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Block 1 Development

270 Lamarche Avenue

Servicing and Stormwater Management Report

SERVICING AND STORMWATER MANAGEMENT REPORT

BLOCK 1 DEVELOPMENT
270 LAMARCHE AVENUE
CITY OF OTTAWA

Prepared by:

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

December 22, 2021
Revised: November 15, 2024

Novatech File: 121214
Ref No. R-2021-194

NOVATECH
Engineers, Planners & Landscape Architects

November 15, 2024

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

Attention: Katie Turk

Dear Ms Turk:

Reference: Block 1, 270 Lamarche Avenue, City of Ottawa
Servicing and Stormwater Management Report
Our File No.: 121214

Please find enclosed the revised 'Servicing and Stormwater Management Report' for the above noted project. This report is being submitted in support of Site Plan Control Application for the proposed development.

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

Yours truly,

NOVATECH

Cara Ruddle, P.Eng.
Senior Project Manager | Land Development Engineering

cc: Pascale Lépine

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

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Grading Plan – Block 1	(121214-GRB1)
Erosion Sediment Control Plan – Block 1	(121214-ESCB1)

1.0 INTRODUCTION

Novatech has been retained by Lépine Corporation to prepare a Servicing and Stormwater Management Report for the proposed residential development located at 270 Lamarche Avenue within the City of Ottawa. The proposed site is denoted as Block 1 on the plan of subdivision 4M-1629 and is part of a larger development which includes the 3 development blocks and a proposed public right-of-way. The proposed roadway (Street 1) has been designed with design information outlined within a separate Novatech report titled "240-270 Lamarche Avenue & 3484 Innes Road Servicing and Stormwater Management Report".

The purpose of this report is to support the site plan application for the Block 1 development. **Figure 1** Key Plan shows the site location. A copy of the legal plan is also included for reference.

2.0 EXISTING CONDITIONS

The total Block 1 site area is approximately 1.8 hectares. The property was previously part of the Innes Road Golfland Driving range and is currently vacant. The site is bound by the future Street 1 to the north, Lamarche Avenue to the east, residential buildings to the south, and residential buildings fronting Page Road to the west. The site is generally flat and slopes towards the southwest corner of the site. Due to the recent construction of Lamarche Avenue the current site grades are +/- 1.0m below the new roadway. **Figure 2** shows the existing site conditions.

The subject site was denoted as block 150 within the Orleans Village Development. The subdivision was designed by David Schaeffer Engineering Ltd. (DSEL) and design information is provided in the following reports:

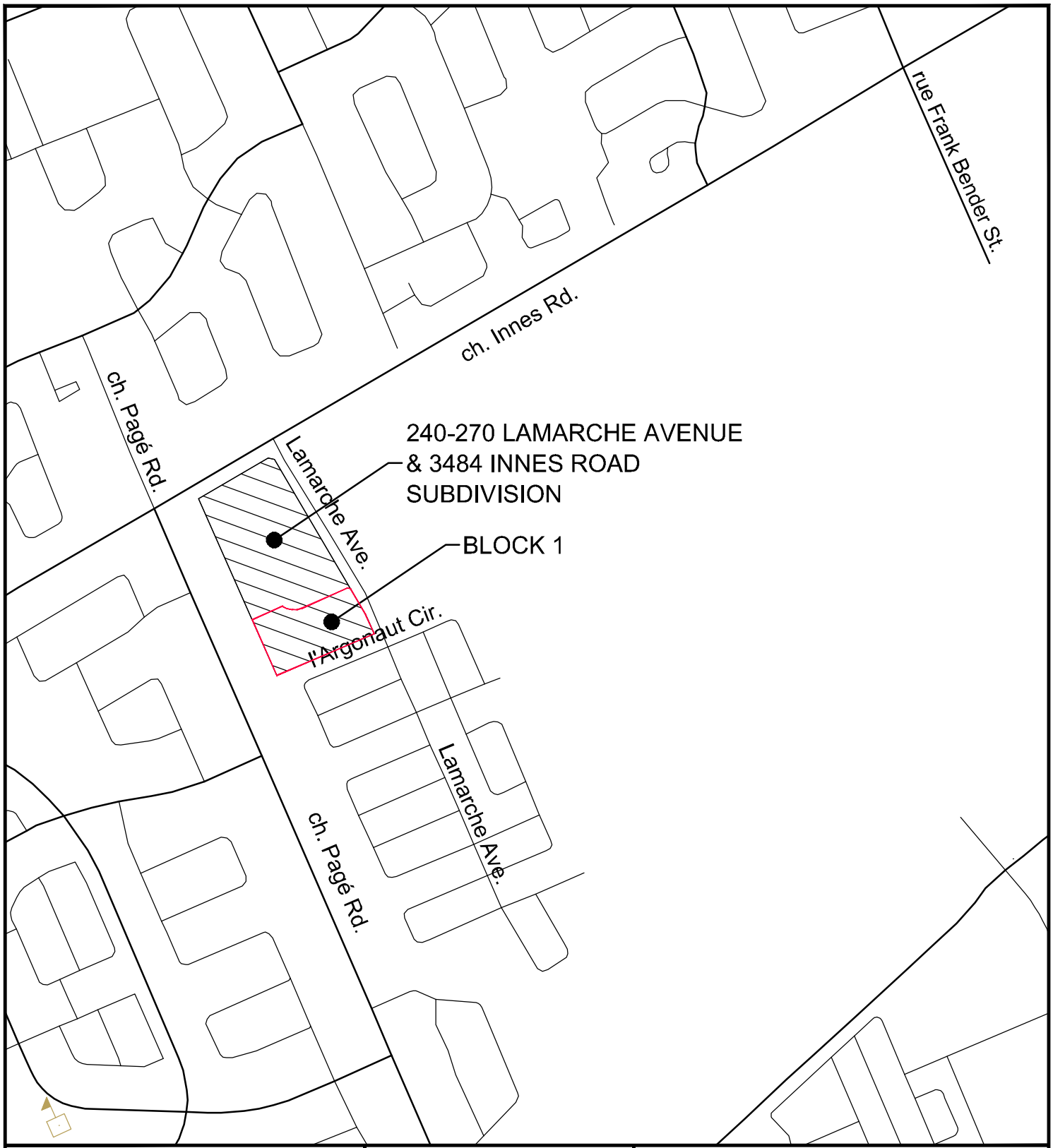
- 'Design Brief for Cavian (Orleans Village) Limited, 3490 Innes Road' prepared By DSEL dated November 2018 – Ver 3 (Reference as DSEL Report).
- 'Assessment of Adequacy of Public Services for Lepine Corporation, 3490 Innes Road' Prepared by DSEL dated May 2019 – Rev 1 (Referenced as DSEL Assessment)

3.0 PROPOSED DEVELOPMENT

The proposed development Block 1 will include +/- 1.6 ha of residential area, and +/- 0.2ha of parkland. It is proposed to develop the residential site with three (3) apartment buildings connected by an underground parking structure. Pavilion A will be six (6) storeys in height with a footprint of 2022m^2 and 105 units. Pavilion B will be seven (7) storeys in height with a footprint of 1966m^2 and 81 units. Pavilion C will be seven (7) storeys in height with a footprint of 1851m^2 and 97 residential units and 252m^2 of commercial space. **Figure 3** shows the proposed development.

Access to the site will be provided from two (2) entrances from the future Street 1 which connects to the existing Lamarche Avenue. It should be noted that this report should be read in conjunction with the following engineering drawings:

General Plan of Services (dwg 121214-GPB1)
Grading Plan (dwg 121214-GRB1)
Erosion and Sediment Control Plan (dwg 121214-ESCB1)
Notes and Details Plan (dwg 121214-NDB1)



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Website www.novatech-eng.com

270 LAMARCHE AVENUE
CITY OF OTTAWA

KEYPLAN - BLOCK 1

SCALE		
N.T.S.		
DATE	JOB	FIGURE
NOV 2024	121214	1

M:\2021\121214\CAD\Design\-Block 1\121214-KP -B1.dwg, KP, Dec 19, 2021 - 2:24pm, amestwarp

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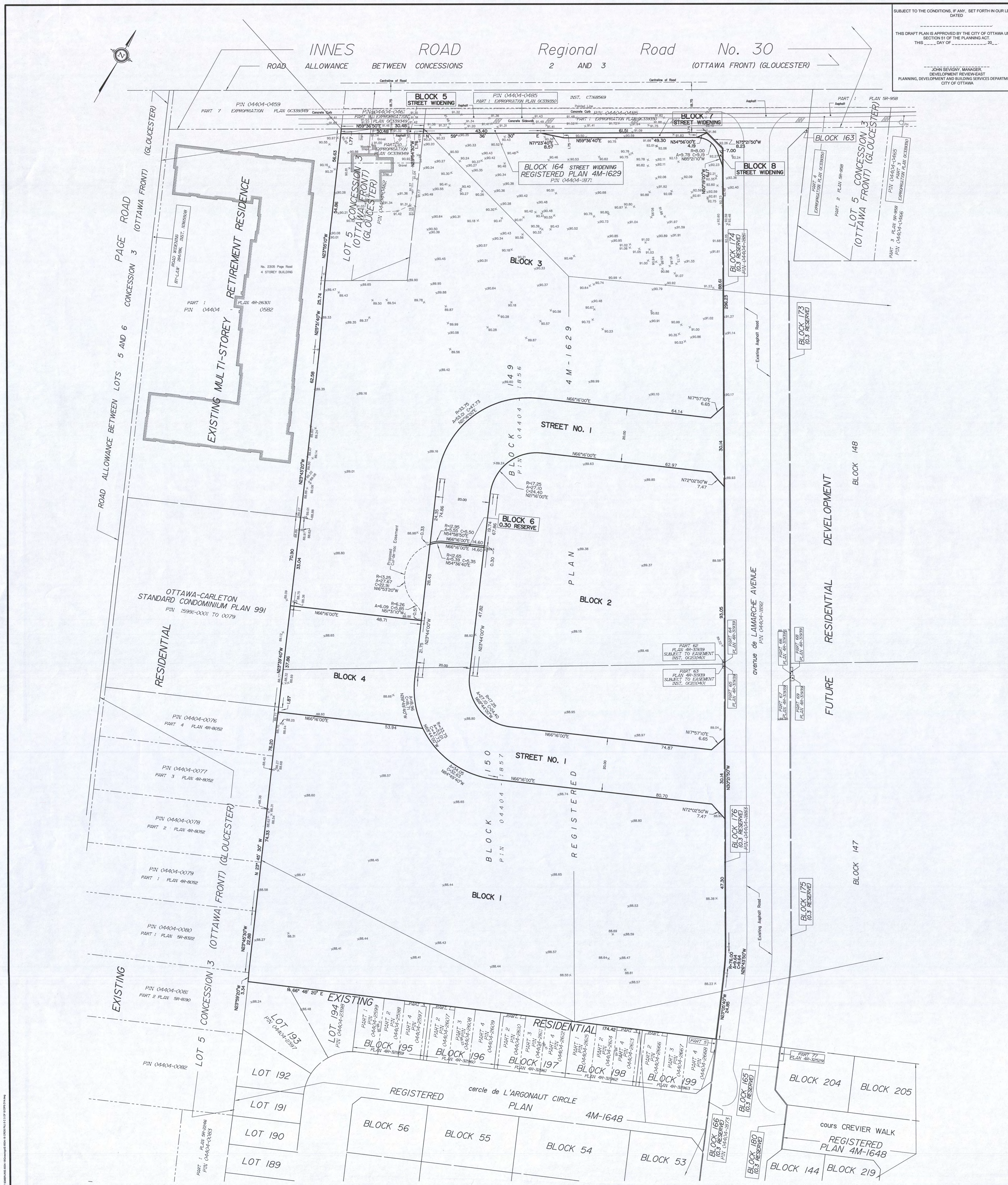
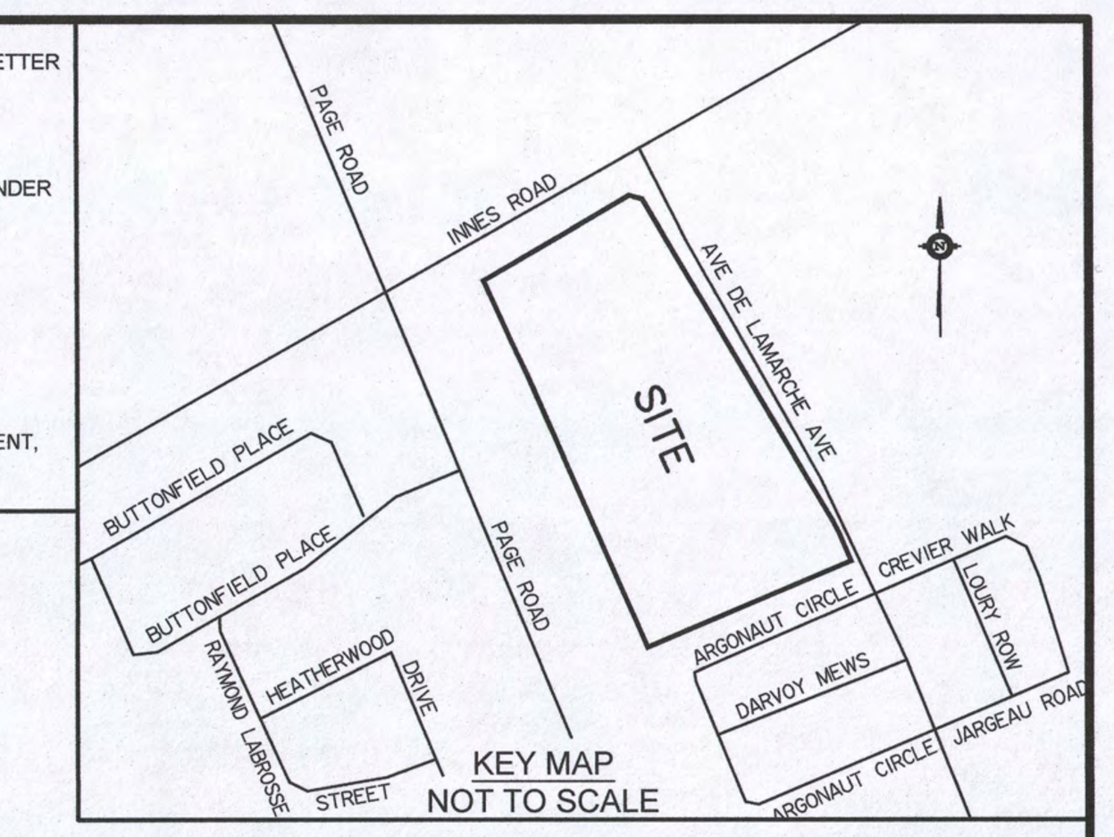


SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED

____

THIS DRAFT PLAN IS APPROVED BY THE CITY OF OTTAWA UNDER SECTION 51 OF THE PLANNING ACT.
THIS ____ DAY OF ____________, 20__.

____
JOHN SEVIGNY, MANAGER,
DEVELOPMENT REVIEW-EAST
PLANNING, DEVELOPMENT AND BUILDING SERVICES DEPARTMENT,
CITY OF OTTAWA



DRAFT PLAN OF SUBDIVISION OF

BLOCKS 149, 150, 174 AND 176 REGISTERED PLAN 4M-1629 AND PART OF LOT 5 CONCESSION 3 (OTTAWA FRONT)

Geographic Township of Gloucester
CITY OF OTTAWA
Prepared by Annis , O'Sullivan , Vollebekk Ltd.

Scale 1 : 500

20 15 10 5 0 10 20 Metres

Metric
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :
The boundaries of the lands to be subdivided and their relationship to adjoining lands have been accurately and correctly shown.

August 7, 2024
Date

A.J. Broxham
ANDREW J. BROXHAM
ONTARIO LAND SURVEYOR

Notes & Legend

+ 85.00 Denotes Location of Existing Elevations
———— " Property Line

Topographical detail per AOV Survey dated July 30th, 2018.
Position of avenue de Lamarche Avenue per GeoOttawa imagery.

SCHEDULE OF LAND USE		
Land Use	Blocks	Area (sq. m.)
Apartment Residential	Block 1	15739
Development Blocks Use to be Determined through Future Applications	Block 2	9180
	Block 3	18622
Park	Block 4	1966
New Street	Street No. 1, Blocks 5, 6, 7, 8	6358

OWNER'S CERTIFICATE

This is to certify that I am the owner / agent of the lands to be subdivided and that this plan was prepared in accordance with my instructions.

5 AUGUST 2024
Date

Francis Lepine, President
Canadian Rental Development Services Inc.

Bearings are grid bearings and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

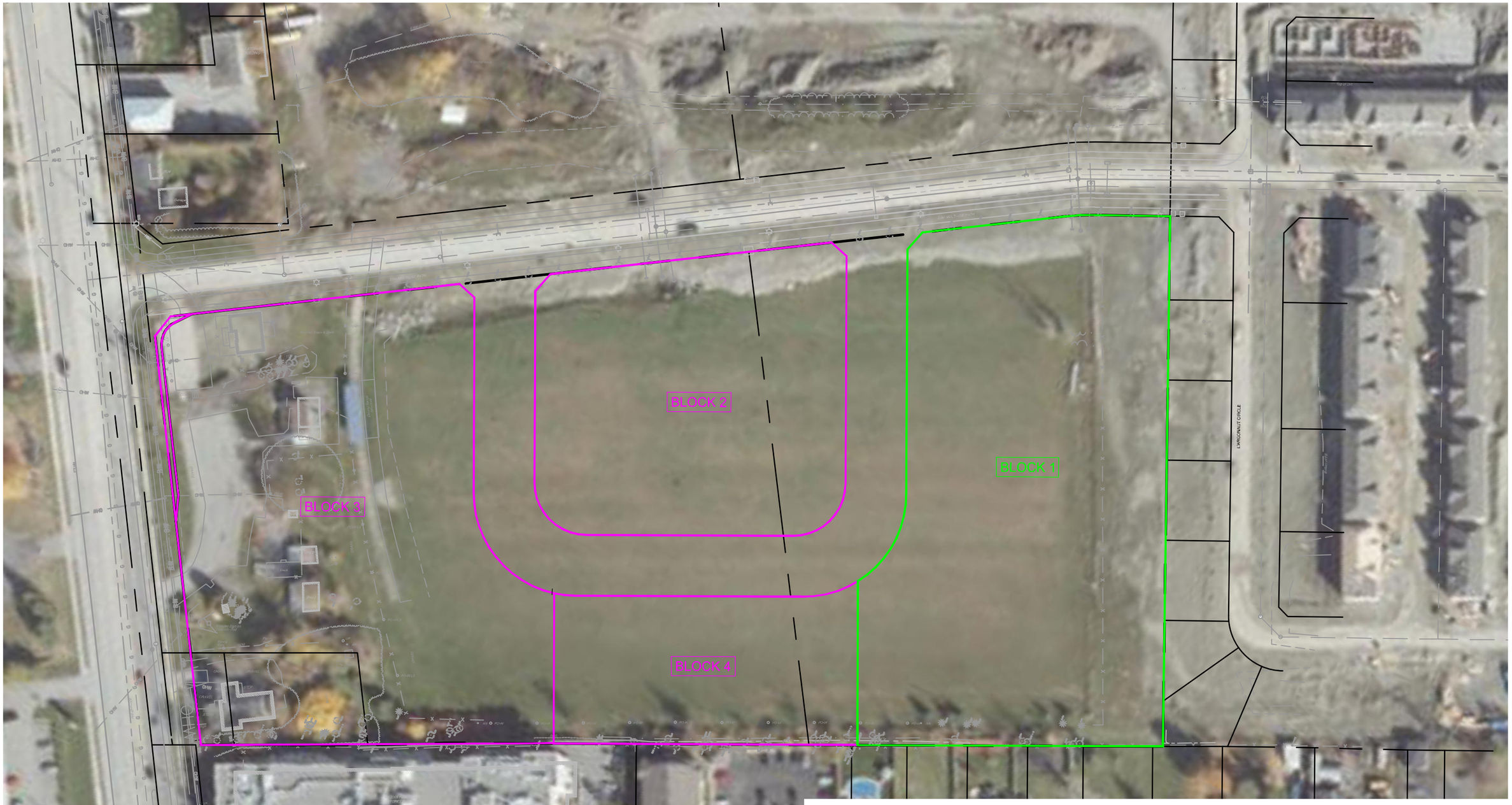
ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 OF THE PLANNING ACT

(a) see plan
(b) see plan
(c) see plan
(d) (purpose for which lots are to be used)
(e) see plan
(f) see plan
(g) see plan
(h) City of Ottawa
(i) see soils report
(j) see plan
(k) (municipal services available or to be available)
(l) see plan

Ontario Land Surveyors

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com

Job No. E-8534-18 CRDS PIL1 5 C 3 OF GI DPS DI4 | AP



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270 LAMARCHE AVENUE
CITY OF OTTAWA

EXISTING CONDITIONS PLAN

SCALE 1 : 1250 (0, 10, 20, 30, 40, 50)

DATE	JOB	FIGURE
NOV 2024	121214	2

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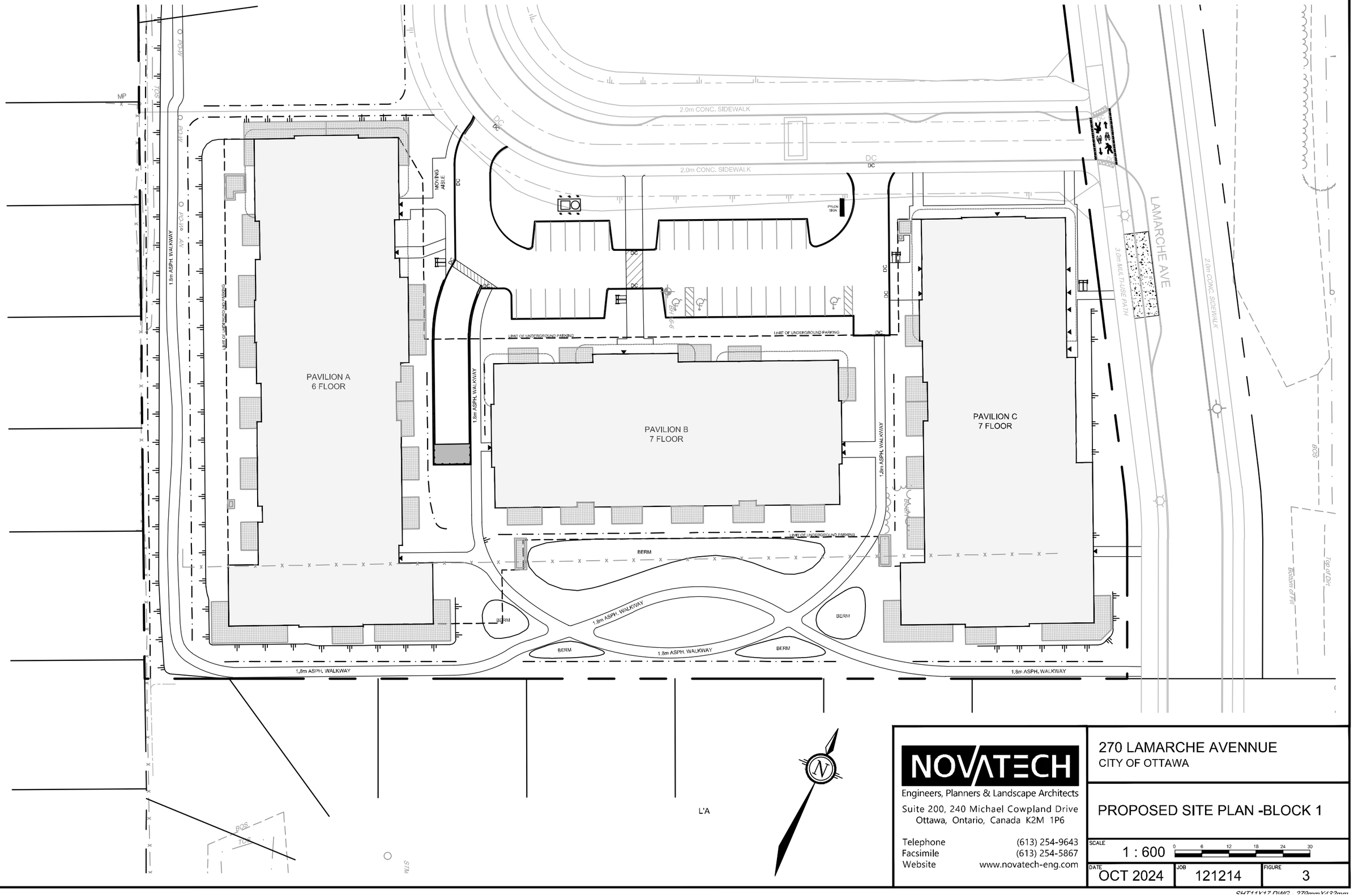

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270 LAMARCHE AVENNUE
CITY OF OTTAWA

PROPOSED SITE PLAN -BLOCK 1

SCALE 1 : 600 (0, 6, 12, 18, 24, 30)
DATE OCT 2024
JOB 121214
FIGURE 3

SHT11X17.DWG - 279mmX432mm

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4.0 SITE CONSTRAINTS

A geotechnical investigation was completed by Paterson Group Inc. and a report prepared entitled 'Geotechnical Investigation, Proposed Multi-Storey Residential Buildings' dated May 21, 2019. The report included the following recommendations:

- If buildings are founded directly over a clay deposit, a permissible grade raise restriction will be required. A preliminary permissible grade raise restriction of 2 m is recommended for the south portion of the site.
- It should be noted that bedrock was encountered between 5.6 to 7 m below existing grade within the subject property.
- To reduce long-term lowering of the groundwater level at this site clay seals should be provided along the sewer trenches.
- During construction, groundwater volumes pumped could be between 50,000 to 400,000 L/day and it would be required to register on the Environmental Activity and Sector Registry (EASR). However, the project is expected to be phased, so each building constructed one at a time. As the phasing of the underground foundation works is planned in stages the groundwater volumes to be pumped are expected to be maintained under the 50,000L/day threshold.

5.0 WATER SERVICING

The subject property is within the City of Ottawa 2E pressure zone. As previously indicated, Block 1 is part of a larger development (240-270 Lamarche Avenue & 3784 Innes Road Plan of Subdivision) which includes the construction of the proposed Street 1 public right-of-way. As part of the subdivision works a 200mm watermain will connect to the existing Lamarche Avenue watermain in two (2) locations creating a looped system for redundancy purposes.

Block 1 will be serviced by two (2) 150mm diameter watermains that will connect to the proposed 200mm diameter watermain in Street 1. As per the City of Ottawa Technical Bulletin ISDTB-2014-02, the water services will be separated by an isolation valve in the right-of-way as the average day domestic demands are greater than 50 cubic meters of water per day. The proposed buildings are to be sprinklered and equipped with a Siamese connection located near the front entrance of each building and are to be within 45m of a fire hydrant. Refer to the General Plan of Services drawing (121214-GPB1) for servicing details.

Water demand calculations have been calculated using criteria from Section 4 of the City of Ottawa Water Distribution Guidelines and the Ontario Building Code. The required fire demand was calculated using the 2020 Fire Underwriters Survey (FUS) Guidelines. The water demand and fire flow calculations are provided in **Appendix A** for reference. A summary of the water demand and fire flows are provided in **Table 5.1**.

Table 5.1: Domestic Water Demand Summary

Building	Population	Commercial Area (m^2)	Ave. Daily Demand (L/s)	Max. Daily Demand (L/s)	Peak Hour Demand (L/s)	Fire Flow (L/s)
Pavilion A	179	N/A	0.58	1.45	3.18	117
Pavilion B	155	N/A	0.50	1.25	2.75	100
Pavilion C	154	264	0.52	1.28	2.81	100
Park Land	N/A	N/A	0.01	0.01	0.02	
Total Domestic Demands	**496**	**252**	**1.61**	**4.00**	**8.78**	

In the "240-270 Lamarche Avenue & 3484 Innes Road Servicing and Stormwater Management Report", Block 1 was assumed to be a residential development with an equivalent population of 513 people. The allotted domestic demands and fire flows for the Block 1 are summarized in **Table 5.2**.

Table 5.2 Allowable Block 1 Water Demand (Novatech Detailed Design Report for Subdivision)

Area	Ave. Daily Demand (L/s)	Max. Daily Demand (L/s)	Peak Hour Demand (L/s)	Fire Flow (L/s)
Block 1	1.66	4.15	9.14	117

Therefore, based on the information in the preceding tables the proposed development water demands are less than the demands allotted from the '240-270 Lamarche Avenue & 3484 Innes Road Servicing and Stormwater Management Report'. Therefore, it can be concluded that the existing watermain system can provide adequate flow and pressures for the fire flows and domestic demands.

6.0 SANITARY SERVICING

As part of the subdivision works, a 250mm diameter sanitary sewer will be constructed in the future Street 1 public right-of-way which will connect to the existing Lamarche Avenue sanitary sewer system. Block 1 will be serviced with a 200mm private sewer with a connection to the proposed sanitary sewer in Street 1. Refer to the General Plan of Services drawing (121214-GPB1) for servicing details.

Sanitary flows for the proposed development were calculated using criteria from Section 4 of the City of Ottawa Sewer Design Guidelines and the Ontario Building Code as follows:

- Residential Average Flow = 280 L/capita/day
- 1 Bed apartment = 1.4 Person/unit
- 2 Bed apartment = 2.1 Person/unit
- 3 Bed apartment = 3.1 Person/unit
- Single unit = 3.4 Person/unit
- Commercial flow = 75 L/9.3m^3/day
- Parkland = 1 unit/ hectare
- Residential Peaking Factor = Harmon Equation (max peaking factor = 4.0)
- Commercial Peaking Factor = 1.0
- Peak Extraneous Flows (Infiltration) = 0.33L/s/ha

The peak sanitary flow including infiltration for the Block 1 development was calculated to be 5.95 L/s with 5.89 L/s for Pavilion A, B and C, and 0.06L/s for the proposed parkland. Detailed sanitary flow calculations are provided in **Appendix B** for reference.

Part of Block 1 development was allocated 12.53 L/s in the "240-270 Lamarche Avenue & 3484 Innes Road Servicing and Stormwater Management Report". Since the allotted flow of 12.53 L/s is greater than the proposed theoretical peak flow of 5.95 L/s, it is anticipated that the downstream sanitary sewer infrastructure has capacity to service the proposed Block 1 development.

7.0 STORM SERVICING

There is an existing 850mm and 1350mm diameter storm sewer fronting the development in Lamarche Avenue. A 750mm diameter storm sewer and catchbasin manhole were constructed just inside the Block 1 site as part of the overall Orleans Subdivision construction to service these lands. This infrastructure will serve as the outlet for the Block 1 development.

A private storm sewer will be constructed to service the Block 1 development ranging in size from 250mm to 600mm in diameter. Refer to the General Plan of Services (121214-GPB1) for more details.

The proposed storm sewers have been sized to convey the uncontrolled 2-year storm event using the Rational Method. The design criteria used in sizing the storm sewers is summarized below in **Table 7.1**.

Table 7.1: Storm Sewer Design Parameters

Parameter	Design Criteria
Local Roads	2 Year Return Period
Storm Sewer Design	Rational Method
IDF Rainfall Data	Ottawa Sewer Design Guidelines
Initial Time of Concentration (Tc)	10 min
Minimum Velocity	0.8 m/s
Maximum Velocity	3.0 m/s
Minimum Diameter	250 mm

Refer to **Appendix C** for detailed storm drainage area plans and storm sewer design sheets.

8.0 STORM DRAINAGE AND STORMWATER MANAGEMENT

The stormwater management strategy for the site is based on the established criteria from the DSEL Assessment of Adequacy of Public Services. This design criteria was also used for the overall site design as discussed in the "240-270 Lamarche Avenue & 3484 Innes Road Servicing and Stormwater Management Report".

8.1 Existing Off-Site Storm Infrastructure – Orleans Village Development

The storm infrastructure servicing the Orleans Village Subdivision includes a stormwater management facility and storm sewers with sizes ranging from 300mm to 1800mm in diameter. The Orleans Village Subdivision storm sewer system was designed to receive drainage from the proposed development. As previously indicated the overall Lepine development area was identified as Blocks 149 and 150 on the registered plan of subdivision. The downstream SWM Facility was designed to provide stormwater quality and quantity control for the overall Orleans Village Subdivision area prior to discharging to Mud Creek. The facility was sized to accommodate all future developments within the tributary drainage area, including the subject development lands.

8.2 Stormwater Management Criteria

8.2.1 Stormwater Quality Control

The existing SWM Facility is currently sized to provide a normal level of stormwater quality control. In the future it is proposed to upgrade the SWM facility to provide and enhanced level of stormwater quality control for 80% long-term removal of total suspended solids (TSS).

As previously indicated the Block 1 development was identified as Block 150 in the Orleans Village Development and was estimated to be 79% impervious. The proposed Block 1 development has an overall imperviousness of 74% and will therefore have no negative effects on the downstream stormwater infrastructure (sewers and pond).

8.2.2 Stormwater Quantity Control – Allowable Release Rate

The DSEL Adequacy of Public Services Report provides stormwater allowable release rates for Blocks 149, Block 150 and the external drainage areas for the residential properties fronting onto Innes Road. The allowable release rates per block are provided in **Table 8.1.**

Table 8.1 Allowable Release Rates Per Block (DSEL Report)

Block	Area (ha)	Allowable Release Rate (L/s)
Block 149	2.86	501
Block 150	2.17	406
External Area	0.11	*9.4
Total	**5.14**	**916.4**

**Note: Calculated using rational method for a 2-year storm event.*

The overall Lepine development will be required to control the release rate of stormwater from the site to 916.4 L/s . Each area in the overall Lepine development has been allocated a portion of this total release rate. The allocated release rates are summarized below in **Table 8.2** and were calculated based on the following criteria:

- No 2-year surface ponding in the right-of-way.
- No stormwater management controls in the park blocks.
- Each development Block was allocated a portion of the remaining release rate.

Table 8.2 Allowable Release Rates Per Block (Novatech Detailed Design Report for Subdivision)

Development Area	Area (ha)	Allowable Release Rate (L/s)
ROW	0.611	147.0
Park	0.503	95.0
Sub Total	**1.114**	**242.0**
Block 1	1.535	258.0
Block 2	0.922	155.0
Block 3	1.563	261.0
Sub Total	**4.020**	**674.0**
Total	**5.134**	**916.0**

Based on the information provided in **Table 8.2** the Block 1 development will be allocated 258.0 L/s to the Lamarche Avenue sewer and ultimately the downstream SWM facility. Refer to the "240-270 Lamarche Avenue & 3484 Innes Road Servicing and Stormwater Management Report" for detailed calculations on the allowable release rate allocation.

8.3 Stormwater Management Modeling

The performance of the proposed stormwater management system was evaluated using a dual-drainage model created in PCSWMM. The PCSWMM model simulates the storage and routing of flows through the proposed storm drainage network. The results of the analysis were used to:

- Calculate the storm sewer hydraulic grade line and ponding elevations for the 2-year, 5-year, and 100-year storm events.
- Determine the allowable release rates from each drainage area and size the required inlet control devices (ICD's).
- Calculate the modelled runoff from the controlled portions and uncontrolled portions of the site under post-development conditions.

Refer to **Figure 5**- Post-Development Storm Drainage Area Plan for reference.

8.3.1 Post-Development Conditions

Design Storms

The design storms used in the hydrologic analysis model include the 6-hour Chicago distribution and the 12-hour and 24-hour SCS Type II distribution for the 2-year, 5-year and 100-year storm events. IDF data was taken from the *City of Ottawa Sewer Design Guidelines* (OSDG) (October 2012). The 6-hour Chicago storm distribution was found to generate the highest peak flows and the model results from this distribution are documented in the following tables.

The proposed drainage system was also stress tested using a 6-hour Chicago storm that has 20% higher intensity and total volume compared to the 100-year event.

Model Parameters

For modeling purposes, the site has been divided into subcatchments based on the drainage areas tributary to each inlet of the proposed storm sewer system. The sub-catchment areas are shown on **Figure SWMB1** (Stormwater Management Plant – Block 1). The post-development model parameters are summarized in **Table 8.3**. The model schematic, system parameters and output files are provided in **Appendix D**.

Table 8.3: Post-Development Model Parameters

Area ID	Catchment Area (ha)	Runoff Coefficient (C)	Percent Impervious (%)	No Depression (%)	Flow Length (m)	Equivalent Width (m)	Average Slope (%)
A-01	0.021	0.59	55.7%	0%	16	13	2.0%
A-02	0.111	0.61	58.6%	0%	35	32	2.5%
A-03	0.142	0.63	61.4%	0%	50	29	2.0%
A-04	0.014	0.54	48.6%	0%	31	5	2.0%
B-01	0.532	0.80	85.7%	0%	49	109	2.0%
B-02	0.242	0.83	90.0%	0%	34	72	2.0%
C-01	0.174	0.34	20.0%	0%	105	17	2.0%
C-02	0.058	0.42	31.4%	0%	65	9	2.0%
C-03	0.147	0.32	17.1%	0%	59	25	2.0%
C-04	0.055	0.44	34.3%	0%	59	9	2.0%
D-01	0.047	0.33	18.6%	0%	6	76	4.0%
TOTAL	**1.543**						

Boundary Conditions

JFSA Engineering created a SWM model for the Orleans Village Subdivision (dated June 2019) which is provided in Appendix E of the " Master Servicing Study for East Urban Community Phase 3 Area Community Design Plan" prepared by DSEL (December 2020). Based on the results of this model, the boundary condition HGL elevations have been applied at storm outfalls to Lamarche Avenue for Block 1.

Table 8.4 summarizes the boundary condition HGL elevations for the Lamarche Avenue STM System (MH15) . The JFSA HGL result tables are included in **Appendix D**.

Table 8.4: STM Boundary Conditions - Lamarche Avenue (JFSA, 2019)

Return Period	Storm HGL Elevation (m)
	MH15
100-year	84.564
100-year + 20%	85.315

8.3.2 Model Results

Runoff from Block 1 drainage area will outlet to the existing 1350 mm diameter storm sewer in Lamarche Avenue via the private sewer system on site. The post-development flow from Block 1 area will be attenuated using ICDs prior to being discharged into the Lamarche Avenue storm sewer. A summary of the ICD locations and peak flows is provided in **Table 8.5**.

Table 8.5: Inlet Control Device Sizes and Design Flows

ICD	Location	ICD Size (mm)	ICD invert (m)	100-year 6-hr Chicago		
				HGL (m)	Head (m)	Release Rate (L/s)
O-CBMH205	CBMH205	127	86.74	88.44	1.64	44.14
O-MH212	MH212	102	86.08	88.77	2.64	35.33
O-TANK1	TANK1	178	86.00	87.64	1.55	84.41
O-TANK2	TANK2	178	86.00	87.36	1.27	76.34

The above ICDs will require upstream storage to control the site runoff. This storage will be provided by the underground pipe network and surface ponding. Area B-01 will have a storage tank to contain the controlled runoff. The provided storage and the 100-year required storage is summarized in **Table 8.6**.

Table 8.6: Storage Summary

Upstream ICD Location	Available Storage			Required 100-year Storage[1]		
	Underground Storage (m^3)	Surface Storage (m^3)	Total Storage (m^3)	Underground Storage (m^3)	Surface Storage (m^3)	Total Storage (m^3)
CBMH205	17	72	88	16	2	19
MH212	27	75	102	25	0	25
TANK1	235	0	235	138	0	138
TANK2	78	0	78	36	0	36

[1] *100-year 6-hour Chicago Storm*

Hydraulic Grade Line

The PCSWMM model was used to determine the HGL elevations in the storm sewer system during the 100-year storm event. The 100-year HGL elevations at the proposed storm manholes are provided in **Table 8.7**.

Table 8.7: 100-year and Stress Test HGL Elevations

Manhole ID	MH Invert Elevation (m)	T/G Elevation (m)	HGL - 100yr6hr (m)	HGL - 100yr6hr+20% (m)	FFE (m)	Clearance (100yr) (m)
MH201	83.91	88.81	84.60	85.39	89.60	5.00
MH202	85.02	88.50	85.31	85.49	89.60	4.29
MH203	85.28	88.82	85.51	85.67	89.60	4.09
MH204	85.63	89.10	85.83	85.93	89.60	3.77
MH209	86.39	89.16	88.85	88.94	89.60	0.75
MH211	86.14	89.20	88.79	88.88	89.60	0.81
MH212	86.08	89.15	88.77	88.87	89.60	0.83

Major System (Ponding)

The major system has been designed for the 100-year event. During large storm events, storm runoff that exceeds the inlet capacity of the ICDs will pond on the surface. The major overland system is shown on the Grading Plan (drawing 121214-GRB1). A summary of the ponding depths for the 100-year storm event is provided in **Table 8.8**. Additional ponding depths for other Storm events are provided in **Appendix D**.

Table 8.8: Ponding at Catchbasins (100-year Event)

Structure	T/G (m)	Max. Static Ponding		100-year Ponding			
		Elev. (m)	Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)
Catchbasins at Low Points							
CB01	89.00	89.25	0.25	88.89	0.00	N	0.00
CB02	89.35	89.40	0.05	88.90	0.00	N	0.00
CB03	88.70	88.86	0.16	88.58	0.00	N	0.00
Catchbasin Manholes at Low Points							
CBMH205	88.36	88.58	0.22	88.44	0.08	N	0.00
CBMH206	88.48	88.80	0.32	88.52	0.04	N	0.00
CBMH207	88.58	88.86	0.28	88.58	0.00	N	0.00
CBMH208	88.70	89.00	0.30	88.87	0.17	N	0.00
CBMH210	89.10	89.00	-	88.83	0.00	N	-

Peak Flows

The allowable release rates for the Block 1 development are presented in **Table 8.9**. The modelled peak flows are slightly less than the allowable release rates due to attenuation of peak flows in the model from major system storage, pipe storage, and travel times within the storm sewer system.

Table 8.9: Peak Flows

Storm Distribution->		**6hr Chicago**			
Return Period->		**25mm**	**2yr**	**5yr**	**100yr**
Allowable Release Rate		258	258	258	258
Post-Development	*Controlled*	87	120	152	233
	Uncontrolled	1	3	9	21
	Total	**88**	**123**	**161**	**254**
Difference		*-170*	*-135*	*-97*	*-4*

As shown in **Table 8.9**, the proposed storm drainage system will provide sufficient storage and attenuation of post-development runoff to limit peak flows to allowable release rate of 258 L/s with for all storms up to and including the 100-year design event.

8.4 Major Overland Flow Route

A major overland flow route will be provided for storms greater than the 100-year storm event. Stormwater will be directed to the Street 1 and Lamarche Avenue rights-of-way. The major overland system is shown on the Grading Plan (drawing 121214-GRB1).

9.0 EROSION AND SEDIMENT CONTROL

Temporary erosion and sediment control measures will be implemented on-site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter socks (catchbasin inserts) will be placed in existing and proposed catchbasins and catchbasin manholes, and will remain in place until vegetation has been established and construction is completed;
- Silt fencing will be placed along the surrounding construction limits;
- Mud mats will be installed at the site entrances;
- Strawbale or rock check dams will be installed in swales and ditches;
- The contractor will be required to perform regular street sweeping and cleaning as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site;

Erosion and sediment control measures should be inspected daily and after every rain event to determine maintenance, repair or replacement requirements. Sediments or granulars that enter site sewers shall be removed immediately by the contractor. These measures will be implemented prior to the commencement of construction and maintained in good order until vegetation has been established. Refer to the Erosion and Sediment Control Plan (drawing 121214-ESCB1) for additional information.

10.0 CONCLUSIONS AND RECOMMENDATIONS

Watermain

The analysis of the existing and proposed watermain network confirms the following:

- The two (2) proposed 150mm dia. watermain services which connect to the proposed 200mm watermain system within Street 1, and ultimately the existing 300mm dia. watermain in Lamarche Avenue can service the proposed development.
- It is anticipated that there are adequate pressures in the existing watermain infrastructure to meet the required domestic demands for the development.
- It is anticipated that there is adequate flow to service the proposed fire protections system.

Sanitary Servicing

The analysis of the existing and proposed sanitary system confirms the following:

- The proposed 250mm diameter sanitary sewer in Street 1 will provide service connections for the parkland and Block 1.
- It is anticipated there is adequate capacity within the existing sanitary infrastructure to service the proposed development based on the information provided in the existing Orleans Village Development design.

Stormwater Management

The following provides a summary of the storm sewer and stormwater management system:

- The proposed storm sewer system is to connect to the existing 750mm diameter storm sewer on site.
- Storm sewers (minor system) have been designed to convey the uncontrolled 2-year peak flow using the Rational Method.
- Underground storage is be provided within the storm sewer system and underground storage tanks.
- Inlet control devices and underground storage has been designed to ensure no static ponding is achieved in the 2-year event.
- Storm flows will be attenuated through the implementation of inlet control devices.
- Parking lots have been graded to ensure that static ponding depths do not exceed 0.30m.
- As per existing conditions a major overland flow route is provided to Lamarche Avenue.
- Quality control of stormwater will be provided in the downstream SWM facility.

Erosion and Sediment control

- Erosion and sediment control measures (i.e. filter fabric, catchbasin inserts, silt fences, etc.) will be implemented prior to construction and are to remain in place until vegetation is established.

11.0 CLOSURE

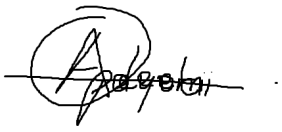
The preceding report is respectfully submitted for review and approval. Please contact the undersigned should you have questions or require additional information.

NOVATECH

Prepared by:

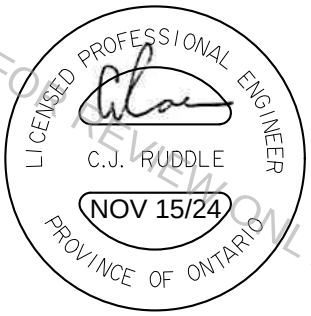
Melanie Schroeder, P.Eng.
Project Engineer
Water Resources

Prepared by:



Michael Adeoti, E.I.T, M.Eng.
Engineer in Training
Land Development Engineering

Reviewed by:



Cara Ruddle, P.Eng.
Senior Project Manager
Land Development Engineering

APPENDIX A
Water Servicing Information

Project No. 121214
Project Name: 240-270 Lamarche Avenue 3484 Innes Road - Block 1
Project Location: 240-270 Lamarche Avenue 3484 Innes Road - Block 1

NOVATECH
Engineers, Planners & Landscape Architects

Date: January, 2023
Revised: October, 2024

Proposed Development Conditions - BLOCK 1

	Pavilion A	Pavilion B	Pavilion C	Park	Totals
1 Bed Apartment (Units)	61	46	53	n/a	160
2 Bed Apartment (Units)	43	43	38	n/a	124
3 Bed Apartment (Units)	1	0	0	n/a	1
Total number of units	105	89	91	n/a	285
Total Population	179	155	154	n/a	488
Total Daily Volume (Liters)	50064	43316	43120	n/a	136500
Avg Day Demand (L/s)	0.579	0.501	0.499	n/a	1.58
Max Day Demand (L/s)	1.449	1.253	1.248	n/a	3.95
Peak Hour Demand (L/s)	3.187	2.757	2.745	n/a	8.69

	Pavilion A	Pavilion B	Pavilion C	Park	Totals
Commercial area (m²)	n/a	n/a	264	n/a	264
Area (ha)	n/a	n/a	n/a	0.1724	0.1724
Total Daily Volume (Liters)	n/a	n/a	2129.0	639.0	2768.0
Avg Day Demand (L/s)	n/a	n/a	0.025	0.007	0.05
Max Day Demand (L/s)	n/a	n/a	0.037	0.011	0.05
Peak Hour Demand (L/s)	n/a	n/a	0.067	0.020	0.09

Combined Total

	Pavilion A	Pavilion B	Pavilion C	Park	Totals
Avg Day Demand (L/s)	0.579	0.501	0.524	0.007	1.61
Max Day Demand (L/s)	1.449	1.253	1.285	0.011	4.00
Peak Hour Demand (L/s)	3.187	2.757	2.811	0.020	8.78

Design Parameters

Establishment	Daily Demand Volume		Source
1 Bed Apartment	1.4	Person/unit	City of Ottawa Sewer Design Guidelines
2 Bed Apartment	2.1	Person/unit	
3 Bed Apartment	3.1	Person/unit	
Residential Average Flow	280	L/c/day	
Picnic and Fair Grounds Flush Toilets only	20	L/Person/day Assume 75 Per/acre	
Office:	75	l/9.3m² /day	Daily Demands from OBC Table 8.2.1.3

**Note: Commercial Daily Demand from OBC Table 8.2.1.3 was used to calculate the Daily demand volume instead of the City of Ottawa Water Distribution Guidelines Table 4.2 as it provided a higher volume*

Residential Peaking Factors City of Ottawa Water Distrubution Guidelines:

Conditions	Peaking Factor		Units
Maximum Day	2.5	x avg day	L/c/day
Peak Hour	2.2	x max day	L/c/day

Commercial Peaking Factors City of Ottawa Water Distribution Guidelines

Conditions	Peaking Factor		Units
Maximum Day	1.5	x avg day	L/c/day
Peak Hour	1.8	x max day	L/c/day

FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 121214
Project Name: 3484 Innes Road
Date: 24/9/2024
Input By: Micheal Adeoti
Reviewed By: Cara Ruddle

Legend: Input by User; No Information or Input Required

Building Description: Block 1 - 6 Storey Pavilion A
Type I - Fire resistive construction (2 hrs)

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame		1.5	0.6	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)	Yes	0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	2202			
		Number of Floors/Storeys	6			
		Protected Openings (1 hr)	Yes			
		Area of structure considered (m^2)			**3,303**	
	F	**Base fire flow without reductions**				**8,000**
		F = 220 C (A)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**6,800**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-2,550**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	Yes	-10%	-10%	
				Cumulative Sub-Total	**-50%**	
		Area of Sprinklered Coverage (m²)	9909	75%		
				Cumulative Total	**-38%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**2,380**
		East Side	3.1 - 10 m		20%	
		South Side	>30m		0%	
		West Side	>30m		0%	
				Cumulative Total	**35%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**7,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**117**
				or	USGPM	1,849

FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 121214
Project Name: 3484 Innes Road
Date: 24/9/2024
Input By: Micheal Adeoti
Reviewed By: Cara Ruddle

Legend: Input by User; No Information or Input Required

Building Description: Block 1 - 7 Storey Pavilion B
Type I - Fire resistive construction (2 hrs)

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame		1.5	0.6	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)	Yes	0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	1966			
		Number of Floors/Storeys	7			
		Protected Openings (1 hr)	Yes			
		Area of structure considered (m^2)			**2,949**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-2,231**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	Yes	-10%	-10%	
				Cumulative Sub-Total	**-50%**	
		Area of Sprinklered Coverage (m²)	10321.5	75%		
				Cumulative Total	**-38%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**1,785**
		East Side	>30m		0%	
		South Side	10.1 - 20 m		15%	
		West Side	>30m		0%	
				Cumulative Total	**30%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**6,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**100**
				or	USGPM	1,585

FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

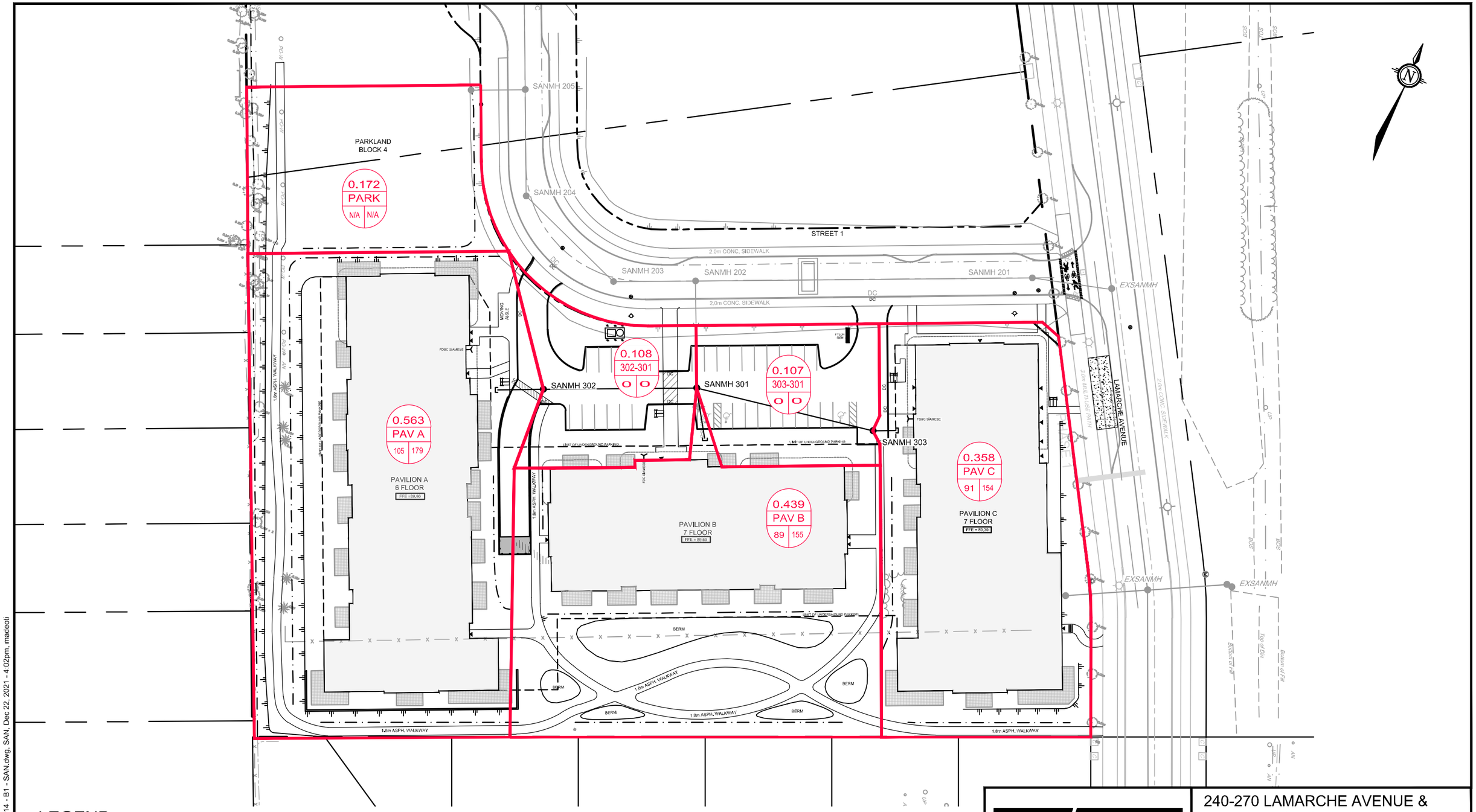
Novatech Project #: 121214
Project Name: 3484 Innes Road
Date: 24/9/2024
Input By: Micheal Adeoti
Reviewed By: Cara Ruddle

Legend: Input by User; No Information or Input Required

Building Description: Block 1 - 7 Storey Pavilion C
Type I - Fire resistive construction (2 hrs)

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame		1.5	0.6	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)	Yes	0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	1851			
		Number of Floors/Storeys	7			
		Protected Openings (1 hr)	Yes			
		Area of structure considered (m^2)			**2,777**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-2,231**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	Yes	-10%	-10%	
				Cumulative Sub-Total	**-50%**	
		Area of Sprinklered Coverage (m^2)	9717.75	75%		
				Cumulative Total	**-38%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**2,083**
		East Side	3.1 - 10 m		20%	
		South Side	10.1 - 20 m		15%	
		West Side	>30m		0%	
				Cumulative Total	**35%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**6,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**100**
				or	USGPM	1,585

APPENDIX B
Sanitary Servicing Information



LEGEND

0.495 / ST-208 / 125 / 225 — DRAINAGE AREA (ha), DRAINAGE AREA ID, NO. OF UNITS / TOTAL POPULATION

SANITARY DRAINAGE AREA BOUNDARY

PROPOSED SANITARY SEWER C/W MANHOLE

SAN MH — *EXISTING SANITARY MANHOLE & SEWER*

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

240-270 LAMARCHE AVENUE & 3484 INNES ROAD

CITY OF OTTAWA

SANITARY DRAINAGE AREA PLAN - BLOCK1

SCALE 1 : 750 (0 10 20 30)

DATE OCT 2024 | JOB 121214 | FIGURE SANB1

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SHT11X17.DWG - 279mmX432mm

SANITARY SEWER DESIGN SHEET

Novatech Project #: 121214
Project Name: 3484 Innes Road Zone 1
Date Prepared: 12/16/2021
Date Revised: 10/31/2024
Input By: Anthony Mestwarp
Reviewed By: Cara Ruddle
Drawing Reference: 121214- SAN-BLOCK 1

Legend:
- PROJECT SPECIFIC INFO
- USER DESIGN INPUT
- CUMULATIVE CELL
- CALCULATED DESIGN CELL OUTPUT

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			DEMAND																	DESIGN CAPACITY							
			RESIDENTIAL FLOW									COMMERCIAL FLOW					EXTRANEOUS FLOW				PROPOSED SEWER PIPE SIZING / DESIGN							
AREA	FROM MH	TO MH	1 Bed Apartment	2 Bed Apartment	3 Bed Apartment	PARK AREA (ha)	POPULATION (in 1000's)	CUMULATIVE POPULATION (in 1000's)	PEAK FACTOR M	AVG POPULATION FLOW (L/s)	PEAKED DESIGN POP FLOW (L/s)	COMMERICAL AREA (m^2)	CUMULATIVE COMMERICAL AREA (m^2)	DESIGN COMMERICAL FLOW (L/s)	COMMERICAL PEAK FACTOR	PEAKED COMMERCIAL FLOW	Total Area (ha.)	Accum. Area (ha.)	DESIGN EXTRAN. FLOW (L/s)	TOTAL DESIGN FLOW (L/s)	PIPE LENGTH (m)	PIPE SIZE (mm) AND MATERIAL	PIPE ID ACTUAL (m)	ROUGH. (n)	DESIGN GRADE (%)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak Design / Qcap
CROISSANT FRANCOISE (SANMH 202)																												
PAV A	PAV A	302	61	43	1		0.179	0.179	3.53	0.58	2.05		0.000	0.00	1.00	0.00	0.56	0.56	0.19	2.23	10.0	200 PVC	0.203	0.013	2.00	48.4	1.49	4.6%
302-301	302	301					0.000	0.179	3.53	0.58	2.05		0.000	0.00	1.00	0.00	0.11	0.67	0.22	2.27	31.9	200 PVC	0.203	0.013	0.50	24.2	0.75	9.4%
PAV B	PAV B	301	46	43	0		0.155	0.155	3.55	0.50	1.78		0.000	0.00	1.00	0.00	0.44	0.44	0.14	1.92	11.1	200 PVC	0.203	0.013	2.00	48.4	1.49	4.0%
PAV C	PAV C	303	53	38	0		0.154	0.154	3.55	0.50	1.77	264.000	264.000	0.02	1.00	0.02	0.36	0.36	0.12	1.91	5.3	200 PVC	0.203	0.013	2.00	48.4	1.49	4.0%
303-301	303	301					0.000	0.154	3.55	0.50	1.77		264.000	0.02	1.00	0.02	0.11	0.47	0.15	1.95	37.8	200 PVC	0.203	0.013	0.50	24.2	0.75	8.1%
	301	STUB					0.000	0.488	3.38	1.58	5.35		264.000	0.02	1.00	0.02	0.00	1.58	0.52	5.89	13.0	200 PVC	0.203	0.013	0.50	24.2	0.75	24.3%
CROISSANT FRANCOISE (SANMH 205)																												
PARK	STUB	205				0.172	0.001	0.001	3.78	0.00	0.01		0.000	0.00	1.00	0.00	0.17	0.17	0.06	0.06	10.0	250 PVC	0.254	0.013	1.00	62.0	1.22	0.1%
TOTAL			160	124	1	0.172	0.488	0.488				264.000	264.000				1.47											

Design Parameters:

1. Residential Flows
   - -SINGLE UNIT 3.4 Person/ Unit
   - -1 Bed Apartment 1.4 Person/ Unit
   - -2 Bed Apartment 2.1 Person/ Unit
   - -3 Bed Apartment 3.1 Person/ Unit
2. Commercial Flow
   - -Office 75 L/9.3m^3/day
3. q Avg capita flow 280 L/per/day
4. M = Harmon Formula (maximum of 4.0)
5. K = 0.8
6. Commercial Peak Factor
   - -area > 20% of development 1.5
   - -area < 20% of development 1.0
7. Park flow is considered equivalent to a single unit / ha
   - Park Demand = 1 Single Unit Equivalent / Park ha
8. Extraneous Flows = 0.33 L/sec/ha

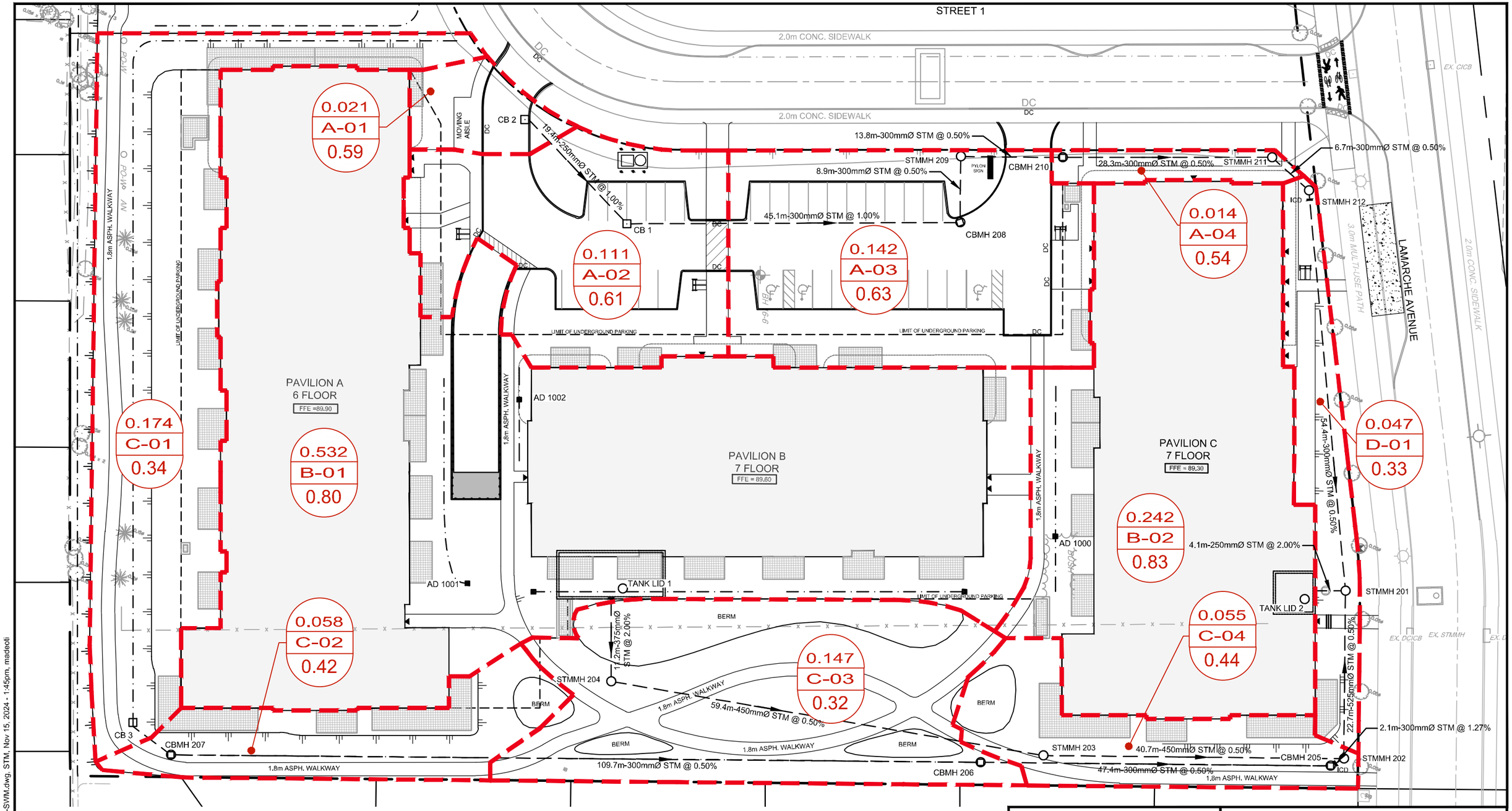
CAPACITY EQUATION

Q full= (1/n) A R^(2/3)So^(1/2)

Where : Q full = Capacity (L/s)

n = Manning coefficient of roughness (0.013)
A = Flow area (m^2)
R = Wetter perimenter (m)
So = Pipe Slope/gradient

APPENDIX C
Storm Servicing Information



LEGEND

0.495 / ZONE 3A / 0.85	DRAINAGE AREA (ha) / DRAINAGE AREA ID / RUNOFF COEFFICIENT
	STORM DRAINAGE AREA BOUNDARY
	PROPOSED STORM SEWER C/W MANHOLE
STM MH	*EXISTING STORM MANHOLE & SEWER*

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

240-270 LAMARCHE AVENUE & 3484 INNES ROAD
CITY OF OTTAWA

STORM DRAINAGE AREA PLAN - BLOCK 1

SCALE 1 : 500 (0 5 10 15 20)

DATE	JOB	FIGURE
NOV 2024	121214	STMB1

SHT11X17.DWG - 279mmX432mm

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STORM SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 121214
Project Name: 240-270 Lamarche Avenue & 3484 Innes Road
Date Prepared: 12/21/2021
Date Revised: 11/15/2024
Input By: Jesse Appiah-Kubi
Reviewed By:
Drawing Reference: 121214-GPB1 AND 121214-SWMB1

Legend:
- PROJECT SPECIFIC INFO
- USER DESIGN INPUT
- CUMILATIVE CELL
- CALCULATED DESIGN CELL OUTPUT
- USER AS-BUILT INPUT

LOCATION			DEMAND													CAPACITY				
			AREA							FLOW						PROPOSED SEWER PIPE SIZING / DESIGN				
From MH	To MH	Area ID	Hardscape	Landscaping	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr) 2yr	5yr	100yr	Peak Flow	TOTAL UNRESTRICTED PEAK FLOW (QDesign)	TOTAL RESTRICTED PEAK FLOW (Q100yr)	PIPE PROPERTIES LENGTH	SIZE / MATERIAL	ID ACTUAL	ROUGHNESS	DESIGN GRADE	CAPACITY	FULL FLOW VELOCITY	TIME OF FLOW	QPEAK DESIGN / QFULL
			0.90	0.20	(ha)				(min.)				(L/s)	(L/s)	(L/s)	(m)	(mm / type)	(m)		(%)	(L/s)	(m/s)	(min.)	(%)
Croissant Francoise (STMMH 101)																								
Lamarche Avenue (EXSTMMH)																								
CB 2	CB 1	A-01	0.01	0.01	0.02	0.58	0.03	0.03	10.00	76.81			2.53	2.5	0.0	19.4	250 PVC	0.254	0.013	1.00	62.0	1.22	0.26	4.1%
					0.00		0.00	0.00	10.00				0.00											
					0.00		0.00	0.00	10.00				0.00											
CB 1	CBMH 208	A-02	0.06	0.05	0.11	0.61	0.19	0.22	10.26	75.81			16.72	16.7	0.0	45.1	300 PVC	0.305	0.013	1.00	100.9	1.38	0.54	16.6%
					0.00		0.00	0.00	10.26				0.00											
					0.00		0.00	0.00	10.26				0.00											
CBMH 208	STMMH 209	A-03	0.09	0.05	0.14	0.63	0.25	0.47	10.81	73.84			34.76	34.8	0.0	8.9	300 PVC	0.305	0.013	0.50	71.3	0.98	0.15	48.7%
					0.00		0.00	0.00	10.81				0.00											
					0.00		0.00	0.00	10.81				0.00											
STMMH 209	CBMH 210				0.00		0.00	0.47	10.96	73.31			34.51	34.5	0.0	13.8	300 PVC	0.305	0.013	0.50	71.3	0.98	0.24	48.4%
					0.00		0.00	0.00	10.96				0.00											
					0.00		0.00	0.00	10.96				0.00											
CBMH 210	STMMH 211	A-04	0.01	0.01	0.01	0.54	0.02	0.49	11.19	72.50			35.66	35.7	0.0	28.3	300 PVC	0.305	0.013	0.50	71.3	0.98	0.48	50.0%
					0.00		0.00	0.00	11.19				0.00											
					0.00		0.00	0.00	11.19				0.00											
STMMH 211	STMMH 212				0.00		0.00	0.49	11.68	70.91			34.88	34.9	0.0	6.7	300 PVC	0.305	0.013	0.50	71.3	0.98	0.11	48.9%
					0.00		0.00	0.00	11.68				0.00											
					0.00		0.00	0.00	11.68				0.00											
STMMH 212	STMMH201				0.00																			
					0.00		A-01 - A-04 is controlled to a maximum of 35.33 L/s by ICD in the outlet pipe of STMMH 212								35.3	54.4	300 PVC	0.305	0.013	0.50	71.3	0.98	0.93	49.5%
					0.00																			
TANK 1	STMMH 204	B-01	0.45	0.08	0.53	0.80																		
					0.00		B-01 is controlled to a maximum of 84.41L/s by ICD in the outlet pipe of TANK 1							0.0	84.4	11.2	375 PVC	0.381	0.013	2.00	258.7	2.27	0.08	32.6%
					0.00																			
STMMH 204	STMMH 203				0.00																			
					0.00									0.0	84.4	59.4	450 PVC	0.457	0.013	0.50	210.3	1.28	0.77	40.1%
					0.00																			
STMMH 203	STMMH 202				0.00																			
					0.00									0.0	84.4	40.7	450 PVC	0.457	0.013	0.50	210.3	1.28	0.53	40.1%
					0.00																			
CB3	CBMH 207	C-01	0.04	0.14	0.17	0.34	0.17	0.17	10.00	76.81			12.74	12.7	0.0	6.4	300 PVC	0.305	0.013	0.50	71.3	0.98	0.11	17.9%
					0.00		0.00	0.00	10.00				0.00											
					0.00		0.00	0.00	10.00				0.00											
CBMH 207	CBMH 206	C-02	0.02	0.04	0.06	0.42	0.07	0.23	10.11	76.39			17.81	17.8	0.0	109.7	300 PVC	0.305	0.013	0.50	71.3	0.98	1.87	25.0%
					0.00		0.00	0.00	10.11				0.00											
					0.00		0.00	0.00	10.11				0.00											
CBMH 206	CBMH 205	C-03	0.02	0.12	0.15	0.32	0.13	0.36	11.98	69.96			25.42	25.4	0.0	47.4	300 PVC	0.305	0.013	0.50	71.3	0.98	0.81	35.6%
					0.00		0.00	0.00	11.98				0.00											
					0.00		0.00	0.00	11.98				0.00											
CBMH 205	STMMH 202	C-04	0.02	0.04	0.06	0.44																		
					0.00		C-01 - C-04 is controlled to a maximum of 44.14L/s by ICD in the outlet pipe of CBMH 205							0.0	44.1	2.1	300 PVC	0.305	0.013	0.50	71.3	0.98	0.04	61.9%
					0.00																			
STMMH 202	STMMH 201	B-01 + C-01-C-04			0.00																			
					0.00									0.0	128.6	22.7	525 CONC	0.5334	0.013	0.50	317.2	1.42	0.27	40.5%
					0.00																			
TANK 2	STMMH 201	B-02	0.22	0.02	0.24	0.84																		
					0.00		B-02 is controlled to a maximum of 76.34 L/s by ICD in the outlet pipe of TANK 2							0.0	76.3	4.1	250 PVC	0.254	0.013	2.00	87.7	1.73	0.04	87.0%
					0.00																			
STMMH 201	EX. STMMH	A-01-A04 + B-01 + B-02 + C-01-C04			0.00																			
					0.00									0.0	240.2	14.1	750 CONC	0.762	0.013	0.50	821.2	1.80	0.13	29.3%
					0.00																			

DEMAND EQUATION
Q = 2.78 AIR

Where : Q = Peak flow in litres per second (L/s)
A = Area in hectares (ha)
R = Weighted runoff coefficient (increased by 25% for 100-year)
I = Rainfall intensity in millimeters per hour (mm/hr)
Rainfall Intensity (I) is based on City of Ottawa IDF data presented in the City of Ottawa Sewer Design Guidelines (Oct. 2012)

CAPACITY EQUATION
Q full= (1/n) A R^(2/3)So^(1/2)

Where : Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A = Flow area (m²)
R = Wetter perimenter (m)
So = Pipe Slope/gradient

APPENDIX D
Stormwater Management Calculations

STREET 1

2.0m CONC. SIDEWALK

2.0m CONC. SIDEWALK

EX. CICB

0.021
A-01
0.59

0.111
A-02
0.61

0.142
A-03
0.63

0.014
A-04
0.54

0.174
C-01
0.34

0.532
B-01
0.80

0.058
C-02
0.42

0.147
C-03
0.32

0.242
B-02
0.83

0.055
C-04
0.44

0.047
D-01
0.33

PAVILION A
6 FLOOR
FFE =89.90

PAVILION B
7 FLOOR
FFE = 89,60

PAVILION C
7 FLOOR
FFE = 89,30

PHASE 1

LAMARCHE AVENUE

3.0m MULTI-USE PATH

2.0m CONC. SIDEWALK

1.8m ASPH. WALKWAY

LIMIT OF UNDERGROUND PARKING

MOVING AISLE

CB 1

CB 2

CB 3

CBMH 207

CBMH 208

CBMH 210

CBMH 205

CBMH 206

STMMH 209

STMMH 211

STMMH 212

STMMH 204

STMMH 203

STMMH 202

STMMH 201

AD 1001

AD 1002

AD 1000

TANK LID 1

TANK LID 2

PYLON SIGN

BERM

DC

ICD

EX. DCICB

EX. STMMH

LEGEND

0.495
ZONE 3A
0.85

DRAINAGE AREA (ha)
DRAINAGE AREA ID
RUNOFF COEFFICIENT

STORM DRAINAGE AREA BOUNDARY

PROPOSED STORM SEWER C/W MANHOLE

STM MH — EXISTING STORM MANHOLE & SEWER

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

270 LAMARCHE AVENUE
CITY OF OTTAWA

STORMWATER MANAGEMENT PLAN - BLOCK 1

SCALE 1 : 500 (0 5 10 15 20)

DATE NOV 2024 | JOB 121214 | FIGURE SWMB1

SHT11X17.DWG - 279mmX432mm

M:\2021\121214\CAD\Design\-Block 1\121214-B1-SWM.dwg, SWM, Nov 15, 2024 - 1:45pm, madeoti

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
Post-Development Model Parameters

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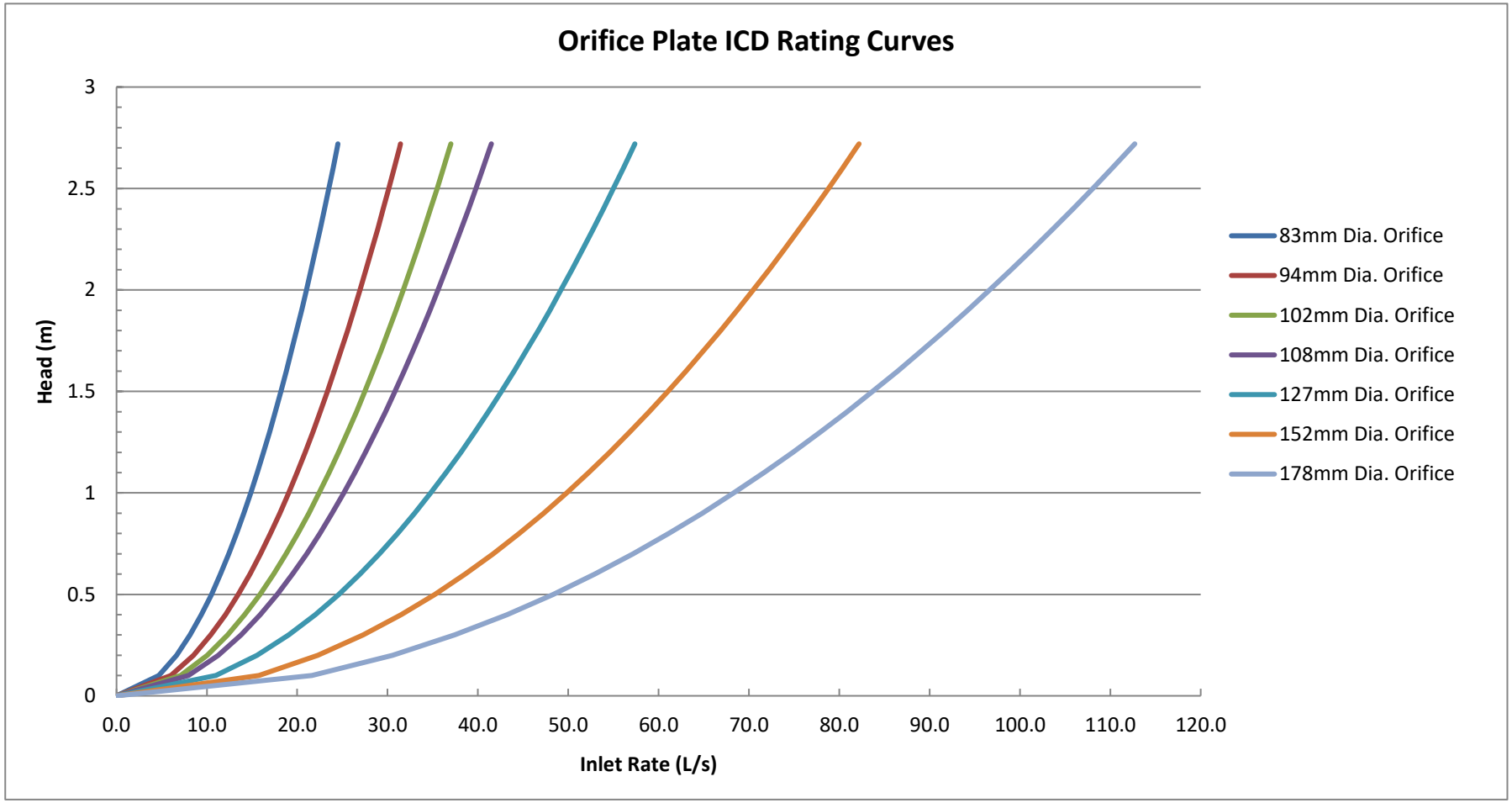
Area ID	Catchment Area (ha)	Runoff Coefficient (C)	Percent Impervious (%)	No Depression (%)	Flow Path Length (m)	Equivalent Width (m)	Average Slope (%)
A-01	0.021	0.59	55.7%	0%	16	13	2.0%
A-02	0.111	0.61	58.6%	0%	35	32	2.5%
A-03	0.142	0.63	61.4%	0%	50	29	2.0%
A-04	0.014	0.54	48.6%	0%	31	5	2.0%
B-01	0.532	0.80	85.7%	0%	49	109	2.0%
B-02	0.242	0.83	90.0%	0%	34	72	2.0%
C-01	0.174	0.34	20.0%	0%	105	17	2.0%
C-02	0.058	0.42	31.4%	0%	65	9	2.0%
C-03	0.147	0.32	17.1%	0%	59	25	2.0%
C-04	0.055	0.44	34.3%	0%	59	9	2.0%
D-01	0.047	0.33	18.6%	0%	6	76	4.0%
TOTAL:	**1.543**						

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
ICD Rating Curves



Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
HGL Elevations

Manhole ID	Pipe / MH Information				HGL Information[1]		Finished Floor Elevation	Clearance from FFE		Surcharge Depth Above Pipe Obvert		Clearance to T/G	
	D/S Pipe Size (mm)	D/S Pipe Invert Elev. (m)	D/S Pipe Obvert Elev. (m)	MH T/G Elev. (m)	100-year (m)	100-year (+20%) (m)	(m)	100-year (m)	100-year (+20%) (m)	100-year (m)	100-year (+20%) (m)	100-year (m)	100-year (+20%) (m)
MH201	675	83.91	84.59	88.81	84.60	85.39	89.60	5.00	4.21	0.02	0.81	4.21	3.42
MH202	525	85.02	85.55	88.50	85.31	85.49	89.60	4.29	4.11	0.00	0.00	3.19	3.01
MH203	450	85.28	85.73	88.82	85.51	85.67	89.60	4.09	3.93	0.00	0.00	3.31	3.15
MH204	450	85.63	86.08	89.10	85.83	85.93	89.60	3.77	3.67	0.00	0.00	3.27	3.17
MH209	300	86.39	86.69	89.16	88.85	88.94	89.60	0.75	0.66	2.16	2.25	0.31	0.22
MH211	300	86.14	86.44	89.20	88.79	88.88	89.60	0.81	0.72	2.35	2.44	0.41	0.32
MH212	300	86.08	86.38	89.15	88.77	88.87	89.60	0.83	0.73	2.39	2.49	0.38	0.28

[1] HGL information is for a 6-hour Chicago Storm Distribution

Block 1 Development 240-270 Lamarche Avenue 3484 Innes Road (121214)

ROW Ponding Depths

Structure	T/G	Max. Static Ponding (Spill Depth)		2-yr Event (6hr)				5-yr Event (6hr)				100-yr Event (6hr)				100-yr Event (+20%) (6hr)			
	(m)	Elev. (m)	Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)
Catchbasins																			
CB01	89.00	89.25	0.25	87.08	0.00	N	0.00	87.46	0.00	N	0.00	88.89	0.00	N	0.00	89.07	0.07	N	0.00
CB02	89.35	89.40	0.05	87.39	0.00	N	0.00	87.46	0.00	N	0.00	88.90	0.00	N	0.00	89.07	0.00	N	0.00
CB03	88.70	88.86	0.16	87.73	0.00	N	0.00	87.74	0.00	N	0.00	88.58	0.00	N	0.00	88.84	0.14	N	0.00
Catchbasins Manholes																			
CBMH205	88.36	88.58	0.22	87.11	0.00	N	0.00	87.26	0.00	N	0.00	88.44	0.08	N	0.00	88.59	0.23	Y	0.01
CBMH206	88.48	88.80	0.32	87.13	0.00	N	0.00	87.28	0.00	N	0.00	88.52	0.04	N	0.00	88.74	0.26	N	0.00
CBMH207	88.58	88.86	0.28	87.67	0.00	N	0.00	87.70	0.00	N	0.00	88.58	0.00	N	0.00	88.84	0.26	N	0.00
CBMH208	88.70	89.00	0.30	87.01	0.00	N	0.00	87.45	0.00	N	0.00	88.87	0.17	N	0.00	88.97	0.27	N	0.00
CBMH210	89.10	89.00	-	87.00	0.00	N	-	87.43	0.00	N	-	88.83	0.00	N	-	88.93	0.00	N	-

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
Ponding Storage Curves

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Storage Curves for Surface Ponding

CB ID	STM Area ID	Storage Curve				
CB01	A-02	Elevation	Depth	Area	Incremental Volume	Cummulative Volume
Notes		(m)	(m)	(m^2)	(m^3)	(m^3)
Invert		87.00	0.000	0.36	0.0	0.0
CB T/G		89.00	2.000	0.36	0.7	0.7
5cm ponding		89.05	2.050	24.15	0.6	1.3
10cm ponding		89.10	2.100	78.09	2.6	3.9
15cm ponding		89.15	2.150	156.33	5.9	9.7
20cm ponding		89.20	2.200	236.81	9.8	19.6
Max Static Ponding[(1)]		89.25	2.250	316.09	13.8	33.4
Top of Storage Node[(2)]		89.35	2.350	316.09	31.6	65.0

(1) Based on spill point between CBs

(2) Top of storage node is 0.35m above T/G - modelled major system with 0.35m depth

CB ID	STM Area ID	Storage Curve				
CB02	A-01	Elevation	Depth	Area	Incremental Volume	Cummulative Volume
Notes		(m)	(m)	(m^2)	(m^3)	(m^3)
Invert		87.35	0.000	0.36	0.0	0.0
CB T/G		89.35	2.000	0.36	0.7	0.7
Max Static Ponding[(1)]		89.40	2.050	11.89	0.3	1.0
Top of Storage Node[(2)]		89.70	2.350	11.89	3.6	4.6

(1) Based on spill point between CBs

(2) Top of storage node is 0.35m above T/G - modelled major system with 0.35m depth

CB ID	STM Area ID	Storage Curve				
CBMH208	A-03	Elevation	Depth	Area	Incremental Volume	Cummulative Volume
Notes		(m)	(m)	(m^2)	(m^3)	(m^3)
Invert		86.49	0.000	1.77	0.0	0.0
CBMH T/G		88.70	2.210	1.77	3.9	3.9
5cm ponding		88.75	2.260	14.83	0.4	4.3
10cm ponding		88.80	2.310	49.81	1.6	5.9
15cm ponding		88.85	2.360	104.05	3.8	9.8
20cm ponding		88.90	2.410	181.48	7.1	16.9
25cm ponding		88.95	2.460	286.26	11.7	28.6
Max Static Ponding[(1)]		89.00	2.510	410.27	17.4	46.0
Top of Storage Node[(2)]		89.05	2.560	410.27	20.5	66.5

(1) Based on spill point between CBs

(2) Top of storage node is 0.35m above T/G - modelled major system with 0.35m depth

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
Ponding Storage Curves

NOVATECH
Engineers, Planners & Landscape Architects

CB ID	STM Area ID	Storage Curve				
CBMH210	A-04	Elevation	Depth	Area	Incremental Volume	Cummulative Volume
Notes		(m)	(m)	(m^2)	(m^3)	(m^3)
Invert		86.31	0.000	1.13	0.0	0.0
CBMH T/G		89.10	2.790	1.13	3.2	3.2
Top of Storage Node[2]		89.45	3.140	0.00	0.2	3.4

[1] Based on spill point between CBs

[2] Top of storage node is 0.35m above T/G - modelled major system with 0.35m depth

Storage Curves for Tank Storage

CB ID	STM Area ID	Storage Curve				
TANK1	B-01	Elevation	Depth	Area	Incremental Volume	Cummulative Volume
Notes		(m)	(m)	(m^2)	(m^3)	(m^3)
Bottom of Tank		86.00	0.000	84.05	0.0	0.0
Underside of Tank		88.80	2.800	84.05	235.3	235.3
Top of Tank		89.15	3.150	0.00	14.7	250.0
Ground Elevation		89.29	3.290	0.00	0.0	250.0

CB ID	STM Area ID	Storage Curve				
TANK2	B-02	Elevation	Depth	Area	Incremental Volume	Cummulative Volume
Notes		(m)	(m)	(m^2)	(m^3)	(m^3)
Bottom of Tank		86.00	0.000	26.57	0.0	0.0
Underside of Tank		88.95	2.950	26.57	78.4	78.4
Top of Tank / Ground Floor		89.30	3.300	0.00	4.6	83.0

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
Design Storm Time Series Data
6-hour Chicago Design Storms

NOVATECH
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C25mm-6.stm		C2-6.stm		C5-6.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0	0:00	0	0:00	0
0:10	0.93	0:10	1.37	0:10	1.78
0:20	1.01	0:20	1.49	0:20	1.94
0:30	1.11	0:30	1.63	0:30	2.13
0:40	1.23	0:40	1.82	0:40	2.37
0:50	1.39	0:50	2.05	0:50	2.68
1:00	1.61	1:00	2.37	1:00	3.1
1:10	1.91	1:10	2.81	1:10	3.68
1:20	2.37	1:20	3.5	1:20	4.58
1:30	3.18	1:30	4.69	1:30	6.15
1:40	4.95	1:40	7.3	1:40	9.61
1:50	12.35	1:50	18.21	1:50	24.17
2:00	52.1	2:00	76.81	2:00	104.19
2:10	16.33	2:10	24.08	2:10	32.04
2:20	8.38	2:20	12.36	2:20	16.34
2:30	5.64	2:30	8.32	2:30	10.96
2:40	4.27	2:40	6.3	2:40	8.29
2:50	3.45	2:50	5.09	2:50	6.69
3:00	2.91	3:00	4.29	3:00	5.63
3:10	2.52	3:10	3.72	3:10	4.87
3:20	2.23	3:20	3.29	3:20	4.3
3:30	2	3:30	2.95	3:30	3.86
3:40	1.82	3:40	2.68	3:40	3.51
3:50	1.67	3:50	2.46	3:50	3.22
4:00	1.55	4:00	2.28	4:00	2.98
4:10	1.44	4:10	2.12	4:10	2.77
4:20	1.35	4:20	1.99	4:20	2.6
4:30	1.27	4:30	1.87	4:30	2.44
4:40	1.2	4:40	1.77	4:40	2.31
4:50	1.14	4:50	1.68	4:50	2.19
5:00	1.09	5:00	1.6	5:00	2.08
5:10	1.03	5:10	1.52	5:10	1.99
5:20	0.99	5:20	1.46	5:20	1.9
5:30	0.95	5:30	1.4	5:30	1.82
5:40	0.91	5:40	1.34	5:40	1.75
5:50	0.87	5:50	1.29	5:50	1.68
6:00	0.84	6:00	1.24	6:00	1.62

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
Design Storm Time Series Data
6-hour Chicago Design Storms

C100-6.stm		C100-6+20%.stm	
Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr
0:00	0	0:00	0
0:10	2.9	0:10	3.48
0:20	3.16	0:20	3.79
0:30	3.48	0:30	4.18
0:40	3.88	0:40	4.66
0:50	4.39	0:50	5.27
1:00	5.07	1:00	6.08
1:10	6.05	1:10	7.26
1:20	7.54	1:20	9.05
1:30	10.16	1:30	12.19
1:40	15.97	1:40	19.16
1:50	40.65	1:50	48.78
2:00	178.56	2:00	214.27
2:10	54.05	2:10	64.86
2:20	27.32	2:20	32.78
2:30	18.24	2:30	21.89
2:40	13.74	2:40	16.49
2:50	11.06	2:50	13.27
3:00	9.29	3:00	11.15
3:10	8.02	3:10	9.62
3:20	7.08	3:20	8.5
3:30	6.35	3:30	7.62
3:40	5.76	3:40	6.91
3:50	5.28	3:50	6.34
4:00	4.88	4:00	5.86
4:10	4.54	4:10	5.45
4:20	4.25	4:20	5.1
4:30	3.99	4:30	4.79
4:40	3.77	4:40	4.52
4:50	3.57	4:50	4.28
5:00	3.4	5:00	4.08
5:10	3.24	5:10	3.89
5:20	3.1	5:20	3.72
5:30	2.97	5:30	3.56
5:40	2.85	5:40	3.42
5:50	2.74	5:50	3.29
6:00	2.64	6:00	3.17

Block 1 Development – 240-270 Lamarche Avenue & 3484 Innes Road (121214)
PCSWMM Model Schematics

Overall Model Schematic

Date: 2024-11-14
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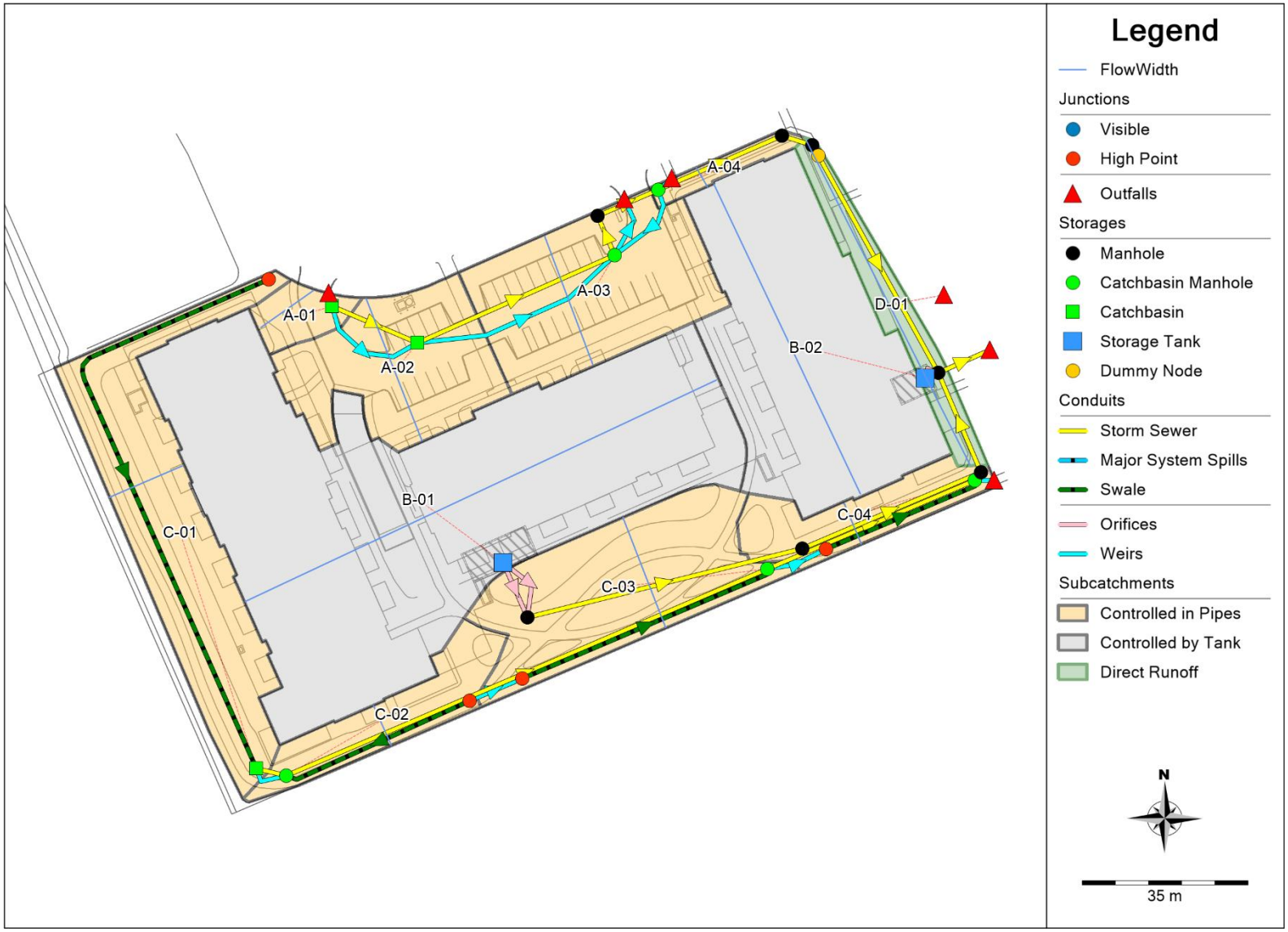
Block 1 Development – 240-270 Lamarche Avenue & 3484 Innes Road (121214)
PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Subcatchments and Flow Widths



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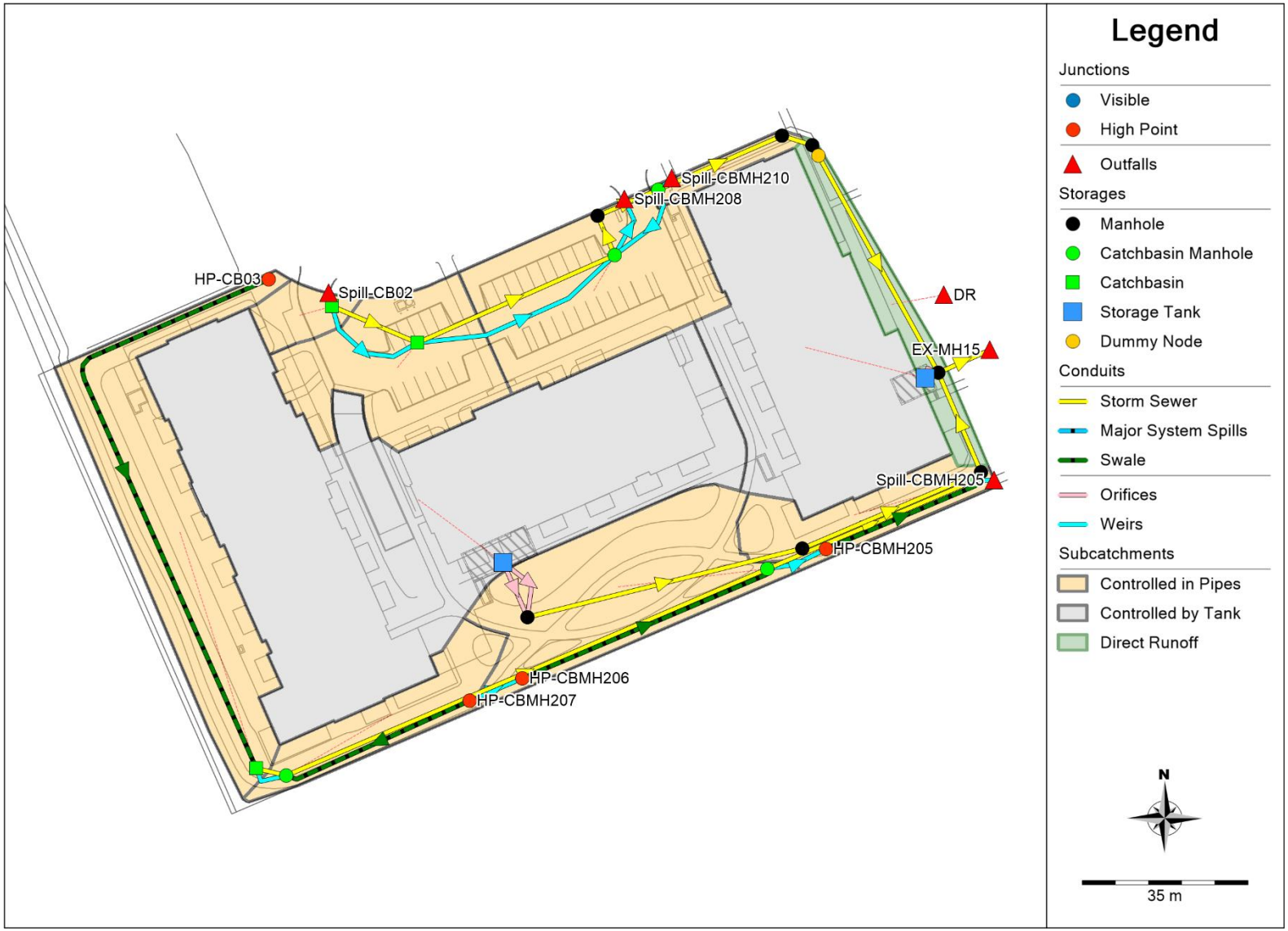
Block 1 Development – 240-270 Lamarche Avenue & 3484 Innes Road (121214)
PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Junctions and Outfalls



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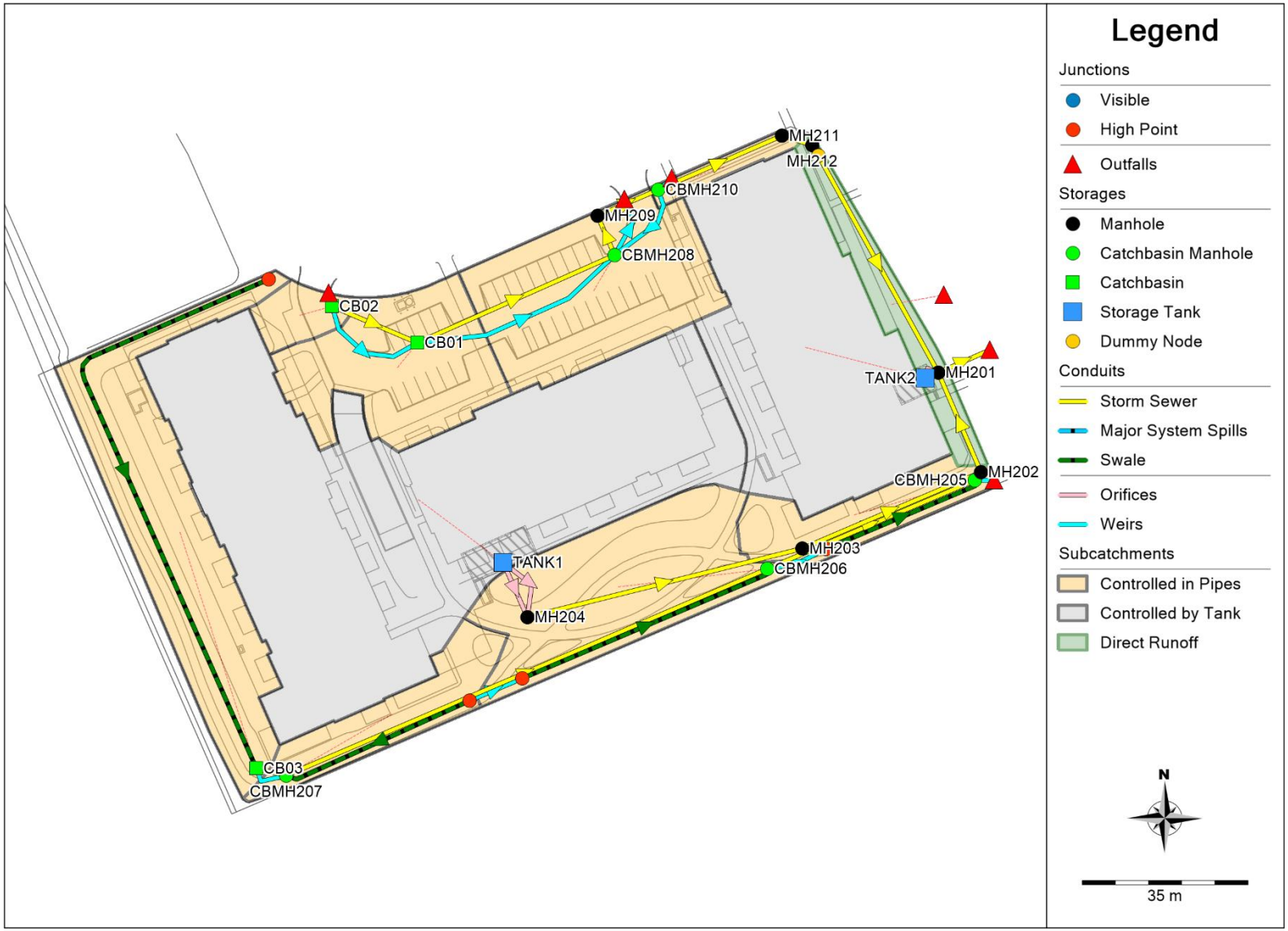
Block 1 Development – 240-270 Lamarche Avenue & 3484 Innes Road (121214)
PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Storage Nodes



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Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
PCSWMM Model Output - 100-year 6-hour Chicago Storm Event

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.3)
------------------------------------------------------------

Allowable = 258 L/s
100-yr @ MH 15 = 84.564
100-yr + 20% @ MH 15 = 85.315

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 11
Number of nodes ........... 28
Number of links ........... 34
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
Raingage1            03-C6-100                   INTENSITY   10 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------------
A-01                         0.02     13.47     55.70    2.0000 Raingage1            CB02
A-02                         0.11     32.00     58.60    2.5000 Raingage1            CB01
A-03                         0.14     28.64     61.40    2.0000 Raingage1            CBMH208
A-04                         0.01      4.52     48.60    2.0000 Raingage1            CBMH210
B-01                         0.53    109.03     85.70    2.0000 Raingage1            TANK1
B-02                         0.24     71.72     90.00    2.0000 Raingage1            TANK2
C-01                         0.17     16.52     20.00    2.0000 Raingage1            CB03
C-02                         0.06      8.96     31.40    2.0000 Raingage1            CBMH207
C-03                         0.15     24.71     17.10    2.0000 Raingage1            CBMH206
C-04                         0.06      9.25     34.30    2.0000 Raingage1            CBMH205
D-01                         0.05     75.93     18.60    4.0000 Raingage1            DR


************
Node Summary
************
                                    Invert      Max.    Ponded    External
Name                 Type            Elev.     Depth      Area    Inflow
------------------------------------------------------------------------
HP-CB03              JUNCTION        89.38      0.30       0.0
HP-CBMH205           JUNCTION        88.60      0.30       0.0
HP-CBMH206           JUNCTION        88.75      0.30       0.0
HP-CBMH207           JUNCTION        88.70      0.30       0.0
DR                   OUTFALL         88.66      0.00       0.0
EX-MH15              OUTFALL         83.87      0.68       0.0
Spill-CB02           OUTFALL         89.40      0.00       0.0
Spill-CBMH205        OUTFALL         88.58      0.00       0.0
Spill-CBMH208        OUTFALL         89.00      0.00       0.0
Spill-CBMH210        OUTFALL         89.00      0.00       0.0
CB01                 STORAGE         87.00      2.35       0.0
CB02                 STORAGE         87.35      2.35       0.0
CB03                 STORAGE         87.66      1.34       0.0
CBMH205              STORAGE         86.74      1.92       0.0
CBMH206              STORAGE         87.03      1.75       0.0
CBMH207              STORAGE         87.59      1.29       0.0
CBMH208              STORAGE         86.49      2.56       0.0
CBMH210              STORAGE         86.31      3.14       0.0
MH201                STORAGE         83.91      4.90       0.0
MH202                STORAGE         85.02      3.48       0.0
MH203                STORAGE         85.28      3.54       0.0
MH204                STORAGE         85.63      3.47       0.0
MH209                STORAGE         86.39      2.77       0.0
MH211                STORAGE         86.14      3.06       0.0
MH212                STORAGE         86.08      3.07       0.0
MH212_Dummy          STORAGE         86.08      3.07       0.0
TANK1                STORAGE         86.00      3.29       0.0
TANK2                STORAGE         86.00      3.30       0.0
```

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
PCSWMM Model Output - 100-year 6-hour Chicago Storm Event

```
************
Link Summary
************
```

Name	From Node	To Node	Type	Length	%Slope	Roughness
CB01-CBMH208	CB01	CBMH208	CONDUIT	45.1	0.9978	0.0130
CB02-CB01	CB02	CB01	CONDUIT	19.4	0.9794	0.0130
CB03-CBMH207	CB03	CBMH207	CONDUIT	6.4	0.6250	0.0130
CBMH206-CBMH205	CBMH206	CBMH205	CONDUIT	47.4	0.5063	0.0130
CBMH207-CBMH206	CBMH207	CBMH206	CONDUIT	109.7	0.5014	0.0130
CBMH208-MH209	CBMH208	MH209	CONDUIT	8.9	0.4494	0.0130
CBMH210-MH211	CBMH210	MH211	CONDUIT	28.3	0.4947	0.0130
MH201-EX15	MH201	EX-MH15	CONDUIT	11.8	0.3390	0.0130
MH202-MH201	MH202	MH201	CONDUIT	22.7	0.5286	0.0130
MH203-MH202	MH203	MH202	CONDUIT	40.7	0.4914	0.0130
MH204-MH203	MH204	MH203	CONDUIT	59.4	0.5051	0.0130
MH209-CBMH210	MH209	CBMH210	CONDUIT	13.8	0.5073	0.0130
MH211-MH212	MH211	MH212	CONDUIT	6.7	0.4478	0.0130
MH212-MH201	MH212_Dummy	MH201	CONDUIT	54.4	0.4963	0.0130
SWALE-CB03	HP-CB03	CB03	CONDUIT	135.3	0.5026	0.0350
SWALE-CBMH205	HP-CBMH205	CBMH205	CONDUIT	33.7	0.7122	0.0350
SWALE-CBMH206	HP-CBMH206	CBMH206	CONDUIT	55.5	0.4865	0.0350
SWALE-CBMH207	HP-CBMH207	CBMH207	CONDUIT	41.1	0.2920	0.0350
O-CBMH205	CBMH205	MH202	ORIFICE			
O-MH212	MH212	MH212_Dummy	ORIFICE			
O-TANK1	TANK1	MH204	ORIFICE			
O-TANK2	TANK2	MH201	ORIFICE			
OVF-TANK1	TANK1	MH204	ORIFICE			
OVF-TANK2	TANK2	MH201	ORIFICE			
OVF-CB01	CB01	CBMH208	WEIR			
OVF-CB02a	CB02	Spill-CB02	WEIR			
OVF-CB02b	CB02	CB01	WEIR			
OVF-CB03	CB03	CBMH207	WEIR			
OVF-CBMH205	CBMH205	Spill-CBMH205	WEIR			
OVF-CBMH206	CBMH206	HP-CBMH205	WEIR			
OVF-CBMH207	HP-CBMH207	HP-CBMH206	WEIR			
OVF-CBMH208	CBMH208	Spill-CBMH208	WEIR			
OVF-CBMH210a	CBMH210	Spill-CBMH210	WEIR			
OVF-CBMH210b	CBMH210	CBMH208	WEIR			

```
*********************
Cross Section Summary
*********************
```

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
CB01-CBMH208	CIRCULAR	0.30	0.07	0.07	0.30	1	96.60
CB02-CB01	CIRCULAR	0.25	0.05	0.06	0.25	1	58.86
CB03-CBMH207	CIRCULAR	0.30	0.07	0.07	0.30	1	76.45
CBMH206-CBMH205	CIRCULAR	0.30	0.07	0.07	0.30	1	68.81
CBMH207-CBMH206	CIRCULAR	0.30	0.07	0.07	0.30	1	68.48
CBMH208-MH209	CIRCULAR	0.30	0.07	0.07	0.30	1	64.83
CBMH210-MH211	CIRCULAR	0.30	0.07	0.07	0.30	1	68.02
MH201-EX15	CIRCULAR	0.68	0.36	0.17	0.68	1	489.44
MH202-MH201	CIRCULAR	0.53	0.22	0.13	0.53	1	312.71
MH203-MH202	CIRCULAR	0.45	0.16	0.11	0.45	1	199.87
MH204-MH203	CIRCULAR	0.45	0.16	0.11	0.45	1	202.63
MH209-CBMH210	CIRCULAR	0.30	0.07	0.07	0.30	1	68.88
MH211-MH212	CIRCULAR	0.30	0.07	0.07	0.30	1	64.71
MH212-MH201	CIRCULAR	0.30	0.07	0.07	0.30	1	68.13
SWALE-CB03	TRAPEZOIDAL	0.30	0.27	0.14	1.80	1	149.08
SWALE-CBMH205	TRAPEZOIDAL	0.30	0.27	0.14	1.80	1	177.46
SWALE-CBMH206	TRAPEZOIDAL	0.30	0.27	0.14	1.80	1	146.67
SWALE-CBMH207	TRAPEZOIDAL	0.30	0.27	0.14	1.80	1	113.62

```
***************
Analysis Options
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
```

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
PCSWMM Model Output - 100-year 6-hour Chicago Storm Event

```
  Starting Date ............ 11/13/2024 00:00:00
  Ending Date .............. 11/14/2024 00:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 00:01:00
  Wet Time Step ............ 00:05:00
  Dry Time Step ............ 00:05:00
  Routing Time Step ........ 2.00 sec
  Variable Time Step ....... YES
  Maximum Trials ........... 8
  Number of Threads ........ 8
  Head Tolerance ........... 0.001500 m

  **************************        Volume         Depth
  Runoff Quantity Continuity     hectare-m            mm
  **************************     ---------       -------
  Initial LID Storage ......         0.001         0.967
  Total Precipitation ......         0.127        82.323
  Evaporation Loss .........         0.000         0.000
  Infiltration Loss ........         0.032        21.052
  Surface Runoff ...........         0.095        61.881
  Final Storage ............         0.001         0.967
  Continuity Error (%) .....        -0.732

  **************************        Volume        Volume
  Flow Routing Continuity        hectare-m      10^6 ltr
  **************************     ---------     ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......         0.096         0.955
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........         0.096         0.956
  Flooding Loss ............         0.000         0.000
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.000         0.005
  Final Stored Volume ......         0.000         0.005
  Continuity Error (%) .....        -0.048
```

```
  ***************************
  Time-Step Critical Elements
  ***************************
  Link MH201-EX15 (10.55%)

  *********************************
  Highest Flow Instability Indexes
  *********************************
  Link O-MH212 (3)

  *********************************
  Most Frequent Nonconverging Nodes
  *********************************
  Convergence obtained at all time steps.

  ************************
  Routing Time Step Summary
  ************************
  Minimum Time Step           :     0.50 sec
  Average Time Step           :     1.93 sec
  Maximum Time Step           :     2.00 sec
  % of Time in Steady State   :     0.00
  Average Iterations per Step :     2.00
  % of Steps Not Converging   :     0.00
  Time Step Frequencies       :
      2.000 -  1.516 sec      :    94.95 %
      1.516 -  1.149 sec      :     2.08 %
      1.149 -  0.871 sec      :     1.23 %
      0.871 -  0.660 sec      :     0.77 %
      0.660 -  0.500 sec      :     0.97 %

  ***************************
  Subcatchment Runoff Summary
  ***************************

  ---------------------------------------------------------------------------------------------------------------
-------------
```

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
PCSWMM Model Output - 100-year 6-hour Chicago Storm Event

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
A-01	82.32	0.00	0.00	23.15	45.88	14.24	60.13	0.01	9.52	0.730
A-02	82.32	0.00	0.00	21.87	48.33	12.79	61.12	0.07	47.79	0.742
A-03	82.32	0.00	0.00	20.61	50.73	11.57	62.30	0.09	58.82	0.757
A-04	82.32	0.00	0.00	27.29	40.07	15.63	55.70	0.01	5.60	0.677
B-01	82.32	0.00	0.00	7.48	70.90	4.60	75.49	0.40	256.42	0.917
B-02	82.32	0.00	0.00	5.19	74.36	3.35	77.70	0.19	118.42	0.944
C-01	82.32	0.00	0.00	46.30	16.50	19.80	36.30	0.06	31.34	0.441
C-02	82.32	0.00	0.00	38.00	25.91	18.84	44.74	0.03	15.73	0.544
C-03	82.32	0.00	0.00	46.21	14.09	22.44	36.53	0.05	31.42	0.444
C-04	82.32	0.00	0.00	36.14	28.30	18.34	46.64	0.03	16.02	0.566
D-01	82.32	0.00	0.00	42.27	15.31	27.16	42.48	0.02	20.72	0.516

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
HP-CB03	JUNCTION	0.00	0.00	89.38	0 00:00	0.00
HP-CBMH205	JUNCTION	0.00	0.00	88.60	0 00:00	0.00
HP-CBMH206	JUNCTION	0.00	0.00	88.75	0 00:00	0.00
HP-CBMH207	JUNCTION	0.00	0.00	88.70	0 00:00	0.00
DR	OUTFALL	0.00	0.00	88.66	0 00:00	0.00
EX-MH15	OUTFALL	0.69	0.69	84.56	0 00:00	0.69
Spill-CB02	OUTFALL	0.00	0.00	89.40	0 00:00	0.00
Spill-CBMH205	OUTFALL	0.00	0.00	88.58	0 00:00	0.00
Spill-CBMH208	OUTFALL	0.00	0.00	89.00	0 00:00	0.00
Spill-CBMH210	OUTFALL	0.00	0.00	89.00	0 00:00	0.00
CB01	STORAGE	0.08	1.89	88.89	0 02:13	1.89
CB02	STORAGE	0.06	1.55	88.90	0 02:12	1.54
CB03	STORAGE	0.03	0.92	88.58	0 02:22	0.92
CBMH205	STORAGE	0.08	1.70	88.44	0 02:23	1.70
CBMH206	STORAGE	0.06	1.49	88.52	0 02:23	1.49
CBMH207	STORAGE	0.03	0.99	88.58	0 02:22	0.99
CBMH208	STORAGE	0.12	2.38	88.87	0 02:21	2.38
CBMH210	STORAGE	0.14	2.52	88.83	0 02:21	2.52
MH201	STORAGE	0.66	0.69	84.60	0 02:14	0.69
MH202	STORAGE	0.03	0.29	85.31	0 02:21	0.29
MH203	STORAGE	0.03	0.23	85.51	0 02:15	0.23
MH204	STORAGE	0.03	0.20	85.83	0 02:16	0.20
MH209	STORAGE	0.13	2.46	88.85	0 02:21	2.46
MH211	STORAGE	0.15	2.65	88.79	0 02:22	2.65
MH212	STORAGE	0.16	2.69	88.77	0 02:22	2.69
MH212_Dummy	STORAGE	0.02	0.17	86.25	0 02:22	0.17
TANK1	STORAGE	0.09	1.64	87.64	0 02:16	1.64
TANK2	STORAGE	0.04	1.36	87.36	0 02:12	1.36

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
HP-CB03	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
HP-CBMH205	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr

HP-CBMH206	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HP-CBMH207	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DR	OUTFALL	20.72	20.72	0	02:10	0.02	0.02	0.000
EX-MH15	OUTFALL	0.00	233.21	0	02:14	0	0.936	0.000
Spill-CB02	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
Spill-CBMH205	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
Spill-CBMH208	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
Spill-CBMH210	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
CB01	STORAGE	47.79	52.65	0	02:09	0.0679	0.0806	-0.005
CB02	STORAGE	9.52	16.55	0	02:06	0.0126	0.0128	0.499
CB03	STORAGE	31.34	31.34	0	02:10	0.0632	0.0632	0.064
CBMH205	STORAGE	16.02	46.20	0	02:20	0.0257	0.169	0.003
CBMH206	STORAGE	31.42	63.41	0	02:07	0.0537	0.143	-0.302
CBMH207	STORAGE	15.73	44.02	0	02:09	0.026	0.0891	-0.010
CBMH208	STORAGE	58.82	92.51	0	02:10	0.0885	0.169	-0.029
CBMH210	STORAGE	5.60	65.90	0	02:10	0.0078	0.177	-0.024
MH201	STORAGE	0.00	233.20	0	02:14	0	0.937	-0.000
MH202	STORAGE	0.00	128.11	0	02:21	0	0.57	-0.020
MH203	STORAGE	0.00	84.41	0	02:17	0	0.402	0.035
MH204	STORAGE	0.00	84.41	0	02:16	0	0.402	-0.001
MH209	STORAGE	0.00	70.66	0	02:10	0	0.169	-0.002
MH211	STORAGE	0.00	51.22	0	02:10	0	0.177	-0.034
MH212	STORAGE	0.00	38.95	0	02:11	0	0.177	0.002
MH212_Dummy	STORAGE	0.00	35.33	0	02:22	0	0.177	-0.002
TANK1	STORAGE	256.42	256.42	0	02:10	0.402	0.402	-0.000
TANK2	STORAGE	118.42	118.42	0	02:10	0.188	0.188	0.001

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
CB01	0.000	0.0	0.0	0.0	0.001	1.0	0 02:13	39.63
CB02	0.000	0.5	0.0	0.0	0.001	12.1	0 02:12	8.69
CB03	0.000	2.2	0.0	0.0	0.000	69.0	0 02:22	28.95
CBMH205	0.000	4.3	0.0	0.0	0.002	88.7	0 02:23	44.14
CBMH206	0.000	3.6	0.0	0.0	0.002	85.2	0 02:23	38.80
CBMH207	0.000	2.7	0.0	0.0	0.001	76.9	0 02:22	37.85
CBMH208	0.000	0.5	0.0	0.0	0.013	19.0	0 02:21	70.66
CBMH210	0.000	4.8	0.0	0.0	0.003	90.2	0 02:21	51.22
MH201	0.001	13.4	0.0	0.0	0.001	14.1	0 02:14	233.21
MH202	0.000	0.9	0.0	0.0	0.000	8.5	0 02:21	128.09
MH203	0.000	0.8	0.0	0.0	0.000	6.5	0 02:15	84.43
MH204	0.000	0.8	0.0	0.0	0.000	5.9	0 02:16	84.41
MH209	0.000	4.7	0.0	0.0	0.003	88.7	0 02:21	60.51
MH211	0.000	4.9	0.0	0.0	0.003	86.5	0 02:22	38.95
MH212	0.000	5.2	0.0	0.0	0.003	87.8	0 02:22	35.33
MH212_Dummy	0.000	0.0	0.0	0.0	0.000	0.0	0 00:00	35.33
TANK1	0.008	3.1	0.0	0.0	0.138	55.3	0 02:16	84.41
TANK2	0.001	1.2	0.0	0.0	0.036	43.5	0 02:12	76.34

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Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
DR	27.51	1.12	20.72	0.020
EX-MH15	53.93	26.52	233.21	0.936

Spill-CB02	0.00	0.00	0.00	0.000
Spill-CBMH205	0.00	0.00	0.00	0.000
Spill-CBMH208	0.00	0.00	0.00	0.000
Spill-CBMH210	0.00	0.00	0.00	0.000
System	13.57	27.64	241.98	0.956

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
CB01-CBMH208	CONDUIT	39.63	0 02:12	0.80	0.41	1.00
CB02-CB01	CONDUIT	8.69	0 02:07	0.80	0.15	1.00
CB03-CBMH207	CONDUIT	28.95	0 02:09	0.91	0.38	1.00
CBMH206-CBMH205	CONDUIT	38.80	0 02:21	0.59	0.56	1.00
CBMH207-CBMH206	CONDUIT	37.85	0 02:07	0.83	0.55	1.00
CBMH208-MH209	CONDUIT	70.66	0 02:10	1.00	1.09	1.00
CBMH210-MH211	CONDUIT	51.22	0 02:10	0.72	0.75	1.00
MH201-EX15	CONDUIT	233.21	0 02:14	0.65	0.48	1.00
MH202-MH201	CONDUIT	128.09	0 02:21	1.17	0.41	0.50
MH203-MH202	CONDUIT	84.43	0 02:17	1.03	0.42	0.52
MH204-MH203	CONDUIT	84.41	0 02:17	1.22	0.42	0.45
MH209-CBMH210	CONDUIT	60.51	0 02:10	0.86	0.88	1.00
MH211-MH212	CONDUIT	38.95	0 02:11	0.55	0.60	1.00
MH212-MH201	CONDUIT	35.33	0 02:22	0.95	0.52	0.52
SWALE-CB03	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
SWALE-CBMH205	CONDUIT	0.00	0 00:00	0.00	0.00	0.14
SWALE-CBMH206	CONDUIT	0.00	0 00:00	0.00	0.00	0.07
SWALE-CBMH207	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
O-CBMH205	ORIFICE	44.14	0 02:23			1.00
O-MH212	ORIFICE	35.33	0 02:22			1.00
O-TANK1	ORIFICE	84.41	0 02:16			1.00
O-TANK2	ORIFICE	76.34	0 02:12			1.00
OVF-TANK1	ORIFICE	0.00	0 00:00			
OVF-TANK2	ORIFICE	0.00	0 00:00			
OVF-CB01	WEIR	0.00	0 00:00			0.00
OVF-CB02a	WEIR	0.00	0 00:00			0.00
OVF-CB02b	WEIR	0.00	0 00:00			0.00
OVF-CB03	WEIR	0.00	0 00:00			0.00
OVF-CBMH205	WEIR	0.00	0 00:00			0.00
OVF-CBMH206	WEIR	0.00	0 00:00			0.00
OVF-CBMH207	WEIR	0.00	0 00:00			0.00
OVF-CBMH208	WEIR	0.00	0 00:00			0.00
OVF-CBMH210a	WEIR	0.00	0 00:00			0.00
OVF-CBMH210b	WEIR	0.00	0 00:00			0.00

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
CB01-CBMH208	1.00	0.00	0.00	0.00	0.05	0.01	0.00	0.94	0.01	0.00
CB02-CB01	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
CB03-CBMH207	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
CBMH206-CBMH205	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.01	0.00
CBMH207-CBMH206	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.02	0.00
CBMH208-MH209	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.00	0.00
CBMH210-MH211	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
MH201-EX15	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
MH202-MH201	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
MH203-MH202	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
MH204-MH203	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
MH209-CBMH210	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.00	0.00
MH211-MH212	1.00	0.00	0.00	0.00	0.16	0.00	0.00	0.84	0.00	0.00
MH212-MH201	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
SWALE-CB03	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SWALE-CBMH205	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SWALE-CBMH206	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SWALE-CBMH207	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Block 1 Development (121214)
240-270 Lamarche Avenue 3484 Innes Road
PCSWMM Model Output - 100-year 6-hour Chicago Storm Event

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Conduit Surcharge Summary
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Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
CB01-CBMH208	0.93	0.93	1.13	0.01	0.01
CB02-CB01	0.81	0.81	0.88	0.01	0.01
CB03-CBMH207	0.55	0.55	0.57	0.01	0.01
CBMH206-CBMH205	0.87	0.87	1.05	0.01	0.01
CBMH207-CBMH206	0.59	0.59	0.87	0.01	0.01
CBMH208-MH209	1.16	1.16	1.17	0.05	0.16
CBMH210-MH211	1.26	1.26	1.39	0.01	0.01
MH201-EX15	0.45	0.45	24.00	0.01	0.01
MH209-CBMH210	1.21	1.21	1.25	0.01	0.01
MH211-MH212	1.42	1.42	1.46	0.01	0.01

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Analysis begun on:  Fri Nov 15 11:30:18 2024
Analysis ended on:  Fri Nov 15 11:30:21 2024
Total elapsed time: 00:00:03
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Excerpts from Appendix E of the Master Servicing Study for East Urban Community Phase 3 Area Community Design Plan (DSEL, December 2020)

Appendix E

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [(1)] (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (m)	Interpolated HGL		
																					Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																		253	85.79	1.703	81.3	65.3	84.087
																		252	85.98	1.828	81.3	79.1	84.152
																		258	85.68	1.879	81.3	3.9	83.801
																		257	85.79	1.941	81.3	14.2	83.849
																		256	85.74	1.838	81.3	25.6	83.902
																		255	85.78	1.821	81.3	37.8	83.959
B5	B6	84.597	84.452	300	14.5	1.0	0.013	87.803	87.913	1.37	0.10	0.00	0.0	-0.252	1.17	84.645	84.714	50	86.01	1.365			
B5	B56	83.691	82.380	675	138.0	1.0	0.013	87.803	87.712	2.29	0.82	0.30	0.4	-0.311	1.17	84.055	83.668	40	85.69	1.635			
B6	B7	84.388	84.082	300	47.0	0.7	0.013	87.913	87.917	1.10	0.08	0.01	0.2	0.026	1.25	84.714	84.714	54	86.04	1.326			
B7	B8	84.022	83.956	300	12.0	0.6	0.013	87.917	87.801	1.01	0.07	0.02	0.2	0.392	1.26	84.714	84.714	55	85.97	1.256			
B8	B9	83.926	83.552	300	68.0	0.6	0.013	87.801	87.873	1.01	0.07	0.07	1.0	0.488	1.26	84.714	84.532	27	85.83	1.116			
B9	B57	83.477	82.547	375	71.5	1.3	0.013	87.873	87.813	1.81	0.20	0.19	1.0	0.680	1.17	84.532	83.505	21	85.69	1.158			
B10	B11	83.947	83.685	375	69.0	0.4	0.013	88.197	88.159	0.98	0.11	0.12	1.1	0.289	0.84	84.611	84.512	81	86.04	1.429			
B10	B49	84.417	83.682	300	106.5	0.7	0.013	88.197	88.057	1.14	0.08	0.04	0.5	-0.106	1.01	84.611	84.335	311	86.27	1.659			
B11	B34	83.665	83.053	375	80.5	0.8	0.013	88.159	87.886	1.38	0.15	0.17	1.1	0.472	0.93	84.512	84.007	74	85.92	1.408			
B12	B13	87.219	85.699	375	76.0	2.0	0.013	91.003	89.864	2.25	0.25	0.11	0.5	-0.197	0.93	87.397	85.877	N/A	N/A	N/A			
B13	B15	85.249	83.720	825	139.0	1.1	0.013	89.864	88.345	2.82	1.51	1.10	0.7	-0.288	0.95	85.786	84.564	N/A	N/A	N/A			
B15	B21	83.195	82.979	1350	58.5	0.4	0.013	88.345	88.484	2.27	3.25	2.14	0.7	0.019	0.96	84.564	84.488	N/A	N/A	N/A			
B16	B40	84.536	84.061	375	108.0	0.4	0.013	88.626	88.320	1.05	0.12	0.12	1.0	0.086	1.02	84.997	84.651	B370S	86.26	1.263			
																		B370S	86.26	1.548	108.2	19.1	84.712
																		B370N	86.63	1.876	108.2	32.3	84.754
																		B369S	86.63	1.836	108.2	44.6	84.794
																		B369N	86.41	1.527	108.2	72.4	84.883
																		B368S	86.53	1.604	108.2	85.9	84.926
																		B368N	86.63	1.660	108.2	99.7	84.970
																		B374S	86.87	1.878	108.2	106.7	84.992
																		B373N	86.67	1.699	108.2	100.1	84.971
																		B373S	86.55	1.649	108.2	78.1	84.901
																		B372N	86.55	1.691	108.2	65.2	84.859
																		B372S	86.62	1.830	108.2	43.6	84.790
																		B371N	86.62	1.869	108.2	31.4	84.751
																		B371S	86.77	2.062	108.2	17.8	84.708
B17	B16	84.801	84.611	300	9.5	2.0	0.013	88.702	88.626	1.93	0.14	-0.02	-0.2	-0.117	1.09	84.984	84.997	B374N	86.75	1.766			
B17	B18	84.894	84.371	300	48.0	1.1	0.013	88.702	88.502	1.43	0.10	0.02	0.2	-0.210	1.09	84.984	84.772	B376E	86.59	1.606			
B18	B21	84.296	83.934	375	67.0	0.5	0.013	88.502	88.484	1.17	0.13	0.11	0.8	0.101	1.11	84.772	84.488	B377W	86.51	1.738			
B19	B21	84.917	83.859	450	141.0	0.8	0.013	88.600	88.484	1.55	0.25	0.09	0.4	-0.257	1.03	85.110	84.488	B356E	86.51	1.400			
B19	B26	84.843	84.810	300	9.5	0.4	0.013	88.600	88.678	0.81	0.06	0.05	0.9	-0.033	0.84	85.110	85.091	351	86.73	1.620			
B21	B24	82.959	82.707	1350	58.5	0.4	0.013	88.484	88.145	2.45	3.50	2.30	0.7	0.179	0.95	84.488	84.388	B145N	86.60	2.112			
B22	B24	84.693	83.587	450	146.5	0.8	0.013	88.456	88.145	1.55	0.25	0.10	0.4	-0.240	0.99	84.903	84.388	B136E	86.15	1.247			
B22	B2200	84.552	84.434	300	29.0	0.4	0.013	88.456	87.660	0.88	0.06	0.09	1.4	0.051	0.95	84.903	84.666	B158	86.60	1.697			
B24	B25	82.687	82.479	1350	41.5	0.5	0.013	88.145	88.096	2.64	3.77	2.43	0.6	0.351	0.94	84.388	84.297	B146S	86.09	1.702			
B25	B30	82.449	82.380	1350	14.0	0.5	0.013	88.096	88.193	2.61	3.74	2.40	0.6	0.498	1.14	84.297	84.261	N/A	N/A	N/A			
B26	B22	84.780	84.572	300	52.0	0.4	0.013	88.678	88.456	0.87	0.06	0.06	1.0	0.011	1.01	85.091	84.903	124	86.63	1.539			
B27	B28	83.872	83.767	675	10.5	1.0	0.013	88.285	88.194	2.35	0.84	0.30	0.4	0.028	1.15	84.575	84.552	121	86.38	1.805			

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [(1)] (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (m)	Interpolated HGL Length HGL (m)	Interpolated HGL Dist. From D/S MH (m)	Interpolated HGL HGL (m)
																		253	85.79	1.081	81.3	65.3	84.709
																		252	85.98	1.211	81.3	79.1	84.769
																		258	85.68	1.242	81.3	3.9	84.438
																		257	85.79	1.306	81.3	14.2	84.484
																		256	85.74	1.206	81.3	25.6	84.534
																		255	85.78	1.193	81.3	37.8	84.587
B5	B6	84.597	84.452	300	14.5	1.0	0.013	87.803	87.913	1.37	0.10	-0.02	-0.2	-0.195	1.12	84.702	84.948	50	86.01	1.308			
B5	B56	83.691	82.380	675	138.0	1.0	0.013	87.803	87.712	2.29	0.82	0.33	0.4	0.018	1.12	84.384	84.118	40	85.69	1.306			
B6	B7	84.388	84.082	300	47.0	0.7	0.013	87.913	87.917	1.10	0.08	-0.02	-0.3	0.260	1.05	84.948	84.969	54	86.04	1.092			
B7	B8	84.022	83.956	300	12.0	0.6	0.013	87.917	87.801	1.01	0.07	-0.02	-0.3	0.647	1.05	84.969	84.974	55	85.97	1.001			
B8	B9	83.926	83.552	300	68.0	0.6	0.013	87.801	87.873	1.01	0.07	0.07	0.9	0.748	1.49	84.974	84.875	27	85.83	0.856			
B9	B57	83.477	82.547	375	71.5	1.3	0.013	87.873	87.813	1.81	0.20	0.19	1.0	1.023	1.33	84.875	83.911	21	85.69	0.815			
B10	B11	83.947	83.685	375	69.0	0.4	0.013	88.197	88.159	0.98	0.11	0.13	1.2	0.777	0.83	85.099	85.019	81	86.04	0.941			
B10	B49	84.417	83.682	300	106.5	0.7	0.013	88.197	88.057	1.14	0.08	0.06	0.7	0.382	0.99	85.099	84.866	311	86.27	1.171			
B11	B34	83.665	83.053	375	80.5	0.8	0.013	88.159	87.886	1.38	0.15	0.17	1.1	0.979	0.93	85.019	84.557	74	85.92	0.901			
B12	B13	87.219	85.699	375	76.0	2.0	0.013	91.003	89.864	2.25	0.25	0.12	0.5	-0.189	0.93	87.405	86.085	N/A	N/A	N/A			
B13	B15	85.249	83.720	825	139.0	1.1	0.013	89.864	88.345	2.82	1.51	1.11	0.7	0.011	0.99	86.085	85.315	N/A	N/A	N/A			
B15	B21	83.195	82.979	1350	58.5	0.4	0.013	88.345	88.484	2.27	3.25	2.32	0.7	0.770	1.17	85.315	85.204	N/A	N/A	N/A			
B16	B40	84.536	84.061	375	108.0	0.4	0.013	88.626	88.320	1.05	0.12	0.12	1.0	0.839	0.99	85.750	85.405	B370S	86.26	0.510			
																		B370S	86.26	0.794	108.2	19.1	85.466
																		B370N	86.63	1.122	108.2	32.3	85.508
																		B369S	86.63	1.083	108.2	44.6	85.547
																		B369N	86.41	0.774	108.2	72.4	85.636
																		B368S	86.53	0.851	108.2	85.9	85.679
																		B368N	86.63	0.907	108.2	99.7	85.723
																		B374S	86.87	1.125	108.2	106.7	85.745
																		B373N	86.67	0.946	108.2	100.1	85.724
																		B373S	86.55	0.896	108.2	78.1	85.654
																		B372N	86.55	0.937	108.2	65.2	85.613
																		B372S	86.62	1.076	108.2	43.6	85.544
																		B371N	86.62	1.115	108.2	31.4	85.505
																		B371S	86.77	1.308	108.2	17.8	85.462
B17	B16	84.801	84.611	300	9.5	2.0	0.013	88.702	88.626	1.93	0.14	-0.03	-0.2	0.639	1.03	85.740	85.750	B374N	86.75	1.010			
B17	B18	84.894	84.371	300	48.0	1.1	0.013	88.702	88.502	1.43	0.10	0.03	0.3	0.546	1.18	85.740	85.703	B376E	86.59	0.850			
B18	B21	84.296	83.934	375	67.0	0.5	0.013	88.502	88.484	1.17	0.13	0.14	1.1	1.032	1.09	85.703	85.204	B377W	86.51	0.807			
B19	B21	84.917	83.859	450	141.0	0.8	0.013	88.600	88.484	1.55	0.25	0.12	0.5	0.088	1.22	85.455	85.204	B356E	86.51	1.055			
B19	B26	84.843	84.810	300	9.5	0.4	0.013	88.600	88.678	0.81	0.06	0.06	1.0	0.312	1.62	85.455	85.450	351	86.73	1.275			
B21	B24	82.959	82.707	1350	58.5	0.4	0.013	88.484	88.145	2.45	3.50	2.58	0.7	0.895	1.10	85.204	85.066	B145N	86.60	1.396			
B22	B24	84.693	83.587	450	146.5	0.8	0.013	88.456	88.145	1.55	0.25	0.12	0.5	0.221	1.12	85.364	85.066	B136E	86.15	0.786			
B22	B2200	84.552	84.434	300	29.0	0.4	0.013	88.456	87.660	0.88	0.06	0.09	1.5	0.512	0.95	85.364	85.325	B158	86.60	1.236			
B24	B25	82.687	82.479	1350	41.5	0.5	0.013	88.145	88.096	2.64	3.77	2.79	0.7	1.029	1.10	85.066	84.943	B146S	86.09	1.024			
B25	B30	82.449	82.380	1350	14.0	0.5	0.013	88.096	88.193	2.61	3.74	2.79	0.7	1.144	1.10	84.943	84.895	N/A	N/A	N/A			
B26	B22	84.780	84.572	300	52.0	0.4	0.013	88.678	88.456	0.87	0.06	0.06	1.0	0.370	1.62	85.450	85.364	124	86.63	1.180			
B27	B28	83.872	83.767	675	10.5	1.0	0.013	88.285	88.194	2.35	0.84	0.34	0.4	0.731	1.10	85.278	85.245	121	86.38	1.102			

APPENDIX E
Drawings

GENERAL NOTES:

1. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN.
3. CO-ORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
4. 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 THESE DRAWINGS.
5. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
6. 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.
7. CONNECT TO EXISTING SYSTEMS AS DETAILED, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER.
8. RESTORE ALL TRENCHES AND SURFACE FEATURES TO EXISTING CONDITIONS OR BETTER AND TO THE SATISFACTION OF MUNICIPAL AUTHORITIES.
9. ASPHALT RESTORATION SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA DETAIL R-10. THICKNESS OF GRANULAR MATERIAL AND ASPHALT LAYERS TO MATCH EXISTING. BOULEVARDS SHALL BE REINSTATED WITH 100mm OF TOPSOIL, SEED AND MULCH.
10. 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.
11. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
12. ALL FENCING TO BE LOCATED 0.15m INSIDE PROPERTY LINE. REFER TO LANDSCAPING PLAN FOR DETAILS.
13. PERFORATED PIPE SUB-DRAINS TO BE PROVIDED AT SUBGRADE LEVEL EXTENDING FROM THE ROADSIDE CATCHBASIN FOR A DISTANCE OF 3.0m, PARALLEL TO THE CURB IN TWO DIRECTIONS.
14. REFER TO GEOTECHNICAL REPORT (No. PG4488-1, DATED MAY 21, 2019), PREPARED BY PATERSON GROUP) FOR SUBSURFACE SOIL AND GROUNDWATER 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.
15. REFER TO THE STORMWATER MANAGEMENT REPORT No. R-2021-194, DATED DECEMBER 22, 2021 PREPARED BY NOVATECH.
16. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
17. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
SANITARY/STORM/CATCHBASIN MANHOLE (1200Ø)	701.010	OPSD
CATCHBASIN (600x600)	705.010	OPSD
CATCHBASIN FRAME AND COVER	400.020	OPSD
STORM/SANITARY MH FRAME	S25	CITY OF OTTAWA
SANITARY COVER	S24	CITY OF OTTAWA
STORM COVER (CLOSED)	S24.1	CITY OF OTTAWA
STORM COVER (OPEN)	S28.1	CITY OF OTTAWA
SEWER TRENCH	S6 &S7	CITY OF OTTAWA
CLAY SEAL	S8	CITY OF OTTAWA
STORM SEWER < 450mmØ	PVC DR 35(UNLESS SPECIFIED OTHERWISE)	
STORM SEWER >= 450mmØ	CONC 65D (UNLESS SPECIFIED OTHERWISE)	
SANITARY SEWER	PVC DR 35	CITY OF OTTAWA

2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 2.0m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO PROPERTY LINE AT MINIMUM SLOPE OF 1.0% (2.0% IS PREFERRED).
4. 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.
5. SEWER SERVICE CONNECTIONS PER CITY OF OTTAWA DETAILS S11 AND S11.1.
6. 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.
7. THE OWNER SHALL REQUIRE THAT THE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16 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 TEST RESULTS.
8. STORM MANHOLES AND CBMHS SHALL HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
9. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

WATERMAIN NOTES:

1. GENERAL:

ITEM	DETAIL No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER / OVER SEWER	W25 / W25.2	CITY OF OTTAWA
WATERMAIN	PVC DR18	CITY OF OTTAWA
VALVE CHAMBER	W11	CITY OF OTTAWA
VALVE BOX	W24	CITY OF OTTAWA

2. THE WATERMAIN SHALL BE PVC DR 18 IN ACCORDANCE WITH MATERIAL SPECIFICATION MW-18.1, UNLESS OTHERWISE INDICATED.
3. 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 AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
4. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
5. PROVIDE MINIMUM 0.25m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS.
6. WATER SERVICE SHALL BE CONSTRUCTED TO WITHIN 1.0mOF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

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.

EROSION AND SEDIMENT CONTROL NOTES :

1. ALL EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, CITY OF OTTAWA AND THE CONSERVATION AUTHORITY. THEY SHALL BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES SHALL BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
2. TO PREVENT SURFACE EROSION FROM ENTERING THE DITCH OR STORM SYSTEM DURING CONSTRUCTION, FILTER SOCKS WILL BE PLACED UNDER GRATES OF ALL PROPOSED AND EXISTING CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED IN SELECTED LOCATIONS, AND STRAW BALE BARRIERS WILL BE INSTALLED WITHIN THE OUTLET DITCHES. THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED AND CONSTRUCTION COMPLETE.
3. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
4. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
5. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
6. THE CONTRACTOR SHALL PROVIDE DUST CONTROL WITH THE APPLICATION OF WATER AND/OR CALCIUM CHLORIDE AS REQUIRED.

GRADING NOTES:

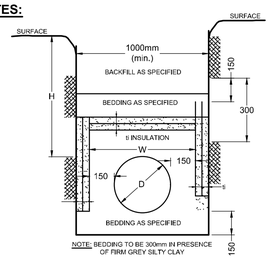
1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL 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 IN 300mm THICK LIFTS. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 100% 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.

SEWER & WATERMAIN INSULATION NOTES:

1. INSULATE ALL SEWER PIPES THAT HAVE LESS THAN 2.0m COVER AND ALL WATERMAIN WITH LESS THAN 2.4m OF COVER WITH EXPANDED POLYSTYRENE INSULATION AS PER OPSD 1109.030.
2. THE THICKNESS OF INSULATION SHALL BE THE EQUIVALENT OF 25mm FOR EVERY 300mm REDUCTION IN THE REQUIRED DEPTH OF COVER WITH 50mm MINIMUM (SEE TABLE)

T = THICKNESS OF INSULATION (mm)
W = WIDTH OF INSULATION (mm)
W = D + 300 (1000 mm.)
D = O.D OF PIPE (mm)

COVER SEWER / WATER (mm)	INSULATION THICKNESS (mm)
2000-1700 / 2400-2100	50
1700-1400 / 2100-1800	75
1400-1100 / 1800-1500	100

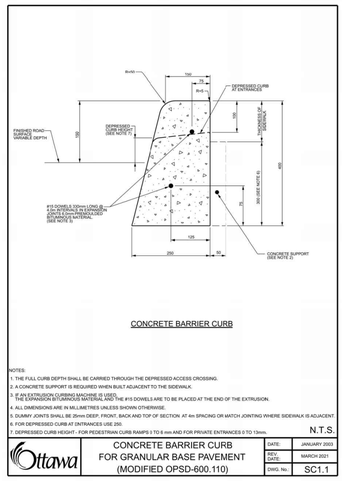


INSULATION DETAIL FOR SHALLOW SEWERS & WATERMAIN
N.T.S

150mmØ WATERMAIN TABLE			
STATION	ELEVATION	TOP OF WATERMAIN	DESCRIPTION
1+000.0	89.43	87.00	REMOVE EX CAP AND CONNECT TO EXISTING WATERMAIN
1+001.9	89.50	87.10	150 X 150mm TEE
1+003.4	89.57	87.17	45° HORIZONTAL BEND
1+009.0	89.69	87.30	CAP AT 1.0m. FROM FOUNDATION WALL

150mmØ WATERMAIN TABLE			
STATION	ELEVATION	TOP OF WATERMAIN	DESCRIPTION
2+000.0	89.38	86.98	REMOVE EX. CAP AND CONNECT TO EXISTING WATERMAIN, 45° HORIZONTAL BEND
2+002.8	89.41	87.01	45° HORIZONTAL BEND
2+007.2	89,50	87.10	150 X 150mm TEE

TEMPEST LMF/MHF ICDs			
LOCATION	MODEL NO. / ORFICE DIAMETER	100-YEAR FLOW (L/S)	100-YEAR HEAD (m)
CBMH205	127mmPLATE	44.14	1.70
MH212	102mmPLATE	35,33	2,69
TANK 1	178mm PLATE	84.41	1.64
TANK 2	178mm PLATE	76.34	1.36

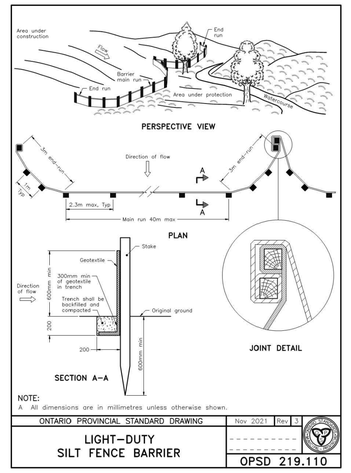


CONCRETE BARRIER CURB

NOTES:
1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSING.
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK.
3. IF AN EXTRUSION CURBING MACHINE IS USED,
   i. THE EXPANSION BITUMINOUS MATERIAL AND THE #10 DOWELS ARE TO BE PLACED AT THE END OF THE EXTRUSION.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. DUMMY JOINTS SHALL BE 25mm DEEP, FRONT, BACK AND TOP OF SECTION. AT 4m SPACING OR MATCH JOINTING WHERE SIDEWALK IS ADJACENT
6. FOR DEPRESSED CURB AT ENTRANCES USE 250.
7. DEPRESSED CURB HEIGHT - FOR ROESETRAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13mm.

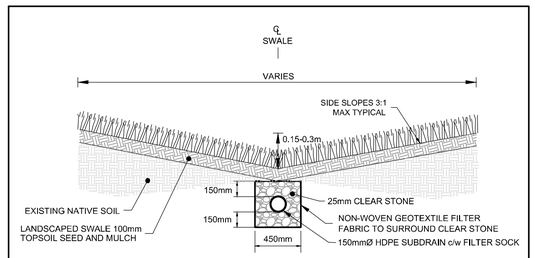
N.T.S

Ottawa	CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110)	DATE:	JANUARY 2003
		REV. DATE:	MARCH 2021
		DWG. No.:	SC1.1

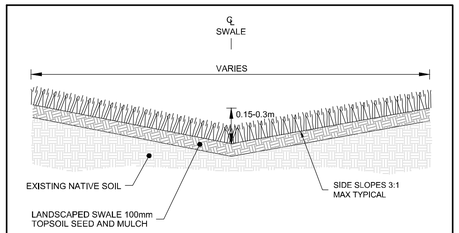


NOTE:
A All dimensions are in millimetres unless otherwise shown.

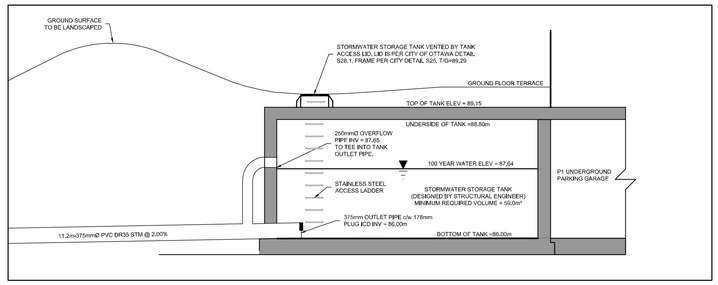
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev	3
LIGHT–DUTY SILT FENCE BARRIER			
		OPSD 219.110	



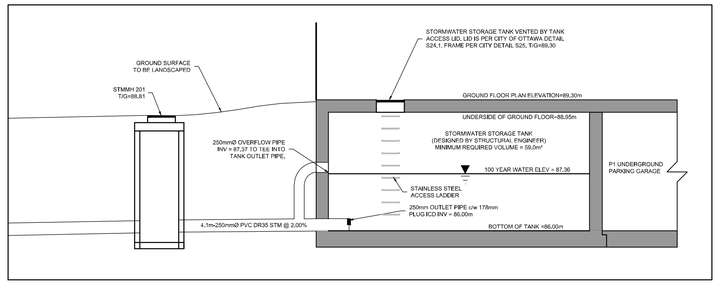
TYPICAL "V" BOTTOM SWALE WITH SUBDRAIN CROSS-SECTION DETAIL
N.T.S



TYPICAL "V" BOTTOM SWALE DETAIL
N.T.S



STORMWATER TANK 1
N.T.S



STORMWATER TANK 2
N.T.S

1.7	REVISED PER CITY COMMENTS	NOV 15/24	CJR
1.6	REVISED BLOCK NAMING	JUL 18/24	CJR
1.5	ISSUED FOR MUNICIPAL CONSENT FOR SHORING	MAY 27/24	RJK
1.B	ISSUED FOR PRELIMINARY PRICING	MAY 27/24	RJK
1.A	ISSUED FOR SITE PLAN APPLICATION	DEC 22/21	MJH
No.	REVISION	DATE	BY

SCALE: AS SHOWN

DESIGN: MJH/ARM
CHECKED: CJR
DRAWN: MJH/ARM
CHECKED: CJR
APPROVED: JLS

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — C.J. RUDDLE — NOV 15/24 — PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
270 LAMARCHE AVENUE

DRAWING NAME
NOTES AND DETAILS - BLOCK 1

PROJECT No. 121214
REV REV # 1.7
DRAWING No. 121214 - NDB1

D07-12-21-0232

M:\2021\121214\CAD\Design-Block 1\121214 - B1 - ND.dwg, ND, Nov 15, 2024 - 2:21pm, madiodi

PLAN #18960

LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED DEPRESSED CURB (DC)
- PROPOSED CAP
- PROPOSED SANITARY SEWER C/W MANHOLE
- PROPOSED STORM SEWER C/W MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED LANDSCAPE DRAIN
- PROPOSED AREA DRAIN
- PROPOSED INLET CONTROL DEVICE (ICD)
- PROPOSED SIAMESE CONNECTION
- PROPOSED WATER MAIN
- PROPOSED HYDRANT c/w LEAD & VALVE
- PROPOSED VALVE AND VALVE BOX (V&VB)
- PROPOSED WATER METER (M)
- PROPOSED REMOTE WATER METER (RM)
- PROPOSED BUILDING ENTRANCE
- DIRECTION OF FLOW
- PIPE CROSSING (REFER TO 112214-NDB1 FOR DETAILS) (1)
- PROPOSED SWALE
- PROPOSED TERRACING
- PROPOSED TRANSFORMER
- PROPOSED STORM SEWER INSULATION
  REFER TO DETAIL ON NOTES AND DETAILS PLAN

- EXISTING UTILITY POLE C/W GUY WIRES
- EXISTING WATERMAIN C/W WATER VALVE (WV)
- EXISTING HYDRANT C/W VALVE & LEAD
- EXISTING SANITARY MANHOLE & SEWER (SAN MH)
- EXISTING STORM MANHOLE & SEWER (STM MH)
- EXISTING CATCHBASIN (CB)
- EXISTING CATCHBASIN MANHOLE
- EXISTING OVERHEAD WIRES (OHW)
- EXISTING STREETLIGHT (LS)

PIPE CROSSING TABLE

CROSSING	LOWER PIPE	HIGHER PIPE	CLEARANCE
1	200mmØ SAN OBV = 86.52	300mmØ STM INV = 86.83	±0.31m
2	200mmØ SAN OBV = 85.47	300mmØ STM INV = 85.82	±0.35m

NORTH

KEY PLAN
N.T.S.
SITE

PARKLAND BLOCK 4

STREET 1

REFER TO DRAWINGS 121214 - PP1& PP2 FOR STREET 1 DESIGN DETAILS

2.0m CONC. SIDEWALK

LAMARCHE AVENUE

3.0m MULTI-USE PATH

2.0m CONC. SIDEWALK

PAVILION A
6 FLOOR
FFE =89.90

PAVILION B
7 FLOOR
FFE = 89.60

PAVILION C
7 FLOOR
FFE = 89.30

1.8m ASPH. WALKWAY

LIMIT OF UNDERGROUND PARKING

CONTINUOUS BALCONY (2ND & 3RD FLOOR)

MOVING AISLE

PARKING GARAGE RAMP DRAIN BY OTHERS.

REFER TO MECHANICAL DRAWINGS FOR FURTHER DETAILS ON INTERNAL PLUMBING (TYP).

ALL FLOWS FROM THE UNDERGROUND PARKING GARAGE ARE TO BE CONVEYED TO THE SANITARY SERVICE.

PROPOSED SERVICES TO BE SLEEVED THROUGH FOUNDATION WALL. FOUNDATION DRAINS TO BE PUMPED TO STORM SERVICE.

ALL SANITARY FLOWS FROM UNDERGROUND ARE TO BE PUMPED TO THE PROPOSED SANITARY SERVICE (TYP.).

AREA DRAINS AND ROOF DRAINS TO BE CONVEYED BY INTERNAL PLUMBING TO THE UNDERGROUND STORMWATER TANK. INTERNAL PLUMBING BY OTHERS. REFER TO MECHANICAL DRAWINGS FOR DETAILS.

ALL PROPOSED STORM SERVICES ARE TO HAVE BACKFLOW PREVENTION DEVICES INSTALLED DOWNSTREAM OF ANY GRAVITY OUTLET FROM THE BUILDING. REFER TO MECHANICAL PLANS FOR DETAILS.

REFER TO STORMWATER TANK DETAILS ON 121214-NDB1

STORMWATER TANK 1

STORMWATER TANK 2

TANK LID 1 AS PER CITY OF OTTAWA DETAIL S28.1 T/G=89.31

TANK LID 2 AS PER CITY OF OTTAWA DETAIL S24.1 T/G=89.30

BERM

EXISTING WATER SERVICE TO BE ABANDONED PER CITY STANDARDS

REMOVE EX STRUCTURES

CB 401 T/G=88.49 INV.NE=86.53

CBMH 400 T/G=89.20 INV.NE=86.07 INV.SW=86.07

45.7m-300mmØ STM @ 1.00%

50mmØ WM T/WM=86.84

SANMH 205 T/G=89.34 INV.SE=86.56 INV.SW=86.63 INV.NW=86.57

11.2m-150mmØ SAN @ 1.00%

14.4m-200mmØ STM @ 0.50%

SANMH 204 T/G=89.24 INV.E=86.42 INV.NW=86.45

22.1m-250mmØ SAN @ 0.50%

20.6m-200mmØ SAN @ 0.50%

STMMH 103 T/G=89.19 INV.E=85.31 INV.NW=85.34

STMMH 102 T/G=89.33 INV.NE=85.17 INV.W=85.20

SANMH 203 T/G=89.38 INV.NE=86.26 INV.W=86.29

17.1m-250mmØ SAN @ 0.50%

SANMH 202 T/G=89.29 INV.NE=86.16 INV.SW=86.17 INV.SE=86.22

43.6m-675mmØ STM @ 0.50%

STMMH 101 T/G=88.93 INV.NE=84.87 INV.SW=84.95

55.6m-750mmØ STM @ 0.50%

70.1m-250mmØ SAN @ 0.50%

SANMH 201 T/G=88.97 INV.E=85.78 INV.SW=85.81

16.5m-250mmØ SAN @ 0.50%

EX. SANMH T/G=88.87 INV.SE=85.64 INV.W=85.70 INV.NW=85.68

STMMH 100 T/G=88.85 INV.SE=84.52 INV.SW=84.52 INV.NW=84.60

CICB T/G=88.65

CONNECT TO EXISTING T/W=87.00

CONNECT TO EXISTING T/W=86.98

CONNECT TO EXISTING INV=86.27

T/W=87.30

INV=86.77

CB 2 T/G=89.35 INV.SE=87.35

CB 1 T/G=89.00 INV.NE=87.00 INV.NW=87.16

HYD T/F=89.63

HYD T/F=89.17

9.3m-200mmØ SAN @ 0.50% INV.=86.27

9.3m-300mmØ STM @ 0.50%

13.6m-300mmØ STM @ 0.50%

28.3m-300mmØ STM @ 0.50%

CBMH 210 T/G=89.10 INV.NE=86.31 INV.SW=86.32

STMMH 209 T/G=89.16 INV.NE=86.39 INV.SE=86.45

"YLON SIGN

STMMH 211 T/G=89.20 INV.E=86.14 INV.SW=86.17

STMMH 212 T/G=89.15 INV.W=86.11 INV.SE=86.08

ICD

CBMH 208 T/G=88.70 (1500mmØ) INV.NW=86.49 INV.SW=86.55

45.1m-300mmØ STM @ 1.00%

SANMH 302 T/G=89.46 INV.NE=86.56 INV.SW=86.57

10.0m-200mmØ SAN @ 2.00%

31.9m-200mmØ SAN @ 0.50%

SANMH 301 T/G=89.19 INV.NW=86.34 INV.SW=86.40 INV.SE=86.35 INV.E=86.40

37.8m-200mmØ SAN @ 0.50%

SANMH 303 T/G=89.02 INV.W=86.59 INV.NE=86.60

FDSC SIAMESE 5.3m-200mmØ SAN @ 2.00% INV=86.71

11.1m-200mmØ SAN @ 2.00% INV=86.57

AD 1002 T/G=89.35

AD 1000 T/G=88.95

AD 1001 T/G=89.45

AD 1003 T/G=89.20

AD 1004 T/G=89.20

INV=86.00

1.2m-375mmØ STM @ 2.00%

STMMH 204 T/G=89.10 INV.E=85.63 INV.NW=85.78

59.4m-450mmØ STM @ 0.50%

109.7m-300mmØ PERF HDPE STM @ 0.50%

40.7m-450mmØ STM @ 0.50%

47.4m-300mmØ PERF HDPE STM @ 0.50%

22.7m-525mmØ STM @ 0.50%

2.9m-300mmØ STM @ 1.27%

CB 3 T/G=88.70 INV.E=87.66

6.4m-300mmØ STM @ 0.50%

CBMH 207 T/G=88.58 INV.NE=87.59 INV.W=87.62

CBMH 206 T/G=88.48 INV.NE=87.03 INV.SW=87.04

STMMH 203 T/G=88.82 INV.NE=85.28 INV.W=85.33

CBMH 205 T/G=88.36 INV.NE=86.74 INV.SW=86.79

STMMH 202 T/G=88.50 INV.NW=85.02 INV.SW=85.08 INV.SW=86.72

4.1m-250mmØ STM @ 2.00% INV=86.00

STMMH 201 T/G=88.81 INV.NE=83.91 INV.SE=84.90 INV.SW=85.92 INV.NW=85.81

14.1m-750mmØ STM @ 0.35%

EX. SANMH T/G=88.24 INV.NE=85.53

EX. SANMH T/G=88.34 INV.SE=83.13 INV.NW=85.10 INV.NE=85.10 INV.SW=84.98

EX. STMMH T/G=88.27 INV.SE=83.20 INV.NW=83.72 INV.NE=83.37 INV.W=83.87

EX. DCICB T/G=88.19

EX. DCICB T/G=88.24

Top of Dirt

Bottom of Fill

Bottom of Fill

UP

BCS

HBCG

V&VB

DC

JUT

REFER TO 121214 - NDB1 FOR ADDITIONAL NOTES

NOTE:
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NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY
1.7	REVISED PER CITY COMMENTS	NOV 15/24	CJR
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1.5	ISSUED FOR MUNICIPAL CONSENT FOR SHORING	MAY 27/24	RJK
1.B	ISSUED FOR PRELIMINARY PRICING	MAY 27/24	RJK
1.A	ISSUED FOR SITE PLAN APPLICATION	DEC 22/21	MJH

SCALE 1:300

1:300
0 3 6 9 12

DESIGN MJH/ARM
CHECKED CJR
DRAWN MJH/ARM
CHECKED CJR
APPROVED JLS

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER C.J. RUDDLE NOV 15/24 PROVINCE OF ONTARIO

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

LOCATION
CITY OF OTTAWA
270 LAMARCHE AVENUE

DRAWING NAME
GENERAL PLAN OF SERVICING - BLOCK 1

PROJECT No. 121214
REV # 1.7
DRAWING No. 121214-GPB1

PLAN #18960

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LEGEND

- PROPERTY LINE
- PROPOSED BARRIER CURB
- DC — PROPOSED DEPRESSED CURB
- 98.40 — PROPOSED ELEVATION
- x 98.40 — EXISTING ELEVATION
- x 97.79(S) — PROPOSED SWALE ELEVATION
- x 97.79TW — PROPOSED TOP OF WALL ELEVATION
- x 97.79BW — PROPOSED BOTTOM OF WALL ELEVATION
- x 97.88TC — PROPOSED TOP OF CURB ELEVATION
- V&VB — PROPOSED VALVE AND VALVE BOX
- FDSC — FIRE DEPARTMENT SIAMESE CONNECTION
- PROPOSED BUILDING ENTRANCE
- H.P. — PROPOSED HIGH POINT
- SWALE c/w SUBDRAIN AND DIRECTION OF FLOW
- TERRACING 3:1 SLOPE MAX (UNLESS OTHERWISE INDICATED)
- PROPOSED RETAINING WALL
- 2.0% — SLOPE AND DIRECTION
- DIRECTION OF MAJOR OVERLAND FLOW
- PROPOSED LANDSCAPE DRAIN
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED CATCHBASIN
- SAN MH — PROPOSED SANITARY MANHOLE
- STM MH — PROPOSED STORM MANHOLE
- PROPOSED HYDRANT & VALVE
- PROPOSED VALVE AND VALVE BOX
- 100 YEAR SURFACE PONDING EXTENTS
- PROPOSED TRANSFORMER
- EXISTING VALVE & VALVE BOX
- EXISTING VALVE & LEAD
- SAN MH — EXISTING SANITARY MANHOLE
- STM MH — EXISTING STORM MANHOLE
- CB 1 — EXISTING CATCHBASIN
- EXISTING DITCH CENTERLINE
- UP — EXISTING UTILITY POLE
- AN — EXISTING UTILITY POLE ANCHORS
- EXISTING STREETLIGHT

PAVEMENT STRUCTURE:

LIGHT DUTY PAVEMENT
50mm HL3 OR SP 12.5
150mm GRANULAR "A" CRUSHED STONE
300mm OPSS GRANULAR "B" TYPE II

HEAVY DUTY PAVEMENT
40mm HL3 OR SP 12.5
50mm HL8 OR SP 19.0
150mm OPSS GRANULAR "A" CRUSHED STONE
400mm OPSS GRANULAR "B" TYPE II

NORTH

KEY PLAN
N.T.S.

SITE

PARKLAND BLOCK 4

STREET 1

2.0m CONC. SIDEWALK

MATCH INTO EXISTING SIDEWALK GRADES

MATCH INTO EXISTING ASPHALT GRADES. CURB RETURN ENTRANCE PER CITY OF OTTAWA STANDARD SC7.1

EXISTING SWALE TO BE REGRADED

VENTILATION SHAFT (TYP.)

CONTINUOUS BALCONY (2ND & 3RD FLOOR)

MATCH INTO EXISTING GRADES AT PROPERTY LINE

1.8m ASPH. WALKWAY

SWALE c/w SUBDRAIN

LIMIT OF UNDERGROUND PARKING

1.6m CONC. WALKWAY

3.0m CONC. WALKWAY

2.3m CONC. WALKWAY

HYDRO TRANSFORMER

MOVING AISLE

LAMARCHE AVENUE

3.0m MULTI-USE PATH

PAVILION A
6 FLOOR
FFE =89.90

PAVILION B
7 FLOOR
FFE = 89.60

PAVILION C
7 FLOOR
FFE = 89.30

UNDERGROUND STORAGE TANK

BERM

REMOVE EX STRUCTURES

EX. TREE TO BE REMOVED

3 STEPS AT 0.17m

PROPOSED SWALE TO TIE INTO EXISTING SWALE PER SUBDIVISION DESIGN

MATCH INTO EXISTING GRADES AT PROPERTY LINE

REFER TO 121214 - NDB1 FOR ADDITIONAL NOTES

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1.A	ISSUED FOR SITE PLAN APPLICATION	DEC 22/21	MJH

SCALE: 1:300 (1:300, 0 3 6 9 12)

DESIGN: MJH/ARM
CHECKED: CJR
DRAWN: MJH/ARM
CHECKED: CJR
APPROVED: JLS

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — C.J. RUDDLE — NOV 15/24 — PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
270 LAMARCHE AVENUE

DRAWING NAME
GRADING PLAN - BLOCK 1

PROJECT No. 121214
REV REV # 1.7
DRAWING No. 121214-GRB1

PLAN #18960

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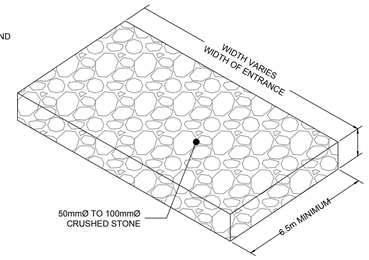
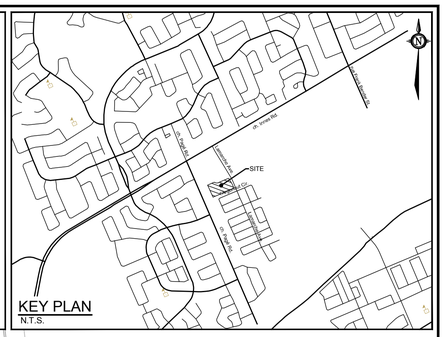
LEGEND

- PROPERTY LINE
- PROPOSED CURB
- DC — PROPOSED DEPRESSED CURB
- PROPOSED STORM MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED LANDSCAPE DRAIN
- PROPOSED AREA DRAIN
- PROPOSED BUILDING ENTRANCE
- PROPOSED TRANSFORMER
- PROPOSED SWALE
- TERRACING 3:1 SLOPE MAX (UNLESS OTHERWISE INDICATED)
- PROPOSED FILTER BAGS AT CATCHBASINS, AND CATCHBASIN MANHOLES
- M M — PROPOSED MUD MAT
- LIGHT DUTY SILT FENCE (OPSD 219.110)
- STRAW BALE BARRIER AS PER OPSD 219.180
- STM MH — EXISTING STORM MANHOLE
- CB 1 — EXISTING CATCHBASIN
- EXISTING CATCHBASIN MANHOLE

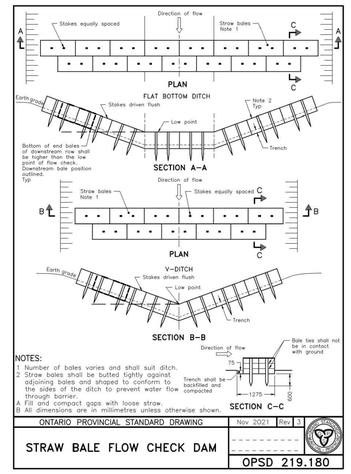


MUD MAT DETAIL
NOT TO SCALE

NORTH



KEY PLAN
N.T.S.



NOTES:
1. Number of bales varies and shall suit ditch.
2. Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A. Fill and compact gaps with loose straw.
B. All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev. 1
STRAW BALE FLOW CHECK DAM		OPSD 219.180

REFER TO 121214 - NDB1 FOR ADDITIONAL NOTES

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SCALE: 1:300
1:300
0 3 6 9 12

DESIGN MJH/ARM
CHECKED CJR
DRAWN MJH/ARM
CHECKED CJR
APPROVED JLS

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LOCATION
CITY OF OTTAWA
270 LAMARCHE AVENUE

DRAWING NAME
EROSION AND SEDIMENT CONTROL PLAN - BLOCK 1

PROJECT No. 121214
REV REV # 1.7
DRAWING No. 121214-ESCB1

D07-12-21-0232
PLAN #18960

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