SITE SERVICING REPORT – 641 SLADEN AVENUE

Project No.: 0CP-19-0187

Prepared for:

Chris Deimling
Deimling Architecture
66 Queen Street
Ottawa, ON
K1P SC6

REV01: January 22, 2020

McINTOSH PERRY

Executive Summary

Developing a site within the City of Ottawa requires meeting a predefined set of requirements outlined in the City of Ottawa Sewer Design Guidelines (SDG) - 2012 along with meeting the local conservation authority requirements (Rideau Valley Conservation Authority - RVCA) and provincial requirements (Ministry of the Environment, Conservation and Parks – MECP). Site specific requirements are discussed and outlined in the pre-consultation meeting with the City of Ottawa before the detailed design process is initiated.

This report describes an innovative and cost efficient design solution for the site servicing (water, sanitary, and storm) and stormwater management (SWM) requirements in order to develop this site.

Evaluation of the proposed site plan in addition to a review of the site grading and soil characteristics was completed. Our review identified that roof storage will be utilized to meet the SWM requirements. The proposed sanitary and water services will utilize the existing infrastructure in and around the site to service the development. Therefore, it is our professional opinion that this site located at 641 Sladen Avenue is able to be developed and fully serviced.

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

1.0 PROJECT DESCRIPTION

1.1 Purpose

This report will address the servicing (water, sanitary, and storm) and stormwater management requirements associated with the proposed development located at 641 Sladen Avenue within the City of Ottawa.

1.2 Site Description

The property is located at 641 Sladen Avenue. It is described as Part of Lot 1 Plan 34, Part 1 Plan 4R25610 together with an easement over Part of Lots 1 & 2 Plan 34, Part 2 Plan 4R25610 as in OC1405769 City of Ottawa. The land in question covers approximately 0.36 ha and is located at the intersection of Malartic Avenue and Sladen Avenue.

The site is currently developed with an existing three-storey 1804m^2 school and is made up of gravel and asphalt parking areas. The existing school building is serviced with storm, water and sanitary infrastructure.

The proposed development consists of a 335 m² 3-Storey school addition to the existing building. Existing parking and drive aisles will remain throughout the site along with landscaping. The existing site accesses for the development will be maintained.

Figure 1: Key Map: 641 Sladen Avenue, Ottawa

2.0 BACKGROUND STUDIES

Background studies that have been completed for the site include a topographical survey of the site and a geotechnical report.

A topographic survey of the site was completed by Annis, O'Sullivan, Vollebekk Ltd. dated August 26, 2019 and can be found under separate cover.

The following report has previously been completed and is available under separate cover:

- Geotechnical Investigation completed by Paterson Group Consulting Engineers dated June 14, 2019.

3.0 EXISTING SERVICES

There are existing services to the building. There is an existing 100mm diameter water service and an existing 100mm - 150mm diameter sanitary service to the building. The location and size of the existing storm lateral is unknown.

There is an existing 225 mm diameter sanitary main as well as a 300 mm diameter storm sewer located within Malartic Avenue extending into Sladen Avenue. There is also a 152 mm diameter watermain within Sladen Avenue.

4.0 SERVICING PLAN

4.1 Proposed Servicing Overview

The overall servicing to the proposed addition will be provided via internal building connections from the existing building. Refer to the Mechanical Plans for details.

4.2 Proposed Water Design

Water will be serviced via internal connections from the existing building. Refer to mechanical plans.

A new hydrant is proposed to service the site complete with a water valve and will be connected to the existing 150 mm diameter watermain within Sladen Avenue.

The Fire Underwriters Survey 1999 (FUS) method was utilized to determine the required fire flow for the site. The results of the calculations yielded a required fire flow of 12,000 L/min. A fire flow of 9,000 L/min was calculated using the Ontario Building Code (OBC) requirements. The detailed calculations for the FUS and OBC can be found in Appendix 'C'.

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

Table 1: Water Demands

Average Day Demand (L/s)	0.30
Maximum Daily Demand (L/s)	0.45
Peak Hourly Demand (L/s)	0.81
OBC Fire Flow Requirement (L/s)	150.00
FUS Fire Flow Requirement (L/s)	200.00
Max Day + Fire Flow (FUS) (L/s)	200.45

Boundary conditions have been provided by the City of Ottawa for the current conditions and are available in Appendix 'C'. A water model was completed using Bentley's WaterCAD based on the boundary conditions. The results determined that the proposed 150mm watermain can adequately service the proposed development. An available fire flow of 4,200 L/min has been indicated in the boundary conditions.

To provide sufficient fire flow 3 existing hydrants within 150m of the building were taken into account. An additional hydrant has been proposed to meet the required FUS demand of 12,000 L/s. The table below outlines the hydrants and the contribution to the fire flow per Table 1 of the Technical Bulletin ISTB-2018-02. To be conservative, a flow of 3,800 L/min has been assigned to the proposed and existing hydrants on Sladen Avenue. A drawing indicating the hydrants is available in Appendix 'C' of this report.

Table 2: Fire Protection Confirmation

Hydrant Name	Contribution to fire flow (L/min)
H1	3,800
H2	3,800
H3	800
Proposed Hyd.	3,800
Total	12,200

4.3 Proposed Sanitary Design

The proposed addition will be serviced via internal connections. Refer to mechanical plans for additional details.

The peak design flow for the proposed addition was determined to be 0.72 L/s (See Appendix 'C' for detailed calculations). It is anticipated that there will be no issues with capacity constraints within the lateral or within the existing sanitary main along Sladen Avenue.

It is acknowledged that the indoor swimming pool within the proposed school addition will require backwashing/flushing through routine maintenance periods. The discharge will be permitted at a determined controlled rate as determined by the Mechanical Engineer.

4.4 Proposed Storm Design (Conveyance and Management)

The proposed addition will be serviced via internal connections. Refer to mechanical plans for additional details.

Positive slopes away from the existing and proposed buildings will be maintained. The site will continue to drain southwest towards Sladen Avenue. Considering there is no change in hard surface on the site, there will be no increase in runoff and therefore is no need for onsite stormwater management.

4.5 Site Utilities

All relevant utility companies (telephone - Bell, gas – Enbridge, hydro – Hydro Ottawa and cable - Rogers) will be contacted prior to construction in order to confirm adequate utility servicing for the site. Existing utilities are present along Sladen Avenue; however, the site connections are anticipated to be fed from the existing building.

5.0 SEDIMENT EROSION CONTROL

5.1 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 of Ottawa, RVCA 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. Geosock is to be installed under the grates of all existing structures along the frontage of the site and any new structures immediately upon installation. The Geosock is to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the RVCA 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 both warrant and permit. Please see the Site Grading and Drainage Plan in Appendix F for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

6.0 SUMMARY

- A new 335 m^2 school addition will be constructed on the site located at 641 Saladen Avenue.
- Sanitary, water, and storm services to the new addition will be connected internally.
- A new hydrant on Saladen Avenue is proposed in order to meet fire flow requirements.

7.0 RECOMMENDATIONS

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management Report in support of the proposed building addition on Saladen Avenue.

The sediment and erosion control plan and detailed in the Grading and Drainage Plan notes are to be implemented by the contractor.

This report is respectfully being submitted for approval.

Charissa Hampel, EIT
Engineering Intern, Land Development
McIntosh Perry Consulting Engineers
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Ryan Kennedy, P.Eng.
Practice Area Lead, Land Development
McIntosh Perry Consulting Engineers
T: 613.903.5766
E: r.kennedy@mcintoshperry.com

\\192.168.1.3\MPDOCUMENTS\01 PROJECT - PROPOSALS\2019 JOBS\CP\0CP-PROJECTS\0CP-19-0187 DEIMLING_ACADEMY_641 SLADEN AVE\CIVIL\03 - SERVICING\REPORT\CP-19-0187_SERVICING REPORT_REV01.DOCX

8.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of Deimling Architecture. 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 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
CITY OF OTTAWA PRE-CONSULTATION NOTES

Charissa Hampel

From: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Sent: May 1, 2019 10:58 AM
To: Curtis Melanson
Cc: Baldwin, Kimberley
Subject: RE: 641 Sladen

Hi Curtis

A simple grading plan showing drainage patterns around the new addition and a servicing plan is any existing services are relocated. No SWM required.

Richard Buchanan, CET

Coordinator, Front Ending Agreements and Brownfields Programs
Planning Services, Development Review Branch
Planning, Infrastructure and Economic Development Department
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Curtis Melanson <c.melanson@mcintoshperry.com>
Sent: May 01, 2019 10:52 AM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Subject: RE: 641 Sladen

Hi Richard,
See attached.

Thanks,

Curtis Melanson, C.E.T.
Practice Area Lead, Land Development
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.714.4621 | **F.** 613.836.3742 | **C.** 613.857.0784
c.melanson@mcintoshperry.com | www.mcintoshperry.com

From: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Sent: April 30, 2019 4:48 PM
To: Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 641 Sladen

Please send me a plan of the proposal.

I think we can limit it to the area being developed.

Richard Buchanan, CET

Coordinator, Front Ending Agreements and Brownfields Programs
Planning Services, Development Review Branch
Planning, Infrastructure and Economic Development Department
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Curtis Melanson <c.melanson@mcintoshperry.com>
Sent: April 30, 2019 4:09 PM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Subject: 641 Sladen

Hi Richard,
The planner for this one was Kimberley Baldwin and the pre-consult was October 31st, 2018. Don't know if that helps but thought I would send it along just in case.

Thanks very much for your time.

Cheers,

Curtis Melanson, C.E.T.
Practice Area Lead, Land Development
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APPENDIX B
EXISTING WATERMAIN FLOW AND FIRE PROTECTION CALCULATIONS

McINTOSH PERRY

Charissa Hampel

From: Evans, Allan <Allan.Evans@ottawa.ca>
Sent: December 17, 2019 12:49 PM
To: Charissa Hampel
Subject: RE: 641 Sladen Avenue
Attachments: Hydrant percentage by distance.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Sorry about that – it kept falling off my screen and I would miss it.

We have a technical bulletin that is more intended for design of the watermain network, but this would apply for your situation as well. I have cut this out of a larger technical bulletin which is why it looks the way it does.

You are permitted to use hydrants up to 150m away (travel path, not direct line) – please refer to the attachment and let me know if you have any further questions.

Allan Evans

Fire Protection Engineer / Ingénieur de Protection d'Incendies
Prevention Division / Prévention des Incendies
Ottawa Fire Services / Service des Incendies d'Ottawa
1445 Carling Avenue / 1445 Avenue Carling
Ottawa, ON K1Z 7L9
Allan.Evans@Ottawa.ca
((613) 913-2747| ((613) 580-2424 x24119| 6 (613) 580-2866 | + Mail Code: 25-102| @FFSnack

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: December 16, 2019 10:49 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Subject: RE: 641 Sladen Avenue

Hi Allan,
Following up on below. We will be needing your input by the end of the week. Please respond at your earliest convince.

Thanks,

Charissa Hampel, EIT
Engineering Intern
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.714.4625 | **F.** 613.836.3742 | **C.** 613.791.0505
c.hampel@mcintoshperry.com | www.mcintoshperry.com

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: December 2, 2019 2:22 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Subject: RE: 641 Sladen Avenue

Hi Allan,
Following up on below. Have you had a chance to review?

Thanks,

Charissa Hampel, EIT
Engineering Intern
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
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c.hampel@mcintoshperry.com | www.mcintoshperry.com

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: November 21, 2019 10:15 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Subject: RE: 641 Sladen Avenue

Hi Allan,
Following up on below. Have you had a chance to review?

Thanks,

Charissa Hampel, EIT
Engineering Intern
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c.hampel@mcintoshperry.com | www.mcintoshperry.com

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: November 15, 2019 1:42 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Subject: RE: 641 Sladen Avenue

Hi Allan,
Following up on below. Have you had a chance to review?

Thanks,

Charissa Hampel, EIT
Engineering Intern
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c.hampel@mcintoshperry.com | www.mcintoshperry.com

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: November 11, 2019 2:55 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Subject: 641 Sladen Avenue

Hi Allan,
Please see attached sketch of 641 Sladen Avenue. There will a proposed addition to the existing building at this address. As you can see there are two hydrants in the vicinity of the building. One is directly in front of the building on Sladen Avenue and the other is on Center Street. Can you confirm we are able to use both hydrants to meet the required fire flow for the building.

Thanks,

Charissa Hampel, EIT
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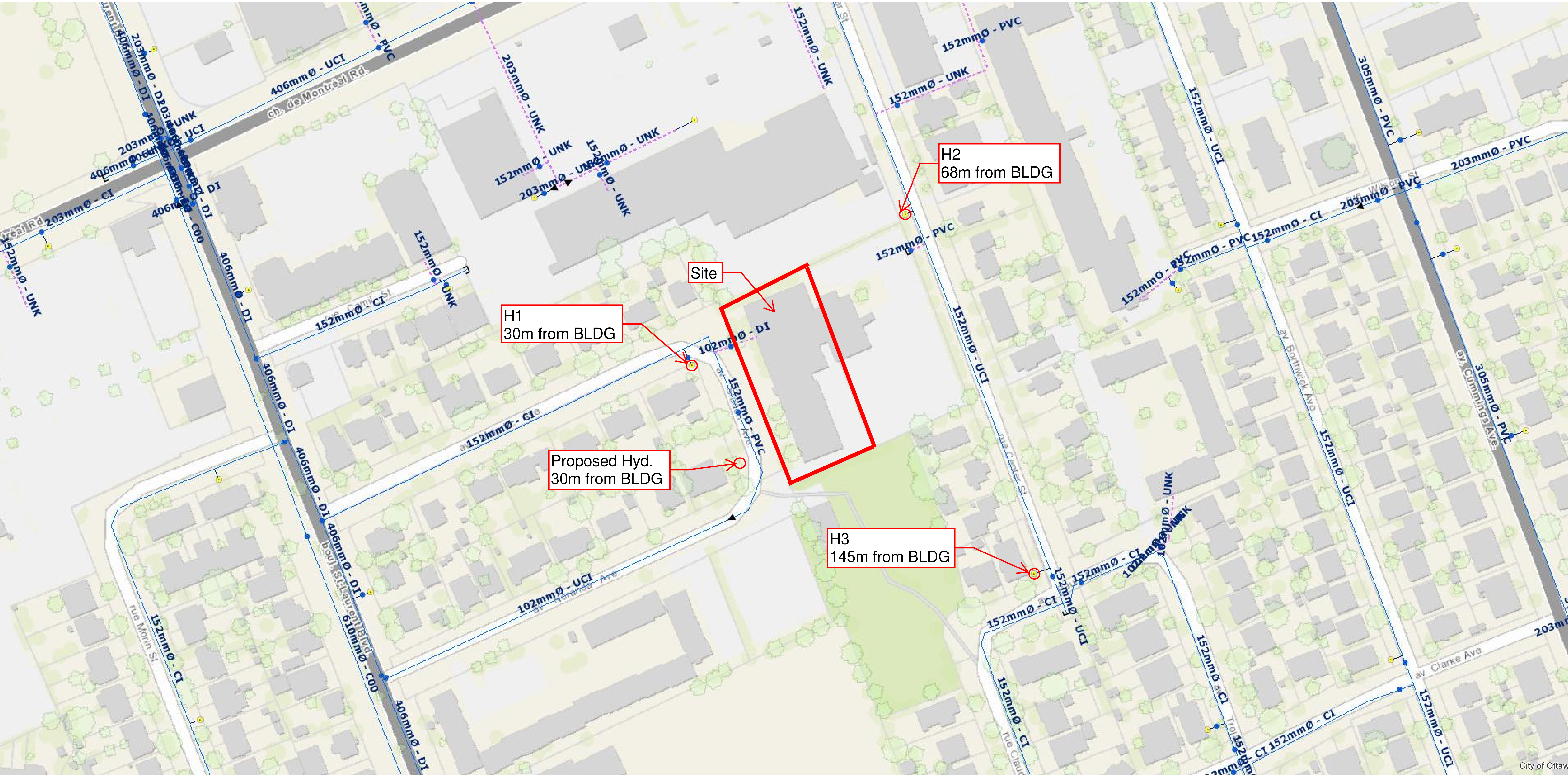
H2
68m from BLDG
Site
H1
30m from BLDG
Proposed Hyd.
30m from BLDG
H3
145m from BLDG
City of Ottawa

McINTOSH PERRY

CP-19-0187 - Sladen Avenue - Water Demands

Project:	Sladen Avenue
Project No.:	CP-19-0187
Designed By:	S.P.G.
Checked By:	R.P.K.
Date:	11/04/2019
Site Area:	0.36 gross ha
Number of People:	369.00

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	350	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 Parks 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
Othe Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	0.30	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.5 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	0.45	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.2 x max. 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	0.81	L/s

CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

McINTOSH PERRY

CP-19-0187 - Sladen Avenue - Fire Underwriters Survey (FUS) Fire Calculations

Project:	Sladen Avenue
Project No.:	CP-19-0187
Designed By:	S.P.G.
Checked By:	R.P.K.
Date:	11/04/2019

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:

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.

A. Determine The Coefficient Related To The Type Of Construction

The building is considered to be of non-combustable. Therefore,

C = 0.80

B. Determine Ground Floor Area

As provided by the Architect:

Existing:

Three Storey Floor Area	= 635.57	m²	
A x 3 storeys	= 1,906.71	m²	(3 floors)
Single Storey Floor Area	= 1,176.83	m²	
Total	= 3,083.54		

Proposed:

Three Storey Floor Area	= 290.90	m²	
A x 3 storeys	= 872.70	m²	(3 floors)
Single Storey Floor Area	= 43.70	m²	
Total	= 916.40		

Total Floor Area = 3,999.94 m²

This floor area represents the new and existing areas.

C. Determine Height in Storeys

From Architectural Drawings:

Number of Storeys = 3.00

D. Calculate Required Fire Flow

F = 220 x C x √A

F = 220.00 X 0.80 X √ 3999.94

F = 11,131.13 L/min.

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E. Determine Increase or Decrease Based on Occupancy

From note 2, Page 18 of the Fire Underwriter Survey:

Low Hazard - School -0.15%

Occupancy Decrease = 1,669.67 L/min.

F = 9,461.46 L/min.

CP-19-0187 - Sladen Avenue - Fire Underwriters Survey (FUS) Fire Calculations

F. Determine the Decrease, if any for Sprinkler Protection

From note 3, Page 18 of the Fire Underwriter Survey:

- The flow requirement may be reduced by up to 50% for complete automatic sprinkler protection depending upon adequacy of the system.
- The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.
- Additional credit of 10% if water supply is standard for both the system and fire department hose lines
- If sprinkler system is fully supervised system, an additional 10% credit is granted
- The entire building will be installed with a fully automated, standardized with the City of Ottawa Fire Department and fully supervised.
- Therefore the value obtained in Step E is reduced by 30% (The building is sprinklered with a standard system and fire department hose lines)

Reduction = 9,461.46 L/min. X 0%

Reduction = 0.00 L/min.

G. Determine the Total Increase for Exposures

From note 4, Page 18 of the Fire Underwriter Survey:

- Exposure distance to the nearest building to the north, east, west and south of the proposed building is approximatly 30m, 68m, 20m, and 35m respectfully
- Therefore the charge for exposure is 25% of the value obtained in Step E.

Increase = 9,461.46 L/min. X 25%

Increase = 2,365.37 L/min.

H. Determine the Total Fire Demand

- To the answer obtained in E, substract the value obtained in F and add the value obtained in G
- Fire flow should be no less than 2,000L/min. and the maximum value shoul not exceed 45,000L/min.

F = 9,461.46 L/min. - 0.00 L/min. + 2,365.37 L/min.

F = 11,826.83 L/min.

Therefore, after rounding to the nearest 1,000 L/min, the total required fire flow for the development is 12,000 L/min (3,963 GPM).

CP-19-0187 - Sladen Avenue - OBC Fire Calculations

Project:	Sladen Avenue
Project No.:	CP-19-0187
Designed By:	S.P.G.
Checked By:	R.P.K.
Date:	11/04/2019

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

Water Supply for Fire-Fighting - School

Building is classified as Group : A2 (from OBC Table 3.1.2.1)
Building is of noncombustable construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2, including loadbearging 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 x V x Stot

where:

Q = minimum supply of water in litres

K = water supply coefficient from Table 1

V = total building volume in cubic metres (new and existing)

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

Stot = 1.0 + [Sside1+Sside2+Sside3+..etc.]

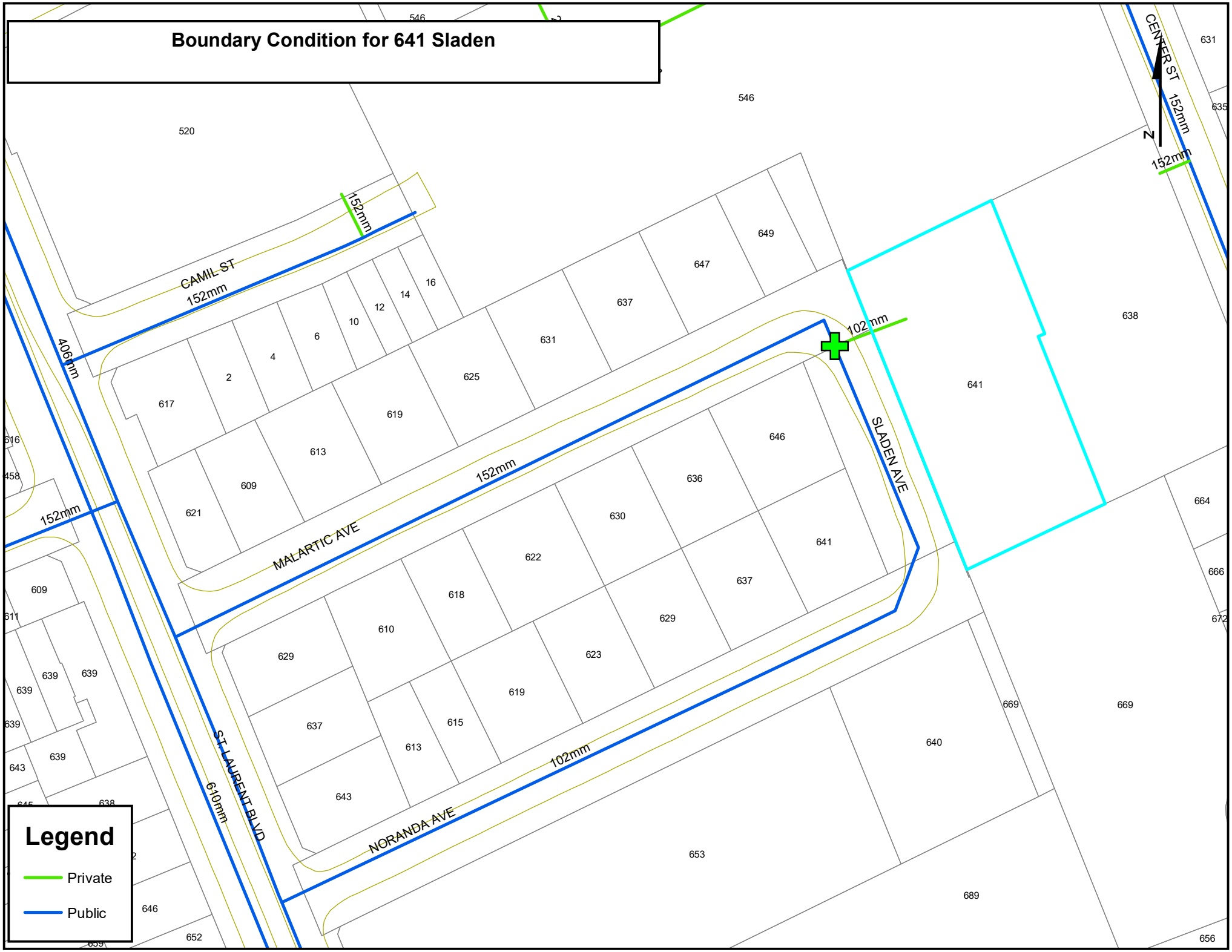
K	10	(from Table 1 pg A-31) (Worst case occupancy {E/ F2} 'K' value used)
V	23,220	(Total building volume in m³.)
Stot	2.0	(From figure 1 pg A-32)
Q =	464,400.00 L	

			From Figure 1 (A-32)
Snorth	3.75	m	0.50
Seast	3.54	m	0.50
Ssouth	5.98	m	0.35
Swest	9.1	m	0.05

* approximate distances

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

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


Boundary Condition for 641 Sladen
CAMIL ST
152mm
406mm
152mm
MALARTIC AVE
152mm
ST. LAURENT BLVD
610mm
NORANDA AVE
102mm
SLADEN AVE
102 mm
CENTER ST
152mm
152mm
N
Legend
Private
Public

Charissa Hampel

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: November 15, 2019 8:43 AM
To: Charissa Hampel
Subject: RE: Request for Boundary Conditions - 641 Sladen Avenue
Attachments: 641 Sladen Nov 2019.pdf

Hi Charissa,

Please find below boundary conditions, HGL, for hydraulic analysis at 641 Sladen Ave. (Zone 1E) assumed to be connected to the 152mm dia. watermain within Sladen Ave. See attached PDF for connection location.

Average Day Demand: 0.30 L/s
Maximum Daily Demand: 0.45 L/s
Maximum Hourly Demand: 0.81 L/s
Fire Flow: 15,000 L/min (250L/s)

Minimum HGL = 108.5m
Maximum HGL = 118.2m
Available Flow @ 20psi = 70 L/s assuming a ground elevation of 75.0m

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

Please refer to City of Ottawa, Ottawa Design Guidelines – Water Distribution, First Edition, July 2010, WDG001 Clause 4.2.2 for watermain pressure and demand objectives.

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.

If you have any questions please let me know.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Fraser, Mark
Sent: November 08, 2019 10:33 AM
To: c.hampel@mcintoshperry.com
Cc: Renaud, Jean-Charles <Jean-Charles.Renaud@ottawa.ca>
Subject: RE: Request for Boundary Conditions - 641 Sladen Avenue

Hi Charissa,

I will proceed with requesting boundary conditions for hydraulic analysis however please note the below comments:

- You must ensure that there are a sufficient number of fire hydrants at sufficient proximities to actually provide the required fire flow (RFF) of 15,000L/min. The total fire flow capacity of all available fire hydrants within 150m (maximum contributing distance) of the building shall not be less than the RFF as per Technical Bulletin ISTB-2018-02 dated March 21, 2018 Appendix I. There is only one available hydrant on Sladen Ave. that is within 150mm of the building. It would need to be determined if Ottawa Fire Services will consider the hydrant on Center St. as a viable option however it is anticipated that the response will be no due to obstructions. This hydrant has a maximum fire flow capacity of 5700L/min as per Table 1 (hydrant fire flow capacity) of Appendix I. Unless additional hydrants are installed or options are investigated to decrease the required fire flow there are currently not a sufficient number of hydrants thus it is unclear how you will achieve the calculated fire flow requirement of 15,000 L/min. Please review and adhere to Technical Bulletin ISTB-2018-02 dated March 21, 2018 Appendix I. A fire hydrant coverage plan will be necessary to document hydrant proximities to the building.
- Provide water modeling or calculations for each water demand scenario in section 4.2.2.1, 4.2.2.2 and 4.2.2.3 of the Water Distribution Design Guidelines to confirm pressures once boundary condition are provided.
- The City does not provide hydrant flow data.

If you have any questions please let me know.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
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From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: November 07, 2019 5:05 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: RE: Request for Boundary Conditions - 641 Sladen Avenue

Hi Mark,
Please see below and attached.

Charissa Hampel, EIT
Engineering Intern
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.714.4625 | **F.** 613.836.3742 | **C.** 613.791.0505
c.hampel@mcintoshperry.com | www.mcintoshperry.com

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: November 6, 2019 3:56 PM
To: Charissa Hampel <c.hampel@mcintoshperry.com>
Subject: RE: Request for Boundary Conditions - 641 Sladen Avenue

Hi Charissa,

Please see the below comments regarding the fire flow calculations:

- Please confirm with the Architect that non-combustible construction (C=0.8) is an appropriate construction class for the building (existing and addition) and not ordinary construction (C=1.0) as the building is being analyzed as a single fire area.
- Existing is steel and concrete structure. New will be steel (w/ poured concrete foundation and poured concrete floor over steel deck).
- The occupancy combustibility classification for an institutional use should be limited-combustible (-15% occupancy charge) not non-combustible (-25% occupancy charge) as per Technical Bulletin ISTB-2018-02.
- Cals have been updated to reflect -15% charge.
- The final value (13,189.69L/min) is rounded to the nearest 1,000L/min, thus a final fire flow of 13,000 L/min.
- Fire Hydrant Capacity Requirement: In addition to the hydraulic analysis please document that the aggregate fire flow capacity of all available contributing fire hydrants within 150m of the building is not less than the required fire flow as per Technical Bulletin ISTB-2018-02 (Table 1). Include a table and fire hydrant coverage plan identifying the available hydrants and distances as part of the site servicing brief to demonstrate that there is adequate fire protection for the building.
- Please provide flow data for hydrants in the vicinity of the site.
- Please confirm that the calculated water demands are for the whole building.
- The occupancies are for the new and existing building.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
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From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: November 06, 2019 2:47 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: RE: Request for Boundary Conditions - 641 Sladen Avenue

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From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: November 6, 2019 2:32 PM
To: Charissa Hampel <c.hampel@mcintoshperry.com>
Subject: RE: Request for Boundary Conditions - 641 Sladen Avenue

Hi Charissa,

Can you please send me the fire flow calculations.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
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Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: November 06, 2019 2:28 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: Request for Boundary Conditions - 641 Sladen Avenue

Good Afternoon,

I have conducted water demand and fire flow calculations with the information available and would like to request boundary conditions for the development located at 641 Sladen Ave.

I have attached a location map showing the subject site.

Please find the below water demands to obtain boundary conditions.

	1970 Merivale Road
Type of Development:	School Addition
Location of Service:	Sladen Ave
Amount of Fire Flow Required (FUS):	14,000 L/min
Average Daily Demand (L/sec):	0.30
Maximum Daily Demand (L/sec):	0.45
Maximum Hourly Demand (L/sec):	0.81

If you require any further information or have any questions, please feel free to contact me.

Thank you,

Charissa Hampel, EIT
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McINTOSH PERRY

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Average Day

Label	Elevation (m)	Demand (L/min)	Pressure (psi)	Hydraulic Grade (m)
J-1 (BLDG)	72.90	18.00	59.76	115.00

Peak Hourly

Label	Elevation (m)	Demand (L/min)	Pressure (psi)	Hydraulic Grade (m)
J-1 (BLDG)	72.90	48.60	49.11	107.50

APPENDIX C
SANITARY SEWER CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

Project:	CP-19-0187 SLADEN AVENUE
Designed By:	S.P.G
Checked By:	R.P.K.
Date:	November 6, 2019

Re: Sanitary Flow Calculations

1. Building Occupancy

The building addition will consist of a pool on the bottom floor and classrooms on the upper floors. The existing building consists of a gymnasium, cafeteria, and classrooms. The following occupancies have been provided by the architect.

- $P_{Students}$ = 308 Students
- P_{Staff} = 29 Staff
- P_{Pool} = 16 x 2 = 32 people (provide by architect on drawing A101b)
- P_{Total} = 308 + 29 + 32 = 369 people

Daily Volume in Litres

As per the extract of the City of Ottawa Sewer Design Guidelines, Appendix 4-A; Daily Sewage Flow for schools;

- Day school with cafeteria, gym and showers.
  = 90 Liters/Person/Day

2. Peak Flow (Q/p)

- $Q_{School}(p) = F \times P$

  Where:
  F = 90 Litres/person/Day (as per city of Ottawa sewer guidelines)
  P = 369 people (as per floor plan and table 3.1.17.1.)

  Therefore $Q_{school}(p)$ = (90) x (369) = 33,210 L/Day (0.38 L/Sec)

- $Q_{Pool}(p) = F \times P$

  Where:
  F = 40 Litres/Person/Day
  P = 32 People

- Therefore, $Q_{Pool}(p)$ = (40) x (32) = <u>1,280 L/Day (0.02 L/s)</u>

- Q_{Total} = 33,210 + 1,280
  <u>Q_{Total} = 34,490 L/Day (0.40 L/s)</u>

Q_{Total} x Peaking Factor = Q_{Peak}
Q_{Peak} = 0.40 x 1.5
Q_{Peak} = 0.60 L/s

- $Q_{Infiltration}(p) = R \times A$ Where:
  R = 0.33 Litres/Second/Ha
  P = 0.36Ha
- Therefore, $Q_{Infiltration}$ (p) = (0.33) x (0.36) = 0.12 L/s

In addition to above, it is noted in the Ontario Building Code Section 3.11.8.1 that public pools shall be capable of being emptied through the pool drains in 12 hours or less.

- $Q_{pool\ drains} = V/T$ Where:
  V = 88,000 Litres
  T = 0.5 Days
- Therefore, $Q_{pool\ drains}$ = (88,000) / (0.5) = 176,000 L/Day (2.04 L/s)
- $Q_{TOTAL} = Q_{PEAK} + Q_{Infiltration} + Q_{pool\ drains}$

  Where:
  Q_{PEAK} = 0.60 L/s
  $Q_{Infiltration}$ = 0.12 L/s
  $Q_{pool\ drains}$ = 2.04 L/s

- Therefore, Q_{TOTAL} = 2.76 L/s