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Proposed 6-Storey Residential Development 246 Gilmour Street

Development Servicing Study & Stormwater Management Report

Engineering excellence. Planning precision. Inspired landscapes.

PROPOSED 6-STOREY RESIDENTIAL DEVELOPMENT
246 GILMOUR STREET

DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT

Prepared by:

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

November 18, 2019
Revised: April 16, 2020

Ref: R-2019-155
Novatech File No. 118221

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April 16, 2020

Epcon Enterprises Ltd.
1566 Laperriere Avenue
Ottawa, ON
K1Z 7T2

Attention: Mr. Domenic Idone

Dear Sir:

Re: Development Servicing Study and Stormwater Management Report
Proposed 6-Storey Residential Development
246 Gilmour Street, Ottawa, ON
Novatech File No.: 118221

Enclosed is a copy of the revised 'Development Servicing Study and Stormwater Management Report' for the proposed 6-storey residential development located at 246 Gilmour Street, in the City of Ottawa. This report addresses the approach to site servicing and stormwater management and is submitted in support of a site plan control application.

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

Yours truly,

NOVATECH

François Thauvette, P. Eng.
Senior Project Manager

cc: Shawn Wessel (City of Ottawa)

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

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1.0 INTRODUCTION

The new 6-storey residential building is being proposed by Epcon Enterprises Ltd. and Novatech has been retained to complete the site servicing and stormwater management design for this project.

1.1 Purpose

This report addresses the approach to site servicing and stormwater management and is being submitted in support of a site plan control application.

1.2 Site Description and Location

The subject site is approximately 0.039 hectares in size and is currently vacant. The site is located between Gilmour and Lewis Streets, immediately west of the Elgin Street Public School. A three-storey residential building abuts the property to the west. The legal description of the subject site is designated as Part of Lots 1 and 2 (west side Beaconsfield Place) and Part of Lots 5 and 6 (East Side Metcalfe Street), Registered Plan 15558, City of Ottawa.

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

1.3 Pre-Consultation Information

A pre-consultation meeting was held with the City of Ottawa on December 13th, 2018, at which time the client was advised of the general submission requirements. Subsequent discussions were held with the City to confirm the approach to the servicing and stormwater management design. Refer to **Appendix A** for correspondence related to the proposed development.

Based on a review of **O. Reg. 525/98: Approval Exemptions**, a Ministry of the Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA) is anticipated to be required because the storm flows from this site are ultimately being directed into a combined sewer in Elgin Street. Refer to **Appendix A** for correspondence related to the proposed development.

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). Based on discussions with the RVCA, stormwater quality control will not be required for this development as the storm sewer flows are being directed into a combined sewer. Refer to **Appendix A** for correspondence from the RVCA.

1.4 Proposed Development

The proposed development will consist of a new 6-storey residential building between Gilmour and Lewis Streets. The proposed 6-storey residential building will be serviced by extending new laterals to the municipal combined sewer and watermain in Lewis Street. Barrier-free access to the proposed building will be provided off Gilmour Street. A street-level parking spot is proposed at the back of the building, off Lewis Street.

1.5 Reference Material

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

[1] The Geotechnical Investigation Report (Ref. No. PG4975-1, Rev. 1), prepared by Paterson Group on July 4, 2019.

2.0 SITE SERVICING

The objective of the site servicing design is to provide proper sewage outlets, a suitable domestic water supply and to ensure that appropriate fire protection is provided for the proposed development. The servicing criteria, the expected sewage flows, and the water demands are to conform to the City of Ottawa municipal design guidelines for sewer and water distribution systems. Refer to the subsequent sections of the report and to plan 118221-GP for further details.

As discussed with the City of Ottawa, the total allowable site flow to the combined sewer in Lewis Street is to include:

- Peak sanitary sewage flows
- Groundwater flows 0.12 L/s (less than 10,000 L/day per section 6.5 of the Geotech Report[1])
- Peak stormwater flows

The City of Ottawa Servicing Study Guidelines for Development Applications requires that a Development Servicing Study Checklist be included to confirm that each applicable item is deemed complete and ready for review by City of Ottawa Infrastructure Approvals. A completed checklist is enclosed in **Appendix B** of the report.

2.1 Sanitary Sewage

The proposed residential development will be serviced by a new 200mm dia. sanitary lateral connected to the existing 300mm dia. combined sewer in Lewis Street. A connection to the

250mm dia. sanitary sewer in Gilmour Street was considered, and rejected, as the sanitary service would be too shallow as it would need to cross above both the existing 300mm dia. watermain and shallow 675mm dia. concrete storm sewer in the street.

The City of Ottawa design criteria were used to calculate the theoretical sanitary flows for the proposed development. The following design criteria were taken from Section 4 – 'Sanitary Sewer Systems' and Appendix 4-A - 'Daily Sewage Flow for Various Types of Establishments' of the City of Ottawa Sewer Design Guidelines:

Residential Use

- Residential Units (Studio or 1-Bedroom): 1.4 people per unit
- Residential Units (2-Bedroom): 2.1 people per unit
- Residential Units (3-Bedroom): 3.1 people per unit
- Average Daily Residential Sewage Flow: 280 L/person/day
- Residential Peaking Factor = 3.8 (Harmon Equation)
- Infiltration Allowance: 0.33 L/s/ha x 0.039 ha site = 0.01 L/s*

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

Table 1: Theoretical Post-Development Sanitary Flows

Residential Use	Unit Count	Design Population	Average Flow (L/s)	Peaking Factor	Peak Flow (L/s)
Studio / 1-Bedroom	18	26	0.08	3.8	0.32
2-Bedroom	3	7	0.02	3.8	0.09
3-Bedroom	1	4	0.01	3.8	0.05
Total	22	**37**	**0.11**	-	**0.47***

*Includes infiltration allowance of 0.33L/s/ha

As indicated in the table above, the peak sanitary flow to the combined sewer in Lewis Street was calculated to be approximately 0.47 L/s.

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

2.2 Water

The proposed residential development will be serviced by a new 150mm dia. water lateral connected to the existing 200mm dia. watermain in Lewis Street. A connection to the existing 300mm dia. watermain in Gilmour Street was considered, and rejected, as it would require an additional roadcut as both the proposed sanitary and storm service connections are to the municipal sewer in Lewis Street.

The water service has been sized to provide the required domestic water demand and fire flow. A shut-off valve will be provided on the proposed water service at the property line. The water

meter will be located within the water entry room, with a remote meter on the exterior face of the building.

2.2.1 Domestic Water Demands and Watermain Analysis

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

- Residential Units (Studio or 1 Bedroom): 1.4 people per unit
- Residential Units (2 Bedroom): 2.1 people per unit
- Residential Units (3-Bedroom): 3.1 people per unit
- Average Daily Residential Water Demand: 350 L/person/day (City Water Table 4.2)
- Maximum Day Demand Peaking Factor = 2.5 x Avg. Day Demand (City Water Table 4.2)
- Peak Hour Demand Peaking Factor = 2.2 x Max. Day Demand (City Water Table 4.2)

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

Table 2: Theoretical Water Demand for the Proposed Development

Residential Use	Unit Count	Design Population	Average Day Demand (L/s)	Max. Day Demand (L/s)	Peak Hour Demand (L/s)
Studio / 1-Bedroom	18	26	0.11	0.27	0.60
2-Bedroom	3	7	0.03	0.07	0.16
3-Bedroom	1	4	0.02	0.05	0.11
Total	22	**37**	**0.16**	**0.39**	**0.87**

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

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

Preliminary domestic water demands, and fire flow requirements were provided to the City of Ottawa. These values were used to generate the municipal watermain network boundary conditions. **Table 2.1** summarizes the watermain boundary conditions and the results of the hydraulic analysis related to the domestic demands. It is anticipated that a booster pump will likely be required to increase pressure to the upper floors of the building.

Table 2.1: Hydraulic Boundary Condition Provided by the City

Municipal Watermain Boundary Condition	Boundary Condition	Domestic Demand (L/s)	Normal Operating Pressure Range (psi)	Design Pressure (psi)*
Minimum HGL (Peak Hour Demand)	105.8m	0.87	40 psi (min.)	49.3
Maximum HGL (Max Day Demand)	115.0m	0.39	50-70 psi	62.4
Max Day + Fire Flow HGL	101.0m	133 + 0.39	20 psi (min.)	42.5

*Based on a building floor elevation of 71.05m

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

2.2.2 Water Supply for Firefighting

The proposed building will be fully sprinklered and supplied with a fire department (siamese) connection. The siamese connection will be located on the north side of the building, within 45m of the existing municipal fire hydrant on the south side of Gilmour Street, in front of the Elgin Street Public School.

The Fire Underwriters Survey (FUS) was used to estimate fire flow requirements for the proposed building. Based on information provided by the architect, a 6-storey, sprinklered building, using ordinary construction materials was used in the calculations.

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

Table 2.2: Fire Flow Requirements for the Proposed Development

Type of Uses	Fire Flow Demand USGPM (L/s)
Proposed Residential Building	2,114 USGPM (133 L/s)

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

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

As discussed with the City of Ottawa during the design process, a multi-hydrant approach to firefighting is anticipated. There are at least 3 Class AA blue bonnet hydrants in close proximity to the proposed development (one hydrant on the NW corner of Gilmour/Metcalfe Streets, another on the south side of Gilmour Street, in front of the Elgin Street Public School and a third hydrant is located on the south side of Lewis Street, approximately mid-way between the subject site and Metcalfe). Based on the City of Ottawa Technical Bulletin ISTB-2018-02, Class AA blue bonnet hydrants have a minimum capacity 95 L/s (at a pressure of 20 PSI). The combined maximum flow

from these hydrants will exceed the Max Day + Fire Flow requirement (134 L/s) of the proposed development. This multi-hydrant approach to firefighting is in accordance with the City of Ottawa Guidelines. The existing municipal watermain network should therefore have adequate water supply for the proposed development and will provide adequate system pressures for both 'Max Day + Fire Flow' and 'Peak Hour' conditions, within the normal operating pressure ranges.

2.3 Storm Drainage and Stormwater Management

The proposed storm outlet for the site is the existing 300mm dia. combined sewer in Lewis Street. A connection to the 675mm dia. concrete storm sewer in Gilmour Street was considered, and rejected, as the storm service would be too shallow due to crossing conflicts. Since the post-development storm flows are being directed to a combined sewer, they will need to be controlled prior to being released from the site. The proposed storm drainage and stormwater management design for the site is shown on plan 118221-SWM and is discussed in the following sections of the report.

2.3.1 Stormwater Management Criteria and Objectives

The stormwater management criteria and objectives for the site are as follows:

- Maximize the use of on-site storage on the building roof.
- Control the post-development flows from the site to the allocated release rate (specified by the City of Ottawa). Control post-development flows from the site for storms up to and including the 100-year design event.
- Minimize the impact on the existing combined sewer in Lewis Street by reducing the post-development storm flows from the site during the 100-year event, when compared to current conditions.
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

2.3.2 Pre-Development Conditions and Allowable Release Rate

Under pre-development conditions, there are currently no water quantity or water quality control measures being provided on site. The uncontrolled pre-development flows from the 0.039 ha site were calculated using the Rational Method to be 3.5 L/s during the 5-year design event and 7.1 L/s during the 100-year design event. Refer to **Appendix D** for detailed calculations.

As specified by the City of Ottawa, the total allowable site flow to the combined sewer system in Lewis Street will be 10.0 L/s, including a combination of the following flows:

- The peak sanitary flow (0.47 L/s) from Table 1
- The maximum groundwater flow (0.12 L/s) per section 6.5 of the Geotech Report[1]
- The peak allowable storm flows

Consequently, the maximum remaining allowable storm flow was calculated to be approximately 9.4 L/s (or 10.0 L/s – (0.47 + 0.12) L/s).

2.3.3 Post-Development Conditions

The proposed site will be serviced by connecting to the existing 300mm dia. combined sewer in Lewis Street. As part of the stormwater management (SWM) strategy, stormwater runoff from the

building roof will be attenuated using control flow roof drains. Runoff from the remainder of the property cannot be attenuated and will therefore continue to sheet drain uncontrolled towards Gilmour and Lewis Streets. Refer to plan 118221-SWM for drainage areas and further details.

2.3.3.1 Areas A-1, A-2 and A-3: Uncontrolled Direct Runoff

The runoff from these sub-catchment areas will flow overland towards the roadway catch basins in Gilmour and Lewis Streets. The uncontrolled post-development flows from sub-catchment area A-1 were calculated using the Rational Method to be approximately 0.24 L/s during the 5-year design event and 0.48 L/s during the 100-year design event. Similarly, the uncontrolled post-development flows from sub-catchment area A-2 were calculated to be approximately 0.88 L/s during the 5-year design event and 1.70 L/s during the 100-year design event. The uncontrolled post-development flows from sub-catchment area A-3 were calculated to be approximately 0.46 L/s during the 5-year design event and 0.92 L/s during the 100-year design event. Refer to **Appendix D** for detailed calculations.

2.3.3.2 Areas R-1, R-2, R-3 and R-4 – Controlled Flow from Building Roof

The post-development flow from this sub-catchment area will be attenuated by using four (4) Watts adjustable 'Accutrol' control flow roof drains (model number RD-100-A-ADJ) prior to being directed to the proposed storm service.

Table 3 summarizes the post-development design flows from the building roof as well as the type of roof drains, the maximum anticipated ponding depths, storage volumes required, and storage volumes provided for both the 5-year and the 100-year design events.

Table 3: Design Flow and Roof Drain Table

Roof Drain ID & Drainage Area (ha)	Number of Roof Drains	Watts Roof Drain Model ID (Weir Opening)	Controlled Flow per Drain (L/s)		Approximate Ponding Depth Above Drains (m)		Storage Volume Required (m^3)		Max. Storage Available (m^3)
			5-Yr	100-Yr	5-Yr	100-Yr	5-Yr	100-Yr	
RD-1 (0.0021 ha)	1	RD-100-A-ADJ (1/4 Exposed)	0.63	0.75	0.05	0.09	0.03	0.20	0.79
RD-2 (0.0089 ha)	1	RD-100-A-ADJ (1/4 Exposed)	0.71	0.87	0.10	0.13	1.04	2.55	4.02
RD-3 (0.0062 ha)	1	RD-100-A-ADJ (1/4 Exposed)	0.71	0.87	0.10	0.13	0.54	1.44	2.14
RD-4 (0.0108 ha)	1	RD-100-A-ADJ (1/4 Exposed)	0.71	0.87	0.10	0.14	1.43	3.40	4.95
Total Roof (0.028ha)	**4**	**-**	**2.76**	**3.36**	**-**	**-**	**3.0**	**7.6**	**11.9**

Refer to **Appendix D** for detailed SWM calculations and to **Appendix E** for roof drain information. As indicated in the table above, the building roof will provide sufficient storage for both the 5-year and 100-year design events.

2.3.3.3 Stormwater Flow Summary

Table 3.1 provides a summary of the total post-development flows from the site and compares them to the uncontrolled pre-development flows and maximum allowable storm flows.

Table 3.1: Stormwater Flows Comparison Table

Design Event	Pre-Development Conditions		Post-Development Conditions					
	Uncontrolled Flow (L/s)	Maximum Allowable Storm Flow (L/s)	A-1 Flow (L/s)	A-2 Flow (L/s)	A-3 Flow (L/s)	R-1 - R-4 Flow (L/s)	Total Flow (L/s)	Reduction in Flow (L/s or %)*
5-Yr	3.5	9.4	0.24	0.88	0.46	2.76	4.34	N/A
100-Yr	7.1	9.4	0.48	1.70	0.92	3.36	6.46	0.64 or 9%

*Reduced flow compared to uncontrolled pre-development conditions

As indicated in the table above, both the 5-year and 100-year post-development flows from the site will be less than the maximum allowable storm flow of 9.4 L/s. This also represents a reduction in total site flow rate during the 100-year design storm, when compared to the pre-development condition.

2.3.4 Stormwater Quality Control

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

2.4 Summary of Total Flow to Municipal Combined Sewer

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

Table 4 provides a summary of the total post-development flows from the site to be developed and compares them to the uncontrolled pre-development storm flows and total allowable flow from the site, as specified by the City of Ottawa.

Table 4: Site Flows Summary and Comparison Table

Design Event	Pre-Development Conditions	Post-Development Conditions			
	Total Allowable Site Flow (L/s)	Sanitary Flow (L/s)	Ground Water Flow (L/s)	Storm Flow (L/s)	Total Flow (L/s)
5-Yr	10.0	0.47	0.12	4.34	4.93
100-Yr	10.0			6.46	7.05

As indicated above, the total flow from the site to be developed will be less than the maximum allowable site flow, specified by the City of Ottawa.

3.0 SITE GRADING

The existing site slopes from north (Gilmour Street) to south (Lewis Street). The edge of pavement elevations in front of the subject site along Gilmour Street range from approximately 70.40m-70.50m, while the elevations along Lewis Street are approximately 69.30-69.40m. The existing catchbasins within Lewis Street are currently located within a sag (low T/G=69.30m) and the emergency overland flow route will spill at the corner of Lewis and Metcalfe Streets (beyond the limits shown on the plans). The finished floor elevation (FFE) of the proposed residential building will be set at an elevation of 71.05m to tie into the existing sidewalk elevations along Gilmour Street. The lowest building opening (69.95m), which provides access to the garbage and recycling room lift at the basement level, has been set above the emergency overland spillover elevation at the corner of Lewis and Metcalfe Streets. Refer to enclosed 118221-GR for further details.

4.0 GEOTECHNICAL INVESTIGATIONS

A Geotechnical Investigation Report has been prepared by Paterson Group for the proposed project. Refer to the Geotechnical Report[1] 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 sewer system, temporary erosion and sediment control measures will be implemented on-site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter bags will be placed under the grates of nearby catchbasins, manholes and will remain in place until vegetation has been established and construction is completed.
- Silt fencing will be placed per OPSS 577 and OPSD 219.110, where applicable, along the surrounding construction limits.
- Mud mats will be installed at the site entrance(s).
- Street sweeping and cleaning will be performed, as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site.
- On-site dewatering is to be directed to a sediment trap and/or gravel splash pad and discharged safely to an approved outlet as directed by the engineer.

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

6.0 CONCLUSION

This report has been prepared in support of a site plan control application for the proposed residential development located at 246 Gilmour Street.

The conclusions are as follows:

- The proposed 6-storey residential building will be serviced by extending new laterals to the municipal combined sewer and watermain in Lewis Street.
- The building will be sprinklered and supplied with a fire department siamese connection. The siamese connection will be located on the north side of the building, within 45m of the municipal fire hydrant in front of the Elgin Street Public School.
- The site flows from sub-catchment areas A-1, A-2 and A-3 will be uncontrolled. The flows from sub-catchment areas R-1 to R-4 will be attenuated using control flow roof drains, prior to being discharged into the municipal sewer in Lewis Street.
- The total post-development flow from the site, including peak sanitary flows, anticipated groundwater flows and peak storm flows, being directed to the combined sewer in Lewis Street will be approximately 4.93 L/s during the 5-year design event and approximately 7.05 L/s during the 100-year event. Both values are less than the maximum allowable site flow of 10 L/s, specified by the City.
- Regular inspection and maintenance of the building services and roof drains is recommended to ensure that the storm drainage system is clean and operational.
- Temporary erosion and sediment control measures are to be provided during construction.

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

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Prepared by:

Ryan Brault, M. Eng.
Land Development

Reviewed by:

François Thauvette, P. Eng.
Senior Project Manager | Land Development

APPENDIX A

Correspondence

MINUTES

246 Gilmour Street - Pre-Application Consultation Meeting
Date: Thursday, December 13, 2018
Time: 10:00 AM – 11:00 AM
Location: 110 Laurier Avenue West, Room 4106E

Present:

Murray Chown (Applicant/Agent, Novatech)
Danna See-Har (Applicant/Agent, Novatech)
Nicholas Breault (Architect, Robertson Martin Architects)
Dave Grummett (Owner)
Robert Sandercott (City of Ottawa Planning)
Shawn Wessel (City of Ottawa Engineering)
Anne Fitzpatrick (City of Ottawa Heritage)
Christopher Moise (City of Ottawa Urban Designer)

1.0 Introductions

2.0 Confirmation NDA has been signed

Signed

3.0 Overview of Proposal

3.1	**Overview** • Nicholas Breault provided an overview of the subject property, the proposed development concept and the design approach: o The subject property is a through lot that abuts both Gilmour Street and Lewis Street. It has been vacant since 2002. o The proposal is to construct a 9-storey, mid-rise apartment dwelling containing 24 dwelling units. o A 4 m setback is proposed from Gilmour Street, with storeys above the fourth floor to be stepped back further. This setback is in part to address clearance requirements from the adjacent hydro line. o A 0.3 m setback is proposed from Lewis Street. o Two on-site parking spaces are proposed which would be accessed from Lewis Street. One of the spaces is proposed to be dedicated to visitor parking. o The layout of the ground floor, including storage, waste and mechanical space, has not been fully settled upon at this time. However, a room for bicycle parking is proposed at the ground floor. o Rooftop amenity space is proposed. o In terms of the exterior design, the first four storeys are proposed to primarily be comprised of brick, in order to	

	match the existing design of the apartment building to the west and reflect the surrounding context. The storeys above are proposed to be of a different material and stepped back in order to reduce the impacts of massing from this portion of the building.	

3.2	**Official Plan and Zoning Designations**
	• Official Plan – General Urban Area
	  o Section 3.6.1 applies to properties within the General Urban Area.
	• Centretown Secondary Plan – Central Character Area
	  o Medium Profile Residential designation
	  o A mid-rise building of maximum 9 storeys is contemplated in the Medium Profile Residential designation, per policy 3.9.4.3 of the Secondary Plan.
	• R4T[479] – Residential Fourth Density Zone
	  o A low-rise apartment building containing maximum four storeys is permitted in this zone.
	  o A mid- or high-rise apartment dwelling is not permitted.
	  o For zoning purposes, Lewis Street is deemed to be the front lot line as it abuts the street for the shorter distance.
	  o The property is also within the Heritage Overlay and subject to the provisions of Section 60 of the By-law. Among other things, when a building in the overlay is removed, it must be rebuilt at the same volume, scale, massing and floor area as what was previously existing, except where the lot has been vacant prior to April 19, 1978.
	  o The property is located in the Mature Neighbourhoods Overlay and therefore subject to the provisions of Sections 139 and 140.
	  o On-site parking is required in accordance with Sections 101 and 102 of the Zoning By-law. In particular, the first 12 dwelling units are exempt from these requirements, and parking is required for any unit over the first 12 at a rate of 0.5 resident spaces/unit and 0.1 visitor spaces/unit. For 24 units, this represents a total of 6 resident parking spaces and 1 visitor parking space.	

4.0 Preliminary Comments from City

4.1	**Planning (Robert Sandercott):** • A Site Plan Control application (Manager Approval, Public Consultation) will be required in support of the proposed townhouse development. • A Major Zoning By-law Amendment is required to permit a 9-storey mid-rise apartment dwelling which is not a permitted use in the R4T[479] zone. Relief will also be required from the minimum parking requirements for 24 dwelling units. • Relief will also be required from the Heritage Overlay, to construct a larger building than what previously existed on the site. • The development will be required to be presented to the Urban Design Review Panel (UDRP). • Given the small size of the lot, rationale will be required to demonstrate that the proposed development would not represent an overdevelopment of the site. Attention should be given in particular to the site design, in particular of the upper storeys of the building, as well as the treatment at ground level of both Gilmour Street and Lewis Street. • Consider opportunities for additional landscaped area on the Lewis Street side of the building, where possible. • Rationale will also be required for the reduction in the number of required parking spaces, including in the form of a parking study. • Greater consideration should be given to the massing on the Lewis Street side of the building.	
4.2	**Engineering (Shawn Wessel)** A noise study will be required as the site is within 100 metres of Metcalfe Street, an Arterial Road under the Official Plan. • While the site is serviced by separated sewers, the sanitary sewer drains into a combined sewer. Therefore a Ministry of Environment CA direct submission will be required. o As the site is in close proximity to the Rideau Canal, the RVCA will need to be notified for quality control measures. • Plans and reports required for SPC Application: Site Servicing & SWM Report Geotechnical Report Phase I ESA (and Phase II ESA if applicable) Environmental Noise Study (including Stationary Noise for roof top units for neighbouring dwellings and occupants combined) Site Plan Grading Plan	

	SWM Plan Site Servicing Plan Landscape Plan Erosion & Sediment Control Plan Wind Analysis (as proposed building height is more than double that of the surrounding existing buildings on either side) Draft 4R Plan (if applicable) • Applicant to check HGL of sewers in area to ensure capacity for the proposed build. • Water Boundary conditions can be provided for applicant once we receive their calculated requirements. Stormwater Management - T= 10 minutes, C=0.4	
4.3	**Transportation (Wally Dubyk):** • The TIA Screening Form has been signed off. No further TIA reports are required. • A Traffic Parking Study will be required. • 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 the City's ROE limits. • The concrete sidewalks should be 2.0 metres in width and be continuous and depressed through the proposed access (please refer to the City's sidewalk and curb standard drawing). • The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards. • By-Law No. 2003-447, Section 11 states that a private approach shall have a minimum of 2.4 metres and a maximum width of 9.0 metres and in no case shall the width exceed 50% of the frontage on which the approach or approaches are located. • No person shall construct a private approach serving any parking area with a grade exceeding 2% and the grade on the private approach shall descend in the direction of the roadway. • 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.	
4.4	**Urban Design (Christopher Moise):** • Draw from neighbourhood and heritage context for the lower portion of the proposal;	

	• Breaking the facades with additional material deteriorates the clarity of the intent (north and east facade); • Illustrate the planned context, both east and west, to illustrate how the project mitigates these proximities; • Mitigate apparent weight of the upper half (dark material is problematic); • Mitigate the co-planar south facade expression; • Address the proportioning of the Gilmour entrance; • Project is proposed on a lot 2/3 size of established mid-rise minimums set out in the R5 zones; o Must illustrate how this Proposal is not over-built and mitigates all the concerns that are a result of not enough room for a mid-rise;	
4.5	**Heritage (Anne Fitzpatrick):** • The property is located within the Centretown Heritage Conservation District (HCD) and is designated under Part V of the Ontario Heritage Act. • Consider policies of the Centretown HCD plan when developing the proposal. • A Cultural Heritage Impact Statement (CHIS) will be required in support of the proposal. • The building appears tall at first glance. The CHIS will be an important part of the rationale as to why the proposal fits the site, particularly from the perspective of both street frontages. • Consider some stronger horizontal elements on the front façade, picking up on the streetscape analysis that has been done. • The proposed use of brick for the first four storeys is a good start in terms of materiality. • Potential concerns with the use of two entrances on the Gilmour Street frontage. A single front entrance is more characteristic of existing buildings in Centretown. • Further articulate/strengthen the cornice line. • The stone foundation line should be lowered. • Look for ideas for architectural details (cornices, quoins, brick banding, sills) from other historic apartment buildings in Centretown. • A heritage permit application under the Ontario Heritage Act is required for the construction of a new building. The application is reviewed by the Built Heritage Sub-Committee, Planning Committee and City Council. This process takes approximately two months and a building permit cannot be issued until Council approval is received. • The application requirements include: 1. Application Form (attached)	

	2. Description of Proposed Work (1-2 page summary) 3. Site Plan/Landscape Plan 4. Elevations - with materials indicated 5. Perspectives / Renderings 6. Streetscape perspectives/ analysis 7. Cultural Heritage Impact Statement • Information about the requirements for Cultural Heritage Impact Statements can be found here: http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans/guide-preparing-cultural	

5.0 Preliminary Comments from Community Association Representative (Jack Hanna, Centretown Citizens Community Association)

5.1	No representative from the CCCA was able to attend the scheduled meeting time. However, the following preliminary comments were provided: *"First, the positives.* • *The garbage and bicycle parking are inside.* • *The red-brick cladding on the lower four storeys reflects the old red-brick buildings in the neighbourhood and, as this is within a heritage district, that's important.* • *The distinction between the "old" lower storeys and the "modern" upper storeys is appropriate.* • *The step-back on the fifth floor breaks up the front facade, so that the red-brick lower storeys are more obvious and prominent, again reflecting the heritage character of the neighbourhood.* • *The step-back breaks up the front-face massing, so that it is slightly less visually imposing.* *Now, the negatives.* • *The windows on the lower four storeys on the west face will look out onto the brick wall of the building next door.* *I have one big problem with this building and I am going to state it bluntly: It will be an ugly building of uninspired design. It is two boxes, one on top of the other. And that's what it will look like. The design is very boxy.*	

	I realize a small lot constrains design. However, I have in recent weeks seen two proposed designs for very similar buildings in Centretown, nine or 10 storeys on a single-house lot, and those designs would create tall, elegant, beautiful buildings. It is possible to create a tall, slendor building that is elegant. In my opinion, this design fails to achieve that. *The character of neighbourhood around this site is more than just century-old heritage buildings. It includes, right across the street, one of the most dramatic and beautiful pieces of architecture in the city, the PSAC building. The character of this neighbourhood includes aesthetic design.* *The community association always is happy to meet developers. If the proponents of the proposed building at 246 Gilmour wish, they can present at a meeting of the Planning Committee of the Centretown Citizens Community Association (CCCA). They also can meet with the Co-chairs of the CCCA Planning Committee, Shawn Barber and myself."*	

6.0 Next Steps / Process

6.1	• Staff to follow up with minutes and list of required reports and studies. • Owner/Applicant is strongly encouraged to discuss the proposal with the Community Association in advance of any formal applications, including a meeting if possible.	

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 to:

http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

S/A	Number of copies	ENGINEERING		S/A	Number of copies
S	6	1. Site Servicing Plan	2. Assessment of Adequacy of Public Services / Site Servicing Study	S	6
S	6	3. Grade Control and Drainage Plan	4. Geotechnical Study / Slope Stability Study	S	4
	2	5. Composite Utility Plan	6. Groundwater Impact Study		6
	5	7. Servicing Options Report	8. Wellhead Protection Study		6
S	6	9. Traffic Parking Study	10.Erosion and Sediment Control Plan / Brief	S	6
S	6	11.Stormwater Management Report / Brief	12.Hydro geological and Terrain Analysis		8
	3	13.Hydraulic Water main Analysis	14.Environmental Noise Study	S	3
	35/50/55	15.Roadway Modification Design Plan	16.Confederation Line Proximity Study		9

S/A	Number of copies	PLANNING / DESIGN / SURVEY		S/A	Number of copies
	50	17.Draft Plan of Subdivision	18.Plan Showing Layout of Parking Garage		2
	30	19.Draft Plan of Condominium	20.Planning Rationale	S	3
S	15	21.Site Plan	22.Minimum Distance Separation (MDS)		3
	20	23.Concept Plan Showing Proposed Land Uses and Landscaping	24.Agrology and Soil Capability Study		5
	3	25.Concept Plan Showing Ultimate Use of Land	26.Cultural Heritage Impact Statement	S	3
S	15	27.Landscape Plan	28.Archaeological Resource Assessment Requirements: **S** (site plan) **A** (subdivision, condo)		3
S	2	29.Survey Plan	30.Shadow Analysis		3
S	3	31.Architectural Building Elevation Drawings (dimensioned)	32.Design Brief (includes the Design Review Panel Submission Requirements)	S	Available online
S	6	33.Wind Analysis			

S/A	Number of copies	ENVIRONMENTAL		S/A	Number of copies
S	5	34.Phase 1 Environmental Site Assessment	35.Impact Assessment of Adjacent Waste Disposal/Former Landfill Site		6
S*	5	36.Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37.Assessment of Landform Features		7
	4	38.Record of Site Condition	39.Mineral Resource Impact Assessment		4
	10	40.Tree Conservation Report	41.Environmental Impact Statement / Impact Assessment of Endangered Species		11
	4	42.Mine Hazard Study / Abandoned Pit or Quarry Study			

S/A	Number of copies	ADDITIONAL REQUIREMENTS		S/A	Number of copies
		43.	44.		

Meeting Date: 2018-Nov-14

Application Type: *Zoning By-Law Amendment*

File Lead (Assigned Planner): Robert Sandercott

Infrastructure Approvals Project Manager: Shawn Wessel

Site Address (Municipal Address): 246 Gilmour Street

*Preliminary Assessment: 1☐ 2☒ 3☐ 4☐ 5☐

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

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

Francois Thauvette

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Friday, September 20, 2019 3:01 PM
To: Francois Thauvette
Cc: Murray Chown
Subject: RE: 246 Gilmour St - Pre-Consultation

Good afternoon Mr. Thauvette.

In speaking with Water Resources Department, their comment was to keep the release rate to no more than 10L/s and do the best you can with roof storage, assuming flat roof construction. Lewis Street connection is acceptable.

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

Thank you

Regards,

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

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

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: August 27, 2019 10:56 AM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>
Cc: Murray Chown <m.Chown@novatech-eng.com>
Subject: RE: 246 Gilmour St - Pre-Consultation

Hi Shawn,

Further to the VM message I left you earlier, please confirm the following:

- Section 4.2 of the pre-consultation meeting minutes – Please confirm the return period of the target allowable release rate from the site (i.e. Q allowable based on 2-yr or 5-yr?, using a C=0.4 and a Tc of 10 mins.). Either way, the target allowable release rate will be nearly impossible to achieve (Q=3.3 L/s if based on a 2-yr return period or Q=4.5 L/s if based on a 5-yr return period). We will do our best to minimize the total post-development flow off the site, however the target allowable will likely be exceeded.
- Do we have the option of connecting to either the 250mm dia. SAN in Gilmour Street or the 300mm dia. Combined in Lewis Street? The Gilmour Street sanitary sewer is relatively shallow and will be difficult to connect into due to crossing conflicts with the 675mm dia. STM and 300mm dia. WM. The combined sewer in Lewis Street is approx. 1.5m deeper and should be much easier to connect into.
- Could you ask your colleagues to confirm the HGL of the SAN and STM sewers in Gilmour Street as well as the HGL in the combined sewer in Lewis Street?

Please review and provide clarification.

We will contact the RVCA, however based on past experience, stormwater quality control measures are typically not required when residential flow is being directed to a combined sewer.

Regards,

François Thauvette, P. Eng., Senior Project Manager | Land Development & Public Sector Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 219 | Cell: 613.276.0310 | Fax: 613.254.5867

From: Sandercott, Robert <Robert.Sandercott@ottawa.ca>
Sent: Wednesday, December 19, 2018 12:11 PM
To: 'nsb@robertsonmartin.com' <nsb@robertsonmartin.com>; 'Rob' <rm@robertsonmartin.com>; 'Jack Hanna' <jack.2014@icloud.com>; Danna SeeHar <d.seehar@novatech-eng.com>; Murray Chown <m.Chown@novatech-eng.com>; Nicholas Breault <nbreault@robertsonmartin.onmicrosoft.com>
Cc: Fitzpatrick, Anne <Anne.Fitzpatrick@ottawa.ca>; Dubyk, Wally <Wally.Dubyk@ottawa.ca>; Moise, Christopher <christopher.moise@ottawa.ca>; Wessel, Shawn <shawn.wessel@ottawa.ca>
Subject: RE: 246 Gilmour St - Pre-Consultation

Good afternoon all,

Attached are the meeting minutes and required reports and studies list for the above-noted proposal. Please let me know if you have any questions or if I have represented anything inaccurately.

Thank you,

Robert Sandercott
Planner
Development Review - Central Branch

Planning, Infrastructure, and Economic Development Department
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 14270
E-mail: robert.sandercott@ottawa.ca
ottawa.ca/planning / ottawa.ca/urbanisme

-----Original Appointment-----
From: Sandercott, Robert
Sent: Tuesday, November 06, 2018 7:54 AM
To: Sandercott, Robert; Dubyk, Wally; Moise, Christopher; Valic, Jessica; 'nsb@robertsonmartin.com'; 'Rob'; 'Jack Hanna'; 'Danna SeeHar'; Murray Chown; Kimm, MacKenzie
Cc: Nicholas Breault; Fitzpatrick, Anne
Subject: 246 Gilmour St - Pre-Consultation
When: Thursday, December 13, 2018 11:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Laurier 110 - Room 4106E (AV Enabled)

Meeting to discuss proposal to construct a low-rise apartment dwelling at the subject property. The request indicates that relief will be required from the minimum side and rear yard setback requirements from the Zoning By-law.

Concept plans will follow once I receive them from the proponents. Please let me know if there are any issues with this time.

Robert Sandercott
X14270
'

'
'

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'

Francois Thauvette

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: Wednesday, August 28, 2019 4:10 PM
To: Francois Thauvette
Subject: Re: Pre-Consultation with the RVCA - Proposed 6-storey Residential Development at 246 Gilmour Street

Hi Francois

that is correct. Please mention this in your serving report

Get Outlook for Android

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: Wednesday, August 28, 2019 3:09:17 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: Pre-Consultation with the RVCA - Proposed 6-storey Residential Development at 246 Gilmour Street

Hi Eric,

We are working on a 6-storey residential development located at 246 Gilmour Street, in the City of Ottawa. Although the proposed development will include on-site stormwater quantity control, we assume there will be no requirement for stormwater quality control as the storm sewer in Gilmour St. flows into a combined sewer in Elgin Street. This has been our experience on other projects located within a combined sewer area, in the City of Ottawa.

Please review and confirm if our assumption is correct.

Regards,

François Thauvette, P. Eng., Senior Project Manager | Land Development & Public Sector Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 219 | Cell: 613.276.0310 | Fax: 613.254.5867

APPENDIX B

Development Servicing Study Checklist

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

N/A ☐ Executive Summary (for larger reports only).

☑ Date and revision number of the report.

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

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

☑ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.

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

N/A ☐ 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.

N/A ☐ 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.

N/A ☐ Proposed phasing of the development, if applicable.

☑ Reference to geotechnical studies and recommendations concerning servicing.

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

- Metric scale
- North arrow (including construction North)
- Key plan
- Name and contact information of applicant and property owner
- Property limits including bearings and dimensions
- Existing and proposed structures and parking areas
- Easements, road widening and rights-of-way
- Adjacent street names

4.2 Development Servicing Report: Water

N/A ☐ 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.

N/A ☐ 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.

N/A ☐ 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

N/A ☐ 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.

N/A ☐ 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).

N/A ☐ 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.

N/A ☐ Description of existing sanitary sewer available for discharge of wastewater from proposed development.

N/A ☐ 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)

N/A ☐ 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.

N/A ☐ 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).

N/A ☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.

N/A ☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.

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

N/A ☐ 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.

N/A ☐ Set-back from private sewage disposal systems.

N/A ☐ 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.

N/A ☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

- [x] Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- [ ] N/A Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- [x] 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.
- [x] Any proposed diversion of drainage catchment areas from one outlet to another.
- [x] Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- [ ] N/A 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.
- [x] Identification of potential impacts to receiving watercourses
- [ ] N/A Identification of municipal drains and related approval requirements.
- [x] Descriptions of how the conveyance and storage capacity will be achieved for the development.
- [x] 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.
- [ ] N/A Inclusion of hydraulic analysis including hydraulic grade line elevations.
- [x] Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- [ ] N/A 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.
- [ ] N/A 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:

NOTED ☐ 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.

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

N/A ☐ Changes to Municipal Drains.

N/A ☐ 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

TBD ☐ 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

Water Demands, FUS Calculations and City of Ottawa Boundary Conditions

Francois Thauvette

From: Francois Thauvette
Sent: Thursday, October 10, 2019 11:53 AM
To: Wessel, Shawn
Subject: 246 Gilmour - Request for WM boundary Conditions
Attachments: FUSv2-0_246 Gilmour.pdf

Hi Shawn,

We are working on the proposed 6-storey residential development at 246 Gilmour Street. We are sending you this e-mail to request watermain boundary conditions for a proposed water service connection to the 200mm dia. WM in Lewis Street, south of the subject site. The anticipated water demands for the proposed development are as follows:

- Average Day Demand = 0.16 L/s
- Max. Day Demand = 0.39 L/s
- Peak Hour Demand = 0.87 L/s
- Max Daily + Fire Flow = 134 L/s (FUS fire flow of 133 L/s) – See attached FUS calculation sheet for details.

Please note that we may require a multi-hydrant approach to fire fighting. There are at least 3 Class AA (blue bonnet hydrants in close proximity to the proposed development (one hydrant on the NW corner of Gilmour/Metcalfe, another on the south side of Gilmour just east of the site in front of the Elgin Street Public School and a third hydrant on the south side of Lewis Street, approximately mid-way between the subject site and Metcalfe).

Regards,

François Thauvette, P. Eng., Senior Project Manager | Land Development & Public Sector Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 219 | Cell: 613.276.0310 | Fax: 613.254.5867

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118221
Project Name: 246 Gilmour
Date: 10/10/2019
Input By: S.Matthews
Reviewed By: F.Thauvette

Legend: Input by User; No Information or Input Required

Building Description: 6-Storey Residential Building
Ordinary construction

Step			Input		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Wood frame		1.5	1	
		Ordinary construction	Yes	1		
		Non-combustible construction		0.8		
		Modified Fire resistive construction (2 hrs)		0.6		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	221			
		Number of Floors/Storeys	6			
		Area of structure considered (m^2)			**1,326**	
	F	**Base fire flow without reductions**				**8,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**			**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**6,800**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**			**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-2,720**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	No	-10%		
				Cumulative Total	**-40%**	
5	**Exposure Surcharge (cumulative %)**				**Surcharge**	
	(3)	North Side	20.1 - 30 m		10%	**4,080**
		East Side	20.1 - 30 m		10%	
		South Side	10.1 - 20 m		15%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**60%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**8,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**133**
				or	USGPM	2,114
7	**Storage Volume**	Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	960

Francois Thauvette

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Tuesday, October 15, 2019 1:20 PM
To: Francois Thauvette
Subject: 246 Gilmour - Request for WM boundary Conditions
Attachments: 246 Gilmour Oct 2019.pdf

Good afternoon Mr. Thauvette.

Please find boundary conditions as requested:

The following are boundary conditions, HGL, for hydraulic analysis at 246 Gilmour (zone 1W) assumed to be connected to the 203mm on Lewis (see attached PDF for location).

Minimum HGL = 105.8m

Maximum HGL = 115.0m

MaxDay + FireFlow (133L/s) = 101.0m

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

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

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

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji
Project Manager - Infrastructure Approvals

Gestionnaire de projet – Approbation des demandes d'infrastructures

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

'

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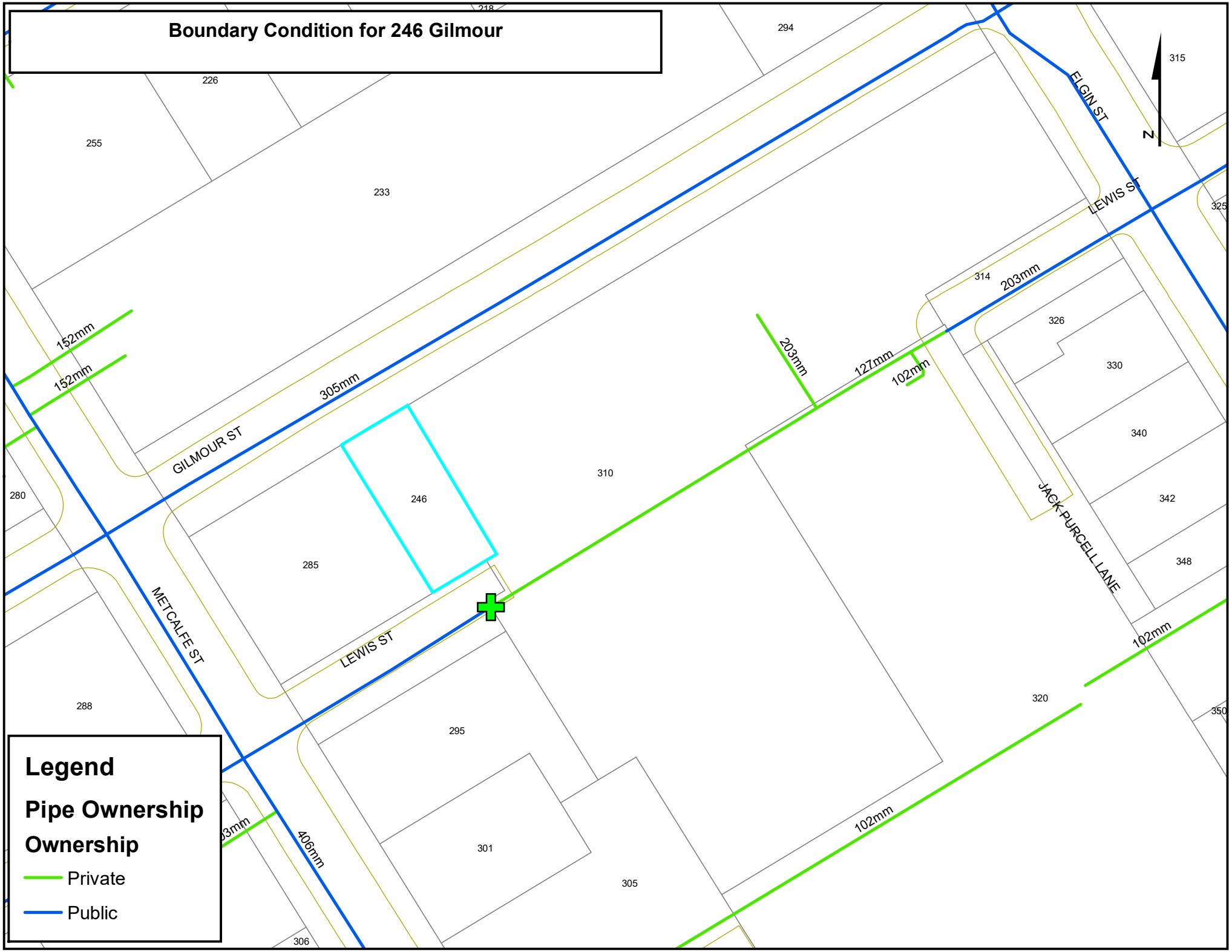
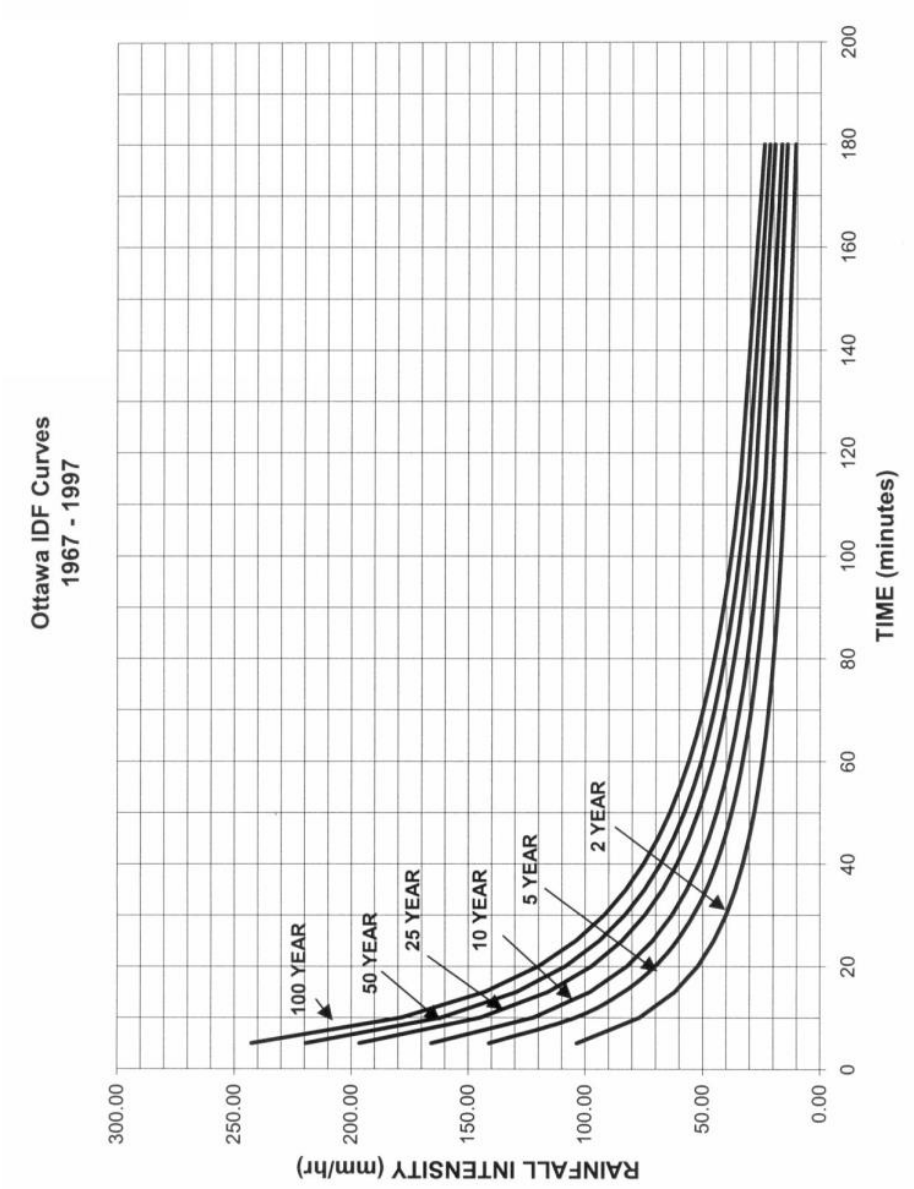

Boundary Condition for 246 Gilmour
294
226
255
233
315
N
ELGIN ST
LEWIS ST
325
314
203mm
326
330
340
342
348
152mm
152mm
305mm
GILMOUR ST
203mm
127mm
102mm
310
246
280
285
JACK PURCELL LANE
METCALFE ST
LEWIS ST
102mm
288
295
320
350
301
305
102mm
406mm
306
Legend
Pipe Ownership
Ownership
Private
Public

APPENDIX D

IDF Curves and SWM Calculations

APPENDIX 5-A OTTAWA INTENSITY DURATION FREQUENCY (IDF) CURVE



Proposed Residential Building
246 Gilmour Street

Pre - Development							
Description	***Area (ha)***	***$A_{impervious}$ (ha) C=0.9***	***$A_{pervious}$ (ha) C=0.2***	**Weighted C_{w5}**	**Weighted C_{w100}**	**5-Year Flow (L/s)**	**100-Year Flow (L/s)**
Total Site Area	0.039	0.006	0.033	0.31	0.37	3.5	7.1

Post - Development : Uncontrolled Site								
Area	**Description**	***Area (ha)***	***A_{imp} (ha) C=0.9***	***A_{perv} (ha) C=0.2***	**C_5**	**C_{100}**	**Uncontrolled Flow (L/s)**	
							5-year	**100-year**
A-1	Direct Runoff to Gilmour Street	0.0024	0.0005	0.0019	0.35	0.41	0.24	0.48
A-2	Direct Runoff to Lewis Street	0.0047	0.0030	0.0017	0.65	0.73	0.88	1.70
A-3	Direct Runoff to Lewis Street	0.0041	0.0011	0.0030	0.39	0.45	0.46	0.92

Post - Development : Total Flows for Controlled Site + Uncontrolled Runoff						
Area	**Description**	**Flow (L/s)**		**Storage Required (m^3)**		**Provided (m^3)**
		5-year	**100-year**	**5-year**	**100-year**	
A-1	Direct Runoff to Gilmour Street	0.24	0.48	-	-	-
A-2	Direct Runoff to Lewis Street	0.88	1.70	-	-	-
A-3	Direct Runoff to Lewis Street	0.46	0.92	-	-	-
R 1-4	Controlled Roof Drains	2.76	3.36	3.0	7.6	11.9
	Totals :	**4.34**	**6.46**	**3.0**	**7.6**	**11.9**

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 5-YEAR EVENT
AREA A-1 Direct Runoff to Gilmour Street

OTTAWA IDF CURVE

Area =	0.0024	ha	Qallow =	0.24	L/s
C =	0.35		Vol(max) =	0.0	m^3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m^3)
5	141.18	0.33	0.09	0.03
10	104.19	0.24	0.00	0.00
15	83.56	0.19	-0.05	-0.04
20	70.25	0.16	-0.08	-0.09
25	60.90	0.14	-0.10	-0.15
30	53.93	0.12	-0.12	-0.21
35	48.52	0.11	-0.13	-0.27
40	44.18	0.10	-0.14	-0.33
45	40.63	0.09	-0.15	-0.40
50	37.65	0.09	-0.15	-0.46
55	35.12	0.08	-0.16	-0.53
60	32.94	0.08	-0.16	-0.59
65	31.04	0.07	-0.17	-0.66
70	29.37	0.07	-0.17	-0.73
75	27.89	0.06	-0.18	-0.79
80	26.56	0.06	-0.18	-0.86
85	25.37	0.06	-0.18	-0.93
90	24.29	0.06	-0.18	-1.00

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 100-YEAR EVENT
AREA A-1 Direct Runoff to Gilmour Street

OTTAWA IDF CURVE

Area =	0.0024	ha	Qallow =	0.48	L/s
C =	0.41		Vol(max) =	0.0	m^3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m^3)
5	242.70	0.66	0.17	0.05
10	178.56	0.48	0.00	0.00
15	142.89	0.39	-0.10	-0.09
20	119.95	0.33	-0.16	-0.19
25	103.85	0.28	-0.20	-0.30
30	91.87	0.25	-0.23	-0.42
35	82.58	0.22	-0.26	-0.55
40	75.15	0.20	-0.28	-0.67
45	69.05	0.19	-0.30	-0.80
50	63.95	0.17	-0.31	-0.93
55	59.62	0.16	-0.32	-1.06
60	55.89	0.15	-0.33	-1.20
65	52.65	0.14	-0.34	-1.33
70	49.79	0.13	-0.35	-1.47
75	47.26	0.13	-0.36	-1.60
80	44.99	0.12	-0.36	-1.74
85	42.95	0.12	-0.37	-1.87
90	41.11	0.11	-0.37	-2.01

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 5-YEAR EVENT
AREA A-2 Direct Runoff to Lewis Street

OTTAWA IDF CURVE

Area =	0.0047	ha	Qallow =	0.88	L/s
C =	0.65		Vol(max) =	0.0	m^3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m^3)
5	141.18	1.19	0.31	0.09
10	104.19	0.88	0.00	0.00
15	83.56	0.71	-0.17	-0.16
20	70.25	0.59	-0.29	-0.34
25	60.90	0.51	-0.37	-0.55
30	53.93	0.46	-0.42	-0.76
35	48.52	0.41	-0.47	-0.99
40	44.18	0.37	-0.51	-1.22
45	40.63	0.34	-0.54	-1.45
50	37.65	0.32	-0.56	-1.69
55	35.12	0.30	-0.58	-1.93
60	32.94	0.28	-0.60	-2.17
65	31.04	0.26	-0.62	-2.41
70	29.37	0.25	-0.63	-2.66
75	27.89	0.24	-0.64	-2.90
80	26.56	0.22	-0.66	-3.15
85	25.37	0.21	-0.67	-3.40
90	24.29	0.21	-0.68	-3.65

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 100-YEAR EVENT
AREA A-2 Direct Runoff to Lewis Street

OTTAWA IDF CURVE

Area =	0.0047	ha	Qallow =	1.70	L/s
C =	0.73		Vol(max) =	0.0	m^3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m^3)
5	242.70	2.31	0.61	0.18
10	178.56	1.70	0.00	0.00
15	142.89	1.36	-0.34	-0.31
20	119.95	1.14	-0.56	-0.67
25	103.85	0.99	-0.71	-1.07
30	91.87	0.87	-0.83	-1.49
35	82.58	0.79	-0.91	-1.92
40	75.15	0.72	-0.98	-2.36
45	69.05	0.66	-1.04	-2.82
50	63.95	0.61	-1.09	-3.27
55	59.62	0.57	-1.13	-3.74
60	55.89	0.53	-1.17	-4.20
65	52.65	0.50	-1.20	-4.68
70	49.79	0.47	-1.23	-5.15
75	47.26	0.45	-1.25	-5.63
80	44.99	0.43	-1.27	-6.10
85	42.95	0.41	-1.29	-6.58
90	41.11	0.39	-1.31	-7.07

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 5-YEAR EVENT
AREA A-3 Direct Runoff to Lewis Street

OTTAWA IDF CURVE

Area =	0.0041	ha	Qallow =	0.46	L/s
C =	0.39		Vol(max) =	0.0	m^3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m^3)
5	141.18	0.62	0.16	0.05
10	104.19	0.46	0.00	0.00
15	83.56	0.37	-0.09	-0.08
20	70.25	0.31	-0.15	-0.18
25	60.90	0.27	-0.19	-0.29
30	53.93	0.24	-0.22	-0.40
35	48.52	0.21	-0.25	-0.52
40	44.18	0.20	-0.27	-0.64
45	40.63	0.18	-0.28	-0.76
50	37.65	0.17	-0.29	-0.88
55	35.12	0.16	-0.31	-1.01
60	32.94	0.15	-0.31	-1.13
65	31.04	0.14	-0.32	-1.26
70	29.37	0.13	-0.33	-1.39
75	27.89	0.12	-0.34	-1.52
80	26.56	0.12	-0.34	-1.65
85	25.37	0.11	-0.35	-1.78
90	24.29	0.11	-0.35	-1.91

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 100-YEAR EVENT
AREA A-3 Direct Runoff to Lewis Street

OTTAWA IDF CURVE

Area =	0.0041	ha	Qallow =	0.92	L/s
C =	0.45		Vol(max) =	0.0	m^3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m^3)
5	242.70	1.25	0.33	0.10
10	178.56	0.92	0.00	0.00
15	142.89	0.73	-0.18	-0.17
20	119.95	0.62	-0.30	-0.36
25	103.85	0.53	-0.38	-0.58
30	91.87	0.47	-0.45	-0.80
35	82.58	0.42	-0.49	-1.04
40	75.15	0.39	-0.53	-1.28
45	69.05	0.36	-0.56	-1.52
50	63.95	0.33	-0.59	-1.77
55	59.62	0.31	-0.61	-2.02
60	55.89	0.29	-0.63	-2.27
65	52.65	0.27	-0.65	-2.53
70	49.79	0.26	-0.66	-2.78
75	47.26	0.24	-0.68	-3.04
80	44.99	0.23	-0.69	-3.30
85	42.95	0.22	-0.70	-3.56
90	41.11	0.21	-0.71	-3.82

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 5-YEAR EVENT
AREA R-1 **Controlled Roof Drain #1**

OTTAWA IDF CURVE

Area =	0.0021	ha	Qallow =	0.63	L/s
C =	0.90		Vol(max) =	0.03	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	0.74	0.11	0.03
10	104.19	0.55	-0.08	-0.05
15	83.56	0.44	-0.19	-0.17
20	70.25	0.37	-0.26	-0.31
25	60.90	0.32	-0.31	-0.47
30	53.93	0.28	-0.35	-0.62
35	48.52	0.25	-0.38	-0.79
40	44.18	0.23	-0.40	-0.95
45	40.63	0.21	-0.42	-1.12
50	37.65	0.20	-0.43	-1.30
55	35.12	0.18	-0.45	-1.47
60	32.94	0.17	-0.46	-1.64
65	31.04	0.16	-0.47	-1.82
70	29.37	0.15	-0.48	-2.00
75	27.89	0.15	-0.48	-2.18
90	24.29	0.13	-0.50	-2.71
105	21.58	0.11	-0.52	-3.25
120	19.47	0.10	-0.53	-3.80

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 100-YEAR EVENT
AREA R-1 **Controlled Roof Drain #1**

OTTAWA IDF CURVE

Area =	0.0021	ha	Qallow =	0.75	L/s
C =	1.00		Vol(max) =	0.20	m3

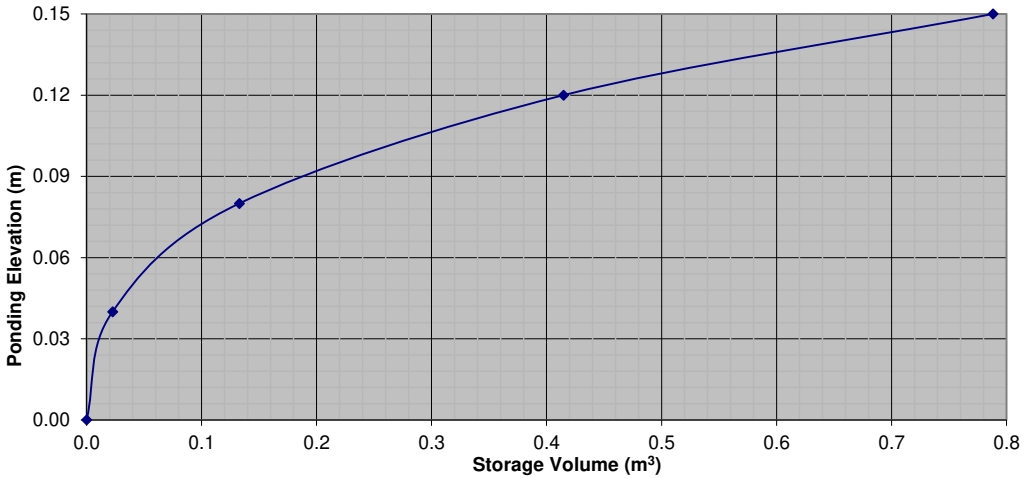
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	1.42	0.67	0.20
10	178.56	1.04	0.29	0.18
15	142.89	0.83	0.08	0.08
20	119.95	0.70	-0.05	-0.06
25	103.85	0.61	-0.14	-0.22
30	91.87	0.54	-0.21	-0.38
35	82.58	0.48	-0.27	-0.56
40	75.15	0.44	-0.31	-0.75
45	69.05	0.40	-0.35	-0.94
50	63.95	0.37	-0.38	-1.13
55	59.62	0.35	-0.40	-1.33
60	55.89	0.33	-0.42	-1.53
65	52.65	0.31	-0.44	-1.73
70	49.79	0.29	-0.46	-1.93
75	47.26	0.28	-0.47	-2.13
90	41.11	0.24	-0.51	-2.75
105	36.50	0.21	-0.54	-3.38
120	32.89	0.19	-0.56	-4.02

Watts Accutrol Flow Control Roof Drains:		RD-100-A-ADJ set to 1/4 Exposed			
Design Event	**Flow/Drain (L/s)**	**Total Flow (L/s)**	**Ponding (cm)**	**Storage (m^3) Required**	**Provided**
5-Year	0.63	0.63	5	0.03	0.79
100-Year	0.75	0.75	9	0.20	0.79

Roof Drain Storage Table for Area RD 1

Elevation	Area RD 1	Total Volume
m	m^2	m^3
0.00	0	0.00
0.04	1.13	0.02
0.08	4.38	0.13
0.12	9.72	0.41
0.15	15.17	0.79

Stage Storage Curve: Area R-1
Controlled Roof Drain #1



Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 5-YEAR EVENT
AREA R-2 **Controlled Roof Drain #2**

OTTAWA IDF CURVE

Area =	0.0089	ha	Qallow =	0.71	L/s
C =	0.90		Vol(max) =	1.04	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	3.14	2.43	0.73
10	104.19	2.32	1.61	0.97
15	83.56	1.86	1.15	1.04
20	70.25	1.56	0.85	1.03
25	60.90	1.36	0.65	0.97
30	53.93	1.20	0.49	0.88
35	48.52	1.08	0.37	0.78
40	44.18	0.98	0.27	0.66
45	40.63	0.90	0.19	0.53
50	37.65	0.84	0.13	0.39
55	35.12	0.78	0.07	0.24
60	32.94	0.73	0.02	0.08
65	31.04	0.69	-0.02	-0.07
70	29.37	0.65	-0.06	-0.23
75	27.89	0.62	-0.09	-0.40
90	24.29	0.54	-0.17	-0.91
105	21.58	0.48	-0.23	-1.45
120	19.47	0.43	-0.28	-1.99

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 100-YEAR EVENT
AREA R-2 **Controlled Roof Drain #2**

OTTAWA IDF CURVE

Area =	0.0089	ha	Qallow =	0.87	L/s
C =	1.00		Vol(max) =	2.55	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	6.00	5.13	1.54
10	178.56	4.42	3.55	2.13
15	142.89	3.54	2.67	2.40
20	119.95	2.97	2.10	2.52
25	103.85	2.57	1.70	2.55
30	91.87	2.27	1.40	2.53
35	82.58	2.04	1.17	2.46
40	75.15	1.86	0.99	2.37
45	69.05	1.71	0.84	2.26
50	63.95	1.58	0.71	2.14
55	59.62	1.48	0.61	2.00
60	55.89	1.38	0.51	1.85
65	52.65	1.30	0.43	1.69
70	49.79	1.23	0.36	1.52
75	47.26	1.17	0.30	1.35
90	41.11	1.02	0.15	0.79
105	36.50	0.90	0.03	0.21
120	32.89	0.81	-0.06	-0.40

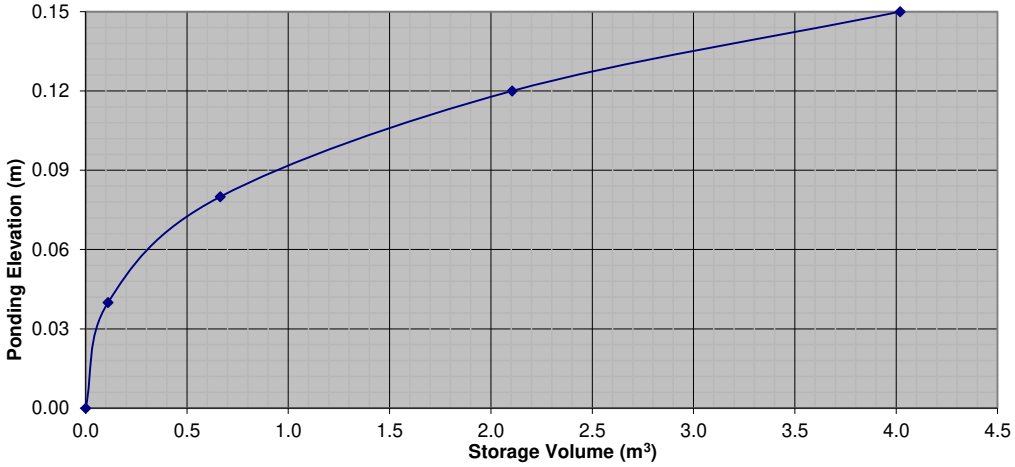
Watts Accutrol Flow Control Roof Drains: RD-100-A-ADJ set to 1/4 Exposed

Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage (m^3) Required	Storage (m^3) Provided
5-Year	0.71	0.71	10	1.04	4.02
100-Year	0.87	0.87	13	2.55	4.02

Roof Drain Storage Table for Area RD 2

Elevation	Area RD 2	Total Volume
m	m^2	m^3
0.00	0	0.00
0.04	5.54	0.11
0.08	22.15	0.66
0.12	49.83	2.10
0.15	77.85	4.02

Stage Storage Curve: Area R-2
Controlled Roof Drain #2



Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 5-YEAR EVENT
AREA R-3 **Controlled Roof Drain #3**

OTTAWA IDF CURVE

Area =	0.0062	ha	Qallow =	0.71	L/s
C =	0.90		Vol(max) =	0.54	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	2.19	1.48	0.44
10	104.19	1.62	0.91	0.54
15	83.56	1.30	0.59	0.53
20	70.25	1.09	0.38	0.46
25	60.90	0.94	0.23	0.35
30	53.93	0.84	0.13	0.23
35	48.52	0.75	0.04	0.09
40	44.18	0.69	-0.02	-0.06
45	40.63	0.63	-0.08	-0.22
50	37.65	0.58	-0.13	-0.38
55	35.12	0.54	-0.17	-0.55
60	32.94	0.51	-0.20	-0.72
65	31.04	0.48	-0.23	-0.89
70	29.37	0.46	-0.25	-1.07
75	27.89	0.43	-0.28	-1.25
90	24.29	0.38	-0.33	-1.80
105	21.58	0.33	-0.38	-2.36
120	19.47	0.30	-0.41	-2.94

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 100-YEAR EVENT
AREA R-3 **Controlled Roof Drain #3**

OTTAWA IDF CURVE

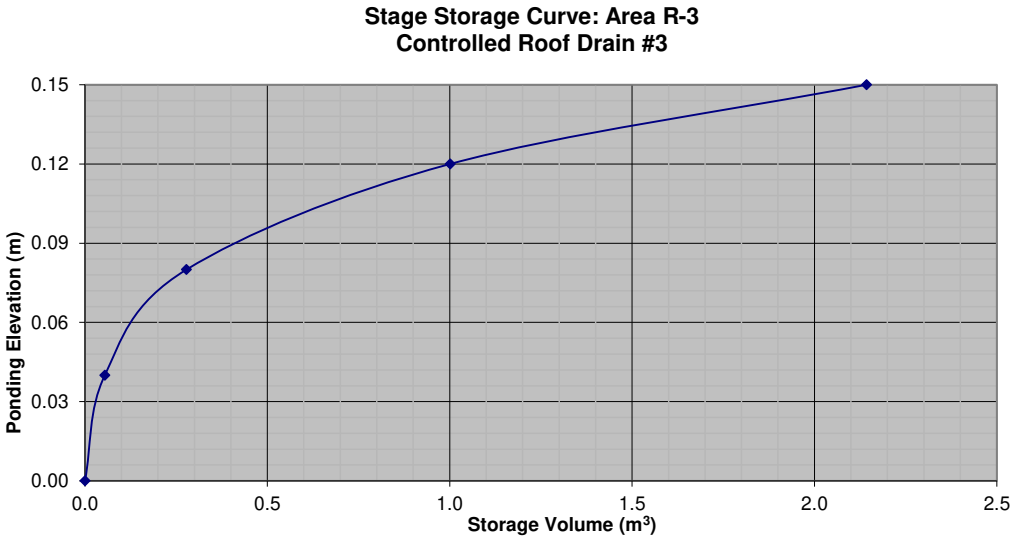
Area =	0.0062	ha	Qallow =	0.87	L/s
C =	1.00		Vol(max) =	1.44	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	4.18	3.31	0.99
10	178.56	3.08	2.21	1.32
15	142.89	2.46	1.59	1.43
20	119.95	2.07	1.20	1.44
25	103.85	1.79	0.92	1.38
30	91.87	1.58	0.71	1.28
35	82.58	1.42	0.55	1.16
40	75.15	1.30	0.43	1.02
45	69.05	1.19	0.32	0.86
50	63.95	1.10	0.23	0.70
55	59.62	1.03	0.16	0.52
60	55.89	0.96	0.09	0.34
65	52.65	0.91	0.04	0.15
70	49.79	0.86	-0.01	-0.05
75	47.26	0.81	-0.06	-0.25
90	41.11	0.71	-0.16	-0.87
105	36.50	0.63	-0.24	-1.52
120	32.89	0.57	-0.30	-2.18

Watts Accutrol Flow Control Roof Drains:			RD-100-A-ADJ set to 1/4 Exposed		
Design Event	**Flow/Drain (L/s)**	**Total Flow (L/s)**	**Ponding (cm)**	**Storage (m^3) Required**	**Provided**
5-Year	0.71	0.71	10	0.54	2.14
100-Year	0.87	0.87	13	1.44	2.14

Roof Drain Storage Table for Area RD 3

Elevation	Area RD 3	Total Volume
m	m^2	m^3
0.00	0	0.00
0.04	2.72	0.05
0.08	8.47	0.28
0.12	27.68	1.00
0.15	48.45	2.14



Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 5-YEAR EVENT
AREA R-4 **Controlled Roof Drain #4**

OTTAWA IDF CURVE

Area =	0.0108	ha	Qallow =	0.71	L/s
C =	0.90		Vol(max) =	1.43	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	3.81	3.10	0.93
10	104.19	2.82	2.11	1.26
15	83.56	2.26	1.55	1.39
20	70.25	1.90	1.19	1.43
25	60.90	1.65	0.94	1.40
30	53.93	1.46	0.75	1.34
35	48.52	1.31	0.60	1.26
40	44.18	1.19	0.48	1.16
45	40.63	1.10	0.39	1.05
50	37.65	1.02	0.31	0.92
55	35.12	0.95	0.24	0.79
60	32.94	0.89	0.18	0.65
65	31.04	0.84	0.13	0.50
70	29.37	0.79	0.08	0.35
75	27.89	0.75	0.04	0.20
90	24.29	0.66	-0.05	-0.29
105	21.58	0.58	-0.13	-0.80
120	19.47	0.53	-0.18	-1.32

Proposed Residential Building
Novatech Project No. 118221
REQUIRED STORAGE - 100-YEAR EVENT
AREA R-4 **Controlled Roof Drain #4**

OTTAWA IDF CURVE

Area =	0.0108	ha	Qallow =	0.87	L/s
C =	1.00		Vol(max) =	3.4	m3

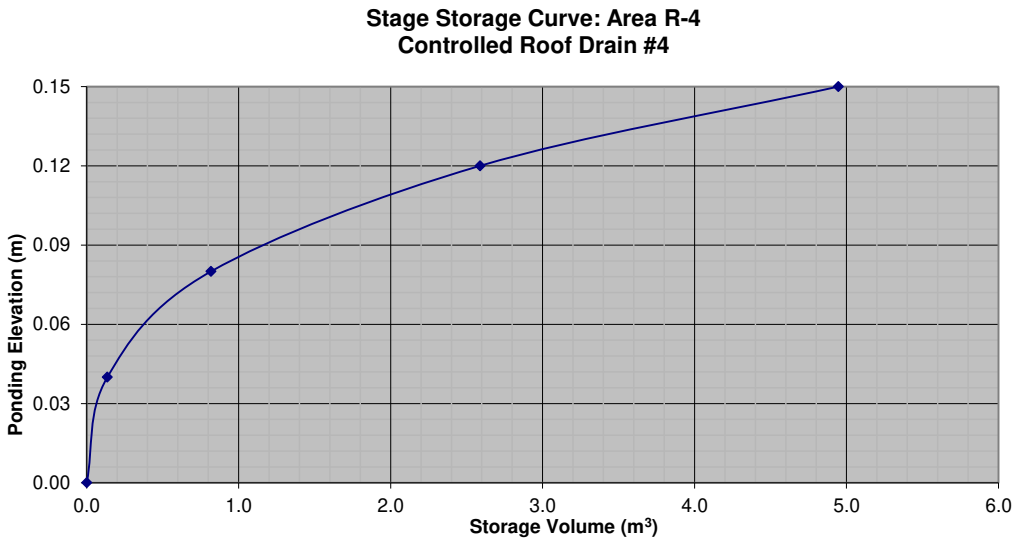
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	7.29	6.42	1.93
10	178.56	5.36	4.49	2.69
15	142.89	4.29	3.42	3.08
20	119.95	3.60	2.73	3.28
25	103.85	3.12	2.25	3.37
30	91.87	2.76	1.89	3.40
35	82.58	2.48	1.61	3.38
40	75.15	2.26	1.39	3.33
45	69.05	2.07	1.20	3.25
50	63.95	1.92	1.05	3.15
55	59.62	1.79	0.92	3.04
60	55.89	1.68	0.81	2.91
65	52.65	1.58	0.71	2.77
70	49.79	1.49	0.62	2.62
75	47.26	1.42	0.55	2.47
90	41.11	1.23	0.36	1.97
105	36.50	1.10	0.23	1.42
120	32.89	0.99	0.12	0.85

Watts Accutrol Flow Control Roof Drains: RD-100-A-ADJ set to 1/4 Exposed

Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage (m^3) Required	Storage (m^3) Provided
5-Year	0.71	0.71	10	1.43	4.95
100-Year	0.87	0.87	14	3.40	4.95

Roof Drain Storage Table for Area RD 4

Elevation	Area RD 4	Total Volume
m	m^2	m^3
0.00	0	0
0.04	6.81	0.14
0.08	27.25	0.82
0.12	61.32	2.59
0.15	95.84	4.95



APPENDIX E

Control Flow Rood Drain Information

WATTS®	Adjustable Accutrol Weir Tag: RD-100-A-ADJ	Adjustable Flow Control for Roof Drains

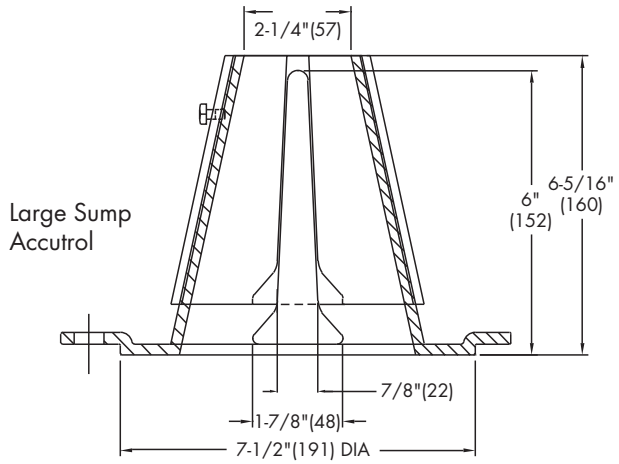
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

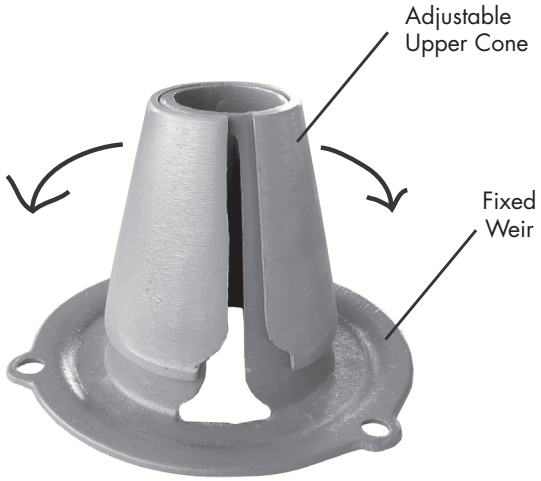
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the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

EXAMPLE:

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

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





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

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

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

Engineer _____ Representative _____

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
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