

September 13, 2024

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

Gentlemen and Mesdames:

Re: Canada Company Drain North

In accordance with your instructions, R. Dobbin Engineering has undertaken an examination of the Canada Company Drain North 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 was appointed by council on April 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.

Background

The Canada Company Drain North outlets into the Ausable River at the south limit of Lot 1, Ausable. It continues generally easterly for 1,189m as an open channel. The channel then heads northeasterly for 661m to the east limit of a culvert installed on the unopened road allowance.

The Canada Company Drain North was originally constructed under a report submitted on April 4th, 1930. The last Engineer's Report is dated April 17th, 1973. Under this report the channel was deepened and improved. This report specified a 1.80m bottom width with 1:1 side slopes and a 0.20% and 0.15% grade line.

On-Site Meeting

A site meeting was held on June 29th, 2023.

The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Municipality of North Middlesex)
- Hugh Dietrich (Landowner)
- Grant Dietrich (Landowner)
- Bryden Hope (Landowner)
- Frank Delitala (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 the drain overtops the banks under larger storm events. Generally, the banks are overtopped on the south side of the drain downstream of Hagmier Road and on the north side of the drain upstream of Hagmier Road. This causes loss of crop and flooding of the adjacent fields and Hagmier Road.
 - Landowners requested that the drain be evaluated for cleaning, re-sloping and construction of berms on the banks to the elevation of the underside of the Hagmier Road culvert.
- No adverse soil conditions were noted at the site meeting.

Draft Report

A draft report, dated July 4, 2024 was sent to all the affected Landowners and a meeting was held on July 26, 2024 to go over the report and address any questions and concerns related to the draft report. At the meeting no major concerns were brought forward. The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Municipality of North Middlesex)
- Kristyn Wilson (Municipality of North Middlesex)
- Hugh Dietrich (Landowner)
- Grant Dietrich (Landowner)
- William Woodburn (Landowner)
- Terry Hodgins (Landowner)
- Josh Lagerwerf (Landowner)
- Frank Delitala (Landowner)
- Jim Denys (Landowner)
- Brian Steeper (Landowner)

Drain Classification

The Canada Company Drain North is currently classified as a class “E” drain from the Ausable River to Station 1+189 and as a Not Rated Drain upstream of this. This rating is according to the Department of Fisheries and Oceans (DFO) classification as presented by the Ontario Ministry of Agriculture, Food and Rural Affairs’ Agricultural Information Atlas.

Approvals

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

On September 12, 2024, R. Dobbin Engineering had correspondence with the DFO. Due to the proposed work the following works were required by the DFO:

- Replacement of Gravel/Cobble Substrate where removed
- Temporary Rock Flow Check Dam and Sediment Trap near outlet
- Two Sediment Traps

Existing Conditions

Below is a summary of the condition of the existing culverts:

Culvert Number	Location	Existing Culvert Size	Condition	Recommendation
1	Hagmier Road	7300mm Wide Opening Concrete Box Culvert	Okay. Built in 1962	Leave. Develop provisions for future replacement.
2	(Unopened Road Allowance, but utilized by 000-070-125)	3300mm dia. CSP	Good. Constructed in 2023	Leave. Develop provisions for future replacement.

Design

The agricultural culverts shall be designed to provide outlet for a 1 in 5-year storm event. The municipal road culverts shall be designed to provide outlet for a 1 in 25-year storm event.

Recommendations

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

1. The Canada Company Drain North be improved with a cleanout, bank re-sloping and berthing adjacent the low banks.
2. Implementation of DFO measures:
 - Replacement of Gravel/Cobble Substrate where removed
 - Temporary Rock Flow Check Dam and Sediment Trap near outlet
 - Two Temporary Sediment Traps
3. Future specifications shall be developed for the replacement/repair of the culverts.

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 \$250,082, 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 engineering for the Hagmier Road Crossing has been assessed with 100% of the estimated cost assessed as a special benefit assessment to the road authority.

2. The remaining cost of the drainage works has generally been assessed with 45% 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 the proposed and future work on the Canada Company Drain North shall be from Hagmier Road, the unopened road allowance at Station 1+850 and along the length of the drainage works. All access shall be restricted to a width of 6 metres.

The working area at each culvert shall extend 10 metres from the bank on both sides and for 10 metres along the channel on either side of the culvert.

The working area for channel improvements and maintenance shall be restricted to a width of 25m from the side the excavation is taking place, except from Station 1+490 to 1+850 where it shall be restricted to a width of 10m. For construction, the channel shall be excavated from the south side from Station 0+000 to 0+693 and from the north side from Station 0+693 to 1+850. If, at the discretion of the Drainage Superintendent or

Engineer, there is erosion on the channel opposite the working area access may be gained along the channel and nearest culvert to repair the bank. For future maintenance the channel may be excavated from either side of the channel at the discretion of the Drainage Superintendent.

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.

Maintenance

The Canada Company Drain North shall be repaired and maintained as per the Schedule of Maintenance, drawings and specifications contained in this report.

Culvert No. 1 shall be repaired, maintained or replaced at the expense of the owner of Hagmier Road. Culvert No. 2 shall be repaired, maintained or replaced at the expense of the owner of the property with Roll Number 000-070-125.

Properties that wish to have the excavated material trucked shall be assessed the cost of trucking less the cost of levelling. The cost of levelling shall form part of the drain maintenance cost.

Each property is allowed one access culvert for each municipal drain with any second culvert on the property maintained and repaired 100% by the owner.

Yours truly,



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



Canada Company Drain North
Municipality of North Middlesex
September 13, 2024

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 (\$) (R.O.W)	Section 30 (\$) Damages	Total (\$)	
Ausables	28	Lot 1	000-070-126	New Venice Corp Ltd	11,570	8,680	20,250
		Lot 2	000-070-127	Deietrich Farms Ltd	2,480	-	2,480
		Lot 1	000-070-130	New Venice Corp Ltd	3,470	-	3,470
		Lot 2	000-070-131	J. Eagleson	13,860	5,200	19,060
TOTAL ALLOWANCES				31,380	13,880	45,260	

Estimate of Cost

	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Pre-Construction Meeting	1	LS	300	300
Strip and Level Topsoil	1189	m	15	17,835
Open Channel Excavation and Levelling (Station 0+000 to 1+189)	1189	m	50	59,450
Open Channel Excavation and Levelling (Station 1+189 to 1+850)	661	m	12	7,932
Rip Rap as Required	200	tonne	150	30,000
Locate and Connect Existing Field Tile	4	ea	150	600
Straw Bale and Silt Fence	1	LS	1,000	1,000
Restoration / Hydroseeding and Straw Matting	1	LS	30,000	30,000
Temporary Rock Flow Check Dam complete with Sediment Trap	25	tonne	200	5,000
Sediment Traps (Station 0+330 and 1+189)	2	each	300	600
Replacement of Gravel/Cobble Substrate where removed	40	m	10	400
Miscellaneous/Contingency				<u>7,700</u>
Sub Total			\$160,817	
Allowances			\$45,260	
Engineering			\$29,330	
Future Culvert Design			\$1,400	
Estimate for Tendering, Contract Administration and Inspection			\$8,500	
ABC A Fee			\$450	
Sub Total			\$245,757	
Non-Recoverable HST (1.76%)			\$4,325	
Total Estimate			\$250,082	

SCHEDULE OF ASSESSMENT

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
<u>Agricultural Lands</u>								
16	N 3/4 Lot 4	6.07	000-050-106	Vanosch Farms Limited	-	304	304	
	S 1/4 Lot 4 & Lot 5	25.50	000-050-105	Vanosch Farms Limited	-	1,278	1,278	
	N 1/2 Lot 6	8.09	000-050-104	G. Thompson	-	405	405	
	S 1/2 Lot 6 & N 1/4 Lot 7	12.14	000-050-103	H. & M. Thompson	-	608	608	
	S 3/4 Lot 7	12.14	000-050-103-02	G. & M. Thompson	-	608	608	
	Lot 8	14.16	000-050-102	Vanosch Farms Limited	-	710	710	
	W 3/4 Lot 9	6.07	000-050-101	A. Denys	-	304	304	
17	N 1/2 Lot 3	6.07	000-050-063	Vanosch Farms Limited	-	304	304	
	S 1/2 Lot 3 & Lot 4	52.61	000-050-064	E. & D. Mccann	-	2,637	2,637	
	N 1/2 Lot 5	20.23	000-050-065	E. & D. Mccann	-	1,014	1,014	
	S 1/2 Lot 5	19.41	000-050-066	Vanosch Farms Limited	-	973	973	
	Lot 6	40.47	000-050-067	W. & M. Watson	-	2,028	2,028	
	Lot 7	40.47	000-050-068	L. & B. Mccann	-	2,028	2,028	
	N 1/2 Lot 8	20.23	000-050-069	P. Geudens	-	1,014	1,014	
	S 1/2 Lot 8	20.23	000-050-070	P. Geudens	-	1,014	1,014	
	Lot 9	40.47	000-050-071	N. & M. Trevithick	-	2,028	2,028	
	Lot 10	30.35	000-050-072	N. & L. Mccann	-	1,521	1,521	
	N 1/2 Lot 11	8.09	000-050-073	Vanespo Ltd	-	405	405	
	S 1/2 Lot 11	8.09	000-050-074	C. Mccann	-	405	405	
	N 1/2 Lot 12	8.09	000-050-075	C. & A. Mollard	-	405	405	
	S 1/2 Lot 12	6.47	000-050-076	G. & L. Thompson	-	324	324	
	Lot 13	3.24	000-050-077	Volcrest Investments Inc	-	162	162	
18	Lot 3	2.02	000-050-048-01	M. & M. Thompson	-	101	101	
	N 1/2 Lot 4	8.09	000-050-048	M. Thompson	-	405	405	
	S 1/2 Lot 4 & N1/2 Lot 5	23.06	000-050-047	Vanosch Farms Limited	-	1,156	1,156	
	S 1/2 Lot 5	19.83	000-050-045	Vanosch Farms Limited	-	994	994	
	Lot 6	40.47	000-050-044	A. Denys	-	2,028	2,028	
	Lot 7	40.47	000-050-043	C. Thompson	-	2,028	2,028	
	N 1/2 Lot 8	20.23	000-050-042	M. Groot	-	1,014	1,014	
	S 1/2 Lot 8	20.23	000-050-041	G. Jongeneel	-	1,014	1,014	
	Lot 9	40.47	000-050-040	L. Eagleson	-	2,028	2,028	
	Lot 10	40.47	000-050-039	J. Dixon & J. Sadler	-	2,028	2,028	
	E 1/2 Lot 11	20.23	000-050-038	M. Young	-	1,014	1,014	
	W 1/2 Lot 11	20.23	000-050-037	M. Squire-Smith & H. Young	-	1,014	1,014	

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
19	Lot 12	30.35	000-050-036	M. Young	-	1,521	1,521	
	Lot 13	12.95	000-050-035	G. & J. Jongeneel	-	649	649	
	S 1/2 Lot 3	4.04	000-050-003	R. Mcfalls	-	202	202	
	N 1/2 Lot 4	18.21	000-050-004	D. Dietrich	-	913	913	
	S 1/2 Lot 4	19.42	000-050-005	C. Lindsay	-	973	973	
	W 1/2 Lot 5	20.23	000-050-007-20	D. Mcclure	-	1,014	1,014	
	N 1/2 Lot 6	20.23	000-050-008	R. & C. Mccann	-	1,014	1,014	
	S 1/2 Lot 6 & N 1/4 Lot 7	30.35	000-050-009	P. Rollgen	-	1,521	1,521	
	S 3/4 Lot 7	30.35	000-050-009-01	P. Rollgen	-	1,521	1,521	
	Lot 8	40.47	000-050-010	Denys Farms Inc	-	2,028	2,028	
20	N Pt. Lot 10	12.14	000-050-015	D & M Pork Inc.	-	608	608	
	S Pt. Lot 10	12.14	000-050-013	D. Ritchie	-	608	608	
	Lot 3	34.40	000-070-025	F. & R. Vanderkant	-	1,724	1,724	
	Lot 4	40.47	000-070-024	Frank Vanderkant & Family	-	2,028	2,028	
	W 1/2 Lot 5	20.23	000-070-022-01	H. Roellgen	-	1,014	1,014	
	E 1/2 Lot 5	20.23	000-070-023	H. Roellgen	-	1,014	1,014	
	W 1/2 Lot 6	20.23	000-070-022	C. Scott	-	1,014	1,014	
	E 1/2 Lot 6	20.23	000-070-022-20	P. Roellgen	-	1,014	1,014	
	Lot 7	40.47	000-070-021	P. Roellgen	-	2,028	2,028	
	Lot 8	40.47	000-070-020	S. & C. Scott	-	2,028	2,028	
19,20	Lot 9 & S 1/2 Lot 9	60.70	000-070-019	W. Roellgen	-	3,042	3,042	
20	N 1/2 Lot 10	20.23	000-070-018	D & M Pork Inc.	-	1,014	1,014	
	S 1/2 Lot 10	20.23	000-070-017	D. Ritchie	-	1,014	1,014	
	Lot 11	17.40	000-070-016	D & M Pork Inc.	-	872	872	
21	E 1/2 Lot 12	2.43	000-070-014	E. Hodgins	-	122	122	
	Lot 3	8.09	000-070-039	J. Mcfalls	-	405	405	
	Lot 4	40.47	000-070-040	L. & E. Mcfalls	-	2,028	2,028	
	Lot 5	40.47	000-070-041	B. & C. Kaak	-	2,028	2,028	
	N 1/2 Lot 6	20.23	000-070-042	E. & D. Eagleson	-	1,014	1,014	
	S 1/2 Lot 6	20.23	000-070-043	W. & B. McCann	-	1,014	1,014	
	Lot 7	38.45	000-070-044-10	H. Roellgen	-	1,927	1,927	
	N 1/2 Lot 8	20.23	000-070-045	S. & C. Scott	-	808	808	
	S 1/2 Lot 8 & N 1/2 Lot 9	40.47	000-070-046	H. Roellgen	-	1,617	1,617	
	S 1/2 Lot 9	20.23	000-070-047	H. Roellgen	-	808	808	
	Lot 10	20.23	000-070-048	H. Roellgen	-	808	808	

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
22	N 1/2 Lot 3 & W 1/2 Lot 34 N.B.C	20.23	000-070-033	D. & J. Hodgins	-	1,014	1,014	
	S 1/2 Lot 3	20.19	000-070-062-02	G. & J. Steeper	-	1,012	1,012	
	Lot 4	40.20	000-070-062	Julen Farms Ltd	-	2,015	2,015	
	Pt. W 1/2 Lot 5	15.85	000-070-061-02	G. & B. Steeper	-	794	794	
	E 1/2 Lot 5	20.23	000-070-061-01	G. & J. Steeper	-	1,014	1,014	
	N 1/2 Lot 6	20.23	000-070-060	Julen Farms Ltd	-	1,014	1,014	
	S 1/2 Lot 6 & N 1/2 Lot 7	39.46	000-070-059	Marandy Farms Inc.	-	1,677	1,677	
	S 1/2 Lot 7	20.23	000-070-058	A. Roelands	-	705	705	
	Lot 8	34.40	000-070-056	C. & K. Eagleson	-	1,199	1,199	
	Lot 9	18.21	000-070-056-10	Marandy Farms Inc.	-	635	635	
	Lot 10	4.04	000-070-055	Denys Farms Inc	-	141	141	
23	Lot 3	39.25	000-070-081	Mitchell Swine Ltd	-	1,967	1,967	
	Lot 4	40.47	000-070-082	G. & B. Steeper	-	2,028	2,028	
	Lot 5	40.47	000-070-083	S. & A. Steeper	-	1,905	1,905	
	W 1/2 Lot 6	20.23	000-070-084	C. & B. Macgregor	-	705	705	
	E 1/2 Lot 6	12.14	000-070-085-01	C. & B. Macgregor	-	485	485	
	N 1/2 Lot 7	20.23	000-070-086	A. & B. Woodburn	-	705	705	
	S 1/2 Lot 7	16.15	000-070-087-01	B. Woodburn	-	563	563	
	Pt S 1/2 Lot 7	1.65	000-070-087	A. Woodburn	-	58	58	
	N 1/2 Lot 8	13.35	000-070-088	N. & L. Eagleson	-	465	465	
	S 1/2 Lot 8	8.09	000-070-089	M. & M. Kazuk & J. Gielen	-	282	282	
24	Lot 3 & N 1/2 Lot 4 & W 1/2 Lot 39 N.B.C	70.82	000-070-096	T. & C. Hodgins	-	3,550	3,550	
	S 1/2 Lot 4 & Lot 5	60.70	000-070-095	E. & J. Bullock	-	2,579	2,579	
	Lot 6	32.37	000-070-094	E. & G. Bullock	-	1,129	1,129	
25	Lot 3 & N 1/2 Lot 4	60.70	000-070-104	Lagerwerf's Greenway Acres c/o J. Lagerwerf	-	2,811	2,811	
	S 1/2 Lot 4 & N 1/2 Lot 5	40.47	000-070-105	R. Masschelein	-	1,411	1,411	
	SW 1/4 Lot 5 & W 1/2 Lot 6	16.18	000-070-106	Dalgetta Farms Inc	-	564	564	
	SE 1/4 Lot 5 & E 1/2 Lot 6	18.14	000-070-107-01	Lagerwerf's Greenway Acres c/o J. Lagerwerf	-	633	633	
26	Lot 3	39.25	000-070-115	P. & A. Wiersma	-	1,818	1,818	
	W 1/2 & NE 1/4 Lot 4	30.35	000-070-114	J & D Mclinchey Farms Ltd	-	1,058	1,058	
	SE 1/4 Lot 4 & N 1/2 Lot 5	28.32	000-070-113	R. & L. Masschelein	-	987	987	
	S 1/2 Lot 5	8.09	000-070-112	J. & D. Mclinchey	-	282	282	
	Lot 3	35.04	000-070-120	W. Woodburn	-	1,222	1,222	
27	Lot 4	24.28	000-070-118	D. & B. Mclinchey	-	847	847	
	Lot 1	35.00	000-070-126	New Venice Corp Ltd	40,481	1,754	42,235	
	Lot 2	25.00	000-070-127	Deietrich Farms Ltd	8,548	872	9,420	

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
Ausables	Lot 1	0.00	000-070-130	New Venice Corp Ltd		11,943	-	11,943
	Lot 2	0.00	000-070-131	J. Eagleson		34,124	-	34,124
N.B.C	Lot 35	3.23	000-070-038	J C Rutten Farms Inc		-	162	162
	Lot 36 & E 1/2 Lot 37	14.97	000-070-069	M. Mueller		-	750	750
	W 1/2 Lot 37 & E 1/2 Lot 38	20.23	000-070-070	J. Lagerwerf		-	1,014	1,014
	E 1/2 Lot 39	12.14	000-070-073	G. & J. Bullock		-	608	608
	E 1/2 Lot 40	12.14	000-070-098	M. Larmer		-	608	608
	W 1/2 Lot 40	12.14	000-070-099	WM Woodburn Farms Of		-	608	608
	Lot 41	22.26	000-070-100	W. & C. Woodburn Trustee		-	1,116	1,116
	E 2/3 Lot 42	16.19	000-070-101	W. Woodburn		-	811	811
	W 1/3 Lot 42 & E 1/2 Lot 43	15.38	000-070-102	K. & R. Eagleson		-	771	771
	W 1/2 Lot 43	10.11	000-070-103-01	K. & R. Eagleson		-	507	507
	Lot 44	23.47	000-070-122	WM Woodburn Farms Of		-	1,176	1,176
	W 3/4 Lot 45	22.25	000-070-124	Hope Family Pork Ltd.		-	1,115	1,115
	E 1/4 Lot 45	5.26	000-070-125	Hope Family Pork Ltd.		-	248	248
						-	95,096	129,654
								224,750

Non-Agricultural Lands

16	Pt. Lot 5	0.55	000-050-105-10	S. & C. Glavin		-	32	32
17	Pt. Lot 5	0.83	000-050-066-02	Vanosch Farms Limited		-	49	49
18	Pt. Lot 4	0.40	000-050-046	Municipality of North Middlesex		-	23	23
19	NE 1/4 Lot 5	11.22	000-050-006	2812065 Ontario Ltd		-	656	656
	SE 1/4 Lot 5	11.10	000-050-007	Mccann Redi-Mix Inc		-	649	649
	N 1/2 Lot 9	20.23	000-050-011	L. Visscher-Coletta & R. Coletta		-	1,183	1,183
	C Pt. Lot 10	14.16	000-050-014	N. Arabi		-	828	828
	S Pt. Lot 10	2.08	000-050-015-05	W. & B. Mccann		-	122	122
	Lot 11	32.37	000-050-016	Ausable Bayfield Conservation Authority		-	1,893	1,893
	Pt. Lot 12	7.29	000-050-017	Municipality of North Middlesex		-	426	426

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Special Benefit (\$)	Benefit (\$)	Outlet (\$)	Total (\$)
21	Pt. Lot 7	2.01	000-070-044	L. Jackson	-		118	118
22	Pt. N 1/2 Lot 7	1.02	000-070-057	T. & J. Scott	-		41	41
	Pt. W 1/2 Lot 5	4.61	000-070-061	B. Lively & J. Hales	-		270	270
	Pt. Lot 3	0.31	000-070-062-01	D. Royackers	-		18	18
23	Pt. Lot 3	1.21	000-070-081-01	1784133 Ontario Limited	-		71	71
	Pt. E 1/2 Lot 6	2.25	000-070-085	C. Lacey & E. Carter	-		112	112
24	Lot 7	5.48	000-070-093	Ausable Bayfield Conservation Authority	-		223	223
25	Pt E 1/2 Lot 6	2.09	000-070-107	M. Mcmenamin	-		85	85
26	Pt. Lot 3	1.21	000-070-115-01	J. & M. Rossiter	-		71	71
27	Pt. Lot 3	0.57	000-070-119	D. Hodgins & J. Scott	-		23	23
N.B.C.	W 1/2 Lot 38	10.11	000-070-071	G. & B. Nethercott	-		591	591
					-		7,484	7,484

Municipal Lands

Grand Bend Road	7.28	County of Middlesex	-	874	874	
Hagmier Road	1.60	Municipality of North-Middlesex	1,400	8,796	149	10,345
Unopened Road Allowance (Lot 27, 28)	2.66	Municipality of North-Middlesex	-		301	301
Hutchinson Road	2.42	Municipality of North-Middlesex	-		274	274
Bullock Road	3.64	Municipality of North-Middlesex	-		412	412
Cedar Swamp Road	6.47	Municipality of North-Middlesex	-		865	865
Salem Road	6.07	Municipality of North-Middlesex	-		811	811
Lieury Road	4.85	Municipality of North-Middlesex	-		648	648
Adare Drive	19.42	Municipality of North-Middlesex	-		2,398	2,398
Mooresville Drive	6.88	Municipality of North-Middlesex	-		920	920
			1,400	8,796	7,652	17,848
Total - Agricultural Lands				224,750		
Total - Non - Agricultural Lands				7,484		
Total - Municipal Lands				17,848		
Total Assessment				\$250,082		

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

Conc.	Lot or Part	Roll No.	Owner	Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)
Agricultural Lands							
16	N 3/4 Lot 4	000-050-106	Vanosch Farms Limited	304	101		203
	S 1/4 Lot 4 & Lot 5	000-050-105	Vanosch Farms Limited	1,278	426		852
	N 1/2 Lot 6	000-050-104	G. Thompson	405	135		270
	S 1/2 Lot 6 & N 1/4 Lot 7	000-050-103	H. & M. Thompson	608	203		405
	S 3/4 Lot 7	000-050-103-02	G. & M. Thompson	608	203		405
	Lot 8	000-050-102	Vanosch Farms Limited	710	237		473
	W 3/4 Lot 9	000-050-101	A. Denys	304	101		203
17	N 1/2 Lot 3	000-050-063	Vanosch Farms Limited	304	101		203
	S 1/2 Lot 3 & Lot 4	000-050-064	E. & D. Mccann	2,637	879		1,758
	N 1/2 Lot 5	000-050-065	E. & D. Mccann	1,014	338		676
	S 1/2 Lot 5	000-050-066	Vanosch Farms Limited	973	324		649
	Lot 6	000-050-067	W. & M. Watson	2,028	676		1,352
	Lot 7	000-050-068	L. & B. Mccann	2,028	676		1,352
	N 1/2 Lot 8	000-050-069	P. Geudens	1,014	338		676
	S 1/2 Lot 8	000-050-070	P. Geudens	1,014	338		676
	Lot 9	000-050-071	N. & M. Trevithick	2,028	676		1,352
	Lot 10	000-050-072	N. & L. Mccann	1,521	507		1,014
	N 1/2 Lot 11	000-050-073	Vanespo Ltd	405	135		270
	S 1/2 Lot 11	000-050-074	C. Mccann	405	135		270
	N 1/2 Lot 12	000-050-075	C. & A. Mollard	405	135		270
	S 1/2 Lot 12	000-050-076	G. & L. Thompson	324	108		216
	Lot 13	000-050-077	Volcrest Investments Inc	162	54		108
18	Lot 3	000-050-048-01	M. & M. Thompson	101	34		67
	N 1/2 Lot 4	000-050-048	M. Thompson	405	135		270
	S 1/2 Lot 4 & N1/2 Lot 5	000-050-047	Vanosch Farms Limited	1,156	385		771
	S 1/2 Lot 5	000-050-045	Vanosch Farms Limited	994	331		663
	Lot 6	000-050-044	A. Denys	2,028	676		1,352
	Lot 7	000-050-043	C. Thompson	2,028	676		1,352
	N 1/2 Lot 8	000-050-042	M. Groot	1,014	338		676
	S 1/2 Lot 8	000-050-041	G. Jongeneel	1,014	338		676

Conc.	Lot or Part	Roll No.	Owner	Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)	
19	Lot 9	000-050-040	L. Eagleson	2,028	676		1,352	
	Lot 10	000-050-039	J. Dixon & J. Sadler	2,028	676		1,352	
	E 1/2 Lot 11	000-050-038	M. Young	1,014	338		676	
	W 1/2 Lot 11	000-050-037	M. Squire-Smith & H. Young	1,014	338		676	
	Lot 12	000-050-036	M. Young	1,521	507		1,014	
	Lot 13	000-050-035	G. & J. Jongeneel	649	216		433	
	S 1/2 Lot 3	000-050-003	R. Mcfalls	202	67		135	
	N 1/2 Lot 4	000-050-004	D. Dietrich	913	304		609	
	S 1/2 Lot 4	000-050-005	C. Lindsay	973	324		649	
	W 1/2 Lot 5	000-050-007-20	D. McClure	1,014	338		676	
20	N 1/2 Lot 6	000-050-008	R. & C. Mccann	1,014	338		676	
	S 1/2 Lot 6 & N 1/4 Lot 7	000-050-009	P. Rollgen	1,521	507		1,014	
	S 3/4 Lot 7	000-050-009-01	P. Rollgen	1,521	507		1,014	
	Lot 8	000-050-010	Denys Farms Inc	2,028	676		1,352	
	N Pt. Lot 10	000-050-015	D & M Pork Inc.	608	203		405	
	S Pt. Lot 10	000-050-013	D. Ritchie	608	203		405	
	Lot 3	000-070-025	F. & R. Vanderkant	1,724	575		1,149	
	Lot 4	000-070-024	Frank Vanderkant & Family	2,028	676		1,352	
	W 1/2 Lot 5	000-070-022-01	H. Roellgen	1,014	338		676	
	E 1/2 Lot 5	000-070-023	H. Roellgen	1,014	338		676	
19,20	W 1/2 Lot 6	000-070-022	C. Scott	1,014	338		676	
	E 1/2 Lot 6	000-070-022-20	P. Roellgen	1,014	338		676	
	Lot 7	000-070-021	P. Roellgen	2,028	676		1,352	
	Lot 8	000-070-020	S. & C. Scott	2,028	676		1,352	
	Lot 9 & S 1/2 Lot 9	000-070-019	W. Roellgen	3,042	1,014		2,028	
	20	N 1/2 Lot 10	000-070-018	D & M Pork Inc.	1,014	338		676
		S 1/2 Lot 10	000-070-017	D. Ritchie	1,014	338		676
	Lot 11	000-070-016	D & M Pork Inc.	872	291		581	
	E 1/2 Lot 12	000-070-014	E. Hodgins	122	41		81	
21	Lot 3	000-070-039	J. Mcfalls	405	135		270	
	Lot 4	000-070-040	L. & E. Mcfalls	2,028	676		1,352	
	Lot 5	000-070-041	B. & C. Kaak	2,028	676		1,352	
	N 1/2 Lot 6	000-070-042	E. & D. Eagleson	1,014	338		676	
	S 1/2 Lot 6	000-070-043	W. & B. McCann	1,014	338		676	
	Lot 7	000-070-044-10	H. Roellgen	1,927	642		1,285	
	N 1/2 Lot 8	000-070-045	S. & C. Scott	808	269		539	
	S 1/2 Lot 8 & N 1/2 Lot 9	000-070-046	H. Roellgen	1,617	539		1,078	
	S 1/2 Lot 9	000-070-047	H. Roellgen	808	269		539	
	Lot 10	000-070-048	H. Roellgen	808	269		539	

Conc.	Lot or Part	Roll No.	Owner	Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)
22	N 1/2 Lot 3 & W 1/2 Lot 34 N.B.C	000-070-033	D. & J. Hodgins	1,014	338		676
	S 1/2 Lot 3	000-070-062-02	G. & J. Steeper	1,012	337		675
	Lot 4	000-070-062	Julen Farms Ltd	2,015	672		1,343
	Pt. W 1/2 Lot 5	000-070-061-02	G. & B. Steeper	794	265		529
	E 1/2 Lot 5	000-070-061-01	G. & J. Steeper	1,014	338		676
	N 1/2 Lot 6	000-070-060	Julen Farms Ltd	1,014	338		676
	S 1/2 Lot 6 & N 1/2 Lot 7	000-070-059	Marandy Farms Inc.	1,677	559		1,118
	S 1/2 Lot 7	000-070-058	A. Roeland	705	235		470
	Lot 8	000-070-056	C. & K. Eagleson	1,199	400		799
	Lot 9	000-070-056-10	Marandy Farms Inc.	635	212		423
	Lot 10	000-070-055	Denys Farms Inc	141	47		94
23	Lot 3	000-070-081	Mitchell Swine Ltd	1,967	656		1,311
	Lot 4	000-070-082	G. & B. Steeper	2,028	676		1,352
	Lot 5	000-070-083	S. & A. Steeper	1,905	635		1,270
	W 1/2 Lot 6	000-070-084	C. & B. Macgregor	705	235		470
	E 1/2 Lot 6	000-070-085-01	C. & B. Macgregor	485	162		323
	N 1/2 Lot 7	000-070-086	A. & B. Woodburn	705	235		470
	S 1/2 Lot 7	000-070-087-01	B. Woodburn	563	188		375
	Pt S 1/2 Lot 7	000-070-087	A. Woodburn	58	19		39
	N 1/2 Lot 8	000-070-088	N. & L. Eagleson	465	155		310
	S 1/2 Lot 8	000-070-089	M. & M. Kazuk & J. Gielen	282	94		188
24	Lot 3 & N 1/2 Lot 4 & W 1/2 Lot 39 N.B.C	000-070-096	T. & C. Hodgins	3,550	1,183		2,367
	S 1/2 Lot 4 & Lot 5	000-070-095	E. & J. Bullock	2,579	860		1,719
	Lot 6	000-070-094	E. & G. Bullock	1,129	376		753
25	Lot 3 & N 1/2 Lot 4	000-070-104	Lagerwerf's Greenway Acres c/o J. Lagerwerf	2,811	937		1,874
	S 1/2 Lot 4 & N 1/2 Lot 5	000-070-105	R. Masschelein	1,411	470		941
	SW 1/4 Lot 5 & W 1/2 Lot 6	000-070-106	Dalgetta Farms Inc	564	188		376
	SE 1/4 Lot 5 & E 1/2 Lot 6	000-070-107-01	Lagerwerf's Greenway Acres c/o J. Lagerwerf	633	211		422
26	Lot 3	000-070-115	P. & A. Wiersma	1,818	606		1,212
	W 1/2 & NE 1/4 Lot 4	000-070-114	J & D Mclinchey Farms Ltd	1,058	353		705
	SE 1/4 Lot 4 & N 1/2 Lot 5	000-070-113	R. & L. Masschelein	987	329		658
	S 1/2 Lot 5	000-070-112	J. & D. Mclinchey	282	94		188
27	Lot 3	000-070-120	W. Woodburn	1,222	407		815
	Lot 4	000-070-118	D. & B. Mclinchey	847	282		565
28	Lot 1	000-070-126	New Venice Corp Ltd	42,235	14,078	20,250	7,907
	Lot 2	000-070-127	Deierlich Farms Ltd	9,420	3,140	2,480	3,800
Ausables	Lot 1	000-070-130	New Venice Corp Ltd	11,943	3,981	3,470	4,492
	Lot 2	000-070-131	J. Eagleson	34,124	11,375	19,060	3,689
N.B.C	Lot 35	000-070-038	J C Rutten Farms Inc	162	54		108

Conc.	Lot or Part	Roll No.	Owner	Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)
	Lot 36 & E 1/2 Lot 37	000-070-069	M. Mueller	750	250		500
	W 1/2 Lot 37 & E 1/2 Lot 38	000-070-070	J. Lagerwerf	1,014	338		676
	E 1/2 Lot 39	000-070-073	G. & J. Bullock	608	203		405
	E 1/2 Lot 40	000-070-098	M. Larmer	608	203		405
	W 1/2 Lot 40	000-070-099	WM Woodburn Farms Of	608	203		405
	Lot 41	000-070-100	W. & C. Woodburn Trustee	1,116	372		744
	E 2/3 Lot 42	000-070-101	W. Woodburn	811	270		541
	W 1/3 Lot 42 & E 1/2 Lot 43	000-070-102	K. & R. Eagleson	771	257		514
	W 1/2 Lot 43	000-070-103-01	K. & R. Eagleson	507	169		338
	Lot 44	000-070-122	WM Woodburn Farms Of	1,176	392		784
	W 3/4 Lot 45	000-070-124	Hope Family Pork Ltd.	1,115	372		743
	E 1/4 Lot 45	000-070-125	Hope Family Pork Ltd.	248	83		165
Non-Agricultural Lands							
16	Pt. Lot 5	000-050-105-10	S. & C. Glavin	32			32
17	Pt. Lot 5	000-050-066-02	Vanosch Farms Limited	49			49
18	Pt. Lot 4	000-050-046	Municipality of North Middlesex	23			23
19	NE 1/4 Lot 5	000-050-006	2812065 Ontario Ltd	656			656
	SE 1/4 Lot 5	000-050-007	Mccann Redi-Mix Inc	649			649
	N 1/2 Lot 9	000-050-011	L. Visscher-Coletta & R. Coletta	1,183			1,183
	C Pt. Lot 10	000-050-014	N. Arabi	828			828
	S Pt. Lot 10	000-050-015-05	W. & B. Mccann	122			122
	Lot 11	000-050-016	Ausable Bayfield Conservation Authority	1,893			1,893
	Pt. Lot 12	000-050-017	Municipality of North Middlesex	426			426
21	Pt. Lot 7	000-070-044	L. Jackson	118			118
22	Pt. N 1/2 Lot 7	000-070-057	T. & J. Scott	41			41
	Pt. W 1/2 Lot 5	000-070-061	B. Lively & J. Hales	270			270
	Pt. Lot 3	000-070-062-01	D. Royackers	18			18
23	Pt. Lot 3	000-070-081-01	1784133 Ontario Limited	71			71
	Pt. E 1/2 Lot 6	000-070-085	C. Lacey & E. Carter	112			112
24	Lot 7	000-070-093	Ausable Bayfield Conservation Authority	223			223
25	Pt E 1/2 Lot 6	000-070-107	M. Mcmenamin	85			85
26	Pt. Lot 3	000-070-115-01	J. & M. Rossiter	71			71
27	Pt. Lot 3	000-070-119	D. Hodgins & J. Scott	23			23
N.B.C.	W 1/2 Lot 38	000-070-071	G. & B. Nethercott	591			591

Conc.	Lot or Part	Roll No.	Owner	Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)
Municipal Lands							
	Grand Bend Road		County of Middlesex	874			874
	Hagmier Road		Municipality of North-Middlesex	10,345			10,345
	Unopened Road Allowance (Lot 27, 28)		Municipality of North-Middlesex	301			301
	Hutchinson Road		Municipality of North-Middlesex	274			274
	Bullock Road		Municipality of North-Middlesex	412			412
	Cedar Swamp Road		Municipality of North-Middlesex	865			865
	Salem Road		Municipality of North-Middlesex	811			811
	Lieury Road		Municipality of North-Middlesex	648			648
	Adare Drive		Municipality of North-Middlesex	2,398			2,398
	Mooresville Drive		Municipality of North-Middlesex	920			920
Total Assessment				\$250,082	\$74,917	\$45,260	\$129,905

SCHEDULE OF MAINTENANCE

To Maintain the Open Channel Portion of the Canada Company Drain North From Station 0+000 to 1+850

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
<u>Agricultural Lands</u>							
16	N 3/4 Lot 4	6.07	000-050-106	Vanosch Farms Limited	-	0.13	0.13
	S 1/4 Lot 4 & Lot 5	25.50	000-050-105	Vanosch Farms Limited	-	0.55	0.55
	N 1/2 Lot 6	8.09	000-050-104	G. Thompson	-	0.18	0.18
	S 1/2 Lot 6 & N 1/4 Lot 7	12.14	000-050-103	H. & M. Thompson	-	0.26	0.26
	S 3/4 Lot 7	12.14	000-050-103-02	G. & M. Thompson	-	0.26	0.26
	Lot 8	14.16	000-050-102	Vanosch Farms Limited	-	0.31	0.31
	W 3/4 Lot 9	6.07	000-050-101	A. Denys	-	0.13	0.13
17	N 1/2 Lot 3	6.07	000-050-063	Vanosch Farms Limited	-	0.13	0.13
	S 1/2 Lot 3 & Lot 4	52.61	000-050-064	E. & D. Mccann	-	1.14	1.14
	N 1/2 Lot 5	20.23	000-050-065	E. & D. Mccann	-	0.44	0.44
	S 1/2 Lot 5	19.41	000-050-066	Vanosch Farms Limited	-	0.42	0.42
	Lot 6	40.47	000-050-067	W. & M. Watson	-	0.88	0.88
	Lot 7	40.47	000-050-068	L. & B. Mccann	-	0.88	0.88
	N 1/2 Lot 8	20.23	000-050-069	P. Geudens	-	0.44	0.44
	S 1/2 Lot 8	20.23	000-050-070	P. Geudens	-	0.44	0.44
	Lot 9	40.47	000-050-071	N. & M. Trevithick	-	0.88	0.88
	Lot 10	30.35	000-050-072	N. & L. Mccann	-	0.66	0.66
	N 1/2 Lot 11	8.09	000-050-073	Vanespo Ltd	-	0.18	0.18
	S 1/2 Lot 11	8.09	000-050-074	C. Mccann	-	0.18	0.18
	N 1/2 Lot 12	8.09	000-050-075	C. & A. Mollard	-	0.18	0.18
	S 1/2 Lot 12	6.47	000-050-076	G. & L. Thompson	-	0.14	0.14
	Lot 13	3.24	000-050-077	Volcrest Investments Inc	-	0.07	0.07
18	Lot 3	2.02	000-050-048-01	M. & M. Thompson	-	0.04	0.04
	N 1/2 Lot 4	8.09	000-050-048	M. Thompson	-	0.18	0.18
	S 1/2 Lot 4 & N 1/2 Lot 5	23.06	000-050-047	Vanosch Farms Limited	-	0.50	0.50
	S 1/2 Lot 5	19.83	000-050-045	Vanosch Farms Limited	-	0.43	0.43
	Lot 6	40.47	000-050-044	A. Denys	-	0.88	0.88
	Lot 7	40.47	000-050-043	C. Thompson	-	0.88	0.88
	N 1/2 Lot 8	20.23	000-050-042	M. Groot	-	0.44	0.44
	S 1/2 Lot 8	20.23	000-050-041	G. Jongeneel	-	0.44	0.44
	Lot 9	40.47	000-050-040	L. Eagleson	-	0.88	0.88

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
19	Lot 10	40.47	000-050-039	J. Dixon & J. Sadler	-	0.88	0.88
	E 1/2 Lot 11	20.23	000-050-038	M. Young	-	0.44	0.44
	W 1/2 Lot 11	20.23	000-050-037	M. Squire-Smith & H. Young	-	0.44	0.44
	Lot 12	30.35	000-050-036	M. Young	-	0.66	0.66
	Lot 13	12.95	000-050-035	G. & J. Jongeneel	-	0.28	0.28
	S 1/2 Lot 3	4.04	000-050-003	R. Mcfalls	-	0.09	0.09
	N 1/2 Lot 4	18.21	000-050-004	D. Dietrich	-	0.39	0.39
	S 1/2 Lot 4	19.42	000-050-005	C. Lindsay	-	0.42	0.42
	W 1/2 Lot 5	20.23	000-050-007-20	D. McClure	-	0.44	0.44
	N 1/2 Lot 6	20.23	000-050-008	R. & C. McCann	-	0.44	0.44
	S 1/2 Lot 6 & N 1/4 Lot 7	30.35	000-050-009	P. Rollgen	-	0.66	0.66
	S 3/4 Lot 7	30.35	000-050-009-01	P. Rollgen	-	0.66	0.66
20	Lot 8	40.47	000-050-010	Denys Farms Inc	-	0.88	0.88
	N Pt. Lot 10	12.14	000-050-015	D & M Pork Inc.	-	0.26	0.26
	S Pt. Lot 10	12.14	000-050-013	D. Ritchie	-	0.26	0.26
	Lot 3	34.40	000-070-025	F. & R. Vanderkant	-	0.75	0.75
	Lot 4	40.47	000-070-024	Frank Vanderkant & Family	-	0.88	0.88
	W 1/2 Lot 5	20.23	000-070-022-01	H. Roellgen	-	0.44	0.44
	E 1/2 Lot 5	20.23	000-070-023	H. Roellgen	-	0.44	0.44
	W 1/2 Lot 6	20.23	000-070-022	C. Scott	-	0.44	0.44
19,20	E 1/2 Lot 6	20.23	000-070-022-20	P. Roellgen	-	0.44	0.44
	Lot 7	40.47	000-070-021	P. Roellgen	-	0.88	0.88
	Lot 8	40.47	000-070-020	S. & C. Scott	-	0.88	0.88
	Lot 9 & S 1/2 Lot 9	60.70	000-070-019	W. Roellgen	-	1.32	1.32
	N 1/2 Lot 10	20.23	000-070-018	D & M Pork Inc.	-	0.44	0.44
	S 1/2 Lot 10	20.23	000-070-017	D. Ritchie	-	0.44	0.44
	Lot 11	17.40	000-070-016	D & M Pork Inc.	-	0.38	0.38
	E 1/2 Lot 12	2.43	000-070-014	E. Hodgins	-	0.05	0.05
21	Lot 3	8.09	000-070-039	J. Mcfalls	-	0.18	0.18
	Lot 4	40.47	000-070-040	L. & E. Mcfalls	-	0.88	0.88
	Lot 5	40.47	000-070-041	B. & C. Kaak	-	0.88	0.88
	N 1/2 Lot 6	20.23	000-070-042	E. & D. Eagleson	-	0.44	0.44
	S 1/2 Lot 6	20.23	000-070-043	W. & B. McCann	-	0.44	0.44
	Lot 7	38.45	000-070-044-10	H. Roellgen	-	0.83	0.83

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
22	N 1/2 Lot 8	20.23	000-070-045	S. & C. Scott	-	0.30	0.30
	S 1/2 Lot 8 & N 1/2 Lot 9	40.47	000-070-046	H. Roellgen	-	0.60	0.60
	S 1/2 Lot 9	20.23	000-070-047	H. Roellgen	-	0.30	0.30
	Lot 10	20.23	000-070-048	H. Roellgen	-	0.30	0.30
	N 1/2 Lot 3 & W 1/2 Lot 34 N.B.C	20.23	000-070-033	D. & J. Hodgins	-	0.44	0.44
	S 1/2 Lot 3	20.19	000-070-062-02	G. & J. Steeper	-	0.44	0.44
	Lot 4	40.20	000-070-062	Julen Farms Ltd	-	0.87	0.87
	Pt. W 1/2 Lot 5	15.85	000-070-061-02	G. & B. Steeper	-	0.34	0.34
	E 1/2 Lot 5	20.23	000-070-061-01	G. & J. Steeper	-	0.44	0.44
	N 1/2 Lot 6	20.23	000-070-060	Julen Farms Ltd	-	0.44	0.44
23	S 1/2 Lot 6 & N 1/2 Lot 7	39.46	000-070-059	Marandy Farms Inc.	-	0.65	0.65
	S 1/2 Lot 7	20.23	000-070-058	A. Roelands	-	0.23	0.23
	Lot 8	34.40	000-070-056	C. & K. Eagleson	-	0.40	0.40
	Lot 9	18.21	000-070-056-10	Marandy Farms Inc.	-	0.21	0.21
	Lot 10	4.04	000-070-055	Denys Farms Inc	-	0.05	0.05
	Lot 3	39.25	000-070-081	Mitchell Swine Ltd	-	0.85	0.85
	Lot 4	40.47	000-070-082	G. & B. Steeper	-	0.88	0.88
	Lot 5	40.47	000-070-083	S. & A. Steeper	-	0.79	0.79
	W 1/2 Lot 6	20.23	000-070-084	C. & B. Macgregor	-	0.23	0.23
	E 1/2 Lot 6	12.14	000-070-085-01	C. & B. Macgregor	-	0.18	0.18
24	N 1/2 Lot 7	20.23	000-070-086	A. & B. Woodburn	-	0.23	0.23
	S 1/2 Lot 7	16.15	000-070-087-01	B. Woodburn	-	0.19	0.19
	Pt S 1/2 Lot 7	1.65	000-070-087	A. Woodburn	-	0.02	0.02
	N 1/2 Lot 8	13.35	000-070-088	N. & L. Eagleson	-	0.15	0.15
	S 1/2 Lot 8	8.09	000-070-089	M. & M. Kazuk & J. Gielen	-	0.09	0.09
	Lot 3 & N 1/2 Lot 4 & W 1/2 Lot 39 N.B.C	70.82	000-070-096	T. & C. Hodgins	-	1.53	1.53
	S 1/2 Lot 4 & Lot 5	60.70	000-070-095	E. & J. Bullock	-	1.01	1.01
25	Lot 6	32.37	000-070-094	E. & G. Bullock	-	0.37	0.37
	Lot 3 & N 1/2 Lot 4	60.70	000-070-104	Lagerwerf's Greenway Acres c/o J. Lagerwerf	-	1.16	1.16
	S 1/2 Lot 4 & N 1/2 Lot 5	40.47	000-070-105	R. Masschelein	-	0.46	0.46
	SW 1/4 Lot 5 & W 1/2 Lot 6	16.18	000-070-106	Dalgetta Farms Inc	-	0.19	0.19
26	SE 1/4 Lot 5 & E 1/2 Lot 6	18.14	000-070-107-01	Lagerwerf's Greenway Acres c/o J. Lagerwerf	-	0.21	0.21
	Lot 3	39.25	000-070-115	P. & A. Wiersma	-	0.75	0.75
	W 1/2 & NE 1/4 Lot 4	30.35	000-070-114	J & D Mclinchey Farms Ltd	-	0.35	0.35
	SE 1/4 Lot 4 & N 1/2 Lot 5	28.32	000-070-113	R. & L. Masschelein	-	0.33	0.33
	S 1/2 Lot 5	8.09	000-070-112	J. & D. Mclinchey	-	0.09	0.09
27	Lot 3	35.04	000-070-120	W. Woodburn	-	0.40	0.40
	Lot 4	24.28	000-070-118	D. & B. Mclinchey	-	0.28	0.28
28	Lot 1	35.00	000-070-126	New Venice Corp Ltd	16.15	0.76	16.91
	Lot 2	25.00	000-070-127	Deitrich Farms Ltd	5.43	0.29	5.72

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
Ausables	Lot 1	0.00	000-070-130	New Venice Corp Ltd	7.59	-	7.59
	Lot 2	0.00	000-070-131	J. Eagleson	7.59	-	7.59
N.B.C	Lot 35	3.23	000-070-038	J C Rutten Farms Inc	-	0.07	0.07
	Lot 36 & E 1/2 Lot 37	14.97	000-070-069	M. Mueller	-	0.32	0.32
	W 1/2 Lot 37 & E 1/2 Lot 38	20.23	000-070-070	J. Lagerwerf	-	0.44	0.44
	E 1/2 Lot 39	12.14	000-070-073	G. & J. Bullock	-	0.26	0.26
	E 1/2 Lot 40	12.14	000-070-098	M. Larmer	-	0.26	0.26
	W 1/2 Lot 40	12.14	000-070-099	WM Woodburn Farms Of	-	0.26	0.26
	Lot 41	22.26	000-070-100	W. & C. Woodburn Trustee	-	0.48	0.48
	E 2/3 Lot 42	16.19	000-070-101	W. Woodburn	-	0.35	0.35
	W 1/3 Lot 42 & E 1/2 Lot 43	15.38	000-070-102	K. & R. Eagleson	-	0.33	0.33
	W 1/2 Lot 43	10.11	000-070-103-01	K. & R. Eagleson	-	0.22	0.22
	Lot 44	23.47	000-070-122	WM Woodburn Farms Of	-	0.51	0.51
	W 3/4 Lot 45	22.25	000-070-124	Hope Family Pork Ltd.	-	0.48	0.48
	E 1/4 Lot 45	5.26	000-070-125	Hope Family Pork Ltd.	-	0.10	0.10
					36.76	54.06	90.82
<u>Non-Agricultural Lands</u>							
16	Pt. Lot 5	0.55	000-050-105-10	S. & C. Glavin	-	0.01	0.01
17	Pt. Lot 5	0.83	000-050-066-02	Vanosch Farms Limited	-	0.02	0.02
18	Pt. Lot 4	0.40	000-050-046	Municipality of North Middlesex	-	0.01	0.01
19	NE 1/4 Lot 5	11.22	000-050-006	2812065 Ontario Ltd	-	0.28	0.28
	SE 1/4 Lot 5	11.10	000-050-007	Mccann Redi-Mix Inc	-	0.28	0.28
	N 1/2 Lot 9	20.23	000-050-011	L. Visscher-Coletta & R. Coletta	-	0.51	0.51
	C Pt. Lot 10	14.16	000-050-014	N. Arabi	-	0.36	0.36
	S Pt. Lot 10	2.08	000-050-015-05	W. & B. Mccann	-	0.05	0.05
	Lot 11	32.37	000-050-016	Ausable Bayfield Conservation Authority	-	0.82	0.82
	Pt. Lot 12	7.29	000-050-017	Municipality of North Middlesex	-	0.18	0.18

Conc.	Lot or Part	Affected Hect.	Roll No.	Owner	Benefit (\$)	Outlet (\$)	Total (\$)
21	Pt. Lot 7	2.01	000-070-044	L. Jackson	-	0.05	0.05
22	Pt. N 1/2 Lot 7	1.02	000-070-057	T. & J. Scott	-	0.01	0.01
	Pt. W 1/2 Lot 5	4.61	000-070-061	B. Lively & J. Hales	-	0.12	0.12
	Pt. Lot 3	0.31	000-070-062-01	D. Royackers	-	0.01	0.01
23	Pt. Lot 3	1.21	000-070-081-01	1784133 Ontario Limited	-	0.03	0.03
	Pt. E 1/2 Lot 6	2.25	000-070-085	C. Lacey & E. Carter	-	0.04	0.04
24	Lot 7	5.48	000-070-093	Ausable Bayfield Conservation Authority	-	0.07	0.07
25	Pt E 1/2 Lot 6	2.09	000-070-107	M. Mcmenamin	-	0.03	0.03
26	Pt. Lot 3	1.21	000-070-115-01	J. & M. Rossiter	-	0.03	0.03
27	Pt. Lot 3	0.57	000-070-119	D. Hodgins & J. Scott	-	0.01	0.01
N.B.C.	W 1/2 Lot 38	10.11	000-070-071	G. & B. Nethercott	-	0.26	0.26
					-	3.18	3.18
<u>Municipal Lands</u>							
Grand Bend Road		7.28		County of Middlesex	-	0.35	0.35
Hagmier Road		1.60		Municipality of North-Middlesex	2.82	0.05	2.87
Unopened Road Allowance (Lot 27, 28)		2.66		Municipality of North-Middlesex	-	0.12	0.12
Hutchinson Road		2.42		Municipality of North-Middlesex	-	0.11	0.11
Bullock Road		3.64		Municipality of North-Middlesex	-	0.16	0.16
Cedar Swamp Road		6.47		Municipality of North-Middlesex	-	0.37	0.37
Salem Road		6.07		Municipality of North-Middlesex	-	0.35	0.35
Lieury Road		4.85		Municipality of North-Middlesex	-	0.28	0.28
Adare Drive		19.42		Municipality of North-Middlesex	-	0.99	0.99
Mooresville Drive		6.88		Municipality of North-Middlesex	-	0.40	0.40
					2.82	3.18	6.00
Total - Agricultural Lands					90.82		
Total - Non - Agricultural Lands					3.18		
Total - Municipal Lands					6.00		
Total Assessment					\$ 100.00		

Canada Company Drain North
Municipality of North Middlesex
September 13, 2024

SPECIFICATION OF WORK

1. Location

The work in this specification is located in Lot 1 and 2, Ausable and Concession 28 in The Municipality of North Middlesex.

2. Scope of Work

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

- Proposed Works
 - Open Channel Improvements
- Future Works
 - Open Channel Maintenance
 - Culvert Replacement or Repairs

3. General

Each tenderer must inspect the site prior to submitting their tender and satisfy themselves by personal examination as to the local conditions that may be encountered during this project. The Contractor shall make allowance in their tender for any difficulties which they may encounter. Quantities or any information supplied by the Engineer is not guaranteed and is for reference only.

All work and materials shall be to the satisfaction of the Drainage Superintendent who may vary these specifications as to minor details but in no way decrease the proposed capacity of the drain.

The Contractor shall be responsible for the notification of all utilities prior to the start of construction.

Measurement for Payment Clauses have not been included in these specifications and will be part of the Construction document. If the Construction document has not identified Measurement for Payment Clauses, the Contractor must notify the Municipality of North Middlesex and request clarification 2 days prior to pricing the project

4. Plans and Specifications

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 (25% of the cost) shall be borne by that utility. at the end of this report.

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.

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 the proposed and future work on the Canada Company Drain North shall be from Haghmier Road, the unopened road allowance at Station 1+850 and along the length of the drainage works. All access shall be restricted to a width of 6 metres.

The working area at each culvert shall extend 10 metres from the bank on both sides and for 10 metres along the channel on either side of the culvert.

The working area for channel improvements and maintenance shall be restricted to a width of 25m from the side the excavation is taking place, except from Station 1+490 to 1+850 where it shall be restricted to a width of 10m. For construction, the channel shall be excavated from the south side from Station 0+000 to 0+693 and from the north side from Station 0+693 to 1+850. If, at the discretion of the Drainage Superintendent or Engineer, there is erosion on the channel opposite the working area access may be gained along the channel and nearest culvert to repair the bank. For future maintenance the channel may be excavated from either side of the channel at the discretion of the Drainage Superintendent.

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 (Future)

The culverts, catch basins, unsuitable or not required excavated material, etc. shall be removed in their entirely and shall be disposed offsite at the expense of the Contractor.

12. Brushing and Tree Removal (Future)

All brush, trees, vegetation, stumps etc. shall be removed within the channel cross section and in order to facilitate the excavation of the open channel and culvert construction, as determined by the Drainage Superintendent or Engineer.

A mechanical grinder attached to an excavator shall be used for the removal of brush and trees. Any brush and trees too large to grind shall be close cut. The Contractor shall stockpile the trees and brush in a single pile on the property in which they were removed or dispose of the trees and brush offsite. The Contractor is responsible for the burning of the trees and brush. The Contractor is responsible for obtaining all necessary permits for any disposal sites. Burning of the trees and brush is subject to local bylaws and guidelines of the Ministry of the Environment Conservation and Parks.

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

13. Strip and Place Topsoil

The topsoil adjacent the channel from Station 0+000 to 1+189 shall be stripped for a width of 15m on the side the excavation is taking place. The topsoil shall be placed at the edge of the working allowance until the levelling and creation of the berms has taken place. Once the excavated material has been levelled the Contractor shall level the topsoil over the excavated material and left in a condition suitable to cultivation. This item is to

be completed as part of the improvement project and shall be done under maintenance at the discretion of the Drainage Superintendent.

14. Excavation and Levelling 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.

The bank on the side the excavation is taking place shall be resloped to a minimum of 1.75:1 from Station 0+000 to 1+189. From Station 0+000 to 1+189 the levelling shall include the creation of a berm. Generally, at the location of the excavation, the excavated material shall be utilized to create a berm on the side it is being excavated from. The berm shall have a 1.75:1 slope on the channel side, a 1m top width and a minimum of a 5:1 slope to the field. The 5:1 slope and 1m top shall be left in a condition suitable for cultivation. The berm shall be completed as part of the improvement project and shall be done under maintenance at the discretion of the Drainage Superintendent. At a minimum, the new top of bank elevation shall match the top of bank on the opposite bank and be at an elevation no lower than 179.73m. This will require excess material from some locations to be utilized to build up the banks in others. Approximate sections have been included as part of this report. These are estimates, the berms shall be created based on the actual excavated quantities and at the direction of the Drainage Superintendent and Engineer. If additional material is required, the material upstream of Station 1+189 shall be used to build the berms. This shall be completed at the discretion of the Drainage Superintendent or Engineer. If additional material is still required the banks shall be sloped at a flatter slope. This will be an extra to the contract.

All other 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 outletting 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 item shall include the removal of any rocks larger than 10cm in diameter and any debris/wood that could damage or plug farm equipment. Leveling shall occur when the material is dry enough to do so as determined by the Drainage Superintendent or Engineer. All high spots above grade shall be removed. The sediment shall be removed leaving a rounded bottom. All material unfit for placing on farmlands shall be disposed of offsite by the Contractor.

For construction under this the report any gravel/cobble substrate shall be re-installed with the existing materials.

This item shall include cleaning out of the Hagmier Road culvert. This material shall be dealt with in the same manner as the rest of the excavated material in the vicinity.

15. Temporary Rock Flow Check Dams and Sediment Traps

The temporary rock flow check dam shall have rip rap in accordance with the rip rap specification. Temporary sediment traps and rock flow check dams shall be installed at the approximate locations as shown on the profile. The sediment traps and rock flow check dams are temporary erosion protection measures and shall only be included as apart of construction under this project. The rock flow check dam shall be installed 1m downstream of the sediment trap. The rock flow check dam and sediment traps shall be installed before any work upstream of their location takes place. The rock flow check dam shall be removed upon completion of construction and the rip rap shall be utilized for erosion protection in the vicinity of check dam.

The sediment traps shall be as per OPSD 219.220 and shall be 0.30m deep and 5m long. The rock flow check dams shall be as per OPSD 219.211 and shall utilize rip rap and geotextile as detailed in the rip rap specification.

16. Installation of Culverts (Future)

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

The Contractor shall supply, install, and backfill aluminized corrugated steel pipe (CSP) with a minimum wall thickness of 2.8mm. Corrugated Steel Pipe Arches and culverts under roadways shall have a minimum wall thickness of 3.5mm. All corrugation profiles shall be of helical lock seam 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.

The culverts designated to be replaced in the future under this report shall be examined after any cleanout of the open channel as to its condition. If it is found to be in disrepair (i.e. there are holes corroded in the bottom or sides) it shall be replaced as per these specifications.

The culverts shall be installed generally in the same location or as approved by the Drainage Superintendent or Engineer. The culverts shall be installed with the invert 10% (minimum 150mm) below the original channel bottom elevation unless otherwise shown in order to achieve the minimum cover. It is the Contractors responsibility to ensure that the minimum cover is achieved when backfilling the culverts. The minimum cover for CSP under Highway Loading shall be 1/6 of the span, and shall be no less than 300mm.

All culverts shall have concrete block end walls.

Any tile outlets extended as a result of a culvert shall be extended at the landowner's expense. The pipes that shall be extended upstream or downstream of the proposed culvert shall be done with non-perforated HDPE agricultural tubing with a manufactured coupling, elbow and rodent grate.

Access Culvert:

The bottom of the excavation shall be excavated to a minimum of 100mm below the proposed invert. The pipe shall be bedded with $\frac{3}{4}$ " clear stone. When the pipe has been installed to the proper grade and depth, the excavation shall be backfilled with $\frac{3}{4}$ " clear stone and wrapped in filter fabric from the bottom of the excavation to the spring line of the pipe. 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 culverts shall be backfilled from the spring line to within 150mm of finished grade with Granular "B" Type II. Where no vehicular traffic is proposed to cross the culvert, the culvert may be backfilled with select native material. The top 150mm shall be backfilled with compacted 100% crushed granular "A" material to finished grade. In sections where no vehicular traffic is proposed to cross the culvert, the top 150mm shall be topsoil and seeded as per the restoration specification. If asphalt is proposed, the asphalt shall be HL4 and shall match the existing thickness. In these cases, the compacted granular "A" shall occupy 150mm below the proposed asphalt.

Road Culvert:

The concrete box culvert shall be precast, shall be installed as per OPSS 422 and the contractor shall submit shop drawings to the engineer prior to ordering. In the event of a conflict between these specifications and those of the structural designer, the more stringent shall apply. The joints between precast sections shall have butyl tape and shall be wrapped with a minimum 600mm width of geotextile to prevent the migration of soil between the joints. The future box culvert shall match the end area of the existing box culvert.

The bottom of the excavation shall be excavated to a minimum of 200mm below the proposed culvert bottom. The pipe shall be bedded with $\frac{3}{4}$ " clear stone and the bedding shall be wrapped in filter fabric. The culvert shall be backfilled from the spring line to within 200mm of finished grade with granular B Type II. Clay material may be utilized, at the discretion of the Engineer, to the outside of the culvert with granular material in the center. The top 200mm shall be OPS Granular "M", produced from 100% crushed dolomite, and shall be mechanically compacted to 100% modified standard proctor density.

Concrete block end walls shall consist of concrete blocks with dimensions of approx. 600mm x 600mm x 1200mm, 600mm x 600mm x 2400mm or 300mm x 600mm x 1200mm as required. 600mm x 600mm x 2400mm concrete blocks will be paid at twice the unit price established per block, all others will be at a unit of 1. The top of the culvert

shall govern block elevation. The correct block shall be set with the top of the block equal to the top of the culvert. 2400mm wide concrete blocks shall be used as the top block on arch and larger round pipes in order to span between the culvert top and the supporting block. The blocks shall be set at each end of the culvert so that each row of blocks will be offset approx. 100mm from the row below. The bottom row shall consist of one block placed parallel to the culvert. The blocks shall be imbedded a minimum of 300mm into each bank and shall extend into the drain bottom to match the pipe invert or below. Erosion protection shall be placed on the banks next to the end walls. The erosion protection shall consist of 150mm x 300mm quarry stone over filter fabric (Mirafi P150 or approved equal). It shall extend 500mm upstream or downstream and from top of bank to top of bank at each end wall.

The blocks shall be placed over a layer of filter fabric (Mirafi P150 or approved equal). The culvert shall be backfilled in conjunction with the placement of the blocks. The gaps between the culvert and the blocks shall be filled with concrete cinder blocks/bricks and mortar to give the end wall a finished appearance.

17. Rip Rap

Rip rap shall be made up of 100mm to 900mm quarry stone (Shot Rock) or approved equal. The area to receive the rip rap shall first be graded to ensure embedment of the stone to match the 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.

Rip rap shall be placed at the discretion of the Engineer or Drainage Superintendent at the time of construction. For the construction project rip rap shall be placed on the south bank at Station 1+189.

18. Seeding/Restoration

The side slopes of the channel and all areas disturbed by construction, that will not be cultivated, shall be restored with hydroseed and double straw matting. The double straw matting shall be installed according to the manufacturer's specifications.

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.

19. Subsurface Drainage

All existing subsurface drains encountered during construction shall be reconnected to the open channel and tile drain unless otherwise noted on the drawings or as directed by the Drainage Superintendent.

A suitable length of equivalent sized PE agricultural tubing shall be used to connect the drain to the open channel and tile drain. Manufactured fittings shall connect the PE tile to the existing drain and to the concrete tile. The connections shall be carefully backfilled to ensure there is adequate support under the pipe and large clumps of clay do not displace the tile.

Rip rap shall be installed at all tile connections from the top of bank to the toe of slope and for a width of 0.50m either side of the tile.

20. Environmental Considerations

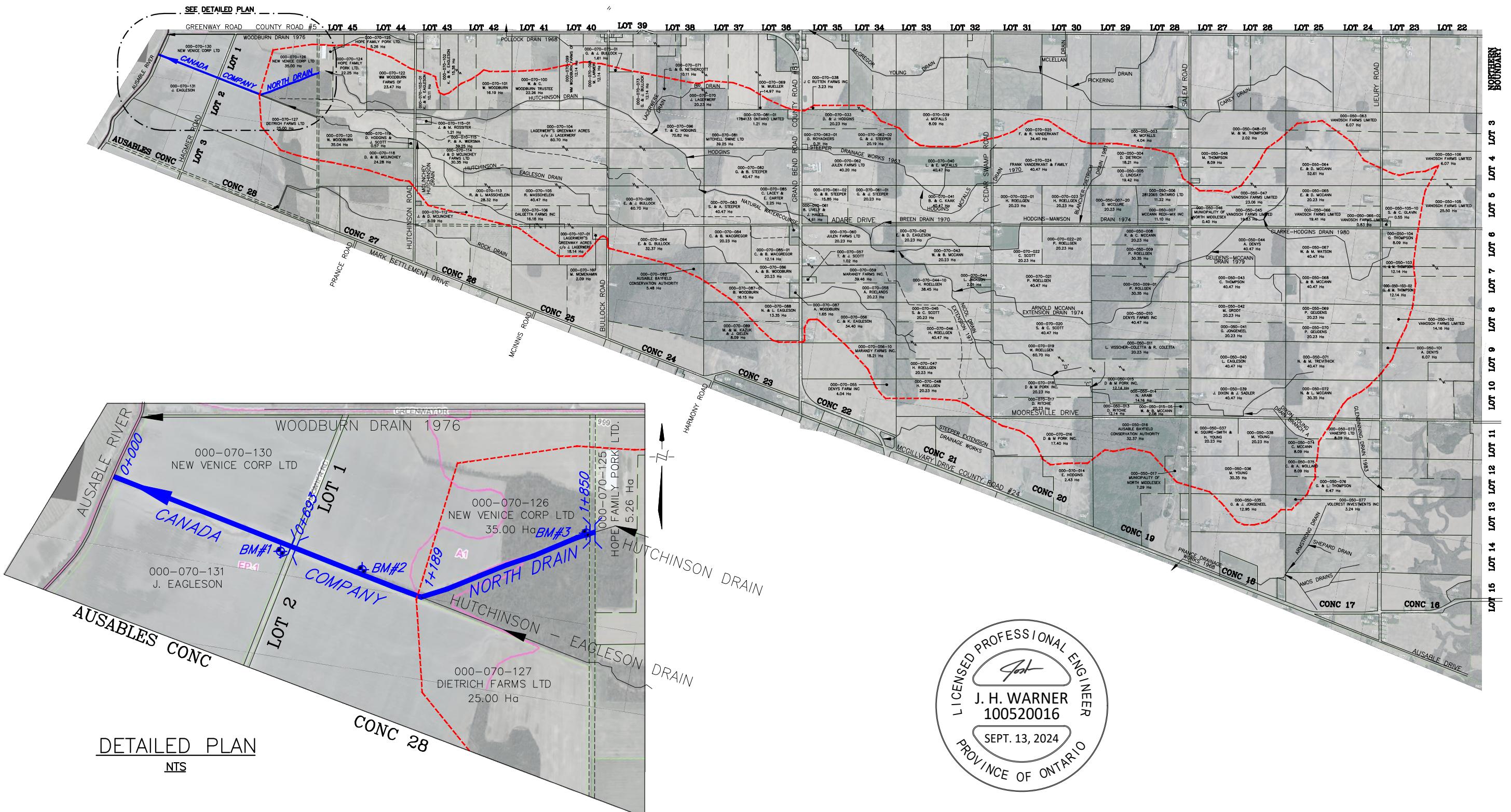
The Contractor shall take care to adhere to the following considerations.

- 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 fence and straw bale check dam 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.



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

DRAWING NAME:
Canada Company Drain North Plan

PROJECT NO.
2023-1505

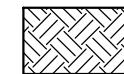
APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	SEPT. 13, 2024	CS
B. VAN RUITENBURG				
		SCALE: 1:20,000		
DRAWN		0 200 400 600 800m		
C. SAUNDERS				

MUNICIPALITY of NORTH MIDDLESEX
CANADA COMPANY DRAIN NORTH
PLAN

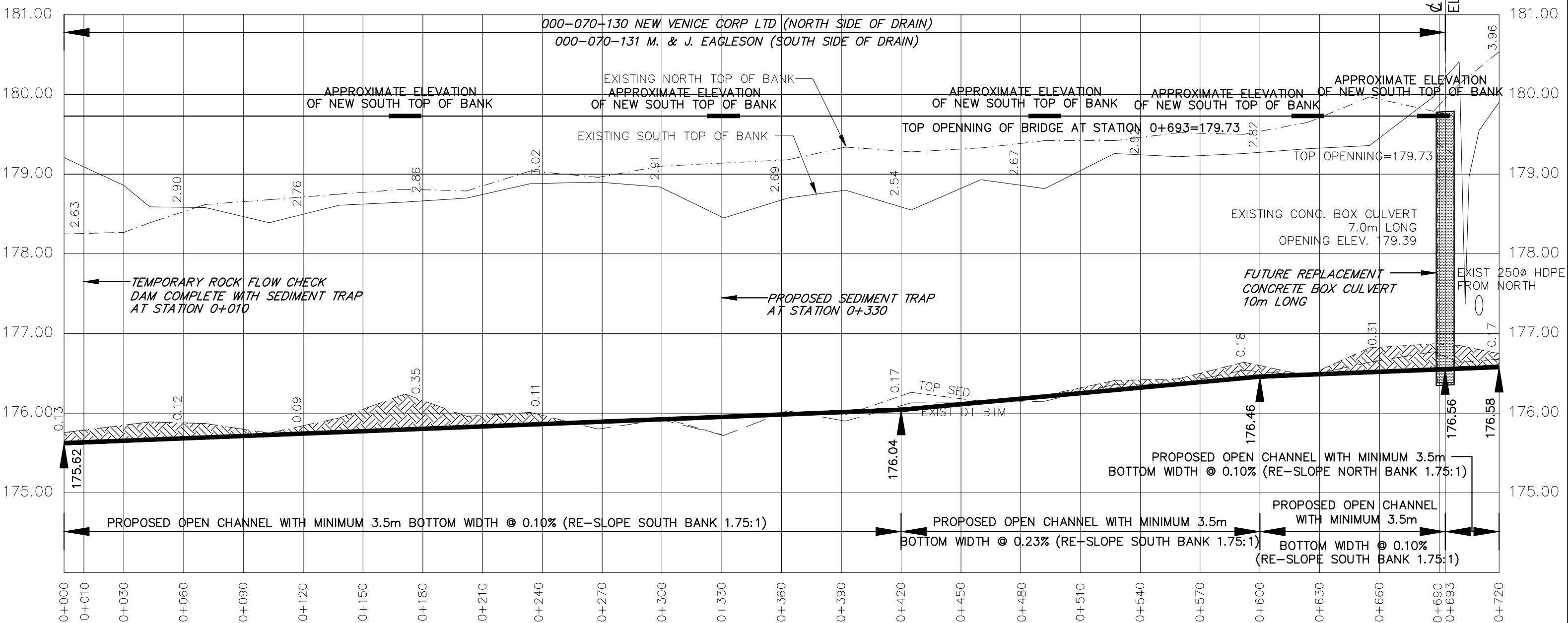
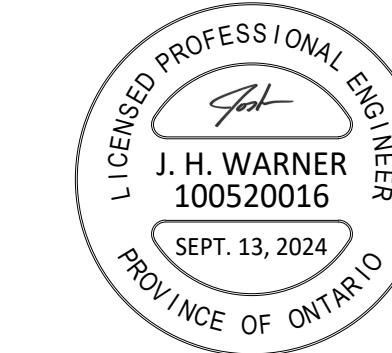
1
OF 9

GENERAL NOTES

- BENCHMARK No.1 ELEV. 180.54
TOP OF SOUTHWEST CORNER OF CONCRETE BRIDGE LOCATED AT STATION 0+693
- UPPER NUMBERS ARE DEPTH FROM EXISTING SOUTH TOP OF BANK TO PROPOSED BOTTOM OF CHANNEL
- LOWER NUMBERS ARE DEPTH FROM EXISTING CHANNEL BOTTOM TO PROPOSED GRADE
- GRAVEL/COBBLE SUBSTRATE TO BE RESTORED

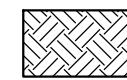


DRAIN EXCAVATION



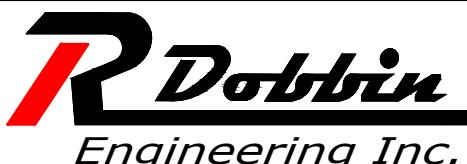
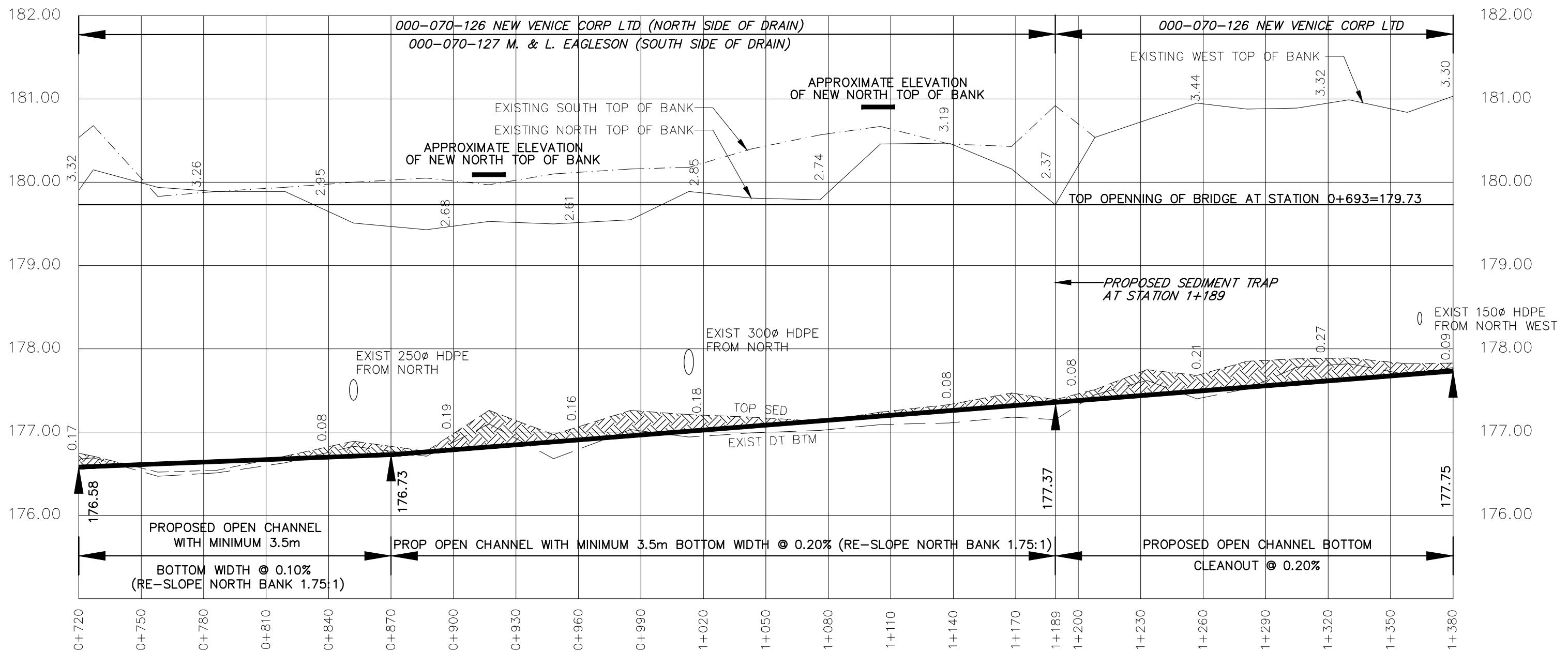
GENERAL NOTES

1. BENCHMARK No.2 ELEV. 177.99
TOP OF 300Ø HDPE TILE
FROM NORTH SIDE OF DRAIN
AT APPROX. STATION 1+014
 2. UPPER NUMBERS ARE DEPTH FROM EXISTING
SOUTH TOP OF BANK TO PROPOSED BOTTOM
 3. LOWER NUMBERS ARE DEPTH FROM EXISTING
CHANNEL BOTTOM TO PROPOSED GRADE
 4. GRAVEL/COBBLE SUBSTRATE TO BE RESTORED



DRAIN EXCAVATION

A circular professional engineer license seal. The outer ring contains the words "LICENCED PROFESSIONAL ENGINEER" at the top and "PROVINCE OF ONTARIO" at the bottom. In the center, it features a signature "J.H. WARNER" above the number "100520016". Below the name is the date "SEPT. 13, 2024".



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

DRAWING NAME:
Canada Company Drain North Profile 2

PROJECT No
2023-1505

-2233	APPROVED J. WARNER	NO.	REVISIONS	DATE
	CHECKED B. VAN RUITENBURG	1	FINAL REPORT	SEPT. 13, 20
		SCALE: 1:2,000		
DRAWN C. SAUNDERS	0	20	40	60

MUNICIPALITY of NORTH MIDDLESEX

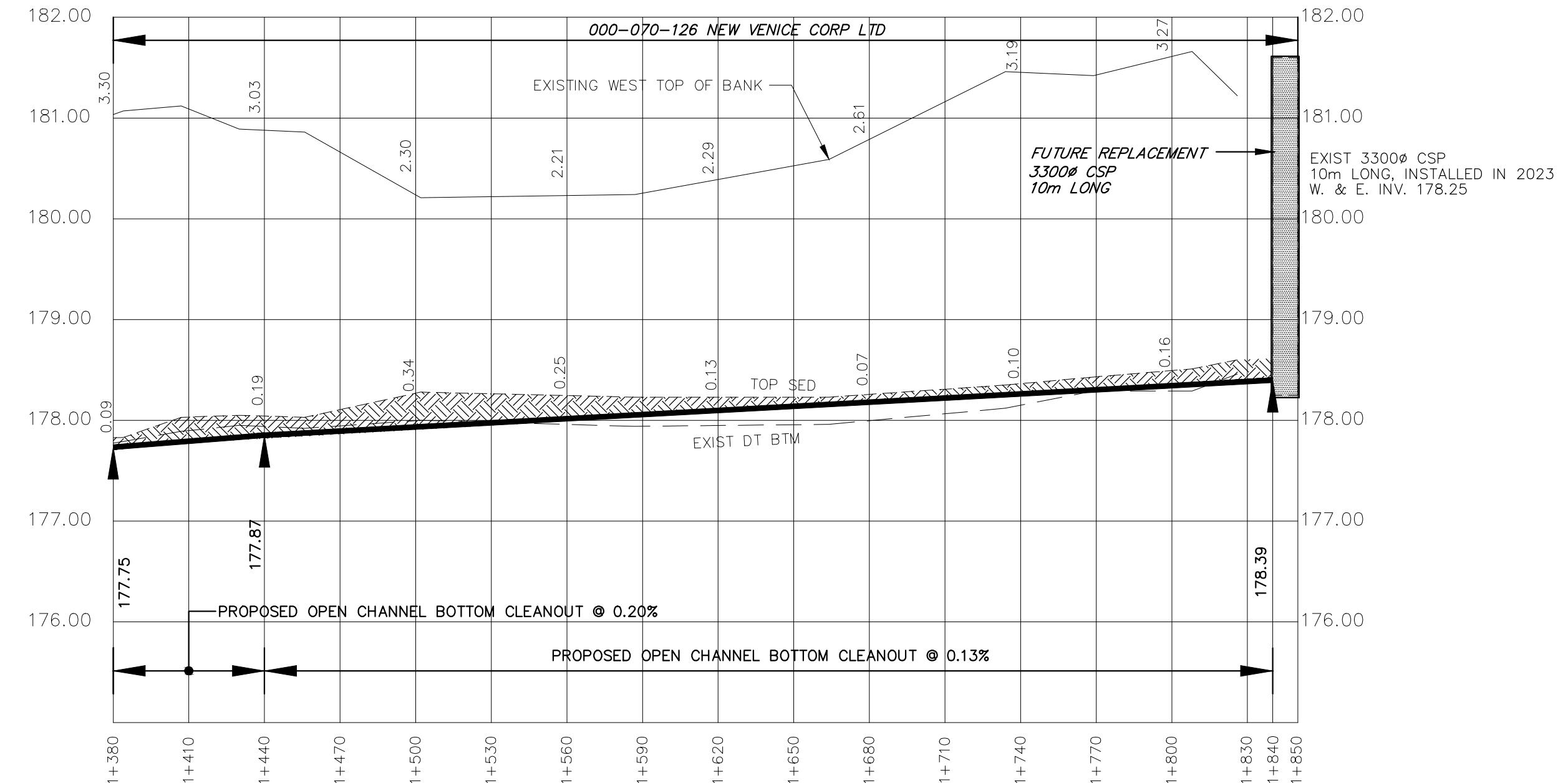
CANADA COMPANY DRAIN NORTH PROFILE

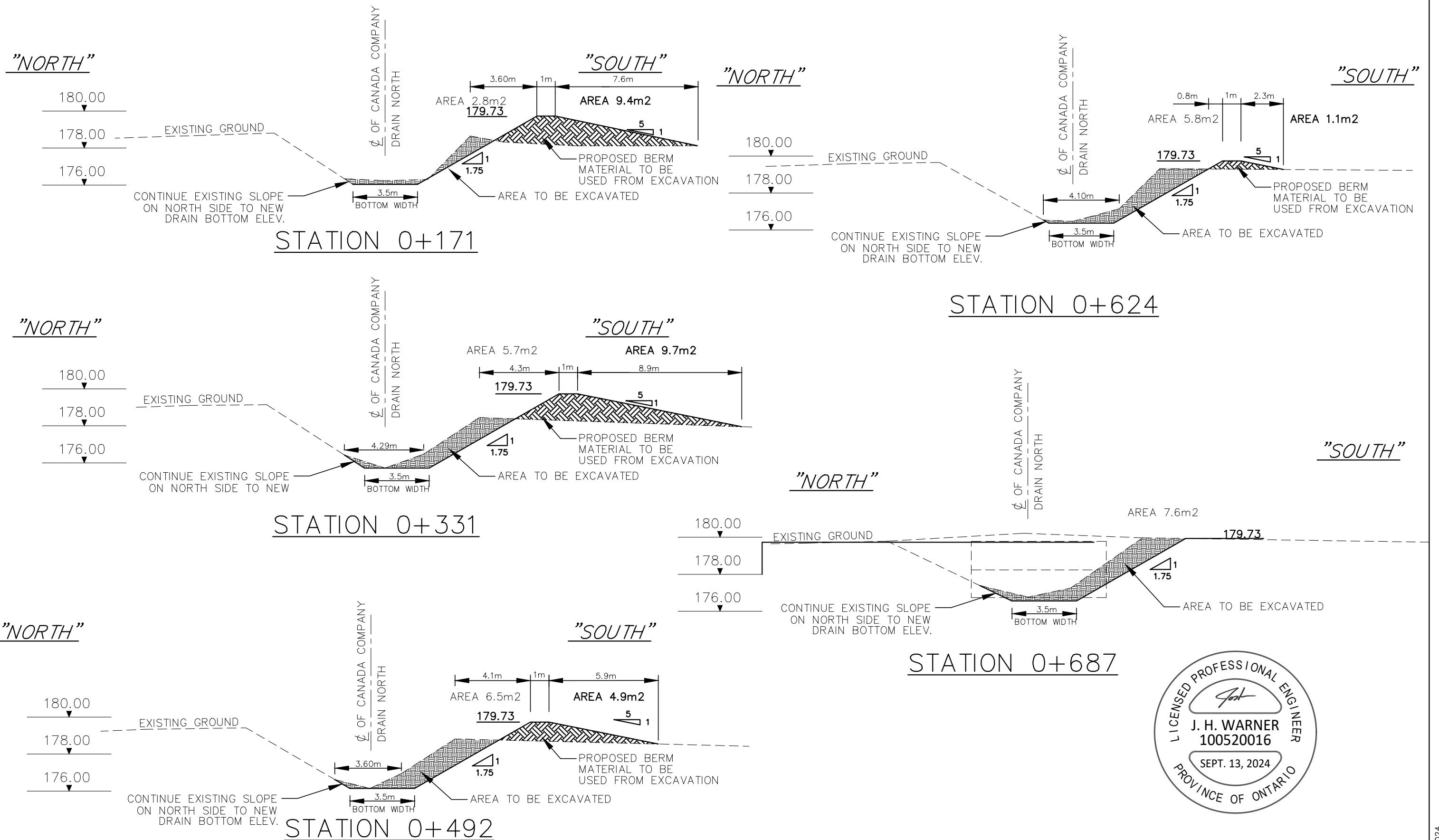
GENERAL NOTES

1. BENCHMARK No.2 ELEV. 181.595
TOP OF WEST END OF CSP AT
STATION 1+810
2. UPPER NUMBERS ARE DEPTH FROM EXISTING
WEST TOP OF BANK TO PROPOSED BOTTOM OF CHANNEL
3. LOWER NUMBERS ARE DEPTH FROM EXISTING
CHANNEL BOTTOM TO PROPOSED GRADE



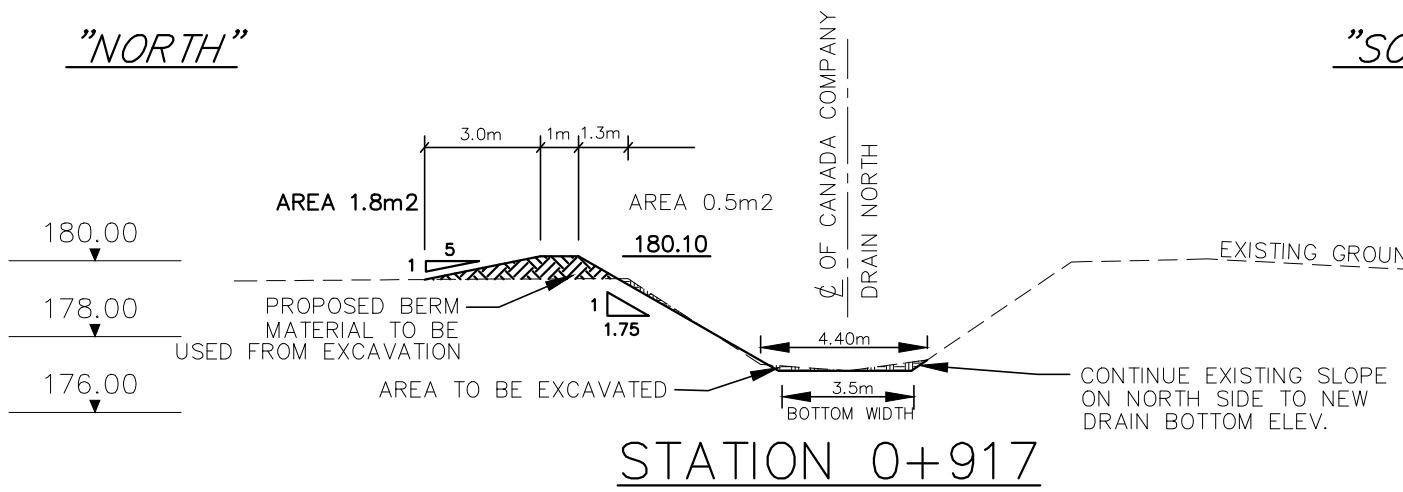
DRAIN EXCAVATION





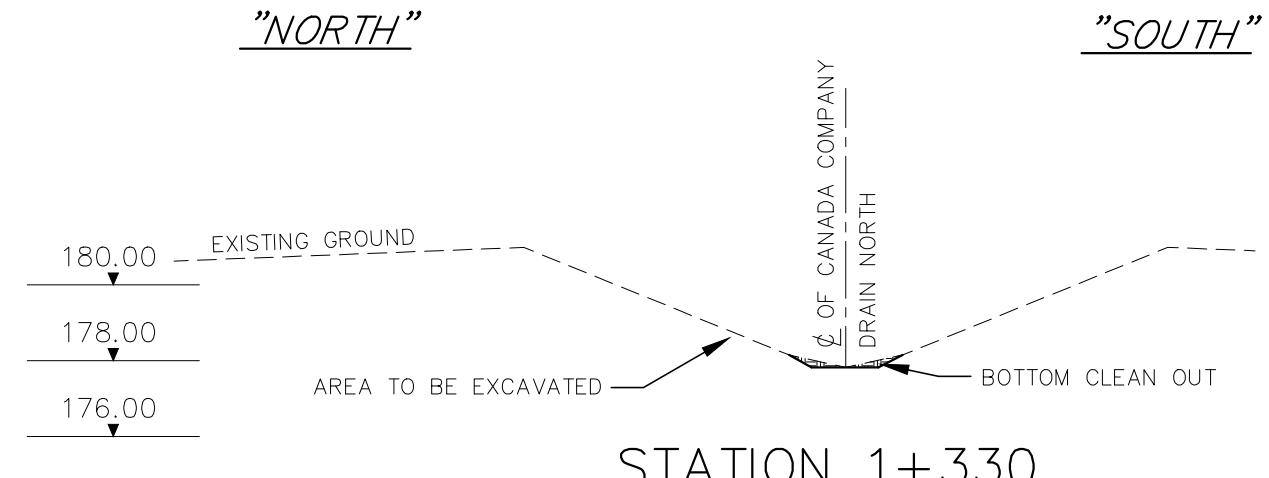
APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	SEPT. 13, 2024	CS
B. VAN RUITENBURG				
DRAWN		SCALE 1:200		
C. SAUNDERS		0 2 4 6m		

"NORTH"



"SOUTH"

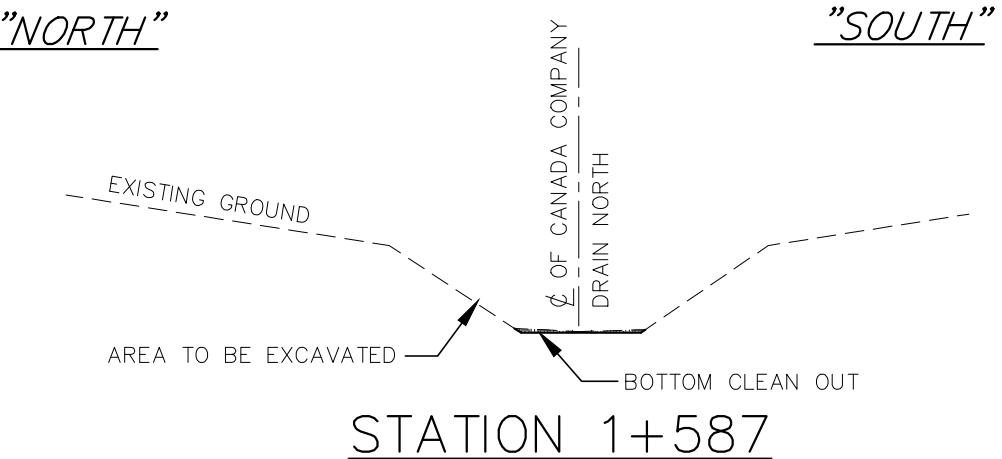
"NORTH"



"SOUTH"

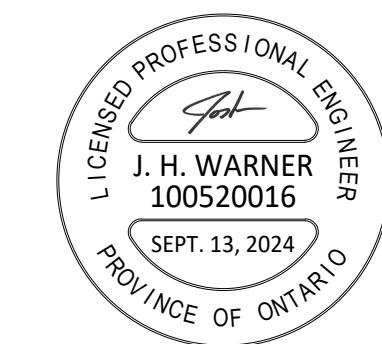
STATION 1+330

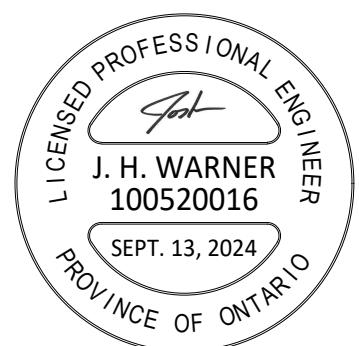
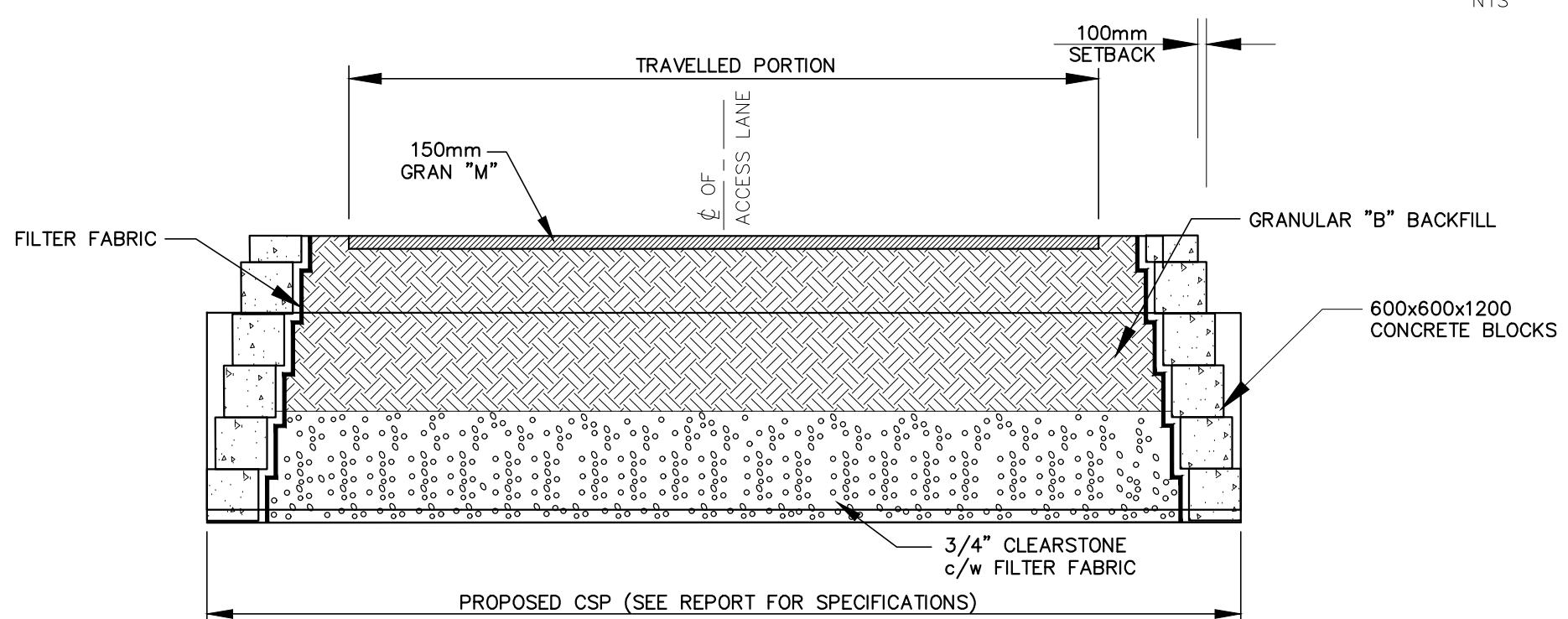
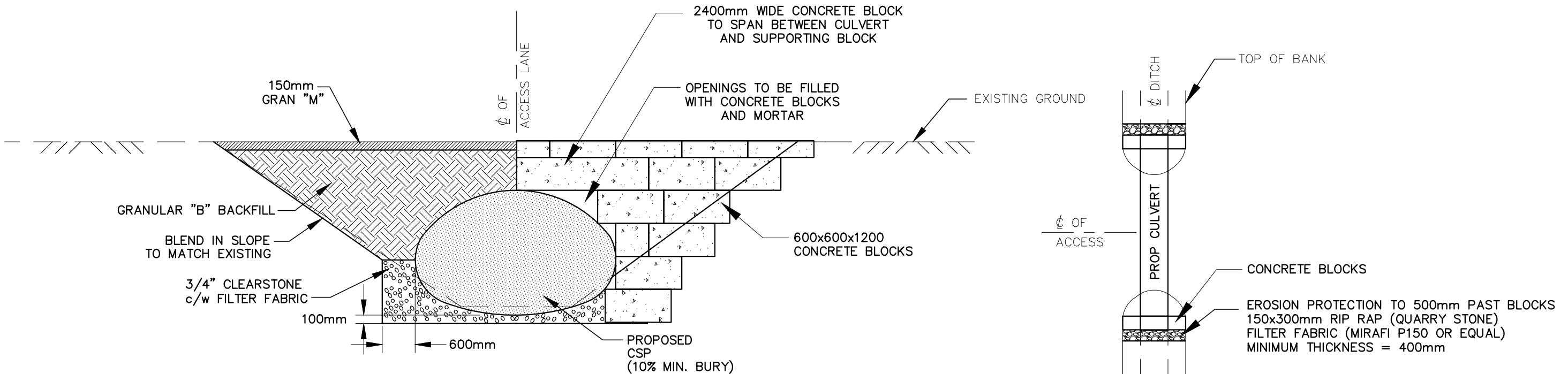
"NORTH"

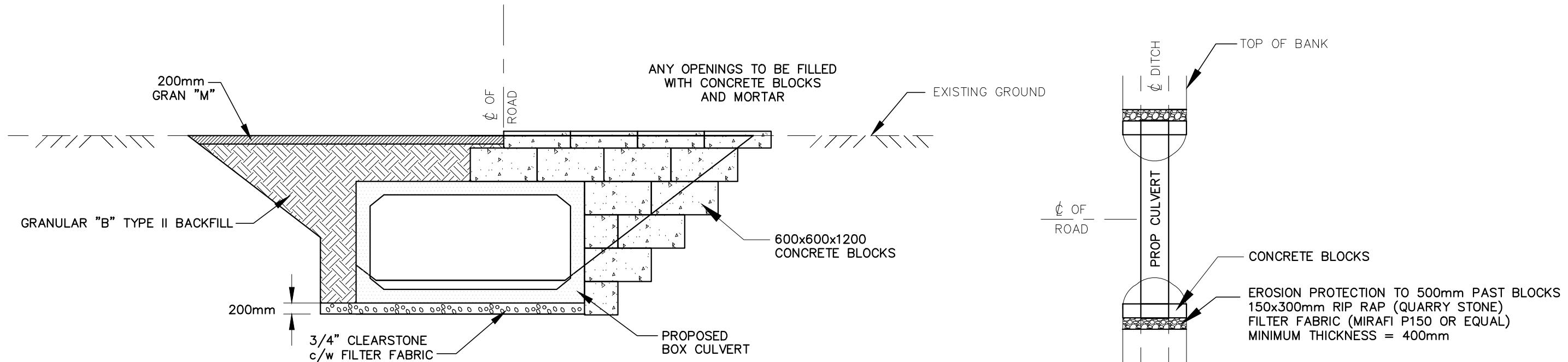


"SOUTH"

STATION 1+105



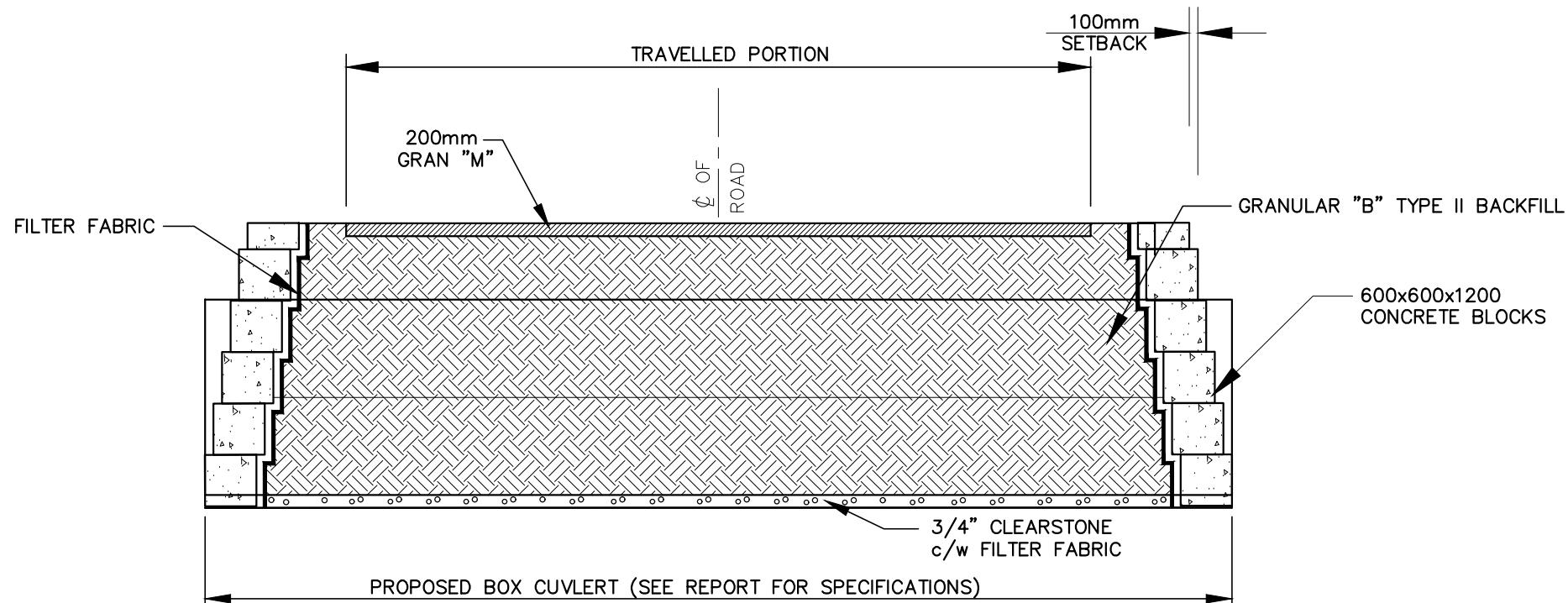




PROPOSED END SECTION

TYPICAL CULVERT PLAN

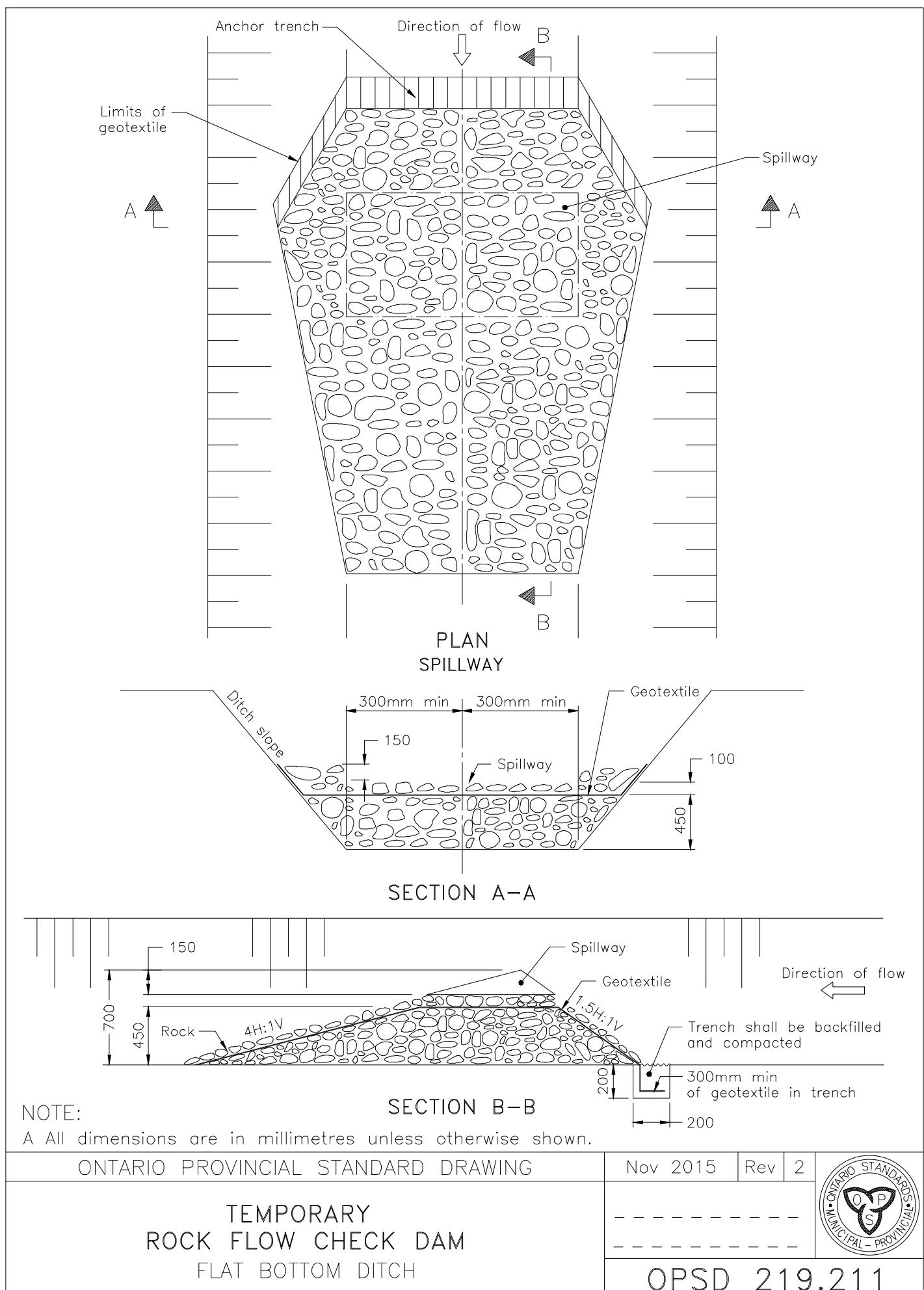
NTS



NOTE:

ALL BACKFILL COMPAKTED
TO 95% MODIFIED PROCTOR DENSITY

PROPOSED CROSS-SECTION



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

DRAWING NAME:
Canada Company Drain Detail

PROJECT No.
2023-1505

APPROVED J. WARNER	SCALE	PLAN	
		1:10,000	
CHECKED B. VAN RUITENBERG	NO.	REVISIONS	DATE
DRAWN J. WARNER	1	FINAL REPORT	SEPT. 13, 2024
	JW		

MUNICIPALITY of NORTH-MIDDLESEX
CANADA COMPANY DRAIN
DETAIL

9
OF 9