Stormwater Management Report and Servicing Brief

250-252 Hinchey Avenue

City of Ottawa

PEARSON
ENGINEERING LTD.
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(Revised September 2020)

March 2020

19126

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Stormwater Management Report and Servicing Brief
250-252 Hinchey Ave, Ottawa

1. Introduction

PEARSON Engineering Ltd. has been retained by Terrain Development Consulting (Client) to prepare a Stormwater Management and Servicing Report in support of a proposed 3-storey residential building located at 250-252 Hinchey Ave in the City of Ottawa (City).

The subject property is approximately 0.06 ha in size and currently consists of two residential lots, zoned Residential Fourth Zone (R4H) and generally slopes from east to west. The Project site fronts onto Hinchey Ave to the East, and existing residential lots to the north, south, and west. The location of the site can be seen on Figure 1.

The objective of this report is to assess the existing municipal infrastructure in the vicinity of the Project, the onsite Stormwater Management (SWM) facilities and internal services required to service the proposed Project. The report also includes design calculations and a brief outline of the proposed internal services, as well as comments regarding the ability of the various secondary utilities to service the site.

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, October 2012
- City of Ottawa, Water Distribution Design Guidelines, July 2010

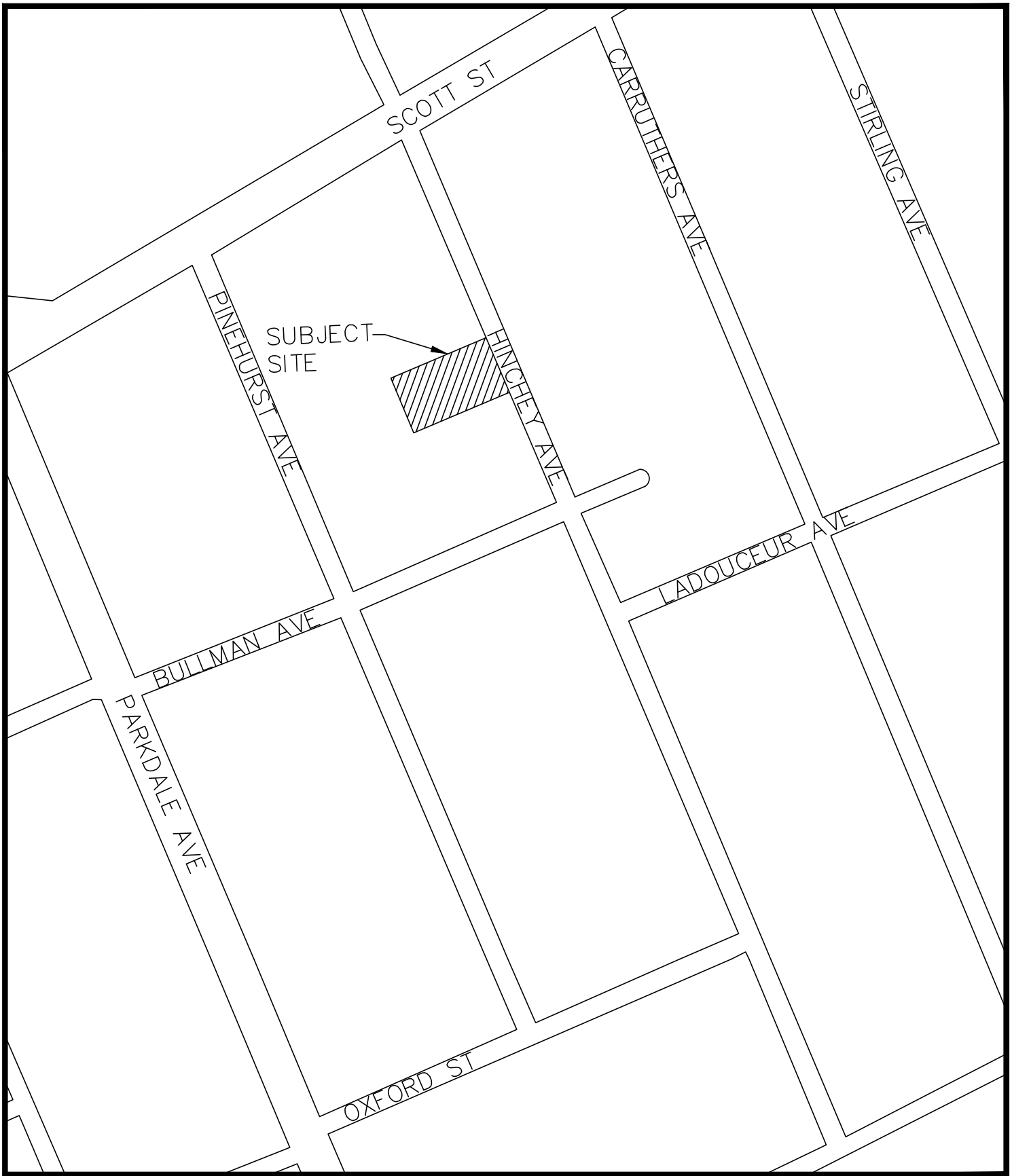
3. Design Population

The proposed development is to consist of a 3-storey residential building with a total of 16 apartment units ranging from 1 to 2 bedrooms. Based on City of Ottawa residential flows data, a design population of 1.40 persons per 1 bedroom unit and 2.10 persons per 2 bedroom unit were selected. This results in a maximum projected design population of 26 persons. Refer to Appendix A for calculations.

4. Water Supply and Distribution

4.1. Water Servicing Design Criteria

The site is to have a total population of 26 persons. Utilizing the City of Ottawa Guidelines for Domestic Water Use of 350 L/capita/day, an Average Day Demand (ADD) of 0.10 L/s is required. The Peak Rate factor of 14.3 was used in calculating a Peak Hour Demand (PHD) of 1.50 L/s for the development. Calculations for the domestic water requirements for the site can be found in Appendix A.



J.MURRAY–PROJECT MANAGEMENT
250–252 HINCHEY AVE
OTTAWA, ON

SITE LOCATION PLAN

PEARSON ENGINEERING LTD.
PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	JP	HORIZ SCALE	HORZ	PROJECT #	19126
DRAWN BY	JP	VERT SCALE	VERT	DRAWING #	FIG–1
CHECKED BY	MWD	DATE	FEBRUARY 2020	REVISION #	0

4.2. Internal Water Distribution System

The Project will be serviced by municipal water for domestic and fire service and designed as per City standards. A 200 mm diameter municipal watermain is located on the west side of Hinchey Avenue. The site will be serviced by connecting to the existing 200 mm diameter watermain with a 100 mm diameter domestic service. The proposed layout of the watermain can be seen on Drawing SS-1 in Appendix G.

4.3. Fire Fighting Requirements

An existing fire hydrant is located within 30m of the building on Hinchey Ave and will provide adequate firefighting coverage for the proposed apartment building. Fire flow calculations have been conducted and resulted in a required fire flow of 217 L/s. The Boundary Conditions for the site were provided by the City of Ottawa based on the project's domestic and fire flow demands. Table 1 below shows the City of Ottawa Water Design Guideline requirements for water pressure in a residential development as well as our corresponding watermain pressure values. Fire flow analysis, water pressure conversion and boundary conditions supplied by the City can be found 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	0.10	108.0	64.4	444.2	-	552
Peak Hour	1.50	114.7	74.0	510.0	276	552
Max Day + Fire Flow	1.14	101.4	38.7	379.5	140	552

Based on the values provided in Table 1, a max day + fire flow pressure of 379.5 kPa falls above the City of Ottawa pressure range of 140 kPa and 552 kPa. Therefore, the existing watermain's flow availability and residual pressures appear to be sufficient to service the proposed development.

5. Sanitary Servicing

5.1. Sanitary Design Criteria

The site is to have a total population of 26 persons. Utilizing the City of Ottawa Guidelines for domestic sewer use of 280 L/capita/day, an Average Daily Flow (ADF) of 0.08 L/s was calculated. Using a Peaking Factor of 3.69 for this project, a Peak Flow of 0.61 L/s was calculated for the project site.

5.2. Internal Sanitary Sewer System

The sanitary sewers will be constructed in accordance with the City of Ottawa's Engineering Standards and the Ministry of the Environment, Conservation and Parks (MECP) guidelines in order to service the Project. The proposed sanitary sewer system for this Project is to convey sanitary flow to the existing sanitary sewer on Hinchey Avenue. The sanitary system will drain by a 200 mm diameter gravity sanity sewer to a proposed manhole inside the site before draining to the existing 250 mm diameter sanitary sewer on Hinchey Ave. The existing 250 mm diameter sanitary sewer on Hinchey Ave runs south to north and has a capacity of 79 L/s assuming a slope of 1.75%. The proposed peak flow is 0.01% of the existing capacity and therefore the existing 250 mm diameter sanitary sewer is sufficient to convey the sanitary design flows. Refer to Drawing SS-1 for the proposed sanitary servicing layout.

We suggest that the City review the sanitary design flow from this Project with respect to the City's sanitary treatment capacities and confirm that capacity allocation is available for this development.

6. 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. SWM parameters have evolved from an understanding of the location and sensitivity of the site's natural systems. 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.

6.1. 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, Stormwater Management Guidelines for the Pinecrest Creek/Westboro Area, May 2019

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.

6.2. Existing Drainage Conditions

The Project site currently consists of two residential lots. Review of the site's current drainage conditions identifies that the site splits and drains to both the east and west. The east half of the site is conveyed via sheet flow to a storm sewer on Hinchey Ave, while the west half is conveyed via overland flow through to adjacent residential lots and ultimately to Pinehurst Ave. Details of existing storm drainage conditions are shown on Drawing STM-1.

Patterson Group completed a geotechnical investigation for the site in February 2020. The investigation revealed that the site is generally composed of a silty sand with some gravel and organic underlaid by limestone bedrock. The depth of bedrock ranges from 4.70 m to 5.90 m below the existing ground surface. Groundwater was found to be at a depth of 3.70 m to 4.08 m below the existing ground surface.

Allowable peak flows for the site were calculated using the site's current conditions and can be seen in Table 2 below. Detailed calculations for the existing drainage conditions can be found in Appendix A.

Table 2: Pre-Development Peak Flows

	2 Year Storm	5 Year Storm	10 Year Storm	25 Year Storm	50 Year Storm	100 Year Storm
Peak Flow to Hinchey Ave (m^3/s)	0.002	0.003	0.003	0.004	0.004	0.005
Peak Flow to Pinehurst Ave (m^3/s)	0.002	0.002	0.003	0.003	0.004	0.004
Total Site Peak Flow (m^3/s)	**0.004**	**0.005**	**0.006**	**0.007**	**0.008**	**0.009**

6.3. Proposed Storm Drainage System

The proposed drainage conditions from the site will generally follow pre-development. The drainage from the building rooftop will flow via roof drains to a proposed storm sewer which connects to an existing manhole on Hinchey Ave. The grassed area east of the proposed building will drain overland to Hinchey Ave and a small portion west of the building will drain overland ultimately to Pinehurst Ave as it currently does. Post-development storm drainage patterns can be found on Drawing STM-2.

6.4. Stormwater Quantity Control

The post-development runoff coefficient of 0.63 is greater than the pre-development coefficient of 0.59, therefore considerations were taken in regard to quantity control. Due to constraints on the site, underground storage is not feasible and as such flow control roof drains and rooftop storage have been proposed to reduce the post-development peak flow.

However, due to the size of the site, the roof area is not large enough to reduce the post-development peak flow to below pre-development values. The increase in peak flow draining to Hinchey Avenue was deemed nominal, and the peak flows draining westerly through residential lots to Pinehurst Ave has been reduced below pre-development.

Table 3: Post-Development Peak Flows

	2 Year Storm	5 Year Storm	10 Year Storm	25 Year Storm	50 Year Storm	100 Year Storm
Uncontrolled to Hinchey Ave (Area 1) (m^3/s)	0.001	0.002	0.002	0.002	0.003	0.003
Rooftop Area Drainage to Hinchey Ave (Area 2) (m^3/s)	0.006	0.008	0.009	0.011	0.012	0.013
Total to Hinchey Ave (m^3/s)	**0.007**	**0.010**	**0.011**	**0.013**	**0.015**	**0.016**
Uncontrolled to Pinehurst Ave (Area 3) (m^3/s)	0.001	0.002	0.002	0.002	0.003	0.003
Total Site (m^3/s)	**0.008**	**0.012**	**0.013**	**0.015**	**0.018**	**0.019**

Table 3 summarizes post-development peak flows for the development. By comparing Table 2 and Table 3, it can be seen that the post-development peak flow for the site are nominally larger than pre-development for all storm events.

6.4.1. Rooftop Control

In order to reduce post-development peak flows, MIFAB R1100-F or approved equivalent flow control weirs will be added on all four roof drains (Detail found in appendix C). The available storage on the roof and associated peak flows were calculated which resulted in a 100-year flow of 0.008 m^3/s, requiring 3.8 m^3 of storage at a depth of 0.075m on the roof. Quantity control measures can be seen on the Post Development Storm Catchment Plan drawing STM-2.

6.5. 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.

6.5.1. Permanent Quality Control

The development's sidewalk areas pose a potential risk to stormwater quality through the collection of grit, sand, and oils on the paved surface. Redevelopment of the site will increase the landscaped area and the majority of the site's runoff occurs on the rooftop of the proposed building, which is considered generally clean. However, due to the nature of the site and the nominal change in total imperviousness, no treatment is proposed to treat flows from the Project site. No further quality control requirements have been suggested by the Rideau Valley Conservation Authority (RVCA) as per the email found in Appendix D.

6.5.2. 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;
- Installation of a construction entrance mat to minimize transportation of sediment onto roadways;
- 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.

7. Conclusions

The proposed development will require the connection of sanitary and watermain services to the municipal services on Hinchey Ave.

Quantity control for the site is provided with flow control weirs on the roof drains. The redevelopment of the site proposes a nominal increase in imperviousness; therefore, quality controls are not proposed.

All of which is respectfully submitted,

Pearson Engineering Ltd.

Taylor Arkell, P.Eng.
Project Engineer

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

Appendix A

Water Servicing Calculations

250-252 Hinchey Ave., Ottawa
Water Flow Calculations

Design Criteria:

Demand per capita (Q):	350	L/cap/day
Peak Rate Factor (Max. Hour)	14.3	(Table 3-3: Peaking Factors, MOE Design Guidelines for Drinking-Water Systems)
Max. Day Factor	9.5	(Table 3-3: Peaking Factors, MOE Design Guidelines for Drinking-Water Systems)

Site Data:

Description		Density		Units		Flow Rate	
Apartments - Bachelor	1.40	person/unit		2 units		350 L/cap/d	
Apartments - 1 Bedroom	1.40	person/unit		9 units		350 L/cap/d	
Apartments - 2 Bedroom	2.10	person/unit		5 units		350 L/cap/d	Max Day Factor* 9.50 Peak Rate Factor* 14.30 *From MOE Manual based on Population of 30

Calculate Population

Pop. Apartments	=	1.40	x	11	+	2.10	x	5
Pop.	=	26	people					

Calculate Average Day Demand

ADD	=	350	x	26
ADD	=	9065	L/day	
ADD	=	0.10	L/s	

Calculate Max Day Flow

MDF	=	0.12	x	9.50
MDF	=	1.14	L/s	

Calculate Peak Hour Demand

PHD	=	0.10	x	14.30
	=	1.50	L/s	

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Hinchey Ave, Ottawa
Fire Flow Calculations - Townhouses

Location:	250-252 Hinchey Ave, Ottawa
OBC Occupancy	Residential Occupancies - Class C
Building Foot Print:	294 m^2
# of Stories:	4 Storey — **Townhouse Buidings**

Project: J Murray, Ottawa

Project Number: 19126

Construction Class	Charge
Wood Frame	1.5
Ordinary	1.0
Non-Combustible	0.8
Fire Resistive	0.6

Construction Class: Ordinary Construction

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

Automated Sprinkler Protection:		**Credit**	**Total**
NFPA 13 sprinkler standard	No	30%	
Standard Water Supply	No	10%	0%
Fully Supervised System	No	10%	

Contents Factor: Combustible — **Charge:** 0%

Exposure 1 (north) 5-Storey Apartment	Distance to Exposure Building (m) / Length - Height	4.7	20%
Exposure 2 (east) Townhouse - Block 3	Distance to Exposure Building (m) / Length - Height	21.3	10%
Exposure 3 (south) Townhouse - Block 5	Distance to Exposure Building (m) / Length - Height	2.0	25%
Exposure 4 (west) Ex. Commercial	Distance to Exposure Building (m) / Length - Height	20.5	10%

Separation	Charge
0 - 3.0 m	25%
3.1 - 10.0 m	20%
10.1 - 20.0 m	15%
20.1 - 30.0 m	10%
30.1 - 45.0 m	5%
> 45.1 m	0%

Total: 65% *no more than 75%

Are Buildings Contigious? No

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

Calculations: *C* = 1.0 — Ordinary Construction

RFF = 220 x C x √A *A* = 1,176 m^2

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

RFF = 7,544 L/min

Round to Nearest 1000 L/min — RFF = 8,000 L/min *Must be > 2000 L/min or < 45,000 L/min

Correction Factors:

Occupancy		0	L/min
Fire Flow Adjusted for Occupancy	**E =**	8,000	L/min
Reduction For Sprinkler	**F =**	0	L/min
Fire Flow w/ Sprinkler Reduction		8,000	L/min
Exposure Charge	**G =**	5,200	L/min
Fire Flow w/ Exposure Charge		13,200	L/min

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

RFF = 8,000 L/min - 0 L/min + 4,400 L/min
RFF = 12,000/min

Required Fire Flow: **RFF =** 13,200 L/min

Round to Nearest 1000 L/min — **RFF = 13,000 L/min**

RFF= 3,432 GPM

RFF = 217 L/s

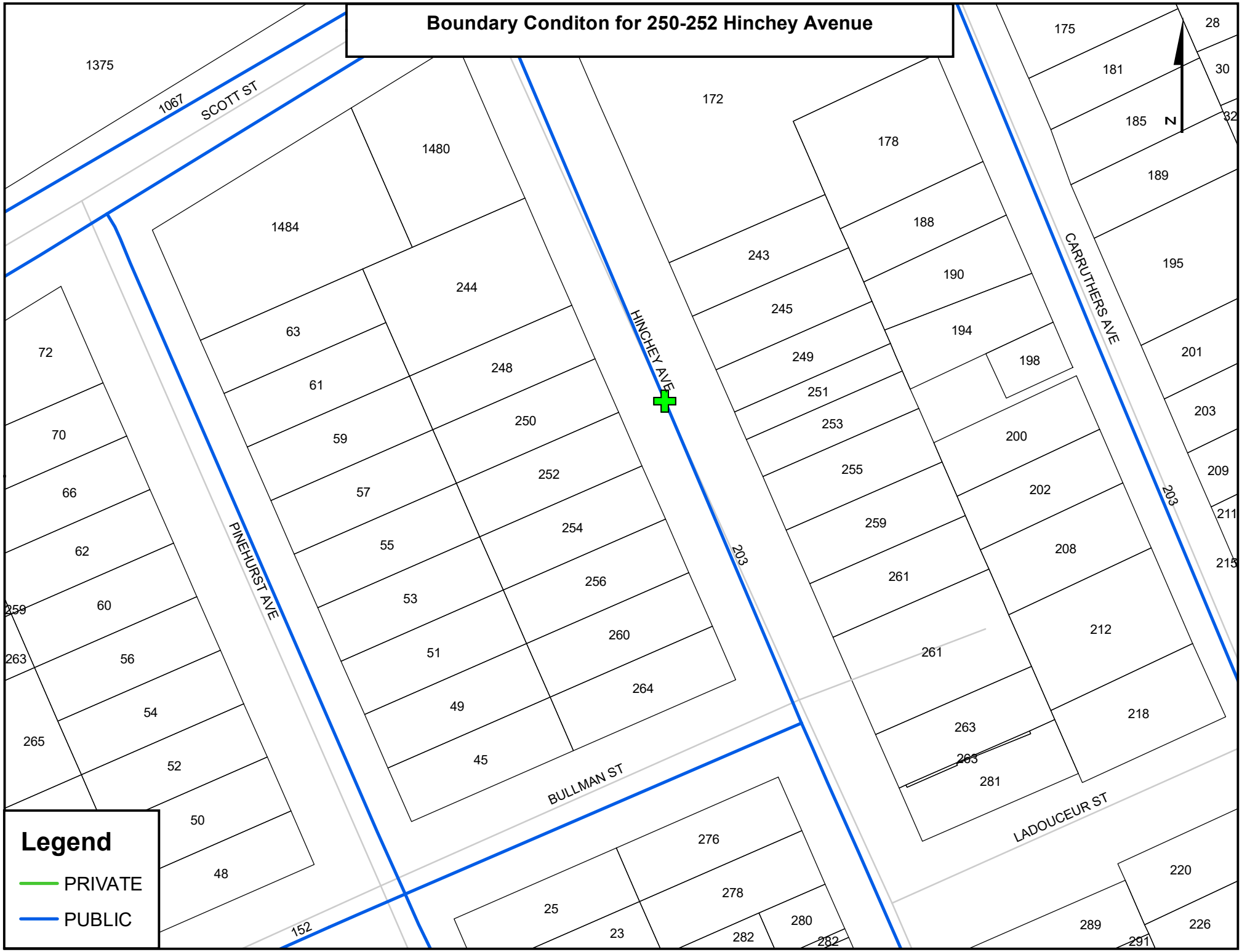
250-252 Hinchey Ave., Ottawa
Boundary Conditions Unit Conversion

Project: J Murray, Ottawa

Project Number: 19126

Street: Hinchey Ave **Ground Elev (m)** 62.66

	Height (m)	m H_2O	PSI	kPa
Avg. Day	108.0	45.3	64.4	444.2
Peak Hour	114.7	52.0	74.0	510.0
Max Day + Fire Flo	101.4	38.7	55.0	379.5


Boundary Conditon for 250-252 Hinchey Avenue
1375
1067
SCOTT ST
1480
1484
172
178
175
28
181
30
185
32
189
N
188
243
190
245
195
244
63
194
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218
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281
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48
276
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280
23
282
220
289
226
291
72
70
66
62
60
259
56
263
54
265
52
PINEHURST AVE
HINCHEY AVE
CARRUTHERS AVE
203
BULLMAN ST
LADOUCEUR ST
152
Legend
PRIVATE
PUBLIC

From:	Fraser, Mark
To:	Nicole Wells
Cc:	jennifer@terraindevelopment.ca; Gary Pearson; Gauthier, Steve
Subject:	RE: 250 Hinchey Ave - Fire Flow Calcs
Date:	August 19, 2020 4:37:48 PM
Attachments:	250-252 Hinchey Avenue August 2020.pdf 19126 - Wat & Fire Flows.pdf

Hi Nicole,

Please find below boundary conditions, HGL, for hydraulic analysis for **250-252 Hinchey Ave.** (zone 1W) assumed to be connected to the 203mm dia. watermain on Hinchey Avenue. (see attached PDF for location).

Minimum HGL = 108.0m
Maximum HGL = 114.7m
MaxDay + FireFlow (150 L/s) = 101.4m

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

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

Regards,

Mark Fraser, P.Eng.
Engineer, Infrastructure Projects (T)
Rail Construction Program | Programme de construction du train léger
Transportation Services Department | Direction générale des transports
City of Ottawa | Ville d'Ottawa
141 Laurier Avenue W. Suite 300 | 141 avenue Laurier O., bureau 300
Ottawa, ON K2P 2P7
Email: Mark.Fraser@ottawa.ca

From: Nicole Wells <nwells@pearsoneng.com>
Sent: August 13, 2020 9:09 AM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Cc: jennifer@terraindevelopment.ca; Gary Pearson <gpearson@pearsoneng.com>
Subject: RE: 250 Hinchey Ave - Fire Flow Calcs

Appendix B

Sanitary Servicing Calculations

250-252 Hinchey Ave., Ottawa
Sanitary Flow Calculations

Design Criteria

Flow per capita (Q): 280 L/cap/day

Peak Flow $Qp = P * Q * M / 86400$

Peaking Factor (Harmon Formula) $M = 1 + ((14 / (4 + (P / 1000) ^ 0.5)) \times 0.8)$ 2 <= "M" <= 4

Site Data

Description	Density	Units	Flow Rate
Apartments - Bachelor	1.40 person/unit	2 units	280 L/cap/d
Apartments - 1 Bedroom	1.40 person/unit	9 units	280 L/cap/d
Apartments - 2 Bedroom	2.10 person/unit	5 units	280 L/cap/d

Calculate Population

Pop. Apartments = 1.40 x 11 + 2.10 x 5

Pop. = 26 people

Calculate Average Daily Demand

$$ADD = \frac{280 \times 26}{86400}$$

ADD = 0.08 L/s

Calculate Peaking Factor

$$M = 1 + \frac{14}{4 + \left(\frac{26}{1{,}000}\right)^{0.5}} \times 0.8$$

M = 3.69

Infiltration Allowance = 0.33 x 0.91

= 0.30 L/s

Calculate Peak Flow

Qp = 0.08 x 3.69 + 0.30

= 0.61 L/s

250-252 Hinchey Ave., Ottawa
Sanitary Sewer Pipe Design Sheet

n = 0.013

$Q_{Residential}$ = (P/1000)*Q*M/86.4) (Q = 280 L/day/person)

$M = 1+(14/(4+(P/1000)^{0.5}))$ (2 <= M <= 4)

Q_i = 0.33 L/ha/s

Date: 01-Sep-20

File: 19126

Contract/Project: Hinchey Ave, Ottawa

Areas	Manhole		Dwelling Units	Area	Pop.	Pop.	M	Residential Flow	Length	Q_i (ACC.)	Total Q	D	S	Q Full	V Full	Percent Full
	From	To		(ha)	(P)	(ACC.)		(L/s)	(m)	(L/s)	(L/s)	(mm)	(%)	(L/s)	(m/s)	(%)
-	SAN CAP	SAN MH1	16	0.06	26	26	3.69	0.31	3.2	0.30	0.61	200	1.00	32.80	1.04	1.86
-	SAN MH	EX. SAN MH	0	0.00	0.00	26	3.69	0.31	10.8	0.30	0.61	200	1.00	32.80	1.04	1.86

Appendix C

Stormwater Management Calculations

250-252 Hinchey Ave., 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
Pre-Development	Total Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)		
1	285	34	80	153	0	18		0.82
2	329	240	7	79	0	3		0.39
Pre Total	614	274	87	232	0	21		0.59
Post-Development	Total Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)		
1	107	55	0	0	0	52		0.54
2	207	181	0	0	0	26		0.29
3	300	0	0	300	0	0		0.90
Post Total	614	236	0	300	0	78		0.63

250-252 Hinchey Ave., Ottawa
Pre-Development Peak Flows

Storm Event (yrs)	City of Ottawa Coeff A	Coeff B	Coeff C
2	732.95	6.20	0.81
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

Rational Method
Q = CIA / 360

Where:
- Q - Flow Rate (m^3/s)
- C - Rational Method Runoff Coefficient
- I - Storm Intensity (mm/hr)
- A - Area (ha.)

Area Number	1		2	
Area	0.029	ha	0.033	ha
Runoff Coefficient	0.50	*	0.39	
Time of Concentration	20	min	20	min
Return Rate	2	year	2	year
Runoff Coefficient	0.50		0.39	
Rainfall Intensity	52.0	mm/hr	52.0	mm/hr
Pre-Development Peak Flow	0.002	m^3/s	0.002	m^3/s
Return Rate	5	year	5	year
Runoff Coefficient	0.50		0.39	
Rainfall Intensity	70.3	mm/hr	70.3	mm/hr
Pre-Development Peak Flow	0.003	m^3/s	0.002	m^3/s
Return Rate	10	year	10	year
Runoff Coefficient	0.50		0.39	
Rainfall Intensity	82.2	mm/hr	82.2	mm/hr
Pre-Development Peak Flow	0.003	m^3/s	0.003	m^3/s
Return Rate	25	year	25	year
Runoff Coefficient	0.50		0.39	
Rainfall Intensity	97.3	mm/hr	97.3	mm/hr
Pre-Development Peak Flow	0.004	m^3/s	0.003	m^3/s
Return Rate	50	year	50	year
Runoff Coefficient	0.50		0.39	
Rainfall Intensity	108.5	mm/hr	108.5	mm/hr
Pre-Development Peak Flow	0.004	m^3/s	0.004	m^3/s
Return Rate	100	year	100	year
Runoff Coefficient	0.50		0.39	
Rainfall Intensity	120.0	mm/hr	120.0	mm/hr
Pre-Development Peak Flow	0.005	m^3/s	0.004	m^3/s

*pre-development coefficient cannot be greater than 0.5

*pre-development coefficient cannot be greater than 0.5 as per City of Ottawa Guidelines

250-252 Hinchey Ave., Ottawa
Post-Development Peak Flows

City of Ottawa

Storm Event (yrs)	Coeff A	Coeff B	Coeff C
2	**732.95**	**6.20**	**0.81**
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**

Rational Method
Q = CIA / 360

Where:
- Q - Flow Rate (m^3/s)
- C - Rational Method Runoff Coefficient
- I - Storm Intensity (mm/hr)
- A - Area (ha.)

	Uncontrolled Area East to Hinchey Ave	Uncontrolled Area West to Pinhurst Ave	Rooftop Area to East Hinchey Ave
Area Number	1	2	3
Area	0.01 ha	0.021 ha	0.030 ha
Runoff Coefficient	0.54	0.29	0.90
Time of Concentration	10 min	10 min	10 min
Return Rate	2 year	2 year	2 year
Runoff Coefficient	0.54	0.29	0.90
Rainfall Intensity	76.8 mm/hr	76.8 mm/hr	76.8 mm/hr
Post-Development Peak Flow	0.001 m^3/s	0.001 m^3/s	0.006 m^3/s
Return Rate	5 year	5 year	5 year
Runoff Coefficient	0.54	0.29	0.90
Rainfall Intensity	104.2 mm/hr	104.2 mm/hr	104.2 mm/hr
Post-Development Peak Flow	0.002 m^3/s	0.002 m^3/s	0.008 m^3/s
Return Rate	10 year	10 year	10 year
Runoff Coefficient	0.54	0.29	0.90
Rainfall Intensity	122.1 mm/hr	122.1 mm/hr	122.1 mm/hr
Post-Development Peak Flow	0.002 m^3/s	0.002 m^3/s	0.009 m^3/s
Return Rate	25 year	25 year	25 year
Runoff Coefficient	0.54	0.29	0.90
Rainfall Intensity	144.7 mm/hr	144.7 mm/hr	144.7 mm/hr
Post-Development Peak Flow	0.002 m^3/s	0.002 m^3/s	0.011 m^3/s
Return Rate	50 year	50 year	50 year
Runoff Coefficient	0.54	0.29	0.90
Rainfall Intensity	161.5 mm/hr	161.5 mm/hr	161.5 mm/hr
Post-Development Peak Flow	0.003 m^3/s	0.003 m^3/s	0.012 m^3/s
Return Rate	100 year	100 year	100 year
Runoff Coefficient	0.54	0.29	0.90
Rainfall Intensity	178.6 mm/hr	178.6 mm/hr	178.6 mm/hr
Post-Development Peak Flow	0.003 m^3/s	0.003 m^3/s	0.013 m^3/s

250-252 Hinchey Ave., Ottawa
Quantity Control Volume Calculations (Uncontrolled)

DATE: 02-Sep-20
FILE: 19126
CONTRACT/PROJECT: 250-252 Hinchey Ave
COMPLETED BY: NW

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
0.06	**0.03**	**20**	**1**	**0.59**	**0.90**

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	**0.59**	**0.59**	**0.59**	**0.65**	**0.71**	**0.73**
I	**52.03**	**70.25**	**82.21**	**97.26**	**108.47**	**119.95**
A	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**
Q	**0.005**	**0.007**	**0.008**	**0.011**	**0.013**	**0.015**

Note: Q= 0.00278CIA

Rainfall Station	**City of Ottawa**

SWM Pond Design Input

Storm Event (yrs)	Chicago Storm Coefficient	Chicago Storm Coefficient	Chicago Storm Coefficient	Allowable Outflow	Post Development Runoff Coefficient
	A	B	C	(m3/s)	
2	732.95	6.20	0.81	**0.003**	**0.90**
5	998.07	6.05	0.81	**0.004**	**0.90**
10	1174.18	6.01	0.82	**0.004**	**0.90**
25	1402.88	6.02	0.82	**0.006**	**0.99**
50	1569.58	6.01	0.82	**0.008**	**1**
100	1735.69	6.01	0.82	**0.009**	**1**

Results

Storm Event (yrs)	Storage m^3	Time min
2	**1.44**	**22**
5	**1.96**	**22**
10	**2.30**	**22**
25	**2.42**	**20**
50	**1.56**	**17**
100	**1.06**	**16**

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

Time (min)	2 Year					5 Year					10 Year				
	Intensity mm/hr	Inflow m^3/s	Outflow m^3/s	Storage m^3	Difference	Intensity mm/hr	Inflow m^3/s	Outflow m^3/s	Storage m^3	Difference	Intensity mm/hr	Inflow m^3/s	Outflow m^3/s	Storage m^3	Difference
1	148.14	0.011	0.003	-1	0	203.51	0.015	0.004	-1	1	239.57	0.018	0.004	-2	1
2	133.33	0.010	0.003	-1	0	182.69	0.014	0.004	-1	0	214.88	0.016	0.004	-1	1
3	121.46	0.009	0.003	0	0	166.09	0.012	0.004	0	0	195.22	0.015	0.004	0	0
4	111.72	0.008	0.003	0	0	152.51	0.011	0.004	0	0	179.16	0.013	0.004	0	0
5	103.57	0.008	0.003	0	0	141.18	0.011	0.004	0	0	165.77	0.012	0.004	1	0
6	96.64	0.007	0.003	0	0	131.57	0.010	0.004	1	0	154.42	0.012	0.004	1	0
7	90.66	0.007	0.003	1	0	123.30	0.009	0.004	1	0	144.67	0.011	0.004	1	0
8	85.46	0.006	0.003	1	0	116.11	0.009	0.004	1	0	136.19	0.010	0.004	1	0
9	80.87	0.006	0.003	1	0	109.79	0.008	0.004	1	0	128.74	0.010	0.004	2	0
10	76.81	0.006	0.003	1	0	104.19	0.008	0.004	1	0	122.14	0.009	0.004	2	0
11	73.17	0.005	0.003	1	0	99.19	0.007	0.004	2	0	116.25	0.009	0.004	2	0
12	69.89	0.005	0.003	1	0	94.70	0.007	0.004	2	0	110.96	0.008	0.004	2	0
13	66.93	0.005	0.003	1	0	90.63	0.007	0.004	2	0	106.17	0.008	0.004	2	0
14	64.23	0.005	0.003	1	0	86.93	0.007	0.004	2	0	101.82	0.008	0.004	2	0
15	61.77	0.005	0.003	1	0	83.56	0.006	0.004	2	0	97.85	0.007	0.004	2	0
16	59.50	0.004	0.003	1	0	80.46	0.006	0.004	2	0	94.21	0.007	0.004	2	0
17	57.42	0.004	0.003	1	0	77.61	0.006	0.004	2	0	90.86	0.007	0.004	2	0
18	55.49	0.004	0.003	1	0	74.97	0.006	0.004	2	0	87.76	0.007	0.004	2	0
19	53.70	0.004	0.003	1	0	72.53	0.005	0.004	2	0	84.88	0.006	0.004	2	0
20	52.03	0.004	0.003	1	0	70.25	0.005	0.004	2	0	82.21	0.006	0.004	2	0
21	50.48	0.004	0.003	1	0	68.13	0.005	0.004	2	0	79.72	0.006	0.004	2	0
22	49.02	0.004	0.003	1	0	66.15	0.005	0.004	2	0	77.39	0.006	0.004	2	0
23	47.66	0.004	0.003	1	0	64.29	0.005	0.004	2	0	75.21	0.006	0.004	2	0
24	46.37	0.003	0.003	1	0	62.54	0.005	0.004	2	0	73.15	0.005	0.004	2	0
25	45.17	0.003	0.003	1	0	60.90	0.005	0.004	2	0	71.22	0.005	0.004	2	0
26	44.03	0.003	0.003	1	0	59.35	0.004	0.004	2	0	69.40	0.005	0.004	2	0
27	42.95	0.003	0.003	1	0	57.88	0.004	0.004	2	0	67.68	0.005	0.004	2	0
28	41.93	0.003	0.003	1	0	56.49	0.004	0.004	2	0	66.05	0.005	0.004	2	0
29	40.96	0.003	0.003	1	0	55.18	0.004	0.004	2	0	64.51	0.005	0.004	2	0
30	40.04	0.003	0.003	1	0	53.93	0.004	0.004	2	0	63.05	0.005	0.004	2	0
31	39.17	0.003	0.003	1	0	52.74	0.004	0.004	2	0	61.65	0.005	0.004	2	0
32	38.34	0.003	0.003	1	0	51.61	0.004	0.004	2	0	60.33	0.005	0.004	2	0
33	37.54	0.003	0.003	1	0	50.53	0.004	0.004	2	0	59.06	0.004	0.004	2	0
34	36.78	0.003	0.003	1	-1	49.50	0.004	0.004	2	-2	57.85	0.004	0.004	2	-2
35	36.06	0.003	0.000	0	0	48.52	0.004	0.000	0	0	56.70	0.004	0.000	0	0
36	35.37	0.003	0.000	0	0	47.58	0.004	0.000	0	0	55.60	0.004	0.000	0	0
37	34.70	0.003	0.000	0	0	46.67	0.004	0.000	0	0	54.54	0.004	0.000	0	0
38	34.06	0.003	0.000	0	0	45.81	0.003	0.000	0	0	53.53	0.004	0.000	0	0
39	33.45	0.003	0.000	0	0	44.98	0.003	0.000	0	0	52.55	0.004	0.000	0	0
40	32.86	0.002	0.000	0	0	44.18	0.003	0.000	0	0	51.62	0.004	0.000	0	0
41	32.30	0.002	0.000	0	0	43.42	0.003	0.000	0	0	50.72	0.004	0.000	0	0
42	31.76	0.002	0.000	0	0	42.68	0.003	0.000	0	0	49.86	0.004	0.000	0	0
43	31.23	0.002	0.000	0	0	41.97	0.003	0.000	0	0	49.03	0.004	0.000	0	0
44	30.73	0.002	0.000	0	0	41.29	0.003	0.000	0	0	48.23	0.004	0.000	0	0
45	30.24	0.002	0.000	0	0	40.63	0.003	0.000	0	0	47.45	0.004	0.000	0	0

Time (min)	25 Year					50 Year					100 Year				
	Intensity mm/hr	Inflow m^3/s	Outflow m^3/s	Storage m^3	Difference	Intensity mm/hr	Inflow m^3/s	Outflow m^3/s	Storage m^3	Difference	Intensity mm/hr	Inflow m^3/s	Outflow m^3/s	Storage m^3	Difference
1	284.43	0.023	0.006	-2	1	317.75	0.026	0.008	-3	1	351.38	0.029	0.009	-4	1
2	255.03	0.021	0.006	-1	1	284.86	0.024	0.008	-2	1	315.00	0.026	0.009	-3	1
3	231.63	0.019	0.006	-1	1	258.67	0.022	0.008	-1	1	286.05	0.024	0.009	-2	1
4	212.51	0.018	0.006	0	0	237.29	0.020	0.008	-1	1	262.41	0.022	0.009	-1	1
5	196.58	0.016	0.006	0	0	219.48	0.018	0.008	0	0	242.70	0.020	0.009	-1	0
6	183.08	0.015	0.006	1	0	204.38	0.017	0.008	0	0	226.01	0.019	0.009	0	0
7	171.48	0.014	0.006	1	0	191.41	0.016	0.008	0	0	211.67	0.018	0.009	0	0
8	161.39	0.013	0.006	1	0	180.14	0.015	0.008	1	0	199.20	0.017	0.009	0	0
9	152.54	0.013	0.006	2	0	170.24	0.014	0.008	1	0	188.25	0.016	0.009	0	0
10	144.69	0.012	0.006	2	0	161.47	0.013	0.008	1	0	178.56	0.015	0.009	1	0
11	137.69	0.011	0.006	2	0	153.65	0.013	0.008	1	0	169.91	0.014	0.009	1	0
12	131.40	0.011	0.006	2	0	146.62	0.012	0.008	1	0	162.13	0.014	0.009	1	0
13	125.71	0.010	0.006	2	0	140.26	0.012	0.008	1	0	155.11	0.013	0.009	1	0
14	120.55	0.010	0.006	2	0	134.49	0.011	0.008	1	0	148.72	0.012	0.009	1	0
15	115.83	0.010	0.006	2	0	129.22	0.011	0.008	2	0	142.89	0.012	0.009	1	0
16	111.50	0.009	0.006	2	0	124.39	0.010	0.008	2	0	137.55	0.011	0.009	1	0
17	107.52	0.009	0.006	2	0	119.94	0.010	0.008	2	0	132.63	0.011	0.009	1	0
18	103.84	0.009	0.006	2	0	115.83	0.010	0.008	2	0	128.08	0.011	0.009	1	0
19	100.43	0.008	0.006	2	0	112.01	0.009	0.008	2	0	123.87	0.010	0.009	1	0
20	97.26	0.008	0.006	2	0	108.47	0.009	0.008	2	0	119.95	0.010	0.009	1	0
21	94.30	0.008	0.006	2	0	105.17	0.009	0.008	1	0	116.30	0.010	0.009	1	0
22	91.53	0.008	0.006	2	0	102.08	0.009	0.008	1	0	112.88	0.009	0.009	1	-1
23	88.94	0.007	0.006	2	0	99.18	0.008	0.008	1	0	109.68	0.009	0.000	0	0
24	86.51	0.007	0.006	2	0	96.47	0.008	0.008	1	0	106.68	0.009	0.000	0	0
25	84.22	0.007	0.006	2	0	93.91	0.008	0.008	1	-1	103.85	0.009	0.000	0	0
26	82.05	0.007	0.006	2	0	91.50	0.008	0.000	0	0	101.18	0.008	0.000	0	0
27	80.01	0.007	0.006	2	0	89.22	0.007	0.000	0	0	98.66	0.008	0.000	0	0
28	78.08	0.006	0.006	2	0	87.06	0.007	0.000	0	0	96.27	0.008	0.000	0	0
29	76.25	0.006	0.006	2	0	85.02	0.007	0.000	0	0	94.01	0.008	0.000	0	0
30	74.51	0.006	0.006	2	0	83.08	0.007	0.000	0	0	91.87	0.008	0.000	0	0
31	72.86	0.006	0.006	2	-2	81.23	0.007	0.000	0	0	89.83	0.007	0.000	0	0
32	71.29	0.006	0.000	0	0	79.47	0.007	0.000	0	0	87.89	0.007	0.000	0	0
33	69.79	0.006	0.000	0	0	77.80	0.006	0.000	0	0	86.03	0.007	0.000	0	0
34	68.36	0.006	0.000	0	0	76.20	0.006	0.000	0	0	84.27	0.007	0.000	0	0
35	66.99	0.006	0.000	0	0	74.68	0.006	0.000	0	0	82.58	0.007	0.000	0	0
36	65.68	0.005	0.000	0	0	73.22	0.006	0.000	0	0	80.96	0.007	0.000	0	0
37	64.43	0.005	0.000	0	0	71.82	0.006	0.000	0	0	79.42	0.007	0.000	0	0
38	63.22	0.005	0.000	0	0	70.48	0.006	0.000	0	0	77.93	0.006	0.000	0	0
39	62.07	0.005	0.000	0	0	69.19	0.006	0.000	0	0	76.51	0.006	0.000	0	0
40	60.97	0.005	0.000	0	0	67.95	0.006	0.000	0	0	75.15	0.006	0.000	0	0
41	59.90	0.005	0.000	0	0	66.77	0.006	0.000	0	0	73.83	0.006	0.000	0	0
42	58.88	0.005	0.000	0	0	65.62	0.005	0.000	0	0	72.57	0.006	0.000	0	0
43	57.89	0.005	0.000	0	0	64.52	0.005	0.000	0	0	71.35	0.006	0.000	0	0
44	56.94	0.005	0.000	0	0	63.46	0.005	0.000	0	0	70.18	0.006	0.000	0	0
45	56.03	0.005	0.000	0	0	62.44	0.005	0.000	0	0	69.05	0.006	0.000	0	0

🟨 : Maximum Storage Volume

250-252 Hinchey Ave., Ottawa
Roof Drain Calculations

Roof Drain Weir Geometry (see attached specs):

Weir Area (A_1)	=	2004.71	mm^2
Weir Centroid (C)	=	52.86	mm
Top Area (A_2)	=	791.73	mm^2

Flow (Q) for H < 0.12 m = $0.80 \times A_1 \times (2 \times 9.81 \times H)^{0.5}$

Flow (Q) for H > 0.12 m = $0.80 \times A_1 \times (2 \times 9.81 \times H)^{0.5} + 0.80 \times A_2 \times (2 \times 9.81 \times H)^{0.5}$

Rooftop Stage-Discharge Table:

Elevation (m)	Total Roof Flow (m^3/s)
0.000	0.000
0.025	0.004
0.050	0.006
0.075	0.008

100-Year Storm Results (From following Rooftop Storage Colume Calculation Spreadsheet)

Total Flow	=	0.008	m^3/s
Total Storage	=	3.8	m^3
Elevation	=	0.075	m

Calculation Notes:

1. Total roof drain weir height is 121.9 mm. Flow up to an elevation 0.12 m is calculated as orifice flow through the weir. Flow at an elevation higher than 0.12 m is calculated as orifice flow through the weir and the top opening.
2. Total roof flow is the flow through all 4 roof weirs.

PEARSON ENGINEERING LTD.

250-252 Hinchey Ave., Ottawa
Quantity Control Volume Calculations (Rooftop)

DATE:	02-Sep-20
FILE:	19126
CONTRACT/PROJECT:	250-252 Hinchey Ave
COMPLETED BY:	NW

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
0.03	0.03	10	1	0.90	0.90

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

Rooftop Design Input

Storm Event (yrs)	Chicago Storm Coefficient A	Chicago Storm Coefficient B	Chicago Storm Coefficient C	Allowable Outflow (m3/s)	Post Development Runoff Coefficient
2	732.95	6.20	0.81	0.008	0.90
5	998.07	6.05	0.81	0.008	0.90
10	1174.18	6.01	0.82	0.008	0.90
25	1402.88	6.02	0.82	0.008	0.90
50	1569.58	6.01	0.82	0.008	0.90
100	1735.69	6.01	0.82	0.008	0.90

Results

Storm Event (yrs)	Storage m^3	Time min
2	0.0	5
5	0.0	10
10	0.9	12
25	2.0	14
50	2.9	16
100	3.8	17

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

Time (min)	2 Year Intensity mm/hr	2 Year Inflow m^3/s	2 Year Outflow m^3/s	2 Year Storage m^3	Difference	5 Year Intensity mm/hr	5 Year Inflow m^3/s	5 Year Outflow m^3/s	5 Year Storage m^3	Difference	10 Year Intensity mm/hr	10 Year Inflow m^3/s	10 Year Outflow m^3/s	10 Year Storage m^3	Difference	25 Year Intensity mm/hr	25 Year Inflow m^3/s	25 Year Outflow m^3/s	25 Year Storage m^3	Difference	50 Year Intensity mm/hr	50 Year Inflow m^3/s	50 Year Outflow m^3/s	50 Year Storage m^3	Difference	100 Year Intensity mm/hr	100 Year Inflow m^3/s	100 Year Outflow m^3/s	100 Year Storage m^3	Difference
1	148.14	0.011	0.008	-2	0	203.51	0.015	0.008	-2	0	239.57	0.018	0.008	-1	1	284.43	0.021	0.008	-1	1	317.75	0.024	0.008	-1	1	351.38	0.026	0.008	-1	1
2	133.33	0.010	0.008	-2	0	182.69	0.014	0.008	-1	0	214.88	0.016	0.008	-1	0	255.03	0.019	0.008	-1	1	284.86	0.021	0.008	0	1	315.00	0.024	0.008	0	1
3	121.46	0.009	0.008	-1	0	166.09	0.012	0.008	-1	0	195.22	0.015	0.008	0	0	231.63	0.017	0.008	0	0	258.67	0.019	0.008	0	1	286.05	0.021	0.008	1	1
4	111.72	0.008	0.008	-1	1	152.51	0.011	0.008	-1	0	179.16	0.013	0.008	0	0	212.51	0.016	0.008	1	0	237.29	0.018	0.008	1	0	262.41	0.020	0.008	1	1
5	103.57	0.008	0.000	0	0	141.18	0.011	0.008	0	0	165.77	0.012	0.008	0	0	196.58	0.015	0.008	1	0	219.48	0.016	0.008	1	0	242.70	0.018	0.008	2	0
6	96.64	0.007	0.000	0	0	131.57	0.010	0.008	0	0	154.42	0.012	0.008	0	0	183.08	0.014	0.008	1	0	204.38	0.015	0.008	2	0	226.01	0.017	0.008	2	0
7	90.66	0.007	0.000	0	0	123.30	0.009	0.008	0	0	144.67	0.011	0.008	1	0	171.48	0.013	0.008	1	0	191.41	0.014	0.008	2	0	211.67	0.016	0.008	3	0
8	85.46	0.006	0.000	0	0	116.11	0.009	0.008	0	0	136.19	0.010	0.008	1	0	161.39	0.012	0.008	2	0	180.14	0.014	0.008	2	0	199.20	0.015	0.008	3	0
9	80.87	0.006	0.000	0	0	109.79	0.008	0.008	0	0	128.74	0.010	0.008	1	0	152.54	0.011	0.008	2	0	170.24	0.013	0.008	2	0	188.25	0.014	0.008	3	0
10	76.81	0.006	0.000	0	0	104.19	0.008	0.008	0	0	122.14	0.009	0.008	1	0	144.69	0.011	0.008	2	0	161.47	0.012	0.008	3	0	178.56	0.013	0.008	3	0
11	73.17	0.005	0.000	0	0	99.19	0.007	0.000	0	0	116.25	0.009	0.008	1	0	137.69	0.010	0.008	2	0	153.65	0.012	0.008	3	0	169.91	0.013	0.008	4	0
12	69.89	0.005	0.000	0	0	94.70	0.007	0.000	0	0	110.96	0.008	0.008	1	0	131.40	0.010	0.008	2	0	146.62	0.011	0.008	3	0	162.13	0.012	0.008	4	0
13	66.93	0.005	0.000	0	0	90.63	0.007	0.000	0	0	106.17	0.008	0.008	1	-1	125.71	0.009	0.008	2	0	140.26	0.011	0.008	3	0	155.11	0.012	0.008	4	0
14	64.23	0.005	0.000	0	0	86.93	0.007	0.000	0	0	101.82	0.008	0.000	0	0	120.55	0.009	0.008	2	0	134.49	0.010	0.008	3	0	148.72	0.011	0.008	4	0
15	61.77	0.005	0.000	0	0	83.56	0.006	0.000	0	0	97.85	0.007	0.000	0	0	115.83	0.009	0.008	2	0	129.22	0.010	0.008	3	0	142.89	0.011	0.008	4	0
16	59.50	0.004	0.000	0	0	80.46	0.006	0.000	0	0	94.21	0.007	0.000	0	0	111.50	0.008	0.008	2	0	124.39	0.009	0.008	3	0	137.55	0.010	0.008	4	0
17	57.42	0.004	0.000	0	0	77.61	0.006	0.000	0	0	90.86	0.007	0.000	0	0	107.52	0.008	0.008	2	0	119.94	0.009	0.008	3	0	132.63	0.010	0.008	4	0
18	55.49	0.004	0.000	0	0	74.97	0.006	0.000	0	0	87.76	0.007	0.000	0	0	103.84	0.008	0.008	2	-2	115.83	0.009	0.008	3	0	128.08	0.010	0.008	4	0
19	53.70	0.004	0.000	0	0	72.53	0.005	0.000	0	0	84.88	0.006	0.000	0	0	100.43	0.008	0.000	0	0	112.01	0.008	0.008	3	0	123.87	0.009	0.008	4	0
20	52.03	0.004	0.000	0	0	70.25	0.005	0.000	0	0	82.21	0.006	0.000	0	0	97.26	0.007	0.000	0	0	108.47	0.008	0.008	3	0	119.95	0.009	0.008	4	0
21	50.48	0.004	0.000	0	0	68.13	0.005	0.000	0	0	79.72	0.006	0.000	0	0	94.30	0.007	0.000	0	0	105.17	0.008	0.008	3	-3	116.30	0.009	0.008	4	0
22	49.02	0.004	0.000	0	0	66.15	0.005	0.000	0	0	77.39	0.006	0.000	0	0	91.53	0.007	0.000	0	0	102.08	0.008	0.000	0	0	112.88	0.008	0.008	4	0
23	47.66	0.004	0.000	0	0	64.29	0.005	0.000	0	0	75.21	0.006	0.000	0	0	88.94	0.007	0.000	0	0	99.18	0.007	0.000	0	0	109.68	0.008	0.008	4	0
24	46.37	0.003	0.000	0	0	62.54	0.005	0.000	0	0	73.15	0.005	0.000	0	0	86.51	0.006	0.000	0	0	96.47	0.007	0.000	0	0	106.68	0.008	0.008	4	0
25	45.17	0.003	0.000	0	0	60.90	0.005	0.000	0	0	71.22	0.005	0.000	0	0	84.22	0.006	0.000	0	0	93.91	0.007	0.000	0	0	103.85	0.008	0.008	4	-4
26	44.03	0.003	0.000	0	0	59.35	0.004	0.000	0	0	69.40	0.005	0.000	0	0	82.05	0.006	0.000	0	0	91.50	0.007	0.000	0	0	101.18	0.008	0.000	0	0
27	42.95	0.003	0.000	0	0	57.88	0.004	0.000	0	0	67.68	0.005	0.000	0	0	80.01	0.006	0.000	0	0	89.22	0.007	0.000	0	0	98.66	0.007	0.000	0	0
28	41.93	0.003	0.000	0	0	56.49	0.004	0.000	0	0	66.05	0.005	0.000	0	0	78.08	0.006	0.000	0	0	87.06	0.007	0.000	0	0	96.27	0.007	0.000	0	0
29	40.96	0.003	0.000	0	0	55.18	0.004	0.000	0	0	64.51	0.005	0.000	0	0	76.25	0.006	0.000	0	0	85.02	0.006	0.000	0	0	94.01	0.007	0.000	0	0
30	40.04	0.003	0.000	0	0	53.93	0.004	0.000	0	0	63.05	0.005	0.000	0	0	74.51	0.006	0.000	0	0	83.08	0.006	0.000	0	0	91.87	0.007	0.000	0	0
31	39.17	0.003	0.000	0	0	52.74	0.004	0.000	0	0	61.65	0.005	0.000	0	0	72.86	0.005	0.000	0	0	81.23	0.006	0.000	0	0	89.83	0.007	0.000	0	0
32	38.34	0.003	0.000	0	0	51.61	0.004	0.000	0	0	60.33	0.005	0.000	0	0	71.29	0.005	0.000	0	0	79.47	0.006	0.000	0	0	87.89	0.007	0.000	0	0
33	37.54	0.003	0.000	0	0	50.53	0.004	0.000	0	0	59.06	0.004	0.000	0	0	69.79	0.005	0.000	0	0	77.80	0.006	0.000	0	0	86.03	0.006	0.000	0	0
34	36.78	0.003	0.000	0	0	49.50	0.004	0.000	0	0	57.85	0.004	0.000	0	0	68.36	0.005	0.000	0	0	76.20	0.006	0.000	0	0	84.27	0.006	0.000	0	0
35	36.06	0.003	0.000	0	0	48.52	0.004	0.000	0	0	56.70	0.004	0.000	0	0	66.99	0.005	0.000	0	0	74.68	0.006	0.000	0	0	82.58	0.006	0.000	0	0
36	35.37	0.003	0.000	0	0	47.58	0.004	0.000	0	0	55.60	0.004	0.000	0	0	65.68	0.005	0.000	0	0	73.22	0.005	0.000	0	0	80.96	0.006	0.000	0	0
37	34.70	0.003	0.000	0	0	46.67	0.004	0.000	0	0	54.54	0.004	0.000	0	0	64.43	0.005	0.000	0	0	71.82	0.005	0.000	0	0	79.42	0.006	0.000	0	0
38	34.06	0.003	0.000	0	0	45.81	0.003	0.000	0	0	53.53	0.004	0.000	0	0	63.22	0.005	0.000	0	0	70.48	0.005	0.000	0	0	77.93	0.006	0.000	0	0
39	33.45	0.003	0.000	0	0	44.98	0.003	0.000	0	0	52.55	0.004	0.000	0	0	62.07	0.005	0.000	0	0	69.19	0.005	0.000	0	0	76.51	0.006	0.000	0	0
40	32.86	0.002	0.000	0	0	44.18	0.003	0.000	0	0	51.62	0.004	0.000	0	0	60.97	0.005	0.000	0	0	67.95	0.005	0.000	0	0	75.15	0.006	0.000	0	0
41	32.30	0.002	0.000	0	0	43.42	0.003	0.000	0	0	50.72	0.004	0.000	0	0	59.90	0.004	0.000	0	0	66.77	0.005	0.000	0	0	73.83	0.006	0.000	0	0
42	31.76	0.002	0.000	0	0	42.68	0.003	0.000	0	0	49.86	0.004	0.000	0	0	58.88	0.004	0.000	0	0	65.62	0.005	0.000	0	0	72.57	0.005	0.000	0	0
43	31.23	0.002	0.000	0	0	41.97	0.003	0.000	0	0	49.03	0.004	0.000	0	0	57.89	0.004	0.000	0	0	64.52	0.005	0.000	0	0	71.35	0.005	0.000	0	0
44	30.73	0.002	0.000	0	0	41.29	0.003	0.000	0	0	48.23	0.004	0.000	0	0	56.94	0.004	0.000	0	0	63.46	0.005	0.000	0	0	70.18	0.005	0.000	0	0
45	30.24	0.002	0.000	0	0	40.63	0.003	0.000	0	0	47.45	0.004	0.000	0	0	56.03	0.004	0.000	0	0	62.44	0.005	0.000	0	0	69.05	0.005	0.000	0	0

: Maximum Storage Volume

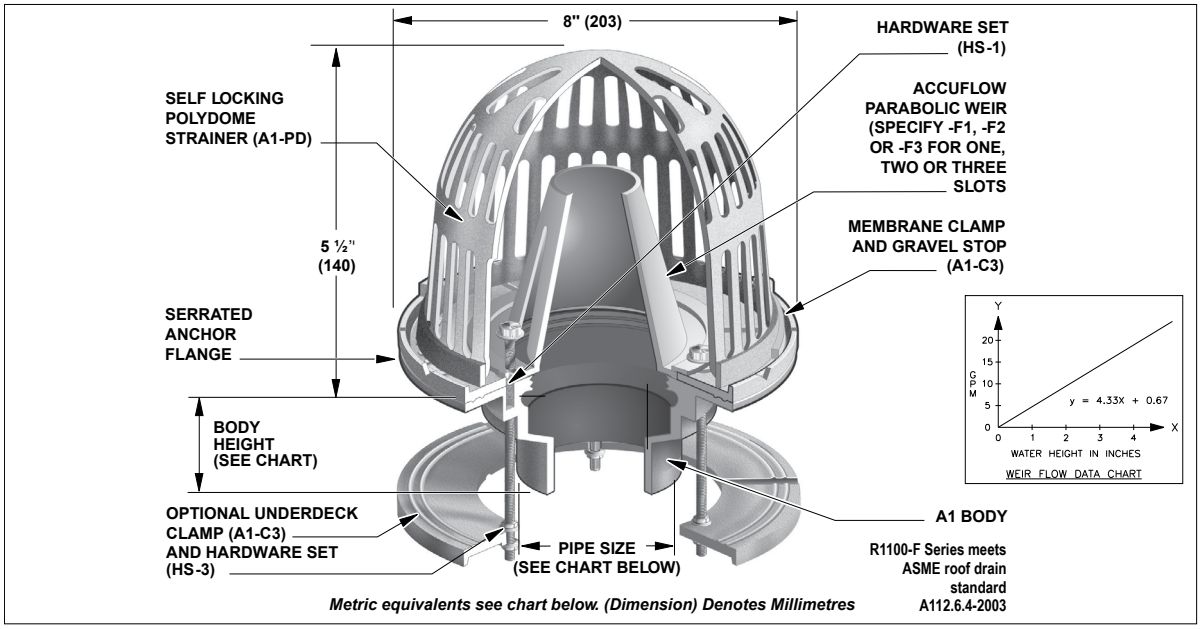
Location: _____

MIFAB® R1100-F

FLOW CONTROLLED ROOF DRAIN WITH PARABOLIC WEIR

Specification: MIFAB® Series R1100-F lacquered cast iron roof drain with anchor flange, cast iron water proofing membrane clamp ring with integral gravel stop, accuflow parabolic weir (specify -F1, -F2, -F3 for one, two or three slots), and standard selflocking polydome strainer with a free area of 43 square inches.

Function: Used in any type of flat roofs and gutters to control the flow of rain water off of the roof. Slotted weirs reduce the volume of water to the leader. Specify F1, -F2, or -F3 for one, two or three slots to attain the required limitation of volume. 8" diameter body is ideal for applications with limited space. Dome provides for efficient drainage of rainwater and prevents debris from entering the drain line. Anchor flange and membrane clamp with tongue in groove design provides for secure grip of membrane and roof flashing materials. Flow performance per weir is 5 GPM per inch of water per slot.

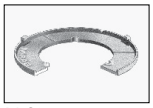


PARTS:


A1 BODY


A1-PD


A1-F1, F2 or F3 WEIR


A1-C3


HS-1

Note: Deck opening - 6 3/8" (162) with sump receiver - 8 1/2" (216)

PIPE SIZE	BODY HEIGHT				
	NO HUB (STANDARD)	PUSH ON (P)	THREADED (T)	INSIDE CAULK (X)	PVC (-30) / ABS (-31)
○ 2" (51)	☐ 3" (76)	☐ 3 3/8" (86)	☐ 2 1/4" (57)	☐ 3 3/4" (95)	☐ 2 5/8" (67)
○ 3" (76)	☐ 3" (76)	☐ 3 3/8" (86)	☐ 2 5/8" (67)	☐ 3 3/4" (95)	☐ 3 1/4" (83)
○ 4" (102)	☐ 3" (76)	☐ 3 3/8" (86)	☐ 2 5/8" (67)	☐ 3 3/4" (95)	☐ 3 1/2" (89)
○ 5" (127)	☐ 3" (76)	—	☐ 2 5/8" (67)	☐ 6 7/8" (175)	—
○ 6" (152)	☐ 3 1/2" (89)	☐ 6 7/8" (175)	—	—	—

	Suffix	Description
☐	-6	Vandal proof dome (metal dome only)
☐	-11	Acid resistant epoxy coating
☐	-12	Galvanized metal dome
☐	-12A	Galvanized body and membrane clamp
☐	-13	Galvanized body, membrane clamp and dome
☐	-28	Stainless steel body (Type 304) (2", 3", 4")
☐	-30	PVC socket connection body
☐	-31	ABS socket connection body
☐	-81	Rough bronze dome
☐	-83	Stainless steel mesh screen over dome
☐	-90	Threaded side outlet (2",3",4")
☐	-90NH	No Hub side outlet (cast iron only) (2", 3", 4")
☐	-B	Sump receiver
☐	-BA	Buy America Act compliant product
☐	-C	Secondary clamp

☐	-E	Adjustable extension
☐	-EG	Galvanized Adjustable extension
☐	-G	Stainless steel ballast guard
☐	-JC	S.S. ballast guard with secondary clamp
☐	-M	Metal dome
☐	P	Push on outlet
☐	-PA	Pennsylvania Steel Act compliant product
☐	(Standard)	No hub outlet
☐	T	Threaded outlet (2",3",4")
☐	-U	Underdeck clamp (Not available with 6" outlets)
☐	-U3	Underdeck clamp with cutaway side (Not available with 6" outlets)
☐	-W-1	Water proofing flange
☐	X	Inside caulk outlet (2",3",4")
☐	-XJ	Vertical expansion joint (see R1900)
☐	-Z	Extended wide elastomeric flange

CALIFORNIA PROPOSITION 65 WARNING. This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Job Name: _____ Page No: _____

Section No: _____ Contractor: _____

Schedule No: _____ Purchase Order No: _____

USA: 1-800-465-2736 www.mifab.com CAN: 1-800-387-3880

Q = 0.0028*C*I*A (m^3/s)

C = Runoff Coefficient

I = Rainfall Intensity = $A/(Time+B)^C$

A = Area (ha)

250-252 Hinchey Ave., Ottawa
Storm Sewer Design
5-Year Storm Event

DATE: 02-Sep-20

FILE: 19126

CONTRACT/PROJECT: 250-252 Hinchey Ave

Areas	Manhole		Length	Increment			Total	Flow Time (min)		I	Total Q	S	D	Q Full	V Full
	From	To	(m)	C	A	CA	CA	TO	IN	(mm/h)	(m^3/s)	(%)	(mm)	(m^3/s)	(m/s)
3.0	CAP	CBMH1	1.8	0.90	0.03	0.03	0.03	10.00	0.02	104.19	0.01	1.0	250.0	0.06	1.21
3.0	CBMH1	TEE	11.8	0.90	0.00	0.00	0.00	10.02	0.16	104.06	0.00	1.0	250.0	0.06	1.21

Appendix D

RVCA Correspondence

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: Monday, July 27, 2020 9:14 AM
To: jennifer@terraindevelopment.ca; Gary Pearson <gpearson@pearsoneng.com>
Cc: Gauthier, Steve <steve.gauthier@ottawa.ca>
Subject: RE: 250 & 252 Hinchey Ave - Zoning D02-02-20-0025 and Site Plan D07-12-20-0030 - Engineering comments

Hi Jennifer,

In Advance of the meeting on Wednesday,

It is noted that the RVCA has no requirements for water quality control based on the proposed plan. The RVCA treats stormwater run off as clean, and there was no hard surface landscaping. The RVCA defers quantity control to the City.

I am wondering if anything is required. The RVCA had no objections on this application and provided comment in May. Has anything changed on the project?

Thanks,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: jennifer@terraindevelopment.ca <jennifer@terraindevelopment.ca>
Sent: Friday, July 24, 2020 11:56 AM
To: Eric Lalande <eric.lalande@rvca.ca>; 'Gary Pearson' <gpearson@pearsoneng.com>
Subject: FW: 250 & 252 Hinchey Ave - Zoning D02-02-20-0025 and Site Plan D07-12-20-0030 - Engineering comments

Good morning Eric,
For this small infill file in Hintonburg, the City has asked us to provide written confirmation with the RVCA of the requirements for post-development stormwater quality.

Can you please confirm requirements.

The Engineering

From: Gauthier, Steve <Steve.Gauthier@ottawa.ca>
Sent: July 23, 2020 1:39 PM
To: jennifer@terraindevelopment.ca; Jennifer Murray <JenniferKMurray@outlook.com>
Subject: 250 & 252 Hinchey Ave - Zoning D02-02-20-0025 and Site Plan D07-12-20-0030 - Engineering comments

Hi Jennifer,

The additional engineering comments were added to the original review document. I've also attached Mark Fraser's pre-consultation notes, who will be taking over as Jessica was just promoted to another position.

Do not hesitate to contact Mark or myself should you have any questions.

Regards,

Steve Gauthier **RPP**
Planner | Urbaniste
Development Review | Examen des projets d'aménagement
Planning Department | Service de l'urbanisme
City of Ottawa | Ville d'Ottawa

Appendix E

Ottawa Servicing Report Checklist

4. Development Servicing Study Checklist

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

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

4.1 General Content

☐ Executive Summary (for larger reports only).

☒ Date and revision number of the report.

☒ Location map and plan showing municipal address, boundary, and layout of proposed development.

☒ Plan showing the site and location of all existing services.

☒ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.

☒ Summary of Pre-consultation Meetings with City and other approval agencies.

☒ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.

☒ Statement of objectives and servicing criteria.

☒ Identification of existing and proposed infrastructure available in the immediate area.

☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).

☒ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.

☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.

☐ Proposed phasing of the development, if applicable.

☐ Reference to geotechnical studies and recommendations concerning servicing.

☒ All preliminary and formal site plan submissions should have the following information:

- Metric scale
- North arrow (including construction North)
- Key plan
- Name and contact information of applicant and property owner
- Property limits including bearings and dimensions
- Existing and proposed structures and parking areas
- Easements, road widening and rights-of-way
- Adjacent street names

4.2 Development Servicing Report: Water

☐ Confirm consistency with Master Servicing Study, if available

☒ Availability of public infrastructure to service proposed development

☒ Identification of system constraints

☒ Identify boundary conditions

☒ Confirmation of adequate domestic supply and pressure

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

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

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

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

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

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

☐ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.

☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.

☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.

☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

4.3 Development Servicing Report: Wastewater

☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).

☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.

☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.

☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.

☐ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)

☒ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.

☒ Description of proposed sewer network including sewers, pumping stations, and forcemains.

☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).

☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.

☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.

☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

☐ Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

☐ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

☐ Analysis of available capacity in existing public infrastructure.

☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

☒ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.

☒ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.

☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.

☐ Set-back from private sewage disposal systems.

☐ Watercourse and hazard lands setbacks.

☒ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.

☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

- ☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- ☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- ☒ Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.
- ☐ Any proposed diversion of drainage catchment areas from one outlet to another.
- ☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- ☐ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.
- ☐ Identification of potential impacts to receiving watercourses
- ☐ Identification of municipal drains and related approval requirements.
- ☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.
- ☐ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.
- ☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.
- ☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- ☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.
- ☐ Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

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

☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.

☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

☐ Changes to Municipal Drains.

☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

☒ Clearly stated conclusions and recommendations

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

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

Appendix F

Pre-Consultation Summary

Nicole Wells

To: Fraser, Mark
Subject: RE: PC_250 Hinchey Ave.

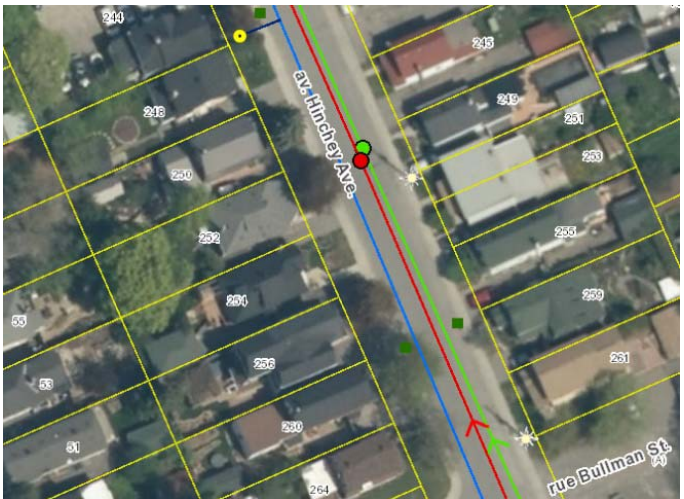
From: Fraser, Mark
Sent: December 12, 2019 4:08 PM
To: Gauthier, Steve <Steve.Gauthier@ottawa.ca>
Subject: PC_250 Hinchey Ave.

Hi Steve,

Please forward the below information to the applicant regarding a development proposal at **250 Hinchey Ave.** for a 16 unit low-rise apartment building. Note that the information is considered preliminary and the assigned Development Review Project Manager may modify and/or add additional requirements and conditions upon review of an application if deemed necessary.

General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided and all easements shall be shown on the engineering plans.
- Please provide an **Existing Conditions/Removals Plan** as part of the engineering drawing set. Existing services are to be removed or abandoned in accordance with City standards AND service sizes to be documented.
- Please note that the proposed servicing design and site works shall be in accordance with the following documents:
  - Ottawa Sewer Design Guidelines (October 2012)
  - Technical Bulletin PIEDTB-2016-01
  - Technical Bulletins ISTB-2018-01, ISTB-2018-02 and ISTB-2018-03.
  - Ottawa Design Guidelines - Water Distribution (2010)
  - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
  - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
  - City of Ottawa Environmental Noise Control Guidelines (January 2016)
  - City of Ottawa Accessibility Design Standards (2012) (City recommends development be in accordance with these standards on private property)
  - Ottawa Standard Tender Documents (latest version)
  - Ontario Provincial Standards for Roads & Public Works (2013)
  - Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-424 x.44455).



Disclaimer:
The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.

Stormwater Management Criteria and Information:

- This development proposal is located within a partially separated sewer area (i.e. foundations drains connected to sanitary sewer) and has a history of basement flooding.
- The **storm sewer system within this area was designed to a 5-year level of service**.
- **Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the 100-year storm event, to a **5-year pre-development level.** The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. [**If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5**]. The time of concentration (T_c) used to determine the pre-development condition shall be 20min or can be calculated. [*T_c of 20 minutes should be used for all pre-development calculations without engineering justification, Tc should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations*].
- Any storm events greater than the established 5-year allowable release rate, up to and including the 100-year storm event, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.
- **The receiving storm sewer system is uncontrolled** (no ICDs) **and therefore subject to surcharge**. The SWM solution will need to be designed accordingly. **It can be assumed that the 100-year HGL during critical storm events has the potential to reach basements.**
- Please note that foundation drainage is to be independently connected to sewermain unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. **It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.**
- **Water Quality Control:** Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.
- Please note that as per *Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14)* **there shall be no surface ponding on private parking areas during the 2-year storm rainfall event**.
- **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.
  When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.**
  In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.
- Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.

- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.
- Please provide a **Pre-Development Drainage Area Plan** to define the pre-development drainage areas/patterns. **Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution**.
- If rooftop control and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- Investigate the implementation of LID features (i.e. permeable IPS) to reduce runoff however no credit shall be given in terms of stormwater management.

Storm Sewer:

- A 450mm dia. PVC storm sewer (1994) is available within Hinchey Ave. Stormwater drains to the Merton Street Overflow trunk sewer system and discharged to the Ottawa River.
- As-built drawings of the existing services within the vicinity of the site shall be obtained and reviewed in order to determine proper servicing and SWM plan for the subject site(s).
- The storm service connection is to have backwater valve.

Sanitary Sewer:

- A 250mm dia. PVC sanitary sewer (1994) is available within Hinchey Ave. Wastewater flows to the West Nepean Trunk Collector sewer system.
- **An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided**. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- Please apply the wastewater design flow parameters *in Technical Bulletin PIEDTB-2018-01.*
- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.
- A backwater valve is required on the sanitary service for protection.

Water:

- A 203mm dia. PVC watermain is available within Hinchey Ave.
- Existing residential service to be blanked at the main.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than $50m^3$/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration.* The basic day demand for this site not expected to exceed $50m^3$/day.
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
    - Type of Development and Units
    - Site Address
    - A plan showing the proposed water service connection location.
    - **Average Daily Demand** (L/s)
    - **Maximum Daily Demand** (L/s)
    - **Peak Hour Demand** (L/s)
    - **Fire Flow** (L/min)

[*Fire flow demand requirements shall be based on* ***Fire Underwriters Survey (FUS)*** *Water Supply for Public Fire Protection 1999*]
Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

- **Hydrant capacity shall be assessed to demonstrate the RFF can be achieved**. Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

- The subject site is located within the 1W Pressure Zone.

Snow Storage:

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

Permits and Approvals:

- The consultant shall determine if this project will be subject to an Environmental Compliance Approval (ECA) for Private Sewage Works. It shall be determined if the exemptions set out under Ontario Regulation 525/98: *Approval Exemptions* are satisfied. **All regulatory approvals shall be documented and discussed in the report**.

The following studies will be required to be submitted support ZBLA and SPC applications:

Required Engineering Plans and Studies in Support of only a ZBLA Application:

PLANS:

- Site Servicing Plan
- Pre-Development Drainage Area Plan
- Post-Development Drainage Area Plan
- Topographical Plan of Survey
- Legal Survey Plan

REPORTS:

- Assessment of Adequacy of Public Services (water, stormwater, sanitary) Report
- Geotechnical Study/Investigation
- Noise Feasibility Study
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)

Required Engineering Plans and Studies in Support of ZBLA and SPC Application:

PLANS:

- Existing Conditions and Removals Plan
- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan
- Pre-Development Drainage Area Plan
- Post-Development Drainage Area Plan
- Roof Drainage Plan
- Foundation Drainage System Detail
- Topographical Plan of Survey
- Legal Survey Plan
- Site Lighting Plan and Photometric Plan

REPORTS:

- Site Servicing and Stormwater Management Report
- Geotechnical Study/Investigation
- Noise Control Study (assessment of stationary and transportation noise) (due to proximity (within 100m) of an existing arterial road (Scott Street)).

- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)

Please refer to the **City of Ottawa Guide to Preparing Studies and Plans [Engineering]:**
https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#gravity-pipe-design-guidelines
Please ensure you are using current guidelines, by-laws and standards.

Phase One Environmental Site Assessment:

- A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.
- The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.
- Official Plan Section 4.8.4:
  https://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan/volume-1-official-plan/section-4-review-development-applications#4-8-protection-health-and-safety

Geotechnical Investigation:

- A Geotechnical Study/Investigation shall be prepared in support of this development proposal.
- Reducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long term damages associated with lowering the groundwater in this area.
- Geotechnical Study shall be consistent with the **Geotechnical Investigation and Reporting Guidelines for Development Applications**.
  https://documents.ottawa.ca/sites/default/files/documents/cap137602.pdf

Noise Study:

- A Phase 2 Noise Control Detailed Study is required as the subject site is within 100m of Scott Street (arterial road) that is considered a surface transportation noise source. Any existing and/or new stationary noise sources shall be identified and analyzed.
- Please note that an environmental noise assessment of any stationary noise sources (Stationary Noise Assessment) of the proposed development will be required to determine the affects of any proposed roof top units, etc. for this building as this noise may subject the tenants/owners of the upper level of the residential building, and the surrounding neighbours, to static noise levels that are beyond the acceptable limits.
- Noise Study shall be consistent with the City's **Environmental Noise Control Guidelines**.
  https://documents.ottawa.ca/sites/default/files/documents/enviro_noise_guide_en.pdf

Exterior Site Lighting:

- Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a **Site Lighting Plan, Photometric Plan and Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

Please note that these comments are considered preliminary based on the information available to date and therefore maybe amended as additional details become available and presented to the City. It is the responsibility of the applicant to verify the above information. The applicant may contact me for follow-up questions related to engineering/infrastructure prior to submission of an application if necessary.

If you have any questions or require any clarification please let me know.

Regards,

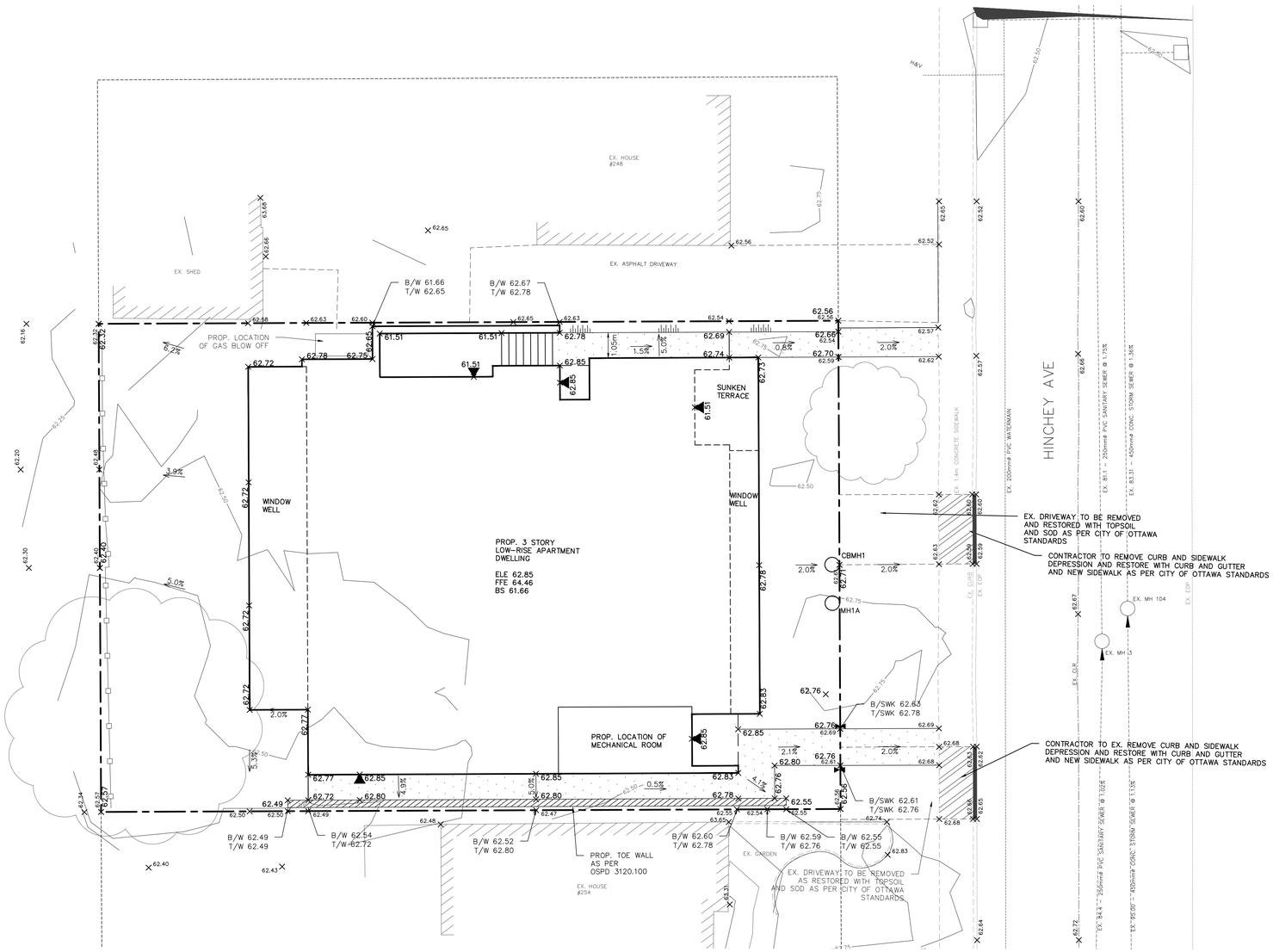
Mark Fraser, P. Eng.
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

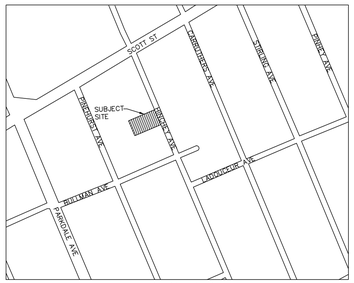
Appendix G

Pearson Engineering Drawings

SITE GRADING NOTES:

1. 1. NO EXCESS DRAINAGE, DURING OR AFTER CONSTRUCTION TO BE DIRECTED TOWARDS NEIGHBORING PROPERTIES.
2. EXISTING DRAINAGE PATTERNS TO BE MAINTAINED.
3. ENSURE POSITIVE DRAINAGE AWAY FROM FOUNDATION
4. LANDSCAPE AREAS TO HAVE MINIMUM 2%, MAXIMUM 7% SLOPE UNLESS TERRACED AT 3:1 MAXIMUM.
5. NO ALTERATION TO EXISTING GRADES ON PROPERTY LINES.
6. USF TO BE MINIMUM 1.5m BELOW FINISHED GRADE OR INSULATION IS REQUIRED.
7. TOF TO BE MINIMUM 0.15m ABOVE FINISHED GRADE.





KEYMAP
NTS

LEGEND

CB	CATCH BASIN
DCB	DOUBLE CATCH BASIN
CBMH	CATCH BASIN
MH	STORM MANHOLE
MH	SANITARY MANHOLE
	SERVICE CAP
HYD.	FIRE HYDRANT
VB	WATER VALVE
CS	CURB STOP W/ SERVICE
WM	WATER METER
254.63 / 254.09	PROPOSED ELEVATION / EXISTING ELEVATION
1.5%	PROPOSED DIRECTION AND GRADE

ELE	ENTRANCE LEVEL ELEVATION
FFE	FIRST FLOOR ELEVATION
BS	BASEMENT SLAB

TOPOGRAPHIC SURVEY COMPLETED
BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD
DATED DECEMEBER 18, 2018
AMMENDED AUGUST 27, 2019

NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY COMMENTS	09/03/20	JP

BENCHMARK

MAG NAIL IN HYDRO POLE IN FRONT OF 251 HINCHEY AVE

ELEV 63.51

LICENSED PROFESSIONAL ENGINEER
G. M. PEARSON
100061666
PROVINCE OF ONTARIO

J.MURRAY–PROJECT MANAGEMENT
250–252 HINCHEY AVE,
OTTAWA, ON

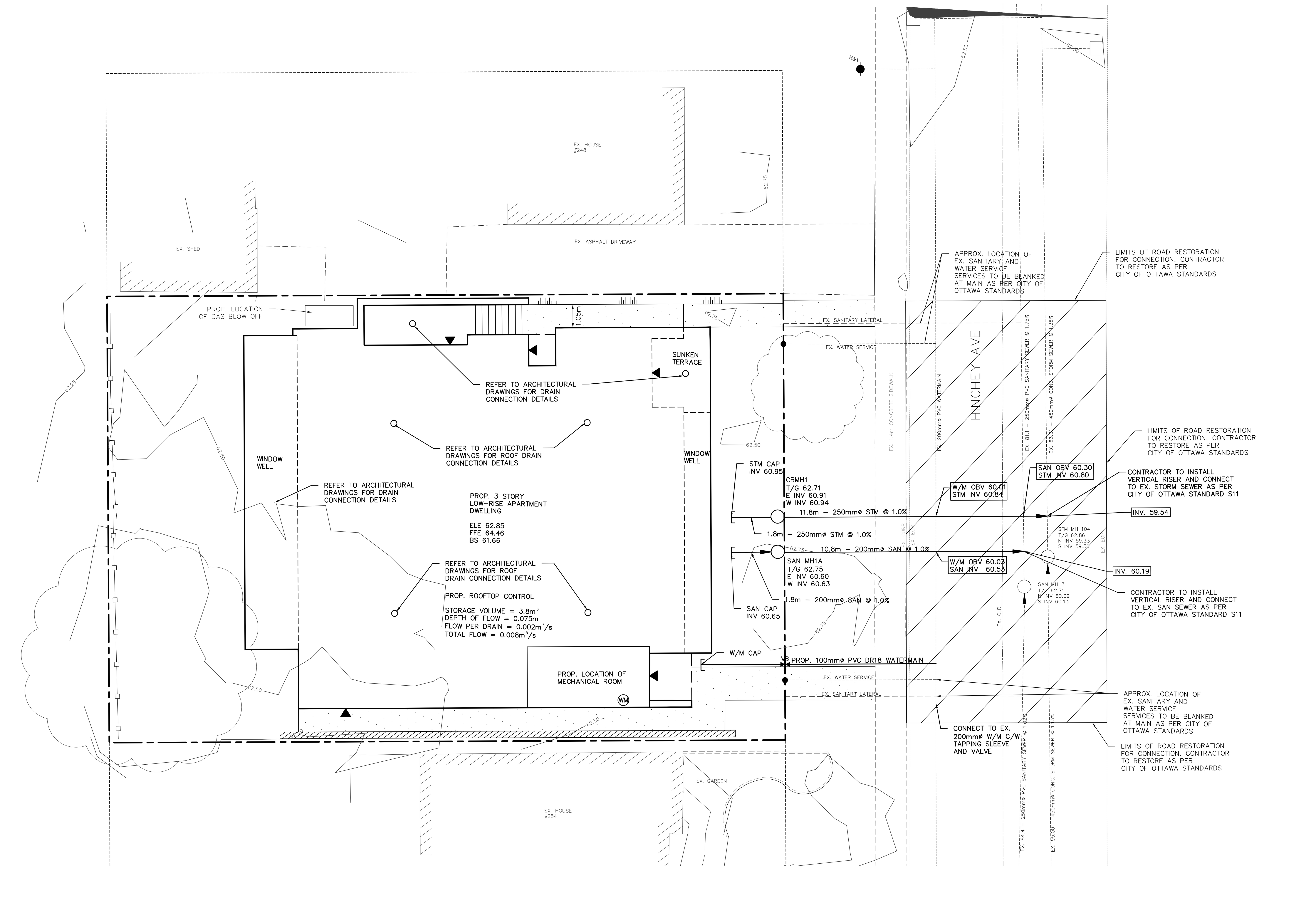
SITE GRADING PLAN

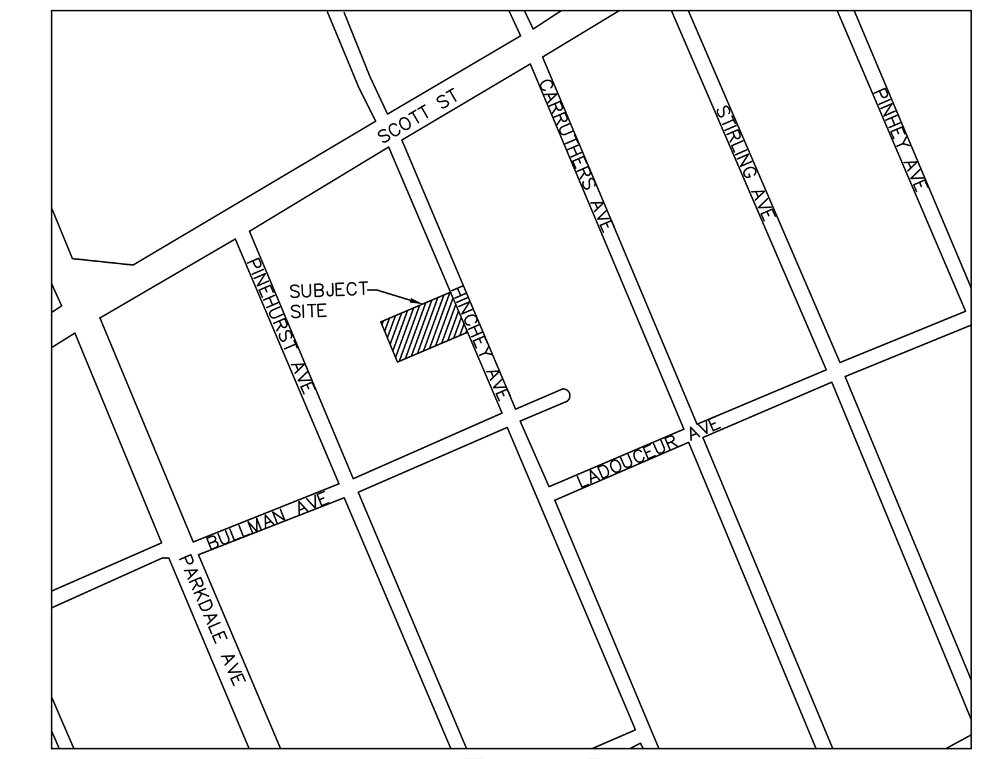
PEARSON ENGINEERING LTD.
PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	JP/NW	HORIZ SCALE	1:100
DRAWN BY	JP	VERT SCALE	N/A
CHECKED BY	GMP	DATE	FEBRUARY 2020
PROJECT #	19126		
DRAWING #	SG–1		
REVISION #	1		

SITE SERVICING NOTES:

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





KEYMAP
NTS

LEGEND

CB	CATCH BASIN
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	SERVICE CAP
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CS	CURB STOP W/ SERVICE
WM	WATER METER
254.63 / 254.09	PROPOSED ELEVATION / EXISTING ELEVATION
1.5%	PROPOSED DIRECTION AND GRADE

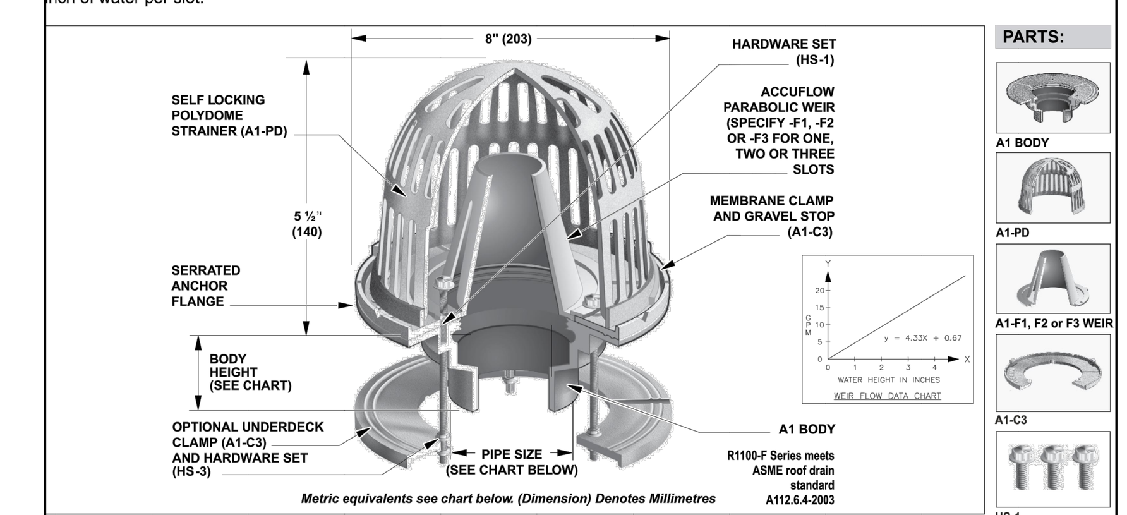
ELE	ENTRANCE LEVEL ELEVATION
FFE	FIRST FLOOR ELEVATION
BS	BASEMENT SLAB

Location: ______

MIFAB® R1100-F FLOW CONTROLLED ROOF DRAIN WITH PARABOLIC WEIR

Specification: MIFAB® Series R1100-F lacquered cast iron roof drain with anchor flange, cast iron water proofing membrane clamp ring with integral gravel stop, accuflow parabolic weir (specify -F1, -F2, -F3 for one, two or three slots), and standard selflocking polydome strainer with a free area of 43 square inches.

Function: Used in any type of flat roofs and gutters to control the flow of rain water off of the roof. Slotted weirs reduce the volume of water to the leader. Specify F1, -F2, or -F3 for one, two or three slots to attain the required limitation of volume. 8" diameter body is ideal for applications with limited space. Dome provides for efficient drainage of rainwater and prevents debris from entering the drain line. Anchor flange and membrane clamp with tongue in groove design provides for secure grip of membrane and roof flashing materials. Flow performance per weir is 5 GPM per inch of water per slot.



Metric equivalents see chart below. (Dimension) Denotes Millimetres

Note: Deck opening - 6 3/8" (162) with sump receiver - 8 1/2" (216)

PIPE SIZE	BODY HEIGHT				
	NO HUB (STANDARD)	PUSH ON (P)	THREADED (T)	INSIDE CAULK (X)	PVC (-30) / ABS (-31)
2" (51)	3" (76)	3 3/8" (86)	2 1/4" (57)	3 3/4" (95)	2 5/8" (67)
3" (76)	3" (76)	3 3/8" (86)	2 5/8" (67)	3 3/4" (95)	3 1/4" (83)
4" (102)	3" (76)	3 3/8" (86)	2 5/8" (67)	3 3/4" (95)	3 1/2" (89)
5" (127)	3" (76)	—	2 5/8" (67)	6 7/8" (175)	—
6" (152)	3 1/2" (89)	6 7/8" (175)	—	—	—

Suffix	Description
-6	Vandal proof dome (metal dome only)
-11	Acid resistant epoxy coating
-12	Galvanized metal dome
-12A	Galvanized body and membrane clamp
-13	Galvanized body, membrane clamp and dome
-28	Stainless steel body (Type 304) (2", 3", 4")
-30	PVC socket connection body
-31	ABS socket connection body
-81	Rough bronze dome
-83	Stainless steel mesh screen over dome
-90	Threaded side outlet (2",3",4")
-90NH	No Hub side outlet (cast iron only) (2", 3", 4")
-B	Sump receiver
-BA	Buy America Act compliant product
-C	Secondary clamp
-E	Adjustable extension
-EG	Galvanized Adjustable extension
-G	Stainless steel ballast guard
-JC	S.S. ballast guard with secondary clamp
-M	Metal dome
P	Push on outlet
-PA	Pennsylvania Steel Act compliant product
(Standard)	No hub outlet
T	Threaded outlet (2",3",4")
-U	Underdeck clamp (Not available with 6" outlets)
-U3	Underdeck clamp with cutaway side (Not available with 6" outlets)
-W-1	Water proofing flange
X	Inside caulk outlet (2",3",4")
-XJ	Vertical expansion joint (see R1900)
-Z	Extended wide elastomeric flange

CALIFORNIA PROPOSITION 65 WARNING. This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Job Name: ______ Page No: ______
Section No: ______ Contractor: ______
Schedule No: ______ Purchase Order No: ______

NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY COMMENTS	09/03/20	JP

BENCHMARK
MAG NAIL IN HYDRO POLE IN FRONT OF 251 HINCHEY AVE
ELEV 63.51

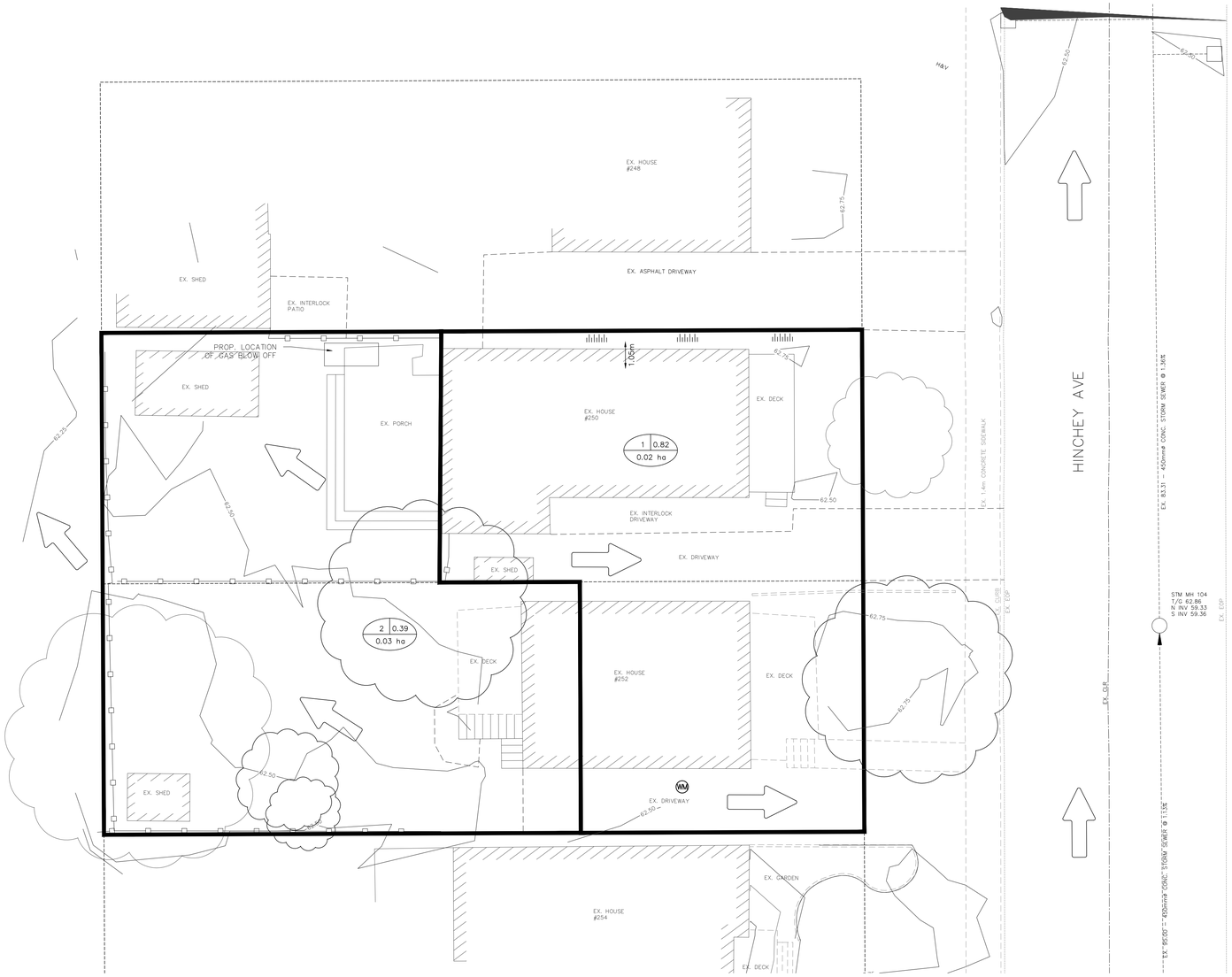
LICENSED PROFESSIONAL ENGINEER
G. M. PEARSON
100061966
09/03/20
PROVINCE OF ONTARIO

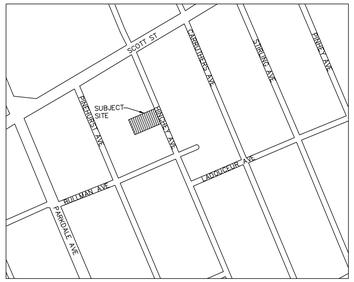
J.MURRAY–PROJECT MANAGEMENT
250–252 HINCHEY AVE,
OTTAWA, ON

SITE SERVICING PLAN

PEARSON ENGINEERING LTD.
PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	JP/NW	HORIZ SCALE	1:100	PROJECT #	19126
DRAWN BY	JP	VERT SCALE	N/A	DRAWING #	SS–1
CHECKED BY	GMP	DATE	FEBRUARY 2020	REVISION #	1





LEGEND

- CB — CATCH BASIN
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- CBMH — CATCH BASIN
- MH — STORM MANHOLE
- MH — SANITARY MANHOLE
- SERVICE CAP
- HYD. — FIRE HYDRANT
- VB — WATER VALVE
- CS — CURB STOP W/ SERVICE
- WM — WATER METER
- 254.63 / 254.09 — PROPOSED ELEVATION / EXISTING ELEVATION
- 1.5% — PROPOSED DIRECTION AND GRADE
- OVERLAND FLOW DIRECTION
- CATCHMENT AREA (1 | 0.75 | 1.00 ha) — RUNOFF COEFFICIENT / AREA IN HECTARES
- CATCHMENT BOUNDARY

NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY COMMENTS	09/03/20	JP

BENCHMARK

MAG NAIL IN HYDRO POLE IN FRONT OF 251 HINCHEY AVE

ELEV 63.51

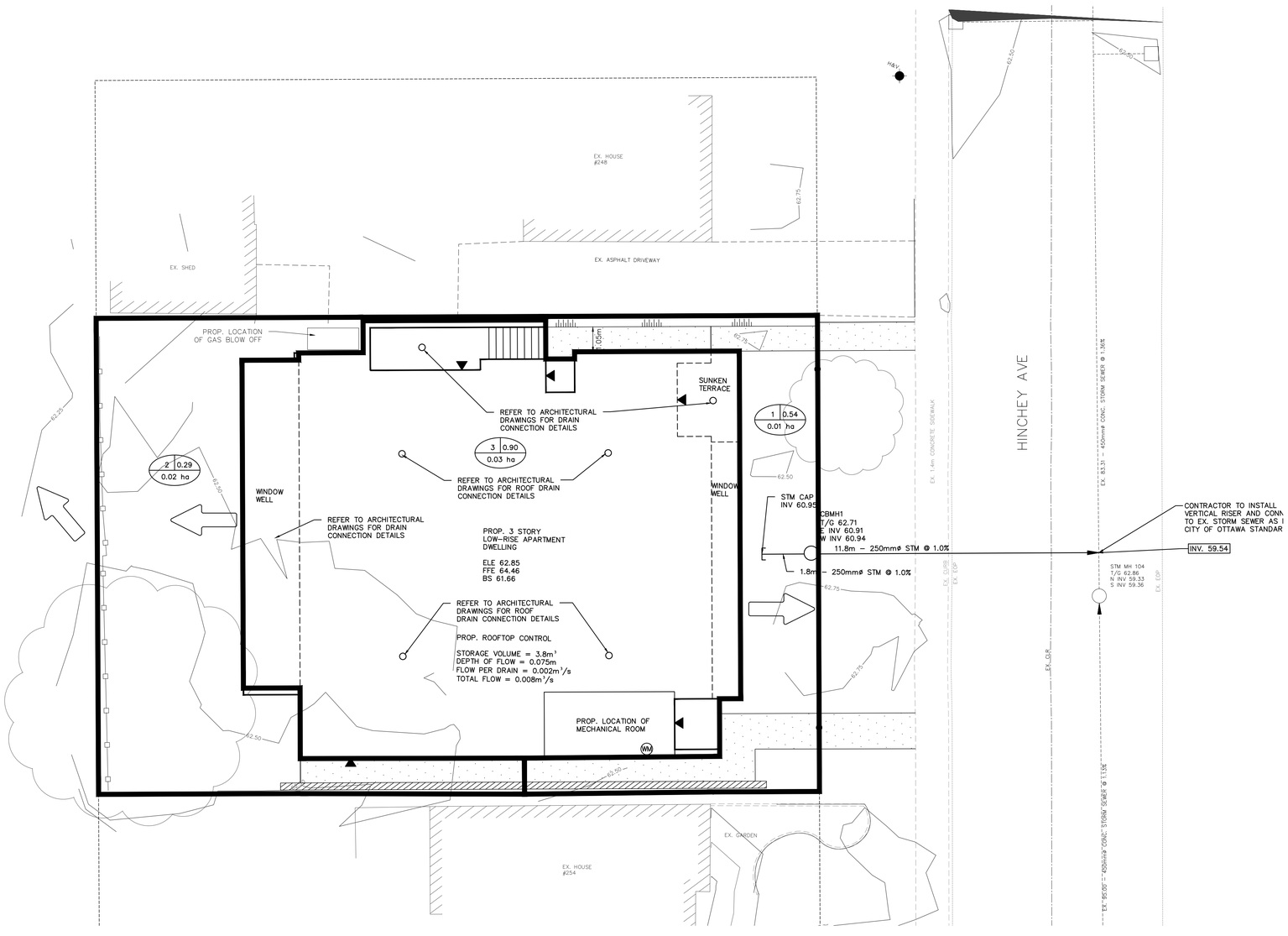
LICENSED PROFESSIONAL ENGINEER — G. M. PEARSON — 100061986 — PROVINCE OF ONTARIO

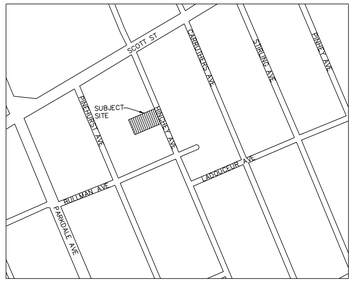
J.MURRAY–PROJECT MANAGEMENT
250–252 HINCHEY AVE,
OTTAWA, ON

PRE–DEVELOPMENT STORM CATCHMENT PLAN

PEARSON ENGINEERING LTD.
PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	JP/NW	HORIZ SCALE	1:100
DRAWN BY	JP	VERT SCALE	N/A
CHECKED BY	GMP	DATE	FEBRUARY 2020
PROJECT #	19126		
DRAWING #	STM–1		
REVISION #	1		





KEYMAP
NTS

LEGEND

- CB — CATCH BASIN
- DCB — DOUBLE CATCH BASIN
- CBMH — CATCH BASIN
- MH — STORM MANHOLE
- MH — SANITARY MANHOLE
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- AREA IN HECTARES
- CATCHMENT BOUNDARY

ELE	ENTRANCE LEVEL ELEVATION
FFE	FIRST FLOOR ELEVATION
BS	BASEMENT SLAB

NO.	REVISION NOTE	DATE	BY
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BENCHMARK

MAG NAIL IN HYDRO POLE IN FRONT OF 251 HINCHEY AVE

ELEV 63.51

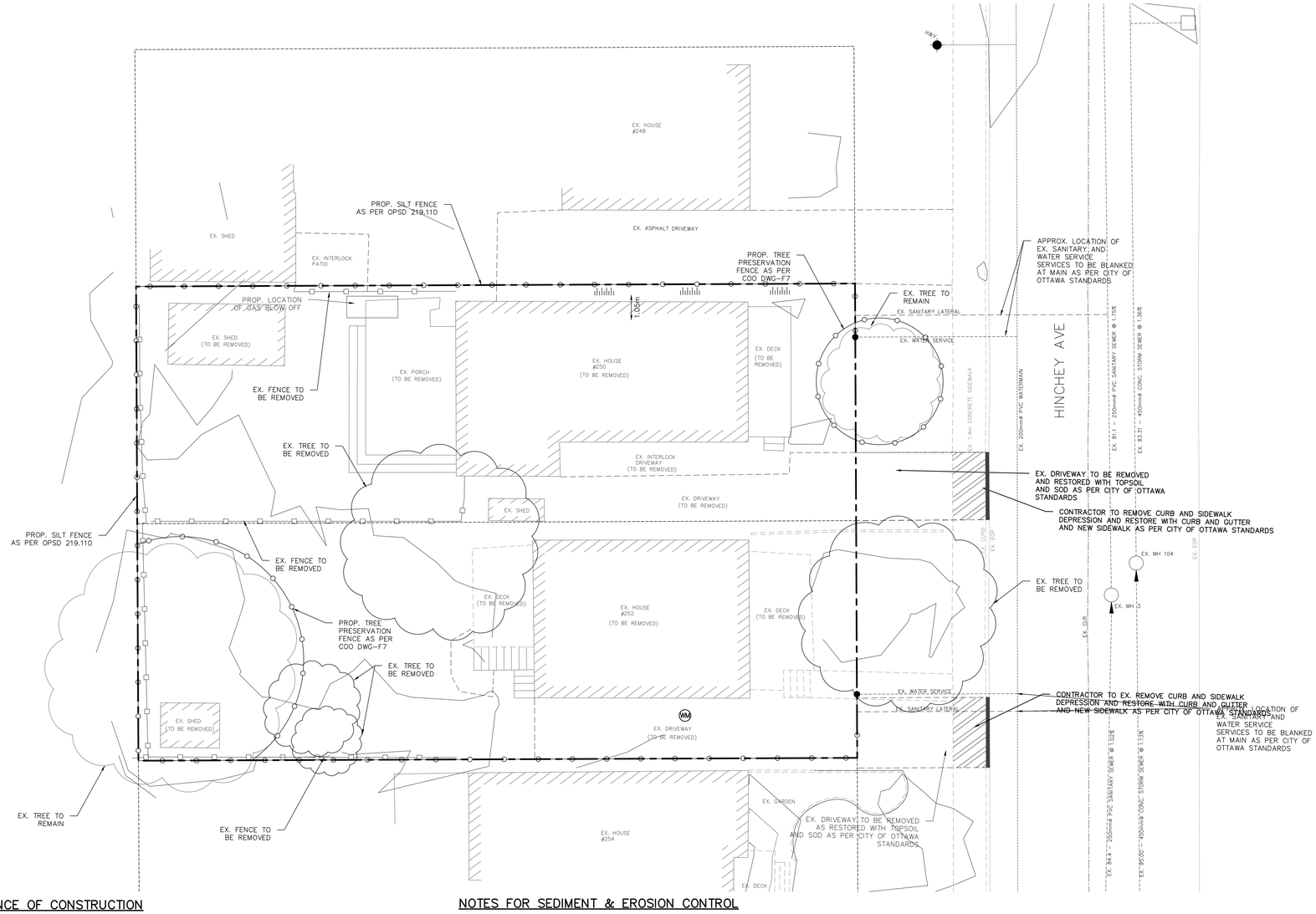
LICENSED PROFESSIONAL ENGINEER — G.M. PEARSON — 100061966 — PROVINCE OF ONTARIO — 2020/09/08

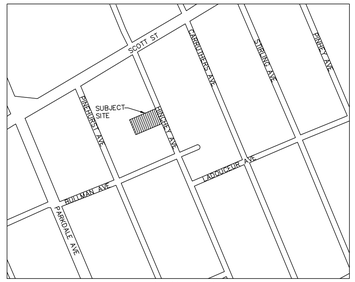
J.MURRAY–PROJECT MANAGEMENT
250–252 HINCHEY AVE,
OTTAWA, ON

POST–DEVELOPMENT STORM CATCHMENT PLAN

PEARSON ENGINEERING LTD.
PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	JP/NW	HORIZ SCALE	1:100
DRAWN BY	JP	VERT SCALE	N/A
CHECKED BY	GMP	DATE	FEBRUARY 2020
PROJECT #	19126		
DRAWING #	STM–2		
REVISION #	1		





KEYMAP
NTS

LEGEND

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- 254.63 / 254.09 — PROPOSED ELEVATION / EXISTING ELEVATION
- 1.5% — PROPOSED DIRECTION AND GRADE
- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- SILT FENCE

SEQUENCE OF CONSTRUCTION

1. ENGINEER TO BE NOTIFIED PRIOR TO INITIATION OF ANY ON SITE WORKS.
2. SILT FENCE AS PER DETAILS.
3. VEGETATION REMOVAL MAY COMMENCE AFTER ALL SILT FENCE IS INSTALLED AND APPROVED BY THE ENGINEER.
4. COMMENCE WITH EARTH WORKS AND SITE SERVICING.
5. INSTALLATION OF PROPOSED INFILTRATION FACILITIES TO THE TIME OF LANDSCAPING WORKS.
6. 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.
7. 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.

NOTES FOR SEDIMENT & EROSION CONTROL

1. 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.
2. 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.
3. 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.
4. 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.
6. CONTRACTOR SHALL OBTAIN A CURRENT COPY AND BECOME FAMILIAR WITH OPSS 577, CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS.
7. 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.
8. 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.
9. 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.
10. CONTRACTOR RESPONSIBLE FOR MUD TRACKING, PREVENTION, AND MAINTENANCE ON PROGRESS COURT.
11. ROADS TO BE LEFT IN A BROOM SWEPT CONDITION AT THE END OF EACH WORK DAY.

NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY COMMENTS	09/03/20	JP

BENCHMARK

MAG NAIL IN HYDRO POLE IN FRONT OF 251 HINCHEY AVE

ELEV 63.51

LICENSED PROFESSIONAL ENGINEER — G.M. PEARSON — 100061966 — 09/09/20 — PROVINCE OF ONTARIO

J.MURRAY–PROJECT MANAGEMENT
250–252 HINCHEY AVE,
OTTAWA, ON

EROSION PROTECTION AND REMOVALS PLAN

PEARSON ENGINEERING LTD.
PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	JP/NW	HORIZ SCALE	1:100
DRAWN BY	JP	VERT SCALE	N/A
CHECKED BY	GMP	DATE	FEBRUARY 2020
PROJECT #	19126		
DRAWING #	EPR–1		
REVISION #	1		