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April 11, 2025

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

Gentlemen and Mesdames:

Re: VanMassenhoven Drain Branch "F" and "G" (2025)

In accordance with your instructions, R. Dobbin Engineering Inc. has undertaken an examination of the VanMassenhoven Drain Branch "F" and Branch "G" in the Municipality of North Middlesex.

Authorization under the Drainage Act

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

R. Dobbin Engineering Inc. was appointed by council on July 19, 2023.

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 VanMassenhoven Drain Branch "F" outlets into the VanMassenhoven Drain Branch "A" on the north side of Coldstream Road. It continues generally southerly and slightly easterly as a 400mm (16"), 350mm (14") and 300mm (12") diameter tile drain to the south side of Bornish Drive in Lot 10, Concession 12 where it provides an outlet for Branch "G". Branch "G"

continues southeasterly as a 200mm (8") and 150mm (6") diameter tile drain to the south limit of Lot 10, Concession 12.

Background

Under an Engineer's report dated November 6th, 1970 the VanMassenhoven Drain Branches "A", "B", "C", "D", "E", "F", "G", "H" and "J" were constructed.

On July 22, 2014 a private tile was installed on Lot 3, Concession 14 paralleling Branch "F". There is a letter signed by the Landowner stating that the tile was not to be apart of the municipal drain and as such, repairs and maintenance of this portion of the drain is totally at the expense and responsibility of the Landowner. There is an existing tile map, however no grades are shown. As part of this work Branch "F" was re-routed westerly to accommodate a new barn on the property.

Drain Classification

The VanMassenhoven Drain Branch "A", where the Branch "F" tile drain outlets, is classified as a class "F" drain. This rating is 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.

Class "F" drains are intermittent or ephemeral (dry for more than two consecutive months).

Approvals

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

On-Site Meeting

A site meeting was held on August 31st, 2023.

The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Drainage Superintendent, Municipality of North Middlesex)
- Kevin Boere (Landowner)
- Nelson McLachlan (Landowner)
- Ethan Porter (Landowner)
- Basil McDonald (Landowner)
- Andy Wenhardt (Landowner)
- Jack Willemse (Landowner)
- James Willemse (Landowner)
- Jerry Hendrikx (Landowner)

The following is a brief summary of the meeting:

- General discussion of the Drainage Act and Landowners rights under the Drainage Act.
- It was discussed that Branch "F" from Branch "G" to its outlet and Branch "G" shall be replaced.
- It was discussed that the proposed tile on Lot 3, Concession 14 shall be installed east of the 1970 tile drain.
- Landowners requested that catch basins and berms be installed at the property lines.
- It was discussed that Landowners would like to see the cost of the drain designed to the 50mm/24hours, which exceeds the grantable coefficient.
- No adverse soil conditions were noted at the site meeting.

Draft Report

A draft report, dated March 4, 2025 was sent to all the affected Landowners and a meeting was held on April 3, 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 (Municipality of North Middlesex)
- Glen Bullock (Municipality of North Middlesex)
- James Willemse (Landowner)
- Basil McDonald (Landowner)
- Andy Wenhardt (Landowner)
- Ethan Porter (Landowner)
- Jerry Hendrikx (Landowner)
- Rick Hodgins on behalf of Steve Jennison
- Kevin Boere (Landowner)

The following is a brief summary of the meeting:

- Landowners were generally satisfied with the proposed drainage improvements.
- There was discussion about leaving the original municipal tile on the property with 049-030-041. It was decided that this could be discussed at the pre-construction meeting, but would likely not be possible with the location of the proposed and private drain on the property.
- It was discussed that in addition to access from the roadways access could be granted from the windmill laneway from Bornish Drive and through the properties with Roll Numbers 049-030-032 and 049-030-041.

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 VanMassenhoven Drain Branch "F" shall be replaced from its outlet in the VanMassenhoven Drain Branch "A" to its junction with the VanMassenhoven Drain Branch "G". The existing 1970 drain shall be crushed and abandoned as part of the drainage works.

2. The VanMassenhoven Drain Branch "G" shall be replaced and the existing 1970 drain shall be crushed and abandoned as part of the drainage works

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 $425,387, 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 Coldstream Road and Bornish Drive Crossings and cost to locate and work around utilites shall be tendered separately with the actual cost plus engineering (20% of the construction cost) being assessed to the owner of the road authority or utility as a special benefit assessment. The watermain utility has been assessed, as a benefit assessment, the increased cost to have a deeper tile drain downstream of Bornish Drive due to the elevation of the watermain at Bornish Drive. The watermain utility special benefit assessment shall be calculated as follows:

   Watermain Utility Assessment = 1.0176 (Net Tax) x (Tendered Costs to Locate and Work Around Utility x 1.20 (For Engineering)) + $3,500 (Daylighting and Surveying Utilities))

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 outlet works and the tile drain downstream of Station 0+036, with the exception of the Coldstream Road Crossing, has been assessed with 100% of the cost applied as an outlet assessment to upstream lands and roads based on equivalent hectares.

4. 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.

5. The remaining cost of the drainage works has generally been assessed with 55% of the cost applied as a benefit assessment and the remainder applied as outlet assessment to the upstream lands and roads based on equivalent hectares.

All final costs included in the cost estimate of this report, except as identified above, shall be pro-rated based on the 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 Coldstream Road and Bornish Drive and along the length of the drainage works. Access may also be gained through the windmill access off of Bornish Drive, through the property with Roll Number 049-030-032 and along the south limit of the property with Roll Number 049-030-041. 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 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 special benefit assessments to agricultural properties will not be eligible for grant as these are the additional cost to provide a drainage coefficient above the 38mm / 24hrs.

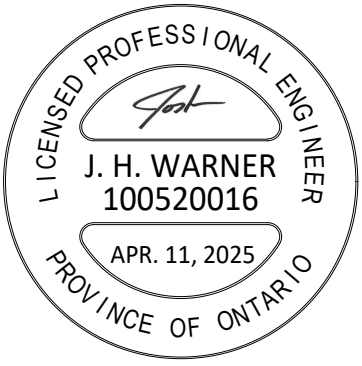
Maintenance

The VanMassenhoven Branches “F” and “G”, except for the Coldstream Road and Bornish Drive crossings, shall be repaired and maintained 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 crossing on Coldstream Road (Station 0+021 to 0+032) and Bornish Drive (Station 1+923 to 1+940, excluding basins) shall be maintained and repaired at the expense of the road authority.

Yours truly,

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



VanMassenhoven Drain Branches "F" and "G"
Municipality of North Middlesex
April 11, 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
Branch "F"						
WCR	N 1/2 Lot 10	049-030-004	B. McDonald	-	340	340
	S 1/2 Lot 11	049-030-033	B. McDonald	-	1,620	1,620
	N 1/2 Lot 11	049-030-036	B. McDonald	-	1,450	1,450
	S 1/2 Lot 12	049-030-037	S. Jennison	-	1,450	1,450
	N 1/2 Lot 12	049-030-038	A. & M. Wenhardt	-	1,080	1,080
13	Lot 3	049-030-032	Dalgetta Farms Inc.	-	1,280	1,280
14	Lot 3	049-030-041	Coldstream Pork w/ J Willie	-	6,930	6,930
15	Lot 3	049-030-064	Porky Acres w/ Jack P Willemse	-	100	100
Branch "G"						
WCR	N 1/2 Lot 9	049-030-002	E. Porter & A. Vanhooydonk	-	100	100
	S 1/2 Lot 10	049-030-003	Kevlin Farms Ltd.	-	1,610	1,610
	N 1/2 Lot 10	049-030-004	B. McDonald	-	1,490	1,490
			TOTAL ALLOWANCES	-	17,450	17,450

Estimate of Cost

	Quantity	Unit	Unit Cost	Total Cost
Pre-Construction Meeting	1	LS	300	300
Brushing and Tree Removal	1	LS	5,000	5,000
Locate existing Municipal Drain	1	LS	4,300	4,300
BRANCH "F"				
Remove existing Hickenbottom at Station 0+980 and 1+336	2	each	100	200
Remove existing DICB at Station 1+923	1	LS	800	800
Strip and Level Topsoil	1927	m	6	11,562
750mmø HDPE Pipe	24	m	400	9,600
Rodent Grate at Station 0+000	1	LS	800	800
Rip Rap at Outlet	15	tonne	100	1,500
675mmø Concrete Tile	945	m	115	108,675
Clear Stone Bedding where depth of Tile Exceeds 2.5m	100	tonne	40	4,000
525mmø Concrete Tile	942	m	80	75,360
450mmø Concrete Tile	40	m	65	2,600
Locate and Work Around Nextera Line at Station 1+246	1	LS	500	500
CB #1 (900mm x 1200mm) c/w Berm	1	LS	3,000	3,000
CB #2 (900mm x 1200mm) c/w Berm	1	LS	3,000	3,000
CB #3 (900mm x 1200mm) c/w Berm	1	LS	3,000	3,000
CB #4 (900mm x 1200mm) c/w Berm	1	LS	3,000	3,000
CB #5 (900mm x 1200mm) c/w Berm	1	LS	3,000	3,000
CB #6 (900mm x 1200mm) c/w Berm	1	LS	3,000	3,000
CB #7 (900mm x 1200mm) c/w Berm	1	LS	3,000	3,000
JB #8 (600mm x 600mm)	1	LS	2,200	2,200

	Quantity	Unit	Unit Cost	Total Cost
Coldstream Road				
Traffic Control	1	LS	800	800
Locate and Work Around Watermain	1	LS	1,200	1,200
Remove Existing Culvert and Unsuitable Backfill Material to Outlet	1	LS	2,500	2,500
750mmø HDPE Smooth Wall Pipe (Open Cut) c/w Bedding	12	m	450	5,400
Granular "B" Backfill	80	tonne	30	2,400
100% Crushed Granular "A"	30	tonne	40	1,200
Place Suitable Native Backfill	1	LS	1,000	1,000
Restoration to Outlet	1	LS	1,000	1,000
Bornish Road				
Traffic Control	1	LS	800	800
Locate and Work Around Watermain	1	LS	1,200	1,200
Remove & Reinstall Existing Culvert	1	LS	2,500	2,500
525mmø HDPE Smooth Wall Pipe (Open Cut) c/w Bedding	17	m	250	4,250
Granular "B" Backfill	120	tonne	30	3,600
100% Crushed Granular "A"	40	tonne	40	1,600
Place Suitable Native Backfill	1	LS	1,000	1,000
Restoration and Ditch Grading	1	LS	1,000	1,000
Locate and connect existing 250mmø to JB #8 (From Branch "F")	1	LS	250	250
Locate and Connect Existing Field Tile	100	each	120	12,000
Silt Fence Check Dam	1	LS	400	400
BRANCH "G"				
Strip and Level Topsoil	470	m	6	2,820
250mmø Concrete Tile	470	m	40	18,800
CB #9 (900mm x1200mm)	1	LS	3,000	3,000
CB #10 (900mm x 1200mm)	1	LS	3,000	3,000
Locate and Connect Existing Field Tile	30	each	100	3,000
Miscellaneous/Contingency				16,700

Sub Total	$339,817
Allowances	$17,450
Engineering	$47,670
Tendering, Contract Administration and Inspection	$16,500
Locate and Survey Utilities	$3,500
ABCA Fee	$450
Total Estimate	**$425,387**

SCHEDULE OF ASSESSMENT (BRANCH "F")

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Agricultural Lands								
WCR	S 1/2 Lot 9	10.50	049-030-001	Bornish Farms Inc. & M. Hendrikx		-	20,294	20,294
	N 1/2 Lot 9	10.50	049-030-002	E. Porter & A. Vanhooydonk		-	20,294	20,294
	S 1/2 Lot 10	8.10	049-030-003	Kevlin Farms Ltd.		-	15,655	15,655
	N 1/2 Lot 10	6.70	049-030-004	B. McDonald	699	4,519	12,670	17,888
	S 1/2 Lot 11	4.00	049-030-033	B. McDonald	4,195	19,995	6,808	30,998
	N 1/2 Lot 11	3.20	049-030-036	B. McDonald	3,846	18,205	5,116	27,167
	S 1/2 Lot 12	2.40	049-030-037	S. Jennison	3,828	18,140	3,307	25,275
	N 1/2 Lot 12	3.00	049-030-038	A. & M. Wenhardt	2,867	14,538	3,951	21,356
	Lot 13	1.80	049-030-039	R. & S. Schiestel		-	2,177	2,177
12	E 1/2 Lot 3	14.80	049-030-005	Dalgetta Farms Inc.		-	28,604	28,604
	W 1/2 Lot 3	1.20	049-030-006	Dalgetta Farms Inc.		-	2,319	2,319
13	Lot 3	9.70	049-030-032	Dalgetta Farms Inc.	1,731	10,282	12,004	24,017
14	Lot 3	26.30	049-030-041	Coldstream Pork w/ J Willie	16,519	63,775	10,919	91,213
	Pt. Lot 4	0.00	049-030-042	A. Hoogerbrugge		-	-	-
15	Lot 3	0.00	049-030-064	Porky Acres w/ Jack P Willemse		-	-	-
					33,685	149,454	144,118	327,257
Municipal Lands								
Coldstream Road		0.00		Municipality of North Middlesex	17,960	-	-	17,960
Bornish Drive		0.40		Municipality of North Middlesex	18,500	4,279	2,219	24,998
					36,460	4,279	2,219	42,958

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Utilities								
Watermain Utility				Municipality of North Middlesex	6,580	4,712	-	11,292
Total Area (Ha)		**102.60**			6,580	4,712	-	11,292
				Total Utilities	11,292			
				Total Municipal Lands	42,958			
				Total Agricultural Lands	327,257			
				Total Assessment	$381,507			

SCHEDULE OF ASSESSMENT (BRANCH "G")

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total	Equivalent Ha.
Agricultural Lands									
WCR	S 1/2 Lot 9	2.90	049-030-001	Bornish Farms Inc. & M. Hendrikx		-	6,130	6,130	2.90
	N 1/2 Lot 9	3.80	049-030-002	E. Porter & A. Vanhooydonk		1,900	8,032	9,932	3.80
	S 1/2 Lot 10	2.05	049-030-003	Kevlin Farms Ltd.	1,087	12,129	3,084	16,300	2.05
	N 1/2 Lot 10	2.00	049-030-004	B. McDonald	1,173	9,450	895	11,518	2.00
					2,260	23,479	18,141	43,880	
				Total Agricultural Lands	43,880				
				Total Assessment	$43,880				

Composite Schedule of Assessment (Branches "F" and "G" Improvements)

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Agricultural Lands								
WCR	S 1/2 Lot 9	10.50	049-030-001	Bornish Farms Inc. & M. Hendrikx	-	-	26,424	26,424
	N 1/2 Lot 9	10.50	049-030-002	E. Porter & A. Vanhooydonk	-	1,900	28,326	30,226
	S 1/2 Lot 10	8.10	049-030-003	Kevlin Farms Ltd.	1,087	12,129	18,739	31,955
	N 1/2 Lot 10	6.70	049-030-004	B. McDonald	1,872	13,969	13,565	29,406
	S 1/2 Lot 11	4.00	049-030-033	B. McDonald	4,195	19,995	6,808	30,998
	N 1/2 Lot 11	3.20	049-030-036	B. McDonald	3,846	18,205	5,116	27,167
	S 1/2 Lot 12	2.40	049-030-037	S. Jennison	3,828	18,140	3,307	25,275
	N 1/2 Lot 12	3.00	049-030-038	A. & M. Wenhardt	2,867	14,538	3,951	21,356
	Lot 13	1.80	049-030-039	R. & S. Schiestel	-	-	2,177	2,177
12	E 1/2 Lot 3	14.80	049-030-005	Dalgetta Farms Inc.	-	-	28,604	28,604
	W 1/2 Lot 3	1.20	049-030-006	Dalgetta Farms Inc.	-	-	2,319	2,319
13	Lot 3	9.70	049-030-032	Dalgetta Farms Inc.	1,731	10,282	12,004	24,017
14	Lot 3	26.30	049-030-041	Coldstream Pork w/ J Willie	16,519	63,775	10,919	91,213
	Pt. Lot 4	0.00	049-030-042	A. Hoogerbrugge	-	-	-	-
15	Lot 3	0.00	049-030-064	Porky Acres w/ Jack P Willemse	-	-	-	-
					35,945	172,933	162,259	371,137
Municipal Lands								
Coldstream Road		0.00		Municipality of North Middlesex	17,960	-	-	17,960
Bornish Drive		0.40		Municipality of North Middlesex	18,500	4,279	2,219	24,998
					36,460	4,279	2,219	42,958

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Utilities								
Watermain Utility				Municipality of North Middlesex	6,580	4,712	-	11,292
					6,580	4,712	-	11,292

Total Utilities	11,292
Total Municipal Lands	42,958
Total Agricultural Lands	371,137
Total Assessment	$425,387

VanMassenhoven Drain Branches "F" and "G"
Municipality of North Middlesex
April 11, 2025

ESTIMATED NET ASSESSMENT

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

Roll No.	Owner	BRANCH "F" Assessment	Estimated Grant	Allowances	Net "F" Assessment	BRANCH "G" Assessment	Estimated Grant	Allowances	Net "G" Assessment	Total Estimated Net Assessment
049-030-001	Bornish Farms Inc. & M. Hendrikx	20,294	6,765		13,529	6,130	2,043		4,087	17,616
049-030-002	E. Porter & A. Vanhooydonk	20,294	6,765		13,529	9,932	3,311	100	6,521	20,050
049-030-003	Kevlin Farms Ltd.	15,655	5,218		10,437	16,300	5,071	1,610	9,619	20,056
049-030-004	B. McDonald	17,888	5,730	340	11,818	11,518	3,448	1,490	6,580	18,398
049-030-033	B. McDonald	30,998	8,934	1,620	20,444	-			-	20,444
049-030-036	B. McDonald	27,167	7,774	1,450	17,943	-			-	17,943
049-030-037	S. Jennison	25,275	7,149	1,450	16,676	-			-	16,676
049-030-038	A. & M. Wenhardt	21,356	6,163	1,080	14,113	-			-	14,113
049-030-039	R. & S. Schiestel	2,177	726		1,451	-			-	1,451
049-030-005	Dalgetta Farms Inc.	28,604	9,535		19,069	-			-	19,069
049-030-006	Dalgetta Farms Inc.	2,319	773		1,546	-			-	1,546
049-030-032	Dalgetta Farms Inc.	24,017	7,429	1,280	15,308	-			-	15,308
049-030-041	Coldstream Pork w/ J Willie	91,213	24,898	6,930	59,385	-			-	59,385
049-030-042	A. Hoogerbrugge	-	-		-	-			-	-
049-030-064	Porky Acres w/ Jack P Willemse	-	-	100	(100)	-			-	(100)
Coldstream Road	Municipality of North-Middlesex	17,960			17,960	-			-	17,960
Bornish Drive	Municipality of North-Middlesex	24,998			24,998	-			-	24,998
Watermain Utility	Municipality of North Middlesex	11,292			11,292	-			-	11,292
Total Assessment		$381,507	$97,859	$14,250	$269,398	$43,880	$13,873	$3,200	$26,807	$296,205

VanMassenhoven Drain Branches “F” and “G”
Municipality of North Middlesex
April 11, 2025

SPECIFICATION OF WORK

1. Location

The work in this specification is located in Lot 3, Concession 13-15, and Lot 10-12, Concession West Side of Centre Road in The Municipality of North Middlesex.

2. Scope of Work

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

- 2,450m of proposed tile drain replacement c/w catch basins, junction boxes and two road crossings

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. 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 Coldstream Road and Bornish Drive and along the length of the drainage works. Access may also be gained through the windmill access off of Bornish Drive, through the property with Roll Number 049-030-032 and along the south limit of the property with Roll Number 049-030-041. 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 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 20 metres normally centered on the proposed tile drain. They shall be removed in their entirety including stumps.

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. If left on site, the Contractor is responsible for the burning of the trees and brush. The Contractor is responsible for obtaining all necessary permits for any disposal sites. Burning of the trees and brush is subject to local bylaws and guidelines of the Ministry of the Environment Conservation and Parks.

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

13. 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.

14. 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.

15. 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 1970 tile.

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.

16. 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.

17. 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 2.8mm in all cases. All corrugation profiles shall be of helical lockseam manufacture using 68 x 13mm corrugations for 1600mm dia. pipe and smaller and 125 x 25mm corrugations for 1800mm dia. pipe and larger. Pipe with 125 x 25mm corrugations shall be used if 68 x 13mm corrugations are not available. Future culvert replacements shall be to the same specifications.

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

The bottom of the excavation shall extend 150mm below the bottom of the tile with any over excavation backfilled with ¾" clear stone material. When the tile has been installed to the proper grade and depth, the excavation shall be backfilled with ¾" clear stone from the bottom of the excavation to 300mm above the proposed tile. 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".

18. Catch Basins

Structure	Station	Size (mm)	Grate Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
CB #1 c/w Berm	0+981	900x1200	224.76	222.38 (N) 675	222.39 (S) 525
CB #2 c/w Berm	1+080	900x1200	226.19	223.74 (W) 525	223.75 (E) 525
CB #3 c/w Berm	1+244	900x1200	228.15	225.98 (N) 525	225.99 (S) 525
CB #4 c/w Berm	1+463	900x1200	231.23	228.99 (N) 525	229.01 (S) 525
CB #5 c/w Berm	1+683	900x1200	233.95	231.31 (N) 525	231.32 (S) 525
CB #6 c/w Berm	1+923	900x1200	235.30	233.48 (N) 525	233.49 (S) 525
CB #7	1+940	900x1200	235.80	233.63 (N) 525	234.40 (S) 450
CB #9 c/w Berm	2+206	900x1200	240.67	238.75 (N) 250	238.77 (E) 250
CB #10 c/w Berm	2+450	900x1200	242.66	240.80 (N) 250	240.90 (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.

19. 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 #8	1+980	600x600	235.90	235.00 (N) 450	235.22 (E) / 235.00 (S) 250 / 200

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.

20. 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 100mm of screened topsoil and hydro seeded. The timing of the seeding shall be approved by the Drainage Superintendent or Engineer.

All disturbed side slopes of the channel shall be restored with straw matting and hydroseed.

Seed mixture, fertilizer and application rates are as follows:

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

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

21. Subsurface Drainage

All existing subsurface drains encountered during construction shall be reconnected to the open 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.

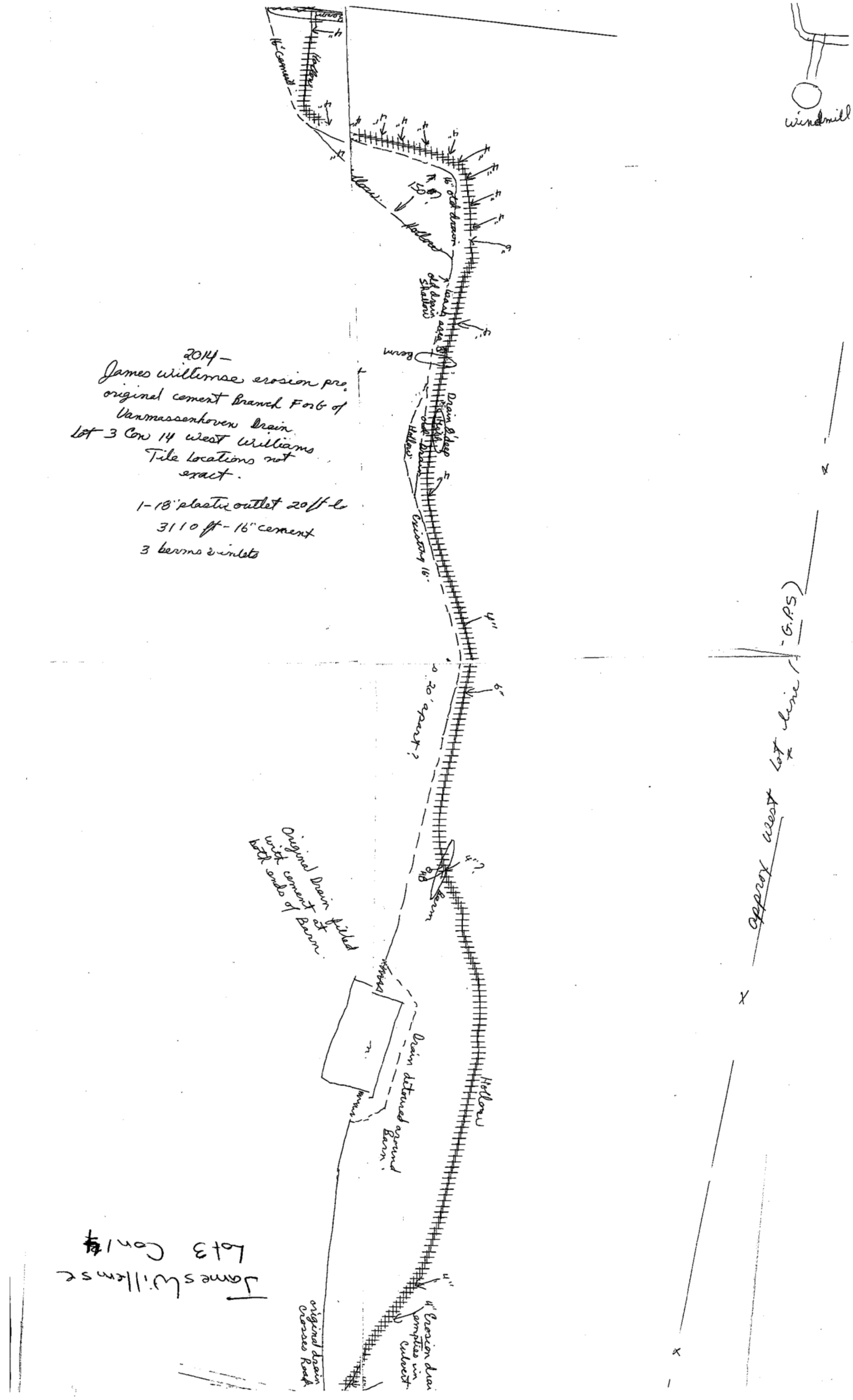
22. Environmental Considerations

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.


2014 -
James Willemse erosion pro.
original cement Branch F or G of
Vanmassenhoven Drain
Lot 3 Con 14 West Williams
Tile locations not
exact.
1-18" plastic outlet 20 ft-lo
3110 ft - 16" cement
3 berms & inlets
James Willemse
Lot 3 Con 14
Windmill
approx West Lot line (~G.P.S)
Original Drain filled
with cement at
both ends of Barn.
Drain detoured around
Barn.
original drain
crosses Road
Erosion drain
empties in
culvert
Hollow
Berm
Existing 16"
Hollow
16" cement
20' apart?

North

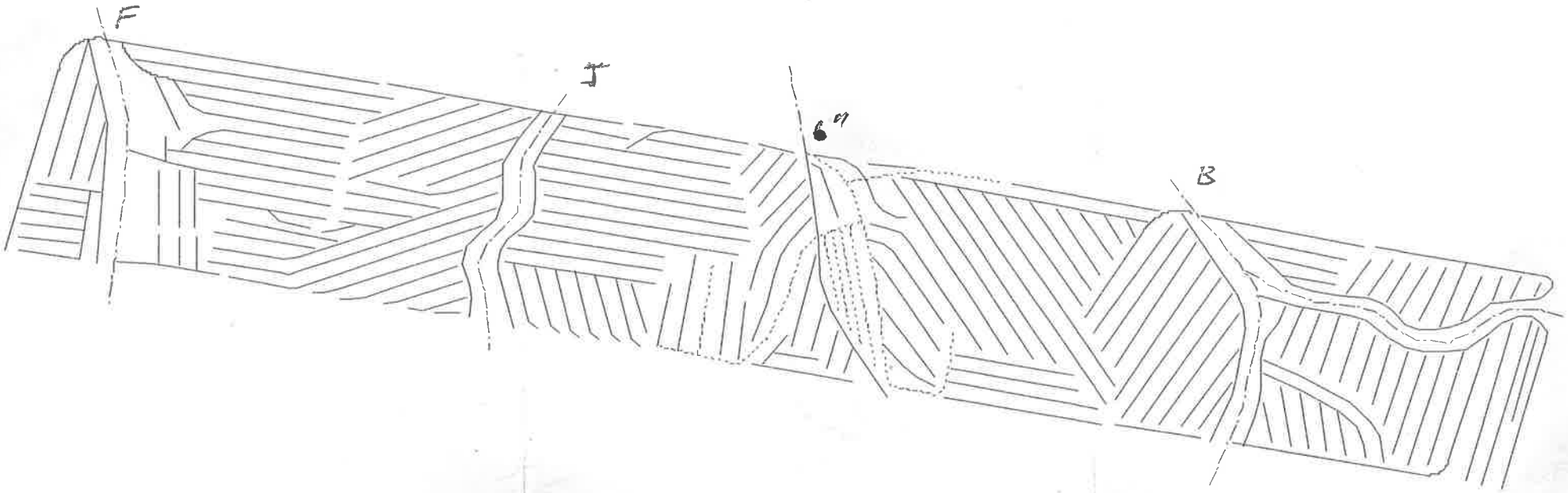
Plan Of Drains
Jack Kustermans
Lot 12 Con. WestCentre Rd.
West Williams Twp. Middlesex
Aug. 2004

Howard Cook Drainage
Stratford 273-4118

New Drains ——————

Existing Drains .....

Municipal Drains —·—·—·—·—



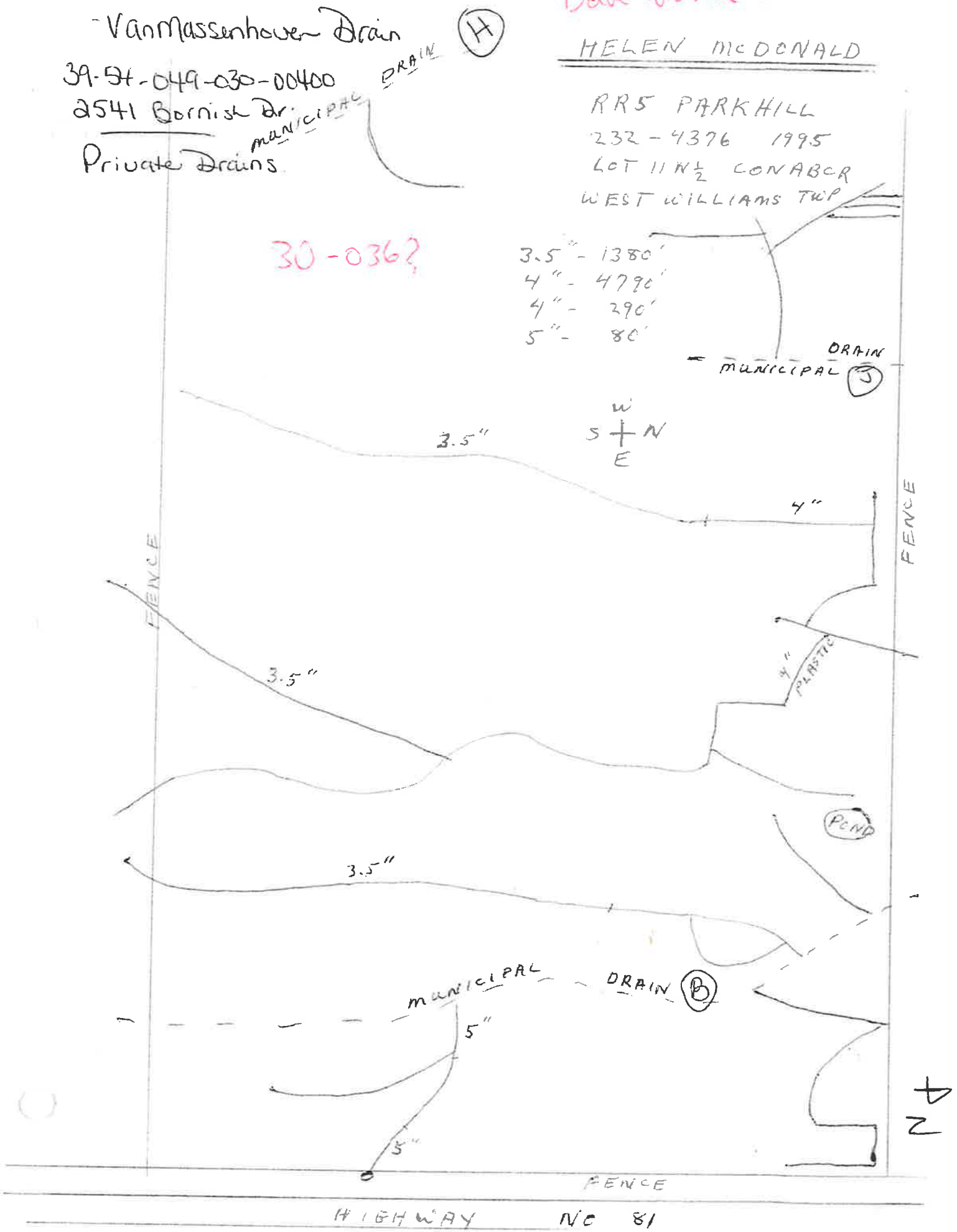
Dave Wideman Private Drains

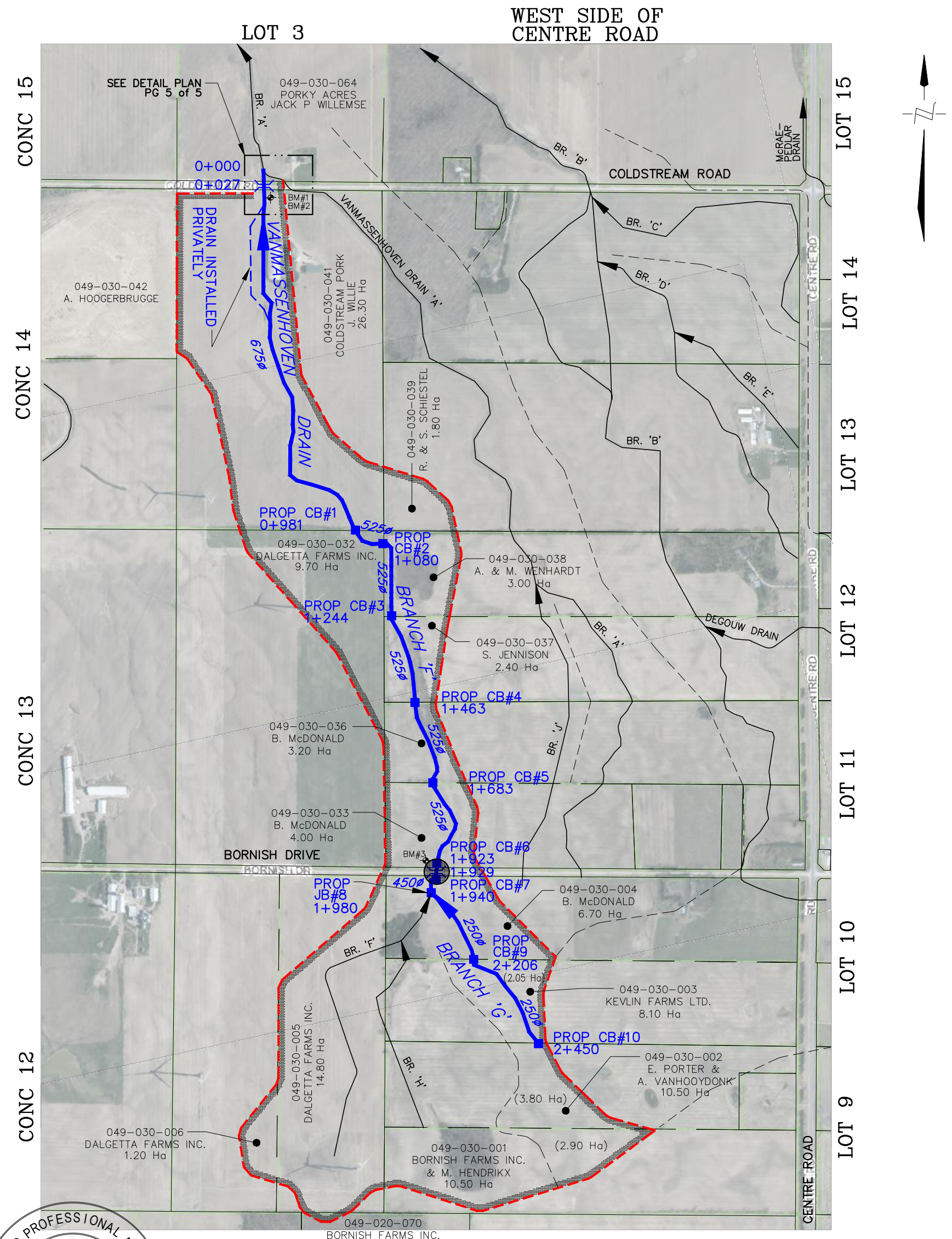
Van Massenhoven Drain

39-51-049-030-00400

2541 Bornish Dr.

Private Drains





LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
APR. 11, 2025
PROVINCE OF ONTARIO

LEGEND

- EXISTING CULVERT
- EXISTING CULVERT TO BE REMOVED & REINSTALLED
- DRAINAGE AREA
- VANMASSENHOVEN DRAIN – BRANCH 'F' & 'G'
- MUNICIPAL DRAIN

SCALE: 1:10,000
0 150 300 450m

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

DRAWING NAME: Vanmassenhoven Drain – Branches 'F' & 'G' Plan
PROJECT No. 2023-1540

APPROVED J. WARNER	SCALE		PLAN	
CHECKED B. VAN RUITENBURG			1:10,000	
DRAWN C. SAUNDERS	NO.	REVISIONS	DATE	BY
	1	FINAL REPORT	APR. 11, 2025	CS

MUNICIPALITY of NORTH MIDDLESEX

VANMASSENHOVEN DRAIN - BRANCHES 'F' & 'G' PLAN

1 of 5

Last Updated: April 11, 2025

GENERAL NOTES

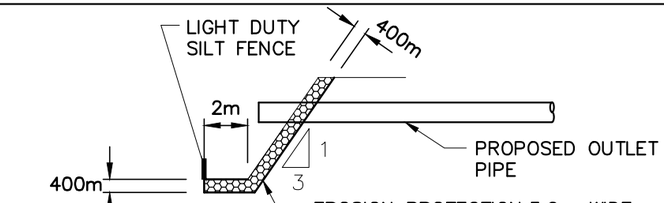
1. BENCHMARK No.1 ELEV. 217.51
   TOP OF SOUTH END OF EXISTING 1200mmø CSP, CROSSING COLDSTREAM ROAD. WEST OF PROPOSED DRAIN CROSSING.

   BENCHMARK No.2 ELEV. 216.89
   TOP OF EXISTING 450mmø HDPE OUTLET PIPE WEST OF PROPOSED DRAIN. STATION 0+036

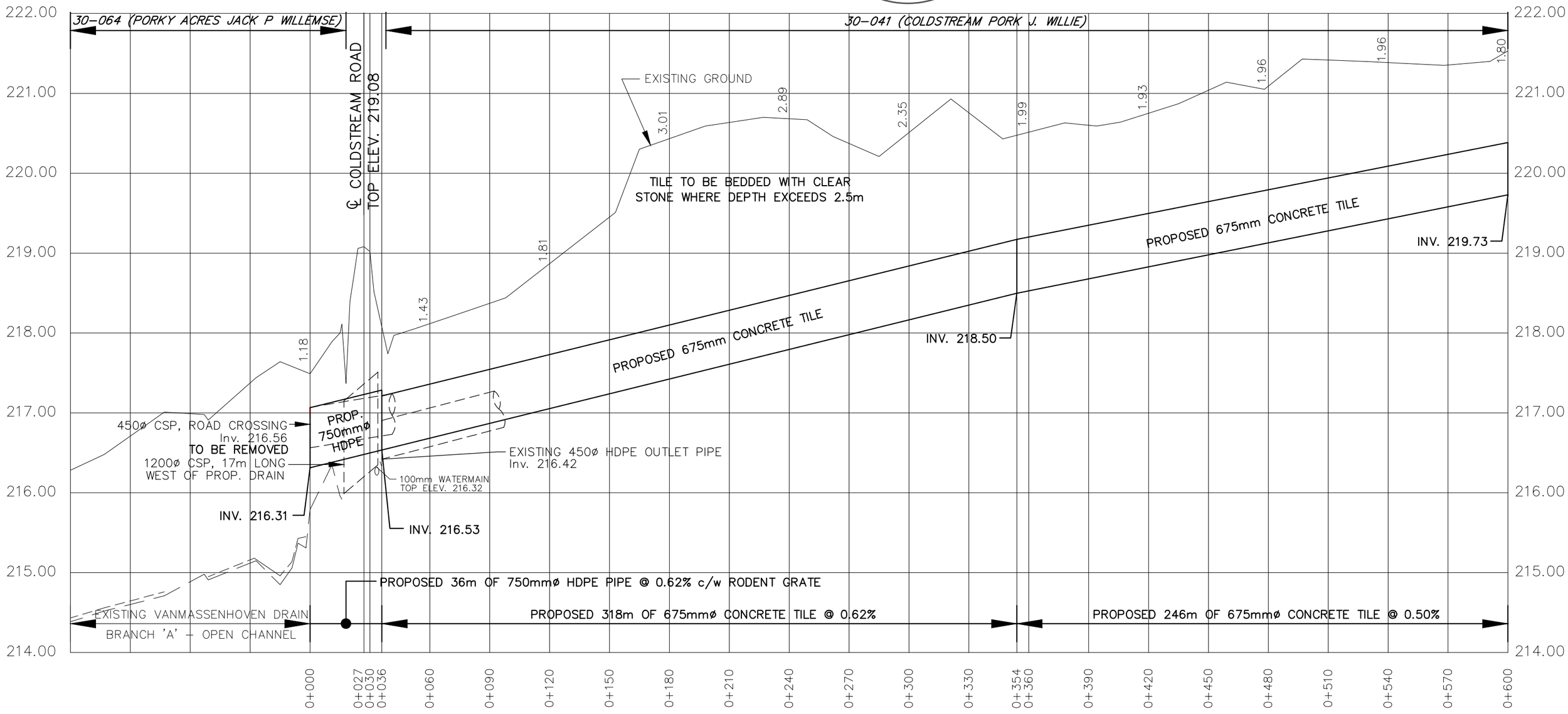
BENCHMARK
R. DOBBIN ENGINEERING TO PROVIDE BENCHMARKS EVERY 300m ONCE ALIGNMENT HAS BEEN VERIFIED.

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

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
APR. 11, 2025
PROVINCE OF ONTARIO



OUTLET DETAIL
NTS



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

DRAWING NAME: Vanmassenhoven Drain Branch 'F' Profile 1

PROJECT No. 2023-1540

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	APR. 11, 2025	CS
B. VAN RUITENBURG				
DRAWN	SCALE: 1:2,000			
C. SAUNDERS	0 20 40 60m			

MUNICIPALITY of NORTH - MIDDLESEX

VANMASSENHOVEN DRAIN BRANCH 'F'

PROFILE

Last Updated: April 11, 2025

GENERAL NOTES

1. BENCHMARK No.1 ELEV. 217.51
   TOP OF SOUTH END OF EXISTING 1200mmø CSP, CROSSING COLDSTREAM ROAD. WEST OF PROPOSED DRAIN CROSSING.

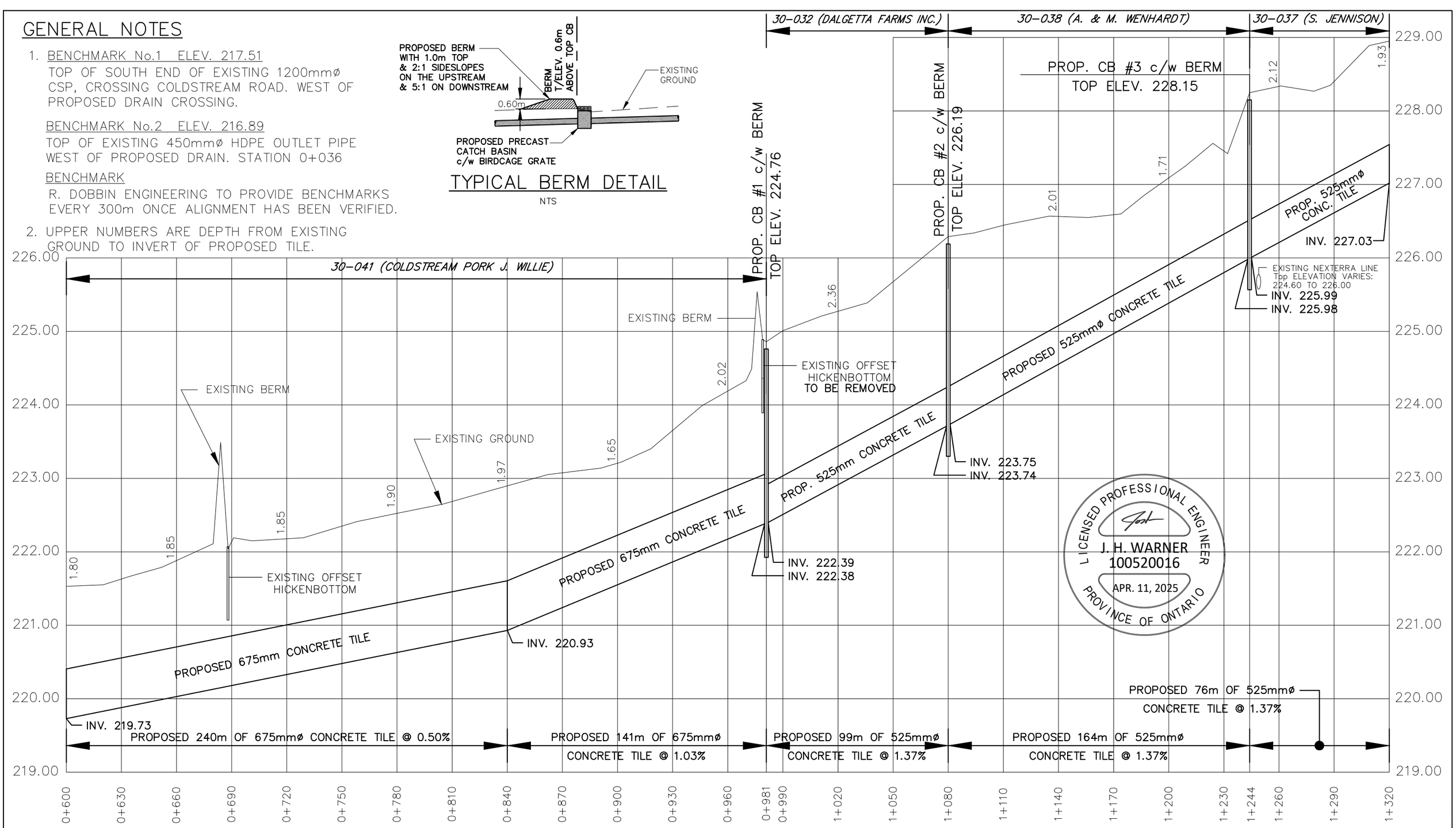
   BENCHMARK No.2 ELEV. 216.89
   TOP OF EXISTING 450mmø HDPE OUTLET PIPE WEST OF PROPOSED DRAIN. STATION 0+036

   BENCHMARK
   R. DOBBIN ENGINEERING TO PROVIDE BENCHMARKS EVERY 300m ONCE ALIGNMENT HAS BEEN VERIFIED.

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

TYPICAL BERM DETAIL

NTS



LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
APR. 11, 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: Vanmassenhoven Drain Branch 'F' Profile 2

PROJECT No. 2023-1540

APPROVED	J. WARNER
CHECKED	B. VAN RUITENBURG
DRAWN	C. SAUNDERS

NO.	REVISIONS	DATE	BY
1	FINAL REPORT	APR. 11, 2025	CS

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

MUNICIPALITY of NORTH - MIDDLESEX

VANMASSENHOVEN DRAIN BRANCH 'F'

PROFILE

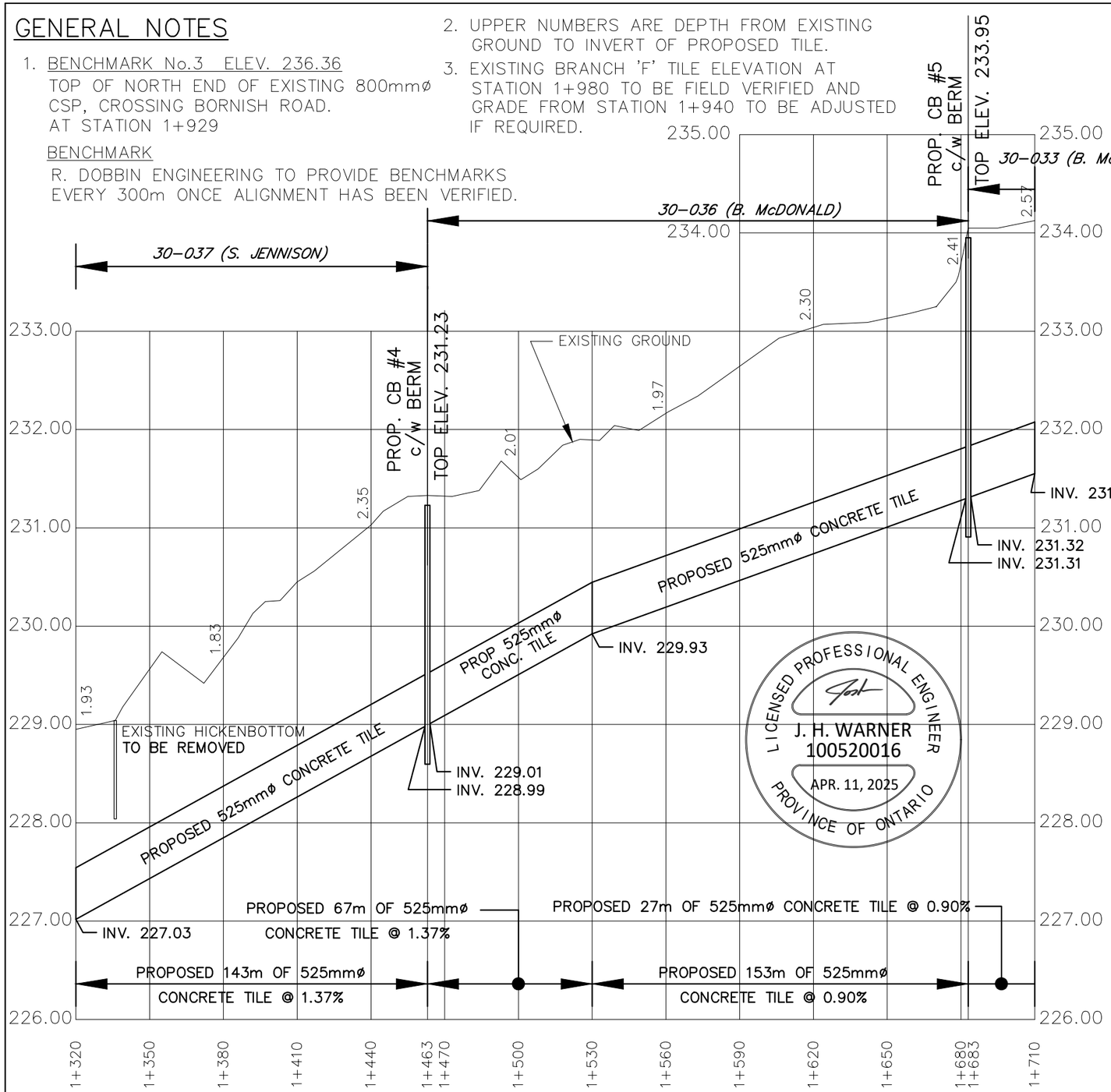
Last Updated: April 11, 2025

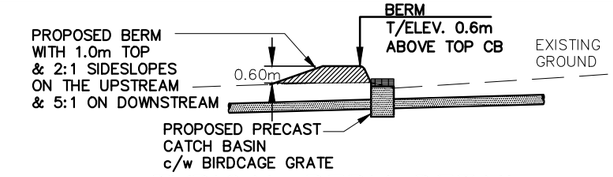
GENERAL NOTES

1. BENCHMARK No.3 ELEV. 236.36
   TOP OF NORTH END OF EXISTING 800mmø CSP, CROSSING BORNISH ROAD. AT STATION 1+929

   BENCHMARK
   R. DOBBIN ENGINEERING TO PROVIDE BENCHMARKS EVERY 300m ONCE ALIGNMENT HAS BEEN VERIFIED.

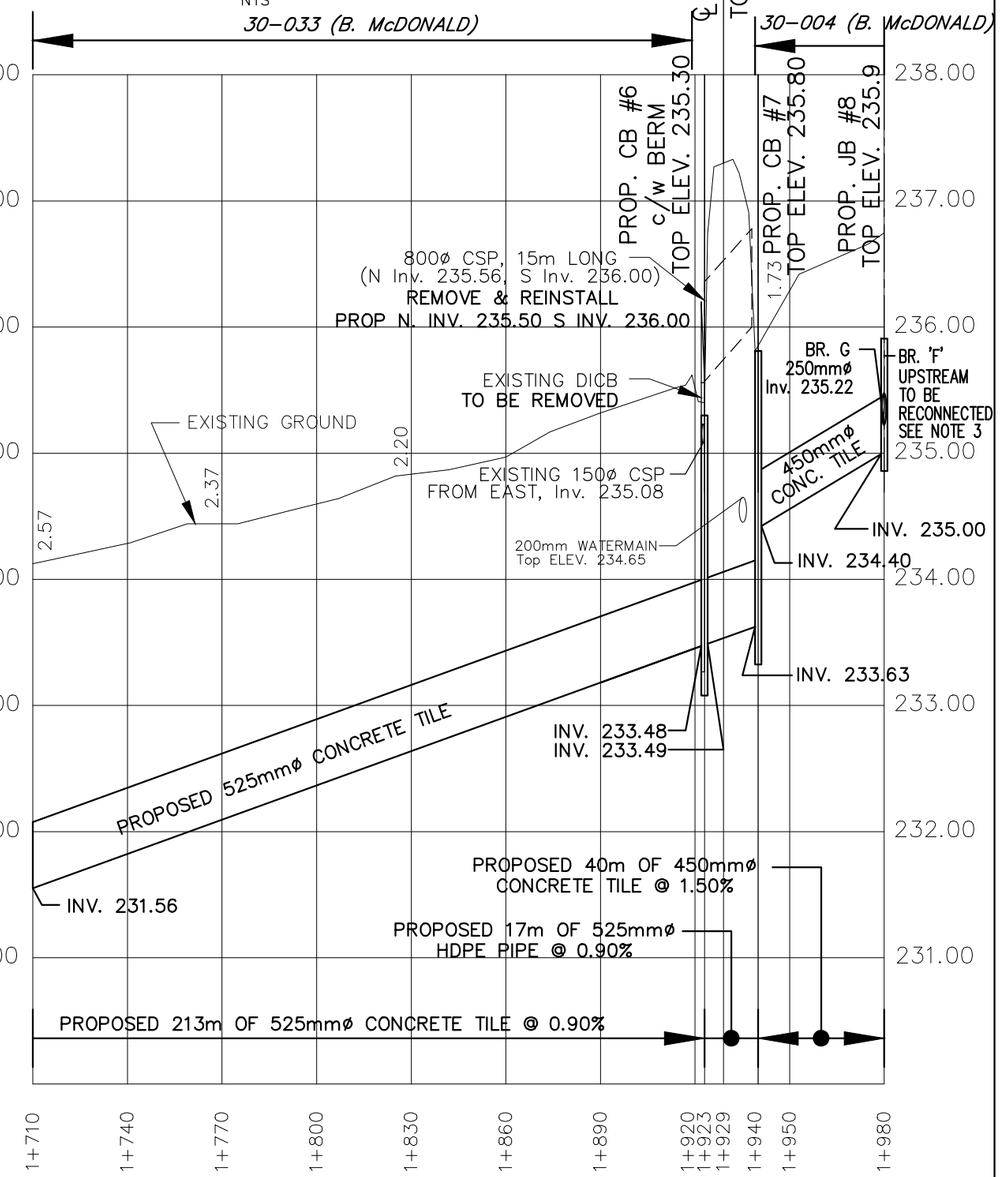
2. UPPER NUMBERS ARE DEPTH FROM EXISTING GROUND TO INVERT OF PROPOSED TILE.
3. EXISTING BRANCH 'F' TILE ELEVATION AT STATION 1+980 TO BE FIELD VERIFIED AND GRADE FROM STATION 1+940 TO BE ADJUSTED IF REQUIRED.





TYPICAL BERM DETAIL

NTS



LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
APR. 11, 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: Vanmassenhoven Drain Branch 'F' Profile 3

PROJECT No. 2023-1540

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	APR. 11, 2025	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

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

MUNICIPALITY of NORTH - MIDDLESEX

VANMASSENHOVEN DRAIN BRANCH 'F'

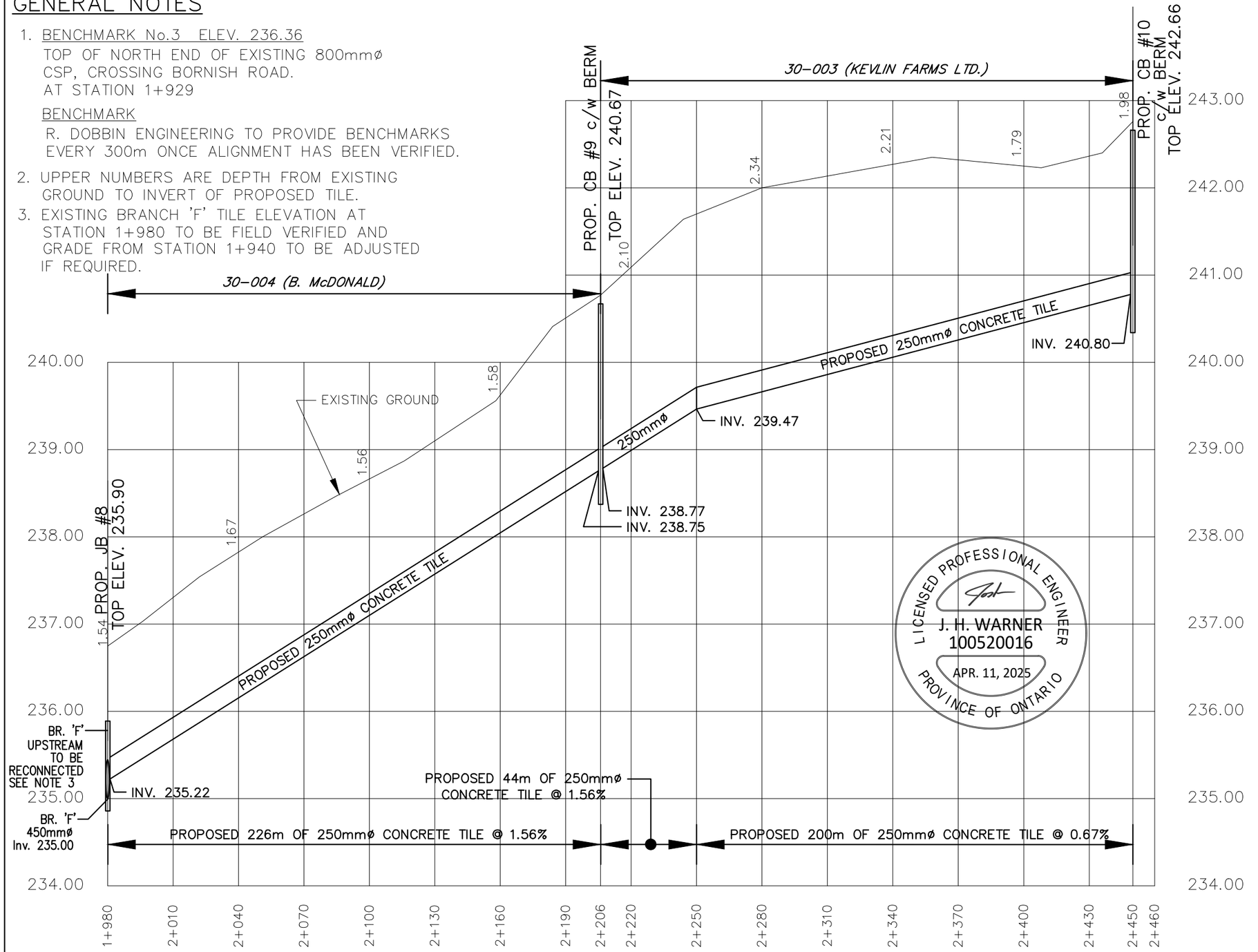
PROFILE

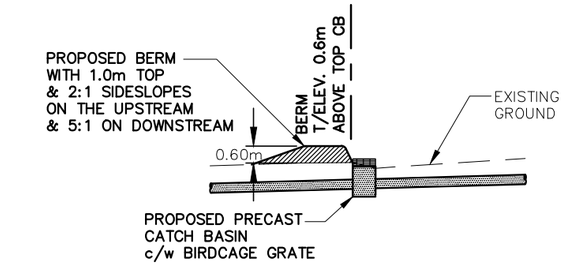
Last Updated: April 11, 2025

GENERAL NOTES

1. BENCHMARK No.3 ELEV. 236.36
   TOP OF NORTH END OF EXISTING 800mmø CSP, CROSSING BORNISH ROAD. AT STATION 1+929

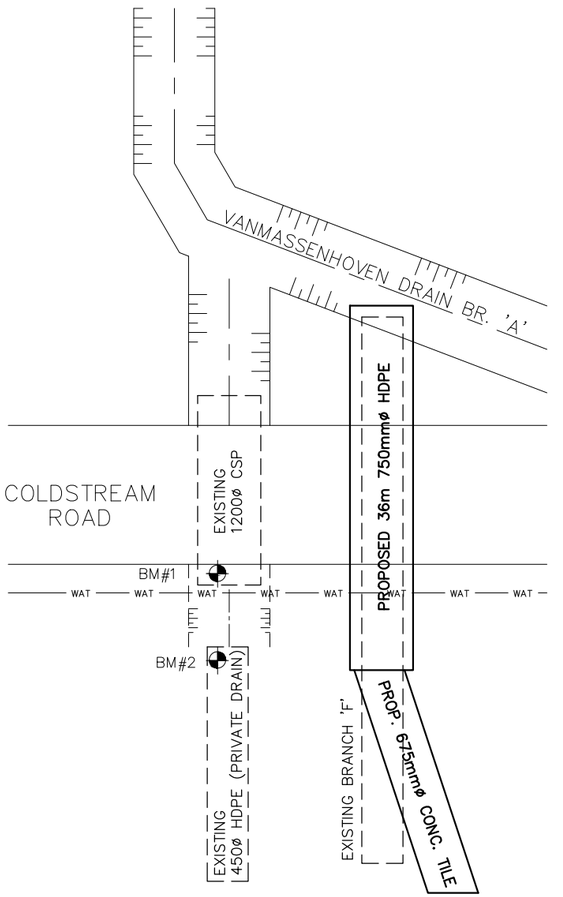
   BENCHMARK
   R. DOBBIN ENGINEERING TO PROVIDE BENCHMARKS EVERY 300m ONCE ALIGNMENT HAS BEEN VERIFIED.
2. UPPER NUMBERS ARE DEPTH FROM EXISTING GROUND TO INVERT OF PROPOSED TILE.
3. EXISTING BRANCH 'F' TILE ELEVATION AT STATION 1+980 TO BE FIELD VERIFIED AND GRADE FROM STATION 1+940 TO BE ADJUSTED IF REQUIRED.





TYPICAL BERM DETAIL

NTS



COLDSTREAM ROAD CROSSING DETAIL (BR "F")

NTS

LICENSED PROFESSIONAL ENGINEER
J. H. WARNER
100520016
APR. 11, 2025
PROVINCE OF ONTARIO

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DRAWING NAME: Vanmassenhoven Drain Branch 'G' Profile 1

PROJECT No. 2023-1540

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	APR. 11, 2025	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

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

MUNICIPALITY of NORTH - MIDDLESEX

VANMASSENHOVEN DRAIN BRANCH 'G'

PROFILE

Last Updated: April 11, 2025