

July 9, 2026

The Mayor and Council
Municipality of North Middlesex
229 Parkhill Main Street
Parkhill, ON
N0M 2K0

Gentlemen and Mesdames:

Re: Brown-Rose Drain (2026)

In accordance with your instructions, R. Dobbin Engineering Inc. has undertaken an examination of the Brown-Rose Drain in the Municipality of North Middlesex.

Authorization under the Drainage Act

This Engineers Report that has been prepared under Section 78 of the Drainage Act as per a request from an affected Landowner.

R. Dobbin Engineering Inc. was appointed by council on July 16, 2025.

Under Section 78 of the Drainage Act, Council may undertake and complete the maintenance or repair of any drainage works constructed under a bylaw passed under this Act or its predecessor. Section 78 is to be used where it is considered expedient to change the course of the drainage works, or to make a new outlet for the whole or any part of the drainage works, or to construct a tile drain under the bed of the whole or any part of the drainage works as ancillary thereto, or to construct, reconstruct or extend embankments, walls, dykes, dams, reservoirs, bridges, pumping stations, or other protective works as ancillary to the drainage works, or to otherwise improve, extend to an outlet or alter the drainage works or to cover the whole or any part of it, or to consolidate two or more drainage works, the Council whose duty it is to maintain and repair the drainage works or any part thereof may, without a petition required under Section 4 but on the report of an Engineer appointed by it, undertake and complete the drainage works as set forth in such report.

Existing Conditions

The Brown-Rose Drain (Main Drain) is an open channel for approximately 160m west (all directions relative to drawing north) of Petty Street in Lot 12, Concession 5. The open channel continues in an easterly direction to the east side of Petty Street. From there the drain continues as a twin tile drain of varying sizes in a generally north easterly direction to

a basin approximately 130m west of Argyle Street. A single tile drain continues easterly to the Concession 1 and 2 line in Lot 13. There are 3 existing branch drains. Branch “A” is located in Lot 13, Concession 3, Branch “B” in Lot 13 and 14, Concession 3 and Lot 14, Concession 2, and Branch “C” in Lot 13, Concession 2.

Background

Under an Engineer’s report dated January 2, 1969 the Brown-Rose Drain, including the branches, were constructed.

Under an Engineer’s Report dated June 4, 1980 the open channel was improved and the open channel from Petty Street to Branch “B” was enclosed with a twin tile drain.

Under an Engineer’s Report dated February 11, 2020 Branch “A” was replaced and Branch “B” was replaced from the Main Drain to the east side of Argyle Street. The drains were sized to accommodate 38mm/24hrs.

Drain Classification

The open channel portion of the Brown-Rose Drain is currently classified a Class “F” drain according to the Department of Fisheries and Oceans (DFO) classification as presented by the Ontario Ministry of Agriculture, Food and Agribusiness Agricultural Information Atlas.

Approvals

The drain will require approval from the Ausable Bayfield Conservation Authority and the Department of Fisheries and Oceans. Construction cannot commence without necessary approvals.

On-Site Meeting

A site meeting was held on August 7th, 2025.

The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Drainage Superintendent, Municipality of North Middlesex)
- Kristyn Wilson (Drainage Clerk, Municipality of North Middlesex)
- Amanda Van Duren (Landowner)
- Dave Manning (Landowner)
- Anthony Aerts (Landowner)
- Hugh Aerts (Landowner)
- Dave Currie (Landowner)

- John Ross (Landowner)

The following is a brief summary of the meeting:

- General discussion of the Drainage Act and Landowners rights under the Drainage Act.
- The Landowner downstream of Petty Street was concerned with the condition of the existing channel.
- The Landowners of the property with Roll Number 042-010-075 stated they would like to have the catch basin at Station 2+196 removed and that the property was recently tiled.
- It was discussed that the Landowner wishes to replace Branch “B” upstream of Argyle Street, Branch “C” and the Main Drain from Branch “B” to the top end.
 - It was discussed that there may be capacity concerns with the Main Drain downstream of Branch “B” as it was completed in 1980 and would not be designed to the same standard as today. R. Dobbin Engineering was to investigate and prepare a preliminary report to present options for the improvements of the Main Drain.
- No adverse soil conditions were noted at the site meeting.

Preliminary Report

It was determined that the 1980 Brown-Rose Drain improvements of the Main Drain from the east side of Petty Street to Branch “B” were sized to accommodate approximately 30mm/24hrs. The Landowner requesting the improvements requested that the drain be sized to handle 50mm/24hrs. Therefore, 5 options were presented for improvements to the Main Drain and Branch “C” as part of a preliminary report. The details of each are outlined below:

1. A drainage system designed to accommodate 30mm/24hrs from Main Drain at Branch “B” to its top end and Branch “C”. The existing drain from 1969 would be crushed and abandoned where replaced. The 1980 drain will remain in place to provide outlet for the proposed improvements. The preliminary cost estimate for this option was \$180,000.
2. A drainage system designed to accommodate 50mm/24hrs for the entirety of the Main Drain and Branch “C”, but the tripling of the Main Drain from Branch “B” to the east side of Petty Street. Therefore, the 1980 drains would remain part of the drainage works, but the Main Drain upstream of Branch “B” and Branch “C” would be crushed and abandoned. The preliminary cost estimate for this option was \$440,000.
3. A drainage system designed to accommodate 50mm/24hrs for the entirety of the Main Drain and Branch “C”. The Main Drain improvements would include a

crossing under Petty Street to accommodate the larger tile drain. The Main Drain between Petty Street and Branch “B” may remain in place and get connected at the property lines for additional capacity. The preliminary cost estimate for this option was \$576,000.

4. A drainage system designed to accommodate 38mm/24hrs for the entirety of the Main Drain and Branch “C”, but the tripling of the Main Drain from Branch “B” to the east side of Petty Street. Therefore, the 1980 drains would remain part of the drainage works, but the Main Drain upstream of Branch “B” and Branch “C” would be crushed and abandoned. The preliminary cost estimate for this option was \$396,000.
5. A drainage system designed to accommodate 38mm/24hrs for the entirety of the Main Drain and Branch “C”. The Main Drain improvements would include a crossing under Petty Street to accommodate the larger tile drain. The Main Drain between Petty Street and Branch “B” may remain in place and get connected at the property lines for additional capacity. The existing Main Drain and Branch “C” would no longer form part of the drainage works. The preliminary cost estimate for this option was \$526,000.

A preliminary report dated March 3rd, 2026, was distributed to all affected landowners. A meeting was subsequently held on April 9th, 2026, to review the report and gather input from landowners regarding a preferred option to proceed. The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Drainage Superintendent, Municipality of North Middlesex)
- Kristyn Wilson (Drainage Clerk, Municipality of North Middlesex)
- John Ross (Landowner)
- Penny Rose (Landowner)
- Anthony Aerts (Landowner)
- John Van Deuren (Landowner)
- Anne Marie Van Dueren (Landowner)
- Hugh Aerts (Landowner)
- David Currie (Landowner)

The following is a brief summary of the meeting:

- A Landowner expressed concerns with the open channel downstream of Petty Street, but indicated that they were not going to initiate any improvements. It was stated that maintenance can be completed on this section of the drain if a request is received.
- The Landowners agreed to proceed to a draft report with Option 4, which is a tile drain designed to the grantable coefficient of 38mm/24hrs with the drain being

tripled downstream of Station 2+196. Landowners stated that there were no concerns with the existing tile from 1980.

- Landowners requested that the proposed drain be installed between the existing drains. R. Dobbin Engineering stated that the 1980 report outlines a 10m separation between the two tiles for the majority of the drain and would therefore likely be possible.
- Landowners were to provide tile maps.

Draft Report

A draft report, dated June 1, 2026 was sent to all the affected Landowners and a meeting was held on July 8, 2026 to go over the report and address any questions and concerns related to the draft report. The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Drainage Superintendent, Municipality of North Middlesex)
- Jared Tweedle (County of Middlesex)
- John Ross (Landowner)
- David Ross (Landowner)
- Penny Rose (Landowner)
- Anthony Aerts (Landowner)
- John Van Deuren (Landowner)
- Dave Currie (Landowner)

The following is a brief summary of the meeting:

- Josh Warner provided an overview of the report.
- John Ross clarified his previous comments in stating that the improvements will increase drainage concerns in Lot 11, Concession 5 as the water currently cannot get to the Ausable.
 - Josh Warner outlined that he believes a sufficient outlet has been achieved with the proposed improvements as there is significant grade on the channel downstream of Petty Street.
- Most of the discussion focused on the proposed construction schedule for the drain. It was initially determined that construction of the Branch “B” improvements should be completed by October 31, 2026, with the remaining improvements to be constructed during the summer of 2027 and completed by September 30, 2027.
 - Following further review of the report preparation and Drainage Act process timelines, it was determined that an October 31, 2026 completion date for Branch “B” was very restrictive. This was discussed with the Landowner who had requested the expedited schedule, and it was agreed that the completion date for the Branch “B” improvements would be revised to November 30, 2026.
- No major concerns were brought forward with the report.

Design

The proposed drain shall be designed to accommodate a drainage coefficient of 38mm/24hours. Tile design criteria includes a minimum tile depth of 760mm.

The County road culvert has been designed to provide outlet for a 1 in 100-year storm event.

Recommendations

It is therefore recommended that the following work be carried out:

1. The Brown-Rose Drain open channel from Petty Street to the Sutherland Drain shall be specified for future maintenance and a maintenance schedule shall be developed (Station 0+000 to 0+486).
2. The culvert under Petty Street on the Brown-Rose Drain shall be specified for future replacement.
3. The Brown-Rose Drain shall be improved from Station 0+509 to 2+196 with the installation of an additional tile. The existing twin tiles from 1980 shall remain in place with the intent to install the new tile in between the existing tiles. The existing northerly drain from Station 0+509 to 0+551 shall be removed and re-routed to the north to allow for the placement of the proposed tile drain between the two tiles.
4. The Brown-Rose Drain shall be improved from Station 2+196 to 3+213 with the installation of a new tile drain. The existing tile drain from 1969 shall be crushed and abandoned.
5. The Brown-Rose Drain Branch "B" shall be improved from Station B 0+302 to B 1+150 with the installation of a new tile drain. The existing tile drain from 1969 shall be crushed and abandoned.
6. The Brown-Rose Drain Branch "C" shall be improved from Station C 0+000 to C 0+230 with the installation of a new tile drain. The existing tile drain from 1969 shall be crushed and abandoned.
7. A maintenance schedule shall be developed for the Brown-Rose Drain (Main Drain), Brown-Rose Drain Branch "B" and Brown-Rose Drain Branch "C".

Estimate of Cost

It is recommended that the work be carried out in accordance with the accompanying Specification of Work and Profile that forms part of this Report. There has been prepared

an Estimate of Cost in the amount of \$71,120 for Branch “B” and \$457,548 for the Main Drain and Branch “C” (totalling \$528,668), including engineering of the report, attending the Meeting to Consider the Report, attending the Court of Revision, and an estimate for tendering, contract administration and inspection. Appearances before appeal bodies have not been included in the cost estimate.

The preliminary report estimated the improvements to the Main Drain and Branch “C” for the chosen option (Option 4) at approximately \$396,000. During detailed design, it was determined that the conflict with the watermain at Argyle Street could not be avoided and therefore needs to be lowered. In addition, the existing drain near the outlet would need to be removed and replaced to facilitate construction of the new drain between the existing tile drains. These two items account for the majority of the increase in the estimated cost.

Assessment

As per Section 21 of the Drainage Act, the Engineer in their Report shall assess for benefit and outlet for each parcel of land and road liable for assessment. Lands, roads, buildings, utilities, or other structures that are increased in value or are more easily maintained as a result of the construction, improvement, maintenance, or repair of a drainage works may be assessed for benefit. (Section 22)

Lands and roads that use a drainage works as an outlet, or for which, when the drainage works is constructed or improved, an improved outlet is provided either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek, or watercourse may be assessed for outlet. The assessment for outlet shall be based on the volume and rate of flow of the water artificially caused to flow into the drainage works from the lands and roads liable for such assessments. (Section 23)

The Engineer may assess for special benefit any lands for which special benefits have been provided by the drainage works. (Section 24)

A Schedule of Assessment for the lands and roads affected by the work and therefore liable for the cost thereof will be prepared as per the Drainage Act. Also, assessments may be made against any public utility or road authority, as per Section 26 of the Drainage Act, for any increased cost for the removal or relocation of any of its facilities and plant that may be necessitated by the construction or maintenance of the drainage works.

The cost of any approvals, permits or any extra work, beyond that specified in this Report that is required by any utility, government ministry or organization (federal or provincial), or road authority shall be assessed to that organization requiring the permit, approval, or extra work.

The estimated cost of the drainage works has been assessed in the following manner:

1. As per Section 26 of the Drainage Act, the roads and utilities have been assessed the increased cost of the drainage works caused by the existence of the works of the public utility or road. The road crossings, with the exception of the extra cost to locate and work around utilities, have been assessed with 100% of the estimated cost assessed as a special benefit assessment to the road authority. The utilities have been assessed with 100% of the estimated cost to work around that utility, daylighting costs and costs of lowering their infrastructure as a special benefit assessment to that utility. The road crossings and the cost to utilities shall be tendered separately with the actual cost-plus engineering being assessed to the owner of the road authority or utility as a special benefit assessment. The special benefit assessments to roads and utilities shall be calculated as follows:

Telecom Special Benefit Assessment= $1.0176 \text{ (Net Tax)} \times \text{Tendered Cost to Locate and Work Around Telecom} \times 1.25 \text{ (For Engineering)} + \$1,680 \text{ (Daylighting and Surveying Utilities)}$

Watermain Special Benefit Assessment= $1.0176 \text{ (Net Tax)} \times \text{All costs as part of Watermain Lowering on Argyle Street} \times 1.20 \text{ (For Engineering)} + \$1,680 \text{ (Daylighting and Surveying Utilities)}$

Argyle Street Special Benefit Assessment= $1.0176 \text{ (Net Tax)} \times \text{Tendered Costs for all items under Crossing Replacement except the Utilities} \times 1.25 \text{ (For Engineering)}$

2. Catch Basins have generally been assessed as a benefit assessment with 50% of the estimated cost assessed to the upstream property and 50% assessed to the downstream property.
3. The remaining cost of the drainage works has generally been assessed with 55% of the cost applied as a benefit assessment and the remainder applied as outlet assessment to the upstream lands and roads based on equivalent hectares.

All final costs included in the cost estimate of this report, except as identified above, shall be pro-rated based on the Composite Schedule of Assessment. Any additional costs shall be assessed in a manner as determined by the Engineer in accordance with the Drainage Act.

Allowances

Under Section 29 of the Drainage Act, the Engineer in his report shall estimate and allow in money to the Owner of any land that it is necessary to use for the construction or improvement of a drainage works or for the disposal of material removed from drainage works. This shall be considered an allowance for right-of-way.

Under Section 30 of the Drainage Act, the Engineer shall determine the amount to be paid to persons entitled thereto for damage, if any, to ornamental trees, lawns, fences, land and crops occasioned by the disposal of material removed from a drainage works. This shall be considered an allowance for damages.

Allowances have been made, where appropriate, as per Section 29 of the Drainage Act for right-of-way and as per Section 30 of the Drainage Act for damages to lands and crops. Allowances for right of way are based on a land value of \$50,000.00 per hectare (\$20,000.00 per acre). Allowances for crop loss are based on \$2,000.00 per hectare for the first year and \$1,000.00 for the second year (\$3,000.00 per hectare total).

Access and Working Area

Access to the work site for construction and future maintenance shall be from Petty Street and Argyle Street and along the length of the drainage works. Access shall generally be restricted to a width of 6 metres. For future maintenance, access may be along the property lines at the Drainage Superintendents discretion.

The working area for the construction and future maintenance of the tile drains shall be restricted to a width of 20m normally centred on the proposed tile drain. The working area for the open channel shall be from either side of the channel and shall be restricted to 15m past the top of bank. The working area shall extend 10m past the length of the drain to allow for vehicles to turn around. For work within the finished lawns the working area shall be restricted to 10m normally centered on the proposed tile drain.

Restrictions

No trees and shrubs shall be planted nor shall permanent structures be erected within 5m of either side of the proposed drain without prior written permission of Council. Attention is also drawn to Sections 80 and 82 of the Drainage Act, which refer to the removal of obstructions in a drain and damage caused to a drain.

Agricultural Grant

If available, it is recommended that application for subsidy be made for eligible agricultural properties. Any assessments against agricultural properties are shown separately in the Schedule of Assessment.

Maintenance

The Brown-Rose Drain (Main Drain), Branch “B” and Branch “C” shall be maintained and repaired in accordance with the specifications, drawings and applicable Schedule of Maintenance contained in this report. Branch “A” of the Brown-Rose Drain shall be

maintained and repaired in accordance with the Engineer's Report dated February 11th, 2020.

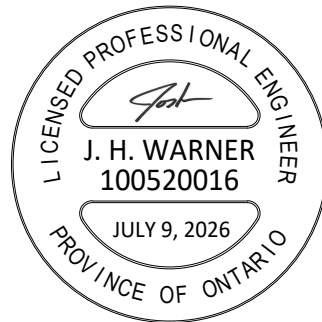
If capacity is restricted at the culvert under Petty Street, the culvert may be replaced at the discretion of the Drainage Superintendent. Alternatively, under this report or under maintenance, a junction box may be installed upstream of the outlets in order to combine two of the tiles into a single 825mm dia. concrete tile to provide better alignment to the road culvert.

The additional costs as a result of a road or utility shall be assessed to the owner of the road or utility as per Section 26 of the Drainage Act. Therefore, the road crossings on Petty Street & Argyle Street, excluding basins, shall be maintained and repaired at the expense of the road authority.

Yours truly,



Josh Warner, P. Eng.
R. Dobbin Engineering Inc.



Brown-Rose Drain
Municipality of North Middlesex
July 9, 2026

ALLOWANCES

Allowances have been made as per Sections 29 & 30 of the Drainage Act for Right of Way and damages to lands and crops.

Conc.	Lot or part	Roll No.	Owner	Section 29 (\$)	Section 30 (\$)	Total (\$)
Branch "B"						
1	Lot 14	042-010-005	M. Corman		100	100
2	Lot 14	042-010-068	Triple A Acres Ltd		5,090	5,090
Total Allowances (Branch "B")				\$0	\$5,190	\$5,190
Main Drain and Branch "C"						
1	W 1/2 Lot 13	042-010-003	Denbree Farms Ltd	-	200	200
2	Lot 13	042-010-069	Triple A Acres Ltd	-	6,570	6,570
3	Lot 13	042-010-075	Breegurgh Farms Ltd	-	5,450	5,450
4	Lot 12 & W 1/2 Lot 13	042-010-174	P. Rose	-	5,540	5,540
Total Allowances (Main Drain and Branch "C")				\$0	\$17,760	\$17,760

Brown-Rose Drain (Branch "B")
Municipality of North Middlesex
July 9, 2026

1 of 1

ESTIMATE OF COST (BRANCH "B")

<u>Item Description (Supply and Install New)</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Total (\$)</u>
Locate and Abandon Existing Drain	1	LS	1,000	1,000
Connect to Existing CB at Station B 0+302	1	LS	200	200
Strip and Place Topsoil	848	m	6	5,088
Supply and Install 450mmø Concrete Tile	148	m	64	9,472
Supply and Install 350mmø Concrete Tile	300	m	48	14,400
Supply and Install 300mmø Concrete Tile	292	m	43	12,556
Supply and Install 200mmø Concrete Tile	108	m	38	4,104
Catchbasin #8 (600mm x 600mm) @ B 1+150 c/w Berm	1	LS	2,500	2,500
Restoration	1	LS	500	500
Contingency				<u>2,500</u>
Sub Total				52,320
Allowances				5,190
Engineering				8,970
Estimate for Tendering, Inspection and Contract Administration				3,500
Total Estimate excluding HST				<u>69,980</u>
Non-Recoverable HST (1.76%)				<u>1,140</u>
Total Estimate				\$ 71,120

ESTIMATE OF COST (MAIN DRAIN AND BRANCH "C")

38mm/24hrs for Main Drain and Branch "C" and Tripling Main Drain From the East Side of Petty Street to Branch "B"

<u>Item Description (Supply and Install New)</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Total (\$)</u>
Pre-Construction Meeting	1	LS	500	500
Brushing and Tree Removal	1	LS	2,000	2,000
Locate Existing Twinned Drain (Station 0+509 to 2+196)	1	LS	4,000	4,000
Locate and Abandon Existing Drain (2+196 to 3+213 and C 0+000 to C 0+230)	1	LS	2,000	2,000
Strip and Place Topsoil (Station 0+619 to 3+213 and C 0+000 to C 0+230)	2946	m	4	11,784
<u>Station 0+509 to 0+619</u>				
Rip Rap at Outlet (Station 0+509) c/w Re-Grading	20	tonne	150	3,000
Rodent Grate for 525mmø HDPE Pipe at Outlet (Center Drain)	1	LS	450	450
Rodent Grate for 600mmø HDPE Pipe at Outlet (North Drain)	1	LS	500	500
Remove and Dispose of Existing Drain as indicated on Detail Drawing (Station 0+509 to 0+551)	42	m	20	840
Remove 6m of CSP Outlet Pipe and Supply and Install New 6m of 525mmø HDPE Pipe at Outlet c/w Rodent Grate (South Drain)	1	LS	2,000	2,000
Supply and Install 525mmø HDPE Pipe (Station 0+509 to 0+619) for Center Drain	110	m	200	22,000
Supply and Install 600mmø HDPE Pipe (0+509 to 0+551) c/w Connection for North Drain	42	m	240	10,080
Supply and Install 525mmø HDPE 22.5 Degree Elbow	1	each	300	300
Supply and Install 600mmø HDPE 22.5 Degree Elbow	1	each	400	400
Granular "A" for Driveway Crossing	20	tonne	40	800
Locate and Work Around Existing Water Service	1	LS	800	800
Restoration of Lawn at #10615 Petty Street with Topsoil and Hydroseed	1	LS	3,500	3,500
Supply and Install 525x525x375mmø Tee Complete with 3m of 375mmø Lead and Connection to existing DICB #1	1	LS	1,200	1,200
Locate and Connect Existing Tiles	2	each	200	400

<u>Item Description (Supply and Install New)</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Total (\$)</u>
<u>Station 0+619 to 3+213 and C 0+000 to C 0+230</u>				
Supply and Install 525mmØ Concrete Tile (Station 0+619 to 1+433)	814	m	75	61,050
Supply and Install 450mmØ Concrete Tile (Station 1+433 to 2+196)	763	m	64	48,832
Supply and Install 525mmØ Concrete Tile (Station 2+196 to 2+333) (Twinned)	274	m	75	20,550
Argyle Street Road Crossing				
Traffic Control	1	LS	800	800
Locate and Work Around Telecom Line	1	LS	500	500
Remove Existing Tile and Dispose of Unsuitable Backfill Material	1	LS	600	600
750mmØ HDPE Smooth Wall Pipe (Open Cut) c/w Bedding	15	m	500	7,500
Supply and Install Granular "A" Backfill	50	tonne	40	2,000
Restoration and Ditch Grading	1	LS	800	800
<u>Watermain Lowering</u>				
Cut and Cap Existing Watermain	2	each	200	400
100mmØ PVC Watermain Pipe installed by Directional Drilling c/w tracer wire	12	m	800	9,600
Hot tap existing watermain with 50mmØ corporation stop, c/w stainless steel saddle for supply during testing procedure. To be removed and corporation stop to be permanently closed upon completion	1	each	1,000	1,000
Supply and install Couplers at connections	2	each	1,000	2,000
Connect new 100mmØ watermain to existing. Both connections to be completed the same day	1	LS	8,000	8,000
New watermain to undergo pressure testing, leakage testing and bacteriological testing as per Municipal Standards prior to connection	1	LS	2,000	2,000
Remove and dispose offsite existing watermain	12	m	60	720
Restoration	1	LS	500	500
Supply and Install 600mmØ Concrete Tile (Station 2+348 to 2+640)	292	m	84	24,528
Supply and Install 525mmØ Concrete Tile (Station 2+640 to 2+820)	180	m	75	13,500
Supply and Install 400mmØ Concrete Tile (Station 2+820 to 3+005)	185	m	54	9,990
Supply and Install 300mmØ Concrete Tile (Station 3+005 to 3+213 and C 0+000 to C 0+230)	438	m	43	18,834
Locate and Connect Existing Lead from DICB #2 to Proposed Drain	1	LS	200	200
Locate and Connect Existing Tiles	2	each	120	240
Remove Existing Basin at Station 1+375 and Grout Leads	1	LS	1,200	1,200
Remove Existing Basin at Station 2+348	1	LS	600	600
Connect Branch "C" to Main Drain	1	LS	300	300
Proposed Catchbasin #3 (900mm x 1200mm) @ Station 1+433 c/w 9m of 400mm dia., Connections to Existing Mains and Berm	1	LS	5,000	5,000

<u>Item Description (Supply and Install New)</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Total (\$)</u>
Proposed Junction Box #4 (1800mmx1200mm) at Station 2+196 c/w Connections	1	LS	6,000	6,000
Remove Existing Basin at Station 2+196	1	LS	1,200	1,200
Remove Existing Junction Box at Station 2+196	1	LS	1,200	1,200
Remove and Dispose of Existing Pipes identified on Detail Plan	1	LS	800	800
Extend Branch "B" to JB #4 with 450mmø Concrete Tile	7	m	80	560
450mmø Concrete Tile from JB #4 to South Drain c/w Connections and Elbows	6	m	80	480
400mmø Concrete Tile from JB #4 to North Drain c/w Connections and Elbows	8	m	70	560
Connect 300mmø Tile to Branch "B"	1	LS	250	250
Catchbasin #5 (900mm x 1200mm) @ Station 2+333 c/w Berm	1	LS	3,500	3,500
Supply and Install 525mmø HDPE 45 Degree Elbow Out of CB #5	1	LS	500	500
Catchbasin #6 (900mm x 1200mm) @ Station 2+348	1	LS	3,500	3,500
Catchbasin #7 (900mm x 1200mm) @ Station 3+213 c/w Berm	1	LS	3,500	3,500
Catchbasin #9 (900mm x 1200mm) @ Station C 0+230 c/w Berm	1	LS	3,500	3,500
Sil Fence Downstream of Work	1	LS	500	500
Cross Connection of Existing Drains being Tripled with 350mm dia. Concrete Tile c/w Connections	40	m	100	4,000
Contingency				16,960
Sub Total				354,808
Allowances				17,760
ABCA Fee				450
Engineering				54,133
Expose Existing Drain				987
Daylight and Survey Utilities				3,300
Estimate for Tendering, Inspection and Contract Administration				18,500
Total Estimate excluding HST				449,938
Non-Recoverable HST (1.76%)				7,610
Total Estimate				\$ 457,548

SCHEDULE OF ASSESSMENT (BRANCH "B")

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
Agricultural Lands								
1	E 1/2 Lot 13	0.30	042-010-004	D. Currie		-	1,314	1,314
	Lot 14	0.50	042-010-005	M. Corman		-	2,190	2,190
2	Lot 13	4.70	042-010-069	Triple A Acres Ltd		-	5,145	5,145
	Lot 14	16.00	042-010-068	Triple A Acres Ltd		39,116	23,355	62,471
						-	39,116	32,004
						-		71,120
Total Public Lands						-		
Total Non Agricultural Lands						-		
Total Agricultural Lands						71,120		
Total Assessment						\$71,120		

SCHEDULE OF ASSESSMENT (MAIN DRAIN AND BRANCH "C")

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
Utilities								
	Telecom Utility			Bell Telecom	2,301	-	-	2,301
	Water Utility			Municipality of North Middlesex	32,476	-	-	32,476
					34,777	-	-	34,777
Public Lands								
	Petty Street	0.50		County of Middlesex		1,800	-	1,800
	Argyle Street	1.50		Municipality of North Middlesex	15,064	4,895	6,278	26,237
					15,064	6,695	6,278	28,037
Non Agricultural Lands								
3	Pt. Lot 13	1.40	042-010-075-01	D. Manning		-	2,930	2,930
					-	-	2,930	2,930
Agricultural Lands								
1	Lot 12	10.00	042-010-002	Denbree Farms Ltd		-	15,271	15,271
	W 1/2 Lot 13	12.00	042-010-003	Denbree Farms Ltd		4,509	19,141	23,650
	E 1/2 Lot 13	7.00	042-010-004	D. Currie		-	15,279	15,279
	Lot 14	0.50	042-010-005	M. Corman		-	379	379
2	Lot 13	32.00	042-010-069	Triple A Acres Ltd		79,239	40,974	120,213
	Lot 14	16.00	042-010-068	Triple A Acres Ltd		-	12,125	12,125
3	Lot 12	7.50	042-010-074	A. Aerts		-	4,608	4,608
	Lot 13	38.50	042-010-075	Breegurgh Farms Ltd		72,916	25,328	98,244
	Lot 14	15.00	042-010-076	A. Van Deuren		-	8,885	8,885
4	Lot 12 & W 1/2 Lot 13	29.00	042-010-174	P. Rose		81,677	11,216	92,893
	E 1/2 Lot 13	0.50	042-010-172	H & E Kennes Farms Inc		-	257	257
5	Lot 12	2.00	042-010-179	J. Ross		-	-	-
	Total Area (Ha)	173.40			-	238,341	153,463	391,804
				Total Utilities	34,777			
				Total Public Lands	28,037			
				Total Non Agricultural Lands	2,930			
				Total Agricultural Lands	391,804			
				Total Assessment	\$457,548			

COMPOSITE SCHEDULE OF ASSESSMENT

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
Utilities								
	Telecom Utility			Bell Telecom	2,301	-	-	2,301
	Water Utility			Municipality of North Middlesex	32,476	-	-	32,476
					34,777	-	-	34,777
Public Lands								
	Petty Street	0.50		County of Middlesex	-	1,800	-	1,800
	Argyle Street	1.50		Municipality of North Middlesex	15,064	4,895	6,278	26,237
					15,064	6,695	6,278	28,037
Non Agricultural Lands								
3	Pt. Lot 13	1.40	042-010-075-01	D. Manning	-	-	2,930	2,930
					-	-	2,930	2,930
Agricultural Lands								
1	Lot 12	10.00	042-010-002	Denbree Farms Ltd	-	-	15,271	15,271
	W 1/2 Lot 13	12.00	042-010-003	Denbree Farms Ltd	-	4,509	19,141	23,650
	E 1/2 Lot 13	7.00	042-010-004	D. Currie	-	-	16,593	16,593
	Lot 14	0.50	042-010-005	M. Corman	-	-	2,569	2,569
2	Lot 13	32.00	042-010-069	Triple A Acres Ltd	-	79,239	46,119	125,358
	Lot 14	16.00	042-010-068	Triple A Acres Ltd	-	39,116	35,480	74,596
3	Lot 12	7.50	042-010-074	A. Aerts	-	-	4,608	4,608
	Lot 13	38.50	042-010-075	Breegurgh Farms Ltd	-	72,916	25,328	98,244
	Lot 14	15.00	042-010-076	A. Van Deuren	-	-	8,885	8,885
4	Lot 12 & W 1/2 Lot 13	29.00	042-010-174	P. Rose	-	81,677	11,216	92,893
	E 1/2 Lot 13	0.50	042-010-172	H & E Kennes Farms Inc	-	-	257	257
5	Lot 12	2.00	042-010-179	J. Ross	-	-	-	-
	Total Area (Ha)	173.40			-	277,457	185,467	462,924
			Total Utilities		34,777			
			Total Public Lands		28,037			
			Total Non Agricultural Lands		2,930			
			Total Agricultural Lands		462,924			
			Total Assessment		\$528,668			

Estimated Net Assessment

Net assessment subject to OMAFRA ADIP Policy and actual construction costs.

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Total Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)
Utilities								
	Telecom Utility			Bell Telecom	2,301			2,301
	Water Utility			Municipality of North Middlesex	32,476			32,476
Public Lands								
	Petty Street	0.50		County of Middlesex	1,800			1,800
	Argyle Street	1.50		Municipality of North Middlesex	26,237			26,237
Non Agricultural Lands								
3	Pt. Lot 13	1.40	042-010-075-01	D. Manning	2,930			2,930
Agricultural Lands								
1	Lot 12	10.00	042-010-002	Denbree Farms Ltd	15,271	5,090		10,181
	W 1/2 Lot 13	12.00	042-010-003	Denbree Farms Ltd	23,650	7,883	200	15,567
	E 1/2 Lot 13	7.00	042-010-004	D. Currie	16,593	5,531		11,062
	Lot 14	0.50	042-010-005	M. Corman	2,569	856	100	1,613
2	Lot 13	32.00	042-010-069	Triple A Acres Ltd	125,358	41,786	6,570	77,002
	Lot 14	16.00	042-010-068	Triple A Acres Ltd	74,596	24,865	5,090	44,641
3	Lot 12	7.50	042-010-074	A. Aerts	4,608	1,536		3,072
	Lot 13	38.50	042-010-075	Breegurgh Farms Ltd	98,244	32,748	5,450	60,046
	Lot 14	15.00	042-010-076	A. Van Deuren	8,885	2,962		5,923
4	Lot 12 & W 1/2 Lot 13	29.00	042-010-174	P. Rose	92,893	30,964	5,540	56,389
	E 1/2 Lot 13	0.50	042-010-172	H & E Kennes Farms Inc	257	86		171
5	Lot 12	2.00	042-010-179	J. Ross	-	-		-
					528,668	154,307	22,950	351,411

SCHEDULE OF MAINTENANCE NO. 1

To Maintain the Open Channel Portion of the Brown-Rose Drain (Station 0+000 to 0+486)

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
Public Lands							
	Petty Street	0.50		County of Middlesex	-	8	8
	Argyle Street	1.50		Municipality of North Middlesex	-	23	23
					-	31	31
Non Agricultural Lands							
3	Pt. Lot 13	1.40	042-010-075-01	D. Manning	-	11	11
					-	11	11
Agricultural Lands							
1	Lot 12	10.00	042-010-002	Denbree Farms Ltd	-	39	39
	W 1/2 Lot 13	12.00	042-010-003	Denbree Farms Ltd	-	46	46
	E 1/2 Lot 13	7.00	042-010-004	D. Currie	-	27	27
	Lot 14	0.50	042-010-005	M. Corman	-	2	2
2	Lot 13	32.00	042-010-069	Triple A Acres Ltd	-	124	124
	Lot 14	16.00	042-010-068	Triple A Acres Ltd	-	62	62
3	Lot 12	7.50	042-010-074	A. Aerts	-	29	29
	Lot 13	38.50	042-010-075	Brecgurgh Farms Ltd	-	149	149
	Lot 14	15.00	042-010-076	A. Van Deuren	-	58	58
4	Lot 12 & W 1/2 Lot 13	29.00	042-010-174	P. Rose	-	112	112
	E 1/2 Lot 13	0.50	042-010-172	H & E Kennes Farms Inc	-	2	2
5	Lot 12	2.00	042-010-179	J. Ross	300	8	308
					300	658	958
				Total Public Lands	31		
				Total Non Agricultural Lands	11		
				Total Agricultural Lands	958		
				Total Assessment	\$1,000		

SCHEDULE OF MAINTENANCE NO. 2

To Maintain the Closed Portion of the Brown-Rose Main Drain (Station 0+509 to 3+213)

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
Public Lands							
	Petty Street	0.50		County of Middlesex	-	-	-
	Argyle Street	1.50		Municipality of North Middlesex	-	16	16
					-	16	16
Non Agricultural Lands							
3	Pt. Lot 13	1.40	042-010-075-01	D. Manning	-	8	8
					-	8	8
Agricultural Lands							
1	Lot 12	10.00	042-010-002	Denbree Farms Ltd	-	52	52
	W 1/2 Lot 13	12.00	042-010-003	Denbree Farms Ltd	-	74	74
	E 1/2 Lot 13	7.00	042-010-004	D. Currie	-	54	54
	Lot 14	0.50	042-010-005	M. Corman	-	1	1
2	Lot 13	32.00	042-010-069	Triple A Acres Ltd	161	137	298
	Lot 14	16.00	042-010-068	Triple A Acres Ltd	-	37	37
3	Lot 12	7.50	042-010-074	A. Aerts	-	12	12
	Lot 13	38.50	042-010-075	Breegurgh Farms Ltd	167	67	234
	Lot 14	15.00	042-010-076	A. Van Deuren	-	22	22
4	Lot 12 & W 1/2 Lot 13	29.00	042-010-174	P. Rose	171	20	191
	E 1/2 Lot 13	0.50	042-010-172	H & E Kennes Farms Inc	-	1	1
5	Lot 12	2.00	042-010-179	J. Ross	-	-	-
					499	477	976
				Total Public Lands	16		
				Total Non Agricultural Lands	8		
				Total Agricultural Lands	976		
				Total Assessment	\$1,000		

SCHEDULE OF MAINTENANCE NO. 3
To Maintain Branch "B" of the Brown-Rose Drain

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
Public Lands							
	Argyle Street	0.73		Municipality of North Middlesex	-	14	14
					-	14	14
Agricultural Lands							
1	E 1/2 Lot 13	0.30	042-010-004	D. Currie	-	11	11
	Lot 14	0.50	042-010-005	M. Corman	-	19	19
2	Lot 13	4.70	042-010-069	Triple A Acres Ltd	-	98	98
	Lot 14	16.00	042-010-068	Triple A Acres Ltd	373	334	707
	Lot 13	3.00	042-010-075	Breegurgh Farms Ltd	103	10	113
	Lot 14	4.00	042-010-076	A. Van Deuren	23	15	38
					499	487	986
				Total Public Lands	14		
				Total Agricultural Lands	986		
				Total Assessment	\$1,000		

SCHEDULE OF MAINTENANCE NO. 4
To Maintain Branch "C" of the Brown-Rose Drain

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
Agricultural Lands							
1	Lot 12	10.00	042-010-002	Denbree Farms Ltd	-	275	275
	W 1/2 Lot 13	5.80	042-010-003	Denbree Farms Ltd	-	159	159
2	Lot 13	2.40	042-010-069	Triple A Acres Ltd	500	66	566
					500	500	1,000
Total Agricultural Lands					1,000		
Total Assessment					\$1,000		

Brown-Rose Drain
Municipality of North Middlesex
July 9, 2026

SPECIFICATION OF WORK

1. Location

The work in this specification is located in Lot 12, Concession 5, Lot 13, Concession 2 to 4 and Lot 14, Concession 2 in The Municipality of North Middlesex.

2. Scope of Work

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

- Brown-Rose Drain (Main Drain):
 - Future specifications for an open channel cleanout and Petty Street Culvert Replacement
 - Watermain lowering on Argyle Street
 - 2,983m of proposed tile drain c/w catch basins and includes:
 - Road Crossing on Argyle Street complete by open cut
- Brown Drain (Branch “B”):
 - 848m of proposed tile drain replacement c/w catch basin
- Brown Drain (Branch “C”):
 - 230m of proposed tile drain replacement c/w catch basin

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 and Engineer who may vary these specifications as to minor details but in no way decrease the proposed capacity of the drain.

All excess material shall be disposed offsite at the expense of the Contractor.

Branch “B” shall be completed before November 30, 2026. The remainder of the improvements shall be completed in the dry with a completion date of September 30, 2027.

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. The utilities shall be located prior to the installation of any tile. 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.

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 and County 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.
- d) If work is being completed on a Road and or Road Allowance in North Middlesex, the Contractor is required to complete a Road Allowance Work Permit Application available on their website: <https://www.northmiddlesex.on.ca/media/591>. No fees are required.

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 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 construction and future maintenance shall be from Petty Street and Argyle Street and along the length of the drainage works. Access shall generally be restricted to a width of 6 metres. For future maintenance, access may be along the property lines at the Drainage Superintendents discretion.

The working area for the construction and future maintenance of the tile drains shall be restricted to a width of 20m normally centred on the proposed tile drain. The working area for the open channel shall be from either side of the channel and shall be restricted to 15m past the top of bank. The working area shall extend 10m past the length of the drain to allow for vehicles to turn around. For work within the finished lawns the working area shall be restricted to 10m normally centered on the proposed tile drain.

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. Once the Contractor has located the existing tile and a general alignment has been determined, R. Dobbin Engineering may add additional benchmarks along the length of the drainage works if requested by the Contractor.

11. Removals

The culverts, catch basins, hickenbottoms, outlet pipes, tile, unsuitable or not required excavated material, etc. shall be removed in their entirety and shall be disposed offsite at the expense of the Contractor. Tile under road crossings shall be removed in their entirety.

12. Brushing and Tree Removal

For the tile drain all brush, trees, woody vegetation, stumps etc. shall be removed within the working corridor as determined by the Engineer or Drainage Superintendent. For the open channel all brush, trees, woody vegetation, stumps etc. shall be removed within the channel cross-section and working area in order to facilitate construction or 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 discretion of the Drainage Superintendent or Engineer.

13. Excavation of Open Channel (Future)

For construction and future maintenance, 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 excavated material is to be levelled on the side it is being excavated from. 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 out letting surface water to the channel. The excavated material shall be levelled to a maximum depth at 150mm increments and shall be left in a condition suitable for cultivation. This 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 with the intent not to undercut the side slopes. All material unfit for placing on farmlands, as determined by the Drainage Superintendent or Engineer, shall be disposed of offsite by the Contractor.

Where, as determined by the Drainage Superintendent or Engineer, the banks are unstable the banks shall be re-sloped to 2:1.

14. Installation of Culvert (Future)

The minimum cover is not always adequate during construction and it is the Contractors responsibility to provide additional cover to avoid damage to the pipe.

It is the Contractors responsibility to ensure that the minimum covers are met at the completion of construction. The box culvert shall have a minimum earth cover of 600mm at the completion of construction. The concrete box culvert shall be precast and shall be installed as per OPSS 422. 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 connection plates, butyl tape and shall be wrapped with a minimum 600mm width of geotextile to prevent the migration of soil between the joints. Connection plates shall be installed at the joint of each box culvert. The plates shall be 25mm thick on the top slab and 19mm thick on the side walls. The plates shall be placed at an 800mm spacing. The plates and any holes shall be sealed with CS 102 sealant tape, Sikaflex concrete fix sealant or approved equivalent.

The culvert may have concrete block or rip rap end walls. The culvert length is based on utilizing rip rap end walls.

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.

Road Culverts:

Where there is asphalt, the asphalt shall be sawcut and milled for a thickness of 45mm and 0.30m past the joint. The milled surface shall be tack coated as per OPSS.

The bottom of the excavation shall be excavated to a minimum of 200mm below the proposed bottom of the box culvert. The box culvert shall be bedded with a minimum of 200mm of $\frac{3}{4}$ " clear stone to the underside of the box culvert. The pipe shall be backfilled above the clear stone with Granular "A" in accordance with OPSS 1010, compacted in 300mm lifts. If asphalt is proposed the HL4 and HL3 shall match the existing thicknesses with a minimum thickness of 50mm.

If rip rap end walls are used, they shall consist of 150mm x 300mm quarry stone or approved equal. The area to receive the rip rap shall be graded to a depth of 400mm below finished grade. Filter fabric (Mirafi P150 or approved equal) shall then be placed with any joints overlapped a minimum 600mm. The quarry stone shall then be placed with the smaller pieces placed in the gaps and voids to give it a uniform appearance.

If concrete block end walls are used, they 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 (Terrafix 270R 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 (Terrafix 270R 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.

15. Locate and Abandon Existing Drain

The existing tile drain shall be exposed at the discretion of the Drainage Superintendent or Engineer and Contractor in order to adequately determine the proposed alignment. The existing north drain from Station 0+509 to 0+551 shall be removed with the south drain remaining in place. The existing twinned municipal drain from Station 0+551 to 2+196 shall remain in place. The existing drain from Station 2+196 to 3+213, B 0+302 to B 1+150 and C 0+000 to 0+230 shall be abandoned and crushed.

16. Strip and Place Topsoil

In farmers fields 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 its pre-construction condition.

17. 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.

Concrete tile shall conform to ASTM C412, 2000D. Tile shall have a circular interior and exterior shape.

Where the concrete tile depth is greater than 2.5m the tile shall be bedded to the spring line with clear stone.

HDPE pipe shall be CSA Approved smooth wall gasketed pipe with bell and spigot joints (320 kPa) and shall include clear stone bedding to the spring line under gravel driveways and accesses. The pipe shall be backfilled with Granular "A" under driveways.

The proposed tile shall run in between the two existing tiles from Station 0+509 to 2+196 (with the relocation of the north drain from Station 0+509 to 0+551). The proposed tile for the remainder of the drainage works shall run in the low run and/or adjacent the existing. The exact location is to be determined at the time of construction.

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 (HDPE 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**. The bedding, except where the depth of the tile is greater than 2.5m, shall be included in the Contractors unit price for this item if being completed by excavator. 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, they will do so in one area.

The Landowners are also warned to minimize farm equipment crossing over the trench or along the length of the trench for 1 year after construction in order to protect the tile.

18. Outlet Works

The outlet works for the drain shall consist of HDPE smooth wall pipe as shown on the profile (320 kPa) and detailed plan with a manufactured rodent rotating grate on all outlets. 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 1m on either side of all outlets and to convey flow to the existing road culvert. 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. The erosion protection shall be placed in order align the flow from the three tiles into the existing road culvert.

19. Road Crossing: Argyle Street

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 pipe and 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 3.5mm in all cases. All corrugation profiles shall be of helical lockseam manufacture using 68 x 13mm corrugations. Future culvert replacements shall be to the same specifications.

The proposed tile shall be installed in the same general location as the existing tile, unless otherwise stated on the drawings or in the specification. The location of the tile 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 $\frac{3}{4}$ " clear stone material. When the tile has been installed to the proper grade and depth, the excavation shall be backfilled with $\frac{3}{4}$ " clear stone from the bottom of the excavation to 300mm above the proposed tile. The clear stone shall be considered bedding. Care shall be taken to ensure that the backfill on either side of the pipe 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. Granular "A" shall be mechanically compacted to 100% modified standard proctor density.

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. Watermain Lowering

The watermain lowering shall be completed by Directional Drilling.

The existing watermain is 100mm dia. PVC. The existing watermain shall be removed at the discretion of the Engineer, Municipality and OCWA. The size and material of the watermain shall be verified by the Contractor prior to the ordering of any materials.

The Contractor shall be responsible for notifying the Municipality of North Middlesex, Ontario Clean Water Agency and the Engineer prior to the lowering of the watermain.

The watermain shall be installed in accordance with OPSS, local Municipal standards and with a minimum cover below the proposed tile of 500mm.

The proposed watermain shall be Certa-Lok PVC Pipe or approved equivalent.

Contractor shall confirm the line and grade of existing mains by means of excavation prior to commencing pipe installation. Physical ties are to be free from bends and elbows.

The distribution system shall be backflow protected and pressured tested to 1050 kPa for a period not less than two hours. All leaking joints, fitting and/ or appurtenances shall be tightened and all defective materials shall be removed and replaced. The maximum allowable leakage is 1.85L per day per mm of diameter, per km of length and all necessary steps to reduce the leakage to the allowable amount shall be taken. When the installation is completed and the leakage test and pressure test results are satisfactory, the system shall be

thoroughly swabbed and flushed to remove all debris and unwanted material. The system shall be disinfected using a chlorine solution maintained at a minimum concentration of 50mg/L throughout the length of the watermain. The residual concentration at the end of the 24 hours shall be a minimum of 25mg/L. If the test of the chlorine solution is satisfactory, the contents of the watermain shall be flushed out completely and recharged with municipal water. Water samples of the recharge water in the system shall be analyzed for contamination and the system shall not be put into operation until test results indicate no contamination. Disinfection procedures shall be repeated as necessary. All testing and disinfection shall be carried out by the Contractor in the presence of the Municipality's representative and in accordance with current provincial standards.

21. Catch Basins

Structure	Station	Size (mm)	Grate Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
EXISTING O/S DICB #1	0+568	900x1200	Inlet 225.20	To Remain as Existing with New Lead to South	
EXISTING O/S DICB #2	0+632	900x1200	Inlet 225.38	To Remain as Existing	
CB #3 c/w Berm	1+433	900x1200	228.10	226.49 (W) / 226.55 (N) / 226.55 (S) 525 / 400 / 400	226.51 (E) 450
CB #5 c/w Berm	2+333	900x1200	230.67	229.30 (W) / 229.30 (S) 525 / 525	229.31 (E) 750
CB #6	2+348	900x1200	230.58	226.32 (W) 750	226.33 (E) 600
CB #7 c/w Berm	3+213	900x1200	234.92	233.59 (W) 300	233.60 (E) 250 k/o
CB #8 c/w Berm	B 1+150	600x600	236.10	234.40 (W) 200	234.45 (E) 200 k/o
CB #9 c/w Berm	C 0+230	900x1200	235.80	234.31 (W) 250	234.35 (E) 250 k/o

The catch basins shall be square precast concrete structures as noted above and shall have a birdcage type grate. The catch basins shall be located with the backside at the property line and at the locations identified on the Plans. 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. If more material is required it shall be supplied at the expense of the drainage works.

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 may be installed at the catch basins as determined by the Engineer or Drainage Superintendent.

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.

22. 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 #4	2+196	1800x1200	229.90	229.10 (W) / 229.20 (W) / 229.20 (S) 450 / 400 / 450	229.16 (E) / 229.16 (E) 525 / 525

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.

23. Seeding/Restoration

All areas disturbed by construction shall be restored to their pre-construction state.

All grass areas disturbed by construction, shall be restored with 50mm of screened topsoil and hydroseeded. The timing of the seeding shall be approved by the Drainage Superintendent or Engineer. The side slopes of the open channel shall be restored with seed.

24. 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.

The existing drains shall be cross connected to the proposed drain with 350mm dia. tile at approximately Stations 0+800, 1+100, 1+600 and 1+850 or as directed by the Engineer.

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.

25. 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 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 construction is complete.

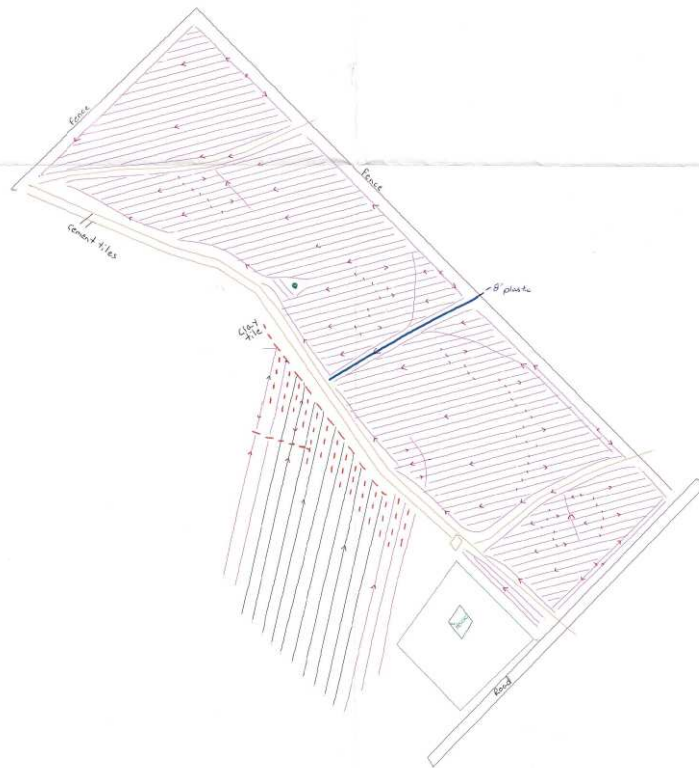


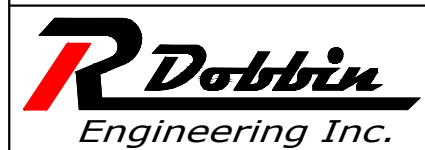
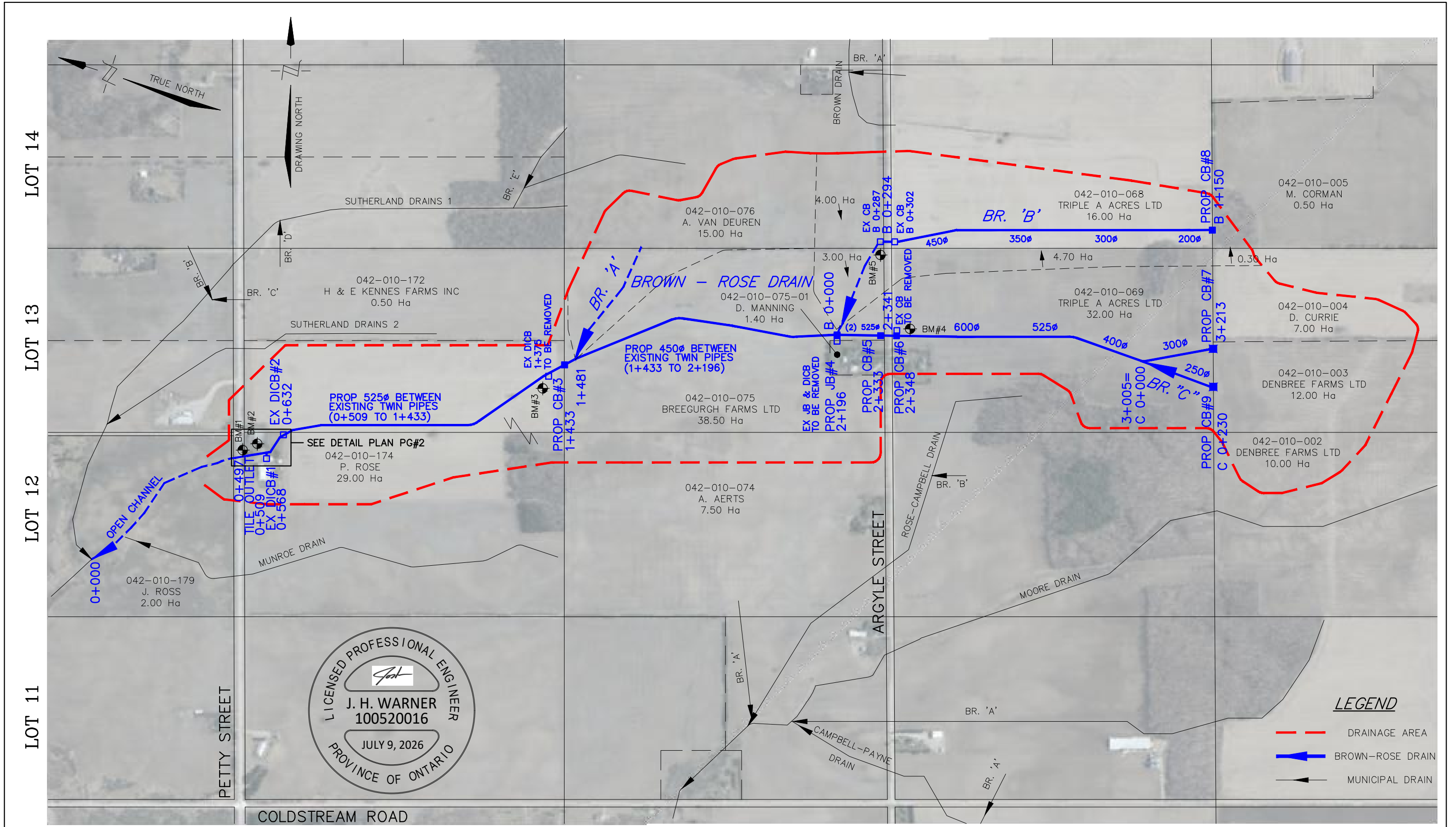
Willemse Drainage Inc.
2437 Glasgow St.
Strathroy, Ontario N7G 3H7
519 777 1778
willemse@rogers.com
LTD. 100% of the shares owned
under permission from Willemse Drainage Inc. & U.S. 400000
Present by AGRIUM
Farm Name
Fid TONYARTS202.lla
-8133551 43054438
-81332788 43049796
North

Tie Sizes Feet
2
4 62,500
8

PipeLine
Road
StreamLine
OldFence

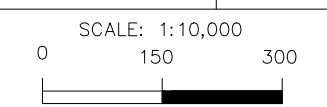
1 inch = 258.16 Feet





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

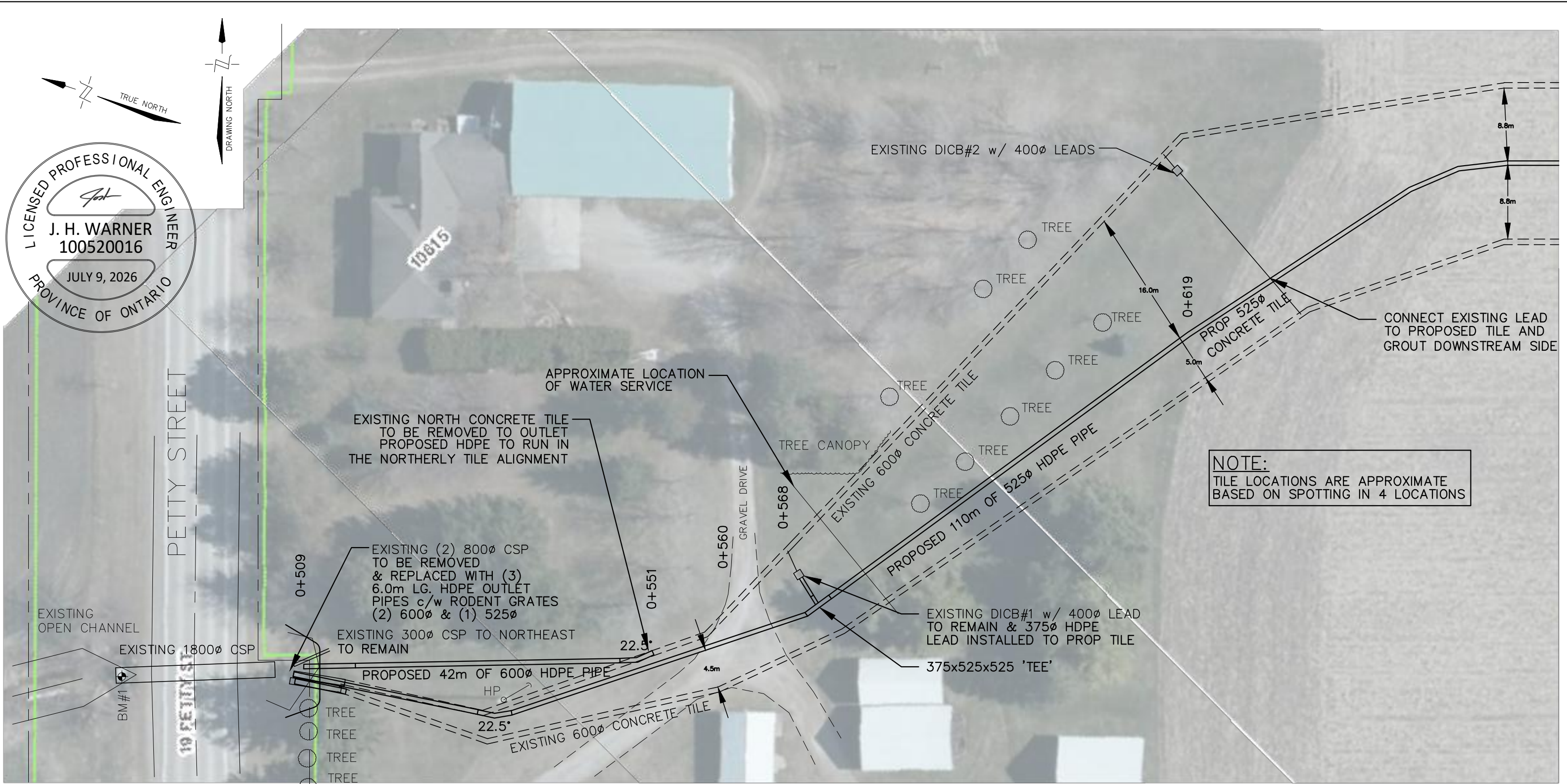
APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	JULY 9, 2026	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

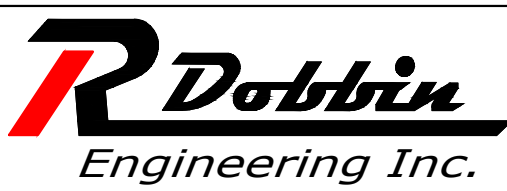


MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN PLAN

Last Updated: May 18, 2026





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

DRAWING NAME:
Brown-Rose Drain Detail Plan

PROJECT No.
2025-1757

APPROVED J. WARNER	NO.	REVISIONS	DATE	BY
CHECKED D. MOORES	1	FINAL REPORT	JULY 9, 2026	CS
DRAWN C. SAUNDERS	SCALE: 1: 500 0 4 8 12m			

MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN
DETAIL PLAN

2
OF 11

Last Updated: June 1, 2026

GENERAL NOTES

1. BENCHMARK No.1 ELEV. 225.51

TOP OF EAST END OF EXISTING 1800Ø CSP CROSSING PETTY STREET. CULVERT #1, ST. 0+497

BENCHMARK No.2 ELEV. 225.20

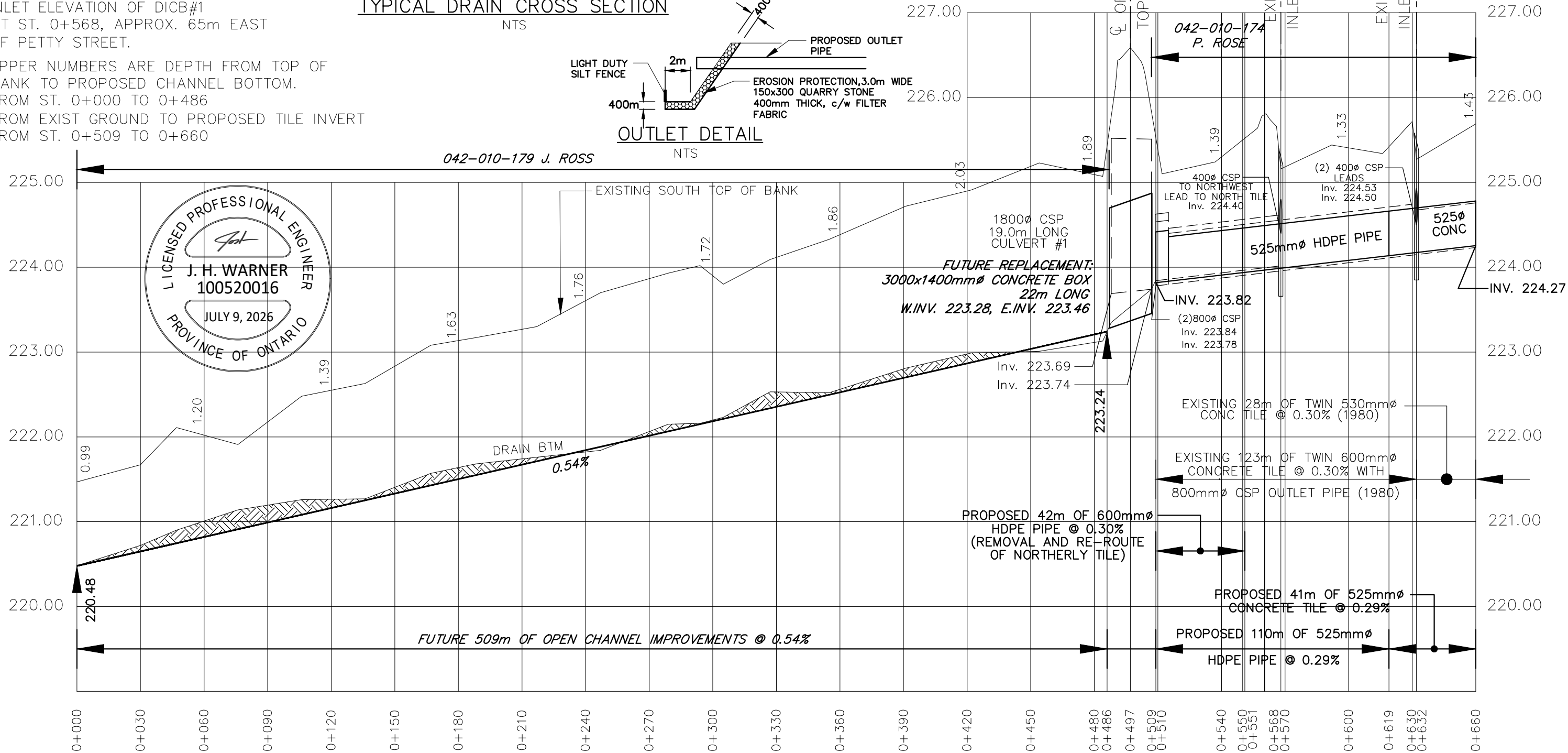
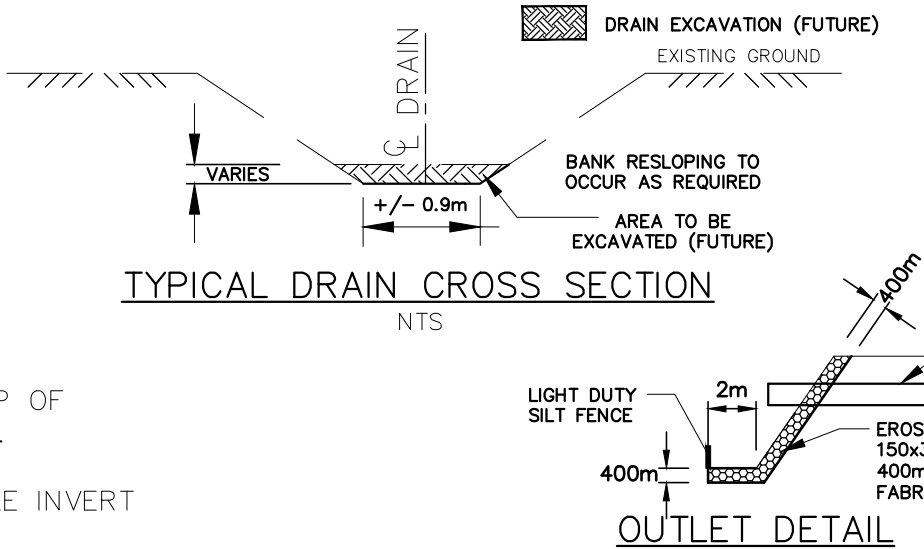
INLET ELEVATION OF DICB#1

AT ST. 0+568, APPROX. 65m EAST OF PETTY STREET.
2. UPPER NUMBERS ARE DEPTH FROM TOP OF BANK TO PROPOSED CHANNEL BOTTOM.

FROM ST. 0+000 TO 0+486

FROM EXIST GROUND TO PROPOSED TILE INVERT

FROM ST. 0+509 TO 0+660



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

DRAWING NAME:
Brown-Rose Drain Profile 1

PROJECT No.
2025-1757

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	JULY 9, 2026	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

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

MUNICIPALITY of NORTH MIDDLESEX
BROWN - ROSE DRAIN
PROFILE

3
OF 11

GENERAL NOTES

1. BENCHMARK No.2 ELEV. 225.20

INLET ELEVATION OF DICB#1

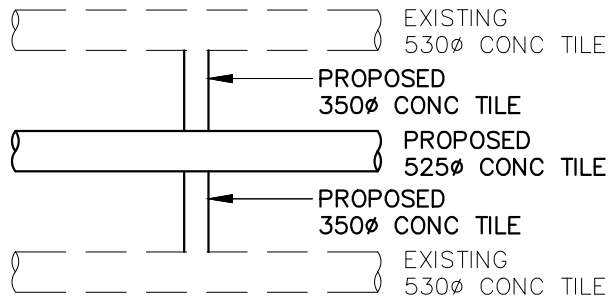
AT ST. 0+568, APPROX. 65m EAST

OF PETTY STREET.
2. CROSS CONNECTION BETWEEN 3 DRAINS TO BE

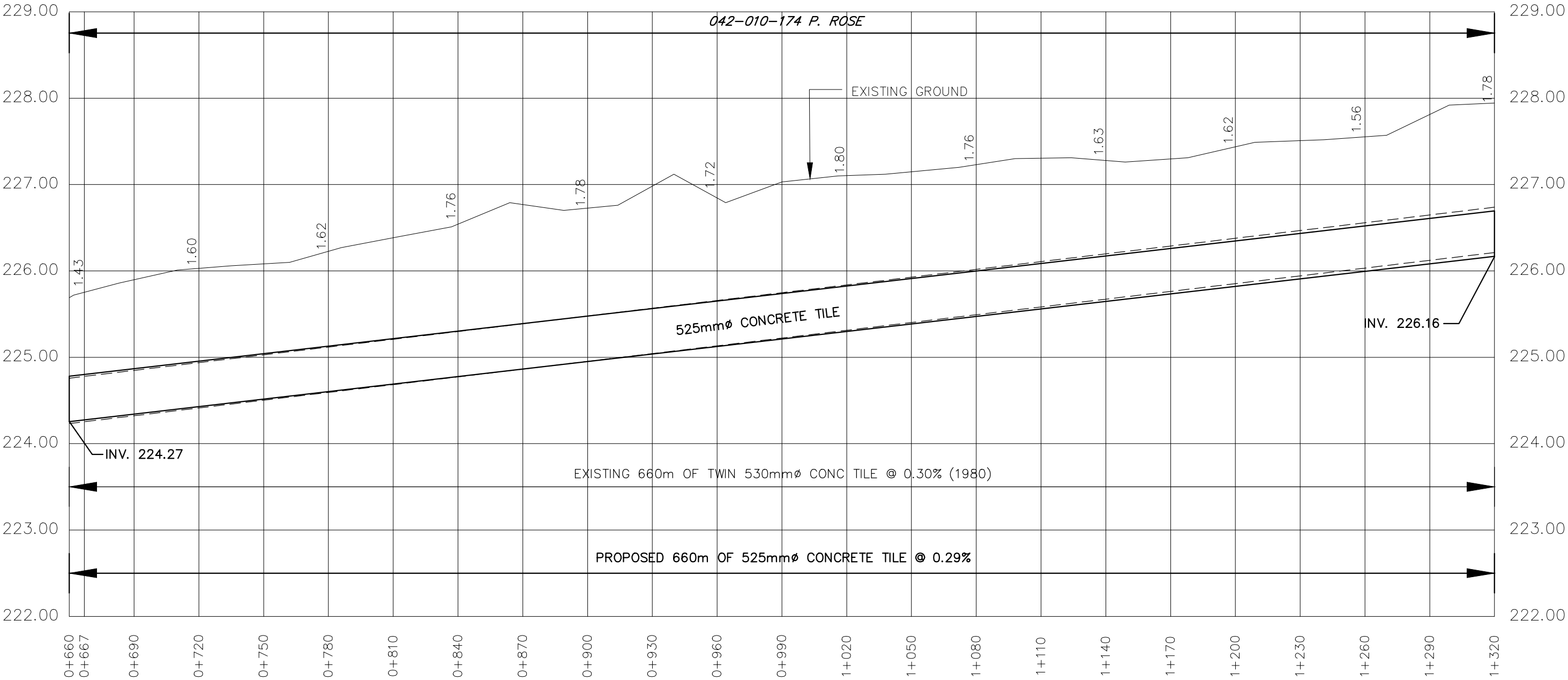
COMPLETED APPROXIMATELY AT STATIONS:

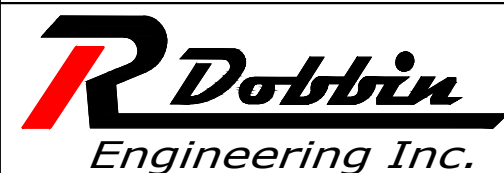
0+800, 1+100, 1+600, 1+850
3. UPPER NUMBERS ARE DEPTH FROM EXISTING

GROUND TO THE PROPOSED INVERT.



TYPICAL CROSS CONNECTION DETAIL
NTS





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

DRAWING NAME:
Brown-Rose Drain Profile 2

PROJECT No.
2025-1757

APPROVED
J. WARNER

CHECKED
B. VAN RUITENBURG

DRAWN
C. SAUNDERS

NO.	REVISIONS	DATE	BY
1	FINAL REPORT	JULY 9, 2026	CS

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

MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN

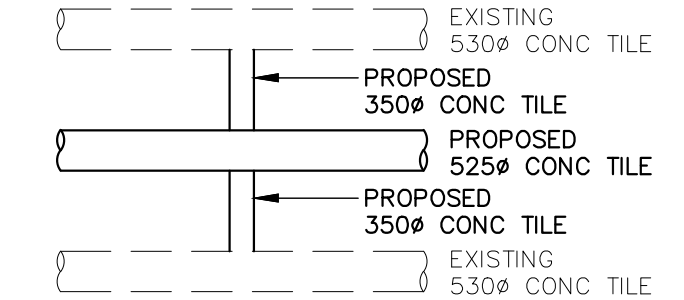
PROFILE

4

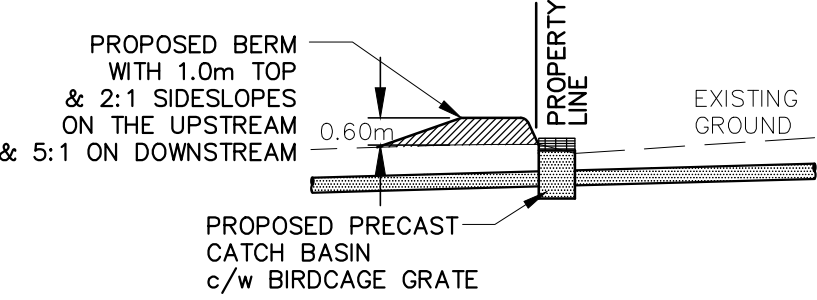
OF 11

GENERAL NOTES

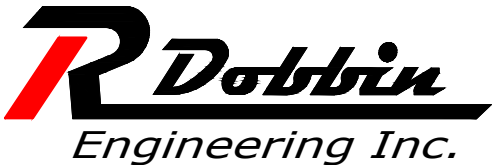
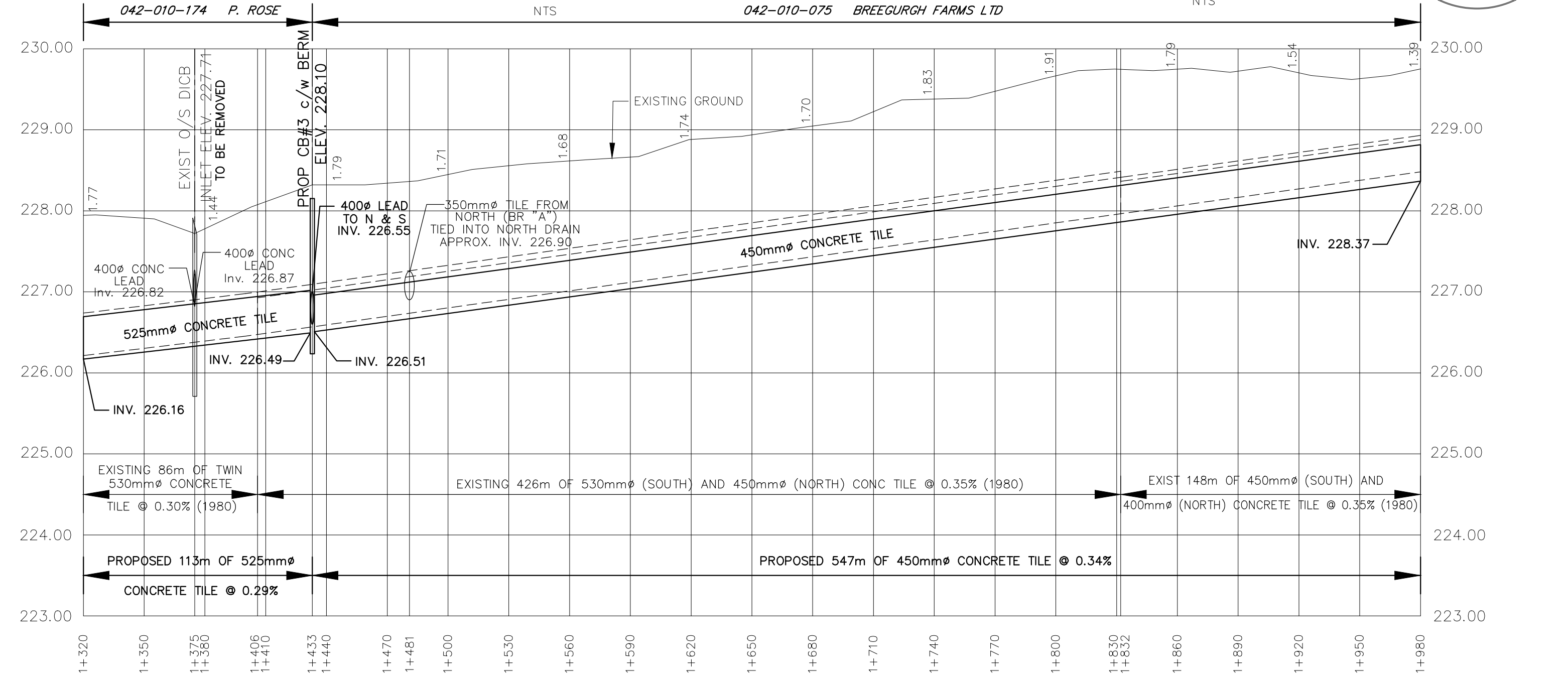
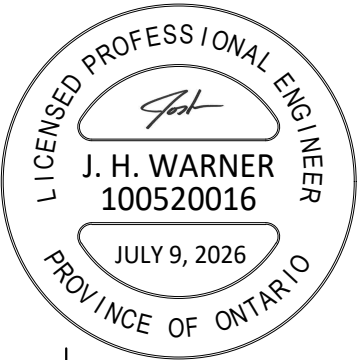
1. BENCHMARK No.3 ELEV. 227.71
INLET ELEVATION OF DICB#1
AT ST. 1+375
2. CROSS CONNECTION BETWEEN 3 DRAINS TO BE
COMPLETED APPROXIMATELY AT STATIONS:
0+800, 1+100, 1+600, 1+850



TYPICAL CROSS CONNECTION DETAIL



TYPICAL BERM DETAIL



DRAWING NAME:
Brown-Rose Drain Profile 3

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

PROJECT No.
2025-1757

APPROVED
J. WARNER

CHECKED
B. VAN RUITENBURG

DRAWN
C. SAUNDERS

NO.	REVISIONS	DATE	BY
1	FINAL REPORT	JULY 9, 2026	CS

SCALE: 1:2,000

0 20 40 60m

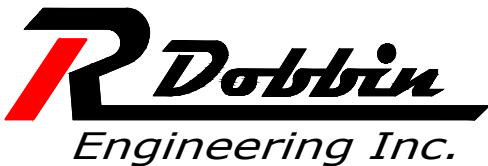
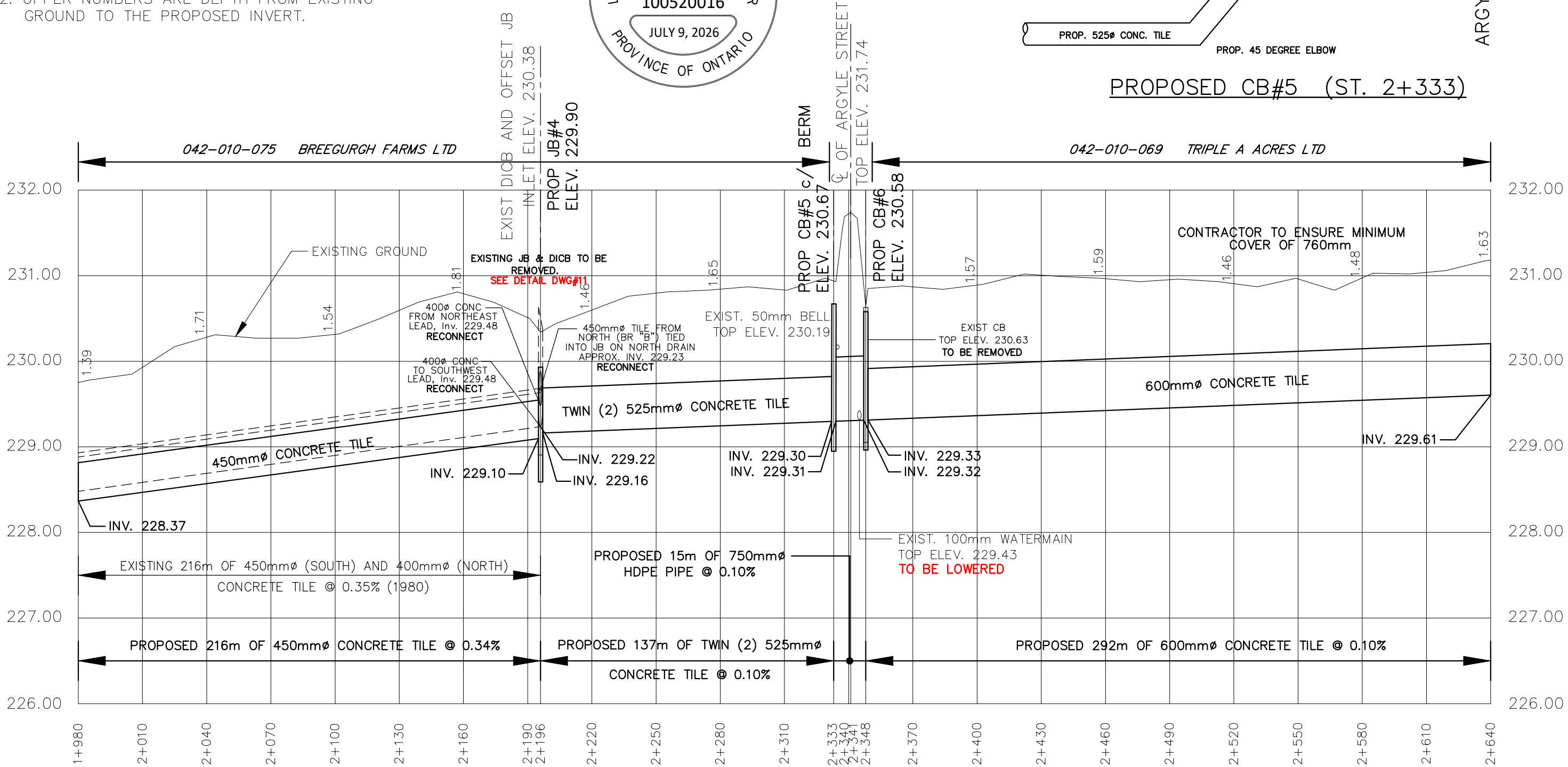
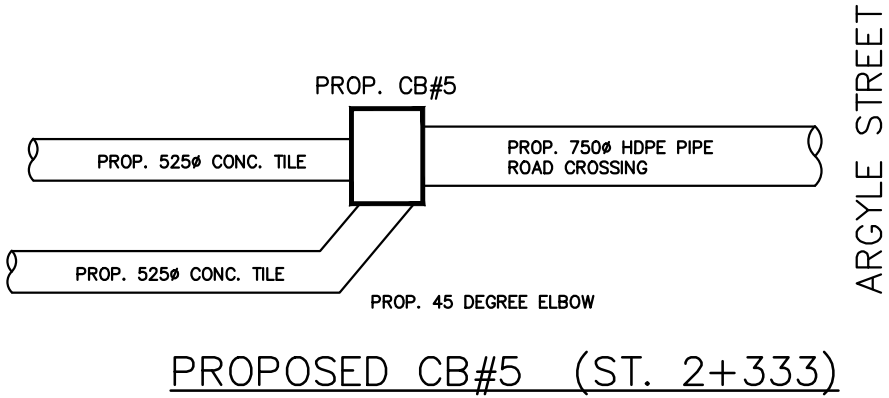
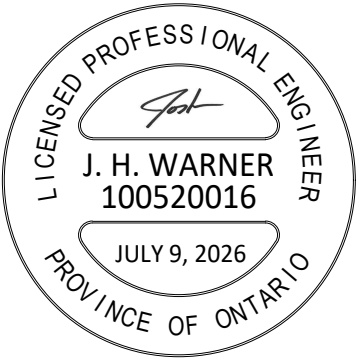
MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN

PROFILE

GENERAL NOTES

- 1. BENCHMARK No.4 ELEV. 230.63
TOP OF EXISTING O/S CATCHBASIN
ON EAST SIDE OF ARGYLE STREET
ST. 2+348
- 2. UPPER NUMBERS ARE DEPTH FROM EXISTING
GROUND TO THE PROPOSED INVERT.



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

DRAWING NAME:
Brown-Rose Drain Profile 4

PROJECT No.
2025-1757

APPROVED
J. WARNER

CHECKED
B. VAN RUITENBURG

DRAWN
C. SAUNDERS

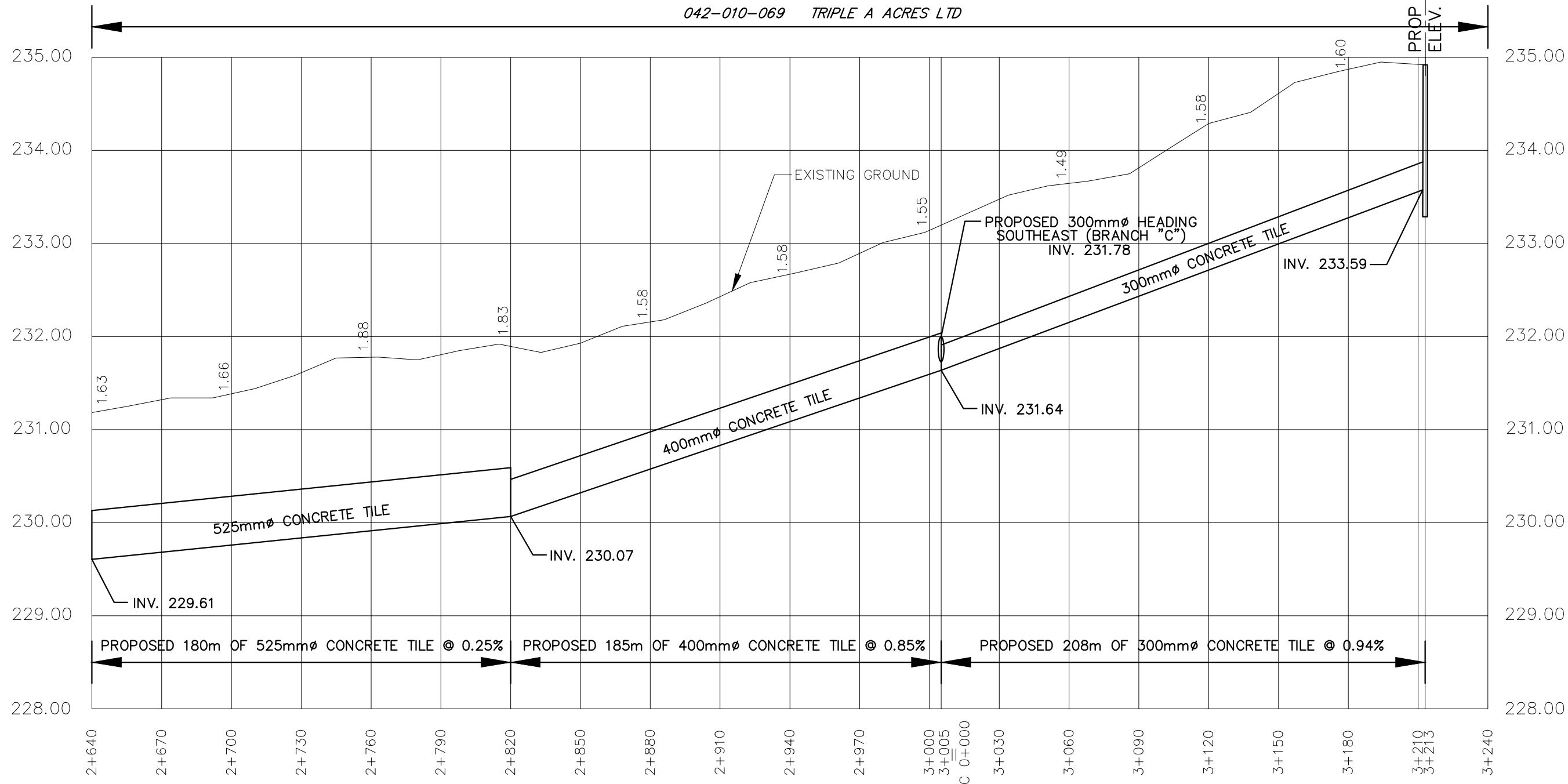
NO.	REVISIONS	DATE	BY
1	FINAL REPORT	JULY 9, 2026	CS
SCALE: 1:2,000			
0 20 40 60m			

MUNICIPALITY of NORTH MIDDLESEX
BROWN - ROSE DRAIN
PROFILE

6
OF 11

GENERAL NOTES

- 1. BENCHMARK No.4 ELEV. 230.63
TOP OF EXISTING O/S CATCHBASIN
ON EAST SIDE OF ARGYLE STREET
ST. 2+348. TRANSFER PRIOR TO REMOVAL
- 2. UPPER NUMBERS ARE DEPTH FROM EXISTING
GROUND TO THE PROPOSED INVERT.



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

DRAWING NAME:
Brown-Rose Drain Profile 5

PROJECT No.
2025-1757

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	JULY 9, 2026	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

SCALE: 1:2,000

0 20 40 60m

MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN

PROFILE

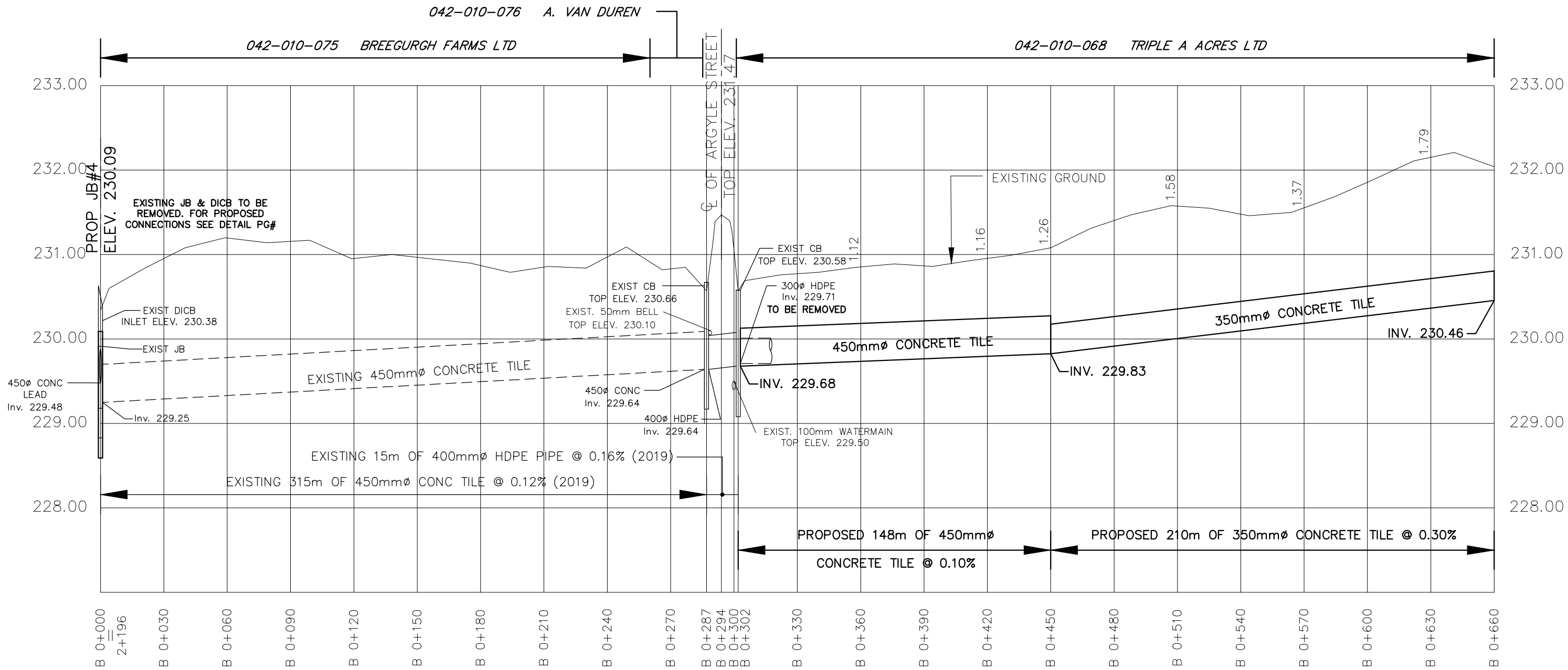
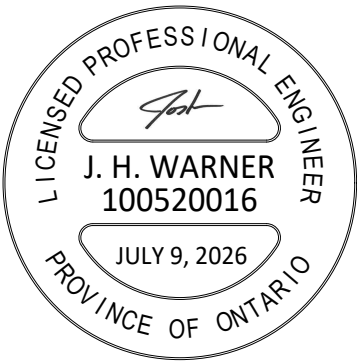
7

OF 11

Last Updated: May 18, 2026

GENERAL NOTES

- 1. BENCHMARK No.5 ELEV. 230.66
NORTHEAST CORNER OF EXISTING CB ON
WEST SIDE OF ARGYLE STREET
STATION B 0+287
- 2. UPPER NUMBERS ARE DEPTH FROM EXISTING
GROUND TO THE PROPOSED INVERT.



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

DRAWING NAME:
Brown-Rose Drain 'Branch B' Profile 1

PROJECT No.
2025-1757

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	JULY 9, 2026	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

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

MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN BRANCH 'B'

PROFILE

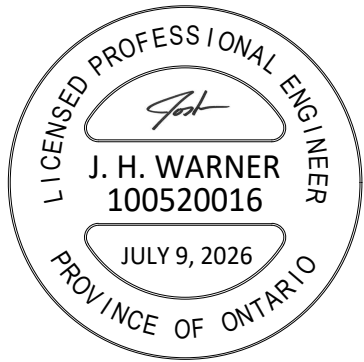
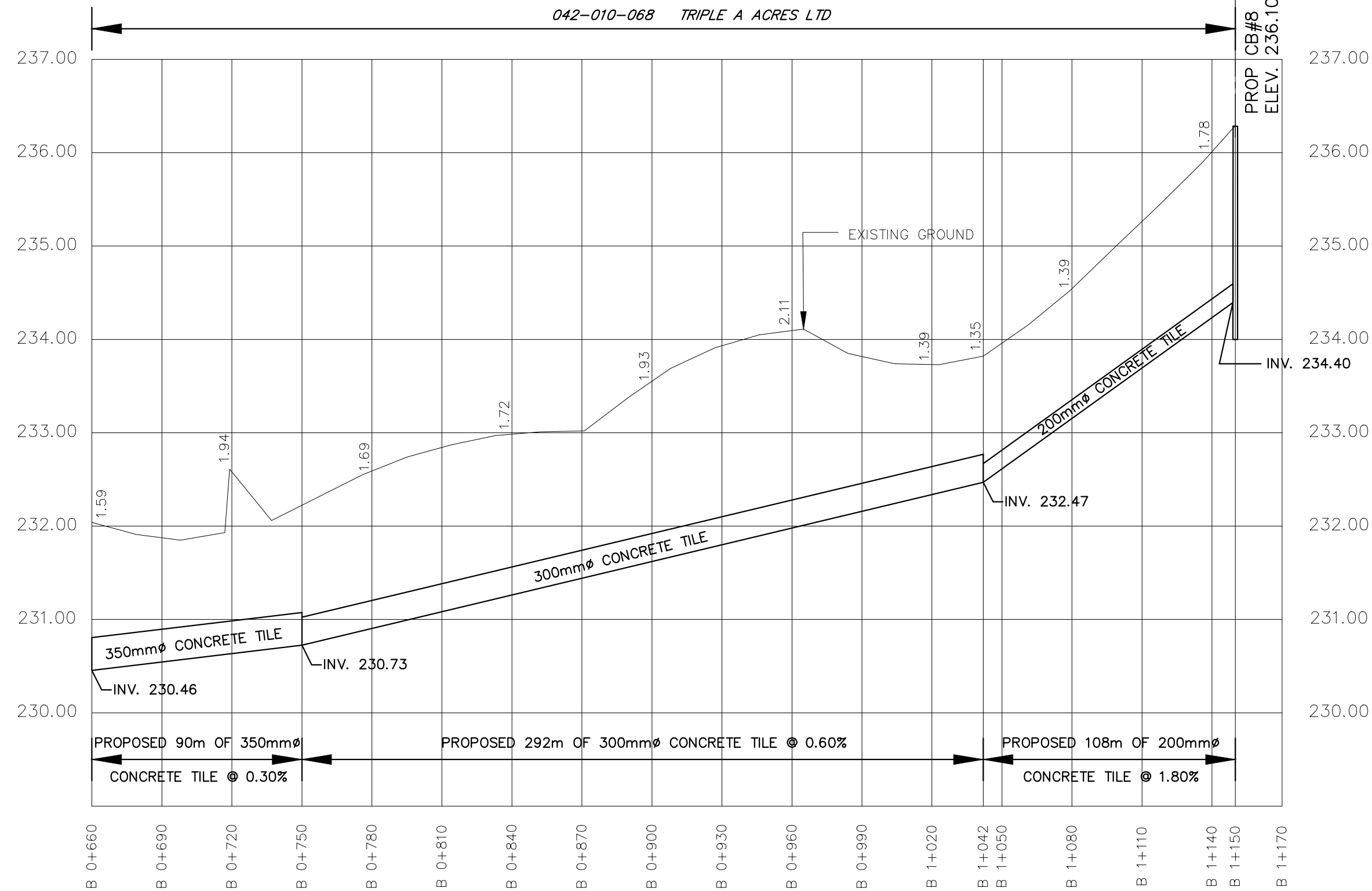
8

OF 11

GENERAL NOTES

1. BENCHMARK No.5 ELEV. 230.66
NORTHEAST CORNER OF EXISTING CB ON
WEST SIDE OF ARGYLE STREET
STATION B 0+287

2. UPPER NUMBERS ARE DEPTH FROM EXISTING
GROUND TO THE PROPOSED INVERT.



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

DRAWING NAME:
Brown-Rose Drain 'Branch B' Profile 2

PROJECT No.
2025-1757

APPROVED J. WARNER	NO.	REVISIONS	DATE	BY
CHECKED B. VAN RUITENBURG	1	FINAL REPORT	JULY 9, 2026	CS
DRAWN C. SAUNDERS	SCALE: 1: 2,000 0 20 40 60m			

MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN BRANCH 'B'

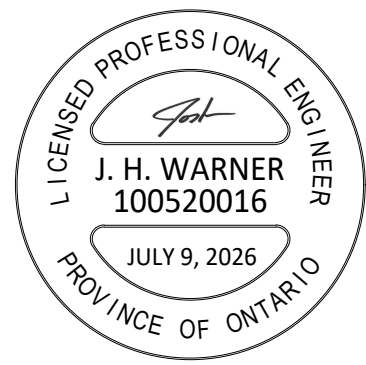
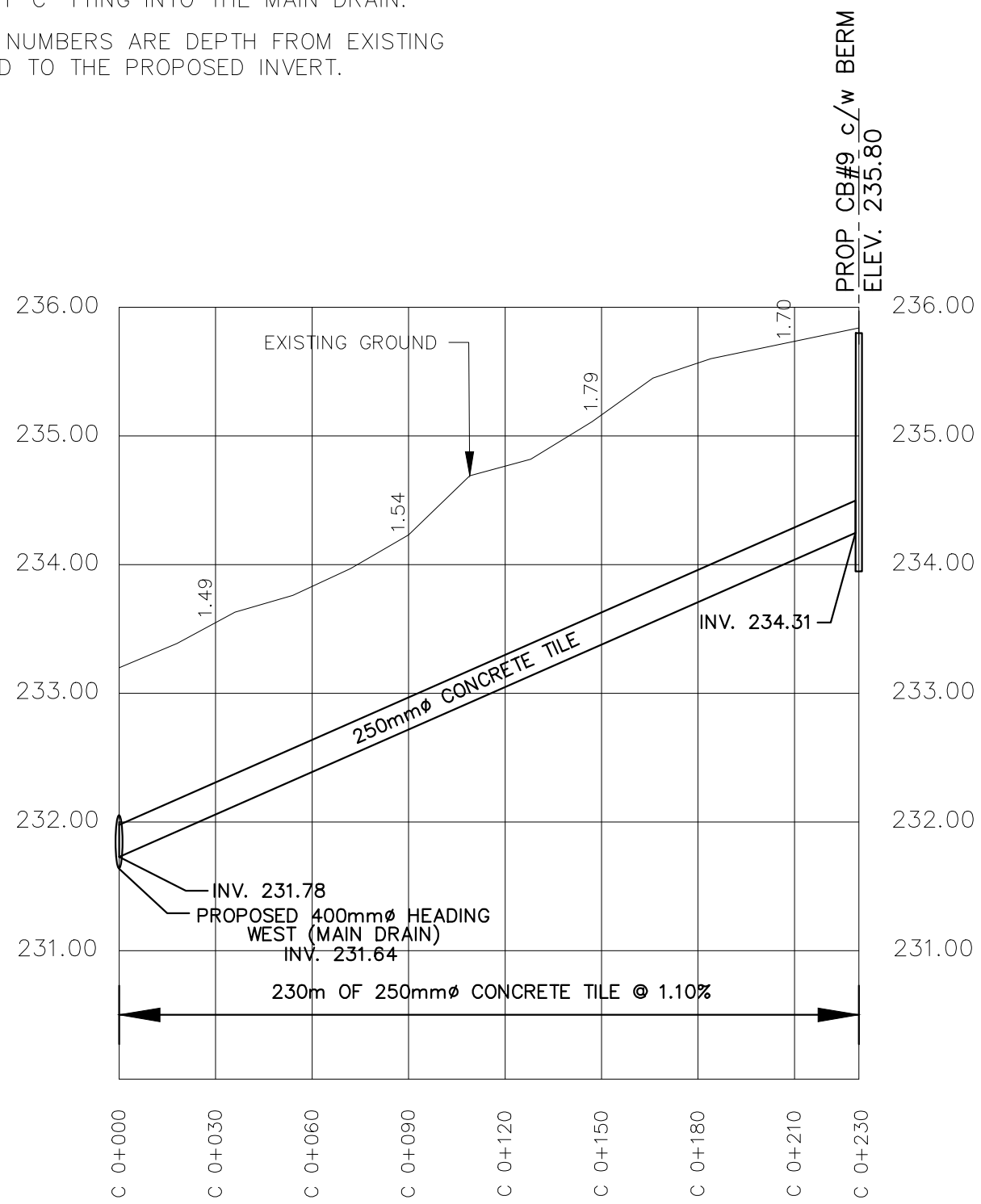
PROFILE

9
OF 11

Last Updated: May 18, 2026

GENERAL NOTES

1. BENCHMARK ELEV. TBD
- PRIOR TO CONSTRUCTION. R. DOBBIN ENGINEERING
TO PROVIDE A BENCHMARK IN THE LOCATION OF
BRANCH 'C' TYING INTO THE MAIN DRAIN.
2. UPPER NUMBERS ARE DEPTH FROM EXISTING
GROUND TO THE PROPOSED INVERT.



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

DRAWING NAME:
Brown-Rose Drain 'Branch C' Profile 1

PROJECT No.
2025-1757

APPROVED J. WARNER	NO.	REVISIONS	DATE	BY
CHECKED B. VAN RUITENBURG	1	FINAL REPORT	JULY 9, 2026	CS
DRAWN C. SAUNDERS	SCALE: 1:2,000 0 20 40 60m			

MUNICIPALITY of NORTH MIDDLESEX

BROWN - ROSE DRAIN BRANCH 'C'

PROFILE

10
OF 11

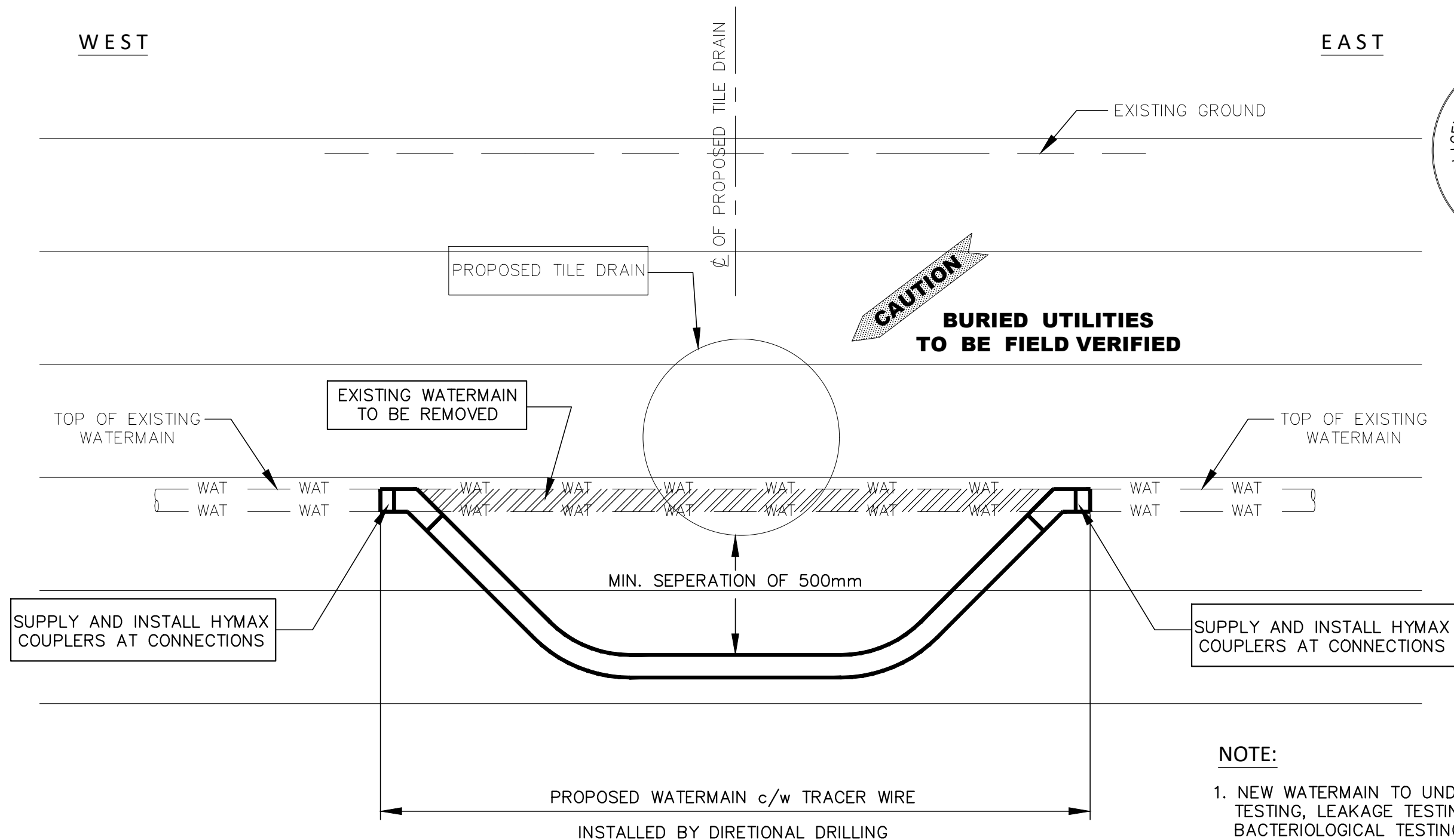
Last Updated: May 18, 2026



MUNICIPALITY of NORTH MIDDLESEX
BROWN - ROSE DRAIN
DETAILS

WEST

EAST

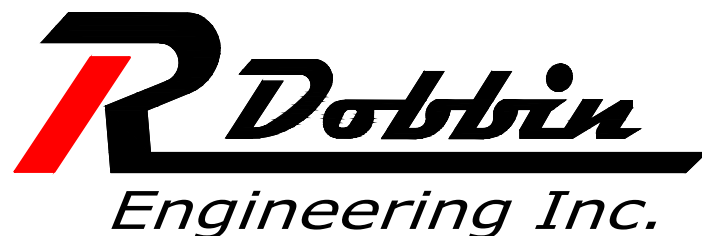


NOTE:

1. NEW WATERMAIN TO UNDERGO PRESSURE TESTING, LEAKAGE TESTING AND BACTERIOLOGICAL TESTING AS PER MUNICIPAL STANDARDS.
2. CONNECTIONS TO EXISTING WATERMAIN TO BE COMPLETED THE SAME DAY.

WATERMAIN LOWERING DETAIL

NTS



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