



Fraser Municipal Drain

June 12, 2026

Prepared for:



MUNICIPALITY OF

**Huron
East**

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Kitchener, Ontario

June 12, 2026

To the Mayor and Members of Council:

**Re: Fraser Municipal Drain
Municipality of Huron East
Our Reference No. HE-006**

Headway Engineering is pleased to provide its report for the **Fraser Municipal Drain** in the Municipality of Huron East.

The preparation of this report was authorized by a resolution of the Council of the Municipality of Huron East on December 9, 2025, per Section 78(5) of the Drainage Act.

The primary objective of this report is to relocate the Fraser Drain on the Terpstra Drying Inc. property (Roll No. 15-034), Lot 30, Concession 16 in the Municipality of Huron East, Grey Ward, County of Huron.

Yours truly,

Stephen Brickman, P.Eng.
Project Engineer and Manager



Adam Hall
Project Coordinator
HEADWAY ENGINEERING

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TABLE OF CONTENTS

1.0	Introduction and location	1
2.0	Authorization	1
3.0	Drainage History	1
4.0	Public Meetings and Engagements	1
5.0	Findings.....	1
6.0	Design Considerations	2
7.0	Environmental Considerations	2
8.0	Recommendations	3
9.0	Working Area and Access.....	3
10.0	Schedules.....	3
11.0	Allowances	3
12.0	Estimated Construction Costs.....	4
13.0	Summary of Estimated Project Costs	4
14.0	Assessment	4
15.0	Grant Eligibility	5
16.0	Maintenance.....	5

SCHEDULES

Schedule A Schedule of Allowances

Schedule B Schedule of Estimated Construction Costs

SPECIFICATIONS

Specifications for the Construction of Municipal Drainage Works

REPORT

1.0 INTRODUCTION AND LOCATION

The Council of the Municipality of Huron East has appointed Headway Engineering to investigate a request for minor improvements to the Fraser Municipal Drain. Specifically, to relocate the Fraser Drain on the Terpstra Drying Inc. property (Roll No. 15-034), Lot 30, Concession 16, Grey Ward.

The Drainage Area comprises of approximately 215.9 hectares, and land uses within the watershed include agriculture, wood lots, and roads.

The attached Plans, Profiles and Details; Drawing Numbers 1 to 3, show and describe in detail the location and extent of the work to be completed.

2.0 AUTHORIZATION

Authority to prepare this report was obtained by a resolution of the Municipality of Huron East at its December 9, 2025, meeting to appoint Headway Engineering to prepare an Engineer's Report under Section 78(5) of the Drainage Act.

3.0 DRAINAGE HISTORY

3.1. Fraser Drain (1968)

The Fraser Drain was originally constructed under the authority of a report prepared by E. H. Fairchild, dated 1968.

3.2. Fraser Drain (1984)

A cleanout and excavation of approximately 2,407m was authorized under the report prepared by E.W. Shifflett, P.Eng., dated February 28, 1984.

4.0 PUBLIC MEETINGS AND ENGAGEMENTS

In accordance with Section 9(1) of the Drainage Act, an on-site meeting was held on March 30, 2026.

An information meeting was held with the Landowner on June 3, 2026 to discuss the design and estimated costs of the project.

5.0 FINDINGS

The following summarizes Headway Engineering's findings based on the information collected during field investigations, surveys, public engagements, and review of documentation:

5.1. Watershed Condition (Hydrology):

- The watershed was established through the analysis of previous engineers' reports for surrounding systems, field investigations, surveys, and data analysis of provincially



available LiDar derived digital data. The drainage area comprises of approximately 215.9 hectares.

- The existing drainage system begins in Lot 33, Concession 14, Grey Ward, and runs southwest to its outlet into the Livingstone Municipal Drain in Lot 30, Concession 16.
- The Fraser Drain alignment crosses the southern portion of the Terpstra Drying Inc, property (Roll No. 15-034) leaving a small isolated farmable area in the southeast corner of the farm.

5.2. Environmental Findings:

- The Fraser Drain is listed as having an 'E' classification under the Department of Fisheries and Oceans (DFO) classification system. A class E Drain is a municipal drain classified by DFO as containing sensitive fish species.

5.3. Other Noted Findings:

- The proposed minor improvements satisfy all the requirements of Section 78(5) of the Drainage Act, and Ontario Regulation 500/21.

6.0 DESIGN CONSIDERATIONS

The proposed realignment begins where the Fraser Drain outlets into the Livingstone Drain in Lot 30, Concession 16. The new alignment follows the perimeter of the property in an east and then north direction to the downstream end of the crossing under Livingstone Line.

The open ditch works have been designed to provide adequate depth for sufficient outlet and tile drainage for workable areas adjacent to, and upstream of the municipal drain,

The channel cross-section is designed to have a trapezoidal shape, with a streambed width of 1.2m and side slopes at a ratio 1.5 horizontal to 1 vertical.

7.0 ENVIRONMENTAL CONSIDERATIONS

7.1. Department of Fisheries and Oceans (DFO)

The works proposed under this report consist of an improvement to an existing open watercourse, Headway Engineering submitted a 'Request for Review by DFO' on April 23, 2026.

7.2. Maitland Valley Conservation Authority (MVCA)

The MVCA has been included on the circulation list for this report. A design submission was filed with the MVCA on May 26, 2026 which included design drawings and a discussion of the proposal.

7.3. Ministry of Natural Resources

Headway Engineering completed a review of the Natural Heritage Information Centre mapping for Species at Risk in Ontario. Provincial Species at Risk requiring special consideration were not identified in the working area.



8.0 RECOMMENDATIONS

Headway Engineering recommends relocating approximately 228 metres of the Fraser Municipal Drain in Lot 30, Concession 16, Grey Ward.

9.0 WORKING AREA AND ACCESS

Access to the working area shall be from Moncrieff Road and Livingstone Line.

9.1. Existing Ditch

The working area for the enclosure of the existing open ditch shall be average of 10m on the primary working side of the existing ditch, and an additional 5m on the opposite side.

9.2. Proposed Ditch

The average working width for construction purposes shall be 25 metres along the alignment of the proposed drain.

10.0 SCHEDULES

Two schedules are attached and form part of this report.

10.1. Schedule A – Schedule of Allowances

In accordance with Sections 29, and 30 of the Drainage Act, allowances are provided to affected Landowners for Right-of-Way, and Damages to Lands and Crops. Schedule A contains a table of the applicable allowances to the Landowner.

10.2. Schedule B – Schedule of Estimated Construction Costs

An itemized cost estimate of the proposed construction work is included in detail in Schedule B.

11.0 ALLOWANCES

In accordance with Sections 29, and 30 of the Drainage Act, Allowances payable to Landowners are calculated using the following methodology.

11.1. Allowances for Right-of-Way (Section 29)

The Right-of-Way allowance compensates the lands for the right to enter onto the land at various times for the purpose of inspecting the drainage system and conducting maintenance activities. The land value used for the Right-of-Way calculation is adjusted to account for the continued use of the land after the construction of the open drainage system,

The values used for calculating allowances for Right-of-Way are as follows:

Land Use	Land Value	Adjustment Factor for Drainage Act Right-of-Way	Adjusted Land Value for Drainage Act Right-of-Way Allowance
Agricultural Working Side of Ditch	\$60,000/Ha	25%	\$15,000/Ha
Agricultural - Top Width of Ditch	\$60,000/Ha	100%	\$60,000/Ha



11.2. Allowances for Damages to Lands and Crops (Section 30)

Allowances for Damages to Lands and Crops under Section 30 of the Drainage Act, were primarily calculated to compensate landowners for crop losses, and land damages due to the construction and operation of the drain, including access to the working area.

Area values used for calculating allowances for Damages are \$6,000/Ha.

Allowances payable to Landowners entitled thereto are as shown in Schedule A.

Total Allowances, under Sections 29 and 30 of the Drainage Act: \$20,500

12.0 ESTIMATED CONSTRUCTION COSTS

Headway Engineering has made an estimate of the cost of the proposed construction work. A detailed description of the estimated construction costs can be found in Schedule B of this report.

Total Estimated Construction Costs are \$59,000.

13.0 SUMMARY OF ESTIMATED PROJECT COSTS

The total estimated project costs are as follows:

Allowances under Sections 29 and 30 of the Drainage Act (Refer to Schedule A)	\$	20,500
Total Estimated Construction Costs (Refer to Schedule B)	\$	59,000
Meetings, survey, design, preparation of preliminary cost estimates, preparation of final drainage report, consideration of report	\$	18,000
Consultation with Environmental Agencies and Permitting Fees	\$	1,000
Preparation of contract documents, contract administration, supervision, and inspection of construction, assistance with Grant Applications	\$	7,500
Contingencies, Interest and net H.S.T.	\$	5,400
TOTAL ESTIMATED PROJECT COSTS – FRASER MUNICIPAL DRAIN	\$	111,400

The estimated cost of the work in the Municipality of Huron East is \$ 111,400.

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

The above cost estimate does not include costs associated with defending the drainage report should appeals be filed with the Drainage Tribunal and/or Drainage Referee. Should additional costs be incurred, unless otherwise directed, additional costs will be added to the cost of the project.

14.0 ASSESSMENT

In accordance with Ontario Regulation 500/21, which operationalizes Section 78(5) of the Drainage Act, the costs for minor improvements—including engineering fees, construction expenses, contingencies, incremental future maintenance, and eligible municipal administrative costs—are to be borne by the requesting party. In this instance, Terpstra Drying Inc. (Roll No. 15-034).



15.0 GRANT ELIGIBILITY

The Province provides grants towards assessment to eligible properties for drainage improvements which meet the specific criteria. The provision of these grants for activities under the Drainage Act is called the *Agricultural Drainage Infrastructure Program (ADIP)*.

A grant may be available for assessments to privately owned parcels of land which are used for agricultural purposes and eligible for the Farm Property Class Tax rate. Section 88 of the Drainage Act directs the County to make application for this grant upon certification of completion. The County will then deduct the grant from the assessments.

16.0 MAINTENANCE

Following completion of the work described in this report, the Fraser Drain shall continue to be maintained by the Municipality of Huron East in accordance with the assessment schedule contained in the 1984 Fraser Drainage Works Engineer's Report, prepared by E.W. Shifflett, P.Eng., dated February 28, 1984, as amended by any subsequent valid reports or by-laws.

This report has been prepared under Section 78(5) of the Drainage Act and does not assign any additional future repair or maintenance liability to any lands or roads.



Schedule A

Schedule of Allowances

Schedule of Allowances

Fraser Municipal Drain

Fraser Drain	Property Details				Drainage Act Allowances		
	Part			Roll	Right of Way	Damages	
	Lot	Con.	Landowner	Number	(Sec. 29)	(Sec. 30)	Total Allowances
	30	16	Terpstra Drying Inc.	15-034	\$ 15,050.00	\$ 5,450.00	\$ 20,500.00
Total Allowances							
Fraser Drain					\$ 15,050.00	\$ 5,450.00	\$ 20,500.00



Schedule B

Schedule of Estimated Construction Costs

Schedule of Estimated Construction Costs

An estimate of the cost of the proposed work has been completed, which is outlined in detail as follows:

Part A - Fraser Drain

	Description	Estimated Quantity	\$ /Unit		Total
1)	Clearing, brushing and mulching	I.s.		\$	2,450.00
2)	Open ditch excavation including stripping and stockpiling top soil (2,635m3)	228 m	\$ 75.00	\$	17,100.00
3)	Fill existing ditch with excavated material from the proposed ditch including stripping topsoil and spreading topsoil over backfilled ditch	1440 m3	\$ 10.00	\$	14,400.00
4)	Hydroseed new ditch side slopes with bonded fiber matrix mulch	1350 m2	\$ 3.00	\$	4,050.00
5)	Tile connection, approx. 70m of 100mm ag tubing	I.s.		\$	2,000.00
6)	Supply and placement of 150 to 300mm diameter quarry stone rock rip-rap and geotextile filter material	190 t	\$ 100.00	\$	<u>19,000.00</u>
Total Estimated Construction Costs					
Part A - Fraser Drain					<u>\$ 59,000.00</u>



Specifications for the Construction of Municipal Drainage Works

DIVISION A – General Conditions

DIVISION B – Specification for Open Drains

DIVISION H – Special Provisions



DIVISION A

General Conditions



TABLE OF CONTENTS

A.1.	Scope	1
A.2.	Examinations of Site, Drawings, and Specifications.....	1
A.3.	Payment	1
A.4.	Contractor's Liability Insurance	1
A.5.	Losses Due to Acts of Nature, Etc.	2
A.6.	Commencement and Completion of Work	2
A.7.	Working Area and Access.....	2
A.8.	Sub-Contractors.....	3
A.9.	Permits, Notices, Laws and Rules	3
A.10.	Railways, Highways, and Utilities	3
A.11.	Errors and Unusual Conditions.....	3
A.12.	Alterations and Additions	3
A.13.	Supervision.....	4
A.14.	Field Meetings	4
A.15.	Periodic and Final Inspections.....	4
A.16.	Acceptance By the Municipality	4
A.17.	Warranty	4
A.18.	Termination of Contract By The Municipality.....	4
A.19.	Tests.....	5
A.20.	Pollution	5
A.21.	Species and Risk.....	5
A.22.	Road Crossings	5
A.22.1.	Road Occupancy Permit.....	5
A.22.2.	Road Closure Request and Construction Notification.....	5
A.22.3.	Traffic Control	6
A.22.4.	Weather	6
A.22.5.	Equipment	6
A.23.	Laneways.....	6
A.24.	Fences.....	7
A.25.	Livestock	7
A.26.	Standing Crops	7



A.27.	Surplus Gravel.....	7
A.28.	Iron Bars	7
A.29.	Rip-Rap	8
A.30.	Clearing, Grubbing and Brushing	8
A.31.	Restoration of Lawns	8



DIVISION A – GENERAL CONDITIONS

A.1. Scope

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

A.2. Examinations of Site, Drawings, and Specifications

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

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

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

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

A.3. Payment

Progress payments equal to 87±% of the value of work completed and materials incorporated in the work will be made to the Contractor monthly. An additional ten per cent (10±%) will be paid 60 days after the final acceptance by the Engineer, and three per cent (3±%) of the Contract price may be reserved by the Municipality as a maintenance holdback for a one (1) year period from the date of the Completion Certificate. A greater percentage of the Contract price may be reserved by the Municipality for the same one (1) year period if in the opinion of the Engineer, particular conditions of the Contract requires such greater holdback.

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

A.4. Contractor's Liability Insurance



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

The following are to be named as co-insured:

- Successful Contractor
- Sub-Contractor
- Municipality
- Headway Engineering

A.5. Losses Due to Acts of Nature, Etc.

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

A.6. Commencement and Completion of Work

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

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

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

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

A.7. Working Area and Access

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

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



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

A.8. Sub-Contractors

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

A.9. Permits, Notices, Laws and Rules

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

A.10. Railways, Highways, and Utilities

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

A.11. Errors and Unusual Conditions

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

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

A.12. Alterations and Additions

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



A.13. Supervision

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

A.14. Field Meetings

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

A.15. Periodic and Final Inspections

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

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

A.16. Acceptance By the Municipality

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

A.17. Warranty

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

A.18. Termination of Contract By The Municipality

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



of finishing the work including compensation to the Engineer for his additional services and including the other damages of every name and nature, such excess shall be paid by the Contractor. If such expense will exceed such unpaid balance, the Contractor shall pay the difference to the Municipality. The expense incurred by the Municipality, as herein provided, shall be certified by the Engineer.

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

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

A.19. Tests

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

A.20. Pollution

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

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

A.21. Species and Risk

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

A.22. Road Crossings

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

A.22.1. Road Occupancy Permit

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

A.22.2. Road Closure Request and Construction Notification



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

A.22.3. Traffic Control

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

A.22.4. Weather

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

A.22.5. Equipment

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

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

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

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

A.23. Laneways

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

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



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

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

A.24. Fences

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

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

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

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

A.25. Livestock

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

A.26. Standing Crops

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

A.27. Surplus Gravel

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

A.28. Iron Bars

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



A.29. Rip-Rap

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

A.30. Clearing, Grubbing and Brushing

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

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

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

A.31. Restoration of Lawns

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

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

END OF DIVISION



DIVISION B

Specifications for Open Drains



TABLE OF CONTENTS

B.1.	Alignment	1
B.2.	Profile	1
B.3.	Excavation	1
B.4.	Excavated Material	1
B.5.	Excavation at Existing Bridge and Culvert Sites	2
B.6.	Pipe Culverts	2
B.7.	Rip-Rap Protection For Culverts	2
B.8.	Clearing, Grubbing and Mulching	3
B.9.	Tributary Tile Outlets	3
B.10.	Seeding	3
B.11.	Hydro Seeding	3
B.12.	Hand Seeding	3
B.12.1.	Completion	3



DIVISION B – SPECIFICATIONS FOR OPEN DRAINS

B.1. Alignment

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

B.2. Profile

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

B.3. Excavation

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

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

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

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

B.4. Excavated Material

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

No excavated material shall be placed in tributary drains, depressions, or low areas which direct water behind the spoil bank. The excavated material shall be placed and levelled to a maximum



depth of 200 mm, unless instructed otherwise and commence a minimum of one (1) metre from the top of the bank. The edge of the spoil bank away from the ditch shall be feathered down to the existing ground; the edge of the spoil bank nearest the ditch shall have a maximum slope of 2(h):1(v). The material shall be levelled such that it may be cultivated with ordinary farm equipment without causing undue hardship to the farm machinery and farm personnel. No excavated material shall cover any logs, brush, etc. of any kind.

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

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

B.5. Excavation at Existing Bridge and Culvert Sites

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

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

B.6. Pipe Culverts

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

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

B.7. Rip-Rap Protection For Culverts

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

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



B.8. Clearing, Grubbing and Mulching

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

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

B.9. Tributary Tile Outlets

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

B.10. Seeding

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

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

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

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

B.11. Hydro Seeding

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

B.12. Hand Seeding

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

B.13. Completion



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

END OF DIVISION



SPECIAL PROVISIONS

Fraser Municipal Drain



TABLE OF CONTENTS

1.	General.....	1
2.	Utilities	1
3.	Working Area and Access.....	1
4.	Clearing, Brushing, and Protection of Features.....	2
5.	Rip-Rap	2
6.	Topsoil Stripping.....	2
7.	Open Ditch Excavation.....	2
8.	Seeding	3
9.	Tile Connections.....	3
10.	Erosion and Sediment Control	3



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

1. General

The Contractor shall organize and hold a preconstruction meeting with the Engineer and the Drainage Superintendent prior to the start of construction. The Contractors shall notify and invite all Landowners and all applicable road authorities on whose property where works are proposed.

The Contractor shall notify the Landowner, the Drainage Superintendent and the Engineer one week prior to construction.

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

The Contractor must maintain access to all driveways as well as maintain access for all emergency vehicles at all times during construction.

The Contractor should make their own independent interpretation of the subsurface information as it may affect their proposed construction means and methods, equipment selection, scheduling, pricing and the like.

All objects or obstructions within the construction working area such as signs, mailboxes, fences, property ornamentals, etc., that interfere with the installation of the drain shall be removed and re-erected in the same location or another location satisfactory to the Landowner. Any damages to such objects by the Contractor shall be repaired, replaced, installed and paid for by the Contractor at the discretion of the Engineer.

The Contractor shall be responsible for all settlement within the warranty period.

2. Utilities

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

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

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

The Contractor shall contact the Engineer if the Contractor discovers a conflict or discrepancy between the design as detailed on the attached set of plans and the utility locates.

3. Working Area and Access

Access to the working area for construction shall be using Moncrieff Road and Livingstone Line.



EXISTING DITCH

The working area for the enclosure of the existing open ditch shall be average of 10m on the primary working side of the existing ditch, and an additional 5m on the opposite side.

PROPOSED DITCH

The average working width for construction purposes shall be 25 metres along the alignment of the proposed drain.

4. Clearing, Brushing, and Protection of Features

The Contractor shall clear, brush, and mulch vegetation within the working area as required to complete the work. Clearing shall be limited to that necessary for construction, unless otherwise authorized by the Engineer.

All brush, limbs, and trees less than 150mm in diameter, and any larger material that can be reasonably mulched, shall be mulched or chipped and spread within the working area.

Where larger diameter material is encountered that is not practical to mulch, the Contractor shall cut such material into manageable lengths and place it in neat, stable piles along the outer limits of the working area in locations designated by the Landowner. Where no direction is provided by the Landowner and where reasonable attempts were made to contact the Landowner, the Contractor may select appropriate locations to neatly pile the material within the working area.

Unless otherwise specified, cleared materials are not intended to be salvaged or preserved for later use.

Landowners shall clearly identify any trees, features, objects, or improvements of particular value within or adjacent to the working area and access routes prior to construction. While reasonable efforts may be made to accommodate such features where practicable, no guarantee of protection is provided where such features interfere with the work.

5. Rip-Rap

All stone rip-rap material used shall be quarry stone 150mm to 300mm dia. and placed to a depth of 450mm.

All rip-rap material shall be placed on geo-textile filter material (Mirafi 180N).

6. Topsoil Stripping

The Contractor shall strip all available topsoil from the side slopes and streambed of the existing ditch prior to the enclosure and shall stockpile it adjacent to the ditch. The Contractor shall ensure that the topsoiled area is left in a condition that the Landowner can perform final restoration using nothing more than farm equipment.

7. Open Ditch Excavation

An approved hydraulic excavator shall be used to carry out the excavation of the open ditches. The drain shall have a 1.2m bottom width. The side slopes shall be a 1.5H:1V or flatter for all open ditch works.



8. Seeding

The Contractor shall supply and spread an approved native seed mixture over all the newly constructed open ditch by means of hydroseed with bonded fibre matrix mulch using the seed manufacturers application recommendations.

The Contractor shall be responsible for regrading and reapplication of the hydroseed mixture for up to one year after the completion of construction in areas that have been significantly eroded or exhibit poor growth, as determined by the Engineer.

9. Tile Connections

The Contractor shall make all tributary tile drain connections.

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

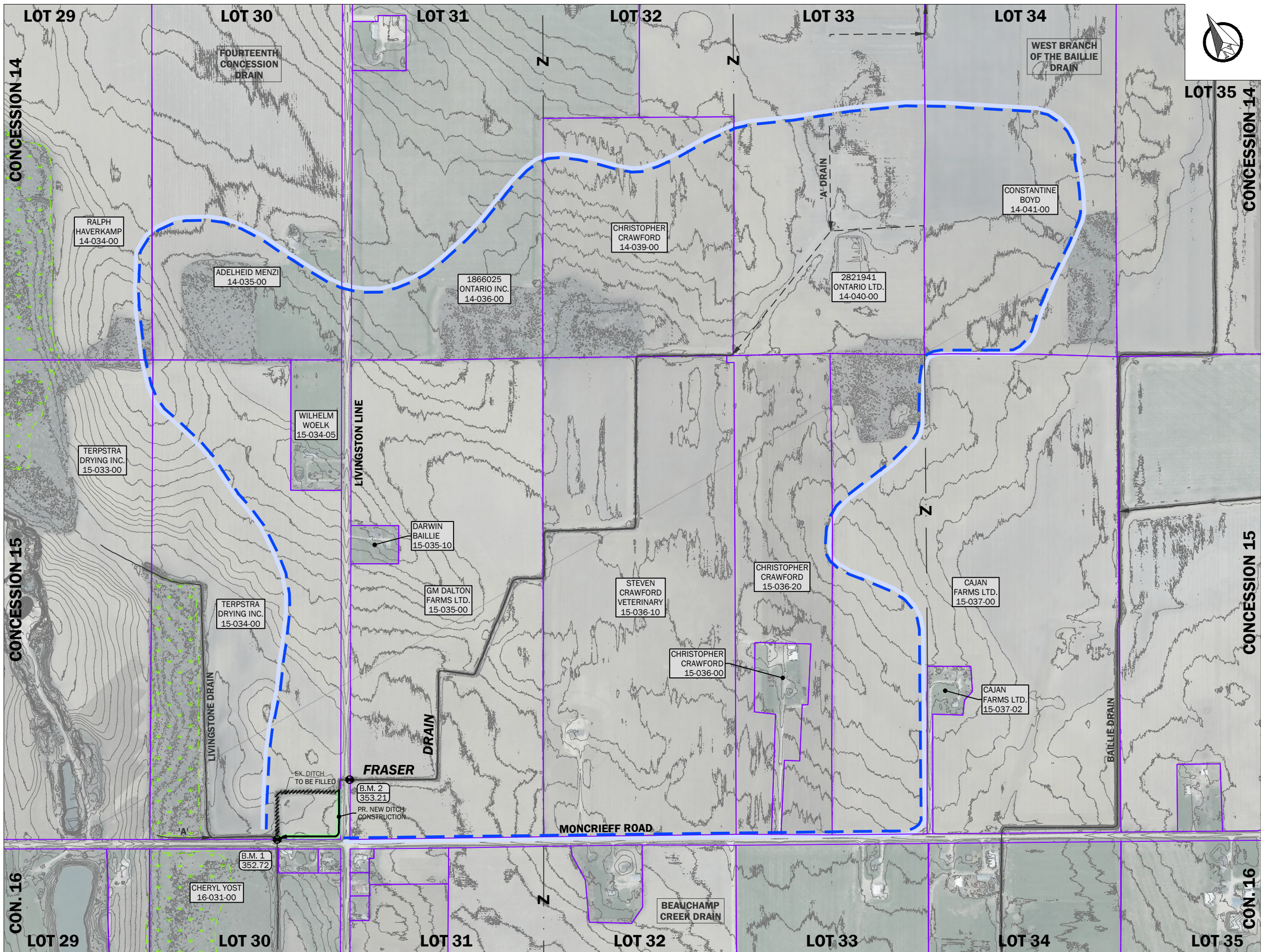
The Contractor shall supply all necessary materials to compete the connections of the existing drains to the new drain. The type of materials used to make the tributary drain connections shall be verified with the engineer.

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

10. Erosion and Sediment Control

The Contractor shall provide adequate erosion and sediment control for the duration of construction including monitoring and maintenance of the control measures put in place. The Contractor shall inspect the erosion and sediment control measures regularly, and specifically before predicted rainfall events, and after rainfall events.

END OF DIVISION



GREY WARD

FRASER MUNICIPAL DRAIN

WATERSHED PLAN

- NOTES:**
- 1. THIS MAP WAS CREATED USING COUNTY OF HURON GEOGRAPHIC INFORMATION SYSTEM DIGITAL DATA. THIS MAP IS A SECONDARY PRODUCT WHICH HAS NOT BEEN VERIFIED BY THE COUNTY OF HURON.
 - 2. THE CONTOURS WERE CREATED USING LIDAR DERIVED DIGITAL DATA (2022) FROM LAND INFORMATION ONTARIO.

BENCHMARK DESCRIPTIONS

BENCHMARK No. 1 ELEV.=352.72
TOP UPSTREAM END OF 2000mmØ CSP CULVERT AT STA. 0+003

BENCHMARK No. 2 ELEV.=353.21
TOP UPSTREAM END OF 2400mm X 3700mm CSP CULVERT AT STA. 0+271

LEGEND

LOT/CONCESSION LINE

PROPERTY LINE

MAJOR WATERSHED BOUNDARY

MINOR WATERSHED BOUNDARY

WETLAND LIMIT

BENCHMARK LOCATION

BENCHMARK No.

BENCHMARK ELEVATION

LANDOWNER NAME(S)

ASSESSMENT ROLL No. (ABBREVIATED)

AREA WITHIN WATERSHED

DRAIN NAME

OPEN DRAIN WITH CROSSING AND FLOW DIRECTION

CLOSED DRAIN WITH CATCH BASIN, MANHOLE AND FLOW DIRECTION

OVERLAND FLOW PATH

OPEN DRAIN WITH CROSSING AND FLOW DIRECTION

	2	REPORT SUBMISSION 26-06-12
	1	ON-SITE MEETING 26-04-07
No.	REVISION	DATE (YY-MM-DD)



DRAWN BY: R.U.	DESIGNED BY: A.H.	CHECKED BY: S.B.	DRAWING 1 OF 3
DATE: 2026-06-12		REFERENCE No. HE-006	



GREY WARD

FRASER MUNICIPAL DRAIN

WORK AREA PLAN

- NOTES:**
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- BENCHMARK DESCRIPTIONS**
- BENCHMARK No. 1** **ELEV.=352.72**
TOP UPSTREAM END OF 2000mmØ CSP CULVERT AT STA. 0+003
- BENCHMARK No. 2** **ELEV.=353.21**
TOP UPSTREAM END OF 2400mm X 3700mm CSP CULVERT AT STA. 0+271

LEGEND

LOT/CONCESSION LINE

PROPERTY LINE

MAJOR WATERSHED BOUNDARY

MINOR WATERSHED BOUNDARY

WETLAND LIMIT

OVERHEAD UTILITY LINE

HYDRO POLE WITH GUY WIRE

BENCHMARK LOCATION

BENCHMARK No.
BENCHMARK ELEVATION

JOHN & JANE SMITH
12-345
(12.3 Ha.)

LANDOWNER NAME(S)
ASSESSMENT ROLL No. (ABBREVIATED)
AREA WITHIN WATERSHED

EXISTING FEATURES:

DRAIN NAME

OPEN DRAIN WITH CROSSING
AND FLOW DIRECTION

DRAIN NAME

CLOSED DRAIN WITH CATCH BASIN,
MANHOLE AND FLOW DIRECTION

OVERLAND FLOW PATH

PROPOSED FEATURES:

DRAIN NAME

OPEN DRAIN WITH CROSSING
AND FLOW DIRECTION

	2	REPORT SUBMISSION	26-06-12
	1	ON-SITE MEETING	26-04-07
No.	REVISION		DATE (YY-MM-DD)

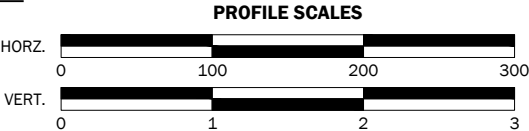
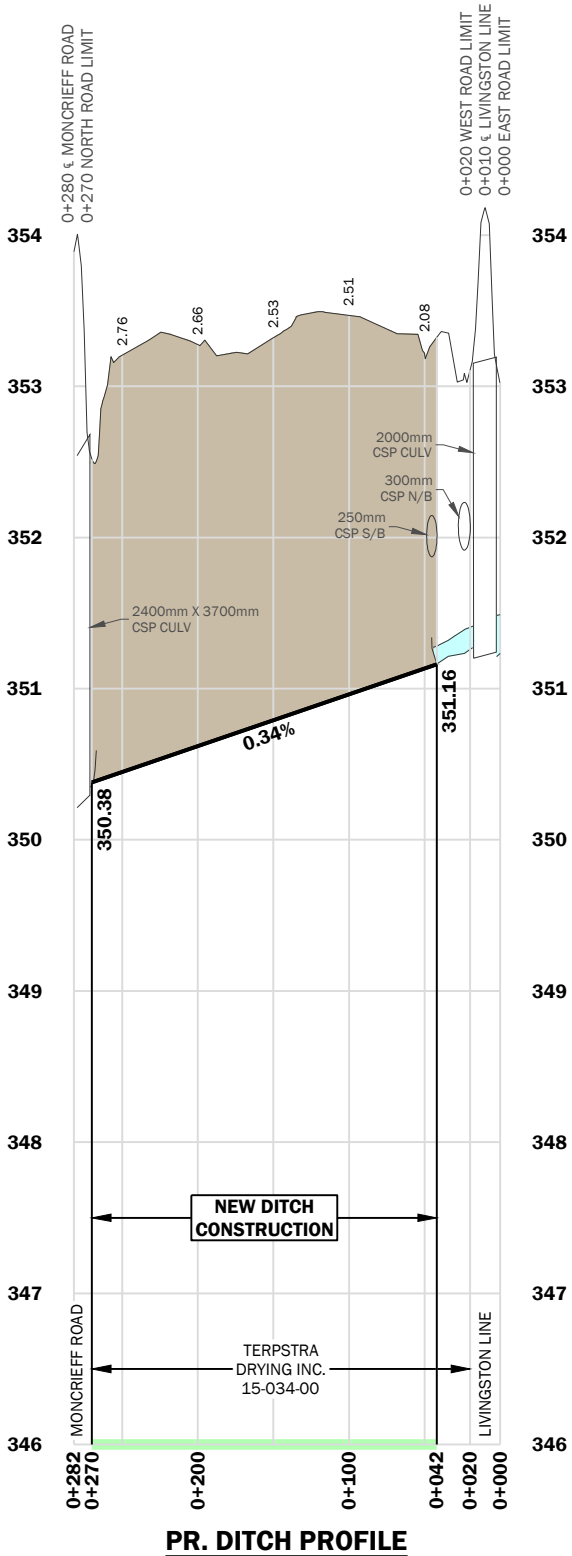
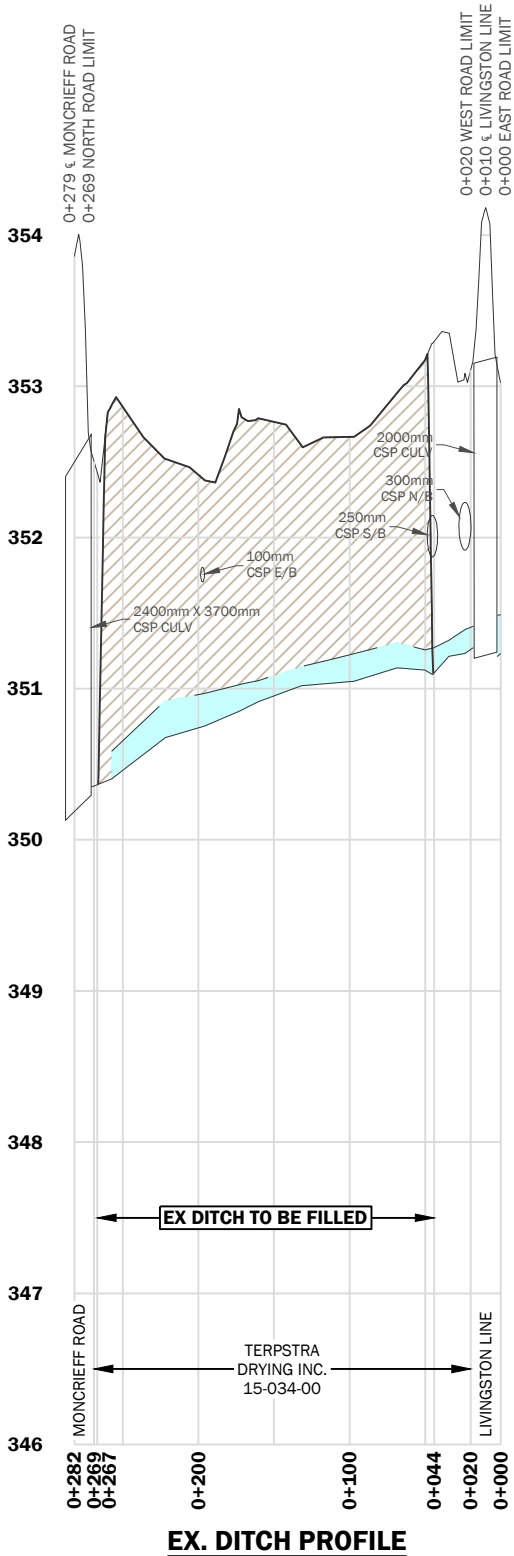
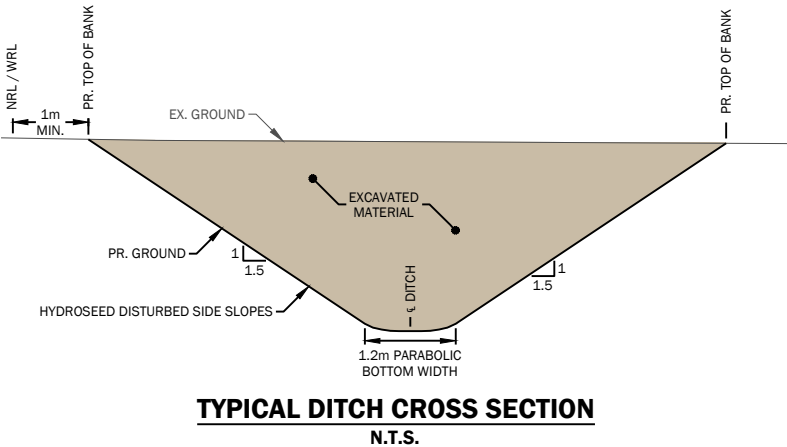


DRAWN BY: R.U.	DESIGNED BY: A.H.	CHECKED BY: S.B.	DRAWING 2 OF 3
DATE: 2026-06-12		REFERENCE No. HE-006	

BENCHMARK DESCRIPTIONS

BENCHMARK No. 1 **ELEV.=352.72**
TOP UPSTREAM END OF 2000mmØ CSP CULVERT AT STA. 0+003

BENCHMARK No. 2 **ELEV.=353.21**
TOP UPSTREAM END OF 2400mm X 3700mm CSP CULVERT AT STA. 0+271



OPEN DITCH CLEANOUT

BOTTOM WIDTH
1.2m (PARABOLIC)
SIDE SLOPES
1.5:1

	2	REPORT SUBMISSION 26-06-12
	1	ON-SITE MEETING 26-04-07
No.	REVISION	DATE (YY-MM-DD)