SERVICING & STORMWATER MANAGEMENT REPORT 3745 ST JOSEPH BOULEVARD

Project No.: CCO-23-3287

City File No.: D07-12-23-0059

Prepared for:

CSV Architects
190 O'Connor Street
Ottawa, Ontario
K2P 2R3

Prepared by:

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Carp, ON K0A 1L0

Rev01: May 9, 2023

Rev02: October 6, 2023

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by CSV Architects to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed development located at 3745 St Joseph Boulevard within the City of Ottawa.

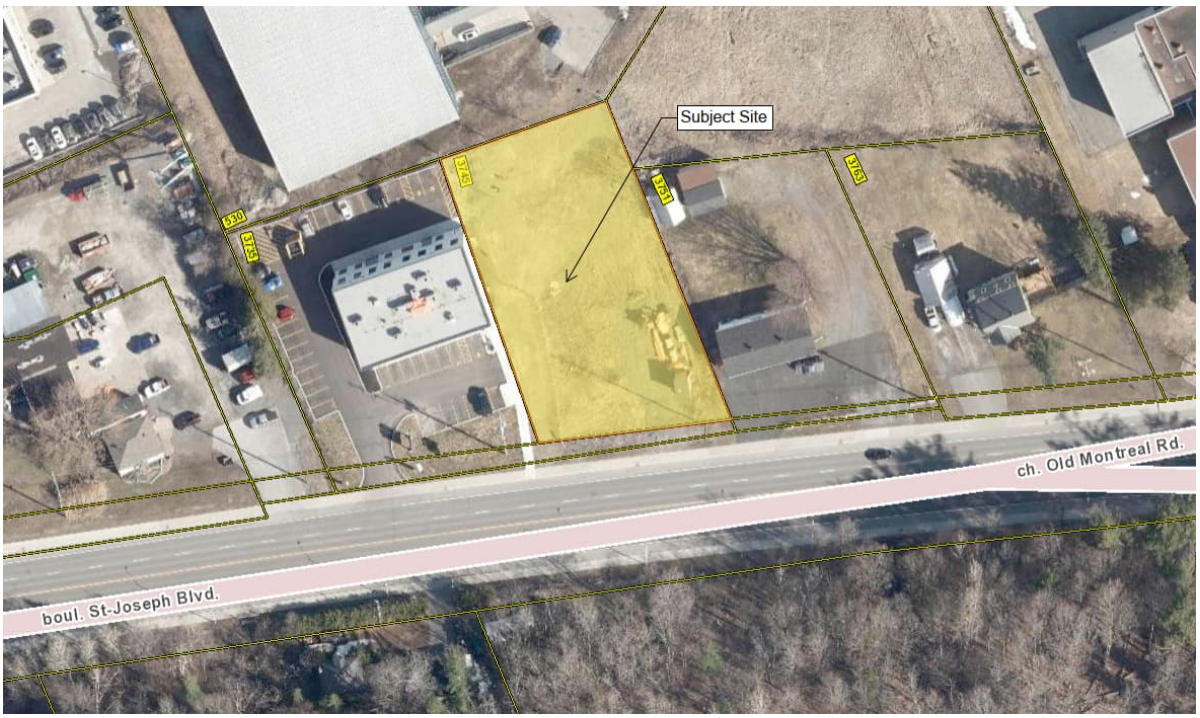
The main purpose of this report is to present a servicing and stormwater management design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation 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-23-3287, C101 – Removals, Erosion & Sediment Control, and Lot Grading & Drainage Plan
- CCO-23-3287, C102 – Site Servicing Plan
- CCO-23-3287, PRE – Pre-Development Drainage Plan (Appendix E)
- CCO-23-3287, POST – Post-Development Drainage Plan (Appendix F)

1.2 Site Description

Figure 1: Site Map



The subject property, herein referred to as the site, is located at 3745 St Joseph Boulevard within the Orleans East-Cumberland ward. The site covers approximately 0.25 ha and is located along St Joseph Boulevard between Trim Road and Taylor Creek Drive. The site is zoned for Heavy Industrial (IL H(21)). See Site Location Plan in Appendix 'A' for more details.

1.3 Proposed Development and Statistics

The proposed development consists of the addition of a 6-storey 990 m² mixed use building, complete with underground parking with street access from St Joseph Boulevard. Development is proposed within 0.25 ha of the site. Refer to Site Plan prepared by CSV Architects and included in Appendix B for further details.

1.4 Existing Conditions and Infrastructures

The site is currently undeveloped.

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), and along the rear of the property within a servicing easement:

- St Joseph Boulevard
  - 406 mm diameter PVC watermain
- Servicing Easement
  - 300 mm diameter PVC storm service; a
  - 1050 mm diameter concrete storm sewer, a
  - 135 mm diameter PVC sanitary service, and a
  - 250 mm diameter PVC sanitary sewer

1.5 Approvals

The proposed development is subject to the City of Ottawa site plan control approval 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 since the proposed storm service services one parcel of land and does not propose industrial use.

2.0 BACKROUND STUDIES, STANDARDS, AND REFERENCES

2.1 Background Reports / Reference Information

As-built drawings of existing services, provided by the City of Ottawa Information centre, within the vicinity of the proposed site were reviewed in order to identify infrastructure available to service the proposed development.

As-Built servicing of the adjacent property located at 3735 St Joseph Boulevard, prepared by Mcintosh Perry, was also reviewed in order to identify infrastructure available to service the proposed development.

A topographic survey (E-2505-22) of the site was completed by AOV and dated May 27th, 2022.

The Site Plan (A100) was prepared by CSV Architects (Site Plan).

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-2018-04 City of Ottawa, March 2018. (ISTB-2018-04)
  - 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)
  - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. (ISTB-2021-03)

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 held with City staff on January 12th, 2023 regarding the proposed site servicing. Specific design parameters to be incorporated within this design include the following:

- Control 5 through 100-year post-development flows to a maximum release rate of 26.4 L/s/ha, per the "On-Site Detention Design in The Taylor Creek Business Park Township of Cumberland" report.
- Ensure no overland flow for all storms up to and including the 100-year event.
- Quality control required up to an enhanced level of treatment (80% TSS Removal)

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 are tree municipal fire hydrants on St Joseph Boulevard available to service the proposed development.

4.2 Proposed Watermain

It is proposed to service the new building with a 150 mm diameter water service connected to the 406 mm diameter water main within St Joseph Boulevard.

Table 1, below, summarizes the water supply design criteria obtained from the Ottawa Water Guidelines and utilized for the water analysis.

Table 1: Water Supply Design Criteria

Site Area	0.25 ha
Commercial	28,000 L/gross ha/d
Hotel	225 L/bed-space/d
Max Day Peaking Factor – Commercial	1.5 x avg. day
Peak Hour Peaking Factor - Commercial	1.8 x max. day

The Fire Underwriters Survey 2020 (FUS) method was utilized to estimate the required fire flow for the proposed building. Fire flow requirements were calculated per City of Ottawa Technical Bulletin ISTB-2018-02. The following parameters were coordinated with the architect:

FUS:

- Type of construction – Mass Timber Type IV-B
- Occupancy Type – Limited Combustible
- Sprinkler Protection – Standard Sprinkler System

The results of the FUS calculations yielded a required fire flow of 10,000 L/min (166.67 L/s). The detailed calculations for the FUS can be found in Appendix C.

The city provided the estimated water pressures at both 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: Summary of Estimated Water Demand

Scenario	Proposed Demands (L/S)	Connection 1 HGL (m H_2O)* / kPa
Average Day Demand	0.25	50.2 / 492.5
Max Day + Fire Flow Demand (FUS)	167.04	41.0 / 402.2
Peak Hourly Demand	0.67	45.5 / 446.4
* Adjusted for an estimated ground elevation of 63.9m above the connection point.		

The normal operating pressure range is anticipated to be 446.4 kPa to 492.5 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, existing hydrants within 150 m of the proposed building were analysed per City of Ottawa ISTB 2018-02 Appendix I Table 1. The results are summarized 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)
3745 St Joseph Boulevard	10,000 (FUS)	1 Public	2 Public

Based on City guidelines (ISTB-2018-02), the existing hydrants provide adequate protection for the proposed development. A hydrant coverage figure can be found in Appendix C.

5.0 SANITARY DESIGN

5.1 Existing Sanitary Sewer

There is an existing 135 mm sanitary service and 250 mm diameter sanitary sewer at the rear of the site, available to service to proposed development.

5.2 Proposed Sanitary Sewer

A new 150 mm diameter gravity sanitary service will be extended from the proposed building and connected to the existing 250 mm diameter sanitary sewer with a vertical riser connection per City of Ottawa Standard S11.1, complete with a monitoring maintenance hole located just outside of the building. Refer to drawing C102 for a detailed servicing layout.

Table 4, below, summarizes the wastewater design criteria identified by the Ottawa Sewer Guidelines.

Table 4: Sanitary Design Criteria

Design Parameter	Value
Site Area	0.25 ha
Commercial	28,000 L/gross ha/d
Hotel Beds	225 L/(bed-space/d)
Commercial Peaking Factor	1.5
Extraneous Flow Allowance	0.33 L/s/ha

Table 5 below, summarizes the estimated wastewater flow from the proposed building. 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	0.26
Total Estimated Peak Dry Weather Flow	0.39
Total Estimated Peak Wet Weather Flow	0.46

As noted above, the development is proposed to be serviced via a proposed 150 mm sanitary service connection to the existing maintenance hole at the rear of the site. The maintenance hole will convey flow to the existing 250 mm diameter sanitary sewer.

The full flowing capacity of the existing 250 mm diameter sewer at 1.5% slope is estimated to be 75.98 L/s. Based on the servicing report for Project D07-12-18-0152, it is estimated that the existing sanitary sewer has an available capacity of approximately 74.93 L/s.

Per Table 5, a peak wet weather flow of 0.46 L/s will be conveyed within the 250 mm diameter sanitary sewer, therefore the existing system has sufficient capacity to accommodate the additional flows.

6.0 STORM SEWER DESIGN

6.1 Existing Storm Sewers

Stormwater runoff from the existing site flows overland towards the rear of the site. There is an existing 300 mm diameter storm service and 1050 mm diameter storm sewer at the rear of the site, complete with a storm maintenance hole.

6.2 Proposed Storm Sewers

The proposed development will be serviced through a new 250 mm diameter service connection to the existing 1050 mm diameter storm sewer. An internal cistern is proposed to store and control runoff from the development area.

Runoff from the roof of the proposed building will be collected using 4 roof drains. The roof drains will be used to convey runoff to the proposed internal cistern without restriction.

Foundation drainage is proposed to be directed to the internal cistern.

Surface runoff will be directed to the rear of the site, where it will be collected by a catch basin and landscaping catch basin. Collected runoff will be directed to the internal cistern via a 250 mm diameter storm service. A fixed rate mechanical pump will be used to limit flow from the cistern to the allowable release rate.

See CCO-23-3287 - 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

As per Section 6.2, stormwater management for the proposed development will be provided by storage within the proposed internal cistern. The controlled stormwater flow will be directed to the existing infrastructure at the rear of the site.

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

- Quality controls are required up to an enhanced level of treatment (80% TSS removal).

Quantity Control

- Control the 5 through 100-year events to a maximum release rate of 26.4 L/s/ha, as per the findings of the "Guidelines for On-Site Detention Design in the Taylor Creek Business Park Township of Cumberland" report.

7.2 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 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
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.

7.3 Pre-Development Drainage

It has been assumed that the development area 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 CCO-23-3287 - PRE in Appendix E and Appendix G for calculations.

Table 6: Pre-Development Runoff Summary

Drainage Area	Area (ha)	C 5 & 100-Year	Q (L/s)	
			5-Year	100-Year
A1	0.25	0.20/ 0.25	14.50	31.05
Total	0.25	-	14.50	31.05

7.4 Post-Development Drainage

To meet the stormwater objectives, the development will contain flow attenuation via cistern storage. Table 7, below, summarizes the required restricted flow.

Table 7: Required Restricted Flow

Drainage Area	Area (ha)	Q (Max)	Q (L/s)
A1	0.25	26.4 L/s/ha	6.61

Based on the criteria listed in Section 7.1, the development will be required to restrict flows to a maximum release rate of 26.4 L/s/ha. It is estimated that the target release rate during the 100-year event will be 6.61 L/s. See Appendix G for calculations.

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-23-3287 - POST in Appendix F of this report for more details. A summary of the post-development runoff calculations can be found below.

Table 8: 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)
B1A	0.019	6.06	6.06	88.87	203.28
B1B	0.035				
B1C	0.022				
B1D	0.017				
B2	0.152				
B3	0.004	0.25	0.54	-	-
Total	0.25	6.32	6.61	88.87	203.28

Runoff from areas B1A-B1D will be collected on the roof of the proposed building (B1) using 4 roof drains. The roof drains will convey runoff to the internal cistern without restriction.

Runoff for area B2 will flow overland towards the rear of the site where it will be captured by a catch basin and landscaping catch basin. A mechanical pump will limit flow to the specified allowable release rate. Runoff for areas B1-B2 will be directed to the existing 1050 mm diameter storm sewer at the allowable release rate. Runoff from area B3 will be unrestricted and directed north of the site as per existing conditions.

7.5 Quality Control

As noted in Section 7.1, quality controls are required up to an enhanced level of treatment. Quality control will be provided by a Hydro-International FD-4HC (or approved equivalent) located at the downstream end of the proposed storm servicing. Refer to Appendix 'G' for additional information on the proposed quality control unit.

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 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 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

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

- A new 6-storey 990 m^2 ground floor area commercial building is proposed to be constructed at 3745 St Joseph Boulevard. The development is proposed within 0.25 ha of the site.
- It is proposed to service the new building through a new 150 mm diameter water service, 150 mm diameter sanitary service, and 250 mm diameter storm service.
- It is proposed to service the development area via cistern storage. The storm system will connect to the existing 1050 mm diameter storm sewer at the rear of the site.
- Storage for the 5- through 100-year storm events will be provided via cistern storage.
- Quality controls will be provided up to an enhanced level of treatment via a Hydro-International First Defense Hydrodynamic Separator.

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 3745 St Joseph Boulevard.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.

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11.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of CSV Architects. 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, Parks and Climate Change, 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

McINTOSH PERRY

LEGEND

- Site Location
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

600 300 0 600

Scale 1:20,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2023.

CLIENT: CSV ARCHITECTS

PROJECT: 3745 ST JOSEPH BOULEVARD

TITLE: SITE LOCATION

McINTOSH PERRY
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PROJECT NO: CCO-23-3287		FIGURE:
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APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY

From:	Murshid, Shoma
To:	McGirr, Emily [NN-CA]
Cc:	Charie, Kelsey; Paudel, Neeti; Rehman, Sami; Wang, Randolph; Maloney, David; Richardson, Mark; Pamela.Whyte@parsons.com; Hofstetter, Payton; Camille Lewis; slsemajuste@gmail.com; leonard goddard; Yigit Cuhacibasi
Subject:	3745 St. Joseph Boulevard Pre-Consultation Follow-up for Zoning By-law Amendment & Site Plan Control
Date:	January 24, 2023 3:56:45 PM
Attachments:	image001.png image002.png preapplication_3745 St Joseph.pdf 220980 3745 St. Joseph Blvd Site Plan.pdf design_brief_submission requirements_3745 St. Joseph .pdf

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Good afternoon Emily,

Thank you for meeting with us on January 12, 2023 to discuss a 6-storey building at 3745 St. Joseph Boulevard, as per the attached concept. It is understood a hotel use will occupy the top four storeys, whereas the first two storeys will be comprised of co-working spaces and potentially a café, gym and/or other retail or office spaces. The subject land is zoned IL H(21). You wish to rezone the lands to permit the hotel use and to amend a few of the zoning provisions, such as side yard interior setbacks.

I offer the **following planning notes and comments** for your consideration when preparing a final formal submission for zoning by-law amendment and site plan control:

- Please provide shade/canopy trees along the proposed MUP and/or street frontage and consider any existing hydro wires and setbacks.
- Please bring the building as close as possible to the street to provide a more pedestrian friendly public realm along St. Joseph Boulevard.
- Ensure this proposal takes into account the new Official Plan as well as the Orleans Corridor Secondary Plan policies.
- When seeking reduced setbacks, first ensure there is adequate space between the existing shared property lines as well as its buildings in order that there be adequate maintenance access both properties.
- Please do not forget to design and identify locations of temporary (and/or permanent) snow storage, garbage/green-bin/recyclable pick-up, emergency and protective service turn-arounds (in other words, demonstrate truck turning movements) on your submission documents.
- At time of site plan control approval, private easements and a copy of the JUMA between 3735 and 3745 St. Joseph Boulevard will be required, via a condition of site plan approval, for the City's review. This JUMA will include details on the shared infrastructure services (service lines for 3735 St. Joseph that run through the northern segment of 3745 St. Joseph Blvd.) as well as the required western side yard maintenance access corridor at 3745 St. Joseph, in favour of 3735 St. Joseph, etc.
- At time of site plan approval, cash in lieu of parkland will apply
- At time of site plan approval, the MUP conveyance to the City will be required.
- Bird safe design guidelines are applicable.

Site Plan Control/Zoning By-law Amendment Categories, Required Plans/Studies and Fees for Submission:

I understand the intent is to submit the Site Plan Control and Zoning By-law Amendment applications concurrently. Note, when submitted concurrently, there will be a 10% deduction to the planning fee component of each application.

This proposal triggers Application for "New Development, Complex" site plan control, as it is approximately 1620 m2 GFA in total for proposed retail uses requiring approximately 55 required parking spaces under the Zoning By-law. This site plan control category has a submission fee requirement that is (planning fee component) $49,964.88 + the Initial Design Review and Inspection Fee, based on the value of Infrastructure and Landscaping (sliding scale between $1,000 to $10K) plus an Initial Conservation Authority Fee of $1,065.00.

This proposal also triggers "Zoning By-law Amendment (Major)". This development application has a submission fee requirement that is (planning fee component) $22,472.80 + another Initial Conservation Authority Fee of $400.00.

Plans and reports required at the time of zoning by-law amendment/site plan control submission (PDFs only) shall be:

Site Plan
Grade Control and Drainage/Ponding Plan
Existing Condition Storm Drainage Plan
Post Development Storm Drainage Plan
Landscape Plan (can be combined with TCR)
TCR, if applicable
Legal Survey Plan
Topographical Plan of Survey Plan with a published Bench Mark
Planning Rationale
Erosion and Sediment Control Plan
Site Servicing Plan
Site Servicing Study (can be combined with Stormwater Management Report)
Stormwater Management Report
Geotechnical Study
Noise Study
Plan Showing Parking Garage Layout
Elevations
Floor Plans
Phase 1 ESA

Comments from Policy Review, David Maloney:

The property at 3745 St. Joseph Boulevard is designated as 'Trim Minor Corridor' in the Orléans Corridor Secondary Plan. The applicable policies from the Orléans Corridor Secondary Plan are as follows:

The Trim Minor Corridor is intended to support the adjacent Local Production and Entertainment designation and the Trim O-train Station.

1) In addition to the uses permitted in the Local Production and Entertainment designation, commercial, restaurant and hotel uses may be permitted.

2) Residential is not permitted.

3) New or enhanced cycling and pedestrian connections will be pursued through tools such as: Site Plan Control, Community Benefits Agreements and traffic calming, in association with proposals for new development.

4) Development of sensitive uses such as a hotel is conditional on the submission of a Noise and Vibration study, and an analysis of existing or potential land use conflicts demonstrating compatibility.

5) Design strategies shall be implemented which may include locating non-residential sensitive land uses in a manner that shields them from nearby Class I or Class II industrial uses, framing the building to the adjacent street, maximizing setbacks in accordance with Provincial land use compatibility guidelines, and installing walls, fences, or landscaping to mitigate nuisances, where there is a current, or anticipated need.

The height schedule indicates a maximum height of six stories.

Comments:

The proposal is generally consistent with the intent of the applicable Orléans Corridor Secondary Plan. The proposed uses could meaningfully support the current activities of Taylor Creek, and its planned evolution. The proposed rooftop amenity space and restaurant, with views toward Petrie Island, Ottawa River and the Gatineau Hills is notable as this takes advantage of the site's locational assets and sloping grade. The co-working space, hotel, café, gym and the retail or office space will add important vitality to this area that will likely transform considerable with the arrival of the eastern terminus of the O-Train at Trim Station.

Policy Planning has a few specific comments to support the evolution of the project to achieve the active transportation objectives of the Secondary Plan. Other comments and to support efficient project design, with the understanding that existing zoning provisions have not been updated to align with the Secondary Plan.

- Dedication of land along the eastern property line for the purposes of a connection to Lacolle Way is important to establish a pedestrian and/or cycling shortcut from St. Joseph Boulevard into the Taylor Creek Business Park
    - Providing this connection to the 524 Lacolle Way property, entirely on the subject site would ensure its completion in the shorter term, as the City can leverage a potential easement on the vacant land to complete the link
    - Alternatives to a 6m wide multi-use pathway could be explored given the short length of this connection
    - Ensure the pathway / MUP connection is separated from vehicular traffic and buffered with landscaping to improve safety and enjoyability for users
- Reducing front and side yard setbacks are encouraged to frame the building on St. Joseph Bouleverd and mitigate land use conflicts

- Understanding there are restraints caused by above grade infrastructure, but contributing to an urban edge along the north side of St. Joseph Boulevard is encouraged
- Reducing the side yard setback opposite the driveway is encouraged to allow for increased rear yard setback without losing potential GFA
- Flexible zoning provisions for permitted projections are encouraged to encourage optimal building placement and rear yard land use mitigation measures

Comments from Engineering, Kelsey Charie:

Please see the below engineering comments from the pre-consultation meeting for 3745 St. Joseph Boulevard which occurred on January 12, 2023.

List of Reports and Plans (Concurrent Site Plan Control and Rezoning applications):

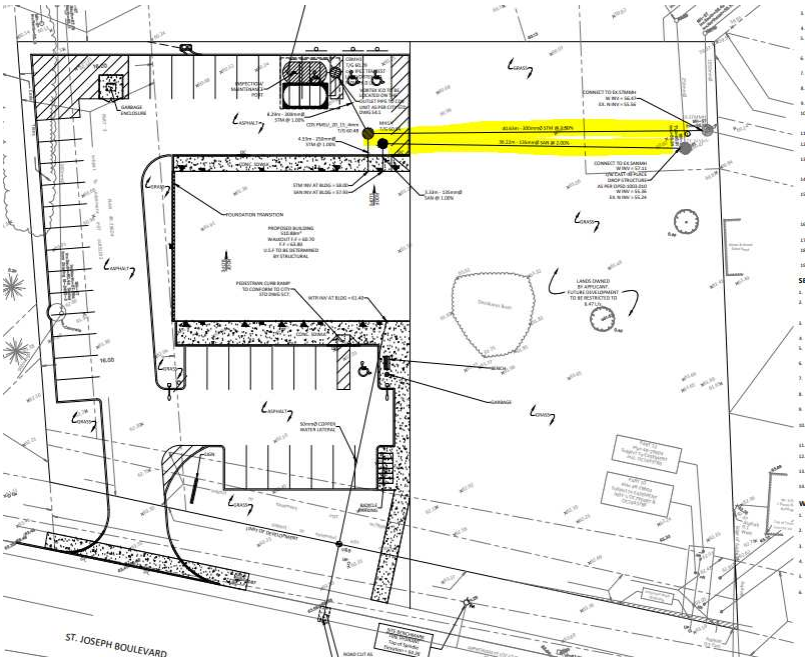
1. Site Servicing Plan
2. Site Grading and Ponding Plan
3. Erosion and Sediment Control Plan
4. Existing Condition Storm Drainage Plan
5. Post Development Storm Drainage Plan
6. Stormwater Management and Site Servicing Report
7. Geotechnical Investigation Report

List of Reports and Plans (If applicant elects to pursue Rezoning in advance of SPC):

1. Assessment of Adequacy of Public Services Report
2. Geotechnical Report

The applicant should also note that their submission should be coordinated with the plans and reports that were completed for the Phase 1 portion of this site: 3735 St. Joseph. The applicant's engineering consultant can obtain these plans and reports using the contact listed below and referencing Plan #16921.

One key item to note is the servicing for 3735 St. Joseph crosses the property of 3745 to connect to the public services at the North corner of the lot, see below snapshot of Phase 1 servicing plan:



These services may need to be redesigned/relocated based on the proposed footprint that is shown in the preliminary plans for 3745 St. Joseph.

Please note the following information regarding the engineering design submissions for the above noted site:

1. The Servicing Study Guidelines for Development Applications are available at the following address:

   https://ottawa.ca/en/city-hall/planning-and-development/how-develop-property/development-application-review-process-2/guide-preparing-studies-and-plans

2. Servicing and site works shall be in accordance with the following documents:

   - Ottawa Sewer Design Guidelines, Second Edition, (October 2012), including Technical Bulletins, ISDTB-2014-01, PIEDTB-2016-01, ISTB 2018-01, ISTB-2018-04, and ISTB-2019-02
   - Ottawa Design Guidelines – Water Distribution, First Edition, (July 2010), including Technical Bulletins ISD-2010-2, ISDTB-2014-02, ISTB-2018-02, and ISTB-2021-03
   - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (Revised 2008)
   - City of Ottawa Slope Stability Guidelines for Development Applications (Revised 2012)
   - City of Ottawa Environmental Noise Control Guidelines (January, 2016)
   - City of Ottawa Hydrogeological and Terrain Analysis Guidelines (March 2021)
   - City of Ottawa Park and Pathway Development Manual (2012)
   - City of Ottawa Accessibility Design Standards (2012)
   - Ottawa Standard Tender Documents (latest version)
   - Ontario Provincial Standards for Roads & Public Works (2013)

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

4. The Stormwater Management Criteria for the subject site is to be based on the following:
    - The stormwater management for the subject site shall be designed per the "Guidelines for On-Site Detention Design in the Taylor Creek Business Park Township of Cumberland"
    - Flows to the storm sewer for the 5-Year and 100-Year storm events must be controlled on-site to a maximum release rate of 26.4 l/s/ha.
    - Ensure no overland flow for all storms up to and including the 100-year event. Provide adequate emergency overflow conveyance off-site
    - Quality control requirements to be provided by Rideau Valley Conservation Authority (RVCA).
5. Deep Services:

i. A plan view of the approximate services may be seen above.

a. Available infrastructure for future connections:

i. 406 mm dia. PVC water main in St. Joseph Blvd.
ii. 250 mm dia. PVC sanitary sewer with sanitary manhole at the North corner of the property
iii. 1050 mm dia. PVC storm sewer with storm manhole at the North corner of the property

ii. Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.

iii. Provide information on the monitoring manhole requirements – should be located in an accessible location on private property near the property line (ie. Not in a parking area).

iv. Provide information on the type of connection permitted

Sewer connections to be made above the springline of the sewermain as per:

a. Std Dwg S11.1 for flexible main sewers – *connections made using approved tee or wye fittings.*

b. Std Dwg S11 (For rigid main sewers) – *lateral must be less that 50% the diameter of the sewermain,*

c. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – *for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain,*

d. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.

e. No submerged outlet connections.

v. *Please provide estimated sanitary flows with the first submission, to allow the City to confirm whether there are any downstream capacity constraints.*

6. 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 and the expected loads required by the proposed development. Please provide the following information:

   i. Location of service(s)

   ii. Type of development and the amount of fire flow required (as per FUS, 2020).

   iii. Average daily demand: ___ l/s.

   iv. Maximum daily demand: ___l/s.

   v. Maximum hourly daily demand: ___ l/s.

   vi. Hydrant location and spacing to meet City's Water Design guidelines.

   vii. Water supply redundancy will be required for more than 50 m3/day water demand.

   Please note that a boundary condition request should be made to the City as early as possible, in order to identify any water supply constraints (if any exist).

7. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

8. All development applications should be considered for an Environmental Compliance Approval (ECA) by the Ministry of the Environment, Conservation, and Parks (MECP);

   a. The consultants determine if an approval for sewage works under Section 53 of OWRA is required and determines what type of application. The City's project manager may help confirm and coordinate with the MECP as required.

   b. The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.

   c. Pre-consultation is not required if applying for standard or additional works (Schedule A

of the Agreement) under Transfer Review.

d. Pre-consultation with local District office of MECP is recommended for direct submission.

e. Consultant completes an MECP request form for a pre-consultation. Send request to moeccottawasewage@ontario.ca

f. ECA applications are required to be submitted online through the MECP portal. A business account required to submit ECA application. For more information visit https://www.ontario.ca/page/environmental-compliance-approval

NOTE: Site Plan Approval, or Draft Approval, is required before an application is sent to the MECP.

9. General Engineering Submission requirements:

a. 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.

b. 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.

c. All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)

Should you have any questions or require additional information, please contact me directly at kelsey.charie@ottawa.ca

Design Review Comments, Randolph Wang:

Here are urban design comments on this pre-consultation:

1. Design Brief is required for these applications. The Terms of Reference is attached.
2. Urban design has no concern on the proposed uses.
3. The building placement and massing appear to be appropriate for the proposed uses and the relationship with the abutting properties also appears to be appropriate. The proposed MUP is in keeping with the Secondary Plan. However, the proposed site plan is very tight and leaves very little room for on-site vehicle maneuvering:
    a. Have pick- up and drop-off been considered for hotel guests?
    b. How is garbage storage and pick up arranged?
    c. Are pick-up and drop-off required for the function of the community facility?
4. Given the history and the said close relationship between owners of this property and the owner of the one-storey building to the west, considerations may be given to create a loop at the back both properties to allow for better vehicular circulation.

5. Continuous tree canopy and landscaping should be provided along St. Joseph and the proposed MUP.

Comments from PIED Forestry, Mark Richardson:

- A Tree Conservation report is not needed unless there are trees on site that are greater than 10cm in diameter

LP tree planting requirements:

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

- Curb style planter is highly recommended
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade

Soil Volume

- Please document on the LP that adequate soil volumes can be met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12

Medium	25	15
Large	30	18
Conifer	25	15

Sensitive Marine Clay

- Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

Comments from Environmental Policy, Sami Rehman:

Given the vacant nature of the subject property, and distance between the it and the urban natural feature, I don't think there is much environmental concerns with this proposed development.

Because the proposed development is going to be over 4-storeys, my major recommendations for the Site Plan Control application would be:

a. to ensure the applicant reviews and draws relevant design elements from the City's Bird-safe Design Guidelines:
   Bird-Safe Design Guidelines | City of Ottawa
b. plant as many locally appropriate native trees/shrubs/plans as possible.

Comments from Transportation Engineering Review, Neeti Paudel:

- Noise Impact Studies required for the following:
  - Road.
  - Stationary (if there will be any exposed mechanical equipment due to the proximity to neighbouring noise sensitive land uses)
- Right of Way Protection on St Joseph along the frontage is **37.5m** (18.75m from the centerline). This needs to be protected and shown on the site plan.
- Ensure there is sufficient throat length at the access as per TAC.
- Access should be designed as per City standards SC7.1. Recommend moving the access as far as possible from the intersection.
- As the proposed site is for the general public use, AODA legislation applies.
  - Clearly define accessible parking stalls and ensure they meet AODA standards (include an access aisle next to the parking stall and a pedestrian curb ramp at the end of the access aisle, as required).
  - Please consider using the City's Accessibility Design Standards, which provide a summary of AODA requirements. https://ottawa.ca/en/city-hall/creating-equal-inclusive-and-diverse-city/accessibility-services/accessibility-design-standards-features#accessibility-design-standards

Closing Thoughts:

Sometime after June 2023, the regime of reviewing development review applications will change. It is advisable to submit before then so that these pre-consultation notes are still applicable. Also to note, sometime after May/June 2023, the High Performance Design Standards will become applicable, some of which will become mandatory and some of which will be voluntary measures. Community Benefits Charge By-law may also be applicable.

***Minimum Drawing and File Requirements- All Plans -**Please note that Plans are to be submitted on standard **A1 size** (594mm x 841mm) sheets, saved as PDFs, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400, or 1:500). **Provide individual PDF of the DWGs (plans – i.e. not 2 or more sheets per PDF) and for reports please provide one PDF file of the reports. All PDF documents are to be unlocked and flattened.**

If there is a need for clarifications or a need for more information, please do not hesitate to contact me.

Best wishes,

Shoma Murshid, MCIP, RPP
(she/ her/ elle)
File Lead, Planner II
Responsable de dossier, urbaniste II
City of Ottawa/ Ville d'Ottawa
Development Review (Suburban Services, East)/ Examen des projets d'aménagement (Services suburbains Est)
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
110 Laurier Avenue West, 4th Floor, Ottawa ON K1P 1J1/ 110, avenue Laurier Ouest, 4e étage, Ottawa (Ontario) K1P 1J1
Mail Code/ Code de courrier : 01-14
Tel/ Tél: (613) 580-2424 ext. 15430
Fax/ Téléc. : (613) 580-4751
e-mail/ courriel : shoma.murshid@ottawa.ca
www.ottawa.ca

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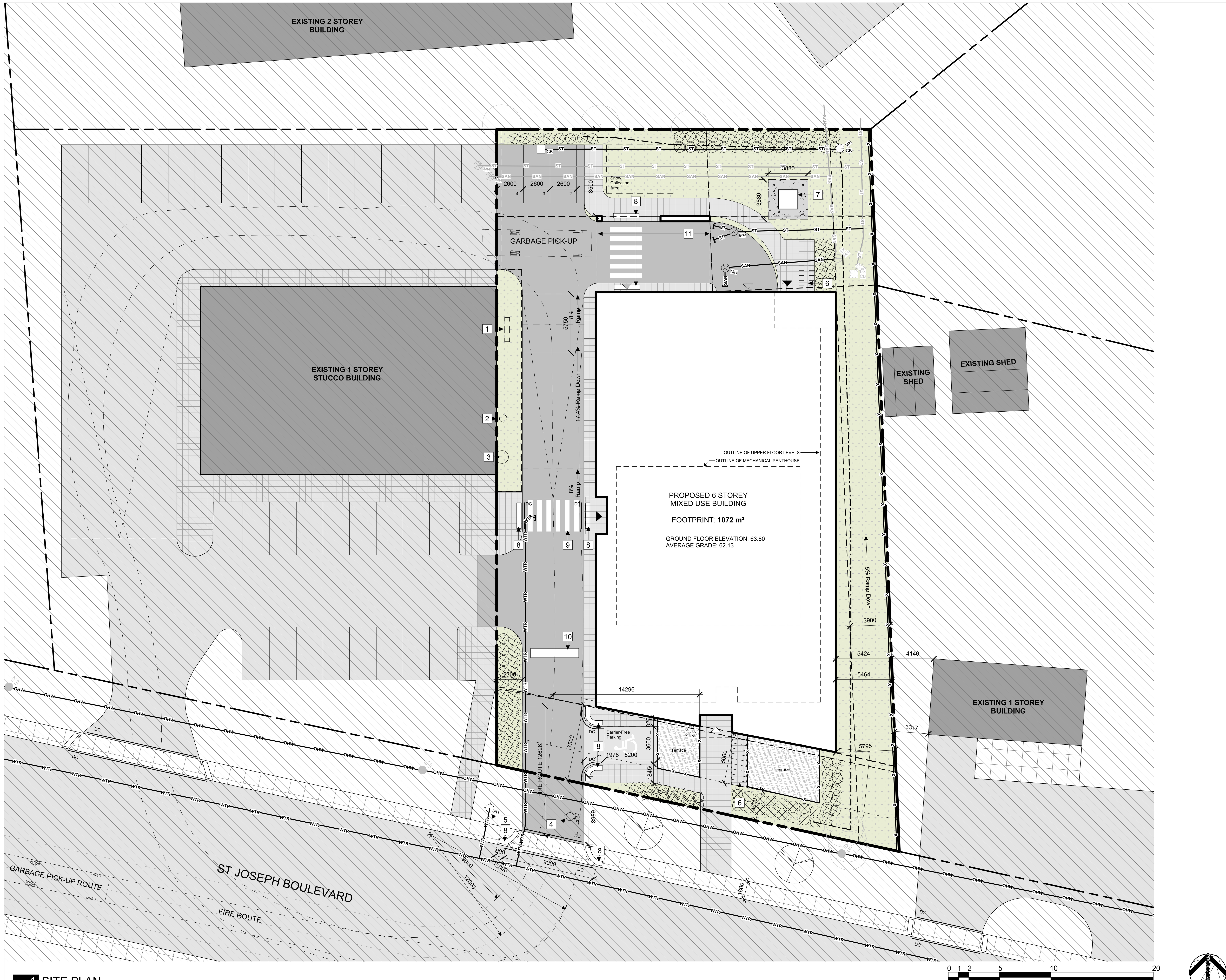

1 SITE PLAN

A100 1 : 200

LEGAL DESCRIPTION:

PART LOT 31, CONCESSION 1, CUMBERLAND OLD SURVEY, PARTS 1, 2, 6, 7, 8, 9, 10, 11, AND 12, PLAN 4R-32177

REFERENCE SURVEY:

BASED ON INFORMATION FROM A SURVEY PREPARED BY ANNIS O'SULLIVAN, VOLLEBEKK LTD., DATED MAY 27, 2022.

MUNICIPAL ADDRESS:

3745 ST. JOSEPH BOULEVARD

DEVELOPMENT INFORMATION:

SITE AREA	2,502 m²
BUILDING FOOTPRINT	1,072 m²
GROSS FLOOR AREA	3,828 m²
BUILDING HEIGHT	23.6 m (SIX STOREYS)
ZONE PROVISIONS	(IL H(21))
SCHEDULE 1:	AREA C SUBURBAN
SCHEDULE 1A:	AREA C
SCHEDULE 2B:	RAPID TRANSIT STATIONS (EAST) DISTANCE EXCEEDS 600m.

UNIT MIX:

COMMERCIAL 1	81
COMMERCIAL 2	82
COMMERCIAL 3	94
COMMERCIAL 4	186
COMMERCIAL 5	85
COMMERCIAL 6	251
RESTAURANT	102
TOTAL COMMERCIAL GFA	**881 m²**
INSTRUCTIONAL	208 m²
HOTEL SUITES	
BACHELOR HOTEL ROOM	42
ONE BEDROOM HOTEL ROOM	11
TWO BEDROOM HOTEL ROOM	8
TOTAL	**61**

ZONING PROVISION	REQUIRED	PROVIDED
MIN. LOT WIDTH	No Minimum	40.14 m
MIN. LOT AREA	No Minimum	2,502 m²
MAX. LOT COVERAGE	65%	43%
MIN. FRONT YARD SETBACK	7.5 m	7.5 m
MIN. REAR YARD SETBACK	7.5 m	8.5 m
MIN. INTERIOR YARD SETBACK		
East Lot Line	7.5 m	3.9 m
West Lot Line	7.5 m	9.68 m
MAX. BUILDING HEIGHT	21 m	23.6 m
FLOOR SPACE INDEX	2.0	1.52
MIN. WIDTH OF LANDSCAPED AREA		
Abutting a street	3.0 m	7.5 m
All other cases	No Minimum	N/A

ZONING PROVISION	REQUIRED	PROVIDED
CUMULTIVE GFA OF ADDITIONAL PERMITTED USES	2,999 m² max	403 m²
EACH ADDITIONAL PERMITTED USE NOT EXCEEDING 300m²		
Day Program (Instructional)	300 m²	208 m²
Restuarant (1 - Cafe)	300 m²	83 m²
Restaurant (2 - Full Service)	300 m²	102 m²

ACCESSIBLE PARKING PROVISION RATES

TOTAL No. PARKING SPACES	No. ACCESSIBLE SPACES REQUIRED	No. TYPE A	No. TYPE B
76 - 100	4	2	2

VEHICLE PARKING + LOADING	REQUIRED	PROVIDED
HOTEL Commercial 6 (Co-Working Space) Atrium / Multi-Pupose Space Commercial 4 (Gym Space)	61	61
COMMERCIAL 1 (Retail)	3	2
COMMERCIAL 2 (Cafe)	4	3
COMMERCIAL 3 (Retail)	3	-
COMMERCIAL 5 (Retail)	3	-
RESTAURANT (Full-Service)	10	8
DAY PROGRAM (Instructional)	7	6
TOTAL	**91 spaces**	**80 spaces**
BICYCLE PARKNG		
HOTEL	1.7	3
COMMERCIAL 1	0.3	2
COMMERCIAL 2 (Cafe)	0.3	4
COMMERCIAL 3 (Retail)	0.4	2
COMMERCIAL 5 (Retail)	0.4	2
RESTAURANT (Full-Service)	0.5	6
DAY PROGRAM (Instructional)	1	1
TOTAL	**5**	**20**

SITE PLAN GENERAL NOTES:

1. ALL GENERAL SITE INFORMATION AND CONDITIONS COMPILED FROM EXISTING PLANS AND SURVEYS
2. DO NOT SCALE THIS DRAWING
3. REPORT ANY DISCREPANCIES PRIOR TO COMMENCING WORK. NO RESPONSIBILITY IS BORN BY THE CONSULTANT FOR UNKNOWN SUBSURFACE CONDITIONS
4. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY ERRORS AND/OR OMISSIONS TO THE CONSULTANT
5. REINSTATE ALL AREAS AND ITEMS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE CONSULTANT
6. CONTRACTOR TO LAYOUT PLANTING BEDS, PATHWAYS ETC. TO APPROVAL OF CONSULTANT PRIOR TO ANY JOB EXCAVATION
7. THE ACCURACY OF THE POSITION OF UTILITIES IS NOT GUARANTEED - CONTRACTOR TO VERIFY PRIOR TO EXCAVATION
8. INDIVIDUAL UTILITY COMPANY MUST BE CONTACTED FOR CONFIRMATION OF UTILITY EXISTENCE AND LOCATION PRIOR TO DIGGING
9. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE NOTED

SITE PLAN KEYNOTES:

1 CONCRETE PAD, GAS METER (NEIGHBOUR)
2 AIR CONDITIONER (NEIGHBOUR)
3 ROOF LADDER (NEIGHBOUR)
4 FIRE HYDRANT TO BE RELOCATED
5 NEW FIRE HYDRANT LOCATION
6 BICYCLE PARKING 500x1500mm (20 SPACES TOTAL)
7 ELECTRICAL TRANSFORMER ON CONCRETE PAD 3880mm W x 3880mm L (TBC)
8 TWSI
9 RAISED CROSSWALK
10 SPEED BUMP
11 BUILDING OVERHEAD

SITE PLAN LEGEND:

- EXISTING BUILDING
- ASPHALT PAVING
- NEW GRASS
- CONCRETE SIDEWALK
- CONCRETE PAD
- PAVER TYPE 1
- PAVER TYPE 2
- PAVER TYPE 3
- EMERGENCY EXIT
- SERVICE DOORS
- BUILDING MAIN ENTRANCE
- PROPERTY LINE
- SET BACKS
- FENCE PER LANDSCAPE
- NEW DOMESTIC WATER
- NEW SANITARY
- NEW STORM
- NEW ELECTRICAL SERVICE (BELOW GRADE)
- GAS
- SWALE
- CATCH BASIN
- CATCH BASIN
- LIGHT STANDARD
- LIGHT STANDARD EXISTING
- FIRE HYDRANT
- FIRE HYDRANT EXISTING
- MANHOLE
- MANHOLE EXISTING
- UTILITY POLE
- UTILITY POLE EXISTING
- CUSTOM SYMBOL
- CUSTOM SYMBOL EXISTING
- SIAMESE CONNECTION
- DROPPED CURB
- NEW TREE
- NEW SHRUB

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2611 Queensview Drive, Suite 300
Ottawa, ON, K2B 8K2
(613) 829-2800

MECHANICAL/ELECTRICAL ENGINEER
Smith + Anderson
1600 Carling Ave #530,
Ottawa, ON K1Z 1G3
(613) 230-1186

CIVIL ENGINEER
McIntosh Perry
115 Walgreen Road
R.R. 3 Carp, ON, K0A 1L0
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JAMES B. LENNOX & ASSOCIATES INC. LANDSCAPE ARCHITECTS
LANDSCAPE ARCHITECT
James B. Lennox & Associates Inc.
3332 Carling Avenue,
Ottawa, Ontario, K2H 5A8
(613) 722-5168

ONTARIO ASSOCIATION OF ARCHITECTS
DARRYL J. HOOD
LICENCE 6165

STAMP

REV	DATE	ISSUE
1	20230512	Issued for Site Plan Control

CLIENT
13890767 Canada Inc.
3735 Saint Joseph Boulevard
Unit #1, Ottawa
ON, K1C 1T1, CANADA

PROJECT
3745 ST JOSEPH
3745 St. Joseph Ave, Orleans, ON

TITLE
SITE PLAN

PROJECT NO: 220980
DRAWN: CL/YC
APPROVED: DH/CL
SCALE: 1 : 200
DATE PRINTED: 2023-10-02 5:18:05 PM

REV 1
DRAWING NO. A100

D07-12-23-0059

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CCO-23-3287 - 3745 St Joseph Boulevard - Water Demands

Project:	3745 St Joseph Boulevard
Project No.:	CCO-23-3287
Designed By:	FV
Checked By:	AM
Date:	May 9, 2023
Site Area:	0.25 gross ha

Commercial	2,160	m2	28,000	L/gross ha/d
Hotel Beds	69	bed-space	225	L/(bed-space/d)

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/(1000m² /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	0.00	L/s
	Commercial/ Industrial/ Institutional	0.25	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	9.5	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	0.00	L/s
	Commercial/ Industrial/ Institutional	0.37	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	14.3	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	0.00	L/s
	Commercial/ Industrial/ Institutional	0.67	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.25	L/s
MAXIMUM DAILY DEMAND	0.37	L/s
MAXIMUM HOUR DEMAND	0.67	L/s

115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

CCO-23-3287 - 3745 St Joseph Boulevard - Fire Underwriters Survey

Project:	3745 St Joseph Boulevard
Project No.:	CCO-23-3287
Designed By:	FV
Checked By:	AM
Date:	May 9, 2023

From the Fire Underwriters Survey (2020)

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

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: Type IV-B Mass Timber Construction

C: 0.9 A: 6,361.0 m^2

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area): 4,260.7 m^2

Calculated Fire Flow	12,924.3 L/min
	13,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%
Fire Flow	11,050.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Standard Water Supply Sprinklered	-40%
Reduction	-4,420.0 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	20.1 to 30	Fire Resistive - Non Combustible (Unprotected Openings)	38.1	3	114.3	4%
Exposure 2	3.1 to 10	Wood frame	7.4	1	7.4	15%
Exposure 3	Over 30 m	Wood frame	10.0	2	20.0	0%
Exposure 4	3.1 to 10	Ordinary - Mass Timber (Unprotected)	18.0	1	18.0	10%
					% Increase*	29%

Increase*	3,204.5 L/min

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

Fire Flow	9,834.5 L/min
Fire Flow Required**	10,000.0 L/min

* 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

CCO-23-3287 - 3745 St Joseph Boulevard - Boundary Condition Unit Conversion

Project:	3745 St Joseph Boulevard
Project No.:	CCO-23-3287
Designed By:	FV
Checked By:	AM
Date:	May 9, 2023

Boundary Conditions Unit Conversion

St Joseph Boulevard

Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	114.1	63.9	50.2	71.4	492.5
Max Day + Fire Flow	104.9	63.9	41.0	58.3	402.2
Peak Hour	109.4	63.9	45.5	64.7	446.4

115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

Boundary Conditions
3745 St. Joseph Blvd.

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	15	0.25
Maximum Daily Demand	22	0.37
Peak Hour	40	0.67
Fire Flow Demand #1	10,000	166.67

Location

Results

Connection 1 – St. Joseph Blvd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	114.1	71.3
Peak Hour	109.4	64.7
Max Day plus Fire Flow	104.9	58.3

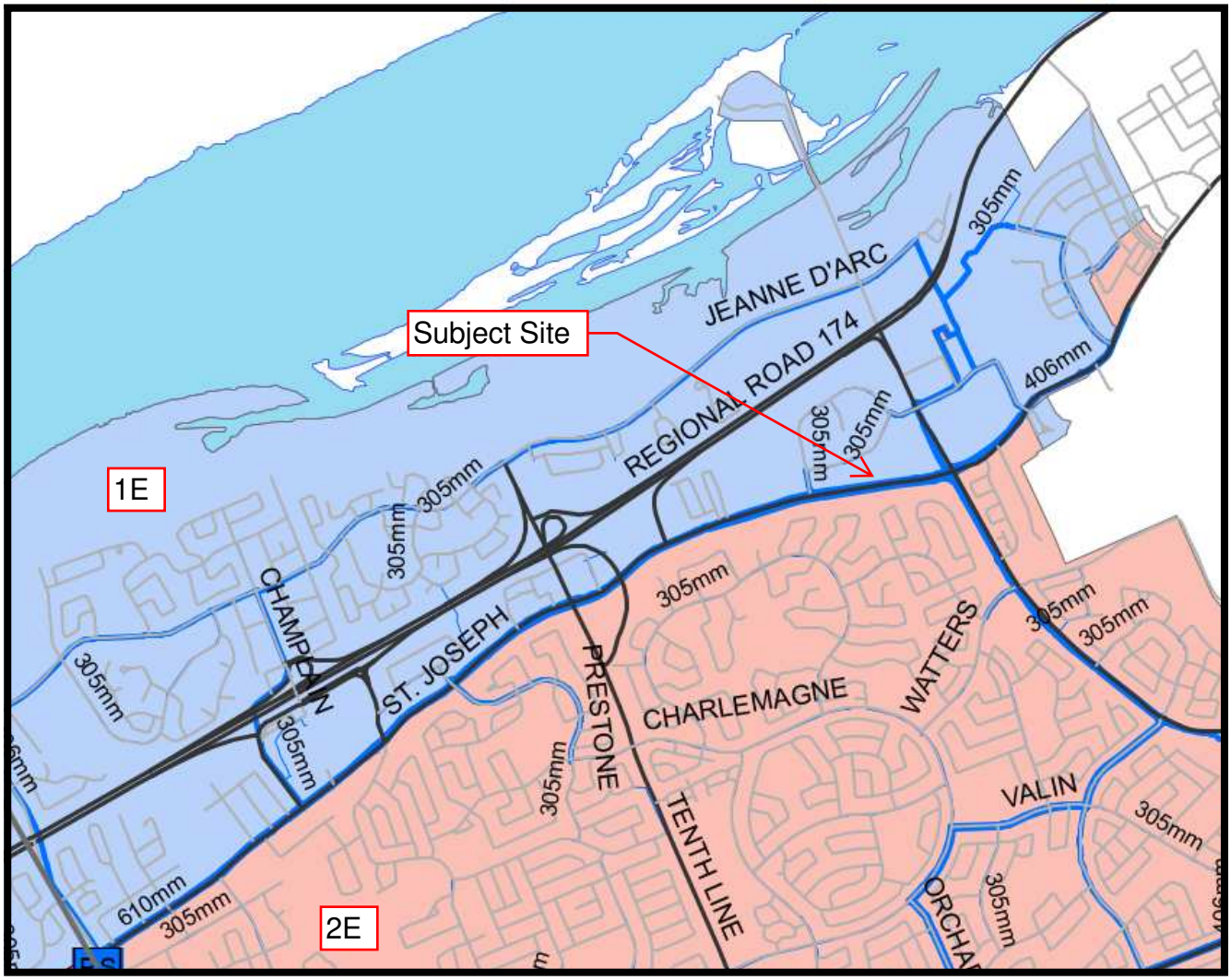
[1] Ground Elevation = 63.9 m

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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

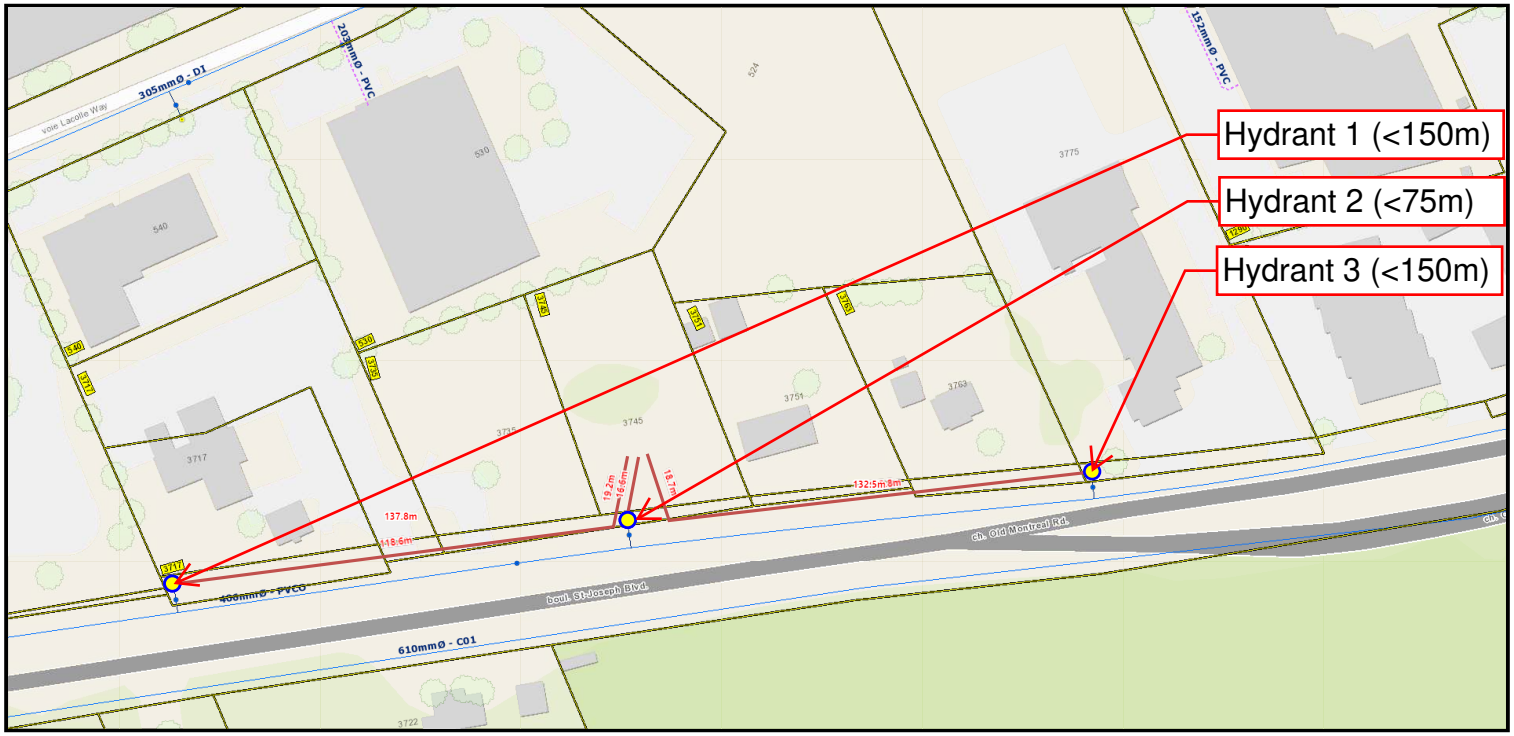
3745 St Joseph Boulevard

Pressure Zone Figure



3745 St Joseph Boulevard

Hydrant Coverage Figure



APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CCO-23-3287 - 3745 St Joseph - Sanitary Demands

Project:	3745 St Joseph			
Project No.:	CCO-23-3287			
Designed By:	FV			
Checked By:	BC			
Date:	Apr-23			
Site Area	0.25	Gross ha		
Commercial Area	2160.00	m^2	28,000	L/gross ha/d
Hotel Beds	69.00	bed-space	225	L/(bed-space/d)

DESIGN PARAMETERS

Commercial Peaking Factor	1.5	
Residential Peaking Factor	3.80	* 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	0.01
Wet	0.07
Total	0.08

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	0	0.00
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)	2160.00	0.07
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)	69	0.18
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

AVERAGE ICI FLOW	0.25	L/s
PEAK INSTITUTIONAL/ COMMERCIAL FLOW	0.37	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.37	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.26	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.39	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.46	L/s

SANITARY SEWER DESIGN SHEET

PROJECT: CCO-23-3287
LOCATION: 3745 St Joseph Boulevard
CLIENT: CSV Architects

McINTOSH PERRY

LOCATION				ICI AREAS							INFILTRATION ALLOWANCE			FLOW	SEWER DATA						
1	2	3	4	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
STREET	AREA ID	FROM MH	TO MH	AREA (ha) INSTITUTIONAL IND	INSTITUTIONAL CUM	COMMERCIAL IND	COMMERCIAL CUM	INDUSTRIAL IND	INDUSTRIAL CUM	PEAK FLOW (L/s)	AREA (ha) IND	AREA (ha) CUM	FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY L/s	AVAILABLE CAPACITY (%)
3735 St Joseph		Ex. Bldg	Ex. MH1											0.59	12.00	3.33	135	1.00	0.812	11.41	95.08
3735 St Joseph		Ex. MH1	Ex. 250mm SAN											0.59	16.97	33.22	135	2.00	1.148	16.38	96.52
3745 St Joseph		Prop. Bldg	Prop. MH1A		0.00		0.22		0.00	0.37	0.25	0.25	0.08	0.46	22.47	3.22	150	2.00	1.232	22.01	97.95
3745 St Joseph		Prop. MH1A	Ex. 250mm SAN		0.00		0.22		0.00	0.37	0.25	0.25	0.08	0.46	22.47	10.79	150	2.00	1.232	22.01	97.95
3735+3745 St Joseph		Ex. MH2	Ex. MH3											1.05	75.98	15.30	250	1.50	1.500	74.93	98.62

Design Parameters:

Residential

SF	3.4	p/p/u
TH/SD	2.7	p/p/u
APT	2.3	p/p/u
Other	60	p/p/Ha

ICI Areas

			Peak Factor
INST	28,000	L/Ha/day	1.5
COM	28,000	L/Ha/day	1.5
IND	35,000	L/Ha/day	MOE Chart

Designed by: FV

Reviewed by: AM

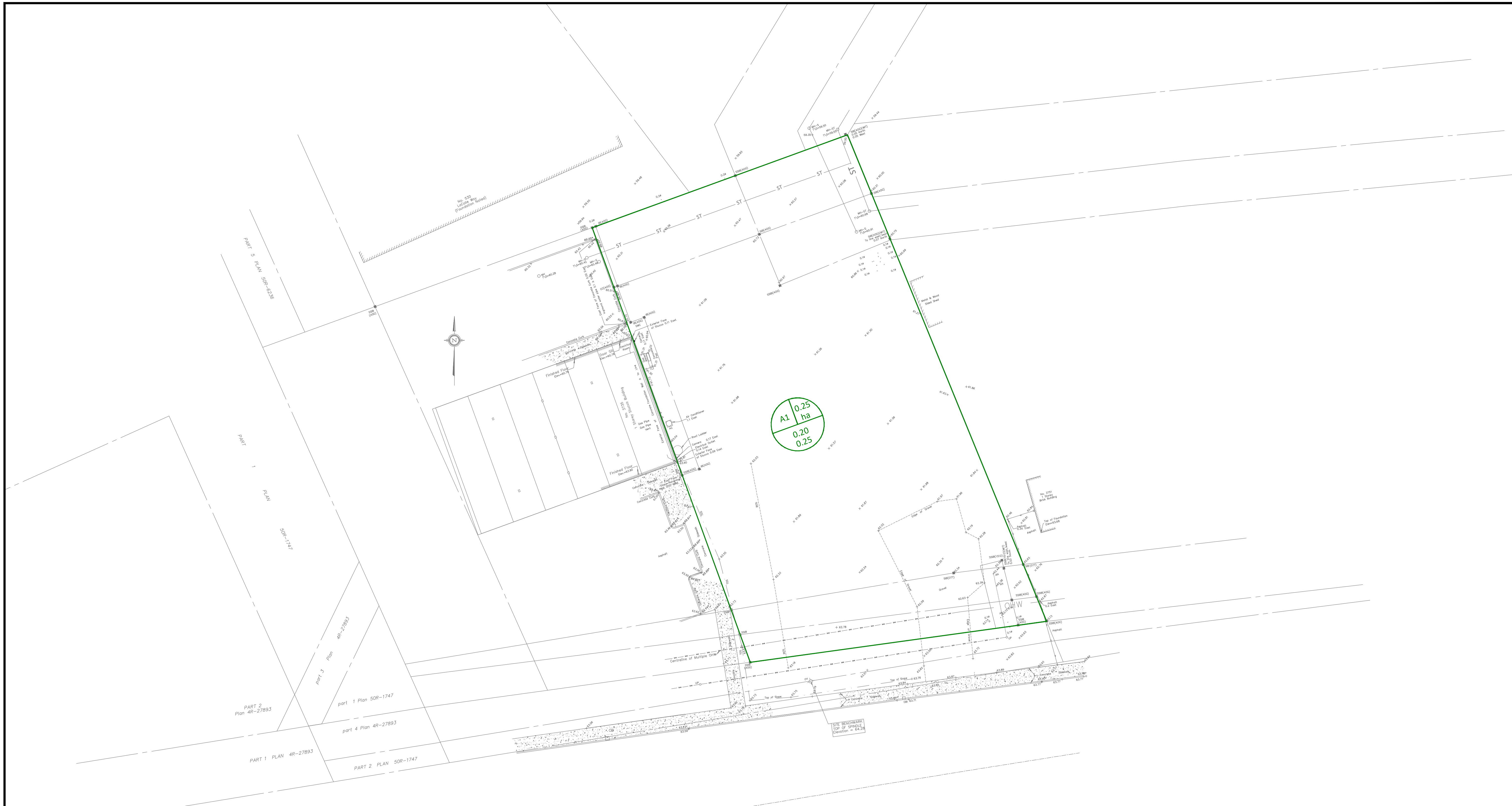
CCO-23-3287

No.	Revision	Date
1.	Revision 1	2023.05.09
2.	Revision 2	2023.10.06

Sheet No: 1 of 1

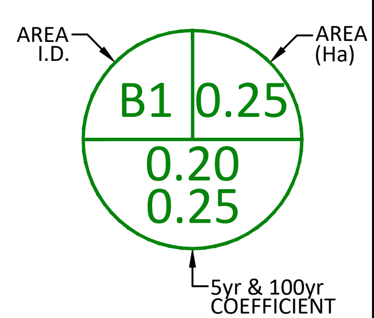
APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY



SCALE 1 : 500

0 10 20 30 40 50 Metres



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

Drawn by:	Checked By:
FV	AM
Scale: 1:500	Project Number: CCO-23-3287

Client: CSV ARCHITECTS
190 O'CONNOR STREET, SUITE 100

Project: COMMERCIAL BUILDING
3745 ST JOSEPH BOULEVARD, OTTAWA

Drawing Title: PRE-DEVELOPMENT DRAINAGE AREA PLAN

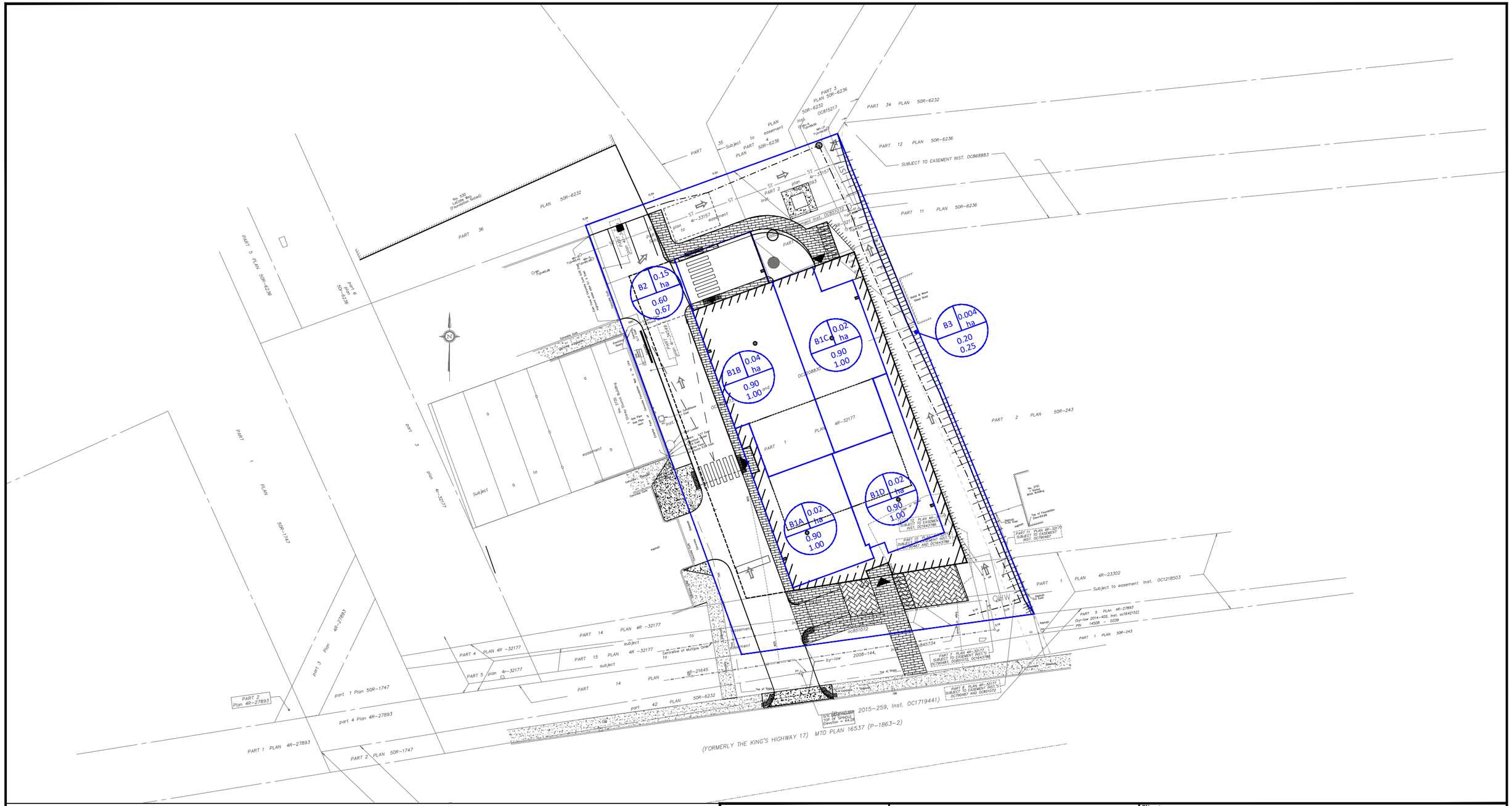
No.	Revisions	Date
2		
1		

Drawing Number: PRE

FILENAME: U:\Ottawa\01 Project - Proposals\2023 Jobs\CCO\CCO-23-3287 CSV_Multi-Use Building_3745 St. Joseph Blvd\12 - Drawings\CCO-23-3287 Presentation.dwg
LAST SAVED: Friday, April 14, 2023 LAST SAVED BY: F.Valenti
LAST PLOTTED: Tuesday, May 09, 2023 CTB FILE USED: ----

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY



SCALE 1 : 500

0 10 20 30 40 50 Metres

AREA I.D. — AREA (Ha)

B1 | 0.25

0.20

0.25

5yr & 100yr COEFFICIENT

N

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, SUITE 100

Project: MIXED USE BUILDING
3745 ST JOSEPH BOULEVARD, OTTAWA

Drawing Title: POST-DEVELOPMENT DRAINAGE AREA PLAN

Drawn by:	Checked By:				Drawing Number:
FV	AM	2			POST
Scale: 1:500	Project Number: CCO-23-3287	1	RE-ISSUED FOR SITE PLAN CONTROL	2023.10.06	
		No.	Revisions	Date	

FILENAME: I:\Ottawa\01 Project - Proposals\2023 Jobs\CCO\CCO-23-3287 CSV_Multi-Use Building_3745 St. Joseph Blvd\12 - Drawings\CCO-23-3287 Presentation.dwg
LAST SAVED: Thursday, October 05, 2023 LAST SAVED BY: F.Valenti
LAST PLOTTED: Thursday, October 05, 2023 CTB FILE USED: ----

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CCO-23-3287 - 3745 St Joseph Boulevard

Tc (min)	Intensity (mm/hr)	
	5-Year	100-Year
20	70.3	120.0
10	104.2	178.6

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (5-year)	Average C (100-year)
A1	0	0	2,502	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)	
					5-Year	100-Year
A1	0.25	0.20	0.25	10	14.50	31.05
Total	0.25				14.50	31.05

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (5-year)	Average C (100-year)	
B1A	188	0	0	0.90	1.00	Building Roof - Directed to Internal Cistern Without Restriction
B1B	352	0	0	0.90	1.00	
B1C	225	0	0	0.90	1.00	
B1D	174	0	0	0.90	1.00	
B2	861	0	659	0.60	0.67	Surface Collected
B3	0	0	44	0.20	0.25	Surface Unrestricted

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)		
					5-Year	100-Year	
B1A	0.019	0.90	1.00	10	4.90	9.32	Building Roof - Directed to Internal Cistern Without Restriction
B1B	0.035	0.90	1.00	10	9.19	17.49	
B1C	0.022	0.90	1.00	10	5.86	11.16	
B1D	0.017	0.90	1.00	10	4.55	8.66	
B2	0.152	0.60	0.67	10	26.25	50.90	Surface Collected
B3	0.004	0.20	0.25	10	0.25	0.54	Surface Unrestricted
Total	0.25				51.00	98.07	

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	Q (L/s)	
				5-Year	
A1	0.25	0.20	10	6.61	Allowable outflow per Guidelines for On-Site Detention Design in the Taylor Creek Business Park Township of Cumberland - 26.4 L/s/ha

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	4.90	9.32	6.06	6.06	37.11	88.87	203.28	203.28
B1B	9.19	17.49						
B1C	5.86	11.16						
B1D	4.55	8.66						
B2	26.25	50.90						
B3	0.25	0.54	0.25	0.54				
Total	51.00	98.07	6.32	6.61	37.11	88.87	203.28	203.28

CCO-23-3287 - 3745 St Joseph Boulevard

Storage Requirements

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1A	Runoff (L/s) B1B	Runoff (L/s) B1C	Runoff (L/s) B1D	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	4.90	9.19	5.86	4.55	26.26	6.06	44.68	26.81
20	70.3	3.30	6.20	3.95	3.07	17.71	6.06	28.17	33.81
30	53.9	2.53	4.75	3.03	2.35	13.58	6.06	20.19	36.33
40	44.2	2.08	3.90	2.49	1.93	11.14	6.06	15.46	37.11
50	37.7	1.77	3.32	2.12	1.65	9.50	6.06	12.30	36.89
60	32.9	1.55	2.90	1.85	1.44	8.29	6.06	9.96	35.85
70	29.4	1.38	2.59	1.65	1.28	7.41	6.06	8.25	34.66
80	26.6	1.25	2.34	1.50	1.16	6.70	6.06	6.89	33.07
90	24.3	1.14	2.14	1.37	1.06	6.12	6.06	5.77	31.16
100	22.4	1.05	1.97	1.26	0.98	5.64	6.06	4.84	29.07
110	20.8	0.98	1.83	1.17	0.91	5.24	6.06	4.06	26.83
120	19.5	0.92	1.72	1.10	0.85	4.91	6.06	3.43	24.71
130	18.3	0.86	1.61	1.03	0.80	4.61	6.06	2.85	22.21
140	17.3	0.81	1.53	0.97	0.76	4.36	6.06	2.36	19.83
150	16.4	0.77	1.45	0.92	0.72	4.13	6.06	1.92	17.30

Maximum Storage Required 5-year =	37	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1A	Runoff (L/s) B1B	Runoff (L/s) B1C	Runoff (L/s) B1D	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	9.33	17.49	11.16	8.66	50.91	6.06	91.49	54.89
20	120.0	6.27	11.75	7.50	5.82	34.21	6.06	59.48	71.38
30	91.9	4.80	9.00	5.74	4.46	26.20	6.06	44.13	79.44
40	75.1	3.92	7.36	4.69	3.64	21.41	6.06	34.96	83.89
50	64.0	3.34	6.27	4.00	3.10	18.24	6.06	28.89	86.68
60	55.9	2.92	5.48	3.49	2.71	15.93	6.06	24.47	88.09
70	49.8	2.60	4.88	3.11	2.41	14.20	6.06	21.14	88.77
80	45.0	2.35	4.41	2.81	2.18	12.83	6.06	18.51	88.87
90	41.1	2.15	4.03	2.57	1.99	11.72	6.06	16.38	88.48
100	37.9	1.98	3.71	2.37	1.84	10.80	6.06	14.64	87.82
110	35.2	1.84	3.45	2.20	1.71	10.03	6.06	13.16	86.87
120	32.9	1.72	3.22	2.06	1.60	9.38	6.06	11.91	85.72
130	30.9	1.61	3.03	1.93	1.50	8.81	6.06	10.81	84.34
140	29.2	1.52	2.86	1.82	1.42	8.32	6.06	9.88	83.03
150	27.6	1.44	2.70	1.72	1.34	7.87	6.06	9.01	81.09

5-Year Storm Event Storage Summary

Storage Available (m^3) = 203.3
Storage Required (m^3) = 37.1

100-Year Storm Event Storage Summary

Storage Available (m^3) = 203.3
Storage Required (m^3) = 88.9

STORM SEWER DESIGN SHEET

PROJECT: CCO-23-3287
LOCATION: 3745 St Joseph Boulevard
CLIENT: CSV Architects

McINTOSH PERRY

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			(L/s)	(%)
St Joseph Blvd	B2	LSCB2	CB1	0.60	0.15	0.09	0.09	10.00	0.56	10.56	104.19	122.14	178.56	26.25				26.25	43.87	29.27	250			0.50	0.866	17.61	40.15%
		CB1	CISTERN				0.09	10.56	0.08	10.65	101.31	118.74	173.57	25.53				25.53	62.04	6.10	250			1.00	1.224	36.51	58.85%
	B1	CISTERN	OGS3	0.90	0.09	0.08	0.18	10.65	0.02	10.67	100.90	118.26	172.86	49.14				49.14	87.74	2.37	250			2.00	1.731	38.60	43.99%
		OGS3	EX. 1050mm				0.18	10.67	0.12	10.79	100.79	118.13	172.66	49.08				49.08	87.74	12.26	250			2.00	1.731	38.65	44.06%

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:
FV

Checked:
AM

Project No.:
CCO-23-3287

No.	Revision	Date
1.	RE-ISSUED FOR SITE PLAN CONTROL	2023.10.06

Date:
2023.10.06

Sheet No:
1 of 1

Note: Sizing is based on the 5-year unrestricted flow, however runoff must be controlled to a maximum release rate of 26.4 L/s/ha as per the "Guidelines for On-Site Detention Design in the Taylor Creek Business Park Township of Cumberland" report. Max allowable outflow for the site is 6.61 L/s

Hydro First Defense® - HC

Rev. 12.81

Project Name:	**CCO-23-3287**	*Report Date:*	**10/5/2023** Paste
Street:	**3745 St Joseph Boulevard**	*City:*	**Ottawa**
Province:	**Ontario**	*Country:*	
Designer:	**Francis Valenti**	*email:*	**F.Valenti@McIntoshPerry.c**

Treatment Parameters:

Structure ID:		
TSS Goal:	80	% Removal
TSS Particle Size:	Fine	
Area:	0.25	ha
Percent Impervious:	72%	
Rational C value:	0.73	Calc. Cn
Rainfall Station:	Ottawa, ONT	MAP
Peak Storm Flow:	98.07	L/s

RESULTS SUMMARY

Model	TSS	Volume
FD-3HC	92.0%	>90%
FD-4HC	**95.0%**	**>90%**
FD-5HC	97.0%	>90%
FD-6HC	98.0%	>90%
FD-8HC	99.0%	>90%
FD-10HC	100.0%	>90%

Model Specification:

Model:	**FD-4HC**	
Diameter:	1200	mm
Peak Flow Capacity:	510.00	L/s
Sediment Storage:	0.54	m^3
Oil Storage:	723.00	L

Installation Configuration:

Placement:	Online		
Outlet Pipe Size:	525	mm	*OK*
Inlet Pipe 1 Size:	525	mm	*OK*
Inlet Pipe 2 Size:		mm	*OK*
Inlet Pipe 3 Size:		mm	*OK*
Rim Level:	0.000	m	Calc Invs.
Outlet Pipe Invert:	0.000	m	*Additional cover may be required*
Invert Pipe 1:		m	*Check cover*
Invert Pipe 2:		m	
Invert Pipe 3:		m	

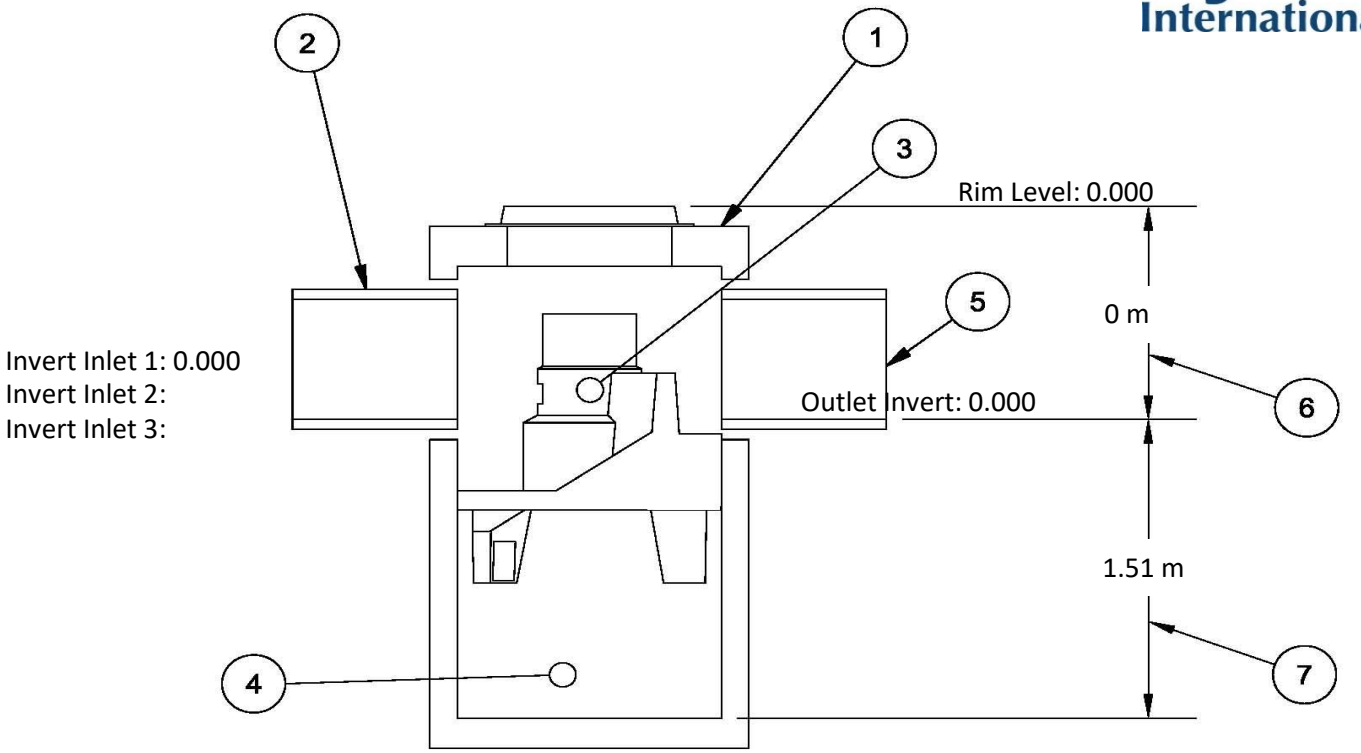
Net Annual Removal Model: FD-4HC

Intensity[1]	Fraction of Rainfall[1]	FD-4HC Removal Efficiency[2]	Weighted Net Annual Efficiency
(mm/hr)	(%)	(%)	(%)
0.50	0.1%	100.0%	0.1%
1.00	14.1%	100.0%	14.1%
1.50	14.2%	100.0%	14.2%
2.00	14.1%	100.0%	14.1%
2.50	4.2%	100.0%	4.2%
3.00	1.5%	100.0%	1.5%
3.50	8.5%	98.6%	8.4%
4.00	5.4%	97.3%	5.3%
4.50	1.2%	96.3%	1.1%
5.00	5.5%	95.3%	5.3%
6.00	4.3%	93.7%	4.1%
7.00	4.5%	92.4%	4.2%
8.00	3.1%	91.3%	2.8%
9.00	2.3%	90.3%	2.1%
10.00	2.6%	89.4%	2.3%
20.00	9.2%	83.8%	7.7%
30.00	2.6%	80.7%	2.1%
40.00	1.2%	78.6%	0.9%
50.00	0.5%	77.0%	0.4%
100.00	0.7%	72.2%	0.5%
150.00	0.1%	69.5%	0.0%
Total Net Annual Removal Efficiency:			**95.0%**
Total Annual Runoff Volume Treated:			**>90%**

1. Rainfall Data: 1960:2007, HLY03, Ottawa, ONT, 6105976 & 6105978.
2. Based on third party verified data and appoximating the removal of a PSD similar to the STC Fine distribution
3. Rainfall adjusted to 5 min peak intensity based on hourly average.

Designer Notes:

Hydro First Defense® - HC



All drawing elevations are metres.

FD-4HC Specification

1	Vortex Chamber Diameter	1200	mm
2	Inlet Pipe Diameter	525	mm
3	Oil Storage Capacity	723.00	L
4	Min. Provided Sediment Storage Capacity	0.54	m^3
5	Outlet Pipe Diameter	525	mm
6	Height(Final Grade to Outlet Invert)	0	mm
7	Sump Depth(Outlet Invert to Sump)	1510	mm
	Total Depth	**1510**	**mm**

Notes:

First Defense®

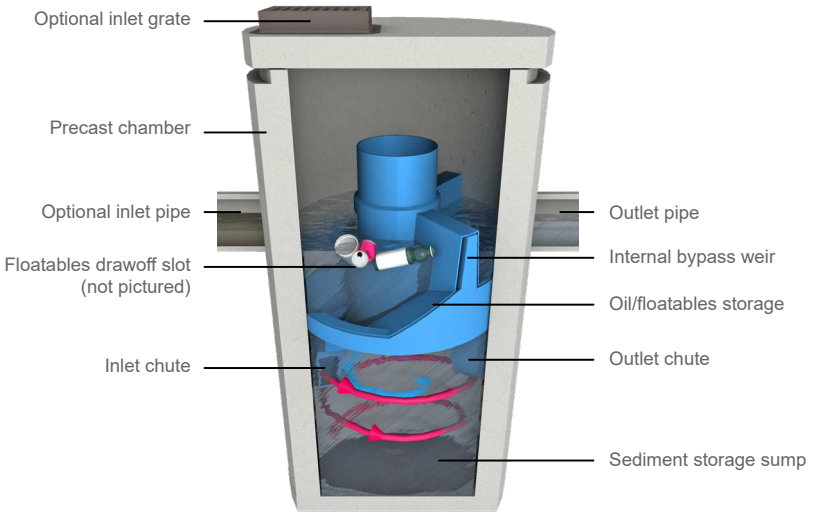
Advanced Hydrodynamic Separator

Product Summary

A Simple Solution for the Trickiest Sites

First Defense is a versatile stormwater separator with some of the highest approved flow rates in the United States. Engineers and contractors can save site space and reduce project costs by using the smallest possible footprint. It works with single or multiple inlet pipes and inlet grates. An internal bypass conveys infrequent peak flows directly to the outlet, efficiently capturing pollutants and preventing washouts.

Features



Contaminated stormwater runoff enters the inlet chute from a surface grate and/or inlet pipe. The inlet chute introduces flow into the chamber tangentially to create a low energy vortex flow regime (magenta arrow) that directs sediment into the sump while oils, floating trash and debris rise to the surface.

Treated stormwater exits through a submerged outlet chute located opposite to the direction of the rotating flow (blue arrow). Enhanced vortex separation is provided by forcing the rotating flow within the vessel to follow the longest path possible rather than directly from inlet to outlet.

Higher flows bypass the treatment chamber to prevent turbulence and washout of captured pollutants. An internal bypass conveys infrequent peak flows directly to the outlet eliminating the need for, and expense of, external bypass control structures. A floatables draw off slot functions to convey floatables into the treatment chamber prior to bypass.

Applications

- Areas requiring a minimum of 50% TSS removal
- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Highways, parking lots, industrial areas and urban developments
- Pre-treatment to ponds, storage systems, green infrastructure

Benefits

Highest Flow Through the Smallest Footprint

- **Smaller Footprint, Lower Costs**
  First Defense provides space-saving, easy-to-install surface water treatment in standard size chambers/manholes.
- **Adapt to Site Limitations**
  Variable configurations will help you effectively slip First Defense into a tight spot. It also works well with large pipes, multiple inlet pipes and inlet grates.
- **Reduce Installation Time & Costs**
  Every First Defense unit is delivered to site pre-assembled and ready for install.
- **Online System Configuration**
  First Defense eliminates the need for separate structures with its integrated internal bypass.
- **Designed with Maintenance in Mind**
  Easy vactor hose access through the center shaft of the system makes for quick sump cleanout, saving time and reducing long-term operational cost.

Sizing & Specifications

First Defense units are available in **six diameters** to fit standard chamber and manhole sizes. The dimensions below are common across all model numbers.

Diameter	Peak Online Flow Rate	Maximum Pipe Diameter[1]	Typical Sediment Storage Capacity[2]	Minimum Distance from Outlet Invert to Top of Rim[3]	Standard Distance from Outlet Invert to Sump Floor
(ft / m)	(cfs / L/s)	(in / mm)	(yd^3 / m^3)	(ft / m)	(ft / m)
3 / 0.9	15 / 424	18 / 450	0.4 / 0.3	2.0 - 2.5 / 0.61 - 0.76	3.71 / 1.13
4 / 1.2	18 / 510	24 / 600	0.7 / 0.5	2.0 - 3.0 / 0.61 - 0.91	4.97 / 1.5
5 / 1.5	20 / 566	24 / 600	1.1 / .84	2.0 - 3.7 / 0.61 - 1.13	5.83 / 1.5
6 / 1.8	32 / 906	30 / 750	1.6 / 1.2	2.0 - 4.1 / 0.61 - 1.25	5.97 / 1.8
8 / 2.4	50 / 1415	48 / 1200	2.8 / 2.1	2.4 - 5.4 / 0.73 -1.65	7.40 / 2.2
10 / 3.0	50 / 1415	48 / 1200	4.4 / 3.3	2.4 - 6.8 / 0.73 - 2.07	10.25 / 3.12

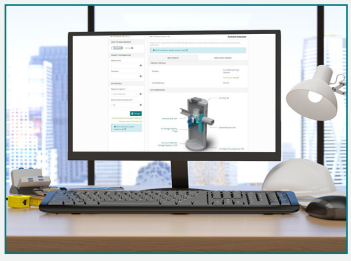
Hydro International offers First Defense units in **two versions** that conform to the performance requirements of different states' water quality regulations.[4]

First Defense High Capacity Model Number	Typical TSS Treatment Flow Rates	
	NJDEP Certified[4]	110µm
	(cfs / L/s)	(cfs / L/s)
FDHC-3	0.84 / 23.7	1.06 / 30.0
FDHC-4	1.50 / 42.4	1.88 / 53.2
FDHC-5	2.35 / 66.2	2.94 / 83.2
FDHC-6	3.38 / 95.7	4.23 / 119.8
FDHC-8	6.00 / 169.9	7.52 / 212.9
FDHC-10	9.38 / 265.6	11.75 / 332.7

First Defense Optimum Model Number	NJDEP Certified Treatment Flow Rates[4]
	(cfs / L/s)
FDO-3	1.02 / 28.9
FDO-4	1.81 / 51.3
FDO-5	2.83 / 80.0
FDO-6	4.07 / 115.2
FDO-8	7.23 / 204.7
FDO-10	11.33 / 320.6

[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]These are guidlines only. Minimum distance is based on pipe diameter and headloss at assumed flow rates, contact Hydro for detailed design.
[4]NJDEP Certified / NJCAT Verified, based on one inlet pipe and no inlet grate.

Also available in a screened configuration for Full Trash Capture!



Free Online Design Tool

This free online sizing tool will recommend the best separator, model size and online or offline configuration based on site-specific data entered by the user.

Upon completion, users have the option to submit the design to Hydro International for a free review by our engineering team.

Go to hydro-int.com/sizing to access the tool.

Hydro International

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200
Email: stormwaterinquiry@hydro-int.com
Web: www.hydro-int.com/firstdefense

FD_SS_B_2203

Download Drawings:
→ hydro-int.com/fddrawings

Operation & Maintenance Manual:
→ hydro-int.com/fd-om

APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST

McINTOSH PERRY

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)
☐ Executive Summary (for larger reports only).	N/A
☐ Date and revision number of the report.	On Cover
☐ Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
☐ Plan showing the site and location of all existing services.	Site Servicing Plan (C102)
☐ 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
☐ Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
☐ 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 defendable design criteria.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
☐ Statement of objectives and servicing criteria.	3.0 Pre-Consultation Summary

☐ Identification of existing and proposed infrastructure available in the immediate area.	N/A
☐ 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)
☐ 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)
☐ 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
☐ Proposed phasing of the development, if applicable.	N/A
☐ Reference to geotechnical studies and recommendations concerning servicing.	Section 2.0 Background Studies, Standards and References
☐ All preliminary and formal site plan submissions should have the following information: o Metric scale o North arrow (including construction North) o Key plan o Name and contact information of applicant and property owner o Property limits including bearings and dimensions o Existing and proposed structures and parking areas o Easements, road widening and rights-of-way o Adjacent street names	Site Grading Plan (C101)

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
☐ Confirm consistency with Master Servicing Study, if available	N/A
☐ Availability of public infrastructure to service proposed development	N/A
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	Appendix C
☐ Confirmation of adequate domestic supply and pressure	N/A
☐ 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
☐ 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
☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐ Address reliability requirements such as appropriate location of shut-off valves	N/A
☐ Check on the necessity of a pressure zone boundary modification.	N/A
☐ 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

☐ 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)
☐ Description of off-site required feedermains, 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
☐ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix C
☐ 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)
☐ 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
☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐ 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
☐ Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2 Proposed Sanitary Sewer

☐ 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
☐ 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
☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2 Proposed Sanitary Sewer
☐ 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
☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐ 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
☐ Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Criteria	Location (if applicable)
☐ 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
☐ Analysis of available capacity in existing public infrastructure.	N/A
☐ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
☐ 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
☐ 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
☐ 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
☐ Set-back from private sewage disposal systems.	N/A
☐ Watercourse and hazard lands setbacks.	N/A
☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☐ 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

☐ 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
☐ 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
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ 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
☐ 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
☐ Identification of potential impacts to receiving watercourses	N/A
☐ Identification of municipal drains and related approval requirements.	N/A
☐ 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
☐ 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)
☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A

☐ 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
☐ 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
☐ 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)
☐ 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
☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐ Changes to Municipal Drains.	N/A
☐ 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)
☐ Clearly stated conclusions and recommendations	Section 9.0 Summary Section 10.0 Recommendations
☐ 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
☐ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped