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18 Louisa Street

Development Servicing Study and Stormwater Management Report

**PROPOSED 9-STOREY RESIDENTIAL DEVELOPMENT
18 LOUISA STREET**

**DEVELOPMENT SERVICING STUDY AND
STORMWATER MANAGEMENT REPORT**

Prepared by:

NOVATECH

Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
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May 28, 2021

Ref: R-2020-130
Novatech File No. 120206

May 28, 2021

Ironwood Fund Limited Partnership
Suite 370, 18 Louisa Street
Ottawa, ON
K1R 6Y6

Attention: Mr. Ken Jennings

Dear Sir:

**Re: Development Servicing Study and Stormwater Management Report
Proposed 9-Storey Residential Development
18 Louisa Street, Ottawa, ON
Novatech File No.: 120206**

Enclosed is a copy of the 'Development Servicing Study and Stormwater Management Report' for the proposed 9-storey residential development located at 18 Louisa Street, in the City of Ottawa. This report addresses the approach to site servicing and stormwater management and is submitted in support of Zoning By-Law Amendment and Site Plan Control applications.

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

Yours truly,

NOVATECH



François Thauvette, P. Eng.
Senior Project Manager

cc: Shawn Wessel (City of Ottawa)
David Anderson (Hobin)

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General Plan of Services (120206-GP)

Grading and Erosion & Sediment Control Plan (120206-GR)

Stormwater Management Plan (120206-SWM)

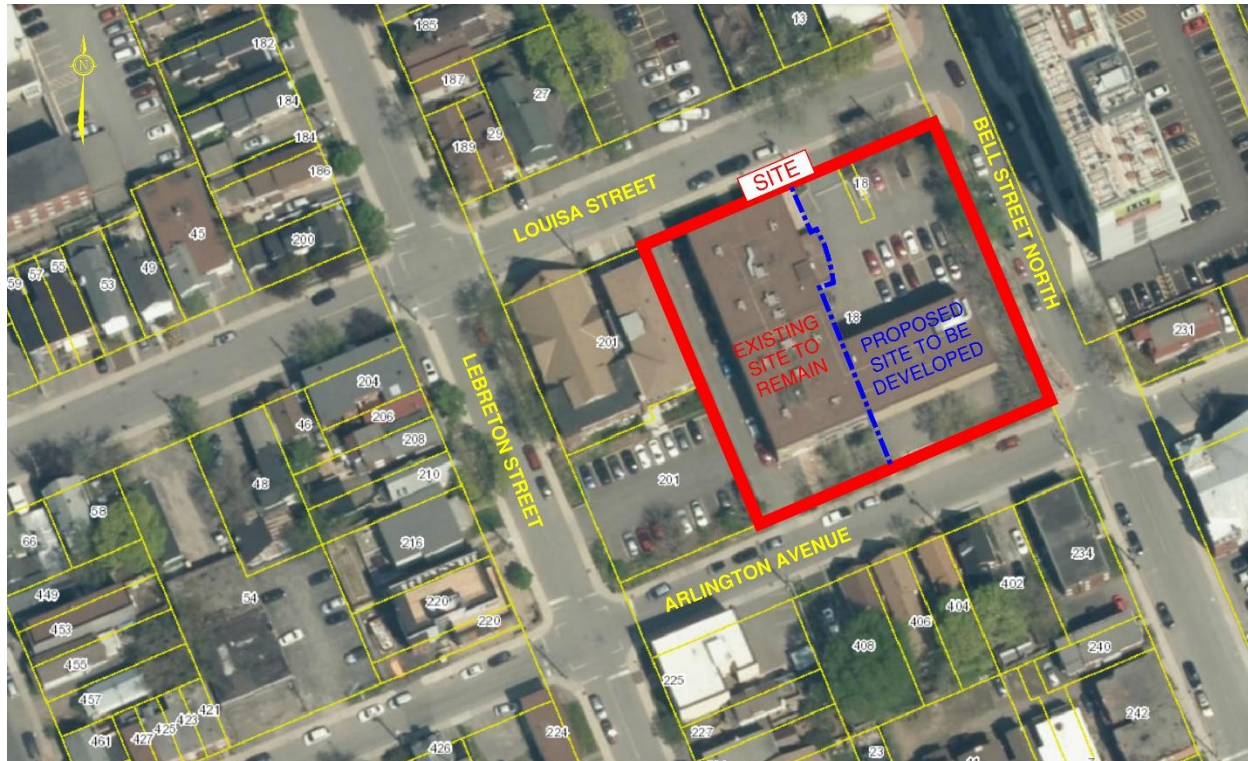
1.0 INTRODUCTION

The new 9-storey residential building is being proposed by Ironwood Fund Limited Partnership and Novatech has been retained to complete the site servicing and stormwater management design for this project. This report addresses the approach to servicing and stormwater management and is being submitted in support of the Zoning By-Law Amendment (ZBLA) and Site Plan Control (SPC) applications.

1.1 Site Description and Location

The subject site is approximately 0.33 hectares in size and currently consists of an ‘L’ shaped building with surface parking lots accessible off Louisa Street and Arlington Avenue. Prior to being a Health and Sports Centre, this building was previously a school. The subject site is bordered by Louisa Street to the north, Arlington Avenue to the south, Bell Street North to the east and a church and associated building to the west. The legal description of the subject site is designated as Lots 7, 8, 9, 10, 11, 12, 13 and 14, Registered Plan 49, City of Ottawa.

Figure 1 – Aerial Plan provides an aerial view of the site.



1.2 Pre-Consultation Information

A pre-consultation meeting was held with the City of Ottawa on October 31, 2020, at which time the client was advised of the general submission requirements. Refer to **Appendix A** for a summary of the correspondence related to 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) is anticipated to

be required because the storm flows from this site are being directed into a combined sewer in Louisa Street. A pre-consultation meeting has not been held with the MECP.

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). Based on discussions with the RVCA, stormwater quality control will not be required for this development as the storm sewer flows are being directed into the combined sewer system in Louisa Street.

1.3 Proposed Development

The proposed development will consist of a new 9-storey residential building adjoining a portion of the existing building (that is to be maintained). The proposed 9-storey residential building will be serviced by extending new laterals to the municipal combined sewer and watermains adjacent to the site. Barrier-free access to the proposed building will be provided off Bell Street North and Louisa Street. Access to the underground parking levels will be provided off Arlington Avenue, on the south side of the building, while the loading space will be provided off Louisa Street. The western portion of the existing building will be incorporated into the overall design of the site, however, the portion of the site to be maintained will continue to be serviced by the existing building laterals to Louisa Street.

1.4 Reference Material

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

¹ The Geotechnical Investigation Report (Ref. No. PG5405-1, Rev. 1), prepared by Paterson Group on January 19, 2021.

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. As discussed with the City of Ottawa, the total allowable flow from the subject site being directed to the combined sewer in Louisa Street is to include:

- Peak sanitary sewage flows
- Ground water flows (Less than 25,000 L/day per section 6.5 of the Geotech Report¹)
- Peak stormwater flows

The total flow from the site (summarized in **Section 2.3.4** of the Report) is being provided to the City of Ottawa for their review in confirming that the municipal combined sewer system has adequate capacity to accommodate the proposed development.

The servicing criteria, the expected sewage flows, and the water demands are to conform to the City of Ottawa municipal design guidelines for sewer and water distribution systems. Refer to the subsequent sections of the report for further details.

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 proposed residential development will be serviced by a new 200mm dia. sanitary sewer connected to the existing 300mm dia. combined sewer in Louisa Street.

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 Section 4 – ‘Sanitary Sewer Systems’ and Appendix 4-A - ‘Daily Sewage Flow for Various Types of Establishments’ of the City of Ottawa Sewer Design Guidelines:

Residential Use

- Residential Units (Studio or 1-Bedroom): 1.4 people per unit
- Residential Units (2-Bedroom): 2.1 people per unit
- Average Daily Residential Sewage Flow: 280 L/person/day
- Residential Peaking Factor = 3.73 (Harmon Equation)
- Infiltration Allowance: 0.33 L/s/ha x 0.179 ha site = 0.06 L/s

Table 1 identifies the theoretical sanitary flows for the proposed residential development based on the above design criteria.

Table 1: Theoretical Post-Development Sanitary Flows

Residential Use	Unit Count	Design Population	Average Flow (L/s)	Peaking Factor	Peak Flow (L/s)	Total Flow (L/s)*
New Building (serviced by a new lateral)						
Studio / 1-Bedroom	109	153	0.50	3.73	1.85	1.85
2-Bedroom	30	63	0.20	3.73	0.76	0.76
Infiltration Allowance	-	-	-	-	-	0.06
Total	139	216	0.70	-	-	2.67

*Existing building not included in calculations (to continue to be serviced by the existing sanitary and water laterals)

As indicated in the table above, the peak sanitary flow to the combined sewer in Louisa Street was calculated to be approximately 2.7 L/s. Refer to **Appendix C** for a copy of the theoretical sanitary flow calculations.

A 200mm dia. sanitary gravity sewer at a minimum slope of 1.0% has a full flow conveyance capacity of 34.2 L/s and will have enough capacity to convey the theoretical sanitary flows for the proposed development.

2.2 Water for Domestic Use and Firefighting

The proposed residential development will be serviced by redundant 150mm dia. water services connected to the existing 150mm dia. watermain in Louisa Street and the existing 200mm dia. watermain in Bell Street North. The water services have been sized to provide the required domestic water demand and fire flow. Shut-off valves will be provided on the proposed water services near the exterior face of the building. The water meter will be located within the water entry room, with a remote meter also on the exterior face of the building.

The City of Ottawa design criteria were used to calculate the theoretical water demands for the proposed development. The following design criteria were taken from Section 4 – ‘Water Distribution Systems’ of the Ottawa Design Guidelines – Water Distribution:

- Residential Units (Studio or 1 Bedroom): 1.4 people per unit
- Residential Units (2 Bedroom): 2.1 people per unit
- Average Daily Residential Water Demand: 350 L/person/day (City Water Table 4.2)
- 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)

Table 2 identifies the theoretical domestic water demands for the proposed residential development based on the above design criteria.

Table 2: Theoretical Water Demand for the Proposed Development

Residential Use	Unit Count	Design Population	Average Day Demand (L/s)*	Max. Day Demand (L/s)*	Peak Hour Demand (L/s)*
New Building (serviced by new redundant laterals)					
Studio / 1-Bedroom	109	153	0.62	1.55	3.41
2-Bedroom	30	63	0.26	0.64	1.40
Total	139	216	0.88	2.19	4.81

*Existing building not included in calculations (to continue to be serviced by the existing sanitary and water laterals)

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. These values were used to generate the municipal watermain network boundary conditions. **Table 2.1** below summarizes the watermain boundary conditions and the results of the hydraulic analysis related to the domestic demands. It is anticipated that a booster pump will be required to increase pressure to the upper floors of the building.

Table 2.1 : Hydraulic Boundary Condition Provided by the City

Municipal Watermain Boundary Condition	Boundary Condition	Domestic Demand (L/s)	Normal Operating Pressure Range (psi)	Design Pressure (psi)*
Minimum HGL (Peak Hour Demand)	107.4 m	4.81	40 psi (min.)	50.9
Maximum HGL (Max Day Demand)	114.8 m	2.19	50-70 psi	61.4
Max Day + Fire Flow HGL	102.9 m	250 + 2.19	20 psi (min.)	44.5

*Based on a street elevation of 71.60m at the service connection location.

As indicated above, the existing municipal watermain should provide adequate system pressures, within the normal operating pressure ranges specified by the City of Ottawa.

2.2.1 Water Supply for Firefighting

The proposed building will be fully sprinklered and supplied with a fire department (siamese) connection. The siamese connection will be located on the north side of the building, within 45m of the existing municipal fire hydrant on the NW corner of Louisa Street and Bell Street North.

The Fire Underwriters Survey (FUS) was used to estimate fire flow requirements for the proposed building. Based on information provided by the architect, a 9-storey, sprinklered building, constructed using non-combustible materials was used in the calculations.

Table 2.2 summarizes the fire flow requirements for the proposed building, based on the FUS calculations.

Table 2.2: Fire Flow Requirements for the Proposed Development

Type of Uses	Fire Flow Demand USGPM (L/s)
Proposed Residential Building	3,963 USGPM (250 L/s)

Refer to **Appendix D** for a copy of the preliminary FUS fire flow calculations and watermain boundary conditions correspondence from the City of Ottawa.

The fire flow requirements include both sprinkler system and hose allowances in accordance with the OBC and NFPA 13. The sprinkler systems will be designed by the fire protection (sprinkler) contractor as this process involves detailed hydraulic calculations based on building layout, pipe runs, head losses, fire pump requirements, etc. Fire flow requirements calculated using the FUS method tend to generate higher values when compared to flows being calculated using the OBC and NFPA.

As discussed with the City of Ottawa during the design process, a multi-hydrant approach to firefighting is anticipated. There are 4 Class AA (blue bonnet) hydrants within 75m of the on-site buildings (one hydrant on the NW corner of Louisa St./Bell St. N., another on the SW corner of Bell St. N./Arlington Ave., one on the NE corner of Lebreton St. N./Arlington Ave. and a fourth hydrant on the SW corner of Lebreton St. N./Louisa St. Based on the City of Ottawa Technical Bulletin ISTB-2018-02, Class AA (blue bonnet) hydrants within 75m of the building should provide a minimum capacity 95 L/s each (at a pressure of 20 PSI). The combined maximum flow from these hydrants will exceed the Max Day + Fire Flow requirement (252 L/s) of the

proposed development. This multi-hydrant approach to firefighting is in accordance with the City of Ottawa Technical Bulletin ISTB-2018-02.

Refer to **Appendix D** for a sketch showing the existing fire hydrant locations, City ID numbers and the dimensions confirming the appropriate site coverage for fire-fighting purposes.

The existing municipal watermain network should therefore have adequate water supply for the proposed development and will provide adequate system pressures for both 'Max Day + Fire Flow' and 'Peak Hour' conditions, within the normal operating pressure ranges.

2.3 Storm Drainage and Stormwater Management

As discussed with the City of Ottawa, the western portion of the existing site (0.150 ha), which is to be maintained and protected, will be excluded from the SWM calculations, as there is limited opportunity to control the runoff from this portion of the site. On-site stormwater management will however be required for the remaining portion of the site to be developed (0.179 ha). Stormwater runoff from the western portion of the site will continue to sheet drain uncontrolled towards Louisa and Arlington Streets.

The proposed storm outlet for the site to be developed is the existing 300mm dia. PVC combined sewer in Louisa Street, which in turn flows into a combined sewer in Bell Street North. Since the post-development storm flows are ultimately being directed to a combined sewer, they will need to be controlled prior to being released from the site. The total site allowable flow will be a combination of the peak sanitary flows, anticipated groundwater flows and the allocated stormwater flow components, as specified by the City of Ottawa.

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 criteria and objectives for the site are as follows:

- Control the post-development flows from the site to the allocated release rate (i.e. allowable 2-year release rate specified by the City of Ottawa minus the peak sanitary and ground water flow components). Control post-development flows from the portion of the site being developed (i.e. new building), excluding the western portion of the site to remain, for storms up to and including the 100-year design event.
- Minimize the impact on the existing combined sewer system in Louisa and Bell Streets by reducing the post-development storm flows from the site, when compared to current conditions.
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

2.3.2 Pre-Development Conditions and Allowable Release Rate

The uncontrolled pre-development flows from the 0.179 ha portion of the site to be developed were calculated using the Rational Method to be 42.0 L/s during the 1:5-year design event and 80.3 L/s during the 1:100-year design event. Refer to **Appendix E** for detailed calculations. There are currently no water quantity or water quality control measures being provided on site.

As specified by the City of Ottawa, the allowable release rate from the site (including the sanitary and groundwater flow components) was calculated using the Rational Method, to be approximately 15.3 L/s, based on a 10-minute rainfall intensity, using a 2-year return period (City of Ottawa IDF Curves) and a runoff coefficient of 0.40.

$$\begin{aligned}
 T_c &= 10 \text{ min} & C &= 0.40 \\
 I_{5yr} &= 76.81 \text{ mm/hr} & A &= 0.179 \text{ ha} \\
 \\
 Q_{allow} &= 2.78 \text{ CIA} \\
 &= 2.78 \times 0.40 \times 76.81 \times 0.179 \\
 &= 15.3 \text{ L/s}
 \end{aligned}$$

As stated above, the total site allowable flow to the combined sewer system in Louisa Street will be a combination of the peak sanitary flow, anticipated groundwater flow and the allocated stormwater flow components.

- The peak sanitary flow from **Table 1** above was calculated to be 2.67 L/s.
- The anticipated groundwater corresponds to a maximum flow rate of approximately 0.29 L/s (based on the geotechnical estimate of less than 25,000 L/day/building).
- The remaining site flow allocated for stormwater management is therefore 12.3 L/s. (15.3 L/s – (2.67 L/s peak sanitary flow + 0.29 L/s groundwater flow))

2.3.3 Post-Development Conditions

The proposed site will be serviced by connecting to the existing 300mm dia. combined sewer in Louisa Street. Stormwater runoff from the new building roof, lower roof terraces and ground level amenity areas will be directing to an internal stormwater storage tank and controlled prior to being discharged into the municipal sewer in Louisa Street. Runoff from the site entrances to the underground parking and a portion of the side yards along Louisa, Arlington and Bell Streets will sheet drain uncontrolled towards existing catchbasins within the municipal right-of-way.

Due to the requirement to maintain and protect the existing building on the western portion of the property, runoff from the side yards and parking area for that building will continue to sheet drain uncontrolled towards Louisa and Arlington Streets. Runoff from this existing catchment area to remain is not included in the overall SWM calculations. Refer to plan 120206-SWM for the relevant drainage areas, area I.D.'s and runoff coefficients.

2.3.3.1 Areas A-1: Uncontrolled Direct Runoff

The runoff from this sub-catchment area will flow overland towards the roadway catch basins in Louisa, Arlington, and Bell Streets. The uncontrolled post-development flows from sub-catchment area A-1 were calculated using the Rational Method to be approximately 3.7 L/s during the 5-year design event and 7.3 L/s during the 100-year design event. Refer to **Appendix D** for detailed calculations.

2.3.3.2 Area R-1: Controlled Building Flows

Stormwater runoff from this sub-catchment area will be captured by the courtyard deck drains as well as the building roof / terrace drains and directed to an internal stormwater storage tank. Stormwater collected within the storage tank will be pumped up to the proposed storm service and released into the existing combined sewer in Louisa Street. A pump (designed by the mechanical consultant) is required to control flow from the tank to a maximum rate of 5.0 L/s (79.3 USGPM), which corresponds to the maximum flow allocated for this catchment area. A “stand-by” pump will be provided for emergency and/or maintenance purposes. An emergency back-up power supply will also be provided. 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 post-development stormwater design flows and storage volumes for the 2-year, the 5-year and the 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	5.0 L/s	18.0 m ³	> 67 m ³
1:5 Year		27.8 m ³	
1:100 Year		66.2 m ³	
1:100 Year + 20% IDF increase		84.1 m ³	

*Stormwater storage requirements in excess of the 100-year design event will overflow to the surface via lid of proposed CBMH 1 as the access and emergency spill point to Louisa Street.

As indicated in the table above, the internal stormwater storage tank will provide adequate storage for both the 5-year and 100-year design events. 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 to be developed and compares them to the uncontrolled pre-development flows and allocated for the stormwater component.

Table 3.1: Stormwater Flows Comparison Table

Design Event	Pre-Development Conditions		Post-Development Conditions		
	Uncontrolled Flow (L/s)	Allocated Release Rate (L/s)	A-1 Flow (L/s)	R-1 Flow (L/s)	Total Stormwater Flow (L/s)
5-Yr	42.0	12.3	3.7	5.0	8.7
100-Yr	80.3		7.3	5.0	12.3

A 250mm dia. storm service at a minimum slope of 1.0% has a full flow conveyance capacity of 62.0 L/s and will have enough capacity to convey the theoretical storm flows for the proposed development.

2.3.4 Summary of Total Flow to Municipal Combined Sewer

As stated above, the total site allowable flow to the combined sewer system in Louisa Street will be a combination of the peak sanitary flow, anticipated groundwater flow and the allocated stormwater flow components.

Table 3.2 provides a summary of the total post-development flows from the site to be developed and compares them to the uncontrolled pre-development flows and allowable release rate specified by the City of Ottawa.

Table 3.2: Site Flows Summary and Comparison Table

Design Event	Pre-Development Conditions		Post-Development Conditions				
	Uncontrolled Storm Flow (L/s)	Allowable Release Rate (L/s)	Sanitary Flow (L/s)	Ground Water Flow (L/s)	Storm Flow (L/s)	Total Flow (L/s)	Reduction in Flow (L/s or %)*
5-Yr	42.0	15.3	2.7	0.3	8.7	11.7	30.3 or 72%
100-Yr	80.3				12.3	15.3	65.0 or 81%

*Reduced flow compared to uncontrolled pre-development stormwater runoff conditions (excl. pre-development sanitary and ground water flow components).

The total flow from the site to be developed is being provided to the City of Ottawa for their review in confirming that the municipal combined sewer system has adequate capacity to accommodate the proposed development.

2.3.5 Stormwater Quality Control

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). Based on discussions with the City of Ottawa and the RVCA, stormwater quality control will not be required for this development as the subject site is located within a combined sewershed. Refer to **Appendix A** for a copy of the correspondence received from the RVCA.

3.0 SITE GRADING

The existing site is relatively flat, with elevations varying from approximately 72.3m at both the northwest and southeast property corners down to approximately 71.6m at the southwest property corner and approximately 71.75m near the intersection of Louisa Street and Bell Street North. The western portion of the existing site generally slopes both north and south directions from the highpoint on-site towards the existing right-of ways. The eastern portion of the existing site is generally flat and the grade drops off to the north along the existing parking lot entrance off Louisa Street. The finished floor elevation (FFE) of the proposed residential building will be set at an elevation of 72.50m to tie into the existing building elevations and the perimeter sidewalk elevations along Louisa, Arlington and Bell Streets. The finished floor elevations of the

existing building to remain will be maintained and varies between 72.23m and 72.62m. The grades around the existing building to remain will also be maintained. Refer to the enclosed Grading and Erosion & Sediment Control Plan (120206-GR) for details.

4.0 GEOTECHNICAL INVESTIGATIONS

A Geotechnical Investigation Report has been prepared by Paterson Group 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 municipal sewer system, temporary erosion and sediment control measures will be implemented on-site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter bags and/or Filter socks will be placed under the grates or at the curb inlet openings of nearby catchbasin structures and 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 construction 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.

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 Zoning By-Law Amendment and Site Plan Control applications for the proposed residential development located at 18 Louisa Street.

The conclusions are as follows:

- The proposed 9-storey residential building will be serviced by extending new laterals to the municipal combined sewer in Louisa Street. Redundant water services will be extended from the existing municipal watermain in Louisa and Bell Streets.
- The building will be sprinklered and supplied with a fire department siamese connection. The siamese connection will be located within 45m of the municipal fire hydrant at the north-west corner of the intersection of Louisa Street and Bell Street North.
- The site flows from sub-catchment area A-1 will be uncontrolled to the adjacent municipal right-of-ways. The flows from sub-catchment area A-2 will be directed to an

internal SWM tank and controlled prior to being discharged into the municipal combined sewer system in Louisa Street.

- The total post-development flow for the portion of the site being developed will be approximately 11.7 L/s during the 5-year design event and 15.3 L/s during the 100-year event. The combined flows are less than or equal to the allowable combined release rate of 15.3 L/s. Furthermore, post-development flows will be significantly reduced when compared to current conditions.
- Regular inspection and maintenance of the building services, roof drains, internal SWM storage system, pumps and back-up power supply is recommended to ensure that the storm drainage system is clean and operational.
- Temporary erosion and sediment control measures 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:



Desmond Mills, E.I.T.
B. Eng.

Reviewed by:



François Thauvette, P. Eng.
Senior Project Manager

APPENDIX A
Correspondence

Formal Pre-Application Consultation Meeting Minutes
PC2019-0274
18 Louisa Avenue
Thursday, October 31, 9:00 a.m. – 10:00 a.m.

Attendees

City of Ottawa

John Bernier, File Lead
Christopher Moise, Urban Design
Shawn Wessel, Engineer
Wally Dubyk, Transportation
Urja Modi, Student Planner

Applicant Team

Scott Alain
Carl Furney
Ed McKenna
Daniel Donnelly
Kenneth Jennings
Christian Jennings

Community Representative

Eric Darwin*, Dalhousie Community Association

*Eric Darwin signed a Non-Disclosure Agreement (NDA) prior to this meeting.

Note: Shawn Wessel from City of Ottawa was unable to attend this meeting but will be included in the pre-application consultation correspondence.

Proposal Overview

The applicant team is seeking to rezone the subject site from Minor Institutional to Residential Fifth Density to permit the construction of a mid-rise residential development that tapers in height from 9 storeys to 6 storeys, and contains 100+ units, below-grade residential parking, and visitor surface parking. The proposed development will include landscaped and rooftop amenity spaces.

Comments from related discipline

Planning

City staff: John Bernier

The subject site is located within the General Urban Area of the Official Plan. This section permits the proposed use and supports greater height. The applicant team is advised to focus on justifying compatibility with the character of the neighbourhood, specifically between the north and south frontages where lower densities exist. City staff share the following comments regarding the proposed development:

- The first design of the proposed development makes good use of the corner and provide good transition from the LIV building to surrounding low-rise dwellings. Greater attention to design will be required to address the corridor created by facing a tall building in front of another tall building.
- The applicant team is advised to show greater detail for proposed parking and amenity spaces.
- Greater clarification of the uses of the landscaped amenity space is required (i.e. public, public/private, or private).
- City trees (assets) have been identified along the perimeter of the subject site; the City will want to retain these trees. Zoning can be fitted to allow for the retention of these trees; if retention is not possible, then the applicant team will be required to pay compensation.

The following plans will be required:

- Wind study
- Sun/shadow analysis
- Tree Conservation Report

The City Forester will follow up with specific requirements regarding the trees and landscaping of the subject site. The proposed development will be subject to applications for a Major Zoning By-Law Amendment and a Complex Site Plan Control.

Engineering

City staff: Shawn Wessel

City staff was unable to attend this meeting. Engineering notes and a list of required plans and studies will be provided in the pre-application consultation correspondence.

Transportation

City staff: Wally Dubyk

The applicant team will be required to submit Steps 1 and 2 of a Transportation Impact Assessment when filing for any future application.

City staff will review and provide comments for site triangles.

Urban Design

City staff: Christopher Moise

The applicant team is advised to conduct a thorough design analysis that addresses the canyon effect, sun/shadow effect, and the corridor created by steep walls. City staff advise that a 6-storey to 12-storey transition may be more appropriate and will have less impact on the canyon effect. It is recommended that modelling be used for justification purposes, to explore other design options, and to illustrate the city.

Comments from community representatives

Eric Darwin, Dalhousie Community Association

The community representative (CR) shares the City's concerns regarding the 9-storey portion of the building facing the LIV units. The community representative suggests to the applicant team to re-mass or reorient the entirety of the project by 90 degrees clockwise so that the 9-storey wall would be fronting onto Arlington Avenue. The community representative expresses the following additional concerns and recommendations about the proposed development:

- It is a dubious repute to add a laneway to the site considering there are multiple laneways within the area.
- The CR supports the idea of incorporating at-grade townhouses but expresses that the townhouse portion of the project is not big enough and it should be extended over the lot line. Additionally, the CR suggests fronting townhouses onto Bell Street.

Next Steps

The applicant team is advised to keep the File Lead and Design Lead updated. It is also recommended that the applicant team seek input from the Ward Councillor, Community Association, and neighbouring property owners.

Steve Matthews

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Thursday, January 7, 2021 2:06 PM
To: Francois Thauvette; Bernier, John
Cc: Steve Matthews
Subject: RE: 18 Louisa Ave - Pre-Consultation Meeting Minutes
Attachments: 18 Louisa Pre-Consul Notes for the File Lead.pdf

Here you are Francois.

Happy New Year!

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

Thank you

Regards,

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

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

 Please consider the environment before printing this email

*****Please also note that, while my work hours may be affected by the current situation and am working from home, I still have access to email, video conferencing and telephone. Feel free to schedule video conferences and/or telephone calls, as necessary.*****

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: January 07, 2021 10:18 AM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>; Bernier, John <John.Bernier@ottawa.ca>
Cc: Steve Matthews <S.Matthews@novatech-eng.com>
Subject: 18 Louisa Ave - Pre-Consultation Meeting Minutes

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Hi Shawn and John,

Would it be possible for you provide the engineering design criteria along with the list of required plans and studies for this site? They were never provided as part of the (attached) pre-consultation meeting minutes we received from the architect.

Regards,

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

NOVATECH Engineers, Planners & Landscape Architects

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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Infrastructure:

Louisa St.:

A 152 mm dia. DI Watermain (c. 2003) is available

A 300 mm dia. Conc. Combined Sewer (c. 2003) is available, which drains to Preston Street Trunk, Booth Street Trunk and then to Interceptor Sewer.

Bell St.:

A 203 mm dia. DI Watermain (c. 2003) is available

A 300 mm dia. Conc. Combined Sewer (c. 2002) is available, which drains to Preston Street Trunk, Booth Street Trunk and then to Interceptor Sewer.

Arlington Ave.:

A 203 mm dia. DI Watermain (c. 2003) is available

A 300 mm dia. Conc. Combined Sewer (c. 2002) is available, which drains to Preston Street Trunk, Booth Street Trunk and then to Interceptor Sewer.

The following apply to this site and any development within a combined sewer area:

- **Total** (San & Stm) allowable release rate will be 2 year pre-development rate.
- Coefficient (C) of runoff will need to be determined **as per existing conditions** but in no case more than 0.4
- TC = 20 minutes or can be calculated
TC should be not be less than 10 minutes, since IDF curves become unrealistic at less than 10 min.
- Any storm events greater than 2 year, up to 100 year, and including 100 year storm event must be detained on site.
- Two separate sewer laterals (one for sanitary and other for storm) will be required.

An MECP ECA will be required.

Please have applicant provide one copy of the following for our review:

- MECP ECA Application Form - Direct Submission tied to SPC
- Fees - Certified Cheque made out to "Ministry of Finance"
- Proof of Applicant's Identification (if no Certificate of Incorporation)
- Certificate of Incorporation (if Applicable)
- NAICS Code (If Applicable)
- Plan & Profile
- Grading and Servicing Plans
- Survey Plan
- Pipe Data Form
- Draft ECA (City of Ottawa Expanded Works Form)
- Source Protection Policy Screening & Significant Threat Report
- Sewer Drainage Area Plan
- SWM Report
- Services Report
- Geotechnical Report & any other supportive documentation
- Correspondence: City of Ottawa including ROW, Water Resources Dept., ISD etc., MNR, Conservation Authority & MECP.

Please note that once the review has been completed and the Sr. Engineer is satisfied and ready to sign off on the application, after the PM recommendations 3 final bound copies including 3 CD Rom disks will be required to accompany the applications with MECP and for City of Ottawa records.

Footer of ECA Application should have reference #: 8551E (2019/05)

Please also note:

Foundation drains are to be independently connected to sewermain (separated or combined) unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.

Roof drains are to be connected downstream of any incorporated ICD within the SWM system.

Other:

If residential component to proposal the following applies:

Due to more sensitive use, an Record of Site Condition (RSC) is required. Ensure Phase I, and if applicable, Phase II ESA's speak to required RSC.

Environmental Noise Study is required due to within proximity of 500 m of Hwy #417.

Stationary Noise Study – consultant to speak to this in their report as per City NCG and NPC 300 Guidelines.

If high rise is proposed, Shadow Study will be required for this proposal.

If 9 storeys or greater, a Wind Study will be required for this proposal.

Capital Works Etc.:

Catherine St. Resurfacing and infrastructure planned for 3-5 years.

MTO bridge replacement for 417 planned for 3-10 years

Water Supply Redundancy – Fire Flow:

Applicant to ensure that a second service with an inline valve chamber be provided where the average daily demand exceeds 50 m³ / day (0.5787 l/s per day)

FUS Fire Flow Criteria to be used unless a low-rise building, where OBC requirements may be applicable.

Where underground storage (UG) and surface ponding are being considered:

Show all ponding for 5 and 100 year events

Above and below ground storage is permitted although uses ½ Peak Flow Rate or is modeled. Please confirm that this has been accounted for and/or revise.

Rationale:

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 be used 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.

Note that the above will added to upcoming revised Sewer Design Guidelines to account for underground storage, which is now widely used.

Further to above, what will be the actual underground storage provided during the major (100 year) and minor (2 year) storm events?

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?

Note - 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.

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.

For proposed depressed driveways or developments with private lanes, parking areas or with entrances etc. lower than roadway...



S18.pdf



S18.1.pdf

Provided Info:

Please be advised that it is the responsibility of the applicant and their representatives/consultants to verify information provided by the City of Ottawa. Please contact City View and Release Info Centre at Ext. 44455

Environmental Source Information:

City of Ottawa - Historical Land Use Inventory (HLUI) - Required

Rationale:

The HLUI database is currently undergoing an update. The updated HLUI will include additional sources beyond those included in the current database, making the inclusion of this record search even more important.

Although a municipal historic land use database is not specifically listed as required environmental record in O. Reg 153/04, Schedule D, Part II states the following:

The following are the specific objectives of a records review:

1. To obtain and review records that relate to the Phase I (One) property and to the current and past uses of and activities at or affecting the Phase I (One) property in order to determine if an area of potential environmental concern exists and to interpret any area of potential environmental concern.
2. To obtain and review records that relate to properties in the Phase I (One) study area other than the Phase I (One) property, in order to determine if an area of potential environmental concern exists and to interpret any area of potential environmental concern.

It is therefore reasonable to request that the HLUI search be included in the Phase I ESA to meet the above objectives.

Please submit.

FYI :

All existing reports and plans will need to be revised if older than 2 years and must reflect current City Standards, Guidelines, By-laws and Policies.

Please refer to City of Ottawa website portal for **“Guide to preparing Studies and Plans”** at <https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans>.

Please ensure you are using the current guidelines, bylaws and standards including materials of construction, disinfection and all relevant reference to OPSS/D and AWWA guidelines - all current and as amended, such as:

City of Ottawa Sewer Design Guidelines (CoOSDG) complete with ISTDB 2012-01, 2014-01, 2016-01 & 2018-01 technical bulletin updates as well as current Sewer, Landscape & Road Standard Detail Drawings as well as Material Specifications (MS Docs).
Sewer Connection (2003-513) & Sewer Use (2003-514) By-Laws.

City of Ottawa Water Distribution Design Guidelines (CoOWDDG) complete with ISTDB 2010-02, 2014-02 & 2018-02 technical bulletin updates as well as current Watermain/ Services Material Specifications (MS Docs) as well as Water and Road Standard Detail Drawings.
FUS Fire Flow standards
Water (2018-167) By-Law

Ensure to include version date and add “(as amended)” when referencing all standards, detail drawings, by-Laws and guidelines.

Contact me at 613-580-2424, Ext. # 33017 or e-mail shawn.wessel@ottawa.ca if you have any questions.

Sincerely,



Shawn Wessel, A.Sc.T., rcji
Project Manager
Development Review, Central Branch

Steve Matthews

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: Wednesday, May 19, 2021 3:47 PM
To: Francois Thauvette
Cc: Steve Matthews
Subject: RE: 18 Louisa Street - RVCA Pre-Consultation

Hi Francois,

The RVCA would rely on municipal infrastructure to handle quality control. No requirements from our end for on-site SWM controls.

Thank you,

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

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: Wednesday, May 19, 2021 2:35 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Steve Matthews <S.Matthews@novatech-eng.com>
Subject: 18 Louisa Street - RVCA Pre-Consultation

Hi Eric,

We are working on a 9-storey residential development with underground parking located at 18 Louisa Street. Approximately half of the site (east side) is being re-developed and a portion of the existing site and building (west side) is to remain. Although the proposed re-development will include on-site stormwater quantity control measures, we assume there will be no requirement for stormwater quality control as the immediate receiver is the existing combined sewer in Louisa Street. This has been our experience on other projects located within a combined sewer area, in the City of Ottawa.

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
Theoretical Sanitary Flow Calculations

18 Louisa - 9-Storey Residential Development

SANITARY SEWAGE ANALYSIS

Residential	Post-Development	Units
Number of 1-Bedroom/Studio Units	109	
Number of Persons per 1-Bdrm Apartment	1.4	
Number of 2-Bedroom Units	30	
Number of Persons per 2-Bdrm Apartment	2.1	
Design Population	216	
Average Daily Flow per resident	280	L/c/day
Peak Factor (Harmon Formula)	3.7	
Peak Residential Flow	2.61	L/s
Extraneous Flow		
Site Area to be Developed	0.181	ha
Infiltration Allowance	0.33	L/s/ha
Peak Extraneous Flows	0.06	L/s
Total Peak Sanitary Flow	2.67	L/s

APPENDIX D

Water Demands, FUS Calculations, Boundary Conditions

18 Louisa - Proposed Residential Development

WATER ANALYSIS

DOMESTIC WATER DEMAND

Residential	Post-Development	Units
Number of 1-Bedroom/Studio Units	109	
Number of Persons per 1-Bdrm Apartment	1.4	
Number of 2-Bedroom Units	30	
Number of Persons per 2-Bdrm Apartment	2.1	
Design Population	216	
Average Daily Flow per resident	350	L/c/day
Average Day Demand	0.88	L/s
Maximum Day Demand (2.5 x avg. day)	2.19	L/s
Peak Hour Demand (2.2 x max. day)	4.81	L/s
TOTALS		
Average Day Demand	0.88	L/s
Maximum Day Demand	2.19	L/s
Peak Hour Demand	4.81	L/s

BOUNDARY CONDITIONS (Values provided by the City of Ottawa)

Maximum HGL =	114.8	114.8 m
Minimum HGL =	107.4	107.4 m
Max Day + Fire Flow (133L/s or 250 L/s) =	107.7	102.9 m

PRESSURE TESTS

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

Approx. Street Elevation (at service connection) 71.6 71.6 m

High Pressure Test = (Max HGL - Avg. Ground Elev.) x 1.42197 PSI/m > 50 PSI and < 70 PSI
 High Pressure = **61.4 psi**

Low Pressure Test = (Min. HGL - Avg. Ground Elev.) x 1.42197 PSI/m > 40 PSI
 Low Pressure = **50.9 psi**

Max Day + Fire Flow Test = (Max Day + Fire Flow - Avg. Ground Elev.) x 1.42197 PSI/m > 20 PSI
 MD + FF Pressure = **44.5 psi**

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



Engineers, Planners & Landscape Architects

Novatech Project #: 120206

Project Name: 18 Louisa Street

Date: 4/28/2021

Input By: D.Mills

Reviewed By: F.Thauvette

Legend

Input by User

No Information or Input Required

Building Description: Existing 3-storey building

Non-combustible construction

Step	Input		Value Used	Total Fire Flow (L/min)	
Base Fire Flow					
1	Construction Material		Multiplier		
	Coefficient related to type of construction C	Wood frame	1.5		0.8
		Ordinary construction	1		
		Non-combustible construction	Yes 0.8		
		Modified Fire resistive construction (2 hrs)	0.6		
Fire resistive construction (> 3 hrs)		0.6			
2	Floor Area			9,000	
	A	Building Footprint (m ²)	839		
		Number of Floors/Storeys	3		
		Area of structure considered (m ²)	2,517		
F	Base fire flow without reductions $F = 220 C (A)^{0.5}$				
Reductions or Surcharges					
3	Occupancy hazard reduction or surcharge		Reduction/Surcharge	7,650	
	(1)	Non-combustible	-25%		-15%
		Limited combustible	Yes -15%		
		Combustible	0%		
		Free burning	15%		
Rapid burning		25%			
4	Sprinkler Reduction		Reduction	-3,060	
	(2)	Adequately Designed System (NFPA 13)	Yes -30%		
		Standard Water Supply	Yes -10%		
		Fully Supervised System	-10%		
Cumulative Total			-40%		
5	Exposure Surcharge (cumulative %)		Surcharge	3,825	
	(3)	North Side	20.1 - 30 m 10%		
		East Side	2Hr Fire Wall 10%		
		South Side	20.1 - 30 m 10%		
		West Side	3.1 - 10 m 20%		
Cumulative Total			50%		
Results					
6	(1) + (2) + (3)	Total Required Fire Flow, rounded to nearest 1000L/min		L/min	8,000
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	133
				or	2,114
7	Storage Volume	Required Duration of Fire Flow (hours)		Hours	2
		Required Volume of Fire Flow (m ³)		m ³	960

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



Engineers, Planners & Landscape Architects

Novatech Project #: 120206

Project Name: 18 Louisa Street

Date: 4/28/2021

Input By: D.Mills

Reviewed By: F.Thauvette

Legend

Input by User

No Information or Input Required

Building Description: Proposed 9-storey residential building
Non-combustible construction

Step	Input		Value Used	Total Fire Flow (L/min)	
Base Fire Flow					
1	Construction Material		Multiplier		
	Coefficient related to type of construction C	Wood frame	1.5		0.8
		Ordinary construction	1		
		Non-combustible construction	Yes 0.8		
		Modified Fire resistive construction (2 hrs)	0.6		
Fire resistive construction (> 3 hrs)		0.6			
2	Floor Area			17,000	
	A	Building Footprint (m ²)			1091
		Number of Floors/Storeys			9
		Area of structure considered (m ²)			9,819
F	Base fire flow without reductions				
	$F = 220 C (A)^{0.5}$				
Reductions or Surcharges					
3	Occupancy hazard reduction or surcharge		Reduction/Surcharge	14,450	
	(1)	Non-combustible	-25%		-15%
		Limited combustible	Yes -15%		
		Combustible	0%		
		Free burning	15%		
Rapid burning		25%			
4	Sprinkler Reduction		Reduction	-5,780	
	(2)	Adequately Designed System (NFPA 13)	Yes -30%		-30%
		Standard Water Supply	Yes -10%		
		Fully Supervised System	-10%		
Cumulative Total			-40%		
5	Exposure Surcharge (cumulative %)		Surcharge	6,503	
	(3)	North Side	20.1 - 30 m		10%
		East Side	20.1 - 30 m		10%
		South Side	10.1 - 20 m		15%
		West Side	2Hr Fire Wall		10%
Cumulative Total			45%		
Results					
6	(1) + (2) + (3)	Total Required Fire Flow, rounded to nearest 1000L/min		L/min	15,000
		(2,000 L/min < Fire Flow < 45,000 L/min)	or	L/s	250
			or	USGPM	3,963
7	Storage Volume	Required Duration of Fire Flow (hours)		Hours	3
		Required Volume of Fire Flow (m ³)		m ³	2700

Steve Matthews

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Monday, May 3, 2021 3:47 PM
To: Francois Thauvette
Subject: 18 Louisa Street - Request for WM boundary conditions
Attachments: 18 Louisa Street May 2021.pdf

Good afternoon Francois

Please find conditions as requested , below:

The following are boundary conditions, HGL, for hydraulic analysis at 18 Louisa (zone 1W) assumed to be connected to the 203mm on Louisa and Bell Streets (see attached PDF for location).

Minimum HGL = 107.4m

Maximum HGL = 114.8m

Max Day + Fire Flow (133 L/s) = 107.7m

Max Day + Fire Flow (250 L/s) = 102.9m

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.

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

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji

Project Manager - Infrastructure Approvals

Gestionnaire de projet – Approbation des demandes d’infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale
Planning, Infrastructure and Economic Development Department | Direction générale de la planification
de l'infrastructure et du développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1

 Please consider the environment before printing this email

*****Please also note that, while my work hours may be affected by the current situation and am working from home, I still have access to email, video conferencing and telephone. Feel free to schedule video conferences and/or telephone calls, as necessary.*****

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: April 28, 2021 3:26 PM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>
Cc: Steve Matthews <S.Matthews@novatech-eng.com>
Subject: 18 Louisa Street - Request for WM boundary conditions

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

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

Hi Shawn,

As you know, we are working on the proposed re-development of the 18 Louisa Street. The intent is to retain the existing 3-storey building and paved laneway (western portion of the site) and to demolish the existing gymnasium and large surface parking lot (eastern portion of the site) to construct a new 9-storey residential building. Based on previous correspondence, the existing building will retain its existing service laterals and new service laterals will be installed for the proposed 9-storey residential building.

We are sending you this e-mail to request watermain boundary conditions for both 200mm dia. watermains in Louisa and Bell Streets (as shown on geoOttawa). We anticipate requiring two (2) water service connections, due to the high domestic demands. The anticipated water demands for the proposed 9-storey residential building are as follows:

- Average Day Demand = 0.88 L/s
- Maximum Day Demand = 2.19 L/s
- Peak Hour Demand = 4.81 L/s
- Maximum Fire Flow Demand Range = 133-250 L/s (Ex. Building & New Building)

See attached calculation sheets for details.

A multi-hydrant approach to firefighting is anticipated to be required. As indicated on the geoOttawa website, there are several blue bonnet municipal hydrants within 150m of the subject site that could be used for firefighting purposes. See attached **WM Boundary Conditions Figure** for details.

Please review and let us know if you require any additional information.

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.

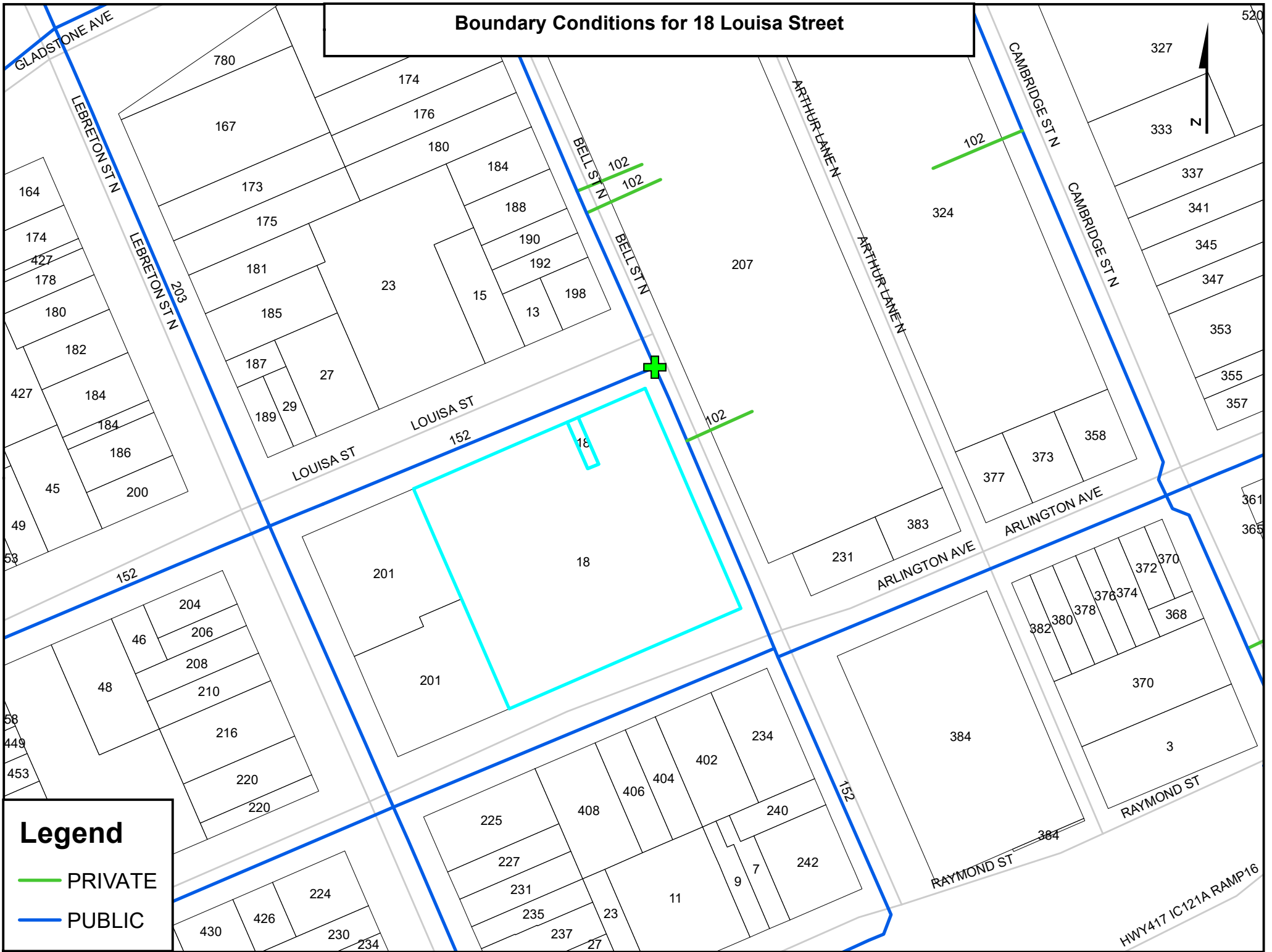
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 219 | Cell: 613.276.0310 | Fax: 613.254.5867

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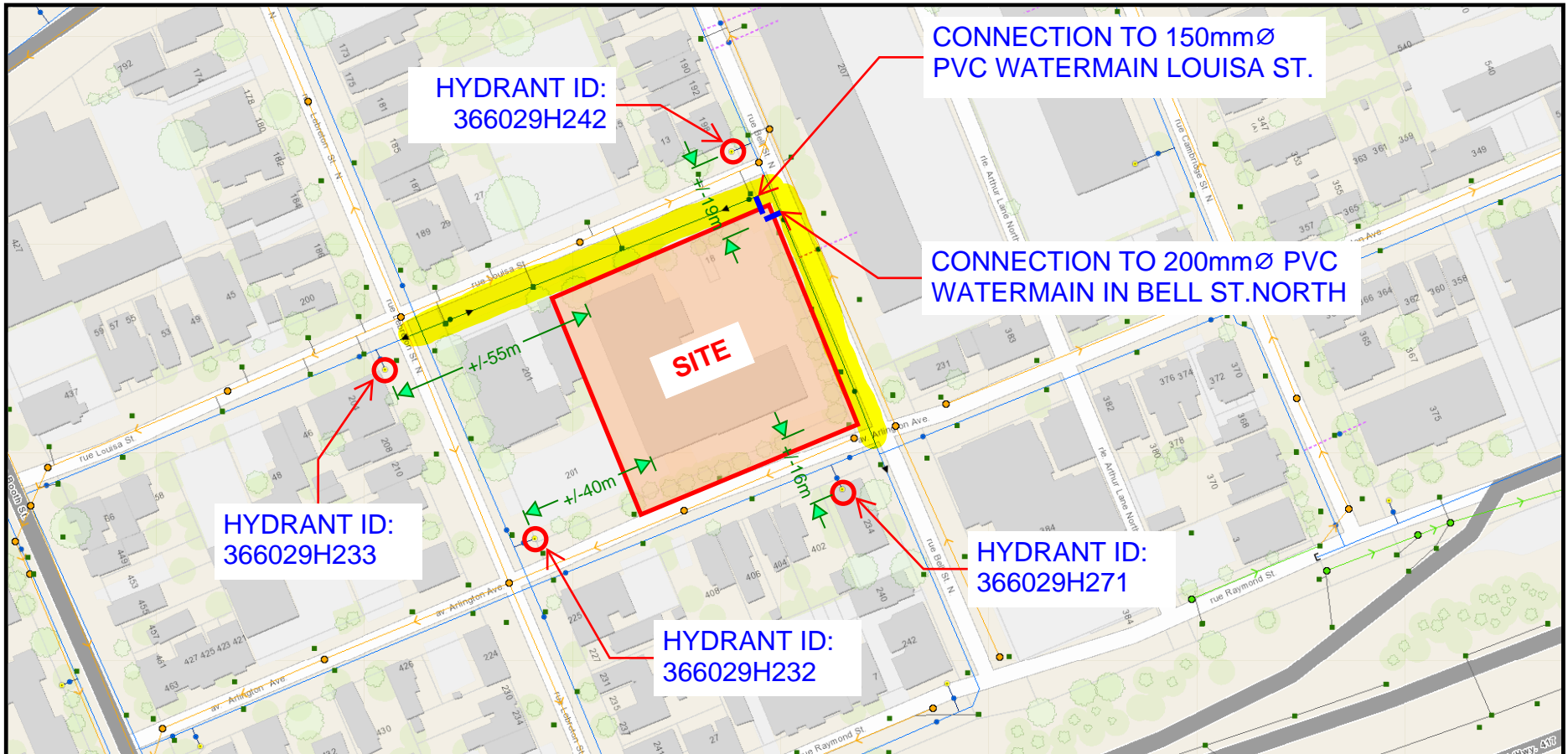
Boundary Conditions for 18 Louisa Street



Legend

- PRIVATE
- PUBLIC

EXISTING INFRASTRUCTURE

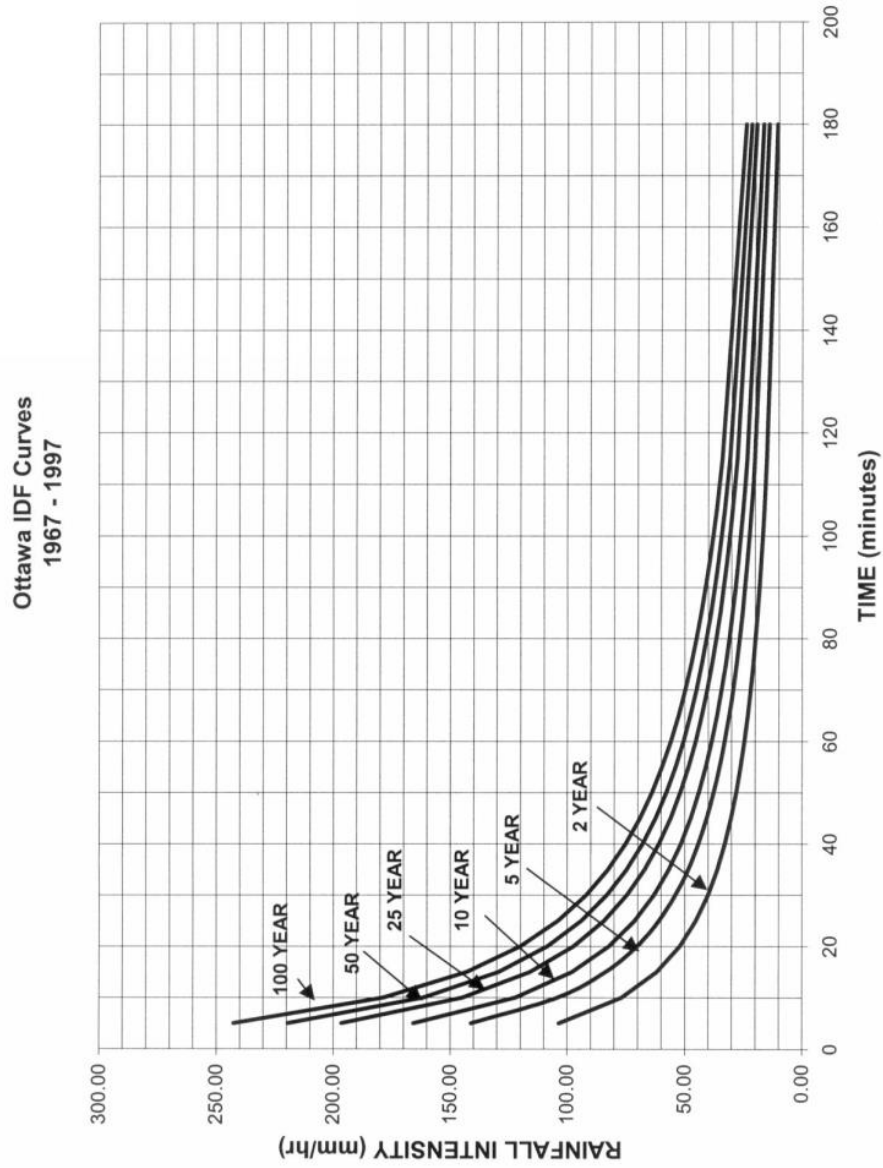


APPENDIX E
IDF Curves and SWM Calculations

Ottawa Sewer Design Guidelines

APPENDIX 5-A

OTTAWA INTENSITY DURATION FREQUENCY (IDF) CURVE



Proposed 9-Storey Residential Building 18 Louisa Street

Pre - Development										
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)
Portion of Site to be Re-Developed	0.179	0.156	0.000	0.023	0.81	0.90	42.0	80.3	0.4	15.3

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_s	C_{100}	Uncontrolled Flow (L/s)	
							5 year	100 year
A-1	Direct Runoff	0.026	0.011	0.015	0.50	0.57	3.7	7.3
A-2	Controlled Internal SWM Tank	0.153	0.149	0.004	0.88	0.98	39.1	74.5

Summed Area Check: 0.179 $T_c = 10mins$ $T_c = 10mins$

Post - Development : Total Flows for Controlled Site + Uncontrolled Runoff						
Area	Description	Flow (L/s)		Storage Required (m ³)		Provided (m ³)
		5 year	100 year	5 year	100 year	
A-1	Direct Runoff	3.7	7.3	-	-	-
A-2	Controlled Internal SWM Tank	5.0	5.0	27.8	66.2	> 67
Totals :		8.7	12.3	27.8	66.2	> 67

Over Controlled: 6.6 3.0 Excess flow restriction required for sanitary + groundwater contribution to combined sewer

Proposed Residential Development				
Novatech Project No. 120206				
REQUIRED STORAGE - 1:2 YEAR EVENT				
Allowable Flow to Louisa Combined Sewer				
OTTAWA IDF CURVE				
Area =	0.179	ha	Qallow =	15.3 L/s
C =	0.40		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	103.57	20.62	5.33	1.60
10	76.81	15.29	0.00	0.00
15	61.77	12.29	-2.99	-2.69
20	52.03	10.36	-4.93	-5.92
25	45.17	8.99	-6.30	-9.45
30	40.04	7.97	-7.32	-13.17
35	36.06	7.18	-8.11	-17.03
40	32.86	6.54	-8.75	-20.99
45	30.24	6.02	-9.27	-25.03
50	28.04	5.58	-9.71	-29.12
55	26.17	5.21	-10.08	-33.26
60	24.56	4.89	-10.40	-37.44
65	23.15	4.61	-10.68	-41.65
70	21.91	4.36	-10.93	-45.89
75	20.81	4.14	-11.15	-50.15
80	19.83	3.95	-11.34	-54.44
85	18.94	3.77	-11.52	-58.74
90	18.14	3.61	-11.68	-63.05

Proposed Residential Development				
Novatech Project No. 120206				
REQUIRED STORAGE - 1:5 YEAR EVENT				
AREA A-1 Uncontrolled Runoff				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	3.7 L/s
C =	0.50		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	141.18	5.06	1.33	0.40
10	104.19	3.74	0.00	0.00
15	83.56	3.00	-0.74	-0.67
20	70.25	2.52	-1.22	-1.46
25	60.90	2.18	-1.55	-2.33
30	53.93	1.93	-1.80	-3.24
35	48.52	1.74	-2.00	-4.19
40	44.18	1.58	-2.15	-5.16
45	40.63	1.46	-2.28	-6.15
50	37.65	1.35	-2.39	-7.16
55	35.12	1.26	-2.48	-8.17
60	32.94	1.18	-2.56	-9.20
65	31.04	1.11	-2.62	-10.23
70	29.37	1.05	-2.68	-11.27
75	27.89	1.00	-2.74	-12.31
80	26.56	0.95	-2.78	-13.36
85	25.37	0.91	-2.83	-14.42
90	24.29	0.87	-2.87	-15.47

Proposed Residential Development				
Novatech Project No. 120206				
REQUIRED STORAGE - 1:100 YEAR EVENT				
AREA A-1 Uncontrolled Runoff				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	7.3 L/s
C =	0.57		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	242.70	9.95	2.63	0.79
10	178.56	7.32	0.00	0.00
15	142.89	5.86	-1.46	-1.32
20	119.95	4.92	-2.40	-2.88
25	103.85	4.26	-3.06	-4.60
30	91.87	3.77	-3.55	-6.40
35	82.58	3.39	-3.94	-8.26
40	75.15	3.08	-4.24	-10.18
45	69.05	2.83	-4.49	-12.12
50	63.95	2.62	-4.70	-14.10
55	59.62	2.44	-4.88	-16.09
60	55.89	2.29	-5.03	-18.11
65	52.65	2.16	-5.16	-20.14
70	49.79	2.04	-5.28	-22.18
75	47.26	1.94	-5.38	-24.23
80	44.99	1.84	-5.48	-26.29
85	42.95	1.76	-5.56	-28.36
90	41.11	1.69	-5.64	-30.43

Proposed Residential Development Novatech Project No. 120206 REQUIRED STORAGE - 1:2 YEAR EVENT AREA A-2 Controlled Flow-Internal SWM Tank				
OTTAWA IDF CURVE				
Area = 0.153 ha		Qallow = 5.0 L/s		
C = 0.88		Vol(max) = 18.0 m3		
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	103.57	38.84	33.84	10.15
10	76.81	28.80	23.80	14.28
15	61.77	23.16	18.16	16.35
20	52.03	19.51	14.51	17.42
25	45.17	16.94	11.94	17.91
30	40.04	15.02	10.02	18.03
35	36.06	13.52	8.52	17.90
40	32.86	12.32	7.32	17.58
45	30.24	11.34	6.34	17.12
50	28.04	10.52	5.52	16.55
55	26.17	9.81	4.81	15.89
60	24.56	9.21	4.21	15.15
65	23.15	8.68	3.68	14.36
70	21.91	8.22	3.22	13.51
75	20.81	7.81	2.81	12.62
90	18.14	6.80	1.80	9.74
105	16.13	6.05	1.05	6.62
120	14.56	5.46	0.46	3.32
135	13.30	4.99	-0.01	-0.11
150	12.25	4.59	-0.41	-3.65

Proposed Residential Development Novatech Project No. 120206 REQUIRED STORAGE - 1:5 YEAR EVENT AREA R-2 Controlled Flow-Internal SWM Tank				
OTTAWA IDF CURVE				
Area = 0.153 ha		Qallow = 5.0 L/s		
C = 0.88		Vol(max) = 27.8 m3		
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	52.95	47.95	14.38
10	104.19	39.07	34.07	20.44
15	83.56	31.34	26.34	23.70
20	70.25	26.35	21.35	25.61
25	60.90	22.84	17.84	26.76
30	53.93	20.22	15.22	27.40
35	48.52	18.20	13.20	27.71
40	44.18	16.57	11.57	27.77
45	40.63	15.24	10.24	27.64
50	37.65	14.12	9.12	27.36
55	35.12	13.17	8.17	26.97
60	32.94	12.35	7.35	26.48
65	31.04	11.64	6.64	25.90
70	29.37	11.02	6.02	25.26
75	27.89	10.46	5.46	24.56
90	24.29	9.11	4.11	22.19
105	21.58	8.09	3.09	19.49
120	19.47	7.30	2.30	16.57
135	17.76	6.66	1.66	13.46
150	16.36	6.14	1.14	10.23

Proposed Residential Development Novatech Project No. 120206 REQUIRED STORAGE - 1:100 YEAR EVENT AREA A-2 Controlled Flow-Internal SWM Tank				
OTTAWA IDF CURVE				
Area = 0.153 ha		Qallow = 5.0 L/s		
C = 0.98		Vol(max) = 66.2 m3		
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	101.21	96.21	28.86
10	178.56	74.46	69.46	41.68
15	142.89	59.59	54.59	49.13
20	119.95	50.02	45.02	54.02
25	103.85	43.30	38.30	57.46
30	91.87	38.31	33.31	59.96
35	82.58	34.44	29.44	61.81
40	75.15	31.34	26.34	63.21
45	69.05	28.79	23.79	64.24
50	63.95	26.67	21.67	65.01
55	59.62	24.86	19.86	65.55
60	55.89	23.31	18.31	65.91
65	52.65	21.95	16.95	66.12
70	49.79	20.76	15.76	66.20
75	47.26	19.71	14.71	66.17
90	41.11	17.14	12.14	65.57
105	36.50	15.22	10.22	64.38
120	32.89	13.72	8.72	62.76
135	30.00	12.51	7.51	60.82
150	27.61	11.51	6.51	58.62

Proposed Residential Development Novatech Project No. 120206 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA A-2 Controlled Flow-Internal SWM Tank				
OTTAWA IDF CURVE				
Area = 0.153 ha		Qallow = 5.0 L/s		
C = 0.98		Vol(max) = 84.1 m3		
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	291.24	121.45	116.45	34.93
10	214.27	89.35	84.35	50.61
15	171.47	71.50	66.50	59.85
20	143.94	60.02	55.02	66.03
25	124.62	51.97	46.97	70.45
30	110.24	45.97	40.97	73.75
35	99.09	41.32	36.32	76.28
40	90.17	37.60	32.60	78.25
45	82.86	34.55	29.55	79.79
50	76.74	32.00	27.00	81.01
55	71.55	29.84	24.84	81.96
60	67.07	27.97	22.97	82.69
65	63.18	26.34	21.34	83.24
70	59.75	24.91	19.91	83.64
75	56.71	23.65	18.65	83.91
90	49.33	20.57	15.57	84.09
105	43.80	18.26	13.26	83.56
120	39.47	16.46	11.46	82.52
135	36.00	15.01	10.01	81.08
150	33.13	13.82	8.82	79.35

CONNECT TO EXISTING 300mmØ PVC COMBINED SEWER WITH INSERTA-TEE FROM ABOVE WITH (2) 22.5° VERTICAL BENDS PER CITY OF OTTAWA STANDARD DETAIL S11.1. EXCAVATION, BACKFILL AND REINSTATEMENT BY CONTRACTOR. PROPOSED 200mmØ SANITARY SERVICE INVERT=68.95m± AT CONNECTION. EXISTING 300mmØ INVERT=68.80m±. EXISTING 300mmØ SPRINGLINE=68.95m±. SANITARY SERVICE TO CROSS ABOVE THE EXISTING 150mmØ WATERMAIN. MINIMUM CLEARANCE BETWEEN OUTSIDE OF PIPES AT CROSSING=0.5m±. TOP OF EX. 150mmØ WATERMAIN AT CROSSING=69.40±. SANITARY SERVICE INVERT AT WATERMAIN CROSSING=69.90m±.

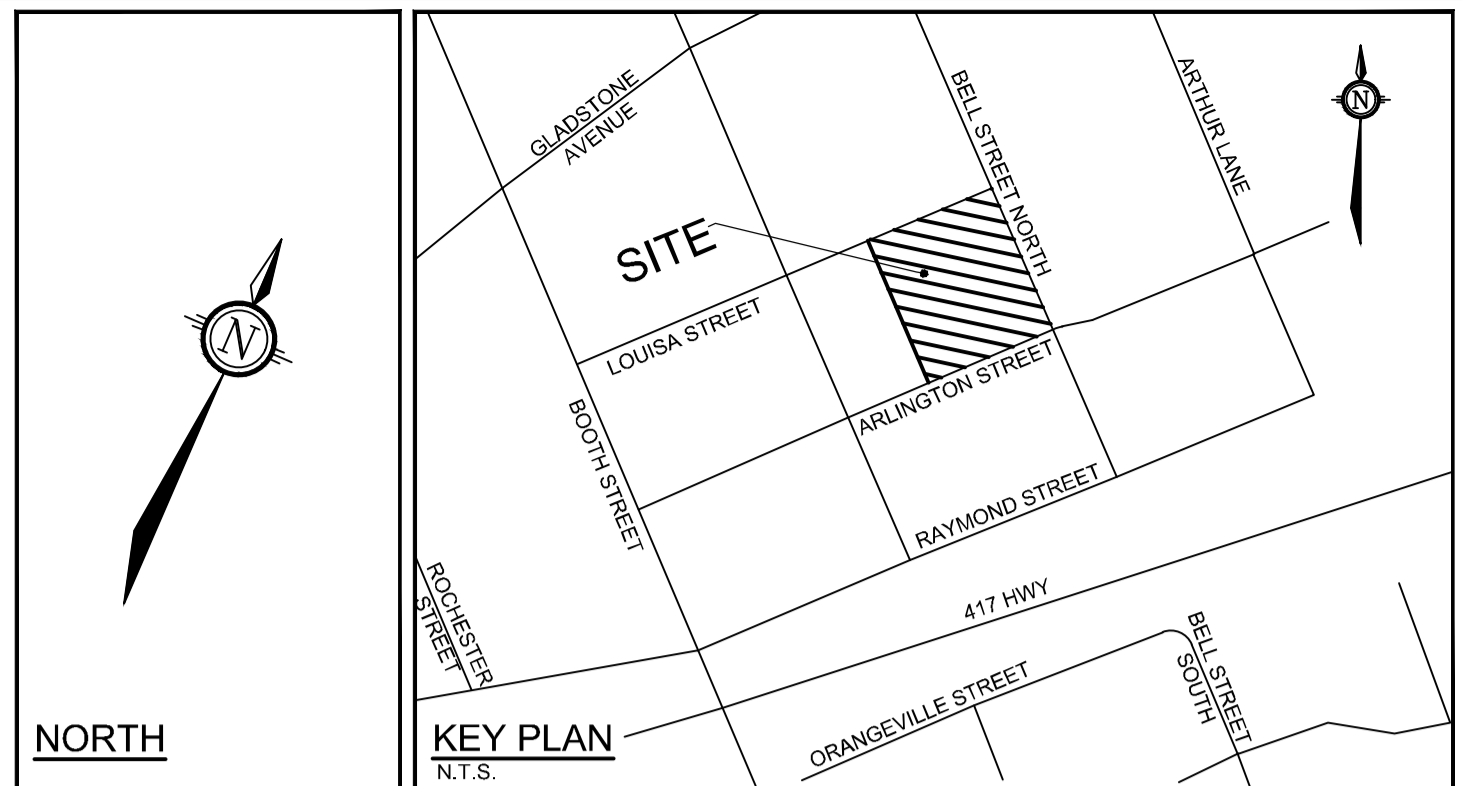
CONNECT TO EXISTING 150mmØ PVC WATERMAIN WITH NEW 150mmØ PVC WATER SERVICE BY CITY FORCES. CONTRACTOR TO DETERMINE EXACT LOCATION AND ELEVATION OF WATERMAIN IN FIELD. EXCAVATION, BACKFILL AND REINSTATEMENT BY CONTRACTOR.

CONNECT TO EXISTING 200mmØ PVC WATERMAIN WITH NEW 150mmØ PVC WATER SERVICE BY CITY FORCES. CONTRACTOR TO DETERMINE EXACT LOCATION AND ELEVATION OF WATERMAIN IN FIELD. EXCAVATION, BACKFILL AND REINSTATEMENT BY CONTRACTOR.

INTERNAL SWM STORAGE SYSTEM

DESIGN EVENT	STORAGE SYSTEM CONTROLLED FLOW	STORAGE VOLUMES REQUIRED	STORAGE VOLUMES PROVIDED
1:2 YR	5.0 L/s	18.0 m³	> 67 m³
1:5 YR	5.0 L/s	27.8 m³	
1:100 YR	5.0 L/s	66.2 m³	
1:100+20%	5.0 L/s	84.1 m³	

- NOTES:**
- ALL DRAINAGE FROM AREA A-2 (PROPOSED COURTYARD DECK DRAINS AND ALL ROOF + PATIO 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 MECHANICAL PLANS FOR PUMP INFORMATION AND DETAILS OF THE INTERNAL STORMWATER STORAGE SYSTEM.



LEGEND:

- RD - PROPERTY LINE
- Proposed Controlled Flow Roof Drain
- Proposed Water Meter and Remote Meter
- Proposed Barrier Curb
- DC - Proposed Depressed Curb
- Proposed Building Entrance
- Proposed Water Service
- Proposed Storm Service
- Proposed Valve and Valve Box
- Proposed Thermal Insulation
- FFE - FINISHED FLOOR ELEVATION
- T/FND - TOP OF FOUNDATION WALL ELEVATION
- USF - UNDERSIDE OF FOOTING ELEVATION
- X - REMOVAL AND/OR ABANDONMENT
- Watermain Cap
- Proposed Fence and Gate
- Proposed Test Port
- Proposed Water Service
- Proposed Storm Service
- CBMH LID FOR SWM TANK OVERFLOW
- Proposed Siamese Connection
- OHW - EXISTING OVERHEAD WIRES
- EX - EXISTING CONCRETE CURB
- SA/MH - EXISTING SANITARY MANHOLE & SEWER
- CBMH - EXISTING CATCHBASIN MANHOLE
- ST/MH - EXISTING STORM MANHOLE & SEWER
- CB - EXISTING CATCHBASIN C/W CATCHBASIN LEAD
- HYD - EXISTING HYDRANT & VALVE
- HYD - EXISTING TREES / VEGETATION
- EX UP - EXISTING UTILITY POLE
- EX - EXISTING FENCE
- 300mmØ WM - EXISTING WATERMAIN
- HYD - EXISTING HYDRANT C/W VALVE & LEAD
- EX - EXISTING HYDRO TRANSFORMER

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.
- 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, BYLAWS AND STANDARDS INCLUDING MATERIALS OF CONSTRUCTION, DISINFECTION AND ALL RELEVANT REFERENCES TO OPSS, 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 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 (PATTERSON REPORT NUMBER PG5405-1), DATED JANUARY 19, 2021, PREPARED BY PATTERSON GROUP, FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS AND GEOTECHNICAL REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO MECHANICAL PLAN FOR UN-CONTROLLED ROOF DRAIN INFORMATION.
- REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARD SURFACED AREAS AND DIMENSIONS.
- REFER TO THE 'DEVELOPMENT SERVICING STUDY' AND 'STORMWATER MANAGEMENT REPORT' (R-2020-130) PREPARED BY NOVATECH.
- SAW CUT AND KEYGRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE-IN 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
CBMH FRAME AND COVER	401.010 - TYPE 'B'	OPSD
STORM SERVICE	PVC DR 35	
SANITARY SERVICE	PVC DR 35	
SEWER TRENCH	BEDDING (GRANULAR 'A')	
	COVER (GRANULAR 'B' OR GRANULAR 'B' TYPE I WITH MAXIMUM PARTICLE SIZE=25mm)	
- THE SANITARY SERVICE LATERAL SHALL BE EQUIPPED WITH A BACKFLOW PREVENTER 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.
- 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 SEWER PIPES THAT HAVE LESS THAN 1.5m COVER WITH UP TO 125mm THICK HI-40 RIGID INSULATION.
- 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 T&G 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 OPSS 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 WATERMAIN 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
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
THERMAL INSULATION BY OPEN STRUCTURES	W23	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWERS	W25	CITY OF OTTAWA
WATERMAIN MATERIAL	PVC DR 18 (100mm AND LARGER)	
- EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS. EXCAVATION, INSTALLATION OF SERVICE, BACKFILL AND RESTORATION BY THE CONTRACTOR.
- 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.

PROPOSED 150mmØ WATER SERVICE TABLE - LOUISA STREET

STATION	SURFACE ELEVATION	T&M ELEVATION	COMMENTS
0+00	71.60±	69.40±	150mmØ WM CONNECTION TO EX. 150mmØ WM
0+05.9	71.83	69.43	150mmØ V&VB
0+06.4	71.84	69.44	CAP 0.5m FROM PROPERTY LINE

PROPOSED 150mmØ WATER SERVICE TABLE - BELL STREET

STATION	SURFACE ELEVATION	T&M ELEVATION	COMMENTS
1+00	71.60±	69.37±	150mmØ WM CONNECTION TO EX. 200mmØ WM
1+03.0	71.74	69.34	150mmØ V&VB
1+04.5	71.74	69.34	CROSS UNDER 150mm GAS (T&GAS=70.84±, CLEARANCE = 1.35m±)
1+05.2	71.75	69.35	CAP 0.5m FROM PROPERTY LINE

* CONNECTION TO EXISTING 150mmØ WATERMAIN. EXACT ELEVATIONS TO BE FIELD DETERMINED.
 ** PROVIDE THERMAL INSULATION AS PER CITY OF OTTAWA DETAIL W22 IN SHALLOW TRENCHES AND/OR CITY OF OTTAWA DETAIL W23 ADJACENT TO OPEN STRUCTURES.

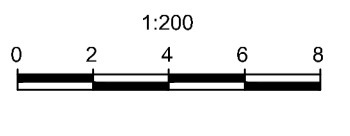
* CONNECTION TO EXISTING 200mmØ WATERMAIN. EXACT ELEVATIONS TO BE FIELD DETERMINED.
 ** PROVIDE THERMAL INSULATION AS PER CITY OF OTTAWA DETAIL W22 IN SHALLOW TRENCHES AND/OR CITY OF OTTAWA DETAIL W23 ADJACENT TO OPEN STRUCTURES.

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
 IRONWOOD FUND LIMITED PARTNERSHIP
 SUITE 370, 18 LOUISA STREET
 OTTAWA, ONTARIO, K1R 6Y6

No.	REVISION	DATE	BY
1	ISSUED FOR SITE PLAN APPROVAL	MAY 28/21	FST

SCALE
 1:200



FOR REVIEW ONLY

DESIGN: DM / SM
 CHECKED: FST
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 APPROVED: FST

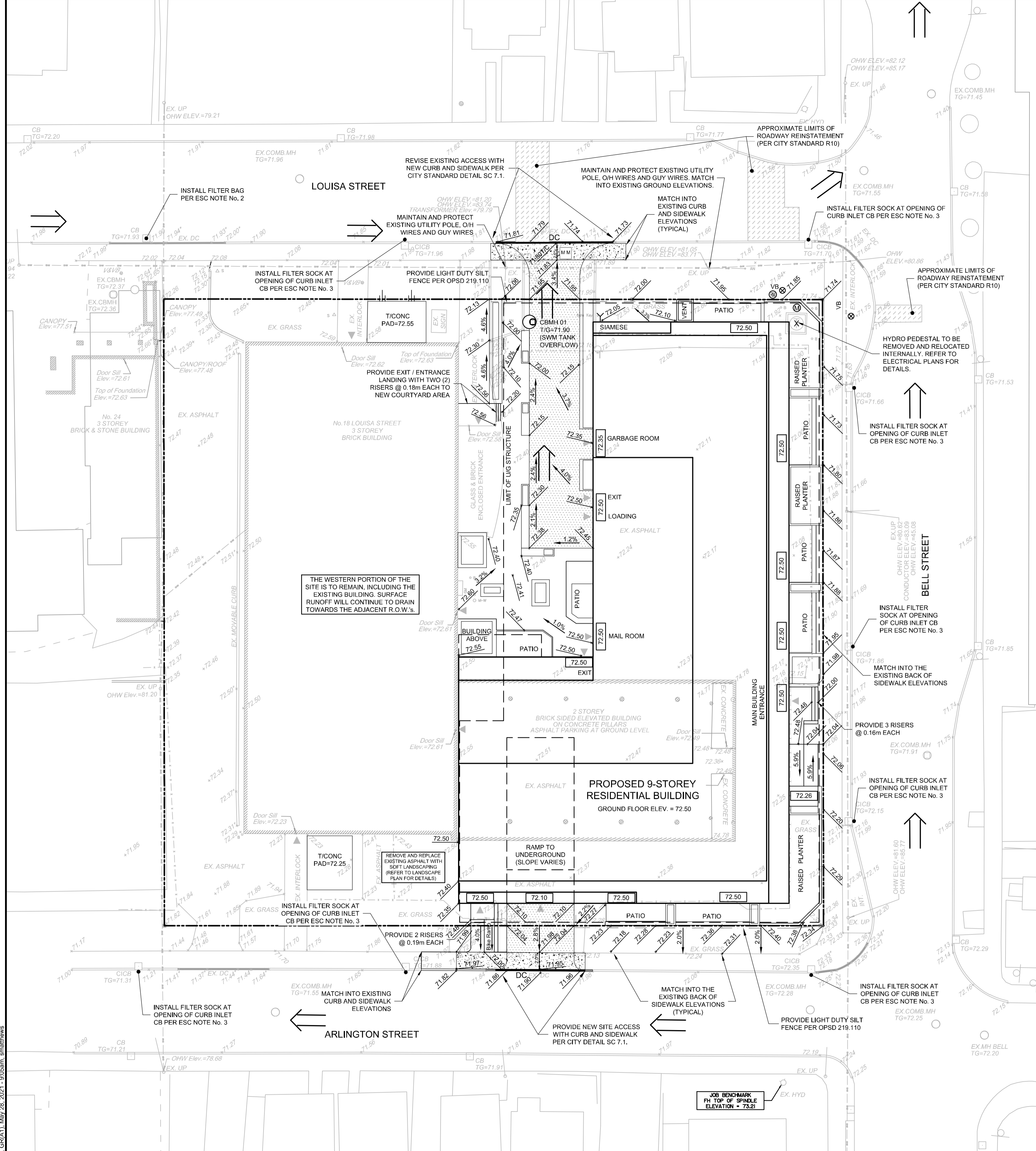
NOVATECH
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 Suite 200, 240 Michael Cowpland Drive
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LOCATION
 CITY OF OTTAWA
 18 LOUISA STREET

DRAWING NAME
GENERAL PLAN OF SERVICES

PROJECT No.: 120206-00
 REV: REV #1
 DRAWING No.: 120206-GP

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PAVEMENT STRUCTURE:

- HEAVY DUTY PAVEMENT - ROADWAY RE-INSTATEMENT
MATCH EXISTING GRANULAR STRUCTURE OF ROADWAY
MATCH EXISTING ASPHALT THICKNESSES
NEW ASPHALT GRADE: PG 58-34
- HEAVY DUTY PAVEMENT - ACCESS LANES AND LOADING AREA
40mm SUPERPAVE 12.5
50mm SUPERPAVE 19.0
150mm GRANULAR "A"
300mm GRANULAR "B" TYPE II
ASPHALT GRADE PG 58-34

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.
- 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, BYLAWS AND STANDARDS INCLUDING MATERIALS OF CONSTRUCTION, DISINFECTION AND ALL RELEVANT REFERENCES TO OPSS, OPSP & 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 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 REPORT (PATTERSON REPORT NUMBER PG0405-1), DATED JANUARY 19, 2021, PREPARED BY PATTERSON GROUP, 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.
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- SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).

GRADING NOTES:

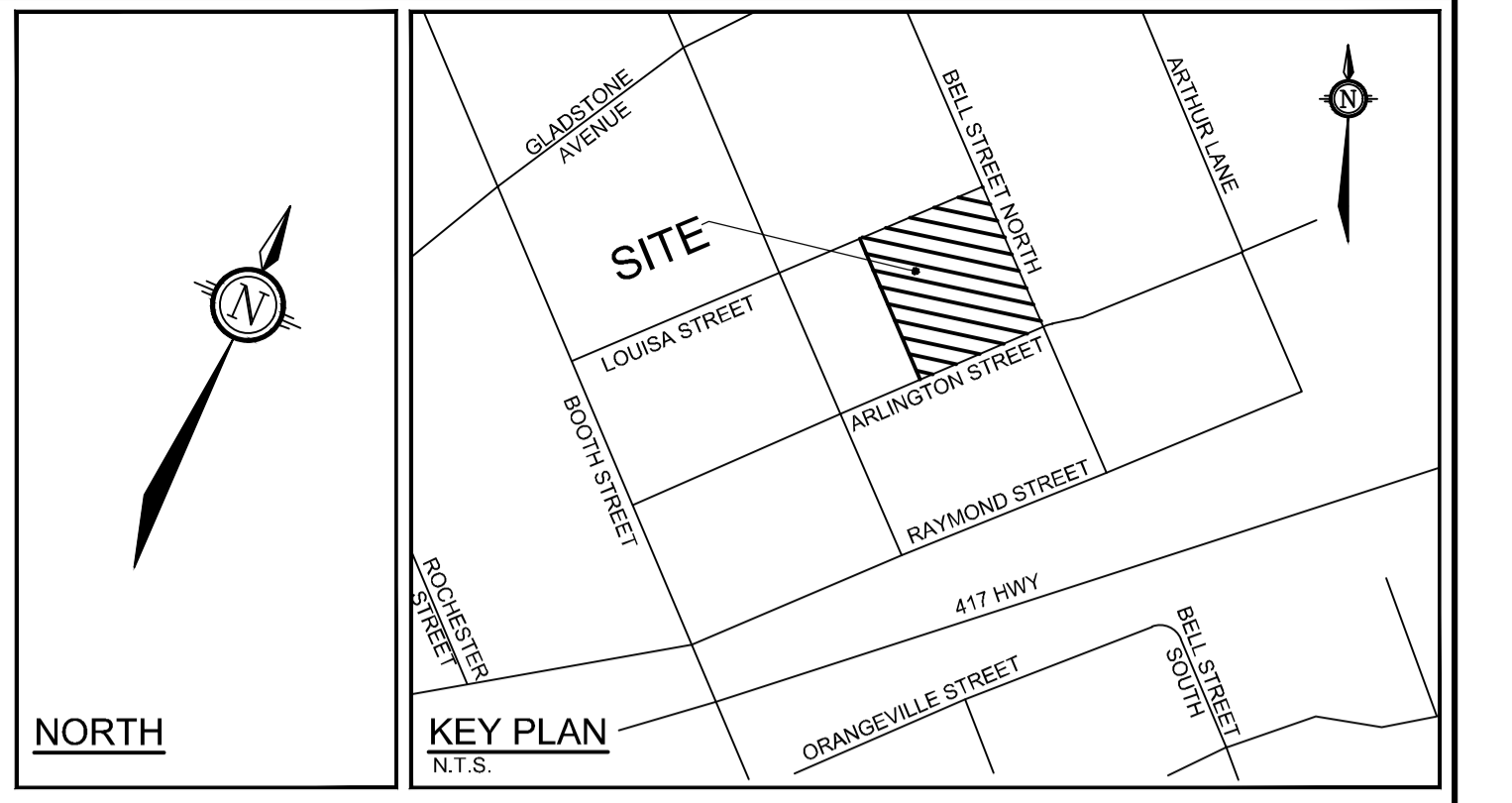
- ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
- EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL 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 100% 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 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 SEWER SYSTEM DURING CONSTRUCTION, FILTER BAGS WILL BE PLACED UNDER GRATES OF NEARBY CATCHBASINS AND STRUCTURES. TERRAFIX 8" 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 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 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 SWEEPED 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.

Erosion and Sediment Control Responsibilities:

ESC Measure	Symbol	Specification	Installation Responsibility	During Construction		After Construction Prior to Final Acceptance		After Final Acceptance
				Inspection/Maintenance Responsibility	Inspection Frequency	Approval to Remove	Removal Responsibility	Inspection/Maintenance Responsibility
Silt Fence	---	OPSD 219.110	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
Filter Fabric	Location as Indicated in ESC Note #3	Erosion and Sediment Control Notes	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
Mud Mat	MM	Drawing Details	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Developer's Contractor	Developer's Contractor	N/A
Dust Control	Location as Required Around Site	Erosion and Sediment Control Notes	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
Stabilized Material Stockpiling	Location as Required by Contractor	Erosion and Sediment Control Notes	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Developer's Contractor	Developer's Contractor	N/A
Sediment Basin (for flows being pumped out of excavations)	Location as Required by Contractor	---	Developer's Contractor	Developer's Contractor	After Every Rainstorm	Developer's Contractor	Developer's Contractor	N/A



LEGEND

- PROPERTY LINE
- PROPOSED ELEVATION
- EXISTING ELEVATION
- GRADE AND DIRECTION
- PROPOSED ELEVATION
- DIRECTION OF MAJOR SYSTEM OVERLAND FLOW
- FFE FINISHED FLOOR ELEVATION
- USF UNDERSIDE OF FOOTING ELEVATION
- PROPOSED CONTROLLED FLOW ROOF DRAIN
- BUILDING ENTRANCE / EXIT
- APPROXIMATE PONDING LIMITS
- REMOVAL AND/OR ABANDONMENT
- PROPOSED VALVE AND VALVE BOX
- PROPOSED FENCE AND GATE
- PROPOSED SILT FENCING (OPSD 219.110)
- PROPOSED SIAMESE CONNECTION
- EXISTING EDGE OF PAVEMENT
- EXISTING VALVE & VALVE BOX
- EXISTING HYDRANT
- EXISTING COMBINED MH
- EXISTING COMBINED MH
- EXISTING CATCHBASIN
- EXISTING CATCHBASIN/MH
- EXISTING UTILITY POLE & GUY WIRES
- EXISTING OVERHEAD WIRES
- EXISTING HYDRO TRANSFORMER

NOTE:
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OWNER INFORMATION
IRONWOOD FUND LIMITED PARTNERSHIP
SUITE 370, 18 LOUISA STREET
OTTAWA, ONTARIO, K1R 6Y6

SCALE		DESIGN	DM / SM
1:200		CHECKED	FST
1:200		DRAWN	DM
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1 ISSUED FOR SITE PLAN APPROVAL		APPROVED	FST
No.	REVISION	DATE	BY

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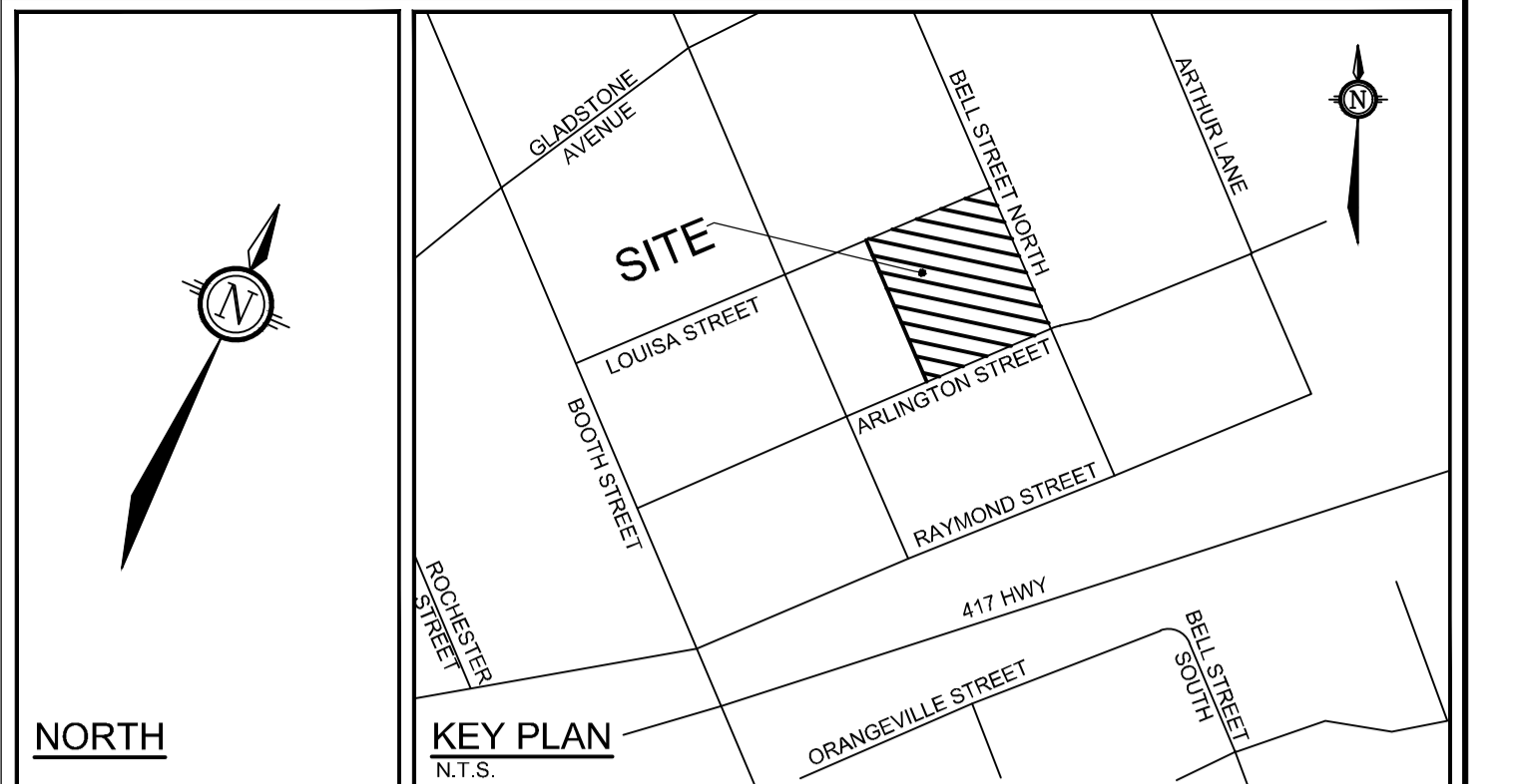
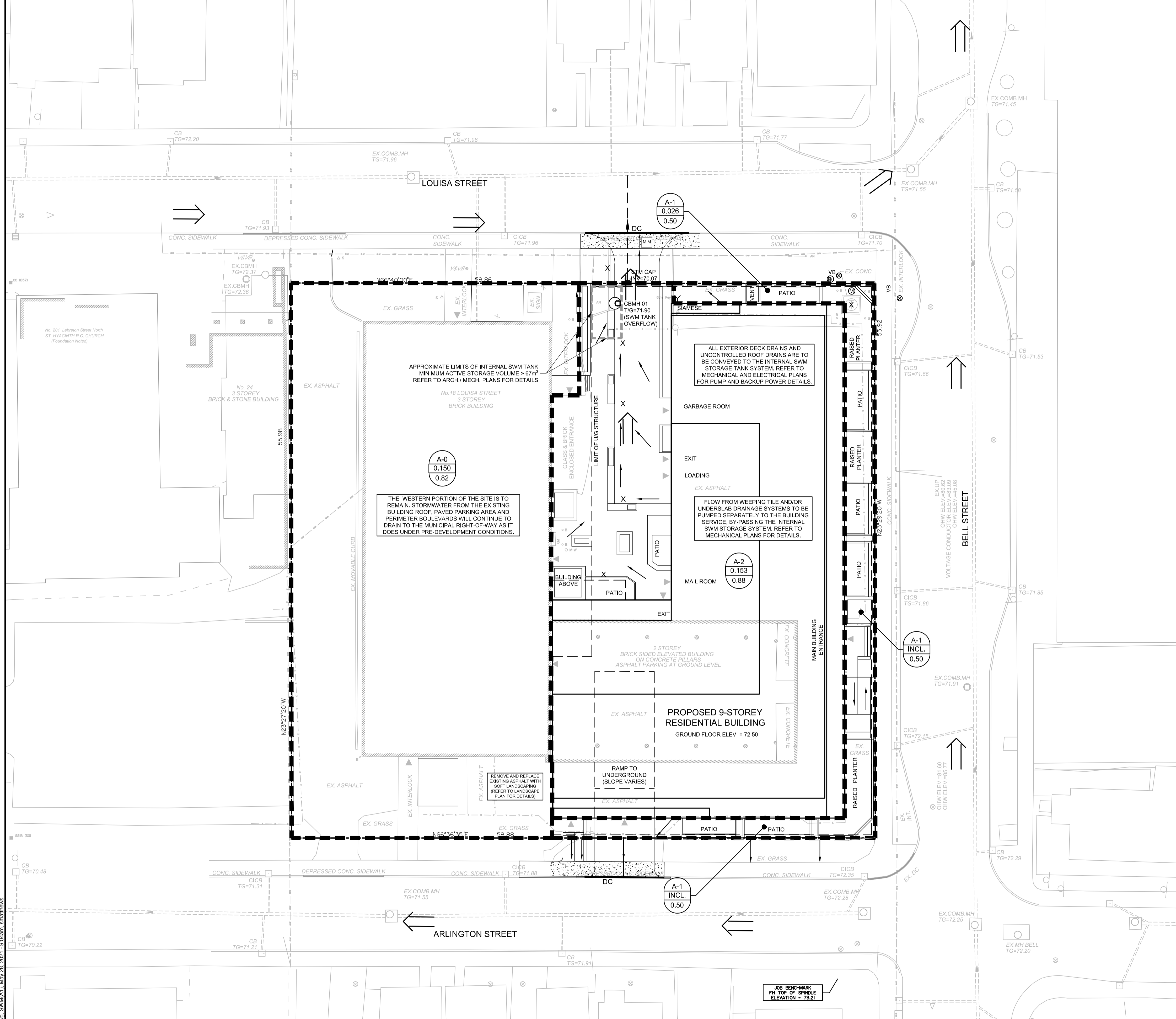
PROFESSIONAL ENGINEER
F.S. THAUETTE
100041399
MAY 12, 2021
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
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Facsimile: (613) 254-9667
Website: www.novatech-eng.com

LOCATION
CITY OF OTTAWA
18 LOUISA STREET

DRAWING NAME
GRADING AND EROSION & SEDIMENT CONTROL PLAN

PROJECT No. 120206-00
REV #1
DRAWING No. 120206-GR



LEGEND

	PROPOSED BARRIER CURB		EXISTING STORM MH & SEWER
	PROPOSED DEPRESSED CURB		EXISTING CATCHBASIN / CATCHBASIN LEAD
	DRAINAGE AREA LIMITS		PROPOSED STORM SEWER AND FLOW DIRECTION
	POST-DEVELOPMENT AREA ID		EMERGENCY OVERLAND FLOW ROUTE
	POST-DEVELOPMENT DRAINAGE AREA (ha)		PROPOSED BUILDING ENTRANCE / EXIT
	1.5 YEAR WEIGHTED RUNOFF COEFFICIENT		
	FINISHED FLOOR ELEVATION		
	TOP OF FOUNDATION WALL ELEVATION		
	UNDERSIDE OF FOOTING ELEVATION		

- 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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 - SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
 - PROVIDE LINE/PARKING PAINTING.

INTERNAL SWM STORAGE SYSTEM

DESIGN EVENT	STORAGE SYSTEM CONTROLLED FLOW	STORAGE VOLUMES	
		REQUIRED	PROVIDED
1:2 YR	5.0 L/s	18.0 m³	> 67 m³
1:5 YR	5.0 L/s	27.8 m³	
1:100 YR	5.0 L/s	66.2 m³	
1:100+20%	5.0 L/s	84.1 m³	

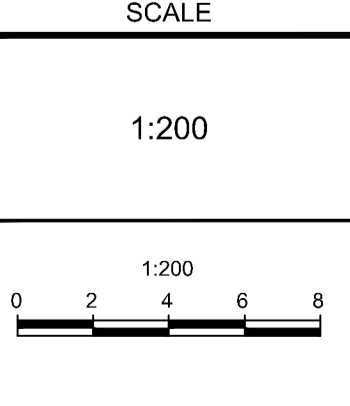
NOTES:

- ALL DRAINAGE FROM AREA A-2 (PROPOSED COURTYARD DECK DRAINS AND ALL ROOF + PATIO 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 MECHANICAL PLANS FOR PUMP INFORMATION AND DETAILS OF THE INTERNAL STORMWATER STORAGE SYSTEM.

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
IRONWOOD FUND LIMITED PARTNERSHIP
SUITE 370, 18 LOUISA STREET
OTTAWA, ONTARIO, K1R 6Y6

No.	REVISION	DATE	BY
1	ISSUED FOR SITE PLAN APPROVAL	MAY 28/21	FST



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LOCATION CITY OF OTTAWA 18 LOUISA STREET		PROJECT No. 120206-00
DRAWING NAME STORMWATER MANAGEMENT PLAN		REV # 1
		DRAWING No. 120206-SWM

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