Engineer's Report

Bolt Municipal Drain Improvement 2026

Municipality of Morris-Turnberry

STREAMLINE ENGINEERING INC.

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May 2026

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May 20, 2026

To the Mayor and Members of Council of the Municipality of Morris-Turnberry,

Streamline Engineering is pleased to present our accompanying report for the Bolt Municipal Drain Improvement 2026.

This report recommends the improvement of the drain crossing of County Road 87 (Harriston Road), the improvement of approximately 152m of municipal channel, the installation of approximately 473m of municipal drain tile on Lots 5-6, Concession 3 (Turnberry Ward), the filling of approximately 430m of drainage channel, and the improvement of the drain crossing of Kieffer Line.

The total estimated cost for this project is $308,000. This report assesses $42,400 to municipal lands, $104,000 to county lands, $159,600 to privately owned lands and $2,000 to utility companies.

We appreciate the opportunity to provide services to the Municipality of Morris-Turnberry and we trust that this report meets the requirements of the Municipality of Morris-Turnberry.

Respectfully submitted by,

Streamline Engineering Inc.

Trevor Kuepfer, P. Eng.
Project Engineer

Cody Kuepfer, C.E.T.
Civil Technologist

Table of Contents

1 Project Background 1
1.1 Existing Conditions 1
1.2 Project Authorization 3
1.3 Municipal Drain History 3
1.4 Watershed Area 3
2 Design Process and Engineering Considerations 4
2.1 Design Considerations 4
2.2 Environmental Considerations 4
2.3 Project Meetings 5
3 Proposed Work 6
3.1 Recommendations 6
3.2 Summary of Work on Each Property 6
4 Project Costs 7
4.1 Allowances to Property Owners 7
4.2 Project Cost Estimate 8
4.3 Assessment Schedules 8
4.4 Grant 10
5 Future Considerations 11
5.1 Maintenance 11

List of Schedules

Schedule A – Allowances
Schedule B – Project Cost Estimate
Schedule C – Construction Assessments
Schedule D – Maintenance Assessments

Appendices

Appendix A Construction Specifications
Appendix B Agency Documentation
Appendix C OMAFA Grant Eligibility Request Letter
Appendix D Drawings

1 Project Background

1.1 Existing Conditions

The Bolt Municipal Drain is a tile and channel drainage system located generally between Wroxeter and Bluevale. The focus of this project is the channel portion of the Bolt Municipal Drain located on Lots 5-6, Concession 3 in the Municipality of Morris-Turnberry (Turnberry ward). Specific to the channel east of the residential dwelling on Lot 6, Concession 3, the channel has minimal slope. Bank slumping is prevalent in the channel with many portions where the channel banks have collapsed into the channel. As a result, a large amount of sediment has accumulated throughout this portion of the channel as well as the crossing of Kieffer Line. The crossing of Kieffer Line was noted to be a steel pipe and was rusted throughout its length.

Figure 1 - Facing Northeast, The Bolt Municipal Drain on Lots 5-6, Concession 3 (Nov 2025)

Figure 2 – Facing Northeast, The Existing Channel on Lot 5, Concession 3 (July 2025)

Figure 3 – Inside Bolt Municipal Drain Culvert Crossing of Kieffer Line (Nov 2025)

West of the residential dwelling on Lot 6, Concession 3, the sedimentation within the channel improves notably as the slope in the channel increases, the stability of the banks improves, and vegetative cover on the banks increases. Flows from the drainage system are then conveyed across County Road 87 through a steel culvert that was noted to be damaged at the north end, rusted throughout its length, and relatively short. The generally short length of the culvert results in a steep drop off from the edge of the highway into the drainage channel.

Figure 4 - South End of Bolt Municipal Drain Culvert Crossing of County Road 87 (Nov 2025)

1.2 Project Authorization

This report has been prepared in response to an appointment by the Municipality of Morris-Turnberry, dated June 17, 2025 to provide an improvement to the Bolt Municipal Drain in accordance with Section 78(1) of the Drainage Act, R.S.O. 1990.

There was one request for drain improvement dated May 23, 2025 submitted by Trevor and Nathan Peel (Roll No. 3-006); owners of Lot 6, Concession 3.

1.3 Municipal Drain History

Streamline Engineering conducted a thorough review of all the historical documentation available in the Municipality of Morris-Turnberry office regarding the Bolt Municipal Drain as well as for other abutting Municipal Drains.

- The Bolt Municipal Drain was established in 1913.
  - This report provided for the establishment of the Main Drain, North and South Branches of the Bolt Municipal Drain which are generally located on Lots 40-44 Concession 1, Lots 4-8, Concessions 2 & 3, in the Municipality of Morris-Turnberry and outlet into the Maitland River.
- The Bolt Municipal Drain was improved in 1948 under a report by Fred A. Edgar, C.E.
  - This report provided for the improvement of various portions of the Main Drain, North and South Branches of the Bolt Municipal Drain and other miscellaneous work.
- The Bolt Municipal Drain was extended and improved in 1975 under a report by E.W. Shifflett, P. Eng.
  - This report provided for the establishment of approximately 1,925m of tile drain consisting of a Main Drain, 'A' Drain, and 'B' Drain servicing Lots 2-5, Concession 3 and other miscellaneous work.

1.4 Watershed Area

The total watershed area contributing to the Bolt Municipal Drain for this project is approximately 398.7 acres (161.3 hectares). The watershed was determined through the examination of topographic contour mapping, the examination of existing drainage reports, and the review of field survey and observations. The watershed area has been adopted as part of this report.

Land use within the watershed area is approximately divided as follows:

- 378.6 acres as agricultural lands
- 11.6 acres as woodlot
- 2.6 acres as municipal road ROW
- 5.9 acres as county road ROW

2 Design Process and Engineering Considerations

2.1 Design Considerations

Tile Drain

The tile system has been designed with the Drainage Coefficient Method outlined in the OMAFRA Drainage Guide for Ontario. The drainage coefficient relates to the design capacity of the drainage system, and is expressed as a depth of water removed from the contributing drainage area, in 24 hours.

For this project an approximate ¾ inch drainage coefficient has been used for the design of the tile drainage system.

Open Drain

OMAFRA Publication 852 recommends that for open drainage systems, the design standard for Upper-Tier Municipal Road Crossings is a 10-25 year return period storm event. The crossing of County Road 87 has been evaluated and designed to convey a 25-year return period storm event while maintaining a minimum 0.3m of freeboard to the travelled edge of the roadway.

Fish Passage

The County Road 87 crossing for this project has been designed with embedment and the hydraulic conditions have been reviewed to ensure that it does not create a barrier for fish passage. These factors are important to be considered to allow fish species to utilize the length of the channel as a habitat, for spawning, etc. once the proposed work is completed.

Water Quality

Rip-rap erosion protection has been proposed in erosion susceptible banks. Rock check dams and upstream sediment basins are also proposed to prevent the release of sediment to downstream lands during construction.

2.2 Environmental Considerations

The Department of Fisheries and Oceans Canada (DFO)

Streamline Engineering submitted a Request for Review to the DFO in July 2025 (DFO File No. 25-HCAA-01461). In October 2025 the DFO indicated that a Fisheries Act Authorization would be required for this project. Streamline Engineering completed an application for a Fisheries Act Authorization in January 2026 and the final Authorization was received from DFO in April 2026. The Authorization has been provided in Appendix B of this report.

The channel portion of the Bolt Municipal Drain is classified as a Class D watercourse, meaning that it is a permanently flowing watercourse that is mapped as habitat for fish species that spawn both in the spring and the fall.

Throughout consultation with the DFO, they had provided input specific to their objectives and this input was considered in the proposed works. Various offsetting measures have been incorporated into the project including but not limited to: establishment of riffle and pool structures, tree and shrub planting, establishment of a grassed buffer, designing crossings to have suitable embedment and flow characteristics to allow for fish passage, and conducting a fish salvage in the location of the channel filling at the time of construction.

Maitland Valley Conservation Authority (MVCA)

The MVCA has been apprised of this project throughout its progression. Their primary concern pertained to potential impacts to the watercourse floodplain. The drainage system has been designed following relevant design standards and no negative impacts to the watercourse floodplain are anticipated. Comments from the MVCA were considered in the proposed works and a permit from the MVCA has obtained by Streamline Engineering and is included in Appendix B.

The Ministry of Environment, Conservation and Parks (MECP)

There is no indication of any adverse impacts to Species at Risk because of the proposed works.

2.3 Project Meetings

Informal meetings were completed for this project in July 2025 and January 2026 to help establish the overall scope for this project. An on-site meeting for this project was held on May 5, 2026 at the drain crossing of Kieffer Line. The following were present at the meeting.

Trevor Peel	Property Owner
Nathan Peel	Property Owner
Edison Peel	Property Representative
Robert Purdy	Property Owner
Wyatt Carey	Project Manager, County of Huron
Lyle Campbell	Patrol Supervisor, County of Huron
Kirk Livingston	Drainage Superintendent, Municipality of Morris-Turnberry
Cody Kuepfer	Streamline Engineering
Trevor Kuepfer	Streamline Engineering

Prior to this meeting, Streamline Engineering had contacted each of the stakeholders to discuss the project, receive input, and discuss each of their individual preferences for the project. The watershed boundary, estimated costs, design, allowances and assessments for the recommended drain improvements were discussed with all those in attendance. The recommended improvements presented at the meeting included an improved crossing of County Road 87, approximately 152m of

channel improvements, the installation of approximately 473m of tile including an improved crossing of Kieffer Line, and the filling of approximately 430m of existing channel.

It was indicated that the Municipality of Morris-Turnberry Director of Public Works, Michael Alcock, should be contacted to discuss the specifics of the crossing of Kieffer Line. Streamline Engineering contacted him following the meeting.

3 Proposed Work

3.1 Recommendations

Considering topographic survey information, site investigations, design options and their respective costs, environmental constraints, and discussion with involved project stakeholders, Streamline Engineering is of the opinion that the following recommended work best addresses the concerns of the parties affected by the proposed work, while meeting required design constraints.

Streamline Engineering recommends improving of the County Road 87 crossing, improving approximately 152m of drainage channel with the incorporation of riffle and pool structures, plantings, and establishment of a grassed buffer, installing 473m of 30" diameter municipal drain tile with four concrete structures, improving the drain crossing of Kieffer Line, the filling of approximately 430m of drainage channel, and other miscellaneous work.

3.2 Summary of Work on Each Property

County Road 87 (Harriston Road)

- Construction of a temporary rock check dam;
- Installation of 22m of 2000mm diameter corrugated steel pipe with rip-rap erosion protection, highway restoration, removal and disposal of existing steel pipes, and necessary channel work;
- Hand seeding of all disturbed work areas.

Nathan and Trevor Peel (Roll No. 3-006)

- Tree clearing as required to facilitate channel improvement works;
- 152m of channel deepening with the construction of one stilling basin and establishment of two riffle and pool structures;
- Tree and shrub planting, live staking on channel banks, and seeding of 3m grassed buffer strip;
- Stripping and stockpiling of topsoil along the drain alignment to allow for restoration to be completed by the property owner;
- Installation of approximately 294m of 30" diameter concrete tile and 12m of 30" diameter dual-wall plastic pipe and filling of approximately 295m of channel by the property owner;
- Removal and disposal of existing laneway crossing and necessary laneway restoration;
- Connection of all tiles impacted by the proposed drain filling.

Kieffer Line

- Installation of one 3′ x 4′ concrete buried junction box with an 6m offset of 24″ dia. dual-wall plastic pipe to a 3′ x 4′ concrete catchbasin;
- Installation of 18m of 30″ diameter dual-wall plastic pipe;
- Installation of 12m of 24″ diameter dual-wall plastic pipe as a surface culvert complete with the removal of the existing steel culvert;
- Restoration of the roadway;
- Installation of one 3′ x 4′ concrete catchbasin;
- Hand seeding of all disturbed work areas.

975311 Ontario Ltd. c/o Nathan Peel (Roll No. 3-005)

- Stripping and stockpiling of topsoil along the drain alignment to allow for restoration to be completed by the property owner;
- Installation of approximately 149m of 30″ diameter concrete tile and filling of approximately 135m of channel by the property owner;
- Installation of one 3′ x 4′ concrete buried junction box;
- Connection of all tiles impacted by the proposed drain filling.

4 Project Costs

4.1 Allowances to Property Owners

For this project allowances have been provided under Section 30 of the Drainage Act which are further described below. The allowances for this project are provided in Schedule A of this report.

The working corridors and access routes for this project are utilized for allowance calculations and are summarized in the Special Provisions in Appendix A for this project.

Section 30 – Damages

The damage allowance compensates property owners for land damage that may occur during construction and in future maintenance activities.

In this report, damage allowances have been calculated as follows:

- A $1,600 per acre allowance has been provided on workable, agricultural lands where crop damage may be necessary during the drain construction.
- A $900 allowance was provided to the Nathan and Trevor Peel property (Roll No. 3-006) to restore the lawn area that will be disturbed during construction.
- A minimum damage allowance of $200 was provided to properties affected by minor construction activities.

4.2 Project Cost Estimate

The total project cost is estimated to be $ 308,000. This cost includes estimated construction costs, allowances, administrative costs, an allotment for contingency costs, net HST, interest charges, etc. Schedule B – Project Cost Estimate details a breakdown of all of the estimated costs anticipated for this project.

4.3 Assessment Schedules

All properties that are within a project watershed boundary, or that are the site of construction works may be assessed costs associated with a drainage project.

Streamline Engineering has prepared Schedule C – Construction Assessments which shall govern the distribution of the costs for this project. It is the opinion of Streamline Engineering that the assessments provided are fair and equitable for all assessed properties.

The Engineer is authorized to assess project costs in accordance with Sections 22 and 26 of the Drainage Act which are further described below.

Section 22 – Benefit

Benefit assessments are generally assessed to properties in the vicinity of where work is completed.

Benefit can be generally defined as advantages to any lands, roads, buildings or other structures resulting from the construction, improvement, repair or maintenance of a drainage works that will result in a higher market value, increased crop production, improved appearance, better control of surface or subsurface water, etc.

All costs associated with the pipe installation, channel filling, as well as the offsetting work required by the DFO Authorization have been assessed the relevant private properties as a benefit.

Section 26 – Special Assessment

Special assessments are utilized to directly assess increased costs that are required as a result of the existence of a roadway/utility directly to their owner.

Special assessments are calculated by first the determining the cost of a portion of the drain that is affected by the existence the road/utility including all associated administration costs. Following this the cost of an "equivalent drain" is determined by estimating the cost of the portion of drain if the roadway/utility did not exist. The difference between these two costs form the Special Assessment for the relevant owner.

For this project the following Special Assessments have been determined:

County Road 87:

Est. Construction Cost			
Items A1 (25%), A7, A8		$	62,000
Est. material costs for granulars, clearstone and rip-rap	+	$	11,200
Allotment for contingencies	+	$	5,300
Plus (+) Est. Admin Cost			
Engineering and Contract Administration	+	$	21,500
Est. net HST and interest	+	$	4,000
Est. Special Assessment		**$**	**104,000**

Whether or not the County of Huron elects to do work on their property, they shall be assessed the actual increased costs calculated as per the above table as a Special Assessment.

Kieffer Line:

Est. Construction Cost			
Items A1 (25%), A17a-d, A17e-f (50%), A18, A19 (50%)		$	28,600
Est. material costs for granulars, clearstone and rip-rap	+	$	3,000
Allotment for contingencies	+	$	2,400
Plus (+) Est. Admin Cost			
Engineering and Contract Administration	+	$	9,000
Est. net HST and interest	+	$	2,000
Less (-) Equivalent Drain Cost			
Supply and install 18m of 30" concrete tile	-	$	2,600
Est. Special Assessment		**$**	**42,400**

Whether or not the Municipality of Morris-Turnberry elects to do work on their property, they shall be assessed the actual increased costs calculated as per the above table as a Special Assessment.

Eastlink:

Est. Admin Cost			
Engineering and Contract Administration		$	900
Est. net HST and interest	+	$	100
Est. Special Assessment		**$**	**1,000**

Eastlink shall be assessed the actual increased cost calculated as per the above table as a Special Assessment.

Wightman Telecom:

Est. Admin Cost			
Engineering and Contract Administration		$	900
Est. net HST and interest	+	$	100
Est. Special Assessment		**$**	**1,000**

Wightman Telecom shall be assessed the actual increased cost calculated as per the above table as a Special Assessment.

4.4 Grant

Under the authorization of Section 85 of the Drainage Act, some properties may be eligible for an OMAFA grant for up to ⅓ of the property assessment. Grant eligibility is determined by the OMAFA Agricultural Drainage Infrastructure Program (ADIP). A property is required to be used for agricultural purposes and have a Farm Property Tax Class rate in order to be eligible for the grant under this program. The Municipality of Morris-Turnberry will be required to apply for this grant upon the completion of this project and if a property is eligible for to receive grant, it will be deducted from its assessment.

While drain enclosures are typically not grant eligible, Streamline Engineering is of the opinion that the proposed work for this project is necessary to address bank slumping and erosion issues on agricultural lands. The letter included in Appendix C was completed by Streamline Engineering with rationale supporting this. It was indicated by OMAFA that grant approval would not be provided in advance for this project. Rather, OMAFA would review and consider the grant application at the completion of the project.

A summary of the project assessments divided into grantable and non-grantable portions is included below:

Privately Owned Agricultural – Grantable	$	159,600
Special Non-Proratable Assessments	$	148,400
Total Estimated Assessments	**$**	**308,000**

5 Future Considerations

5.1 Maintenance

The Municipality of Morris-Turnberry will be responsible for the maintenance of the proposed drain following its construction as authorized by Section 74 of the Drainage Act.

The Municipality of Morris-Turnberry shall utilize Schedule D – Maintenance Assessments provided in this report to divide any maintenance costs using the same relative proportions until such time that the maintenance schedule is changed under the relevant process in the Drainage Act.

The Municipality of Morris-Turnberry shall be responsible for all maintenance costs associated with the work on the right-of-way of Kieffer Line and the County of Huron shall be responsible for all maintenance costs associated with work on the right-of-way of County Road 87.

Project Schedules

SCHEDULE A - ALLOWANCES

Bolt Municipal Drain Improvement 2026				
Lot	**Conc.**	**Property Owner**	**Roll No.**	**Damages (Sect. 30)**
5	3	975311 Ontario Ltd. c/o Nathan Peel	3-005	$ 1,200
6	3	Nathan & Trevor Peel	3-006	$ 3,700
7	3	Nathan & Trevor Peel	3-007	$ 200
7	2	Robert & Tina Purdy	2-011	$ 200
TOTAL ALLOWANCES				**$ 5,300**

Bolt Municipal Drain Improvement 2026

Item No.	SP No.*	Description	Approx. Quantity	Est. Cost
A1	1	Pre-construction meeting, mobilization, de-mobilization.	LS	$4,000
A2	2	Supply Granular 'A' material.	140 tonnes	$4,200
A3	3	Supply Granular 'B' material.	175 tonnes	$4,400
A4	4	Supply 19mm (¾") clear crushed stone.	300 tonnes	$9,700
A5	5	Supply 150mm to 300mm dia. rip-rap and required geotextile underlay.	135 tonnes	$8,900
A6	6	Construct a temporary rock check dam (OPSD 219.211) c/w removal once construction area has stabilized (Sta. -0+180).	LS	$1,200
Work on Highway 87				
A7	7	a) Supply 2,000mm dia. aluminized steel type II corrugated steel pipe (125mm x 25mm corrugations, min. 2.8mm thickness) and required couplers.	22 m	$20,400
		b) Provide all labour, signage, traffic control plan, and other necessary traffic control measures throughout the duration of construction.	LS	$3,500
		c) Remove and dispose of existing culvert.	LS	$1,000
		d) Install CSP, bedding and backfill material, rip-rap and complete channel works as specified c/w dewatering of work area as required.	LS	$17,500
		e) Handseeding of disturbed vegetated areas.	LS	$400
A8	8	a) Asphalt sawcut and milling of 60mm depth and 0.6m width of asphalt along joint as specified.	LS	$3,500
		b) Supply 60mm depth of HL4 hot mix asphalt for base course.	60 m^2	$2,400
		c) Supply 60mm depth of HL4 hot mix asphalt and tack coat for top course.	70 m^2	$2,800
		d) Place, level, and compact base course HL4 and top course HL4 c/w application of tack coat.	LS	$9,500
A9	9	Brushing and tree clearing to ground level to allow for channel work as specified. (Sta. -0+152 to 0+000)	LS	$2,000
A10	10	Approximately 113m of channel deepening, c/w spoil hauling for re-use as channel fill. (Sta. -0+152 to -0+136 & Sta. -0+116 to -0+019)	LS	$1,700
A11	11	Construct riffle, stilling basin and refuge pool as specified including the installation of rip-rap erosion protection and spoil hauling for re-use as channel fill. (Sta. -0+136 to -0+116)	LS	$3,000
A12	11	Construct riffle, and stilling basins as specified including the installation of rip-rap erosion protection and spoil hauling for re-use as channel fill. (Sta. -0+019 to 0+000)	LS	$5,000
A13	12	a) Supply 750mm dia. solid, plain end HDPE pipe (320 kPa) and rodent grate.	6 m	$1,800
		b) Install HDPE pipe via excavator on 19mm clear stone bedding and rodent grate. (Sta. 0+000 to 0+006)	6 m	$700

Item No.	SP No.*	Description	Approx. Quantity	Est. Cost
A14	12	a) Supply 750mm dia. concrete tile (2000D) and required geotextile.	39 m	$3,800
		b) Install concrete tile via excavator on 19mm clear stone bedding. (Sta. 0+006 to 0+045)	39 m	$2,000
A15	12	a) Supply 750mm dia. solid, plain end HPDE pipe (320 kPa).	6 m	$1,800
		b) Install HDPE pipe via excavator on 19mm clear stone bedding c/w laneway restoration and removal of existing culvert. (Sta. 0+045 to 0+051)	6 m	$1,000
A16	12	a) Supply 750mm dia. concrete tile (2000D) and required geotextile.	255 m	$25,000
		b) Install concrete tile via wheel trencher. (Sta. 0+051 to 0+306)	255 m	$9,700
Work on Kieffer Line				
A17	13	a) Supply 900mm x 1,200mm concrete JB.	LS	$1,800
		b) Install JB. (Sta. 0+306)	LS	$1,500
		c) Supply 600mm dia. solid, plain end HPDE pipe (320 kPa).	6 m	$1,200
		d) Install HDPE pipe via excavator on 19mm clear stone bedding. (Sta. 0+306 o/s 6m)	6 m	$300
		e) Supply 900mm x 1,200mm concrete CB c/w birdcage grate, tabs, and marker.	LS	$2,500
		f) Install CB. (Sta. 0+306 o/s 6m)	LS	$1,500
A18	14	a) Supply 750mm dia. solid, split coupler, HPDE pipe (320 kPa) and required couplers.	18 m	$5,400
		b) Supply 600mm dia. solid, split coupler, HPDE pipe (320 kPa) and required couplers.	15 m	$3,000
		c) Install HDPE pipes through Kieffer Line c/w removal and disposal of ex. culvert and road restoration as specified. (Sta. 0+306 to 0+324)	LS	$10,400
A19	13	a) Supply 900mm x 1,200mm concrete CB.	LS	$2,500
		b) Install CB. (Sta. 0+324)	LS	$1,500
A20	12	a) Supply 750mm dia. concrete tile (2000D) and required geotextile.	149 m	$14,600
		b) Install concrete tile via wheel trencher. (Sta. 0+324 to 0+443)	119 m	$4,500
		c) Install concrete tile via excavator on 19mm clear stone bedding. (Sta. 0+443 to 0+473)	30 m	$1,500
A21	13	a) Supply 900mm x 1,200mm concrete JB.	LS	$1,800
		b) Install JB. (Sta. 0+473)	LS	$1,500

Item No.	SP No.*	Description	Approx. Quantity	Est. Cost
A22	15	Connections to drain		
		a) 100mm dia. connection (Sta. 0+061)	LS	$200
		b) Supply and install approx. 18m of 150mm dia. solid, snap coupler, HDPE pipe (320 kPa) and required couplers for connection of existing private drain to drain. (Approx. Sta. 0+150)	LS	$900
		c) 100mm dia. connection (Sta. 0+203)	LS	$200
		d) Supply and install approx. 15m of 200mm dia. solid, split coupler, HDPE pipe (320 kPa), 12m of 150mm dia. solid agricultural tubing and required tees/couplers/reducers for connection of existing private tiles to drain. (Sta. 0+239)	LS	$1,300
		e) Supply and install approx. 15m of 150mm dia. solid, snap coupler, HDPE pipe (320 kPa) and required couplers for connection of existing private tile to drain. (Sta. 0+397)	LS	$700
		f) Supply and install approx. 6m of 375mm dia. solid, plain end HDPE pipe (320 kPa) and required geotextile for connection of existing drain to JB. (Sta. 0+473)	LS	$600
SUBTOTAL - Bolt Municipal Drain Improvement 2026				**$210,300**

Provisional Items

These costs are included to account for construction activities that may or may not be required at the time of construction.

Item No.	SP No.*	Description	Approx. Quantity	Est. Cost
P1	16	Construct, maintain, and remove temporary flow passage system c/w supply of all necessary equipment and materials to isolate working area.	LS	$2,500
P2	17	Removal of wheel trencher due to stony conditions.	5 ea.	$2,000
P3	18	Increased cost to install drain on 19mm (¾") clear stone bedding in areas of soil instability as per drain installation on stone bedding detail, not including the supply of clear stone.	150 m	$6,000
SUBTOTAL - Provisional Items				**$10,500**

Other Costs

Item No.	SP No.*	Description	Approx. Quantity	Est. Cost
O1		Completion of fish salvage.	LS	$2,500
O2		Tree and shrub planting, live staking, and grass seeding by MVCA.	LS	$4,500
SUBTOTAL - Other Costs				**$7,000**
TOTAL ESTIMATED CONSTRUCTION COST				**$227,800**

*SP No. refers to the Special Provisions - Project Specific Construction Specification associated with the item

SUMMARY OF COSTS

Construction	
Total estimated cost of construction	$227,800
Allowances	
Allowances to property owners	$5,300
Administration	
Public meetings, survey, design and drafting, utility investigations, preparation of cost estimates and assessments, drainage report preparation, presentation at the Consideration of the drainage report	$28,500
Coordination and consultation with agencies, submissions to agencies (DFO request for review, DFO Authorization application, and MVCA permit application), 2-year post construction monitoring and reporting as required by DFO Authorization	$12,500
Tendering, contract administration and construction review, grant application support	$20,500
Miscellaneous project expenses (i.e. printing, permitting fees, mileage, estimated interest charges, net HST, etc.)	$13,400
TOTAL ESTIMATED PROJECT COST	**$308,000**

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

These estimates do **not** include costs to defend the Drainage Report should appeals be filed with the Court of Revision, Drainage Tribunal, and/or Drainage Referee.

Bolt Municipal Drain Improvement 2026

Private Lands (Municipality of Morris-Turnberry)

Lot	Conc.	Property Owner	Roll No.	Benefit (Sect. 22)	Total Assessment	For Information Purposes Only: OMAFA 1/3 Grant	Total Allowances	Est. Net Assessment
5	3	975311 Ontario Ltd. c/o Nathan Peel	3-005	$ 56,700	$ 56,700	$ 18,900	$ 1,200	$ 36,600
6	3	Nathan & Trevor Peel	3-006	$ 102,900	$ 102,900	$ 34,300	$ 3,700	$ 64,900
7	3	Nathan & Trevor Peel	3-007	$ -	$ -	$ -	$ 200	$ (200)
7	2	Robert & Tina Purdy	2-011	$ -	$ -	$ -	$ 200	$ (200)
SUBTOTAL - Private Lands (Municipality of Morris-Turnberry)				**$ 159,600**	**$ 159,600**	**$ 53,200**	**$ 5,300**	**$ 101,100**

Special Assessments (Sect. 26)

Special Assessment against **Huron County** for work on **County Road 87**	$ 104,000
Special Assessment against the **Municipality of Morris-Turnberry** for work on **Kieffer Line**	$ 42,400
Special Assessment against **Eastlink** for work around **Eastlink Infrastructure**	$ 1,000
Special Assessment against **Wightman Telecom** for work around **Wightman Infrastructure**	$ 1,000
SUBTOTAL - Special Assessment	**$ 148,400**

TOTAL COST - BOLT MUNICIPAL DRAIN IMPROVEMENT 2026 $308,000

Notes:

Properties are presumed to have agricultural tax class, and thus be eligible for a ⅓ OMAFA grant, with the exception of properties denoted with a "*". Property owners shall note it is their individual responsibility to confirm the tax class of each of their properties and verify grant eligibility under the most current agricultural drain infrastructure (ADIP) policies.

Bolt Municipal Drain Improvement 2026

Private Lands (Municipality of Morris-Turnberry)

Lot	Conc.	Property Owner	Roll No.	Affected Area (acres)	Portion of Maintenance Cost			
					-0+180 to -0+147 (Highway 87)	-0+147 to 0+000	0+000 to 0+305 & 0+327 to 0+473	0+305 to 0+327 (Kieffer Line)
2	3	Mary Ann Peel & Diana Binotto-Peel	3-002	65.7	0.0%	14.8%	11.6%	0.0%
3	3	Nathan & Mary Ann Peel	3-003	97.4	0.0%	23.4%	18.4%	0.0%
4	3	Nathan Peel	3-004	98.8	0.0%	23.8%	18.7%	0.0%
5	3	975311 Ontario Ltd. c/o Nathan Peel	3-005	81.2	0.0%	19.5%	23.7%	0.0%
6	3	Nathan & Trevor Peel	3-006	38.7	0.0%	9.3%	21.1%	0.0%
7	3	Nathan & Trevor Peel	3-007	0.8	0.0%	0.2%	0.0%	0.0%
3	4	Menno & Ephraim Hoover	4-003	0.9	0.0%	0.1%	0.1%	0.0%
4	4	Wayne & Bonnie Sage	4-004	2.4	0.0%	0.3%	0.2%	0.0%
5	4	975311 Ontario Ltd. c/o Nathan Peel	4-005	4.3	0.0%	1.0%	0.8%	0.0%

Roads

Road Name	Property Owner	Affected Area (acres)	-0+180 to -0+147 (Highway 87)	-0+147 to 0+000	0+000 to 0+305 & 0+327 to 0+473	0+305 to 0+327 (Kieffer Line)
County Road 87	* Huron County	5.9	100.0%	5.7%	3.9%	0.0%
Kieffer Line	* Municipality of Morris-Turnberry	2.6	0.0%	1.9%	1.5%	100.0%

Total Affected Area (acres)	**398.7**				
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**

Notes:

Properties are presumed to have agricultural tax class, and thus be eligible for a ⅓ OMAFA grant, with the exception of properties denoted with a "*". Property owners shall note it is their individual responsibility to confirm the tax class of each of their properties and verify grant eligibility under the most current agricultural drain infrastructure (ADIP) policies.

Note conversation factor, 2.47105 acres are equal to 1 hectare

Appendix A

Construction Specifications

Table of Contents

1 Special Provisions 1
1.1 Working Space and Access Routes 1
1.2 Utilities 1
1.3 Anticipated Soil Conditions 2
1.4 Agency Project Requirements 2
1.5 Project Specific Construction Specifications 3
SP1 Pre-Construction Meeting, Mobilization, and De-Mobilization 3
SP2 Supply Granular 'A' 3
SP3 Supply Granular 'B' 3
SP4 Supply 19mm (¾ inch) Diameter Clearstone 4
SP5 Supply Rip-Rap Erosion Protection and Geotextile Underlay 4
SP6 Temporary Rock Flow Check Dam 4
SP7 County Road 87 Open Cut Crossing 4
SP8 Asphalt Work 6
SP9 Tree Clearing to Ground Level and Brushing 6
SP10 Channel Work 7
SP11 Stilling Basin and Riffle Structures 7
SP12 Tile Installation 7
SP13 Structure Installation 10
SP14 Kieffer Line Open Cut Crossing 11
SP15 Connections to Proposed Municipal Drain 13
SP16 Temporary Flow Passage System 14
SP17 Removal of Wheel Trencher 15
SP18 Special Installation Technique 16

2 General Requirements 17
2.1 Order of Precedence 17
2.2 Periodic and Final Construction Review 17
2.3 Existing Conditions 17
2.4 Benchmarks and Temporary Construction Markers 17
2.5 Material Specifications 18
2.6 Iron Bars 18
2.7 Pollution 18
2.8 Fences 19
2.9 Livestock and Standing Crops 19
2.10 Material Disposal 19
2.11 Removal of Large Stones and Rock 19
2.12 Damage by Vehicles and Other Equipment 19
2.13 Equipment and Material Staging 20

2.14 Deficient Items....20
2.15 Construction Document Errors....20
2.16 Alterations to Work....20
2.17 Liquidated Damages....21
2.18 Sub-Contractors....21
2.19 Payment....21
2.20 Substantial Performance and Contract Completion....21
2.21 Statutory Holdback....22
2.22 Warranty Holdback....22
2.23 Tests....22
2.24 Species at Risk....22
2.25 Weather....23
2.26 Dewatering....23
2.27 Erosion and Sediment Control....23
2.28 Seeding....23
3 General Specifications for Open Drains....24
3.1 Profile....24
3.2 Tile Outlets....24
3.3 Crossing of Open Drains....24
4 General Specifications for Tile Drains....25
4.1 Alignment....25
4.2 Profile....25
4.3 Trench Crossings....25

1 Special Provisions

Special Provisions are directions specific to this project. A project specific specification is included in the Special Provisions for each line item bid for the project. Should a discrepancy be noted between the Special Provisions and General Conditions/Specifications, the Special Provisions shall take precedence.

1.1 Working Space and Access Routes

The Contractor shall be entitled to undertake work and stage construction equipment/materials in the following working areas:

- A 10m width on the north side of the existing channel along from the County Road 87 crossing to the residential laneway on Lot 6, Concession 3.
- A 10m width centered on the proposed tile drain (Sta. 0+000 to 0+051).
- A 20m width centered on the proposed tile drain (Sta. 0+051 to 0+473).
- A 20m x 20m construction staging area on Lot 6, Concession 3.

The Contractor shall be entitled to utilize the following access routes, which shall be a maximum 6m in width:

- Access Route #1: From Harriston Road to the farm access driveway located near the property line between Lot 6 & Lot 7, Concession 3 on the north side of the road.
- Access Route #2: From Harriston Road to the 42190 Harriston Road driveway on the north side of the road on Lot 6, Concession 3.
- Access Route #3: From Kieffer Line to the west side of the road into the field on the south side of the existing drain.
- Access Route #4: From Kieffer Line to the east side of the road into the field on the south side of the existing drain.
- Access Route #5 – From Harriston Road to the 42374 Harriston Road driveway on the north side of the road on Lot 5, Concession 3.

The Contractor shall obtain approval from the Contract Administrator and relevant property owner(s) prior to exceeding the noted working spaces, or if they wish to use an alternative access route. The Contractor shall be responsible for any damages to lands, crops, etc. outside of the specified working areas or access routes.

1.2 Utilities

A utilities investigation was undertaken during the design stage to determine possible conflicts prior to the time of construction. The following utilities were noted in the area of the proposed drain:

County Road 87 (Harriston Road)

- Overhead hydro located approximately 8m south of the edge of gravel on Harriston Road.

- Underground fibre line located approximately 3-4m north of the edge of gravel on Harriston Road.
- Underground telephone line located approximately 8-9m north of the edge of gravel on Harriston Road.

Kieffer Line

- Two underground fibre lines located approximately 1m east of the edge of gravel on Kieffer Line.
- Underground telephone line located approximately 1m east of the edge of gravel on Kieffer Line.

42190 Harriston Road Laneway

- Various utility lines are anticipated to cross the drain in the vicinity of the laneway.

All public and private utilities shall be located by the Contractor prior to the construction of the proposed drain. If required by the specific utility, the Contractor shall be responsible to coordinate for a representative of the utility to be on-site during the relevant construction works.

1.3 Anticipated Soil Conditions

No soils investigation was completed for this project and soils conditions are generally unknown. However, soils are anticipated to be generally gravelly with small boulders based on commentary from the property owners.

1.4 Agency Project Requirements

The Contractor shall ensure that all relevant permits have been obtained prior to the commencement of any regulated construction activities and if required, ensure that they have a printed copy of the permit(s) available on-site.

Maitland Valley Conservation Authority (MVCA)

Attention is drawn to the MVCA permit. All work is to be in accordance with the terms and conditions of this permit.

The Department of Fisheries and Oceans Canada (DFO)

Attention is drawn to the DFO Fisheries Act Authorization. All work is to be done in accordance with the Authorization.

The Contractor shall note a requirement for a fish salvage for this project and shall give Streamline Engineering sufficient notice to allow for them to coordinate the fish salvage work to be completed.

The Ministry of Environment, Conservation and Parks (MECP)

There is no indication of any adverse impacts to Species at Risk because of the proposed works.

1.5 Project Specific Construction Specifications

SP1 Pre-Construction Meeting, Mobilization, and De-Mobilization

The Contractor shall not complete any construction activities prior to an executed Contract being completed, as well as confirmation of their anticipated construction start date with the Contract Administrator.

The Contractor shall be responsible to notify all property owners, the Drainage Superintendent and Contract Administrator and conduct a pre-construction meeting prior to the commencement of any construction activities. A minimum 48 hours' notice shall be provided by the Contractor.

Furthermore, this item covers the Contractor's costs associated with facilitation and attendance at the pre-construction meeting, the transportation and/or accommodation (meals and lodging) of labour, equipment, offices, conveniences, and other items not required to form part of the permanent works and not covered by other items in the Schedule of Unit Prices. This line item shall only apply to the first/ primary mobilization/demobilization required to fulfill the Contract. Additional mobilization costs will not be paid if the Contractor chooses to leave the site on their own accord following the initial mobilization. However, if at the discretion of the Contract Administrator a situation warrants the Contractor to demobilize from site to complete the remainder of the work at a later date, the costs associated with this may be negotiated with the Contract Administrator and paid as an extra item.

Payment at the Lump Sum price set out in the schedule of unit prices for the pre-construction meeting, mobilization and demobilization will be made as follows:

- 25% payable following the pre-construction meeting.
- 50% payable following the first mobilization.
- 25% payable on the Substantial Performance of the Contract.

SP2 Supply Granular 'A'

For the unit price bid per tonne, the Contractor shall supply Granular 'A' material as per the requirements in OPSS.MUNI 1010. This unit price shall be used for payment for all Granular 'A' installed for this project.

The Contractor shall provide tickets and/or adequate documentation to the Contract Administrator to support the quantity of Granular 'A' proposed to be paid.

SP3 Supply Granular 'B'

For the unit price bid per tonne, the Contractor shall supply Granular 'B' Type I, II, or III material as per the requirements in OPSS.MUNI 1010. This unit price shall be used for payment for all Granular 'B' installed for this project.

The Contractor shall provide tickets and/or adequate documentation to the Contract Administrator to support the quantity of Granular 'B' proposed to be paid.

SP4 Supply 19mm (¾ inch) Diameter Clearstone

For the unit price bid per tonne, the Contractor shall supply 19mm (¾ inch) dia. clear crushed stone as per requirements in OPSS.MUNI 1004. This unit price shall be used as payment for all 19mm clear crushed stone installed for this project.

The Contractor shall provide tickets and/or adequate supporting documentation to the Contract Administrator to support the quantity of clearstone proposed to be paid.

SP5 Supply Rip-Rap Erosion Protection and Geotextile Underlay

For the unit price bid per tonne, the Contractor shall supply 150 to 300mm (as per OPSS.MUNI 1004 R-50 classification) diameter quarry stone rip-rap. This unit price shall be used for payment for all rip-rap installed for this project.

Unless specified otherwise, it shall be assumed that the rip-rap erosion protection is to be installed on geotextile underlay and the Contractor shall include the cost to supply the geotextile in the bid of this line item. It should also be assumed that the bid price per tonne provided by the Contractor applies only to the tonnage of rip-rap provided.

The Contractor shall provide tickets and/or adequate documentation to the Contract Administrator to support the quantity of rip-rap proposed to be paid.

SP6 Temporary Rock Flow Check Dam

The Contractor shall install a temporary rock flow check dam as per OPSD 219.211 at approximately Sta. -0+180, prior to commencement of any work on the remainder of the proposed drain. This dam shall be considered the barrier to fish passage and allow for the fish salvage and channel works to be completed following installation. After the completion of the work and when so instructed by the Contract Administrator, the rock flow check dam shall be removed. The excess stone may be incorporated into the surrounding channel features.

SP7 County Road 87 Open Cut Crossing

The crossing shall be as constructed as per the accompanying drawings and details.

Notification and Traffic Control. The Contractor shall give the County a minimum five days' notice before they commence any work on the crossing and shall provide a traffic control plan for review by the County at that time. The information shall be provided to Wyatt Carey, Project Manager for the County of Huron (email: wcarey@huroncounty.ca, phone: (519) 440 – 2151). The Contractor shall note that the County has indicated that a road closure would be acceptable for the completion of this crossing, but a detour route would be required to be proposed by the Contractor and approved by the County prior to the beginning of construction.

The Contractor shall be responsible for providing, erecting, maintaining and removing all signage and traffic control in accordance with the Ontario Traffic Manual (OTM) and the OTM Book 7 Temporary

Conditions – Field Edition. Any required traffic control measures shall be the responsibility of the Contractor and the cost of the traffic control is to be included in the bid price for the crossing.

Agency Requirements. The culvert shall be installed in dry weather and in low or no flow channel conditions as per best management practices.

Construction. The Contractor shall strip all topsoil material that will be disturbed in the completion of the crossing. This material shall be stockpiled separately from the subsoil material. The Contractor shall note dewatering requirements noted in the General Specification for the crossing installation works.

The Contractor shall complete all trenching required to install the pipe with slopes as per OPSD 802.010. The Contractor shall stockpile the existing granular material separately from the native subsoil material. The existing pipe shall be removed and disposed of off-site by the Contractor.

The Contractor shall be responsible for all equipment, labour and material costs associated with temporary excavations (i.e. shelf construction within the crossing), access crossings, etc. required to facilitate the construction works. The Contractor shall restore any of these locations to existing conditions or better once they are no longer necessary.

The Contractor shall bed the pipe on a minimum 150mm thickness of 19mm dia. clear crushed stone or Granular 'A' material compacted to a minimum 98% Standard Proctor Dry Density (SPDD). The Contractor shall install the bedding material a minimum 300mm in thickness around the edges and top of the pipe at a minimum. The Contractor shall use imported Granular 'B' material be as backfill within the crossing, shall place the material in lifts no greater than 300mm in depth, and shall compact each lift with an approved vibratory plate compactor to a minimum 98% SPDD prior to the next lift being placed. Compacted backfill material shall extend a minimum 1m from the edge of the crossing projecting downwards at a 1H:1V slope at a minimum. The Contractor shall provide a minimum 200mm topcoat depth of Granular 'A' compacted to 98% SPDD. The final top width of the crossing shall match the existing crossing. All existing excavated material shall be installed and compacted to establish a suitable side slope at the location of the crossing to the satisfaction of the Contract Administrator and will not be permitted to be installed in the travelled portion of the roadway. Excess material shall be disposed of by the Contractor off-site.

The Contractor shall install a minimum 300mm depth of approved clay plug at each end of the crossing to the satisfaction of the Contract Administrator.

Any settlement or deficiency with the crossing shall be the sole responsibility of the Contractor. The property owner of the site of the crossing shall be contacted by the Contractor regarding any issues pertaining to the pipe installation on their property, prior to leaving the site. Any issues shall be remedied to the satisfaction of the Contract Administrator and Owner.

It is anticipated that the crossing will be able to be completed in minimal or no flow conditions. Should the drain be required to be constructed at a time where the flows within in drain are such that

a temporary flow passage system is necessary then the Contractor shall install a temporary flow passage system for the duration of the works within the drain at the provisional item cost.

Erosion Protection and Channel Work. In the locations specified on the accompanying drawings the Contractor shall install an approximate 450mm depth of 150mm to 300mm dia. rip-rap with geotextile underlay. The Contractor shall also excavate a stilling basin at the outlet of the culvert and complete channel works as necessary to transition from the crossing to the cross section of the channel in the vicinity of the crossing to the satisfaction of the Contract Administrator. This work shall be included in the Contractors bid of the relevant culvert installation line item.

Restoration. All stockpiled topsoil shall be spread and levelled in the disturbed vegetation areas at the conclusion of construction works. Following topsoil restoration with the stockpiled material, disturbed areas that were previously grassed shall be seeded as per the General Requirements.

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.

SP8 Asphalt Work

The existing asphalt shall be saw cut to provide for an approximate excavation width of 6.5m. The existing asphalt shall be removed and disposed of off-site by the Contractor. After completing the sawcut the Contractor shall verify the thickness of the existing asphalt structure. The Contractor shall mill an approximate 60mm depth and 0.6m width of asphalt adjacent to each sawcut so a lap joint can be established with the top coat of asphalt.

The Contractor shall supply one compacted 60mm lift of HL4 hot mix asphalt, and one 60mm lift of HL4 asphalt and these items shall be paid per m^2 provided. The Contractor shall place, level, and compact the asphalt as per OPSS.MUNI 310 to the satisfaction of the Contract Administrator. Prior to the placement of the top course of HL4 asphalt, tack coat shall be applied by the Contractor and this shall be included in the bid line item.

SP9 Tree Clearing to Ground Level and Brushing

Clearing means the cutting of all standing trees, brushing, and other vegetation to a maximum height of 300mm above the original ground level.

All trees greater than 150mm in diameter shall be felled, delimbed, cut into lengths no larger than 6m, and neatly stacked in piles to the satisfaction of the Contract Administrator.

Brushing means the removal of trees, limbs, and brush less than 150mm in diameter by the using one of the following methods:

- Chipped in place by an excavator equipped with a hydraulic brushing attachment.
- Chipped using a woodchipper and piled or spread within the ROW.
- Piled and burned in accordance with the Municipality of Morris-Turnberry's burning regulations and by-law(s).

The method preferred by the Contractor shall be discussed at the pre-construction meeting and shall be completed to the satisfaction of the Contract Administrator.

Any trees required to be removed for this project are specified in the list below:

Sta. -0+152 to 0+000 - The Contractor shall clear to ground level, and brush all trees along the north channel bank as well as a 3m width north of the channel.

SP10 Channel Work

All channel works shall be as per the Typical Channel Deepening Cross Section and profile on the accompanying drawing set.

All excavated material shall be utilized for fill in the existing channel from Sta. 0+000 to Sta. 0+045. Fill shall not be placed in the existing channel until the fish salvage has been completed.

The Contractor shall complete the following in locations where channel work is proposed:

- The drain shall be excavated to the elevation, minimum bottom width, side slopes, and relevant cross section specified on the accompanying drawings.
- Channel bank disturbance shall be minimized in the completion of the channel work.

SP11 Stilling Basin and Riffle Structures

The Contractor shall construct a riffle structure, refuge pool, and stilling basins as per the relevant cross sections, details, and profiles on the accompanying drawings. All rip-rap placed on channel banks shall be on a geotextile underlay.

Prior to the construction, the Contractor shall strip the topsoil from the work areas. The topsoil shall be stockpiled separately from the subsoil material and used for restoration when the features have been constructed.

All excavated material shall be utilized for fill in the existing channel from Sta. 0+000 to Sta. 0+045. Fill shall not be placed in the existing channel until the fish salvage has been completed.

SP12 Tile Installation

All concrete tile shall be 2000D strength. All HDPE pipe shall be solid dual-wall (i.e. smooth inner wall) pipe with a minimum 320 kPa stiffness at 5% deflection.

Topsoil Stripping

Topsoil shall be stripped and stockpiled separately from subsoil material in all areas where excavation work is proposed. Unless specified otherwise, the Contractor shall strip the topsoil from the area of the proposed tile trench a minimum 6m in width and it shall be stockpiled at the south extent of the working space.

The Contractor shall consider circumstances where additional topsoil stripping may be required, and any additional stripping work shall be included in their bid of the associated line item.

Trenching

Unless specified otherwise, all trenching shall be completed by the Contractor with equipment capable of excavating a trench with a rounded trench bottom (i.e. wheel trencher or approved equivalent) as per the Typical Drain Installation detail with the rounded bottom conforming to the outside diameter of the proposed pipe.

Where specified, trenching is required with an excavator and the pipe shall be installed with 19mm clearstone bedding and backfill as per the Typical Drain Installation on Stone Bedding detail.

The minimum trench width shall be equal to the outside diameter of the pipe plus 100mm on each side of the pipe. The maximum trench width shall be equal to the outside diameter of the pipe plus 300mm on each side of the pipe.

Where the tile installation exceeds the maximum digging depth of the Contractor's excavation equipment, they shall lower the surface grade in order that the Contractor may excavate at the correct depth and include the cost to complete such work in their bid of the associated line item.

Concrete Tile Installation

The concrete tiles shall be laid carefully so that successive tiles align both horizontally and vertically as firmly as possible and at a regular grade and alignment in accordance with the drawings. The maximum acceptable gap between any tiles shall be 10mm. Any ground/debris along the edges, faces, or inside of the tile shall be scraped off by the Contractor prior to the tile being laid. If requested by the Contract Administrator, the Contractor shall use a concrete saw to cut the edges of any concrete tile to bevel the tile and minimize the gap between the butt joints at a turn in the proposed drain.

The Contractor shall wrap all concrete tile joints with a min. 400mm width of RM-150 (4 oz.) non-woven geotextile or approved equivalent centered on the tile joints with the following minimum widths.

High Density Polyethylene Pipe Installation

All HDPE pipe shall be laid carefully so that the successive tiles align both horizontally and vertically as firmly as possible and at a regular grade and alignment in accordance with the drawings. The joints of the HDPE pipe shall be secured with a prefabricated coupler, or with the spigoted end of the pipe inserted into a gasketed bell end of the successive pipe to the satisfaction of the Contract Administrator.

Backfilling

Once sufficient time has been given for the Contract Administrator to verify the elevation of the tile, backfilling of the trench may commence. The tile installation trench shall be backfilled by the Contractor at the end of each working day. Clean native material free of stones greater than 150mm in diameter and organic material shall be used within 300mm of the proposed tile. In cases, where in the opinion of the Contract Administrator the backfill material is too stony to be used as backfill

around the tile, the Contractor shall use 19mm clear stone as backfill up to 150mm overtop of the tile. The Contractor shall take care to ensure that the area between the tile and the trench wall is backfilled as to avoid any voids between the tile and the trench wall. The remainder of the trench may be backfilled with the remaining native material and must be within 150mm of the original ground elevation.

Topsoil Restoration (By Others)

Following backfilling with the native material, the topsoil shall remain in stockpiles in the field and the topsoil restoration shall be completed by others.

Tile Installation Specifics

The proposed drain shall be bid and installed considering information highlighted in the table below:

Station Range	Comments
0+000 to 0+051	• Tile shall be installed via excavator as per Typical Drain Installation on Stone Bedding detail. • The Contractor shall strip as narrow a width as possible through the grassed area to avoid unnecessary disturbance to the lawn. • The drain shall be located approximately 4m offset from the south top of bank • One length of 750mm dia. solid HDPE pipe shall be used to outlet the drain into the channel. The HDPE pipe and the concrete pipe shall be butt jointed and double wrapped with geotextile. • The Contractor shall supply and install a rodent grate on the end of the outlet pipe. • The existing granular material through the driveway from 0+045 to 0+051 shall be initially stripped and stockpiled for the restoration of the driveway. The Contractor shall install a min 150mm depth of new Granular 'A' for the restoration of the driveway and the driveway shall be restored to the satisfaction of the Contract Administrator. • The 6m length of HDPE pipe from 0+045 to 0+051 shall be installed so that the centre of the pipe is aligned with the centre of the existing driveway. Each end of the pipe shall be butt jointed double wrapped with geotextile to the adjacent concrete tiles. • The existing culvert through the driveway shall be removed and disposed of off-site by the Contractor.
0+051 to 0+306	• Tile shall be installed via wheel trencher as per Typical Drain Installation detail. • Tile to be installed generally 6m offset from the south top of bank of the existing channel.
0+324 to 0+443	• Tile shall be installed via wheel trencher as per Typical Drain Installation detail. • Tile to be installed generally 6m offset from the south top of bank of the existing channel.

0+443 to 0+473	• Tile shall be installed via excavator as per Typical Drain Installation on Stone Bedding detail due to the crossing of the existing channel.

All of the aforementioned work shall be included as part of the work of the associated tile installation line item. An extra payment will not be made for the stripping, stockpiling and replacing of topsoil.

The Contractor shall be responsible for any damage to the new tile throughout the warranty period.

Provisional Items Associated with Tile Installation

The Contractor shall bid the installation on the basis of using the specified installation technique; however, as specified in the provisional items, the Contractor shall provide additional unit prices for instances that may require transition to a different installation technique.

Should the Contractor choose to voluntarily install tile using an excavator, where in the opinion of the Contract Administrator conditions would be suitable for installation with a wheel trencher, provisional item costs shall not apply and any additional material, labour, equipment, etc. costs incurred by the Contractor in doing so shall be their sole responsibility.

SP13 Structure Installation

The proposed catchbasins and junction boxes shall be manufactured with cored holes, knockouts, and sumps as per the applicable structure details, and shall be installed as oriented on any applicable detail drawings. Any existing structures in the general vicinity of a proposed structure shall be removed and disposed of offsite by the Contractor unless specified otherwise. The Contractor shall include the cost to complete all necessary municipal tile connections as part of the associated structure installation line item. Furthermore, the Contractor shall include the cost to complete parging on the interior and exterior of the structure for all completed connections.

All catchbasins shall have a minimum 300mm deep sump unless specified otherwise.

All catchbasins shall be cast in sections and include a minimum one 50mm to 150mm riser to allow for adjustment of the top elevation during construction to account for the field conditions. All catchbasin sections shall be wrapped with a minimum 400mm thickness of RM-150 (4 oz.) non-woven geotextile or approved equivalent.

Junction boxes shall have a minimum 150mm thick reinforced concrete lid and shall have a minimum 450mm of cover.

All structures shall be placed on either firm native material, or if necessary, 19mm clearstone bedding. All structures shall be levelled by the Contractor to the satisfaction of the Contract Administrator. Excavated subsoil material may be used by the Contractor as backfill surrounding the catchbasins, however the Contractor shall be responsible to address any settlement around the structure during the warranty period.

The Contractor shall place a minimum 1m width of rip-rap with geotextile on all sides of all catchbasins and install each catchbasin with tabs, and approved post and marker. All catchbasins shall

be topped with a birdcage type steel grate which shall be removable and shall be inset into a recess around the top of the structure.

The following specific notes shall be considered by the Contractor in their bid of the associated line item:

O/S CB at Sta. 0+306

- The Contractor shall supply and install approx. 6m of 600mm dia. solid HDPE (320 kPa) pipe via excavator on stone bedding as per the Typical Drain Installation on Stone Bedding Detail. The pipe shall be installed at a minimum 0.5% grade and should drain towards the junction box at Sta. 0+306.
- The catchbasin should be located in the low area and should be aligned with the proposed surface culvert crossing Kieffer Line. The catchbasin should be set in a way that allows positive drainage from the proposed surface culvert into the top of the catchbasin and both the outlet of the road culvert and catchbasin shall be armoured with rip-rap

CB at Sta. 0+324 – The catchbasin should be located on the property line between Kieffer Line and Lot 5, Concession 3.

JB at Sta. 0+473 – The junction box should be located near the upstream end of the existing channel where the existing pipe connects to the existing outlet pipe.

SP14 Kieffer Line Open Cut Crossing

The crossing shall be as constructed as per the accompanying drawings and details.

Notification. The Contractor shall give the Authority responsible for the lands being crossed a minimum five days' notice before they commence any work on the crossing and shall provide a traffic control plan for review by the Authority at that time. The plan shall be approved by the Owner prior to the beginning of construction. The information shall be provided to Michael Alcock at the Municipality of Morris-Turnberry (email: malcock@morristurnberry.ca, phone: (519) 887 – 6137 ext. 227).

Traffic Control. The Contractor shall be responsible for providing, erecting, maintaining and removing all signage and traffic control in accordance with the Ontario Traffic Manual (OTM) and the OTM Book 7 Temporary Conditions – Field Edition. Any required traffic control measures shall be the responsibility of the Contractor and the cost of the traffic control is to be included in the bid price for the crossing.

Construction. The Contractor shall strip all topsoil material that will be disturbed in the completion of the crossings. This material shall be stockpiled separately from the subsoil material. The Contractor shall note dewatering requirements noted in the General Specification for the crossing installation works.

The existing pipe shall be removed and disposed of off-site by the Contractor. All unsuitable or excess material shall be spread and levelled within the working ROW to the satisfaction of the Contract Administrator.

The Contractor shall be responsible for all equipment, labour and material costs associated with temporary excavations (i.e. shelf construction within the crossing), access crossings, etc. required to facilitate the construction works. The Contractor shall restore any of these locations to existing conditions or better once they are no longer necessary.

The Contractor shall complete all trenching required to install the pipe with slopes as per OPSD 802.010. The Contractor shall stockpile the existing granular material separately from the native subsoil material in the crossing for re-use in the crossing. If the native subsoil material is not suitable for re-installation in the roadway, Granular 'B' material shall be imported and paid for as a provisional item.

The Contractor shall bed the pipe on a minimum 150mm thickness of 19mm dia. clear crushed stone or Granular 'A' material compacted to a minimum 98% Standard Proctor Dry Density (SPDD). The Contractor shall install the bedding material a minimum 300mm in thickness around the edges and top of the pipe at a minimum. The Contractor shall use select native material, or if required, imported Granular 'B' material be used as backfill within the crossing and shall place the material in lifts no greater than 300mm in depth, and shall compact each lift with an approved vibratory plate compactor to a minimum 98% SPDD prior to the next lift being placed. Compacted backfill material shall extend a minimum 1m from the edge of the crossing projecting downwards at a 1H:1V slope at a minimum. The Contractor shall provide a minimum 150mm topcoat depth of Granular 'A' compacted to 98% SPDD. The final top width of the crossing shall match the existing crossing.

Should Granular 'B' be required to be imported to the site, only the additional labour time resulting from levelling the excess spoil in the working ROW or trucking away the excess spoil shall be considered to be extra work and shall be negotiated at the time of construction. These extra items shall only apply from the imported Granular 'B' displacing existing native material and shall not apply for the spoil levelling/trucking that will be required from the native material displaced by the proposed pipes, imported bedding material, topcoat of Granular 'A' material, etc.

Any settlement or deficiency with the crossing shall be the sole responsibility of the Contractor. The property owner of the site of the crossing shall be contacted by the Contractor regarding any issues pertaining to the pipe installation on their property, prior to leaving the site. Any issues shall be remedied to the satisfaction of the Contract Administrator and Owner.

It is anticipated that the crossing will be able to be completed in minimal or no flow conditions. Should the drain be required to be constructed at a time where the flows within in drain are such that a temporary flow passage system is necessary then the Contractor shall install a temporary flow passage system for the duration of the works within the drain at the provisional item cost.

Restoration. All stockpiled topsoil shall be spread and levelled in the disturbed vegetation areas at the conclusion of construction works. Following topsoil restoration with the stockpiled material, disturbed areas that were previously grassed shall be seeded as per the General Requirements.

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.

SP15 Connections to Proposed Municipal Drain

The Contractor shall complete all connections via excavator on a 19mm clearstone bedding and the stone shall be paid out based on the bid unit price in the Tender and not included in the bid of this line item. The Contractor shall ensure that all connections are properly supported to prevent settlement underneath connections and any tile required to cross the existing channel shall have all loose material removed to the firm ditch bottom and replaced with 19mm clearstone. The Contractor shall be responsible for any damage to the tiles throughout the warranty period.

For all connections initially the Contractor shall connect to the existing tile with an appropriate coupler or reducer and the connection shall be double wrapped with geotextile. Connections to the municipal tile shall be installed into the drain with a core drilled hole and manufactured HDPE tee/coupler fitting as per the detail in the accompanying drawings.

All connections shall be bid and installed considering information highlighted in the table below:

Station	Comments
0+061	• Existing outlet pipe on south bank to be removed and disposed of off-site by the Contractor • The Contractor shall supply and install 100mm dia. ag. tubing (assuming a length of 6m or less)
Approx. 0+150	• Contractor to locate the tile outlet on north bank in this area based on the tile map provided by the landowner. • Note that this connection will be required to cross the existing channel • Existing outlet pipe to be removed and disposed of off-site by the Contractor. • The Contractor shall supply and install approximately 18m of 150mm dia. solid, snap coupler, HDPE pipe (320 kPa).
0+203	• Existing outlet pipe on south bank to be removed and disposed of off-site by the Contractor • The Contractor shall supply and install 100mm dia. ag. tubing (assuming a length of 6m or less).
Approx. 0+239	• Two existing outlet pipes on north bank to be removed and disposed of off-site by the Contractor. • Note that this connection will be required to cross the existing channel.

	• Contractor to locate one of the tile outlets in this area based on the tile map provided by the landowner. • The Contractor shall supply and install approximately 18m of 200mm dia. solid, snap coupler, HDPE pipe (320 kPa). • The Contractor shall supply and install an 200mm dia. tee with the appropriate couplers/reducers to connect both existing 150mm dia. private tiles. • To connect the second existing 150mm dia. private tile the Contractor shall supply and install approx. 12m of 150mm dia. ag. tubing.
0+397	• Existing outlet pipe on north bank to be removed and disposed of off-site by the Contractor. • Note that this connection will be required to cross the existing channel. • The Contractor shall supply and install approximately 15m of 150mm dia. solid, snap coupler, HDPE pipe (320 kPa).
0+473	• Existing outlet pipe to be removed and disposed of off-site by the Contractor. • The Contractor shall supply and install approx. 6m of 375mm dia. solid HDPE pipe (320 kPa) for the connection of the existing municipal drain to the pr. structure. The new tile shall be butt jointed to the existing tile and double wrapped with geotextile. The tile shall be connected to the north wall of the structure. • The pipe shall be connected to the proposed junction box at the provided hole and parged on both the interior and exterior.

The Contractor shall be responsible for all tile connections made, or any missed tile connections over the course of the warranty period, and is required to rectify any deficiencies related to the connections.

SP16 Temporary Flow Passage System

The Contractor shall implement a temporary flow passage consisting of either a cofferdam and by-pass pump/culvert or a by-pass channel prior to any construction activities being completed.

The Contractor shall assess the risk of fluctuations in the flow volume as part of temporary flow passage design. The Contractor shall be responsible for the failure of the temporary flow passage system.

Cofferdam and Bypass Pump/Culvert Construction. The Contractor shall be responsible to construct two cofferdams, one at the upstream, and one at the downstream extents of the proposed work. The sizing of the cofferdams shall be as per the Contractor's judgement and the Contractor shall be responsible for any breaching, overtopping, or failure of the cofferdams.

The cofferdams shall be constructed with sand or pea gravel filled bags, sheet piles, or similar materials that are free of dirt, debris, sediment, fines, oil, grease, etc. to the satisfaction of the Contract Administrator. Should a material be deemed unsuitable, it shall be removed at the Contractor's expense. The Contractor shall include the cost to supply the cofferdam material as part of their bid of this line item.

The Contractor shall be responsible to size, supply, install and maintain a temporary pump system that can maintain the flow of the drain throughout the duration of the construction. The inlet of the pump system shall be wrapped in filter fabric and situated on a bed of rip-rap to prevent fish entry to the pump. The Contractor shall have a backup pump available at all times.

Alternatively, the Contractor shall size, supply, install and maintain a temporary by-pass pipe to maintain the flow of the drain throughout the duration of construction.

Following the completion of the work being isolated by the system, it shall be removed in the following order:

1. The downstream cofferdam shall be completely removed.
2. The water conveyance system shall be removed.
3. The upstream cofferdam shall be completely removed.

Bypass Channel. The Contractor shall construct a temporary by-pass channel leaving a plug at the edge of the existing channel at both the upstream and downstream ends. The sizing of the by-pass channel shall be as per the Contractor's judgement and the Contractor shall be responsible for any breaching, overtopping, or failure of the by-pass channel. Should sandy or erosive soil be encountered in the bottom of the channel and for 1m up the banks, rip-rap erosion protection with a geotextile underlay shall be used to line the channel bottom and bank.

The downstream plug of the by-pass channel shall be removed prior to the removal of the upstream plug. Once the plugs have been removed and the bypass channel is online, the original watercourse shall be dammed for the duration of the construction activities.

Following the completion of the work being isolated by the system, it shall be removed in the following order:

1. The dams to the original watercourse shall be completely removed.
2. The temporary by-pass channel shall be filled with appropriate material and restored to existing conditions or better to the satisfaction of the Contract Administrator.

SP17 Removal of Wheel Trencher

When large boulders or stony areas force the removal of the wheel trencher from the trench for cleanout and stone removal, prior to recommencing with the wheel trencher, the Contractor shall be paid a fixed sum as per the provisional item cost for each time this takes place between periods of continuous wheel trenching.

For the unit bid price per occurrence, the Contractor shall specify the cost for the removal of the wheel trencher as a result of large stones and/or poor soil conditions, as required for continued pipe installation with the wheel trencher. This cost shall include the time to complete the transition and the downtime for the working crew during the transition.

The Contractor shall keep a detailed list and review each pullout of the trencher with the Contract Administrator at the end of each working day. Stones or obstructions causing the wheel trencher removal shall be kept to the side of the trench as evidence for the Contract Administrator to verify. Pullouts of the trencher without sufficient evidence from the Contractor shall not be paid under this item at the discretion of the Contract Administrator.

In cases where the wheel trencher is removed to immediately switch to a special installation technique, the provisional item cost for this item will not apply. Under this scenario, the additional payment for the applicable alternate installation method will be applicable only.

SP18 Special Installation Technique

In areas where the drain is specified to be installed via wheel trencher, if poor construction conditions are encountered where, in the opinion of the Contractor, it is not feasible to use the wheel trencher, the Contractor shall immediately inform the Contract Administrator to obtain approval to switch to:

- Installation on a minimum depth of 100mm of 19mm dia. clear crushed stone (or approved equal) with 19 mm clear crushed stone backfill up to the springline of the pipe at a minimum.

The Contractor shall bid the additional unit price per lineal metre of trench, including all additional labour, equipment and materials (excluding the supply cost of 19mm clearstone) required, to install the pipe on 19mm (¾ inch) diameter clear crushed stone, or on geotextile wrapped 19 mm (¾ inch) diameter clear crushed stone, as per the details in the accompanying drawings, with a hydraulic excavator instead of a wheel trencher. The supply cost of the 19mm clearstone shall be paid based on the bid unit price in the Tender and not included in the bid of this line item.

The Contractor shall keep a list of stations where these installation techniques were used, to be confirmed with the Contract Administrator on a daily basis. When soil conditions are again favourable in the opinion of the Contractor and the Contract Administrator, the wheel trencher must again be used for tile installation as soon as possible.

All costs are to be included in the associated special installation technique provisional item costs. No extra payment will be made for the removal of the wheel trencher, crew downtime, or other costs for this transition when the Contractor is required to change to a special installation technique.

2 General Requirements

2.1 Order of Precedence

In the case of any inconsistency or conflict between construction specifications, the following order of precedence shall apply:

- Direction of the Contract Administrator
- Special Provisions
- Contract Drawings
- General Specifications
- General Requirements
- OPSS.MUNI 100

2.2 Periodic and Final Construction Review

Periodic review of the construction works will be made by the Contract Administrator during the completion of the work. The Contract Administrator may order the Contractor to daylight any aspect of the work completed so that they may verify elevations, or review any other aspect of the work.

Regardless of whether or not the Contractor's work has been checked by the Contract Administrator, the Contractor shall assume full responsibility for the alignment, elevations, and dimensions of each and all parts of the work.

Prior to demobilization and removal of equipment and materials from the site, the Contractor shall arrange an on-site final review of the work with the Contract Administrator. A minimum 48 hours' notice shall be provided by the Contractor.

2.3 Existing Conditions

The Contractor shall clean up and restore all disturbed areas to condition equal to or better than existing conditions using materials equal to or better than existing materials.

The Contractor shall maintain flow in all existing sewers, drains, ditches, watercourses, etc. as applicable.

2.4 Benchmarks and Temporary Construction Markers

The established benchmarks will govern the elevation of the proposed work and the Contractor shall verify the accuracy of benchmarks prior to completing any construction works. Any discrepancies shall be brought to the attention of the Contract Administrator immediately.

Both prior to and during construction, the Contract Administrator may set out temporary benchmarks, stakes, flags, or markers. The Contractor or property owner shall be held liable for the cost of re-establishing any destroyed benchmarks or temporary construction markers.

2.5 Material Specifications

Unless otherwise specified elsewhere in the Contract Documents the following specifications shall apply for the following construction materials.

- All concrete tile shall conform to the requirements of the most recent ASTM C412 specification for with a pipe strength of 2000D.
- All high-density polyethylene (HDPE) pipe shall be solid dual-wall (i.e. smooth inner wall) pipe with a minimum stiffness of 320 kPa at 5% deflection. The pipe joints shall be secured with either snap-on couplers for pipes up to and including 200mm in diameter, or split couplers for pipes larger than 250mm in diameter, or gasketed bell and spigot joints, whichever is specified in the Contract Documents.
- All agricultural tubing shall be corrugated inner and outer wall tubing conforming to the Land Improvement Contractors of Ontario – Standard Specification for Corrugated Plastic Drainage Tubing, 2006. Requirements for the tubing to be perforated or wrapped in a sock will be specified in the Contract Documents.
- All CSP shall be galvanized and according to OPSS.MUNI 1801.
- All non-woven geotextile shall be RM-150 (4 oz), Terrafix 270R or approved equivalent unless specified elsewhere.
- Granular 'A' material shall be as per requirements in OPSS.MUNI 1010.
- Granular 'B' material shall be as per requirements in OPSS.MUNI 1010 and may be Type I, II, or III.
- 19mm (¾ inch) crushed clear stone shall be as per requirements in OPSS.MUNI 1004.
- Asphalt materials shall be as per requirements in OPSS.MUNI 1150.
- Rip-Rap shall be as per requirements in OPSS.MUNI 1004 and be assumed to be R-50 classification (generally ranging from 100mm to 300mm in diameter).

2.6 Iron Bars

The Contractor shall notify the Contract Administrator should they disturb an iron bar during construction so it can be replaced by an Ontario Land Surveyor. If, to the discretion of the Contract Administrator, the disturbance of the iron bar is due to negligence on the Contractor's behalf, the Contractor shall retain an Ontario Land Surveyor to replace the bar at their own expense.

2.7 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 the construction materials or equipment is caused to flow into the drain, the Contractor shall immediately follow the relevant spill reporting and cleanup protocols specified by the relevant governing body.

2.8 Fences

The Contractor will be permitted to remove fences to the extent necessary to allow for the construction of the drain. Unless specifically noted in the Contract documents, disturbed fences shall be restored in as good of condition as they were found. Fences should be handled in such a manner to prevent any unnecessary damage. Where feasible, cutting of the fence and subsequently patching the fence shall be avoided. The Contractor shall not leave any fence open when not working in the immediate area and shall replace the fence in a timely manner.

Fences damaged beyond repair as a result of the Contractor's negligence shall be replaced with new materials similar to the existing fence to the satisfaction of the Contract Administrator, and all costs incurred shall be at the Contractor's expense.

2.9 Livestock and Standing Crops

The Contractor shall notify all property owners with a minimum 48 hours' notice prior to removing a fence that may contain livestock, or prior to damaging to any standing crops. The Contractor shall be responsible for all loss or injury of livestock, or damage to crops if they fail to provide 48 hours' notice to the relevant property owner.

Following notification, the property owner shall be responsible to keep the livestock clear of the construction activities until all such activities have concluded.

2.10 Material Disposal

The Contractor is responsible to remove and dispose of all excess construction materials off-site prior to demobilizing from the site.

2.11 Removal of Large Stones and Rock

The Contractor shall haul all stones greater than 300mm in diameter that remain at the ground surface following construction to a location approved by the property owner or, if there is no suitable location, disposed of off-site. Extra costs for such stone relocation/removal shall be to the discretion of the Contract Administrator.

2.12 Damage by Vehicles and Other Equipment

Throughout all construction activities, the Contractor shall be responsible maintain all road surfaces or other infrastructure impacted by the construction activities. This maintenance shall include but not be limited to scraping mud from the road surfaces, repairing potholes, etc.

If at any time, in the opinion of the Contract Administrator, damage is being or is likely to be done to any road or other infrastructure that is not included in the scope of work, by the Contractor's vehicles or other equipment, the Contractor shall, on the direction of the Contract Administrator and at the Contractor's own expense make changes in or substitutions for such vehicles or other equipment or

shall in some manner remove the cause of such damage to the satisfaction of the Contract Administrator.

2.13 Equipment and Material Staging

Construction equipment and materials shall be staged in the areas specified in the Contract Documents. No construction equipment or materials shall be left unattended within five (5) metres of any road ROW.

2.14 Deficient Items

Deficient items as noted by the Contract Administrator shall be remedied by the Contractor in a timely manner. The Contract Administrator shall, at their discretion, have the authority to holdback up to 250% of the value of a deficient item. If the deficient item is not remedied in a reasonable time frame, the Contract Administrator shall notify the Contractor, and, at the Contract Administrator's discretion, procure an alternative Contractor to complete the work and any outstanding payment associated with the deficient item shall be forfeited by the original Contractor.

2.15 Construction Document Errors

The Contractor shall notify the Contract Administrator immediately with respect to any errors or omissions with any of the construction contract documents. The Contractor shall be responsible for any decisions they make of their own accord to correct such errors or omissions and no extra charge shall be incurred because of said decisions.

The Contractor and Contract Administrator shall, in a timely manner, rectify the errors and omissions and adjust the contract documents as the situation warrants.

2.16 Alterations to Work

The Contract Administrator shall have the power to make alterations in the work and the Contractor shall proceed to make such changes without causing delay. Such alterations shall in no way render the Contract void.

The valuation of such alterations shall be determined as a result of negotiations between the Contractor and Contract Administrator, but in all cases the Contract Administrator shall maintain the final responsibility for the decision. Where such changes involve additional work similar to other items in the Contract, the price for the additional work shall be determined after consideration is given to the bid price for similar items.

Furthermore, in the event that the quantity of any provisional item exceeds the quantity specified in the Bid Form by more than 150%, the Contract Administrator may request revised unit pricing resulting from economies of scale, and the Contractor shall provide updated unit pricing within one (1) working day.

No claims for a variation or alteration in the increased or decreased price shall be valid unless done in pursuance of an order form from the Contract. In no case shall the Contractor commence work that they consider to be an extra charge before receiving approval from the Contract Administrator.

2.17 Liquidated Damages

It is agreed by the parties to the Contract, that if this Contract is not substantially performed by the required date specified in the Contract Documents without prior consultation with the Contract Administrator and Owner, that the Contractor may be subject to daily liquidated damages of $500 plus HST for each and every calendar day's delay in finishing the work to the discretion of the Contract Administrator and Owner.

2.18 Sub-Contractors

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

2.19 Payment

Progress payments equal to 87% of the value of work completed and materials incorporated shall be made to the Contractor on a monthly basis. The remaining 13% of the work completed shall consist of a 10% Statutory Holdback and a 3% Warranty Holdback for the project.

Payments shall be made on the written request and submission of a proper invoice by the Contractor to the Contract Administrator or Owner. A proper invoice submission, in addition to the definition provided in the Construction Act, R.S.O. 1990, c. C.30., shall require the following:

- Quantities and unit prices shall be provided for with adequate supporting documentation shall be provided by the Contractor for all necessary items. For extras in the Contract, the Contract Administrator may request a detailed labour and material breakdown.
- A current clearance certificate from the Workplace Safety and Insurance Board (WSIB).
- A detailed unit summary page denoting all payable line items, applicable holdbacks, taxes, etc.

If any of these requirements are not met to the satisfaction of the Contract Administrator, the Contract Administrator shall promptly notify the Contractor, at which time the Contractor shall revise the invoice. Prompt payment procedures shall not begin until the Contract Administrator receives a proper invoice to the satisfaction of the Contract Administrator.

2.20 Substantial Performance and Contract Completion

Substantial performance and Contract Completion shall be determined as per their respective definitions in Section 2 of the Construction Act, R.S.O. 1990, c. C.30.

Unless indicated otherwise, the Substantial Performance date shall be deemed to be the same as the date of Contract Completion and any documentation indicating such shall jointly represent certificates of Substantial Performance and Project Completion.

2.21 Statutory Holdback

In accordance with the Construction Act, a 10% Statutory Holdback shall held by the Owner and released sixty days after the earlier of:

- The date of publication of the of the Certificate of Substantial Performance, which the Contractor shall provide proof of; or
- The date of the certification of Contract Completion issued by the Engineer.

The holdback shall be released once the Contractor provides a Statutory Declaration that all material and/or labour incorporated in the work has been fully paid for.

2.22 Warranty Holdback

A 3% Warranty Holdback shall be held for a minimum one year from the date of Substantial Performance. If the Contract Administrator notifies the Contractor in writing of any deficient items prior to the expiration of the warranty period, they shall be remedied promptly by the Contractor notwithstanding that the rectification of the work may extend beyond the end of the warranty period. The warranty holdback shall not be considered due until all outstanding deficient items have been rectified by the Contractor to the satisfaction of the Contract Administrator.

2.23 Tests

The cost for testing of materials supplied to the job by the Contractor shall be borne by the Contractor.

The Contract Administrator shall have the authority to subject any lengths of any pipe to a competent testing laboratory to ensure the adequacy of the pipe. If any pipe supplied by the Contractor is determined to be inadequate to meet the applicable governing standards, the Contractor shall bear the full responsibility to remove and/or replace all such inadequate pipe with pipe that satisfies the requirements of said governing standards.

2.24 Species at Risk

The Contractor is responsible to ensure that during construction, no extirpated, endangered, threatened, or special concern species or their habitats are adversely affected. Should a Species at Risk be encountered, the Contractor shall notify the Contract Administrator immediately and follow the Ministry's guidelines and guidance regarding handling of the species, measures to exclude the species from the site, safety considerations, etc.

2.25 Weather

The Contractor shall make every effort to avoid working in weather conditions that may increase the difficulty of construction activities. Should the Contractor choose to work during periods of frequent rainfall or snow, or excessively hot or cold weather, etc., extra charges resulting from working in unfavourable construction conditions caused by such weather may not be applicable and shall be to the discretion of the Contract Administrator.

2.26 Dewatering

The Contractor shall dewater excavations/trenches and maintain the groundwater level at least 0.5m below the excavation bases, thereby facilitating proper completion of the work in reasonably dry, stable conditions. If a specific line item for dewatering is not included with the Contact, the cost of such dewatering shall be included with the bid of the associated line items and no additional payments shall apply if the Contractor is required to complete damming, pumping, etc. in order to facilitate construction works.

The dewatering system shall be discharged a minimum 20m away from its re-entry point to the drain to encourage water filtration. The quality of the water re-entering the watercourse shall be to the satisfaction of the Contract Administrator and should additional means be required to ensure suitable water quality (i.e. filter bags, settling ponds, check dams, geotextile, etc.), they shall be negotiated as an extra item at the time of construction.

2.27 Erosion and Sediment Control

Appropriate erosion and sediment control measures shall be in place for the entirety of construction and the Contractor shall regularly monitor and maintain said measures. The Contractor shall ensure that the site is left each day with appropriate controls to avoid erosion. No construction activities which may cause sediment to be conveyed downstream of the working area shall commence until appropriate erosion and sediment control measures are in place.

2.28 Seeding

Grass seed shall be fresh, and clean seed, and unless specified elsewhere be as per OPSS.MUNI 804 Standard Roadside Mix which is duplicated below for convenience. It shall be applied at a rate of 130kg per 10,000m^2:

- 50 % Creeping red fescue
- 10% Kentucky Bluegrass
- 35% Perennial Ryegrass
- 5% White clover

If a nurse crop is required, it shall be fall rye grain or winter wheat grain applied at a rate of 60 kg per 10,000m^2.

3 General Specifications for Open Drains

3.1 Profile

The profile drawing shows the approximate depth of cuts from the base of the existing open drain to the proposed base of the drain as well as the total existing depth of the open drain. These cuts are established for the convenience of the Contractor, however, benchmarks will govern the final elevation of the drain. Accurate grade control must be maintained by the Contractor during the work in the open drain to the satisfaction of the Contract Administrator.

3.2 Tile Outlets

During any construction activities on an open drain, the Contractor shall guard against damaging the outlet of any private or municipal pipes that outlet into the open drain.

Repair or replacement of any tile outlets shall be as per the accompanying drawings. Any marked tile drain outlets damaged during construction shall be repaired by the Contractor at their own expense. Any unmarked tile drain outlets damaged during construction shall be repaired by the Contractor and paid as a provisional item.

3.3 Crossing of Open Drains

No crossing of any drain, watercourse, or other waterbody with construction equipment shall be permitted throughout the duration of construction. Should a temporary crossing be required it shall be on a bed of rip-rap or a temporary crossing with an appropriately sized culvert shall be constructed by the Contractor. The Contractor shall be responsible for the failure of the temporary crossing or if any deleterious substances are released as a result of inadequacies with the temporary crossing.

The Contractor shall remove all materials associated with the temporary crossing when it is no longer required and restore the channel to its undisturbed conditions or better to the satisfaction of the Contract Administrator.

4 General Specifications for Tile Drains

4.1 Alignment

The Contractor shall contact the Contract Administrator to establish the approximate course of the drain at the onset of construction and provide a minimum 48 hours' notice to do so. The drain shall run in as straight a line as possible throughout its length.

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 the existing drain, or between two runs of existing drains, the Contractor shall locate the existing drain(s) at intervals along the course of the drain such that the disturbance of any existing drainage systems is minimized. The frequency of drain locating shall be to the discretion of the Contractor and should be generally more frequent in areas where the existing drain is turning to avoid disturbance of the existing system. The costs of locating shall be included in the bid price and the Contractor shall be responsible to repair any tiles that are damaged during the drain locating at no additional cost.

4.2 Profile

The profile drawing shows the elevations and gradients that the tile drain shall be installed at as well as the approximate depth of cuts from the existing ground elevation to the proposed invert of the pipe in key locations. The cuts are noted for the convenience of the Contractor, however, benchmarks will govern the final elevation of the drain. Accurate grade control must be maintained by the Contractor during the installation of any tile drains to the satisfaction of the Contract Administrator.

When installing a drain towards a fixed point such as a previously installed bore pipe, the Contractor shall confirm the elevations of such a fixed point at a sufficient distance away from the pipe in order to allow for any minor adjustments to the pipe grade as required.

4.3 Trench Crossings

The Contractor shall not cross any backfilled trench with any construction equipment, except at 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 to adequately support the equipment and vehicles that may cross the trench. The Contractor shall be responsible for any damage to the new tile resulting from the crossing of the drain.

Appendix B

Agency Documentation

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 7, 2026

Our file *Notre référence*

25-HCAA-01461

Municipality of Morris-Turnberry
ATTENTION: Kirk Livingston
41342 Morris Road, P.O. Box 310
Brussels, ON
N0G 1H0

Subject: Drain Enclosure, Bolt Main Drain, Class D, Turnberry – *Fisheries Act* Authorization

Dear Kirk Livingston:

Pursuant to Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*, Fisheries and Oceans Canada (DFO) authorizes the carrying on of your proposed work, undertaking or activity that results 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*

The work includes the enclosure of approximately 430 linear metres of Bolt Drain upstream of Highway 87/Harriston Road, resulting in the removal/destruction of approximately 1,290 m^2 of fish habitat. The authorization under paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act* is attached.

Failure to comply with any of the terms or conditions of the attached authorization may lead to prosecution under the *Fisheries Act*.

A copy of this authorization shall be kept on site while the work is in progress and, upon request, be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

As you are aware, Bill C-68 included new provisions (sections 42.2 to 42.5) in the *Fisheries Act* that require the Minister of Fisheries and Oceans to establish a public registry to facilitate public access to certain records, including amongst other items, authorizations issued pursuant to paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act.* While the public registry provisions of the *Fisheries Act* are not yet in force, the Department has begun to post a list of authorizations issued since August 28, 2019, when amendments to the fish and fish habitat protection provisions of the Act came into force.

Information pertaining to this authorization will be posted to the *Fisheries Act* Registry and accessible from the Department's website at https://www.dfo-mpo.gc.ca/pnw-ppe/registry-registre-eng.html as well as from the Open Government Portal at https://open.canada.ca/data/en/dataset/2c09d2fd-9a8e-4d8c-b5af-95747e36eaac and the Common Project Search at https://common-project-search.canada.ca/. Information and data will be updated as the Department continues to develop the *Fisheries Act* Registry.

Any disclosure of information will be conducted in accordance with the *Access to Information Act* and the *Privacy Act*. Should you have any documents that contain sensitive or proprietary information that you believe should be protected from public disclosure, please contact us to discuss whether and how the information may be protected.

If you or anyone conducting work on your behalf have any questions please contact Paul Kraly at our Burlington office at by email at paul.kraly@dfo-mpo.gc.ca.

Yours sincerely,

Digitally signed by Mitchell, Tricia
Date: 2026.04.08 09:52:23 -04'00'

Tricia Mitchell
Regional Director General
Fisheries and Oceans Canada
Ontario and Prairie Region

ATTACHMENT: *Fisheries Act* Authorization

Cc: Trevor Kuepfer (Streamline Engineering Inc.)
Cody Kuepfer (Streamline Engineering Inc.)
Micheal Siemon (Streamline Engineering Inc.)

Paragraphs 34.4(2)(b) and 35(2)(b) *Fisheries Act* Authorization

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Authorization issued to
Municipality of Morris-Turnberry *(hereafter referred to as the "Proponent")*
Attention: Kirk Livingston
41342 Morris Road, P.O. Box 310
Brussels, ON, N0G 1H0

Location of Proposed Project
Nearest community (city, town, village): Turnberry Township
Municipality, district, township, county: Municipality of Morris-Turnberry
Province: Ontario
Name of watercourse, waterbody: Bolt Drain
Longitude and latitude, UTM Coordinates: 43.863, -81.198

Valid Authorization Period

This Authorization remains in force from the **Date of Issuance** until **June 3, 2029.**

Please note that this Authorization may contain more specific timing requirements and limitations. These are set out in the Conditions of Authorization section.

Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part of involves:

- Enclosing approximately 430 linear metres of Bolt Drain, a Class D drain, upstream of Highway 87/Harriston Road.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in the harmful alteration, disruption or destruction of fish habitat:

The work(s), undertaking(s), or activity(ies) associated with the proposed project described above, that are likely to result in the harmful alteration, disruption or destruction of fish habitat, are:

- Enclosure (infilling) of 430 linear meters of Bolt drain, resulting in the destruction of permanent fish habitat.

The authorized work(s), undertaking(s), or activity(ies) are likely to result in the following impacts to fish and fish habitat:

- Destruction of a maximum of 430 linear metres (1,290m^2) of Class D drain habitat.

Conditions of Authorization

The above described work, undertaking or activity must be carried on in accordance with the following conditions.

1. **Conditions that relate to the period during which the work, undertaking or activity can be carried on**

The work, undertaking or activity that is/are authorized to be carried on during the following period:

From **Date of Issuance** to **October 1, 2026.**

If the Proponent cannot complete the work, undertaking or activity during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above time period. An application for amendment, suspension or cancellation of the authorization should be submitted to DFO.

The periods during which other conditions of this authorization must be complied with are provided in their respective sections below.

1.1 The Proponent shall notify DFO at least 10 days prior to starting any in-water works by sending an email to the DFO 10 day notification inbox at DFO.OP.10DayNotification-Notification10Jours.OP.MPO@dfo-mpo.gc.ca .

2. Conditions that relate to measures and standards to avoid and mitigate impacts to fish and fish habitat.

2.1 Sediment and erosion control: Sediment and erosion control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity.

2.1.1 Effective erosion and sediment control measures shall be in place prior to, during, and after construction activities and shall remain in place until the site is permanently stabilized.

2.1.2 A minimum of one (1) sediment trap with a rock check dam immediately downstream shall be installed prior to any in-water work occurring.

2.1.2.1 The sediment trap shall be a minimum length of 3m, and approximately 300mm deep.

2.1.2.2 Rock check dams shall be a minimum length of 3m.

2.1.2.3 The sediment trap and rock check dam may be removed after all work(s) are complete and the banks have been stabilized, or the rock check dam and sediment trap may be converted into a pool-riffle sequence and left in the watercourse.

2.1.3 Erosion and sediment control measures shall be inspected regularly and repaired or upgraded as required and temporary measures removed once the site is permanently stabilized.

2.1.4 All fill material, including construction rubble, rock, and soil, to be used in construction shall be clean and free of fine materials and debris prior to placement.

2.1.5 Clearing of riparian vegetation shall be kept to a minimum and where removal is necessary, proper clearing techniques shall be used.

2.1.6 Stockpiled material shall be stored in a manner that prevents entry into nearby waterbodies.

2.1.7 All areas disturbed by any work, undertaking or activity associated with the project shall be stabilized through revegetation with native species, suitable for the site, upon completion of the work.

2.1.8 Construction activities shall be scheduled to avoid windy or rainy periods that may increase erosion and sedimentation.

2.2 List of measures and standards to avoid and mitigate impacts to fish and fish habitat:

2.2.1 No in-water work shall occur during the restricted activity period of **October 1st to July 15th**, in any year.

2.2.2 Work shall be conducted in the dry where possible to avoid sedimentation.

2.2.3 Machinery shall be washed, refuelled, and serviced in such a way as to prevent any deleterious substance from entering the water.

2.2.4 A Spill Response Plan shall be prepared, available on site, and adhered to throughout construction.

2.2.5 Machinery shall operate on land above the high water mark (HWM) in a manner that reduces disturbances to the banks and bed of the watercourse.

2.2.6 Aquatic invasive species are introduced and spread through transporting water, sands, and sediments and using contaminated construction equipment. To prevent the spread of aquatic invasive species during construction in aquatic environments:

2.2.6.1 All machinery shall arrive on site in a clean condition and be maintained free of fluid leaks, invasive species, and noxious weeds.

2.2.6.2 Clean, drain, and dry any equipment used in the water.

2.2.6.3 Never move organisms or water from one body of water to another.

2.2.7 A qualified environmental professional shall be on-site to conduct a fish salvage and relocation from the isolated area, as required, for the duration of the in-water works.

2.3 Contingency measures: DFO shall be notified immediately and contingency measures shall be put in place by the Proponent if monitoring required in section 3 below indicates that the measures and standards to avoid and mitigate impacts to fish and fish habitat are not successful. In the event of failed measures and standards to avoid and mitigate impacts to fish and fish habitat, the Proponent shall develop and implement contingency measures in consultation with, and to the satisfaction of, DFO to correct the situation and minimize the impact. Monitoring and regular reporting of the corrective actions taken shall be provided to DFO until the contingency measures are successful.

2.4 Dates by which these measures and standards shall be implemented: Measures and standards to avoid and mitigate impacts to fish and fish habitat shall be implemented prior to the initiation of works, undertakings or activities and maintained until project completion.

3. Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate impacts to fish and fish habitat.

3.1 Monitoring of avoidance and mitigation measures: The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO, by **December 31, 2026**, and indicate whether the measures and standards to avoid and mitigate impacts to fish and fish habitat were conducted according to the conditions of this authorization. This shall be done, by:

3.1.1 Demonstration of effective implementation and functioning: Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the impacts to fish and fish habitat to what is covered by this authorization.

3.1.2 Contingency measures: Providing details of any contingency measures that were followed, to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.

3.1.3 As-built survey: An as-built survey shall be undertaken to show the project has been constructed as proposed. A copy of the as-built survey shall be provided to DFO as part of the construction monitoring report.

3.1.4 A record of all fish removal efforts that were conducted with the abundance and species of fish removed, number of mortalities, and relocation locations.

3.1.4.1 Digital vouchers of all species captured shall be collected following the protocol outlined in Mandrak et al. (2022) (Mandrak, N.E., Bouvier, L.D., Colm, J.E., Enders, E.C., Watkinson, D., Holm, E., Morris, T.J., and Drake, D.A.R. 2022. Voucher collection guidance for freshwater fishes in DFO's Ontario and Prairie, and Arctic regions. Can. Manuscr. Rep. Fish. Aquat. Sci. 3235: iv + 30 p.).

4. Conditions that relate to offsetting plan

4.1 Letter of credit: DFO may draw upon funds available to DFO as the beneficiary of the letter of credit in the amount of **$15,000 (serial number: SBGT183703)** provided to DFO as part of the application for this authorization to cover the costs of implementing and maintaining the offsetting measures required to be implemented under this authorization, including the associated monitoring measures included in section 5 of this authorization, in instances where the Proponent fails to implement these required measures.

4.2 Scale and description of offsetting measures: The offsetting measures shall be carried out in accordance with the measures set out in the Proponent's offsetting plan, provided by Streamline Engineering Inc. and Maitland Valley Conservation Authority, titled '*Draft Planting Plan: Bolt Drain'*, dated **January 27, 2026**, or any subsequent version of the offsetting plan that has been approved by DFO in writing. A summary of the offsetting measures include but are not limited to:

4.2.1 Construct two (2) riffle features each approximately 7m in length and 3 – 4m in width, and three (3) pools approximately 4 – 6m in length and 0.45 – 0.6m in depth, within the 150m of open drain immediately downstream of the enclosure.

4.2.2 Plant a minimum of five (5) tulip trees on the north bank and maintain a grass buffer of 160m in length and 3m in width between the drain and the agricultural field.

4.2.3 Plant a minimum of 500 dogwood stakes and 75 potted shrubs along approximately 140m in length and 1 – 2m in width along the south channel bank, and maintain the existing 10m wide grassed buffer.

4.2.4 Replace the existing perched 900mm culvert at the Highway 87 road crossing with a 2000mm culvert approximately 22m long and embedded 10% to provide access to fish habitat upstream of the crossing.

4.2.5 All offsetting works shall be constructed by **May 15, 2027**.

4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting plan: All fish habitat offsetting measures shall be completed and functioning according to the criteria below and as described in the Offsetting Plan, including:

- 4.3.1 All offsetting structures and features shall be shown to be constructed and installed as per the design specifications and demonstrated to be stable (as described in the offsetting plan) using visual assessments and pre- and post-construction data for 2 years post-construction.
- 4.3.2 Photographic evidence of the culvert shall be provided to demonstrate:
  - 4.3.2.1 The culvert is embedded to 10%, and;
  - 4.3.2.2 The culvert is wetted and passable by fishes, during the summer under low flow conditions.
- 4.3.3 All offsetting vegetation shall be shown to be installed and successfully established, as intended.
  - 4.3.3.1 The condition of vegetation shall be verified using site-specific data collected during monitoring activities, including information on percent vegetation cover and species composition. The revegetated area shall achieve a minimum of 80% survival rate based on coverage area by the end of the monitoring period.

4.4 Contingency measures: If the results of monitoring as required in section 5 indicate that the offsetting measures are not completed by the date specified and/or are not functioning according to the above criteria in 4.3, the Proponent shall give written notice to DFO and shall implement the contingency measures and associated monitoring measures, as contained within the approved offsetting plan (referenced in section 4.2), and as set out in section 5 of this authorization, to ensure the implementation of the offsetting measures is completed and/or functioning as required by this authorization.

- 4.4.1 Scale and description of contingency measures: Should the offsetting measures be deemed unstable and/or not functioning as intended, an investigation shall be conducted to determine the cause and appropriate action shall be taken. Contingency measures shall be implemented within 12 months of when the failure or deficiency is observed.
- 4.4.2 Monitoring measures to ensure offsetting contingency is completed and/or functioning as required: The Proponent shall conduct monitoring to document the success of any contingency offsetting habitat to the satisfaction of DFO, to meet the offsetting requirements of this authorization.

4.5 The Proponent shall not carry on any work, undertaking or activity that will adversely impact the offsetting measures.

4.6 The Proponent shall obtain written permission for the Proponent, DFO, and anyone authorized to act on behalf of DFO, to access lands, water sources, or water bodies that are not owned by or under the care, control, or administration of the Proponent that must be accessed in order to implement the offsetting measures in this section and the monitoring of said measures.

4.7 The Proponent shall provide the written permission to DFO prior to the commencement of the Authorized work(s), undertakings(s) or activity(ies) that are likely to result in impacts to fish and fish habitat, described herein, and prior to the commencement of the implementation of the Proponent's offsetting plan referred to in condition 4.2 and dated January 27, 2026 that is to take place on lands or in water sources or water bodies not owned by or under the care, control, or administration of the Proponent.

5. Conditions that relate to monitoring and reporting of implementation of offsetting measures (described in section 4):

5.1 Schedule(s) and criteria: The Proponent shall conduct monitoring of the implementation of offsetting measures according to the timeline and criteria in the offsetting plan approved by DFO, referred to in section 4.2 and which are the following]:

5.1.1 List of timeline(s) and monitoring and reporting criteria:

5.1.1.1 Final as-built design for all constructed habitat features shall be assessed through as-built survey to demonstrate each individual offsetting component has been constructed in accordance with the offsetting plan, as summarized in 4.2. This shall be reported on as part of the Year 0 Post-Construction Monitoring report, due June 1, 2027.

5.1.1.2 A digital photographic record of pre-construction, during construction, and post-construction shall be compiled using the same vantage points and direction to show that the approved works have been completed and functioning in accordance with the offsetting plan. This shall be reported on as part of the Year 0 through Year 2 Post-Construction Monitoring Reports, due June 1, 2027 – 2029, respectively.

5.1.1.3 Vegetative planting survival and overall cover shall be monitored and assessed by a qualified biologist in Years One (1), and Two (2) post-planting.

5.2 List of reports to be provided to DFO: The Proponent shall report to DFO on whether the offsetting measures were conducted according to the conditions of this authorization by providing the following:

5.2.1 Year 0 As-Built/Post-Construction Monitoring Report: Due on or before **June 1, 2027**;

5.2.2 Year 1 Post-Construction Monitoring Report: Due on or before **June 1, 2028**; and

5.2.3 Year 2 Post-Construction Monitoring Report: Due on or before **June 1, 2029.**

Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this authorization and for all design, safety and workmanship aspects of all the works associated with this authorization.

The holder of this authorization is hereby authorized under the authority of Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*. R.S.C., 1985, c.F-14, to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in impacts to fish and fish habitat as described herein.

This authorization does not purport to release the Proponent from any obligation to obtain permission from any private landowner or to comply with the requirements of any other regulatory agencies.
This authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

This authorization does not permit the killing, harming, harassment, capture or taking of individuals of any aquatic species listed under the *Species at Risk Act* (SARA) (s. 32 of the SARA), or the damage or destruction of residence of individuals of such species (s. 33 of the SARA) or the destruction of the critical habitat of any such species (s. 58 of the SARA).

At the date of issuance of this authorization, no individuals of aquatic species listed under the *Species at Risk Act* (SARA) were identified in the vicinity of the authorized works, undertakings or activities.]

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the unauthorized death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to (http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html)

The failure to comply with any condition of this authorization constitutes an offence under Paragraph 40(3)(a) of the *Fisheries Act*, and may result in charges being laid.

A copy of this authorization shall be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

This authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this authorization shall advise DFO in advance.

Date of Issuance: April 7, 2026

Digitally signed by Mitchell, Tricia
Date: 2026.04.08 09:54:36 -04'00'

Approved by: _____
Tricia Mitchell
Regional Director General
Fisheries and Oceans Canada

May 20, 2026

Streamline Engineering Inc.
Agent for Municipality of Morris-Turnberry
6 Mill Street E.
Milverton ON
N0K 1M0

MVCA File No. 12728

Attention: Trevor Kuepfer

Re: Permit ALT20/2026
Concession 3, Lots 5 and 6, Turnberry Ward, Municipality of Morris-Turnberry, County of Huron; Known as Bolt Municipal Drain

The Maitland Valley Conservation Authority (MVCA) has approved your application signed 05/14/2026 by Trevor Kuepfer (Agent) and on 05/19/2026, by Kirk Livingston (Morris-Turnberr, Landowner), to perform upgrades to the Bolt Municipal Drain.

Part of the work is to be undertaken within a watercourse. Watercourses plus a 15-metre buffer, are regulated pursuant to *Ontario Regulation 41/24 Prohibited Activities, Exemptions and Permits* made under Section 28 of the *Conservation Authorities Act (R.S.O. 1990, Chapter C.27)*. Your application was reviewed with regard for *O. Regulation 41/24* and in accordance with MVCA Board approved policies made under the Regulation.

Please be advised that Permit No. ALT20/2026 is subject to conditions outlined on the attached Permit.

MVCA has the legal authority to revoke your Permit should the specific and/or general conditions of the Permit not be met. Every person who contravenes the regulation or the terms and conditions of a Permit is liable to fines and prosecution under Section 28 of the *Conservation Authorities Act (R.S.O 1990, as amended).*

MVCA permission does not exempt you (the applicant) from complying with any or all other approvals, laws, statues, ordinances, directives, regulations, by-laws etc. that may affect the property. Specifically this Permit does not exempt you from approvals from Fisheries and Oceans Canada (DFO).

Thank you for your cooperation. **Please sign the Permit and return a copy to this office**. You may fax or email the signed copy.

Feel free to contact this office should you have any questions or concerns.

Regards,

Kirsten Snoek
Resource Technician - Regulations Officer
MAITLAND VALLEY CONSERVATION AUTHORITY

Enc.: *Permit No. ALT 20/2026*
Cc: Drainage Superintendent, Municipality of Morris-Turnberry

No. **ALT20/2026**
Wroxeter, Ontario, May 20, 2026

PERMIT TO: DEVELOP IN A REGULATED AREA
X **ALTER A WATERCOURSE**

In accordance with Ontario Regulation 41/24 and amendments there to, permission has been granted to:

	Streamline Engineering Inc. (*Agent for Municipality of Morris-Turnberry)*
Address:	6 Mill Street E., Milverton ON, N0K 1M0
Location of works:	Concession 3, Lots 5 and 6, Turnberry Ward, Municipality of Morris-Turnberry, County of Huron; Known as Bolt Municipal Drain
Existing land use:	Infrastructure
For the following works:	Construct drain upgrades from May 20, 2026, to May 20, 2028, subject to the following conditions:

SPECIFIC CONDITIONS:

1. **All work must be carried out in conformance with the application, signed by Trevor Kuepfer (Streamline Engineering Inc.) on 05-14-2026, along with the Landowner Authorization form, signed by Kirk Livingston (Morris-Turnberry, Landowner) on 05/19/2026, and in accordance with the following:**
    a. **Drawings, titled "*Bolt Municipal Drain Improvement 2026*", prepared by Streamline Engineering Inc. prepared for client Municipality of Morris-Turnberry, dated May 2026, Project No.: 0028, designed by CK, drawn by CK, checked by TK, including;**
        i. **Drawing 1: Plan and Profile**
        ii. **Drawing 2: Details**
    b. **Engineer's Report for the Bolt Drain Improvement, prepared for the Municipality of Morris-Turnberry, prepared by Streamline Engineering Inc., with reference to the statement including "*no negative impacts to the watercourse floodplain are anticipated*".**
2. **MVCA requires site to be secured in a manner to ensure water events above base flow will pass unobstructed through site in a manner that prevents flooding upstream or erosion and sediment release downstream.**
3. **Works shall have regard for weather conditions and for potential rapid changes in those conditions.**
4. **Stock piles of overburden material shall not be kept beside or within the floodplain of the watercourse. MVCA prefers material to be removed from site as soon as possible unless needed to backfill.**
5. **Placed rip rap or field stone shall be sufficient to prevent erosion.**
6. **Equipment and materials should not be stored in the floodplain of the watercourse, nor within the surrounding wetland.**

GENERAL CONDITIONS:

The applicant, by acceptance of and in consideration of the issuance of this Permit, agrees to the following conditions:

1. This Permit does not preclude compliance from any other legislation, federal or provincial, or necessary approvals from the local municipality.
2. Authorized representatives of the Maitland Valley Conservation Authority (MVCA) may, at any time, enter onto the lands which are described herein in order to make any surveys, examinations, investigations, or inspections which are required for the purposes of ensuring the work(s) authorized by this Permit are being carried out according to the terms of the Permit.
3. The applicant agrees:
    a) To indemnify and save harmless on a solicitor and client basis, the Maitland Valley Conservation Authority and its officers, employees, or agents, from any act or omission of the owner and/or applicant or any of his agents, employees or contractors relating to any of the particulars, terms of conditions of the Permit.
    b) That this Permit shall not release the applicant from any legal liability or obligation and remains in force subject to all limitations, requirements and liabilities imposed by law;

c) That all complaints arising from the execution of the works authorized under this Permit shall be reported prior to the expiration of this Permit by the applicant to the Maitland Valley Conservation Authority.

d) That the Permit issued herein is based upon the plan(s) submitted to the Authority and the accuracy of the matters contained in the Application to the Authority.

4. This Permit is not assignable.
5. The applicant agrees that should the works be carried out contrary to the terms of this Permit, the Maitland Valley Conservation Authority may enter onto the property and cause the terms to be satisfied, at the expense of the applicant.

I agree to carry out or cause to be carried out the work(s) indicated above in compliance with the conditions set out herein and in accordance with the information contained in the application and any accompanying sketches. I realize should I carry out the work(s) contrary to the terms of this Permit, this Permit may be revoked. I also realize this Permit is valid only for the time period noted, and I agree to re-apply to the Authority prior to the expiration of this period should an extension be required.

Original Signed by (Applicants signature): _____Date:_____

Signature of Authority Official

Kirsten Snoek
Resource Technician - Regulations Officer
MAITLAND VALLEY CONSERVATION AUTHORITY ***Date:*** *May 20, 2026*

Appendix C

OMAFA Grant Eligibility Request Letter

STREAMLINE
ENGINEERING INC.

6 Mill Street East
Lower Unit, PO Box 9
Milverton Ontario, N0K 1M0

January 26, 2026

Tim Brook, Lead Engineer, Drainage Program
Ontario Ministry of Agriculture, Food and Agribusiness
1 Stone Road West
Guelph, ON N1G 4Y2
timothy.brook@ontario.ca

Re: 0028 – Bolt Drain Improvement, Grant Eligibility Request

Dear Tim,

Streamline Engineering Inc. has been appointed by the Municipality of Morris-Turnberry to complete an improvement to the Bolt Drain located on Lots 5-6, Concessions 2-3 in the Municipality of Morris-Turnberry. A key component of this project is to enclose a portion of highly eroded drainage channel and the primary purpose of this letter is to request written approval to deem this to be grant eligible as per Section 2.3 (f) of the agricultural drainage infrastructure program (ADIP) policy. This part of the ADIP policy states that generally drain enclosures are not eligible for grant, but an exception may be made if evidence is provided to the satisfaction of the Director that a drain enclosure is required to address bank slumping or erosion problems in the drain, and the Directors' written approval is received in advance. Documentation to support this request is included herein.

Approximately 430m of highly degraded, single stage drainage channel with an excessively wide bottom width is proposed to be enclosed on Lot 5 and 6, Concession 3 and currently planned to be replaced with a 750mm diameter concrete pipe. This portion of channel has bank erosion and slumping prevalent throughout its length, and has several locations where the banks have failed entirely. As a result, the channel is laden with sediment and the banks' slopes are becoming increasingly unstable. Photos and a photo location sketch are enclosed with this letter to depict these issues. The enclosure is proposed to end where channel bank vegetation is better established, and channel conditions generally improve.

The open portion of the Bolt drain is classified as a D class watercourse based on the OMAFA AgMaps tool. Streamline Engineering submitted a request for review for this project to the Department of Fisheries and Oceans (DFO) on July 14, 2025 and received a response from DFO on October 22, 2025 indicating that a Fisheries Act Authorization will be required for this project.

Various offsetting measures are proposed to be included as part of the work and will be required to acquire a Fisheries Act Authorization. Components that are being proposed as part of the project are planned to include, but are not limited to the following:

- Establish stone riffle structures;
- Establish fish refuge pools;

- Improve the Highway 87 crossing to provide for fish passage;
- Establish a grassed buffer to prevent bank slumping on portions of the open drain proposed to be enhanced as part of the work.
- Complete tree and shrub planting with support from the Maitland Valley Conservation Authority.

Streamline Engineering is of the opinion that this project is necessary to address bank slumping and erosion issues within the open portion of the Bolt Drain and the proposed work will substantially reduce sedimentation within the drain. At the same time, this project will enhance the habitat in subsequent portions of the Bolt Drain under the DFO Authorization process. Based on this, we respectfully request written approval to deem this project as grant eligible for the assessments to agricultural properties involved on this project.

Any questions you have concerning the subject of this letter, please reach out to the sender at their contact information below.

Respectfully,

Trevor Kuepfer, P. Eng.

Project Engineer
trevor@streamlineeng.ca

Enclosures

Bolt Drain Photo Pages
Bolt Drain Map and Photo Location Sketch

cc:

Trevor Hallam	CAO/Clerk	The Municipality of Morris-Turnberry	thallam@morristurnberry.ca
Kirk Livingston	Drainage Superintendent	The Municipality of Morris-Turnberry	klivingston@morristurnberry.ca

PHOTO 1

July 11, 2025

Looking Upstream (East), Ex. Channel Bank Failure on Lot 5 Concession 3 Resulting in Sediment Accumulation and Wide Single Stage Channel

PHOTO 2

November 21, 2025

Bank Failure in the Existing channel on Lot 6, Concession 3

PHOTO 3

November 21, 2025

Looking Downstream (West), Ex. Channel Bank Erosion on Lot 5, Concession 3

PHOTO 4

November 21, 2025

Existing substate typical of channel in location of proposed enclosure

PHOTO 5

July 11, 2025

Looking downstream (West), Ex. channel Bank Slumping on Lot 6, Concession 3 Resulting in Sediment Accumulation and Wide Single Stage Channel

PHOTO 6

November 21, 2025

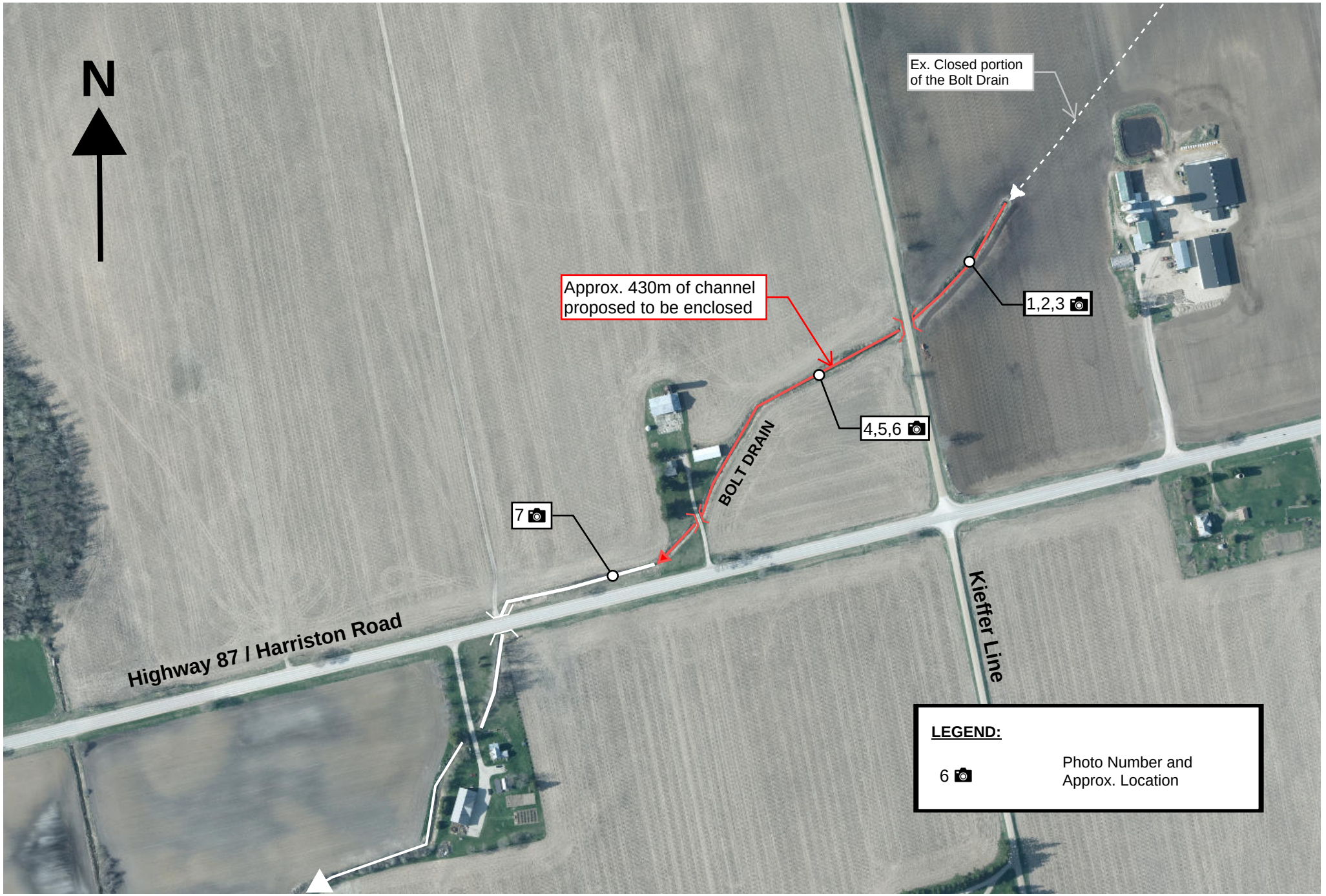
Looking upstream (East), Existing channel Bank Slumping on Lot 6, Concession 3 Resulting in Sediment Accumulation and Wide Single Stage Channel

PHOTO 7

July 11, 2025

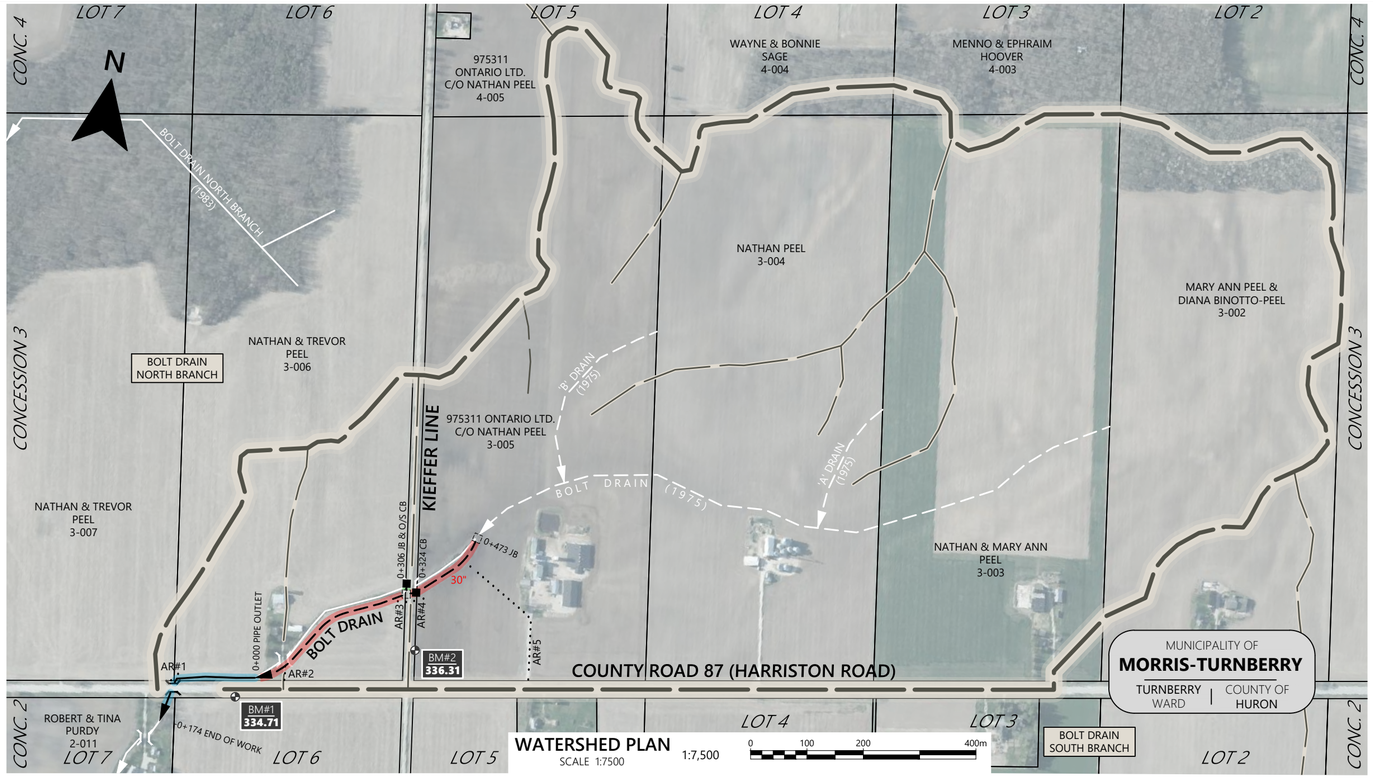
Looking downstream (West), Existing channel on Lot 6, Concession 3 Downstream of Pr. Enclosure with Narrow Channel Bottom, Minimal Bank Erosion and Well Established Vegetation

BOLT DRAIN MAP AND PHOTO LOCATION SKETCH



Appendix D

Drawings



WATERSHED PLAN
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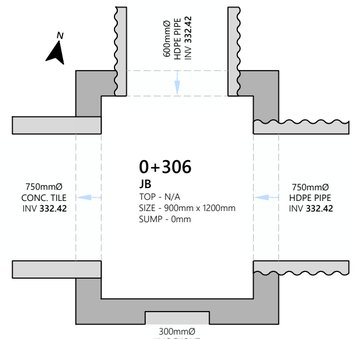
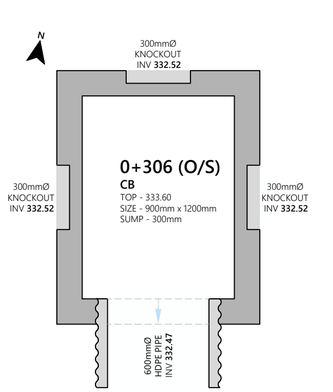
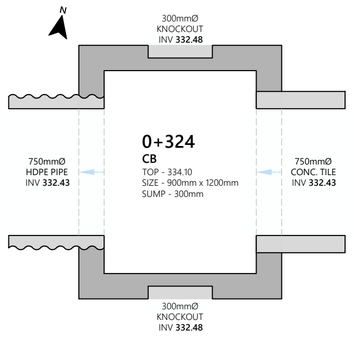
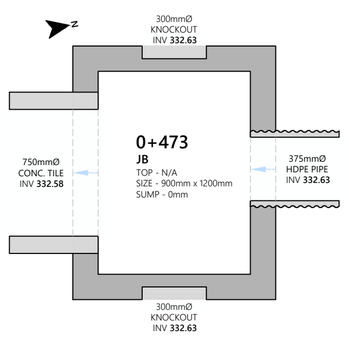
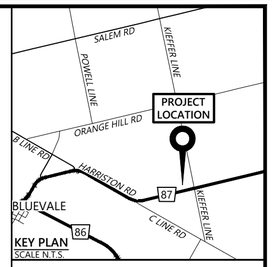








CB DETAILS
SCALE 1:25

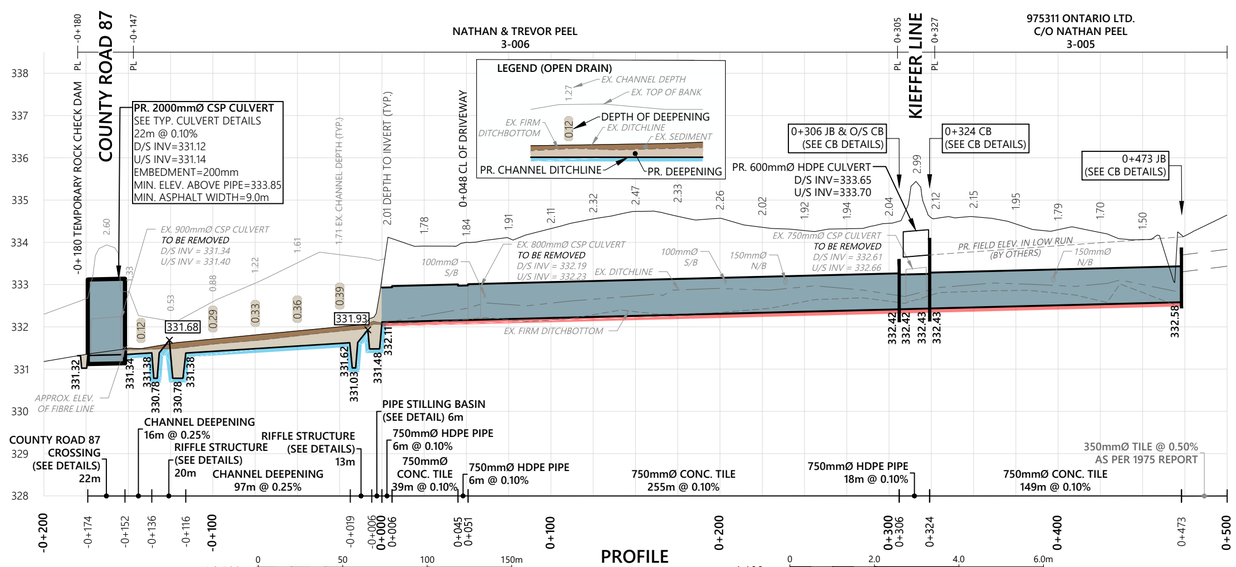


LEGEND

- WATERSHED BOUNDARY
- SUBWATERSHED BOUNDARY
- APPROX. PROPERTY LINE
- EX. OPEN DRAIN / EX. TILE DRAIN
- PR. OPEN DRAIN / PR. TILE DRAIN
- EX. DRAIN CROSSING
- DRAIN CROSSING
- CATCH BASIN
- JUNCTION BOX
- ACCESS ROUTE PATH (AR1)
- BENCHMARK LOCATION, NUMBER & ELEVATION (BM#1 ELEV)
- APPROX. FIBRE LINE (F)
- APPROX. TELEPHONE LINE (T)
- OVERHEAD HYDRO LINE (OH)
- HYDRO POLE (HP)
- UTILITY HANDHOLE (HH)
- FIBRE MARKER (MKF)

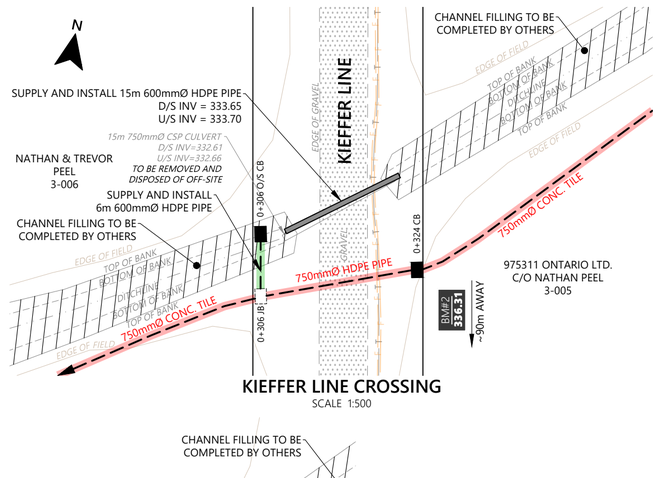
BENCHMARKS

BENCHMARK No. 1 ELEVATION=334.71m
NAIL NORTH FACE OF HP #BDXKAN LOCATED ABOUT 55m EAST OF COUNTY ROAD 87 DRAIN CROSSING.
BENCHMARK No. 2 ELEVATION=336.31m
NAIL IN NORTH FACE OF 1.5mØ DECIDUOUS TREE LOCATED APPROXIMATELY 100m SOUTH OF PR. DRAIN.

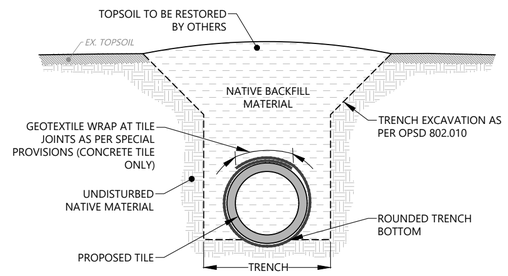


PROFILE
SCALE H1:2500 | V1:100

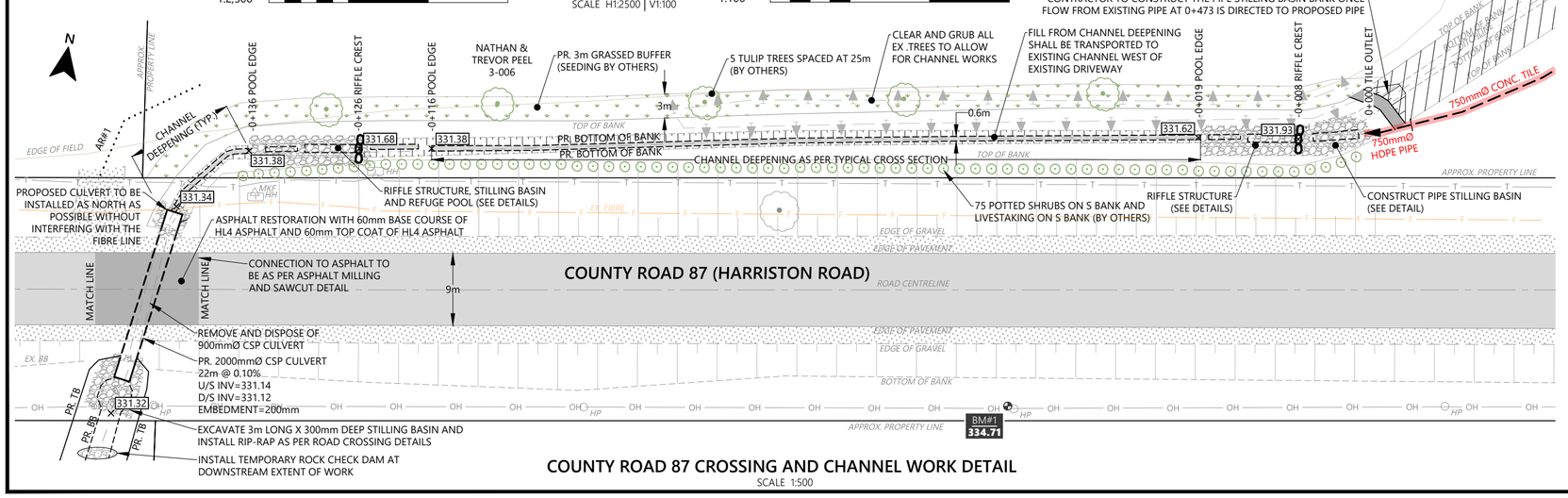
1:2,500 0 50 100 150m
1:100 0 2.0 4.0 6.0m



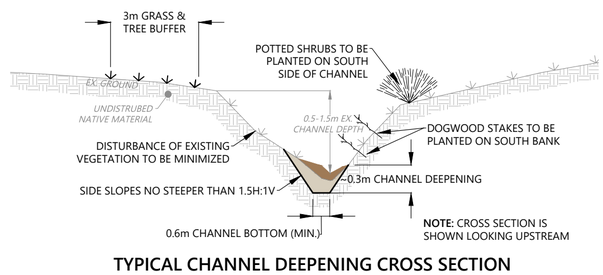
KIEFFER LINE CROSSING
SCALE 1:500



TYPICAL DRAIN INSTALLATION
N.T.S.



COUNTY ROAD 87 CROSSING AND CHANNEL WORK DETAIL
SCALE 1:500



TYPICAL CHANNEL DEEPENING CROSS SECTION
N.T.S.

LICENSED PROFESSIONAL ENGINEER
T. A. KUEPFER
100506337
2026/05/20
PROVINCE OF ONTARIO

PROJECT
BOLT MUNICIPAL DRAIN IMPROVEMENT 2026

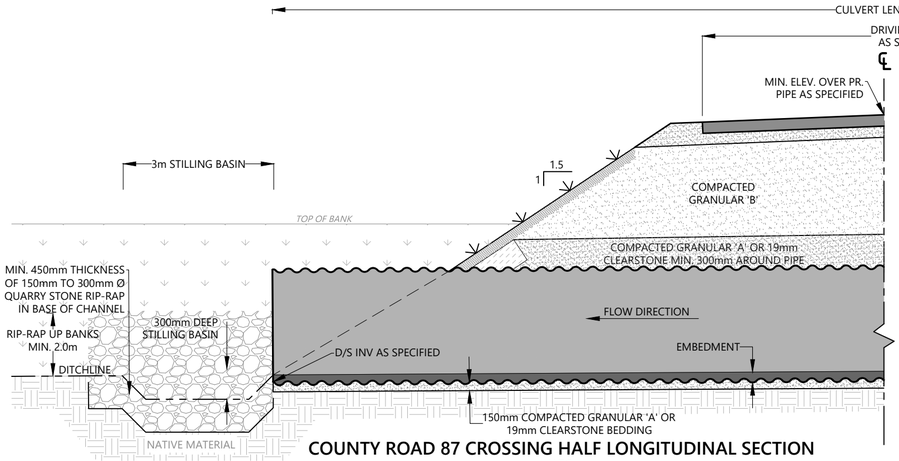
STREAMLINE ENGINEERING INC.

CLIENT
MUNICIPALITY OF MORRIS-TURNBERRY

ISSUE / REVISION	DATE
ON-SITE MEETING	MAY 2026
ENGINEER'S REPORT	MAY 2026

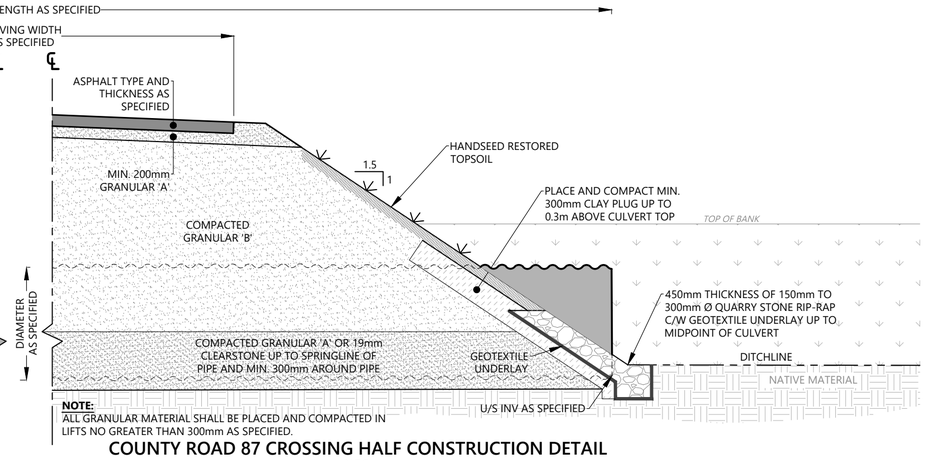
DRAWING: PLAN AND PROFILE
DRAWING NO. 1 OF 2

DESIGNED	DRAWN	CHECKED	PROJECT NO.
CK	CK	TK	0028



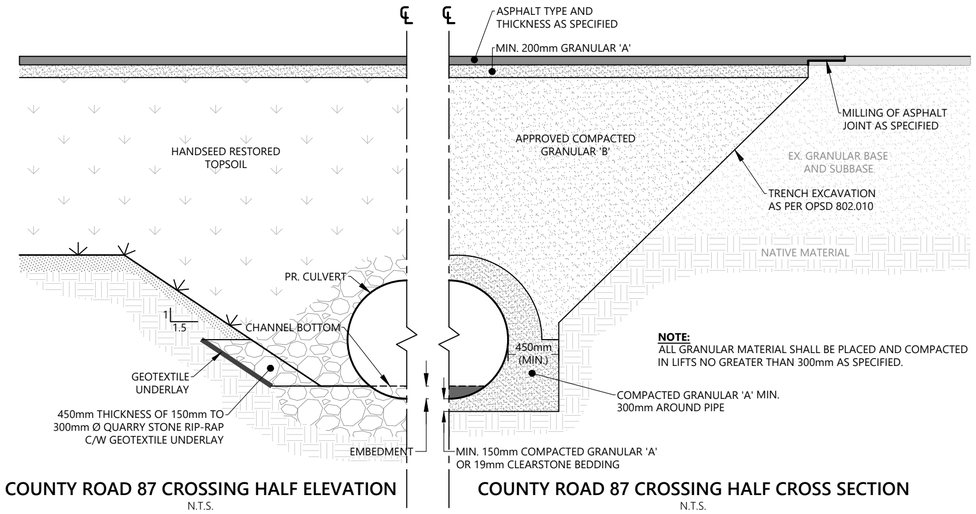
COUNTY ROAD 87 CROSSING HALF LONGITUDINAL SECTION

N.T.S.



COUNTY ROAD 87 CROSSING HALF CONSTRUCTION DETAIL

N.T.S.

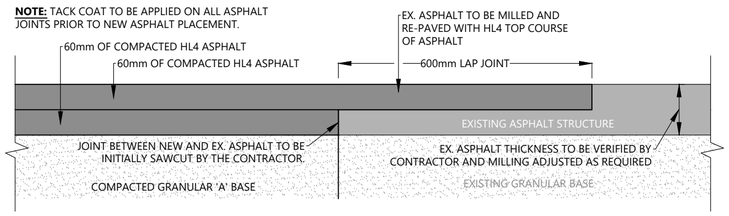


COUNTY ROAD 87 CROSSING HALF ELEVATION

N.T.S.

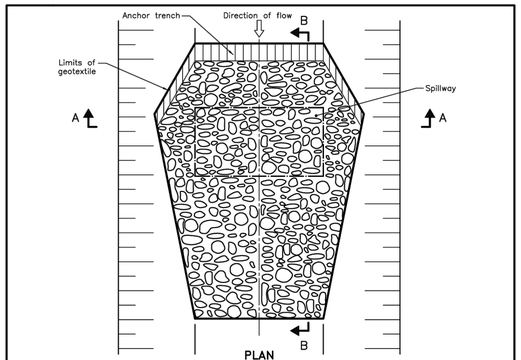
COUNTY ROAD 87 CROSSING HALF CROSS SECTION

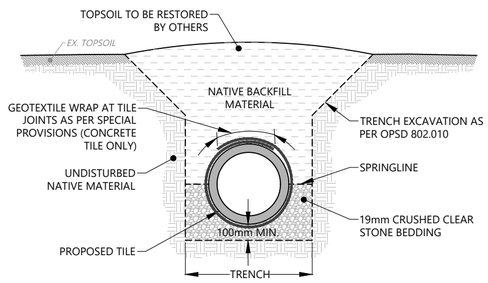
N.T.S.



ASPHALT MILLING AND SAWCUT DETAIL

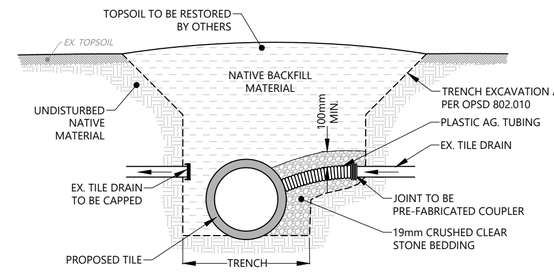
SCALE 1:10





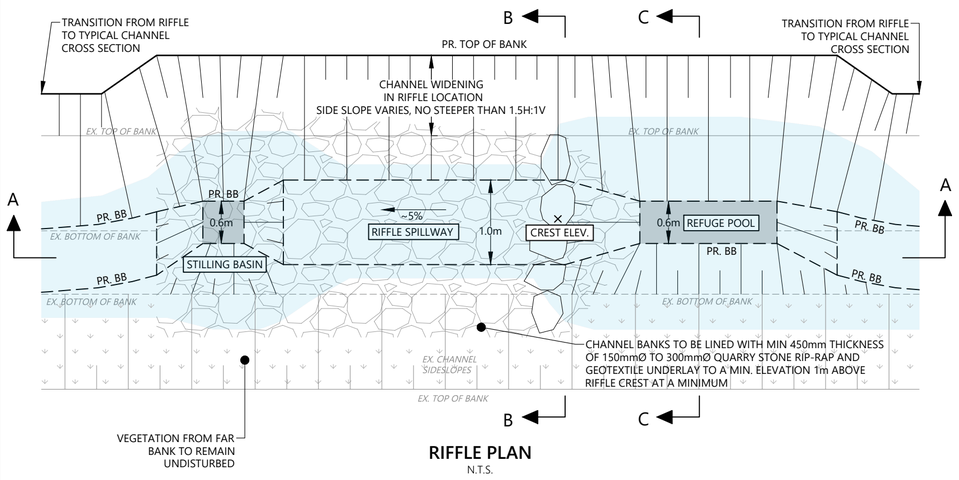
TYPICAL DRAIN INSTALLATION ON STONE BEDDING

N.T.S.



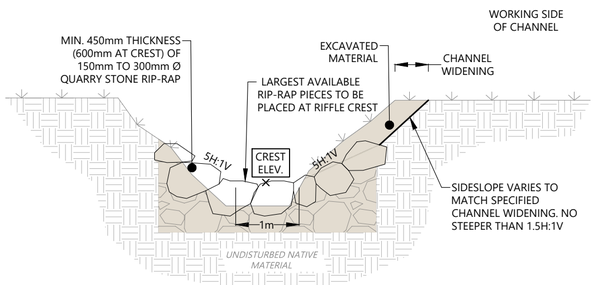
TILE CONNECTION DETAIL

N.T.S.



RIFFLE PROFILE - SECTION A-A

N.T.S.



RIFFLE SPILLWAY CONSTRUCTION DETAIL - SECTION B-B

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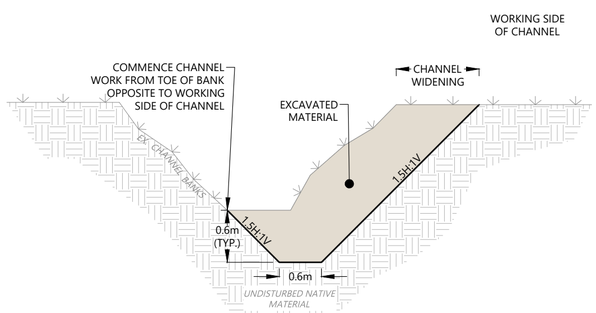
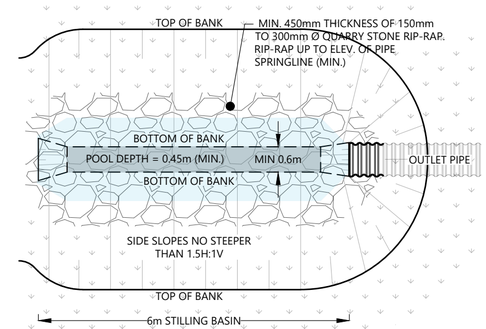


REFUGE POOL CONSTRUCTION DETAIL - SECTION C-C

N.T.S.



PIPE STILLING BASIN DETAIL

N.T.S.

LICENSED PROFESSIONAL ENGINEER
T. A. KUEPFER
100506337
2026/05/20
PROVINCE OF ONTARIO

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ISSUE / REVISION	DATE
ON-SITE MEETING	MAY 2026
ENGINEER'S REPORT	MAY 2026

DRAWING
DETAILS

DRAWING NO. 2 OF 2

DESIGNED	DRAWN	CHECKED	PROJECT NO.
CK	CK	TK	0028