2705460 ONTARIO INC.

RESIDENTIAL DEVELOPMENT
112 MONTREAL ROAD, OTTAWA, ON
SITE SERVICING REPORT

APRIL 3, 2023
2ND SUBMISSION

RESIDENTIAL DEVELOPMENT 112 MONTREAL ROAD, OTTAWA, ON

SITE SERVICING REPORT

2705460 ONTARIO INC.

SITE PLAN APPLICAITON
2ND SUBMISSION

PROJECT NO.: 19M-01935-00
DATE: APRIL 2023

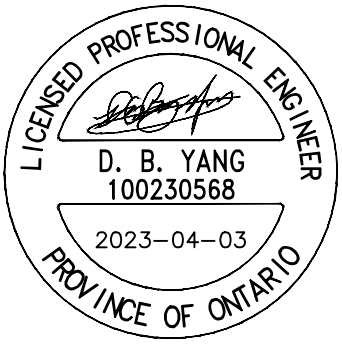
WSP
2611 QUEENSVIEW DRIVE, SUITE 300
OTTAWA, ON, CANADA, K2B 8K2

TEL.: +1 613-829-2800

WSP.COM

SIGNATURES

PREPARED AND REVIEWED BY



Ding Bang Yang, P.Eng., PMP.
Senior Civil Engineer

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1 INTRODUCTION

1.1 EXECUTIVE SUMMARY

WSP was retained by 2705460 Ontario Inc. C/O Anand Aggarwal to provide servicing, grading and stormwater management design services, in support of the site plan application, for the proposed residential development located at 112 Montreal Road, in the City of Ottawa. The current phase 1 proposed development consists of one high rise Tower B1, 35 storeys and one mid rise 8 storeys Tower A. The future phase 2 consists of two high rise towers, towers B2 and B3 – 30 and 15 storeys respectively. All these towers are to be built over 3 levels of underground parking garage. This report will provide sufficient detail to demonstrate that the proposed development can be supported by the existing municipal infrastructure services, such as watermain, sanitary and storm sewers and that the servicing design conforms to the applicable standards and guidelines. The report will also include measures to be taken during the construction to minimize erosion and sedimentation. A separate report (112 Montreal Road – Stormwater Management Report) will be provided detailing stormwater management approach, addressing the quantity control and quality measures in accordance with the applicable guidelines.

Currently, the existing buildings on site have been demolished and most of the site was filled with gravel. Existing paved parking areas, trees and grassed areas to the west perimeter of the property are remained. The total lot area was considered to be 1.22 ha in size. The site is bounded by commercial development to the north and east, and residential development to the south and west.

The subject site consists of multiple lots and parts of City of Ottawa (refer to Appendix A for the Topographical Survey Plan). Based on the topographic survey plan, the overall topography of the site is relatively flat, with parking areas and buildings sloping towards Montreal Road. The drainage and sewage from the site is currently directed to the existing municipal sewers on Montreal Road. The domestic water to the site is also off Montreal Road's existing municipal watermain.

The City of Ottawa required that the design of a drainage and stormwater management system in this development must be prepared in accordance with the following documents:

- Sewer Design Guidelines, City of Ottawa, October 2012;
- Stormwater Management Planning and Design Manual, Ministry of the Environment, March 2003; and
- Stormwater Management Facility Design Guidelines, City of Ottawa, April 2012

This report was prepared utilizing servicing design criteria obtained from the City of Ottawa and outlines the design for water, sanitary wastewater and stormwater facilities.

The format of this report matches that of the servicing study checklist found in Section 4 of the City of Ottawa's Servicing Study Guidelines for Development Applications, November 2009.

The following municipal services are available within Montreal Road, Vanier Parkway, Gardner Street and Palace Street adjacent to the development as recorded from the following as-built drawings received from the City:

Montreal Road

- 300 mm watermain, 1050 mm storm sewer and 600 mm sanitary sewer.

Vanier Parkway

- 600 mm watermain (backbone), 375 mm, 450 mm and 1800 mm storm sewers, no sanitary sewer.

Gardner Street

- 150 mm watermain, 375 mm storm sewer, 250 mm sanitary sewer

Palace Street

- 150 mm watermain, no storm sewer available in the close proximity, 375 mm sanitary sewer

It is proposed that:

- On-site stormwater management system, employing external stormwater cistern will be provided to attenuate flow rates leaving the subjected site. Existing drainage patterns, previously established controlled flow rates and storm sewers will be maintained. Refer to stormwater management report for details.

1.2 LOCATION MAP AND PLAN

The proposed three high rise and one mid rise buildings are located at 112 Montreal Road, in the City of Ottawa at the location shown in Figure 1-1 below.

Figure 1-1 Site Location

1.3 HIGHER LEVEL STUDIES

The review for servicing has been undertaken in conformance with, and utilizing information from, the following documents:

- Ottawa Sewer Design Guidelines, Second Edition, Document SDG002, October 2012, City of Ottawa including all amendments issued as part of Technical Bulletins.

- Ottawa Design Guidelines – Water Distribution, July 2010 (WDG001), including all amendments issued as part of Technical Bulletins.

- Stormwater Management Planning and Design Manual, Ontario Ministry of the Environment and Climate Change, March 2003 (SMPDM).

- Design Guidelines for Drinking-Water Systems, Ontario Ministry of the Environment and Climate Change, 2008 (GDWS).

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

1.4 AVAILABLE EXISTING AND PROPOSED INFRASTRUCTURE

As described above, all municipal mains (sanitary, storm and watermain) are available and located along Montreal Road. A new sanitary service will be connected to Palace Street. A new watermain looping for redundancy will be connecting the existing watermain along Montreal Road and Palace Street. Two new water services isolated by a valve will be connected to this watermain looping. One storm sewer will be connected to the 1050mm existing storm sewer along Montreal Road. Quantity control is required to restrict the discharge leaving the development area; thus the on-site storm runoff will be captured by the proposed roof drains and deck drains. The runoff from the roof will be controlled by the designed roof drains and roof storage will be provided; runoff from the rest of the site will be captured by the proposed deck drains, street catchbasins and landscape drains and will be directed to the external cistern located on the southwest of the building next to the west property line.

1.5 GEOTECHNICAL SUTDY

Exp services Inc. completed a preliminary geotechnical investigation report of the subject property. Based on the report, bedrock was encountered at depths ranging from 5.6 m to 8.1 m below the ground surface. With this proximity of rock from the surface, the location and depth of services may not require any removal of bedrock and its recommendations have been taken into account in developing the engineering specifications.

1.6 CONCEPT LEVEL MASTER GRADING PLAN

A detailed grading plan for the development site has been developed, matching the existing overland flow pattern of directing overflow drainage to Montreal Road. The site topographic survey, included in Appendix A, provides evidence of direction of overland flow of the site from south east to north west.

Grading will employ terraced slopes of 3H:1V to provide transitions from the new work areas to existing grades. No changes will be made to grades at the property perimeter. Regrade is required for the existing ditch running along the Vanier Parkway ROW east to the site.

2 WATER DISTRIBUTION

2.1 CONSISTENCY WITH MASTER SERVICING STUDY AND AVAILABILITY OF PUBLIC INFRASTRUCTURE

The subject property lies within the City of Ottawa's 1E pressure zone. The proposed building will be serviced by two 200mm diameter service laterals from the new 200 mm diameter redundancy looping watermain connecting the existing 300 mm and 150 mm diameter municipal mains located on Montreal Road and Palace Street. Based on our analysis, the entire property can be serviced off Montreal Road municipal main. However, to avoid vulnerability in the system or in the event of Montreal Road closure due to the re-development, as advised by the City, the proposed development will also be serviced by additional single 200 mm diameter watermain from the existing 150 mm diameter municipal main located on Palace Street. The proposed 200 mm diameter watermain will be looped adjacent to the west property line connecting to Montreal Road and Palace Street. The proposed buildings will be fully sprinklered and fire protection will be provided with the fire department Siamese connection within 45 m of the proposed private fire hydrant located on the north side of Tower A close to Montreal Road. The Siamese connections are located immediately across the proposed private fire hyrant as shown on the site plan, as well as, on all the engineering plans.

No changes are required to the existing City water distribution system to allow servicing for this property.

2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

Boundary conditions have been provided by the City of Ottawa at the connection along the Montreal Road 305mm watermain and Palace Street 155mm watermain. Tower B1 has the maximum fire flow of 100 l/s (6,000 l/min) which was estimated by FUS method.

Table 2-1: Boundary Conditions (City of Ottawa)

SCENARIO	@ Montreal Road connection	@ Palace Street connection
Basic Day (MAX HGL)	118.2m	118.2m
Peak Hour (MIN HGL)	107.5m	106.5m
Max Day + Fire Flow @20psi	110.5m	85L/s

2.3 CONFIRMATION OF ADEQUATE DOMESTIC SUPPLY AND PRESSURE

Water demands are based on Table 4.2 of the Ottawa Design Guidelines – Water Distribution. As previously noted, the development is considered as residential development, consisting of 1-bedroom and 2-bedroom units. A water demand calculation sheet is included in Appendix B, and the total water demands are summarized as follows:

	WSP (2018 Bulletin)			
	Tower A	Tower B1	Tower B2	Tower B3
Average Day	0.19 l/s	2.72 l/s	1.86 l/s	0.83 l/s
Maximum Day	0.47 l/s	6.81 l/s	4.66 l/s	2.09 l/s
Peak Hour	1.04 l/s	14.98 l/s	10.24 l/s	4.59 l/s

The 2010 City of Ottawa Water Distribution Guidelines stated that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 552 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in the guidelines are as follows:

Minimum Pressure — Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)

Fire Flow — During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.

Maximum Pressure — Maximum pressure at any point the distribution system shall not exceed 689 kPa (100 psi). In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls may be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

A water model software, WaterGEMS was used to perform the water distribution analyze for the proposed development including proposed towers and future towers. The minimum water pressure inside the building at the connection is determined with the minimum HGL condition, resulting in a pressure of 483 kPa for Building which exceeds the minimum requirement of 276 kPa per the guidelines. Refer to Appendix C for detail water distribution analyze output.

Table 2-2: Summary of the minimum water pressure under peak hour scenario

Peak Hour – Junction	
ID	Pressure (kPa)
J-01	488
J-02	485
J-03	484
J-04	480
J-05	484
J-06	488

2.4 CONFIRMATION OF ADEQUATE FIRE FLOW PROTECTION

The fire flow rate has been calculated using the Fire Underwriters Survey (FUS) method. The method takes into account the type of building construction, the building occupancy, the use of sprinklers and the exposures to adjacent structures. Assuming noncombustible construction with fully sprinkler system, the fire flow demand of 5,000 l/min (83 l/s) for towers

A and 6,000 l/min (100 l/s) for tower B1, and 6,000 l/min (100 l/s) for tower B2 and 5,000 l/min (83 l/s) for tower B3 have also been calculated. Copy of the FUS calculations are included in Appendix B.

The maximum fire demand of 6,000 l/min can be delivered through two fire hydrants either from Montreal Road, Palace Street or the on site private fire hydrants. One public fire hydrant is located north of Tower A on Montreal Road and is within 45m of the FDC and can provide up to 5700 L/min. And there is an on site private fire hydrant which is within 100m from the FDC and can provide up to 3800 L/min.

The proposed three high rise towers and one mid rise tower on site will be serviced by the 203 mm water lines off the 305 mm public watermain from Montreal Road and 150 mm public watermain from Palace Street. Two water service stubs will be provided for building connections along the stretch. The proposed towers will have fully sprinklered system and fire protection will be provided with the fire department Siamese connection within 45 m of the private and existing municipal fire hydrants. The Siamese connection will be connected internally for future tower B2 and B3 which is located across the west access road, 45 m to the private fire hydrant, excluding Tower A and B1, the Siamese connection for Tower A and B1 will be on its own, and is within 45 m to the existing fire hydrants on Montreal Road.

The boundary condition for Maximum Day and Fire Flow results the available fire flows of 184.67 l/s, 174.79 l/s and 168.00 l/s at J-02, J-03 and J-04. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As the available demand fire flow is achieved, the fire flow requirement is exceeded.

Table 2-3: Summary of the available fire flow under Max Day + Fire scenario

Max Day + Fire	
ID	Available Fire Flow (l/s)
J-02	184.67
J-03	174.79
J04	168.00

2.5 CHECK OF HIGH PRESSURE

High pressure is a concern. The maximum water pressure inside the building at the connection is determined with the maximum HGL condition, resulting in a pressure of 603 kPa which is more than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure control is required for this building.

2.6 RELIABILITY REQUIREMENTS

Two shut off valves are provided for this site, one is located on the north boundary close to Montreal Road, the other one is located on the south west corner of the site, close to Palace Street. And one shut off valve is introduced along the 305mm watermain along Montreal Road, and one for the 150mm watermain along Palace Street for future maintenance or emergency purpose. Water can be supplied to the building from both end of the Montreal Road and Palace Street and which they can be isolated for future emergency circumstance.

3 WASTEWATER DISPOSAL

3.1 DESIGN CRITERIA

In accordance with the City of Ottawa's Sewer Design Guidelines, the following design criteria have been utilized in order to predict wastewater flows generated by the subject site and complete the sewer design;

- Minimum Velocity 0.6 m/s
- Maximum Velocity 3.0 m/s
- Manning Roughness Coefficient 0.013
- Total est. hectares residential use 1.236
- Average sanitary flow for residential use 280 l/c/d
- Infiltration Allowance (Total) 0.33 l/ha/s
- Minimum Sewer Slopes – 200 mm diameter 0.32%

The area of 1.22 ha represents the lot area of the new residential development phase 1 and immediate surrounding area to the sides of the new buildings. This is the sanitary collection area that is being considered to contribute to the existing 600mm sanitary sewer along Montreal Road.

3.2 DESCRIPTION OF EXISTING SANITARY SEWER

The outlet sanitary sewer for this development is the existing 600 mm diameter sewer on Montreal Road. This private sewer will outlet to a 600 mm diameter sanitary trunk sewer along Montreal Road, then discharge to municipal wastewater treatment facility.

3.3 CALCULATIONS FOR NEW SANITARY SEWER

A sanitary sewer design sheet is provided for the proposed development. See Appendix C for details.

3.4 VERIFICATION OF AVAILABLE CAPACITY IN DOWNSTREAM SEWER

The capacity of the downstream 600 mm diameter sewer at 0.12% slope is 209.12 l/s, which is adequate for the flow assumptions from the proposed development. The proposed site including the future phase will generate 17.67 l/s. This existing downstream sewer has already serviced the current site and the adjacent properties. The existing 600 mm sanitary sewer should have enough capacity to convey the peak flow of 17.67 l/s from the proposed development site. In addition, correspondence with the City of Ottawa staff did not identify any capacity issues with existing municipal sewers on Montreal Road.

4 SITE STORM SERVICING

4.1 EXISTING CONDITION

The subject site is located at the southwest intersection of Montreal Road and Vanier Parkway, currently is dominated by an asphalt parking lot consists with multiple one to two storeys buildings. The subject site is serviced with a series of storm sewers which collect runoff from the various buildings and significant parking lots. Most runoff from the subject site is ultimately directed to the 1050 mm diameter storm sewers along Montreal Road. In excess of the minor system capacity, the storm runoff will flow overland to Montreal Road right of way.

4.2 DRAINAGE DRAWING

Drawings C03 show the receiving storm sewer and site storm sewer network. Drawings C02 provide proposed grading and drainage, and include existing grading information. Drawing C04 provides a post-construction drainage sub-area plan. Site sub-area information is provided in Appendix D.

4.3 WATER QUANTITY CONTROL OBJECTIVE

Refer to the Stormwater Management Report for the water quantity objective for the site.

4.4 WATER QUALITY CONTROL OBJECTIVE

Refer to the Stormwater Management Report for the water quality objective for the site.

4.5 DESIGN CRITERIA

The stormwater system was designed following the principles of dual drainage, making accommodation for both major and minor flow. Refer to the Stormwater Management Report for further details.

4.6 PROPOSED MINOR SYSTEM

The proposed development will be serviced by 375 mm storm service connection off 1050 mm storm sewer located on Montreal Road. As described in the storm water management report, runoff from the site will be collected by deck drains, roof drains, surface catchbasins and trench drain that will be directed to the underground cistern located on the south west of the site outside of the building footprint. The outlet pipe from the cistern will be equipped with an inlet restrictor to restrict post development flows to pre-development levels. The subject development site has been designed to accommodate the allowable release rate of 106 L/s leaving the site with 98 l/s from the cistern and 8.0 l/s from the roof and uncontrolled areas.

Perimeter foundation drainage from the proposed development will discharge into the sump pit inside the building and eventually outlet to the private 375 mm storm sewer via a forcemain on the west side of the site. The forcemain will be designed and provided by the mechanical engineer.

4.7 STORMWATER MANAGEMENT

Refer to Stormwater Management report for details.

5 SEDIMENT AND EROSION CONTROL

5.1 GENERAL

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction. Silt fences will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fences will remain in place until the working areas have been stabilized or re-vegetated. Catch basins and manholes will have filter fabric installed under the grate during construction to protect from silt entering the storm sewer system. A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. Recommendations to the contractor will be included in the erosion and sediment control plan C05 and are summarized below:

During all construction activities, erosion and sedimentation shall be controlled by the following techniques:

Prior to start of construction:

- Install silt fence along the perimeter of the property line.
- Install filter fabric or silt sack filters in all the catchbasins and manholes that exist within the vicinity of the site.

During construction:

- Minimize the extent of disturbed areas and the duration of exposure and impacts to existing grading.
- Perimeter vegetation to remain in place until permanent storm water management is in place otherwise, immediately install silt fence when the existing site is disturbed at the perimeter.
- Protect disturbed areas from overland flow by providing temporary swales to the satisfaction of the field engineer. Tie-in temporary swale to existing catchbasins as required.
- Provide temporary cover such as seeding or mulching if disturbed area will not be rehabilitated within 30 days.
- Inspect silt fences, filter fabric filters and catch basin sumps weekly and within 24 hours after a storm event. Clean and repair when necessary.
- Drawing to be reviewed and revised as required during construction.
- Erosion control fencing to be also installed around the base of all stockpiles.
- Do not locate topsoil piles and excavation material closer than 2.5m from any paved surface, or one which is to be paved before the pile is removed. All topsoil piles are to be seeded if they are to remain on site long enough for seeds to grow (longer than 30 days).
- Control wind-blown dust off site by seeding topsoil piles and other areas temporarily (provide watering as required and to the satisfaction of the engineer).
- No alternate methods of erosion protection shall be permitted unless approved by the field engineer.
- City roadway and sidewalk to be cleaned of all sediment from vehicular tracking as required.
- Provide gravel entrance (mud mat) wherever equipment leaves the site to provide mud tracking onto paved surfaces.

- During wet conditions, tires of all vehicles/equipment leaving the site are to be scrapped.
- Any mud/material tracked onto the road shall be removed immediately by hand or rubber tire loader.
- Take all necessary steps to prevent building material, construction debris or waste being spilled or tracked onto abutting properties or public streets during construction and proceed immediately to clean up any areas so affected.
- All erosion control structure to remain in place until all disturbed ground surfaces have been stabilized either by paving or restoration of vegetative ground cover.
- During the course of construction, if the engineer believes that additional prevention methods are required to control erosion and sedimentation, the contractor will install additional silt fences or other methods as required to the satisfaction of the engineer.
- The contractor shall implement best management practices, to provide for protection of the area drainage system and the receiving watercourse, during construction activities. The contractor acknowledges that failure to implement appropriate erosion and sediment control measures may be subject to penalties imposed by any applicable regulatory agency.

6 APPROVAL AND PERMIT REQUIREMENTS

6.1 GENERAL

The proposed development is subject to site plan approval and building permit approval.

No approvals related to municipal drains are required.

No permits or approvals are anticipated to be required from the Ontario Ministry of Transportation, National Capital Commission, Parks Canada, Public Works and Government Services Canada, or any other provincial or federal regulatory agency.

7 CONCLUSION CHECKLIST

7.1 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the proposed development can meet all provided servicing constraints and associated requirements. It is recommended that this report be submitted to the City of Ottawa in support of the application for SPA approval.

7.2 COMMENTS RECEIVED FROM REVIEW AGENCIES

This is the second submission, city comments for the initial review have been addressed.

APPENDIX

A

- TOPOGRAPHIC SURVEY PLAN
- PRECONSULTATION MEETING MINUTE

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

LEGEND

■	– SURVEY MONUMENT FOUND
SIB	– STANDARD IRON BAR
SSIB	– SHORT STANDARD IRON BAR
IB	– IRON BAR
MN&W	– MAGNETIC NAIL & WASHER
ø	– ROUND
(P)	– PLAN 5R–6112
(P1)	– PLAN 5R–258
(M)	– MEASURED
(S)	– SET
(857)	– FAIRHALL, MOFFATT & WOODLAND LIMITED, O.L.S.
(CITY)	– CITY OF OTTAWA
(SU)	– SOURCE UNKNOWN
(WIT)	– WITNESS
PIN	– PROPERTY IDENTIFIER NUMBER
DIA.	– DIAMETER
INV.	– INVERT
BLDG	– BUILDING
E	– EAST
W	– WEST
N	– NORTH
▲	– PROJECT CONTROL MONUMENT
P	– PILLAR
CB	– CATCH BASIN
MH	– MANHOLE
LS	– LAMP STANDARD
UP	– UTILITY POLE
FH	– FIRE HYDRANT
WV	– WATER VALVE
BH	– BOREHOLE
BP	– BELL PEDESTAL
JB	– JUNCTION BOX
FP	– FLAG POLE
	– GUY WIRE AND ANCHOR
	– BOLLARD
	– SIGN
	– CONIFEROUS TREE
	– DECIDUOUS TREE
	– SHRUB
	– HANDICAP
	– NO PARKING
—W—	– WATERMAIN
— · —	– OVERHEAD UTILITY WIRES
—UH—	– UNDERGROUND HYDRO
—UB—	– UNDERGROUND BELL
—G—	– GAS MAIN
—ST—	– STORM SEWER
—S—	– SANITARY SEWER
—R—	– ROGERS CABLE
═══	– CURB

INVERT TABLE

NUMBER	ELEVATION	INVERTS
MH#1	56.52	53.86 North
		53.89 South
MH#2	56.37	54.24 North
		54.44 South
		54.34 South
MH#3	56.06	53.42 North
		Full of Water
MH#4	56.11	53.69 East
		53.65 North
CB#5	56.00	Invert Inaccessible
CB#6	56.11	Northeast Inaccessible
		55.01 Southeast
MH#7	56.22	West Inaccessible
		54.05 East
CB#8	55.80	54.86 North
		54.80 West
CB#9	55.79	Inaccessible
CB#10	55.82	Inaccessible

NUMBER	ELEVATION	INVERTS
CB#11	56.21	55.55 Northwest
		Full of Debris
CB#12	56.71	55.40 South
CB#13	56.73	55.74 East
		Full of Debris & Water
MH#14	56.81	55.41 North
		55.38 South
CB#15	56.90	Inaccessible
MH#16	57.45	55.13 North
		55.12 South
CB#17	57.31	55.52 Inv.
		55.87 West
MH#18	56.70	54.07 North
		54.06 South
MH#19	56.50	53.89 North
		53.90 South
CB#20	56.33	55.52 West

TOPOGRAPHIC SURVEY OF
LOT 5 AND PART OF LOTS 6 AND 7 BLOCK 2 REGISTERED PLAN 29 AND LOT 88 AND PART OF LOTS 40 & 41 REGISTERED PLAN 49 CITY OF OTTAWA

SCALE 1 : 250

0 5 10 20 25 metres

FAIRHALL, MOFFATT & WOODLAND LIMITED
ONTARIO LAND SURVEYORS

ELEVATION NOTES

1. ELEVATIONS SHOWN HEREON ARE REFERRED TO GEODETIC DATUM.
2. ELEVATIONS FOR MANHOLE COVERS AND CATCH BASINS HAVE TO BE INDEPENDENTLY CONFIRMED BEFORE THEY CAN BE ACCEPTED FOR FINAL DESIGN OR CONSTRUCTION PURPOSES.
3. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE JOB BENCHMARKS HAVE NOT BEEN ALTERED OR DISTURBED AND THAT THEIR RELATIVE ELEVATION AND DESCRIPTION AGREE WITH THE INFORMATION SHOWN ON THIS DRAWING.

UTILITY NOTES

1. THIS DRAWING CANNOT BE ACCEPTED AS ACKNOWLEDGING ALL OF THE UNDERGROUND UTILITIES AND IT WILL BE THE RESPONSIBILITY OF THE USER TO CONTACT THE RESPECTIVE UTILITY AUTHORITIES FOR CONFIRMATION OR LOCATION.
2. UNDERGROUND UTILITIES, AS REPORTED ON THIS DRAWING, ARE NOT BASED ON AN ACTUAL 'FIELD LOCATE' BY THE RESPECTIVE UTILITY AGENCIES BUT HAVE BEEN COMPILED FROM DATA OBTAINED FROM THE FOLLOWING SOURCE:
   a) CITY OF OTTAWA PUBLIC UTILITIES REGISTRY
3. BEFORE ANY WORK INVOLVING PROBING, EXCAVATING, ETC., A FIELD LOCATION OF UNDERGROUND PLANT BY THE PERTINENT UTILITY AUTHORITY IS MANDATORY.

NOTES

1. BEARINGS ARE ASTRONOMIC AND ARE DERIVED FROM THE WESTERLY LIMIT OF PART 1, PLAN 5R–6112 SHOWN AS HAVING A BEARING OF N 28°27'30" W.
2. REVISION: JULY 16, 2014 – ADDED UTILITIES ALONG VANIER PARKWAY AND INTERSECTION OF VANIER PARKWAY AND MONTREAL ROAD.

THIS IS NOT A VALID COPY UNLESS EMBOSSED WITH SEAL

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT, THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON JULY 12, 2014.

DATE

JOHN H. GUTRI
ONTARIO LAND SURVEYOR

Fairhall Moffatt & Woodland LIMITED
ONTARIO LAND SURVEYORS
OTTAWA
Surveying and Land Information Services
100–600 TERRY FOX DRIVE, KANATA, ONTARIO K2L 4B6
TEL: (613) 591–2580 FAX: (613) 591–1495
www.fmw.on.ca

JOB No. T 2 5 6 0 0
E 370053, N 5032955
REFERENCE No. 21(a)–49, 15(a)–29
S:\JOBS\T25600\DWG 2014–07–17
TP256T.DWG (nj)

Pre-Application Consultation Meeting Notes

Property Address: 112 Montreal Road
PC2022-0151
June 22, 2022; 1:30 PM – 2:30 PM - Microsoft Teams

Attendees:

City of Ottawa:

Nader Kadri – *File Lead, Planner II*
Steve Gauthier – *Previous Lead / Parks Planner*
Mackenzie Kimm – *Heritage Planner*
Christopher Moise – *Urban Design*
Wally Dubyk – *Transportation PM*
Evan Saunders – *Student Planner*

Applicants:

Scott Alain – *Fotenn Consultants Inc.*
Miguel Tremblay – *Fotenn Consultants Inc.*
Lalit Agarwal - *AGCO*
Roderick Lahey – *Architect*
Ashwani Kumar – *Designer*
Dave Renfroe - *PM*

Community Representatives:

Chris Greenshields – *Interim President, DCA*
Diane Erwin – *DCA*
Lauren Touchant – *Previous President, DCA*

Regrets:

Shawn Wessel – *Infrastructure PM, City of Ottawa*

Subject: 224 Preston Street

Meeting notes:

Opening & attendee introduction
- Introduction of meeting attendees

Overview of Proposal

- Site Plan Control Application
- Near the intersection of the Vanier Parkway and Montreal Road
- TM Zoning

- 8 Storey Along Montreal Road (Phase1)
- Towers scaled towards Vanier (Phase2)
- Phased site plan approach

Preliminary comments and questions from staff and agencies, including follow-up actions:

Planning – Nader Kadri / Steve Gauthier (previous File Lead)

- Coming at the Site Plan stage so I have fewer comments from a planning perspective than I typically would.
- Questions related to timing around phasing? Please provide a phasing plan with your submission showcasing interim and ultimate build outs as there are several years between the various phases.
- Recent zoning approval with very detailed Section 37 requirements so looking to ensure that components listed are secured through the Site Plan process.
- Concerns around changes to site access as it relates to public realm benefits including POPS space. Please identify the proposed POPS areas on the site plan with the revised scheme with your formal submission.
- Road from Vanier to Palace – although it's a private connection, it should look and feel like a public connection and improve access to the site and into the community. Explore the potential for a woonerf style connection similar to the River City example in Toronto.
- Appreciate that there is a healthy unit mix with the majority of units being 2-3 bedroom units.
- Can you highlight project sustainability ambitions? Will the project be LEED certified? Please ensure that this information is detailed in your submission materials.
- Design excellence is key, and I appreciate some of the efforts made on the podiums and lower-scale buildings to fit with the surrounding context. Ground floor animation is important on all four towers. Please ensure that this objective is prioritized relative to all four sides of each building with your formal submission.
- Given that the project will include some of the tallest buildings in the area, tower expression for the two tallest buildings is important. Please provide skyline views with submission if possible. Perhaps explore a different architectural language for the two taller buildings.
- Materiality – please provide details on building materials with submission.
- Amenity – please ensure that there are amenity areas that are supporting families as well as pets. Consider play areas, and pet wash and pet relief areas.
- Bicycle parking – happy to see that you are in excess of the by-law requirement, however, having lived in an urban context for many years, I also understand the importance of easy access to and from the bicycle storage area. Would like to see a consolidated room with easy access to and from the ground level to encourage residents to use some of the proposed infrastructure along Vanier Parkway.
- Landscaped areas/POPS spaces above parking garage – keen to see Landscape Plan for these areas – please ensure that there is sufficient soil volume in key areas to support the growth of mature vegetation including trees where possible.
- Site lighting – will be important to understand site lighting at grade-as well as potential opportunities for tower lighting to bolster the projects skyline presence? Maybe something associated with the building top?
- Affordable housing – I know this was discussed at a high level through the rezoning efforts but has the applicant given any thought to it through the SPA process. Please provide details through your formal submission.
- Has there been any thought given towards public art? Please detail through your formal submission.
- Waste management – balancing the functionality and street level animation

Parks – Steve Gauthier

- Basketball court – parkland dedication – short of what we are entitled. We would like a combo of Park and CIL
- With big units, we want an actual park/POPS to support families, not just decorative green spaces/programmable spaces.

Urban Design – Christopher Moise

- This proposal runs along one of the City's Design Priority Areas and must attend the City's UDRP. We recommend the proposal attend an Informal visit (prior to a full submission and is not a public meeting), with the City's UDRP to further discuss and evaluate various scenarios of development for the whole site;
- We appreciate that the project has recently been through an OPA and re-zoning and we have the following comments on the site plan application drawings presented:
    - **Tower design**: We encourage the differentiation of the tallest towers and special consideration of the 37 storey tower with higher level design resolution as it will be a highly visible tower in that location for decades to come;
    - **Central courtyards**: The central courtyards were certainly a contributing factor to achieving the re-zoning and OPA, this proposal needs to offer a suitable way to rectify this change with a higher degree of landscaping treatment. We have concerns about the central courtyard being converted from a pedestrian only space to a vehicle oriented space. We recommend alternative configurations be sought to prevent this from happening completely. If this must happen we encourage the applicant to strive for ways to provide a much better balance;

- A scoped Design Brief is a required submittal (and separate from any UDRP submission) for all Site Plan/Re-zoning applications and can be combined with the Planning Rationale. Please see the Design Brief Terms of Reference provided and consult the City's website for details regarding the UDRP schedule.
    - ***Note. The Design Brief submittal should have a section which addresses these pre-consultation comments;***

Infrastructure – Shawn Wessel

See attached.

Transportation – Wally Dubyk

- Transit priority along Montreal Road is targeted to start this season.
- Watermain renewal along Montreal Road is targeted to start this season.
- Road resurfacing along Montreal Road is targeted to start this season.
- Work by PWES along Vanier Pkwy is targeted to start this season.
- Road resurfacing along Vanier Pkwy is targeted to start this season.
- TIA for Phase 1 would be required.

- The Site Plan for Phase 1 is to identify the access and internal driveways.
- Update to the TIA Guideline Forecasting Report
    - We would like to inform all consultants making TIA Forecasting Report submissions to the City of Ottawa as part of a development application, that all new applications (pre-consultation meetings dated after March 3, 2021) must use the NEW TRANS Trip Generation Manual when forecasting site generated trips using this manual (see attached).
    - The TRANS committee (a joint transportation planning committee serving the National Capital region) finalized a new manual early in March 2021. The document will be available in French and English on the TRANS website http://www.ncr-trans-rcn.ca/surveys/2009-trip-generation.
    - The new manual has simplified the conversion from vehicle trips to person trips and then trips by modal share. The City has also developed a spreadsheet that will apply the factors of location and building type to quickly provide the existing trip numbers by mode share.
- Montreal Road is designated as an Arterial road within the City's Official Plan with a ROW protection of 23.0 metres. The ROW limits are to be shown on all the drawings and the offset distance (11.5 metres) is to be dimensioned from the existing centerline of pavement. The Certified Ontario Land Surveyor is to confirm the ROW protected limits and any portion that may fall within the private property to be conveyed to the City.
- ROW interpretation – Land for a road widening will be taken equally from both sides of a road, measured from the centreline in existence at the time of the widening if required by the City. The centreline is a line running down the middle of a road surface, equidistant from both edges of the pavement. In determining the centreline, paved shoulders, bus lay-bys, auxiliary lanes, turning lanes and other special circumstances are not included in the road surface.
- The internal driveways are to be 6.0 metres wide minimum to accommodate Fire Trucks.
- The Tactile Walking Surface Indicator (TWSI) should be provided at pedestrian crossings. Under the Integrated Accessibility Standards of the Accessibility for Ontarians with Disabilities Act, 2005, and the City of Ottawa Accessibility Design Standards, TWSI's are required for new construction and the redevelopment of elements in public spaces, such as for exterior paths of travel (e.g. sidewalks and at the top of stairs).
- The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- The Owner acknowledges and agrees that all private accesses to Roads shall comply with the City's Private Approach By-Law being By-Law No. 2003-447 as amended https://ottawa.ca/en/living-ottawa/laws-licences-and-permits/laws/law-z/private-approach-law-no-2003-447 or as approved through the Site Plan control process.
- Relocating an existing roadway curbing by 30 cm will require a RMA report and approval by the delegated authority. Please confirm if you are triggering an RMA.
- Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.

- Signs related to the development site are to be placed in accordance with the applicable sign by-law https://ottawa.ca/en/search?searchfield=sign+by+law. (Permanent Signs on Private Property By-law No. 2016-326). (Temporary Signs on Private Property By-law No. 2004-239). (Signs on City Roads By-law No. 2003-520). An Encroachment Agreement will be required for any signage on the road allowance.
- The Owner shall be required to enter into maintenance and liability agreement for all pavers, plant and landscaping material placed in the City right-of-way and the Owner shall assume all maintenance and replacement responsibilities in perpetuity.
- Should the property Owner wish to use a portion of the City's road allowance for construction staging, prior to obtaining a building permit, the property Owner must obtain an approved Traffic Management Plan from the Manager, Traffic Management, Transportation Services Department. The city has the right for any reason to deny use of the Road Allowance and to amend the approved Traffic Management Plan as required.
- Further comments will be provided during the Site Plan Application review.

Community Association – Chris Greenshields

- Worried about road access. Changed from what we were assured in previous meetings. Use of Palace. Head of traffic services, previously vetoed use of Palace. Entrance onto Vanier would be a part of the project.
    - Proposal for 200 unit building at end of palace. Palace is a narrow ROW with no sidewalks, the street cannot support this volume.
- Loss of soft landscaping. Although it was a condition of Section 37 agreement, it has been changed. There is any existing basketball court in the area, we are not looking for another one, looking for greenspace.
- Lack of trees on the site.
- How does it integrate with the community? Arita house will be looking for greenspace. POPS was part of this Section 37.

Community Association – Diane Erwin

- Required to look at POPS – area north and east of B1 is passive space and would be a security concern. Entire development needs to be looked at from security perspective. Site lighting etc.
- Clarification on Palace Street as an egress across the phasing timelines.

<u>Conclusion and Next Steps</u>

- Meeting meetings and comments will be circulated.
- Put together a set of meeting minutes and formal submission requirements (checklist)
- Leading up to a formal submission – if you want to run through some changes, the city staff would be happy to hear – reach out.
- If you have questions reach out to Nader Kadri.

Saunders, Evan

From: Wessel, Shawn
Sent: July 15, 2022 11:35 AM
To: Kadri, Nader
Cc: Saunders, Evan
Subject: RE: PC2022-0151 - 112 Montreal Road SPA - Pre-Application Consultation Meeting

Hi Nader/Evan

You will need a concept and detailed Master Servicing Plan and Site Servicing and SWM Brief for entire site, including all phased lands.
Same with Grading, which should also be discussed in brief, to be sure site can be serviced in a phased process as well you want to see a plan for Existing conditions, Pre and Post Drainage Plans showing minor and major flows. Is this going under subdivision process, I would assume it is, but maybe not.

The applicant must demonstrate that the phased development (phase I) can meet all the servicing requirements and be tied into the remaining phased lands, without issue. Please also consider the applicant severing the lots for each building and how that would work, if they attempt to do that in the future and post approval. What issues would they have, etc.?

Make sure all private WMs show thrust blocks at any proposed FHs or at any bend in pipe, on the servicing drawing. You will need a water meter chamber between services if the WM in the ROW that they are connecting to is 400 mm or greater in size. Redundant water servicing (twinning of services) for domestic and fire flow, when demand for site is greater than 50 m3/s (0.56 L/s).

I am assuming that they received boundary conditions for Palace Street, for their second connection. Montreal Rd is a new WM, built this or last year. Anyway, check with Shohan shohan.ahmad@ottawa.ca or Simone Burke simone.bourke@ottawa.ca . Applicant should have provided you with data for Water Resources to check conditions.

I remember that they were going to attempt to tie a storm lateral into the Vanier Parkway system, but don't see that on their concept drawing. Is this still being proposed? That would be for tower B2 and B3, if I recall. It appears that they are funneling all roof water from three roofs to cistern and then a separate (from foundation drains) to STM main in ROW. That is fine. Should check with Eric Tousignant (Water Resources to be sure there is capacity, I think it is ok, but check anyway.

Traffic Noise study will need to be for each phased site and include comments regarding stationary noise. Stationary noise can be for nearby drive thru (Tim Hortons), Gas stations, parking lots and for mechanical units on each building, which may require dampeners in the mechanical design. The noise engineer will need to speak to stationary noise, at min., in their report. If they say it will be done during mech design, you may need to condition this, when the phase is approved, using:

Stationary Noise Study

The Owner covenants and agrees that is shall retain the services of an professional engineer licensed in the Province of Ontario to provide a Stationary Noise Study (the "Report") for review to Development Review (PRED-DR), prior to issuance of a building permit, further to City comments and requirements. The Owner further acknowledge and agrees that is shall provide the General Manager, Planning Real Estate and Economic Development Department (PRED) with confirmation issued by the professional engineer that the Owner has complied with all recommendations and provisions of the Report, prior to building occupancy, which confirmation shall be to the satisfaction of the General Manager, Planning Infrastructure and Economic Development Department.

Any drive thru, parking lots, gas stations will need a stationary noise report or be spoken to (with criteria, modeling data and recommendations for mitigation) within Traffic Noise report.

If any mitigation is required for amenitites and it makes the ammentity space unusable (blocked visual.sceenery due to noise walls greater than 1.2 m, then inform the planner. They may have to change location, which means a new study or a Memo, at min. with calculations and modeling data. If you don't know how to review noise, wind or environmental studies, let me know and I can help.

If any underground storage is being used, then use this condition and revise the name of the product, accordingly. (could be Brentwood, Triton, StormTech, etc.):

Brentwood Stormtank

The Owner agrees to install and maintain in good working order, the required stormtank as recommended in the approved Functional Servicing and Stormwater Management Report referenced in Schedule "E" hereto. The Owner acknowledges and agrees to assume all maintenance and replacement responsibilities in perpetuity, including inspection and debris build-up removal every twelve (12) months, as identified in the said Report, and to keep all records of inspection and maintenance in perpetuity and make said records available for inspection upon demand by the City.

A cistern is fine, which they will need to identify if it is gravity drained or pumped. If gravity drained, then what is the control at this location? Or is there a control in the system at a MH, prior to discharging into the main in ROW. You will want a roof plan for each building, each SPC for each phase. Roof plans need to show 5 and 100 year ponding contours, scupper and drain locations, if controlled, as well as a table with wier opening, drain type (Watts, Zurn, Etc.) and flow rate (l/s).

I will say that they can use private Storm mains for storage as well (Super Pipe system) and in this, there are no controls or conditions, other then the normal SWM and Eng. conditions. I would then expect an ICD (controls) at a MH prior to discharging into sewer main.

Look at geotech for excavation type. If using rock anchors, piles, hoe ram then you need a Pre and Post Construction Survey:

Pre and Post Construction Surveys

a) The Owner acknowledges and agrees that all shoring/sheet piling/bracing and excavation activities, including hoe ramming (related to Ground Borne Vibration and Noise from Hoe Rams and/'or Rock

Drills), will conform to the requirements of O.Reg.213/91- Construction Projects, Part III – Excavations, O.H.S.A., M.O.L. - Excavation Hazards, O.B.C., City of Ottawa Environmental Noise Control Guidelines and Ottawa Noise By-law No.2017-255, all as amended. Prior to any of the aforementioned activities, pre and post construction surveys shall be prepared, at the Owner's expense, for all buildings, utilities, structure, infrastructure, water plant and facilities within 75 m of location of site, likely to be affected by these activities, in particular, those adjacent to the site location. The standard inspection procedure shall include the provision of an explanatory letter to the owner or occupant and owner with a formal request for permission to carry out an inspection and documentation of existing baseline structural conditions.

b) The Owner acknowledges and agrees to circulate a notification letter to all buildings, utilities, structures, water wells, and facilities likely to be affected by the vibration and noise generated from excavation activities and are within 150 m of the location of site.

c) The pre and post construction survey shall include, as a minimum, the following information:
    i) identification and description of existing differential settlements, including visible cracks in walls, floors, and ceiling, including a diagram, if applicable, room-by-room. All other apparent structural and cosmetic damage or defect must be noted. Defects shall be described, including dimensions, wherever possible; and
    ii) photographs or video as necessary for recording areas of significant concern.

d) The Owner acknowledges and agrees to arrange visits by the structural engineer referred to in paragraph (a) herein every ten (10) working days during excavation and construction, to monitor any change from the baseline established in the above-mentioned pre-construction survey.

The Owner shall provide five full days written notice to the owners and residents captured in the study area, prior to commencing any construction and, if requested, the Owner shall cause its representatives to meet with said owners and residents within the five-day period.

See highlighted text. This is what they need to do, beyond meeting by-laws,etc.

If using blasting, then a blasting condiditon will be required that will include a Pre and Post Blast Survey:

Use of Explosives and Pre-Blast Survey

(a) The Owner acknowledges and agrees that all blasting activities will conform to the City's Standard S.P. No. F-1201 entitled *Use of Explosives*, as amended. Prior to any blasting activities, a pre-blast survey shall be prepared as per S.P. No. F-1201, at the Owner's expense, for all buildings, utilities, structures, water wells and facilities likely to be affected by the blast, in particular, those within seventy-five (75) metres of the location where explosives are to be used. The standard inspection procedure shall include the provision of an explanatory letter to the owner or occupant and owner with a formal request for permission to carry out an inspection (the "Notification Letter").

(b) The Owner acknowledges and agrees that the Notification Letter(s) shall be in compliance with City Standard S.P. No. F-1201 and to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development. Pursuant to City Standard S.P. No. F-1201, the Owner or its agents, contractors and subcontractors shall provide written notice to all owners and tenants of any building and/or facility located within a minimum of one hundred and fifty (150) metres from the blasting location at a minimum of fifteen

(15) business days prior to any blasting. The Owner further acknowledges and agrees that it shall provide a copy of the Notification Letter(s) to the General Manager, Planning, Real Estate and Economic Development prior to any blasting activities.

Pre-Blast Survey

Prior to any blasting activities, the Owner acknowledges and agrees it shall arrange for a pre-blast survey to be carried out in accordance with Ontario Provincial Standard Specification entitled "General Specification for the Uses of Explosives", Section 120.07.03, by a Professional Engineer licensed in the Province of Ontario, which states as follows:

(c) A pre-blast survey shall be prepared for all buildings, utilities, structures, water wells, and facilities likely to be affected by the blast and those within 150 m of the location where explosives are to be used. The standard inspection procedure shall include the provision of an explanatory letter to the owner or occupant and owner with a formal request for permission to carry out an inspection.

(d) The pre-blast survey shall include, as a minimum, the following information:

(i) Type of structure, including type of construction and if possible, the date when built.

(ii) Identification and description of existing differential settlements, including visible cracks in walls, floors, and ceilings, including a diagram, if applicable, room-by-room. All other apparent structural and cosmetic damage or defect shall also be noted. Defects shall be described, including dimensions, wherever possible.

(iii) Digital photographs or digital video or both, as necessary, to record areas of significant concern. Photographs and videos shall be clear and shall accurately represent the condition of the property. Each photograph or video shall be clearly labelled with the location and date taken.

(e) A copy of the pre-blast survey limited to a single residence or property, including copies of any photographs or videos that may form part of the report shall be provided to the owner of that residence or property, upon request.

I don't recall, but if there is a 600+ mm dia. WM (High Pressure / Feeder Main) and within 15m of foundation of any building, vibration monitoring is required. Same for any local WM connection of servicing, occuring within 15m of Feeder Main:

High Pressure Transmission Main

In order to help ensure the integrity of the high-pressure transmission main, located within the Right-of-Way of XXXX Street / Avenue and close the West/East/South/North boundary of the site (### XXXX Street / Avenue,

which carries a significant portion of the entire water supply for the City of Ottawa (this area), the Owner acknowledges and agrees to undertake the following:

1. a site-specific Settlement and Vibration Monitoring Program will be developed and stamped by a professional Engineer in the province of Ontario and will be submitted to the City for their review and approval before the inclusion of the Plan in the contract documents.
2. should monitoring levels of vibration and underground soil movement exceed the maximum limits outline in the submitted/approved plan/report, the owner agrees to cease all construction activities immediately, and will take necessary correction option and at the same time will report to the City immediately and will resubmit a revised work plan to the the City of Ottawa Water Distribution and Asset Management Departments.
3. in the event that the levels of vibration momentarily exceed the maximum limits outlined in the submitted report/plan but the Owner's on-site consultant is of the professional opinion that no danger exists, the Owner may continue to proceed with the work by a different means, consistent with the report, that does not further cause the levels of vibration /settlement to exceed the maximum limits outlined in the report. Priors to so proceeding with the work, the exceedance shall be reported to the Construction Services Branch of the City
4. In the event of any requirement for emergency repairs of this transmission main, the Owner shall reimburse the City for the cost of such repair to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.
5. The City reserves the right to issue a stop work order for the construction in the event of an incident which would adversely affect the City's requirement to provide safe drinking water. This may include but is not limited to, a leak or failure of the high-pressure transmission main and /or a failure at one of the water purification plans. Where the stop work order is for a period of 24 hours or less, the City is not responsible for any delay claim billed by the developer. NO inference of liability is to be taken from these conditions for any period longer than 24 hours.

A certificate of liability insurance shall be submitted to the City wherein the Owner is the named insured and the City of Ottawa is an additional insured. The limits of the policy shall be in the amount of **$25,000,000** and shall be kept in full force and effect for the term of the construction work.

VIBRATION MONITORING

The proposed limits for vibration monitoring are to meet the following criteria:

Scope

The work under this item includes all requirements for continuous vibration monitoring to the City of Ottawa XXXX mm watermain (WM) within the project limits on XXXX Street north/south/east/west of XXXXXXXXX Avenue (as detailed elsewhere in the Contract), during all phases of the work within 15 m of the XXXX mm watermain, including but not limited to, all on-site work activities required for:

1. The installation of protection system prior to utility installation.
2. Earth excavation and backfilling operations for the watermain, sanitary sewer and service installations.
3. Excavation and backfill to construct the roadway and sidewalks.
4. Placement and Compaction of granular materials and asphalt pavement.

Definitions

Vibration Monitoring Specialist Engineer: An Engineer licensed in the Province of Ontario with a minimum of five (5) years' experience in the field of vibration monitoring. The Vibration Monitoring Specialist Engineer shall be retained by

the Contractor to develop the vibration monitoring plan, undertake monitoring as specified herein, ensure general conformance with the contract documents and shall issue certificate(s) of conformance.

Submissions and Design Requirements

All submissions shall bear the signature and seal of the Vibration Monitoring Specialist Engineer.

At least four (4) weeks prior to proceeding with the work, the Contractor shall submit a copy of the vibration monitoring plan to the Contract Administrator. The Contractor shall retain a copy of the vibration monitoring plan at the site during vibration monitoring operations.

The vibration monitoring plan shall satisfy the contract documents and at a minimum, contain the following specific information:

- Qualifications of the Vibration Monitoring Specialist Engineer.
- Proposed instrumentation/equipment and calibrations.
- Proposed location of instruments.
- Proposed method of installation.
- Proposed frequency of readings.
- Proposed schedule for issuing certificates of conformance.
- Proposed monitoring triggers and precautionary actions.
- The proposed monitoring triggers shall specify precautionary action items to be taken by the Contractor at several vibration ranges as the monitored vibration approaches the specified vibration limit, to alert the Contractor that the vibration limit is being approached and to ensure that the vibration limit is not exceeded.

The Contractor shall notify the Contract Administrator in writing that the vibrations measured at the City of Ottawa Watermain has not exceeded the limits specified in the contract, at the intervals below:

1. One-hour interval for activities identified in the Scope of Work

The Contractor shall make all vibration data available to the Contract Administrator and City Project Manager at all times as well as submit three copies of the vibration monitoring results at the end of each day that work is carried out on the activities above requiring vibration monitoring. The Contractor shall submit three copies of the vibration monitoring results during all other work activities requiring vibration monitoring at the end of each week to the Contract Administrator.

Equipment

Vibration monitoring shall be carried out with Instantel MiniMate Plus Series III digital seismographs or an approved equivalent, capable of monitoring on a continuous basis and providing peak levels at regular intervals (no greater than 5 minutes) as well as full waveform data. The vibration monitoring equipment shall be capable of measuring vibration intensities up to 254 mm/s at a frequency response of 2 to 250 Hz in the vertical, transverse and radial directions. The vibration monitors shall be equipped with a real time warning system consisting of either a red flashing light or an air horn to alert when a threshold value has been reached. The vibration monitors shall be capable of withstanding saturated conditions and require watertight connections.

The equipment shall have been calibrated within the last six months prior to the commencement of any operations requiring vibration monitoring. Proof of calibration shall be submitted to the Contract Administrator prior to the commencement of any monitoring operations.

Construction

Installation and Maintenance of Monitoring Equipment

The vibration monitors (seismographs) for the vibration monitoring shall be installed directly on the XXXX mm, as follows:

TABLE 1 – VIBRATION MONITORING LOCATIONS

Watermain & Location Description	Stationing	Maximum Seismograph Spacing	Minimum Number of Seismographs
XXXX mm WM on N/S/W/E side of XXXX Avenue and N/S/W/E side of XXXX Street from XXXX Avenue to XXXX Drive	Example - 3+048; 3+058; 3+068; 3+078; 3+088; 3+098; 3+108; 3+118; 3+128; 5+298 and 5+288	10 m	11

The vibration monitors (seismographs) shall be installed using a hydraulic-vacuum excavator. A hole shall be advanced through the existing asphalt and backfill to the top of the pipe with the hydraulic-vacuum excavator. Control of groundwater inflow may be required. The vibration monitor (seismograph) shall then be lowered into place on top of the watermain and coupled to the substrate, and the hole backfilled with native material to hold the seismograph in place.

Vibration monitoring is required when work is within 15 metres of the areas identified for vibration monitoring. The vibration monitoring program shall be in place a minimum of five (5) days prior to the work commencing in these areas to confirm observed background levels.

The installed instrumentation shall be inspected and serviced on a bimonthly basis, or more frequently if required due to on-site conditions, at all locations where the seismographs are within the fluctuating seasonal groundwater table. For instrumentation buried above the seasonal groundwater fluctuations, inspection and servicing shall be every three months unless on-site conditions require otherwise.

In the event that a sensor is no longer functioning:

1. Immediately notify the Contract Administrator;
2. Stop all construction operations that are within 15 m of the areas identified in Table 1 which are subject to vibration monitoring requirements;
3. Notify the Contractor Administrator when the sensor is put back into operation.

Monitoring

The Contractor shall ensure that the Vibration Monitoring Specialist Engineer is on site monitoring readings for the full duration of all foundation or below grade construction and backfilling operations, and all construction operations above any watermain.

Initial testing shall be carried out at the start of each operation requiring vibration monitoring, as identified in Section 1.0 Scope of Work and Table 1, to determine the dominant frequency of the operation. Instrumentation shall be installed directly on the pipe immediately adjacent to the construction location prior to commencing operations, and analysis shall be carried out by the Vibration Monitoring Specialist Engineer to determine the dominant frequency of the operation as soon as sufficient vibration data has been obtained. If necessary, the Contractor shall alter the procedure for the

construction operation being assessed. The revised plan shall be reviewed, signed and sealed by the Vibration Monitoring Specialist Engineer and submitted to the CA. Subsequent operations shall not be carried out until the Vibration Monitoring Specialist Engineer has confirmed that the dominant frequency is within the limits specified herein and instructed the Contractor to proceed.

The following vibration threshold criteria shall apply:

Element	Frequency (Hz)	Peak Particle Velocity (mm/sec)	Required Action	Description of Event
Structure, Pipelines and all other operations	≤ 40	15 - 20	Warning: investigate activities	Amber warning light illuminated
		≥ 20	Cease all operations and investigate	Red warning light illuminated – vibration is in excess of permitted limit
		< 15	No action required	
Structure, Pipelines and all other operations	≥ 40	40 - 50	Warning: investigate activities	Amber warning light illuminated
		≥ 50	Cease all operations and investigate	Red warning light illuminated – vibration is in excess of permitted limit
		< 40	No action required	

After the initial testing is complete, work shall commence from the location furthest from the monitored utility to assess the vibration levels during the operations specified in Section 1.0 Scope of Work. Analysis shall be carried out by the Vibration Monitoring Specialist to determine the dominant frequency of the operation as soon as sufficient vibration data has been obtained. If necessary, the Contractor shall alter the procedure for the construction operation. The revised procedure shall be reviewed, signed and sealed by the Vibration Monitoring Specialist Engineer and submitted to the CA.

The results shall be submitted to the Contract Administrator after each construction operation requiring vibration monitoring has been completed and at the one-hour intervals during the work items listed in Section 1.0 prior to continuing with subsequent work.
If hoe-ramming is required for rock excavation, the vibration instruments shall be monitored on a continuous basis by the Vibration Monitoring Specialist Engineer.
If the vibration limits are exceeded, the work shall be stopped immediately. If the readings are not within the limits stated above, the Contractor shall alter the procedure for the construction operation until the vibrations are within acceptable levels.

If at any time the vibration limit is exceeded during execution of the operations to which vibration monitoring is required (i.e. those listed in Section 1.0 Scope of Work), the Vibration Monitoring Specialist shall immediately advise the Contractor that the vibration limit has been exceeded. The Contractor shall immediately cease all operations when the vibration limit has been exceeded and shall adjust the method/operation until vibration limits are not exceeded. The testing requirements specified in this special provision shall be repeated to confirm that the vibration limits are not exceeded under execution of the adjusted method/operation. The Contractor shall not be entitled to additional compensation for delays resulting from adjustments to the Contractor's method/operation so that vibration limits are not exceeded. All costs for delays resulting from adjustments to the Contractor's method/operation shall be at no expense to the owner.

You will also need a site lighting certificate and due to size of development, and a photometric plan (plan showing lights and wiring):

Site Lighting Certificate

(a) In addition to the requirements contained in clause 19 of Schedule "C" hereto, the Owner acknowledges and agrees, prior to the issuance of a building permit, to provide the City with a certificate and plan from an acceptable professional engineer, licensed in the Province of Ontario, which certificate shall state that the exterior site lighting has been designed to meet the following criteria:

(i) it must be designed using only fixtures that meet the criteria for full cut-off (sharp cut-off) classification, as recognized by the Illuminating Engineering Society of North America (IESNA or IES);

(ii) and it must result in minimal light spillage onto adjacent properties. As a guideline, 0.5 fc is normally the maximum allowable spillage.

(b) The Owner acknowledges and agrees that, upon completion of the lighting Works and prior to the City releasing any associated securities, the Owner shall provide certification and photometric plan satisfactory to the General Manager, Planning, Infrastructure and Economic Development, from a Professional Engineer, licensed in the Province of Ontario, that the site lighting has been constructed in accordance with the Owner's approved design plan.

If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji
Project Manager - Infrastructure Approvals
Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale
Planning, Real Estate and Economic Development Department | Direction générale de la planification des biens immobiliers et du développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1
(613) 580 2424 Ext. | Poste 33017
Int. Mail Code | Code de Courrier Interne 01-14
shawn.wessel@ottawa.ca

Please be advised that I will be away from the office August 1st - 5th inclusive, returing August 8th.

APPENDIX

B

- CITY CORRESPONDENCE (BOUNDARY CONDITIONS)
- WATER DEMAND AND FIRE FLOW CALCULATION
- WATERGEM RESULTS

Jafferjee, Ishaque

From: Wu, John <John.Wu@ottawa.ca>
Sent: January-27-20 10:54 AM
To: Jafferjee, Ishaque
Subject: RE: 112 Montreal Road Multi Residential Development - Sanitary and Potable Adequacy
Attachments: 112 Montreal Jan 2020.pdf

The following are boundary conditions, HGL, for hydraulic analysis at 112 Montreal Rd (zone 1E) assumed to be connected to the 305mm on Montreal Rd and152mm on Palace (see attached PDF for locations).

	Montreal Road connection	Palace connection
Minimum HGL	107.5m	106.5m
Maximum HGL	118.2m	118.2m
MaxDay + FireFlow (133 L/s)	110.5m	Available flow @20psi = 85 L/s

Note: The maximum pressure is estimated to be more than 80 psi at both connections. A pressure check at completion of construction is recommended to determine if pressure control is required.

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.

John

From: Jafferjee, Ishaque <Ishaque.Jafferjee@wsp.com>
Sent: January 23, 2020 11:30 AM
To: Wu, John <John.Wu@ottawa.ca>
Cc: Yang, Winston <Winston.Yang@wsp.com>
Subject: RE: 112 Montreal Road Multi Residential Development - Sanitary and Potable Adequacy

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.

Hi John,

No problem.

The fire flow calculations were attached in the earlier email. It was a combined pdf with 2 pages. Here it is attached again for your review along with confirmation from the architect regarding construction use.

Ishaque Jafferjee, P.Eng
T +1 613-690-3923

From: Wu, John <John.Wu@ottawa.ca>
Sent: January-23-20 9:58 AM
To: Jafferjee, Ishaque <Ishaque.Jafferjee@wsp.com>
Subject: RE: 112 Montreal Road Multi Residential Development - Sanitary and Potable Adequacy

We only provide watemain boundary conditions, all other will be reviewed and circulated when the application is been submitted.
Please provide the calculation of the Fire Flow.

John

From: Jafferjee, Ishaque <Ishaque.Jafferjee@wsp.com>
Sent: January 23, 2020 9:53 AM
To: Wu, John <John.Wu@ottawa.ca>
Cc: Yang, Winston <Winston.Yang@wsp.com>; David Renfroe <davidrenfroe@outlook.com>; Gauthier, Steve <Steve.Gauthier@ottawa.ca>
Subject: 112 Montreal Road Multi Residential Development - Sanitary and Potable Adequacy

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.

Hi John,

Please see attached the potable and sanitary servicing plan for this proposed development along with domestic & fire demand and sanitary demand calculations. We would like to request **boundary conditions** of the potable distribution network and **capacity** of the downstream sanitary sewer system along Montreal Road.

The demand calculations have been based on the latest City of Ottawa design standards and technical bulletins.

Site Description

- Three high-rise condominium apartment towers with a 3 levels of underground parking below.
- Proposed services for connection:
    - 250mm PVC sanitary (Montreal Road)
    - 200mm PVC watermain (Montreal Road)
    - 150mm PVC watermain (Palace Street)

Water Demand

- Average Day Demand: **3.45 L/s**
- Max Day Demand: **8.62 L/s**
- Peak Hour Demand: **18.96 L/s**
- Fire Demand (max of the three towers): **133 L/s**
- **Max Day + Fire Demand: 141.6 L/s**

Sanitary Demand

- **Peak Design Flow (incl. infiltration): 12.2 L/s**

Should you have any questions please do not hesitate to contact us.

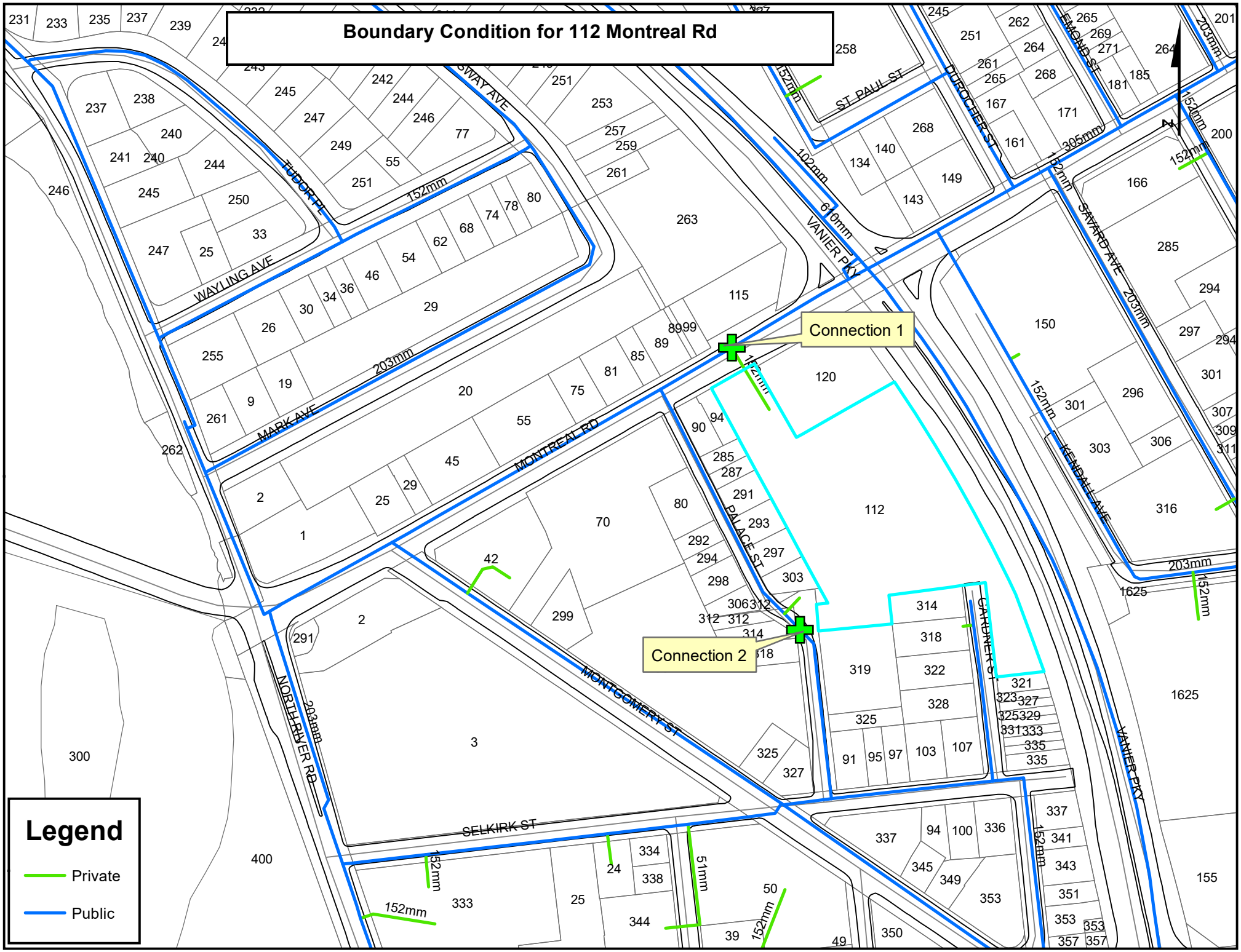
Thank you,

Ishaque Jafferjee, P.Eng
Team Lead
Municipal Infrastructure

T+ 1 613-690-3923
F+ 1 613-829-8299

2611 Queensview Drive, Suite 300
Ottawa, Ontario,
K2B 8K2 Canada

wsp.com


Boundary Condition for 112 Montreal Rd
Connection 1
Connection 2
Legend
Private
Public
MONTREAL RD
VANIER PKY
MARK AVE
WAYLING AVE
TUDOR PL
SWAY AVE
ST PAUL ST
DUROCHER ST
EMOND ST
SAVARD AVE
KENDALL AVE
PALACE ST
MONTGOMERY ST
NORTH RIVER RD
SELKIRK ST
CARDINER ST
152mm
203mm
305mm
610mm
102mm
51mm

Fire Flow Design Sheet (FUS)
112 Montreal Road
City of Ottawa
WSP Project No. 19M-01935-00
Date: 06-Sep-22

Proposed 8-Storey Mixed Use Building A1
Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020

1. An estimate of the Fire Flow required for a given fire area may be estimated by: $F = 220\ C\ \sqrt{A}$

F = required fire flow in litres per minute
C = coefficient related to the type of construction
- 1.5 for **Type V** Wood Frame Construction
- 0.8 for **Type IV-A** Mass Timber Construction
- 0.9 for **Type IV-B** Mass Timber Construction
- 1.0 for **Type IV-C** Mass Timber Construction
- 1.5 for **Type IV-D** Mass Timber Construction
- 1.0 for **Type III** Ordinary Construction
- 0.8 for **Type II** Noncombustible Construction
- 0.6 for **Type I** Fire resistive Construction

A =2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

A = 735 m^2
C = 0.8
F = 4771.5 L/min

rounded off to 5,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 5,000 = 4,250 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -40% x 4,250 = -1,700 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	0%

Side 1	25	10%	north side
Side 2	20	15%	east side
Side 3	20	15%	south side
Side 4	7.5	20%	west side
		60%	(Total shall not exceed 75%)

Increase due to separation 60% x 4,250 = 2,550 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 5,000 L/min (Rounded to nearest 1000 L/min)
or **83 L/sec**
or 1,321 gpm (us)
or 1,100 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

Fire Flow Design Sheet (FUS)
112 Montreal Road
City of Ottawa
WSP Project No. 19M-01935-00
Date: 06-Sep-22

Proposed 37-Storey Residential Building B1
Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020

1. An estimate of the Fire Flow required for a given fire area may be estimated by: $F = 220\ C\ \sqrt{A}$

F = required fire flow in litres per minute
C = coefficient related to the type of construction
- 1.5 for **Type V** Wood Frame Construction
- 0.8 for **Type IV-A** Mass Timber Construction
- 0.9 for **Type IV-B** Mass Timber Construction
- 1.0 for **Type IV-C** Mass Timber Construction
- 1.5 for **Type IV-D** Mass Timber Construction
- 1.0 for **Type III** Ordinary Construction
- 0.8 for **Type II** Noncombustible Construction
- 0.6 for **Type I** Fire resistive Construction

A =2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

A = 1667 m^2
C = 0.8
F = 7184.8 L/min

rounded off to 7,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 7,000 = 5,950 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -40% x 5,950 = -2,380 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	0%

Side 1	8	20%	north side
Side 2	60	0%	east side
Side 3	25	10%	south side
Side 4	20	15%	west side
		45%	(Total shall not exceed 75%)

Increase due to separation 45% x 5,950 = 2,678 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 6,000 L/min (Rounded to nearest 1000 L/min)
or **100 L/sec**
or 1,585 gpm (us)
or 1,320 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

Fire Flow Design Sheet (FUS)
112 Montreal Road
City of Ottawa
WSP Project No. 19M-01935-00
Date: 06-Sep-22

Future Residential Building B2
Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020

1. An estimate of the Fire Flow required for a given fire area may be estimated by: $F = 220\ C\ \sqrt{A}$

F = required fire flow in litres per minute
C = coefficient related to the type of construction
- 1.5 for **Type V** Wood Frame Construction
- 0.8 for **Type IV-A** Mass Timber Construction
- 0.9 for **Type IV-B** Mass Timber Construction
- 1.0 for **Type IV-C** Mass Timber Construction
- 1.5 for **Type IV-D** Mass Timber Construction
- 1.0 for **Type III** Ordinary Construction
- 0.8 for **Type II** Noncombustible Construction
- 0.6 for **Type I** Fire resistive Construction

A =2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

A = 1908 m^2
C = 0.8
F = 7687.8 L/min

rounded off to 8,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 8,000 = 6,800 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -40% x 6,800 = -2,720 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	0%

Side 1	22	10%	north side
Side 2	30	10%	east side
Side 3	48	0%	south side
Side 4	32	5%	west side
		25%	(Total shall not exceed 75%)

Increase due to separation 25% x 6,800 = 1,700 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 6,000 L/min (Rounded to nearest 1000 L/min)
or **100 L/sec**
or 1,585 gpm (us)
or 1,320 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

Fire Flow Design Sheet (FUS)
112 Montreal Road
City of Ottawa
WSP Project No. 19M-01935-00
Date: 06-Sep-22

Future Residential Building B3
Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020

1. An estimate of the Fire Flow required for a given fire area may be estimated by: $F = 220\ C\ \sqrt{A}$

F = required fire flow in litres per minute
C = coefficient related to the type of construction
- 1.5 for **Type V** Wood Frame Construction
- 0.8 for **Type IV-A** Mass Timber Construction
- 0.9 for **Type IV-B** Mass Timber Construction
- 1.0 for **Type IV-C** Mass Timber Construction
- 1.5 for **Type IV-D** Mass Timber Construction
- 1.0 for **Type III** Ordinary Construction
- 0.8 for **Type II** Noncombustible Construction
- 0.6 for **Type I** Fire resistive Construction

A =2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

A = 1580 m^2
C = 0.8
F = 6994.8 L/min

rounded off to 7,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 7,000 = 5,950 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -40% x 5,950 = -2,380 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	0%

Side 1	14	15%	north side
Side 2	38	0%	east side
Side 3	32	0%	south side
Side 4	13	15%	west side
		30%	(Total shall not exceed 75%)

Increase due to separation 30% x 5,950 = 1,785 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 5,000 L/min (Rounded to nearest 1000 L/min)
or **83 L/sec**
or 1,321 gpm (us)
or 1,100 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

Water Demand Calculation Sheet

Project:	**112 Montreal Road**	**Date:**	**2022-09-06**
Location:	**City of Ottawa**	**Design:**	**WY**
WSP Project No.	**19M-01935-00**	**Page:**	**1 of 1**

Proposed Buildings	Residential				Non-Residentail			Average Daily			Maximum Daily			Maximum Hourly			Fire
	Units			Pop.	Industrial	Institutional	Commercial	Demand (l/s)			Demand (l/s)			Demand (l/s)			Demand
	1 BED APT	2 BED APT	3 BED APT		(ha)	(ha)	(ha)	Res.	Non-Res.	Total	Res.	Non-Res.	Total	Res.	Non-Res.	Total	(l/s)
Proposed 8-Storey Tower A																	
Units	20	14		57				0.19		0.19	0.47		0.47	1.02		1.02	100
Commercial							0.02		0.01	0.01		0.01	0.01		0.02	0.02	
Total				57			0.02			0.19			0.47			1.04	
Proposed 37-Storey Tower B1																	
Units	261	92	91	841				2.72		2.72	6.81		6.81	14.98		14.98	83
Commercial																	
Total				841			0.00			2.72			6.81			14.98	
Future Tower B2																	
Units	160	167		575				1.86		1.86	4.66		4.66	10.24		10.24	100
Commercial																	
Total				575			0.00			1.86			4.66			10.24	
Future Tower B3																	
Units	79	70		258				0.83		0.83	2.09		2.09	4.59		4.59	83
Commercial																	
Total				258			0.00			0.83			2.09			4.59	
										5.61			14.03			30.86	

Population Densities

Single Family	3.4	person/unit
Semi-Detached	2.7	person/unit
Duplex	2.3	person/unit
Townhome (Row)	2.7	person/unit
Bachelor Apartment	1.4	person/unit
1 Bedroom Apartment	1.4	person/unit
2 Bedroom Apartment	2.1	person/unit
3 Bedroom Apartment	3.1	person/unit
4 Bedroom Apartment	4.1	person/unit
Avg. Apartment	1.8	person/unit

Average Daily Demand

Residentail	280	l/cap/day
Industrial	35000	l/ha/day
Institutional	28000	l/ha/day
Commercial	28000	l/ha/day

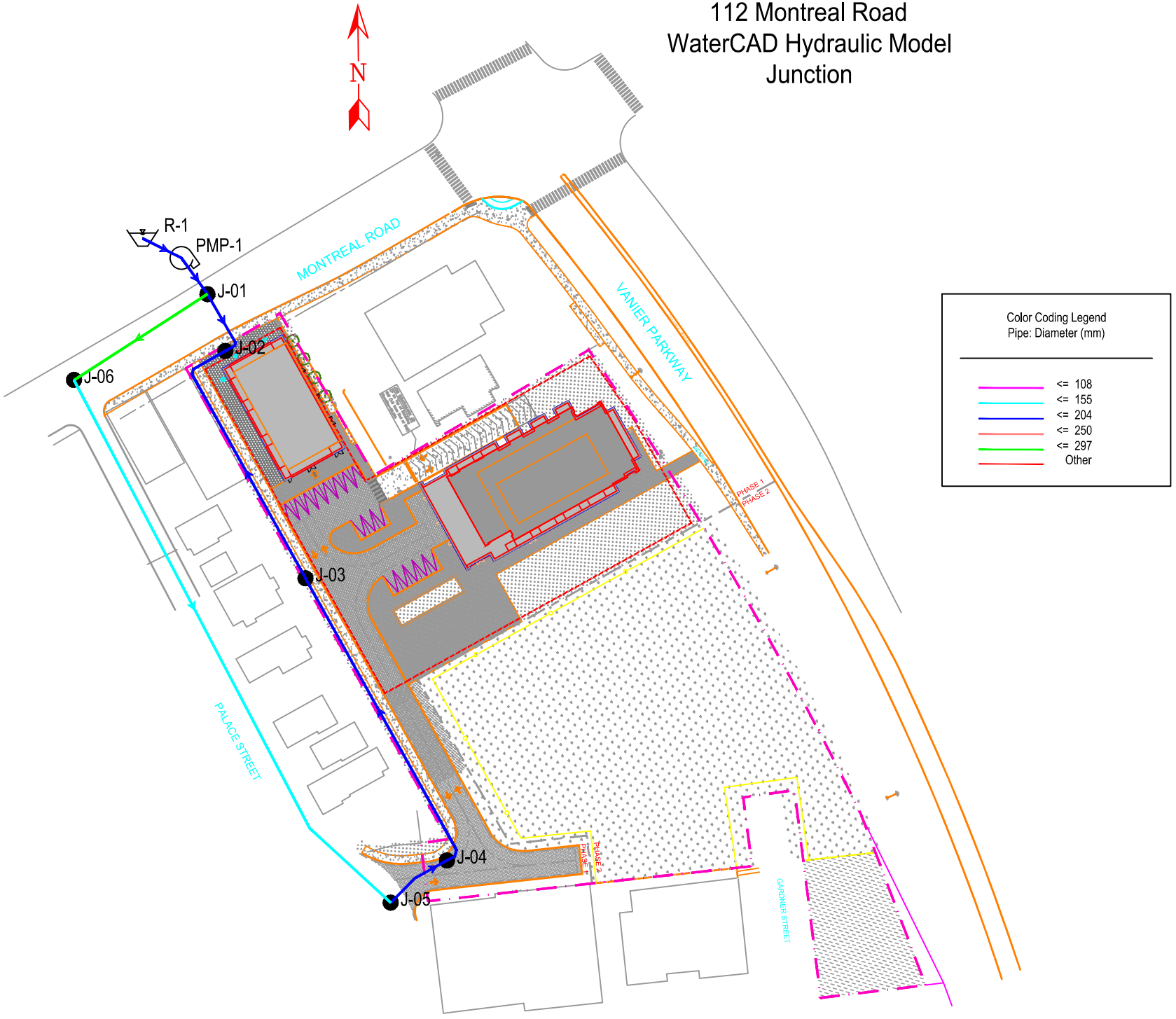
Maximum Daily Demand

Residential	2.5	x avg. day
Industrial	1.5	x avg. day
Institutional	1.5	x avg. day
Commercial	1.5	x avg. day

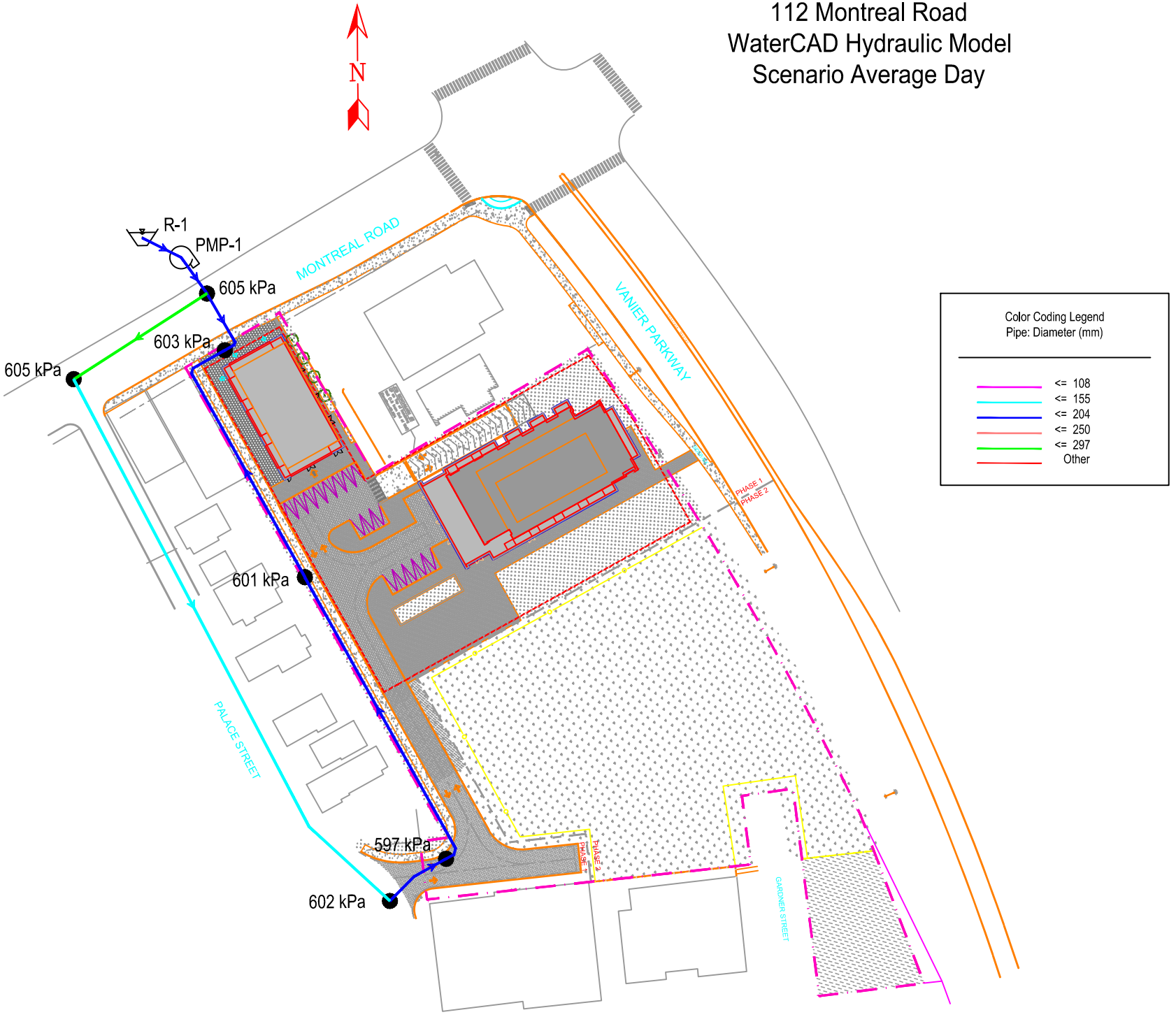
Maximum Hourly Demand

Residential	2.2	x max. day
Industrial	1.8	x max. day
Institutional	1.8	x max. day
Commercial	1.8	x max. day

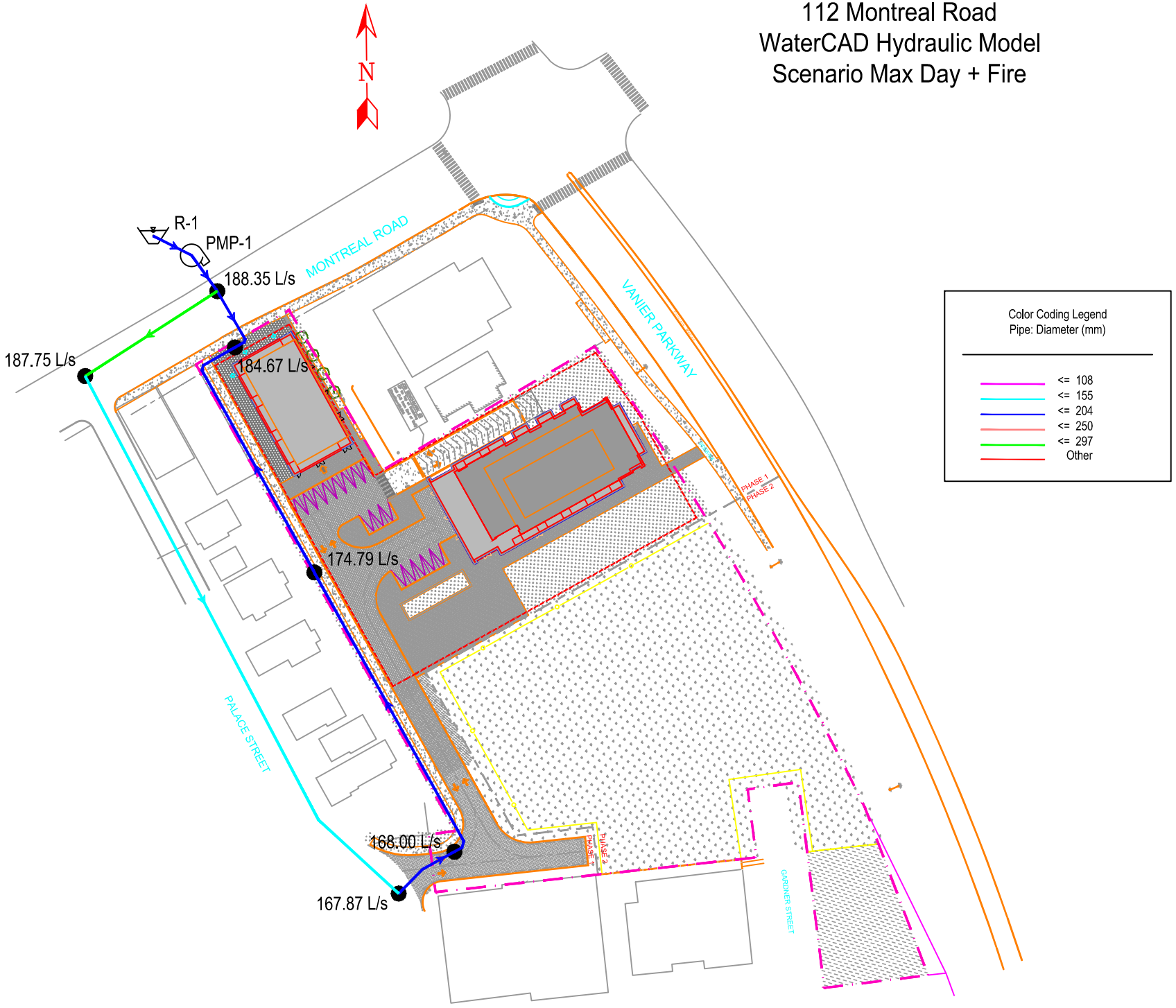
112 Montreal Road
WaterCAD Hydraulic Model
Junction



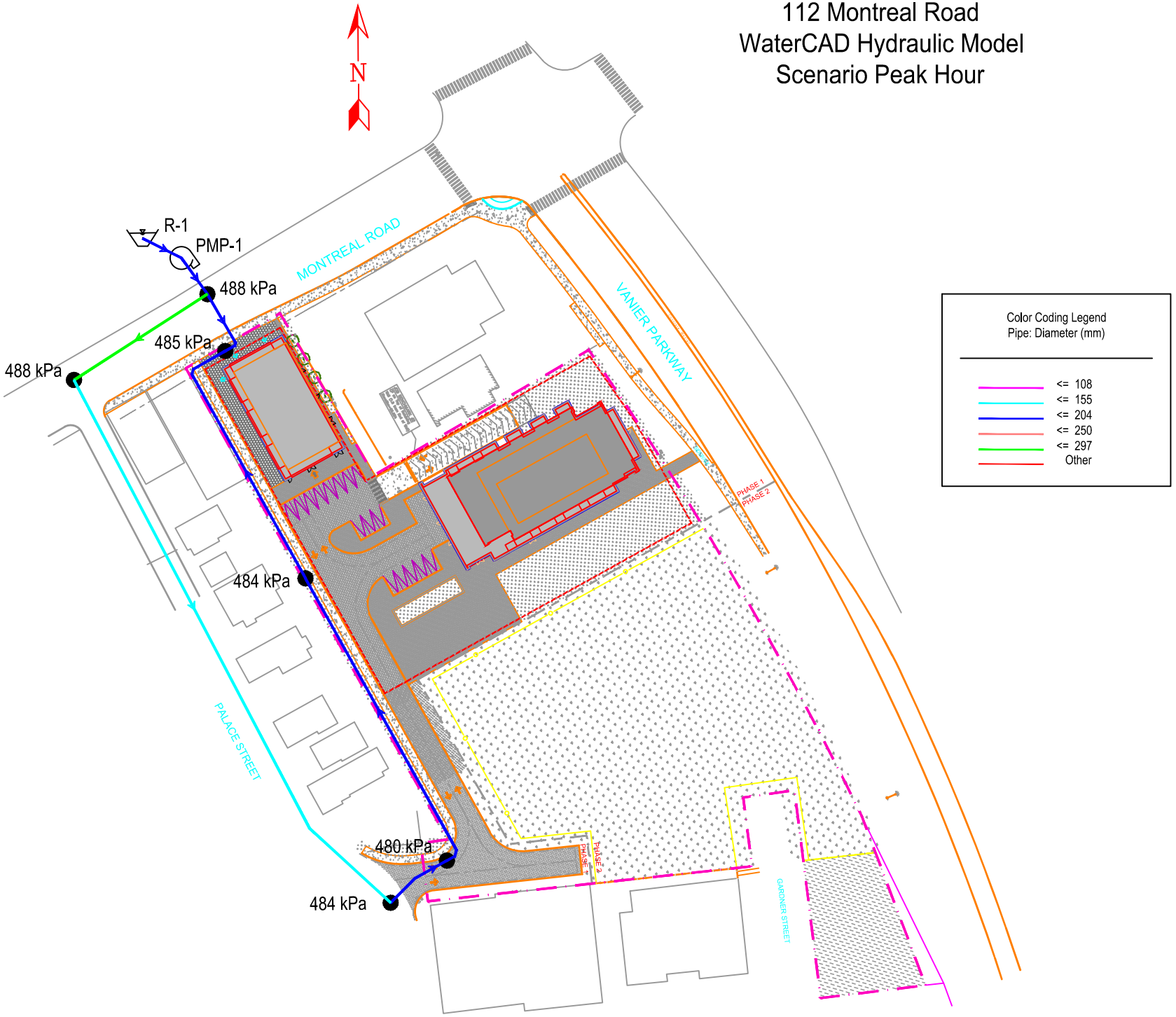
112 Montreal Road
WaterCAD Hydraulic Model
Scenario Average Day



112 Montreal Road
WaterCAD Hydraulic Model
Scenario Max Day + Fire



112 Montreal Road
WaterCAD Hydraulic Model
Scenario Peak Hour



APPENDIX

C

- SANITARY SEWER DESIGN SHEET

SANITARY SEWER DESIGN SHEET

112 Montreal Road
Residential Development
Project: 19M-01935-00
Date: September, 2022

LOCATION				RESIDENTIAL AREA AND POPULATION											INDUSTRIAL				COMMERCIAL		INSTITUTIONAL		I+C+I	INFILTRATION			TOTAL	PIPE					
LOCATION	FROM M.H.	TO M.H.	SANITARY DRAINAGE AREA ID	INDV AREA (ha)	ACCU AREA (ha)	NUMBER OF UNITS						POPULATION		PEAK FACT.	PEAK FLOW (l/s)	GROSS AREA (ha)	DEVEL. AREA (ha)	ACCU. AREA (ha)	PEAK FACTOR	INDIV AREA (ha)	ACCU. AREA (ha)	INDIV AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	INDIV AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	**FLOW (l/s)**	LENGTH (m)	DIA. (mm)	SLOPE (%)	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)	AVAIL. CAP. (%)
						SINGLES	SEMIS	TOWNS	1-BED APT.	2-BED APT.	3-BED APT.	INDIV POP.	ACCU POP.																				
TO MONTREAL ROAD																																
PHASE 2	FUTURE B2 AND B3								234.00	232.00		815	815	3.28	8.67										0.000	0.00	0.00	**8.67**						
PHASE 1	BLDG	SAMH01		1.197	1.197				281.00	106.00	91	898	1713	3.11	17.26					0.020	0.02			0.01	1.217	1.22	0.40	**17.67**	1.05	300	1.00	96.70	1.37	**81.73%**
	SAMH01	SAMH02			1.197							0	1713	3.11	17.26						0.02			0.01	0.000	1.22	0.40	**17.67**	10.05	300	0.50	68.38	0.97	**74.16%**
	SAMH02	*Ex. SANMH*			1.197							0	1713	3.11	17.26						0.02			0.01	0.000	1.22	0.40	**17.67**	*45.11*	*600*	*0.12*	209.12	0.74	**91.55%**

DESIGN PARAMETERS

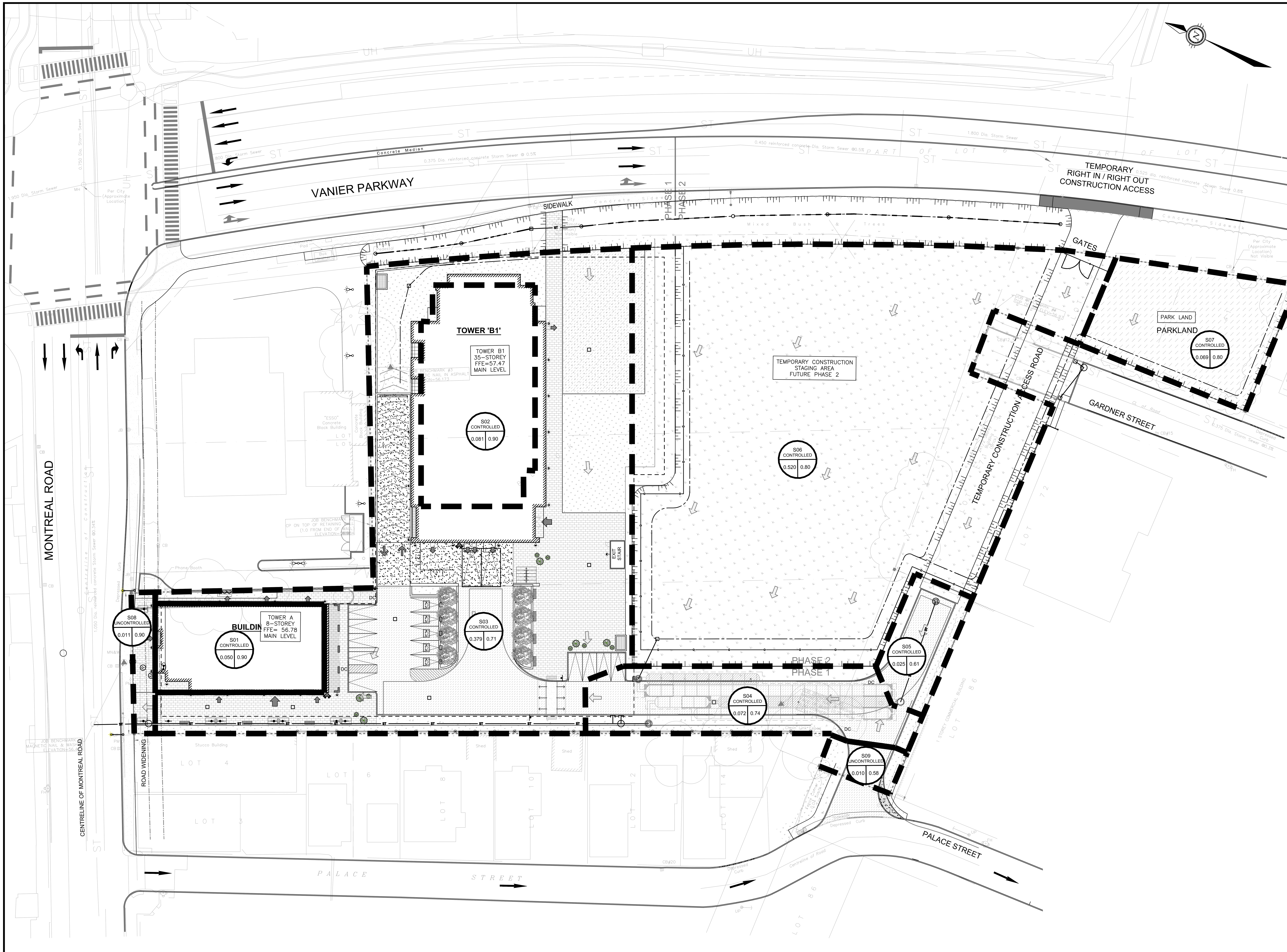
RESIDENTIAL AVG. DAILY FLOW =	280	l/cap/day	COMMERCIAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	PEAK POPULATION FLOW, (l/s) =	P*q*M/86400	UNIT TYPE	PERSONS/UNIT	
COMMERCIAL AVG. DAILY FLOW =	28,000	l/ha/day		1.0	(WHEN AREA < 20%)	PEAK EXTRANEOUS FLOW, (l/s) =	I*Ac	SINGLES	3.4	
	0.324	l/ha/s				RESIDENTIAL PEAKING FACTOR, M =	1+(14/(4+P^0.5))*K	SEMI-DETACHED	2.7	
INSTITUTIONAL AVG. DAILY FLOW =	28,000	l/ha/day	INSTITUTIONAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	Ac = CUMULATIVE AREA (ha)		TOWNHOMES	2.7	
	0.324	l/ha/s		1.0	(WHEN AREA < 20%)	P = POPULATION (THOUSANDS)		SINGLE APT. UNIT	1.4	
LIGHT INDUSTRIAL FLOW =	35,000	l/ha/day						2-BED APT. UNIT	2.1	
	0.405	l/ha/s	RESIDENTIAL CORRECTION FACTOR, K =	0.80		SEWER CAPACITY, Qcap (l/s) =	1/N S^(1/2) R^(2/3) Ac	3-BED APT. UNIT	3.1	
HEAVY INDUSTRIAL FLOW =	55,000	l/ha/day	MANNING N =	0.013		(MANNING'S EQUATION)				
	0.637	l/ha/s	PEAK EXTRANEOUS FLOW, I (l/s/ha) =	0.33						

DESIGNED:	NO.	REVISION	DATE
Ding Bang Yang, P.Eng.	1.	City Submission No.1	2022-09-08
CHECKED:			
Ding Bang Yang, P.Eng.			
PROJECT:			
112 Montreal Road			
Residential Development			
LOCATION:			
Ottawa, Ontario			
PAGE NO:	**FILE & DWG. REFERENCE:**		
1 of 1			

APPENDIX

D

- GRADING PLAN C02
- SERVICING PLAN C03
- STORM DRAINAGE AREA PLAN C04
- STORM SEWER DESIGN SHEET
- FLOW CONTROL ROOF DRAINAGE DELCARATION



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KEY PLAN
(N.T.S)

SUBJECT TO APPROVAL

BENCH MARK No.1 ELEVATION=56.43

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE WESTERLY LIMIT OF PART 1, PLAN 5R-6112 SHOWN AS HAVING A BEARING OF N28°27'30"W.

TOWNSHIP: CITY OF OTTAWA

No.	REVISIONS	BY	DATE
02	REVISED AS PER CITY COMMENTS	D.Y.	2023-04-03
01	ISSUED FOR SPA	D.Y.	2022-09-13

HORIZONTAL SCALE:
5m 2 0 5 10m
SCALE: 1:300

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

LICENSED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2023-04-03
PROVINCE OF ONTARIO

NOT VALID UNLESS SIGNED AND DATED

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DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	J.T.	D.Y.

PROJECT
112 MONTREAL ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE
STORM DRAINAGE
AREA PLAN

PROJECT NO.
19M-01935-00

DRAWING NO.
C04

D07-12-22-0138

#18856

FILENAME: V:\10-13 MI-LD\19M-01935-00 - 112 Montreal Road - Site Plan\3. Drawings\Working drawings\19M-01935-00_C_NEW.dwg
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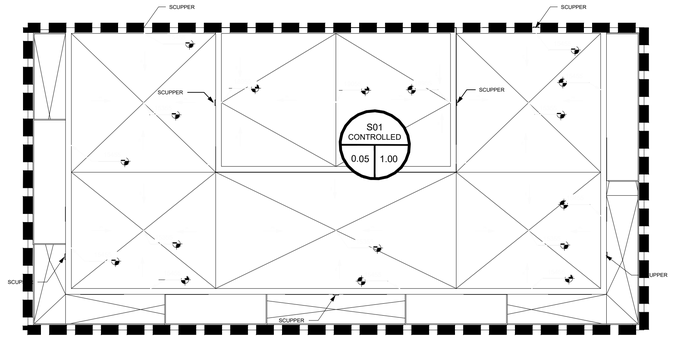
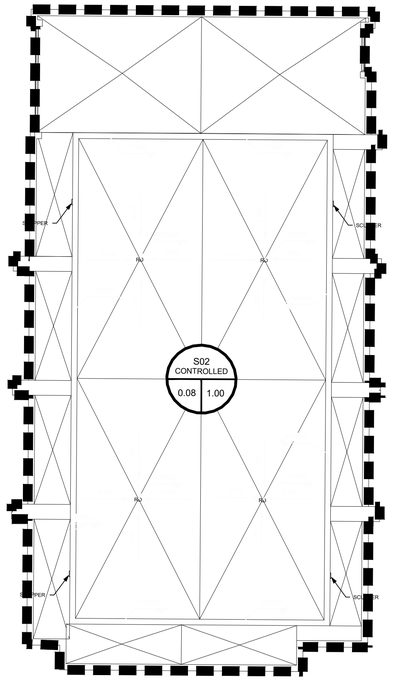




Roof Drains

							WATT Drains		
Catchment ID	Status	Common Name	Area (ha.)	Area (m^2)	Area to Cistern 1 (m^2)	Area controlled by Rooftop (m^2)	Number of Drains Req. (~1 Drain / 150 m2)	Area Per Drain	Width / Length (m)
S01	Controlled	Building A	0.05	500	190	**310**	5	62.00	7.87
S02	Controlled	Building B1	0.081	810	447	**363**	4	90.75	9.53

METRIC	Flow Rate (m3/sec)					
Weir opening	**25.4**	**50.8**	**76.2**	**101.6**	**127.0**	**152.4**
	0.02540	**0.05080**	**0.07620**	**0.10160**	**0.12700**	**0.15240**
Fully Exposed	0.000315451	0.000630902	0.000946353	0.001261804	0.001577255	0.001892706
3/4	0.000315451	0.000630902	0.00086749	0.001104079	0.001340667	0.001577255
1/2	0.000315451	0.000630902	0.000788628	0.000946353	0.001104079	0.001261804
1/4	0.000315451	0.000630902	0.000709765	0.000788628	0.00086749	0.000946353
Closed	0.000315451	0.000315451	0.000315451	0.000315451	0.000315451	0.000315451

Table 3-3: Post-Development Modelling Results (C)

RETURN PERIOD (YEARS)	ROOFTOP MAXIMUM STORAGE VOLUME, PEAK RELEASE RATE[1], AND PONDING DEPTH						UNCONTROLLED FLOW RATE[2] (L/S)
	TOWER A			TOWER B1			
	(m^3)	(L/s)	(m)	(m^3)	(L/s)	(m)	
5	4.5	1.5	0.054	6.4	1.2	0.073	2.9
100	11.5	1.5	0.086	15.4	1.2	0.142	8.3

[1] Based on the critical duration resulting in maximum storage utilized on each roof surface

[2] Based on the critical duration resulting in the maximum flow released from the site

WATTS® | Adjustable Accutrol Weir Tag: _____ | Adjustable Flow Control for Roof Drains

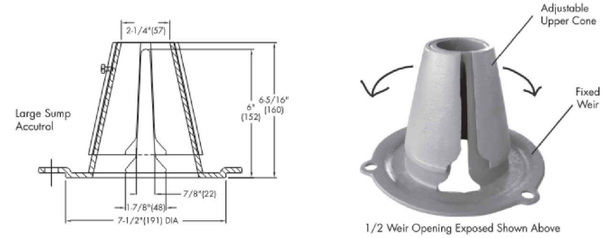
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3"of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.



1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____
Job Location _____ Contractor's P.O. No. _____
Engineer _____ Representative _____

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Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

ES-WD-RD-ACCUTROLADJ-CAN 1615

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01	ISSUED FOR SPA	D.Y.	2022-09-13

HORIZONTAL SCALE:
3.0m 1.5 0 3.0 6.0m
SCALE: 1:150

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

LICENSED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2023-04-03
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TEL:(613)727-0850 FAX(613)727-1079

DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	J.T.	D.Y.

PROJECT
112 MONTREAL ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE
ROOF DRAINAGE PLAN

PROJECT NO. 19M-01935-00
DRAWING NO. C04A

D07-12-22-0138

#18856

FILENAME: V:\19-13-MLD\19MJ\01935-00 - 112 Montreal Road - Site Plan\3. Drawings\Working drawings\19M-01935-00_C_NEW.dwg
PLOTDATE: Apr 03, 2023 - 4:54pm CKITIFASI2

STORM SEWER DESIGN SHEET

112 Montreal Road
Residential Development
Project: 19M-01935-00
Date: April, 2023

LOCATION				AREA (Ha)						RATIONAL DESIGN FLOW												PROPSOED SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.25	C= 0.35	C= 0.50	C= 0.60	C= 0.80	C= 0.90	IND 2.78AC	CUM 2.78 AC	INLET (min)	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)	BLDG FLOW (L/s)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	MATERIAL PIPE	SIZE (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME IN PIPE	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
Building Deck Drains to Underground Storm Chamber																														
112 Montreal Road	S03	BUILDING SERVICE	STMH01	0.111					0.268	0.748	0.748	10.00	10.01	76.81	104.19	178.56		57.43				57.43	PVC DR-35	375.0	1.00	1.00	175.51	1.59	0.01	118.08	67.28%
Undeveloped runoff to Underground Storm Chamber																														
													40.00																	
	S06A, S07	DICB01	STMH01					0.545		1.212	1.212	40.00	40.04	32.86	44.18	75.15		39.83				39.83	PVC DR-35	300.0	1.00	3.50	96.80	1.37	0.04	56.96	58.85%
		STMH01	STORM CHAMBER							0.000	1.960	40.04	40.06	32.84	44.15	75.09		64.36				64.36	PVC DR-35	375.0	1.00	1.30	175.51	1.59	0.01	111.15	63.33%
Surface runoff to Underground Storm Chamber																														
	S05, S06B	CBMH06	STMH05	0.011				0.044	0.014	0.141	0.141	10.00	10.22	76.81	104.19	178.56		10.79				10.79	PVC DR-35	300.0	0.80	16.35	86.58	1.22	0.22	75.79	87.53%
		STMH05	STORM CHAMBER							0.000	0.141	10.22	10.41	75.96	103.03	176.55		10.67				10.67	PVC DR-35	300.0	0.80	13.95	86.58	1.22	0.19	75.90	87.67%
	S04	CB02	STORM CHAMBER	0.018					0.054	0.148	0.895	10.00	10.00	76.81	104.19	178.56		68.76				68.76	DESIGN BY OTHERS								
		STORM CHAMBER	CBMH02							0.000	2.996	40.06	40.08	32.83	44.14	75.07		98.35				98.35	PVC DR-35	375.0	1.00	2.00	175.51	1.59	0.02	77.16	43.96%
		CBMH02	STMH03							0.000	2.996	40.08	40.16	32.82	44.12	75.04		98.31				98.31	PVC DR-35	375.0	0.50	5.45	124.10	1.12	0.08	25.79	20.78%
Building Roof Drains																														
	S01, S02	BUILDING SERVICE	STMH03						0.131	0.328	0.328	10.00	10.01	76.81	104.19	178.56		25.17				25.17	PVC DR-35	375.0	1.00	1.20	175.51	1.59	0.01	150.33	85.66%
Building Foundation Drain																														
		BUILDING SERVICE	STMH03-STMH04							0.000	0.000	10.00	10.02	76.81	104.19	178.56					0.20	0.20	PVC DR-35	200.0	1.00	1.20	32.83	1.04	0.02	32.63	99.39%
		STMH03	STMH04							0.000	3.323	40.16	41.62	32.77	44.06	74.93		108.92			0.20	109.12	PVC DR-35	450.0	0.30	86.20	156.32	0.98	1.46	47.20	30.19%
Montreal Road		STMH04	*EXISTING 1050mm STM*							0.000	3.323	41.62	41.79	31.96	42.96	73.04		106.21			0.20	106.41	PVC DR-35	450.0	0.30	9.95	156.32	0.98	0.17	49.91	31.93%

Definition:
Q=2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall Intensity in millimeters per hour (mm/hr)
i = 732.951/(TC+6.199)^0.810 — 2 Year
i = 1174.184/(TC+6.014)^0.816 — 5 Year
i = 1735.688/(TC+6.014)^0.820 — 100 Year

Notes:
1. Mannings coefficient (n) = 0.013

Time-of-Concentration in the Swale
FAA Equation: t (min) = 3.258 [(1.1 - C) L^0.5 / S^.33]
Where: Longest Watercourse Length, L (m). S (%)
Runoff Coef.C = Impervious

No.	L (m)	S %	Tc (min)
1	155	1.50	40.00

Designed: D.B.Y.
Checked: D.B.Y.
Dwg. Reference: C04

No.	Revision	Date
1.	City Submission No. 1	2022-09-08
2.	City Submission No. 2	2023-04-03

File Reference: 19M-01935-00
Date: 2023-04-03
Sheet No: 1 of 1

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100230568
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DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	J.T.	D.Y.

PROJECT

112 MONTREAL ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

GRADING PLAN

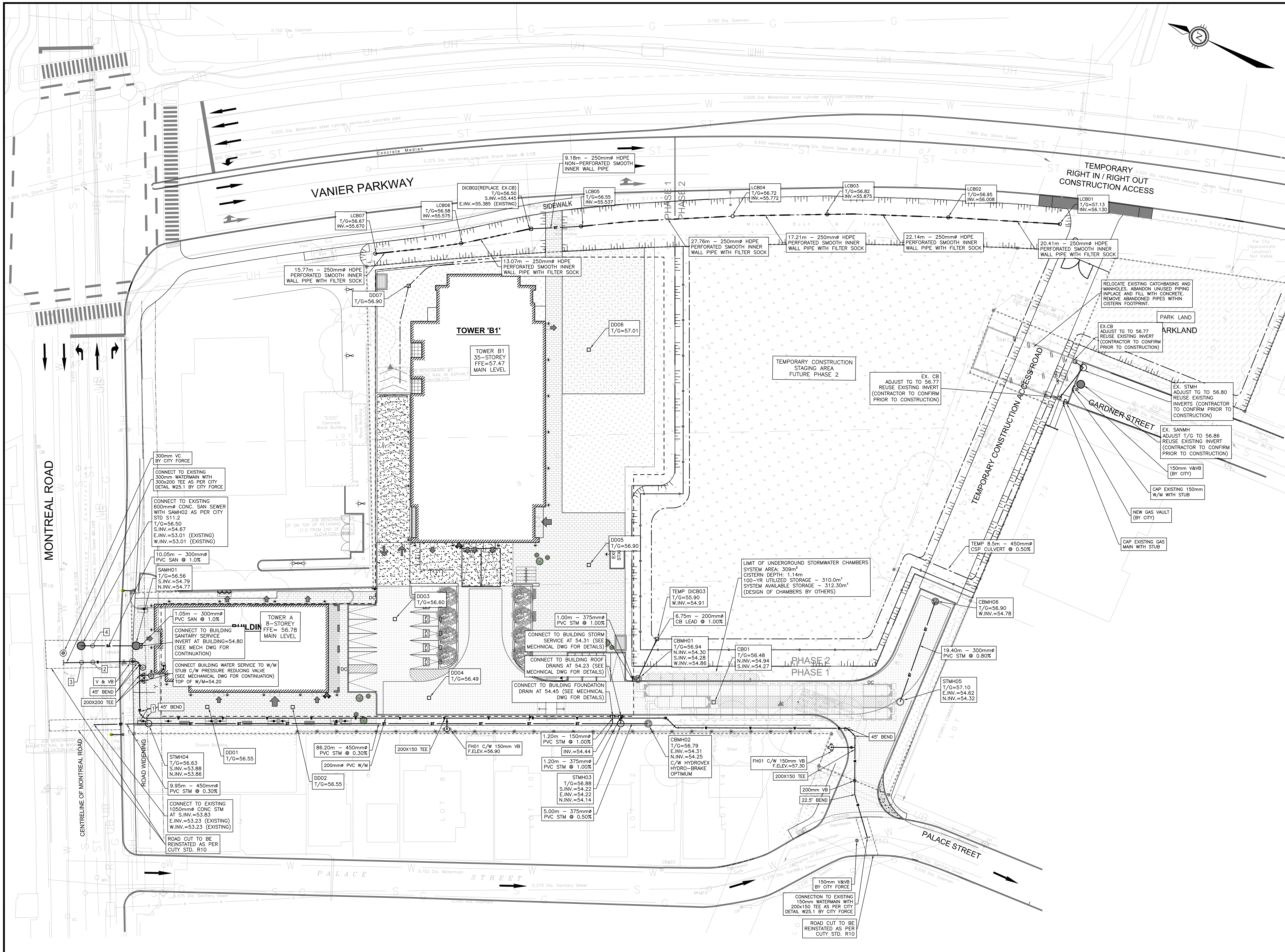
PROJECT NO. 19M-01935-00

DRAWING NO. C02

D07-12-22-0138

#18856

FILENAME: V:\10-13 MIL\D\19M-01935-00 - 112 Montreal Road - Site Plan\3. Drawings\Working drawings\19M-01935-00_C_NEW.dwg
PLOTDATE: Apr 03, 2023 - 4:59pm, CAJTD7451\2



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5m 2 0 5 10m
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2023-04-03
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TEL.(613)727-0850 FAX(613)727-1079

DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	J.T.	D.Y.

PROJECT

112 MONTREAL ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

SERVICING PLAN

PROJECT NO. 19M-01935-00

DRAWING NO. C03

D07-12-22-0138

#18856

FLOW CONTROL ROOF DRAINAGE DECLARATION

THIS FORM TO BE COMPLETED BY THE MECHANICAL AND STRUCTURAL ENGINEERS RESPONSIBLE FOR DESIGN

Permit Application No.

Project Name:

Building Location: 112 Montreal Road

Municipality: Ottawa

The roof drainage system has been designed in accordance with the following criteria: (please check one of the following).

M1. ❑ Conventionally drained roof (no flow control roof drains used).

M2. ☑ Flow control roof drains meeting the following conditions have been incorporated in this design:

(a) the maximum drain down time does not exceed 24h,
(b) one or more scuppers are installed so that the maximum depth of water on the roof cannot exceed 150mm,
(c) drains are located not more than 15m from the edge of roof and not more than 30m from adjacent drains, and
(d) there is at least one drain for each 900 sq.m.

M3. ❑ A flow control drainage system that does not meet the minimum drainage criteria described in M2 has been incorporated in this design.

PROFESSIONAL SEAL APPLIED BY:

Practitioner's Name: Dinesh Jain

Firm: Jain Sustainability Consultants Inc.

Phone #: 905-285-9900

City: Mississauga Province: ON

Mechanical Engineer's Seal

S1. ❑ The design parameters incorporated into the overall structural design are consistent with the information provided by the Mechanical Engineer in M2. Loads due to rain are not considered to act simultaneously with loads due to snow as per Sentence 4.1.7.3 (3) OBC.

S2. ❑ The structure has been designed incorporating the additional structural loading due to rain acting simultaneously with the snow load. The design parameters are consistent with the control flow drainage system designed by the mechanical engineer.

PROFESSIONAL SEAL APPLIED BY:

Practitioner's Name:

Firm:

Phone #:

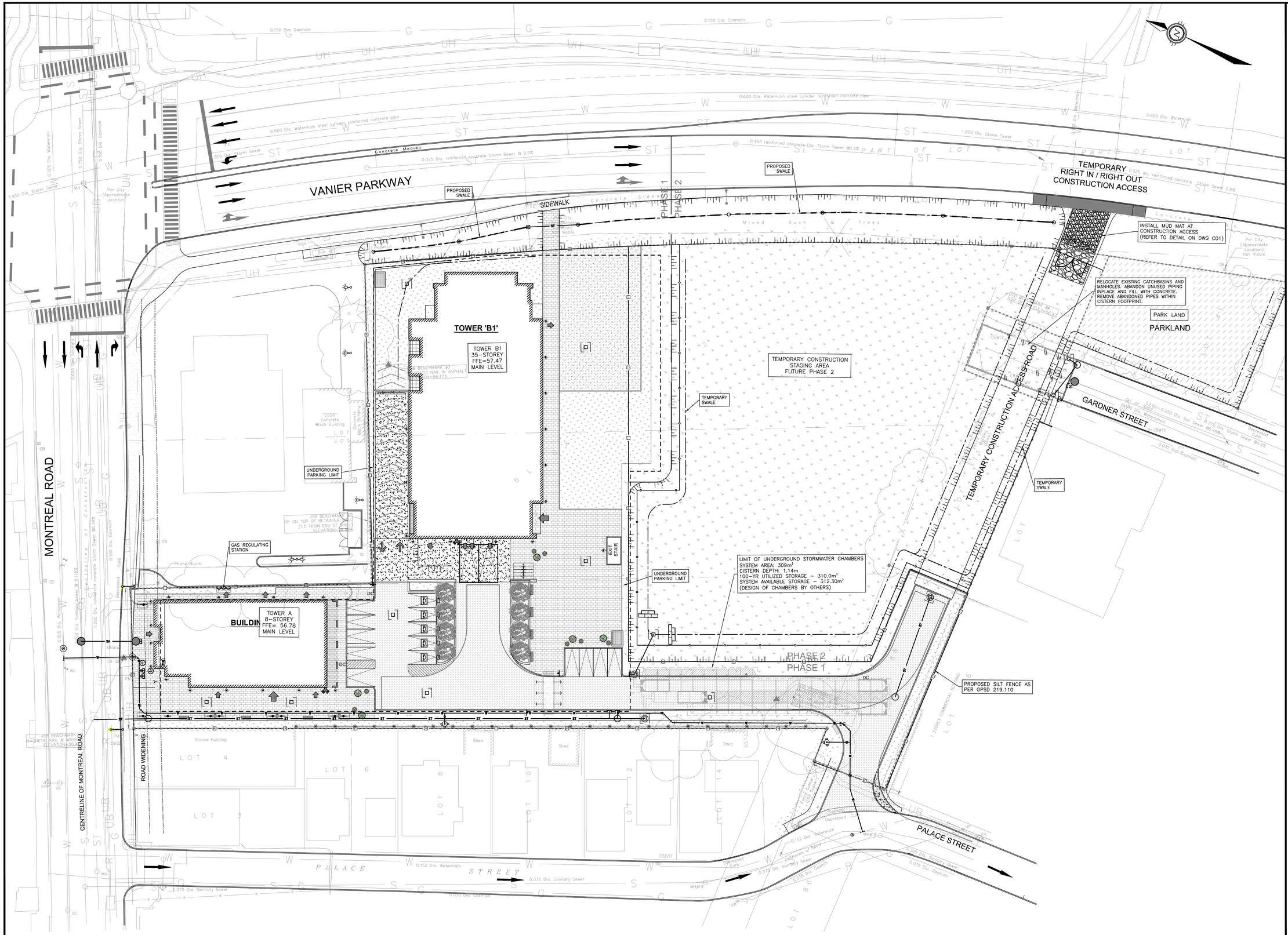
City: Province:

Structural Engineer's Seal

APPENDIX

E

- EROSION AND SEDIMENT CONTROL PLAN C05



GENERAL NOTES:

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

KEY PLAN
(N.T.S)

SUBJECT TO APPROVAL

BENCH MARK No.1 ELEVATION=56.43

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE WESTERLY LIMIT OF PART 1, PLAN 5R-6112 SHOWN AS HAVING A BEARING OF N28°27'30"W.

TOWNSHIP: CITY OF OTTAWA

No.	REVISIONS	BY	DATE
02	REVISED AS PER CITY COMMENTS	D.Y.	2023-04-03
01	ISSUED FOR SPA	D.Y.	2022-09-13

HORIZONTAL SCALE:
5m 2 0 5 10m
SCALE: 1:300

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

LICENSED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2023-04-03
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED AND DATED

wsp
2611 Queensview Dr. Ottawa, ON Canada K2B 8K2
t: 613.829.2800 f: 613.829.8299 www.wspgroup.com

CLIENT

2705460 ONTARIO INC.
C/O ANAND AGGARWAL
MANOR PARK MANAGEMENT
231 BRITTANY DRIVE, SUITE D
OTTAWA, ON K1K 0R8

rla/architecture
roderick lahey architect inc.
56 beech street, ottawa, ontario K1S 3J6
t 613.724.9932 f 613.724.1209 rlaarchitecture.ca

ANNIS,O'SULLIVAN, VOLLEBEKK
Ontario Land Surveyors
14 CONCOURSE GATE, SUITE 500, NEPEAN, ONTARIO, K2E 7S6
TEL.(613)727-0850 FAX(613)727-1079

DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	J.T.	D.Y.

PROJECT

112 MONTREAL ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

EROSION AND SEDIMENTATION CONTROL PLAN

PROJECT NO. 19M-01935-00

DRAWING NO. C05

D07-12-22-0138

#18856

FILENAME: V:\10-13 MAJ\01\M\-01935-00 - 112 Montreal Road - Site Plan\3. Drawings\Working drawings\19M-01935-00_C_NEW.dwg
PLOTDATE: Apr 03, 2023 - 4:54pm, CAUTO74512

APPENDIX

F

- DEVELOPMENT SERVICING STUDY CHECKLIST

4.1 General Content

☒ Executive Summary (for larger reports only).

Comments: Refer to Servicing Report Section 1.1

☒ Date and revision number of the report.

Comments: *Refer to front page of the Report*

☒ Location map and plan showing municipal address, boundary, and layout of proposed development.

Comments: *Refer to Figure 1.1 Site Location for Location Map and Plan*

☒ Plan showing the site and location of all existing services.

Comments: *Refer to drawing C03*

☒ 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.

Comments: *Refer to Architectural Site Plan*

☒ Summary of Pre-consultation Meetings with City and other approval agencies.

Comments: Refer to Appendix A for Pre-Consultation Meeting Notes

☒ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.

Comments: *N/A*

☒ Statement of objectives and servicing criteria.

Comments: Refer to Servicing Report Section 1.7

☒ Identification of existing and proposed infrastructure available in the immediate area.

Comments: *Refer to drawing C03*

☒ 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).

Comments: *N/A*

☒ 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.

Comments: *Refer to drawing C02*

☒ 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.

Comments: *N/A*

☒ Proposed phasing of the development, if applicable.

Comments: *N/A*

☒ Reference to geotechnical studies and recommendations concerning servicing.

Comments: *N/A*

☒ All preliminary and formal site plan submissions should have the following information:

- ☒ 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

Comments: *Refer to drawing C01 to C05*

4.2 Development Servicing Report: Water

☒ Confirm consistency with Master Servicing Study, if available

Comments: *Refer to Servicing Report Section 2.1*

☒ Availability of public infrastructure to service proposed development

Comments: Refer to Servicing Report Section 2.1

☒ Identification of system constraints

Comments: N/A

☒ Identify boundary conditions

Comments: *Refer to Servicing Report Section 2.2*

☒ Confirmation of adequate domestic supply and pressure

Comments: *Refer to Servicing Report Section 2.3*

☒ 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.

Comments: *Refer to Servicing Report Section 2.4*

☒ 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.

Comments: *Refer to Servicing Report Section 2.5*

☒ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design

Comments: N/A

☒ Address reliability requirements such as appropriate location of shut-off valves

Comments: Refer to Servicing Report Section 2.6

☒ Check on the necessity of a pressure zone boundary modification.

Comments: N/A

☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

Comments: *Refer to Servicing Report Section 2.7*

☒ 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.

Comments: *Refer to Servicing Report Section 2.8*

☒ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.

Comments: Refer to Servicing Report Section 2.9

☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.

Comments: *Refer to Servicing Report Section 2.3 and 2.4*

☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

Comments: N/A

4.3 Development Servicing Report: Wastewater

☒ 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).

Comments: *Refer to Servicing Report Section 3.1*

☒ Confirm consistency with Master Servicing Study and/or justifications for deviations.

Comments: *Refer to Servicing Report Section 3.2*

☒ 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.

Comments: *Refer to Servicing Report Section 3.3*

☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.

Comments: *Refer to Servicing Report Section 3.3*

☒ 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)

Comments: *Refer to Servicing Report Section 3.4*

☒ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

Comments: N/A

☒ Special considerations such as contamination, corrosive environment etc.

Comments: N/A

4.4 Development Servicing Report: Stormwater

☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

Comments: *Refer to Servicing Report Section 4.1*

☒ Analysis of available capacity in existing public infrastructure.

Comments: *Refer to Servicing Report Section 4.2*

☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

Comments: *Refer to drawing C02*

☒ 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.

Comments: *Refer to SWM Report*

☒ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.

Comments: Refer to SWM Report

☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.

Comments: *Refer to SWM Report*

☒ Set-back from private sewage disposal systems.

Comments: *N/A*

☒ Watercourse and hazard lands setbacks.

Comments: N/A

☒ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.

Comments: N/A

☒ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

Comments: N/A

☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).

Comments: Refer to SWM Report

☒ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.

Comments: Refer to SWM Report

☒ 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.

Comments: Refer to SWM Report

☒ Any proposed diversion of drainage catchment areas from one outlet to another.

Comments: Refer to SWM Report

☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.

Comments: Refer to drawing C02 and C004

☒ 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.

Comments: Refer to SWM Report

☒ Identification of potential impacts to receiving watercourses

Comments: Refer to SWM Report

☒ Identification of municipal drains and related approval requirements.

Comments: Refer to SWM Report

☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.

Comments: *Refer to SWM Report*

☒ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

Comments: Refer to drawings C02 and C04

☒ Inclusion of hydraulic analysis including hydraulic grade line elevations.

Comments: Refer to SWM Report

☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.

Comments: *Refer to Servicing Report Section 5.0*

☒ 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.

Comments: *N/A*

☒ Identification of fill constraints related to floodplain and geotechnical investigation.

Comments: *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:

☐ 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.

Comments: Not applicable.

☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

Comments: Not applicable.

☐ Changes to Municipal Drains.

Comments: *Not applicable.*

☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

Comments: *Not applicable.*

4.6 Conclusion Checklist

☒ Clearly stated conclusions and recommendations

Comments:

☐ 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.

Comments: *Further comments to be added following site plan application review.*

☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

Comments: