

SERVICING & STORMWATER MANAGEMENT REPORT

377-381 WINONA AVENUE



Project No.: CCO-23-1238

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

Prepared for:

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

Prepared by:

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October 12th, 2022

McINTOSH PERRY

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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 377-381 Winona Avenue 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-23-1238, C101 – Existing Conditions, Removals, Lot Grading, Drainage, Servicing, Erosion & Sediment Control Plan
- CCO-23-1238, PRE – Pre-Development Drainage Plan (*Appendix E*)
- CCO-23-1238, 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 377-381 Winona Avenue within the Kitchissippi ward. The site covers approximately *0.10 ha* and is located at the corner of Winona Avenue and Picton Avenue. The site is zoned for Traditional Mainstreet (TM). 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 *788 m²* mixed use building, complete with underground parking with street access from Picton Avenue. Development is proposed within *0.10 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 developed containing two 2-storey homes with asphalt driveways. The existing buildings are serviced by the municipal infrastructure within Winona Avenue.

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):

- ❖ Winona Avenue
 - 152 mm diameter UCI watermain, a
 - 225 mm diameter concrete sanitary sewer, and a
 - 450 mm diameter concrete storm sewer, tributary to the Ottawa River approximately 3km downstream.
- ❖ Picton Avenue
 - 152 mm diameter UCI watermain, a
 - 225 mm diameter concrete sanitary sewer, and a
 - 300 mm diameter concrete storm sewer, tributary to the Ottawa River approximately 3km downstream.

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 sewer system services one parcel of land and does not propose industrial use.

2.0 BACKGROUND 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.

A topographic survey (23018-22) of the site was completed by AOV and dated August 9th, 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 April 29, 2022 regarding the proposed site servicing. Specific design parameters to be incorporated within this design include the following:

- Pre-development and post-development flows shall be calculated using a time of concentration (T_c) no less than 10 minutes.
- Control 5 through 100-year post-development flows for the roof to the 2-year pre-development flow with a combined C value to a maximum of 0.50.
- The remainder of the site can be unrestricted provided it is directed towards the City ROW.

4.0 WATERMAIN

4.1 Existing Watermain

The site is located within the 1W pressure zone, as per the Water Distribution System mapping included in *Appendix C*. There are two municipal fire hydrants on Winona Avenue and one municipal hydrant on Picton Avenue 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 152 mm diameter water main within Picton Avenue. The existing service connections to the existing buildings will be blanked at the main and removed.

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	0.10 ha
Residential	280 L/day/person
Residential Apartment – 1 Bedroom	1.4 person/unit
Residential Apartment – 2 Bedroom	2.1 person/unit
Max Day Peaking Factor - Residential	4.9 x avg. day
Peak Hour Peaking Factor - Residential	7.4 x avg. day

The OBC and Fire Underwriters Survey 2020 (FUS) methods were 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 utilized for the calculations:

FUS:

- ❖ Type of construction – Non-Combustible Construction
- ❖ Occupancy Type – Limited Combustible
- ❖ Sprinkler Protection – Standard Sprinkler System

OBC:

- ❖ Type of construction – Non-Combustible Construction
- ❖ Occupancy Type: Group C and E
- ❖ Water Supply Coefficient (K): 17 (Worst case occupancy “K’ value used)

The results of the FUS calculations yielded a required fire flow of *8,000 L/min* (133.33 L/s), and the results of the OBC calculation yielded a required fire flow of *9,000 L/min* (150.0 L/s). The detailed calculations for the FUS and OBC can be found in *Appendix C*.

Boundary Conditions have been requested from the City however were not available at the time of submission. Once boundary conditions are provided by the City, the minimum and maximum water pressures will be compared to those proposed to ensure they fall within the required range identified by in the City of Ottawa Water Supply Guidelines and to confirm the system has adequate capacity for the proposed development.

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 2: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m (5,700 L/min)	Fire Hydrant(s) within 150m (3,800 L/min)	Combined Fire Flow (L/min.)
377-381 Winona Avenue	9,000 (OBC) 8,000 (FUS)	2 Public	1 Public	15,200

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 are two existing service connections to the 225 mm diameter concrete sanitary sewer located within Winona Avenue, tributary to the West Nepean Collector.

5.2 Proposed Sanitary Sewer

A new 150 mm diameter gravity sanitary service will be extended from the 225 mm diameter sanitary main within Picton Avenue to service the proposed building. The existing services will be blanked at the main and removed. Refer to drawing C102 for a detailed servicing layout.

Table 3, below, summarizes the wastewater design criteria identified by the *Ottawa Sewer Guidelines*.

Table 3: Sanitary Design Criteria

Design Parameter	Value
Site Area	0.10 ha
Residential	280 L/person/day
1 Bedroom Apartment	1.4 persons/unit
2 Bedroom Apartment	2.1 persons/unit
Residential Peaking Factor	3.59
Extraneous Flow Allowance	0.33 L/s/ha
Estimated Population	101 persons

Table 4 below, summarizes the estimated wastewater flow from the proposed building. Refer to *Appendix D* for detailed calculations.

Table 4: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/s)
Total Estimated Average Dry Weather Flow	0.36
Total Estimated Peak Dry Weather Flow	1.21
Total Estimated Peak Wet Weather Flow	1.24

As noted above, the development is proposed to be serviced via a proposed 150 mm sanitary service connection to the 225 mm concrete sanitary sewer within Picton Avenue.

The full flowing capacity of a 150 mm diameter service at 2.0% slope is estimated to be 22.47 L/s. Per *Table 4*, a peak wet weather flow of 1.24 L/s will be conveyed within the 150 mm diameter service, therefore the proposed system is sufficiently sized for the development. Due to the complexity of the downstream network the City will need to advise of any downstream constraints.

6.0 STORM SEWER DESIGN

6.1 Existing Storm Sewers

Stormwater runoff from the existing site flows overland towards the Winona Avenue and Picton Avenue right of way. Runoff is then collected by municipal infrastructure, and travels approximately 3km downstream before discharging into the Ottawa River.

6.2 Proposed Storm Sewers

The proposed development will be serviced through two new 150 mm service connections to the existing 300 mm diameter storm sewer within Picton Avenue.

Runoff collected on the roof of the proposed building will be stored and controlled internally using 4 roof drains. The roof drains will be used to limit the flow from the roof to the specified allowable release rate. Roof drainage will be directed to a 150 mm diameter service connected to the 300 mm diameter storm sewer within Picton Avenue. For calculation purposes a Watts Accutrol roof drain in the fully exposed position was used to estimate a reasonable roof flow. Other products may be specified at detailed building design provided release rates and storage volumes are respected.

Runoff from the walkways and landscaped areas will be directed towards the Winona Avenue and Picton Avenue right of way. Flow restriction is not proposed for the surface runoff.

Foundation drainage is proposed to be conveyed via a 150 mm storm service connected to the 300 mm diameter storm sewer within Picton Avenue.

See CCO-23-1238 - *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 roof storage. The controlled stormwater flow will be directed to the existing 300 mm diameter storm sewer within Picton Avenue.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the RVCA and City:

Quality Control

- Based on consultation with the RVCA included in Appendix B, quality controls are not required.

Quantity Control

- Any storm events greater than the 2-year, up to 100-year, and including 100-year storm event must be detained on the roof only. The remainder of the site is permitted to direct unrestricted flow towards the City ROW.
- Post-development roof area to be restricted to the 2-year storm event, based on a calculated time of concentration of at least 10 minutes and a combined maximum rational method coefficient of 0.50. Refer to *Section 7.2* for further details.

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 2-, 5-, and 100-year events are summarized below in *Table 5*. See CCO-23-1238 - *PRE* in *Appendix E* and *Appendix G* for calculations.

Table 5: Pre-Development Runoff Summary

Drainage Area	Area (ha)	C 2/5 & 100- Year	Q (L/s)		
			2-Year	5-Year	100-Year
A1	0.07	0.64 / 0.72	9.38	12.73	24.59
A2	0.03	0.39 / 0.45	2.25	3.06	6.10
Total	0.10	-	11.64	15.79	30.68

7.4 Post-Development Drainage

To meet the stormwater objectives, the development will contain flow attenuation via rooftop storage. *Table 6*, below, summarizes the required restricted flow for the roof.

Table 6: Required Restricted Flow

Drainage Area	Area (ha)	C (2-Year)	Q (L/s) 2-Year
A1	0.07	0.50	7.32

Based on the criteria listed in *Section 7.1*, the development will be required to restrict roof flow to the 2-year storm event. It is estimated that the target release rate for the roof during the 100-year event will be 7.32 L/s. See *Appendix G* for calculations.

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-23-1238 - *POST* in *Appendix F* of this report for more details. A summary of the post-development runoff calculations can be found below.

Table 7: Post-Development Runoff Summary

Drainage Area	Area (ha)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)	100-year Storage Required (m ³)	100-year Storage Available (m ³)
B1	0.07	3.28	5.05	22.45	22.86
B2	0.03	4.56	8.86	-	-
Total	0.10	7.84	13.90	22.45	22.86

Runoff from area B1 will be controlled and stored on the roof of the proposed building (B1) using 4 roof drains. The roof drains will be used to limit the flow from the roof to the specified allowable

release rate. For calculation purposes a Watts Accutrol roof drain in the fully exposed position was used to estimate a reasonable roof flow. Other products may be specified at detailed building design provided release rates and storage volumes are respected.

Runoff for area B2 will flow overland towards Winona Avenue and Picton Avenue right of way.

As seen in *Table 8*, below, roof runoff will be restricted to a maximum release rate of 5.05 L/s, allowing for a proposed 22.86 m³ of roof storage.

Table 8: Roof Drainage Summary

Drainage Area	Area (ha)	# of Roof Drains	Storage Depth (mm)		Total Flow Rate (L/s)	
			5-Year	100-Year	5-Year	100-Year
B1	0.07	4	65	100	3.28	5.05

7.5 Quality Control

As noted in *Section 7.1*, quality controls are not required for the development based on consultation with the RVCA.

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 788 m^2 building is proposed to be constructed at 377-381 Winona Avenue. The development is proposed within 0.10 ha of the site.
- It is proposed to service the new building through a new 150 mm diameter water service and 150 mm diameter sanitary service. Two new 150 mm diameter storm services are proposed to collect and control drainage within the development area.
- It is proposed to blank the existing services at the main and remove them.
- It is proposed to service the development area via roof storage. The storm system will connect to the existing 300 mm diameter concrete storm sewer located within Picton Avenue.
- Storage for the 5- through 100-year storm events will be provided on the roof.
- Quality controls are not required based on consultation with the RVCA.

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 377-381 Winona Avenue.

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



Ottawa River

Site Location

LEGEND

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

REFERENCE

GIS data provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022.



CLIENT:		CSV ARCHITECTS	
PROJECT:		377-381 WINONA AVENUE	
TITLE:		SITE LOCATION	
PROJECT NO: CCO-23-1238		FIGURE:	
Date	Aug., 31, 2022	1	
GIS	AH		
Checked By	FV		

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APPENDIX B
BACKGROUND DOCUMENTS

377 and 381 Winona Avenue - Pre-Application Consultation Meeting Notes

Meeting Date: Friday, April 29, 2022

File No. PC2022-0108

MS Teams

Attendees:

City of Ottawa

Kimberley Baldwin, Planner

Nader Kadri, Planner

Ann O'Connor, Urban Designer

Reza Bakhit, Engineer

Applicant Team

Murray Chown, Planner

Carlos Da Silva, Engineer

Paul Weidl, Architect

John Thomas, Azure Developments

Cynthia Mar, Azure Developments

Jeffery Kelley, Engineer

Community

Heather Mitchell, Westboro Community Association

Introductions

- Kim introduced City Staff
- John introduced the Applicant team
- Heather introduced herself as the community representative.

Proposal:

Paul was tasked with developing plans based on as-of-right permissions within the By-law. Paul noted that although the By-law allows a 0 lot line setback, the Applicant has setback 1.2 metres on the south and east side to allow for windows from a building code perspective.

Paul provided a proposal overview, which includes:

- Ground floor commercial, ground floor residential uses and an elevator and staircase. An internal bike storage room, and storage racks within the public realm.
- 18 vehicular parking spaces are provided below-grade.
- 2-4th floor plans containing residential units; 5-6th floor plan are stepped in which created an opportunity for larger units.

- Amenity space is provided on the roof. Paul noted that the roof amenity space can be extended to occupy more of the roof area.
- The intent is to provide brick on the building to be sensitive to the materials within the neighbourhood.

Jeff provided an overview of the official plan and secondary plan and zoning provisions which included the following highlights:

- New Official Plan: Mainstreet Corridor, Evolving Neighbourhoods Overlay, Inner Urban Transect
- In Force Official Plan: Traditional Mainstreet
- Secondary Plan: Richmond Road/Westboro Secondary Plan which designates the subject properties for 4-6 storeys.
- Zoning: Traditional Mainstreet zone

Planning comments:

- Kim confirmed the official plan and zoning permissions that Jeff had listed, and noted that we would follow-up with more detail.
- Kim noted that Staff have concerns with orientation of units on south and east facades, primary windows for those units could be obstructed if adjacent sites are ever developed.
- Staff appreciate the ground floor commercial, as it is in line with zoning.
- Kim suggested the Applicant consider grade oriented residential units on Picton Avenue to have a better interface with the low-rise residential uses on that street. Kim also noted that there was a real opportunity to expand and enhance the Picton Avenue streetscape to provide additional trees and to better differentiate between the public and private realm for street-facing residential uses.
- Staff appreciate that temporary bike parking is provided on Winona for guests, however the internal bike storage needs to be expanded to better encourage alternate modes of transport.
- Kim highlighted that there may be an opportunity to bring the building closer to Winona Avenue and to improve the landscaping within the public realm to better support some of the new commercial uses that would go into the base of the new building. This would require further exploration as the hydro lines may pose a challenge.
- Rooftop amenity area is currently facing the low-rise residential community. Although Staff appreciate that there is an opportunity highlight views to the river, the Applicant needs to explore design solutions to minimize overlook.
- General comment that cash in lieu of parkland would apply as a condition of site plan.

Urban Design comments:

- Ann explained that an urban design brief would be required with a formal submission, and would forward the terms of reference for that document. The urban design brief should refer to the Secondary Plan and the TOD.
- Ann noted that the site is within a design priority area and would be subject to review at the Urban Design Review Panel (UDRP).

- Ann suggested that in prep for UDRP, the Applicant should draft alternate massing to show the options that were been considered. Ann requested that the Applicant model out as-of-right conditions on the adjacent lots to show relationship to surrounding buildings.
- From a livability perspective 2.4 metres (1.2 metres on-site) between buildings on the south and east property lines is not supported. Limited access to sunlight for principle windows.
- Consider an L-shaped building with frontages on Picton Avenue and Winona Avenue.
- Consider orienting the elevator core and staircase towards the south property line since the setback there is minimal.
- Ann noted that the east side of the site within tree canopy. Preserve trees wherever possible. Landscape Plan and arborist report to accompany application. Explore the potential to save mature plantings.
- Ann noted that there is an opportunity to go to the UDRP at the pre-consultation stage before investing in the design further. Helps to address massing issues. This review would be in addition to the review that would take place through the formal review process.
- Ann echoed Kim's comments to expand on internal bicycle parking opportunities. Advised the Applicant to look to the by-law for aisle widths, and that there may be opportunities for stackable bike parking.
- Ann encouraged the Applicant to explore ways to minimize the sightlines to mechanical equipment.
- Ann encouraged the Applicant to look to the community for materials and design, and highlighted that brick is the predominant material.
- Ann suggested that the ground floor commercial height needs to be taller (4.5 metres minimum) to support a variety of retail options.
- The Applicant asked question around additional height to improve building setbacks. Ann advised that she would be happy to explore other options. Kim noted that the secondary plan is capped at 6 storeys so additional height ask would need to come with an OPA.
- Applicant asked about what setback would be required to the east and south to improve livability of units. Ann advised that she would not be able to comment but that it would depend on the internal uses and relationship to adjacent sites.
- Applicant asked about the opportunity to undertake a minor variance. Staff would review and Jeff advised that the two process' would run concurrently.

Engineering comments:

- Reza asked if they have started an engineering investigation.
- Reza advised that rooftop storage would be permitted, if there is enough space available.
- Reza asked if the two lots would be consolidated. Reza advised that if not, the Applicant would be required to undertake an ECA Application.
- Reza advised that services available within the ROW and upgrades expected within the next one to two years. Once the Consultant engineer is retained they will need to contact

Engineering to ensure that they have the latest information – stormwater criteria will likely be changing.

- Applicant asked if they allow timed release, and Reza indicated there is criteria available for consideration.
- The 6 storey development would not trigger the need for a wind study. Reza will provide all studies via email.
- Applicant asked of the potential for RSC. Carlos from the Applicant team further clarified that the site is on shallow bedrock and there is a groundwater matter. The site is not a source of contamination but there is contamination from drycleaning operations coming from the area further south, flowing down to the Ottawa River. Regional issue around the Churchill/Richmond Road intersection. Carlos does not believe that a RSC is required as the Applicant is not proposing a land use change. He advised that there are design solutions that might be appropriate in this condition – additional ventilation, barrier.
- Reza noted that he understands, and that he would review the ESA report upon submission.
- Reza requested past correspondence, since this is not the first time that the applicant has brought up this matter with Planning Staff.
- Applicant asked about the timing of the review of engineering review and Reza clarified that his review would be a part of the Site Plan process.

Community comments:

- Heather explained that the community might have some concerns with 6 storeys, but understands that it is permitted within the Secondary Plan.
- Heather advised to design the amenity space on top to have minimal impacts on neighbours.
- Heather explained that retaining as much of the greenery as possible is important
- Heather supported commercial at-grade. Noted that the opportunity for on-street patios would be nice but would need to consider the neighbours across the street,
- Heather had a question about affordability, and suggested that some of units could be targeted affordable units.

From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: May 12, 2022 9:21 AM
To: Baldwin, Kimberley; Kadri, Nader
Subject: Pre-Con Notes 377-381 Winona

Hi Kim and Nader,

Please forward the below information to the applicant regarding a development proposal at **377-381 Winona Ave, Ottawa for a Six-storey, Mixed-use building with two commercial units located on the ground floor and residential units on the ground floor and upper floors**. Note that the information is considered **preliminary**, and the assigned Development Review Project Manager may modify and/or add additional requirements and conditions upon review of an application if deemed necessary.

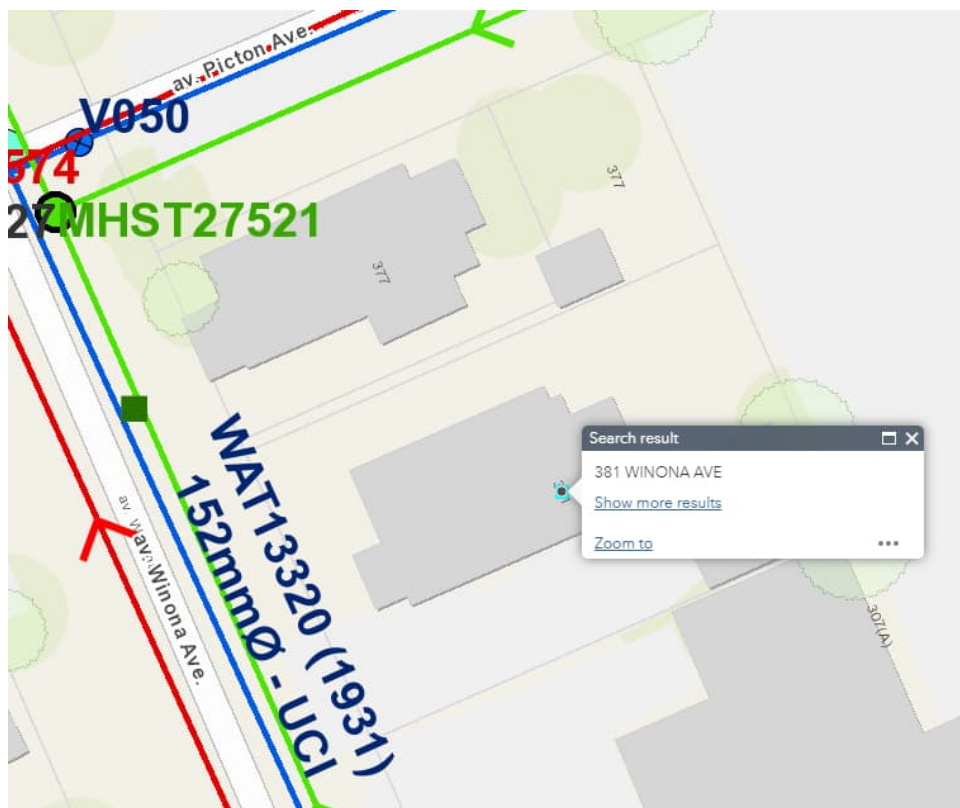
General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided and all easements shall be shown on the engineering plans.
- An application to consolidate the parcels (377- 381 Winona Ave) of land will be required otherwise the proposed stormwater works will be servicing more than one parcel of land and thus does not meet the exemption set out in O.Reg. 525/98. This would mean an **ECA would be required** regardless of who owns the parcels.
- A deep excavation and dewatering operations have the potential to cause damages to the neighboring adjacent buildings/ City infrastructure. Document that construction activities (excavation, dewatering, vibrations associated with construction, etc.) will not have an impact on any adjacent buildings and infrastructure.
- A **Record of Site Condition (RSC) in accordance with O.Reg. 153/04** will be required to be filed and acknowledged by the Ministry prior to issuance of a building permit due to a change to a more sensitive property use.
- Existing buildings require a CCTV inspection and report to ensure existing services to be re-used are in good working order and meet current minimum size requirements. Located services to be placed on site servicing plans.

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

- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-424 x.44455).

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



Disclaimer:

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

Stormwater Management Criteria and Information:

- Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the **100-year storm event**, to a **2-year pre-development level**. The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. **[If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5]**. The time of concentration (T_c) used to determine the pre-development condition should be calculated. *T_c should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations.*
- Any storm events greater than the established **2-year allowable** release rate, up to and including the **100-year storm event**, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.
- Please note that foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. **It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.**
- Water Quality Control:** Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water

quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.

- Please note that as per *Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14)* **there shall be no surface ponding on private parking areas during the 2-year storm rainfall event.**
- **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

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

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

Please provide information on UG storage pipe. Provide required cover over pipe and details, chart of storage values, capacity etc. How will this pipe be cleaned of sediment and debris?

Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc.

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

In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective. Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

- Please note that the minimum orifice dia. for a plug style ICD is **83mm and the minimum flow rate from a vortex ICD is 6 L/s** in order to reduce the likelihood of plugging.
- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.
- Please provide a **Pre-Development Drainage Area Plan** to define the pre-development drainage areas/patterns. **Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.**
- **If rooftop control** and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- **Considering the size of the site, it would be acceptable to control the roof portion only and leave the remainder of the site uncontrol as long as the uncontrolled portion is directed towards the right of way. This approach should be discussed in the SWM report. Also, the grading plan should clearly demonstrate that the runoff from the uncontrolled portion of the site will be directed towards the ROW**
- There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.

Existing infrastructures within the ROW

Storm Sewer:

- A 450mm dia. CONR storm sewer (1981) is available within Winona Ave.

Sanitary Sewer Maclaren St:

- A 225 mm dia. CONC Sanitary sewer (1931) is available within Winona Ave.
- Please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity. An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- Please apply the wastewater design flow parameters *in Technical Bulletin PIEDTB-2018-01*.
- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.
- A backwater valve is required on the sanitary service for protection.

Water :

- A 152 mm dia. UCI watermain (1931) is available within Winona Ave.
- Existing residential service to be blanked at the main.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m³/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration*.
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
 - Type of Development and Units
 - Site Address
 - A plan showing the proposed water service connection location.
 - **Average Daily Demand** (L/s)
 - **Maximum Daily Demand** (L/s)
 - **Peak Hour Demand** (L/s)
 - **Fire Flow** (L/min)

[Fire flow demand requirements shall be based on **Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 1999**]

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

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

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

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

IMPORTANT INFRASTRUCTURE NOTE

Infrastructure renewal : Please note that an infrastructure renewal/upgrade project has been planned for the Winona Ave. It is the designer's responsibility to contact the City and obtain the latest information on the WAT, SAN and STM mains within the ROW, and other information they require for their design.

Snow Storage:

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

Gas pressure regulating station

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



Gas Pressure
Regulating Station.pdf

Regarding Quantity Estimates:

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

Required Engineering Plans and Studies:

PLANS:

- Existing Conditions and Removals Plan
- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan
- Roof Drainage Plan
- Foundation Drainage System Detail (if applicable)
- Topographical survey

REPORTS:

- Site Servicing and Stormwater Management Report

- Geotechnical Study/Investigation
- Noise Control Study
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)
- ECA (If the SWM serves two parcels)
- RSC

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

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

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

Phase One Environmental Site Assessment:

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

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

Geotechnical Investigation:

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

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

RSC (Record of the site Conditions)

- A RSC is required due to changing the land use of a property to a more sensitive use.

Noise Study:

- A **Transportation Noise Assessment** is required as the subject development is located within 100m proximity of an Arterial Road
- A **Stationary Noise Assessment** is required in order to assess the noise impact of the proposed sources of stationary noise (mechanical HVAC system/equipment) of the development onto the surrounding residential area to ensure the noise levels do not exceed allowable limits specified in the City Environmental Noise Control Guidelines.

Exterior Site Lighting:

- Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a **Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

Fourth (4th) Review Charge:

Please be advised that additional charges for each review, after the 3rd review, will be applicable to each file. There will be no exceptions.

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

Please note that these comments are considered preliminary based on the information available to date and therefore maybe amended as additional details become available and presented to the City. It is the responsibility of the applicant to verify the above information. The applicant may contact me for follow-up questions related to engineering/infrastructure prior to submission of an application if necessary.

If you have any questions or require any clarification, please let me know.

Regards,

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

Project Manager

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

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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

613.580.2424 ext./poste 19346, reza.bakhit@ottawa.ca

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

Francis Valenti

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: September 26, 2022 9:54 AM
To: Francis Valenti
Subject: RE: 23-1238 - Quality Control Requirement - 377-381 Winona Avenue

Hi Francis,

The RVCA does not have any water quality requirements based on the proposed site plan as presented. Best management practices are encouraged to be implemented where feasible.

Let me know if you require anything else.

Thank you,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: Friday, September 23, 2022 9:41 AM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Nicholas Vachon <n.vachon@mcintoshperry.com>
Subject: 23-1238 - Quality Control Requirement - 377-381 Winona Avenue

Hi Eric,

See attached site plan for a project that we're working on at 377-381 Winona. The site currently consists of two single family homes with asphalt driveways that will be demolished. A new 6-storey mixed use building will be built and occupy almost the entire site area, complete with underground parking. The remainder of the site consists of small pervious areas around the building with the exception of the underground parking entrance, patio, and walkways at the front entrances.

I've also attached a drainage path figure for your reference. Storm runoff from the site is currently tributary to the Ottawa River approximately 3km downstream.

We're providing quantity control of the storm runoff but can you confirm if we require quality control? Since the site consists almost entirely of roof area in post development conditions I assume it's not warranted but wanted to check and see if anything would be required.

If you have any questions or concerns please don't hesitate to get back to me whenever you have a moment.

Regards,

Francis Valenti, EIT
Engineering Intern, Land Development
T. 613.714.6895 | C. 613.808.2123

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

CCO-23-1238 - 377/381 Winona Avenue - Water Demands

Project:	377/381 Winona Avenue
Project No.:	CCO-23-1238
Designed By:	FV
Checked By:	NV
Date:	October 11, 2022
Site Area:	0.10 gross ha

Residential	NUMBER OF UNITS	UNIT RATE	
Studio Apartment	22 units	1.4	persons/unit
1 Bedroom Apartment	23 units	1.4	persons/unit
2 Bedroom Apartment	18 units	2.1	persons/unit

Total Population 101 persons

Commercial & Amenity 900 m2

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	280	L/c/d	
Industrial - Light	35,000	L/gross ha/d	
Industrial - Heavy	55,000	L/gross ha/d	
Shopping Centres	2,500	L/(1000m ² /d	
Hospital	900	L/(bed/day)	
Schools	70	L/(Student/d)	
Trailer Park with no Hook-Ups	340	L/(space/d)	
Trailer Park with Hook-Ups	800	L/(space/d)	
Campgrounds	225	L/(campsite/d)	
Mobile Home Parks	1,000	L/(Space/d)	
Motels	150	L/(bed-space/d)	
Hotels	225	L/(bed-space/d)	
Tourist Commercial	28,000	L/gross ha/d	
Other Commercial	28,000	L/gross ha/d	
AVERAGE DAILY DEMAND	Residential	0.33	L/s
	Commercial/Industrial /Institutional	0.03	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	4.9	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	1.60	L/s
	Commercial/Industrial /Institutional	0.04	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	7.4	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	2.42	L/s
	Commercial/Industrial /Institutional	0.08	L/s

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

AVERAGE DAILY DEMAND	0.36	L/s
MAXIMUM DAILY DEMAND	1.65	L/s
MAXIMUM HOUR DEMAND	2.50	L/s

McINTOSH PERRY

CCO-23-1238 - 377/381 Winona Avenue - OBC Fire Calculations

Project:	377/381 Winona Avenue
Project No.:	CCO-23-1238
Designed By:	FV
Checked By:	NV
Date:	October 11, 2022

Ontario 2006 Building Code Compendium (Div. B - Part 3)

Water Supply for Fire-Fighting - Mixed Use Building

Building is classified as Group : C and E, Residential and Mercantile (from table 3.2.2.55)
 Building is of noncombustible construction with fire separations and fire-resistance ratings provided in accordance with subsections 3.2.2., including loadbearing walls, columns and arches

From Div. B A-3.2.5.7. of the Ontario Building Code - 3. Building On-Site Water Supply:

(a) $Q = K \times V \times Stot$

where:

Q = minimum supply of water in litres

K = water supply coefficient from Table 1

V = total building volume in cubic metres

Stot = total of spatial coefficient values from the property line exposures on all sides as obtained from the formula:

$Stot = 1.0 + [S_{side1} + S_{side2} + S_{side3} + \dots \text{etc.}]$

K	17	(from Table 1 pg A-31) (Worst case occupancy {E / F2} 'K' value used)
V	14,953	(Total building volume in m ³ .)
Stot	2.0	(From figure 1 pg A-32)
Q =	508,402.00 L	



			From Figure 1 (A-32)
Snorth	2 m	0.5	
Seast	1.2 m	0.5	
Ssouth	1.2 m	0.5	
Swest	5 m	0.5	

*approximate distances

From Table 2: Required Minimum Water Supply Flow Rate (L/s)

9000 L/min if Q > 270,000 L
 2378 gpm

McINTOSH PERRY

CCO-23-1238 - 377/381 Winona Avenue - Fire Underwriters Survey

Project: 377/381 Winona Avenue
 Project No.: CCO-23-1238
 Designed By: FV
 Checked By: NV
 Date: October 11, 2022

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 Non-Combustible Construction

C 0.8 A 4,250.0 m²

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) 2,833.3 m² *Unprotected Vertical Openings

Calculated Fire Flow 9,368.3 L/min
 9,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:
 Limited Combustible -15%

Fire Flow 7,650.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Standard Water Supply Sprinklered -40%

Reduction -3,060.0 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	10.1 to 20	Wood frame	6	2	12.0	10%
Exposure 2	20.1 to 30	Wood frame	46.5	2	93.0	8%
Exposure 3	0 to 3	Wood frame	17	3	51.0	22%
Exposure 4	20.1 to 30	Wood frame	9.2	2	18.4	0%
% Increase*						40%

Increase* 3,060.0 L/min

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

Fire Flow 7,650.0 L/min
 Fire Flow Required** 8,000.0 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-23-1238 - 377-381 Winona - Boundary Condition Unit Conversion

Project: 377-381 Winona

Project No.: CCO-23-1238

Designed By: FV

Checked By: NV

Date: October 11, 2022

Boundary Conditions Unit Conversion

Picton Avenue

Scenario	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa
Avg. DD	115.0	64.6	50.4	71.7	494.6
Fire Flow at 20 PSI (92 L/s)	78.6	64.6	14.1	20.0	137.9
Peak Hour	108.7	64.6	44.1	62.8	432.8

Francis Valenti

From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: October 11, 2022 11:58 AM
To: Francis Valenti
Cc: Nicholas Vachon
Subject: RE: 23-1238 - Boundary Condition Request - 377-381 Winona Avenue
Attachments: 377-381 Winona Avenue September 2022.pdf

Hi Francis,

Please note Available Fire flow at 20 psi: 92 L/s, assuming a ground elevation of 67.0 m. Fire request exceeds capacity. (Existing 152mm watermain)

As noted in previous corresponds , the Winona Ave will go under reconstruction and a new watermain will be installed. Therefore, you will require to request an updated boundary condition once the new watermain is constructed.

The following are boundary conditions, HGL, for hydraulic analysis at 377-381 Winona Avenue (zone 1W) assumed to be connected to the 152 mm watermain on Winona Avenue (see attached PDF for location).

Minimum HGL: 108.7 m

Maximum HGL: 115.0 m

Available Fire flow at 20 psi: 92 L/s, assuming a ground elevation of 67.0 m

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

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Regards,

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

Project Manager

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

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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

613.580.2424 ext./poste 19346, reza.bakhit@ottawa.ca

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

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: Tuesday, September 27, 2022 3:46 PM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Cc: Nicholas Vachon <n.vachon@mcintoshperry.com>
Subject: RE: 23-1238 - Boundary Condition Request - 377-381 Winona Avenue

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

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

Good afternoon Reza,

Just checking in on the status of this boundary condition request. Is it still being processed?

Thanks,

Francis Valenti, EIT

Engineering Intern, Land Development

T. 613.714.6895 | **C.** 613.808.2123

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

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Platinum
member

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: August 30, 2022 2:04 PM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Cc: Nicholas Vachon <n.vachon@mcintoshperry.com>
Subject: 23-1238 - Boundary Condition Request - 377-381 Winona Avenue

Good afternoon,

We would like to request boundary conditions for the proposed development at 377-381 Winona Avenue. The proposed development consists of a 6-storey mixed use building, complete with underground parking. The proposed connection (single) will be to the existing 152mm dia. watermain located within Winona Avenue.

- The estimated fire flow is 9,000 L/min based on the OBC method
- The estimated fire flow is 8,000 L/min based on the FUS method
- Average Daily Demand: 0.36 L/s
- Maximum Daily Demand: 1.65 L/s
- Maximum hourly daily demand: 2.50 L/s

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

Comments were also noted regarding possible infrastructure upgrades in the pre-consultation notes. Can you please confirm if watermain upgrades are anticipated?

Thanks,

Francis Valenti, EIT

Engineering Intern, Land Development

T. 613.714.6895 | **C.** 613.808.2123

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

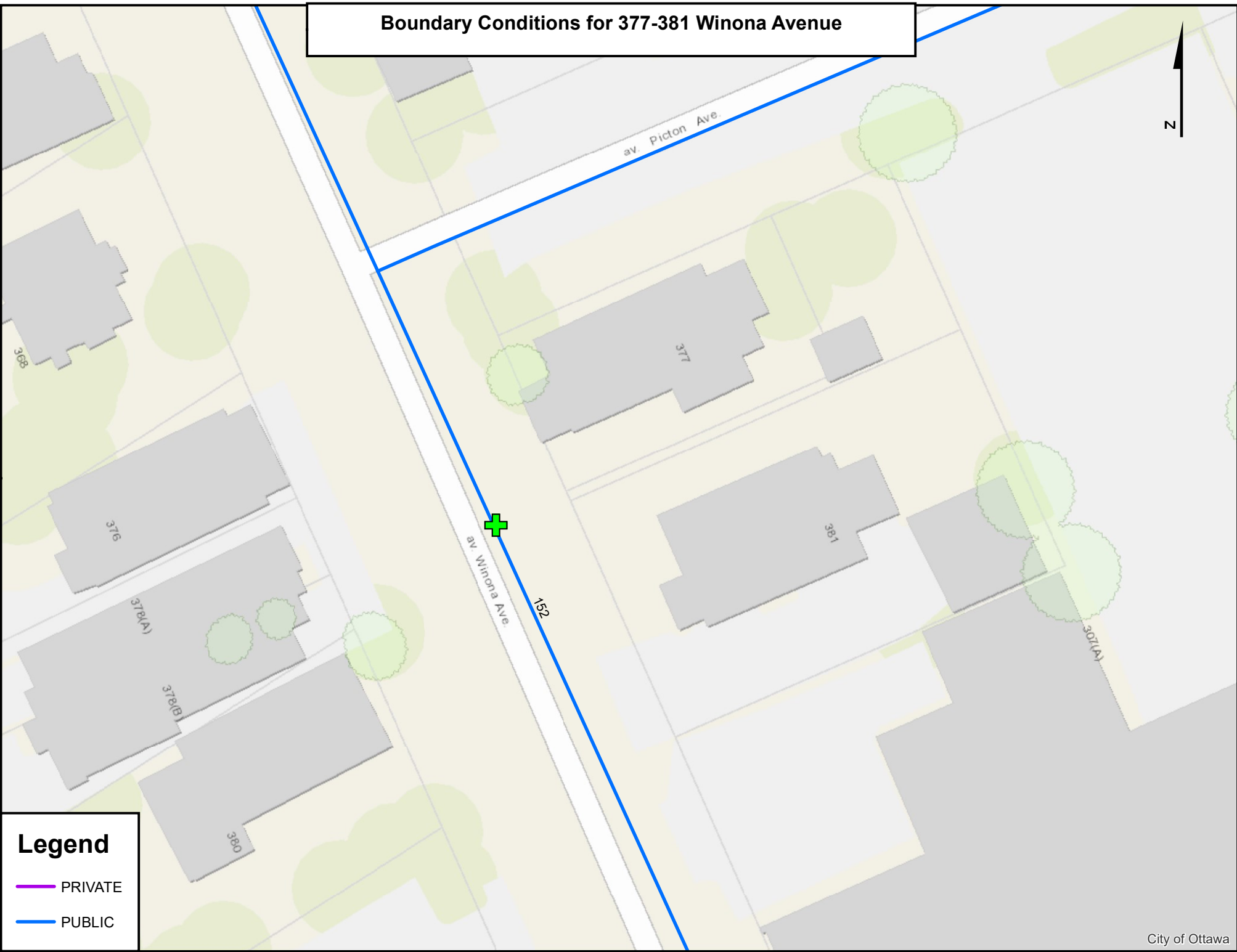
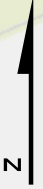
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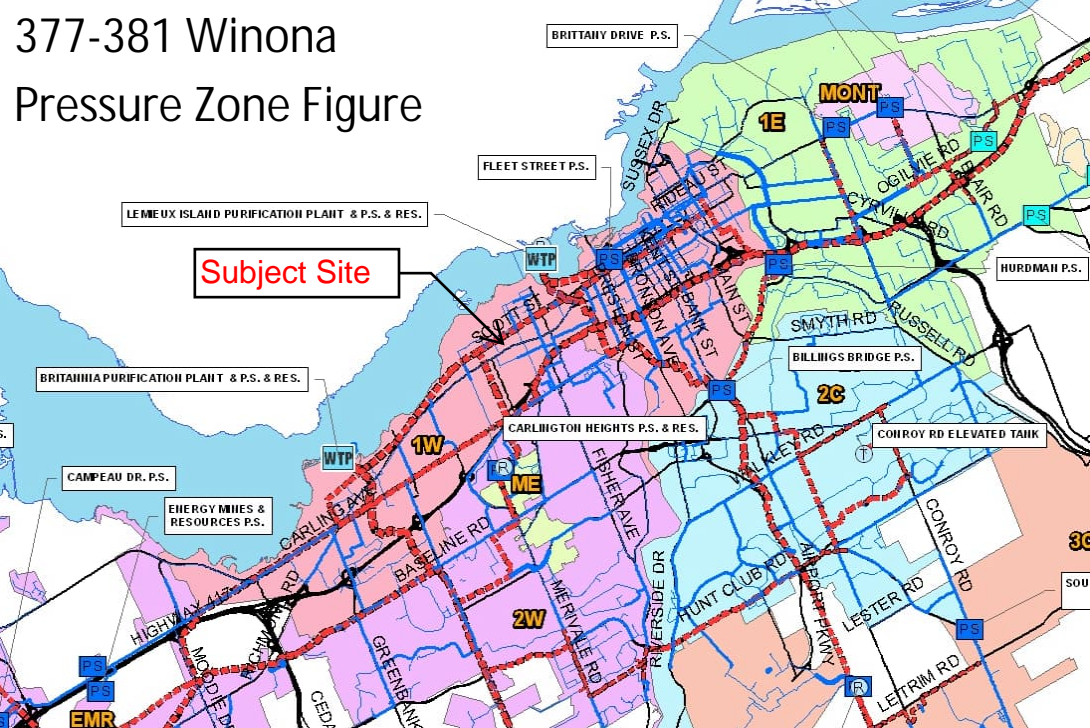
Boundary Conditions for 377-381 Winona Avenue



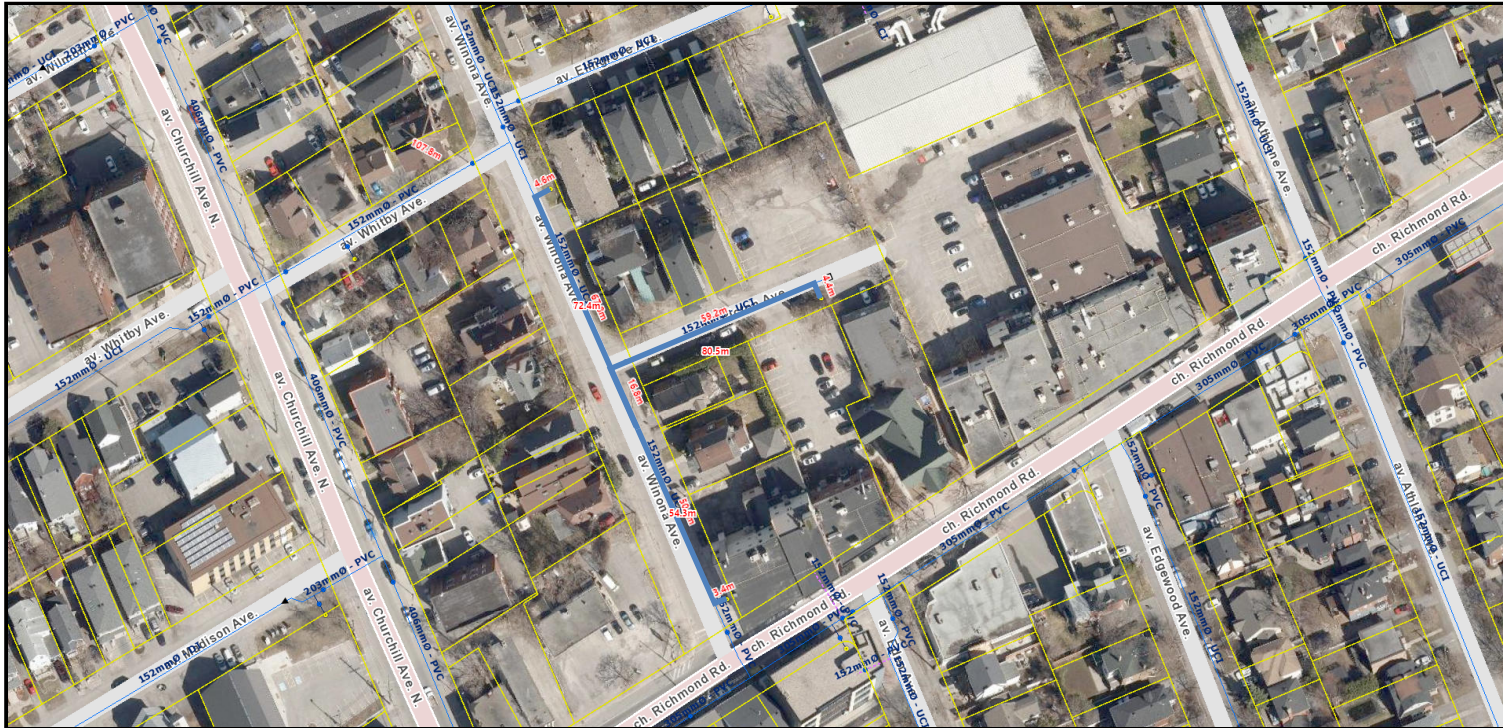
Legend

- PRIVATE
- PUBLIC

377-381 Winona Pressure Zone Figure



377-381 Winona Avenue Hydrant Coverage Figure



APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

CCO-23-1238 - 377-381 Winona Avenue - Sanitary Demands

Project:	377-381 Winona Avenue		
Project No.:	CCO-23-1238		
Designed By:	FV		
Checked By:	NV		
Date:	11/12/2021		
Site Area	0.10	Gross ha	
1 Bedroom	45	1.40	Persons per unit
2 Bedroom	18	2.10	Persons per unit
Total Population	101	Persons	
Commercial Area	188.00	m ²	
Amenity Space	712.00	m ²	

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.0	
Residential Peaking Factor	3.59	* 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	0.00
Wet	0.03
Total	0.03

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	101	0.33
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)	900.00	0.03
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m ² /d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

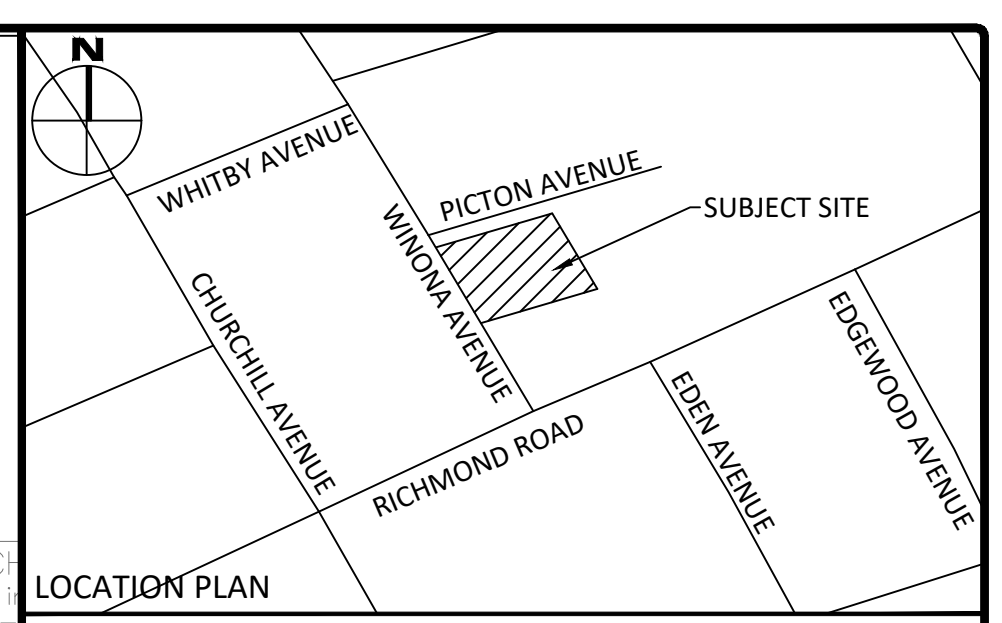
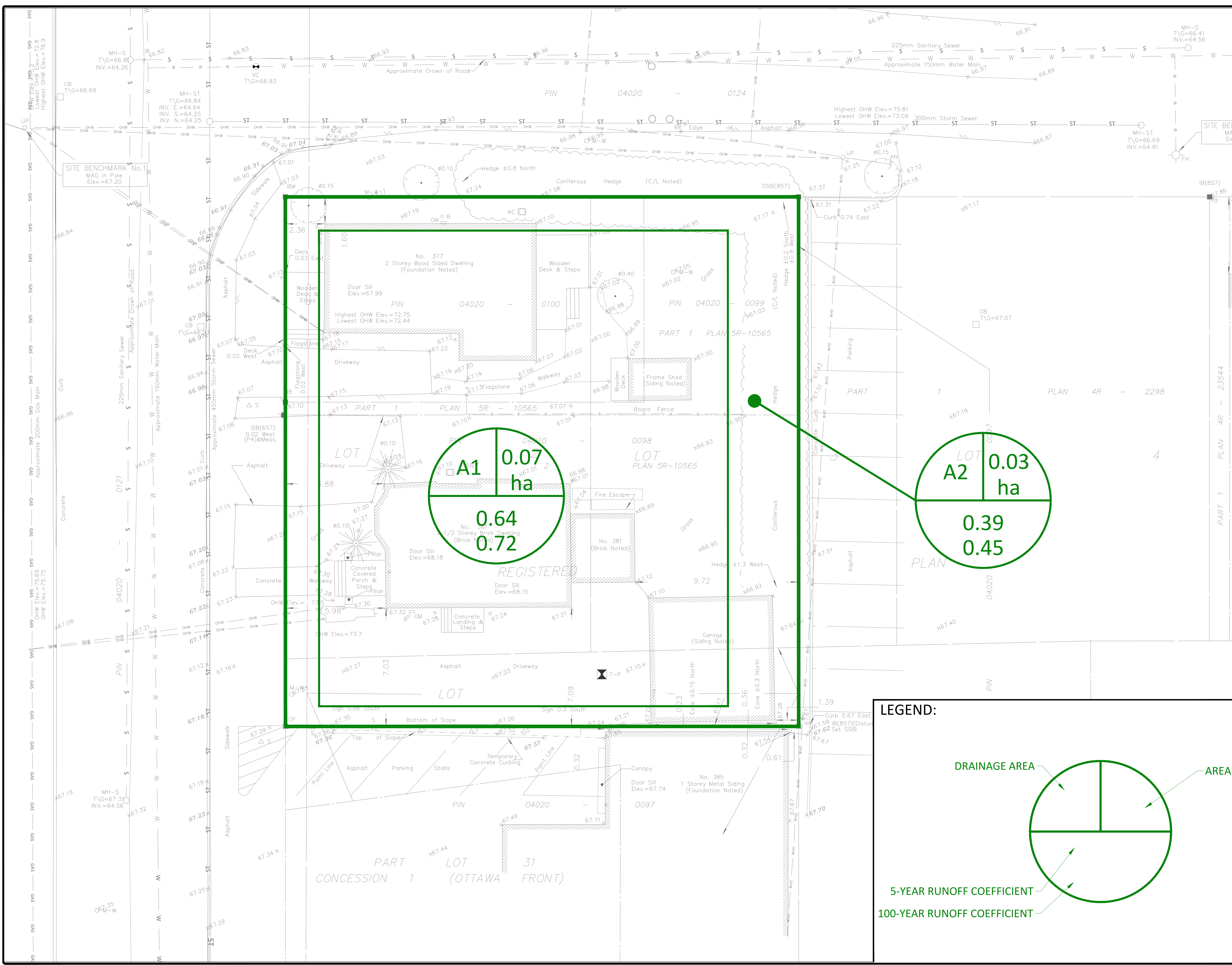
AVERAGE RESIDENTIAL FLOW	0.33	L/s
PEAK RESIDENTIAL FLOW	1.18	L/s
AVERAGE ICI FLOW	0.03	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.03	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.03	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.36	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	1.21	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	1.24	L/s

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

FILENAME: I:\City\01 Project - 2023\2023\01\CCO-23-1238_C01_SPC_377381_Winona Avenue\12 - Drawing\CCO-23-1238_Presentation.dwg
 DATE PLOTTED: Tuesday, October 11, 2023 10:58:11 AM
 PLOTTER: Tundra, October 11, 2023 10:58:11 AM



LEGEND

FOR REVIEW ONLY
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No.	Revisions	Date
1	ISSUED FOR REVIEW	OCT. 11, 2022

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

SCALE 1:100

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
 OTTAWA, ON K2P 2R3

Project:

MIXED USE BUILDING
 377/381 WINONA AVENUE

Drawing Title:

PRE-DEVELOPMENT DRAINAGE PLAN

Scale:	1:100	Project Number:	CCO-23-1238
Drawn By:	FV	Checked By:	CJM
Designed By:	NV	Drawing Number:	PRE

LEGEND:

5-YEAR RUNOFF COEFFICIENT

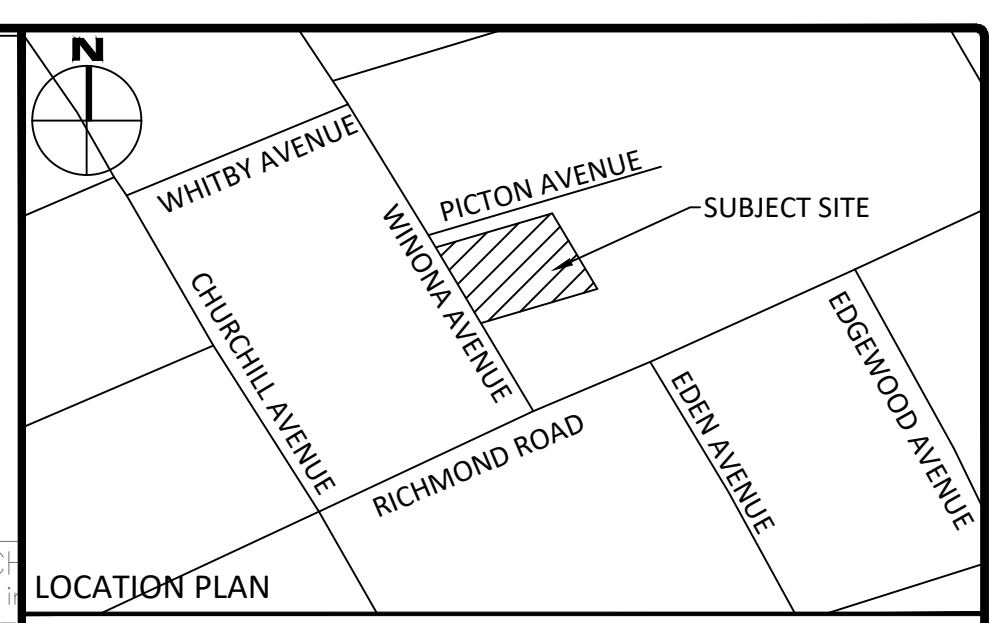
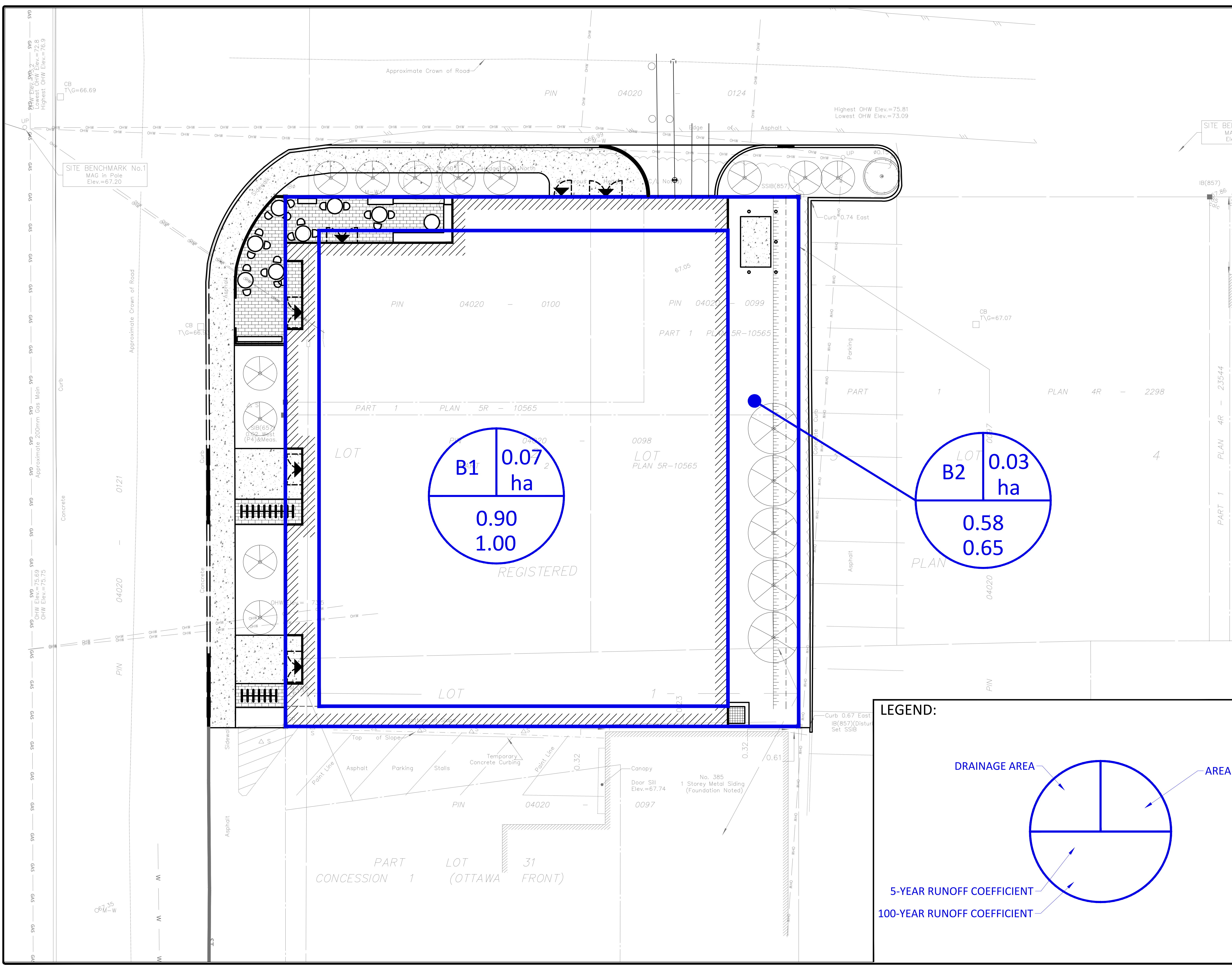
100-YEAR RUNOFF COEFFICIENT

D07-12-XX-XXXX

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APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

FILENAME: (U:\City\01 Project - Proposed\2023\06\CCO-23-1238\01_SPC_SPC_377381_Winona Avenue\12 - Drawing\CCO-23-1238_Presentation.dwg
 DATE SAVED: Tuesday, October 11, 2023 1:52:45 PM
 LAST SAVER: DAVEY BY F. W. K. B. 1
 LAST PLOTTED: Tuesday, October 11, 2023 12:15:00 PM



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No.	Revisions	Date
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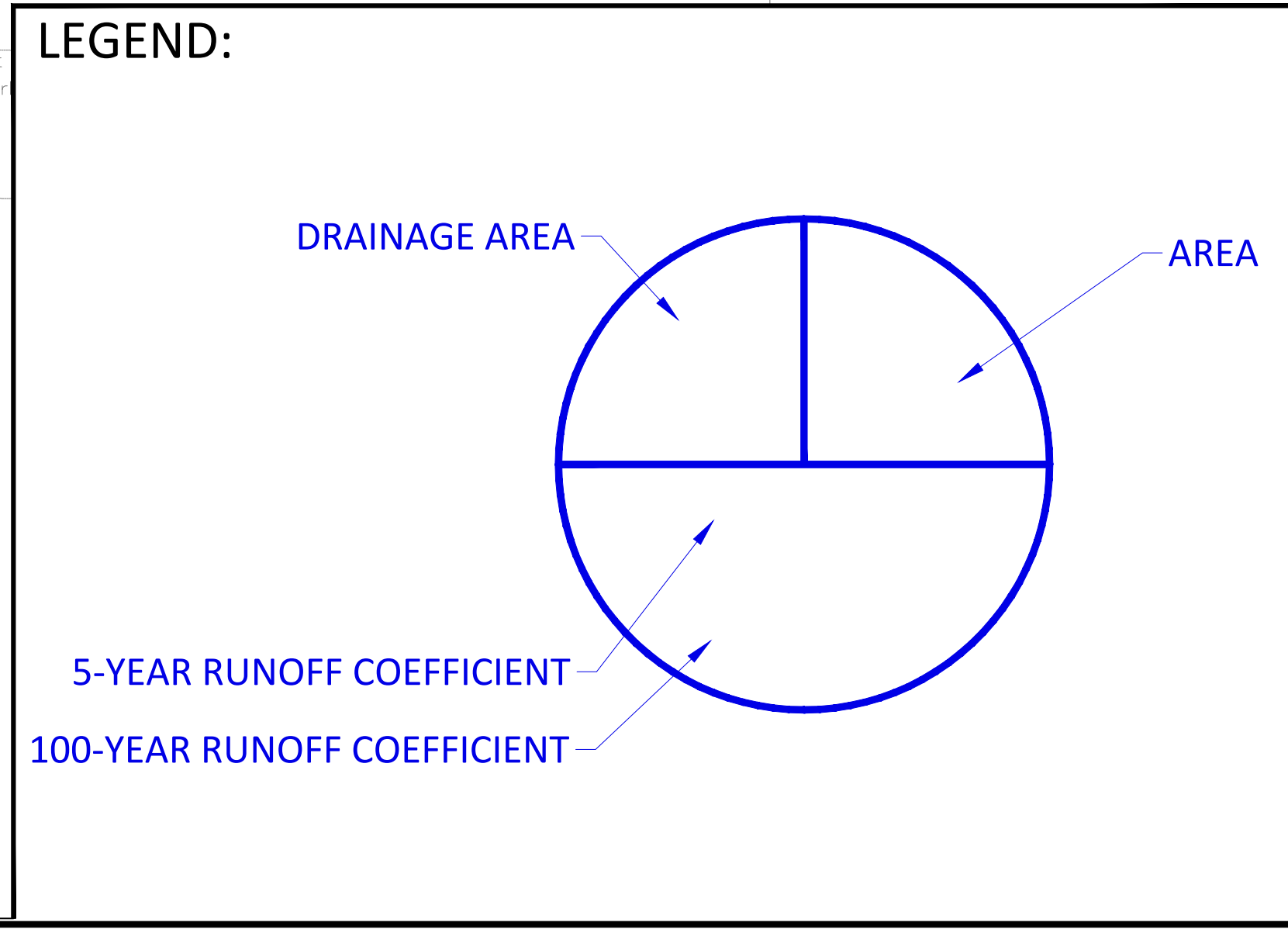
McINTOSH PERRY
 115 Walgreen Road, RR3, Carp, ON K0A 1L0
 Tel: 613-836-2184 Fax: 613-836-3742
 www.mcintoshperry.com

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

Project: **MIXED USE BUILDING**
 377/381 WINONA AVENUE

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

Scale:	1:100	Project Number:	CCO-23-1238
Drawn By:	FV	Checked By:	CJM
Designed By:	NV	Drawing Number:	POST



D07-12-XX-XXXX

#XXXX

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CCO-23-1238 - 377-381 Winona Avenue

1 of 4

Tc (min)	Intensity (mm/hr)		
	2-Year	5-Year	100-Year
20	52.0	70.3	120.0
10	76.8	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	432	0	254	0.64	0.72
A2	73	0	200	0.39	0.45

Area Matching B1

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	5-Year	100-Year
A1	0.07	0.64	0.72	10	9.38	12.73	24.59
A2	0.03	0.39	0.45	10	2.25	3.06	6.10
Total	0.10				11.64	15.79	30.68

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)
B1	686	0	0	0.90	1.00
B2	147	0	126	0.58	0.65

Proposed Bldg Roof

Unrestricted

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)	
					5-Year	100-Year
B1	0.07	0.90	1.00	10	17.88	34.05
B2	0.03	0.58	0.65	10	4.56	8.86
Total	0.10				22.44	42.90

Proposed Bldg Roof

Unrestricted

Required Restricted Roof Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	Q (L/s)
				2-Year
A1	0.07	0.50	10	7.32

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
B1	17.88	34.05	3.28	5.05	10.74	22.45	11.15	22.86
B2	4.56	8.86	4.56	8.86				
Total	22.44	42.90	7.84	13.90				

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CCO-23-1238 - 377-381 Winona Avenue - Roof Storage

2 of 4

5-Year Storm Event

Tc (min)	I (mm/hr)	B1A Runoff (L/s)	Allowable	Runoff to	Storage
			Outflow (L/s)	be Stored (L/s)	Required (m ³)
10	104.2	17.88	3.28	14.60	8.76
20	70.3	12.06	3.28	8.78	10.54
30	53.9	9.25	3.28	5.97	10.74
40	44.2	7.59	3.28	4.30	10.33
50	37.7	6.47	3.28	3.19	9.57
60	32.9	5.65	3.28	2.37	8.52
70	29.4	5.05	3.28	1.76	7.41
80	26.6	4.56	3.28	1.28	6.16

Maximum Storage Required 5-Year (m³) = 10.74

100-Year Storm Event

Tc (min)	I (mm/hr)	B1A Runoff (L/s)	Allowable	Runoff to	Storage
			Outflow (L/s)	be Stored (L/s)	Required (m ³)
10	178.6	34.05	5.05	29.00	17.40
20	120.0	22.87	5.05	17.82	21.39
30	91.9	17.52	5.05	12.47	22.45
40	75.1	14.33	5.05	9.28	22.28
50	64.0	12.19	5.05	7.15	21.44
60	55.9	10.66	5.05	5.61	20.20
70	49.8	9.49	5.05	4.45	18.68
80	45.0	8.58	5.05	3.53	16.95

Maximum Storage Required 100-Year (m³) = 22.45

Storage Parameters

Roof Area (m ²)	685.90
Usable Roof Area (%)	75%
Usable Roof Area (m ²)	514.43

5-Year Storage Summary

Max. Storage Available (m ³)	11.15
Storage Required (m ³)	10.74
Max. Ponding Depth (m)	0.065

100-Year Storage Summary

Max. Storage Available (m ³)	22.86
100-Year Storage Required (m ³)	22.45
Max. Ponding Depth (m)	0.100

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CCO-23-1238 - 377-381 Winona Avenue - Roof Storage

Roof Drain Flow (B1)

3 of 4

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	4	
Roof Drain Position	Open	
	5-Year	100-Year
Rooftop Storage Available (m ³)	11.15	22.86
Rooftop Storage Required (m ³)	10.74	22.45
Storage Depth (m)	0.065	0.100
Flow (Per Roof Drain) (L/s)	0.82	1.26
Total Flow (L/s)	3.28	5.05

Flow Rate Vs. Build-Up (Individual Drain)	
Depth (mm)	Flow (L/s)
0	0.00
5	0.06
10	0.13
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69
60	0.76
65	0.82
70	0.88
75	0.95
80	1.01
85	1.07
90	1.14
95	1.20
100	1.26
105	1.32
110	1.39
115	1.45
120	1.51
125	1.58
130	1.64
135	1.70
140	1.77
145	1.83
150	1.89

Roof Drain Flow		
Individual Flow (l/s)	Storage Depth (mm)	Cumulative Flow (l/s)
0.00	0	0.00
0.06	5	0.25
0.13	10	0.50
0.19	15	0.76
0.25	20	1.01
0.32	25	1.26
0.38	30	1.51
0.44	35	1.77
0.50	40	2.02
0.57	45	2.27
0.63	50	2.52
0.69	55	2.78
0.76	60	3.03
0.82	65	3.28
0.88	70	3.53
0.95	75	3.79
1.01	80	4.04
1.07	85	4.29
1.14	90	4.54
1.20	95	4.79
1.26	100	5.05
1.32	105	5.30
1.39	110	5.55
1.45	115	5.80
1.51	120	6.06
1.58	125	6.31
1.64	130	6.56
1.70	135	6.81
1.77	140	7.07
1.83	145	7.32
1.89	150	7.57

5-Year

100-Year

*Roof Drain model to be Accutrol Weirs, See attached sheets
 *Roof Drain Flow information taken from Watts Drainage website

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

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CCO-23-1238 - 377-381 Winona Avenue

4 of 4

Time of Concentration Pre-Development

Drainage Area ID	Sheet Flow Distance (m)	Slope of Land (%)	Tc (min) (5-Year)	Tc (min) (100-Year)
A1	44	1.46	6	5

Therefore, a Tc of 10 can be used

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

c = Balanced Runoff Coefficient

L = Length of drainage area

S = Average slope of watershed

APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST

City of Ottawa

4. Development Servicing Study Checklist

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

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

4.1 General Content

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

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

4.2 Development Servicing Report: Water

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

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

4.3 Development Servicing Report: Wastewater

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

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

4.4 Development Servicing Report: Stormwater Checklist

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

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

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

4.5 Approval and Permit Requirements: Checklist

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

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

4.6 Conclusion Checklist

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