

**Attn:** Alisha Cull  
Planning and Realty Services Department  
Norfolk County  
Community and Development Services Division  
12 Gilbertson Drive  
Simcoe, ON  
N3Y 3N3  
519-426-5870  
[alisha.cull@norfolkcounty.ca](mailto:alisha.cull@norfolkcounty.ca)



**From:** William Reed  
CDN Buildings  
523 James Street, Unit 3  
Delhi, ON  
N4B 2C2  
519-582-8222  
[wr@cdnbuildings.com](mailto:wr@cdnbuildings.com)

**Re:** Site Plan Application SPPL2025233  
2148 Highway 3 - Roll Number 3310.491.028.07800  
Responses to September 16, 2025 Letter

**Date:** 8-Dec-25

Dear Alisha,

CDN Buildings acknowledges the letter sent to our offices in which you confirm the receipt of the full set of plans for the Site Plan Amendment Application. We note the agency comments provided and have issued responses. Please accept this letter and coordinated responses as a response matrix for this stage of the application.

Please refer to the chart on the following sheets for coordinated comment responses.

Please do not hesitate to contact us should any clarifications be required.

Sincerely,

A handwritten signature in black ink that reads "W. Reed." with a stylized flourish at the end.

William Reed

**COMMENT RESPONSE MATRIX**

DEPARTMENT	COMMENT	RESPONSE	REFERENCE
Planning and Realty Services Department	Scale	Complete - added	A1.01
	North Arrow	Complete - added	A1.01
	Legal Description	Legal Description not shown on site plan but provided in response letter as follows: WDM CON 14 PT LOT 23 RP 37R3879 PARTS 3 AND 4 REG 40.47AC FR D	This document
	Development Name	Complete - added	A1.01
	Owner name, address, and telephone number	Complete - added	A1.01
	Existing easement	No existing Easements	This document
	Zoning compliance table - required vs. proposed	Complete - added	A1.01
	Updated parking space totals - required vs. proposed	Already provided "Parking Requirements" Table on site plan sheet.	A1.01
	Mark entrances to parking areas with arrows	Complete - added	A1.01
	All setbacks of buildings and structures to property lines	Complete - added	A1.01
	Septic system setbacks from lot lines and existing and proposed structures	Complete - added	A1.01
	Location of well and setbacks from lot lines and existing and proposed structures	Refer to Notes and details, Site Servicing Plan, and Site Grading Plan, for the location of the well complete with 15m setback shown.	ND-1 SS-1 SG-1
	Refuse disposal and storage areas (if indoors, need notation on plan)	Complete - added	A1.01
	Snow storage locations	Complete - added	A1.01
	Any proposed landscaping, existing trees, etc.	Complete - grassed area and existing treed area extents noted.	A1.01
	Any proposed fencing	None applicable	
	Light standards and wall mounted lights with note that lighting will be dark sky compliant	Complete - Lighting photometrics plan provided.	E-100
	Any proposed signage	Complete - No parking signs added	A1.01
	Please include a response matrix outlining how the comments have been addressed	Complete - Please refer to this document	This document

Continued on next sheet

**COMMENT RESPONSE MATRIX**

DEPARTMENT	COMMENT	RESPONSE	REFERENCE
Building Department	1) Industrial building will require a standpipe system. [OBC 3.5.7.8, NFPA 14]	Complete - Provided. Refer to civil drawings and fire protection drawings. Refer to architectural drawings for building matrix.	A0.01
	1a) Location of fire department connection on industrial building is required	Complete - Provided on Site Plan, Site Servicing Plan, and Site Grading Plan	A1.01 SS-1 SG-1
	1b) Fire water capacity to be included in functional servicing report. [NFPA 14]	Complete - Provided in FSR document.	FSR Section 3.3, Page 6
	1c) Fire water mains to be indicated on civil drawing(if applicable) [OBC 7.2.11.1]	Complete - Provided on Site Servicing Plan and Pond Plan.	SS-1 PND-1
	1d) Location of pump house to be indicated on the civil drawings (if applicable) [OBC 3.2.5.18, NFPA 20]	Complete - Provided on Site Plan, Site Servicing plan, Site Grading Plan, Pond Plan, and Post Development Stormwater Drainage Plan	A1.01 SS-1 SG-1 PND-1 SWM-2
	2) Industrial building as designed will require a sprinkler system - interconnected floor space [OBC 3.2.5.12, nfpa 13, 3.2.8.2.]	Complete - provided. Refer to Architectural drawings for the building matrix, refer to civil plans for the servicing of the sprinkler system, refer to FSR for fire flows, and refer to fire protection drawings for system design/drawings/details.	A0.01 SS-1 PND-1
	2a) Location of fire department connection on industrial building is required [OBC 3.2.5.15]	Complete - Provided on Site Plan, Site Servicing Plan, and Site Grading Plan	A1.01 SS-1 SG-1
	2b) Fire water capacity to be included in functional servicing report [NFPA 13]	Complete - Provided in FSR document.	FSR Section 3.3, Page 6
	2c) Fire mains to be indicated on civil drawing (if applicable) [OBC 7.2.11.1]	Complete - Provided on Site Servicing Plan and Pond Plan.	SS-1 PND-1
	2d) Location of pump house to be indicated on civil drawings (if applicable) [OBC 3.2.5.18, NFPA 20]	Complete - Provided on Site Plan, Site Servicing plan, Site Grading Plan, Pond Plan, and Post Development Stormwater Drainage Plan	A1.01 SS-1 SG-1 PND-1 SWM-2

Continued on next sheet

COMMENT RESPONSE MATRIX			
DEPARTMENT	COMMENT	RESPONSE	REFERENCE
Building Department	3) Fire department access to farm building (greenhouse) is required. Access lane to be indicated on the civil drawings. [OBC 2.2.4.1.]	Complete - Provided on Site plan and Site Servicing Plan.	A1.01 SS-1
	4) Existing agricultural buildings being used as a contractors shop. A change of use/building permit is required to change the building from a farm building of low human occupancy to an industrial occupancy. [BCA 8/10]	Not Applicable - these buildings will be retained as farm buildings and will be accessory to the agricultural use. The industrial occupancies will be housed in the industrial building on-site.	This document
Ministry of Transportation	A new MTO Building and Land Use permit will be required for the greenhouse prior to any work on the site beginning.	Noted. - Will be applied for prior to any works on the greenhouse	This document
	Prior to applying for the MTO permit, the label "Future Greenhouse" should be changed to "Proposed Greenhouse".	Noted - Notation to change for the MTO application, when materials are ready to submit for MTO permit.	This document
	Any signage visible from Highway 3 will require an MTO sign permit.	Noted. - Any visible signage will be subject to MTO sign permit.	This document
Fire	Adequate fire access route to be provided	Complete - Provided on Site plan and Site Servicing Plan.	A1.01 SS-1
	Ensure all OBC requirements are met in relation to fire protection and/or detection systems	Complete - Refer to architectural drawings and fire protection drawings. Civil requirements of the fire protection system are detailed on the Site Servicing Plan, Details, and Pond Plan. Refer to FSR for servicing requirements.	A0.01 A1.01 SS-1 PND-1 ND-1 FSR Section 3.3, Page 6
	More information required for on-site water for sprinkler system - will there be a dry hydrant on-site?	Complete/Yes - refer to civil drawing package for Site servicing plan and notes and details sheet for details.	SS-1 PND-1 ND-1
	If electric vehicle charging or battery-storage infrastructure will be provided please notify NCFD	None proposed - not applicable	This document
Continued on next sheet			



**COMMENT RESPONSE MATRIX**

DEPARTMENT	COMMENT	RESPONSE	REFERENCE
Development Engineering	1) Please include a response matrix in your next submission.	Complete - Please refer to this document	This document
	2) Securities are to be provided in the amount of 10% of site works and 100% of works within the right-of-way. This is to be provided in a security schedule. A copy of Norfolk County's template can be provided upon request.	Complete - Securities Schedule provided.	Cost Estimate
	2a) As-constructed drawings must be included as part of the securiteis. The minimum amount of \$1500 @100% will be required.	Complete - Noted. Refer to Gerrits Engineering Response Letter	Gerrits Response Letter, Page 3.
	b) Driveway apron to be included at 100%	Noted - refer to securities schedule	Cost Estimate
	3) No Comments	Noted.	
	4) Illustrate the connection between the pond's permanent pool supply and the onsite dry hydrants.	Complete - Provided on notes and details sheet.	ND-1
	5) Driveway entrance is to be paved from edge of asphalt to property line and constructed per Norfolk County Design Criteria 6.7.01.	Complete - Provided under "4. PARKING LOT" on notes and details sheet.	ND-1
	6) Identify roof water leaders from all proposed buildings	Complete - Provided on site servicing plan	SS-1
	7) Per Norfolk County Design Criteria 11.3.00, rear and side yard swales shall have a minimum slope of 2%	Unable due to existing elevations and pond outlet. Refer to Gerrits Engineering Response Letter	Gerrits Response Letter, Page 3.
	8) Confirm elevation for Pond Weir 1. Currently the detail shows 251.24m	Complete - Corrected on-plan to 231.54	PND-1
	9) Per Norfolk County Design Criteria 7.4.01, an additional 0.3m freeboard is required above the 100-year storm level	Complete and provided - refer to pond plan and sections	PND-1
Continued on next sheet			

**COMMENT RESPONSE MATRIX**

DEPARTMENT	COMMENT	RESPONSE	REFERENCE
Development Engineering	10) Per Norfolk County Design Criteria 10.1.1., the system shall be designed to meet the greater of either the maximum daily demand plus fire flow, or the maximum hourly demand.	Not applicable: Refer to Gerrits Engineering Response Letter	Gerrits Response Letter, Page 4.
	11) Per Norfolk County Design Criteria 10.1, please revise onsite demand factors.	Complete, revised. Refer to Gerrits Engineering Response Letter.	Gerrits Response Letter, Page 4.
	12) Per Norfolk County Design Criteria 7.8.04, please revise runoff coefficients for areas that outlet to Big Creek	Complete, revised. Refer to Gerrits Engineering Response Letter.	Gerrits Response Letter, Page 4.
	13) Per Norfolk County Design Criteria 7.8.02, please revise IDF Curve Parameters.	Complete, revised. Refer to Gerrits Engineering Response Letter.	Gerrits Response Letter, Page 4.
Zoning Administrator	Building height of office/manufacturing building is deficient. Proposal is 12.58m from grade to peak, Maximum permitted is 11m in the agricultural zone. (Planning staff note that this was addressed through the Zoning By-Law Amendment.)	Complete: Height of office building permitted through bylaw amendment.	Zoning By-Law Amendment
	Provide setback and building height information for proposed buildings in site statistics table	Complete - Table provided on site plan for zoning provision compliance	A1.01
	Parking access aisles for parking spaces need to be 7.3m for two way traffic.	Complete - Revised and provided on site plan.	A1.01
	Parking is deficient by 13 parking spaces, 108 total parking spaces required.	Complete - Revised to 108 total parking spaces provided.	A1.01
	2 Type-A and 3 Type-B barrier free spaces minimum required. Type-A spaces can be provided in lieu of Type-B spaces. The proposal currently meets the barrier free parking requirement.	Complete - 2 Type-A and 3 Type-B barrier free stalls shown.	A1.01
End of Response Matrix			

Project No.: 1121-012-22

November 28 2025

## SITE PLAN APPLICATION SPPL2025233 2148 HIGHWAY 3 – ROLL NUMBER 3310.491.028.07800

NORFOLK COUNTY  
12 GILBERSTON DRIVE  
SIMCOE ONTARIO N3Y 3N3

Attn: Alisha Cull Acting director, Planning and Realty Services

Site Plan Application SPPL2025233  
1<sup>st</sup> Submission Comments  
2148 Highway 3, Norfolk ON

Thank you for your comments received date comments received September 16 2025; the following items are in response to comments:

### Building Department Comments

#### **Industrial building will require a standpipe system.**

*[OBC 3.5.7.8, NFPA 14]*

- a) Location of fire department connection on industrial building is required. *[OBC 3.2.5.15]*
- b) Fire water capacity to be included in functional servicing report. *[NFPA 14]*
- c) Fire water mains to be indicated on civil drawing (if applicable). *[OBC 7.2.11.1]*
- d) Location of pump house to be indicated on the civil drawings (if applicable). *[OBC 3.2.5.18, NFPA 20]*

- Response: Functional servicing report includes fire water capacity and Site servicing drawing have been updated to show fire department connection, fire water mains and pump house location.

#### **Industrial building as designed will require a sprinkler system – interconnected floor space.**

*[OBC 3.2.5.12, NFPA 13, 3.2.8.2]*

- a) Location of fire department connection on industrial building is required. *[OBC 3.2.5.15]*
- b) Fire water capacity to be included in functional servicing report. *[NFPA 13]*
- c) Fire water mains to be indicated on civil drawings (if applicable). *[OBC 7.2.11.1]*
- d) Location of pump house to be indicated on the civil drawings (if applicable). *[OBC 3.2.5.18, NFPA 20]*

- Response: Functional servicing report includes fire water capacity and Site servicing drawing have been updated to show fire department connection, fire water mains and pump house location.

**Fire department access to farm building (greenhouse) is required.**

Access lane to be shown on the civil drawings. [OBC 2.2.4.1]

Response: Site servicing drawing includes the fire access lane.

**Existing agricultural buildings being used as a contractor's shop.**

A change of use / building permit is required to change the building from a farm building of low human occupancy to an industrial occupancy. [BCA 8/10]

Response: CDN Buildings to comment.

**Development Engineering Comments**

**General:**

Comment #1: Please include a response matrix in your next submission.

- Response: We elected to provide a letter response format to the comments as the amount of comments were minimal.

Comment #2: Securities are to be provided in the amount of 10% of site works and 100% of works within the right-of-way. This is to be provided in a security schedule. A copy of Norfolk County's template can be provided upon request.

a. As-constructed drawings must be included as part of the securities. The minimum amount of \$1500.00 @ 100% will be required.

b. Driveway apron to be included at 100%.

- Response: Please see Securities and Construction Estimates with civil engineering package.

**Erosion and Sediment Control Plan:**

Comment #3: No Comments.

- Response: Noted

**Site Servicing Plan**

Comment #4: Illustrate the connection between the pond's permanent pool supply and the onsite dry hydrants.

- Response: Please see pond section and details to show location of dry hydrant pipe intake

## **Site Grading Plan**

Comment #5: Driveway entrance is to be paved from edge of asphalt to property line and constructed per Norfolk County Design Criteria 6.7.01: COMMERCIAL, LIGHT INDUSTRIAL AND APARTMENTS

### **Asphalt**

- 40 mm HL3 surface course
- 50 mm HL8 base course

### **Granular Base**

- 150 mm of Granular 'A'
- 225 mm of Granular 'B'

- Response: Notes and detail page has been updated to include Driveway entrance pavement structure.

Comment #6: Identify roof water leaders from all proposed buildings.

- Response: Civil drawings have been updated to show down spouts on all buildings.

Comment #7: Per Norfolk County Design Criteria 11.3.00, rear and side yard swales shall have a minimum slope of 2.0%

- Response: Due to the existing elevations and pond outlet location, we are unable to meet the minimum slope of 2.0% for 3.0m channel. We have include a detail which includes rip rap and subdrain to ensure drainage is directed towards the proposed storm pond.

## **Pond Plan**

Comment #8: Confirm elevation for pond weir 1. Currently the detail shows 251.24m.

- Response: The weir detail has been updated and the corrected elevation identified

Comment #9: Per Norfolk County Design Criteria 7.4.01, an additional 0.3m freeboard is required above the 100-year stormwater level.

- Response: Civil drawings have been updated to include the 0.30m freeboard around the pond at the elevation of 231.90m

## Functional Servicing Report (February 28, 2025)

Comment #10: Per Norfolk County Design Criteria 10.1.1, the system shall be designed to meet the greater of either of the following demands:

- a. Maximum daily demand plus fire flow
- b. Maximum hourly demand

- Response: Noted. However, the subject property is a separated water system, with fire supply and potable water supply being separated and in different pipes. One system is supplying the potable water which is sized to accommodate the greater of the maximum daily demand or the maximum hourly demand. The fire supply system is sized to accommodate the fire flows.

Comment #11: Per Norfolk County Design Criteria 10.1, please revise onsite demand factors.

- Response: Functional servicing report has been updated to reflect demand factors based on Norfolk County Design criteria 10.1

Comment #12: Per Norfolk County Design Criteria 7.8.04, please revise runoff coefficients for areas that outlet to Big Creek.

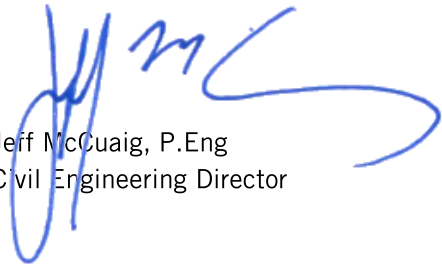
- Response: Functional servicing report has been updated to reflect runoff coefficients based on Norfolk County Design Criteria 7.8.04

Comment #13: Per Norfolk County Design Criteria 7.8.02, please revise IDF Curve Parameters.

- Response: Functional servicing report has been updated to reflect IDF Curve parameters based on Norfolk County Design Criteria 7.8.02

We trust this answers your questions presently. Please feel free to contact the office should you have any further questions.

Sincerely,  
Gerrits Engineering Limited



Jeff McCuaig, P.Eng  
Civil Engineering Director



Kevin Filion, C.E.T.  
Civil Design Manager





SITE PLAN LEGEND:	
	GRASSED AREA (NEW OR EXISTING)
	NEW GRAVEL OR PAVED AREA
	EXISTING GRAVEL AREA
	EXISTING ASPHALT AREA
	PROPOSED BUILDING
	EXISTING BUILDING
	EXISTING ROAD – EDGE OF SHOULDER
	EXISTING ROAD – EDGE OF PAVEMENT
	EXISTING ROAD – CENTRELINE
	LANDSCAPE BUFFER LINE
	SUBJECT PROPERTY LINE
	ABUTTING/ADJACENT PROPERTY LINE
	EXISTING GREENHOUSE
	CONSERVATION AUTHORITY BOUNDARY
	EXISTING STREAM/WATERWAY
	SWALE
	DITCH INLET CATCH BASIN
	ROCK CHECK DAM
	OVERLAND FLOW ARROW
	EXISTING CATCH BASIN
	NEW MANHOLE CATCH BASIN
	NEW CATCH BASIN
	SILT FENCE
	FENCE LINE
	STORM DRAIN PIPE BELOW GRADE
	WATER CISTERN BELOW GRADE
	SEPTIC TANK BELOW GRADE
	SEPTIC WEEPING FIELD
	SEPTIC DISTRIBUTION PIPE
	EDGE OF PAVED/GRAVEL AREA
	PROPOSED STORM POND
	EXISTING STORM POND

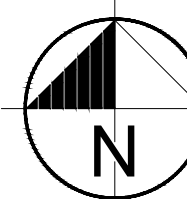
- 1) THE EXISTING LOT CONTAINS AGRICULTURAL BUILDINGS, A RESIDENTIAL DETACHED DWELLING AND A SHED ACCESSORY-TO THE RESIDENTIAL DETACHED DWELLING.
- 2) THE EXISTING LOT (TOTAL PARCEL) IS 156795.668 m<sup>2</sup> IN AREA. THE EXISTING DWELLING OCCUPIES 0.1% OF THE AREA AND THE RESIDENTIAL ACCESSORY BUILDING OCCUPIES 0.08% OF THIS AREA. THE REMAINING EXISTING BUILDINGS ARE AGRICULTURAL USE, OCCUPYING 0.84% OF THE TOTAL LOT.
- 3) THE TOTAL EXISTING LOT COVERAGE IS 1.1% OF THE TOTAL LOT.
- 4) THE PROPOSED DEVELOPMENT INTENDS TO RE-ZONE A PORTION OF THE EXISTING LOT TO ALLOW FOR THE INDUSTRIAL USAGE, AND TO DEVELOP A NEW GREENHOUSE IN THE REMAINING AGRICULTURAL ZONE.
- 5) THE PROPOSED INDUSTRIAL SITE AREA OCCUPIES AN AREA OF 17080.228 m<sup>2</sup> OR 10.9% OF THE TOTAL LOT/PARCEL AREA. THIS RETAINS 139715.44 m<sup>2</sup> OF AGRICULTURAL SITE AREA OR 89.11% OF THE TOTAL LOT/PARCEL AREA IN THE EXISTING AGRICULTURAL ZONE.
- 6) THE PROPOSED INDUSTRIAL DEVELOPMENT INTENDS TO PROVIDE A MANUFACTURING/WAREHOUSE/OFFICE BUILDING AND PUMP HOUSE, 1555.898 m<sup>2</sup> OR 0.99% OF THE PROPOSED INDUSTRIAL AREA.
- 7) THE PROPOSED AGRICULTURAL DEVELOPMENT INTENDS TO BUILD A GREENHOUSE BUILDING OF 64120 m<sup>2</sup>. THIS PROPOSED GREENHOUSE, IN CONJUNCTION WITH THE EXISTING AGRICULTURAL BUILDINGS, THE TOTAL AGRICULTURAL BUILDING COVERAGE EQUATES TO 46.83 % OF THE PROPOSED AGRICULTURAL SITE.
- 8) THE TOTAL PROPOSED BUILDING COVERAGE FOR ALL STRUCTURES WITHIN THIS PARCEL (ALL PROPOSED ZONES/SITES) IS 46%.

**P**YLONS  
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A | 20 Rivermede Road, Unit# 101, Concord, Ontario, Canada

ONTARIO ASSOCIATION  
OF  
ARCHITECTS  
*Rafik Nassif*  
RAFIK NASSIF  
LICENCE  
7988

  
TRUE  
NORTH

  
PROJECT  
NORTH

## PARKING REQUIREMENTS

CALCULATIONS DONE BASED ON FLOOR AREA FOR OFFICES AND DESIGN OCCUPANT LOAD FOR INDUSTRIAL AND GREENHOUSE ESTABLISHMENT

OFFICE (1 PER 30 m<sup>2</sup>) =  $1464 / 30 = 49$  SPACES  
INDUSTRIAL ESTABLISHMENT (40 OCCUPANTS) = 40 SPACES  
GREENHOUSE (6 OCCUPANTS) = 6 SPACES

TOTAL OF 95 PARKING SPACES INCLUDING:  
2 TYPE A ACCESSIBLE SPACES AND 3 TYPE B ACCESSIBLE SPACES

# A1.01



GENERAL NOTES - EXTERIORS

1. Readings shown are based on a total LLF of 0.81, 0.84, 0.87, 0.90 as indicated in the luminaire schedule at 0.0' (0.0m) AFG (at grade). Data references the extrapolated performance projections in a 25c ambient based on 10,000 hrs of LED testing (per IESNA LM-80-08 and projected per IESNA TM-21-11).

2. Please refer to the fixture labels for product type and mounting heights.

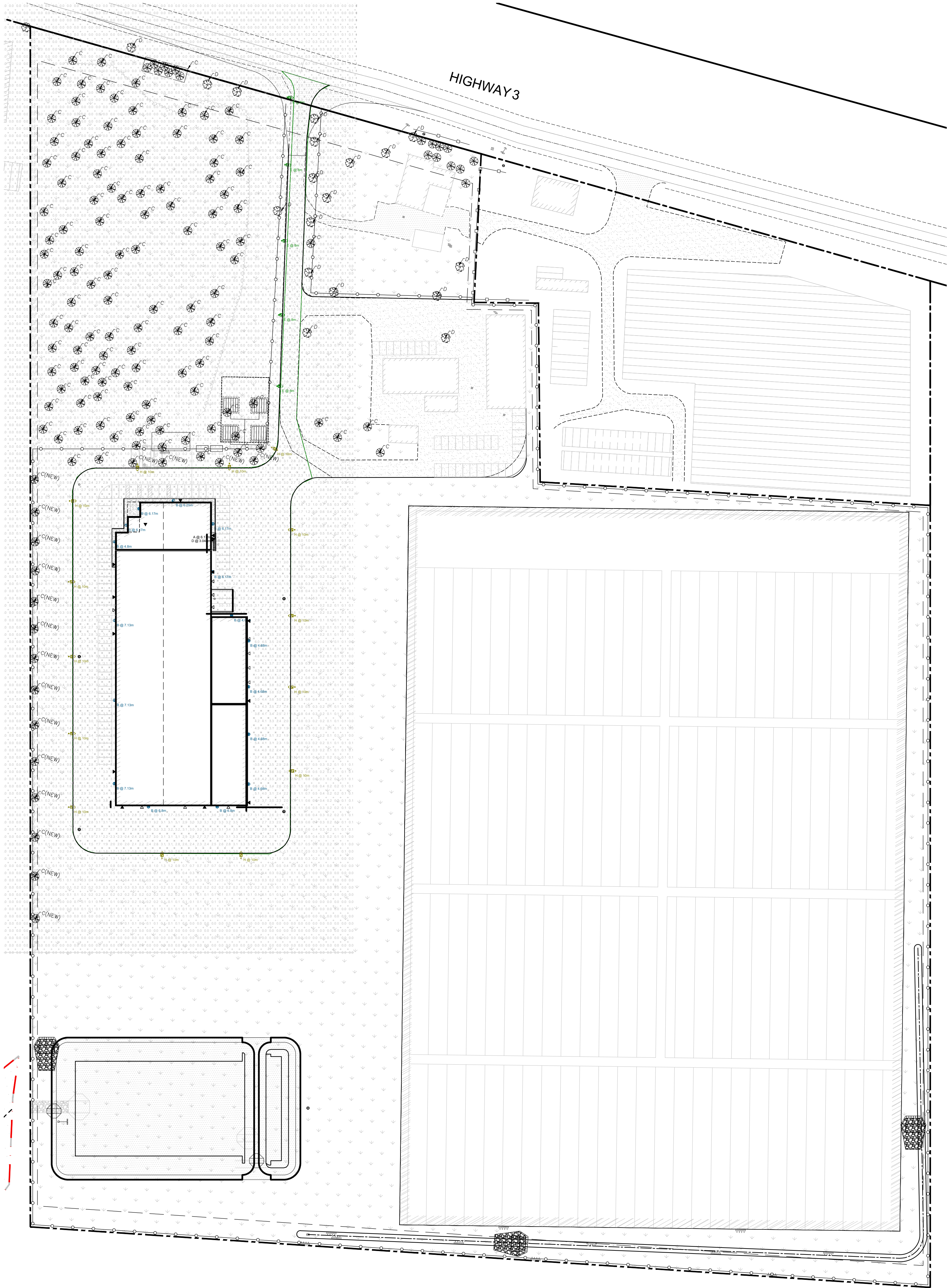
3. Product information can be obtained at <https://www.acuitybrands.com/> or through your local agency.

4. Grid spacing is 3.05m x 3.05m on center.

5. Note: pole and wall pack locations are based on provided plans or approximations using Google Earth.

Symbol	Label	Catalog Number	Description	Number Lamps	Lumens per Lamp	LLF	Wattage
	A	WDGE2 LED P2 40K 70CRI T2M	WDGE2 LED WITH P2 - PERFORMANCE PACKAGE, 4000K, 70CRI, TYPE 2 MEDIUM OPTIC	1	2326	0.84	18.9815
	B	WDGE3 LED P1 70CRI R3 40K	WDGE3 LED WITH P1 - PERFORMANCE PACKAGE, 4000K, 70CRI, TYPE 3 OPTIC	1	7523	0.87	51.1717
	C	WDGE3 LED P4 70CRI RFT 40K	WDGE3 LED WITH P4 - PERFORMANCE PACKAGE, 4000K, 70CRI, FORWARD THROW OPTIC	1	12277	0.87	67.8914
	D	ARV13 15W 40K OP Adjusted LLF to reflect 15W	Luminaire LED, Inc. - Round ceiling surface mount luminaire. Product ID: ARV13-25W-4000K OP Brown painted aluminum cast housing with linear prismatic white plastic bowl lens. 144 LEDs mounted in circular array on white PCB mounted on white painted base plate. One AC Electronics LEDs driver. Model: AC-25CD700AUZ. Operating at 120 Vac and 60 Hz with dimming disconnected.	144	17	0.58	27.5
	E	DSX0 LED P5 40K 70CRI T2M HS	D-Series Size 0 Area Luminaire P5 Performance Package 4000K CCT 70 CRI Type 2 Medium HouseSide Shield	1	10370	0.81	90.12
	H	DSX1 LED P9 40K 70CRI T4M HS	D-Series Size 1 Area Luminaire P9 Performance Package 4000K CCT 70 CRI Type 4 Medium HouseSide Shield	1	29689	0.81	277.0702

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
ABOVE STAIR LANDING 2 (NORTH)		2.9 fc	2.9 fc	2.9 fc	1.0:1	1.0:1
DRIVE LANE & PARKING		2.8 fc	6.1 fc	0.9 fc	6.8:1	3.1:1
PROPERTY LINE		0.0 fc	0.1 fc	0.0 fc	N/A	N/A
SPILL LIGHT SUMMARY		0.5 fc	6.1 fc	0.0 fc	N/A	N/A
UNDER STAIRCASE 2 (NORTH)		6.4 fc	6.6 fc	6.2 fc	1.1:1	1.0:1



**Gerrits**  
ENGINEERING

Barris, ON  
Tel.: 705.737.3303

Kingston, ON  
Tel.: 613.217.8246

[www.gerritg.com](http://www.gerritg.com)

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Check and verify all dimensions and information on the drawings and report all errors or omissions to the Consultant before proceeding with the work. This drawing shall not be reproduced in any manner, in part or in whole, for any project other than that for which it was prepared. This drawing, and all design concepts it contains, are an instrument of professional service and remain the property of Gerrits Engineering.

This drawing may have been reduced.  
0 5 10 20 30 40 50mm  
0" 1/4" 1/2" 1" 1 1/2" 2"

No.	Issuance Description	YYMMDD
1.	ISSUED FOR APPROVAL	25/07/07
2.	ISSUED FOR APPROVAL	25/07/16
3.	-	-
4.	-	-
5.	-	-

ISSUED FOR:

**APPROVAL**

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Client

**CDNBUILDINGS**  
523 James Street, Unit 3, Delhi, ON N4B 2C2

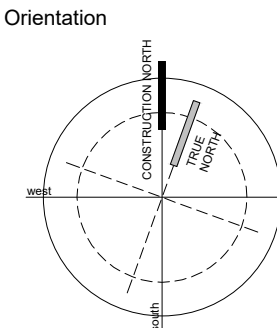
Project

**HWY #3 DEHLI**  
2148 Highway 3, Delhi, ON N4B 2W4 Norfolk County

Drawing:

**LIGHTING PHOTOMETRICS**

Project No. 1121-012-22 Designed by: MG Checked by: MK  
Time Stamp: Drawn by: MG Approved by: MK



Drawing No.

**E-100**

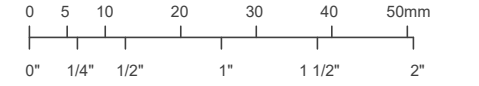


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No.	Issuance Description	YY/MM/DD
1.	CLIENT REVIEW	23/03/08
2.	MTO SUBMISSION	25/04/09
3.	SPA & BP SUBMISSION	25/12/05

**BENCHMARK:** TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For:

## SITE PLAN APPROVAL

DRAWINGS ARE "ISSUED FOR APPROVAL" AND ARE NOT TO BE USED  
FOR PERMIT APPLICATIONS OR CONSTRUCTION UNTIL SO  
AUTHORIZED BY THE CONSULTANT.

Client



523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

HWY #3 DELHI

2148 Highway 3, Delhi, ON N4B 2W4

2148 Highway 3, Delhi, ON N4B 2W4  
Norfolk County

Drawing:

## SITE SERVICING PLAN

Project No.	1121-012-22	Designed by:	KF	Checked by:	JDM
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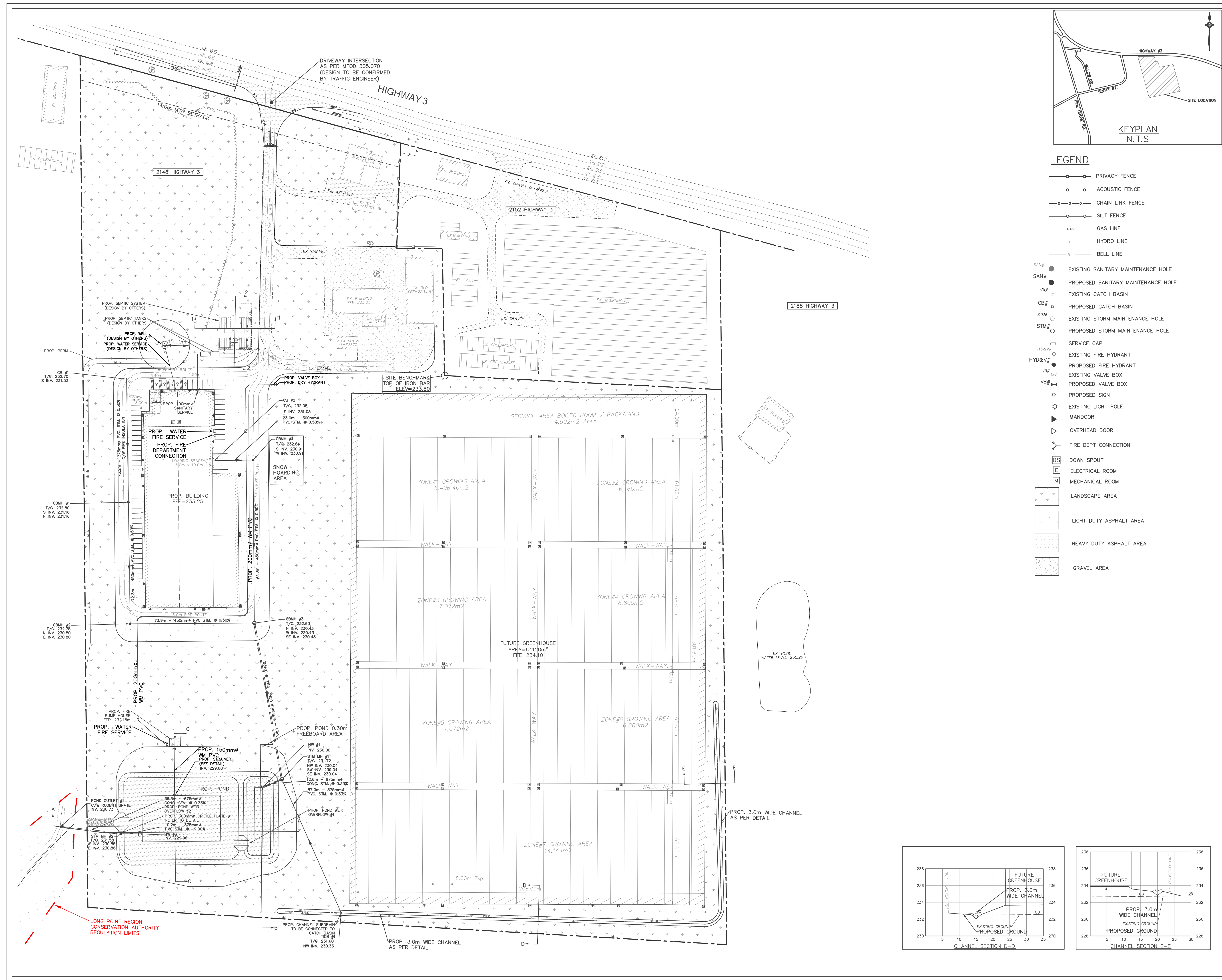
Scale:	1:1000	Drawn by:	KF	Approved by:	JDM
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Orientation	Stamm
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Drawing No.

SS-1





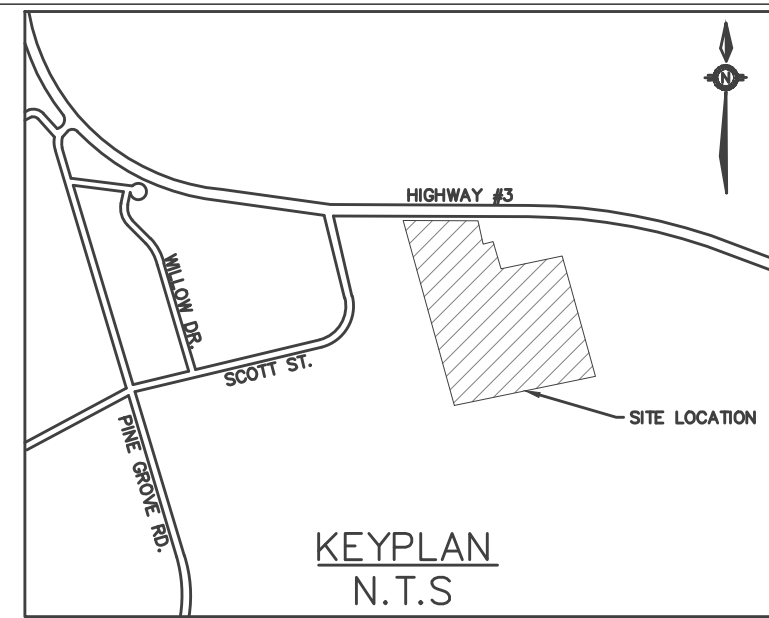
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This drawing may have been reduced.

0 5 10 20 30 40 50m  
0" 1/4" 1/2" 1" 1 1/2" 2"



## LEGEND

- PRIVACY FENCE
- ACOUSTIC FENCE
- CHAIN LINK FENCE
- SILT FENCE
- GAS LINE
- HYDRO LINE
- BELL LINE
- EXISTING SANITARY MAINTENANCE HOLE
- PROPOSED SANITARY MAINTENANCE HOLE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING STORM MAINTENANCE HOLE
- PROPOSED STORM MAINTENANCE HOLE
- SERVICE CAP
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING VALVE BOX
- PROPOSED VALVE BOX
- PROPOSED SIGN
- EXISTING LIGHT POLE
- MANDOOR
- OVERHEAD DOOR
- FIRE DEPT CONNECTION
- DOWN SPOUT
- ELECTRICAL ROOM
- MECHANICAL ROOM
- LANDSCAPE AREA
- LIGHT DUTY ASPHALT AREA
- HEAVY DUTY ASPHALT AREA
- GRAVEL AREA

BENCHMARK: TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For:

## SITE PLAN APPROVAL

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Client

**CDNBUILDINGS**

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

**HWY #3 DELHI**

2148 Highway 3, Delhi, ON N4B 2W4

Norfolk County

Drawing:

## SITE GRADING PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM

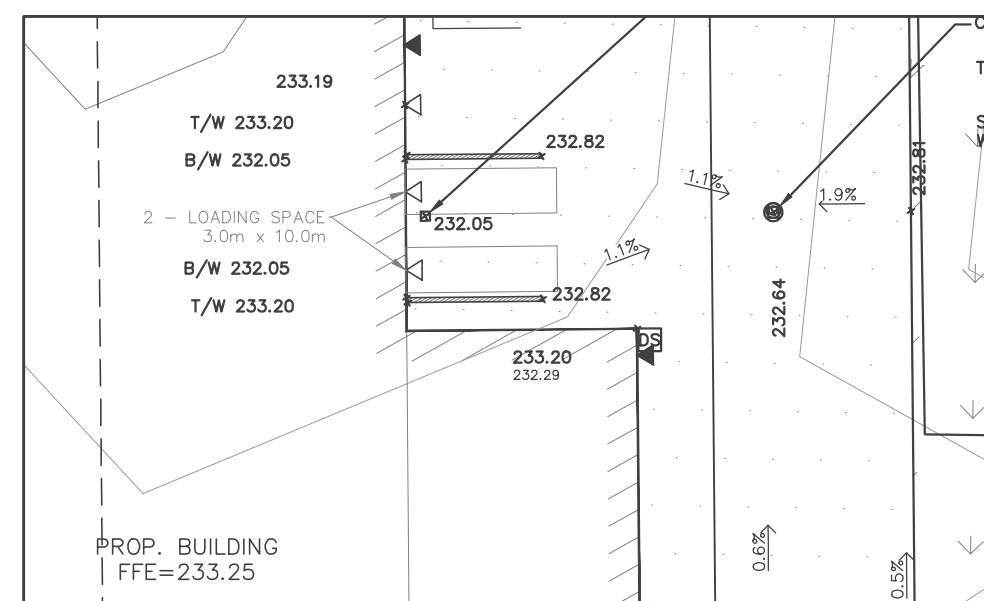
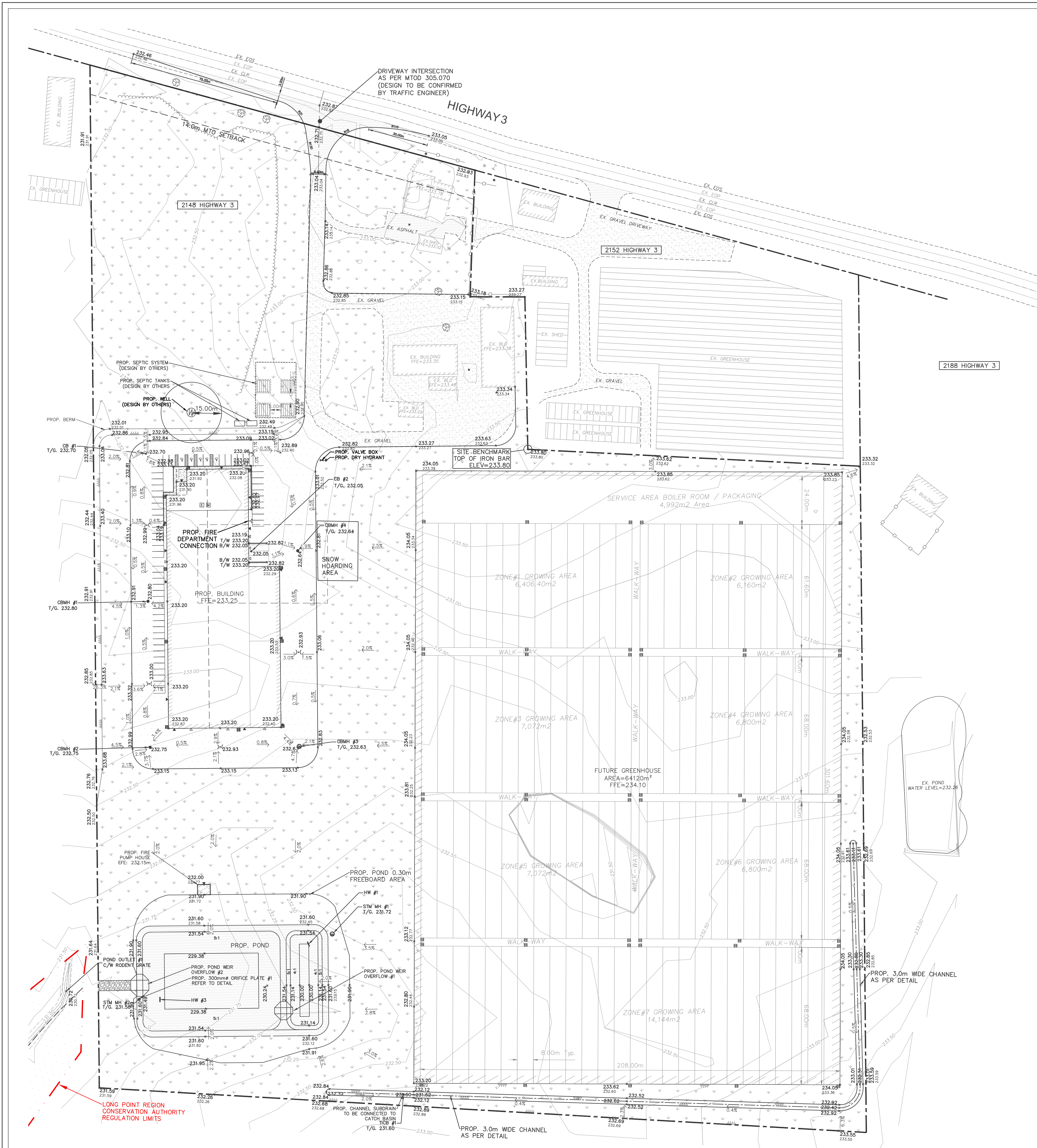
Scale: 1:1000 Drawn by: KF Approved by: JDM

Orientation



Drawing No.

SG-1





## 1. DRAWINGS

- THE NOTES ON THIS SHEET APPLY TO ALL WORKS UNDER THIS CONTRACT UNLESS OTHERWISE NOTED ON THE SPECIFIC DETAIL DWGS.
- THE STANDARD DRAWINGS OF THE LOCAL MUNICIPALITY , ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS (OPSS) AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) CONSTITUTE PART OF THE PLANS OF THIS CONTRACT.
- ORDER OF PRECEDENCE OF STANDARD DRAWINGS IS FIRSTLY THE LOCAL MUNICIPALITY AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS.
- THE STANDARD DRAWINGS INCLUDED WITH THESE PLANS ARE PROVIDED FOR CONVENIENCE ONLY AND ARE NOT TO BE CONSTRUED TO BE A COMPLETE SET FOR THE PURPOSE OF THE CONTRACT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL RELEVANT STANDARD DRAWINGS AND SPECIFICATIONS AS REQUIRED FOR THIS CONTRACT.

## 2. MEASUREMENTS

- ALL DIMENSIONS ARE IN METRES, EXCEPT PIPE DIAMETERS, WHICH ARE IN MILLIMETRES, UNLESS SPECIFIED OTHERWISE.
- ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION, AND ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.

## 3. GENERAL

- EXISTING SERVICES AND UTILITIES SHOWN ON THESE CONTRACT DRAWINGS ARE BASED ON THE BEST INFORMATION AVAILABLE AND THEIR LOCATIONS ARE NOT GUARANTEED. THE CONTRACTOR SHALL INTERPRET THIS INFORMATION AS THEY WISH WITH THE UNDERSTANDING THAT THE OWNER DISCLAIMS ALL RESPONSIBILITY FOR ITS ACCURACY AND/OR SUFFICIENCY. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK.
- NATIVE MATERIAL, SUITABLE FOR BACKFILL, SHALL BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.
- GRANULAR MATERIAL, USED FOR BACKFILL, SHALL BE PLACED IN LAYERS 150mm IN DEPTH MAXIMUM AND COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.
- ALL DISTURBED AREAS ARE TO BE REINSTATED TO THEIR ORIGINAL CONDITION OR BETTER, AS DETERMINED BY THE ENGINEER. ALL GRASS AND VEGETATION COVERED AREAS SHALL BE RESTORED BY PLACING 200mm OF APPROVED TOPSOIL AND NURSERY SOD UNLESS NOTED OTHERWISE.

## 4. PARKING LOT

- NATIVE SUBGRADE TO BE COMPACTED TO MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.
- PAVEMENT STRUCTURE TO BE CONFIRMED BY GEOTECHNICAL ENGINEER PRIOR TO START OF CONSTRUCTION
- THE PARKING LOT PAVEMENT STRUCTURE SHALL CONSIST OF THE FOLLOWING:

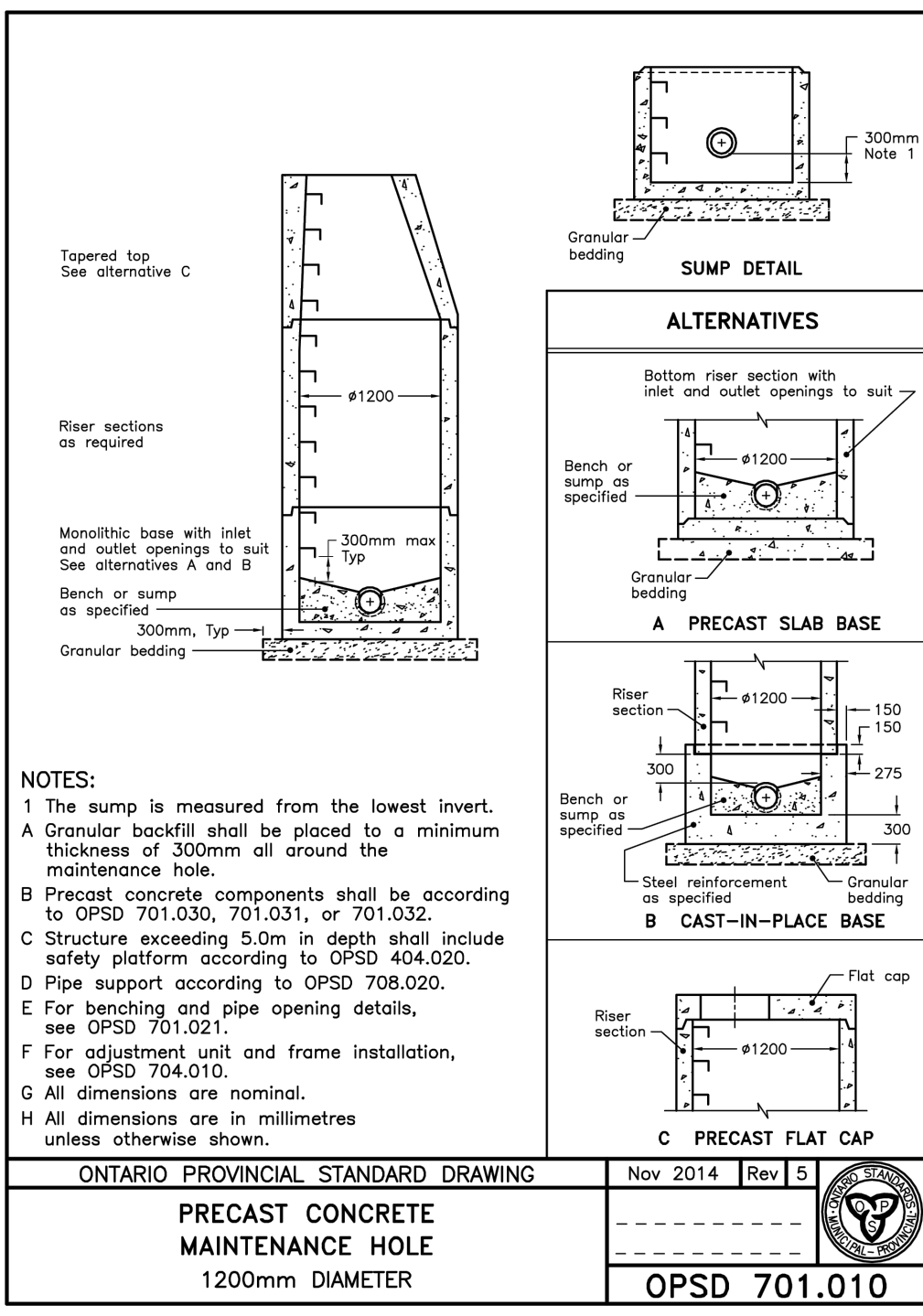
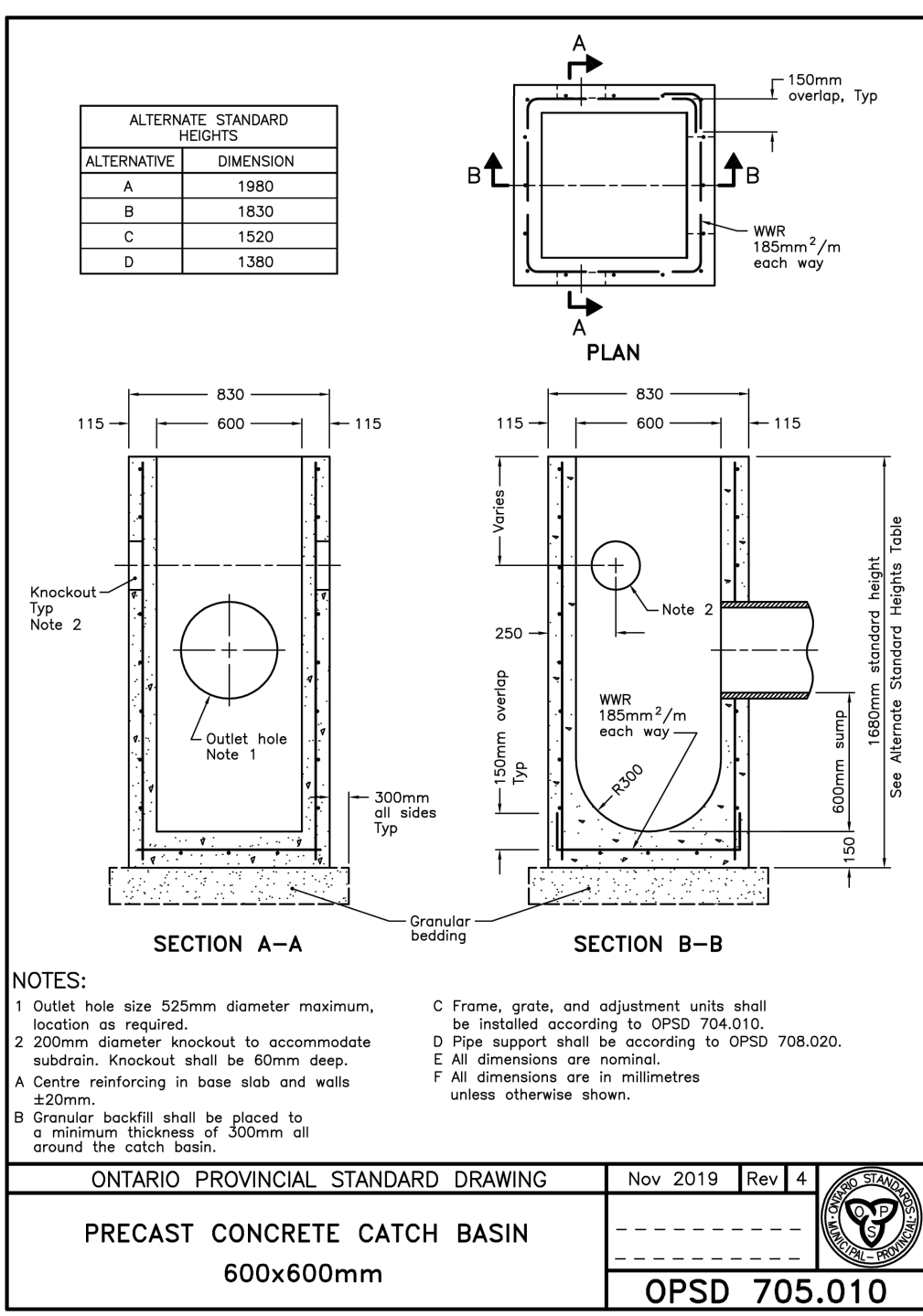
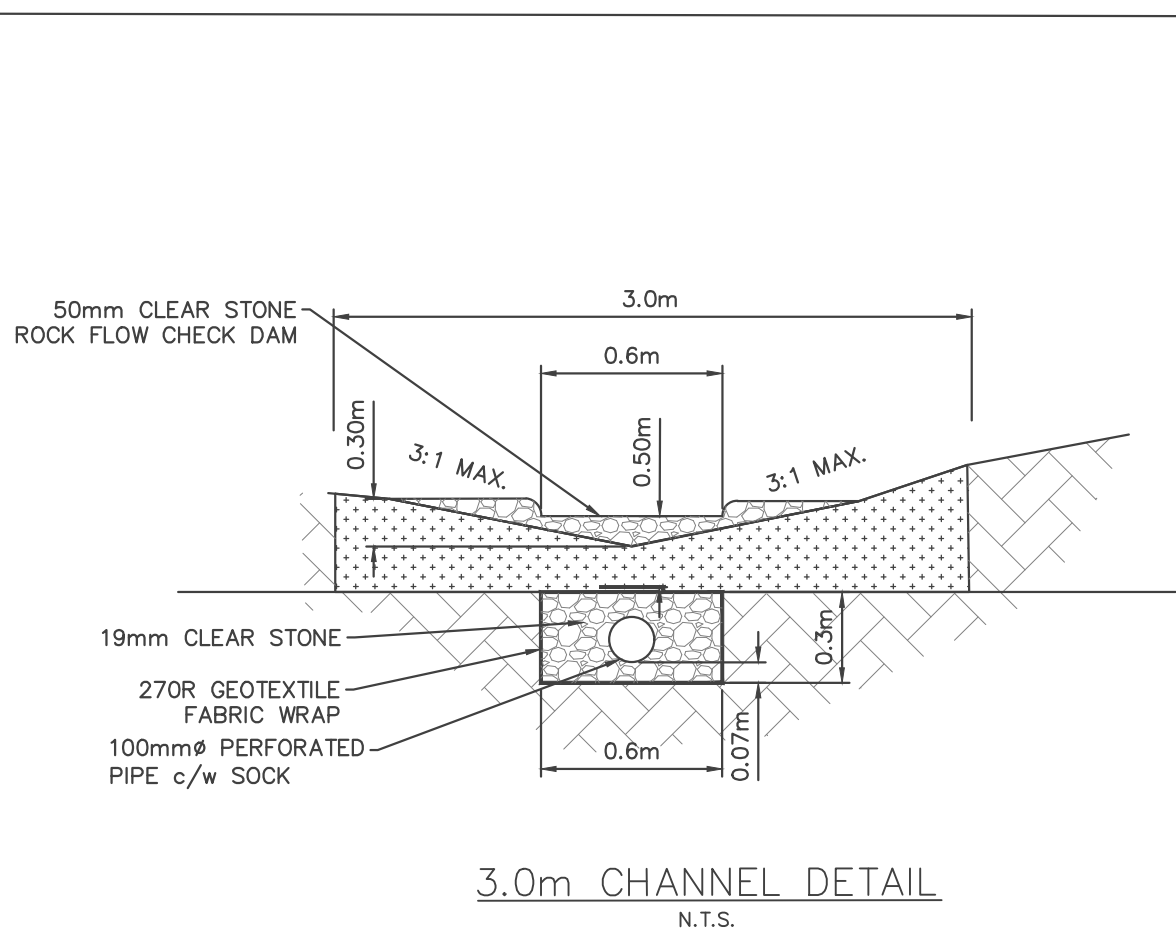
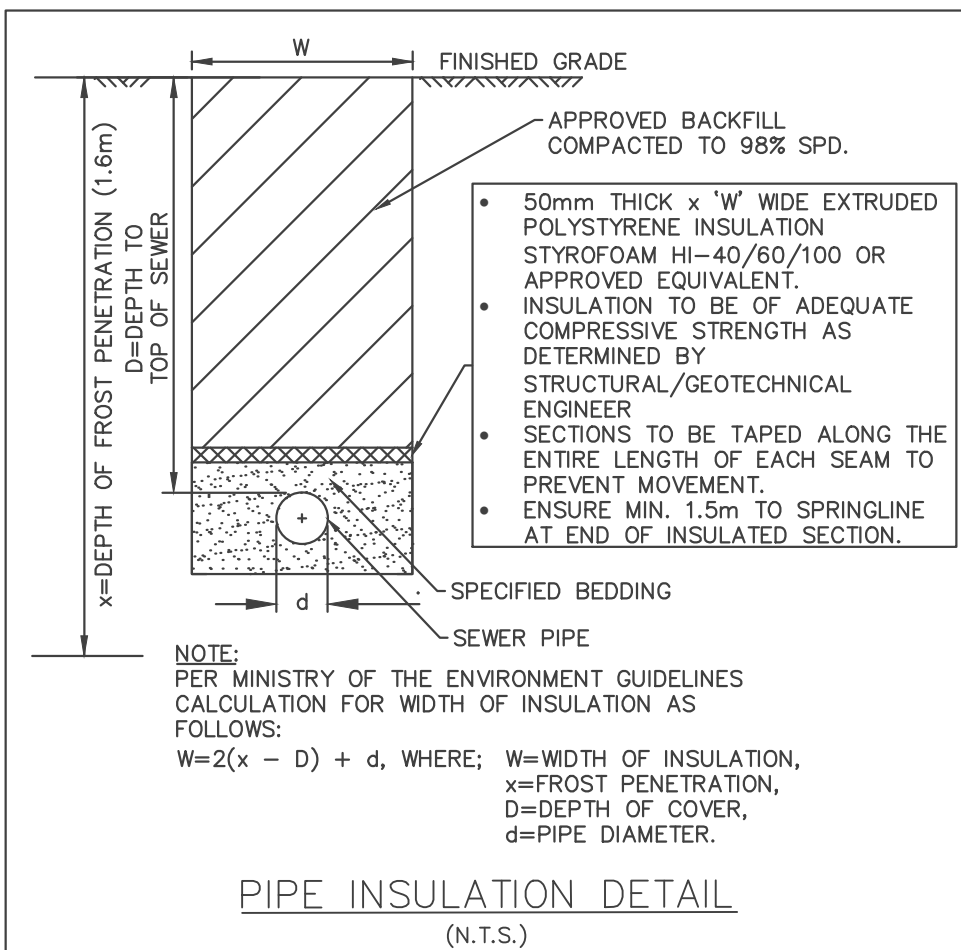
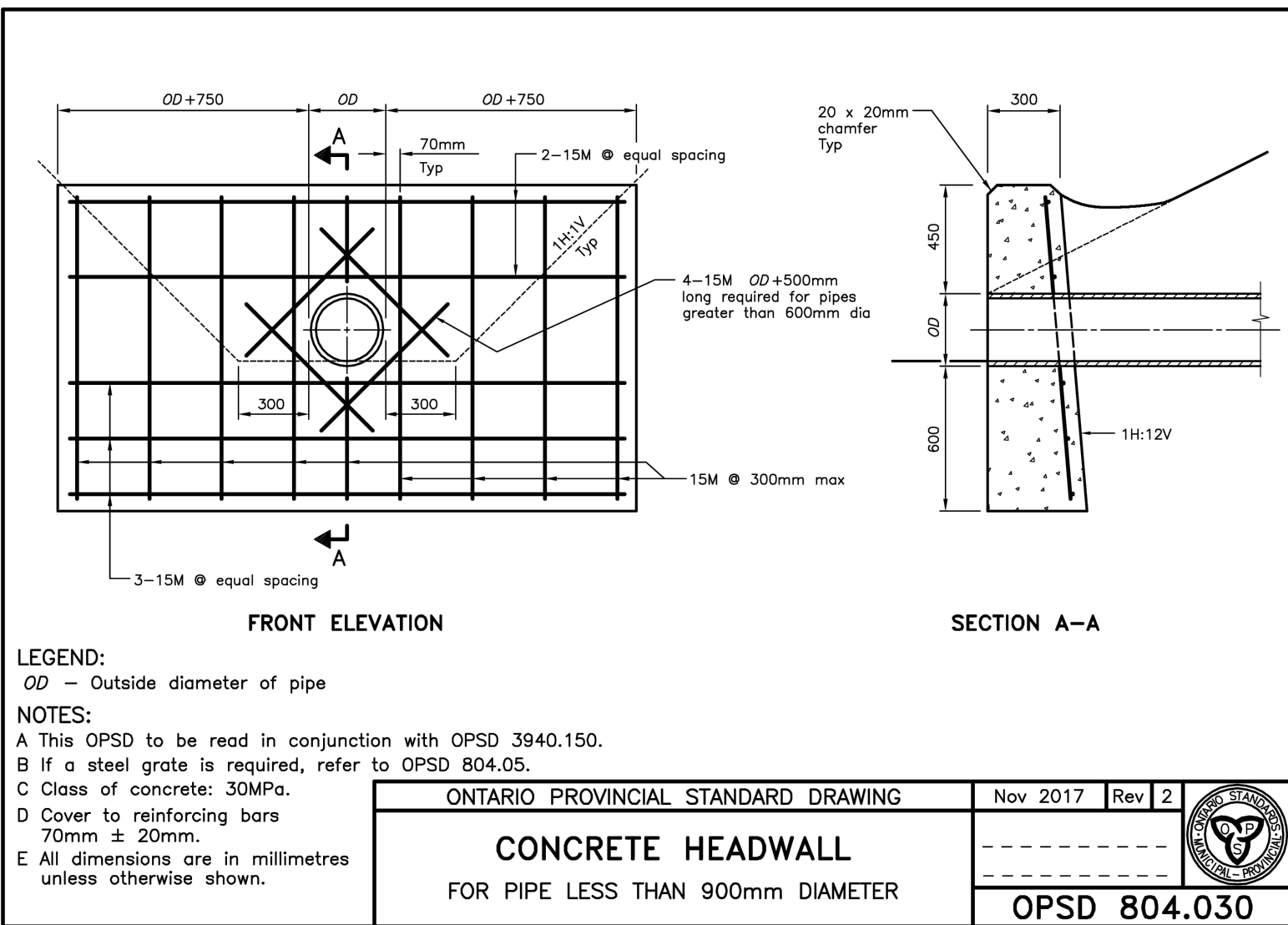
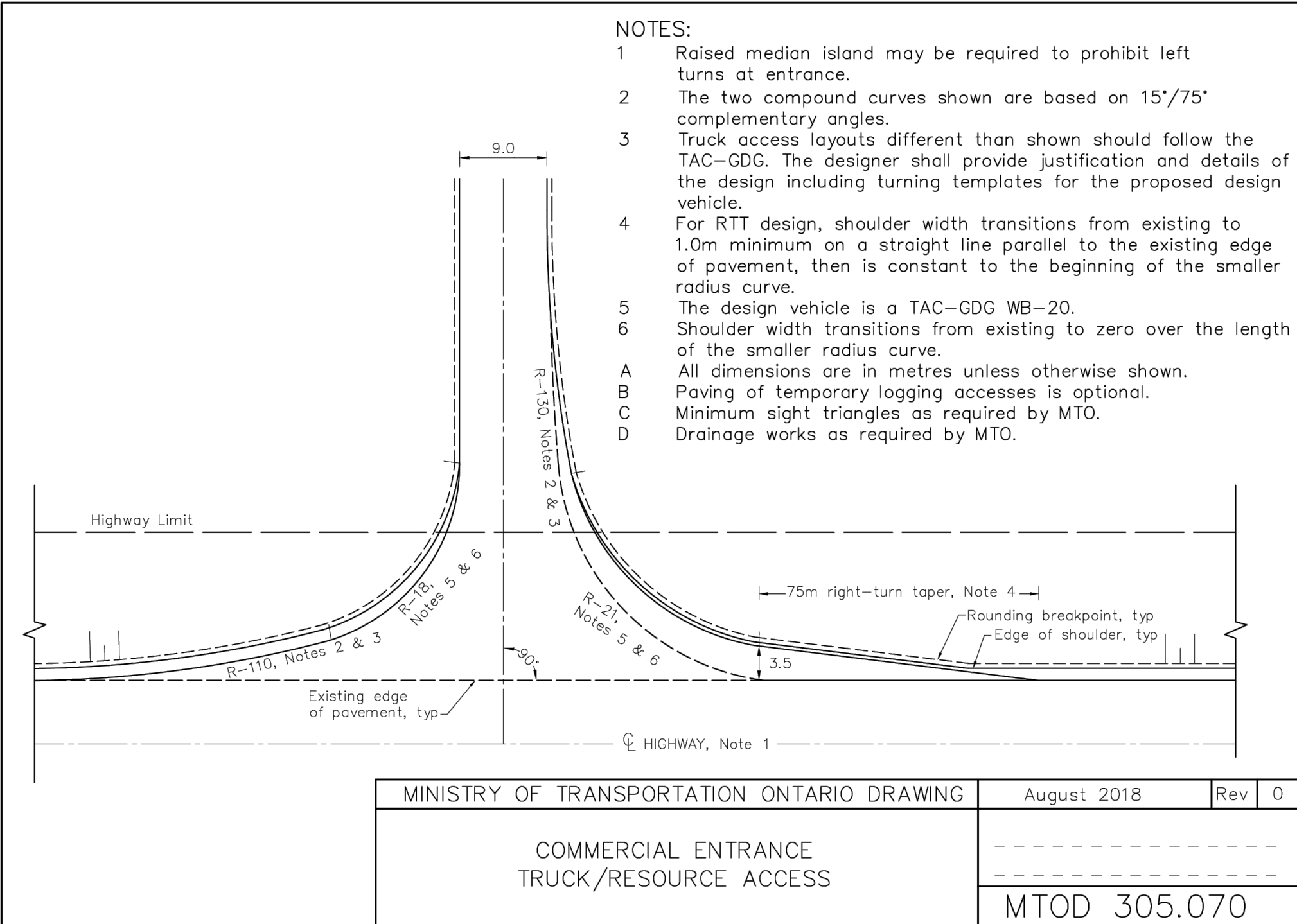
MEDIUM DUTY	CONCRETE (HEAVY DUTY)
40mm HL3	150mm CAST-IN-PLACE CONCRETE
50mm HL4	150mm GRANULAR "A"
150mm GRANULAR "A"	300mm GRANULAR "B"
300mm GRANULAR "B"	
GRAVEL (HEAVY DUTY)	DRIVEWAY ENTRANCE (DESIGN CRITERIA 6.7.01)
200mm GRANULAR "A"	40mm HL3 Surface Course
450mm GRANULAR "B"	50mm HL8 Surface Course
	150mm GRANULAR "A"
	225mm GRANULAR "B"

## 5. SEWERS

- INTERNAL SANITARY SEWERS AND LATERALS TO BE MINIMUM 150mm DIAMETER PVC DR 28 WITH JOINTS CONFORMING TO CSA STANDARD A257.3.
- SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD 802.010 (GRANULAR "A" EMBEDMENT MATERIAL), UNLESS APPROVED OTHERWISE BY THE ENGINEER.
- PRECAST MANHOLES SHALL BE 1200mm DIAMETER UNLESS OTHERWISE SPECIFIED, AND SHALL BE IN ACCORDANCE WITH OPSD 701.010, FRAME AND GRATE TO BE "TYPE A" CLOSED COVER AND TO CONFORM TO OPSD 401.010.
- MANHOLE TOPS ARE TO BE SET TO FINAL GRADE.

## 6. WATERMAINS

- THE MINIMUM HORIZONTAL SEPARATION BETWEEN THE WATERMAIN AND THE SANITARY/STORM SEWER IS TO BE 2.5 METERS.
- A MINIMUM OF 0.5m VERTICAL CLEARANCE BETWEEN THE WATERMAIN, SANITARY, STORM AND/OR ALL UTILITIES MUST BE KEPT, WHILE STILL MAINTAINING A MINIMUM DEPTH OF COVER AT ALL TIMES. WHERE WATERMAIN CONFLICTS WITH SEWER PIPE, DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY TO OBTAIN MINIMUM COVER AND VERTICAL CLEARANCE.
- WATERMAINS SHALL BE PVC DR 18 AND INSTALLED WITH A MINIMUM COVER OF 1.7m (MEASURED FROM FINISHED GRADE TO TOP OF WATERMAIN). IF MINIMUM COVER CAN NOT BE ACHIEVED, INSULATION AS PER DETAIL PROVIDED.
- WATERMAIN SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD 802.010 (GRANULAR "A" EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES.
- COPPER WATER SERVICES 25mm DIA. SHALL BE EMBEDDED IN SAND 100mm ABOVE AND BELOW TO CONFORM TO OPSS 1104.010.
- WATERMAIN BEDDING SHALL ADHERE TO THE MUNICIPAL STANDARD AND BE PLACED MIN 150mm BELOW AND 300mm ABOVE THE WATERMAIN.
- CONCRETE THRUST BLOCKS ARE TO BE INSTALLED AT ALL TEES, BENDS, HYDRANTS, ENDS OF MAINS AND CONNECTIONS 100mm AND LARGER AS PER STANDARD DRAWINGS. ALL BENDS TO BE MECHANICALLY RESTRAINED.
- ALL JOINTS MUST BE MECHANICALLY RESTRAINED AND THRUST BLOCKED.
- ANY EXISTING, ON SITE, WATER WELLS MUST BE DECOMMISSIONED.
- WHERE A COPPER SERVICE MUST BE JOINED UNDER THE FLOOR, THE COPPER SHALL BE JOINED BY SILVER SOLDER CONNECTION ONLY.
- ALL SERVICE PIPE MATERIAL MUST BE DUCTILE IRON AND MECHANICALLY RESTRAINED FROM THE RESTRAINED FROM THE RESTRAINING FLANGE TO A MINIMUM OF 3 METERS OUTSIDE THE FOUNDATION. ALL DUCTILE SHALL BE POLY WRAPPED FOR ADDED PROTECTION.
- OPERATION OF FIRE HYDRANTS AND VALVES ON POTABLE WATER BY OTHER THAN MUNICIPAL CITY DEPARTMENT IS PROHIBITED.
- THE CITY WILL SWAB, CHLORINATE AND FLUSH ALL NEW SERVICES. THE CONTRACTOR SHALL PERFORM PRESSURE TEST WITH WATER FIELD COORDINATOR WITNESSING.
- EXTERNAL CONTRACTOR TO COORDINATE WITH INTERNAL CONTRACTOR ON ALL INSTALLATION, SWABBING, CHLORINATING AND TESTING WITNESSED BY WATER FIELD SERVICES COORDINATOR.
- MECHANICAL RESTRAINTS WILL BE REQUIRED ON ALL HYDRANTS. A MINIMUM OF TWO PIPE LENGTHS OF EITHER SIDE OF THE HYDRANT TEE CONNECTION. HYDRANTS TO BE PAINTED RED.
- TRACING WIRE (#12 TWJ STRANDED COPPER) TO BE INSTALLED ON THE TOTAL LENGTH OF ALL PVC WATERMAINS AND BROUGHT UP AT EACH HYDRANT AND CONNECTED TO FLANGE BOLT.
- SERVICE CONNECTIONS SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m AND A MINIMUM OF 0.6m FROM JOINTS.
- CONTRACTOR TO PROVIDE PLAN FOR REMOVING CHLORINATED WATER FROM SITE.
- A CHLORINATION TAIL SHALL BE INSTALLED JUST BEHIND TAPPING VALVE TO FACILITATE CHLORINATING SERVICE, TO BE REMOVED AFTER TESTING.

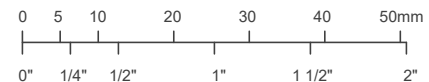


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No.	Issuance Description	YYMMDD
1.	CLIENT REVIEW	23/03/08
2.	MTO SUBMISSION	25/04/09
3.	SPA & BP SUBMISSION	25/12/05

BENCHMARK: TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For:

## SITE PLAN APPROVAL

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Client

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

## HWY #3 DELHI

2148 Highway 3, Delhi, ON N4B 2W4  
Norfolk County

Drawing:

## NOTES & DETAILS

Project No.	1121-012-22	Designed by:	KF	Checked by:	JDM
Scale:		Drawn by:	KF	Approved by:	JDM
Orientation		Stamp			



Drawing No.

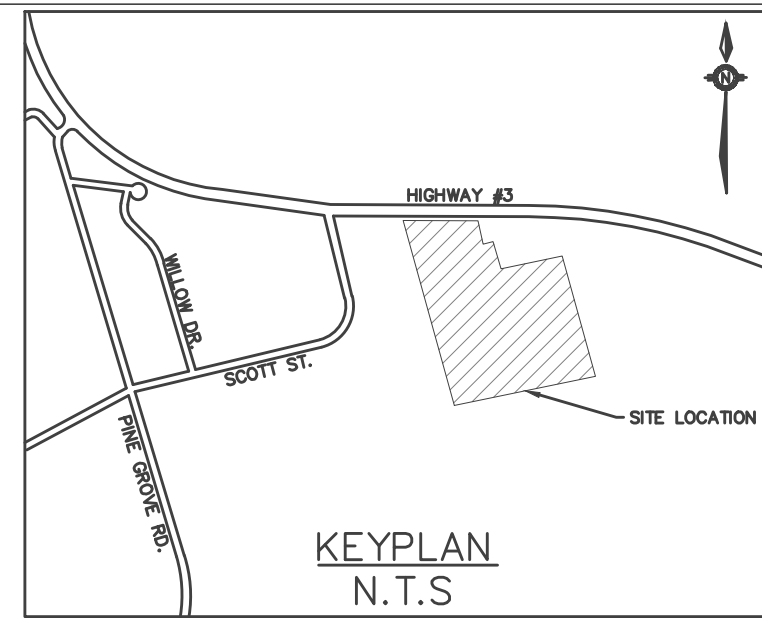
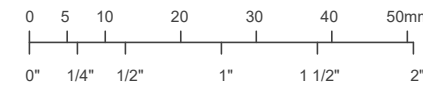


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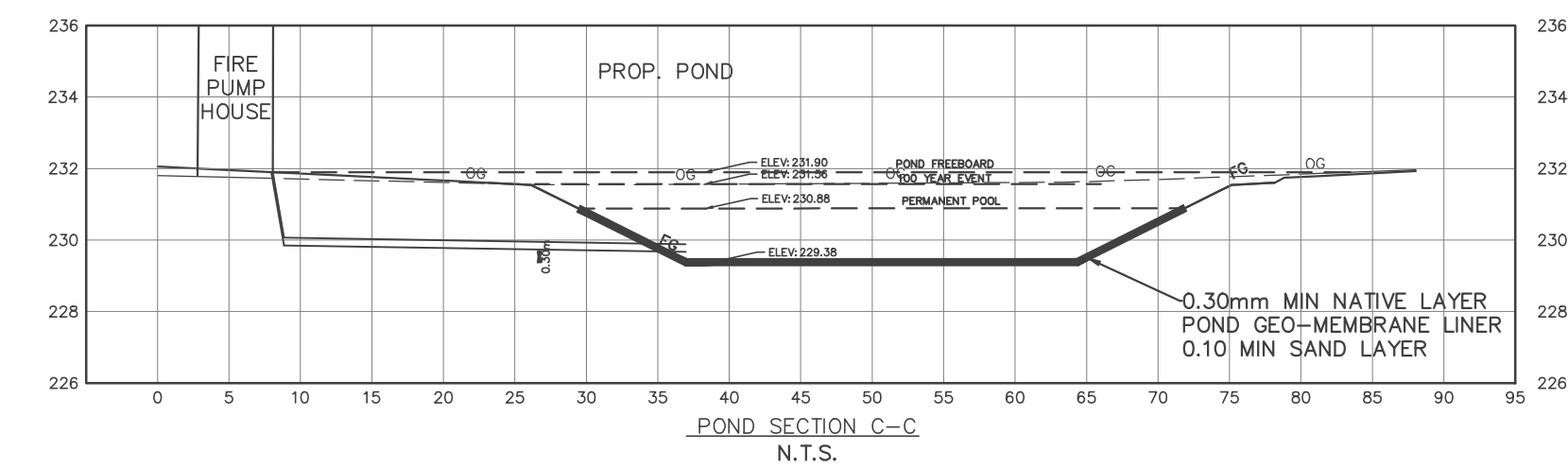
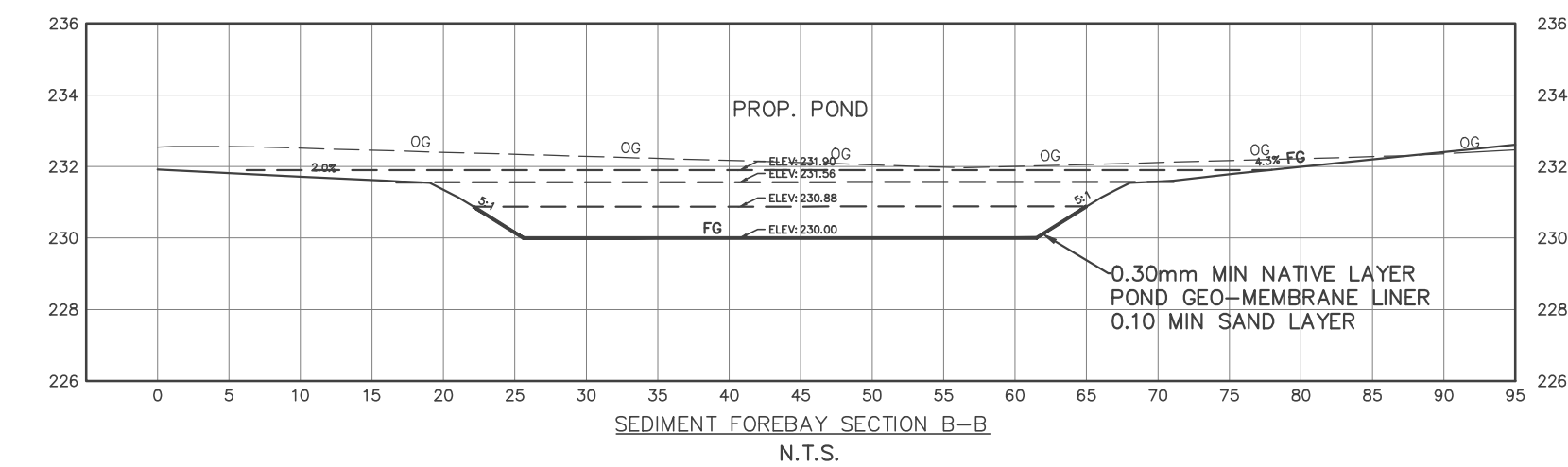
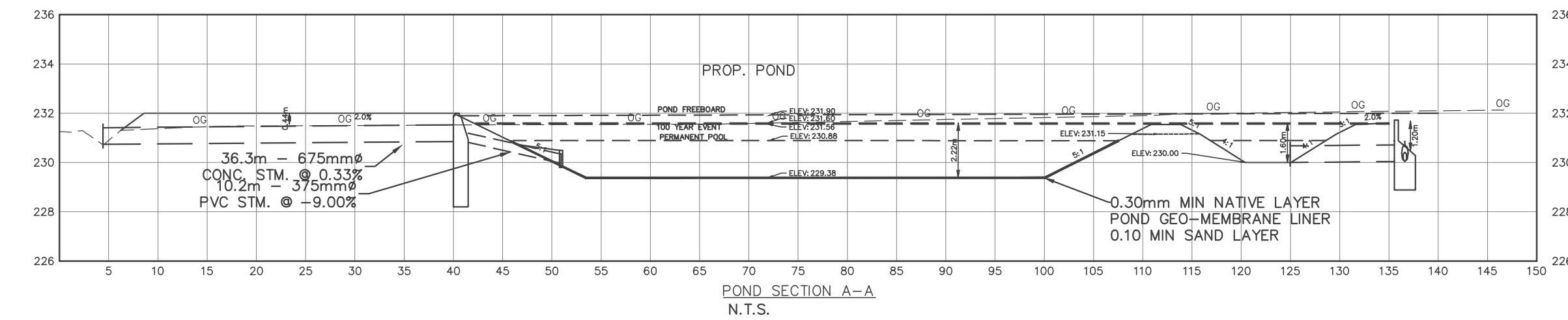
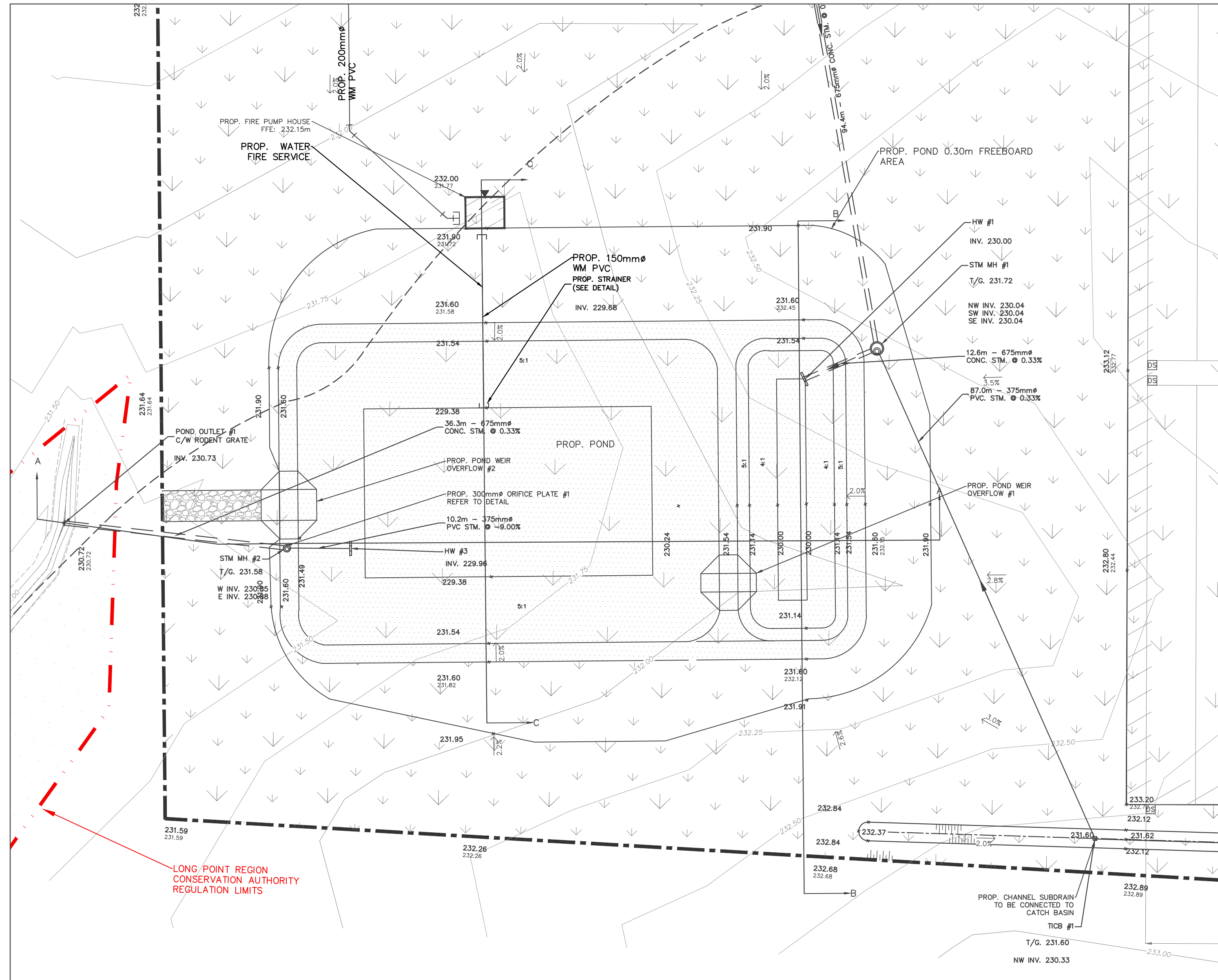
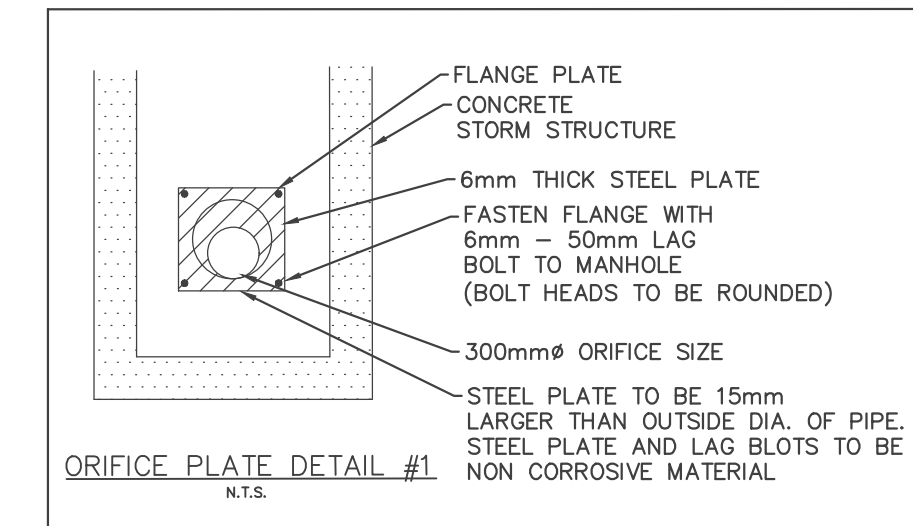
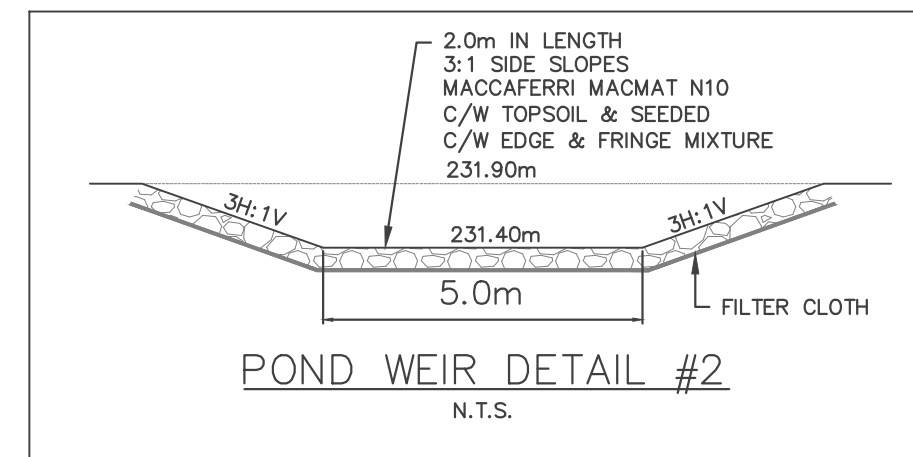
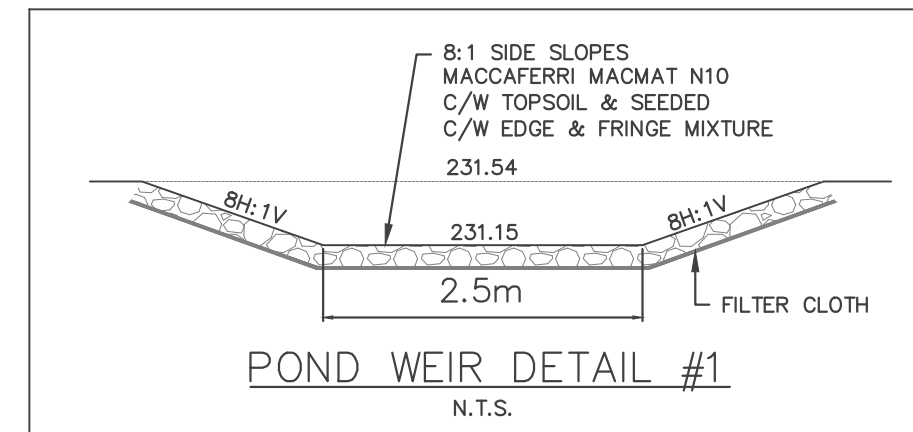
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### LEGEND

- PRIVACY FENCE
- ACOUSTIC FENCE
- CHAIN LINK FENCE
- SILT FENCE
- GAS LINE
- HYDRO LINE
- BELL LINE
- EXISTING SANITARY MAINTENANCE HOLE
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- MECHANICAL ROOM
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- LIGHT DUTY ASPHALT AREA
- HEAVY DUTY ASPHALT AREA
- GRAVEL AREA



Issued For:

### SITE PLAN APPROVAL

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Client



523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

HWY #3 DELHI

2148 Highway 3, Delhi, ON N4B 2W4  
Norfolk County

Drawing:

POND PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM

Scale: 1:500 Drawn by: KF Approved by: JDM

Orientation

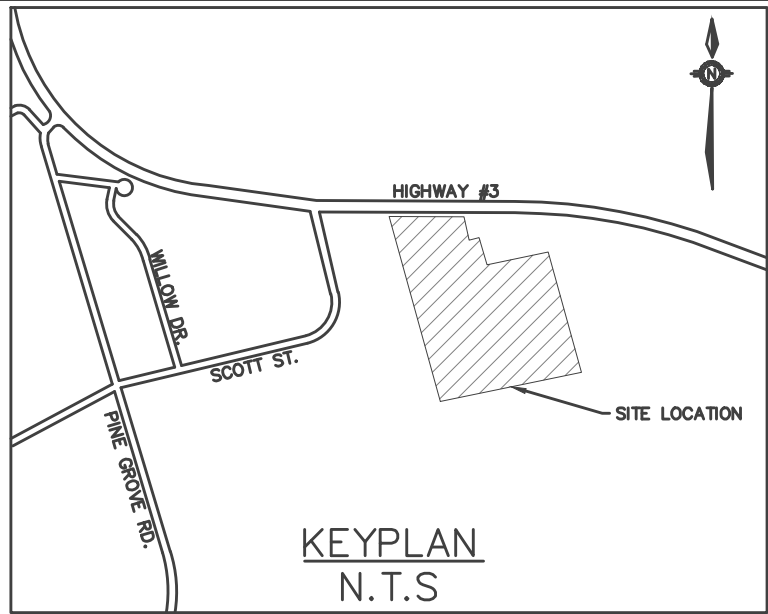
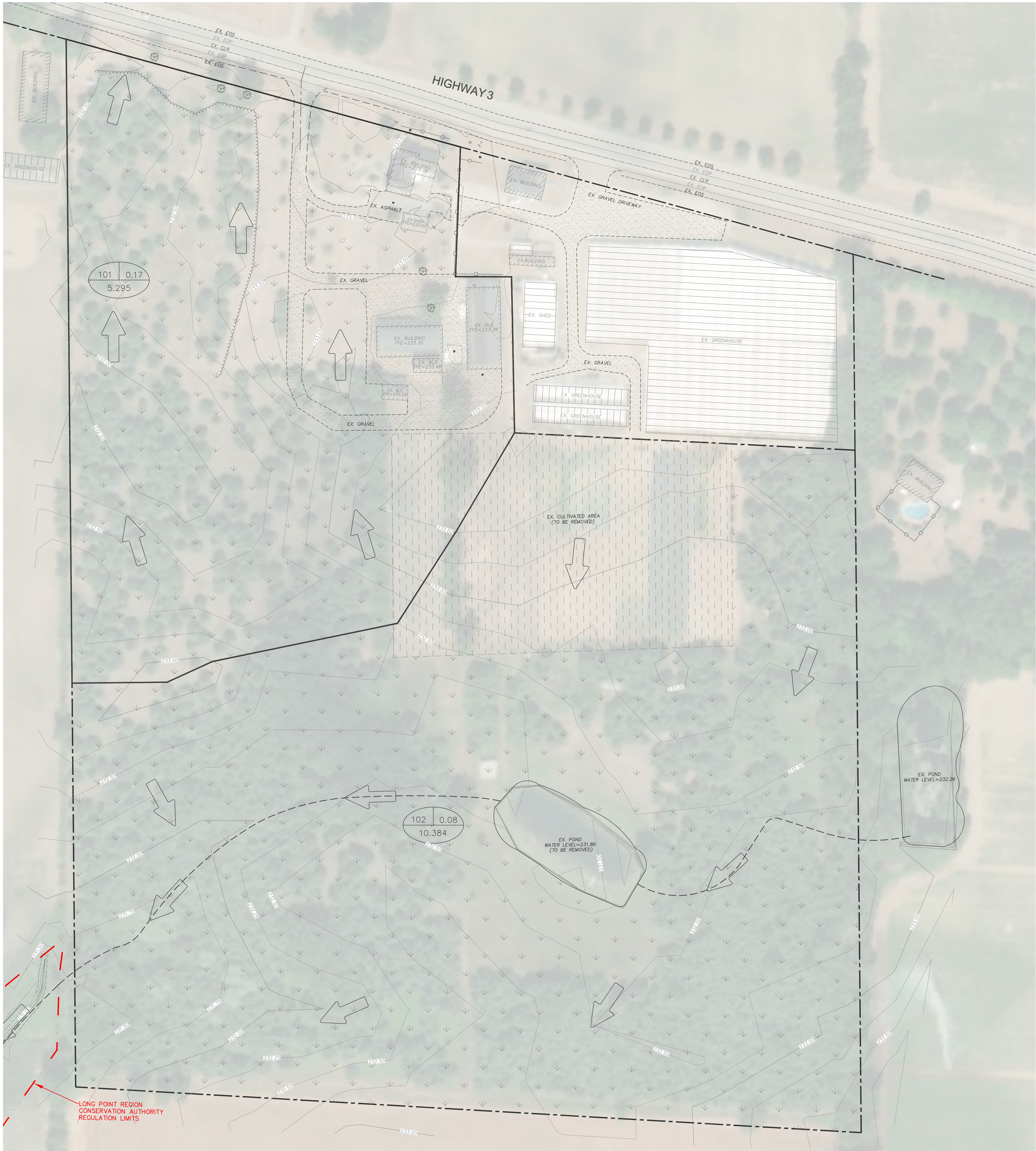
Stamp



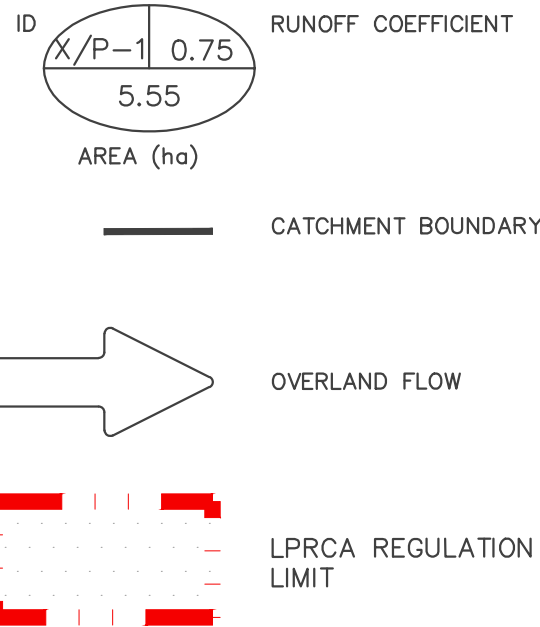
Drawing No.

PND-1





LEGEND



**Gerrits**  
ENGINEERING

Barrie, ON  
Tel.: 705.737.3303

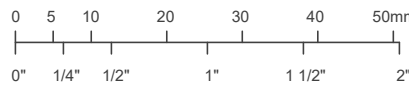
Kingston, ON  
Tel.: 613.217.8246

www.gerritseng.com

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No.	Issuance Description	YYMMDD
1.	CLIENT REVIEW	23/03/08
2.	MTD SUBMISSION	25/04/09
3.	SPA & BP SUBMISSION	25/12/05

BENCHMARK: TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For:

SITE PLAN APPROVAL

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Client

**CDNBUILDINGS**

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

HWY #3 DELHI

2148 Highway 3, Delhi, ON N4B 2W4  
Norfolk County

Drawing:

PRE-DEVELOPMENT  
STORMWATER  
DRAINAGE PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM

Scale: 1:1000 Drawn by: KF Approved by: JDM

Orientation

Stam

Stam



Drawing No.

SWM-1



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0 5 10 20 30 40 50mm  
0" 1/4" 1/2" 1" 1 1/2" 2"

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ELEVATION OF 233.80

Issued For:

## SITE PLAN APPROVAL

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Client

CDNBUILDINGS

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

HWY #3 DELHI

2148 Highway 3, Delhi, ON N4B 2W4

Norfolk County

Drawing:

## POST DEVELOPMENT STORMWATER DRAINAGE PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM

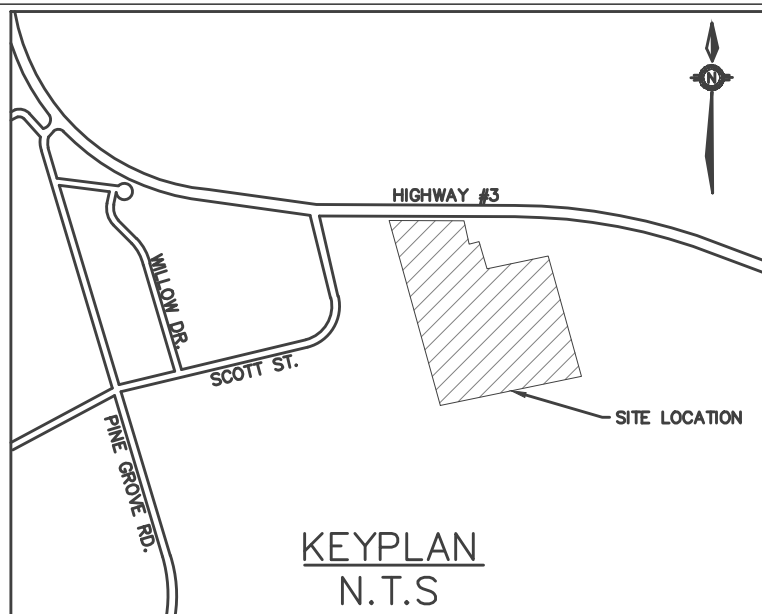
Scale: 1:1000 Drawn by: KF Approved by: JDM

Orientation



Drawing No.

SWM-2



## LEGEND

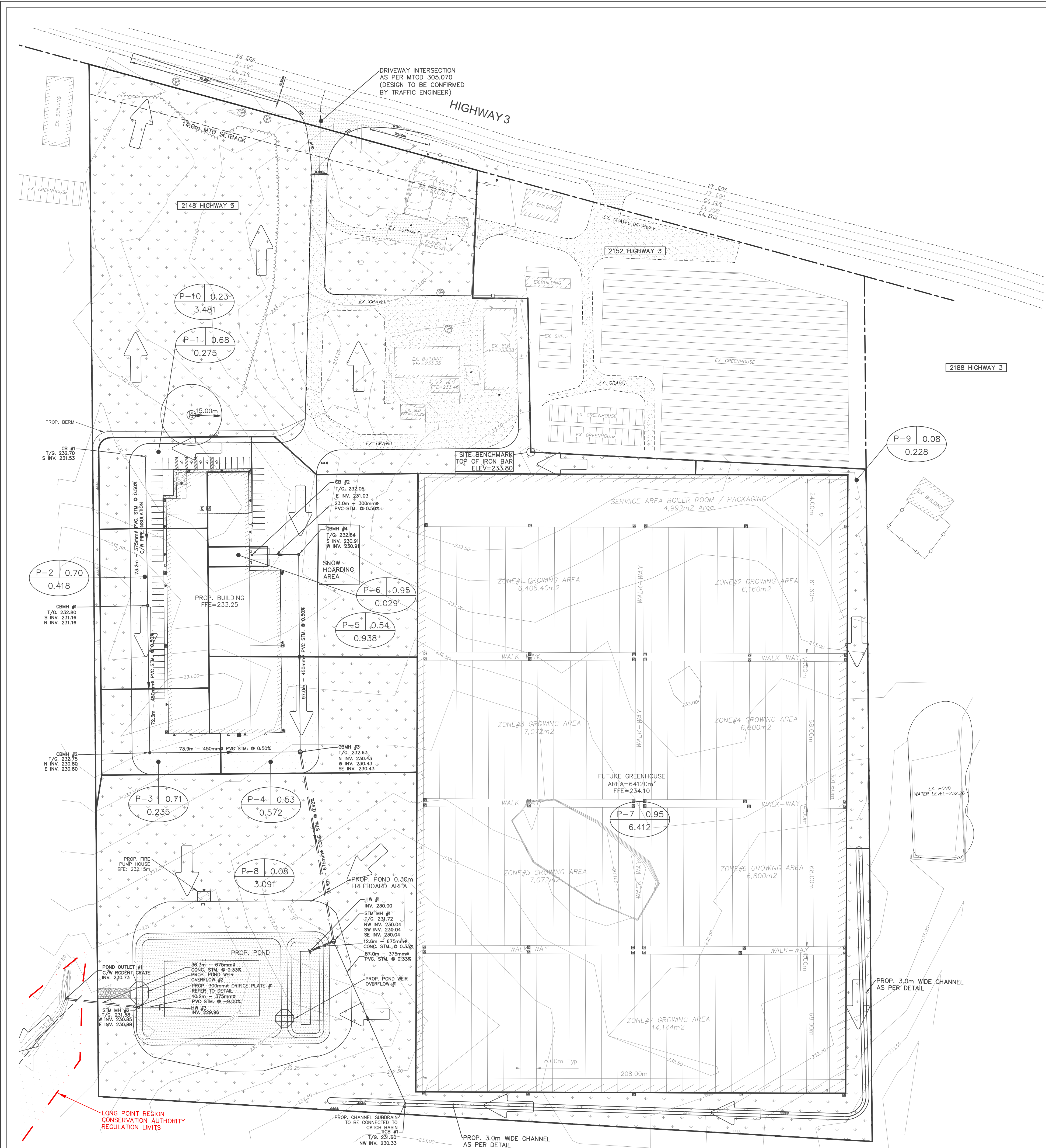
ID (X/P-1) 0.75  
5.55  
AREA (ha)

RUNOFF COEFFICIENT

CATCHMENT BOUNDARY

OVERLAND FLOW

LPRCA REGULATION LIMIT





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BENCHMARK: TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For:

## SITE PLAN APPROVAL

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Client

**CDNBUILDINGS**

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

**HWY #3 DELHI**

2148 Highway 3, Delhi, ON N4B 2W4

Norfolk County

Drawing:

## EROSION & SEDIMENT CONTROL PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM

Scale: 1:1000 Drawn by: KF Approved by: JDM

Orientation

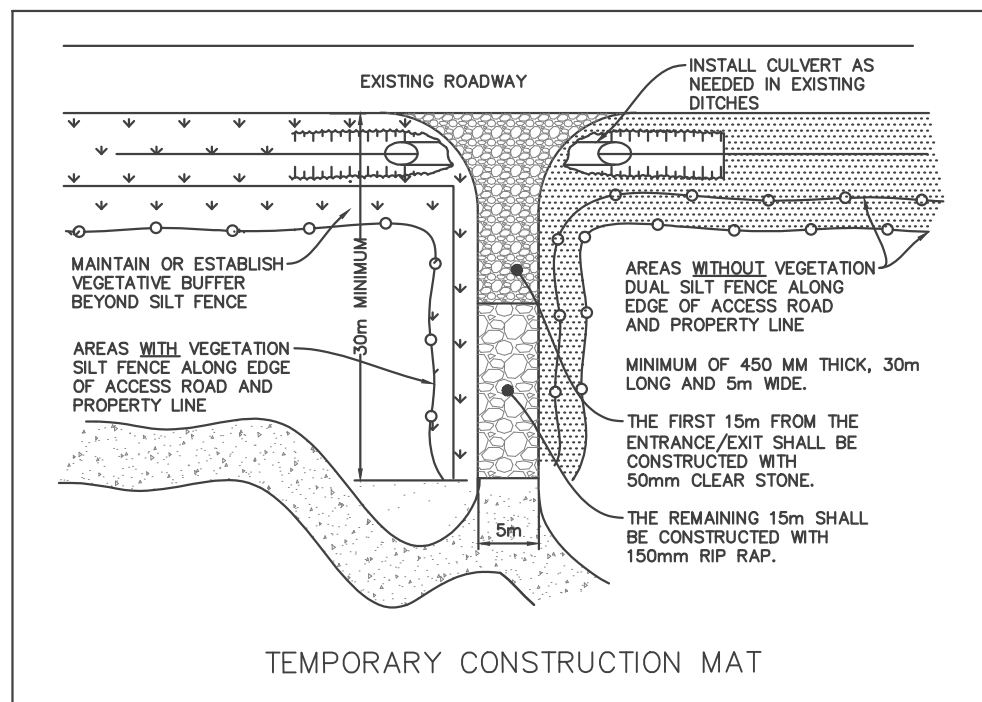
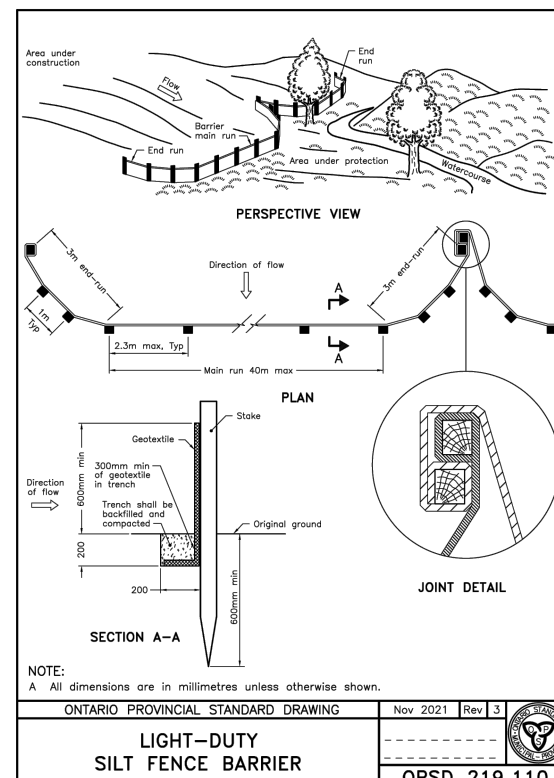
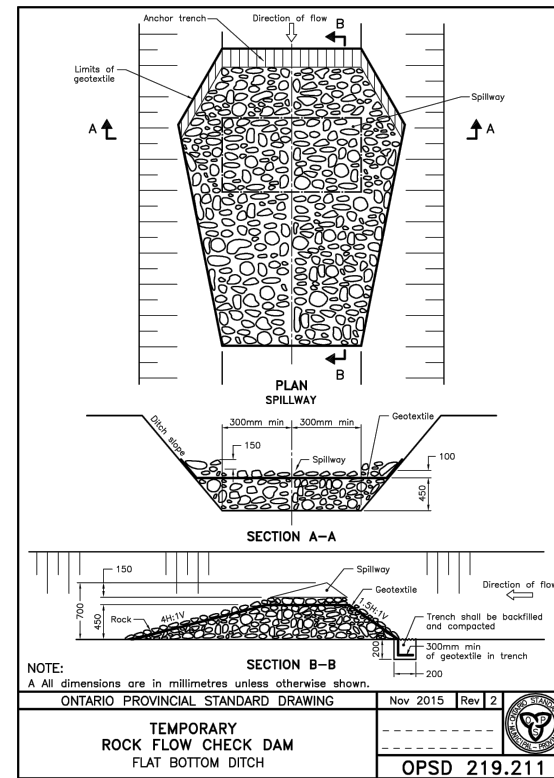
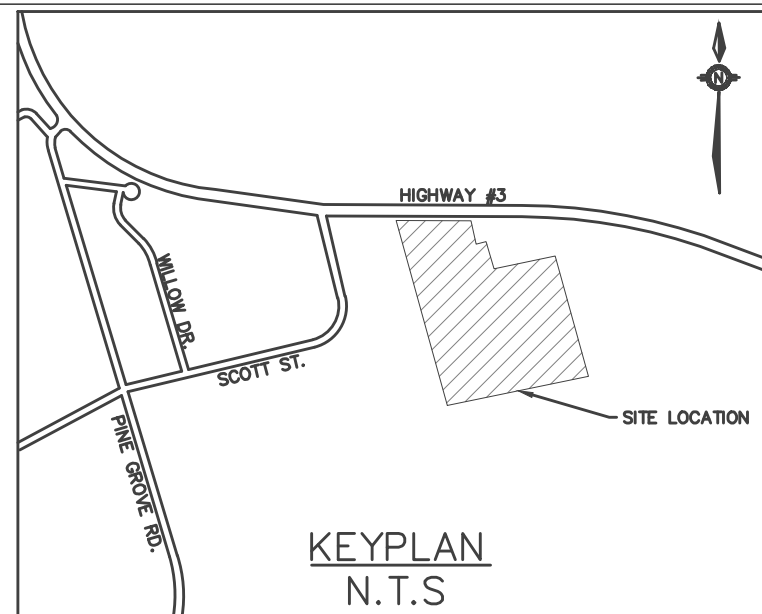
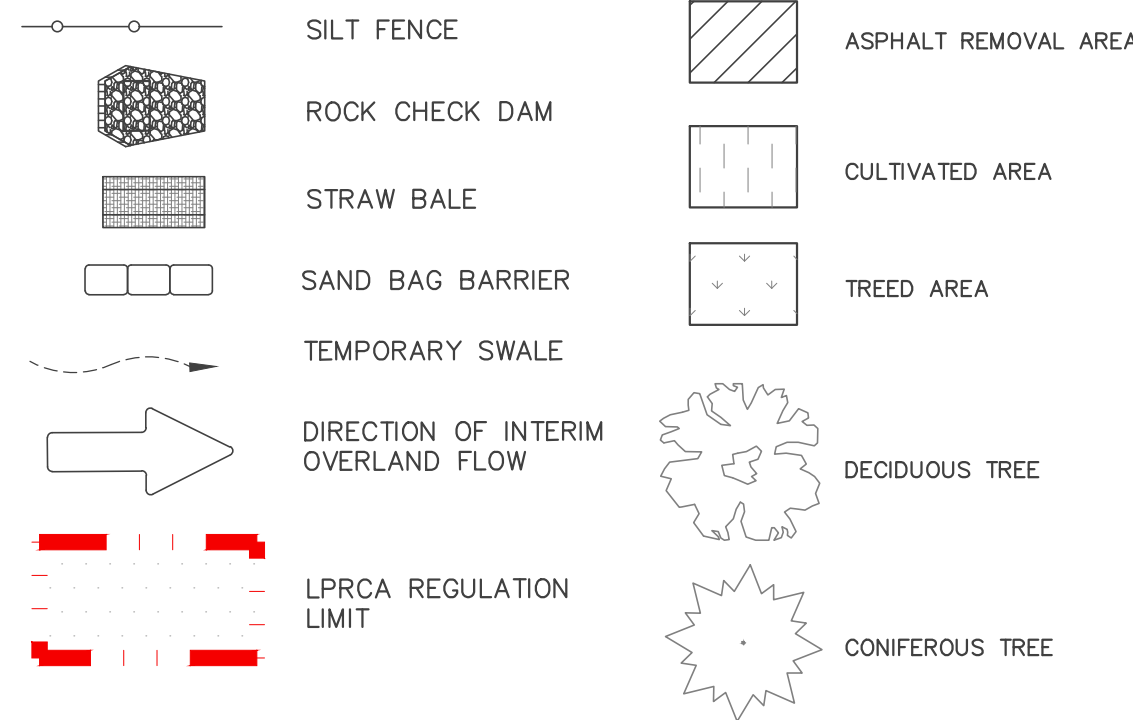
Stamp



Drawing No.

ESC-1

## LEGEND

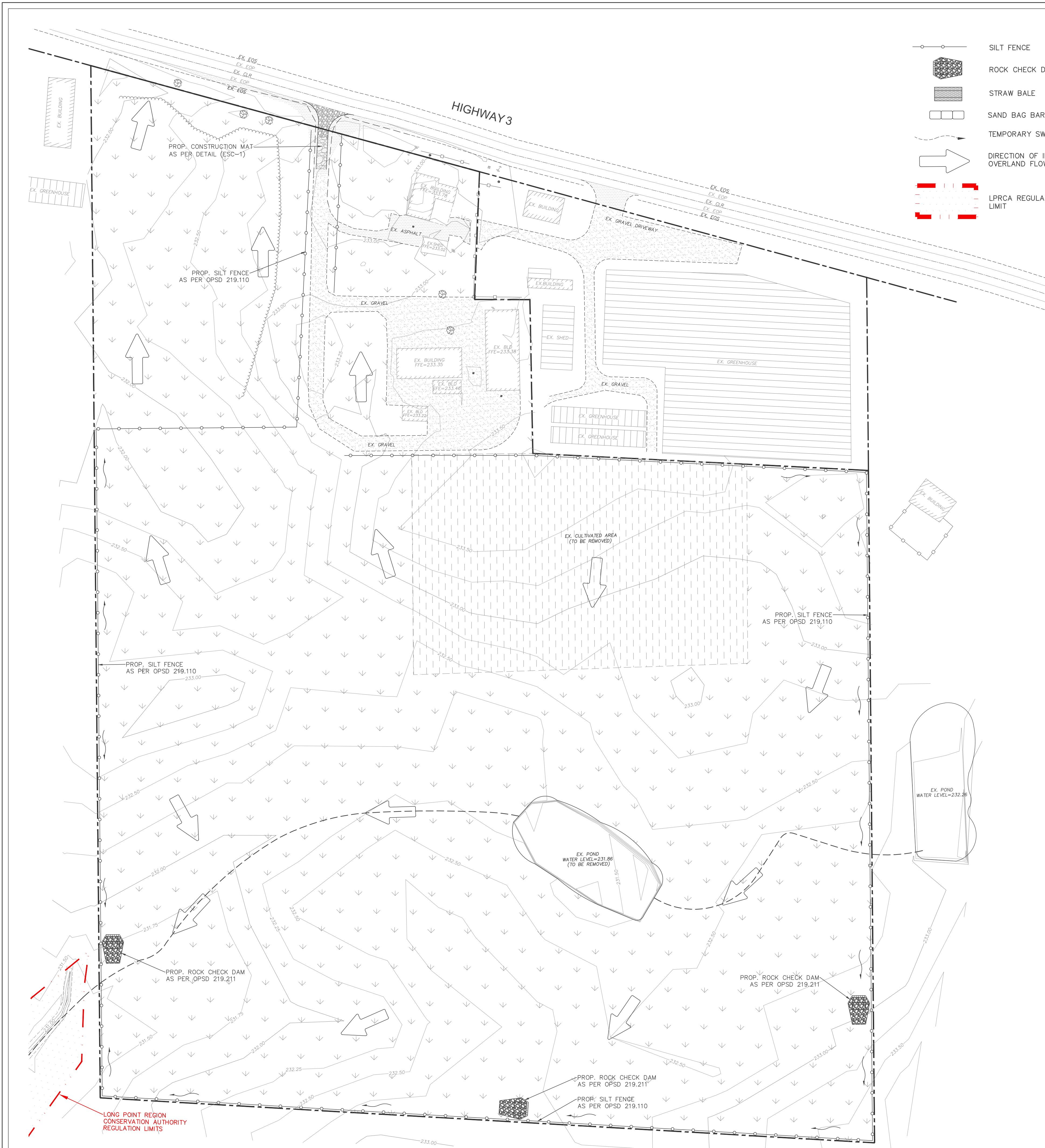


## SEQUENCE OF CONSTRUCTION

- ENGINEER TO BE NOTIFIED PRIOR TO INITIATION OF ANY ON SITE WORKS.
- SILT FENCE AND CONSTRUCTION ACCESS MATS TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY WORKS ONSITE.
- VEGETATION REMOVAL MAY COMMENCE AFTER ALL SILT FENCE IS INSTALLED AND APPROVED BY THE ENGINEER.
- COMMENCE WITH EARTH EXCAVATION AND SITE SERVICING (TO BE REMOVED FROM SITE - NO STOCKPILE).
- EROSION CONTROL MEASURES TO BE MAINTAINED AS DIRECTED BY THE ENGINEER DURING THE CONSTRUCTION PERIOD. ADDITIONAL CONTROL MEASURES MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
- ALL DISTURBED GROUND LEFT INACTIVE FOR MORE THAN 30 DAYS SHALL BE STABILIZED WITH SEED, SOD, MULCH OR OTHER ADEQUATE COVERING, AS INSTRUCTED BY THE ENGINEER.
- ALL CONSTRUCTION VEHICLES TO ACCESS THE SITE VIA THE DESIGNATED CONSTRUCTION ENTRANCES AS SHOWN.

## NOTES FOR SEDIMENT & EROSION CONTROL

- DISTURBED AREAS THAT HAVE FAILED TO HAVE STABLE GROUND COVER ESTABLISHED BY OCTOBER 30TH SHALL BE PROTECTED WITH A SILTATION CONTROL FENCE OR STRAW MULCH ETC. AND MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION BECOMES ESTABLISHED IN THE SUBSEQUENT GROWING SEASON.
- ANY DEWATERING WASTE SHALL BE DISCHARGED TO A VEGETATED AREA AT LEAST 30 M FROM ANY WATERCOURSE AND FILTERED. FILTERING METHODS MUST BE APPROVED BY THE SITE ADMINISTRATOR.
- SILT FENCE SHALL BE PUT IN PLACE PRIOR TO AND MAINTAINED DURING ALL GRADING. SILT FENCE SHALL COMPLY WITH OPSD 219.110 FOR LIGHT DUTY AND / OR OPSD 219.130 FOR HEAVY DUTY, UNLESS NOTED OTHERWISE. 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 SUGGESTED SPECIFICATIONS.
- THE CONTRACTOR SHALL BE PREPARED FOR UNEXPECTED CONDITIONS AND ACCORDINGLY HAVE STOCKPILED MATERIALS ON SITE FOR NECESSARY REPAIRS AS A RESULT OF FAILED OR INADEQUATE CONTROL MEASURES. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK, AND AFTER EVERY RAINFALL EVENT.
- MUD MATS WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES THE SITE SHALL BE USED. MUD MATS TO BE 300mm IN DEPTH, 6.0m WIDE BY 20.0m LONG, FIRST 10.0m TO 150mmØ CLEAR STONE WITH THE REMAINING 10.0m CONSISTING OF 50mmØ CLEAR STONE, OR MEET MUNICIPAL STANDARDS WHERE IDENTIFIED.
- CONTRACTOR SHALL OBTAIN A CURRENT COPY AND BECOME FAMILIAR WITH OPS8 805, CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS.
- THE CONTRACTOR MAY CONSIDER ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES. SUCH MEASURES SHOULD BE PRESENTED IN WRITING FOR APPROVAL OF THE SITE ADMINISTRATOR AND MUST BE APPROVED IN WRITING BY THE CONSERVATION AUTHORITY.
- THE TOPS OF ALL FILTER FABRIC MUST BE A MINIMUM OF 1.0 METRES ABOVE THE GROUND LEVEL AND ATTACHED TO THE FENCE WITH A CONTINUOUS STEEL WIRE. ALTERNATIVELY, THE FILTER FABRIC MUST BE FOLDED OVER THE TOP OF THE FENCE AND ATTACHED TO THE FENCE WITH WIRE LOOPED THROUGH THE FABRIC ON BOTH SIDES OF THE FENCE. FILTER FABRIC IS TO BE TERRAFIX 270R OR EQUIVALENT.
- ALL DISTURBED GROUND LEFT INACTIVE 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 MUNICIPAL DIRECTOR OF ENGINEERING BUT SHALL NOT EXCEED (30) DAYS OR SUCH LONGER PERIOD DEEMED ADVISABLE BY THE MUNICIPAL DIRECTOR OF ENGINEERING.
- CONTRACTOR SHALL INSTALL AND MAINTAIN CATCHBASIN SEDIMENT BARRIERS THROUGHOUT THE SITE DURING ALL CONSTRUCTION ACTIVITIES IN ORDER TO MITIGATE SEDIMENT ENTERING THE STORM STORM SEWERS.
- NO FUEL TO BE STORED ON SITE. IN CASE OF A SPILL PLEASE CONTACT:MOECC SPILLS ACTION CENTER 1-800-268-6060.
- SEDIMENT CONTROLS ARE TO REMAIN IN PLACE UNTIL WRITTEN DIRECTION IS RECEIVED FROM THE ENGINEER REGARDING THEIR REMOVAL.
- EROSION AND SEDIMENT CONTROLS WILL BE INSPECTED ON AS PER MUNICIPAL REQUIREMENTS OR AFTER SIGNIFICANT RAINFALL EVENTS.





COST ESTIMATE

ON-SITE WORKS					
Item No.	Description	Estimated Quantity	Units	Unit Cost	Total Cost
Part A - Site Preparation, ESC Measures & Removals					
A.1	Supply & Install Light Duty Silt Fence	1613	m	\$12.50	\$20,162.50
A.2	Supply & Install Construction Entrance Mat	1	LS	\$7,000.00	\$7,000.00
A.3	Supply & Install Rock Check Dam	3	each	\$550.00	\$1,650.00
					\$28,812.50 Subtotal
Part B - Watermains					
B.1	Supply & Install 100mm PVC DR 18 Water Service	28	m	\$225.00	\$6,300.00
B.2	Supply & Install 150mm PVC DR 18 Water Service	28	m	\$280.00	\$7,840.00
B.3	Supply & Install 200mm PVC DR 18 Water Service	323	m	\$315.00	\$101,745.00
B.4	Supply & Install Fire Hydrant, Valve & Box	1	ea	\$9,500.00	\$9,500.00
					\$125,385.00 Subtotal
Part C - Sanitary Sewers					
C.1	Supply & Install Septic System and tanks	1	LS	\$50,000.00	\$50,000
C.2	Supply & Install 150mm PVC DR 35 Sanitary Sewer	33	m	\$275.00	\$9,075
					\$59,075.00 Subtotal
Part D - Storm Sewers					
D.1	Supply & Install 150mm Subdrain	353	m	\$45.00	\$15,885
D.2	Supply & Install 300mm PVC DR 35 Storm Sewer	23	m	\$285.00	\$6,555
D.3	Supply & Install 375mm PVC DR 35 Storm Sewer	83.4	m	\$300.00	\$25,020
D.4	Supply & Install 450mm PVC DR 35 Storm Sewer	243.2	m	\$325.00	\$79,040
D.5	Supply & Install 675mm Concrete Storm Sewer	143.3	m	\$375.00	\$53,738
D.6	Supply & Install Headwall OPSD 804.030	2	each	\$10,000.00	\$20,000
D.7	Supply & Install Catchbasin	3	each	\$6,000.00	\$18,000
D.8	Supply & Install 1200mm Diameter Manhole	4	each	\$8,500.00	\$34,000
D.9	Supply & Install 1500mm Diameter Manhole	2	each	\$10,250.00	\$20,500
	Supply & Install Stormwater Management Facility	1	LS	\$175,000.00	\$175,000
					\$447,737.50 Subtotal
Part E - Roadworks & Concrete Works					
E.1	Supply & Install Base Asphalt (HL8)	8600	m2	\$25.00	\$215,000
E.2	Supply & Install Surface Asphalt (HL3)	8600	m2	\$20.00	\$172,000
E.3	Supply & Install Granular B	8600	m2	\$12.00	\$103,200
E.4	Supply & Install Granular A	8600	m2	\$15.00	\$129,000
E.5	Supply & Install Concrete Sidewalk (OPSD 310.010)	154	m2	\$150.00	\$23,100
E.5	Supply & Install Concrete Barrier Curb (OPSD 600.110)	100	m	\$110.00	\$11,000
E.7	Line Painting	1	LS	\$9,500.00	\$9,500
					\$662,800.00 Subtotal
					\$1,323,810.00 Total

OFF-SITE WORKS					
Item No.	Description	Estimated Quantity	Units	Unit Cost	Total Cost
Part A - Site Preparation, ESC Measures & Removals					
A.1	Not Applicable		0	\$0.00	\$0.00
					\$00.00 Subtotal
Part B - Watermains					
B.1	Not Applicable		0	\$0.00	\$0.00
					\$00.00 Subtotal
Part C - Sanitary Sewers					
C.1	Not Applicable		0	\$0.00	\$0.00
					\$00.00 Subtotal
Part D - Storm Sewers					
D.1	Not Applicable		0	\$0.00	\$0.00
					\$00.00 Subtotal
Part E - Roadworks & Concrete Works					
E.1	Supply & Install Granular B	800	m2	\$12.00	\$9,600
E.2	Supply & Install Granular A	800	m2	\$15.00	\$12,000
E.3	Supply & Install Base Asphalt (HL8)	800	m2	\$25.00	\$20,000
E.4	Supply & Install Surface Asphalt (HL3)	800	m2	\$20.00	\$16,000
					\$57,600.00 Subtotal
					\$57,600.00 Total



SITE SECURITIES ESTIMATE

ON-SITE WORKS

Part A - Site Preparation, ESC Measures & Removals	\$28,812.50
Part B - Watermains	\$125,385.00
Part C - Sanitary Sewers	\$59,075.00
Part D - Storm Sewers	\$447,737.50
Part E - Roadworks & Concrete Works	\$662,800.00
Estimated Cost	\$1,323,810.00
Total On-Site Securities	\$132,381.00

OFF-SITE WORKS

Part A - Site Preparation, ESC Measures & Removals	\$0.00
Part B - Watermains	\$0.00
Part C - Sanitary Sewers	\$0.00
Part D - Storm Sewers	\$0.00
Part E - Roadworks & Concrete Works	\$57,600.00
Estimated Cost	\$57,600.00
Total Off-Site Securities	\$57,600.00

TOTAL SECURITIES REQUIRED

ON-SITE SECURITIES	\$132,381.00
OFF-SITE SECURITIES	\$57,600.00
TOTAL SECURITIES REQUIRED	\$ 189,981.00

\*Note: Values provided are an estimate of the projects probable capital costs based on an accuracy of +/- 20%, do not include taxes or fees associated with permits , and are subject to fluctuations in the respective markets

Prepared by:

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Kevin Fillion, C.E.T.

Checked by:

Jeff McCuaig

Jeff McCuaig, P.Eng.

Date:

11/28/2025



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December 5, 2025

Project Number 1121-012-22

## Functional Servicing Report

### Regarding:

Proposed Greenhouse Building  
2148 Highway 3  
Delhi, Ontario

### Prepared on behalf of:

CDN Buildings

### By:

GERRITS ENGINEERING LIMITED  
222 Mapleview Dr. W., Suite 300  
Barrie, ON L4N 9E7



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## APPENDICES

Appendix A – Design Calculations

Appendix B – Geotechnical Investigation

Appendix C – Design Drawings

## LIST OF FIGURES & DRAWINGS

DWG SP1.00	Site Plan
DWG ESC-1	Erosion and Sediment Control Plan
DWG SS-1 and SG-1	Site Servicing and Grading Plan
DWG PND-1	Pond Plan
DWG SWM-1	Pre-Development SWM Drainage Plan
DWG SWM-2	Post-Development SWM Drainage Plan



## 1. Introduction

Gerrits Engineering Ltd. (GEL) has been retained by CDN Buildings (Client) to provide engineering services for the proposed development located within the property identified as 2148 Highway 3 in Delhi, Ontario.

This Functional Servicing Report (FSR) has been prepared in support of the Site Plan Control Application prepared by CDN Building (CDN) to demonstrate how the proposed development can be serviced by the surrounding existing municipal infrastructure. This FSR will examine the property's conceptual servicing with relation to:

- Potable Water Supply
- Sanitary Sewerage
- Storm Sewerage
- Stormwater Management
- Erosion & Sediment Controls

### 1.1. Supporting & Reference Documents

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

- Ministry of the Environment, Guidelines for the Design of Sanitary Sewage Works and Water Works – 2008
- Ministry of the Environment, Stormwater Management Planning and Design Manual, March 2003
- Ontario Building Code (OBC, 2024)
- Ministry of Transportation, Drainage Management Manual (MTO, 1997)
- Norfolk Design Criteria, February 2019

### 1.2. Subject Property

The site is located at 2148 Highway 3 in Delhi, Ontario and is legally described as Concession/Lot in the Township of Delhi, County of Norfolk. The site is presently developed with a single-family home, associated barn/warehouse structures, outdoor storage and parking areas. The site is bound by Highway 3 to the north, a commercial garden center to the east, residential/agricultural land to the west and agricultural land to the south. The site is approximately 15.7 ha in area, trapezoidal in shape and generally slopes in two directions. Approximately one-third of the site drains to the north towards Highway 3, while the other two-thirds of the site drains to the south/southwest. The topographical information is based on a survey completed by JoeTOPO Survey and CADD and aerial mapping from Google Imagery.

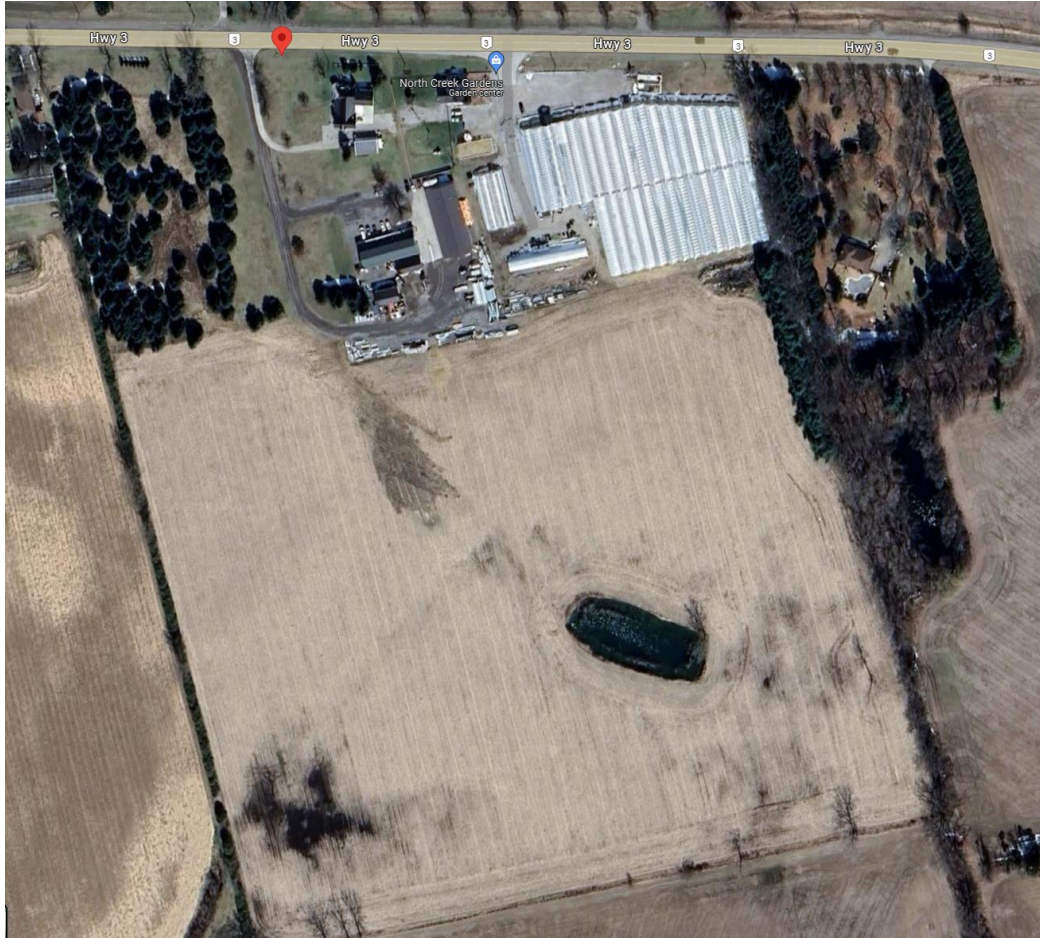


Figure 1 - Subject Property (Red)

### 1.3. Proposed Land Use

The proponent is seeking to undertake the proposed development in two phases. The first phase will consist of the construction of a fabrication shop for a greenhouse manufacturing establishment, including 161 parking spaces. The structure will include a maintenance shop for repairs, wash bays, a fabrication shop equipped with a crane/hoist, office space for employees and sales. The second phase of the development will consist of the construction of a greenhouse for growing strawberries. The preliminary site plan is attached in Appendix C.



## 2. Sanitary Servicing

It is proposed that the subject lands will be serviced by an on-site sewage system as per the Ontario Building Code (O.B.C.).

### 2.1 Septic System

The development of the private septic system will be required to meet the provisions of Part 8 of the Ontario Building Code, more specifically Class IV sewage systems, which governs the design and installation of sewage systems of less than 10,000 L per day.

Based on the O.B.C. Table 8.2.1.3.B, the following design flow rate has been generated for both facilities including the existing residence. Referencing the Geotechnical Investigation conducted by JLP Services Incorporated, dated November 21, 2022; the surficial soils are identified in Unified Soils Classification Groups SW-SP (Well-Graded to Poorly Graded Sand) and SM (Silty Sand). The SW-SP soils have high permeability at an approximate percolation rate of 7.6 cm/hr and the SM soils have a moderate permeability at an approximate percolation rate between 0.5 to 7.6 cm/hr.

This percolation rate of 8 min/cm was used for sizing the proposed leaching beds.

$$\begin{aligned} Q_{\text{peak}} &= \text{Proposed Buildings (O.B.C.)} + \text{Existing Residence} \\ &= 75 \text{ Liters/Employee/Day (Factory – No Showers)} + 500 \text{ Litres/resident} \\ &= 75 \text{ Employees (75 Litres/Employee/day} \times 75) + 5 \text{ residents (500 L/resident/day} \times 5) \\ &= 8,125 \text{ Liters/Day} \end{aligned}$$

#### Minimum Size of Septic Tank

$$\begin{aligned} &\text{As per O.B.C. 8.2.2.3.(1)(b);} \\ &\text{Tank} = 3 \times 8,125 \text{ L} \\ &= 24,375 \text{ L} \end{aligned}$$

#### Size of Filter Bed Contact Area

As per O.B.C. 8.7.5.2.(4), the filter medium shall have an effective area that does not exceed 50 L/m<sup>2</sup> therefore required filter medium area is:

$$\begin{aligned} \text{Area} &= Q / 50 \\ &= 8,125 / 50 \\ &= 162.5 \text{ m}^2 \end{aligned}$$

#### Size of Filter Bed Expanded Contact Area

As per O.B.C. 8.7.5.3.(6), the base of the filter medium shall extend to a thickness of at least 250mm over an area meeting the requirements of the following formula:

$$\begin{aligned} \text{Area} &= QT / 850 \\ &= 8,125 \times 8 / 850 \\ &= 76.5 \text{ m}^2 \end{aligned}$$

#### Loading Area

As per O.B.C. 8.7.4.1., the area described in Sentence 8.7.4.2.(1) shall be designed such that the loading rate does not exceed the values as laid out in Table 8.7.4.1. of the O.B.C.

$$\begin{aligned} \text{Area} &= Q / 6 \\ &= 8,125 / 6 \\ &= 1,355 \text{ m}^2 \end{aligned}$$



The following details the required and provided volumes of the septic bed system:

	Required
Tank Size (L):	24,375
Contact Area (m <sup>2</sup> ):	162.5
Expanded Contact Area (m <sup>2</sup> ):	76.5
Loading Area (m <sup>2</sup> ):	1,355

### 3. Water Supply and Distribution

#### 3.1. Design Criteria

As previously indicated, it is proposed to service the facility with an existing well located at the north end of the facility. The water servicing for this Development has been considered from an internal perspective and the preliminary analysis of the onsite demands has been as per the Norfolk Design Criteria, and includes the following criteria:

- Commercial/Industrial Demand (Average Day Demand) = 28m<sup>3</sup>/ha\*d
- Max Day Factor (MDD) = 2.25
- Peak Hour Factor (PH) = 2.00
- Minimum pressure in system at MDD = 350 kPa
- Maximum pressure in system at MDD = 700 kPa
- Minimum pressure in system at Peak Hour (Maximum Day) Demands = 275 kPa
- Minimum pressure in system at Fire Flow + Maximum Day Demands = 140 kPa

The projected daily average, maximum day, and peak hourly flows from the subject property are summarized in the table below:

**Table 1 – Design Water Flows**

Average Daily Demand (Design)	439.6	m <sup>3</sup> /d
	5.1	L/s
Maximum Day Demand (Design)	989.1	m <sup>3</sup> /d
	11.4	L/s
Peak Hour Flow (Design)	879.2	m <sup>3</sup> /d
	10.2	L/s

#### 3.2. Internal Distribution System

To service the subject facility's internal water distribution system, a private well is to be constructed and maintained in accordance with the Ontario Water Resources Act R.R.O 1990, Regulation 903 and the Safe Drinking Water Act including Ontario Regulation 169/03.



### 3.3. Fire Flow Requirement

As per the Ontario Building Code (2024) Section A-3.2.5.7 “Water Supply”, it is required to provide adequate water supply for firefighting of every building. The required water supply for firefighting operations will be calculated for the proposed industrial/commercial building. As per the same code, adequate water supply for firefighting is not required for farm buildings of low human occupancy, which are exempt under the National Farm Building Code of Canada 1995. Structures used primarily for agricultural production, such as greenhouses, are generally classified as farm buildings because their design and use are focused on production rather than serving as places for long-term or high-density human occupancy. As such, no additional fire water supply will be provided for the proposed greenhouse. Detailed water supply calculations for the proposed commercial/industrial structure are provided in Appendix A and summarized as 1,586,693 L or 1587 m<sup>3</sup>. It is acceptable to use a water supply from the permanent pool of the pond equal to 3,147 m<sup>3</sup>, which would be pumped from a dry hydrant system.

## 4. Storm Drainage and Stormwater Management

A key component of the Development is the need to address environmental and related Stormwater Management (SWM) issues. These are examined in a framework aimed at meeting the Norfolk County, Long Point Region Conservation Authority (LPRCA), and MOE requirements. SWM parameters have evolved from an understanding of the location and sensitivity of the site’s natural systems.

It is understood that 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.
- Maintain and protect significant natural features.
- Protect and provide diverse recreational opportunities that are in harmony with the environment.

### 4.1. Existing Drainage Conditions

The subject property is approximately 15.7 Ha in size and as previously mentioned the site is presently developed with a single-family home, associated barn/warehouse structures, outdoor storage, and parking areas. The site is evaluated as having two drainage areas consisting of grasslands with hardened surfaces such as building roofs, concrete, gravel and asphalt surfaces. Based on our review of the mapping, topography across the development area is moderate, generally sloping southwest towards an existing watercourse for catchment area 102 and sloping north towards Highway 3 for catchment area 101. No onsite flow attenuation controls exist and pre-development flows from the site drain overland, in the form of sheet flow, towards the existing water course and the right of way. The existing watercourse meanders north and south, ultimately flowing west and drains into Big Creek, see attached Ontario Watershed Information Tool Mapping attached in Appendix D. Using the Ministry of Transportation SWM policies and Design Guidelines, the existing site statistics produce the following weighted runoff coefficient:

Undeveloped Lands	=	149,737 m <sup>2</sup>	R	=	0.08	AR	=	3,671.7
Asphalt	=	557 m <sup>2</sup>	R	=	0.95	AR	=	529.2
Building Roof	=	1,727 m <sup>2</sup>	R	=	0.95	AR	=	1,640.7
Gravel	=	4,773 m <sup>2</sup>	R	=	0.60	AR	=	3,341.1
							Total	AR = 9,182.6
Site Area = 156,794 m <sup>2</sup>							AR = 9,183	Weighted R = 0.11





## 4.2. Proposed Drainage Conditions

The proposed development will increase the imperviousness of the site, and it is important to quantify the increase in stormwater runoff rates for proper sizing of the on-site controls with downstream facilities. As per the proposed statistics, the post development weighted runoff is:

Unimproved Lands	=	70,463 m <sup>2</sup>	R	=	0.08	AR	=	5,637.0	
Asphalt	=	9,235 m <sup>2</sup>	R	=	0.95	AR	=	8,773.3	
Concrete	=	155 m <sup>2</sup>	R	=	0.95	AR	=	147.3	
Gravel	=	4,772 m <sup>2</sup>	R	=	0.60	AR	=	3,340.4	
Building Roof	=	72,169 m <sup>2</sup>	R	=	0.95	AR	=	68,560.6	
						Total	AR	=	86,458.5
Site Area = 156,794 m <sup>2</sup>			AR = 86,459		Weighted R = 0.55				

### 4.2.1. Hydrology Model Results

Given the size of the site, the Modified Rational Method will be used to determine the existing and anticipated SWM release rates. The Ministry of Transportation IDF curve equations were used for determining the storm intensity values and the following release rates have been calculated (Detailed calculations have been included in Appendix A):

Site Area	= 15.7 hectares
Runoff Coefficient	= 0.17 (existing condition) – Catchment Area X-101 = 0.08 (existing condition) – Catchment Area X-102 = 0.64 (proposed condition) – Catchment Area P1-P9 = 0.23 (proposed condition) – Catchment Area P10
Time of Concentration (t <sub>c</sub> )	= 10 Minutes
Rainfall Intensity	= Norfolk County IDF Curve Parameters
Peaking Factor (C <sub>i</sub> )	= 1.00 (2, 5 & 10 year design period) = 1.10 (25 year design period) = 1.20 (50 year design period) = 1.25 (100 year design period)
Runoff Rate (Q <sub>r</sub> )	= C <sub>i</sub> x C x I x A x 360 <sup>-1</sup>



Applying the above criteria results in the following release rates:

**Table 2 – Unmitigated Release Rates**

	2 year (m <sup>3</sup> /s)	5 year (m <sup>3</sup> /s)	10 year (m <sup>3</sup> /s)	25 year (m <sup>3</sup> /s)	50 year (m <sup>3</sup> /s)	100 year (m <sup>3</sup> /s)
Pre-Development X-101 Towards the Right of Way	0.18	0.24	0.29	0.37	0.45	0.51
Pre-Development X-102 Towards the Water Course	0.17	0.22	0.26	0.33	0.41	0.46
Post-Development (w/o Attenuation) Towards the Right of Way	0.16	0.22	0.25	0.33	0.40	0.45
Post-Development (w/o Attenuation) Towards the Water Course	1.57	2.09	2.43	3.15	3.83	4.38

Based on the above results, there is a decrease in runoff to the Highway right-of-way and a significant increase to the existing water course. Based on the modelled storm events, attenuation of runoff will be required for quantity control of flows directed to the existing watercourse.

### 4.3. Stormwater Quantity Control

The comparison of the pre and post development flows calculated in Table 2, indicates that quantity control is required for the site. The post development flows must be controlled such that they are less than or equal to the predevelopment flows for the site. To provide quantity control, on-site storage is required and is proposed to be provided in a wet pond that will receive site runoff prior to discharging at a controlled rate, through quantity control orifices and an overflow weir, to the southwest towards the existing watercourse that is ultimately tributary to Big Creek.

Release from the wet pond will be controlled by an outlet pipe sized using the following equation:

$$Q = cA\sqrt{2gh}$$

Q = allowable release rate

A = orifice area (m<sup>2</sup>)

c = orifice coefficient = 0.80

g = gravitational constant = 9.81m/s<sup>2</sup>

h = high water level over center of orifice (m)

We find that the proposed quantity control 300mm orifice pipe at an elevation of 230.88 m in addition to the 2 m wide by 2.0 m long overflow weir at an elevation 231.40 m, restrict the post development allowable release rates from the controlled areas, such that post development flows from the site are less than or equal to the pre development flows calculated in Table 2. The controlled calculated release rates for the proposed development are summarized in Table 3 below and detailed calculations provided within Appendix A.

**Table 3: Mitigated Release Rates & Storage Requirements**

	2 year	5 year	10 year	25 year	50 year	100 year
Allowable Release Rate to Water Course	0.17	0.22	0.26	0.33	0.41	0.46
Post Development Controlled Release Rate	0.09	0.11	0.12	0.16	0.27	0.41
Storage Volume Required (m <sup>3</sup> )	899	1,193	1,391	1,817	2,189	2,464

The calculations summarized in Table 3 indicate that there is a reduction in the post development flows from the site and therefore the stormwater management facility (SWMF) provides adequate quantity control. The quantity storage requirements within the SWMF are calculated to be approximately 2,464 m<sup>3</sup>. The proposed SWMF has been sized with a total available quantity control volume of about 2,660 m<sup>3</sup>, which meets the storage requirements. Detailed calculations have been provided in Appendix A.

#### 4.4. Stormwater Quality Control

The MOE issued a “Stormwater Management Planning and Design Manual” in March 2003. This manual has been adopted by a variety of agencies including the Town. The objective of the SWM quality control will be to ensure MOE’s Enhanced Protection. To achieve Enhanced Protection, permanent and temporary control of erosion and sediment transport are proposed and are discussed in the following sections.

##### 4.4.1. Stormwater Quality Control During Construction

To ensure stormwater quality control during construction, it is imperative that effective environmental and sedimentation controls be in place throughout the entire area subjected to construction activities. With the requirement of earth grading, there will be a potential of soil erosion. It is therefore recommended that the following be implemented to assist in achieving acceptable stormwater runoff quality:

- Restoration of exposed surfaces with vegetation and non-vegetative material as soon as construction schedules permit;
- Installation of temporary sediment ponds, filter strips, silt fences and rock check dams or other similar facilities throughout the site, and specifically during all construction activities;
- Reduce stormwater drainage velocities where possible;
- Ensure that disturbed areas that are left inactive for more than 30 days shall be vegetated and stabilized as instructed by the Engineer;
- Minimize the amount of existing vegetation removed.



#### 4.4.2. Permanent Quality Control

The objective of the permanent SWM quality controls will be to ensure MOE's Enhanced Protection Levels are met for the site runoff. The proposed development will increase the imperviousness of the site. It is important to quantify this increase to evaluate the potential downstream impacts. As per the site's statistics, the post development's Total Imperviousness (TIMP) is calculated as follows:

Area of Building	=	70,780 m <sup>2</sup>
Area of Asphalt	=	11,195 m <sup>2</sup>
Area of Conc.	=	165 m <sup>2</sup>
Area of Gravel	=	4,772 m <sup>2</sup>
Total Area	=	156,794 m <sup>2</sup>

$$\begin{aligned}\text{TIMP} &= (A_{\text{BLD}} + A_{\text{ASP}} + A_{\text{GRAV}}) / A_{\text{TOTAL}} \\ &= (78,853) / 121,980 \\ &= 0.65 \text{ (or 65\%)}\end{aligned}$$

The existing developed portion of the site will not be subject to additional quality control as the post development conditions for the site are to remain unchanged from the predevelopment conditions. The developed portion of the site will be required to meet quality control in accordance with MOE Enhanced Protection Levels.

#### 4.4.3. Wet Pond

Wet ponds are the most used end-of-pipe facility in the province of Ontario. Given that the proposed site provides an ideal condition to achieve many of the preferred criteria, a wet pond configuration was selected as the preferred alternative to achieve the stormwater management control objectives for the proposed development. Utilizing the MECP Manual Table 3.2 "Water Quality Storage Requirements based on Receiving Waters" and a site imperviousness of 65%, the stormwater management wet pond permanent pool volume required is 173 m<sup>3</sup>/ha, which provides a calculated volume of 2104 m<sup>3</sup>. In addition to the permanent pool volume for quality control, an additional 40 m<sup>3</sup>/ha for active storage (extended detention) equal to 488 m<sup>3</sup> must be included in the pond sizing for quality control. The total required stormwater management quality control volume is calculated as follows:

Quality Control (80% TSS Removal)	2,104 m <sup>3</sup>
Extended Detention Sizing:	488 m <sup>3</sup>
Total:	2,592 m <sup>3</sup>

A forebay to the wet pond is provided as pre-treatment. The minimum criteria for a forebay is 1m in depth, sized to ensure non-erosive velocities leaving the forebay and a maximum area equal to or less than 33% of the total permanent pool. The forebay length is determined by using the Forebay Settling Length Equation:

$$Dist = \sqrt{\frac{rQ_p}{V_s}}$$



Where:

Dist= Forebay Length (m)

r=length to width ratio of forebay for a single inlet (2:1)

$Q_p$ = peak flow rate from the pond during the design quality storm (0.75 m<sup>3</sup>/s for 2-year return period)

$V_s$ = Settling Velocity (0.0003 m/s used as per MOE Guideline Recommendations)

Given the above equation and the parameters as described, we find that a forebay length of 31 m is required. The total forebay length from the inlet to the channel overflow is 44 m, therefore there is sufficient forebay length to provide sediment distribution and pretreatment.

The dispersion length of the forebay can be calculated using the following equation:

$$Dist = \frac{8Q}{DV_f}$$

Where:

Q= Full capacity of the inlet pipe (0.64 m<sup>3</sup>/s for a 750mm HDPE pipe at 0.33%)

D= Depth of Forebay (1.5 m)

$V_f$ = Desired velocity in the forebay (0.15 m/s)

Given the above equation and the parameters as described, we find that a dispersion length within the forebay of 23 m is required. The total forebay length from the inlet to the channel overflow is 44 m, therefore there is sufficient forebay length to provide dispersion.

The minimum forebay deep bottom width can be calculated using the following equation:

$$W = \frac{Dist}{8}$$

Where:

W= Width (m)

Dist= Distribution length (23 m)

Given the above equation and parameters as described, we find that a minimum forebay deep bottom width is calculated as 2.9 m. The width of the forebay deep bottom is 3m, therefore the requirement is met.

#### 4.5. Erosion and Sediment Control

To ensure Stormwater runoff quality is controlled during construction, an erosion and sediment control strategy will be implemented to mitigate transportation of silt off-site to the existing roads and sewers. It is imperative that effective controls be put in place and maintained until all areas are stabilized with surface cover. All erosion and sediment control Best Management Practices (BMP) shall be designed, constructed, and maintained in accordance with the CVC's erosion control requirements.



Items that will be addressed for both temporary and permanent erosion and sediment controls are based on the following:

- Site location description and area;
- Existing and proposed land use;
- Vegetative cover;
- Existing drainage routes;
- Proposed site works;
- Proposed outlets;
- Permits required;
- Sediment filters and barriers - silt fences;
- Construction entrance location;
- Protection to catch basins and ditch inlets;
- 

To prevent construction generated sediments from entering the storm sewers or leaving the site by overland flow, the following measures should be implemented during the construction phase:

- Temporary sediment control fencing should be erected around the perimeter of the grading activities.
- Temporary sediment fabric and stone filters should be installed on existing and proposed catch basins until surface cover and vegetation has been stabilized.
- A temporary construction access mud mat should be implemented to reduce the amount of materials that may be transported off site.
- Construction during drier months should be monitored for wind-borne transport of sediments. At the direction of the engineer, the contractor may be directed to water down exposed earth areas with an aqueous solution of calcium chloride.
- All disturbed areas not under immediate construction for 30 days, or not intended for building activities within a 3-month time period, should be stabilized with seeding.
- Built up sediment should be removed and disposed off-site at least once a month, or more frequently as directed by the engineer.

## 5. Conclusions

Implementation of the designs outlined in this report will ensure that there are appropriately sized services that support the operational conditions of the site and that the stormwater drainage from the site complies with the requirements of the reviewing authorities, is of acceptable quality both during and after construction, and further, in the event of a major storm, that proper facilities are in place to protect the buildings and adjacent properties.

All of which is respectfully submitted,  
Gerrits Engineering Ltd.



Jeff McCuaig, P.Eng.  
Director, Civil Engineer

  
Kevin Filion, C.E.T.  
Civil Design Manager



## Appendix A Design Calculations

## RUNOFF COEFFICIENT CALCULATIONS

Reference Material	Parameters														
MECP SWM Planning and Design Guidelines (2003) Design Criteria February 2019	<table> <tr> <th>Surface Area</th><th>Runoff Coefficient</th></tr> <tr> <td>Lawns</td><td>0.08</td></tr> <tr> <td>Predevelopment Gravel</td><td>0.70</td></tr> <tr> <td>Post Development Gravel</td><td>0.70</td></tr> <tr> <td>Asphalt</td><td>0.95</td></tr> <tr> <td>Concrete</td><td>0.95</td></tr> <tr> <td>Building Roof</td><td>0.95</td></tr> </table>	Surface Area	Runoff Coefficient	Lawns	0.08	Predevelopment Gravel	0.70	Post Development Gravel	0.70	Asphalt	0.95	Concrete	0.95	Building Roof	0.95
Surface Area	Runoff Coefficient														
Lawns	0.08														
Predevelopment Gravel	0.70														
Post Development Gravel	0.70														
Asphalt	0.95														
Concrete	0.95														
Building Roof	0.95														

## WEIGHTED RUNOFF COEFFICIENTS

Area ID	Total Area (m <sup>2</sup> )	Lawns	Gravel	Asphalt	Concrete	Building	Weighted Runoff Coefficient
Predevelopment Sub Areas							0.11
X-101	52953	45896	4773	557	0	1727	0.17
X-102	103841	103841	0	0	0	0	0.08
<b>Total</b>	<b>156794</b>	<b>149737</b>	<b>4773</b>	<b>557</b>	<b>0</b>	<b>1727</b>	<b>0.11</b>
Post Development Sub Areas							0.55
P-1	2752	866	0	1296	127	463	0.68
P-2	4184	1183	0	1409	0	1592	0.70
P-3	2348	651	0	1247	0	450	0.71
P-4	5725	2770	0	1621	0	1334	0.53
P-5	9375	4467	0	2591	28	2289	0.54
P-6	286	0	0	88	0	198	0.95
P-7	64120	0	0	0	0	64120	0.95
P-8	30914	30914	0	0	0	0	0.08
P-9	2276	2276	0	0	0	0	0.08
P-10	34814	27336	4772	983	0	1723	0.23
<b>Total</b>	<b>156794</b>	<b>70463</b>	<b>4772</b>	<b>9235</b>	<b>155</b>	<b>72169</b>	<b>0.55</b>
Controlled Sub Areas (P1 - P9)							0.64
<b>Total</b>	<b>121980</b>	<b>43127</b>	<b>0</b>	<b>8252</b>	<b>155</b>	<b>70446</b>	<b>0.64</b>
Uncontrolled Sub Areas (P10)							0.23
<b>Total</b>	<b>34814</b>	<b>27336</b>	<b>4772</b>	<b>983</b>	<b>0</b>	<b>1723</b>	<b>0.23</b>



## SUB AREA PRE-DEVELOPMENT RELEASE RATES

### IDF Curve Parameters

Storm Event	Coeff A	Coeff B	Coeff C
2-Year	529.711	4.501	0.745
5-Year	583.017	3.007	0.703
10-Year	670.324	3.007	0.698
25-Year	721.533	2.253	0.679
50-Year	766.038	1.898	0.668
100-Year	801.041	1.501	0.657

### Site Statistics

X-101	
Total Site Area (ha)	5.30
Runoff Coefficient, C	0.17
Time of Concentration (mins)	10
X-102	
Total Site Area (ha)	10.38
Runoff Coefficient, C	0.08
Time of Concentration (mins)	10

### Formulae

Rainfall Intensity, I (mm/hr) =  $A/(tc+B)^C$   
 Release Rate, Q (m<sup>3</sup>/s) =  $C_i C A I / 360$

Where:  $t_c$  = Time of Concentration (min)  
 $C_i$  = Peaking Coefficient  
 C = Runoff Coefficient  
 I = Rainfall Intensity (mm/hr)  
 A = Area (ha)

## RELEASE RATES TRIBUTARY TO CONTROL SYSTEM (X-101)

Return Rate	Peaking Coefficient, $C_i$	Runoff Coefficient, C	Rainfall Intensity (mm/hr)	Release Rate (m <sup>3</sup> /s)
2-Year	1	0.17	72.24	0.18
5-Year	1	0.17	96.03	0.24
10-Year	1	0.17	111.84	0.29
25-Year	1.1	0.17	131.63	0.37
50-Year	1.2	0.17	146.50	0.45
100-Year	1.25	0.17	160.97	0.51

## RELEASE FROM UNCONTROLLED AREAS (X-102)

Return Rate	Peaking Coefficient, $C_i$	Runoff Coefficient, C	Rainfall Intensity (mm/hr)	Release Rate (m <sup>3</sup> /s)
2-Year	1	0.08	72.24	0.17
5-Year	1	0.08	96.03	0.22
10-Year	1	0.08	111.84	0.26
25-Year	1.1	0.08	131.63	0.33
50-Year	1.2	0.08	146.50	0.41
100-Year	1.25	0.08	160.97	0.46

## SUB AREA POST DEVELOPMENT RELEASE RATES

### IDF Curve Parameters

Storm Event	Coeff A	Coeff B	Coeff C
2-Year	529.711	4.501	0.745
5-Year	583.017	3.007	0.703
10-Year	670.324	3.007	0.698
25-Year	721.533	2.253	0.679
50-Year	766.038	1.898	0.668
100-Year	801.041	1.501	0.657

### Site Statistics

Controlled Sub Areas (P1 - P9)	
Total Site Area (ha)	12.20
Runoff Coefficient, C	0.64
Time of Concentration (mins)	10
Uncontrolled Sub Areas (P10)	
Total Site Area (ha)	3.48
Runoff Coefficient, C	0.23
Time of Concentration (mins)	10

### Formulae

Rainfall Intensity, I (mm/hr) =  $A/(tc+B)^C$   
 Release Rate, Q (m<sup>3</sup>/s) =  $C_i C A I / 360$

Where:  $t_c$  = Time of Concentration (min)  
 $C_i$  = Peaking Coefficient  
 C = Runoff Coefficient  
 I = Rainfall Intensity (mm/hr)  
 A = Area (ha)

## RELEASE RATES TRIBUTARY TO CONTROL SYSTEM (P1-P9)

Return Rate	Peaking Coefficient, $C_i$	Runoff Coefficient, C	Rainfall Intensity (mm/hr)	Release Rate (m <sup>3</sup> /s)
2-Year	1	0.64	72.24	1.57
5-Year	1	0.64	96.03	2.09
10-Year	1	0.64	111.84	2.43
25-Year	1.1	0.64	131.63	3.15
50-Year	1.2	0.64	146.50	3.83
100-Year	1.25	0.64	160.97	4.38

## RELEASE FROM UNCONTROLLED AREAS (P10)

Return Rate	Peaking Coefficient, $C_i$	Runoff Coefficient, C	Rainfall Intensity (mm/hr)	Release Rate (m <sup>3</sup> /s)
2-Year	1	0.23	72.24	0.16
5-Year	1	0.23	96.03	0.22
10-Year	1	0.23	111.84	0.25
25-Year	1.1	0.23	131.63	0.33
50-Year	1.2	0.23	146.50	0.40
100-Year	1.25	0.23	160.97	0.45

## STAGE STORAGE DISCHARGE FOR CONTROLLED AREA (P1-P9)

Formulae	Quantity Control Systems	Rating Curve Data Points	Notes:
<b>Quantity Control Orifice</b> Release Rate, $Q \text{ (m}^3/\text{s)} = C \cdot A \cdot (2 \cdot g \cdot h)^{0.5}$ Where: C= Orifice Constant (0.8 pipe, 0.63 plate) A= Area ( $\text{m}^2$ ) g= gravitational constant ( $\text{m/s}^2$ ) h= Head loss across orifice (m)	<b>Quantity Control Orifice 1</b> Diameter (mm): 300 Elevation (m): 230.88 Constant: 0.8 Centroid (m): 231.03	Elevation (m)    Outflow ( $\text{m}^3/\text{s}$ )    Storage ( $\text{m}^3$ ) 230.88    0.00    0 231.08    0.06    650 231.18    0.10    996 231.38    0.15    1737 231.43    0.17    1932 231.53    0.32    2335 231.63    0.54    2660	
<b>Over Flow Weir</b> Release Rate, $Q \text{ (m}^3/\text{s)} = C \cdot (h^{3/2}) \cdot w$ Where: C= Rectangular C h=Depth of flow above weir (m) w=width of weir (m)	<b>Quantity Control Orifice 2</b> Diameter (mm): 0 Elevation (m): 232.00 Constant: 0.8 Centroid (m): 232.00	<b>Check</b> Storm Event    Allowable ( $\text{m}^3/\text{s}$ )    Controlled ( $\text{m}^3/\text{s}$ )    Storage ( $\text{m}^3$ )    Release    Storage 2-Year    0.17    0.09    899    PASS    PASS 5-Year    0.22    0.11    1193    PASS    PASS 10-Year    0.26    0.12    1391    PASS    PASS 25-Year    0.33    0.16    1817    PASS    PASS 50-Year    0.41    0.27    2189    PASS    PASS 100-Year    0.46    0.41    2464    PASS    PASS	
<b>Rectangular C Equation</b> $y = (a+bx)/(1+cx+dx^2)$ Where: a    -10383.48985 b    3418997.012 c    2131595.078 d    -235014.2466	<b>Over Flow Weir</b> Width (m): 2 Side Slopes: 3H:1V Bottom Elevation (m): 231.4 Length of Weir (m): 2.00		

Elevation (m)	Incremental Depth (m)	Area ( $\text{m}^2$ )	Storage Volume ( $\text{m}^3$ )	Active Storage Volume ( $\text{m}^3$ )	Head Loss Across Orifice (m)	Calculated Release from Orifice ( $\text{m}^3/\text{s}$ )	Head Loss Across Orifice (m)	Calculated Release from Orifice ( $\text{m}^3/\text{s}$ )	Depth of Flow Above Weir (m)	Overflow (x)	Rectangular 'C'	Calculated Release from Weir ( $\text{m}^3/\text{s}$ )	Total Flow ( $\text{m}^3/\text{s}$ )	
229.38	0.00	1300	0	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.43	0.05	1315	65	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.48	0.05	1352	131	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.53	0.05	1391	200	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.58	0.05	1429	271	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.63	0.05	1469	343	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.68	0.05	1508	417	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.73	0.05	1549	494	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.78	0.05	1590	572	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.83	0.05	1631	653	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.88	0.05	1673	735	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.93	0.05	1715	820	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
229.98	0.05	1758	907	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.03	0.05	1978	1001	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.08	0.05	2038	1101	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.13	0.05	2099	1205	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.18	0.05	2161	1311	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.23	0.05	2224	1421	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.28	0.05	2288	1534	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.33	0.05	2352	1650	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.38	0.05	2417	1769	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.43	0.05	2483	1891	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.48	0.05	2550	2017	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.53	0.05	2617	2146	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.58	0.05	2685	2279	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.63	0.05	2754	2415	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.68	0.05	2823	2554	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.73	0.05	2893	2697	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.78	0.05	2963	2844	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.83	0.05	3034	2994	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.88	0.05	3105	3147	0	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	PERMANENT POOL
230.93	0.05	3176	3304	157	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
230.98	0.05	3248	3465	318	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	
231.03	0.05	3320	3629	482	0.00	0.000	0.00	0.000	0.00	0.00	0.00	0.00	0.000	EXTENDED DETENTION
231.08	0.05	3393	3797	650	0.05	0.056	0.00	0.000	0.00	0.00	0.00	0.00	0.056	
231.13	0.05	3466	3968	821	0.10	0.079	0.00	0.000	0.00	0.00	0.00	0.00	0.079	
231.18	0.05	3544	4143	996	0.15	0.097	0.00	0.000	0.00	0.00	0.00	0.00	0.097	
231.23	0.05	3623	4323	1176	0.20	0.112	0.00	0.000	0.00	0.00	0.00	0.00	0.112	
231.28	0.05	3703	4506	1359	0.25	0.125	0.00	0.000	0.00	0.00	0.00	0.00	0.125	
231.33	0.05	3784	4693	1546	0.30	0.137	0.00	0.000	0.00	0.00	0.00	0.00	0.137	
231.38	0.05	3864	4884	1737	0.35	0.148	0.00	0.000	0.00	0.00	0.00	0.00	0.148	
231.43	0.05	3946	5079	1932	0.40	0.158	0.00	0.000	0.03	0.02	1.28	0.01	0.172	
231.48	0.05	4027	5279	2132	0.45	0.168	0.00	0.000	0.08	0.04	1.49	0.07	0.235	
231.53	0.05	4110	5482	2335	0.50	0.177	0.00	0.000	0.13	0.06	1.54	0.14	0.321	
231.58	0.05	4879	5707	2560	0.55	0.186	0.00	0.000	0.18	0.09	1.57	0.24	0.425	
231.63	0.05	5164	5807	2660	0.60	0.194	0.00	0.000	0.23	0.12	1.58	0.35	0.543	MAX POND HEIGHT

## 2-YEAR RELEASE RATES AND HYDROGRAPHS

Site Statistics	Rating Curve Data Points	Formulae
<b>Controlled Sub Areas (P1 - P9)</b> Total Site Area (ha) 12.20 Runoff Coefficient, C 0.64 Storm Duration (mins) 20 2-Year Release Rate (m <sup>3</sup> /s) 1.573	Elevation (m) Outflow (m <sup>3</sup> /s) Storage (m <sup>3</sup> )	$Q_{in} = Q_p / (t_p / 2) * t_i$ $Q_{out} = \text{Computer Generated using rating curve data points}$ $\text{Storage (m}^3\text{)} = \text{Cumulative storage}_{(i-1)} + \Delta \text{ Storage}_i$ $\Delta \text{ Storage (m}^3\text{)} = (Q_{in} - Q_{out}) * (t_i - t_{(i-1)}) * 60$  Where: $Q_{in}$ = Flow rate tributary to the system at a given time (m <sup>3</sup> /s) $Q_{out}$ = Flow rate out of the system at a given time (m <sup>3</sup> /s) $T_p$ = Storm Duration (min) $T_i$ = Time (min)
Total Site Area (ha) 0.00 Runoff Coefficient, C 0.00 Storm Duration (mins) 0 2-Year Release Rate (m <sup>3</sup> /s) 0.000	230.88 0.000 0.00 231.08 0.056 649.66 231.18 0.097 996.35 231.38 0.148 1737.04 231.43 0.172 1932.29 231.53 0.321 2335.05 231.63 0.543 2660.24	

Hydrograph Data (Controlled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.00	0.00
1	0.157	0.000	9.44	9.44
2	0.315	0.001	18.82	28.26
3	0.472	0.002	28.16	56.42
4	0.629	0.005	37.45	93.86
5	0.786	0.008	46.69	140.55
6	0.944	0.012	55.88	196.44
7	1.101	0.017	65.03	261.47
8	1.258	0.023	74.13	335.59
9	1.415	0.029	83.18	418.77
10	1.573	0.036	92.18	510.96
11	1.415	0.044	82.27	593.23
12	1.258	0.051	72.41	665.64
13	1.101	0.058	62.57	728.21
14	0.944	0.065	52.69	780.90
15	0.786	0.072	42.88	823.79
16	0.629	0.077	33.14	856.93
17	0.472	0.081	23.47	880.41
18	0.315	0.083	13.87	894.28
19	0.157	0.085	4.34	898.62
20	0.000	0.085	-5.13	893.49
21	0.000	0.085	-5.09	888.40
22	0.000	0.084	-5.05	883.34
23	0.000	0.084	-5.02	878.33
24	0.000	0.083	-4.98	873.34
25	0.000	0.082	-4.95	868.39
26	0.000	0.082	-4.91	863.48
27	0.000	0.081	-4.88	858.60
28	0.000	0.081	-4.84	853.76
29	0.000	0.080	-4.81	848.95
30	0.000	0.080	-4.77	844.18
31	0.000	0.079	-4.74	839.44
32	0.000	0.078	-4.71	834.73
33	0.000	0.078	-4.67	830.06
34	0.000	0.077	-4.64	825.41
35	0.000	0.077	-4.61	820.81
36	0.000	0.076	-4.57	816.23
37	0.000	0.076	-4.54	811.69
38	0.000	0.075	-4.51	807.18
39	0.000	0.075	-4.48	802.70
40	0.000	0.074	-4.45	798.25

Max Storage

Hydrograph Data (Uncontrolled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.000	0.000
1	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000
14	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000
16	0.000	0.000	0.000	0.000
17	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000
19	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000
21	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.000
23	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000
26	0.000	0.000	0.000	0.000
27	0.000	0.000	0.000	0.000
28	0.000	0.000	0.000	0.000
29	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000
31	0.000	0.000	0.000	0.000
32	0.000	0.000	0.000	0.000
33	0.000	0.000	0.000	0.000
34	0.000	0.000	0.000	0.000
35	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000
38	0.000	0.000	0.000	0.000
39	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000

Total Release from Site	
Minute	Out Flow (m <sup>3</sup> /s)
0	0.000
1	0.000
2	0.001
3	0.002
4	0.005
5	0.008
6	0.012
7	0.017
8	0.023
9	0.029
10	0.036
11	0.044
12	0.051
13	0.058
14	0.065
15	0.072
16	0.077
17	0.081
18	0.083
19	0.085
20	0.085
21	0.085
22	0.084
23	0.084
24	0.083
25	0.082
26	0.082
27	0.081
28	0.081
29	0.080
30	0.080
31	0.079
32	0.078
33	0.078
34	0.077
35	0.077
36	0.076
37	0.076
38	0.075
39	0.075
40	0.074

Max Release

## 5-YEAR RELEASE RATES AND HYDROGRAPHS

Site Statistics	Rating Curve Data Points	Formulae
Controlled Sub Areas (P1 - P9)	Elevation (m)	Outflow (m <sup>3</sup> /s)
Total Site Area (ha)	12.20	Storage (m <sup>3</sup> )
Runoff Coefficient, C	0.64	
Storm Duration (mins)	20	
5-Year Release Rate (m <sup>3</sup> /s)	2.090	
Total Site Area (ha)	0.00	
Runoff Coefficient, C	0.00	
Storm Duration (mins)	0	
5-Year Release Rate (m <sup>3</sup> /s)	0.000	

$Q_{in} = Q_p / (t_d / 2) * t_i$   
 $Q_{out}$  = Computer Generated using rating curve data points  
 $Storage (m^3) = Cumulative storage_{t_{i-1}} + \Delta Storage_i$   
 $\Delta Storage (m^3) = (Q_{in} - Q_{out}) (t_i - t_{i-1}) * 60$   
  
 Where:  
 $Q_{in}$  = Flow rate tributary to the system at a given time (m<sup>3</sup>/s)  
 $Q_{out}$  = Flow rate out of the system at a given time (m<sup>3</sup>/s)  
 $T_p$  = Storm Duration (min)  
 $T_i$  = Time (min)

Hydrograph Data (Controlled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.00	0.00
1	0.209	0.000	12.54	12.54
2	0.418	0.001	25.02	37.56
3	0.627	0.003	37.43	74.99
4	0.836	0.006	49.78	124.77
5	1.045	0.011	62.06	186.83
6	1.254	0.016	74.28	261.12
7	1.463	0.023	86.44	347.56
8	1.672	0.030	98.54	446.10
9	1.881	0.038	110.57	556.67
10	2.090	0.048	122.54	679.21
11	1.881	0.060	109.31	788.51
12	1.672	0.072	95.99	884.50
13	1.463	0.084	82.77	967.27
14	1.254	0.094	69.64	1036.90
15	1.045	0.100	56.72	1093.62
16	0.836	0.104	43.94	1137.57
17	0.627	0.107	31.22	1168.79
18	0.418	0.109	18.55	1187.33
19	0.209	0.110	5.93	1193.26
20	0.000	0.111	-6.64	1186.63
21	0.000	0.110	-6.61	1180.02
22	0.000	0.110	-6.58	1173.44
23	0.000	0.109	-6.55	1166.88
24	0.000	0.109	-6.53	1160.35
25	0.000	0.108	-6.50	1153.85
26	0.000	0.108	-6.47	1147.38
27	0.000	0.107	-6.45	1140.93
28	0.000	0.107	-6.42	1134.51
29	0.000	0.107	-6.39	1128.12
30	0.000	0.106	-6.37	1121.75
31	0.000	0.106	-6.34	1115.41
32	0.000	0.105	-6.31	1109.10
33	0.000	0.105	-6.29	1102.81
34	0.000	0.104	-6.26	1096.55
35	0.000	0.104	-6.24	1090.31
36	0.000	0.104	-6.21	1084.10
37	0.000	0.103	-6.18	1077.92
38	0.000	0.103	-6.16	1071.76
39	0.000	0.102	-6.13	1065.63
40	0.000	0.102	-6.11	1059.52

Max Storage

Hydrograph Data (Uncontrolled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.000	0.000
1	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000
14	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000
16	0.000	0.000	0.000	0.000
17	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000
19	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000
21	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.000
23	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000
26	0.000	0.000	0.000	0.000
27	0.000	0.000	0.000	0.000
28	0.000	0.000	0.000	0.000
29	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000
31	0.000	0.000	0.000	0.000
32	0.000	0.000	0.000	0.000
33	0.000	0.000	0.000	0.000
34	0.000	0.000	0.000	0.000
35	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000
38	0.000	0.000	0.000	0.000
39	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000

Total Release from Site	
Minute	Out Flow (m <sup>3</sup> /s)
0	0.000
1	0.000
2	0.001
3	0.003
4	0.006
5	0.011
6	0.016
7	0.023
8	0.030
9	0.038
10	0.048
11	0.060
12	0.072
13	0.084
14	0.094
15	0.100
16	0.104
17	0.107
18	0.109
19	0.110
20	0.111
21	0.110
22	0.110
23	0.109
24	0.109
25	0.108
26	0.108
27	0.107
28	0.107
29	0.107
30	0.106
31	0.106
32	0.105
33	0.105
34	0.104
35	0.104
36	0.104
37	0.103
38	0.103
39	0.102
40	0.102

Max Release

## 10-YEAR RELEASE RATES AND HYDROGRAPHS

Site Statistics	Rating Curve Data Points	Formulae
<b>Controlled Sub Areas (P1 - P9)</b> Total Site Area (ha) 12.20 Runoff Coefficient, C 0.64 Storm Duration (mins) 20 10-Year Release Rate (m <sup>3</sup> /s) 2.434	Elevation (m) Outflow (m <sup>3</sup> /s) Storage (m <sup>3</sup> )	$Q_{in} = Q_p / (t_d / 2) * t_i$ $Q_{out} = \text{Computer Generated using rating curve data points}$ $\text{Storage (m}^3\text{)} = \text{Cumulative storage}_{i-1} + \Delta \text{ Storage}_i$ $\Delta \text{ Storage (m}^3\text{)} = (Q_{in} - Q_{out})(t_i - t_{i-1}) * 60$ Where: $Q_{in}$ = Flow rate tributary to the system at a given time (m <sup>3</sup> /s) $Q_{out}$ = Flow rate out of the system at a given time (m <sup>3</sup> /s) $T_d$ = Storm Duration (min) $T_i$ = Time (min)
Total Site Area (ha) 0.00 Runoff Coefficient, C 0.00 Storm Duration (mins) 0 10-Year Release Rate (m <sup>3</sup> /s) 0.000	230.88 0.000 0.00 231.08 0.056 649.66 231.18 0.097 996.35 231.38 0.148 1737.04 231.43 0.172 1932.29 231.53 0.321 2335.05 231.63 0.543 2660.24	

Hydrograph Data (Controlled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.00	0.00
1	0.243	0.000	14.61	14.61
2	0.487	0.001	29.14	43.74
3	0.730	0.004	43.59	87.33
4	0.974	0.008	57.97	145.31
5	1.217	0.013	72.28	217.59
6	1.461	0.019	86.51	304.10
7	1.704	0.026	100.67	404.77
8	1.947	0.035	114.76	519.52
9	2.191	0.045	128.77	648.29
10	2.434	0.056	142.71	791.00
11	2.191	0.073	127.09	918.09
12	1.947	0.088	111.58	1029.67
13	1.704	0.099	96.28	1125.96
14	1.461	0.106	81.28	1207.24
15	1.217	0.112	66.34	1273.57
16	0.974	0.116	51.45	1325.03
17	0.730	0.120	36.64	1361.66
18	0.487	0.122	21.88	1383.54
19	0.243	0.124	7.18	1390.72
20	0.000	0.124	-7.46	1383.27
21	0.000	0.124	-7.42	1375.84
22	0.000	0.123	-7.39	1368.45
23	0.000	0.123	-7.36	1361.08
24	0.000	0.122	-7.33	1353.75
25	0.000	0.122	-7.30	1346.45
26	0.000	0.121	-7.27	1339.18
27	0.000	0.121	-7.24	1331.94
28	0.000	0.120	-7.21	1324.72
29	0.000	0.120	-7.18	1317.54
30	0.000	0.119	-7.15	1310.39
31	0.000	0.119	-7.12	1303.27
32	0.000	0.118	-7.09	1296.17
33	0.000	0.118	-7.06	1289.11
34	0.000	0.117	-7.03	1282.08
35	0.000	0.117	-7.01	1275.07
36	0.000	0.116	-6.98	1268.09
37	0.000	0.116	-6.95	1261.15
38	0.000	0.115	-6.92	1254.23
39	0.000	0.115	-6.89	1247.34
40	0.000	0.114	-6.86	1240.48

Max Storage

Hydrograph Data (Uncontrolled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.000	0.000
1	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000
14	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000
16	0.000	0.000	0.000	0.000
17	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000
19	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000
21	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.000
23	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000
26	0.000	0.000	0.000	0.000
27	0.000	0.000	0.000	0.000
28	0.000	0.000	0.000	0.000
29	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000
31	0.000	0.000	0.000	0.000
32	0.000	0.000	0.000	0.000
33	0.000	0.000	0.000	0.000
34	0.000	0.000	0.000	0.000
35	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000
38	0.000	0.000	0.000	0.000
39	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000

Total Release from Site	
Minute	Out Flow (m <sup>3</sup> /s)
0	0.000
1	0.000
2	0.001
3	0.004
4	0.008
5	0.013
6	0.019
7	0.026
8	0.035
9	0.045
10	0.056
11	0.073
12	0.088
13	0.099
14	0.106
15	0.112
16	0.116
17	0.120
18	0.122
19	0.124
20	0.124
21	0.124
22	0.123
23	0.123
24	0.122
25	0.122
26	0.121
27	0.121
28	0.120
29	0.120
30	0.119
31	0.119
32	0.118
33	0.118
34	0.117
35	0.117
36	0.116
37	0.116
38	0.115
39	0.115
40	0.114

Max Release

## 25-YEAR RELEASE RATES AND HYDROGRAPHS

Site Statistics	Rating Curve Data Points	Formulae
<b>Controlled Sub Areas (P1 - P9)</b> Total Site Area (ha) 12.20 Runoff Coefficient, C 0.64 Storm Duration (mins) 20 25-Year Release Rate (m <sup>3</sup> /s) 3.152	Elevation (m) Outflow (m <sup>3</sup> /s) Storage (m <sup>3</sup> )	$Q_{in} = Q_p / (t_d / 2) * t_i$ $Q_{out} = \text{Computer Generated using rating curve data points}$ $\text{Storage (m}^3\text{)} = \text{Cumulative storage}_{i-1} + \Delta \text{ Storage}_i$ $\Delta \text{ Storage (m}^3\text{)} = (Q_{in} - Q_{out})(t_i - t_{i-1}) * 60$  Where: $Q_{in}$ = Flow rate tributary to the system at a given time (m <sup>3</sup> /s) $Q_{out}$ = Flow rate out of the system at a given time (m <sup>3</sup> /s) $T_d$ = Storm Duration (min) $T_i$ = Time (min)
Total Site Area (ha) 0.00 Runoff Coefficient, C 0.00 Storm Duration (mins) 0 25-Year Release Rate (m <sup>3</sup> /s) 0.000	Elevation (m) 231.08 Outflow (m <sup>3</sup> /s) 0.056 Storage (m <sup>3</sup> ) 649.66 231.18 0.097 996.35 231.38 0.148 1737.04 231.43 0.172 1932.29 231.53 0.321 2335.05 231.63 0.543 2660.24 #REF! #REF! #REF!	

Hydrograph Data (Controlled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.00	0.00
1	0.315	0.000	18.91	18.91
2	0.630	0.000	37.82	56.73
3	0.945	0.000	56.73	113.46
4	1.261	0.000	75.64	189.09
5	1.576	0.000	94.55	283.64
6	1.891	0.000	113.46	397.10
7	2.206	0.000	132.37	529.46
8	2.521	0.000	151.28	680.74
9	2.836	0.004	169.96	850.70
10	3.152	0.024	187.67	1038.37
11	2.836	0.100	164.19	1202.56
12	2.521	0.111	144.60	1347.16
13	2.206	0.121	125.09	1472.25
14	1.891	0.130	105.66	1577.92
15	1.576	0.137	86.32	1664.23
16	1.261	0.143	67.05	1731.28
17	0.945	0.148	47.86	1779.14
18	0.630	0.153	28.62	1807.76
19	0.315	0.157	9.51	1817.27
20	0.000	0.158	-9.47	1807.80
21	0.000	0.157	-9.40	1798.40
22	0.000	0.156	-9.34	1789.06
23	0.000	0.154	-9.27	1779.79
24	0.000	0.153	-9.20	1770.59
25	0.000	0.152	-9.13	1761.46
26	0.000	0.151	-9.07	1752.39
27	0.000	0.150	-9.00	1743.39
28	0.000	0.149	-8.94	1734.45
29	0.000	0.148	-8.88	1725.57
30	0.000	0.147	-8.84	1716.73
31	0.000	0.147	-8.81	1707.92
32	0.000	0.146	-8.77	1699.15
33	0.000	0.146	-8.73	1690.42
34	0.000	0.145	-8.70	1681.72
35	0.000	0.144	-8.66	1673.06
36	0.000	0.144	-8.63	1664.43
37	0.000	0.143	-8.59	1655.84
38	0.000	0.143	-8.55	1647.29
39	0.000	0.142	-8.52	1638.77
40	0.000	0.141	-8.48	1630.28

Max Storage

Hydrograph Data (Uncontrolled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.000	0.000
1	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000
14	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000
16	0.000	0.000	0.000	0.000
17	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000
19	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000
21	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.000
23	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000
26	0.000	0.000	0.000	0.000
27	0.000	0.000	0.000	0.000
28	0.000	0.000	0.000	0.000
29	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000
31	0.000	0.000	0.000	0.000
32	0.000	0.000	0.000	0.000
33	0.000	0.000	0.000	0.000
34	0.000	0.000	0.000	0.000
35	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000
38	0.000	0.000	0.000	0.000
39	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000

Total Release from Site	
Minute	Out Flow (m <sup>3</sup> /s)
0	0.000
1	0.000
2	0.000
3	0.000
4	0.000
5	0.000
6	0.000
7	0.000
8	0.000
9	0.004
10	0.024
11	0.100
12	0.111
13	0.121
14	0.130
15	0.137
16	0.143
17	0.148
18	0.153
19	0.157
20	0.158
21	0.157
22	0.156
23	0.154
24	0.153
25	0.152
26	0.151
27	0.150
28	0.149
29	0.148
30	0.147
31	0.147
32	0.146
33	0.146
34	0.145
35	0.144
36	0.144
37	0.143
38	0.143
39	0.142
40	0.141

Max Release

## 50-YEAR RELEASE RATES AND HYDROGRAPHS

Site Statistics	Rating Curve Data Points	Formulae
<b>Controlled Sub Areas (P1 - P9)</b> Total Site Area (ha) 12.20 Runoff Coefficient, C 0.64 Storm Duration (mins) 20 50-Year Release Rate (m <sup>3</sup> /s) 3.827	Elevation (m) Outflow (m <sup>3</sup> /s) Storage (m <sup>3</sup> ) 231.08 0.056 649.66 231.18 0.097 996.35 231.38 0.148 1737.04 231.43 0.172 1932.29 231.53 0.321 2335.05 231.63 0.543 2660.24 #REF! #REF! #REF!	$Q_{in} = Q_p / (t_d / 2) * t_i$ $Q_{out} = \text{Computer Generated using rating curve data points}$ $\text{Storage (m}^3\text{)} = \text{Cumulative storage}_{i-1} + \Delta \text{ Storage}_i$ $\Delta \text{ Storage (m}^3\text{)} = (Q_{in} - Q_{out})(t_i - t_{i-1}) * 60$  Where: $Q_{in}$ = Flow rate tributary to the system at a given time (m <sup>3</sup> /s) $Q_{out}$ = Flow rate out of the system at a given time (m <sup>3</sup> /s) $T_d$ = Storm Duration (min) $T_i$ = Time (min)
Total Site Area (ha) 0.00 Runoff Coefficient, C 0.00 Storm Duration (mins) 0 50-Year Release Rate (m <sup>3</sup> /s) 0.000		

Hydrograph Data (Controlled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.00	0.00
1	0.383	0.000	22.96	22.96
2	0.765	0.000	45.92	68.88
3	1.148	0.000	68.88	137.76
4	1.531	0.000	91.84	229.59
5	1.913	0.000	114.80	344.39
6	2.296	0.000	137.76	482.15
7	2.679	0.000	160.72	642.86
8	3.061	0.000	183.68	826.54
9	3.444	0.021	205.38	1031.92
10	3.827	0.099	223.63	1255.55
11	3.444	0.115	199.74	1455.28
12	3.061	0.129	175.95	1631.24
13	2.679	0.141	152.26	1783.50
14	2.296	0.154	128.53	1912.03
15	1.913	0.169	104.64	2016.67
16	1.531	0.203	79.65	2096.32
17	1.148	0.233	54.91	2151.24
18	0.765	0.253	30.73	2181.97
19	0.383	0.265	7.09	2189.05
20	0.000	0.267	-16.03	2173.02
21	0.000	0.261	-15.67	2157.34
22	0.000	0.255	-15.32	2142.02
23	0.000	0.250	-14.98	2127.04
24	0.000	0.244	-14.65	2112.39
25	0.000	0.239	-14.32	2098.07
26	0.000	0.233	-14.00	2084.06
27	0.000	0.228	-13.69	2070.37
28	0.000	0.223	-13.38	2056.99
29	0.000	0.218	-13.09	2043.90
30	0.000	0.213	-12.79	2031.11
31	0.000	0.208	-12.51	2018.60
32	0.000	0.204	-12.23	2006.37
33	0.000	0.199	-11.96	1994.42
34	0.000	0.195	-11.69	1982.73
35	0.000	0.190	-11.43	1971.30
36	0.000	0.186	-11.17	1960.12
37	0.000	0.182	-10.92	1949.20
38	0.000	0.178	-10.68	1938.52
39	0.000	0.174	-10.44	1928.07
40	0.000	0.171	-10.27	1917.80

Max Storage

Hydrograph Data (Uncontrolled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.000	0.000
1	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000
14	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000
16	0.000	0.000	0.000	0.000
17	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000
19	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000
21	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.000
23	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000
26	0.000	0.000	0.000	0.000
27	0.000	0.000	0.000	0.000
28	0.000	0.000	0.000	0.000
29	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000
31	0.000	0.000	0.000	0.000
32	0.000	0.000	0.000	0.000
33	0.000	0.000	0.000	0.000
34	0.000	0.000	0.000	0.000
35	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000
38	0.000	0.000	0.000	0.000
39	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000

Total Release from Site	
Minute	Out Flow (m <sup>3</sup> /s)
0	0.000
1	0.000
2	0.000
3	0.000
4	0.000
5	0.000
6	0.000
7	0.000
8	0.000
9	0.021
10	0.099
11	0.115
12	0.129
13	0.141
14	0.154
15	0.169
16	0.203
17	0.233
18	0.253
19	0.265
20	0.267
21	0.261
22	0.255
23	0.250
24	0.244
25	0.239
26	0.233
27	0.228
28	0.223
29	0.218
30	0.213
31	0.208
32	0.204
33	0.199
34	0.195
35	0.190
36	0.186
37	0.182
38	0.178
39	0.174
40	0.171

Max Release



## 100-YEAR RELEASE RATES AND HYDROGRAPHS

Site Statistics	Rating Curve Data Points	Formulae
<b>Controlled Sub Areas (P1 - P9)</b> Total Site Area (ha) 12.20 Runoff Coefficient, C 0.64 Storm Duration (mins) 20 100-Year Release Rate (m <sup>3</sup> /s) 4.380	Elevation (m) Outflow (m <sup>3</sup> /s) Storage (m <sup>3</sup> )	$Q_{in} = Q_p / (t_p / 2) * t_i$ $Q_{out} = \text{Computer Generated using rating curve data points}$ $\text{Storage (m}^3\text{)} = \text{Cumulative storage}_{i-1} + \Delta \text{ Storage}_i$ $\Delta \text{ Storage (m}^3\text{)} = (Q_{in} - Q_{out})(t_i - t_{i-1}) * 60$  Where: $Q_{in}$ = Flow rate tributary to the system at a given time (m <sup>3</sup> /s) $Q_{out}$ = Flow rate out of the system at a given time (m <sup>3</sup> /s) $T_p$ = Storm Duration (min) $T_i$ = Time (min)
Total Site Area (ha) 0.00 Runoff Coefficient, C 0.00 Storm Duration (mins) 0 100-Year Release Rate (m <sup>3</sup> /s) 0.000	230.88 0.000 0.00 231.08 0.056 649.66 231.18 0.097 996.35 231.38 0.148 1737.04 231.43 0.172 1932.29 231.53 0.321 2335.05 231.63 0.543 2660.24	

Hydrograph Data (Controlled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.00	0.00
1	0.438	0.000	26.28	26.28
2	0.876	0.002	52.42	78.70
3	1.314	0.007	78.43	157.13
4	1.752	0.014	104.30	261.43
5	2.190	0.023	130.04	391.48
6	2.628	0.034	155.65	547.12
7	3.066	0.047	181.12	728.25
8	3.504	0.065	206.31	934.56
9	3.942	0.090	231.13	1165.69
10	4.380	0.109	256.27	1421.95
11	3.942	0.126	228.93	1650.88
12	3.504	0.142	201.70	1852.58
13	3.066	0.162	174.23	2026.80
14	2.628	0.207	145.26	2172.06
15	2.190	0.261	115.74	2287.80
16	1.752	0.304	86.88	2374.69
17	1.314	0.348	57.93	2432.61
18	0.876	0.388	29.28	2461.90
19	0.438	0.408	1.81	2463.70
20	0.000	0.409	-24.55	2439.16
21	0.000	0.392	-23.54	2415.61
22	0.000	0.376	-22.58	2393.03
23	0.000	0.361	-21.66	2371.37
24	0.000	0.346	-20.77	2350.60
25	0.000	0.332	-19.92	2330.68
26	0.000	0.320	-19.19	2311.48
27	0.000	0.313	-18.76	2292.72
28	0.000	0.306	-18.34	2274.38
29	0.000	0.299	-17.94	2256.44
30	0.000	0.292	-17.54	2238.90
31	0.000	0.286	-17.14	2221.76
32	0.000	0.279	-16.76	2205.00
33	0.000	0.273	-16.39	2188.61
34	0.000	0.267	-16.02	2172.59
35	0.000	0.261	-15.66	2156.92
36	0.000	0.255	-15.32	2141.61
37	0.000	0.250	-14.97	2126.63
38	0.000	0.244	-14.64	2112.00
39	0.000	0.239	-14.31	2097.68
40	0.000	0.233	-13.99	2083.69

Max Storage

Hydrograph Data (Uncontrolled)				
Minute	In Flow (m <sup>3</sup> /s)	Out Flow (m <sup>3</sup> /s)	Delta-Storage (m <sup>3</sup> )	Cummulative Storage (m <sup>3</sup> )
0	0.000	0.000	0.000	0.000
1	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000
14	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000
16	0.000	0.000	0.000	0.000
17	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000
19	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000
21	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.000
23	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000
26	0.000	0.000	0.000	0.000
27	0.000	0.000	0.000	0.000
28	0.000	0.000	0.000	0.000
29	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000
31	0.000	0.000	0.000	0.000
32	0.000	0.000	0.000	0.000
33	0.000	0.000	0.000	0.000
34	0.000	0.000	0.000	0.000
35	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000
38	0.000	0.000	0.000	0.000
39	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000

Total Release from Site	
Minute	Out Flow (m <sup>3</sup> /s)
0	0.000
1	0.000
2	0.002
3	0.007
4	0.014
5	0.023
6	0.034
7	0.047
8	0.065
9	0.090
10	0.109
11	0.126
12	0.142
13	0.162
14	0.207
15	0.261
16	0.304
17	0.348
18	0.388
19	0.408
20	0.409
21	0.392
22	0.376
23	0.361
24	0.346
25	0.332
26	0.320
27	0.313
28	0.306
29	0.299
30	0.292
31	0.286
32	0.279
33	0.273
34	0.267
35	0.261
36	0.255
37	0.250
38	0.244
39	0.239
40	0.233

Max Release

## WATER QUALITY CALCULATIONS

### Reference Material

MECP Stormwater Management Planning & Design Manual (2003)

Table 3.2: Water Quality Storage Requirements Based on Receiving Waters

Proection Level	SWMP Type	Storage Volume (m3/ha) for Impervious Level			
		35%	55%	70%	85%
Enhanced 80% Long-term S.S. Removal	Infiltration	25	30	35	40
	Wetlands	80	105	120	140
	Hybrid Wet Pond/Wetland	110	150	175	195
	Wet Pond	140	190	225	250

Table 4.4 "Minimum Soil Percolation Rates

Soil Type	Percolation Rate (mm/hr)
Sand	210
Loamy Sand	60
Sandy Loam	25
Loamy Sand	15

### Site Statistics

Drainage Area (m <sup>2</sup> )	121980
Site Impervious Area (m <sup>2</sup> )	78853
Impervious Level	64.64%
Soil Type	Sandy Loam
Percolation Rate (mm/hr)	25.00
Porosity of Storage Media (n)	0.40

### Notes

Infiltration is not proposed. Quality control is provided through the Wet Pond, which has been designed for both quantity and quality control.

## Quality Sizing Criteria

Wet Pond

Storage Volume for Quality Control (m <sup>3</sup> /ha):	173
Storage Volume for Extended Detention (m <sup>3</sup> /ha):	40
Total Volume Required for Quality Control (m <sup>3</sup> ):	2104
Total Volume Required for Extended Detention (m <sup>3</sup> ):	488

## ONTARIO BUILDING CODE (2012) MINIMUM WATER SUPPLY

### Reference Documents

Ontario Building Code (2024)  
Site Plan Completed by CDN dated 2025/01/21  
Note: Building information obtained from preliminary site plan

### Building Information

Building Classification F-2  
Construction Type Non-combustible  
Number of Storeys 2.5  
Total GFA (m<sup>2</sup>) 6678

### Formulae

$Q = K * V * S_{tot}$   
Where:  
Q= Minimum water supply in litres  
K= Water supply coefficient from Step 1  
V= Total building volume in cubic metres  
 $S_{tot}$ = Total of Spatial Coefficient values from step 3

## 1. WATER SUPPLY COEFFICIENT, K

### Parameters

#### Type of Construction

Building is of combustible construction. Floor assemblies are fire separations with no fire-resistance rating.

### Notes

Information provided from the preliminary site plan completed by CDN dated January 21, 2025 and will be required to be updated as per the final approved site plan.

Building Classification	Coefficient, K
F-2	27

## 2. TOTAL BUILDING VOLUME, V

### Parameters

Proposed Building Height (m)	8.8
Proposed Gross Floor Area (m <sup>2</sup> )	6678
Total Building Volume (m <sup>3</sup> )	58766.4

### Notes

Information provided from the preliminary site plan completed by CDN dated January 21, 2025 and will be required to be updated as per the final approved site plan.

## 3. SPATIAL COEFFICIENT, $S_{tot}$

### Parameters

North Separation Distance	Adjustment
10+ m	0.00
East Separation Distance	Adjustment
10+ m	0.00
South Separation Distance	Adjustment
10+ m	0.00
West Separation Distance	Adjustment
10+ m	0.00
Total of Spatial Coefficient Values	1

### Formulae

$$S_{tot} = 1.0 + (S_{side1} + S_{side2} + S_{side3} + S_{side4})$$

Where:

$S_{tot}$ = Total of Spatial coefficient values from property line exposures on all sides

Note: Max value for  $S_{tot}$  not to exceed 2.0

## MINIMUM SUPPLY OF WATER

WATER SUPPLY	TARGET DURATION	MINIMUM FLOW RATE (L/min)
1586693 L 1587 m <sup>3</sup> 419160 USG	30 Minutes	9000 L/min

Note: The calculated minimum water supply Q, shall not be less than the minimum flow rate multiplied by the target duration



## Appendix B

### Geotechnical Investigation Report

## *Geotechnical Investigation*

Proposed Greenhouse  
2148 Highway #3  
Delhi, Ontario

**Client:**

CDN Buildings  
523 James Street, Unit #3  
Delhi, Ontario  
N4B 2C2

**Attention:** Bill Dendekker, President

**Type of Document:**

Geotechnical Report

**Project Number:**

G4633-22-8

**JLP Services Inc.**

Geotechnical and Environmental Consultants  
405 York Road  
Guelph, Ontario  
N1E 3H3

**Date Submitted:**

November 21, 2022

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### Enclosures

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## 1. Introduction

JLP Services Inc. (JLP) was retained by CDN Buildings (CDN) to carry out a geotechnical investigation for the proposed greenhouse to be constructed at 2148 Highway #3 in Delhi, Ontario.

It is understood that the proposed greenhouse and associated building to the west of the greenhouse will consist of single-storey, steel frame, slab-on-grade structures having a floor area of about 9,285 and 3,625 square metres, respectively.

The purpose of the investigation was to reveal the subsurface conditions and to determine the relevant soil properties for recommendations for the design and construction of the building foundations, slab-on-grade construction, storm water management, private septic system and pavement designs.

The conclusions and recommendations given within this report are based on the assumption that above-mentioned design concept will proceed into construction. If changes are made either in the design phase and/or during construction, JLP must be retained to review these changes. The result of this review may require modifications of our recommendations or the requirement of additional field and/or laboratory analysis to determine if the proposed changes are acceptable from a geotechnical standpoint.

## 2. Site Description

The site is municipally addressed as 2148 Highway #3, Delhi, Ontario. It is located on south side of Highway #3, 200± metres east of Scott Street.

The site is accessed from Highway #3 and has a fairly flat topography. At the time of the investigation, the front portion of the site was occupied by numerous buildings appearing to be used for agricultural purposes, associated pavements, etc. with low lying vegetation/wild grasses/weeds surface cover where not occupied by buildings. Additionally, it is noted that at the time of the investigation, there is a pond located in the vicinity of Test Pit 2 (see Enclosure 2).

## 3. Field Work

The fieldwork was carried out on August 24, 2022 and consisted of six (6) test pits at the approximate locations indicated on the Test Pit Location Plan, Enclosure 1. The test pits were excavated with a hydraulic excavator supplied and operated by CDN Buildings. The subsurface soils were visually inspected and logged.



Geotechnical field staff from JLP Services Inc. supervised the fieldwork. The ground surface elevation at each of the test pit locations was interpolated from the Contour Plan supplied to JLP by CDN (see Enclosure 3).

#### 4. Subsurface Conditions

Full details of the soils encountered in the test pits are given on the Test Pit logs, Enclosures 4 to 9, inclusive and the following notes are intended to summarize this data.

All test pits encountered a surficial deposit of topsoil, ranging between 200 to 350mm± thick.

The topsoil at Test Pit 2 was underlain by a 200mm± thick layer of sand fill, brown in colour.

Native sand and/or silty sand was encountered below the topsoil and fill at the test pits to the full depth of investigation of 1.5± metres below grade. It is noted the sand generally contained trace to some silt, trace clay and was brown in colour. Typical grain size distribution curves for these materials can be found on Enclosures 10 to 13, inclusive.

Based on visual and tactile examination, the sand/silty sand is considered to be in generally moist condition and the relative density in compact state.

#### 5. Groundwater Conditions

The test pits were dry and open to the full depth of investigation on completion of the fieldwork program.

An examination of the soil samples indicated that they were generally moist.

It is noted no sub-artesian water pressures were encountered in the test pits.

It is expected that the groundwater table at the proposed building areas is likely to be below the depths of the investigation.

Seasonal fluctuation of the groundwater level should be anticipated.



## 6. Discussion and Recommendations

### 6.1 General

It is understood the proposed greenhouse and associated building to the west of the greenhouse will consist of single-storey, steel frame, slab-on-grade structures having a floor area of about 9,285 and 3,625 square metres, respectively. We note final grading plans for the site were not available at the time of this report and the following discussion is therefore considered preliminary. It should be reviewed when more details are available.

Based on the findings of the test pits, the soil profile at the site generally consisted of surficial topsoil over compact sand/silty sand.

The local groundwater table is expected to be located below Elevation 230.1m although seasonal fluctuations can be expected.

### 6.2 Building Foundations

The existing topsoil and fill are not considered suitable bearing strata. The foundations for the proposed buildings should, therefore, be extended into the underlying native undisturbed sand/silty sand for support.

The proposed buildings can be supported on footings founded at least 300mm into the compact native sand/silty sand and designed to a geotechnical reaction of 100 kPa at Serviceability Limit States (S.L.S.) and a factored geotechnical resistance of 150 kPa at Ultimate Limit States (U.L.S.).

We note that the existing pond is located within the proposed building envelope for the greenhouse and, therefore, will have to be drained and filled with engineered fill to support the building foundations and floor slab.

If it is necessary to raise the grades to accommodate the final site grading and in order to remediate the existing pond the following procedures must be used to construct "engineered fill" to support the proposed dwelling:

1. All water, vegetation, topsoil and fill must be removed from the entire proposed buildings footprint.
2. Geotechnical personnel from JLP Services Inc., prior to placement of engineered fill should inspect the exposed subgrade. Any loose zones which are encountered should be removed

and replaced with approved on-site or imported granular material, compacted to at least 98% Standard Proctor maximum dry density.

3. The areas can then be brought up to the design pre-grade level with selected on-site soil materials approved for re-use or natural soil approved for import, placed in maximum 200mm thick lifts and compacted to a minimum of 98% of the standard Proctor maximum dry density (SPMDD).
4. Moisture conditioning should be applied to the soil materials, as required for effective compaction.
5. All imported soil materials should be assessed by JLP prior to transport to the site in accordance with the "On-site and Excess Soil Management Regulation", O.Reg.406/19 and supporting amendments.
6. All imported soil materials should be free from organics and debris and deleterious materials and should be tested geotechnically by JLP prior to transport to the site.
7. The "engineered fill" under all structures to be supported should extend to at least 1.0 metre laterally beyond the edge of their perimeters at the founding level and at least a distance equal to the depths of the fill pad, at the level of the approved subgrade.
8. Temporary fill slopes should be no steeper than 1 vertical to 1 horizontal and should be protected from surface erosion.
9. All water, vegetation, topsoil and unsuitable material removal, subgrade preparation, fill placement and compaction should be monitored on a full-time basis by geotechnical staff from JLP to approve materials and to verify that the specified degree of compaction have been achieved.

All the exterior footings subjected to freezing temperatures should be located at least 1.2 metres below finished grade or provided with equivalent thermal insulation for adequate frost protection.

Elevation difference between adjacent footings should not be more than a half of the horizontal distance between them.

It is estimated that the total and differential settlements of footings designed to these bearing pressures on native undisturbed compact sand/silty sand or on "engineered fill" will be less than 25 and 20mm respectively, which are normally considered acceptable for the proposed structure.

It is recommended that all foundation excavations be inspected by geotechnical personnel from JLP Services Inc. to ensure the founding soils are similar to those identified in the test pits and that they are capable of supporting the design bearing pressures.

Based on the 2012 Building Code Compendium, the classification of soils for seismic design should be based on the average properties of the top 30 metres of the soil profile. The deepest test pit was only 1.5 metres below grade and was terminated in native compact sand/silty sand. Assuming this deposit extends to depth, the soils at the site may be classified as Site Class 'D' under the site classification for seismic site response of 2012 Building Code Compendium.

### 6.3 Excavation and Groundwater Control

Excavation to reach the footing founding levels will extend through surficial topsoil, fill and native sand/silty sand deposits.

Excavations must be carried out in accordance with the current Occupation Health and Safety Act (OHSA) and local regulations. For guidance, the side slopes should be cut back to 1 vertical to 1 horizontal as the existing fill, native sand/silty sand are considered to be Type 3 soils within the meaning of the OHSA.

Minor seepage from groundwater in the fill and coarse sand seams may be anticipated during construction. However, it should be possible to control and remove seepage water from these sources or surface water from precipitation by pumping on as and where required basis.

### 6.4 Subsurface Walls

For the design of subsurface walls, if any, the magnitude of which can be determined from:

$$p = K(\gamma d + q)$$

where;  $p$  = earth pressure, kN/m<sup>2</sup>  
 $K$  = earth pressure co-efficient = 0.33, if retaining structure is permitted to move, otherwise  $K = 0.5$



$\gamma$	=	unit weight of backfill, 22 kN/m <sup>3</sup> for sandy material
$d$	=	depth below finished grade, m
$q$	=	all adjacent surcharge, kN/m <sup>2</sup>

The above expression assumes that a perimeter drainage is provided at footing founding levels and the perimeter drainage system is effective to prevent the build-up of any hydrostatic pressure behind the perimeter walls.

If perimeter drainage cannot be provided due to high groundwater level in relation to the subsurface structure, the subsurface walls can be waterproofed and designed for full hydrostatic pressure.

## 6.5 Floor Slabs

All topsoil and any deleterious materials encountered should be stripped from the proposed building areas. The exposed subgrade should be re-compacted from the surface to 98% of its Standard Proctor maximum dry density. Any loose/wet material encountered should be sub-excavated and replaced with approved fill.

The fill may consist of approved on-site materials free of organics and cobbles/boulders or approved imported sandy fill. All fill materials should be placed in 150 to 200mm thick lifts and compacted to 98% of its Standard Proctor maximum dry density.

A layer of well-graded, free-draining material, such as OPSS Granular 'A', at least 150mm thick and compacted to at least 100% of its Standard Proctor maximum dry density, should be placed under the floor slabs to provide a uniform bearing surface and to act as a vapour barrier.

Frequent inspections by geotechnical personnel from JLP Services Inc. should be carried out during construction to verify compaction of the subgrade and base courses by in-situ density testing using nuclear gauges.

## 6.6 Stormwater Management and Septic System Designs

Grain size distribution curves were prepared for representative samples of the subsoils obtained at the test pits. These grain size distribution analyses were performed following applicable ASTM laboratory procedures and are found on Enclosures 10 to 13, inclusive.

The grain size distribution curves were compared to the family of curves presented in the Supplementary Standard SB-6 of the 2012 Building Code Compendium. According to the Unified Soils Classification System and taking into consideration the specific physical nature of the soils, the samples in question are considered to have the properties noted in the following Table 1.

**Table 1: Soil Permeability and T-time Estimation**

Sample Number	Material					Unified Soils Classification Group	Estimated Co-efficient of Permeability (k) (cm/sec)	Estimated T-time (min/cm)
	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)			
TP 1, Sam 1	SAND, trace silt, trace clay	0	90.5	7.7	1.8	(SW-SP)	$10^{-1} - 10^{-3}$	10
TP 3, Sam 1	SAND, some silt, some clay	0	70.2	17.1	12.7	(SM)	$10^{-3} - 10^{-5}$	15
TP 4, Sam 1	SILTY SAND, some clay	0	63.0	22.1	14.9	(SM)	$10^{-3} - 10^{-5}$	15
TP 6, Sam 1	SAND, trace clay	0.4	89.0	0.7	9.9	(SW-SP)	$10^{-1} - 10^{-3}$	10

If a storm water management pond is to be constructed for the proposed development, a low permeability liner may be required to maintain a permanent wet pond. The low permeability liner may be constructed with a minimum 1m thick layer of clayey soils conforming to OPSS.MUNI 1205 requirements. Alternatively, a geosynthetic clay liner, such as Bentofix CNSL, or a synthetic liner, such as Nilex Geomembrane PVC 40 mil or similar products, may be used.

If a geosynthetic or synthetic liner is used, a minimum 300mm thick marker layer should be placed above the liner as an indicator/protective soil cover. The liner should be installed as per manufacturer's guidelines and up to a minimum of 0.6m above the design flood level in the pond. An underdrainage system may be required to relieve the hydrostatic uplift against the liner if the bottom of pond is lower than the highest observed groundwater level in the vicinity of the pond.

## 6.7 Pavement Designs

At the time of this report, it is understood that there may be concrete loading docks on the sides of the proposed buildings as well as asphalt pavement for the passenger car parking fronting the proposed buildings with the rest of the pavement on the site consisting of gravel pavement.

We recommend, as a minimum the removal of the existing topsoil, fill materials and any other deleterious materials encountered and underlying subsoils to a sufficient depth to allow for the following pavement designs. The underlying subgrade should then be re-compacted from the surface to at least 98% of its Standard Proctor maximum dry density prior to construction of the pavements. Any loose areas which are detected should be sub-excavated and backfilled with approved on-site material or approved imported granular material. All fill materials should be placed in 150 to 200mm thick lifts and compacted to at least 98% Standard Proctor maximum dry density.

Considering the probable traffic requirements and subsoil conditions, the following pavement designs presented in Table 2 are recommended:

**Table 2: Recommended Pavement Structures**

Material	Passenger Car Parking (Medium Duty) (mm)	Gravel Pavement for Heavy Equipment/Trucks (Heavy Duty) (mm)	Concrete Loading Docks for Heavy Equipment/Trucks* (Heavy Duty) (mm)
Asphaltic Concrete Surface Course	40	-	-
Asphaltic Concrete Base/Binder Course	50	-	-
Cast-in-place-Concrete	-	-	150
Granular 'A' Base Course	150	200	150
Granular 'B' Sub-base Course	300	450	300



- \*1. Steel reinforced with 150mm x 150mm WWM 40mm clear from top to receive wood float finish;
2. Provide clean straight 10mm bituminous expansion joints between existing and new concrete paving or existing structures and at 6m intervals maximum;
3. Control joints shall be provided at a maximum 1500mm intervals to a depth of 38mm;
4. Control joints shall be hand tooled to establish finishing pattern and then sawcut if hand tooling is not deep enough;
5. Tool finish all walk edges.

It is noted that the gravel pavement will likely require regular maintenance including placement of additional Granular 'A' to the surface due to wear from heavy vehicles traffic and turning and/or winter maintenance.

The granular base materials should be compacted to at least 100% Standard Proctor maximum dry density. The asphalt should be compacted to OPS Specifications.

Frequent inspections by geotechnical personnel from JLP Services Inc. should be carried out during construction to verify the compaction of the subgrade, base courses and asphaltic concrete by in-situ density testing using nuclear gauges. As well, we recommend testing of the concrete for compliance with OPS Specifications for the loading docks pavement.

## 7. Statement of Limitation

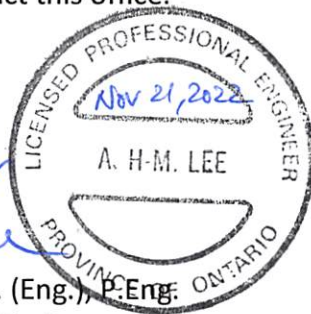
The Statement of Limitation including the Terms and Conditions of this report is presented on Appendix 'A' is an integral part of this report.

## 8. Closure

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

Sincerely,  
JLP Services Inc.

  
Alexander Lee, M.Sc. (Eng.), P.Eng.  
Senior Geotechnical Engineer



  
J. Board, B.A.  
General Manager

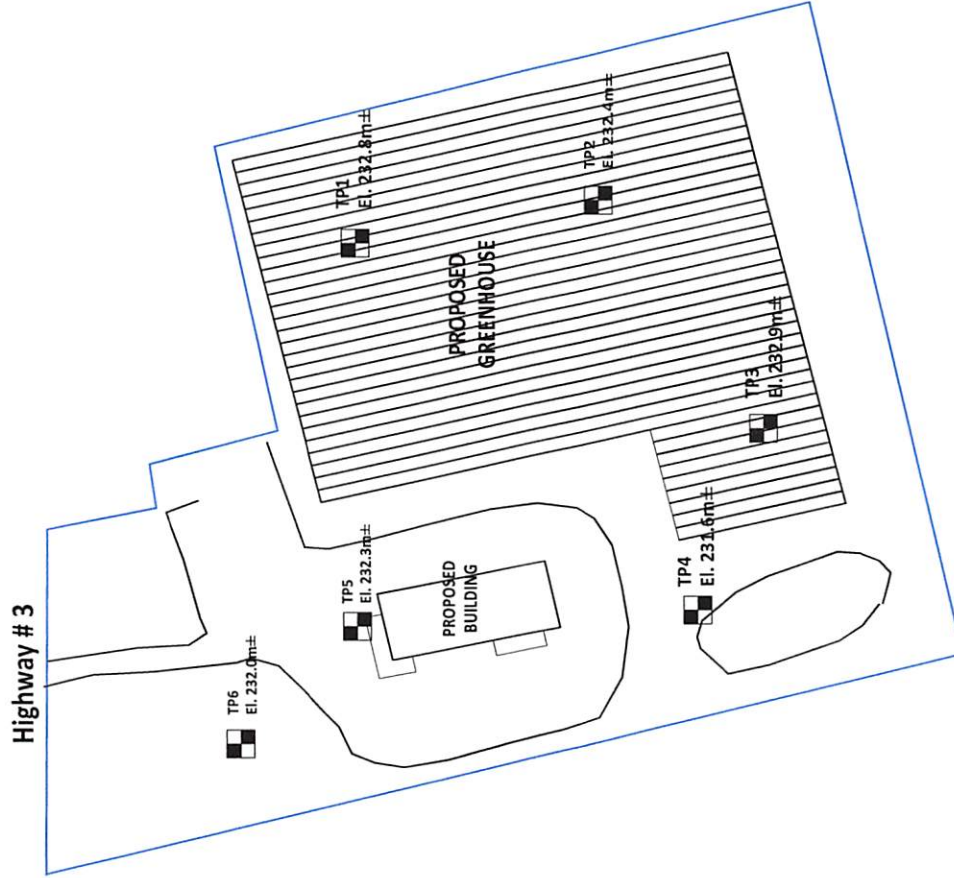
JLP Services Inc.  
*Geotechnical Investigation*  
*Proposed Greenhouse*  
2148 Highway #3, Delhi, Ontario  
G4633-22-8  
November 21, 2022

## Enclosures



# Legend

Test Pit (JLP 24-Aug-2022)  
[Approx.]



Notes:  
1. The soil types and boundaries are applicable only at the location of the borings. Between borings, they are assumed and may change substantially. The borehole thicknesses quoted in the report are used for discussion purposes only and should not be used for estimating purposes.  
2. The groundwater elevations at the borehole locations were derived from the temporary piezometers installed at the time of the investigation.  
3. The soil samples will be retained for three months from the date of issue of the final report and then discarded, unless the client has requested to extend the storage period will fees.



Test Pit Location Plan  
Proposed Greenhouse  
2148 Highway 3  
Delhi, Ontario

Date: November 14, 2022	Ref. No. G4633-22-11
Prepared By: GB	Checked By: JB
Source: Site Plan	Scale: N.T.S.
	ENCL. No. 1



Notes:

1. The soil types and boundaries are applicable only at the location of the boreholes. Between boreholes, they are assumed and may change substantially. The topsoil thicknesses quoted in the report are used for discussion purposes only and should not be used for estimating purposes.
2. The Ground Surface elevations at the borehole locations were derived from the Temporary Benchmark (TBM) as shown.
3. The soil samples will be retained for three months from the date of issue of the Final report, and then discarded, unless the client has requested to extend the storage period well before.



Date: November 14, 2022	Ref. No. G4633-22-11
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Prepared By: GB

Checked By: JBA

IB	DW
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2

Legend



Notes:  
1. The soil types and boundaries are applicable only at the location of the boreholes. Between boreholes, they are assumed and may change substantially. The borehole thicknesses quoted in the report are used for discussion purposes only and should not be used for estimating purposes.  
2. The groundwater elevations at the borehole locations were derived from the temporary piezometers installed at the time of the investigation.  
3. The soil samples will be retained for three months from the date of issue of the final report and then discarded, unless the client has requested to extend the storage period at all times.



Existing Condition Plan  
Proposed Greenhouse  
2148 Highway 3  
Delhi, Ontario

Date: November 14, 2022	Ref. No. G4633-22-11	
Prepared By: GB	Checked By: JB	ENCL. 3
Source: Site Plan	Scale: N.T.S.	No.

NOTE: Trees shown on plan removed prior to August, 2022.



## PAGE 1 OF 1

**PROJECT NAME** Proposed Greenhouse

**PROJECT LOCATION** 2148 Highway #3, Delhi, Ontario

**GROUND ELEVATION** 232.8 m Geodetic **TEST PIT SIZE** 1.5m x 1.5m

GROUND WATER LEVELS:

AT TIME OF EXCAVATION ---

AT END OF EXCAVATION ---

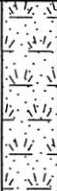


**AFTER EXCAVATION** ---

SS	8333
1	

Bottom of test pit at 1.50 m.





CLIENT <u>CDN Buildings</u>	PROJECT NAME <u>Proposed Greenhouse</u>
PROJECT NUMBER <u>G4633--22-8</u>	PROJECT LOCATION <u>2148 Highway #3, Delhi, Ontario</u>
DATE STARTED <u>24-8-22</u> COMPLETED <u>24-8-22</u>	GROUND ELEVATION <u>232.4 m Geodetic</u> TEST PIT SIZE <u>1.5m x 1.5m</u>
EXCAVATION CONTRACTOR <u>CDN Buildings</u>	GROUND WATER LEVELS:
EXCAVATION METHOD <u>Excavator</u>	AT TIME OF EXCAVATION <u>---</u>
LOGGED BY <u>JB</u> CHECKED BY <u>JB</u>	AT END OF EXCAVATION <u>---</u>
NOTES _____	AFTER EXCAVATION <u>---</u>

DEPTH (m)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
			<b>TOPSOIL:</b> about 250mm thick topsoil, no odour, no staining.
0.30			232.10
			<b>FILL</b> about 200mm thick sand, brown, loose, moist, no odour, no staining.
0.5			
			231.80
			<b>SAND:</b> Brown sand, compact, moist, no odour, no staining.
1.0			
			230.90
1.5			

**TEST PIT DRY AT COMPLETION**  
**END OF TEST PIT AT 1.5 MBGS**

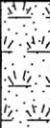

Bottom of test pit at 1.50 m.

<b>CLIENT</b> <u>CDN Buildings</u> <b>PROJECT NUMBER</b> <u>G4633--22-8</u> <b>DATE STARTED</b> <u>24-8-22</u> <b>COMPLETED</b> <u>24-8-22</u> <b>EXCAVATION CONTRACTOR</b> <u>CDN Buildings</u> <b>EXCAVATION METHOD</b> <u>Excavator</u> <b>LOGGED BY</b> <u>JB</u> <b>CHECKED BY</b> <u>JB</u> <b>NOTES</b> _____	<b>PROJECT NAME</b> <u>Proposed Greenhouse</u> <b>PROJECT LOCATION</b> <u>2148 Highway #3, Delhi, Ontario</u> <b>GROUND ELEVATION</b> <u>232.9 m Geodetic</u> <b>TEST PIT SIZE</b> <u>1.5m x 1.5m</u> <b>GROUND WATER LEVELS:</b> <b>AT TIME OF EXCAVATION</b> <u>---</u> <b>AT END OF EXCAVATION</b> <u>---</u> <b>AFTER EXCAVATION</b> <u>---</u>
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DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
				<b>TOPSOIL:</b> about 200mm thick topsoil, no odour, no staining.
				<b>SAND:</b> Brown sand, trace silt, compact, moist, no odour, no staining.
0.20				232.70
0.5				
1.0	SS 1	7692		
1.5				231.40

**TEST PIT DRY AT COMPLETION**  
**END OF TEST PIT AT 1.5 MBGS**  
 Bottom of test pit at 1.50 m.



CLIENT <u>CDN Buildings</u> PROJECT NUMBER <u>G4633--22-8</u> DATE STARTED <u>24-8-22</u> COMPLETED <u>24-8-22</u> EXCAVATION CONTRACTOR <u>CDN Buildings</u> EXCAVATION METHOD <u>Excavator</u> LOGGED BY <u>JB</u> CHECKED BY <u>JB</u> NOTES _____	PROJECT NAME <u>Proposed Greenhouse</u> PROJECT LOCATION <u>2148 Highway #3, Delhi, Ontario</u> GROUND ELEVATION <u>231.6 m Geodetic</u> TEST PIT SIZE <u>1.5m x 1.5m</u> GROUND WATER LEVELS: AT TIME OF EXCAVATION <u>---</u> AT END OF EXCAVATION <u>---</u> AFTER EXCAVATION <u>---</u>
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DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
				<b>TOPSOIL:</b> about 200mm thick topsoil, no odour, no staining.
0.20				231.40
				<b>SAND:</b> Brown sand, compact to dense, moist, no odour, no staining.
0.5				
1.0	SS 1	7692		
1.5				230.10

**TEST PIT DRY AT COMPLETION**  
**END OF TEST PIT AT 1.5 MBGS**

Bottom of test pit at 1.50 m.

<b>CLIENT</b> <u>CDN Buildings</u> <b>PROJECT NUMBER</b> <u>G4633--22-8</u> <b>DATE STARTED</b> <u>24-8-22</u> <b>COMPLETED</b> <u>24-8-22</u> <b>EXCAVATION CONTRACTOR</b> <u>CDN Buildings</u> <b>EXCAVATION METHOD</b> <u>Excavator</u> <b>LOGGED BY</b> <u>JB</u> <b>CHECKED BY</b> <u>JB</u> <b>NOTES</b> _____	<b>PROJECT NAME</b> <u>Proposed Greenhouse</u> <b>PROJECT LOCATION</b> <u>2148 Highway #3, Delhi, Ontario</u> <b>GROUND ELEVATION</b> <u>232.3 m Geodetic</u> <b>TEST PIT SIZE</b> <u>1.5m x 1.5m</u> <b>GROUND WATER LEVELS:</b> <b>AT TIME OF EXCAVATION</b> <u>---</u> <b>AT END OF EXCAVATION</b> <u>---</u> <b>AFTER EXCAVATION</b> <u>---</u>
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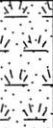
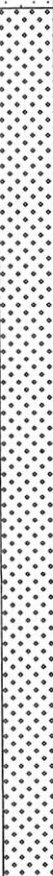
DEPTH (m)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
			<b>TOPSOIL:</b> about 200mm thick topsoil, no odour, no staining.
			<div style="display: flex; justify-content: space-between;"> <span>0.20</span> <span>232.10</span> </div> <b>SAND:</b> Brown sand, compact, moist, no odour, no staining.
0.5			
1.0			
1.5			230.80

**TEST PIT DRY AT COMPLETION**  
**END OF TEST PIT AT 1.5 MBGS**

Bottom of test pit at 1.50 m.



CLIENT <u>CDN Buildings</u>	PROJECT NAME <u>Proposed Greenhouse</u>
PROJECT NUMBER <u>G4633--22-8</u>	PROJECT LOCATION <u>2148 Highway #3, Delhi, Ontario</u>
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EXCAVATION METHOD <u>Excavator</u>	AT TIME OF EXCAVATION <u>---</u>
LOGGED BY <u>JB</u> CHECKED BY <u>JB</u>	AT END OF EXCAVATION <u>---</u>
NOTES _____	AFTER EXCAVATION <u>---</u>

DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
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0.20				231.80
0.5				
1.0	SS 1	7692		
1.5				230.50

**TEST PIT DRY AT COMPLETION**  
**END OF TEST PIT AT 1.5 MBGS**

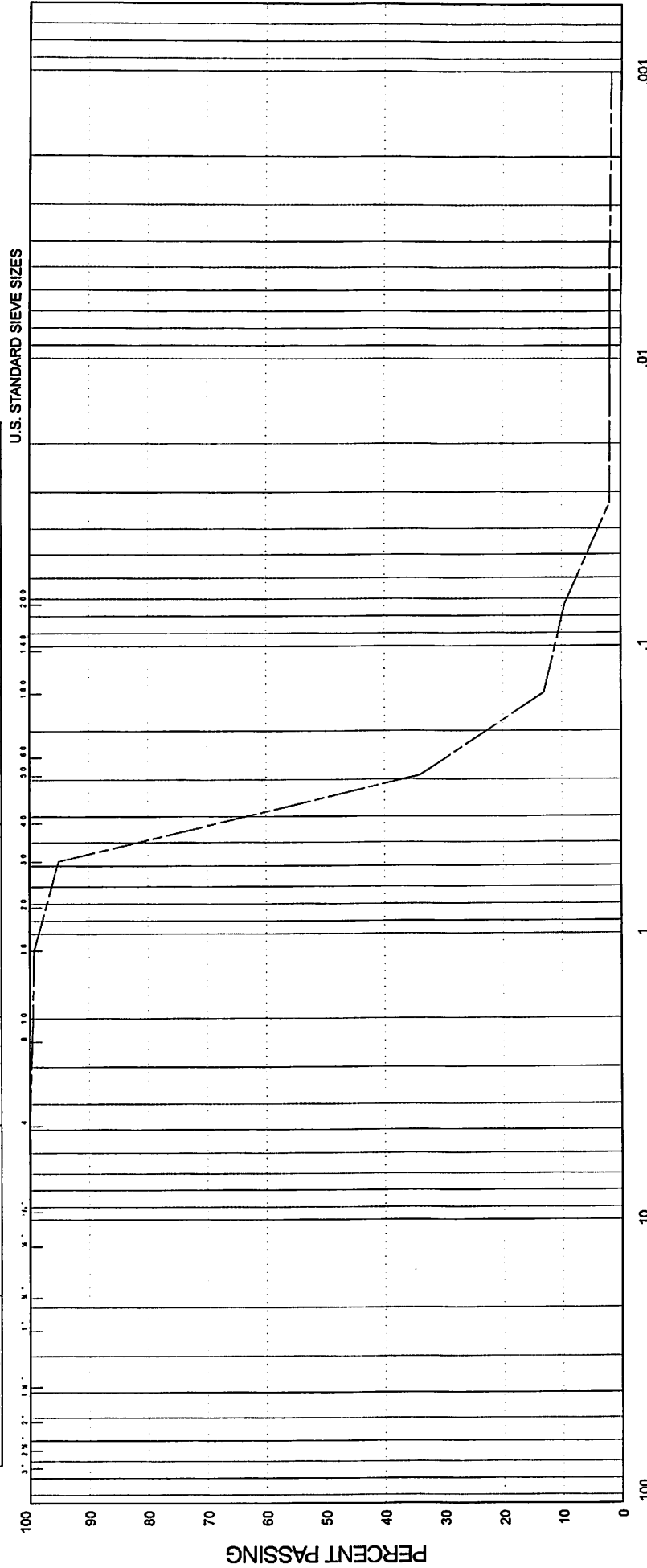
Bottom of test pit at 1.50 m.

# GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G4633-22-8

UNIFIED SOIL CLASSIFICATION SYSTEM

GRAVEL		SAND		SILT & CLAY	
COARSE	FINE	COARSE	FINE		



# GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G4633-22-9

UNIFIED SOIL CLASSIFICATION SYSTEM

SILT & CLAY

FINE

MEDIUM

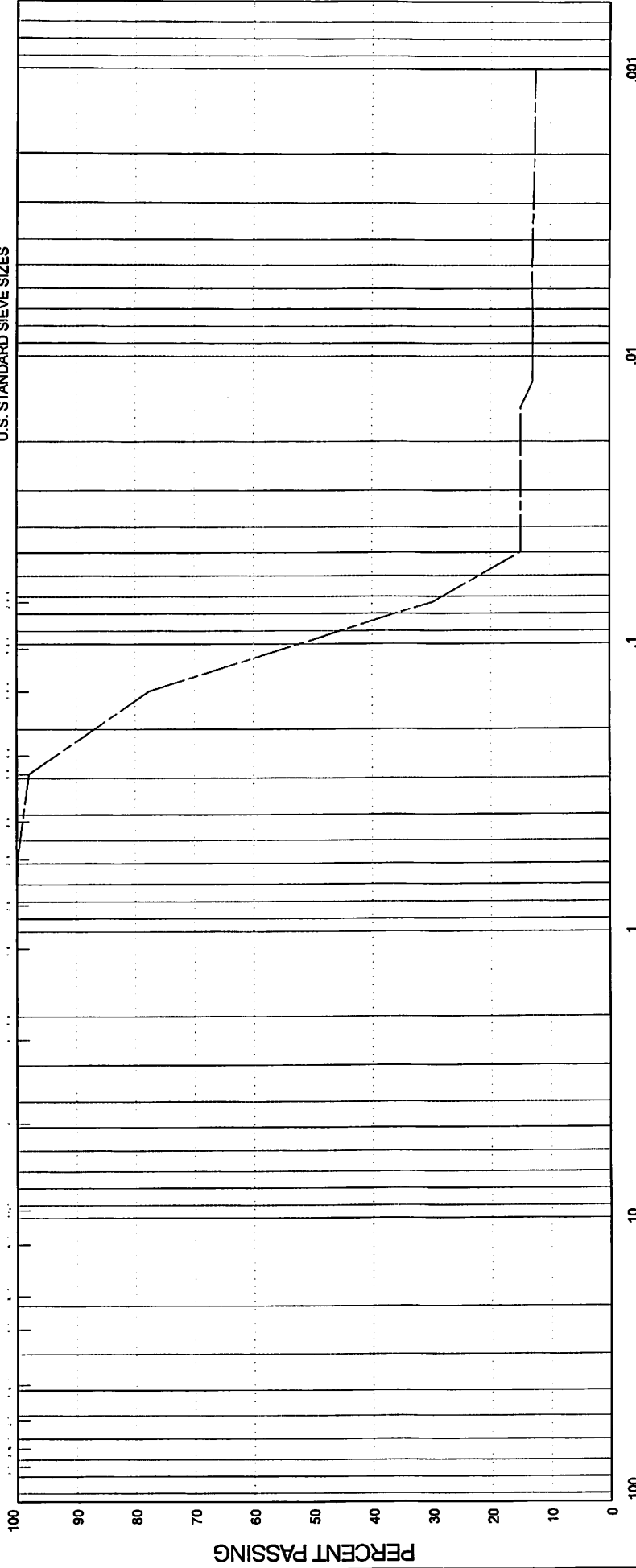
COARSE

FINE

GRAVEL

COARSE

U.S. STANDARD SIEVE SIZES



Grain Size in Millimeters

ENCLOSURE N° 11

PROJECT: Proposed Greenhouse

LOCATION: 2148 Highway 3, Delhi, ON

TEST PIT N°: 3

SAMPLE N°: 1

DEPTH: 0.2 - 1.5m±

ELEVATION: 232.7 - 231.4m±

PLASTIC PROPERTIES

LIQUID LIMIT % = -

PLASTIC LIMIT % = -

PLASTICITY INDEX % = -

MOISTURE CONTENT % = 16.1

COEFFICIENT OF UNIFORMITY:

COEFFICIENT OF CURVATURE:

Classification of Sample and Group Symbol:

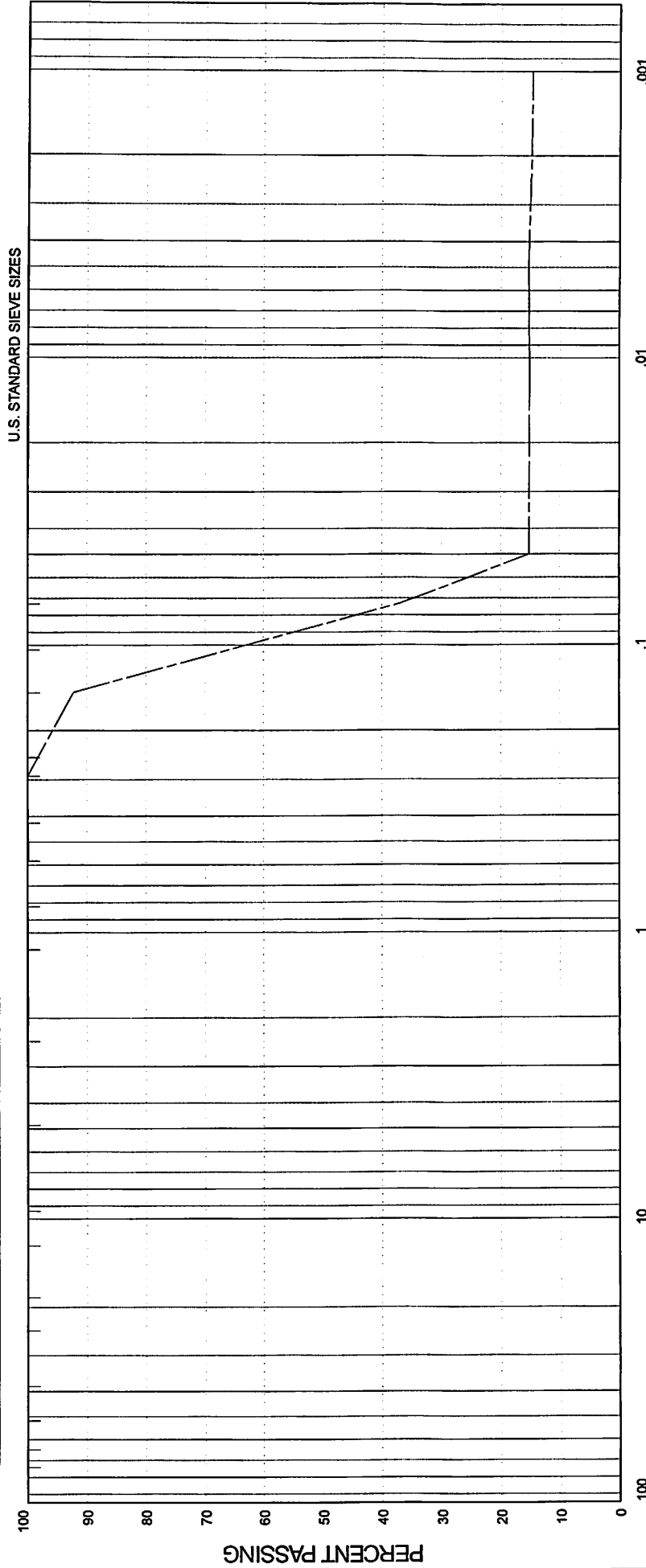
SAND, some silt, some clay (SM)

# GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G4633-22-8

GRAVEL		SAND		SILT & CLAY	
COARSE	FINE	COARSE	MEDIUM	FINE	

UNIFIED SOIL CLASSIFICATION SYSTEM



Grain Size in Millimeters

ENCLOSURE N° 12

PROJECT: Proposed Greenhouse  
 LOCATION: 2148 Highway 3, Delhi, ON  
 TEST PIT N°: 4  
 SAMPLE N°: 1  
 DEPTH: 0.2 - 1.5m±  
 ELEVATION: 231.4 - 230.1m±

COEFFICIENT OF UNIFORMITY:  
 COEFFICIENT OF CURVATURE:

PLASTIC PROPERTIES  
 LIQUID LIMIT % = -  
 PLASTIC LIMIT % = -  
 PLASTICITY INDEX % = -  
 MOISTURE CONTENT % = 22.1

Classification of Sample and Group Symbol:

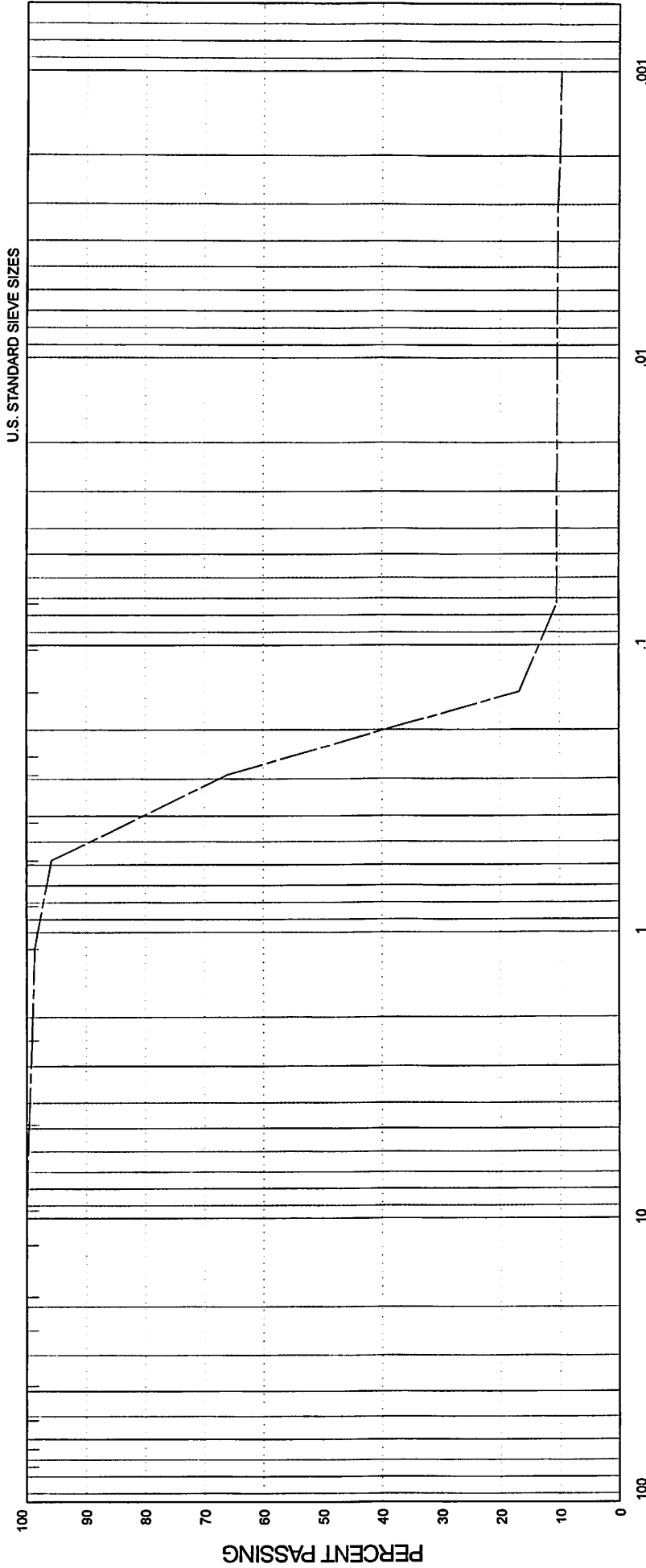
SILTY SAND, some clay (SM)

# GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G4633-22-8

GRAVEL		SAND		SILT & CLAY	
COARSE	FINE	COARSE	MEDIUM	FINE	

UNIFIED SOIL CLASSIFICATION SYSTEM



## Grain Size in Millimeters

PROJECT: Proposed Greenhouse  
LOCATION: 2148 Highway 3, Delhi, ON  
TEST PIT N°: 6  
SAMPLE N°: 1  
DEPTH: 0.2 - 1.5m±  
ELEVATION: 231.8 - 230.5m±

COEFFICIENT OF UNIFORMITY:  
COEFFICIENT OF CURVATURE:

## PLASTIC PROPERTIES

LIQUID LIMIT % = -  
PLASTIC LIMIT % = -  
PLASTICITY INDEX % = -  
MOISTURE CONTENT % = 7.9

## Classification of Sample and Group Symbol:

SAND, trace clay (SW-SP)

ENCLOSURE N° 13



## Appendix A – Limitations and Use of Report

## **REPORT TERMS AND CONDITIONS**

NOTICE: THE FOLLOWING PROVISIONS SET FORTH IMPORTANT QUALIFICATIONS AND LIMITATIONS ON THE FINDINGS AND RECOMMENDATIONS IN THE REPORT AS WELL AS THE USE OF, AND RELIANCE ON, THE REPORT.

1. **DEFINITIONS.** The following capitalized terms have the following meanings:

- (a) **"Additional Investigations"** means investigations that JLP has indicated to the Client should be undertaken to take into account any Out-of-Scope Requirements, but that are not otherwise specifically within the scope of investigations conducted for the purpose of the Report.
- (b) **"Applicable Laws"** means and includes without limitation all applicable provincial laws, regulations, guidelines, policies, standards, protocols, and objectives administered by the Ministry of the Environment and Climate Change or any other duly-constituted governmental authority, all as in force as of the date of the Report.
- (c) **"Client"** means the Client as referred to in the Report.
- (d) **"Client Information"** means the information, representations, and instructions provided by the Client, the Client's representatives, and/or others and upon which the Report is based, in whole or in part.
- (e) **"Findings"** means the evaluations and conclusions set forth in the Report.
- (f) **"JLP"** means JLP Services Inc.
- (g) **"Out-of-Scope Requirements"** means special concerns or requirements of the Client in respect of the subject matter of the Report.
- (h) **"Recommendations"** mean the findings and recommendations referred to in the Report, taking into account any Out-of-Scope Requirements that were disclosed to JLP prior to the date of the Report.
- (i) **"Report"** means the report to which these Terms and Conditions are attached and form part.
- (j) **"Report Documents"** means the underlying documents, records, data, and files, in any medium whatsoever, generated in connection with the preparation of the Report, including without limitation, the instructions and objectives communicated to JLP by the Client, communications between JLP and the Client, and other reports, proposals, or documents prepared by JLP for the Client in connection with the Site.
- (k) **"Site"** means the site in respect of which the Report was prepared.
- (l) **"Site Conditions"** means Site conditions known as a result of, or reasonably imputed by, the investigations that were undertaken as of the date of the Report.

2. **BASIS OF REPORT.** The Report is based on the Site Conditions. Any changes to the Site Conditions after the date of the Report that could or will affect the Site Conditions may or will have a corresponding effect on the Recommendations. The Report does not take into account any (a) Additional Investigations that were not undertaken, or (b) Out-of-Scope Requirements that were not communicated prior to completion of the investigations that were been undertaken as of the date of the Report. Where recommended field services are referred to, they are the minimum services necessary to determine compliance of construction with Applicable Laws, generally accepted industry-standard practices, and the Recommendations.

3. **RELIANCE & USE.** The Report has been prepared only for the Site and the related design, development, building, or building assessment objectives identified by the Client. The Findings and Recommendations are based on the Site Conditions and the Client Information. In preparing the Report, JLP has relied upon the Client Information and disclaims any responsibility for any inaccuracy, misstatement, omission, unintentional misrepresentation, or other deficiency contained in the Report as a result of such reliance. Unless specifically stated otherwise, the applicability and reliability of the Findings and the Recommendations expressed in the Report are only valid to the extent that (a) there has been no material change to or variation from any of the Client Information, (b) the Client Information contains no untrue statement of a material fact, or (c) the Client Information omits no statement of a material fact necessary in order to make the Client Information not misleading.

The Report and the Findings and Recommendations are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the prior written consent of JLP, which may be arbitrarily withheld or conditioned.

RELIANCE UPON THE REPORT OR ANY OF THE DETERMINATIONS MADE HEREIN BY A THIRD PARTY WITHOUT JLP'S CONSENT IS PROHIBITED AND JLP MAKES NO REPRESENTATION, GUARANTEE, OR WARRANTY IN FAVOUR OF ANY THIRD PARTY WITH RESPECT TO THE REPORT WHATSOEVER. JLP FULLY DISCLAIMS, AND WILL HAVE NO LIABILITY FOR, ANY LOSS, DAMAGES, OR EXPENSES WHICH ANY THIRD PARTY MAY INCUR OR SUFFER AS A RESULT OF THE USE OF OR RELIANCE ON THE REPORT WHERE JLP HAS NOT EXPRESSLY AUTHORIZED SAME. ANY THIRD PARTY WHO RELIES ON THE REPORT TO ANY EXTENT DOES SO AT SUCH PARTY'S OWN RISK AND COMPLETELY WAIVES ANY AND ALL CLAIMS AGAINST JLP IN CONNECTION WITH THE REPORT, REGARDLESS OF THE THEORY OF LAW (WHETHER IN CONTRACT, TORT, OR ANY THEORY OF LAW COMING INTO EXISTENCE HEREAFTER).

4. **STANDARD OF CARE.** The Report has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances. No other warranty, expressed or implied, is made or intended in the Report. It is intended that the Findings and Recommendations are meant to assist in reducing the Client's risk associated with environmental impairment at the Site. The Report should not be considered risk mitigation.
5. **ENTIRE REPORT.** The Report also includes the Report Documents. In order to properly understand the Findings and Recommendations, reference must be made to the Report in its entirety. JLP is not responsible for use by any party of a part of the Report only.
6. **GOVERNING FORMAT.** Notwithstanding that JLP may have submitted an electronic version of the Report or any document forming part of the Report, only the signed and sealed physical copy of the Report shall be deemed to be the original and in the event of any dispute or discrepancy, the physical copy shall govern. JLP makes no representation about the compatibility of its electronic or digital file format with the Client's current or future software and/or hardware systems. The documents described herein are JLP's instruments of professional service and shall not be altered without the written consent of JLP.
7. **GENERAL LIMITATIONS.**
- (a) Unless specifically stated otherwise, the Report does not contain environmental consulting advice.
  - (b) The Report contains no opinion or determination as to any matters governed by laws other than the laws of the Province of Ontario and the federal laws of Canada applicable therein as of the date hereof.
  - (c) During any future development of the Site, conditions not observed during JLP's investigations may become apparent. If this occurs, JLP should be contacted to assess the situation and whether there is a need for additional testing.



## Appendix C Design Drawings

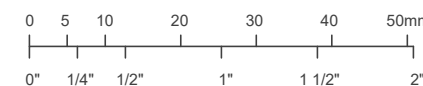


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No.	Issuance Description	YY/MM/DD
1.	CLIENT REVIEW	23/03/08
2.	MTO SUBMISSION	25/04/09
3.	SPA & BP SUBMISSION	25/11/28

**BENCHMARK:** TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For

## SITE PLAN APPROVAL

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FOR PERMIT APPLICATIONS OR CONSTRUCTION UNTIL SO  
AUTHORIZED BY THE CONSULTANT.

---

Client:

CDNBUILDINGS

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

HWY #3 DELH

2148 Highway 3, Delhi, ON N4B 2W4  
Norfolk County

Norfolk County

Drawing

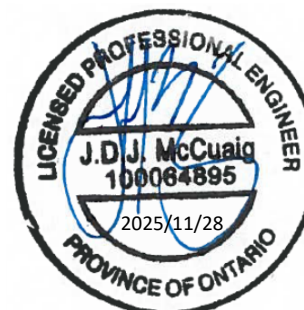
## SITE SERVICING PLAN

Project No.	1121-012-22	Designed by:	KF	Checked by:	JDM
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Scale:	1:1000	Drawn by:	KF	Approved by:	JDM
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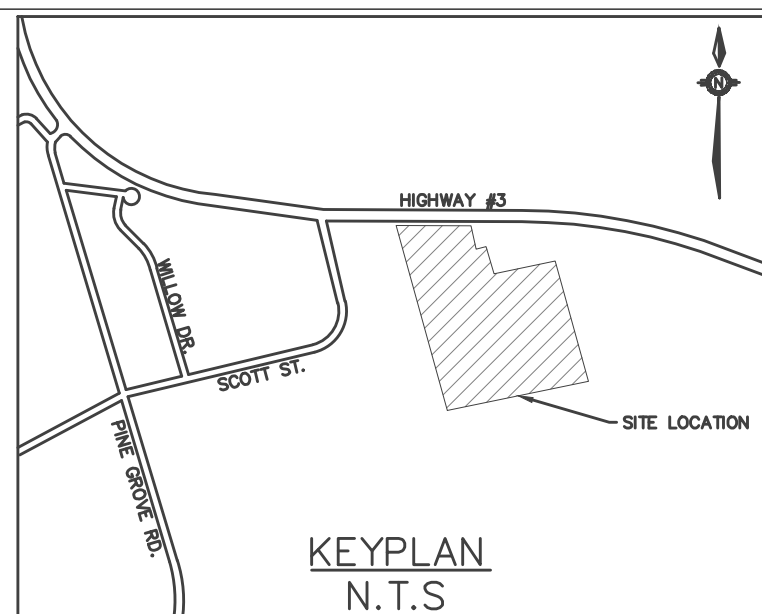
### Orientation

Stamp


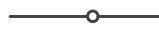

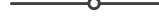




























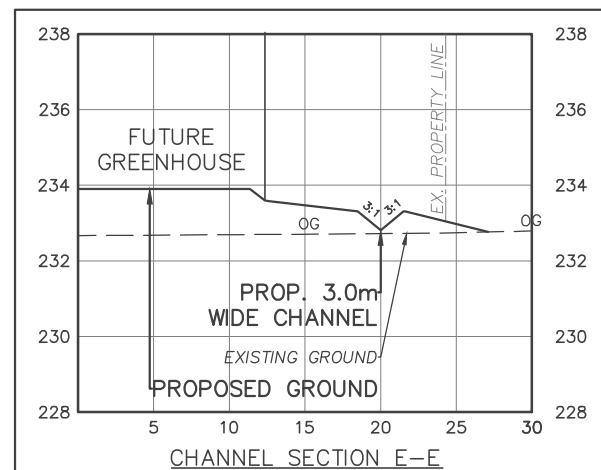
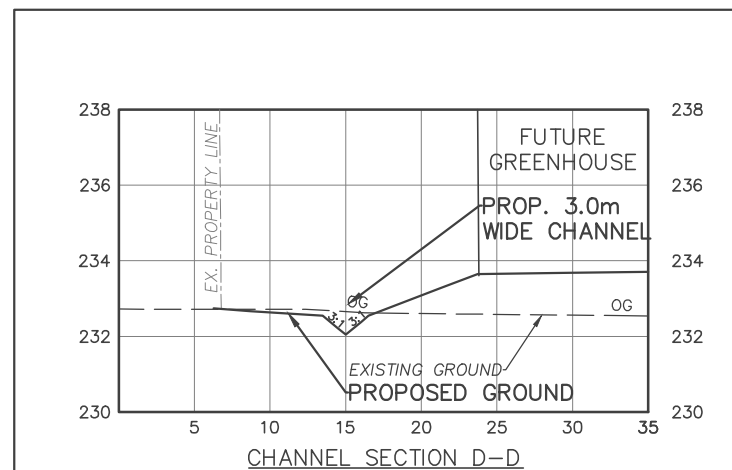
Drawing No.

SS-1

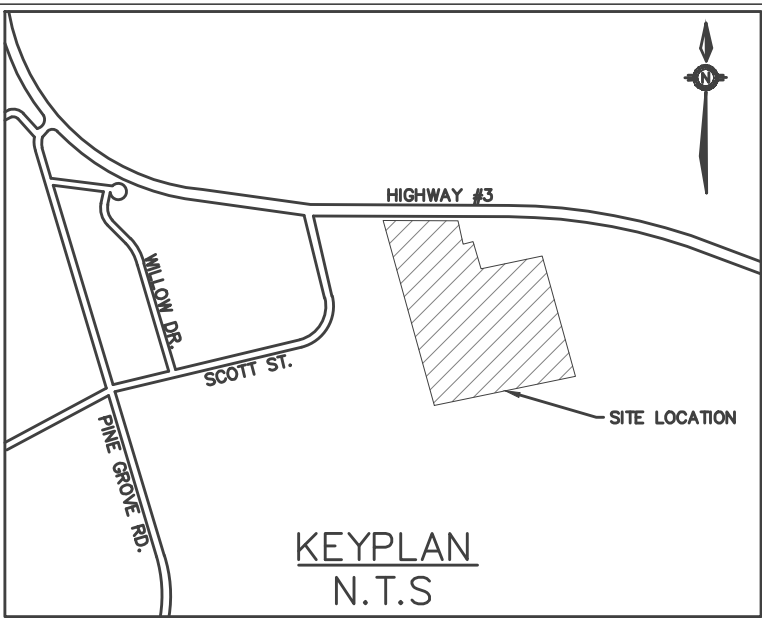


LEGEND

- |   |                                    |
|---|------------------------------------|
|    | PRIVACY FENCE                      |
|    | ACOUSTIC FENCE                     |
|    | CHAIN LINK FENCE                   |
|    | SILT FENCE                         |
|    | GAS LINE                           |
|    | HYDRO LINE                         |
|    | BELL LINE                          |
|    | EXISTING SANITARY MAINTENANCE HOLE |
|    | PROPOSED SANITARY MAINTENANCE HOLE |
|    | EXISTING CATCH BASIN               |
|    | PROPOSED CATCH BASIN               |
|    | EXISTING STORM MAINTENANCE HOLE    |
|    | PROPOSED STORM MAINTENANCE HOLE    |
|    | SERVICE CAP                        |
|    | EXISTING FIRE HYDRANT              |
|    | PROPOSED FIRE HYDRANT              |
|    | EXISTING VALVE BOX                 |
|    | PROPOSED VALVE BOX                 |
|    | PROPOSED SIGN                      |
|    | EXISTING LIGHT POLE                |
|    | MANDOOR                            |
|    | OVERHEAD DOOR                      |
|  | FIRE DEPT CONNECTION               |
|  | DOWN SPOUT                         |
|  | ELECTRICAL ROOM                    |
|  | MECHANICAL ROOM                    |
|  | LANDSCAPE AREA                     |
|  | LIGHT DUTY ASPHALT AREA            |
|  | HEAVY DUTY ASPHALT AREA            |
|  | GRAVEL AREA                        |







LEGEND

- PRIVACY FENCE
- ACOUSTIC FENCE
- CHAIN LINK FENCE
- SILT FENCE
- GAS LINE
- HYDRO LINE
- BELL LINE
- EXISTING SANITARY MAINTENANCE HOLE
- PROPOSED SANITARY MAINTENANCE HOLE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING STORM MAINTENANCE HOLE
- PROPOSED STORM MAINTENANCE HOLE
- SERVICE CAP
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING VALVE BOX
- PROPOSED VALVE BOX
- PROPOSED SIGN
- EXISTING LIGHT POLE
- MANDOOR
- OVERHEAD DOOR
- FIRE DEPT CONNECTION
- DOWN SPOUT
- ELECTRICAL ROOM
- MECHANICAL ROOM
- LANDSCAPE AREA
- LIGHT DUTY ASPHALT AREA
- HEAVY DUTY ASPHALT AREA
- GRAVEL AREA

BENCHMARK: TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For:

SITE PLAN APPROVAL

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Client

CDNBUILDINGS

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

HWY #3 DELHI

2148 Highway 3, Delhi, ON N4B 2W4

Norfolk County

Drawing:

SITE GRADING PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM

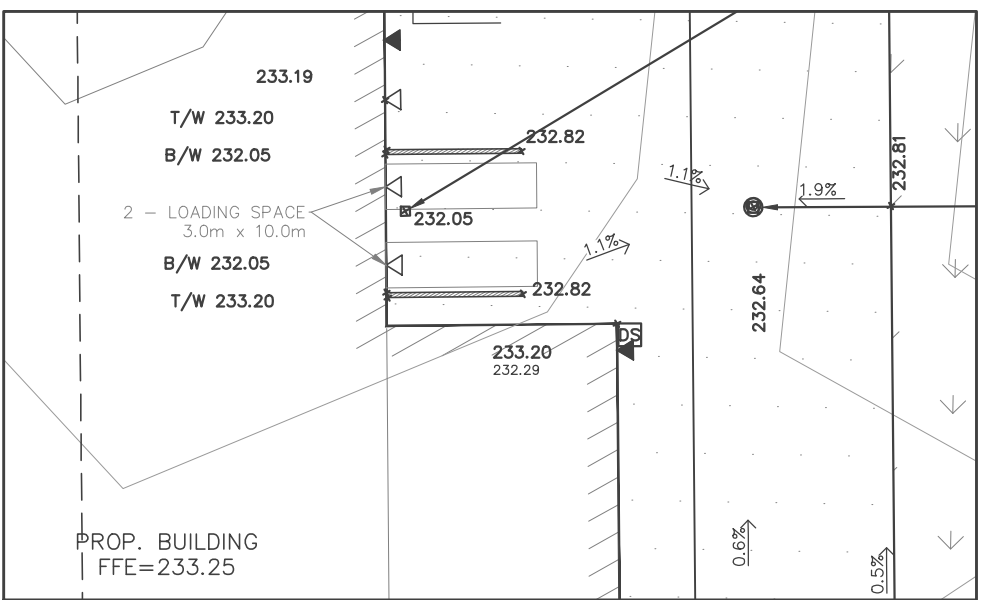
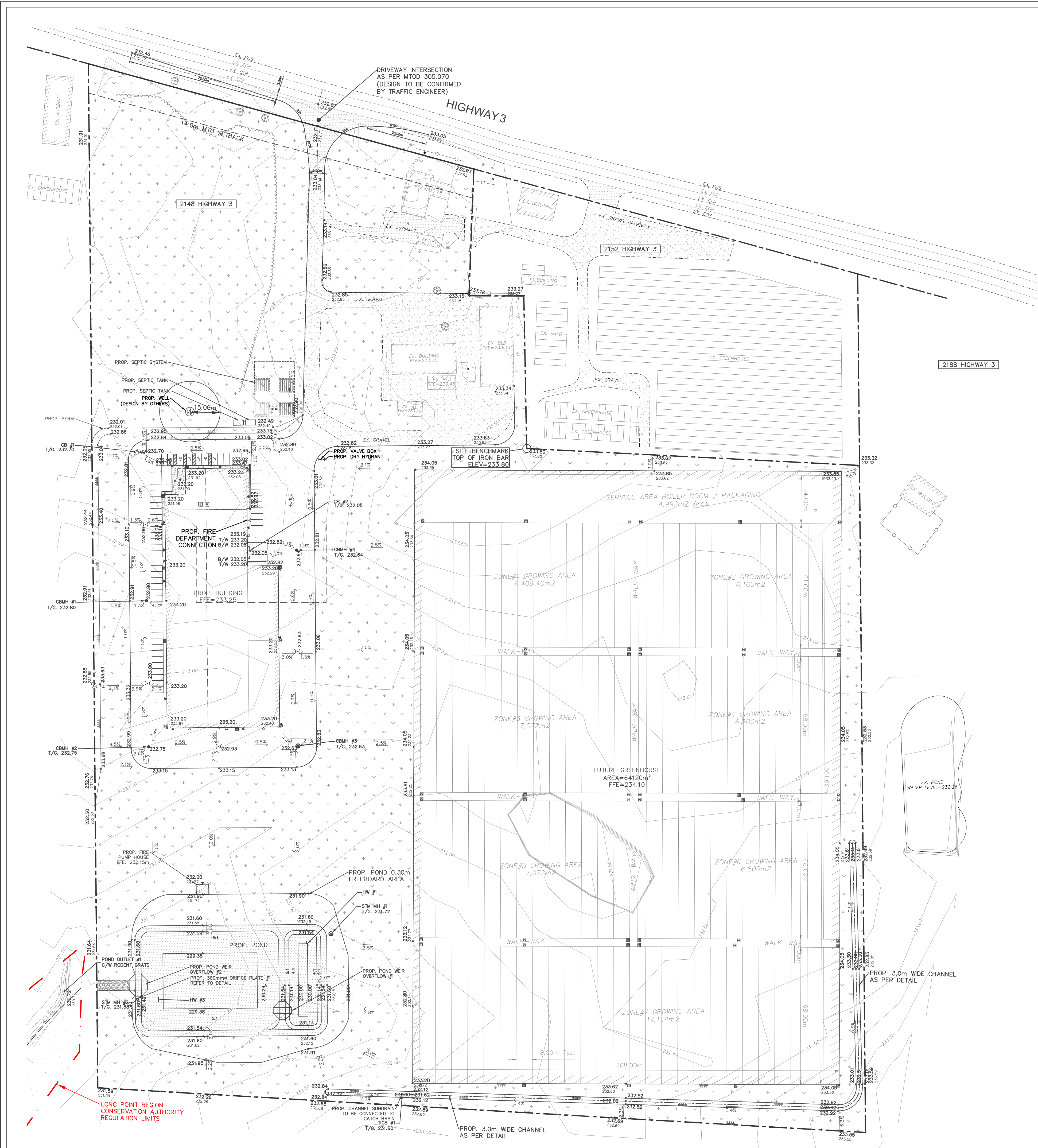
Scale: 1:1000 Drawn by: KF Approved by: JDM

Orientation Stamp



Drawing No.

SG-1



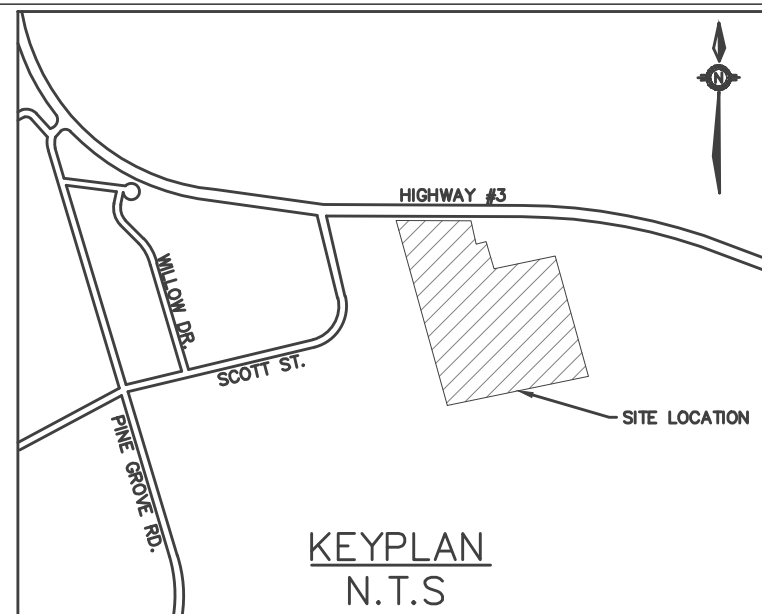
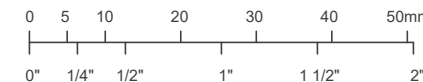


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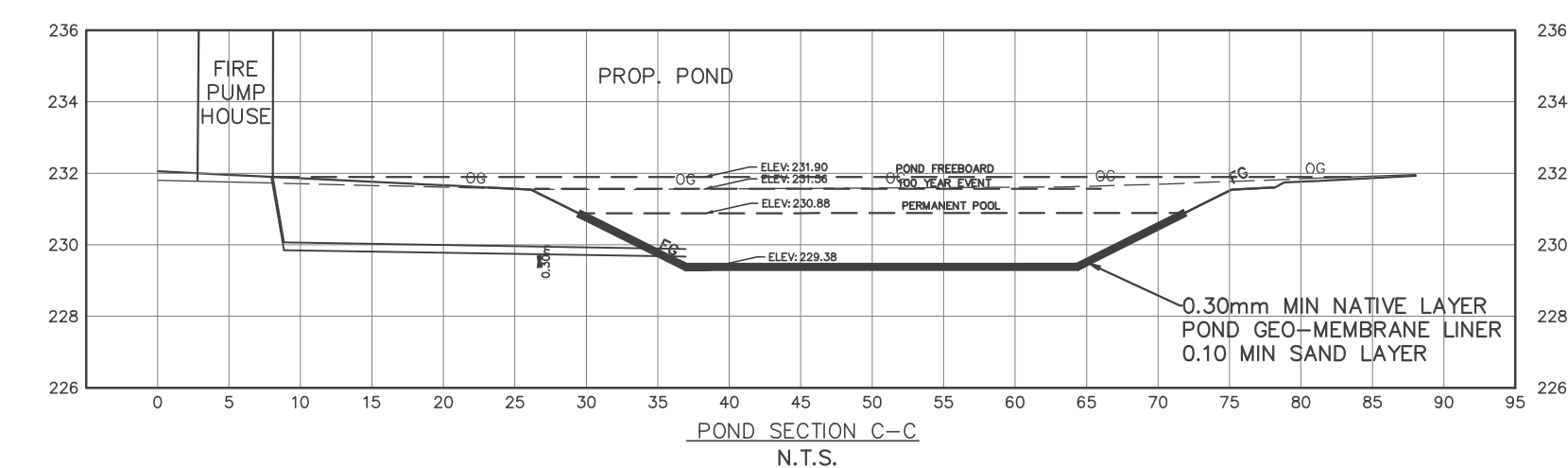
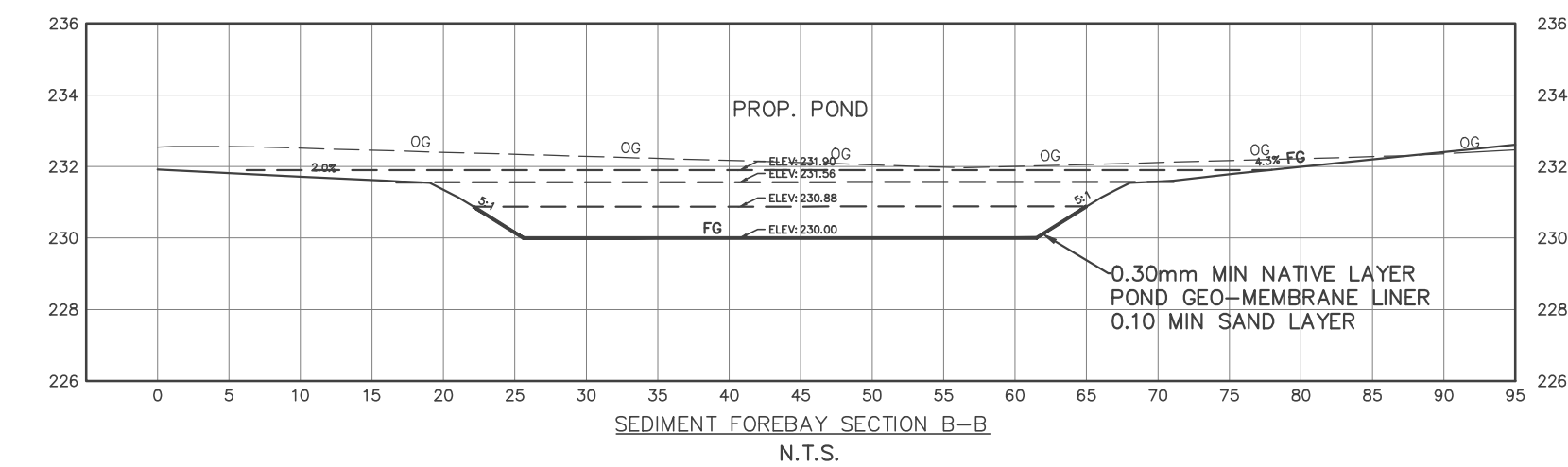
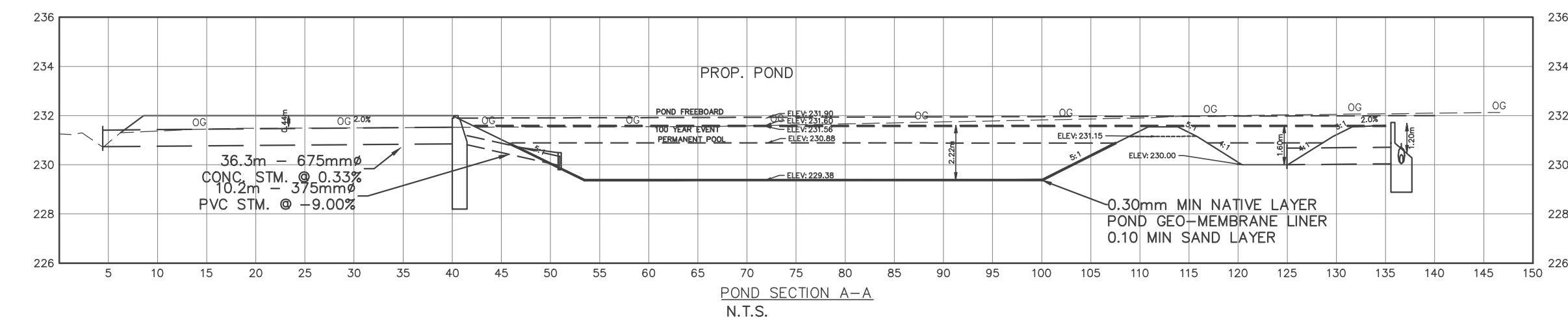
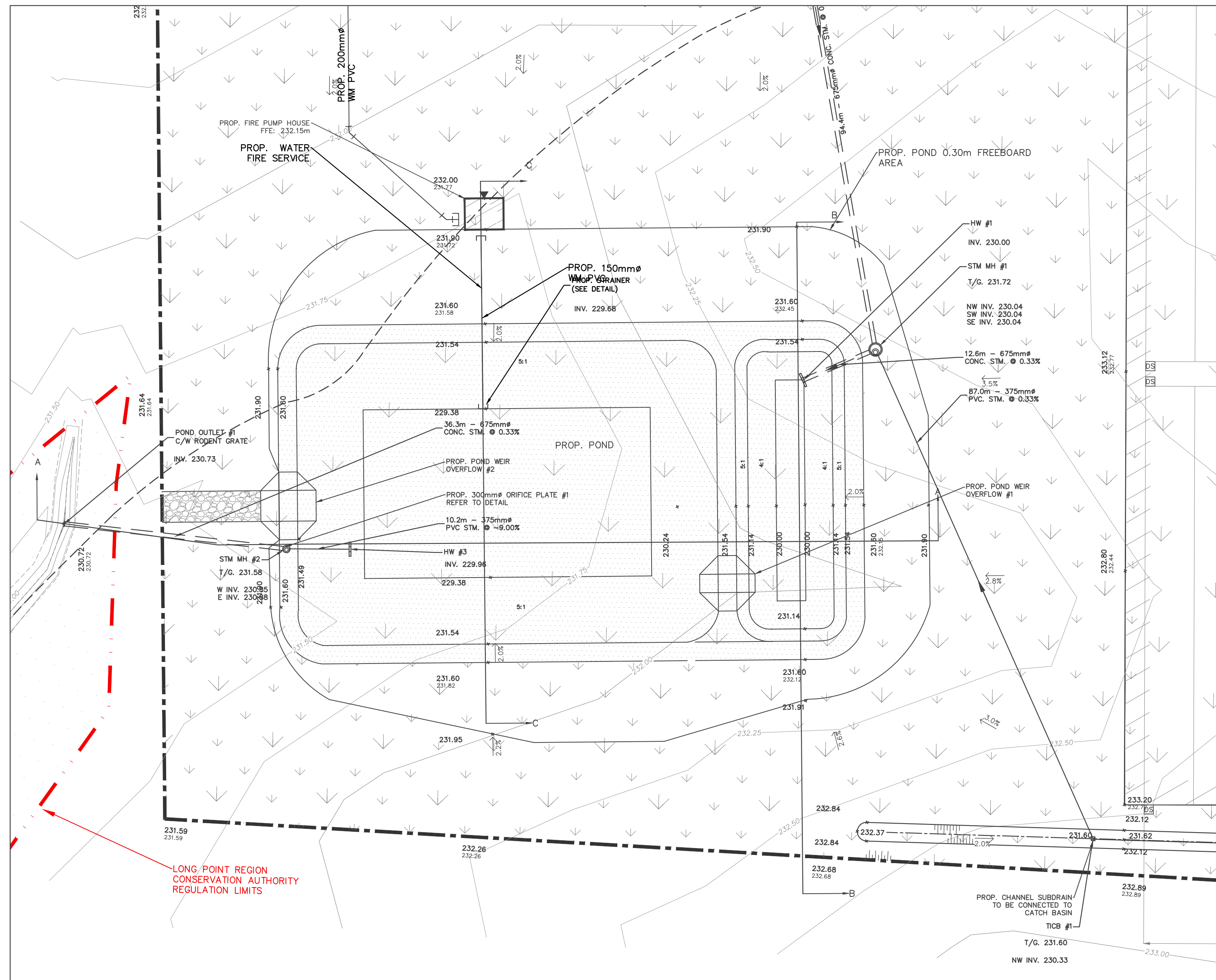
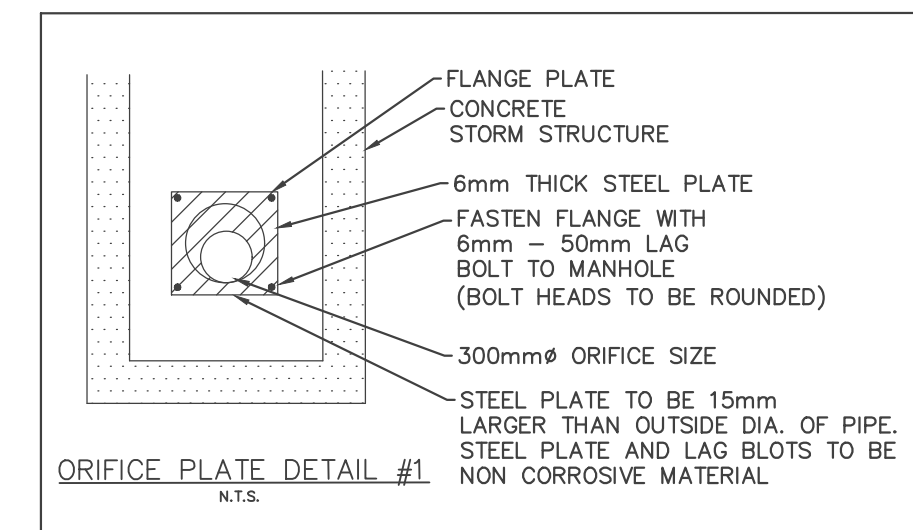
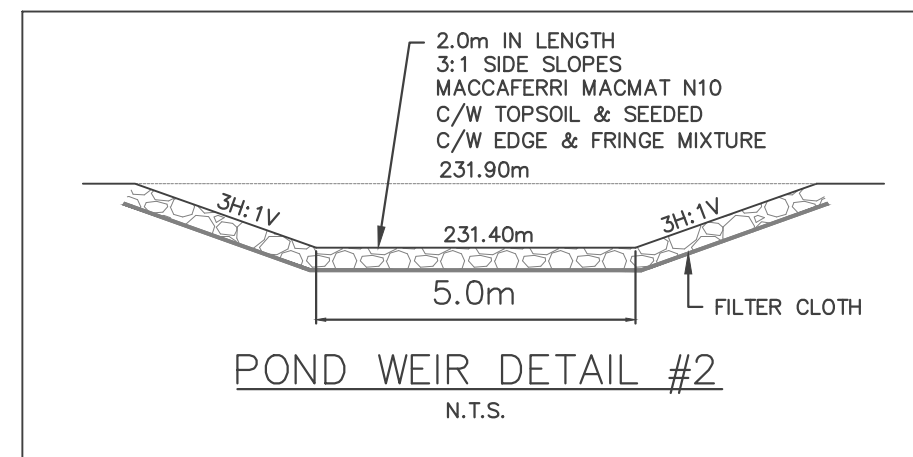
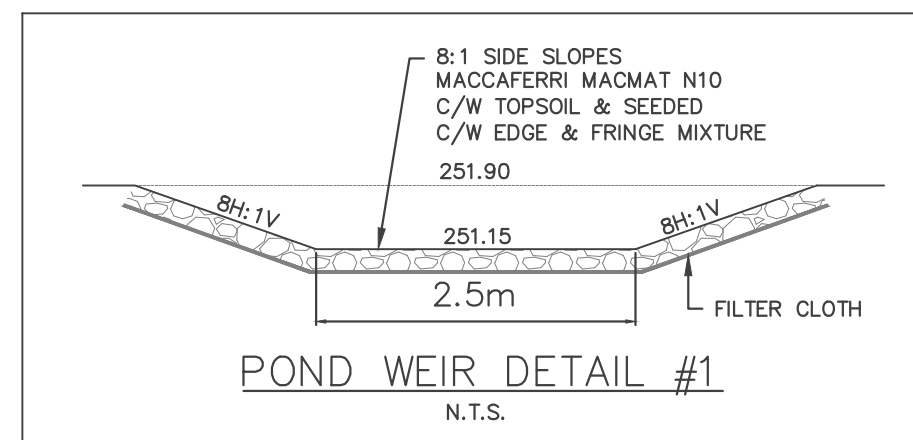
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### LEGEND

- PRIVACY FENCE
- ACOUSTIC FENCE
- CHAIN LINK FENCE
- SILT FENCE
- GAS LINE
- HYDRO LINE
- BELL LINE
- EXISTING SANITARY MAINTENANCE HOLE
- PROPOSED SANITARY MAINTENANCE HOLE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING STORM MAINTENANCE HOLE
- PROPOSED STORM MAINTENANCE HOLE
- SERVICE CAP
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING VALVE BOX
- PROPOSED VALVE BOX
- PROPOSED SIGN
- EXISTING LIGHT POLE
- MANDOOR
- OVERHEAD DOOR
- FIRE DEPT CONNECTION
- DOWN SPOUT
- ELECTRICAL ROOM
- MECHANICAL ROOM
- LANDSCAPE AREA
- LIGHT DUTY ASPHALT AREA
- HEAVY DUTY ASPHALT AREA
- GRAVEL AREA



Issued For:

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Client

**CDNBUILDINGS**

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

**HWY #3 DELHI**

2148 Highway 3, Delhi, ON N4B 2W4

Norfolk County

Drawing:

**POND PLAN**

Project No. 1121-012-22 Designed by: KF Checked by: JDM

Scale: 1:500 Drawn by: KF Approved by: JDM

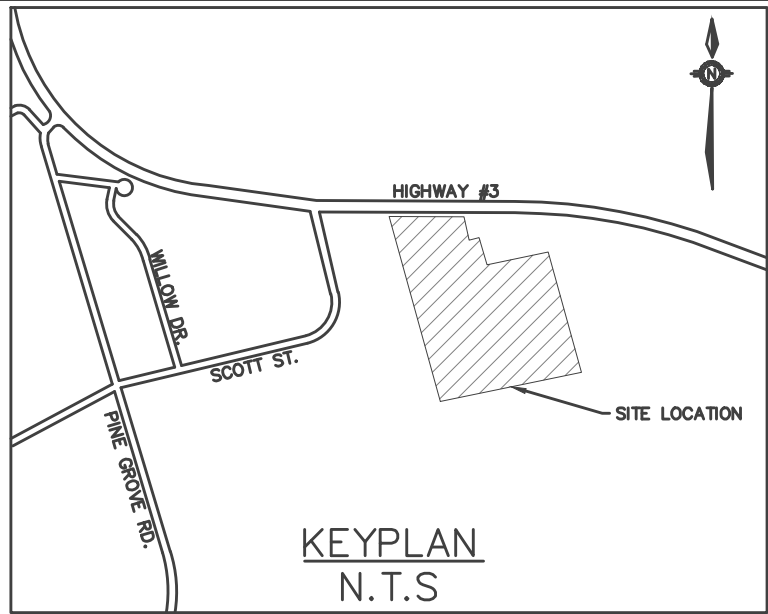
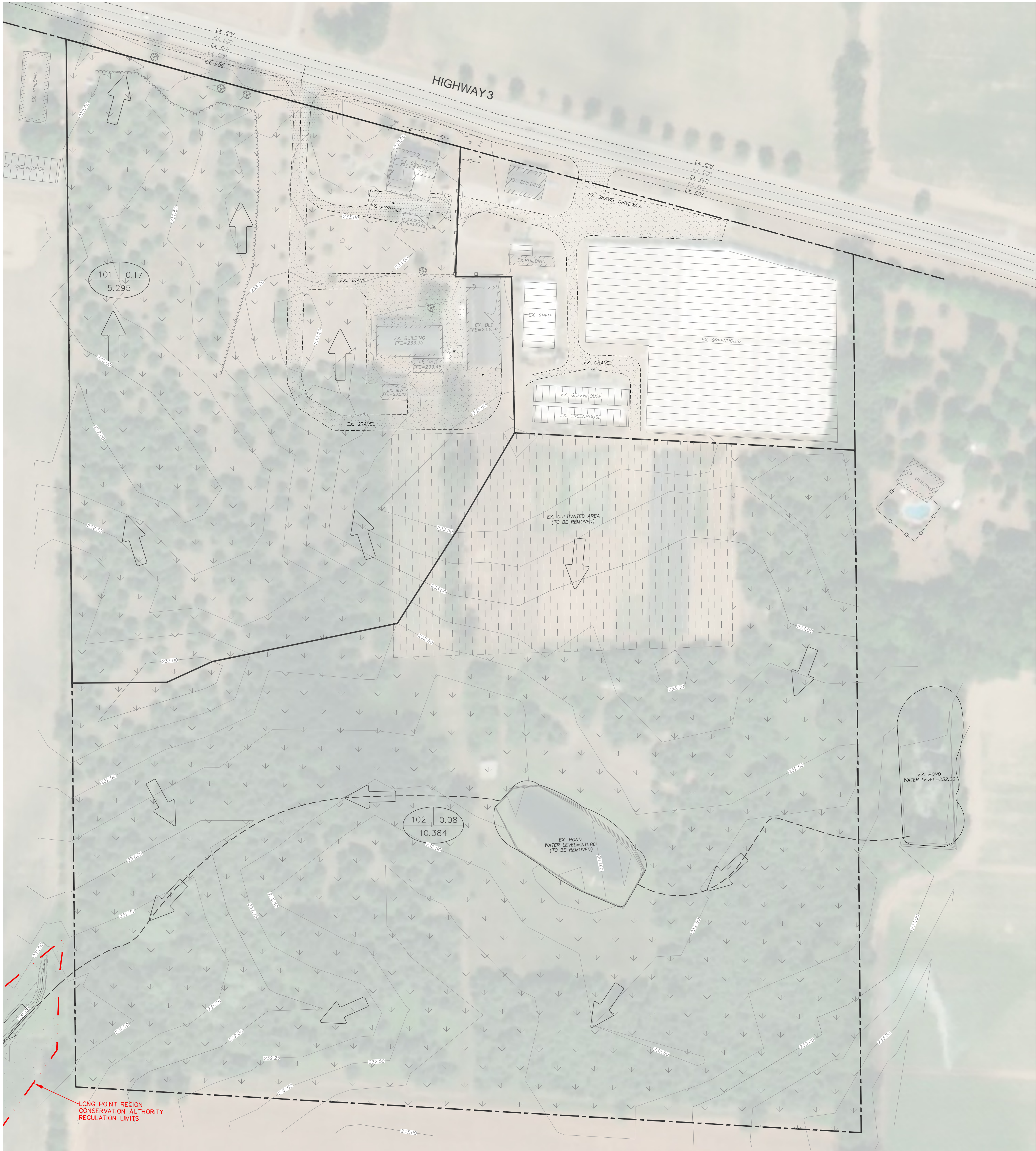
Orientation Stamp



Drawing No.

**PND-1**





- LEGEND**
- ID  $X/P-1$  0.75  
5.55  
AREA (ha)
- RUNOFF COEFFICIENT
- CATCHMENT BOUNDARY
- OVERLAND FLOW
- LPRCA REGULATION LIMIT

**Gerrits**  
ENGINEERING

Barrie, ON  
Tel.: 705.737.3303

Kingston, ON  
Tel.: 613.217.8246

www.gerrits.com

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0 5 10 20 30 40 50mm  
0" 1/4" 1/2" 1" 1 1/2" 2"

No.	Issuance Description	YYMMDD
1.	CLIENT REVIEW	23/03/08
2.	MTD SUBMISSION	25/04/09
3.	SPA & BP SUBMISSION	25/11/28

BENCHMARK: TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

## SITE PLAN APPROVAL

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Client  
**CDNBUILDINGS**  
523 James Street, Unit 3, Delhi, ON N4B 2C2

Project  
**HWY #3 DELHI**  
2148 Highway 3, Delhi, ON N4B 2W4  
Norfolk County

## PRE-DEVELOPMENT STORMWATER DRAINAGE PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM  
Scale: 1:1000 Drawn by: KF Approved by: JDM

Orientation

Stamp

Drawing No.  
**SWM-1**

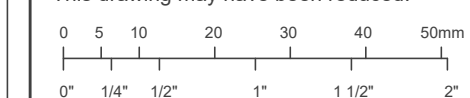


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No.	Issuance Description	YY/MM/DD
1.	CLIENT REVIEW	23/03/08
2.	MTO SUBMISSION	25/04/09
3.	SPA & BP SUBMISSION	25/11/28

**BENCHMARK:** TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

DRAWINGS ARE "ISSUED FOR APPROVAL" AND ARE NOT TO BE USED  
FOR PERMIT APPLICATIONS OR CONSTRUCTION UNTIL SO  
AUTHORIZED BY THE CONSULTANT.

---

Client

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

2148 Highway 3, Delhi, ON N4B 2W4  
Norfolk County

Drawing:

Project No.	1121-012-22	Designed by:	KF	Checked by:	JDM
-------------	-------------	--------------	----	-------------	-----

Scale:	1:1000	Drawn by:	KF	Approved by:	JDM
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Orientation	Stamp
-------------	-------

Orientation	Stamp
-------------	-------



Drawing No.

SWM-2

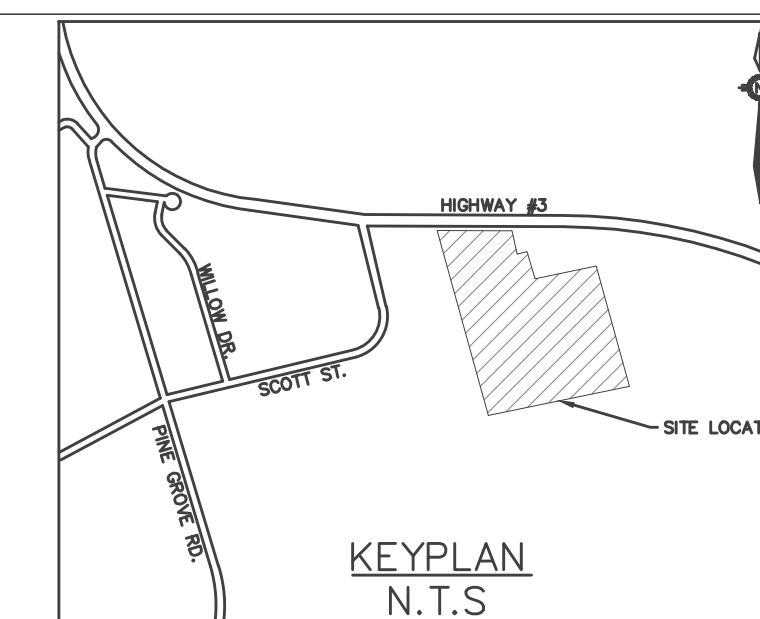


Diagram of a circular field divided into three sections:

- Top-left section: ID, X/P-1
- Top-right section: RUNOFF COEFFICIENT, 0.75
- Bottom section: AREA (ha), 5.55

RUNOFF COEFFICIENT

5.5

CATCHMENT BOUNDARY

OVERLAND FLOW

— — — — — LPRCA REGULATION  
— — — — — LIMIT



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0 5 10 20 30 40 50mm  
0" 1/4" 1/2" 1" 1 1/2" 2"

No.	Issuance Description	YYMMDD
1.	CLIENT REVIEW	23/03/08
2.	MTD SUBMISSION	25/04/09
3.	SPA & BP SUBMISSION	25/11/28

BENCHMARK: TOP OF IRON BAR, EAST CORNER OF LOT  
ELEVATION OF 233.80

Issued For:

## SITE PLAN APPROVAL

DRAWINGS ARE "ISSUED FOR APPROVAL" AND ARE NOT TO BE USED FOR PERMIT APPLICATIONS OR CONSTRUCTION UNTIL SO AUTHORIZED BY THE CONSULTANT.

Client

**CDNBUILDINGS**

523 James Street, Unit 3, Delhi, ON N4B 2C2

Project

**HWY #3 DELHI**

2148 Highway 3, Delhi, ON N4B 2W4

Norfolk County

Drawing:

## EROSION & SEDIMENT CONTROL PLAN

Project No. 1121-012-22 Designed by: KF Checked by: JDM

Scale: 1:1000 Drawn by: KF Approved by: JDM

Orientation

Stamp

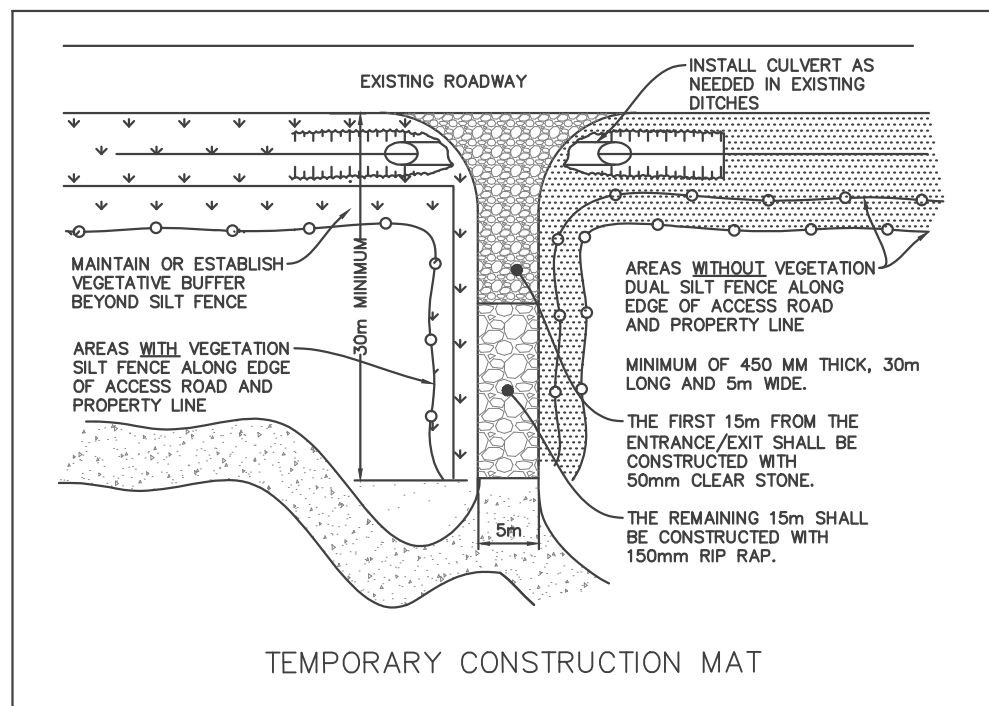
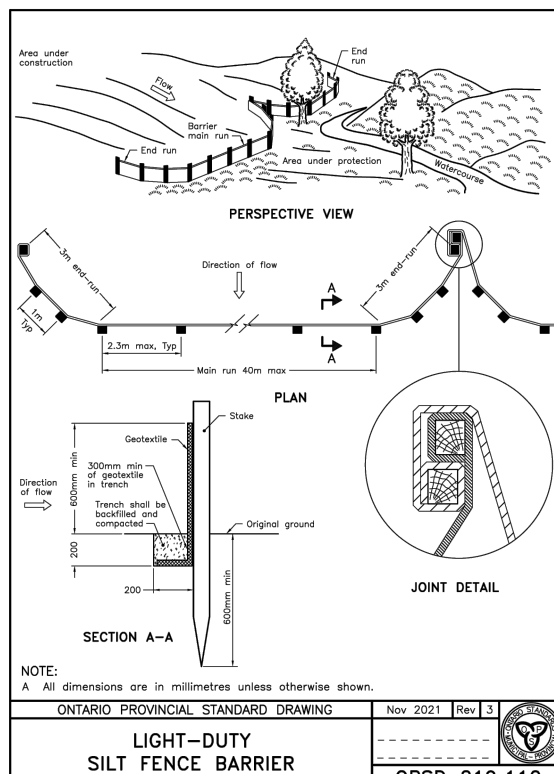
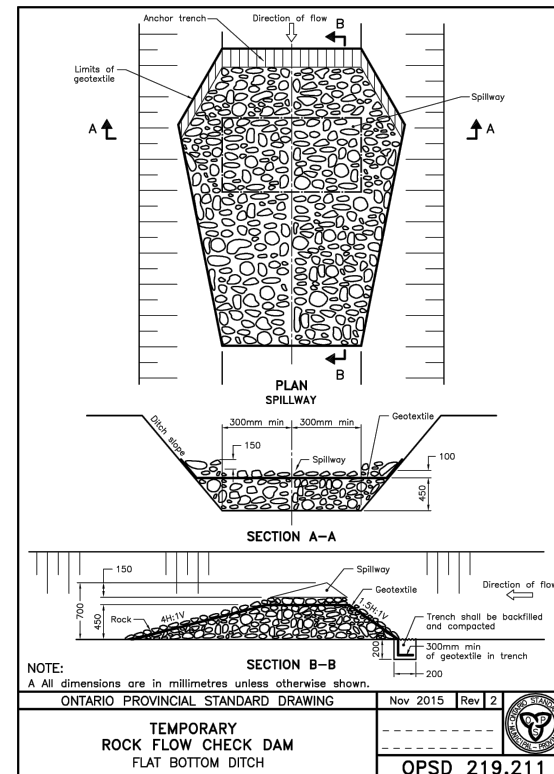
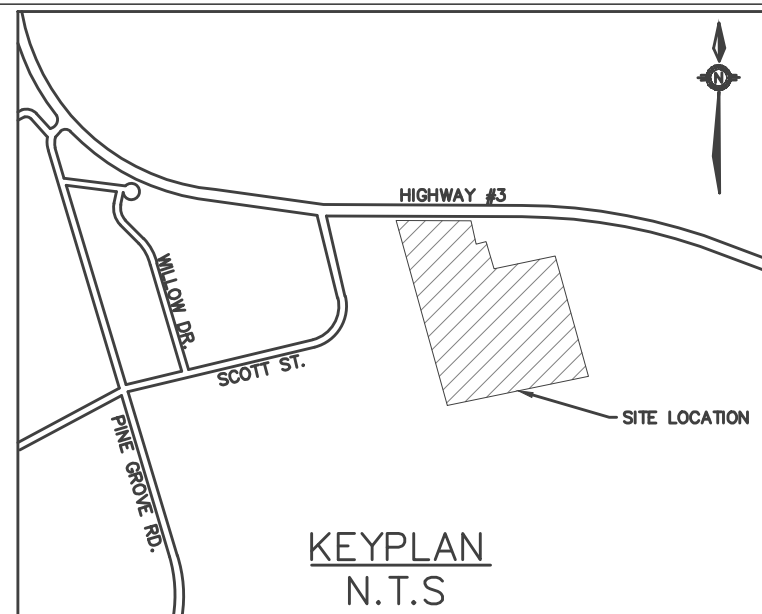


Drawing No.

**ESC-1**

## LEGEND

	SILT FENCE		ASPHALT REMOVAL AREA
	ROCK CHECK DAM		CULTIVATED AREA
	STRAW BALE		TREED AREA
	SAND BAG BARRIER		DECIDUOUS TREE
	TEMPORARY SWALE		CONIFEROUS TREE
	DIRECTION OF INTERIM OVERLAND FLOW		
	LPRCA REGULATION LIMIT		

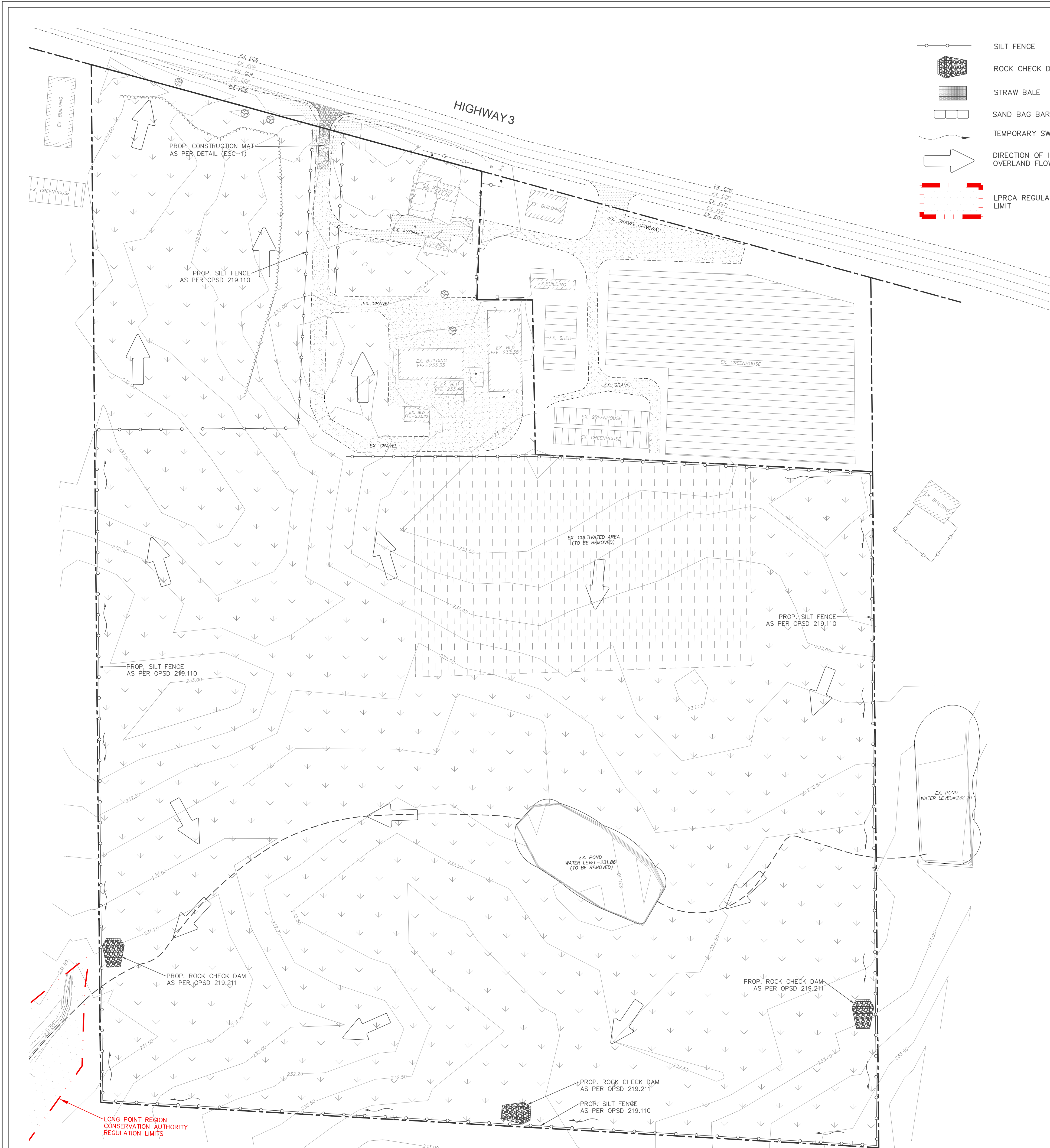


## SEQUENCE OF CONSTRUCTION

- ENGINEER TO BE NOTIFIED PRIOR TO INITIATION OF ANY ON SITE WORKS.
- SILT FENCE AND CONSTRUCTION ACCESS MATS TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY WORKS ONSITE.
- VEGETATION REMOVAL MAY COMMENCE AFTER ALL SILT FENCE IS INSTALLED AND APPROVED BY THE ENGINEER.
- COMMENCE WITH EARTH EXCAVATION AND SITE SERVING (TO BE REMOVED FROM SITE - NO STOCKPILE).
- EROSION CONTROL MEASURES TO BE MAINTAINED AS DIRECTED BY THE ENGINEER DURING THE CONSTRUCTION PERIOD. ADDITIONAL CONTROL MEASURES MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
- ALL DISTURBED GROUND LEFT INACTIVE FOR MORE THAN 30 DAYS SHALL BE STABILIZED WITH SEED, SOD, MULCH OR OTHER ADEQUATE COVERING, AS INSTRUCTED BY THE ENGINEER.
- ALL CONSTRUCTION VEHICLES TO ACCESS THE SITE VIA THE DESIGNATED CONSTRUCTION ENTRANCES AS SHOWN.

## NOTES FOR SEDIMENT & EROSION CONTROL

- DISTURBED AREAS THAT HAVE FAILED TO HAVE STABLE GROUND COVER ESTABLISHED BY OCTOBER 30TH SHALL BE PROTECTED WITH A SILTATION CONTROL FENCE OR STRAW MULCH ETC. AND MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION BECOMES ESTABLISHED IN THE SUBSEQUENT GROWING SEASON.
- ANY DEWATERING WASTE SHALL BE DISCHARGED TO A VEGETATED AREA AT LEAST 30 M FROM ANY WATERCOURSE AND FILTERED. FILTERING METHODS MUST BE APPROVED BY THE SITE ADMINISTRATOR.
- SILT FENCE SHALL BE PUT IN PLACE PRIOR TO AND MAINTAINED DURING ALL GRADING. SILT FENCE SHALL COMPLY WITH OPSD 219.110 FOR LIGHT DUTY AND / OR OPSD 219.130 FOR HEAVY DUTY. UNLESS NOTED OTHERWISE, 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 SUGGESTED SPECIFICATIONS.
- THE CONTRACTOR SHALL BE PREPARED FOR UNEXPECTED CONDITIONS AND ACCORDINGLY HAVE STOCKPILED MATERIALS ON SITE FOR NECESSARY REPAIRS AS A RESULT OF FAILED OR INADEQUATE CONTROL MEASURES. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK, AND AFTER EVERY RAINFALL EVENT.
- MUD MATS WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES THE SITE SHALL BE USED. MUD MATS TO BE 300mm IN DEPTH, 6.0m WIDE BY 20.0m LONG, FIRST 10.0m TO 150mmØ CLEAR STONE WITH THE REMAINING 10.0m CONSISTING OF 50mmØ CLEAR STONE, OR MEET MUNICIPAL STANDARDS WHERE IDENTIFIED.
- CONTRACTOR SHALL OBTAIN A CURRENT COPY AND BECOME FAMILIAR WITH OPSD 805, CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS.
- THE CONTRACTOR MAY CONSIDER ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES. SUCH MEASURES SHOULD BE PRESENTED IN WRITING FOR APPROVAL OF THE SITE ADMINISTRATOR AND MUST BE APPROVED IN WRITING BY THE CONSERVATION AUTHORITY.
- THE TOPS OF ALL FILTER FABRIC MUST BE A MINIMUM OF 1.0 METRES ABOVE THE GROUND LEVEL AND ATTACHED TO THE FENCE WITH A CONTINUOUS STEEL WIRE. ALTERNATIVELY, THE FILTER FABRIC MUST BE FOLDED OVER THE TOP OF THE FENCE AND ATTACHED TO THE FENCE WITH WIRE LOOPED THROUGH THE FABRIC ON BOTH SIDES OF THE FENCE. FILTER FABRIC IS TO BE TERRAFIX 270R OR EQUIVALENT.
- ALL DISTURBED GROUND LEFT INACTIVE 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 MUNICIPAL DIRECTOR OF ENGINEERING BUT SHALL NOT EXCEED (30) DAYS OR SUCH LONGER PERIOD DEEMED ADVISABLE BY THE MUNICIPAL DIRECTOR OF ENGINEERING.
- CONTRACTOR SHALL INSTALL AND MAINTAIN CATCHBASIN SEDIMENT BARRIERS THROUGHOUT THE SITE DURING ALL CONSTRUCTION ACTIVITIES IN ORDER TO MITIGATE SEDIMENT ENTERING THE STORM STORM SEWERS.
- NO FUEL TO BE STORED ON SITE. IN CASE OF A SPILL PLEASE CONTACT: MOECC SPILLS ACTION CENTER 1-800-268-6060.
- SEDIMENT CONTROLS ARE TO REMAIN IN PLACE UNTIL WRITTEN DIRECTION IS RECEIVED FROM THE ENGINEER REGARDING THEIR REMOVAL.
- EROSION AND SEDIMENT CONTROLS WILL BE INSPECTED ON AS PER MUNICIPAL REQUIREMENTS OR AFTER SIGNIFICANT RAINFALL EVENTS.







**The Corporation of Norfolk County**

**By-Law 2017-04**

**Lot Grading and Drainage**

THIS FORM IS TO BE SUBMITTED WITH EVERY LOT GRADING PLAN

Municipal Address: 2148 Highway 3, DELHI, ONTARIO, N4B 2C2

And/or

PIN: \_\_\_\_\_

SELECT THE **ONE** PURPOSE FOR SUBMITTING THIS FORM:

☒ Proposed Grading Plan for Infill Lot:

I, Jeff McCuaig P.ENG, a Qualified Person, submit the attached Proposed Grading Plan, under my seal to confirm that the Plan provides drainage in accordance with the Ontario Building Code and applicable Municipal regulations for the works to be constructed that are the subject of the Building Permit Application to which this is attached.

☐ Proposed Grading Plan within a Plan of Subdivision:

I, \_\_\_\_\_, a Qualified Person, submit the attached Proposed Grading Plan, under my seal to confirm that the Plan conforms in all respects with the Master Grading Plan in the Plan of Subdivision Master Grading Plan, registered as:

\_\_\_\_\_(common name of the Plan of Subdivision and Registration Number).

- ☐ Final Grading Plan for Infill Lot that fully conforms with the Proposed Grading Plan:

I, \_\_\_\_\_, a Qualified Person, submit the attached Final Grading Plan, under my seal to confirm that the Plan conforms in all respects with the Proposed Grading Plan for the referenced property.

- ☐ Final Grading Plan for Infill Lot that does not fully conform with the Proposed Grading Plan:

I, \_\_\_\_\_, a Qualified Person, submit the attached Proposed Grading Plan, under my seal to confirm that the Final Grading Plan does not fully conform with the Proposed Grading Plan for the referenced property. I further attest that the grading depicted in the Final Grading Plan provides adequate drainage in accordance with prevailing Acts, Regulations and by-laws.

- ☐ Final Grading Plan in a Plan of Subdivision that conforms with the Proposed Grading Plan to the extent described in Section 5 of the By-Law:

I, \_\_\_\_\_, a Qualified Person, submit the attached Final Grading Plan, under my seal to confirm that the Plan conforms in all respects with the Proposed Grading Plan for the referenced property.

- ☐ Final Grading Plan in a Plan of Subdivision that does not fully conform with the Proposed Grading Plan to the extent described in Section 5 of the By-Law:

I, \_\_\_\_\_, the Qualified Person that designed the Master Grading Plan, under my seal confirm that the Final Grading Plan does not fully conform with the Master Grading Plan for the referenced property as described in Clause 5.3 of the By-Law. I further attest that the grading depicted in the Final Grading Plan provides adequate drainage in accordance with prevailing Acts, Regulations and by-laws.

- ☐ Exemption from Submission of Grading Plans (Must be obtained prior to making a Building Permit Application):

I, \_\_\_\_\_, a Qualified Person, under my seal, confirm that the existing property qualifies for a Lot Grading Plan exemption as described in the By-Law and that this property provides drainage in accordance with the Ontario Building Code and all other prevailing Acts, Regulations and by-laws for the works to be constructed that are the subject of the Building Permit Application attached hereto, and no changes will be made to the existing grading for the construction of those works.

Or:

I, \_\_\_\_\_, the (agent) or (owner) request that the County review the proposed works as described in the attached information which is to be the subject of a future Building Permit application and the County advise if this meets the requirements for an exemption for the submission of Proposed and Final Grading Plans. I understand that any fees provided to the County for this review are non-refundable, whether or not the exemption is granted and that in requesting this exemption, confirm that the works that are the subject of this application is eligible for an exemption under the By-Law.

Exemption is granted by (Print name): \_\_\_\_\_  
(Sign name): \_\_\_\_\_ (County Staff), and this form may be provided with the supporting documentation submitted for the exemption with a Building Permit application consistent with the information in the Exemption Request.

Exemption is denied by (Print name): \_\_\_\_\_  
(Sign name): \_\_\_\_\_ (County Staff). Proposed and Final Grading Plans must be submitted with the Building Permit application.

IN ANY INSTANCE ABOVE NOTING "UNDER MY SEAL", AFFIX SEAL BELOW:



**SEAL (Qualified Person)**

(Sign and date over the seal)

**Name:** Jeff McCuaig, P.Eng.

**License Number:** 100064895

This form approved by the County Official under delegated authority under Norfolk County By-Law 2017-04



# APPLICABLE LAW CHECKLIST

**The Building Code Act** prohibits the issuance of a building permit if the proposed construction or demolition will contravene an applicable law as defined by the Building Code. The questions below will help you to determine if an applicable law applies to your project. No timeframe for building permit review can be established until all required applicable law approvals are completed and the approval documents are submitted to the Building Division.

If the answer is **YES** to any question, the relevant approval documents must be submitted with this permit application. Where any required approval has **NOT** been obtained, the agencies listed on the back of this form must be contacted to obtain approval, and the declaration on the bottom of this form must state accordingly.

**Property Address:** 2148 Highway 3, Delhi, Roll#:3310491028078000000 **Permit Number (office use)**

<b>Zoning By-Laws – Norfolk County Planning Department</b>	YES	NO
Is/was relief required to permit a minor zoning variance in your proposal?		X
Is/was rezoning required to permit the proposed building or land use?	X	
Is a land division or subdivision required and not yet fully completed?		X
Are municipal services required but not yet completed or available?		X

<b>Planning Approval - Norfolk County Planning Department</b>	YES	NO
Is this property regulated by Site Plan Control under Section 41 of the Planning Act?	X	

<b>Heritage - Norfolk County Heritage and Culture Department</b>	YES	NO
Are you demolishing a building that is listed on the County's heritage inventory?		X
Is the building designated or in the process of being designated?		X
Is the property located in a heritage district or study area?		X

<b>Construction and Fill Permits – Long Point Regional or Grand River Conservation Authority</b>	YES	NO
Is the property located within a regulated area (i.e. abutting a ravine, watercourse, wetland, or shoreline)?		X

<b>Building and Land Use Permits - Ontario Ministry of Transportation</b>	YES	NO
Is the property within 45m of a highway or 180 m from any highway intersection?		X
Is the property within 395m of a controlled highway intersection? (applies to Sign Permits)		X
Is this a major traffic generating project located within 800m of a highway?		X

**Community Development Division- Building Department**

185 Robinson Street, Suite 200, Simcoe, ON N3Y 5L6 • 519-426-5870 Ext. 6016



<b>Clean Water Act – Public Works</b>	YES	NO
Is the property located within a Source Water Protection regulated area?		X
If yes: does a Water Source Protection Plan restrict the land use you are proposing? (s.59 screening form may be required)		X

<b>Agriculture and Farms - Ontario Ministry of Agriculture and Food</b>	YES	NO
Is this a farm building that will house animals or manure?		X
Is this a milk processing plant?		X

<b>Crown Lands Work Permit – Ministry of Natural Resources</b>	YES	NO
Are you proposing to construct or place a structure or combination of structures that are in physical contact with more than 15 square meters of shore lands?		X
Are you proposing to build on Crown Land?		X

<b>Electrical Conductor Clearances - Electrical Safety Authority</b>	YES	NO
Are any overhead power lines located above or within 5.5 metres of the proposed building?		X

<b>Environmental Approvals - Ministry of Environment, Conservation, Parks</b>	YES	NO
Is a Record of Site Condition required to be filed because of a change to more sensitive land use? Is the property a former waste disposal site?		X
Is this project a major industrial, commercial, or government project?		X
Is this a renewable energy project?		X
Does this property have a Certificate of Property Use under the Environmental Protection Act?		X

<b>Child Care Centres - Ministry of Education</b>	YES	NO
Is a daycare proposed in any part of the building?		X

<b>Seniors Centres - Ministry of Children, Community and Social Services</b>	YES	NO
Is this a seniors project where Ontario Government funding is being sought?		X

<b>Long Term Care Centres – Ministry of Health &amp; Long Term Care</b>	YES	NO
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Construction, alteration or conversion of building used for a nursing home?		X
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Education Act - Ministry of Education	YES	NO
Is the project being carried out on the property of an educational facility?		X
If so, is any or all building on the property being fully or partially demolished?		X

DECLARATION – I have considered the list of applicable laws in the Ontario Building Code as described above, and do hereby declare that:

	None of these applicable law approvals apply to this project
X	Applicable laws check 'yes' apply to this project, and approval documents are submitted with this application.
	Applicable laws checked 'yes' apply to this project; however, all approval documents have not yet been obtained

The information provided on this form is true to the best of my knowledge. I have authority to act on behalf of the owner, corporation, or partnership with respect to this application (if applicable).

Name:

WILLIAM REED

Signature:

*W. Reed*

Date:

2025-12-03

Approvals from other agencies are required in many instances before a building permit can be processed and issued. These approvals are **NOT** administered by the Building Department. The fastest way to obtain a building permit is to ensure that all other required approvals are completed prior to permit application. The Building Department is required by law to prioritize applications that are fully complete in terms of applicable law approvals and document submissions. Building permit documents must be consistent with applicable law approvals. If you answer yes to any of the following question please reach out to these agencies for approvals.

#### Zoning and Planning – Community Services Division – Norfolk County

**Zoning** 519-426-5870 ext. 6064 or [zoning@norfolkcounty.ca](mailto:zoning@norfolkcounty.ca)

**Planning** 519-426-5870 ext. 1842 or [planning@norfolkcounty.ca](mailto:planning@norfolkcounty.ca)

#### Planning Act, s.34, 34(5), 45, and Part VI

Zoning By-laws restrict such things as land use, lot size, building size, and setbacks. If your project does not comply with any part of the Zoning By-law, a minor variance or rezoning must be obtained before any building permit can be issued. Zoning By-laws also restrict the issuance of permits until any associated land division, subdivision, or municipal servicing is complete. **Planning Act, s.41**

Site Plan Approval applies to commercial, industrial, institutional, multi-residential and intensive livestock site plans. The site plan agreement must be registered before site plans will be approved.

#### Conservation Authority Permits

**Grand River Conservation Authority (GRCA)** 1-866-900-4722 or [grca@grandriver.ca](mailto:grca@grandriver.ca) **Long Point Regional Conservation Authority (LPRCA)** 1-888-231-5408 or [conservation@lprca.on.ca](mailto:conservation@lprca.on.ca)

## Community Development Division- Building Department

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**Conservation Authorities Act s. 28 (1)(c), regulation 166/06**

Development within certain conservation regulated areas requires a construction and fill permit from the conservation authority before any building permit can be issued. GRCA or LPRCA will confirm if your property falls within their jurisdiction.

**Highway Corridor Building & Land Use Permits**

**Ministry of Transportation (MTO)** 1-800-265-6072 or [www.mto.gov.on.ca/english/highway-bridges/highway-corridor-management/index.shtml](http://www.mto.gov.on.ca/english/highway-bridges/highway-corridor-management/index.shtml)

**Public Transportation and Highway Improvement Act, s.34, 38**

Ministry authorization is required for construction of all buildings within certain distances of a highway or intersection. The requirement for Ministry authorization extends to 800m from a highway where development will generate major traffic, such as a shopping centre.

**Environmental Approvals**

**Ministry of the Environment, Conservation and Parks (MECP)** 1-800-461-6290 or [www.ontario.ca](http://www.ontario.ca)

**Environmental Protection Act s. 46, 47.3, 168 and the Environmental Assessment Act s 5.**

Ministry of Environment approvals are required where a property of industrial or commercial use is changed to more sensitive residential or parkland use, for major government, industrial and commercial projects where defined by regulation, properties formerly used for landfill or waste disposal, or renewable energy projects.

**Electrical Conductor Clearances**

**Electrical Safety Authority** 1-877-372-7233 or [www.esasafe.com](http://www.esasafe.com)

Subsection 3.1.19. of the Ontario Building Code prohibits buildings being located beneath or within a certain minimum distances of overhead electrical conductor wires, other than the power feed to the building.

**Source Water Protection – Environmental and Infrastructure Services – Norfolk County**

**Environmental Services** – Stephanie Davis- Manager, Water & Wastewater Compliance- 519-426-5870 ext. 8037 or [Stephanie.Davis@norfolkcounty.ca](mailto:Stephanie.Davis@norfolkcounty.ca)

**Cambium Inc.** Racheal Doyle – [sourcewaterprotection@cambium-inc.com](mailto:sourcewaterprotection@cambium-inc.com)

**Clean Water Act s. 59**

Special land use restrictions may apply if a water source protection plan is in effect in the area where the building is located. Uses affected by these restrictions require the approval of the designated Risk Management Official

**Agriculture and Farms**

**Ministry of Agriculture Food and Rural Affairs** 1-877-424-1300 or [www.omafra.gov.on.ca](http://www.omafra.gov.on.ca)

**Community Development Division- Building Department**

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**Nutrient Management Act 2002 s.11 reg 267/03, Milk Act s.14**

Buildings or structures that house animals or store manure may trigger a requirement for a nutrient management strategy approved by the Ministry. The Ministry must determine that a milk processing plant is necessary and authorize it before a building permit can be issued.

**Child Care Centres**

**Ministry of Education** (905) 895-9192 or [www.ontario.ca](http://www.ontario.ca)

**Child Care and Early Years Act, s. 14 reg 137/15**

Ministry plan approval is required if a new building is proposed to be used as a day nursery, an existing building is proposed to be used, altered or renovated for a day nursery, or if an existing day nursery is altered or renovated.

**Seniors Centres**

**Ministry of Children, Community and Social Services** 1-888-789-4199 or [www.mcscs.gov.on.ca](http://www.mcscs.gov.on.ca)

**Elderly Persons Centres Act s. 6 of reg 314**

Reports must be submitted to the Minister and approval obtained for all seniors centres to which government funding applies.

**Long Term Care Homes**

**Ministry of Health & Long Term Care** 1-800-387-5559 or [www.health.gov.on.ca](http://www.health.gov.on.ca)

**Nursing Home Act s. 4, 5 reg 832 Homes for the Aged & Rest Homes Act s. 14**

The Long Term Health Care Act is designed to help ensure that residents of long-term care homes receive safe, consistent, high-quality, resident-centred care.

**Education**

**Ministry of Education** (905) 895-9192 or [www.ontario.ca](http://www.ontario.ca)

**Education Act s. 194**

The board shall obtain approval from the Minister for the demolition of any buildings located on a school site regulated by the Education Act. App

**Crown Lands Works Permits**

**Ministry of Natural Resources** [www.ontario.ca/page/crown-land-work-permits](http://www.ontario.ca/page/crown-land-work-permits)

**Ontario Regulation 239/13 s. 2, s. 5**

Ministry approval is required to construct a building on crown lands or to construct or place a structure along shorelines.