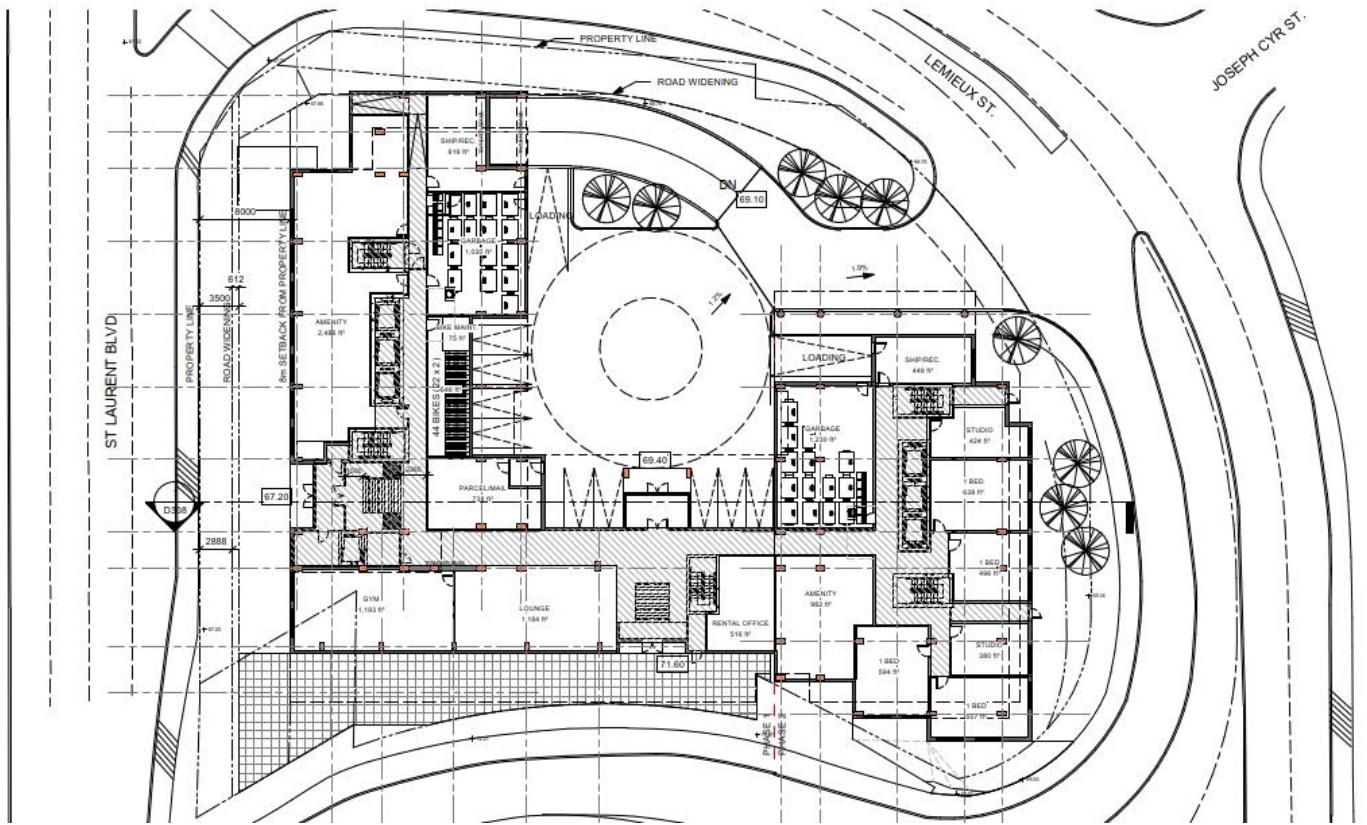


SERVICING & STORMWATER MANAGEMENT REPORT

1209 ST. LAURENT BOULEVARD, OTTAWA



Project No.: CCO-22-1215

City File No.: D07-12-XX-XXXX

Prepared for:

Canderel Management Inc.
200-350 Albert Street
Ottawa, ON K1R 1A4

Prepared by:

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

May 20, 2022

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by Canderel Management Inc. to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control application for the proposed 30-storey residential building, located at 1209 St. Laurent Boulevard 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:

- OOO-22-1215, C101 – Site Grading and Drainage Plan, and
- OOO-22-1215, C102 – Site Servicing Plan.
- OOO-22-1215, PRE – Pre-Development Drainage Area Plan (Appendix E)
- OOO-22-1215, POST – Post-Development Drainage Area Plan (Appendix F)

1.2 Site Description

The property is located at 1209 St. Laurent Boulevard. It is described as Plan 4R-33004 and Plan 5R-9619, Part of Lots 4 and 14, Concession 2 (Ottawa Front), Ward 11 Beacon Hill-Oryville, City of Ottawa. The land in question covers approximately 0.43 ha and is bounded by St. Laurent Boulevard, Lemieux Street and an existing ramp accessing St. Laurent Boulevard. The development area for the proposed works is approximately 0.43 ha. The site is zoned for Transit Oriented Development (TD3). See Site Location Plan in Appendix 'A' for more details.

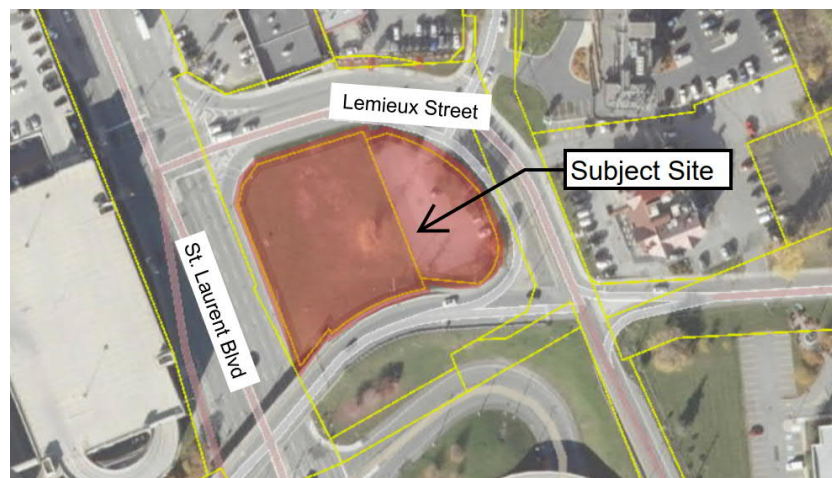


Figure 1: Site Map

1.3 Proposed Development and Statistics

The proposed development consists of a two 30-storey residential towers with a 7-storey podium to connect the towers. Visitor parking and drive aisles will be provided through an internal courtyard. Underground parking will be provided for residents with site access extending from Lemieux Street.

1.4 Existing Conditions and Infrastructure

The existing site is currently undeveloped with a small parking lot fronting Lemieux Street. The existing site has no sanitary or water services, however, stormwater from the parking lot is captured by an existing catchbasin on site. Stormwater from the remainder of the site travels overland to the City right of ways where it is captured by existing municipal catchbasins.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal rights-of-way(s):

- St. Laurent Boulevard
 - 406mm diameter unlined cast iron watermain
 - 762mm diameter transmission watermain
 - 525mm diameter concrete sanitary sewer, tributary to the Cyrville Road Collector
 - 600mm diameter concrete storm sewer, tributary to the Rideau River with approximately 2.4 Km to the outlet, and
 - 400-450mm diameter concrete storm sewer, tributary to the Rideau River
- Lemieux Street
 - 203mm diameter unlined cast iron watermain
 - 250mm diameter asbestos concrete sanitary sewer, tributary to the Cyrville Road Collector, and a
 - 300mm diameter concrete storm sewer, tributary to the Rideau River with approximately 2.4 Km to the outlet

1.5 Approvals

The proposed development is subject to the City of Ottawa site plan control process. Site plan control requires the City to review, provided concurrence and approve the engineering design package. Permits to construct can be requested once the City has issued a site plan agreement.

An Environmental Compliance Approval (ECA) through the Ministry of Environment, Conservation and Parks (MECP) is not anticipated to be required for the development since the development is contained within a single parcel of land, is not within a combined sewershed, and does not propose industrial sewage. As a result, the stormwater management system meets the exemption requirements under O.Reg 525/90..

2.0 BACKGROUND STUDIES, STANDARDS, AND REFERENCES

2.1 Background Reports / Reference Information

Background studies that have been completed for the proposed site include City of Ottawa as-built drawings, a topographical survey, a geotechnical report and a Phase I & II Environmental Site Assessment (ESA).

As-built drawings of existing services within the vicinity of the proposed site were reviewed in order to determine accurate servicing and stormwater management schemes for the site.

A topographic survey of the site (Job No. 21851-21) was completed by Annis, O'Sullivan, Vollebakk LTD., dated March 10, 2022.

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

- Preliminary Geotechnical and Hydrological Investigation completed by GHD Group, dated August 13, 2021.
- Phase One Environmental Site Assessment completed by GHD Group, dated January 10, 2022.
- Phase Two Environmental Site Assessment completed by GHD Group, dated January 11, 2022.

2.2 Applicable Guidelines and Standards

City of Ottawa:

- ◆ Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (Ottawa Sewer Guidelines)
 - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (ISTB-2014-01)
 - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (PIEDTB-2016-01)
 - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (ISTB-2018-01)
 - Technical Bulletin ISTB-2018-03 City of Ottawa, March 2018. (ISTB-2018-03)
 - Technical Bulletin ISTB-2019-01 City of Ottawa, January 2019. (ISTB-2019-01)
 - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (ISTB-2019-02)
- ◆ Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (Ottawa Water Guidelines)
 - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (ISD-2010-2)
 - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (ISDTB-2014-02)
 - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. (ISTB-2018-02)

Ministry of Environment, Conservation and Parks:

- ◆ Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (MECP Stormwater Design Manual)

- ◆ Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (MECP Sewer Design Guidelines)

Other:

- ◆ Water Supply for Public Fire Protection, Fire Underwriters Survey, 2020. (FUS Guidelines)

3.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on August 11, 2021 regarding the proposed site. Specific design parameters to be incorporated within this design include the following:

- Pre-development and post-development flows shall be calculated using a time of concentration (T_c) of 10 minutes.
- Control post-development flows to the pre-development flows with a combined C value of 0.50.
- Coordination with the FVCA is required to confirm quality control requirements.

The notes from the City of Ottawa can be found in Appendix 'B'.

4.0 WATERMAIN

4.1 Existing Watermain

The site is located within the 1E pressure zone, as per the Water Distribution System mapping included in Appendix C. There is an existing 203mm diameter UCI watermain within Lemieux Street. The watermain provides servicing to the municipal fire hydrant along the North side of Lemieux Street.

4.2 Proposed Watermain

Two new 150mm diameter PVC water services are proposed to service the development complete with water valves located at the property line. The water services are proposed to be serviced by the existing 203 mm diameter watermain within Lemieux Street. The services are designed to have a minimum of 2.4m cover. Refer to drawing C102 for a detailed servicing layout.

The Fire Underwriters Survey 2020 (FUS) method was utilized to determine the required fire flow for the site. The 'C' factor (type of construction) for the FUS calculation was determined to be 0.8 (non-combustible type). The total floor area ('A' value) for the FUS calculation was determined to be 6,248.3 m². The results of the calculations yielded a required fire flow of 7,000 L/min. The detailed calculations for the FUS can be found in Appendix 'C'.

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 in Table 1, below. In accordance with Section 4.3.1 of the guidelines, service areas with a basic day demand greater than 50 m³/day require a dual connection to the municipal system. The basic day demand for the development is estimated to be 305 m³/day, therefore a dual connection is required.

Table 1: Water Supply Design Criteria and Water Demands

Site Area	0.143 ha
Residential	280 L/person/ day
1 Bedroom Apartment	1.4 persons/ unit
2 Bedroom Apartment	2.1 persons/ unit
Bachelor Apartment	1.4 persons/ unit
Maximum Daily Peaking Factor	2.2 x avg day
Maximum Hour Peaking Factor	5.5 x max day
Average Day Demand (L/s)	3.53
Maximum Daily Demand (L/s)	7.77
Peak Hourly Demand (L/s)	19.43
FUS Fire Flow Requirement (L/s)	116.66 (7,000 L/min)

The City provided the estimated water pressures at both for the average day scenario, peak hour scenario and the max day plus fire flow scenario for the demands indicated by the correspondence

in Appendix C. The resulting pressures for the boundary conditions results are shown in Table 2, below.

Table 2: Boundary Conditions Results

Scenario	Proposed Demands (L/s)	Connection HGL (m H ₂ O)* / kPa
Average Day Demand	3.53	51.2 / 501.9
Maximum Daily + Fire Flow Demand	124.44	43.1 / 422.4
Peak Hourly Demand	19.43	42.9 / 420.5
* Adjusted for an estimated ground elevation of 67.34m above the connection point.		

The normal operating pressure range is anticipated to be 421 kPa to 502 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi).

To confirm the adequacy of fire flow to protect the proposed development, public fire hydrants within 150 m of the proposed building were analysed per City of Ottawa ISTB 2018-02 Appendix I Table 1. Based on City guidelines (ISTB-2018-02), the existing hydrants can provide adequate fire protection to the proposed development. The results are summarized in Table 3, below.

Table 3: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m	Fire Hydrant(s) within 150m	Combined Fire Flow (L/min.)
1209 St. Laurent Boulevard	7,000 (FUS)	3	3	28,500

5.0 SANITARY DESIGN

5.1 Existing Sanitary Sewer

There is an existing 525mm diameter concrete sanitary sewer within St. Laurent Boulevard.

5.2 Proposed Sanitary Sewer

A new 200 mm diameter gravity sanitary is proposed be connected to the existing 525 mm diameter sanitary sewer at the existing sanitary manhole (MHSA00412) within St. Laurent Boulevard. As no permanent structures are permitted in the 8 m setback along St. Laurent Boulevard it is anticipated monitoring would occur at MHSA00412. Refer to drawing C102 for a detailed servicing layout.

The subject site is a proposed apartment building. The total area of the building is 25,777 m². The peak design flows for the proposed building were calculated using criteria from the Ottawa Sewer Guidelines and are summarized in Table 4, below. Based on the unit occupancy statistics provided by the architect, the proposed site development will generate a flow of 11.52 L/s. See Appendix 'D' of this report for more details.

Table 4: Sanitary Design Criteria

Design Parameter	Value
Site Area	0.43 ha
Residential	280 L/person/day
1 Bedroom Apartment	1.4 persons/unit
2 Bedroom Apartment	2.1 persons/unit
Bachelor Apartment	1.4 persons/unit
Residential Peaking Factor	3.22
Extraneous Flow Allowance	0.33 L/s/ha

Table 5, below, summarizes the estimated wastewater flow from the proposed development. Refer to Appendix D for detailed calculations.

Table 5: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/s)
Total Estimated Average Dry Weather Flow	3.55
Total Estimated Peak Dry Weather Flow	11.40
Total Estimated Peak Wet Weather Flow	11.52

The proposed 200 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. The capacity of the service lateral is 33.74 L/s at a proposed slope of 1.00%. Due to the complexity of the downstream network, the City will need to advise of any downstream constraints. See Appendix 'D' of this report for more details.

6.0 STORM SEWER DESIGN

6.1 Existing Storm Sewers

Water runoff from the site is currently tributary to the Rideau River within the Lower Rideau sub-watershed. The subject property is currently serviced by a catch basin on the east side of the site and municipal catch basins within St. Laurent Boulevard. There is an existing 600mm diameter storm sewer within St. Laurent Boulevard that is available to service the site.

6.2 Proposed Storm Sewers

A new 250 mm storm service will be extended from the existing 600 mm diameter storm sewer within St Laurent Boulevard. The sewer system will provide attenuation for the roof area and drive aisle/entrance area by an internal cistern complete with a Tempest MHF-A ICD or an approved equivalent. A cistern detail prepared by the Mechanical Engineer is available in Appendix G.

Foundation drainage is proposed to be conveyed without flow attenuation via the 250 mm diameter storm service downstream of any cistern controls.

See COO-22-1215 - POST include in Appendix F of this report for more details. The Stormwater Management design for the subject property will be outlined in Section 7.0 of this report.

7.0 PROPOSED STORMWATER MANAGEMENT

7.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through the use of an internal cistern and will collect runoff from the at-grade areas within the site. The flow will be directed to the existing 600 mm diameter storm sewer within St. Laurent Boulevard.

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

- Based on the distance to the downstream storm outlet being over 2 Km, the RVCA does not require on-site water quality treatment. Refer to Appendix B for correspondence with the RVCA.

Quantity Control

- Pre-development and post-development flows shall be calculated using a time of concentration (T_c) of 10 minutes.
- Control post-development flows to the pre-development flows with a combined C value of 0.50.

7.2 Runoff Calculations

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

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

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 result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

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 the pre-consultation meeting with the City of Ottawa the time of concentration (Tc) used for pre-development shall be calculated using a Tc of 10 minutes and post-development flows shall be calculated using a Tc of 10 minutes.

7.3 Pre-Development Drainage

It has been assumed that the site contains no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 5, and 100-year events are summarized below in Table 6. See COO-22-1215 - PRE in Appendix E and Appendix G for calculations.

Table 6: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Q (L/s)	
		5-Year	100-Year
A1	0.428	45.52	91.17

7.4 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See COO-22-1215 - POST in Appendix 'F' of this report for more details. A summary of the Post-Development Runoff Calculations can be found below.

Table 7: Post-Development Runoff Summary

Drainage Area	Area (ha)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)	100-year Storage Required (m ³)	100-year Storage Available (m ³)
B1	0.293	47.81	77.81	38.40	38.52
B2	0.135	14.16	28.39	-	-
Total	0.428	61.97	106.20	38.40	38.52

Runoff for area B1 will be collected by roof drains (uncontrolled) and surface drains and conveyed to the internal cistern. The 38.52 m³ internal cistern is anticipated to convey stormwater to the outlet at a maximum flow rate of 47.81 L/s and 77.81 L/s for the 5 and 100-year storms, respectively. Flows in excess of the 100-year storm event will need to be directed towards St. Laurent Boulevard via a cistern overflow. A cistern detail provided by the Mechanical Engineer and complete storm calculations are included in Appendix G.

Foundation drainage is proposed to be conveyed without flow attenuation via the 250 mm storm service, downstream of cistern controls.

8.0 EROSION AND SEDIMENT CONTROL

8.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams 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. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. Fibre roll barriers are to be installed at all existing curb inlet catchbasins and filter fabric is to be placed under the grates of all existing catchbasins and manholes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures is 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 the Site Grading, Drainage and Sediment & Erosion Control Plan for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

8.2 Permanent Measures

Rip-rap will be placed at all locations that have the potential for concentrated flow. It is crucial that the Contractor ensure that the geotextile is keyed in properly to ensure runoff does not undermine the rip rapped area. Additional rip rap is to be placed at erosion prone locations as identified by the Contractor / Contract Administrator / City or Conservation Authority.

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the

site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

9.0 SUMMARY

- 30-storey residential towers are proposed be constructed at 1209 St. Laurent Boulevard.
- Two 150 mm diameter water services are proposed to be connected to the existing 200 mm diameter within Lemieux Street.
- A new 200 mm diameter sanitary service is proposed to service the development via the 525 mm diameter sanitary sewer within St. Laurent Boulevard tributary to the Cyrville Road collector.
- A new 250 mm storm service for rooftop, surface, and foundation drainage is proposed to service the development. The storm service will connect to the 600mm diameter storm sewer within St. Laurent Boulevard, tributary to the Ottawa River approximately 2.4 Km downstream.
- Storage for the 5- through 100-year storm events will be provided through internal cistern attenuation.
- Quality control requirements have been requested from the RVCA however were not available at the time of submission.

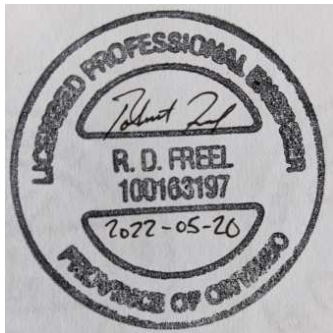
10.0 RECOMMENDATION

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 at 1209 St. Laurent Boulevard

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.



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E: r.freel@mcintoshperry.com

A handwritten signature in black ink that reads "Ryan Robineau".

Ryan R. Robineau, E.I.T.
Civil Engineering Technologist, Land Development
T: 613.714.6611
E: r.robineau@mcintoshperry.com

11.0 STATEMENT OF LIMITATIONS

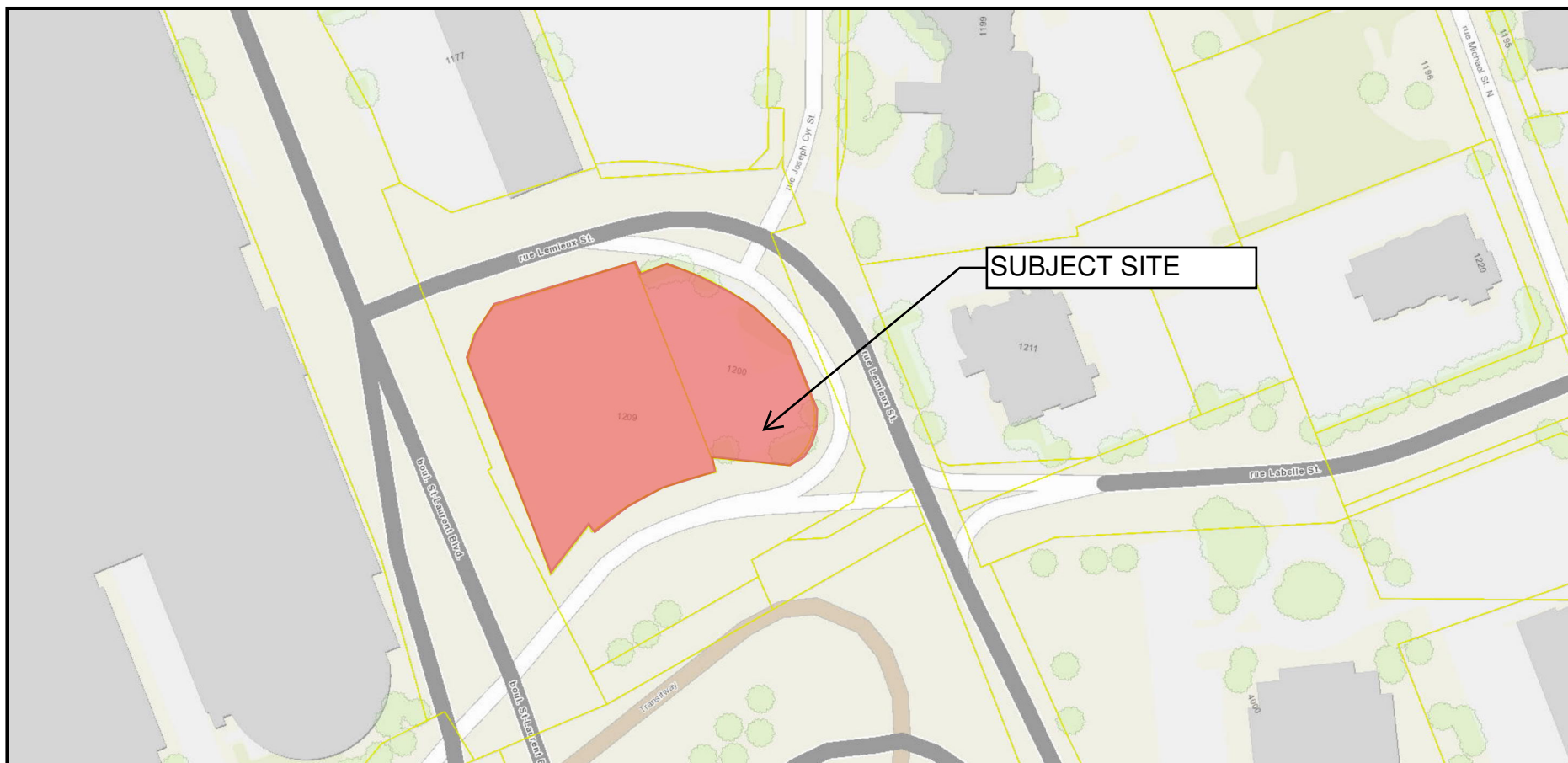
This report was produced for the exclusive use of Canderel Management Inc. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry 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.

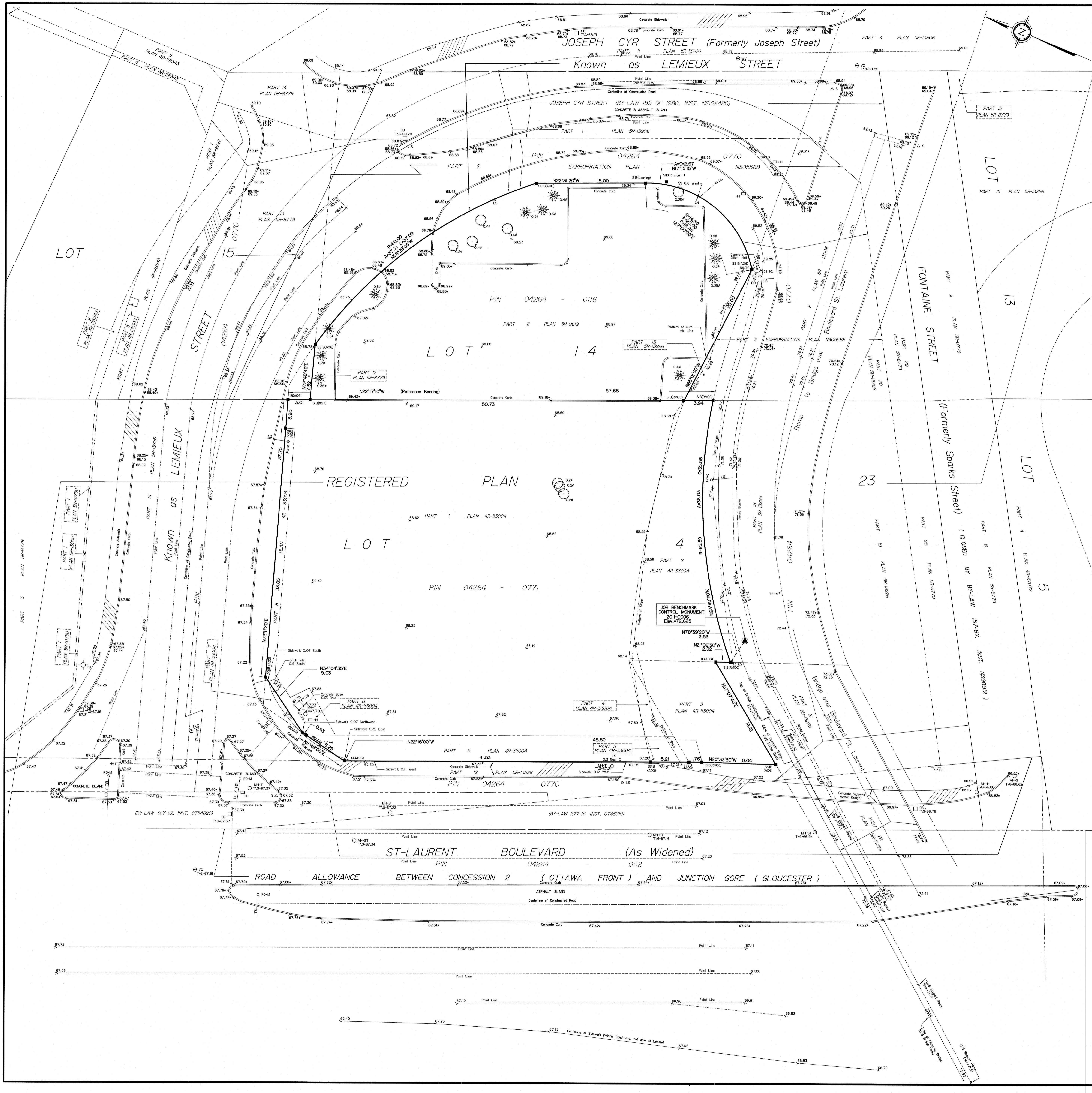
The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested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

**APPENDIX A
SITE LOCATION PLAN**

LOCATION PLAN: 1209 ST. LAURENT BOULEVARD



APPENDIX B
CITY OF OTTAWA PRE-CONSULTATION NOTES



**PLAN OF SURVEY OF
PART OF LOTS 4 and 14
REGISTERED PLAN 23
CITY OF OTTAWA**
Surveyed by Annis, O'Sullivan, Vollebek Ltd.

Scale 1 : 250
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 Metres

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

Surveyor's Certificate
I, THE SURVEYOR, CERTIFY THAT:
1. This survey and plan are correct and in accordance with the Survey Act and the Regulations made under the Survey Act and the regulations made under the Survey Act.
2. The survey was completed on the 7th day of March, 2022.
Date: March 19, 2022
Andrew J. Brodham
Ontario Land Surveyor

Notes & Legend

Denotes	Survey Monument Found
—	Survey Monument Found
SIB	Standard Iron Bar
SSIB	Short Standard Iron Bar
IB	Iron Bar
CC	Cut Cross
(WIT)	Witness
Meas.	Measured
(AOG)	Annis, O'Sullivan, Vollebek Ltd. (AOG) Plan dated August 18, 2021
(PI)	(AOG) Plan dated August 18, 2021
○ MH-ST	Maintenance Hole (Storm Sewer)
○ MH-S	Maintenance Hole (Sanitary)
○ MH-T	Maintenance Hole (Traffic)
○ MH-H	Maintenance Hole (Hydro)
○ VC	Valve Chamber (Watermain)
○ UP	Utility Pole
○ AN	Anchor
○ LS	Light Standard
○ CB	Catch Basin
○ DI	Ditch Inlet
○ FH	Fire Hydrant
Inv.	Invert
T/G	Top of Grate
△ S	Sign
○ PO-M	Metal Pole
○ PO-C	Concrete Pole
TSL	Traffic Light
□ HI	Handhole
C/L	Centreline
U/S	Underside
○	Location of Elevations
○	Top of Concrete Curb / Jersey Barrier Elevation
○	Deciduous Tree
○	Coniferous Tree

All bearing and distances between found survey monuments are (P) & Meas. unless otherwise noted.
Bearings are grid, derived from the easterly limit of Part 1 Plan 4R-33004 shown to be N22°17'10"W thereon and are referenced to MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

SITE AREA = 4280.7 m²

ELEVATION NOTES
1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that its relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES
1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

Topographic data was collected under Winter Conditions. Snow cover and ice preclude determining location and elevation of some topographical data that is otherwise visible.

ASSOCIATION OF ONTARIO
LAND SURVEYORS
PLAN SUBMISSION FORM
V-22635

THIS PLAN IS NOT VALID UNLESS
IT IS AN UNRECORDED ORIGINAL
COPY ISSUED BY THE SURVEYOR
IN ACCORDANCE WITH
REGULATION 1029, SECTION 29 (2)

ANIS, O'SULLIVAN, VOLLEBEK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Info@AnnisOst.com

Ontario
Land Surveyors (Reg. No. 21851-21 Condon, P.L. 4, P.L. 23 T.F.)

Site Plan Pre- Application Consultation Notes

Date: August 11, 2021

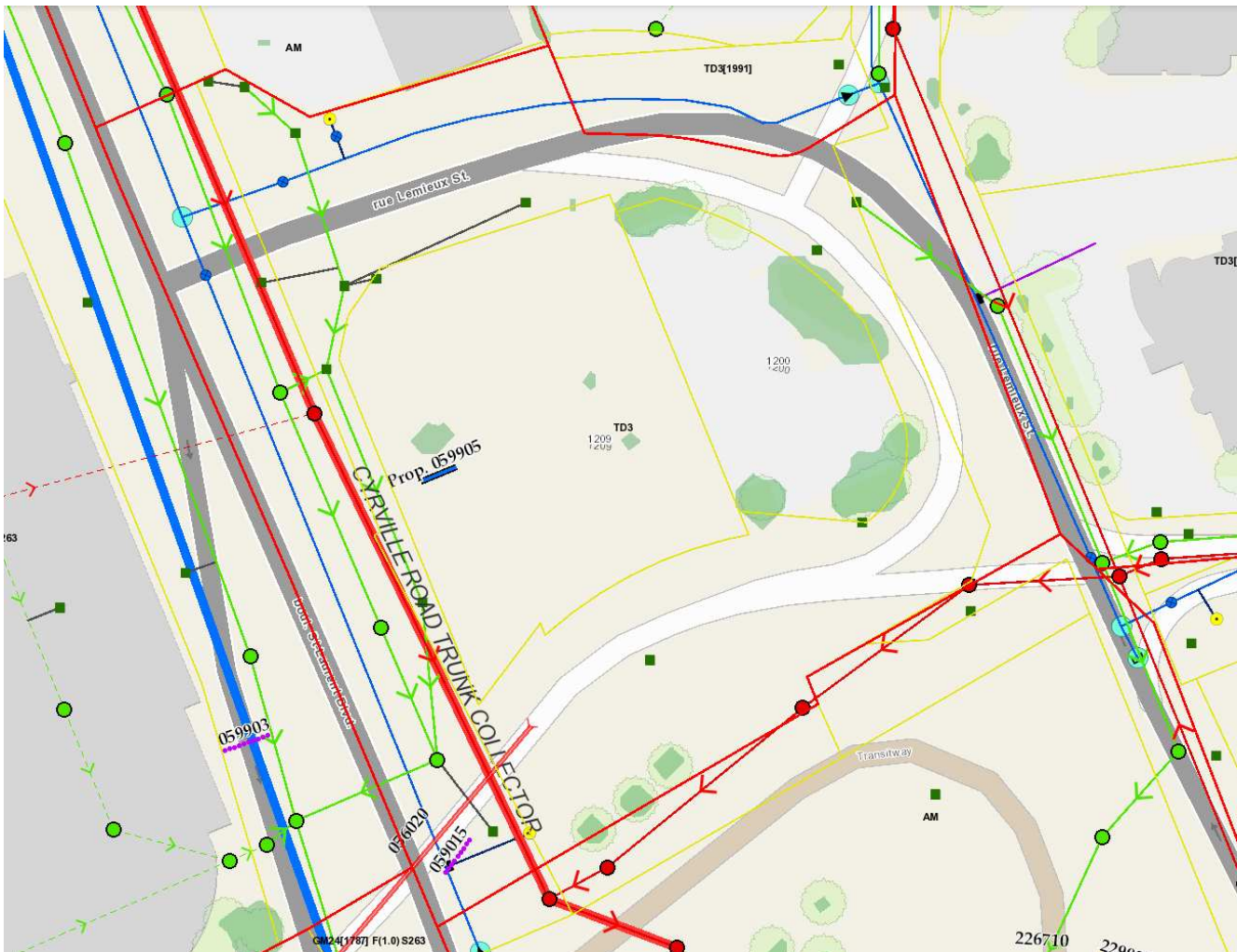
Site Location: 1209 St. Laurent Blvd. & 1200 Lemieux St.

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

Project Manager: Will Curry / Natasha Baird

Planner: Michael Boughton

Infrastructure



Water

Water District Plan No: 372-031

Existing public services:

- St-Laurent Blvd – 406mm UCI
- Lemieux St (North side of site) – 203mm UCI
- Lemieux St (East side of site) – 152mm CI

Boundary conditions:

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

- Water boundary condition requests must include the location of the service(s) and the expected loads required by the proposed developments. Please provide all the following information:
 - Location of service(s)
 - Type of development and the amount of fire flow required (as per FUS, 1999).
 - Average daily demand: ___ l/s.
 - Maximum daily demand: ___ l/s.
 - Maximum hourly daily demand: ___ l/s.
- Fire protection (Fire demand, Hydrant Locations)

General comments

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

Sanitary Sewer

Existing public services:

- St-Laurent Blvd – 525mm concrete trunk sewer, connection not permitted due to the surcharging.
- Lemieux St – 250mm asbestos concrete

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

General comments

- It was noted that the provision of sanitary services could provide a challenge for the site development. The sanitary connection should be taken from Lemieux Street. Any further questions concerning the servicing of the site should be directed to Will Curry.
- No direct sanitary service connection to the collector on St. Laurent Blvd. is permitted; an off-line MH and private sewer is permitted to connect.
- Any premise in which there is commercial or institutional food preparation shall install a grease and oil inceptor on all fixtures.
- The Environmental Site Assessment (ESA) may provide recommendations where site contamination may be present. The recommendations from the ESA need to be coordinated with the servicing report to ensure compliance with the Sewer Use By-Law.

Storm Sewer and Stormwater Management

Existing public services:

- St-Laurent Blvd – 400mm and 600mm trunk sewers both concrete
- Lemieux St – 300mm Concrete

General comments

- Design Criteria – The following site design criteria are provide for your consideration and action.
 - Coordination with the RVCA and Hydro Ottawa will be required.
 - Pre to post – Post C of .5
 - Pre tc 20; post tc 10
 - Onsite – design for 2-year or 5-year pipe and store up to 100-year on site.
 - No 2 year-ponding.
 - Permissible ponding of 350mm for 100-year event.
 - At 100-year ponding elevation, you must spill to City ROW.
 - Spill elevation must be 300mm lower than any building opening (includes ramps).
 - Require MHs just inside the property line. The site is required to accommodate the road drainage and the existing flow out-letting from the culverts towards the river.

Quality Control:

- Rideau Valley Conservation Authority to confirm quality control requirements.

Ministry of Environment, Conservation and Parks (MECP)

This site will require an ECA if sewers are servicing more than one parcel through transfer of review.

NOTE: Site Plan Approval, or Draft Approval, is required before any ECA application is sent.

General Service Design Comments

- The City of Ottawa requests that all new services be located within the existing service trench to minimize necessary road cuts.
- Monitoring manholes should be located within the property near the property line in an accessible location to City forces and free from obstruction (i.e. not a parking).

- Where service length is greater than 30 m between the building and the first maintenance hole / connection, a cleanout is required.
- Manholes are required for connections to sanitary or combined trunk sewers as per City of Ottawa Standards S13.
- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.
- The upstream and downstream manhole top of grate and invert elevations are required for all new sewer connections.
- Services crossing the existing watermain or sewers need to clearly provide the obvert/invert elevations to demonstrate minimum separation distances. A watermain crossing table may be provided.

Geotechnical and Slope Stability Analysis

- This development requires a geotechnical analysis and a slope stability analysis prior to the OPA to determine the developable lands. The site is adjacent to a waterway and is on sensitive clays with a slope. The City will require geotechnical information to ensure that the height and type of building supported by the OPA and ZA is satisfied.
- Provide an updated geotechnical report and slope stability analysis certified by a qualified engineer.
- Development shall comply to the current City of Ottawa Geotechnical Guideline: <https://documents.ottawa.ca/sites/documents/files/documents/cap137602.pdf>
- Development shall comply to the current City of Ottawa Slope Stability Guidelines for Development Applications: <https://documents.ottawa.ca/sites/documents/files/documents/cap137604.pdf>

Environmental Site Assessment

- As per the Official Plan, the environmental site assessment shall be completed as per Environmental Protection Act - O. Reg. 153/04, Part VII & VIII.
- Any reports older than 2 years shall be updated.

Other

At time of site plan control application, it will be required to verify if:

- Capital Works Projects will be within proximity to application.
- Watermain Frontage Fees are applicable.
- Minimum Drawing and File Requirements for all Plans - The following plans and drawing requirements apply.
- Plans are to be submitted on standard A1 size (594mm x 841mm) sheets, utilizing an appropriate metric scale (1:200, 1:250, 1:300, 1:400, or 1:500).
- With all submitted hard copies, provide individual PDF of the DWGs and for reports please provide one PDF file of the reports. All PDF documents are to be unlocked and flattened.
- No reports submitted are to be older than 5 years.
- Existing drawings are available from informationcentre@ottawa.ca.

References and Resources

- As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.
- All required plans are to be submitted on standard A1 size sheets (594mm x 841mm) sheets, utilizing a reasonable and appropriate metric scale as per City of Ottawa Servicing and Grading Plan Requirements: title blocks are to be placed on the right of the sheets and not along the bottom. Engineering plans may be combined, but the Site Plans must be provided separately. Plans shall include the survey monument used to confirm datum. Information shall be provided to enable a non-surveyor to locate the survey monument presented by the consultant.

- All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)
- Please find relevant City of Ottawa Links to Preparing Studies and Plans below:
<https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines>
- To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:
InformationCentre@ottawa.ca<mailto:InformationCentre@ottawa.ca>
(613) 580-2424 ext. 44455
- geoOttawa
<http://maps.ottawa.ca/geoOttawa/>

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Tower A - Water Demands

Project:	1209 St. Laurent Blvd - Tower A
Project No.:	000-22-1215
Designed By:	AJG
Checked By:	RDF
Date:	May 20, 2022
Ste Area:	0.43 gross ha

<u>Residential</u>	NUMBER OF UNITS	UNIT RATE	
Single Family	homes	3.4	persons/unit
Semi-detached	homes	2.7	persons/unit
Townhouse	homes	2.7	persons/unit
Bachelor Apartment	17 units	1.4	persons/unit
1 Bedroom Apartment	174 units	1.4	persons/unit
2 Bedroom Apartment	147 units	2.1	persons/unit
3 Bedroom Apartment	units	3.1	persons/unit
Average Apartment	units	1.8	persons/unit
Total Population	577 persons		
<u>Commercial</u>	m2		
<u>Industrial - Light</u>	m2		
<u>Industrial - Heavy</u>	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	280	L/c/d	
Industrial - Light	35,000	L/gross ha/d	
Industrial - Heavy	55,000	L/gross ha/d	
Shopping Centres	2,500	L/(1000m ² /d)	
Hospital	900	L/(bed/day)	
Schools	70	L/(Student/d)	
Trailer Park with no Hook-Ups	340	L/(space/d)	
Trailer Park with Hook-Ups	800	L/(space/d)	
Campgrounds	225	L/(campsite/d)	
Mobile Home Parks	1,000	L/(Space/d)	
Motels	150	L/(bed-space/d)	
Hotels	225	L/(bed-space/d)	
Tourist Commercial	28,000	L/gross ha/d	
Other Commercial	28,000	L/gross ha/d	
AVERAGE DAILY DEMAND	Residential	1.87	L/s
	Commerical/ Industrial/ Institutional	0.00	L/s

McINTOSH PERRY

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	4.11	L/s
	Commerical/ Industrial/ Institutional	0.00	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	5.5	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	10.28	L/s
	Commerical/ Industrial/ Institutional	0.00	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT

CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	1.87	L/s
MAXIMUM DAILY DEMAND	4.11	L/s
MAXIMUM HOUR DEMAND	10.28	L/s

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Tower B - Water Demands

Project:	1209 St. Laurent Blvd - Tower B
Project No.:	000-22-1215
Designed By:	AJG
Checked By:	RDF
Date:	May 20, 2022
Site Area:	0.43 gross ha

<u>Residential</u>	NUMBER OF UNITS	UNIT RATE	
Single Family	homes	3.4	persons/unit
Semi-detached	homes	2.7	persons/unit
Townhouse	homes	2.7	persons/unit
Bachelor Apartment	12 units	1.4	persons/unit
1 Bedroom Apartment	160 units	1.4	persons/unit
2 Bedroom Apartment	130 units	2.1	persons/unit
3 Bedroom Apartment	units	3.1	persons/unit
Average Apartment	units	1.8	persons/unit
Total Population	514 persons		
<u>Commercial</u>	m2		
<u>Industrial - Light</u>	m2		
<u>Industrial - Heavy</u>	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	280	L/d	
Industrial - Light	35,000	L/gross ha/d	
Industrial - Heavy	55,000	L/gross ha/d	
Shopping Centres	2,500	L/(1000m ² /d)	
Hospital	900	L/(bed/day)	
Schools	70	L/(Student/d)	
Trailer Park with no Hook-Ups	340	L/(space/d)	
Trailer Park with Hook-Ups	800	L/(space/d)	
Campgrounds	225	L/(campsite/d)	
Mobile Home Parks	1,000	L/(Space/d)	
Motels	150	L/(bed-space/d)	
Hotels	225	L/(bed-space/d)	
Tourist Commercial	28,000	L/gross ha/d	
Other Commercial	28,000	L/gross ha/d	
AVERAGE DAILY DEMAND	Residential	1.67	L/s
	Commerical/ Industrial/ Institutional	0.00	L/s

McINTOSH PERRY

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	3.66	L/s
	Commerical/Industrial/Institutional	0.00	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	5.5	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	9.16	L/s
	Commerical/Industrial/Institutional	0.00	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT

CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	1.67	L/s
MAXIMUM DAILY DEMAND	3.66	L/s
MAXIMUM HOUR DEMAND	9.16	L/s

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Total - Water Demands

Project:	1209 St. Laurent Blvd - Total
Project No.:	000-22-1215
Designed By:	AJG
Checked By:	RDF
Date:	May 20, 2022
Site Area:	0.43 gross ha

<u>Residential</u>	NUMBER OF UNITS		UNIT RATE	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse		homes	2.7	persons/unit
Bachelor Apartment	29 units		1.4	persons/unit
1 Bedroom Apartment	334 units		1.4	persons/unit
2 Bedroom Apartment	277 units		2.1	persons/unit
3 Bedroom Apartment	0 units		3.1	persons/unit
Average Apartment		units	1.8	persons/unit

Total Population 1090 persons

<u>Commercial</u>	m2
<u>Industrial - Light</u>	m2
<u>Industrial - Heavy</u>	m2

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	280	L/c/d	
Industrial - Light	35,000	L/gross ha/d	
Industrial - Heavy	55,000	L/gross ha/d	
Shopping Centres	2,500	L/(1000m ² /d)	
Hospital	900	L/(bed/day)	
Schools	70	L/(Student/d)	
Trailer Park with no Hook-Ups	340	L/(space/d)	
Trailer Park with Hook-Ups	800	L/(space/d)	
Campgrounds	225	L/(campsite/d)	
Mobile Home Parks	1,000	L/(Space/d)	
Motels	150	L/(bed-space/d)	
Hotels	225	L/(bed-space/d)	
Tourist Commercial	28,000	L/gross ha/d	
Other Commercial	28,000	L/gross ha/d	
AVERAGE DAILY DEMAND	Residential	3.53	L/s
	Commerical/ Industrial/ Institutional	0.00	L/s

McINTOSH PERRY

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	7.77	L/s
	Commercial/Industrial/Institutional	0.00	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	5.5	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	19.43	L/s
	Commercial/Industrial/Institutional	0.00	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT

CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	3.53	L/s
MAXIMUM DAILY DEMAND	7.77	L/s
MAXIMUM HOUR DEMAND	19.43	L/s

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Fire Underwriters Survey

Project: 1209 St. Laurent Blvd
 Project No.: 000-22-1215
 Designed By: AJG
 Checked By: RDF
 Date: May 20, 2022

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:
 F = Required fire flow in liters per minute
 C = Coefficient related to the type of construction.
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Non-Combustible Construction**

C 0.8 A 35,712.8 m²

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) 5,499.8 m² * Unprotected Vertical Openings

Calculated Fire Flow 13,052.2 L/min
 13,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:
 Limited Combustible -15%

Fire Flow 11,050.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered -50%

Reduction -5,525.0 L/min

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons. of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	30.1 to 45	Ordinary (Unprotected)	20	1	20.0	5%
Exposure 2	>45	Wood frame	33.5	2	67.0	0%
Exposure 3	>45	Wood frame	27.1	14	379.4	0%
Exposure 4	30.1 to 45	Non-Combustible	232	2	464.0	5%
% Increase*						10%

Increase* 1,105.0 L/min

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow 6,630.0 L/min
 Fire Flow Required** 7,000.0 L/min

McINTOSH PERRY

* In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

** In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Boundary Condition Unit Conversion

Project: 1209 St. Laurent Blvd

Project No.: 000-22-1215

Designed By: AJG

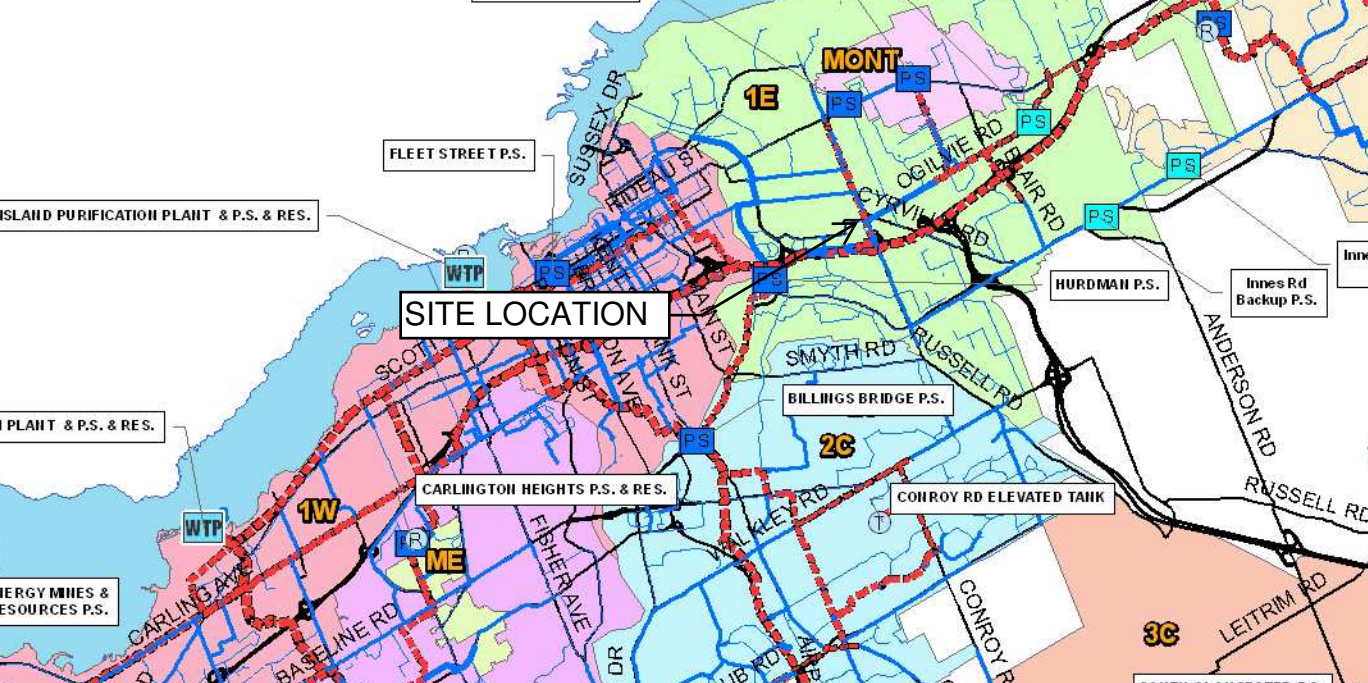
Checked By: RDF

Date: May 20, 2022

Boundary Conditions Unit Conversion

LEMIEUX STREET

Scenario	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa
Avg. DD	118.5	67.3	51.2	72.8	501.9
Fire Flow Of 116.67 L/s (7,000 L/min)	110.4	67.3	43.1	61.3	422.4
Peak Hour	110.2	67.3	42.9	61.0	420.5



FLEET STREET P.S.

ISLAND PURIFICATION PLANT & P.S. & RES.

SITE LOCATION

PLANT & P.S. & RES.

CARLINGTON HEIGHTS P.S. & RES.

BILLINGS BRIDGE P.S.

HURDMAN P.S.

Innes Rd Backup P.S.

ENERGY MINES & RESOURCES P.S.

CONROY RD ELEVATED TANK

3C

From: Rasool, Rubina <Rubina.Rasool@ottawa.ca>
Sent: May 11, 2022 10:36 AM
To: Alison Gosling <a.gosling@mcintoshperry.com>
Subject: RE: 22-1215 - 1209 St. Laurent Blvd - Boundary Condition Request

Hi Alison,

Great timing, I just received the WBC.

I believe Natasha Baird was the PM for the pre-consult. I have forwarded your inquiry to her for response.

The following are boundary conditions, HGL, for hydraulic analysis at 1209 St-Laurent Boulevard (zone 1E) assumed to be a dual connection to the 203 mm on Lemieux Street (see attached PDF for location).

Minimum HGL: 110.2 m

Maximum HGL: 118.5 m

Max Day + Fire Flow (116.67 L/s): 110.4 m

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of water mains 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.

Rubina

Rubina Rasool, E.I.T.

Project Manager

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

Development Review – East Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue Laurier Ouest. Ottawa (Ontario) K1P 1J1 rubina.rasool@ottawa.ca

From: Rasool, Rubina <Rubina.Rasool@ottawa.ca>

Sent: May 9, 2022 12:13 PM

To: Alison Gosling <a.gosling@mcintoshperry.com>

Subject: RE: 22-1215 - 1209 St. Laurent Blvd - Boundary Condition Request

Hi Alison,

I have received your request for water boundary conditions. Please allow for approximately 3 weeks due to staff shortages. Note that development applications can still be submitted pending water boundary condition requests to avoid delays.

Best,

Rubina

Rubina Rasool, E.I.T.

Project Manager

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

Development Review – East Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue Laurier Ouest. Ottawa (Ontario) K1P 1J1 rubina.rasool@ottawa.ca

APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Tower A - Sanitary Demands

Project:	1209 St. Laurent Blvd - Tower A
Project No.:	000-22-1215
Designed By:	AJG
Checked By:	RDF
Date:	May-22

Site Area	0.43	Gross ha	
Bachelor	17		1.40 Persons per unit
1 Bedroom	174		1.40 Persons per unit
2 Bedroom	147		2.10 Persons per unit
Total Population	577	Persons	
Commercial Area		m ²	
Amenity Space		m ²	

DESIGN PARAMETERS

Institutional/ Commercial Peaking Factor	1	
Residential Peaking Factor	3.35	* 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	0.02
Wet	0.12
Total	0.14

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	577	1.87
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial	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

McINTOSH PERRY

AVERAGE RESIDENTIAL FLOW	1.87	L/s
PEAK RESIDENTIAL FLOW	6.27	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	1.89	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	6.29	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	6.41	L/s

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Tower B - Sanitary Demands

Project:	1209 St. Laurent Blvd - Tower B
Project No.:	000-22-1215
Designed By:	AJG
Checked By:	RDF
Date:	May-22

Site Area	0.43	Gross ha	
Bachelor	12		1.40 Persons per unit
1 Bedroom	160		1.40 Persons per unit
2 Bedroom	130		2.10 Persons per unit
Total Population	514	Persons	
Commercial Area		m ²	
Amenity Space		m ²	

DESIGN PARAMETERS

Institutional/ Commercial Peaking Factor	1	
Residential Peaking Factor	3.37	* 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

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.12
Total	0.14

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	514	1.67
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial	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

McINTOSH PERRY

AVERAGE RESIDENTIAL FLOW	1.67	L/s
PEAK RESIDENTIAL FLOW	5.62	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	1.69	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	5.64	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	5.76	L/s

McINTOSH PERRY

000-22-1215 - 1209 St. Laurent Blvd - Total - Sanitary Demands

Project:	1209 St. Laurent Blvd - Total		
Project No.:	000-22-1215		
Designed By:	A.J.G.		
Checked By:	R.D.F.		
Date:	May-22		

Ste Area	0.43	Gross ha		
Bachelor	29		1.40	Persons per unit
1 Bedroom	334		1.40	Persons per unit
2 Bedroom	277		2.10	Persons per unit
Total Population	1090	Persons		
Commercial Area		m ²		
Amenity Space		m ²		

DESIGN PARAMETERS

Institutional/ Commercial Peaking Factor	1	
Residential Peaking Factor	3.22	* 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	0.02
Wet	0.12
Total	0.14

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	1090	3.53
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial	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

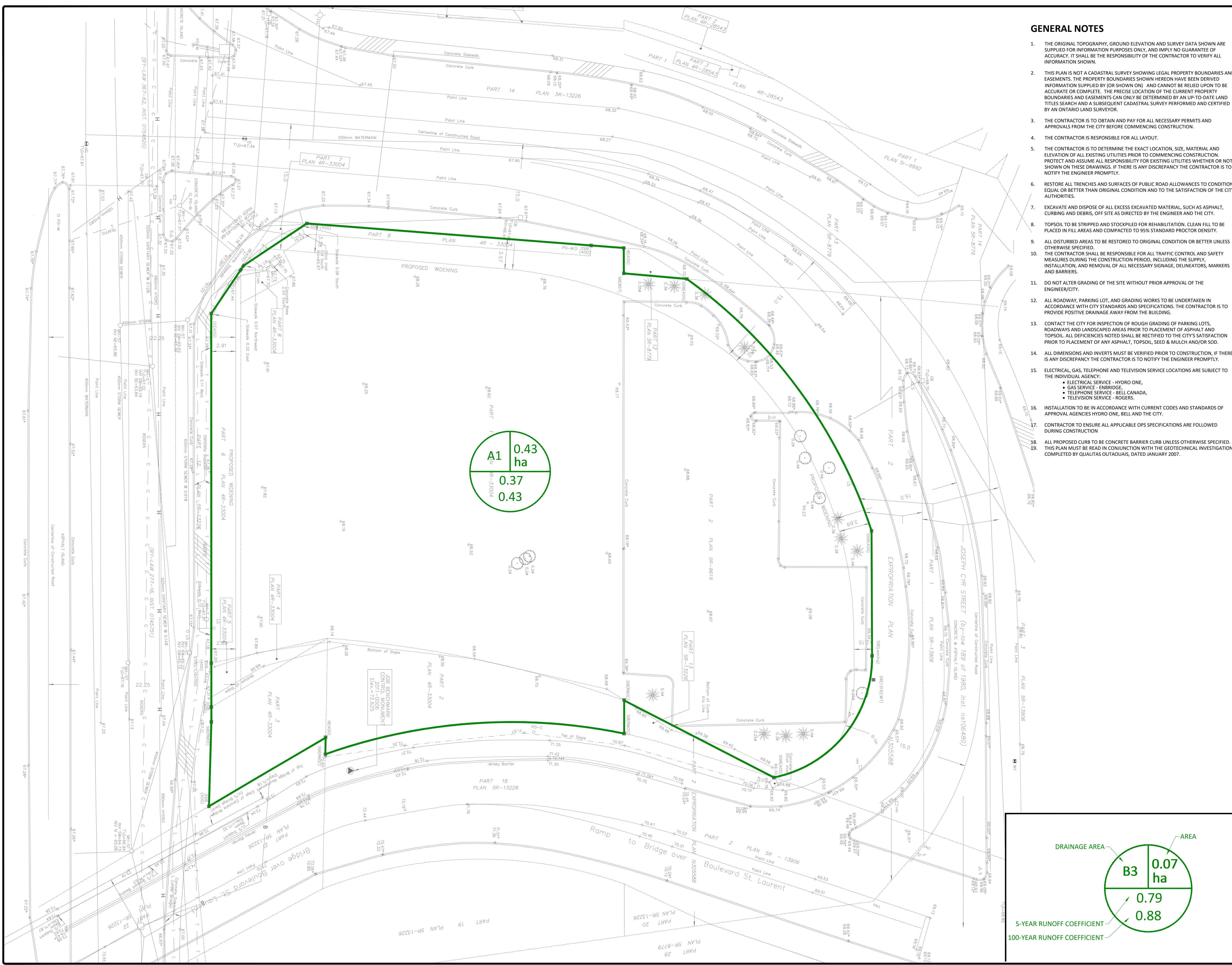
McINTOSH PERRY

AVERAGE RESIDENTIAL FLOW	3.53	L/s
PEAK RESIDENTIAL FLOW	11.38	L/s
AVERAGE IQI FLOW	0.00	L/s
PEAK INSTITUTIONAL/ COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK IQI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

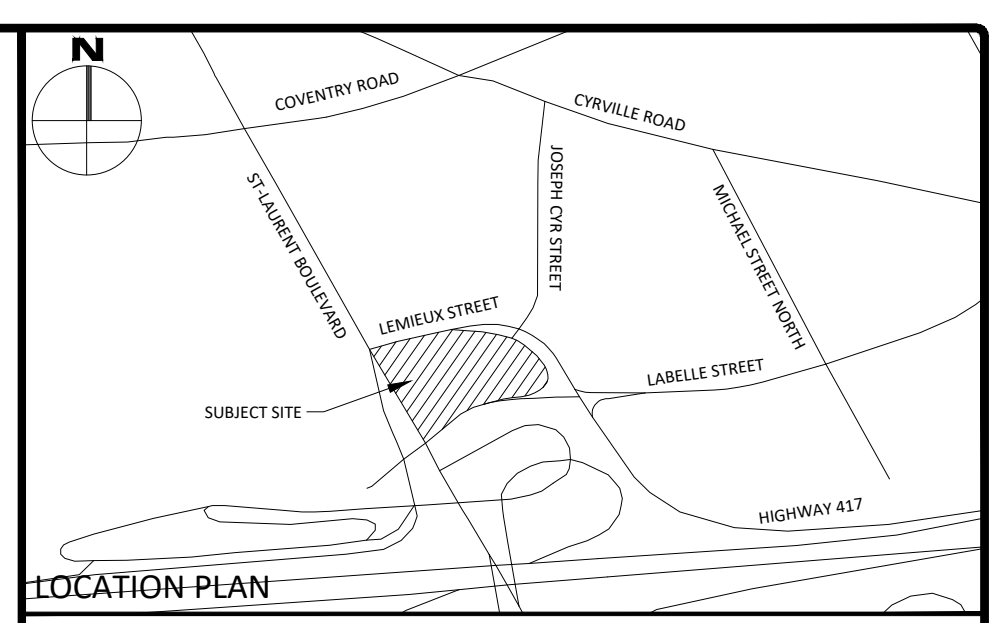
TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	3.55	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	11.40	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	11.52	L/s

**APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN**



GENERAL NOTES

- THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
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- THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
- THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
- EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
- TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
- DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
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 - TELEVISION SERVICE - ROGERS.
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- ALL PROPOSED CURBS TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED. THIS PLAN MUST BE READ IN CONJUNCTION WITH THE GEOTECHNICAL INVESTIGATION COMPLETED BY QUALITAS OUTAOUAIS, DATED JANUARY 2007.



LEGEND

- | | | | |
|-----|----------------------------------------|-----|------------------------------------|
| DC | BARRIER CURB & CURB DEPRESSION | --- | CENTRELINE OF SWALE |
| --- | PROPOSED ASPHALT | --- | CENTRELINE OF DITCH |
| --- | PROPOSED CONCRETE WALKWAY | --- | SLOPING AT 3% UNLESS SPECIFIED |
| ○ | STORM MANHOLE | --- | PROPOSED EXISTING ELEVATION |
| □ | CATCH BASIN, CURB INLET OR DITCH INLET | --- | SWALE ELEVATION |
| ○ | MH/A | --- | TOP/BOTTOM WALL FACE ELEVATIONS |
| ○ | MH/A | --- | EMERGENCY OVERLAND FLOW ROUTE |
| ○ | SANITARY MANHOLE | --- | SALT FENCE BARRIER PER OPS 013.110 |
| ○ | PERFORATED PIPE | --- | BUILDING ENTRANCE OVERHEAD DOOR |
| ○ | WATER VALVE/CHAMBER | --- | REDUCER |
| ○ | FIRE HYDRANT | --- | PROPOSED GRASS |
| ○ | PROPOSED WALL | --- | |
| ○ | DS | --- | PROPOSED DOWNSPOUT |

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NOT FOR CONSTRUCTION

1	ISSUED FOR REVIEW	MAY 20, 2022
No.	Revisions	Date

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

SCALE 1:200

0 10 20 Metres

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

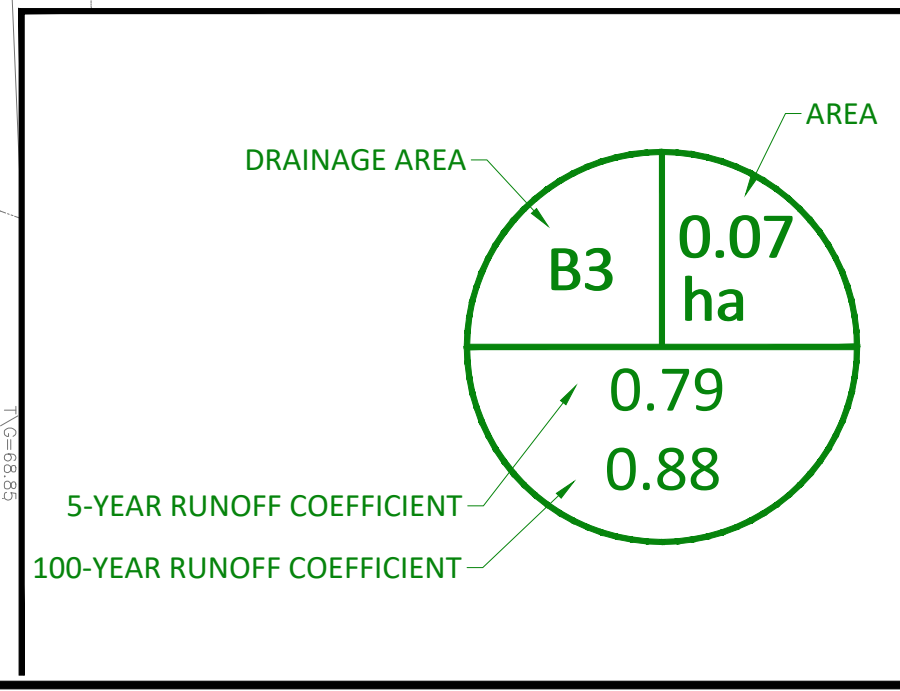
Stamp:

Client: **CANDEREL**
200-350 ALBERT STREET
OTTAWA, ON K1R 1A4

Project: **30 STOREY RESIDENTIAL BUILDING**
1209 ST LAURENT BOULEVARD

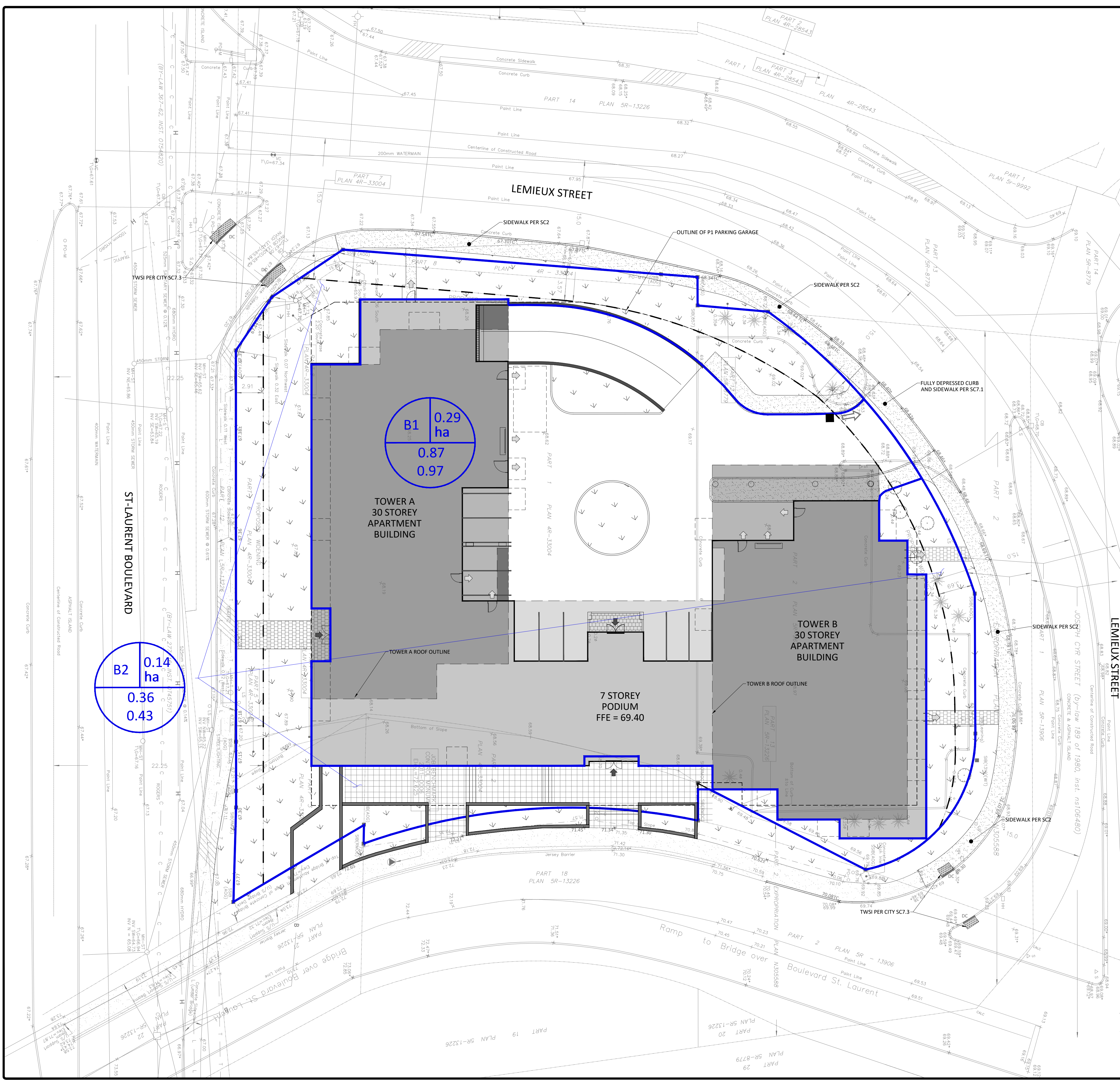
Drawing Title: **PRE-DEVELOPMENT DRAINAGE PLAN**

Scale: 1:200	Project Number: CCO-22-1215
Drawn By: RRR	Checked By: RDF
Designed By: RDF	Drawing Number: PRE



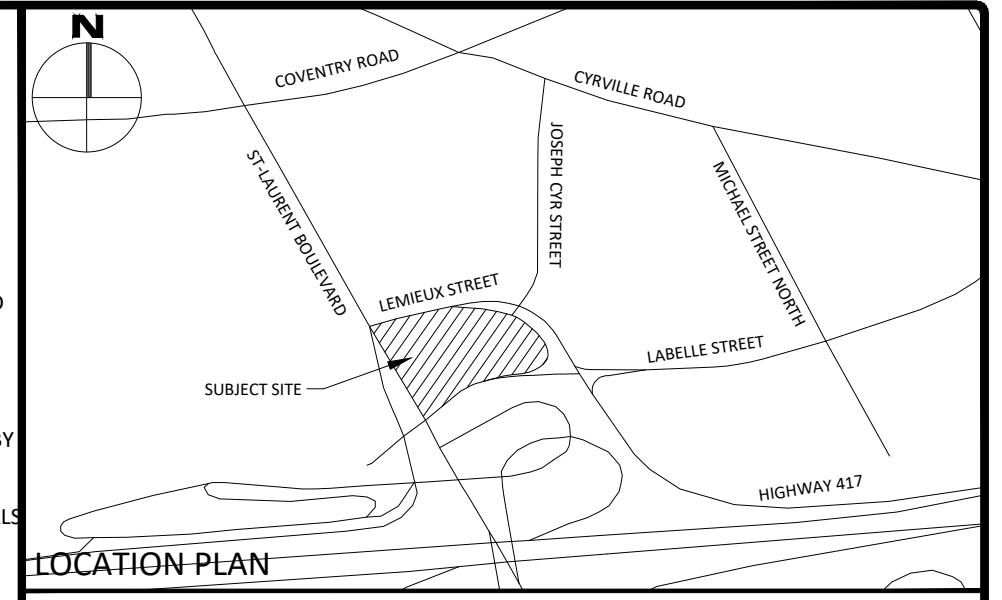
DRAWING: (1) OTHER/OTHER PROJECT: PROPOSAL 2022 (MCC) CCO-22-1215 - Canderel 1209 St. Laurent Blvd/12 - Drawing: CCO-22-1215 - Presentation.dwg
 LAST REVISED: Friday, May 13, 2022 1:55:56 PM
 LAST PLOTTED: Thursday, May 19, 2022 10:18:05 AM
 CDR: J. ROBINSON

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

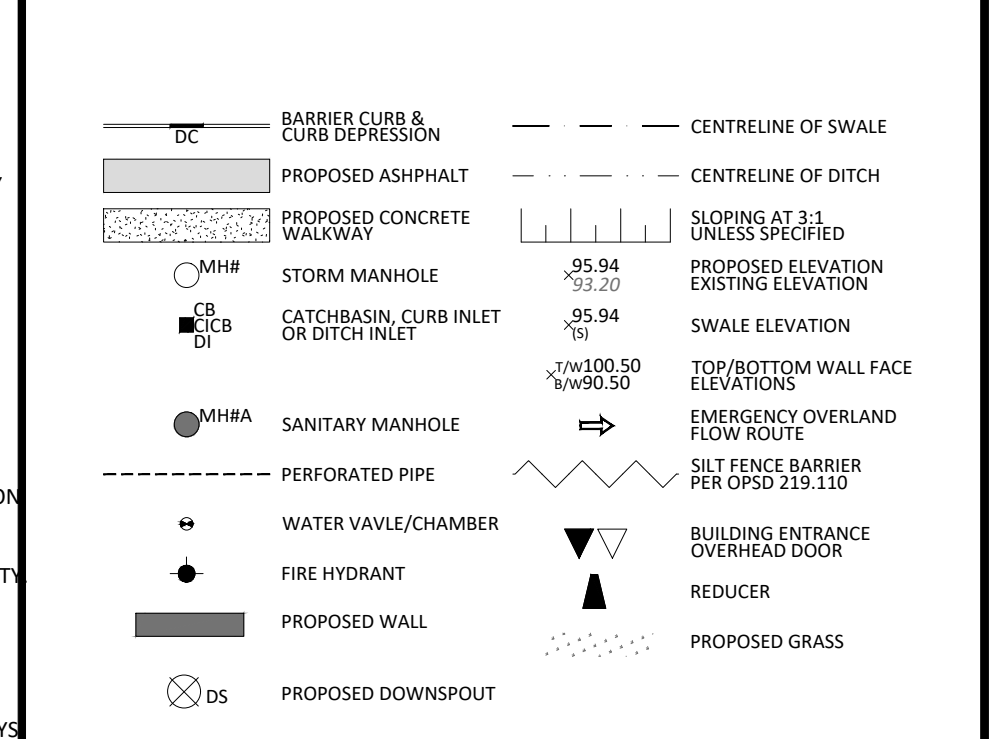


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18. ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.
19. THIS PLAN MUST BE READ IN CONJUNCTION WITH THE GEOTECHNICAL INVESTIGATION COMPLETED BY QUALITAS OUTAOUAIS, DATED JANUARY 2007.

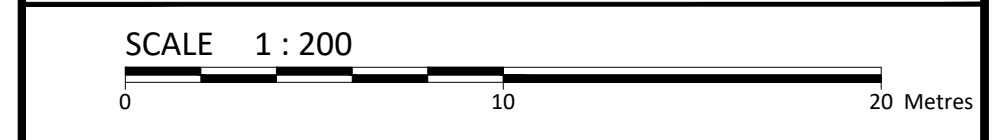


LEGEND



FOR REVIEW ONLY
NOT FOR CONSTRUCTION

1	ISSUED FOR REVIEW	MAY 20, 2022
No.	Revisions	Date
Check and verify all dimensions before proceeding with the work		Do not scale drawings



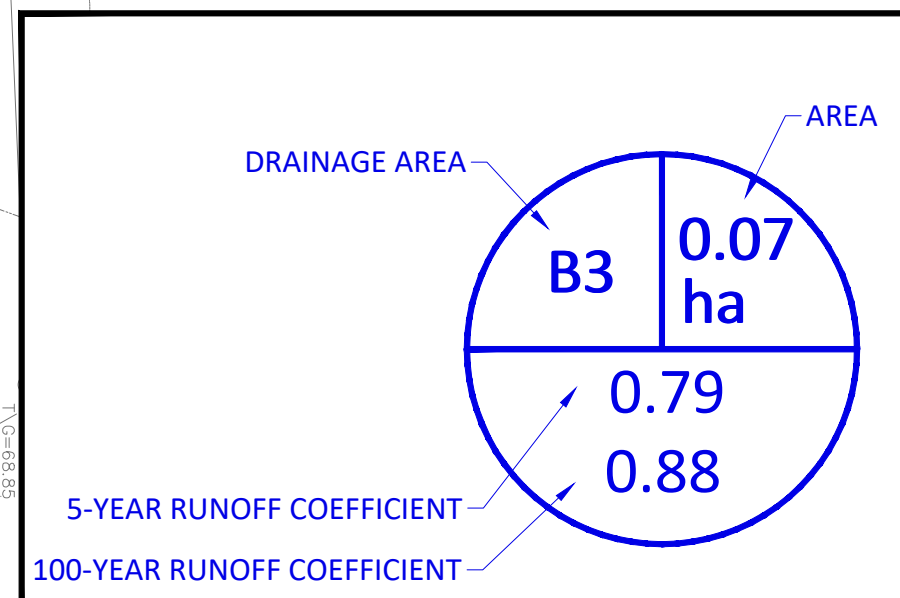
McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Client: **CANDEREL**
200-350 ALBERT STREET
OTTAWA, ON K1R 1A4

Project: **30 STOREY RESIDENTIAL BUILDING**
1209 ST LAURENT BOULEVARD

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

Scale: 1:200	Project Number: CCO-22-1215
Drawn By: FV	Checked By: RDF
Designed By: RDF	Drawing Number: POST



DRAWING: (1) OTHER (2) PROJECT: (3) PROPOSAL (4) 2022 (5) CCO-22-1215 - Canderel 1209 St. Laurent Blvd (6) Drawing (7) CCO-22-1215 - Presentation (8) DATE: (9) 15/05/2022 (10) LAST SAVED: (11) 15/05/2022 (12) LAST PLOTTED: (13) 15/05/2022 (14) CDR: (15) FV

D07-12-XX-XXXX

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CCO-22-1215 - 1209 St Laurent Boulevard - Runoff Calculations

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} 2/ 5-Year	C _{AVG} 100-Year
A1	0.428	1,022.61	0.90	0.00	0.60	3,256.29	0.20	0.37	0.43

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/ 5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	0.428	0.37	0.43	10	76.8	104.2	178.6	33.56	45.52	91.17
Total	0.428							33.56	45.52	91.17

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} 2/ 5-Year	C _{AVG} 100-Year
B1	0.293	2,821.82	0.90	0.00	0.60	111.59	0.20	0.87	0.97
B2	0.135	314.14	0.90	0.00	0.60	1,031.35	0.20	0.36	0.43

Controlled
Uncontrolled

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/ 5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B1	0.293	0.87	0.97	10	76.8	104.2	178.6	54.7	74.21	141.46
B2	0.135	0.36	0.43	10	76.8	104.2	178.6	10.4	14.16	28.39
Total	0.428							65.14	88.37	169.85

Required Restricted Flow

Drainage Area	Area (ha)	C	Tc (min)	I (mm/hr)			Q (L/s)		
				2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	0.428	0.50	10	76.8	104.2	178.6	45.68	61.97	106.20
Total	0.428						45.68	61.97	106.20

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)			Restricted Flow (L/s)			Storage Required (m ³)			Storage Provided (m ³)		
	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B1	54.70	74.21	141.46	35.24	47.81	77.81	12.32	16.80	38.52	12.32	16.80	38.52
B2	10.44	14.16	28.39	10.44	14.16	28.39						
Total	65.14	88.37	169.85	45.68	61.97	106.20	12.32	16.80	38.52	12.32	16.80	38.52

McINTOSH PERRY

Storage Requirements for Area B1

2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
5	103.6	73.77	35.24	38.53	11.56
6	96.6	68.83	35.24	33.59	12.09
7	90.7	64.57	35.24	29.33	12.32
8	85.5	60.86	35.24	25.62	12.30
9	80.9	57.60	35.24	22.36	12.07

Maximum Storage Required 2-year = 12.3 m³

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
5	141.2	100.55	47.81	52.74	15.82
6	131.6	93.71	47.81	45.90	16.52
7	123.3	87.82	47.81	40.01	16.80
8	116.1	82.70	47.81	34.89	16.75
9	109.8	78.20	47.81	30.39	16.41

Maximum Storage Required 5-year = 16.8 m³

100Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
5	242.7	192.28	77.81	114.47	34.34
6	226.0	179.05	77.81	101.24	36.45
7	211.7	167.69	77.81	89.88	37.75
8	199.2	157.81	77.81	80.00	38.40
9	188.3	149.14	77.81	71.33	38.52
10	178.6	141.46	77.81	63.65	38.19
11	169.9	134.60	77.81	56.79	37.48
12	162.1	128.45	77.81	50.64	36.46

Maximum Storage Required 100-year = 38.5 m³

2-Year Storm Event Storage Summary

Storage Available (m³) = 12.3 *
Storage Required (m³) = 12.3

5-Year Storm Event Storage Summary

Storage Available (m³) = 16.8 *
Storage Required (m³) = 16.8

100-Year Storm Event Storage Summary

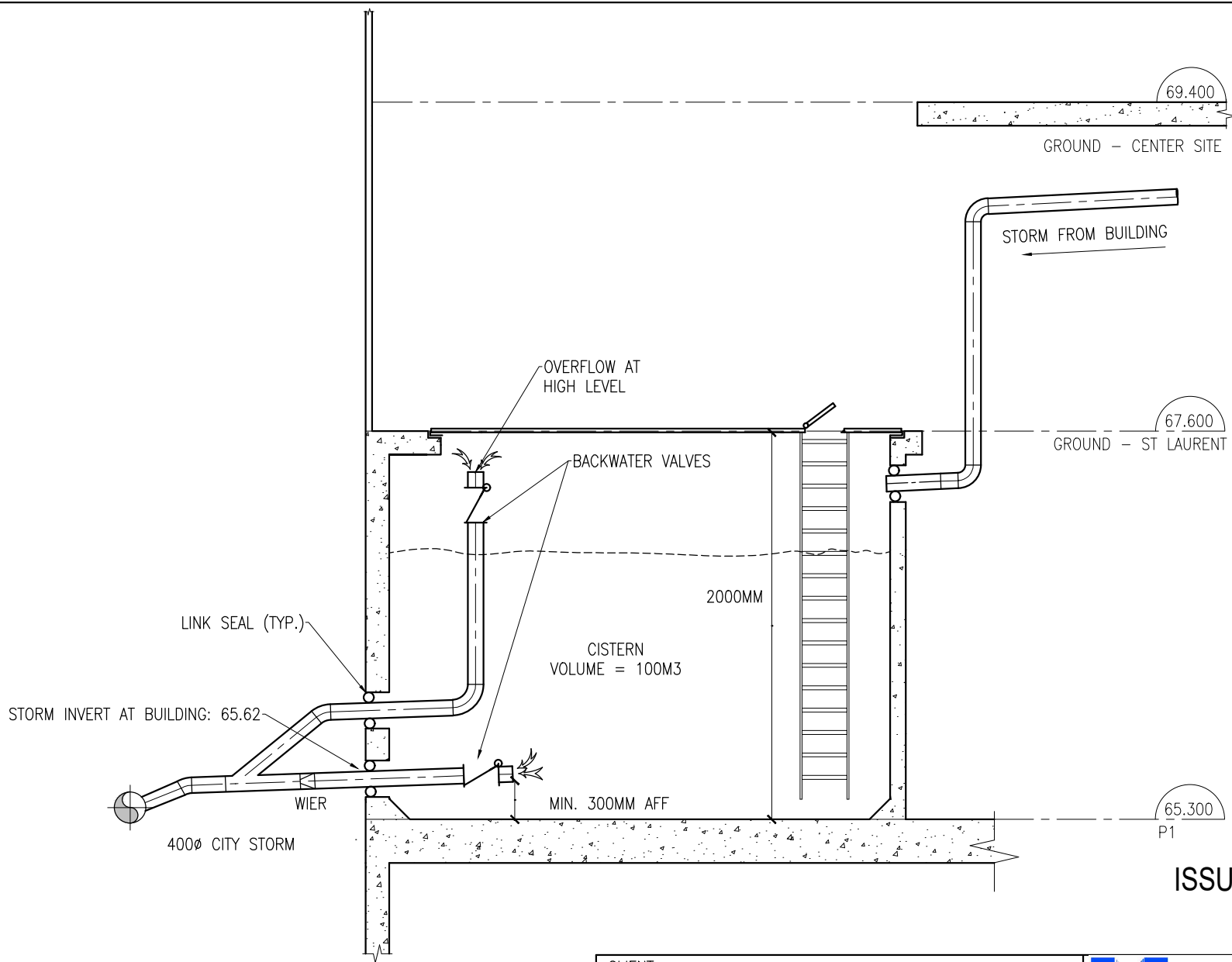
Storage Available (m³) = 38.5 *
Storage Required (m³) = 38.5

STORM SEWER DESIGN SHEET


PROJECT: 30-Storey Apartment
 LOCATION: 1209 St.Laurent
 CLIENT: Canderel Management 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	
STREET	AREA ID	FROM MH	TO MH	C-VALUE	AREA	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)		
																					DIA	W	H					
St. Laurent Boulevard	B1	BLDG	EX MH	0.87	0.29	0.26	0.26	10.00	0.14	10.14	104.19	122.14	178.56	74.21					47.81	62.04	10.31	250			1.00	1.224	14.23	22.94%
Definitions: Q = 2.78QA, 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: FFR Checked: PDF Project No.: 000-22-1215			No. Revision Date 1. Issued For Review 2022-05-20																		
																				Date: 2022-05-20			Sheet No: 1 of 1					



ISSUED FOR SITE PLAN
2022-05-20

CLIENT	CANDEREL		 Goodkey Weedmark <i>Consulting Engineers</i>
TITLE	CISTERN SCHEMATIC		
DATE	2022-05-20	REVISION	-
		DRAWING	M1
1688 Woodward Dr. Ottawa Ontario Canada K2C 3R8		613 727-5111 613 727-5115 www.gwal.com	Voice Fax Web

**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 E
<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 A
<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, Drainage, Sediment & Erosion Control 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, Drainage, Sediment & Erosion Control 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
<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, Drainage, Sediment & Erosion Control 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	N/A
<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 B
<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	N/A

<input type="checkbox"/> Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	N/A
<input type="checkbox"/> Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
<input type="checkbox"/> Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix B
<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 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)	N/A
<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 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 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 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 Management
<input type="checkbox"/> Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 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 F

<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, Drainage, Sediment & Erosion Control 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 6.0 Stormwater Management Appendix F
<input type="checkbox"/> Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 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 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.	Appendix 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 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, Drainage, Sediment & Erosion Control 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 7.0 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 8.0 Summary Section 9.0 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