5506 MANOTICK MAIN STREET
COMMERCIAL DEVELOPMENT

DEVELOPMENT SERVICING AND
STORMWATER MANAGEMENT REPORT

Prepared by:

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April 20, 2020

Ref: R-2020-036
Novatech File No. 119234

NOVATECH
Engineers, Planners & Landscape Architects

April 20, 2020

City of Ottawa
Planning, Infrastructure and Economic Development Department
Development Review Rural Branch
110 Laurier Avenue West, 4th Floor
Ottawa, Ontario
K1P 1J1

Attention: Mr. Harry Alvey

Dear Sir:

Re: Development Servicing and Stormwater Management Report
5506 Manotick Main Street
Ottawa, Ontario
Our File No.: 119234

Enclosed herein is the 'Development Servicing and Stormwater Management Report' for the commercial development at 5506 Manotick Main 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

M Savic

Miroslav Savic, P. Eng.
Senior Project Manager

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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 2 storey, multi-use building at 5506 Manotick Main Street in the City of Ottawa.

1.1 Site Description and Location

The subject site is located in City of Ottawa Ward 21 – Rideau-Goulbourn. The legal description of the subject site is designated as part of Lot 1, Concession 'A', Broken Front Geographic Township of North Gower. The site is currently occupied by a one storey single family dwelling. An aerial photo of the subject site is shown in **Figure 1** below.

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

1.2 Pre-Consultation Information

A pre-consultation meeting was held with the City of Ottawa on October 21, 2019 at which time the client was advised of the general submission requirements. Refer to **Appendix A** for the pre-consultation meeting notes.

Based on a review of **O. Reg. 525/98: Approval Exemptions**, a Ministry of the Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA) will not be required

since the stormwater management facility will service a single residential lot and the storm flows from this site are will discharge into a storm sewer that is not a combined sewer.

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). An 'Enhanced' Level of Protection, equivalent to a long-term average removal of 80% of total suspended solids (TSS) is required as noted at the pre-consultation meeting with the City off Ottawa.

2.0 PROPOSED DEVELOPMENT

The proposed development is to demolish the existing 1 storey single family home, and to construct a 2 storey multi-use building. This building will be a mix of office space and general commercial uses. A paved parking lot will be provided at the rear of the building with access from Highcroft Drive. 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 G**.

3.1 Water

The site is currently serviced by an existing 19mm diameter water service connected to the 400mm diameter municipal watermain in Manotick Main Street. The proposed building will be provided with a new 50mm diameter service connection to the Manotick Main Street Watermain.

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 2-storey above ground wood frame construction. The calculated fire flow demand is 9,000 L/min (150 L/s). Refer to **Appendix C** for detailed calculations.

The fire protection will be provided from the existing municipal fire hydrants. A multi-hydrant approach to fire-fighting is anticipated to be required. There are 2 Class AA (blue bonnet) municipal hydrants within 150m of the proposed development (one hydrant east side of Manotick Main Street approximately 30m from the proposed building; another near the SE corner of Manotick Main Street and Maple Avenue West approximately 100m from the proposed building). 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 three 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
1 x 5,700 L/min	1 x 3,800 L/min	9,500 L/min

Therefore, the combined fire flow from the two existing hydrants of 9,500 L/min exceeds the required fire flow of 9,000 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.** The detailed water demand calculations are provided in **Appendix C.**

Table 3.1.2: Water Demand

Average Day Demand	Maximum Day Demand	Peak Hour Demand
0.04 L/s	0.05 L/s	0.10 L/s

The water analysis was done based on the boundary conditions provided by the City off Ottawa for both, the existing pressure zone and the future pressure zone reconfiguration. The water analysis and the boundary conditions are provided in **Appendix C**.

The results of the water analysis are summarized below in **Table 3.1.3** and **Table 3.1.4**.

Table 3.1.3 Water Analysis Results Summary - Existing Pressure Zone

Condition	Water Demand	Min/Max Allowable Operating Pressures	Limits of Design Operating Pressures
High Pressure	0.21 L/s	80 psi (Max)	96.7 psi
Peak Hour	0.57 L/s	40 psi (Min)	72.2 psi
Max Day + Fire Flow	150.32 L/s	20 psi (Min)	33.6 psi

Table 3.1.3 Water Analysis Results Summary – Future Pressure Zone Reconfiguration

Condition	Water Demand	Min/Max Allowable Operating Pressures	Limits of Design Operating Pressures
High Pressure	0.21 L/s	80 psi (Max)	84.6 psi
Peak Hour	0.57 L/s	40 psi (Min)	77.6 psi
Max Day + Fire Flow	150.32 L/s	20 psi (Min)	48.2 psi

The results of the water analysis show there is adequate flow and pressure in the existing 400mm watermain in Manotick Main Street to meet the required water demands.

As per the boundary conditions, the high pressure in the distribution system well exceeds 80 psi. According to the Ontario Building Code in areas that may be occupied, the residual pressure at any fixture shall not exceed 552 kPa (80 psi). Therefore, a pressure reducing valve needs to be

installed immediately downstream of the isolation valve in the building, located downstream of the meter, so it is owner maintained.

3.2 Sanitary Sewer

The proposed development will be serviced by connecting a 150mm diameter sanitary service to the existing 600mm diameter municipal sanitary sewer in Manotick Main Street. As per to the infrastructure mapping information on GeoOttawa the Manotick Main Street sewer outlets to the sanitary pumping station at 4344 Rideau Valley Drive North.

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

- Daily Commercial/Retail Sewage Flow: 5 L/m^2 of floor space
- Daily Office Sewage Flow: 75 L/9.3m^2 off office space
- Infiltration Allowance: 0.33 L/s/ha x 0.123 ha site = 0.04 L/s

The calculated peak sanitary flow from the proposed development, including infiltration, is 0.10 L/s. Refer to **Appendix C** for detailed calculations.

The proposed 150 mm diameter sanitary service will be a gravity pipe at a minimum slope of 1.0% with a full flow conveyance capacity of 15.9 L/s.

3.3 Stormwater Management

The proposed development will be serviced by connecting to the existing 600mm diameter municipal storm sewer in Manotick Main Street.

The stormwater management design for the proposed development will include on-site water quality and quantity control prior to releasing flows from the site. Stormwater management will be provided by rooftop storage, parking lot storage and underground storage controlled by a proposed inlet control device, and an on-site Oil-Grit separator. Further details on the sub catchment drainage areas are explained in subsequent sections of the report. See the Stormwater Management Plan (119234-SWM) included in **Appendix H**, for catchment locations, areas, and runoff coefficients.

3.3.1 Existing Conditions

The subject site is presently occupied by a single one storey house. The existing site drains West to East towards the municipal catch basins in the Manotick Main Street right of way.

3.3.2 Stormwater Management Objectives

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

- Provide a dual drainage system (i.e. minor and major system flows).
- 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 released into the municipal storm sewer system in Montreal Road.

- Ensure that no surface ponding will occur on the paved surfaces (i.e. drive aisle and parking lot) during the 2-year storm event.
- Direct major overland flow to the public Right-of-Way.
- Accommodate any upstream stormwater runoff by the proposed stormwater management design.
- Provide 'enhanced' level of water quality control, equivalent to a long-term average removal of 80% of total suspended solids (TSS)

3.3.3 Storm Drainage Areas

The proposed site has been subdivided into three 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 (119234-SWM). A brief description of the sub catchment areas are as follows:

- Runoff from the rear parking lot area (Area A-1) will be controlled by a proposed inlet control device and stored on-site in large stormwater pipes and on the parking lot surface ponding prior to being released to the municipal storm sewer in Manotick Main Street.
- Runoff from the side yard (Area A-2) will sheet drain uncontrolled.
- Runoff from the building roof (Areas R1 and R2) will be controlled and stored on the roof prior to being release to the municipal storm sewer at the front of the property.

3.3.4 Pre-development Conditions and Allowable Release Rate

The uncontrolled pre-development flows from the 0.13 ha site were calculated using the Rational Method to be 17.8 L/s during the 1:5-year design event and 30.6 L/s during the 1:100-year design event. Refer to **Appendix D** for detailed calculations and Pre-Development Storm Drainage Area Pan. There are currently no water quantity control measures being provided on site.

The allowable release rate for the site was calculated using the Rational Method to be 17.8 L/s. This release rate was based on a runoff coefficient of C=0.46 (existing conditions) 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 the post-development conditions, the stormwater runoff from the proposed parking lot will be collected by on-site storm system and directed to the existing 450mm diameter storm sewer in Manotick Main Street. The basement foundation drainage and the building roof drains will be connected directly to the Manotick Main Street sewer.

The existing roadside ditches on south side of Highcrioft drive and west side of Manotick Main Street adjacent to the proposed building will be filled in and replaced with an underground storm system. The storm system has been sized to accommodate the on-site drainage as well as the existing stormwater runoff upstream of the site that is presently draining to the roadside ditches.

Refer to **Appendix D** for the storm for the storm sewer design sheet and **Appendix H** for the storm drainage area plan

In order to mitigate the stormwater related impacts due to the proposed development, post-development flows form the site will have to be controlled and stored on site via rooftop storage and parking lot and underground storage controlled by a proposed ICD prior to entering the existing municipal storm sewers. Refer to **Appendix D** for runoff calculations for the sub catchments areas for the site.

Areas A1 –Controlled Parking Lot Area

The post-development flows from sub-catchment Area A-1 will be attenuated by the use of a Tempest LMF Model 80 ICD, installed within the outlet pipe of proposed CBMH 3. Stormwater runoff from this drainage area will be temporarily stored in the underground storage pipes and on the parking lot surface, prior to being discharged into the free-flow portion of the on-site storm sewer system.

The Modified Rational Method was used to determine the required storage volumes for the 5-year and 100-year design events. As required by the City of Ottawa, due to the presence of underground storage, the storage volume calculations were completed using an assumed average release rate, equal to 1/2 of the peak design flow allocated to this drainage area. It is noted that this approach is considered conservative and is likely to overestimate the required storage volume and ponding elevations. The approximate ponding elevations calculated for the 5-year and 100-year design storms were estimated based on these required storage volumes.

The Modified Rational Method was used to determine the storage volume required for this catchment area. Refer to **Appendix D** for detailed tables and calculations. As required by the City of Ottawa due to the presence of underground storage, the required storage volume was calculated using an assumed average release rate equal to 50% of the peak allowable flow. It is noted that this approach is considered conservative and is likely to overestimate the required storage volume and maximum water level. The approximate ponding elevations calculated for the 5-year and 100-year design storms were estimated based on these required storage volumes. The ICD was selected using the peak allowable flow allocated to this sub-catchment area and a maximum water elevation calculated using 50% of the allowable flow rate.

Table 3.3.1 summarizes the post-development design flows from Area A-1 as well as the type of ICD, the design flow, design head, storage volumes required and storage volume for both the 1:5 year and the 1:100 year design events.

Table 3.3.1: Area A-1 Design Flow and ICD Information

Design Event	Drainage Area A-1					
	Post-Development Flow					
	Plug Type ICD	Average Design Flow	Peak Design Flow	Water Design Head *	Volume Required	Volume Provided
1:5 Year	Tempest LMF Model 80	2.45 L/s	4.9 L/s	0.75 m	15.3 m^3	30.4 m^3

1:100 Year	Tempest LMF Model 80	4.15 L/s	9.3 L/s	2.07 m	30.3 m^3	30.4 m^3

*Water Design Head is calculated from the water elevation to center of the orifice.

Refer to **Appendix D** for Rational Method calculations, Modified Rational Method calculations and stage storage curves.

Area A2 – Direct Runoff

The post-development runoff from Area A-2 was calculated using the Rational Method to be 3.62 L/s and 7.07 L/s for the 1:5 year and 1:100 year design events respectively. Refer to **Appendix D** for Rational Method tables and calculations.

Areas R1 and R2– Controlled Building Roof

The post-development flow from Area R-1 and R-2 will be attenuated by the use of a controlled flow roof drain. An adjustable flow control roof drain will control the flow from RD1 and RD2 to a maximum of 1.1 L/s (17.5 USGPM) per drain.

The Modified Rational Method was used to determine the storage volume required for this catchment area.

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 3.3.2: Areas R1 and R2 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 (1/2 Open)	0.95	1.10	9	13	1.2	3.1	5.2
RD 2	RD-100-A-ADJ (1/2 Open)	0.95	1.10	10	13	1.4	3.5	5.9

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 3.3.3: 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	
A1		Controlled Parking Lot	4.90	8.30	15.3	30.3	30.4
A2		Uncontrolled Landscaped Area	3.62	7.07	N/A	N/A	N/A
R	1	Controlled Building Roof	0.95	1.10	1.2	3.1	5.2
	2	Controlled Building Roof	0.95	1.10	1.4	3.5	5.9
		Total Flow =	**10.4**	**17.6**			

As indicated in **Table 3.3.3** the total post-development flow from the sub-catchment areas will be released from the proposed development at a combined maximum rate of 17.6 L/s during the 1:100 year design event and 10.4 L/s during the 1:5 year design event; neither of which exceeds the allowable flow for the site of 17.80 L/s

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3.3.6 Stormwater Quality Control

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA) and is in the Rideau River tributary area. An 'Enhanced' Level of Protection, equivalent to a long-term average removal of 80% of total suspended solids (TSS), with at least 90% of the total rainfall being captured and treated, is required.

In order to achieve this level of quality control protection, a new oil-grit separator unit (CDS Model PMSU 20_15_4m) will be installed downstream of CBMH 3 on the proposed 250mm diameter storm sewer outlet pipe from the site. Stormwater runoff collected by the on-site storm sewer system (0.086 ha tributary area from the entire site) will be directed through the proposed treatment unit. The contributing area includes the proposed paved parking areas and the concrete paths.

As stated above, the proposed oil-grit separator has been sized to provide an Enhanced Level of water quality treatment prior to discharging the stormwater towards the municipal storm sewer in Manotick Main Street. Echelon Environmental and Contech Engineering Solutions Inc. have modeled the tributary area to provide a CDS unit capable of meeting the TSS removal requirements. The model parameters for the TSS removal were based on historical rainfall data for Ottawa. It was determined that a CDS Model PMSU 20_15_4m will exceed the target removal rate, providing a net annual 90.6% TSS removal. The CDS unit has a sediment storage capacity of 838 L; an oil storage capacity of 232 L and will treat a net annual volume of approximately 99.0% for the tributary area.

Maintenance and Monitoring of Storm Sewer and SWM Systems

It is recommended that the client implements a maintenance and monitoring program for both the on-site storm sewer and the stormwater management systems: The storm drainage system should be inspected routinely (at least annually); the plug type ICD unit should be inspected to ensure they are fitted securely and free of debris; and the oil-grit separator should be inspected

at regular intervals and maintained when necessary to ensure optimum performance. Refer to **Appendix F** for the CDS unit operation, design and maintenance summary parameters as well as the annual TSS removal efficiency data.

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 Plan (119234-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 parking lot area will pond to a maximum of 0.06m before overflowing towards the roadside ditch in Highcroft Drive ROW. Stormwater from on the building roof will pond to a maximum of 0.13m on the rooftops before overflowing to the landscaped areas via the proposed scuppers.

4.2 Erosion and Sediment Control

An erosion and sediment control plan has been prepared for the proposed site. Refer to the GEMTEC 'Erosion and Sediment Control Plan – Proposed Commercial Development', No. 65032.03-R0. dated February 4th, 2020 for the erosion and sediment control requirements for the proposed development.

5.0 GEOTECHNICAL INVESTIGATION

A geotechnical investigation report has been prepared for the proposed site. Refer to the GEMTEC 'Geotechnical Investigation – Proposed Commercial Development', No. 65032.03, dated February 14, 2020 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 commercial development located at 5506 Manotick Main Street, in the City of Ottawa.

The conclusions are as follows:

- The proposed building will be serviced by connecting to the municipal infrastructure in Manotick Main Street.
- The proposed building will not be sprinklered. The fire protection will be provided from the existing municipal fire hydrants in Manotick Main Street.
- The total post-development flow from the site will be controlled to a maximum of 17.6 L/s during the 1:100 year design event and to 10.4 L/s during the 1:5 year design event. Neither of which exceed the maximum allowable release rate of 17.8 L/s required by the City of Ottawa.
- On-site stormwater quality treatment will be provided by the installation of an oil-grit separator (CDS Model PMSU 20_15_4m). The treatment unit will provide 90.6% TSS removal and will treat 99% of the total annual runoff.

- Temporary erosion and sediment controls are to be provided during construction as per the GEMTEC Erosion and Sediment Control Plan.

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:

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

APPENDIX A

Correspondence

Pre-Application Consultation Meeting Notes

Property Address: 5506 Manotick Main Street
PC2019-0246
October 21, 2019; room 4105

Attendees:

Sarah McCormick, City of Ottawa, Planner II
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Regrets:

Kersten Nitsche, City of Ottawa, Parks Planner II
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Eric Lalande, Rideau Valley Conservation Authority, Planner
(613)253-0006 x- 229, eric.lalande@rvca.ca

Subject: 5506 Manotick Main Street

Meeting notes:

Overview of proposal

- Demolish the existing structure.
- Propose a 2-storey, 450m^2 commercial office building.
- Approximately 18 parking spaces proposed.
- Potential coffee shop on the main floor.

Please see below the preliminary comments and questions from staff and agencies:

Planning

Official Plan:

- Property is designated Village on Shcedule A of the Official Plan
- Schedules G and H of the Official Plan identifies Manotick Main Street as an existing arterial road with a protected right-of-way of 30m from the centreline of the road.
    - From aerial photography, it seems the total ROW width is already in City ownership. The site plan must identify the right-of-way width measured from the centreline, demonstrating that the protected ROW width has already been taken.

- Schedule J of the Official Plan identifies Manotick Main Street as a Spine Route and as a Scenic Entry Route.

Manotick Secondary Plan:

- The goals and objectives of the Seondary Plan include:
  - Enhancing and developing Manotick as a vibrant, walkable and cycle friendly community and gathering place for both residents and visitors.
  - Ensuring the Village Core is a focus of commercial and community activity.
  - Improving connectivity that provides ways for residents and visitors to easily travel throughout the Village.
- Schedule A of the Secondary Plan designates the property as Village Core.
- The Village Core is the focus of non-residential and residential development .
- Main Street is identified as a Design Priority Area and is subject to review by the City's Urban Design Review Panel. Design review will focus on achieving streetscape improvements and high design standards for both public and private sector development projects.
  - An informal pre-consult will be required for this property/project.
- Schedule B of the Secondary Plan designates the property as Main Street Character Area.
- The Main Street Character Area is the commercial spine of the Village.
- Permitted uses include a variety of commercial, retail, office and personal service uses.
- Stormwater management requirements for any future development will be determined through studies following the policies of the Official Plan Section 4.4.1 and requirements from the Ministry of the Environment and Climate Change.
- Existing studies such as the Manotick Special Design Area Environmental Management plan (MMM/WESA, 2006), the Mahogany Community Phase I Stormwater Management Servicing (IBI Group, May 2012) and the Mud Creek Subwatershed Study (2015) will be used in the evaluation of development applications, where applicable.
- Annex 7 identifies this portion of Manotick Main Street as a proposed cycling route.

Zoning By-law:

- The property is zoned Village Mixed Use Zone, subzone 9 (VM9)
- Proposed office use is permitted within the VM9 zone.
- Please ensure when designing the site, sufficient area is provided for; snow storage, loading bays, garbage enclosures.
- Please note that outdoor loading and refuse collection areas contained within a parking lot must be:
  - A minimum of 9 metres from a lot line abutting a street;
  - A minimum of 3 metres from any other lot line; and
  - Screened by view by an opaque screen with a minimum height of 2 metres.
- Parking requirements are currently 11-12 spaces.

Discussion:

- It is recommended that you contact Hydro Ottawa to determine the require setbacks from the existing overhead wires located along Highcroft.
- Site Plan Control is triggered based on the number of parking spaces proposed. A standard site plan application would be required. If the required and provided parking spaces remain 9 or less, then Site Plan Control is not triggered (based on the existing proposed building size of approximately 450m^2).
- Driveways and drive aisle must be a minimum of 6.7 metres, as per the requirements of Section 107 of the Zoning By-law.

Urban Design

- Vehicular access from Highcroft is preferred
- There is a lot of hard surface proposed for the rear yard – having landscaped islands and a landscape buffer wide enough to plant trees around the periphery is recommended.
- As this is on a corner lot, the design of the side façade facing Highcroft will be important, elements such as an active entrance and/or a high percentage of glazing is preferred.
- There are a number of design guidelines contained in the Manotick Secondary Plan for this area and attention to these policies will be important.
- This section of Manotick Main is a busy, wide street. If a coffee shop or other use if proposed, consider setting the building back to allow for some extra room for patio space (it is noted that the maximum setback in the zone is 3 metres). Noise from Manotick Main will also have to be considered in the design of any outdoor space.
- The site is within a Design Priority Area so the proposal needs to go to the Urban Design Review Panel. While not required, it is strongly recommended that the proposal go to an informal review with the Panel prior to submitting a Site Plan application. The submission criteria and panel dates are on our webpage. For the scale of this development, the submission should contain the following:
    - Applicant project summary sheet https://ottawa.ca/online_services/forms/planning/applicant_project_summary_sheet_en.pdf
    - A brief overview of the site including photographs to illustrate existing site conditions and surrounding contexts with a map identifying where each photo is taken.
    - A contextual analysis describing abutting properties, focal points/nodes, parks/open spaces, the urban pattern (streets, blocks).
    - A design brief (approximately 4 pages), which should include references to the Manotick Secondary Plan policies as it relates to the site and Village Design Guidelines.
    - Site Plan (fully dimensioned in metres) and Landscape Plan – given the size of the site, this could be combined on one plan, if it's easy to read.
    - Different massing options with associated building elevations. Different building design options are good to generate a discussion about what may work on the site and the impact they have on the neighbouring site and the streetscape. At this stage, the building elevations do not have to be detailed but enough information to give an idea of the look and feel of the building.
    - Floor Plans.

Parks

Pursuant to Section 14(2) of the Parkland Dedication By-law (By-law 2009-95), no conveyance of land or money-in-lieu is required for a change of use from commercial to another commercial use.

Engineering

Site Servicing

Water:

The Servicing Memo shall be completed by a professional engineer. It has been attached for your convenience.

Please provide the following information to the City of Ottawa via email at your engineering consultant's earliest convenience to request water distribution network boundary conditions for the site. Please note that once this information has been received, it may take 5 business days to receive boundary condition results for hydraulic analysis. The boundary condition correspondence should be provided within the servicing report.

- Type of development
- Site Address
- A plan clearly showing the proposed water service connection location
- **Average Daily Demand** (L/s)
- **Maximum Daily Demand** (L/s)
- **Peak Hour Demand** (L/s)
- **Fire Flow** (L/s)
  - Fire flow demand requirements shall be based on Fire Underwiters Survey (FUS) Water Supply for Public Fire Protection 1999 as per the *Ottawa Design Guidelines – Water Distribution*, First Edition, Document WDG001, July 2010, City of Ottawa Clause 4.2.11. Technical Bulletin ISTB-2018-02.

Sanitary:

The site will be connected to sanitary sewer services available on Manotick Main.

Storm Water Management:

- The consultant should determine a stormwater management regime for the application and, generally, maintain post-development flows to pre-development levels by way of providing storage to offset the increased impervious areas.
- The pre-development conditions will consider the existing dwelling and drive lane as existing impervious surfaces. All other structures and hard landscaping surfaces shall be considered soft landscaping/grass for the pre-development conditions.
- The stormwater management system should be designed for the 5-year minor and the 100-year major storm events.
- Overland flows should be directed to the Right-of-Way.
- Any existing stormwater runoff from adjacent site(s) that crosses the property must be accommodated by the proposed stormwater management design.
- Water quality design requirements will be determined by the Rideau Valley Conservation Authority.
- Stormwater quality control is required for the site. The site must ensure enhanced TSS removal of 80% is achieved.
- All stormwater management determinations shall have supporting rationale.

Fire Protection:

The applicant should have their consultant contact Ottawa Fire Services to determine if fire protection is required.

Contact Information:

Allan Evans - Engineer, Fire Protection

613-580-2424 x24119, Allan.Evans@ottawa.ca

Snow Storage:

Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patterns or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance.

Permits and Approvals:

All development applications should be considered for an Environmental Compliance Approval (ECA) by the Ministry of the Environment, Conservation, and Parks (MECP); The consultant should determine if an approval for sewage works under Section 53 of OWRA is required. Consultants should determine what type of application is required and the City's project manager confirms. If the consultant is not clear if an ECA is required, they will work with the City to determine what is required. If the consultant is still unclear or there is a difference of opinion, City staff will then, separately, approach the MECP local office for a decision. Please note that MECP ECA application is not submitted until after Site Plan Approval is achieved.

Please contact the Rideau Valley Conservation Authority (RVCA), amongst other federal and provincial departments/agencies, to identify all the necessary permits and approvals required to facilitate the development: responsibility rests with the developer and their consultant for obtaining all external agency approvals. The address shall be in good standing with all approval agencies, for example the RVCA, prior to approval. Copies of correspondence will be required by the City of Ottawa from all approval agencies that a form of assent was provided.

No construction shall commence until after a commence work notification is given by a Development Review engineering staff member.

Site Plan Control Engineering Reports:

- Geotechnical Report
    - Please note that the area may contain sensitive marine clays. Atterberg limits, consolidation testing, shear strength testing, grade raise restriction, sieve analysis, and discussion thereof, amongst other data, will be required in if sensitive marine clay, or similar conditions are found.
    - The geotechnical consultant will need to provide full copies of any published and peer reviewed papers relied on to determine results and conclusions.
- Servicing Report

- Stormwater Management Report
- Phase 1 Environmental Site Assessment
    - The Phase 1 Environmental Site Assessment (ESA) must be prepared as per O.Reg. 153/04. Phase 2 ESA documents performed to CSA standards are not acceptable.
    - Please ensure all ESAs are prepared for the purpose of land development for the specific property.

Site Plan Control Engineering Plans:

- Grading and Drainage Plan
- Servicing Plan
- Sediment and Erosion Control Plan
    - The Erosion and Sediment Control Plan should manage all loose material from being transporting into adjacent properties and waterways. The Conservation Authority should be consulted to determine any additional measures that may be required.

All required plans are to be submitted on standard A1 size sheets (594mm x 841mm) sheets, utilizing a reasonable and appropriate metric scale as per City of Ottawa Servicing and Grading Plan Requirements: title blocks are to be placed on the right of the sheets and not along the bottom. Engineering plans may be combined, but the Site Plans must be provided separately. Plans shall include the survey monument used to confirm datum. Information shall be provided to enable a non-surveyor to locate the survey monument presented by the consultant.

Please find relevant City of Ottawa Links to Preparing Studies and Plans below:

https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines

To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:

InformationCentre@ottawa.ca<mailto:InformationCentre@ottawa.ca>

(613) 580-2424 ext. 44455

As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.

Transportation

- Given this area is within a Design Priority Area, a Transportation Impact Assessment (TIA) is required.

        - Please submit the TIA Screening Form (Step 1) as soon as possible. The Screening Form will determine if any element indicates that the development proposal requires further assessment. Note that the site is in a Design Priority Area which would trigger a TIA (location trigger), as such proceed to next step of the TIA in accordance to the City's Guidelines. The TIA should demonstrate that the site plan is designed and functions in accordance to the objectives of the Design Priority Area.
    - A 5x5m sight triangle is required at this location.
    - Staff notes that there are concerns regarding how traffic will access Highcroft Drive as Manotick Main Street is a busy street.

Environmental

Trees:

- Tree preservation; if possible we would like to see some tree retained depending on the condition and location of the trees. A Tree Conservation Report is required and can be combined with the site plan /landscape plan. Close attention should be paid to trees along property lines and whether or not the trees are jointly owned with the neighbours.
- If tree preservation is not possible, the landscape plan should include some large shade trees if the soil conditions permit (i.e., no clay soils).

Endangered and Threatened Species

- A Scoped Environmental Impact Statement (EIS) is required.
- The property is within 120 m of part of the Natural Heritage System (NHS). As per the policies in the Manotick Secondary Plan, since the development is greater than 30 m from the natural heritage system (as indicated in the Secondary Plan Annex 2 "Natural Heritage and Constraints) and no large-scale alterations to the landscape are proposed indicating the NHS does not trigger the EIS. However there are chimneys that may provide chimney swift habitat and as such an EIS is required.
- It is recommend that due diligence under the Endangered Species Act is undertaken to ensure habitat is not destroying through the removal of the existing building. More guidance is available from MNRF Kemptville.
- The Scoped EIS can take the form of a letter report or use the Scoped EIS form contained within the Council-approved EIS Guidelines (a copy of the form linked below). The Scoped EIS will describe the habitat or lack thereof (e.g., open chimneys), how the project would impact the chimney (if still present) and be supported with several photographs documenting the absence of the chimney or that the chimney is capped/lined years ago. It is important that the Scoped EIS be completed with a recent site visit that is conducted for the purpose of gathering information for this. If the chimneys are open then contacting the Kemptville District MNR for further guidance is important for the completion of the Scoped EIS.
- Please see the accompanying documents providing information on the chimney swift to assist.
- Access to the scoped EIS form can be found here.

Conservation Authority

- The subject lands are required to provide enhanced water quality protection (minimum 80% TSS removal).
- Opportunities for low impact design and best management practices are encouraged where possible on site.

Submission requirements and fees

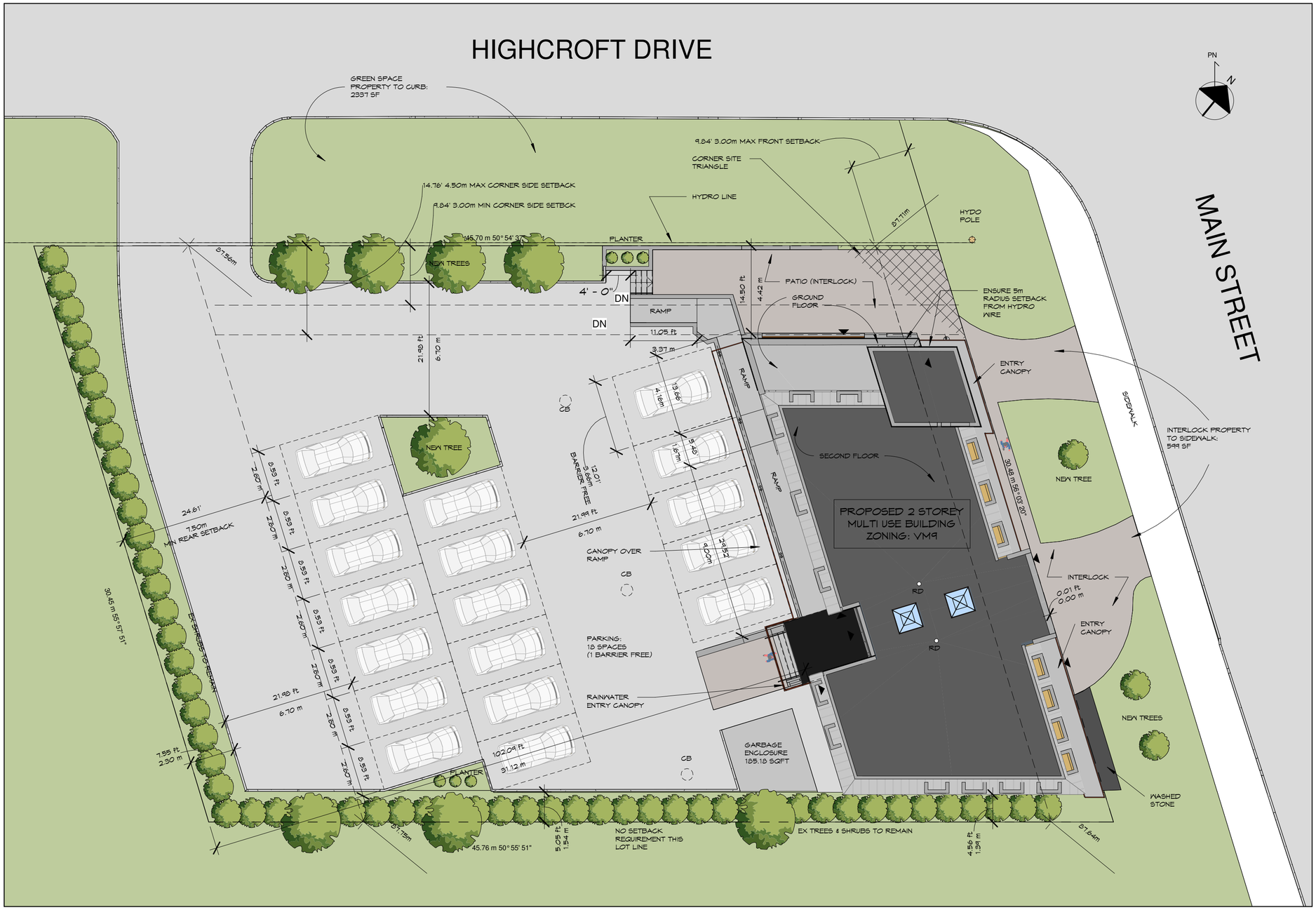
- The development proposal triggers Site Plan Control. As per the new Site Plan Control By-law, this proposal is considered a Standard Site Plan application.
- Required fees for the Site plan control application can be found of the application form and include; planning fees, engineering review fees and preliminary Conservation Authority fees.
- The submission requirements for this application can be found on the accompanying required Plans and Studies list.

Next steps

- It is encourage that you discuss the proposal with the Ward Councillor, local community groups and neighbours
- It is encouraged that you attend a pre-consultation meeting with the Urban Design Review Panel. Information regarding these meetings are included in the above discussions.

APPENDIX B

Site Plan



AVERAGE EXISTING GRADE:

(87.71+87.64+87.75+88.65)/4=
87.915m

RAMP NOTES:

TOP OF RAMP: 89.00m
BOTTOM OF RAMP: 87.90m
CHANGE IN ELEVATION: 1.10m (43.31")
MIN RAMP LENGTH (1:15): 54.14'

PROPERTY SCHEDULE

NAME	AREA	AREA (m2)	% OF SITE (14346.52 SF)
GREEN SPACE	2063 SF	192	14%
INTERLOCK	776 SF	72	5%
PARKING	7870 SF	731	55%

AREA SCHEDULE

Name	Area	AREA (m2)
BUILDING AREA	2666 SF	248
	2666 SF	248
SECOND FLOOR	2408 SF	224
1ST FLOOR	2617 SF	243
TOTAL FLOOR AREA	5025 SF	467

Area Schedule (Rentable)

Name	Area	PARKING
UNIT 1 (DELI)	1153 SF	11
UNIT 2 (STORE)	567 SF	2
UNIT 3 (OFFICE)	953 SF	3
UNIT 4 (OFFICE)	778 SF	2
TOTAL	3451 SF	18

GRANT+HENLEY DESIGN GROUP

No.	Description	Date
1		

project
5506 MAIN STREET

drawing title
SITE PLAN

date
MARCH 2020

drawing no.
A0.8

scale
1:150

PRELIMINARY- NOT FOR CONSTRUCTION

APPENDIX C

Sanitary Sewer, Watermain and Fire Flow Calculations

5506 MANOTICK MAIN STREET
SANITARY FLOW

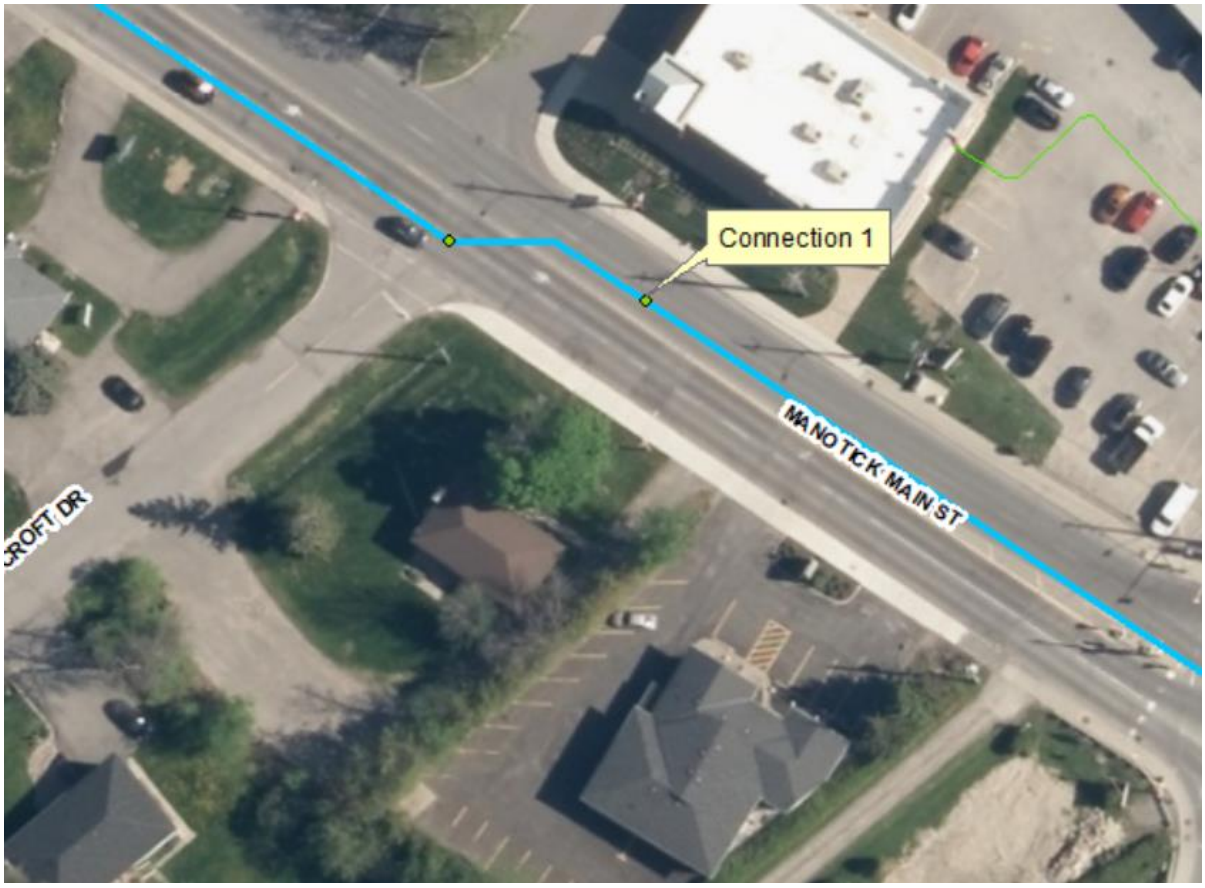
Ground Floor Comemrcial/Retail Area	243	m^2
Average Daily Flow	5	L/m^2 of floor space
Average Daily Flow	1215	L/day
Second Floor Office Area	229	m^2
Average Daily Flow	75	$L/9.3m^2$ of floor space
Average Daily Flow	1847	L/day
Average Sanitary Flow	0.04	L/s
Peak Factor	1.5	
Peak Sanitary Flow	**0.05**	**L/s**
Site Area	0.133	ha
Infiltration Allowance	0.33	L/s/ha
Peak Extraneous Flows	**0.04**	**L/s**
Total Peak Sanitary Flow	**0.10**	**L/s**

Boundary Conditions
5506 Manotick Main Street

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	12.6	0.21
Maximum Daily Demand	19.2	0.32
Peak Hour	34.2	0.57
Fire Flow Demand	9000	150

Location



Results – Existing Conditions

Connection 1 – Manotick Main St. (N20319)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	155.7	96.6
Peak Hour	138.5	72.2
Max Day plus Fire	111.3	33.5

[1] Ground Elevation = 87.7m

Results – SUC Zone Reconfiguration

Connection 1 – Manotick Main St. (N20319)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	147.2	84.5
Peak Hour	142.3	77.6
Max Day plus Fire	121.6	48.2

[1] Ground Elevation = 87.7 m

Notes:

1. A second connection to the watermain is required to decrease vulnerability of the water system in case of breaks.
2. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
    a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
    b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 119234
Project Name: 5506 Manotick Main Street
Date: 3/10/2020
Input By: Miroslav Savic
Reviewed By:

Legend: Input by User; No Information or Input Required

Building Description: 2-Storey commercial Building
Wood frame

Step			Input		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Wood frame	Yes	1.5	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	Ground Floor Area (m^2)	248			
		Ground Floor Area (m^2)	2			
		Area of structure considered (m^2)			**496**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**			**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	0%	**7,000**
		Limited combustible		-15%		
		Combustible	Yes	0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**			**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge (cumulative %)**				**Surcharge**	
	(3)	North Side	> 45.1m		0%	**1,750**
		East Side	10.1 - 20 m		15%	
		South Side	30.1- 45 m		5%	
		West Side	30.1- 45 m		5%	
				Cumulative Total	**25%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**9,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**150**
				or	USGPM	2,378
7	**Storage Volume**	Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	1080

5506 MANOTICK MAIN STREET
WATER DEMAND

Ground Floor Comemrcial/Retail Area	243	m^2
Average Daily Flow	5	L/m^2 of floor space
Average Daily Flow	1215	L/day
Second Floor Office Area	229	m^2
Average Daily Flow	75	$L/9.3m^2$ of floor space
Average Daily Flow	1847	L/day
Average Day Demand	**0.04**	**L/s**
Maximum Day Demand (1.5 x avg. day)	**0.05**	**L/s**
Peak Hour Demand (1.8 x max. day)	**0.10**	**L/s**

5506 MANOTICK MAIN STREET
WATER ANALYSIS

BOUNDAY CONDITIONS - EXISITNG PRESSURE ZONE

Maximum HGL =	155.7 m
Minimum HGL =	138.5 m
Max Day + Fire Flow =	111.3 m

PRESSURE TESTS

AVERAGE GROUND ELEVATION 87.7 m

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

HIGH PRESSURE = **96.7** PSI

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

LOW PRESSURE = **72.2** PSI

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

MAX DAY + FIRE PRESSURE = **33.6** PSI

BOUNDAY CONDITIONS - FUTURE PRESSURE ZONE RECONFIGURATION

Maximum HGL =	147.2 m
Minimum HGL =	142.3 m
Max Day + Fire Flow =	121.6 m

PRESSURE TESTS

AVERAGE GROUND ELEVATION 87.7 m

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

HIGH PRESSURE = **84.6** PSI

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

LOW PRESSURE = **77.6** PSI

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

MAX DAY + FIRE PRESSURE = **48.2** PSI

APPENDIX D

Stormwater Management Calculations

PROJECT NUMBER: 119234
PROJECT NAME: 5506 MANOTICK MAIN STREET
LOCATION: MANOTICK

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: APRIL 2020

Proposed 2 Storey Multi Use Building
5506 Manotick Main Street

Allowable Flow						
Description	***A (ha)***	**A imp (ha) 0.9**	**A perv (ha) 0.2**	**C**	**5 year (L/s)**	**100 year (L/s)**
Site Area	0.133	0.050	0.083	0.46	17.8	17.8

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**
A-1	Controlled Parking Area	0.086	0.078	0.008	0.83	0.93	20.7	39.8
A-2	Uncontrolled Landscaped Area	0.024	0.011	0.013	0.52	0.59	3.6	7.1
R-1	Controlled Building Roof	0.011	0.011	0.000	0.90	1.00	2.8	5.5
R-2	Controlled Building Roof	0.012	0.012	0.000	0.90	1.00	3.1	6.0
	Summed Area Check:	0.133						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**	
A-1	Controlled Parking Area	4.90	8.30	15.3	30.3	30.4
A-2	Uncontrolled Landscaped Area	3.62	7.07	0.0	0.0	0.0
R-1	Controlled Building Roof	0.95	1.10	1.2	3.1	5.2
R-2	Controlled Building Roof	0.95	1.10	1.4	3.5	5.9
	Totals =	**10.4**	**17.6**	**17.9**	**36.9**	**41.6**
	Over-Controlled by:	7.4	0.3			

5506 Manotick Main St
2 Storey Multi Use Building
REQUIRED STORAGE - 1:2 YEAR EVENT
AREA A-1 Controlled Parking Area

OTTAWA IDF CURVE

Area =	0.086		Qpeak =	4.00	L/s
C =	0.835	ha	Qaverage =	2.00	L/s
			Vol(max) =	10.9	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	103.57	20.67	18.67	5.60
10	76.81	15.33	13.33	8.00
15	61.77	12.33	10.33	9.30
20	52.03	10.39	8.39	10.06
25	45.17	9.02	7.02	10.52
30	40.04	7.99	5.99	10.79
35	36.06	7.20	5.20	10.91
40	32.86	6.56	4.56	10.94
45	30.24	6.04	4.04	10.90
50	28.04	5.60	3.60	10.79
55	26.17	5.22	3.22	10.64
60	24.56	4.90	2.90	10.45
65	23.15	4.62	2.62	10.22
70	21.91	4.37	2.37	9.97
75	20.81	4.15	2.15	9.69
90	18.14	3.62	1.62	8.76
105	16.13	3.22	1.22	7.69
120	14.56	2.91	0.91	6.53

5506 Manotick Main St
2 Storey Multi Use Building
REQUIRED STORAGE - 1:100 YEAR EVENT
AREA A-1 Controlled Parking Area

OTTAWA IDF CURVE

Area =	0.086		Qpeak =	8.30	L/s
C =	0.93	ha	Qaverage =	4.15	L/s
			Vol(max) =	30.3	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	53.98	49.83	14.95
10	178.56	39.71	35.56	21.34
15	142.89	31.78	27.63	24.87
20	119.95	26.68	22.53	27.03
25	103.85	23.10	18.95	28.42
30	91.87	20.43	16.28	29.31
35	82.58	18.37	14.22	29.85
40	75.15	16.71	12.56	30.15
45	69.05	15.36	11.21	30.26
50	63.95	14.22	10.07	30.22
55	59.62	13.26	9.11	30.06
60	55.89	12.43	8.28	29.81
65	52.65	11.71	7.56	29.48
70	49.79	11.07	6.92	29.08
75	47.26	10.51	6.36	28.62
90	41.11	9.14	4.99	26.96
105	36.50	8.12	3.97	24.99
120	32.89	7.32	3.17	22.79

Tempest LMF Model 80 Vortex ICD

1:100 Yr		
Flow (L/s) =	8.3	
Head (m) =	2.07	
Elevation (m)	**88.70**	
Outlet Pipe Dia.(mm) =	254	
Volume (m3)	30.3	
1:5 Yr		
Flow (L/s) =	4.9	
Head (m) =	0.74	
Elevation (m)	**87.37**	
Outlet Pipe Dia.(mm) =	254	
Volume (m3)	15.3	
1:2 Yr		
Flow (L/s) =	4.0	
Head (m) =	0.53	
Elevation (m)	**87.16**	
Outlet Pipe Dia.(mm) =	254	
Volume (m3)	10.9	

5506 Manotick Main St
2 Storey Multi Use Building
REQUIRED STORAGE - 1:5 YEAR EVENT
AREA A-1 Controlled Parking Area

OTTAWA IDF CURVE

Area =	0.086		Qpeak =	4.90	L/s
C =	0.83	ha	Qaverage =	2.45	L/s
			Vol(max) =	15.3	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	28.18	25.73	7.72
10	104.19	20.80	18.35	11.01
15	83.56	16.68	14.23	12.81
20	70.25	14.02	11.57	13.89
25	60.90	12.16	9.71	14.56
30	53.93	10.76	8.31	14.97
35	48.52	9.68	7.23	15.19
40	44.18	8.82	6.37	15.29
45	40.63	8.11	5.66	15.28
50	37.65	7.52	5.07	15.20
55	35.12	7.01	4.56	15.05
60	32.94	6.58	4.13	14.85
65	31.04	6.20	3.75	14.61
70	29.37	5.86	3.41	14.33
75	27.89	5.57	3.12	14.02
90	24.29	4.85	2.40	12.95
105	21.58	4.31	1.86	11.70
120	19.47	3.89	1.44	10.34

Tempest LMF Model 80

Design Event	Total Flow (L/s)	Head (m)	Storage (m^3) Required	Storage (m^3) Provided
1:5 Year	4.90	0.74	15.3	28.8
1:100 Year	8.30	2.07	30.3	30.4

SURFACE STORAGE

LOCATION	5 YEAR AREA	5 YEAR DEPTH	5 YEAR VOLUME	100 YEAR AREA	100 YEAR	100 YEAR VOLUME
CBMH 1	0.0	0.0	0.00	25.4	0.05	0.42
CBMH 2	0.0	0.0	0.00	37.0	0.05	0.62
CBMH 3	0.0	0.0	0.00	27.9	0.06	0.56
		Sub Total	**0.00**		**Sub Total**	**1.60**

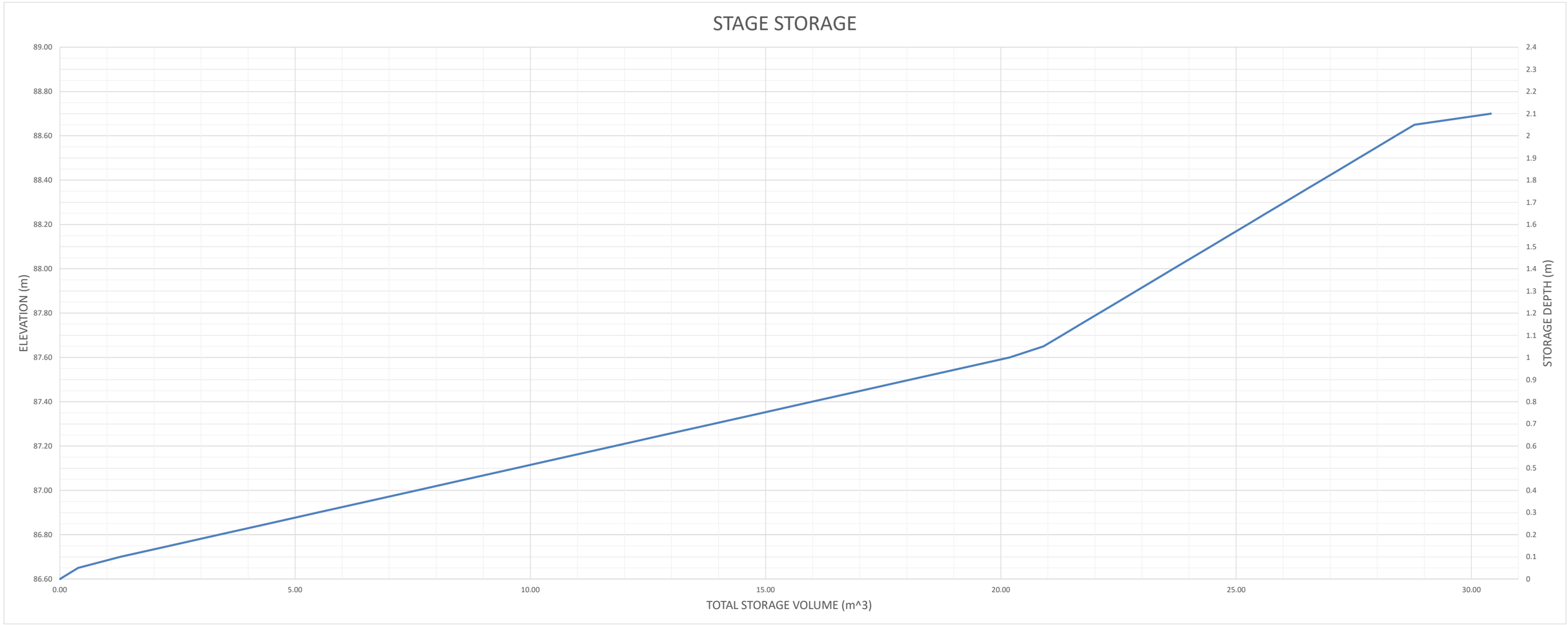
PIPE AND STRUCTURE STORAGE

Description	Location	Pipe Diameter (mm)	Pipe Length (m)	Depth to Invert (m)	Storage Volume (m3)	Cumulative Volume (m3)
Pipe Storage		914.4	20.0	N/A	13.13	13.13
Catchbasin	CBMH 1	N/A	N/A	1.95	5.12	18.25
Manhole	CBMH 2	N/A	N/A	1.99	5.23	23.48
Storage	CBMH 3	N/A	N/A	2.02	5.31	28.79
				Pipe and Structure storage =		**28.79**

PROJECT NUMBER: 119234
PROJECT NAME: 5506 MANOTICK MAIN STREET
LOCATION: MANOTICK

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: APRIL 2020



DATE: 4/15/2020
PREPARED BY: NOVATECH

M:\2019\119234\DATA\Calculations\SWM\119234-SWM.xlsx

NOVATECH
Engineers, Planners & Landscape Architects

5506 Manotick Main St
2 Storey Multi Use Building
REQUIRED STORAGE - 1:5 YEAR EVENT
AREA R-1 Controlled Roof Drain #1

OTTAWA IDF CURVE

Area =	0.011	ha	Qallow =	0.95	L/s
C =	0.90		Vol(max) =	1.2	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	3.89	2.94	0.88
10	104.19	2.87	1.92	1.15
15	83.56	2.30	1.35	1.21
20	70.25	1.93	0.98	1.18
25	60.90	1.68	0.73	1.09
30	53.93	1.48	0.53	0.96
35	48.52	1.34	0.39	0.81
40	44.18	1.22	0.27	0.64
45	40.63	1.12	0.17	0.45
50	37.65	1.04	0.09	0.26
55	35.12	0.97	0.02	0.05
60	32.94	0.91	-0.04	-0.16
65	31.04	0.85	-0.10	-0.37
70	29.37	0.81	-0.14	-0.59
75	27.89	0.77	-0.18	-0.82
90	24.29	0.67	-0.28	-1.52
105	21.58	0.59	-0.36	-2.24
120	19.47	0.54	-0.41	-2.98

5506 Manotick Main St
2 Storey Multi Use Building
REQUIRED STORAGE - 1:100 YEAR EVENT
AREA R-1 Controlled Roof Drain #1

OTTAWA IDF CURVE

Area =	0.011	ha	Qallow =	1.10	L/s
C =	1.00		Vol(max) =	3.1	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	7.42	6.32	1.90
10	178.56	5.46	4.36	2.62
15	142.89	4.37	3.27	2.94
20	119.95	3.67	2.57	3.08
25	103.85	3.18	2.08	3.11
30	91.87	2.81	1.71	3.08
35	82.58	2.53	1.43	2.99
40	75.15	2.30	1.20	2.88
45	69.05	2.11	1.01	2.73
50	63.95	1.96	0.86	2.57
55	59.62	1.82	0.72	2.39
60	55.89	1.71	0.61	2.19
65	52.65	1.61	0.51	1.99
70	49.79	1.52	0.42	1.77
75	47.26	1.45	0.35	1.55
90	41.11	1.26	0.16	0.85
105	36.50	1.12	0.02	0.10
120	32.89	1.01	-0.09	-0.68

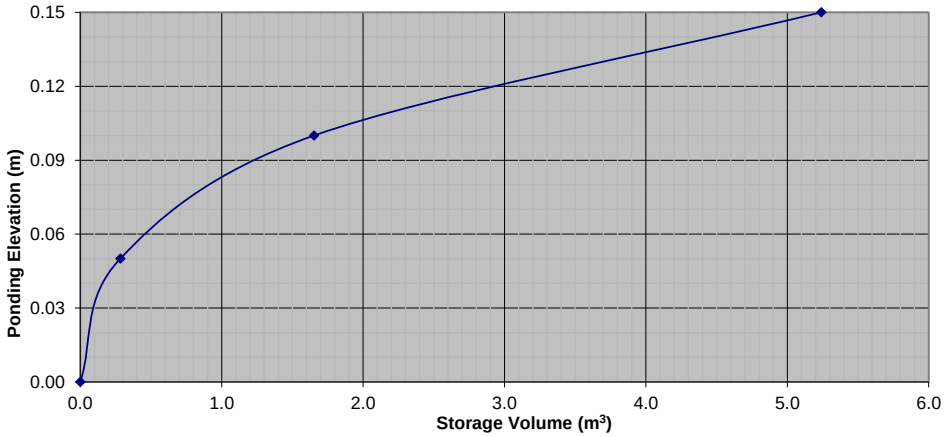
Watts Accutrol Flow Control Roof Drains: RD-100-A-ADJ set to 1/2 Open

Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage (m^3) Required	Storage (m^3) Provided
1:5 Year	0.95	0.95	9	1.2	5.2
1:100 Year	1.10	1.10	13	3.1	5.2

Roof Drain Storage Table for Area R-1

Elevation	Area RD 1	Total Volume
m	m^2	m^3
0.00	0	0
0.05	11.3	0.3
0.10	43.5	1.7
0.15	100.0	5.2

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



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5506 Manotick Main St
2 Storey Multi Use Building
REQUIRED STORAGE - 1:5 YEAR EVENT
AREA R-2 Controlled Roof Drain #2

OTTAWA IDF CURVE

Area =	0.012	ha	Qallow =	0.95	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	4.24	3.29	0.99
10	104.19	3.13	2.18	1.31
15	83.56	2.51	1.56	1.40
20	70.25	2.11	1.16	1.39
25	60.90	1.83	0.88	1.32
30	53.93	1.62	0.67	1.20
35	48.52	1.46	0.51	1.06
40	44.18	1.33	0.38	0.90
45	40.63	1.22	0.27	0.73
50	37.65	1.13	0.18	0.54
55	35.12	1.05	0.10	0.34
60	32.94	0.99	0.04	0.14
65	31.04	0.93	-0.02	-0.07
70	29.37	0.88	-0.07	-0.29
75	27.89	0.84	-0.11	-0.51
90	24.29	0.73	-0.22	-1.19
105	21.58	0.65	-0.30	-1.90
120	19.47	0.58	-0.37	-2.63

5506 Manotick Main St
2 Storey Multi Use Building
REQUIRED STORAGE - 1:100 YEAR EVENT
AREA R-2 Controlled Roof Drain #2

OTTAWA IDF CURVE

Area =	0.012	ha	Qallow =	1.10	L/s
C =	1.00		Vol(max) =	3.5	m3

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	8.10	7.00	2.10
10	178.56	5.96	4.86	2.91
15	142.89	4.77	3.67	3.30
20	119.95	4.00	2.90	3.48
25	103.85	3.46	2.36	3.55
30	91.87	3.06	1.96	3.54
35	82.58	2.75	1.65	3.48
40	75.15	2.51	1.41	3.38
45	69.05	2.30	1.20	3.25
50	63.95	2.13	1.03	3.10
55	59.62	1.99	0.89	2.93
60	55.89	1.86	0.76	2.75
65	52.65	1.76	0.66	2.56
70	49.79	1.66	0.56	2.36
75	47.26	1.58	0.48	2.14
90	41.11	1.37	0.27	1.47
105	36.50	1.22	0.12	0.74
120	32.89	1.10	0.00	-0.02

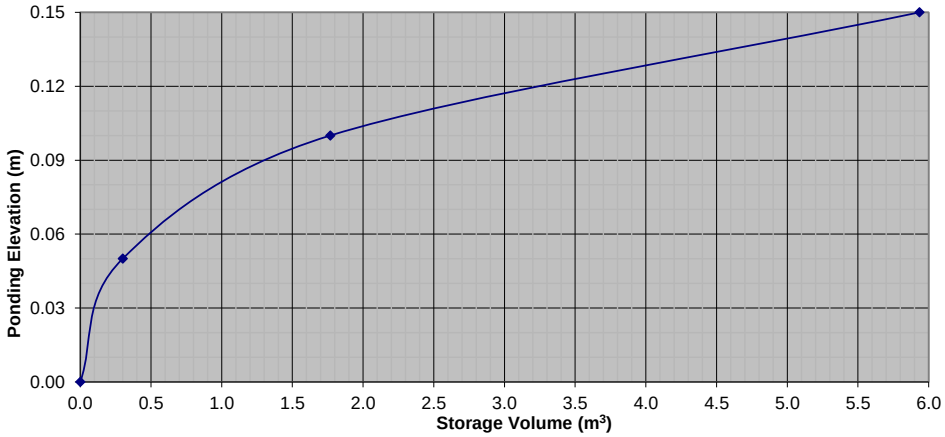
Watts Accutrol Flow Control Roof Drains: RD-100-A-ADJ set to 1/2 Open

Design Event	Flow/Drain (L/s)	Total Flow (L/s)	Ponding (cm)	Storage (m^3) Required	Storage (m^3) Provided
1:5 Year	0.95	0.95	10	1.4	5.9
1:100 Year	1.10	1.10	13	3.5	5.9

Roof Drain Storage Table for Area R-2

Elevation	Area RD 1	Total Volume
m	m^2	m^3
0.00	0	0
0.05	12.0	0.3
0.10	46.7	1.8
0.15	120.0	5.9

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



Project: 5506 Manotick Main Street (119234)
Location: Manotick, Ontario

DATE: March 2020

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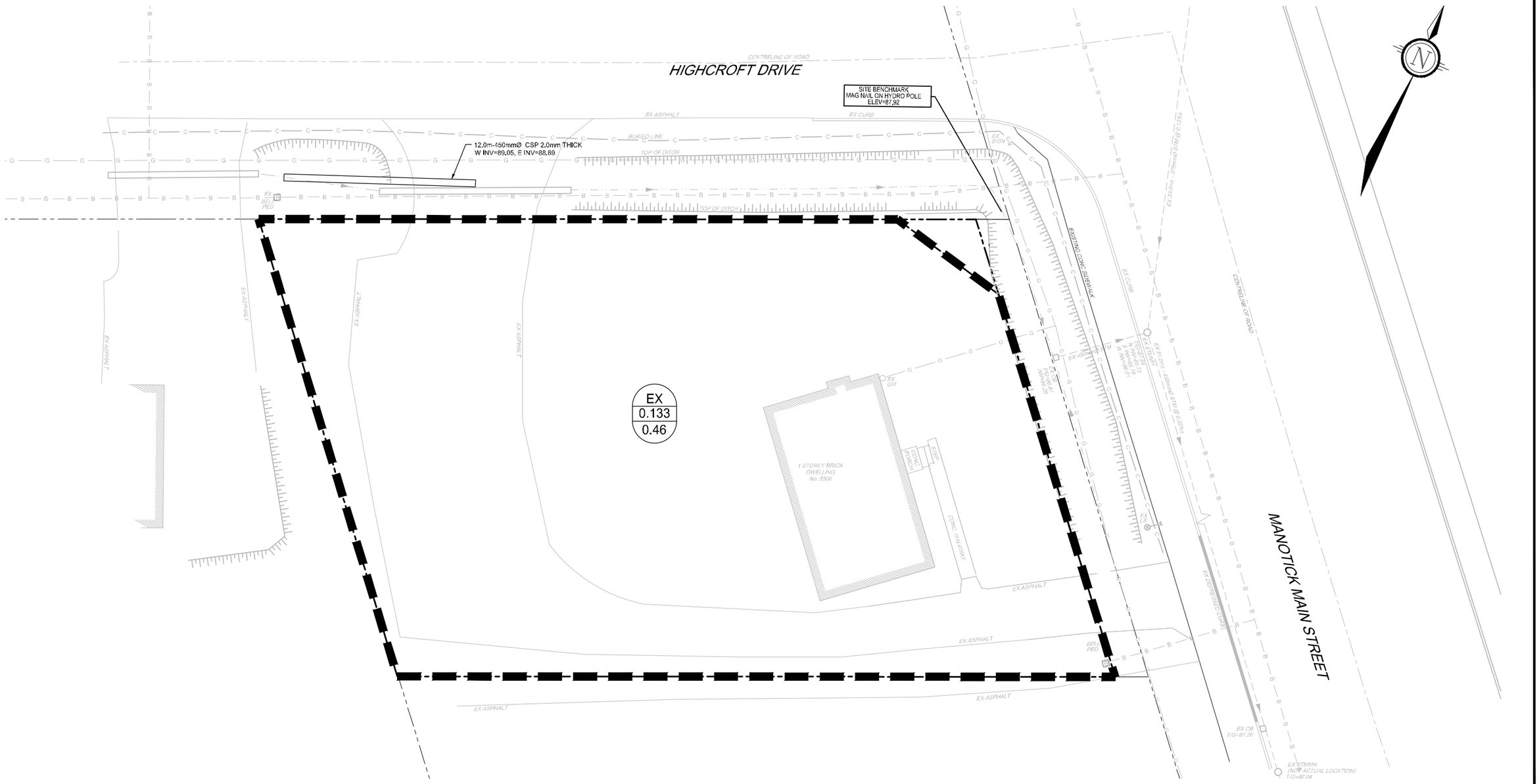
Storm Sewer Design Sheet

LOCATION						FLOW					PROPOSED SEWER							
FROM	TO	AREA ID	R= 0.90	R= 0.20	RUNOFF C	INDIV 2.78 AR	ACCUM 2.78 AR	TIME OF CONC.	RAINFALL INTENSITY I	PEAK FLOW Q (l/s)	PIPE SIZE (mm)	PIPE SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW (min.)	EXCESS CAPACITY (l/s)	Q/Qfull
CDS UNIT	CBMH 4	A1	0.078	0.008	0.83	0.20	0.20	10.00	104.19	8.30	254.0	1.00	2.0	62.10	1.22	0.03	53.80	0.13
CBMH 4	CBMH 5	EX 1	0.250	0.550	0.42	0.93	1.13	10.03	104.05	117.67	457.2	0.35	14.0	176.14	1.07	0.22	58.47	0.67
CBMH 5	CBMH 6	EX 2	0.003	0.012	0.34	0.01	1.15	10.24	102.92	117.85	457.2	0.35	7.0	176.14	1.07	0.11	58.29	0.67
CBMH 6	STMMH 202	EX 3	0.000	0.004	0.20	0.00	1.15	10.35	102.36	117.44	457.2	0.35	6.0	176.14	1.07	0.09	58.70	0.67
STMMH 202	EX STM						1.15	10.45	101.89	116.90	457.2	0.35	6.0	176.14	1.07	0.09	59.24	0.66

Definitions
Q = 2.78 AIR
Q = Peak Flow, in Litres per second (L/s)
A = Area in hectares (ha)
I = Rainfall Intensity (mm/h)

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min Velocity = 0.80 m/sec.



LEGEND

EXISTING DRAINAGE AREA

EX / 0.133 / 0.46 — CATCHMENT I.D. / DRAINAGE AREA IN HECTARES / C VALUE

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

CITY OF OTTAWA
5506 MAIN STREET MANOTICK

EXISTING STORM DRAINAGE AREA PLAN

APR 2020 | 119234 | FIG 1

SHT11X17.DWG - 279mmX432mm

M:\2019\119234\CAD\Design\119234-SWM.dwg, FIG 1, Apr 17, 2020 - 3:03pm, lcolbran

APPENDIX E

Watts Adjustable Flow Control Roof Drains

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

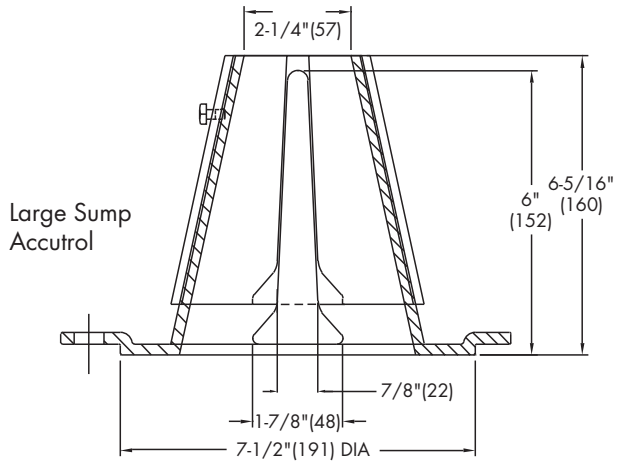
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

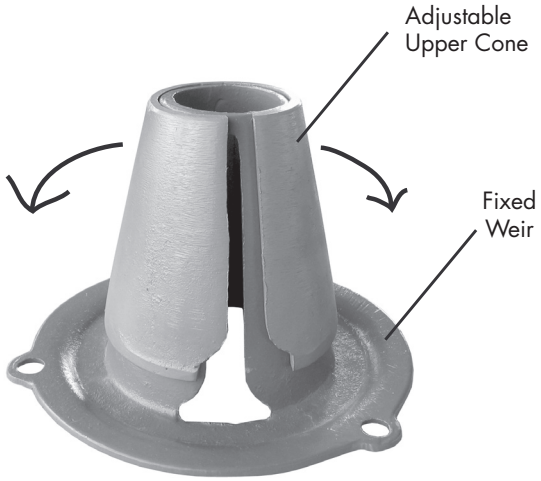
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the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

EXAMPLE:

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

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





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

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

Job Name _____ Contractor _____

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

Engineer _____ Representative _____

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

WATTS®
A Watts Water Technologies Company

APPENDIX F

CDS Unit Information

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD BASED ON A FINE PARTICLE SIZE DISTRIBUTION

Project Name: 5506 Manotick Main Street
Location: Ottawa, ON
OGS #: 1

Engineer: Novatech
Contact: Miroslav Savic, P.Eng
Report Date: 18-Mar-20

Area 0.086 ha
Weighted C 0.90
CDS Model 2015-4

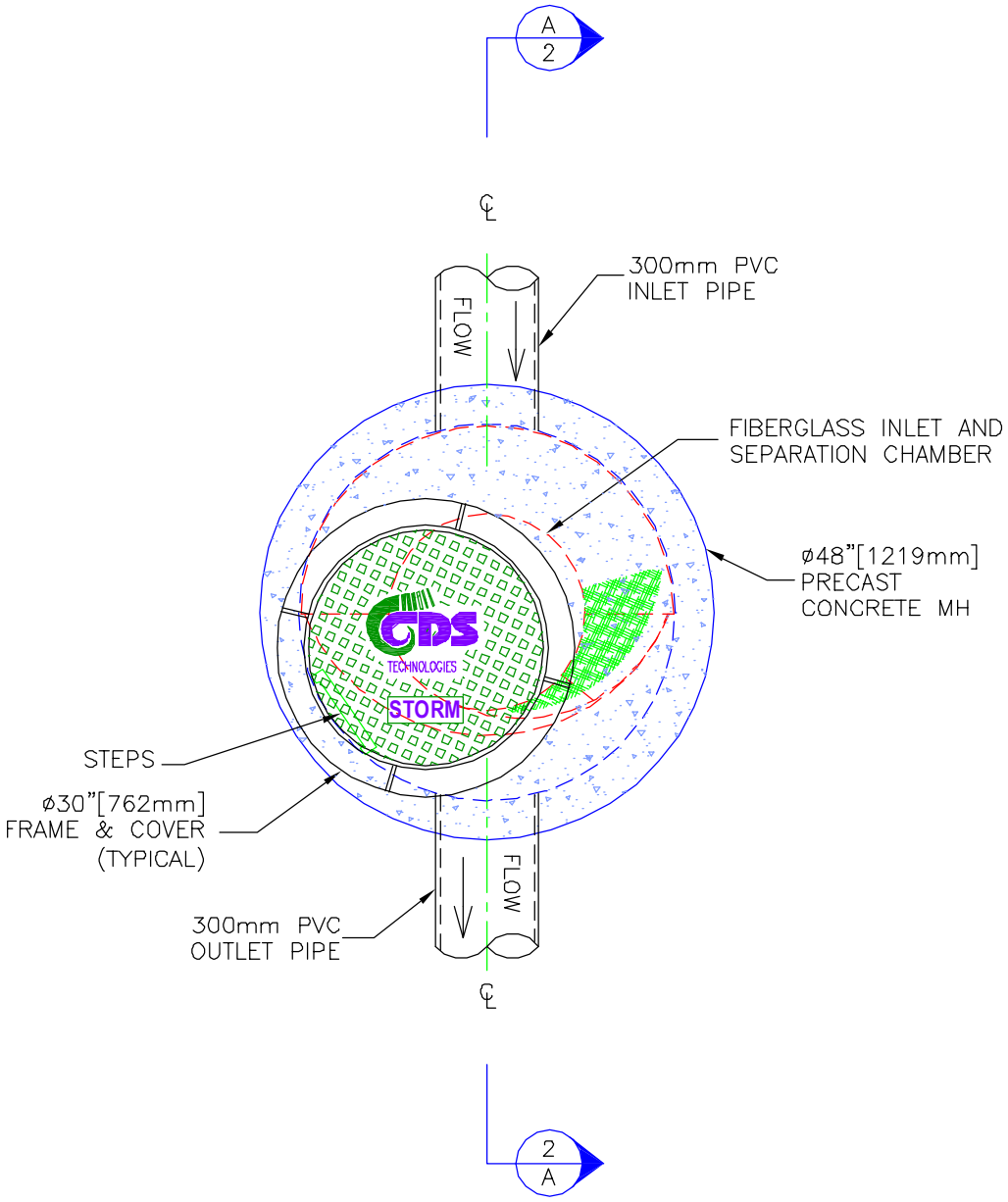
Rainfall Station # 215
Particle Size Distribution FINE
CDS Treatment Capacity 20 l/s

Rainfall Intensity[1] (mm/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (l/s)	Treated Flowrate (l/s)	Operating Rate (%)	Removal Efficiency (%)	Incremental Removal (%)
1.0	10.6%	19.8%	0.2	0.2	1.1	98.5	10.5
1.5	9.9%	29.7%	0.3	0.3	1.6	98.4	9.7
2.0	8.4%	38.1%	0.4	0.4	2.2	98.2	8.2
2.5	7.7%	45.8%	0.5	0.5	2.7	98.1	7.5
3.0	5.9%	51.7%	0.6	0.6	3.3	97.9	5.8
3.5	4.4%	56.1%	0.8	0.8	3.8	97.8	4.3
4.0	4.7%	60.7%	0.9	0.9	4.3	97.6	4.6
4.5	3.3%	64.0%	1.0	1.0	4.9	97.5	3.2
5.0	3.0%	67.1%	1.1	1.1	5.4	97.3	2.9
6.0	5.4%	72.4%	1.3	1.3	6.5	97.0	5.2
7.0	4.4%	76.8%	1.5	1.5	7.6	96.7	4.2
8.0	3.5%	80.3%	1.7	1.7	8.7	96.4	3.4
9.0	2.8%	83.2%	1.9	1.9	9.8	96.1	2.7
10.0	2.2%	85.3%	2.2	2.2	10.9	95.7	2.1
15.0	7.0%	92.3%	3.2	3.2	16.3	94.2	6.6
20.0	4.5%	96.9%	4.3	4.3	21.7	92.6	4.2
25.0	1.4%	98.3%	5.4	5.4	27.1	91.1	1.3
30.0	0.7%	99.0%	6.5	6.5	32.6	89.5	0.6
35.0	0.5%	99.5%	7.5	7.5	38.0	88.0	0.4
40.0	0.5%	100.0%	8.6	8.6	43.4	86.4	0.5
45.0	0.0%	100.0%	9.7	9.7	48.8	84.9	0.0
50.0	0.0%	100.0%	10.8	10.8	54.3	83.3	0.0
							97.1

Removal Efficiency Adjustment[2] = 6.5%
Predicted Net Annual Load Removal Efficiency = 90.6%
Predicted Annual Rainfall Treated = 99.0%

1 - Based on 42 years of hourly rainfall data from Canadian Station 6105976, Ottawa ON
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.
3 - CDS Efficiency based on testing conducted at the University of Central Florida
4 - CDS design flowrate and scaling based on standard manufacturer model & product specifications

PLAN VIEW

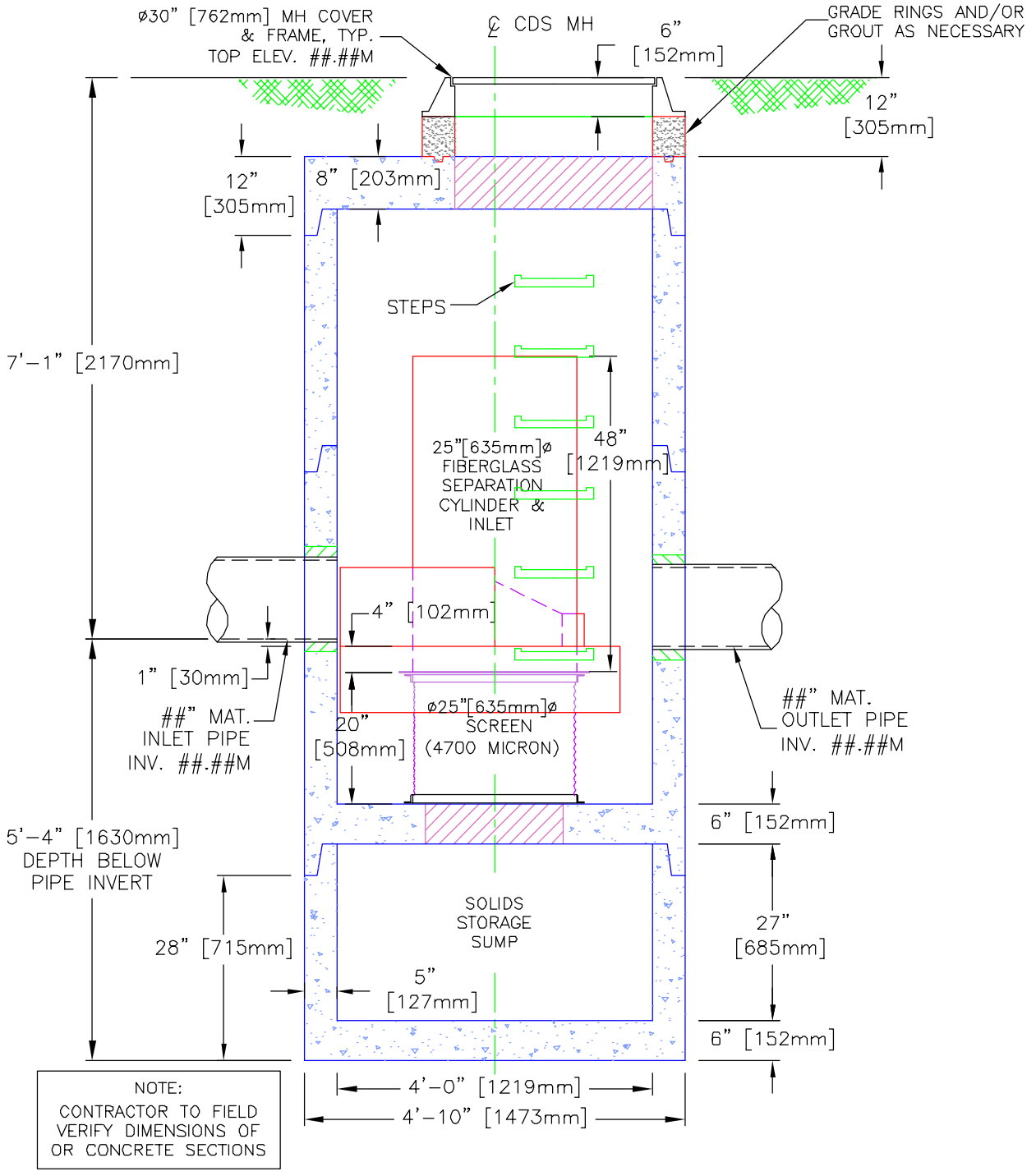


CDS MODEL PMSU20_15_4m
STORMWATER TREATMENT UNIT

CONTECH STORMWATER SOLUTIONS	PROJECT NAME CITY, STATE	JOB# XX-##-###	SCALE 1" = 2'
		DATE ##/##/##	SHEET 1
		DRAWN INITIALS	
		APPROV.	

Echelon Environmental 505 Hood Road, Unit 26, Markham, Ontario L3R 5V6 Tel: (905) 948-0000 Fax: (905) 948-0577
CONTECH Stormwater Solutions Inc. 930 Woodcock Road, Suite 101, Orlando, Florida 32803 Tel: (800) 848-9955

SECTION A–A
ELEVATION VIEW



NOTE:
CONTRACTOR TO FIELD VERIFY DIMENSIONS OF OR CONCRETE SECTIONS

CDS MODEL PMSU20_15_4m
STORMWATER TREATMENT UNIT

CONTECH STORMWATER SOLUTIONS	PROJECT NAME CITY, STATE	JOB# XX–##–###	SCALE 1" = 2'
		DATE ##/##/##	SHEET 2
		DRAWN INITIALS	
		APPROV.	

Echelon Environmental 505 Hood Road, Unit 26, Markham, Ontario L3R 5V6 Tel: (905) 948-0000 Fax: (905) 948-0577
CONTECH Stormwater Solutions Inc. 930 Woodcock Road, Suite 101, Orlando, Florida 32803 Tel: (800) 848-9955

CONTECH®
ENGINEERED SOLUTIONS

CDS® Inspection and Maintenance Guide

CDS TECHNOLOGIES

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	yd3	m3
CDS2015-4	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treament products. For information, visit www.ContechES.com or call 800.338.1122

CONTECH ENGINEERED SOLUTIONS
800.925.5240
www.ContechES.com

CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

APPENDIX G

Development Servicing Study Checklist

Servicing study guidelines for development applications

4. Development Servicing Study Checklist

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

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

4.1 General Content

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

☒ Reference to geotechnical studies and recommendations concerning servicing.

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

4.2 Development Servicing Report: Water

☐ Confirm consistency with Master Servicing Study, if available
☒ Availability of public infrastructure to service proposed development
☒ Identification of system constraints
☒ Identify boundary conditions
☒ Confirmation of adequate domestic supply and pressure
☒ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.
☐ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.
☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design
☒ Address reliability requirements such as appropriate location of shut-off valves
☐ Check on the necessity of a pressure zone boundary modification.
☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

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

4.3 Development Servicing Report: Wastewater

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

4.4 Development Servicing Report: Stormwater Checklist

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

- ☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.
- ☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- ☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.
- ☐ Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

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

- ☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.
- ☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.
- ☐ Changes to Municipal Drains.
- ☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

- ☒ Clearly stated conclusions and recommendations
- ☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.
- ☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

APPENDIX H

Engineering Drawings

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 (65032.03, DATED FEB 14, 2020), PREPARED BY GEMTEC., 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 HARD SURFACE AREAS AND DIMENSIONS.
10. REFER TO DEVELOPMENT SERVICING & STORMWATER MANAGEMENT REPORT (R-2020-036) PREPARED BY NOVATECH.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. REFER TO EROSION AND SEDIMENT CONTROL PLAN PREPARED BY GEMTEC, PROJECT 65032.03, DATED FEBRUARY 04, 2020 FOR EROSION AND SEDIMENT CONTROL REQUIREMENTS DURING CONSTRUCTION.

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
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200mmØ)	701.010	OPSD
STORM MANHOLE (1800mmØ)	701.050	OPSD
CB, FRAME & COVER	400.020	OPSD
STORM / SANITARY MH FRAME & COVER	401.010	OPSD
LANDSCAPE DRAIN	S31	CITY OF OTTAWA
SEWER TRENCH	S6	CITY OF OTTAWA
SANITARY SEWER	PVC DR 35	
STORM SEWER	PVC DR 35, CONC 65D	

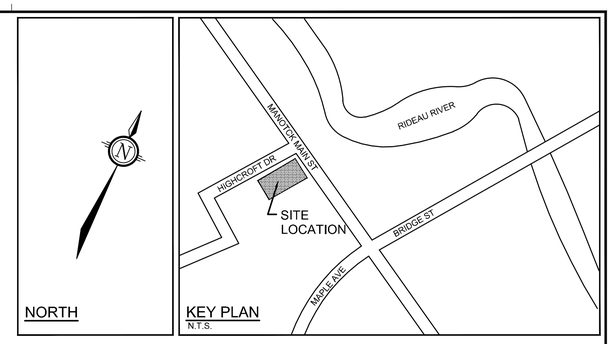
3. ALL STORM AND SANITARY SERVICE LATERALS SHALL BE EQUIPPED WITH BACKFLOW PREVENTION DEVICES AS PER THE CITY OF OTTAWA STANDARD DETAILS S14 AND S14.1 OR S14.2.
4. INSULATE ALL PIPES (SANISTM) THAT HAVE LESS THAN 1.5m COVER WITH HI-40 INSULATION PER INSULATION DETAIL FOR SHALLOW SEWERS. PROVIDE 150mm 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 STORM MANHOLES AND CATCHBASIN MANHOLES ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED. ALL CATCHBASINS ARE TO HAVE 600mm SUMPS UNLESS OTHERWISE INDICATED.
10. ALL CATCHBASINS, MANHOLES AND/OR CATCHBASIN MANHOLES THAT ARE TO HAVE ICD'S INSTALLED WITHIN THEM ARE TO HAVE 600mm SUMPS.
11. ALL WEEPING TILE CONNECTIONS TO BE MADE TO THE PROPOSED STORM SEWER SYSTEM DOWNSTREAM OF ANY INLET CONTROL DEVICES.
12. THE CONTRACTOR IS TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL APPLICABLE SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS AND ANY ALIGNMENT CHANGES, ETC.

WATERMAIN NOTES:

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

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
THERMAL INSULATION AT OPEN STRUCTURES	W23	CITY OF OTTAWA
WATERMAIN SERVICE	W33	CITY OF OTTAWA

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



ROOF DRAIN TABLE: ROOF DRAINS RD1 & RD 2

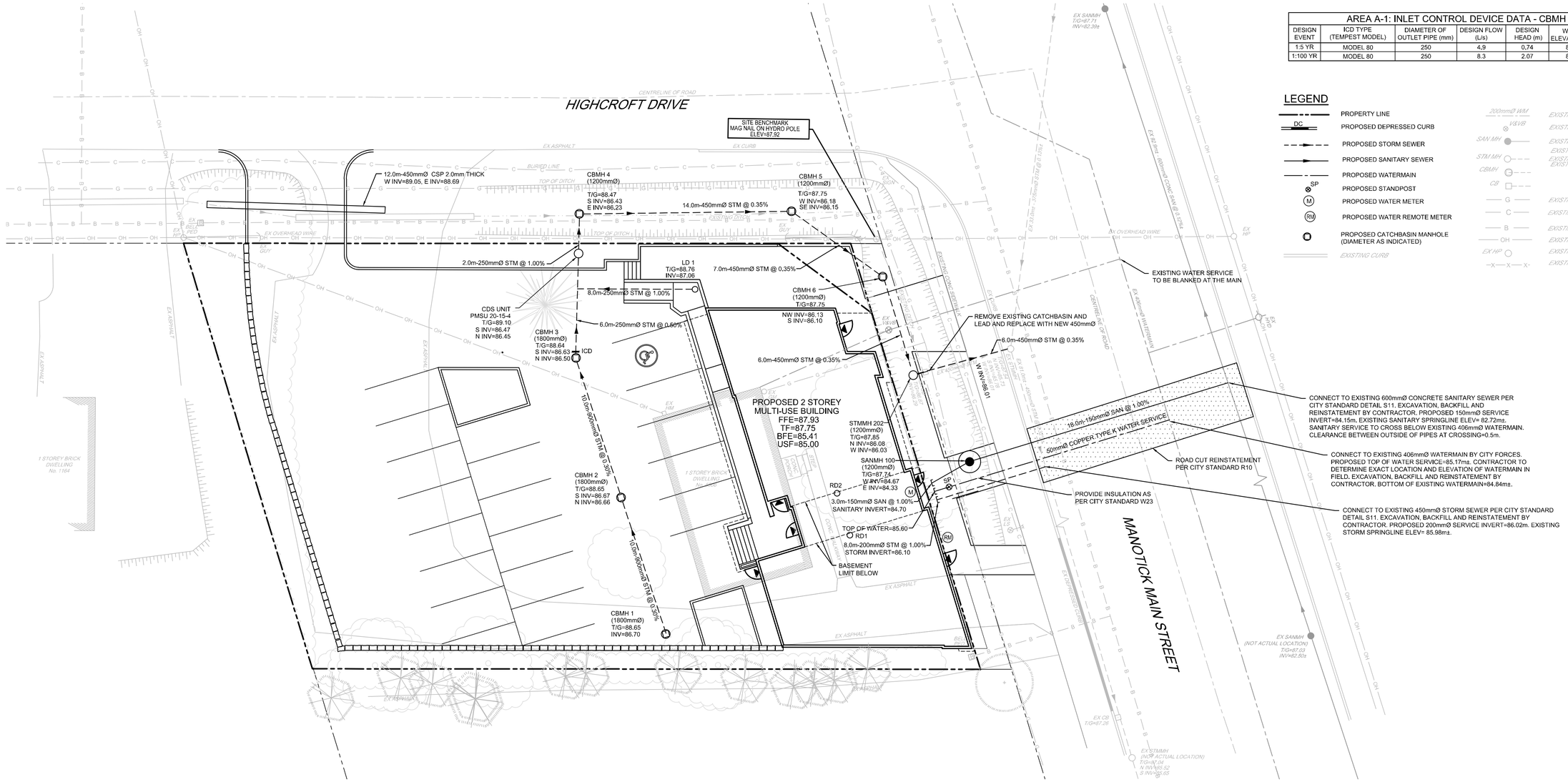
AREA ID *	ROOF DRAIN No. (WATTS MODEL)	ROOF DRAIN OPENING SETTING	1:5 YEAR RELEASE RATE	APPROX. 5 YR PONDING DEPTH	1:100 YEAR RELEASE RATE	APPROX. 100 YR PONDING DEPTH
R-1	RD 1 (RD-100-A-ADJ)	1/2 OPEN	0.95 L/s	9 cm	1.10 L/s	13 cm
R-2	RD 2 (RD-100-A-ADJ)	1/2 OPEN	0.95 L/s	10 cm	1.10 L/s	13 cm

* REFER TO THE 'DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT' (R-2020-036) 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.

AREA A-1: INLET CONTROL DEVICE DATA - CBMH 3

DESIGN EVENT	ICD TYPE (TEMPEST MODEL)	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	DESIGN HEAD (m)	WATER ELEVATION (m)	STORAGE VOLUME (m^3)
1:5 YR	MODEL 80	250	4.9	0.74	87.37	15.3
1:100 YR	MODEL 80	250	8.3	2.07	88.70	30.3



LEGEND

- PROPERTY LINE
- DC — PROPOSED DEPRESSED CURB
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- SP — PROPOSED STANDPOST
- (M) PROPOSED WATER METER
- (RM) PROPOSED WATER REMOTE METER
- PROPOSED CATCHBASIN MANHOLE (DIAMETER AS INDICATED)
- EXISTING CURB
- 200mmØ WM — EXISTING WATERMAIN
- VALVE — EXISTING VALVE & VALVE BOX
- SAN MH — EXISTING SANITARY MH & SEWER
- EXISTING CATCHBASIN MH & STORM SEWER
- STM MH — EXISTING STORM MH & SEWER
- EXISTING CATCHBASIN & CATCHBASIN LEAD
- CBMH — EXISTING CATCHBASIN MANHOLE
- CB — EXISTING CATCHBASIN
- G — EXISTING GAS
- C — EXISTING CABLE
- B — EXISTING BELL
- OH — EXISTING OVERHEAD WIRES
- EX HP — EXISTING UTILITY POLE C/W GUY WIRES
- EXISTING FENCE

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
CEDAR SANDS HOLDINGS INC.
C/O STEVEN JAMES MENARD
184 REDPATH DRIVE
OTTAWA, ONTARIO
K2G 6K5

No.	REVISION	DATE	BY
2	ISSUED FOR SITE PLAN APPLICATION	APR 20/20	MS
1	ISSUED FOR COORDINATION	MAR 31/20	MS

SCALE: 1:150 (1:150, 0 3 6)

DESIGN: MS / LSC
CHECKED: MS
DRAWN: LSC
CHECKED: MS
APPROVED: MS

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — M. SAVIC 100102651 — 4/20/20 — PROVINCE OF ONTARIO

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
5506 MAIN STREET MANOTICK

DRAWING NAME
GENERAL PLAN OF SERVICES

PROJECT No. 119234
REV REV # 2
DRAWING No. 119234-GP

M:\2019\119234\CAD\Design\119234-GP.dwg, GP, Apr 21, 2020 - 12:31pm, lcolbran

PLAN41.DWG - 841mmx594mm

GENERAL NOTES:

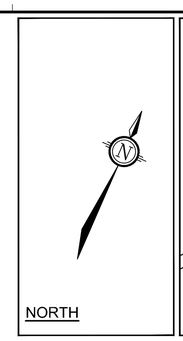
1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN 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 (65032.03, DATED FEB 14, 2020), PREPARED BY GEMTEC., 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 HARD SURFACE AREAS AND DIMENSIONS.
10. REFER TO DEVELOPMENT SERVICING & STORMWATER MANAGEMENT REPORT (R-2020-036) PREPARED BY NOVATECH.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. REFER TO EROSION AND SEDIMENT CONTROL PLAN PREPARED BY GEMTEC, PROJECT 65032.03, DATED FEBRUARY 04, 2020 FOR EROSION AND SEDIMENT CONTROL REQUIREMENTS DURING CONSTRUCTION.

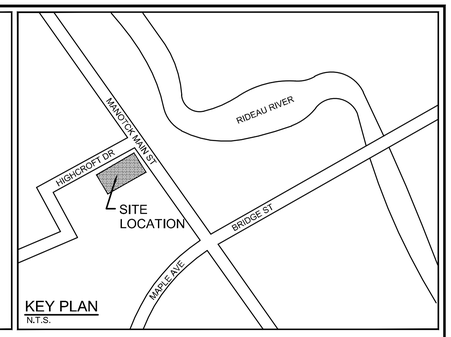
GRADING NOTES:

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 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.
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 BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1,1).
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.

LEGEND

- PROPERTY LINE
- DC — PROPOSED DEPRESSED CURB
- 71.11 / TC 71.23 — PROPOSED ELEVATION / EXISTING ELEVATION
- 2.0% — PROPOSED SLOPE AND DIRECTION
- PROPOSED RETAINING WALL
- PROPOSED CATCHBASIN MANHOLE (DIAMETER AS INDICATED)
- LD — PROPOSED LANDSCAPE DRAIN PER CITY STANDARD S31
- FFE=87.93 — PROPOSED FIRST FLOOR ELEVATION
- TF=87.75 — PROPOSED TOP OF FOUNDATION ELEVATION
- BFE=85.41 — PROPOSED BASMENT FLOOR ELEVATION
- USF=85.00 — PROPOSED UNDERSIDE OF FOOTING ELEVATION
- EXISTING CURB
- SAN MH — EXISTING SANITARY MANHOLE
- STM MH — EXISTING STORM MANHOLE
- CBMH — EXISTING CATCHBASIN MANHOLE
- CB — EXISTING CATCHBASIN
- G — EXISTING GAS
- C — EXISTING CABLE
- B — EXISTING BELL
- OH — EXISTING OVERHEAD WIRES
- EX HP — EXISTING UTILITY POLE C/W GUY WIRES
- EXISTING FENCE

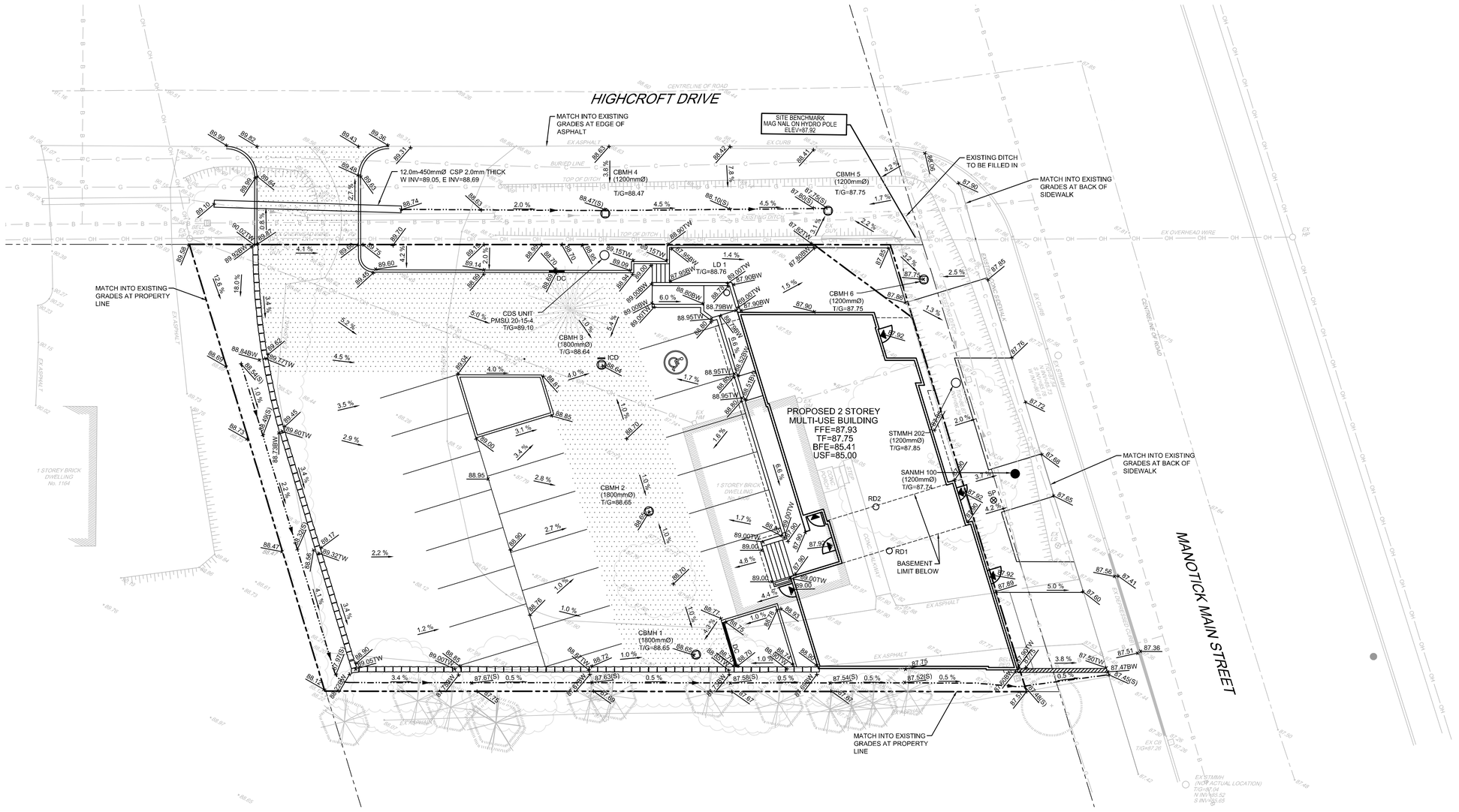




PAVEMENT STRUCTURE:

LIGHT DUTY PAVEMENT
40mm SUPERPAVE 12.5
40mm SUPERPAVE 12.5
150mm GRANULAR "A"
300mm GRANULAR "B" TYPE II
ASPHALT GRADE PG 58-34

HEAVY DUTY PAVEMENT
40mm SUPERPAVE 12.5
60mm or SUPERPAVE 19.0
150mm GRANULAR "A"
450mm GRANULAR "B" TYPE II
ASPHALT GRADE PG 58-34



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OWNER INFORMATION
CEDAR SANDS HOLDINGS INC.
C/O STEVEN JAMES MENARD
184 REDPATH DRIVE
OTTAWA, ONTARIO
K2G 6K5

No.	REVISION	DATE	BY
2	ISSUED FOR SITE PLAN APPLICATION	APR 20/20	MS
1	ISSUED FOR COORDINATION	MAR 31/20	MS

SCALE 1:150 (1:150, 0, 3, 6)

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

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — M. SAVIC 100102651 — 4/20/20 — PROVINCE OF ONTARIO

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
5506 MAIN STREET MANOTICK

DRAWING NAME
GRADING PLAN

PROJECT No. 119234
REV REV # 2
DRAWING No. 119234-GR

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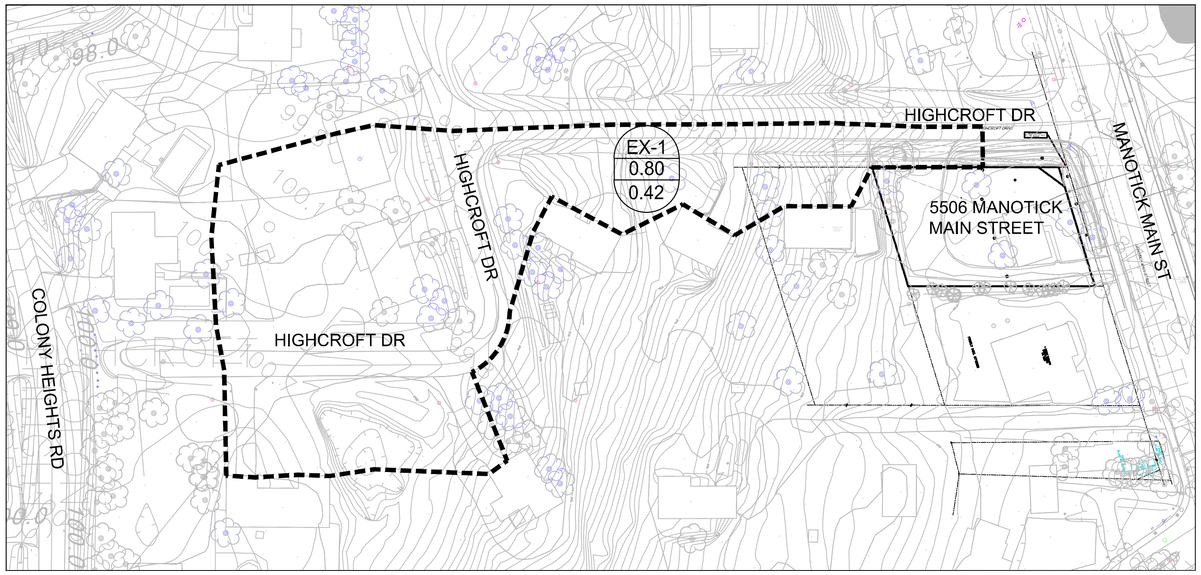
PLAN A1.DWG - 841mmx594mm

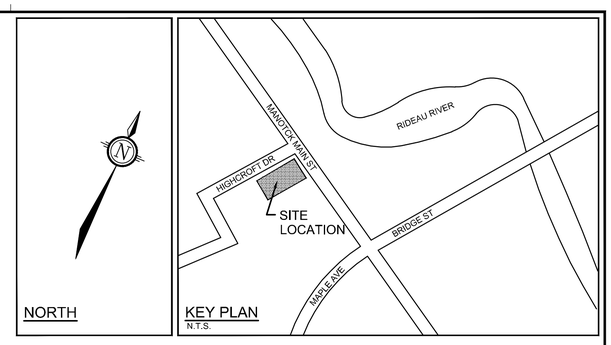


UPSTREAM STORM DRAINAGE AREA

LEGEND

- PROPERTY LINE
- PROPOSED STORM SERVICE
- PROPOSED RETAINING WALL
- DIRECTION OF MAJOR OVERLAND FLOW
- OHW — EXISTING OVERHEAD WIRES
- EXISTING CONCRETE CURB
- SANMH — EXISTING SANITARY MANHOLE & SEWER
- STMMH — EXISTING STORM MANHOLE & SEWER
- CB — EXISTING CATCHBASIN C/W CATCHBASIN LEAD
- HYD, VLVB — EXISTING HYDRANT & VALVE
- EXISTING TREES / VEGETATION
- EX UP — EXISTING UTILITY POLE C/W GUY WIRES
- EXISTING FENCE
- PROPOSED DRAINAGE AREA

A-1 / 0.001 / 0.83 — CATCHMENT I.D. / DRAINAGE AREA IN HECTARES / C VALUE

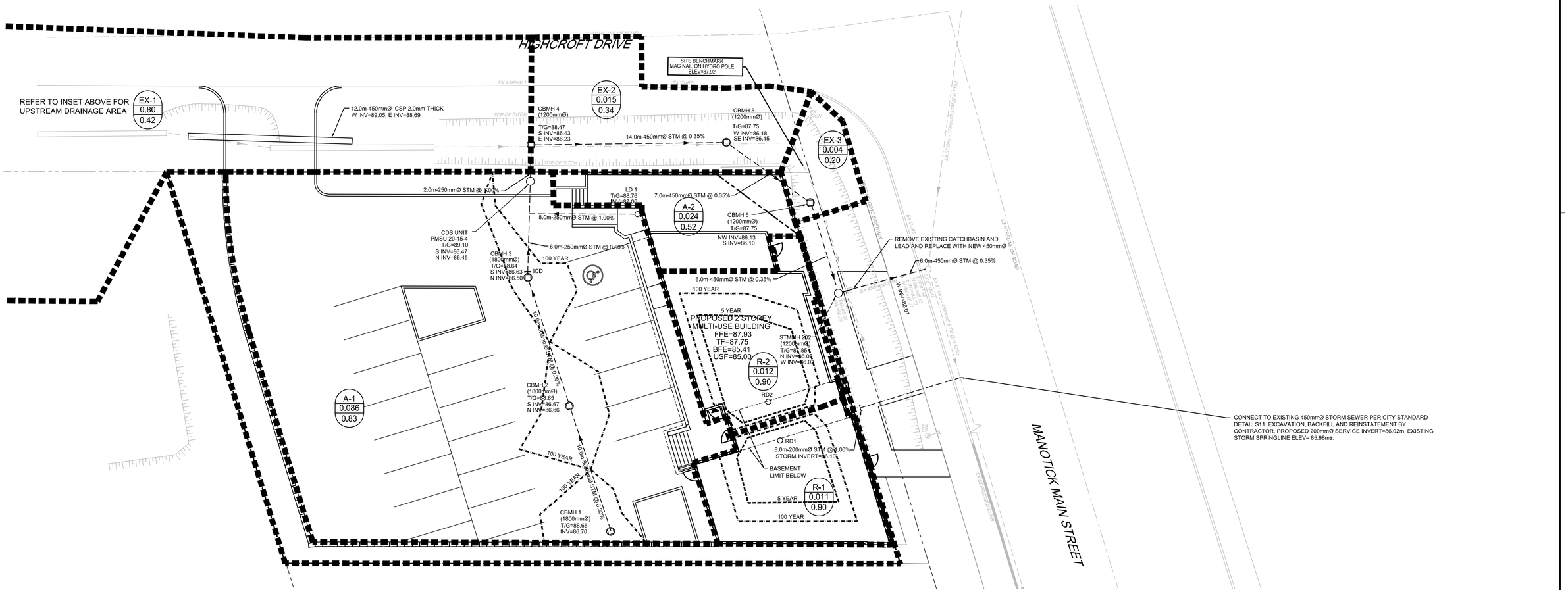


ROOF DRAIN TABLE: ROOF DRAINS RD1 & RD 2						
AREA ID *	ROOF DRAIN No. (WATTS MODEL)	ROOF DRAIN OPENING SETTING	1:5 YEAR RELEASE RATE	APPROX. 5 YR PONDING DEPTH	1:100 YEAR RELEASE RATE	APPROX. 100 YR PONDING DEPTH
R-1	RD 1 (RD-100-A-ADJ)	1/2 OPEN	0.95 L/s	9 cm	1.10 L/s	13 cm
R-2	RD 2 (RD-100-A-ADJ)	1/2 OPEN	0.95 L/s	10 cm	1.10 L/s	13 cm

* REFER TO THE 'DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT' (R-2020-036) 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.

AREA A-1: INLET CONTROL DEVICE DATA - CBMH 3						
DESIGN EVENT	ICD TYPE (TEMPEST MODEL)	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	DESIGN HEAD (m)	WATER ELEVATION (m)	STORAGE VOLUME (m^3)
1:5 YR	MODEL 80	250	4.9	0.74	87.37	15.3
1:100 YR	MODEL 80	250	8.3	2.07	88.70	30.3



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LOCATION
CITY OF OTTAWA
5506 MAIN STREET MANOTICK

DRAWING NAME
STORMWATER MANAGEMENT PLAN - POST DEVELOPMENT

PROJECT No. 119234
REV REV # 1
DRAWING No. 119234-SWM

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