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36 Years

114 Isabella Street
7-Storey Residential Building
City of Ottawa

Development Servicing and Stormwater Management Report

114 ISABELLA STREET
7-STOREY RESIDENTIAL BUILDING

DEVELOPMENT SERVICING AND STORMWATER MANAGEMENT REPORT

Prepared by:

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

April 9th, 2020

Ref: R-2020-034
Novatech File No. 119100

April 9th, 2020

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

Attention: Mr. John Wu

Re: Development Servicing and Stormwater Management Report
114 Isabella Street
Ottawa, Ontario
Our File No.: 119100

Enclosed is the 'Development Servicing and Stormwater Management Report' for the proposed 7-storey residential building development at 114 Isabella Street, 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

Alex McAuley, P.Eng.
Project Manager | Land Development Engineering

cc: Chris Allard, 2702021 Ontario Inc. (Owner)

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

TABLE OF CONTENTS

LIST OF APPENDICIES

LIST OF FIGURES

LIST OF DRAWINGS

1.0 INTRODUCTION

Novatech has been retained to prepare the site servicing, grading and stormwater management design in support of a Site Plan Control application for the proposed 7-storey (19 unit) residential building at 114 Isabella Street in the City of Ottawa.

The subject site is located in City of Ottawa, Ward 17 – Capital. The legal description of the subject site is designated as part 1 Lot 32, Registered Plan 35403, City of Ottawa. The site is currently undeveloped and utilized as a gravel parking lot. An aerial photo of the subject site is shown in **Figure 1** below.

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

The City of Ottawa was consulted with respect to the general submission requirements and the servicing criteria for the site. Refer to **Appendix A** for correspondence with the City of Ottawa.

1.1 Reference Material

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

- Geotechnical Investigation Report (Ref. No. 190650, Rev. 2), prepared by Kollaards Associates on June 11th, 2013, revised on July 31st, 2019.

2.0 PROPOSED DEVELOPMENT

The proposed development will consist of a new 7-storey residential building on a current vacant lot on #114 Isabella Street located between O'Connor Street and Metcalfe Street. Barrier-free access to the proposed building will be provided. No on-site parking is being 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 proposed 7-storey residential building will be serviced by extending new service laterals to the existing municipal combined sewer in Isabella Street and connecting to an existing water lateral on-site.

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 C**.

It is anticipated that a Ministry of the Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA) will be required due to the storm flows from this site ultimately being directed into a combined sewer.

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). The City of Ottawa has circulated the site plan application to the RVCA and the City of Ottawa indicated that RVCA had no comments. Refer to **Appendix A** for correspondence with the City of Ottawa.

3.1 Water

An existing service (150mm diameter) runs through the site to service the neighbouring building at 100 Isabella Street. This service will be disconnected and a new service on 100 Isabella Street (directly west of the existing 100 Isabella building) would be constructed to service that building. The existing service on 114 Isabella Street will be utilized by the proposed development.

The water demands for the proposed development were calculated and provided to the City of Ottawa to obtain boundary conditions to confirm serviceability.

The required fire flow is calculated using the Fire Underwriter's Survey method and is based on 7-storey above ground non-combustible (steel and concrete) frame construction with automatic sprinklers. The calculated fire flow demand is 2,000 L/min (33 L/s). Refer to **Appendix D** for detailed calculations and the exposure surcharge figure.

The fire protection will be provided from the existing municipal fire hydrants. There are two fire hydrants on Isabella Street near the proposed building. Refer to the Fire Hydrant Coverage **Figure 2** enclosed in **Appendix D** for the hydrant locations and approximate distances to the building. 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 combined flows from the two hydrants are summarized in **Table 3.1.1**.

Table 3.1.1: Combined Hydrant Flow Summary

Fire Hydrants < 75m from Building	Fire Hydrants > 75m < 150m from Building	Combined Fire Flow
2 x 5,700 L/min	-	11,400 L/min

Therefore, the combined fire flow from the two existing hydrants of 11,400 L/min exceeds the required fire flow of 2,000 L/min.

The domestic water demands for the proposed development, calculated as per the Ottawa Design Guidelines – Water Distribution are summarized in **Table 3.1.2.**

Table 3.1.2: Water Demand

Average Day Demand	Maximum Day Demand	Peak Hour Demand
0.13 L/s	0.32 L/s	0.71 L/s

The detailed water demand calculations, boundary conditions and watermain analysis calculations for the existing public infrastructure are provided in **Appendix D**.

The results of the hydraulic analysis are summarized below in **Table 3.1.3**.

Table 3.1.3 Water Analysis Results Summary

Condition	Water Demand	Min/Max Allowable Operating Pressures	Limits of Design Operating Pressures
High Pressure	0.13 L/s	80 psi (Max)	68.5 psi
Peak Hour	0.32 L/s	40 psi (Min)	54.3 psi
Max Day + Fire Flow	33.71 L/s	20 psi (Min)	52.2 psi

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

3.2 Sanitary Sewer

The proposed residential development will be serviced by a new 150mm dia. sanitary service lateral connected to the existing 300mm dia. combined sewer in Isabella Street. As indicated by the infrastructure mapping information on the GeoOttawa website the Isabella Street combined sewer ultimately outlets into the existing 2250mm diameter sanitary trunk running along the Queen Elizabeth Driveway.

The calculated peak sanitary flow from the proposed development, including infiltration, is 0.37 L/s. The flow has been calculated as per the City of Ottawa Sewer Design Guidelines. Refer to **Appendix D** for detailed calculations.

The proposed development increases the peak flow by only 0.37 L/s, which represents less than 1% of the capacity of existing 300mm combined sewer. Therefore, there are no concerns that the proposed development flows will have any adverse effects on the existing infrastructure.

3.3 Stormwater Management

The proposed residential development will be serviced by a new 200mm dia. storm service lateral for the foundation drainage connected to the existing 300mm dia. combined sewer in Isabella Street.

3.3.1 Existing Conditions

The subject site is currently vacant. The existing site drains towards the south to an existing catch basin on the neighbouring lot to the east (100 Isabella). Refer to **Appendix E** for the Pre-Development Drainage **Figure 3**.

3.3.2 Stormwater Management Objectives

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

- Maximize the use of on-site storage on the building roof.
- Control the post-development flows from the site for storms up to and including the 100-year design event.to the allocated release rate (i.e. allowable 2-year release rate specified by the City of Ottawa minus the peak sanitary and ground water flow components).
- Minimize the impact on the existing combined sewer in Isabella Street by reducing the post-development storm flows from the site during the 100-year event, when compared to current conditions.
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

3.3.3 Pre-development Conditions and Allowable Release Rate

There are currently no existing water quantity control measures being provided on site. The uncontrolled pre-development flows from the site were calculated using the Rational Method and are summarized in **Table 3.3.1** below.

Table 3.3.1 Pre-Development and Allowable Release Rate

Storm Event	Pre-Development Release Rate	Allowable Release Rate
1:2 Year	3.6 L/s	2.9 L/s
1:5 Year	4.8 L/s	2.9 L/s
1:100 Year	10.5 L/s	2.9 L/s

Based on discussion with the City, the allowable release rate for the site was calculated based on a 1:2 year storm for all storms up to and including the 1:100 year storm. This represents a significant reduction in stormwater runoff compared to the pre-development condition.

Refer to **Appendix A** for correspondence from the City of Ottawa and **Appendix E** for detailed calculations and Pre-Development Storm Drainage Area Plan.

3.3.4 Post-Development Conditions

The proposed site has been subdivided into three (3) 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 - Post-Development **Figure 4**. A brief description of the sub-catchment areas are as follows:

- Runoff from the building roof (Area R1) will be controlled and stored on the roof prior to being released to the rear yard to then drain overland towards the existing catchbasin adjacent to the subject site.
- Runoff from the rear yard area (Area A1) will drain uncontrolled towards the existing catchbasin at the rear of the property.
- Runoff from the front yard area (Areas A2) will drain uncontrolled towards existing catchbasins in Isabella Street.

To mitigate the stormwater related impacts due to the proposed development, post-development flows from the site will be controlled to the allowable release rate prior to the runoff entering the existing municipal combined sewers.

Area R1– Controlled Building Roof

The post-development flow from Area R1 will be attenuated by the use of two controlled flow roof drains (RD1 and RD2). Stormwater storage on the roof is maximized based on the proposed roof configuration. Per the City of Ottawa Sewer Design Guidelines (2012), section 3.2.2.3 the roof leader will discharge to the surface. The roof leader will discharge to a riverstone swale with an underlying clear stone trench in the rear yard. The rain garden will dissipate the flow, provide some storage and promote infiltration. Refer to **Appendix E** for supporting calculations.

Area A1– Un-Controlled Rear Yard

The post-development flow from Area A1 will be directed to a shallow riverstone swale along the rear lot line, which will outlet to the existing rear yard catchbasin on the adjacent property. The riverstone swale and underlying clear stone trench will provide some storage and promote infiltration. Refer to **Appendix E** for supporting calculations.

Area A2– Un-Controlled Front Yard

The post-development flow from Area A2 will be sheet drain to the existing Isabella Street right-of-way. Existing road catchbasins located along the south curb will collect the stormwater runoff and directed it to the existing combined sewer on Isabella Street. Refer to **Appendix E** for supporting calculations.

Summary of Post-Development Flows

Based on the small size of the lot, the opportunities for stormwater management are limited. The proposed design maximises available storage on the roof, while allowing the smaller front and rear landscaped yards to go uncontrolled. In addition, while not quantified, the riverstone swale with underlying clear stone trench along the rear lot line provides an additional measure to store runoff, reduce flows and promote infiltration.

Table 3.3.2 Pre-Development to Post-Development Reduction

Storm Event	Pre-Development Release Rate	Allowable Release Rate	Post-Development Release Rate	Reduction from Pre to Post
1:2 Year	3.6 L/s	2.9 L/s	2.3	35%
1:5 Year	4.8 L/s	2.9 L/s	2.8	42%
1:100 Year	10.5 L/s	2.9 L/s	4.4	58%

As indicated in **Table 3.3.2** above, the total post-development flow is less than the maximum allowable release rate for the 1:2 year and 1:5 year design events. The 1:100 year design event exceeds the maximum allowable release rate by only 1.1L/s. Compared to the pre-development conditions there will be significant reductions in total site flow rates.

4.0 SITE GRADING

The existing site slopes from north (Isabella Street) to south (rear of lot). The proposed front yard will slope north towards the roadway (storm service and overland respectively). The rear yard flows towards the south-east property corner toward the existing rear yard catchbasin on the adjacent property.

The proposed grading design provides positive drainage away from the building. Refer to the enclosed Grading and Erosion & Sediment Control Plan (119100-GS) for details.

4.1 Major System Overland Flow Route

In the case of a major storm event exceeding the design storms provided for, the stormwater located within the rear yard landscaped area and adjacent rear yards will pond and overflow towards the east along the rear property lines and eventually flowing towards Petoria Avenue. Stormwater on the building roof will pond to a maximum of depth of 0.15 m before overflowing to the landscaped areas 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 (119100-GS).

- 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 Kollaard Geotechnical Investigation (July 31, 2019) 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 114 Isabella Street, in the City of Ottawa.

The conclusions are as follows:

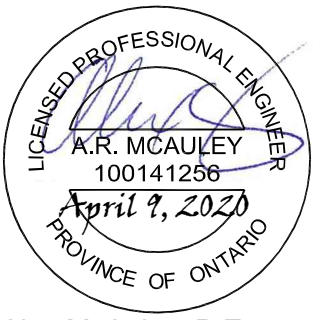
- The proposed residential building will be serviced by new sanitary and storm sewer laterals - both connected to the existing combined sewer in Isabella Street.
- The proposed building will be serviced by the existing water service on-site, currently being used by 100 Isabella Street.
- The proposed foundation drainage will outlet to the combined sewer in Isabella Street.
- The proposed building will be sprinklered.
- Fire protection will be provided from the existing municipal fire hydrants near the proposed building.
- The total post-development flow from the site will be controlled to the maximum allowable release rate for events up to the 1:5 year.
- For events exceeding the 1:5 year up to and including the 1:100 year, runoff will be substantially reduced from pre-development conditions.
- 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

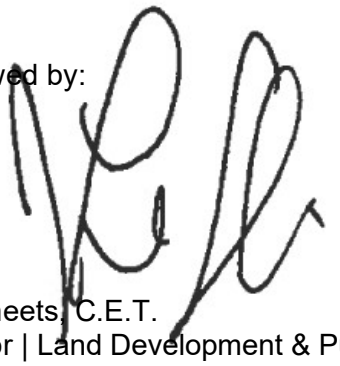
Prepared by:

Ryan Brault, M.Eng



Alex McAuley, P.Eng.
Project Manager | Land Development Engineering

Reviewed by:



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

APPENDIX A

Correspondence

Miro Savic

From: Renaud, Jean-Charles <Jean-Charles.Renaud@ottawa.ca>
Sent: Monday, May 13, 2019 1:36 PM
To: Danna SeeHar
Cc: Murray Chown; Moise, Christopher; Wu, John; Lunney, John; Richardson, Mark; 'peter.hook@sympatico.ca'
Subject: 114 Isabella Street - Pre-application consultation meeting followup
Attachments: 2019-05-13_StudiesPlansList_114Isabella.pdf

Good morning Danna,

Further to our pre-application meeting on May 8, 2019 for the construction of a mid-rise apartment dwelling at 114 Isabella Street, please find below a summary of what was discussed.

People in attendance:

- Jean-Charles Renaud (City)
- John Wu (City)
- Chirstopher Moise (City)
- John Lunney (City)
- Danna Seehar (Agent)
- Murray Chown (Agent)
- Debbie Belair (Applicant)
- Chris Allard (Applicant)
- Peter Hook (Community Association)

Proposal:

- Option 1
  - Continue previous application (D07-12-14-0009) for 6-storey residential building, with modifications to ground floor to accommodate more dwelling units and no parking.
- Option 2
  - New application for a 7-storey mixed use building with 20 residential units and 1 commercial unit at grade. No parking is proposed, with the potential for providing parking elsewhere on another site in proximity (460 O'Connor Street).
  - Access to rear yard amenity spaces might be difficult and still needs to be determined.
  - Amenity area will be provided at grade, on balconies and on rooftop.
  - Still need to confirm if overhead wires are hydro

Planning (JC Renaud and John Lunney):

- Please note that the GM4 Zone does not permit retail or restaurant uses.
- Consider how the building aligns with the neighbouring building to the east and how it frames the street
- Consider reducing the number of doors along the front of the building.
- *There was discussion of amenity space being tied to GFA. This is not the case.*
- *Confirmation: a Wind Study will be required given that the proposed building is more than twice the height of existing adjacent buildings, and is more than 5 storeys, as per the City's TOR.*
- A parking variance is not concerning to Planning staff.
- There is a need to discuss the amenity space situation and how/where it will be provided.

- Even though the proposal does not introduce greater heights, be mindful of the rear yard neighbours, both in terms of privacy and massing.
- If Option 1 is chosen, and depending on the extent of the changes, a recirculation may be required.

Urban Design (Christopher Moise)
- This is a difficult street to work with.
- Does not have any issues with the scale. It will come down to design.
- Getting to the rear yard is problematic: maybe a breezeway could work.
- Consider the windows located on the neighboring building's side façade.
- Will require a well-designed westerly wall.
- Look at opportunities for shared services (e.g. garbage) with neighbouring properties.

Engineering (John Wu)
- The site is located within a combined sewer area.
- The applicant will need to provide stormwater management, and restrict up to a 1:100 storm event to a C0.4, 2 year's storm event.
- You will also need MOE approval.
- You will need MOT approval since it is within 100 metres of the 417.

Transportation (Wally Dubyk)
- You will need to provide for ROW protection of 26 metres.
- You will need to provide a TIA screening form, and will also need to address the parking space reduction.
- *Visit Ottawa.ca/catherinestreet for more information on the Chamberlain Avenue, Catherine Street and Isabella Street Functional Design Study.*
    - *Cycling facilities are being considered for this stretch of road, however the hydro poles are an issue and may need to be buried.*
    - *An open house is scheduled for June. You may contact Vanessa Black for more information.*

Community Association (Peter Hook)
- It would be great if the Pizza site could also be used for the development.
- Most of the comments have been covered already. Agreed that this is a challenging site.
- Adding more variances will attract more community attention.
- The commercial unit seems too small to be worthwhile.
- More space will be lost when garbage is considered.
- Parking and delivery needs to be thought out.
- If off-site parking is chosen as a solution, then a long-term agreement needs to be provided to guarantee the availability of those spaces.
- Sharing the neighbour's side yard for access is a good idea.

Planning Forester (Mark Richardson) *Additional Information*
- *If there are trees on site, or if there are trees on a neighbouring site with a Critical Root Zone extending onto the development site, a Tree Conservation Report (TCR) must be supplied for review along with the various other plans/reports required by the City; an approved TCR is a requirement for Site Plan approval*
- *any removal of privately-owned trees 10cm or larger in diameter requires a tree permit issued under the Urban Tree Conservation Bylaw; the permit is based on the approved TCR*

- *the removal of City-owned trees will require the permission of Forestry Services who will also review the submitted TCR*
- *in this case, the TCR may be combined with the LP;*
- *the TCR must list all trees on site by species, diameter and health condition; similar groupings (stands) of trees can combined using averages by species, diameter class*
- *the TCR must address all trees with a critical root zone that extends into the developable area – all trees that could be impacted by the construction that are outside the developable area need to be addressed.*
- *Trees with a trunk that crosses/touches a property line are considered co-owned by both property owners; permission from the adjoining property owner must be obtained prior to the removal of co-owned trees*
- *If trees are to be removed, the TCR must clearly show where they are, and document the reason they can not be retained – please provide a plan showing retained and removed treed areas*
- *All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines listed on Ottawa.ca*
- *Please ensure newly planted trees have an adequate soil volume for their size at maturity. The following is a table of recommended minimum soil volumes:*

Tree Type/Size	*Single Tree Soil Volume (m3)*	*Multiple Tree Soil Volume (m3/tree)*
Ornamental	*15*	*9*
Columnar	*15*	*9*
Small	*20*	*12*
Medium	*25*	*15*
Large	*30*	*18*
Conifer	*25*	*15*

- *The City requests that all efforts are made to retain trees – trees should be healthy, and of a size and species that can grow into the site and contribute to Ottawa's urban forest canopy*
- *For more information on the TCR process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca*

Next Steps

- A Site Plan Control application, manager approval, with public consultation will be required (for Option 2).
- A Committee of Adjustment application for Minor Variance will be required.
- A list of required studies and plans is attached.
- Please note that these pre-consultation comments are valid for one year. If you submit a development application after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change.
- Prior to making a complete submission, I also encourage you to discuss the proposal with the area Councillor, Shawn Menard, local community associations as well as immediate neighbours.

JC

Jean-Charles Renaud, MCIP/*MICU*, RPP/*UPC*
Planner II | *Urbaniste II*
Development Review, Central | *Examen des projets d'aménagement, Central*

Planning, Infrastructure and Economic Development Department | *Services de la planification, de l'infrastructure et du développement économique*
City of Ottawa | *Ville d'Ottawa*
110 Laurier Avenue West. Ottawa, ON | *110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1*
613.580.2424 ext./poste 27629
ottawa.ca/planning / ottawa.ca/urbanisme

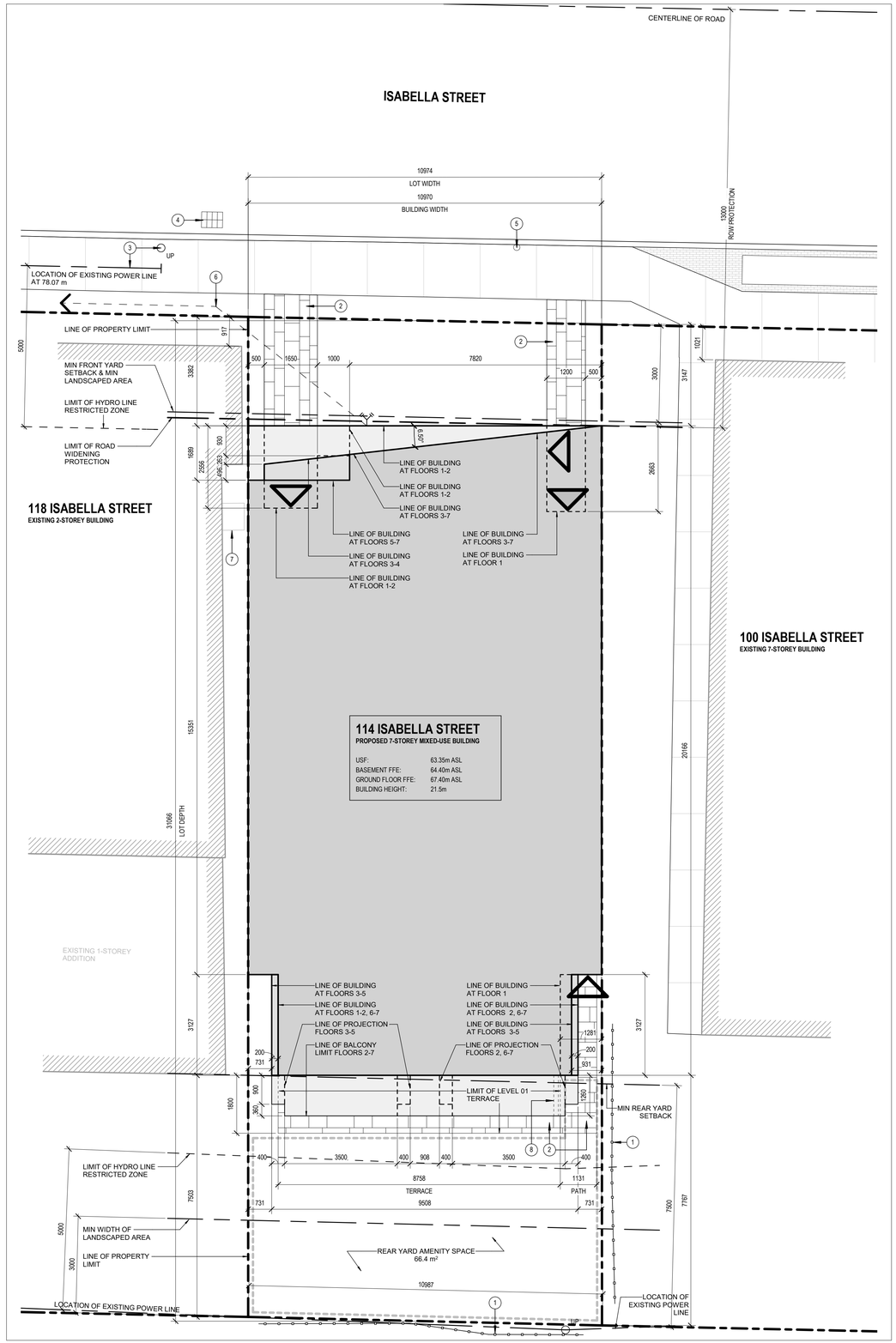
*****Absence alert: Please note that I will be out of the office on paternity leave as of June 3, 2019, and will be back in the office on September 16, 2019.*****

'

'

APPENDIX B

Site Plan



5 SP-01 SITE PLAN
SCALE: 1 : 75

4 SP-01 LOCATION PLAN
SCALE: N.T.S.

SITE & PROJECT STATISTICS

GENERAL INFORMATION

Zoning:	GM4 F(3.0)
Min. Lot Area:	No minimum
Max. Building Height:	23.5 m for buildings located on properties abutting the South side of Isabella Street
Min. Front Yard:	3 m
Min. Rear Yard:	7.5 m from any portion of a rear lot line abutting a residential zone
Min. Int. Side Yard:	No minimum

PROJECT STATISTICS

Lot Area:	341.05 m²
Building Height:	21.5 m
Front Yard:	3.15 m
Rear Yard:	7.5 m
Int. Side Yard:	0 m
Number of Proposed Units:	19 Units
Retail GFA:	2.59 m²

PARKING CALCULATION
As per Section 101

Required Parking: 4 spaces
Within Area X on Schedule 1A
0 spaces for first 12 units - Section 101(3)
0.5 spaces / unit for 7 units - Table 101
0 spaces for first 500m² non-residential - Section10(f)(d)(iii)

Total Resident Parking Provided: 0 spaces

VISITOR PARKING CALCULATION
As per Section 102

Required Visitor Parking: 1 spaces
Within Area X on Schedule 1A
0 spaces for first 12 units - Section 102(2)
0.1 spaces/unit for 7 units - Table 102

Total Visitor Parking Provided: 0 spaces

BICYCLE PARKING CALCULATION
As per Table 111A

Required Residential Parking: 10 spaces
0.5 spaces/unit for 19 units Section111A(b)(i)

Required Non-residential Parking: 0 spaces
1 space/1500m² of gross floor area 111A(i)

Total Parking Provided: 20 spaces

AMENITY AREA CALCULATION
As per Table 137

Total Amenity Area Req'd: 114 m²
6m²/unit @ 19units

Communal Amenity Req'd: 57 m²
Min of 50% of Total Amenity Area

Communal Amenity Provided: 66.4 m²
Rear Yard Amenity Space: 66.4 m²

Private Amenity Area Provided: 71.9 m²
Level 01: 15.76 m²
Level 02: 8.82 m²
Level 03: 10.47 m²
Level 04: 8.82 m²
Level 05: 8.82 m²
Level 06: 10.47 m²
Level 07: 8.82 m²

Total Amenity Area Provided: 138.3 m²

GROSS FLOOR AREA CALCULATION

Level 01:	*69.60 m²*
Level 02:	*153.41 m²*
Level 03:	*153.03 m²*
Level 04:	*153.03 m²*
Level 05:	*151.20 m²*
Level 06:	*151.20 m²*
Level 07:	*151.20 m²*

Gross Floor Area: 982.67 m²

Lot Area: 341.05 m²
Floor Space Index: 3
Permitted Gross Floor Area: 1023.15 m²

Proposed Gross Floor Area: 982.67 m² (2.88 FSI)

2 SP-01 ZONING
SCALE: N.T.S.

PLAN OF SURVEY OF
LOT 32
REGISTERED PLAN 35403
CITY OF OTTAWA

H.K.KEN SHIPMAN SURVEYING LTD. 2019

SURVEY INFO
SCALE: N.T.S.

SITE PLAN SYMBOLS LEGEND

- BUILDING ENTRANCE
- BUILDING EXIT
- BICYCLE PARKING
- UTILITY POLE
- SIAMESE CONNECTION
- EXISTING ELEVATION

SYMBOLS LEGEND
SCALE: N.T.S.

1. EXISTING BOARD FENCE
2. INTERLOCKING CONCRETE PAVERS
3. EXISTING POWER LINE TERMINATES AT EXISTING UTILITY POLE
4. EXISTING CATCH BASIN
5. EXISTING METAL SIGN POST
6. 35 m TO FIRE HYDRANT
7. EXISTING AC UNIT
8. WOOD PRIVACY SCREEN

KEYNOTE LEGEND
SCALE: N.T.S.

GENERAL ARCHITECTURAL NOTES:
1. This drawing is the property of the Architect and may not be reproduced or used without the expressed consent of the Architect.
2. Drawings are not to be scaled. The Contractor is responsible for checking and verifying all levels and dimensions and shall report all discrepancies to the Architect and obtain clarification prior to commencing work.
3. Upon notice in writing, the Architect will provide written/graphic clarification or supplementary information regarding the intent of the Contract Documents.
4. The Architectural drawings are to be read in conjuction with all other Contract Documents including Project Manuals and the Structural, Mechanical and Electrical Drawings.
5. Positions of exposed or finished Mechanical or Electrical devices, fittings and fixtures are indicated on the Architectural Drawings. Locations shown on the Architectural Drawings shall grawm over Mechanical and Electrical Drawings. Mechanical and Electrical items not clearly located will be located as directed by the Architect.
6. These documents are not to be used for construction unless specifically noted for such purpose.

PRINTED: 2020-04-09

6	ISSUED FOR SITE PLAN CONTROL	2020-04-09
4	ISSUED FOR COORDINATION	2020-02-11
3	ISSUED FOR COORDINATION	2020-01-28
2	ISSUED FOR COORDINATION	2020-01-22
1	ISSUED FOR COORDINATION	2019-11-20

ISSUE RECORD

ONTARIO ASSOCIATION of ARCHITECTS
RYAN M. KOOLWINE
LICENCE
7370

project1 studio
Project1 Studio Incorporated
|613.884.3939 | mail@project1studio.ca

114 ISABELLA STREET

114 Isabella Street
Ottawa, ON

PROJ	SCALE	DRAWN	REVIEWED
1912	NOTED	AP	RMK

SITE PLAN

SP-01

APPENDIX C

Development Servicing Study Checklist

Servicing study guidelines for development applications

4. Development Servicing Study Checklist

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

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

4.1 General Content

- ☐ N/A Executive Summary (for larger reports only).
- ☒ Date and revision number of the report.
- ☒ Location map and plan showing municipal address, boundary, and layout of proposed development.
- ☒ Plan showing the site and location of all existing services.
- ☒ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.
- ☒ Summary of Pre-consultation Meetings with City and other approval agencies.
- ☐ N/A Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.
- ☒ Statement of objectives and servicing criteria.
- ☒ Identification of existing and proposed infrastructure available in the immediate area.
- ☐ N/A Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).
- ☒ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.
- ☐ N/A Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.
- ☐ N/A Proposed phasing of the development, if applicable.

☒ Reference to geotechnical studies and recommendations concerning servicing.

☒ All preliminary and formal site plan submissions should have the following information:
- Metric scale
- North arrow (including construction North)
- Key plan
- Name and contact information of applicant and property owner
- Property limits including bearings and dimensions
- Existing and proposed structures and parking areas
- Easements, road widening and rights-of-way
- Adjacent street names

4.2 Development Servicing Report: Water

N/A☐ Confirm consistency with Master Servicing Study, if available

☒ Availability of public infrastructure to service proposed development

☒ Identification of system constraints

☒ Identify boundary conditions

☒ Confirmation of adequate domestic supply and pressure

☒ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.

☒ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.

N/A☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design

☒ Address reliability requirements such as appropriate location of shut-off valves

N/A☐ Check on the necessity of a pressure zone boundary modification.

☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

- ☒ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.
- N/A ☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.
- ☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
- ☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

4.3 Development Servicing Report: Wastewater

- ☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).
- N/A ☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.
- ☒ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.
- ☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.
- ☐ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)
- ☒ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix ‘C’) format.
- ☒ Description of proposed sewer network including sewers, pumping stations, and forcemains.
- N/A ☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).
- N/A ☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.
- N/A ☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.
- N/A ☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.
- N/A ☐ Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

- ☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)
- ☒ Analysis of available capacity in existing public infrastructure.
- ☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.
- ☒ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.
- ☒ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
- ☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
- N/A ☐ Set-back from private sewage disposal systems.
- N/A ☐ Watercourse and hazard lands setbacks.
- ☒ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
- N/A ☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.
- ☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- N/A ☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- ☒ Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.
- ☒ Any proposed diversion of drainage catchment areas from one outlet to another.
- ☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- N/A ☐ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100 year return period storm event.
- ☒ Identification of potential impacts to receiving watercourses
- N/A ☐ Identification of municipal drains and related approval requirements.
- ☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.
- ☒ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

N/A ☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.

☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.

N/A ☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.

N/A ☐ Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

N/A ☐ 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.)

4.6 Conclusion Checklist

☒ Clearly stated conclusions and recommendations

N/A ☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.

☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

APPENDIX D

Sanitary Sewer, Watermain and Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

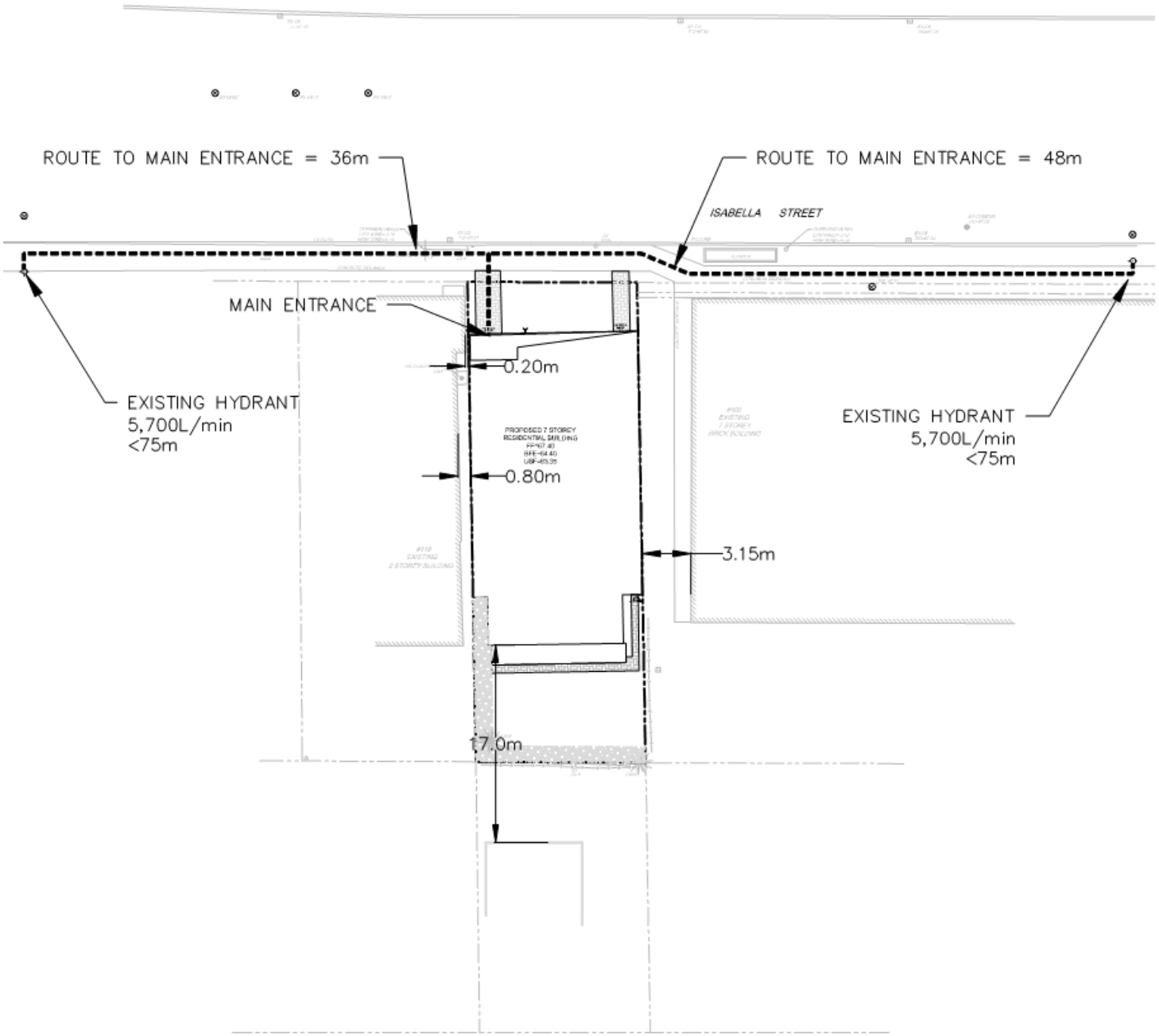
SANITARY FLOW CALCULATIONS

Number of 1 Bedroom Units	12	
Persons per 1 Bedroom Unit	1.4	
Number of 2 Bedroom Units	7	
Persons per 2 Bedroom Unit	2.1	
Total Population	32	
Average Daily Flow	280	L/c/day
Peak Factor (Harmon Formula)	3.48	
Peak Sanitary Flow	**0.36**	**L/s**
Site Area	0.034	ha
Infiltration Allowance	0.33	L/s/ha
Peak Extraneous Flows	**0.01**	**L/s**
Total Peak Sanitary Flow	**0.37**	**L/s**

Hydraulic Elements of Smooth Walled Circular Sewers Flowing Full:
200 - 375 mm Diameter (n=0.013)

	FLOW (L/s)							
Actual (mm)	203.2		254		304.8		381	
Nominal (mm)	200		250		300		375	
%Gr.	Q	V	Q	V	Q	V	Q	V
8.1	97.38	**3.00**						
7	90.53	2.79						
6	83.81	2.58	151.96	**3.00**				
5	76.51	2.36	138.72	2.74				
4.7	74.18	2.29	134.50	2.65	218.71	**3.00**		
4	68.43	2.11	124.08	2.45	201.76	2.77		
3.5	64.01	1.97	116.06	2.29	188.73	2.59	342.20	**3.00**
3	59.26	1.83	107.45	2.12	174.73	2.39	316.81	2.78
2	48.39	1.49	87.74	1.73	142.67	1.96	258.68	2.27
1	34.22	1.06	62.04	1.22	100.88	1.38	182.91	1.60
0.95	33.35	1.03	60.47	1.19	98.33	1.35	178.28	1.56
0.9	32.46	1.00	58.86	1.16	95.70	1.31	173.52	1.52
0.88	32.10	0.99	58.20	1.15	94.64	1.30	171.59	1.51
0.86	31.73	0.98	57.53	1.14	93.55	1.28	169.62	1.49
0.84	31.36	0.97	56.86	1.12	92.46	1.27	167.64	1.47
0.82	30.98	0.96	56.18	1.11	91.35	1.25	165.63	1.45
0.8	30.60	0.94	55.49	1.10	90.23	1.24	163.60	1.43
0.78	30.22	0.93	54.79	1.08	89.10	1.22	161.54	1.42
0.76	29.83	0.92	54.08	1.07	87.95	1.21	159.46	1.40
0.74	29.43	0.91	53.37	1.05	86.78	1.19	157.35	1.38
0.72	29.03	0.90	52.64	1.04	85.60	1.17	155.21	1.36
0.7	28.63	0.88	51.91	1.02	84.40	1.16	153.03	1.34
0.68	28.22	0.87	51.16	1.01	83.19	1.14	150.83	1.32
0.66	27.80	0.86	50.40	0.99	81.96	1.12	148.60	1.30
0.64	27.37	0.84	49.63	0.98	80.71	1.11	146.33	1.28
0.62	26.94	0.83	48.85	0.96	79.43	1.09	144.02	1.26
0.6	26.50	0.82	48.06	0.95	78.14	1.07	141.68	1.24
0.58	26.06	0.80	47.25	0.93	76.83	1.05	139.30	1.22
0.56	25.61	0.79	46.43	0.92	75.49	1.03	136.88	1.20
0.54	25.14	0.78	45.59	0.90	74.13	1.02	134.41	1.18
0.52	24.67	0.76	44.74	0.88	72.75	1.00	131.90	1.16
0.5	24.19	0.75	43.87	0.87	71.33	0.98	129.34	1.13
0.48	23.71	0.73	42.98	0.85	69.89	0.96	126.72	1.11
0.46	23.21	0.72	42.08	0.83	68.42	0.94	124.06	1.09
0.432	22.49	0.69	40.78	**0.80**	66.31	0.91	120.22	1.05
0.42	22.17	0.68	40.21	0.79	65.38	0.90	118.54	1.04
0.40	21.64	0.67	39.24	0.77	63.80	0.87	115.68	1.01
0.39	21.26	0.66	38.55	0.76	62.68	0.86	113.66	1.00
0.35	20.24	0.62	36.70	0.72	59.68	0.82	108.21	0.95
0.34	19.80	0.61	35.91	0.71	58.39	**0.80**	105.87	0.93
0.320	19.36	**0.60**	35.09	0.69	57.07	0.78	103.47	0.91
0.30			34.09	0.67	55.43	0.76	100.50	0.88
0.25			31.02	0.61	50.44	0.69	91.46	**0.80**
0.240			30.39	**0.60**	49.42	0.68	89.61	0.79
0.20					45.12	0.62	81.80	0.72
0.186					43.51	**0.60**	78.89	0.69
0.17							75.42	0.66
0.16							73.16	0.64
0.15							70.84	0.62
0.14							68.44	**0.60**

Capacity of existing combined sewer on Isabella



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

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LEGEND

PROPERTY LINE

ROUTE FROM PROPOSED BUILDING TO HYDRANT

DISTANCE TO ADJACENT BUILDING

CITY OF OTTAWA
114 ISABELLA STREET

FIRE HYDRANT COVERAGE PLAN

SCALE		
N.T.S.		
DATE	JOB	FIGURE
APR 2020	119100	2

M:\2019\119100\CAD\Design\119100-SWM.dwg, Hydrant Map, Apr 06, 2020 - 1:29pm, rbrault

SHT8X11.DWG - 216mmx279mm

Alex McAuley

From: Wu, John <John.Wu@ottawa.ca>
Sent: Tuesday, April 7, 2020 1:14 PM
To: Alex McAuley
Subject: RE: 114 Isabella - Boundary Conditions
Attachments: 114 Isabella April 2020.pdf

The following are boundary conditions, HGL, for hydraulic analysis at 114 Isabella (zone 1W) assumed to be connected to the 152mm on Isabella(see attached PDF for location).

Minimum HGL = 105.5m

Maximum HGL = 115.5m

Max Day + Fire Flow (36L/s) = 104.0m

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

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

John

From: Alex McAuley <a.mcauley@novatech-eng.com>
Sent: April 6, 2020 12:29 PM
To: Wu, John <John.Wu@ottawa.ca>
Subject: RE: 114 Isabella - Boundary Conditions

I just wanted to follow-up on my previous email and see if you have been able to obtain the boundary conditions.

Thank you,

Alex McAuley, P.Eng., Project Manager | Land Development Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 292 | Cell: 613.261.9166 | Fax: 613.254.5867

From: Wu, John <John.Wu@ottawa.ca>
Sent: Friday, March 27, 2020 3:24 PM
To: Alex McAuley <a.mcauley@novatech-eng.com>
Subject: RE: 114 Isabella - Boundary Conditions

Not get response.

From: Alex McAuley <a.mcauley@novatech-eng.com>
Sent: March 27, 2020 3:15 PM
To: Wu, John <John.Wu@ottawa.ca>
Cc: Ryan Brault <r.brault@novatech-eng.com>
Subject: RE: 114 Isabella - Boundary Conditions

I just wanted to follow-up on my previous email and see if you have been able to obtain the boundary conditions.

Thank you,

Alex McAuley, P.Eng., Project Manager | Land Development Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 292 | Cell: 613.261.9166 | Fax: 613.254.5867

From: Alex McAuley
Sent: Friday, March 13, 2020 4:01 PM
To: John Wu <John.Wu@ottawa.ca>
Cc: Miro Savic <m.savic@novatech-eng.com>; Ryan Brault <r.brault@novatech-eng.com>
Subject: 114 Isabella - Boundary Conditions

Hi John,
We are working on the detailed servicing for a proposed residential building at 114 Isabella St. Please see location plan below for reference.
We are proposing to connect to the existing 200mm watermain along the site frontage on Isabella.

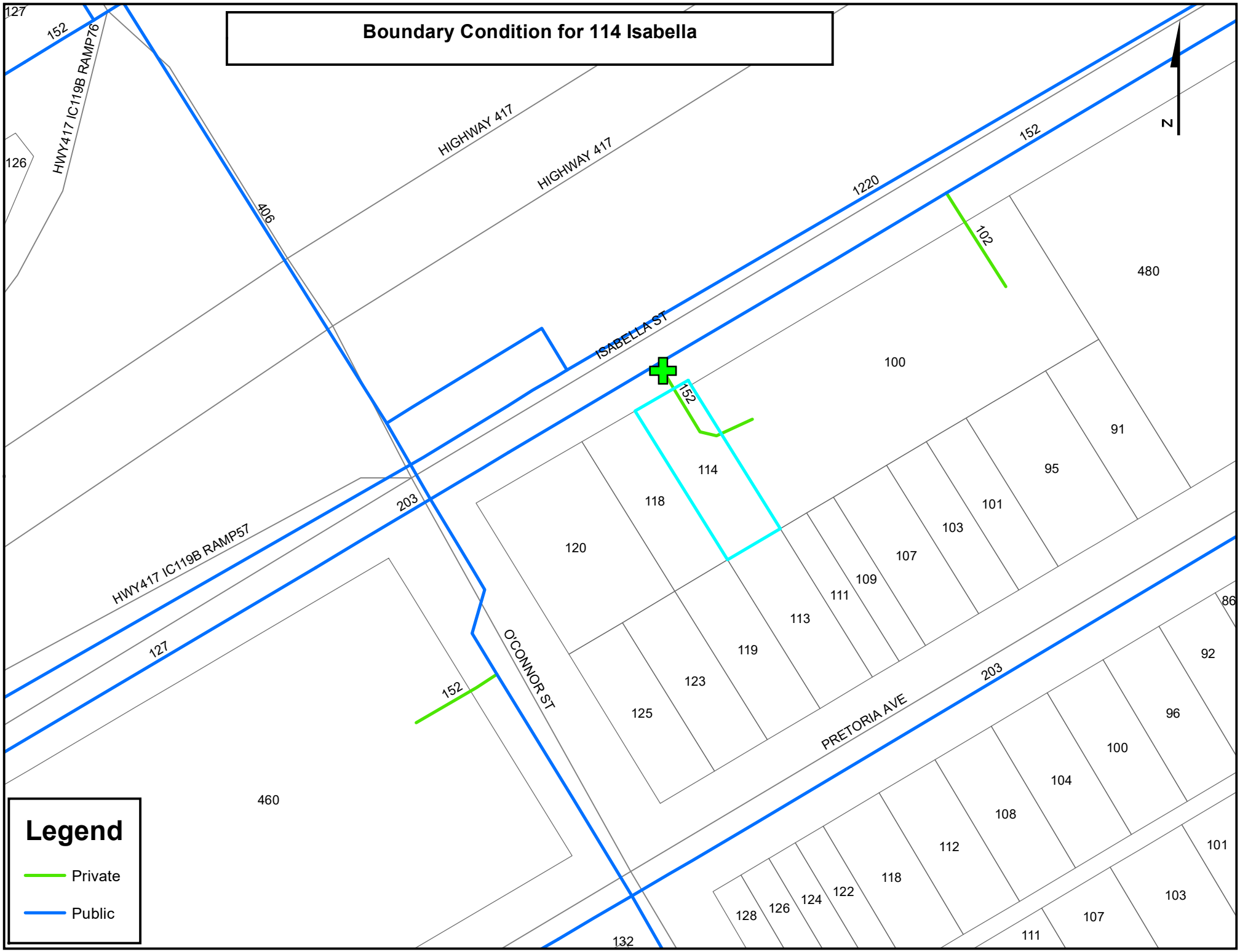
We are requesting water boundary conditions based on the following:
Fire Flow of 2,000L/min for a sprinklered building.

Average Day Demand	0.13	L/s
Maximum Day Demand (2.5 x avg. day)	0.32	L/s
Peak Hour Demand (2.2 x avg. day)	0.71	L/s

Please let us know if you have any questions.

Thank you,

Alex McAuley, P.Eng., Project Manager | Land Development Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 292 | Cell: 613.261.9166 | Fax: 613.254.5867


Boundary Condition for 114 Isabella
N
HWY417 IC119B RAMP76
HIGHWAY 417
HIGHWAY 417
406
1220
ISABELLA ST
HWY417 IC119B RAMP57
O'CONNOR ST
PRETORIA AVE
203
152
127
126
480
100
91
95
101
103
107
109
111
113
114
118
120
119
123
125
460
92
96
100
104
108
112
118
122
124
126
128
101
103
107
111
132
Legend
Private
Public

WATER ANALYSIS

WATER DEMND

Number of 1 Bedroom Units	12	
Persons per 1 Bedroom Unit	1.4	
Number of 2 Bedroom Units	7	
Persons per 2 Bedroom Unit	2.1	
Total Population	32	
Average Day Demand	350	L/c/day
Average Day Demand	0.13	L/s
Maximum Day Demand (2.5 x avg. day)	0.32	L/s
Peak Hour Demand (2.2 x max. day)	0.71	L/s

BOUNDAY CONDITIONS

Maximum HGL =	115.5	m
Minimum HGL =	105.5	m
Max Day + Fire Flow =	104	m

PRESSURE TESTS

AVERAGE GROUND ELEVATION 67.3 m

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

HIGH PRESSURE = **68.5** PSI

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

LOW PRESSURE = **54.3** PSI

MAX DAY + FIRE FLOW TEST = MAX DAY + FIRE - AVG GROUND ELEV x 1.42197 PSI/m > 20 PSI

MAX DAY + FIRE PRESSURE = **52.2** PSI

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 119100
Project Name: 114 Isabella Street
Date: 9/3/2020
Input By: R.Brault
Reviewed By: A.McAuley

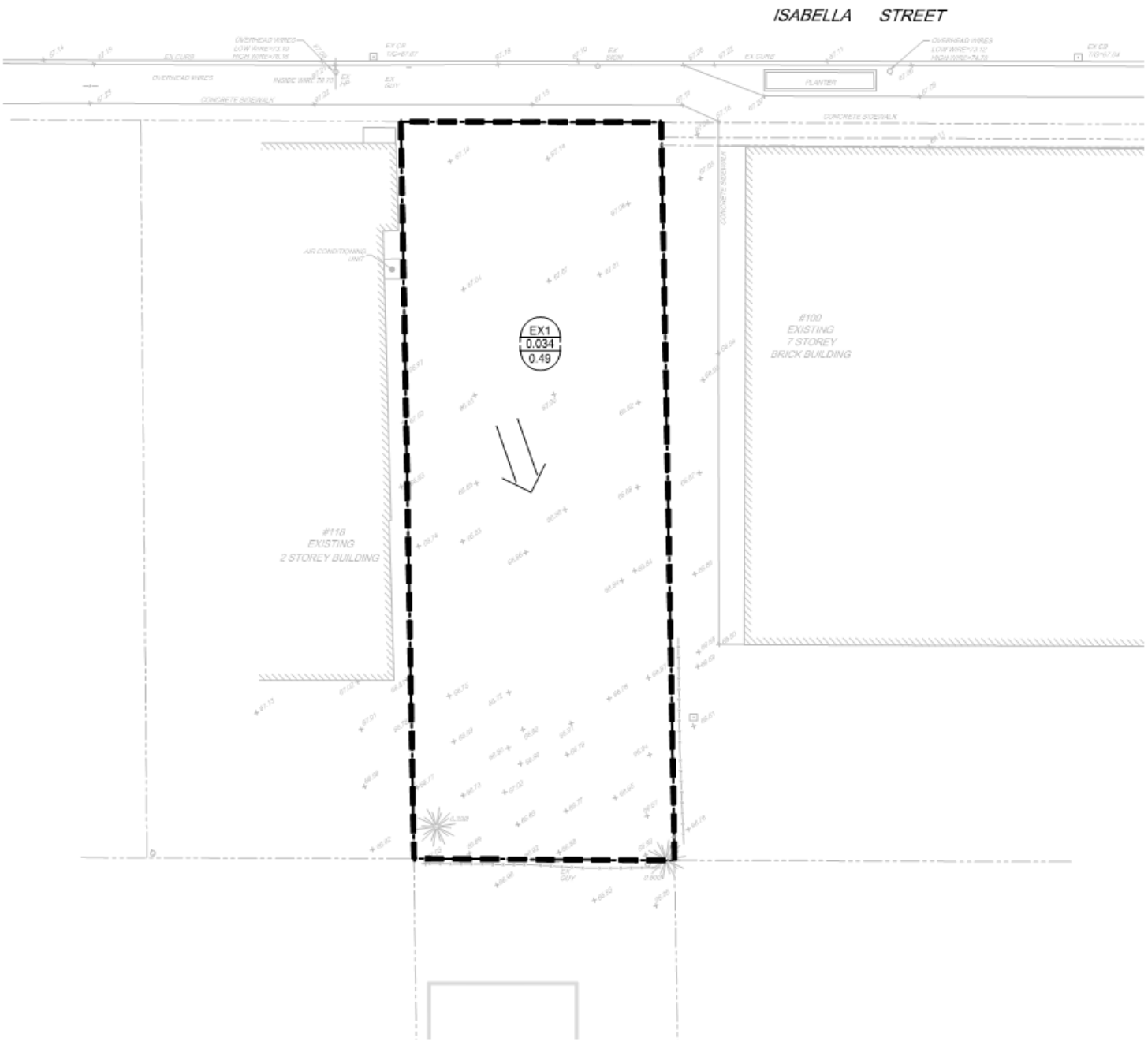
Legend: Input by User; No Information or Input Required

Building Description: 7 Storey Residential Building
Fire Resistive Construction

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Wood frame		1.5	0.6	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Modified Fire resistive construction (2 hrs)	Yes	0.6		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	210			
		Number of Floors/Storeys	7			
		Protected Openings (1 hr)	Yes			
		Area of structure considered (m^2)			**315**	
	F	**Base fire flow without reductions**				**2,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**			**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**1,700**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**			**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-680**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	No	-10%		
				Cumulative Total	**-40%**	
5	**Exposure Surcharge (cumulative %)**				**Surcharge**	
	(3)	North Side	> 45.1m		0%	**1,190**
		East Side	0 - 3 m		25%	
		South Side	3.1 - 10 m		20%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**70%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**2,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**33**
				or	USGPM	528
7	**Storage Volume**	Required Duration of Fire Flow (hours)			Hours	1
		Required Volume of Fire Flow (m^3)			m^3	120

APPENDIX E

Stormwater Management Calculations



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LEGEND

- PROPERTY LINE
- PROPOSED STORM SERVICE
- PROPOSED 600mm x 600mm CATCHBASIN COMPLETE WITH 200mmØ LEAD
- DRAINAGE AREA LIMITS
- 97 / A1 / 0.57 — POST-DEVELOPMENT DRAINAGE AREA (m^2); POST-DEVELOPMENT AREA ID; 1:5 YEAR WEIGHTED RUNOFF COEFICIENT
- OVERLAND FLOW
- STMMH — EXISTING STORM MANHOLE & SEWER
- EXISTING FENCE

CITY OF OTTAWA
114 ISABELLA STREET

PRE-DEVELOPMENT DRAINAGE

SCALE 1 : 250 (0 2 4 6 8 10)

DATE APR 2020 | JOB 119100 | FIGURE 3

SHT8X11.DWG - 216mmx279mm

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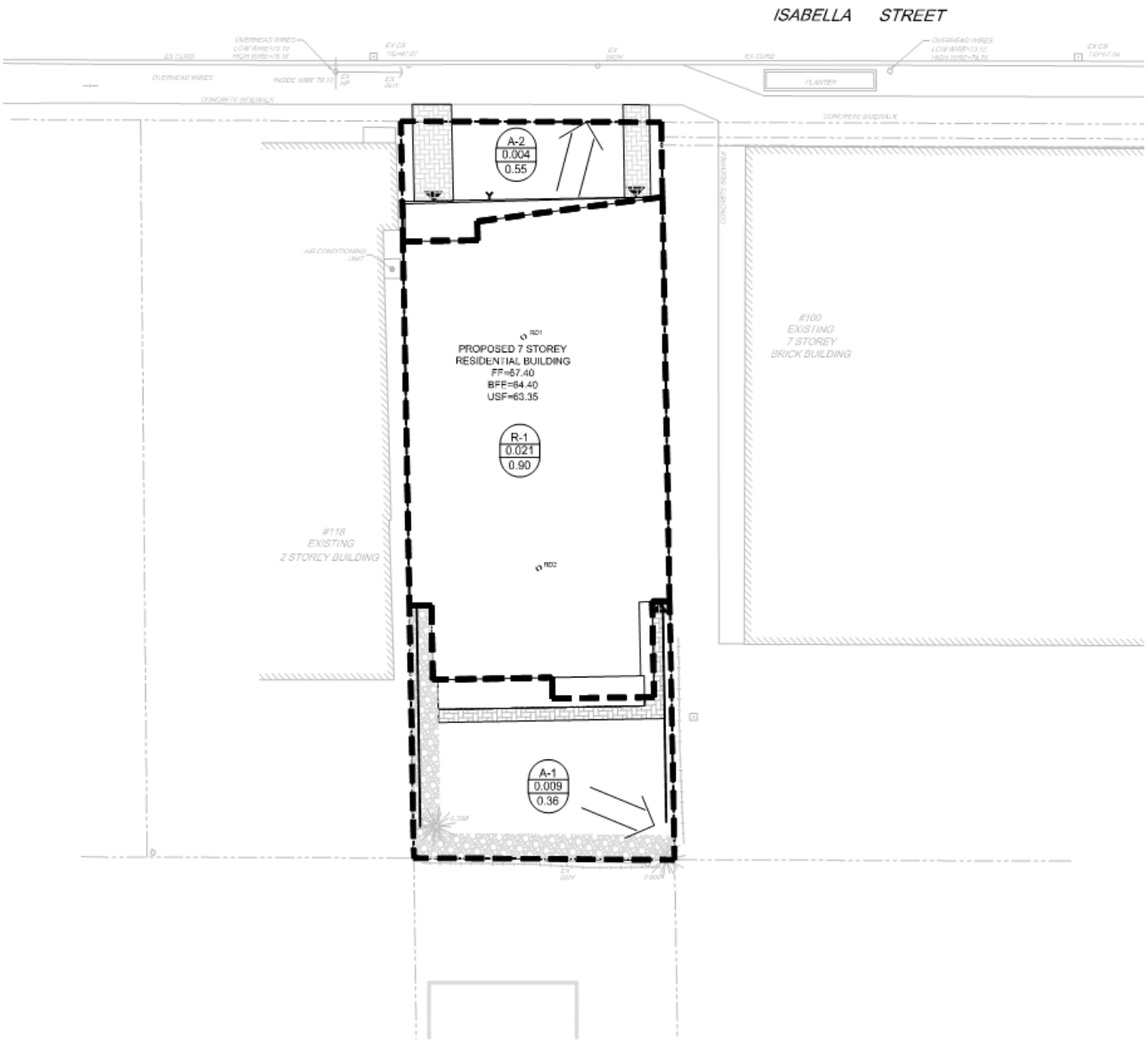

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- RD — ROOF DRAIN
- OVERLAND FLOW
- LANDSCAPE RETAINING WALL
- RIVERSTONE DRAINAGE SYSTEM
- STMMH — EXISTING STORM MANHOLE & SEWER
- EXISTING FENCE

CITY OF OTTAWA
114 ISABELLA STREET

STORMWATER MANAGEMENT
POST DEVELOPMENT

SCALE 1 : 250 (0 2 4 6 8 10)

DATE APR 2020 | JOB 119100 | FIGURE 4

SHT8X11.DWG - 216mmx279mm

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114 Isabella Street
Proposed 2 - Storey Apartment Building

Pre-Development						
Description	***A (ha)***	**$C_{2/5}$**	**C_{100}**	**2 year (L/s)**	**5 year (L/s)**	**100 year (L/s)**
Pre-Development Runoff	0.034	0.49	0.62	3.6	4.8	10.5
Allowable Release Rate	0.034	0.40	0.40	2.9	2.9	2.9
Percentage Reduction	0%	18%	35%	18%	40%	72%

Post - Development : Total Uncontrolled Site Flows									
Area	**Description**	***A (ha)***	***A imp (ha) C=0.9***	***A perv (ha) C=0.2***	**$C_{2/5}$**	**C_{100}**	**Uncontrolled Flow (L/s)**		
							2 year	**5 year**	**100 year**
A1	Uncontrolled Back Yard	0.009	0.002	0.007	0.36	0.42	0.7	1.0	1.9
A2	Uncontrolled Front Yard	0.004	0.002	0.002	0.55	0.63	0.5	0.7	1.3
R1	Building Roof	0.021	0.021	0.000	0.90	1.00	4.1	5.5	10.5

t_c=10mins

Post - Development : Total Flows for Controlled Site								
Area	**Description**	**Flow (L/s)**			**Storage Required (m^3)**			**Provided (m^3)**
		2 year	**5 year**	**100 year**	**2 year**	**5 year**	**100 year**	
A1	Uncontrolled Back Yard	0.7	1.0	1.9	N/A	N/A	N/A	N/A
A2	Uncontrolled Front Yard	0.5	0.7	1.3	N/A	N/A	N/A	N/A
R1	Building Roof	1.1	1.1	1.2	2.1	3.3	8.0	8.9
	Totals =	**2.3**	**2.8**	**4.4**	**2.1**	**3.3**	**8.0**	**8.9**
	Percentage Reduction from Pre-Development	**35%**	**42%**	**58%**				

REQUIRED STORAGE - 1:2 YEAR EVENT
AREA R1 **Controlled Roof Drain #1**

OTTAWA IDF CURVE

Area =	0.011	ha	Qallow =	0.79	L/s
C =	0.90		Vol(max) =	0.8	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	103.57	2.80	2.01	0.60
10	76.81	2.08	1.29	0.77
15	**61.77**	**1.67**	**0.88**	**0.79**
20	52.03	1.41	0.62	0.74
25	45.17	1.22	0.43	0.65

REQUIRED STORAGE - 1:5 YEAR EVENT
AREA R1 **Controlled Roof Drain #1**

OTTAWA IDF CURVE

Area =	0.011	ha	Qallow =	0.79	L/s
C =	0.00		Vol(max) =	1.3	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
10	104.19	2.82	2.03	1.22
15	83.56	2.26	1.47	1.32
20	**70.25**	**1.90**	**1.11**	**1.33**
25	60.90	1.65	0.86	1.29
30	53.93	1.46	0.67	1.20

REQUIRED STORAGE - 1:100 YEAR EVENT
AREA R1 **Controlled Roof Drain #1**

OTTAWA IDF CURVE

Area =	0.011	ha	Qallow =	0.87	L/s
C =	1.00		Vol(max) =	3.4	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
20	119.95	3.61	2.74	3.28
25	103.85	3.12	2.25	3.38
30	**91.87**	**2.76**	**1.89**	**3.40**
35	82.58	2.48	1.61	3.39
40	75.15	2.26	1.39	3.33

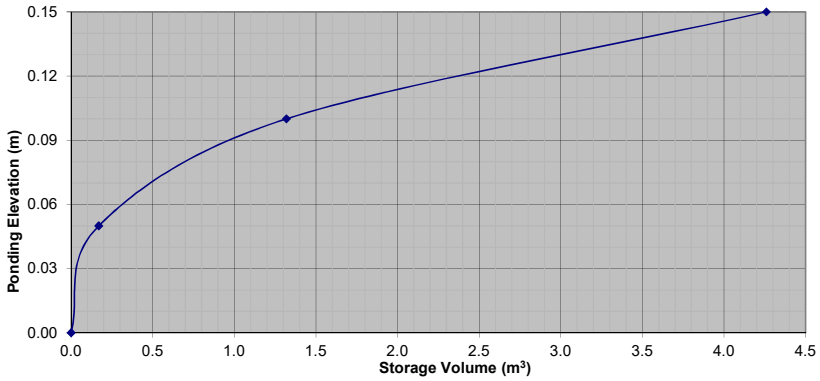
Watts Accutrol Flow Control Roof Drains: RD-100-A-ADJ set to 1/4 Open

Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage (m^3) Required	Storage (m^3) Provided
1:2 Year	0.79	0.79	8	0.8	0.8
1:5 Year	0.79	0.79	10	1.3	1.3
1:100 Year	0.87	0.87	14	3.4	4.3

Roof Drain Storage Table for Area R1

Elevation	Area RD 1	Total Volume
m	m^2	m^3
0.00	0	0
0.05	10.2	0.2
0.10	35.8	1.3
0.15	81.8	4.3

Stage Storage Curve: Area R1
Controlled Roof Drain #1



REQUIRED STORAGE - 1:2 YEAR EVENT
AREA R2 **Controlled Roof Drain #2**

OTTAWA IDF CURVE

Area =	0.010	ha	Qallow =	0.32	L/s
C =	0.90		Vol(max) =	1.3	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
20	52.03	1.34	1.02	1.22
25	45.17	1.16	0.84	1.26
30	**40.04**	**1.03**	**0.71**	**1.28**
35	36.06	0.93	0.61	1.28
40	32.86	0.85	0.53	1.26

REQUIRED STORAGE - 1:5 YEAR EVENT
AREA R2 **Controlled Roof Drain #2**

OTTAWA IDF CURVE

Area =	0.010	ha	Qallow =	0.32	L/s
C =	0.90		Vol(max) =	2.0	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
30	53.93	1.39	1.07	1.92
35	48.52	1.25	0.93	1.95
40	**44.18**	**1.14**	**0.82**	**1.96**
45	40.63	1.05	0.73	1.96
50	37.65	0.97	0.65	1.95

REQUIRED STORAGE - 1:100 YEAR EVENT
AREA R2 Controlled Roof Drain #2

OTTAWA IDF CURVE

Area =	0.010	ha	Qallow =	0.32	L/s
C =	1.00		Vol(max) =	4.6	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
65	52.65	1.50	1.18	4.62
70	49.79	1.42	1.10	4.63
75	**47.26**	**1.35**	**1.03**	**4.64**
80	44.99	1.29	0.97	4.64
85	42.95	1.23	0.91	4.63

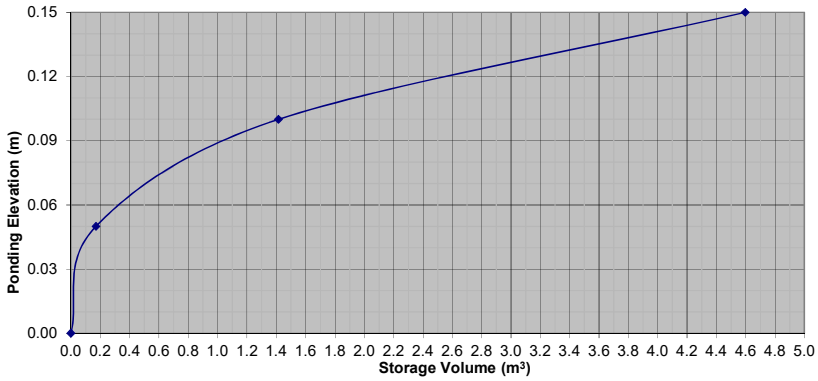
Watts Accutrol Flow Control Roof Drains: RD-100-A-ADJ set to Closed

Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage (m^3) Required	Storage (m^3) Provided
1:2 Year	0.32	0.32	10	1.3	1.4
1:5 Year	0.32	0.32	11	2.0	2.0
1:100 Year	0.32	0.32	15	4.6	4.6

Roof Drain Storage Table for Area R2

Elevation	Area RD 1	Total Volume
m	m^2	m^3
0.00	0	0
0.05	10.22	0.2
0.10	39.55	1.4
0.15	87.72	4.6

Stage Storage Curve: Area R2
Controlled Roof Drain #2



APPENDIX F

Engineering Drawing

GRADING NOTES:

1. 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.
2. 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.
3. 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.
4. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 98% 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.
5. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
6. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
7. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
8. ALL CURBS SHALL BE MONOLITHIC CURB AND SIDEWALK AS PER CITY OF OTTAWA STANDARDS (SC2).
9. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
10. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.

EROSION AND SEDIMENT CONTROL NOTES :

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.

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
9. ROADWAYS ARE TO BE SWEPT AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR THE MUNICIPALITY.
10. 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.

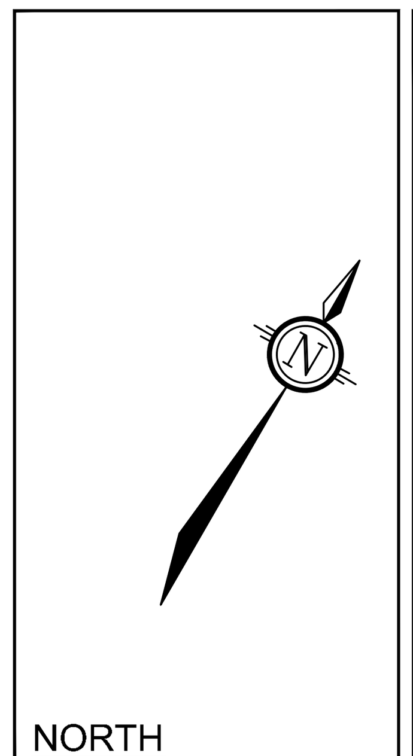
PAVEMENT STRUCTURES:

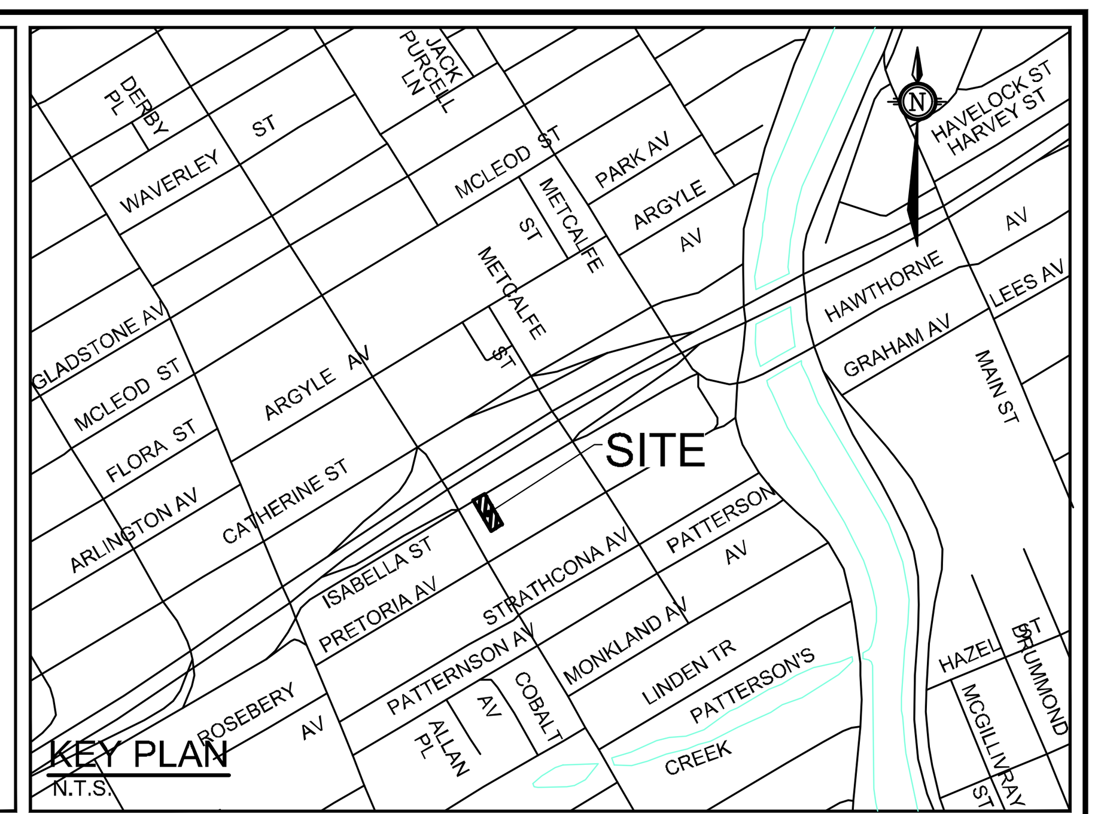
HEAVY DUTY (NEW PAVEMENT)
MATCH EXISTING PAVEMENT STRUCTURE
BUT SHALL NOT BE LESS THAN:
40mm HL3 or SUPERPAVE 12.5
50mm HL8 or SUPERPAVE 19.0
150mm GRANULAR "A"
450mm GRANULAR "B" TYPE II
* INSTALLED PER GEOTECHNICAL REPORT

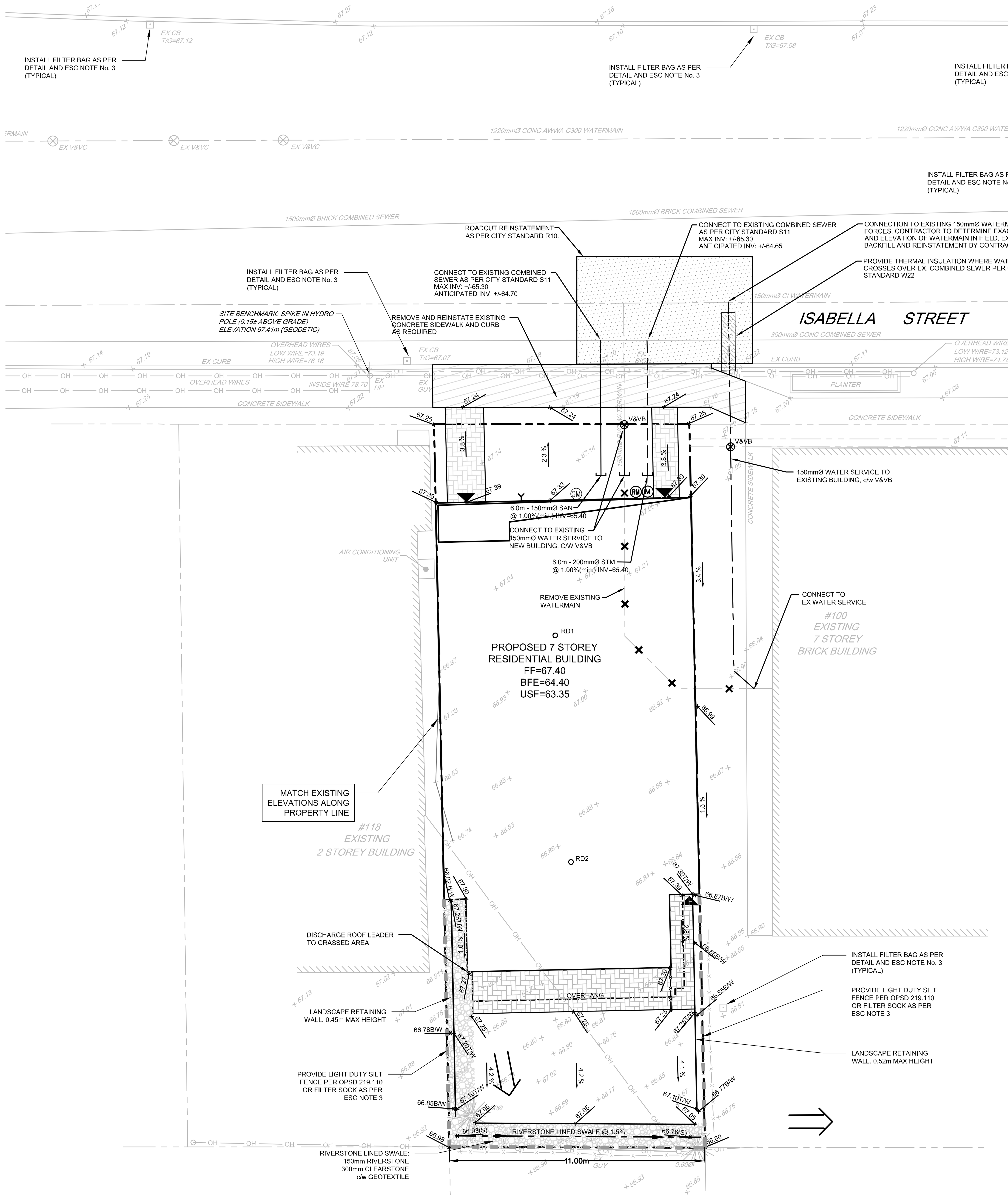
MONOLITHIC CURB AND SIDEWALK AS PER CITY OF OTTAWA STANDARD (SC2)

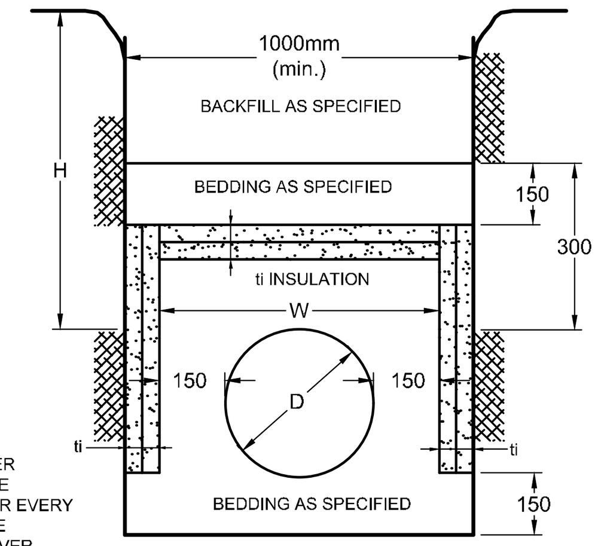
UNIT PAVERS PER CITY OF OTTAWA STANDARD (SC9)

RIVERSTONE DRAINAGE SYSTEM
150mm RIVERSTONE
300mm cLEARSTONE
c/w gEOTEXTILE









INSULATION NOTES:

1. THE THICKNESS OF SEWER INSULATION SHALL BE THE EQUIVALENT OF 25mm FOR EVERY 300mm REDUCTION IN THE REQUIRED DEPTH OF COVER LESS THAN 1500mm (SEE TABLE)

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

INSULATION DETAIL FOR SHALLOW SEWERS
NOT TO SCALE

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

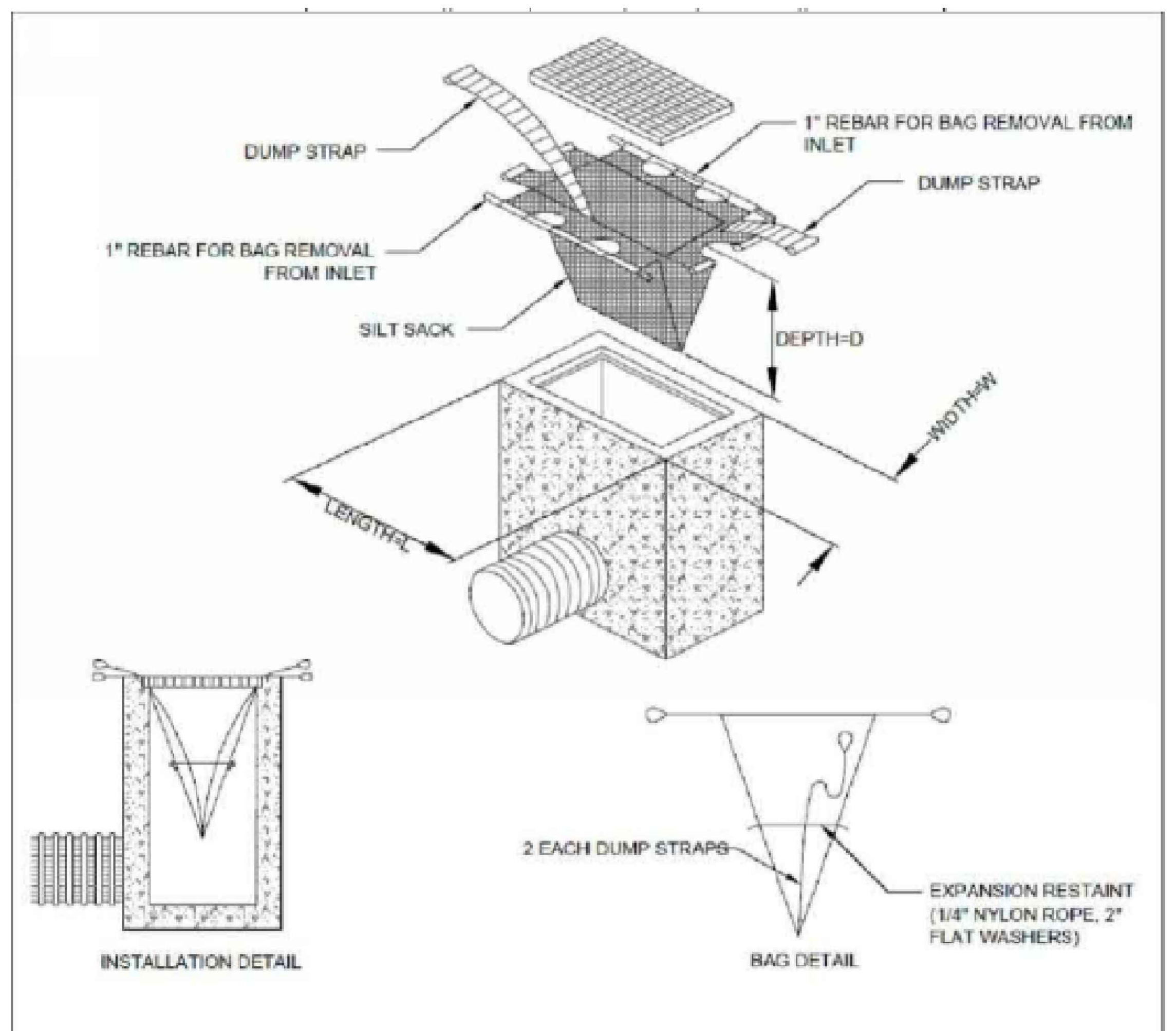
LEGEND

- PROPERTY LINE
- PROPOSED STORM SERVICE
- PROPOSED SANITARY SERVICE
- 200mmØ PROPOSED WATERMAIN AND DIAMETER
- SP PROPOSED VALVE AND VALVE BOX
- PROPOSED CAP
- RD CONTROLLED FLOW ROOF DRAIN
- THERMAL INSULATION FOR SHALLOW WATERMAIN
- PROPOSED BUILDING ENTRANCE
- PROPOSED WATER METER AND REMOTE METER
- PROPOSED GAS METER
- 121.62 PROPOSED ELEVATION / 121.50 EXISTING ELEVATION
- 2.0% PROPOSED GRADE AND DIRECTION
- PROPOSED SILT FENCING (OPSD 219.110)
- PROPOSED SWALE
- MAJOR OVERLAND FLOW ROUTE
- PROPOSED LANDSCAPE RETAINING WALL
- PROPOSED PRIVACY FENCE
- EXISTING ELEVATION
- EXISTING CONCRETE CURB
- EXISTING SANITARY MANHOLE AND SEWER
- EXISTING CATCHBASIN MANHOLE
- EXISTING STORM MANHOLE AND SEWER
- EXISTING CATCHBASIN C/W CATCHBASIN LEAD
- EXISTING HYDRANT
- EXISTING UTILITY POLE C/W GUY WIRES
- 300mmØ WM EXISTING WATERMAIN
- EXISTING HYDRANT C/W VALVE & LEAD
- EXISTING LIGHT STANDARD
- EXISTING OVERHEAD WIRES
- EXISTING FENCE
- EXISTING OVERHEAD UTILITY WIRES

ROOF DRAIN TABLE: AREA R-1 (ROOF DRAINS 1 to 2)						
AREA ID *	ROOF DRAIN No. (WATTS MODEL)	ROOF DRAIN OPENING SETTING	1:5 YEAR RELEASE RATE	APPROX. 5 YR PONDING DEPTH	1:100 YEAR RELEASE RATE	APPROX. 100 YR PONDING DEPTH
R-1	RD 1 (RD-100-A-ADJ)	1/4 EXPOSED	0.79 L/s	10 cm	0.87 L/s	14 cm
R-1	RD 2 (RD-100-A-ADJ)	CLOSED	0.32 L/s	10 cm	0.32 L/s	15 cm

* REFER TO THE 'DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT' (R-2020-034) PREPARED BY NOVATECH FOR DRAINAGE AREA IDENTIFIERS AND STORMWATER MANAGEMENT DETAILS.

**ALL CONTROLLED FLOW ROOF DRAINS FOR THE PROPOSED BUILDING TO BE WATTS 'ADJUSTABLE ACCUTROL' ROOF DRAINS OR APPROVED EQUIVALENT.



INLET SEDIMENT CONTROL DEVICE
N.T.S.

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. 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.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
5. 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.
6. 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.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (NO. 190650_REVISION 1, DATED JULY 31, 2019), PREPARED BY KOLLAARD ASSOCIATES., 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.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO STORMWATER MANAGEMENT REPORT(R-2020-034) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

SEWER NOTES:

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

ITEM	SPEC. No.	REFERENCE
SEWER TRENCH	S6	CITY OF OTTAWA
STORM SEWER	PVC DR 35	
SANITARY SEWER	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	

3. 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.
4. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH HI-40 INSULATION PER INSULATION DETAIL FOR SHALLOW SEWERS. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
5. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
6. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
7. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
8. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. 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.
9. ALL WEEPING TILE CONNECTIONS TO BE MADE TO THE PROPOSED STORM SEWER SYSTEM DOWNSTREAM OF ANY INLET CONTROL DEVICES.
10. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

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

OWNER INFORMATION
CHRIS ALLARD
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No.	REVISION	DATE	BY
3	ISSUED FOR SITE PLAN APPROVAL	APR 09/20	AM
2	ISSUED FOR COORDINATION	APR 06/20	AM
1	ISSUED FOR COORDINATION	MAR 25/20	AM

SCALE
1:125

DESIGN AM
CHECKED AM
DRAWN LC
CHECKED RB
APPROVED AM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
April 9, 2020
PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
114 ISABELLA STREET

DRAWING NAME
GRADING, SERVICING AND EROSION & SEDIMENT CONTROL PLAN

PROJECT No. 119100
REV # 3
DRAWING No. 119100-GS