INSTRUCTIONS TO TENDERERS

Sealed Tenders shall be received by the Clerk of the Municipality of Huron East at their office (72 Main St S, Seaforth, ON N0K 1W0) until: September 3rd at 12:00 Noon, Local Time.

1. A Certified cheque is required as Tender security equal to $ 34,000.00.
2. Further information and particulars are available at the office of the Engineers:

   Dietrich Engineering Limited
   Consulting Engineers
   10 Alpine Court
   Kitchener, Ontario N2E 2M7
   (519) 880-2708

3. The Contractor shall return a completed copy of the Scope of Work along with the completed Form of Tender and Agreement to the Municipality. For complete Scope of Work, see Plan(s), Profile(s), Specifications and Special Provisions (Division H of Specifications).
4. This drain shall be constructed in accordance with the latest applicable "Specifications for the Construction of Municipal Drainage Works", consisting of the following Divisions:

   DIVISION A - General Conditions
   DIVISION B - Specification for Open Drains
   DIVISION C - Specifications for Tile Drains
   DIVISION E - Specification for Drainage Crossings by the Boring Method
   DIVISION H - Special Provisions

5. The Contractor shall supply all labour, equipment and materials to complete the drainage works as shown on the Plan(s) and described in the Specifications. The Contractor shall include in the Tender price all applicable Federal and Provincial Sales Taxes.
6. Tenders shall be made on a lump sum basis on the forms provided for the complete works. Acceptance of the Tender by the Municipality shall constitute a formal and binding Contract when signed by the Municipal officials.
7. Lowest or any Tender not necessarily accepted.

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

A certified cheque is not required if the Contractor provides an alternate form of Contract Security such as a Bid Bond for 10% of the amount of the Tender or other satisfactory security, if required/permitted by the Municipality. A Contract Performance Bond and a labour and material bond for 100% of the contract price will be required if the tender is accepted by the Municipality.

FORM OF TENDER AND AGREEMENT

TO: Members of Municipal Council

RE: Construction of the Dill Municipal Drain 2025

The undersigned, having carefully examined the Plan(s), Profile(s), Specifications and the site of the work, and understanding all conditions, hereby offers to enter into a Contract to supply all materials and to construct the said work for the Municipality complete and ready for use in accordance with the Plan(s), Profile(s) and Specifications on file at the office of the Engineer, which Drawings and Specifications form the basis of the proposal for the following prices.

To Wit:

Total Construction Costs	**$** _____
13% H.S.T.	$ _____
Total Tender	
Dill Municipal Drain 2025	**$** _____

NOTES:

Contractor to be paid in accordance with the following schedule for tributary tile drain connections.

1. 100mm diameter tile drain - $90.00 per connection
2. 150mm diameter tile drain - $100.00 per connection
3. 200mm diameter tile drain - $130.00 per connection

A Certified cheque is required as Tender security equal to $ 34,000.00, payable to the Municipality and a copy of the Scope of Work are enclosed.

Work will begin on or before _____

Work will be completed on or before _____

The Contractor shall fill in the above starting and completion dates. Failure to do so will render the Tender liable for rejection by the Municipality.

OFFERED ON BEHALF OF THE CONTRACTOR

Company _____

Authorized Signature _____

Address _____

_____

Telephone ( ) _____ Date _____

ACCEPTED ON BEHALF OF THE MUNICIPALITY

Mayor _____

Clerk _____

Date _____

[Seal]

This proposal or Form of Tender and Agreement when signed and offered by the Contractor shall constitute a formal and binding Contract when accepted and signed on behalf of the Municipality.

SCOPE OF WORK

Reference No. 2215

LABOUR, EQUIPMENT AND MATERIALS

	Description	Estimated Quantity		$/Unit	Total
A) Main Drain (Closed)					
1	Supply 750mm diameter concrete field tile (2000 D)	441	m	$	$
	Installation (Sta. 0+431 to Sta. 0+872)	441	m	$	$
2	Supply 675mm diameter concrete field tile (2000 D)	298	m	$	$
	Installation (Sta. 0+872 to Sta. 0+170)	298	m	$	$
3	Supply 750mm diameter HDPE pipe	12	m	$	$
	Installation (Sta. 0+170 to Sta. 0+182)	12	m	$	$
4	Supply and install 900mm X 2100mm concrete ditch inlet catch basin at Sta.0+431 (inline type)	1	ea	$	$
5	Supply and install 900mm X 1200mm concrete ditch inlet catch basin at Sta. 0+872 (inline type)	1	ea	$	$
6	Supply 450mm diameter HDPE pipe	6	m	$	$
	Installation (catch basin connection at Sta 0+872)	l.s.			$
7	Provisional Items				

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

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

Description	Estimated Quantity		$/Unit	Total
675mm diameter concrete field tile	60	m	$	$
750mm diameter concrete field tile	100	m	$	$
Sub Total				**$**

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

Description	Estimated Quantity	$/Unit	Total
c) Back filll ditch (includes bulldozing in existing spoil imported fill and spreading topsoil)	400 m	$	$
Total Construction Costs Main Drain (Enclosure)			**$**
C) Main Drain (Open)			
1 Open ditch excavation Sta. 0+000 to Sta. 0+125	1,200 m^3	$	$
2 Hydroseed side slopes and buffer strips (approx. 1500 m^2)	1,500 m^2	$	$
3 Haul excavated material	1,200 m^3	$	$
4 Supply and install quarry stone rip-rap lined plunge pool at Sta. 0+125 including geotextile filter material (Mirafi 180N or approved equivalent) (approx. 50 m^2)	l.s.		$
5 Supply and place quarry stone rip-rap protection and geo textile filter material (overflow spill way) including constructing pond and placing river rock Sta. 0+000 to Sta. 0+030	100 m^2	$	$
6 Construct pools and riffles (including placing rock) at Sta 0+009 and Sta 0+065	l.s.		$
Total Construction Costs Main Drain (Open)			**$**
TOTAL CONSTRUCTION COSTS DILL MUNICIPAL DRAIN 2025			**$**

Summary of Construction Costs

A) Total Construction CostsMain Drain (Closed)		$
B) Total Construction CostsMain Drain (Enclosure)		$
C) Total Construction CostsMain Drain (Open)		$
TOTAL CONSTRUCTION COSTS DILL MUNICIPAL DRAIN 2025		**$**

DIVISION A – GENERAL CONDITIONS

TABLE OF CONTENTS

DIVISION A – GENERAL CONDITIONS

A.1. Scope

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

A.2. Tenders

Tenders are to be submitted using the documents provided, completed & signed (where applicable), clearly marked with the name of the tender, uploaded through the Bidding System and must include the following:

- Completed Schedule 'A' Items and Prices
- Bidder information Form
- Ability and Experience Form
- Subcontractor Form
- Form of Tender and Agreement
- Scanned Copy of the Bid/Performance Deposit (Certified Cheque or Bid Bond) or Digital Bid Bond on a lump sum basis for the complete works or a portion thereof, as instructed by the Municipality.

The Scope of Work must be completed and submitted with the Form of Tender and Agreement. A certified cheque is required as Tender Security, payable to the Treasurer of the Municipality.

The original bid bond and/or bid deposit (cheque/draft) is required to follow within five (5) business days of the Bid Closing Time and Date from the two (2) lowest Bidders. The Bid deposits of all Bidders, except the most feasible and second most feasible Bidders, will be returned withing Twenty-One (21) calendar days of the Tender Closing. The Bid Deposit of the second most feasible Bidder will be returned when the successful bidder has provided the required documentation, to the Corporation.

The certified cheque of the bidder to whom the work is awarded will be retained as Contract Security and returned when the Municipality receives a Completion Certificate for the work.

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

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

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

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

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

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

A.4. Payment

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

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

A.5. Contractor's Liability Insurance

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

The following are to be named as co-insured:

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

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

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

A.7. Commencement and Completion of Work

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

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

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

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

A.8. Working Area and Access

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

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

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

A.9. Sub-Contractors

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

A.10. Permits, Notices, Laws and Rules

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

A.11. Railways, Highways, and Utilities

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

A.12. Errors and Unusual Conditions

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

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

A.13. Alterations and Additions

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

A.14. Supervision

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

A.15. Field Meetings

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

A.16. Periodic and Final Inspections

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

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

A.17. Acceptance By the Municipality

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

A.18. Warranty

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

A.19. Termination of Contract By The Municipality

If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should refuse or fail to supply enough properly skilled workmen or proper materials after having received seven (7) days notice in writing from the Engineer to supply additional workmen or materials to commence or complete the works, or if he should fail to make prompt payment to Sub-Contractors, or for material, or labour, or persistently

disregards laws, ordinances, or the instruction of the Engineer, or otherwise be guilty of a substantial violation of the provisions of the Contract, then the Municipality, upon the certificate of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy, by giving the Contractor written notice, terminate the employment of the Contractor and take possession of the premises, and of all materials, tools and appliances thereon, and may finish the work by whatever method the Engineer may deem expedient but without delay or expense. In such a case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price will exceed the expense of finishing the work including compensation to the Engineer for his additional services and including the other damages of every name and nature, such excess shall be paid by the Contractor. If such expense will exceed such unpaid balance, the Contractor shall pay the difference to the Municipality. The expense incurred by the Municipality, as herein provided, shall be certified by the Engineer.

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

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

A.20. Tests

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

A.21. Pollution

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

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

A.22. Species and Risk

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

A.23. Road Crossings

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

A.23.1 Road Occupancy Permit

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

A.23.2 Road Closure Request and Construction Notification

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

A.23.3 Traffic Control

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

A.23.4 Weather

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

A.23.5 Equipment

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

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

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

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

A.24. Laneways

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

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

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

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

A.25. Fences

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

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

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

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

A.26. Livestock

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

A.27. Standing Crops

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

A.28. Surplus Gravel

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

A.29. Iron Bars

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

A.30. Rip-Rap

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

A.31. Clearing, Grubbing and Brushing

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

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

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

A.32. Restoration of Lawns

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

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

END OF DIVISION

DIVISION B – SPECIFICATIONS FOR OPEN DRAINS

TABLE OF CONTENTS

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

DIVISION C – SPECIFICATIONS FOR TILE DRAINS

TABLE OF CONTENTS

DIVISION C – SPECIFICATIONS FOR TILE DRAINS

C.1. Pipe Materials

C.1.1 Concrete Tile

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

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

C.1.2 High Density Polyethylene (HDPE) Pipe

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

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

C.2. Alignment

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

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

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

C.3. Profile

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

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

C.4. Excavation

C.4.1 Wheel machine

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

C.4.2 Scalping

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

C.4.3 Excavator

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

C.5. Installation

C.5.1 Concrete Tile

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

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

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

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

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

C.5.2 HDPE Pipe

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

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

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

C.6. Trench Crossings

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

C.7. Outlet Protection

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

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

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

C.8. Catch Basins and Junction Boxes

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

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

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

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

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

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

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

C.9. Tributary Drains

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

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

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

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

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

C.10. Clearing, Grubbing and Mulching

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

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

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

C.11. Roads and Laneway Sub-Surface Crossings

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

C.12. Filling In Existing Ditches

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

C.13. Construction of Grassed Waterways

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

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

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

C.14. Unstable Soil

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

C.15. Rocks

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

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

C.16. Broken or Damaged Tile

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

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

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

END OF DIVISION

DIVISION E – SPECIFICATIONS FOR DRAINAGE CROSSING BY BORING METHOD

TABLE OF CONTENTS

DIVISION E – SPECIFICATIONS FOR DRAINAGE CROSSING BY BORING METHOD

E.1. General Requirements

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

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

E.2. Notification

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

E.3. Pipe

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

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

E.4. Installation

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

E.5. Auger Pit

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

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

E.6. Construction

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

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

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

E.7. Acceptance

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

END OF DIVISION

DIVISION H – SPECIAL PROVISIONS

TABLE OF CONTENTS

DIVISION H – SPECIAL PROVISIONS

Dill Municipal Drain 2025

Municipality of Huron East Reference No. 2215

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

H.1 General

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

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

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

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

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

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

The Contractor shall be responsible for all trench settlement.

H.2 Utilities

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

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

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

H.3 Working Area And Access

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

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

H.3.1 Open Work

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

H.3.2 Closed Work

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

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

H.4 Topsoil

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

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

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

H.5 Clearing and Grubbing

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

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

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

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

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

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

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

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

H.7 Pipe, Installation, Bedding & Backfill

H.7.1 Concrete Field Tile

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

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

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

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

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

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

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

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

The Contractor shall be responsible for all trench settlement.

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

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

H.8 Catch Basins & Manholes

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

All catch basins to have 300mm sumps.

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

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

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

Knockouts shall be provided in all catch basins.

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

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

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

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

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

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

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

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

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

H.9 Existing Drains/Tile Connections

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

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

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

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

H.10 Rip-Rap

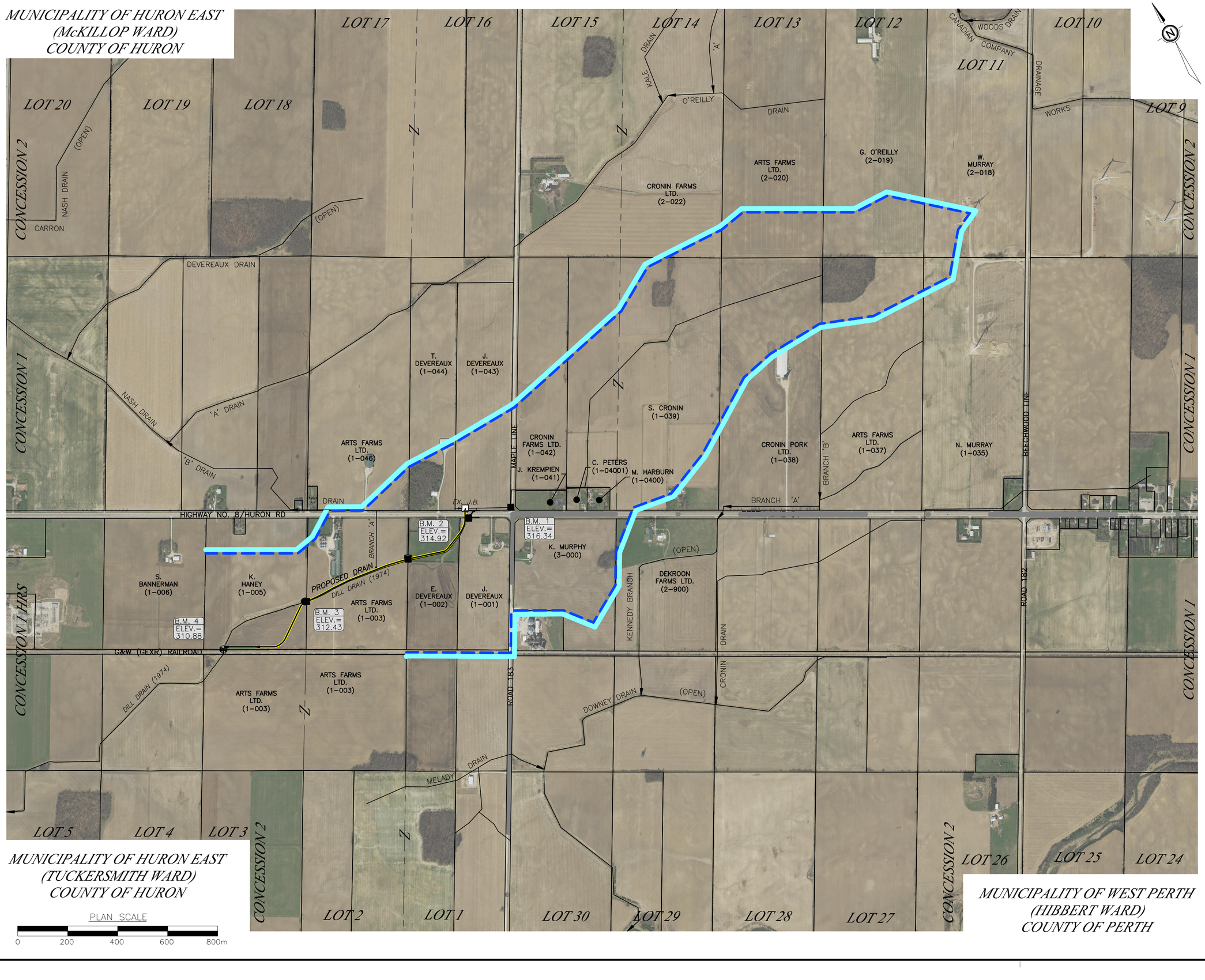
All stone rip-rap material shall be quarry stone 150mm to 300mm dia. and placed to a depth of 450mm. All rip-rap material shall be placed on geo-textile filter material (Mirafi 180N).

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

H.11 Sediment Erosion Control Measures

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

END OF DIVISION



NOTES:

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

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

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

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

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

LEGEND:

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

No.	ISSUES AND REVISIONS	DATE	BY
4.	ISSUED FOR TENDER	2025-08-05	DEL
3.	REPORT SUBMISSION	2025-05-05	DEL
2.	INFORMATION MEETING	2025-04-04	DEL
1.	ON-SITE MEETING	2022-12-14	DEL

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

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

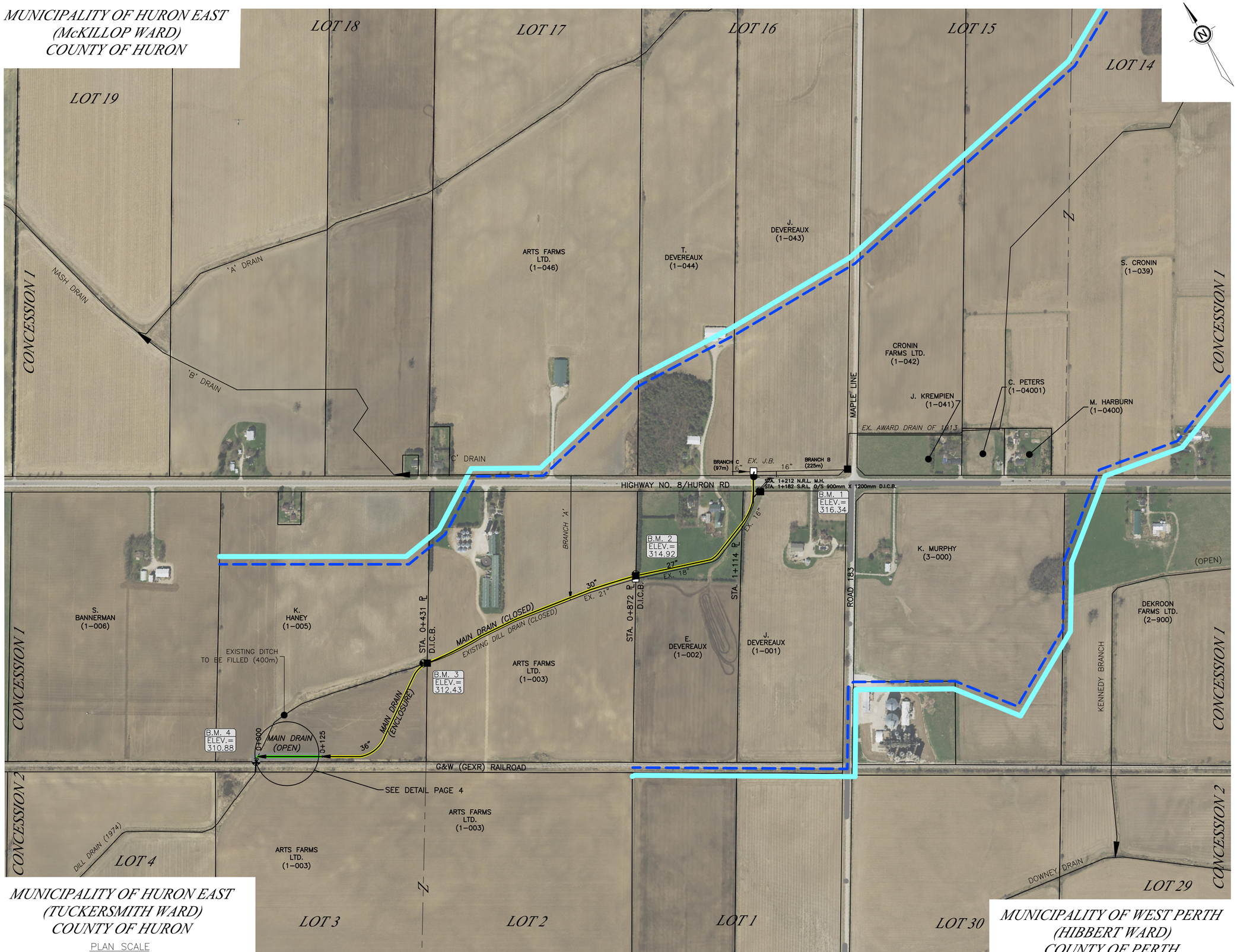
PROJECT:
DILL MUNICIPAL DRAIN 2025

DRAWING:
WATERSHED PLAN

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

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

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



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No.	ISSUES AND REVISIONS	DATE	BY
4.	ISSUED FOR TENDER	2025-08-05	DEL
3.	REPORT SUBMISSION	2025-05-05	DEL
2.	INFORMATION MEETING	2025-04-04	DEL
1.	ON-SITE MEETING	2022-12-14	DEL

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

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

PROJECT:
DILL MUNICIPAL DRAIN 2025

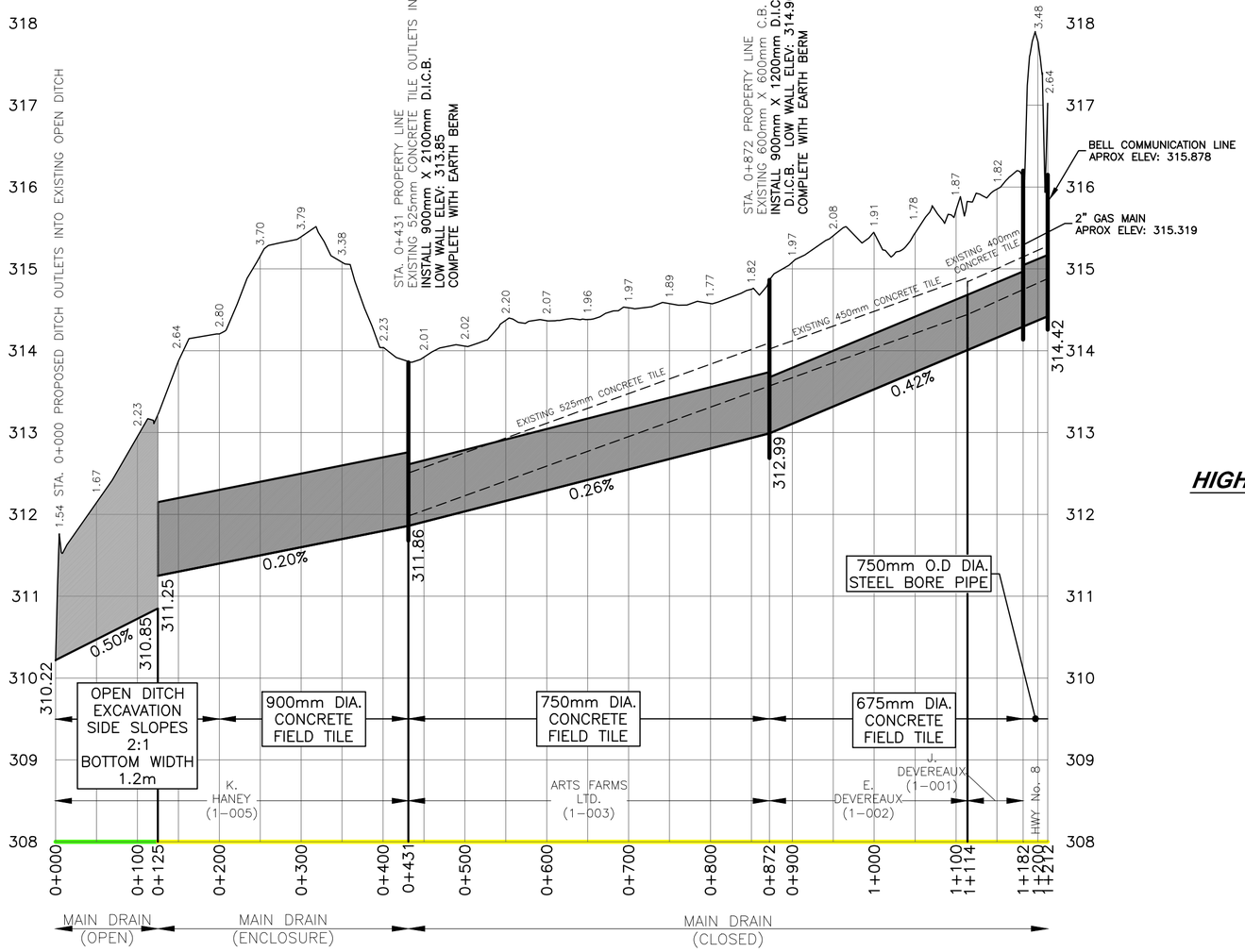
DRAWING:
PLAN

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

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

TILE SIZES

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

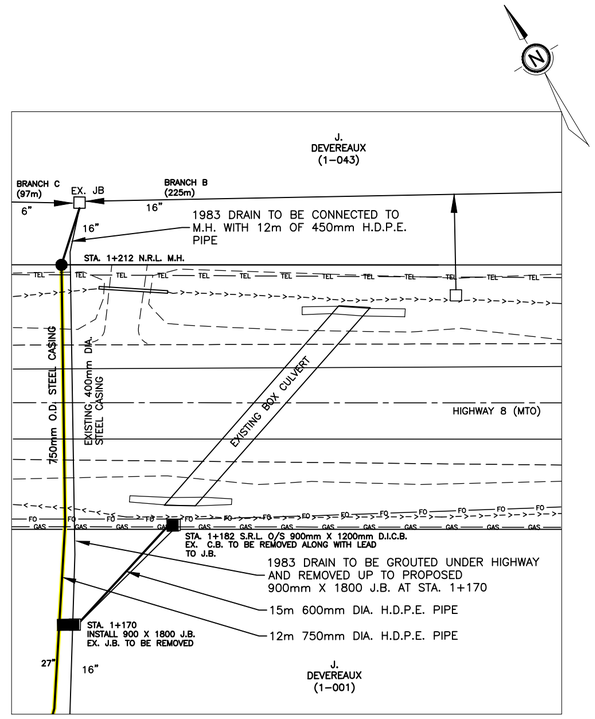


PROPOSED DRAIN PROFILE

PROFILE SCALES

HORZ. 0 100 200 300 400m

VERT. 0 1 2 3 4m



HIGHWAY 8 ROAD CROSSING DETAIL - MAIN DRAIN (CLOSED)

PROFILE SCALES

HORZ. 0 10 20 30 40m

VERT. 0 1 2 3 4m

NOTES:

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TOP OF 600mm DIA. C.M.P. OUTLET PIPE AT STA. 0+431 ON THE PROPOSED DRAIN ALIGNMENT.

BENCHMARK No. 4 ELEV.=310.88
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No.	ISSUES AND REVISIONS	DATE	BY
4.	ISSUED FOR TENDER	2025–08–05	DEL
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REGISTERED PROFESSIONAL ENGINEER W. J. DIETRICH PROVINCE OF ONTARIO

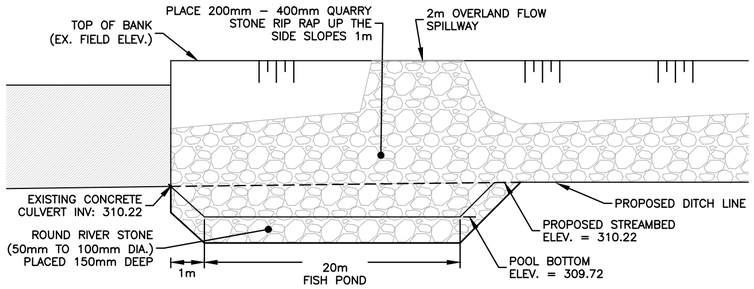
HURON EAST ESTABLISHED 2001

PROJECT: DILL MUNICIPAL DRAIN 2025

DRAWING: PROFILE

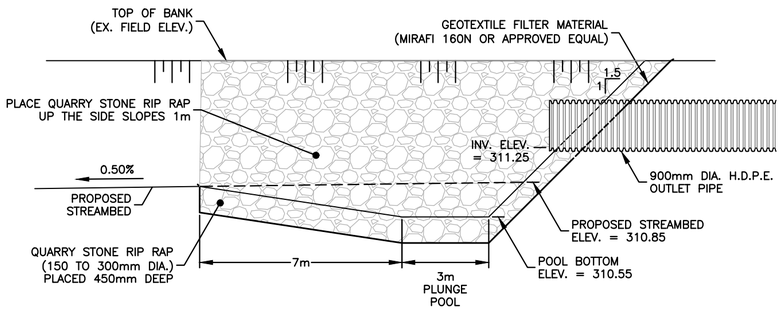
DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS
10 Alpine Court, Kitchener, ON, N2E 2M7

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



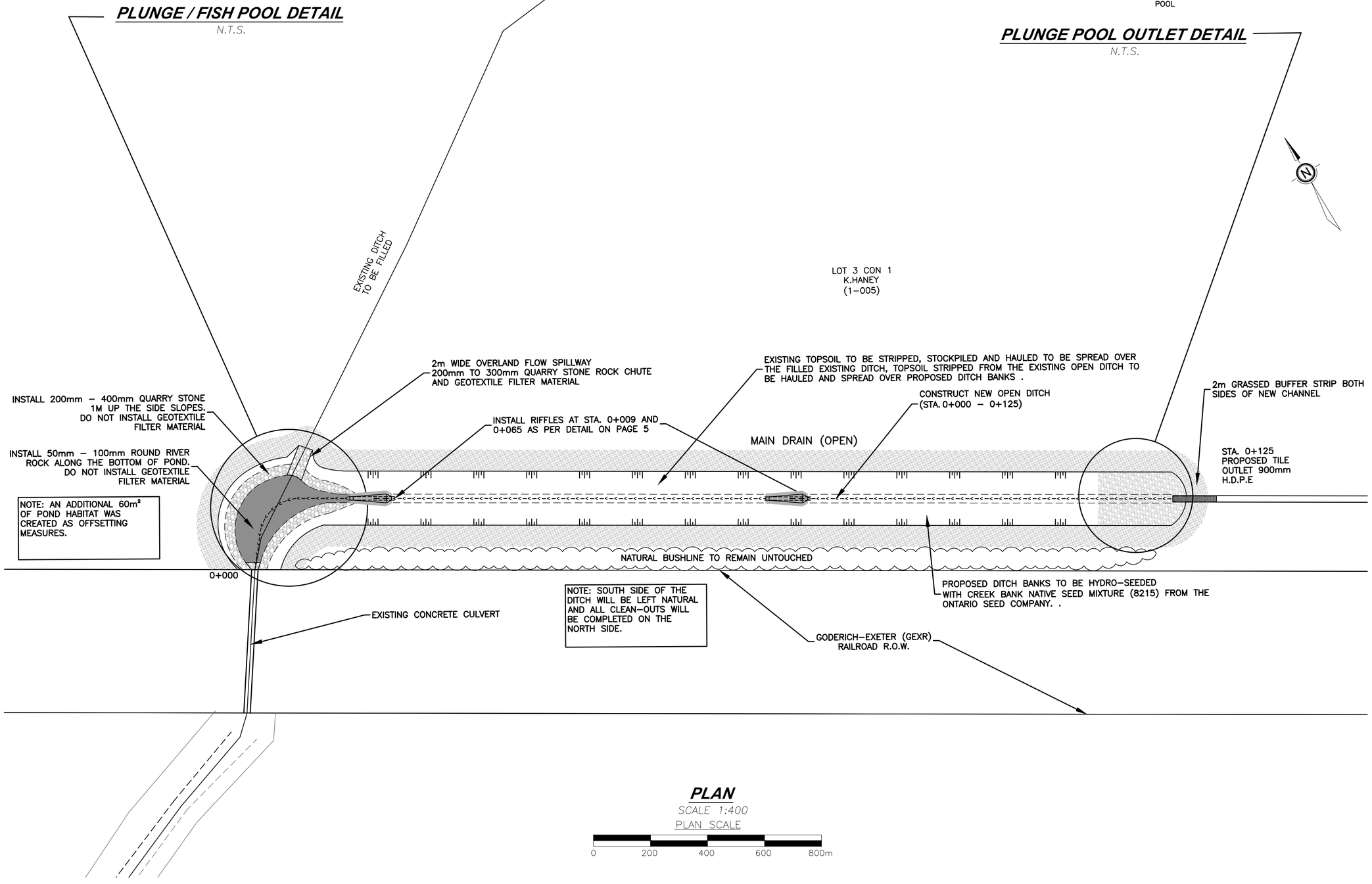
PLUNGE / FISH POOL DETAIL

N.T.S.



PLUNGE POOL OUTLET DETAIL

N.T.S.



PLAN

SCALE 1:400

PLAN SCALE

0 200 400 600 800m

NOTES:

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No.	ISSUES AND REVISIONS	DATE	BY
4.	ISSUED FOR TENDER	2025–08–05	DE
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REGISTERED PROFESSIONAL ENGINEER · W. J. DIETRICH · PROVINCE OF ONTARIO

HURON EAST · ESTABLISHED 2001

PROJECT:

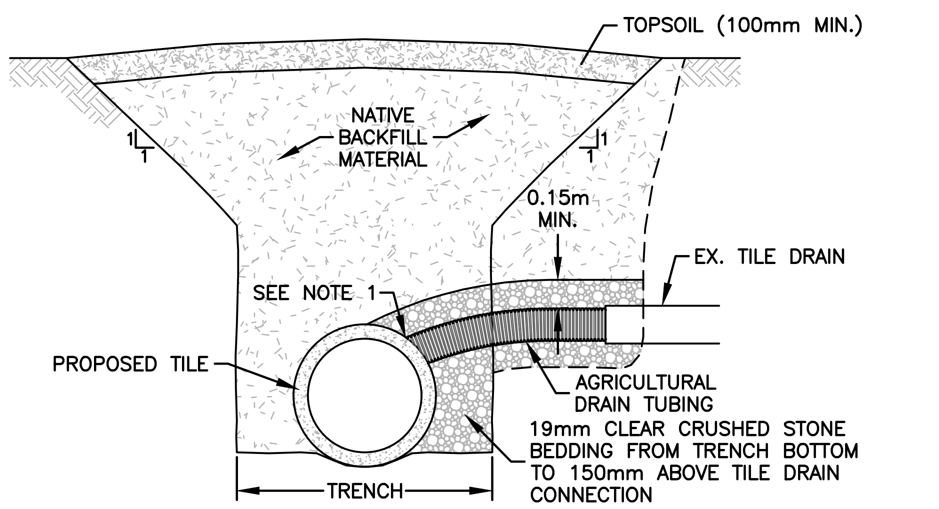
DILL MUNICIPAL DRAIN 2025

DRAWING:

OPEN DITCH DETAIL

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

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

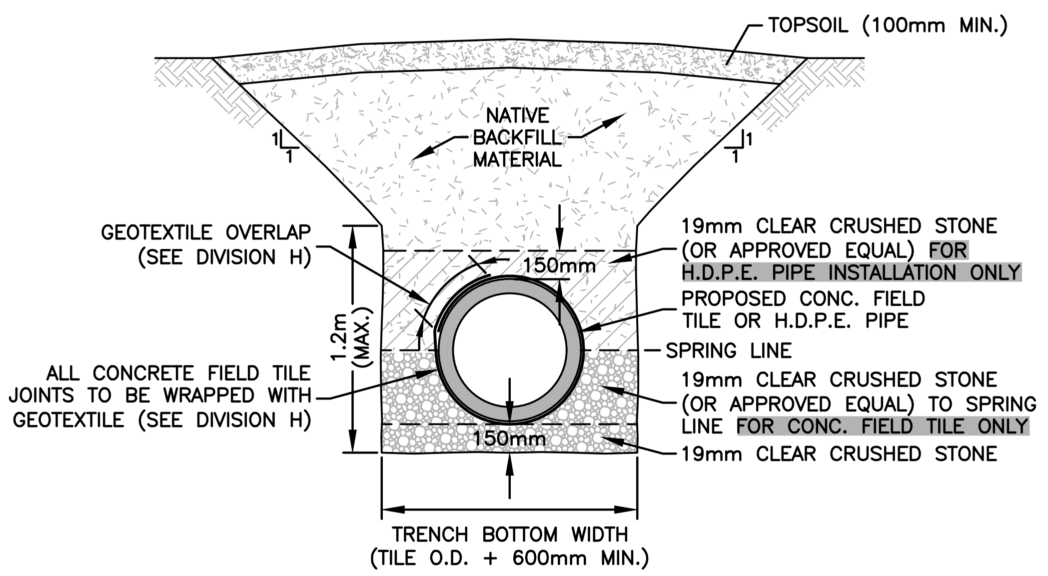


NOTE:

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

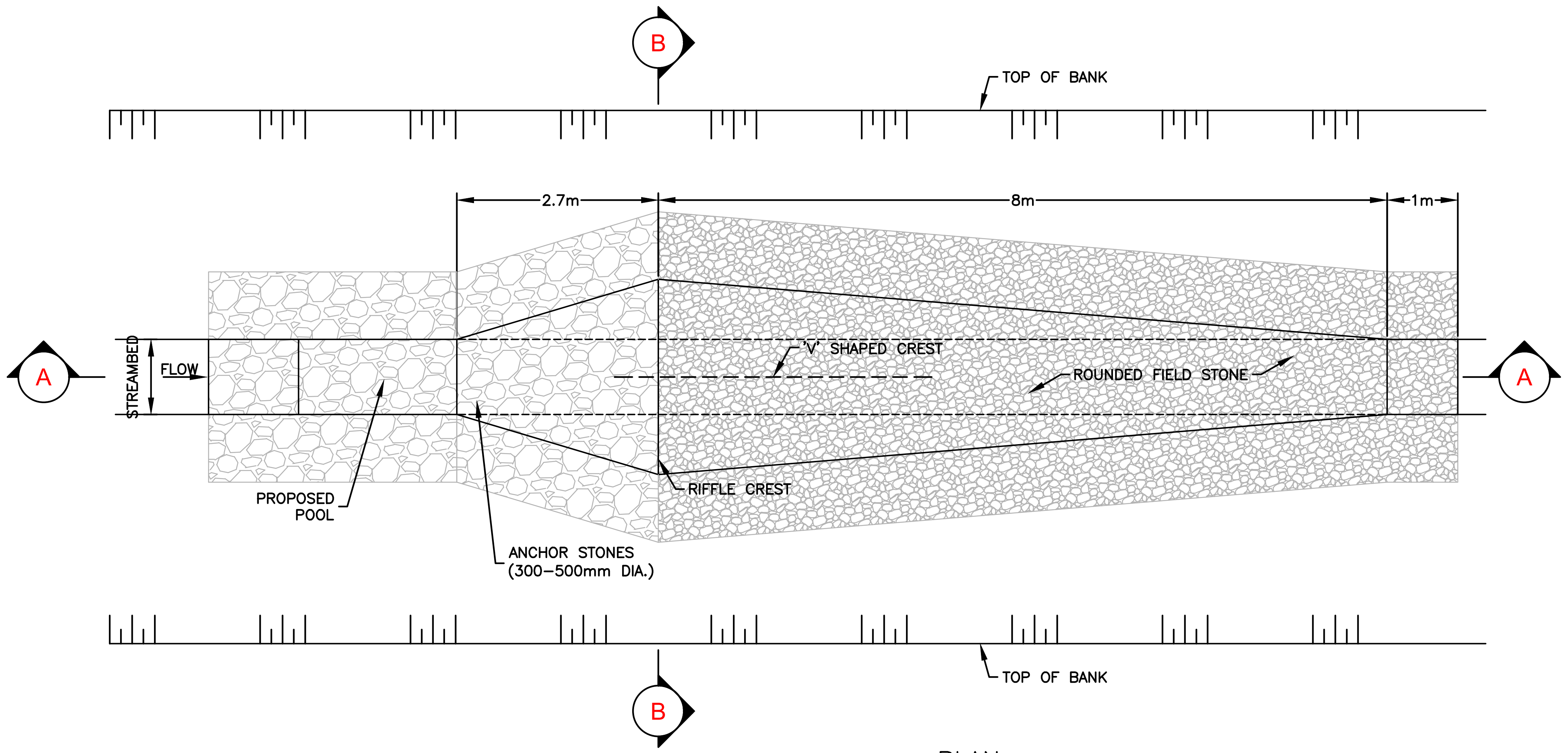
TYPICAL TILE CONNECTION DETAIL

N.T.S.

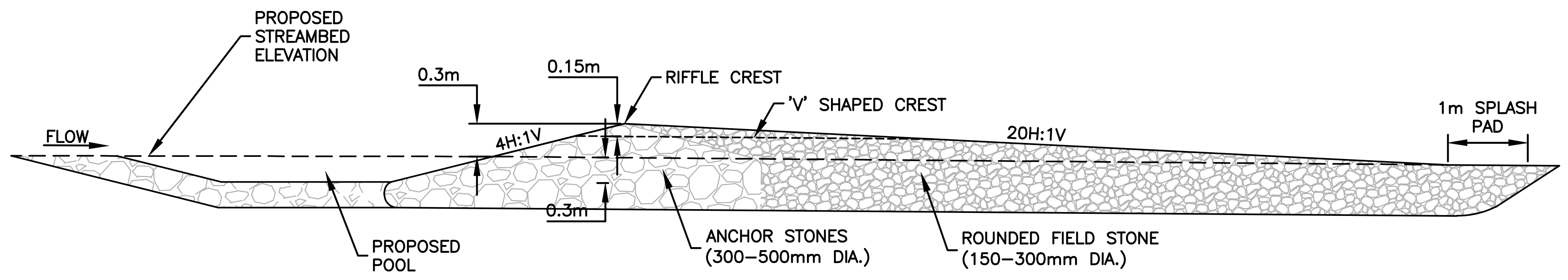


TYPICAL DRAIN INSTALLATION ON STONE BEDDING DETAIL

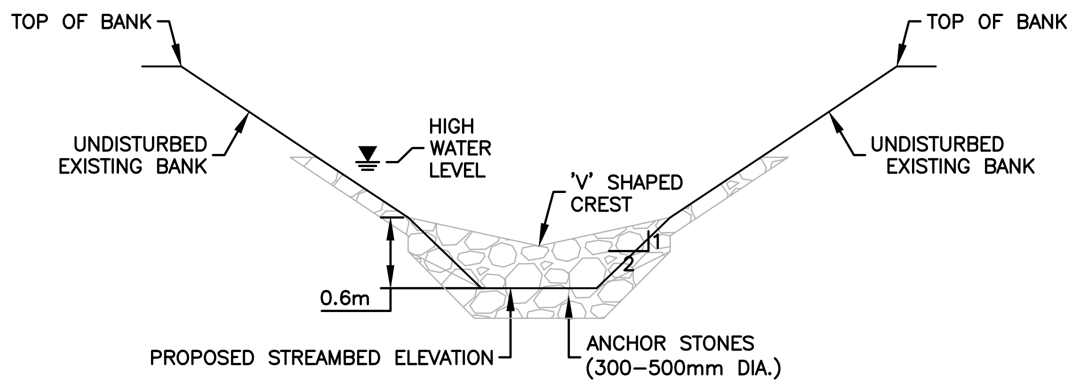
N.T.S.



PLAN



SECTION A



SECTION B

TYPICAL POOL AND RIFFLE DETAIL

N.T.S.

NOTES:

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No.	ISSUES AND REVISIONS	DATE	BY
4.	ISSUED FOR TENDER	2025–08–05	DE
3.	REPORT SUBMISSION	2025–05–05	DE
2.	INFORMATION MEETING	2025–04–04	DE
1.	ON–SITE MEETING	2022–12–14	DE

PROJECT:
DILL MUNICIPAL DRAIN 2025

DRAWING:
DETAILS

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

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