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December 1, 2025

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

Gentlemen and Mesdames:

Re: Elliott Drainage Works (2025)

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

Authorization under the Drainage Act

This Engineer's 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 February 5th, 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 Elliott Drainage Works (Main Drain) outlets into a watercourse in Lot 3, Concession 7 East of Centre Road (ECR) in the Municipality of North Middlesex. It continues easterly as an open channel to approximately 210m east of Springbank Road. The Main Drain then continues easterly as a tile drain to the south side of Centre Road, approximately 110m west of Robotham Road. Branch "A" outlets into the Main Drain and continues southeasterly to the north side of

Centre Road as a 400mm dia. tile drain. It then continues easterly along the north side of Centre Road as a shallow channel to the east limit of Lot 7, Concession 7 ECR. Branch "B" outlets into the open channel portion of the Main Drain near the easterly limit of Lot 4, Concession 7 ECR. It then continues southerly as an open channel to the north side Centre Road.

Background

Under an Engineer's Report dated June 7, 1971 Branch "A" and the Main Drain were constructed. At this time, the Main Drain extended approximately 165m into Lot 4, Concession 7 ECR and approximately 740m of open channel was filled in between Centre Road and Lot 6, Concession 7 ECR.

Under an Engineer's Report dated May 27, 1987 the portion of the Gerry Drain in the Municipality of North Middlesex was included as part of the Elliott Drainage Works to be known as Branch "B". The Main Drain was extended and improved to the east limit of Lot 3, Concession 7 ECR.

Drain Classification

The Elliott Drainage Works (Main Drain) is currently Not Rated downstream of Branch "B" and is classified as a Class "F" drain upstream of Branch "B" 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 April 3rd, 2025.

The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Drainage Superintendent, Municipality of North Middlesex)
- Jim Lumsden (Landowner)
- Rob Keidlz (Landowner)
- Tom Rieg (Landowner)
- Dane Matheson (Landowner)
- Leo Boere (Landowner)
- Robert Vanie (Landowner)
- Jeff Vanhie (Landowner)
- Mike Bles (Landowner)

The following is a brief summary of the meeting:

- General discussion of the Drainage Act and Landowners rights under the Drainage Act.
- Landowners stated that when the Main Drain is full, the water drains into Branch "A".
- Landowners felt that when there is a larger storm event, the surface water assessed to the Wyatt-McKenzie Drain utilizes the Elliott Drainage Works. R. Dobbin Engineering was to verify the drainage area.
    - It was determined that under larger storm events the properties west of Robotham Road will utilize the Elliott Drainage Works system.
- Landowners requested the replacement of the tile portion of Branch "A", cleanout of Branch "A" along Centre Road and that the Main Drain be investigated for an enclosure on the property with Roll Number 042-030-060-20 from the current tile portion of the Main Drain to Springbank Road.
- No adverse soil conditions were noted at the site meeting.

Draft Report

A draft report, dated October 21, 2025 was sent to all the affected Landowners and a meeting was held on November 27, 2025 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)
- Kristyn Wilson (Drainage Clerk, Municipality of North Middlesex)
- Jeff Vanhie (Landowner)
- Robert Vanhie (Landowner)

The following is a brief summary of the meeting:

- General discussion of the Drainage Act.
- It was discussed that a completion date of the end of 2026 would be utilized for the tender.
- It was requested that the drainage area into Branch "A" be reviewed. It was discussed that the drainage area was established based on previous report.
    - Upon review of LiDAR (Light Detection and Ranging) survey information it was determined that it aligns with the drainage area included in the draft report and previous reports. Therefore, the drainage area was kept the same.
- No other major concerns were brought forward.

Design

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

Recommendations

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

1. The Elliott Drainage Works (Main Drain) shall be enclosed on the property with Roll Number 042-030-060-20 (Station 0+245 to 0+464). The road crossing under Springbank Road (Station 0+227 to 0+245) shall be replaced. The open channel downstream shall be deepened (Station 0+054 to 0+227) in order to provide a sufficient outlet. A new Schedule of Maintenance shall be developed for the Main Drain.

2. The Elliott Drainage Works (Branch "A") tile portion (Station A 0+000 to A 0+322) shall be replaced and the existing tile drain shall be abandoned as part of the drainage works. The open channel portion of Branch "A" (Station 0+322 to 0+720) shall be deepened in order to provide relief to the Main Drain on the north side of Centre Road. The culvert at #30192 Centre Road shall be replaced. A new Schedule of Maintenance shall be developed for Branch "A".

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 $238,938, 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, with the exception of the extra cost to locate and work around utilities, has 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 and the daylighting costs as a special benefit assessment to that utility. The road crossings and the cost to locate and work around utilities shall be tendered separately with the actual cost-plus engineering (25% of the construction cost) 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 (Net Tax) x (Tendered Cost to Locate and Work Around Utilities x 1.25 (For Engineering)) + $1,000 (Daylighting and Surveying Utilities))

    Centre Road Special Benefit Assessment= 1.0176 (Net Tax) x (Tendered Costs for Traffic Control on Centre Road x 1.25 (For Engineering))

    Springbank Road Special Benefit Assessment= 1.0176 (Net Tax) x (Tendered Costs for all items under Crossing Replacement except the Utilities and CB #1 x 1.25 (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 open channel improvements on the property with Roll Number 042-030-059 has been assessed with 25% of the cost applied as a benefit assessment to the abutting property and the remainder applied as an outlet assessment to the upstream lands and roads based on equivalent hectares.

4. The cost to enclose the channel on the property with Roll Number 042-030-060-20 has been assessed to the requesting property as a special benefit assessment. These costs shall be pro-rated with the rest of the drainage works but will not be eligible for grant as per OMAFRA ADIP Policies.

5. The Branch "A" Tile Drain has been assessed with the increased cost to provide a drainage coefficient above 38mm/24hrs assessed to the property with Roll Number 042-030-060-20 as a special benefit assessment. The remainder of the Branch "A" Tile Drain replacement has been assessed with 30% of the cost applied as a benefit assessment to Centre Road, 20% of the cost applied as a benefit assessment to the abutting property, 20% of the cost applied as a cut-off benefit assessment and the remainder applied as an outlet assessment to the upstream lands and roads based on equivalent hectares.

6. The Branch "A" open channel improvements along Centre Road have been assessed with 50% of the cost applied as a benefit assessment to Centre Road, 10% of the cost applied as a benefit assessment to the abutting property, 25% of the cost applied as a cut-off benefit assessment and the remainder applied as an outlet assessment to the upstream lands and roads based on equivalent hectares.

7. The culvert replacement at #30192 Centre Road has been assessed with 30% of the cost applied as a benefit assessment to Centre Road, 35% of the cost applied as a benefit assessment to the abutting property and the remainder applied as an 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 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 Springbank Road and Centre Road and along the length of the drainage works. Access shall generally be restricted to a width of 6 metres.

The working area for the construction and future maintenance of the tile portions of the drain shall be restricted to a width of 25m along the length of the drainage works normally centred on the proposed tile drain.

The working area for the construction and future maintenance of the open channel shall be along the north side of the open channel and shall extend 20m past the top of bank.

For construction only, the working area shall extend 15m past the banks on both sides at the enclosure, in addition to the above.

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 provide a tile drain above the design coefficient of 38mm/24hrs and to enclose the drain on the property with Roll Number 042-030-060-20 has been assessed as a special benefit assessment and will not be eligible for grant based on the current ADIP policies.

Maintenance

The Elliott Drainage Works (Main Drain) from Station 0+054 to 0+464 and Branch "A" from Station A 0+000 to 0+729 shall be maintained and repaired in accordance with the specification and drawings contained in this report. The Elliott Drainage Works (Main Drain) and Branch "A" shall be maintained and repaired in the same proportions as contained in the applicable Schedule of Maintenance contained in this report. The remainder of the drainage works shall be maintained and repaired as per the previous reports.

The culvert replacement at #30192 Centre Road shall be maintained and repaired with 30% of the cost applied to Centre Road, 45% of the cost applied to the property with Roll Number 042-030-062, 17% of the cost applied to the property with Roll Number 000-020-161, 6% of the cost applied to the property with Roll Number 000-020-135-01 and 2% of the cost applied to the property with Roll Number 000-020-161-02.

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.

Yours truly,

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

Elliott Drainage Works
Municipality of North Middlesex
December 1, 2025

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 ($)
7	E 1/2 Lot 5	042-030-059	Artesian Springs Poultry Inc	2,160	780	2,940
	S Pt. Lot 6	042-030-060-20	R. Vanhie	-	4,060	4,060
	Lot 7	042-030-062	Terradust Acres Ltd	1,020	2,440	3,460
	Lot 8	042-030-063	Terradust Acres Ltd	-	100	100
			TOTAL ALLOWANCES	$3,180	$7,380	$10,560

Estimate of Cost

Item Description	Quantity	Unit	Unit Cost ($)	Total ($)
Pre-Construction Meeting	1	LS	200	200
Brushing and Tree Removal	1	LS	1,000	1,000
Silt Fence	1	LS	500	500
Open Channel Improvements (Station 0+054 to 0+227)				
Excavation of Open Channel	173	m	15	2,595
Trucking of Excavated Material to Fill in Open Channel (0+245 to 0+464)	173	m	12	2,076
Matting and Seeding of Disturbed Slope Slopes	730	sq.m	3	2,190
Springbank Road Crossing (Station 0+227 to 0+245)				
Traffic Control	1	LS	2,500	2,500
Locate and Work Around Utlities	1	LS	800	800
Remove and Disppose of Existing 1500mmø CSP (16m) and Unsuitable Backfill	1	LS	2,000	2,000
Supply and Install 750mmø HDPE Smooth Wall Pipe (Open Cut) c/w Bedding and Rodent Grate	18	m	450	8,100
Supply and Install 1390x970mmø CSPA (2.8mm Thick) (Open Cut)	16	m	950	15,200
Place Suitable Native Backfill	1	LS	1,500	1,500
Granular "B" Backfill	50	tonne	35	1,750
100% Crushed Granular "A" Backfill	30	tonne	40	1,200
Rip Rap for End Walls and Around Basin	30	tonne	150	4,500
Catchbasin #1 (1200x900mm)	1	LS	3,000	3,000
Restoration/Seeding and Ditch Grading	1	LS	2,500	2,500
Open Channel Enclosure (Station 0+245 to 0+464)				
Strip and Level Topsoil Along Tile Alignment	219	m	5	1,095
Supply and Install 750mmø Concrete Tile (2000D)	219	m	120	26,280
Junction Box #2 (1200x900mm)	1	LS	2,500	2,500
Connect Existing Tile from Main Drain to JB #2	1	LS	500	500
Locate and Connect Existing Tiles				
Long Connections	5	each	250	1,250
Short Connections	20	each	150	3,000
Strip and Level Topsoil in Existing Open Channel	219	m	5	1,095
Fill in Existing Open Channel	219	m	30	6,570
Remove and Dispose of Existing Overflow Pipe at Station 0+468 (3m)	1	LS	200	200
Branch "A" Tile Replacement (Station A 0+000 to A 0+322)				
Locate and Abandon Existing Tile	1	LS	500	500
Strip and Level Topsoil Along Tile Alignment	322	m	5	1,610
Supply and Install 525mmø Concrete Tile (2000D)	322	m	75	24,150
Locate and Connect Existing Tiles	15	each	150	2,250
Remove and Dispose of Existing DICB at Station 0+322	1	LS	500	500
DICB #3 (1200x900mm)	1	LS	3,000	3,000

Item Description	Quantity	Unit	Unit Cost ($)	Total ($)
Branch "A" Open Channel Cleanout and Culvert Replacement (Station A 0+322 to A 0+729)				
Traffic Control on Centre Road	1	LS	3,000	3,000
Strip and Level Topsoil Adjacent Channel	407	m	8	3,256
Open Channel Excavation	407	m	8	3,256
Levelling of Excavated Material	407	m	5	2,035
Reconnect Existing Tiles	2	each	150	300
Matting and Seeding of Disturbed Side Slope Slopes	1100	sq.m	3	3,300
Rip Rap as Required	30	tonne	150	4,500
Culvert Replacement at Station 0+603				
Remove and Disppose of Existing 600mmø CSP (12m) and Unsuitable Backfill	1	LS	1,200	1,200
Supply and Install 900mmø HDPE Smooth Wall Pipe c/w Bedding	18	m	700	12,600
Granular "B" Backfill	50	tonne	35	1,750
100% Crushed Granular "A" Backfill	25	tonne	40	1,000
Rip Rap End Walls	25	tonne	150	3,750
Contigency				8,350
Sub Total				174,408
Allowances				10,560
Engineering				34,580
Daylighting and Surveying Utilities				1,000
Estimate for Tendering, Inspection and Contract Administration				14,000
ABCA Fee				450
Total Estimate excluding HST				**234,998**
Non-Recoverable HST (1.76%)				3,940
Total Estimate				**$ 238,938**

SCHEDULE OF ASSESSMENT

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Township of Adelaide Metcalfe								
Public Lands								
Centre Road (County Road #81)		2.00		County of Middlesex		-	5,983	5,983
Robotham Road		(0.60)		Township of Adelaide Metcalfe		-	1,793	1,793
					-	-	7,776	7,776
Agricultural Lands								
2 NCR	W 1/2 Lot 16	0.00	000-020-128	Van Geffen Farms Inc.		-	-	-
	E 1/2 Lot 16, W 1/4 Lot 17	0.00	000-020-127	J. & S. Looman		-	-	-
	E 3/4 Lot 17	0.00	000-020-124	Meuwissen & Sons Ltd		-	-	-
3 NCR	E 1/2 Lot 15	0.00	000-010-018	J K Rombouts Farms Ltd		-	-	-
	W 1/2 Lot 16	0.00	000-020-129	F. Boere		-	-	-
	E 1/2 Lot 16	0.00	000-020-130	W. Lumsden		-	-	-
	W 1/2 Lot 17	0.00	000-020-131-01	Lymarikx Farms Limited		-	-	-
	E 1/2 Lot 17	0.00	000-020-132	Lymarikx Farms Limited		-	-	-
	N 1/2 Lot 18	(10.00)	000-020-135-01	S. & N. Thomson		-	3,739	3,739
	SW 1/2 Lot 18	0.00	000-020-133	J. Rieg		-	-	-
4 NCR	Lot 16	0.00	000-020-164	Van Den Eynden Farms Ltd		-	-	-
	Lot 17	4.05	000-020-162	Lymarikx Farms Limited		-	3,029	3,029
() Represents surface water overflow from Wyatt-McKenzie Drainage Works					-	-	6,768	6,768

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Non-Agricultural Lands								
3 NCR	Pt. W 1/2 Lot 16	0.00	000-020-129-01	M. Chouffot		-	-	-
	Pt. W 1/2 Lot 17	0.00	000-020-131	V. & G. Balcarras		-	-	-
4 NCR	Pt. Lot 16	0.00	000-020-163	J. & E. Groot		-	-	-
	Pt. Lot 17	0.34	000-020-162-02	A. Slakic & D. Kerrigan		-	509	509
	Lot 18	6.18 (5.30)	000-020-161	M. Bles		-	6,603	6,603
	Pt. Lot 18	0.94	000-020-161-02	A. & T. Millard		-	1,406	1,406
() Represents surface water overflow from Wyatt-McKenzie Drainage Works					-	-	8,518	8,518
				Total - Non-Agricultural Lands	8,518			
				Total - Public Lands	7,776			
				Total Agricultural Lands	6,768			
				Total - Township of Adelaide Metcalfe	23,062			
Municipality of North Middlesex								
Public Lands								
Springbank Road		1.42		Municipality of North Middlesex	53,751	4,111	506	58,368
Centre Road (County Road #81)		2.00		County of Middlesex	4,111	39,148	5,983	49,242
					57,862	43,259	6,489	107,610

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Agricultural Lands								
7	Lot 4	0.00	042-030-057	F. Boere		-	-	-
	W 1/2 Lot 5	0.00	042-030-058	L. Boere		-	-	-
	E 1/2 Lot 5	0.00	042-030-059	Artesian Springs Poultry Inc		3,460	-	3,460
	N Pt. Lot 6	8.07	042-030-060	H. Vanhie		-	912	912
	S Pt. Lot 6	20.23	042-030-060-20	R. Vanhie	58,646	11,717	3,877	74,240
	Lot 7	12.50	042-030-062	Terradust Acres Ltd		24,808	1,413	26,221
	Lot 8	11.80	042-030-063	Terradust Acres Ltd		-	1,334	1,334
					58,646	39,985	7,536	106,167
Utilities								
Telecom Utility				Bell	2,099	-	-	2,099
					2,099	-	-	2,099

Total - Utilities	2,099
Total - Public Lands	107,610
Total Agricultural Lands	106,167
Total - Municipality of North Middlesex	215,876
Total - Township of Adelaide Metcalfe	23,062
Total Assessment	$238,938

Estimated Net Assessment

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

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Total Assessment ($)	Estimated Grant ($)	Allowances ($)	Estimated Net Assessment ($)
Township of Adelaide Metcalfe								
Public Lands								
Centre Road (County Road #81)		2.00		County of Middlesex	5,983			5,983
Robotham Road		(0.60)		Township of Adelaide Metcalfe	1,793			1,793
Agricultural Lands								
2 NCR	W 1/2 Lot 16	0.00	000-020-128	Van Geffen Farms Inc.	-	-		-
	E 1/2 Lot 16, W 1/4 Lot 17	0.00	000-020-127	J. & S. Looman	-	-		-
	E 3/4 Lot 17	0.00	000-020-124	Meuwissen & Sons Ltd	-	-		-
3 NCR	E 1/2 Lot 15	0.00	000-010-018	J K Rombouts Farms Ltd	-	-		-
	W 1/2 Lot 16	0.00	000-020-129	F. Boere	-	-		-
	E 1/2 Lot 16	0.00	000-020-130	W. Lumsden	-	-		-
	W 1/2 Lot 17	0.00	000-020-131-01	Lymarikx Farms Limited	-	-		-
	E 1/2 Lot 17	0.00	000-020-132	Lymarikx Farms Limited	-	-		-
	N 1/2 Lot 18	(10.00)	000-020-135-01	S. & N. Thomson	3,739	1,246		2,493
	SW 1/2 Lot 18	0.00	000-020-133	J. Rieg	-	-		-
4 NCR	Lot 16	0.00	000-020-164	Van Den Eynden Farms Ltd	-	-		-
	Lot 17	4.05	000-020-162	Lymarikx Farms Limited	3,029	1,010		2,019
() Represents surface water overflow from Wyatt-McKenzie Drainage Works								
Non-Agricultural Lands								
3 NCR	Pt. W 1/2 Lot 16	0.00	000-020-129-01	M. Chouffot	-			-
	Pt. W 1/2 Lot 17	0.00	000-020-131	V. & G. Balcarras	-			-
4 NCR	Pt. Lot 16	0.00	000-020-163	J. & E. Groot	-			-
	Pt. Lot 17	0.34	000-020-162-02	A. Slakic & D. Kerrigan	509			509
	Lot 18	6.18 (5.30)	000-020-161	M. Bles	6,603			6,603
	Pt. Lot 18	0.94	000-020-161-02	A. & T. Millard	1,406			1,406

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Total Assessment ($)	Estimated Grant ($)	Allowances ($)	Estimated Net Assessment ($)
Municipality of North Middlesex								
Public Lands								
Springbank Road		1.42		Municipality of North Middlesex	58,368			58,368
Centre Road (County Road #81)		2.00		County of Middlesex	49,242			49,242
Agricultural Lands								
7	Lot 4	0.00	042-030-057	F. Boere	-	-		-
	W 1/2 Lot 5	0.00	042-030-058	L. Boere	-	-		-
	E 1/2 Lot 5	0.00	042-030-059	Artesian Springs Poultry Inc	3,460	1,153	2,940	(633)
	N Pt. Lot 6	8.07	042-030-060	H. Vanhie	912	304		608
	S Pt. Lot 6	20.23	042-030-060-20	R. Vanhie	74,240	5,198	4,060	64,982
	Lot 7	12.50	042-030-062	Terradust Acres Ltd	26,221	8,740	3,460	14,021
	Lot 8	11.80	042-030-063	Terradust Acres Ltd	1,334	445	100	789
Utilities								
Telecom Utility				Bell	2,099			2,099
					238,938	18,096	10,560	210,282

SCHEDULE OF MAINTENANCE (MAIN DRAIN)

To Maintain the Elliott Drainage Works (Open and Closed) from the West Limit of Lot 4, Concession 7 to its top end in Lot 18, Cocnession 4 NCR

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total
Township of Adelaide Metcalfe							
Public Lands							
Centre Road (County Road #81)		3.10		County of Middlesex	268	508	776
Robotham Road		(0.60)		Township of Adelaide Metcalfe	-	191	191
School Road		1.60		Township of Adelaide Metcalfe	-	15	15
Cuddy Road		2.00		Township of Adelaide Metcalfe	-	19	19
					268	733	1,001
Agricultural Lands							
2 NCR	W 1/2 Lot 16	3.20	000-020-128	Van Geffen Farms Inc.	-	8	8
	E 1/2 Lot 16, W 1/4 Lot 17	16.20	000-020-127	J. & S. Looman	-	38	38
	E 3/4 Lot 17	8.90	000-020-124	Meuwissen & Sons Ltd	-	21	21
3 NCR	E 1/2 Lot 15	15.80	000-010-018	J K Rombouts Farms Ltd	-	37	37
	W 1/2 Lot 16	31.20	000-020-129	F. Boere	-	74	74
	E 1/2 Lot 16	40.47	000-020-130	W. Lumsden	-	96	96
	W 1/2 Lot 17	39.50	000-020-131-01	Lymarikx Farms Limited	-	94	94
	E 1/2 Lot 17	38.00	000-020-132	Lymarikx Farms Limited	-	90	90
	N 1/2 Lot 18	22.00 (10.00)	000-020-135-01	S. & N. Thomson	-	450	450
	SW 1/2 Lot 18	8.10	000-020-133	J. Rieg	-	19	19
4 NCR	Lot 16	24.30	000-020-164	Van Den Eynden Farms Ltd	-	58	58
	Lot 17	23.16	000-020-162	Lymarikx Farms Limited	-	159	159
() Represents surface water overflow from Wyatt-McKenzie Drainage Works					-	1,144	1,144

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total
Non-Agricultural Lands							
3 NCR	Pt. W 1/2 Lot 16	1.20	000-020-129-01	M. Chouffot	-	6	6
	Pt. W 1/2 Lot 17	0.98	000-020-131	V. & G. Balcarras	-	5	5
4 NCR	Pt. Lot 16	0.17	000-020-163	J. & E. Groot	-	1	1
	Pt. Lot 17	0.34	000-020-162-02	A. Slakic & D. Kerrigan	-	19	19
	Lot 18	9.08 (5.30)	000-020-161	M. Bles	268	809	1,077
	Pt. Lot 18	0.94	000-020-161-02	A. & T. Millard	49	150	199
() Represents surface water overflow from Wyatt-McKenzie Drainage Works					317	990	1,307
				Total - Non-Agricultural Lands	1,307		
				Total - Public Lands	1,001		
				Total Agricultural Lands	1,144		
				Total - Township of Adelaide Metcalfe	3,452		
Municipality of North Middlesex							
Public Lands							
Springbank Road		1.42		Municipality of North Middlesex	-	73	73
Centre Road (County Road #81)		3.10		County of Middlesex	-	508	508
					-	581	581

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total
Agricultural Lands							
7	Lot 4	12.10	042-030-057	F. Boere	997	-	997
	W 1/2 Lot 5	11.70	042-030-058	L. Boere	523	28	551
	E 1/2 Lot 5	14.20	042-030-059	Artesian Springs Poultry Inc	559	101	660
	N Pt. Lot 6	8.07	042-030-060	H. Vanhie	-	227	227
	S Pt. Lot 6	20.23	042-030-060-20	R. Vanhie	1,070	261	1,331
	Lot 7	12.50	042-030-062	Terradust Acres Ltd	973	351	1,324
	Lot 8	11.80	042-030-063	Terradust Acres Ltd	292	585	877
					4,414	1,553	5,967
				Total - Public Lands	581		
				Total Agricultural Lands	5,967		
				Total - Municipality of North Middlesex	6,548		
				Total - Township of Adelaide Metcalfe	3,452		
				Total Assessment	$10,000		

SCHEDULE OF MAINTENANCE (BRANCH "A")

To Maintain the Elliott Drainage Works (BRANCH "A") from Station A 0+000 to A 0+729

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total
Township of Adelaide Metcalfe							
Public Lands							
Centre Road (County Road #81)		2.00		County of Middlesex	-	470	470
Robotham Road		(0.60)		Township of Adelaide Metcalfe	-	141	141
					-	611	611
Agricultural Lands							
3 NCR	N 1/2 Lot 18	(10.00)	000-020-135-01	S. & N. Thomson	-	293	293
4 NCR	Lot 17	4.05	000-020-162	Lymarikx Farms Limited	-	237	237
					-	530	530
Non-Agricultural Lands							
4 NCR	Pt. Lot 17	0.34	000-020-162-02	A. Slakic & D. Kerrigan	-	40	40
	Lot 18	6.18 (5.30)	000-020-161	M. Bles	-	518	518
	Pt. Lot 18	0.94	000-020-161-02	A. & T. Millard	-	110	110
() Represents surface water overflow from Wyatt-McKenzie Drainage Works					-	668	668

Total - Non-Agricultural Lands	668
Total - Public Lands	611
Total Agricultural Lands	530
Total - Township of Adelaide Metcalfe	1,809

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total
Municipality of North Middlesex							
Public Lands							
Centre Road (County Road #81)		2.00		County of Middlesex	3,790	469	4,259
					3,790	469	4,259
Agricultural Lands							
7	S Pt. Lot 6	20.23	042-030-060-20	R. Vanhie	1,604	130	1,734
	Lot 7	12.50	042-030-062	Terradust Acres Ltd	2,198	-	2,198
					3,802	130	3,932
				Total - Public Lands	4,259		
				Total Agricultural Lands	3,932		
				Total - Municipality of North Middlesex	8,191		
				Total - Township of Adelaide Metcalfe	1,809		
				Total Assessment	$10,000		

Elliott Drainage Works
Municipality of North Middlesex
December 1, 2025

SPECIFICATION OF WORK

1. Location

The work in this specification is located in Lot 5, 6 and 7, Concession 7 ECR in the Municipality of North Middlesex.

2. Scope of Work

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

- 173m of Open Channel Deepening (Station 0+054 to 0+227)
- Road Crossing on Springbank Road (Station 0+227 to 0+245)
- 219m Enclosure with 750mm dia. Concrete Tile (0+245 to 0+464)
- 322m of Tile Drain Replacement with 525mm dia. Concrete Tile (A 0+000 to A 0+322)
- 407m of Open Channel Cleanout (A 0+322 to A 0+729) and Culvert Replacement

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 (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 and Municipality of North Middlesex 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, County of Middlesex 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 Springbank Road and Centre Road and along the length of the drainage works. Access shall generally be restricted to a width of 6 metres.

The working area for the construction and future maintenance of the tile portions of the drain shall be restricted to a width of 25m along the length of the drainage works normally centred on the proposed tile drain.

The working area for the construction and future maintenance of the open channel shall be along the north side of the open channel and shall extend 20m past the top of bank.

For construction only, the working area shall extend 15m past the banks on both sides at the enclosure, in addition to the above.

10. Benchmarks

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

11. Removals

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 and culverts under road crossings shall be removed in their entirety.

12. Brushing and Tree Removal

All brush, trees, woody vegetation, stumps etc. shall be removed within the working corridor and drain cross section at the discretion of 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. Topsoil Stripping

The existing channel that is being enclosed between Station 0+245 and 0+464 shall be stripped. The topsoil shall be stockpiled at the edge of the working allowance. Once the channel is filled and graded to allow for an overflow swale the Contractor shall level the topsoil over the swale.

The Contractor shall strip the topsoil for a width of 6m normally centered on the proposed tile drain (Station 0+245 and 0+464 and A 0+000 to A 0+322). 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 a condition that is suitable for cultivation.

From Station A 0+322 to A 0+729 the topsoil adjacent the channel shall be stripped for a width of 15m and placed at the edge of the working area. Once the excavated material is

levelled the topsoil shall be placed over the excavated material and left in a condition that is suitable for cultivation. This is only required as part of construction and not future maintenance. It is anticipated that any future maintenance will only include a bottom cleanout.

14. Excavation of Open Channel

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

For construction, the excavated material between Station 0+054 and 0+227 shall be utilized to fill in the channel between Station 0+245 and 0+464. From Station A 0+322 to A 0+729 the excavated material shall be levelled. If additional material is required to fill in the channel between Station 0+054 and 0+227 the excavated material between Stations 0+245 and 0+464 may be used at an agreed to price.

Where leveled, 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 and 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 existing side slopes. All material unfit for placing on farmlands shall be disposed of offsite by the Contractor. It is anticipated that future maintenance of the open channel will include the levelling of all excavated material.

The open channels shall be restored as per the restoration specification.

15. Expose and Decommission Existing Drain

The existing tile drain shall be exposed by the Contractor and crushed at the discretion of the Drainage Superintendent or Engineer in order to adequately determine the proposed alignment.

16. Filling in Channel

The Contractor shall fill in the existing open channel between Station 0+245 and 0+464. This shall be completed with any combination of excess tile material, excavated material from the open channel improvements and re-grading adjacent the channel. The method shall be approved by the contract administrator prior to construction.

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.

17. Springbank Road Crossing

The Contractor is required to have a Municipality approved traffic control plan prior to any work commencing.

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.

The culvert shall be removed in its entirety and disposed offsite at the expense of the Contractor.

The Contractor shall supply, install, and backfill aluminized corrugated steel pipe (CSP) as specified. CSP shall have a minimum wall thickness of 2.8mm in all cases and 68 x 13mm corrugations.

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).

The culverts shall be installed generally in the same location or as approved by the Drainage Superintendent. The culverts shall be installed with the invert 10% (minimum 100mm) below the proposed channel bottom and as specified on the profile.

All backfill shall be free from deleterious material. All granular bedding and backfill material shall be mechanically compacted to 98% modified standard proctor density.

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 “B”. Outside the road allowance excavated material can be used. The top 150mm within the road shall be 100% crushed Granular “A”. Granular “A” shall be mechanically compacted to 100% modified standard proctor density.

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”.

Rip rap end walls 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 (Terrafix 250R 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. For rip rap end walls, the clay material shall generally be used close to the end walls with gravel material being used for the center drive area.

18. Driveway Culvert

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

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.

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).

The bottom of the excavation shall be excavated to a minimum of 100mm below the proposed invert. When the pipe has been installed to the proper grade and depth, the excavation shall be backfilled with ¾” clear stone and wrapped in filter fabric from the bottom of the excavation to the spring line of the pipe, this shall be considered the 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. The access culvert shall be backfilled from the spring line to within 150mm of finished grade with granular “B” or approved native material. The top 150mm shall be backfilled with OPS granular “A” material to finished grade.

The rip rap end walls 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.

19. 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).

The exact location of the proposed tile shall be determined once the existing tile is spotted. It is anticipated that the tile drain will run south of the existing channel between Station 0+245 and 0+464.

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.

20. Outlet Works

The outlet works for the drain shall consist of HDPE smooth wall pipe (320 kPa) as shown on the profile 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 any pipes. 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.

21. Catch Basins

Structure	Station	Size (mm)	Grate Inlet Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
CB #1	0+245	1200x900	223.68	222.65 (W) 750 HDPE	222.66 (E) 750 CONC.
JB #2	0+464	1200x900	224.40	223.32 750 (W) CONC.	223.35 / 223.40 450 (E) / 525 (S) CONC.
DICB #3	A 0+322	1200x900	225.60 (E)	224.56 (NW) 525 CONC.	

The catch basins and junction boxes shall be square precast concrete structures as noted above. The basins shall have a birdcage type grate and the junction box shall have a concrete lid. The ditch inlet catch basin (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 and 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. Birdcage grates shall be manufactured with a bar spacing no larger than 50mm. The top of junction boxes shall be set a minimum of 600mm below grade to accommodate farm tillage practices.

The catch basins and junction boxes shall be set at the final elevations as directed by the Drainage Superintendent. They 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 catch basins to ensure proper drainage.

22. Additional Rip Rap

Rip Rap shall be placed within the open channels at the discretion of the Engineer or Drainage Superintendent. 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.

23. Seeding/Restoration

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

All previously 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 connected to the tile drain and open channel 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.

Where an existing subsurface drain needs to cross the existing open channel to tie into the proposed tile the open channel shall be excavated to its hard bottom. Drainage stone shall be used to bed the pipe from the bottom of the channel to the spring line of the tile.

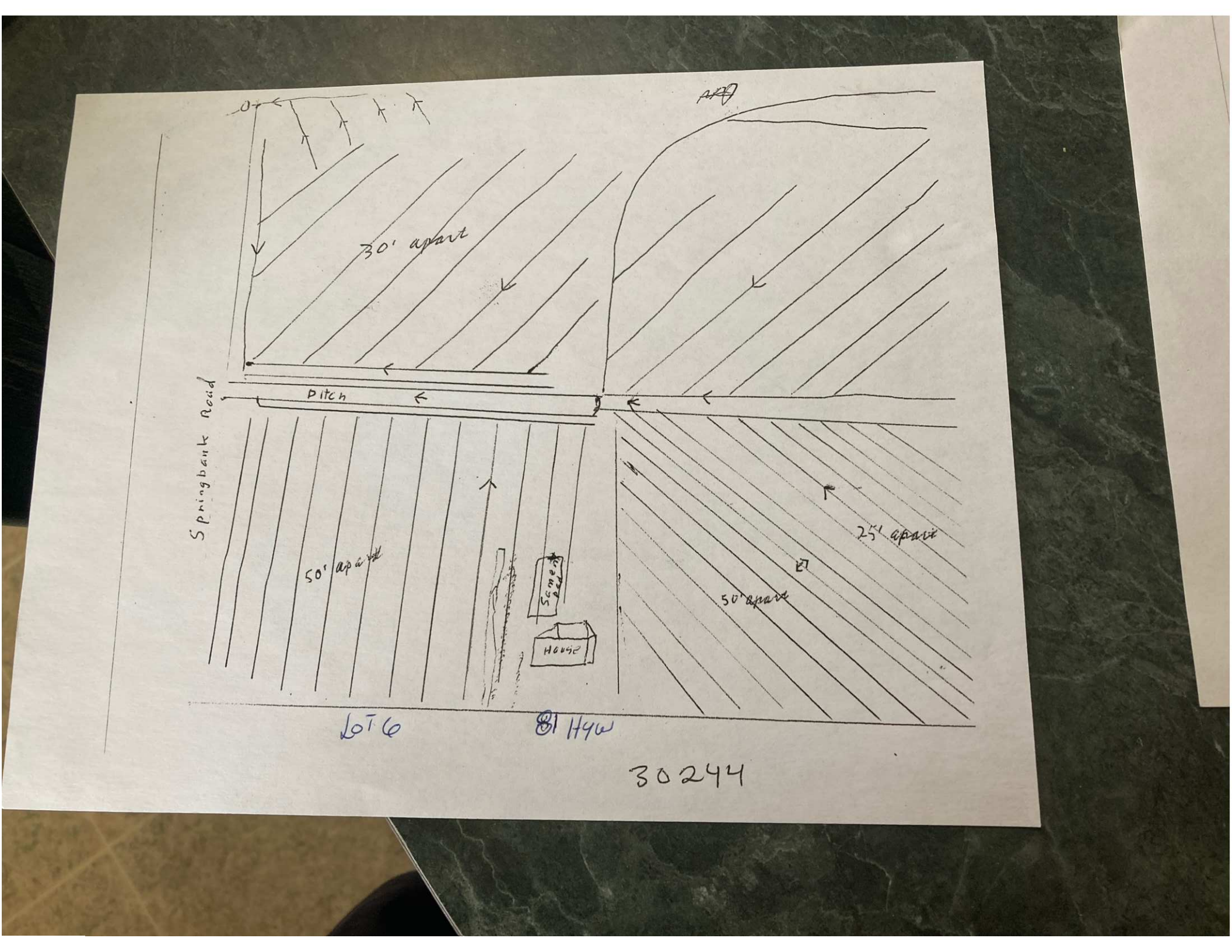
25. Environmental Considerations

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.


30' apart
Ditch
Springbank Road
50' apart
Septic
House
25' apart
50' apart
Lot 6
81 Hwy
30244

LOT 4 LOT 5 LOT 6 LOT 7 LOT 8

CON 7 EOCR

SPRINGBANK ROAD

042-030-058
L. BOERE
11.70 Ha

042-030-059
ARTESIAN SPRINGS
POULTRY INC
14.20 Ha

EXISTING PIPELINE

042-030-060
H. VANHIE
8.07 Ha

042-030-060-20
R. VANHIE
20.23 Ha

0+000
PROP TILE OUTLET
0+227
PROP CB #1
0+245
0+054
BM1
0+235
MAIN DRAIN
750ø
BR. 'B'
DRAIN TO BE
ENCLOSED FROM
0+245 TO 0+464
BM2
ELLIOTT
DRAINAGE WORKS
PROP JB #2
0+464=A 0+000
525ø
0+718
042-030-062
TERRADUST ACRES LTD
12.50 Ha
A 0+603
042-030-063
TERRADUST ACRES LTD
11.80 Ha
CENTRE ROAD
BM3
PROP
DICB #3
A 0+322
BR. 'A'
CENTRE RD
A 0+729
BM4
WYATT-McKENZIE
DRAINAGE WORKS
'1'
'2'
'A'
000-020-162-02
A. SLAKIC &
D. KERRIGAN
0.34 Ha
GERRY DRAIN
000-020-161-02
A. & T. MILLARD
0.90 Ha
000-020-162
LYMARIKX FARMS
LIMITED
4.05 Ha
000-020-161
M. BLES
11.48 Ha (5.30 Ha'B'
WHEN WYATT-
MCKENZIE IS FULL)

MUNICIPALITY OF NORTH MIDDLESEX

LOT 9

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
DEC. 1, 2025
PROVINCE OF ONTARIO

LOT 16 LOT 17 LOT 18 LOT 19

CON 4 NOCR

BR. B
BR. A
BR. C
BR. D
BR. A

TOWNSHIP OF ADELAIDE METCALFE

000-020-135-01
S. & N. THOMSON
(10.00 Ha
WHEN WYATT-
MCKENZIE IS FULL)

ROBOTHAM ROAD

ROBOTHAM DRAIN

SUTHERLAND DRAIN

CON 3 NOCR

LEGEND

- DRAINAGE AREA
- ELLIOTT DRAINAGE WORKS
- MUNICIPAL DRAIN
- EXISTING CULVERT
- EXISTING CULVERT TO BE REPLACED
- EXISTING CULVERT

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

DRAWING NAME:
Elliott Drainage Works Plan

PROJECT No.
2025-1711

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

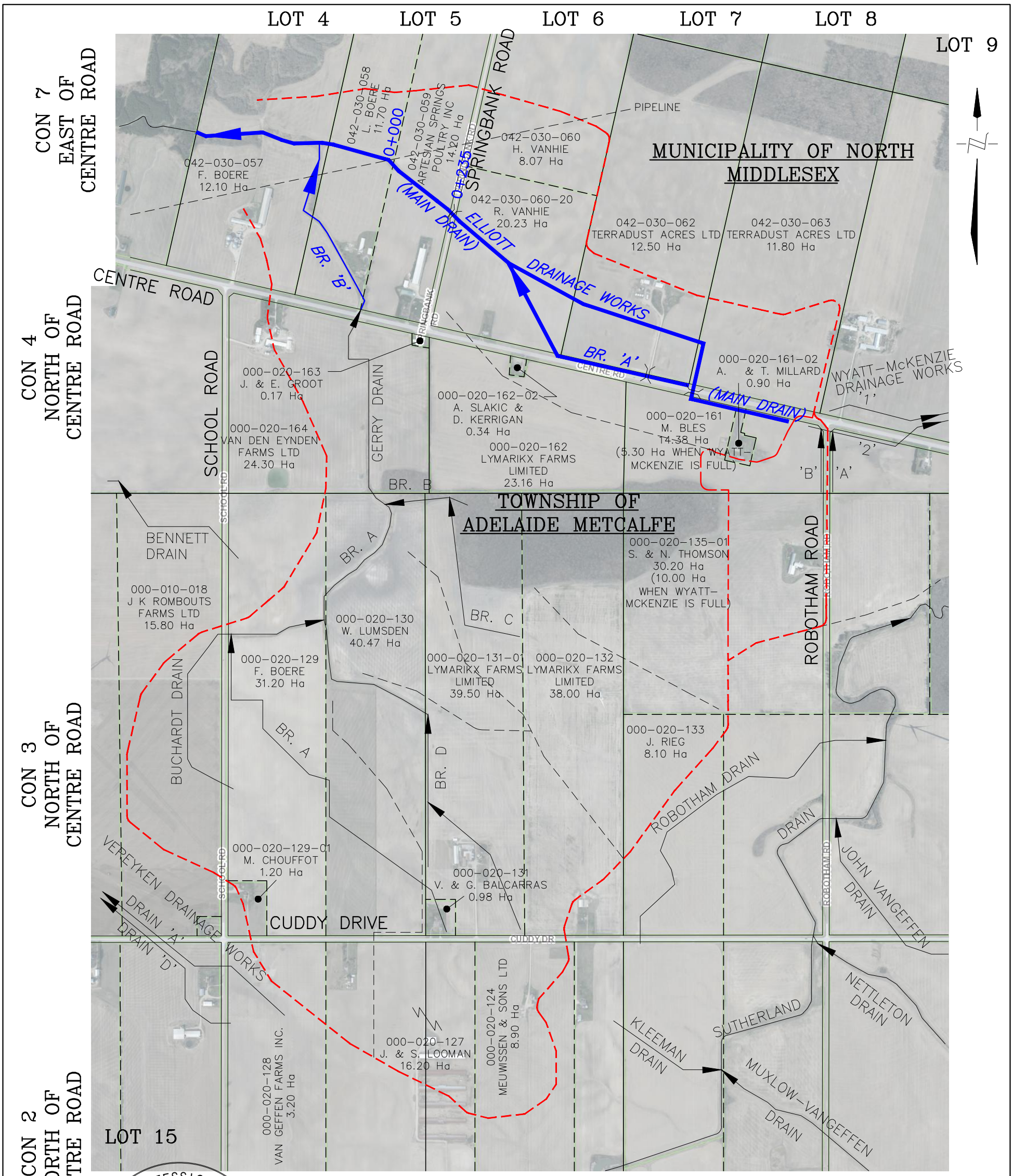
SCALE: 1:7500
0 100 200 300m

MUNICIPALITY of NORTH MIDDLESEX

ELLIOTT DRAINAGE WORKS PLAN

1 OF 4

Last Updated: September 30, 2025



LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
DEC. 1, 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: Elliott Drainage Works Plan For Maintenance Schedules

PROJECT No. 2025-1711

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

SCALE: 1:12,000
0 120 240 360m

MUNICIPALITY of NORTH MIDDLESEX

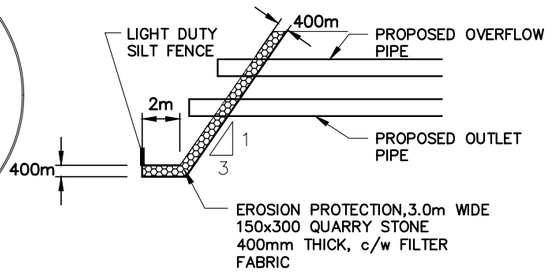
ELLIOTT DRAINAGE WORKS
PLAN FOR MAINTENANCE SCHEDULES

Last Updated: September 30, 2025

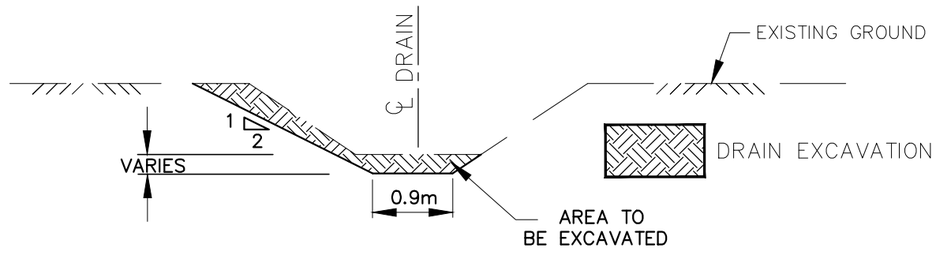
GENERAL NOTES

1. BENCHMARK No.1 ELEV. 224.62
   TOP OF WEST END OF EXISTING 1500mmø CSP, CROSSING SPRINGBANK ROAD STA. 0+235
   BENCHMARK No.2 ELEV. 224.90
   TOP OF EAST END OF EXISTING 500ø CSP OVERFLOW PIPE, STATION 0+468
2. UPPER NUMBERS ARE DEPTH FROM TOP OF BANK TO PROPOSED CHANNEL BOTTOM AND EXISTING GROUND TO THE PROPOSED TILE INVERT.
3. LOWER NUMBERS ARE DEPTH OF THE EXCAVATION.

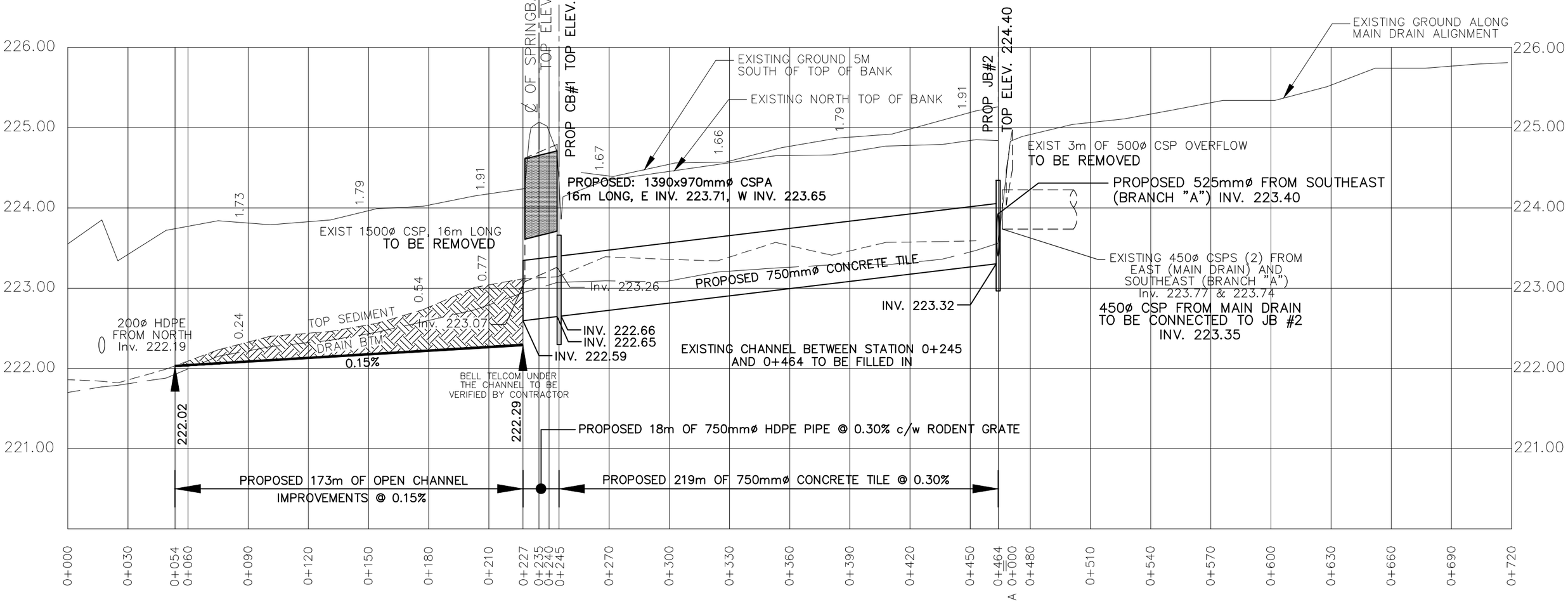
LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
DEC. 1, 2025
PROVINCE OF ONTARIO



OUTLET DETAIL
NTS



TYPICAL DRAIN CROSS SECTION STATION 0+054 TO 0+237
NTS



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

DRAWING NAME:
Elliott Drainage Works – Main Drain Profile 1

PROJECT No.
2025–1711

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

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

MUNICIPALITY of NORTH - MIDDLESEX

ELLIOTT DRAINAGE WORKS - MAIN DRAIN

PROFILE

3 OF 4

Last Updated: September 30, 2025

GENERAL NOTES

1. BENCHMARK No.2 ELEV. 224.90
   TOP OF EAST END OF EXISTING 500ø CSP OVERFLOW PIPE, STATION 0+468

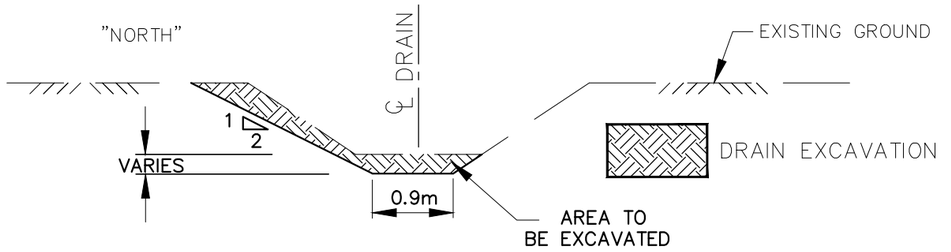
   BENCHMARK No.3 ELEV. 225.72
   EXISTING INLET ELEVATION FOR DITCH INLET CATCHBASIN ON NORTH SIDE OF CENTRE ROAD AT STATION A 0+322

   BENCHMARK No.4 ELEV. 227.43
   TOP OF NORTHEAST END OF EXISTING CONCRETE BOX CULVERT CROSSING CENTRE ROAD. STATION A 0+729

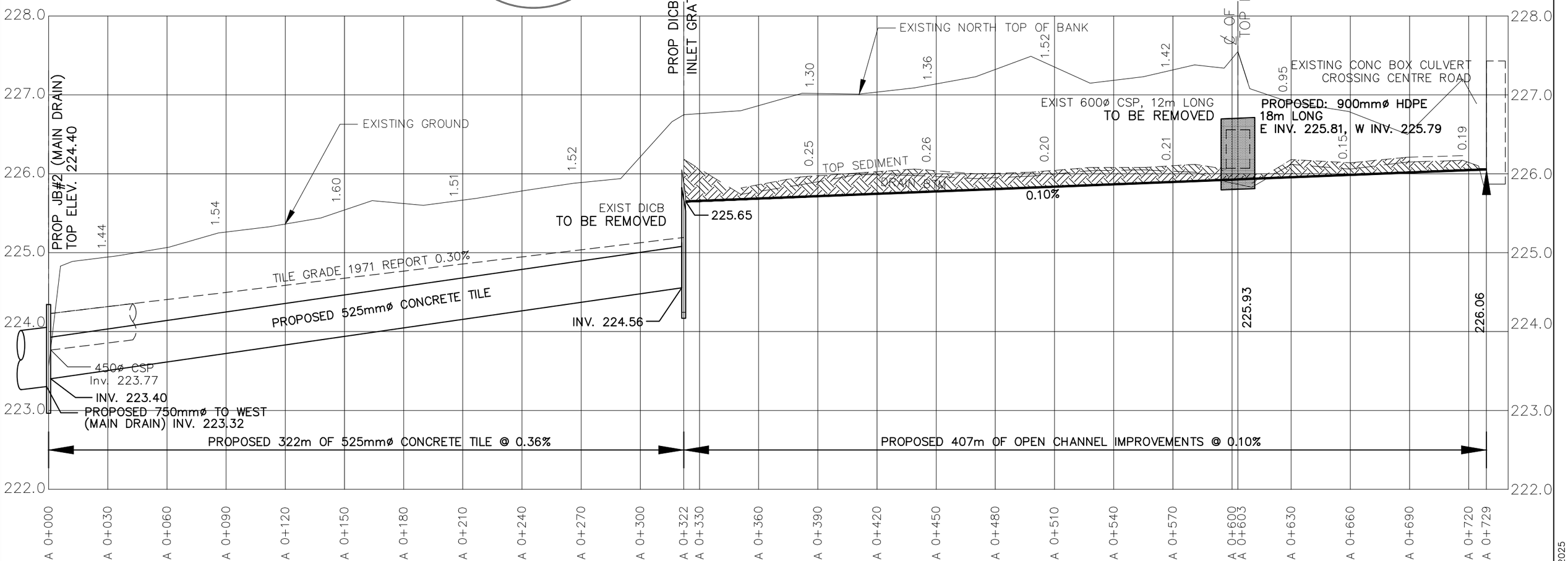
2. UPPER NUMBERS ARE DEPTH FROM TOP OF BANK TO PROPOSED CHANNEL BOTTOM AND EXISTING GROUND TO THE PROPOSED TILE INVERT.

3. LOWER NUMBERS ARE DEPTH OF THE EXCAVATION.

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
DEC. 1, 2025
PROVINCE OF ONTARIO



TYPICAL DRAIN CROSS SECTION
STATION A 0+322 TO 0+729
NTS



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

DRAWING NAME:
Elliott Drainage Works – Branch 'A' Profile 1

PROJECT No.
2025–1711

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

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

MUNICIPALITY of NORTH - MIDDLESEX

ELLIOTT DRAINAGE WORKS - BRANCH 'A'
PROFILE

Last Updated: September 30, 2025