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PROPOSED MIXED-USE DEVELOPMENT 150 & 160 LAURIER AVENUE

Development Servicing Study and
Stormwater Management Report

**PROPOSED MIXED-USE DEVELOPMENT
150 & 160 LAURIER AVENUE**

**DEVELOPMENT SERVICING STUDY AND
STORMWATER MANAGEMENT REPORT**

Prepared by:

NOVATECH

Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
K2M 1P6

August 30th, 2022

Ref: R-2022-124
Novatech File No. 122133

August 30th, 2022

JADCO Group
345 Boulevard Samson
Laval, QC
H7X 2Z7

Attention: Mr. André Doudak

Dear Sir:

**Re: Development Servicing Study and Stormwater Management Report
Proposed Mixed-Use Development
150 Laurier Avenue West, Ottawa, ON
Novatech File No.: 122133**

Enclosed is a copy of the 'Development Servicing Study and Stormwater Management Report' for the proposed mixed-use development located at 150 Laurier Avenue West, in the City of Ottawa. This report addresses the approach to site servicing and stormwater management and is submitted in support of a Site Plan Control application.

Please contact the undersigned, should you have any questions or require additional information.

Yours truly,

NOVATECH



François Thauvette, P. Eng.
Senior Project Manager

cc: Reza Bakhit (City of Ottawa)
Rob Verch (RLA)

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Pre-Development Storm Drainage Plan (122133-SWM1)

Post-Development Stormwater Management Plan (122133-SWM2)

1.0 INTRODUCTION

A new 27-storey mixed-use building is being proposed by JADCO Group and Novatech has been retained to complete the site servicing, grading, and stormwater management design for this project. This report is being submitted in support of a Site Plan Control application.

1.1 Site Description and Location

The subject site is located at 150 and 160 Laurier Avenue West, in the City of Ottawa. The merged properties cover an area of approximately 0.182 hectares. The legal description of the subject site as indicated on the Topographical Plan of Survey prepared by Annis, O’Sullivan, Vollbeek Ltd. is designated as Lots 54, 55 and Part of Lot 53, South Laurier Avenue, Registered Plan 4556, City of Ottawa.

Figure 1: Aerial View of the Subject Site



1.2 Pre-Consultation Information

A pre-consultation meeting was held with the City of Ottawa on July 5, 2022, at which time the client was advised of the general submission requirements. The Rideau Valley Conservation Authority (RVCA) was also consulted regarding the proposed development. Based on a review of **O. Reg. 525/98: Approval Exemptions**, a Ministry of the Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA) will not be required for the proposed development. Refer to **Appendix A** for a summary of the correspondence related to the proposed development.

1.3 Proposed Development

The proposed development will include a 27-storey mixed-use (residential with ground floor commercial) building with 5 levels of underground parking. A few short-term (covered and uncovered) parking stalls are also being proposed at street level. Access to the underground parking levels will be off Laurier Avenue West. The proposed building will be serviced by extending new laterals to the municipal sanitary sewer, storm sewer and watermain in Laurier Avenue West.

1.4 Reference Material

The following reports and studies were prepared and/or reviewed as part of the design process:

¹ The Geotechnical Investigation Report (Ref. No. PG5195-1), prepared by Paterson Group Inc. on February 10, 2020.

2.0 SITE SERVICING

The objective of the site servicing design is to provide proper sewage outlets, a suitable domestic water supply and to ensure that appropriate fire protection is provided for the proposed development. The servicing criteria, the expected sewage flows and the water demands are to conform to the requirements of the City of Ottawa municipal design guidelines for sewer and water distribution systems. The City of Ottawa Servicing Study Guidelines for Development Applications requires that a Development Servicing Study Checklist be included to confirm that each applicable item is deemed complete and ready for review by City of Ottawa Infrastructure Approvals. A completed checklist is enclosed in **Appendix B** of the report.

2.1 Sanitary Sewage

The existing building to be demolished is currently being serviced by the 450mm dia. sanitary sewer in Laurier Avenue West. Under post-development conditions, the proposed development will continue to be serviced by the municipal sanitary sewer in Laurier Avenue West via a new 200mm dia. sanitary service lateral. The sanitary service lateral will enter the mechanical room on the north side of the building and will be equipped with a backflow preventer.

The City of Ottawa design criteria were used to calculate the theoretical sanitary flows for the proposed development. The following design criteria were taken from the City of Ottawa Sewer Design Guidelines and subsequent Technical Bulletins:

Residential and Commercial Uses

- Residential Units (1-Bedroom or Studio): 1.4 people per unit
- Residential Units (2-Bedroom): 2.1 people per unit
- Average Daily Residential Sewage Flow: 280 L/person/day (ISTB-2018-01)
- Residential Peaking Factor = 3.62 (Harmon Equation)
- Average Commercial Sewage Flow: 2.8 L/m²/day
- Commercial Peaking Factor = 1.5
- Infiltration Allowance: 0.33 L/s/ha x 0.182 ha site = 0.06 L/s (ISTB-2018-01)

Table 1 identifies the theoretical sanitary flows for the proposed development based on the above design criteria and information provided by the architect.

Table 1: Theoretical Post-Development Sanitary Flows

Residential/ Commercial Use	Unit Count/ Floor Area	Design Population	Average Flow (L/s)	Peaking Factor	Peak Flow (L/s)
1-Bedroom / Studio	147	206	0.67	3.62	2.42
2-Bedroom	165	347	1.12		4.07
Commercial Space	500 m ²	-	<0.02	1.5	0.02
Infiltration Allowance	-	-	0.06	-	0.06
Total for Site	312	553	1.87		6.57

A 200mm dia. sanitary service at a minimum slope of 1.0% has a full flow conveyance capacity of 34.2 L/s and should have enough capacity to convey the theoretical sanitary flows from the proposed development. Refer to **Appendix C** for detailed sanitary sewage calculations.

2.2 Water Supply for Domestic Use and Firefighting

The existing building to be demolished is currently being serviced by the 300mm dia. watermain in Laurier Avenue. Under post-development conditions, the proposed development will continue to be serviced by the municipal watermain network in Laurier Avenue. As per City of Ottawa Technical Bulletin (ISDTB-2014-02), the proposed development will require two water service laterals separated by an isolation valve, as the daily water demands are greater than 50m³/day (0.58 L/s). The building will be sprinklered and the water meter will be located within the water entry room, with the remote meter and siamese connection on the exterior face of the building. The subject site is located within the City of Ottawa 1W watermain pressure zone.

2.2.1 Water Demands and Watermain Analysis

The theoretical water demand and fire flow calculations are based on criteria in the City of Ottawa Design Guidelines. The fire flow requirements were calculated per the Fire Underwriters Survey (FUS) as indicated in City of Ottawa Technical Bulletin ISTB-2021-03, based on information provided by the architect. The following design criteria were taken from City of Ottawa Sewer Design Guidelines and subsequent Technical Bulletins:

- Residential Units (1-Bedroom or Studio): 1.4 people per unit
- Residential Units (2-Bedroom): 2.1 people per unit
- Average Daily Residential Water Demand: 280 L/person/day (ISTB-2021-03)
- Maximum Day Demand Peaking Factor = 2.5 x Avg. Day Demand (City Water Table 4.2)
- Peak Hour Demand Peaking Factor = 2.2 x Max. Day Demand (City Water Table 4.2)
- Average Commercial Water Demand: 2.8 L/m²/day
- Maximum Day Demand Peaking Factor = 1.5 x Avg. Day Demand (City Water Table 4.2)
- Peak Hour Demand Peaking Factor = 1.8 x Max. Day Demand (City Water Table 4.2)

Table 2 identifies the theoretical domestic water demands and fire flow requirements for the development based on the above design criteria. Refer to **Appendix D** for detailed calculations.

Table 2: Theoretical Water Demand for Proposed Development

Residential Use	Unit Count / Floor Area	Design Population	Avg. Day Demand (L/s)	Max. Day Demand (L/s)	Peak Hour Demand (L/s)	Fire Flow (L/s)
1-Bdrm/Studio	147	206	0.67	1.67	3.67	233
2-Bdrm	165	347	1.12	2.81	6.18	
Commercial	500 m ²	-	<0.02	0.02	0.04	
Total for Site	312	553	1.81*	4.50*	9.89*	233

*Represents rounded values

The following design criteria were taken from Section 4.2.2 – ‘Watermain Pressure and Demand Objectives’ of the City of Ottawa Design Guidelines for Water Distribution:

- Normal operating pressures are to range between 345 kPa (50 psi) and 483 kPa (70 psi) under Max Day demands
- Minimum system pressures are to be 276 kPa (40 psi) under Peak Hour demands
- Minimum system pressures are to be 140 kPa (20 psi) under Max Day + Fire Flow demands

Preliminary domestic water demands, and fire flow requirements were provided to the City of Ottawa to generate the municipal watermain network boundary conditions. **Table 2.1** summarizes the City’s municipal watermain boundary conditions and the preliminary hydraulic analysis results based on the information provided by The City of Ottawa.

Table 2.1: Hydraulic Boundary Conditions Provided by the City (Existing Conditions)

Municipal Watermain Boundary Condition	Boundary Condition	Normal Operating Pressure Range (psi)	Anticipated WM Pressure (psi)*
Minimum HGL (Peak Hour Demand)	106.7 m	40 psi (min.)	~ 57 psi
Maximum HGL (Max Day Demand)	115.5 m	50 - 70 psi	~ 69 psi
HGL (Max Day + Fire Flow)	108.3 m	20 psi (min.)	~ 59 psi

* Based on an approximate roadway elevation of 69.0m in Laurier Avenue West at the service connection. Design pressure = (HGL – watermain elevation) x 1.42197 PSI/m.

As discussed with the City of Ottawa, a multi-hydrant approach to firefighting will be required to supply adequate fire flow to the proposed development. There are currently five (5) Class AA (blue bonnet) hydrants within 150m of the proposed site. Based on the City of Ottawa Technical Bulletin ISTB-2018-02, Class AA (blue bonnet) hydrants within 75m have a maximum capacity of 95 L/s while hydrants between 75m and 150m have a maximum capacity of 63 L/s (at a pressure of 20 PSI). **Table 2.2** summarizes the theoretical combined fire flow available from the

nearby municipal fire hydrants and compares it to the fire flow demands based on the FUS calculations.

Table 2.2: Theoretical Fire Protection Summary Table

Building	FUS Fire Flow Demand (L/s)	Fire Hydrant(s) within 75m (~ 95 L/s each)	Fire Hydrant(s) within 150m (~ 63 L/s each)	Theoretical Combined Available Fire Flow (L/s)
Mixed-Use Building	233	2	4	442*

*Theoretical values exceed the FUS Fire Flow requirements and were therefore not confirmed by hydraulic analysis.

The combined maximum flow from the nearby municipal hydrants will exceed the Max Day + Fire Flow requirement of the proposed development. This multi-hydrant approach to firefighting is in accordance with the City of Ottawa Technical Bulletin ISTB-2018-02.

Based on the preliminary calculations, adequate water and system pressures will exist throughout the watermain network under the specified 'Max Day + Fire Flow' and 'Peak Hour' conditions. Booster pump(s) will be required to provide adequate water pressure to the upper floors. Refer to **Appendix D** for detailed calculations, correspondence from the City of Ottawa, a fire hydrant sketch showing the existing fire hydrant locations and the dimensions confirming the appropriate site coverage.

2.3 Storm Drainage and Stormwater Management

Under post-development conditions, on-site stormwater management (SWM) will be required to meet the requirements of the City of Ottawa. Storm flows for the site will include both uncontrolled direct runoff and controlled site flows. The proposed storm drainage and stormwater management design for the site is discussed in the following sections of the report.

2.3.1 Stormwater Management Criteria and Objectives

The stormwater management (SWM) criteria have been provided during a pre-consultation meeting with the City of Ottawa. The SWM (quantity control) criteria and objectives are as follows:

- Provide a dual drainage system (i.e., minor, and major system flows).
- Control post-development storm flows, up to an including the 100-year design event, to the maximum allowable release rate calculated using the Rational Method, with a runoff coefficient equivalent to existing conditions, but in no case greater than C=0.5, a time of concentration no less than 10 minutes and a 2-year rainfall intensity from City of Ottawa IDF curves.
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). Based on preliminary feedback from the RVCA, on-site stormwater quality control measures will not be required. Refer to **Appendix A** for correspondence from the City of Ottawa and RVCA.

2.3.2 Pre-Development Conditions and Allowable Release Rate

Although unknown, it is assumed that site flows are currently not being controlled (i.e., using control flow roof drains and/or within an internal SWM storage tank) prior to being released into the municipal storm sewer in Laurier Avenue. As specified by the City of Ottawa, the maximum allowable release rate from the subject site is to be calculated using the Rational Method, with a runoff coefficient equivalent to existing conditions, but in no case greater than $C=0.5$, a time of concentration of 10 minutes and a 2-year rainfall intensity from City of Ottawa IDF curves. The maximum allowable release rate was calculated as follows:

$$\begin{aligned}
 T_c &= 10 \text{ min} & C &= 0.50 \\
 I_{2yr} &= 76.8 \text{ mm/hr} & A &= 0.182 \text{ ha} \\
 Q_{allow} &= 2.78 \text{ CIA} \\
 &= 2.78 (0.50) (76.8) (0.182) \\
 &= 19.4 \text{ L/s}
 \end{aligned}$$

Refer to the Pre-Development Storm Drainage Plan (122133-SWM1) and to **Appendix E** for detailed SWM calculations.

2.3.3 Post-Development Conditions

The post-development conditions will include both uncontrolled direct runoff and controlled site flows. Flows from the building roof, which essentially covers most of the site area, will be directed to an internal SWM storage tank and controlled/pumped prior to being discharged into the municipal storm sewer in Laurier Avenue. The area in the front and sides of the proposed building will sheet drain uncontrolled towards the street, as there is no practical way to capture this drainage. This is similar to most new development in the downtown area.

2.3.3.1 Area A-1: Direct Runoff from Subject Site

The uncontrolled post-development flow from this sub-catchment area was calculated using the Rational Method to be approximately 3.2 L/s during the 5-year design event and 6.2 L/s during the 100-year design event. Refer to the Post-Development Stormwater Management Plan (122133-SWM2) and to **Appendix E** for detailed SWM calculations.

2.3.3.2 Area A-2: Controlled Site Flow

Stormwater runoff from this sub-catchment area will be captured by the main roof, lower terrace roof and surface parking lot area drains directed to an internal SWM storage tank. Stormwater collected within the storage tank will be pumped up to the new 250mm storm service and released into the existing 1676mm storm sewer in Laurier Avenue. A pump (designed by the mechanical consultant) is required to control flow from the tank to a maximum rate of 3.78 L/s (60 USGPM), which is significantly less than the maximum allowable flow for this catchment area. A “stand-by” pump will be provided for emergency and/or maintenance purposes. An emergency power supply will also be provided and the internal SWM tank will be equipped with an emergency overflow pipe from the top of the tank, out letting to the surface on the south side

of the building (the internal plumbing is to be pressure rated piping specified by the mechanical engineer. The storm service will be equipped with a backflow prevention device to protect the building from any potential sewer back-ups. **Table 3** summarizes the controlled post-development design flows and approximate storage volumes from area A-2 for the 2-year, 5-year and 100-year design events.

Table 3: Internal Stormwater Storage Tank and Pumped Flow

Design Event	Post-Development Conditions		
	Pumped Design Flow (L/s)	Volume Required (m ³)	Volume Provided (m ³)
1:2 Year	3.78 L/s	23.1 m ³	> 105m ³
1:5 Year		34.6 m ³	
1:100 Year		80.1m ³	
1:100 Year + 20% IDF increase	3.78 L/s	101.5 m ³	

As indicated in the **Table 3** above, the internal stormwater storage tank will provide sufficient storage for the 100-year design event, including an increased volume due to a 20% increase in rainfall intensity. Refer to **Appendix E** for detailed calculations.

2.3.3.3 Stormwater Flow Summary

Table 3.1 provides a summary of the total post-development flows from the site and compares them to the allowable release rate specified by the City of Ottawa.

Table 3.1: Stormwater Flows Comparison Table

Design Event	Pre-Development Conditions		Post-Development Conditions			
	Uncontrolled Flow (L/s)	Allowable Release Rate (L/s)	A-1 Flow (L/s)	A-2 Flow (L/s)	Total Flow (L/s)	Reduction in Flow (L/s or %)*
5-Yr	46.8	19.4	3.2	3.8	7.0	39.8 or 85%
100-Yr	89.2		6.2	3.8	10.0	79.2 or 89%

*Reduced flow compared to uncontrolled pre-development conditions from the current 0.182 ha site area.

As indicated in the table above, the post-development flows from the site will be less than the allowable release rate specified by the City of Ottawa. Furthermore, this represents significant reductions in total site flow rate when compared to the uncontrolled pre-development conditions.

2.3.4 Stormwater Quality Control

As stated above, the subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). Based on preliminary feedback from the RVCA, landscaped areas and roof tops are considered clean for the purposes of water quality and aquatic habitat protection. In this case, since the parking will be mostly covered and/or provided underground, on-site stormwater quality control will not be required. Refer to **Appendix A** for correspondence from the RVCA.

3.0 SITE GRADING

The existing site is relatively flat, and generally slopes in a northeastern direction. The northwest property corner is approximately 69.30m and slopes down to 68.85m at the northeastern property corner. The existing grades at the southwestern corner of property is approximately 70.10 and approximately 70.05 at the southeastern property corner. The finished floor elevation (FFE) will vary (69.10m - 69.30m) to match the existing grades along the south side of Laurier Avenue. The grades around the perimeter of the site will be maintained. Refer to the enclosed Grading and Erosion & Sediment Control Plan (122133-GR) for details.

4.0 GEOTECHNICAL INVESTIGATIONS

A Geotechnical Investigation Report has been prepared by Paterson Group Inc. for the proposed project. Refer to the Geotechnical Report¹ for subsurface conditions, construction recommendations and geotechnical inspection requirements.

5.0 EROSION AND SEDIMENT CONTROL

To mitigate erosion and to prevent sediment from entering the storm drainage system, temporary erosion and sediment control measures will be implemented on-site during construction in accordance with Best Management Practices for Erosion and Sediment Control. Details are provided on the Grading and Erosion and Sediment Control Plan. This includes the following measures:

- Filter bags / catchbasin inserts (sediment sacks) will be placed under the grates of nearby catchbasins and manholes and they will remain in place until vegetation has been established and construction is completed.
- Silt fencing will be placed per OPSS 577 and OPSD 219.110 along the surrounding construction limits.
- Mud mats will be installed at the site entrances.
- Street sweeping, and cleaning will be performed, as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site.
- On-site dewatering is to be directed to a sediment trap and/or gravel splash pad and discharged safely to an approved outlet as directed by the engineer.
- Any stockpiled material will be properly managed to prevent those materials from entering the sewer system and/or the downstream ditch or watercourse.

The temporary erosion and sediment control measures will be implemented prior to construction and will remain in place during all phases of construction. Regular inspection and maintenance of the erosion control measures will be undertaken.

6.0 CONCLUSION

This report has been prepared in support of a Site Plan Control application for the proposed mixed-use development located at 150 Laurier Avenue. The conclusions are as follows:

- The proposed development will be serviced by the municipal infrastructure in Laurier Avenue.
 - Sanitary flows will continue to be directed to the existing 450mm dia. municipal sanitary sewer in Laurier Avenue West via a new 200mm dia. sanitary service lateral.
 - Storm flows from the roof and parking area will be sent to internal SWM tank, then pumped out to the existing municipal 1676mm dia. storm sewer in Laurier Avenue West via a new 250mm dia. storm service lateral.
 - The proposed development will continue to be serviced by the municipal watermain network via two (2) 150mm dia. water service laterals connecting to the existing 300mm watermain in Laurier Avenue West. Adequate water and system pressures will exist throughout the watermain network under the specified 'Max Day + Fire Flow' and 'Peak Hour' conditions.
- The proposed building will be sprinklered and the municipal watermain network, including the nearby municipal fire hydrants will provide the necessary water for firefighting purposes.
- The total post-development flow directed to the municipal storm sewer system will be approximately 7.0 L/s during the 5-year design event and 10.0 L/s during the 100-year event, both of which are less than the allowable release rate for the site (19.4 L/s) specified by the City of Ottawa.
- Regular inspection and maintenance of the building services, roof drains, internal SWM tank and pumps is recommended to ensure that the storm drainage system is clean and operational.
- Erosion and sediment controls are to be provided during construction.

It is recommended that the proposed site servicing and stormwater management design be approved for implementation.

NOVATECH

Prepared by:



Chris Visser
Project Coordinator

Reviewed by:



François Thauvette, P. Eng.
Senior Project Manager

APPENDIX A
Correspondence

Francois Thauvette

From: Robert Verch <rverch@rlaarchitecture.ca>
Sent: Tuesday, August 9, 2022 11:40 AM
To: Cara Ruddle; Francois Thauvette
Subject: 1827: 150 Laurier Avenue West - Pre-consultation Follow-up
Attachments: Laurier 150_TOR_Design Brief.pdf; PC2022-0154 - 150 Laurier - List of Plans and Studies.pdf; PC2022-0154 - 150 Laurier - Pre-Consultation Follow-up.pdf; HPDS Example Checklist.pdf; HPDS Overview for Applicants.pdf

Francois: it doesn't look like I sent this to you. The Pre-consult follow up is the only one that may mean anything.

Rob

From: Nitsche, Kersten <Kersten.Nitsche@ottawa.ca>
Sent: July-13-22 5:11 PM
To: Roderick Lahey <rlahey@rlaarchitecture.ca>; Robert Verch <rverch@rlaarchitecture.ca>
Cc: Nakanishi, Alice <alice.nakanishi@dx.com>; Mary Huang <maryhuanggd@gmail.com>; Gervais, Josiane <josiane.gervais@ottawa.ca>; Bakhit, Reza <reza.bakhit@ottawa.ca>; O'Connor, Ann <Ann.OConnor@ottawa.ca>; Giampa, Mike <Mike.Giampa@ottawa.ca>
Subject: 150 Laurier Avenue West - Pre-consultation Follow-up

Good afternoon,

Please refer to the attached notes regarding the Pre-Application Consultation Meeting held on July 5, 2022 for the property at 150 Laurier Avenue West for a Site Plan Control application in order to allow the development of an 27-storey mixed-use building with underground parking. I have also attached the list of required plans and studies for a complete application.

Please refer to the links to [Guide to preparing studies and plans](#) and [fees](#) for further information. Additional information is available related to [building permits](#), [development charges](#), and the [Accessibility Design Standards](#). Further to this, please review the attached information sheets on the High Performance Development Standards (HPDS) and note that a Waste Reduction Workplan Summary is required for the construction project as required by O.Reg. 102/94, being "Waste Audits and Waste Reduction Work Plans" made under the Environmental Protection Act, RSO 1990, c E.19, as amended. Please also be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting geoinformation@ottawa.ca.

These pre-consultation comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,
Kersten

Kersten Nitsche, MCIP RPP
Planner III (A)
Development Review Central
Planning, Real Estate and Economic Development
110 Laurier Avenue West, 4th Floor, Ottawa, ON K1P 1J1
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Pre-Application Consultation Meeting Notes

Property Address: 150 Laurier Avenue West
PC2022-0154
July 5, 2022 (Virtual Meeting)

Attendees:

- Kersten Nitsche (City of Ottawa – File Lead and Planner)
- Mike Giampa (City of Ottawa – Transportation)
- Ann O'Connor (City of Ottawa – Urban Design)
- Rod Lahey (RLA – Applicant)
- Rob Verch (RLA – Applicant)
- Alice Nakanishi (Community representative – CCA)
- Mary Huang (Community representative – CCA)

Regrets:

- Josiane Gervais (City of Ottawa – Transportation)
- Reza Bakhit (City of Ottawa – Infrastructural Approvals Project Manager)

Overview:

- Introduction of meeting attendees. Discussion is subject to the non-disclosure agreement, unless the applicant waives it in writing.
- Proposal is for a 27-storey mixed-use building in conformance with the current zoning of the site (i.e., Site Plan Control only). Underground parking with some surface parking that will be for commercial parking, drop-offs, visitors, etc.

Planning (Kersten Nitsche):

- As the proposal will conform with the zoning, this is a straight-forward application process for Site Plan Control.
- Please review the Secondary Plan policies, especially with respect to urban design (e.g., roof treatment, human scale, etc.), pedestrian realm, and height/viewplanes.
- The redevelopment of this site is an opportunity for the pedestrian realm to be enhanced.
 - To support the pedestrian realm, a right-of-way protection of 20 m exists along this portion of Laurier. Note that the maximum dedication is 0.9 m from the subject property
 - The site is subject to the widening/easement policy. This policy includes the following:
 - Certain streets identified in Table 1, Road Right-of-way Protection, are subject to a widening/easement policy. The widening/easement policy may be applied **in addition to any required right-of-way widening**. The policy can also be applied as a stand-alone requirement as identified in Table 1.
 - An unobstructed surface easement for the use of pedestrians, or other forms of active transportation, will be required along the full length of property frontages.
 - Unless otherwise determined by the City, this easement will generally consist of dimensions as described in this paragraph.
 - The width of this easement measured from the proposed right-of-way varies depending on the design of the building.
 - Where the building is setback and there is no building cantilever, a width of 1.5 metres is required.

- Where a building cantilevers over the easement the easement will have a height of 4.5 metres from finished grade surface, and a width of 1.5 metres.
- Where columns support the part of a building built over the easement a width of 1.5 metres between the columns and the closer of the building face and any door swing area is required.
- Where a cantilevered building and a column-supported building are located adjacent to each other, there must be a clear passage for pedestrians of 1.5 metres in the easement where the buildings meet.
- The travel surface must be AODA compliant, continuous and at the same grade at the adjacent sidewalk and free of obstructions or obstacles.
 - See the provisions of Annex 1 of the current OP/Schedule C16 of new Official Plan for further information.
- Ensure the development meets the provisions for the MD zone with respect to GFA on the ground floor (see Section 193(2) of the Zoning By-law)
- Ensure the required amenity space is being provided. The concept plan submitted for discussion indicates that the communal amenity space does not meet the minimum requirement.
- While the provided vehicle and bicycle parking meets the provisions of the Zoning By-law, less vehicle parking and more bicycle parking should be considered. The location of this site in close proximity to transit and cycling infrastructure is supportive of residents who would prefer to own bicycles over cars. Some units may have need for more than one bicycle parking space. Further to this, as noted by the community representatives, a bicycle repair room or facilities should be provided for residents.

Community Comments (Alice and Mary):

- Is there sufficient setback for ice/snow not falling onto the sidewalk?
- Are there going to be car-share space?
- Need more visitor spaces and parking spaces for care and support workers for residents
- Is there going to be a bike repair room?
- Need more family-oriented size units, especially as this site is in close proximity to Lisgar Collegiate
- Need more greenery. Suggest low-rise planters for seating. With the church next door, there are often long line-ups for events during the summer.
- It is within the permitted zoning – usually through a rezoning, the community will ask for affordable housing. For this development – is there any affordable housing proposed?
- Agree with Alice re: 3 bedroom units, especially projects near schools (Lisgar is close by), people working from home. Without three bedrooms, there's usually only just room for a couple or a couple with one child and not enough room for larger families, especially those that work from home.
- Universal design for doors and corridors – would like to see more than the minimum requirement
- Centretown already has a higher percentage of aging population. The Ontario Building Code is behind on demographics – buildings are for 40 – 50 years and need to plan for that now. Such things as barrier-free showers/walk-in showers, etc.
- Environmental building standards – in light of climate change

Urban Design (Ann O'Connor)

- A Design Brief that follows the provided Terms of Reference is required upon submission of the application.
- The subject site is within a Design Priority Area (DPA) and is subject to the Urban Design Review Panel (UDRP) review.
- Explore ways to complement and respect the character of the heritage building (First Baptist Church) neighbouring site to east.
 - Consider a plainer expression, rather than the vertical expression, of the proposed building on the eastern façade, facing the church. A different architectural approach may lend itself to be more compatible with the heritage aesthetic. Also consider that this angle/view of the building will also be highly visible and be the background to the heritage building.
 - Explore alternate materials for the base of the building that are more complementary to the heritage building, such as masonry.
 - Consider a using setbacks and stepbacks to create greater transition.
- Explore reducing the floorplate to comply with the High-Rise Guidelines (S.2.24 outlines a maximum of 750m²).
- Explore increasing the 7.2m setback from the southern property line to be 11.5m (an additional 4.3m) as per S.2.25 of the High Rise Guidelines. It's true that S. 2.26 does consider a reduced separation in the Central Area, but this only applies where towers are staggered and do not overlap by more than 15-20% the length of the facing facades, which does not apply in this case.
- Consider the livability, privacy and access to light for the residential units facing the western lot line on floors 2 to 5. Consider an increased setback and materiality changes. Consider that the current setback is 0.5m and the adjacent lot has a 2-storey building built on the property line and that this neighbouring property may redevelop into a potential future high-rise.
- Staff support the intention to ensure the building height is below the angular height plane. Ensure the development respects the visual integrity of parliament buildings and other national symbols as seen from key viewpoints as outlined in OP Annex 6A.
- Ensure the base of the building develops to be human scaled and creates pedestrian interest at-grade.
- Consider any/all opportunities to introduce some landscaping and greenery to the site.
- Please refer and conform to S. 1.3.3 (e) Design Criteria in the Central Area Secondary Plan. This section addresses design criteria including roof treatment, human scale, sunlight, etc.
- Please refer and conform to the Urban Design Guidelines for High-rise Buildings, Transit Oriented Development Guidelines, and Bird-Safe Design Guidelines.

Engineering (Reza Bakhit)

General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided and all easements shall be shown on the engineering plans..
- A deep excavation and dewatering operations have the potential to cause damages to the neighboring adjacent buildings/ City infrastructure. Document that construction activities

(excavation, dewatering, vibrations associated with construction, etc.) will not have an impact on any adjacent buildings and infrastructure.

- A **Record of Site Condition (RSC) in accordance with O.Reg. 153/04** will be required to be filed and acknowledged by the Ministry prior to issuance of a building permit due to a change to a more sensitive property use.
- Reference documents for information purposes:
 - Ottawa Sewer Design Guidelines (October 2012)
 - Technical Bulletin PIEDTB-2016-01
 - Technical Bulletins ISTB-2018-01, ISTB-2018-02 and ISTB-2018-03.
 - Ottawa Design Guidelines - Water Distribution (2010)
 - Technical Bulletin ISTB-2021-03
 - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
 - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
 - City of Ottawa Environmental Noise Control Guidelines (January 2016)
 - City of Ottawa Accessibility Design Standards (2012) (City recommends development be in accordance with these standards on private property)
 - Ottawa Standard Tender Documents (latest version)
 - Ontario Provincial Standards for Roads & Public Works (2013)
 - Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-424 x.44455).
- Please note that this is the applicant responsibility to refer to the latest applicable guidelines while preparing reports and studies.
- Specific information has been incorporated into both the [Guide to Preparing Studies and Plans](#) for a site plan. The guide outlines the requirement for a statement to be provided on the plan about where the property boundaries have been derived from.
- Added to the general information for servicing and grading plans is a note that an **O.L.S.** should be engaged when reporting on or relating information to property boundaries or existing conditions. The importance of engaging an **O.L.S.** for development projects is emphasized.
- Please note that these comments are considered preliminary based on the information available to date and therefore maybe amended as additional details become available and presented to the City. It is the responsibility of the applicant to verify the above information. The applicant may contact me for follow-up questions related to engineering/infrastructure prior to submission of an application if necessary.



Disclaimer:

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

Stormwater Management Criteria and Information:

- **Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the **100-year storm event**, to a **2-year pre-development level**. The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. **[If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5]**. The time of concentration (T_c) used to determine the pre-development condition should be calculated. *T_c should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations*.
- Any storm events greater than the established **2-year allowable** release rate, up to and including the **100-year storm event**, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.
- Please note that foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. **It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.**
- **Water Quality Control:** Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.
- Please note that as per *Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14)* **there shall be no surface ponding on private parking areas during the 2-year storm rainfall event.**
- **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.
- When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.**
- In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.
- Please provide information on UG storage pipe. Provide required cover over pipe and details, chart of storage values, capacity etc. How will this pipe be cleaned of sediment and debris?

- Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc.
- Provide a cross section of underground chamber system showing invert and obvert/top, major and minor HWLs, top of ground, system volume provided during major and minor events. UG storage to provide actual 2- and 100-year event storage requirements.
- In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.
- Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.
- Please note that the minimum orifice dia. for a plug style **ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s** in order to reduce the likelihood of plugging.
- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.
- Please provide a **Pre-Development Drainage Area Plan** to define the pre-development drainage areas/patterns. **Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.**
- **If rooftop control** and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- If **Window wells** are proposed, they are to be indirectly connected to the footing drains. A detail of window well with indirect connection is required, as is a note at window well location speaking to indirect connection.
- There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.

Storm Sewer:

- A 1650mm dia. CONC storm sewer (1965) is available within Laurier Ave West.

Sanitary Sewer Laurier Ave West:

- A 450 mm dia. CONC Sanitary sewer (1965) is available within Laurier Ave West.
- Please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity. An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- Please apply the wastewater design flow parameters in Technical Bulletin PIEDTB-2018-01.

- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.
- A backwater valve is required on the sanitary service for protection.

Water:

- A 305 mm dia. DI watermain (1984) is available within Laurier Ave West.
- Existing residential service to be blanked at the main.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m³/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration*.
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
 - Type of Development and Units
 - Site Address
 - A plan showing the proposed water service connection location.
 - **Average Daily Demand** (L/s)
 - **Maximum Daily Demand** (L/s)
 - **Peak Hour Demand** (L/s)
 - **Fire Flow** (L/min)
- [*Fire flow demand requirements shall be based on **Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 1999***]
- [*Fire flow demand requirements shall be based on ISTB-2021-03*]
- Note: The OBC method can be used if the fire demand for the private property is less than 9,000 L/min. If the OBC fire demand reaches 9000 L/min, then the FUS method is to be used.
- *Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).*
- **Hydrant capacity shall be assessed to demonstrate the RFF can be achieved.** Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

Snow Storage:

- Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patters or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m.

Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

Gas pressure regulating station

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



Gas Pressure
Regulating Station.pdf

Regarding Quantity Estimates:

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

Road Reinstatement

- Where servicing involves three or more service trenches, either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By-Law 2003-445 and City Standard Detail Drawing R10. The amount of overlay will depend on condition of roadway and width of roadway(s).

Phase One Environmental Site Assessment:

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

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

RSC (Record of Site Condition)

- An RSC is required when changing the land use of a property to a more sensitive land use.

[Submitting a record of site condition | Ontario.ca](#)

Geotechnical Investigation:

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

Noise Study:

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

Wind analysis:

- When greater than 9 storeys in height Wind Study for all buildings/dwellings.
- A wind analysis must be prepared, signed and stamped by an engineer who specializes in pedestrian level wind evaluation. Where a wind analysis is prepared by a company which do not have extensive experience in pedestrian level wind evaluation, an independent peer review may be required at the expense of the proponent. [Terms of Reference: Wind Analysis \(ottawa.ca\)](#)

Exterior Site Lighting:

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

Fourth (4th) Review Charge:

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

Construction approach

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

Transportation

- Follow Transportation Impact Assessment Guidelines:
 - A TIA is required. Submit a Scoping Report at your earliest convenience to josiane.gervais@ottawa.ca.
 - This site falls within the “Urban” area designation, based upon the Transportation Master Plan ‘Inner Urban’ area (i.e. 400m Radius for study area).
 - Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
 - Request base mapping asap if RMA is required. Contact Engineering Services (<https://ottawa.ca/en/city-hall/planning-and-development/engineering-services>)
 - An update to the TRANS Trip Generation Manual has been completed (October 2020). This manual is to be utilized for this TIA. A copy of this document can be provided upon request.
- ROW protection on Laurier between Bronson and Elgin is 20m even. Future ROW line must be shown on the site plan.
- Provide as much clear throat length as possible at the access.
- The access location is supported.
- Site is within 500m of Parliament Station.
- As the proposed site is multi-use and for general public use, AODA legislation applies.
 - Ensure all crosswalks located internally on the site provide a TWSI at the depressed curb, per requirements of the Integrated Accessibility Standards Regulation under the AODA.
 - Clearly define accessible parking stalls and ensure they meet AODA standards (include an access aisle next to the parking stall and a pedestrian curb ramp at the end of the access aisle, as required).
 - Please consider using the City’s Accessibility Design Standards, which provide a summary of AODA requirements. <https://ottawa.ca/en/city-hall/creating-equal-inclusive-and-diverse-city/accessibility-services/accessibility-design-standards-features#accessibility-design-standards>
- On site plan:
 - Ensure site access meets the City’s Private Approach Bylaw.
 - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
 - Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
 - Turning movement diagrams required for internal movements (loading areas, garbage).
 - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).
 - Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)
 - Sidewalk is to be continuous across access as per City Specification 7.1.

- Show slope of garage ramp on site plan. Note that underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%. Ramp grades greater than 15% can be psychological barriers to some drivers.
- Parking stalls at the end of dead-end parking aisles require adequate turning around space

Parks

- Cash-in-lieu will be required as a condition of Site Plan Control approval.
- Parks and Facilities Planning is currently undertaking a legislated replacement of the Parkland Dedication By-law, with the new by-law to be considered by City Council on August 31, 2022. The by-law recommended for approval by Council increases the required parkland conveyance for mid-rise and high-rise residential development, and includes one-year transition policies for in-stream development and building permit applications or those that will be submitted and meet the requirements for completeness by September 1, 2022.

To ensure you are aware of parkland dedication requirements for your proposed development, we encourage you to familiarize yourself with the [staff report](#) and [recommended by-law](#) that were recommended for Council approval by [Planning Committee on July 7, 2022](#). For any questions or information, please contact the project lead at Kersten.Nitsche@ottawa.ca

Heritage

- A Heritage Impact Assessment/Cultural Heritage Impact Statement is required for submission given the proximity to the First Baptist Church (designated under Part IV of the Ontario Heritage Act) and the potential for impact

City Surveyor

- The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
- Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.
- Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

Waste Services

- New multi-unit residential development, defined as containing six (6) or more units, intending to receive City waste collection services will be required, as of June 1, 2022, to participate in the City's Green Bin program in accordance with Council's approval of the [multi-residential waste diversion strategy](#). The development must include adequate facilities for the proper storage of allocated garbage, recycling, and green bin containers and such facilities built in accordance with the approved site design. Questions regarding this change and requirements can be directed to Andre.Laplante@ottawa.ca.

Submission requirements and fees

- Outline the submission requirements and fees.
- Additional information regarding fees related to planning applications can be found [here](#).

- Plans are to be standard A1 size (594 mm x 841 mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- All PDF submitted documents are to be unlocked and flattened.

Next steps

- Encourage applicant to discuss the proposal with Councillor, community groups and neighbours.

APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Legend: **S** indicates that the study or plan is required with application submission.
A indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information and guidance on preparing required studies and plans refer [here](#):

S/A	ENGINEERING		S/A
S	1. Site Servicing Plan	2. Site Servicing Study / Assessment of Adequacy of Public Services	S
S	3. Grade Control and Drainage Plan	4. Geotechnical Study / Slope Stability Study	S
	5. Composite Utility Plan	6. Groundwater Impact Study	
	7. Servicing Options Report	8. Wellhead Protection Study	
S	9. Transportation Impact Assessment (TIA)	10. Erosion and Sediment Control Plan / Brief	S
S	11. Storm water Management Report / Brief	12. Hydro geological and Terrain Analysis	
	13. Hydraulic Water main Analysis	14. Noise / Vibration Study	S
S	15. Roof Drainage Plan	16. Existing Conditions and Removals Plan	S

S/A	PLANNING / DESIGN / SURVEY		S/A
	17. Draft Plan of Subdivision	18. Plan Showing Layout of Parking Garage	S
	19. Draft Plan of Condominium	20. Planning Rationale	S
S	21. Site Plan	22. Minimum Distance Separation (MDS)	
	23. Concept Plan Showing Proposed Land Uses and Landscaping	24. Agrology and Soil Capability Study	
	25. Concept Plan Showing Ultimate Use of Land	26. Cultural Heritage Impact Statement	S
S	27. Landscape Plan	28. Archaeological Resource Assessment Requirements: S (site plan) A (subdivision, condo)	
S	29. Survey Plan	30. Shadow Analysis	S
S	31. Architectural Building Elevation Drawings (dimensioned)	32. Design Brief (includes the Design Review Panel Submission Requirements)	S
S	33. Wind Analysis		

S/A	ENVIRONMENTAL		S/A
S	34. Phase 1 Environmental Site Assessment	35. Impact Assessment of Adjacent Waste Disposal/Former Landfill Site	
A	36. Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37. Assessment of Landform Features	
S	38. Record of Site Condition	39. Mineral Resource Impact Assessment	
S	40. Tree Conservation Report	41. Environmental Impact Statement / Impact Assessment of Endangered Species	
	42. Mine Hazard Study / Abandoned Pit or Quarry Study	43. Integrated Environmental Review (Draft, as part of Planning Rationale)	

S/A	ADDITIONAL REQUIREMENTS		S/A
S	44. Applicant's Public Consultation Strategy (may be provided as part of the Planning Rationale)	45. Site Lighting Plan	
A	46. Site Lighting Certification Letter	47.	

Meeting Date: July 5, 2022

Application Type: *Site Plan Control*

File Lead (Assigned Planner): Kersten Nitsche

Infrastructure Approvals Project Manager: Reza Bakhit

Site Address (Municipal Address): 150 Laurier Ave West *Preliminary Assessment: 1 2 3 4 5

*One (1) indicates that considerable major revisions are required before a planning application is submitted, while five (5) suggests that proposal appears to meet the City's key land use policies and guidelines. **This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.**

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, the Planning, Real Estate and Economic Development Department will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the Planning, Real Estate and Economic Development Department.

Francois Thauvette

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: Tuesday, August 23, 2022 10:30 AM
To: Francois Thauvette
Subject: RE: 150-160 Laurier Ave - Mixed-Use Development - RVCA Pre-Consultation

Hi Francois

Based on the plan, and description, the RVCA has no on-site requirements for water quality protection. It is encouraged to implement best management practices into the design where possible.

Thanks,

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

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: Monday, August 22, 2022 1:58 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Chris Visser <c.visser@novatech-eng.com>
Subject: 150-160 Laurier Ave - Mixed-Use Development - RVCA Pre-Consultation

Hi Eric,

We are working on a proposed 27-storey mixed-use development downtown in the City of Ottawa (150 & 160 Laurier Avenue W). The site will include a 6-storey podium + 21-storey residential tower above. Most of the parking will be provided underground (5 levels), however there will be a few (covered) at-grade parking stalls and likely 2-3 exterior visitor parking stalls (open to the sky). See attached preliminary Site Plan for details. Based on similar developments downtown, on-site quality control measures are not typically required for 2-3 parking stalls. Please review and confirm if our assumption is correct.

Regards,

François Thauvette, P. Eng., Senior Project Manager | Land Development & Public Sector Engineering

NOVATECH Engineers, Planners & Landscape Architects

Please note that I am working from home. Email or MS Teams are the best ways to contact me.

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 219 | Cell: 613.276.0310 | Fax: 613.254.5867

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APPENDIX B

Development Servicing Study Checklist

Servicing study guidelines for development applications

4. Development Servicing Study Checklist

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

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

4.1 General Content

- Executive Summary (for larger reports only).
- Date and revision number of the report.
- Location map and plan showing municipal address, boundary, and layout of proposed development.
- Plan showing the site and location of all existing services.
- 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.
- Summary of Pre-consultation Meetings with City and other approval agencies.
- Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria.
- Statement of objectives and servicing criteria.
- Identification of existing and proposed infrastructure available in the immediate area.
- 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).
- 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.
- 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.
- Proposed phasing of the development, if applicable.

- Reference to geotechnical studies and recommendations concerning servicing.
- 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

4.2 Development Servicing Report: Water

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

- 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.
- Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.
- Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
- Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

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).
- Confirm consistency with Master Servicing Study and/or justifications for deviations.
- 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.
- Description of existing sanitary sewer available for discharge of wastewater from proposed development.
- 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)
- Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.
- Description of proposed sewer network including sewers, pumping stations, and forcemains.
- Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).
- Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.
- Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.
- Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.
- Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

- Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)
- Analysis of available capacity in existing public infrastructure.
- A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.
- 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.
- Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
- Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
- Set-back from private sewage disposal systems.
- Watercourse and hazard lands setbacks.
- Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
- Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.
- Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- 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.
- Any proposed diversion of drainage catchment areas from one outlet to another.
- Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- 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.
- Identification of potential impacts to receiving watercourses
- Identification of municipal drains and related approval requirements.
- Descriptions of how the conveyance and storage capacity will be achieved for the development.
- 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

- Inclusion of hydraulic analysis including hydraulic grade line elevations.
- Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- 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.
- Identification of fill constraints related to floodplain and geotechnical investigation.

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.
- Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.
- Changes to Municipal Drains.
- Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

- Clearly stated conclusions and recommendations
- Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.
- All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

APPENDIX C
Sanitary Sewage Calculations

150 Laurier Ave W. - Proposed Mixed-Use Building SANITARY SEWAGE ANALYSIS

Residential	Post-Development	
Number of 1-Bedroom Apartments	147	
Number of Persons per 1-Bdrm Apartment	1.4	
Number of 2-Bedroom Apartments (including Penthouse Loft Units)	165	
Number of Persons per 2-Bdrm Apartment	2.1	
Design Population	553	
Average Daily Flow per resident	280	L/c/day
Peak Factor (Harmon Formula)	3.62	
Peak Residential Flow	6.49	L/s
Commercial		
Commercial Space	500.0	m ²
Average Commercial Flow	2.8	L/m ² /day
Commercial Peaking Factor	1.5	
Peak Commercial Flow	0.02	L/s
Extraneous Flow		
Site Area	0.181	ha
Infiltration Allowance	0.33	L/s/ha
Peak Extraneous Flows	0.06	L/s
Total Peak Sanitary Flow	6.57	L/s

APPENDIX D

Water Demands, FUS Fire Flow Calculations, City of Ottawa Boundary Conditions and Hydrant Location Sketch

150 Laurier: 27 Storey Mixed-Use Building WATER ANALYSIS

DOMESTIC WATER DEMANDS

Residential Use	Post-Development	
Number of Studio / 1-Bedroom Units	147	
Persons per Studio / 1-Bedroom Unit	1.4	
Number of 2-Bedroom Units	165	
Persons per 2-Bedroom Unit	2.1	
Total Number of Units	312	
Total Design Population	552	
Average Day Demand (280 L/c/day)	1.79	L/s/day
Maximum Day Demand (2.5 x avg. day)	4.47	L/s
Peak Hour Demand (2.2 x max. day)	9.84	L/s
Commercial/Amenity Use		
Commercial Space	500	m ²
Average Day Demand (28,000 L/ha/day)	0.02	L/s
Maximum Day Demand (1.5 x avg. day)	0.02	L/s
Peak Hour Demand (1.8 x max. day)	0.04	L/s
Total Average Day Demand	1.81	L/s
Total Maximum Day Demand	4.50	L/s
Total Peak Hour Demand	9.88	L/s

BOUNDARY CONDITIONS

Minimum HGL =	106.7	m
Maximum HGL =	115.5	m
Max Day + Fire Flow =	108.3	m

PRESSURE TESTS

Existing ground elevation at connection	69.0	m
Low Pressure Pressure = (Min. HGL - (Existing Ground Elevation - Watermain Elevation)) x 1.42 PSI/m (should be > 40 PSI)	57.0	PSI
High Pressure Pressure = (Max HGL - (Existing Ground Elevation - Watermain Elevation)) x 1.42 PSI/m (should be between 50- 70 PSI)	69.0	PSI
Max Day + Fire Flow Pressure = (Max Day + Fire Flow - (Existing Ground Elevation - Watermain Elevation)) x 1.42 PSI/m (should be > 20 PSI)	59.0	PSI

To convert Head(m) to PSI: multiply by 1.42

FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines



Engineers, Planners & Landscape Architects

Novatech Project #: 122133
 Project Name: 150 Laurier Ave
 Date: 8/18/2022
 Input By: FST
 Reviewed By: F. Thauvette

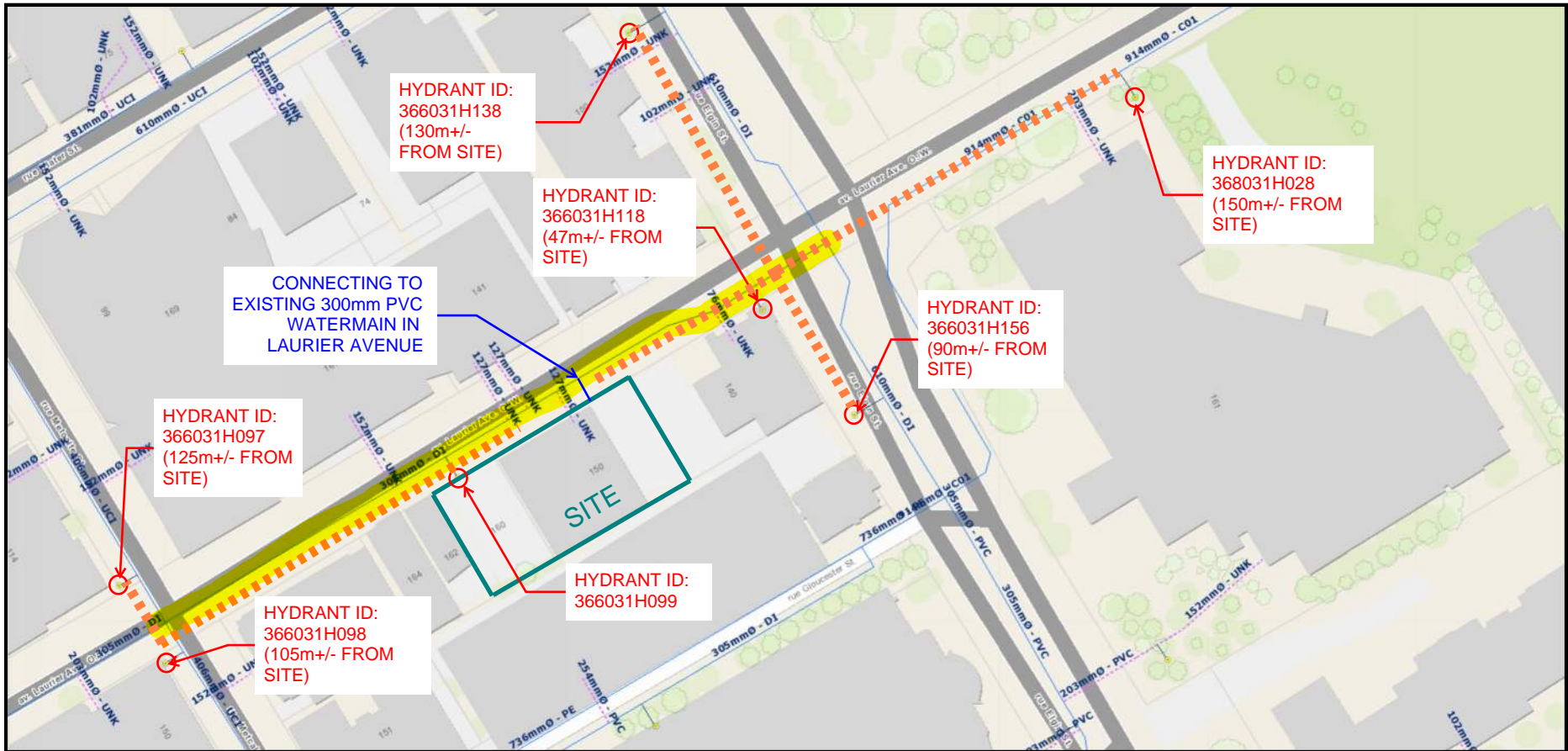
Legend

Input by User
 No Information or Input Required

Building Description: 27-Storey Building with 6-Storey Podium
 Type II - Non-combustible construction

Step		Choose		Value Used	Total Fire Flow (L/min)	
Base Fire Flow						
1	Construction Material		Multiplier		0.8	
	Coefficient related to type of construction C	Type V - Wood frame		1.5		
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction	Yes	0.8		
Type I - Fire resistive construction (2 hrs)			0.6			
2	Floor Area				13,000	
	A	Podium Level Footprint (m ²)	913.5			
		Total Floors/Storeys (Podium)	6			
		Tower Footprint (m ²)	814			
		Total Floors/Storeys (Tower)	21			
		Protected Openings (1 hr)				
		Area of structure considered (m ²)		5,282		
F	Base fire flow without reductions					
	F = 220 C (A)^{0.5}					
Reductions or Surcharges						
3	Occupancy hazard reduction or surcharge		Reduction/Surcharge		11,050	
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
Rapid burning			25%			
4	Sprinkler Reduction (100% sprinkler coverage of building used)		Reduction		-5,525	
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%		
		Standard Water Supply	Yes	-10%		
		Fully Supervised System	Yes	-10%		
	Cumulative Total		-50%			
5	Exposure Surcharge (cumulative %, Maximum Exposure Adjustment Charge Used)		Surcharge		8,288	
	(3)	North Side	20.1 - 30 m			
		East Side	3.1 - 10 m			
		South Side	0 - 3 m			
		West Side	0 - 3 m			
	Cumulative Total		75%			
Results						
6	(1) + (2) + (3)	Total Required Fire Flow, rounded to nearest 1000L/min		L/min	14,000	
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	233
				or	USGPM	3,699
7	Storage Volume	Required Duration of Fire Flow (hours)		Hours	3	
		Required Volume of Fire Flow (m ³)		m ³	2520	

FIRE HYDRANT SKETCH AND WATER INFRASTRUCTURE



Francois Thauvette

From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: Monday, August 29, 2022 12:52 PM
To: Francois Thauvette
Subject: RE: 150 Laurier - Request for Watermain Boundary Conditions
Attachments: 150 Laurier Street August 2022.pdf

Hi Francois,

The following are boundary conditions, HGL, for hydraulic analysis at 150 Laurier Street (zone 1W) assumed to be a dual connection to the 305 mm watermain on Laurier Street (see attached PDF for location).

Both Connections:

Minimum HGL: 106.7 m

Maximum HGL: 115.5 m

Max Day + Fire Flow (233 L/s): 108.3 m

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

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

Regards,

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

Project Manager

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

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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

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

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

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: Monday, August 29, 2022 11:01 AM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Subject: RE: 150 Laurier - Request for Watermain Boundary Conditions

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Any updates on the WM boundary conditions request? The client wants us to submit to the City tomorrow and we would like to include the WM analysis (if we get the information on time).

Regards,

François Thauvette, P. Eng., Senior Project Manager | Land Development & Public Sector Engineering

NOVATECH Engineers, Planners & Landscape Architects

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From: Francois Thauvette

Sent: Thursday, August 18, 2022 9:42 AM

To: Bakhit, Reza <reza.bakhit@ottawa.ca>

Cc: Chris Visser <c.visser@novatech-eng.com>

Subject: RE: 150 Laurier - Request for Watermain Boundary Conditions

Hi Reza,

We are re-sending this e-mail to request municipal watermain boundary conditions for the above-noted development. This request is for a proposed 27-storey, 312-unit residential development located at 150 Laurier Avenue, in Ottawa. Attached is a sketch showing the subject site and nearby existing watermain infrastructure and hydrants.

The anticipated water demands for the proposed residential development are as follows, based on a slight increase in the commercial area and 2020 FUS calcs:

- Average Day Demand = 1.8 L/s
- Maximum Day Demand = 4.5 L/s
- Peak Hour Demand = 9.9 L/s
- Fire Flow Demand = 233 L/s

See attached calculation sheets for details.

It is anticipated that a multi-hydrant approach to firefighting will be required. Based on a review of geoOttawa, there are 2 blue bonnet hydrants within 75m of the subject and at least another 4 blue bonnet hydrants within 150m of the site (see attached Hydrant Sketch for details). Please review and confirm the existing hydrants will provide the necessary fire flow.

Regards,

François Thauvette, P. Eng., Senior Project Manager | Land Development & Public Sector Engineering

NOVATECH Engineers, Planners & Landscape Architects

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From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: Friday, August 12, 2022 8:57 AM
To: Francois Thauvette <f.thauvette@novatech-eng.com>
Cc: Chris Visser <c.visser@novatech-eng.com>
Subject: RE: 150 Laurier - Request for Watermain Boundary Conditions

Hi Francois,

Could you please use the 2020 FUS calculation method for the fire demand?

Thanks,

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

Project Manager

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

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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

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

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From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: Tuesday, August 09, 2022 1:44 PM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Cc: Chris Visser <c.visser@novatech-eng.com>
Subject: 150 Laurier - Request for Watermain Boundary Conditions

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Hi Reza,

We are sending this e-mail to request municipal watermain boundary conditions for the above-noted development. This request is for a proposed 27-storey, 312-unit residential development located at 150 Laurier Avenue, in Ottawa. Attached is a sketch showing the subject site and nearby existing watermain infrastructure and hydrants.

The anticipated water demands for the proposed residential development are as follows:

- Average Day Demand = 1.8 L/s
- Maximum Day Demand = 4.5 L/s
- Peak Hour Demand = 9.9 L/s
- Fire Flow Demand = 250 L/s

See attached calculation sheets for details.

It is anticipated that a multi-hydrant approach to firefighting will be required. Based on a review of geoOttawa, there are 2 blue bonnet hydrants within 75m of the subject and at least another 4 blue bonnet hydrants within 150m of the site (see attached Hydrant Sketch for details). Please review and confirm the existing hydrants will provide the necessary fire flow.

Regards,

François Thauvette, P. Eng., Senior Project Manager | Land Development & Public Sector Engineering
NOVATECH Engineers, Planners & Landscape Architects

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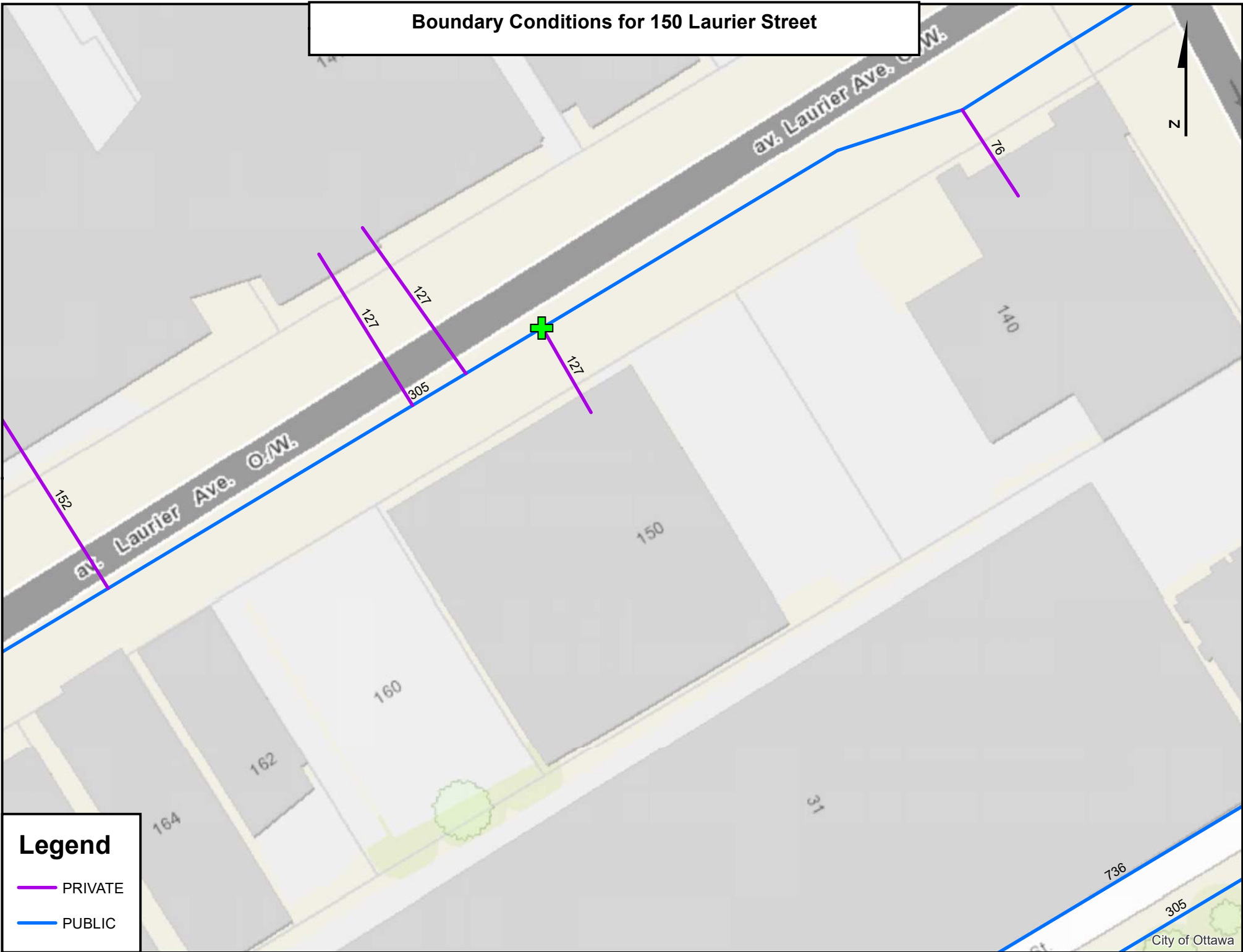
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Boundary Conditions for 150 Laurier Street



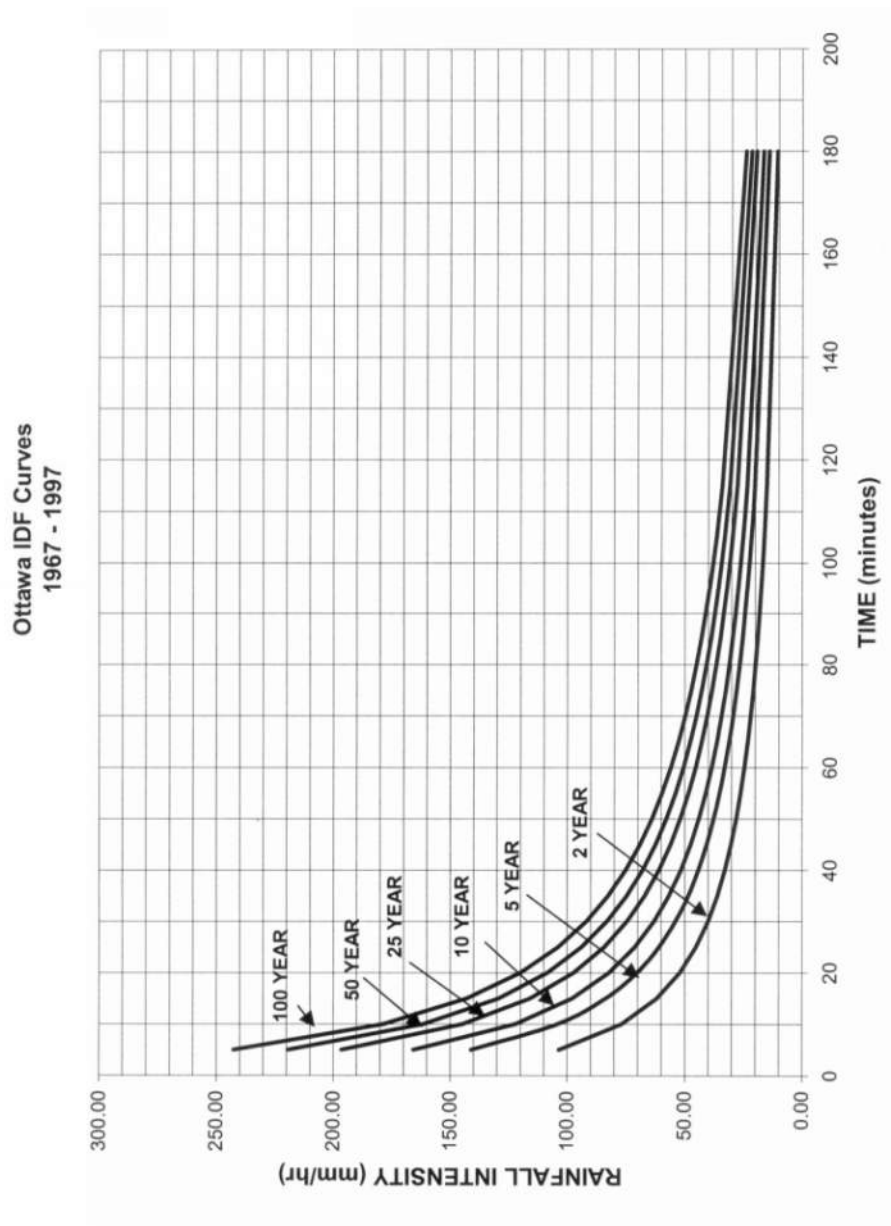
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APPENDIX E
IDF Curves and SWM Calculations

APPENDIX 5-A

OTTAWA INTENSITY DURATION FREQUENCY (IDF) CURVE



Proposed Mixed-Use Development 150 Laurier Avenue West

Pre - Development Site Flows										
Description	Area (ha)	$A_{impervious} (ha)$ C=0.9	$A_{gravel} (ha)$ C=0.6	$A_{pervious} (ha)$ C=0.2	Weighted C_{w5}	Weighted C_{w100}	1:5 Year Flow (L/s)	1:100 Year Flow (L/s)	Allowable C_{value}	Allowable Flow
										2 year (L/s)
Subject Site	0.182	0.179	0.000	0.003	0.89	0.99	46.8	89.2	0.5	19.4

$T_c = 10mins$

Post - Development : Site Flows if the areas were left Uncontrolled								
Area	Description	Area (ha)	$A_{imp} (ha)$ C=0.9	$A_{perv} (ha)$ C=0.2	C_5	C_{100}	Uncontrolled Flow (L/s)	
							5 year	100 year
A-1	Direct Runoff from Site	0.019	0.010	0.009	0.58	0.66	3.2	6.2
R-1	Controlled Internal SWM Tank	0.163	0.163	0.000	0.90	1.00	42.5	80.9

Summed Area Check: 0.182

$T_c = 10mins$ $T_c = 10mins$

Post - Development : Total Flows for Controlled Site + Uncontrolled Direct Runoff						
Area	Description	Peak Design Flow (L/s)		Storage Required (m ³)		Provided (m ³)
		5 year	100 year	5 year	100 year	
A-1	Direct Runoff from Site	3.2	6.2	-	-	-
R-1	Controlled Internal SWM Tank	3.8	3.8	34.8	80.1	> 95
Totals :		7.0	10.1	34.8	80.1	> 95

Over Controlled: 12.4 9.3

Proposed Mixed-Use Development				
Novatech Project No. 119210				
REQUIRED STORAGE - 1:5 YEAR EVENT				
AREA A-1 Direct Runoff from Site				
OTTAWA IDF CURVE				
Area =	0.019	ha	Qallow =	3.2 L/s
C =	0.58		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	141.18	4.35	1.14	0.34
10	104.19	3.21	0.00	0.00
15	83.56	2.57	-0.64	-0.57
20	70.25	2.16	-1.04	-1.25
25	60.90	1.87	-1.33	-2.00
30	53.93	1.66	-1.55	-2.78
35	48.52	1.49	-1.71	-3.60
40	44.18	1.36	-1.85	-4.43
45	40.63	1.25	-1.96	-5.28
50	37.65	1.16	-2.05	-6.14
55	35.12	1.08	-2.13	-7.02
60	32.94	1.01	-2.19	-7.89
65	31.04	0.96	-2.25	-8.78
70	29.37	0.90	-2.30	-9.67
75	27.89	0.86	-2.35	-10.57
80	26.56	0.82	-2.39	-11.47
85	25.37	0.78	-2.43	-12.37
90	24.29	0.75	-2.46	-13.28

Proposed Mixed-Use Development				
Novatech Project No. 119210				
REQUIRED STORAGE - 1:100 YEAR EVENT				
AREA A-1 Direct Runoff from Site				
OTTAWA IDF CURVE				
Area =	0.019	ha	Qallow =	6.2 L/s
C =	0.66		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	242.70	8.46	2.24	0.67
10	178.56	6.23	0.00	0.00
15	142.89	4.98	-1.24	-1.12
20	119.95	4.18	-2.04	-2.45
25	103.85	3.62	-2.60	-3.91
30	91.87	3.20	-3.02	-5.44
35	82.58	2.88	-3.35	-7.03
40	75.15	2.62	-3.61	-8.65
45	69.05	2.41	-3.82	-10.31
50	63.95	2.23	-4.00	-11.99
55	59.62	2.08	-4.15	-13.68
60	55.89	1.95	-4.28	-15.40
65	52.65	1.84	-4.39	-17.12
70	49.79	1.74	-4.49	-18.86
75	47.26	1.65	-4.58	-20.60
80	44.99	1.57	-4.66	-22.35
85	42.95	1.50	-4.73	-24.11
90	41.11	1.43	-4.79	-25.88

Proposed Mixed-Use Development
Novatech Project No. 119210
REQUIRED STORAGE - 1:2 YEAR EVENT
AREA R-1 Controlled Internal SWM Tank

OTTAWA IDF CURVE
 Area = 0.163 ha Qallow = 3.78 L/s
 C = 0.90 Vol(max) = 23.1 m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	103.57	42.21	38.43	11.53
10	76.81	31.30	27.52	16.51
15	61.77	25.17	21.39	19.26
20	52.03	21.21	17.43	20.91
25	45.17	18.41	14.63	21.94
30	40.04	16.32	12.54	22.57
35	36.06	14.70	10.92	22.93
40	32.86	13.39	9.61	23.08
45	30.24	12.32	8.54	23.07
50	28.04	11.43	7.65	22.95
55	26.17	10.67	6.89	22.73
60	24.56	10.01	6.23	22.42
65	23.15	9.44	5.66	22.06
75	20.81	8.48	4.70	21.16
90	18.14	7.39	3.61	19.52
120	14.56	5.94	2.16	15.52
150	12.25	4.99	1.21	10.92
180	10.63	4.33	0.55	5.95
210	9.42	3.84	0.06	0.72
240	8.47	3.45	-0.33	-4.69

Proposed Mixed-Use Development
Novatech Project No. 119210
REQUIRED STORAGE - 1:5 YEAR EVENT
AREA R-1 Controlled Internal SWM Tank

OTTAWA IDF CURVE
 Area = 0.163 ha Qallow = 3.78 L/s
 C = 0.90 Vol(max) = 34.8 m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	57.54	53.76	16.13
10	104.19	42.47	38.69	23.21
15	83.56	34.06	30.28	27.25
20	70.25	28.63	24.85	29.82
25	60.90	24.82	21.04	31.56
30	53.93	21.98	18.20	32.76
35	48.52	19.77	15.99	33.59
40	44.18	18.01	14.23	34.15
45	40.63	16.56	12.78	34.50
50	37.65	15.35	11.57	34.70
55	35.12	14.32	10.54	34.77
60	32.94	13.43	9.65	34.73
65	31.04	12.65	8.87	34.60
75	27.89	11.37	7.59	34.14
90	24.29	9.90	6.12	33.04
120	19.47	7.93	4.15	29.91
150	16.36	6.67	2.89	26.00
180	14.18	5.78	2.00	21.59
210	12.56	5.12	1.34	16.85
240	11.29	4.60	0.82	11.86

Proposed Mixed-Use Development
Novatech Project No. 119210
REQUIRED STORAGE - 1:100 YEAR EVENT
AREA R-1 Controlled Internal SWM Tank

OTTAWA IDF CURVE
 Area = 0.163 ha Qallow = 3.78 L/s
 C = 1.00 Vol(max) = 80.1 m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	109.91	106.13	31.84
10	178.56	80.86	77.08	46.25
15	142.89	64.71	60.93	54.84
20	119.95	54.32	50.54	60.65
25	103.85	47.03	43.25	64.87
30	91.87	41.60	37.82	68.08
35	82.58	37.40	33.62	70.60
40	75.15	34.03	30.25	72.60
45	69.05	31.27	27.49	74.22
50	63.95	28.96	25.18	75.55
55	59.62	27.00	23.22	76.63
60	55.89	25.31	21.53	77.52
65	52.65	23.84	20.06	78.24
75	47.26	21.40	17.62	79.29
90	41.11	18.62	14.84	80.12
120	32.89	14.90	11.12	80.04
150	27.61	12.50	8.72	78.51
180	23.90	10.82	7.04	76.08
210	21.14	9.58	5.80	73.02
240	19.01	8.61	4.83	69.51

Proposed Mixed-Use Development
Novatech Project No. 119210
REQUIRED STORAGE - 1:100 YR + 20% IDF Increase
AREA R-1 Controlled Internal SWM Tank

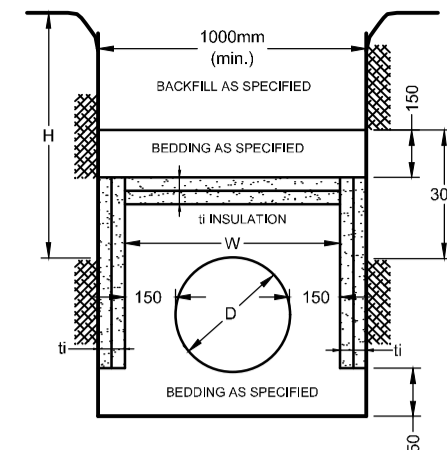
OTTAWA IDF CURVE
 Area = 0.163 ha Qallow = 3.78 L/s
 C = 1.00 Vol(max) = 101.5 m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	291.24	131.89	128.11	38.43
10	214.27	97.04	93.26	55.95
15	171.47	77.65	73.87	66.49
20	143.94	65.19	61.41	73.69
25	124.62	56.43	52.65	78.98
30	110.24	49.92	46.14	83.06
35	99.09	44.88	41.10	86.30
40	90.17	40.84	37.06	88.94
45	82.86	37.52	33.74	91.11
50	76.74	34.75	30.97	92.92
55	71.55	32.40	28.62	94.45
60	67.07	30.38	26.60	95.74
65	63.18	28.61	24.83	96.84
75	56.71	25.68	21.90	98.55
90	49.33	22.34	18.56	100.23
120	39.47	17.88	14.10	101.49
150	33.13	15.00	11.22	101.02
180	28.68	12.99	9.21	99.46
210	25.37	11.49	7.71	97.15
240	22.81	10.33	6.55	94.30

LEGEND

- PROPERTY LINE
- PROPOSED SANITARY MH & SEWER
- PROPOSED CATCHBASIN MH & SEWER
- PROPOSED STORM MH & SEWER
- MECHANICAL DECK DRAIN FOR (COVERED) SURFACE PARKING (EXPOSED TO THE RAIN)
- PROPOSED HYDRANT c/w VALVE & VALVE BOX
- PROPOSED WATER METER AND REMOTE METER
- PROPOSED BARRIER CURB
- PROPOSED DEPRESSED CURB
- 150mmØ PROPOSED WATER SERVICE AND DIAMETER
- PROPOSED VALVE & VALVE BOX
- PROPOSED BEND AND THRUSTBLOCK 11.25°, 22.5°, 45° or TEE
- PROPOSED CAP
- PROPOSED BUILDING ENTRANCE
- THERMAL INSULATION FOR SHALLOW SEWERS
- PROPOSED HYDRO TRANSFORMER
- PROPOSED BUILDING PILLAR
- REMOVALS

- FFE FINISHED FLOOR ELEVATION
- T/FND TOP OF FOUNDATION WALL ELEVATION
- USF UNDERSIDE OF FOOTING ELEVATION
- EXISTING CONCRETE CURB
- EXISTING SANITARY MANHOLE & SEWER
- EXISTING CATCHBASIN MANHOLE
- EXISTING STORM MANHOLE & SEWER
- EXISTING CATCHBASIN c/w CATCHBASIN LEAD
- EXISTING WATERMAIN
- EXISTING HYDRANT c/w VALVE & LEAD
- EXISTING TREES / VEGETATION
- EXISTING UTILITY POLE
- EXISTING OVERHEAD UTILITY WIRES

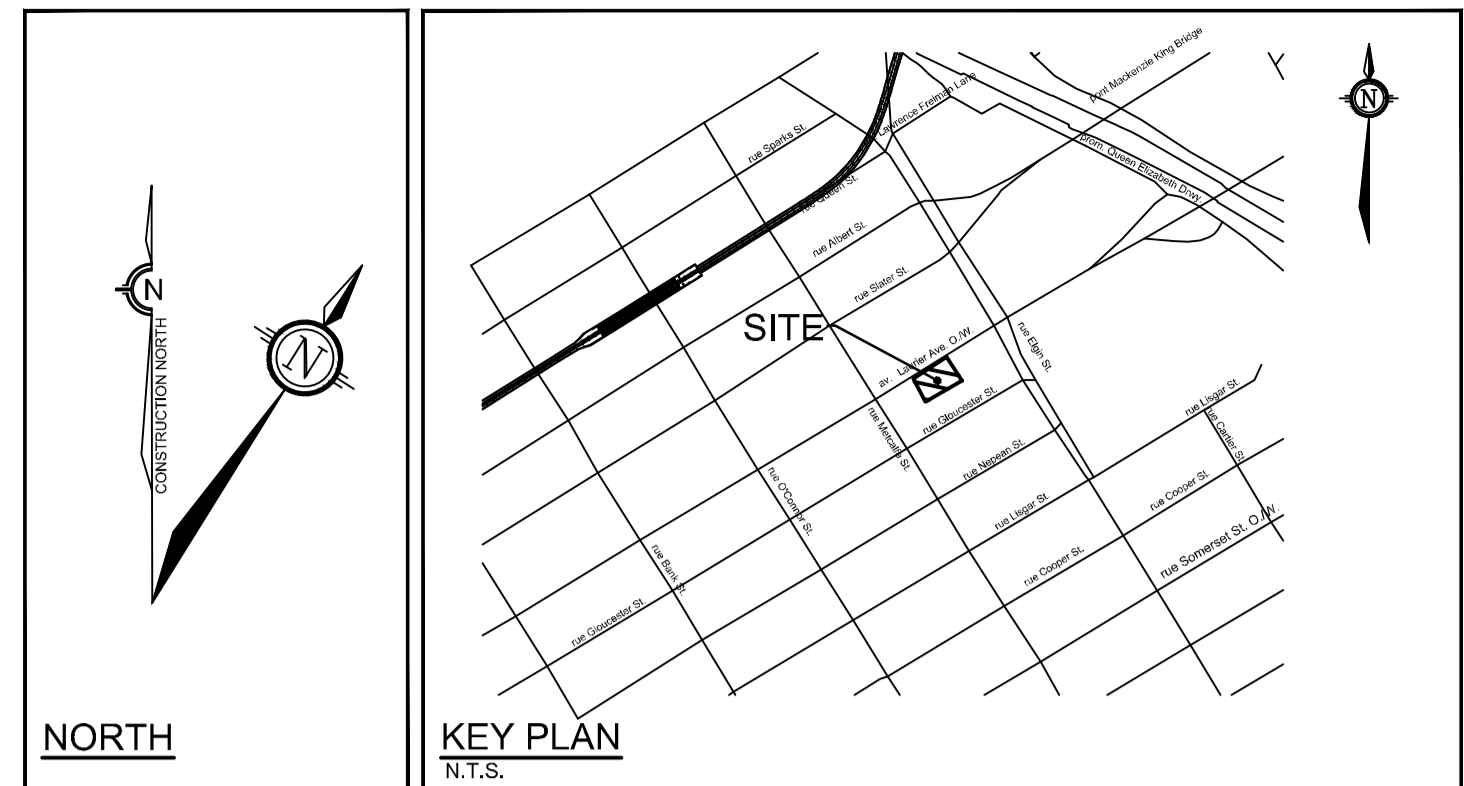


COVER (mm)	THICKNESS (mm)
1800-1500	50
1500-1200	75
1200-900	100
900-600	125

h = THICKNESS OF INSULATION (mm)
 h = DEPTH OF COVER
 W = D + 300 (1000 mm)
 W = WIDTH OF INSULATION (mm)
 D = O.D. OF PIPE (mm)

- NOTES:**
- INSULATE ALL SEWER PIPES THAT ARE LESS THAN 600mmØ AND HAVE LESS THAN 1.8m COVER WITH EXPANDED POLYSTYRENE INSULATION AS SHOWN.
 - THE THICKNESS OF INSULATION SHALL BE THE EQUIVALENT OF 20mm FOR EVERY 300mm REDUCTION IN THE REQUIRED DEPTH OF COVER (SEE TABLE).

INSULATION DETAIL FOR SHALLOW SEWERS ONLY
NOT TO SCALE



GENERAL NOTES:

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, WATERMAIN AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
- COMPLETE ALL WORKS IN ACCORDANCE WITH THE MOST CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS USING THE CURRENT GUIDELINES. BY-LAWS AND STANDARDS INCLUDING MATERIALS OF CONSTRUCTION, DISINFECTION AND ALL RELEVANT REFERENCES TO OPS, OPS & AWWA GUIDELINES - ALL CURRENT VERSIONS AND AS AMENDED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF MUNICIPAL AUTHORITIES.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO GEOTECHNICAL INVESTIGATION REPORT (PG65195-1, DATED FEBRUARY 10, 2020), PREPARED BY PATERSON GROUP INC., CONSTRUCTION RECOMMENDATIONS AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO ARCHITECTS AND LANDSCAPE ARCHITECTS DRAWINGS FOR BUILDING AND HARD SURFACED AREAS AND DIMENSIONS.
- REFER TO THE 'DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT (R-2022-124) PREPARED BY NOVATECH.
- SAW CUT AND KEYGRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE-POINTS AS PER CITY OF OTTAWA STANDARDS (R10).

SEWER NOTES:

- SUPPLY AND CONSTRUCT ALL SEWERS AND APPURTENANCES IN ACCORDANCE WITH THE MOST CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS - ALL CURRENT VERSIONS AND AS AMENDED.
- SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
STORM / SANITARY MANHOLE (1200)	701.014	OPS
SANITARY MANHOLE FRAME AND COVER	401.010 - TYPE 'A'	OPS
STORMCATCH-BASIN MANHOLE (1800)	701.012	OPS
STORMCATCH-BASIN FRAME AND COVER	401.012 - TYPE 'B'	OPS
WATERTIGHT MANHOLE FRAME AND COVER	401.030	OPS
CATCH-BASIN (600x600)	705.010	OPS
CATCH-BASIN FRAME & COVER	S19	CITY OF OTTAWA
SEWER TRENCH	S6	CITY OF OTTAWA
STORM SEWER	PVC DR 35 (450mmØ PIPE AND SMALLER)	CITY OF OTTAWA
STORM SEWER	CONCRETE 65-D (600mmØ PIPE AND LARGER)	CITY OF OTTAWA
SANITARY SEWER	PVC DR 35	CITY OF OTTAWA
- THE SANITARY SERVICE LATERAL SHALL BE EQUIPPED WITH BACKFLOW PREVENTERS WITHIN THE BUILDING FOOTPRINT AS PER CITY OF OTTAWA STANDARD DETAILS S14.1 OR S14.2. REFER TO MECHANICAL PLANS FOR DETAILS.
- THE STORM SERVICE LATERAL SHALL BE EQUIPPED WITH A BACKFLOW PREVENTER WITHIN THE BUILDING FOOTPRINT AS PER CITY OF OTTAWA STANDARD DETAILS S14. REFER TO MECHANICAL PLANS FOR DETAILS.
- SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
- PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
- INSULATE ALL PIPES (SAN / STM) THAT HAVE LESS THAN 1.8m COVER WITH H-40 INSULATION PER INSULATION DETAIL FOR SHALLOW SEWERS. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
- CONCRETE MANHOLES ARE TO BE 1200mmØ STRUCTURES UNLESS OTHERWISE NOTED ON THE DRAWING. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KORAN-SEAL, PSX POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
- TYPICAL STORM MANHOLES AND CATCHBASIN MANHOLES ARE TO HAVE 300mm SUMP UNLESS OTHERWISE INDICATED.
- THE CONTRACTOR IS TO TELEVISION (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES. PROVIDE A COPY OF ALL CCTV INSPECTION REPORTS TO THE ENGINEER FOR REVIEW.
- CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL APPLICABLE SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND TIG ELEVATIONS, STRUCTURE LOCATIONS AND ANY ALIGNMENT CHANGES, ETC.
- THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPS 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.

WATERMAIN NOTES:

- SUPPLY AND CONSTRUCT ALL WATERMANS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS - ALL CURRENT VERSIONS AND AS AMENDED.
- SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
HYDRANT INSTALLATION	W19	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
THERMAL INSULATION BY OPEN STRUCTURES	W23	CITY OF OTTAWA
VALVE BOX ASSEMBLY	W24	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWERS	W25	CITY OF OTTAWA
CATHODIC PROTECTION FOR PVC WATERMANS	W40	CITY OF OTTAWA
WATERMAIN MATERIAL	PVC DR 18 (100mm AND LARGER)	CITY OF OTTAWA
- EXCAVATION, INSTALLATION, BACKFILL AND REINSTATEMENT BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
- WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
- PROVIDE MINIMUM 0.5m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS, UNLESS OTHERWISE INDICATED.
- WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

INTERNAL SWM STORAGE SYSTEM

DESIGN EVENT	STORAGE SYSTEM CONTROLLED FLOW	REQUIRED	PROVIDED
1:2 YR		23.1 m³	
1:5 YR		34.8 m³	
1:100 YR	PUMPED FLOW RATE = 3.78 L/s	80.1 m³	>105 m³
1:100+20%		101.5 m³	

- NOTES:**
- ALL DRAINAGE FROM AREA R-1 (PROPOSED AMENITY AREA DECK DRAINS AND ALL ROOF DRAINS) TO BE DIRECTED TO THE INTERNAL STORMWATER STORAGE SYSTEM. REFER TO ARCHITECTURAL AND MECHANICAL PLANS FOR DETAILS.
 - REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR EXACT SIZE AND DETAILS OF INTERNAL STORMWATER STORAGE SYSTEM.
 - REFER TO ARCHITECTURAL AND MECHANICAL PLANS FOR LOCATION AND CONNECTIONS AND DETAILS OF THE INTERNAL STORMWATER STORAGE SYSTEM AND EMERGENCY OVERFLOW PIPING.

PROPOSED 150mmØ WATER SERVICE TABLE

Station	FIG ELEVATION	TOP OF WATERMAIN	DESCRIPTION
1+000.00	68.98	66.60★	ROLL 150mmØ WM CONNECTION TO EX. 300mmØ DI WM
1+001.97	68.96	66.58	WATERMAIN TO CROSS UNDER EXISTING BELL LINE
1+003.04	68.96	66.58	WATERMAIN TO CROSS UNDER EXISTING STREET LIGHT LINE
1+003.78	69.07	66.74	WATERMAIN TO CROSS UNDER EXISTING STREET LIGHT LINE
1+004.50	69.16	66.78	WATERMAIN TO CROSS UNDER EXISTING 680mm HYDRO LINE
1+005.22	69.15	66.85	VALVE AND VALVE BOX 0.5m OFF OF CAP
1+005.72	69.16	66.77	CAP AT 1.0m FROM FOUNDATION WALL

PROPOSED 150mmØ WATER SERVICE TABLE

Station	FIG ELEVATION	TOP OF WATERMAIN	DESCRIPTION
2+000.00	68.95	66.57★	ROLL 150mmØ WM CONNECTION TO EX. 300mmØ DI WM
2+001.95	68.95	66.64	WATERMAIN TO CROSS UNDER EXISTING BELL LINE
2+003.05	68.94	66.67	WATERMAIN TO CROSS UNDER EXISTING STREET LIGHT LINE
2+003.79	69.11	66.70	WATERMAIN TO CROSS UNDER EXISTING STREET LIGHT LINE
2+004.47	69.12	66.73	WATERMAIN TO CROSS UNDER EXISTING 680mm HYDRO LINE
2+005.22	69.14	66.76	VALVE AND VALVE BOX 0.5m OFF OF CAP
2+005.72	69.15	66.77	CAP AT 1.0m FROM FOUNDATION WALL

★ CONNECTION TO EXISTING 300mmØ PVC WATERMAIN. EXACT ELEVATION TO BE FIELD DETERMINED.
 ** PROVIDE THERMAL INSULATION AS PER CITY OF OTTAWA DETAIL W22 IN SHALLOW TRENCHES AND/OR CITY OF OTTAWA W23 ADJACENT TO OPEN STRUCTURES.

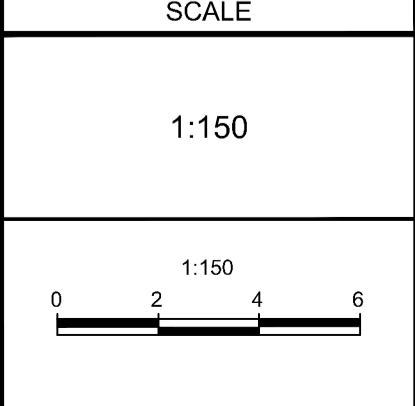
NOTE:
 THE POSITION OF ALL POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

OWNER INFORMATION

JADCO Group
 345 Boulevard Samson
 Laval, QC H7X 2Z7

CONTACT: ANDRÉ DOUDAK
 Tel: (613) 791-1970
 EMAIL: adoudak@jadcogroup.com

No.	REVISION	DATE	BY
1.	ISSUED FOR SPC APPLICATION	AUG 30/22	FST



FOR REVIEW ONLY

DESIGN	CV
CHECKED	FST
DRAWN	CV
CHECKED	FST
APPROVED	FST

PROFESSIONAL ENGINEER
 F.S. THAUVERTE
 100041299
 AUG 30, 2022
 PROVINCE OF ONTARIO

NOVATECH
 Engineers, Planners & Landscape Architects
 Suite 200, 240 Michael Cowpland Drive
 Ottawa, Ontario, Canada K2M 1P6
 Telephone: (613) 254-9643
 Facsimile: (613) 254-5867
 Website: www.novatech-eng.com

LOCATION
 CITY OF OTTAWA
 150 LAURIER AVENUE WEST

DRAWING NAME
 GENERAL PLAN OF SERVICES

PROJECT No. 122133
 REV # 1
 DRAWING No. 122133-GP
 PLAN #

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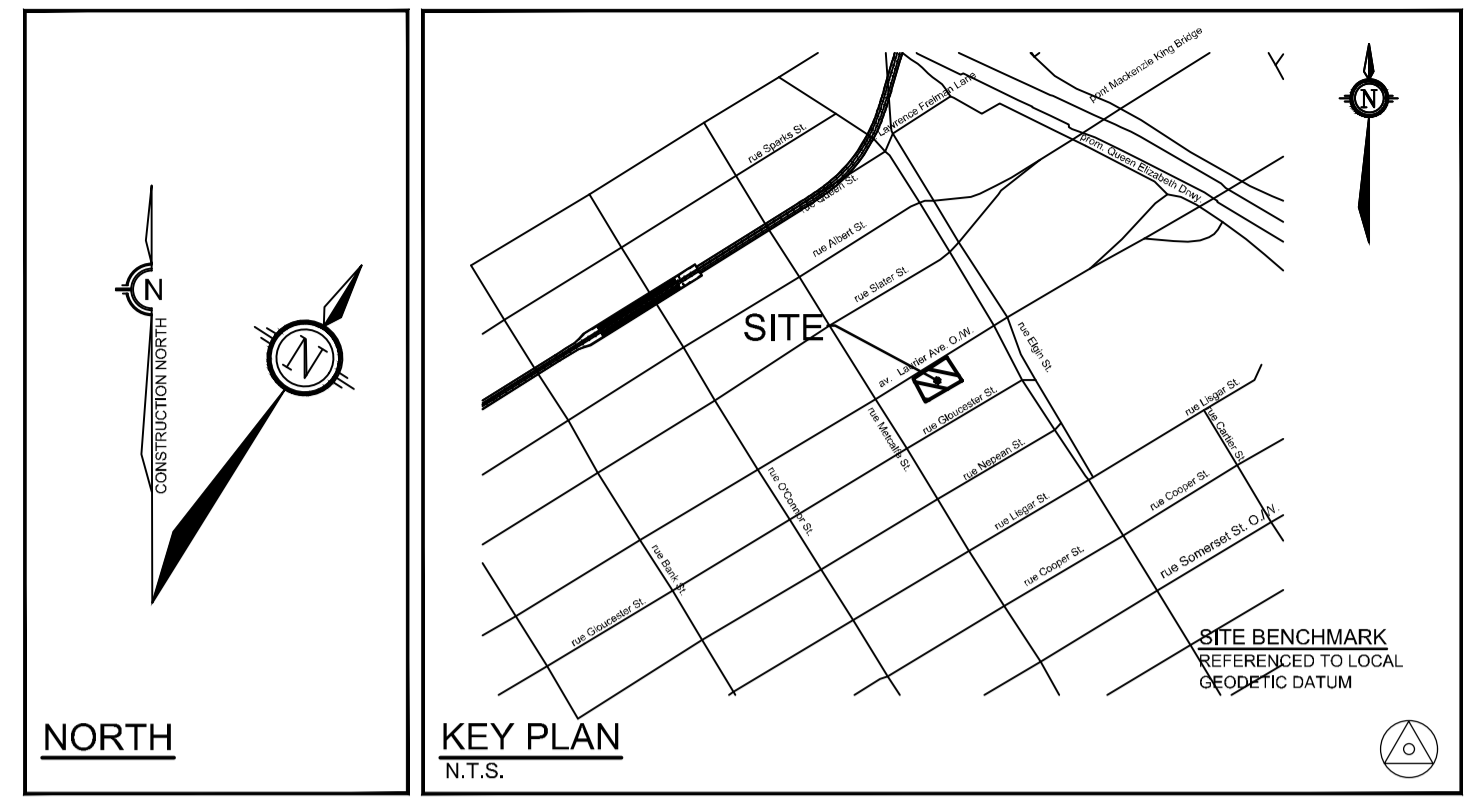
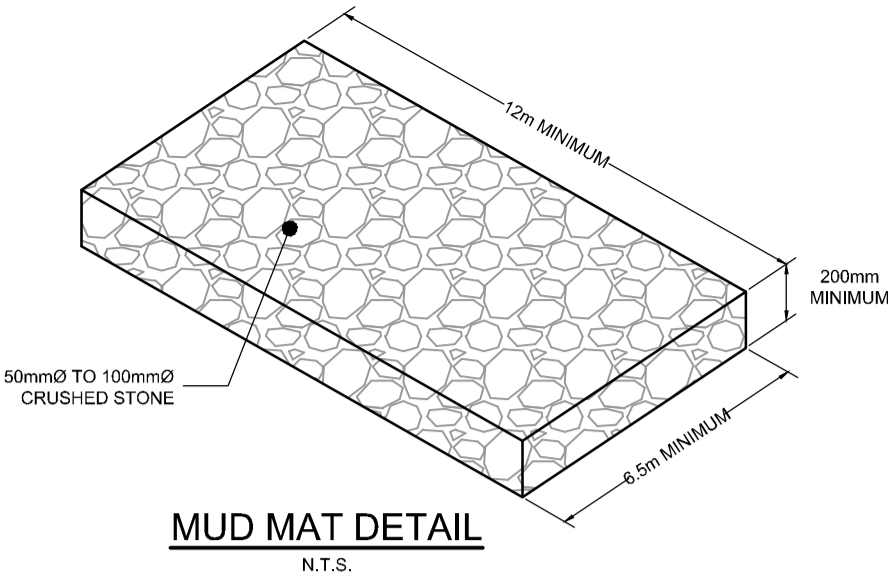
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LEGEND

94.60	PROPOSED ELEVATION	SAN MH 01	PROPOSED SANITARY MANHOLE	V&VB	EXISTING VALVE & VALVE BOX
94.60TC	PROPOSED TOP OF CURB ELEVATION	STM MH 03	PROPOSED STORM MANHOLE	SP	EXISTING SERVICE POST
94.60TV	PROPOSED TOP OF WALL ELEVATION	CBMH 01	PROPOSED CATCHBASIN MANHOLE	HYD	EXISTING HYDRANT
94.60	MATCH INTO EXISTING GRADES	AD	UNDERGROUND MECHANICAL AREA DRAINS	CBMH	EXISTING CONCRETE CURB
+92.05	EXISTING ELEVATION	DD	UNDERGROUND MECHANICAL DECK DRAINS	CB	EXISTING CATCHBASIN
2.0%	GRADE AND DIRECTION	←	PROPOSED FILTER BAG	CBMH	EXISTING CATCHBASIN MH
1:1	MAXIMUM 3:1 SIDESLOPE	←	EMERGENCY OVERLAND FLOW ROUTE	EX UP	EXISTING UTILITY POLE
91.30	PROPOSED TERRACE ELEVATION	←	BUILDING ENTRANCE / EXIT	—	CW GUY WIRES
---	PROPOSED SILT FENCING (OPSD 219.110)	←	PROPOSED BUILDING PILLAR	—	EXISTING FENCE
---	PROPERTY LINE	+	REMOVALS	—	EXISTING OVERHEAD WIRES
---	FFE FINISHED FLOOR ELEVATION				
---	USF UNDERSIDE OF FOOTING ELEVATION				

PAVEMENT STRUCTURE:

- NEW LIGHT DUTY PAVEMENT
- 50mm SUPERPAVE 12.5
- 150mm GRANULAR "A"
- 300mm GRANULAR "B" TYPE II
- ASPHALT GRADE PG 58-34



GENERAL NOTES:

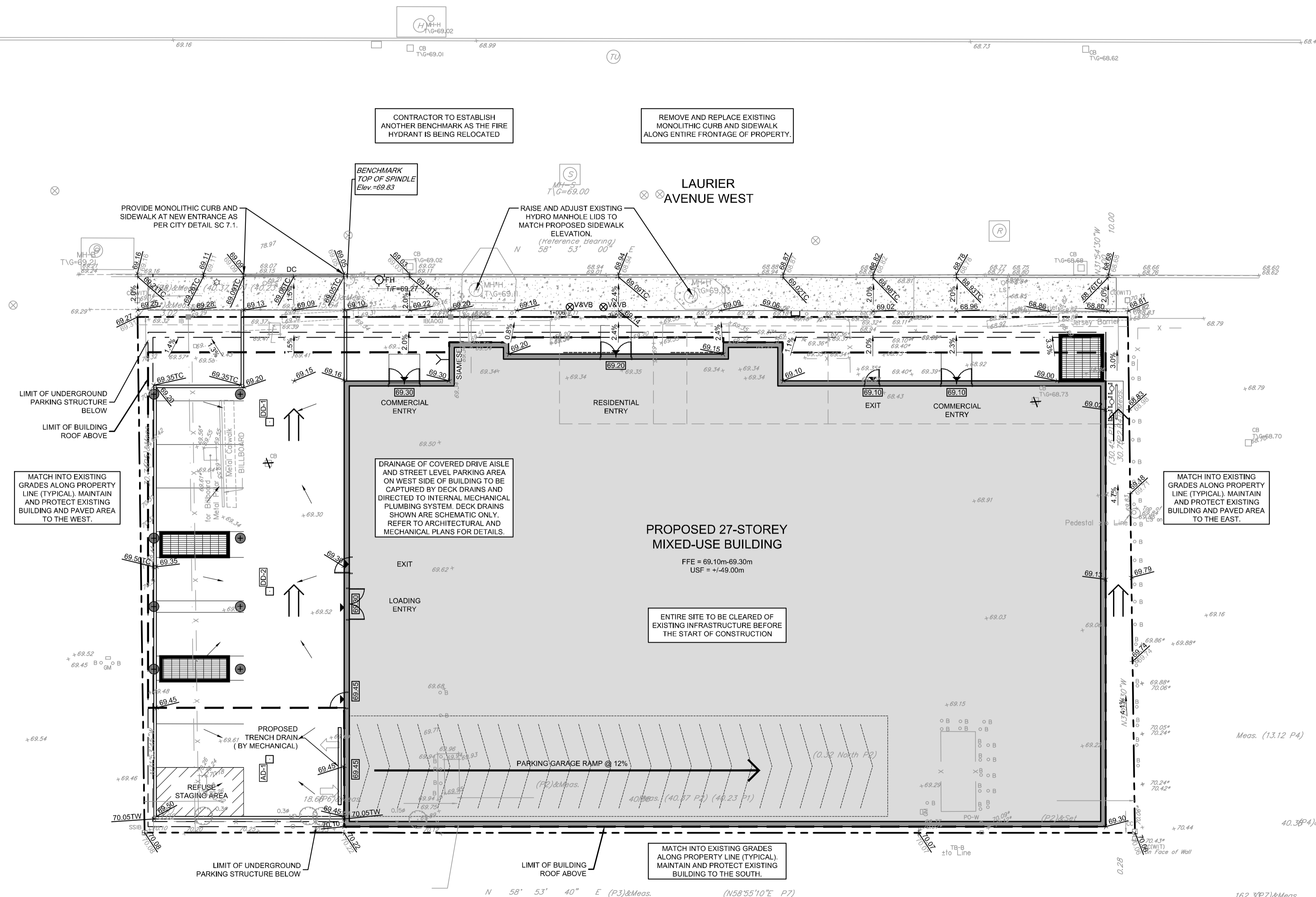
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- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
- COMPLETE ALL WORKS IN ACCORDANCE WITH THE MOST CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS USING THE CURRENT GUIDELINES, BY LAWS AND STANDARDS INCLUDING MATERIALS OF CONSTRUCTION, DISINFECTION AND ALL RELEVANT REFERENCES TO OPSD, OPSD & AWWA GUIDELINES - ALL CURRENT VERSIONS AND AS AMENDED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND THE ENGINEER.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO GEOTECHNICAL INVESTIGATION REPORT (P665195-1, DATED FEBRUARY 10, 2020), PREPARED BY PATERSON GROUP INC., FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
- REFER TO THE DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT (R-2022-124) PREPARED BY NOVATECH.
- SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).

GRADING NOTES:

- ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
- EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
- ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
- THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
- MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
- MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
- ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
- ALL CURBS SHALL BE BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1).
- REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
- CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING THE AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.

EROSION AND SEDIMENT CONTROL NOTES:

- ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF OTTAWA. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
- A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED AROUND THE CONSTRUCTION AREA (WHERE APPLICABLE). THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
- TO PREVENT SURFACE EROSION FROM ENTERING ANY STORM SEWER SYSTEM DURING CONSTRUCTION, FILTER BAGS WILL BE PLACED UNDER GRATES OF NEARBY SURFACE CATCHBASINS AND MANHOLE STRUCTURES. TERRAFIX 6" ULTRA SILT SOCK (FILTER SOCK) IS TO BE USED AT THE OPENING OF ALL CURB INLET CATCHBASINS. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED (PER OPSD 219.110) AROUND THE CONSTRUCTION AREA (WHERE APPLICABLE). IN AREAS WHERE SILT FENCING CANNOT BE INSTALLED PER OPSD 219.110 (i.e. HARD SURFACES), A FILTER SOCK SHALL BE SUBSTITUTED. THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
- THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
- THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
- THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
- ROADWAYS ARE TO BE SWEEP AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR MUNICIPALITY.
- THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.

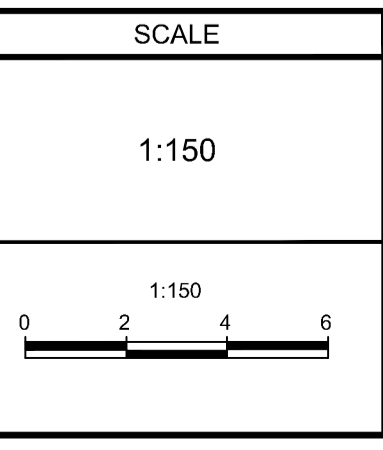


NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

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No.	REVISION	DATE	BY
1.	ISSUED FOR SPC APPLICATION	AUG 30/22	FST



DESIGN	CV
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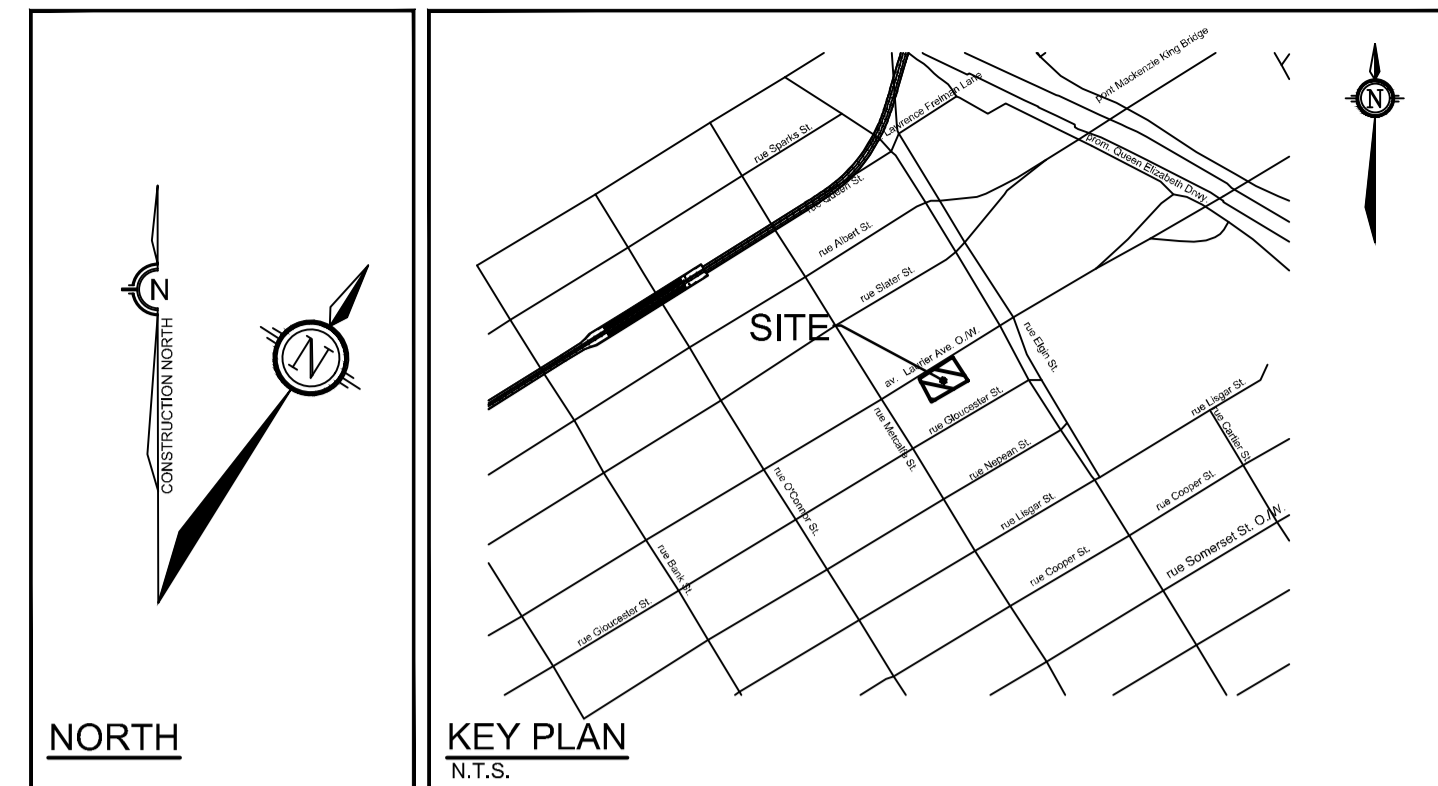
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LOCATION CITY OF OTTAWA 150 LAURIER AVENUE WEST	
DRAWING NAME GRADING AND EROSION & SEDIMENT CONTROL PLAN	
PROJECT No. 122133	REV # REV # 1
DRAWING No. 122133-GR	
PLAN #	

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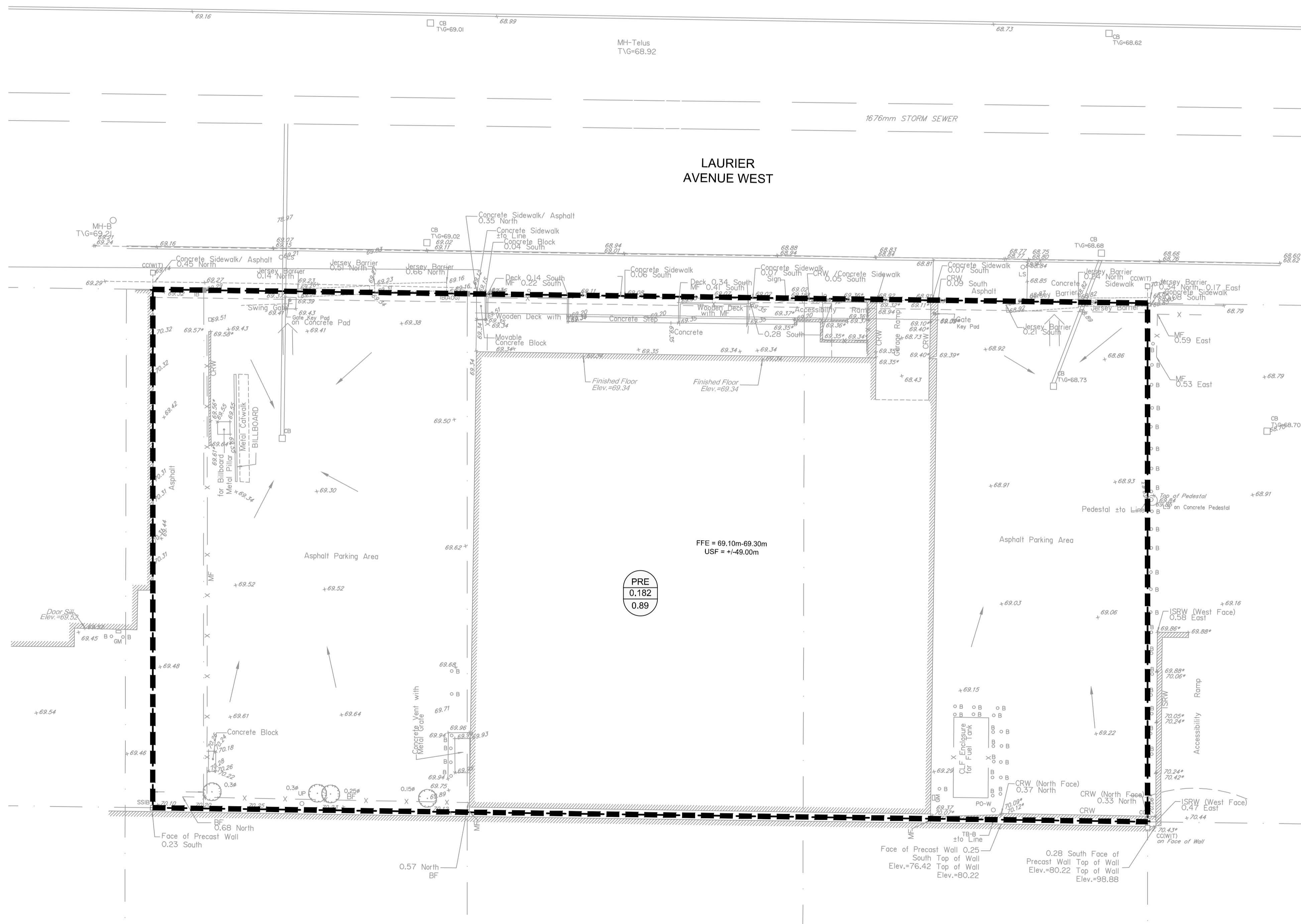


GENERAL NOTES:

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO GEOTECHNICAL INVESTIGATION REPORT (PG65195-1, DATED FEBRUARY 10, 2020), PREPARED BY PATERSON GROUP INC., FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO THE DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT (R-2022-124) PREPARED BY NOVATECH.

LEGEND

- DRAINAGE AREA LIMITS
- PRE-DEVELOPMENT AREA ID
- PRE-DEVELOPMENT DRAINAGE AREA (ha)
- 1.5 YEAR WEIGHTED RUNOFF COEFFICIENT
- EXISTING CONCRETE CURB
- EXISTING VALVE & VALVE BOX
- EXISTING SERVICE POST
- EXISTING HYDRANT
- EXISTING CATCHBASIN
- EXISTING CATCHBASIN MH
- EXISTING UTILITY POLE
- CW GUY WIRES
- EXISTING DRAINAGE DIRECTION ARROWS
- EXISTING OVERLAND FLOW



NOTE:
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SCALE
1:150

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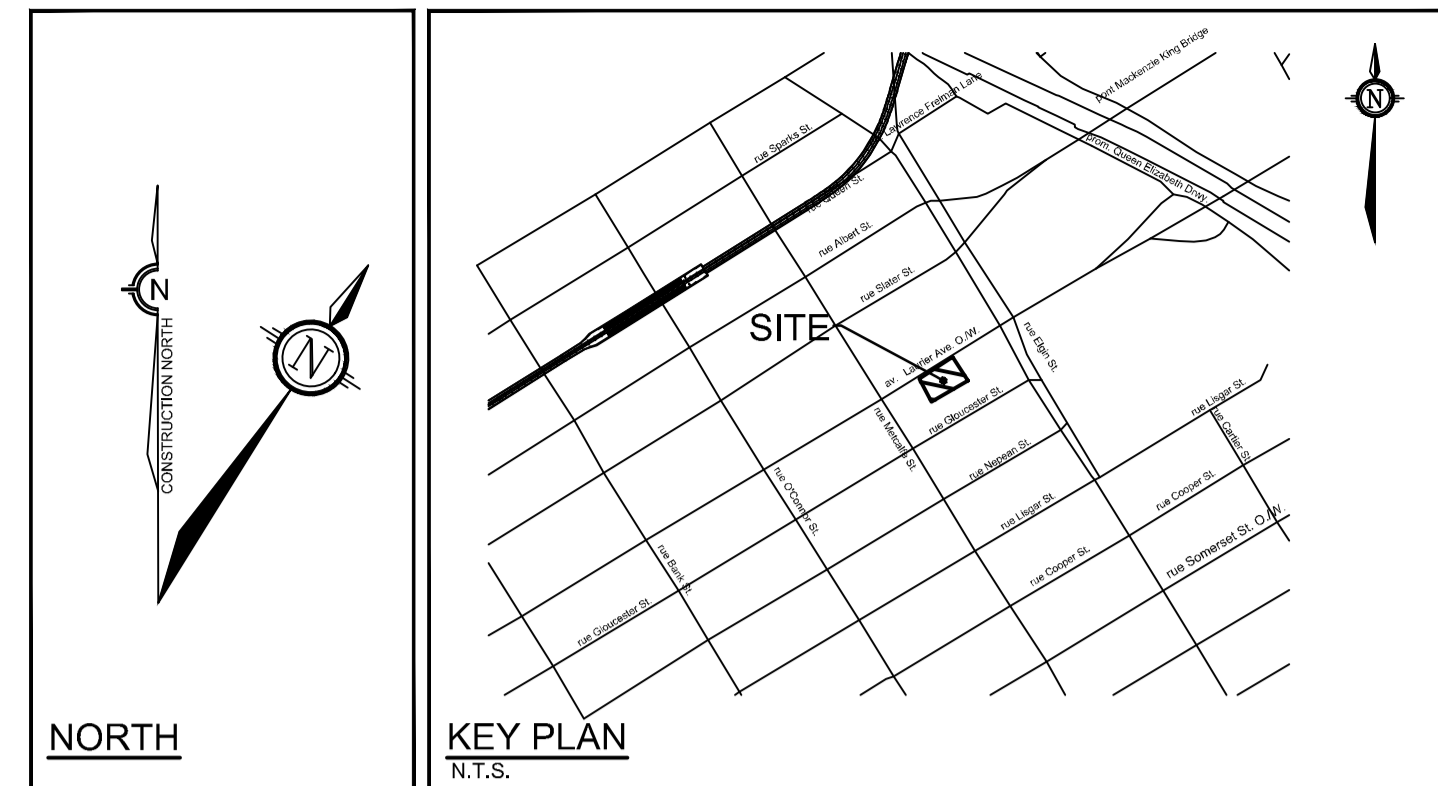
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LOCATION CITY OF OTTAWA 150 LAURIER AVENUE WEST		PROJECT No. 122133
DRAWING NAME PRE-DEVELOPMENT STORM DRAINAGE PLAN		REV REV # 1
DRAWING No. 122133-SWM1		PLAN #

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GENERAL NOTES:

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
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- REFER TO THE DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT (R-2022-124) PREPARED BY NOVATECH.

LEGEND

- PROPOSED BARRIER CURB
- PROPOSED DEPRESSED CURB
- DRAINAGE AREA LIMITS
- POST-DEVELOPMENT AREA ID
- POST-DEVELOPMENT DRAINAGE AREA (ha)
- 1.5 YEAR WEIGHTED RUNOFF COEFFICIENT
- EXISTING CONCRETE CURB
- EXISTING VALVE & VALVE BOX
- EXISTING SERVICE POST
- EXISTING HYDRANT
- EXISTING CATCHBASIN
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- EXISTING UTILITY POLE
CW GUY WIRES

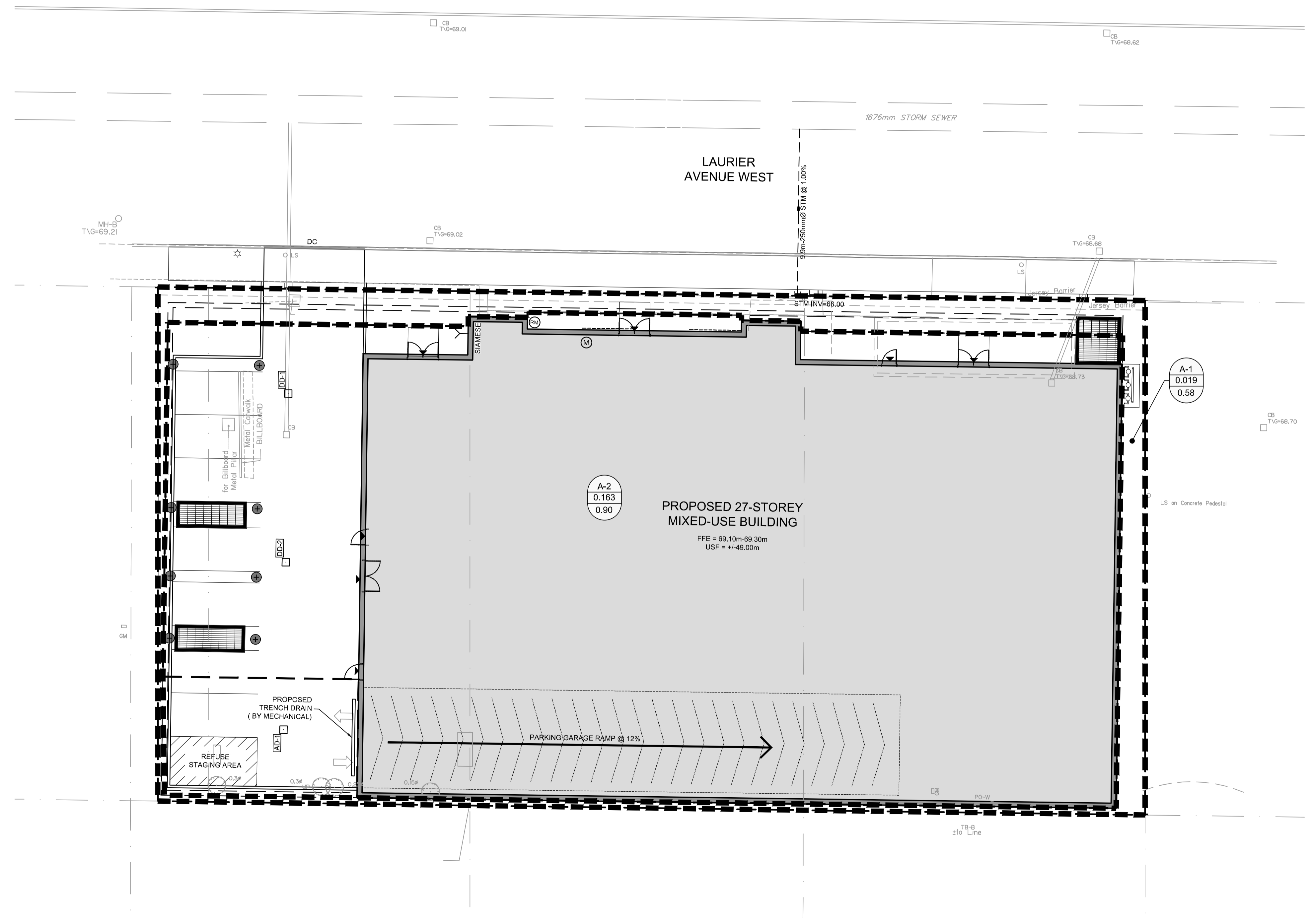
INTERNAL SWM STORAGE SYSTEM

DESIGN EVENT	STORAGE SYSTEM CONTROLLED FLOW	STORAGE VOLUMES	
		REQUIRED	PROVIDED
1:2 YR	PUMPED FLOW RATE = 3.78 L/s	23.1 m ³	>105 m ³
1:5 YR		34.8 m ³	
1:100 YR		80.1 m ³	
1:100+20%		101.5 m ³	

- NOTES:**
- ALL DRAINAGE FROM AREA R-1 (PROPOSED AMENITY AREA DECK DRAINS AND ALL ROOF DRAINS) TO BE DIRECTED TO THE INTERNAL STORMWATER STORAGE SYSTEM. REFER TO ARCHITECTURAL AND MECHANICAL PLANS FOR DETAILS.
 - REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR EXACT SIZE AND DETAILS OF INTERNAL STORMWATER STORAGE SYSTEM.
 - REFER TO ARCHITECTURAL AND MECHANICAL PLANS FOR LOCATION AND CONNECTIONS AND DETAILS OF THE INTERNAL STORMWATER STORAGE SYSTEM AND EMERGENCY OVERFLOW PIPING.

Design Event	Pre-Development Conditions		Post-Development Conditions			Reduction in Flow (L/s or %)
	Uncontrolled Flow (L/s)	Allowable Release Rate (L/s)	A-1 Flow (L/s)	A-2 Flow (L/s)	Total Flow (L/s)	
5-Yr	46.8	19.4	3.2	3.8	7.0	39.8 or 85%
100-Yr	89.2		6.2	3.8	10.0	79.2 or 89%

Reduced flow compared to uncontrolled pre-development conditions from the current 0.182 ha site area.

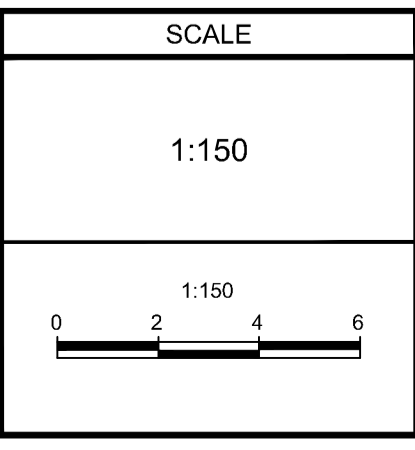


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APPROVED	FST



LOCATION CITY OF OTTAWA 150 LAURIER AVENUE WEST		PROJECT No. 122133
DRAWING NAME POST-DEVELOPMENT STORMWATER MANAGEMENT PLAN		REV # 1 REV # 1
DRAWING No. 122133-SWM2		PLAN #

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