

SERVICING & STORMWATER MANAGEMENT REPORT

78 ROSEMOUNT AVENUE



Project No.: CP-22-2211

Prepared for:

78 Rosemount Avenue Inc.
78 Rosemount Avenue
Ottawa, ON, K1N 5N1

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
Carp, ON K0A 1L0

May 4th, 2022

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by 78 Rosemount Avenue Inc. to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed three-storey residential apartment building located at 78 Rosemount Avenue within the City of Ottawa.

The main purpose of this report is to present a servicing design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the water, sanitary and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

- CCO-22-2211, C101 – Removals, Site Servicing, Lot Grading, Drainage, Sediment and Erosion Control Plan

1.2 Site Description

The property is located at 78 Rosemount Avenue Inc.. It is described as Lot 20, Registered Plan 94, Ward 15 – Kitchissippi Jeff Leiper, City of Ottawa, Ontario. The land in question covers approximately 0.054 ha and is located on the west side of Rosemount Avenue, just south of the intersection of Gladstone Avenue and Rosemount Avenue. See Appendix 'A' for Key Plan.

The site is currently developed with a two-storey residential building.

The proposed development consists of a three-storey apartment building. The building will consist of 12 housing units, 4 one bedroom, 8 two bedroom. The foundation footprint is approximately 263 m². There will be access to the building from the entrance on Rosemount Avenue.

2.0 BACKGROUND STUDIES

Background studies that have been completed for the site include review of the City as-built drawings, a topographical survey, and a geotechnical report.

As-built drawings of the existing services within the vicinity of the site were obtained from the City of Ottawa Information Center and were reviewed to determine proper servicing and stormwater management schemes for the site.

A topographic survey of the site was completed by Farley, Smith & Denis Surveying Ltd. (Job No. 603-21) and is available under separate cover.

The following reports have been reviewed and are available under separate cover:

- Geotechnical Investigation completed by Paterson Group, dated December 6, 2021.

3.0 PRE-CONSULTATION SUMMARY

City of Ottawa Staff have been pre-consulted regarding the proposed development on January 26, 2021. Specific design parameters to be incorporated within this design include the following:

- Pre-development time of concentration (T_c) calculated but not less than 10 minutes and post-development flow shall be calculated using a T_c of 10 minutes,
- Control 5 through 100-year post-development peak flows to the 5-year pre-development peak flows, with a combined C value to a maximum of 0.50; and
- Any storm events greater than 5 years, up to and including 100-year storm event, to be detained on site.

Correspondence can be found in Appendix 'B'.

4.0 EXISTING SERVICES

The following subsections describe the existing services within the Rosemount Avenue right of way.

4.1 Existing Sanitary

There is an existing 250 mm diameter PVC sanitary sewer located within Rosemount Avenue. As the sewer crosses Gladstone Avenue, it increases in size to 450mm. The sewer ultimately drains to the Robert O. Pickard Environmental Centre (ROPEC).

4.2 Existing Storm

There is an existing 375 mm diameter storm sewer within Rosemount Avenue. Overland flow is directed to the Rosemount right of way where it flows north and is collected by catch basins on Gladstone Avenue.

4.3 Existing Water

There is an existing 203 mm diameter watermain within Rosemount Avenue.

5.0 SERVICING PLAN

5.1 Proposed Servicing Overview

The overall servicing will be provided via service connections to the mains within Rosemount Avenue. The water service will be extended to the building from the 203 mm diameter watermain. Similarly, the storm and sanitary services will be connected to the 375 mm diameter and 250 mm diameter mains, respectively. Details pertaining to the final proposed servicing locations have been reviewed and are shown on plan *CCO-C101 – Removals, Site Servicing, Lot Grading, Drainage, Sediment and Erosion Control Plan*.

5.2 Proposed Water Design

A new 150mm diameter PVC watermain is proposed to service the site complete with a water valve and will be connected to the existing 203 mm diameter watermain within Rosemount Avenue. The watermain is designed to have a minimum of 2.4m cover.

A fire flow of 5,400 L/min was calculated using the Ontario Building Code (OBC) requirements. The detailed calculations for the OBC can be found in Appendix 'C'. The fire flow was also calculated using the FUS method and the result was 13,000 L/min (provided for information purposes only).

The water demands for the proposed building have been calculated to adhere to the *Ottawa Design Guidelines – Water Distribution* manual and can be found in Appendix 'C'. The results have been summarized below:

Table 1: Water Demands

Average Day Demand (L/s)	0.07
Maximum Daily Demand (L/s)	0.71
Peak Hourly Demand (L/s)	1.07
OBC Fire Flow Requirement (L/s)	90.00
Max Day + Fire Flow (FUS) (L/s)	90.71

Boundary conditions have been provided by the City of Ottawa for the current conditions and are available in Appendix 'C'. The subject site is located in pressure zone 1W. A water model was completed using Bentley's WaterCAD based on the boundary conditions. The results determined that the proposed 150mm water service can adequately service the proposed development and provide sufficient fire flow as Hydrant H-1 produced available fire flows of 14079.79 L/min. Refer to drawing for more details. The results are available in Appendix 'C' of this report.

Prior to connecting to the municipal water distribution system, it is essential to determine whether the system has adequate capacity and that the overall impact to the existing system is minimal. A WaterCAD model was generated to determine the capacity, pressure and size of pipes required to service the proposed site. Three

(3) different scenarios were analyzed within the model, namely average day, maximum day + fire flow and peak hourly demands.

When modelling the proposed water distribution system for 78 Rosemount Avenue, it was necessary to determine which scenario produced a greater demand: the maximum day + fire flow or peak hourly. It was concluded that the maximum day + fire flow scenario would govern the design process, since it produced the higher demand. A layout of the WaterCAD model has been attached in Appendix 'C'.

The normal operating pressure range is anticipated to be 434.4 kPa (63 psi) to 496 kPa (72 psi) and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The proposed watermain will meet the minimum required 140 kPa (20 psi) at the ground level during maximum day demand plus fire flow conditions.

Table 2: Water Pressure at Junctions per Scenario

Junction	Average Day (psi)	Peak Hourly (psi)	Max. Day + Fire Flow (psi)
J-1	71.94	62.14	63.00

To confirm the adequacy of fire flow to protect the proposed development, public and private on-site fire hydrants within 150 m of the proposed building were analysed per City of Ottawa ISTB 2018-02 Appendix I Table 1. The results are demonstrated in Table 3 below.

Table 3: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m (5,700 L/min)	Fire Hydrant(s) within 150m (3,800 L/min)	Combined Fire Flow (L/min.)
78 Rosemount Avenue	5,400	1	1	9,500

5.3 Proposed Sanitary Design

A new 135 mm diameter gravity sanitary service will be connected to the existing 250 mm diameter sanitary sewer within Rosemount Avenue. The service will be complete with an interior sampling port as there is not enough space to have a monitoring manhole.

The subject site is a proposed three-storey residential building. The total area of the building is 263 m². The peak design flows for the proposed building were calculated using criteria from the City of Ottawa – Sewer Design Guidelines, October 2012. The proposed site development area (0.054ha) will generate a flow of 0.29 L/s (residential flow and infiltration).

The proposed 135 mm diameter gravity sanitary service will be installed with a minimum full flow target velocity (cleansing velocity) of 0.6 m/s and a full flow velocity of not more than 3.0 m/s. Design parameters for the site include an infiltration rate of 0.33 L/s/ha.

The proposed service for the site will be connected to the existing 250 mm diameter sanitary sewer within Rosemount Avenue. It is anticipated that flow from the site has been previously accounted for within the downstream infrastructure as a sanitary service from the previous development connected to this sewer. Although the sanitary flow is likely slightly higher for the proposed development, it is anticipated that there will be no issues with capacity constraints for the existing 250 mm sanitary main within Rosemount Avenue as less than 0.5% of additional capacity would be required.

See *Sanitary Flow Calculations* and *Sanitary Sewer Design Sheet* in Appendix 'D' of this report for more details.

5.4 Proposed Storm Design (Conveyance and Management)

Stormwater runoff will be conveyed by way of roof drains which will discharge into the existing infrastructure within Rosemount Avenue. Roof drains will restrict the flow to conform with City requirements and storage will be provided on the roof.

A new 150 mm diameter gravity storm service will be connected to the existing 375 mm diameter storm main within Rosemount Avenue. The storm service is provided as an outlet for the foundation drain system which includes the proposed area drains and flows to the drain via sump pump. The flow from the roof drains will be connected to an additional 150 mm diameter gravity storm service which will also be connected to the existing 375 mm diameter storm main within Rosemount Avenue.

From discussions with the City and the RVCA, quality control will not be provided within the site. Correspondence with the RVCA is available in Appendix 'B'. Further details and calculations pertaining to the quantity and quality of the stormwater management system are provided in Section 6.0.

6.0 PROPOSED STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for this site will be maintained through roof storage and positive drainage away from the proposed building. Stormwater runoff will be restricted on the proposed roof and directed to the proposed storm service before reaching the existing storm main within Rosemount Avenue. Overland flow will be directed towards the eastern property line from which it will flow to the Rosemount Avenue right of way. Stormwater Best Management Practices (SWM BMP's) will be implemented at the "Lot level", "Conveyance" and "End of Pipe" locations. These concepts will be explained further in Section 6.4. In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the RVCA and City:

Quality Control

- No quality control is required for the site as per the RVCA.

Quantity Control

- Post-development peak flow 5/100-year is to be restricted to match the 5-year pre-development peak flow with a maximum C value of 0.50.

6.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where	C	= Runoff coefficient
	I	= Rainfall intensity in mm/hr (City of Ottawa IDF curves)
	A	= Drainage area in hectares

It is recognized that the rational method tends to overestimate runoff rates. As a by-product of using extremely conservative prediction method, any facilities that are sized using these results are expected to function as intended in real world conditions.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the City of Ottawa Sewer Design Guidelines, the 5-year balanced ‘C’ value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

As per correspondence with the City the time of concentration (Tc) used for pre-development flows is to be calculated and not less than 10 minutes and post-development flows shall be 10 minutes.

6.2.1 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. The existing site has been demonstrated as drainage area A1. See drawing CCO-22-2211 – PRE within Appendix ‘E’ of this report for more details. Existing conditions have the overland stormwater runoff flowing from high points located within the property and draining to existing storm infrastructure within Rosemount Avenue. A summary of the Pre-Development Runoff Calculations can be found below.

Table 4: Pre-Development Runoff Summary

Area ID	Drainage Area (ha)	Balanced Runoff Coefficient (C) 5-year	Balanced Runoff Coefficient (C) 100-year	5-Year Flow Rate (l/s)	100-Year Flow Rate (l/s)
A1	0.053	0.77	0.86	11.87	22.75
Total	0.053			11.87	22.75

(See Appendix ‘G’ for Calculations)

6.2.2 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-22-2211 - POST in Appendix ‘F’ of this report for more details. A summary of the Post-Development Runoff Calculations can be found below.

Table 5: Post-Development Runoff Summary

Area ID	Drainage Area (ha)	Balanced Runoff Coefficient (C) 5-year	Balanced Runoff Coefficient (C) 100-year	5-year Flow Rate (L/s)	100-year Flow Rate (L/s)
B1A	0.012	0.90	1.00	3.21	6.12
B1B	0.014	0.90	1.00	3.65	6.95
B2	0.027	0.45	0.51	3.50	6.91
Total	0.053			10.36	19.98

(See Appendix ‘G’ for Calculations)

Runoff from areas B1A and B1B will be restricted through the use of roof drains. The roof restrictions will restrict the 5-year and 100-year flows creating the need for roof storage. See Appendix ‘G’ for calculations. This restriction will be further detailed in Section 6.3.

6.3 Quantity Control

After discussing the stormwater management criteria for the site with the City, the 5 and 100-year post-development runoff for this site has been restricted to match the 5 year peak flow rate with a maximum C value of 0.50 (See Appendix 'B' for correspondence). These values create the following allowable release rates and storage volumes for the development site.

Table 6: Allowable Release Rate

Area	Drainage Area (ha)	Balanced Runoff Coefficient (C) 5-yr	Tc (min)	5-Year Flow Rate (L/s)
A1	0.053	0.50	10	7.74

(See Appendix 'G' for Calculations)

Reducing site flows will be achieved using roof drains and will create the need for roof storage. Runoff from areas B1A, and B1B will be restricted as detailed below.

Table 7: Post-Development Stormwater Management Summary

Area ID	Area (ha)	Flow Rate (L/s)		Storage Required (m ³)		Storage Provided (m ³)	
		5-yr	100-yr	5-yr	100-yr	5-yr	100-yr
B1A	0.012	X	1.39*	X	3.26	X	3.39
B1B	0.014	X	1.45*	X	3.86	X	4.03
B2	0.027	3.50	6.91				
Total	0.053	3.50	9.75				

(See Appendix 'G' for Calculations)

Flows marked with a '*' indicate proposed flow restrictions

Area B1A is on the west side of the building's roof area. Runoff from Area B1A will be restricted by one roof drain restricting the flows to 1.39 L/s for the 100-year storm event. Area B1B is the south side of the roof. Area B1B will be restricted by one roof drain restricting the flows to 1.45 L/s for the 100-year storm event. Due to various site constraints area B2 cannot be restricted and thus the allowable flow rate cannot be met. As noted by the City in the pre-consultation notes (See Appendix 'B'), it would be acceptable to control the roof portion only and leave the remainder of the site uncontrolled as long as the uncontrolled portion is directed towards the right of way. As such, it was determined that the proposed total 100-year flow for the site of 9.75 L/s was acceptable since all of area B2 is being direct to the Rosemount Avenue right of way. Drainage areas for the roof are depicted on CCO-22-2211 – POST plan available within Appendix 'E'. The table below details the required and provided rooftop storage volumes for the development.

Table 8: Roof Drain Summary

Area ID	Area (ha)	Number of roof Drains	Total Restricted Flow (L/s)		Storage Depth (m)		Storage Volume Required (m ³)		Storage Volume Available (m ³)	
			5-Yr	100-Yr	5-Yr	100-Yr	5-Yr	100-Yr	5-Yr	100-Yr
B1A	0.012	1	0.38	0.69	0.030	0.055	2.36	4.52	2.77	5.08
B1B	0.014	1	0.38	0.69	0.030	0.055	2.82	5.40	3.15	5.78

(See Appendix 'G' for Calculations)

In the event there is a rainfall above the 100-year storm event, or a blockage within the storm sewer system, emergency roof scuppers have been provided so that the storm water runoff will not exceed the maximum allowable ponding depth of 0.15m as per the OBC.

6.4 Quality Control

The development of this lot will employ Best Management Practices (BMP's) wherever possible. The intent of implementing stormwater BMP's is to ensure that water quality and quantity concerns are addressed at all stages of development. Lot level BMP's typically include temporary retention of the site runoff, minimizing ground slopes and maximizing landscaped areas. Some of these BMP's however cannot be provided for this site due to site constraints and development requirements.

As per the discussions with the RVCA, there are no quality control requirements for the site. Please refer to Appendix 'B' for correspondence with the RVCA. The combination of the above BMP's and the proposed flow control measures will aid in the protection of the natural environment.

7.0 EROSION AND SEDIMENT CONTROL

7.1 Temporary Measures

Before construction begins temporary silt fence will be installed at all natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of sediment and erosion control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City, Conservation Authority or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. Care shall be taken to properly remove sediment from the fences as required. Fibre roll barriers are to be installed at all existing curb inlet catch basins and filter fabric is to be placed under the grates of all existing catch basins and manholes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures are to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the City and/or Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant. Please see *CCO-22-2211, C101 - Removals, Site Servicing, Lot Grading, Drainage, Sediment and Erosion Control Plan* for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

8.0 SUMMARY

- A new 263 m² ground floor area three-storey residential building will be constructed on the site located at 78 Rosemount Avenue;
- A new 135 mm diameter sanitary service will be installed and connected to the existing 250 mm diameter sewer within Rosemount Avenue;
- A new 150 mm diameter water lateral will be extended from the existing 203 mm diameter main within Rosemount Avenue;
- A new 150 mm storm service will be installed for the roof drainage system and connected to the existing 375 mm diameter sewer within Rosemount Avenue;
- A new 150 mm storm service will be installed for the foundation drain system and connected to the existing 375 mm diameter sewer within Rosemount Avenue;
- As discussed with City staff, the stormwater management design will ensure that the post-development flow rates are restricted to the 5-year pre-development flow rates calculated with a maximum C value of 0.5;
- As discussed with the RVCA, there are no quality control requirements for this site; and
- Storage for the 5 and 100-year storm events will be provided on the proposed flat roof.

9.0 RECOMMENDATIONS

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management Report in support of the proposed development located at 78 Rosemount Avenue.

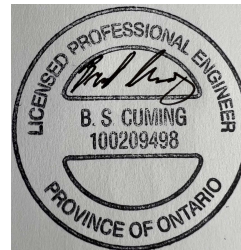
This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.



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10.0 STATEMENT OF LIMITATIONS

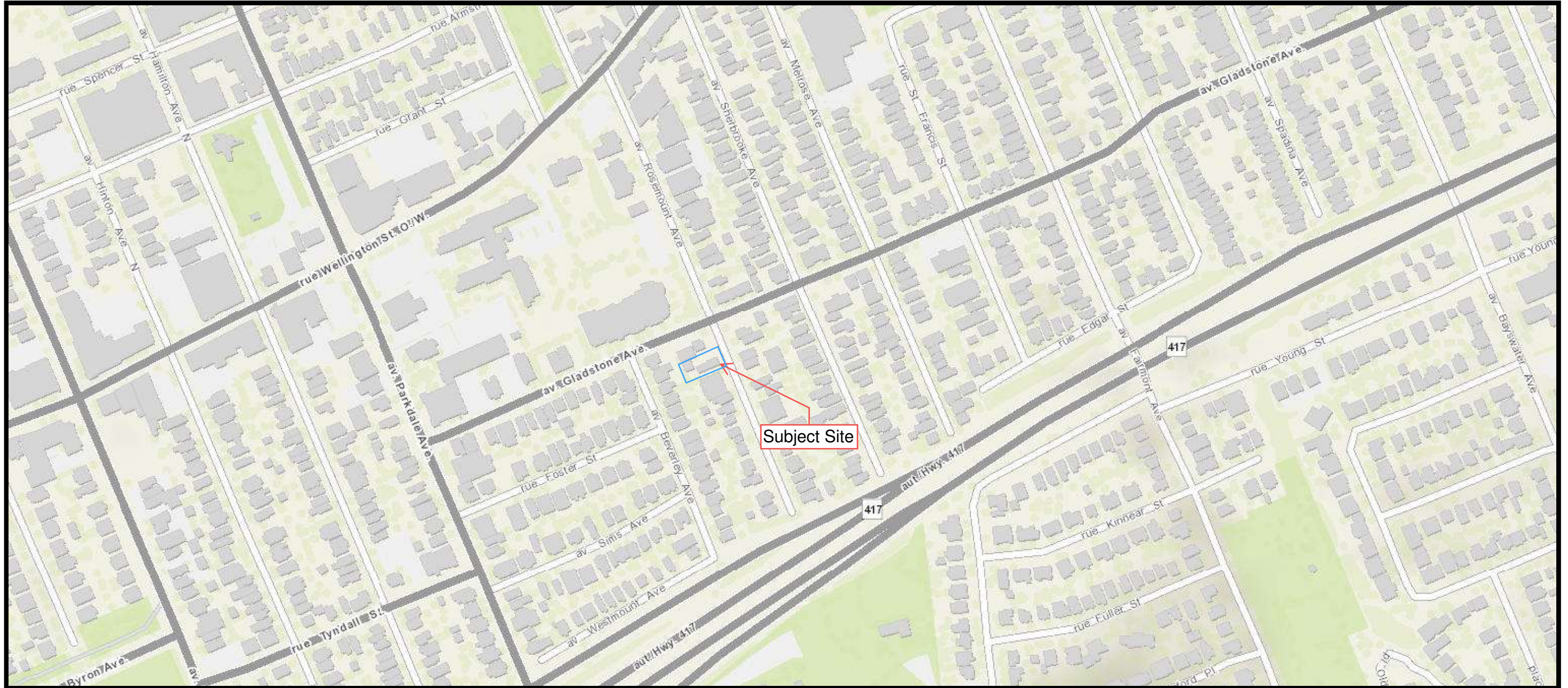
This report was produced for the exclusive use of 78 Rosemount Avenue Inc.. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Conservation and Parks, City of Ottawa and local approval agencies. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

**APPENDIX A
KEY PLAN**

Site Location Plan



**APPENDIX B
BACKGROUND DOCUMENTS**

Nicholas Vachon

From: Jake Levinson <jakelevinson@gmail.com>
Sent: January 12, 2022 10:12 AM
To: Jessie Smith; Lee-Christine Bushey
Subject: Fwd: 78 Rosemount Ave - PC2021-0394 - Follow-up
Attachments: image005.png; 211130 78 Rosemount - Schematic Exterior and Plans_Option 2.pdf; Plans and Study list_Rosemount 78.pdf

Hi both -

Finally heard back from John Bernier. See the comments below.

Unfortunately, they don't provide a solid answer on whether the window well is permitted or not, beyond it 'not being preferred'.

Can you take a look below and let me know if there are any other questions or clarifications required? I assume you'll need the consultants' feedback as well - let me know if I should be sending to them or if you'll coordinate getting this sent to them.

Thanks,

Jake

----- Forwarded message -----

From: Bernier, John <John.Bernier@ottawa.ca>
Date: Jan 12, 2022, 9:58 AM -0500
To: Jake Levinson <jakelevinson@gmail.com>
Cc: Ippersiel, Matthew <Matthew.Ippersiel@ottawa.ca>, Dubyk, Wally <Wally.Dubyk@ottawa.ca>, Bakhit, Reza <reza.bakhit@ottawa.ca>, Hamilton, Craig <craig.hamilton@ottawa.ca>
Subject: 78 Rosemount Ave - PC2021-0394 - Follow-up

Hi Jake,

Sorry for the delay. Please refer to the below [and/or attached notes] regarding the Pre-Application Consultation (pre-con) Meeting held on December 1st, 2021 for the property at 78 Rosemount Avenue for the development of an 12-unit residential apartment building. I have also attached the required Plans & Study List for application submission.

Below [or attached] are staff's preliminary comments based on the information available at the time of pre-con meeting:

Planning – John Bernier

- **Relevant Policies:**

- **OP: General Urban Area**
- **Secondary Plan: N/A**
- **Zoning By-law: R4UB** - permits the use of a low-rise apartment building (max 4 stories) limited to 12 units.
 - Minor Variances may be required, please contact the Committee of Adjustment Planner to discuss: Craig Hamilton // craig.hamilton@ottawa.ca // ext. 613-560-2400 x23502

Initial thoughts:

- This is a reasonable development and a good use of the property given the context.
- Appreciate the extensive at-grade amenity area, I would encourage a mix of hard and softscape landscaping with a programmed use.

- **General Comments:**

- Any part of a yard not used for bike lockups, pathways, patios, stairs, etc. must be softscaped.
- Ensure that any projections, such as awnings, balconies, and stairs are dimensioned and meet the permitted projection provisions (Sec. 65) - wheelchair ramps have no limit.
- Min pathway to the waste management are ais 1.2m, per Sec. 143, requirements may be greater for City collection - these requirements will be TBD through circulation.
- Cash-in-lieu of parkland will be taken per the Parkland Dedication By-law 2009-95. The amount is calculated based on the uplift – meaning the existing units would be discounted.

- **Rear Yard**

- Setback is dependant on what the front yard setback is - See Sec. 144, likely 30% of lot depth.. Therefore, ~8.78m
- 50% of rear yard must be softscaped, with at least one area a min of 25 sq metres - please confirm this in your submission
- Accessory building - include dimensions (incl length, width, height, door dimensions, etc) - no permitted projections, and must be setback 0.6m from lot line per Sec. 55
- Dimension bike lockup and include a detail of this lockup. It should be in a well lit and naturally surveilled area, and mounted to a concrete pad.
- Encourage a 1:1 ratio, especially when there is no parking provided.

- **Front Yard**

- Explore ways to remove or reduce the window well within the frontyard setback. The intention is for this to be a softscaped area.
- Min front yard is average of two adjacent buildings, but no more than zone req of 4.5m – Minor Variance required otherwise.
- 40 percent of front yard to be softscaped
- R4 Articulation polices: At least 20 per cent of the area of the front facade must be recessed an additional 0.6 metres from the front setback line, unless each storey contains a balcony.
- Confirm 25% windows on front façade.
- Front yard shall include permanent fixtures that prevent illegal parking - such as: planters, benches, bollards, trees, ornamental fencing, raised planters, etc.

Urban Design – Matthew Ippersiel

The elimination of the ramp on the front of the building is a strong design move and is supported.

In terms of the three design options provided, the preferred option would be the “Entry at Grade Opt.1”. This would greatly simplify accessibility and would avoid the need for an exterior elevator (which would require regular maintenance and would likely be unpleasant to use in winter months).



If the proposal proceeds with the “Entry at Grade Opt.1” design and window wells are still proposed at the front of the building, perhaps the entry could be slightly above grade and the pedestrian approach could have a gentle slope to reconcile the grade change between the sidewalk and entrance. This would permit the basement windows to be less sunken below grade.

Having window wells project into the front yard setback is generally discouraged. Should it remain in future proposals, ensure that sufficient room is provided in the front yard for ample planting and landscaping.

If the landscaping strip is at grade, select hardy, salt-tolerant native plant material that will be resilient.

If raised planters are used, ensure that adequate soil volumes are provided.

Please be sure to show access to the rear yard on the renderings and plans.

Please Reference the low-rise infill housing design guidelines for more design guidance.

As the proposal evolves and materials are refined, please use clues from the existing built content to help inform what materiality would fit into the neighbourhood.

It would be preferable to have the bicycle parking protected from the elements. Consider having a roof extend from the shed.

Consider where waste/recycling will be located on the site and how it will be brought to the curb for collection.

An Urban Design Brief is required as a part of your submission. This may be combined with your Planning Rationale report. Please refer to the attached Urban Design Brief Terms of Reference to inform the content of the brief.

This application is not subject to review by the Urban Design Review Panel.

Engineering – Reza Bakhit

General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided and all easements shall be shown on the engineering plans.
- A deep excavation and dewatering operations have the potential to cause damages to the neighboring adjacent buildings/ City infrastructure. Document that construction activities (excavation, dewatering, vibrations associated with construction, etc.) will not have an impact on any adjacent buildings and infrastructure.

1. Reference documents for information purposes :

- Ottawa Sewer Design Guidelines (October 2012)
- Technical Bulletin PIEDTB-2016-01
- Technical Bulletins ISTB-2018-01, ISTB-2018-02, ISTB-2018-03, and ISTB-2021-03
- Ottawa Design Guidelines - Water Distribution (2010)
- Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
- City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
- City of Ottawa Environmental Noise Control Guidelines (January 2016)
- City of Ottawa Accessibility Design Standards (2012) (City recommends development be in accordance with these standards on private property)
- Ottawa Standard Tender Documents (latest version)
- Ontario Provincial Standards for Roads & Public Works (2013)
- 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) 580-424 x.44455).

Please note that this is the applicant responsibility to refer to the latest applicable guidelines while preparing reports and studies.



Disclaimer:

The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.

Stormwater Management Criteria and Information:

- **Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the **100-year storm event**, to a **5-year pre-development level**. The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. **[If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5]**. The time of concentration (T_c) used to determine the pre-development condition should be calculated. *T_c should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations*].
- Any storm events greater than the established **5-year allowable** release rate, up to and including the **100-year storm event**, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.
- Please note that foundation drainage is to be independently connected to the storm sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow

prevention. **It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.**

- **Water Quality Control:** Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.
- Please note that as per *Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14)* **there shall be no surface ponding on private parking areas during the 5-year storm rainfall event.**
- **If Underground Storage proposed:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.**

In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.

Please provide information on UG storage pipe. Provide required cover over pipe and details, chart of storage values, capacity etc. How will this pipe be cleaned of sediment and debris? Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc.

Provide a cross section of underground chamber system showing invert and obvert/top, major and minor HWLs, top of ground, system volume provided during major and minor events. UG storage to provide actual 2- and 100-year event storage requirements.

In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.

Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

- Please note that the minimum orifice dia. for a plug style **ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s** in order to reduce the likelihood of plugging.

- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.
- Please provide a **Pre-Development Drainage Area Plan** to define the pre-development drainage areas/patterns. **Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.**
- **If rooftop control and storage is proposed** as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- **Considering the size and the existing condition of the site, and the fact that the proposed building occupy the majority of the site area, it would be acceptable to control the roof portion only and leave the remainder of the site uncontrol as long as the uncontrolled portion is directed towards the right of way. This approach should be discussed in the SWM report. Also, the grading plan should clearly demonstrate that the runoff from the uncontrolled portion of the site will be directed towards the ROW**
- If **Window wells** are proposed, they are to be indirectly connected to the footing drains. A detail of window well with indirect connection is required, as is a note at window well location speaking to indirect connection.
- There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.
- Rear yard on grade parking to be permeable pavement. Refer to City Standard Detail Drawings SC26 (maintenance/temp parking areas), SC27 or permeable asphalt materials. No gravel or stone dust parking areas permitted.

Storm Sewer:

- A 375mm dia. PVC storm sewer (1993) is available within Rosemount Ave.

Sanitary Sewer:

- A 250 mm dia. PVC Sanitary sewer (1993) is available within Rosemount Ave.
- Please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity. An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- Please apply the wastewater design flow parameters *in Technical Bulletin PIEDTB-2018-01*.
- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.
- A backwater valve is required on the sanitary service for protection.

Water :

- A 203 mm dia. PVC watermain (1994) is available within Rosemount Ave.
- Existing residential service to be blanked at the main.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m³/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration*. The basic day demand for this site not expected to exceed 50m³/day.
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.

1. Type of Development and Units
2. Site Address
3. A plan showing the proposed water service connection location.
4. **Average Daily Demand** (L/s)
5. **Maximum Daily Demand** (L/s)
6. **Peak Hour Demand** (L/s)
7. **Fire Flow** (L/min)

[Fire flow demand requirements shall be based on ISTB-2021-03]

Note: The OBC method can be used if the fire demand for the private property is less than 9,000 L/min. If the OBC fire demand reaches 9000 L/min, then the FUS method is to be used.

Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

7. **Hydrant capacity shall be assessed to demonstrate the RFF can be achieved.**
Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

Snow Storage:

1. Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patterns or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

Gas pressure regulating station

A gas pressure regulating station may be required depending on HVAC needs (typically for 12+ units). Be sure to include this on the Grading, Site Servicing, SWM and Landscape plans. This is to ensure that there are no barriers for overland flow routes (SWM) or conflicts with any proposed grading or landscape features with installed structures and has nothing to do with supply and demand of any product.



Gas Pressure
Regulating Station.pdf

Regarding Quantity Estimates:

Please note that external **Garbage and/or bicycle storage structures are to be added to QE under Landscaping** as it is subject to securities. In addition, sump pumps for Sanitary and Storm laterals and/or cisterns are to be added to QE under Hard items as it is subject to securities, even though it is internal and is spoken to under SWM and Site Servicing Report and Plan.

CCTV sewer inspection

CCTV sewer inspection required for pre and post construction conditions to ensure no damage to City Assets surrounding site.

Required Engineering Plans and Studies:

PLANS:

- Existing Conditions and Removals Plan
- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan
- Roof Drainage Plan (If rooftop storage proposed)
- Topographical survey

REPORTS:

- Site Servicing and Stormwater Management Report
- Geotechnical Study/Investigation
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)
- Site lighting certificate

Please refer to the **City of Ottawa Guide to Preparing Studies and Plans [Engineering]**:

Specific information has been incorporated into both the Guide to Preparing Studies and Plans for a site plan. The guide outlines the requirement for a statement to be provided on the plan about where the property boundaries have been derived from.

Added to the general information for servicing and grading plans is a note that an **O.L.S.** should be engaged when reporting on or relating information to property boundaries or existing conditions. The importance of engaging an **O.L.S.** for development projects is emphasized.

Phase One Environmental Site Assessment:

- A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.
- The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.
- Official Plan Section 4.8.4:

<https://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan/volume-1-official-plan/section-4-review-development-applications#4-8-protection-health-and-safety>

Geotechnical Investigation:

- A Geotechnical Study/Investigation shall be prepared in support of this development proposal.
- Reducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long term damages associated with lowering the groundwater in this area.
- Geotechnical Study shall be consistent with the **Geotechnical Investigation and Reporting Guidelines for Development Applications**.

https://documents.ottawa.ca/sites/documents/files/geotech_report_en.pdf

Exterior Site Lighting:

1. Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. 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), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a **Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

Construction approach – Please contact the Right-of-Ways Permit Office TMconstruction@ottawa.ca early in the Site Plan process to determine the ability to construct site and copy File Lead John.Bernier@ottawa.ca on this request.

Transportation – Wally Dubyk

The development site proposes 12 units and no parking spaces. This development would not generate sufficient traffic to warrant a TIA report.

Rosemount Avenue is classified as a Local road. There are no additional protected ROW limits identified in the OP.

General

The drawing should depict the street name Hydro wires, and roadway features.

The purchaser, tenant or sub-lessee acknowledges the unit being rented/sold is not provided with any on-site parking and should a tenant/purchaser have a vehicle for which they wish to have parking that alternative and lawful arrangements will need to be made to accommodate their parking need at an alternative location. The Purchaser/Tenant also acknowledges that the availability and regulations governing on-street parking vary; that access to on-street parking, including through residential on-street parking permits issued by the City cannot be guaranteed now or in the future; and that a purchaser, tenant or sub-lessee intending to rely on on-street parking for their vehicle or vehicles does so at their own risk.

Please keep in mind that on street parking is not a viable option for tenants. Ensure that potential tenants are aware that there is no provision for parking.

Permanent structures such as curbing, stairs, retaining walls, and underground parking foundation also bicycle parking racks are not to extend into the City's right-of-way limits.

The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.

The Owner shall be required to enter into maintenance and liability agreement for all pavers, plant and landscaping material placed in the City right-of-way and the Owner shall assume all maintenance and replacement responsibilities in perpetuity.

Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.

Waste Management Services

I guess the shed in the back is where they will store the waste? If it is it will be sufficient for the following containers:

Garbage: 3 x 360L carts

Fiber: 1 x 360L cart

Glass metal plastic: 1 x 360l cart

Organics: 1 x 240L cart

The 1.5m will work since it's a cart service for only 12 units but we will have to make sure a depress curb of 1.5 wide at street side and a no parking in front so we can collect the containers unless there is a driveway to the building.

Other

You are encouraged to contact the Ward Councillor, Jeff Leiper.

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 do not hesitate to contact me if you have any questions.

Regards,

John Bernier, MCIP, RPP

Planner II | *Urbaniste II*

Development Review, Central | *Examen des projets d'aménagement, Central*

Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement

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 21576

ottawa.ca/planning / ottawa.ca/urbanisme

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APPENDIX C
WATERMAIN CALCULATIONS

Nicholas Vachon

From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: April 21, 2022 1:49 PM
To: Francis Valenti
Subject: RE: 22-2211 - 78 Rosemount - Boundary Condition Request
Attachments: 78 Rosemount Avenue April 2022.pdf

Hi Francis,

The following are boundary conditions, HGL, for hydraulic analysis at 78 Rosemount Avenue (zone 1W) assumed to be connected to the 203 mm watermain on Rosemount Avenue (see attached PDF for location).

Minimum HGL: 108.0 m

Maximum HGL: 114.9 m

Max Day + FF (90 L/s): 108.6 m

Max Day + FF (216.6 L/s): 102.3 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.

Regards,

Reza Bakhit, P.Eng, C.E.T

Project Manager

Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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

613.580.2400 ext./poste 19346, reza.bakhit@ottawa.ca

Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is the easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: Wednesday, April 13, 2022 2:37 PM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Subject: RE: 22-2211 - 78 Rosemount - Boundary Condition Request

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

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Good afternoon Reza,

There have been a few building updates since the (below) boundary condition request. We would like to revise the boundary condition request for 78 Rosemount Ave. The revised demands are listed below, with detailed calculations attached.

- The estimate fire flow is 13,000 L/min based on the FUS
- The estimate fire flow is 5,400 L/min based on the OBC
- Average Daily Demand: 0.07 L/s
- Maximum Daily Demand: 0.71 L/s
- Maximum hourly daily demand: 1.07 L/s

Regards,

Francis Valenti, EIT

Engineering Intern, Land Development

T. 613.714.6895 | C. 613.808.2123

F.Valenti@McIntoshPerry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Bakhit, Reza <reza.bakhit@ottawa.ca>

Sent: April 6, 2022 3:28 PM

To: Francis Valenti <F.Valenti@McIntoshPerry.com>

Subject: RE: 22-2211 - 78 Rosemount - Boundary Condition Request

Hi Francis,

We will review and get back to you.

Thanks,

Reza Bakhit, P.Eng, C.E.T

Project Manager

Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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613.580.2400 ext./poste 19346, reza.bakhit@ottawa.ca

Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is the easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: Wednesday, April 06, 2022 1:51 PM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Subject: 22-2211 - 78 Rosemount - Boundary Condition Request

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Good Afternoon,

We would like to request boundary conditions for the proposed development at 78 Rosemount Avenue. The proposed development consists of the construction of a new 3-story apartment building. The proposed connection (single) will be to the existing 203 mm dia. watermain located within Rosemount Avenue.

- The estimate fire flow is 5,000 L/min based on the FUS
- The estimate fire flow is 2,700 L/min based on the OBC
- Average Daily Demand: 0.07 L/s
- Maximum Daily Demand: 0.71 L/s
- Maximum hourly daily demand: 1.07 L/s

Please find attached a map showing the proposed connection location and calculations prepared for the demands listed above.

Regards,

Francis Valenti, EIT

Engineering Intern, Land Development

T. 613.714.6895 | C. 613.808.2123

F.Valenti@McIntoshPerry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

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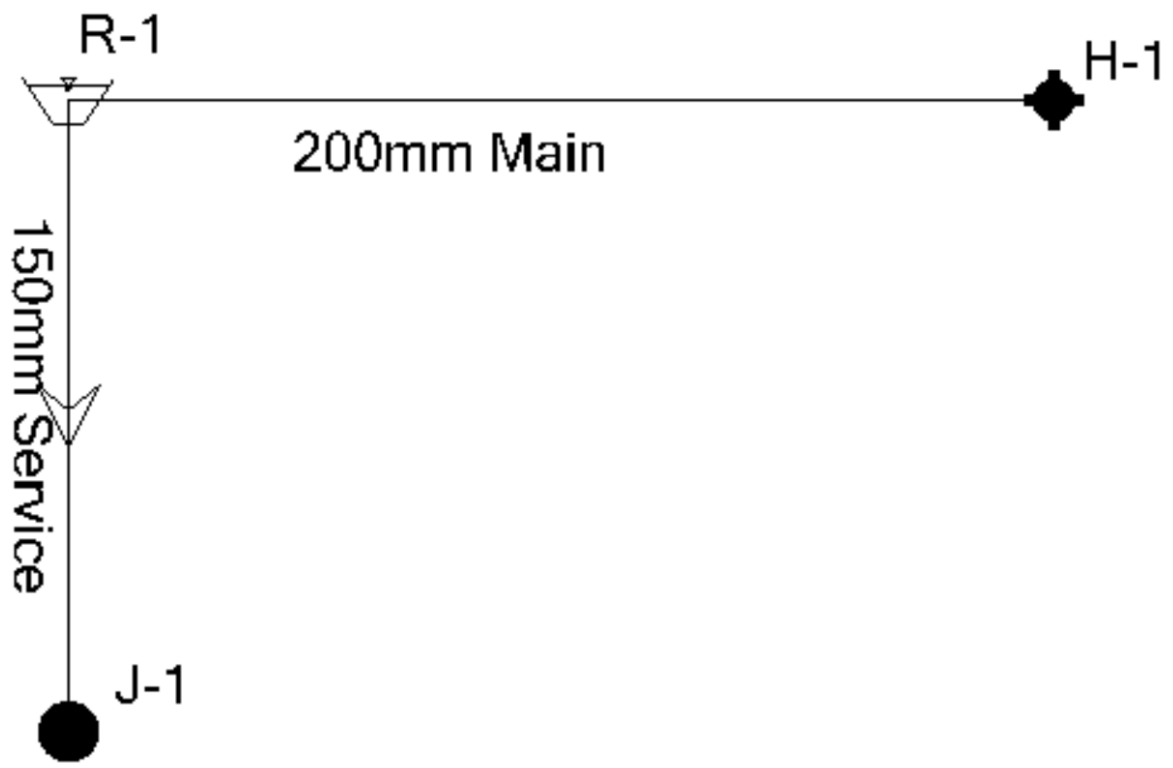
'

Boundary Conditions for 78 Rosemount Avenue



Legend

- PRIVATE
- PUBLIC



Active Scenario: Average Day - Existing Conditions

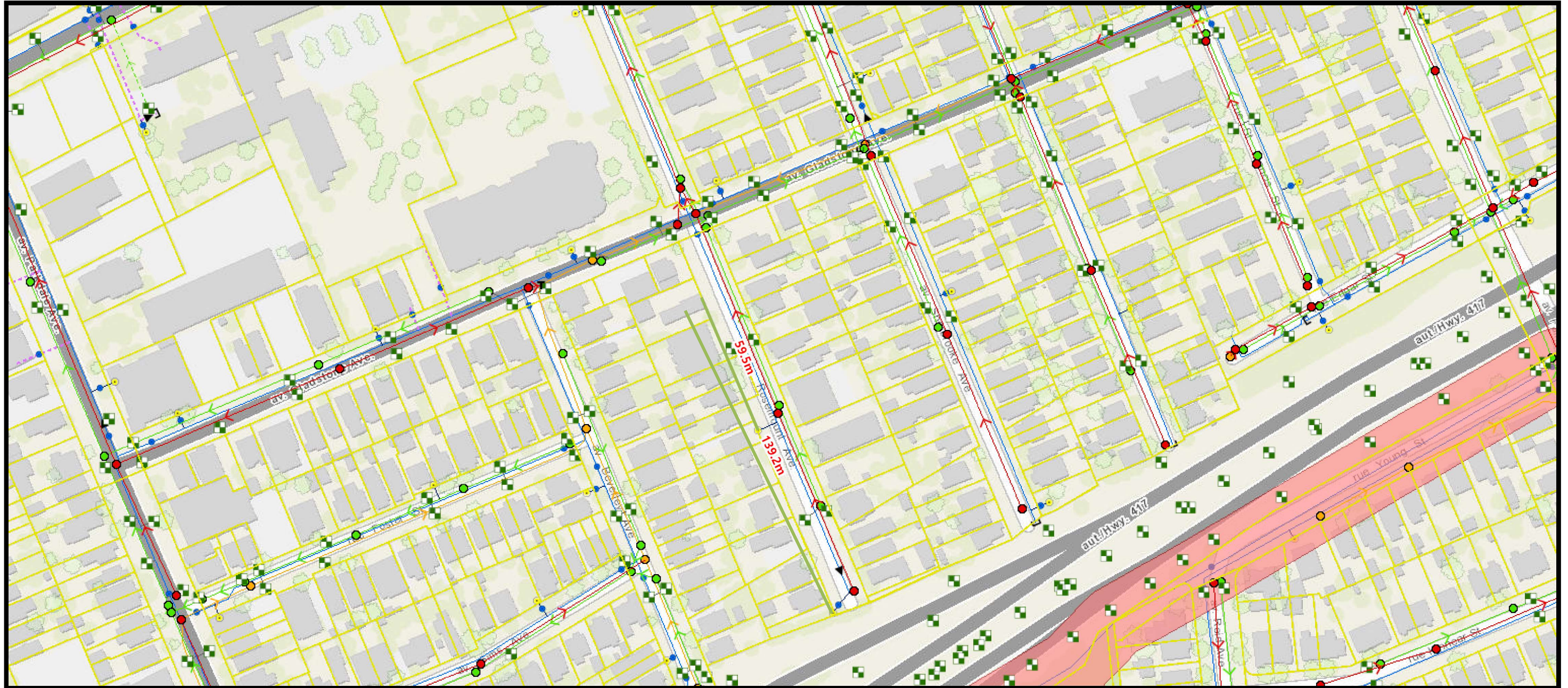
Label	Elevation (m)	Demand (L/min)	Pressure (psi)	Hydraulic Grade (m)
J-1	64.22	4.20	71.94	114.90

Active Scenario: Peak Hourly - Existing Conditions

Label	Elevation (m)	Demand (L/min)	Pressure (psi)	Hydraulic Grade (m)
J-1	64.22	64.20	62.14	108.00

Active Scenario: Max Day + Fire Flow - Existing Conditions

Label	Is Fire Flow Run Balanced?	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (L/min)	Fire Flow (Available) (L/min)	Pressure (psi)	Elevation (m)	Demand (L/min)	Pressure (Residual Lower Limit) (psi)
H-1	True	True	5,400.00	14,079.79	63.46	63.89	0.00	20.00
J-1	False	False	5,400.00	(N/A)	63.00	64.22	42.60	20.00



APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

CCO-22-2211 - 78 Rosemount Avenue - Phase 1 Sanitary Demands

Project:	78 Rosemount Avenue
Project No.:	CCO-22-2211
Designed By:	N.B.V.
Checked By:	B.C.
Date:	May-22

Site Area	0.05	Gross ha		
Bachelor	0		1.40	Persons per unit
1 Bedroom	4		1.40	Persons per unit
2 Bedroom	8		2.10	Persons per unit
Total Population	23	Persons		
Commercial Area	0.00	m ²		
Amenity Space	0.00	m ²		

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.5	*Check technical bulleting (Either use 1.0 or 1.5)
Residential Peaking Factor	3.70	* Using Harmon Formula = $1 + (14 / (4 + P^{0.5})) * 0.8$ where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEIOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.00
Wet	0.02
Total	0.02

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	23	0.07
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m ² /d)	0.00	0.00
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m ² /d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

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AVERAGE RESIDENTIAL FLOW	0.07	L/s
PEAK RESIDENTIAL FLOW	0.28	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.08	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.28	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.29	L/s

** PEAK INDUSTRIAL FLOW PER CITY OF OTTAWA SEWER DESIGN GUIDELINES APPENDIX 4B

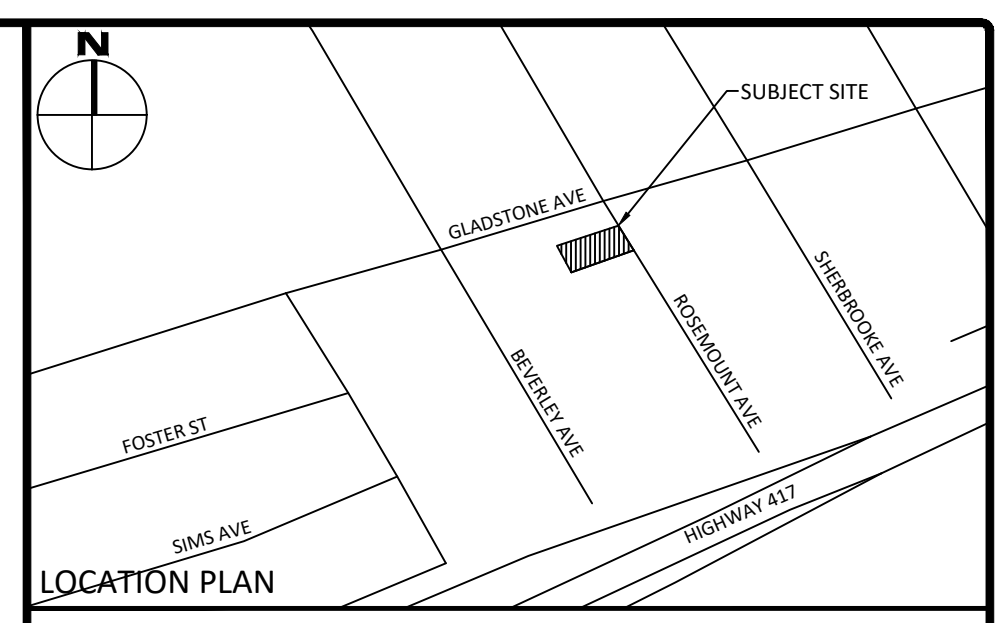
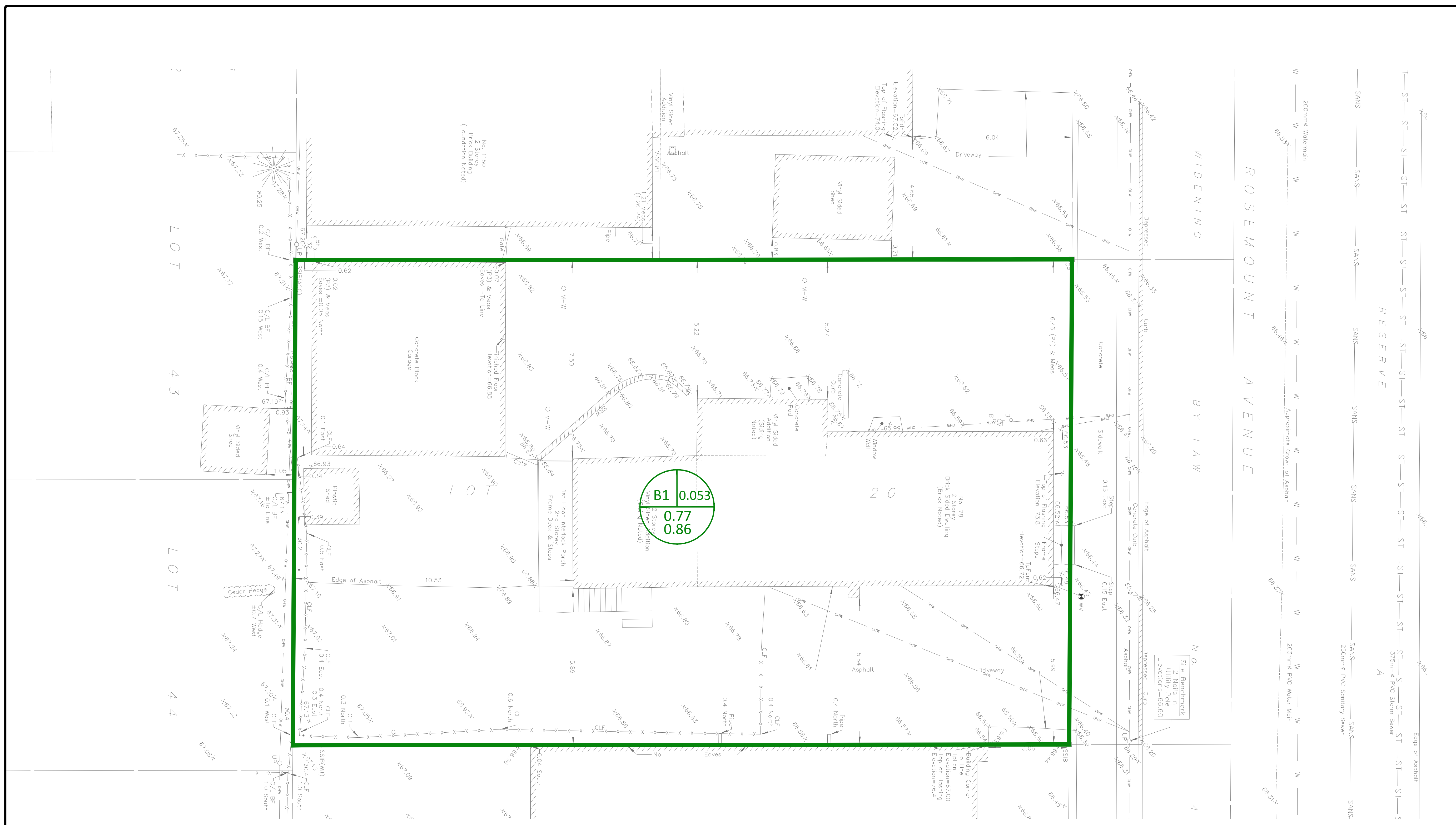
SANITARY SEWER DESIGN SHEET

PROJECT: 78 Rosemount Avenue
 LOCATION: 78 Rosemount Avenue
 CLIENT: 78 Rosemount Avenue Inc.



LOCATION				RESIDENTIAL								ICI AREAS						INFILTRATION ALLOWANCE			FLOW	SEWER DATA									
1	2	3	4	UNIT TYPES			9	POPULATION		12	13	AREA (ha)			20	AREA (ha)		23	24	25	26	27	28	29	AVAILABLE CAPACITY						
STREET	AREA ID	FROM MH	TO MH	1-BED	2-BED	TH	APT	(ha)	IND	CUM	PEAK FACTOR	PEAK FLOW (L/s)	INSTITUTIONAL		COMMERCIAL		INDUSTRIAL		PEAK FLOW (L/s)	IND	CUM	(L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	L/s	(%)	
		BLDG	EX. 250mm	4	8			0.05	22.4	22	3.70	0.27							0.00	0.05	0.05	0.02	0.29	16.97	14.44	135	2.00	1.148	16.68	98.31	
Design Parameters:				Notes:								Designed:						No.			Revision						Date				
Residential				ICI Areas								NBV						1.			ISSUED FOR REVIEW						2022-05-02				
1-BED	1.4	p/p/u						Peak Factor																							
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day			1.5																							
2-BED	2.1	p/p/u	COM	28,000	L/Ha/day			1.5																							
Apt	2.3	p/p/u	IND	35,000	L/Ha/day			MOE Chart																							
Other	60	p/p/Ha																													
				1. Mannings coefficient (n) = 0.013 2. Demand (per capita): 280 L/day 3. Infiltration allowance: 0.33 L/s/Ha 4. Residential Peaking Factor: Harmon Formula = $1 + \frac{14}{(4 + P^{0.5})} * 0.8$ where P = population in thousands								BC																			
				Project No.: CCO-22-2211																							Sheet No: 1 of 1				

**APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN**



LEGEND

DRAINAGE AREA: B1A 0.02

AREA: 0.20, 0.25

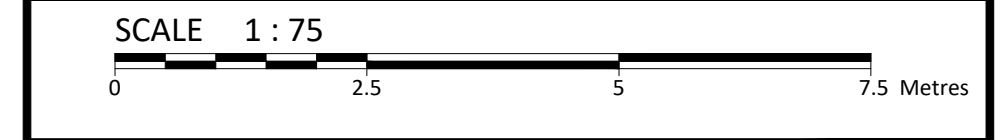
5-YEAR RUNOFF COEFFICIENT

100-YEAR RUNOFF COEFFICIENT

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

1	ISSUED FOR REVIEW	MAY 04, 2022
No.	Revisions	Date

Check and verify all dimensions before proceeding with the work. Do not scale drawings.



McINTOSH PERRY
 115 Walgreen Road, RR3, Carp, ON K0A 1L0
 Tel: 613-836-2184 Fax: 613-836-3742
 www.mcintoshperry.com

Client: **CSV ARCHITECTS**
 190 O'CONNOR STREET, # 100
 OTTAWA, ON K2P 2R3

Project: **78 ROSEMOUNT AVENUE**

Drawing Title: **PRE-DEVELOPMENT DRAINAGE PLAN**

Scale: 1:75 Project Number: **CO-22-2211**

Drawn By: N.B.V.

Checked By: C.J.M.

Designed By: N.B.V.

Stamp: _____

PRE

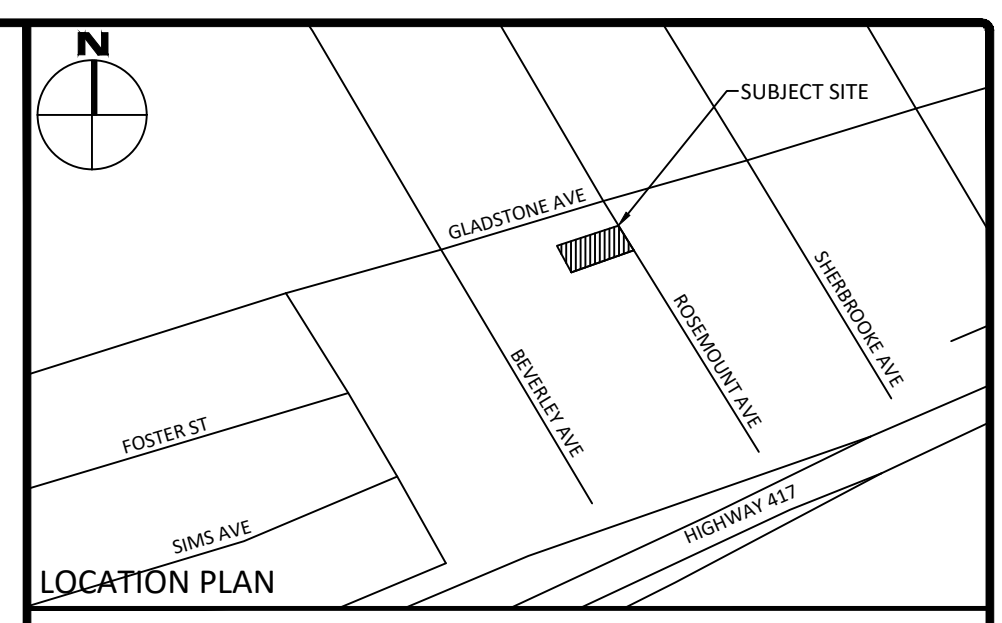
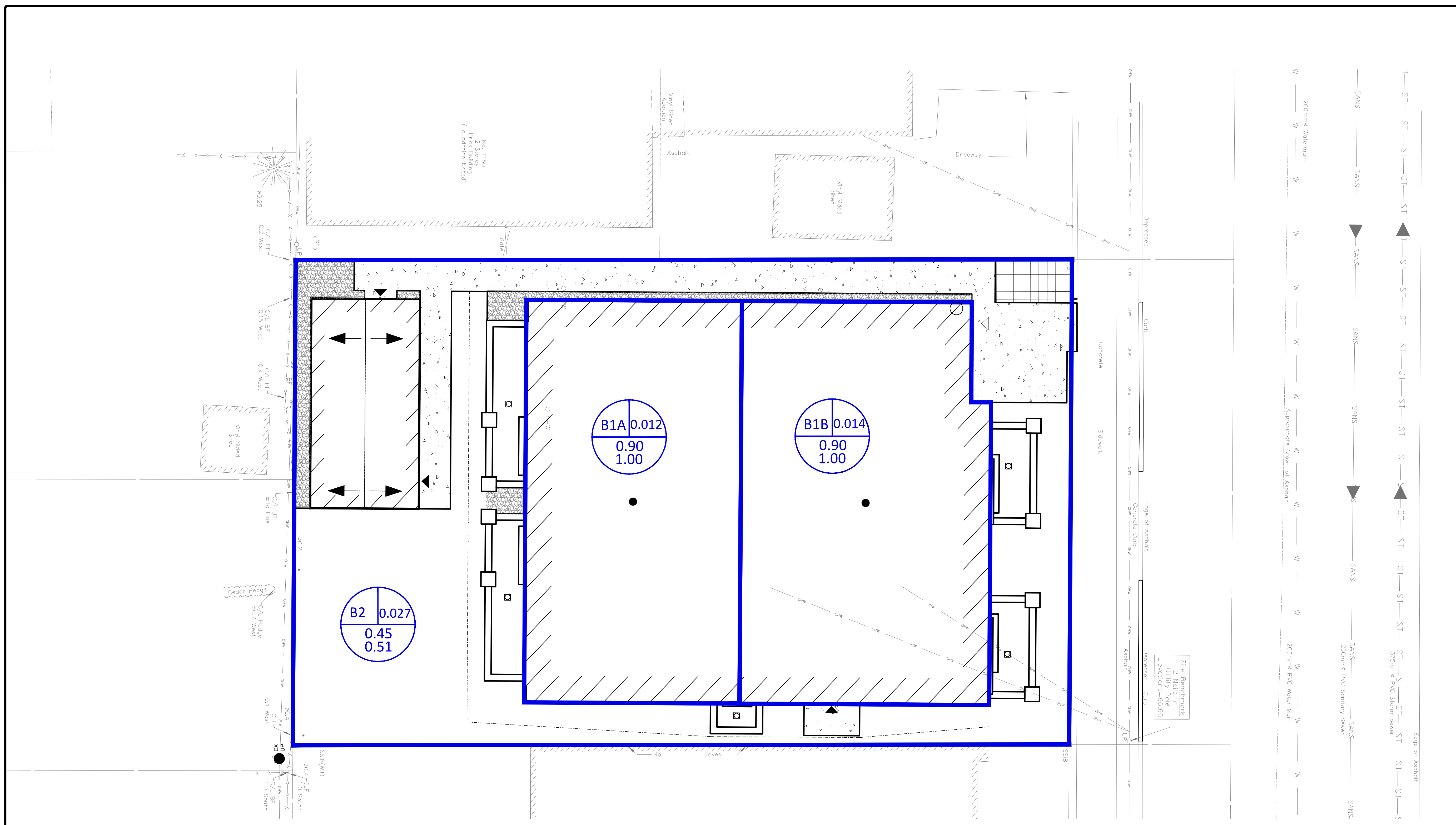
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 LAST SAVED BY: rickson
 LAST PLOTTED: Monday, May 02, 2022 11:18:15 AM

D07-12-XX-XXXX

#XXXXX

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

FILENAME: \\c:\projects\78 Rosemount\78 Rosemount.dwg Project: 78 Rosemount\78 Rosemount.dwg Plot Date: 2022-05-04 10:00:00 AM
 LAST SAVED: Tuesday, April 26, 2022 1:57:54 PM LAST SAVED BY: rickson
 LAST PLOTTED: Monday, May 02, 2022 11:18:18 AM



LEGEND

DRAINAGE AREA

B1A

0.02

0.20

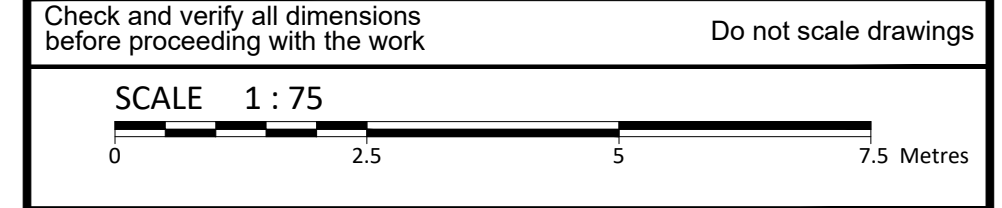
0.25

5-YEAR RUNOFF COEFFICIENT
100-YEAR RUNOFF COEFFICIENT

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

1	ISSUED FOR REVIEW	MAY 04, 2022
No.	Revisions	Date

Check and verify all dimensions before proceeding with the work. Do not scale drawings.



McINTOSH PERRY

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Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Stamp:

Client: **CSV ARCHITECTS**
190 O'CONNOR STREET, # 100
OTTAWA, ON K2P 2R3

Project: **78 ROSEMOUNT AVENUE**

Drawing Title: **POST-DEVELOPMENT DRAINAGE PLAN**

Scale: 1:75	Project Number: CO-22-2211
Drawn By: N.B.V.	Designed By: N.B.V.
Checked By: C.J.M.	Drawing Number: POST

D07-12-XX-XXXX

#XXXX

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CCO-22-2211 - 78 Rosemount Avenue - Runoff Calculations

1 of 6

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m ²)	C	Gravel Area (m ²)	C	Pervious Area (m ²)	C	C _{AVG} 5-Year	C _{AVG} 100-Year
A1	0.053	433.05	0.90	0.00	0.45	101.10	0.20	0.77	0.86

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A1	0.053	0.77	0.86	10	104.2	178.6	11.87	22.75
Total	0.053						11.87	22.75

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m ²)	C	Gravel Area (m ²)	C	Pervious Area (m ²)	C	C _{AVG} 5-Year	C _{AVG} 100-Year	
B1A	0.012	123.23	0.90	0.00	0.25	0.00	0.20	0.90	1.00	Roof
B1B	0.014	140.05	0.90	0.00	0.25	0.00	0.20	0.90	1.00	Roof
B2	0.027	93.98	0.90	16.73	0.25	160.16	0.20	0.45	0.51	Unrestricted

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)		
					5-Year	100-Year	5-Year	100-Year	
B1A	0.012	0.90	1.00	10	104.2	178.6	3.21	6.12	Roof
B1B	0.014	0.90	1.00	10	104.2	178.6	3.65	6.95	Roof
B2	0.027	0.45	0.51	10	104.2	178.6	3.50	6.91	Unrestricted
Total	0.053						10.36	19.98	

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	I (mm/hr)	Q (L/s)
				5-Year	5-Year
A1	0.053	0.50	10	104.2	7.74

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m ³)		Storage Provided (m ³)		
	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	
B1A	3.21	6.12	x	1.39	x	3.26	x	3.39	Restricted
B1B	3.65	6.95	x	1.45	x	3.86	x	4.03	Restricted
B2	3.50	6.91	3.50	6.91					Unrestricted
Total	10.36	19.98	3.50	9.75	0.00	7.13	0.00	7.42	

McINTOSH PERRY

CCO-22-2211 - 78 Rosemount Avenue - Roof Storage

2 of 6

Storage Requirements for Area B1A

100-Year Storm Event

Tc (min)	I (mm/hr)	B1A Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	6.12	1.39	4.73	2.84
20	120.0	4.11	1.39	2.72	3.26
30	91.9	3.15	1.39	1.76	3.16
40	75.1	2.57	1.39	1.18	2.84
50	64.0	2.19	1.39	0.80	2.40
60	55.9	1.91	1.39	0.52	1.89
70	49.8	1.71	1.39	0.32	1.33
80	45.0	1.54	1.39	0.15	0.73

Maximum Storage Required 100-Year (m³) = 3.26

Storage Occupied In Area B1A

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m ³)
Roof	92.42	0.110	3.39
		Total	3.39
Maximum Roof Storage			
Max Storage	92.42	0.150	4.62

Storage Available (m³) = 3.39
Storage Required (m³) = 3.26

*Area is 75% of the total roof area

McINTOSH PERRY

CCO-22-2211 - 78 Rosemount Avenue - Roof Storage

3 of 6

Roof Drain Flow (B1A)

Roof Drains Summary	
Type of Control Device	Watts Drainage - Accutrol Weir
Number of Roof Drains	1
	100-Year
Rooftop Storage (m ³)	3.39
Storage Depth (m)	0.110
Flow (Per Roof Drain) (L/s)	1.39
Total Flow (L/s)	1.39

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

2 roof drains during a 5 year storm

elevation of water = 30mm

Flow leaving 2 roof drains = (2 x 0.36 L/s) = 0.72 L/s

2 roof drains during a 100 year storm

elevation of water = 45mm

Flow leaving 2 roof drains = (2 x 0.54 L/s) = 1.08 L/s

Roof Drain Flow		
Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
0.19	15	0.19
0.25	20	0.25
0.32	25	0.32
0.38	30	0.38
0.44	35	0.44
0.50	40	0.50
0.57	45	0.57
0.63	50	0.63
0.69	55	0.69
0.76	60	0.76
0.82	65	0.82
0.88	70	0.88
0.95	75	0.95
1.01	80	1.01
1.07	85	1.07
1.13	90	1.13
1.20	95	1.20
1.26	100	1.26
1.32	105	1.32
1.39	110	1.39
1.45	115	1.45
1.51	120	1.51
1.58	125	1.58
1.64	130	1.64
1.70	135	1.70
1.76	140	1.76
1.83	145	1.83
1.89	150	1.89

100-Year

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

CCO-22-2211 - 78 Rosemount Avenue - Roof Storage

Storage Requirements for Area B1B

100-Year Storm Event

Tc (min)	I (mm/hr)	B1B Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	6.95	1.45	5.50	3.30
20	120.0	4.67	1.45	3.22	3.86
30	91.9	3.58	1.45	2.13	3.83
40	75.1	2.93	1.45	1.48	3.54
50	64.0	2.49	1.45	1.04	3.12
60	55.9	2.18	1.45	0.73	2.61
70	49.8	1.94	1.45	0.49	2.05
80	45.0	1.75	1.45	0.30	1.45

Maximum Storage Required 100-Year (m³) =	3.86
------------------------------------------------------------	-------------

Storage Occupied In Area B1B

100-Year Storm Event

Roof Storage			
Location	Area	Depth	Volume (m ³)
Roof	105.04	0.115	4.03
		Total	4.03
Maximum Roof Storage			
Roof	105.04	0.150	5.25

Storage Available (m³) =	4.03
Storage Required (m³) =	3.86

*Area is 75% of the total roof area

McINTOSH PERRY

CCO-22-2211 - 78 Rosemount Avenue - Roof Storage

Roof Drain Flow (B3B)

Roof Drains Summary	
Type of Control Device	Watts Drainage - Accutrol Weir
Number of Roof Drains	1
	100-Year
Rooftop Storage (m ³)	4.03
Storage Depth (m)	0.115
Flow (Per Roof Drain) (L/s)	1.45
Total Flow (L/s)	1.45

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

4 roof drains during a 5 year storm

elevation of water = 50mm

Flow leaving 4 roof drains = (4 x 0.60 L/s) = 2.40 L/s

4 roof drains during a 100 year storm

elevation of water = 75mm

Flow leaving 4 roof drains = (4 x 0.90 L/s) = 3.60 L/s

Roof Drain Flow		
Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
0.19	15	0.19
0.25	20	0.25
0.32	25	0.32
0.38	30	0.38
0.44	35	0.44
0.50	40	0.50
0.57	45	0.57
0.63	50	0.63
0.69	55	0.69
0.76	60	0.76
0.82	65	0.82
0.88	70	0.88
0.95	75	0.95
1.01	80	1.01
1.07	85	1.07
1.13	90	1.13
1.20	95	1.20
1.26	100	1.26
1.32	105	1.32
1.39	110	1.39
1.45	115	1.45
1.51	120	1.51
1.58	125	1.58
1.64	130	1.64
1.70	135	1.70
1.76	140	1.76
1.83	145	1.83
1.89	150	1.89

100-Year

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

McINTOSH PERRY

CP-19-0608 - 1518-1526 Stittsville Main - Runoff Calculations

6 of 6

Time of Concentration Pre-Development

Drainage Area ID	Sheet Flow Distance (m)	Slope of Land (%)	Tc (min) (5-Year)	Tc (min) (100-Year)
A1	29	2.31	4	3

Therefore, a Tc of 10 can be used

$$T_c = (3.26(1.1-c)L^{0.5}/S^{0.33})$$

c= Blanced Runoff Coefficient

L= Length of drainage area

S= Average slope of watershed

STORM SEWER DESIGN SHEET

PROJECT: 78 Rosemount Avenue
LOCATION: Ottawa, Ontario
CLIENT: 78 Rosemount Avenue Inc.

LOCATION				CONTRIBUTING AREA (ha)								RATIONAL DESIGN FLOW										SEWER DATA										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
STREET	AREA ID	FROM MH	TO MH	C-VALUE						INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr)		
				0.20	0.60	0.79	0.85	0.87	0.90																DIA	W	H			(L/s)	(%)	
	B1, B2	BLDG	Tee							0.026	0.02	0.02	10.00	0.22	10.22	104.19	122.14	178.56	6.86				6.86	22.47	16.22	150			2.00	1.232	15.61	69.45%
Definitions: Q = 2.78CIA, where: Q = Peak Flow in Litres per Second (L/s) A = Area in Hectares (ha) i = Rainfall intensity in millimeters per hour (mm/hr) [i = 998.071 / (TC+6.053)^0.814] 5 YEAR [i = 1174.184 / (TC+6.014)^0.816] 10 YEAR [i = 1735.688 / (TC+6.014)^0.820] 100 YEAR				Notes: 1. Mannings coefficient (n) = 0.013								Designed: N.V.B.				No. Revision Date																
												Checked: C.J.M.				1. Issued for review 2022-05-04																
												Project No.: CCO-22-2211				Sheet No: 1 of 1																

**APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST**

City of Ottawa

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

Criteria	Location (if applicable)
<input type="checkbox"/> Executive Summary (for larger reports only).	N/A
<input type="checkbox"/> Date and revision number of the report.	On Cover
<input type="checkbox"/> Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
<input type="checkbox"/> Plan showing the site and location of all existing services.	Site Servicing Plan (C102)
<input type="checkbox"/> Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
<input type="checkbox"/> Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
<input type="checkbox"/> Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
<input type="checkbox"/> Statement of objectives and servicing criteria.	3.0 Pre-Consultation Summary

<input type="checkbox"/> Identification of existing and proposed infrastructure available in the immediate area.	N/A
<input type="checkbox"/> Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Site Grading Plan (C101)
<input type="checkbox"/> Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Site Grading Plan (C101)
<input type="checkbox"/> Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
<input type="checkbox"/> Proposed phasing of the development, if applicable.	N/A
<input type="checkbox"/> Reference to geotechnical studies and recommendations concerning servicing.	Section 2.0 Background Studies, Standards and References
<input type="checkbox"/> All preliminary and formal site plan submissions should have the following information: <ul style="list-style-type: none"> ○ Metric scale ○ North arrow (including construction North) ○ Key plan ○ Name and contact information of applicant and property owner ○ Property limits including bearings and dimensions ○ Existing and proposed structures and parking areas ○ Easements, road widening and rights-of-way ○ Adjacent street names 	Site Grading Plan (C101)

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
<input type="checkbox"/> Confirm consistency with Master Servicing Study, if available	N/A
<input type="checkbox"/> Availability of public infrastructure to service proposed development	N/A
<input type="checkbox"/> Identification of system constraints	N/A
<input type="checkbox"/> Identify boundary conditions	Appendix C
<input type="checkbox"/> Confirmation of adequate domestic supply and pressure	N/A
<input type="checkbox"/> Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter’s Survey. Output should show available fire flow at locations throughout the development.	Appendix C
<input type="checkbox"/> Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
<input type="checkbox"/> Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
<input type="checkbox"/> Address reliability requirements such as appropriate location of shut-off valves	N/A
<input type="checkbox"/> Check on the necessity of a pressure zone boundary modification.	N/A
<input type="checkbox"/> Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Appendix C, Section 4.2

<input type="checkbox"/> Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Site Servicing Plan (C101)
<input type="checkbox"/> Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
<input type="checkbox"/> Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix C
<input type="checkbox"/> Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

Criteria	Location (if applicable)
<input type="checkbox"/> Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	N/A
<input type="checkbox"/> Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
<input type="checkbox"/> Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
<input type="checkbox"/> Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2 Proposed Sanitary Sewer

<input type="checkbox"/> Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 5.3 Proposed Sanitary Design
<input type="checkbox"/> Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N/A
<input type="checkbox"/> Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2 Proposed Sanitary Sewer
<input type="checkbox"/> Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A
<input type="checkbox"/> Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
<input type="checkbox"/> Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
<input type="checkbox"/> Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
<input type="checkbox"/> Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Criteria	Location (if applicable)
<input type="checkbox"/> Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
<input type="checkbox"/> Analysis of available capacity in existing public infrastructure.	N/A
<input type="checkbox"/> A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
<input type="checkbox"/> Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5-year event (dependent on the receiving sewer design) to 100-year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
<input type="checkbox"/> Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
<input type="checkbox"/> Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
<input type="checkbox"/> Set-back from private sewage disposal systems.	N/A
<input type="checkbox"/> Watercourse and hazard lands setbacks.	N/A
<input type="checkbox"/> Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
<input type="checkbox"/> Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
<input type="checkbox"/> Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).	Appendix G

<input type="checkbox"/> Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Site Grading Plan
<input type="checkbox"/> Calculate pre-and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 7.0 Proposed Stormwater Management Appendix G
<input type="checkbox"/> Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
<input type="checkbox"/> Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
<input type="checkbox"/> If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
<input type="checkbox"/> Identification of potential impacts to receiving watercourses	N/A
<input type="checkbox"/> Identification of municipal drains and related approval requirements.	N/A
<input type="checkbox"/> Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
<input type="checkbox"/> 100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Site Grading Plan (C101)
<input type="checkbox"/> Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A

<input type="checkbox"/> Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 8.0 Sediment & Erosion Control
<input type="checkbox"/> Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
<input type="checkbox"/> Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

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

4.6 Conclusion Checklist

Criteria	Location (if applicable)
<input type="checkbox"/> Clearly stated conclusions and recommendations	Section 9.0 Summary Section 10.0 Recommendations
<input type="checkbox"/> Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	All are stamped
<input type="checkbox"/> All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped