MICHIELSEN AND TAP DRAIN

THE MUNICIPALITY OF NORTH MIDDLESEX

TENDER for CONTRACT MD 02-2024

Dobbin Engineering Inc.

CLOSING DATE: April 24, 2024 @ 11 a.m.

BID FORM

MICHIELSEN AND TAP DRAIN

MUNICIPALITY OF NORTH MIDDLESEX

OWNER:	The Municipality of North Middlesex
CONTRACT ADMINISTRATOR:	R. Dobbin Engineering Inc.
LOCATION:	Lot 10-13, Concession 18 ands 19 in the Municipality of North Middlesex.

Bids will be received in sealed envelopes clearly marked **"Michielsen and Tap Drain""** at the Municipal office of:

The Municipality of North Middlesex

229 Parkhill Main Street

Parkhill, ON

N0M 2K0

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

Wednesday April 24, 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

<u>Tender enquiries shall be accepted until April 22, 2024</u>

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

Item Description (Supply and Install New)	Quantity	Unit	Unit Cost ($)	Total ($)
Pre-Construction Meeting	1	LS		
Brushing and Tree Removal	1	LS		
Benchmark Loop	1	LS		
Locate and Decomission existing Tile	1	LS		
Daylight and Work Around Utilites	1	LS		
Restoration/Seeding	1	LS		
Rip Rap at Catch Basins	15	tonne		
Silt Fence	1	LS		
Michielsen Drain				
Strip and Place Topsoil for Tile Drain	1171	m		
525mmø HDPE Pipe c/w Rodent Grate	6	m		
525mmø Concrete Pipe	724	m		
450mmø Concrete Pipe	400	m		
450mmø HDPE Pipe c/w Bedding and Backfill	12	m		

Item Description (Supply and Install New)	Quantity	Unit	Unit Cost ($)	Total ($)
300mmø HDPE Pipe c/w Connection of Existing Tile	3	m		
Junction Box #1 (900mm x 600mm) c/w Connections	1	LS		
Catch Basin #2 (1200mm x 900mm) c/w Connections	1	LS		
Remove Existing Catch Basin and Lead at Station 1+142	1	LS		
Rip Rap at Outlet	50	tonne		
Locate and Connect Existing Tile	30	ea		
Fill In and Regrade Existing Ditch at Station 1+142 to New CB#2	1	LS		
Tap Drain				
Strip and Place Topsoil for Tile Drain	29	m		
Traffic Control	1	LS		
Remove Existing Road Crossing and Unsuitable Backfill	1	LS		
Catch Basin #3 (600mm x 600mm)	1	LS		
Catch Basin #4 (600mm x 600mm)	1	LS		
250mmø HDPE Smooth Wall Pipe c/w Bedding	44	m		

Item Description (Supply and Install New)	Quantity	Unit	Unit Cost ($)	Total ($)
Granular "A" Backfill for Road Crossing	100	tonne		
100% Crushed Granular "A" for Road Crossing	25	tonne		
Contingency				7,360

Subtotal

HST (13%)

Total Tender Price

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

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, 2, 3 and the attached Specifications of Work for the Michielsen and Tap Drain 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. 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.

4. 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.

5. SCHEDULE

a) The Contract is to be completed on or before – **November 30, 2024.**

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.

6. 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.

7. 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.

8. 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.

9. 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).

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

16. UTILITIES

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

17. 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.

18. 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.

19. 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.

20. 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.raqsb.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

Item Description (Supply and Install New)	Quantity	Unit	Unit Cost ($)	Total ($)
Pre-Construction Meeting	1	LS	200	200
Brushing and Tree Removal	1	LS	1,000	1,000
Benchmark Loop	1	LS	500	500
Locate and Decomission existing Tile	1	LS	3,000	3,000
Daylight and Work Around Utilites	1	LS	3,000	3,000
Restoration/Seeding	1	LS	1,000	1,000
Rip Rap at Catch Basins	15	tonne	150	2,250
Silt Fence	1	LS	200	200
Michielsen Drain				
Strip and Place Topsoil for Tile Drain	1171	m	6	7,026
525mmø HDPE Pipe c/w Rodent Grate	6	m	250	1,500
525mmø Concrete Pipe	724	m	78	56,472
450mmø Concrete Pipe	400	m	70	28,000
450mmø HDPE Pipe c/w Bedding and Backfill	12	m	150	1,800
300mmø HDPE Pipe c/w Connection of Existing Tile	3	m	55	165
Junction Box #1 (900mm x 600mm) c/w Connections	1	LS	2,500	2,500
Catch Basin #2 (1200mm x 900mm) c/w Connections	1	LS	3,000	3,000
Remove Existing Catch Basin and Lead at Station 1+142	1	LS	1,000	1,000
Rip Rap at Outlet	50	tonne	150	7,500
Locate and Connect Existing Tile	30	ea	150	4,500
Fill In and Regrade Existing Ditch at Station 1+142 to New CB#2	1	LS	3,000	3,000

Item Description (Supply and Install New)	Quantity	Unit	Unit Cost ($)	Total ($)
Tap Drain				
Strip and Place Topsoil for Tile Drain	29	m	6	174
Traffic Control	1	LS	5,000	5,000
Remove Existing Road Crossing and Unsuitable Backfill	1	LS	2,000	2,000
Catch Basin #3 (600mm x 600mm)	1	LS	2,200	2,200
Catch Basin #4 (600mm x 600mm)	1	LS	2,200	2,200
250mmø HDPE Smooth Wall Pipe c/w Bedding	44	m	80	3,520
Granular "A" Backfill for Road Crossing	100	tonne	30	3,000
100% Crushed Granular "A" for Road Crossing	25	tonne	40	1,000
Contingency				7,360
			Sub Total	154,067
			Allowances	7,050
			Engineering	23,540
			Daylighting and Survey Utilities	4,000
			Estimate for Tendering, Inspection and Contract Administration	10,500
			ABCA Fee	450
			Total Estimate excluding HST	**199,607**
			Non-Recoverable HST (1.76%)	3,380
			Total Estimate	**$ 202,987**

Michielsen and Tap Drains
Municipality of North Middlesex
February 14, 2024

SPECIFICATION OF WORK

1. Location

The Michielsen and Tap Drains are located in Lot 10 to 13, Concession 18 and Lot 11, Concession 19 in The Municipality of North Middlesex.

2. Scope of Work

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

- Road pipe replacement.
- Supply and installation of concrete and HDPE tile.
- Supply and installation of catch basin and junction box structures

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

These specifications shall apply and be part of the Contract along with the General Specifications for Closed Drains and the General Specifications for Open Drains. 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. 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.

7. 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.

The Contractor is required to complete a benchmark loop prior to construction to verify the benchmarks. If discrepancies exist the Contractor must notify the Drainage Superintendent and Engineer prior to completing any work.

8. 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. All obstructions and diversions of traffic must be approved by the Engineer or Drainage Superintendent and Roads Superintendent at least two (2) full working days in advance.

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.

9. Access and Working Area

Access to the work site for construction and future maintenance shall be from Elliot Drive, the unopened portion of McIntyre Road and along the length of the drainage works. Access shall generally be restricted to a width of 6 metres.

The working area for the construction and future maintenance of the proposed tile drain shall be restricted to a width of 25m along the length of the drainage works normally centred on the proposed tile drain. The working area shall extend 10m past the extents of the drain to allow for trucks to turn around.

10. Removals

The existing culverts, pipes and catch basins, where specified, shall be removed in their entirety. The culvert and the concrete rubble shall be disposed offsite at the expense of the Contractor. Suitable backfill shall be stockpiled adjacent to the site for reuse during installation of the proposed culvert. Any broken concrete or rip rap (concrete bags) from the existing structures shall be disposed offsite at the expense of the Contractor.

11. Brushing and Tree Removal

All brush, trees, woody vegetation, stumps etc. shall be removed for a width of 15 metres along the tile drain. They shall be removed in their entirety including stumps.

A mechanical grinder attached to an excavator 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.

12. Expose Existing Drain

The existing tile drains shall be exposed at the discretion of the Drainage Superintendent or Engineer and Contractor in order to adequately determine the proposed alignment. The proposed tile drains shall generally run up the existing municipal drain.

13. Strip and Place Topsoil

The Contractor shall strip the topsoil for a width of 6m normally centered on the proposed drain. The topsoil shall be stockpiled at the edge of the working allowance for the duration of the tile installation. Once the tile is installed, the Contractor shall level the topsoil over the drain to their pre-construction condition.

14. Installation of Tile

The Contractor shall supply, install, and backfill the specified sizes of tile and pipe to the depths and grades as shown on the drawings.

The proposed tile drains shall generally run up the existing municipal drain.

Concrete tile shall conform to ASTM C412, extra quality. Tile shall have a circular interior and exterior shape.

Where the concrete tile depth is greater than 2.5m the tile shall be 2000D concrete tile and shall be bedded to the spring line with clear stone. The estimated length of 2000D concrete tile required has been shown as a separate item. Clear stone bedding to the spring line shall be included as part of this item.

HDPE shall be CSA Approved smooth wall gasketed pipe with bell and spigot joints (320 kPa) and under driveways and accesses shall include clear stone bedding to the spring line, granular “A” to 300mm above the pipe and finished with 150mm of granular “A”. Under roadways the road crossing specification shall be used.

All excess material within finished lawns and driveways shall be disposed offsite at the expense of the Contractor.

The trenching and laying of the concrete tile shall be done by wheel machine. An excavator must be used in areas of soil instability, unless approved by the Engineer. All tile joints shall be wrapped with a minimum 300mm width of Mirafi P150 (or approved equal) filter fabric. The filter fabric shall be overlapped by 450mm at the top of the tile. The tile shall be laid in straight lines or on smooth gradual curves with a minimum radius or 25m.

Where approved by the Engineer (or specified) concrete tile may be laid in tighter curves by saw cutting joints. The maximum deflection of one concrete tile joint shall be 22 degrees. Turns of greater than 22 degrees shall require the use of manufactured bends (PE smooth wall).

Laser control shall be used to ensure proper grades. The grades calculated on the Profile are to the invert of the tile and pipe with allowances to be made by the Contractor for the wall thickness of the tile and pipe. The depths shown and figured are from ground level to the invert of the pipe along the line of the proposed drain. Should an error appear in the figured depth at any station or stations, the grade shall be made to correspond with that shown on the Profile without extra charge.

Wheel Machine

A wheel machine shall be used to excavate the trench to allow for a round bottom. Prior to backfilling, the tile shall be covered manually to a depth of approx. 100mm over the pipe to ensure that the tile and pipe are not displaced by large clumps of earth. The trench shall be backfilled with excavated material free of stones, broken tile or other deleterious material. All stones larger than 100mm in diameter evident immediately after construction shall be picked up by the Contractor and disposed offsite. The Landowners are responsible for stones after that. The material shall be left windrowed over the trench to allow for settlement.

Excavator

When concrete tile is installed with an excavator, the tile must be installed as per the manufacturer's recommendations **complete with bedding to the spring line**. Prior to backfilling, the tile shall be covered manually to a depth of approx. 100mm over the pipe to ensure that the tile and pipe are not displaced by large clumps of earth. The trench shall be backfilled with excavated material free of stones, broken tile or other deleterious material. All stones larger than 100mm in diameter evident immediately after construction shall be picked up by the Contractor and disposed offsite. The Landowners are responsible for stones after that. The material shall be left windrowed over the trench to allow for settlement.

If the land level must be lowered in order to carry out trenching operations, then it is up to the Contractor to determine if it is necessary and include any extra cost involved. They shall first strip the topsoil to its full depth and stockpile it along one side of the working width and then grade the area to allow the trenching to be carried out. All excavated material shall be windrowed on the side opposite the trench that the topsoil is stockpiled. After trenching and backfilling operations are complete, the topsoil shall be spread to its original depth.

All areas disturbed by construction, except the material windrowed over the trench, shall be left in a condition suitable for cultivation.

The Contractor shall not operate any trenching or backfill equipment, delivery trucks or equipment, pickup trucks or other vehicles along or over the trench during or after construction. The Contractor shall be responsible for any damage caused by any equipment or vehicles operated over the trench. If the Contractor must cross the trench, he will do so in one area.

The Landowners are also warned not to operate farm equipment over the trench or along the length of the trench for 1 year after construction in order to protect the tile.

Future replacements shall conform to these specifications.

15. Catch Basins

Structure	Station	Type (mm)	Inlet Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
CB #2	1+142	900x1200	198.40	197.17 (W) 450	197.25 (E) 300
CB #3	2+029	600x600	196.90	195.51 (S) 250	195.52 (N) 250
CB #4	2+044	600x600	196.90	195.55 (S) 250	195.60 (N) 250 k/o

The catch basins shall be square precast concrete structures as noted above and shall have a birdcage type grate. The ditch inlet catch basins shall have a 2:1 sloped top. The direction in the inlet elevation column denotes the direction the low side of the ditch inlet catch basins shall face. The catch basins shall be located with the backside at the property line and at the locations identified on the Plans. The catch basin elevations shall be 50mm above grade. When specified the catch basins shall have a berm constructed on the downstream end. The top of the berm shall be 0.60m above the inlet elevation. The berm shall have a 2:1 front slope and 5:1 back slope with a 1m wide top. The height and back

slopes can be increased under the direction of the Drainage Superintendent in order to reduce erosion and facilitate farming. Care shall be taken to ensure this does not negatively impact upstream lands. The berms shall be constructed using excess materials on site.

The catch basins shall be made with the top sections separate from the base sections in order to allow riser sections to be installed or removed as necessary (i.e. the base section shall not extend for more than 150mm above the top of the highest opening in the base section). The wall thickness of all structures shall be 115mm and each shall have a 300mm sump. Birdcage grates shall be manufactured with a bar spacing no larger than 50mm.

The catch basins shall be set at the final elevations as directed by the Drainage Superintendent. The catch basins shall be set on a layer of clear stone. The clear stone shall be extended up to the spring line of the inlet and outlet pipe connections.

The tile at the connection to the catch basins shall be concreted on both the inside and outside prior to backfilling. Any pipe or tile shall not protrude more than 50mm inside the wall.

As part of this item the Contractor shall grade the area in the vicinity of the basin to ensure proper drainage. Rip rap shall be installed around the basins. The rip rap shall be 150mmx300mm c/w filter fabric. The area to receive the rip rap shall first be graded to allow the placement of the rip rap to a depth of 400mm below 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

The Drainage Superintendent or Engineer may change a birdcage type grate on a catch basin to a concrete lid or sloped birdcage grate at the request of a Landowner.

The existing ditch at Catch Basin #2 shall be regraded to the proposed basin from Elliot Drive and a sufficient distance north of the proposed basin (approximately 5m) to ensure proper drainage. Filling in the channel shall be done utilizing excess material from the tile installation.

16. Junction Boxes

The junction boxes shall be installed to the elevations and in the locations shown on the drawings as follows:

Structure	Station	Type (mm)	Top Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
JB #1	0+730 = 2+000	600x900	196.34	195.44 (W) 525	195.45 (E) / 195.45 (N) 450 / 250

The junction boxes shall be square precast concrete structures as noted above.

The junction boxes shall be made with the top sections separate from the base sections in order to allow riser sections to be installed or removed as necessary (i.e. the base section shall not extend for more than 150mm above the top of the highest opening in the base section). The wall thickness of all structures shall be 115mm and each shall have a 300mm sump. The top of junction boxes shall be set a minimum of 600mm below grade to accommodate farm tillage practices.

The junction boxes shall be set on a layer of clear stone. The clear stone shall be extended up to the top of the inlet and outlet pipe connections

The tile at the connection to the junction boxes shall be concreted on both the inside and outside prior to backfilling. Any pipe or tile shall not protrude more than 50mm inside the wall.

The Drainage Superintendent may change a concrete lid on a junction box to a birdcage type grate creating a catch basin at the request of a Landowner.

17. Subsurface Drainage

All existing subsurface drains encountered during construction of the tile drain shall be connected to the proposed tile drain unless otherwise noted on the drawings or as directed by the Drainage Superintendent. The downstream end shall be plugged to the satisfaction of the Drainage Superintendent.

For 100mm and 150mm subsurface drains, the upstream end of the subsurface drain shall be connected to the tile drain at a 45-degree angle. A suitable length of equivalent sized PE agricultural tubing shall be used to connect the drains. 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. It is recommended that clear stone be used under the connections at the tile drain.

18. Outlet Works

The outlet works for the drain shall consist of 6m of HDPE smooth wall pipe as shown on the profile (320 kPa) with a manufactured rodent rotating grate. It shall be installed at the outlet to the open channel.

Erosion protection made up of rip rap and filter fabric shall be installed on the channel side slope from the bottom of the channel to the top of the bank and for a distance of 3m on either side of the outlet. This item shall include the required grading within the vicinity of the outlet pipes in order to install the rip rap. Rip rap shall be made up of 150mm to 300mm quarry stone or approved equal. The area to receive the rip rap shall first be graded to allow the placement of the rip rap to a depth of 400mm below 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.

19. Installation of Road Crossing

Where High Density Polyethylene Pipe is specified, the Contractor shall supply, install, and backfill the HPDE smooth wall gasketed pipe with bell and spigot joints (320 KPa) or approved equivalent under road crossings. Future culvert replacements shall be to the same specifications.

Where corrugated steel pipe (CSP) is specified, the Contractor shall supply, install, and backfill aluminized CSP with a minimum wall thickness of 2.8mm in all cases. All corrugation profiles shall be of helical lockseam 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. Future culvert replacements shall be to the same specifications.

The proposed culverts shall be installed in the same general location as the existing culverts, unless otherwise stated on the drawings or in the specification. The location of the culvert may be moved a short distance if approved by the Engineer or Drainage Superintendent.

The bottom of the excavation shall extend 150mm below the bottom of the tile with any over excavation backfilled with ¾" clear stone material. When the tile has been installed to the proper grade and depth, the excavation shall be backfilled with ¾" clear stone from the bottom of the excavation to 300mm above the proposed tile. 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. Within the road allowance the pipe shall be backfilled to 150mm below finished grade with OPS Granular "A". Outside the road allowance excavated material can be used. The top 150mm within the road shall be 100% crushed

Granular “A”. Granular “A” shall be mechanically compacted to 100% modified standard proctor density and filter fabric shall be placed between the changes in bedding and backfill in all cases.

It is the Contractors responsibility to locate and expose any utilities prior to the installation of any tile. If there is a conflict with the tile elevation the Contractor is required to notify the Engineer. Any permits that are required by the Road Authority are the responsibility of the Contractor.

The Contractor shall expose the water service near Station 1+078 prior to installation of the tile upstream of JB #1. The grade may be changed to avoid any potential conflict at the discretion of the Engineer.

The ditch shall be graded to ensure the surface water is collected to the catch basins on all road crossings.

The Contractor shall be responsible for maintenance of the pipes for a period of one year after their installation. This will include repairing any settlement areas on the travel surface with granular “A”.

20. Seeding/Restoration

All areas disturbed by construction shall be returned to their pre-constructions state. The road right of way, finished lawns and all areas where disturbed by construction, shall be topped with 100mm of screened topsoil and hydroseeded following construction in accordance with the seed mixture, fertilizer and application rate as shown below. Spreading of the seed shall be by use of a mechanical spreader.

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.

21. 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.

22. Silt Fence

Light duty silt fencing 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 the disturbed area has been re-vegetated.

LOT 14 LOT 13 LOT 12 LOT 11 LOT 10

CONC 19

049-030-135
D. & J. DENYS

049-030-136
J. & M. DENYS
4.45 Ha

049-030-125
C. ELLIOT
0.29 Ha

O'NEIL DRAIN

ELLIOT DRIVE

BM#1

TAP DRAIN

CB#4
2+044

ELLIOTT DR

BM#2

MCINTYRE ROAD

CB#32+029

525mmø MICHIELSEN DRAIN

450mmø

0+313

JB#1
0+730
(2+000)

CB#2
1+145

0+000

EXISTING CHANNEL

049-030-126
M. DENYS
10.12 Ha

049-030-128
ALSINA FARMS INC
2.02 Ha

049-030-127
J. DENYS
4.04 Ha

Surface Only
3.20 Ha

UNOPENED RIGHT OF WAY

049-030-125-02
YELLOW GOLD FARMS
c/o R. WILLEMSE
16.18 Ha

CONC 18

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
FEB. 14 2024
PROVINCE OF ONTARIO

LEGEND

- DRAINAGE AREA
- MICHIELSEN DRAIN
- MUNICIPAL DRAIN

Dobbin Engineering Inc.
4218 Oil Heritage Road
Petrolia Ontario, N0N 1R0
Phone: (519) 882-0032 Fax: (519) 882-2233

DRAWING NAME: Michielsen and Tap Drain Plan

PROJECT No. 2023-1512

APPROVED J. WARNER

CHECKED B. VAN RUITENBURG

DRAWN C. SAUNDERS

NO.	REVISIONS	DATE	BY
1	FINAL REPORT	FEB. 14, 2024	CS

SCALE: 1:5000
0 66 134 200m

MUNICIPALITY of NORTH MIDDLESEX

MICHIELSEN AND TAP DRAIN PLAN

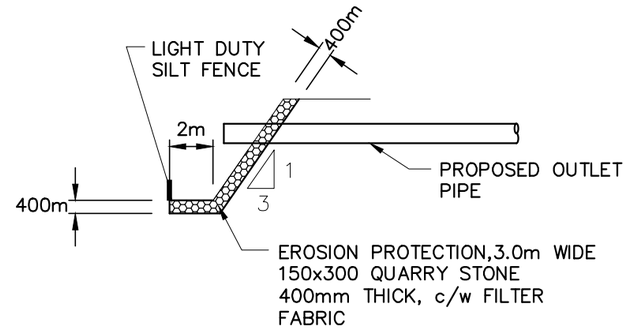
1 OF 3

Last Updated: February 14, 2024

GENERAL NOTES

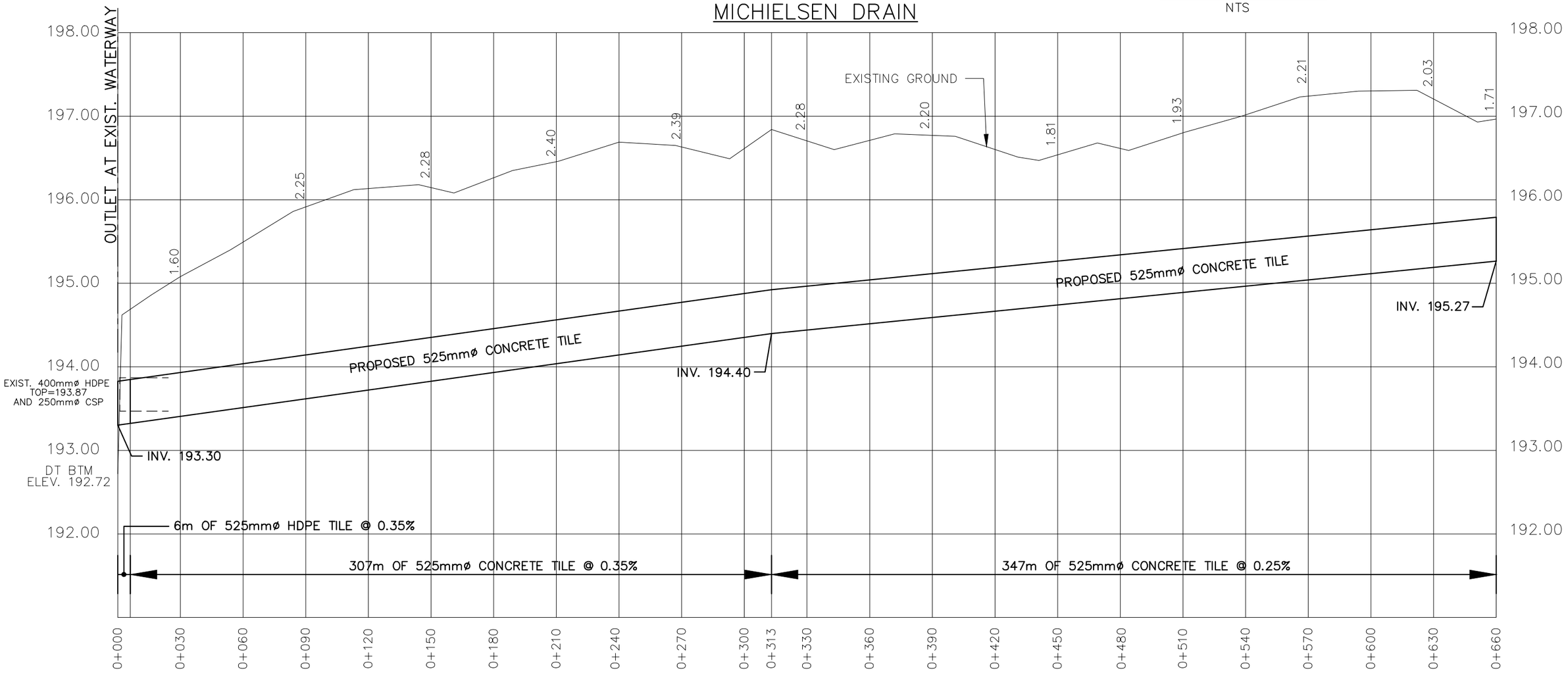
1. BENCHMARK No.1 ELEV. 197.72
   NAIL IN UTILITY POLE EAST OF FIELD ACCESS CULVERT FOR 1694 ELLIOT DRIVE
2. UPPER NUMBERS ARE DEPTH FROM GROUND TO INVERT OF CONCRETE TILE.

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
FEB. 14, 2024
PROVINCE OF ONTARIO



OUTLET DETAIL
NTS

MICHIELSEN DRAIN



Dobbin Engineering Inc.
4218 Oil Heritage Road
Petrolia Ontario, N0N 1R0
Phone: (519) 882-0032 Fax: (519) 882-2233

DRAWING NAME: Michielsen Drain Profile 1

PROJECT No. 2023-1512

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	FEB. 14, 2024	CS
B. VAN RUITENBURG				
DRAWN	SCALE: 1:2,000			
C. SAUNDERS	0 20 40 60m			

MUNICIPALITY of NORTH MIDDLESEX

MICHIELSEN DRAIN
PROFILE

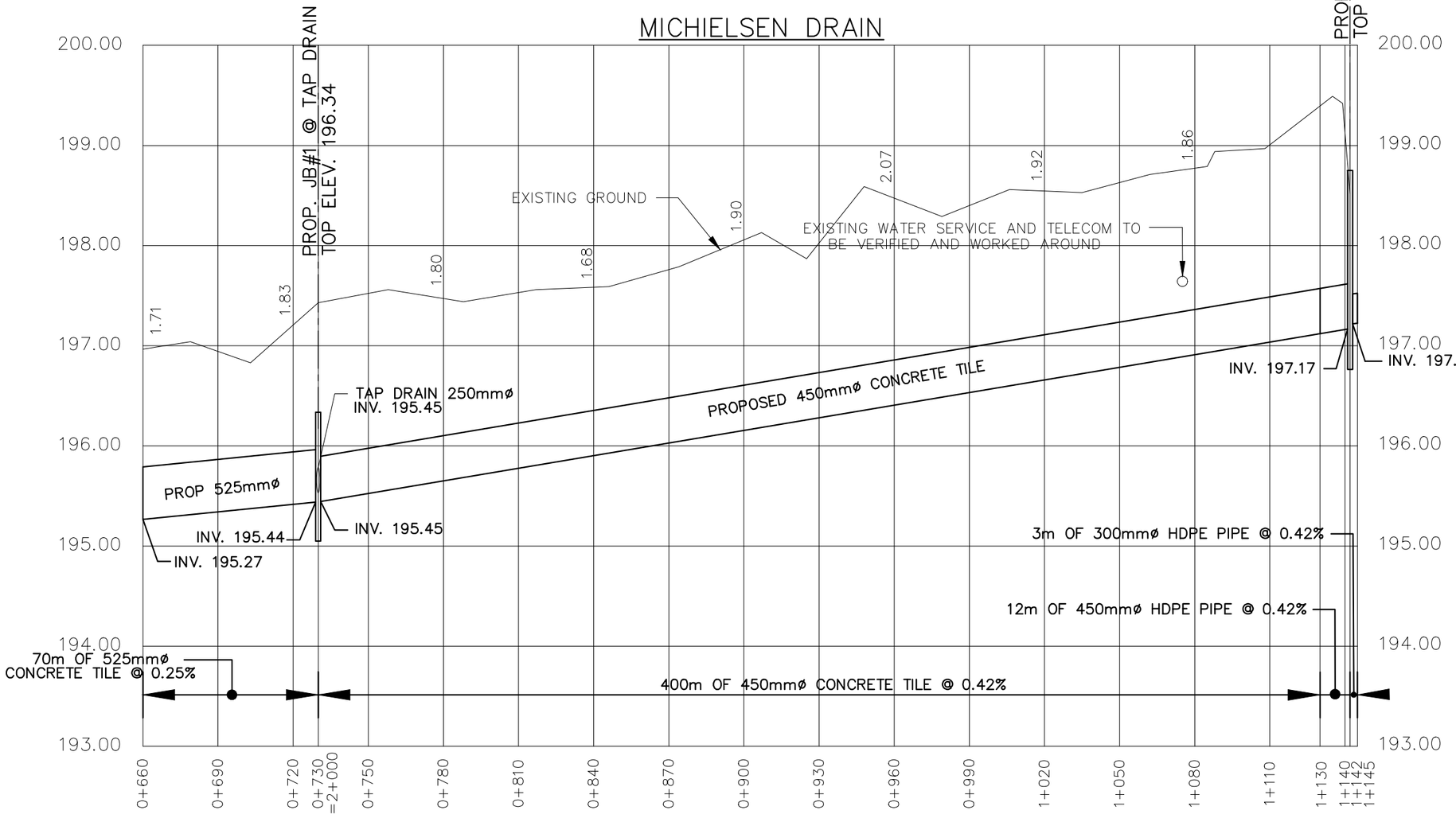
Last Updated: February 14, 2024

GENERAL NOTES

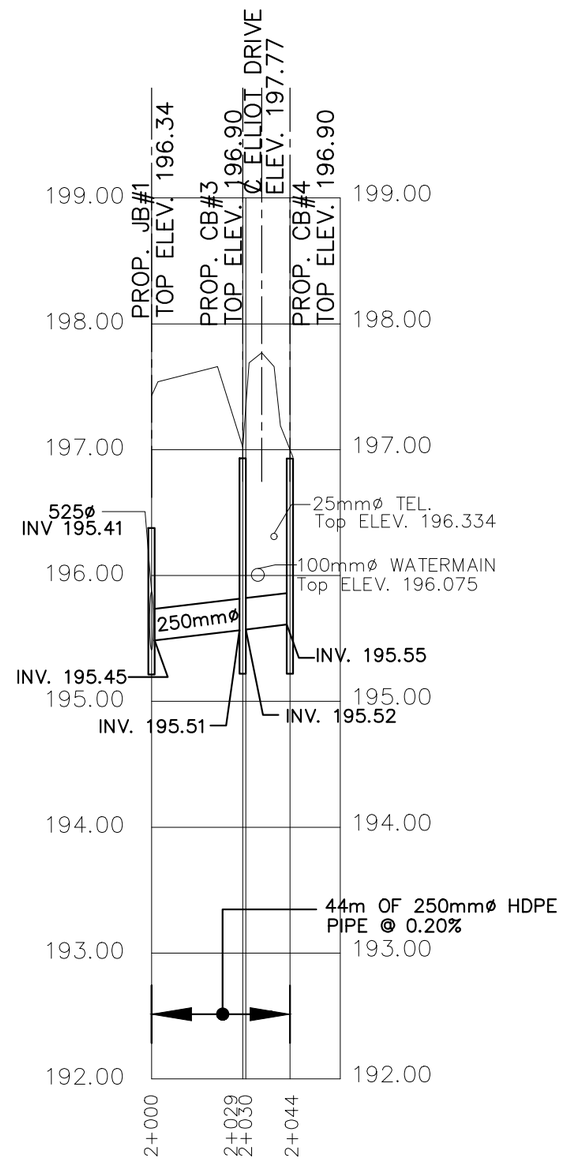
1. BENCHMARK No.2 ELEV. 199.78
   NAIL IN HYDRO POLE ON EAST SIDE OF MCINTYRE ROAD AND NORTH SIDE OF ELLIOT DRIVE
2. UPPER NUMBERS ARE DEPTH FROM GROUND TO INVERT OF CONCRETE TILE.

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
FEB. 14, 2024
PROVINCE OF ONTARIO

MICHIELSEN DRAIN



TAP DRAIN



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DRAWING NAME: Michielsen and Tap Drain Profile

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J. WARNER				
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B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

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

MUNICIPALITY of NORTH MIDDLESEX

MICHIELSEN AND TAP DRAINS PROFILE

Last Updated: February 14, 2024