

**CANADA COMPANY DRAIN NORTH**

THE MUNICIPALITY OF NORTH MIDDLESEX  
TENDER for CONTRACT MD 09-2024



CLOSING DATE: October 23, 2024 @ 11 a.m.

**BID FORM**  
**CANADA COMPANY DRAIN NORTH**

**MUNICIPALITY OF NORTH MIDDLESEX**

**OWNER:** The Municipality of North Middlesex  
**CONTRACT ADMINISTRATOR:** R. Dobbin Engineering Inc.  
**LOCATION:** Lot 1 and 2, Concession, Ausable and Concession 28 in the  
Municipality of North Middlesex.

Bids will be received in sealed envelopes clearly marked **“Canada Company Drain North”** at  
the Municipal office of:

**The Municipality of North Middlesex**  
**229 Parkhill Main Street**  
**Parkhill, ON**  
**NOM 2K0**

Your bid must be received at the above specified location no later than:

**Wednesday October 23, 2024**

**11:00 a.m. LOCAL TIME**

Bid inquiries shall be submitted to Josh Warner, R. Dobbin Engineering Inc.:

Josh Warner, P. Eng.  
R. Dobbin Engineering Inc.  
4218 Oil Heritage Road  
Petrolia, Ontario  
(519)-882-0032 ext. 204

**Tender enquiries shall be accepted until October 18, 2024**

**SCHEDULE OF TENDER PRICES**

**TENDER PRICE**

A. **Offer by:** \_\_\_\_\_  
**Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
\_\_\_\_\_  
**HST #:** \_\_\_\_\_  
**Date:** \_\_\_\_\_  
**To:** The Municipality of North Middlesex \_\_\_\_\_

We, the undersigned, having examined the site of the Work, having carefully investigated the conditions pertaining to the Work and having secured all the information necessary to enable us to submit a bid, and having inspected all the Contract Documents and Drawings, hereby agree to enter into a Contract and perform all the Work in accordance with the Contract Documents and Drawings to the satisfaction of the Contract Administrator for the total bid price **INCLUDING HST** of:

\_\_\_\_\_  
\_\_\_\_\_ ( \$ \_\_\_\_\_ )

**1. ADDENDA**

We agree that we have received addenda \_\_\_ to \_\_\_ inclusive, and the bid price includes the provisions set out in such addenda.

**TENDER TABLE**

	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Pre-Construction Meeting	1	LS		
Strip and Level Topsoil	1189	m		
Open Channel Excavation and Levelling (Station 0+000 to 1+189)	1189	m		
Open Channel Excavation and Levelling (Station 1+189 to 1+850)	661	m		
Rip Rap as Required	200	tonne		
Locate and Connect Existing Field Tile	4	ea		
Straw Bale and Silt Fence	1	LS		
Restoration / Hydroseeding and Straw Matting	1	LS		
Temporary Rock Flow Check Dam complete with Sediment Trap	25	tonne		
Sediment Traps (Station 0+330 and 1+189)	2	each		
Replacement of Gravel/Cobble Substrate where removed	40	m		
Miscellaneous/Contingency				7,700

Sub Total

Tax (13%)

Total Tender Price

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OFFERED ON BEHALF  
OF THE CONTRACTOR

\_\_\_\_\_  
COMPANY NAME

\_\_\_\_\_  
SIGNATURE

CONTRACTOR'S SEAL  
(See Note Below)

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
WITNESS (See Note Below)

\_\_\_\_\_  
COMPANY STREET ADDRESS

\_\_\_\_\_  
CITY, PROVINCE, POSTAL CODE

\_\_\_\_\_  
DATE OF OFFER

The Contractor agrees to complete substantially the work included in the contract barring delays regarding strikes and acts of God beyond our control, within \_\_\_\_\_ working days from the time of starting construction.

**Note:** Contractor to have the necessary signatures to bind the company. If a Contractor's seal is used there is no need for the offer to be witnessed. If no Contractor's seal is used, then a witness signature is needed.

## CONDITIONS OF BID

1. The lowest or any bid will not necessarily be accepted by the Owner.
2. Contract Drawings 1 to 9 and the attached Specifications of Work for the Canada Company Drain North are made part of this Contract Bid. The Contractor is to complete construction in accordance with the Drawings and the conditions indicated within this Bid Document.
3. A Form of Agreement is required to be signed and returned within 10 days of the award of contract.
4. TENDER DEPOSIT

The tender shall be accompanied by a tender deposit in the form of a certified cheque or a Bid Bond payable to the Owner (Municipality of North Middlesex) in the amount of 10% of the value of the tender price.

The Tenderers shall keep their tenders open for acceptance for 45 days after the closing date. Withdrawal during this period will result in forfeiture or enforcement of the tender deposit or Bid Bond.

Upon being notified that the tender has been accepted, the Contractor shall execute copies of the Agreement, supply bonds and insurance documents as specified, and start Work as specified.

Failure to execute the copies of the Agreement, or to supply bonds and insurance documents, within one week of the date of acceptance of the tender, will automatically mean the forfeiture or enforcement of the tender deposit. Tender deposits of unsuccessful Tenderers will be returned not later than two weeks following Tender close. The tender deposit of the successful Tenderer will be returned once the Contract Security is in place.

5. CONTRACT SECURITY

The bid deposit of the successful Tender shall be retained by the Municipality of North Middlesex until the contract is completed and a completion certificate is issued by the Engineer. The successful Contractor shall have the option of furnishing the Municipality of North Middlesex with a Performance Bond in the amount of one hundred percent (100%) of the total tender price (not including HST). The Performance Bond shall ensure completion of the work and maintenance of the work for a period of one year after the date of the completion certificate.

## 6. SCHEDULE

- a) The Contract is to be completed on or before – **May 15, 2025. Construction shall not commence until December 1, 2024. All in water work must be completed by March 15, 2025)**
- b) If the time limit above is not sufficient to permit completion by the Contractor working a normal number of hours, the Contractor shall make changes to permit the Work to be completed by the above date. Additional costs incurred shall be deemed to be included in the price bid for the Works.

## 7. EXAMINATION

- a) Upon receipt of Documents, verify that they are complete; notify the Contract Administrator should the Documents be incomplete.
- b) Each firm submitting a Tender shall carefully examine the Documents for discrepancies or omissions, and immediately notify the Consultant upon finding discrepancies or omissions, at least four (4) days prior to the date specified for closing.
- c) All firms submitting Tenders will acknowledge receipt of Addenda in the space provided in the Tender Form. If no Addenda are received, insert the word "None" in the space provided.

## 8. EXAMINATION OF SITE

- a) The Tenderers shall visit the site of the Work before submitting their Tender and shall by personal examination satisfy themselves as to the local conditions that may be encountered during construction of the Work. They shall make their own estimate of the facilities and difficulties that may be encountered and the nature of the subsurface materials and conditions.
- b) The Tenderer shall not claim at any time after submission of their Tender that there was any misunderstanding of the terms and conditions of the Contract relating to site conditions.

## 9. INSURANCE

- a) The successful Bidder will file with the Municipality within 10 calendar days of award of Contract, General Liability, Automobile and Property Damage Insurance coverage required by the Ontario Provincial Standard General Conditions.

## 10. WORKER'S SAFETY INSURANCE BOARD

- a) The successful Bidder will file with the Municipality within 10 calendar days of award of Contract, a current Certificate of good standing from the Worker's Safety Insurance Board (WSIB).

## 11. TIME CONSTRAINTS

- a) All Work shall be completed within the times outlined in The Municipality of North Middlesex noise by-law regulations.
- b) No weekend Work is permitted without prior approval by The Municipality of North Middlesex.

## 12. GUARANTEE PERIOD

- a) The Contractor shall guarantee the Material and Work shall for a period of twelve (12) months from the acceptance date remain in such condition as will meet the Contract Administrator's approval, and that they will make good in a permanent manner, satisfactory to the Contract Administrator, any imperfections due to materials or workmanship used in the construction and any damage caused by such imperfections. The decision of the Contract Administrator shall be final as to the nature and cause of such imperfections and the necessity for remedying them.

Should the Contractor fail to comply with the directions of the Contract Administrator, the Contract Administrator may, after giving the Contractor forty-eight (48) hours written notice, perform the necessary Work, and the cost may be deducted, or collected by the Owner as provided in the Contract.

- b) Notwithstanding the provision of the subsection (a) of this clause, the Contract Administrator may, in cases of danger or public safety, make such immediate arrangements for repairs as he/she sees fit, and the Contract Administrator will inform the Contractor of such action. The cost of such emergency Work shall be borne by the Contractor.
- c) If the Contract Administrator notifies the Contractor, in writing, of imperfections prior to the termination of the guarantee period, the Contractor shall make good the imperfections as required in subsection (a) above, notwithstanding that such Work of making good may commence after or extend beyond the end of the guarantee period.



- d) To cover the rectification costs during the guarantee period, the Municipality shall retain 3% of the value of Work done. This holdback will be retained for a period of twelve (12) months from the acceptance date.

### 13. PAYMENT

- a) Monthly draws for Work completed will be paid as needed. Payment will be subject to the 3% maintenance holdback and a 10% statutory holdback in accordance with the Construction Act. Payment at the unit priced bid for each item shall be full compensation for all labour, equipment, and materials required to do the Work.

### 14. EXTRA WORK

- a) Extra Work shall be undertaken as described in subsection GC3.10.02 of the General Conditions.
- b) If applicable tender items are provided in other parts of the Contract, extra Work shall be performed using the appropriate unit prices from these parts.
- c) Extra Work shall be paid under the Contingency Allowance.

### 15. QUANTITY OVERUNS AND UNDERUNS

- a) Compensation for quantity over runs and under runs shall be as described in GC 8.01.02 of the General Conditions.

### 16. DAMAGE

- a) Any damage to existing infrastructure and neighboring properties shall be repaired by the Contractor to the satisfaction of the Contract Administrator and be at the Contractors expense.

### 17. Liquidated Damages

Where the working days exceeds those identified in the contract the Contractor shall be

responsible for the cost of the engineering inspection for the additional working days.

#### 18. UTILITIES

- a) The Contractor shall secure locates at no extra cost to the Contract prior to any construction activities.

#### 19. CONSTRUCTION LAYOUT

- a) The Contractor will be responsible for the layout of all lines and grades from the plans at no extra cost to the Contract. Control information will be provided to the successful Bidder by R. Dobbin Engineering Inc. in a digital format.
- b) All discrepancies are to be reported to the Contract Administrator prior to proceeding with the Work. The Contract Administrator will review the layout in the field prior to construction.

#### 20. INCLEMENT WEATHER

- a) There will be no compensation for inclement weather other than consideration of an extension for lost time at the end of the Contract that will be at the discretion of the Contract Administrator.

#### 21. SUBSTANTIAL PERFORMANCE

- a) The project will be considered substantially performed when all parts of the Contract are completed in accordance with the General Conditions of Contract – GC 1.05.

#### 22. ONTARIO PROVINCIAL STANDARDS

- a) GENERAL CONDITIONS OF CONTRACT (OPSS.MUNI 100), November 2006 apply to this Contract.

- b) The Ontario Provincial Standard Specifications (OPSS) and Drawings (OPSD) apply to this contract. All required OPS Specifications can be downloaded at:

<http://www.ragsb.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage>

**THE SUPPLEMENTAL SPECIFICATIONS APPLICABLE TO THIS PROJECT ARE AS FOLLOWS:**

**Operational Constraints**

The following operational constraints form part of the Contract. No additional costs will be made for completing Work within the operational constraints. Payment for Work associated with the operational constraints shall be included in the applicable unit price item.

1. The Contractor is responsible to complete the Contract within the schedule specified.
2. Safe and reasonable access must be provided to local vehicle traffic and to pedestrian traffic. The Contractor shall ensure traffic regulatory signs and 911 signs are in place and secure at all times.
3. The Contractor is responsible for securing locates and providing coordination with all utilities and agencies. In addition, the Contractor shall protect from damage all buried and aerial utility lines during construction.
4. If required, the Contractor is responsible for obtaining a Permit to Take Water (PTTW) for dewatering purposes.
5. Geotechnical investigation has not been undertaken within the project limits.
6. All conditions from the Department of Fisheries and Oceans (DFO) and Ausable Bayfield Conservation's (ABCA) approvals shall be adhered to.

**Estimate of Cost**

	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Pre-Construction Meeting	1	LS	300	300
Strip and Level Topsoil	1189	m	15	17,835
Open Channel Excavation and Levelling (Station 0+000 to 1+189)	1189	m	50	59,450
Open Channel Excavation and Levelling (Station 1+189 to 1+850)	661	m	12	7,932
Rip Rap as Required	200	tonne	150	30,000
Locate and Connect Existing Field Tile	4	ea	150	600
Straw Bale and Silt Fence	1	LS	1,000	1,000
Restoration / Hydroseeding and Straw Matting	1	LS	30,000	30,000
Temporary Rock Flow Check Dam complete with Sediment Trap	25	tonne	200	5,000
Sediment Traps (Station 0+330 and 1+189)	2	each	300	600
Replacement of Gravel/Cobble Substrate where removed	40	m	10	400
Miscellaneous/Contingency				<u>7,700</u>
			Sub Total	\$160,817
			Allowances	\$45,260
			Engineering	\$29,330
			Future Culvert Design	\$1,400
			Estimate for Tendering, Contract Administration and Inspection	\$8,500
			ABCA Fee	\$450
			<b>Sub Total</b>	<b><u>\$245,757</u></b>
			Non-Recoverable HST (1.76%)	\$4,325
			<b>Total Estimate</b>	<b><u>\$250,082</u></b>

Canada Company Drain North  
Municipality of North Middlesex  
September 13, 2024

## **SPECIFICATION OF WORK**

### **1. Location**

The work in this specification is located in Lot 1 and 2, Ausable and Concession 28 in The Municipality of North Middlesex.

### **2. Scope of Work**

The work included in this specification includes, but is not limited to, the following:

- Proposed Works
  - Open Channel Improvements
- Future Works
  - Open Channel Maintenance
  - Culvert Replacement or Repairs

### **3. General**

Each tenderer must inspect the site prior to submitting their tender and satisfy themselves by personal examination as to the local conditions that may be encountered during this project. The Contractor shall make allowance in their tender for any difficulties which they may encounter. Quantities or any information supplied by the Engineer is not guaranteed and is for reference only.

All work and materials shall be to the satisfaction of the Drainage Superintendent who may vary these specifications as to minor details but in no way decrease the proposed capacity of the drain.

The Contractor shall be responsible for the notification of all utilities prior to the start of construction.

Measurement for Payment Clauses have not been included in these specifications and will be part of the Construction document. If the Construction document has not identified Measurement for Payment Clauses, the Contractor must notify the Municipality of North Middlesex and request clarification 2 days prior to pricing the project

#### **4. Plans and Specifications**

This Specification of Work shall take precedence over all plans and general conditions pertaining to the Contract. The Contractor shall provide all labour, equipment, and supervision necessary to complete the work as shown in the Plans and described in these specifications. Any work not described in these specifications shall be completed according to the Ontario Provincial Standard Specifications and Standard Drawings.

#### **5. Health and Safety**

The Contractor at all times shall be responsible for health and safety on the worksite including ensuring that all employees wear suitable personal protective equipment including safety boots and hard hats.

When applicable the Contractor shall be responsible for traffic control as per the Ontario Traffic Manual Book 7 – Temporary Conditions (latest revision).

The Contractor shall be responsible to ensure that all procedures are followed under the Occupational Health and Safety Act to ensure that work sites are safe and that accidents are prevented. In the event of a serious or recurring problem, a notice of non-compliance will be issued. The Contractor will be responsible for reacting immediately to any deficiency and correcting any potential health and safety risk. Continuous disregard for any requirement of the Occupational Health and Safety Act could be cause for the issuance of a stop work order or even termination of the Contract.

The Contractor shall also ensure that only competent workers are employed onsite and that appropriate training and certification is supplied to all employees.

#### **6. Utilities**

The Contractor is responsible for organizing locates and exposing all the utilities along the length of the drainage works. If any utilities interfere with the proposed drainage works in a manner not shown on the accompanying Estimate of Cost or profile the Contractor shall notify the Drainage Superintendent and Engineer.

The Contractor is responsible for coordinating the replacement of additional utilities with the utility company if they interfere with the proposed drain. All costs for the utility to replace their services will be outside of this report and shall be borne by the utility as per Section 26 of the Drainage Act.

All additional costs to work around and organize replacement of the utilities not included in the estimate shall be tracked separately and the cost plus a portion of the engineering (25% of the cost) shall be borne by that utility. at the end of this report.

## **7. Traffic Control**

Access and driveways to private properties shall not be obstructed longer than the minimum time necessary for the work and shall be reinstated as soon as possible all to the satisfaction of the Engineer. The contractor shall schedule any obstruction of existing driveways with the owners at least two full working days in advance. The Traffic Plan must be approved by the Municipality prior to the commencement of any road closures.

- a) The Contractor shall supply, erect and maintain all detour signs and special signs necessary for detours to divert traffic from the area under construction as directed by the Road Superintendent or Engineer. All this work shall be at the Contractor's expense.
- b) The Contractor shall be responsible for supplying, erecting and maintaining all signs, supports, barricades, flashers, cones, etc. in the construction area and at the boundaries of the work as part of the above detours, all to the satisfaction of the Engineer or Drainage Superintendent. All this work shall be done by the Contractor at their own expense.
- c) The Contractor shall not be allowed to proceed with construction activities unless proper signage and flagmen are present. Flagging procedures, signage and detours shall conform to the recommendations of Book 7, Temporary Conditions, Ontario Traffic Manual, issued by the Ministry of Transportation. Conformance shall be enforced by the Ministry of Labour Inspector.

## **8. Pre-Construction Meeting**

There is a requirement for a pre-construction meeting to be held prior to any construction taking place. The meeting shall be scheduled by the Contractor. The Landowners, Engineer, and the Municipality of North-Middlesex shall be notified of the pre-construction meeting at least 48 hours prior.

## **9. Access and Working Area**

Access to the work site for the proposed and future work on the Canada Company Drain North shall be from Hagmier Road, the unopened road allowance at Station 1+850 and along the length of the drainage works. All access shall be restricted to a width of 6 metres.

The working area at each culvert shall extend 10 metres from the bank on both sides and for 10 metres along the channel on either side of the culvert.

The working area for channel improvements and maintenance shall be restricted to a width of 25m from the side the excavation is taking place, except from Station 1+490 to 1+850 where it shall be restricted to a width of 10m. For construction, the channel shall be excavated from the south side from Station 0+000 to 0+693 and from the north side from Station 0+693 to 1+850. If, at the discretion of the Drainage Superintendent or Engineer, there is erosion on the channel opposite the working area access may be gained along the channel and nearest culvert to repair the bank. For future maintenance the channel may be excavated from either side of the channel at the discretion of the Drainage Superintendent.

#### **10. Benchmarks**

The benchmarks are based on geodetic elevations. Elevations are available at the locations shown on the Plan and Profile drawings. Where these elevations are on existing structures to be replaced, they shall be transferred by the Contractor prior to the removal.

#### **11. Removals (Future)**

The culverts, catch basins, unsuitable or not required excavated material, etc. shall be removed in their entirety and shall be disposed offsite at the expense of the Contractor.

#### **12. Brushing and Tree Removal (Future)**

All brush, trees, vegetation, stumps etc. shall be removed within the channel cross section and in order to facilitate the excavation of the open channel and culvert construction, as determined by the Drainage Superintendent or Engineer.

A mechanical grinder attached to an excavator shall be used for the removal of brush and trees. Any brush and trees too large to grind shall be close cut. The Contractor shall stockpile the trees and brush in a single pile on the property in which they were removed or dispose of the trees and brush offsite. The Contractor is responsible for the burning of the trees and brush. The Contractor is responsible for obtaining all necessary permits for any disposal sites. Burning of the trees and brush is subject to local bylaws and guidelines of the Ministry of the Environment Conservation and Parks.

Certain trees may be left in place at the direction of the Drainage Superintendent.

#### **13. Strip and Place Topsoil**

The topsoil adjacent the channel from Station 0+000 to 1+189 shall be stripped for a width of 15m on the side the excavation is taking place. The topsoil shall be placed at the edge of the working allowance until the levelling and creation of the berms has taken place. Once the excavated material has been levelled the Contractor shall level the topsoil over the excavated material and left in a condition suitable to cultivation. This item is to



be completed as part of the improvement project and shall be done under maintenance at the discretion of the Drainage Superintendent.

#### **14. Excavation and Levelling of Open Channel**

The open channel shall be excavated and maintained to the depths and grades as per the profile and drawings as contained in this Engineers Report. The channel shall be excavated to the proper depth using a laser or similar approved device with a labourer onsite to ensure correctness of grade and to confirm location of tile ends.

The bank on the side the excavation is taking place shall be resloped to a minimum of 1.75:1 from Station 0+000 to 1+189. From Station 0+000 to 1+189 the levelling shall include the creation of a berm. Generally, at the location of the excavation, the excavated material shall be utilized to create a berm on the side it is being excavated from. The berm shall have a 1.75:1 slope on the channel side, a 1m top width and a minimum of a 5:1 slope to the field. The 5:1 slope and 1m top shall be left in a condition suitable for cultivation. The berm shall be completed as part of the improvement project and shall be done under maintenance at the discretion of the Drainage Superintendent. At a minimum, the new top of bank elevation shall match the top of bank on the opposite bank and be at an elevation no lower than 179.73m. This will require excess material from some locations to be utilized to build up the banks in others. Approximate sections have been included as part of this report. These are estimates, the berms shall be created based on the actual excavated quantities and at the direction of the Drainage Superintendent and Engineer. If additional material is required, the material upstream of Station 1+189 shall be used to build the berms. This shall be completed at the discretion of the Drainage Superintendent or Engineer. If additional material is still required the banks shall be sloped at a flatter slope. This will be an extra to the contract.

All other excavated material shall be cast at least 1.5 metres clear of the bank. Excavated material shall not be placed in low runs or swales outletting surface water to the channel. The excavated material shall be levelled to a maximum depth of 150mm and left in a condition suitable for cultivation. This item shall include the removal of any rocks larger than 10cm in diameter and any debris/wood that could damage or plug farm equipment. Leveling shall occur when the material is dry enough to do so as determined by the Drainage Superintendent or Engineer. All high spots above grade shall be removed. The sediment shall be removed leaving a rounded bottom. All material unfit for placing on farmlands shall be disposed of offsite by the Contractor.

For construction under this the report any gravel/cobble substrate shall be re-installed with the existing materials.

This item shall include cleaning out of the Hagmier Road culvert. This material shall be dealt with in the same manner as the rest of the excavated material in the vicinity.

## **15. Temporary Rock Flow Check Dams and Sediment Traps**

The temporary rock flow check dam shall have rip rap in accordance with the rip rap specification. Temporary sediment traps and rock flow check dams shall be installed at the approximate locations as shown on the profile. The sediment traps and rock flow check dams are temporary erosion protection measures and shall only be included as a part of construction under this project. The rock flow check dam shall be installed 1m downstream of the sediment trap. The rock flow check dam and sediment traps shall be installed before any work upstream of their location takes place. The rock flow check dam shall be removed upon completion of construction and the rip rap shall be utilized for erosion protection in the vicinity of check dam.

The sediment traps shall be as per OPSD 219.220 and shall be 0.30m deep and 5m long. The rock flow check dams shall be as per OPSD 219.211 and shall utilize rip rap and geotextile as detailed in the rip rap specification.

## **16. Installation of Culverts (Future)**

The Contractor is required to notify the Landowner forty-eight (48) hours prior to the removal of a culvert.

The Contractor shall supply, install, and backfill aluminized corrugated steel pipe (CSP) with a minimum wall thickness of 2.8mm. Corrugated Steel Pipe Arches and culverts under roadways shall have a minimum wall thickness of 3.5mm. All corrugation profiles shall be of helical lock seam manufacture using 68 x 13mm corrugations for 1600mm dia. pipe and smaller and 125 x 25mm corrugations for 1800mm dia. pipe and larger. Pipe with 125 x 25mm corrugations shall be used if 68 x 13mm corrugations are not available.

The culverts designated to be replaced in the future under this report shall be examined after any cleanout of the open channel as to its condition. If it is found to be in disrepair (i.e. there are holes corroded in the bottom or sides) it shall be replaced as per these specifications.

The culverts shall be installed generally in the same location or as approved by the Drainage Superintendent or Engineer. The culverts shall be installed with the invert 10% (minimum 150mm) below the original channel bottom elevation unless otherwise shown in order to achieve the minimum cover. It is the Contractors responsibility to ensure that the minimum cover is achieved when backfilling the culverts. The minimum cover for CSP under Highway Loading shall be 1/6 of the span, and shall be no less than 300mm.

All culverts shall have concrete block end walls.

Any tile outlets extended as a result of a culvert shall be extended at the landowner's expense. The pipes that shall be extended upstream or downstream of the proposed culvert shall be done with non-perforated HDPE agricultural tubing with a manufactured coupling, elbow and rodent grate.

**Access Culvert:**

The bottom of the excavation shall be excavated to a minimum of 100mm below the proposed invert. The pipe shall be bedded with ¾" clear stone. When the pipe has been installed to the proper grade and depth, the excavation shall be backfilled with ¾" clear stone and wrapped in filter fabric from the bottom of the excavation to the spring line of the pipe. Care shall be taken to ensure that the backfill on either side of the culvert does not differ by more than 300mm so that the pipe is not displaced. The access culverts shall be backfilled from the spring line to within 150mm of finished grade with Granular "B" Type II. Where no vehicular traffic is proposed to cross the culvert, the culvert may be backfilled with select native material. The top 150mm shall be backfilled with compacted 100% crushed granular "A" material to finished grade. In sections where no vehicular traffic is proposed to cross the culvert, the top 150mm shall be topsoil and seeded as per the restoration specification. If asphalt is proposed, the asphalt shall be HL4 and shall match the existing thickness. In these cases, the compacted granular "A" shall occupy 150mm below the proposed asphalt.

**Road Culvert:**

The concrete box culvert shall be precast, shall be installed as per OPSS 422 and the contractor shall submit shop drawings to the engineer prior to ordering. In the event of a conflict between these specifications and those of the structural designer, the more stringent shall apply. The joints between precast sections shall have butyl tape and shall be wrapped with a minimum 600mm width of geotextile to prevent the migration of soil between the joints. The future box culvert shall match the end area of the existing box culvert.

The bottom of the excavation shall be excavated to a minimum of 200mm below the proposed culvert bottom. The pipe shall be bedded with ¾" clear stone and the bedding shall be wrapped in filter fabric. The culvert shall be backfilled from the spring line to within 200mm of finished grade with granular B Type II. Clay material may be utilized, at the discretion of the Engineer, to the outside of the culvert with granular material in the center. The top 200mm shall be OPS Granular "M", produced from 100% crushed dolomite, and shall be mechanically compacted to 100% modified standard proctor density.

Concrete block end walls shall consist of concrete blocks with dimensions of approx. 600mm x 600mm x 1200mm, 600mm x 600mm x 2400mm or 300mm x 600mm x 1200mm as required. 600mm x 600mm x 2400mm concrete blocks will be paid at twice the unit price established per block, all others will be at a unit of 1. The top of the culvert

shall govern block elevation. The correct block shall be set with the top of the block equal to the top of the culvert. 2400mm wide concrete blocks shall be used as the top block on arch and larger round pipes in order to span between the culvert top and the supporting block. The blocks shall be set at each end of the culvert so that each row of blocks will be offset approx. 100mm from the row below. The bottom row shall consist of one block placed parallel to the culvert. The blocks shall be imbedded a minimum of 300mm into each bank and shall extend into the drain bottom to match the pipe invert or below. Erosion protection shall be placed on the banks next to the end walls. The erosion protection shall consist of 150mm x 300mm quarry stone over filter fabric (Mirafi P150 or approved equal). It shall extend 500mm upstream or downstream and from top of bank to top of bank at each end wall.

The blocks shall be placed over a layer of filter fabric (Mirafi P150 or approved equal). The culvert shall be backfilled in conjunction with the placement of the blocks. The gaps between the culvert and the blocks shall be filled with concrete cinder blocks/bricks and mortar to give the end wall a finished appearance.

### **17. Rip Rap**

Rip rap shall be made up of 100mm to 900mm quarry stone (Shot Rock) or approved equal. The area to receive the rip rap shall first be graded to ensure embedment of the stone to match the finished grade. After grading, a layer of filter fabric (Mirafi P150 or approved equal) is to be placed with any joints overlapped a minimum of 600mm. Rip rap shall then be placed with the smaller pieces placed in the gaps and voids to give it a uniform appearance.

Rip rap shall be placed at the discretion of the Engineer or Drainage Superintendent at the time of construction. For the construction project rip rap shall be placed on the south bank at Station 1+189.

### **18. Seeding/Restoration**

The side slopes of the channel and all areas disturbed by construction, that will not be cultivated, shall be restored with hydroseed and double straw matting. The double straw matting shall be installed according to the manufacturer's specifications.

Seed mixture, fertilizer and application rates are as follows:

- Canada Wild Rye (*Elymus Canadensis*), Virginia Wild Rye (*Elymus virginicus*), or Indian grass (*Sorghastrum nutans*)
- Fertilizer (300 kg/ha.) consisting of 8-32-16.
- Hydraulic mulch (2,999 kg/ha.) type "B" and water (52,700 litres/ha.) in accordance with OPSS 572 (hydroseed).

The above seed mixture shall apply unless otherwise approved by the Drainage Superintendent or Engineer.

### **19. Subsurface Drainage**

All existing subsurface drains encountered during construction shall be reconnected to the open channel and tile drain unless otherwise noted on the drawings or as directed by the Drainage Superintendent.

A suitable length of equivalent sized PE agricultural tubing shall be used to connect the drain to the open channel and tile drain. Manufactured fittings shall connect the PE tile to the existing drain and to the concrete tile. The connections shall be carefully backfilled to ensure there is adequate support under the pipe and large clumps of clay do not displace the tile.

Rip rap shall be installed at all tile connections from the top of bank to the toe of slope and for a width of 0.50m either side of the tile.

### **20. Environmental Considerations**

The Contractor shall take care to adhere to the following considerations.

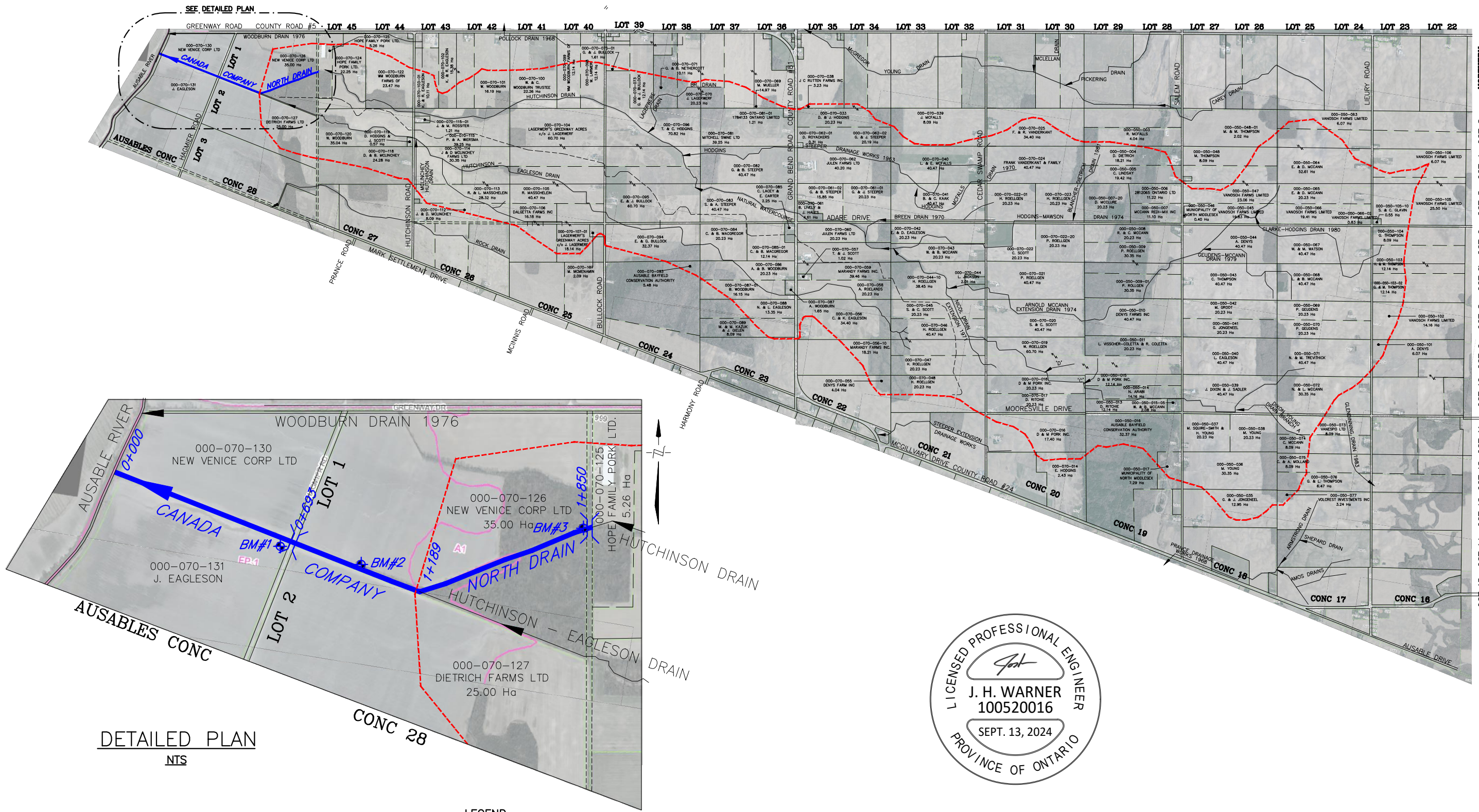
- Operate machinery in a manner that minimizes disturbance to the banks of the watercourse.
- Erosion and sediment control measures must be installed prior to construction to prevent sediment from entering the water body.
- Material shall not be in areas regulated by the Conservation Authority or Ministry of Natural Resources.
- All granular and erosion control materials shall be stockpiled a minimum of 3.0m from the top of the bank or excavation. Material shall not be placed in surface water runs or open inlets that enter the channel.
- All activities, including maintenance procedures, shall be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicle and equipment refuelling and maintenance shall be conducted away from the channel, any surface water runs, or open inlets. All waste materials shall be stockpiled well back from the top of the bank and all surface water runs and open inlets that enter the drain.
- When possible, all construction within the open channel shall be carried out during periods of low flow or in dry conditions.
- The Contractor shall conduct regular inspections and maintain erosion and sediment control measures and structures during the course of construction.
- The Contractor shall repair erosion and sediment control measures and structures if damage occurs.

- The Contractor shall remove non-biodegradable erosion and sediment control materials once site is stabilized.
- Remove all construction materials from site upon project completion.

A light duty silt fence and straw bale check dam shall be installed down-gradient of the work for the duration of construction.

The light duty silt fencing shall be supplied and installed in accordance with OPSS 577 and OPSD 219.110. The light duty silt fencing shall be removed once construction is complete.





SOUTH BOUNDARY  
LOT 3  
LOT 4  
LOT 5  
LOT 6  
LOT 7  
LOT 8  
LOT 9  
LOT 10  
LOT 11  
LOT 12  
LOT 13  
LOT 14  
LOT 15

**DETAILED PLAN**  
NTS

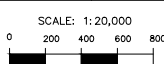
**LEGEND**

- DRAINAGE AREA
- SUB DRAINAGE AREA
- CANADA COMPANY DRAIN NORTH
- MUNICIPAL DRAIN
- CULVERT TO BE REPLACED
- EXISTING CULVERT



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Petrolia Ontario, N0N 1R0  
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B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				



**MUNICIPALITY of NORTH MIDDLESEX**  
CANADA COMPANY DRAIN NORTH  
PLAN

**1**  
**OF 9**

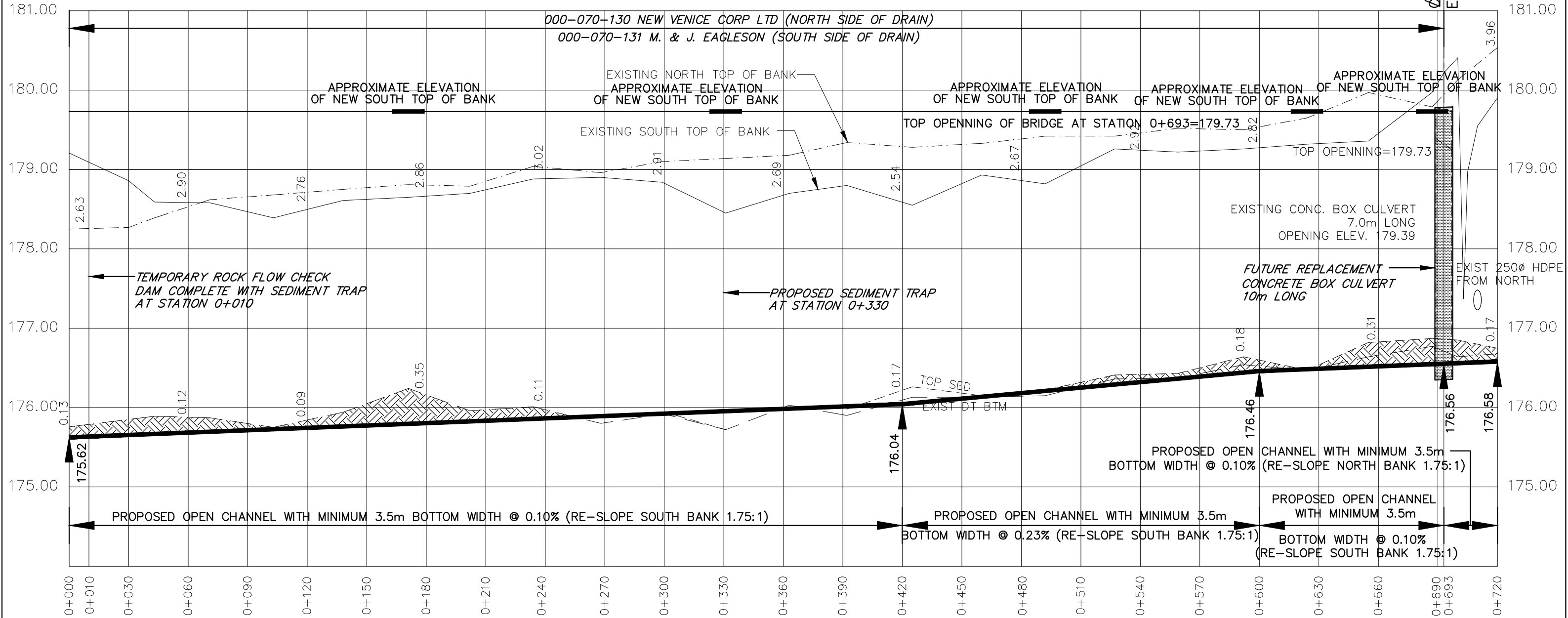
FULL SIZE IS "D" SIZE  
24x36 @ 1:20,000 SCALE

DRAWING NAME: Canada Company Drain North Plan  
PROJECT No. 2023-1505



# GENERAL NOTES

- BENCHMARK No.1 ELEV. 180.54  
TOP OF SOUTHWEST CORNER OF  
CONCRETE BRIDGE LOCATED AT STATION 0+693
- UPPER NUMBERS ARE DEPTH FROM EXISTING  
SOUTH TOP OF BANK TO PROPOSED BOTTOM OF CHANNEL
- LOWER NUMBERS ARE DEPTH FROM EXISTING  
CHANNEL BOTTOM TO PROPOSED GRADE
- GRAVEL/COBBLE SUBSTRATE TO BE RESTORED



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DRAWING NAME:  
Canada Company Drain North Profile 1

PROJECT No.  
2023-1505

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DRAWN	SCALE: 1:2,000			
C. SAUNDERS	0 20 40 60m			

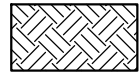
MUNICIPALITY of NORTH MIDDLESEX  
CANADA COMPANY DRAIN NORTH  
PROFILE

2  
OF 9

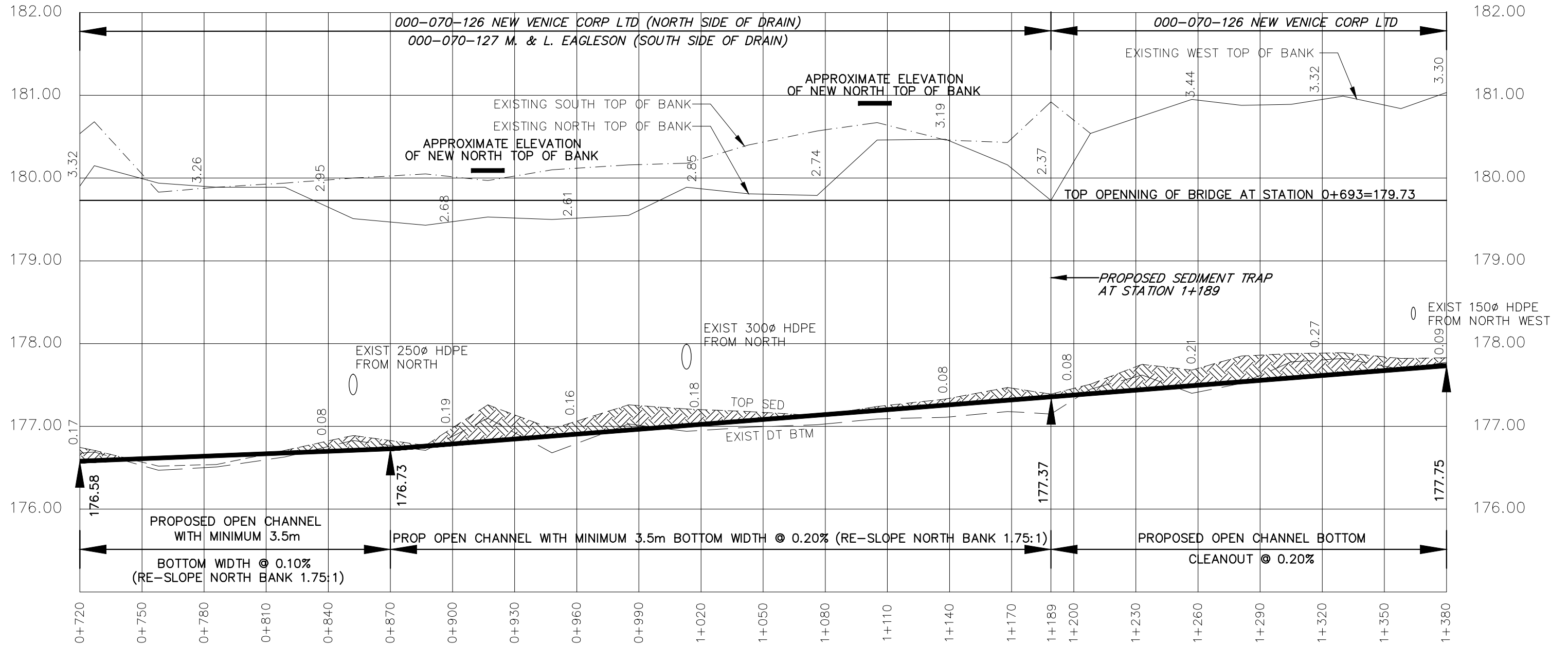


# GENERAL NOTES

- BENCHMARK No.2 ELEV. 177.99  
TOP OF 300Ø HDPE TILE  
FROM NORTH SIDE OF DRAIN  
AT APPROX. STATION 1+014
- UPPER NUMBERS ARE DEPTH FROM EXISTING  
SOUTH TOP OF BANK TO PROPOSED BOTTOM OF CHANNEL
- LOWER NUMBERS ARE DEPTH FROM EXISTING  
CHANNEL BOTTOM TO PROPOSED GRADE
- GRAVEL/COBBLE SUBSTRATE TO BE RESTORED



DRAIN EXCAVATION



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DRAWING NAME:  
Canada Company Drain North Profile 2

PROJECT No.  
2023-1505

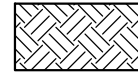
APPROVED J. WARNER	NO.	REVISIONS	DATE	BY
CHECKED B. VAN RUITENBURG	1	FINAL REPORT	SEPT. 13, 2024	CS
DRAWN C. SAUNDERS	SCALE: 1:2,000 0 20 40 60m			

MUNICIPALITY of NORTH MIDDLESEX  
CANADA COMPANY DRAIN NORTH  
PROFILE

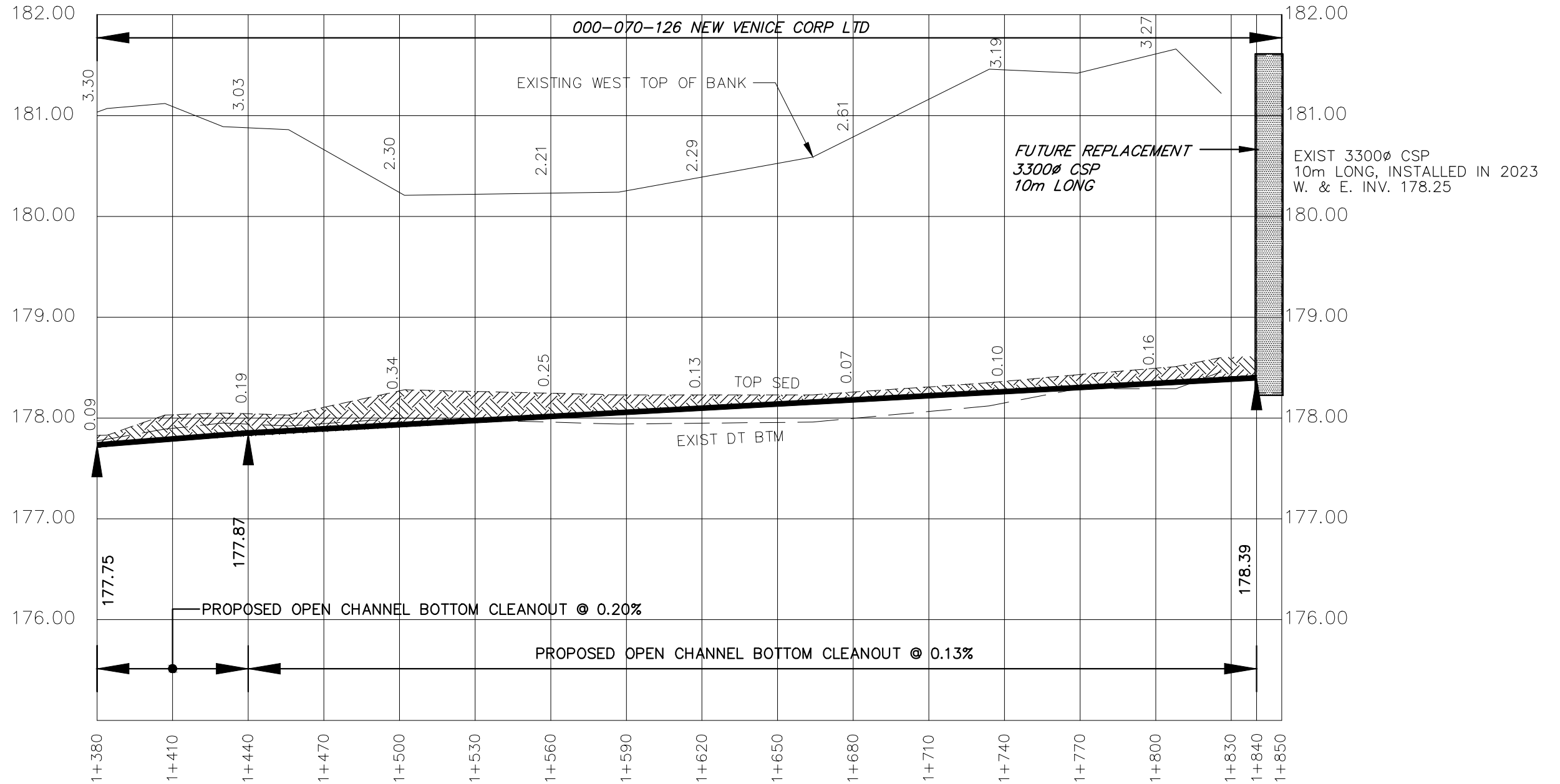
3  
OF 9

# GENERAL NOTES

- BENCHMARK No.2 ELEV. 181.595  
TOP OF WEST END OF CSP AT  
STATION 1+810
- UPPER NUMBERS ARE DEPTH FROM EXISTING  
WEST TOP OF BANK TO PROPOSED BOTTOM OF CHANNEL
- LOWER NUMBERS ARE DEPTH FROM EXISTING  
CHANNEL BOTTOM TO PROPOSED GRADE



DRAIN EXCAVATION



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Petrolia Ontario, N0N 1R0  
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DRAWING NAME:  
Canada Company Drain North Profile 3

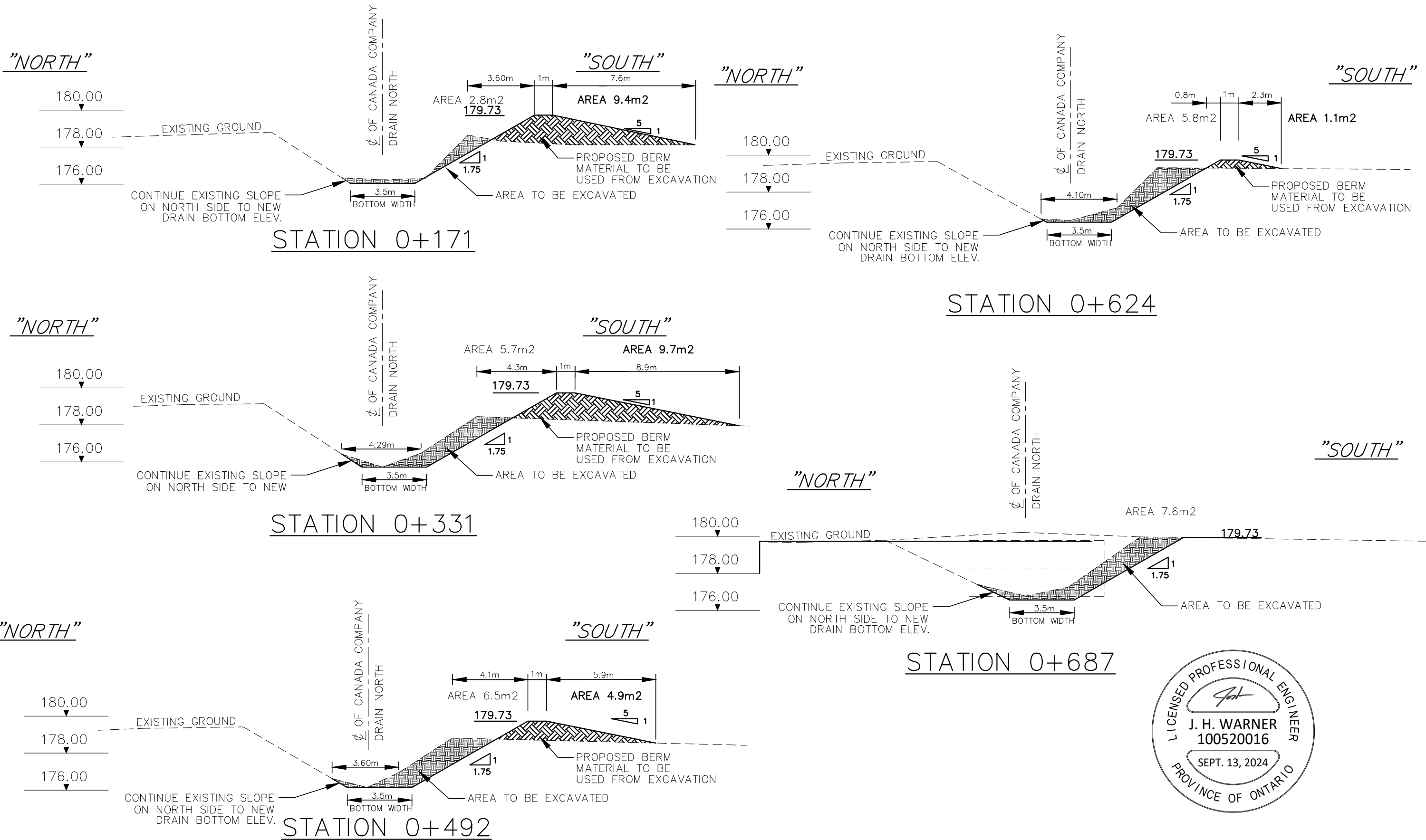
PROJECT No.  
2023-1505

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B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

SCALE: 1:2,000  
0 20 40 60m

**MUNICIPALITY of NORTH MIDDLESEX**  
**CANADA COMPANY DRAIN NORTH**  
**PROFILE**

**4**  
**OF 9**

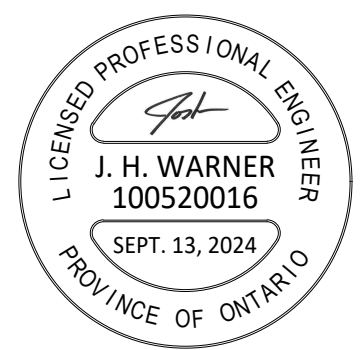
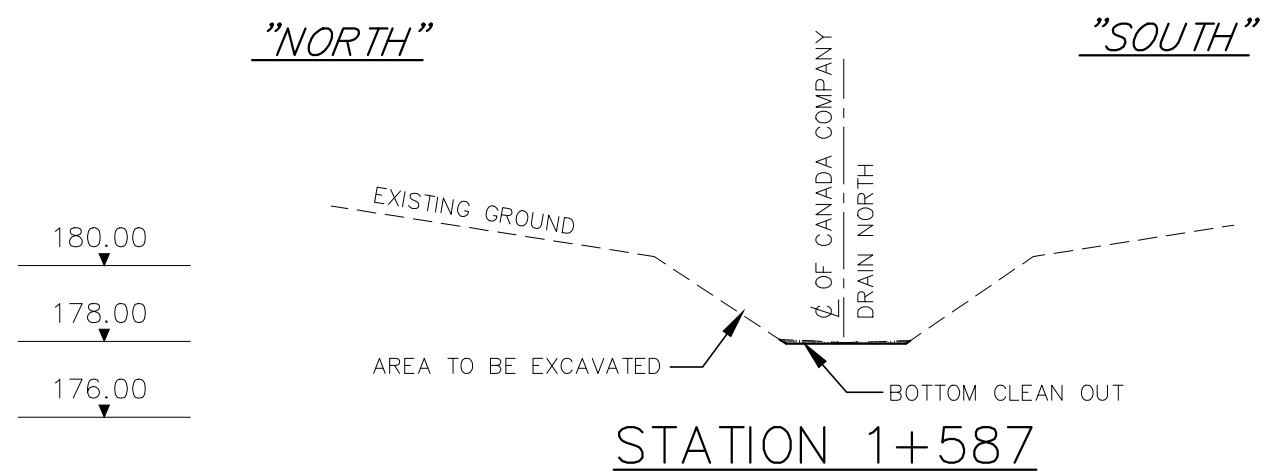
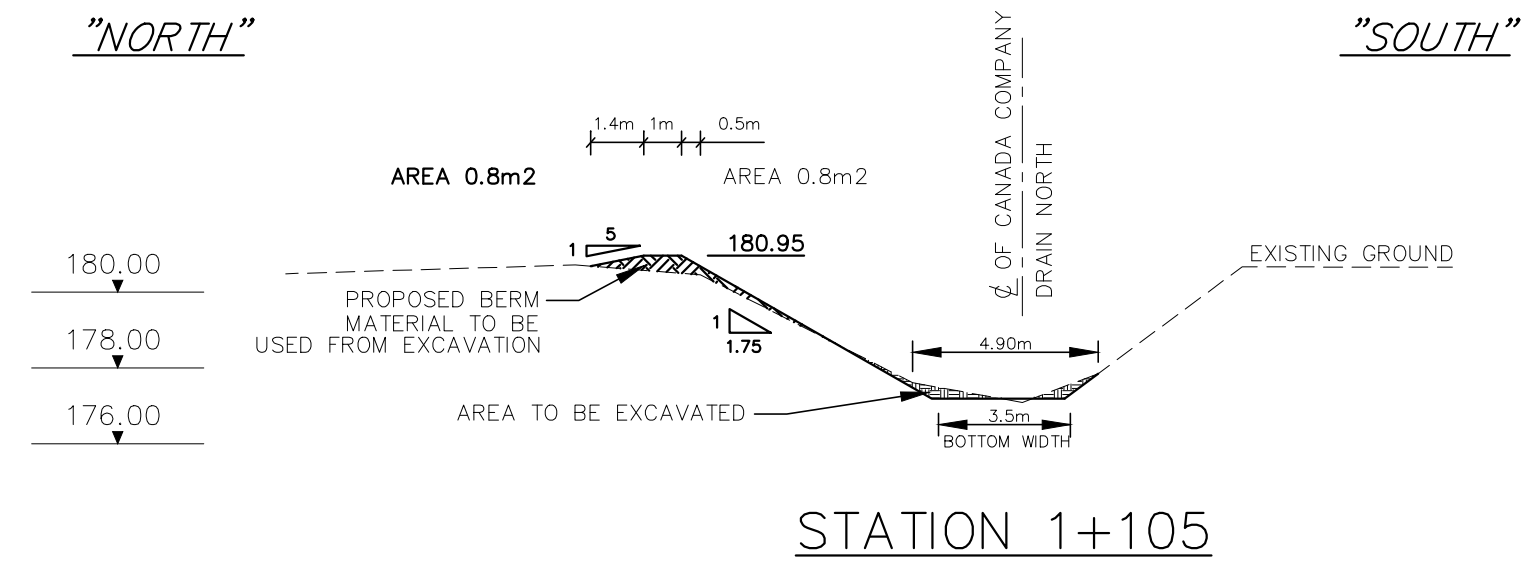
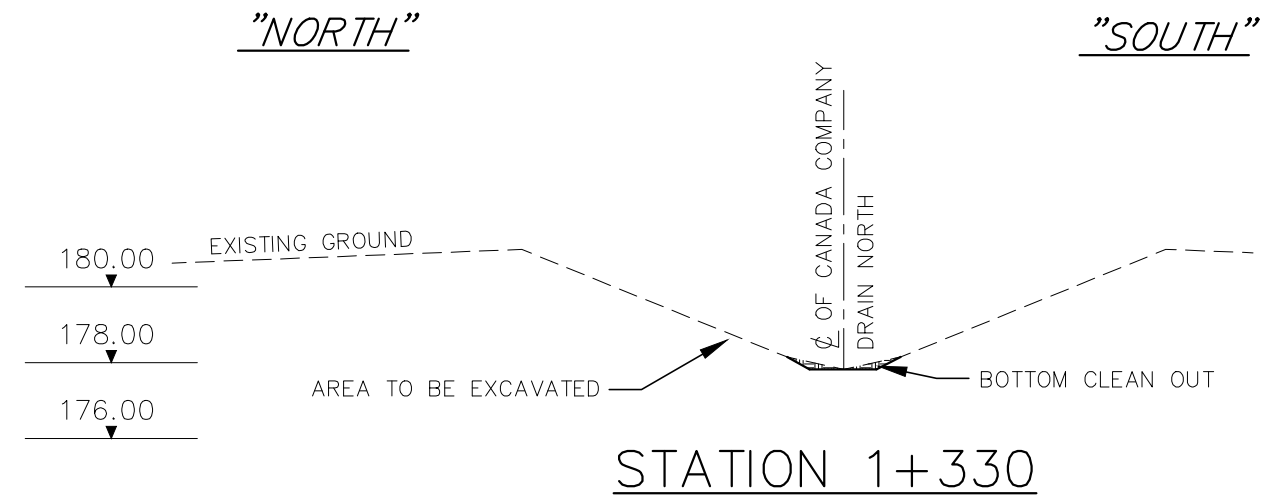
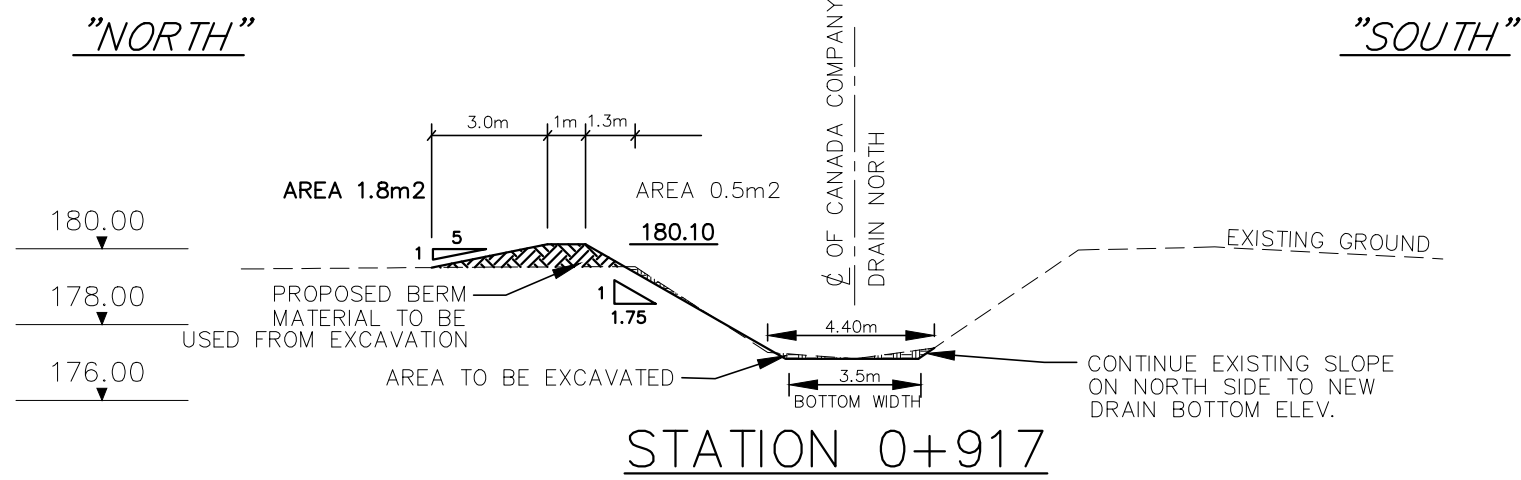


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DRAWN C. SAUNDERS	SCALE 1:200			

**MUNICIPALITY of NORTH MIDDLESEX**  
**CANADA COMPANY DRAIN NORTH**  
**TYPICAL CROSS SECTIONS**

Last Updated: May 17, 2024



**R Dobbin Engineering Inc.**

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Petrolia Ontario, N0N 1R0  
Phone: (519) 882-0032 Fax: (519) 882-2233

DRAWING NAME: Canada Company Drain North Sections 2

PROJECT No. 2023-1505

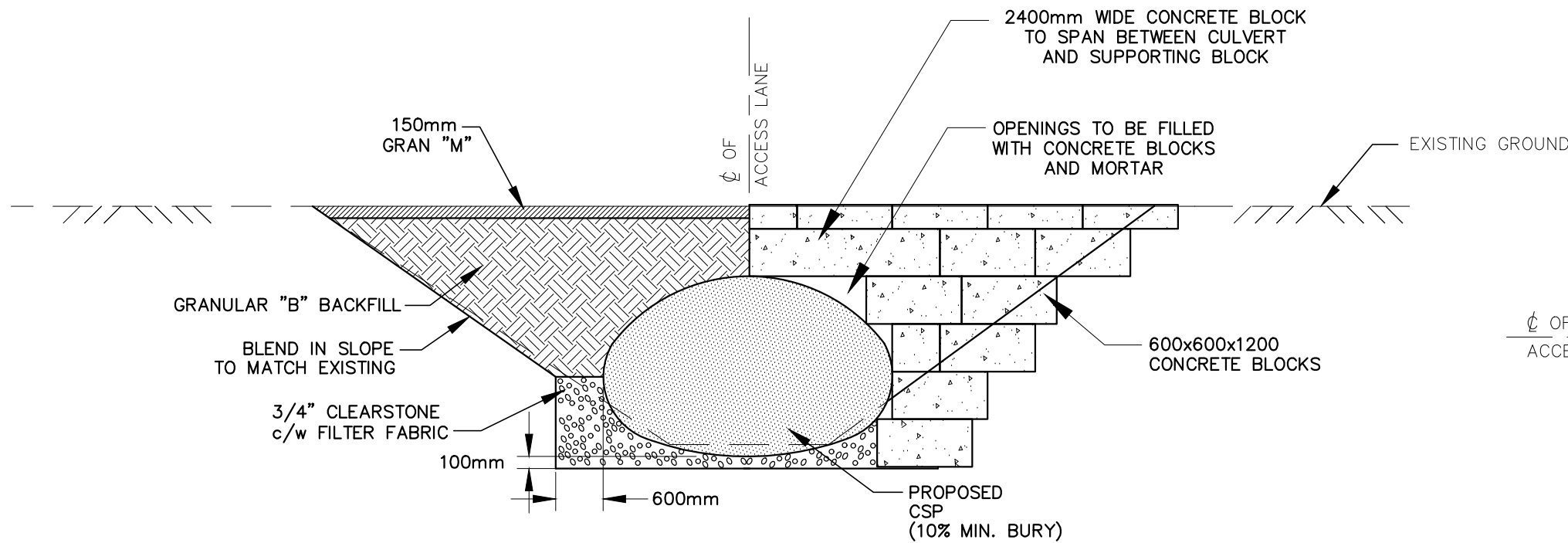
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B. VAN RUITENBURG				
DRAWN	SCALE 1:200			
C. SAUNDERS	0 2 4 6m			

**MUNICIPALITY of NORTH MIDDLESEX**

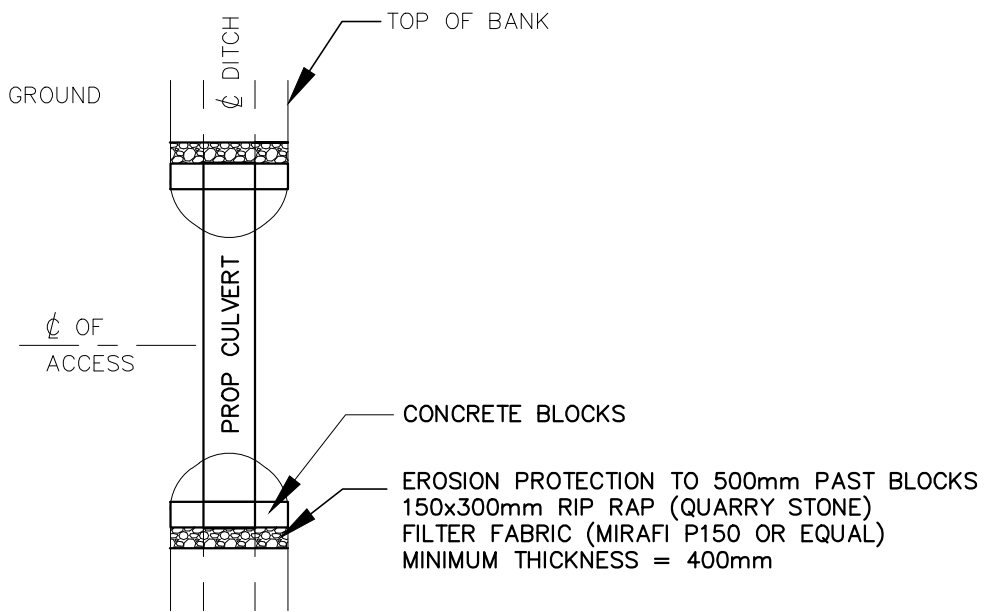
**CANADA COMPANY DRAIN NORTH**

**TYPICAL CROSS SECTIONS**

Last Updated: May 17, 2024

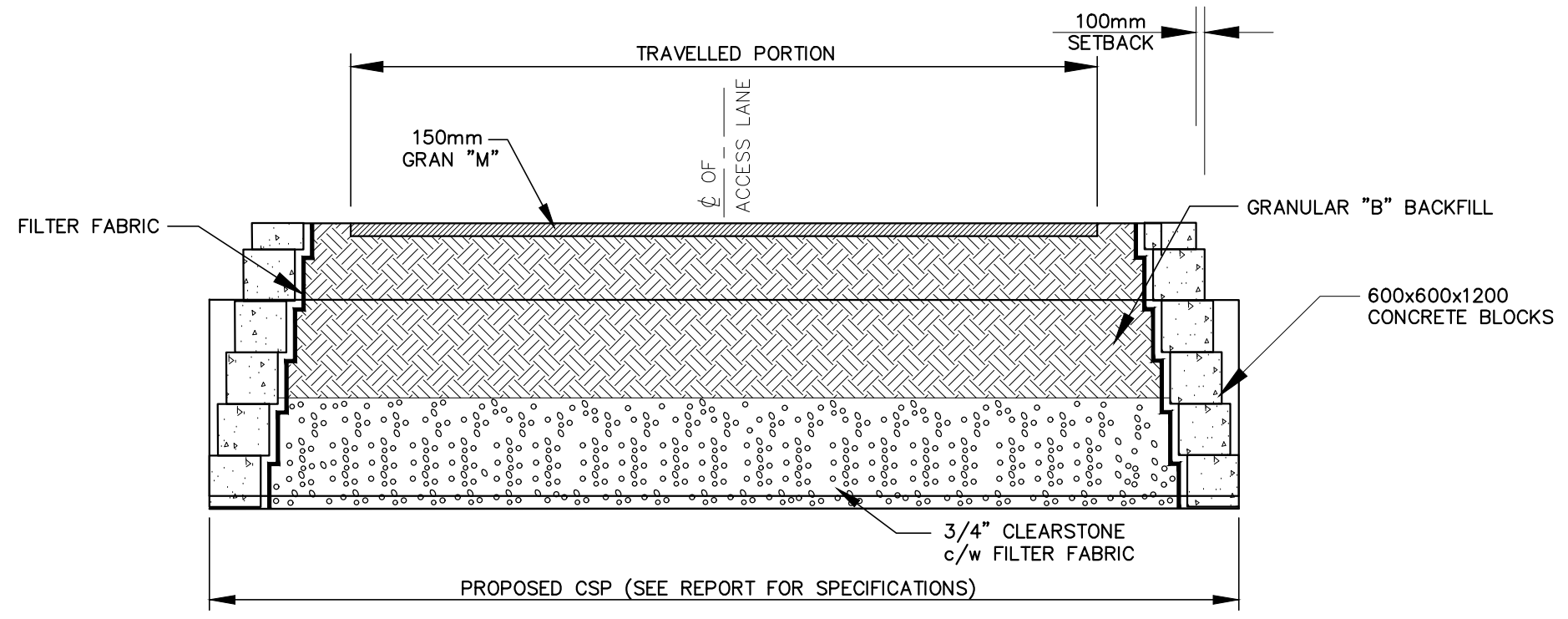


PROPOSED PIPE END SECTION



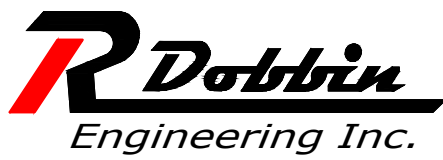
TYPICAL CULVERT PLAN

NTS



PROPOSED CROSS-SECTION

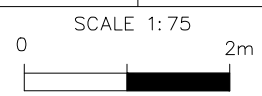
NOTE:  
ALL BACKFILL COMPACTED TO 95% MODIFIED PROCTOR DENSITY



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DRAWING NAME: Canada Company Drain North Typical Access Culvert Detail  
PROJECT No. 2023-1505

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DRAWN				
C. SAUNDERS				



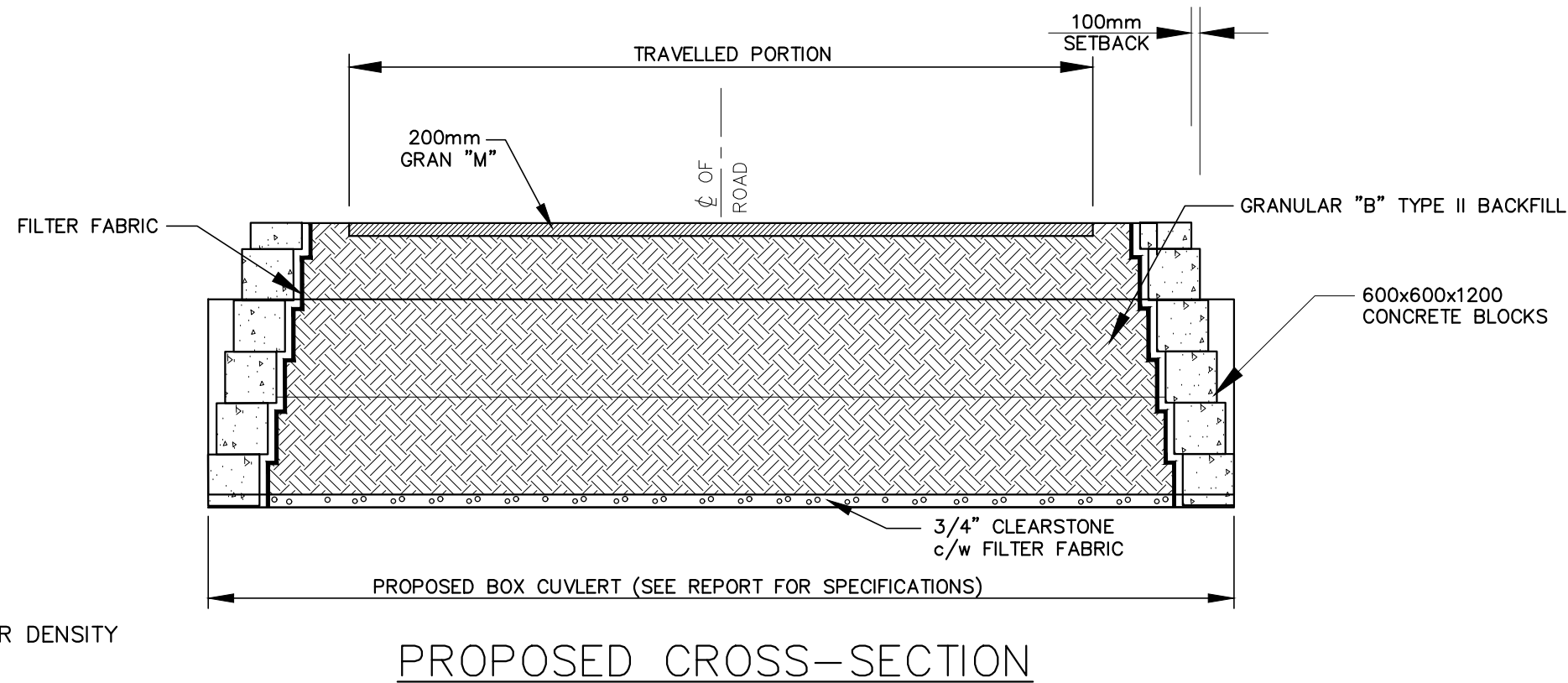
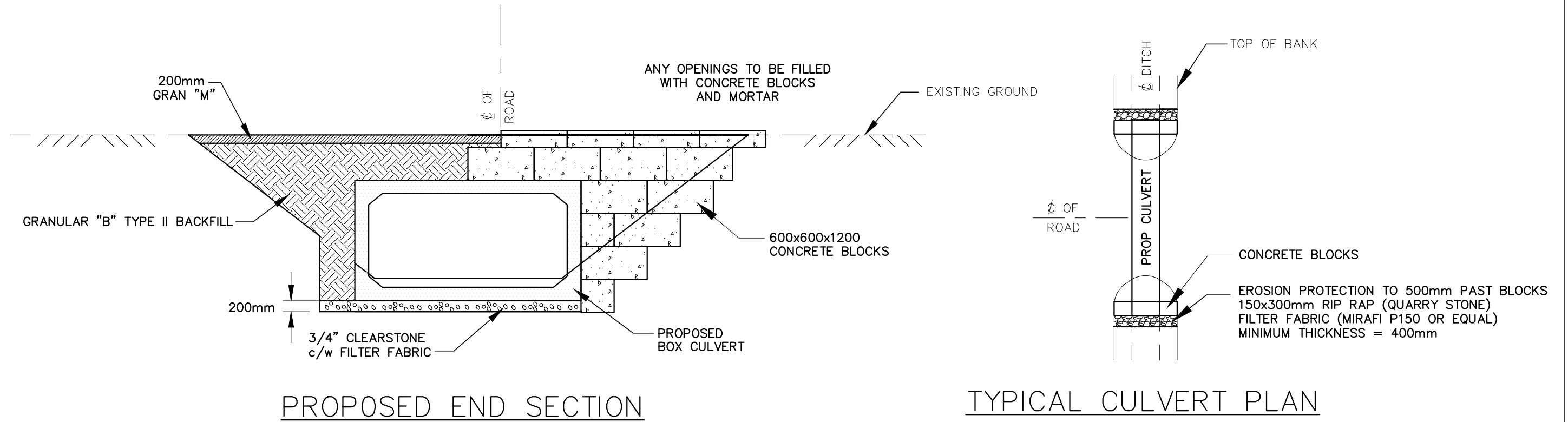
MUNICIPALITY of NORTH - MIDDLESEX

CANADA COMPANY DRAIN NORTH  
TYPICAL ACCESS CULVERT DETAIL

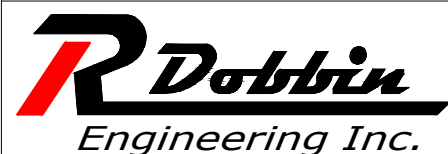
7  
OF 9

Last Updated: May 17, 2024





**NOTE:**  
 ALL BACKFILL COMPACTED TO 95% MODIFIED PROCTOR DENSITY



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DRAWING NAME: Canada Company Drain North Typical Concrete Box Culvert Detail  
 PROJECT No. 2023-1505

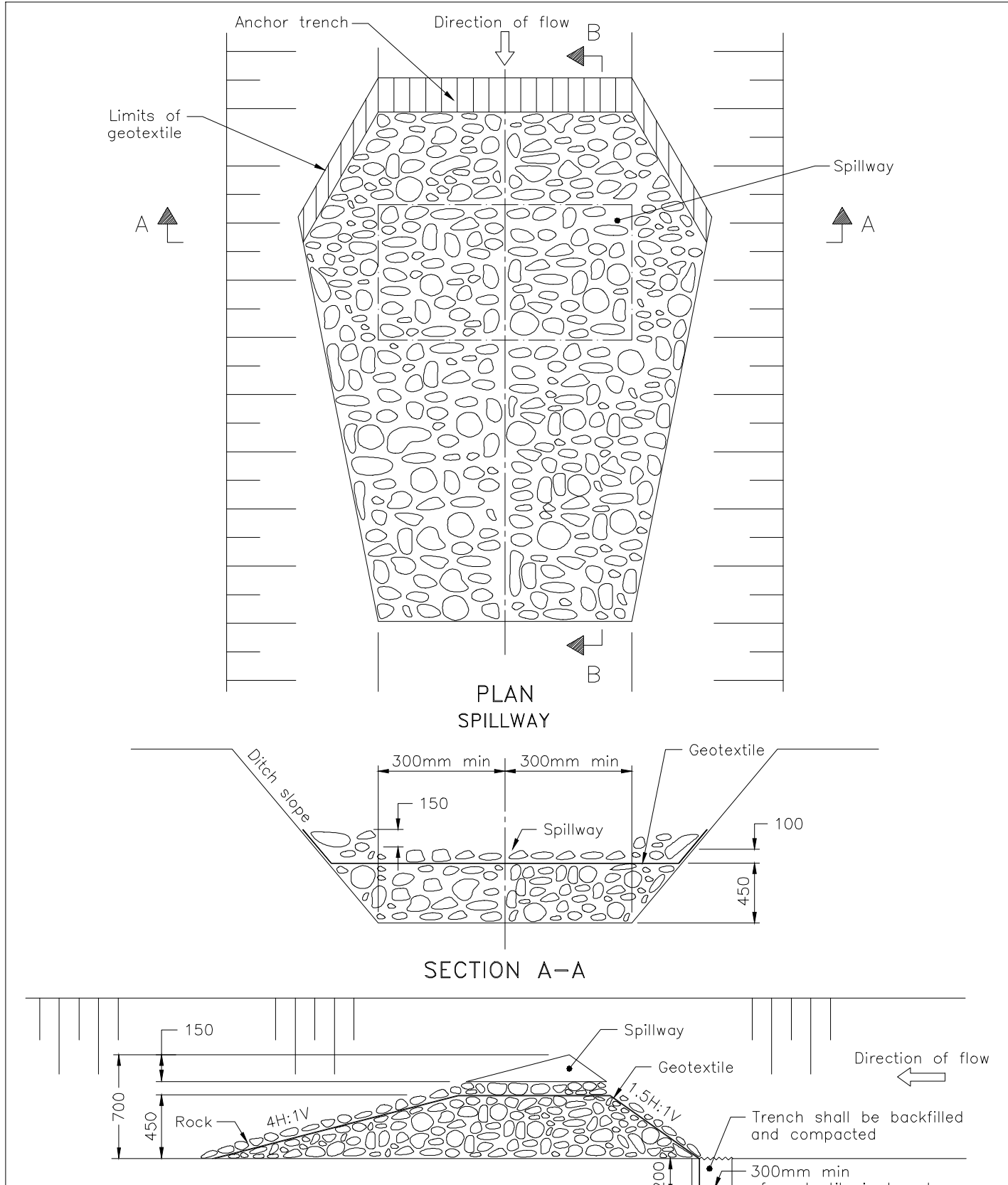
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B. VAN RUITENBURG				
DRAWN				
J. WARNER				

SCALE 1:75  
 0 2m

**MUNICIPALITY of NORTH - MIDDLESEX**  
 CANADA COMPANY DRAIN NORTH  
 TYPICAL CONCRETE BOX CULVERT DETAIL

8  
 OF 9

Last Updated: May 17, 2024



NOTE:  
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2015	Rev 2	
<b>TEMPORARY ROCK FLOW CHECK DAM FLAT BOTTOM DITCH</b>				
		OPSD 219.211		



**R Dobbin Engineering Inc.**  
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DRAWING NAME: Canada Company Drain Detail  
 PROJECT No. 2023-1505

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**MUNICIPALITY of NORTH-MIDDLESEX**

**CANADA COMPANY DRAIN  
DETAIL**

**9  
OF 9**

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