CENTRELINE	E.P. RT.
80 + 00	212.96	213.76	214.57
80 + 50	212.99	213.79	214.60
81 + 00	212.99	213.80	214.60
81 + 50	212.97	213.77	214.58
82 + 00	212.92	213.72	214.53
82 + 50	212.18	213.64	214.45
83 + 00	212.26	213.56	214.37
83 + 50	212.34	213.47	214.28
84 + 00	212.42	213.39	214.20
84 + 50	212.50	213.30	214.11
85 + 00	212.41	213.22	214.03
85 + 50	212.33	213.13	213.94
86 + 00	212.24	213.01	213.86
86 + 50	212.16	212.96	213.77
87 + 00	212.06	212.87	213.67
87 + 50	211.98	212.79	213.59
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-









7 DENOTES 6" PERFORATED SUB DRAIN PERFORATIONS DOWN

NOTE : - EARTH SHOULDERS AND SIDE SLOPES TO BE SODDED.

Appendix D1

Water Demand Calculations

Water Demand Calculations
3430 Carling Avenue (JLR 31134-001)

Unit Breakdown	**No.**	**Person Per Unit (Table 4.1)**
Studio	4	1.4
1 Bed	29	1.4
1 Bed +	55	1.4
2 Bed	96	2.1
2 Bed+	32	2.1
3 Bed	0	3.1
Total Unit Count =	216	
No. of Studios & 1-bedroom	88	units
Density	1.4	p/p/u
No. Ppl	124	ppl
No. of 2-bedroom	128	units
Density	2.1	p/p/u
No. Ppl	269	ppl
No. of 3-bedroom	0	units
Density	3.1	p/p/u
No. Ppl	0	ppl
Total Population	393	ppl
Average Day Consumption Rate	280	L/c/d
Average Day Demand	**1.27**	**L/s**
Maximum Day Peaking Factor	3.23	x Avg Day (Table 3-3 MOE)
Maximum Day Demand	**4.11**	**L/s**
Peak Hour Peaking Factor	4.84	x Max Day (Table 3-3 MOE)
Peak Hour Demand	**6.17**	**L/s**
Minimum Hour Peaking Factor	0.26	x Avg Day (Table 3-3 MOE)
Minimum Hour Demand	**0.33**	**L/s**

Appendix D2

NFPA 13 Excerpts and Fire Flow Calculation

FUS Fire Flow Calculations

3430 Carling - Mid-Rise Residential
(JLR 31134-000)

Critical Fire Area 1

Step	Parameter	Value		Note
A	Type of Construction	Ordinary		
	Coefficient (C)	1		
B	Sum of All Floors	9721	m^2	Floors 1 is 1261 sq-m, Floor 2-4 are 1300 sq-m, Floor 5-9 are 912 sq-m (areas exclude basements)
C	Height in storeys	9	storeys	Basement is excluded.
	Total Floor Area	9721	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	21691	L/min	
	Rounded Fire Flow	22000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential buildings have a limited combustible occupancy
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-3300		
	Fire Flow	18700	L/min	No rounding applied.
F	Sprinkler Protection	Automatic Fully Supervised		
	Sprinkler Credit	-50%		
	Decrease for Sprinkler	-9350	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Ordinary Unprotected Openings		Distance to north side structure is over 45 m
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:		m	
	Height of Exposed Wall:		storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance		m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Ordinary Unprotected Openings		
	Exposed Wall:	Ordinary Unprotected Openings		
	Length of Exposed Wall:	24.6	m	
	Height of Exposed Wall:	9	storeys	
	Length-Height Factor	221.0	m-storeys	
	Separation Distance	19.47	m	
	East Side Exposure Charge	15%		
	South Side Exposure			
	Exposing Wall:	Ordinary Unprotected Openings		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	52.1	m	
	Height of Exposed Wall:	1	storeys	Properties at rear of proposed site are bungalows
	Length-Height Factor	52.1	m-storeys	
	Separation Distance	12.76	m	
	South Side Exposure Charge	13%		
	West Side Exposure			
	Exposing Wall:	Ordinary Unprotected Openings		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	10.3	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	30.9	m-storeys	
	Separation Distance	36.7	m	
	West Side Exposure Charge	5%		
	Total Exposure Charge	33%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	6171	L/min	
H	Fire Flow	15521	L/min	
	Rounded Fire Flow	16000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**16000**	**L/min**	The City of Ottawa's cap does not apply since the building is a mid-rise apartment.
		267	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

11.2.2 Water Demand Requirements — Pipe Schedule Method.

11.2.2.1 Table 11.2.2.1 shall be used in determining the minimum water supply requirements for light and ordinary hazard occupancies protected by systems with pipe sized according to the pipe schedules of Section 23.7.

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

11.2.2.2 Pressure and flow requirements for extra hazard occupancies shall be based on the hydraulic calculation methods of 11.2.3.

11.2.2.3 The pipe schedule method shall be permitted as follows:

(1) Additions or modifications to existing pipe schedule systems sized according to the pipe schedules of Section 23.7
(2) Additions or modifications to existing extra hazard pipe schedule systems
(3) New systems of 5000 ft^2 (465 m^2) or less
(4) New systems exceeding 5000 ft^2 (465 m^2) where the flows required in Table 11.2.2.1 are available at a minimum residual pressure of 50 psi (3.4 bar) at the highest elevation of sprinkler

11.2.2.4 Table 11.2.2.1 shall be used in determining the minimum water supply requirements.

11.2.2.5 The lower duration value of Table 11.2.2.1 shall be acceptable only where the sprinkler system waterflow alarm device(s) and supervisory device(s) are electrically supervised and such supervision is monitored at an approved, constantly attended location.

11.2.2.6* Residual Pressure.

11.2.2.6.1 The residual pressure requirement of Table 11.2.2.1 shall be met at the elevation of the highest sprinkler.

11.2.2.6.2 Friction Loss Due to Backflow Prevention Valves.

11.2.2.6.2.1 When backflow prevention valves are installed on pipe schedule systems, the friction losses of the device shall be accounted for when determining acceptable residual pressure at the top level of sprinklers.

11.2.2.6.2.2 The friction loss of this device [in psi (bar)] shall be added to the elevation loss and the residual pressure at the top row of sprinklers to determine the total pressure needed at the water supply.

11.2.2.7 The lower flow figure of Table 11.2.2.1 shall be permitted only where the building is of noncombustible construction or the potential areas of fire are limited by building size or compartmentation such that no open areas exceed 3000 ft^2 (280 m^2) for light hazard or 4000 ft^2 (370 m^2) for ordinary hazard.

11.2.3 Water Demand Requirements — Hydraulic Calculation Methods.

11.2.3.1 General.

11.2.3.1.1 The water demand for sprinklers shall be determined only from one of the following, at the discretion of the designer:

(1) Density/area curves of Figure 11.2.3.1.1 in accordance with the density/area method of 11.2.3.2
(2) The room that creates the greatest demand in accordance with the room design method of 11.2.3.3
(3) Special design areas in accordance with 11.2.3.4

11.2.3.1.2 The minimum water supply shall be available for the minimum duration specified in Table 11.2.3.1.2.

11.2.3.1.3 The lower duration values in Table 11.2.3.1.2 shall be permitted where the sprinkler system waterflow alarm device(s) and supervisory device(s) are electrically supervised and such supervision is monitored at an approved, constantly attended location.

11.2.3.1.4 Restrictions. When either the density/area method or room design method is used, the following shall apply:

(1)*For areas of sprinkler operation less than 1500 ft^2 (139 m^2) used for light and ordinary hazard occupancies, the density for 1500 ft^2 (139 m^2) shall be used.
(2) For areas of sprinkler operation less than 2500 ft^2 (232 m^2) for extra hazard occupancies, the density for 2500 ft^2 (232 m^2) shall be used.

11.2.3.1.5 Unsprinklered Combustible Concealed Spaces.

11.2.3.1.5.1* When using the density/area or room design method, unless the requirements of 11.2.3.1.5.2 are met for buildings having unsprinklered combustible concealed spaces, as described in 8.15.1.2 and 8.15.6, the minimum area of sprinkler operation for that portion of the building shall be 3000 ft^2 (280 m^2).

(A) The design area of 3000 ft^2 (280 m^2) shall be applied only to the sprinkler system or portions of the sprinkler system that are adjacent to the qualifying combustible concealed space.

(B) The term *adjacent* shall apply to any sprinkler system protecting a space above, below, or next to the qualifying concealed space except where a barrier with a fire resistance rating at least equivalent to the water supply duration completely separates the concealed space from the sprinklered area.

11.2.3.1.5.2 The following unsprinklered concealed spaces shall not require a minimum area of sprinkler operation of 3000 ft^2 (280 m^2):

(1) Noncombustible and limited-combustible concealed spaces with minimal combustible loading having no access. The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.
(2) Noncombustible and limited-combustible concealed spaces with limited access and not permitting occupancy or storage of combustibles. The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.
(3) Combustible concealed spaces filled entirely with noncombustible insulation.
(4)*Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are directly attached

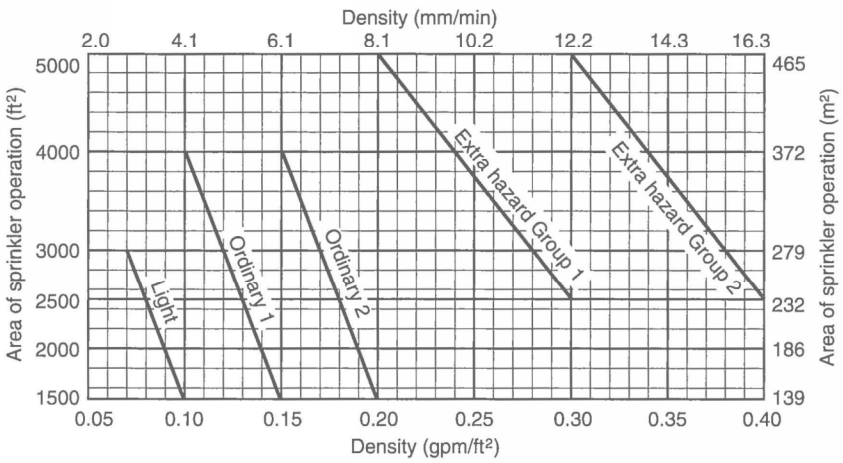


FIGURE 11.2.3.1.1 Density/Area Curves.

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

to the bottom of solid wood joists or solid limited-combustible construction or noncombustible construction so as to create enclosed joist spaces 160 ft^3 (4.5 m^3) or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered concealed space.

(5) Concealed spaces where rigid materials are used and the exposed surfaces have a flame spread index of 25 or less and the materials have been demonstrated to not propagate fire more than 10.5 ft (3.2 m) when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, extended for an additional 20 minutes in the form in which they are installed in the space.

(6) Concealed spaces in which the exposed materials are constructed entirely of fire-retardant-treated wood as defined by NFPA 703.

(7) Concealed spaces over isolated small rooms not exceeding 55 ft^2 (5.1 m^2) in area.

(8) Vertical pipe chases under 10 ft^2 (0.9 m^2), provided that in multifloor buildings the chases are firestopped at each floor using materials equivalent to the floor construction, and where such pipe chases contain no sources of ignition, piping shall be noncombustible, and pipe penetrations at each floor shall be properly sealed.

(9) Exterior columns under 10 ft^2 (0.9 m^2) in area formed by studs or wood joists, supporting exterior canopies that are fully protected with a sprinkler system.

(10) *Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are attached to the bottom of composite wood joists either directly or on to metal channels not exceeding 1 in. (25 mm) in depth, provided the adjacent joist channels are firestopped into volumes not exceeding 160 ft^3 (4.5 m^3) using materials equivalent to ½ in. (13 mm) gypsum board, and at least 3½ in. (90 mm) of batt insulation is installed at the bottom of the joist channels when the ceiling is attached utilizing metal channels.

11.2.3.2 Density/Area Method.

11.2.3.2.1 Water Supply.

11.2.3.2.1.1 The water supply requirement for sprinklers only shall be calculated from the density/area curves of Figure 11.2.3.1.1 or from Chapter 22 where density/area criteria are specified for special occupancy hazards.

11.2.3.2.1.2 When using Figure 11.2.3.1.1, the calculations shall satisfy any single point on the appropriate density/area curve.

11.2.3.2.1.3 When using Figure 11.2.3.1.1, it shall not be necessary to meet all points on the selected curves.

11.2.3.2.2 Sprinklers.

11.2.3.2.2.1 The densities and areas provided in Figure 11.2.3.1.1 shall be for use only with spray sprinklers.

11.2.3.2.2.2 Quick-response sprinklers shall not be permitted for use in extra hazard occupancies or other occupancies where there are substantial amounts of flammable liquids or combustible dusts.

11.2.3.2.2.3 For extended coverage sprinklers, the minimum design area shall be that corresponding to the hazard in Figure 11.2.3.1.1 or the area protected by five sprinklers, whichever is greater.

11.2.3.2.2.4 Extended coverage sprinklers shall be listed with and designed for the minimum flow corresponding to the density for the hazard as specified in Figure 11.2.3.1.1.

Appendix D3

Email (Boundary Condition)

Guy Forget

From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: Wednesday, July 14, 2021 3:39 PM
To: Annie Williams
Cc: Lucie Dalrymple; Guy Forget; 'resposito@omnipex.ca'
Subject: RE: 3430 Carling Ave - Request for Hydraulic Boundary Conditions
Attachments: 3430 Carling Avenue July 2021.pdf

Good afternoon Annie,

As requested, here are the boundary conditions for the proposed development:

The following are boundary conditions, HGL, for hydraulic analysis at 3430 Carling Avenue (zone 1W) with an assumed dual connection to the 305 mm watermain on Carling Avenue (see attached PDF for location).

Minimum HGL: 105.9 m

Maximum HGL: 115.5 m

Available Fire Flow at 20 psi: 189 L/s, assuming a ground elevation of 64.5 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.

Thanks,
Jessica

From: Annie Williams <awilliams@jlrichards.ca>
Sent: July 09, 2021 2:54 PM
To: Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Guy Forget <gforget@jlrichards.ca>; 'resposito@omnipex.ca' <resposito@omnipex.ca>
Subject: RE: 3430 Carling Ave - Request for Hydraulic Boundary Conditions

,

You are correct, we should have five (5) floors at 912 m2.

Please find attached the updated attachments and I've updated our summary below:

Average Day = 1.27 L/s
Maximum Day = 4.11 L/s
Peak Hour = 6.17 L/s
Minimum Hour = 0.33 L/s
Required Fire Flow (RFF) for Critical Fire Area 1 = 16,000 L/min (267 L/s)
RFF for Critical Fire Area 2 = 14,000 L/min (233 L/s)

Please let me know if you have any other questions.

Thank you,
Annie

Annie Williams, P.Eng.
Civil Engineer

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-803-4523

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From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: Friday, July 9, 2021 2:10 PM
To: Annie Williams <awilliams@jlrichards.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Guy Forget <gforget@jlrichards.ca>; 'resposito@omnipex.ca' <resposito@omnipex.ca>
Subject: RE: 3430 Carling Ave - Request for Hydraulic Boundary Conditions

Hello Annie,

Can you please confirm that the building areas used for the FUS Calcs are correct for both buildings? The floor areas for both Buildings seems to be short 912 m2. Are there four floors or 5 floors at 912m2?

If the floor areas need to be amended, can you please revise the FUS sheets to reflect any trickle-down effects on the required fire flow? I will submit for boundary conditions after this is confirmed.

Thank you,

Jessica

From: Annie Williams <awilliams@jlrichards.ca>
Sent: July 07, 2021 1:23 PM
To: Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Guy Forget <gforget@jlrichards.ca>; 'resposito@omnipex.ca' <resposito@omnipex.ca>
Subject: 3430 Carling Ave - Request for Hydraulic Boundary Conditions

Hello Jessica,

We are carrying out an Assessment of Adequacy of Public Services (AAPS) for a proposed site plan located at 3430 Carling Avenue in the Crystal Beach area, within the City of Ottawa (see attached Location Plan). The redevelopment consists of constructing two 9-storey mid-rise residential towers with 216 total units.

The proposed buildings will warrant a dual connection to the existing distribution system for redundancy given that the overall average day demand will exceed 50 m3/day. The dual connection is proposed at the existing 305 mm (CI) watermain on Carling Avenue. The dual connection would have an isolation valve in between both laterals.

We request hydraulic boundary conditions at the proposed dual connection location on Carling Avenue (see attached RFF Results).

Based on the City Design Guidelines, the following demands are anticipated:

Average Day = 1.27 L/s
Maximum Day = 4.11 L/s
Peak Hour = 6.17 L/s
Minimum Hour = 0.33 L/s
Required Fire Flow (RFF) for Critical Fire Area 1 = 15,000 L/min (250 L/s)
RFF for Critical Fire Area 2 = 13,000 L/min (217 L/s)

The RFF was calculated in accordance with the Fire Underwriters Survey (FUS) and City Technical Bulletin ISTB-2018-02. We request a boundary condition under the typical scenarios and for both fire flows. The water demand and fire flow calculations are attached.

If we could receive the requested boundary conditions at your earliest convenience it would be much appreciated.

Should you have any questions or require anything further, please do not hesitate to call.

Regards,
Annie

Annie Williams, P.Eng.
Civil Engineer

J.L. Richards & Associates Limited

700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-803-4523

J.L. Richards & Associates Limited
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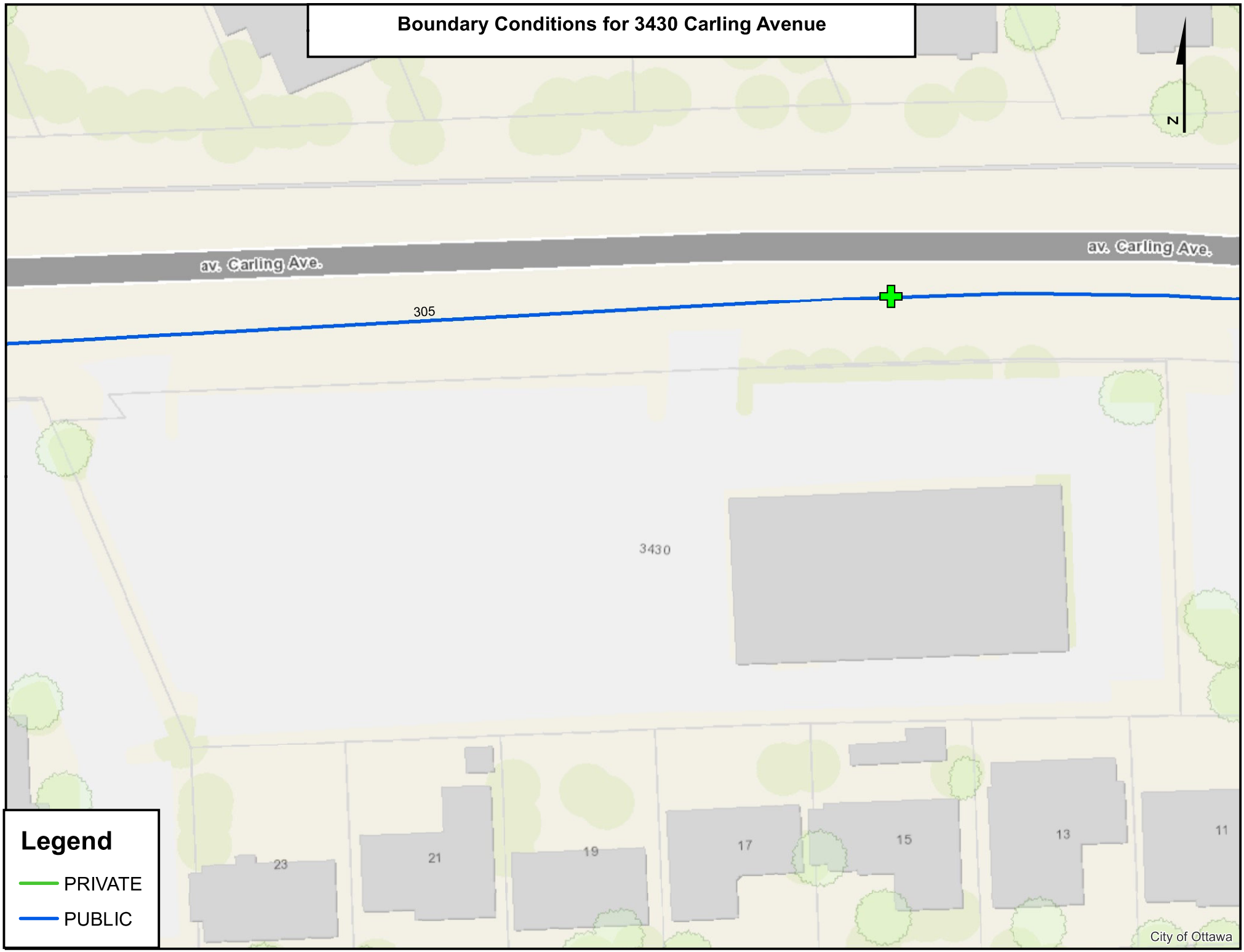
Boundary Conditions for 3430 Carling Avenue
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Legend
PRIVATE
PUBLIC
City of Ottawa

Guy Forget

From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: Wednesday, March 10, 2021 9:46 AM
To: Lucie Dalrymple
Cc: Nico Church; Raphaël Esposito; Guy Forget; Edward Hayes; Miguel Tremblay; Stern, Lisa; Valic, Jessica
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Good Morning Lucie,

The sanitary sewer can accommodate the increase. Since this is a partially separated area, the system is impacted during severe wet weather periods. For this reason, a sanitary backwater valve will be a requirement.

Concerning the storm, control to the 5 year will be permitted.

Thanks,

Jessica

From: Lucie Dalrymple <ldalrymple@jlrichards.ca>
Sent: March 03, 2021 9:54 AM
To: Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Nico Church <church@fotenn.com>; Raphaël Esposito <resposito@omnipex.ca>; Guy Forget <gforget@jlrichards.ca>; Edward Hayes <e.hayes@tempbridge.ca>; Miguel Tremblay <tremblay@fotenn.com>; Stern, Lisa <lisa.stern@ottawa.ca>
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Good morning Jessica,

Thank you for the detailed pre-consultation notes. Further to these notes, we wish to obtain confirmation from the City on the following:

Sanitary

In keeping with the recommendation noted in your pre-consultation notes, please find attached sanitary peak flow calculations for the City to review and confirm available residual capacity to accommodate the proposed redevelopment. Please note that the theoretical sanitary calculations were carried out based on a redevelopment of 250 residential units. Given that the unit statistics is unknown, a blended density of 1.8 person per unit (as per Table 4.1 of the OSDG) was used. Based on the assessment of peak flows for a 250-unit development, we have estimated the peak wastewater flows to be 5.16 L/s, an increase of 4.76 L/s compared to the existing theoretical wastewater of 0.20 L/s. Note that these peak flows include dry & wet I/I of 0.33 L/s per the latest Technical Bulletins.

Storm

The notes identifies the need to detain the 1:100 year post-development peak flows to the 1:2 year allowable peak flow. Given that the dedicated storm sewer outlet is the Carling Avenue 600 mm diameter trunk sewer, the design basis of this sewer in the 80's was likely carried out using a greater recurrence (10 year) as Carling Avenue was at the time an arterial. Given that the calculation method was slightly modified since the 80's, would the City accept that the design target for the project be modified to the 1:5 year allowable peak flow (lesser of the pre-development or C of 0.5)? Based on preliminary calculations, the difference between the 1:2 year & 1:5 year at a C of 0.50 is ±18.5 L/s.

Thank you,

Lucie

Lucie Dalrymple, P.Eng.
Associate
Manager, Planning & Development

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-804-5356 Cell: 613-913-4368

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From: Stern, Lisa <lisa.stern@ottawa.ca>
Sent: Monday, February 22, 2021 3:00 PM
To: Nico Church <church@fotenn.com>; Lucie Dalrymple <ldalrymple@jlrichards.ca>
Cc: Valic, Jessica <jessica.valic@ottawa.ca>
Subject: FW: Questions for Pre-Consult for 3430 Carling Ave

Lucie and Nico,

Further to our preconsultation meeting this afternoon please find Jessica's comments attached. Please feel free to reach out to her directly if you have any questions or concerns. In case any updates are required, I am looking to have the minutes of the meeting/requirements finalized next week.

Lisa Stern MCIP, RPP
Planner
Development Review West

Urbaniste
Examen des demandes d'aménagement ouest

City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 21108
ottawa.ca/planning / ottawa.ca/urbanisme

From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: February 22, 2021 9:29 AM
To: Stern, Lisa <lisa.stern@ottawa.ca>
Cc: Valic, Jessica <jessica.valic@ottawa.ca>
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Hi Lisa,

Unfortunately, I have to take the day off so I'm not going to be able to attend the preconsult this afternoon. Sorry. I've attached my notes in advance for you. The answers to the questions that were posed are found within my notes, but I will email Lucie back directly later this week. You can flag to her that the sanitary sewer capacity might be an issue. What I need from her is to confirm what the expected sanitary demand will be that was calculated using our most recent sewer design guidelines. I'll need to have internal discussions when I get that number.

Something else to mention –this section of Carling was recently redone so there is a road cut moratorium. Restrictions and associated fees for the moratorium will only become clearer once the development moves forward and we have a better idea of timing.

Please do not hesitate to contact me with any questions/concerns.

Regards,

Jessica Valic, E.I.T.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - West
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 15672
jessica.valic@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Stern, Lisa <lisa.stern@ottawa.ca>
Sent: February 19, 2021 1:12 PM
To: Nico Church <church@fotenn.com>; Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>
Subject: RE: Questions for Pre-Consult for 3430 Carling Ave

Jess – plea see the questions below in advance of our preconsultation on Monday.

From: Nico Church <church@fotenn.com>
Sent: February 19, 2021 12:45 PM
To: Stern, Lisa <lisa.stern@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>
Subject: FW: Questions for Pre-Consult for 3430 Carling Ave

Our civil engineering consultant for 3430 Carling has prepared a few questions in advance of our pre-application consultation meeting on Monday afternoon.

Could you please forward to the City engineering reviewer who will be present at the meeting, so that they may be able to adequately prepare and answer Lucie's questions below?

Thank you,

Nico Church, MCIP RPP
Planner
T 613.730.5709 ext. 287

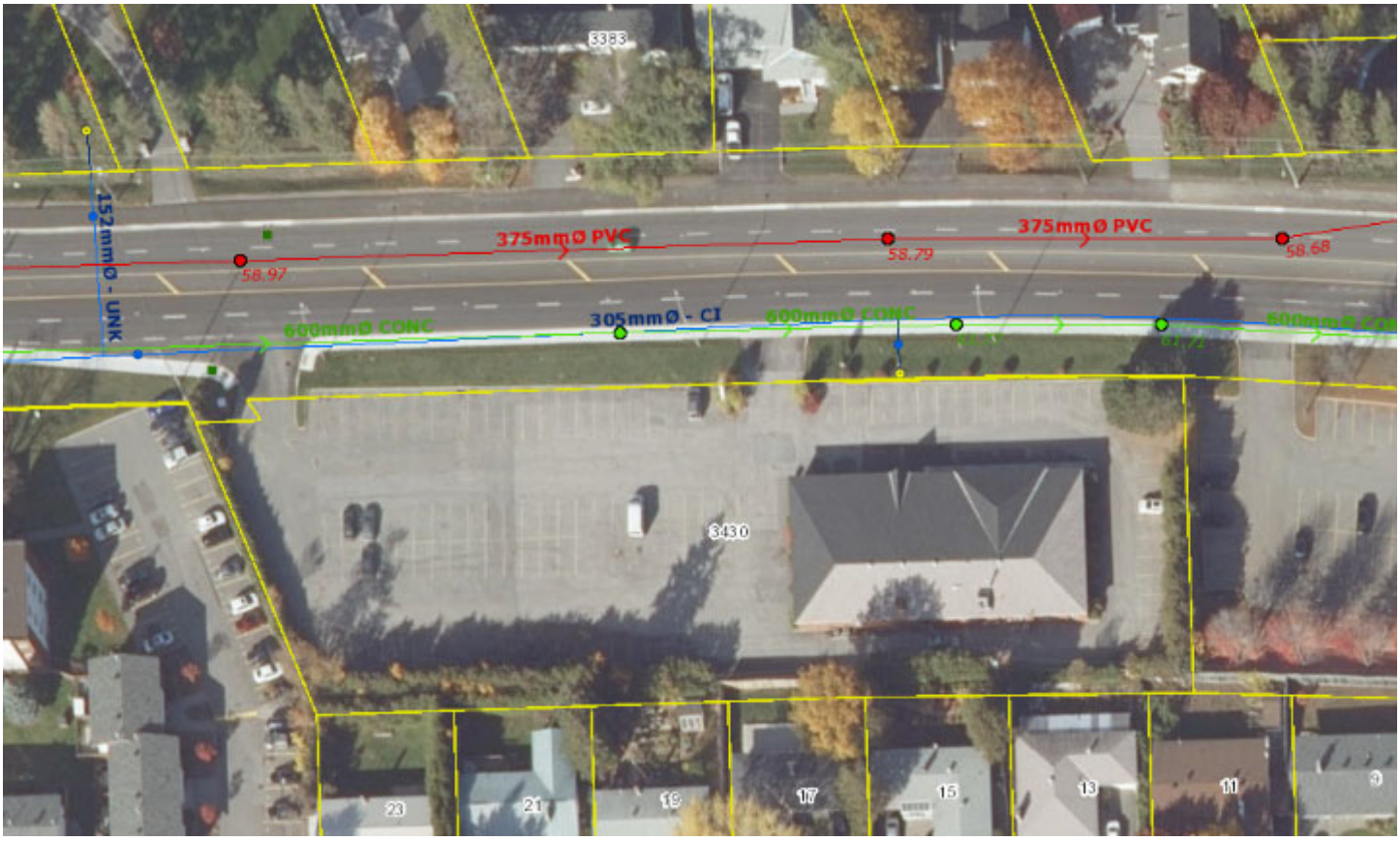
OUT OF OFFICE ALERT - COVID-19
Please be advised that Fotenn staff are currently working remotely in accordance with government recommendations for social distancing. Otherwise I am working regularly and am available by email, phone or video conference.

From: Lucie Dalrymple <ldalrymple@jlrichards.ca>
Sent: Thursday, February 18, 2021 1:13 PM
To: Nico Church <church@fotenn.com>
Cc: Guy Forget <gforget@jlrichards.ca>; Raphaël Esposito <resposito@omnipex.ca>
Subject: Questions for Pre-Consult for 3430 Carling Ave

To City of Ottawa Planner:

According to geoOttawa, the 3430 Carling Ave property is fronting the following existing infrastructure:

Ex. Watermain – 305 mm dia. CI with one fire hydrant immediately in front of the property
Ex. Storm sewer – 600 mm dia. Conc, flowing easterly, with an outlet to the Ottawa River approximately 450m downstream
Ex. Sanitary sewer – 375 mm dia. PVC



Water Servicing Question:

- We anticipate that two domestic water services will be required to service the property, however, could the city confirm if it will be mandatory and also confirm if a valve and valve box in between the two services will be required.

Storm Sewer Servicing Question:

- Given that the existing site condition is mostly all hard surface and that the outlet to the Ottawa River is in close proximity (+/- 450m), can the City confirm the storm discharge criterion that will be imposed for the proposed redevelopment.
- Given the proposed land usage, tower, elevated podium, TSS will be limited to small areas adjacent to the building structure, we assume that there will not be any quality control requirements. Please advise.

Sanitary Sewer Servicing Question:

- From geoOttawa, we note that the existing 375mm dia sanitary sewer along the property frontage was constructed at a slope of 0.19% and has a capacity of approximately 78 l/s. Given that this sewer was constructed in the 1980s, it is understood that the design guidelines were those prior to the latest 2018 update to the wastewater City guidelines. Furthermore, we determined by using former City design guidelines, that this existing sewer would have had the capacity to accommodate a maximum of 5000 equivalent population for a given tributary area of approximately 44.5 ha. These same parameters (i.e., 375 mm dia at 0.18%, 5000 equivalent population, and tributary area of 44.5 ha) were then re-imputed to calculate today's peak flow based on the City's current design guidelines. These calculations generated a reduced peak flow of 60 l/s. When comparing the peak flows generated from both sets of design guidelines (i.e., former and current), we note that a theoretical residual capacity of 18 l/s (78 l/s – 60 l/s) could potentially be available. At a functional level, this would indicate that the redevelopment of 3430 Carling Ave with a proposed 9-storey residential development of 250 units with a peak flow of approximately 5 l/s could be accommodated by this existing 375 mm dia. sewer. Could the City confirm that this approach is acceptable to evaluate the residual capacity of the existing sanitary sewer to allow the development of 250 units.

Thank you,

Lucie

Lucie Dalrymple, P.Eng.
Associate
Manager, Planning & Development

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-804-5356 Cell: 613-913-4368

J.L. Richards & Associates Limited is proactively doing our part to protect the wellbeing of our staff and communities while improving our communication technology. ***We are pleased to announce that we have implemented direct phone lines for all of our staff, allowing you to connect with us regardless of whether we are working remotely or in the office.*** *We are dedicated to delivering quality services to you through value and commitment, as always. Please reach out to us if you have any questions about your project.*

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

'

Guy Forget

From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: Wednesday, July 14, 2021 3:39 PM
To: Annie Williams
Cc: Lucie Dalrymple; Guy Forget; 'resposito@omnipex.ca'
Subject: RE: 3430 Carling Ave - Request for Hydraulic Boundary Conditions
Attachments: 3430 Carling Avenue July 2021.pdf

Good afternoon Annie,

As requested, here are the boundary conditions for the proposed development:

The following are boundary conditions, HGL, for hydraulic analysis at 3430 Carling Avenue (zone 1W) with an assumed dual connection to the 305 mm watermain on Carling Avenue (see attached PDF for location).

Minimum HGL: 105.9 m

Maximum HGL: 115.5 m

Available Fire Flow at 20 psi: 189 L/s, assuming a ground elevation of 64.5 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.

Thanks,
Jessica

From: Annie Williams <awilliams@jlrichards.ca>
Sent: July 09, 2021 2:54 PM
To: Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Guy Forget <gforget@jlrichards.ca>; 'resposito@omnipex.ca' <resposito@omnipex.ca>
Subject: RE: 3430 Carling Ave - Request for Hydraulic Boundary Conditions

,

You are correct, we should have five (5) floors at 912 m2.

Please find attached the updated attachments and I've updated our summary below:

Average Day = 1.27 L/s
Maximum Day = 4.11 L/s
Peak Hour = 6.17 L/s
Minimum Hour = 0.33 L/s
Required Fire Flow (RFF) for Critical Fire Area 1 = 16,000 L/min (267 L/s)
RFF for Critical Fire Area 2 = 14,000 L/min (233 L/s)

Please let me know if you have any other questions.

Thank you,
Annie

Annie Williams, P.Eng.
Civil Engineer

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-803-4523

J.L. Richards & Associates Limited is proactively doing our part to protect the wellbeing of our staff and communities while improving our communication technology. ***We are pleased to announce that we have implemented direct phone lines for all of our staff, allowing you to connect with us regardless of whether we are working remotely or in the office.*** *We are dedicated to delivering quality services to you through value and commitment, as always. Please reach out to us if you have any questions about your project.*

From: Valic, Jessica <jessica.valic@ottawa.ca>
Sent: Friday, July 9, 2021 2:10 PM
To: Annie Williams <awilliams@jlrichards.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Guy Forget <gforget@jlrichards.ca>; 'resposito@omnipex.ca' <resposito@omnipex.ca>
Subject: RE: 3430 Carling Ave - Request for Hydraulic Boundary Conditions

Hello Annie,

Can you please confirm that the building areas used for the FUS Calcs are correct for both buildings? The floor areas for both Buildings seems to be short 912 m2. Are there four floors or 5 floors at 912m2?

If the floor areas need to be amended, can you please revise the FUS sheets to reflect any trickle-down effects on the required fire flow? I will submit for boundary conditions after this is confirmed.

Thank you,

Jessica

From: Annie Williams <awilliams@jlrichards.ca>
Sent: July 07, 2021 1:23 PM
To: Valic, Jessica <jessica.valic@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Guy Forget <gforget@jlrichards.ca>; 'resposito@omnipex.ca' <resposito@omnipex.ca>
Subject: 3430 Carling Ave - Request for Hydraulic Boundary Conditions

Hello Jessica,

We are carrying out an Assessment of Adequacy of Public Services (AAPS) for a proposed site plan located at 3430 Carling Avenue in the Crystal Beach area, within the City of Ottawa (see attached Location Plan). The redevelopment consists of constructing two 9-storey mid-rise residential towers with 216 total units.

The proposed buildings will warrant a dual connection to the existing distribution system for redundancy given that the overall average day demand will exceed 50 m3/day. The dual connection is proposed at the existing 305 mm (CI) watermain on Carling Avenue. The dual connection would have an isolation valve in between both laterals.

We request hydraulic boundary conditions at the proposed dual connection location on Carling Avenue (see attached RFF Results).

Based on the City Design Guidelines, the following demands are anticipated:

Average Day = 1.27 L/s
Maximum Day = 4.11 L/s
Peak Hour = 6.17 L/s
Minimum Hour = 0.33 L/s
Required Fire Flow (RFF) for Critical Fire Area 1 = 15,000 L/min (250 L/s)
RFF for Critical Fire Area 2 = 13,000 L/min (217 L/s)

The RFF was calculated in accordance with the Fire Underwriters Survey (FUS) and City Technical Bulletin ISTB-2018-02. We request a boundary condition under the typical scenarios and for both fire flows. The water demand and fire flow calculations are attached.

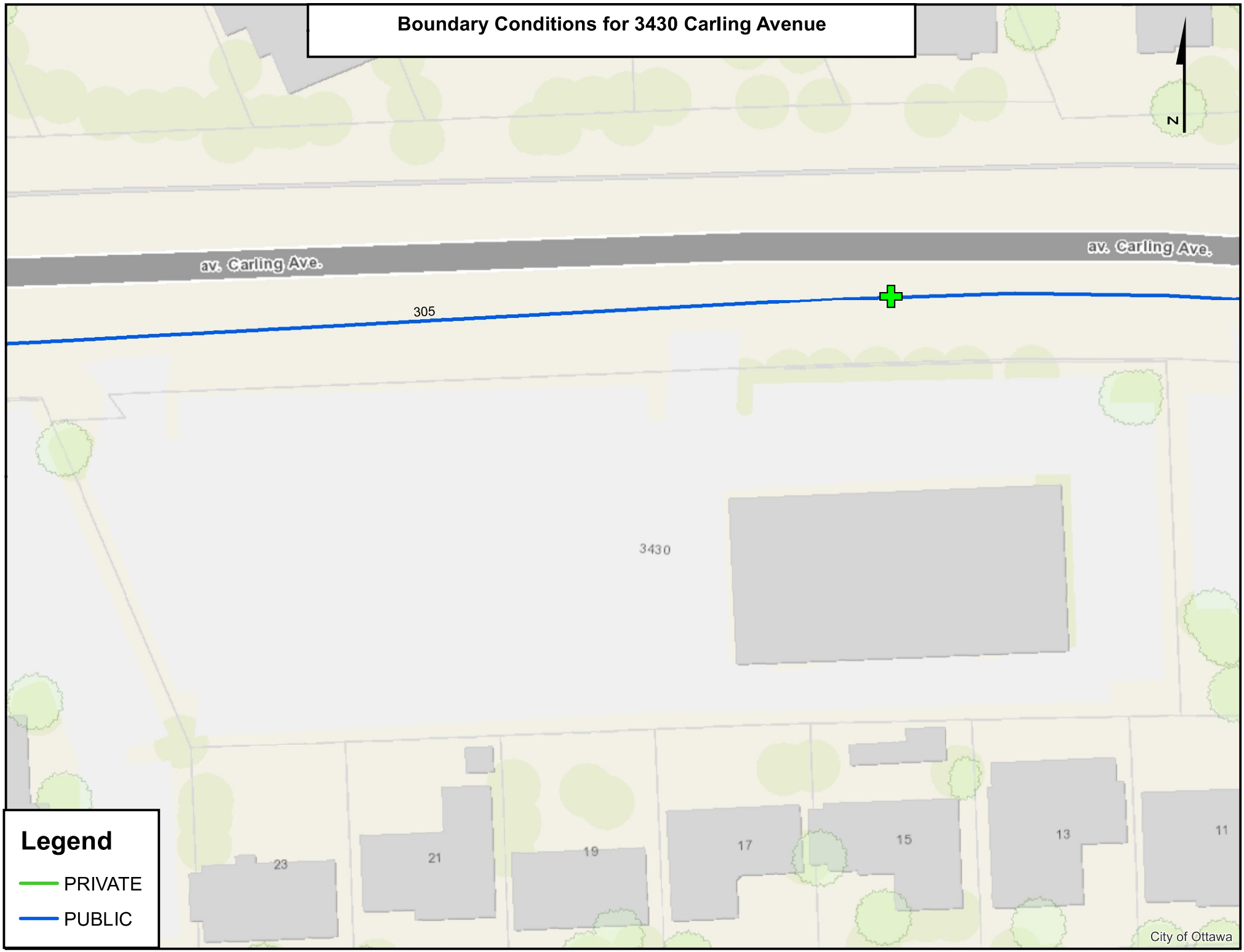
If we could receive the requested boundary conditions at your earliest convenience it would be much appreciated.

Should you have any questions or require anything further, please do not hesitate to call.

Regards,
Annie

Annie Williams, P.Eng.
Civil Engineer

J.L. Richards & Associates Limited


Boundary Conditions for 3430 Carling Avenue
N
av. Carling Ave.
av. Carling Ave.
305
3430
23
21
19
17
15
13
11
Legend
PRIVATE
PUBLIC
City of Ottawa

Appendix D4

Headloss Calculations

3430 Carling Avenue
Project 1
31134-000.1

Boundary Conditions

Water Demand Scenario	Demands (L/s)	Head (m) @ Carling
Peak Hour	6.17	105.9
Maximum HGL (Minimum Hr)	0.33	115.5
MXDY + FF (4.11 L/s + 189 L/s)	193.11	78.58

From City Email for the MXDY + FF:

HGL (m) = [20 psi x 2.31 ft/psi x 0.3048 m/ft] + 64.5 m
HGL (m) = 14.08 m + 64.5 m

HGL m (MXDY+FF) = 78.58 m

Headloss Calculations (Hazen Williams Equation)

Calculate headloss in a given pipe length based on flows and C value

HL = 10.675 * L * Q^1.852 / (C^1.856 * D ^4.8704)

Where,
HL = Headloss (m)
L - Length (m)
Q - Flow (m^3/s)
C - Hazen Williams "C"
D - Watermain Diameter (m)

Headloss Calculations

Water Demand Condition	Flow - Q (L/s)	Flow - Q (m^3/s)	Length (m)	C	D (m)	HeadLoss (m)	HGL (m) @ Carling	Calculated HGL (m)	Elevation (m)	Pressure @ Node (m)	Pressure @ Node (kPa)	Pressure @ Node (psi)	Requirement	Criteria Acheived?
Average Day	1.27	0.00127	14	110	0.200									
Maximum Day	4.11	0.00411	14	110	0.200									
Peak Hour	6.17	0.00617	14	110	0.200	0.00500	105.900	105.895	65	40.895	401	58	275	Yes
Maximum HGL	0.33	0.00033	14	110	0.200	0.00002	115.500	115.500	65	50.500	495	72	552	No
Maximum Day Plus Fire (Q = 4.11 L/s + 69.2 L/s)	73.31	0.07331	14	110	0.200	0.49009	78.582	78.092	65	13.092	128	19	140	No

Appendix E

Wastewater Calculations

Wastewater Calculations
3430 Carling (JLR 31104-01)

Western and Eastern Towers 0.615 Ha.

Unit Breakdown	**No.**	**Person Per Unit (Table 4.1)**
Studio	4	1.4
1 BED+	29	1.4
1 BED+	55	1.4
2 BED	96	2.1
2 BED+	32	2.1
Sum of Total No. Units =	216	
All Types of Unit	216	units
Average Density	1.81	p/p/u
No. Ppl	392	ppl
Total Population	392	ppl
Theoretical Wastewater Flow	280	L/c/d
Average Wastewater Flow	**1.27**	**L/s**
Harmon Peaking Factor	3.421	
Peak Wastewater Flow	**4.35**	**L/s**
Commercial/Office Area (ha)	0.00	
Commercial PF =	1	
Peak Flow (Comm) =	0.000	L/s
Dry & Wet I/I (0.33 L/s/ha)	0.20	L/s

Peak WW Flow (L/s)	4.55	L/s

Appendix F1

Existing Condition

Drainage Plan

CARLING AVENUE

Landscaped Areas:
645 m2 @ C=0.20

Concrete walk:
182 m2 @ C=0.90

PROPOSED APARTMENT BUILDING

Asphalt area:
Area = 4470 m2 @ C=0.20

PROPOSED APARTMENT BUILDING

Roof:
Area = 853 m2 @ C = 0.90

SUBJECT TO EASEMENT INST. CR561595

SUBJECT TO EASEMENT INST. CR432695

No.	ISSUE / REVISION	DD/MM/YY

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:250
0 5 10 15 20m

CLIENT:
3430 CARLING PROPERTY INC.

CONSULTANT: www.jlrichards.ca
J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:
3430 CARLING AVENUE
Existing Condition Drainage Plan
OTTAWA, ONTARIO

DRAWING:

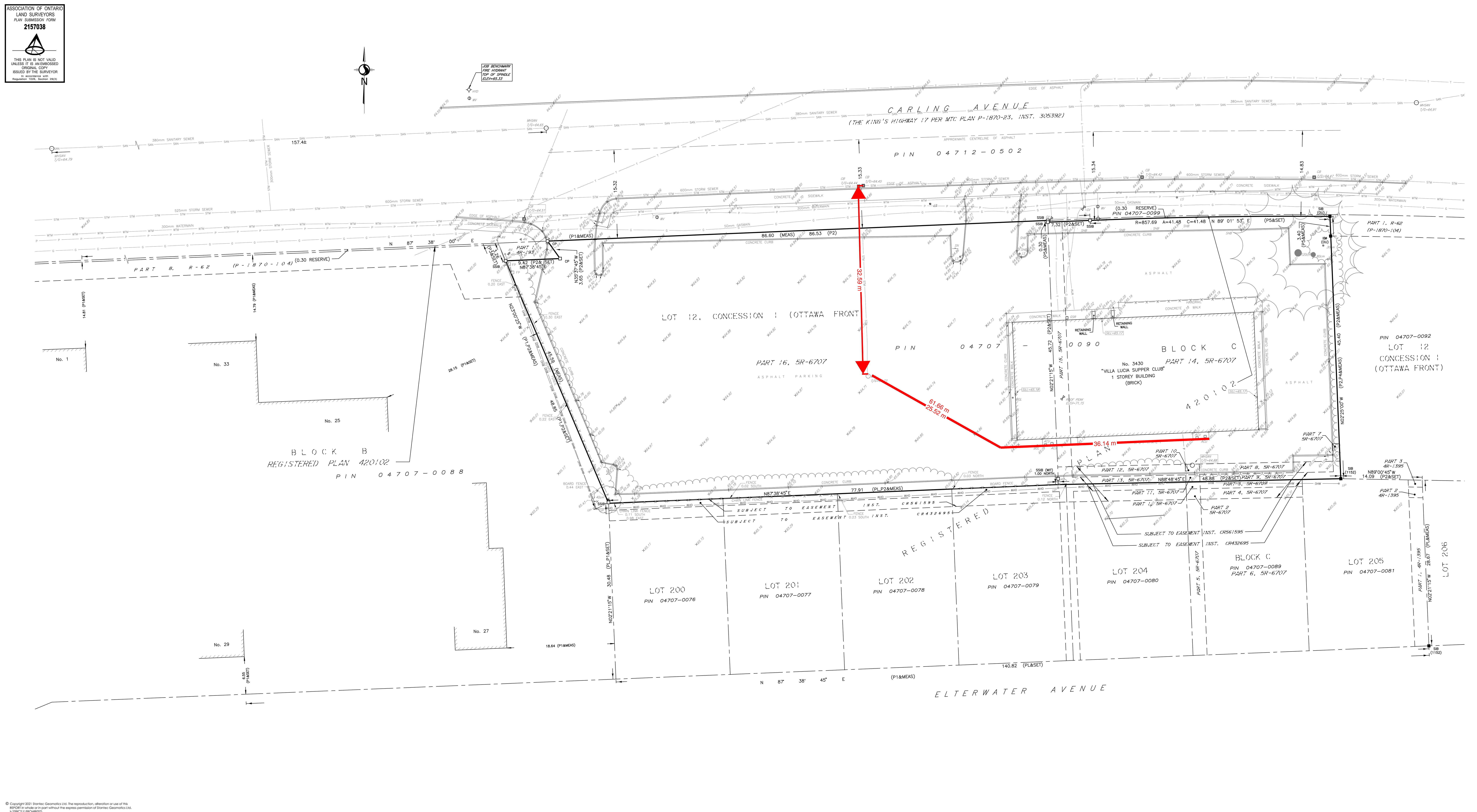
DESIGN: L.D.	
DRAWN: B.R.	DRAWING #:
CHECKED: G.F.	
JLR #: 31134	

PLOT DATE: Tuesday, July 13, 2021 4:09:31 PM

File Location: P:\31\10001\31134-000 - Site Plan - 3430 Carling Ave\5-Production\1-Civil\31134 C SITE PLAN.dwg

Appendix F2

Time of Concentration,
Allowable Peak Flow



TOPOGRAPHIC PLAN OF SURVEY

PART OF BLOCK C
REGISTERED PLAN 420102
AND
PART OF LOT 12
CONCESSION 1 (OTTAWA FRONT)
(GEOGRAPHIC TOWNSHIP OF NEPEAN)
CITY OF OTTAWA

Scale 1:250

5 0 5 10 15 METRES

METRIC CONVERSION

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

BEARING NOTE

BEARINGS ARE GRID, DERIVED FROM THE CAN-NET VRS NETWORK OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76°30' WEST LONGITUDE MTM ZONE 9. NAD83 (ORGINAL).

19773035 N:5006060.42 E:324888.04
19680191 N:5033564.26 E:388064.94

FOR BEARING COMPARISONS, A ROTATION OF 0° 26'15" COUNTER-CLOCKWISE HAS BEEN APPLIED TO BEARINGS ON PL & P2.

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET NETWORK MONUMENT: OTTAWA ELEVATION=95.230.

UTILITY NOTE

ELEVATION OF UNDERGROUND SERVICES ARE APPROXIMATE AND ARE PER CITY OF OTTAWA SHEETS, AND MUST VERIFIED PRIOR TO CONSTRUCTION.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
PL	"	REGISTERED PLAN 420102
P1	"	PLAN BY SG DATED JUNE 26, 2012
P2	"	PLAN 5R-6707
P3	"	PLAN 4R-193
P4	"	PLAN BY SG DATED JUNE 26, 2012
P5	"	PLAN R-62
ACU	"	AIR CONDITIONING UNIT
AN	"	ANCHOR
AP	"	AIR PUMP
BOL	"	BOLLARD
BOUL	"	BOULDER
CB	"	CATCH BASIN
DCB	"	DOUBLE CB
CBMH	"	CB MANHOLE
DCBMH	"	DOUBLE CB MANHOLE
SICB	"	SIDE INLET CB
CHM	"	CHIMNEY
DRN	"	DRAIN
EPOST	"	ELECTRICAL OUTLET
FP	"	FLAG POLE
FL	"	FLOOD LIGHT
GP	"	POLE GUYWIRE
GSR	"	GAS SERVICE REGULATOR
GV	"	GAS VALVE
HLS	"	HYDRO LIGHT STANDARD
HM	"	HYDRO METER
HTN	"	HYDRO TRANSFORMER
HW	"	HAND WELL
HYD	"	FIRE HYDRANT
JBX	"	JUNCTION BOX
LS	"	LIGHT STANDARD
MB	"	MAILBOX
MP	"	MONITORING PIN
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHB	"	MAINTENANCE HOLE BELL
MHF	"	MAINTENANCE HOLE FIBRE OPTIC
MHH	"	MAINTENANCE HOLE HYDRO
MHSA	"	MAINTENANCE HOLE SANITARY
MHST	"	MAINTENANCE HOLE STORM
MHT	"	MAINTENANCE HOLE TRAFFIC
MW	"	MONITORING WELL
SN	"	SIGN
TB BELL	"	TERMINAL BOX - BELL
TB CATV	"	TERMINAL BOX - CABLE
TCB	"	TRAFFIC CONTROL BOX
UP	"	UTILITY POLE
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
WV	"	WATER VALVE
	"	TREE STUMP
	"	TREE CONIFEROUS
	"	TREE DECIDUOUS

T — T — T
UNDERGROUND TELEPHONE

P — P — P
UNDERGROUND HYDRO

WTM — WTM — WTM
WATERMAIN

G — G — G
GASMAIN

STM — STM — STM
STORM SEWER

SAN — SAN — SAN
SANITARY SEWER

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 19th DAY OF APRIL, 2021.

April 20, 2021
DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

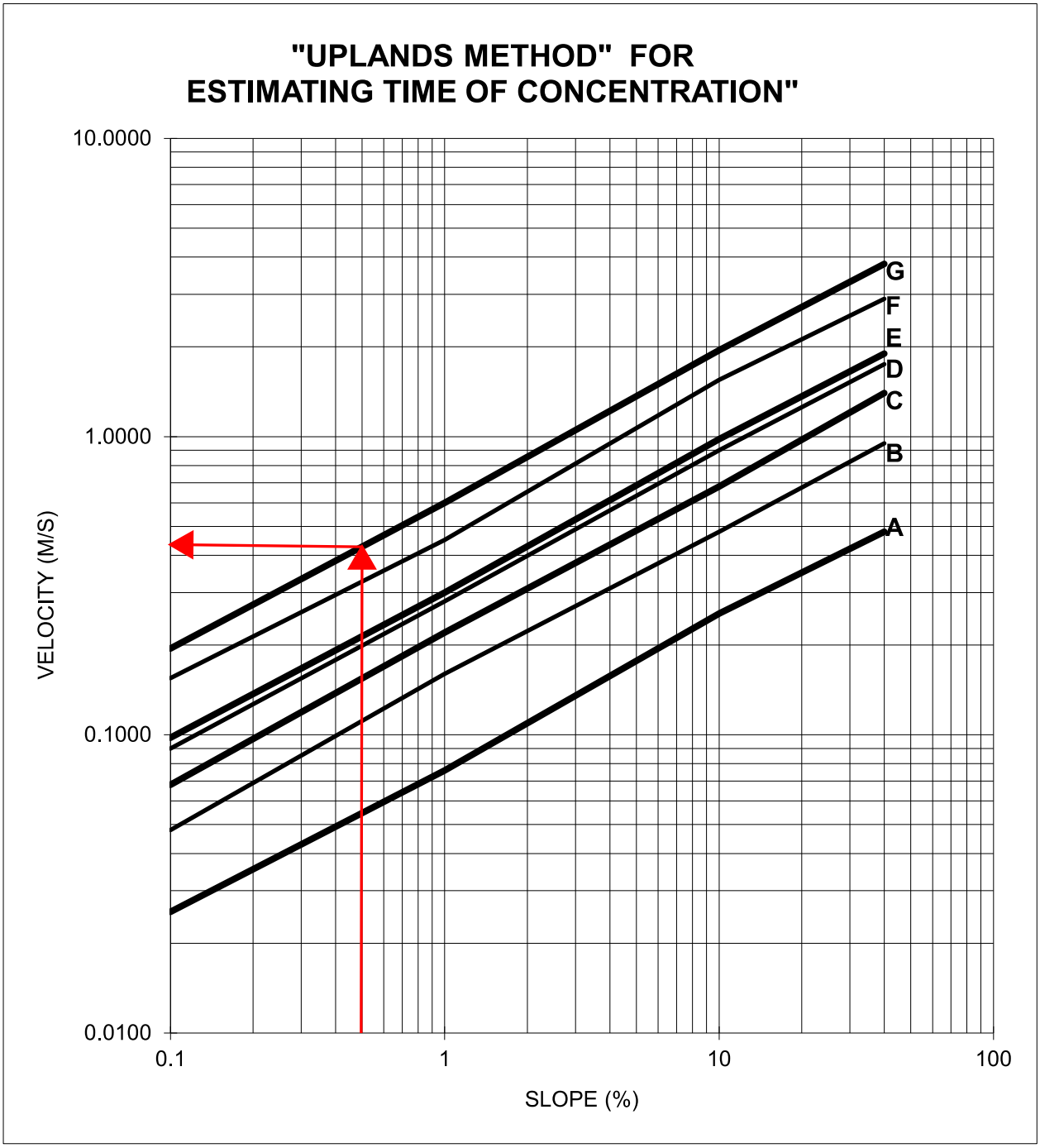
SRO MAP COORD.= 356726.90, 5023786.16

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420
stantec.com

DRAWN: NJ	CHECKED: AB	PM: BW	FIELD: ES/KC	PROJECT No.: 161614346-111

This plan was signed with a scanned signature as a result of the Emergency Order related to the COVID-19 pandemic.

"UPLANDS METHOD" FOR ESTIMATING TIME OF CONCENTRATION"



A = Overland Flow: Forest (heavy litter) & hay meadow
B = Overland Flow: Woodland, fallow, controur or strip crop
C = Overland Flow: Pasture
D = Overland Flow: Cultivated straight row
E = Overland Flow: Nearly bare soil, untilled
F = Grassed waterway
G = Small upland gullies & paved areas (sheet flow)

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

3430 Carling Property Inc.

Calculation of Pre-Development Runoff Coefficient (C-Factor)

AREA OF PARCEL (incl. ParkdaleWidening) = 6150 m^2

SUMMARY OF AREAS (per AOV Survey)

Type of Surface	Area (m^2)	Area (ha)	C-Factor	AC
From topographicla Survey				
Rooftop	853	0.0853	0.9	0.077
Concrete	182	0.0182	0.9	0.016
Asphalt	4470	0.4470	0.9	0.402
Grass	645	0.0645	0.2	0.013
TOTAL:	6150	0.6150		0.83

C-Factor (exist) =	**0.83**
Allowable C-Factor =	**0.50**

Calculation of Time of Concentration (Pre-Development Conditions)

Time of concentration was estimated from the back of the building to the CB and to the Carling Avenue 600 mm diameter storm sewer:

Traveled length on asphalt = 61.66 m

Slope of travel length = (65.09 m - 64.73 m) / 61.66 m) = 0.58%

Based on Upland Curve, velocity was found to be 0.44 m/s for S;lope = 0.58%

Travel Length (asphalt) to CB = 61.66 m and along CB lead length = 32.59 m

Tc = (61.66 m / 0.45 m/s) + (32.59 m / 1.0 m/s)

Tc = 2.83 mins

Tc = 10.00 mins was used per the pre-consult notes

T_c (existing) set to:	**10 mins**

Allowable Peak Flow Calculations (Existing)

Allowable to be set based on 1:5-year IDF per March 10, 2021 Email from Jessica Valic

Q_{5yr} = 2.78CIA

Exclude the future ROW widening from the existing & post-development flow calculations:
The overall parcel area of 6150 m2 is reduced to: 5100 m2

Q_{5yr} = 2.78 x 0.508 x 104.193 mm/hr x 0.5100 ha (I_{5yr} based on Tc = 10 mins)

Q_{5yr} (allowable) =	**73.86 L/s**

Appendix F3

SWM Calculations

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

3430 Carling Property Inc.

Allowable Peak Flow = 73.86 L/s

Post-Development Areas

Area No.	Area (m2)	C-Factor	ICD	Uncontrolled
West Tower 9th Floor	893	0.90	5.67	N/A
East Tower 9th Floor	893	0.90	5.67	N/A
4th Floor Terrace West	454	0.90	10.00	N/A
4th Floor Terrace East	407	0.90	10.00	N/A
Unc. West Area	103	0.50	N/A	2.56
Unc. East Area	87	0.50	N/A	2.16
Southern mixed	1328	0.40	12.00	N/A
Ramp unc	190	0.90	N/A	8.49
At-Grade Parking	749	0.90	17.30	N/A
Total	5104		60.64	13.20

IDF Stats	5	100
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.82

Total Flow =	73.84 L/s
Allowable =	73.86 L/s

Rooftop restrictor:	Watts Adjustable Accutrol Weir (weir fully closed at 6" depth)		
No of Drains West Tower	18	0.315	L/s per drain

SWM Calcs: Western Roof

Roof (m2)	893
C =	0.90
ICD =	5.67
Storage Volume (m3)	80.37

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)	Qp CCE - Qp100yr (L/s)
10	178.56	39.90	5.67	34.23	20.54	49.87	44.20	26.52	9.97
15	142.89	31.93	5.67	26.26	23.63	39.91	34.24	30.81	7.98
20	119.95	26.80	5.67	21.13	25.36	33.50	27.83	33.40	6.70
25	103.85	23.20	5.67	17.53	26.30	29.00	23.33	35.00	5.80
30	91.87	20.53	5.67	14.86	26.74	25.66	19.99	35.98	5.13
35	82.58	18.45	5.67	12.78	26.84	23.06	17.39	36.53	4.61
40	75.15	16.79	5.67	11.12	26.69	20.99	15.32	36.76	4.20
45	69.05	15.43	5.67	9.76	26.35	19.28	13.61	36.76	3.86
50	63.95	14.29	5.67	8.62	25.86	17.86	12.19	36.57	3.57
55	59.62	13.32	5.67	7.65	25.25	16.65	10.98	36.24	3.33

The following assumptions were made in regard to rooftop storage:

Western Roof	
Rooftop flow =	5.67 L/s
Roof	893 m2
60% storage =	535.8 m2
Vol. @ 6" ponding =	80.4 m3

The SWM Calculations (above) shows rooftop storage volume requirements of 27 m3 and 37 m3 under the 1:100 year and climate change event (CCE).

Based on the above assumption (60% of rooftop as storage), sufficient rooftop storage (80 m3) will be provided to detain the 1:100 yr and CCE on the roof Hence, the SWM target will, therefore, be met for the Western Roof. There will not be any overtopping during the 1:100 year nor during the CCE

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

3430 Carling Property Inc.

Allowable Peak Flow = 73.86 L/s

Post-Development Areas

Area No.	Area (m2)	C-Factor	ICD	Uncontrolled
West Tower 9th Floor	893	0.90	5.67	N/A
East Tower 9th Floor	893	0.90	5.67	N/A
4th Floor Terrace West	454	0.90	10.00	N/A
4th Floor Terrace East	407	0.90	10.00	N/A
Unc. West Area	103	0.50	N/A	2.56
Unc. East Area	87	0.50	N/A	2.16
Southern mixed	1328	0.40	12.00	N/A
Ramp unc	190	0.90	N/A	8.49
At-Grade Parking	749	0.90	17.30	N/A
	5104		60.64	13.20

IDF Stats	5	100
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.82

Total Flow =	73.84 L/s
Allowable =	73.86 L/s

Rooftop restrictor: Watts Adjustable Accutrol Weir (weir fully closed at 6" depth)
No of Drains East Tower 18 0.315 L/s per drain

SWM Calcs: Eastern Roof

Roof (m2)	893
C =	0.90
ICD =	5.67
Storage Volume (m3)	80.37

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)	Qp CCE - Qp100yr (L/s)
10	178.56	39.90	5.67	34.23	20.54	49.87	44.20	26.52	9.97
15	142.89	31.93	5.67	26.26	23.63	39.91	34.24	30.81	7.98
20	119.95	26.80	5.67	21.13	25.36	33.50	27.83	33.40	6.70
25	103.85	23.20	5.67	17.53	26.30	29.00	23.33	35.00	5.80
30	91.87	20.53	5.67	14.86	26.74	25.66	19.99	35.98	5.13
35	82.58	18.45	5.67	12.78	26.84	23.06	17.39	36.53	4.61
40	75.15	16.79	5.67	11.12	26.69	20.99	15.32	36.76	4.20
45	69.05	15.43	5.67	9.76	26.35	19.28	13.61	36.76	3.86
50	63.95	14.29	5.67	8.62	25.86	17.86	12.19	36.57	3.57
55	59.62	13.32	5.67	7.65	25.25	16.65	10.98	36.24	3.33
60	55.89	12.49	5.67	6.82	24.55	15.61	9.94	35.79	3.12

The following assumptions were made in regard to rooftop storage:

Eastern Roof	
Rooftop flow =	5.67 L/s
Roof	893 m2
60% storage =	535.8 m2
Vol. @ 6" ponding =	80.4 m3

The SWM Calculations (above) shows rooftop storage volume requirements of 27 m3 and 37 m3 under the 1:100 year and climate change event (CCE).

Based on the above assumption (60% of rooftop as storage), sufficient rooftop storage (80 m3) will be provided to detain the 1:100 yr and CCE on the rooftop Hence, the SWM target will, therefore, be met for the Western Roof. There will not be any overtopping during the 1:100 year nor during the CCE

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Allowable Peak Flow = 73.86 L/s

Post-Development Areas

Area No.	Area (m2)	C-Factor	ICD	Uncontrolled
West Tower 9th Floor	893	0.90	5.67	N/A
East Tower 9th Floor	893	0.90	5.67	N/A
4th Floor Terrace West	454	0.90	10.00	N/A
4th Floor Terrace East	407	0.90	10.00	N/A
Unc. West Area	103	0.50	N/A	2.56
Unc. East Area	87	0.50	N/A	2.16
Southern mixed	1328	0.40	12.00	N/A
Ramp unc	190	0.90	N/A	8.49
At-Grade Parking	749	0.90	17.30	N/A
	5104		60.64	13.20

IDF Stats	5	100
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.82

Total Flow =	73.84 L/s
Allowable =	73.86 L/s

SWM Calcs: 4th Floor Terrace West to Cistern

Roof (m2)	454
C =	0.90
ICD =	10.00
Storage Volume (m3)	11.00

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)	Qp CCE - Qp100yr (L/s)
10	178.56	20.28	5.00	15.28	9.17	25.35	20.35	12.21	5.07
15	142.89	16.23	5.00	11.23	10.11	20.29	15.29	13.76	4.06
20	119.95	13.63	5.00	8.63	10.35	17.03	12.03	14.44	3.41
25	103.85	11.80	5.00	6.80	10.19	14.75	9.75	14.62	2.95
30	91.87	10.44	5.00	5.44	9.78	13.04	8.04	14.48	2.61
35	82.58	9.38	5.00	4.38	9.20	11.73	6.73	14.12	2.35
40	75.15	8.54	5.00	3.54	8.49	10.67	5.67	13.61	2.13
45	69.05	7.84	5.00	2.84	7.68	9.80	4.80	12.97	1.96

Cistern Sizing: The SWM Calculations (above) shows that a cistern with a volume of 11 m3 would be sufficient to contain the 1:100 year storm.

Cistern Sizing: The SWM Calculations (above) shows that a larger cistern (15 m3) would be sufficient to contain the CCE
If a cistern of 11 m3 is provided, a sewer capable of conveying an overflow of 5.07 L/s should be added to the design by mechanical eng

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Allowable Peak Flow =	**73.86 L/s**

Post-Development Areas

Area No.	Area (m2)	C-Factor	ICD	Uncontrolled
West Tower 9th Floor	893	0.90	5.67	N/A
East Tower 9th Floor	893	0.90	5.67	N/A
4th Floor Terrace West	454	0.90	10.00	N/A
4th Floor Terrace East	407	0.90	10.00	N/A
Unc. West Area	103	0.50	N/A	2.56
Unc. East Area	87	0.50	N/A	2.16
Southern mixed	1328	0.40	12.00	N/A
Ramp unc	190	0.90	N/A	8.49
At-Grade Parking	749	0.90	17.30	N/A
	5104		60.64	13.20

IDF Stats	5	100
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.82

Total Flow =	73.84 L/s
Allowable =	73.86 L/s

SWM Calcs: 4th Floor Eastern to Cistern

Roof (m2)	407
C =	0.90
ICD =	10.00
Storage Volume (m3)	9.00

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)	Qp CCE - Qp100yr (L/s)
10	178.56	18.18	5.00	13.18	7.91	22.73	17.73	10.64	4.55
15	142.89	14.55	5.00	9.55	8.60	18.19	13.19	11.87	3.64
20	119.95	12.21	5.00	7.21	8.66	15.27	10.27	12.32	3.05
25	103.85	10.57	5.00	5.57	8.36	13.22	8.22	12.33	2.64
30	91.87	9.36	5.00	4.36	7.84	11.69	6.69	12.05	2.34
35	82.58	8.41	5.00	3.41	7.16	10.51	5.51	11.57	2.10
40	75.15	7.65	5.00	2.65	6.37	9.57	4.57	10.96	1.91
45	69.05	7.03	5.00	2.03	5.49	8.79	3.79	10.23	1.76

Cistern Sizing: The SWM Calculations (above) shows that a cistern with a volume of 9 m3 would be sufficient to contain the 1:100 year storm.

Cistern Sizing: The SWM Calculations (above) shows that a larger cistern (14 m3) would be sufficient to contain the CCE
If a cistern of 9 m3 is provided, a sewer capable of conveying an overflow of 4.55 L/s should be added to the design by mechanical eng

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Allowable Peak Flow = 73.86 L/s

Post-Development Areas

Area No.	Area (m2)	C-Factor	ICD	Uncontrolled
West Tower 9th Floor	893	0.90	5.67	N/A
East Tower 9th Floor	893	0.90	5.67	N/A
4th Floor Terrace West	454	0.90	10.00	N/A
4th Floor Terrace East	407	0.90	10.00	N/A
Unc. West Area	103	0.50	N/A	2.56
Unc. East Area	87	0.50	N/A	2.16
Southern mixed	1328	0.40	12.00	N/A
Ramp unc	190	0.90	N/A	8.49
At-Grade Parking	749	0.90	17.30	N/A
	5104		60.64	13.20

Total Flow =	73.84 L/s
Allowable =	73.86 L/s

IDF Stats	5	100
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.82

SWM Calcs: Southwest Mixed Area

Area (m2)	1328
C =	0.40
ICD =	12.00
Storage Volume (m3)	18.34

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)	Qp CCE - Qp100yr (L/s)
10	178.56	26.37	12.00	14.37	8.62	32.96	20.96	12.58	6.59
15	142.89	21.10	12.00	9.10	8.19	26.38	14.38	12.94	5.28
20	119.95	17.71	12.00	5.71	6.86	22.14	10.14	12.17	4.43
25	103.85	15.34	12.00	3.34	5.00	19.17	7.17	10.75	3.83
30	91.87	13.57	12.00	1.57	2.82	16.96	4.96	8.92	3.39
35	82.58	12.19	12.00	0.19	0.41	15.24	3.24	6.81	3.05
40	75.15	11.10	12.00	N/A	N/A	13.87	1.87	4.49	2.77
45	69.05	10.20	12.00	N/A	N/A	12.75	0.75	2.01	2.55

The following assumptions were made in regard to rooftop storage:

Southwest Mixed Area	
ICD Flow =	12.00 L/s
10 pods @ 1 m3 & D= 0.20	10.0 m3
Pipe 170 m - 250 mm dia	8 m3
Total Storage =	18.3 m3

The SWM Calculations (above) shows a storage volume requirements of 9 m3 and 13 m3 under the 1:100 year and climate change event (CCE).

Based on the above storage surface storage of 10 m3 (10 cells @ 1 m3) and pipe strorage of 8 m3, sufficient storage will be provided to contain the 1:100 yr and CCE

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Allowable Peak Flow = 73.86 L/s

Post-Development Areas

Area No.	Area (m2)	C-Factor	ICD	Uncontrolled
West Tower 9th Floor	893	0.90	5.67	N/A
East Tower 9th Floor	893	0.90	5.67	N/A
4th Floor Terrace West	454	0.90	10.00	N/A
4th Floor Terrace East	407	0.90	10.00	N/A
Unc. West Area	103	0.50	N/A	2.56
Unc. East Area	87	0.50	N/A	2.16
Southern mixed	1328	0.40	12.00	N/A
Ramp unc	190	0.90	N/A	8.49
At-Grade Parking	749	0.90	17.30	N/A
	5104		60.64	13.20

IDF Stats	5	100
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.82

Total Flow =	73.84 L/s
Allowable =	73.86 L/s

SWM Calcs: Parking

Area (m2)	749
C =	0.90
ICD =	17.30
Storage Volume (m3)	15.71

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)	Qp CCE - Qp100yr (L/s)
10	178.56	33.46	17.30	16.16	9.70	41.83	24.53	14.72	8.37
15	142.89	26.78	17.30	9.48	8.53	33.47	16.17	14.56	6.69
20	119.95	22.48	17.30	5.18	6.21	28.10	10.80	12.96	5.62
25	103.85	19.46	17.30	2.16	3.24	24.33	7.03	10.54	4.87
30	91.87	17.22	17.30	N/A	N/A	21.52	4.22	7.60	4.30
35	82.58	15.48	17.30	N/A	N/A	19.34	2.04	4.29	3.87
40	75.15	14.08	17.30	N/A	N/A	17.60	0.30	0.73	3.52
45	69.05	12.94	17.30	N/A	N/A	16.18	N/A	N/A	3.24

The following assumptions were made in regard to rooftop storage:

Parking	
ICD flow =	17.30 L/s
3 sags: 10m2 @ 0.20 m	15.7 m3

The SWM Calculations (above) shows storage volume requirements of 10 m3 and 15 m3 under the 1:100 year and climate change event (CCE).

Based on the 3 surface stroage cells totalling 15.7 m3, sufficient storage is provided to detain the 1:100 yr and CCE

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3430 Carling Property Inc.
3430 Carling Avenue
Stormwater Management Calculations

Allowable Peak Flow = 73.86 L/s

Post-Development Areas

Area No.	Area (m2)	C-Factor	ICD	Uncontrolled
West Tower 9th Floor	893	0.90	5.67	N/A
East Tower 9th Floor	893	0.90	5.67	N/A
4th Floor Terrace West	454	0.90	10.00	N/A
4th Floor Terrace East	407	0.90	10.00	N/A
Unc. West Area	103	0.50	N/A	2.56
Unc. East Area	87	0.50	N/A	2.16
Southern mixed	1328	0.40	12.00	N/A
Ramp unc	190	0.90	N/A	8.49
At-Grade Parking	749	0.90	17.30	N/A
	5104		60.64	13.20

IDF Stats	5	100
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.82

Total Flow =	73.84 L/s
Allowable =	73.86 L/s

Uncontrolled West Area

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)
10	178.56	2.56

Time (min)	Intensity CCE (mm/hr)	Qp CCE (L/s)	Qp CCE - Qp100yr (L/s)
10	214.27	3.07	0.51

Based on the above calculation, the uncontrolled 1:100 peak flow for the western area is 2.56 L/s

Under the CCE, the additional uncontrolled flow is 0.51 L/s beyond the 1:100 year peak flow.
Based on a length of 50 m, a flow of 250 L/s can be accommodated by a depth of 0.02 m. Thus, theere will not be any impact from the CCE flowing to ROW

Uncontrolled Eastern Area

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)
10	178.56	2.16

Time (min)	Intensity CCE (mm/hr)	Qp CCE (L/s)	Qp CCE - Qp100yr (L/s)
10	214.27	2.59	0.43

Based on the above calculation, the uncontrolled 1:100 peak flow for the eastern area is 2.16 L/s

Under the CCE, the additional uncontrolled flow is 0.43 L/s beyond the 1:100 year peak flow.
Based on a length of 50 m, a flow of 250 L/s can be accommodated by a depth of 0.02 m. Thus, theere will not be any impact from the CCE flowing to ROW

Uncontrolled Ramp

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)
10	178.56	8.49

Time (min)	Intensity CCE (mm/hr)	Qp CCE (L/s)	Qp CCE - Qp100yr (L/s)
10	214.27	10.19	1.70

Based on the above calculation, the uncontrolled 1:100 peak flow for the eastern area is 8.49 L/s

Under the CCE, the additional uncontrolled flow is 1.70 L/s beyond the 1:100 year peak flow. The flow enters the building. Hence, no impact downstream

Guy Forget

From: Guy Forget
Sent: Friday, July 16, 2021 9:20 AM
To: Jamie Batchelor; Eric Lalande
Cc: Lucie Dalrymple; Raphaël Esposito
Subject: 3430 Carling Avenue Mid-Rise Residential Development
Attachments: 2103 - Carling - Presentation Set.pdf; 31134 C01 - Functional Post drainage.pdf; FIG2.JPG; 31134 C01-EXISTING CONDITION Drainage.pdf

Jamie/Eric,

We have been retained to prepare a Servicing brief for the above noted development which will be sited at 3430 Carling Avenue.

As shown on the Existing Condition Report, the property consists mostly of hard surfaces; building, parking and concrete walkway and small landscaped areas. Based on this Drawing, the hard surfaces account for 90% of the area.

Under post-development, there will be a substantial reduction in the parking area, from 4470 m2 to 939 m2 (749 m2 and 190 m2). This represents a decrease of 79% of the asphalted area.

The City requested that we consult with the RVCA to confirm if water quality is to be provided. Beside the asphalted area of 939 m2, the remainder is rooftop (9th floor and 4th floor terrace) and landscaped area surrounding the building envelope (see presentation set).

Can you confirm whether the propose 18 parking stalls will warrant an OGS as this is the only surface that would generate TSS.

Thanks

Guy