

STORMWATER MANAGEMENT AND SERVICING REPORT

201 NIPISSING COURT, KANATA
CITY OF OTTAWA



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25028.01



TABLE OF CONTENTS

1. INTRODUCTION	1
2. SUPPORTING DOCUMENTS	1
3. WATER SUPPLY AND DISTRIBUTION	1
3.1. WATER SERVICING DESIGN CRITERIA	1
3.2. INTERNAL WATER DISTRIBUTION SYSTEM	1
3.3. FIRE FIGHTING REQUIREMENTS	2
4. SANITARY SERVICING	2
4.1. SANITARY DESIGN CRITERIA	2
4.2. INTERNAL SANITARY SEWER SYSTEM	2
5. STORMWATER MANAGEMENT	3
5.1. ANALYSIS METHODOLOGY	3
5.2. ALLOWABLE DRAINAGE CONDITIONS	3
5.3. PROPOSED STORM DRAINAGE SYSTEM	4
5.4. STORMWATER QUANTITY CONTROL	5
5.5. STORMWATER QUALITY CONTROL	5
5.5.1. PERMANENT QUALITY CONTROL	5
5.5.2. QUALITY CONTROL DURING CONSTRUCTION ACTIVITIES	6
6. WATER BALANCE	6
7. CONCLUSIONS	7



APPENDICES

Appendix A – Water Servicing Calculations

Appendix B – Sanitary Servicing Calculations

Appendix C – Stormwater Management Calculations

Appendix D – Excerpts from Design Brief of KWBP by IBI Group dated September 2019

Appendix E – Water Balance Calculations

Appendix F – Subsurface Investigation Report by Mendez & Associates Ltd.

Appendix G – Pre-Consultation Summary

Appendix H – StormTech Chambers Information

Appendix I – Pearson Engineering Drawings

LIST OF FIGURES & DRAWINGS

Figure 1 – Site Location Plan

Dwg SG-1 – Site Grading Plan

Dwg SS-1 – Site Servicing Plan

Dwg STM-1 – Pre-Development Storm Catchment Plan

Dwg STM-2 – Post-Development Storm Catchment Plan

Dwg STM-3 – Storm Catchment Drainage Plan

Dwg EP-1 – Erosion and Sediment Control Plan



STORMWATER MANAGEMENT & SERVICING REPORT

201 NIPISSING COURT, OTTAWA

1. INTRODUCTION

PEARSON Engineering Ltd. has been retained by BAPS Mandir Development Inc. (Client) to prepare a Stormwater Management (SWM) & Servicing Report in support of a proposed place of worship development (Project) located at 201 Nipissing Court, Kanata in the City of Ottawa (City).

The subject property is approximately 1.16 ha in size, located in the Kanata West Business Park (KWBP) and fronts onto Nipissing Court to the west, a hydro easement to the north, Bass Pro Shop to the east, and vacant land to the north and south. The Project site currently consists of a vacant lot and proposes the development of a two-storey place for worship facility and associated parking lot. The location of the site can be seen in Figure 1.

The objective of this report is to assess the existing municipal infrastructure in the vicinity of the Project and outline the proposed onsite Stormwater Management (SWM) facilities and internal services required to service the proposed Project.

2. SUPPORTING DOCUMENTS

The following documents have been referenced in the preparation of this report:

- Ministry of the Environment, Design Guidelines for Sewage Works, 2008
- Ministry of the Environment, Design Guidelines for Drinking-Water Systems, 2008
- Ministry of the Environment, Stormwater Management Planning and Design Manual, March 2003
- City of Ottawa, Sewer Design Guidelines, December 2025
- City of Ottawa, Water Distribution Design Guidelines, May 2026
- Kanata West Business Park (KWBP), Stormwater management report and Pond 6 West design brief by IBI Group dated November 2015 – Rev 5
- Design Brief, Kanata West Business Park – Phase 5 by IBI Group dated September 2019

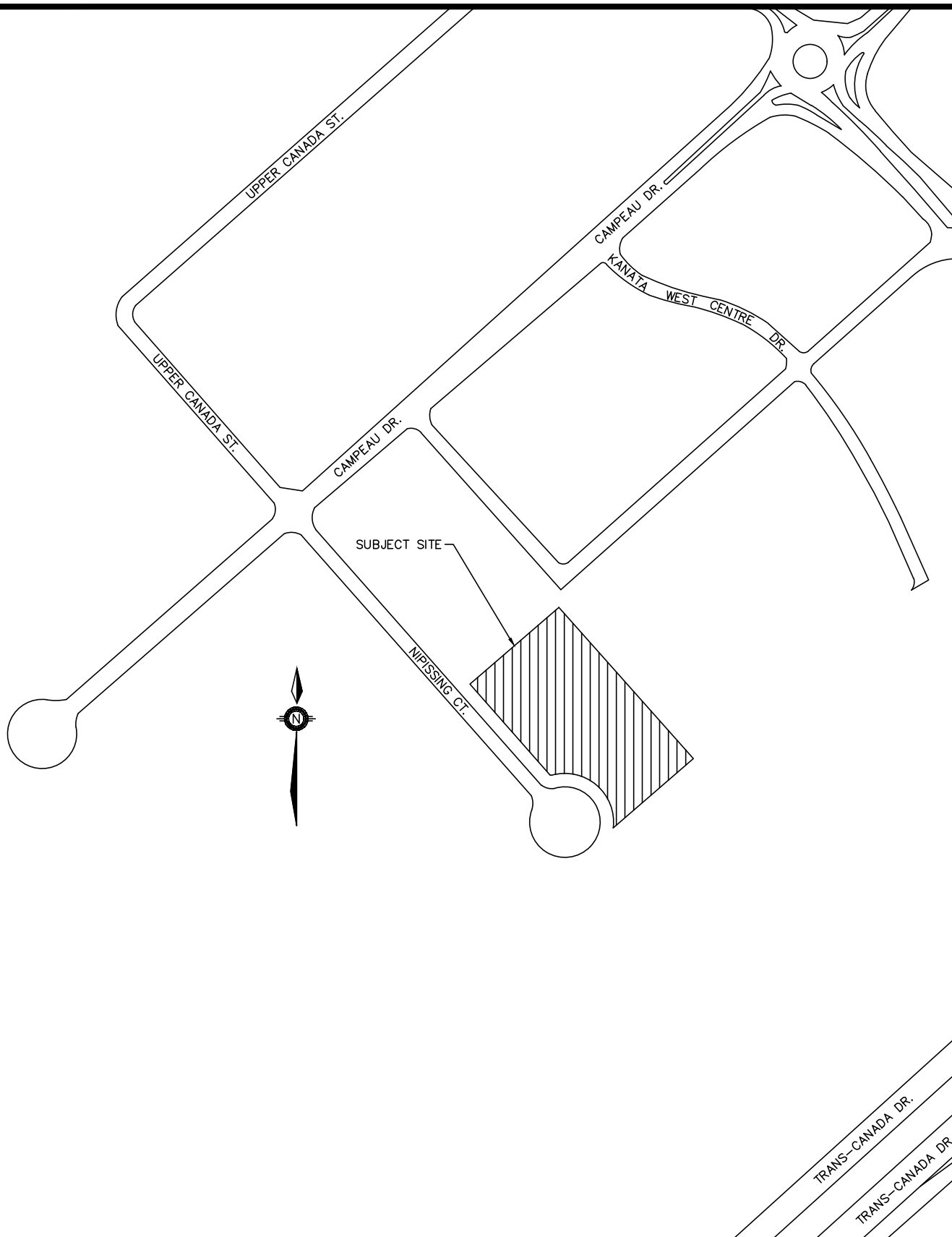
3. WATER SUPPLY AND DISTRIBUTION

3.1. WATER SERVICING DESIGN CRITERIA

The site is to have an Institutional land use area of approximately 1.16 ha. Utilizing the City of Ottawa Water Distribution Design Guidelines for Commercial and Institutional Use of 28,000 L/ha/day, an Average Day Demand (ADD) of 0.37 L/s was calculated. A Peak Rate factor of 1.80 was used in calculating a Peak Hour Demand (PHD) of 1.01 L/s for the development. Calculations for the domestic water requirements for the site can be found in Appendix A.

3.2. INTERNAL WATER DISTRIBUTION SYSTEM

As part of the Kanata West Business Park, a 300 mm diameter watermain was installed on Campeau Drive and a 250 mm diameter on Nipissing Court. The water system for the Project is intended for domestic and firefighting use. The Project will be serviced by connecting into the existing 250 mm diameter watermain on Nipissing Court with a proposed 150mm diameter fire service and a 50 mm diameter domestic service. Both the services will connect to the proposed building at the mechanical room location as shown on SS-1 Drawing in Appendix I.



BAPS CHARITIES
201 NIPISSING COURT
CITY OF OTTAWA

KEY MAP



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DESIGNED BY	MWD	HORIZ SCALE	N/A	PROJECT #	25028.01
DRAWN BY	JM	VERT SCALE	N/A	DRAWING #	FIG-1
CHECKED BY	MWD	DATE	AUGUST 2026	REVISION #	0



3.3. FIRE FIGHTING REQUIREMENTS

Fire flow calculations have been conducted as per OBC and OFM guidelines and resulted in a required fire flow of 75 L/s (4500 L/min). There are two AA Class Private hydrant placed on the eastern and western boundary line of the project site along with three existing AA class hydrants within 100 m and total eight existing AA class hydrant within 150 m of the site. As per Table 1 in Appendix I of Tech Bulletin ISTB 2018-02 issued by the City of Ottawa, the combined fire flow of these hydrants totals 45,600 L/min. As the required fire flow of 4500 L/min is less than the 45,600 L/min, the existing hydrant spacing is adequate for the site.

The boundary conditions were provided by the City of Ottawa for a junction at Campeau Drive and Nipissing Drive located near the subject site. Accordingly, the boundary conditions were adjusted for the project based on the change in ground elevation from 105.70 m at Connection-1 on Campeau Drive to 105.57 m at the subject site. The water pressures presented in Table 1 were calculated based on the Hydraulic Grade Lines (HGLs) provided by the City for these boundary conditions and the adjusted ground elevation at the site. When compared with the minimum and maximum allowable water pressures specified in the City of Ottawa Water Design Guidelines, the site water pressure exceeds the City's allowable limits. Therefore, the Mechanical Engineer should review whether a pressure-reducing valve is required downstream of the project site. The fire flow analysis, water pressure conversion, and boundary conditions provided by the City are included in Appendix A.

Table 1: Water Demand

Design Parameter	Demand (L/s)	HGL (m)	Pressure (PSI)	Pressure (kPa)	City of Ottawa minimum (kPa)	City of Ottawa maximum (kPa)
Average Daily Demand	0.37	162.30	80.56	556.33	-	552
Peak Hour	1.01	155.60	71.14	490.49	276	552
Max Day + Fire Flow	100.56	151.20	64.80	446.78	140	552

4. SANITARY SERVICING

4.1. SANITARY DESIGN CRITERIA

The site is to have an Institutional land use area of approximately 1.16 ha. Utilizing the City of Ottawa Sewer Design Guidelines for Commercial and Institutional Use of 28,000 L/ha/day, an Average Day Demand (ADD) of 0.37 L/s was calculated. Using a Peak Rate factor of 1.50 and an infiltration allowance of 0.33 L/ha/s, a peak flow of 0.94 L/s was calculated for the proposed development. Calculations for the sanitary flows for the site can be found in Appendix B.

4.2. INTERNAL SANITARY SEWER SYSTEM

The sanitary sewers will be constructed in accordance with the City of Ottawa's Sewer Design Guidelines and the Ministry of the Environment, Conservation and Parks (MECP) guidelines in order to service the Project. Similar to the water servicing for the project, sanitary servicing will be provided by connecting into the existing 250 mm diameter sanitary main on Nipissing Court. A proposed 200 mm diameter sanitary sewer system to convey sanitary flow to a proposed monitoring MH1A and ultimately to the 250 mm diameter sanitary sewer on the Nipissing Court.



5. STORMWATER MANAGEMENT

A key component of the development is the need to address environmental and related SWM issues. These are examined in a framework aimed at meeting the City of Ottawa and MECP requirements. This report focuses on the necessary measures to satisfy the MECP's SWM requirements.

It is understood the objectives of the SWM plan are to:

- Protect life and property from flooding and erosion;
- Maintain water quality for ecological integrity, recreational opportunities, etc.;
- Protect and maintain groundwater flow regime(s);
- Protect aquatic and fishery communities and habitats; and
- Maintain and protect significant natural features.

5.1. ANALYSIS METHODOLOGY

The design of the SWM Facilities for this site has been conducted in accordance with:

- The Ministry of the Environment Stormwater Management Planning and Design Manual, March 2003
- City of Ottawa Sewer Design Guidelines, December 2025

In order to design the facilities to meet these requirements, it is essential to select the appropriate modeling methodology for the storm system design. Given the size of the site, the Rational Method is appropriate for the design for the SWM system.

5.2. ALLOWABLE DRAINAGE CONDITIONS

The project site is located within the Kanata West Business Park subdivision and as such it must follow the approved drainage design outline in the Design Brief for Kanata West Business Park – Phase 5 completed by IBI Group dated September 2019. The subject site, including its allowable runoff coefficient and catchment extent, is identified on the Storm Drainage Area Plan, Drawing No. 500, dated September 10, 2019, Rev. 15. The design brief outlines that the project site is located within Catchment ID 200 and based on the SWMHYMO model parameters shown in Table 4.2 of the report, the subject site has an allowable release rate of 178 L/s for Minor storm event up to 5-year and 185 L/s for Major storm event up to 100-year storm event which will be released to the 1950 mm storm sewer on Nipissing Court. The excerpts from the design brief are provided in Appendix C. Storm catchment areas and runoff coefficient are shown on Drawing STM-1 in Appendix I.

Table 2: Allowable Peak Flows

	5 Year Storm	100 Year Storm
Pre-Development Peak Flows (L/s)	178	185

Mendez & Associates Ltd. prepared a Subsurface Investigation report for the site dated July 07, 2026. The investigation revealed that the site consists of brown sandy silt underlain by bedrock. The investigation shows that the groundwater was found in borehole 5 and 11 at a depth of 1.9 m and 1.8 m below ground surface. The subsurface investigation report can be found in Appendix F.



5.3. PROPOSED STORM DRAINAGE SYSTEM

Post-development drainage patterns for the site will generally follow pre-development drainage conditions. The majority of the paved areas will be conveyed overland to a catchbasin and storm sewer system, sized for the 5-year storm event located throughout the site. Post-development storm drainage plan can be found on Drawing STM-2 in Appendix I and the four (4) catchments are described below.

- Catchment 201 (0.06 ha) comprises a western landscape area, which will drain uncontrolled towards Nipissing Court and ultimately drain to the existing SWM pond.
- Catchment 202 (0.02 ha) consists of a landscape area on the south-west corner of the property which will drain uncontrolled towards Nipissing Court and ultimately drain to the existing SWM pond.
- Catchment 203 (0.06 ha) consists of landscape area along the southern and eastern property line of the site which will drain uncontrolled and will be captured through the existing catch basin and ultimately drains to the existing SWM pond.
- Catchment 204 (1.01 ha) contains the Institutional building along with its associated parking and interior road. Runoff will be collected within the proposed storm sewer and drain to the proposed SWM pond situated in the south of the property.

The proposed development will decrease the overall imperviousness of the site with the post-development runoff coefficient decreasing from 0.85 under allowable conditions to 0.73. Given the size of the site, Modified Rational Method will be used to determine the post-development peak flows. IDF curve parameters were taken from the City of Ottawa design guidelines. Table 2 summarizes the post-development peak flows with no controls, calculated using Rational Method. Detailed calculations can be found in Appendix C.

Table 2: Post-Development Peak Flows (L/s)

Storm Event	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
Catchment 201	2.7	3.7	4.3	5.7	6.9	7.9
Catchment 202	1.0	1.3	1.6	2.1	2.5	2.9
Catchment 203	3.0	4.0	4.7	6.1	7.5	8.6
Catchment 204	172.8	234.4	274.7	358.0	435.8	502.1
Total Post-Development Peak Flows (L/s)	179.5	243.4	285.3	371.9	452.7	521.5

As per the Design Brief for Kanata West Business Park – Phase 5 completed by IBI Group dated September 2019, the existing 1950 mm diameter storm sewer on Nipissing Court is designed for an allowable release rate of 185 L/s for the proposed development. Therefore, all post development flows from the site will be controlled to be less than or equal to the allowable release rate of the subdivision based on which the downstream SWM pond was sized to provide quantity control. Table 2 indicates the peak flows after development have increased from allowable release rate. Therefore, additional on-site quantity control storage will be required in the form of the proposed SWM Pond and an orifice plate which will control the post development flows to be less than or equal to allowable capture rate. Calculations for the proposed stormwater management system can be found in Appendix C.



5.4. STORMWATER QUANTITY CONTROL

The Modified Rational Method was used to determine the additional on-site storage required to control the 100-year post-development peak flow to the allowable release rate of 185 L/s. A SWM pond is proposed along the southern portion of the property. An outlet control structure has been designed consisting of a 250 mm diameter orifice plate located at STM Manhole (MH) 4, which will restrict the outflow to the allowable release rate and force storm water to back up in the proposed pond. The controlled site discharge will be conveyed through the existing 300 mm diameter storm sewer connecting the existing ditch inlet to the 1,950 mm diameter storm sewer. The existing 300 mm storm sewer has been assessed under a tailwater elevation of 103.30 m, corresponding to the invert elevation of the orifice plate, to confirm that backwater effects will be avoided for up to and including the 100-year storm event. The HY-8 model results for the existing 300 mm diameter storm sewer are provided in Appendix C. The existing 1,950 mm diameter storm sewer will convey the controlled flows to the existing stormwater management pond, known as Pond 6 West, which ultimately discharges to Feedmill Creek.

In the event of a storm greater than the 100-year storm or if the orifice tube becomes blocked, the site will drain overland towards south end of the property and ultimately drains into the Feedmill Creek.

Table 3 below summarizes post-development peak flows and storage volumes; see Appendix C for detailed calculations.

Table 3: Summary of Post-Development Peak Flows and Storage Volumes

Storm Event	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
Allowable Peak Flows (L/s)	178	178	185	185	185	185
Controlled Peak Flows (L/s)	91.7	110.1	120.2	137.4	150.2	158.8
Uncontrolled Peak Flows (L/s)	8.06	10.94	12.82	16.71	20.35	23.44
Total Post-Development Peak Flows (L/s)	99.8	121.0	133.0	154.1	170.6	182.2
Provided Storage (m ³)	57	89	113	166	220	262

5.5. STORMWATER QUALITY CONTROL

The MECP in March 2003 issued a “Stormwater Management Planning and Design Manual”. This manual has been adopted by a variety of agencies including the City of Ottawa. The objective of the Stormwater Quality Control will be to ensure Enhanced Protection quality control as stated in the MECP manual. To achieve enhanced protection, permanent and temporary control of erosion and sediment transport are proposed and are discussed in the following sections.

5.5.1. PERMANENT QUALITY CONTROL

The development's impervious areas pose a potential risk to stormwater quality through the collection of grit, sand, and oils. The MECP standard stipulates a Total Suspended Solids (TSS) removal of at least 80% in order to treat to the MECP's Enhanced Level of Protection standard.



As per the Design Brief for Kanata West Business Park – Phase 5 completed by IBI Group, the existing SWM pond for the subdivision provides quality control for the catchment area 200 with an imperviousness of 94%. Whereas the proposed development will have 75% imperviousness which is less than the allowable for the project site, therefore the existing SWM Pond will be enough to provide 80% TSS removal.

5.5.2. QUALITY CONTROL DURING CONSTRUCTION ACTIVITIES

During construction, earth grading and excavation will create the potential for soil erosion and sedimentation. It is imperative that effective environmental and sedimentation controls are in place and maintained throughout the duration of construction activities to ensure stormwater runoff's quality.

Therefore, the following recommendations shall be implemented and maintained during construction to achieve acceptable stormwater runoff quality:

- Installation of silt fence along the entire perimeter of the site to reduce sediment migration onto surrounding properties;
- Restoration of exposed surfaces with vegetative and non-vegetative material as soon as construction schedules permit. The duration in which surfaces are disturbed/exposed shall not exceed 30 days;
- Reduce stormwater drainage velocities where possible; and,
- Minimize the amount of existing vegetation removed.

6. WATER BALANCE

The Carp River Watershed/Subwatershed Study (CRWS) established water balance calculations and infiltration targets within the subwatershed based on soil characteristics. Building on the CRWS, the Kanata West Master Servicing Study (KWMSS) established an infiltration target of 70 to 100 mm/year of runoff for the western portion of the Kanata West Business Park (KWBP), with a further 25% increase to the pre-development infiltration target to account for areas such as roadway corridors where infiltration opportunities are limited.

It is proposed to infiltrate the rooftop area of the Institutional building through infiltration chambers. In order to achieve the infiltration standards established by Carp Watershed/subwatershed study, the total rooftop area of 1747 m² of the project was utilized to yield a depth of 236 mm of rainfall which represents 25% of all rainfall across the site. As per MOE Figure C-2, 25% of annual rainfall is equivalent to the 2.5 mm storm, which results in a total volume of 4.30 m³ required for the site.

A total of 5 SC-310 StormTech chambers are proposed for the site which will provide 4.40 m³ of infiltration storage, surpassing the Carp watershed-subwatershed study requirements. Detailed water balance and storm chambers calculations can be found in Appendix E.



7. CONCLUSIONS

The proposed development will require the connection of sanitary and watermain services to the existing services.

Quantity control for the site is provided in proposed SWM pond with an orifice plate at the proposed MH 4 which will reduce the 100-year post development flows to the allowable release rate as per subdivision design.

Quality control is provided through the existing SWM pond as the overall permeability of the site after development is 75% which is less than the allowable permeability of 85%.

Water balance requirement of the site will be provided with rooftop infiltration.

All of which is respectfully submitted,

PEARSON ENGINEERING LTD.

Mike Dejean, P.Eng.
Partner, Manager of Engineering Services





APPENDIX A

WATER SERVICING CALCULATIONS

201 Nipissing Court, City of Ottawa Water Flow Calculations

Design Criteria:

Average Water Consumption Rate (Q): 28000 L/ha/day
 Max. Daily Factor: 1.50
 Max. Hour Factor: 1.80

(As per Table 4.2, Ottawa Design Guidelines - Water Distribution, May 2026)

Site Data:

Description	Site Area	Flow Rate	Peaking Factors	
Institutional/Place of Worship	1.16 ha	28,000 L/ha/d	Max Daily Factor*	1.50
			Max Hour Factor*	1.80

*From Ottawa Design Guidelines based on Institutional Land Use

Calculate Average Day Demand:

$$\begin{aligned}
 \text{ADD} &= \text{Flow Rate (L/ha/day)} \times \text{Area (ha)} \\
 \text{ADD} &= 28,000 \times 1.16 \\
 \text{ADD} &= 32,365 \text{ L/day} \\
 \text{ADD} &= 0.37 \text{ L/s}
 \end{aligned}$$

Calculate Max Daily Flow

$$\begin{aligned}
 \text{MDF} &= \text{ADD} \times \text{Max Daily Factor} \\
 \text{MDF} &= 0.37 \times 1.50 \\
 \text{MDF} &= 0.56 \text{ L/s}
 \end{aligned}$$

Calculate Max Hour Demand

$$\begin{aligned}
 \text{PHD} &= \text{MDF} \times \text{Max Hour Factor} \\
 \text{PHD} &= 0.56 \times 1.80 \\
 \text{PHD} &= 1.01 \text{ L/s}
 \end{aligned}$$

201 Nipissing Court, City of Ottawa Proposed Fire Flow Calculations

Required fire flow calculations as per OFM/OBC guidelines

Location:	201 Nipissing Court, City of Ottawa	
OBC Occupancy:	A-2	
Building Foot Print:	1,737 m ²	
Height of the Building	8.5 m	Church/Temple

Date: 2026-07-29
Project: 201 Nipissing Court
Project Number: 25028.01

North Vacant Land	Distance to Property Line from Exterior face of the poposed building	>10	0.00
East Ex. Industrial Unit	Distance to Property Line from Exterior face of the poposed building	>10	0.00
South Vacant Land	Distance to Property Line from Exterior face of the poposed building	>10	0.00
West Nipissing Court	Distance to Property Line from Exterior face of the poposed building	>10	0.00

Exposure Distance (m)	Spatial Coefficient
0 - 5	0.5
6	0.4
7	0.3
8	0.2
9	0.1
10	0.0

Total: 0.0
 $S_{Total} = 1.0 + [(S_{North}) + (S_{East}) + (S_{South}) + (S_{West})]$
 $S_{Total} = 1.0$ *no more than 2

Calculations:

$K = 10$

$Q = KVS_{Total}$

$V = 14,765 \text{ m}^3$

$S_{total} = 1.0$

Where: Q = minimum supply of water in litres (L)
 K = water supply coefficient from Table 1 of OFM guidelines
 V = total building volume in cubic metres
 S_{Total} = total of spatial coefficient values from property line exposures on all sides, as obtained from the formula

Round to Nearest 1,000 L/min
 $Q = 147,645 \text{ L}$
 $Q = 148,000 \text{ L}$

Fire Flow Requirements from Table J.1 - OBC Fire Flows from Technical Bulletin IWSTB-2024-05

Required Fire Flow

RFF = 4500 L/min

RFF = 1,188 GPM

RFF = 75 L/s

201 Nipissing Court, City of Ottawa Fire Flow Calculations

Required fire flow calculations as per the Fire Underwriters Survey's Water Supply for Public Fire Protection - 2020:

Location:	201 Nipissing Court, City of Ottawa
OBC Occupancy:	A-2 - Churches
Building Foot Print:	1,737 m ²
# of Stories:	2

Construction Class: Type 2 Non-Combustible

Automated Sprinkler Protection:	Credit	Total
NFPA 13 sprinkler standard	Yes 30%	30%
Standard Water Supply	No 0%	
Fully Supervised System	No 0%	

Contents Factor: Non-Combustible

Exposure Side & Building	Length - Height Ratio	Distance to Exposure Building (m)	Charge
North Prop. Commercial	> 100	>30	0%
East Ex. Industrial Lot	> 100	20.1 to 30	4%
South Ex. Woodland Area	> 100	>30	0%
West Ex. Cleared lot	> 100	>30	0%
Total:			4%

Are Buildings Contiguous? No

Fire Resistant Building: Are vertical openings and exterior vertical communications protected with a minimum one (1) hr rating?

Calculations: C = 0.8 Non-Combustible

Required Fire Flow $RFF = 220 \times C \times \sqrt{A}$

Total Effective Area A = 3,474 m²

RFF = 10,374 L/min

Round to Nearest 1000 L/min RFF = 10,000 L/min

Correction Factors:

Contents Charge	E = -2,500	L/min
RFF Adjusted for Contents	E = 7,500	L/min
Reduction For Sprinkler	F = 2,250	L/min
RFF w/ Sprinkler Reduction	F = 5,250	L/min

Exposure Charge G = 300 L/min
RFF w/ Exposure Charge G = 5,550 L/min

Required Fire Flow: RFF = 5,550 L/min

Round to Nearest 1,000 L/min **RFF = 6,000 L/min**

RFF = 1,584 GPM

RFF = 100 L/s

Date: 2026-08-07
Project: 201 Nipissing Court, City of Ottawa
Project Number: 25028.01

Type	Construction Class	Charge
5	Wood Frame	1.50
4	Heavy Timber (A-D)	0.80 - 1.50
3	Ordinary	1.00
2	Non-Combustible	0.80
1	Fire Resistive	0.60

Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Charge: -25%

Separation Distance	Charge
0.0 - 3.0 m	15%
3.1 - 10.0 m	11%
10.1 - 20.0 m	8%
20.1 - 30.0 m	4%
> 30.1 m	0%

Where: RFF = required fire flow in liters per minute

C = Coefficient related to the type of construction

A = the total floor area in square meters (excluding basements in building considered)

* Must be > 2,000 L/min or < 45,000 L/min

As per "Water Supply for Public Fire Protection" pg.20 note H:

$$RFF = E - F + G$$

$$RFF = 7500 \text{ L/min} - 2250 \text{ L/min} + 300 \text{ L/min}$$

$$RFF = 5550 \text{ L/min}$$

Boundary Conditions 201 Nipissing Court – 2026

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	22.2	0.37
Maximum Daily Demand	33.6	0.56
Peak Hour	60.6	1.01
Fire Flow Demand #1	6,000.0	100.00

Location



Results

Connection 1 - Campeau Dr

Demand Scenario	Head (m)	Pressure¹ (psi)
Maximum HGL	162.3	81
Peak Hour	155.6	71
Max Day plus Fire Flow #1	151.2	65

¹ Ground Elevation = 105.7 m

Notes

1. Demands for proposed Connection 1 at existing water main along Nipissing Court were assigned to upstream junction at Campeau Dr. off the public looped watermain. The engineer must calculate headloss off the dead-end main.
2. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
 - If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
 - Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermain deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.



APPENDIX B

SANITARY SERVICING CALCULATIONS

201 Nipissing Court, City of Ottawa Sanitary Flow Calculations

Design Criteria

Peak Flow	$Q_p = P * Q * M / 86,400$	
Average Water Consumption Rate (Q):	28000 L/ha/day	(As per Table 4.2, Ottawa Design Guidelines - Water Distribution, May 2026)
Peaking Factor (M)	1.50	
Extraneous Flow	0.33 L/ha/sec	(As per Section 4.4.1.4, Ottawa Sewer Design Guidelines, December 2025)

Site Data

Description	Site Area	Flow Rate
Institutional/Place of Worship	1.16 ha	28,000 L/ha/d

Calculate Average Daily Flows (ADF):

ADF	=	Flow Rate (L/ha/day)	x	Area (ha)
ADF	=	28,000	x	1.16
ADF	=	32,365	L/day	
ADF	=	0.37	L/s	

Infiltration Allowance (I_A):	=	Extraneous Flow (L/ha/day)	x	Area (ha)
I_A	=	0.33	x	1.16
I_A	=	0.38	L/s	

Calculate Peak Flow (Q_p):

Q_p	=	ADF	x	Peaking Factor
Q_p	=	0.37	x	1.50
	=	0.56	L/s	

Calculate Peak Flow (with Infiltration Allowance):

Q_p (with I_A)	=	Q_p	+	Infiltration Allowance (I_A):
Q_p (with I_A)	=	0.56	+	0.38
Q_p (with I_A)	=	0.94	L/s	



APPENDIX C

STORMWATER MANAGEMENT CALCULATIONS



201 Nipissing Court, Ottawa Calculation of Runoff Coefficients

Runoff Coefficient	=	0.20	0.90	0.90	0.80	0.90		Weighted
Surface Cover	=	Grass	Asphalt	Building	Gravel	Conc.		Runoff Coefficient
<u>Allowable</u>	Total Area (m ²)	Area (m ²)	Area (m ²)	Area (m ²)	Area (m ²)	Area (m ²)		
101	11559	-	-	-	-	-		0.85
Pre Total	11559	-	-	-	-	-		0.85
<u>Post-Development</u>	Total Area (m ²)	Area (m ²)	Area (m ²)	Area (m ²)	Area (m ²)	Area (m ²)		
201	639	639	0	0	0	0		0.20
202	288	288	0	0	0	0		0.20
203	788	738	0	50	0	0		0.24
204	9844	1186	6623	1737	0	298		0.82
Post Total	11559	2851	6623	1787	0	298		0.73

Note: As per Design Brief Kanata West Business Park Phase-5 storm drainage plan provided by IBI Group dated September 2019, an allowable runoff coefficient of 0.85 was used in calculating Pre-development peak flows.

201 Nipissing Court, Ottawa Post-Development Peak Flows

Storm Event (yrs)	City of Ottawa			Modified Rational Method $Q = CiCIA / 360$
	Coeff A	Coeff B	Coeff C	
2	732.95	6.20	0.81	Where: Q - Flow Rate (m^3/s) C - Rational Method Runoff Coefficient I - Storm Intensity (mm/hr) A - Area (ha.) Ci - Peaking Coefficient
5	998.07	6.05	0.81	
10	1174.18	6.01	0.82	
25	1402.88	6.02	0.82	
50	1569.58	6.01	0.82	
100	1735.69	6.01	0.82	

	Uncontrolled Area		Controlled Area	
Area Number	201	202	203	204
Area	0.06 ha	0.03 ha	0.08 ha	0.98 ha
Runoff Coefficient	0.20	0.20	0.24	0.82
Time of Concentration	10 min	10 min	10 min	10 min
Return Rate	2 year	2 year	2 year	2 year
Peaking Coefficient (Ci)	1.00	1.00	1.00	1.00
Rainfall Intensity	76.81 mm/hr	76.81 mm/hr	76.81 mm/hr	76.81 mm/hr
Post-Development Peak Flow	2.7 L/s	1.2 L/s	4.1 L/s	171.3 L/s

Return Rate	5 year	5 year	5 year	5 year
Peaking Coefficient (Ci)	1.00	1.00	1.00	1.00
Rainfall Intensity	104.19 mm/hr	104.19 mm/hr	104.19 mm/hr	104.19 mm/hr
Post-Development Peak Flow	3.7 L/s	1.7 L/s	5.6 L/s	232.4 L/s

Return Rate	10 year	10 year	10 year	10 year
Peaking Coefficient (Ci)	1.00	1.00	1.00	1.00
Rainfall Intensity	122.14 mm/hr	122.14 mm/hr	122.14 mm/hr	122.14 mm/hr
Post-Development Peak Flow	4.3 L/s	2.0 L/s	6.5 L/s	272.4 L/s

Return Rate	25 year	25 year	25 year	25 year
Peaking Coefficient (Ci)	1.10	1.10	1.10	1.10
Rainfall Intensity	144.69 mm/hr	144.69 mm/hr	144.69 mm/hr	144.69 mm/hr
Post-Development Peak Flow	5.7 L/s	2.5 L/s	8.5 L/s	355.0 L/s

Return Rate	50 year	50 year	50 year	50 year
Peaking Coefficient (Ci)	1.20	1.20	1.20	1.20
Rainfall Intensity	161.47 mm/hr	161.47 mm/hr	161.47 mm/hr	161.47 mm/hr
Post-Development Peak Flow	6.9 L/s	3.1 L/s	10.4 L/s	432.2 L/s

Return Rate	100 year	100 year	100 year	100 year
Peaking Coefficient (Ci)	1.25	1.25	1.25	1.25
Rainfall Intensity	178.56 mm/hr	178.56 mm/hr	178.56 mm/hr	178.56 mm/hr
Post-Development Peak Flow	7.9 L/s	3.6 L/s	11.9 L/s	497.8 L/s

201 Nipissing Court, Ottawa

Quantity Control Volume Calculations

DATE:21-Aug-26

FILE:25028.01

CONTRACT/PROJECT:201 Nipissing Court, Ottawa

COMPLETED BY:ST

Modified Rational Method Parameters

Pre Development Area (ha)	Post Development Area (ha)	Time of Concentration (min)	Time Increments (min)	Pre Development Runoff Coefficient	Post Development Runoff Coefficient
1.16	0.98	10	1	0.85	0.82

Note: Refer to page Calculation of Runoff Coefficients for detailed calculations of Modified Rational Method parameters.

Pre-Development Runoff Rate

	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
C	0.85	0.85	0.85	0.94	1.02	1.06
I	76.81	104.19	122.14	144.69	161.47	178.56
A	1.16	1.16	1.16	1.16	1.16	1.16
Q	209.6	284.4	333.4	434.4	528.8	609.2

Note: Q = 0.00278CIA

Allowable Runoff Rate

	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Q _{Allowable}	178.00	178.00	185.00	185.00	185.00	185.00

Rainfall Station	City of Ottawa
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Surface Ponding Design Inputs

Storm Event (yrs)	Rational Method Coefficient	Rational Method Coefficient	Rational Method Coefficient	Controlled Peak Flows (L/s)	Post Development Runoff Coefficient
	A	B	C		
2	732.95	6.20	0.81	91.7	0.82
5	998.07	6.05	0.81	110.1	0.82
10	1174.18	6.01	0.82	120.2	0.82
25	1402.88	6.02	0.82	137.4	0.90
50	1569.58	6.01	0.82	150.2	0.98
100	1735.69	6.01	0.82	158.8	1

Storm Event (yrs)	Storage (m ³)	Time (min)
2	57	19
5	89	21
10	113	23
25	166	26
50	220	28
100	262	30

Note: Storage volume calculated as per Hydrology Handbook, Second Edition, American Society of Civil Engineers, 1996

Time (min)	2 Year					Difference	5 Year					Difference	10 Year					Difference	25 Year					Difference	50 Year					Difference	100 Year					Difference
	Intensity mm/hr	Inflow L/s	Outflow L/s	Storage m³	Intensity mm/hr		Inflow L/s	Outflow L/s	Storage m³	Intensity mm/hr	Inflow L/s		Outflow L/s	Storage m³	Intensity mm/hr	Inflow L/s	Outflow L/s		Storage m³	Intensity mm/hr	Inflow L/s	Outflow L/s	Storage m³		Intensity mm/hr	Inflow L/s	Outflow L/s	Storage m³	Intensity mm/hr		Inflow L/s	Outflow L/s	Storage m³			
1	148.14	330.7	91.7	-10	13	203.51	453.9	110.1	-9	18	239.57	534.3	120.2	-8	22	284.43	697.8	137.4	-3	29	317.75	850.5	150.2	1	36	351.38	960.8	158.8	5	41						
2	133.33	297.6	91.7	3	10	182.69	407.5	110.1	9	14	214.88	479.3	120.2	14	17	255.03	625.7	137.4	26	23	284.86	762.4	150.2	37	29	315.00	861.4	158.8	46	33						
3	121.46	271.1	91.7	13	8	166.09	370.4	110.1	24	12	195.22	435.4	120.2	32	14	231.63	568.3	137.4	49	19	258.67	692.3	150.2	66	23	286.05	782.2	158.8	79	27						
4	111.72	249.4	91.7	21	7	152.51	340.2	110.1	35	10	179.16	399.6	120.2	45	11	212.51	521.4	137.4	67	15	237.29	635.1	150.2	89	19	262.41	717.5	158.8	106	22						
5	103.57	231.2	91.7	28	6	141.18	314.9	110.1	45	8	165.77	369.7	120.2	57	9	196.58	482.3	137.4	83	13	219.48	587.4	150.2	109	16	242.70	663.7	158.8	128	19						
6	96.64	215.7	91.7	34	5	131.57	293.4	110.1	53	7	154.42	344.4	120.2	66	8	183.08	449.2	137.4	96	11	204.38	547.0	150.2	125	14	226.01	618.0	158.8	146	16						
7	90.66	202.4	91.7	38	4	123.30	275.0	110.1	59	6	171.48	322.7	120.2	74	7	191.41	420.7	137.4	107	9	191.41	512.3	150.2	139	12	211.67	578.8	158.8	162	14						
8	85.46	190.8	91.7	42	3	116.11	259.0	110.1	65	5	136.19	303.8	120.2	81	6	161.39	396.0	137.4	116	8	180.14	482.1	150.2	150	10	199.20	544.7	158.8	176	12						
9	80.87	180.5	91.7	45	3	109.79	244.9	110.1	69	4	128.74	287.1	120.2	87	5	152.54	374.2	137.4	124	7	170.24	455.6	150.2	160	9	188.25	514.8	158.8	187	10						
10	76.81	171.4	91.7	48	2	104.19	232.4	110.1	73	3	122.14	272.4	120.2	91	4	144.69	355.0	137.4	131	6	161.47	432.2	150.2	169	8	178.56	488.3	158.8	198	9						
11	73.17	163.3	91.7	50	2	99.19	221.2	110.1	77	3	116.25	259.3	120.2	95	3	137.69	337.8	137.4	136	5	153.65	411.2	150.2	177	7	169.91	464.6	158.8	207	8						
12	69.89	156.0	91.7	52	1	94.70	211.2	110.1	79	2	110.96	247.5	120.2	99	3	131.40	322.4	137.4	141	4	146.62	392.4	150.2	183	6	162.13	443.3	158.8	214	7						
13	66.93	149.4	91.7	53	1	90.63	202.1	110.1	82	2	106.17	236.8	120.2	102	2	125.71	308.4	137.4	146	4	140.26	375.4	150.2	189	5	155.11	424.1	158.8	221	6						
14	64.23	143.4	91.7	54	1	86.93	193.9	110.1	84	2	101.82	227.1	120.2	104	2	120.55	295.8	137.4	150	3	134.49	360.0	150.2	194	4	148.72	406.7	158.8	227	5						
15	61.77	137.9	91.7	55	1	83.56	186.4	110.1	85	1	97.85	218.2	120.2	106	2	115.83	284.2	137.4	153	3	129.22	345.9	150.2	199	4	142.89	390.7	158.8	233	5						
16	59.50	132.8	91.7	56	0	80.46	179.5	110.1	86	1	94.21	210.1	120.2	108	1	111.50	273.6	137.4	155	2	124.39	332.9	150.2	202	3	137.55	376.1	158.8	237	4						
17	57.42	128.2	91.7	56	0	77.61	173.1	110.1	87	1	90.86	202.6	120.2	109	1	107.52	263.8	137.4	158	2	119.94	321.0	150.2	206	3	132.63	362.7	158.8	241	4						
18	55.49	123.9	91.7	57	0	74.97	167.2	110.1	88	1	87.76	195.7	120.2	110	1	103.84	254.8	137.4	160	2	115.83	310.0	150.2	209	2	128.08	350.2	158.8	245	3						
19	53.70	119.9	91.7	57	0	72.53	161.8	110.1	89	0	84.88	189.3	120.2	111	1	100.43	246.4	137.4	161	1	112.01	299.8	150.2	211	2	123.87	338.7	158.8	248	3						
20	52.03	116.1	91.7	57	0	70.25	156.7	110.1	89	0	82.21	183.4	120.2	112	0	97.26	238.6	137.4	163	1	108.47	290.3	150.2	213	2	119.95	328.0	158.8	251	2						
21	50.48	112.7	91.7	57	0	68.13	152.0	110.1	89	0	79.72	177.8	120.2	112	0	94.30	231.4	137.4	164	1	105.17	281.5	150.2	215	1	116.30	318.0	158.8	253	2						
22	49.02	109.4	91.7	56	0	66.15	147.5	110.1	89	0	77.39	172.6	120.2	112	0	91.53	224.6	137.4	165	1	102.08	273.2	150.2	216	1	112.88	308.7	158.8	255	2						
23	47.66	106.4	91.7	56	0	64.29	143.4	110.1	89	0	75.21	167.7	120.2	113	0	88.94	218.2	137.4	165	0	99.18	265.5	150.2	218	1	109.68	299.9	158.8	257	1						
24	46.37	103.5	91.7	56	-1	62.54	139.5	110.1	89	0	73.15	163.2	120.2	112	0	86.51	212.2	137.4	166	0	96.47	258.2	150.2	219	1	106.68	291.7	158.8	258	1						
25	45.17	100.8	91.7	55	-1	60.90	135.8	110.1	88	-1	71.22	158.9	120.2	112	0	84.22	206.6	137.4	166	0	93.91	251.3	150.2	219	1	103.85	284.0	158.8	259	1						
26	44.03	98.3	91.7	54	-1	59.35	132.4	110.1	88	-1	69.40	154.8	120.2	112	-1	82.05	201.3	137.4	166	0	91.50	244.9	150.2	220	0	101.18	276.7	158.8	260	1						
27	42.95	95.9	91.7	54	-1	57.88	129.1	110.1	87	-1	67.68	151.0	120.2	111	-1	80.01	196.3	137.4	166	0	89.22	238.8	150.2	220	0	98.66	269.8	158.8	261	0						
28	41.93	93.6	91.7	53	-53	56.49	126.0	110.1	86	-1	66.05	147.3	120.2	111	-1	78.08	191.6	137.4	165	0	87.06	233.0	150.2	220	0	96.27	263.3	158.8	261	0						
29	40.96	91.4	0.0	0	0	55.18	123.1	110.1	85	-1	64.51	143.9	120.2	110	-1	76.25	187.1	137.4	165	-1	85.02	227.5	150.2	220	0	94.01	257.1	158.8	262	0						
30	40.04	89.4	0.0	0	0	53.93	120.3	110.1	84	-1	63.05	140.6	120.2	109	-1	74.51	182.8	137.4	164	-1	83.08	222.4	150.2	220	0	91.87	251.2	158.8	262	0						
31	39.17	87.4	0.0	0	0	52.74	117.6	110.1	83	-1	61.65	137.5	120.2	108	-1	72.86	178.8	137.4	164	-1	81.23	217.4	150.2	220	0	89.83	245.6	158.8	262	0						

: Maximum Storage Volume

201 Nipissing Court, Ottawa Stage-Storage-Discharge Table

Elevation (m)	Volume (m ³) Pipe + Manhole	Volume (m ³) Pond	Cum. Vol. (m ³)	Orifice Head (m)	Orifice Flow (L/s)	Weir Head (m)	Weir Flow (L/s)	Total Flow (L/s)
103.30	1.0	0	1	0	0	0.0	0	0.0
103.35	1.0	0	1.9	0	0	0.0	0	0.0
103.40	1.0	1.8	4.7	0.00	0.0	0.0	0	0.0
103.45	1.0	2.2	7.8	0.03	21.7	0.0	0	21.7
103.50	1.2	2.5	11.5	0.08	37.5	0.0	0	37.5
103.55	2.3	2.9	16.7	0.13	48.4	0.0	0	48.4
103.60	1.1	3.3	21.1	0.17	57.3	0.1	0	57.3
103.65	2.3	3.7	27.1	0.23	65.0	0.2	0	65.0
103.70	2.3	4.1	33.4	0.28	71.8	0.2	0	71.8
103.75	1.2	4.5	39.2	0.33	78.1	0.3	0	78.1
103.80	1.3	4.9	45.4	0.38	83.9	0.3	0	83.9
103.85	2.1	5.4	52.9	0.42	89.3	0.3	0	89.3
103.90	2.1	5.9	60.9	0.48	94.4	0.4	0	94.4
103.95	2.1	6.3	69.4	0.53	99.3	0.5	0	99.3
104.00	1.4	6.9	77.6	0.58	103.9	0.5	0	103.9
104.05	0.4	7.3	85.4	0.63	108.3	0.5	0	108.3
104.10	0.4	7.9	93.7	0.67	112.5	0.6	0	112.5
104.15	1.1	8.2	103.0	0.73	116.6	0.7	0	116.6
104.20	1.1	9.0	113.1	0.78	120.6	0.7	0	120.6
104.25	1.1	9.6	123.9	0.83	124.4	0.8	0	124.4
104.30	1.1	10.2	135.2	0.88	128.1	0.8	0	128.1
104.35	1.1	10.2	146.4	0.92	131.7	0.8	0	131.7
104.40	0.3	11.1	157.9	0.98	135.3	0.9	0	135.3
104.45	0.4	12.4	170.7	1.03	138.7	1.0	0	138.7
104.50	0.4	12.0	183.0	1.08	142.0	1.0	0	142.0
104.55	0.4	13.3	196.7	1.13	145.3	1.1	0	145.3
104.60	0.4	14.2	211.3	1.18	148.5	1.1	0	148.5
104.65	0.4	14.8	226.5	1.23	151.6	1.2	0	151.6
104.70	0.4	15.5	242.4	1.28	154.7	1.2	0	154.7
104.75	0.4	15.5	258.2	1.33	157.7	1.3	0	157.7
104.80	0.4	17.1	275.7	1.38	160.6	1.3	0	160.6
104.85	0.4	0	276.1	1.43	163.5	1.3	0	163.5
104.90	0.4	0	276.5	1.48	166.4	1.4	0	166.4
104.95	0.4	0	276.9	1.53	169.2	1.5	0	169.2
105.00	0.4	0	277.3	1.58	171.9	1.5	0	171.9
105.05	0.4	0	277.7	1.63	174.6	1.6	0	174.6
105.10	0.4	0	278.1	1.68	177.3	1.6	0	177.3
105.15	0.4	0	278.5	1.73	179.9	1.7	0	179.9
105.20	0.4	0	278.9	1.78	182.5	1.7	0	182.5
105.25	0.4	0	279.3	1.83	185.1	1.8	0	185.1
105.30	0.4	0	279.7	1.88	187.6	1.8	0	187.6
105.35	0.4	0	280.1	1.93	190.1	1.8	0	190.1
105.40	0.4	0	280.5	1.98	192.5	1.9	0	192.5
105.45	0.4	0	280.9	2.03	194.9	2.0	0	194.9
105.50	0.4	0	281.3	2.08	197.3	2.0	0	197.3
105.55	0.4	0	281.7	2.13	199.7	2.1	0	199.7

Orifice Plate	
Diameter	250 mm
Invert Elevation	103.30 m
Orifice Constant	0.63
Orifice Centroid	103.43 m
Orifice Flow Formula	$0.63\pi(D/2,000)^2 \times (2 \times 9.81 \times H)^{0.5}$

201 Nipissing Court, Ottawa

Calculation of Runoff Coefficients for SWM Pipe

Runoff Coefficient	=	0.20	0.90	0.90	0.80	0.90		Weighted
Surface Cover	=	Grass	Asphalt	Building	Gravel	Conc.		Runoff Coefficient
<u>Post-Development</u>	Total Area	Area	Area	Area	Area	Area		
	(m ²)	(m ²)	(m ²)	(m ²)	(m ²)	(m ²)		
1	1336	40	1296	0	0	0		0.88
2	1433	122	1311	0	0	0		0.84
3	420	34	386	0	0	0		0.84
4	541	54	487	0	0	0		0.83
5	429	0	429	0	0	0		0.90
6	1737	0	0	1737	0	0		0.90
7	1590	32	1558	0	0	0	0.89	
8	1560	94	1466	0	0	0	0.86	
9	784	784	0	0	0	0	0.20	
Post Total	9830	1160	6933	1737	0	0	0.82	

$$Q = 0.0028 \cdot C \cdot I \cdot A \quad (\text{m}^3/\text{s})$$

C = Runoff Coefficient

$$I = \text{Rainfall Intensity} = A / (\text{Time} + B)^C$$

A = Area (ha)

201 Nipissing Court, Ottawa Storm Sewer Design Sheet 5-Year Storm Event

DATE:

21-Aug-26

FILE:

25028.01

CONTRACT/PROJECT

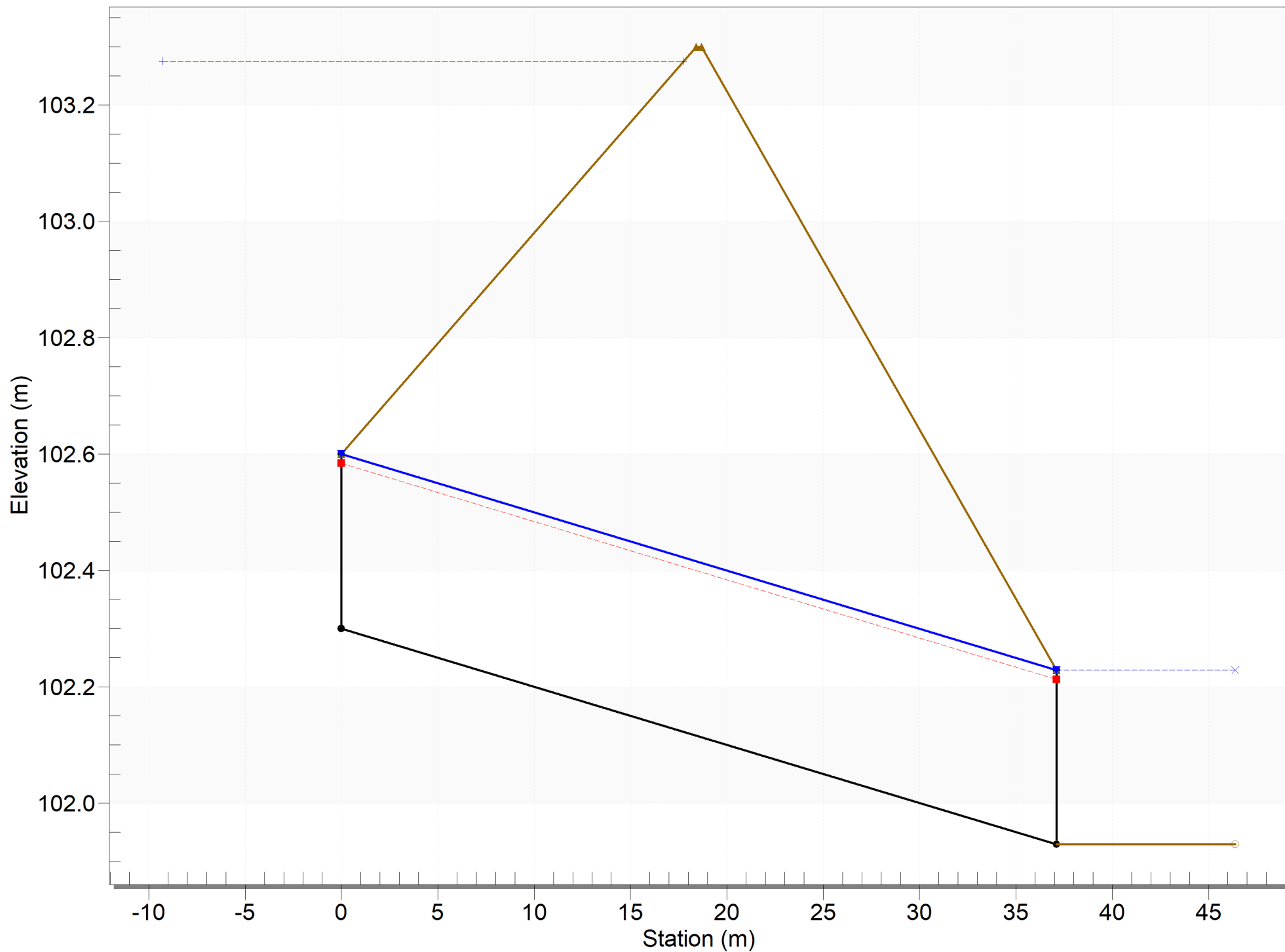
201 Nipissing Court

Areas	Manhole		Length (m)	Increment			Total CA	Flow Time (min)		I (mm/h)	Total Q (L/s)	S (%)	D (mm)	Q Full (L/s)	V Full (m/s)	% Full
	From	To		C	A	CA		TO	IN							
1	CB4	CBMH2	50.3	0.88	0.13	0.12	0.12	10.00	0.72	104.19	34.0	0.72	300	82.1	1.16	41.4%
3	CB3	MH2	3.5	0.84	0.04	0.04	0.04	10.00	0.10	104.19	10.3	0.20	300	43.3	0.61	23.7%
4	CB2	MH2	1.9	0.8	0.1	0.04	0.04	10.00	0.05	104.19	13.0	0.20	300	43.3	0.61	30.1%
2	CBMH2	MH2	82.3	0.84	0.14	0.12	0.32	10.72	1.22	100.53	88.9	0.50	375	124.0	1.12	71.7%
-	MH2	CBMH1	14.9	-	-	-	0.32	11.94	0.22	94.94	83.9	0.50	375	124.0	1.12	67.7%
5	CB1	CBMH3	32.1	0.90	0.04	0.04	0.04	10.00	0.39	104.19	11.2	1.01	300	97.2	1.38	11.5%
6	MH3	CBMH3	11.9	0.90	0.17	0.16	0.19	10.39	0.06	102.18	55.3	5.00	300	216.3	3.06	25.6%
7	CBMH3	CBMH1	43.2	0.9	0.2	0.14	0.34	10.45	0.64	101.85	95.0	0.50	375	124.0	1.12	76.6%
8	CBMH1	SWM Pond	18.0	0.86	0.16	0.13	0.79	12.17	0.18	94.00	205.7	0.85	450	262.9	1.65	78.2%
9	SWM Pond	MH4	13.8	-	-	-	0.79	12.35	0.22	93.24	158.8 *	0.35	450	168.7	1.06	94.1%

Note: * indicates orifice plate flow

Crossing - 201 Nipissing Court, Design Discharge - 0.15 cms

Culvert - 300 mm Diameter SWM sewer, Culvert Discharge - 0.15 cms





PEARSON
ENGINEERING

201 Nipissing Court, Ottawa
300 mm diameter Storm Pipe Flow Summary Table

Discharge Names	Total Discharge (cms)	Culvert Discharge (cms)	Headwater Elevation (m)	Outlet Velocity (m/s)	Tailwater Velocity (m/s)
2 Year	0.08	0.08	102.67	1.13	0
5 Year	0.1	0.1	102.74	1.37	0
10 Year	0.11	0.11	102.79	1.5	0
25 Year	0.12	0.12	102.90	1.75	0
50 Year	0.14	0.14	103.09	1.99	0
100 Year	0.15	0.15	103.27	2.19	0



APPENDIX D

EXCERPTS FROM DESIGN BRIEF OF KWBP BY IBI GROUP DATED SEPTEMBER 2019

Area ID	Area (ha)	IMP (%)		LGI (m)	AVAILABLE/REQUIRED STORAGE (cu-m)	MINOR SYSTEM CAPTURE (l/s)
		TIMP	XIMP			
101A	7.03	0.93	0.93	327	780	1230
150A	0.17	0.53	0.53	83	n/a	31
150B	0.2	0.53	0.53	75	7	37
UPS Site modelled as per approved report "Design Brief UPS Canada Inc. 8825 Campeau Drive (IBI Group, January 2017)						
99C	0.14	0.69	0.69	30	44	33
99D	0.22	0.69	0.69	60	21	45
100C	0.27	0.59	0.59	103	13	49
100B	1.21	0.93	0.93	155	117	259
120A	1.16	0.93	0.93	214	75	191
120B	0.26	0.53	0.53	100	7	45
103A	0.33	0.93	0.93	56	20	104
104C	0.36	0.59	0.59	135	17	62
Kanata West Retail Centre modelled as per approved report "Design Brief Kanata West Retail Centre 3015, 3075 and 3095 Palladium Drive" (IBI Group, July 2017)						
121C	0.21	0.53	0.53	101	49	37
122B	1.07	0.93	0.93	149	103	231
122A	1.16	0.93	0.93	216	73	185
122C	0.21	0.69	0.69	60	21	46
122D	0.14	0.69	0.69	30	24	31
153A	1.89	0.93	0.93	119	190	430
153B	1.82	0.93	0.93	129	180	408
153C	0.16	0.53	0.53	79	n/a	29
154D	0.15	0.53	0.53	76	n/a	29
154A	0.70	0.93	0.93	81	70	171
154C	0.17	0.57	0.57	82	48	33
155C	0.29	0.57	0.57	141	60	50
155A	3.19	0.93	0.93	160	480	525
132D	2.29	0.93	0.93	157	360	377
156B	0.11	0.57	0.57	56	5	22
156C	0.14	0.93	0.93	82	7	40
132B	0.15	0.93	0.93	80	9	43
130C	0.15	0.93	0.93	30	15	41
130B	0.71	0.93	0.93	101	120	111
130D	0.24	0.93	0.93	67	15	62
160C	0.15	0.93	0.93	81	n/a	43
132A	1.01	0.93	0.93	117	132	187
132C	0.15	0.93	0.93	77	4	43
104A	0.85	0.93	0.93	95	90	204
104B	0.3	0.71	0.71	111	65	75
105B	0.22	0.93	0.93	65	n/a	57
106C	0.17	0.93	0.93	82	1	110
135E	0.25	0.93	0.93	50	11	80
106B	0.15	0.93	0.93	82	1	58
133A	0.15	0.93	0.93	57	19	48
133B	0.16	0.93	0.93	57	n/a	74
137A	0.08	0.93	0.93	33	n/a	38
137B/C	0.12	0.93	0.93	36	n/a	57

Area ID		Area (ha)	IMP (%)		LGI (m)	AVAILABLE/REQUIRED STORAGE (cu-m)		MINOR SYSTEM CAPTURE (l/s)	
			TIMP	XIMP					
137D/E		0.14	0.93	0.93	35	n/a		67	
137F/G		0.15	0.93	0.93	35	n/a		72	
136A/B/C		0.25	0.93	0.93	69	n/a		116	
170A		0.06	0.93	0.93	54	n/a		29	
170B		0.06	0.93	0.93	25	n/a		29	
135B		0.12	0.93	0.93	64	n/a		56	
135A		1.12	0.93	0.93	117	111		257	
135C/D		0.17	0.93	0.93	35	n/a		81	
107A		0.22	0.93	0.93	64	n/a		101	
107C/B		0.15	0.93	0.93	35	n/a		72	
107E/D		0.14	0.93	0.93	35	n/a		67	
107G/F		0.14	0.93	0.93	35	n/a		67	
108A/B		0.17	0.93	0.93	36	n/a		81	
108D/C		0.16	0.93	0.93	40	n/a		76	
604A		2.63	0.93	0.93	166	266		556	
604B		0.59	0.93	0.93	137	n/a		170	
166A		1.49	0.93	0.93	112	247		233	
166B		0.14	0.53	0.53	70	5		42	
167A		1.45	0.93	0.93	112	240		227	
167C		0.26	0.53	0.53	127	14		59	
167B		0.07	0.53	0.53	35	n/a		30	
160B		1.01	0.93	0.93	80	245		144	
160A	160A(i) ^φ 0.49ha	1.1	0.93	0.93	79	184	TBD	172	76 ^φ
	160A(ii) ^θ 0.61ha						TBD		96 ^θ
160D		0.12	0.53	0.53	61	n/a		23	
161B		0.24	0.53	0.53	117	47		36	
162A		2.39	0.93	0.93	188	355		233	
162B		0.16	0.53	0.53	79	n/a		30	
165A		0.58	0.93	0.93	92	160		116	
164A		0.13	0.53	0.53	76	4		30	
140AB		0.19	0.61	0.61	76	32		53	
140C		0.13	0.71	0.71	48	11		32	
140D/E		0.13	0.71	0.71	49	7		39	
141A		0.13	0.71	0.71	34	15		30	
603		0.26	0.93	0.93	54	n/a		75	
602		0.32	0.93	0.93	70	n/a		92	
601A		4.56	0.93	0.93	212	642		712	
600		0.78	0.93	0.93	164	n/a		225	

Bold font indicates Phase 5 areas

* required to store the 100 year storm event

^φ Block 2 – Phase 3 Registration

^θ Block 3 – Phase 3 Registration

TBD – To Be Determined at Site Plan Application

4.5 Hydrological Simulation Results

Minor system flows generated in the SWMHYMO model were exported to the XPSWMM model to determine hydraulic grade line within the proposed sewer network, as discussed in Section 4.6.

Cascading overland flows on all streets within the subject site were reviewed for the 100 year 3 hour Chicago and 100 year 3 hour Chicago storm with 20% increase in intensity. The SWMHYMO model results of the major system cascading flow for the site were evaluated using the Route Channel routine to determine velocity and depth of flow on the streets. The 18m, 26m, and Irregular (median separated Campeau Dr. and Palladium Dr) rights-of-way (ROW) were entered into the model with the appropriate longitudinal slopes to obtain the maximum normal depth and velocity of flow, based on the maximum major flow from the SWMHYMO model results. The SWMHYMO output file is provided within **Appendix C** for reference. The results of the evaluation are presented in the below tables.

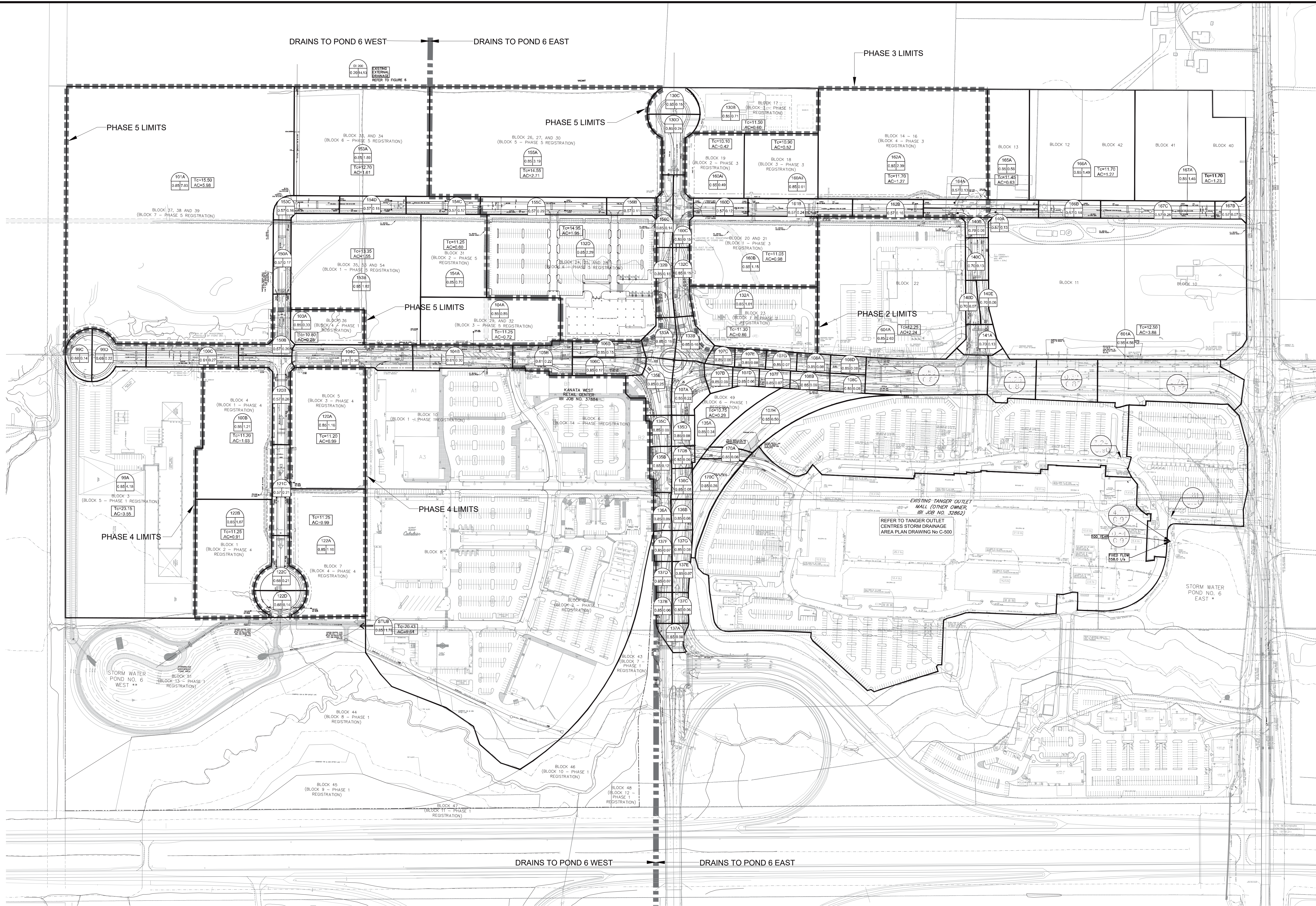
Table 4.3 SWMHYMO Modeling Results: 5 Year and 100 Year Chicago Storm Events

AREA ID	PEAK RUNOFF (L/S)		CAPTURE (L/S)	
	5 yr CHI	100 yr chi	5 yr CHI	100 yr chi
101A	1230	2350	1170	1229
150A	31	65	31	31
150B	37	77	31	36
99C	33	62	33	34
99D	45	88	45	49
100C	49	101	49	53
100B	259	483	258	259
120A	230	432	183	191
120B	45	95	45	48
103A	104	185	100	104
104C	62	131	62	66
121C	37	77	37	39
122B	231	430	230	231
122A	229	431	178	185
122C	46	89	46	49
122D	31	59	31	32
153A	430	792	409	429
153B	408	753	388	408
153C	29	61	29	29
154D	29	60	29	29
154A	171	315	162	171
154C	33	67	33	37
155C	50	105	50	53
155A	678	1262	502	525
132D	489	913	361	376
156B	22	46	22	24
156C	35	64	35	43
132B	37	68	37	46
130C	41	72	41	45
130B	169	311	112	117
130D	62	112	62	67
160C	37	68	37	43
132A	232	428	188	197
132C	37	69	37	46

AREA ID	PEAK RUNOFF (L/S)		CAPTURE (L/S)	
	5 yr CHI	100 yr chi	5 yr CHI	100 yr chi
104A	204	378	194	203
104B	60	118	60	80
105B	57	103	57	57
106C	42	77	42	114
135E	66	118	66	87
106B	37	68	37	60
133A	39	70	39	53
133B	42	74	42	74
137A	22	38	22	38
137B/C	33	57	33	57
137D/E	38	67	38	67
137F/G	41	72	41	72
136A/B/C	63	116	63	116
170A	16	29	16	29
170B	16	29	16	29
135B	31	56	31	56
135A	257	475	244	257
135C/D	46	81	46	81
107A	56	101	56	101
107C/B	41	72	41	72
107E/D	38	67	38	67
107G/F	38	67	38	67
108A/B	46	81	46	81
108D/C	43	76	43	76
604A	556	1040	528	556
604B	133	248	133	170
166A	346	642	235	245
166B	27	56	27	44
167A	334	617	228	238
167C	44	94	44	63
167B	15	30	15	30
160B	281	518	147	151
160A	269	491	174	181
160D	23	49	23	23
161B	36	76	36	39
162A	493	922	376	393
162B	30	62	30	30
165A	179	332	92	95
164A	26	53	26	32
140AB	40	79	40	58
140C	30	57	30	34
140D/E	30	57	30	41
141A	30	57	30	32
603	68	122	68	75
602	81	147	81	92
601A	902	1690	716	750
600	167	315	167	225

Bold font indicates Phase 5 areas

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APPENDIX E

WATER BALANCE CALCULATIONS

201 Nipissing Court, Ottawa Water Balance Calculations

Pre Development Recharge

Precipitation data taken from Environment Canada information for the City of Ottawa

$$\text{Yearly Precipitation} = 938.1 \text{ mm}$$

As per Design Brief Kanata West Business Park Phase-5 provided by IBI Group dated September 2019, a total of 87.5 mm to 125 mm of stormwater runoff annually would need to be retained onsite and infiltrated into the ground.

The required volume can be calculated as below:

$$\begin{aligned} \text{Required Volume} &= \text{Total Site Area (m}^2\text{)} \times \text{Annual Runoff} \\ &= 11,559 \times 87.5 \\ &= 1,011 \text{ m}^3 \end{aligned}$$

Post Development Recharge

Using Table 3.1 of the MOE's SWM Planning & Design Manual, the infiltration amount for Urban Lawns is approximately 24%

$$\begin{aligned} \text{Grassed Area} &= 0.29 \text{ ha} \\ \text{Annual Site Area Recharge Volume} &= (0.29 \times 0.24) \times 938.1 \\ &= 642 \text{ m}^3 \end{aligned}$$

Therefore, post development infiltration deficit is as follows;

$$\begin{aligned} \text{Deficit Volume} &= \text{Targeted Volume} - \text{Post Development} \\ &= 1,011 - 642 \\ &= 370 \text{ m}^3 \end{aligned}$$

Recharge Basin

Find the depth of annual rainfall required to infiltrate 370 m³ from the area into the ground.

$$\begin{aligned} \text{Area contributing to the infiltration locations} &= 1737 \text{ m}^2 \\ \text{Infiltration Deficit} &= 370 \text{ m}^3 \end{aligned}$$

Annual Precipitation Depth Required

$$\begin{aligned} \text{Req'd Precipitation Depth} &= \frac{370 \text{ m}^3}{1737 \text{ m}^2} \\ &= 213 \text{ mm} \end{aligned}$$

Assuming the average runoff for the contributing area is 0.90 the following yearly precipitation depth is required to get 212.7 mm of runoff.

$$\begin{aligned} \text{Precipitation Depth} &= \frac{213 \text{ mm}}{0.9} \\ &= 236 \text{ mm} \end{aligned}$$

Find Percent of Annual Precipitation that Req'd Precipitation Depth represents:

$$\begin{array}{rcl}
 \text{Annual Precipitation for Study Area} & = & 938.1 \text{ mm} \\
 \% \text{ Annual Rainfall} & = & \frac{236}{938.1} \text{ mm} \\
 & = & 25\%
 \end{array}$$

From MOE Figure C-2, 25% of annual rainfall occurs for storm events of 2.5 mm or less.

$$\begin{array}{rcl}
 \text{Contributing Area} & = & 1737 \text{ m}^2 \\
 \text{Precipitation Depth} & = & 2.5 \text{ mm} \\
 \text{Storage Volume Req'd} & = & A \times D \\
 & = & 1737 \times 2.5 \\
 & = & 4.3 \text{ m}^3
 \end{array}$$

The site will require a minimum ponding volume of 4.3 m³ and the Infiltration chambers provides 4.4 m³.

$$\text{Volume Provided In Infiltration Chamber} = 4.4 \text{ m}^3$$



APPENDIX F

**SUBSURFACE INVESTIGATION REPORT BY MENDEZ &
ASSOCIATES LTD.**

SUBSURFACE INVESTIGATION REPORT

201 NIPPISSING COURT, OTTAWA, ON, K2T 0N7

Abstract

This report presents the findings of a Subsurface Investigation completed at a portion of the 201 Nippissing Court parcel, in the City of Ottawa, ON, K2T 0N7, shown in figure 1 in page 9 and issue recommendations for a proposed Proposed Place of Worship development. It provides geotechnical information about the subsurface conditions at 11 borehole locations compiled from field sampling and testing. The borehole locations are shown in figure 1 in page 9. It was found that 6 to 6.6 m of overburden soils are underlain by bedrock. The overburden soils consist of compact to dense sandy silt beneath 5 cm or less of surface organic topsoil as the site had been recently stripped. The information reviewed also includes readily available geologic information from the Geological Survey of Canada (GSC) and local climate data from Environment Canada.

YURI MENDEZ M. ENG., P. ENG.



Report number: 93-BAPS-R0¹
July 07, 2026



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¹For the account of Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha (BAPS) as per proposal in email dated May 23, 2026..

Report 93-BAPS-R0
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Contents

1	Introduction	7
I	Investigation	7
2	Sampling and Testing	7
II	Findings	8
3	Physical Settings, Strata and Topography	8
4	Surface and Subsurface Materials	8
	Test Hole Locations Plan	9
4.1	Sandy Silt	10
4.2	Material Properties	10
4.3	Groundwater and Moisture	11
4.4	Freezing Index, Frost Depth and Frost Susceptibility	11
III	Recommendations	11
5	Foundations General	12
5.1	Bearing Capacity of Strip and/or Pad Footings	12
5.2	Retaining Walls	12
5.3	Settlements	13
5.4	Frost Protection for Foundations	13
5.5	Foundation Insulation	13
5.5.1	Creep Deformation of Insulation	13
5.6	Foundation Wall Dampproofing and Drainage	14
6	Rates of Infiltration, Percolation and Permeability	14
7	Site Class for Seismic Design	14
8	Roadbed Soils and Pavement Structure	14
9	Excavations, Open Cuts, Trenches and Safety	15
9.1	Conditions Requiring Engineered Shoring	16
10	Reinstatement of Excavated Soils	16
11	Water Inflow Within Excavations and Water Takings	17
11.1	Use of Clay Seals in Service Trenches	17
11.2	Water Takings and Permits	17

11.3 Impacts to Adjacent Buildings and Infrastructure from Water Takings	18
12 Underground Corrosion	18
13 Potential of Sulphate Attack to Concrete	19
14 Stripping, Excavation to Undisturbed Soils and rock, Earth and Rock Fill Placement. Asphalt Placement and Compaction	19
14.1 Winter Construction	19
Disclaimer	19
15 Limitations	20
User Agreement	20
 IV Appendices	 23
A Borehole Logs	25
B Resistivity, PH and Soluble Salts Test	35
B.1 Resistivity Tests Results	36
C Pavement	37
C.1 Traffic Classes and Pavement Catalog	37
C.2 Frost Heave in Pavements	37
C.3 Frost Protection for Manholes, Catch Basins and Others	39
D Foundation Drainage	41
D.1 Foundation Drainage Components	42
E Construction Recommendations for Stripping, Earth and Rock Excavation to Undisturbed Soils, Earth and Rock Fill Placement, Asphalt Placement and Compaction	43
E.1 Removal of Water	43
E.2 Earth Excavation	43
E.2.1 Suitability of Earth Materials	43
E.2.2 Striping	43
E.2.3 Excavation to Undisturbed Soil Surface	44
E.3 Foundations Placement	44
E.4 Retaining Wall Foundations	44
E.5 Imported Materials	44
E.5.1 Granular Earthfill Placement	44
E.5.1.1 Moisture for Granular Earthfill	44

E.5.1.2	Compacted Lifts Thicknesses Equipment and Passes for Granular Eathfill	44
E.5.2	Compaction Guide for Passes and Level of Compaction . .	45
E.6	Compaction General	45
E.7	Compaction Specific	45
E.7.1	Compaction Along Basement Walls, Retaining Walls and Structures	45
E.7.2	Self Compacting Materials	47
E.7.3	Settlement Allowance and Overfill	47
E.7.4	Compaction Quality Control	47
E.8	Asphalt Pavement	47
E.8.1	Surface Preparation for Asphalt Pavement	47
E.8.2	Proof Rolling Prior to Asphalt Pavement	47
E.8.3	Asphalt compaction	48

Report 93-BAPS-R0
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1 Introduction

This document reports the findings of subsurface investigation 93-BAPS-R0 completed at 201 Nippissing Court, in the City of Ottawa, ON for the purpose of development of a Proposed Place of Worship having extents and geometry shown in figure 1 in page 9.

The investigation was carried out by advancing 11 boreholes through overburden soils using available exploration techniques for engineering purposes. The information reviewed also includes readily available geologic information from the Geological Survey of Canada (GSC).

Key information about the subsurface conditions across the proposed development area is presented and includes design and construction recommendations and also the physical and mechanical properties of the geotechnical material encountered.

The site was found to be underlain by a sandy silt deposit. The overburden soils are approximately 6 to 6.6 m in thickness.

Part I Investigation

2 Sampling and Testing

The field and laboratory program set out in our proposal is guided by the following standards:

- ASTM D 420-98 Standard Guide to Site Characterization for Engineering Design and Construction Purposes,
- ASTM D5434 - 12 Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock,
- ASTM D1586 - 11 Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils,
 - The ASTM D1586 tests were completed using an “auto safety” hammer rated at 80% energy.
- ASTM D1586 - 11 based Dynamic Cone Penetration Test (DCPT),
- AASHTO T 11 Materials Finer Than No. 200 (75um) Sieve in Mineral Aggregates by Washing,
 - Caution is applied in the interpretation of these tests due to deficiencies in sampling using SPT sampler. The sample is disturbed from sampling and the water in the sampler drops out of the sampler when the extraction is below the water table. Thus, some sample material

is flushed out and the more likely material to be lost in this process is the finer portion.

- ASTM C-136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates,
 - Caution is applied in the interpretation of these tests due to deficiencies in sampling using SPT sampler. The sample is disturbed from sampling and the water in the sampler drops out of the sampler when the extraction is below the water table. Thus, some sample material is flushed out and the more likely material to be lost in this process is the finer portion.

The field program consisted in sampling the subsurface profile using boreholes located as shown in fig. 1 in page 9 along with field review, assessments and classification of samples.

The elevation of the boreholes were estimated based on their location within available survey plans showing elevations and are shown in the Test Hole Locations Plan in fig. 1 in page 9. The program included in addition a laboratory review of samples recovered from the field and one sample submitted to a local laboratory to investigate soluble ions concentration, PH and resistivity to estimate rates of corrosion.

The soil sampling and field testing at each location are shown in the soil profile testing and sampling logs (BH) in the appendices.

Part II

Findings

3 Physical Settings, Strata and Topography

The site consist of the nearly flat, recently stripped of topsoil 201 Nippissing Court parcel within a block surrounded by streets in the City of Ottawa, ON. Figure 1 in page 9 shows a plan view of the site displaying the approximate borehole locations and depth.

The geology data base by Belanger J. R. 1998 suggests 10 to 15 m m of overburden soils underlain by interbedded limestone and shale bedrock at this site.

4 Surface and Subsurface Materials

The site surface had been recently stripped of topsoil. The arrangement of strata found in our investigation is shown in the borehole logs in appendix A.

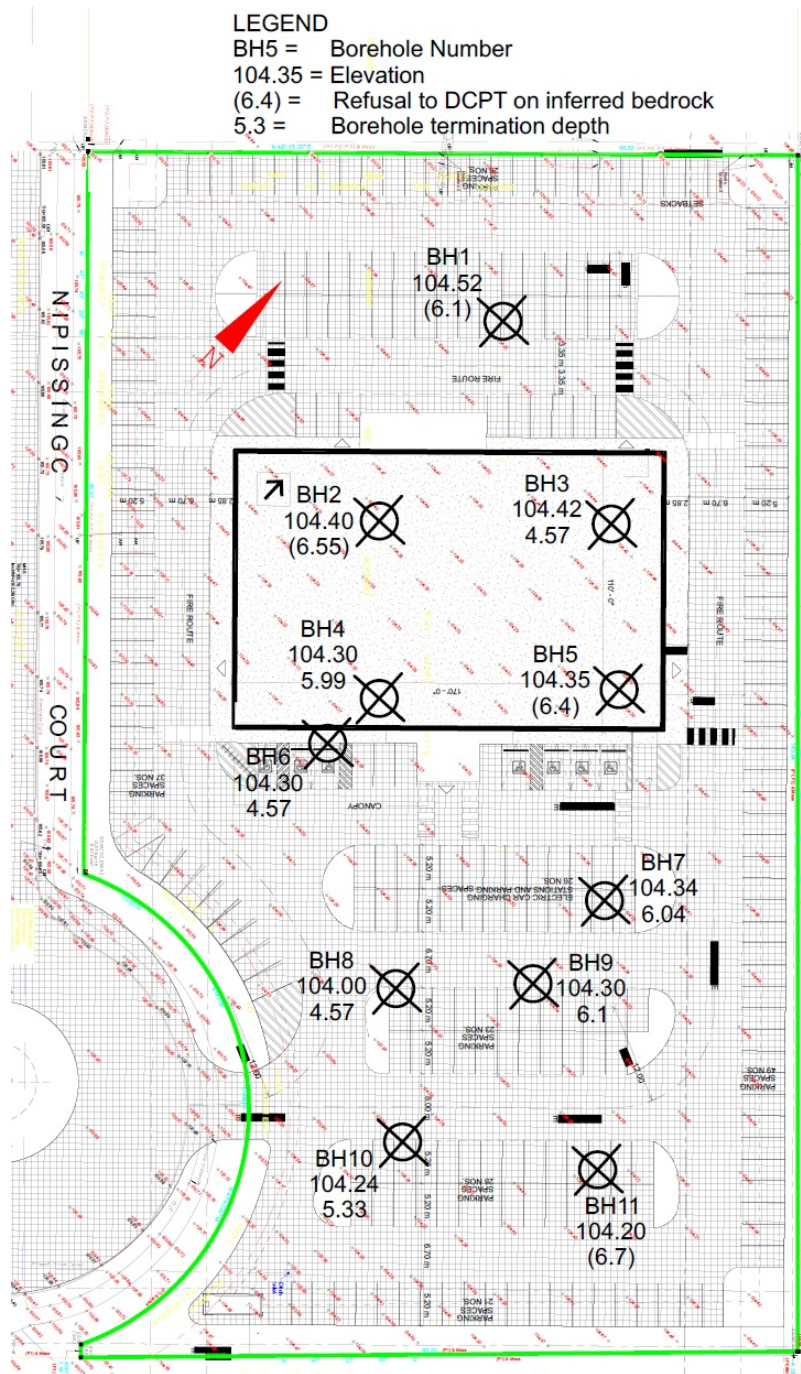


Figure 1: Test hole Locations Plan

It can be seen in the borehole logs that at boreholes 1, 2, 5 and 11, bedrock is inferred from DCPT or sampler refusal at approximately 6 m depth. Throughout the depth profile at all borehole locations dense sandy silt was found in all boreholes. The site is covered with less than 0.05 cm of topsoil.

4.1 Sandy Silt

Gradation testing indicates that the silt encountered has 54, 58 and 20% content of sand finer than 0.18 mm in samples BH6 SS2, BH8 SS4 and BH2 SS5, respectively.

Sandy silt is very susceptible to caving onto excavations exceeding the high water table encountered at this site. Refer to the excavation/open-cut section for guidance. Recent observations at properties located to the northeast of this site strongly suggest that problems of cave-ins will not be present for excavations as deep as 3 meters. During the construction of the development, water inflow was not observed for excavations up to 3 m depth.

Water retention in sandy silt is high and thus frost susceptible. Due to the high water retention a significant degree of cohesion (or suction) can be considered for open excavation cuts *only* above the water table or where water has been drained.

4.2 Material Properties

The material properties in table 1 in page 10 can be considered for the materials found at this site:

Material		Density kg/m ³	Friction Angle	Cohesion kPa	Und. St. kPa/ mPa)	Shear UCS
Sandy Silt		2,000	34		N/A	
Granular Type 2	B	2,200	40			
Granular Type 1	B	2,000	34			
Granular A		2,100	38			

Table 1: Material Properties

Refer to the borehole logs in appendix A for specific details at each location.

Sandy silt and/or sand with high silt content is not susceptible to liquefaction.

4.3 Groundwater and Moisture

Assessments completed during field sampling and testing indicate very shallow water conditions at all borehole locations. These assessments suggest a 1.8 m depth to the water table.

The water level was measured at BHs 5 and 11 at 1.9 and 1.8 m depth respectively during our June 29, 2026 measurement.

Company experience in this area strongly suggests that during construction development, the water table will be found at depths greater than 2.5 m. Moisture contents vary above the ground water table. Water retention is relatively high for the sandy silt materials encountered at this site.

4.4 Freezing Index, Frost Depth and Frost Susceptibility

It is generally assumed that the frost depth for the 1,000 degree Celsius-days freezing index applicable to Ottawa will reach no deeper than 1.8 m on bare ground (snow free) or pavement. It is also assumed that frost depth will reach no deeper than 1.5 m on snow covered ground.

The soil materials encountered at this site are frost susceptible and thus will heave upon exposure to freezing temperatures. Heaving destroys the mechanical properties of soils so that any soil which has been frozen is considered disturbed.

Part III

Recommendations

The following set of the recommendations result from sampling and testing outlined in section 2 and from geotechnical engineering evaluation and assessments.

Based on the investigation findings and company experience in this area, the presence of cave-susceptible sandy silt poses significant challenges for any excavation or any construction exceeding 2.5 to 3 m depth. M & A recommends implementation of dewatering using well points along the perimeter of any excavation exceeding 3 m in depth. Well points are simple wells that are placed along lines following the outside perimeter of proposed excavations to form a barrier. Along the line of wells the water table is lowered to allow excavation. Spacing of wells is approximately 1.2 to 2 m. Wells can be easily installed by lowering casing via water jets or using drilling equipment.

Implementation of basements at depths greater than 2.2 from the existing grades is discouraged at this site. Because a basement would be under the water table, the basement would have to be waterproof. A waterproof basement at this site will face the following unfavourable, costly and potentially destructive conditions:

- Waterproofing also involves the structural requirements that the water uplift pressure would have to be withstood throughout the basement slab.

If a basement is 1 m under the water table, the uplift is 10 kPa, as an example.

- Where the above requirement is met, an accidental breach of the waterproofing barrier can cause serious foundation damage as the materials will cave in along with any water rushing into a breach.
- A completely waterproof basement on soils can be very expensive and very difficult to implement.

Buildings with foundation drainage as deep as 2.2 m can also be implemented if low impact development measures do not limit de-watering at this depth.

Shallow spread footings for a building of slab on grade construction can be considered at this site.

5 Foundations General

Generally speaking, code compliant Part 9 and Part 4 commercial buildings proposed at this site can be founded on shallow foundations using the bearing capacities for spread footings provided below.

5.1 Bearing Capacity of Strip and/or Pad Footings

Based on the findings of this investigation and geotechnical assessments, the following bearing capacity can be used *for strip footings up to 1 m wide and pad footings up to 2 m wide placed on undisturbed dense sandy silt soils and/or engineered fill placed on undisturbed dense fine sand soils encountered in the testholes.:*

- 150 kPa at service limit (SLS).
- 225 kPa for factored loads (ULS).

5.2 Retaining Walls

The following can be considered for the design of retaining walls:

- Generally in Ottawa, a horizontal PGA of 0.2 is used for seismic design of free-standing retaining walls;
- generally the at-rest factor of 0.5 is used for nonyielding walls such as basements;
- the Mononobe Okabe method is often used for seismic design;
- YME recommends that foundations for retaining walls be placed on a 15 cm compacted granular B-type 2 or similar crushed granular fill placed at USF on undisturbed soils. This is due to low friction for footings placed directly on native soils;

- Where the above recommendation is applied, 0.55 friction δ can be used at this site. Otherwise, use $\delta = 0.35$
- use $\delta = 0.4$ for granular fill on formed concrete;
- if the angle of native soils cut behind a retaining wall slopes at 45 degrees or more use $\phi = 30$. If it is less than 45 use $\phi = 38$ for clean granular fill.
- use 20 kN/m^3 unit weight for soils and 22 kN/m^3 for granular fill.
- ensure proper foundation drainage via available means such as crushed stone, drainage pipes, weep holes, etc.
- compaction within 0.9 m of a retaining wall is very light with light equipment;
- additional recommendations in section 14 are applicable.

5.3 Settlements

For the footing loads provided in section 5.1 building settlements for foundations on undisturbed sandy silt are not to exceed service limit values (SLS) of 25 mm and 20 mm total and differential settlements respectively at this site.

5.4 Frost Protection for Foundations

Shallow foundations on frost susceptible soils which may be required on the perimeter of the building for canopies or other structures are considered to be frost protected when placed at sufficient depth to prevent supporting soils from freezing. Foundations in the perimeter of heated buildings where snow is not cleared are considered frost protected at 1.5 m depth (as having a soil cover of 1.5 m). Foundations away from heated buildings or in areas where snow is cleared, need to be at about 1.8 m depth to be frost protected. On the alternative frost protection can be provided by using foundation insulation for shallower foundations.

5.5 Foundation Insulation

To meet the required frost protection in section 5.4 for foundations for canopies or other structures in the perimeter of the building and in unheated areas in otherwise heated buildings 50 mm of extruded polystyrene insulation (XPS) type V, VI or VII meet foundation insulation requirements for the freezing index in the Ottawa area.

5.5.1 Creep Deformation of Insulation

Service loads on foundation insulation must be kept at no more than 1/3 of its rated capacity. Creep deformations occur on insulation at loads exceeding 1/3 of its rated capacity. The rated capacity is at 10 % strains.

5.6 Foundation Wall Dampproofing and Drainage

Foundation walls dampproofing and foundation drainage are not required for foundations serving buildings of slab-on-grade construction not having floor levels lower than the finished grade on the perimeter for the conditions encountered at this site.

Elevator pits deeper than the exterior grade of buildings do require foundation drainage.

Appendix D.1 presents page 2 of NRC Construction Evaluation Reports CCMC 12658-R showing dampproofing and foundation wall drainage system details satisfying the provisions under OBC 2012 and suitable for the conditions found at this site. Other available similar systems having the components shown in CCMC 12658-R may be used. Foundation drainage must be provided to daylight or a positive outlet, or sump.

6 Rates of Infiltration, Percolation and Permeability

Values of permeability, infiltration and percolation which could be associated² to the sandy silt encountered at this site are the following:

- Permeability of 1×10^{-4} cms/sec
- Percolation of 12 min/cm
- Infiltration of 15 cm/hr

7 Site Class for Seismic Design

At this site, the geotechnical testing completed along with the estimated soil properties via Dynamic Cone Penetration (DCPT) conducted in all boreholes are indicative of a $V_s(30)$ exceeding 360 m/s. As such, site class C is assigned under the provisions in section 4.1.8.4 of the Ontario Building Code 2012 (OBC 2012) for seismic design.

8 Roadbed Soils and Pavement Structure

The flexible pavement structures supplied in this report follow the guidelines set out in AASHTO 1993 Guide for Design of Pavement Structures (AASHTO) for climatic Region III. Under AASHTO pavements are designed to withstand 20 year accumulated design Equivalent Single Axle 80 kN (18,000 pounds) load applications (ESALs). ESALs are a measure of mix traffic loads including vehicle

²MMAH Supplementary Standard SB-6 and approximate relationship between the permeability and infiltration rate

loads and truck loads. The number of ESALs applications depend on traffic class and use.

Roadbed denotes the materials beneath pavement structures. The term pavement is used to denote the layered structure that forms a road carriage-way or vehicle parking. *The general quality of the near surface undisturbed soil to serve as foundation for pavement structure (Roadbed soil) at this site are assumed to be very poor* as defined in the AASHTO guide. It is hence recommended to refer to the following information in appendix C:

- M&A's pavement catalog in appendix C.1 to select pavement structures for traffic classes on the very poor roadbed soils encountered at this site.
- Appendix C.2 for guidelines regarding frost heave.
- Appendix C.3 for frost protection recommendations for manholes and catch basin construction.

9 Excavations, Open Cuts, Trenches and Safety

Typically, the main concern when excavating soils or rock is the stability of the sides of excavations. The stability of the sides is achieved by either cutting the sides to safe slopes or by providing shoring. It is also an issue of safety because of imminent hazards to the safety of workers and to property. As such, excavations are governed by the provisions in the Occupational Health and Safety Act of Ontario (O. Reg. 213/91). The application of O. Reg. 213/91 requires a classification of soils in one or several of four types (type I to type IV).

At this site, due to the presence of caving sandy silt and the high water table, soil type IV applies for excavations deeper than the water table encountered at construction time. Company experience suggests that at construction time the water table elevation may be as deep as 2.5 m. Soil type 2 is applicable for excavations shallower than the water table at construction time. Pumping from open sumps does not remedy the caving of soils. The following thus stems from this limitation:

At this site for all excavations to a 2.5 m depth and for all excavations for which the water table has been lowered to an elevation lower than the bottom of the excavation via well points, soils can be considered type II under O. Reg. 213/91 and type IV for excavations deeper than 2.5 m depth *and* for which well points de-watering has not been implemented. As such, the following key aspects of O. Reg. 213/91 are applicable to this site:

1. For excavations in soil type II:
 - Safe open cut is 1 vertical to 1 horizontal.
 - Within 1.2 m of the bottom of open cut areas or trenches, the soil can be cut vertical.
2. For excavations in soil type IV:

- implement well points de-watering along the perimeter of excavations to apply the provisions for soil type II.
3. Where the safe open cut in item 1 and/or 2 are not provided, either the shoring systems described in O. Reg. 213/91 or engineered shoring systems need be used.

Information regarding physical and mechanical properties of subsurface materials which will be required for shoring design are provided in this report.

9.1 Conditions Requiring Engineered Shoring

It is to be understood that at this site, if shoring is used for deep excavations, it is to be used in conjunction with proper de-watering as described in the previous section.

O. Reg. 213/91 describe the conditions in which engineered shoring systems are required. Some key aspects of O.Reg. 213/91 regarding the conditions in which an engineered shoring system is required are:

- Where soils are type I to III and the prescribed safe open cuts are not provided and
 - The excavation is not a trench or
 - The excavation is a trench either deeper than 6 m or wider than 3.6 m or both
- For trench excavations or open cut, where soils are type IV and the safe open cuts are not provided.

Note that along with the descriptions in O. Reg. 213/91 for soils type IV, any difficult soil having significant seepage and/or strength loss upon excavation such as caving soils can be rendered as type IV.

Note also that since excavation and safety are usually in control of the contractor, *shoring design and construction is done by the contractor.*

10 Reinstatement of Excavated Soils

As stated in appendix E the suitability of material for specific purposes is determined by the geotechnical engineer. To the extent they are needed, suitable material from the excavations can be used in the construction of required permanent earthfill or rockfill.

Excavated sandy silt soils may be used to build up the subgrade under parking and pavement *only if* closely supervised by a geotechnical engineer. Otherwise soils must be hauled out or could *only be used for landscaping areas where no structures or pavement will be built.*

11 Water Inflow Within Excavations and Water Takings

Water inflow within excavations in soils is influenced by the depth of excavations relative to the water table and flow behavior of water in soils as controlled by the permeability of soils. Section 6 provides estimated values of permeability, infiltration, and percolation which can be used for calculations in connection with water behavior at this site.

In view of the assessments under section 4.3, the company's experience in this area and information seen in the borehole logs, water inflow in excavations is expected to be significant at depths greater than 2.5 m. In addition, sandy silt encountered at this site is susceptible to caving.

Refer to the excavations/open-cut section 9 for guidance for excavation on difficult soils. Pumping from open sumps does not prevent the caving of soils into excavations. In general, section 9 recommends to use well points dewatering at depths greater than 2.5 m and apply the provisions for type 2 soils.

11.1 Use of Clay Seals in Service Trenches

In order to prevent long term de-watering through service trenches, clay seals are recommended. The City of Ottawa detail "Clay seal for Pipe Trenches" S8 can be used at each 100 m interval within service trenches. The moisture content for compaction of clay is generally less than 22%. Clay placement can be with several passes of jumping jack type equipment or sheep-foot rollers. Proctor dry density percent can be approximately 95% of its Proctor Standard Density.

11.2 Water Takings and Permits

Water takings from the environment, including groundwater in excavations, are regulated under Ontario Water Resources Act, R.S.O. 1990, c. O.40. (OWRA). The OWRA is enforced by the Ministry of Environment (MOE). Under the OWRA, a Permit to Take Water (PTTW) is required for pumping from excavations exceeding 400 cubic meters per day. Along with the consideration of ground water from excavations, PTTW applications require in addition the consideration of precipitation.

Where construction phase ground and surface water is estimated to be between 50,000 to 400,000 L/day, it is a requirement to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16.

If a project qualifies for a PTTW based upon anticipated conditions, an EASR will not be allowed as a temporary dewatering measure while awaiting the MECP review of the PTTW application.

Section 6 provides estimates of infiltration, permeability, and percolation rates which could be used in the context of the EASR registry and/or the PTTW.

Based on estimates a registration under the EASR for volumes between 50,000 to 400,000 L/day will be required. In addition, it is recommended to reduce groundwater takings by phasing construction in sections.

The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium.

11.3 Impacts to Adjacent Buildings and Infrastructure from Water Takings

Water takings induce water table draw-down.

Water table draw-down can impact neighboring buildings and infrastructure in particularly sensitive soil conditions. Soil conditions that can be considered sensitive are lightly overconsolidated clays and very loose soils. The soils encountered at this site are not considered sensitive.

Development induce short term draw-down during construction and long term via service trenches and foundation drainage.

Because the soil conditions at this site are not considered sensitive, short term negative impacts for neighboring buildings are not foreseeable at this time, however, to reduce long-term water table draw-down which may affect the area on a larger scale, are expected to be minimal because the water table will not be drawn down by foundation drainage and because service trenches are to have clay seals to reduce ground water lowering. Long term impacts in the greater scale are also reduced via the implementation of an infiltration gallery.

12 Underground Corrosion

For the resistivity, PH and soluble ions concentrations found at this site and shown in the Paracel Laboratories certificate of analysis in appendix B.1, the soils are non corrosive. Resistivity, PH and soluble ions testing was completed in a representative sample at 1.8 m depth in BH1. After Romanoff (1957)³, the following corrosion rates can be used:

1. For carbon steel:
 - 11 $\mu\text{m}/\text{year}$ for the first 2 years,
 - 8 $\mu\text{m}/\text{year}$, thereafter.
2. For galvanized metal:
 - 3.6 $\mu\text{m}/\text{year}$ for the first 2 years,

³Romanoff's work for the U. S. National Bureau of Standards is authoritative in underground corrosion

- 2.25 $\mu\text{m}/\text{year}$ until depletion of zinc,
- 8 $\mu\text{m}/\text{year}$ for carbon steel.

13 Potential of Sulphate Attack to Concrete

For the sulphate content less than 0.1% in soil encountered at this site, there are no restrictions to the cement type which can be used for underground structures. This refers to restrictions associated with sulphate attack only.

14 Stripping, Excavation to Undisturbed Soils and rock, Earth and Rock Fill Placement. Asphalt Placement and Compaction

Appendix E presents recommended geotechnical specifications and guidelines for stripping, earth and rock excavation to undisturbed surfaces, earth and rock fill placement, asphalt placement, compacted lifts thicknesses for equipment type and compaction for different placements.

14.1 Winter Construction

Winter construction is not recommended. Many construction practices are inadequate to provide protection for all the details and geometries which could allow exposure of frost susceptible soils to freezing temperatures rendering them disturbed.

In situations where M&A is required for guidance and inspections during winter, M&A will provide its best approach with the resources available for protections during construction in real time and its expected that the contractors will act in real time to provide the protections. M&A has insufficient control of the contractor operations and and/or the construction tasks and/or the method of protection to provide any warranties in those situations. Irresponsive contractors add great potential to induce damage.

Disclaimer

Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha BAPS and other professionals understand that soils and groundwater information in this report has been collected in boreholes guided by standards and practice guidelines generally accepted for engineering characterization of ground conditions in Ontario and in no case borehole data and their interpretation warrant understanding of conditions away from the borehole locations. BAPS accepts that as development will have spread away from the boreholes other designers will need the best opinion from the geotechnical consultant based on the findings

of the investigation so that any statements which could be implicitly or explicitly depart from the conditions at borehole may be given to fulfill this need in good faith as best available opinion with the information available at the time without any warranties.

15 Limitations

This report was prepared by M & A Ltd. for the account of Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha (BAPS), for review by its designated consultants, financial institutions, and government agencies.

The content of the report reflects the judgment of Yuri Mendez P.Eng., in light of the information available to him at the time of preparation.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering.

Geotechnical reports are written before or during the early stages of the design period, and they may contain several alternative treatments to address site conditions as reasonably foreseeable at the time of writing. The reports may also contain recommendations presented for consideration by developers, designers and managers. As such, recommendations presented in geotechnical reports may or may not be incorporated into the final project design. The reports may also have been prepared prior to revisions to the project size and/or scope, so they may not reflect changes to the project.

User Agreement

Acknowledgment of Duties

In this 93-BAPS-R0 report, Mendez & Associates Ltd. (M&A) has pursued to fulfill every aspect of the obligations of professional engineers. As a part of those duties, from field work, operations, testing, analyses, application of knowledge and report, M&A has ensured that it meets a high standard of Geotechnical engineering practice and care in the province of Ontario. Obligations under R.R.O. 1990, Reg. 941: Professional Engineers Act, R.S.O. 1990, c. P.28, further referred to as Reg. 941 which are of immediate interest to this service are:

- “77. 7. A practitioner shall,
- i. act towards other practitioners with courtesy and good faith,
 - ii. not accept an engagement to review the work of another practitioner for the same employer except with the knowledge of the other practitioner or except where the connection of the other practitioner with the work has been terminated,
 - iii. not maliciously injure the reputation or business of another practitioner,
8. A practitioner shall maintain the honour and integrity of the practitioner’s profession and without fear or favour expose before the proper tribunals unprofessional, dishonest or unethical conduct by any other practitioner.”

Communications

93-BAPS-R0 is to be used solely in connection with the Proposed Place of Worship by Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha (BAPS) and thus subject of communications amongst other professionals (OP), government bodies and authorities, and BAPS for that purpose. M&A demands great care in precluding damage to the integrity

of this professional work which may arise from careless communications from engineers of Canada. OP and BAPS acknowledge understanding that where any such communication occur in connection with this report, they are bound by this agreement as an extension to the standard of care embodied in R.R.O. 1990, Reg. 941 and thus accept that any correspondence from OP or the public seen to add any bad connotations to the breadth, depth, typesetting, typography, formal semantics and scope of this report or otherwise diminish the breadth of services and knowledge delivered in this report which in any way raise concerns or insecurities to the qualities and/or the *reasonable completeness* delivered to BAPS in this report will be forwarded to M&A.

Reasonable Completeness

Within the limitation of budget OP and Bocharanwasi Shri Akshar Purushottam Swaminarayan Sanstha acknowledge understanding that said care and said standard has been applied equality to the reasonable completeness of this report relative to the information available from the field program and acknowledge understanding that is neither feasible nor possible to convey geotechnical information in this report that would cover for every possible consideration by OP and/or BAPS and that upon issuance it will be subject to reviews which may trigger the need to add information which at the discretion of M&A will be added when considered within the practice obligations under Reg. 941. The geotechnical information here provided is thus envisioned as to cover for the scope and breadth of design figures and assessments generally foreseeable as needed by other designers at the time of issuance and which could be amended as needed within the context of services provided by other designers. M&A agrees to issue revised versions of this 93-BAPS-R0 report by adding R# to each revision where # is the number of the revision. OP covenant to conduct all communications in connection with these reviews following great care to preclude the suggestion of a breach to the reasonable completeness acknowledged herein. Written communications which may trigger reviews under this agreement will be acknowledged as requests for "review under the 93-BAPS-R0 report user agreement". This reasonable completeness is also relative to the scope of services generally accepted in geotechnical engineering work in Ontario

Errors

Where errors are found during reviews under the 93-BAPS-R0 report user agreement, OP covenant great care in communications to preclude the suggestion of a breach to the duties acknowledge herein which could induce damages to M&A. Communications triggered by errors or any such communication which would render the person doing the request in a position of technical authority above the author implies an unauthorized review and constitute a serious breach of the code of ethics under Reg. 941 and damages to M&A and so subject to disciplinary measures and/or liability for damages to M&A. BAPS is thus acquainted that correction of errors will be made and acknowledged by M&A as they may arise in any professional work but in no way OP will purport or render such corrections as omissions departing away from the correction of errors set forth in this agreement. Where communications in connection with the correction of errors process set forth in this agreement raise concerns or insecurities to the qualities and/or the reasonable completeness delivered to BAPS in this report occur, BAPS covenants to inform M&A. BAPS is acquainted that such corrections are part of the natural processes associated with the applied sciences nature of this report and so typified explicitly in this agreement to protect M&A from inappropriate manipulation of those processes by OP and others.

Disclaimer

BAPS and OP understand that soils and groundwater information in this report has been collected in boreholes guided by standards and practice guidelines generally accepted for engineering characterization of ground conditions in Ontario and in no case borehole data and their interpretation warrant understanding of conditions away from the borehole locations.

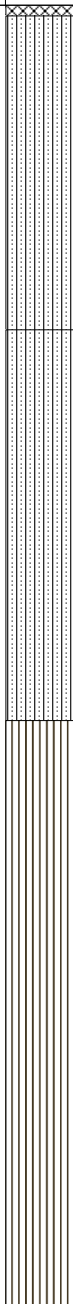
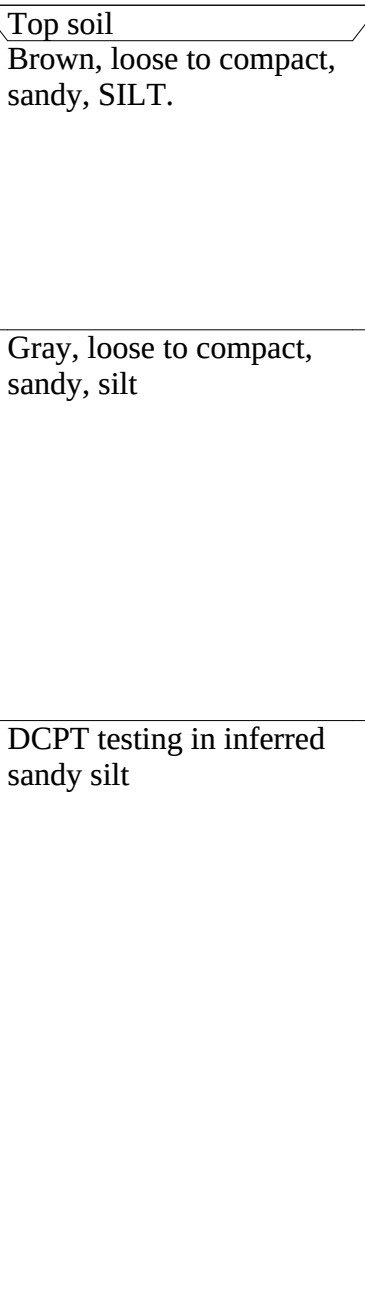
BAPS accepts that as development will have spread away from the boreholes other designers will need the best opinion from the geotechnical consultant based on the findings of the investigation so that any statements which could be implicitly or explicitly depart from the conditions at borehole may be given to fulfill this need in good faith as best available opinion with the information available at the time without any warranties.

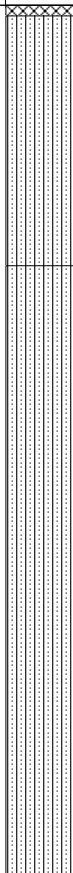
Part IV

Appendices

A Borehole Logs

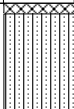
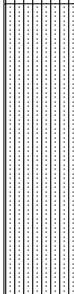
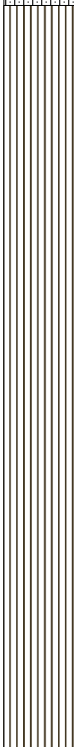
Report 93-BAPS-R0
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Project:		Proposed Place of Worship						M&A Mendez & Associates Ltd.							
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH1 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	 MELENDEZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values Blows/Ft			Shear Strength (kPa)		Laboratory Tests		
								25	50	75	48	68	Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.52															
104.4	0				G1										
	0.25														
	0.5														
103.9	0.75														
	1														
103.4	1.25														
	1.5														
102.9	1.75														
	2														
102.4	2.25														
	2.5														
101.9	2.75														
	3														
101.4	3.25														
	3.5														
100.9	3.75														
	4														
100.4	4.25														
	4.5														
99.9	4.75														
	5														
99.4	5.25														
	5.5														
98.9	5.75														
	6														
Borehole terminated on inferred bedrock															
S = Sample for lab review and moisture content															
Water Elevation Interpreted															

Project:		Proposed Place of Worship						M&A Mendez & Associates Ltd.							
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH2 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	 MELENZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values Blows/Ft			Shear Strength (kPa)		Laboratory Tests		
								25	50	75	48	68	Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.4															
	0			Top soil		SS 1	10								
104.1	0.25			Brown, loose to compact, sandy, SILT.											
	0.5														
103.6	0.75														
	1														
103.1	1.25														
	1.5														
102.6	1.75														
	2														
102.1	2.25														
	2.5	Gray, loose to compact, sandy, silt													
101.6	2.75														
	3														
101.1	3.25														
	3.5														
100.6	3.75														
	4														
100.1	4.25														
	4.5														
99.6	4.75														
	5														
99.1	5.25														
	5.5														
98.6	5.75														
	6														
98.1	6.25														
	6.5														
				DCPT testing in inferred sandy silt											
				Borehole terminated on inferred bedrock											
S = Sample for lab review and moisture content															
 Water Elevation Interpreted															

Project:		Proposed Place of Worship					M&A Mendez & Associates Ltd.								
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH3 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	M&A MELENZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values			Shear Strength (kPa)		Laboratory Tests		
								Blows/Ft 25 50 75			48 68		Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.42															
	0	<													

Project:		Proposed Place of Worship					M&A Mendez & Associates Ltd.								
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH4 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	 MELENZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values Blows/Ft			Shear Strength (kPa)		Laboratory Tests		
								25	50	75	48	68	Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.3															
	0			Top soil											
104	0.25			Brown, loose to compact, sandy, SILT.		G1									
	0.5														
103.5	0.75														
	1														
	1.25					SS 2	20								
103	1.5			Gray, loose to compact, sandy, silt											
	1.75														
102.5	2					SS 3	19								
	2.25														
102	2.5														
	2.75					SS 4	16								
101.5	3			DCPT testing in inferred sandy silt			4								
	3.25						24								
101	3.5						17								
	3.75						20								
100.5	4						37								
	4.25						34								
100	4.5						42								
	4.75						26								
99.5	5						27								
	5.25						39								
99	5.5						66								
	5.75														
98.5															
Borehole terminated on inferred sandy silt.															
S = Sample for lab review and moisture content															
▼ Water Elevation Interpreted															

Project:		Proposed Place of Worship						M&A Mendez & Associates Ltd.								
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH5 of 11								
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026								
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez								
Elevation (m)	Depth (m)	Lithology and color	 MELENZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values Blows/Ft			Shear Strength (kPa)		Laboratory Tests			
								25	50	75	48	68	Moisture Content (%)	Rock Quality RQD %	Other Lab Tests	
104.35																
	0			Top soil		SS 1	7									
104.1	0.25			Brown, loose to compact, sandy, SILT.												
	0.5															
103.6	0.75															
	1					SS 2	11									
103.1	1.25															
	1.5															
102.6	1.75			Gray, loose to compact, sandy, silt		SS 3	7									
	2															
102.1	2.25															
	2.5															
101.6	2.75					SS 4	7									
	3			DCPT testing in inferred sandy silt			2									
101.1	3.25						10									
	3.5						5									
100.6	3.75						9									
	4						10									
100.1	4.25						16									
	4.5						17									
99.6	4.75						12									
	5						14									
99.1	5.25						12									
	5.5						12									
98.6	5.75						14									
	6															
98.1	6.25															
Borehole terminated on inferred bedrock																
S = Sample for lab review and moisture content																
 Water Elevation Interpreted																

Project:		Proposed Place of Worship					M&A Mendez & Associates Ltd.								
Location:201 Nipissing Ct				Client:BAPS				Test Hole No.: BH6 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	 MENDEZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values Blows/Ft			Shear Strength (kPa)		Laboratory Tests		
								25	50	75	48	68	Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.3	0			Top soil											
104.1	0.25			Brown, loose to compact, sandy, SILT.		SS 1	10								
	0.5														
103.6	0.75														
	1					SS 2	26								
103.1	1.25														
	1.5														
102.6	1.75			Gray, loose to compact, sandy, silt		SS 3	19								
	2														
102.1	2.25														
	2.5					SS 4	16								
101.6	2.75														
	3														
101.1	3.25					SS 5	19								
	3.5														
100.6	3.75														
	4					SS 6	45								
100.1	4.25														
	4.5														
				Borehole terminated on sandy silt.											
S = Sample for lab review and moisture content															
 Water Elevation Interpreted															

Project:		Proposed Place of Worship					M&A Mendez & Associates Ltd.								
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH7 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	M&A MELENDEZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values			Shear Strength (kPa)		Laboratory Tests		
								Blows/Ft 25 50 75			48 68		Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.34															
	0			Top soil											
104	0.25			Brown, loose to compact, sandy, SILT.		G1									
	0.5														
103.5	0.75														
	1														
	1.25														
103	1.5														
	1.75			Gray, loose to compact, sandy, silt											
102.5	2					SS 2	9								
	2.25														
102	2.5														
	2.75					SS 3	8								
101.5	3			DCPT testing in inferred sandy silt											
	3.25						8								
101	3.5						8								
	3.75						7								
100.5	4						14								
	4.25						10								
100	4.5														
	4.75						17								
99.5	5						6								
	5.25						5								
99	5.5						6								
	5.75														
98.5	6						5								
				Borehole terminated on inferred sandy silt.											
S = Sample for lab review and moisture content															
Water Elevation Interpreted															

Project:				Proposed Place of Worship				M&A Mendez & Associates Ltd.							
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH8 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	M&A MELENDEZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values			Shear Strength		Laboratory Tests		
								Blows/Ft 25 50 75			(kPa) 48 68		Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104															
	0			Top soil											
103.7	0.25			Brown, loose to compact, sandy, SILT.		SS 1	5								
	0.5														
103.2	0.75														
	1					SS 2	4								
102.7	1.25			Gray, loose to compact, sandy, silt											
	1.5				▼										
102.2	1.75					SS 3	4								
	2														
101.7	2.25														
	2.5					SS 4	1								
101.2	2.75														
	3														
100.7	3.25					SS 5	1								
	3.5														
100.2	3.75														
	4					SS 6	1								
99.7	4.25														
	4.5														
Borehole terminated on sandy silt.															

Project:		Proposed Place of Worship					M&A Mendez & Associates Ltd.								
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH9 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	M&A MELENZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values			Shear Strength (kPa)		Laboratory Tests		
								Blows/Ft 25 50 75			48 68		Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.3															
	0			Top soil											
104	0.25			Brown, loose to compact, sandy, SILT.											
	0.5														
103.5	0.75														
	1														
103	1.25														
	1.5														
102.5	1.75			Gray, loose to compact, sandy, silt			3								
	2			DCPT testing in inferred sandy silt			3								
102	2.25						10								
	2.5						10								
101.5	2.75						8								
	3						4								
101	3.25						3								
	3.5						9								
100.5	3.75						14								
	4						10								
100	4.25						5								
	4.5						8								
99.5	4.75						12								
	5						27								
99	5.25						36								
	5.5														
98.5	5.75														
	6			Borehole terminated on inferred sandy silt.											
S = Sample for lab review and moisture content															
Water Elevation Interpreted															

Project:				Proposed Place of Worship				M&A Mendez & Associates Ltd.							
Location: 201 Nipissing Ct				Client: BAPS				Test Hole No.: BH10 of 11							
Job No.: 93-BAPS				Test Hole Type: 8 1/4" OD				Date: 6/8/2026							
8 and 1/4" OD				SPT Hammer Type: Safety auto hammer				Logged By: Yuri Mendez							
Elevation (m)	Depth (m)	Lithology and color	M&A MENDEZ & ASSOCIATES LTD. SINCE 2013	Material Description	Water elevation measurement	Symbols	Samples or Blows/Ft	SPT N-Values			Shear Strength (kPa)		Laboratory Tests		
								Blows/Ft 25 50 75			48 68		Moisture Content (%)	Rock Quality RQD %	Other Lab Tests
104.24															
	0			Top soil											
	0.25			Brown, loose to compact, sandy, SILT.		SS 1	14								
103.8	0.5														
	0.75														
103.3	1					SS 2	9								
	1.25			Gray, loose to compact, sandy, silt											
102.8	1.5														
	1.75					SS 3	3								
102.3	2														
	2.25														
101.8	2.5					SS 4	1								
	2.75														
101.3	3														
	3.25					SS 5	1								
100.8	3.5														
	3.75														
100.3	4					SS 6	2								
	4.25														
99.8	4.5														
	4.75					SS7	2								
99.3	5														
	5.25														
				Borehole terminated on sandy silt.											
S = Sample for lab review and moisture content															
Water Elevation Interpreted															

Appendix

B Resistivity, PH and Soluble Salts Test

Certificate of Analysis
Client: Geoseismic
Client PO:
Report Date: 18-Jun-2026
Order Date: 15-Jun-2026
Project Description: 201NIPISSING

Client ID:		BH6 SS2									
Sample Date:		09-Jun-26 09:00									
Sample ID:		2625073-01									
Matrix:		Soil									
MDL/Units											

Physical Characteristics											
% Solids	0.1 % by Wt.	82.4	-	-	-	-	-	-	-	-	-
General Inorganics											
pH	0.05 pH Units	7.88	-	-	-	-	-	-	-	-	-
Resistivity	0.1 Ohm.m	149	-	-	-	-	-	-	-	-	-
Anions											
Chloride	10 ug/g	<10	-	-	-	-	-	-	-	-	-
Sulphate	10 ug/g	<10	-	-	-	-	-	-	-	-	-

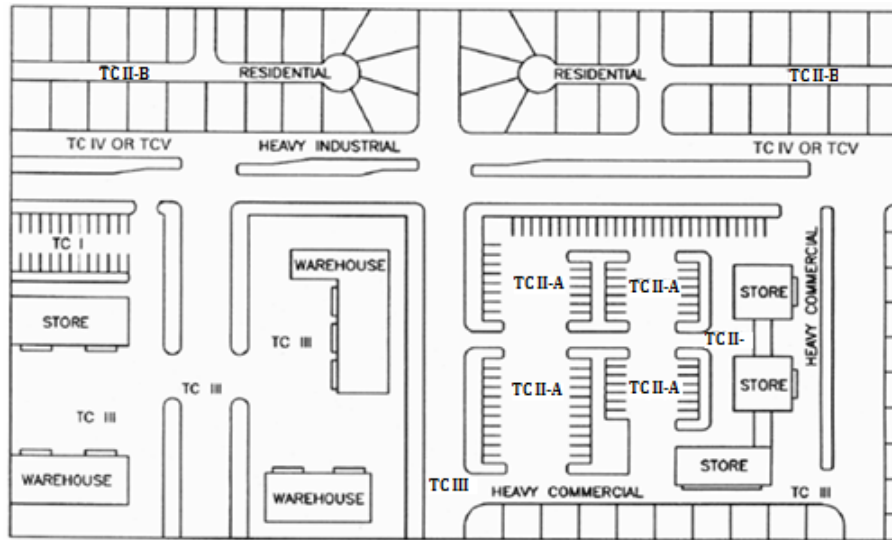


Figure 2: Traffic Classes

Appendix

C Pavement

C.1 Traffic Classes and Pavement Catalog

Figure 2 in page 37 presents a schematic site plan differentiating example uses for five traffic classes developed by the Wisconsin Asphalt Pavement Association and presented in their Design Guide May, 2001.

1. Refer to figure 2 in page 37 to differentiate pavement classes for the proposed Proposed Place of Worship.
2. Refer to table 2 in page 38 for additional information and design ESALs.
3. Refer to Tables 3, 4 and 5 in page 38 to select pavement structures for each traffic class on very poor soils encountered at this site.

Consult Yuri Mendez Engineering for pavement structures on roadbed consisting of newly placed engineered fill, underground parking or as required, where the roadbed is not the near surface very poor soil encountered at this site.

C.2 Frost Heave in Pavements

Frost heave of founding materials for pavement induces reduction (serviceability losses) of the performance period (along with traffic ESALs) for which the

Ontario Category	Classes	ESALs	Uses
A	I	50,000	Residential dead end and parking lots 50 stalls or less.
A	II-A	100,000	Parking lots 51 to 500 stalls.
A	II-B	200,000	Residential streets, parking lots more than 500 stalls.
B	III	600,000	Minor collectors, local streets and light industrial lots.
B	IV	900,000	Collector Streets and heavy industrial parking lots.
B	V	2,200,000	Minor Arterial.

Table 2: Design ESALs (20 years) and uses for traffic classes

Material Class	Specification	Thicknesses			
		Class I		Class II-A	
		mm	in	mm	in
Surface course	OPSS 1151 Superpave 9.5	50.8	2	50.8	2
Surface course	OPSS 1151 Superpave 12.5				
Binder course	OPSS 1151 Superpave 19.0				
Base	OPSS 1010 Granular A	152.4	6	152.4	6
Subbase	OPSS 1010 Granular B Type II	228.6	9	279.4	11
Subgrade	Undisturbed In situ Soil				

Table 3: Flexible Pavement Structure Classes I and II-A

Material Class	Specification	Thicknesses			
		Class II-B		Class III	
		mm	in	mm	in
Surface course	OPSS 1151 Superpave 9.5				
Surface course	OPSS 1151 Superpave 12.5	63.5	2.5	76.2	3
Binder course	OPSS 1151 Superpave 19.0				
Base	OPSS 1010 Granular A	152.4	6	152.4	6
Subbase	OPSS 1010 Granular B Type II	330.2	13	406.4	16
Subgrade	Undisturbed In situ Soil				

Table 4: Flexible Pavement Structure Classes II-B and III

Material Class	Specification	Thicknesses			
		Class IV		Class V	
		mm	in	mm	in
Surface course	OPSS 1151 Superpave 9.5	31.8	1.25		
Surface course	OPSS 1151 Superpave 12.5				
Binder course	OPSS 1151 Superpave 19.0	57.2	2.25		
Base	OPSS 1010 Granular A	152.4	6		
Subbase	OPSS 1010 Granular B Type II	457.2	18		
Subgrade	Undisturbed In situ Soil				

Table 5: Flexible Pavement Structure Classes IV and V

structure was designed. Generally speaking, AASHTO 1993 does not provide for an increase in thicknesses (structural number) for reduction of losses, as such increase has very small influence in the detrimental effects of frost heave. Frost heave affects pavements by roughness induced by differential frost heave, i.e., if the longitudinal vertical alignment is all equally frost susceptible, there is negligible detrimental effect. This is difficult to achieve in urban developments in which services trenches are backfilled with non frost susceptible materials. For long lasting pavements on frost susceptible soils, the general guideline is, where possible; ensure that all soils serving as pavement foundation are equally frost susceptible. This could be achieved by providing frost susceptible backfill within 1.4 m of the pavement foundation in service trenches. Where measures to mitigate the effect of frost heave are not undertaken, decrease of the performance period is accepted to occur.

C.3 Frost Protection for Manholes, Catch Basins and Others

Manholes and catch basin type structures provide a cold bridge to a deeper portion of the soil profile and create localized areas prompt to pavement failure by excessive frost heave roughness in frost susceptible soils. This can be prevented by providing insulation extending downward around the structure and horizontally outward to create a transition from the varying pavement elevation to the more stable catch basin elevation. On the alternative, non frost susceptible backfill can be provided tapered outward from the structure to the surrounding pavement.

Report 93-BAPS-R0
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Appendix

D Foundation Drainage

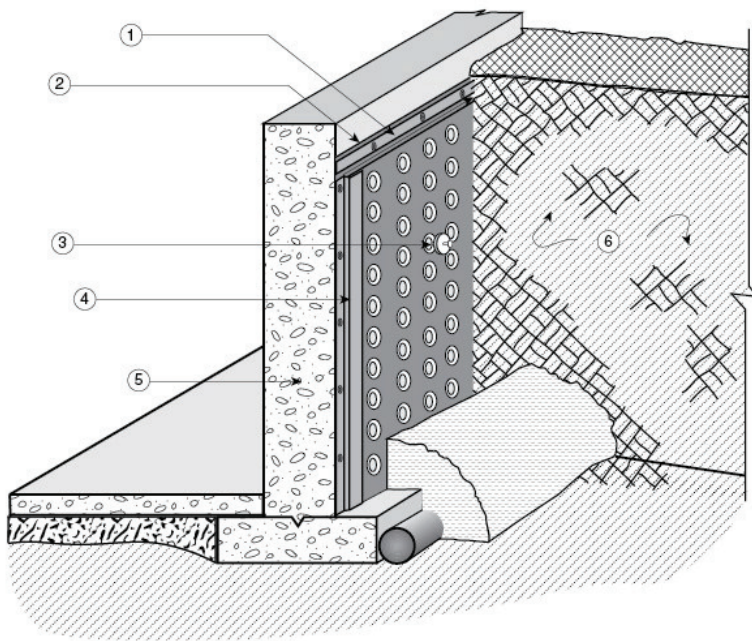


Figure 1. “Cosella-Dörken DELTA[®]-MS and DELTA[®]-MS CLEAR Dampproofing Membranes” – face in contact with the soil

1. termination bar
2. caulking (behind membrane)
3. fastener
4. mould strip
5. concrete foundation
6. backfill

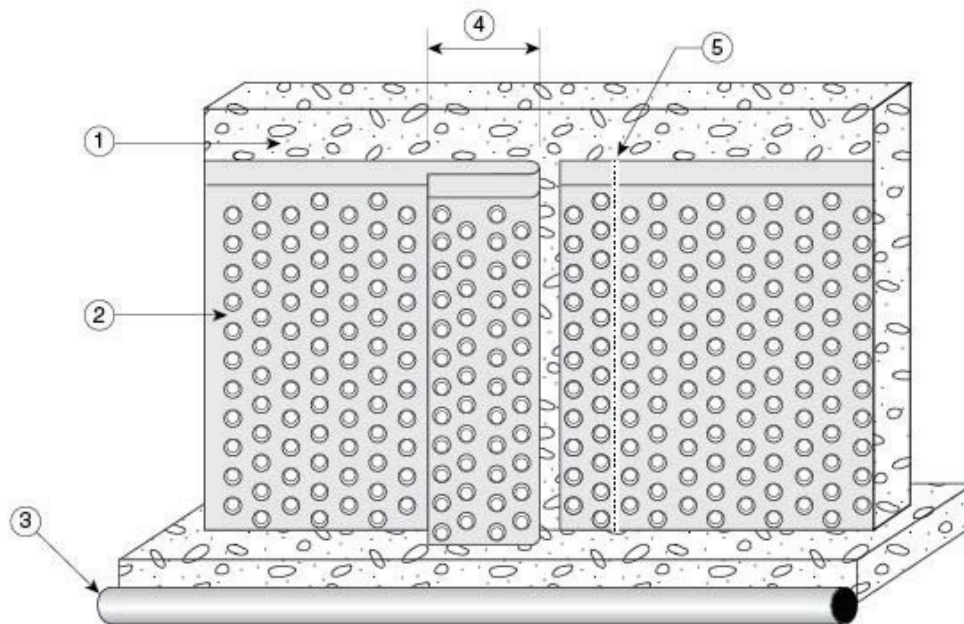


Figure 2. “Cosella-Dörken DELTA[®]-MS and DELTA[®]-MS CLEAR Dampproofing Membranes” – face in contact with the wall

1. concrete foundation
2. membrane
3. drainage tile
4. minimum 6" overlap
5. caulking

Appendix

E Construction Recommendations for Stripping, Earth and Rock Excavation to Undisturbed Soils, Earth and Rock Fill Placement, Asphalt Placement and Compaction

In the event that any of the following recommendations conflict with municipal and or provincial specifications, the most restrictive applies. For the case when products involving ground conditions are used, the manufacturer's specifications take precedence.

The contractor shall be prepared to proceed as directed by the geotechnical consultant within the framework of these recommendations. Construction methods will abide to these recommendations and/or be discussed and agreed upon with the consultant on site in real time or as expressed in writing.

E.1 Removal of Water

Removal and diversion of surface water and ground water will be planed prior to all earthwork within the scope of these recommendations. All surfaces in which to commence construction will be maintained dry and free of muddy conditions.

E.2 Earth Excavation

Earth excavations are subject to the provisions in O. Reg. 213/91: Construction Projects under Occupational Health and Safety Act. Refer to section 9 for key aspect of O. Reg. 213/91 applicable to the findings in testholes at this site.

For the purpose of these recommendations earth materials will be refer to as one or more of the general material classes: topsoil and organic soils, non engineered fill, granular fill, native soils and rock. Topsoil and organic soils and non engineered fill are the subject of striping in subsection E.2.2.

E.2.1 Suitability of Earth Materials

The suitability of material for specific purposes is determined by the geotechnical engineer. To the extent they are needed, suitable material from the excavations can be used in the construction of required permanent earthfill or rockfill.

E.2.2 Striping

Topsoil and/or organic soils and/or existing fill must be removed from the perimeter of all proposed structures, including retaining wall, buildings, pavement, parking areas and earth or fill banks for grading.

E.2.3 Excavation to Undisturbed Soil Surface

All soil surfaces in which to commence construction for all structures are to be preserved in undisturbed condition (Undisturbed Soil Surface (USS)). Native soil surfaces exposed to the weather for a period exceeding 72 hours are considered disturbed. Where rainy weather and/or equipment operation and/or labor make impractical or difficult the preservation of USS a working-leveling granular pad may be used. Use the compaction requirements and materials in Table 6.

Except as otherwise indicated for select earthfill materials at this site, re-instatement of excavated soil is not allowed. When excavation exceeds the depth of the proposed USS, a granular pad using the compaction requirements and materials in Table 6.

It can be assumed that it is impractical to conduct excavations to an even USS. In such case a granular pad not less than 150mm thick must be used to remedy for irregularities caused by the operation of equipment.

E.3 Foundations Placement

Native soil surfaces exposed to the weather for a period exceeding 72 hours are considered disturbed. Place foundations on a OPSS.MUNI 1010 granular B type 2 granular pad that is at least 150 mm thick placed on undisturbed soils.

E.4 Retaining Wall Foundations

Retaining wall foundations are to be placed on a OPSS.MUNI 1010 granular B type 2 granular pad that is at least 150 mm thick.

E.5 Imported Materials

Materials to be imported are subject to prior approval by the geotechnical engineer. The exceptions are granular materials having 12 % or less fines including clean sands. Fines are materials passing the # 200 sieve (70 μm).

E.5.1 Granular Earthfill Placement

E.5.1.1 Moisture for Granular Earthfill

For granular earthfill it is to be assumed that moisture will be added for placement. Compaction in wet of optimum condition is preferred for granulars.

E.5.1.2 Compacted Lifts Thicknesses Equipment and Passes for Granular Earthfill

Compacted lifts will not exceed 250 mm. Subject to test trials a maximum compacted lift of 300 mm may be accepted provided vibratory compaction equipment rated at 60,000 lb-f (27,300 kg-f) of dynamic force is used.

For road construction passes are to overlap by 300 mm for full coverage.

Where non vibratory pneumatic compactors with ballast an tire pressure of 100 psi (7 kg/cm²) are used (9 or 13 ply) the compacted lift thicknesses will not exceed 150 mm for granular.

For services and culvert trenches, when using rammers and light vibratory plates weighing less than 115 kg (250 lbs) the compacted lift thicknesses will not exceed 100 and 125 mm respectively. For heavier trench equipment the compacted lifts will not exceed 250 mm.

No heavy equipment will be operated above the crown of pipes or culverts unless 1.2 m of fill has been placed or the subgrade elevation has been reached.

For all trenches below the water table, trench foundation not less than 200 mm will be provided as per materials and specification in Table 6 in page 46.

Materials lift placement beneath foundations, slabs or any placement not specified above must abide to the above specifications as they relate to the equipment being used.

E.5.2 Compaction Guide for Passes and Level of Compaction

The contents of this section are provided as guidelines for construction. The resulting compaction densities and compacted lift thicknesses can only be verified by actual testing and field trials respectively.

For equipment passes the contractor may consider not less than 4, 5 or 6 passes for 95, 98 or 100 % Proctor Standard compaction.

For granular materials loose lifts may be approximately 150, 175 and 235 mm for compacted lift thicknesses 125, 150 and 200 mm respectively.

For select earthfill materials loose lifts may be approximately 125 and 190 mm for compacted lift thicknesses 100 and 150 mm respectively.

E.6 Compaction General

It is to be assumed that water will be added for compaction and that the required maximum grain size shall be 3/4 of the compacted lift thickness.

Obtain the approximate loose lift thickness by dividing the compacted lift by 0.88. Compacted lifts are approximately 12% less than the loose lift thickness.

Each lift shall be compacted by the specified number of passes of the approved type and weight of roller or other equipment.

Table 6 in page 46 presents Proctor Standard (PS) compaction requirements for specified placement and materials.

E.7 Compaction Specific

E.7.1 Compaction Along Basement Walls, Retaining Walls and Structures

No heavy compaction equipment is to be operated within 0.9 m of any structure. The consolidation zone is defined as the zone within 0.9 m of the exterior edge of basements or the interior edge of retaining walls or any structure. Only light

Material Placement	Material Description	% PS
Base	OPSS.MUNI 1010 Granular A	100
Subbase	OPSS.MUNI 1010 Granular B Type II	100
Subgrade	Granular earthfill (with 12 % or less fines) and 100% passing 106 mm sieve	95
	Select earthfill	95
Backfill for trenches under pavement	Granular earthfill (with 12 % or less fines) and 100% passing 106 mm sieve.	95
	Select earthfill	95
Under sidewalks top 200 mm	Any OPSS.MUNI 1010 Granular specification for which 100% passes the 26.5 mm sieve	95
Under foundations	OPSS.MUNI 1010 Granular B type 2 with 12% or less fines and for which 100% passes the 106 mm sieve	98
Backfill under slabs on grade	Cohesionless (with 12 % or less fines) and 100% passing 106 mm sieve.	100
	Select earthfill	100
Top 100 mm under slabs	Crushed stone 9.5 to 19 mm (use one or several sizes).	90
Pipe bedding and cover (150 mm for bedding to 150 mm above the crown)	Any OPSS.MUNI 1010 Granular specification for which 100% passes the 26.5 mm sieve	95
Trench foundation (stabilization minimum 200 mm)	Any OPSS 1010.MUNI Granular specification for which 100% passes the 106 mm sieve except Granular B Type I	95
Backfill for non building, non traffic and/or non parking areas	Granular (with 12 % or less fines) and 100% passing 106 mm sieve	90
	Select earthfill	90
Placement not specified above	Granular (with 12% or less fines) and 100% passing 106 mm sieve	95
	Select earthfill	95

Table 6: Proctor Standard (PS) compaction requirements for specified placement and materials.

to very light compaction is to be applied along the consolidation zone with no more than 2 passes of light vibratory equipment.

E.7.2 Self Compacting Materials

There are no self compacting materials. Total fill thickness of 200 mm of granular materials consisting of more than 90% of one nominal size referred to as crushed stone are acceptable without compaction under concrete slabs.

E.7.3 Settlement Allowance and Overfill

The settlement (consolidation) of lightly compacted earthfill can be excessive. Overfill to compensate for settlement allowance will be discussed with the geotechnical engineer.

E.7.4 Compaction Quality Control

Provide moisture density relationships for Standard Proctor compaction for the proposed materials and source. Conduct one in situ test at randomly selected locations per 60 m³ of fill. This is approximately one test, each 300 m² of lift in place. Nuclear or non-nuclear density probes testing can be used. Density probes will only measure the density within 0.12 m depth at the point of the measurement.

E.8 Asphalt Pavement

Place asphalt mix only when base course, or previous course is dry and air temperature is 7 degrees C and increasing.

Asphalt pavement mix temperatures at the time of placement will be within the range of 120 to 160 degrees C.

Do not place asphalt on a surface which is wet or covered by snow or ice or if the ground is frozen.

E.8.1 Surface Preparation for Asphalt Pavement

It is to be assumed that rough grading and fine grading shall take place before asphalt placement. Rough grading will be completed to within ± 25 mm of the underside of asphalt and tested to meet the specified density. Fine grading and rolling will be completed by the paving contractor. The granular material for fine grading will meet OPSS.MUNI 1010 Granular M.

E.8.2 Proof Rolling Prior to Asphalt Pavement

Conduct proof rolling using a single pass of a tandem-axle dump truck or a tri-axle dump truck with the third axle raised loaded to a minimum gross vehicle weight of 26 metric tons at walking speed. Rutting in excess of 25 mm is considered failure. Where proof rolling reveals areas of defective subgrade,

Remove base, Sub-base and subgrade material to depth and extent and width that will allow reconstruction using the available equipment or as directed by the Consultant.

E.8.3 Asphalt compaction

The compacted lifts are accepted to be 80% of the loose lift thickness (the loose lift reduces thickness by 20% when compacted). Divide the compacted lift thickness by 0.8 to obtain the thickness of the loose lift.

Compaction will consist on at least three passes at approximately walking speed (5.4 km/hr) as follows: *break down rolling* using a vibratory steel drum roller, *intermediate rolling* with a static (non-vibrating) roller or a pneumatic roller and *finish rolling* with a smooth static roller.



APPENDIX G

PRE-CONSULTATION SUMMARY

June 10, 2026

Pallavi Swaranjali
Mindful Habitats Inc.
Via email: pallavi@mindfulhabitats.ca

**Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Control Application – 201 Nipissing Court**

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on June 5, 2026.

Pre-Consultation Preliminary Assessment

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. For your next submission, please submit the required Application Form, together with the necessary studies and/or plans to planningcirculations@ottawa.ca, copy (cc:) to the file lead and planning support.
2. In your subsequent pre-consultation or application submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed is requested with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.
3. Please note, if your development proposal changes significantly in scope, design, or density it is recommended that a subsequent pre-consultation application be submitted.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.
 - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Proposed Development

The proposed development involves the redevelopment of a vacant lot with a two-storey structure with no basement, designed to serve as a community gathering space located at 201 Nippising Court. It is understood that there will be two phases and the feedback in this form relates to Phase 1 - 201 Nippising.

Planning

Official Plan

1. Pursuant to Schedules A and B5 in the Official Plan, the subject site is located within the Suburban (West) Transect and is designated Neighbourhood.
2. Per Schedule C4 – Urban Road Network, Nippising Court is classified as a Local Road.
3. The lands are subject to Area Specific Policy 2, Kanata West in Volume 2C of the Official Plan. The Area-Specific Policy and associated provisions can be found here: [Volume 2C – Area-Specific Policies](#)
 - a. As per Area Specific Policy 2, Landowners in the Kanata West policy area are required to enter into private agreements to share the costs of the major infrastructure projects and studies and plans for the development of the Kanata West Area. As a condition of site plan approval, notification is required Trustee of the Kanata West Owners Group Inc. that the owner is party to the agreements and has paid its share of any costs pursuant to the agreements.

Zoning By-law 2008-250

4. Please note as of March 11, all development applications and building permits must comply with the provisions in Zoning By-law 2008-250 and Zoning By-law 2026-50. Both by-laws must be reviewed to determine which provisions are most restrictive, and the most restrictive provisions should be applied.
5. The subject site is currently designated General Mixed-Use Zone, Exception 2815, (GM[2815]).

6. The proposed use of the site (community centre) is permitted as of right within this designation.

7. Landscape Requirements – Section 110

- a. Except in the case of an industrial zone, a minimum of 15% of the area of any parking lot, whether a principal or an accessory use, must be provided as perimeter or interior landscaped area comprised of the following:
 - i. a landscaped buffer must be provided between the perimeter of the parking lot and a lot line in accordance with Table 110. A driveway may cross the landscaped buffer; and (OMB Order, File #PL080959 issued September 18, 2009)
 - ii. in addition to the landscaped buffer, interior landscaping may be provided including various landscaped islands, landscaped medians, pedestrian pathways or public plazas to meet the minimum 15% requirement. (OMB Order, File #PL080959 issued September 18, 2009)

8. Parking Requirements

- a. Per Section 101 of the Zoning By-law, the following parking requirements are outlined below for Area C on Schedule 1A.
 - i. Community Centre - 4 per 100 m² of gross floor area

Zoning By-law 2026-50

9. The subject site is currently designated Neighbourhood Mixed-Use Zone, Exception 2815 (NMU[2815]).
 - a. The purpose of the Neighbourhood Mixed-Use Zone is to strengthen locally oriented services and amenities that support 15-minute neighbourhoods, provide flexible and adaptable space for both residential and non-residential uses, support mixed-use development in appropriate locations within the Neighbourhood designation while recognizing existing non-residential uses, and establish zoning requirements that ensure development is contextually appropriate for the surrounding area.
 - b. The proposed use of the site (Community Centre) is permitted as of right within this zone.

10. Waste Management – Section 217

- a. Please provide the measurements of the proposed waste enclosure.

- b. Please ensure compliance with policies outlined below regarding screening and setbacks.
- c. All outdoor refuse collection and refuse loading areas contained within or accessed via a parking lot must be screened from view by an opaque screen with a minimum height of 2 metres, subject to the following:
 - i. in the case of a parking lot with 50 or more parking spaces, all outdoor refuse or refuse loading areas must be located at least 9 metres from a lot line abutting a public street and least 3 metres from any other lot line; and
 - ii. despite subsection (6), where an in-ground refuse container is provided, the screening requirement may be achieved with soft landscaping and must be a minimum height of 1.5 metres.

11. Landscape Requirements - Section 607.

- a. Please confirm on the site plan whether the proposed development is meeting the required landscape requirements outset in Section 607 for parking lots containing more than 100 spaces.
- b. A soft landscaped buffer must be provided between the perimeter of a parking lot and a lot line, and a driveway may cross the soft landscaped buffer:
 - i. for a parking lot containing 100 or more spaces: 5 metres.
- c. For a principal or accessory use parking lot, the following landscaping provisions apply:
 - i. a minimum percentage of the parking lot area must consist of soft landscaping as follows:
 - 1. more than 100 parking spaces: 20 per cent of the parking lot area.
- d. the landscaping required by clause (8)(a) may include features such as landscaped islands, landscaped medians, pedestrian pathways, or public plazas;
- e. for parking lots with 50 parking spaces or more, in addition to the perimeter surrounding a parking lot, a minimum of one soft landscaped median or peninsula at least 3.5 metres wide must also be provided within the parking lot.

12. Please confirm how many bicycle parking spaces will be provided to align with the short term bicycle parking requirements in Section 613.

- a. Community centre - 10 spaces, of which 2 must be inclusive spaces, with an additional 1 space per 100 m² above 500 m².

General Comments:

- 13. Staff appreciate the provision of Electric Car Charging Stations.
- 14. Please ensure there is dedicated space for temporary snow storage.
- 15. Please provide an overall site plan showing both Phases 1 and 2 as part of the Site Plan Control submission package.
- 16. Please note the site is located within the Kanata West Business Park Subdivision. The subdivision agreement notes that the site is located in proximity to a bedrock quarry, however it is located in sufficient distance and therefore does not require a vibration study.
- 17. The subject site is located within three kilometres of an operating Solid Waste Disposal Site.
 - a. Per Official Plan Policy 10.1.7 4) and 5); New lot creation within this zone will require a notice on title to ensure the impacts of the operating Solid Waste Disposal Site (i.e. noise, dust, odours and haul route) are provided.
 - b. Please provide a brief demonstrating that the Solid Waste Disposal Site shall not have any unacceptable adverse effects on the proposed development and will not pose any risks to human health and safety.
- 18. Please note the site is subject to One Lot for Zoning Purposes per Section 144 of the 2026-50 Zoning By-law and [Section 93 of the 2008-250 Zoning By-law](#).

Required Applications

- 19. Should a Zoning By-Law Amendment be required, more information on process, timelines, fees, etc. can be found [here](#).
- 20. A Site Plan Control (Standard) application will be required. More information on process, timelines, fees, etc. can be found [here](#).
 - a. Please note the timeline for a Standard Site Plan application is 60 calendar dates from once the application is deemed complete.
 - b. Please note the a Complex Site Plan Control is triggered by a Gross Floor Area larger than 1,860 sq. m.

Feel free to contact Emily Charby, Planner, for follow-up questions.

Urban Design

Submission Requirements

- Site Plan
- Conceptual Master Site Plan for both Phase 1 and Phase 2 development
- Landscape Plan
- Building Elevations

Preliminary Comments

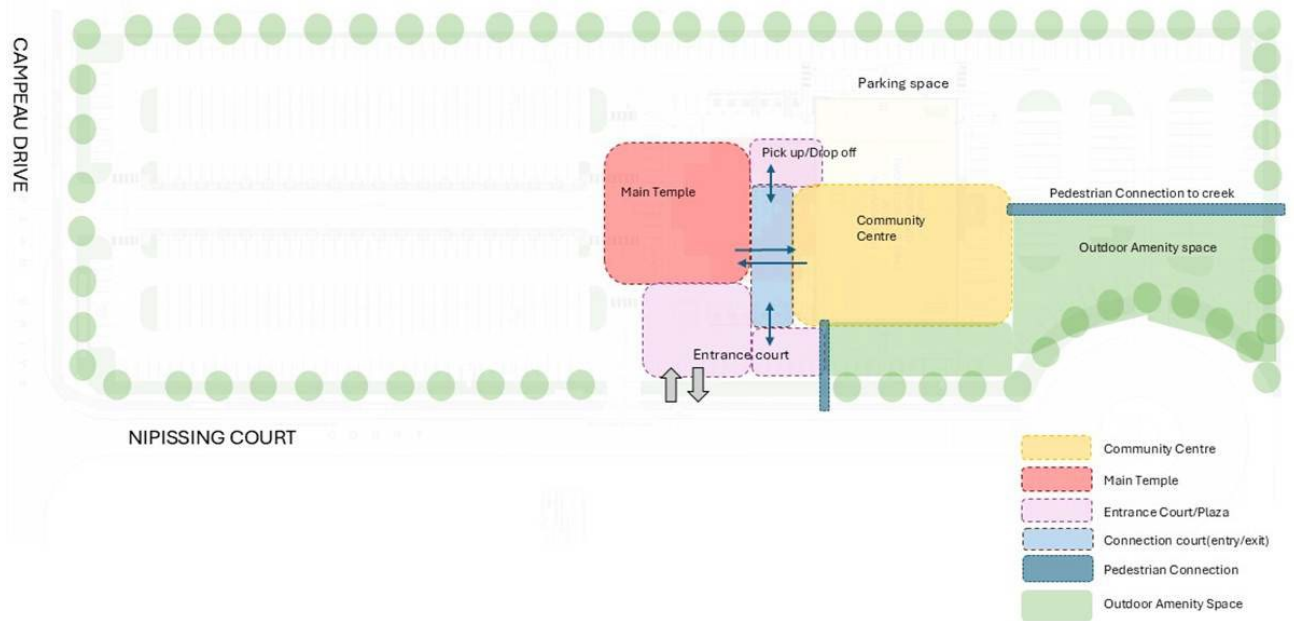
21. The proposed development is provides extensive surface parking. The community center building has no presence along Nipissing Court and does not establish a strong relationship with the public realm.

22. The proposal would benefit from the following:

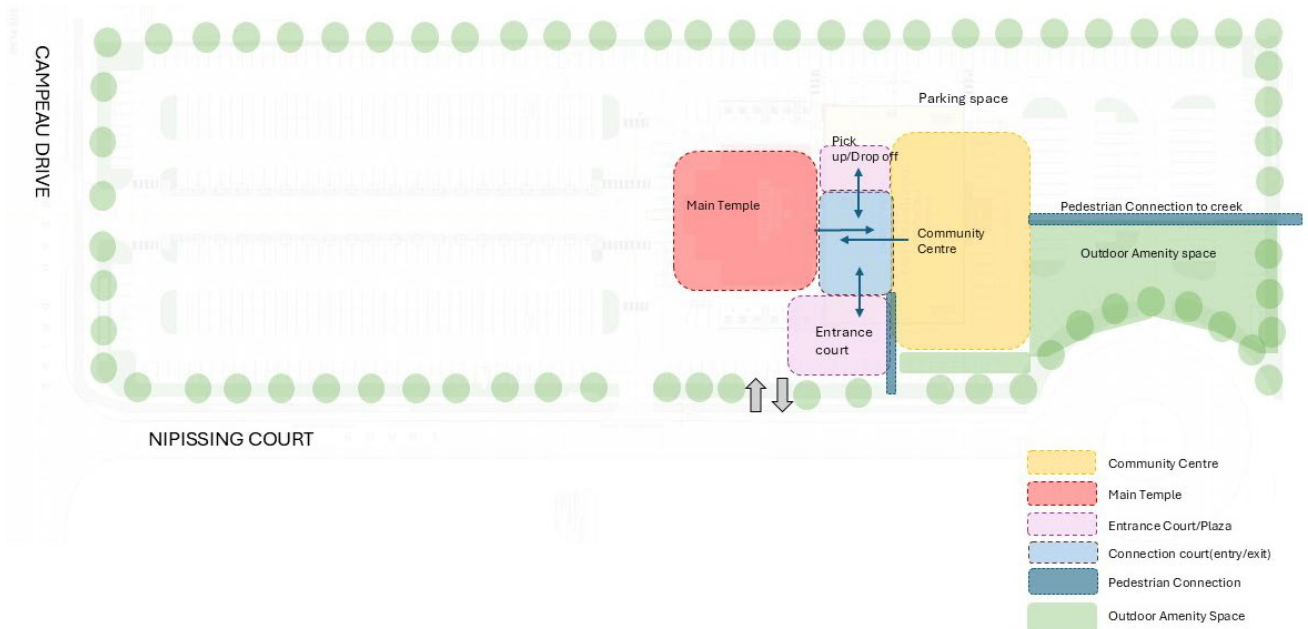
- a. Explore opportunities to locate and orient the building closer to Nipissing Court to create a stronger street presence and activate public realm.
- b. Provide a clearly defined pedestrian entrance forecourt and arrival sequence to strengthen the visitor experience.
- c. Explore opportunities to enhance the relationship with the adjacent open space (creek and pathways) through building orientation and location, views, outdoor spaces, and pedestrian connections. Consider incorporating an outdoor amenity space between the community centre and the open space.
- d. Strengthen pedestrian connections between building entrances, parking areas, public sidewalks, and future development phases.
- e. Increase landscaping throughout the site, particularly within parking areas and along site edges, to reduce the visual impact of surface parking.

Conceptual design options to consider:

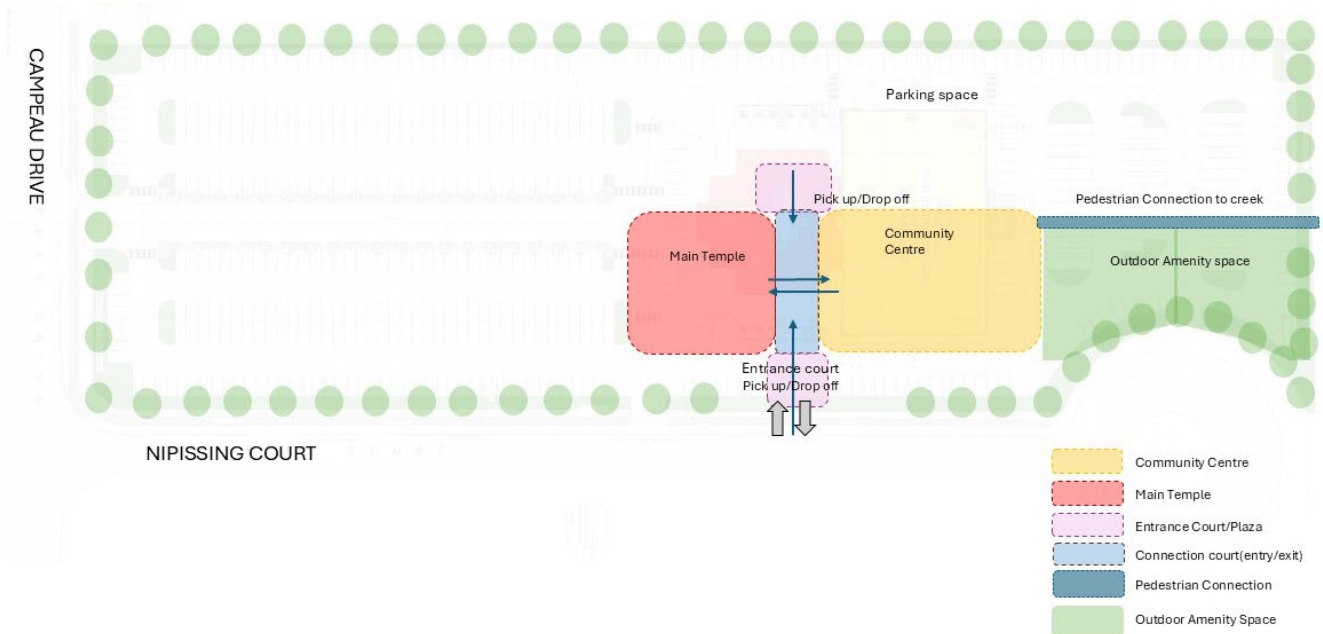
23. Option 1: Reorient the community center toward Nipissing Court and create a central entrance forecourt that serves as the primary gathering space and focal point for future Phase 2 development.



24. Option 2: Maintain the building orientation while creating a larger entrance court shared by the community center and future temple. Consider outdoor amenity space connected to the building and improved pedestrian connections to the creek.



25. Option 3: Reorganize the site by locating buildings closer to Nipissing Court, consolidating parking areas, and establishing a stronger public realm presence along the street frontage.



Feel free to contact Randolph Wang, Urban Design, for follow-up questions.

Engineering

Comments:

General

26. The proposal consists of a Phase 1 Community Centre (assembly occupancy) with classrooms, workshop spaces, and accessory kitchen, with Phase 2 (101 Nipissing) intended as a place of worship. Phasing and ultimate servicing strategy shall be clearly defined.
27. The site is located within the Kanata West Business Park and shall conform to the applicable servicing criteria, including the Kanata West Master Servicing Study (MSS) and supporting documentation. The proponent is encouraged to obtain the latest studies from the GeoInformation Centre.
28. Confirm consistency with the Carp River Subwatershed Study, including applicable quantity and quality control requirements. The proponent is encouraged to obtain the latest studies from the GeoInformation Centre.

29. A hydro corridor/easement traverses the site and adjacent lands. If any works are proposed within the easement, that they must obtain clearance from the easement owner and provide approvals to the City prior to Commence work Notice or Building Permit. All proposed works must:
 - a. Respect hydro clearance requirements
 - b. Avoid conflicts with servicing and grading
 - c. Be coordinated with the applicable utility authority
30. Show all easements, including hydro corridor, on all plans.
31. Confirm no conflicts with underground servicing within easement areas.

Water

32. A 254 mm dia. PVC watermain is available along 201 Nipissing Court.
33. District Metering Area (DMA) Chamber(s) are required for private developments serviced by a connection 150 mm or larger or when there are two or more private connections to the public watermain. Refer to the City of Ottawa Water Distribution Guidelines.
34. Please be advised that capacity of the existing system will be determined after Water Boundary conditions are requested. Water Boundary condition requests must be submitted to the City Project Manager, Development Review by the civil design engineer or consultant prior to submission and include the following information:
35. The location of the service and the expected water demand of the proposed development shown on a plan, figure, or map;
 - a. Type of development;
 - b. Average daily demand: ____ l/s;
 - c. Maximum daily demand: ____ l/s;
 - d. Maximum hourly daily demand: ____ l/s;
36. Given the use and building footprint, confirm that fire flow requirements are met in accordance with Fire Underwriters Survey (FUS) and completed FUS Design Declaration if applicable.
37. Supporting Calculations for all demands listed above and required fire flow as per Ontario Building Code or Fire Underwriter Surveys (See technical Bulletin ISTB-2021-03.

- 38. Watermain system analysis demonstrating adequate pressure as per section 4.2.2 of the Water Distribution Guidelines.
- 39. Demonstrate adequate hydrant coverage for fire protection. Please review Technical Bulletin ISTB-2018-02, Appendix I Table 1 – maximum flow to be considered from a given hydrant.
- 40. Show proposed emergency route (to be satisfactory to Fire Services).

Sanitary Sewers

- 41. A 250 mm dia. PVC sanitary sewer is available along 201 Nipissing Court.
- 42. Provide sanitary servicing strategy for Phase 1 and Phase 2, including ultimate buildout conditions.
- 43. Confirm whether the kitchen/ food service uses will require grease management systems.
- 44. A monitoring maintenance hole shall be required just inside the property line for all non-residential and multi residential buildings connections from a private sewer to a public sewer. See the sewer use by-law for details.
- 45. Provide pre and post CCTV of the sanitary sewer fronting the development as per City Standard CCTV spec S.P. F-4090.
- 46. Provide an analysis to demonstrate that there is adequate residual capacity in the receiving and downstream wastewater system to accommodate the proposed development.
- 47. Please apply the wastewater design flow parameters in Technical Bulletin ISTB-2018-01.

Stormwater Management

- 48. A 1950 mm dia. concrete storm sewer is available along 201 Nipissing Court.
- 49. A monitoring maintenance hole shall be required just inside the property line for all non-residential and multi residential buildings connections from a private sewer to a public sewer. See the sewer use by-law for details.

Stormwater Quality

- 50. Confirm whether downstream SWM facilities (ponds) provide water quality control for the site.
- 51. If downstream facilities do not provide quality control, the site must provide treatment through one of the following:
 - a. Oil Grit Separator (OGS) ETV certified, OR

- b. Enhanced on-site TSS removal as per City guidelines
- 52. Stormwater quality criteria shall align with:
 - a. Kanata West MSS
 - b. Carp River Subwatershed Study
 - c. Applicable MECP guidelines
- 53. Characterize the water quality to be protected and Stormwater Contaminants (e.g., suspended solids, nutrients, bacteria, water temperature) for potential impact on the Natural Environment, and control as necessary; OR As per the MSS, watershed/subwatershed plan, similar area-wide Stormwater study, or Stormwater management plan to minimize, or where possible, prevent increases in Contaminant loads and impacts to receiving waters.
- 54. Provide Enhanced level of protection (80%) for suspended solids removal.
- 55. If Pond 6 does not provide quality control, that the criterion should be the most conservative between the CRSWS and 80% suspended solids removal.

Stormwater Quantity

- 56. Stormwater quantity control shall conform to the Kanata West Business Park servicing criteria / MSS allocation.
- 57. The allocated release rate for the site shall be confirmed and applied. The design must demonstrate compliance with this target. Refer to the Stormwater Management Pond Design Report
- 58. Provide stormwater management strategy for phased development, ensuring:
 - a. Phase 1 functions independently if needed
 - b. No adverse impacts during interim conditions
- 59. The site shall provide onsite quantity control as required, particularly if upstream/downstream SWM infrastructure is not fully implemented.
- 60. Demonstrate safe overland flow routes, accounting for large parking areas and fire routes shown on site plan.
- 61. Demonstrate compliance with Kanata West MSS criteria, applying typical design guidance (e.g., approx. 85 L/s/ha release rates and 40–50 m³/ha storage) while confirming site-specific release controls, on-site storage volumes (underground

and/or surface), and no adverse downstream impacts through detailed hydrologic and hydraulic analysis.

62. Time of concentration (Tc) to be calculated, min Tc = 10mins

Grading and Drainage

63. Active coordination and grading transition encouraged with the adjacent properties to reduce reliance on retaining walls.

64. Large parking areas (200+ spaces across site) shall include proper drainage design and ponding control.

65. Provide grading plan demonstrating:

- a. No uncontrolled drainage towards adjacent lands or hydro corridor.
- b. Drainage within hydro easement corridor constraints
- c. Compatibility with landscape buffer

66. Electric vehicle charging stations are proposed; confirm electrical servicing coordination.

67. Ensure loading and service areas are properly drained and accessible.

68. Consider Pedestrian Accessibilities at max 5%.

Geotechnical and Slope Stability

69. Sensitive Marine Clay (SMC) is widely found across Ottawa- geotechnical reports should include Atterberg Limits, consolidation testing, sensitivity values, and vane shear test. Refer to City of Ottawa Geotechnical and Slope Stability Guidelines.

70. Provide a geotechnical investigation report consistent with City guidelines:

- a. Soil conditions
- b. Bearing capacity
- c. Groundwater levels
- d. Pavement design (large parking supply)

71. The investigation must support:

- a. SWM design
- b. Building design (no basement noted)

c. Serviceability of buried infrastructure

Additional Engineering Notes

72. No road moratorium that would impact the application has been identified.
73. Any future road widening setbacks, existing easements or proposed easements should be shown on all plans. Proposed infrastructure shall not be located within setbacks.
74. For any proposed exterior light fixtures, please provide certification from a licensed professional engineer confirming lighting has been designed only using fixtures that meet the criteria for full cut-off classification as recognized by the Illuminating Engineering Society of North America and result in minimal light spillage onto adjacent properties (maximum allowable spillage is 0.5 fc). Additionally, include in the submission the location of the fixtures, fixture type (make, model, part number and mounting height).
75. Sewer connections to be made above the springline of the sewermain as per:
- a. Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.
 - b. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less than 50% the diameter of the sewermain,
76. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.
77. No submerged outlet connections.

Drawings, Plans and geoOttawa

78. Plans are to be submitted on standard A1 size (594mm x 841mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400, or 1:500).
79. With all submitted hard copies provide individual PDF of the DWGs and for reports please provide one PDF file of the reports. All PDF documents are to be unlocked and flattened.
80. Record drawings, utility plans and/or LIDAR information are also available for purchase from the City (Contact the City's Information Centre by email at geoinformation@ottawa.ca or by phone at (613) 580-2424 x.44455).



81. Please refer to GeoOttawa with the Water and Wastewater Infrastructure layer turned on to determine what servicing is available for this site: <https://maps.ottawa.ca/geottawa/>.

For information on preparing required studies and plans refer to:

- 82. Planning application submission information and materials | City of Ottawa;
- 83. Ottawa Sewer Design Guidelines (December 2025);
- 84. Ottawa Design Guidelines – Water Distribution (December 2025);
- 85. Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007);
- 86. City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012);
- 87. City of Ottawa Environmental Noise Control Guidelines (January, 2016);
- 88. City of Ottawa Park and Pathway Development Manual (2012);
- 89. City of Ottawa Accessibility Design Standards (2012);
- 90. Ottawa Standard Tender Documents (latest version);
- 91. Please refer to other applicable Guidelines (provincial and federal);
- 92. Please consider these comments in combination with comments you receive from other technical groups, agencies and the public. Contact me if it is necessary to resolve any conflicting comments.
- 93. “Please provide a resubmission which addresses each of the comments or issues listed above. A cover letter must also be included that states how each provided comment was addressed in the resubmission. Please co-ordinate the numbering of each resubmission comment, or issue, with the above noted comment number.
- 94. All addenda or revisions to any studies, or plans, must be accompanied by a *.pdf copy (either by CD or e-mail).”

Feel free to contact **Tony Pezoulas**, Project Manager, for follow-up questions.

Transportation

Comments:

1. Show the existing sidewalk and boulevard (with dimensions) on the site plan.
2. Ensure that the existing sidewalk is continuous and depressed through the proposed private approach.
3. Remove the center island from the Nippising cul-de-sac.
4. Although a full TIA is not required, please provide a memo outlining the site generated vehicular trips and identify the peak hours.

Feel free to contact **Mike Giampa**, Transportation Project Manager, for follow-up questions.

Environment

Comments:

5. The site is approximately 40 m north of the Feedmill Creek Urban Natural Feature, which is a significant feature and development within 30 m of this feature would trigger an Environmental Impact Study. However, since the site is 40m from the UNF, there are no triggers for an Environmental Impact Study.
6. Bird-Safe Design Guidelines - Please review and incorporate bird safe design elements, where feasible. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here:
https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.pdf
7. Please consider if there are features that can be added reduce the urban heat island effect (see OP 10.3). For example, this impact can be reduced by adding large canopy trees, green roofs or vegetation walls, or incorporating building with low heat absorbing materials.

Feel free to contact Matthew Hayley, Environmental Planner, for follow-up questions.

Forestry

Comments:

8. A Tree Conservation Report is required, in accordance with [Schedule E](#) of the Tree Protection By-law. Ownership of all trees on the subject site and

with Critical Root Zones extending onto the subject site must be determined, and plans must show how they will be protected from proposed works.

9. There are existing young trees planted in the ROW of Nipissing and Campeau; the design for the property must account for the retention and adequate soil space for long-term survival of these trees.
10. The locations of vehicle entrances, curbs, buildings and structures should account for the retention and protection of healthy trees on and adjacent to the site.
11. Section 4.8.2 of the New Official Plan provides strong direction to maintain the urban forest canopy and its ecosystem services during intensification noting when considering the impacts on individual trees, planning and development decisions, including Committee of Adjustment decisions, shall give priority to the retention and protection of large, healthy trees over replacement plantings and compensation. Applications must address the cumulative impacts on the urban forest, over time and space, with the goal of 40% urban forest canopy cover in mind. Further, that the City and the Committee of Adjustment may refuse a development application where it deems the loss of a tree(s) avoidable.
12. A permit is required prior to removal of any protected trees on site. The tree permit will be released upon site plan approval. Please contact the planner associated with the file or the Planning Forester, Nancy Young (Nancy.young@ottawa.ca) for information on obtaining the tree permit.
13. To ensure that no harm is caused to breeding birds, tree removal and vegetation clearing should be avoided during the migratory bird season (April 15 – August 15) as specified by The City of Ottawa's Environmental Impact Study Guidelines.
14. A Landscape Plan is required with this application and must address all requirements within the Landscape Plan Terms of Reference https://documents.ottawa.ca/sites/documents/files/landscape_term_of_reference.pdf, including the projection of canopy cover toward the target of 40%, and confirmation of adequate soil volumes to support any proposed trees.
15. It is a best management practice to provide 1 tree/5 parking spaces to provide shade to address the urban heat island effect created by large paved areas.
16. The Official Plan section 4.8.2, sub 3 provides the following direction related to tree planting related to site plans:
 - a. Preserve and provide space for mature, healthy trees on private and public property, including the provision of adequate volumes of high-quality soil as recommended by a Landscape Architect;

- b. On urban properties subject to site plan control or community planning permits, development shall create tree planting areas within the site and in the adjacent boulevard, as applicable, that meet the soil volume requirements in any applicable City standards or best management practices or in accordance with the recommendation of a Landscape Architect;
17. The Zoning By-law requires a landscape buffer of 5m between parking lots and property lines and 20% of the parking lot area to be soft landscaping. The design will need to meet these requirements and provide tree planting within these soft landscaped areas to increase the canopy cover and provide screening between the subject and adjacent properties.
18. Conifer trees should be included in the species mix along property lines to help provide year-round screening from adjacent commercial/industrial uses.

Feel free to contact Nancy Young, Forester, for follow-up questions.

Parkland

Comments:

19. It is understood that the community centre would be considered a commercial use, specifically a place of assembly under the Zoning By-law:
- a. *Place of Assembly* means a place designed and used to accommodate gatherings of people, such as trade shows, banquets, and conventions, and includes clubs, reception halls, conference centres, legion halls, assembly halls and lodges.
20. Parkland dedication, in accordance with [By-law No. 2022-280](#), was previously satisfied through the related plan of subdivision approval D07-16-14-0003 (registration # OC1793705) based on the 2% commercial/industrial rate.
21. Pursuant to Parkland Dedication by-law 2022-280, Section 11 – Exemptions: 2) No conveyance of land or payment of cash-in-lieu under this by-law is required in the case of the development or redevelopment of: c) a place of worship, excluding any ancillary uses as defined by the Zoning By-law.
22. Please note, if the proposed land use or gross floor area changes, then the parkland dedication requirement, and form will be re-evaluated accordingly.

Feel free to contact Samantha Gatchene, Parks Planner, for follow-up questions.

Other

23. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building



projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.

- a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.
- b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.

Submission Requirements and Fees

1. Additional information regarding fees related to planning applications can be found [here](#).
2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
 - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
3. All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,
Emily Charby

- c.c. Stream Shen, Planner III
Randolph Wang, Urban Design
Karanpreet Kaur, Urban Design
Tony Pezoulas, Infrastructure Project Manager
Jean-Miguel Roy, Infrastructure Project Manager
Mike Giampa, Transportation Project Manager
Samantha Gatchene, Parks Planner
Nancy Young, Forestry
Matthew Hayley, Environmental Planner

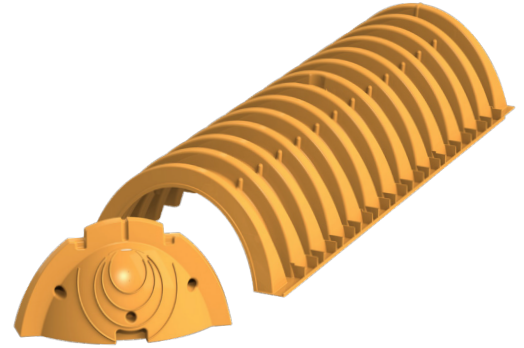


APPENDIX H

STORMTECH CHAMBERS INFORMATION

StormTech® SC-310 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



Nominal Chamber Specifications

(not to scale)

Size (L x W x H)

85.4" x 34" x 16"

2170 mm x 864 mm x 406 mm

Chamber Storage

14.7 ft³ (0.42 m³)

Min. Installed Storage*

29.3 ft³ (0.83 m³)

Weight

37.0 lbs (16.8 kg)

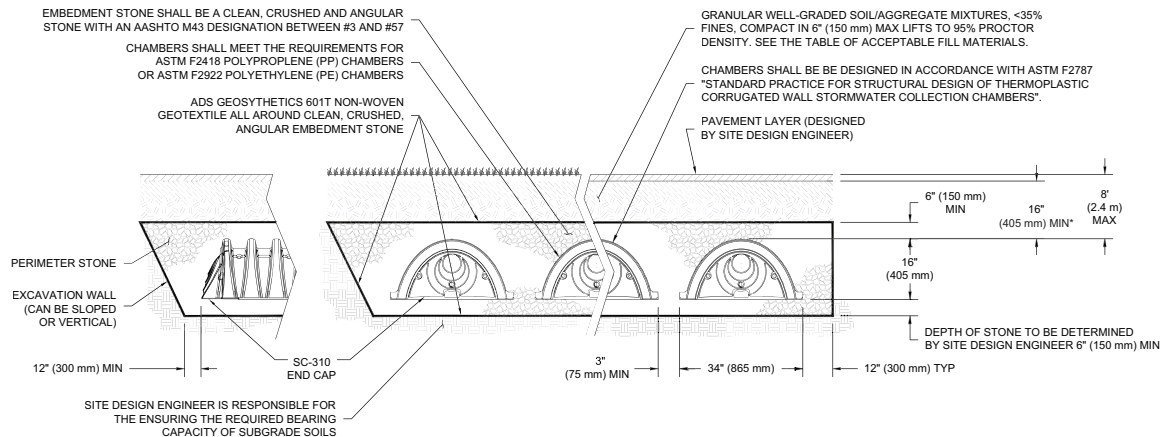
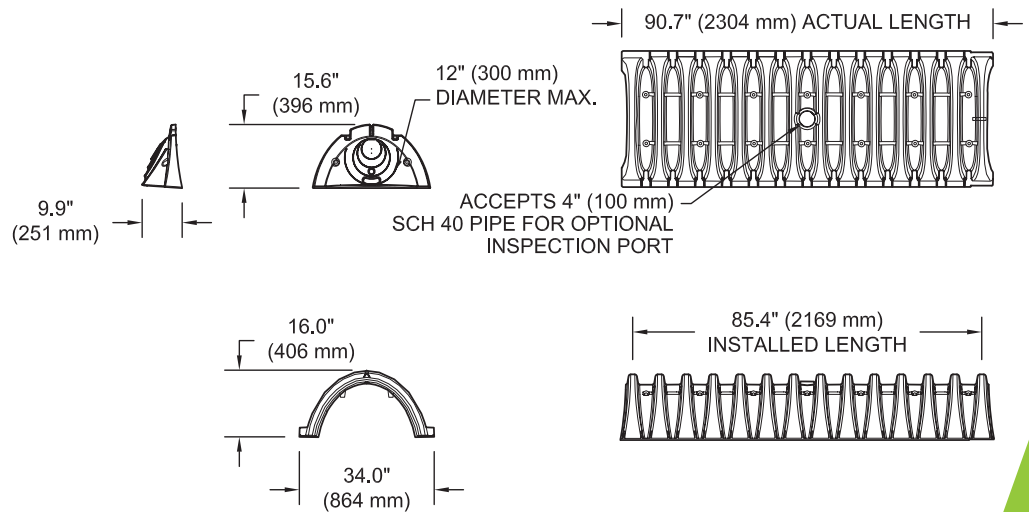
Shipping

55 chambers/pallet

108 end caps/pallet

18 pallets/truck

*Assumes 6" (150 mm) stone above and below chambers and 40% stone porosity.



StormTech SC-310 Specifications

Cumulative Storage Volumes Per Chamber

Assumes 40% Stone Porosity. Calculations are Based Upon a 6" (150 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
28 (711)	14.70 (0.416)	29.34 (0.831)
27 (686)	14.70 (0.416)	28.60 (0.810)
26 (660)	14.70 (0.416)	27.87 (0.789)
25 (635)	14.70 (0.416)	27.14 (0.769)
24 (610)	14.70 (0.416)	26.41 (0.748)
23 (584)	14.70 (0.416)	25.68 (0.727)
22 (559)	14.70 (0.416)	24.95 (0.707)
21 (533)	14.64 (0.415)	24.18 (0.685)
20 (508)	14.49 (0.410)	23.36 (0.661)
19 (483)	14.22 (0.403)	22.47 (0.636)
18 (457)	13.68 (0.387)	21.41 (0.606)
17 (432)	12.99 (0.368)	20.25 (0.573)
16 (406)	12.17 (0.345)	19.03 (0.539)
15 (381)	11.25 (0.319)	17.74 (0.502)
14 (356)	10.23 (0.290)	16.40 (0.464)
13 (330)	9.15 (0.260)	15.01 (0.425)
12 (305)	7.99 (0.227)	13.59 (0.385)
11 (279)	6.78 (0.192)	12.13 (0.343)
10 (254)	5.51 (0.156)	10.63 (0.301)
9 (229)	4.19 (0.119)	9.11 (0.258)
8 (203)	2.83 (0.081)	7.56 (0.214)
7 (178)	1.43 (0.041)	5.98 (0.169)
6 (152)	0	4.39 (0.124)
5 (127)	0	3.66 (0.104)
4 (102)	0	2.93 (0.083)
3 (76)	0	2.19 (0.062)
2 (51)	0	1.46 (0.041)
1 (25)	0	0.73 (0.021)

Note: Add 0.73 ft³ (0.021 m³) of storage for each additional inch (25 mm) of stone foundation.

Storage Volume Per Chamber ft³ (m³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (300)	18 (450)
SC-310 Chamber	14.7 (0.42)	29.30 (0.83)	33.7 (0.95)	38.1 (1.08)

Note: Assumes 6" (150 mm) stone above chambers, 3" (76 mm) row spacing and 40% stone porosity.

Amount of Stone Per Chamber

English Tons (yds³)	Stone Foundation Depth		
	6"	12"	18"
SC-310	1.9 (1.4)	2.5 (1.8)	3.1 (2.2)
Metric Kilograms (m³)	150 mm	300 mm	450 mm
SC-310	1724 (1.0)	2268 (1.3)	2812 (1.7)

Note: Assumes 6" (150 mm) of stone above and 3" (76 mm) between chambers.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth		
	6 (150)	12 (300)	18 (450)
SC-310	2.6 (2.0)	3.0 (2.3)	3.4 (2.6)

Note: Assumes 3" (76 mm) of row separation and 6" (150 mm) of stone above the chambers and 16" (400 mm) of cover. The volume of excavation will vary as depth of cover increases.

ADS StormTech products, manufactured in accordance with ASTM F2418 or ASTM F2922, comply with all requirements in the Build America, Buy America (BABA) Act.

Working on a project?
Visit us at adspipe.com and utilize the Design Tool



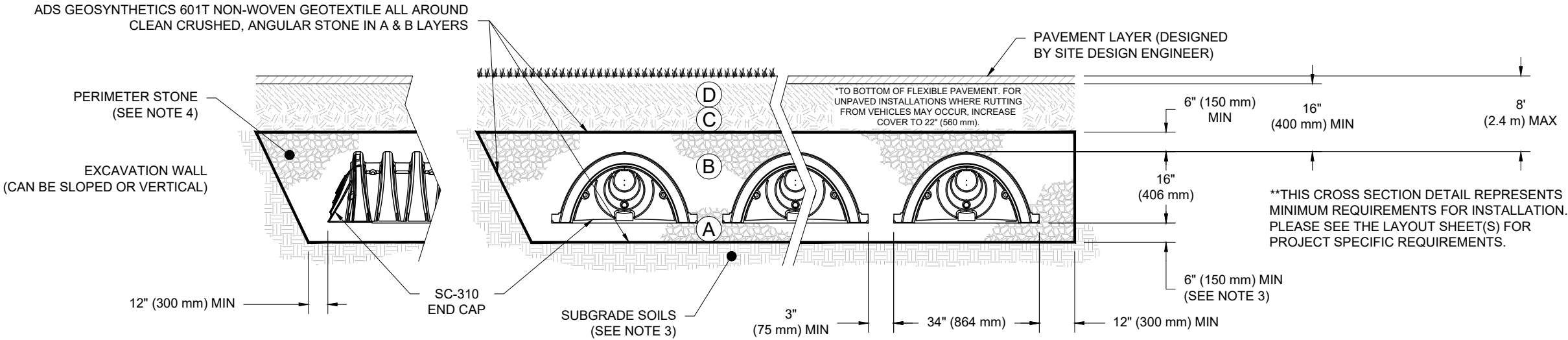
ADS "Terms and Conditions of Sale" are available on the ADS website, www.adspipe.com
The ADS logo and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc.
StormTech® is a registered trademark of StormTech, Inc.
© 2025 Advanced Drainage Systems, Inc. #S15 090508 1/25 CS

adspipe.com
800-821-6710

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	3.25	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 16" (400 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
 - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
 - ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
 - WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLYETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 325 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

STANDARD CROSS SECTION
SC-310 CHAMBER
STORMTECH

DATE: 02/17/2025
DRAWING #: 721-320
DRAWN: SMW
CHECKED: JLM

DESCRIPTION

DATE

DRWN

CHKD

StormTech®
Chamber System
1-800-821-6710 | WWW.STORMTECH.COM

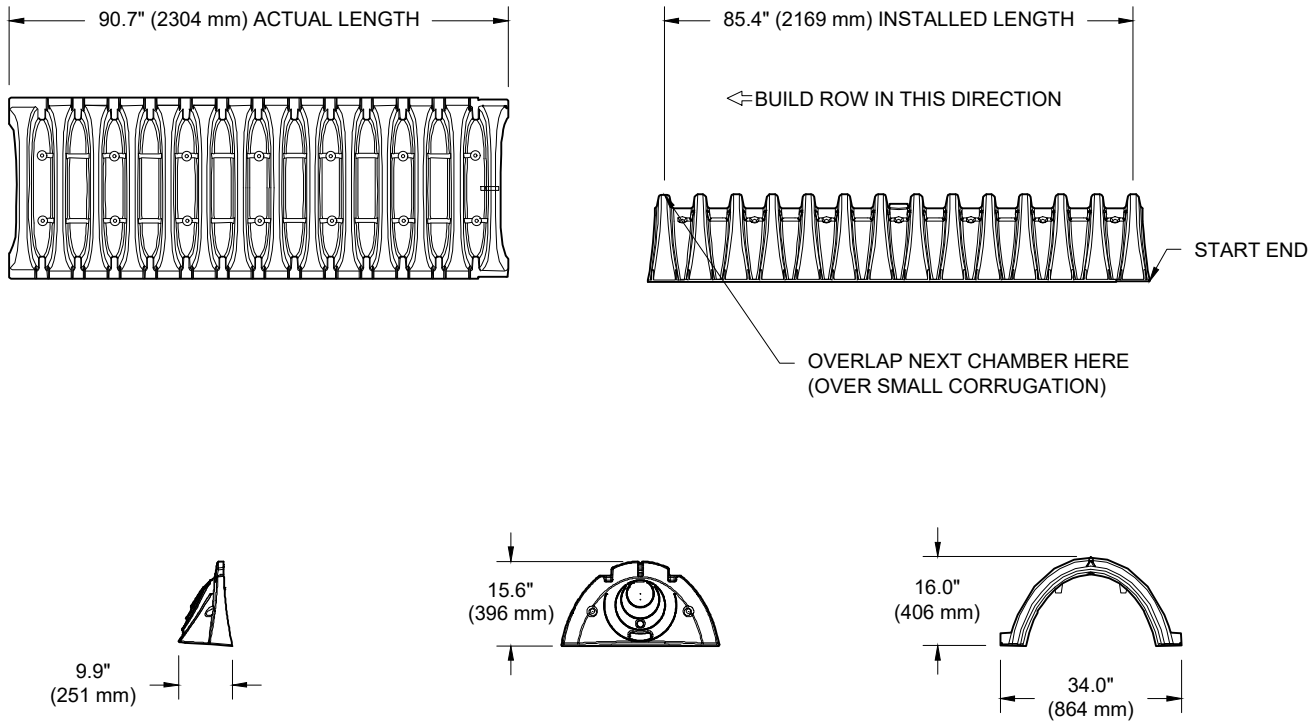
ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026

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1 SHEET
OF 1

SC-310 TECHNICAL SPECIFICATION

NTS

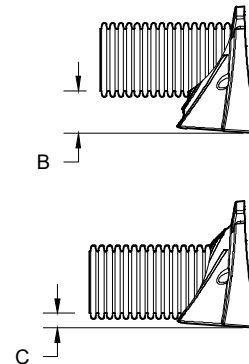


NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 16.0" X 85.4"	(864 mm X 406 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	29.34 CUBIC FEET	(0.83 m³)
WEIGHT	35.0 lbs.	(16.8 kg)

*ASSUMES 6" (150 mm) ABOVE AND BELOW CHAMBER; 3" (75 mm) BETWEEN CHAMBERS

PART #	STUB	B	C
SC310EPE06TPC	6" (150 mm)	5.8" (147 mm)	---
SC310EPE06BPC		---	0.5" (13 mm)
SC310EPE08TPC	8" (200 mm)	3.5" (89 mm)	---
SC310EPE08BPC		---	0.6" (15 mm)
SC310EPE10TPC	10" (250 mm)	1.4" (36 mm)	---
SC310EPE10BPC		---	0.7" (18 mm)
SC310ECEZ*	12" (300 mm)	---	0.9" (23 mm)



ALL STUBS, EXCEPT FOR THE SC310ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310ECEZ THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL; PRE-CORED END CAPS END WITH "PC"

TECHNICAL SPECIFICATIONS

SC-310 CHAMBER

DRAWN: SMW

CHECKED: JLM

DATE: 01/15/25

DRAWING #: 721-310

1-800-821-6710

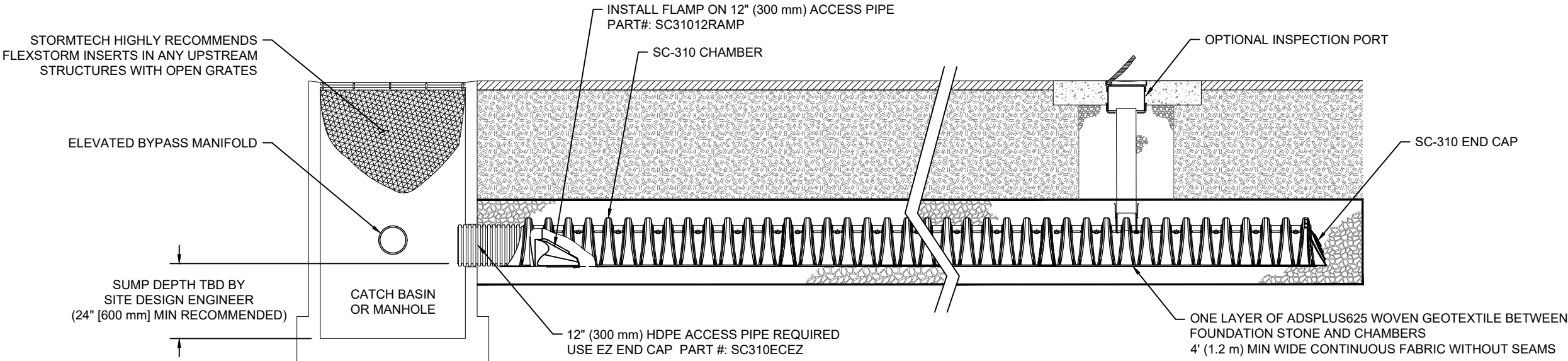
WWW.STORMTECH.COM

StormTech®
Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

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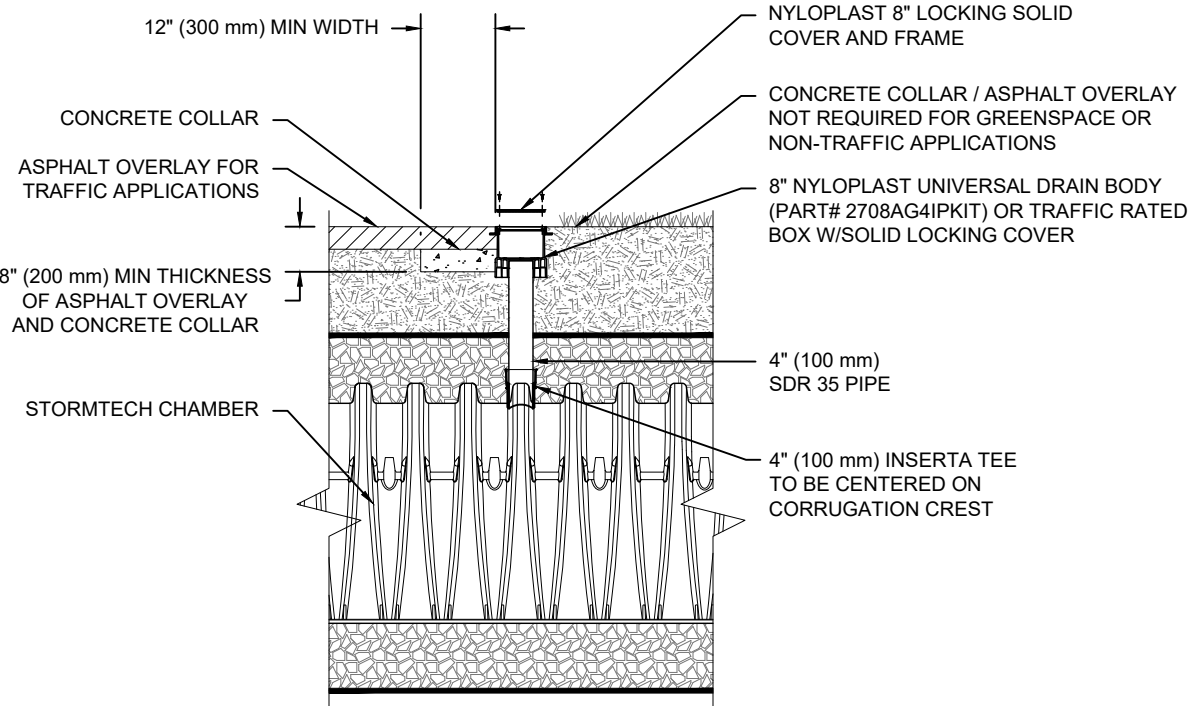
SC-310 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
 - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
 - B. ALL ISOLATOR PLUS ROWS
 - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
 - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
 - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
 - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



4" PVC INSPECTION PORT DETAIL
(SC SERIES CHAMBER)
NTS

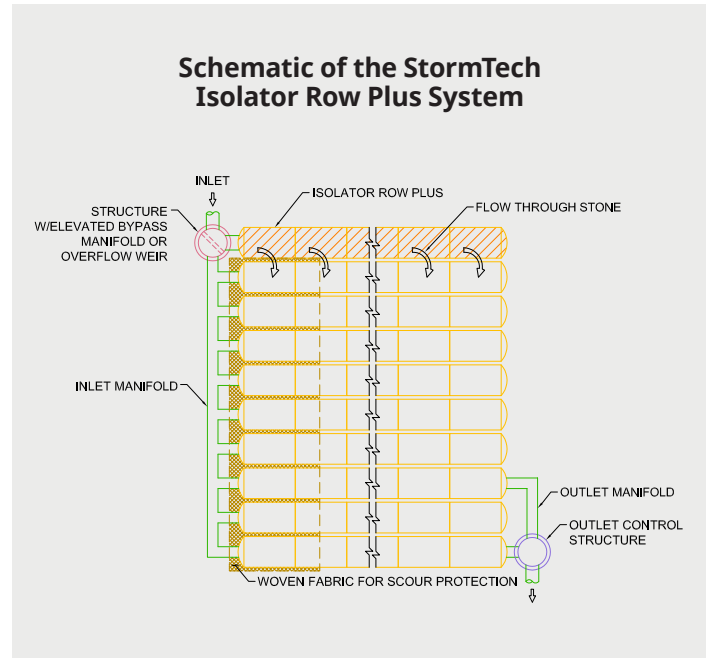
SC-310	ISOLATOR ROW PLUS DETAILS	
	DATE: 10/29/20	DRAWN: ALI
	PROJECT #:	CHECKED: ALI
		DESCRIPTION
		DATE 12/15/23
		DRWN CHKD
		AYT
StormTech® Chamber System 888-892-2694 WWW.STORMTECH.COM		
4640 TRUEMAN BLVD HILLIARD, OH 43026 1-800-733-7473		
ADS		
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1 SHEET OF 1		

Isolator[®] Row Plus

The StormTech Isolator Row Plus is an enhancement to our proven water quality treatment system. This updated system is an NJCAT verified water quality treatment device that can be incorporated into any system layout.

Features

- Isolator Row Plus is now NJCAT verified. As a Manufactured Treatment Device it achieves over 80% TSS removal by filtration NJDEP Laboratory Protocol Assessment NJCAT Technology Verification.
- A patented Flamp[™] (Flared End Ramp) provides a smooth transition from pipe invert to fabric bottom. The Flamp is attached to the inlet pipe inside the chamber end cap and improves chamber function over time by distributing sediment and debris that would otherwise collect at the inlet. It also serves to improve the fluid and solid flow back into the inlet pipe during maintenance and cleaning.
- Proprietary ADS Plus fabric maintains durability and sediment removal while allowing for higher water quality flow rates. A single layer of ADS Plus fabric is placed between the angular base stone and the Isolator Row Plus chambers.



Technology Descriptions

The Isolator Row Plus is designed to capture the “first flush” runoff and offers the versatility to be sized on a volume or a flow basis. An upstream manhole not only provides access to the Isolator Row Plus but includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row Plus bypass through a manifold to the other chambers. This is achieved with either an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row Plus row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row Plus. After Stormwater flows through the Isolator Row Plus and into the rest of the StormTech chamber system it is either infiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

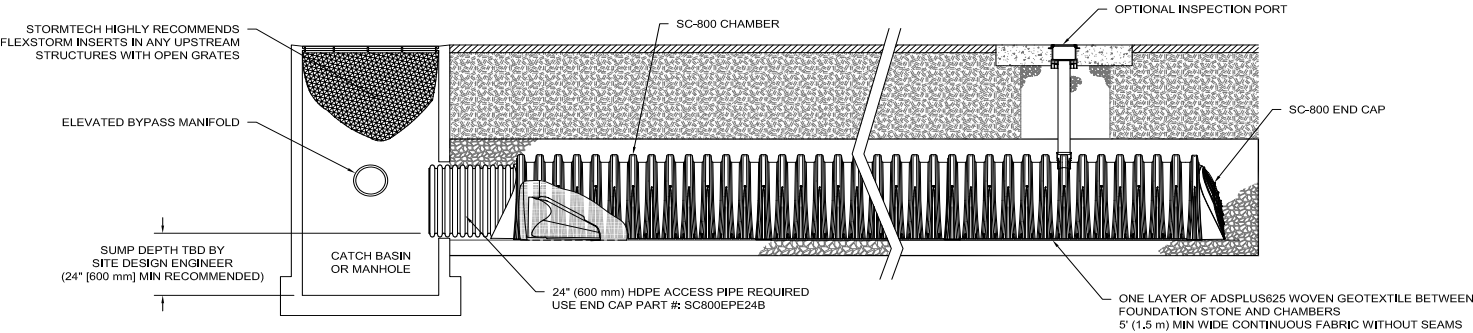
Summary of Verified Claims¹

Treatment Rate (gpm/ft ²)	4.1
Underlying Geotextile Layers	1
NJDEP Test Sediment	D50=75um
Mean Particle Concentration (mg/L)	200
TSS Removal Efficiency	>80%

¹ Verification testing of the StormTech SC-740 Isolator Row PLUS in accordance with NJDEP Laboratory protocol to access total suspended solids removal by filtration manufactured treatment device, 2013



StormTech Isolator Row Plus (not to scale)



Maintenance

The Isolator Row Plus was designed to reduce the cost of periodic maintenance. By “isolating” sediment to just one row of the StormTech system, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout.

Maintenance is accomplished with the JetVac® process. The JetVac process utilizes a high-pressure water nozzle to propel itself down the Isolator Row Plus while scouring and suspending sediment. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency.

StormTech Isolator Row Plus

Chamber Model	Chamber Storage	Chamber Footprint	Treatment Rate
SC-160LP	15.0 cf (0.42 m³)	11.45 sf (1.06 m²)	0.11 cfs (3.11 L/s)
SC-310	31.0 cf (0.88 m³)	17.7 sf (1.64 m²)	0.16 cfs (4.53 L/s)
DC-780	78.4 cf (2.22 m³)	27.8 sf (2.58 m²)	0.26 cfs (7.36 L/s)
SC-800	81.0 cf (2.29 m³)	27.3 sf (2.54 m²)	0.25 cfs (7.1 L/s)
MC-3500	175.0 cf (4.96 m³)	42.9 sf (3.99 m²)	0.40 cfs (11.32 L/s)
MC-4500	162.6 cf (4.60 m³)	30.1 sf (2.80 m²)	0.28 cfs (7.93 L/s)
MC-7200	267.3 cf (7.57 m³)	50.0 sf (4.65 m²)	0.45 cfs (12.74 L/s)

Installation

Installation of the stormwater treatment unit(s) shall be preformed per manufacture’s installation instructions. Such instructions can be obtained by calling Advanced Drainage Systems Inc. at (800) 821-6710 or by logging on to adspipe.com.



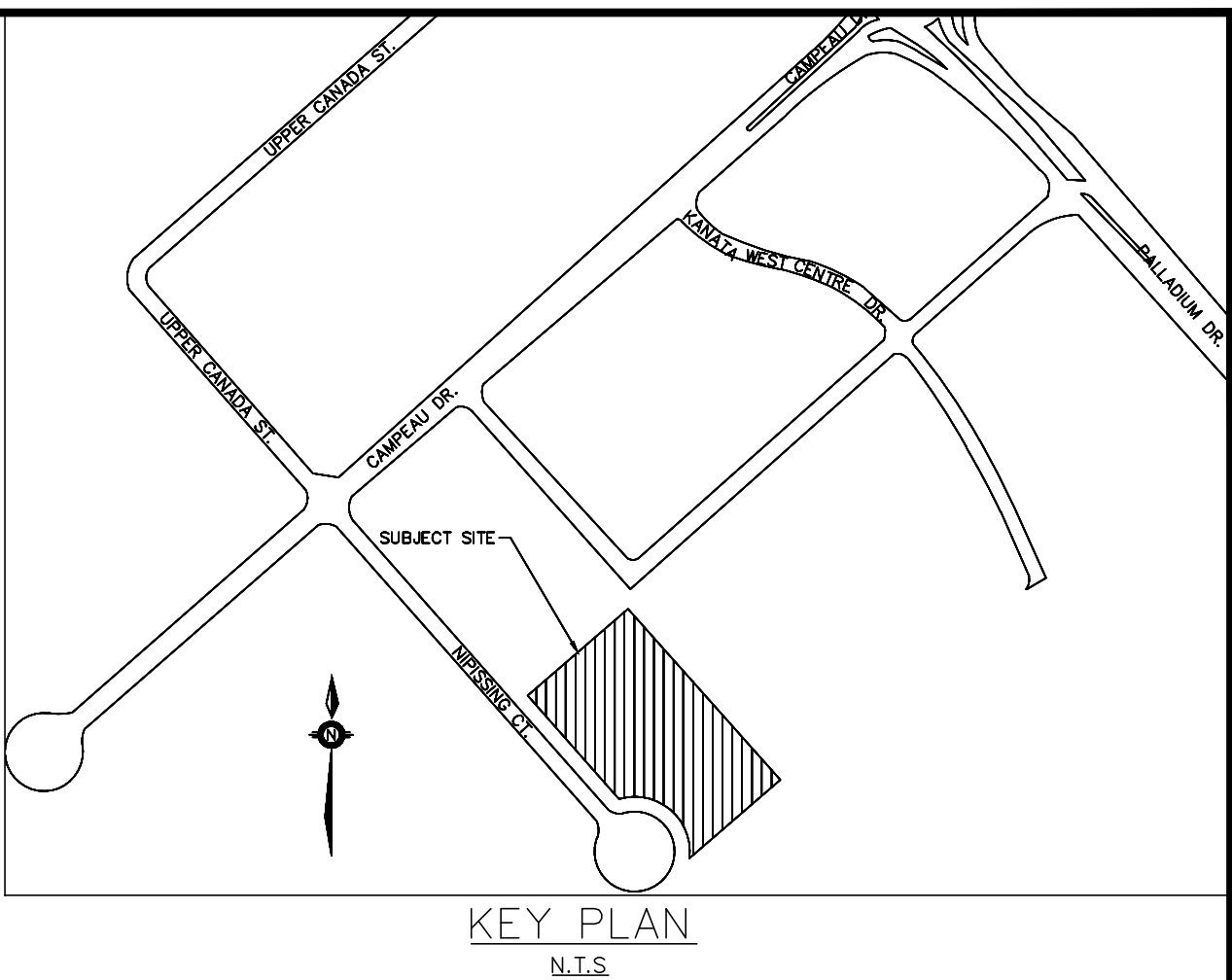
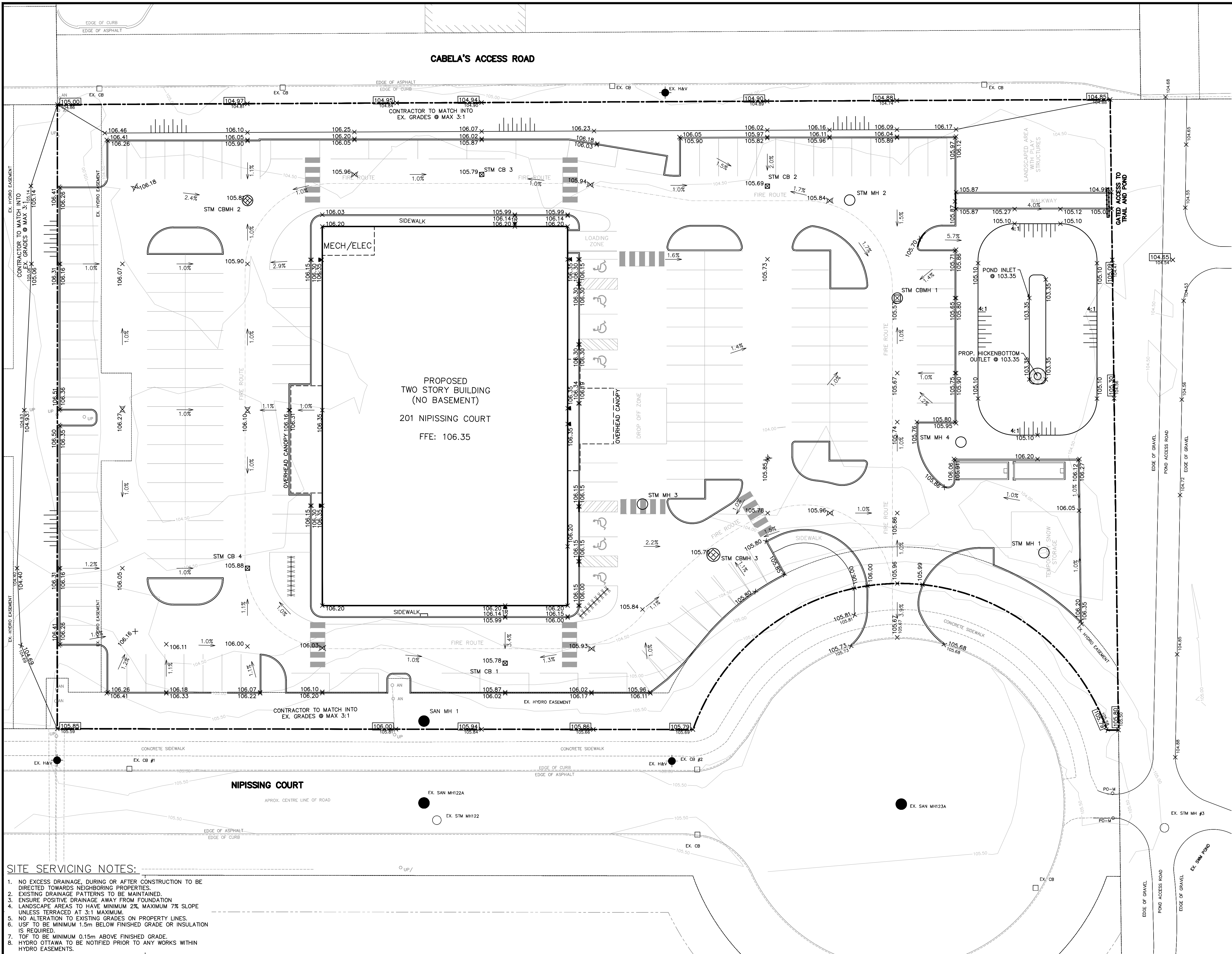
adspipe.com
800-821-6710



APPENDIX I

PEARSON ENGINEERING DRAWINGS

P:\Autodesk Vault\Working Folders\25028\01 - SG-1.dwg Layout:SG-1 Plotted Aug 21, 2026 @ 6:14pm by Jmoore @ PEARSON ENGINEERING LTD.



LEGEND

- RLCB REAR LAWN CATCH BASIN
- EX. CB EXISTING CATCH BASIN
- STM DCB PROPOSED DOUBLE CATCH BASIN
- STM MH PROPOSED STORM MANHOLE
- EX. STM MH EXISTING STORM MANHOLE
- SAN MH SANITARY MANHOLE
- EX. SAN MH EXISTING SANITARY MANHOLE
- HYD. FIRE HYDRANT
- EX. H&V EXISTING FIRE HYDRANT
- VB WATER VALVE
- 254.63 PROPOSED ELEVATION
- 254.09 EXISTING ELEVATION
- 1.5% PROPOSED DIRECTION AND GRADE
- BACK OF CURB
- EDGE OF PAVEMENT
- PROP. CURB CUT LOCATION
- EX. CURB CUT LOCATION
- () HIGH POINT
- PROPERTY LINE
- LIMIT OF WORK
- PERSON DOOR
- 305.18 PROPOSED SUBDIVISION GRADES
REFERENCED FROM IBI GROUP'S
KANATA WEST BUSINESS PARK PH. 4
PROJ. NO. 14289 DWG. NO. 203
DATED 19-07-25

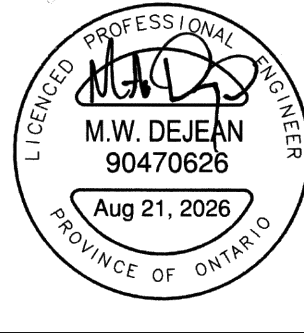
SITE SERVICING NOTES:

- NO EXCESS DRAINAGE, DURING OR AFTER CONSTRUCTION TO BE DIRECTED TOWARDS NEIGHBORING PROPERTIES.
- EXISTING DRAINAGE PATTERNS TO BE MAINTAINED.
- ENSURE POSITIVE DRAINAGE AWAY FROM FOUNDATION.
- LANDSCAPE AREAS TO HAVE MINIMUM 2% MAXIMUM 7% SLOPE UNLESS TERRACED AT 3:1 MAXIMUM.
- NO ALTERATION TO EXISTING GRADES ON PROPERTY LINES.
- USE TO BE MINIMUM 1.5m BELOW FINISHED GRADE OR INSULATION IS REQUIRED.
- TOF TO BE MINIMUM 0.15m ABOVE FINISHED GRADE.
- HYDRO OTTAWA TO BE NOTIFIED PRIOR TO ANY WORKS WITHIN HYDRO EASEMENTS.

BENCHMARK

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO GEODETIC DATUM CGVD-1928 :1978. (MONUMENT NO. 19770882)

SITE BENCHMARK - FIRE HYDRANT(TOP OF SPINDLE)
ELEVATION=106.56



BAPS CHARITIES
201 NIPISSING COURT
CITY OF OTTAWA

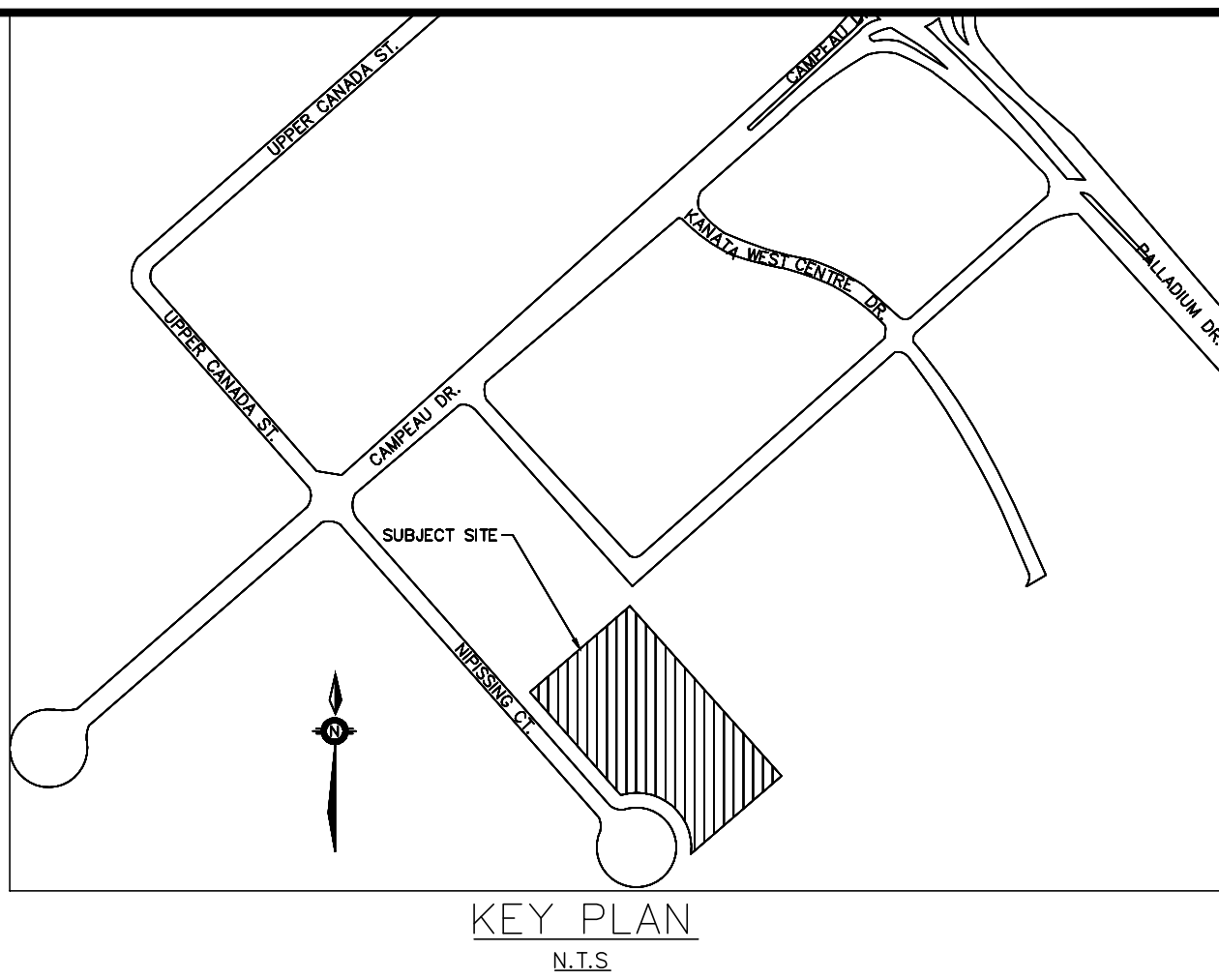
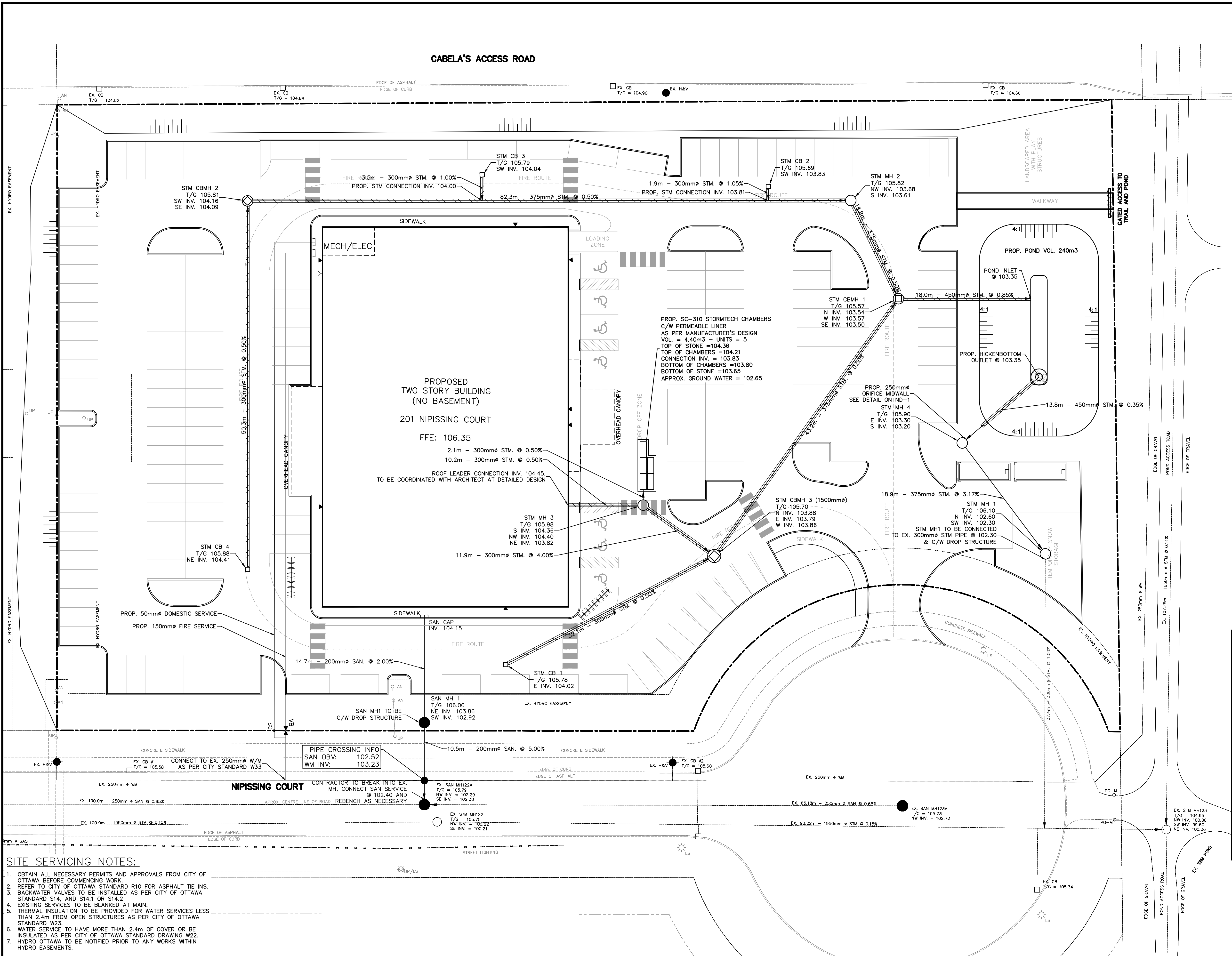
SITE GRADING PLAN



PEARSON
ENGINEERING
PEARSONENG.COM PH. 705.719.4785

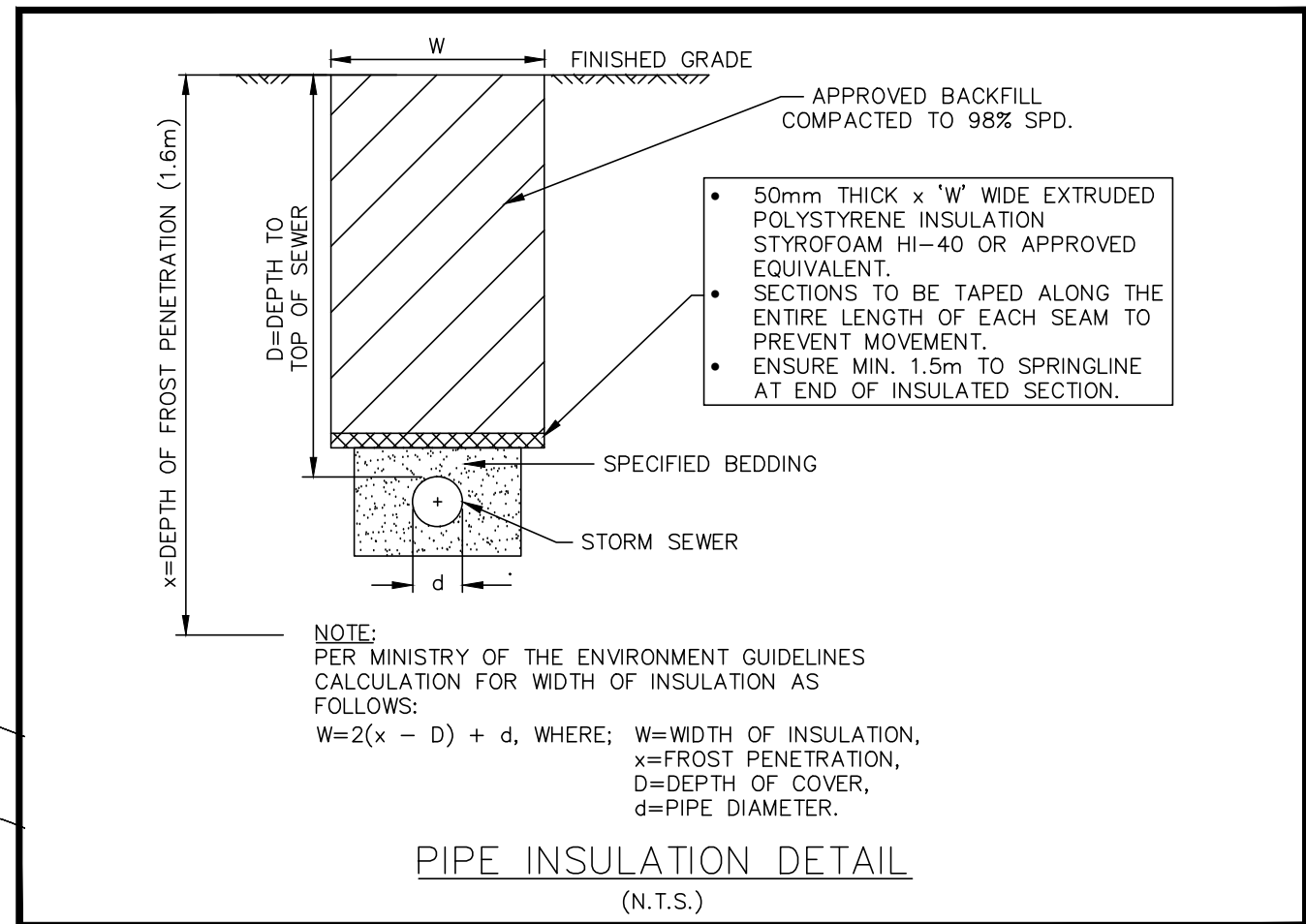
DESIGNED BY	MWD	HORIZ SCALE	1:250	PROJECT #	25028.01
DRAWN BY	JM	VERT SCALE	N/A	DRAWING #	SG-1
CHECKED BY	MWD	DATE	JULY 2026	REVISION #	0

p:\Autocad\ Youth\Working Folders\25028.01 - Folders\ 201 Nipissing Court, Ottawa\Layout Sheets\25028.01 - SS-1.dwg Layout:SS-1 Plotted Aug 21, 2026 @ 5:56pm by jmore @ PEARSON ENGINEERING LTD.



LEGEND

- RLCB REAR LAWN CATCH BASIN
- EX. CB EXISTING CATCH BASIN
- STM DCB PROPOSED DOUBLE CATCH BASIN
- STM MH PROPOSED STORM MANHOLE
- EX. STM MH EXISTING STORM MANHOLE
- SAN MH SANITARY MANHOLE
- EX. SAN MH EXISTING SANITARY MANHOLE
- HYD. FIRE HYDRANT
- EX. HAV EXISTING FIRE HYDRANT
- VB WATER VALVE
- x 254.63 PROPOSED ELEVATION
- 254.09 EXISTING ELEVATION
- 1.5% PROPOSED DIRECTION AND GRADE
- BACK OF CURB
- EDGE OF PAVEMENT
- PROP. CURB CUT LOCATION
- EX. CURB CUT LOCATION
- HIGH POINT
- PROPERTY LINE
- LIMIT OF WORK
- PERSON DOOR
- PROPOSED PIPE INSULATION AS PER SS-1 DETAIL



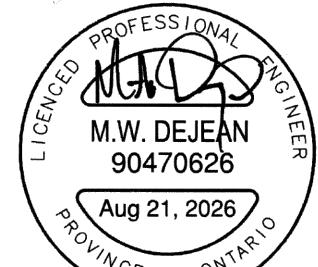
SITE SERVICING NOTES:

- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM CITY OF OTTAWA BEFORE COMMENCING WORK.
- REFER TO CITY OF OTTAWA STANDARD R10 FOR ASPHALT TIE INS.
- BACKWATER VALVES TO BE INSTALLED AS PER CITY OF OTTAWA STANDARD S14, AND S14.1 OR S14.2
- EXISTING SERVICES TO BE BLANKED AT MAIN.
- THERMAL INSULATION TO BE PROVIDED FOR WATER SERVICES LESS THAN 2.4m FROM OPEN STRUCTURES AS PER CITY OF OTTAWA STANDARD W23.
- WATER SERVICE TO HAVE MORE THAN 2.4m OF COVER OR BE INSULATED AS PER CITY OF OTTAWA STANDARD DRAWING W22.
- HYDRO OTTAWA TO BE NOTIFIED PRIOR TO ANY WORKS WITHIN HYDRO EASEMENTS.

BENCHMARK

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO GEODETIC DATUM CGVD-1928 :1978. (MONUMENT NO. 19770882)

SITE BENCHMARK - FIRE HYDRANT(TOP OF SPINDLE)
ELEVATION=106.56



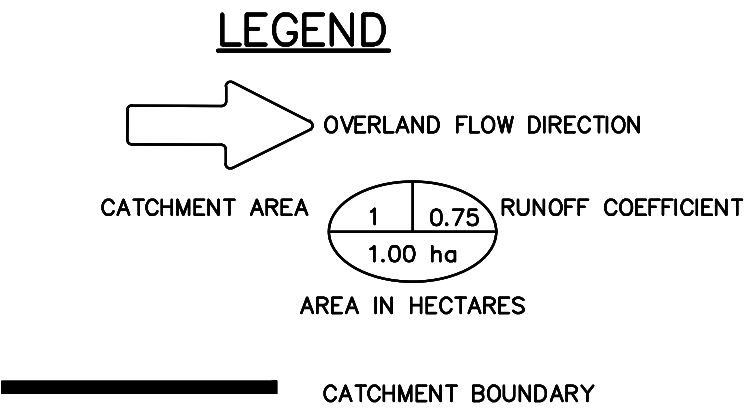
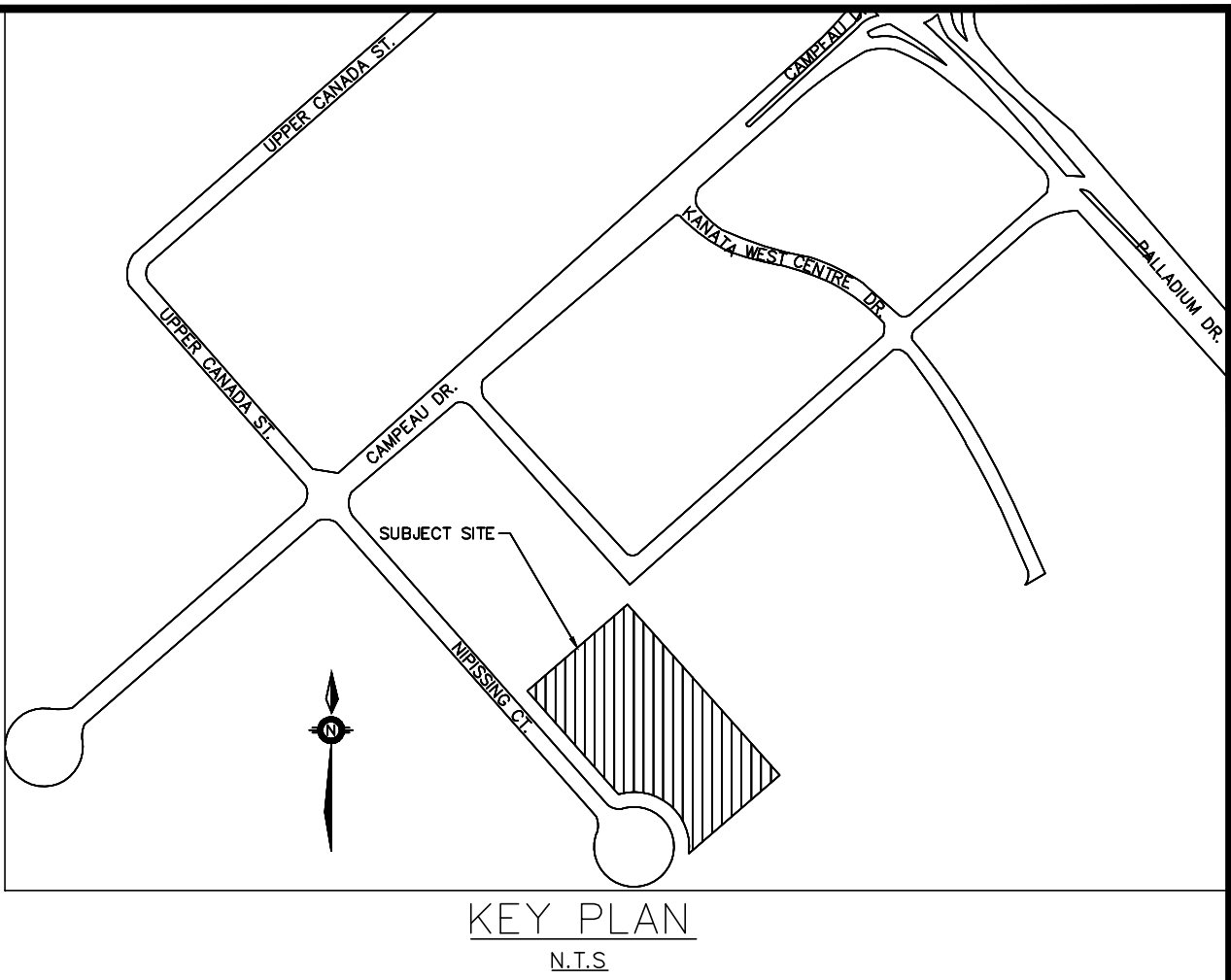
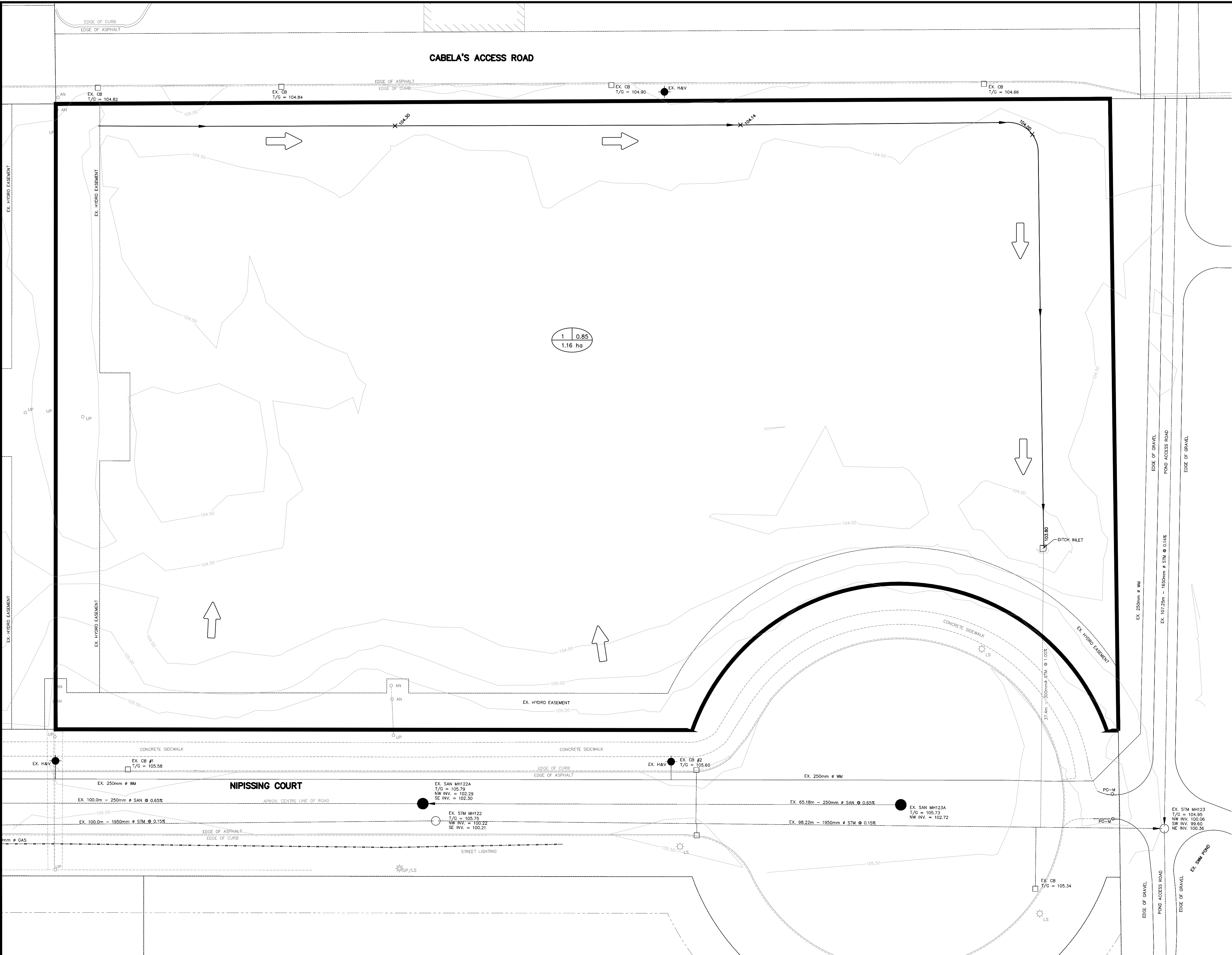
BAPS CHARITIES
201 NIPISSING COURT
CITY OF OTTAWA

SITE SERVICING PLAN



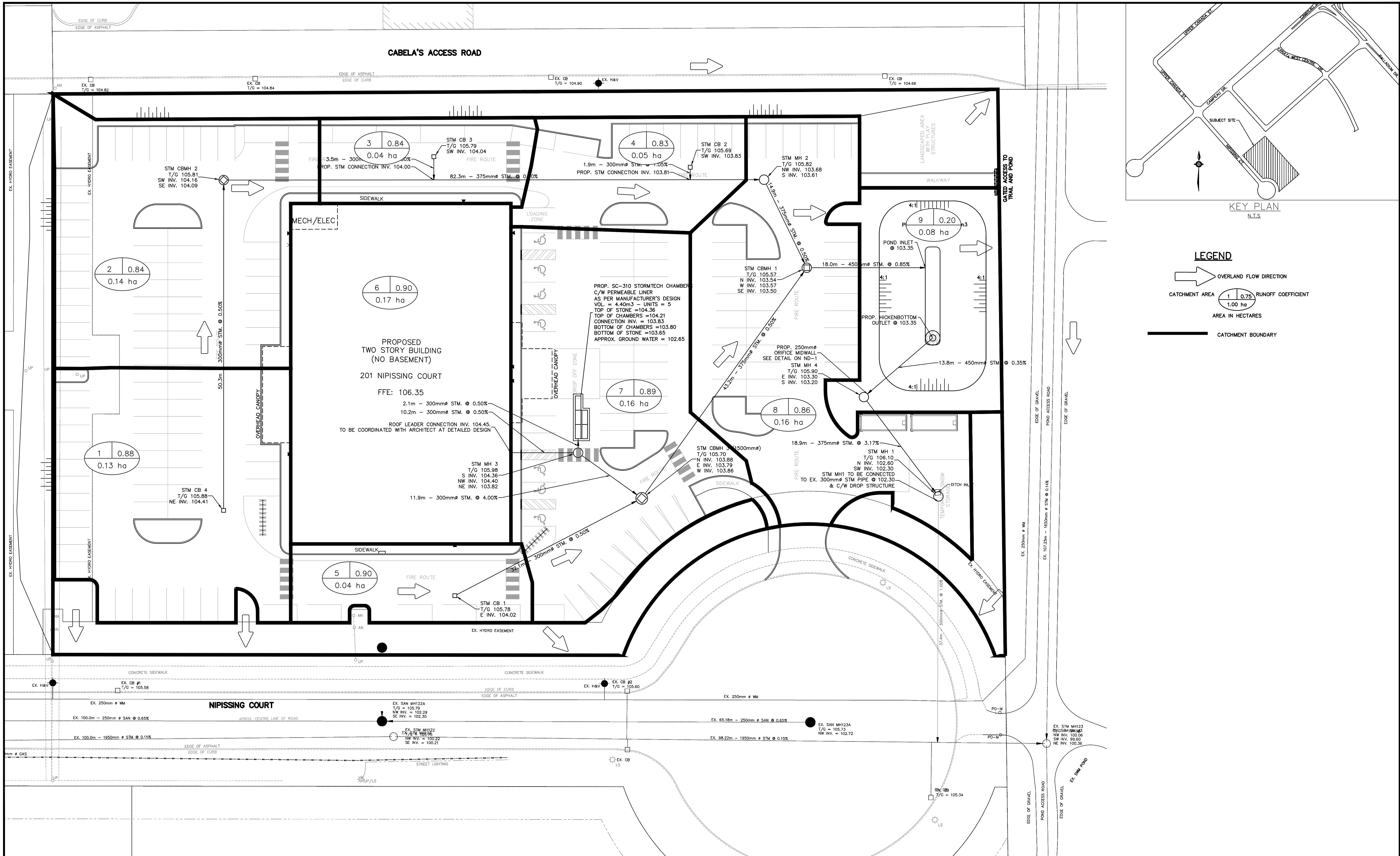
DESIGNED BY	MWD	HORIZ SCALE	1:250	PROJECT #	25028.01
DRAWN BY	JM	VERT SCALE	N/A	DRAWING #	SS-1
CHECKED BY	MWD	DATE	JULY 2026	REVISION #	0

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				BENCHMARK ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO GEODETIC DATUM CGVD-1928 :1978. (MONUMENT NO. 19770882) SITE BENCHMARK - FIRE HYDRANT(TOP OF SPINDLE) ELEVATION=106.56																BAPS CHARITIES 201 NIPISSING COURT CITY OF OTTAWA				 PEARSON ENGINEERING PEARSONENG.COM PH. 705.719.4785			
																				PRE-DEVELOPMENT STORM CATCHMENT PLAN				DESIGNED BY MWD HORIZ SCALE 1:250 PROJECT # 25028.01			
																								DRAWN BY JM VERT SCALE N/A DRAWING # STM-1			
																								CHECKED BY MWD DATE JULY 2026 REVISION # 0			

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BENCHMARK
ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO GEODETIC DATUM CGVD-1928 :1978. (MONUMENT NO. 19770882)
SITE BENCHMARK - FIRE HYDRANT(TOP OF SPINDLE)
ELEVATION=106.56



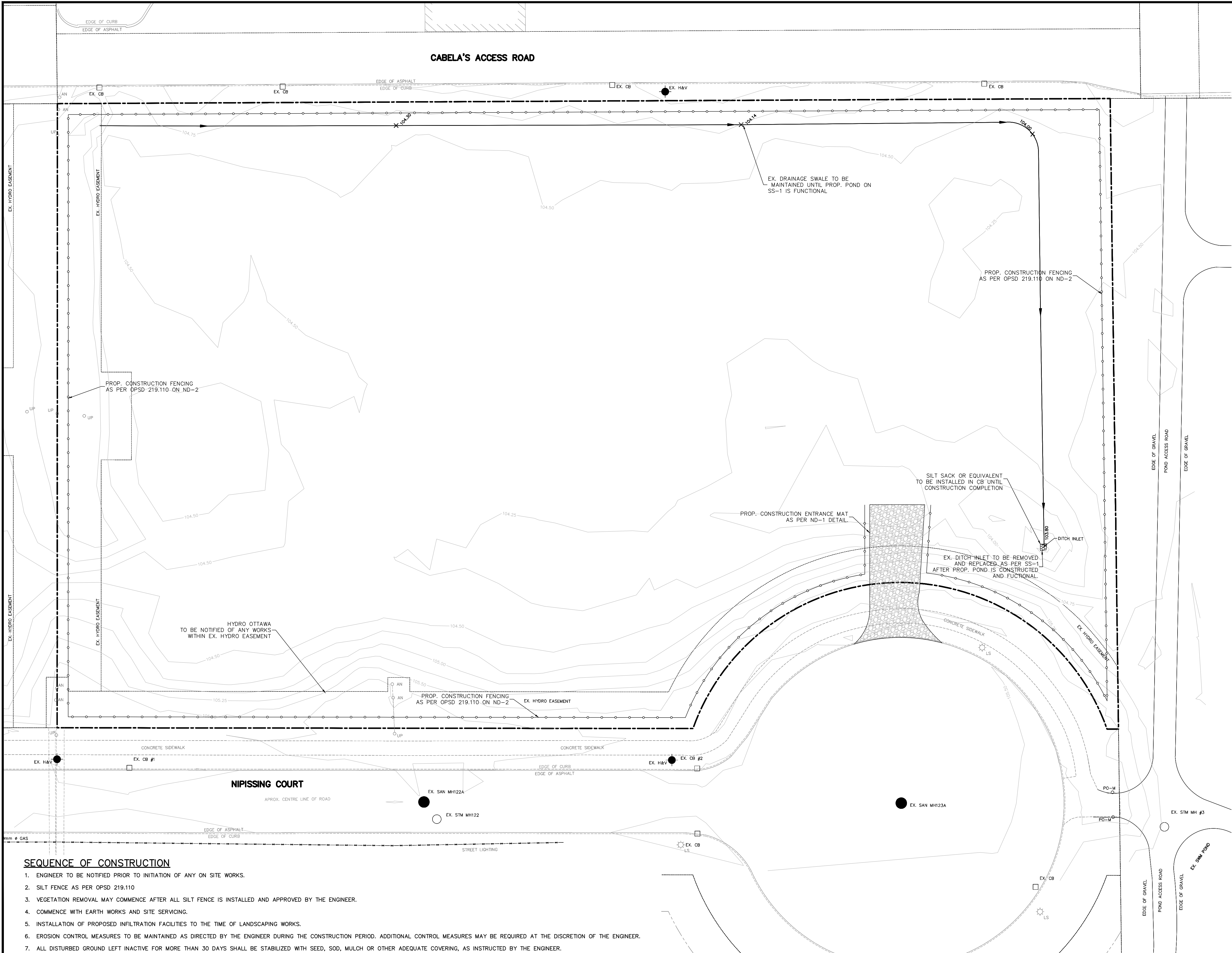
BAPS CHARITIES
201 NIPISSING COURT
CITY OF OTTAWA

STORM CATCHMENT DRAINAGE PLAN

DESIGNED BY	MWD	HORIZ SCALE	1:250	PROJECT #	25028.01
DRAWN BY	JM	VERT SCALE	N/A	DRAWING #	STM-3
CHECKED BY	MWD	DATE	JULY 2026	REVISION #	0



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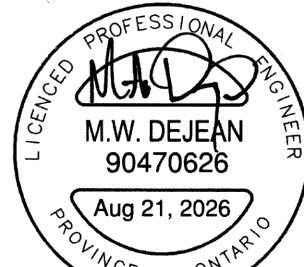
SEQUENCE OF CONSTRUCTION

- ENGINEER TO BE NOTIFIED PRIOR TO INITIATION OF ANY ON SITE WORKS.
- SILT FENCE AS PER OPSP 219.110
- VEGETATION REMOVAL MAY COMMENCE AFTER ALL SILT FENCE IS INSTALLED AND APPROVED BY THE ENGINEER.
- COMMENCE WITH EARTH WORKS AND SITE SERVICING.
- INSTALLATION OF PROPOSED INFILTRATION FACILITIES TO THE TIME OF LANDSCAPING WORKS.
- EROSION CONTROL MEASURES TO BE MAINTAINED AS DIRECTED BY THE ENGINEER DURING THE CONSTRUCTION PERIOD. ADDITIONAL CONTROL MEASURES MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
- ALL DISTURBED GROUND LEFT INACTIVE FOR MORE THAN 30 DAYS SHALL BE STABILIZED WITH SEED, SOD, MULCH OR OTHER ADEQUATE COVERING, AS INSTRUCTED BY THE ENGINEER.

BENCHMARK

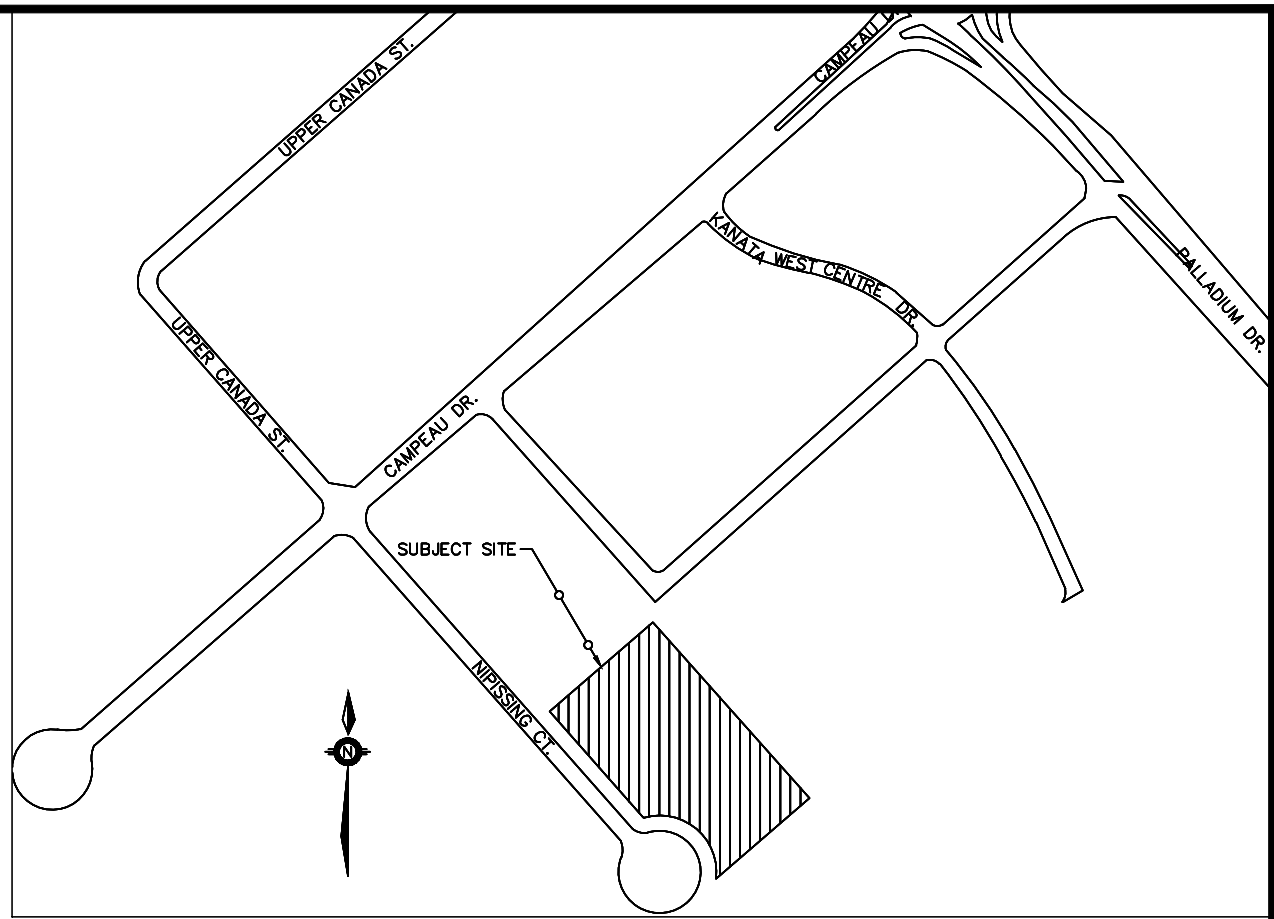
ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO GEODETIC DATUM CGVD-1928 :1978. (MONUMENT NO. 19770882)

SITE BENCHMARK - FIRE HYDRANT(TOP OF SPINDLE)
ELEVATION=106.56



BAPS CHARITIES
201 NIPISSING COURT
CITY OF OTTAWA

EROSION AND SEDIMENT
CONTROL PLAN



KEY PLAN
N.T.S.

LEGEND

- RLCB REAR LAWN CATCH BASIN
- EX. CB EXISTING CATCH BASIN
- STM DCB PROPOSED DOUBLE CATCH BASIN
- STM MH PROPOSED STORM MANHOLE
- EX. STM MH EXISTING STORM MANHOLE
- SAN MH EXISTING SANITARY MANHOLE
- EX. SAN MH EXISTING SANITARY MANHOLE
- HYD. FIRE HYDRANT
- EX. H&V EXISTING FIRE HYDRANT
- VB WATER VALVE
- PROPERTY LINE
- SILT FENCE
- EX. CB GEOTEXTILE WRAPPED CATCH BASIN

NOTES FOR SEDIMENT & EROSION CONTROL

- DISTURBED AREAS THAT HAVE FAILED TO HAVE STABLE GROUND COVER ESTABLISHED BY OCTOBER 30TH SHALL BE PROTECTED WITH A SILTATION CONTROL FENCE OR STRAW MULCH ETC. AND MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION BECOMES ESTABLISHED IN THE SUBSEQUENT GROWING SEASON.
- ANY DEWATERING WASTE SHALL BE DISCHARGED TO A VEGETATED AREA AT LEAST 30m FROM ANY WATERCOURSE AND FILTERED. FILTERING METHODS MUST BE APPROVED BY THE SITE ADMINISTRATOR.
- SILT FENCE SHALL BE PUT IN PLACE PRIOR TO AND MAINTAINED DURING ALL GRADING. SILT FENCE TO BE INSPECTED PRIOR TO COMMENCEMENT OF EARTH GRADING ACTIVITIES. SILT FENCE TO BE INSPECTED AND REPAIRED OR REPLACED IF DAMAGED AS DIRECTED BY THE SITE ADMINISTRATOR. SILT CONTROLS TO BE INSPECTED ON A REGULAR BASIS AND AFTER EVERY RAIN EVENT. INSTALLATION SHALL BE TO THE MANUFACTURER'S RECOMMENDED SPECIFICATIONS.
- THE CONTRACTOR SHALL BE PREPARED FOR UNEXPECTED CONDITIONS AND ACCORDINGLY HAVE STOCKPILED MATERIALS ON SITE FOR NECESSARY REPAIRS AS A RESULT OF FAILED OR INADEQUATE CONTROL MEASURES. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK, AND AFTER EVERY RAINFALL EVENT.
- CONTRACTOR SHALL OBTAIN A CURRENT COPY AND BECOME FAMILIAR WITH OPSP 577, CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS.
- THE CONTRACTOR MAY CONSIDER ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES. SUCH MEASURES SHOULD BE PRESENTED IN WRITING FOR APPROVAL OF THE SITE ADMINISTRATOR AND MUST BE APPROVED IN WRITING BY THE MUNICIPALITY AND CONSERVATION AUTHORITY.
- THE TOPS OF ALL FILTER FABRIC MUST BE A MINIMUM OF 1.0 METRES ABOVE THE GROUND LEVEL AND ATTACHED TO THE FENCE WITH A CONTINUOUS STEEL WIRE. ALTERNATIVELY, THE FILTER FABRIC MUST BE FOLDED OVER THE TOP OF THE FENCE AND ATTACHED TO THE FENCE WITH WIRE LOOPED THROUGH THE FABRIC ON BOTH SIDES OF THE FENCE. FILTER FABRIC IS TO BE TERRAFIX 270R OR EQUIVALENT.
- ALL DISTURBED GROUND LEFT FOR MORE THAN 30 DAYS SHALL BE STABILIZED BY SEEDING, SODDING, MULCHING, OR COVERING OR OTHER EQUIVALENT CONTROL MEASURES. THIS PERIOD OF INACTIVITY SHALL BE AT THE DISCRETION OF THE CITY OF OTTAWA BUT SHALL NOT EXCEED THIRTY DAYS OR SUCH LONGER PERIOD DEEMED ADVISABLE BY THE CITY OF OTTAWA'S PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT.
- CONTRACTOR RESPONSIBLE FOR MUD TRACKING, PREVENTION, AND MAINTENANCE ON NIPISSING CRT.
- ROADS AND PARKING LOT AROUND SITE TO BE LEFT IN A BROOM SWEEP CONDITION AT THE END OF EACH WORK DAY.
- SILT SACKS TO BE CLEANED OUT AD REQUIRED.
- THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

NO.	REVISION NOTE	DATE	BY
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