Dill Municipal Drain 2025

Municipality of Huron East

DIETRICH ENGINEERING LIMITED

CONSULTING ENGINEERS

Reference No. 2215 May 5, 2025

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DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS

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Kitchener, Ontario

May 5, 2025

Dill Municipal Drain 2025
Municipality of Huron East

To the Mayor and Council
of the Municipality of Huron East

Members of Council:

1.0 Introduction

We are pleased to present our report on the "Dill Municipal Drain 2025", serving the following Lots and Concessions in the Municipality of Huron East:

Tuckersmith Ward:

Parts of Lots 1 to 3, Concession 1 HRS

McKillop Ward:
Lots 11 to 17, Concession 1,
and Parts of Lots 11 to 14, Concession 2, and
Serving the following Lots and Concessions in the Municipality of West Perth.

Hibbert Ward:
Parts of Lots 29 & 30, Concession 1.

The attached Plans, Profile, and Detail Drawings No.'s 1 to 5 Reference No. 2215, Specifications and the Instructions to Tenderers form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.

2.0 Authorization

Authority to prepare this report was obtained by a resolution of the Municipality of Huron East Council at its April 5, 2022 meeting to appoint Dietrich Engineering Limited to prepare an Engineer's Report.

In accordance with your instructions pursuant to a request received by Council under Section 78 of the Drainage Act, R.S.O. 1990 for repairs and improvements to the Dill Municipal Drain, we have made an examination and survey of the affected area and submit herewith our Report which includes Plans, Profile and Specifications for this work.

3.0 History

1. The Dill Municipal Drain was originally constructed under Bylaw 79 of 1925 in accordance with a report prepared by John Roger, O.L.S.
2. Repairs and improvements were undertaken in accordance with a report by Roy Patterson, P. Eng. under By Law No. 8 of 1946.
3. E.H. Uderstadt Inc. submitted a report dated February 5, 1974. Under Bylaw No. 12-1974 the following repairs and improvements were undertaken. Approximately 11,818 feet of open drain was cleaned out from the outlet in Silver Creek (Lot 9, Concession 2 HRS) upstream to the property line between Lots 2 & 3, Concession 1 HRS. Approximately 2515 feet of 16" dia. to 21" dia. tile was installed in Lots 1 & 2, Concession 1 HRS.
4. R.J. Burnside and Associates submitted a report dated June 17, 1983 (Bylaw No. 29–1983) which included an extension of the Dill Municipal Drain upstream. The Main Drain was extended across Highway No. 8 by means of a 400mm O.D. steel casing by the Boring Method . Two (2) tile branches were installed in the Ept Lot 16, Concession 1 (McKillop Ward). Branch 'B' included the installation of 202 metres of 400mm dia. tile and Branch 'C' included the installation of 97 metres of 150mm dia. tile.

4.0 On-Site Meeting

In accordance with Section 9(1) of the Drainage Act, R.S.O. 1990, an on-site meeting was held on December 14, 2022. The place of meeting was at the Municipality of Huron East municipal office at 72 Main Street South in Seaforth. Persons in attendance were:

William J. Dietrich, P.Eng	Dietrich Engineering Limited	
Ken McCallum	Drainage Superintendent, Municipality of Huron East	
Steve Arnold	Ministry of Transportation of Ontario	
Landowners:		
Steward Bannerman	Paul Cronin	Matt Devereaux
Richard Haney	John Arts	Tim Devereaux
Keven Haney	Ray Chartrand	Matt Cronin

5.0 Information Meeting

An information meeting was held on April 4, 2025 at the Municipality of Huron East Municipal Office. Persons in attendance were:

William J. Dietrich, P.Eng	Dietrich Engineering Limited	
Kyle Morton	Dietrich Engineering Limited	
Ken McCallum	Drainage Superintendent, Municipality of Huron East	
Landowners:		
Kevin Haney	Paul Cronin	Maureen Harburn
Richard Haney	Matt Cronin	Stewart Bannerman
John Devereaux	John Dekroon	Jim Bannerman
John Arts	Kaleb Arts	Joel Krempien

The information provided proposed upgrading the Dill Municipal Drain in Lots 1 & 2, Concession 1 HRS (Tuckersmith Ward) and relocating and enclosing the open portion of the Dill Municipal Drain in the N pt. of 3, Concession 1 HRS (Tuckersmith Ward). This meeting provided a review of the design of the proposed drainage system, the estimated costs of the project and proposed assessments.

6.0 Findings

We have made an examination of the drainage area and have found the following:

1. The existing Dill Municipal Drain in Lots 1 & 2, Concession 1 HRS (Tuckersmith Ward) is not of sufficient capacity to drain the surrounding and upstream lands within the watershed at today's standards of drainage.
2. The landowner of the N pt of Lot 3, Concession 1 HRS (Tuckersmith Ward) has requested a relocation and enclosure of the existing open drain.

7.0 Recommendations

It is our recommendation that:

1. The drainage coefficient design standard used for this drain is 38mm of rainfall per 24 hours.
2. This new drainage system shall be known as the "Dill Municipal Drain 2025".
3. Main Drain (Enclosure) N pt Lot 3, Concession 1 HRS (Tuckersmith Ward):
   a) The existing open drain be filled in.
   b) 306 metres of 900mm dia. tile be installed and a ditch inlet catch basin at the property line between Lots 2 & 3, Concession 1 HRS.
4. Main Drain (Closed) Lots 1 & 2, Concession 1 HRS (Tuckersmith Ward):
   a) Install 751 metres of 675mm dia. to 750mm dia. tile
   b) Install 750 mm O.D. steel casing by the Boring Method across Highway No 8.
5. Main Drain (Open) N pt Lot 3, Concession 1 HRS (Tuckersmith Ward):
   a) Relocate and construct 125m of open ditch.
   b) Construct plunge pool, two (2) pools and riffles in the open drain and a pool and rip-rap protection in the open drain upstream of the Goderich Exeter Railroad.
   c) The Municipality of Huron East cleans out the Main Drain (Open) portion of the Dill Municipal Drain downstream of the Goderich-Exeter Railway under the maintenance program (Section 74 of the Drainage Act).

8.0 Environmental Considerations

The open portion of the Dill Municipal Drain has been classified as a 'C' Drain. An application to alter a watercourse for the repairs and improvements to the Dill Municipal Drain was submitted to the Ausable Bayfield Conservation Authority (ABCA) on January 3, 2023. A drain classification assessment report was prepared by Kari Jean, Aquatic Biologist (ABCA) dated July 2024. A copy is attached (Appendix A).

To mitigate the impact of fish habitat destruction associated with filling in the existing ditch, a series of offsetting measures were introduced in accordance with the Department of Fisheries and Oceans Canada guidelines. These measures aim to enhance and restore aquatic habitat functionality in the modified area. The proposed offsetting includes the installation of riffles along the bottom of the proposed ditch to improve water flow diversity and oxygenation, as well as the creation of a fish pool to provide refuge and feeding habitat. A natural tree line will be preserved to offer shade, regulate water temperature, and contribute to overall ecosystem health. A 2-metre-wide grass buffer strip will be planted along the ditch edge to reduce sediment runoff. Additionally, topsoil from the existing ditch will be transferred to the proposed ditch to preserve the native seed banks, then the banks will be hydro-seeded to stabilize soil and prevent erosion. Collectively, these measures are designed to maintain and support fish habitat despite the filling of the existing ditch.

A copy of the DFO letter dated April 15, 2025 is attached (Appendix B). The financing guarantee (Line of Credit) has been arranged with the Municipality of Huron East and sent to DFO for their acceptance.

9.0 Summary of Proposed Works

The proposed work consists of:

1. Approximately 125 metres of open ditch excavation;
2. Filling in approximately 400 metres of open ditch;
3. The installation of approximately 1057metres of 675mm to 900mm diameter concrete tile and HDPE pipes;
4. The installation of three (3) concrete catch basins and one (1) concrete junction box and one (1) concrete manhole; and
5. The installation of 30 metres of 750mm O.D. smooth wall steel casing by the Boring Method.

10.0 Working Area and Access

Each landowner on whose property the drainage work is to be constructed shall designate access to and from the working area.

10.1 Open Work

Main Drain (Open)

The working area shall be a width of twenty (20) metres for construction purposes, and a width of 10 metres for maintenance purposes on the side of the drain where the excavated material is to be placed and levelled.

10.2 Closed Work

Main Drain (Enclosure)

The working area shall be an average width of thirty (30) metres for construction purposes, and an average width of ten (10) metres for maintenance purposes along the alignment of the proposed tile drain.

The working area for backfilling the existing ditch in the N pt Lot 3, Concession 1 HRS shall be five (5) metres on both sides of the existing ditch.

Main Drain (Closed)

The working area shall be an average width of twenty-five (25) metres for construction purposes, and an average width of ten (10) metres for maintenance purposes along the alignment of the proposed tile drain.

11.0 Watershed and Soils Characteristics

The watershed was established through analysis of tile drainage maps, previous engineer's reports, field investigations, surveys, and data analysis of the Southwestern Ontario Orthophotographic Project (SWOOP).

The Drainage Area comprises of approximately 194 hectares. Land use within the watershed is primarily agricultural.

The Ontario Ministry of Agriculture, Food and Rural Affairs' Agricultural Information Atlas describes the soil types within the watershed and along the route of the drain as Brookston Clay Loam and Perth Clay Loam.

12.0 Allowances

In accordance with Sections 29 and 30 of the Drainage Act, R.S.O. 1990, we have calculated Allowances payable to Landowners using the following methodology.

12.1 Allowances for Right-of-Way (Section 29)

The agricultural land values used for calculating allowances for Right-of-Way was $50,000/ha.

Allowances for Right-of-Way were not provided in the previous Engineers' Reports, which authorized the construction of the existing Dill Municipal Drain.

12.1.1 Open Drain

The allowances for Right-of-Way under Section 29 of the Drainage Act, R.S.O. 1990 were calculated based on 100% of the land value for the average proposed top width of the new open ditch plus a ten (10) metre working width for future maintenance purposes based on 25% of the land value.

12.1.2 Closed Drain

The allowances for Right-of-Way under Section 29 of the Drainage Act, R.S.O. 1990 for closed drains were calculated based on 25% of the land value for a ten (10) metre Right-of-Way.

12.2 Allowances for Damages to Lands and Crops (Section 30)

Allowances for Damages to Lands and Crops under Section 30 of the Drainage Act, R.S.O. 1990 were primarily calculated to compensate landowners for crop losses, bush losses and land damages due to the construction of the drain, including access to the working corridor.

We determined the allowances payable to Landowners entitled thereto as shown in Schedule A.

Total Allowances, under Sections 29 and 30 of the Drainage Act, R.S.O. 1990;

Dill Municipal Drain 2025: **$32,325**

13.0 Estimated Construction Costs

We have made an estimate of the cost of the proposed work based on labour, equipment and materials. A detailed description of the costs involved can be found in Schedule B of this report.

The total estimated construction costs for this project are as follows:

A) Total Estimated Construction Costs – Main Drain (Closed)	$ 185,720
B) Total Estimated Construction Costs – Main Drain (Enclosure)	$ 110,700
C) Total Estimated Construction Costs – Main Drain (Open)	$ 40,900
Total Estimated Construction Costs	**$ 337,320**

14.0 Summary of Estimated Project Costs

The total estimated project costs are as follows:

Allowances under Sections 29 and 30 of the Drainage Act, R.S.O. 1990 (Refer to Schedule A)	$ 32,325
Total Estimated Construction Costs (Refer to Schedule B)	$ 337,320
Meetings, survey, design, preparation of preliminary cost estimates, preparation of final drainage report, consideration of report and attendance at the Court of Revision (if necessary)	$ 59,700
Soils Investigation (geotechnical engineering report)	$ 55,000
Consultation with Environmental Agencies encroachment permit	$ 10,000
Preparation of contract documents, contract administration, supervision and inspection of construction	$ 40,500
Contingencies, Interest and net H.S.T.	$ 14,955
TOTAL ESTIMATED PROJECT COSTS – Dill Municipal Drain 2025	**$ 549,800**

The estimated cost of the work in the Municipality of Huron East is $549,800.

The above costs are estimates only. The final costs of construction, engineering and administration cannot be determined until construction is completed.

The above cost estimate does not include costs associated with defending the drainage report should appeals be filed with the Court of Revision Drainage Tribunal and/or Drainage Referee.

15.0 Assessment

We assess the cost of this work against the lands and roads liable for assessment for benefit and outlet liability as shown in the annexed Schedule C - Assessment for Construction. We have determined that there is no injuring liability assessment involved.

15.1 Special Assessments (Section 26)

Whether or not the Ministry of Transportation elects to do the work on their property Highway No. 8, Sta. 1+182 to Sta. 1+212, (Main Drain Closed) they shall be assessed the actual increased costs to the

drainage works due to the construction and operation of the road as a Special Assessment in addition to any benefit and outlet assessments. The Special Assessment shall be made up of the actual construction costs plus an allowance for administration costs. This assessment is non-proratable.

16.0 Maintenance

After completion, this drain shall be maintained by the Municipality of Huron East at the expense of all the lands and roads assessed in the attached Schedule D - Assessment for Maintenance and in the same relative proportions until such time as the assessment is changed under the Drainage Act, except for those portions of the drain constructed within road right-of-ways. These portions of the drain shall be maintained at the expense of the road authority having jurisdiction over said road.

Respectfully submitted,

DIETRICH ENGINEERING LIMITED

W. J. Dietrich, P.Eng.

WJD:er

Schedule A - Allowances

Lot or Part	Con.	Landowner	Roll No.	Right-of-Way (Section 29)	Damages to Lands and Crops (Section 30)	Total Allowances
Dill Municipal Drain 2025 - Main Drain (Closed)						
Municipality of Huron East						
Tuckersmith Ward						
E1/2 1	1 HRS	J. Devereaux	1-001	$850	$1,180	$2,030
W1/2 1	1 HRS	E. Devereaux	1-002	$3,025	$2,920	$5,945
2	1 HRS	Arts Farms Ltd.	1-003	$5,520	$4,910	$10,430
McKillop Ward						
E1/2 16	1	J. Devereaux	1-043		$500	$500
Total Allowances Dill Municipal Drain 2025 - Main Drain (Closed)				**$9,395**	**$9,510**	**$18,905**
Dill Municipal Drain 2025 - Main Drain (Enclosure)						
Municipality of Huron East						
Tuckersmith Ward						
Npt3	1 HRS	K. Haney	1-005		$4,670	$4,670
Total Allowances Dill Municipal Drain 2025 - Main Drain (Enclosure)					**$4,670**	**$4,670**
Dill Municipal Drain 2025 - Main Drain (Open)						
Municipality of Huron East						
Tuckersmith Ward						
Npt 3	1 HRS	K. Haney	1-005	$7,750	$1,000	$8,750
Total Allowances Dill Municipal Drain 2025 - Main Drain (Open)				**$7,750**	**$1,000**	**$8,750**
Total Allowances Dill Municipal Drain 2025				**$17,145**	**$15,180**	**$32,325**

Schedule B - Estimated Construction Costs

The estimated construction costs for the outlined proposed work below is as follows:

	Description	Estimated Quantity		$/Unit	Total
A) Main Drain (Closed)					
1	Supply 750mm diameter concrete field tile (2000 D)	441	m	$95.00	$41,895.00
	Installation (Sta. 0+431 to Sta. 0+872)	441	m	$45.00	$19,845.00
2	Supply 675mm diameter concrete field tile (2000 D)	298	m	$80.00	$23,840.00
	Installation (Sta. 0+872 to Sta. 0+170)	298	m	$40.00	$11,920.00
3	Supply 750mm diameter HDPE pipe	12	m	$300.00	$3,600.00
	Installation (Sta. 0+170 to Sta. 0+182)	12	m	$80.00	$960.00
4	Supply and install 900mm X 2100mm concrete ditch inlet catch basin at Sta.0+431 (inline type)	1	ea		$6,000.00
5	Supply and install 900mm X 1200mm concrete ditch inlet catch basin at Sta. 0+872 (inline type)				$4,500.00
6	Supply 450mm diameter HDPE pipe	6	m	$100.00	$600.00
	Installation (catch basin connection at Sta 0+872)		l.s.		$500.00
7	Tile connections		l.s.		$3,060.00
8	Provisional Items				

A Provisional Item is an item that may or may not be required as a part of the Contract. The decision as to whether a Provisional Item will form part of the Contract will be at the discretion of the engineer at time of construction. Payment for Provisional Items will only be made for work authorized in writing (text or email) by the Engineer. Payment for work performed under a Provisional Item shall be based on the Unit Price bid in the Scope of Work below.

Additional costs associated with installation of tile drain on 19mm diameter crushed clear stone bedding. This includes the supply and placement of all stone, labour and equipment required for installation in accordance with Typical Pipe Installation on Stone Bedding Detail.

Description	Estimated Quantity		$/Unit	Total
675mm diameter concrete field tile	60	m	$40.00	$2,400.00
750mm diameter concrete field tile	100	m	$45.00	$4,500.00

Sub Total	**$123,620.00**

	Description	Estimated Quantity		$/Unit	Total
9	Work to be done to the Ministry of Transportation Road Allowance, Highway No. 8 (Sta. 1+182 to Sta. 1+212)				
a)	Supply 750mm O.D. smooth wall steel casing, 9.53mm wall thickness	30	m	$550.00	$16,500.00
	Installation by jack & bore method	30	m	$800.00	$24,000.00
	Installation (Sta. 1+182 to Sta. 1+212)				
b)	Supply and install 1500mm diameter. concrete manhole at Sta. 1+212	1	ea	$7,000.00	$7,000.00
c)	Supply 900mm x 1800mm concrete junction box at Sta. 1+170	1	ea	$4,000.00	$4,000.00
d)	Supply and install 900mm x 1200mm o/s concrete ditch inlet catchbasin at Sta. 1+182		l.s.		$4,000.00
	Supply 600mm diameter HDPE pipe	15	m	$150.00	$2,250.00
	Supply and install 45° 600mm diameter HDPE elbow	1	ea	$650.00	$650.00
	Install 600mm diameter HDPE pipe (DICB connection to junction box at Sta. 1+170)		l.s.		$1,500.00
e)	Supply 450mm diameter HDPE pipe	12	m	100	$1,200.00
	Install 450mm diameter HDPE pipe (connect existing junction box to manhole at Sta. 1+212)		l.s.		$1,000.00
Sub Total					**$62,100.00**
Total Estimated Construction Costs Main Drain (Closed)					**$185,720.00**
B) Main Drain (Enclosure)					
1	Supply 900mm diameter HDPE outlet pipe complete with rodent grate	6	m	$400.00	$2,400.00
	Installation (Sta. 0+125 to Sta. 0+132)		l.s.		$1,000.00
2	Supply 900mm diameter concrete field tile (2400 D)	299	m	$180.00	$53,820.00
	Installation (Sta. 0+132 to Sta. 0+431)	299	m	$100.00	$29,900.00
3	Supply and install 45° 900mm diameter HDPE elbow	1	ea	$1,000.00	$1,000.00
4	Tile connections		l.s.		$2,080.00
5	Backfill existing ditch (400m)				
a)	Clearing		l.s.		$3,000.00
b)	Stripping Topsoil	400	m	$10.00	$4,000.00

Description	Estimated Quantity	$/Unit	Total
c) Import fill (3,000 m^3) by property owner (Roll No. 1-005)	l.s.		$7,500.00
d) Back filll ditch (includes bulldozing in existing spoil imported fill and spreading topsoil)	400 m	$15.00	$6,000.00
Total Estimated Construction Costs Main Drain (Enclosure)			**$110,700.00**
C) Main Drain (Open)			
1 Open ditch excavation Sta. 0+000 to Sta. 0+125	1,200 m^3	$10.00	$12,000.00
2 Hydroseed side slopes and buffer strips (approx. 1500 m^2)	1,500 m^2	$3.00	$4,500.00
3 Haul excavated material	1,200 m^3	$7.00	$8,400.00
4 Supply and install quarry stone rip-rap lined plunge pool at Sta. 0+125 including geotextile filter material (Mirafi 180N or approved equivalent) (approx. 50 m^2)	l.s.		$5,000.00
5 Supply and place quarry stone rip-rap protection and geo textile filter material (overflow spill way) including constructing pond and placing river rock Sta. 0+000 to Sta. 0+030	100 m^2	$90.00	$9,000.00
6 Construct pools and riffles (including placing rock) at Sta 0+009 and Sta 0+065	l.s.		$2,000.00
Total Estimated Construction Costs Main Drain (Open)			**$40,900.00**
TOTAL ESTIMATED CONSTRUCTION COSTS DILL MUNICIPAL DRAIN 2025			**$337,320.00**

Summary of Construction Costs

A)	Total Estimated Construction CostsMain Drain (Closed)	$185,720.00
B)	Total Estimated Construction CostsMain Drain (Enclosure)	$110,700.00
C)	Total Estimated Construction CostsMain Drain (Open)	$40,900.00
TOTAL ESTIMATED CONSTRUCTION COSTS DILL MUNICIPAL DRAIN 2025		**$337,320.00**

Schedule C - Assessment For Construction

TOTAL ASSESSMENT - MAIN DRAIN (CLOSED)											
Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Special Assessment (Sec. 26)	Total Assessment	Less 1/3 Gov't Grant	Less Allowances	Net Assessment
Municipality of Huron East											
Tuckersmith Ward											
E1/2 1	1 HRS	J. Devereaux	1-001	10.1	$10,400	$4,318		$14,718	$4,906	$2,030	$7,782
W1/2 1	1 HRS	E. Devereaux	1-002	10.1	$26,400	$3,599		$29,999	$10,000	$5,945	$14,054
2	1 HRS	Arts Farms Ltd.	1-003	18.2	$53,300	$3,455		$56,755	$18,918	$10,430	$27,407
Total Assessment on Lands					$90,100	$11,372		$101,472	$33,824	$18,405	$49,243
Road 183		Municipality of Huron East		0.4		$518		$518			$518
Total Assessment on Roads						$518		$518			$518
Municipality of Huron East											
Mckillop Ward											
11	1	N. Murray	1-035	0.81		$384		$384	$128		$256
12	1	Arts Farms Ltd.	1-037	8.50		$3,263		$3,263	$1,088		$2,175
13	1	Cronin Pork Ltd.	1-038	16.19		$7,677		$7,677	$2,559		$5,118
14 E1/2 15	1	S. Cronin	1-039	48.16		$22,648		$22,648	$7,549		$15,099
* Pt. E1/2 15	1	M. Harburn	1-040	0.83		$395		$395			$395
* Pt. E1/2 15	1	C. Peters	1-040-01	0.75		$357		$357			$357
* S Pt. W1/2 15	1	J. Krempien	1-041	1.59		$756		$756			$756
N Pt. W1/2 15	1	Cronin Farms Ltd.	1-042	8.50		$4,031		$4,031	$1,344		$2,687
E1/2 16	1	J. Devereaux	1-043	6.47		$3,071		$3,071	$1,024	$500	$1,547
W1/2 16	1	T. Devereaux	1-044	3.64		$1,248		$1,248	$416		$832
17	1	Arts Farms Ltd.	1-046	1.21		$576		$576	$192		$384
11	2	W. Murray	2-018	2.83		$1,344		$1,344	$448		$896
12	2	G. O'Reilly	2-019	10.12		$4,798		$4,798	$1,599		$3,199
13	2	Arts Farms Ltd.	2-020	10.12		$4,798		$4,798	$1,599		$3,199
14	2	Cronin Farms Ltd.	2-022	1.21		$576		$576	$192		$384
Total Assessment on Lands						$55,922		$55,922	$18,138	$500	$37,284

Schedule C - Assessment For Construction

TOTAL ASSESSMENT - MAIN DRAIN (CLOSED)											
Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Special Assessment (Sec. 26)	Total Assessment	Less 1/3 Gov't Grant	Less Allowances	Net Assessment
Maple Line		Municipality of Huron East		0.8		$1,152		$1,152			$1,152
Highway 8		Province of Ontario		3.6	$27,500	$8,637	$132,000	$168,137			$168,137
Total Assessment on Roads					$27,500	$9,789	$132,000	$169,289			$169,289
Municipality of West Perth											
Hibbert Ward											
29	1	Dekroon Farms Ltd.	2-90	0.4		$171		$171	$57		$114
30	1	K. Murphy	3-00	14.6		$6,910		$6,910	$2,303		$4,607
Total Assessment on Lands						$7,081		$7,081	$2,360		$4,721
Road 183		Municipality of West Perth		0.4		$518		$518			$518
Total Assessment on Roads						$518		$518			$518
Total Assessment on Lands and Roads Dill Municipal Drain 2025, Main Drain (Closed)					**$117,600**	**$85,200**	**$132,000**	**$334,800**	**$54,322**	**$18,905**	**$261,573**

NOTES:

1. * Denotes lands not eligible for ADIP grants.
2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.
3. The NET ASSESSMENT is provided for information purposes only.

Schedule C - Assessment For Construction

TOTAL ASSESSMENT - MAIN DRAIN (ENCLOSURE)									
Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Total Assessment	Less Allowances	Net Assessment
Municipality of Huron East									
Tuckersmith Ward									
E1/2 1	1 HRS	J. Devereaux	1-001	10.12		$608	$608		$608
W1/2 1	1 HRS	E. Devereaux	1-002	10.12		$608	$608		$608
2	1 HRS	Arts Farms Ltd.	1-003	18.21		$1,094	$1,094		$1,094
3	1 HRS	K. Haney	1-005	13.35	$141,100	$122	$141,222	$4,670	$136,552
Total Assessment on Lands					$141,100	$2,432	$143,532	$4,670	$138,862
Road 183		Municipality of Huron East		0.4		$73	$73		$73
Total Assessment on Roads						$73	$73		$73
Municipality of Huron East									
Mckillop Ward									
11	1	N. Murray	1-035	0.81		$49	$49		$49
12	1	Arts Farms Ltd.	1-037	8.50		$413	$413		$413
13	1	Cronin Pork Ltd.	1-038	16.19		$973	$973		$973
14 E1/2 15	1	S. Cronin	1-039	48.16		$2,869	$2,869		$2,869
* Pt. E1/2 15	1	M. Harburn	1-040	0.83		$50	$50		$50
* Pt. E1/2 15	1	C. Peters	1-040-01	0.75		$45	$45		$45
* S Pt. W1/2 15	1	J. Krempien	1-041	1.59		$96	$96		$96
N Pt. W1/2 15	1	Cronin Farms Ltd.	1-042	8.50		$511	$511		$511
E1/2 16	1	J. Devereaux	1-043	6.47		$389	$389		$389
W1/2 16	1	T. Devereaux	1-044	3.64		$158	$158		$158
17	1	Arts Farms Ltd.	1-046	1.21		$73	$73		$73
11	2	W. Murray	2-018	2.83		$170	$170		$170
12	2	G. O'Reilly	2-019	10.12		$608	$608		$608
13	2	Arts Farms Ltd.	2-020	10.12		$608	$608		$608
14	2	Cronin Farms Ltd.	2-022	1.21		$73	$73		$73
Total Assessment on Lands					$141,100	$7,085	$7,085		$7,085

Schedule C - Assessment For Construction

TOTAL ASSESSMENT - MAIN DRAIN (ENCLOSURE)									
Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Total Assessment	Less Allowances	Net Assessment
Maple Line		Municipality of Huron East		0.8		$146	$146		$146
Highway 8		Province of Ontario		3.6		$1,094	$1,094		$1,094
Total Assessment on Roads						$1,240	$1,240		$1,240
Municipality of West Perth									
Hibbert Ward									
29	1	Dekroon Farms Ltd.	2-90	0.4		$24	$24		$24
30	1	K. Murphy	3-00	16.2		$973	$973		$973
Total Assessment on Lands						$997	$997		$997
Road 183		Municipality of West Perth		0.4		$73	$73		$73
Total Assessment on Roads						$73	$73		$73
Total Assessment on Lands and Roads Dill Municipal Drain 2025, Main Drain Enclosure					**$141,100**	**$11,900**	**$153,000**	**$4,670**	**$148,330**

NOTES:

1. All the above lands are not eligible for ADIP grants.
2. The NET ASSESSMENT is the total estimated assessment less allowances, if applicable.
3. The NET ASSESSMENT is provided for information purposes only.

Schedule C - Assessment For Construction

TOTAL ASSESSMENT - MAIN DRAIN (OPEN)										
Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Total Assessment	Less 1/3 Gov't Grant	Less Allowances	Net Assessment
Municipality of Huron East										
Tuckersmith Ward										
E1/2 1	1 HRS	J. Devereaux	1-001	10.12		$470	$470	$157		$313
W1/2 1	1 HRS	E. Devereaux	1-002	10.12		$470	$470	$157		$313
2	1 HRS	Arts Farms Ltd.	1-003	18.21		$846	$846	$282		$564
3	1 HRS	K. Haney	1-005	13.35	$52,800	$94	$52,894	$17,631	$8,750	$26,513
Total Assessment on Lands					$52,800	$1,880	$54,680	$18,227	$8,750	$27,703
Road 183		Municipality of Huron East		0.4		$56	$56			$56
Total Assessment on Roads						$56	$56			$56
Municipality of Huron East										
Mckillop Ward										
11	1	N. Murray	1-035	0.81		$38	$38	$13		$25
12	1	Arts Farms Ltd.	1-037	8.50		$320	$320	$107		$213
13	1	Cronin Pork Ltd.	1-038	16.19		$752	$752	$251		$501
14 E1/2 15	1	S. Cronin	1-039	48.16		$2,218	$2,218	$739		$1,479
* Pt. E1/2 15	1	M. Harburn	1-040	0.83		$39	$39			$39
* Pt. E1/2 15	1	C. Peters	1-040-01	0.75		$35	$35			$35
* S Pt. W1/2 15	1	J. Krempien	1-041	1.59		$74	$74			$74
N Pt. W1/2 15	1	Cronin Farms Ltd.	1-042	8.50		$395	$395	$132		$263
E1/2 16	1	J. Devereaux	1-043	6.47		$301	$301	$100		$201
W1/2 16	1	T. Devereaux	1-044	3.64		$122	$122	$41		$81
17	1	Arts Farms Ltd.	1-046	1.21		$56	$56	$19		$37
11	2	W. Murray	2-018	2.83		$132	$132	$44		$88
12	2	G. O'Reilly	2-019	10.12		$470	$470	$157		$313
13	2	Arts Farms Ltd.	2-020	10.12		$470	$470	$157		$313
14	2	Cronin Farms Ltd.	2-022	1.21		$56	$56	$19		$37
Total Assessment on Lands					$52,800	$5,478	$5,478	$1,779		$3,699

Schedule C - Assessment For Construction

TOTAL ASSESSMENT - MAIN DRAIN (OPEN)										
Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Total Assessment	Less 1/3 Gov't Grant	Less Allowances	Net Assessment
Maple Line		Municipality of Huron East		0.8		$113	$113			$113
Highway 8		Province of Ontario		3.6		$846	$846			$846
Total Assessment on Roads						$959	$959			$959
Municipality of West Perth										
Hibbert Ward										
29	1	Dekroon Farms Ltd.	2-90	0.4		$19	$19	$6		$13
30	1	K. Murphy	3-00	16.2		$752	$752	$251		$501
Total Assessment on Lands						$771	$771	$257		$514
Road 183		Municipality of West Perth		0.4		$56	$56			$56
Total Assessment on Roads						$56	$56			$56
Total Assessment on Lands and Roads Dill Municipal Drain 2025, Main Drain (Open)					**$52,800**	**$9,200**	**$62,000**	**$20,263**	**$8,750**	**$32,987**

NOTES:

1. * Denotes lands not eligible for ADIP grants.
2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.
3. The NET ASSESSMENT is provided for information purposes only.

Schedule C - Assessment For Construction

				TOTAL ASSESSMENT						
Lot or Part	Con.	Landowner	Roll No.	Main Drain (Closed)	Main Drain (Enclosure)	Main Drain (Open)	Total Assessment	Less 1/3 Gov't Grant	Less Allowances	Net Assessment
Municipality of Huron East										
Tuckersmith Ward										
E1/2 1	1 HRS	J. Devereaux	1-001	$14,718	$608	$470	$15,796	$5,063	$2,030	$8,703
W1/2 1	1 HRS	E. Devereaux	1-002	$29,999	$608	$470	$31,077	$10,157	$5,945	$14,975
2	1 HRS	Arts Farms Ltd.	1-003	$56,755	$1,094	$846	$58,695	$19,200	$10,430	$29,065
3	1 HRS	K. Haney	1-005		$141,222	$52,894	$194,116	$17,631	$13,420	$163,065
Total Assessment on Lands				$101,472	$143,532	$54,680	$299,684	$52,051	$31,825	$215,808
Road 183		Municipality of Huron East		$518	$73	$56	$647			$647
Total Assessment on Roads				$518	$73	$56	$647			$647
Municipality of Huron East										
Mckillop Ward										
11	1	N. Murray	1-035	$384	$49	$38	$471	$141		$330
12	1	Arts Farms Ltd.	1-037	$3,263	$413	$320	$3,996	$1,195		$2,801
13	1	Cronin Pork Ltd.	1-038	$7,677	$973	$752	$9,402	$2,810		$6,592
14 E1/2 15	1	S. Cronin	1-039	$22,648	$2,869	$2,218	$27,735	$8,288		$19,447
* Pt. E1/2 15	1	M. Harburn	1-040	$395	$50	$39	$484			$484
* Pt. E1/2 15	1	C. Peters	1-040-01	$357	$45	$35	$437			$437
* S Pt. W1/2 15	1	J. Krempien	1-041	$756	$96	$74	$926			$926
N Pt. W1/2 15	1	Cronin Farms Ltd.	1-042	$4,031	$511	$395	$4,937	$1,476		$3,461
E1/2 16	1	J. Devereaux	1-043	$3,071	$389	$301	$3,761	$1,124	$500	$2,137
W1/2 16	1	T. Devereaux	1-044	$1,248	$158	$122	$1,528	$457		$1,071
17	1	Arts Farms Ltd.	1-046	$576	$73	$56	$705	$211		$494
11	2	W. Murray	2-018	$1,344	$170	$132	$1,646	$492		$1,154
12	2	G. O'Reilly	2-019	$4,798	$608	$470	$5,876	$1,756		$4,120
13	2	Arts Farms Ltd.	2-020	$4,798	$608	$470	$5,876	$1,756		$4,120
14	2	Cronin Farms Ltd.	2-022	$576	$73	$56	$705	$211		$494
Total Assessment on Lands				$55,922	$7,085	$5,478	$68,485	$19,917		$48,068

Schedule C - Assessment For Construction

TOTAL ASSESSMENT										
Lot or Part	Con.	Landowner	Roll No.	Main Drain (Closed)	Main Drain (Enclosure)	Main Drain (Open)	Total Assessment	Less 1/3 Gov't Grant	Less Allowances	Net Assessment
Maple Line		Municipality of Huron East		$1,152	$146	$113	$1,411			$1,411
Highway 8		Province of Ontario		$168,137	$1,094	$846	$170,077			$170,077
Total Assessment on Roads				$169,289	$1,240	$959	$171,488			$171,488
Municipality of West Perth										
Hibbert Ward										
29	1	Dekroon Farms Ltd.	2-90	$171	$24	$19	$214	$63		$151
30	1	K. Murphy	3-00	$6,910	$973	$752	$8,635	$2,554		$6,081
Total Assessment on Lands				$7,081	$997	$771	$8,849	$2,617		$6,232
Road 183		Municipality of West Perth		$518	$73	$56	$647			$647
Total Assessment on Roads				$518	$73	$56	$647			$647
Total Assessment on Lands and Roads Dill Municipal Drain 2025, Main Drain (Open)				**$334,800**	**$153,000**	**$62,000**	**$549,800**	**$74,585**	**$32,325**	**$442,890**

NOTES:

1. * Denotes lands not eligible for ADIP grants.
2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.
3. The NET ASSESSMENT is provided for information purposes only.

Schedule D - Assessment For Maintenance

	Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
	Main Drain (Closed)					
	Tuckersmith Ward					
	E1/2 1	1 HRS	J. Devereaux	1-001	10.10	5.16%
	W1/2 1	1 HRS	E. Devereaux	1-002	10.10	5.16%
	2	1 HRS	Arts Farms Ltd.	1-003	18.20	9.29%
	Total Assessment on Lands					**19.6%**
	Road 183		Municipality of Huron East		0.40	0.62%
	Total Assessment on Roads					**0.62%**
	McKillop Ward					
	11	1	N. Murray	1-035	0.81	0.41%
	12	1	Arts Farms Ltd.	1-037	8.50	3.51%
	13	1	Cronin Pork Ltd.	1-038	16.19	8.26%
	14 E1/2 15	1	S. Cronin	1-039	48.16	24.36%
*	Pt. E1/2 15	1	M. Harburn	1-040	0.83	0.43%
*	Pt. E1/2 15	1	C. Peters	1-040-01	0.75	0.38%
*	S Pt. W1/2 15	1	J. Krempien	1-041	1.59	0.81%
	N Pt. W1/2 15	1	Cronin Farms Ltd.	1-042	8.50	4.34%
	E1/2 16	1	J. Devereaux	1-043	6.47	3.30%
	W1/2 16	1	T. Devereaux	1-044	3.64	1.34%
	17	1	Arts Farms Ltd.	1-046	1.21	0.62%
	11	2	W. Murray	2-018	2.83	1.45%
	12	2	G. O'Reilly	2-019	10.12	5.16%
	13	2	Arts Farms Ltd.	2-020	10.12	5.16%
	14	2	Cronin Farms Ltd.	2-022	1.21	0.62%
	Total Assessment on Lands					**60.15%**
	Maple Line		Municipality of Huron East		0.8	1.24%
	Highway 8		Province of Ontario		3.6	9.29%
	Total Assessment on Roads					**10.53%**
	Municipality of West Perth					
	Hibbert Ward					
	29	1	Dekroon Farms Ltd.	2-90	0.4	0.21%
	30	1	K. Murphy	3-00	16.2	8.26%
	Total Assessment on Lands					**8.47%**
	Road 183		Municipality of West Perth		0.4	0.62%
	Total Assessment on Roads					**0.62%**
	Total Assessment on Lands and Roads					
	Dill Municipal Drain 2025, Main Drain (Closed)					100.00%

Schedule D - Assessment For Maintenance

	Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
Main Drain (Enclosure) and Main Drain (Open)						
Tuckersmith Ward						
	E1/2 1	1 HRS	J. Devereaux	1-001	10.12	2.58%
	W1/2 1	1 HRS	E. Devereaux	1-002	10.12	2.58%
	2	1 HRS	Arts Farms Ltd.	1-003	18.21	4.65%
	3	1 HRS	K. Haney	1-005	13.35	50.0%
Total Assessment on Lands						**59.8%**
	Road 183		Municipality of Huron East		0.40	0.31%
Total Assessment on Roads						**0.31%**
McKillop Ward						
	11	1	N. Murray	1-035	0.81	0.21%
	12	1	Arts Farms Ltd.	1-037	8.50	1.75%
	13	1	Cronin Pork Ltd.	1-038	16.19	4.13%
	14 E1/2 15	1	S. Cronin	1-039	48.16	12.18%
*	Pt. E1/2 15	1	M. Harburn	1-040	0.83	0.21%
*	Pt. E1/2 15	1	C. Peters	1-040-01	0.75	0.19%
*	S Pt. W1/2 15	1	J. Krempien	1-041	1.59	0.41%
	N Pt. W1/2 15	1	Cronin Farms Ltd.	1-042	8.50	2.17%
	E1/2 16	1	J. Devereaux	1-043	6.47	1.65%
	W1/2 16	1	T. Devereaux	1-044	3.64	0.67%
	17	1	Arts Farms Ltd.	1-046	1.21	0.31%
	11	2	W. Murray	2-018	2.83	0.72%
	12	2	G. O'Reilly	2-019	10.12	2.58%
	13	2	Arts Farms Ltd.	2-020	10.12	2.58%
	14	2	Cronin Farms Ltd.	2-022	1.21	0.31%
Total Assessment on Lands						**30.07%**
	Maple Line		Municipality of Huron East		0.8	0.62%
	Highway 8		Province of Ontario		3.6	4.65%
Total Assessment on Roads						**5.27%**
Municipality of West Perth						
Hibbert Ward						
	29	1	Dekroon Farms Ltd.	2-90	0.4	0.10%
	30	1	K. Murphy	3-00	16.2	4.13%
Total Assessment on Lands						**4.23%**
	Road 183		Municipality of West Perth		0.4	0.31%
Total Assessment on Roads						**0.31%**
Total Assessment on Lands and Roads						
Dill Municipal Drain 2025, Main Drain (Enclosure) and Main Drain (Open)						100.00%

APPENDIX A

Drain Classification assessment for

Dill Municipal Drain (Municipality of Huron East)

Report to: Municipality of Huron East and Bill Dietrich, Dietrich Engineering Limited

Prepared By: Kari Jean, Aquatic Biologist

Ausable Bayfield Conservation Authority

July 2024

AUSABLE BAYFIELD CONSERVATION

CREATING AWARENESS | TAKING ACTION

Introduction

ABCA staff conducted a site visit at the Dill Municipal Drain off Huron Road near Seaforth Ontario on July 29, 2024 to complete a flow assessment and fish sampling for a section of this drain. A train bridge intersects with the drain at this location and assessment was conducted on both sides of the bridge (Figure 1).

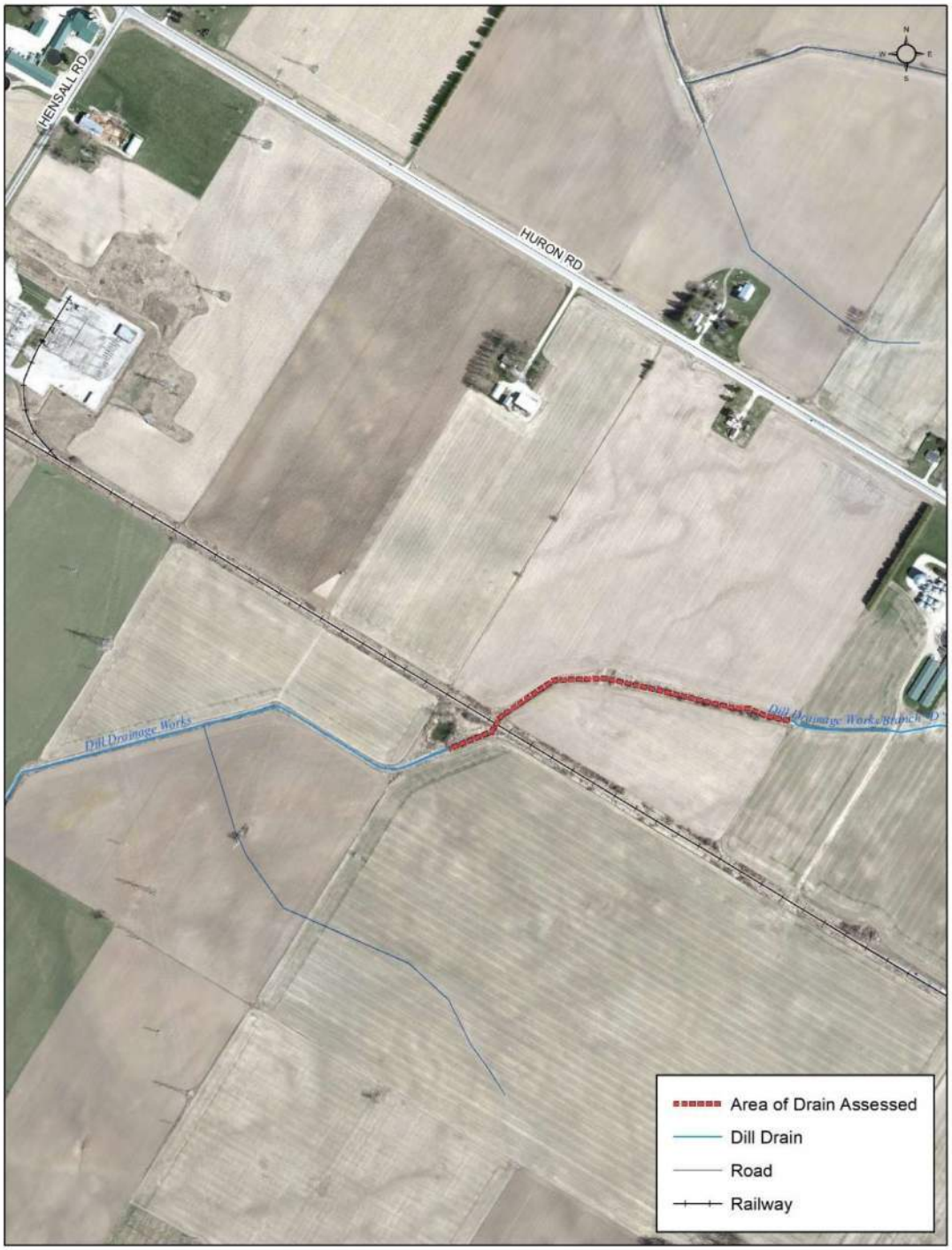

Figure 1: Dill Municipal Drain near Seaforth Ontario.

Methods

Staff walked a section of the Dill Municipal Drain from below the train bridge upstream (Figure 1).

Within this section habitat and flow information were collected using the protocols outlined in Classifying Ontario Municipal Drains Protocol V3.2 (2021).

Fish sampling was also completed within the area assessed using the protocols found in Classifying Ontario Municipal Drains Protocol V3.2 (2021). Staff conducted electrofishing using a backpack electrofishing unit for a portion of the assessment section (3 passes conducted in 40 meters) starting below the train bridge and moving upstream (Figure 1).

Results and Observations

A defined channel with water was present in the section of the Dill Municipal Drain that was assessed on July 29, 2024 (Figure 1). There was connectivity of water in the drain and flow was present in a few shallow locations over riffle areas, however the majority of the water in the drain was pooled and had no visible flow.

Depth of water was typically under 30 cm throughout this section, except upstream and downstream of the train bridge culvert, where depths increased to between 50 cm and 1 m (Figure 2).

Figure 2. Upstream side of train bridge over Dill Municipal Drain.

Aquatic plants were present upstream and downstream of the train bridge and included Watercress. Algae was also noted (Figure 3). Water temperatures were taken at the train bridge and upstream. The water temperature was 19 -20 degrees Celsius at each location. The Flow Determination Sampling datasheet from the Classifying Ontario Municipal Drains protocol was filled out for the section of the drain assessed and is attached separately (Appendix 1).

Figure 3. Dill Municipal Drain upstream from train bridge.

As per the Municipal Drain Classification Protocol, fish sampling was also conducted in a portion of the assessed section of the Dill Municipal Drain (Figure 1). Five brook stickleback were captured (Figure 4). The Fish Sampling datasheet from the Classifying Ontario Municipal Drains protocol is attached separately for this sampling (Appendix 2).

Figure 4. Brook Stickleback captured in Dill Municipal Drain.

APPENDIX B

Fisheries and Oceans Canada | Pêches et Océans Canada

Ontario and Prairies Region
Fish and Fish Habitat
Protection Program
867 Lakeshore Road
Burlington, ON L7S 1A1

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

April 15, 2025

Our file *Notre référence*

23-HCAA-00007

Municipality of Huron East
Attention: Jessica Rudy
72 Main Street South, P.O. Box 610
Seaforth ON
N0K 1W0

Subject: Drain Enclosure, Dill Municipal Drain, Seaforth – Application for a *Fisheries Act* Authorization – Incomplete or Inadequate

Dear Jessica Rudy:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) would like to acknowledge the receipt of your application for authorization under paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act* which was received on March 4, 2025. We understand that you propose to:

- Propose to enclose approximately 410 linear metres of Class C municipal drain.
- Complete a bottom cleanout for a maximum 500 linear metres downstream of the proposed enclosure. Brushing one bank slope as necessary.

Our review considered the following information:

- Request for Review package submitted, via email, to DFO.
- Application for Fisheries Act Authorization submitted, via email, to DFO.
- Email correspondence between Dietrich Engineering (K. Morton) and DFO (C. Biberhofer).

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

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and

- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

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

Upon reviewing your application, the Program determined that some of the information and documentation set out in the *Authorizations Concerning Fish and Fish Habitat Protection Regulations* (the Regulations) has not been provided and as such, the application is incomplete or inadequate.

The following information and documentation is required in order for the application to be complete:

- Financial Guarantee

Upon receipt of this outstanding information and documentation, the Program will notify you to confirm receipt. The Program will notify you as to whether the application is complete within a period of 60 days after receiving this outstanding information and documentation.

If you have any questions with the content of this letter, please contact Christopher Biberhofer at 365-323-4178, or by email at Christopher.Biberhofer@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

William Glass
Team Leader, Coastal and Marine
Fish and Fish Habitat Protection Program

CC: Kyle Morton, Dietrich Engineering

SPECIFICATIONS FOR THE CONSTRUCTION OF MUNICIPAL DRAINAGE WORKS

DIVISION A – General Conditions

DIVISION B – Specification for Open Drains

DIVISION C – Specification for Tile Drains

DIVISION E – Specification for Drainage Crossings by the Boring Method

DIVISION H – Special Provisions

DIVISION A – GENERAL CONDITIONS

TABLE OF CONTENTS

DIVISION A – GENERAL CONDITIONS

A.1. Scope

The work to be done under this contract consists of supplying all labour, equipment and materials to construct the drainage work as outlined in the Scope of Work, Drawings, General Conditions and other Specifications.

A.2. Tenders

Tenders are to be submitted on a lump sum basis for the complete works or a portion thereof, as instructed by the Municipality. The Scope of Work must be completed and submitted with the Form of Tender and Agreement. A certified cheque is required as Tender Security, payable to the Treasurer of the Municipality.

All certified cheques, except that of the bidder to whom the work is awarded will be returned within ten (10) days after the tender closing. The certified cheque of the bidder to whom the work is awarded will be retained as Contract Security and returned when the Municipality receives a Completion Certificate for the work.

A certified cheque is not required if the Contractor provides an alternate form of Contract Security such as a Performance Bond for 100% of the amount of the Tender or other satisfactory security, if required/permitted by the Municipality. A Performance Bond may also be required to insure maintenance of the work for a period of one (1) year after the date of the Completion Certificate.

A.3. Examinations of Site, Drawings, and Specifications

The Tenderer must examine the premises and site to compare them with the Drawings and Specifications in order to satisfy himself of the existing conditions and extent of the work to be done before submission of his Tender. No allowance shall subsequently be made on behalf of the Contractor by reason of any error on his part. Any estimates of quantities shown or indicated on the Drawings, or elsewhere are provided for the convenience of the Tenderer. Any use made of these quantities by the Tenderer in calculating his Tender shall be done at his own risk. The Tenderer for his own protection should check these quantities for accuracy.

The standard specifications (Divisions B through G) shall be considered complementary and where a project is controlled under one of the Divisions, the remaining Divisions will apply for miscellaneous works.

In case of any inconsistency or conflict between the Drawings and Specifications, the following order of precedence shall apply:

- Direction of the Engineer
- Special Provisions (Division H)
- Scope of Work
- Contract Drawings
- Standard Specifications (Divisions B through G)
- General Conditions (Division A)

A.4. Payment

Progress payments equal to 87±% of the value of work completed and materials incorporated in the work will be made to the Contractor monthly. An additional ten per cent (10±%) will be paid 45 days after the final acceptance by the Engineer, and three per cent (3±%) of the Contract price may be reserved by the Municipality as a maintenance holdback for a one (1) year period from the date of the Completion Certificate. A greater percentage of the Contract price may be reserved by the Municipality for the same one (1) year period if in the opinion of the Engineer, particular conditions of the Contract requires such greater holdback.

After the completion of the work, any part of this reserve may be used to correct defects developed within that time from faulty workmanship and materials, provided that notice shall first be given to the Contractor and that he may promptly make good such defects.

A.5. Contractor's Liability Insurance

Prior to commencement of any work, the Contractor shall file with the Municipality evidence of compliance with all Municipality insurance requirements (Liability Insurance, WSIB, etc.) for no less than the minimum amounts as stated in the Purchasing Procedures of the Municipality. All insurance coverage shall remain in force for the entire contract period including the warranty period which expires one year after the date of the Completion Certificate.

The following are to be named as co-insured:

- Successful Contractor
- Sub-Contractor Municipality
- Dietrich Engineering Ltd.

A.6. Losses Due to Acts of Nature, Etc.

All damage, loss, expense and delay incurred or experienced by the Contractor in the performance of the work, by reason of unanticipated difficulties, bad weather, strikes, acts of nature, or other mischances shall be borne by the Contractor and shall not be the subject of a claim for additional compensation.

A.7. Commencement and Completion of Work

The work must commence as specified in the Form of Tender and Agreement. If conditions are unsuitable due to poor weather, the Contractor may be required, at the discretion of the Engineer to postpone or halt work until conditions become acceptable and shall not be subject of a claim for additional compensation.

The Contractor shall give the Engineer a minimum of 48 hours notice before commencement of work. The Contractor shall then arrange a meeting to be held on the site with Contractor, Engineer, and affected Landowners to review in detail the construction scheduling and other details of the work.

If the Contractor leaves the job site for a period of time after initiation of work, he shall give the Engineer and the Municipality a minimum of 24 hours notice prior to returning to the project. If any work is commenced without notice to the Engineer, the Contractor shall be fully responsible for all such work undertaken prior to such notification.

The work must proceed in such a manner as to ensure its completion at the earliest possible date and within the time limit set out in the Form of Tender and Agreement.

A.8. Working Area and Access

Where any part of the drain is on a road allowance, the road allowance shall be the working area. For all other areas, the working area available to the Contractor to construct the drain is specified in the Special Provisions (Division H).

Should the specified widths become inadequate due to unusual conditions, the Contractor shall notify the Engineer immediately. Where the Contractor exceeds the specified working widths without authorization, he shall be held responsible for the costs of all additional damages.

If access off an adjacent road allowance is not possible, each Landowner on whose property the drainage works is to be constructed, shall designate access to and from the working area. The Contractor shall not enter any other lands without permission of the Landowner and he shall compensate the Landowner for damage caused by such entry.

A.9. Sub-Contractors

The Contractor shall not sublet the whole or part of this Contract without the approval of the Engineer.

A.10. Permits, Notices, Laws and Rules

The Contractor shall obtain and pay for all necessary permits or licenses required for the execution of the work (but this shall not include MTO encroachment permits, County Road permits permanent easement or rights of servitude). The Contractor shall give all necessary notices and pay for all fees required by law and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of the public's health and safety.

A.11. Railways, Highways, and Utilities

A minimum of 72 hours' notice to the Railway or Highways, exclusive of Saturdays, Sundays, and Statutory Holidays, is required by the Contractor prior to any work activities on or affecting the applicable property. In the case of affected Utilities, a minimum of 48 hours' notice to the utility owner is required.

A.12. Errors and Unusual Conditions

The Contractor shall notify the Engineer immediately of any error or unusual conditions which may be found. Any attempt by the Contractor to correct the error on his own shall be done at his own risk. Any additional cost incurred by the Contractor to remedy the wrong decision on his part shall be borne by the Contractor. The Engineer shall make the alterations necessary to correct errors or to adjust for unusual conditions during which time it will be the Contractor's responsibility to keep his men and equipment gainfully employed elsewhere on the project.

The Contract amount shall be adjusted in accordance with a fair evaluation of the work added or deleted.

A.13. Alterations and Additions

The Engineer shall have the power to make alterations in the work shown or described in the Drawings and Specifications and the Contractor shall proceed to make such changes without causing delay. In every such case, the price agreed to be paid for the work under the Contract shall be increased or decreased as the case may require according to a fair and reasonable evaluation of the work added or deleted. The valuation shall be determined as a result of negotiations between the Contractor and the Engineer, but in all cases the Engineer shall maintain the final responsibility for the decision. Such alterations and variations shall in no way render the Contract void. No claims for a variation or alteration in the increased or decreased price shall be valid unless done in pursuance of an order from the Engineer and notice of such claims made in writing before

commencement of such work. In no such case shall the Contractor commence work which he considers to be extra before receiving the Engineer's approval.

A.14. Supervision

The Contractor shall give the work his constant supervision and shall keep a competent foreman in charge at the site.

A.15. Field Meetings

At the discretion of the Engineer, a field meeting with the Contractor or his representative, the Engineer and with those others that the Engineer deems to be affected, shall be held at the location and time specified by the Engineer.

A.16. Periodic and Final Inspections

Periodic inspections by the Engineer will be made during the performance of the work. If ordered by the Engineer, the Contractor shall expose the drain as needed to facilitate inspection by the Engineer.

Final inspection by the Engineer will be made within twenty (20) days after he has received notice from the Contractor that the work is complete.

A.17. Acceptance By the Municipality

Before any work shall be accepted by the Municipality, the Contractor shall correct all deficiencies identified by the Engineer and the Contractor shall leave the site neat and presentable.

A.18. Warranty

The Contractor shall repair and make good any damages or faults in the drain that may appear within one (1) year after its completion (as dated on the Completion Certificate) as the result of the imperfect or defective work done or materials furnished if certified by the Engineer as being due to one or both of these causes; but nothing herein contained shall be construed as in any way restricting or limiting the liability of the Contractor under the laws of the Country, Province or Locality in which the work is being done. Neither the Completion Certificate nor any payment there under, nor any provision in the Contract Documents shall relieve the Contractor from his responsibility.

A.19. Termination of Contract By The Municipality

If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should refuse or fail to supply enough properly skilled workmen or proper materials after having received seven (7) days notice in writing from the Engineer to supply additional workmen or materials to commence or complete the works, or if he should fail to make prompt payment to Sub-Contractors, or for material, or labour, or persistently disregards laws, ordinances, or the instruction of the Engineer, or otherwise be guilty of a substantial violation of the provisions of the Contract, then the Municipality, upon the certificate of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy, by giving the Contractor written notice, terminate the employment of the Contractor and take possession of the premises, and of all materials, tools and appliances thereon, and may finish the work by whatever method the Engineer may deem expedient but without delay or expense. In such a case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price will exceed the expense of finishing the work including compensation to the Engineer for his additional services and including the other damages of every name and nature, such excess shall be paid by the

Contractor. If such expense will exceed such unpaid balance, the Contractor shall pay the difference to the Municipality. The expense incurred by the Municipality, as herein provided, shall be certified by the Engineer.

If the Contract is terminated by the Municipality due to the Contractor's failure to properly commence the works, the Contractor shall forfeit the certified cheque bid deposit and furthermore shall pay to the Municipality an amount to cover the increased costs, if any, associated with a new Tender for the Contract being terminated.

If any unpaid balance and the certified cheque do not match the monies owed by the Contractor upon termination of the Contract, the Municipality may also charge such expense against any money which may thereafter be due to the Contractor from the Municipality.

A.20. Tests

The cost for the testing of materials supplied to the job by the Contractor shall be borne by the Contractor. The Engineer reserves the right to subject any lengths of any tile or pipe to a competent testing laboratory to ensure the adequacy of the tile or pipe. If any tile supplied by the Contractor is determined to be inadequate to meet the applicable A.S.T.M. standards, the Contractor shall bear full responsibility to remove and/or replace all such inadequate tile in the Contract with tile capable of meeting the A.S.T.M. Standards.

A.21. Pollution

The Contractor shall keep their equipment in good repair. The Contractor shall refuel or repair equipment away from open water.

If polluted material from construction materials or equipment is caused to flow into the drain, the Contractor shall immediately notify the Ministry of the Environment, and proceed with the Ministry's protocols in place to address the situation.

A.22. Species and Risk

If a Contractor encounters a known Species at Risk as designated by the MNR or DFO, the Contractor shall notify the Engineer immediately and follow the Ministry's guidelines to deal with the species.

A.23. Road Crossings

This specification applies to all road crossings (Municipality, County, Regional, or Highway) where no specific detail is provided on the drawings or in the standard specifications. This specification in no way limits the Road Authority's regulations governing the construction of drains on their Road Allowance.

A.23.1 Road Occupancy Permit

Where applicable, the Contractor must submit an application for a road occupancy permit to the Road Authority and allow a minimum of five (5) working days for its review and issuance.

A.23.2 Road Closure Request and Construction Notification

The Contractor shall submit written notification of construction and request for road closure (if applicable) to the Road Authority and the Engineer for review and approval a minimum of five (5) working days prior to proceeding with any work on the road allowance. The Contractor shall be responsible for notifying all applicable emergency services, schools, etc. of the road closure or construction taking place.

A.23.3 Traffic Control

The Contractor shall supply flagmen, and warning signs and ensure that detour routes are adequately signed in accordance with no less than the minimum standards as set out in the Ontario Traffic Manual's Book 7.

A.23.4 Weather

No construction shall take place during inclement weather or periods of poor visibility.

A.23.5 Equipment

No construction material and/or equipment is to be left within three (3) metres of the travelled portion of the road overnight or during periods of inclement weather.

If not stated on the drawings, the road crossing shall be constructed by open cut method. Backfill from the top of the cover material over the subsurface pipe or culvert to the under side of the road base shall be Granular "B". The backfill shall be placed in lifts not exceeding 300mm in thickness and each lift shall be thoroughly compacted to 98% Standard Proctor. Granular "B" road base for County Roads and Highways shall be placed to a 450mm thickness and Granular "A" shall be placed to a thickness of 200mm. Granular road base materials shall be thoroughly compacted to 100% Standard Proctor.

Where the road surface is paved, the Contractor shall be responsible for placing HL-8 Hot Mix Asphalt patch at a thickness of 50mm or of the same thickness as the existing pavement structure. The asphalt patch shall be flush with the existing roadway on each side and without overlap.

Excavated material from the trench beyond 1.25 metres from the travelled portion or beyond the outside edge of the gravel shoulder may be used as backfill in the trench in the case of covered drains. The material shall be compacted in lifts not exceeding 300mm.

A.24. Laneways

All pipes crossing laneways shall be backfilled with material that is clean, free of foreign material or frozen particles and readily tamped or compacted in place unless otherwise specified. Laneway culverts on open ditch projects shall be backfilled with material that is not easily erodible. All backfill material shall be thoroughly compacted as directed by the Engineer.

Culverts shall be bedded with a minimum of 300mm of granular material. Granular material shall be placed simultaneously on each side of the culvert in lifts not exceeding 150mm in thickness and compacted to 95% Standard Proctor Density. Culverts shall be installed a minimum of 10% of the culvert diameter below design grade with a minimum of 450mm of cover over the pipe unless otherwise noted on the Drawings.

The backfill over culverts and subsurface pipes at all existing laneways that have granular surfaces on open ditch and closed drainage projects shall be surfaced with a minimum of 300mm of Granular "B" material and 150mm of Granular "A" material. All backfill shall be thoroughly compacted as directed by the Engineer. All granular material shall be placed to the full width of the travelled portion.

Any settling of backfilled material shall be repaired by or at the expense of the Contractor during the warranty period of the project and as soon as required.

A.25. Fences

No earth is to be placed against fences and all fences removed by the Contractor shall be replaced by him in as good a condition as found. Where practical the Contractor shall take down existing fences in good condition at the nearest anchor post and roll it back rather than cutting the fence and attempting to patch it. The replacement of the fences shall be done to the satisfaction of the Engineer. Any fences found in such poor condition where the fence is not salvageable, shall be noted and verified with the Engineer prior to commencement of work.

Fences damaged beyond repair by the Contractor's negligence shall be replaced with new materials, similar to those materials of the existing fence, at the Contractor's expense. The replacement of the fences shall be done to the satisfaction of the Landowner and the Engineer.

Any fences paralleling an open ditch that are not line fences that hinder the proper working of the excavating machinery, shall be removed and rebuilt by the Landowner at his own expense.

The Contractor shall not leave fences open when he is not at work in the immediate vicinity.

A.26. Livestock

The Contractor shall provide each landowner with 48 hours notice prior to removing any fences along fields which could possibly contain livestock. Thereafter, the Landowner shall be responsible to keep all livestock clear of the construction areas until further notified. The Contractor shall be held responsible for loss or injury to livestock or damage caused by livestock where the Contractor failed to notify the Landowner, or through negligence or carelessness on the part of the Contractor.

A.27. Standing Crops

The Contractor shall be responsible for damages to standing crops which are ready to be harvested or salvaged along the course of the drain and access routes if the Contractor has failed to notify the Landowners 48 hours prior to commencement of the work on that portion of the drain.

A.28. Surplus Gravel

If as a result of any work, gravel or crushed stone is required and not all the gravel or crushed stone is used, the Contractor shall haul away such surplus material.

A.29. Iron Bars

The Contractor is responsible for the cost of an Ontario Land Surveyor to replace any iron bars that are altered or destroyed during the course of the construction.

A.30. Rip-Rap

Rip-rap shall be quarry stone rip-rap material and shall be the sizes specified in the Special Provisions. Broken concrete shall not be used as rip-rap unless otherwise specified.

A.31. Clearing, Grubbing and Brushing

This specification applies to all brushing where no specific detail is provided on the drawings or in the Special Provisions.

The Contractor shall clear, brush and stump trees from within the working area that interfere with the installation of the drainage system.

All trees, limbs and brush less than 150mm in diameter shall be mulched. Trees greater than 150mm in diameter shall be cut and neatly stacked in piles designated by the Landowners.

A.32. Restoration of Lawns

This specification applies to all lawn restoration where no specific detail is provided on the drawings or in the Special Provisions and no allowance for damages has been provided under Section 30 of the Drainage Act RSO 1990 to the affected property.

The Contractor shall supply “high quality grass seed” and the seed shall be broadcast by means of an approved mechanical spreader. All areas on which seed is to be placed shall be loose at the time of broadcast to a depth of 25mm. Seed and fertilizer shall be spread in accordance with the supplier’s recommendations unless otherwise directed by the Engineer. Thereafter it will be the responsibility of the Landowner to maintain the area in a manner so as to promote growth

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DIVISION B – SPECIFICATIONS FOR OPEN DRAINS

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DIVISION B – SPECIFICATIONS FOR OPEN DRAINS

B.1. Alignment

The drain shall be constructed in a straight line and shall follow the course of the present drain or water run unless noted on the drawings. Where there are unnecessary bends or irregularities on the existing course of the drain, the Contractor shall contact the Engineer before commencing work to verify the manner in which such irregularities or bends may be removed from the drain. All curves shall be made with a minimum radius of fifteen (15) metres from the centre line of the drain.

B.2. Profile

The Profile Drawing shows the depth of cuts from the top of the bank to the final invert of the ditch in metres and decimals of a metre, and also the approximate depth of excavated material from the bottom of the existing ditch to the final invert of the ditch. These cuts are established for the convenience of the Contractor; however, bench marks (established along the course of the drain) will govern the final elevation of the drain. The location and elevation of the bench marks are given on the Profile Drawing. Accurate grade control must be maintained by the Contractor during ditch excavation.

B.3. Excavation

The bottom width and the side slopes of the ditch shall be those shown on the drawings. If the channel cross-section is not specified it shall be a one metre bottom width with 1.5(h):1(v) side slopes. At locations along the drain where the cross section dimensions change, there shall be a transitional length of not less than 10:1 (five metre length to 0.5 metre width differential). Where the width of the bottom of the existing ditch is sufficient to construct the design width, then construction shall proceed without disturbing the existing banks.

Where existing side slopes become unstable, the Contractor shall immediately notify the Engineer. Alternative methods of construction and/or methods of protection will then be determined prior to continuing work.

Where an existing drain is being relocated or where a new drain is being constructed, the Contractor shall strip the topsoil for the full width of the drain, including the location of the spoil pile. Upon completion of levelling, the topsoil shall be spread to an even depth across the full width of the spoil.

An approved hydraulic excavator shall be used to carry out the excavation of the open ditch unless otherwise directed by the Engineer.

B.4. Excavated Material

Excavated material shall be placed on the low side of the drain or opposite trees and fences. The Contractor shall contact all Landowners before proceeding with the work to verify the location to place and level the excavated material.

No excavated material shall be placed in tributary drains, depressions, or low areas which direct water behind the spoil bank. The excavated material shall be placed and levelled to a maximum depth of 200 mm, unless instructed otherwise and commence a minimum of one (1) metre from the top of the bank. The edge of the spoil bank away from the ditch shall be feathered down to the existing ground; the edge of the spoil bank nearest the ditch shall have a maximum slope of 2(h):1(v). The material shall be levelled such that it may be

cultivated with ordinary farm equipment without causing undue hardship to the farm machinery and farm personnel. No excavated material shall cover any logs, brush, etc. of any kind.

Any stones or boulders which exceed 300mm in diameter shall be removed and disposed of in a location specified by the Landowner.

Where it is necessary to straighten any unnecessary bends or irregularities in the alignment of the ditch or to relocate any portion or all of an existing ditch, the excavated material from the new cut shall be used for backfilling the original ditch. Regardless of the distance between the new ditch and the old ditch, no extra compensation will be allowed for this work and must be included in the Contractor's lump sum price for the open work.

B.5. Excavation at Existing Bridge and Culvert Sites

The Contractor shall excavate the drain to the full specified depth under all bridges and to the full width of the structure. Temporary bridges may be carefully removed and left on the bank of the drain but shall be replaced by the Contractor when the excavation is complete. Permanent bridges must, if at all possible, be left intact. All necessary care and precautions shall be taken to protect the structure. The Contractor shall notify the Landowner if excavation will expose the footings or otherwise compromise the structural integrity of the structure.

The Contractor shall clean through all pipe culverts to the grade and width specified on the profile.

B.6. Pipe Culverts

All pipe culverts shall be installed in accordance with the standard detail drawings. If couplers are required, five corrugation couplers shall be used for up to and including 1200mm diameter pipes and 10 corrugation couplers for greater than 1200mm diameter pipes.

When an existing crossing is being replaced, the Contractor may backfill the new culvert with the existing native material that is free of large rocks and stones. The Contractor is responsible for any damage to a culvert pipe that is a result of rocks or stones in the backfill.

B.7. Rip-Rap Protection For Culverts

Quarry stone rip-rap shall be used as end treatment for new culverts and placed on geotextile filter material (Mirafi 160N or approved equal). The rip-rap shall be adequately keyed in along the bottom of the slope, and shall extend to the top of the pipe or as directed on the drawings. The maximum slope for rip-rap shall be 1(h):1(v) or as directed by the Engineer.

The Contractor shall be responsible for any defects or damages that may develop in the rip-rap or the earth behind the rip-rap that the Engineer deems to have been fully or partially caused by faulty workmanship or materials.

B.8. Clearing, Grubbing and Mulching

Prior to excavation, all trees, scrub, fallen timber and debris shall be removed from the side slopes of the ditch and for such a distance on the working side so as to eliminate any interference with the construction of the drain or the spreading of the spoil. The side slopes shall be neatly cut and cleared flush with the slope whether or not they are affected directly by the excavation. With the exception of large stumps causing damage to the drain, the side slopes shall not be grubbed. All other cleared areas shall be grubbed and the stumps put into piles for disposal by the Landowner.

All trees or limbs 150mm or larger, that is necessary to remove, shall be cut, trimmed and neatly stacked in the working width for the use or disposal by the Landowner. Brush and limbs less than 150mm in diameter shall be mulched. Clearing, grubbing and mulching shall be carried out as a separate operation from the excavation of the ditch, and shall not be completed simultaneously at the same location.

B.9. Tributary Tile Outlets

All tile outlets in existing ditches shall be marked by the Landowner prior to excavation. The Contractor shall guard against damaging the outlets of tributary drains. Any tile drain outlets that were marked or noted on the drawings and are subsequently damaged by the Contractor shall be repaired by the Contractor at his expense. The Landowner shall be responsible for repairs to damaged tile outlets that were not marked.

B.10. Seeding

The side slopes where disturbed shall be seeded using an approved grass seed mixture. The grass seed shall be applied the same day as the excavation of the open ditch.

Grass seed shall be fresh, clean and new crop seed, meeting the requirements of the MTO and composed of the following varieties mixed in the proportion by weight as follows:

- 55% Creeping Red Fescue
- 40% Perennial Rye Grass
- 5% White Clover

Grass seed shall be applied at the rate of 100 kg/ha.

B.11. Hydro Seeding

The areas specified in the contract document shall be hydro seeded and mulched upon completion of construction in accordance with O.P.S.S. 572.

B.12. Hand Seeding

Placement of the seed shall be of means of an approved mechanical spreader.

B.13. Completion

At the time of completion and final inspection, all work in the Contract shall have the full dimensions and cross-sections specified without any allowance for caving of banks or sediment in the ditch bottom.

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DIVISION C – SPECIFICATIONS FOR TILE DRAINS

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DIVISION C – SPECIFICATIONS FOR TILE DRAINS

C.1. Pipe Materials

C.1.1 Concrete Tile

Concrete drain tile shall conform to the requirements of the most recent A.S.T.M. specification for Heavy-Duty Extra Quality drain tile. All tile with diameters less than 600mm shall have a pipe strength of 1500D. All tile with diameters 600mm or larger shall have a pipe strength of 2000D.

All tile furnished shall be subject to the approval of the Engineer. All rejected tile are to be immediately removed from the site.

C.1.2 High Density Polyethylene (HDPE) Pipe

All HDPE pipe shall be dual-wall corrugated drainage pipe with a smooth inner wall. HDPE pipe shall have a minimum stiffness of 320 kPa at 5% deflection.

Unless otherwise noted, all sealed HDPE pipe shall have a water tight gasketed bell and spigot joining system meeting the minimum requirements of CSA B182.8. Perforated HDPE pipe shall have a soil tight joining system, and shall be enveloped in non-woven geotextile filter sock.

C.2. Alignment

The Contractor shall contact the Engineer to establish the course of the drain. Where an existing drain is to be removed and replaced by the new drain, or where the new drain is to be installed parallel to an existing drain, the Contractor shall locate the existing drain (including repairing damaged tile caused by locating) at intervals along the course of the drain. The costs of locating shall be included in the tender price.

The drain shall run in as straight a line as possible throughout its length, except that at intersections of other watercourses or at sharp corners, it shall run on a curve of at least 15 metres radius. The new tile drain shall be constructed at an offset from and parallel with any ditch or defined watercourse in order that fresh backfill in the trench will not be eroded by the flow of surface water.

The Contractor shall exercise care not to disturb any existing tile drain or drains which parallel the course of the new drain, particularly where the new and existing tile act together to provide the necessary capacity. Where any such existing drain is disturbed or damaged, the Contractor shall perform the necessary repair at his expense.

C.3. Profile

Benchmarks have been established along the course of the drain which are to govern the elevations of the drain. The location and elevations of the benchmarks are shown on the drawings. Tile is to be installed to the elevation and grade shown on the profiles. Accurate grade control must be maintained by the Contractor at all times.

When installing a drain towards a fixed point such as a bore pipe, the Contractor shall uncover the pipe and confirm the elevation a sufficient distance away from the pipe in order to allow for any necessary minor grade adjustments to be made.

C.4. Excavation

C.4.1 Wheel machine

Unless otherwise specified, all trenching shall be carried out with a wheel machine approved by the Engineer. The wheel machine shall shape the bottom of the trench to conform to the outside diameter of the pipe. The minimum trench width shall be equal to the outside diameter of the pipe plus 100mm on each side of the pipe, unless otherwise specified. The maximum trench width shall be equal to the outside diameter of the pipe plus 300mm on each side of the pipe, unless otherwise specified.

C.4.2 Scalping

Where the depths of cuts in isolated areas along the course of the drain as shown on the profile exceed the capability of the Contractor's wheel machine, he shall lower the surface grade in order that the wheel machine may trench to the correct depth. Topsoil is to be stripped over a sufficient width that no subsoil will be deposited on top of the topsoil. Subsoil will then be removed to the required depth and piled separately. Upon completion, the topsoil will then be replaced to an even depth over the disturbed area. The cost for this work shall be included in his tender price.

C.4.3 Excavator

Where the use of an excavator is used in-lieu of a wheel machine, the topsoil shall be stripped and replaced in accordance with Item C.4.2. All tile shall be installed on 19mm clear crushed stone bedding placed to a minimum depth of 150mm which has been shaped to conform to the bottom of the pipe. The Contractor shall include the costs of this work in his tender price.

C.5. Installation

C.5.1 Concrete Tile

The tile is to be laid with close joints and in regular grade and alignment in accordance with the drawings. The tiles are to be bevelled, if necessary to ensure close joints. The inside of the tile is to be kept clear when laid. The sides of the tile are to be supported by partial filling of the trench (blinding) prior to inspection by the Engineer. No tile shall be backfilled until inspected by the Engineer unless otherwise permitted by the Engineer. The tile shall be backfilled such that a sufficient mound of backfill is placed over the trench to ensure that no depression remains after settling occurs in the backfill.

Where a tile connects to a catch basin or similar structure, the Contractor shall include in his tender price for the supply and placement of compacted Granular 'A' bedding or 19mm clear crushed stone under areas backfilled from the underside of the pipe to undisturbed soil. Where a tile drain passes through a bore pit, the Contractor shall include in his tender price for the supply and placement of compacted Granular 'A' bedding or 19mm clear crushed stone from the underside of the pipe down to undisturbed soil with the limits of the bore pit.

The Contractor shall supply and wrap all concrete tile joints with Mirafi 160N geotextile filter material as part of this contract. The width of the filter material should be:

- 300mm wide for tile sizes 150mm diameter to 350mm diameter.
- 400mm wide for tile sizes 400mm diameter to 750mm diameter.
- 500mm wide for tile sizes larger than 750mm diameter.

The filter material shall completely cover the tile joint and shall have a minimum overlap of 300mm. The type of filter material shall be.

C.5.2 HDPE Pipe

HDPE pipe shall be installed using compacted Granular 'A' bedding or 19mm clear crushed stone bedding from 150mm below the pipe to 300mm above the pipe. All granular material shall be compacted using a suitable mechanical vibratory compactor. Granular bedding and backfill shall be placed in lifts not exceeding 300mm and compacted to at least 95% Standard Proctor Maximum Dry Density (SPMDD).

Where a pipe connects to a catch basin or similar structure, the Contractor shall include in his tender price for the supply and placement of compacted Granular 'A' bedding or 19mm clear crushed stone under areas backfilled from the underside of the pipe to undisturbed soil. Where a pipe passes through a bore pit, the Contractor shall include in his tender price for the supply and placement of compacted Granular 'A' bedding or 19mm clear crushed stone from the underside of the pipe down to undisturbed soil with the limits of the bore pit.

As determined by the Engineer, unsuitable backfill material must be hauled off-site by the Contractor and Granular "B" shall be used as replacement backfill material.

C.6. Trench Crossings

The Contractor shall not cross the backfilled trench with any construction equipment or vehicles, except by one designated crossing location on each property. The Contractor shall ensure that the bedding and backfill material at this designated crossing location is properly placed and compacted so as to adequately support the equipment and vehicles that may cross the trench. The Contractor may undertake any other approved work to ensure the integrity of the tile at the crossing location. The Contractor shall ensure that no equipment or vehicles travel along the length of the trench. The Contractor shall be responsible for any damage to the new tile caused by the construction of the drain.

C.7. Outlet Protection

A tile drain outlet into a ditch shall be either HDPE pipe or corrugated steel pipe and shall include a hinged grate for rodent protection. The maximum spacing between bars on the rodent grate shall be 40mm. All corrugated steel outlet pipes shall be bevelled at the end to generally conform to the slope of the ditch bank.

Quarry stone rock rip-rap protection and geotextile filter material (Mirafi 160N), shall be installed around the outlet pipe and extended downstream a minimum distance of three metres, unless otherwise specified. The protection shall extend to the top of the backfilled trench and below the pipe to 300 mm under the streambed. The protection shall also extend 600mm into undisturbed soil on either side of the backfilled trench. In some locations, rip-rap may be required on the bank opposite the outlet.

Where the outlet occurs at the upper end of an open ditch, the rip-rap protection will extend all around the end of the ditch and to a point 800mm downstream on either side. Where heavy overflow is likely to occur, sufficient additional rip-rap and filter material shall be placed as directed by the Engineer to prevent the water cutting around the protection.

C.8. Catch Basins and Junction Boxes

Unless otherwise noted, catch basins shall be in accordance with OPSD 705.010 and 705.030. The catch basin grate shall be a "Birdcage" type substantial steel grate, removable for cleaning and shall be inset into a recess provided around the top of the structure. The grate shall be fastened to the catch basin with bolts into the concrete. Spacing of bars on grates for use on 600mmX600mm structures shall be 65mm centre to centre. Spacing of bars on grates for use on structures larger than 600mmX600mm shall be 90mm.

All catch basins shall be backfilled with compacted Granular 'A' or 19mm clear crushed stone placed to a minimum width of 300mm on all sides. If settling occurs after construction, the Contractor shall supply and place sufficient granular material to maintain the backfill level flush with adjacent ground. The riser sections of the catch basin shall be wrapped with filter cloth.

Quarry stone rip-rap protection shall be placed around all catch basins and shall extend a minimum distance of one (1) metre away from the outer edge of each side of the catch basin, and shall be placed so that the finished surface of the rip-rap is flush with the existing ground.

If there are no existing drains to be connected to the catch basin at the top end of the drain, a plugged tile shall be placed in the upstream wall with the same elevations as the outlet tile.

Junction boxes shall have a minimum cover over the lid of 450mm.

The Contractor shall include in his tender price for the construction of a berm behind all ditch inlet structures. The berm shall be constructed of compacted clay keyed 300mm into undisturbed soil. The top of the spill way of the earth berm shall be the same elevation as the high wall of the ditch inlet catch basin. The earth berm shall be covered with 100mm depth of topsoil and seeded with an approved green seed mixture. The Contractor shall also include for regrading, shaping and seeding of road ditches for a maximum of 15 metres each way from all catch basins.

The Contractor shall clean all catch basin sumps after completion of the drain installation. Catch basin markers shall be placed beside each catch basin.

C.9. Tributary Drains

Any tributary tile encountered in the course of the drain is to be carefully taken up by the Contractor and placed clear of the excavated earth. If the tributary drains encountered are clean or reasonably clean, they shall be connected into the new drain in accordance with the typical tile drain connection detail. Tributary tile drain connections into the new drain shall be made using high density polyethylene agricultural drain tubing installed on and backfilled with 19mm clear crushed stone. All tile drain connections into the new drain shall be either a cored hole with an insert coupler or a manufactured tee.

Where the existing drains are full of sediment, the decision to connect the tributary drain to the new drain shall be left to the Engineer. The Contractor shall be paid for each tributary drain connection as outlined in the Form of Tender and Agreement.

The Contractor shall be responsible for all tributary tile connections for a period of one year from the date of the Completion Certificate. After construction, any missed tile connections required to be made into the new drain shall be paid at the same rate as defined in the Form of Tender and Agreement. The Contractor will have the option to make any subsequent tile connections or have the Municipality make the required connections and have the cost of which deducted from the holdback.

Where an open ditch is being replaced by a new tile drain, existing tile outlets entering the ditch from the side opposite the new drain shall be extended to the new drain.

Where the Contractor is required to connect an existing tile which is not encountered in the course of the drain, the cost of such work shall constitute an extra to the contract.

C.10. Clearing, Grubbing and Mulching

The Contractor shall clear, brush and stump trees from within the working area.

All trees or limbs 150mm or larger, that is necessary to remove, shall be cut, trimmed and neatly stacked in the working width for the use or disposal by the Landowner. Brush and limbs less than 150mm in diameter shall be mulched.

Clearing, grubbing and mulching shall be carried out as a separate operation from installing the drain, and shall not be completed simultaneously at the same location.

C.11. Roads and Laneway Sub-Surface Crossings

All roads and laneway crossings may be made with an open cut. The Contractor may use original ground as backfill to within 600mm of finished grade only if adequate compaction and if the use of the original ground backfill has been approved beforehand by the Engineer.

C.12. Filling In Existing Ditches

The Contractor shall backfill the ditch sufficiently for traversing by farm equipment. If sufficient material is available on-site to fill in the existing ditch, the topsoil shall be stripped and the subsoil shall be bulldozed into the ditch and the topsoil shall then be spread over the backfilled waterway. The Contractor shall ensure sufficient compaction of the backfill and if required, repair excess settlement up to the end of the warranty period.

C.13. Construction of Grassed Waterways

Where the Contractor is required to construct a grassed waterway, the existing waterway shall be filled in, regraded, shaped and a seed bed prepared prior to applying the grass seed. The grass seed shall be fresh, clean and new crop seed, meeting the requirements of the MTO.

- 55% Creeping Red Fescue
- 15% Perennial Rye Grass
- 27% Kentucky Bluegrass
- 3% White Clover

Grass seed shall be applied at the rate of 100 kg/ha.

C.14. Unstable Soil

The Contractor shall immediately contact the Engineer if unstable soil is encountered. The Engineer shall, after consultation with the Contractor, determine the action necessary and a price for additions or deletions shall be agreed upon prior to further drain installation.

C.15. Rocks

The Contractor shall immediately contact the Engineer if boulders of sufficient size and number are encountered such that the Contractor cannot continue trenching with a wheel machine. The Engineer shall determine the action necessary and a price for additions or deletions shall be agreed upon prior to further drain installation.

If only scattered large stone or boulders are removed on any project, the Contractor shall either excavate a hole to bury same adjacent to the drain, or he shall haul the stones or boulders to a location designated by the Landowner.

C.16. Broken or Damaged Tile

The Contractor shall remove and dispose of all broken (existing or new), damaged or excess tile off site.

C.17. Recommended Practice For Construction of Sub-Surface Drainage Systems

Drainage Guide for Ontario, Ministry of Agriculture, Food and Rural Affairs, Publication 29 and its amendments, dealing with the construction of Subsurface Drainage Systems, shall be the guide to all methods and materials to be used in the construction of tile drains except where superseded by other Specifications of the Contract.

END OF DIVISION

DIVISION E – SPECIFICATIONS FOR DRAINAGE CROSSING BY BORING METHOD

TABLE OF CONTENTS

DIVISION E – SPECIFICATIONS FOR DRAINAGE CROSSING BY BORING METHOD

E.1. General Requirements

When a drainage crossing of a Roadway, Railway, etc. is to be carried out by the Boring Method, the following Specifications for this work shall apply. The Authority having jurisdiction over the lands involved with the crossing will supply no labour, equipment or materials for the construction of the crossing unless otherwise specified.

The Contractor shall be fully responsible for availing himself of, and satisfying any further Specifications that may apply to borings affecting the Authority having jurisdiction over the lands involved with the crossing.

E.2. Notification

The Contractor shall give the Authority responsible for the lands being crossed at least five (5) days notice before he commences any work on the crossing.

E.3. Pipe

The pipe or casing used in the crossing shall be smooth wall welded steel pipe with a minimum wall thickness as specified on the Plan and Profile. All pipe shall be new and manufactured from weldable steel having a minimum yield strength of 241 MPa. Pipe ends shall be bevel edged in the intrude to an angle of thirty (30) degrees for butt weld splicing. The name or trademark of the manufacturer and the heat number shall be clearly marked in the inside of the section of the pipe.

The pipe shall be of sufficient length so that during placement, no part of any excavation shall be closer than three (3) metres to the edge of a pavement and the slope of the excavation from the edge of shoulder, or other point as specified to the invert of the pipe shall be no less than one (1) metre vertical to one (1) metre horizontal (1:1) [See item E.5 “Auger Pit”].

E.4. Installation

The pipe or casing shall be placed by means of continuous flight augering inside the casing and simultaneous jacking to advance the casing immediately behind the tip of the auger. Complete augering of a tunnel slightly larger than the pipe and placing the entire length by pulling or jacking after completion of the tunnel will not be acceptable unless the method to be adopted is approved in advance by both the Engineer and the Authority responsible for the lands being crossed.

E.5. Auger Pit

The pit excavated to accommodate the boring machine shall be so constructed so that the top edge of the pit shall not be closer than three (3) metres to the edge of the pavement. The slope of the pit from the top edge at the shoulder to the bottom of the pit shall not be steeper than one (1) metre vertical to one (1) metre horizontal (1:1). Shoring, sheeting, etc. shall be in accordance with the applicable and most recent Provincial Statutes.

The pit shall be left open for an absolute minimum of time, and if at all possible work shall be so scheduled so that excavation, placement of pipe and backfilling take place in one (1) working day. If this is not possible, every effort should be made to schedule the work so that the pit is not left open for more than one (1) day before and one (1) day after the boring operation.

E.6. Construction

During excavation, every effort should be made to place the top 300 mm of spoil (topsoil) in a separate pile for replacement on top on completion of the backfill operation. If this is not possible or practical, the Contractor shall import and place a minimum of 150 mm of good quality topsoil over the excavated and backfilled area. The finished work shall be left in a clean and orderly condition flush or slightly higher than the adjacent ground so that after settlement, it will conform to the surrounding ground. Excess earth (if any) shall be disposed of as directed by the Engineer and no additional payment will be allotted for such work.

The Contractor shall at his expense supply, erect and maintain suitable and adequate barricades, flashing lights, warning signs and/or flagmen to the satisfaction of the Engineer to adequately warn and protect the motoring public.

Any areas disturbed within the Right-of-Way of a County Road or King's Highway during construction, shall be covered with a minimum of 75 mm of topsoil, fertilized and seeded with an approved grass seed mixture.

E.7. Acceptance

All work undertaken by the Contractor shall be to the satisfaction of the Engineer.

END OF DIVISION

DIVISION H – SPECIAL PROVISIONS

TABLE OF CONTENTS

DIVISION H – SPECIAL PROVISIONS

Dill Municipal Drain 2025

Municipality of Huron East Reference No. 2215

Special provisions means special directions containing requirements peculiar to the work not adequately provided for by the standard or supplemental Specifications. Special provisions shall take precedence and govern any standard or supplemental Specifications.

H.1 General

The Contractor shall notify the Landowners, the Engineer, and the Drainage Superintendent forty-eight (48) hours prior to construction and arrange a pre-construction meeting.

The Contractor shall locate the existing municipal tile drain in several locations before installing the new tile drain as part of this contract. The Contractor shall install the new tile drain (Main Drain Closed) parallel to the existing municipal tile drain (Sta. 0+431 to Sta. 1+182).

The Contractor shall verify the location of the new drainage system with the Engineer and Landowners prior to construction.

The Contractor shall check and verify all dimensions and elevations and report any discrepancies to the Engineer prior to proceeding with the work.

The Contractor must maintain access to all driveways along the route of the drain as well as maintain access for all emergency vehicles at all times during construction. All driveways shall be restored by the Contractor to their original condition.

Each Landowner on whose property the drainage works is to be constructed shall designate access to and from the working area.

The Contractor shall be responsible for all trench settlement.

H.2 Utilities

All utilities shall be located and uncovered in the affected areas by the Contractor prior to construction.

The locations and elevations of all utilities shown on the drawings are approximate locations. Actual locations and elevations of all utilities must be verified by the Contractor prior to construction.

The Contractor shall arrange to have a representative of the utility owner on site during construction if it is a requirement by the utility owner.

H.3 Working Area And Access

Each Landowner on whose property the drainage work is to be constructed shall designate access to and from the working area.

During construction, if the specified working widths are exceeded, the total actual working area used during construction will be calculated and compared to the total allowable working area, which is the product of the maximum allowable working width and the length of the working area of the affected property.

H.3.1 Open Work

The working area shall be a width of twenty (20) metres. All excavated material shall be hauled and placed in the existing ditch to be backfilled on the K. Haney property (Roll No. 1-005).

H.3.2 Closed Work

The working area for construction purposes shall be a width of twenty-five (25) metres along the alignment of the proposed tile drain (Main Drain – Closed). The working area for the installation of the 900mm dia tile (Main Drain Enclosure) on the K. Haney property shall be an average width of thirty (30) metres.

The working area for backfilling the existing ditch on the K. Haney property (Roll No. 1-005) shall be five (5) metres on both sides of the existing ditch.

H.4 Topsoil

Where the drain is to be installed by means of an approved wheel trencher, the Contractor shall strip the topsoil for a minimum width of 5 metres.

Where the drain is to be installed by means of an excavator, the Contractor shall strip the topsoil the entire with of the trench.

The Contractor shall strip and stockpile the topsoil from the banks of the enclosed drain and spread it over the existing open ditch and on the side slopes of the new channel. The Contractor shall strip and stockpile the topsoil for the full top width of the new channel (Main Drain Open) Sta. 0+000 to Sta. 0+125..

H.5 Clearing and Grubbing

The Contractor shall clear and brush all of the trees along the route of the Municipal Drain.

Clearing and grubbing shall be done prior to the construction of the drain.

All trees, limbs and brush less than 150mm in diameter shall be mulched/chipped. Trees greater than 150mm in diameter shall be cut into lengths of no greater than four (4) metres and neatly placed in piles designated by the Landowners. The Contractor shall dispose of stumps in piles designated by the Landowner. All trees and brush shall be cleared from the existing ditch on the K. Haney property (Roll No. 1-005) before backfilling the existing ditch for approximately 400m.

H.6 Filling in Existing Open Ditch (Main Drain – Enclosure)

The Contractor shall import all the fill required to fill the existing open drain and paid in accordance with their contract price.

The Contractor shall strip any available topsoil from the existing open ditch (400 metres) before backfilling the ditch. Topsoil shall later be spread over the backfilled ditch and final grading shall be done using a trim dozer.

The landowner (K. Haney Row No. 1-500) shall import any necessary fill to finish backfilling the open ditch.

The Contractor shall bulldoze and level the imported fill into the existing ditch and existing spoil material. All excess excavated material from installation of the concrete tile drains Sta. 0+125 to Sta. 0+872 shall be used for backfill material to fill in the existing ditch.

The Contractor shall load and haul the excavated material from the excavation of the open ditch (Sta. -0+000 to Sta. -0+125) Main Drain Open and place it in the open drain on the K. Haney property.

H.7 Pipe, Installation, Bedding & Backfill

H.7.1 Concrete Field Tile

An approved wheel trencher shall be used to install the concrete field tile.

All 675mm dia and 750mm dia concrete tile shall be Heavy-Duty Extra Quality Concrete Drain Tile 2000 D.

All 900mm dia concrete tile shall be Heavy-Duty Extra Quality Drain Tile 2400 D.

Concrete field tile installed by means of a wheel machine shall be backfilled using suitable native material. The backfill shall not be compacted but a sufficient mound shall be left over the trench by the contractor to allow for settlement flush with adjacent lands.

Concrete field tile installed by means of an approved hydraulic excavator shall be installed using 19mm (3/4”) crushed stone bedding from 150mm below the pipe to the spring line of the pipe. Optionally, the Contractor may use pea gravel backfill after the 150mm of crushed stone bedding to the spring line of the pipe. Suitable native material shall be used as backfill from the spring line to the underside of the topsoil.

The Contractor shall supply and wrap all concrete tile joints with geotextile filter material as part of this contract. The width of the filter material should be:

- 300mm wide & 300mm overlap for tile sizes of 250mm diameter.
- 400mm wide & 400mm overlap for tile sizes 450mm diameter to 600mm diameter.
- 500mm wide & 500mm overlap for tile sizes larger than 600mm diameter.

The filter material shall completely cover the tile joint. The type of filter material shall be Mirafi 140NC for clay or loam soil conditions and Mirafi 160N for sandy or silty soil conditions.

The Contractor shall be responsible for all trench settlement.

H.7.2 High Density Polyethylene Pipe (H.D.P.E.)

All H.D.P.E. pipe installed with an excavator or wheel trencher and shall be backfilled with 19mm (3/4”) crushed stone to 150mm above the pipe.

H.8 Catch Basins & Manholes

All catch basins shall be precast concrete catch basins (Coldstream Concrete Ltd. or approved equal).

All catch basins to have 300mm sumps.

The catch basin grates elevations shall be set to the satisfaction of the Engineer.

All catch basin grates shall be fastened to the new catch basins.

All catch basins shall have hot dipped galvanized bird cages grates.

Knockouts shall be provided in all catch basins.

All catch basins and manholes structures shall be installed on 150mm crushed stone bedding.

Structures on private property shall be backfilled using approved native material up to the underside of the topsoil layer.

All backfill material shall be placed and thoroughly compacted evenly around each structurer in lifts not exceeding 300mm so as to minimize settlement around structures.

The Contractor shall place quarry stone rip-rap material around all sides of the catch basins for a width of 1m and shall be placed on an approved geo-textile filter material.

Lifts (modulocs) shall be placed be the Contractor on all catch basins or manholes if necessary to achieve the desired elevation when field setting the structures.

All holes for manhole and catch basin pipe connections to the cored by the manufacturer.

The Contractor shall be responsible to repair or reapply grout for all grouted connections into any catch basin or manhole for a period of one year after the completion certificate has been issued.

All existing catch basins and manholes to be removed shall be disposed of off-site by the Contractor.

The Contractor shall construct clay berms behind all ditch inlet catch basins. The berms shall be topsoiled and seeded with an approved grass seed mixture.

H.9 Existing Drains/Tile Connections

The Contractor shall make all tributary tile drain connections in accordance with the Typical Tile Connection Detail found in the drawing set.

The Contractor shall be responsible for all tile connections for a period of one year after the issuance of the completion certificate. Tile connections required to be made within this warranty period shall be made at the same rate as defined on the Form of Tender and Agreement. After construction, the Contractor will be given the option to make any subsequent tile connections or have the Township make said connections and have the costs of which deducted from the holdback.

The Contractor shall supply all necessary materials to complete the connections of the existing drains to the new drain. The type of materials used to make the tributary drain connections shall be verified with the engineer.

All existing drains cut off during the installation of the new draining system that will be connected to the new drainage system shall be flagged or marked by the Contractor prior to the connection being made.

H.10 Rip-Rap

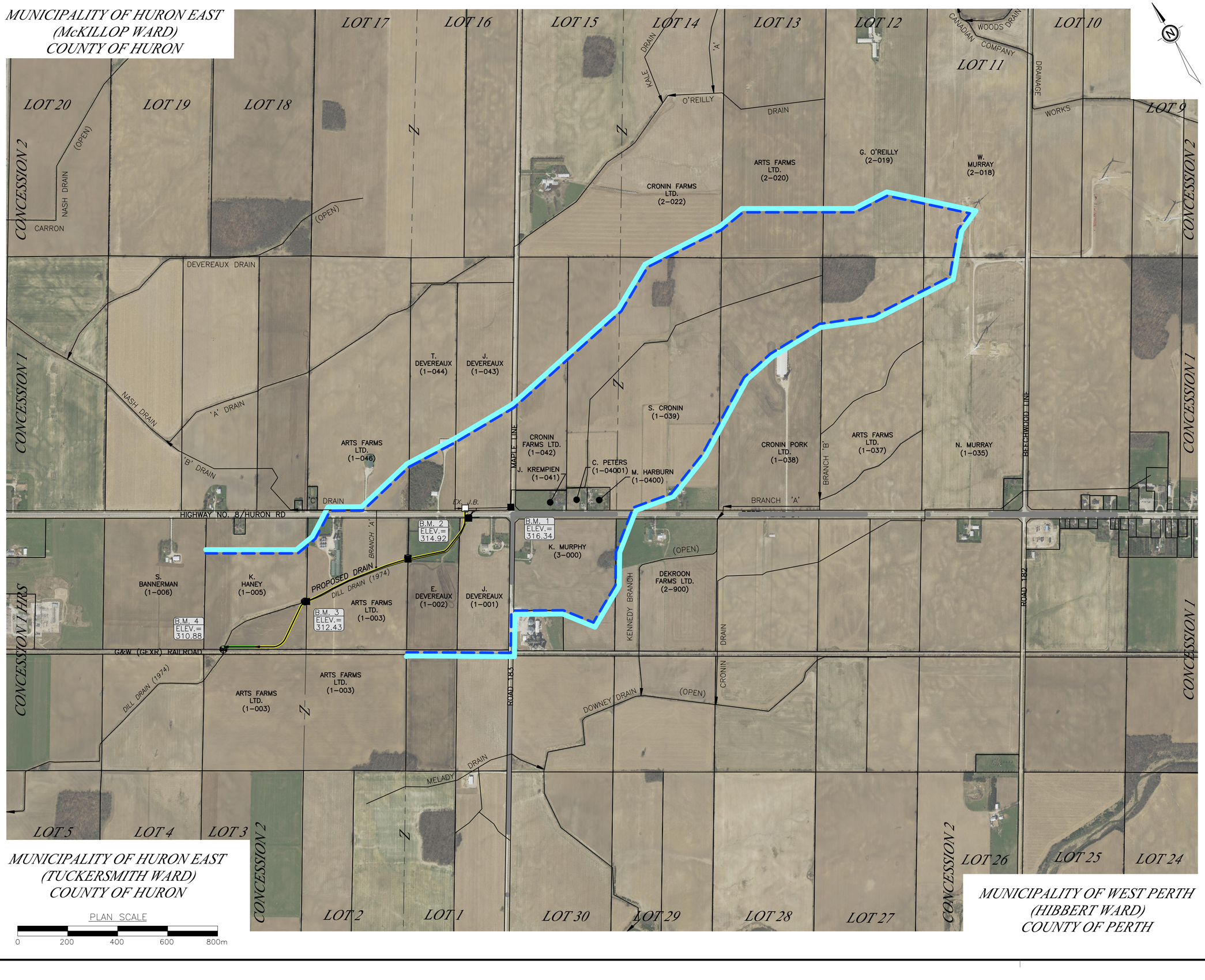
All stone rip-rap material shall be quarry stone 150mm to 300mm dia. and placed to a depth of 450mm. All rip-rap material shall be placed on geo-textile filter material (Mirafi 180N).

A quarry stone outlet structure/plunge pool shall be installed at the outlet of the tile drain (see attached drawing detail).

H.11 Sediment Erosion Control Measures

1. A silt fence and silt trap will be installed in the existing open ditch at the downstream end of the open construction.
2. A quarry stone-lined plunge pool will be constructed at the tile outlet to dissipate energy and provide long-term erosion control (see attached drawing)
3. The open ditch will be backfilled in dry conditions.
4. The Contractor shall complete the work during low flow or no flow conditions.
5. No in-water work is to be undertaken between March 15th and July 15th.

END OF DIVISION



NOTES:

1. ALL SOLID HIGH DENSITY POLYETHYLENE PIPE SHALL BE BELL & SPIGOT CSA B182.8 UNLESS OTHERWISE NOTED.

BENCHMARK No. 1 ELEV.=316.40
TOP OF EXISTING CONCRETE CB 12m EAST OF STA. 1+182 ON THE PROPOSED DRAIN ALIGNMENT.

BENCHMARK No. 2 ELEV.=314.92
TOP OF EXISTING CONCRETE CB 5m NORTH OF STA. 0+872 ON THE PROPOSED DRAIN ALIGNMENT.

BENCHMARK No. 3 ELEV.=312.43
TOP OF 600mm DIA. C.M.P. OUTLET PIPE AT STA. 0+431 ON THE PROPOSED DRAIN ALIGNMENT.

BENCHMARK No. 4 ELEV.=310.88
TOP NORTHWEST CORNER OF CONCRETE FOOTING FOR RAILROAD CULVERT 15m SOUTH OF STATION 0+000 ON THE PROPOSED DRAIN ALIGNMENT.

LEGEND:

- DRAIN NAME — EXISTING MUNICIPAL DRAIN
- INTERIOR/EXTERIOR WATERSHED BOUNDARY
- PROPERTY BOUNDARY
- LOT OR CONCESSION BOUNDARY
- TOWNSHIP BOUNDARY
- EXISTING CATCH BASIN OR JUNCTION BOX
- EXISTING MANHOLE
- DRAIN NAME — MUNICIPAL DRAIN (AREA OF WORK)
- WATERSHED BOUNDARY
- PROPOSED CATCH BASIN OR JUNCTION BOX
- PROPOSED MANHOLE
- BENCHMARK LOCATION — B.M. 1 ELEV.= 50.00 — BENCHMARK No. / BENCHMARK ELEVATION

No.	ISSUES AND REVISIONS	DATE	BY
3.	REPORT SUBMISSION	2025-05-05	DEL
2.	INFORMATION MEETING	2025-04-04	DEL
1.	ON-SITE MEETING	2022-12-14	DEL

REGISTERED PROFESSIONAL ENGINEER W. J. DIETRICH PROVINCE OF ONTARIO

HURON EAST ESTABLISHED 2001

PROJECT:
DILL MUNICIPAL DRAIN 2025

DRAWING:
WATERSHED PLAN

DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR:	DESIGNED BY:	DRAWN BY:	CHECKED BY:
W.J.D.	W.J.D.	V.M.C.	W.J.D.

DRAWING SCALE:	DATE:	PROJECT No.	DRAWING No.
AS NOTED	May 5, 2025	2215	1 of 5

MUNICIPALITY OF HURON EAST
(McKILLOP WARD)
COUNTY OF HURON

LOT 18 *LOT 17* *LOT 16* *LOT 15* *LOT 14*

LOT 19

CONCESSION 1

NASH DRAIN

'A' DRAIN

'B' DRAIN

'C' DRAIN

ARTS FARMS LTD. (1–046)

T. DEVEREAUX (1–044)

J. DEVEREAUX (1–043)

CRONIN FARMS LTD. (1–042)

J. KREMPIEN (1–041)

C. PETERS (1–04001)

M. HARBURN (1–0400)

S. CRONIN (1–039)

MAPLE LINE

EX. AWARD DRAIN OF 1913

BRANCH C (97m) 6" EX. J.B. 16" BRANCH B (225m)

STA. 1+212 N.R.L. M.H.
STA. 1+182 S.R.L. D/S D.I.C.B.

B.M. 1
ELEV.= 316.34

HIGHWAY NO. 8/HURON RD

BRANCH 'A'

B.M. 2
ELEV.= 314.92

STA. 0+872 R D.I.C.B.

27" EX. 18"

STA. 1+114 R EX. 16"

ROAD 183

K. MURPHY (3–000)

(OPEN)

DEKROON FARMS LTD. (2–900)

KENNEDY BRANCH

S. BANNERMAN (1–006)

K. HANEY (1–005)

EXISTING DITCH TO BE FILLED (400m)

STA. 0+431 R D.I.C.B.

30" EX. 21"

MAIN DRAIN (CLOSED)

EXISTING DILL DRAIN (CLOSED)

B.M. 3
ELEV.= 312.43

ARTS FARMS LTD. (1–003)

E. DEVEREAUX (1–002)

J. DEVEREAUX (1–001)

B.M. 4
ELEV.= 310.88

0+900

MAIN DRAIN (OPEN)

0+125

36"

MAIN DRAIN (ENCLOSURE)

G&W (GEXR) RAILROAD

SEE DETAIL PAGE 4

ARTS FARMS LTD. (1–003)

ARTS FARMS LTD. (1–003)

DILL DRAIN (1974)

CONCESSION 2

LOT 4 *LOT 3* *LOT 2* *LOT 1* *LOT 30* *LOT 29*

DOWNEY DRAIN

MUNICIPALITY OF HURON EAST
(TUCKERSMITH WARD)
COUNTY OF HURON

MUNICIPALITY OF WEST PERTH
(HIBBERT WARD)
COUNTY OF PERTH

PLAN SCALE

0 200 400 600 800m

NOTES:

1. ALL SOLID HIGH DENSITY POLYETHYLENE PIPE SHALL BE BELL & SPIGOT CSA B182.8 UNLESS OTHERWISE NOTED.

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BENCHMARK No. 4 ELEV.=310.88
TOP NORTHWEST CORNER OF CONCRETE FOOTING FOR RAILROAD CULVERT 15m SOUTH OF STATION 0+000 ON THE PROPOSED DRAIN ALIGNMENT.

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- BENCHMARK LOCATION — B.M. 1 ELEV.= 50.00 — BENCHMARK No. / BENCHMARK ELEVATION

No.	ISSUES AND REVISIONS	DATE	BY
3.	REPORT SUBMISSION	2025–05–05	DEL
2.	INFORMATION MEETING	2025–04–04	DEL
1.	ON–SITE MEETING	2022–12–14	DEL

REGISTERED PROFESSIONAL ENGINEER · W. J. DIETRICH · PROVINCE OF ONTARIO

HURON EAST · Seaforth · McKillop · Brussels · Grey · Tuckersmith · ESTABLISHED 2001

PROJECT:
DILL MUNICIPAL DRAIN 2025

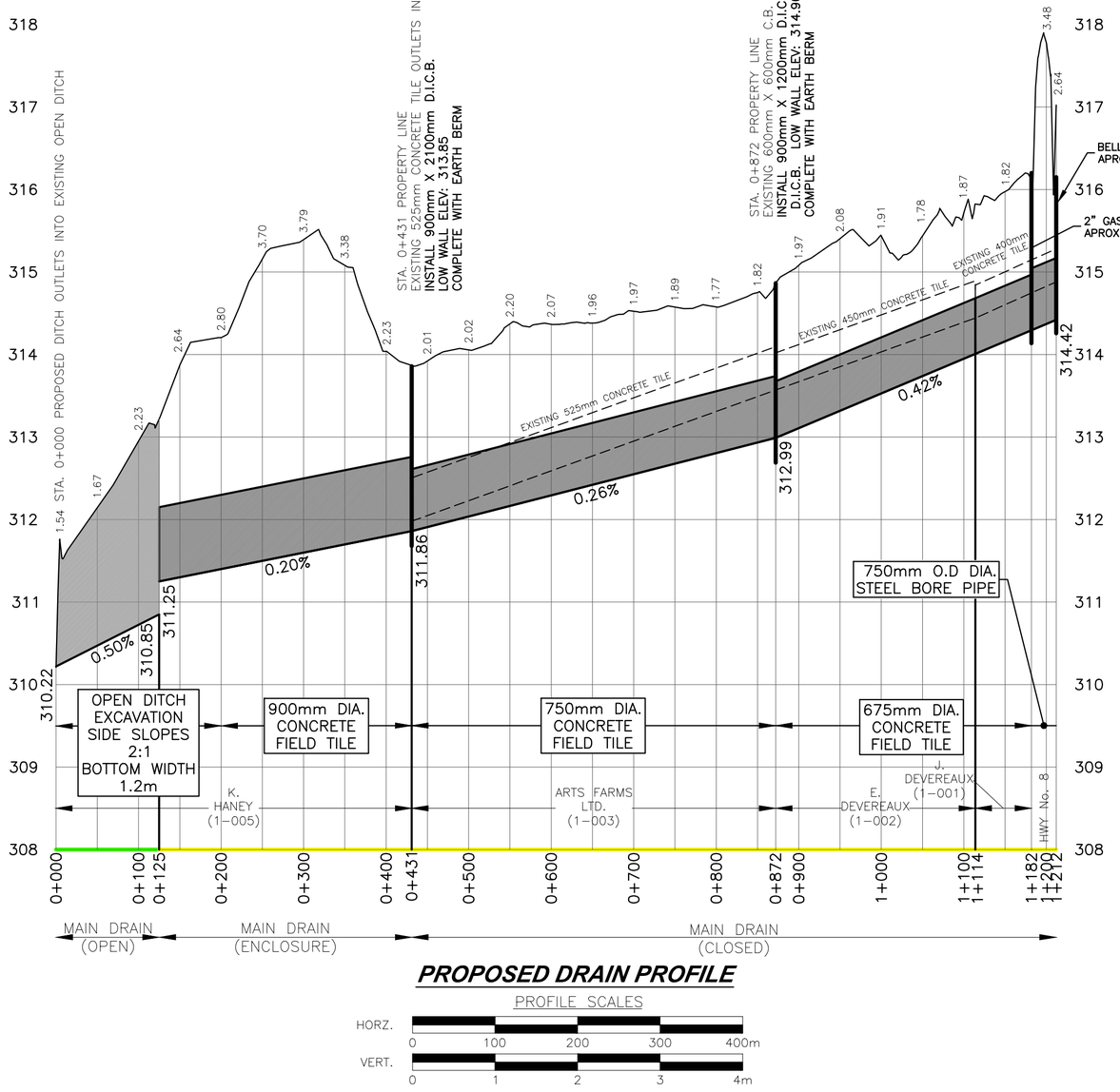
DRAWING:
PLAN

DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR: W.J.D.	DESIGNED BY: W.J.D.	DRAWN BY: V.M.C.	CHECKED BY: W.J.D.
DRAWING SCALE: AS NOTED	DATE: May 5, 2025	PROJECT No. 2215	DRAWING No. 2 of 5

TILE SIZES

No.	ITEM	SIZE (mm)	STATION	LENGTH (m)	THICKNESS (mm)
1.	HIGH DENSITY POLYETHYLENE OUTLET PIPE	900	0+125 – 0+131	6	
2.	CONCRETE FIELD TILE	900	0+131 – 0+431	300	
3.	CONCRETE FIELD TILE	750	0+431 – 0+872	441	
4.	CONCRETE FIELD TILE	675	0+872 – 1+182	310	
5.	SMOOTH WALL STEEL CASING	750 O.D.	1+182 – 1+212	30	9.53

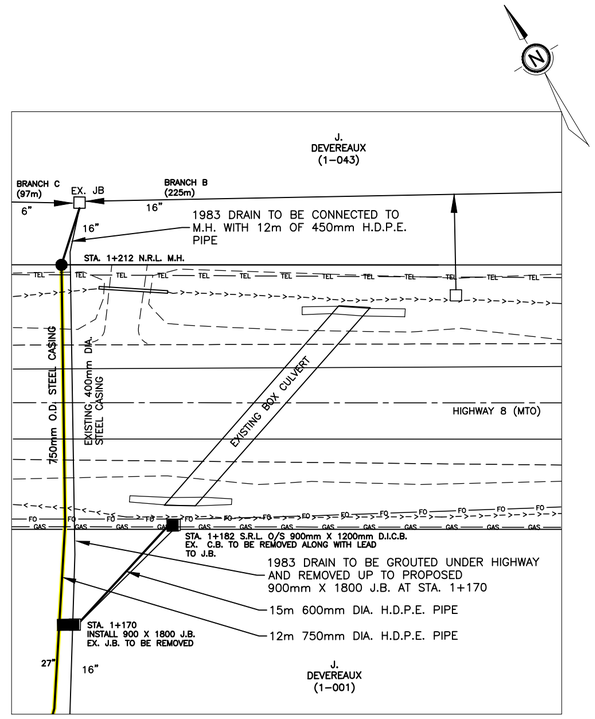


PROPOSED DRAIN PROFILE

PROFILE SCALES

HORZ. 0 100 200 300 400m

VERT. 0 1 2 3 4m



HIGHWAY 8 ROAD CROSSING DETAIL - MAIN DRAIN (CLOSED)

PROFILE SCALES

HORZ. 0 10 20 30 40m

VERT. 0 1 2 3 4m

NOTES:

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- EXISTING MANHOLE
- DRAIN NAME — MUNICIPAL DRAIN (AREA OF WORK)
- WATERSHED BOUNDARY
- PROPOSED CATCH BASIN OR JUNCTION BOX
- PROPOSED MANHOLE
- BENCHMARK LOCATION — B.M. 1 ELEV.= 50.00 — BENCHMARK No. / BENCHMARK ELEVATION

No.	ISSUES AND REVISIONS	DATE	BY
3.	REPORT SUBMISSION	2025–05–05	DEL
2.	INFORMATION MEETING	2025–04–04	DEL
1.	ON–SITE MEETING	2022–12–14	DEL

REGISTERED PROFESSIONAL ENGINEER W. J. DIETRICH PROVINCE OF ONTARIO

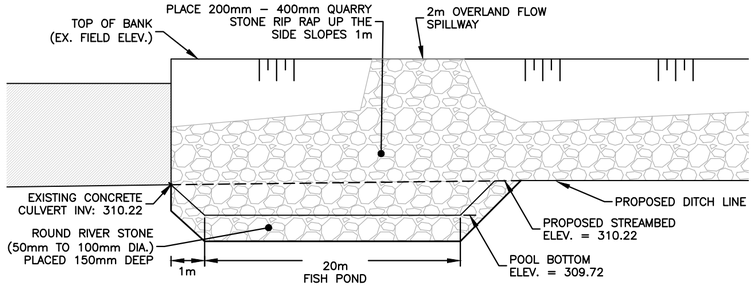
HURON EAST ESTABLISHED 2001

PROJECT:
DILL MUNICIPAL DRAIN 2025

DRAWING:
PROFILE

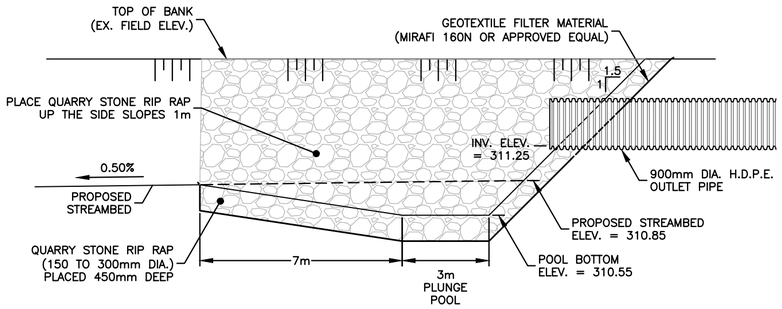
DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR: W.J.D.	DESIGNED BY: W.J.D.	DRAWN BY: V.M.C.	CHECKED BY: W.J.D.
DRAWING SCALE: AS NOTED	DATE: May 5, 2025	PROJECT No. 2215	DRAWING No. 3 of 5



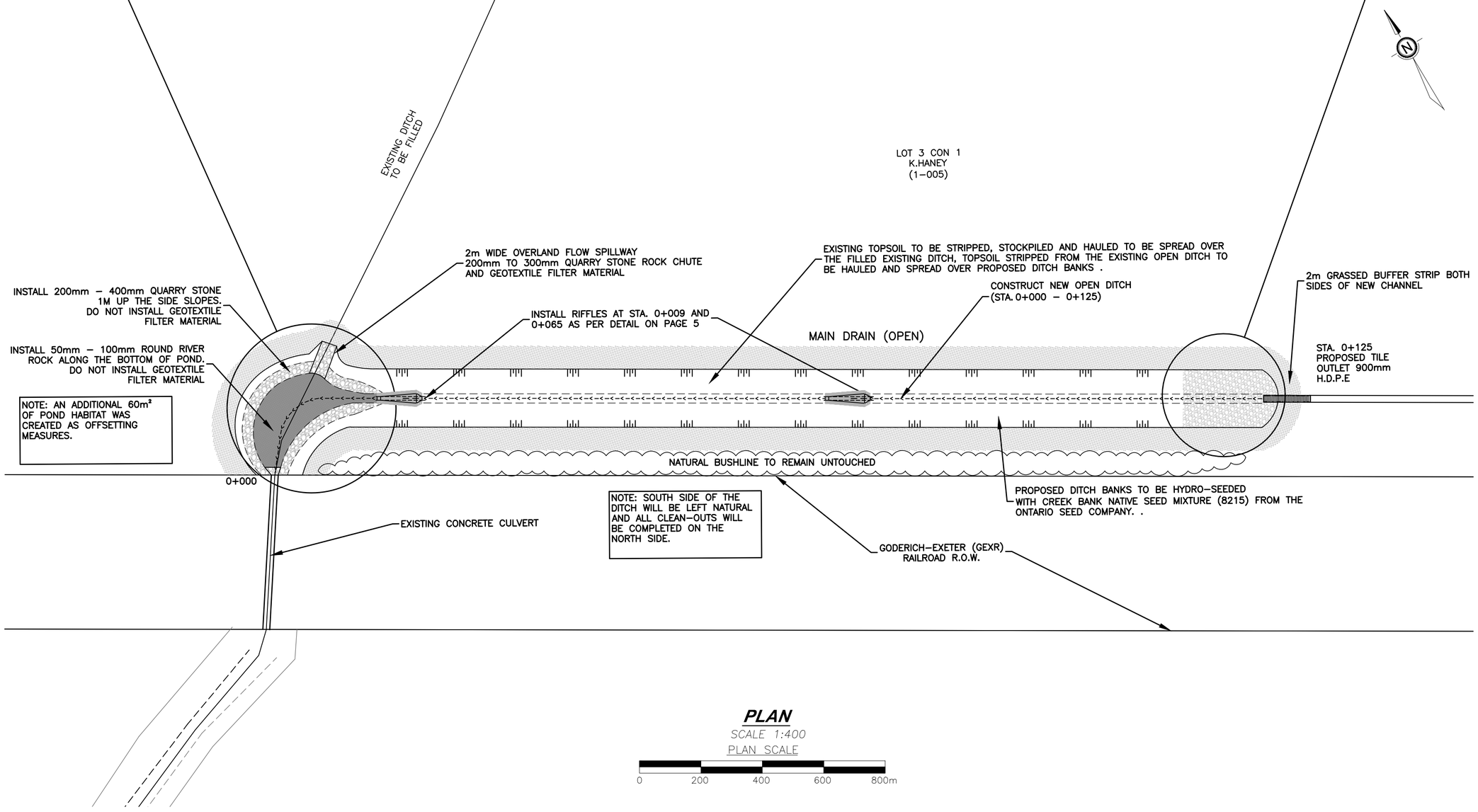
PLUNGE / FISH POOL DETAIL

N.T.S.



PLUNGE POOL OUTLET DETAIL

N.T.S.



PLAN

SCALE 1:400

PLAN SCALE

0 200 400 600 800m

NOTES:

1. ALL SOLID HIGH DENSITY POLYETHYLENE PIPE SHALL BE BELL & SPIGOT CSA B182.8 UNLESS OTHERWISE NOTED.

BENCHMARK No. 1 ELEV.=316.40
TOP OF EXISTING CONCRETE CB 12m EAST OF STA. 1+182 ON THE PROPOSED DRAIN ALIGNMENT.

BENCHMARK No. 2 ELEV.=314.92
TOP OF EXISTING CONCRETE CB 5m NORTH OF STA. 0+872 ON THE PROPOSED DRAIN ALIGNMENT.

BENCHMARK No. 3 ELEV.=312.43
TOP OF 600mm DIA. C.M.P. OUTLET PIPE AT STA. 0+431 ON THE PROPOSED DRAIN ALIGNMENT.

BENCHMARK No. 4 ELEV.=310.88
TOP NORTHWEST CORNER OF CONCRETE FOOTING FOR RAILROAD CULVERT 15m SOUTH OF STATION 0+000 ON THE PROPOSED DRAIN ALIGNMENT.

LEGEND:

- DRAIN NAME — EXISTING MUNICIPAL DRAIN
- INTERIOR/EXTERIOR WATERSHED BOUNDARY
- PROPERTY BOUNDARY
- LOT OR CONCESSION BOUNDARY
- TOWNSHIP BOUNDARY
- EXISTING CATCH BASIN OR JUNCTION BOX
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REGISTERED PROFESSIONAL ENGINEER · W. J. DIETRICH · PROVINCE OF ONTARIO

Seaforth · Mckillop · Brussels · Grey · Tuckersmith · HURON EAST · ESTABLISHED 2001

PROJECT:

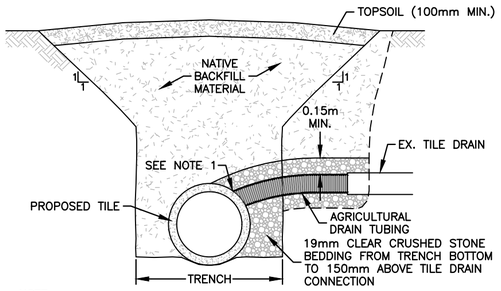
DILL MUNICIPAL DRAIN 2025

DRAWING:

OPEN DITCH DETAIL

DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR: W.J.D.	DESIGNED BY: W.J.D.	DRAWN BY: V.M.C.	CHECKED BY: W.J.D.
DRAWING SCALE: AS NOTED	DATE: May 5, 2025	PROJECT No. 2215	DRAWING No. 4 of 5

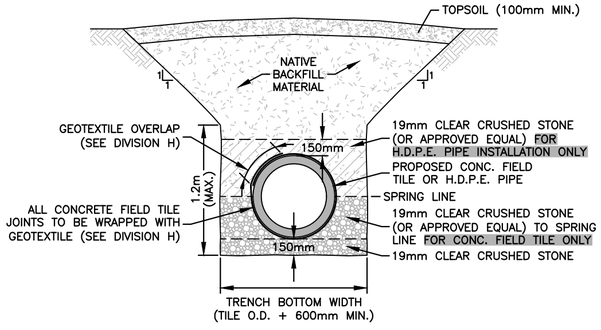


NOTE:

1. ALL TILE CONNECTIONS TO BE EITHER A CORED HOLE WITH AN INSERT COUPLER, OR A MANUFACTURED TEE.
2. CLEAR CRUSHED STONE BEDDING NOT REQUIRED IF DUAL WALL H.D.P.E. PIPE IS USED FOR THE CONNECTION.

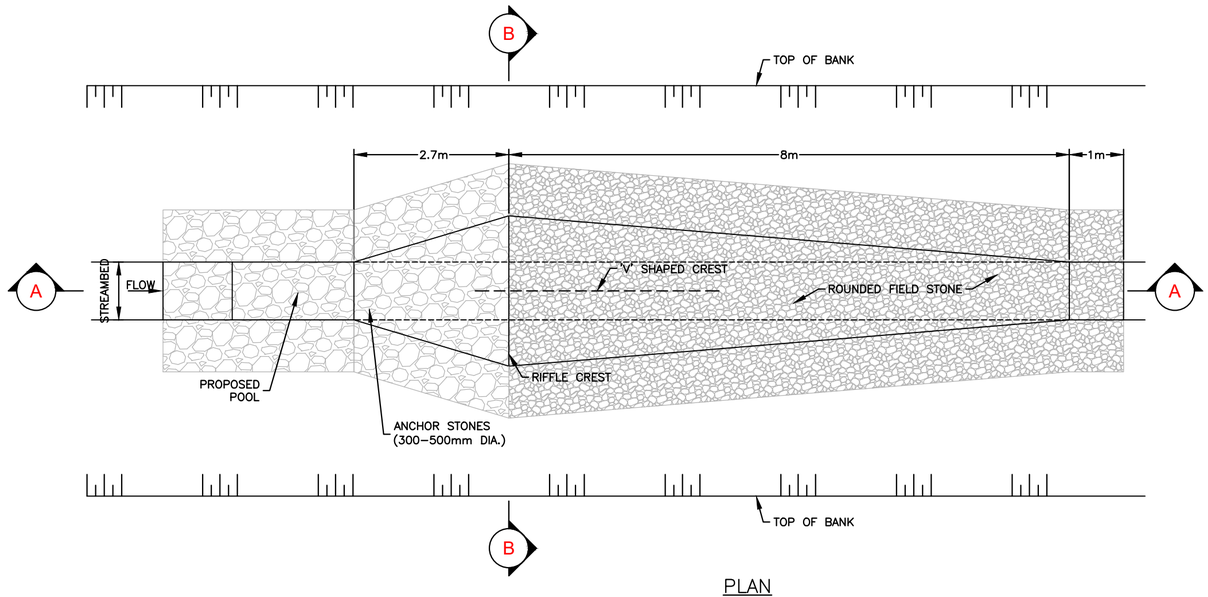
TYPICAL TILE CONNECTION DETAIL

N.T.S.

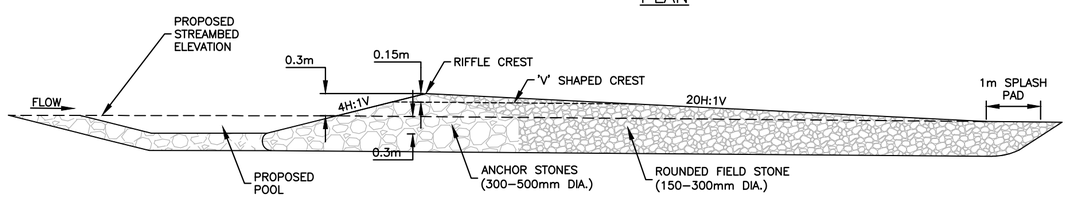


TYPICAL DRAIN INSTALLATION ON STONE BEDDING DETAIL

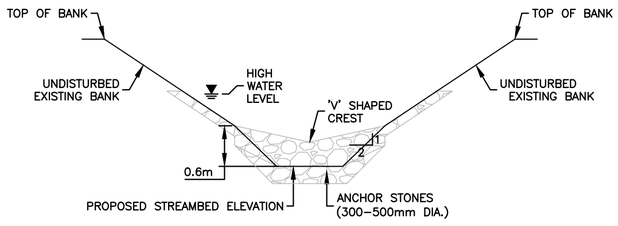
N.T.S.



PLAN



SECTION A



SECTION B

TYPICAL POOL AND RIFFLE DETAIL

N.T.S.

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REGISTERED PROFESSIONAL ENGINEER · W. J. DIETRICH · PROVINCE OF ONTARIO

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PROJECT:
DILL MUNICIPAL DRAIN 2025

DRAWING:
DETAILS

DIETRICH ENGINEERING LIMITED
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10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR: W.J.D.	DESIGNED BY: W.J.D.	DRAWN BY: V.M.C.	CHECKED BY: W.J.D.
DRAWING SCALE: AS NOTED	DATE: May 5, 2025	PROJECT No. 2215	DRAWING No. 5 of 5