

**FUNCTIONAL SERVICING DESIGN BREIF**

**KEEFE STREET DEVELOPMENT  
3 LOT DEVELOPMENT**

**TOWN OF PENETANGUISHENE**

**SIMCOE COUNTY**

**May 01, 2024**

**a.m. candaras associates inc.  
8551 Weston Rd, Suite 203  
Woodbridge, Ontario  
L4L 9R4**

**Project No. 2250**



**a.m. candaras associates inc.**  
consulting engineers

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## 1.0 INTRODUCTION

A 0.65ha site is located in the Town of Penetanguishene at the south end of Keefe Street as shown in **Figure 1**. In the existing condition the site is undeveloped. The proposed site will be severed into three residential lots an east lot (0.15ha), a center lot (0.15ha) and west lot (0.27ha). Each lot will have a separate water and sanitary connection to the existing municipal infrastructure located on Keefe Street. The three proposed lots will have a drainage divide. The north portion of the lots which includes the house, roof eavestrough, front yard, side yard and a portion of the rear yard will drain north towards the existing Keefe Street road ditches. The remaining lot area will maintain its current drainage patterns, draining west. A portion of the site (0.08ha) will be used to extend Keefe Street towards the proposed residential lots.

This report will discuss the proposed servicing for the three residential lots and the extension of Keefe Street.

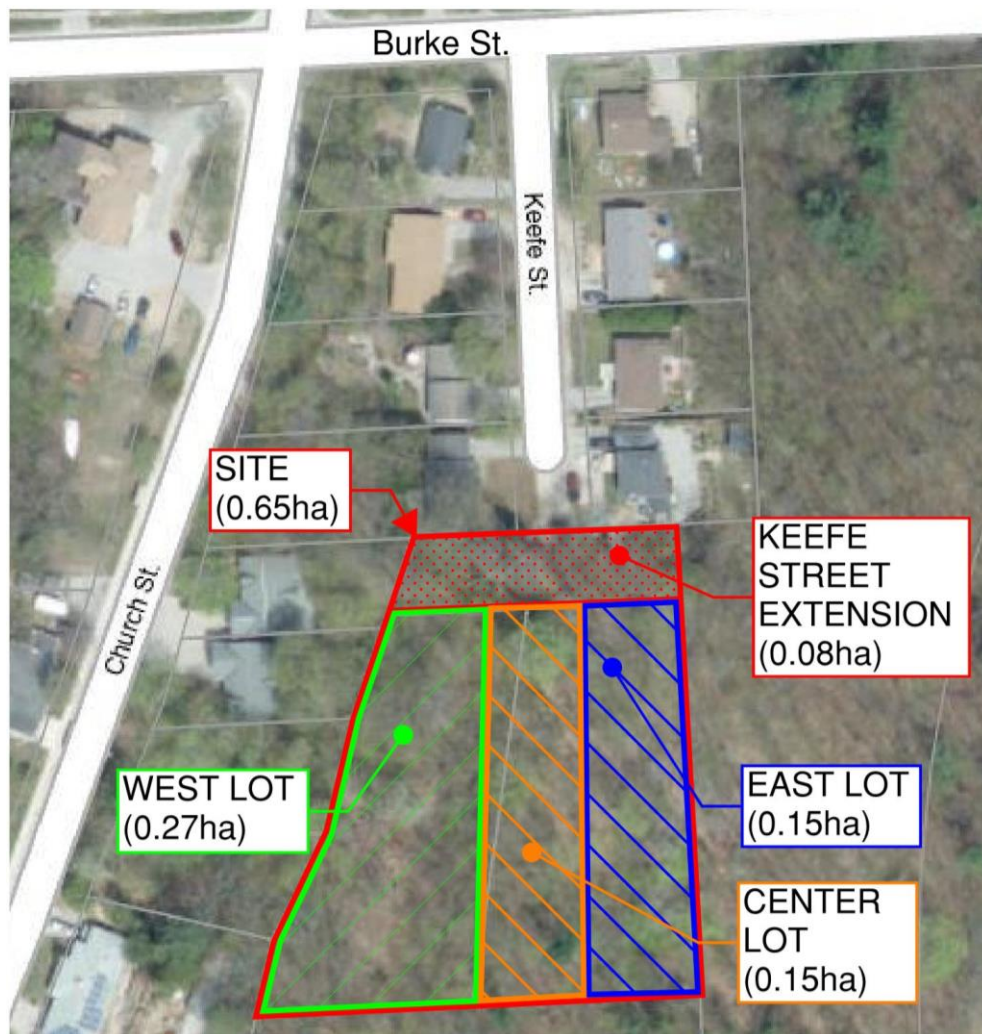


Figure 1 - Site Location



## 2.0 STORMWATER – EAST LOT

The proposed grading design for the east lot will have a drainage divide. The north portion of the lot which includes the house, roof eavestrough, front yard, side yard and a portion of the rear yard will drain north towards the existing Keefe Street road ditches. The remaining lot area will maintain its current drainage patterns, draining west.

The proposed stormwater management design for the east lot will have the downspouts from the proposed house connected to below a ground stone infiltration facility, as further discussed in Section 2.1. This will reduce the amount of stormwater leaving the individual site to the existing receiving areas. The paved areas from the proposed Hammer Head will drain north to the existing Keefe Street road swales. The use of enhanced vegetated swales along the proposed severance will be used to convey stormwater around the proposed house.

### 2.1 Infiltration Facility – East Lot

A 11.0m long X 1.0m wide X 0.65m high stone infiltration facility will be provided along the south limits of the lot. The infiltration facility has been sized to accommodate the 5mm from all paved areas but only the clean roof water will be directed to the stone infiltration facility.

Total Roof Area	=	190.13 m <sup>2</sup>
Total Paved Area	=	<u>379.87 m<sup>2</sup></u>
Total Impervious Area	=	470.00 m <sup>2</sup>

$$\begin{aligned} \text{Total Infiltration Volume Required} &= 470.00 \text{ m}^2 \times 5.0\text{mm} / (1000) \\ &= 2.35 \text{ m}^3 \end{aligned}$$

$$\begin{aligned} \text{Volume Provided} &= 11.0\text{m} \times 1.0\text{m} \times 0.65\text{m} \times 40\% \text{ voids} \\ &= 2.86 \text{ m}^3 \end{aligned}$$

In-situ testing was completed for this proposed development. Based on the results, the rate of percolation, recommended by GEI Consultants Ltd., to use for the infiltration design is 60mm/hr. The drain time for the infiltration facility on the west lot will be 10.83 hours, as calculated below.

#### Drawdown time

Where,

$$\begin{aligned} \text{Volume} &= 2.86 \text{ m}^3 \\ \text{Area} &= 11.0\text{m} \times 1.0\text{m} = 11.0\text{m}^2 \\ \text{Infiltration Rate} &= 60 \text{ mm/hr} / 2.5 \text{ (Safety Factor)} \\ &= 24 \text{ mm/hr} \end{aligned}$$



$$\begin{aligned}
\text{Drawdown Time} &= \frac{\text{Volume}}{\text{Area} \times \text{Infiltration Rate}} \\
&= \frac{2.86\text{m}^3}{11.0\text{m}^2 \times (24\text{mm/hr} / 1000)} \\
&= \mathbf{10.83 \text{ hours}}
\end{aligned}$$

### 3.0 STORMWATER – CENTER LOT

The proposed grading design for the center lot will have a drainage divide. The north portion of the lot which includes the house, roof eavestrough, front yard, side yard and a portion of the rear yard will drain north towards the existing Keefe Street road ditches. The remaining lot area will maintain its current drainage patterns, draining west.

The proposed stormwater management design for the center lot will have the downspouts from the proposed house connected to below a ground stone infiltration facility, as further discussed in Section 3.1. This will reduce the amount of stormwater leaving the individual site to the existing receiving areas. The paved areas from the proposed Hammer Head will drain north to the existing Keefe Street road swales. The use of enhanced vegetated swales along the proposed severance lines will be used to convey stormwater around the proposed house.

#### 3.1 Infiltration Facility – Center Lot

A 10.5m long X 1.0m wide X 0.65m high stone infiltration facility will be provided along the south limits of the lot. The infiltration facility has been sized to accommodate the 5mm from all paved areas but only the clean roof water will be directed to the stone infiltration facility.

$$\begin{aligned}
\text{Total Roof Area} &= 190.13 \text{ m}^2 \\
\text{Total Paved Area} &= \underline{281.12 \text{ m}^2} \\
\text{Total Impervious Area} &= 471.25 \text{ m}^2
\end{aligned}$$

$$\begin{aligned}
\text{Total Infiltration Volume Required} &= 471.25 \text{ m}^2 \times 5.0\text{mm} / (1000) \\
&= 2.36 \text{ m}^3
\end{aligned}$$

$$\begin{aligned}
\text{Volume Provided} &= 10.50\text{m} \times 1.0\text{m} \times 0.70\text{m} \times 40\% \text{ voids} \\
&= 2.94 \text{ m}^3
\end{aligned}$$

In-situ testing was completed for this proposed development. Based on the results, the rate of percolation, recommended by GEI Consultants Ltd., to use for the infiltration design is 60mm/hr. The drain time for the infiltration facility on the center lot will be 11.67 hours, as calculated below.



### Drawdown time

Where,

$$\begin{aligned} \text{Volume} &= 2.94 \text{ m}^3 \\ \text{Area} &= 10.50\text{m} \times 1.0\text{m} = 10.50\text{m}^2 \\ \text{Infiltration Rate} &= 60 \text{ mm/hr} / 2.5 \text{ (Safety Factor)} \\ &= 24 \text{ mm/hr} \end{aligned}$$

$$\begin{aligned} \text{Drawdown Time} &= \frac{\text{Volume}}{\text{Area} \times \text{Infiltration Rate}} \\ &= \frac{2.94\text{m}^3}{10.50\text{m}^2 \times (24\text{mm/hr} / 1000)} \\ &= \mathbf{11.67 \text{ hours}} \end{aligned}$$

## 4.0 STORMWATER – WEST LOT

The proposed grading design for the west lot will have a drainage divide. The north portion of the lot which includes the house, roof eavestrough, front yard and a portion of the side yard will drain north towards the existing Keefe Street road ditches. The rear yard area will drain to rear-yard catchbasin (RCB) 1 which will discharge west and drain into the proposed infiltration facility. The remaining lot area will maintain its current drainage patterns, draining west.

The proposed stormwater management design for the west lot will have the downspouts from the proposed house be connected to a below ground stone infiltration facility, as further discussed in Section 4.1. This will reduce the amount of stormwater leaving the individual site to the existing receiving areas. The paved areas from the Hammer Head will drain north towards the existing Keefe Street road swales. The use of enhanced vegetated swales along the proposed severance line to the east will be used to convey stormwater around the proposed house.

### 4.1 Infiltration Facility

A 13.0m long X 1.0m wide X 0.50m high stone infiltration facility will be provided in the front yard limits of the lot. The infiltration facility has been sized to accommodate the 5mm from all paved areas but only the clean roof water will be directed to the stone infiltration facility.

$$\begin{aligned} \text{Total Roof Area} &= 190.00 \text{ m}^2 \\ \text{Total Paved Area} &= \underline{229.00 \text{ m}^2} \\ \text{Total Impervious Area} &= 419.00 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Total Infiltration Volume Required} &= 419.00 \text{ m}^2 \times 5.0\text{mm} / (1000) \\ &= 2.10 \text{ m}^3 \end{aligned}$$



$$\begin{aligned} \text{Volume Provided} &= 13.0\text{m} \times 1.0\text{m} \times 0.50\text{m} \times 40\% \text{ voids} \\ &= 2.6 \text{ m}^3 \end{aligned}$$

In-situ testing was completed for this proposed development. Based on the results, the rate of percolation, recommended by GEI Consultants Ltd., to use for the infiltration design is 60mm/hr. The drain time for the infiltration facility on the west lot will be 8.33 hours, as calculated below.

Drawdown time

Where,

$$\begin{aligned} \text{Volume} &= 2.6\text{m}^3 \\ \text{Area} &= 13.0\text{m} \times 1.0\text{m} = 13.0\text{m}^2 \\ \text{Infiltration Rate} &= 60 \text{ mm/hr} / 2.5 \text{ (Safety Factor)} \\ &= 24 \text{ mm/hr} \end{aligned}$$

$$\begin{aligned} \text{Drawdown Time} &= \frac{\text{Volume}}{\text{Area} \times \text{Infiltration Rate}} \\ &= \frac{2.6\text{m}^3}{13.0\text{m}^2 \times (24\text{mm/hr} / 1000)} \\ &= \mathbf{8.33 \text{ hours}} \end{aligned}$$

As requested by the Town, a second infiltration facility 30.50m long X 1.5m wide X 1.00m high stone infiltration facility will be provided along the west limit of the lot. The infiltration facility has been sized to accommodate the 25mm from the rear yard landscaped areas from all three lots. The stone infiltration facility has been provided to reduce the amount of stormwater leaving the site.

$$\text{Total Tributary Area} = 2,000.00 \text{ m}^2 \quad C = 0.31$$

$$\begin{aligned} \text{Total Infiltration Volume Required} &= 2,000.00 \text{ m}^2 \times 0.31 \times 25.0\text{mm} / (1000) \\ &= 15.5 \text{ m}^3 \end{aligned}$$

$$\begin{aligned} \text{Volume Provided} &= 30.50\text{m} \times 1.5\text{m} \times 1.00\text{m} \times 40\% \text{ voids} \\ &= 18.3 \text{ m}^3 \end{aligned}$$

In-situ testing was completed for this proposed development. Based on the results, the rate of percolation, recommended by GEI Consultants Ltd., to use for the infiltration design is 60mm/hr. The drain time for the infiltration facility along the west limits of the west lot will be 25.0 hours, as calculated below.



### Drawdown time

Where,

$$\begin{aligned}\text{Volume} &= 18.3\text{m}^3 \\ \text{Area} &= 30.5.0\text{m} \times 1.0\text{m} = 30.5\text{m}^2 \\ \text{Infiltration Rate} &= 60 \text{ mm/hr} / 2.5 \text{ (Safety Factor)} \\ &= 24 \text{ mm/hr}\end{aligned}$$

$$\begin{aligned}\text{Drawdown Time} &= \frac{\text{Volume}}{\text{Area} \times \text{Infiltration Rate}} \\ &= \frac{18.3\text{m}^3}{30.5\text{m}^2 \times (24\text{mm/hr} / 1000)} \\ &= 25.0 \text{ hours}\end{aligned}$$

## 5.0 SANITARY

There is an existing 200mm sanitary sewer located on Keefe Street with a minimum slope of 1.67% which currently services the seven residential units. A new 1200mm manhole as per OPSD 701.010 and 100mm sanitary sewer will connect the proposed east lot to the existing sanitary sewer located at the south end of Keefe Street.

### 5.1 Existing Sanitary Sewer Capacity

As mentioned above there is an existing 200mm sanitary sewer along Keefe Street with a minimum slope of 1.67% which currently services seven residential units. To ensure there is sufficient capacity within the existing sanitary sewer flows were calculated for the seven residential units based on the MOE Design Guidelines for Sewage Works and are presented below:

$$\begin{aligned}\text{Tributary Area} &= 0.788 \text{ ha (existing residential lots tributary to sewer)} \\ \text{Residential Units} &= 7 \text{ units (assuming 3.13 people per unit)} \\ \text{Population} &= 7 \text{ units} \times 3.13 \text{ people/unit} \\ &= 22 \text{ people} \\ \text{Average Daily Flow} &= (225 \text{ L/day/person} \times 22 \text{ people}) / 86,400 \\ &= 0.06 \text{ l/s}\end{aligned}$$

$$\text{Peaking Factor (PF): } PF = 1 + \left( \frac{14}{4 + \left( \frac{22}{1000} \right)^{\frac{1}{2}}} \right) = 4.37$$

$$\text{Extraneous Flow} = 0.1 \text{ l/s/ha} \times 0.788 \text{ ha} = 0.08 \text{ l/s}$$





Total Existing Flows:

$$\begin{aligned} &= \text{Avg. Daily Flow} \times \text{PF} + \text{Extraneous Flow} \\ &= (0.06 \text{ l/s} \times 4.37) + 0.08 \text{ l/s} \\ &= 0.34 \text{ l/s} \end{aligned}$$

The existing 200mm sanitary sewer with a minimum slope of 1.67% has a pipe capacity of 44.22 l/s.

## 5.2 Proposed Sanitary Sewer

A new 100mm sanitary sewer with a minimum slope of 2.0% will connect the east, center and west lot to the existing sanitary sewer located at the south end of Keefe Street. Based on the MOE Design Guidelines for Sewage Works the sanitary flows for the proposed east and west lot has been calculated below:

East Lot

$$\begin{aligned} \text{Tributary Area} &= 0.27 \text{ ha (east lot)} \\ \text{Residential Units} &= 1 \text{ units (assuming 3.13 people per unit)} \\ \text{Population} &= 1 \text{ units} \times 3.13 \text{ people/unit} \\ &= 4 \text{ people} \\ \text{Average Daily Flow} &= (225 \text{ L/day/person} \times 4 \text{ people}) / 86,400 \\ &= 0.01 \text{ l/s} \end{aligned}$$

$$\text{Peaking Factor (PF): } PF = 1 + \left( \frac{14}{4 + \left( \frac{4}{1000} \right)^{\frac{1}{2}}} \right) = 4.45$$

$$\text{Extraneous Flow} = 0.1 \text{ l/s/ha} \times 0.27 \text{ ha} = 0.027 \text{ l/s}$$

Total Proposed Flows (East Lot):

$$\begin{aligned} &= \text{Avg. Daily Flow} \times \text{PF} + \text{Extraneous Flow} \\ &= (0.01 \text{ l/s} \times 4.45) + 0.027 \text{ l/s} \\ &= \mathbf{0.072 \text{ l/s}} \end{aligned}$$

Center Lot

$$\begin{aligned} \text{Tributary Area} &= 0.15 \text{ ha (center lot)} \\ \text{Residential Units} &= 1 \text{ units (assuming 3.13 people per unit)} \\ \text{Population} &= 1 \text{ units} \times 3.13 \text{ people/unit} \\ &= 4 \text{ people} \end{aligned}$$



$$\begin{aligned} \text{Average Daily Flow} &= (225 \text{ L/day/person} \times 4 \text{ people}) / 86,400 \\ &= 0.01 \text{ l/s} \end{aligned}$$

$$\text{Peaking Factor (PF): } PF = 1 + \left( \frac{14}{4 + \left( \frac{4}{1000} \right)^{\frac{1}{2}}} \right) = 4.45$$

$$\text{Extraneous Flow} = 0.1 \text{ l/s/ha} \times 0.15 \text{ ha} = 0.015 \text{ l/s}$$

Total Proposed Flows (Center Lot):

$$\begin{aligned} &= \text{Avg. Daily Flow} \times PF + \text{Extraneous Flow} \\ &= (0.01 \text{ l/s} \times 4.45) + 0.015 \text{ l/s} \\ &= \mathbf{0.060 \text{ l/s}} \end{aligned}$$

West Lot

$$\begin{aligned} \text{Tributary Area} &= 0.15 \text{ ha (west lot)} \\ \text{Residential Units} &= 1 \text{ units (assuming 3.13 people per unit)} \\ \text{Population} &= 1 \text{ units} \times 3.13 \text{ people/unit} \\ &= 4 \text{ people} \end{aligned}$$

$$\begin{aligned} \text{Average Daily Flow} &= (225 \text{ L/day/person} \times 4 \text{ people}) / 86,400 \\ &= 0.01 \text{ l/s} \end{aligned}$$

$$\text{Peaking Factor (PF): } PF = 1 + \left( \frac{14}{4 + \left( \frac{4}{1000} \right)^{\frac{1}{2}}} \right) = 4.45$$

$$\text{Extraneous Flow} = 0.1 \text{ l/s/ha} \times 0.15 \text{ ha} = 0.015 \text{ l/s}$$

Total Proposed Flows (West Lot):

$$\begin{aligned} &= \text{Avg. Daily Flow} \times PF + \text{Extraneous Flow} \\ &= (0.01 \text{ l/s} \times 4.45) + 0.015 \text{ l/s} \\ &= \mathbf{0.060 \text{ l/s}} \end{aligned}$$

Total Sanitary Flows:

$$\begin{aligned} &= \text{Existing Flow} + \text{Proposed Flow from East Lot} + \text{Proposed Flows from West Lot} \\ &\quad + \text{Proposed Flows from West Lot} \\ &= 0.34 \text{ l/s} + 0.072 \text{ l/s} + 0.060 \text{ l/s} + 0.060 \text{ l/s} \\ &= \mathbf{0.53 \text{ l/s}} \end{aligned}$$



An additional 0.072 l/s, 0.060 l/s and 0.060 l/s of sanitary flows from the proposed east, center and west lot, respectively, will be added to the existing 200mm sanitary sewer along Keefe Street. The existing 200mm sanitary sewer with a minimum slope of 1.67% has a pipe capacity of 44.22 l/s and has adequate capacity to convey the additional flows generated from the proposed residential developments.

## 6.0 WATER SERVICE CONNECTION

A new 25mm domestic connection to the existing 100mm watermain on Keefe Street, will be made to provide the water service connection to the proposed east lot. A new fire hydrant will be installed at the end of the existing 100mm watermain along Keefe Street to ensure fire protection is available and the maximum spacing of 90m between the existing hydrant on Burke Street and the proposed fire hydrant is maintained.

## 7.0 WELL HEAD PROTECTION ZONE

As shown on plans 8-1 and 8a-4 from the Severn Sound Source Protection Area Approved Assessment Report in **Appendix A**, this property is within the Payette Well head Protection Zone. This property is zoned residential. This lot will be connecting to existing municipal sanitary sewer and municipal watermain. The storm sewer runoff will be roof and grass area. As such, there is no risk or contravention to the Well Head Protection Area.



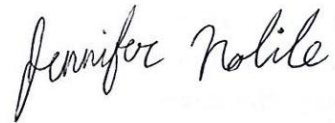
## 8.0 EXTENSION OF KEEFE STREET WITH HAMMER HEAD TURN AROUND

Keefe Street will be extended south for approximately 10m, from the current south limit of pavement, to the Parts 4 & 5 areas on Plan 51R-30663, being conveyed to the Town. The purpose for the conveyance of these two Parts, is to construct a 'Hammer Head' style turn around for municipal vehicles, such as snow plows and emergency vehicles. There is also room for snow storage at the west end of the turn around on Part 5. See **Appendix A** for Plan HH-1 showing proposed Hammer Head turn around on Parts 4 & 5. The extension of Keefe Street to the two Parts, will be maintaining the current rural design with ditches. The pavement structure for the Keefe Street extension and Hammer Head turn around will be constructed to the Town standards or as recommended in the geotechnical report (whichever is greater).

Prepared by,  
**a.m. candaras associates inc.**



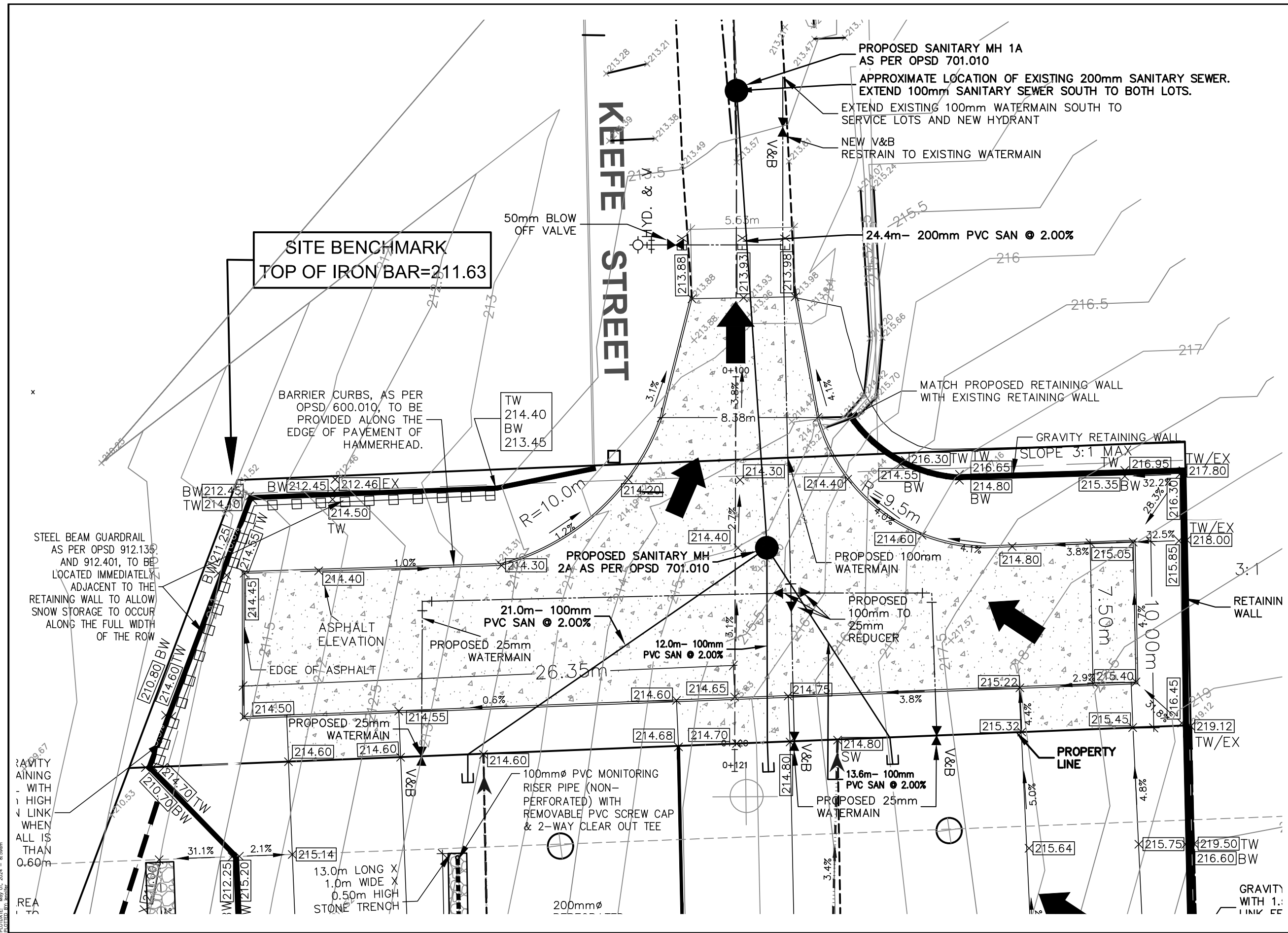
A.M. Candaras, P. Eng.  
Consulting Engineer



Jennifer Nobile, EIT  
May 01, 2024



## APPENDIX A



- ### LEGEND
- X 224.90 EX EXISTING ELEVATION
  - X 224.90 EX EXISTING ELEVATION
  - X 224.90 PROPOSED ELEVATION
  - X 224.90 TW TOP OF WALL ELEVATION
  - X 224.90 BW BOTTOM OF WALL ELEVATION
  - RETAINING WALL

REFER TO PLAN G-1 FOR THE PROPOSED LOT GRADING.

THE PAVEMENT STRUCTURE IS TO BE AS PER THE GEOGRAPHICAL ENGINEERING REPORT COMPLETED BY GEOPRO. THE PAVEMENT SPECIFICATIONS ARE OUTLINED BELOW:

- 40mm HL3
- 50mm HL8
- 150mm GRANULAR 'A'
- NATIVE BASE
- 300mm GRANULAR 'B' TYPE I SUBBASE

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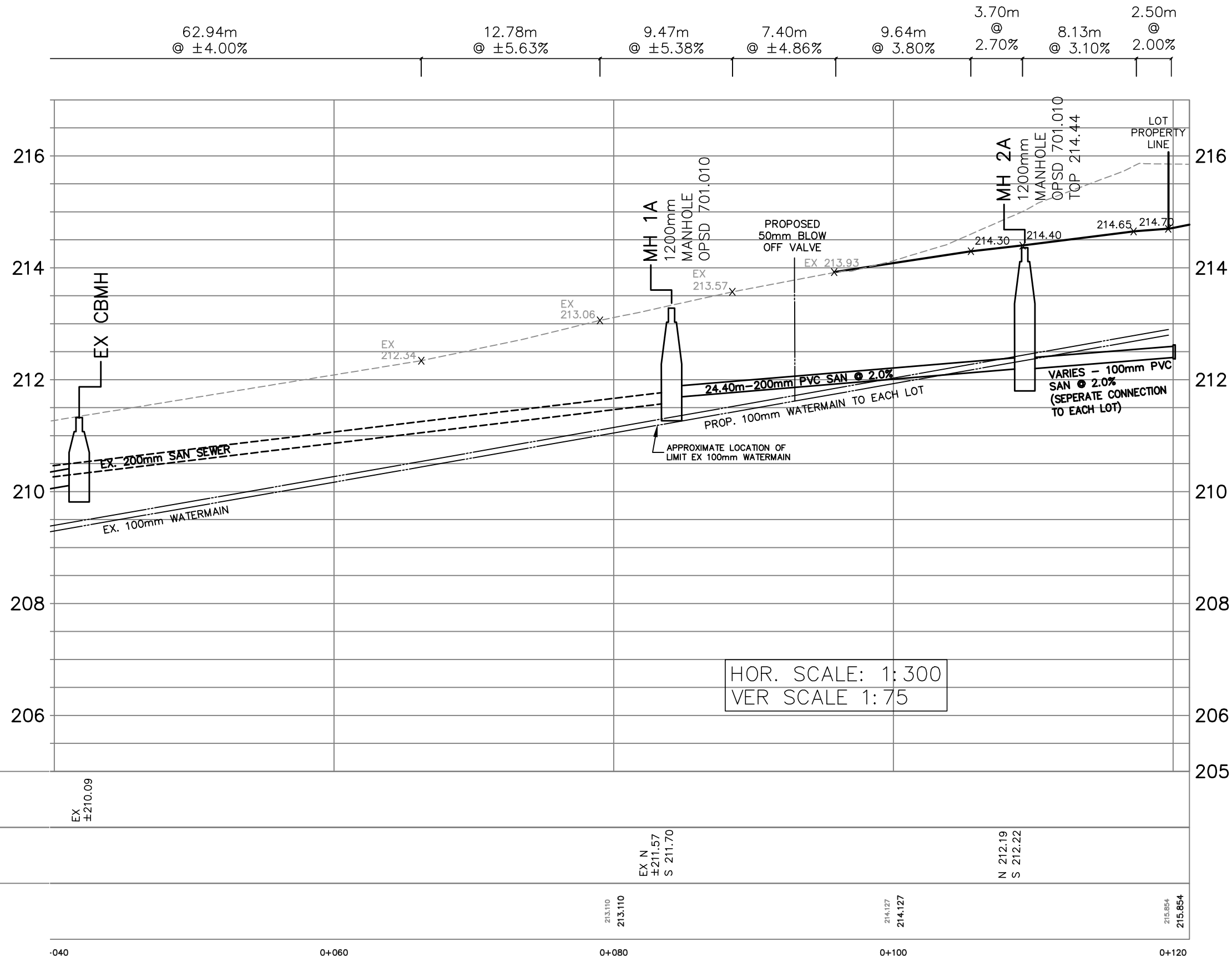
**KEEFE STREET**

**TOWN OF PENETANGUISHENE  
 COUNTY OF SIMCOE**

**HAMMERHEAD GRADING  
 PLAN**

SCALE: 1:200 DATE: MAY 2024 PROJ No. 2250  
 DRAWN: J.M.N. CHK'D: D.R. PLAN No. **HH-1**  
 DESIGNED: D.R. SHEET 1 OF 1

PLAN No. HH-1  
 SCALE: 1:200  
 DATE: MAY 2024  
 PROJ No. 2250  
 DRAWN: J.M.N.  
 CHK'D: D.R.  
 DESIGNED: D.R.  
 SHEET 1 OF 1



**LEGEND**  
 x 224.90 EX EXISTING ELEVATION  
 x 224.90 PROPOSED ELEVATION

HOR. SCALE: 1:300  
 VER SCALE 1:75

STORM  
 INVERTS  
 SANITARY  
 INVERTS

EX ±210.09				
		EX N ±211.57 S 211.70	N 212.19 S 212.22	
		213.110 213.110	214.127 214.127	215.854 215.854
-040	0+060	0+080	0+100	0+120

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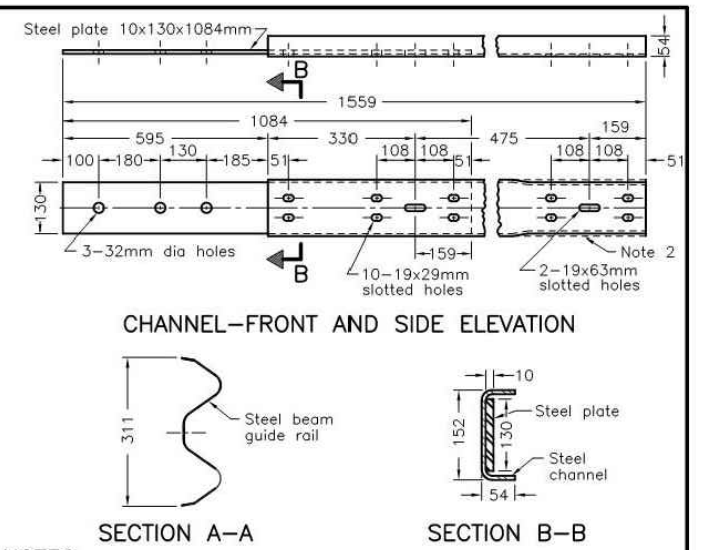
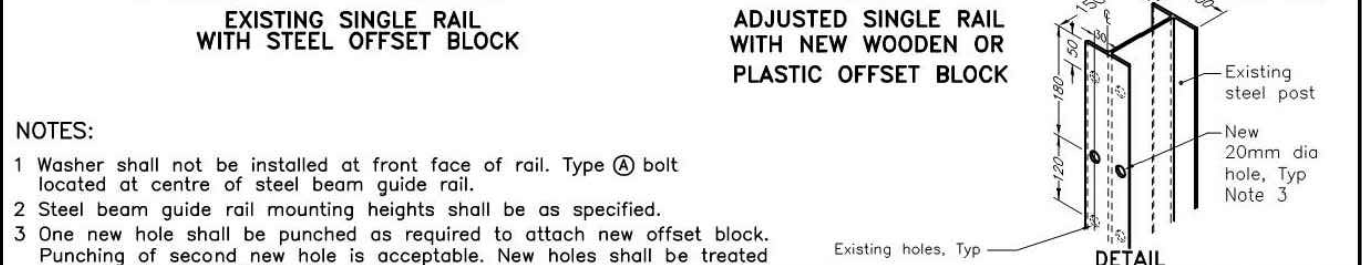
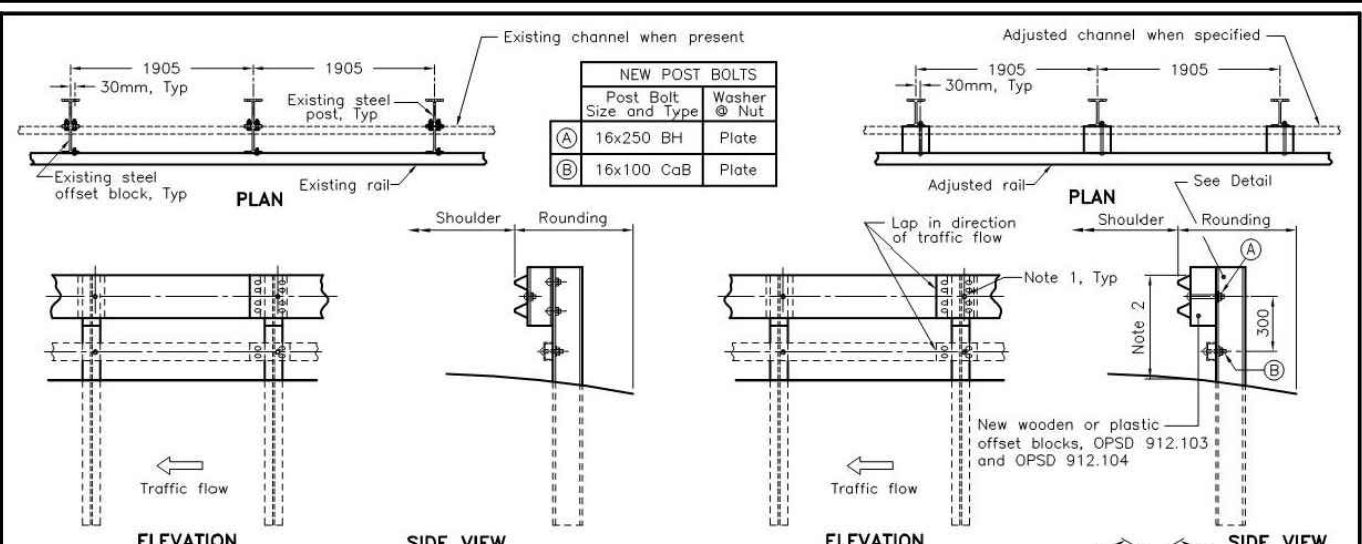
**KEEFE STREET**

**TOWN OF PENETANGUISHENE  
 COUNTY OF SIMCOE**

**KEEFE STREET  
 PROFILE**

SCALE: AS NOTED	DATE: MAY 2024	PROJ No: 2250
DRAWN: J.M.N.	CHK'D: D.R.	PLAN No:
DESIGNED: D.R.	SHEET 1 OF 1	<b>P-1</b>

PLANNING: CA 1/20/24 2:26pm  
 FLOODING: Rev 01 - 2024 - 8:00am  
 EQUIPMENT: Rev 01 - 2024 - 8:00am



**NOTES:**

- 1 Washer shall not be installed at front face of rail. Type (A) bolt located at centre of steel beam guide rail.
- 2 Steel beam guide rail mounting heights shall be as specified.
- 3 One new hole shall be punched as required to attach new offset block. Punching of second new hole is acceptable. New holes shall be treated according to ASTM A780. New holes shall not be flame cut.

A This OPSD shall be read in conjunction with OPSD 912.103 and 912.104.  
 B All dimensions are in millimetres unless otherwise shown.

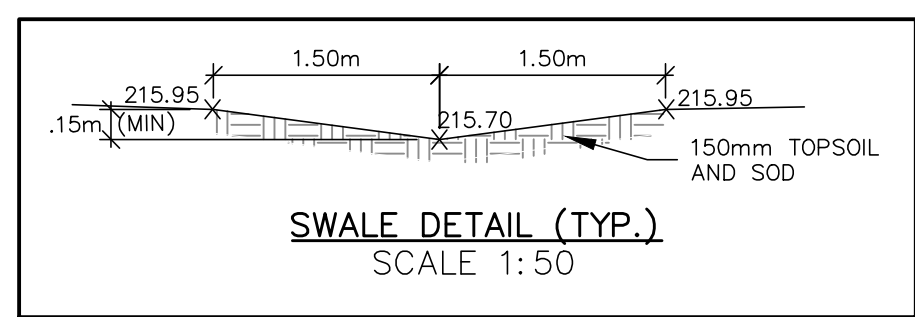
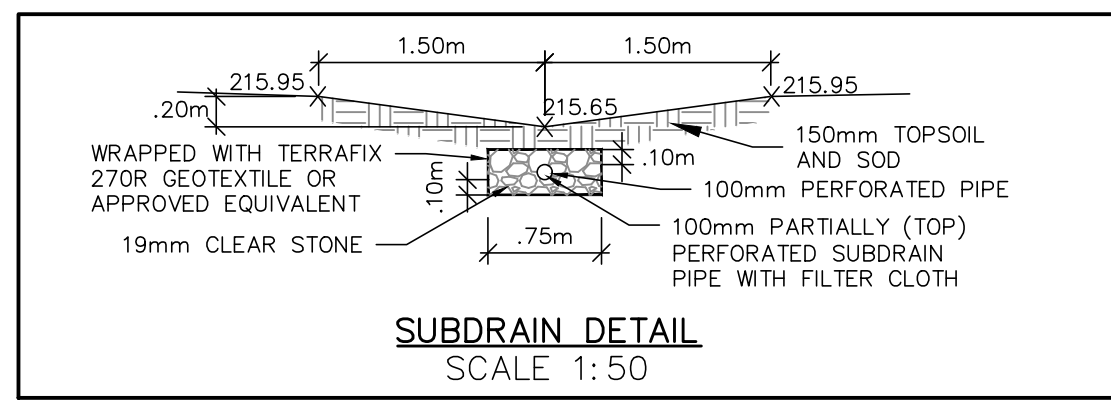
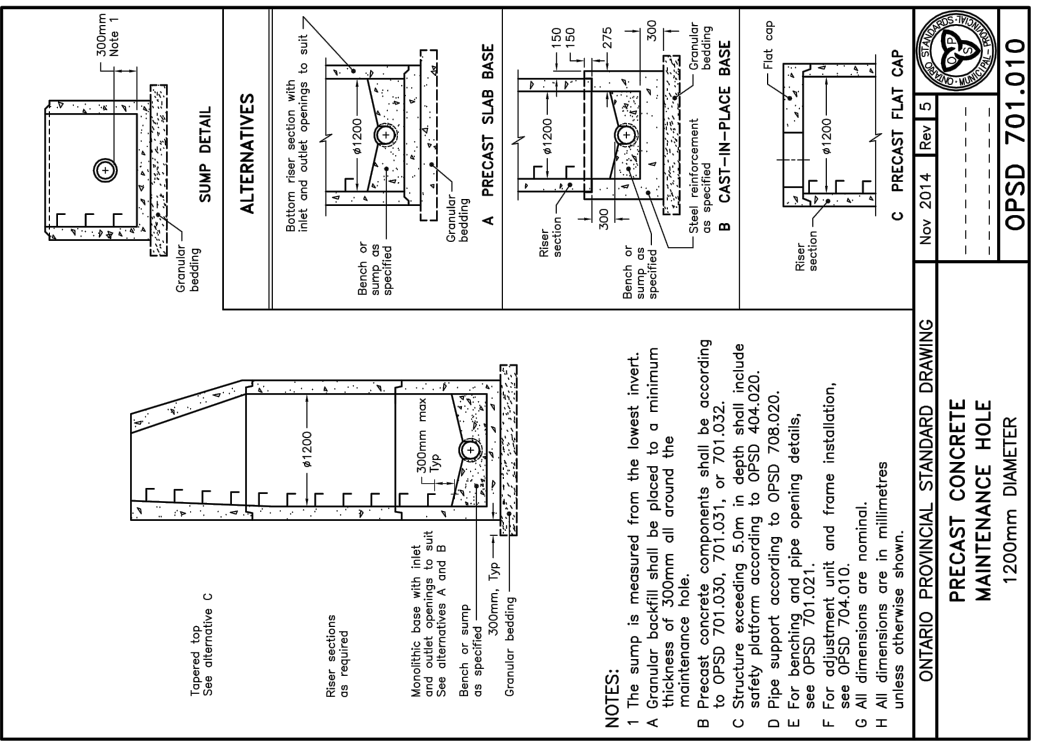
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 1	
<b>GUIDE RAIL SYSTEM, STEEL BEAM STEEL POST WITH STEEL OFFSET BLOCK ASSEMBLY</b>			
<b>ADJUSTMENT - SINGLE RAIL</b>	<b>OPSD 912.135</b>		

**NOTES:**

- 1 End sections shall be welded with 2.5mm fillets and standard guide rail element materials shall be used.
- 2 Channel with swaged end shall be used at structure approach and non swaged end section shall be used at structure exit.

A All welds shall be to low hydrogen classification and shall be ground smooth. Manual electrodes shall be E7015, E7016, and E7018.  
 B This OPSD to be read in conjunction with OPSD-912.101 and 912.102.  
 C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2001	Rev 0	
<b>GUIDE RAIL SYSTEM, STEEL BEAM STRUCTURE CONNECTION</b>			
<b>COMPONENT - RAIL AND CHANNEL</b>	<b>OPSD - 912.401</b>		



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**KEEFE STREET**

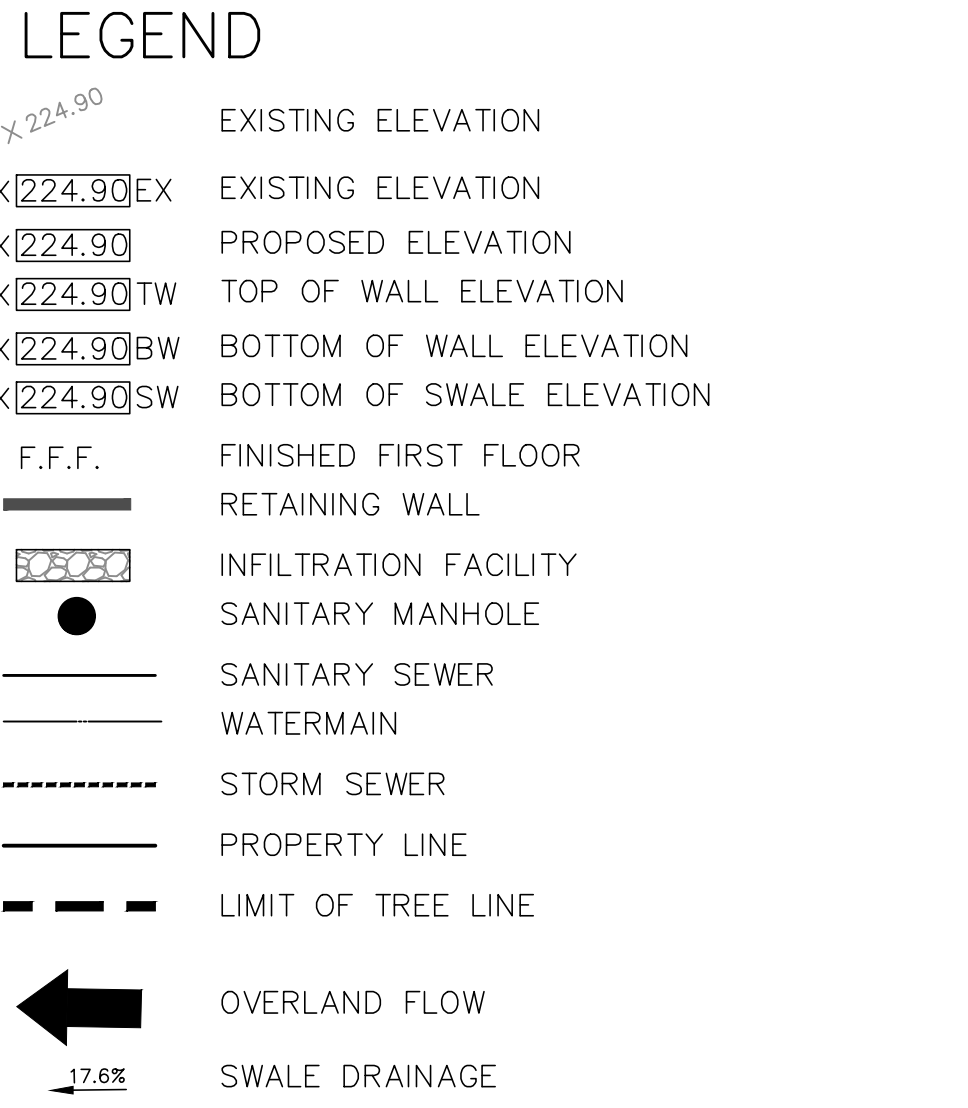
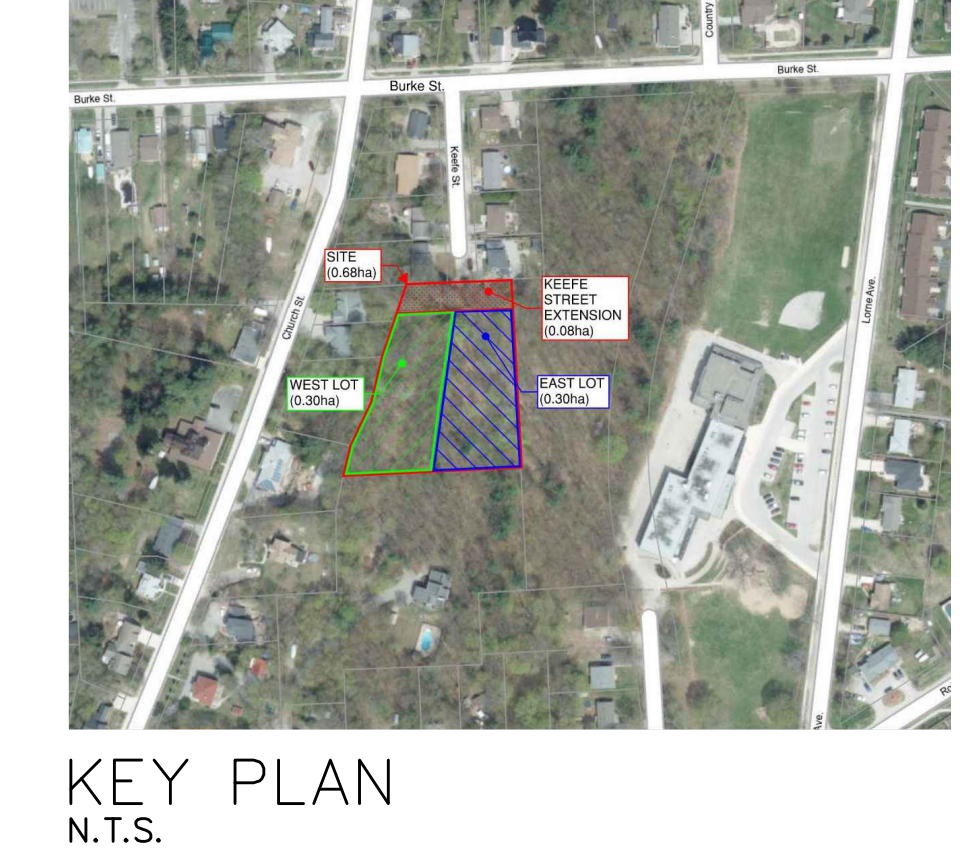
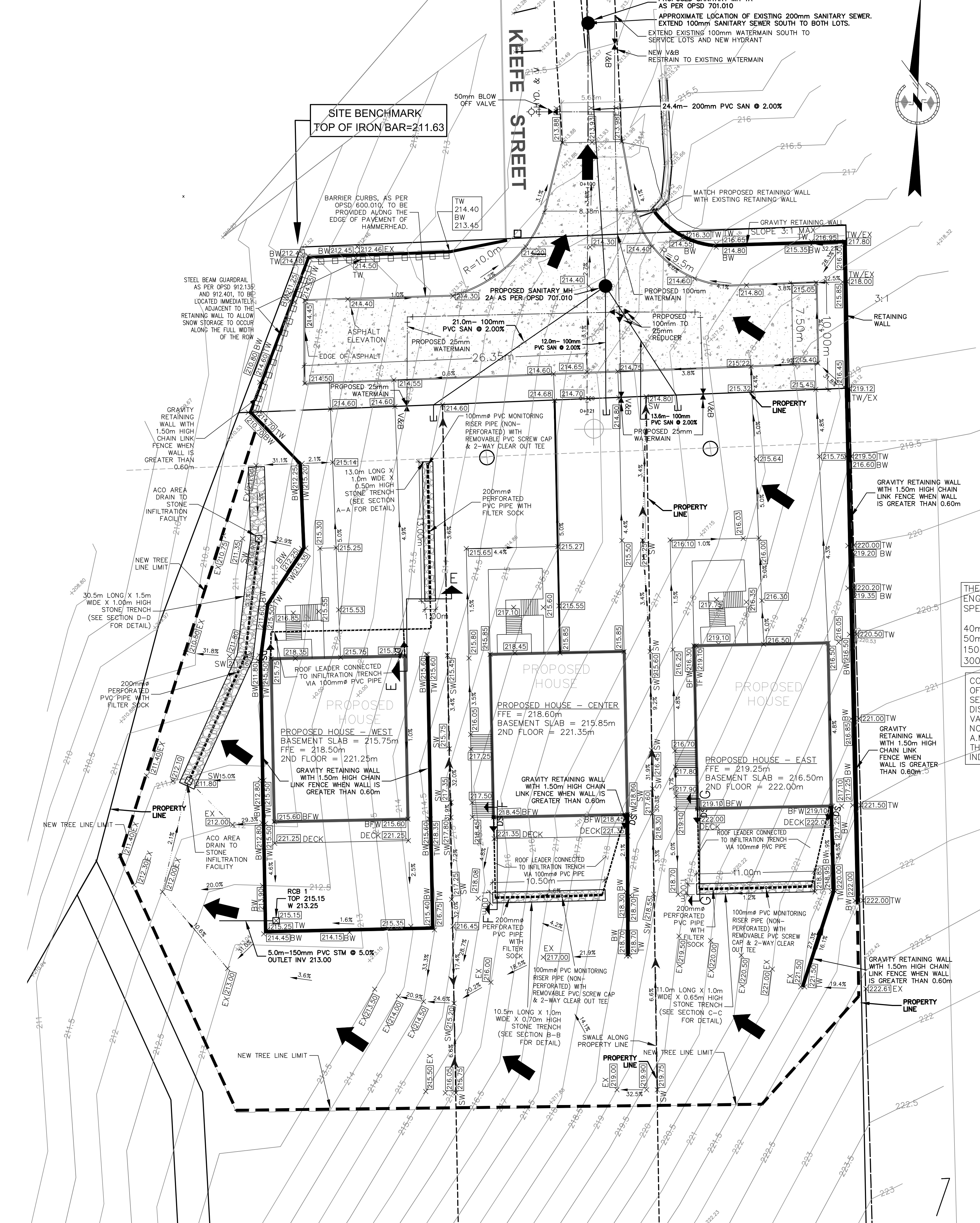
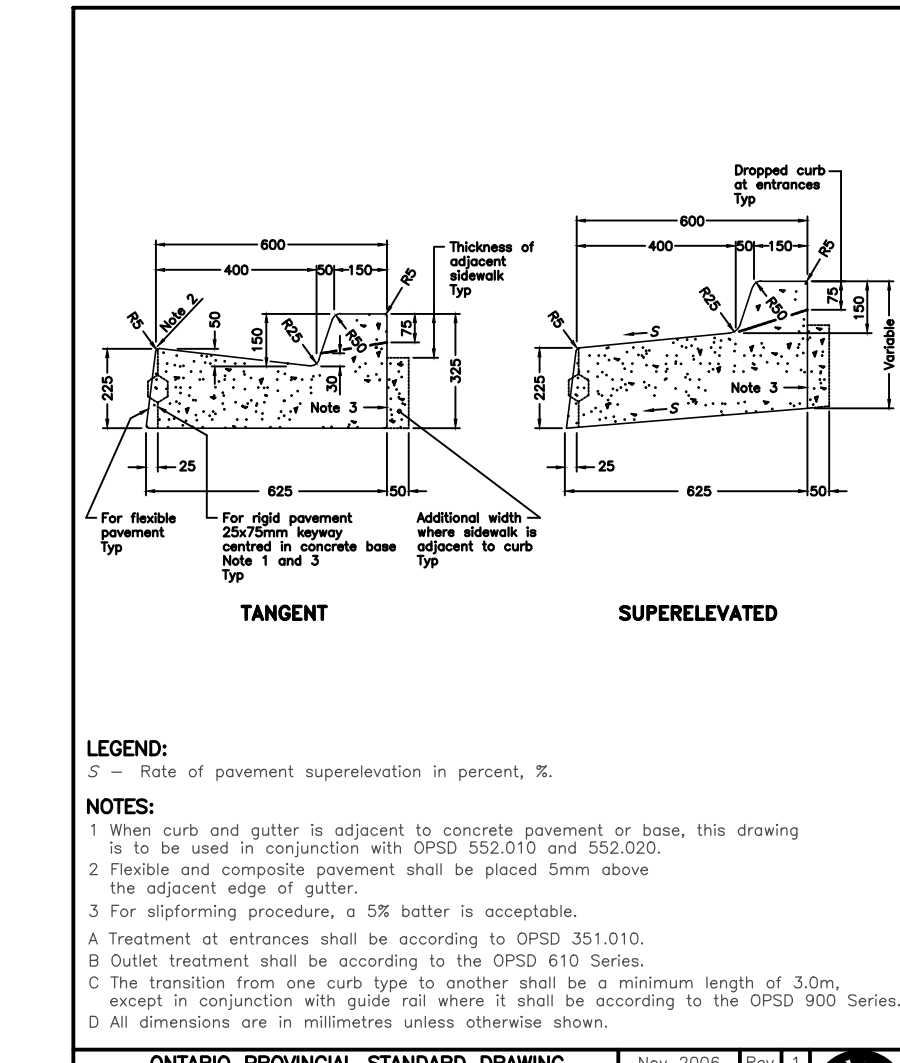
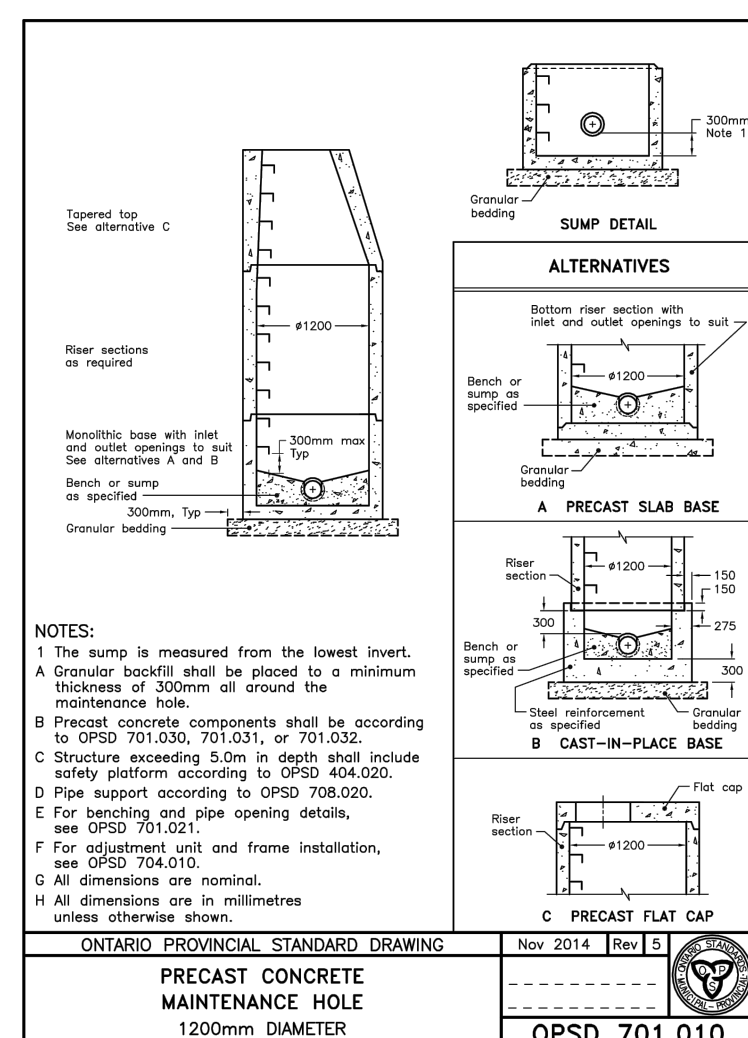
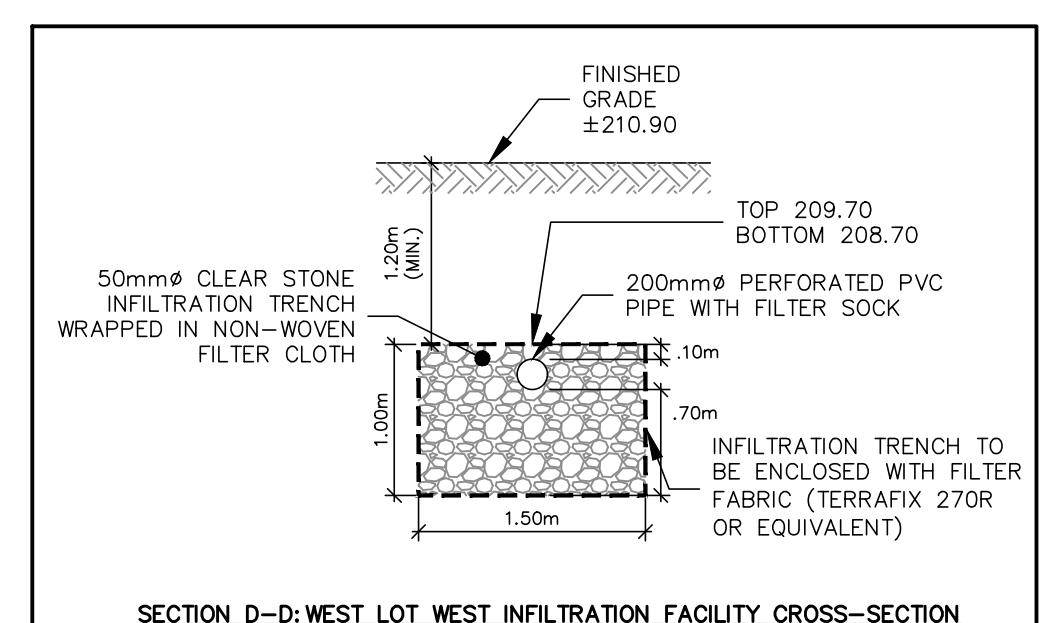
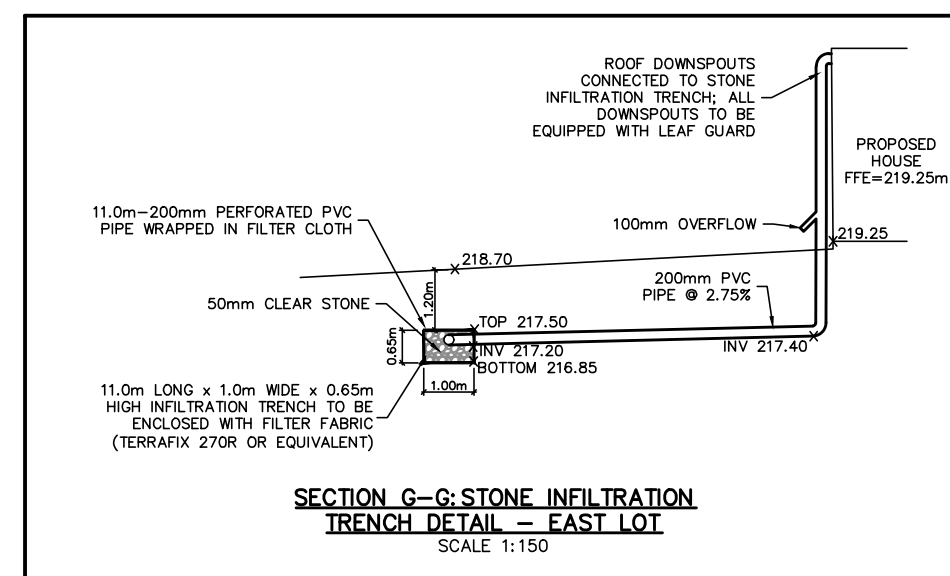
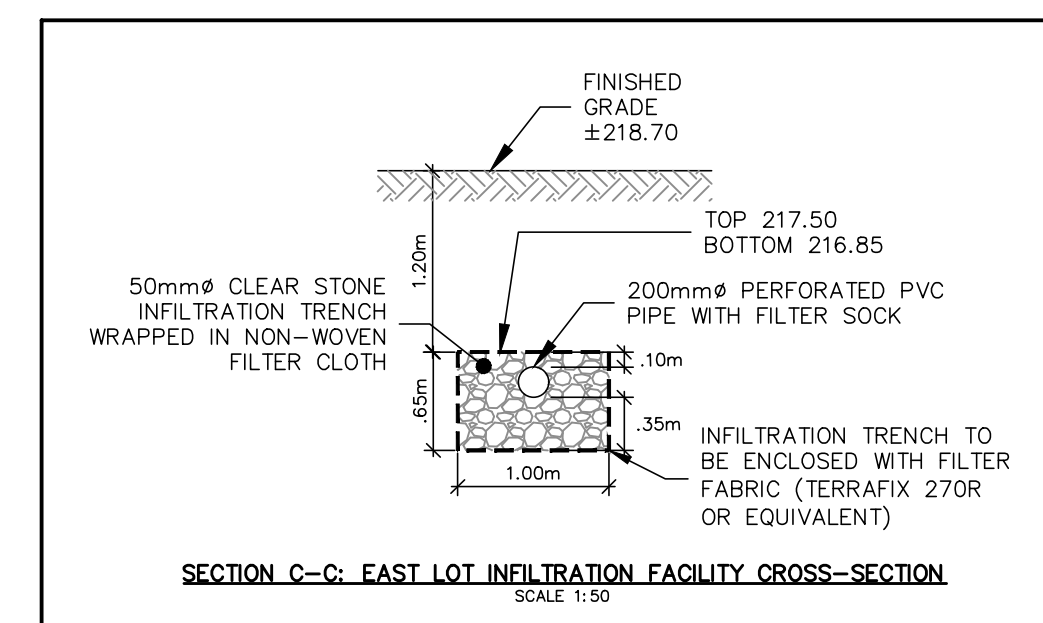
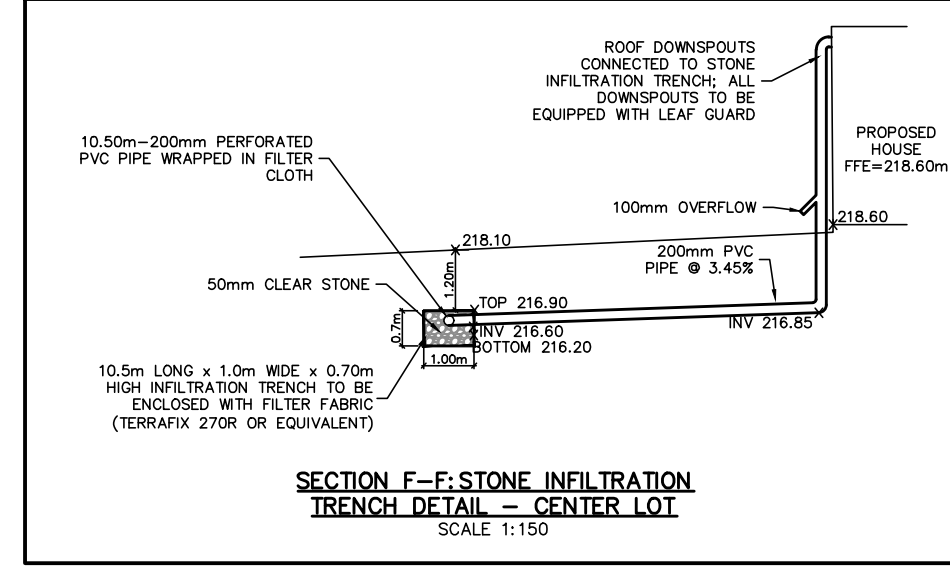
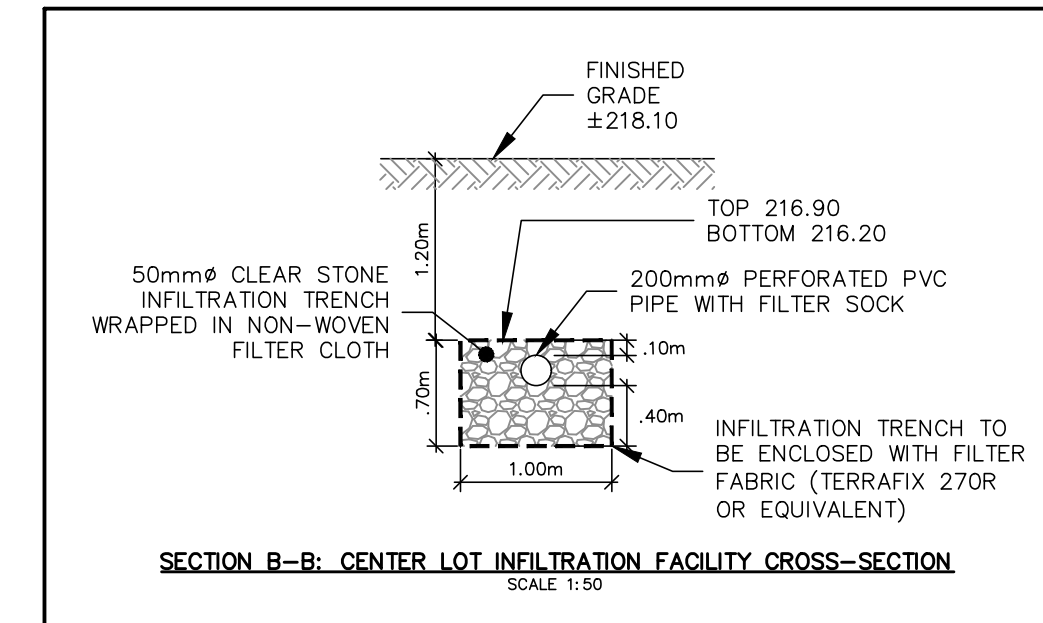
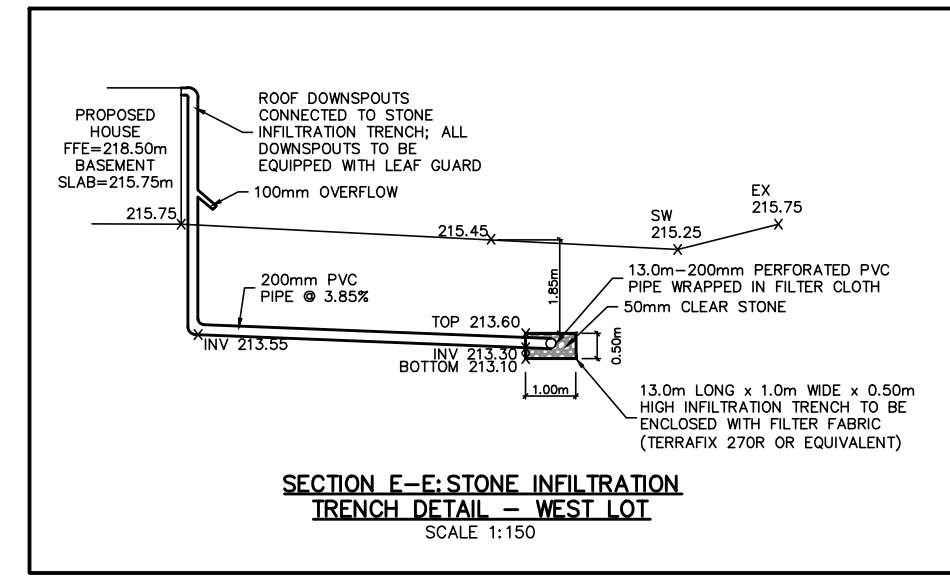
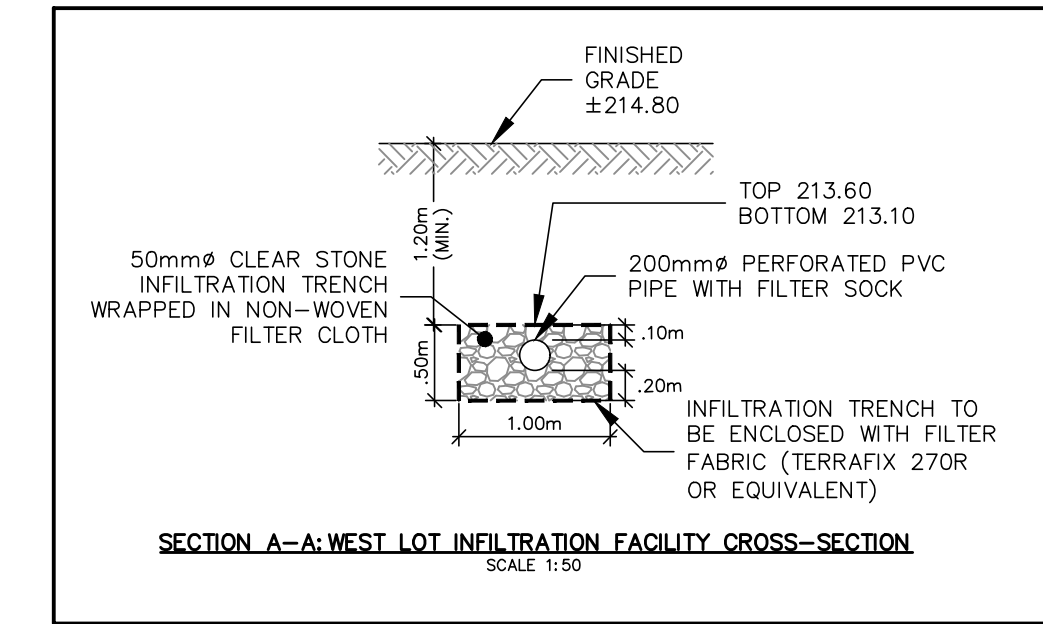
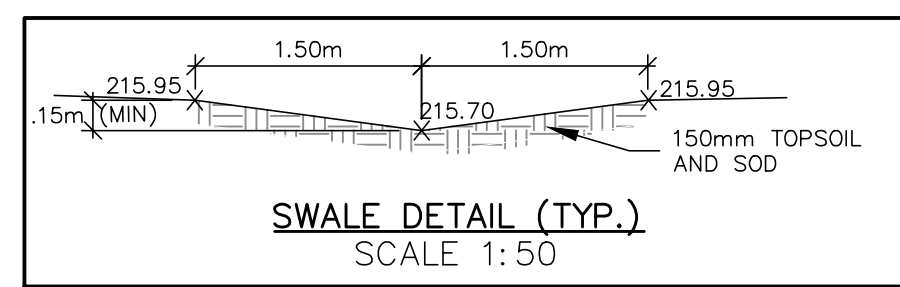
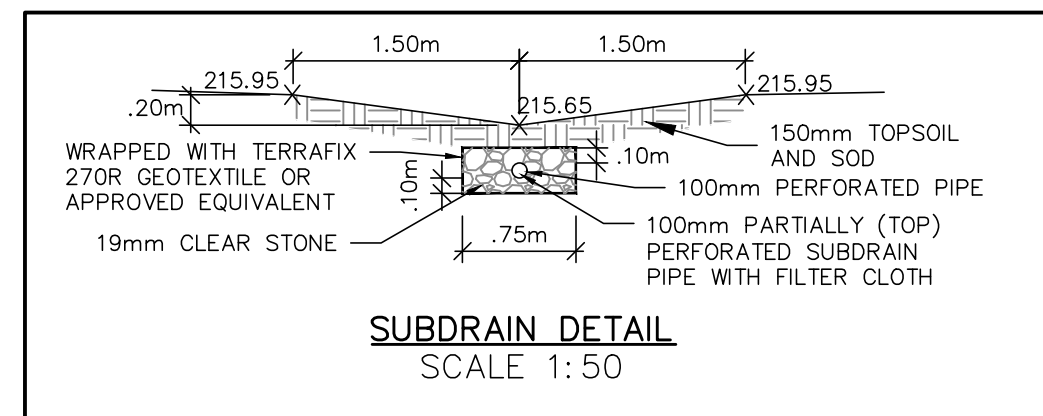
**TOWN OF PENETANGUISHENE  
 COUNTY OF SIMCOE**

**CONSTRUCTION DETAIL  
 PLAN**

SCALE: 1:200	DATE: MAY 2024	PROJ No. 2250
DRAWN: J.M.N.	CHK'D: D.R.	PLAN No.
DESIGNED: D.R.	SHEET 1 OF 1	<b>C-1</b>

PLANNING: CA 1/20/24 1:200 - 1:200  
 FLOODING: Rev 01 - 2024 - 912.035  
 QUANTITY: Rev 01 - 2024 - 912.035

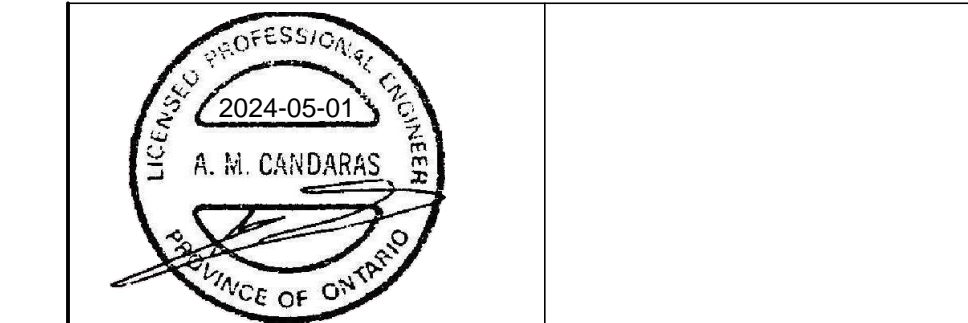




THE PAVEMENT STRUCTURE IS TO BE AS PER THE GEOGRAPHICAL ENGINEERING REPORT COMPLETED BY GEOPRO. THE PAVEMENT SPECIFICATIONS ARE OUTLINED BELOW:

- 40mm HL3
- 50mm HL8
- 150mm GRANULAR 'A' NATIVE BASE
- 300mm GRANULAR 'B' TYPE I SUBBASE

CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL EXISTING UNDERGROUND AND ABOVE UTILITIES AND SERVICES. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCED NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. A.M. CANDARAS ASSOCIATES INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.



No.	Date	By	REVISIONS
5	MAY 01/24	A.W.C.	ISSUED FOR SPA - 3 LOT DESIGN
4	SEP 20/23	A.W.C.	REVISED AS PER TOWN'S COMMENTS
3	JULY 28/23	J.M.N.	ISSUED FOR 4TH SPA SUBMISSION
2	MAY 01/23	J.M.N.	ISSUED FOR 3RD SPA SUBMISSION
1	APR 26/23	J.M.N.	ISSUED FOR COORDINATION

a.m.candaras associates inc.  
consulting engineers  
8551 Weston rd., suite 203  
Woodbridge ont. L4L 9R4  
905-850-8020 Fax 905-850-8099  
Email: civil@amcai.com

**KEEFE STREET & 2 LOT SERVICING**

**TOWN OF PENETANGUISHENE**

**SITE SERVICING, STORMWATER MANAGEMENT & GRADING PLAN**

SCALE: 1:200	DATE: MAY 2024	PROJ No. 2250
DRAWN: A.W.C.	CHK'D: D.R.	PLAN No. G-1
DESIGNED: J.M.N.	SHEET 1 OF 1	