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PROPOSED MULTI-TOWER DEVELOPMENT

314 & 318 Athlone Avenue and 2006, 2020 & 2026 Scott Street

Development Servicing Study and Stormwater Management Report



PROPOSED MULTI-TOWER DEVELOPMENT 314 & 318 Athlone Avenue, 2006, 2020 & 2026 Scott Street

DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGMENT REPORT

Prepared by:

NOVATECH

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

> February 22, 2023 Revised October 16, 2023 Revised March 5, 2024 Revised April 16, 2024

Ref: R-2023-003 Novatech File No. 121302



April 16, 2024

Hoppner Holdings Inc. 1818 Bradley Side Road, Carp, Ontario K0A 1L0

Attention: Mr. Ken Hoppner

Dear Mr. Hoppner:

Re: Development Servicing Study & Stormwater Management Report

Proposed Multi-Tower Development

314 & 318 Athlone Avenue and 2006, 2020 & 2026 Scott Street, Ottawa, ON

Novatech File No.: 121302

Enclosed is a copy of the revised 'Development Servicing Study & Stormwater Management Report' for the proposed multi-tower residential development located at 314 & 318 Athlone Avenue, 2006, 2020 & 2026 Scott Street, in the City of Ottawa. This report addresses the approach to site servicing and stormwater management and is being submitted in support of a Site Plan Control application.

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

NOVATECH

François Thauvette, P. Eng.

Senior Project Manager

Francis Thank

FT/SM

cc: Shawn Wessel (City of Ottawa)

Pat Bisson (Hobin)

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1.0 INTRODUCTION

Novatech has been retained by Hoppner Holdings Inc. to complete the site servicing, grading, and stormwater management design related to the proposed re-development of the properties at 314, 318 Athlone Avenue and 2006, 2020, 2026 Scott Street. This report is being submitted in support of a Site Plan Control application.

1.1 Location and Site Description

The 0.663-hectare site currently consists of five (5) properties that will be merged, including the Granite Curling Club (2026 Scott Street), existing commercial properties (2006 and 2020 Scott Street) as well as two residential properties to the east (314 and 318 Athlone Avenue). The subject site is located on the south side of Scott Street, west of Athlone Avenue, and is bordered by other residential and commercial developments. The Ottawa Gymnastics Centre and Lion's Park abuts the subject site to the south. The legal description of the site based on the Geowarehouse is designated as Part of Lot 31, Concession 1, being as in CR312969, CR570140 and Parts 1 and 2 on Plan 5R10777; Part of Lot 60 on Plan 263, and Parts 1 and 2 on Plan 5R6295; Lots 61 and 62 on Plan 263, City of Ottawa.



Figure 1: Aerial View of the Subject Site

Image Source: geoOttawa (City of Ottawa)

1.2 Pre-Consultation Information

A pre-consultation meeting was held with the City of Ottawa on December 21, 2021, at which time the client was advised of the general submission requirements. The Rideau Valley Conservation Authority (RVCA) was also consulted regarding the proposed development. Based on a review of **O. Reg. 525/98: Approval Exemptions**, a Ministry of the Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA) will not be required for the proposed

development. Refer to **Appendix A** for a summary of the correspondence related to the proposed development.

1.3 Proposed Development

The proposed development will consist of two (2) residential towers with podiums covering approximately 0.597 ha of the total 0.663 ha site. Both towers will be 40-storeys in height. The development will include underground parking with site entrances off Scott Street and Athlone Avenue. The remainder of the site will consist of outdoor amenity space, with the southern portion of the site (~0.066 ha) being dedicated as park space, thus increasing the size of the City of Ottawa's Lion's Park to the south.

1.4 Reference Material

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

- ¹ Assessment of Adequacy of Public Services Report (Ref. No. R-2022-163), prepared by Novatech, dated September 14, 2022.
- ² The Geotechnical Investigation Report (Ref. No. PG5829-1), prepared by Paterson Group Inc. on June 7, 2021.

2.0 SITE SERVICING

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

2.1 Sanitary Servicing

The existing buildings are currently being serviced by the 300mm dia. and 375mm dia. sanitary sewers in Athlone Avenue and Scott Street. The local sanitary sewer flows north along Athlone Avenue, then west along Scott Street and discharges into the 1500mm dia. West Nepean Collector sewer, directly north of the subject site on the north side of Scott Street.

Under post-development conditions, the proposed site will continue to be serviced by the local municipal sanitary sewers in Scott Street. Based on a review of the as-built plan and profile provided by the City of Ottawa (15350p&p19_Scott), it appears the existing sanitary sewer along the western frontage of the site is in fact a 450mm dia. concrete pipe as opposed to a 375mm dia. pipe (as shown on geoOttawa). The City of Ottawa design criteria were used to calculate the theoretical sanitary flows for the proposed development. The following design criteria were taken from the City of Ottawa Sewer Design Guidelines and subsequent Technical Bulletins:

- Residential Units (1-Bedroom or Studio): 1.4 people per unit
- Residential Units (2-Bedroom): 2.1 people per unit
- Residential Units (3-Bedroom): 3.1 people per unit
- Average Daily Residential Sewage Flow: 280 L/person/day (ISTB-2018-01)

- Residential Peaking Factors = 3.32, 3.30 (Harmon Equation) East Tower, West Tower
- Average Commercial Sewage Flow: 2.8 L/m²/day
- Commercial Peaking Factor = 1.5
- Infiltration Allowance: 0.33 L/s/ha (ISTB-2018-01)

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

Table 1: Theoretical Post-Development Sanitary Flows

Proposed Development	Unit Count	Design Population	Res Peak Flow (L/s)	Comm. Peak Flow (L/s)	Infiltration Allowance (L/s)	Sanitary Peak Flow (L/s)
East Tower	392	672	7.24	0.01	0.10	7.34
West Tower	464	773	8.26	0.01	0.10	8.36
Total	856	1,445	15.5*	0.02*	0.20*	15.7*

^{*}Represents rounded values

To simplify the internal plumbing, each building will be equipped with its own service lateral. A PVC sanitary service lateral having a size of 200mm dia. at a minimum slope of 1.0% has a full flow conveyance capacity of 34.2 L/s and should have enough capacity to convey the theoretical sanitary flows from the proposed towers. Based on the internal plumbing configuration and OBC requirements determined by the mechanical consultant the sanitary laterals may need to increase in size, which will thus also increase their conveyance capacity. Refer to the enclosed **General Plan of Services** (121302-GP) and to **Appendix C** for detailed sanitary sewage calculations. Sanitary site flows will travel less than 50m within the local municipal sanitary sewers in Scott Street before being discharged into the 1500mm dia. West Nepean Collector on the north side of Scott Street.

2.2 Water Supply for Domestic Use and Firefighting

The existing buildings are currently being serviced by a 200mm dia. PVC watermain on the south side of Scott Street and a 150mm UCI watermain in Athlone Avenue. A 1220mm dia. (backbone) watermain is also running along the north side of Scott Street, however the proposed development will not connect into this large diameter feeder main. The subject site is located within the City of Ottawa 1W pressure zone.

Under post-development conditions, the proposed site will continue to be serviced by the 200mm dia. local municipal watermain in Scott Street. The anticipated daily water demands will be greater than 50m³/day (~0.58 L/s), therefore, the proposed development will require two (2) water supplies for redundancy purposes. The proposed towers will be sprinklered and the water meter(s) will be located within the water entry room(s), with the remote meter(s) and siamese connection(s) on the exterior face of the Towers.

2.2.1 Water Demands and Watermain Analysis

The theoretical water demand and fire flow calculations are based on criteria in the City of Ottawa Design Guidelines – Water Distribution. The fire flow requirements were calculated per the Fire Underwriters Survey (FUS) as indicated in City of Ottawa Technical Bulletin ISTB-2021-03, based

on information provided by the architect. The following design criteria were taken from City of Ottawa Sewer Design Guidelines and subsequent Technical Bulletins:

- Residential Units (1-Bedroom or Studio): 1.4 people per unit
- Residential Units (2-Bedroom): 2.1 people per unit
- Residential Units (3-Bedroom): 3.1 people per unit
- Average Daily Residential Water Demand: 280 L/person/day (ISTB-2021-03)
- Maximum Day Demand Peaking Factor = 2.5 x Avg. Day Demand (City Water Table 4.2)
- Peak Hour Demand Peaking Factor = 2.2 x Max. Day Demand (City Water Table 4.2)
- Average Commercial Water Demand: 2.8 L/m²/day
- Maximum Day Demand Peaking Factor = 1.5 x Avg. Day Demand (City Water Table 4.2)
- Peak Hour Demand Peaking Factor = 1.8 x Max. Day Demand (City Water Table 4.2)

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

Table 2: Theoretical Water Demand for Proposed Development

Proposed Development	Unit Count	Design Population	Avg. Daily Demand (L/s)	Max. Daily Demand (L/s)	Peak Hour Demand (L/s)	FUS Fire Flow (L/s)
East Tower	392	672	2.2	5.5	12.0	200
West Tower	464	773	2.5	6.3	13.8	217
Total	856	1,445	4.7*	11.8*	25.8*	217 (Max)

^{*}Represents rounded values, including commercial.

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

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

Preliminary domestic water demands, and fire flow requirements were provided to the City of Ottawa to generate the municipal watermain network boundary conditions assuming two (2) water supplies. **Table 2.1** summarizes the municipal watermain boundary conditions and the preliminary hydraulic analysis results based on the information provided by the City of Ottawa.

Normal Operating Anticipated Municipal Watermain Boundary Condition Pressure Range WM Pressure Boundary Condition Head of Water (m) (psi) (psi)* Assuming Two (2) Connections to the 200mm dia. WM in Scott Street Minimum HGL 108.3 m 40 psi (min.) ~ 67 psi (Peak Hour Demand) Maximum HGL 115.0 m 50-70 psi ~ 77psi (Max Day Demand) HGL Max Day + Fire Flow ~ 53 psi 98.2 m 20 psi (min.) FF=200 L/s (East Tower) ~ 50 psi 96.4 m FF=217 L/s (West Tower)

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

Based on preliminary calculations and correspondence received from the City of Ottawa, it is anticipated that the pressure within the municipal watermain network will be adequate, and possibly exceed the upper end of the normal operating pressure range during the Max Day Conditions. Pressure reducing valves (PRV) may be required given the relatively high system pressures. Given the height of the proposed buildings, booster pumps will be required to provide adequate water pressure to the upper floors.

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

Building	(FUS) Fire Flow Demand (L/s)	Fire Hydrant(s) within 75m (~ 95 L/s each)	Fire Hydrant(s) within 150m (~ 63 L/s each)	Theoretical Combined Available Fire Flow (L/s)
East Tower	200	3	2	>200
West Tower	217	2	2	>217

The combined maximum flow from the nearby municipal hydrants will exceed the Max Day + Fire Flow requirement of the proposed development. This multi-hydrant approach to firefighting is in accordance with the City of Ottawa Technical Bulletin ISTB-2018-02. Refer to the enclosed **General Plan of Services** (121302-GP) and to **Appendix D** for detailed calculations, correspondence from the City of Ottawa, a fire hydrant sketch showing the existing fire hydrant locations and the dimensions confirming the appropriate site coverage.

^{*} Based on an approximate elevation of 63.2m at the WM connection points in Scott Street. Design pressure = (HGL – watermain elevation) x 1.42197 PSI/m.

2.3 Storm Drainage and Stormwater Management

Storm drainage from the existing properties is currently being directed towards the local storm sewers in Scott Street and Athlone Avenue. The local storm sewers discharge into the West Transit Way Storm Trunk Sewer and outlet into the Ottawa River (just west of Onigam Street) approximately 2.9 km downstream of the subject site.

Under post-development conditions, storm flows from the subject site will continue to be directed to various storm outlets: Storm flows from the majority of the site (0.597 ha) will be directed to the 1200mm dia. storm sewer in Scott Street. Due to existing elevations, storm drainage from a small low-lying portion of the site will be directed to the 750mm dia. storm sewer in Athlone Avenue. This will ensure that existing drainage patterns and major overland flow paths are generally maintained. Stormwater runoff from the southern portion of the site (~0.066 ha) being dedicated as parkland, expanding the City of Ottawa Lion's Park, will be directed to the 300mm dia. storm sewer in Ashton Avenue as this is the only municipal storm sewer fronting this portion of the park. As previously discussed with the City of Ottawa, the intent is to remove the existing 375mm dia. STM sewer running along the west property line. Leaving the pipe and creating an easement will only encumber the proposed development.

2.3.1 Stormwater Management Criteria and Objectives

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

- Provide a dual drainage system (i.e., minor, and major system flows).
- Control post-development storm flows, up to an including the 100-year design event, to
 the maximum allowable release rate calculated using the Rational Method, with a runoff
 coefficient equivalent to existing conditions, but in no case greater than C=0.5, a time of
 concentration no less than 10 minutes and a 2-year rainfall intensity (despite the preconsultation notes stating a 5-year rainfall intensity from City of Ottawa IDF curves).
- Maintain existing drainage patterns and major overland flow paths as much as possible.
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). Based on correspondence from the RVCA on-site stormwater quality control measures will not be required due to the nature of the development, the fact that parking will be underground and that the distance to the stormwater outlet is >2km downstream. Refer to **Appendix A** for correspondence from the City of Ottawa and RVCA.

2.3.2 Pre-Development Conditions and Allowable Release Rate

Although unknown, it is assumed that site flows are currently not being controlled prior to being released into the municipal storm sewer systems. As specified by the City of Ottawa, the maximum allowable release rate from the subject site is to be calculated using the Rational Method, with a runoff coefficient equivalent to existing conditions, but in no case greater than C=0.5, a time of concentration of 10 minutes and a 2-year rainfall intensity from City of Ottawa IDF curves. The maximum allowable release rates for the residential and dedicated parkland expansion block were calculated as follows:

Residential portion of the site:

```
\begin{array}{lll} T_c & = 10 \text{ min} & C = 0.50 \\ I_{2yr} & = 76.8 \text{ mm/hr} & A = 0.597 \text{ ha} \\ Q_{allow} & = 2.78 \text{ CIA} \\ & = 2.78 \text{ } (0.50) \text{ } (76.8) \text{ } (0.597) \\ & = 63.7 \text{ L/s} \end{array}
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Parkland dedication block portion of the site:

Refer to the **Pre-Development Storm Drainage Area Plan** (121302-SWM1) and to **Appendix D** for detailed SWM calculations.

2.3.3 Post-Development Conditions

The post-development conditions will include both uncontrolled direct runoff and controlled site flows. The uncontrolled direct runoff and site flows include areas on the north, east and west sides of the site. These areas will either sheet drain uncontrolled towards the adjacent streets as there is no practical way to capture this drainage and/or be captured by a catch basin and directed to the municipal storm sewer uncontrolled. The flows from the tower roofs and outdoor amenity space (above the underground parking structure) will be sent directly to an internal SWM storage tank and controlled (pumped) prior to being discharged into the municipal storm sewer in Scott Street. Stormwater runoff from the southern portion of the site, being dedicated as parkland will need to be controlled prior to being directed to the 300mm dia. storm sewer in Ashton Avenue.

2.3.3.1 Area A-1: Direct Runoff

The uncontrolled post-development flow from this sub-catchment area was calculated using the Rational Method to be approximately 7.1 L/s during the 5-year design event and 13.9 L/s during the 100-year design event. Refer to the **Post-Development Storm Drainage Area Plan** (121302-SWM2) and to **Appendix E** for detailed SWM calculations.

2.3.3.2 Area A-2 + OS-1: Uncontrolled Flow

Due to existing elevations, storm drainage from these small low-lying drainage areas will be captured by a new catch basin located adjacent to the east property line. Uncontrolled flows from sub-catchments A-2 + OS-1 (contributing off-site residential drainage) will be directed to the 750mm dia. storm sewer in Athlone Avenue via internal plumbing. This configuration will ensure that existing drainage patterns and major overland flow paths are generally maintained along the south and east sides of the subject site. The uncontrolled post-development flow from these combined sub-catchment areas was calculated using the Rational Method to be approximately 13.6 (0.3+13.3) L/s during the 5-year design event and 27.0 (0.6+26.4) L/s during the 100-year design event. Refer to the **Post-Development Storm Drainage Area Plan** (121302-SWM2) and to **Appendix E** for detailed SWM calculations (representing rounded values).

2.3.3.3 Area A-3: Controlled Site Flow

Stormwater runoff from this larger sub-catchment area will be captured by the tower roofs and site drains and directed to an internal SWM storage tank. Stormwater collected within the storage tank will be pumped up to the storm service lateral and released into the existing 1200mm dia. storm sewer in Scott Street. A pump (designed by the mechanical consultant) is required to control flow from the tank to a maximum rate of 31.5 L/s (540 USGPM). A "stand-by" pump will be provided for emergency and/or maintenance purposes. An emergency power supply will also be provided. CBMH will provide access to the SWM storage tank as well as act as the emergency overflow from the tank to the surface. The internal plumbing is to be pressure rated piping specified by the mechanical engineer. The storm service will be equipped with a backflow prevention device to protect the building from any potential sewer back-ups. **Table 3** summarizes the controlled post-development design flows and approximate storage volumes from area A-3 during the 5-year and 100-year design events.

Table 3: Internal Stormwater Storage Tank and Pumped Flow

Design	Post-Development Conditions				
Event	Pumped Design Flow (L/s)	Volume Required (m³)	Volume Provided (m³)		
5-Year	24.5.1/2	69.4 m³	> 402 m3		
100-Year	31.5 L/s	182.7 m³	> 183 m³		

As indicated in **Table 3** above, the internal stormwater storage tank will provide sufficient storage for the 100-year design event. Refer to **Appendix E** for detailed calculations.

2.3.3.4 Area A-4: Uncontrolled Flow

The uncontrolled post-development flow from this sub-catchment area was calculated using the Rational Method to be approximately 1.1 L/s during the 5-year design event and 2.2 L/s during the 100-year design event. Refer to the **Post-Development Storm Drainage Area Plan** (121302-SWM2) and **Appendix E** for detailed SWM calculations.

2.3.3.5 Area A-5 + OS-2: Controlled Site Flow

As part of the proposed development the existing storm sewer running along the west property line will be removed to accommodate the proposed residential development. As a result, stormwater runoff from sub-catchment areas A-5 (the southern portion of the site being dedicated as parkland) and OS-2 (City of Ottawa property) will need to be directed to the 300mm dia. storm sewer in Ashton Avenue as this is the only municipal storm sewer fronting this portion of the park. Runoff from these combined sub-catchment areas will need to be captured by a new catch basin and attenuated by an ICD installed at the downstream end of the system prior to being released into the Ashton Avenue storm sewer. Since the detailed grading, servicing, and stormwater designs for the expanded City of Ottawa park are unknown at this time, we are simply providing conceptual stormwater management design values based on general assumptions (i.e., the existing paved area will be removed and replaced with sod and the 5-year weighted runoff coefficient for this combined drainage area will be C_w=0.20) until such time as the larger park block is redeveloped.

Table 3.1 summarizes the <u>conceptual</u> post-development design for this combined area as well as the likely type of ICD and anticipated storage volumes requirements for the 5-year and the 100-year design events.

Table 3.1: Stormwater Flows, ICD & Surface Storage

Design	Controlled	rolled Flows from Areas A-5 + OS-2 (Conceptual Only)				
Event	ICD Type	Peak Flow (L/s)	Storage Volume Required (m³)	Storage Volume to be Provided (m³)		
5-Year	Tempest	5.5 L/s	1.5 m³	>6.7 m³		
100-Year	Vortex ICD LMF-Custom	6.0 L/s	6.7 m³	>0.7 m²		

^{*}Above values based on an assumed 5-year weighted runoff coefficient of 0.20.

Refer to **Appendix D** for conceptual SWM calculations. The detailed grading, servicing, and stormwater designs will need to be refined as part of the expanded park design. As a result, the peak flows and storage requirements will vary.

2.3.3.6 Stormwater Flow Summary

Table 3.2 and **Table 3.3** provides a summary of the total post-development flows from the site and compares them to the uncontrolled pre-development flows and to the respective allowable release rates specified by the City of Ottawa.

Table 3.2: Stormwater Flows Comparison Table (Residential Site)

	Drainage Areas A-1, A-2, A-3, and A-4									
Design	Pre-Development Conditions		Post-Development Conditions							
Event	Uncontrolled Flow (L/s)	Allowable Release Rate (L/s)	A-1 Flow (L/s)	A-2 Flow (L/s)	A-3 Flow (L/s)	A-4 Flow (L/s)	Total Flow (L/s)	Reduction in Flow (L/s or %)*		
5-Yr	149.4	63.7	7.1	0.3	31.5	1.1	40.0	109.4 or 73%		
100-Yr	285.0	03.7	13.9	0.6	31.5	2.2	48.2	236.8 or 83%		

^{*}Reduced flow compared to pre-development uncontrolled conditions.

As indicated in the table above, the post-development flows from the residential portion of the site will not exceed the allowable release rate specified by the City of Ottawa. Furthermore, this represents significant reductions in total site flow rate when compared to the uncontrolled predevelopment conditions. Most of the flows are being directed towards the storm sewer in Scott Street, however a small portion (A-2) is being directed to the municipal storm sewer in Athlone Avenue.

Drainage Areas A-5 + OS-2 (Conceptual Only) **Pre-Development Post-Development Conditions** Design **Conditions Event Allowable** Storage A-5 + OS-2Uncontrolled Storage Volume Release Volume to be Flow (L/s) Flow (L/s) Required (m³) Provided (m³) Rate (L/s) 5-Yr 28.6 5.5 1.5 m³ 7.0 $> 6.7 \text{m}^3$ 100-Yr 54.9 6.0 $6.7 \, \text{m}^{3}$

Table 3.3: Stormwater Flows Comparison Table (Expanded Parkland)

As discussed above, the detailed grading, servicing, and stormwater designs will need to be refined as part of the expanded park design.

2.3.4 Stormwater Quality Control

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA) and is tributary to the Ottawa River. Based on preliminary feedback from the RVCA, landscaped areas and roof tops are considered clean for the purpose of protecting water quality for aquatic habitat. In this case, since parking will be provided underground and the distance to the stormwater outlet is > 2 km downstream, on-site stormwater quality control will not be required. Refer to **Appendix A** for correspondence from the RVCA and City of Ottawa.

3.0 SITE GRADING

The existing site is relatively flat, and generally slopes in a northeastern direction. Along the front of the site, the northwest property corner is approximately 63.28 m and slopes to 62.51m at the northeastern property corner. Along the back of the site, the site slopes in a southeasterly direction, the existing grade at the southwestern corner of the property is approximately 62.79 and slopes to approximately 62.59m in the southeastern corner of the site. Under post-development conditions, the site will continue to slope from the back to the front. The proposed finished floor elevation (FFE) will be set at 63.65m for each building to provide a barrier free access to the proposed building at the front entrance and the east side. The existing grades around the perimeter of the site will be maintained. Refer to the enclosed **Grading and Erosion & Sediment Control Plan** (121302-GR) for details.

4.0 GEOTECHNICAL INVESTIGATIONS

A Geotechnical Investigation Report has been prepared by Paterson Group Inc. for the proposed project. Refer to the Geotechnical Report² for subsurface conditions, construction recommendations and geotechnical inspection requirements.

5.0 EROSION AND SEDIMENT CONTROL

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

^{*}Reduced flow compared to pre-development uncontrolled conditions.

provided on the Grading and Erosion and Sediment Control Plan. This includes the following measures:

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

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

6.0 CONCLUSION

This report has been prepared in support of a Site Plan Control application for the proposed development located at 2026 Scott Street. The conclusions are as follows:

- The proposed development will be serviced by the municipal infrastructure in Scott Street, Athlone Avenue and Ashton Avenue.
 - Sanitary flows from the East and West Towers will be directed to the existing 375mm dia. and 450mm dia. municipal sanitary sewers in Scott Street.
 - Storm flows from the main portion of the site, including the building roofs and site area (above the underground parking structure) will be sent to an internal SWM tank, then pumped out to the existing 1200mm dia. municipal storm sewer in Scott Street.
 - Storm flows from the low-lying areas on the east side of the site, including tributary off-site flow from the adjacent residential properties will be directed to the existing 750mm dia. municipal storm sewer in Athlone Avenue, thus maintaining existing drainage patterns.
 - Storm flows from the dedicated parkland at the south end of the existing property will be directed to the existing 300mm dia. municipal storm sewer in Ashton Avenue.
 - The proposed development will continue to be serviced by the municipal watermain network via two (2) water service laterals connecting to the existing 200mm watermain in Scott Street. Adequate water supply and system pressures will exist throughout the watermain network under the specified 'Max Day + Fire Flow' and 'Peak Hour' conditions.
- The proposed building will be sprinklered and the municipal watermain network, including the nearby municipal fire hydrants will provide the necessary water for firefighting purposes.

- The total post-development flow directed to the municipal storm sewer system in Scott Street will be approximately 39.7 (40.0-0.3) L/s during the 5-year design event and 47.6 (48.2-0.6) L/s during the 100-year event, all less than the allowable release rate for the site (63.7 L/s) specified by the City of Ottawa.
- The total post-development flow directed to the municipal storm sewer system in Athlone Avenue will be approximately 13.6 (0.3+13.3) L/s during the 5-year design event and 27.0 (0.6+26.4) L/s during the 100-year event (representing rounded values).
- The total post-development flow directed to the municipal storm sewer system in Ashton Avenue will need to be defined as part of the park block design.
- Regular inspection and maintenance of the building services, roof drains, internal SWM tank and pumps is recommended to ensure that the storm drainage system is clean and operational.
- Erosion and sediment controls are to be provided during construction.

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

NOVATECH

Prepared by:

Chris Visser Project Coordinator

Thise

Reviewed by:

F.S. THAUVETTE HE 100041399
April 16, 2024

François Thauvette, P. Eng. Senior Project Manager

APPENDIX A

Project Correspondence

Steve Matthews

To: Francois Thauvette

Subject: FW: Pre-consultation 2026 Scott Street follow up - PC2021-0379 **Attachments:** 2026 Scott Meeting Minuites final.pdf; 2026 Scott St Pre-Consul Notes

Engineering.docx; 2026 Scott Street_Parks comments.pdf; design_brief_submission requirements_2026 Scott.pdf; Pre-con Applicant's Study and Plan Identification List.pdf;

Scott Street_Ultimate - 1. Churchill to Lanark.pdf

----- Forwarded Message ------

Subject: Pre-consultation 2026 Scott Street follow up - PC2021-0379

Date:Thu, 23 Dec 2021 20:47:13 +0000

From:Button, Jessica <<u>jessica.button@ottawa.ca</u>>

To:Ken Hoppner khoppner@morleyhoppner.com>, Patrick Bisson pbisson@hobinarc.com>

CC:McCreight, Andrew Andrew.McCreight@ottawa.ca, Dubyk, Wally Wally.Dubyk@ottawa.ca, Wessel, Shawn Andrew.McCreight@ottawa.ca, Dubyk, Wally Wally.Dubyk@ottawa.ca, Wessel, Shawn Andrew.McCreight@ottawa.ca, Russett, Mike Andrew.McCreight@ottawa.ca, Wang, Randolph.Wang@ottawa.ca, Russett, Mike Andrew.McCreight@ottawa.ca, Wang, Randolph.Wang@ottawa.ca, Russett, Mike Andrew.McCreight@ottawa.ca, Wherry, Kevin Kevin.Wherry@ottawa.ca, Heather Mitchell

<heathertodmitchell@gmail.com>

Good afternoon,

Please refer to the below and attached notes regarding the Pre-Application Consultation (pre-con) Meeting held on December 21, 2021 for the property at 2026 Scott St. The proposal proposes to develop the site with three towers, containing residential units along with commercial uses at grade. The proposed development requires application for Site Plan Control and Zoning By-law Amendment.

Attached is the required Plans & Study List for application submission. This is based on a concurrent submission of the applications.

Note: Prior to application submission, confirm submission process and if hard copies are required. Procedures are subject to change due to current pandemic procedures.

Attached are staff's preliminary comments based on the information available at the time of pre-con meeting. The attached pre-con Meeting Minutes summarize the meeting discussion. If any comments were recorded incorrectly, please respond to the group and clarify. Similarly, if anyone has any additional comments please do not hesitate to pass those along to the group.

<u>Planning</u>

- See comments in attached minutes
- The Richmond Road / Westboro Secondary Plan applies to this property
- Review the policy context and requirements for high-rise development, including the <u>High-rise</u>
 Guidelines and potential zoning changes.
- Review the Bird-Safe Design Guidelines and status prior to submitting an application.
- Review the new Tree Protection By-law

- The Scott Street ultimate design (may be subject to change) for Scott/Clifton is attached so
 that the site frontage design and at grade treatment are considered accordingly.
- Applications required:
 - Site Plan Control Complex
 - For information on Site Plan Control Thresholds under the Site Plan Control Bylaw, please
 visit: https://documents.ottawa.ca/sites/documents/files/siteplan_thresholds_en.p
 df
 - Zoning By-law Amendment (Major)

<u>Urban Design Comments- Randolph Wang</u>

- As this proposal runs along one of the City's Design Priority Areas and must attend the City's UDRP;
- A Design Brief is a required submittal for all Site Plan/Re-zoning applications. Please see the scoped Design Brief Terms of Reference provided and consult the City's website for details regarding the UDRP schedule. The material required for the design brief can also be used for the UDRP submission.
- Additional comments are attached in minutes

Engineering Comments - Shawn Wessel

- See the engineering comments in the document "Engineering Comments" attached to this
 email.
- Feel free to have your consultant contact shawn.wessel@ottawa.ca if they have any questions or to request boundary conditions.

Transportation Comments

See comments in attached minutes

Feel free to contact Transportation Project Manager, Wally Dubyk, at wally.dubyk@ottawa.ca, ext.13783, for follow-up questions.

Waste Management

 Review the Waste Management Guidelines. Once the number of units is determined, Waste Services can suggest the bin requirements. You can forward a preliminary plan for review to start thinking about garbage room requirements and management for pick-up.

Parkland

Parkland will be collected in the form of land. Addition details are attached.

Community Association Comments – Heather

Comments recorded in the attached minutes.

Other

- You are encouraged to contact the Ward Councillor, Jeff Leiper, for awareness of the proposed development.
- I encourage discussing the proposal with the Ward Councillor, and reaching out to the surrounding neighbours for awareness of the potential proposal. If you reach out to the general public prior to application submission, please consider waiving the Non-Disclosure Agreement confidentiality for Heather.

Please refer to the links to "<u>Guide to preparing studies and plans</u>" and <u>fees</u> for further information. Additional information is available related to <u>building permits</u>, <u>development charges</u>, and the <u>Accessibility Design Standards</u>. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

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

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

Jessica Button, MCIP, RPP

Planner II | Urbaniste II

Development Review Central | Examen des demandes d'aménagement secteur centre Planning, Infrastructure and Economic Development Department | Services de la planification, de l'infrastructure et du développement économique

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West. Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1 ottawa.ca/planning / ottawa.ca/urbanisme

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Pre-Application Consultation Meeting Notes

PC2021-0379

Property Address: 2026 Scott Street December 21, 2021

Attendees:

City of Ottawa:

Andrew McCreight (File Lead), Jessica Button (Planning), Wally Dubyk, (Transportation), Shawn Wessel (Engineering), Randolph Wang (Urban Design), Mike Russett (Parks), Kevin Wherry (Parks)

Applicant Team:

Cyril Leeder, Ken Hoppner, Patrick Bisson, Nick Sutherland, Miguel Tremblay, Geoff Publow, Francois Thauvette, Brad Byvelds, Barry Hobin, Stephen Martin

Community: Heather Mitchel (Westboro Community Association)

Meeting notes:

Opening & attendee introduction

- Introduction of meeting attendees
- Overview of proposal:
 - Former Granite Curling Club to be re-located. Site will be amalgamated with corner lot.
 - o 3 buildings to create a micro-urban hub
 - o Lion's Park and the Gymnastic Club are located to the immediate south
 - Building heights are proposed at 40, 35 and 30 storeys
 - Commercial space at grade / Scott street to support active street frontage
 - Buildings are intended to provide rental units.
 - o 60% 1 bedroom, rest 2 bedrooms and studios
 - Key design narratives: public space, street level animation, mixed use visibility, connectivity, built form to add to the development

Parks (Kevin Wherry)

Detailed parkland comments are attached.

Planning (Andrew McCreight)

• The proposal will be subject to application for Zoning and Site Plan

- It will be essential that the application demonstrate compliance with Richmond Road/Westboro Secondary Plan and Parent OP to avoid an OPA. High-level up to 40-storeys may be considered but need rationale for support re: secondary plan policies for consideration of taller buildings.
- The new OP is expected to be approved around April from the Minister. If an application is submitted prior to this date Planning Rationale shall cover both OPs. Staff will apply the most restrictive policies.
 - Limit surface parking to very small amount and only for drop-off, delivery.
 Look at car-share options
 - Transition on this site is very important and staff see two distinct contexts, 1 along Scott and 2 -rear portion of the site. Towers along Scott should be designed with podium heights consistent with recent builds and approval (5/6-storey) and small tower floor plates (up to 750 sq.m) with the tower at least 20m away from abutting residential zones. The rear portion of the site would be better suited for an angular plane assessment, resulting in much lower height, likely mid-rise.
 - Respond to the proposal at 2050 Scott transitions to 6 and 3-storey are rear along Ashton.
 - Looking for minimum 23 metres tower separation.
- What is meant by the project description of "World Class Transit Hub focusing on mixed-use, high density housing forms focused on multiple forms of housing and public realm"
 - Applicant response The site is an important site and will be developed to it's full potential to be a rich and vibrant hub with activities to draw people to the site. The LRT is nearby and people can filter through the site as they walk to Westboro. This site is approximately 800 units, lots of services and amenities need to be provided on site as it is more of a community or mini city along a transit station.
- A north south mid-block connection is essential in the design of the site, and this will remain a constant as the design evolves, looking to making connections from Scott street to Ashton Street and the Park.
- Further evaluate the site access to avoid open suburban style garage ramp and look for opportunity to internalize this access to the site.
 - Corridor policies suggest that vehicle access should be directed to the site street.
- TDM strategies should be very strong to support the development as being transit oriented –bike parking/location, presto cards for first tenants, lobby display boards,

less parking, car-share etc. Sell the idea further of being a "World Class Transit hub".

- <u>Section 111 Bicycle Parking Space Rates and Provisions</u> provides the zoning requirements for bicycle parking including stacked bicycle parking.
- Affordable Housing is encouraged and is more strongly supported by the new OP
- Be mindful that Inclusionary Zoning (IZ) and Community Benefits By-law is anticipated to come into effect next year and may apply to this development.
 - Currently, Section 37 would apply. An analysis shall be covered within the Planning Rationale demonstrating the as-of-right zoning permissions vs proposed. See the Section 37 guidelines for direction.
- Driveway or private road access servicing as fire access route over parking garage requires construction to bridge standard.
- Think about public use and enjoyment of the site or even tourism. Westboro is a very popular neighbourhood and one that warrants some consideration for tourism as a trendy urban neighbourhood of Ottawa. Looks for opportunities within the tallest towers for things like an observation deck / top level amenity (views back towards downtown and Parliament) or viewing platforms, upper restaurant/bar, etc. This stems from the 41+ building policies but should not be discounted for the intent of this site being world class. Being creative and exploring these public opportunities is encouraged.
- Any unprogrammed space at grade (such as driveway and walkways) should be designed for soft landscaping and trees.
- Look for opportunity to have a public pathway connection from Scott to Park.
- Refer to the Bird-friendly guidelines.
- The construction of the Scott Street corridor is currently going through design detail
 and is subject to change. Development should coordinate the frontage design
 accordingly. Current plans (Ultimate Scott Design) are provided for your
 consideration.

Urban Design (Randolph Wang)

- A Design Brief is required as part of the submission. The Terms of Reference is attached for convenience. Please note both wind and shadow studies are required.
- The site is within a Design Priority Area. Formal review by the City's UDRP is required. Given the significance of the location and the development, the applicant can also benefit from UDRP informal review at pre-consultation stage before submission. The UDRP is currently experiencing high volume of demands and the

priority is given to formal review. It is recommended that the applicant further study the development and design options and come back for a second staff preconsultation. The merits of a UDRP pre-consultation can then be determined and confirmed.

- Urban design agrees with many general principles presented by the applicants. However, as evidenced in the discussion at the meeting, the location and size of the required municipal park play a significant role in determining the overall site plan layout and will influence built form and public realm design. At the first glance the proposed 3-tower concept appears to be overwhelming for the site and its context. Moving forward please continue to study the context of the area and the neighbourhood. At high level, the development should:
 - Create an animated frontage along Scott Street through appropriate at grade uses and built form design;
 - Provide a generous pedestrian realm along Scott Street with allowance for a continuous tree canopy;
 - Respect the residential character of Athlone Avenue through built form design and landscaping;
 - Increase pedestrian connectivity from the transit station to the residential neighbourhood by creating pedestrian short cuts through the site;
 - Provide meaningful transition to the low-rise area and the municipal park.
 Use angular planes are a tool to facilitate the design for transition;
 - Ensure a good relationship and coordination with the proposed development at 2050 Scott Street. Respect tower separations, minimize shadow and wind impacts on the public realm, outdoor amenity spaces, and ensure livable conditions for all future residents;
 - Provide appropriate built form scales along Scott, including the height and scale of both the towers and the podium. It is important to study the completed and approved buildings along Scott Street and develop an understanding of what is likely to unfold and what might be the appropriate strategy moving forward. The general rule of thumbs, as provided for in the City's many policies and guidelines, is that tallest buildings should be located close to transit station. Building heights should decrease as the distances to the transit station increase. The City's policies and guidelines also call for variations.

Transportation (Wally Dubyk)

The Screening Form indicates that the TIA Triggers have been met. Please proceed with the next TIA Step 2 – Scoping Report.

This development falls under a TOD area. The development requires TDM measures that support achieving the area mode share targets.

Update to the TIA Guideline Forecasting Report

- We would like to inform all consultants making TIA Forecasting Report submissions to the City of Ottawa as part of a development application, that all new applications (pre-consultation meetings dated after March 3, 2021) must use the NEW TRANS Trip Generation Manual when forecasting site generated trips using this manual (see attached).
- The TRANS committee (a joint transportation planning committee serving the National Capital region) finalized a new manual early in March 2021. The document will be available in French and English on the TRANS website http://www.ncr-trans-rcn.ca/surveys/2009-trip-generation.
- The new manual has simplified the conversion from vehicle trips to person trips and then trips by modal share. The City has also developed a spreadsheet that will apply the factors of location and building type to quickly provide the existing trip numbers by mode share.

General

Transitway structure renewal targeted to start 2-3 years.

Athlone Avenue is classified as a Local road. There are no additional protected ROW limits identified in the OP.

Scott Street is designated as an Arterial road within the City's Official Plan with a ROW protection limit of 23.0 metres. The ROW protection limit and the offset distance (13.0 metres) are to be dimensioned from the existing centerline of pavement and shown on the drawings. The Certified Ontario Land Surveyor is to confirm the ROW protected limits and any portion that may fall within the private property to be conveyed to the City.

ROW interpretation – Land for a road widening will be taken equally from both sides of a road, measured from the centreline in existence at the time of the widening if required by the City. The centreline is a line running down the middle of a road surface, equidistant from both edges of the pavement. In determining the centreline, paved shoulders, bus lay-bys, auxiliary lanes, turning lanes and other special circumstances are not included in the road surface.

A 5.0 metres x 5.0 metres sight triangle would be required at the intersection of Scott Street and Athlone Avenue. The sight triangle area is to be conveyed to the City and is

to be shown on all drawings. The sight triangle dimensions are to be measured from the ROW protected limits.

All underground and above ground building footprints and permanent walls need to be shown on the plan to confirm that any permanent structure does not extend either above or below into the existing property lines, sight triangles and/or future road widening protection limits.

Permanent structures such as curbing, stairs, retaining walls, and underground parking foundation also bicycle parking racks are not to extend into the City's right-of-way limits.

The consultant should review the sight distance to the access and any obstructions that may hinder the view of the driver.

The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.

The Owner acknowledges and agrees that all private accesses to Roads shall comply with the City's Private Approach By-Law being By-Law No. 2003-447 as amended, or as approved through the Site Plan control process.

The Owner shall be required to enter into maintenance and liability agreement for all pavers, plant and landscaping material placed in the City right-of-way and the Owner shall assume all maintenance and replacement responsibilities in perpetuity.

Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.

Should the property Owner wish to use a portion of the City's road allowance for construction staging, prior to obtaining a building permit, the property Owner must obtain an approved Traffic Management Plan from the Manager, Traffic Management, Transportation Services Department. The city has the right for any reason to deny use of the Road Allowance and to amend the approved Traffic Management Plan as required.

Proceed to the transportation report.

Update on ultimate design for Scott street

Engineering (Shawn Wessel)

Detailed engineering comments are attached.

Heather – Westboro Community Association

- The community anticipated a tower in this location.
- A tower in rear is problematic, located in the middle of the residential area, community will be surprized (and opposed).
- A better transition is preferable, consider the inclusion of townhomes to provide a better transition.
- A pathway between the park and Scott Street is desirable.
- Traffic is a concern; traffic study needs to consider all the other development proposals.
- On street visitor parking in the neighbourhood is already a concern.

Closing comments

- Staff strongly recommend a 2nd pre-consult with more focused design and response to initial comments.
- Key takeaway: transition and density, park location, and connectivity.
- Consider how a third tower can work on the site. Consider how a two-tower design can better meet the policies of the plan.



APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Legend: S indicates that the study or plan is required with application submission.

A indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information and guidance on preparing required studies and plans refer here:

S/A	Number of copies	ENG	ENGINEERING			
s	PDF Only	Site Servicing Plan	Site Servicing Study / Assessment of Adequacy of Public Services	S	PDF Only	
S	PDF Only	3. Grade Control and Drainage Plan	4. Geotechnical Study / Slope Stability Study	S	PDF Only	
	2	5. Composite Utility Plan	6. Groundwater Impact Study		3	
	3	7. Servicing Options Report	8. Wellhead Protection Study		3	
S	PDF Only	9. Transportation Impact Assessment (TIA)	10.Erosion and Sediment Control Plan / Brief	S	PDF Only	
S	PDF Only	11.Storm water Management Report / Brief	12.Hydro geological and Terrain Analysis		3	
	3	13.Hydraulic Water main Analysis	14.Noise / Vibration Study	S	PDF Only	
Α	PDF only	15.Roadway Modification Functional Design	16.Confederation Line Proximity Study		3	

S/A	Number of copies	PLANNING	PLANNING / DESIGN / SURVEY		
	15	17.Draft Plan of Subdivision	18.Plan Showing Layout of Parking Garage	S	PDF Only
	5	19.Draft Plan of Condominium	20.Planning Rationale	S	PDF Only
S	PDF Only	21.Site Plan	22.Minimum Distance Separation (MDS)		3
	15	23.Concept Plan Showing Proposed Land Uses and Landscaping	24.Agrology and Soil Capability Study		3
	3	25.Concept Plan Showing Ultimate Use of Land	26.Cultural Heritage Impact Statement		3
S	PDF Only	27.Landscape Plan	28.Archaeological Resource Assessment Requirements: S (site plan) A (subdivision, condo)		3
S	PDF Only	29.Survey Plan	30.Shadow Analysis	S	PDF Only
S	PDF Only	31.Architectural Building Elevation Drawings (dimensioned)	32.Design Brief (includes the Design Review Panel Submission Requirements)	S	PDF Only
S	PDF Only	33.Wind Analysis			

S/A	Number of copies	ENV	ENVIRONMENTAL		
S	PDF Only	34.Phase 1 Environmental Site Assessment	35.Impact Assessment of Adjacent Waste Disposal/Former Landfill Site		3
S	PDF Only	36.Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37.Assessment of Landform Features		3
S	PDF Only	38.Record of Site Condition	39.Mineral Resource Impact Assessment		3
S	PDF Only	40.Tree Conservation Report	41.Environmental Impact Statement / Impact Assessment of Endangered Species		PDF Only
	3	42.Mine Hazard Study / Abandoned Pit or Quarry Study	43.Integrated Environmental Review (Draft, as part of Planning Rationale)		3

S/A	Number of copies	ADDITION	S/A	Number of copies	
ß	PDF Only	Applicant's Public Consultation Strategy (may be provided as part of the Planning Rationale)	45. Floor Plan - Typical	s	PDF Only

Meeting Date: December 21, 2021 Application Type: *Re-zoning / Site Plan*File Lead (Assigned Planner): Andrew McCreight Infrastructure Approvals Project Manager: Shawn Wessel

*Preliminary Assessment: 1 2 3 3 4 5 5

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

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



ZONING BY LAW AMENDMENT and SITE PLAN APPLICATION PRE-CONSULTATION Parks & Facilities Planning Comments

File: PC2021-0379

Lead Planner: Andrew McCreight / Jessica Button

Site Location: 2026 Scott Street etc.

(Granite Curling Club), Ward 15

Date: December 23, 2021

The following are preliminary comments from the Parks & Facilities Planning regarding Preconsultation application meeting PC2021-0379, being 2026 Scott St., 2020 Scott St., 2006 Scott St., 314 and 318 Athlone Ave., Ward 15, held December 21st, 2021.

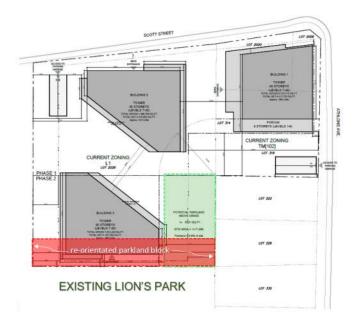
Based on size of the consolidated lot, Parks & Facilities Planning will be requesting dedication of land for parkland purposes, as supported by the new official plan and in accordance with the City's Parks and Facilities Master Plan and City's Parkland Dedication By-law No 2009-95.

Parkland dedication

Parkland dedication has been calculated based on the proposed redevelopment of the site, approximate lot area of 6,686 $\rm m^2$ (to be confirmed), at a 10% maximum of land area, for a parkland dedication requirement of 668.6 $\rm m^2$ or 0.06686Ha.

Parkland orientation

Park block, as shown on the 2026 Scott Street package submission, to be re-oriented to locate the future proposed park block linear to the extents of the existing Lion's Park property boundaries...the applicant should be advised that the requirements of the Park Dedication By-Law apply which includes that the newly dedicated parkland is to be clear of encumbrances such as Limiting Distance Agreements, per Ontario Building Code, will not be permitted to impact the dedicated park block.



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Source: 2026 Scott Street Package submission

Section 37

Depending on timing of approvals and the execution of a new Community Benefits Charges (CBC) By Law, Parks & Facilities Planning request that in the event that this application is approved prior to a new CBC, the Section 37 community benefits funding agreement consider allocating funds for the design & construction of the proposed future Lion's Park expansion.

Zoning, Parkland

Parks & Facilities Planning request L1 – Community Leisure Facility Zone for the future park block, to match the zoning for existing Lion's Park.

Park Development

Funding for new park development on lands acquired through this application will be subject of an updated or replacement Development Charges by Law currently destined for 2024. Should park development be desired in advance of a new by law coming into effect, a development or front ending agreement between the applicant and the city may be considered.

Regards,

Mike

Mike Russett

Parks and Facilities Planning, Recreation, Cultural and Facility Services Dept., 100 Constellation Drive, 8th Floor West, Ottawa. K2G 6J8 (613) 580-2424 Ext. 15459 Pre-Consul Meeting Notes to the File Lead - Andrew McCreight December 21, 2021 Re: 2026 Scott St.

Ward 15 - Kitchesippi, Councillor Jeff Leiper

30-Storey, 35-Storey and a 40-Storey high rise towers on a single podium, with 6 levels of UG Parking

Infrastructure:

A 203 mm dia. PVC Watermain (c. 1994) is available.

A 1220 mm dia. C00 Feeder High Pressure Watermain (c. 1959) is in ROW on North side of Scott Street. Monitoring of Feed WM is required when within 15m of proposed footing and foundation location.

A 375 mm dia. Clay. Sanitary Sewer (c. 1961) is available, which drains to West Nepean Trunk Collector and conveys effluent to the Interceptor Sewer.

A 900 mm dia. Conc. Storm Sewer (c. 1981) is available at western side of frontage to Scott St, which drains to West Transit Way Storm Trunk Sewer and Outlets to the Ottawa River at Onigam Street.

A 1200 mm dia. Conc. Storm Sewer (c. 1972) is available at eastern side of frontage to Scott St., which drains to West Transit Way Storm Trunk Sewer and Outlets to the Ottawa River at Onigam Street.

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

- Total allowable release rate will be 5-year pre-development rate.
- Coefficient (C) of runoff will need to be determined as per existing conditions but in no case more than 0.5
- 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 5 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.

Please 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. Provide Roof plan showing roof drain and scupper locations with a table that indicates flow rates, drain type and weir opening, if controlled. Provide Manufacturer Specifications on drains and also provide 5- and 100-year ponding limits on plan.

Boundary Conditions will be provided at request of consultant after providing Average Daily Demands, Peak Hour Demands & Max Day + Fire Flow Demands

If window wells are proposed, they are to be indirectly connected to the footing drains. A detail of window well with indirect connection is required, as is a note at window well location speaking to indirect connection.

Please note:

We have reached out to our colleagues in the City Water Resource Department for any additional comments regarding this proposal in regard to capacity, historical flooding issues etc.

Note:

If applicable, existing buildings require a CCTV inspection and report to ensure existing services to be re-used are in good working order and meet current minimum size requirements. Located services to be placed on site servicing plans.



Other:

Environmental Noise Study is required due to Scott Street and Transit Way.

Stationary Noise Study – consultant to speak to this in their report as per City NCG and NPC 300 Guidelines. May be required after Mechanical Design completed and prior to building permit issuance.

When greater than 9 Storeys in height, a Shadow Study required for all buildings/dwellings.

When greater than 9 Storeys in height Wind Study for all buildings/dwellings.

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 m^3 / 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.



Site Lighting:

Site lighting certificate and photometric plan required for this site. This will be a condition of agreement(s).

Site lighting certificate and photometric plan required for this site, particularly looking at light spillage and effects on nearby residential properties.

Capital Works:

Temporary Emergency Construction Restriction Process in effect on Scott Street – until April 2022 - for Cleary Watermain Work.

LRT Construction in effect

Trees:

Please note that a new Tree By-law is now in effect.



General Bulletin_New Tree Protection Bylaw.

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



Gas Pressure Regulating Station.pd

Regarding Quantity Estimates:

Please note that external Garbage and/or bicycle storage structures are to be added to QE under Landscaping as it is subject to securities.

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

Source Protection Policy Screening (SPPS):

SPPS will be provided to applicant by City Risk Mgmt. Officer within Asset Mgmt. Dept.

Applicant to contact Rideau Valley Conservation Authority (RVCA) for possible restrictions due to quality control. Provide correspondence in Report.

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

Vibration monitoring will be required for all backbone watermains within 15m proximity of footings/foundation for this site. Conditions for Vibration will be applied to agreements. For example:

Vibration Monitoring

Prior to the issuance of a building permit, the Owner shall, at its expense:

- (i) provide the General Manager, Planning, Infrastructure and Economic Development with an engineering memorandum from a Professional Engineer, licensed in the Province of Ontario, which shall outline the centreline location and overt elevation of the existing 1.220mm diameter C00 City owned Feeder Watermain (FWM), located on the north side of Scott Street, and its measured proximity to the frontage property boundary limits of 2026 Scott Street in order to evaluate the impact on said FWM from the proposed building's footing and foundation walls proposed for this development.
- (ii) obtain a legal survey acceptable to the General Manager, Planning, Infrastructure and Economic Development and the City's Surveyor, showing the existing location of the 1.220mm diameter C00 FWM within Scott Street Right-of-Way ("ROW") between Winona and Athlone Avenues and identify the location of the proposed building and its footings in relation the said FWM;

- (iii) provide the General Manager, Planning, Infrastructure and Economic Development with a Vibration Monitoring Plan from a Professional Engineer, specializing in vibration and monitoring, licensed in the Province of Ontario, which shall outline applicable recommendations for continuous monitoring of the existing 1220 mm dia. C00 FWM during all stages of the Work, including, but not limited to, the boundary area in the ROW between East side of Winona Avenue intersection and the West side of Athlone Avenue intersection. This monitoring will also as provide a Work Plan speaking to Work in Vicinity of Large Diameter WM & Monitoring for site development as well as an extensive Emergency Contingency Plan, to be pre-approved by City Infrastructure Services Department (ISD).
- (iv) provide, during the construction process and upon completion of construction on the private & City lands, at the Owner's expense and to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development, all daily and hourly data reports (as applicable) of completed monitoring works
- (v) assume all liability for any damages caused to the City Water & Sewer Systems within Scott Street ROW between Winona and Athlone Avenues and compensate the City for the full amount of any required repairs to the City Water & Sewer Systems.

<u>Note:</u> In addition to requirement of a vibration specialist engineer required to design and monitor vibration, a certificate of liability insurance shall be submitted to the City wherein the Owner is the named insured and the City of Ottawa is an additional insured. The limits of the policy shall be in the amount of \$25,000,000 and shall be kept in full force and effect for the term of the construction work.

Excavation:

Pre-Construction (Piling/Hoe Ramming or close proximity to City Assets) and/or Pre-Blasting (if applicable) Survey required for any buildings/dwellings in proximity of 75m of site and circulation of notice of vibration/noise to residents within 150 m of site. Conditions for Pre-Construction/ Pre-Blast Survey & Use of Explosives will be applied to agreements. Refer to City's Standard S.P. No. F-1201 entitled *Use of Explosives*, as amended.

Proximity to Transit Way:

Due to proximity of site to Transit Way and Westboro Transit Station, applicant to contact City LRT Group in regard to required building offset from transitway. Noise study to review vibration conditions within 75m of Transitway. See Rail Guidelines and CPCS Report as well as OP Annex 17, Zones of Influence and Guidelines for Proximity Study.



s_NewDevelopment_E



CPCS Report Appendix_F.pdf





Confederation East Confederation West ZOI.pdf



PDF Confed Railway Line Prox. Guidelines.pdf

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

Rear yard on grade parking to be permeable pavement. Refer to City Standard Detail Drawings SC26 (maintenance/temp parking areas), SC27 or permeable asphalt materials. No gravel or stone dust parking areas permitted.

Severance:

If severance is planned, this needs to be addressed in servicing to satisfy severance requirements. Where a large parcel with multiple buildings is planned, City will require an ultimate servicing plan so as to appropriately understand how severance requirements are being met.

Note:

"Provided Info to applicant":

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:

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

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.

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 <a href="https://ottawa.ca/en/city-hall/planning-and-development/information-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:

<u>City of Ottawa Sewer Design Guidelines</u> (**CoOSDG**) complete with all current and relative ISTB 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.

<u>City of Ottawa Water Distribution Design Guidelines</u> (**CoOWDDG**) complete with all current and relative ISTB 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 "(<u>as amended</u>)" when referencing all standards, detail drwaings, by-Laws and guidelines.

Fourth (4th) Review Charge:

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

Construction approach – Please contact the Right-of-Ways Permit Office (<u>TMconstruction@ottawa.ca</u>) early in the zoning and site plan process to determine the ability to construct site and copy Andrew McCreight on this request.

Contact me by e-mail at shawn.wessel@ottawa.ca if you have any questions.

Sincerely,

Shawn Wessel, A.Sc.T., rcji

Project Manager

St D

Development Review, Central Branch

Steve Matthews

From: Jamie Batchelor <jamie.batchelor@rvca.ca>

Sent: Tuesday, April 5, 2022 9:18 AM

To: François Thauvette

Cc: Steve Matthews; Eric Lalande

Subject: RE: 2026 Scott St - Pre-Consultation with the RVCA

Good Morning Francois,

I apologize for the delay. It looks like this came in around the time I went off on leave. I can confirm that based on the parking being underground and the development consisting of rooftop drainage and landscaping, the RVCA would not require additional on-site water quality measures save and except best management practices.

From: Francois Thauvette <f.thauvette@novatech-eng.com>

Sent: Friday, April 1, 2022 12:43 PM

To: Jamie Batchelor < jamie.batchelor@rvca.ca>

Cc: Steve Matthews < S.Matthews@novatech-eng.com > **Subject:** RE: 2026 Scott St - Pre-Consultation with the RVCA

Hi Jamie.

I sent you the e-mail below back in December 2021, but do not recall receiving a response. Please review the e-mail below and provide a response so that we may finalize our servicing and SWM report? Also attached is the updated conceptual Site Plan.

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 The information contained in this email message is confidential and is for exclusive use of the addressee.

From: Francois Thauvette <f.thauvette@novatech-eng.com>

Sent: Wednesday, December 8, 2021 11:55 AM

To: jamie.batchelor@rvca.ca

Cc: Steve Matthews < <u>S.Matthews@novatech-eng.com</u>> **Subject:** 2026 Scott St - Pre-Consultation with the RVCA

Hi Jamie,

We are working on a proposed multi-tower high-rise residential development located at 2026 Scott Street in Ottawa (see attached conceptual Site Plan). The proposed development will include three (3) high-rise towers (ranging from 20 to 40-storeys), exterior amenity space and underground parking. We are sending this e-mail to ask the RVCA to confirm if there are any stormwater management (quality control criteria) requirements for this site. Based on recent RVCA correspondence (for a new project at 1950 Scott Street) stormwater quality control measures are not required due to the nature of the development, the fact that all parking will be underground (i.e. no surface parking) and that the distance to the stormwater outlet is >2km downstream. Please confirm if this is also applicable to the proposed development.

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 The information contained in this email message is confidential and is for exclusive use of the addressee.

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).

Proposed phasing of the development, if applicable.

Ш	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 defendable 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.

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

Preliminary Sanitary Sewage Calculations

PROJECT #: 121302 PROJECT NAME: 2026 SCOTT ST. LOCATION: OTTAWA



2026 SCOTT STREET - EAST TOWER POST-DEVELOPMENT SANITARY FLOWS

Residential Flows Post-Development		
Number of Studio / 1-Bedroom Units	228	
Persons per Studio / 1-Bedroom Unit	1.4	
Number of 2-Bedroom Units	156	
Persons per 2-Bedroom Unit	2.1	
Number of 3-Bedroom Units	8	
Persons per 3-Bedroom Unit	3.1	
Total Number of Units	392	
Design Population	672	
Average Daily Flow per Resident	280	L/c/day
Peak Factor (Harmon Formula)	3.32	
Peak Residential Flow	7.24	L/s
Commercial Flows		
Ground Floor Area	120	m ²
Average Commercial Daily Demand	2.8	L/m²/day
Peaking Factor	1.5	
Peak Commercial Flows	0.01	L/s
Extraneous Flow		
Tower Site Area	0.304	ha
Infiltration Allowance	0.33	L/s/ha
Peak Extraneous Flow	0.10	L/s
Total Peak Sanitary Flow	7.34	L/s

PROJECT #: 121302 PROJECT NAME: 2026 SCOTT ST. LOCATION: OTTAWA



2026 SCOTT STREET - WEST TOWER POST-DEVELOPMENT SANITARY FLOWS

Residential Flows Post-Development		
Number of Studio / 1-Bedroom Units	298	
Persons per Studio / 1-Bedroom Unit	1.4	
Number of 2-Bedroom Units	159	
Persons per 2-Bedroom Unit	2.1	
Number of 3-Bedroom Units	7	
Persons per 3-Bedroom Unit	3.1	
Total Number of Units	464	
Design Population	773	
Average Daily Flow per Resident	280	L/c/day
Peak Factor (Harmon Formula)	3.30	
Peak Residential Flow	8.26	L/s
Commercial Flows		
Ground Floor Area	178	m ²
Average Commercial Daily Demand	2.8	L/m ² /day
Peaking Factor	1.5	
Peak Commercial Flows	0.01	L/s
Extraneous Flow		
Tower Site Area	0.293	ha
Infiltration Allowance	0.33	L/s/ha
Peak Extraneous Flow	0.10	L/s
Total Peak Sanitary Flow	8.36	L/s

APPENDIX D

Preliminary Water Demands, FUS Calculations,
Watermain Boundary Conditions, E-mail
Correspondence from the City of Ottawa, E-mail correspondence
from Architect to support FUS Calculations



2026 SCOTT STREET - EAST BUILDING POST-DEVELOPMENT WATER DEMANDS

DOMESTIC WATER DEMANDS

Residential Use	Post-Development	
Number of Studio / 1-Bedroom Units	228	
Persons per Studio / 1-Bedroom Unit	1.4	
Number of 2-Bedroom Units	156	
Persons per 2-Bedroom Unit	2.1	
Number of 3-Bedroom Units	8	
Persons per 2-Bedroom Unit	3.1	
Total Number of Units	392	
Total Design Population	672	
Average Day Demand (280 L/c/day)	2.18	L/s/day
Maximum Day Demand (2.5 x avg. day)	5.44	L/s
Peak Hour Demand (2.2 x max. day)	11.98	L/s
Commercial/Amenity Use		
Commercial Space	120	m^2
Average Day Demand (28,000 L/ha/day)	0.00	L/s
Maximum Day Demand (1.5 x avg. day)	0.01	L/s
Peak Hour Demand (1.8 x max. day)	0.01	L/s
		. /
Total Average Day Demand	2.18	L/s
Total Maximum Day Demand	5.45	L/s
Total Peak Hour Demand	11.99	L/s

BOUNDARY CONDITIONS

Minimum HGL =	108.3	m
Maximum HGL =	115.0	m
Max Day + Fire Flow =	98.2	m

PRESSURE TESTS

Existing ground elevation at connection	63.2	m
Low Pressure Pressure = (Min. HGL - (Existing Ground Elevation - Watermain	670	PSI
Elevation)) x 1.42 PSI/m (should be > 40 PSI)	67.0	P31
High Pressure Pressure = (Max HGL - (Existing Ground Elevation -Watermain	77.0	DCI
Elevation)) x 1.42 PSI/m (should be between 50- 70 PSI)	77.0	PSI
Max Day + Fire Flow Pressure = (Max Day + Fire Flow - (Existing Ground		
Elevation -Watermain Elevation)) x 1.42 PSI/m (should be > 20 PSI)	53.0	PSI

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



2026 SCOTT STREET - WEST BUILDING POST-DEVELOPMENT WATER DEMANDS

DOMESTIC WATER DEMANDS

Residential Use	Post-Development	
Number of Studio / 1-Bedroom Units	298	
Persons per Studio / 1-Bedroom Unit	1.4	
Number of 2-Bedroom Units	159	
Persons per 2-Bedroom Unit	2.1	
Number of 3-Bedroom Units	7	
Persons per 2-Bedroom Unit	3.1	
Total Number of Units	464	
Total Design Population	773	
Average Day Demand (280 L/c/day)	2.51	L/s/day
Maximum Day Demand (2.5 x avg. day)	6.26	L/s
Peak Hour Demand (2.2 x max. day)	13.78	L/s
Commercial/Amenity Use		
Commercial Space	178	m^2
Average Day Demand (28,000 L/ha/day)	0.01	L/s
Maximum Day Demand (1.5 x avg. day)	0.01	L/s
Peak Hour Demand (1.8 x max. day)	0.02	L/s
Total Average Day Demand	2.51	L/s
Total Maximum Day Demand	6.27	L/s
Total Peak Hour Demand	13.79	L/s

BOUNDARY CONDITIONS

Minimum HGL =	108.3	m
Maximum HGL =	115.0	m
Max Day + Fire Flow =	96.4	m

PRESSURE TESTS

Existing ground elevation at connection	63.2	m	
Low Pressure Pressure =(Min. HGL - (Existing Ground Elevation -Watermain	67 N	PSI	
Elevation)) x 1.42 PSI/m (should be > 40 PSI)		1 31	
High Pressure Pressure = (Max HGL - (Existing Ground Elevation -Watermain	77 (PSI	
Elevation)) x 1.42 PSI/m (should be between 50- 70 PSI)		F31	
Max Day + Fire Flow Pressure = (Max Day + Fire Flow - (Existing Ground	= 0 0	DCI	
Elevation -Watermain Elevation)) x 1.42 PSI/m (should be > 20 PSI)	50.0	PSI	

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

FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines

Novatech Project #: 121302

Project Name: 2026 Scott - East Tower

Date: 10/11/2023
Input By: C. Visser

Reviewed By: F. Thauvette

NOVATECH
Engineers, Planners & Landscape Architects

Legend Input by User

No Information or Input Required

Building Description: 40-Storey Building with 10-Storey Podium

Type II - Non-combustible construction

Step			Choose		Value Used	Total Fire Flow (L/min)		
		Base Fire Flo	w		<u>. </u>	(= :::::)		
	Construction Ma	iterial		Multi	iplier			
	Coefficient	Type V - Wood frame		1.5				
1	related to type of construction	Type IV - Mass Timber		Varies				
-		Type III - Ordinary construction		1	0.8			
	C	Type II - Non-combustible construction	Yes	0.8				
		Type I - Fire resistive construction (2 hrs)		0.6				
	Floor Area							
		Podium Level Footprint (m²)	1284					
		Total Floors/Storeys (Podium)	10					
	Α	Tower Footprint (m ²)	769					
2	^	Total Floors/Storeys (Tower)	30					
		Protected Openings (1 hr)	No					
		Area of structure considered (m ²)			7,704			
	F	Base fire flow without reductions				45.000		
	Г	$F = 220 \text{ C } (A)^{0.5}$				15,000		
		Reductions or Surc	harges					
	Occupancy haza	rd reduction or surcharge	Reduction	/Surcharge				
		Non-combustible		-25%				
3	(1)	Limited combustible	Yes	-15%				
·		Combustible		0%	-15%	12,750		
		Free burning		15%				
		Rapid burning		25%				
	Sprinkler Reduct	tion (100% sprinkler coverage of building	used)	Redu	ction			
		Adequately Designed System (NFPA 13)	Yes	-30%	-30%			
4	(0)	Standard Water Supply	Yes	-10%	-10%	C 275		
	(2)	Fully Supervised System	Yes	-10%	-10%	-6,375		
			Cum	ulative Total	-50%			
	Exposure Surch	arge (cumulative %, Maximum Exposure A	djustment Ch	arge Used)	Surcharge			
		North Side	> 45.1m		0%			
5		East Side	10.1 - 20 m		15%			
5	(3)	South Side	3.1 - 10 m		20%	5,738		
		West Side	20.1 - 30 m		10%			
			Cun	ulative Total	45%			
		Results						
		Total Required Fire Flow, rounded to nea	rest 1000L/mii	1	L/min	12,000		
6	(1) + (2) + (3)	(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	200		
	<u> </u>			or	USGPM Hours	3,170 2.5		
7	Storage Volume	Required Duration of Fire Flow (hours)						
		Required Volume of Fire Flow (m ³)		m^3	1800			

FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines

Novatech Project #: 121302

Project Name: 2026 Scott - West Building

Date: 10/11/2023
Input By: C. Visser
Reviewed By: F. Thauvette



Legend Input by User

No Information or Input Required

Building Description: 40-Storey Building with 10-Storey Podium

Type II - Non-combustible construction

Step			Choose		Value Used	Total Fire Flow (L/min)
		Base Fire Flo	w			
	Construction Ma	terial		Mult	iplier	
	Coefficient	Type V - Wood frame		1.5		
1	related to type	Type IV - Mass Timber		Varies		
	of construction	Type III - Ordinary construction		1	0.8	
	С	Type II - Non-combustible construction	Yes	0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
	Floor Area		1		•	
		Podium Level Footprint (m ²)	1608			
		Total Floors/Storeys (Podium)	10			
	A	Tower Footprint (m ²)	848			
2	A	Total Floors/Storeys (Tower)	30			
		Protected Openings (1 hr)	No			
		Area of structure considered (m ²)			9,648	
	F	Base fire flow without reductions				17,000
	<u> </u>	$F = 220 C (A)^{0.5}$				17,000
		Reductions or Surc	harges			
	Occupancy haza	rd reduction or surcharge		Reduction		
		Non-combustible		-25%		
3	(1)	Limited combustible	Yes	-15%		
Ĭ		Combustible		0%	-15%	14,450
		Free burning		15%		
		Rapid burning		25%		
	Sprinkler Reduc	tion (100% sprinkler coverage of building	used)	Redu	ction	
		Adequately Designed System (NFPA 13)	Yes	-30%	-30%	
4	(0)	Standard Water Supply	Yes	-10%	-10%	7.005
	(2)	Fully Supervised System	Yes	-10%	-10%	-7,225
			Cun	nulative Total	-50%	
	Exposure Surch	arge (cumulative %, Maximum Exposure A	Adjustment Ch	narge Used)	Surcharge	
		North Side	> 45.1m		0%	
5		East Side	20.1 - 30 m		10%	
3	(3)	South Side	20.1 - 30 m		10%	5,780
		West Side	3.1 - 10 m		20%	
			Cun	nulative Total	40%	
		Results				
		Total Required Fire Flow, rounded to nea	rest 1000L/mi	n	L/min	13,000
6	(1) + (2) + (3)	(2,000 L/min < Fire Flow < 45,000 L/min)	or	L/s	217	
				or	USGPM	3,435
		Required Duration of Fire Flow (hours)		Hours	2.5	
7	Storage Volume	m ³				

Francois Thauvette

From: Wessel, Shawn <shawn.wessel@ottawa.ca>

Sent: Tuesday, March 8, 2022 9:33 AM

To: Francois Thauvette
Cc: Steve Matthews

Subject: RE: 2026 Scott Street - Watermain Boundary Conditions Request

Attachments: 2026 Scott Street March 2022.pdf

Good morning, Francois

Please find conditions, as requested, below:

Concerns with Building #3 meeting required fire flow:

- Confirm 362028H057 is measured along a fire access route within their site.
- Hydrant 362028H059 will not be able to deliver the maximum fire flow and therefore this watermain may need to be upgraded unless Hydrant 362028H070 is within 150m measured from the hydrant to building along the fire access roads Technical Bulletin 2018-02.
- Is there fire access roads within the site from Scott Street as the hydrants the consultant has identified need to measured along these to the buildings

****The following information may be passed on to the consultant, but do NOT forward this e-mail directly.****

The following are boundary conditions, HGL, for hydraulic analysis at 2026 Scott Street (zone 1W) assumed to be connected to the 203 mm watermain on Scott Street and the 203 mm on Athlone Avenue (see attached PDF for location).

Both Connections

Minimum HGL: 108.3 m
Maximum HGL: 115.0 m

Max Day + Fire Flow (167 L/s): 101.6 m (Scott connection) and 100.5 m (Athlone connection)

Max Day + Fire Flow (183 L/s): 100.1 m (Scott connection) and 98.8 (Athlone connection)

Max Day + Fire Flow (217 L/s): 96.4 m (Scott connection) and 94.6 (Athlone connection)

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



A Please consider the environment before printing this email

Vacation Alert:

I will be out of the office February 14-18th inclusive. Please contact John Wu or Abdul Mottalib in my absence.

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: March 02, 2022 2:48 PM

To: Wessel, Shawn <shawn.wessel@ottawa.ca>

Cc: Steve Matthews <S.Matthews@novatech-eng.com>

Subject: FW: 2026 Scott Street - Watermain Boundary Conditions Request

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,

We are sending you this message to request municipal watermain boundary conditions for the proposed residential development at 2036 Scott Street (incl. other adjacent properties to be merged). See e-mail below and attachments for details. Please note that although the attached sketch shows 2 watermain connections (one off Scott Street and the other off Athlone Avenue), it may be possible to have 2 connections to Scott Street with an isolation valve between the services. The exact configuration of the water services will have TBD at the detailed design stage, unless advised otherwise by the City's Water Department.

Please 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 The information contained in this email message is confidential and is for exclusive use of the addressee.

From: Steve Matthews < <u>S.Matthews@novatech-eng.com</u>>

Sent: Wednesday, March 2, 2022 2:29 PM

To: Francois Thauvette <f.thauvette@novatech-eng.com>

Subject: 2026 Scott Street - Watermain Boundary Conditions Request

Hi François,

The proposed residential development located at 2026 Scott Street (in the City of Ottawa) will include three residential towers and a common underground parking garage. Refer to the attached Site Plan for details.

Please request watermain boundary conditions from the City of Ottawa for the existing 200mm dia. municipal watermain in Scott Street and the 150mm dia. municipal watermain in Athlone Avenue (as shown on geoOttawa). We do not anticipate requiring any on-site private fire hydrants as there are multiple existing municipal hydrants surrounding the property. The proposed redundant water connections will be located in the north-east corner of the building underground levels and will be serviced off the both the adjacent existing municipal watermains. The anticipated water demands for the proposed development are as follows:

- Average Day Demand = 4.4 L/s
- Maximum Day Demand = 11.1 L/s
- Peak Hour Demand = 24.4 L/s
- Maximum Fire Flow Demand = 217 L/s

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 multiple blue bonnet municipal hydrants within 75m of the site, as well as additional blue bonnet municipal hydrants within 150m of the subject site that could be used for firefighting purposes. See attached Boundary Conditions Request Sketch for details.

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

Regards, Steve

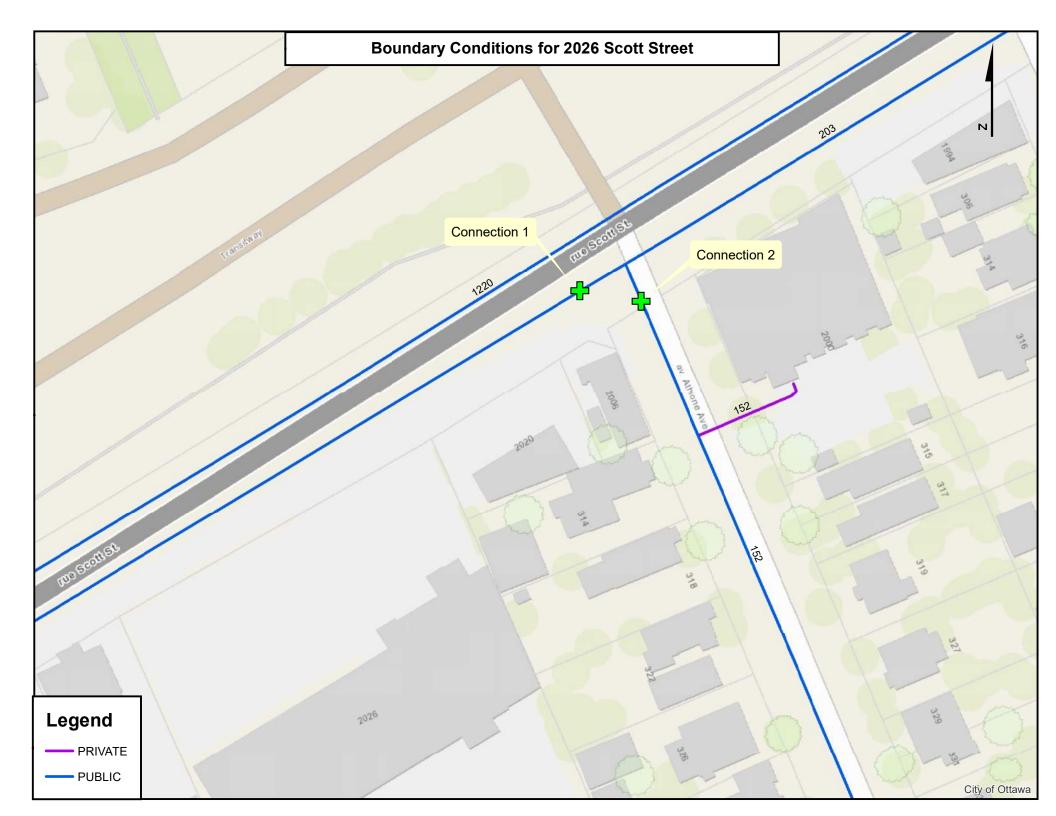
Stephen Matthews, B.A.(Env), Senior Design Technologist **NOVATECH** Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 223 | Fax: 613.254.5867

The information contained in this email message is confidential and is for exclusive use of the addressee.

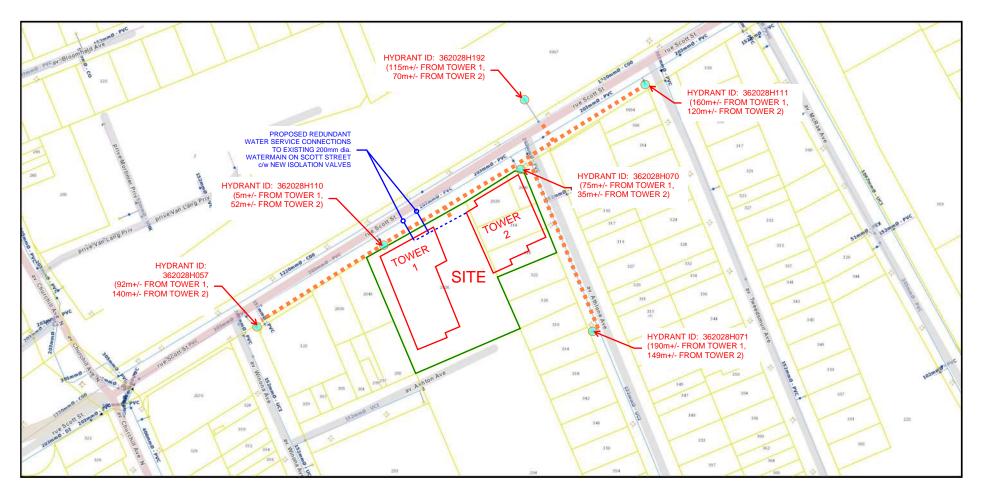
This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.



9/14/22, 1:24 PM

FIRE HYDRANT SKETCH AND WATER INFRASTRUCTURE





October 13, 2023

To: Jean-Charles Renaud, MCIP/MICU, RPP/UPC Planner III (A)

110 Laurier Avenue West

Ottawa, ON K1P 1J1

Partners

Barry J. Hobin OAA, FRAIC, Hon. Fellow AIA Founding Partner

Wendy Brawley OAA, MRAIC, Associate AIA

Douglas Brooks Arch, Tech.

Marc Thivierge OAA, MRAIC

Reinhard Vogel Arch. Tech.

Rheal Labelle M. Arch.

Dan Henhoeffer Arch. Tech.

Melanie Lamontagne OAA, MRAIC

Patrick Bisson OAA, OAQ, MRAIC Please find this letter as a formal confirmation that the drawings pertaining to the Site Plan Control Application – 2006, 2020, 2026 Scott Street & 314, 318 Athlone Avenue meet the required parameters resulting in a reduction in fire flow. The development, comprised of two 40 storey buildings and a four storey below grade parking garage will be constructed to ensure:

- The development is fully sprinklered, fully supervised, and designed as per NFPA 13,
- All structural elements have a minimum 2-hour fire rating,
- The development will be comprised of noncombustible materials as per the Ontario Building Code,
- The construction coefficient will equal 0.8 for Type II Noncombustible Construction

Sincerely,

E.sem

Patrick Bisson Hobin Architecture Inc.

Hobin Architecture Incorporated

63 Pamilla Street Ottawa, Ontario Canada K1S 3K7

t 613-238-7200 f 613-235-2005



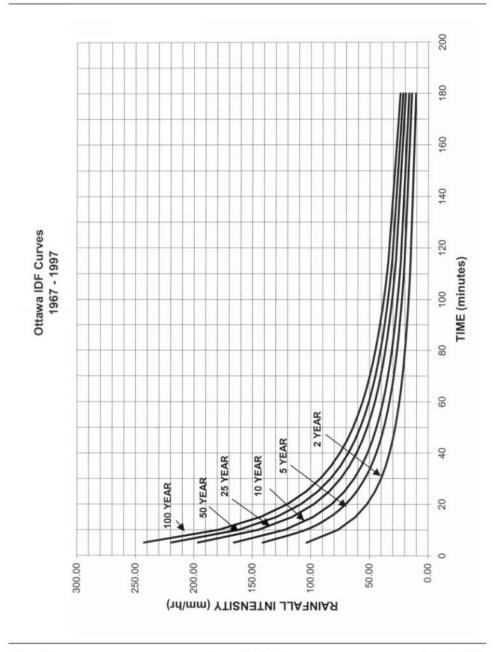
APPENDIX E

IDF Curves and Preliminary SWM Calculations

Ottawa Sewer Design Guidelines

APPENDIX 5-A

OTTAWA INTENSITY DURATION FREQUENCY (IDF) CURVE



City of Ottawa Appendix 5-A.1 October 2012



Proposed Multi -Use, Multi-Tower Site Development 2026 Scott Street

Pre - Development Site Flows										
		A impervious (ha)	A gravel (ha)	A pervious (ha)	Weighted	Weighted	5-Year Flow	100-Year	Allowable	Allowable Flow
Description	Area (ha)	C=0.9	C=0.6	C=0.2	C _{w5}	C _{w100}	(L/s)	Flow (L/s)	C _w =0.5 Max	5-year (L/s)
Off-Site Tributary Area OS-1 (East)	0.105	0.036	0.000	0.069	0.44	0.51	13.3	26.4	0.50	
Off-Site Tributary Area OS-2 (South)	0.069	0.067	0.000	0.002	0.88	0.98	17.6	33.6	0.50	-
Site to be Developed	0.597	0.566	0.000	0.031	0.86	0.96	149.4	285.0	0.50	63.7
Dedicated Parkland	0.066	0.035	0.000	0.031	0.57	0.65	11.0	21.3	0.50	7.0
									C=0.5 (Max.)	$T_c = 20$ mins

			F	Post - Developm	ent Site Flows								
Area	Description	Area (ha)	A _{imp} (ha) C=0.9	A planters (ha) C=0.6	A _{perv} (ha) C=0.2	C ₅	C ₁₀₀	Uncontrolle 5-year	d Flow (L/s) 100-year	Controlled 5-year	Flow (L/s) 100-year	Storage R 5-year	Required (m ³) 100-year
OS-1	Off-Site Tributary Area OS-1 (East)	0.105	0.036	0.000	0.069	0.44	0.51	13.3	26.4	-	-	-	-
OS-2	Off-Site Tributary Area OS-2 (South)	0.069	0.067	0.000	0.002	0.88	0.98	17.6	33.6	-	-	-	-
A-1	Direct Runoff	0.031	0.021	0.009	0.001	0.79	0.90	7.1	13.9	-	-	-	-
A-2	Uncontrolled Flow (East)	0.005	0.000	0.000	0.005	0.20	0.25	0.3	0.6	-	-	-	-
A-3	Controlled Site Flow	0.557	0.452	0.074	0.031	0.82	0.92	-	-	31.5	31.5	69.4	182.7
A-4	Uncontrolled Site Flow (West)	0.004	0.004	0.000	0.000	0.90	1.00	1.1	2.2	-	-	-	-
A-5	Dedicated Parkland	0.066	0.000	0.000	0.066	0.20	0.25	-	-	5.5	6.0	(see below)	(see below)
							al Site Flows :	40.0	48.2				
						T _c = 10mins	T _c = 10mins	23.7	15.6				

A-2 + OS-1	Uncontrolled Flow (East) + Off-Site Tributary Area (East)	0.110	0.036	0.000	0.074	0.43	0.49	13.6	27.0	-	-	-	-
A-5 + OS-2	Parkland + Off-Site Tributary Area (South)	0.135	0.000	0.000	0.135	0.20	0.25	_	_	5.5	6.0	1.5	6.7

Proposed Multi-Tower Residential Development Novatech Project No. 121302
REQUIRED STORAGE - 1:2 YEAR EVENT
AREA OS-1 Off-Site Tributary Area OS-1 (East)

		ibutai y Ai	ea OS-1 (East)		
OTTAWA IDF	CURVE				
Area =	0.105	ha	Qallow =	9.8	L/s
C =	0.44		Vol(max) =	-	m^3
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)	
5	103.68	13.28	3.48	1.04	
10	76.52	9.80	0.00	0.00	
15	61.36	7.86	-1.94	-1.75	
20	51.59	6.61	-3.19	-3.83	
25	44.72	5.73	-4.07	-6.11	
30	39.60	5.07	-4.73	-8.51	
35	35.63	0.03	- 9.76	-20.51	
40	32.45	4.15	-5.64	-13.54	
45	29.84	0.56	-9.24	-24.96	
50	27.65	3.54	-6.26	-18.77	
55	25.79	3.30	-6.50	-21.43	
60	24.19	3.10	-6.70	-24.12	
65	22.80	2.92	-6.88	-26.83	
70	21.57	2.76	-7.04	-29.55	
75	20.48	2.62	-7.18	-32.29	
80	19.51	2.50	-7.30	-35.04	
85	18.63	2.39	-7.41	-37.80	
90	17.84	2.28	-7.51	-40.57	

Proposed Multi-Tower Residential Development

Novatech Project No. 121302
REQUIRED STORAGE - 1:100 YEAR EVENT
AREA OS-1 Off-Site Tributary Area OS-1 (East)

AREA OS-1	Off-Site II	ributary Ar	ea OS-1 (East))	
OTTAWA IDF	CURVE				
Area =	0.105	ha	Qallow =	26.4	L/s
C =	0.51		Vol(max) =	-	m^3
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)	
5	242.70	35.83	9.47	2.84	
10	178.56	26.36	0.00	0.00	
15	142.89	21.09	-5.26	-4.74	
20	119.95	17.71	-8.65	-10.38	
25	103.85	15.33	-11.03	-16.54	
30	91.87	13.56	-12.80	-23.04	
35	82.58	12.19	-14.17	-29.75	
40	75.15	11.09	-15.27	-36.64	
45	69.05	10.19	-16.17	-43.65	
50	63.95	9.44	-16.92	-50.75	
55	59.62	8.80	-17.56	-57.94	
60	55.89	8.25	-18.11	-65.19	
65	52.65	7.77	-18.59	-72.49	
70	49.79	7.35	-19.01	-79.84	
75	47.26	6.98	-19.38	-87.22	
80	44.99	6.64	-19.72	-94.64	
85	42.95	6.34	-20.02	-102.09	
90	41.11	6.07	-20.29	-109.57	

Proposed Multi-Tower Residential Development									
Novatech Project No. 121302									
REQUIRED	STORAGE - 1:5 YEAR EVENT								
AREA A-1	Off-Site Tributary Area OS-1 (East)								

			, ,		
OTTAWA IDF					
Area =	0.105	ha	Qallow =	13.3	L/s
C =	0.44		Vol(max) =	-	m^3
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)	
5	141.18	18.08	8.28	2.48	
10	104.19	13.34	3.54	2.13	
15	83.56	10.70	0.90	0.81	
20	70.25	9.00	-0.80	-0.96	
25	60.90	7.80	-2.00	-3.00	
30	53.93	6.91	-2.89	-5.21	
35	48.52	6.21	-3.59	-7.53	
40	44.18	5.66	-4.14	-9.94	
45	40.63	5.20	-4.60	-12.41	
50	37.65	4.82	-4.98	-14.93	
55	35.12	4.50	-5.30	-17.49	
60	32.94	4.22	-5.58	-20.09	
65	31.04	3.98	-5.82	-22.71	
70	29.37	3.76	-6.04	-25.35	
75	27.89	3.57	-6.23	-28.02	
80	26.56	3.40	-6.40	-30.70	
85	25.37	3.25	-6.55	-33.40	
90	24.29	3.11	-6.69	-36.11	

Proposed Multi-Tower Residential Development
Novatech Project No. 121302
REQUIRED STORAGE - 1:100 YR + 20% IDF Increase
AREA A-1 Off-Site Tributary Area OS-1 (East)

AREA A-1 Off-Site Tributary Area OS-1 (East)											
OTTAWA ID	F CURVE										
Area =	0.105	ha	Qallow =	31.6	L/s						
C =	0.51		Vol(max) =	-	m^3						
Time	Intensity	Q	Qnet	Vol							
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)							
5	291.24	42.99	16.63	4.99							
10	214.27	31.63	5.27	3.16							
15	171.47	25.31	-1.05	-0.94							
20	143.94	21.25	-5.11	-6.13							
25	124.62	18.40	-7.96	-11.94							
30	110.24	16.27	-10.09	-18.15							
35	99.09	14.63	-11.73	-24.63							
40	90.17	13.31	-13.05	-31.31							
45	82.86	12.23	-14.13	-38.14							
50	76.74	11.33	-15.03	-45.09							
55	71.55	10.56	-15.80	-52.13							
60	67.07	9.90	-16.46	-59.25							
65	63.18	9.33	-17.03	-66.43							
70	59.75	8.82	-17.54	-73.66							
75	56.71	8.37	-17.99	-80.95							
80	53.99	7.97	-18.39	-88.27							
85	51.54	7.61	-18.75	-95.62							
90	49.33	7.28	-19.08	-103.01							

Proposed Multi-Tower Residential Development Novatech Project No. 121302 **REQUIRED STORAGE - 1:2 YEAR EVENT** AREA OS-2 Off-Site Tributary Area OS-2 (South) OTTAWA IDF CURVE Area = Qallow = 0.069 ha 12.9 L/s m^3 C = 0.88 Vol(max) = Q Qnet Time Intensity Vol (m^3) (min) (mm/hr) (L/s) (L/s) 5 103.68 17.54 4.59 1.38 12.94 10 76.52 0.00 0.00 15 61.36 10.38 -2.56-2.31 20 51.59 8.73 -4.22 -5.06 25 44.72 7.56 -5.38 -8.07 30 39.60 6.70 -6.24-11.24 35 35.63 0.03 -12.91 -27.11 40 32.45 5.49 -7.45 -17.89 45 29.84 0.56 -12.39 -33.44 4.68 -24.79 50 27.65 -8.26 55 25.79 4.36 -8.58 -28.31 -31.86 60 24.19 4.09 -8.85 65 22.80 3.86 -9.09 -35.43

3.65

3.46

3.30

3.15

3.02

-9.29

-9.48

-9.64

-9.79

-9.92

-39.03

-42.65

-46.28

-49.93

-53.59

70

75

80

85

90

21.57

20.48

19.51

18.63

17.84

OTTAWA IDF					
Area =	0.069	ha	Qallow =	17.6	L/s
C =	0.88		Vol(max) =	-	m^3
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)	
5	141.18	23.88	10.94	3.28	
10	104.19	17.62	4.68	2.81	
15	83.56	14.13	1.19	1.07	
20	70.25	11.88	-1.06	-1.27	
25	60.90	10.30	-2.64	-3.96	
30	53.93	9.12	-3.82	-6.88	
35	48.52	8.21	-4.74	-9.94	
40	44.18	7.47	-5.47	-13.12	
45	40.63	6.87	-6.07	-16.39	
50	37.65	6.37	-6.57	-19.72	
55	35.12	5.94	-7.00	-23.10	
60	32.94	5.57	-7.37	-26.53	
65	31.04	5.25	-7.69	-29.99	
70	29.37	4.97	-7.97	-33.49	
75	27.89	4.72	-8.22	-37.01	
80	26.56	4.49	-8.45	-40.56	
85	25.37	4.29	-8.65	-44.12	
90	24.29	4.11	-8.83	-47.70	

Proposed Multi-Tower Residential Development

Proposed Multi-Tower Residential Development

AREA OS-2 Off-Site Tributary Area OS-2 (South)

REQUIRED STORAGE - 1:5 YEAR EVENT

Novatech Project No. 121302

Proposed Multi-Tower Residential Development									
Novatech Project No. 121302									
REQUIRED STORAGE - 1:100 YEAR EVENT									
AREA OS-2 Off-Site Tributary Area OS-2 (South)									
OTTAWA IDF	CURVE								
Area =	0.069	ha	Qallow =	33.6	L/s				
C =	0.98		Vol(max) =	-	m^3				
Time	Intensity	Q	Qnet	Vol					
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)					
5	242.70	45.64	12.06	3.62					
10	178.56	33.58	0.00	0.00					
15	142.89	26.87	-6.71	-6.04					
20	119.95	22.56	-11.02	-13.23					
25	103.85	19.53	-14.05	-21.08					
30	91.87	17.28	-16.30	-29.35					
35	82.58	15.53	-18.05	-37.91					
40	75.15	14.13	-19.45	-46.68					
45	69.05	12.99	-20.59	-55.61					
50	63.95	12.03	-21.55	-64.66					
55	59.62	11.21	-22.37	-73.81					
60	55.89	10.51	-23.07	-83.05					
65	52.65	9.90	-23.68	-92.35					
70	49.79	9.36	-24.22	-101.71					
75	47.26	8.89	-24.69	-111.12					
80	44.99	8.46	-25.12	-120.57					
85	42.95	8.08	-25.50	-130.06					
90	41.11	7.73	-25.85	-139.59					

Novatech Project No. 121302 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA OS-2 Off-Site Tributary Area OS-2 (South)										
OTTAWA IDF CURVE										
Area =	0.069	ha	Qallow =	40.3	L/s					
C =	0.98		Vol(max) =	-	m ³					
Time	Intensity	Q	Qnet	Vol						
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)						
5	291.24	54.77	21.19	6.36						
10	214.27	40.30	6.72	4.03						
15	171.47	32.25	-1.33	-1.20						
20	143.94	27.07	-6.51	-7.81						
25	124.62	23.44	-10.14	-15.22						
30	110.24	20.73	-12.85	-23.13						
35	99.09	18.64	-14.94	-31.38						
40	90.17	16.96	-16.62	-39.89						
45	82.86	15.58	-18.00	-48.59						
50	76.74	14.43	-19.15	-57.44						
55	71.55	13.46	-20.13	-66.41						
60	67.07	12.61	-20.97	-75.48						
65	63.18	11.88	-21.70	-84.63						
70	59.75	11.24	-22.34	-93.85						
75	56.71	10.66	-22.92	-103.12						
80	53.99	10.15	-23.43	-112.45						
85	51.54	9.69	-23.89	-121.82						
90	49.33	9.28	-24.30	-131.24						

Proposed Multi-Tower Residential Development Novatech Project No. 121302										
REQUIRED STORAGE - 1:2 YEAR EVENT										
AREA A-1 Direct Runoff OTTAWA IDF CURVE										
Area =	0.031	ha	Qallow =	5.2	L/s					
		па		3.2	m ³					
C =	0.79		Vol(max) =	-	m					
Time	Intensity	Q	Qnet	Vol						
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)						
5	103.68	7.05	1.85	0.55						
10	76.52	5.20	0.00	0.00						
15	61.36	4.17	-1.03	-0.93						
20	51.59	3.51	-1.69	-2.03						
25	44.72	3.04	-2.16	-3.24						
30	39.60	2.69	-2.51	-4.52						
35	35.63	0.03	-5.17	-10.85						
40	32.45	2.21	-3.00	-7.19						
45	29.84	0.56	-4.65	-12.54						
50	27.65	1.88	-3.32	-9.96						
55	25.79	1.75	-3.45	-11.38						
60	24.19	1.64	-3.56	-12.80						
65	22.80	1.55	-3.65	-14.24						
70	21.57	1.47	-3.73	-15.68						
75	20.48	1.39	-3.81	-17.14						
80	19.51	1.33	-3.87	-18.60						
85	18.63	1.27	-3.93	-20.06						
90	17.84	1.21	-3.99	-21.54						

70	21.57	1.47	-3.73	-15.68	
75	20.48	1.39	-3.81	-17.14	
80	19.51	1.33	-3.87	-18.60	
85	18.63	1.27	-3.93	-20.06	
90	17.84	1.21	-3.99	-21.54	
Proposed N	lulti-Tower	Residential	Development		
Novatech P	•				
REQUIRED			AR EVENT		
AREA A-1	Direct Rui	noff			
OTTAWA ID					
Area :	= 0.031	ha	Qallow =	13.9	L/s
C =	= 0.90		Vol(max) =	-	m^3
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)	
5	242.70	18.83	4.98	1.49	
10	178.56	13.85	0.00	0.00	
15	142.89	11.09	-2.77	-2.49	
20	119.95	9.31	-4.55	-5.46	
25	103.85	8.06	-5.80	-8.70	
30	91.87	7.13	-6.73	-12.11	
35	82.58	6.41	-7.45	-15.64	
40	75.15	5.83	-8.02	-19.26	
45	69.05	5.36	-8.50	-22.94	
50	63.95	4.96	-8.89	-26.68	
55	59.62	4.63	-9.23	-30.45	
60	55.89	4.34	-9.52	-34.26	
65	52.65	4.08	-9.77	-38.10	
70	49.79	3.86	-9.99	-41.96	
75	47.26	3.67	-10.19	-45.85	
00	44.00	0.40	40.00	40.75	

3.49

3.33

3.19

-10.36

-10.52

-10.66

-49.75

-53.66 -57.59

80

85

90

44.99

42.95

41.11

Proposed Multi-Tower Residential Development											
	Novatech Project No. 121302 REQUIRED STORAGE - 1:5 YEAR EVENT										
	AREA A-1 Direct Runoff										
	OTTAWA IDF CURVE										
Area =	0.031	ha	Qallow =	7.1	L/s						
C =	0.79		Vol(max) =	_	m^3						
			,								
Time	Intensity	Q	Qnet	Vol							
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)							
5	141.18	9.59	4.39	1.32							
10	104.19	7.08	1.88	1.13							
15	83.56	5.68	0.48	0.43							
20	70.25	4.77	-0.43	-0.51							
25	60.90	4.14	-1.06	-1.59							
30	53.93	3.67	-1.54	-2.76							
35	48.52	3.30	-1.90	-4.00							
40	44.18	3.00	-2.20	-5.27							
45	40.63	2.76	-2.44	-6.59							
50	37.65	2.56	-2.64	-7.92							
55	35.12	2.39	-2.81	-9.28							
60	32.94	2.24	-2.96	-10.66							
65	31.04	2.11	-3.09	-12.05							
70	29.37	2.00	-3.20	-13.46							
75	27.89	1.90	-3.30	-14.87							
80	26.56	1.81	-3.40	-16.30							
85	25.37	1.72	-3.48	-17.73							
90	24.29	1.65	-3.55	-19.17							

Proposed Multi-Tower Residential Development										
Novatech Project No. 121302										
REQUIRED STORAGE - 1:100 YR + 20% IDF Increase										
AREA A-1 Direct Runoff										
OTTAWA IDF CURVE										
Area =	0.031	ha	Qallow =	16.6	L/s					
C =	0.90		Vol(max) =	-	m^3					
		_	_							
Time	Intensity	Q	Qnet	Vol						
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)						
5	291.24	22.60	8.74	2.62						
10	214.27	16.63	2.77	1.66						
15	171.47	13.31	-0.55	-0.49						
20	143.94	11.17	-2.69	-3.22						
25	124.62	9.67	-4.19	-6.28						
30	110.24	8.55	-5.30	-9.54						
35	99.09	7.69	-6.17	-12.95						
40	90.17	7.00	-6.86	-16.46						
45	82.86	6.43	-7.43	-20.05						
50	76.74	5.95	-7.90	-23.70						
55	71.55	5.55	-8.30	-27.40						
60	67.07	5.20	-8.65	-31.14						
65	63.18	4.90	-8.95	-34.92						
70	59.75	4.64	-9.22	-38.72						
75	56.71	4.40	-9.45	-42.55						
80	53.99	4.19	-9.67	-46.40						
85	51.54	4.00	-9.86	-50.26						
90	49.33	3.83	-10.03	-54.15						

Proposed Multi-Tower Residential Development										
Novatech Project No. 121302										
REQUIRED STORAGE - 1:2 YEAR EVENT										
AREA A-2 Uncontrolled Flow + OS-1										
OTTAWA IDF CURVE										
Area =	0.110	ha	Qallow =	10.0	L/s					
C =	0.43		Vol(max) =	1.1	m^3					
Time	Intensity	Q	Qnet	Vol						
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)						
5	103.68	13.57	3.55	1.07						
10	76.52	10.01	0.00	0.00						
15	61.36	8.03	-1.98	-1.79						
20	51.59	6.75	-3.26	-3.91						
25	44.72	5.85	-4.16	-6.24						
30	39.60	5.18	-4.83	-8.70						
35	35.63	0.03	-9.98	-20.96						
40	32.45	4.25	-5.77	-13.84						
45	29.84	0.56	-9.46	-25.54						
50	27.65	3.62	-6.40	-19.19						
55	25.79	3.38	-6.64	-21.91						
60	24.19	3.17	-6.85	-24.65						
65	22.80	2.98	-7.03	-27.42						
70	21.57	2.82	-7.19	-30.20						
75	20.48	2.68	-7.33	-33.00						
80	19.51	2.55	-7.46	-35.82						
85	18.63	2.44	-7.58	-38.64						
90	17.84	2.33	-7.68	-41.47						

, 0	21.07	2.02	7.10	00.20	
75	20.48	2.68	-7.33	-33.00	
80	19.51	2.55	-7.46	-35.82	
85	18.63	2.44	-7.58	-38.64	
90	17.84	2.33	-7.68	-41.47	
Proposed M	lulti-Tower	Residential	Development		
Novatech P	roject No. 1	21302	•		
REQUIRED	STORAGE	- 1:100 YEA	AR EVENT		
AREA A-2	Uncontrol	led Flow +	OS-1		
OTTAWA ID	F CURVE				
Area =	0.110	ha	Qallow =	27.0	L/s
C =	0.49		Vol(max) =	2.9	m^3
			,		
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m^3)	
5	242.70	36.69	9.70	2.91	
10	178.56	26.99	0.00	0.00	
15	142.89	21.60	-5.39	-4.85	
20	119.95	18.13	-8.86	-10.63	
25	103.85	15.70	-11.29	-16.94	
30	91.87	13.89	-13.10	-23.59	
35	82.58	12.48	-14.51	-30.47	
40	75.15	11.36	-15.63	-37.52	
45	69.05	10.44	-16.55	-44.70	
50	63.95	9.67	-17.32	-51.97	
55	59.62	9.01	-17.98	-59.33	
60	55.89	8.45	-18.54	-66.75	
65	52.65	7.96	-19.03	-74.23	
70	49.79	7.53	-19.47	-81.76	
75	47.26	7.14	-19.85	-89.32	
80	44.99	6.80	-20.19	-96.92	
	40.05				

85

90

42.95

41.11

6.49

6.21

-20.50

-20.78

-104.54

-112.20

Proposed Multi-Tower Residential Development										
Novatech Project No. 121302										
REQUIRED STORAGE - 1:5 YEAR EVENT										
AREA A-2 Uncontrolled Flow + OS-1										
OTTAWA IDF CURVE										
Area =	0.110	ha	Qallow =	13.6	L/s					
C =	0.43		Vol(max) =	2.5	m^3					
Time	Intensity	Q	Qnet	Vol						
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)						
5	141.18	18.48	8.46	2.54						
10	104.19	13.64	3.62	2.17						
15	83.56	10.94	0.92	0.83						
20	70.25	9.19	-0.82	-0.98						
25	60.90	7.97	-2.04	-3.07						
30	53.93	7.06	-2.96	-5.32						
35	48.52	6.35	-3.66	-7.70						
40	44.18	5.78	-4.23	-10.16						
45	40.63	5.32	-4.70	-12.68						
50	37.65	4.93	-5.09	-15.26						
55	35.12	4.60	-5.42	-17.88						
60	32.94	4.31	-5.70	-20.53						
65	31.04	4.06	-5.95	-23.21						
70	29.37	3.84	-6.17	-25.92						
75	27.89	3.65	-6.36	-28.64						
80	26.56	3.48	-6.54	-31.38						
85	25.37	3.32	-6.69	-34.14						
90	24.29	3.18	-6.84	-36.91						

Novatech Project No. 121302 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase											
AREA A-2 Uncontrolled Flow + OS-1											
OTTAWA IDF CURVE											
Area =	0.110	ha	Qallow =	32.4	L/s						
C =	0.49		Vol(max) =	5.1	m ³						
Time	Intensity	Q	Qnet	Vol							
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)							
5	291.24	44.03	17.03	5.11							
10	214.27	32.39	5.40	3.24							
15	171.47	25.92	-1.07	-0.96							
20	143.94	21.76	-5.23	-6.28							
25	124.62	18.84	-8.15	-12.23							
30	110.24	16.66	-10.33	-18.59							
35	99.09	14.98	-12.01	-25.23							
40	90.17	13.63	-13.36	-32.07							
45	82.86	12.53	-14.47	-39.06							
50	76.74	11.60	-15.39	-46.17							
55	71.55	10.82	-16.18	-53.38							
60	67.07	10.14	-16.85	-60.67							
65	63.18	9.55	-17.44	-68.02							
70	59.75	9.03	-17.96	-75.43							
75	56.71	8.57	-18.42	-82.89							
80	53.99	8.16	-18.83	-90.39							
85	51.54	7.79	-19.20	-97.92							
90	49.33	7.46	-19.53	-105.49							

Proposed Multi-Tower Residential Development

Proposed Multi-Tower Residential Development Novatech Project No. 121302										
REQUIRED STORAGE - 1:2 YEAR EVENT										
AREA A-3 Controlled Site Flow										
OTTAWA IDF	CURVE									
Area =	0.557	ha	Qallow =	31.5	L/s					
C =	0.82		Vol(max) =	41.9	m^3					
Time	Intensity	Q	Qnet	Vol						
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)						
5	103.68	131.81	100.31	30.09						
10	76.52	97.28	65.78	39.47						
15	61.36	78.01	46.51	41.86						
20	51.59	65.59	34.09	40.91						
25	44.72	56.85	25.35	38.03						
30	39.60	50.35	18.85	33.93						
35	35.63	0.03	-31.47	-66.08						
40	32.45	41.25	9.75	23.40						
45	29.84	0.56	-30.95	-83.55						
50	27.65	35.15	3.65	10.96						
55	25.79	32.79	1.29	4.26						
60	24.19	30.76	-0.74	-2.68						
65	22.80	28.98	-2.52	-9.82						
70	21.57	27.42	-4.08	-17.13						
75	20.48	26.04	-5.46	-24.58						
80	19.51	24.80	-6.70	-32.16						
85	18.63	23.68	-7.82	-39.86						
90	17.84	22.68	-8.82	-47.65						

70	21.57	27.42	-4.08	-17.13	
70 75	20.48	27.42 26.04	-4.06 -5.46		
75 80	20.46 19.51	26.04	-5.46 -6.70	-24.58 -32.16	
85	18.63	24.60	-6.70 -7.82	-32.16 -39.86	
90	17.84	23.68	-7.62 -8.82	-39.66 -47.65	
90	17.04	22.00	-0.02	-47.05	
Proposed M	ulti-Tower	Residential	Development		
Novatech Pr			•		
REQUIRED :	STORAGE	- 1:100 YEA	R EVENT		
AREA A-3	Controlled	d Site Flow			
OTTAWA IDI					
Area =	0.557	ha	Qallow =	31.5	L/s
C =	0.92		Vol(max) =	182.7	m^3
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)	
5	242.70	347.60	316.10	94.83	
10	178.56	255.73	224.23	134.54	
15	142.89	204.65	173.15	155.83	
20	119.95	171.79	140.29	168.35	
25	103.85	148.73	117.23	175.84	
30	91.87	131.57	100.07	180.13	
35	82.58	118.27	86.77	182.21	
40	75.15	107.62	76.12	182.69	
45	69.05	98.89	67.39	181.96	
50	63.95	91.59	60.09	180.28	
55	59.62	85.39	53.89	177.84	
60	55.89	80.05	48.55	174.78	
65	52.65	75.40	43.90	171.21	
70	49.79	71.31	39.81	167.19	
75	47.26	67.68	36.18	162.80	
00	44.00	04.44	00.04	450.00	

80

85

90

44.99

42.95

41.11

64.44

61.52

58.88

32.94

30.02

27.38

158.09

153.09 147.84

-	Proposed Multi-Tower Residential Development							
	Novatech Project No. 121302							
	REQUIRED STORAGE - 1:5 YEAR EVENT							
AREA A-3								
OTTAWA ID								
Area =	= 0.557	ha	Qallow =	31.5	L/s			
C =	= 0.82		Vol(max) =	69.4	m^3			
Time	Intensity	Q	Qnet	Vol				
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)				
5	141.18	179.49	147.99	44.40				
10	104.19	132.46	100.96	60.58				
15	83.56	106.23	74.73	67.26				
20	70.25	89.31	57.81	69.38				
25	60.90	77.42	45.92	68.88				
30	53.93	68.56	37.06	66.71				
35	48.52	61.68	30.18	63.38				
40	44.18	56.17	24.67	59.22				
45	40.63	51.65	20.15	54.41				
50	37.65	47.87	16.37	49.11				
55	35.12	44.65	13.15	43.41				
60	32.94	41.88	10.38	37.38				
65	31.04	39.47	7.97	31.07				
70	29.37	37.34	5.84	24.53				
75	27.89	35.46	3.96	17.80				
80	26.56	33.77	2.27	10.89				
85	25.37	32.25	0.75	3.84				
90	24.29	30.88	-0.62	-3.36				

Proposed Multi-Tower Residential Development						
Novatech Project No. 121302						
REQUIRED S	TORAGE	- 1:100 YR -	+ 20% IDF Incr	ease		
AREA A-3 Controlled Site Flow						
OTTAWA IDF	CURVE					
Area =	0.557	ha	Qallow =	31.5	L/s	
C =	0.92		Vol(max) =	235.4	m^3	
Time	Intensity	Q	Qnet	Vol		
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)		
5	291.24	417.11	385.61	115.68		
10	214.27	306.87	275.37	165.22		
15	171.47	245.58	214.08	192.67		
20	143.94	206.15	174.65	209.58		
25	124.62	178.47	146.97	220.46		
30	110.24	157.89	126.39	227.49		
35	99.09	141.92	110.42	231.88		
40	90.17	129.15	97.65	234.35		
45	82.86	118.67	87.17	235.36		
50	76.74	109.91	78.41	235.24		
55	71.55	102.47	70.97	234.20		
60	67.07	96.06	64.56	232.42		
65	63.18	90.48	58.98	230.02		
70	59.75	85.57	54.07	227.09		
75	56.71	81.21	49.71	223.71		
80	53.99	77.32	45.82	219.95		
85	51.54	73.82	42.32	215.84		
90	49.33	70.65	39.15	211.43		

-	Proposed Multi-Tower Residential Development Novatech Project No. 121302						
REQUIRE	REQUIRED STORAGE - 1:5 YEAR EVENT AREA A-4 Uncontrolled Site Flow (West)						
	OTTAWA IDF CURVE						
Area		ha	Qallow =	0.8	L/s		
1	c = 0.004	IIa	Vol(max) =	0.0	m ³		
1	- 0.90		voi(max) –	0.1	""		
Time	Intensity	Q	Qnet	Vol			
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)			
5	103.68	1.14	0.30	0.09			
10	76.52	0.84	0.00	0.00			
15	61.36	0.68	-0.17	-0.15			
20	51.59	0.57	-0.27	-0.33			
25	44.72	0.49	-0.35	-0.53			
30	39.60	0.44	-0.41	-0.73			
35	35.63	0.03	-0.81	-1.70			
40	32.45	0.36	-0.49	-1.16			
45	29.84	0.56	-0.29	-0.78			
50	27.65	0.30	-0.54	-1.61			
55	25.79	0.28	-0.56	-1.84			
60	24.19	0.27	-0.58	-2.07			
65	22.80	0.25	-0.59	-2.31			
70	21.57	0.24	-0.60	-2.54			
75	20.48	0.23	-0.62	-2.78			
80	19.51	0.21	-0.63	-3.01			
85	18.63	0.21	-0.64	-3.25			
90	17.84	0.20	-0.65	-3.49			

70	21.57	0.24	-0.60	-2.54	
75	20.48	0.23	-0.62	-2.78	
80	19.51	0.21	-0.63	-3.01	
85	18.63	0.21	-0.64	-3.25	
90	17.84	0.20	-0.65	-3.49	
Proposed Mu	Iti-Tower	Residentia	Development		
Novatech Pro	ject No. 1	21302	•		
REQUIRED S	TORAGE	- 1:100 YEA	AR EVENT		
AREA A-4	Uncontrol	lled Site Flo	ow (West)		
OTTAWA IDF	CURVE				
Area =	0.004	ha	Qallow =	2.2	L/s
C =	1.00		Vol(max) =	0.2	m^3
			,		
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m^3)	
5	242.70	2.97	0.78	0.24	
10	178.56	2.18	0.00	0.00	
15	142.89	1.75	-0.44	-0.39	
20	119.95	1.47	-0.72	-0.86	
25	103.85	1.27	-0.91	-1.37	
30	91.87	1.12	-1.06	-1.91	
35	82.58	1.01	-1.17	-2.47	
40	75.15	0.92	-1.26	-3.04	
45	69.05	0.84	-1.34	-3.62	
50	63.95	0.78	-1.40	-4.21	
55	59.62	0.73	-1.45	-4.80	
60	55.89	0.68	-1.50	-5.40	
65	52.65	0.64	-1.54	-6.01	
70	49.79	0.61	-1.58	-6.62	
75	47.26	0.58	-1.61	-7.23	
80	44.99	0.55	-1.63	-7.84	
05	42.05	0.50	1.66	9.46	

42.95

41.11

85

90

0.53

0.50

-1.66

-1.68

-8.46

-9.08

	Proposed Multi-Tower Residential Development						
	Novatech Project No. 121302 REQUIRED STORAGE - 1:5 YEAR EVENT						
AREA A-4		led Site Fl					
OTTAWA IDE		iou oito i i	on (most)				
Area =		ha	Qallow =	1.1	L/s		
C =			Vol(max) =	0.2	m ³		
	0.00		(0.2			
Time	Intensity	Q	Qnet	Vol			
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)			
5	141.18	1.55	0.71	0.21			
10	104.19	1.15	0.30	0.18			
15	83.56	0.92	0.08	0.07			
20	70.25	0.77	-0.07	-0.08			
25	60.90	0.67	-0.17	-0.26			
30	53.93	0.59	-0.25	-0.45			
35	48.52	0.53	-0.31	-0.65			
40	44.18	0.49	-0.36	-0.85			
45	40.63	0.45	-0.40	-1.07			
50	37.65	0.41	-0.43	-1.28			
55	35.12	0.39	-0.46	-1.50			
60	32.94	0.36	-0.48	-1.73			
65	31.04	0.34	-0.50	-1.95			
70	29.37	0.32	-0.52	- 2.18			
75	27.89	0.31	-0.54	-2.41			
80	26.56	0.29	-0.55	-2.64			
85	25.37	0.28	-0.56	-2.87			
90	24.29	0.27	-0.57	-3.10			

Proposed Multi-Tower Residential Development							
Novatech Project No. 121302							
			+ 20% IDF Incr	ease			
AREA A-4 Uncontrolled Site Flow (West)							
OTTAWA IDF							
Area =	0.004	ha	Qallow =	2.6	L/s		
C =	1.00		Vol(max) =	0.4	m^3		
Time	Intensity	Q	Qnet	Vol			
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)			
5	291.24	3.56	1.38	0.41			
10	214.27	2.62	0.44	0.26			
15	171.47	2.10	-0.09	-0.08			
20	143.94	1.76	-0.42	-0.51			
25	124.62	1.52	-0.66	-0.99			
30	110.24	1.35	-0.84	-1.50			
35	99.09	1.21	-0.97	-2.04			
40	90.17	1.10	-1.08	-2.59			
45	82.86	1.01	-1.17	-3.16			
50	76.74	0.94	-1.25	-3.74			
55	71.55	0.88	-1.31	-4.32			
60	67.07	0.82	-1.36	-4.91			
65	63.18	0.77	-1.41	-5.50			
70	59.75	0.73	-1.45	-6.10			
75	56.71	0.69	-1.49	-6.71			
80	53.99	0.66	-1.52	-7.31			
85	51.54	0.63	-1.55	-7.92			
90	49.33	0.60	-1.58	-8.54			

Proposed Multi-Tower Residential Development Novatech Project No. 121302							
	REQUIRED STORAGE - 1:2 YEAR EVENT						
AREA A-5 Dedicated Parkland +OS-2							
OTTAWA IDF	CURVE						
Area =	0.135	ha	Qallow =	5.5	L/s		
C =	0.20		Vol(max) =	0.7	m^3		
T :	1	0	0	17.1			
Time	Intensity	Q	Qnet	Vol			
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)			
5	103.68	7.78	2.28	0.68			
10	76.52	5.74	0.24	0.15			
15	61.36	4.61	-0.89	-0.80			
20	51.59	3.87	-1.63	-1.95			
25	44.72	3.36	-2.14	-3.21			
30	39.60	2.97	-2.53	-4.55			
35	35.63	0.03	-5.47	-11.48			
40	32.45	2.44	-3.06	-7.35			
45	29.84	0.56	-4.95	-13.35			
50	27.65	2.08	-3.42	-10.27			
55	25.79	1.94	-3.56	-11.76			
60	24.19	1.82	-3.68	-13.26			
65	22.80	1.71	-3.79	-14.78			
70	21.57	1.62	-3.88	-16.30			
75	20.48	1.54	-3.96	-17.83			
80	19.51	1.46	-4.04	-19.37			
85	18.63	1.40	-4.10	-20.92			
90	17.84	1.34	-4.16	-22.47			

55

60

65

70

75

80

85

90

59.62

55.89

52.65

49.79

47.26

44.99

42.95

41.11

5.59

5.24

4.94

4.67

4.43

4.22

4.03

3.86

-0.41

-0.76

-1.06

-1.33

-1.57

-1.78

-1.97

-2.14

-1.34

-2.72

-4.14

-5.58

-7.05

-8.54

-10.05

-11.57

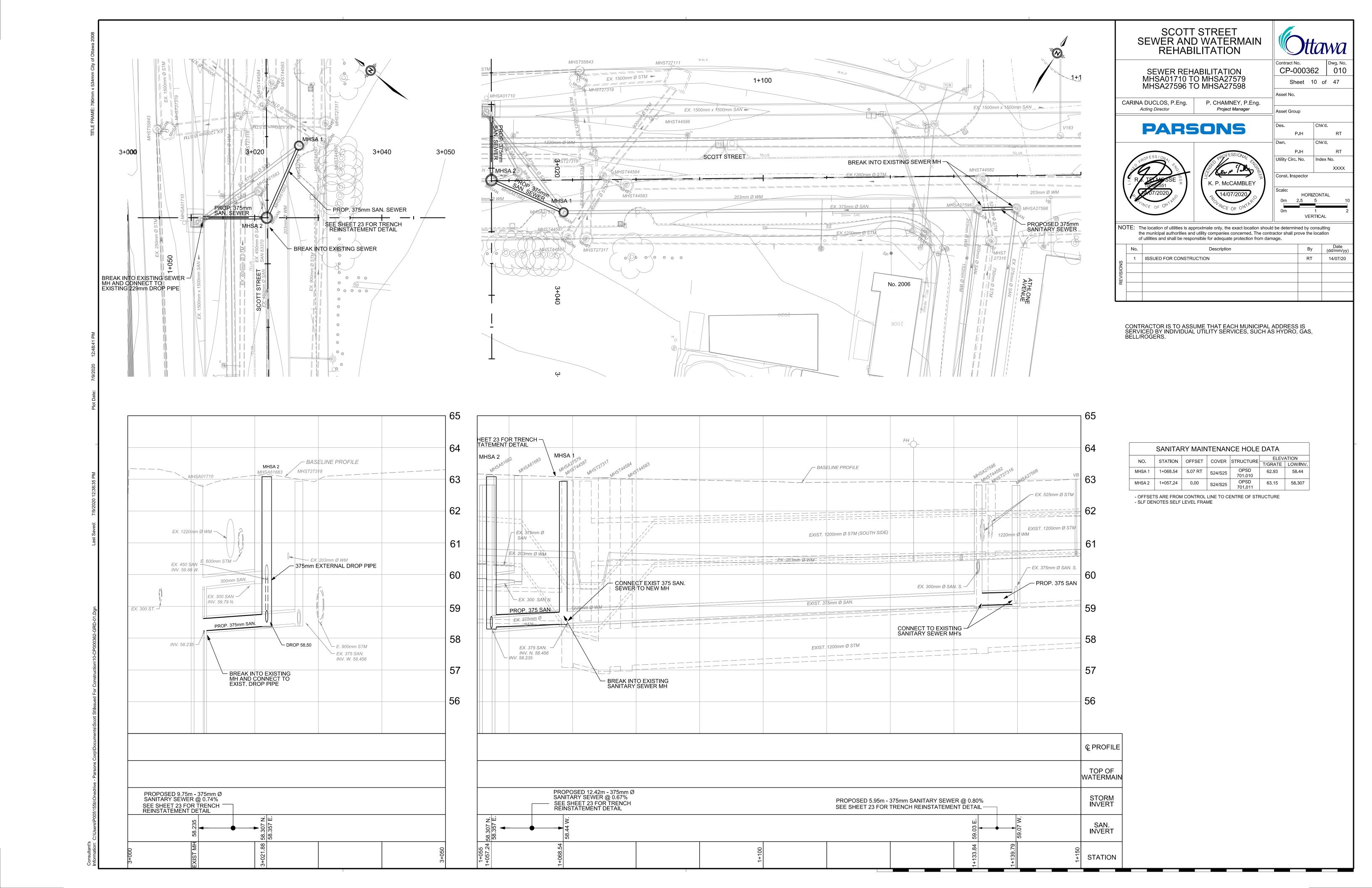
30	3 3.63	0.03	-5.47	-11.40				30	46.52	
40	32.45	2.44	-3.06	-7.35				40	44.18	
45	29.84	0.56	-4.95	-13.35				45	40.63	
50	27.65	2.08	-3.42	-10.27				50	37.65	
55	25.79	1.94	-3.56	-11.76				55	35.12	
60	24.19	1.82	-3.68	-13.26				60	32.94	
65	22.80	1.71	-3.79	-14.78				65	31.04	
70	21.57	1.62	-3.88	-16.30				70	29.37	
75	20.48	1.54	-3.96	-17.83				75	27.89	
80	19.51	1.46	-4.04	-19.37				80	26.56	
85	18.63	1.40	-4.10	-20.92				85	25.37	
90	17.84	1.34	-4.16	-22.47				90	24.29	
	141 T I	Daaidautial	Davalanmant			7	-	Dropood M.	ılti Tower	Doc:
	141 T	Daaidautial	Dovolonment			1		Proposed Mu	ılti-Tower	Resi
•			Development							
ovatech Pro	ject No. 1	21302	•				N	Novatech Pro	oject No. 1	2130
ovatech Pro EQUIRED S	ject No. 1: TORAGE -	21302 - 1:100 YEA	AR EVENT				N F	Novatech Pro REQUIRED S	ject No. 1 TORAGE	2130 - 1:1
ovatech Pro EQUIRED S REA A-5	oject No. 1: TORAGE - Dedicated	21302	AR EVENT				N F	Novatech Pro REQUIRED S AREA A-5	oject No. 1 TORAGE Dedicated	2130 - 1:1
ovatech Pro EQUIRED S REA A-5 TTAWA IDF	pject No. 1: TORAGE - Dedicated CURVE	21302 - 1:100 YEA Parkland +	AR EVENT +OS-2		1/6	-	N F	Novatech Pro REQUIRED S AREA A-5 OTTAWA IDF	pject No. 1 TORAGE Dedicated CURVE	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area =	pject No. 1: TORAGE - Dedicated CURVE 0.135	21302 - 1:100 YEA	AR EVENT FOS-2	6.0	L/s	=	N F	Novatech Pro REQUIRED S AREA A-5 OTTAWA IDF Area =	Dject No. 1 TORAGE Dedicated CURVE 0.135	2130 - 1:1
ovatech Pro EQUIRED S REA A-5 TTAWA IDF	pject No. 1: TORAGE - Dedicated CURVE	21302 - 1:100 YEA Parkland +	AR EVENT +OS-2		L/s m ³		N F	Novatech Pro REQUIRED S AREA A-5 OTTAWA IDF	pject No. 1 TORAGE Dedicated CURVE	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area =	pject No. 1: TORAGE - Dedicated CURVE 0.135	21302 - 1:100 YEA Parkland +	AR EVENT FOS-2	6.0			N F	Novatech Pro REQUIRED S AREA A-5 OTTAWA IDF Area =	Dject No. 1 TORAGE Dedicated CURVE 0.135	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C =	Dedicated CURVE 0.135 0.25 Intensity	21302 - 1:100 YEA <u>Parkland +</u> ha Q	Qallow = Vol(max) = Qnet	6.0 6.7 Vol			N F	Novatech Pro REQUIRED S AREA A-5 DTTAWA IDF Area = C =	Dedicated CURVE 0.135 0.25 Intensity	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C =	pject No. 1: TORAGE - Dedicated CURVE 0.135 0.25 Intensity (mm/hr)	21302 - 1:100 YEA Parkland +	Qallow = Vol(max) =	6.0 6.7 Vol (m ³)			N F	Novatech Pro REQUIRED S AREA A-5 DTTAWA IDF Area = C =	Diject No. 1 TORAGE Dedicated CURVE 0.135 0.25	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C = Time (min) 5	Dedicated CURVE 0.135 0.25 Intensity	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77	Qallow = Vol(max) = Qnet (L/s) 16.77	6.0 6.7 Vol (m ³) 5.03			N F	Novatech Progression (Novatech Progression (Dedicated CURVE 0.135 0.25 Intensity (mm/hr)	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C = Time (min) 5 10	pject No. 1: TORAGE - Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77 16.75	Qallow = Vol(max) = Qnet (L/s) 16.77 10.75	6.0 6.7 Vol (m³) 5.03 6.45			N F	Novatech Proceedings of the Novatech Process of the No	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24 214.27	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C = Time (min) 5	pject No. 1: TORAGE - Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70 178.56	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77	Qallow = Vol(max) = Qnet (L/s) 16.77	6.0 6.7 Vol (m ³) 5.03			N F	Novatech Progression (Novatech Progression (Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C = Time (min) 5 10 15	pject No. 1: TORAGE - Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70 178.56 142.89	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77 16.75 13.41	Qallow = Vol(max) = Qnet (L/s) 16.77 10.75 7.41	6.0 6.7 Vol (m³) 5.03 6.45 6.67			N F	Novatech Pro REQUIRED S AREA A-5 DITTAWA IDF Area = C = Time (min) 5 10 15	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24 214.27 171.47	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C = Time (min) 5 10 15 20	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70 178.56 142.89 119.95	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77 16.75 13.41 11.25	Qallow = Vol(max) = Qnet (L/s) 16.77 10.75 7.41 5.25	6.0 6.7 Vol (m³) 5.03 6.45 6.67 6.31			N F	Novatech Proceedings of the Novatech Process of the No	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24 214.27 171.47 143.94	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C = Time (min) 5 10 15 20 25 30	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70 178.56 142.89 119.95 103.85 91.87	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77 16.75 13.41 11.25 9.74 8.62	Qallow = Vol(max) = Qnet (L/s) 16.77 10.75 7.41 5.25 3.74 2.62	6.0 6.7 Vol (m³) 5.03 6.45 6.67 6.31 5.62 4.72			N F	Novatech Proceedings of the Novatech Process of the No	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24 214.27 171.47 143.94 124.62 110.24	2130 - 1:1 Par
ovatech Pro EQUIRED S REA A-5 TTAWA IDF Area = C = Time (min) 5 10 15 20 25 30 35	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70 178.56 142.89 119.95 103.85 91.87 82.58	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77 16.75 13.41 11.25 9.74 8.62 7.75	Qallow = Vol(max) = Qnet (L/s) 16.77 10.75 7.41 5.25 3.74 2.62 1.75	6.0 6.7 Vol (m³) 5.03 6.45 6.67 6.31 5.62 4.72 3.67			N F	Novatech Proceedings of the Novatech Process of the No	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24 214.27 171.47 143.94 124.62 110.24 99.09	2130 - 1:1 Par
ovatech Properties of the Control of	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70 178.56 142.89 119.95 103.85 91.87	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77 16.75 13.41 11.25 9.74 8.62	Qallow = Vol(max) = Qnet (L/s) 16.77 10.75 7.41 5.25 3.74 2.62	6.0 6.7 Vol (m³) 5.03 6.45 6.67 6.31 5.62 4.72			N F	Novatech Proceedings of the Novatech Process of the No	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24 214.27 171.47 143.94 124.62 110.24	2130 - 1:1 Par
TTAWA IDF	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 242.70 178.56 142.89 119.95 103.85 91.87 82.58 75.15	21302 - 1:100 YEA Parkland + ha Q (L/s) 22.77 16.75 13.41 11.25 9.74 8.62 7.75 7.05	Qallow = Vol(max) = Qnet (L/s) 16.77 10.75 7.41 5.25 3.74 2.62 1.75 1.05	6.0 6.7 Vol (m³) 5.03 6.45 6.67 6.31 5.62 4.72 3.67 2.52			N F	Novatech Proceedings of the Novatech Process of the No	Dedicated CURVE 0.135 0.25 Intensity (mm/hr) 291.24 214.27 171.47 143.94 124.62 110.24 99.09 90.17	2130 - 1:1 Par

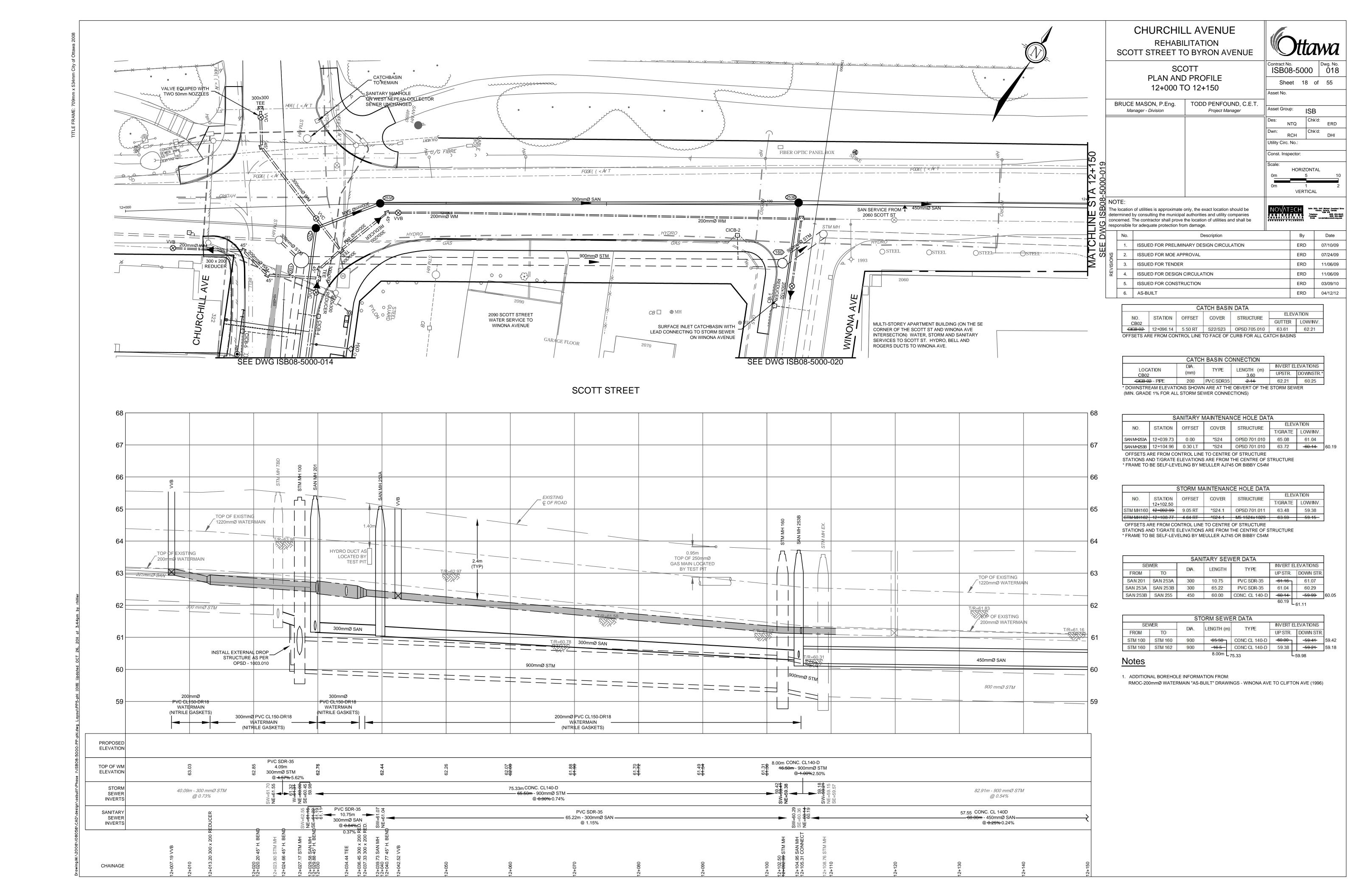
Proposed Multi-Tower Residential Development							
Novatech Project No. 121302							
REQUIRED STORAGE - 1:5 YEAR EVENT							
AREA A-5 Dedicated Parkland +OS-2							
OTTAWA IDF	CURVE						
Area =	0.135	ha	Qallow =	5.5	L/s		
C =	0.20		Vol(max) =	1.5	m^3		
Time	Intensity	Q	Qnet	Vol			
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)			
5	141.18	10.60	5.10	1.53			
10	104.19	7.82	2.32	1.39			
15	83.56	6.27	0.77	0.69			
20	70.25	5.27	-0.23	-0.27			
25	60.90	4.57	-0.93	-1.39			
30	53.93	4.05	-1.45	-2.61			
35	48.52	3.64	-1.86	-3.90			
40	44.18	3.32	-2.18	-5.24			
45	40.63	3.05	-2.45	-6.62			
50	37.65	2.83	-2.67	-8.02			
55	35.12	2.64	-2.86	-9.45			
60	32.94	2.47	-3.03	-10.90			
65	31.04	2.33	-3.17	-12.36			
70	29.37	2.20	-3.30	-13.84			
75	27.89	2.09	-3.41	-15.33			
80	26.56	1.99	-3.51	-16.83			
85	25.37	1.90	-3.60	-18.34			
90	24.29	1.82	-3.68	-19.86			

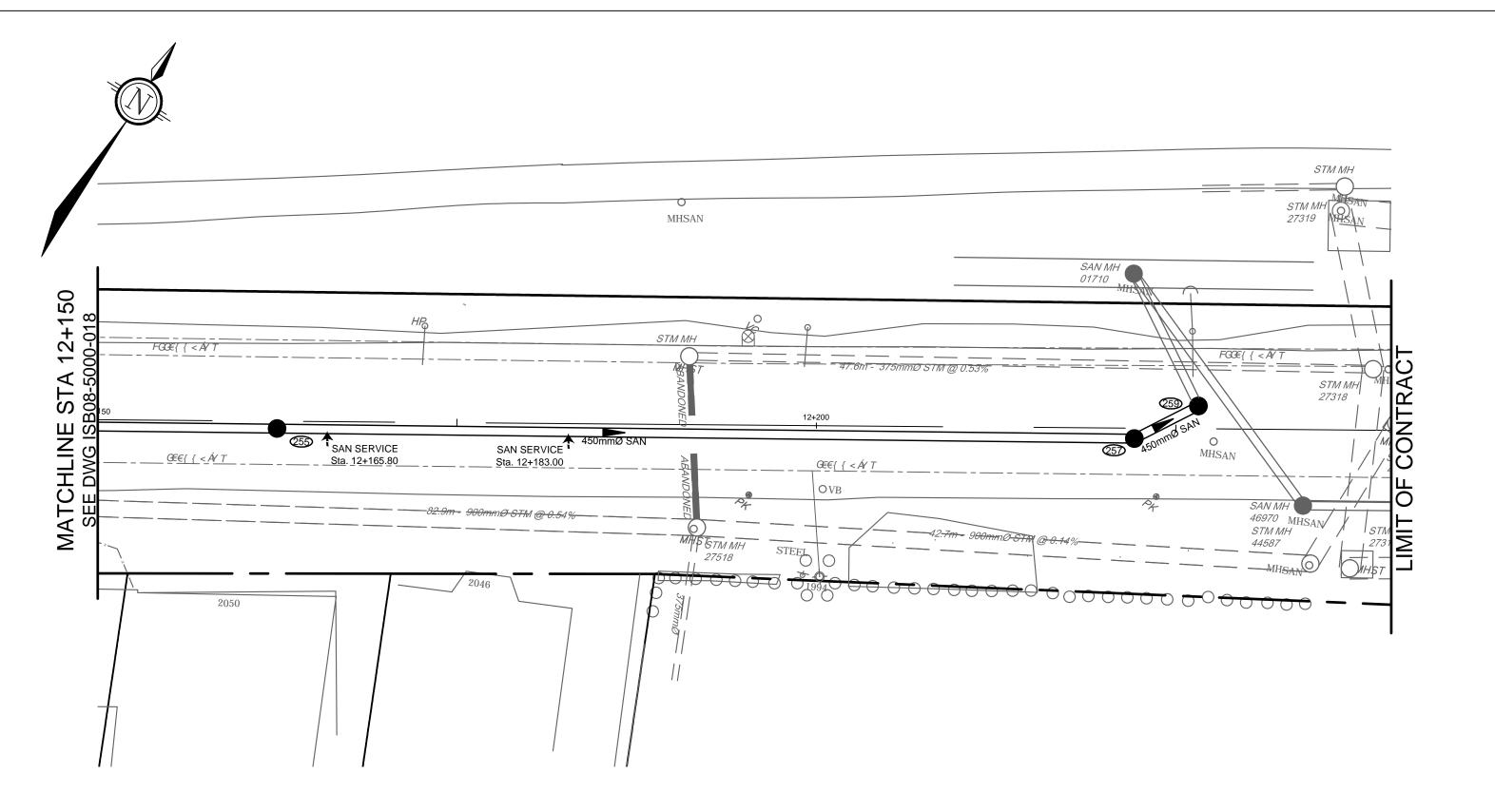
Proposed Multi-Tower Residential Development						
	Novatech Project No. 121302					
			+ 20% IDF Incr	ease		
AREA A-5 Dedicated Parkland +OS-2						
OTTAWA IDF	CURVE					
Area =	0.135	ha	Qallow =	6.0	L/s	
C =	0.25		Vol(max) =	9.1	m^3	
Time	Intensity	Q	Qnet	Vol		
(min)	(mm/hr)	(L/s)	(L/s)	(m ³)		
5	291.24	27.33	21.33	6.40		
10	214.27	20.10	14.10	8.46		
15	171.47	16.09	10.09	9.08		
20	143.94	13.51	7.51	9.01		
25	124.62	11.69	5.69	8.54		
30	110.24	10.34	4.34	7.82		
35	99.09	9.30	3.30	6.92		
40	90.17	8.46	2.46	5.91		
45	82.86	7.77	1.77	4.79		
50	76.74	7.20	1.20	3.60		
55	71.55	6.71	0.71	2.35		
60	67.07	6.29	0.29	1.06		
65	63.18	5.93	-0.07	-0.28		
70	59.75	5.61	-0.39	-1.66		
75	56.71	5.32	-0.68	-3.06		
80	53.99	5.07	-0.93	-4.49		
85	51.54	4.84	-1.16	-5.94		
90	49.33	4.63	-1.37	-7.41		

APPENDIX F

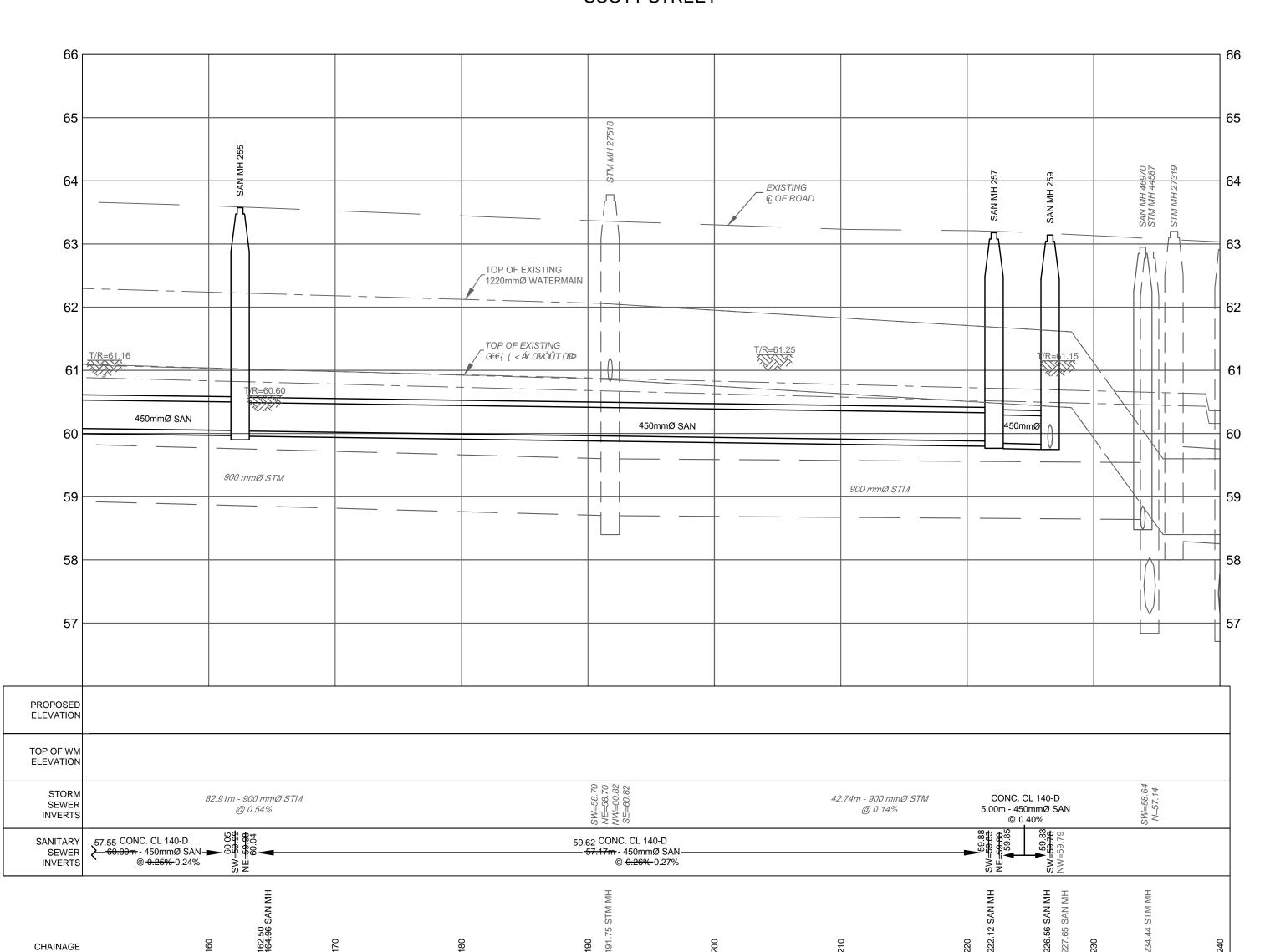
City As-Built Drawings







SCOTT STREET



CHURCHILL AVENUE REHABILITATION

Manager - Division

SCOTT STREET TO BYRON AVENUE

SCOTT PLAN AND PROFILE 12+150 TO 12+240

Sheet 19 of 55 Asset No. BRUCE MASON, P.Eng. TODD PENFOUND, C.E.T.

Asset Group: ISB NTQ RCH Utility Circ. No.: Const. Inspector: HORIZONTAL

NOTE:

The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

NO√∧T∃CH	Suite 200, 240 Michael Compland Drive Kanata, Ontario, Canada K2M IPS
ENGINEERING	Telephone (613) 254-9643 Facsimile (613) 254-5867 Email: novainfo@novatech-eng.com

VERTICAL

	additional fraction in admage.		
No.	Description	Ву	Date
1.	ISSUED FOR PRELIMINARY DESIGN CIRCULATION		07/10/09
2.	ISSUED FOR MOE APPROVAL	ERD	07/24/09
3.	ISSUED FOR TENDER	ERD	11/06/09
4.	ISSUED FOR DESIGN CIRCULATION	ERD	11/06/09
5.	ISSUED FOR CONSTRUCTION	ERD	03/09/10
6.	AS-BUILT	ERD	04/12/12

NO.	STATION OFFSET 12+162.50				ELEVATION		
		COVER	STRUCTURE	T/GRATE	LOW/INV.		
SANMH255	12+164.96	0.52 RT	*S24	OPSD 701.010	63.55	59.98	6
SANMH257	12+222.12	0.72 RT	*S24	OPSD 701.010	63.18	59.80	5
SANMH259	12+226.56	1.58 LT	*S24	OPSD 701.010	63.14	59.74	59

* DOWNSTREAM ELEVATIONS SHOWN ARE AT THE OBVERT OF THE STORM SEWER (MIN. GRADE 1% FOR ALL STORM SEWER CONNECTIONS)

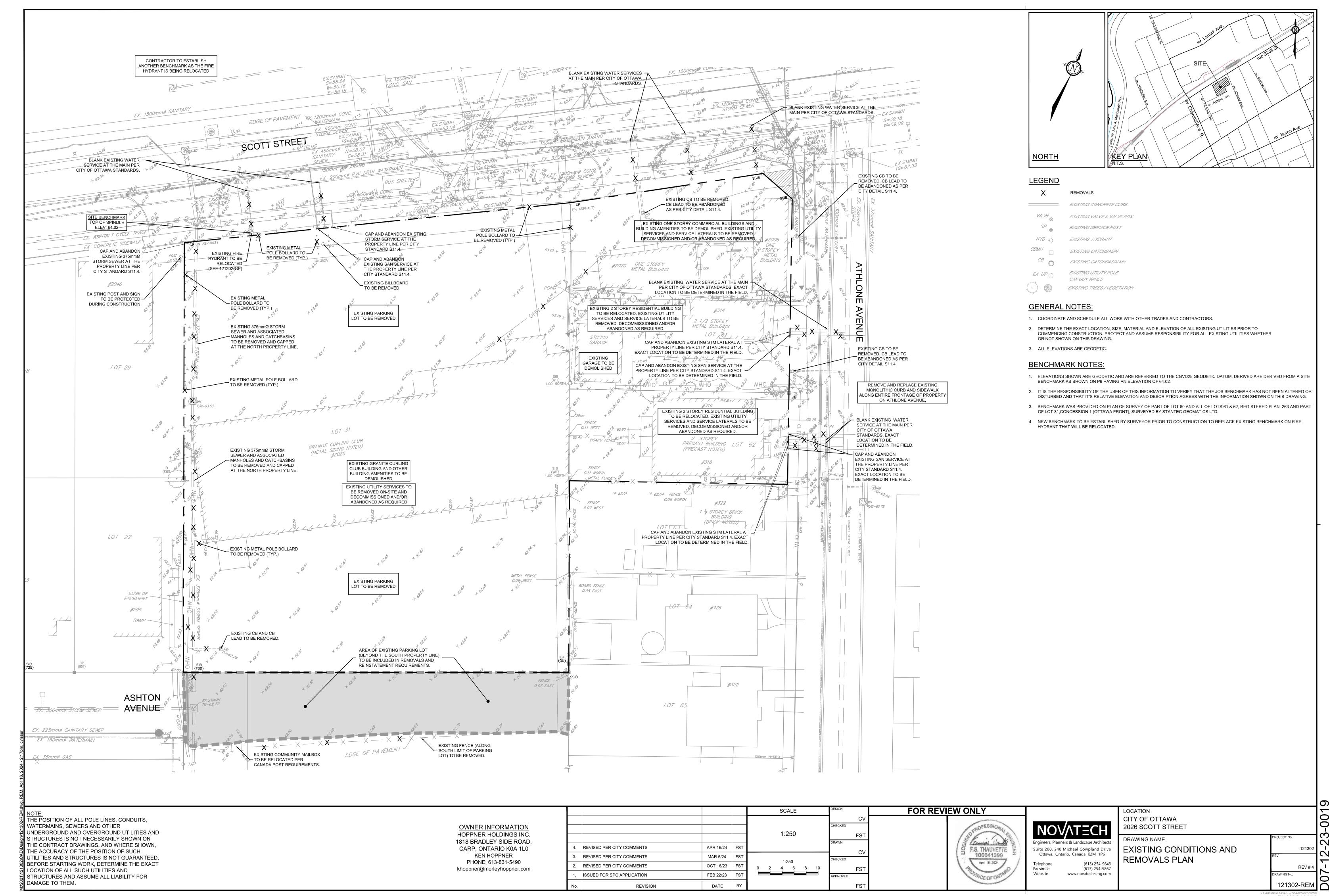
DA. LENGTH T	YPE INVERT ELEVATIONS
59.62	UP STR. DOWN STR.
255 450 60.00 CONC.	CL 140-D 60.14 59.99 60
257 450 57.17 CONC.	CL 140-D 59.98 59.83 59
259 450 5.00 CONC.	CL 140-D 59.80 59.78 59

OFFSETS ARE FROM CONTROL LINE TO CENTRE OF STRUCTURE 59.85 L 60
STATIONS AND T/GRATE ELEVATIONS ARE FROM THE CENTRE OF STRUCTURE
* FRAME TO BE SELF-LEVELING BY MEULLER AJ745 OR BIBBY C54M

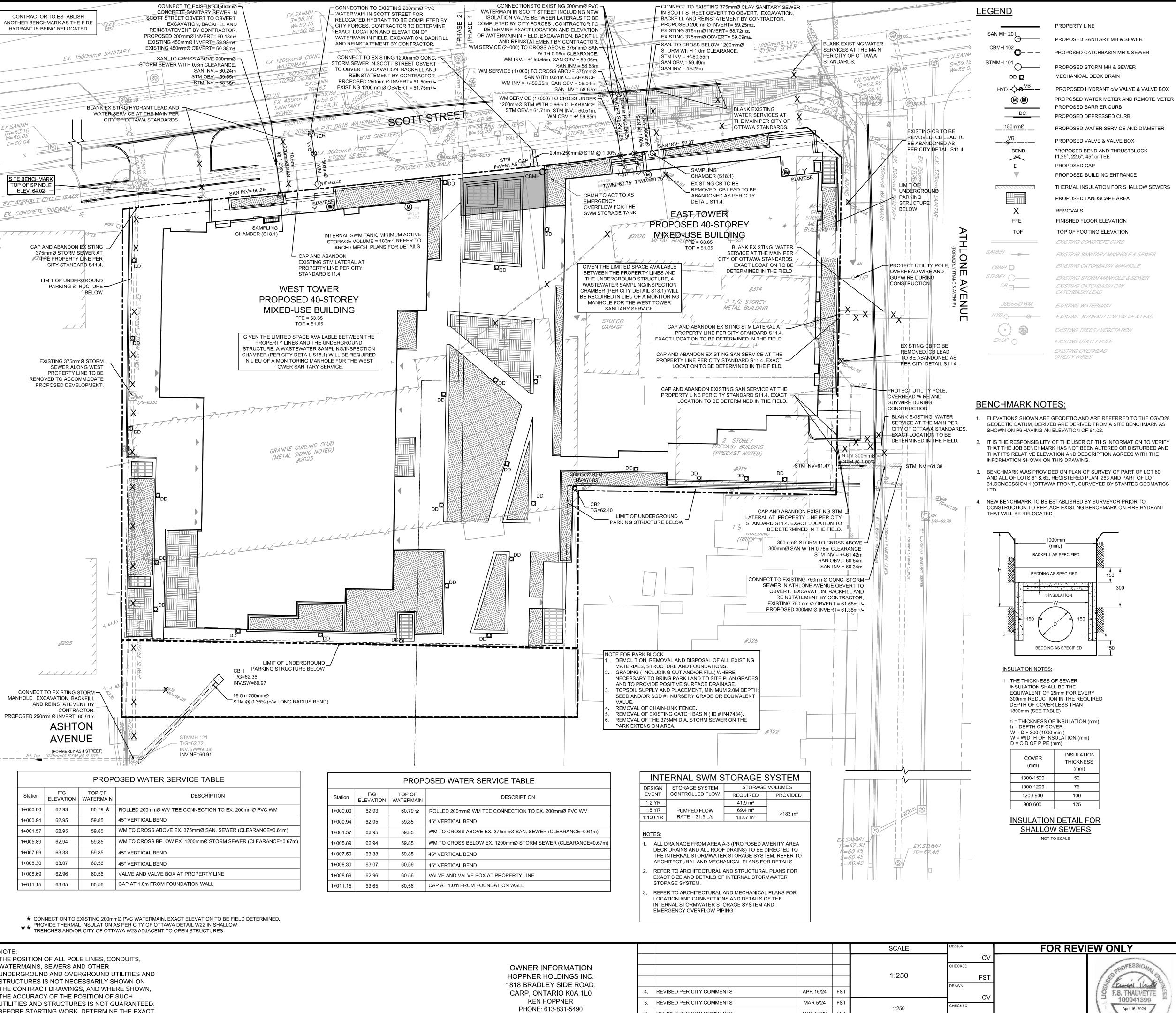
1. ADDITIONAL BOREHOLE INFORMATION FROM: RMOC-200mmØ WATERMAIN "AS-BUILT" DRAWINGS - WINONA AVE TO CLIFTON AVE (1996)

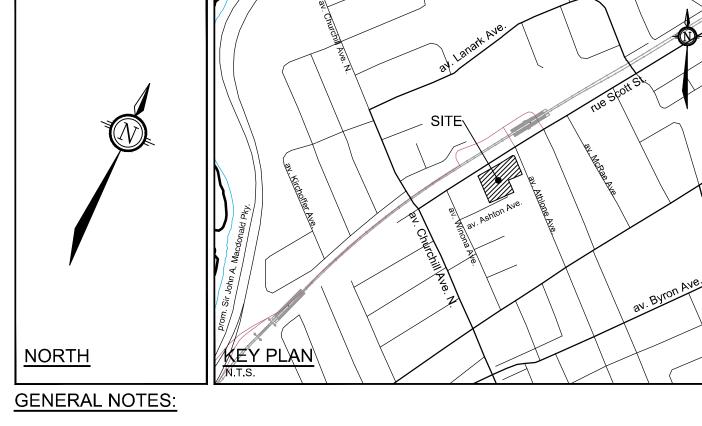
APPENDIX G

Engineering Drawings



PLAN #18976





- 1. 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
- 3. 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. 5. 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'.
- 6. 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.
- 8. ALL ELEVATIONS ARE GEODETIC.
- 9. REFER TO GEOTECHNICAL REPORT (PG5829-1, DATED JUNE 7, 2021), PREPARED BY PATERSON GROUP INC., FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- 10. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARD SURFACE AREAS AND DIMENSIONS
- 11. REFER TO THE DEVELOPMENT SERVICING STUDY & STORMWATER MANAGEMENT REPORT (R-2023-003) PREPARED BY NOVATECH.
- 12. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- 13. PROVIDE LINE / PARKING PAINTING AS REQUIRED PER THE ARCHITECTURAL SITE PLAN.

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:

CATCHBASIN (600x600mm) STORM / SANITARY MANHOLE (1200mmØ) 701.010 OPSD CB, FRAME & COVER 400.020 OPSD SANITARY MH FRAME & COVER OPSD 401 010 - TYPE "A" STORM / CBMH MANHOLE FRAME AND COVER 401.010 - TYPE "B" OPSD WATERTIGHT MH FRAME AND COVER LANDSCAPE DRAIN (ELBOW, COVER & PIPE) S29 / S31 CITY OF OTTAWA CITY OF OTTAWA SEWER TRENCH

PVC DR 35 STORM SEWER SANITARY SEWER PVC DR 35 CATCHBASIN LEAD

3. ALL STORM AND SANITARY SERVICE LATERALS SHALL BE EQUIPPED WITH BACKFLOW PREVENTION DEVICES AS PER THE CITY OF OTTAWA STANDARD DETAILS \$14 AND \$14.1 OR \$14.2.

4. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.8m COVER WITH HI-40 INSULATION PER INSULATION DETAIL FOR SHALLOW

- SEWERS. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
- 5. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
- 6. 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. 7. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL
- AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED. 8. 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, DY TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. TH
- FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED 9. ALL STORM MANHOLES AND CATCHBASIN MANHOLES ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED. ALL
- CATCHBASINS ARE TO HAVE 600mm SUMPS.
- 10. ALL CATCHBASINS, MANHOLES AND/OR CATCHBASIN MANHOLES THAT ARE TO HAVE ICD'S INSTALLED WITHIN THEM ARE TO HAVE
- 11. ALL WEEPING TILE SYSTEMS ARE TO BE PUMPED TO THE SURFACE AS INDICATED ON THE GENERAL PLAN OF SERVICES DRAWING. REFER TO MECHANICAL PLANS FOR DETAILS.
- 12. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
- 13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL 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, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES,

WATERMAIN NOTES

SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS - ALL CURRENT VERSIONS AND 'AS AMENDED'. 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 THE CONTRACTOR IN THE PRESENCE CITY OF OTTAWA FORCES.

SPECIFICATIONS:		
<u>ITEM</u>	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
HYDRANT INSTALLATION	W19	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
THERMAL INSULATION AT OPEN STRUCTURES	W23	CITY OF OTTAWA
VALVE BOX ASSEMBLY	W24	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
WATERMAIN CROSSING OVER SEWER	W25.2	CITY OF OTTAWA
WATERMAIN	PVC DR 18	
	1 40 01/10	

- 3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE, UNLESS OTHERWISE INDICATED.
- 4. PROVIDE MINIMUM 0.5m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS, UNLESS OTHERWISE INDICATED.
- 5. WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED.

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, 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.

khoppner@morleyhoppner.com

				SCALE	DESIGN	
					CV	
					CHECKED	
				1:250	FST	
					DRAWN	1
4.	REVISED PER CITY COMMENTS	APR 16/24	FST		cv	l
3.	REVISED PER CITY COMMENTS	MAR 5/24	FST	4.050	CHECKED	ł
2.	REVISED PER CITY COMMENTS	OCT 16/23	FST	1:250 0 2 4 6 8 10	FST	l
1.	ISSUED FOR SPC APPLICATION	FEB 22/23	FST		APPROVED	1
No.	REVISION	DATE	BY		FST	l



INSULATION

THICKNESS

50

75

100

125



Facsimile

LOCATION

(613) 254-5867

www.novatech-eng.com

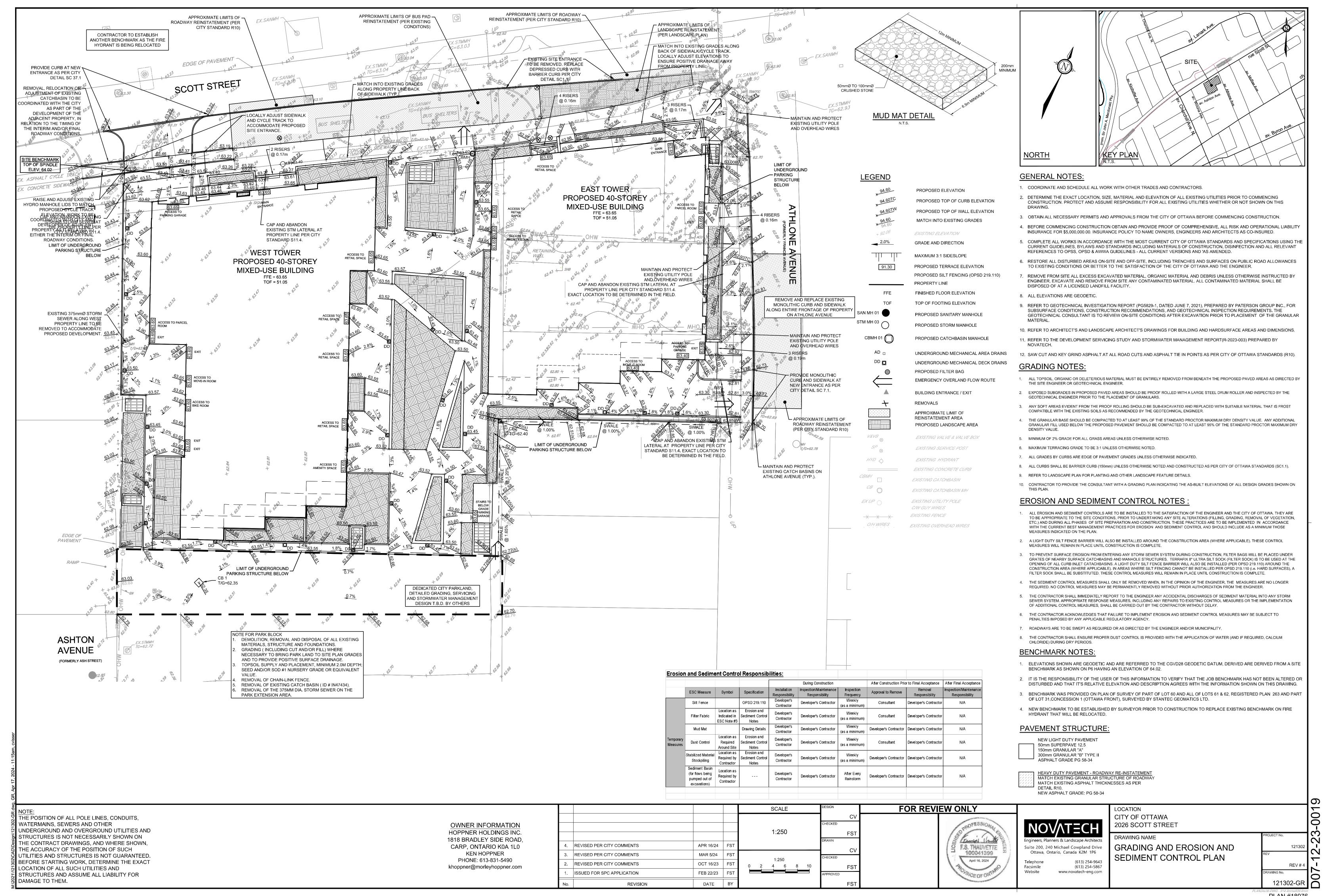
CITY OF OTTAWA 2026 SCOTT STREET DRAWING NAME

GENERAL PLAN OF SERVICES

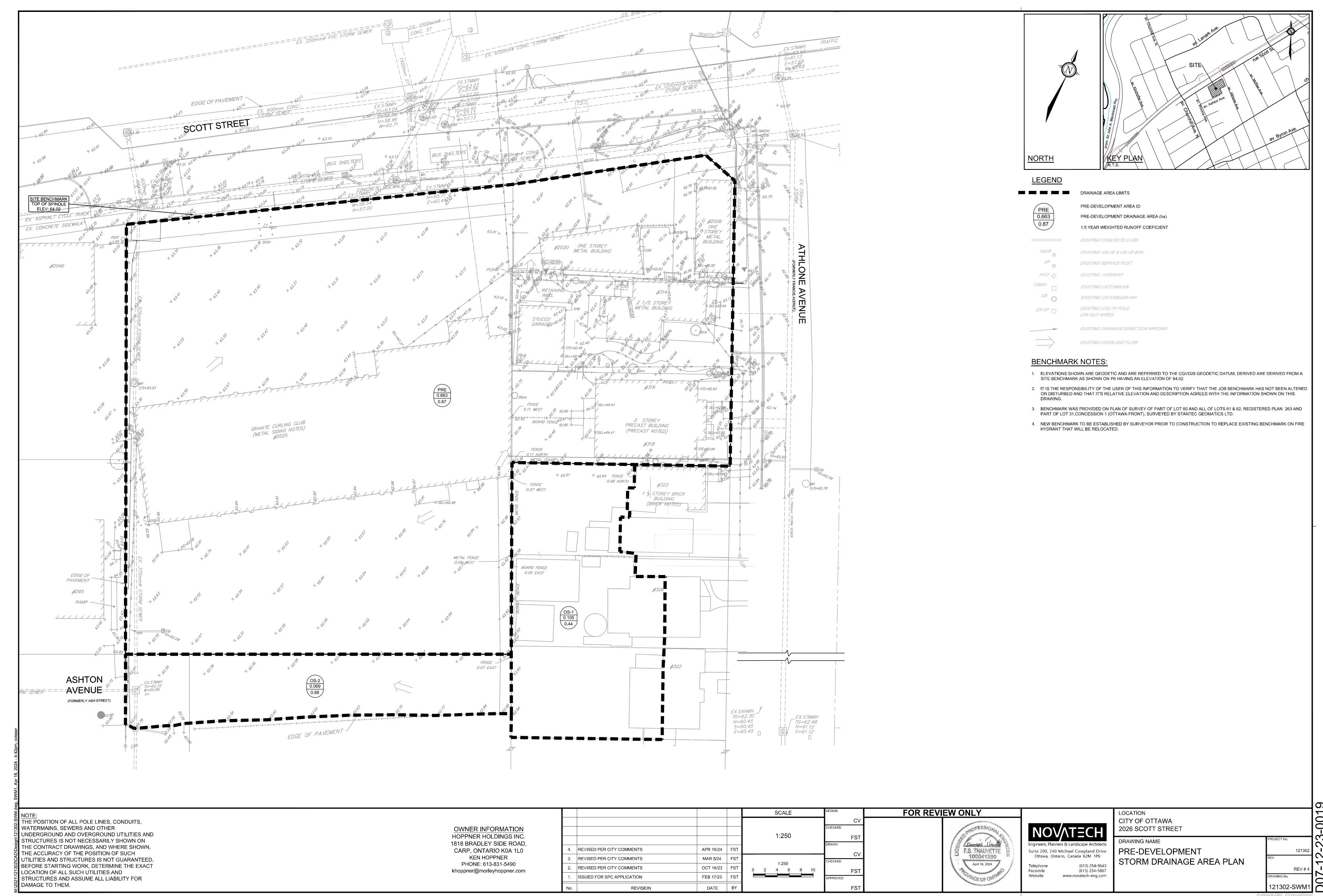
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PLAN #18976

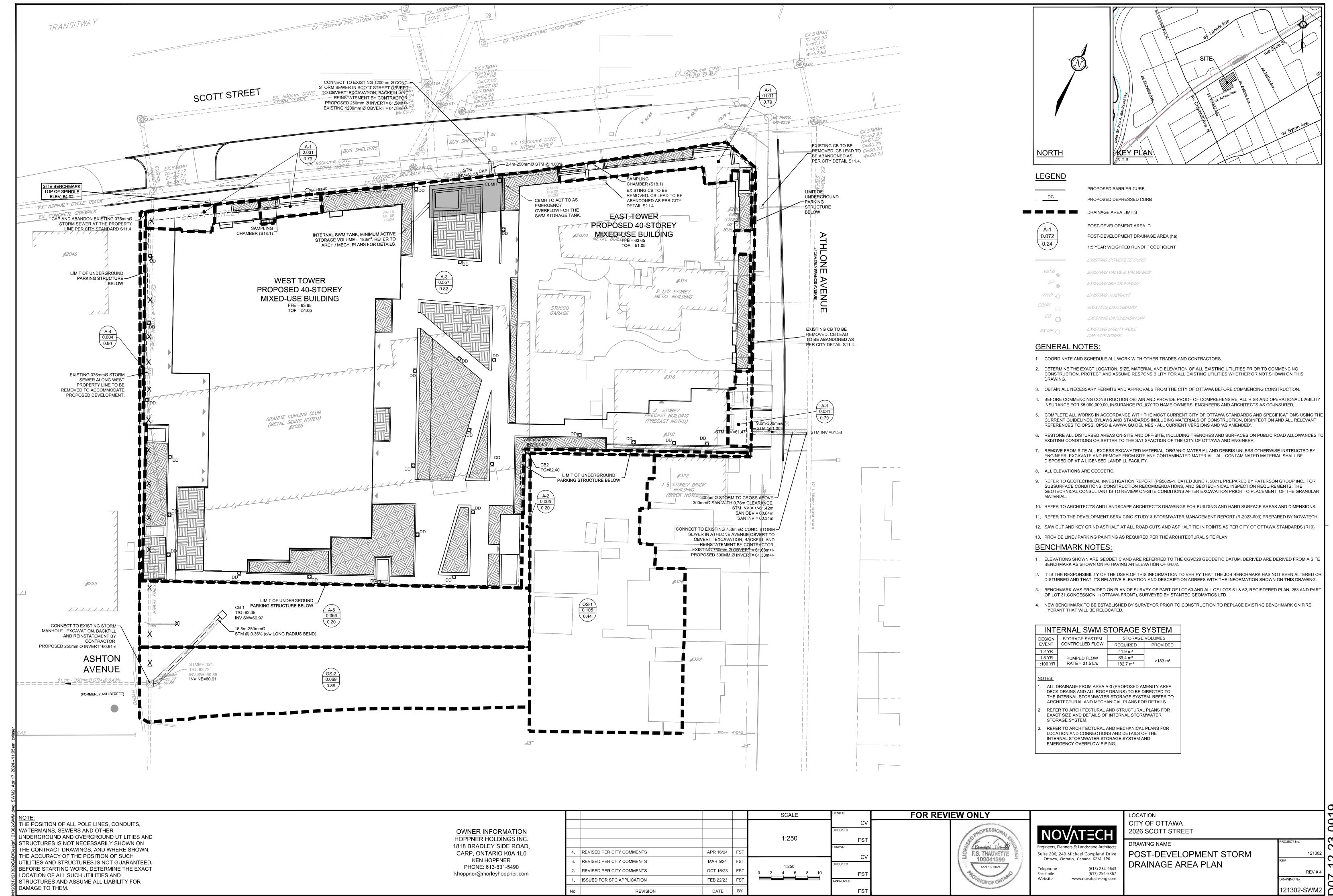
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PLAN #18976



PLAN #18976



21302-SWM2 36.DWG - 914.4mmx609.6mm PLAN #18976