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

August 4, 2025

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

Gentlemen and Mesdames:

Re: Schepers Drain (2025)

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

Authorization under the Drainage Act

This Engineers Report that has been prepared under Section 4 and 78 of the Drainage Act as per a request and petition from affected Landowners.

R. Dobbin Engineering Inc. was appointed by council on August 14, 2024 for the improvements and on May 7, 2025 to address the petition.

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.

A petition for the drainage by means of a drainage works of an area requiring drainage as described in the petition may be filed with the Clerk of the local Municipality in which the area is situate by,

(a) the majority in number of the owners, as shown by the last revised assessment roll of lands in the area, including the owners of any roads in the area;

(b) the owner or owners, as shown by the last revised assessment roll, of lands in the area representing at least 60 per cent of the hectarage in the area;

(c) where a drainage works is required for a road or part thereof, the engineer, road superintendent or person having jurisdiction over such road or part, despite subsection 61(5);

(d) where a drainage works is required for the drainage of lands used for agricultural purposes, the Director. R.S.O. 1990, c.D.17, s.4(1).

This petition was deemed to be valid under Section 4 (a) and (b).

Existing Conditions

The Schepers Main Drain commences as an open channel in the north part of Lot 10, Concession 21 WCR. It continues for 90m southerly where the Schepers Main Drain tile drain outlets. It continues southerly as a 300mm dia. tile to the south side of MacDonald Drive. The Schepers Drain Branch "A" outlets into the Main Drain in the south part of Lot 9, Concession 23 WCR. It continues easterly and then southerly as a 150mm dia. tile to approximately 137m south of MacDonald Drive.

Background

Under an Engineer's report dated April 2, 1971 the Schepers Drain was constructed and incorporated under the Drainage Act. At this time, the open channel was deepened to accommodate the tile, the lower 457m of main drain were replaced, the upper end of the main drain was incorporated and Branch "A" was constructed.

Drain Classification

The Schepers Drain is currently Not Rated according to the Department of Fisheries and Oceans (DFO) classification as presented by the Ontario Ministry of Agriculture, Food and Rural Affair's 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 September 25th, 2024.

The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Drainage Superintendent, Municipality of North Middlesex)
- Dave Wideman (Tile Contractor)
- Brandon McLeod (Manager of Public Works, Municipality of North Middlesex)
- Ian Brebner (Landowner)
- Mark Brebner (Landowner)
- Pat Johnson (Landowner)

The following is a brief summary of the meeting:

- General discussion of the Drainage Act and Landowners rights under the Drainage Act.
- Landowner wished to obtain a price to replace the Schepers Drain, including the Branch.
- Josh was to reach out to the owner south of MacDonald Drive to determine if they would like to extend the drain to Sylvan Road.
    - Following the site meeting it was determined that this Landowner would like to extend the drain and ended up submitting a petition.
- No adverse soil conditions were noted at the site meeting.

Draft Report

A draft report was circulated to all the Landowners and a meeting was held on May 22nd, 2025. This initial report contained the drain designed to the grantable standard of 38mm/24hrs.

The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Drainage Superintendent, Municipality of North Middlesex)
- Glen Bullock (Municipality of North Middlesex)
- Greg Sadler (Landowner)
- Pat Johnson (Landowner)

The following is a brief summary of the meeting:

- The Landowner of the properties with Roll Number 049-040-134-00 and 049-040-135-00 requested that the drain be upsized to the drainage coefficient of 50mm/24hrs. The Landowner was made aware that the additional cost above the

grantable standard would not be eligible for the 1/3 grant in accordance with the current Agricultural Drainage Infrastructure Program (ADIP) policies
- Josh Warner was to reach out to the owner of the property south of MacDonald Drive to determine if they would like the drain designed to the higher coefficient.
- No other major concerns were brought forward with the report

Discussion

Following the redesign of the drain to the 50mm/24hrs, R. Dobbin Engineering reached to out to the owner of the property with Roll Numbers 049-040-136-00 and 049-040-137-00 to discuss the additional cost to go to the 50mm/24hrs design. The Landowner wished to continue with the larger design.

Following the above discussions, the Landowner of the property with Roll Number 049-040-134-00 requested that the drain be enclosed to their north property line.

Draft Report

A draft report dated June 13, 2025 was circulated to all the Landowners and a meeting was held on July 29, 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)
- Pat Johnson (Landowner)

The following is a brief summary of the meeting:

- The present Landowner requested that the work take place after August in 2026. R. Dobbin Engineering was to include that in the tender package.
- No other major concerns were brought forward with the report

Design

The proposed drain shall be designed to accommodate a drainage coefficient of 50mm / 24 hours. Tile design criteria includes a minimum tile depth of 760mm.

Recommendations

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

1. The private channel downstream of the Schepers Main Drain shall be incorporated as part of the drainage works and improved from Station 0+000 to 0+130.

2. The private channel (Station 0+130 to 0+210) and open portion of the Schepers Main Drain (Station 0+210 to 0+300) shall be enclosed.

3. The Schepers Main Drain shall be replaced from Station 0+300 to 1+058. The existing tile drain shall be crushed and abandoned as part of the drainage works. The Main Drain shall be extended upstream to Sylvan Road (Station 1+058 to 1+903).

4. The Schepers Drain Branch "A" from the Main Drain to just south of MacDonald Drive (Station 0+267) shall be replaced and the existing drain shall be crushed and abandoned as part of the drainage works. The existing drain south of MacDonald Drive shall be abandoned as part of the drainage works and will be a private tile for the property.

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 $321,138, 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.

A plan has been prepared showing the location of the work and the approximate drainage area. A profile is included showing the depths and grades of the proposed work.

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 have been assessed with 100% of the estimated cost applied as a special benefit assessment to the road authority. The road crossings shall be tendered separately with the actual cost plus engineering (25% of the construction cost) being assessed to the owner of the road authority as a special benefit assessment.

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 open channel works have been assessed with 40% 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.

4. The cost to enclose the private open channel has been assessed to the requesting property as a benefit assessment. The cost to enclose the open channel portion of the Schepers Main Drain has been assessed to the requesting property as a special benefit assessment and will not be eligible for grant.

5. The additional cost to provide a drainage coefficient above the 38mm/24hrs has been assessed to the benefitting properties as a special benefit assessment. This cost will not be eligible for grant.

6. The remaining cost of the drainage works has generally been assessed with 60% 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 MacDonald Drive and Sylvan Road 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 proposed tile drain shall be restricted to a width of 22m along the length of the drainage works normally centred on the proposed tile drain. The working area for the open channel shall be from the east side of the channel and it shall be restricted to a width of 10m from the east top of bank. For construction only, the working area shall extend 10m past the westerly bank to allow for the channel to filled in. The working area shall extend 10m past the length of the drain to allow for vehicles to turn around.

Restrictions

No trees and shrubs shall be planted nor shall permanent structures be erected within 10m 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 non-agricultural properties are shown separately in the Schedule of Assessment.

The cost to enclose the municipal drain and provide a tile drain above the design coefficient of 38mm/24hrs has been assessed as a special benefit assessment and will not be eligible for grant based on the current ADIP policies.

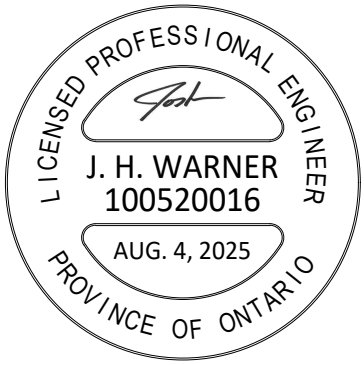
Maintenance

The Schepers Main Drain and Branch "A", except for the MacDonald Drive crossings, shall be maintained and repaired in the same proportions as contained in the applicable Schedule of Assessment, less special benefit assessments.

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 MacDonald Drive (Station 1+047 to 1+058 (Main Drain) and Station 0+256 to 0+267 (Branch "A"), excluding basins) shall be maintained and repaired at the expense of the road authority.

Yours truly,

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



Schepers Drain
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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 ($)
21 WCR	Lot 7	049-040-137-00	J. Lacey	2,170	1,730	3,900
	Lot 8	049-040-136-00	J. Lacey	6,420	5,140	11,560
	Lot 9	049-040-135-00	J J Johnson & Sons Ltd.	-	4,710	4,710
	Lot 10	049-040-134-00	J J Johnson & Sons Ltd.	2,550	1,950	4,500
	Lot 11	049-040-133-00	I. & M. Brebner	1,950	390	2,340
			TOTAL ALLOWANCES	$13,090	$13,920	$27,010

Estimate of Cost

Item Description	Quantity	Unit	Unit Cost ($)	Total ($)
Pre-Construction Meeting	1	LS	200	200
Brushing and Tree Removal	1	LS	7,500	7,500
Environmental Considerations	1	LS	800	800
Main Drain				
Excavation of Open Channel and Re-Use of Material to Fill in Channel between Station 0+130 and 0+300 (Station 0+000 to 0+130)	130	m	25	3,250
Rip Rap as Required	20	tonne	110	2,200
Straw Matting and Seeding of Open Channel	1	LS	1,500	1,500
Strip and Place Topsoil (Station 0+130 to 1+903) along tile Route	1762	m	6	10,572
Locate and Decommission existing Tile	1	LS	3,500	3,500
Remove and Dispose of Existing CB and Lead at Station 1+047	1	LS	800	800
6m of 450mmø HDPE Pipe c/w Rodent Grate	1	LS	2,500	2,500
450mmø Concrete Pipe	819	m	65	53,235
400mmø Concrete Pipe	92	m	60	5,520
350mmø Concrete Tile	601	m	55	33,055
300mmø Concrete Tile	244	m	50	12,200
Clear Stone Bedding Where Tile Depth Exceeds 2.5m	50	tonne	40	2,000
Strip and Level Topsoil In Existing Open Channel (Station 0+130 to 0+300)	170	m	5	850
Fill In Open Channel (Station 0+130 to 0+300)	170	m	40	6,800
Junction Box #1 (600mm x 600mm) c/w Connections	1	LS	2,500	2,500
Rip Rap at Outlet (Station 0+130)	1	LS	1,500	1,500
Connect Existing Tiles to Proposed Drain	60	ea	140	8,400
Reconnect Tiles to Open Channel	2	ea	140	280
MacDonald Drive Crossing				
Traffic Control	1	LS	1,000	1,000
Remove and Dispose of Existing 300mmø CSP, Tile and Unsuitable Backfill	1	LS	1,500	1,500
Supply and Install 450mmø HDPE Tile c/w Bedding	11	m	420	4,620
Supply and Install 400mmø CSP Pipe (Overflow Culvert)	12	m	320	3,840
Granular "A" Backfill	50	tonne	40	2,000
Restoration and Ditch Grading	1	LS	1,200	1,200

Item Description	Quantity	Unit	Unit Cost ($)	Total ($)
Catch Basin #2 (900x1200mm)	1	LS	3,000	3,000
Catch Basin #3 (900x1200mm)	1	LS	3,000	3,000
Catch Basin #4 (900x1200mm) c/w Connection(s)	1	LS	3,200	3,200
Branch 'A'				
Locate and Decomission existing Tile	1	LS	800	800
Strip and Place Topsoil (Station 0+000 to 0+256) along tile Route	256	m	6	1,536
Remove and Dispose of Existing CB and Lead at Station 0+256	1	LS	800	800
300mmø Concrete Tile	256	m	50	12,800
Connect Existing Tiles to Proposed Drain	20	ea	140	2,800
MacDonald Drive Crossing				
Traffic Control	1	LS	1,000	1,000
Remove and Dispose of Existing 300mmø CSP, Tile and Unsuitable Backfill	1	LS	1,500	1,500
Supply and Install 300mmø HDPE Tile c/w Bedding	11	m	350	3,850
Supply and Install 300mmø CSP Pipe (Overflow Culvert)	12	m	300	3,600
Granular "A" Backfill	50	tonne	40	2,000
Restoration and Ditch Grading	1	LS	1,200	1,200
Catch Basin #5 (900x1200mm)	1	LS	3,000	3,000
Catch Basin #6 (900x1200mm) c/w Connections	1	LS	3,200	3,200
Contingency	1	LS		10,950
Sub Total				231,558
Allowances				27,010
Engineering				41,200
Drain Locating				640
Estimate for Tendering, Inspection and Contract Administration				15,000
ABCA Fee				650
Total Estimate excluding HST				**316,058**
Non-Recoverable HST (1.76%)				5,080
Total Estimate				**$ 321,138**

SCHEDULE OF ASSESSMENT (MAIN DRAIN)

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Public Lands								
MacDonald Drive		0.75		Municipality of North Middlesex	18,420	4,475	3,841	26,736
Sylvan Road		0.52		Municipality of North Middlesex		2,105	7,059	9,164
					18,420	6,580	10,900	35,900
Agricultural Lands								
21 WCR	Lot 7	8.68	049-040-137-00	J. Lacey	1,220	16,583	24,949	42,752
	Lot 8	18.26	049-040-136-00	J. Lacey	3,005	41,587	34,070	78,662
	Lot 9	6.03	049-040-135-00	J J Johnson & Sons Ltd.	2,420	38,254	6,810	47,484
	Lot 10	1.25	049-040-134-00	J J Johnson & Sons Ltd.	12,828	39,904	714	53,446
	Lot 11	0.00	049-040-133-00	I. & M. Brebner		3,338	-	3,338
12	Lot 17	1.70	049-040-001-00	G. Sadler		-	5,769	5,769
					19,473	139,666	72,312	231,451

Total - Public Lands	35,900
Total Agricultural Lands	231,451
Total Assessment	$267,351

SCHEDULE OF ASSESSMENT (BRANCH "A")

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Public Lands								
MacDonald Drive		0.30		Municipality of North Middlesex	17,100	4,607	1,486	23,193
					17,100	4,607	1,486	23,193
Agricultural Lands								
21 WCR	Lot 8	4.70	049-040-136-00	J. Lacey	-	2,105	5,824	7,929
	Lot 9	1.82	049-040-135-00	J J Johnson & Sons Ltd.	3,560	16,850	2,255	22,665
					3,560	18,955	8,079	30,594

Total - Public Lands	23,193
Total Agricultural Lands	30,594
Total Assessment	$53,787

COMPOSITE SCHEDULE OF ASSESSMENT

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Public Lands								
MacDonald Drive		0.75		Municipality of North Middlesex	35,520	9,082	5,327	49,929
Sylvan Road		0.52		Municipality of North Middlesex	-	2,105	7,059	9,164
					35,520	11,187	12,386	59,093
Agricultural Lands								
21 WCR	Lot 7	8.68	049-040-137-00	J. Lacey	1,220	16,583	24,949	42,752
	Lot 8	18.26	049-040-136-00	J. Lacey	3,005	43,692	39,894	86,591
	Lot 9	6.03	049-040-135-00	J J Johnson & Sons Ltd.	5,980	55,104	9,065	70,149
	Lot 10	1.25	049-040-134-00	J J Johnson & Sons Ltd.	12,828	39,904	714	53,446
	Lot 11	0.00	049-040-133-00	I. & M. Brebner	-	3,338	-	3,338
12	Lot 17	1.70	049-040-001-00	G. Sadler	-	-	5,769	5,769
					23,033	158,621	80,391	262,045

Total - Public Lands	59,093
Total Agricultural Lands	262,045
Total Assessment	$321,138

Schepers Drain
Municipality of North Middlesex
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Estimated Net Assessment

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

Conc.	Lot or Part	Roll No.	Owner	Main Drain Total Assessment ($)	Main Drain Estimated Grant ($)	Main Drain Allowances ($)	Main Drain Net Assessment ($)	Branch "A" Total Assessment ($)	Branch "A" Estimated Grant ($)	Branch "A" Allowances ($)	Branch "A" Net Assessment ($)	Estimated Net Assessment ($)
Public Lands												
MacDonald Drive			Municipality of North Middlesex	26,736			26,736	23,193			23,193	49,929
Sylvan Road			Municipality of North Middlesex	9,164			9,164					9,164
Agricultural Lands												
21 WCR	Lot 7	049-040-137-00	J. Lacey	42,752	13,844	3,900	25,008					25,008
	Lot 8	049-040-136-00	J. Lacey	78,662	25,219	11,460	41,983	7,929	2,643	100	5,186	47,169
	Lot 9	049-040-135-00	J J Johnson & Sons Ltd.	47,484	15,021	3,174	29,289	22,665	6,368	1,536	14,761	44,050
	Lot 10	049-040-134-00	J J Johnson & Sons Ltd.	53,446	13,539	4,500	35,407					35,407
	Lot 11	049-040-133-00	I. & M. Brebner	3,338	1,113	2,340	(115)					(115)
12	Lot 17	049-040-001-00	G. Sadler	5,769	1,923		3,846					3,846
				267,351	70,659	25,374	171,318	53,787	9,011	1,636	43,140	214,458

Schepers Drain
Municipality of North Middlesex
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SPECIFICATION OF WORK

1. Location

The work in this specification is located in Lot 7, 8, 9, 10 and 11, Concession 21 WCR in The Municipality of North Middlesex.

2. Scope of Work

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

- 2,040m of proposed tile drain replacement c/w catch basins, junction boxes and two road crossings
- 170m of open channel enclosure
- 130m of open channel deepening

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.

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 (20% 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 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 the Municipality of North Middlesex shall be notified of the pre-construction meeting at least 48 hours prior.

9. Access and Working Area

Access to the work site for construction and future maintenance shall be from MacDonald Drive and Sylvan Road 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 proposed tile drain shall be restricted to a width of 22m along the length of the drainage works normally centred on the proposed tile drain. The working area for the open channel shall be from the east side of the channel and it shall be restricted to a width of 10m from the east top of bank. For construction only, the working area shall extend 10m past the westerly bank to

allow for the channel to filled in. The working area shall extend 10m past the length of the drain to allow for vehicles to turn around.

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 will add additional benchmarks along the length of the drainage works.

11. Removals

The culverts, catch basins, hickenbottoms, unsuitable or not required excavated material, etc. shall be removed in their entirely 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 for a width of 22 metres normally centered on the proposed tile drain. 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

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 east drain bank shall be resloped to 2:1. The excavated material shall be used to fill in the open channel that is proposed to be enclosed.

For future maintenance, 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 of 150mm outside of the bush and shall be left in a condition suitable for cultivation. This shall include the removal of any rocks larger then 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.

14. Strip Existing Channel

The existing channel that is being enclosed shall be stripped. The topsoil shall be stockpiled at the edge of the working allowance. Once the channel is filled and graded the Contractor shall level the topsoil.

15. Filling in Channel

The Contractor shall fill in the existing open channel between Station 0+130 and 0+300. This shall be completed with any combination of excess tile material, excavated material from the open channel improvements and levelling of the adjacent land. The material shall be compacted in no larger then 300mm lifts. The Contractor shall ensure that the channel is backfilled in order to allow for an overland flow route under severe storm events. The filled in channel shall be left in a cultivatable state at the discretion of the Engineer or Drainage Superintendent.

16. 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 municipal drain shall be abandoned and crushed. The existing main drain does not extend upstream of MacDonald Drive.

17. 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.

18. 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).

It is intended that the tile be installed east of the existing tile and open channel.

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.

<u>Wheel Machine</u>

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, he 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.

19. Outlet Works

The outlet works for the drain shall consist 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 1m on either side of the outlet. 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.

20. Road Crossings

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 2.0mm 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 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. The clear stone shall be considered bedding. 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. 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".

21. Catch Basins

Structure	Station	Size (mm)	Grate Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
CB #2	1+047	900x1200	226.08	224.51 (N) 400	224.62 (S) 450
CB #3	1+058	900x1200	226.15	224.85 (N) 450	224.93 (S) 350
CB #4	1+903	900x1200	239.79	238.52 (W) 300	238.60 (E) 250 k/o
CB #5	0+256 (BR “A”)	900x1200	228.75	227.16 (N) 300	227.21 (S) 300
CB #6	0+267 (BR “A”)	900x1200	228.90	227.51 (N) 300	227.60 (S) 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 (denoted DICB) 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. 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.

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 #1	0+955 (Main) 0+000 (BR A)	600x600	223.49	222.46 (N) 450	222.70 (E) / 222.55 (S) 250 / 400

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 hydro seeded. 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 double straw matting and seed.

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.

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.

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

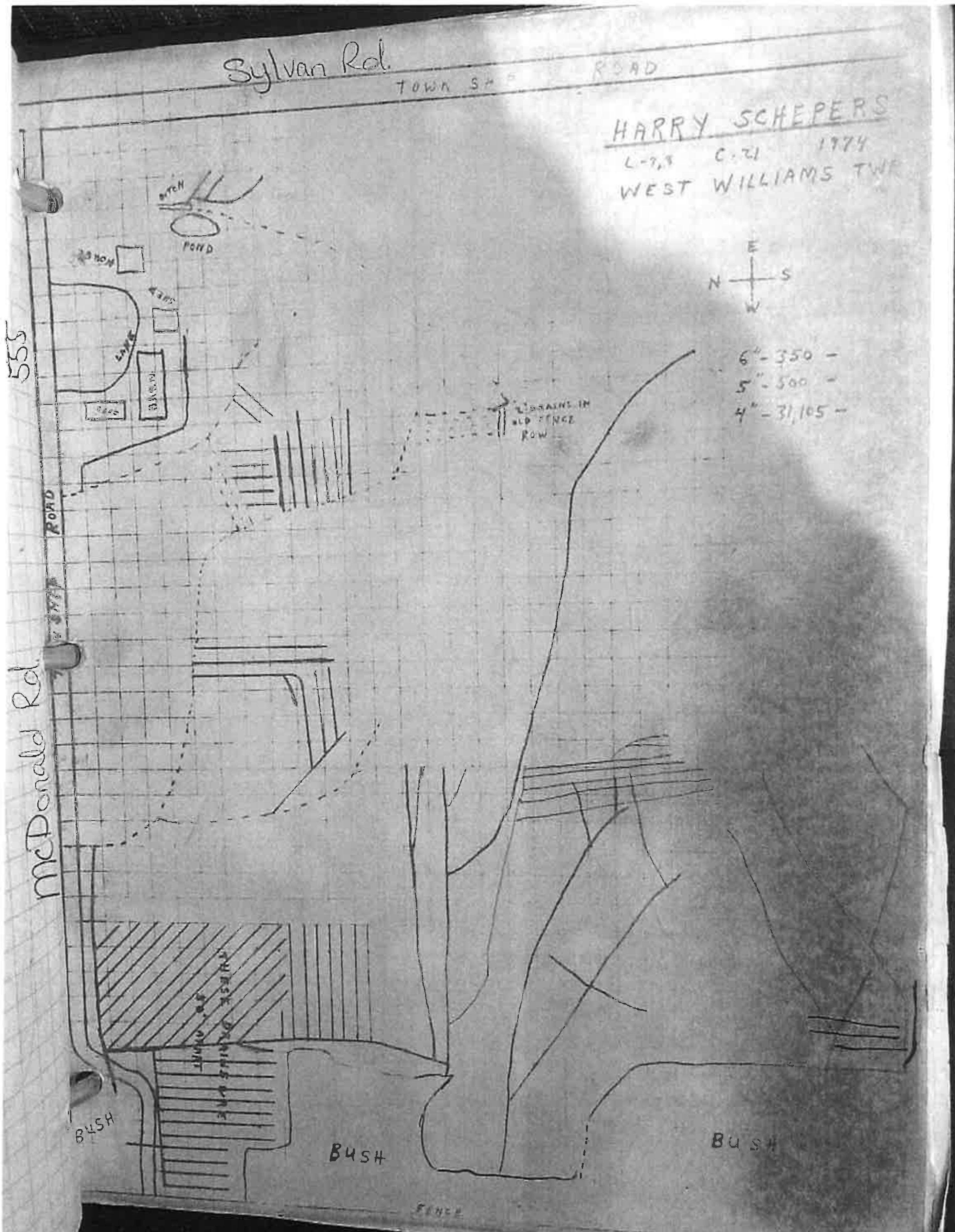
The Contractor shall take care to adhere to the following considerations.

- 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.


555
Sylvan Rd.
McDonald Rd.
ROAD
HARRY SCHEPERS
L-7,8 C-21 1974
WEST WILLIAMS TWP
N
S
E
W
6"-350 -
5"-500 -
4"-31,105 -
DITCH
POND
LANE
BARN
OLD FENCE
ROW
BUSH
BUSH
BUSH
FENCE

Fisheries and Oceans Canada
Pêches et Océans Canada

Ontario and Prairie Region
Fish and Fish Habitat Protection Program
867 Lakeshore Rd.
Burlington, ON
L7S 1A1

Région de l'Ontario et des Prairies
Programme de protection du poisson et de son habitat
867 chemin Lakeshore
Burlington, ON
L7S 1A1

July 18, 2025

Our file *Notre référence*
25-HCAA-01210

Joanne Sadler
Municipality of North Middlesex
229 Parkhill Main Street
Parkhill, ON N0M 2K0

Subject: Drain Improvements, Schepers Drain, Municipality of North Middlesex (25-HCAA-01210) – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

Dear Joanne Sadler:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on June 13, 2025. We understand that you propose to:

- Complete improvements to the Schepers Drain in North Middlesex as part of a new engineer's report that includes:
    - Replacing approximately 2040m of tile drain and abandoning the existing tile in place;
    - Enclosing approximately 170m of open channel by installing drain tile; and,
    - Excavating and deepening approximately 130m of open channel to incorporate into the drain.

Our review considered the following information:

- Request for Review form and associated documents submitted on June 13, 2025.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and,
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned impacts are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures listed below:

- Carry out the project in accordance with timing windows;
    - No in-water work between March 15 to July 15;
- Limit the duration of in-water works, undertakings and activities;
- Limit disturbance of fish habitat features (e.g., aquatic plants, rocks, woody material) to the area required to carry out the project;
- Re-vegetate the affected areas with native species suitable for the project site;
- Limit operation of vehicles and machinery to the area required to carry out the project;
- Develop and implement an erosion and sediment control plan for all phases of the project;
    - Conduct work during a period of no or low flow;
    - Regularly observe the watercourse or water body for signs of suspended sediment during all phases of the project and take corrective action when and where required;
    - Dispose of, and stabilize, all excavated material above the ordinary high water mark or top of bank of nearby watercourses or water bodies;
- Develop and implement a plan to prevent deleterious substances from entering a watercourse or water body;
- Aquatic invasive species are introduced and spread through transporting water, sands and sediments and using contaminated construction equipment. To prevent the spread of aquatic invasive species during construction in aquatic environments:
    - Ensure all equipment arrives on site clean and free of invasive species;
    - Clean, drain and dry any equipment used in the water; and,
    - Never move organisms or water from one body of water to another.

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal is not likely to result in the contravention of the above mentioned prohibitions and requirements.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (Projects near water (dfo-mpo.gc.ca)) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act* and the *Species at Risk Act*.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction

of fish habitat. Such notifications should be directed to DFO.OPHabitat.MPO@dfo-mpo.gc.ca or 1-855-852-8320.

We recommend that you notify this office at least 10 days before starting your project and that a copy of this letter be kept on site while the work is in progress. Send your notification to the DFO 10 day notification mailbox: DFO.OP.10DayNotification-Notification10Jours.OP.MPO@dfo-mpo.gc.ca. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Kyle Mataya at Kyle.Mataya@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Kyle Mataya
Biologist, Triage and Planning
Fish and Fish Habitat Protection Program

CONC.21 WEST OF CENTRE ROAD

LOT 11

LOT 10

LOT 9

LOT 8

LOT 7

LOT 17

CONC.13

CONC.12

0+000

PRIVATE CHANNEL

049-040-133-00
I. & M. BREBNER

0+130
TILE OUTLET

EXISTING TILE OUTLET
0+300

BM #1

450mmø

0+563

049-040-134-00
J J JOHNSON & SONS LTD
1.25 Ha

MACKEY DRAIN 1998

049-040-135-00
J J JOHNSON & SONS LTD
6.03 Ha

SCHEPERS MAIN DRAIN

MACKEY DRAIN
BRANCH 'B'

BRANCH 'A'

PROP JB #1
0+955=
0+000

400mmø

300mmø

PROP CB #2
1+047

BM #2

1+052

PROP CB #3
1+058

PROP CB #5
0+256

BM #4

0+261

PROP CB #6
0+267

MACDONALD DRIVE

DRAIN TO BE ABANDONED

350mmø

4.70 Ha

9.95 Ha

049-040-136-00
J. LACEY
18.26 Ha

350mmø

3.61 Ha

1+659

PROP CB #4
1+903

049-040-001-00
G. SADLER
1.70 Ha

049-040-137-00
J. LACEY
8.68 Ha

300mmø

BM #3

SYLVAN ROAD

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
AUG. 4, 2025
PROVINCE OF ONTARIO

LEGEND

- DRAINAGE AREA
- SCHEPERS DRAIN
- MUNICIPAL DRAIN
- EXISTING CULVERT TO BE REPLACED

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

DRAWING NAME: Schepers Drain Plan

PROJECT No. 2024-1657

APPROVED	NO.	REVISIONS	DATE	BY
R. DOBBIN				
CHECKED	1	FINAL REPORT	AUGUST 4, 2025	CS
B. VAN RUITENBURG	SCALE: 1:5000			
DRAWN	0 50 100 150m			
C. SAUNDERS				

MUNICIPALITY of NORTH MIDDLESEX

SCHEPERS DRAIN PLAN

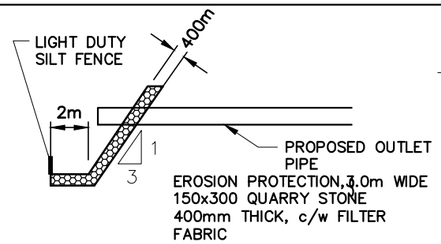
1

OF 6

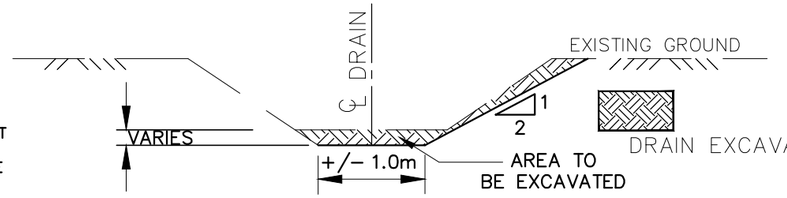
Last Updated: August 4, 2025

GENERAL NOTES

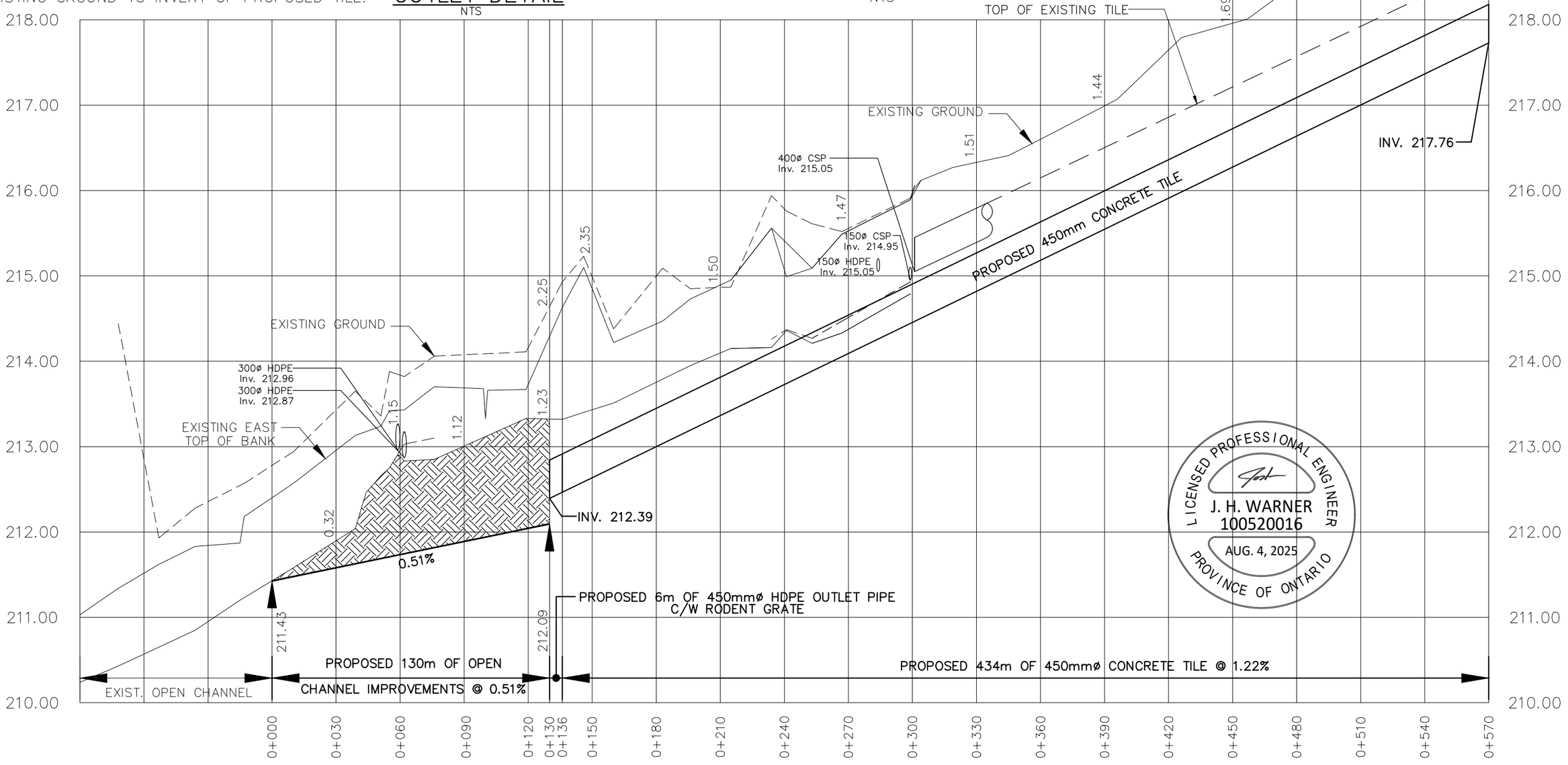
1. BENCHMARK No.1 ELEV. 215.05
   INVERT OF 400ø CSP PIPE AT
   EXISTING OUTLET (STATION 0+300)
2. LOWER NUMBERS ARE DEPTH OF EXCAVATION.
3. UPPER NUMBERS ARE DEPTH FROM
   EXISTING GROUND TO INVERT OF PROPOSED TILE.



OUTLET DETAIL
NTS



TYPICAL DRAIN CROSS SECTION
NTS



LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
AUG. 4, 2025
PROVINCE OF ONTARIO

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

DRAWING NAME: Schepers Drain Profile 1
PROJECT No. 2024-1657

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	AUG. 4, 2025	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

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

MUNICIPALITY of NORTH MIDDLESEX

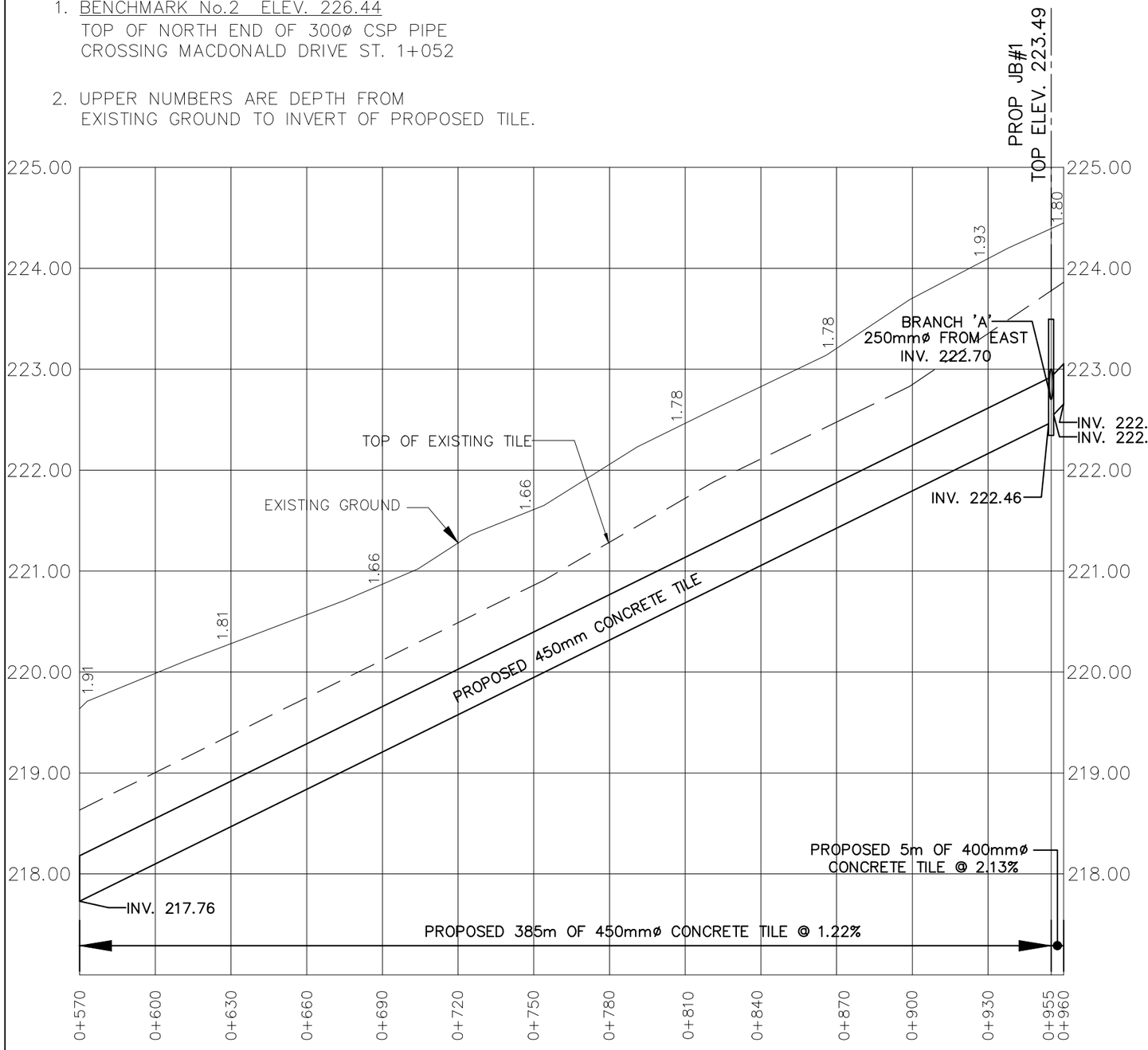
SCHEPERS DRAIN
PROFILE

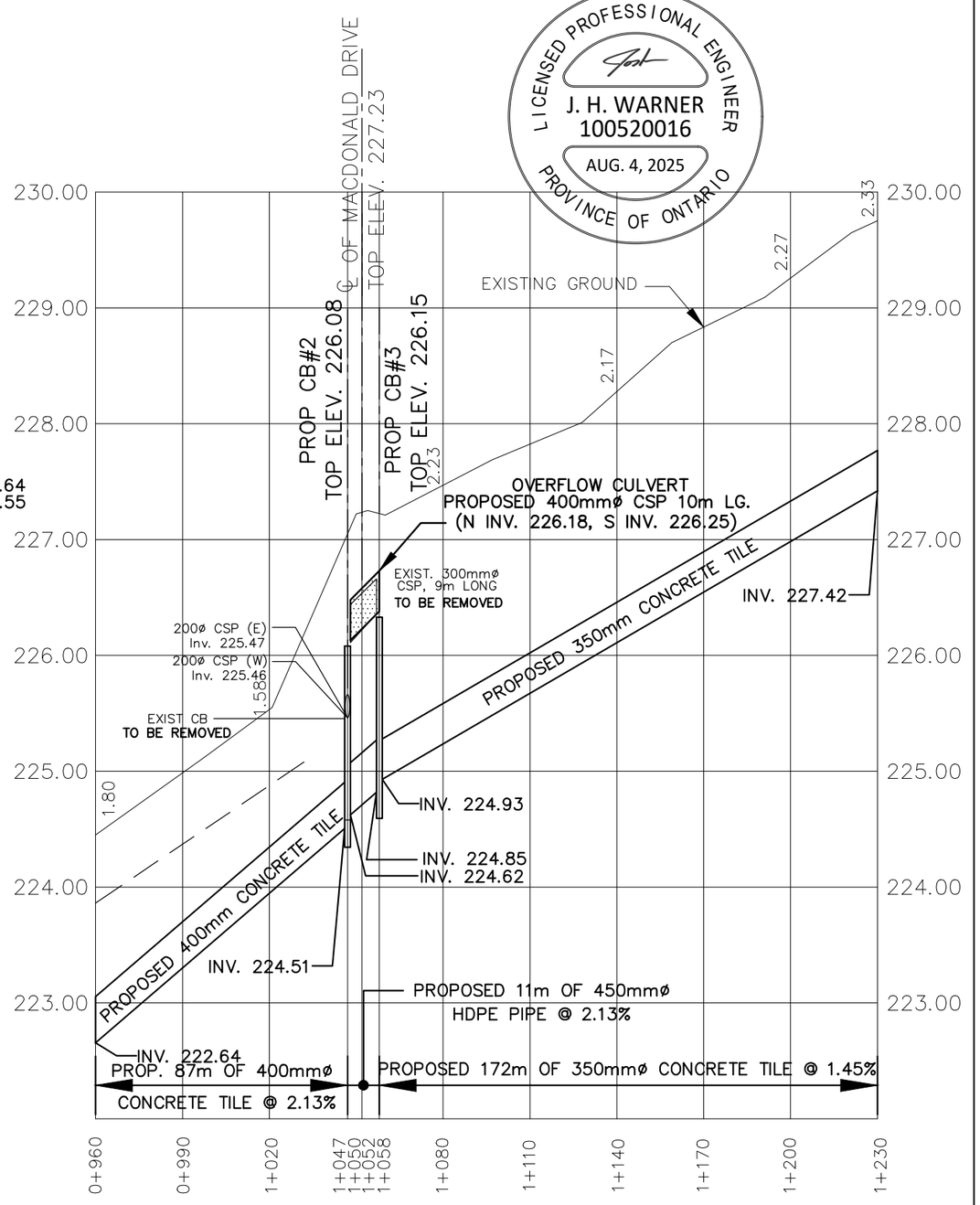
Last Updated: June 9, 2025

GENERAL NOTES

1. BENCHMARK No.2 ELEV. 226.44
   TOP OF NORTH END OF 300ø CSP PIPE
   CROSSING MACDONALD DRIVE ST. 1+052

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





LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
AUG. 4, 2025
PROVINCE OF ONTARIO

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

DRAWING NAME: Schepers Drain Profile 2
PROJECT No. 2024-1657

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	AUG. 4, 2025	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

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

MUNICIPALITY of NORTH MIDDLESEX

SCHEPERS DRAIN
PROFILE

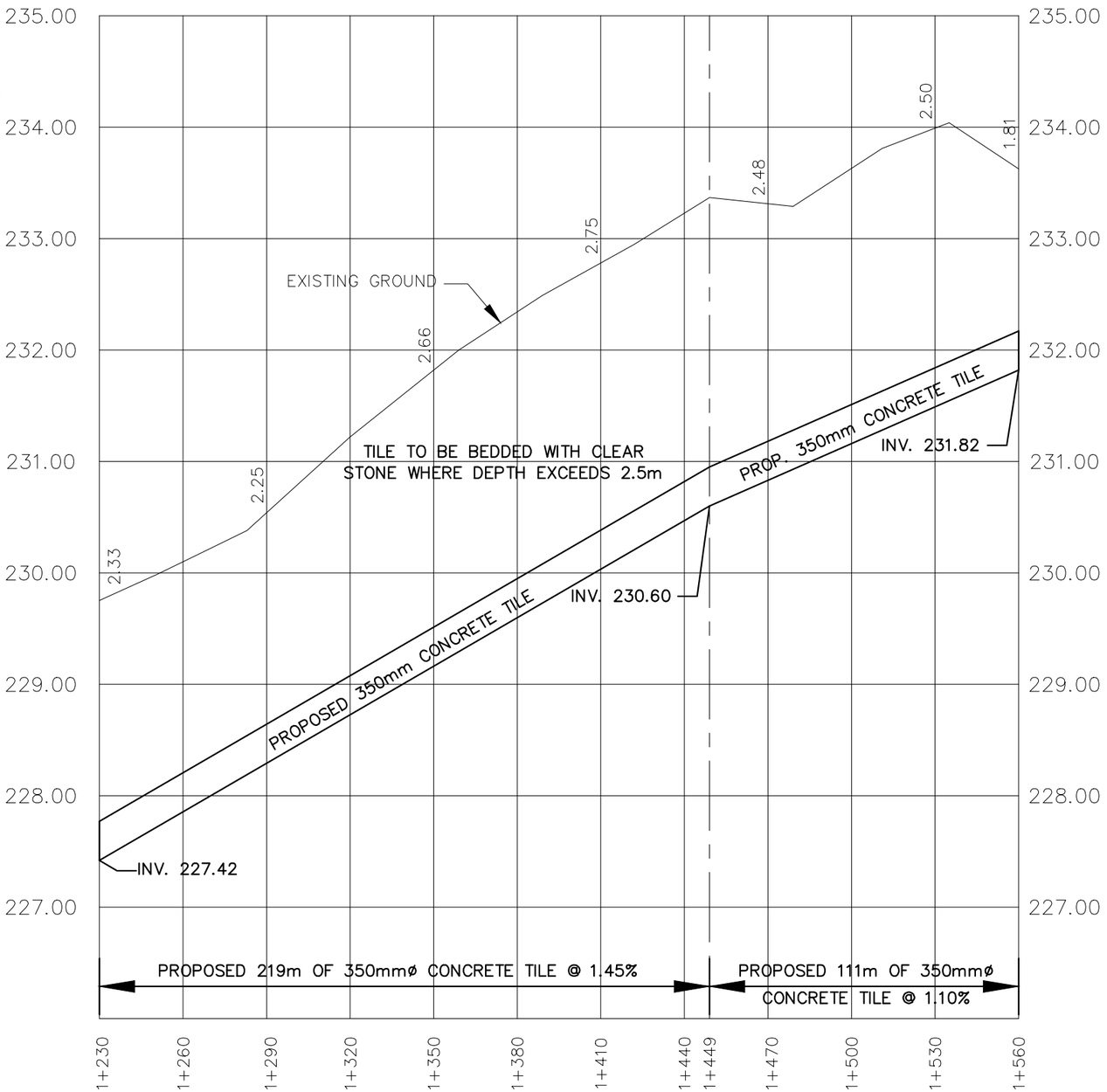
Last Updated: June 9, 2025

GENERAL NOTES

1. BENCHMARK No.2 ELEV. 226.44
   TOP OF NORTH END OF 300ø CSP PIPE
   CROSSING MACDONALD DRIVE ST. 1+052

   BENCHMARK No.3 ELEV. 240.09
   TOP OF WEST END OF 300ø CSP PIPE CROSSING
   SYLVAN ROAD, JUST UPSTREAM OF STATION 1+903

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



LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
AUG. 4, 2025
PROVINCE OF ONTARIO

Dobbin Engineering Inc.

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

DRAWING NAME: Schepers Drain Profile 3

PROJECT No. 2024-1657

APPROVED J. WARNER

CHECKED B. VAN RUITENBURG

DRAWN C. SAUNDERS

NO.	REVISIONS	DATE	BY
1	FINAL REPORT	AUG. 4, 2025	CS

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

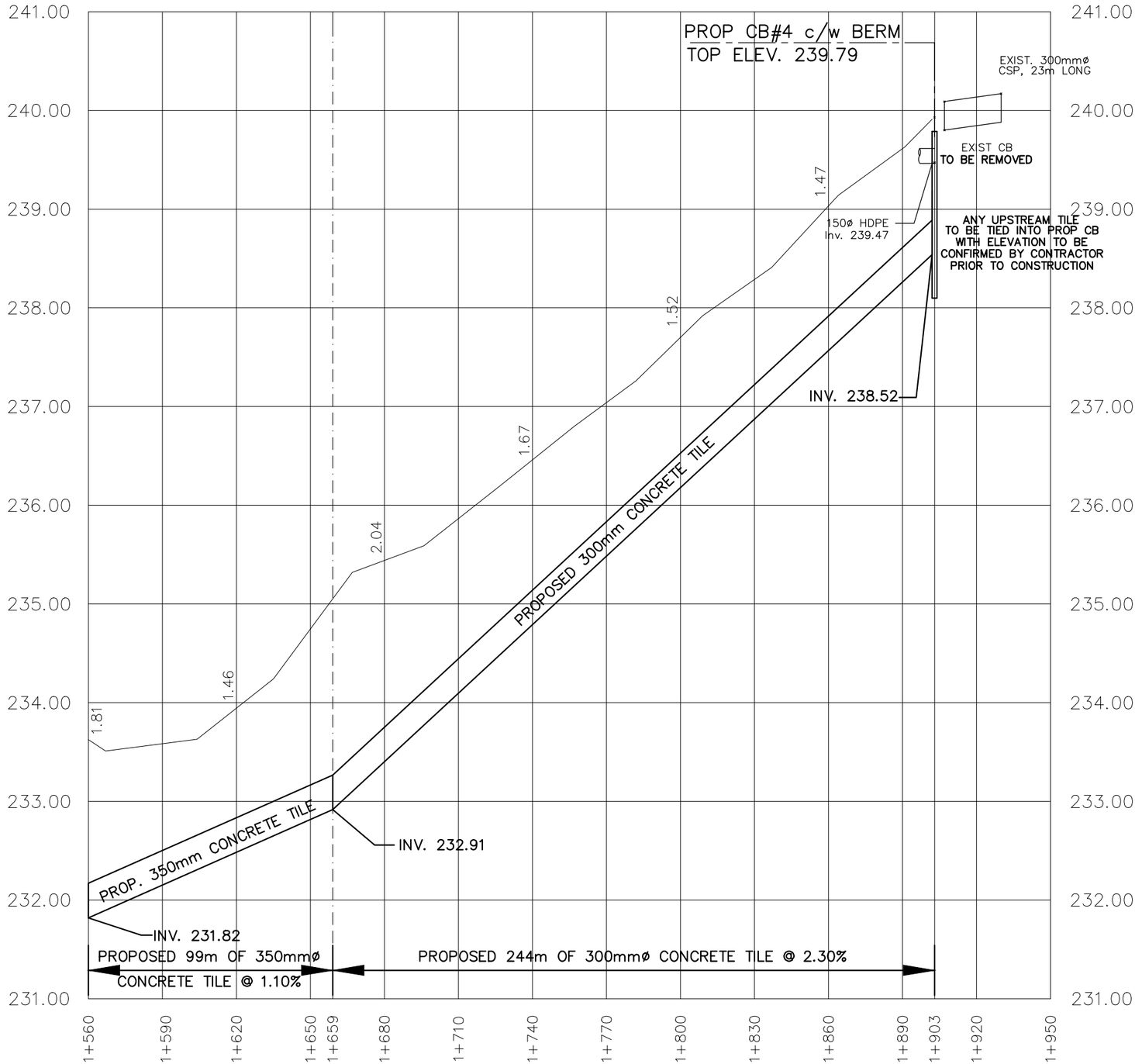
MUNICIPALITY of NORTH MIDDLESEX

SCHEPERS DRAIN
PROFILE

Last Updated: June 9, 2025

GENERAL NOTES

1. BENCHMARK No.3 ELEV. 240.09
   TOP OF WEST END OF 300ø CSP PIPE CROSSING SYLVAN ROAD, JUST UPSTREAM OF STATION 1+903
2. UPPER NUMBERS ARE DEPTH FROM EXISTING GROUND TO INVERT OF PROPOSED TILE.



LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
AUG. 4, 2025
PROVINCE OF ONTARIO

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

DRAWING NAME: Schepers Drain Profile 4

PROJECT No. 2024–1657

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	AUG. 4, 2025	CS
B. VAN RUITENBURG				
DRAWN	SCALE: 1:2,000			
C. SAUNDERS	0 20 40 60m			

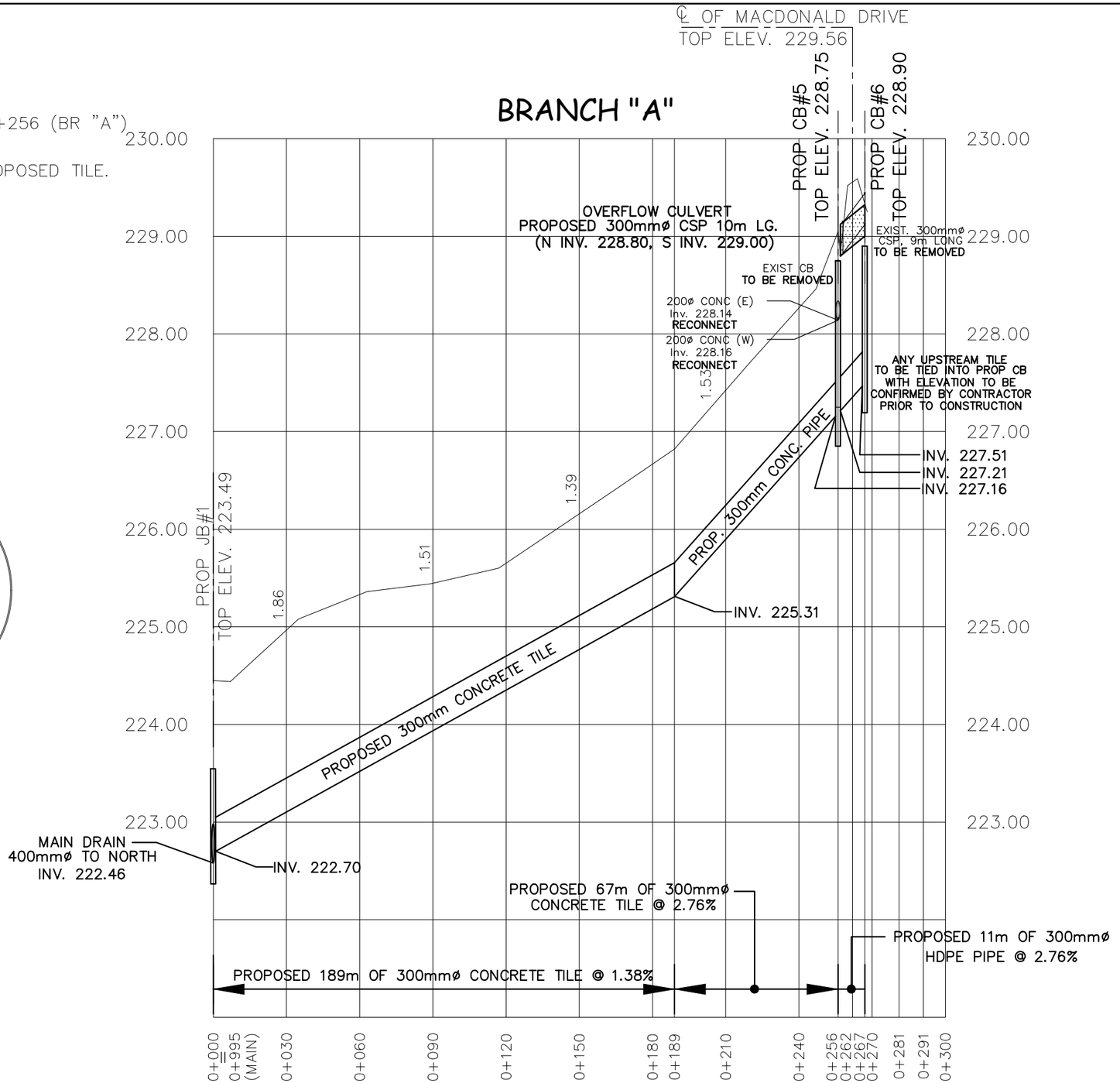
MUNICIPALITY of NORTH MIDDLESEX

SCHEPERS DRAIN
PROFILE

Last Updated: June 9, 2025

GENERAL NOTES

1. BENCHMARK No.4 ELEV. 229.15
   TOP OF NORTH END OF 300ø CSP
   CROSSING MACDONALD DRIVE. ST. 0+256 (BR "A")
2. UPPER NUMBERS ARE DEPTH FROM
   EXISTING GROUND TO INVERT OF PROPOSED TILE.



LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
AUG. 4, 2025
PROVINCE OF ONTARIO

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

DRAWING NAME: Schepers Drain Branch 'A' Profile

PROJECT No. 2024-1657

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	AUG. 4, 2025	CS
B. VAN RUITENBURG				
DRAWN	SCALE: 1:2,000			
C. SAUNDERS	0 20 40 60m			

MUNICIPALITY of NORTH MIDDLESEX

SCHEPERS DRAIN BRANCH 'A'
PROFILE

Last Updated: June 9, 2025