

FUNCTIONAL SERVICE REPORT

**PROPOSED ISLAMIC CENTRE
6735 CALEDONIA STREET
CITY OF NIAGARA FALLS**

NOVEMBER 10, 2025

PREPARED BY

**PREMIER ENGINEERING SOLUTIONS INC.
3294 ALPACA AVENUE, MISSISSAUGA
ONTARIO, L5M 7V3**

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PROPOSED ISLAMIC CENTRE 6735 CALEDONIA STREET CITY OF NIAGARA FALLS, ONTARIO

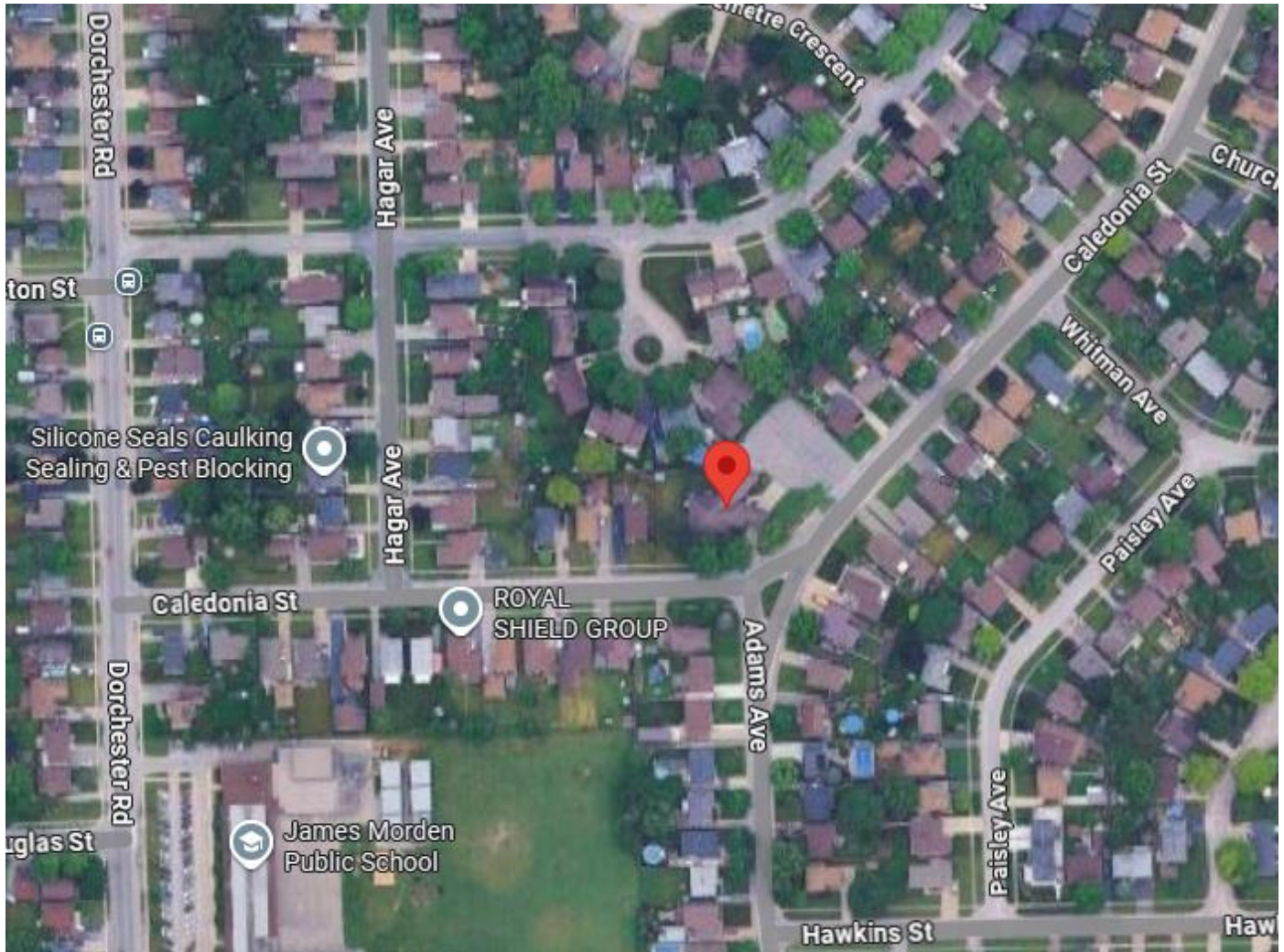
November 10, 2024

1.0 INTRODUCTION

The owner of 6735 Islamic Centre is proposing to redevelop the existing one mosque to a new two story Islamic centre, which includes an educational . The existing building on the lot will be demolished(**Figure 1**). The proposed development will consist of 2 story building with a mezzanine. The includes a prayer hall, gym, youth room, toddler facility and daycare. The proposed daycare will have 10 infants, 15 toddlers, 6 staff. Floor area for infant room will be 61m^2 and for toddler room 74m^2 . The owner has acquired two residential lots north of the property to fulfill the needs of the center. The existing lot area of site 6735 Caledonia is 3071.5m^2 . After adding two lots the new area will be 4659.4m^2 . The new Islamic Centre building will cover an area of 1331.4m^2 . This report study how the proposed is maintained and serviced by the existing infrastructure which includes water, sanitary and storm.

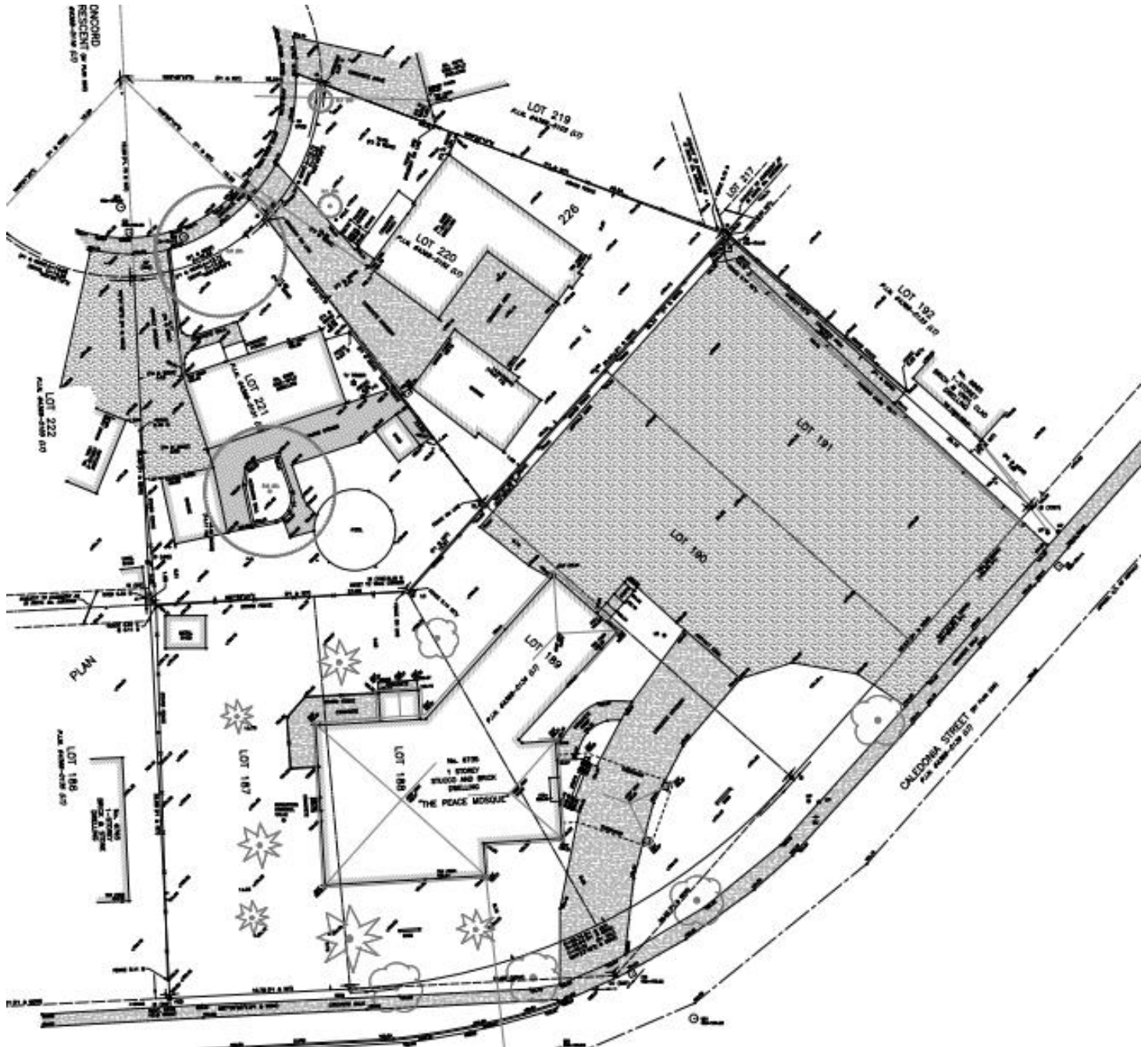
The subject property is fully serviced by storm, sanitary and water. There is a 150 diameter water main, 375mm sanitary sewer and a 1200mm storm sewer trunk.

Figure 1



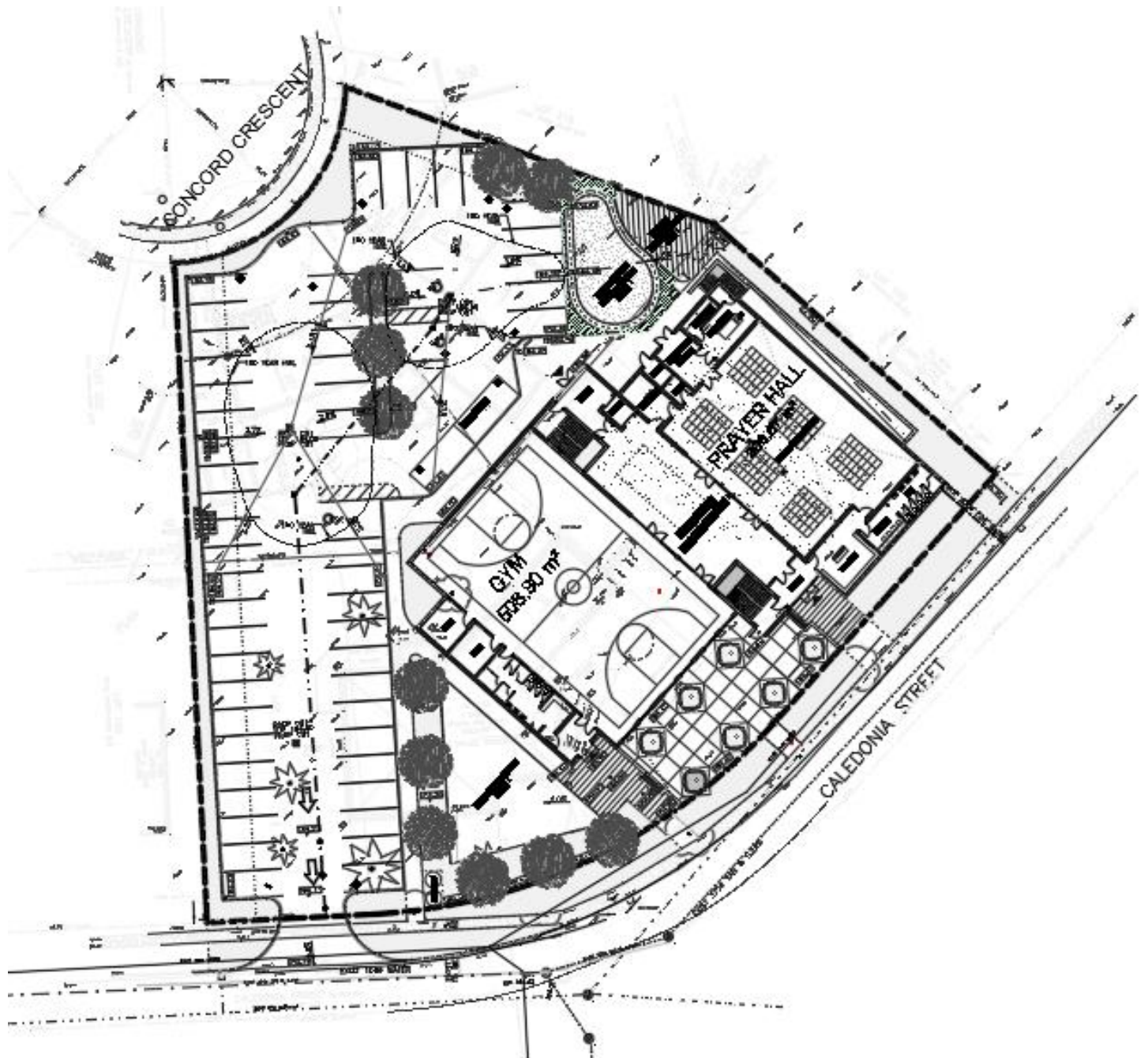
**SATELLITE IMAGE OF THE SUBJECT SITE
AND IT'S SURROUNDING AREA**

Figure 2



EXISTING DEVELOPMENT

Figure 3



PROPOSED DEVELOPMENT

2.0 OBJECTIVE OF REPORT

The objective of this report is to assess the proposed sanitary, domestic and fire water requirements.

2.1 Sanitary Servicing:

-Assess the proposed sanitary flows.

2.2 Water Servicing

-Calculate the domestic and fire demands.

-Ensure the existing municipal water main have enough capacity and pressure for the proposed development needs.

2.3 Storm Servicing

Quantity control will be Pre to Post for 5 Year Storm. Minor system will be designed for a 5 year Storm. An existing 1050mm storm trunk sewer available along Caledonia Street to serve the site.

3.0 WATER SYSTEM

3.1 Design Criteria

The Following design Criteria for water Servicing is used as per Niagara Region and Ontario Design Guidelines.

Assumption:

1. Islamic Centre(Mosque)

Worshipers	215
Average Day Consumption	36 Lcd (higher Side)

2. School

Number of Class Rooms	8
Students per classroom	25
Staff /teachers	12
Total	212
MOE Design Guidelines for 8 hour school operating	140 Lcd

3. Daycare

Infants	10
Toddlers	15
Staff	6
Total	31

Average Day Consumption

75 Lcd

4. Peaking Factors

Following factors are being adopted:

Maximum Daily Demand	2
Peak Hour	4

4.2 Domestic Water Demand Calculations:

Average Daily Demad

Worshippers	215x36=7740 Litres/day
School Students/Staff	=212x140
	=29680 L/day
Daycare	=31x75
	=2,325
Total	=7740+29,680+2,325
	= 39,745 L/day
	= 0.46 L/sec
Maximum daily Demand	=0.46x2
	= 0.92 L/sec
Peak Hourly Demand	=0.46x4
	= 1.84L/sec

3.2 Fire Water Demand

The required fire flow for the site is calculated based on the Fire Underwriters Survey (FUS) requirements. The fire flow calculation indicated that the Buildings fire flow requirement is 1,319 US GPM (83.3L/sec). The total domestic and fire water demand for the proposed development is estimated at

Fire Demand	= 83.3 l/sec(See Appendix 'A')
Mamum Day Demand	=0.92 L/sec
Fire Demand + Maximum Daily Demand	= 83.3+0.92
	=84.22 L/sec
	=1335 USGPM

The hydrant flow test company has been hired is conducted for the flow and pressure in the 150mm water main fronting the site at **20 psi is 1,842 GPM > 1,335 GPM Okay.**

3.3 Proposed System

We are proposing a 150mm new water connection from the existing 150mm water main along Caledon Street for the proposed development. The Fire Water is being proposed 150mm diameter and domestic water service 50mm. As the proposed Siamese connection is more than 45m from the existing fire hydrant,

a fire private hydrant is being proposed inside the property. The proposed water is shown on Site Servicing Plan SS1, **Appendix ‘E’**

4.0 Sanitary System

4.1 Design Criteria

Sanitary Flows are being adopted same as Domestic Water Demand

➤ Peaking Factor based on Harmon Formula	=	4.15(Refer Appendix ‘B’)
➤ Extraneous Flow Design allowance	=	0.28 L/Sec/Ha(MECP)
➤ Average Flow	=	0.178L/sec

4.1 Existing Sanitary System

An existing sanitary sewer of 375mm diameter size runs along Caledonia Street. A service connection of 150mm is available for the.

4.2 Sanitary Design Flows

Proposed Sanitary from the proposed development are shown in **Appendix ‘B’**; Design flows are summarized below:

Site Area	=0.496
Sanitary Flow(Adopt same as Average Water Demand)	=0.46 L/sec
Peaking Factor(Harmon Peak)	=4.0
Peak Flow	=0.46x4.0
	=1.84 L/sec
Extraneous Flow	=0.496x0.28 L/sec
	=0.13 L/sec
Peak Design Flow	=1.84+0.14 L/sec
	=1.97 L/sec

4.3 Proposed Servicing

We are proposing a new 150mm diameter sanitary sewer connection from the existing 375mm sanitary sewer along Caledonia Street for the proposed development.

Peak Design Flows computed as 1.05L/sec. The Capacity of the proposed 150mm sanitary sewer at 2.0% slope is 21.8 L/sec. The Sanitary sewer system is shown in Site Servicing Plan SS1, **Appendix ‘E’**

5.0 Storm System

The minor storm system will be designed for 5-year storm event. The Pre-Development and Post Development Drainage Sheets are attached in **Appendix D**. The Grading is shown in Grading Plan drawing

SG1, Appendix ‘‘ The Drainage will be self contained, except some area in front discharging by sheet flow to the Caledonia Street. The storm minor design sheet is attached in **Appendix ‘C’**. The proposed Storm system is shown in the Site Servicing Plan SS1. The Plan is attached in the **Appendix ‘E’**

6.0 Stormwater Management

The detail will be provided in SWM report. A 5-year post development outflow will be controlled to 5-Year pre-development level or less. Water will be detained temporarily on the parking surface by providing an orifice control tube in the downstream storm manhole for the controlled drainage area. The un-controlled area will be discharged to the street by sheet flow. A Quality Treatment unit will be proposed downstream of the control manhole.

8.0 CONCLUSION

Adequate storm outlet is available for the proposed development. The proposed stormwater drainage scheme will prevent flooding & erosion, provide stormwater quality controls and maintain the integrity of the existing drainage system.

Based on the availability of municipal services and other utilities and the fact that the proposed development is compatible with the existing land use and complements the existing landscape, we recommend approval to be granted to the proposed development.

Prepared by:

Muhammad F. Ismail P. Eng.



APPENDIX A

- **FIRE WATER CALCULATION**
- **FIRE HYDRANT TEST RESULTS**

APPEND A
FIRE FLOW CALCULATIONS
6735 CALEDONIA STREET, NIAGARA FALLS

Client:
Building.:

2025-11-11

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

$$F = 220 C \sqrt{A}$$

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in the building being considered in square metres

- A.

Determine Type of Construction
=> Combustible
Therefore C = 0.6 **0.60** **Fire Resistive Construction**
- B.

Determine Ground Floor Area

Gross Floor Area 2,772 m²

As per the Site Statistics table, vertical openings are provided, please see the architect's signed letter- Appendix B). Considering this, we are adopting Largest floor area and 25% of two adjoining floors

- A= **1,333.40 m²**

Second Floor **333 m²**

Basement **0 m²** **Below Ground)**

Total Floor Area **1,667 m²**
- D.

Determined the Fire Flow
F = 220x0.80x(1667)^{0.50} (Noncombustible Construction)
F = **7,185 Lpm**

- E.

Determine Increase or Decrease for Occupancy
As the Building has Low Fire Hazard Contents, a factor of -25% may be applied but considering it to a limited combustible, thus we apply 25% reduction factor to the Fire Flow calculated in 'D'

Fire Flow = 7186x(1-0.25) Lpm

= **5,389** **Lpm**

- F.

Determine Decrease for Automatic Sprinkler Protection
Automatic Sprinkler Protection (Per NFPA 13 Standards) Fully Supervised, with additional Fire Department hose lines, provide Community Level Automatic Protection of Area Supervised **50% Reduction**

= 2,695 Lpm

G. Determine the Total Increase For Exposures

Face	Distance (m)	Charge		
East Side	31.00	5%		
dist	6	20%	(Fire Wall)	
North Side	33	5%		
South Side	35	5%		
	Total	35%	of	7,185
			=	2,515 Lpm

H. Req'd Fire Flow = E - F + G

$$5389 + 2515 - 2695$$

$$5,210 \text{ Lpm}$$

$$F = 5,210 \text{ Lpm} \quad (2,000 \text{ Lpm} < F < 45,000 \text{ Lpm}; \text{OK})$$

$$\text{Rounding to nearest 1,000 L/s} \quad 5,000 \text{ Lpm}$$

$$F = 1,319 \text{ US GPM}$$

$$= 83.3 \text{ L/s}$$

G. Fire Demand + Maximum dialy Demand

$$= 83.3 + 0.92 \quad (\text{See FSR Section 3.2})$$

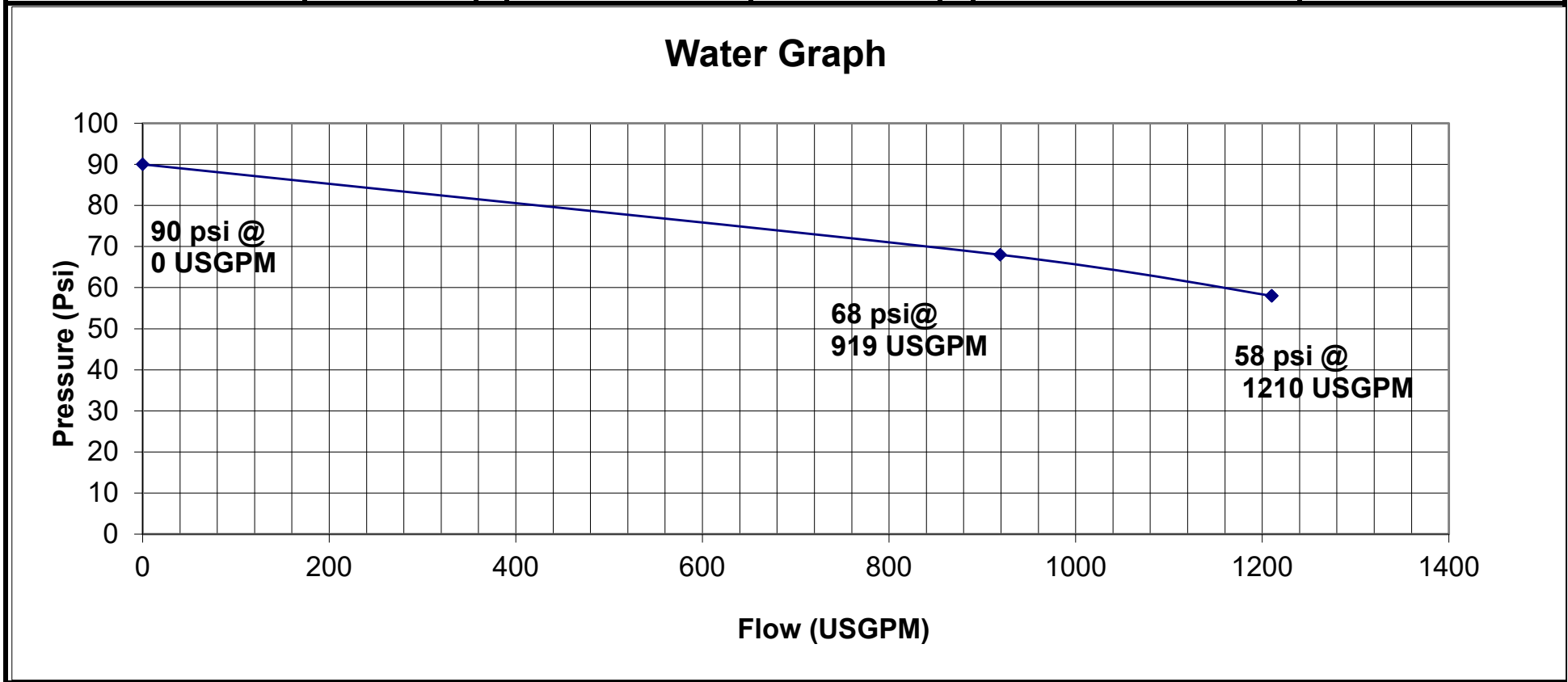
$$84.22 \text{ L/sec}$$

Notes

The Fire Hydrant test results showing at 20psi, the extrapolated flow will be 1842 GPM. Our requirement for the Fire Flow is 1,335 GPM. This shows that we can meet the flow and pressure requirement from the City's watermain safely.



NIAGARA REGIONAL FIRE PROTECTION INC.									
Flow Test Location: 6735 Caledonia Street									
Static Pressure (Psi)		Pitot Reading 1		30		# of Outlets Flowed 1		1	
	90	Outlet Size 1		2.5		# of Outlets Flowed 2		2	
Residual Pressure 1 (Psi)		Pitot Reading 2		13		# of Outlets Flowed 3		2	
	68	Outlet Size 2		2.5		Graph Data:			
Residual Pressure 2 (Psi)		Pitot Reading 3		13		Pressure Values (y-axis)		Flow Values (x-axis)	
	58	Outlet Size 3		2.5		90		0	
Residual Pressure 3 (Psi)		Flow 1 Calculated				68		919	
	58	919.0				58		1210	
Extrapolated to 20psi residual 1842 GPM		Flow 2 Calculated				58		1210	
Color code Blue		1210.0				Date & Time of Test :		Oct. 17/2025	
Coefficient value		Flow 3 Calculated						10:00am	
	0.9	1210.0				Performed by:		Alex & Callum	



APPENDIX B

SANITARY SYSTEM DESIGN SHEET

					APPENDIX B SANITARY SEWER DESIGN SHEET 6735 CALEDONIA STREET NIAGARA FALLS												
Project: 6735 Caledonai Street, Niagara Falls																	
LOCATION	INSTITUTIONAL/DAYCARE																
	Area (m²)	students & Teachers Staff	Daycare	Worshippers	Students 140 L/day	Worshippers 36L//day	Daycare 75 Litres/Day	Total Flow litres/Day	Total Flow litres/Sec	Harmon Peaking Factor	Peak Flow (L/s)	Extraneous Flow L/sec	Total Design Flow (L/s)	PIPE DIA (mm)	SLOPE	FULL FLOW CAPACITY (n=0.013) L/s	% of Design Capacity (%)
Proposed Condition	4659.4	212	31	215	29,680	7,740	2,325	39,745	0.46	4	1.84	0.130	1.97	150	2.0%	21.8	9.04
Students Flow70L/c/day Worshippers36 L/day Daycare75 L/c/Day *Harmon Peaking Factor = 1+[14/(4+P^{0.50})] Extraneous Flow0.28 L/Sec/ha																	
Calc by				MFI				Project:						Sheet No. 1 of 1			
Checked				MFI				6735 Caledonia Street									
Date				10-Oct-25				Niagara Falls									

APPENDIX C
STORM SYSTEM DESIGN SHEET

Appendix C

STORM SEWER DESIGN SHEET

$$Q = 2.78AIR$$

Where

Q peak flow in litres per second (L/s)

A area in hectares

I rainfall in millimetres per hour (mm/hr)

$$= 719.50 / (tc + 6.34)^{0.7687} \quad \text{5 Year Storm}$$

where : t_c is in hours

R runoff coefficient

STREET			AREAS (ha)			Indivi. 2.78AR	Accum 2.78AR	Time of Conc.	Rainfall Intensity I	Peak Flow Q (L/s)	SEWER DATA						
STREET	FROM	TO	R= 0.25	R= 0.5	R= 0.7						Diameter (mm)	Slope %	Length (m)	Capacity (L/s) n= .013	Velocity (m/s) m/s	Time of Flow (minutes)	Remarks
Private	PROP CB1	PROP STM MHC B1			0.10	0.19	0.19	15.00	68.62	16.3	250	2.20	27.0	89.4	1.82	0.25	CONTROL MH3
Private	PROP STM MHC B1	PROP STM MH2			0.08	0.16	0.35	15.25	68.06	26.8	300	0.50	26.0	69.4	0.98	0.44	
Private	PROP STM MH2	PROP STM MH3			0.08	0.16	0.51	15.69	67.01	37.3	450	1.00	33.0	289.7	1.82	0.30	
Private	PROP STM MH3	CDS UNIT			-	0.00	0.86	15.99	66.32	60.2	300	1.00	4.0	98.1	1.39	0.05	
Private	CDS UNIT	STM MH4			-	0.00	0.86	16.04	66.21	60.1	300	1.00	4.0	98.1	1.39	0.05	
Private	ROOF LEADER	STM MH4			0.13	0.26	0.26	16.09	66.10	20.1	150	2.00	28.0	21.8	1.23	0.38	
Private	PROP STM MH4	EX STM			-	0.00	0.26	16.09	66.10	20.1	300	1.00	10.0	98.1	1.39	0.12	
Calc by		MFI					Project:								Sheet No. 1 of 1		
Checked		MFI					6735 CALEDONIA STREET										
Date		13-Sep-25					NIAGARA FALLS										

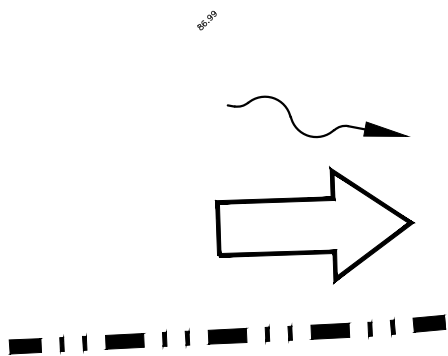
APPENDIX D

- **PRE-DEVELOPMENT DRAINAGE PLAN**
- **POST-DEVELOPMENT DRAINAGE PLAN**

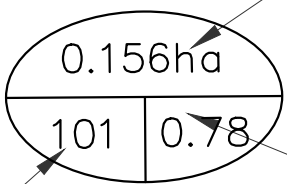
APPENDIX D1 PRE-DEVELOPMENT DRAINAGE PLAN

LEGEND

- EXISTING GRADE
- EXIST. OVERLAND FLOW DIRECTION
- OVERLAND FLOW DIRECTION
- DRAINAGE BOUNDARY

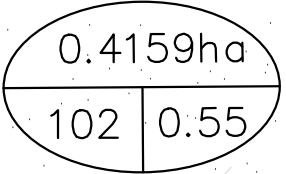


Drainage Area

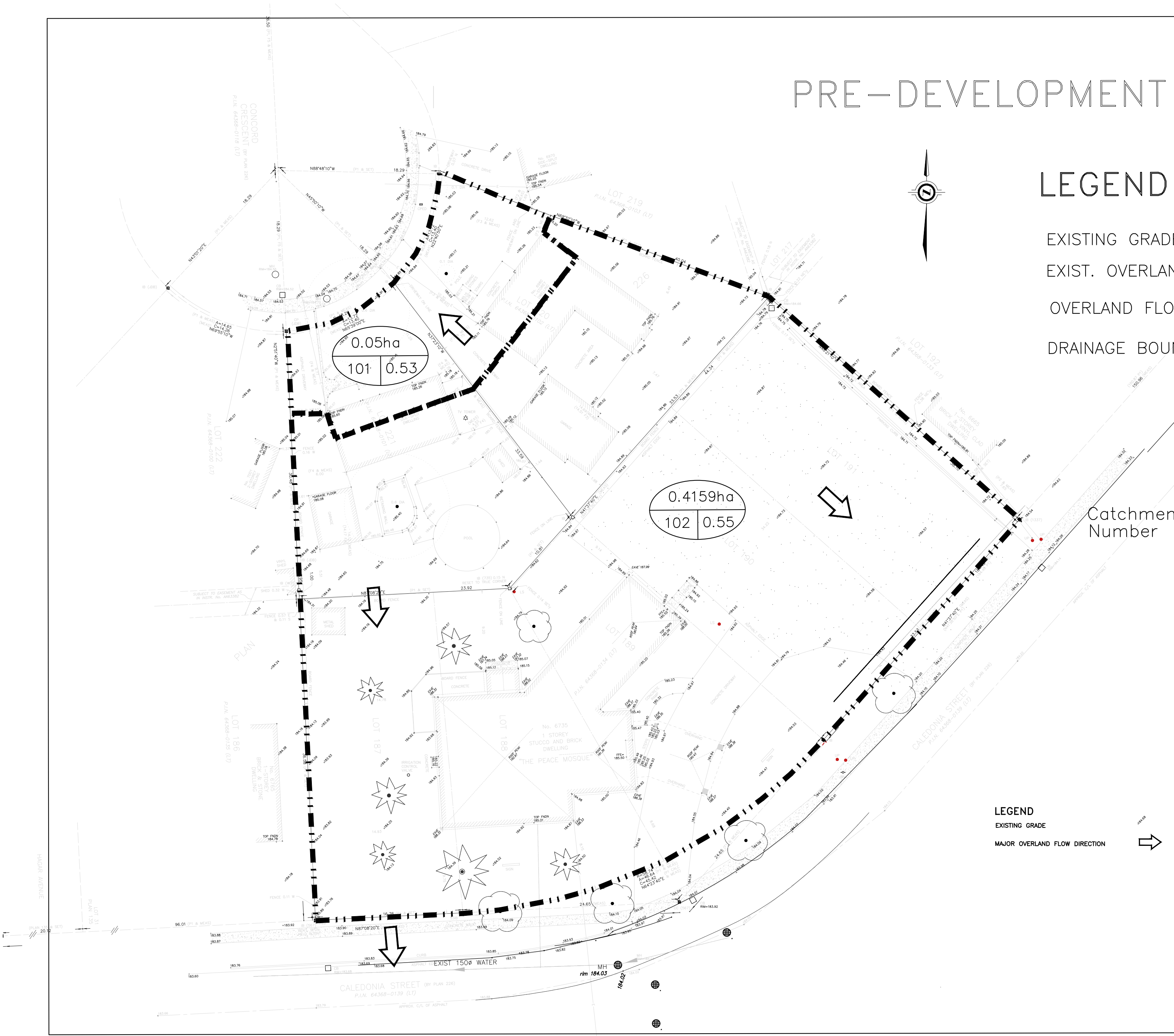


Runoff Coefficient

Catchment Number



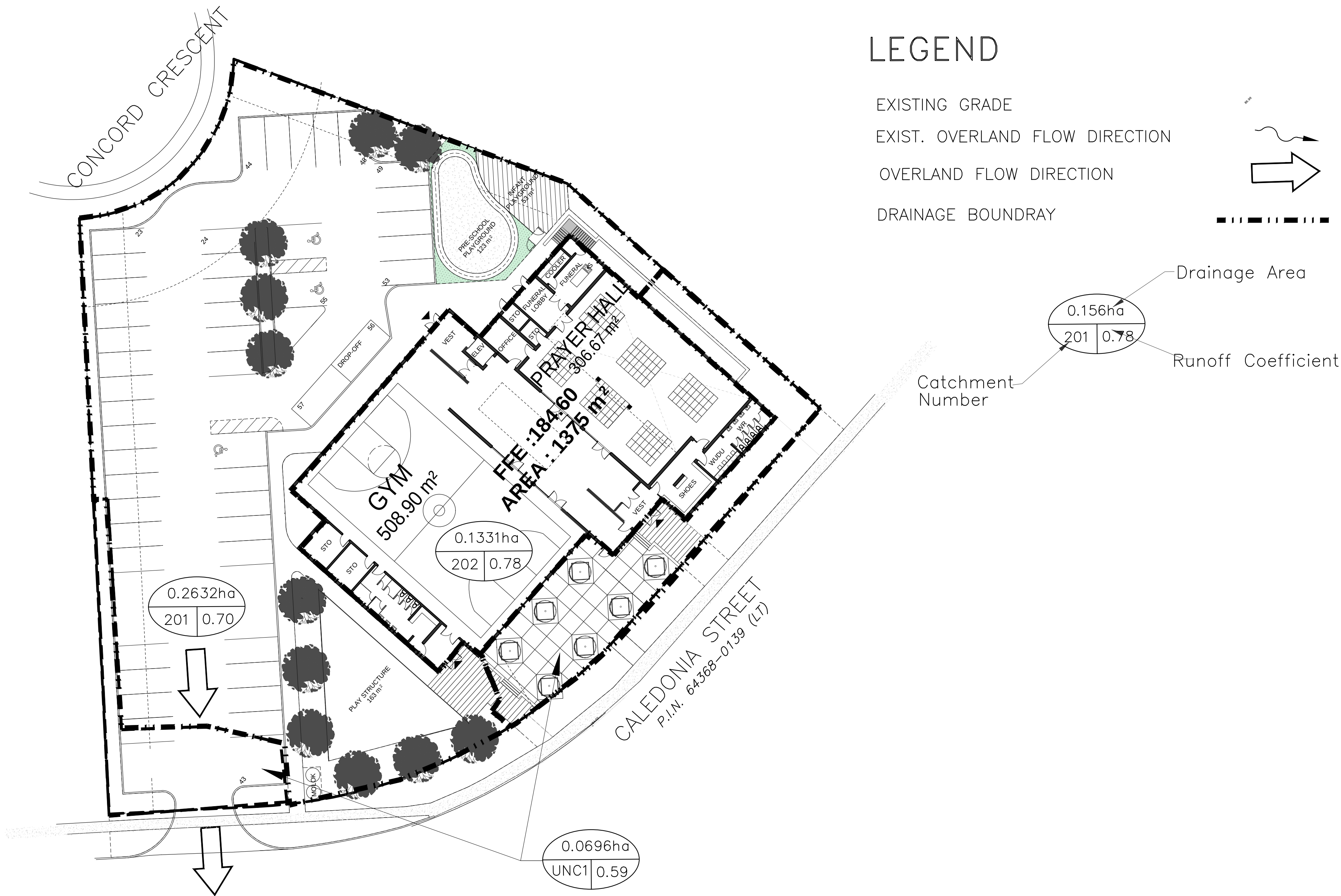
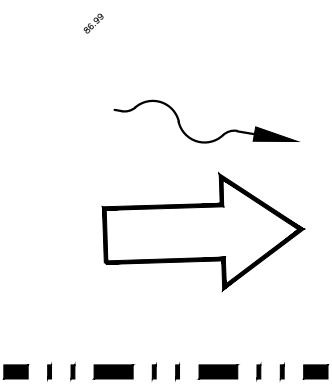
- ### LEGEND
- EXISTING GRADE
 - MAJOR OVERLAND FLOW DIRECTION



APPENDIX D2 POST-DEVELOPMENT DRAINAGE PLAN

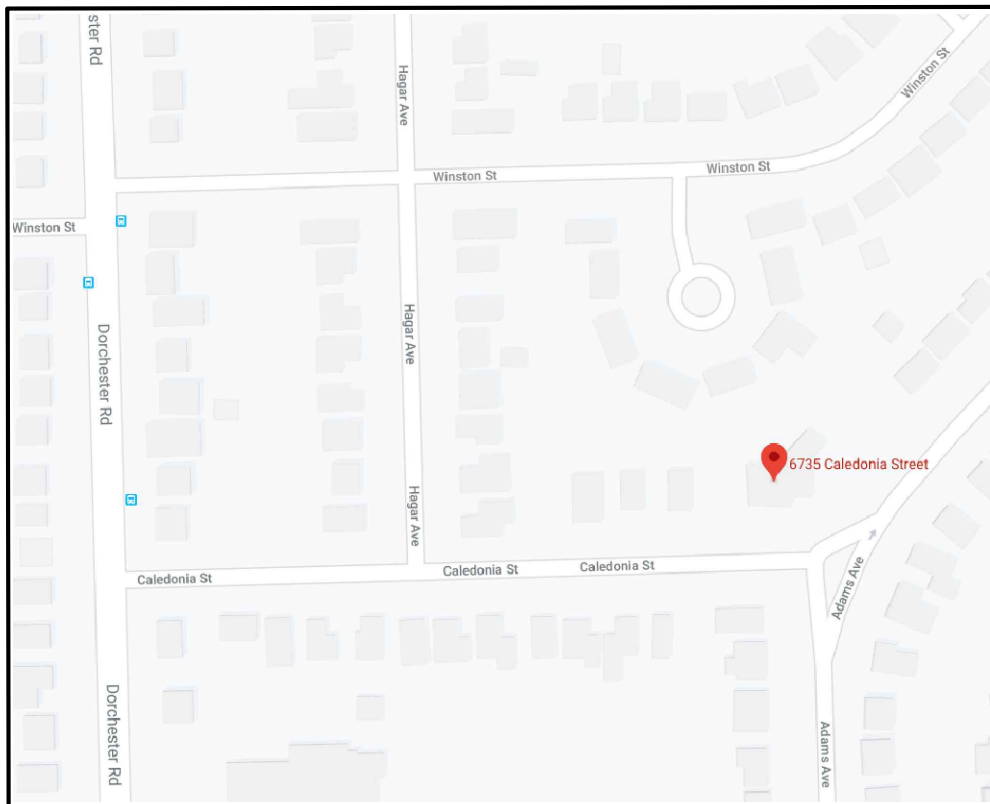
LEGEND

- EXISTING GRADE
- EXIST. OVERLAND FLOW DIRECTION
- OVERLAND FLOW DIRECTION
- DRAINAGE BOUNDARY



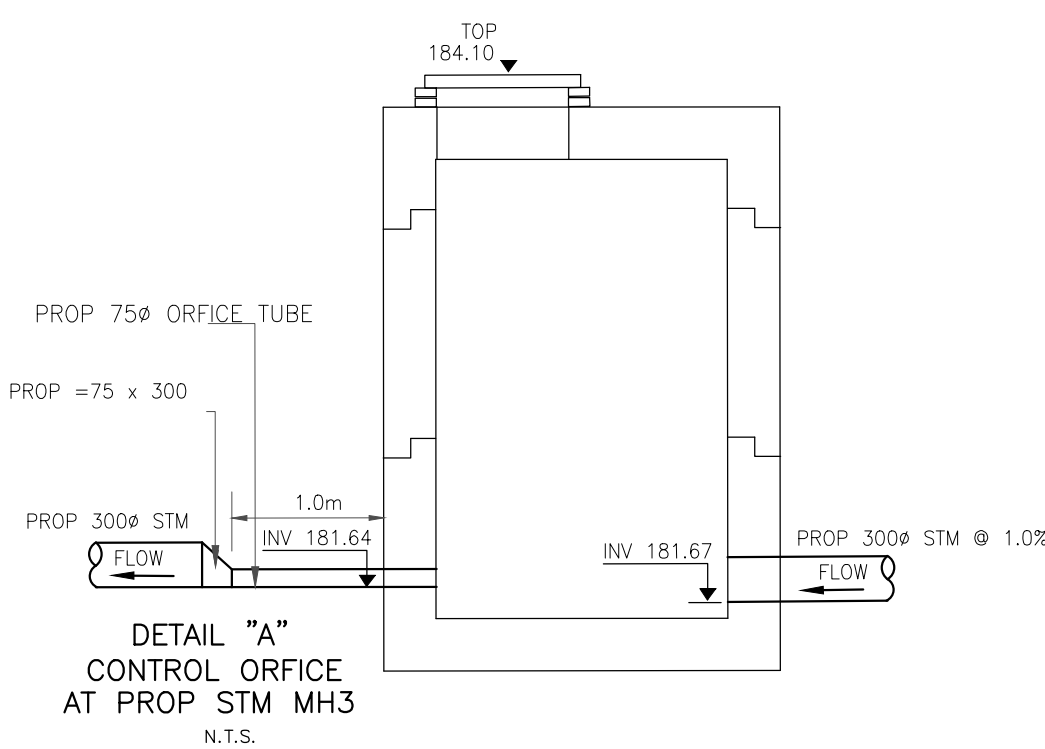
APPENDIX E

- **SITE SERVICING PLAN SS1**
- **GRADING PLAN SG1**



KEY PLAN

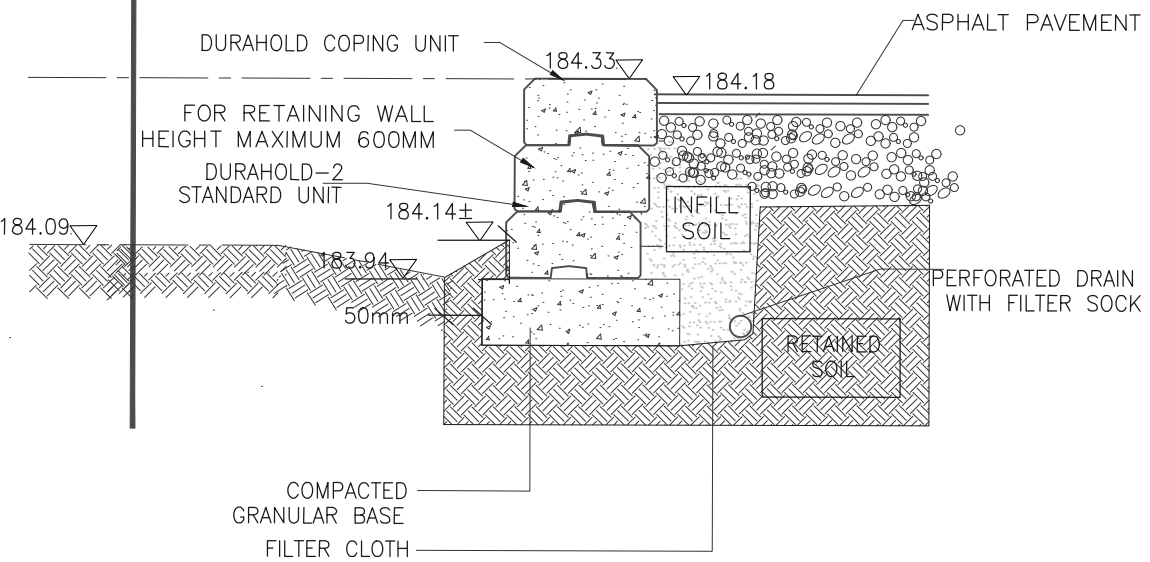
N.T.S.



LEGEND

- PROP WATER
- PROP SANITARY SEWER
- PROP STORM
- EXIST WATER
- EXIST SANITARY SEWER
- EXIST STORM

PROPERTY LINE



DETAIL SECTION AA
RETAINING WALL DETAIL
SCALE: NTS

BENCHMARK NOTE

ELEVATIONS ARE GEODETIC DATUM AND WERE DERIVED FROM GNSS OBSERVATIONS AND ARE NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

CONSTRUCTION NOTES:

ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH O.P.S.S. AND O.P.S.D. REQUIREMENTS AND TO THE REQUIREMENTS OF THE LOCAL AND REGIONAL MUNICIPALITY.

BEDDING TO SEWERS AND LATERALS SHALL BE CLASS 'B' GRANULAR 'A' BEDDING AND COVER MATERIAL COMPACTED TO 100% STANDARD PROCTOR DENSITY IN ACCORDANCE WITH THE O.P.S.D. 802.04, 1005.02 AND 1102.02.

BACKFILL TO THE SEWERS, WATERMAIN & LATERALS SHALL BE NATIVE MATERIAL COMPACTED TO 95% STANDARD PROCTOR DENSITY, EXCEPT UNDER EXISTING ROADS WHERE BACKFILL SHALL BE GRANULAR 'A' COMPACTED TO 100% STANDARD PROCTOR DENSITY.

VERTICAL AND HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 0.5m AND 2.5m RESPECTIVELY. FOR LESSER DISTANCES THE SEWER PIPE MATERIAL AND TESTING SHALL MEET THE STANDARDS FOR PRESSURE PIPE TESTING AND MATERIAL.

ALL STORM & SANITARY SEWERS, CB, LEADS SHALL BE PVC DR35 PIPE AND ALL LATERALS (100mm ø) SHALL BE PVC DR28 PIPE UNLESS NOTED.

ALL LATERALS TO BE CONNECTED TO THE NEW PIPE USING MANUFACTURED TEE AND SEWER TO THE EXISTING PIPE USING PRE-MANUFACTURED SADDLE AND STAINLESS STEEL STRAP.

THE RESTORATION OF EXISTING ROADS, BOULEVARD AND SIDEWALKS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MUNICIPALITY.

NO DETAILED SOIL INVESTIGATION HAS BEEN CARRIED OUT. THE DESIGN OF THIS DEVELOPMENT ASSUMES THAT NO ADVERSE CONDITIONS WILL BE ENCOUNTERED. CONTRACTORS SHOULD CHECK EXISTING SITE CONDITIONS AND INCLUDE NECESSARY COMPENSATION.

THE POSITION OF POLE LINES, CONDUITS WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY ON CONSTRUCTION DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

CONSTRUCTION SPECIFICATIONS:

ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH O.P.S.S. AND O.P.S.D. REQUIREMENTS AND TO THE REQUIREMENTS OF THE LOCAL AND REGIONAL MUNICIPALITY.

OPS SPECIFICATIONS:

201, 206, 212, 310, 313, 314, 351, 353, 405, 407, 410, 501, 504, 506, 507, 514, 515, 516, 517, 538, 570, 571, 701, 904, 905, 1002, 1010, 1351

OPS DRAWINGS:

CONCRETE SIDEWALK	OPSD 310.010
CONCRETE SIDEWALK DRIVEWAY ENTRANCE	OPSD 310.050
ENTRANCE DETAIL	OPSD 310.050
URBAN INDUSTRIAL, COMMERCIAL & APARTMENT	OPSD 350.010
ENTRANCE DETAIL	OPSD 600.110
BARRIER CURB	OPSD 600.110
PRECAST CONCRETE CATCHBASIN	OPSD 705.010
PRECAST MAINTENANCE HOLE	OPSD 701.010
SEWER SERVICE CONNECTION	OPSD 1006.02
WATER SERVICES	OPSD 1104.01
HYDRANT	OPSD 1005.010

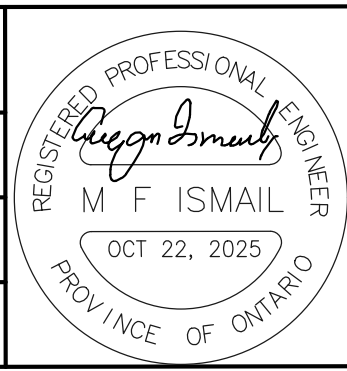
NO.	REVISION	DATE	INIT.
1	ISSUED FOR APPROVAL	OCT 22 2025	MFI

BENCHMARK:

TOPOGRAPHICAL INFORMATION SHOWN HEREON BASED ON TOPOGRAPHIC PLAN BY M.M. GEOMETRICS ONTARIO LTD., ONTARIO LAND SURVEYORS DATED JANUARY 19, 2017, PROJECT No. 17M-00089-00. ELEVATIONS ARE IN METRES AND ARE DERIVED FROM CITY OF MISSISSAUGA CONTROL MONUMENT No. 075023030, A BRASS CAP SET AT THE TOP OF A CONCRETE CYLINDER LOCATED 8M WEST OF THE CENTRE LINE OF NINTH LINE AND 27M NORTH OF THE CENTRELINE OF SKYVIEW STREET. ELEVATION = 187.42m. ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (1928), PRE-1978 ADJUSTMENT.

LEGEND	UNDERGROUND UTILITIES
○ LIGHT POLE	— H HYDRO CABLES
○ TL TRAFFIC LIGHT	— W WATERMAINS
○ S SIGN	— G GASMAINS
○ B BELL POLE	— B BELL CABLES
○ H HYDRO POLE	— CAP OR PLUG
○ HYD HYDRANT	— GUY AND ANCHOR
○ MANHOLE EXISTING	— MANHOLE EXISTING
○ MANHOLE PROPOSED	— MANHOLE PROPOSED
□ CATCHBASIN EXISTING	— CATCHBASIN EXISTING
■ CATCHBASIN PROPOSED	— CATCHBASIN PROPOSED
■ S.I.B. STANDARD IRON BAR	— S.I.B. STANDARD IRON BAR

DRAFTING	DESIGN	CHECKED BY	PROJ. SUPVR.
MI	MI	MI	MI



The City of
Niagara Falls
Canada

PUBLIC WORKS DEPARTMENT

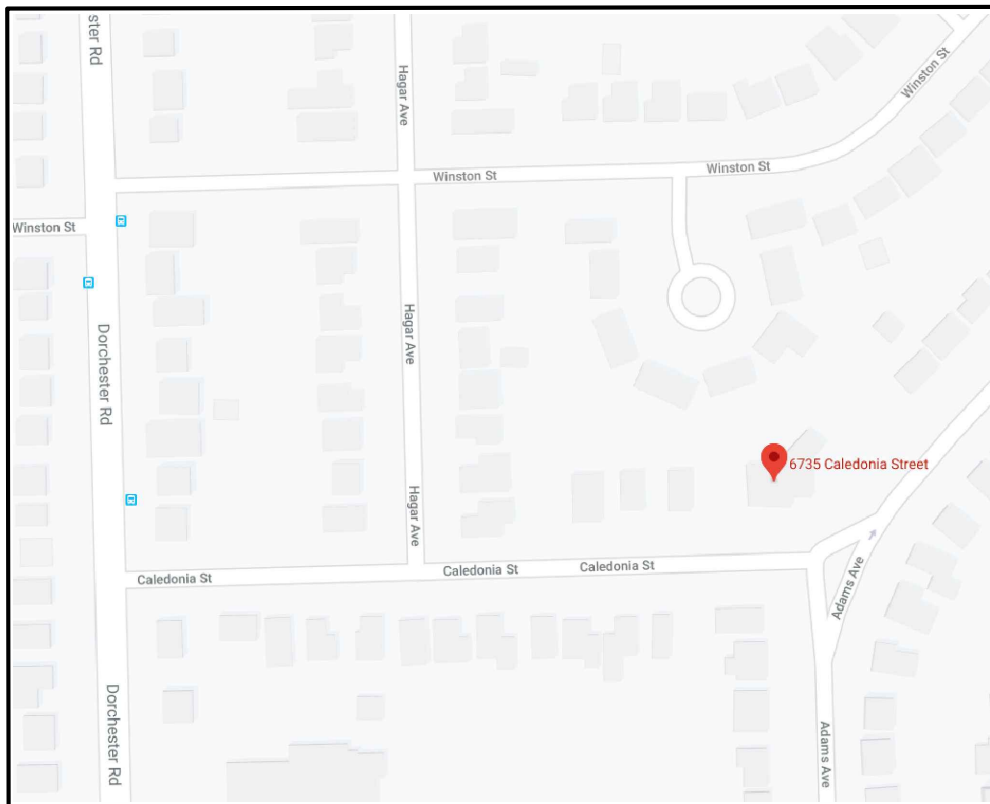
PREMIER ENGINEERING SOLUTIONS
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PHONE: (905) 817-1294 FAX: (905) 817-1299

BENCH MARK DATUM	AS NOTED
AS NOTED	AS NOTED

PROPOSED ADDITION TO THE EXISTING BUILDING 6735 CALEDONIA STREET NIAGARA FALLS, ONTARIO GRADING AND DRAINAGE PLAN

FIELD NOTES	DATE	SCALE	DWG No.	MUN. REF. No.	REV.
		1:250	SS1		1



KEY PLAN
N.T.S.

LEGEND

- EXISTING GRADE
PROPOSED GRADE
EXIST. OVERLAND FLOW DIRECTION
PROP. MINOR OVERLAND FLOW DIRECTION
PROP. MAJOR OVERLAND FLOW DIRECTION
TOP OF WALL
BOTTOM OF WALL
TOP OF CURB

184.68
184.39
TW184.33
BW184.33
BW184.33

NOTE:
SLOPE WITHIN THE ENERGY & INFRASTRUCTURE LANDS WILL BE SEEDED AND ADEQUATE EROSION PROTECTION MEASURES INSTALLED SO THAT THERE IS NO EROSION AT THE PROPOSED GRADING IN FUTURE.

BENCHMARK:

TOPOGRAPHICAL INFORMATION SHOWN HEREON BASED ON TOPOGRAPHIC PLAN BY M.M. GEOMETRICS ONTARIO LTD., ONTARIO LAND SURVEYORS DATED JANUARY 19, 2017, PROJECT No. 17M-00089-00. ELEVATIONS ARE IN METRES AND ARE DERIVED FROM CITY OF MISSISSAUGA CONTROL MONUMENT No. 075023030, A BRASS CAP SET AT THE TOP OF A CONCRETE CYLINDER LOCATED 8M WEST OF THE CENTRE LINE OF NINTH LINE AND 27M NORTH OF THE CENTRELINE OF SKYVIEW STREET. ELEVATION = 187.42m. ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (1928), PRE-1978 ADJUSTMENT.

- LEGEND
- UNDERGROUND UTILITIES
- H — HYDRO CABLES
— W — WATER MAINS
— G — GAS MAINS
— B — BELL CABLES
— C — CAP OR PLUG
— S — SANITARY SEWER
— ST — STORM SEWER
— COMB — COMBINED SEWER
- 300-CAN —
300-STM —
300-COMB —
- LIGHT POLE
○ TL — TRAFFIC LIGHT
○ S — SIGN
○ B — BELL POLE
○ H — HYDRO POLE
○ HYD — HYDRANT
○ — GUY AND ANCHOR
○ — MANHOLE EXISTING
○ — MANHOLE PROPOSED
□ — CATCHBASIN EXISTING
■ — CATCHBASIN PROPOSED
■ S.I.B. STANDARD IRON BAR

DRAFTING
MI
DESIGN
MI
CHECKED BY
MI
PROJ. SUPVR.

REGISTERED PROFESSIONAL ENGINEER
M F ISMAIL
OCT 22, 2025
PROVINCE OF ONTARIO

The City of
Niagara Falls
Canada
PUBLIC WORKS DEPARTMENT
PREMIER ENGINEERING SOLUTIONS
CIVIL ENGINEERS
3294 ALPACA AVENUE, MISSISSAUGA ONTARIO L5M 7V3
PHONE: (905) 817-1294 FAX: (905) 817-1299

BENCH MARK DATUM
AS NOTED

PROPOSED ADDITION TO THE
EXISTING BUILDING
6735 CALEDONIA STREET
NIAGARA FALLS, ONTARIO
GRADING AND DRAINAGE PLAN

FIELD NOTES
DATE
SCALE 1:250
DWG No. SS1
MUN. REF. No.
REV. 1

CONSTRUCTION NOTES:

ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH O.P.S.S. AND O.P.S.D. REQUIREMENTS AND TO THE REQUIREMENTS OF THE LOCAL AND REGIONAL MUNICIPALITY.

BEDDING TO SEWERS AND LATERALS SHALL BE CLASS 'B' GRANULAR 'A' BEDDING AND COVER MATERIAL COMPACTED TO 100% STANDARD PROCTOR DENSITY IN ACCORDANCE WITH THE O.P.S.D. 802.04, 1005.02 AND 1102.02.

BACKFILL TO THE SEWERS, WATERMAIN & LATERALS SHALL BE NATIVE MATERIAL COMPACTED TO 95% STANDARD PROCTOR DENSITY, EXCEPT UNDER EXISTING ROADS WHERE BACKFILL SHALL BE GRANULAR 'A' COMPACTED TO 100% STANDARD PROCTOR DENSITY.

VERTICAL AND HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 0.5m AND 2.5m RESPECTIVELY. FOR LESSER DISTANCES THE SEWER PIPE MATERIAL AND TESTING SHALL MEET THE STANDARDS FOR PRESSURE PIPE TESTING AND MATERIAL.

ALL STORM & SANITARY SEWERS, CB, LEADS SHALL BE PVC DR35 PIPE AND ALL LATERALS (100mm ø) SHALL BE PVC DR28 PIPE UNLESS NOTED.

ALL LATERALS TO BE CONNECTED TO THE NEW PIPE USING MANUFACTURED TEE AND SEWER TO THE EXISTING PIPE USING PRE-MANUFACTURED SADDLE AND STAINLESS STEEL STRAP.

THE RESTORATION OF EXISTING ROADS, BOULEVARD AND SIDEWALKS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MUNICIPALITY.

NO DETAILED SOIL INVESTIGATION HAS BEEN CARRIED OUT. THE DESIGN OF THIS DEVELOPMENT ASSUMES THAT NO ADVERSE CONDITIONS WILL BE ENCOUNTERED. CONTRACTORS SHOULD CHECK EXISTING SITE CONDITIONS AND INCLUDE NECESSARY COMPENSATION.

THE POSITION OF POLE LINES, CONDUITS WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY ON CONSTRUCTION DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

CONSTRUCTION SPECIFICATIONS:

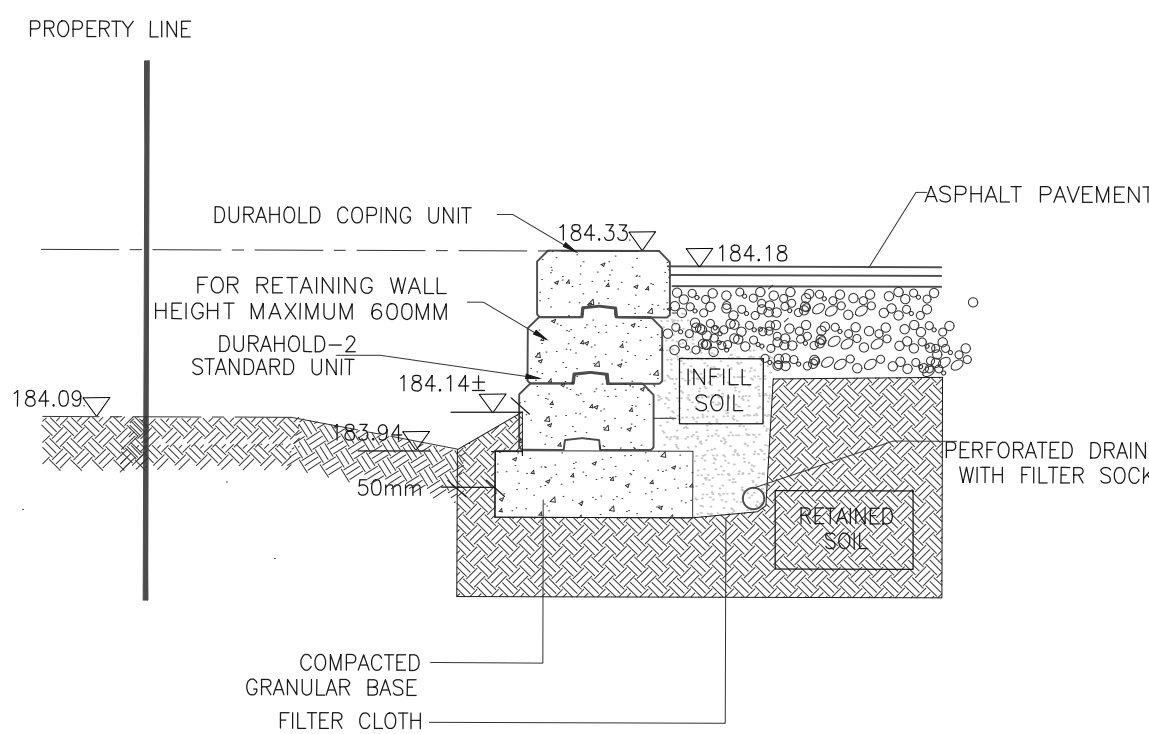
ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH O.P.S.S. AND O.P.S.D. REQUIREMENTS AND TO THE REQUIREMENTS OF THE LOCAL AND REGIONAL MUNICIPALITY.

OPS SPECIFICATIONS:

201, 206, 212, 310, 313, 314, 351, 353, 405, 407, 410, 501, 504, 506, 507, 514, 515, 516, 517, 538, 570, 571, 701, 904, 905, 1002, 1010, 1351

OPS DRAWINGS:

CONCRETE SIDEWALK	OPSD 310.010
CONCRETE SIDEWALK DRIVEWAY ENTRANCE	OPSD 310.050
ENTRANCE DETAIL	
URBAN INDUSTRIAL, COMMERCIAL & APARTMENT	OPSD 350.010
ENTRANCE DETAIL	OPSD 600.110
BARRIER CURB	OPSD 705.010
PRECAST CONCRETE CATCHBASIN	OPSD 701.010
PRECAST MAINTENANCE HOLE	OPSD 1006.02
SEWER SERVICE CONNECTION	OPSD 1104.01
WATER SERVICES	OPSD 1005.010
HYDRANT	



DETAIL SECTION AA
RETAINING WALL DETAIL
SCALE: NTS

BENCHMARK NOTE

ELEVATIONS ARE GEODETIC DATUM AND WERE DERIVED FROM GNSS OBSERVATIONS AND ARE NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.