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73 Guigues Avenue 7-Three Storey Town Houses

Development Servicing and Stormwater Management Report

**73 GUIGUES AVENUE
7-THREE STOREY TOWN HOUSES**

**DEVELOPMENT SERVICING AND
STORMWATER MANAGEMENT REPORT**

Prepared by:

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Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
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May 10, 2019

Ref: R-2019-063
Novatech File No. 118099

May 10, 2019

City of Ottawa
Planning and Growth Management Department
Infrastructure Approvals Division
110 Laurier Avenue West, 4th Floor
Ottawa, Ontario
K1P 1J1

Attention: Mr. Shawn Wessel

Dear Sir:

**Re: Development Servicing and Stormwater Management Report
73 Guigues Avenue
Ottawa, Ontario
Our File No.: 118099**

Enclosed herein is the 'Development Servicing and Stormwater Management Report' for the proposed 7- three storey town house development at 73 Guigues Avenue, in the City of Ottawa. This report addresses the approach to site servicing and stormwater management for the subject property and is submitted in support of the site plan approval application.

Should you have any questions or require additional information, please contact the undersigned.

Yours truly,

NOVATECH



Miroslav Savic, P. Eng.
Project Manager

MS/sm

cc: Jacques Hamel (HD&P)

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- Grading and Erosion & Sediment Control Plan (118099-GR)
- General Plan of Services (118099-GP)
- Stormwater Management Plan (118099-SWM)

1.0 INTRODUCTION

Novatech has been retained to prepare the site servicing, grading and stormwater management design in support of a Zoning By-law Amendment and Site Plan Control application for the proposed 7-three storey town house development at 73 Guigues Avenue in the City of Ottawa.

The subject site is currently occupied by a two storey residential building with a detached parking garage and paved parking. An aerial photo of the subject site is shown in Figure 1.1 below.

Figure 1.1: Aerial Plan provides an aerial view of the site.



A pre-consultation meeting was held with the City of Ottawa in June 2018 at which time the owner was advised of the general submission requirements. Further discussions were held with the City of Ottawa regarding the approach to stormwater management for the site. Refer to **Appendix A** for the pre-consultation meeting minutes, the submission requirements, and the email correspondence with the City of Ottawa.

2.0 PROPOSED DEVELOPMENT

The proposed development is 7-three storey town house units. Six of the units are proposed to face Parent Street and the seventh unit is proposed to face Guigues Avenue. No on-site parking is proposed. A copy of the site plan is included in **Appendix B**.

3.0 SITE SERVICING

The objective of the site servicing design is to conform to the requirements of the City of Ottawa servicing design guidelines by providing a suitable domestic water supply, proper sewage outlets and ensuring that appropriate fire protection is provided.

The servicing criteria, expected sewage flows and water demands for the site have been established using the City of Ottawa municipal design guidelines for sewer and water distribution. The City of Ottawa Servicing Study Guidelines for Development Applications requires a Development Servicing Study Checklist 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 E**.

3.1 Water

The proposed development will be serviced by connecting to the existing 150mm dia. watermain in Parent Street. Each townhouse will have a separate 19mm diameter water service.

The theoretical water demand for the proposed development, calculated as per the Ottawa Design Guidelines – Water Distribution is summarized in **Table 3.2**. Detailed calculations are shown in **Appendix C**.

Table 3.1.1: Water Demand

Average Day Demand	Maximum Day Demand	Peak Hour Demand
0.08 L/s	0.19 L/s	0.42 L/s

The water boundary conditions provided by the City of Ottawa, water demand calculations, and watermain analysis for the existing municipal watermain are provided in **Appendix C**.

The results of the hydraulic analysis are summarized below in **Table 3.1.2**.

Table 3.1.2: Water Analysis Results Summary

Condition	Water Demand	Min/Max Allowable Operating Pressures	Limits of Design Operating Pressures
High Pressure	0.08 L/s	80 psi (Max)	79.5 psi
Peak Hour	0.42 L/s	40 psi (Min)	65.3 psi

The results of the water analysis show there is adequate flow and pressure in the existing 150mm watermain in Parent Street to meet the required domestic fire flow demands.

The Fire Underwriter's Survey (FUS) was used to estimate fire flow demands for the proposed building. The calculated fire flow demand is 233 L/s (14,000 L/min). Refer to **Appendix C** for detailed calculations.

The fire protection will be provided from the existing municipal fire hydrants. There are five fire hydrants near the proposed development. One hydrant is located less than 75m and the other four hydrants are located between 75 and 150m from the proposed building. Refer to the attached screenshot from geoOttawa website enclosed in **Appendix C** for hydrant locations. All the hydrants are rated AA (painted in blue). As per *Table 1 Maximum flow to be considered from a*

given hydrant in Appendix I of Technical Bulletin ISTB-2018-02, the total available flow assuming the above hydrants are running simultaneously is 345 L/s, which is greater than the required fire demand of 233 L/s.

3.2 Sanitary Sewer

The proposed development will be serviced by connecting to the existing 250mm diameter sanitary sewer in Parent Avenue. Each townhouse will be provided with a separate 135mm diameter sanitary service at minimum 1.0% slope.

The calculated peak sanitary flow from the site, including infiltration, is 0.24 L/s. The flow has been calculated as per the City of Ottawa Sewer Design Guidelines. The calculate peak sanitary flow from the existing site is 0.06 L/s. Refer to **Appendix C** for detailed calculations.

The existing 250mm diameter sanitary sewer in Parent Street at 2.09% slope has a full flow capacity of approximately 89.7 L/s. Since the proposed development increases the peak flow by only 0.17 L/s from the existing condition, there are no concerns that the proposed development flows will have any adverse effects on the existing infrastructure.

3.3 Stormwater Management

The proposed development will be serviced by connecting to the existing 300mm diameter storm sewer in Parent Avenue. Each townhouse will have a separate 100mm diameter storm service at minimum 1.0% slope. The existing Parent Avenue storm sewer will have to be extended approximately 18m towards the intersection with Guigues Avenue to service the proposed townhouses.

The stormwater management design for the proposed development will include on-site water quantity control prior to releasing flows from the site. Stormwater management will be provided by rooftop storage. Further details on the sub catchment drainage areas are explained in subsequent sections of the report. See the Stormwater Management Plan (118099-SWM) included in **Appendix G**, for catchment locations, areas, and runoff coefficients.

3.3.1 Existing Conditions

The subject site is presently occupied by a single two storey house with a detached parking garage and a small paved parking lot. The existing site drains towards the municipal catch basins in Parent Street and Guigues Avenue.

3.3.2 Stormwater Management Objectives

The proposed stormwater management design is based on the latest City of Ottawa Sewer Design Guidelines and are as follows:

- Control 1:100 year post-development flow from the site to the maximum 1:5 year allowable release rate as specified by the City of Ottawa. Post-development runoff in excess of the allowable release rate will be stored and controlled on site prior to being release into the municipal storm sewer system.
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

3.3.3 Storm Drainage Areas

The proposed site has been subdivided into eight distinct storm drainage areas for the post-development condition. The size and location of the catchment areas are based on the proposed grading and building roof design for the site. The runoff coefficients for each catchment area were calculated for the proposed conditions and the catchment areas are shown on the Stormwater Management Plan (118099-SWM). A brief description of the subcatchment areas are as follows:

- Runoff from the landscaped areas around the building will sheet drain towards Parent Street and Guigues Avenue (Area A1).
- Runoff from the building roof (Areas R1 to R7) will be controlled and stored on the roof prior to being release to the Parent Avenue storm sewer.

3.3.4 Allowable Release Rate

The allowable release rate for the 0.051 ha site was calculated using the Rational Method to be 7.4 L/s. This release rate was based on an the runoff coefficient of $C=0.5$ and a 1:5 year rainfall intensity of 104.2 mm/hr, based on City of Ottawa IDF Curves using a time of concentration (t_c) of 10 minutes. Refer to **Appendix A** for correspondence from the City of Ottawa.

3.3.5 Post-Development Conditions

Under post-development conditions, the imperviousness of the site will increase. In order to mitigate the stormwater related impacts due to the proposed development, post-development flows will have to be controlled and stored on site via rooftop storage prior to the runoff entering the existing municipal storm sewers. Refer to **Appendix D** for uncontrolled runoff calculations for the sub catchments areas for the site.

Area A1 – Uncontrolled Landscaped Area

The post-development runoff from subcatchment area A1 (uncontrolled runoff) was calculated using the Rational Method to be 2.4 L/s for the 1:5 year design event and 4.9 L/s for the 1:100 year design event (refer to **Appendix D** for detailed calculations).

Areas R1 to R7 – Controlled Building Roof

The post-development flow from Areas R1 to R7 will be attenuated by the use of controlled flow roof drains. A total of three (7) adjustable flow control roof drains will control the flow from the proposed building to 2.24 L/s (5 USGPM/drain).

The controlled release rate, ponding depth, required and maximum storage volumes for both the 1:5 year and 1:100 year design events are summarized in the following table.

Table 3.3.1: Areas R1 to R7 Controlled Flow Roof Drains

Roof Drain ID &	Watts Accutrol Roof Drain Model ID (Weir Setting)	Controlled Flow (L/s)		Ponding Depth (cm)		Storage Vol. Required (m ³)		Max. Storage Available (m ³)
		1:5 Year	1:100 Year	1:5 Year	1:100 Year	1:5 Year	1:100 Year	
RD 1	RD-100-A-ADJ (Closed)	0.32	0.32	8	12	1.4	3.3	4.7

Roof Drain ID &	Watts Accutrol Roof Drain Model ID (Weir Setting)	Controlled Flow (L/s)		Ponding Depth (cm)		Storage Vol. Required (m ³)		Max. Storage Available (m ³)
		1:5 Year	1:100 Year	1:5 Year	1:100 Year	1:5 Year	1:100 Year	
RD 2	RD-100-A-ADJ (Closed)	0.32	0.32	7	10	0.5	1.4	3.2
RD 3	RD-100-A-ADJ (Closed)	0.32	0.32	7	10	0.5	1.4	3.2
RD 4	RD-100-A-ADJ (Closed)	0.32	0.32	7	10	0.5	1.4	3.2
RD 5	RD-100-A-ADJ (Closed)	0.32	0.32	7	10	0.5	1.4	3.2
RD 6	RD-100-A-ADJ (Closed)	0.32	0.32	7	10	0.5	1.4	3.2
RD 7	RD-100-A-ADJ (Closed)	0.32	0.32	7	10	0.5	1.4	3.2
Total Roof	-	2.24	2.24	-	-	4.4	11.7	23.9

Refer to **Appendix D** for Modified Rational Method calculations and **Appendix E** for Watts adjustable flow control roof drain information.

Summary of Post-Development Flows

Table 3.3.2: Post-Development Stormwater Flow Table

Post - Development Flows						
Area	Description	Post-Development Flow (L/s)		Storage Required (m ³)		Provided (m ³)
		5 year	100 year	5 year	100 year	
A-1	Uncontrolled Landscaped Area	2.4	4.9	N/A	N/A	N/A
R1 to R7	Controlled Building Roof	2.2	2.2	4.4	11.7	23.9
	Total Flow =	4.6	7.1			

As indicated in **Table 3.4** the total post-development flow from the sub-catchment areas will be released from the proposed development at a combined maximum rate of 7.1 L/s during the 1:100 year design event and 4.6 L/s during the 1:5 year design event; neither of which exceeds the allowable flow for the site of 7.4 L/s.

4.0 SITE GRADING

The intent of the grading design was to propose the building finished floor elevation to best tie into the elevations along the existing adjacent roadways and surrounding property lines. The proposed grading design provides positive drainage away from the building. Refer to the enclosed Grading and Erosion & Sediment Control Plan (118099-GR) for details.

4.1 Major System Overland Flow Route

In the case of a major rainfall event exceeding the design storms provided for, the stormwater located within the front, side, and rear yard landscaped areas will overflow towards Parent Street and Guigues Avenue. Stormwater from the building roof will pond to a maximum of 0.15 m on the rooftops before overflowing to the front yard via the proposed scuppers.

4.2 Erosion and Sediment Control

Erosion and sediment control measures will be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987). Details are provided on the Grading and Erosion & Sediment Control Plan (113023-GR).

- All erosion and sediment control measures are to be installed to the satisfaction of the engineer, the municipality and the conservation authority prior to undertaking any site alterations (filling, grading, removal of vegetation, etc.) and remain present during all phases of site preparation and construction.
- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accord with the design drawings and that mitigation measures are being implemented as specified.
 - A light duty silt fence is to be installed as per OPSS 577 and OPSD 219.110 along the surrounding construction limits.
 - Filter cloth is to be placed under the grates of all proposed and existing catchbasins and catchbasin manhole drainage structures.
 - Street sweeping and cleaning will be performed, as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site.
- The contractor shall immediately report to the engineer or inspector any accidental discharges of sediment material into any ditch or sewer system. Appropriate response measures shall be carried out by the contractor without delay.

The proposed temporary erosion and sediment control measures will be implemented prior to construction and will remain in place during all phases of construction.

5.0 GEOTECHNICAL INVESTIGATIONS

A Geotechnical Investigation Report has been prepared for the proposed site. Refer to the Patterson Group 'Geotechnical Investigation – Proposed Residential Development' (Report. No. PG4601-1), dated October 2, 2018 for the existing subsurface conditions, construction recommendations and geotechnical inspection requirements for the proposed development.

6.0 SUMMARY AND CONCLUSIONS

This report has been prepared in support of the site plan application for the proposed development located at 73 Guigues, in the City of Ottawa.

The conclusions are as follows:

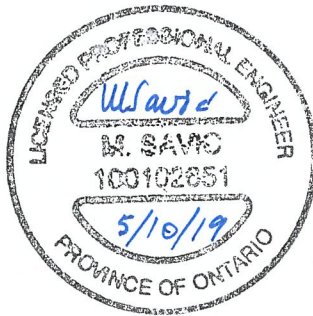
- The proposed development will be serviced by connecting to the existing municipal sanitary and storm sewer systems and the existing municipal watermain within the Parent Street Right-Of-Way.

- The proposed building will not be sprinklered. The fire protection will be provided from the existing municipal fire hydrants near the proposed building.
- The total post-development flow from the will be controlled to a maximum of 7.4 L/s during the 1:100 year design event and to 4.8 L/s during the 1:5 year design event. Neither of which exceed the maximum allowable release rate of 7.4 L/s as calculated to meet the City of Ottawa stormwater quantity requirements.
- Temporary erosion and sediment controls are to be provided during construction.

Servicing assessments discussed in the preceding sections show that there are no major obstacles to servicing the proposed development. It is recommended that the proposed site servicing and stormwater management design be approved for implementation.

NOVATECH

Prepared by:



Miroslav Savic, P. Eng.
Senior Project Manager | Land Development

Reviewed by:

A handwritten signature in black ink, appearing to read "Lee Sheets".

Lee Sheets, C.E.T.
Director | Land Development & Public Sector Infrastructure

APPENDIX A
Correspondence

MINUTES

73 Guigues Avenue (72 St Andrew Street) - Pre-Application Consultation Meeting

Date: Friday, June 29, 2018

Time: 1:00 PM – 2:00 PM

Location: 110 Laurier Avenue West, Room 4103E

Present:

Murray Chown (Applicant/Agent)

Jacques Hamel (Architect)

Cynthia Kasem (Property Owner)

Robert Sandercott (City of Ottawa Planning)

John Lunney (City of Ottawa Planning)

Lesley Collins (City of Ottawa Heritage)

Christopher Moise (City of Ottawa Urban Designer)

Bob Tritt (Lowertown Community Association)

1.0 Introductions

2.0 Confirmation NDA has been signed

Signed

3.0 Overview of Proposal

3.1	Overview <ul style="list-style-type: none">• Jacques Hamel provided an overview of the subject property, the proposed development concept and the design approach:<ul style="list-style-type: none">○ The property consists of two buildings/lots (73 Guigues and 72-74 St Andrew) that have merged on title.○ The building fronting on Guigues Avenue is proposed to be demolished, and it is proposed to construct a three-storey townhouse dwelling containing eight units total.○ No on-site parking is proposed. Seven of the units are proposed to face Parent Street and the eighth unit is proposed to face Guigues Avenue.○ The existing four-unit apartment building fronting onto St Andrew Street is proposed to be retained, with potential interior renovations in the future. The proponents have filed an application for Consent with the Committee of Adjustment to sever off this building from the rest of the property, with an associated Minor Variance application to address deficient lot width and lot area for the existing apartment building.○ The proponents have considered a number of alternatives for developing the site, notably to develop it with a combination of townhouse and semi-detached	
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	<p>units instead of a single townhouse dwelling. Ultimately, it was decided that the 8-unit townhouse option was optimal in terms of useable amenity area as well as site functionality.</p>	
3.2	<p>Official Plan and Zoning Designations</p> <ul style="list-style-type: none"> • Official Plan – General Urban Area <ul style="list-style-type: none"> ○ Section 3.6.1 • R4S – Residential Fourth Density Zone <ul style="list-style-type: none"> ○ A townhouse dwelling is subject to a minimum lot width of 5.6 m and lot area of 165 sq m for each unit. ○ 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. ○ The property is located in the Mature Neighbourhoods Overlay and therefore subject to the provisions of Sections 139 and 140. ○ No on-site parking is required. However, front and corner side yard parking are prohibited. 	

4.0 Preliminary Comments from City

4.1	<p>Planning (Robert Sandercott):</p> <ul style="list-style-type: none"> • A Site Plan Control application (Manager Approval, Public Consultation) will be required in support of the proposed townhouse development. • Relief is required from the Zoning By-law to address, at a minimum, the minimum lot widths and lot areas for the proposed townhouse units, as well as from the Heritage Overlay requirement for demolished buildings to be replaced at the same volume and massing. Given the extent of the relief required, it is Staff's opinion that this is best achieved via a Zoning By-law Amendment. • The development is not subject to the Urban Design Review Panel as it is not within a Design Priority Area and fewer than 9 dwelling units are proposed. • Of the alternatives proposed, it is agreed that the 8-unit townhouse configuration is preferable in terms of site functionality and streetscape treatment. • Given the relatively small lot sizes proposed, rationale should focus on context of the surrounding block and how any potential impacts of proposed building massing on abutting properties can be mitigated. • With regard to the Committee of Adjustment applications in support of the proposed lot severance, note that the proposed lot 	
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	configuration will be inconsistent with the existing lot pattern on this block. Consequently, the Committee may question the appropriateness of such a severance prior to the approval of the proposed rezoning and/or Site Plan.	
4.2	<p>Engineering (Shawn Wessel) – was unable to attend the meeting but provides the following comments:</p> <ul style="list-style-type: none"> • The project site is surrounded by separated sewers and water mains including: <ul style="list-style-type: none"> - 300 mm diameter PVC Sanitary, 300 mm diameter Conc. Storm & 203 mm diameter PVC water main on St. Andrew St. - 250 mm diameter PVC Sanitary, 300 mm diameter Conc. Storm & 152 mm diameter UCI water main on Parent Ave. - 300 mm diameter PVC Sanitary, 300 mm diameter Conc. Storm & 203 mm diameter water main on St. Andrew. - 300 mm diameter PVC Sanitary, 375 mm diameter Conc. Storm & 203 mm diameter DI water main on Guigues Ave. • A noise study will be required due to 100 m proximity to St. Patrick St. • Tree Disclosure Report required due to existing trees within ROW on St. Andrew St, if planned to be removed. • No Slope Stability study required, unless a grade raise is being considered – which does not appear to be the case by the renderings supplied. Please also see Site Alteration By-Law 2018-164 if applicable. • Plans and reports required for SPC Application: <ul style="list-style-type: none"> 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 • Applicant to check HGL of sewers in area to ensure capacity for the proposed build. <ul style="list-style-type: none"> • Water Boundary conditions can be provided for applicant once we receive their calculated requirements. 	

	<p>Stormwater Management - T= 10 minutes, C=0.4</p> <p>Consult amended Sewer and Water Design Guidelines, including new Technical Bulletin ISTB-2018-04 amendment for HGL for storm sewer systems on the use of sump pumps and SP criteria.</p>	
4.3	<p>Transportation (Wally Dubyk):</p> <ul style="list-style-type: none"> The TIA (Transportation Impact Assessment) screening form submitted by the applicant has been reviewed. It is confirmed that no triggers for a TIA have been met and therefore no further TIA reports are required. 	
4.4	<p>Urban Design (Christopher Moise):</p> <ul style="list-style-type: none"> Generally agrees with the approach to have most of the proposed units facing Parent Street. Unit sizes and amenity areas allow for a unique product. Building articulation is also a positive element in the present design. There is opportunity for more expression on the corner entrance on Guigues, as space is available to increase the prominence of this entrance. This may include re-arranging the internal layout of this unit. Uncommon to see 8 townhouse units attached in one building. Consider tying certain design elements (e.g. materiality of front façade) together in order to create variation. Consider adding horizontal features to break up the façade. The rear façade design should also be considered carefully; there is not as much detail on this elevation so far. Proponent has done a good job showing the surrounding design context, but more work should be done to show how the proposed design fits with this context. 	
4.5	<p>Heritage (Lesley Collins):</p> <ul style="list-style-type: none"> Reconsider the design of the corner of Guigues/Parent to provide a more interesting corner feature. Some options to consider may include additional glazing at the ground floor or changes to the proposed landscape treatment. In terms of proposed building materials, try to pick up on the red brick and limestone found throughout the neighbourhood. The building should be “of its own time”, but also reflecting the character of the neighbourhood. Consider some stronger horizontal elements on the front façade, picking up on the streetscape analysis that has been done. A heritage permit will be required for the demolition of the existing building and to permit the construction of the proposed townhouse dwelling. This will be required to proceed through Built Heritage Sub-Committee (BHSC), and subsequently Planning Committee and Council. 	

	<ul style="list-style-type: none"> • This should run concurrently with the Zoning By-law Amendment application such that both applications proceed to the same Planning Committee and Council meetings. • The existing building to be retained is a Category 3 building on the Heritage reference list. 	
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5.0 Preliminary Comments from Community Association Representative (Bob Tritt, Lowertown Community Association)

5.1	<ul style="list-style-type: none"> • The main potential concerns that may be raised from the community will relate to heritage, given that the property is located within the Heritage Overlay and is within a heritage district. The building's fit within the neighbourhood context will need to be carefully considered. • Ensure that high quality building materials are used in the street-facing facades. • Quality of the building's contribution to the existing streetscapes and fit with the existing building pattern will also be major considerations. • In providing comments on the proposal, the Community Association will take the concerns and position of immediate neighbours into consideration. Consequently, advance consultation with immediate neighbours is highly encouraged. • Generally, there appear to be positive elements to the proposal, however the applicant is encouraged to reach out for an informal meeting to discuss the proposal and potential concerns in further detail. 	
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6.0 Next Steps / Process

6.1	<ul style="list-style-type: none"> • Staff to follow up with minutes and list of required reports and studies. • Owner/Applicant is encouraged to discuss the proposal with neighbours and the Community Association in advance of any formal applications. In particular, as Consent applications have already been filed for the severance of the property, such discussion is encouraged to take place sooner rather than later. 	
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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. Site Servicing Study / Brief	S	6
S	6	3. Grade Control and Drainage Plan	4. Geotechnical Report	S	4
	2	5. Composite Utility Plan	6. Groundwater Impact Study		6
	5	7. Servicing Options Report	8. Wellhead Protection Study		6
	9	9. Community Transportation Study and / or Transportation Impact Study / Brief	10. Erosion and Sediment Control Plan / Brief	S	6
S	6	11. Storm water Management Report / Brief	12. Hydro geological and Terrain Analysis		8
	3	13. Hydraulic Water main Analysis	14. Noise / Vibration 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)		Available online
	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
A	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
	6	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-Jun-29

Application Type: Zoning By-law Amendment/
Site Plan Control / Zoning By-law Amendment

File Lead (Assigned Planner): Robert Sandercott

Infrastructure Approvals Project Manager: Shawn Wessel

Site Address (Municipal Address): 73 Guigues Avenue / 72-74 St. Andrew 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.

Miro Savic

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Friday, April 12, 2019 1:02 PM
To: Miro Savic
Cc: Danna SeeHar; Sandercott, Robert
Subject: RE: 73 Guigues Avenue - SWM Criteria

Good afternoon Mr. Savic

My apologies. This was an error and typo.

Please use the following SWM Criteria for this application.

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

- Total (San & Stm) allowable release rate will be 5 year pre-development rate if:
Not within a partially separated sewer area, Sewer Pipe is newer than 1970 or within Vanier Area where no less than 450mm dia. - otherwise use 2 year pre-dev. 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.

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

Other:

Please note the following:

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

Water Supply Redundancy – Fire Flow:

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

FH analysis is available upon request if considering use of FH for firefighting capabilities and suppression.

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

Show all ponding for 5 and 100 year events

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 regards 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 Resources Dept. – Modeling Group, upon request.

Re Waste:

The Owner acknowledges the need to prepare a waste reduction workplan summary for the construction project as required by O.Reg. 102/94, being "Waste Audits and Waste Reduction Work Plans" made under the Environmental Protection Act, RSO 1990, c E.19, as amended and provide a copy of the said waste reduction workplan summary to the File Lead (PIED).

Provided Info:

Please be advised that it is the responsibility of the applicant and their representatives/consultants to verify information provided by the City of Ottawa.

Please contact City View and Release Info Centre at Ext. 44455

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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From: Miro Savic <m.savic@novatech-eng.com>

Sent: April 11, 2019 9:50 AM

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

Cc: Danna SeeHar <d.seehar@novatech-eng.com>

Subject: 73 Guigues Avenue - SWM Criteria

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Shawn,

As discussed, please confirm the stormwater management criteria noted in the attached meeting minutes from the pre-consultation meeting: $C = 0.4$, $T_c = 10$ minutes.

Regards,

Miroslav Savic, P.Eng., Senior Project Manager | Land Development Engineering

NOVATECH Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 265 | Fax: 613.254.5867

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APPENDIX B

Site Plan

APPENDIX C

Sanitary Sewer, Watermain and Fire Flow Calculations

73 GUIGUES AVENUE

SANITARY FLOW

PROPOSED 7 TOWNHOUSES

Number of Townhouse Units	7
Persons per 1bdr Unit	2.7
Total Population	19
Average Daily Flow	280 L/c/day
Peak Factor (Harmon Formula)	3.51
Peak Sanitary Flow	0.22 L/s

Site Area	0.05 ha
Infiltration Allowance	0.33 L/s/ha
Peak Extraneous Flows	0.02 L/s

Total Peak Sanitary Flow	0.24 L/s
---------------------------------	-----------------

EXISTING SINGLE DETACHED HOUSE

Persons per House	3.4
Total Population	3.4
Average Daily Flow	280 L/c/day
Peak Factor (Harmon Formula)	3.56
Peak Sanitary Flow	0.04 L/s

Site Area	0.05 ha
Infiltration Allowance	0.33 L/s/ha
Peak Extraneous Flows	0.02 L/s

Existing Peak Sanitary Flow	0.06 L/s
------------------------------------	-----------------

73 GUIGUES AVENUE

WATER ANALYSIS

WATER DEMND

Number of Townhouse Units	7
Persons per 1bdr Unit	2.7
Total Population	19
Average Day Demand	350 L/c/day

Average Day Demand	0.08 L/s
Maximum Day Demand (2.5 x avg. day)	0.19 L/s
Peak Hour Demand (2.2 x avg. day)	0.42 L/s

BOUNDAY CONDITIONS

Maximum HGL =	115.9 m
Minimum HGL =	105.9 m

PRESSURE TESTS

AVERAGE GROUND ELEVATION	60.0 m
--------------------------	--------

HIGH PRESSURE TEST = MAX HGL - AVG GROUND ELEV x 1.42197 PSI/m < 80 PSI
HIGH PRESSURE = **79.5 PSI**

LOW PRESSURE TEST = MIN HGL - AVG GROUND ELEV x 1.42197 PSI/m > 40 PSI
LOW PRESSURE = **65.3 PSI**

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



Engineers, Planners & Landscape Architects

Novatech Project #: 118099

Project Name: 73 Guigues Avenue

Date: 4/2/2019

Input By: Miroslav Savic

Reviewed By:

Legend

Input by User

No Information or Input Required

Building Description: 7 - Three Storey Town Houses

Step			Input		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	Construction Material			Multiplier		1.5
	Coefficient related to type of construction C	Wood frame	Yes	1.5		
		Ordinary construction		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)	330			990
		Number of Floors/Storeys	3			
		Area of structure considered (m ²)				
	F	Base fire flow without reductions				10,000
		$F = 220 C (A)^{0.5}$				
Reductions or Surcharges						
3	Occupancy hazard reduction or surcharge			Reduction/Surcharge		8,500
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%		
		Combustible		0%	-15%	
		Free burning		15%		
		Rapid burning		25%		
4	Sprinkler Reduction			Reduction		0
	(2)	Adequately Designed System (NFPA 13)	No	-30%		
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
		Cumulative Total			0%	
5	Exposure Surcharge (cumulative %)				Surcharge	5,100
	(3)	North Side	3.1 - 10 m		20%	
		East Side	3.1 - 10 m		20%	
		South Side	20.1 - 30 m		10%	
		West Side	20.1 - 30 m		10%	
		Cumulative Total			60%	
Results						
6	(1) + (2) + (3)	Total Required Fire Flow, rounded to nearest 1000L/min			L/min	14,000
		(2,000 L/min < Fire Flow < 45,000 L/min)			or L/s	233
					or USGPM	3,699
7	Storage Volume	Required Duration of Fire Flow (hours)			Hours	3
		Required Volume of Fire Flow (m ³)			m ³	2520

Miro Savic

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Wednesday, April 24, 2019 7:22 AM
To: Miro Savic
Cc: Danna SeeHar; Murray Chown; Lee Sheets; Sandercott, Robert
Subject: RE: 73 Guigues Avenue - Boundary Conditions
Attachments: 73 Guigues Hydrants.pdf; 73 Guigues April 2019.pdf

Good morning Mr. Savic

Further to my last email, please find boundary conditions as per your request below:

The following are boundary conditions, HGL, for hydraulic analysis at 73 Guigues (zone 1W) assumed to be connected to 152mm on Parent (see attached PDF for location).

Minimum HGL = 105.9, same at all seven connections

Maximum HGL = 115.1m, same at all seven connections

As stated by the consultant, fire protection for the townhouses will be provided from the existing municipal fire hydrants. There are five fire hydrants near the proposed townhouses (see attached hydrant figure developed by the consultant). One hydrant is located less than 75m and other four hydrants are located between 75 and 150m from the proposed building. The total available flow assuming the above hydrants are running simultaneously is 345 L/s, which is greater than the required fire demand of 233 L/s.

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
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Int. Mail Code | Code de Courrier Interne 01-14

shawn.wessel@ottawa.ca

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From: Wessel, Shawn

Sent: April 17, 2019 4:32 PM

To: 'Miro Savic' <m.savic@novatech-eng.com>

Cc: Danna SeeHar <d.seehar@novatech-eng.com>; Murray Chown <m.Chown@novatech-eng.com>; Lee Sheets <l.sheets@novatech-eng.com>

Subject: RE: 73 Guigues Avenue - Boundary Conditions

Thank you Mr. Savic

The inquiry originated from our Water Resources Dept. in regards to your boundary condition request and I have forwarded your response to them for comment.

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

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shawn.wessel@ottawa.ca

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From: Miro Savic <m.savic@novatech-eng.com>

Sent: April 17, 2019 4:21 PM

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

Cc: Danna SeeHar <d.seehar@novatech-eng.com>; Murray Chown <m.Chown@novatech-eng.com>; Lee Sheets <l.sheets@novatech-eng.com>

Subject: RE: 73 Guigues Avenue - Boundary Conditions

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Shawn,

There are 5 fire hydrants in the vicinity of the proposed townhouses. One hydrant is located less than 75m and other 4 hydrants are located between 75 and 150m from the proposed building. Refer to the attached screenshot from geoOttawa website. All hydrant are rated AA (painted in blue).

As per **Table 1 Maximum Flow to be considered from a given hydrant in Appendix I of Technical Bulletin ISTB-2018-02**, all 5 hydrants can provide combined flow of 20, 900 L/min (1 x 5,700 L/min + 4 x 3,800 L/min) which exceeds the required fire flow (RFF) of 14, 000 L/min (233 L/s).

Please contact me should you have any questions or require additional information to provide boundary conditions for the site.

Regards,

Miroslav Savic, P.Eng., Senior Project Manager | Land Development Engineering

NOVATECH Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 265 | Fax: 613.254.5867

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

Sent: Tuesday, April 16, 2019 9:40 AM

To: Miro Savic <m.savic@novatech-eng.com>

Cc: Danna SeeHar <d.seehar@novatech-eng.com>; Murray Chown <m.Chown@novatech-eng.com>; Lee Sheets <l.sheets@novatech-eng.com>

Subject: RE: 73 Guigues Avenue - Boundary Conditions

Thank you Mr. Savic for your message and information.

May I ask that you also comment on the FH item that was referred to in the last email.

Could you please demonstrate that the use of nearby FH will work for this development and which FH's you intend to use, if still applicable.

Please revise your design, drawings and reports if applies.

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

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(613) 580 2424 Ext. | Poste 33017

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shawn.wessel@ottawa.ca



Please consider the environment before printing this email

From: Miro Savic <m.savic@novatech-eng.com>

Sent: April 16, 2019 9:29 AM

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

Cc: Danna SeeHar <d.seehar@novatech-eng.com>; Murray Chown <m.Chown@novatech-eng.com>; Lee Sheets <l.sheets@novatech-eng.com>

Subject: RE: 73 Guigues Avenue - Boundary Conditions

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Good morning Shawn,

The provided domestic demands are for all seven townhouses.

Regards,

Miroslav Savic, P.Eng., Senior Project Manager | Land Development Engineering

NOVATECH Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 265 | Fax: 613.254.5867

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From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Tuesday, April 16, 2019 8:12 AM
To: Miro Savic <m.savic@novatech-eng.com>
Cc: Danna SeeHar <d.seehar@novatech-eng.com>; Murray Chown <m.Chown@novatech-eng.com>
Subject: RE: 73 Guigues Avenue - Boundary Conditions

Good morning Mr. Savic

Please find inquiry and comments from our Water Resources Dept. in regards to your request:

Please confirm that the demands are for each townhouse individually or all seven? Also, please note a hydrant under optimal conditions can only supply 95 L/s as per the latest technical bulletin which is less than their required fire demand. This is a situation where multiple hydrants are needed.

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

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(613) 580 2424 Ext. | Poste 33017
Int. Mail Code | Code de Courrier Interne 01-14
shawn.wessel@ottawa.ca



Please consider the environment before printing this email

From: Miro Savic <m.savic@novatech-eng.com>
Sent: April 11, 2019 9:39 AM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>
Cc: Danna SeeHar <d.seehar@novatech-eng.com>; Murray Chown <m.Chown@novatech-eng.com>
Subject: 73 Guigues Avenue - Boundary Conditions

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Shawn,

Please provide water boundary conditions for the proposed 7-unit townhouse development at 73 Guiguess Avenue.

Each townhouse unit will have a separate water service connected to the existing 150mm diameter watermain in Parent Avenue. Fire protection for the townhouses will be provided from the existing municipal fire hydrant at the corner of Parent Avenue and Guigues Avenue. Refer to the attached sketch.

The water demands are estimated as follows:

Average Day Demand = 0.08 L/s

Maximum Day Demand = 0.19 L/s

Peak Hour Demand = 0.42 L/s

Fire Demand estimated using the FUS = 233 L/s (14,000 L/min)

Regards,

Miroslav Savic, P.Eng., Senior Project Manager | Land Development Engineering

NOVATECH Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 265 | Fax: 613.254.5867

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Boundary Condition for 73 Guiges





APPENDIX D
Stormwater Management Calculations

Proposed 7 - Three Storey Town Houses 73 Guigues Avenue

Allowable Flow				
Description	A (ha)	C	5 year (L/s)	100 year (L/s)
Site Area	0.051	0.50	7.4	7.4

Post - Development : Total Uncontrolled Site Flows							
Area	Description	A (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
A1	Uncontrolled Landscaped Area	0.018	0.007	0.011	0.49	0.56	2.4 4.9
R1	Controlled Building Roof	0.008	0.008	0.000	0.90	1.00	2.1 4.2
R2	Controlled Building Roof	0.004	0.004	0.000	0.90	1.00	1.0 2.1
R3	Controlled Building Roof	0.004	0.004	0.000	0.90	1.00	1.0 2.1
R4	Controlled Building Roof	0.004	0.004	0.000	0.90	1.00	1.0 2.1
R5	Controlled Building Roof	0.004	0.004	0.000	0.90	1.00	1.0 2.1
R6	Controlled Building Roof	0.004	0.004	0.000	0.90	1.00	1.0 2.1
R7	Controlled Building Roof	0.004	0.004	0.000	0.90	1.00	1.1 2.2

Summed Area Check: 0.051

t_c=10mins

Post - Development : Total Flows for Controlled Site						
Area	Description	Flow (L/s)		Storage Required (m ³)		Provided (m ³)
		5 year	100 year	5 year	100 year	
A1	Uncontrolled Landscaped Area	2.4	4.9	N/A	N/A	N/A
R1	Controlled Building Roof	0.32	0.32	1.4	3.3	4.7
R2	Controlled Building Roof	0.32	0.32	0.5	1.4	3.2
R3	Controlled Building Roof	0.32	0.32	0.5	1.4	3.2
R4	Controlled Building Roof	0.32	0.32	0.5	1.4	3.2
R5	Controlled Building Roof	0.32	0.32	0.5	1.4	3.2
R6	Controlled Building Roof	0.32	0.32	0.5	1.4	3.2
R7	Controlled Building Roof	0.32	0.32	0.5	1.4	3.2
Totals =		4.6	7.1	4.5	11.7	24.1

Over-Controlled by: 2.8 0.3

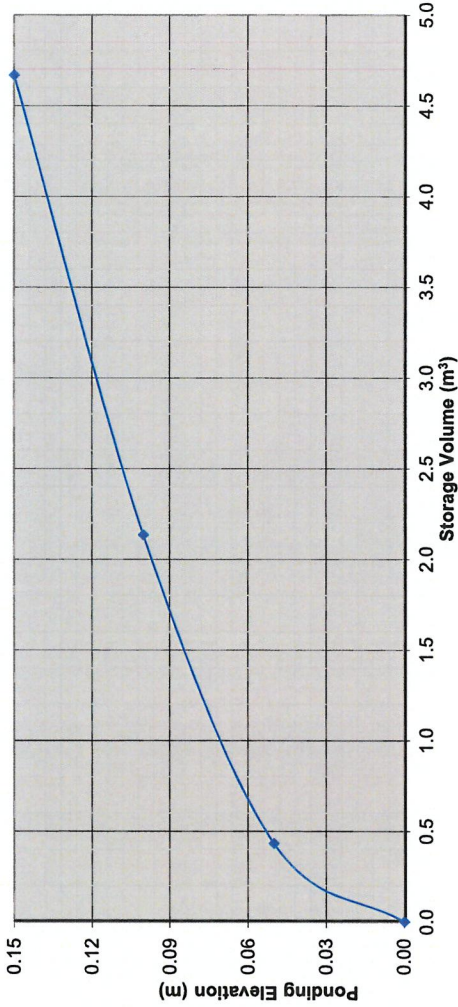
73 GUIQUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:5 YEAR EVENT									
AREA R-1 Controlled Roof Drain #1									
OTTAWA IDF CURVE									
Area = 0.008		ha	Qallow =		0.32	L/s			
C = 0.90			Vol(max) =		1.4	m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	141.18	2.83	2.51	0.75					
10	104.19	2.09	1.77	1.06					
15	83.56	1.67	1.35	1.22					
20	70.25	1.41	1.09	1.30					
25	60.90	1.22	0.90	1.35					
30	53.93	1.08	0.76	1.37					
35	48.52	0.97	0.65	1.37					
40	44.18	0.88	0.56	1.35					
45	40.63	0.81	0.49	1.33					
50	37.65	0.75	0.43	1.30					
55	35.12	0.70	0.38	1.26					
60	32.94	0.66	0.34	1.22					
65	31.04	0.62	0.30	1.18					
70	29.37	0.59	0.27	1.13					
75	27.89	0.56	0.24	1.07					
90	24.29	0.49	0.17	0.90					
105	21.58	0.43	0.11	0.71					
120	19.47	0.39	0.07	0.50					

73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:100 YEAR EVENT									
AREA R-1 Controlled Roof Drain #1									
OTTAWA IDF CURVE									
Area = 0.008 ha		Qallow =		0.32		L/s			
C = 1.00		Vol(max) =		3.3		m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	242.70	5.40	5.08	1.52					
10	178.56	3.97	3.65	2.19					
15	142.89	3.18	2.86	2.57					
20	119.95	2.67	2.35	2.82					
25	103.85	2.31	1.99	2.98					
30	91.87	2.04	1.72	3.10					
35	82.58	1.84	1.52	3.18					
40	75.15	1.67	1.35	3.24					
45	69.05	1.54	1.22	3.28					
50	63.95	1.42	1.10	3.31					
55	59.62	1.33	1.01	3.32					
60	55.89	1.24	0.92	3.32					
65	52.65	1.17	0.85	3.32					
70	49.79	1.11	0.79	3.31					
75	47.26	1.05	0.73	3.29					
90	41.11	0.91	0.59	3.21					
105	36.50	0.81	0.49	3.10					
120	32.89	0.73	0.41	2.96					

Watts Accutrol Flow Control Roof Drains:						RD-100-A-ADJ set to Closed	
Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Required Storage (m³)	Provided Storage (m³)		
1:5 Year	0.32	0.32	8	1.4	4.7		
1:100 Year	0.32	0.32	12	3.3	4.7		

Roof Drain Storage Table for Area R1			
Elevation	Area RD 1	Total Volume	
m	m²	m³	
0.00	0	0	
0.05	17.3	0.4	
0.10	50.7	2.1	
0.15	50.7	4.7	

Stage Storage Curve: Area R1
Controlled Roof Drain #1

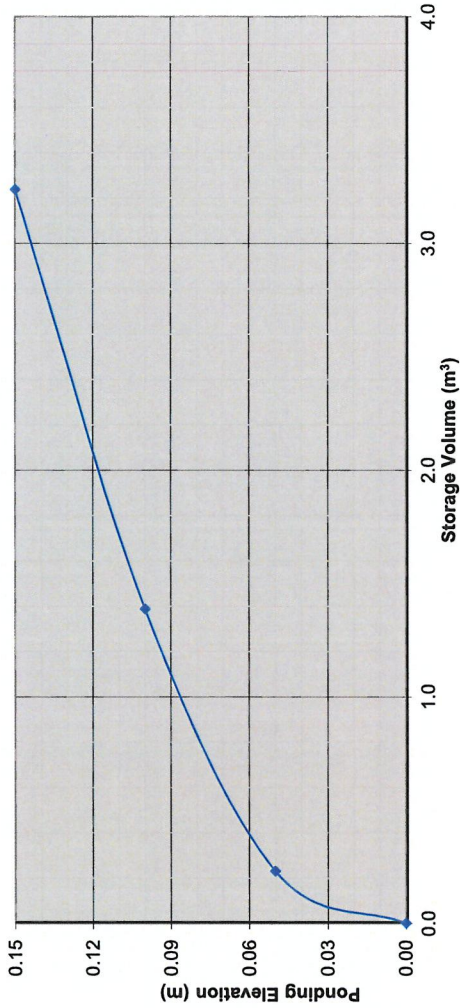


73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:5 YEAR EVENT									
AREA R2									
Controlled Roof Drain #2									
OTTAWA IDF CURVE									
Area = 0.004		ha	Qallow =		0.32	L/s			
C = 0.90			Vol(max) =		0.5	m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	141.18	1.52	1.20	0.36					
10	104.19	1.12	0.80	0.48					
15	83.56	0.90	0.58	0.52					
20	70.25	0.76	0.44	0.52					
25	60.90	0.66	0.34	0.50					
30	53.93	0.58	0.26	0.47					
35	48.52	0.52	0.20	0.42					
40	44.18	0.48	0.16	0.37					
45	40.63	0.44	0.12	0.32					
50	37.65	0.41	0.09	0.26					
55	35.12	0.38	0.06	0.19					
60	32.94	0.35	0.03	0.12					
65	31.04	0.33	0.01	0.05					
70	29.37	0.32	0.00	-0.02					
75	27.89	0.30	-0.02	-0.09					
90	24.29	0.26	-0.06	-0.32					
105	21.58	0.23	-0.09	-0.55					
120	19.47	0.21	-0.11	-0.80					

Watts Accutrol Flow Control Roof Drains:						RD-100-A-ADJ set to Closed	
Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Required	Storage (m ³)		
1:5 Year	0.32	0.32	11	0.5	3.2		
1:100 Year	0.32	0.32	14	1.4	3.2		

Roof Drain Storage Table for Area R2			
Elevation	Area RD 1	Total Volume	
m	m ²	m ³	
0.00	0	0	
0.05	9.23	0.2	
0.10	37	1.4	
0.15	37	3.2	

Stage Storage Curve: Area R2
Controlled Roof Drain #2



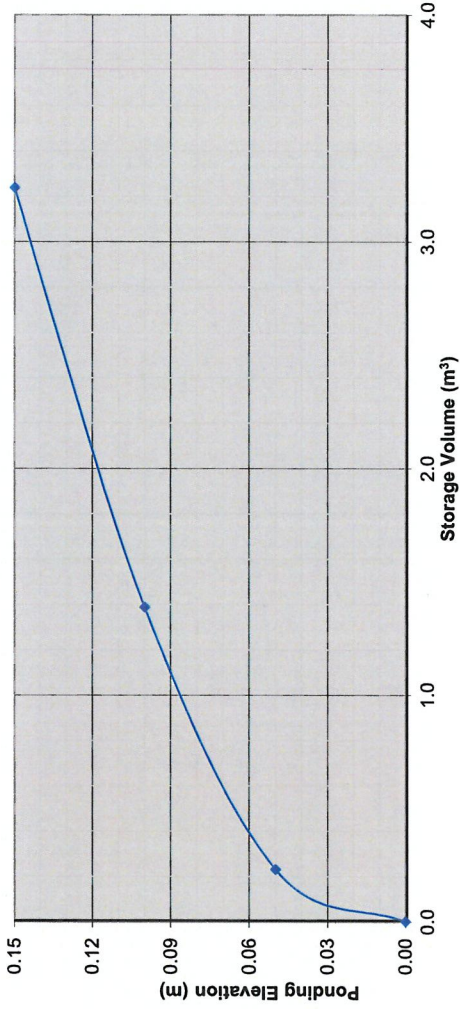
73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:100 YEAR EVENT									
AREA R2 Controlled Roof Drain #2									
OTTAWA IDF CURVE									
Area = 0.004		ha		Qallow =		0.32		L/s	
C = 1.00				Vol(max) =		1.4		m3	
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	242.70	2.90	2.58	0.77					
10	178.56	2.13	1.81	1.09					
15	142.89	1.71	1.39	1.25					
20	119.95	1.43	1.11	1.34					
25	103.85	1.24	0.92	1.38					
30	91.87	1.10	0.78	1.40					
35	82.58	0.99	0.67	1.40					
40	75.15	0.90	0.58	1.39					
45	69.05	0.83	0.51	1.36					
50	63.95	0.76	0.44	1.33					
55	59.62	0.71	0.39	1.30					
60	55.89	0.67	0.35	1.25					
65	52.65	0.63	0.31	1.21					
70	49.79	0.60	0.28	1.16					
75	47.26	0.56	0.24	1.10					
90	41.11	0.49	0.17	0.93					
105	36.50	0.44	0.12	0.73					
120	32.89	0.39	0.07	0.53					

73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:5 YEAR EVENT									
AREA R3 Controlled Roof Drain #3									
OTTAWA IDF CURVE									
Area = 0.004		ha	Qallow =		0.32	L/s			
C = 0.90			Vol(max) =		0.5	m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	141.18	1.52	1.20	0.36					
10	104.19	1.12	0.80	0.48					
15	83.56	0.90	0.58	0.52					
20	70.25	0.76	0.44	0.52					
25	60.90	0.66	0.34	0.50					
30	53.93	0.58	0.26	0.47					
35	48.52	0.52	0.20	0.42					
40	44.18	0.48	0.16	0.37					
45	40.63	0.44	0.12	0.32					
50	37.65	0.41	0.09	0.26					
55	35.12	0.38	0.06	0.19					
60	32.94	0.35	0.03	0.12					
65	31.04	0.33	0.01	0.05					
70	29.37	0.32	0.00	-0.02					
75	27.89	0.30	-0.02	-0.09					
90	24.29	0.26	-0.06	-0.32					
105	21.58	0.23	-0.09	-0.55					
120	19.47	0.21	-0.11	-0.80					

Watts Accutrol Flow Control Roof Drains:					RD-100-A-ADJ set to Closed		
Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Required Storage (m ³)	Provided		
1:5 Year	0.32	0.32	11	0.5	3.2		
1:100 Year	0.32	0.32	14	1.4	3.2		

Roof Drain Storage Table for Area R3			
Elevation	Area RD 1	Total Volume	
m	m ²	m ³	
0.00	0	0	
0.05	9.23	0.2	
0.10	37	1.4	
0.15	37	3.2	

Stage Storage Curve: Area R3
Controlled Roof Drain #3



73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:100 YEAR EVENT									
AREA R3 Controlled Roof Drain #3									
OTTAWA IDF CURVE									
Area = 0.004 ha		Qallow =		0.32		L/s			
C = 1.00		Vol(max) =		1.4		m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	242.70	2.90	2.58	0.77					
10	178.56	2.13	1.81	1.09					
15	142.89	1.71	1.39	1.25					
20	119.95	1.43	1.11	1.34					
25	103.85	1.24	0.92	1.38					
30	91.87	1.10	0.78	1.40					
35	82.58	0.99	0.67	1.40					
40	75.15	0.90	0.58	1.39					
45	69.05	0.83	0.51	1.36					
50	63.95	0.76	0.44	1.33					
55	59.62	0.71	0.39	1.30					
60	55.89	0.67	0.35	1.25					
65	52.65	0.63	0.31	1.21					
70	49.79	0.60	0.28	1.16					
75	47.26	0.56	0.24	1.10					
90	41.11	0.49	0.17	0.93					
105	36.50	0.44	0.12	0.73					
120	32.89	0.39	0.07	0.53					

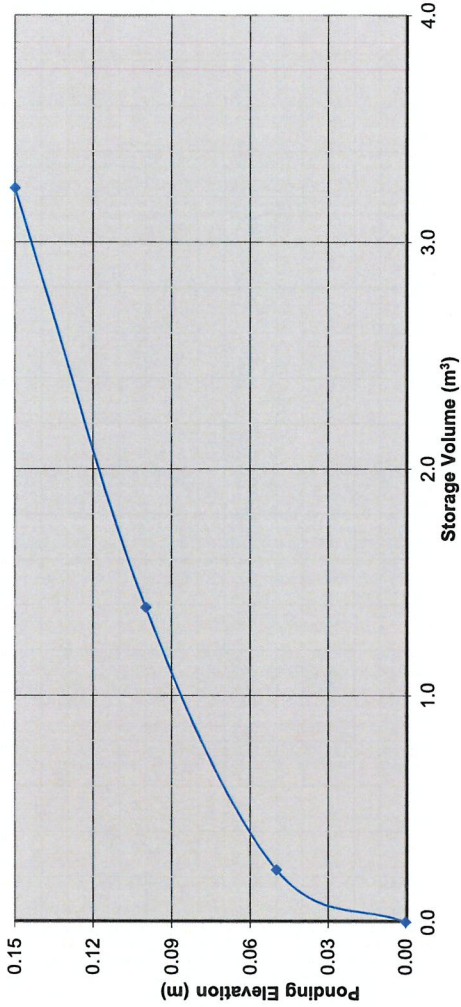
73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:5 YEAR EVENT									
AREA R4 Controlled Roof Drain #4									
OTTAWA IDF CURVE									
Area = 0.004 ha		Qallow =		0.32		L/s			
C = 0.90		Vol(max) =		0.5		m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	141.18	1.52	1.20	0.36					
10	104.19	1.12	0.80	0.48					
15	83.56	0.90	0.58	0.52					
20	70.25	0.76	0.44	0.52					
25	60.90	0.66	0.34	0.50					
30	53.93	0.58	0.26	0.47					
35	48.52	0.52	0.20	0.42					
40	44.18	0.48	0.16	0.37					
45	40.63	0.44	0.12	0.32					
50	37.65	0.41	0.09	0.26					
55	35.12	0.38	0.06	0.19					
60	32.94	0.35	0.03	0.12					
65	31.04	0.33	0.01	0.05					
70	29.37	0.32	0.00	-0.02					
75	27.89	0.30	-0.02	-0.09					
90	24.29	0.26	-0.06	-0.32					
105	21.58	0.23	-0.09	-0.55					
120	19.47	0.21	-0.11	-0.80					

73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:100 YEAR EVENT									
AREA R4 Controlled Roof Drain #4									
OTTAWA IDF CURVE									
Area =		0.004	ha	Qallow =		0.32		L/s	
C =		1.00		Vol(max) =		1.4		m3	
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	242.70	2.90	2.58	0.77					
10	178.56	2.13	1.81	1.09					
15	142.89	1.71	1.39	1.25					
20	119.95	1.43	1.11	1.34					
25	103.85	1.24	0.92	1.38					
30	91.87	1.10	0.78	1.40					
35	82.58	0.99	0.67	1.40					
40	75.15	0.90	0.58	1.39					
45	69.05	0.83	0.51	1.36					
50	63.95	0.76	0.44	1.33					
55	59.62	0.71	0.39	1.30					
60	55.89	0.67	0.35	1.25					
65	52.65	0.63	0.31	1.21					
70	49.79	0.60	0.28	1.16					
75	47.26	0.56	0.24	1.10					
90	41.11	0.49	0.17	0.93					
105	36.50	0.44	0.12	0.73					
120	32.89	0.39	0.07	0.53					

Watts Accutrol Flow Control Roof Drains:						RD-100-A-ADJ set to Closed	
Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Required Storage (m ³)	Provided Storage (m ³)		
1:5 Year	0.32	0.32	11	0.5	3.2		
1:100 Year	0.32	0.32	14	1.4	3.2		

Roof Drain Storage Table for Area R4			
Elevation	Area RD 1	Total Volume	
m	m ²	m ³	
0.00	0	0	
0.05	9.23	0.2	
0.10	37	1.4	
0.15	37	3.2	

Stage Storage Curve: Area R4
Controlled Roof Drain #4

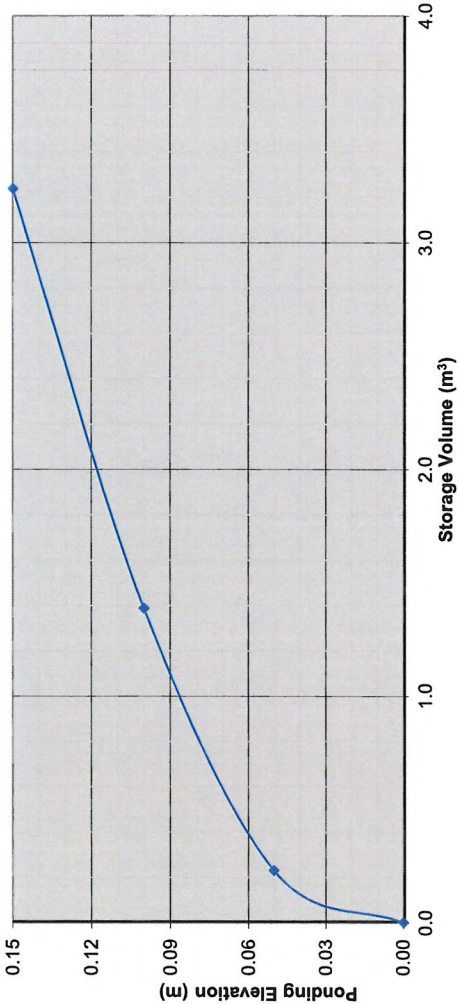


73 GUIQUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:5 YEAR EVENT									
AREA R5 Controlled Roof Drain #5									
OTTAWA IDF CURVE									
Area = 0.004		ha	Qallow =		0.32	L/s			
C = 0.90			Vol(max) =		0.5	m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	141.18	1.52	1.20	0.36					
10	104.19	1.12	0.80	0.48					
15	83.56	0.90	0.58	0.52					
20	70.25	0.76	0.44	0.52					
25	60.90	0.66	0.34	0.50					
30	53.93	0.58	0.26	0.47					
35	48.52	0.52	0.20	0.42					
40	44.18	0.48	0.16	0.37					
45	40.63	0.44	0.12	0.32					
50	37.65	0.41	0.09	0.26					
55	35.12	0.38	0.06	0.19					
60	32.94	0.35	0.03	0.12					
65	31.04	0.33	0.01	0.05					
70	29.37	0.32	0.00	-0.02					
75	27.89	0.30	-0.02	-0.09					
90	24.29	0.26	-0.06	-0.32					
105	21.58	0.23	-0.09	-0.55					
120	19.47	0.21	-0.11	-0.80					

Watts Accutrol Flow Control Roof Drains:						RD-100-A-ADJ set to Closed	
Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Required Storage (m³)	Provided Storage (m³)		
1:5 Year	0.32	0.32	11	0.5	3.2		
1:100 Year	0.32	0.32	14	1.4	3.2		

Roof Drain Storage Table for Area R5			
Elevation	Area RD 1	Total Volume	
m	m²	m³	
0.00	0	0	
0.05	9.23	0.2	
0.10	37	1.4	
0.15	37	3.2	

Stage Storage Curve: Area R5
Controlled Roof Drain #5



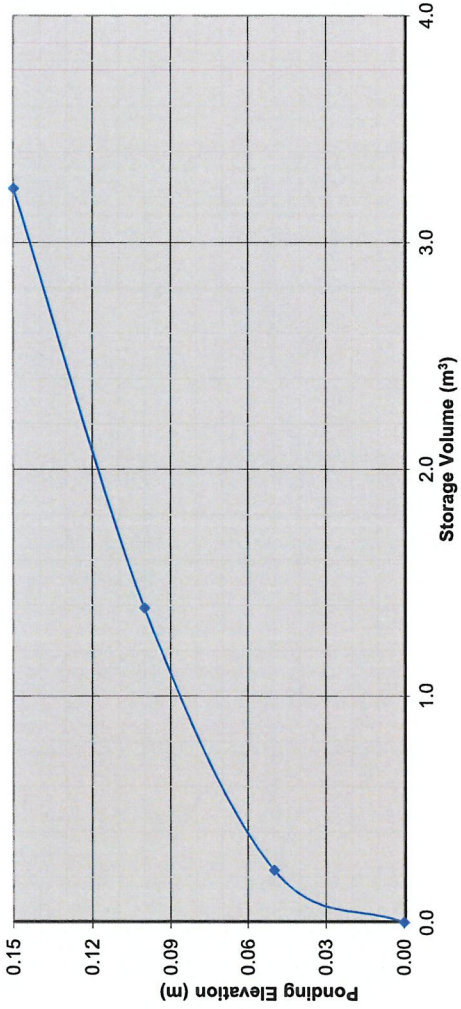
73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:100 YEAR EVENT									
AREA R5 Controlled Roof Drain #5									
OTTAWA IDF CURVE									
Area = 0.004		ha	Qallow =		0.32	L/s			
C = 1.00			Vol(max) =		1.4	m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	242.70	2.90	2.58	0.77					
10	178.56	2.13	1.81	1.09					
15	142.89	1.71	1.39	1.25					
20	119.95	1.43	1.11	1.34					
25	103.85	1.24	0.92	1.38					
30	91.87	1.10	0.78	1.40					
35	82.58	0.99	0.67	1.40					
40	75.15	0.90	0.58	1.39					
45	69.05	0.83	0.51	1.36					
50	63.95	0.76	0.44	1.33					
55	59.62	0.71	0.39	1.30					
60	55.89	0.67	0.35	1.25					
65	52.65	0.63	0.31	1.21					
70	49.79	0.60	0.28	1.16					
75	47.26	0.56	0.24	1.10					
90	41.11	0.49	0.17	0.93					
105	36.50	0.44	0.12	0.73					
120	32.89	0.39	0.07	0.53					

0.32 7-THREE STOREY TOWN HOUSES REQUIRED STORAGE - 1:5 YEAR EVENT AREA R6 OTTAWA IDF CURVE Area = 0.004 ha Qallow = 0.32 L/s C = 0.90 Vol(max) = 0.5 m3									
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	141.18	1.52	1.20	0.36					
10	104.19	1.12	0.80	0.48					
15	83.56	0.90	0.58	0.52					
20	70.25	0.76	0.44	0.52					
25	60.90	0.66	0.34	0.50					
30	53.93	0.58	0.26	0.47					
35	48.52	0.52	0.20	0.42					
40	44.18	0.48	0.16	0.37					
45	40.63	0.44	0.12	0.32					
50	37.65	0.41	0.09	0.26					
55	35.12	0.38	0.06	0.19					
60	32.94	0.35	0.03	0.12					
65	31.04	0.33	0.01	0.05					
70	29.37	0.32	0.00	-0.02					
75	27.89	0.30	-0.02	-0.09					
90	24.29	0.26	-0.06	-0.32					
105	21.58	0.23	-0.09	-0.55					
120	19.47	0.21	-0.11	-0.80					

Watts Accutrol Flow Control Roof Drains: RD-100-A-ADJ set to Closed				
Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage (m ³)
1:5 Year	0.32	0.32	11	0.5
1:100 Year	0.32	0.32	14	1.4
				3.2

Roof Drain Storage Table for Area R6			
Elevation	Area RD 1	Total Volume	
m	m ²	m ³	
0.00	0	0	
0.05	9.23	0.2	
0.10	37	1.4	
0.15	37	3.2	

Stage Storage Curve: Area R6
Controlled Roof Drain #6



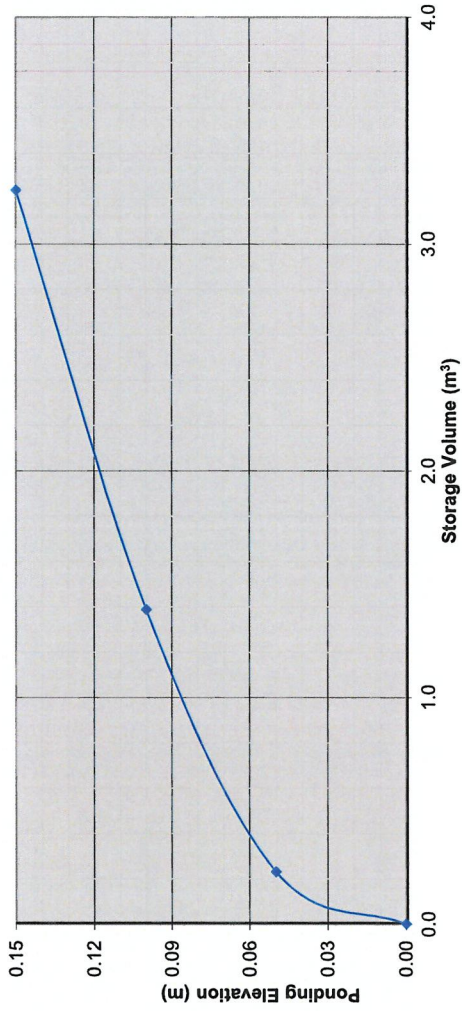
0.32 7-THREE STOREY TOWN HOUSES REQUIRED STORAGE - 1:100 YEAR EVENT AREA R6 OTTAWA IDF CURVE Area = 0.004 ha Qallow = 0.32 L/s C = 1.00 Vol(max) = 1.4 m3									
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	242.70	2.90	2.58	0.77					
10	178.56	2.13	1.81	1.09					
15	142.89	1.71	1.39	1.25					
20	119.95	1.43	1.11	1.34					
25	103.85	1.24	0.92	1.38					
30	91.87	1.10	0.78	1.40					
35	82.58	0.99	0.67	1.40					
40	75.15	0.90	0.58	1.39					
45	69.05	0.83	0.51	1.36					
50	63.95	0.76	0.44	1.33					
55	59.62	0.71	0.39	1.30					
60	55.89	0.67	0.35	1.25					
65	52.65	0.63	0.31	1.21					
70	49.79	0.60	0.28	1.16					
75	47.26	0.56	0.24	1.10					
90	41.11	0.49	0.17	0.93					
105	36.50	0.44	0.12	0.73					
120	32.89	0.39	0.07	0.53					

73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:5 YEAR EVENT									
AREA R7									
Controlled Roof Drain #7									
OTTAWA IDF CURVE									
Area = 0.004		ha	Gallow =		0.32	L/s			
C = 0.90			Vol(max) =		0.5	m3			
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)					
5	141.18	1.52	1.20	0.36					
10	104.19	1.12	0.80	0.48					
15	83.56	0.90	0.58	0.52					
20	70.25	0.76	0.44	0.52					
25	60.90	0.66	0.34	0.50					
30	53.93	0.58	0.26	0.47					
35	48.52	0.52	0.20	0.42					
40	44.18	0.48	0.16	0.37					
45	40.63	0.44	0.12	0.32					
50	37.65	0.41	0.09	0.26					
55	35.12	0.38	0.06	0.19					
60	32.94	0.35	0.03	0.12					
65	31.04	0.33	0.01	0.05					
70	29.37	0.32	0.00	-0.02					
75	27.89	0.30	-0.02	-0.09					
90	24.29	0.26	-0.06	-0.32					
105	21.58	0.23	-0.09	-0.55					
120	19.47	0.21	-0.11	-0.80					

Watts Accutrol Flow Control Roof Drains:						RD-100-A-ADJ set to Closed	
Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage Required (m ³)	Storage Provided (m ³)		
1:5 Year	0.32	0.32	11	0.5	3.2		
1:100 Year	0.32	0.32	14	1.4	3.2		

Roof Drain Storage Table for Area R7			
Elevation	Area RD 1	Total Volume	
m	m ²	m ³	
0.00	0	0	
0.05	9.23	0.2	
0.10	37	1.4	
0.15	37	3.2	

Stage Storage Curve: Area R7
Controlled Roof Drain #7



73 GUIGUES AVENUE									
7-THREE STOREY TOWN HOUSES									
REQUIRED STORAGE - 1:100 YEAR EVENT									
AREA R7									
Controlled Roof Drain #7									
OTTAWA IDF CURVE									
Area =		0.004	ha	Gallow =		0.32		L/s	
C =		1.00		Vol(max) =		1.4		m3	
Time	Intensity	Q	Qnet	Vol					
(min)	(mm/hr)	(L/s)	(L/s)	(m3)					
5	242.70	2.90	2.58	0.77					
10	178.56	2.13	1.81	1.09					
15	142.89	1.71	1.39	1.25					
20	119.95	1.43	1.11	1.34					
25	103.85	1.24	0.92	1.38					
30	91.87	1.10	0.78	1.40					
35	82.58	0.99	0.67	1.40					
40	75.15	0.90	0.58	1.39					
45	69.05	0.83	0.51	1.36					
50	63.95	0.76	0.44	1.33					
55	59.62	0.71	0.39	1.30					
60	55.89	0.67	0.35	1.25					
65	52.65	0.63	0.31	1.21					
70	49.79	0.60	0.28	1.16					
75	47.26	0.56	0.24	1.10					
90	41.11	0.49	0.17	0.93					
105	36.50	0.44	0.12	0.73					
120	32.89	0.39	0.07	0.53					

APPENDIX E

Watts Adjustable Flow Control Roof Drains



Adjustable Accutrol Weir

Tag: RD-100-A-ADJ

Adjustable Flow Control for Roof Drains

ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

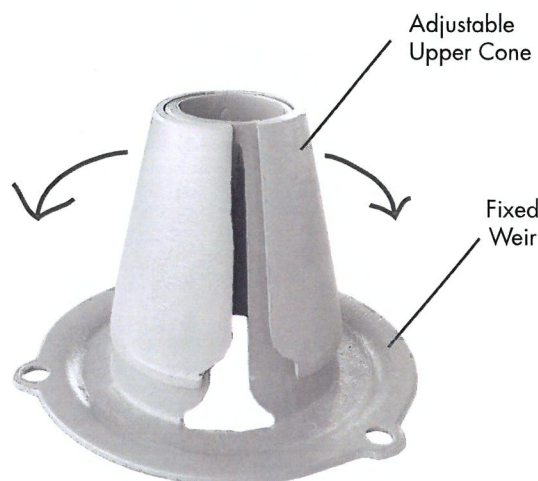
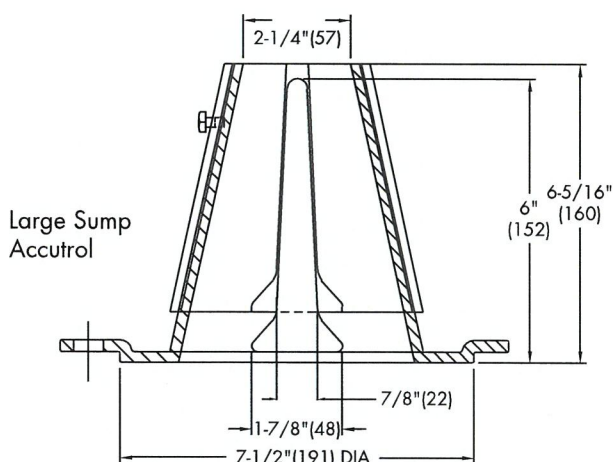
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the 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 _____

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com

Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca

Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

ES-WD-RD-ACCUTROLADJ-CAN 1615



A Watts Water Technologies Company

APPENDIX F

Development Servicing Study Checklist

**73 GUGUES AVENUE, OTTAWA
DEVELOPMENT SERVICING STUDY CHECKLIST**

4.1 General Content	Addressed (Y/N/NA)	Comments
Executive Summary (for larger reports only).	N/A	
Date and revision number of the report.	Y	
Location map and plan showing municipal address, boundary, and layout of proposed development.	Y	
Plan showing the site and location of all existing	Y	
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.	N	Refer to Site Plan
Summary of Pre-consultation Meetings with City and other approval agencies.	Y	
Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria.	N/A	
Statement of objectives and servicing criteria.	Y	
Identification of existing and proposed infrastructure available in the immediate area.	Y	
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).	Y	
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 neighboring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	N/A	

4.1 General Content	Addressed (Y/N/NA)	Comments
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.	N/A	
Reference to geotechnical studies and recommendations concerning servicing.	Y	
All preliminary and formal site plan submissions should have the following information:		
Metric scale	Y	
North arrow (including construction North)	Y	
Key plan	Y	
Name and contact information of applicant and property owner	Y	
Property limits including bearings and dimensions	Y	
Existing and proposed structures and parking areas	Y	
Easements, road widening and rights-of-way	Y	
Adjacent street names	Y	

**73 GUIGUES AVENUE, OTTAWA
DEVELOPMENT SERVICING STUDY CHECKLIST**

4.2 Water	Addressed (Y/N/NA)	Comments
Confirm consistency with Master Servicing Study, if available.	N/A	
Availability of public infrastructure to service proposed development.	Y	
Identification of system constraints.	N/A	
Identify boundary conditions.	Y	Provided by City of Ottawa
Confirmation of adequate domestic supply and pressure.	Y	
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.	Y	
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.	Y	
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design.	N/A	
Address reliability requirements such as appropriate location of shut-off valves.	Y	
Check on the necessity of a pressure zone boundary modification.	N/A	
Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	Y	
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.	Y	
Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A	
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Y	
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A	

73 GUGUES AVENUE, OTTAWA
DEVELOPMENT SERVICING STUDY CHECKLIST

4.3 Wastewater	Addressed (Y/N/NA)	Comments
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	Y	
Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A	
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.	Y	
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.	Y	
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Y	
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.	N/A	

**73 GUIGUES AVENUE, OTTAWA
DEVELOPMENT SERVICING STUDY CHECKLIST**

4.4 Stormwater	Addressed (Y/N/NA)	Comments
Description of drainage outlets and downstream constraints including legality of outlet (i.e. municipal drain, right-of-way, watercourse, or private property).	Y	
Analysis of the available capacity in existing public infrastructure.	N/A	The allowable flow was provided by the City of Ottawa.
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns and proposed drainage patterns.	Y	
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.	Y	
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	N/A	
Description of stormwater management concept with facility locations and descriptions with references and supporting information.	Y	
Set-back from private sewage disposal systems.	N/A	
Watercourse and hazard lands setbacks.	N/A	
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.	N/A	
Storage requirements (complete with calcs) and conveyance capacity for 5 yr and 100 yr events.	Y	
Identification of watercourse within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A	
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.	Y	
Any proposed diversion of drainage catchment areas from one outlet to another.	N/A	
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and SWM facilities.	Y	
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.	N/A	

**73 GUIGUES AVENUE, OTTAWA
DEVELOPMENT SERVICING STUDY CHECKLIST**

4.4 Stormwater	Addressed (Y/N/NA)	Comments
Identification of municipal drains and related approval requirements.	N/A	
Description of how the conveyance and storage capacity will be achieved for the development.	Y	
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 HGL elevations.	N/A	
Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Y	
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.	N/A	

4.5 Approval and Permit Requirements	Addressed (Y/N/NA)	Comments
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.	N/A	
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.)	N/A	

4.6 Conclusion	Addressed (Y/N/NA)	Comments
Clearly stated conclusions and recommendations.	Y	
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.	Y	T.B.D.
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario.	Y	

APPENDIX G
Engineering Drawings

GENERAL NOTES:

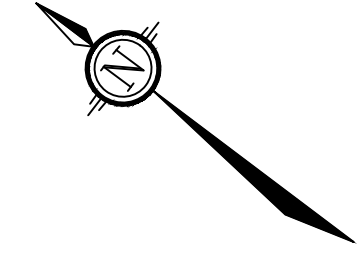
- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO GEOTECHNICAL REPORT (PG4601-1, DATED OCT 02, 2018), PREPARED BY PATERSON GROUP INC., FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARD SURFACE AREAS AND DIMENSIONS.
- REFER TO STORMWATER MANAGEMENT REPORT (R-2019-063) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
- SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- PROVIDE LINE/PARKING PAINTING.

GRADING NOTES:

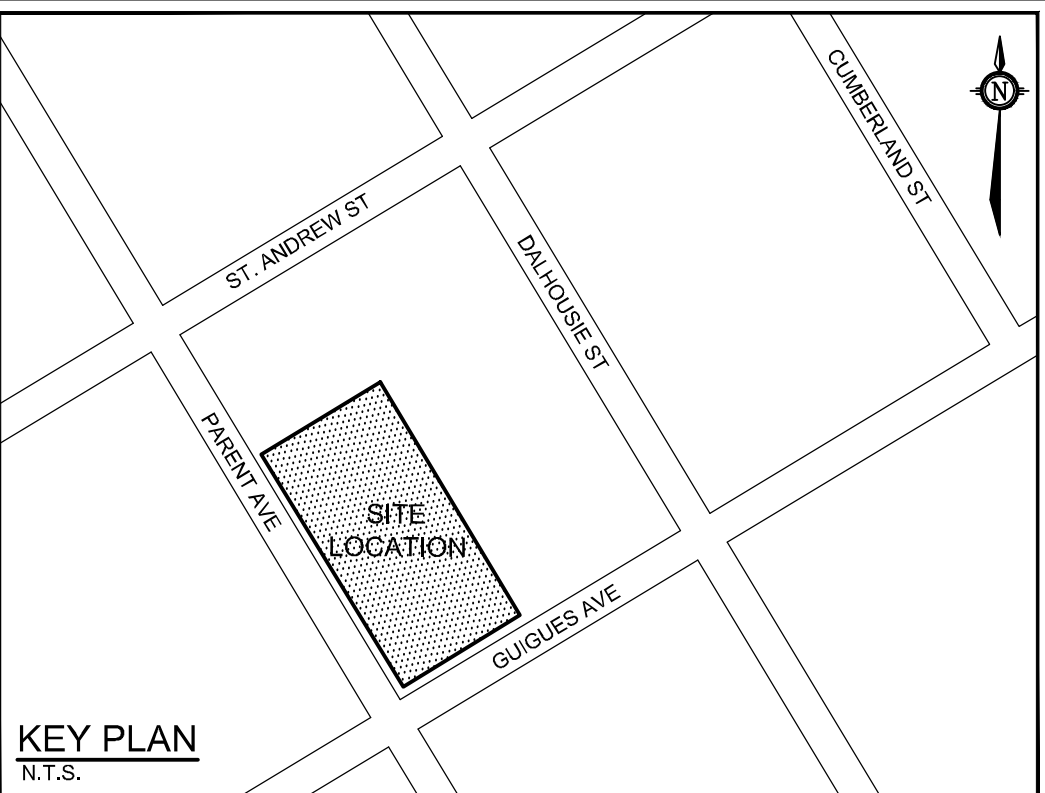
- ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
- EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
- ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
- THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
- MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
- MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
- ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
- ALL CURBS SHALL BE BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1).
- REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
- CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.

LEGEND

- PROPERTY LINE
- PROPOSED ELEVATION
- EXISTING ELEVATION
- PROPOSED TOP OF WALL ELEVATION
- PROPOSED BOTTOM OF WALL ELEVATION
- GRADE AND DIRECTION
- DIRECTION OF MAJOR OVERLAND FLOW
- PROPOSED BARRIER CURB
- PROPOSED DEPRESSED CURB
- PROPOSED RETAINING WALL
- EXISTING OVERHEAD WIRES
- EXISTING CONCRETE CURB
- EXISTING SANITARY MANHOLE
- EXISTING CATCHBASIN MANHOLE
- EXISTING STORM MANHOLE
- EXISTING CATCHBASIN
- EXISTING HYDRANT & VALVE
- EXISTING UTILITY POLE C/W GUY WIRES
- EXISTING FENCE
- EXISTING LIGHT STANDARD



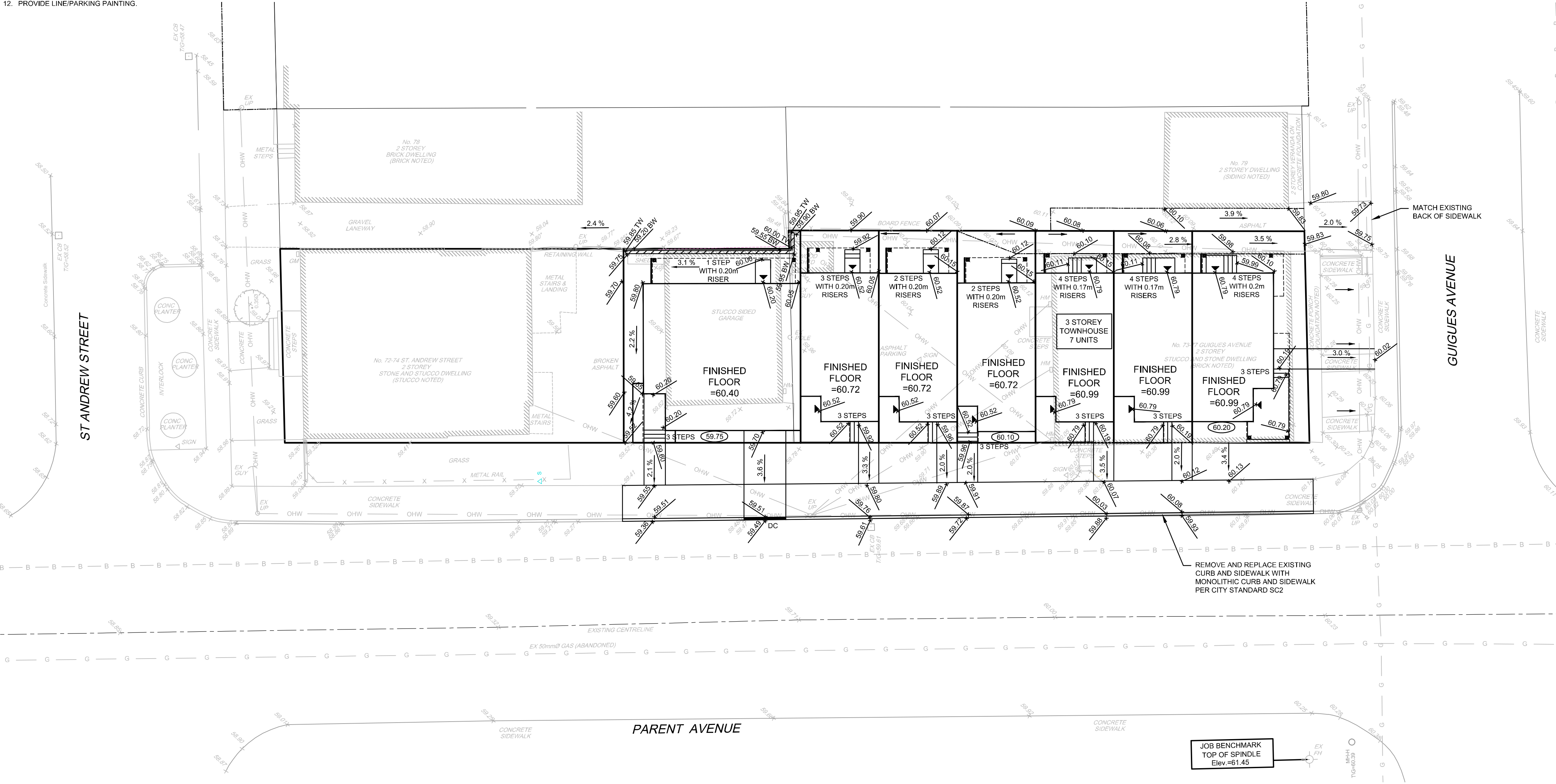
NORTH



KEY PLAN
N.T.S.

EROSION AND SEDIMENT CONTROL NOTES :

- THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
- ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF OTTAWA. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
- EROSION AND SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED DURING CONSTRUCTION IN ACCORDANCE WITH THE "GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES" (GOVERNMENT OF ONTARIO, MAY 1987). THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEETING ALL REGULATORY AGENCY REQUIREMENTS.
- TO PREVENT SURFACE EROSION FROM ENTERING ANY STORM SEWER SYSTEM DURING CONSTRUCTION, FILTER CLOTH WILL BE PLACED UNDER GRATES OF NEARBY CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED AROUND THE CONSTRUCTION AREA (WHERE APPLICABLE). THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
- TO LIMIT EROSION, MINIMIZE THE AMOUNT OF EXPOSED SOILS AT ANY GIVEN TIME. RE-VEGETATE EXPOSED AREAS AND SLOPES AS SOON AS POSSIBLE AND PROTECT EXPOSED SLOPES WITH NATURAL OR SYNTHETIC MULCHES.
- FOR MATERIAL STOCKPILING: MINIMIZE THE AMOUNT OF EXPOSED MATERIALS AT ANY GIVEN TIME; APPLY TEMPORARY SEEDING, TARPS, COMPACTION AND/OR SURFACE ROUGHENING AS REQUIRED TO STABILIZE STOCKPILED MATERIALS THAT WILL NOT BE USED WITHIN 14 DAYS.
- THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
- THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
- THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
- ROADWAYS ARE TO BE SWEEP AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR THE MUNICIPALITY.
- THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS. MONITOR DUST LEVELS DURING SITE PREPARATION/EXCAVATION, AND CONSTRUCTION ACTIVITIES, AND WHEN DUST LEVELS BECOME VISUALLY APPARENT SPRAY WATER TO MINIMIZE THE RELEASE OF DUST FROM GRAVEL PAVED AREAS AND EXPOSED SOILS. USE CHEMICAL DUST SUPPRESSANTS ONLY WHERE NECESSARY ON PROBLEM AREAS.

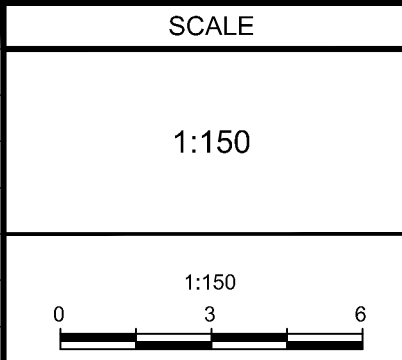


Erosion and Sediment Control Responsibilities:

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

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

No.	REVISION	mm/dd/yy	BY
2	ISSUED FOR SITE PLAN APPLICATION	MAY 10/19	MS
1	ISSUED FOR COORDINATION	MAY 07/19	MS



DESIGN	MS / LSC
CHECKED	MS
DRAWN	LSC
CHECKED	JLS
APPROVED	MS

FOR REVIEW ONLY



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

LOCATION
CITY OF OTTAWA
73 GUIGUES AVENUE

DRAWING NAME
GRADING AND EROSION & SEDIMENT CONTROL PLAN

PROJECT No.	118099
REV	REV 2
DRAWING No.	118099-GR

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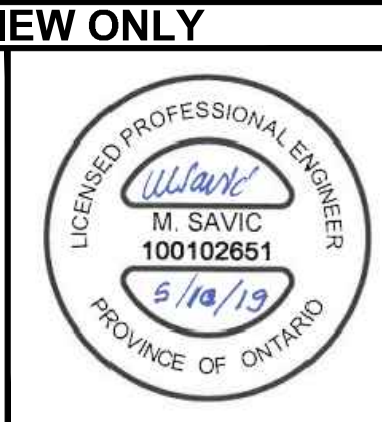
NOTE:
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No.	REVISION	mm/dd/yy	BY
2	ISSUED FOR SITE PLAN APPLICATION	MAY 10/19	MS
1	ISSUED FOR COORDINATION	MAY 01/19	MS

SCALE	DESIGN
1:150	MS / LSC
1:150	MS
1:150	LSC
1:150	JLS
1:150	MS

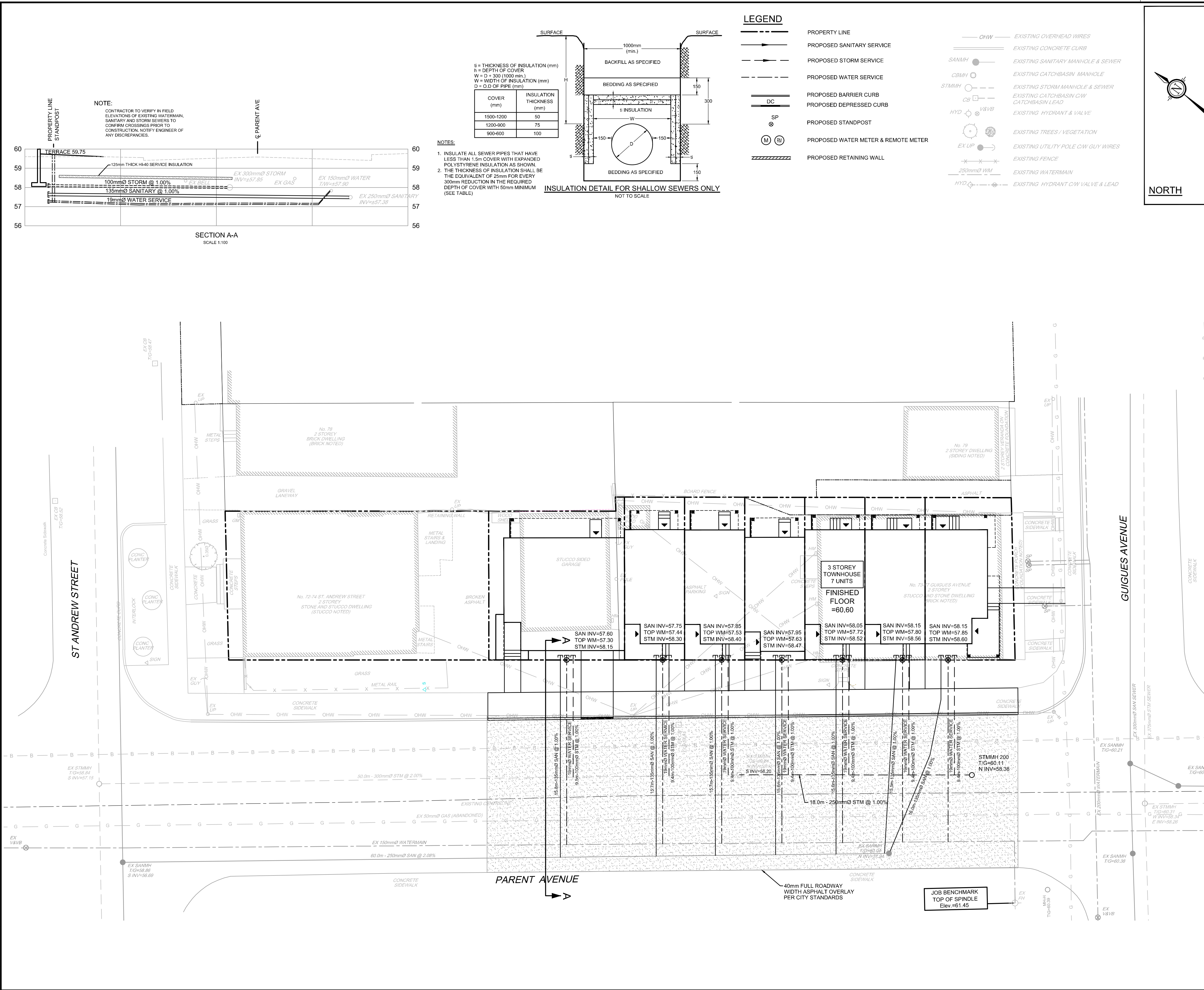
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Telephone (613) 254-9643
Facsimile (613) 254-5667
Website www.novatech-eng.com

LOCATION CITY OF OTTAWA 73 GUIGUES AVENUE	PROJECT No. 118099
DRAWING NAME GENERAL PLAN OF SERVICES	REV REV 2
	DRAWING No. 118099-GP



GENERAL NOTES:

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00, INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL, AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO GEOTECHNICAL REPORT (PG4601-1, DATED OCT 02, 2018), PREPARED BY PATERSON GROUP INC., FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS, THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARD SURFACE AREAS AND DIMENSIONS.
- REFER TO STORMWATER MANAGEMENT REPORT (R-2019-063) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
- SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- PROVIDE LINE/PARKING PAINTING.

SEWER NOTES:

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

ITEM	SPEC. No.	REFERENCE
SEWER TRENCH	S6	CITY OF OTTAWA
100mmØ STORM SERVICE	PVC DR 28	
135mmØ SANITARY SERVICE	PVC DR 28	
- ALL STORM AND SANITARY SERVICE LATERALS SHALL BE EQUIPPED WITH BACKFLOW PREVENTION DEVICES AS PER THE CITY OF OTTAWA STANDARD DETAILS S14 AND S14.1 OR S14.2.
- INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH H-40 INSULATION PER INSULATION DETAIL FOR SHALLOW SEWERS. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
- SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
- PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
- 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.
- 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 OPSB 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.

WATERMAIN NOTES:

- SUPPLY AND CONSTRUCT ALL WATERMANS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMANS BY THE CONTRACTOR. CONNECTIONS, SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OF OTTAWA FORCES.
- SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
INSULATION ADJACENT TO OPEN STRUCTURES	W23	CITY OF OTTAWA
19mmØ WATER SERVICE COPPER TYPE K	W26	
- WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
- PROVIDE MINIMUM 0.5m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS.
- PROPOSED WATER SERVICES ARE TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

