Engineer's Report

MINTO DRAIN NO. 14 IMPROVEMENT 2024

The Town of Minto

STREAMLINE ENGINEERING INC.

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

July 2024

0006

July 19, 2024

To the Mayor and Members of Council of the Town of Minto,

Streamline Engineering is pleased to present our accompanying report for an improvement to Minto Drain No. 14.

This report recommends the improvement to approximately 65m of channel on Lot 6, Concession 9, a new 8th Line crossing, and the improvement to approximately 168m of tile on Lot 7, Concession 8.

A summary of the assessments for the project are as follows:

Municipal Lands	$	4,300
Privately Owned Non-Agricultural	$	300
Privately Owned Agricultural – Grantable	$	147,200
Special Non-Proratable Assessments	$	55,200
Total Estimated Assessments	**$**	**207,000**

We appreciate the opportunity to provide services to the Town of Minto and we trust that this report meets the requirements of the Town of Minto.

Respectfully submitted by,

Streamline Engineering Inc.

Trevor Kuepfer, P. Eng.
Project Engineer

Michael Siemon
Civil Technologist

Table of Contents

List of Schedules

Appendices

1 Project Background

1.1 Existing Conditions

The project is located in the Town of Minto, and is on Lots 6 & 7, Concessions 8 & 9. The portion of municipal tile drain that initiated the request for improvement is located within the low-lying lands on Lot 7, Concession 8. The municipal tile in this area is exposed in some locations. Drain blowouts are also common in this section of the municipal drain.

Figure 1 – Exposed 14" dia. concrete municipal tile in the low-lying lands on Lot 7, Concession 8

Downstream of the low-lying lands, the drain crosses the 8th Line. The crossing of the 8th line is a 15" dia. plastic pipe which outlets to the open portion of the Minto Drain No. 14 on Lot 6, Concession 9. The open drain flows north into a tributary of the Maitland River.

Figure 2 – Open portion of Minto Drain No. 14 just north of 8th Line

1.2 Project Authorization

This report has been prepared in response to an appointment by the Town of Minto, dated May 7, 2024 to provide an improvement to the Minto Drain No. 14 in accordance with Section 78 of the Drainage Act, R.S.O. 1990.

There was one request for improvement dated April 15, 2024 submitted by Edgar R. Martin and Lena M. Martin, owners of Lot 7, Concession 8.

1.3 Municipal Drain History

Streamline Engineering conducted a thorough review of all the historical documentation available in the Town of Minto office regarding the Minto Drain No. 14 as well as for other abutting Municipal Drains. The following is a summary of the drain's history:

- Minto Drain No. 14 was originally established in 1920.
  - This report established the Main Drain of Minto Drain No. 14 as well as Branches A, B, and C of the drainage system.
- The drain was improved under a report by James A. Howes in 1960.

  - The work provided for approximately 230m of tile improvement on Lot 7, Concession 8.
  - This work was primarily to address issues with the drain in the low-lying lands on Lot 7, Concession 8.
- The drain was improved again under a report by James A. Howes in 1966.
  - The report provided for the improvement of approximately 1260m of tile on the Main Drain from Lot 7, Concession 8 to Lot 6, Concession 7.
  - The report provided for the establishment of Branch D with approximately 130m of tile.
- Another drain improvement was completed under a report by Spriet Associates in 1984.
  - The report provided for approximately 580m of tile improvement on the Main Drain on the central portion of Lot 7, Concession 8.
  - The report provided for the establishment of Branch E with approximately 214m of tile.
- The drain was improved again under a report by Spriet Associates in 1991.
  - The report provided for approximately 1320m of tile improvement from Lot 7 Concession 8 to Lot 5, Concession 7.

1.4 On-Site Meeting

The on-site meeting for this project was held on May 16, 2024 at the laneway to 6553 8th Line, Harriston, On. The following were present at the meeting.

Edgar Martin	Property Owner
Lavern Martin	Property Representative
Marvin Martin	Property Representative
Mark Martin	Property Owner
Maynard Martin	Property Owner
Ryan Binkle	Drainage Superintendent, Town of Minto
Trevor Kuepfer	Streamline Engineering
Michael Siemon	Streamline Engineering

Edgar, Lavern, and Marvin Martin, and Ryan Binkle expressed concerns with the depth, condition, and capacity of the existing municipal tile in the downstream section of the drain on the Lot 7, Concession 8 property. They indicated that blowouts within this section of the drain had been occurring frequently on their property.

Maynard Martin indicated his intention to systematically tile drain his property on Lot 6, Concession 8 through Branch C of the Minto Drain No. 14 and expressed interest in an improvement to the branch.

Mark Martin indicated that surface water ponding is an issue along Road 1 North on his property on Lot 5, Concession 7.

Following the meeting, Clare Martin, owner of the property on Lot 8, Concession 8, was contacted to discuss the Branch B and Branch E systems, which currently service his property. Clare expressed general interest in reviewing the condition and capacity of these systems.

1.5 Watershed Area

The total watershed area contributing to the Minto Drain No. 14 is approximately 355.5 acres. 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:

- 310.7 acres as agricultural lands
- 40.6 acres as woodlot
- 0.6 acres as residential lands
- 3.6 acres as municipal ROW

2 Design Process and Engineering Considerations

2.1 Investigations

Camera Investigation

A camera investigation was completed on May 27, 2024 to determine the condition and location of the existing Municipal Drain.

Upstream of the low-lying lands on Lot 7, Concession 8, the existing drain was found to be generally in good condition. Some minor tile shifting and cracks in the system were noted during the camera investigation.

Figure 3 – Tile shifting

Figure 4 – Tile cracks

Figure 5 – Branch C connection to Main Drain

Through the woodlot at the south end of Lot 7, Concession 8, the drain was also noted to be in good condition. Sporadic root growth was observed within the existing drain.

Figure 6 – Root growth in Main Drain tile through woodlot on Lot 7, Concession 8

Soils Investigation

A soils investigation was completed on May 27, 2024 along the proposed drain alignment specifically to investigate the construction conditions that should be anticipated in the low-lying lands on Lot 7, Concession 8. A detailed summary of the investigation can be found in Appendix B.

2.2 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.

Streamline Engineering conducted a review of the capacity of the entirety of Minto Drain No. 14 and its branches and found that it has a drainage coefficient generally ranging from ¼" to ½". Current drainage standards recommend tile drainage systems to be designed to a 1½" drainage coefficient and therefore the existing system can generally convey between 1/6 to 1/3 of the flow when compared to a system designed to current standards.

Water Quality

Rip-rap erosion protection has been proposed in erosion susceptible banks downstream of the 8th Line.

Sufficient Outlet

Section 15 of the Drainage Act requires proposed work be continued to a sufficient outlet which is defined as "a point at which water can be discharged safely so that it will do no damage to lands or roads." For this project the Maitland River Tributary represents a sufficient outlet for Minto Drain No. 14.

2.3 Information Meeting No. 1

An information meeting for this project was held on June 12, 2024 at 6553 8th Line, Harriston, ON. The following were present at the meeting.

Lavern Martin	Property Representative
Marvin Martin	Property Representative
Mark Martin	Property Owner
Maynard Martin	Property Owner
Clare Martin	Property Owner
Ryan Binkle	Drainage Superintendent, Town of Minto
Trevor Kuepfer	Streamline Engineering
Michael Siemon	Streamline Engineering

The watershed boundary, estimated costs, design, allowances and assessments for the recommended improvements were discussed with all those in attendance. The recommended improvements presented at the meeting included channel deepening on Lot 6, Concession 9, a new 8th Line crossing, and the improvement of the Main Drain tile on Lot 7, Concession 8 to the existing Branch B outlet, including the replacement of Branches B & C. All tiles were proposed to be upgraded to a 1½" design standard. Furthermore, it was recommended that a swath of trees be cleared along the tile alignment within the woodlot on Lot 7, Concession 8 to deter tree roots from impeding flows within the drain.

Additional work options and their associated costs were presented at the meeting for consideration by the property owners. The additional work to be considered included the replacement of the entirety of the Main Drain upstream of Branch B to Lot 5, Concession 7 and an enclosure of the channel on Lot 6, Concession 9.

2.4 Follow up Discussions with Property Owners

Individual property owners were contacted following the meeting. Conversations with the landowners confirmed that the attendees did not wish to complete any of the additional work options presented at the information meeting at this time.

Furthermore, the property owners indicated that they would like to reduce the scope of work from what was presented at the information meeting.

2.5 Environmental Considerations

Maitland Valley Conservation Authority (MVCA)

The MVCA has been apprised of this project. A permit from the MVCA will be obtained by Streamline Engineering prior to construction works being completed.

The Department of Fisheries and Oceans Canada (DFO)

Streamline Engineering submitted a Request for Review to the DFO on June 20, 2024.

Relevant DFO approval documentation will be provided for this project prior to the commencement of construction.

The Ministry of Natural Resources and Forestry (MNRF)

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

3 Proposed Work

3.1 Recommendations

Streamline Engineering recommends improving approximately 65m of channel c/w the installation of erosion and sediment control, and bank armouring on the open section of Minto Drain No. 14. Furthermore, we recommend improving one road crossing with approximately 27m of 30" dia. smoothwall steel pipe, approximately 168m of 24" dia. plastic pipe, three concrete structures, and other miscellaneous works on the tile section of Minto Drain No. 14.

This results in an approximate ¾" drainage coefficient for the design of the tile drainage system on private lands, and 1½" drainage coefficient for the design of the road bore on the 8th Line. This design standard was selected based on input from the property owners.

We would also recommend tree clearing to be completed along the tile drain alignment in the woodlot on Lot 7, Concession 8 as drain maintenance to extend the life of the existing municipal tile drain in this location. The drain is agricultural tubing in this location, and as a result care should be taken to avoid excessive loads overtop of the tile drain.

While the Main Drain of Minto Drain No. 14 upstream of the proposed work area was noted to be in generally good condition, we would like to note that the drainage system is undersized by current design standards. It is our opinion that this is contributing to flooding issues that were expressed by some of the property owners in the upper reaches of the watershed area. To address these issues we would recommend the property owners consider upgrading this system in the future.

3.2 Summary of Work on Each Property

Delton, Martha, Maynard & Julianne Martin (Roll No. 3-021)

- Construction of a temporary rock check dam;
- Approximately 65m of channel deepening and widening;
- Installation of rip-rap erosion protection;

8th Line

- Supply and install approximately 27m of 30" smoothwall steel pipe;
- Supply and install one 3' x 4' concrete catchbasin;
- Installation of rip-rap erosion protection;
- Grout the existing municipal drain crossing.

Edgar & Lena Martin (Roll No. 4-182)

- Supply and install approximately 168m of 24" dia. plastic pipe;
- Supply and install one 3' x 4' concrete catchbasin;
- Connect the existing municipal drain and all impacted private tiles.

4 Project Costs

4.1 Allowances to Property Owners

For this project allowances have been provided under Sections 29 and 30 of the Drainage Act which are further described below. A schedule of allowances has been provided in Schedule A of this report.

Section 29 – Right-of-Way (ROW)

For the construction and future maintenance of a drainage system a ROW is required to be established for any party that is required to enter on to private lands. As such, a ROW allowance may be provided for the footprint of a drain, a working space required for the drain, and for any necessary access routes. This allowance compensates property owners to establish such a ROW.

In this report, ROW allowances have been provided as follows:

- A 10m working space has been provided at a rate of $1,000 per acre for lands adjacent to open sections of the drain.
- A 10m working space has been provided at a rate of $5,000 per acre for lands along closed sections of the drain.
- A $200 allowance has been provided to all properties where an access route has been noted.

No permanent buildings, structures or plantings should be allowed within the ROW, to allow for future maintenance of the drain.

Section 30 – Damages

The damage allowance compensates property owners for land damage that may occur during construction and during future maintenance activities. The assumed working corridors for this project are utilized in the Damage allowance calculations and are summarized in the Special Provisions in Appendix A for this project.

In this report, damages have been calculated as follows:

- A $1,600 per acre allowance has been provided on workable, agricultural lands where crops damage may be necessary during the drain construction.
- A $200-$500 allowance has been provided to properties where a fence is impacted, based on the disturbance amount.
- 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 $ 207,000. 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 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 – Assessments for Construction 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, 23, 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.

Section 23 – Outlet

Outlet assessments are distributed to all properties within a watershed area and are based on the volume and rate of flow of water from that property during a rainfall event. Based on the judgement of the Engineer, different land types are assessed at different outlet rates based on the amount of flow they are anticipated to contribute to the drainage system.

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 directly to the owner of that road.

Special assessments are calculated by first determining the cost of a portion of the drain that is affected by the existence of road 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 road did not exist. The difference between these two costs form the Special Assessment for the owner of the roadway.

For this project the following Special Assessment has been determined:

Road Name	Est. Const. Cost	Plus Admin Cost	Less Equivalent Drain Cost	Est. Special Assessment
8th Line	$ 41,200	$ 17,800	$ 3,800	$ 55,200

The Special Assessment shall be finalized and assessed to the Town of Minto based on the applicable actual construction costs.

4.4 Grant

Under the authorization of Section 85 of the Drainage Act, some properties may be eligible for an OMAFRA grant for up to ⅓ of the property assessment. Grant eligibility is determined by the OMAFRA 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 Town of Minto will be required to apply for this grant upon the completion of this project and if a property is eligible to receive grant, it will be deducted from its assessment.

5 Future Considerations

5.1 Maintenance

The Town of Minto will be responsible for the maintenance of the proposed drain following its construction as authorized by Section 74 of the Drainage Act.

The Town of Minto shall use Schedule D – Assessments for Maintenance 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 Town of Minto shall be responsible for all maintenance costs associated with the work on the right-of-way of 8th Line.

5.2 Municipal Drain Abandonment

Section 19 of the Drainage Act provides the Engineer the ability to abandon any drain or part that is no longer useful. Based on discussions with property owners and investigations completed, the following drains shall be considered abandoned and cease of have Municipal Drain Status following the adoption of the by-law for this report. The drains shall instead be considered private drains and be the responsibility of the property owners to maintain in the future.

- The entire length of Branch A;
- Branch B upstream of Lot 7-8, Concession 8 property line;
- The entire length of Branch C;
- The entire length of Branch D.

Project Schedules

SCHEDULE A - ALLOWANCES

Lot	Conc.	Property Owner	Roll No.	Right of Way (Sect. 29)	Damages (Sect. 30)	Totals
6 & Pt. 7	9	Delton, Martha, Maynard & Julianne Martin	3-021	$ 400	$ 1,100	$ 1,500
Pt. 7	9	Edgar & Lena Martin	3-022-5	$ -	$ 200	$ 200
7	8	Edgar & Lena Martin	4-182	$ 2,300	$ 400	$ 2,700
TOTAL ALLOWANCES				**$ 2,700**	**$ 1,700**	**$ 4,400**

*SP No. refers to the Special Provisions - Project Specific Construction Specification Associated with the Item

Item No.	SP No.*	Description	Approx. Quantity	Estimated Cost
Main Drain				
A1	1	Pre-construction meeting, mobilization, de-mobilization.	LS	$5,000
A2	2	Construct a temporary rock check dam (OPSD 219.211) (Sta. -0+065).	LS	$500
A3	3	Channel deepening and widening and excavation of a stilling basin as per the accompanying details (Sta. 0+000 to -0+065).	LS	$6,500
A4	4	Supply and install approx. 125m^2 footprint, 450mm thick, quarry stone rip-rap erosion protection c/w geotextile underlay along banks and existing surface culverts ends as per the accompanying details.	LS	$5,000
A5	5	Handseeding of disturbed, and exposed channel banks and work area as specified.	LS	$800
Work on 8th Line ROW				
A6	6	a) Supply approx. 27m of 762mmØ outside dia. smoothwall steel pipe (9.53mm thickness) c/w rodent grate.	LS	$10,800
		b) Install steel pipe via jack and bore.	LS	$19,200
A7	7	Grouting of existing municipal drain crossing of 8th Line.	LS	$3,000
A8	5	Handseeding of grassed road banks disturbed by jack and bore.	LS	$500
A9	8	a) Supply 900mm x 1,200mm concrete DICB c/w tabs, marker, rip-rap, and geotextile.	LS	$2,500
		b) Install DICB (Sta. 0+027).	LS	$1,500
A10	9	Supply 19mm (¾") clear crushed stone.	350 tonnes	$8,800
A11	10	a) Supply 600mmØ solid, split coupler, HDPE pipe (320 kPa) and required couplers.	168 m	$39,500
		b) Install HDPE pipe via excavator as per the drain installation on wrapped stone bedding detail (Sta. 0+027 to Sta. 0+195).	168 m	$13,400
A12	11	Supply non-woven geotextile required to install HDPE pipe as per the drain installation on wrapped stone bedding detail (Sta. 0+027 to 0+195).	LS	$1,000
A13	8	a) Supply 900mm x 1,200mm concrete CB c/w tabs, marker, rip-rap, and geotextile.	LS	$2,500
		b) Install CB (Sta. 0+195).	LS	$1,500
A14	12	Supply and install min. 3m of 375mmØ solid, HDPE pipe (320 kPa) for connection of ex. municipal drain to CB.	LS	$800
SUBTOTAL Main Drain				**$122,800**
Contingency Costs				
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**	**Estimated Cost**
B1	13	Tile connections into the proposed drain with core drilled hole and coupler.		
		a) 100mm dia. connection	2 ea.	$400
		b) 150mm dia. connection	2 ea.	$600
B2	14	Supply and utilize swamp mats to install tile from Sta. 0+027 to 0+195.	1 LS	$7,500
SUBTOTAL Contingency Costs				**$8,500**
TOTAL ESTIMATED CONSTRUCTION COST				**$131,300**

SUMMARY OF COSTS

Construction	
Total Estimated Cost of Construction	$131,300
Allowances	
Allowances to Property Owners (Section 29 and 30)	$4,400
Administration	
Public meetings, survey, soil and existing drain investigations, design and drafting, preparation of cost estimates and assessments, drainage report preparation, presentation at the Consideration of the drainage report	$42,500
Tendering, Contract Administration and Construction Review	$12,500
Miscellaneous project expenses (i.e. permitting fees, printing costs, mileage, contractor investigations, etc.), estimated interest charges, net HST	$16,300
TOTAL ESTIMATED PROJECT COST	**$207,000**

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.

Drain Name: Minto Drain No. 14 Improvement 2024

PRIVATE LANDS (The Town of Minto)								For Information Purposes Only		
Lot	**Conc.**	**Property Owner**	**Roll No.**	**Affected Area (acres)**	**Benefit (Sect. 22)**	**Outlet (Sect. 23)**	**Total Assessment**	**Total Allowances**	**OMAFRA 1/3 Grant**	**Estimated Net Assessment**
6 & Pt. 7	9	Delton, Martha, Maynard & Julianne Martin	3-021	4.1	$ 1,200	$ 400	$ 1,600	$ 1,500	$ 533	$ (433)
Pt. 7	9	Edgar & Lena Martin	3-022-5	1.5	$ 1,200	$ 100	$ 1,300	$ 200	$ 433	$ 667
Pt. 6	8	* Roger Sisco	4-180-5	0.6	$ -	$ 300	$ 300	$ -	$ -	$ 300
6	8	Maynard & Julianne Martin	4-181	53.2	$ -	$ 14,900	$ 14,900	$ -	$ 4,967	$ 9,933
7	8	Edgar & Lena Martin	4-182	95.8	$ 28,400	$ 33,200	$ 61,600	$ 2,700	$ 20,533	$ 38,367
8	8	Clare & Marie Martin	4-183	59.1	$ -	$ 19,800	$ 19,800	$ -	$ 6,600	$ 13,200
W ½ 7	7	Linda Sinclair	4-167	3.0	$ -	$ 1,100	$ 1,100	$ -	$ 367	$ 733
W ½ 6 & E ½ 7	7	Lena Martin	4-168	65.0	$ -	$ 23,500	$ 23,500	$ -	$ 7,833	$ 15,667
E ½ 6	7	Lena Martin	4-169	40.2	$ -	$ 15,300	$ 15,300	$ -	$ 5,100	$ 10,200
5	7	Mark & Florence Martin	4-171	29.4	$ -	$ 8,100	$ 8,100	$ -	$ 2,700	$ 5,400
PRIVATE LANDS (The Town of Minto) SUBTOTAL				**351.9**	**$ 30,800**	**$ 116,700**	**$ 147,500**	**$ 4,400**	**$ 49,067**	**$ 94,033**

ROADS					
Road Name	**Property Owner**	**Affected Area (acres)**	**Benefit (Sect. 22)**	**Outlet (Sect. 23)**	**Total Assessment**
8th Line	* Town of Minto	1.4	$ 1,200	$ 600	$ 1,800
Road 1 North	* Town of Minto	2.2	$ -	$ 2,500	$ 2,500
ROADS SUBTOTAL		**3.6**	**$ 1,200**	**$ 3,100**	**$ 4,300**

SPECIAL ASSESSMENTS (SECT. 26)	
Special Assessment against the **Town of Minto** for work on **the 8th Line**	$ 55,200
SPECIAL ASSESSMENT SUBTOTAL	**$ 55,200**

Total Affected Area (acres)	**355.5**
TOTAL PROJECT COST	**$207,000**

Notes:

Properties are presumed to have agricultural tax class, and thus be eligible for a ⅓ OMAFRA 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 agricutural drain infrastructure (ADIP) policies.

Drain Name: Minto Drain No. 14 Improvement 2024

PRIVATE LANDS (The Town of Minto)					
Lot	**Conc.**	**Property Owner**	**Roll No.**	**U/S Factored Area (acres)**	**Portion of Maintenance Cost**
6 & Pt. 7	9	Delton, Martha, Maynard & Julianne Martin	3-021	4.1	1.2%
Pt. 7	9	Edgar & Lena Martin	3-022-5	1.5	0.5%
Pt. 6	8	* Roger Sisco	4-180-5	0.9	0.3%
6	8	Maynard & Julianne Martin	4-181	44.1	13.4%
7	8	Edgar & Lena Martin	4-182	88.2	26.9%
8	8	Clare & Marie Martin	4-183	51.9	15.8%
W ½ 7	7	Linda Sinclair	4-167	3.0	0.9%
W ½ 6 & E ½ 7	7	Lena Martin	4-168	61.5	18.7%
E ½ 6	7	Lena Martin	4-169	40.2	12.2%
5	7	Mark & Florence Martin	4-171	21.1	6.4%
Roads					
Road Name		**Property Owner**		**U/S Factored Area (acres)**	**Portion of Maintenance Cost**
8th Line		* Town of Minto		5.6	1.7%
Road 1 North		* Town of Minto		6.6	2.0%
TOTALS				**328.7**	**100.0%**

Notes:

Properties are presumed to have agricultural tax class, and thus be eligible for a ⅓ OMAFRA 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 agricutural drain infrastructure (ADIP) policies.

Appendix A

Construction Specifications

Table of Contents

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 to the east of the existing channel.
- A 20m width centered on the proposed tile drain.
- A 20m x 20m construction staging area as required on the Edgar and Lena Martin property (Roll No. 4-182)
- The 8th Line ROW

The Contractor shall be entitled to utilize the following access routes, which shall be as depicted on the accompanying drawings, and a maximum 6m in width:

- Access Route #1 – From the north side of the 8th Line ROW to the farm access located approximately 200m east of the drain crossing of the 8th Line.
- Access Route #2 – From the south side of the 8th Line ROW to the farm access located approximately 50m west of the drain crossing of the 8th Line.

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:

- One fibre optic line located on the northern half of the 8th Line.
- One telephone line located on the southern half of the 8th Line.
- The 8th Line was cleared of buried hydro lines.
- One overhead hydro line is located on Lot 7, Concession 8.

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

A soils investigation was completed on May 27, 2024 along the proposed drain alignment specifically to investigate the construction conditions that should be anticipated in the low-lying lands on Lot 7, Concession 8. A detailed summary of the investigation can be found in Appendix B.

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)

All work is to be in accordance with the terms and conditions of the relevant MVCA permit included in the Contract Documents.

The Department of Fisheries and Oceans Canada (DFO)

All work shall be governed by the relevant DFO approval documentation included in the Contract Documents.

The Ministry of Natural Resources and Forestry (MNRF)

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 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 Temporary Rock Flow Check Dam

The Contractor shall install a temporary rock flow check dam as per OPSD 219.211 at approximately Sta. -0+065 prior to commencement of any work on the remainder of the proposed drain. 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.

SP3 Channel Work

All channel works shall be as per the relevant typical cross sections and details on the accompanying drawing set.

The Contractor shall consider the below information in their bid for the proposed channel works.

Station Range	Approx. Volume of Exc.	Description of Work
Main Drain		
Sta. -0+208 to Sta. -0+065	0m^3	• No Work required at this time, future maintenance to be as per applicable typical cross section.
Sta. -0+065 to Sta.-0+000	200m^3	• Initially the Contractor shall strip and stockpile all topsoil from the existing east channel bank and in the working area where spoil is proposed to be spread. • The course and dimensions of the channel and stilling basin shall be constructed as depicted on the accompanying details. • All spoil shall be spread and levelled in the designated spoil levelling area. • West bank to remain undisturbed. • All stockpiled topsoil shall be spread over the disturbed areas prior to seeding being completed. • The Contractor shall coordinate with landowner for the removal of the existing fence wiring. The Contractor shall salvage fence posts and pile in a location agreed upon by the landowner. Fence restoration shall be the responsibility of the property owner following construction.

If, during construction, there is excavated subsoil material deemed unsuitable by the Contract Administrator for spreading next to the drain, it shall be loaded and trucked off-site by the Contractor for disposal and paid for at an additional cost.

Excavated material shall be placed on the working side of the drain and a clear buffer of at least 1m shall be maintained between the top edge of the open drain and all excavated material. No excavated material be left in any low runs, depressions, or low areas which would cause water to pond behind the spoil bank. The excavated spoil shall be levelled to a maximum depth of 200mm unless otherwise specified. The material shall be levelled such that it may be cultivated without causing difficulty to the farm machinery and property owner. No excavated material shall cover any logs, large stones, etc. Any stones or boulders which exceed 300mm in any dimension shall be removed and disposed of at a location coordinated with the property owner.

Where excavated sideslopes become unstable, the Contractor shall immediately notify the Contract Administrator. Alternative methods of construction shall be discussed between the Contractor and Contract Administrator prior to continuing work.

SP4 Channel Bank Armouring

The banks and bottom of the open drain shall be lined with approximately 125m^2 of rip-rap (450mm thickness of 150 to 300mm dia.) as depicted on the accompanying details. All rip-rap placed on channel banks shall be on a geotextile underlay to a minimum elevation of 392.20. Approximately 10m^2 of rip-rap shall be placed at each end of the existing surface culvert c/w geo-textile underlay. No geotextile underlay is required in the rip-rap placed in the bottom of the channel.

SP5 Handseeding

Grass seed shall be as specified in the General Requirements.

Following restoration with topsoil, the following areas shall be handseeded by the Contractor to the satisfaction of the Contract Administrator.

- All newly excavated channel banks of Minto Drain No. 14 as well as non-agricultural areas where spoil has been levelled by the Contractor.
- All grassed banks disturbed as a result of the jack and bore crossing of the 8th Line.

SP6 8th Line Bored Road Crossing

Pipe Requirements

The pipe or steel casing shall be smooth wall steel pipe manufactured from weldable steel, and identified as per the requirements in OPSS.MUNI 1802 with a wall thickness specified in the Contract Documents.

The pipe ends shall be bevel edged on the outside to an angle of 30 degrees for butt weld splicing. Lengths of pipe shall be joined with a weld as per OPSS.MUNI 1802.

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.

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 jack and boring.

Installation

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

The location of the bore pit shall be discussed with the Contractor at the pre-construction meeting. Prior to the excavation of the bore pit all topsoil shall be stripped and placed in a pile separate from the subsoil material. Following the completion of the jack and bore, all stockpiled topsoil shall be spread over the backfilled material to the satisfaction of the Contract Administrator.

The boring pit required to accommodate the boring machine shall be excavated such that the edge of the pit is no closer than 3m from the edge of the crossing and the slopes of the excavation shall be as per OPSD 802.010. Any required shoring, sheeting, etc. shall be in accordance with all governing regulations and Acts.

The pit shall be left open for a minimum amount of time, and if possible, work should be scheduled to ensure that the pit excavation, pipe installation and backfilling of the bore pit can be completed in one working day. If a bore bit is required to be left unattended, the pit shall be secured by the Contractor (i.e. install barricades, warning signs, fencing, etc.) at no extra charge to the satisfaction of the Contract Administrator.

The pipe or steel casing shall be installed by means of continuous flight augering inside the steel casing and simultaneous jacking to advance the casing immediately behind the tip of the auger.

Any settlement or impact caused to the road shall be the sole responsibility of the Contractor. Any voids surrounding the pipe shall be filled with grout by the Contractor during construction and may be paid as an extra. The Owner 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.

Bore Pit Restoration

The finished work shall be left in a clean and orderly condition flush or slightly higher than the adjacent ground so that after settlement it will conform to the surrounding ground. Excess spoil shall be evenly distributed in the pit area to the satisfaction of the Contract Administrator and if required be hauled away by the Contractor at no extra cost.

SP7 Grouting existing Municipal Drain Crossing

The existing Municipal Drain crossing shall be filled with grout where it crosses the 8th Line to the satisfaction of the Contract Administrator. The crossing is a 375mmØ dual-wall HDPE pipe and is required to be grouted for a length of approximately 25m.

SP8 Structure Installation

The proposed catchbasins 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. The Contractor shall include the cost to complete all necessary tile connections c/w parging on the interior and exterior of the proposed structure as part of the associated line item.

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.

All ditch inlet catchbasins (DICBs) shall have a 3H:1V slope.

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 supply and 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.

SP9 Supply 19mm (¾ inch) Diameter Clearstone

For the unit price bid per tonne, the Contractor shall supply 19mm (¾ inch) dia. clear crushed stone. 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.

SP10 HDPE Tile Installation

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

Prior to the installation of the new tile, in all locations the Contractor shall strip the topsoil from the area of the proposed tile trench as per the table below. The topsoil shall be stockpiled separately from the subsoil material.

Tile Diameter	Minimum Topsoil Stripping Width
450mm – 750mm	6m

Trenching

All trenching shall be carried out with an excavator installed on wrapped stone bedding as per the accompanying detail.

High Density Polyethylene (HDPE) 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 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.

Topsoil Restoration

Following backfilling with the native material, the topsoil shall be replaced to the satisfaction of the Contract Administrator. The trench shall be mounded to allow for the settlement of the backfill material to ensure that no depression remains after settling has occurred, and conversely that the trench can be easily cultivated with ordinary farm equipment without causing undue hardship to the farm machinery and farm personnel.

Under no circumstances shall frozen topsoil be levelled or placed over top of the drain. If the Contractor elects to install the drain during winter months, the Contractor shall return to the site and level the topsoil when conditions are appropriate. No additional mobilization charges shall be made for returning the site to complete the levelling of topsoil.

Tile Installation Specifics

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

Station Range	Comments
Main Drain	
0+027 to 0+195	• Tile shall be installed via excavator on wrapped stone bedding as per the Drain Installation on Wrapped Stone Bedding Detail. • The Contractor should note generally poor soils, high groundwater table, and poor trenching conditions anticipated in this area and consider this in their bid. • Proposed tile to follow the existing drain alignment. • Existing drain shall be destroyed in place during the installation of the new tile. • The Contractor shall coordinate with landowner for the removal and reinstatement of the existing fences.

All of the aforementioned work shall be included as part of the work of the associated 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.

SP11 Geotextile for Wrapping 19mm Clearstone, Sta. 0+027 to Sta. 0+195

The Contractor shall supply all non-woven geotextile (RM-150 (4 oz), Terrafix 270R, or approved equivalent) required to install the HDPE pipe on wrapped stone bedding as per the accompanying detail.

SP12 Connection of Existing Municipal Tile

The Contractor shall supply and install a minimum 3m of 375mm solid HDPE pipe (320 kPa). The joint between the existing CDT and the proposed pipe shall be butt jointed and double wrapped in with a minimum 600mm width of geotextile. All existing municipal tile destroyed in the making of this connection shall be disposed of offsite by the Contractor.

SP13 Tile Connections

For the unit bid price, the Contractor shall provide all labour and material required to connect all any private drains encountered during construction to the proposed drain with appropriately sized agricultural tubing or approved equivalent (assuming a length of 6m or less). Initially the Contractor shall connect to the existing tile with an appropriate coupler or reducer. The connection shall be adequately supported with 19mm clear stone 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. Connections directly to a length of 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. Connections directly to a structure

shall be into the appropriate opening/knockout provided, and parged on the interior and exterior of the structure.

The Contractor shall also cap the downstream end of the connected tile with an end cap, geotextile, or other item to the satisfaction of the Contract Administrator.

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.

SP14 Swamp Mats

Should construction conditions warrant the need for swamp mats, the Contractor shall supply and utilize the swamp mats as required to facilitate the installation of the proposed drain to the satisfaction of the Contract Administrator.

2 General Requirements

2.1 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.

2.2 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.

2.3 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.

2.4 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 be assumed to be Type II Granular 'B' material.
- 19mm (¾ inch) crushed clear stone shall be as per requirements in OPSS.MUNI 1004.
- 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).
- Rounded Riverstone (i.e. waterbody material) shall be as per requirements in OPSS.MUNI 1005 and be assumed to be WB-350 classification (generally ranging from 150mm to 300mm in diameter).

2.5 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.

2.6 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.

2.7 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.

2.8 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.

2.9 Material Disposal

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

2.10 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.

2.11 Damage by Vehicles and Other Equipment

Throughout all construction activities, the Contractor shall be responsible maintain all road surfaces 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.

2.12 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.

2.13 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.

2.14 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.

2.15 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 contingency 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.

2.16 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.

2.17 Sub-Contractors

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

2.18 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 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.

2.19 Project Completion/Substantial Performance

For all intents and purposes, for this project, the substantial performance date shall be deemed to be the same as the completion date of the project and any documentation indicating such shall represent both the date of substantial performance and project completion. Substantial performance shall be determined as per its definition in the Construction Act.

2.20 Statutory Holdback

As per the Construction Act, a 10% Statutory Holdback shall not be due until 60 days from the date of Substantial Performance. This payment 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.

2.21 Warranty Holdback

A 3% Warranty Holdback shall not be paid 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.

2.22 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.

2.23 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.

2.24 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.

2.25 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.

2.26 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.

2.27 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.

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 contingency item.

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.

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

Soils Investigation

Soils Investigation

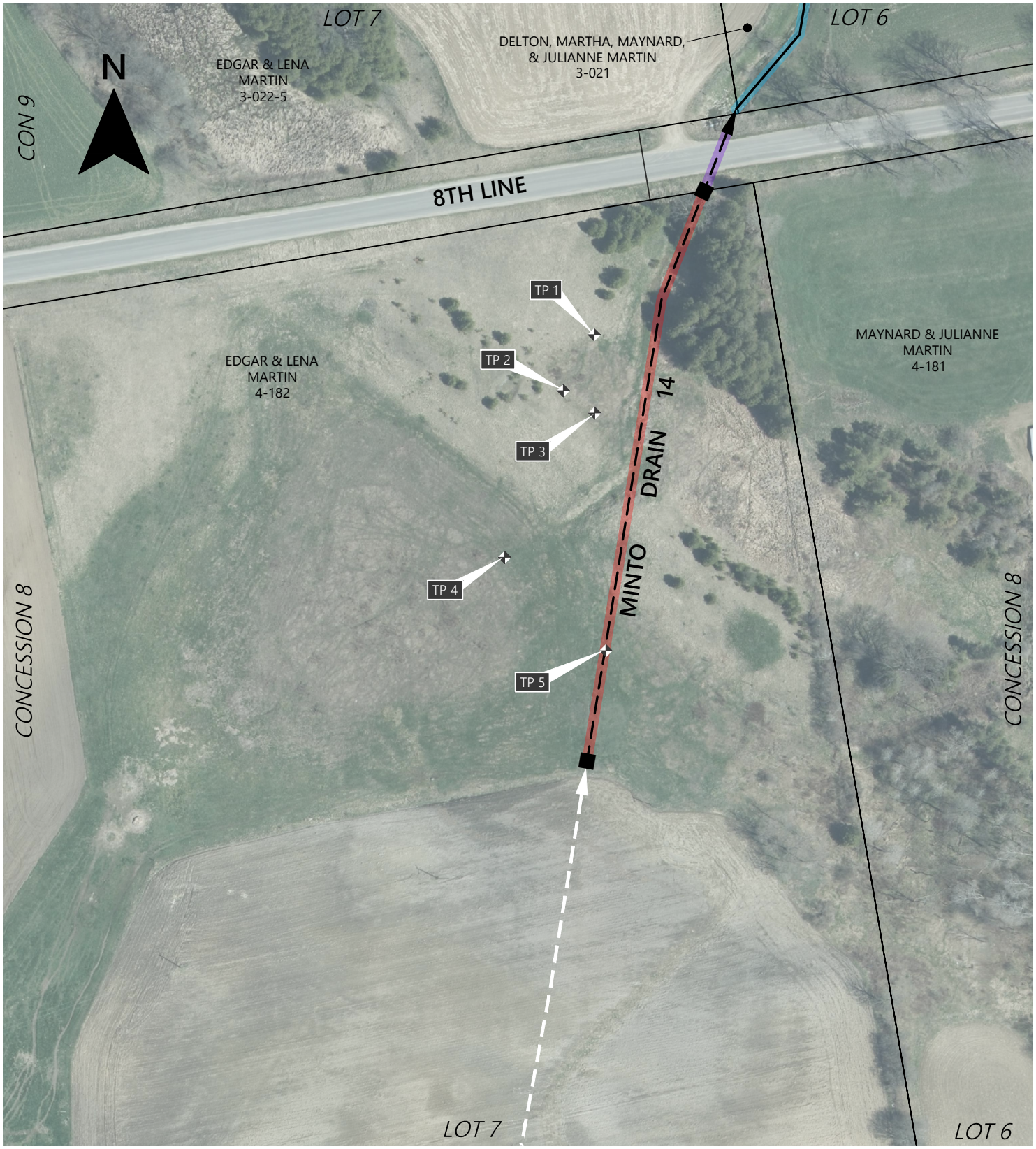
A soils investigation was completed on May 27, 2024 along the proposed drain alignment.

The soils were found to be of high organic content within the low-lying lands on Lot 7, Concession 8. An unstable clayey soil was encountered below the organics. A location map of the test pits and a summary log of the soils encountered with their depths can be found enclosed with this appendix.

As a result of this investigation, the proposed tile installation technique has been chosen to mitigate the challenges of the adverse construction conditions.

Figure 1 – Unstable soil with high organic content within the low-lying lands on Lot 7, Concession 8

Figure 2 – Unstable clayey soil withing the low-lying lands on Lot 7, Concession 8



PROJECT

MINTO DRAIN NO. 14 IMPROVEMENT 2024

CLIENT

TOWN OF
MINTO

STREAMLINE ENGINEERING INC.

DRAWING

TEST PIT FIGURE

DESIGNED	DRAWN	PROJECT NO.	DRAWING NO.
CK	MS	0006	1 OF 1
CHECKED	DATE	SCALE	
TK	JULY 2024	1:1500	

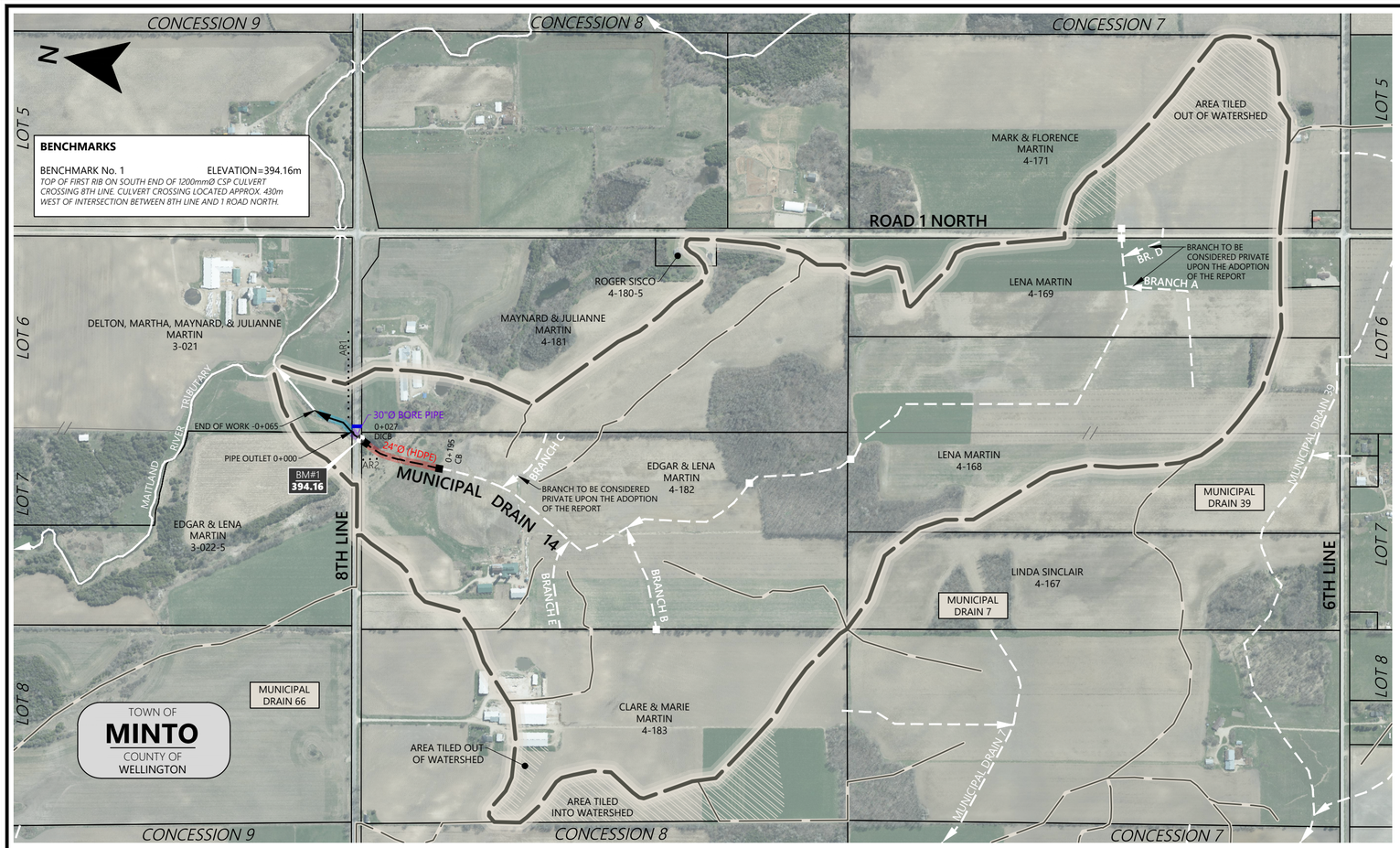
Soil Test Pit Logs

Project: Minto Drain 14 Improvement 2024
Project No.: 0006
Date of Investigation: May 27, 2024

Test Pit Number	Depth Interval	Description
TP1	0.0-0.2	Topsoil
	0.2-2.2	Clay & gravel
	Ground elev.=393.9, pit terminated at 391.7	
	Groundwater observed: N/A	
	Stones observed: none	
TP2	0.0-0.2	Topsoil
	0.2-0.7	Lightweight tan-coloured organic, wet
	0.7-1.3	Grey unstable clay, wet
	Ground elev.=393.4, pit terminated at 392.1	
	Groundwater observed: N/A	
	Stones observed: none	
TP3	0.0-0.6	Topsoil and lightweight organic
	0.6-1.8	Lightweight tan-coloured organic, wet
	1.8-2.5	Grey unstable clay, wet, collapsed trench
	Gound elev.=393.1, pit terminated at 390.6	
	Groundwater observed: N/A	
	Stones observed: none	
TP4	0.0-0.3	Topsoil
	0.3-1.8	Lightweight organic, traces of red-coloured organics, some wood debris
	1.8-1.8	Lightweight tan-coloured organic, wet
	Ground elev.=393.4, pit terminated at 391.6	
	Groundwater observed: N/A	
	Stones observed: none	
TP5	0.0-1.2	Lightweight organic, traces of red-coloured organics, some wood debris
	1.2-2.0	Lightweight tan-coloured organic, wet, water seepage in sides of trench
	Ground elev.=393.4, pit terminated at 391.4	
	Groundwater observed: N/A	
	Stones observed: none	

Appendix C

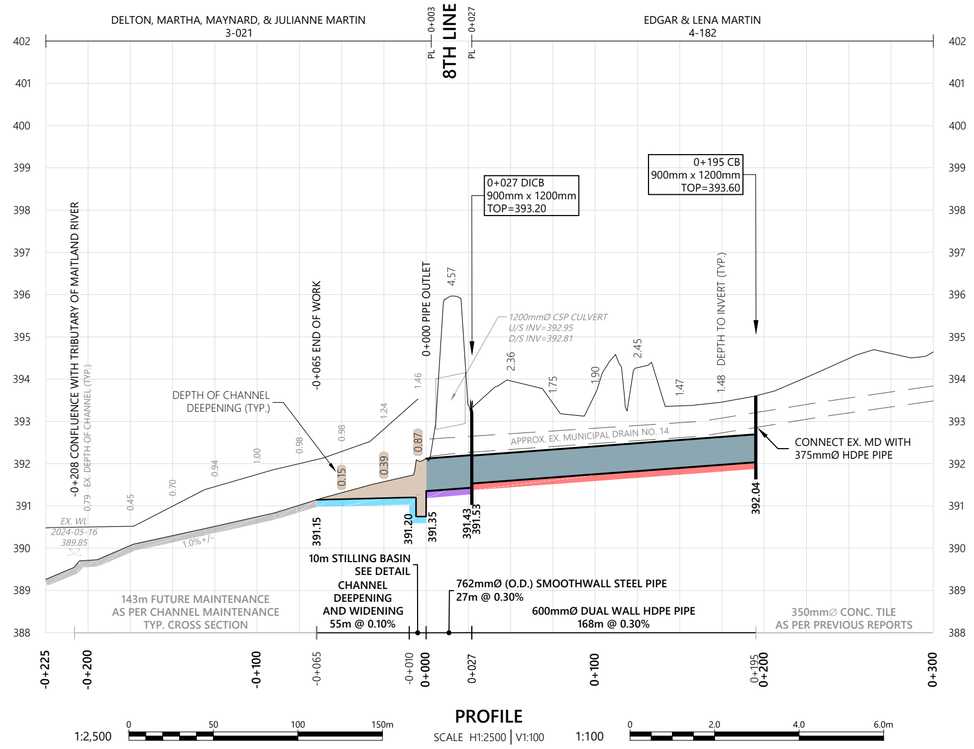
Drawings



WATERSHED PLAN

SCALE 1:8000

1:8,000 0 80 160 320 480

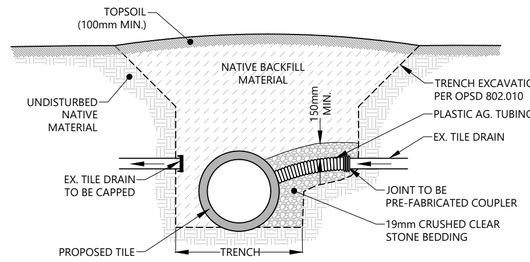


PROFILE

1:2,500 0 50 100 150m

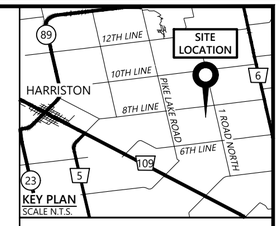
SCALE H1:2500 | V1:100

1:100 0 2.0 4.0 6.0m



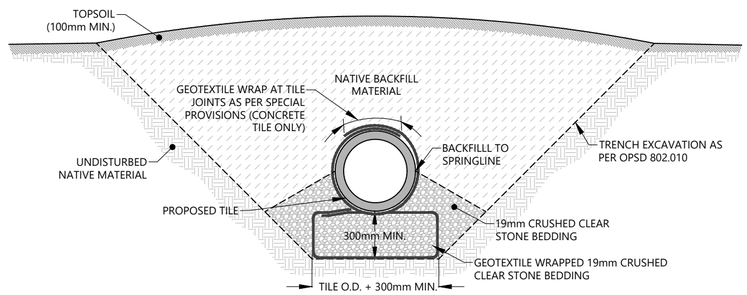
TILE CONNECTION DETAIL

N.T.S.



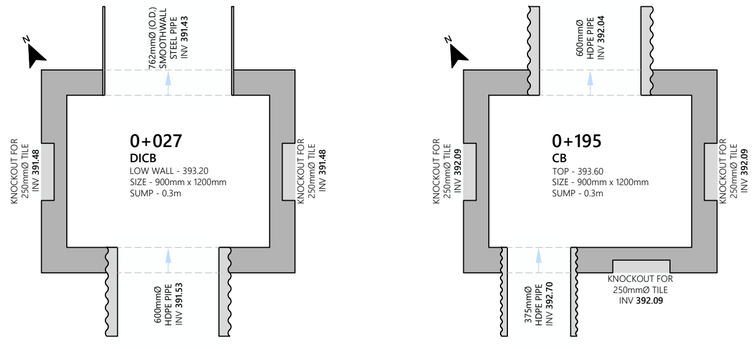
LEGEND

- WATERSHED BOUNDARY
- SUBWATERSHED BOUNDARY
- APPROX. PROPERTY LINE PROPERTY SHARED BETWEEN LOT LINES
- PR. CLOSED DRAIN / EX. CLOSED DRAIN
- PR. OPEN DRAIN / EX. OPEN DRAIN
- BENCHMARK LOCATION, NUMBER, & ELEVATION (BM#1 ELEV)
- PR. DRAIN CROSSING / EX. DRAIN CROSSING
- CATCH BASIN - EX./PR.
- ACCESS ROUTE PATH
- EX. SURFACE CULVERT



DRAIN INSTALLATION ON WRAPPED STONE BEDDING (TYP.)

N.T.S.



CB DETAILS

SCALE 1:25

LICENSED PROFESSIONAL ENGINEER
T. A. KUEPFER
100506337
2024/07/19
PROVINCE OF ONTARIO

PROJECT

MINTO DRAIN NO. 14 IMPROVEMENT 2024

STREAMLINE ENGINEERING INC.

CLIENT

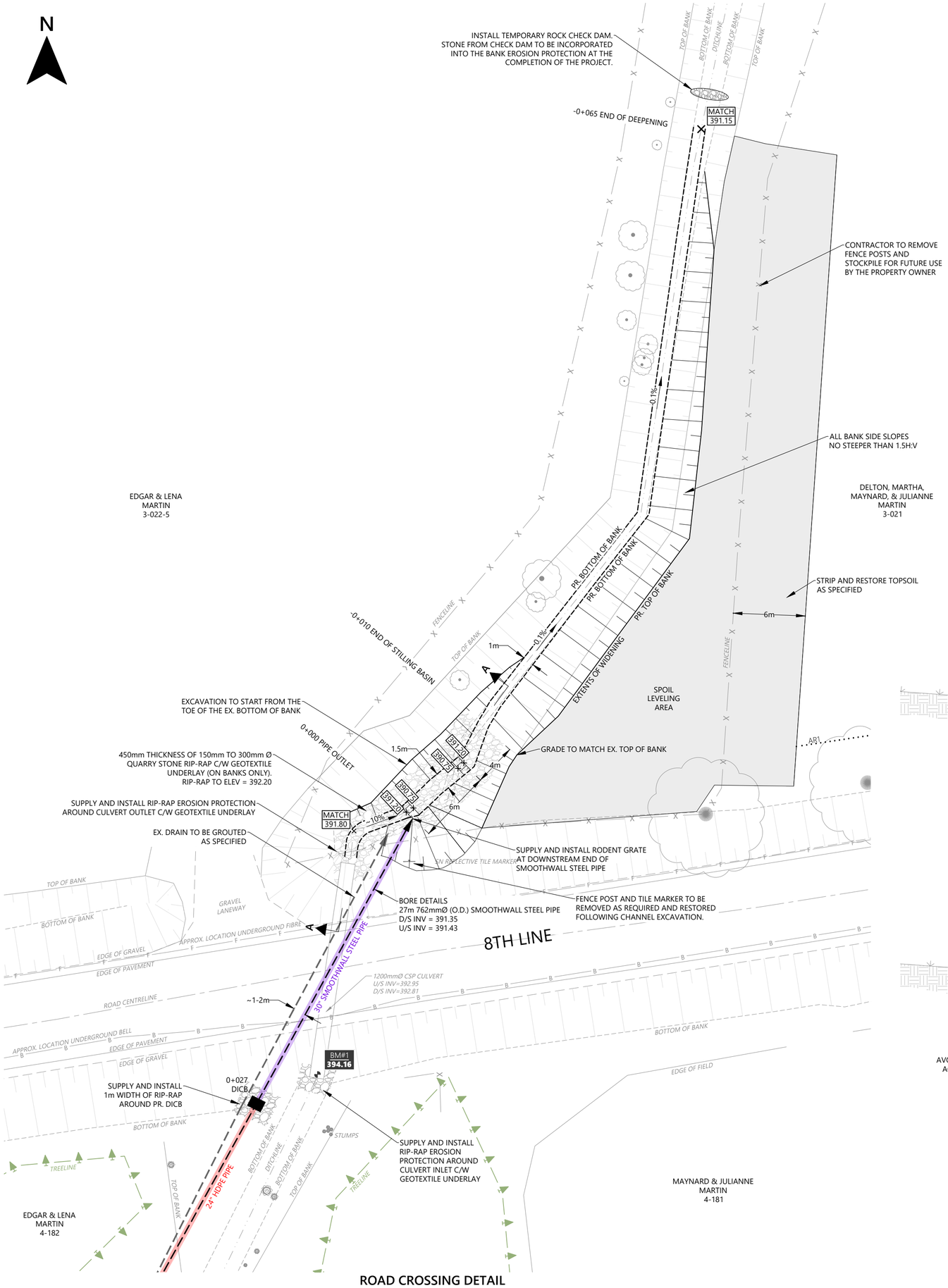
TOWN OF MINTO

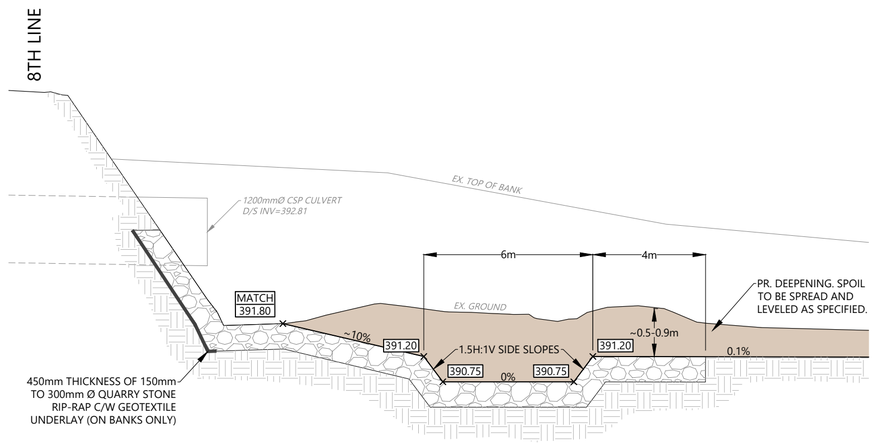
ISSUE / REVISION	DATE
FOR ON-SITE MEETING	MAY 2024
FOR INFORMATION MEETING	JUNE 2024
FOR ENGINEER'S REPORT	JULY 2024

DRAWING: PLAN & PROFILE

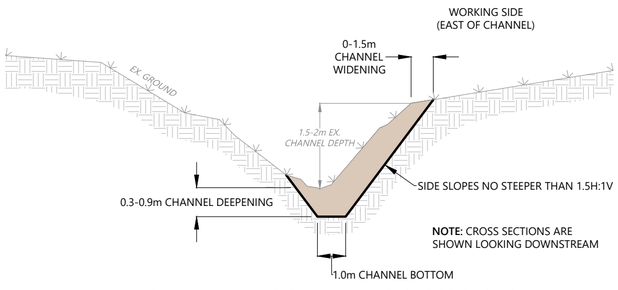
DRAWING NO. 1 OF 2

DESIGNED	DRAWN	CHECKED	PROJECT NO.
CK	CK/MS	TK	0006

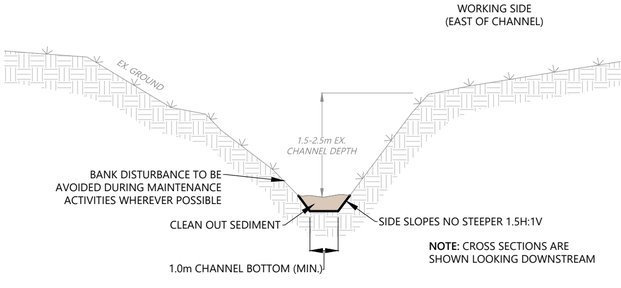




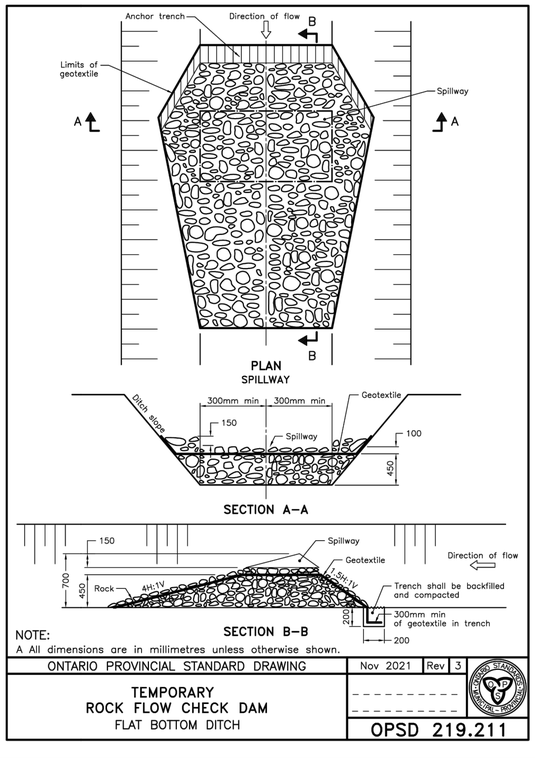
STILLING BASIN DETAIL - SECTION A-A
N.T.S.



TYPICAL DEEPENING & WIDENING CROSS SECTION
N.T.S.



TYPICAL MAINTENANCE CLEANOUT CROSS SECTION
N.T.S.



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev	3
TEMPORARY ROCK FLOW CHECK DAM FLAT BOTTOM DITCH			OPSD 219.211

LICENSED PROFESSIONAL ENGINEER
T. A. KUEPFER
100506337
2024/07/19
PROVINCE OF ONTARIO

PROJECT
MINTO DRAIN NO. 14 IMPROVEMENT 2024

STREAMLINE ENGINEERING INC.

CLIENT
TOWN OF MINTO

ISSUE / REVISION	DATE
FOR ON-SITE MEETING	MAY 2024
FOR INFORMATION MEETING	JUNE 2024
FOR ENGINEER'S REPORT	JULY 2024

DRAWING: DETAILS
DRAWING NO. 2 OF 2

DESIGNED	DRAWN	CHECKED	PROJECT NO.
CK	CK/MS	TK	0006