

Tender Documents for

RICHARDSON DRAIN IMPROVEMENT 2026

Township of Norwich



Tender Summary:

Owner	The Township of Norwich
Contract Administrator	Michael Siemon Streamline Engineering Inc. michael@streamlineeng.ca (226) 622-9618
Bid Closing Time	Thursday August 20, 2026 @ 3:00pm
Submission Details	Paper copies delivered in a sealed opaque envelope to the Township of Norwich's office 285767 Airport Road Norwich, Ontario N0J 1P0
Estimated Tender Value	\$125,000 (not including HST)
Tender/Contract Surety	Certified Cheque in the value of \$12,500 payable to the Owner to be released upon Substantial Performance of the Contract. <u>or</u> Bid Bond in the value of 10% of the Bid Price and an Agreement to Bond for both a Performance and Labour and Material Bond in the amount of 100% of the Bid Price.
Insurance Requirements	\$5,000,000 (for Commercial General Liability and Automotive) Township of Norwich and Streamline Engineering Inc. to be named as co-insured
Restricted Timing Windows	N/A
Required Work Completion Date	July 16, 2027
Statutory Holdback	10% of the total Contract value
Warranty Holdback	3% of the total Contract value

1 Form of Tender

1.1 Examination of the Site, Drawings, and Specifications

The Bidder is fully responsible to examine the site and thoroughly review the specifications, soil investigation documents, and drawings (see Appendices A, B and C) which form part of this Contract, in order to satisfy themselves of the existing conditions and extent of work to be completed. Any estimates of quantities shown or indicated in the drawings or specifications are provided for the convenience of the Bidder only. The Bidder shall perform their own quantity calculations in the determination of their Bid, and shall utilize the provided quantities at their own risk. No allowance shall subsequently be made on behalf of the Contractor by reason of any error on their part.

1.2 Tender Questions, Discrepancies, Ambiguities and Addenda

Bidders requiring clarification with any portion of the Tender or Bidders that find any discrepancies, errors, omissions, etc. with the Tender documents shall notify the Contract Administrator promptly to provide an interpretation. Any interpretations by the Contract Administrator shall be in the form of an Addendum to the Contract Documents which will be forwarded to all Bidders.

The Owner may change any provisions to the Bid documents at any time and shall communicate the changes in the form of an Addendum, which will be forwarded to all Bidders.

Bidders are responsible to ensure that they have received all Addenda prior to the Bid Closing time and must acknowledge receipt of said Addenda.

1.3 Contractor's Standard of Care

In performing this Contract, the Contractor shall exercise a standard of care, skill, judgement, and diligence that would normally be exercised by an experienced, skilled, and prudent contractor supplying similar services for similar projects. The Contractor acknowledges and agrees that, throughout this Contract, the Contractor's obligations, duties and responsibilities shall be interpreted in accordance with this standard. The Contractor shall exercise the same standard of care, skill, judgement, and diligence in respect of any products, subcontractors, suppliers, personnel, or procedures which it may recommend or employ on the Project.

The Contractor represents, covenants, and warrants that:

- The personnel it assigns to the project are appropriately experienced;
- There are sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the Owner's approval, in the event of death, incapacity, removal or resignation, and
- There are no pending, threatened or anticipated claims that would have a material effect on the financial ability of the Contractor to perform the Work under the Contract.

The Contractor shall perform the work to avoid disturbing the occupants of the place of the work, any adjacent structures, or the public in general, and shall respect and comply with local regulations and requirements regarding permitted work hours, noise levels and work conditions.

1.4 Tender and Contract Security

The Tender shall be accompanied by either a Certified Cheque in the amount of **\$12,500** payable to the Owner or an executed Bid Bond valid for a minimum 60 days following the Bid closing, in the amount of **ten percent (10%) of the Bid Price**. If the Tender security is a Bid Bond, then the Bidder shall include with their Tender an **Agreement to Bond** by an authorized surety company from which they propose to obtain the required bonds valid for a minimum 60 days following the Bid closing, indicating that the Bidder is able to obtain from such a surety for a **Performance Bond and Labour and Material Payment Bond, each for 100% of the Total Bid Price**.

In cases where a Bidder withdraws their Bid before the Council has considered the Bids and has awarded a Contract, the amount of the Tender deposit of the Bidder may be forfeited to the Owner. Furthermore, the Tender deposit shall be forfeited if the Bidder refuses or fails to sign the Contract within five days of it being presented by the Contract Administrator.

The Tender security of unsuccessful Bidders shall be returned upon the award and execution of the Contract.

1.5 Bid Pricing and Taxes

The Bid price or prices shall be full compensation for all labour, equipment, and materials and utility and transportation services necessary to perform and complete all work under the Contract, including all miscellaneous work, whether specifically included in the Tender Documents or not. It is the intention of the Drawings and Specifications to provide finished work. Any items omitted therefrom which are clearly necessary for the completion of the work shall be considered part of the work, though not directly specified in the Tender Documents.

The Bid Price shall be in Canadian Dollars and include all applicable federal and provincial sales taxes, excise taxes, and other taxes, including the HST, customs and duties in the designated location on the Bid Form.

All expenses involved with the preparation and submission of the Tender, or any work performed in connection with the Tender shall be borne by the Bidder. No payment shall be made for any Tenders received, nor for any other effort required of, or made by, the Bidder prior to the commencement of the work.

1.6 Contract Schedule

If awarded, the Bidder agrees to substantially perform the work specified in this Contract by **July 16, 2027**.

1.7 Insurance Requirements

The successful Bidder is required to provide proof of insurance for both Commercial General Liability and standard non-owned automotive Insurance with limits not less than \$5,000,000 per occurrence. All insurance coverage shall remain in effect for the entire Contract period including the warranty period which expires one year after the Substantial Performance of the Contract.

The following shall be named as co-insured:

- Township of Norwich
- Streamline Engineering Inc.

1.8 Workplace Safety and Insurance Board (WSIB) Clearance

The successful Bidder is required to be in good standing with the Workplace Safety and Insurance Board (WSIB) and provide a Clearance Certificate demonstrating such within seven days of the Contract award and shall maintain said clearance for the entire Contract period including the warranty period.

1.9 Submission of Bids

The Bidders shall submit their Bids to the Township of Norwich's office (285767 Airport Road, Norwich, Ontario N0J 1P0) before the Bid closing time which is, **3:00:00pm Thursday August 20, 2026** as displayed by the clock at the Township of Norwich's office.

All Bids must be legible, and it is the sole responsibility of the Bidder to ensure that the Bid is received by the Owner prior to the Bid closing time.

The Bid is irrevocable by the Bidder and shall remain in effect and open for acceptance by the Owner for a period of 60 days after the Bid closing. The Bidder may not amend a Bid, but can submit a new Bid prior to the Bid closing time. When more than one Bid is submitted by a Bidder the last Bid to be received prior to the Bid closing time shall supersede any prior Bid.

1.10 Clarification of Submitted Bids

The Owner is not obligated to seek clarification of any aspect of a Bid.

The Owner reserves the right, at any time following the Bid closing time that any one or more Bidders clarify their Bid. The Owner may, in its sole and absolute discretion, choose to meet with one, some, or all of the Bidders to clarify aspects of their Bids and may require Bidders to submit supplementary documentation. The supplementary documentation shall be considered to form part of the applicable Bid of those Bidders.

In the event of an arithmetical error or inconsistency, the Owner reserves the right to recalculate the error, and accept the Bid with the adjusted price. Without limiting generality of the foregoing, any unit prices submitted by the Bidder shall be deemed to represent the Bidder's intention and any amount calculated by multiplying the estimated quantities by the unit prices will be corrected accordingly.

1.11 Negotiations of Bids

The Owner may in its sole and absolute discretion enter into negotiations or discussions with one or more of the Bidders and reserves the right, to reduce the extent of work to be performed in this Contract. If the preferred Bidder is unable to come to an acceptable mutual agreement, the Owner is within their right to proceed to the next preferred Bidder. The Owner at any time, without liability, may withdraw from negotiations with any Bidder.

1.12 Bid Acceptance

By submitting a Bid to the Owner, the Bidders acknowledge that they have read and agree to be bound by the Bid Documents.

The Owner's consideration and selection process will be based on which Bidder has provided a Bid in which the Owner determines in its sole and absolute discretion to be the most beneficial to, and in the best interests of, the Owner. The Owner reserves the right to reject any or all of the Tenders received. The lowest Bid or any Bid will not necessarily be accepted. Special consideration may be placed upon the commencement and completion date as provided as part of the Contractor's Bid.

Failure to complete the Tender in full or neglect any other requirements set out in these documents, will render the Tender liable to rejection by the Owner.

1.13 Termination of the Contract

If the Contractor should be adjudged bankrupt, or if they should make a general assignment for the benefit of their creditors, or if a receiver should be appointed on account of their insolvency, or if they should refuse or fail to supply enough properly skilled labourers or proper materials after having received seven days' notice in writing from the Contract Administrator to supply additional labourers or materials to commence or complete the works, or if they should fail to make prompt payment to Sub-Contractors, or for material, or labour, or persistently disregards laws, ordinances, or the instruction of the Contract Administrator, or otherwise be guilty of a substantial violation of the provisions of the Contract, then the Owner, upon the certificate of the Contract Administrator 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 Contract Administrator 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 completed. If the unpaid balance of the Contract price will exceed the expense of finishing the work including compensation to the Contract Administrator for their 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 Owner. The expense incurred by the Owner, as herein provided, shall be certified by the Contract Administrator.

If the Contract is terminated by the Owner 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 Owner an amount to cover the increased costs, 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 Owner may also charge such expense against any money which may thereafter be due to the Contractor from the Owner.

Bid Form

BID FORM

Bidder Information:

Name of Company: _____

Address: _____

Signing Authority
and Title: _____

Email: _____

Phone: _____

Signature: _____

Date: _____

ADDENDA

The Bidder hereby acknowledges and agrees that the following addenda below form part of the Bid Document and has carefully examined the addenda having included all aspects thereof in their Bid:

Addendum Number	Date	Received by Bidder (✓)

*If no Addenda have been issued then this table may be left blank

SUBCONTRACTORS

The following is a list of Subcontractors proposed to be used. Any changes or additions to the subcontractors to be utilized must be approved in writing by the Owner prior to any work being performed by that Subcontractor.

Scope of Work	Subcontractor Name and Contact	Phone Number	Email

PROPOSED ALTERNATIVES TO WORK

It is mandatory for the Bidder to submit a price for the work as specified.

Should the Bidder not agree with the materials or methods specified in the Tender Documents, they shall notify the Contract Administrator, in writing, stating their reason for objection and may submit a suggested alternative. In such an event, the Contract Administrator may choose to issue an addendum.

REFERENCES

The Bidder shall provide three (3) references for work similar in scope as described in this Tender.

Year Completed	Desc. of Work	Company and Contact Name	Phone Number	Email

SCHEDULE OF PRICES

The Bidder shall note the following abbreviations/acronyms.

Abbreviation/Acronym	Description
m	= Linear metre
m ²	= Square metre
m ³	= Cubic metre (compacted)
LS	= Lump Sum
ea.	= each
t	= Tonnes (2,204.6 lbs)
hrs	= hours
CB	= Catchbasin
DICB	= Ditch Inlet Catchbasin
JB	= Junction Box
c/w	= Complete with
ROW	= Right of Way

This schedule must be completed in full and attached to the form of Tender.

Tender Bid Form**Richardson Drain**

Item No.	SP No.*	Description	Approx. Quantity	Unit Price	Total
A1	1	Pre-construction meeting, mobilization, de-mobilization.	LS		\$
A2	2	Supply 19mm (¾") clear crushed stone.	180 tonne	\$	\$
A3	3	Supply 150mm to 300mm dia. rip-rap and required geotextile underlay.	40 tonne	\$	\$
A4	4	Tree clearing, grubbing, and brushing as specified.	LS		\$
A5	5	Construct a temporary rock check dam (OPSD 219.211) c/w removal once construction area has stabilized (Sta. -0+003).	LS		\$
A6	6	a) Excavation of stilling basin c/w placement of rip-rap per the accompanying details, not including the supply of rip-rap (Sta. -0+003 to 0+000).	LS		\$
		b) Hand seeding of disturbed and exposed channel banks and work area as specified.	LS		\$
A7	7	a) Supply 525mm dia. solid, split coupler, HPDE pipe (320 kPa) c/w required couplers and rodent grate.	6 m	\$	\$
		b) Install HDPE outlet pipe and rodent grate (Sta. 0+000 to 0+006).	LS		\$
A8	7	a) Supply 525mm dia. concrete tile (2000D) and required geotextile.	109 m	\$	\$
		b) Locate and destroy existing drains.	LS		\$
		c) Install concrete tile via wheel trencher (Sta. 0+006 to 0+115).	109 m	\$	\$
A9	7	a) Supply 450mm dia. concrete tile (2000D) and required geotextile.	468 m	\$	\$
		b) Locate and destroy existing drains (Sta. 0+115 to 0+583).	LS		\$
		c) Install concrete tile via wheel trencher (Sta. 0+115 to 0+472).	357 m	\$	\$
		d) Supply one 45 degree, 450mm dia. HDPE elbow (320 kPa) with plain ends and required geotextile (Sta. 0+535).	LS		\$
		e) Install concrete tile via excavator on 19mm clear stone bedding c/w the installation of elbows and crossing the private water service (Sta. 0+472 to 0+583).	111 m	\$	\$

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

Item No.	SP No.*	Description	Approx. Quantity	Unit Price	Total
A10	7	a) Supply 450mm dia. solid, split coupler, HPDE pipe (320 kPa) and required couplers.	18 m	\$	\$
		b) Hand seeding of disturbed vegetated areas.	LS		\$
		c) Install HDPE pipe drain crossing and culvert through private laneway via excavator on 19mm clear stone bedding as per accompanying detail c/w the destruction of the existing drains, removal and disposal of existing culverts and restoration of laneway as specified (Sta. 0+583 to 0+592).	18 m	\$	\$
A11	8	a) Supply 600mm x 600mm concrete DICB c/w birdcage grate, tabs, and marker.	LS		\$
		b) Install DICB (Sta. 0+592).	LS		\$
A12	7	a) Supply 450mm dia. concrete tile (2000D) and required geotextile.	86 m	\$	\$
		b) Supply two 45 degree, 450mm dia. HDPE elbows (320 kPa) with plain ends and required geotextile (Sta. 0+595 and 0+678).	LS		\$
		c) Locate and destroy existing drains.	LS		\$
		d) Install concrete tile via excavator on 19mm clear stone bedding c/w the installation of elbows and regrading of existing channel and surrounding area as specified (Sta. 0+592 to 0+678).	86 m	\$	\$
Old Stage Road					
A13	8	a) Supply 600mm x 600mm concrete DICB c/w birdcage grate, tabs, and marker.	LS		\$
		b) Install DICB (Sta. 0+678).	LS		\$
A14	9	a) Supply 450mm dia. solid, split coupler, HPDE pipe (320 kPa), required couplers, and required Granular 'A'.	33 m	\$	\$
		b) Hand seeding of disturbed vegetated areas.	LS		\$
		c) Install HDPE pipe drain crossing and culvert through Old Stage Road via excavator as specified c/w the destruction of the existing drains, removal and disposal of existing culvert and restoration of road (Sta. 0+678 to 0+696).	33 m	\$	\$
A15	8	a) Supply 600mm x 600mm concrete CB c/w birdcage grate, tabs, and marker.	LS		\$
		b) Remove and dispose of existing CB.	LS		\$
		c) Install CB (Sta. 0+696).	LS		\$
		d) Supply and install approx. 6m of 300mm dia. solid, ag tubing and required fittings for connection of existing tiles to CB.	LS		\$
SUBTOTAL - Richardson Drain					\$

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

Provisional Items

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

Item No.	SP No.*	Description	Approx. Quantity	Unit Price	Total
P1	10	Removal of wheel trencher due to stony conditions.	5 ea.	\$	\$
P2	11	Increased cost to install drain on 19mm (¾") clear stone bedding in areas of soil instability as per detail Typical Drain Installation on Stone Bedding, not including the supply of clear stone.	150 m	\$	\$
P3	12	Tile connections into the proposed drain with core drilled hole and coupler.			
		a) 100mm dia. connection.	5 ea.	\$	\$
		b) 150mm dia. connection.	2 ea.	\$	\$
P4	13	Supply and install Granular 'B' material	50 tonne	\$	\$
SUBTOTAL - Provisional Items					\$

TOTAL BID (Including Prov. Items)	\$
HST (13%)	\$
TOTAL (INCLUDING HST)	\$

Note: All prices are in Canadian Dollars

WORK SCHEDULE

Proposed Start Date:	
Proposed Completion Date:	

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

Appendix A

Construction Specifications

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1 Special Provisions

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

1.1 Working Space and Access Routes

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

- The footprint of the proposed stilling basin as well as a 10m working space around the stilling basin.
- A 20m width centered on the proposed tile drain.
- A 30m width centered on the proposed tile drain in areas where tree clearing is required.
- A 6m width centered on the existing tile drain where tile destruction only is required.
- A 20m x 20m construction staging area as required on the following properties
 - Charles & Mary Dew (roll no. 2-012)

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

- Access Route #1 – From Old Stage Road to the farm lane for the Charles & Mary Dew (roll no. 2-012) property east of the existing drain, proceeding south to the edge of the field near Kenny Creek, then west to the proposed tile alignment.
- Access Route #2 – From Old Stage Road to the 505996 Old Stage Road laneway, proceeding west from the laneway then south to the proposed drain alignment.
- Access Route #3 – From Old Stage Road to the 505996 Old Stage Road laneway, proceeding east from the laneway then south to the proposed drain alignment.
- Access Route #4 – From Old Stage Road to the farm lane for the Charles & Mary Dew (roll no. 2-012) property to the east of the existing drain, proceeding west from the laneway to the proposed drain alignment.
- Access Route #5 – From Old Stage Road to the farm lane for the Joris Laan & Laan Dairy Ltd. (roll no. 1-187) property to the west of the existing drain, proceeding north to the gate entrance to the field, then southeast to the proposed drain alignment.

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

1.2 Utilities

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

- Overhead hydro lines located on the south side of the Old Stage Road right-of-way and on the east side of the 505996 Old Stage Road laneway.
- One gas main located on the south side of the Old Stage Road right-of-way.
- One fibre optic line located on the north side of the Old Stage Road right-of-way. An additional fibre optic cable was noted to be scheduled to be installed on the right-of-way and may result in additional conflicts at the time of construction.
- One telephone cable located near the north edge of gravel in Old Stage Road in addition to a cable located in the 505996 Old Stage Road laneway.
- One private water service line at approx. 0+472.

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

1.3 Anticipated Soil Conditions

Various test pits were dug along the drain alignment during the design stage of the project. A detailed summary of the investigation can be found in Appendix B.

1.4 Agency Project Requirements

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

Grand River Conservation Authority (GRCA)

The Contractor shall establish erosion and sediment control measures (i.e. rock check dam) at the onset of the project and remove any accumulated sediments as required to ensure continued effectiveness throughout construction.

The Department of Fisheries and Oceans Canada (DFO)

No modifications to an existing channel that contains fish at any time during any given year are proposed as part of this report. As a result, this project does not require review by DFO.

The Ministry of Environment, Conservation and Parks (MECP)

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

1.5 Project Specific Construction Specifications

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

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

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

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

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

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

SP2 Supply 19mm (¾ inch) Diameter Clearstone

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

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

SP3 Supply Rip-Rap Erosion Protection and Geotextile Underlay

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

Unless specified otherwise, it shall be assumed that the rip-rap erosion protection is to be installed on geotextile underlay and the Contractor shall include the cost to supply the geotextile in the bid of this

line item. It should also be assumed that the bid price per tonne provided by the Contractor applies only to the tonnage of rip-rap provided.

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

SP4 Clearing, Close Cut Clearing, Grubbing, and Brushing

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

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

Grubbing means the removal of all stumps, roots, embedded logs, debris, and secondary growth. The Contractor shall remove and dispose of all grubbed material off-site or pile in a location agreed upon by the landowner and Contract Administrator. Burying of grubbed material shall not be permitted.

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

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

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

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

Station Range	Description of Work
0+000 to 0+065	• Minor brushing as required to destroy ex. tile to the west of the proposed drain. • Clear, grub, and brush one large tree (approx. 700mm diameter) approximately 8m west of 0+065.
0+215 to 0+430	• Clear, grub, and brush all trees within an approximate 30m width centered on the proposed drain (approx. 2 trees with a diameter of approx. 900mm, 20 trees with a diameter between 300mm and 600mm, 8 trees with a diameter between 150mm and 300mm, 50 trees with a diameter less than 150mm, and three 15-30m² areas of scrub).
0+565 to 0+620	• Clear, grub, and brush all trees in within an approximate 30m width centered on the proposed drain (approx. 2 trees with a diameter greater than 300mm, 4 trees with a diameter less than 150mm, and two 20m² areas of scrub).
0+678	• Clear, grub, and brush trees as required to install the proposed drain (2 trees with an approximate 500mm diameter) as well as minor brushing that may be required.

SP5 Temporary Rock Flow Check Dam

The Contractor shall install a temporary rock flow check dam as per OPSD 219.211 at approximately Sta. -0+003, prior to commencement of any work on the remainder of the proposed drain. After the completion of the work and when so instructed by the Contract Administrator, the rock flow check dam shall be removed. The excess stone may be incorporated into the surrounding channel features.

SP6 Stilling Basin

A permanent stilling basin shall be installed immediately downstream of the outlet pipe as per the accompanying details to the satisfaction of the Contract Administrator.

Prior to the construction, the Contractor shall strip the topsoil from the work areas. The topsoil shall be stockpiled separately from the subsoil material and later used for restoration.

A minimum 450mm thickness of 150mm to 300mm dia. rip-rap with geotextile underlay (underlay required on the banks only) shall be installed by the Contractor to a minimum elevation of 269.80.

All spoil resulting from the excavation of the stilling basin, shall be spread and levelled in the designated working space and a clear buffer of at least 1m shall be maintained between the top edge of the drain and the spread spoil. The approximate volume of material to be excavated is 25m³. The excavated spoil shall be levelled to a maximum depth of 200mm. This shall be included in the bid of the stilling basin line item.

SP7 Tile Installation

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

Topsoil Stripping

Topsoil shall be stripped and stockpiled separately from subsoil material in all areas where excavation work is proposed. The Contractor shall strip a minimum 6m width of topsoil from the area of the proposed tile trench.

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

Trenching

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

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

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

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

Concrete Tile Installation

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

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

- 300mm wide for tiles sizes smaller than 450mm in diameter
- 400mm wide for tiles sizes 450mm in diameter or larger

High Density Polyethylene Pipe Installation

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

Backfilling

Once sufficient time has been given for the Contract Administrator to verify the elevation of the tile, backfilling of the trench may commence. The tile installation trench shall be backfilled by the Contractor at the end of each working day. Clean native material free of stones greater than 150mm in diameter and organic material shall be used within 300mm of the proposed tile. In cases, where in the opinion of the Contract Administrator the backfill material is too stony to be used as backfill around the tile, the Contractor shall use 19mm clear stone as backfill up to 150mm overtop of the tile. The Contractor shall take care to ensure that the area between the tile and the trench wall is backfilled as to avoid any voids between the tile and the trench wall. The remainder of the trench may be backfilled with the remaining native material.

Topsoil Restoration

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

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

Tile Installation Specifics

The existing drains shall be destroyed entirely along their length. In locations where the tiles are not destroyed during the installation of the new drain, they shall be located and destroyed by the Contractor for their entire length (including topsoil stripping and restoration) and the cost to complete such work shall be included in the Contractor's bid of the associated line item. Any connections to these drains shall be re-routed to the proposed tile and paid for as a provisional item.

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

Station Range	Comments
0+000 to 0+115	- The proposed tile shall be installed to the west of the existing drain alignment, as depicted on the accompanying drawings. - The existing drain (approx. 250mm in dia.) located east of the proposed drain shall be located and destroyed. - One length of 525mm dia. solid HDPE pipe with plain ends shall be used to outlet the drain into the proposed Stilling Basin. The concrete pipe shall be butt jointed to the end of the HDPE pipe and double wrapped with geotextile. - The Contractor shall supply and install a rodent grate on the end of the outlet pipe. - The existing outlet pipe shall be removed and disposed of off-site. - The existing fence in the area of the proposed tile (approx. 0+004) shall be removed and disposed of off-site and the cost to do so shall be included in the bid of this line item.
0+115 to 0+583	- The proposed tile shall generally follow the existing drain alignment. - From 0+115 to approximately 0+315 the existing drain (approx. 250mm in dia.) shall be located and destroyed. - Upstream of approximately 0+315 there are two existing drains (both approx. 200mm in dia.) located in the proposed working space that shall be located and destroyed. - The Contractor shall consider the private water service at approximately 0+472 and note that the elevation of the water service has not been confirmed. At the

	onset of the project the Contractor shall daylight this water service at the location of the proposed drain alignment and confirm that there is clearance between the elevation of the water service and the proposed drain. If the Contractor anticipates clearance to be an issue, they shall immediately inform the Contract Administrator to decide on the appropriate course of action. • The water service shall be bedded to the satisfaction of the Contract Administrator and shall be coordinated at the time of the pre-construction meeting. • One 450mm dia. solid, 45 degree elbow with plain ends shall be installed at approx. 0+535. The concrete pipe shall be butt jointed to the elbow and the joints double wrapped with geotextile. • The existing fence in the area of the proposed tile (approx. 0+277 and 0+581) shall be removed and disposed of off-site and the cost to do so shall be included in the bid of this line item. • Existing channel to be filled with native subsoil material (approx. 0+540 to 0+570). Approximately 1.5m wide, 0.15m to 0.50m deep.
0+583 to 0+592 (Laneway Crossing)	• The proposed tile and surface culvert shall be installed along the alignment shown in the accompanying drawings. • The existing granular material through the laneway shall be initially stripped and stockpiled for use in the restoration of the laneway. The laneway shall be restored to the satisfaction of the Contract Administrator. • The existing fence in the area of the proposed tile (approx. 0+592) shall be removed and disposed of off-site and the cost to do so shall be included in the bid of this line item. • The Contractor shall remove and dispose off-site two existing culverts through the laneway as well as destroy the two existing drains (approx. 200mm in dia.) through the laneway.
0+592 to 0+678	• The proposed tile shall be installed along the alignment shown in the accompanying drawings. • The existing fence in the area of the proposed tile (approx. 0+677) shall be removed and disposed of off-site and the cost to do so shall be included in the bid of this line item. • Two 450mm dia. solid, 45 degree elbow with plain ends shall be installed at approx. 0+595 and 0+675. The concrete pipe shall be butt jointed to the elbows and the joint double wrapped with geotextile. • There are two existing drains (approx. 200mm in dia.) located in the proposed working space that shall be located and destroyed. • Existing channel to be filled with native subsoil material. Approximately 2.0m wide, 0.20m to 1.20m deep. The land immediately east of the proposed DICB at 0+592 shall be regraded during the restoration of the trench/channel filling to the satisfaction of the Contract Administrator at slopes no steeper than 10H:1V to ensure positive drainage to the low-wall of the structure.

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

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

Provisional Items Associated with Tile Installation

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

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

SP8 Structure Installation

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

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

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

All ditch inlet catchbasins (DICBs) shall have a 2H:1V slope.

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

The Contractor shall place a minimum 1m width of rip-rap with geotextile on all sides of all catchbasins and install each catchbasin with tabs, and approved post and marker. All catchbasins shall be topped with a birdcage type steel grate which shall be removable and shall be inset into a recess around the top of the structure.

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

DICB at Sta. 0+592 – Location of the proposed ditch inlet catchbasin is intended to allow for future widening of the laneway and the contractor shall consider this at the time of installation. Rip-rap erosion protection surrounding this structure shall be extended around the upstream end of the proposed surface culvert as specified in the accompanying drawings. The ground to the east of the structure shall be regraded to the satisfaction of the Contract Administrator at slopes no steeper than 10H:1V to ensure positive drainage to the low-wall of the structure.

DICB at Sta. 0+678 – The Contractor shall grade the Old Stage Road ROW and required rip-rap to conform to the slope of the ditch inlet and ensure positive drainage from the proposed surface culvert and existing road banks to the low-wall of the structure as specified on the accompanying drawings.

CB at Sta. 0+696 – The existing rock erosion protection on the north bank of Old Stage Road shall be initially stockpiled separately for the re-use on the road bank and around the proposed catchbasin. The Contractor shall remove the fence posts and pile in a location agreed upon by the Contract Administrator for re-use by the landowner. The Contractor shall regrade the restored road banks and Old Stage Road ROW to ensure positive drainage to the proposed catchbasin. The Contractor shall complete the connections of the existing private drains to this structure.

SP9 Old Stage Road Open Cut Crossing

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

Notification. The Contractor shall give the Authority responsible for the lands being crossed a minimum five days' notice before they commence any work on the crossing and shall provide a traffic control plan for review by the Authority at that time. The plan shall be approved by the Owner prior to the beginning of construction. This information shall be provided to Ken Farkas at the Township of Norwich (email: kfarkas@norwich.ca, phone: (519) 667-2000 ext. 7630).

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

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

All existing drains and culvert pipes shall be removed and disposed of off-site by the Contractor. All unsuitable or excess material shall be spread and levelled within the existing channel south of the Old Stage Road ROW to the satisfaction of the Contract Administrator.

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

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

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

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

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

Erosion Protection. The existing rock erosion protection on the north bank of Old Stage Road shall be initially stockpiled separately for the re-use on the road bank and around the proposed catchbasin. In the locations specified on the accompanying drawings the Contractor shall install an approximate 450mm depth of 150mm to 300mm dia. rip-rap with geotextile underlay.

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

All stockpiled rip-rap material shall be placed on disturbed road banks as erosion protection to the satisfaction of the Contract Administrator.

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.

SP10 Removal of Wheel Trencher

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

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

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

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

SP11 Special Installation Technique

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

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

The Contractor shall bid the additional unit price per lineal metre of trench, including all additional labour, equipment and materials (excluding the supply cost of 19mm clearstone) required, to install the pipe on 19mm (¾ inch) diameter clear crushed stone, as per the details in the accompanying drawings, with a hydraulic excavator instead of a wheel trencher. The supply cost of the 19mm

clearstone shall be paid based on the bid unit price in the Tender and not included in the bid of this line item.

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

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

SP12 Tile Connections

For the unit bid price, the Contractor shall provide all labour and material required to connect all any private drains encountered during construction to the proposed drain with appropriately sized agricultural tubing or approved equivalent (assuming a length of 6m or less). Initially the Contractor shall connect to the existing tile with an appropriate coupler or reducer. The connection shall be adequately supported with 19mm clear stone bedding and the stone supply cost shall be paid out based on the bid unit price in the Tender and not included in the bid of this line item. Connections directly to a length of tile shall be installed into the drain with a core drilled hole and manufactured HDPE tee/coupler fitting as per the detail in the accompanying drawings. Connections directly to a structure shall be into the appropriate opening/knockout provided, and parged on the interior and exterior of the structure.

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

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

SP13 Supply and Install Granular 'B'

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

The Contractor shall then install the granular material as directed by the Contract Administrator.

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

2 General Requirements

2.1 Order of Precedence

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

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

2.2 Periodic and Final Construction Review

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

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

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

2.3 Existing Conditions

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

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

2.4 Benchmarks and Temporary Construction Markers

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

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

2.5 Material Specifications

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

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

2.6 Iron Bars

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

2.7 Pollution

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

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

2.8 Fences

The Contractor will be permitted to remove fences to the extent necessary to allow for the construction of the drain. Unless specifically noted in the Contract documents, disturbed fences shall

be restored in as good of condition as they were found. Fences should be handled in such a manner to prevent any unnecessary damage. Where feasible, cutting of the fence and subsequently patching the fence shall be avoided. The Contractor shall not leave any fence open when not working in the immediate area and shall replace the fence in a timely manner.

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

2.9 Livestock and Standing Crops

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

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

2.10 Material Disposal

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

2.11 Removal of Large Stones and Rock

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

2.12 Damage by Vehicles and Other Equipment

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

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

2.13 Equipment and Material Staging

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

2.14 Deficient Items

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

2.15 Construction Document Errors

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

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

2.16 Alterations to Work

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

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

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

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

2.17 Liquidated Damages

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

2.18 Sub-Contractors

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

2.19 Payment

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

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

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

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

2.20 Substantial Performance and Contract Completion

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

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

2.21 Statutory Holdback

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

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

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

2.22 Warranty Holdback

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

2.23 Tests

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

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

2.24 Species at Risk

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

2.25 Weather

The Contractor shall make every effort to avoid working in weather conditions that may increase the difficulty of construction activities. Should the Contractor choose to work during periods of frequent rainfall or snow, or excessively hot or cold weather, etc., extra charges resulting from working in

unfavourable construction conditions caused by such weather may not be applicable and shall be to the discretion of the Contract Administrator.

2.26 Dewatering

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

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

2.27 Erosion and Sediment Control

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

2.28 Seeding

Grass seed shall be fresh, and clean seed, and unless specified elsewhere be as per OPSS.MUNI 804 Standard Roadside Mix which is duplicated below for convenience. It shall be applied at a rate of 130kg per 10,000m²:

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

If a nurse crop is required, it shall be fall rye grain or winter wheat grain applied at a rate of 60 kg per 10,000m².

3 General Specifications for Open Drains

3.1 Profile

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

3.2 Tile Outlets

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

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

3.3 Crossing of Open Drains

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

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

4 General Specifications for Tile Drains

4.1 Alignment

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

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

4.2 Profile

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

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

4.3 Trench Crossings

The Contractor shall not cross any backfilled trench with any construction equipment, except at one designated crossing location on each property. The Contractor shall ensure that the bedding and backfill material at this designated crossing location is properly placed and compacted to adequately support the equipment and vehicles that may cross the trench. The Contractor shall be responsible for any damage to the new tile resulting from the crossing of the drain.

Appendix B

Soils Investigation

Soils Investigation

A soils investigation was completed on November 18, 2025 along the existing and proposed drain alignments. A location map of the test pits and a summary log of the soils encountered with their depths can be found enclosed with this appendix.

The soils were generally found to be of high clay content throughout the areas of proposed tile installation. In one location, in the area where the existing tile is located approximately 65m north of Kenny Creek, the soils were found to be saturated and of high gravel content at depths greater than 1.9m.

Photographs at each test location are provided below.



Figure 1 – (Left) Soil conditions observed at TP#1



Figure 2 – (Right) Soil conditions observed at TP#2

APPENDIX B – SOILS INVESTIGATION



Figure 3 – (Left) Soil conditions observed at TP#3



Figure 4 – (Right) Soil conditions observed at TP#4

Soil Test Pit Logs

Project: Richardson Drain Improvement 2026
Project No.: 0031
Investigation Date: November 18, 2025

Test Pit No.	Depth Interval (m)	Description
TP1	0.0-0.15	Topsoil
	0.15-1.2	Brown clay
	1.2-1.9	Grey clay
	1.9-2.0	Grey gravel & cobbles
TP2	0.0-0.3	Topsoil
	0.3-0.8	Brown clay & gravel, trace cobbles
	0.8-1.7	Brown clay
TP3	0.0-0.3	Topsoil
	0.3-1.7	Brown clay
TP4	0.0-0.15	Topsoil
	0.15-2.0	Brown clay

TP1 Notes:

- Ground elevation=271.4, pit terminated at 269.4
- Groundwater observed: soils saturated at 269.5
- Stones observed: cobbles

TP2 Notes:

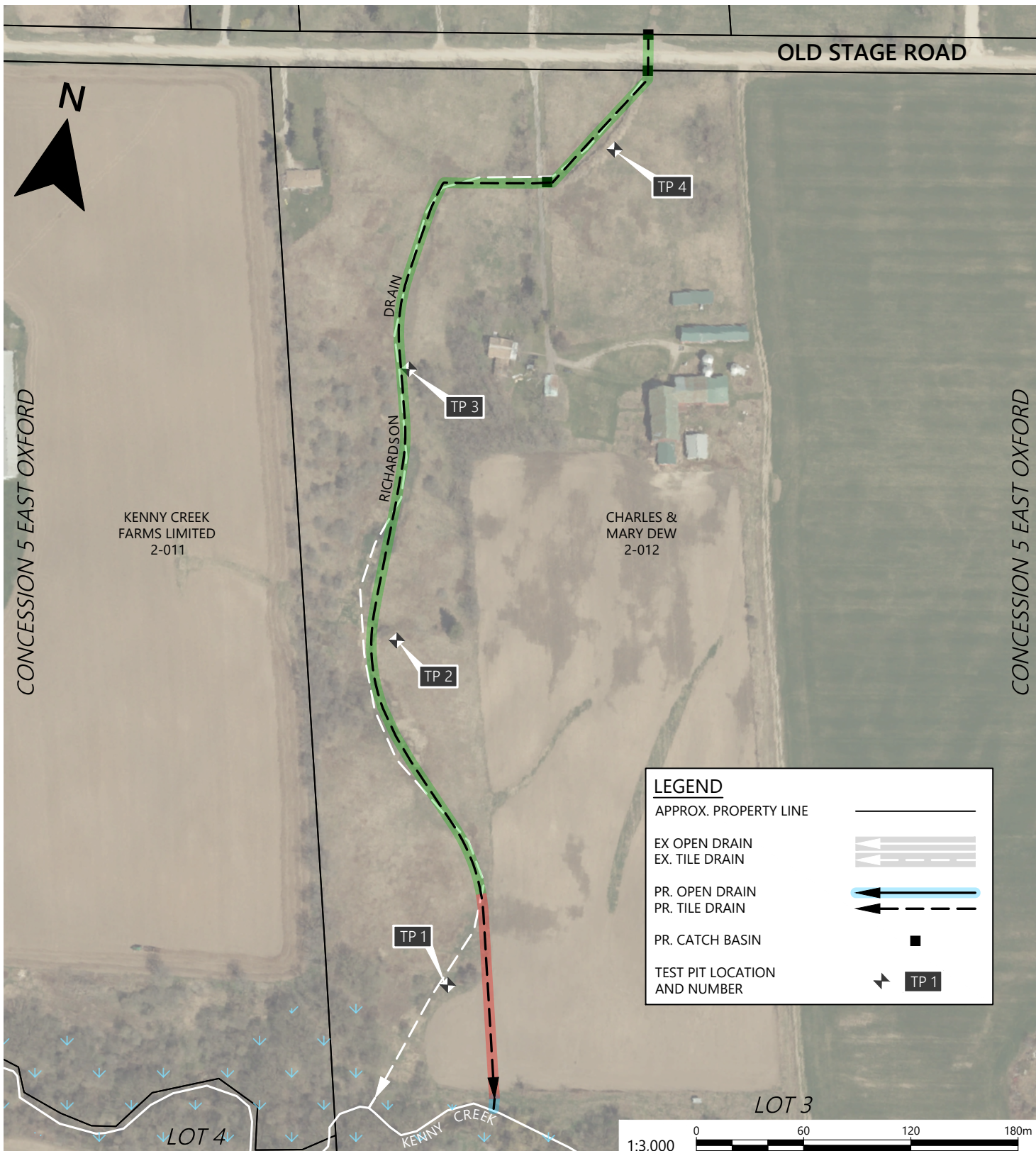
- Ground elevation=275.7, pit terminated at 274.0
- Groundwater observed: N/A
- Stones observed: cobbles

TP3 Notes:

- Ground elevation=277.1, pit terminated at 275.4
- Groundwater observed: water seepage from nearby tiles
- Stones observed: none

TP4 Notes:

- Ground elevation=280.1, pit terminated at 278.1
- Groundwater observed: N/A
- Stones observed: none



PROJECT

RICHARDSON DRAIN IMPROVEMENT 2026

CLIENT

TOWNSHIP OF
NORWICH



STREAMLINE
ENGINEERING INC.

DRAWING

SOILS TEST PIT FIGURE

DESIGNED
CK/MS

CHECKED
TK

DRAWN
MS

DATE
MAY 2026

PROJECT NO.
0031

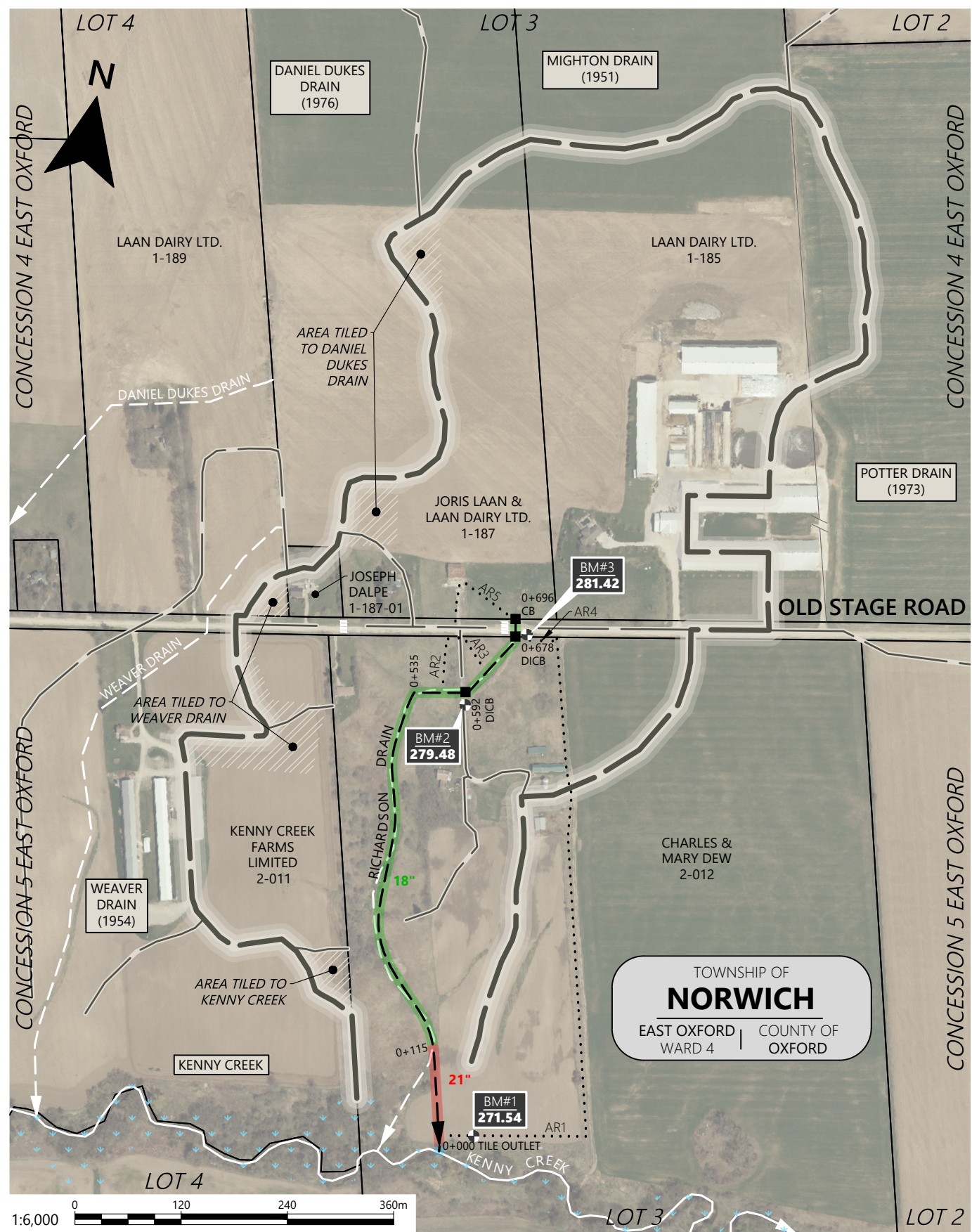
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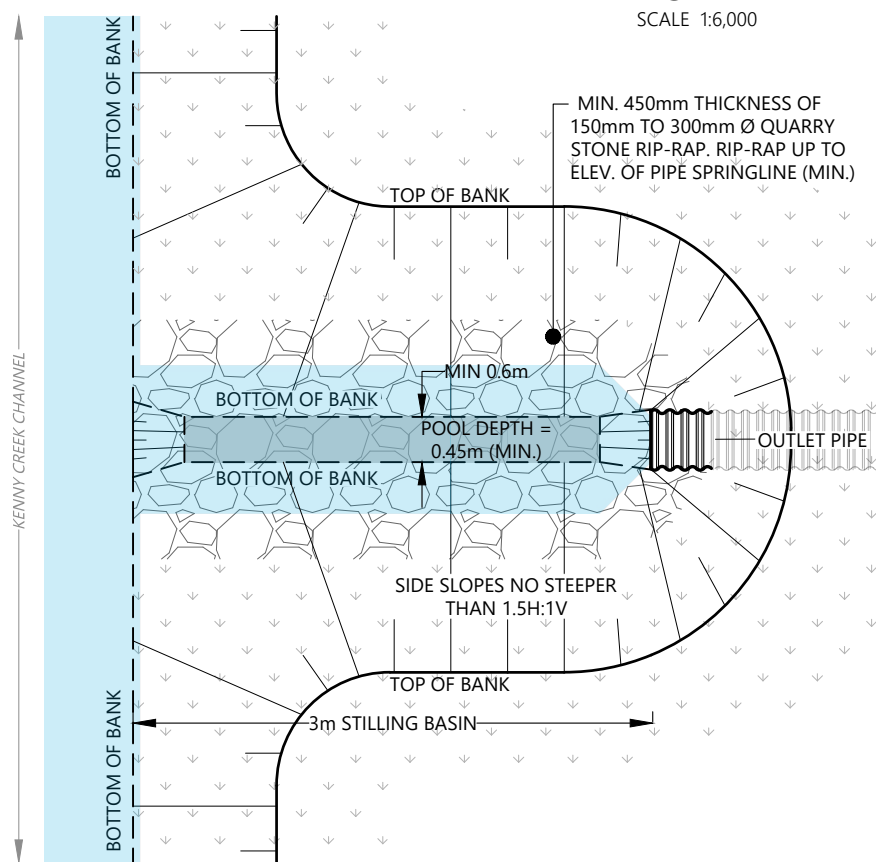
1 OF **1**

Appendix C

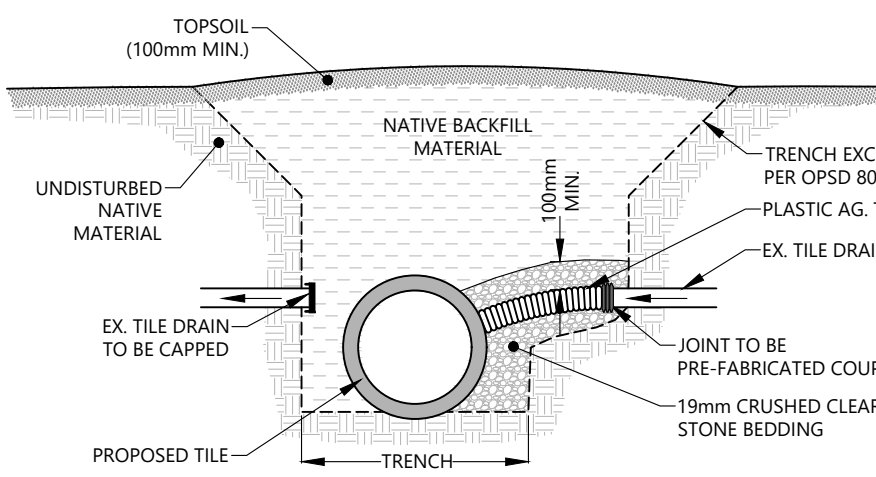
Drawing



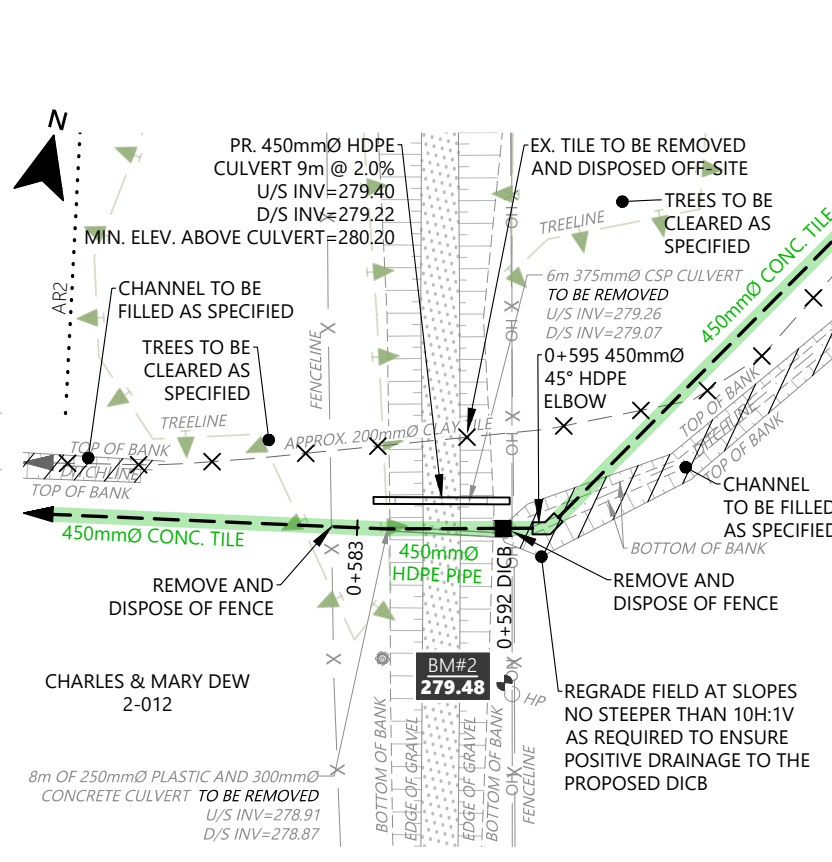
WATERSHED PLAN
SCALE 1:6,000



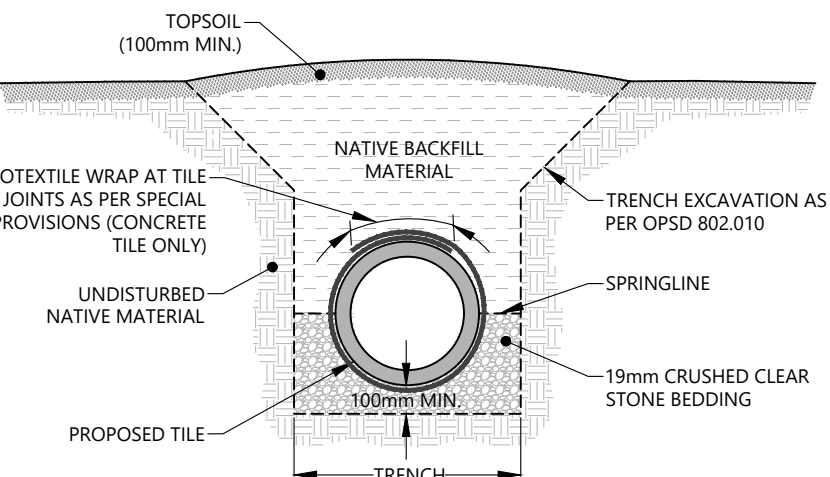
STILLING BASIN DETAIL
N.T.S.



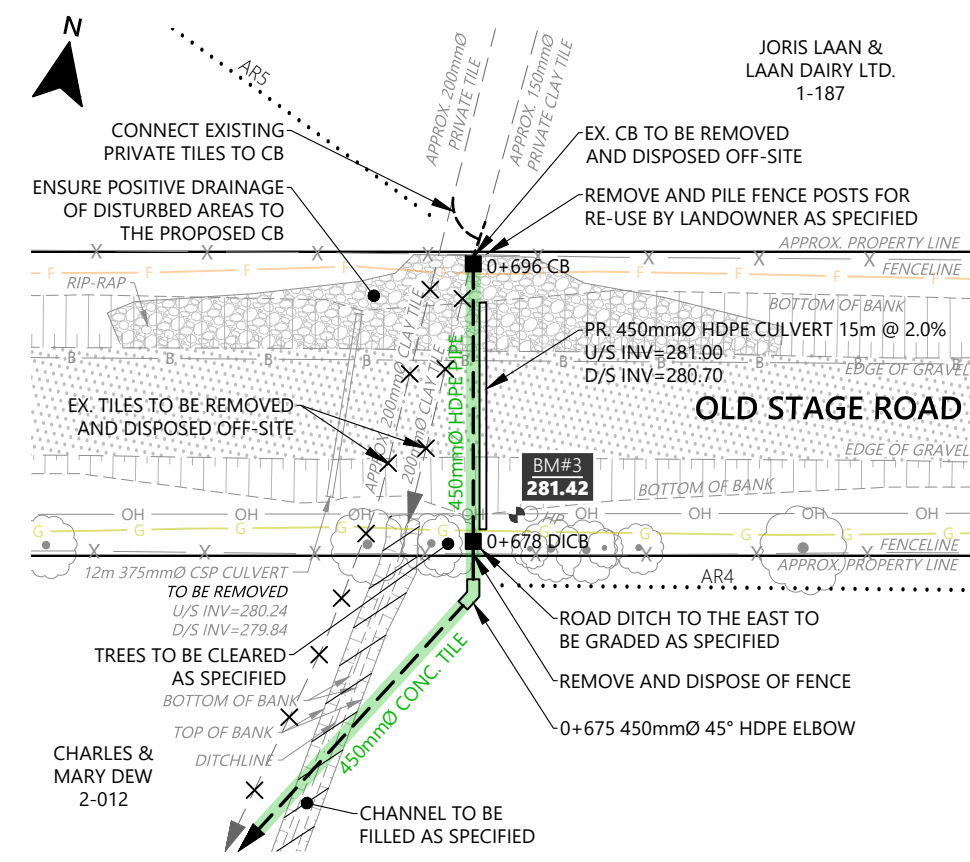
TILE CONNECTION DETAIL
N.T.S.



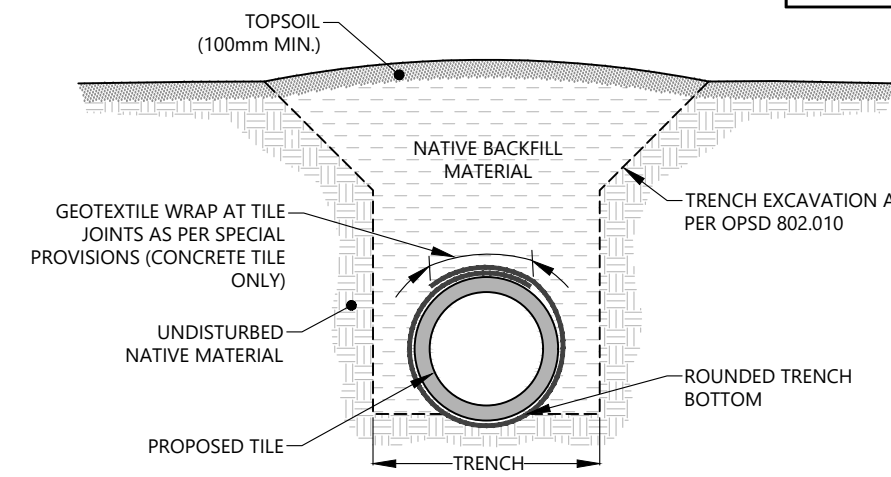
LANEWAY CROSSING DETAIL
SCALE 1:500



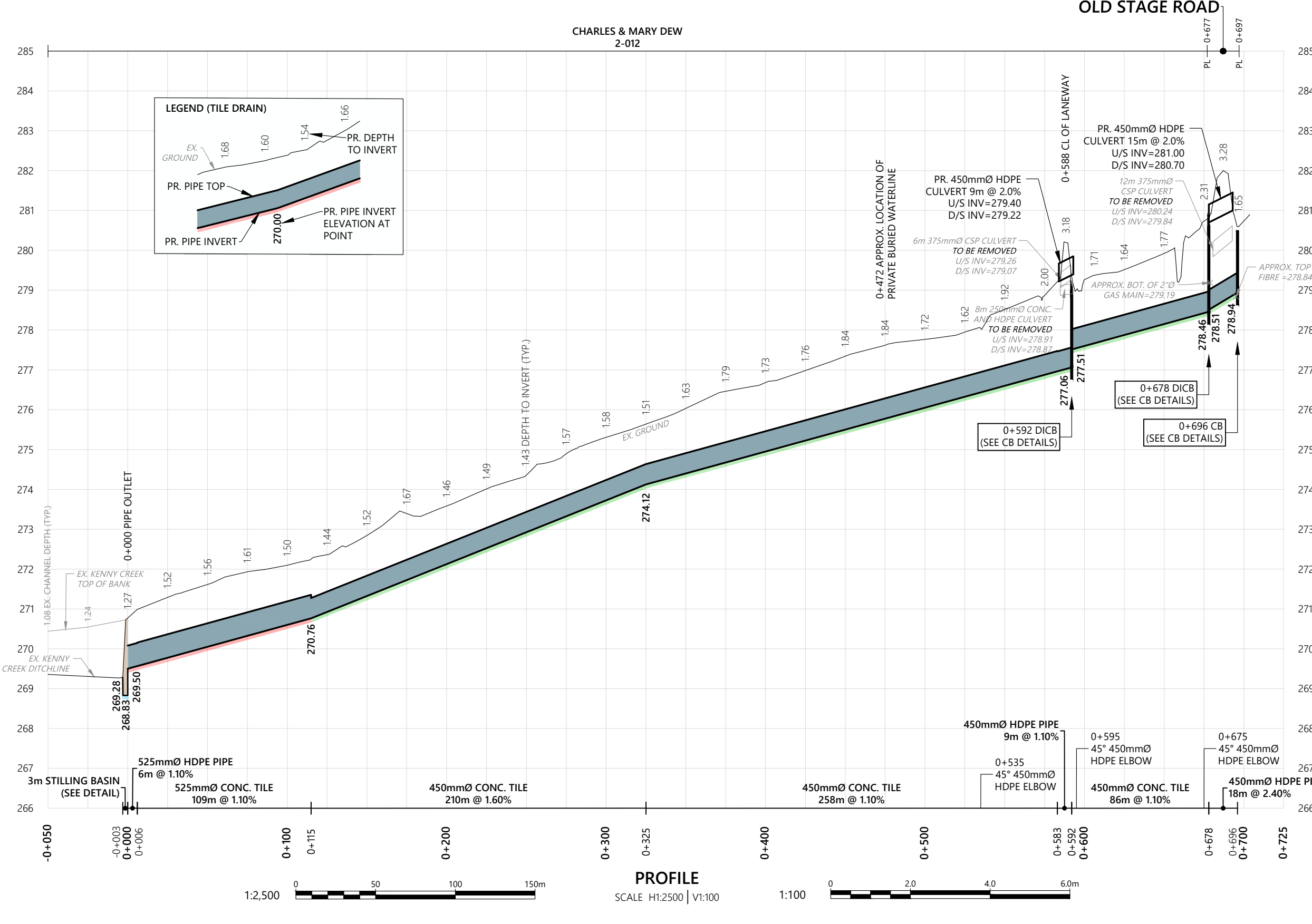
TYPICAL DRAIN INSTALLATION ON STONE BEDDING
N.T.S.



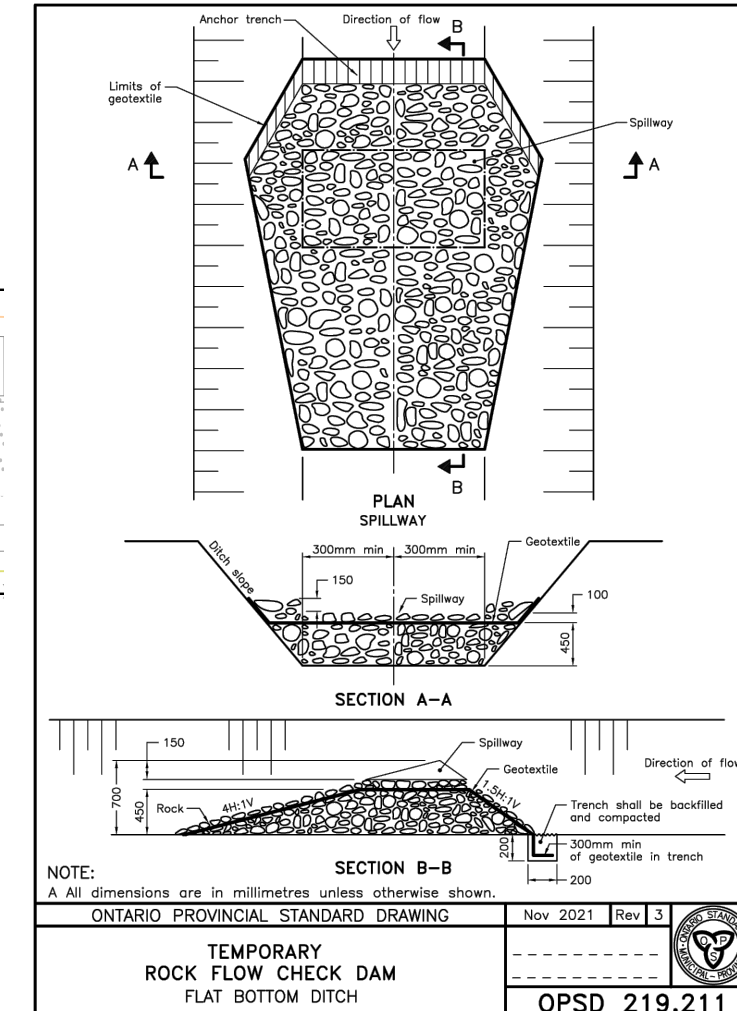
OLD STAGE ROAD CROSSING DETAIL
SCALE 1:500



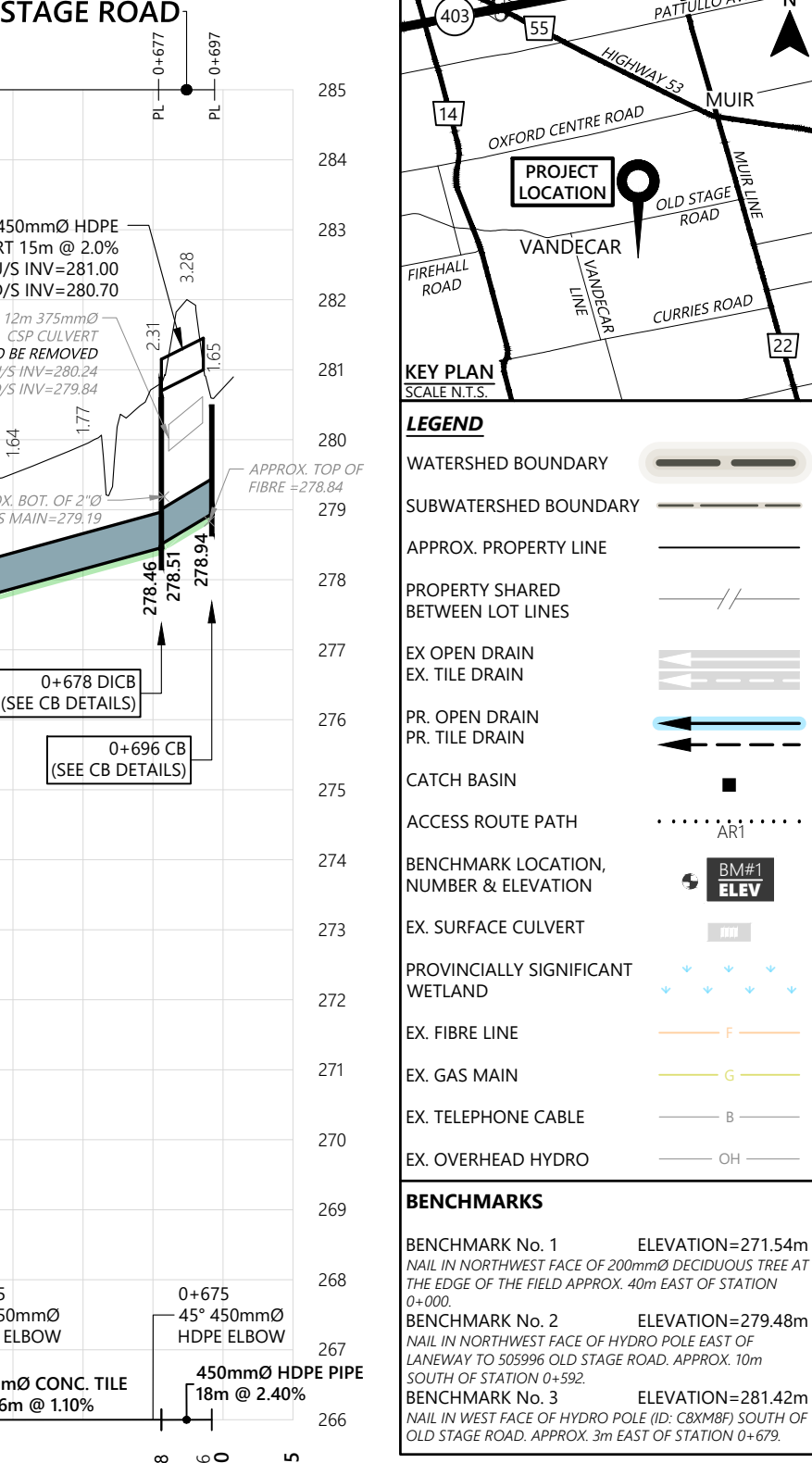
TYPICAL DRAIN INSTALLATION
N.T.S.



PROFILE
SCALE H1:2500 | V1:100



TEMPORARY
ROCK FLOW CHECK DAM
FLAT BOTTOM DITCH
OPSD 219.211



LEGEND	
WATERSHED BOUNDARY	---
SUBWATERSHED BOUNDARY	---
APPROX. PROPERTY LINE	---
PROPERTY SHARED BETWEEN LOT LINES	---
EX OPEN DRAIN	---
EX TILE DRAIN	---
PR. OPEN DRAIN	---
PR. TILE DRAIN	---
CATCH BASIN	---
ACCESS ROUTE PATH	---
BENCHMARK LOCATION, NUMBER & ELEVATION	---
EX SURFACE CULVERT	---
PROVINCIAL SIGNIFICANT WETLAND	---
EX FIBRE LINE	---
EX GAS MAIN	---
EX TELEPHONE CABLE	---
EX OVERHEAD HYDRO	---
BENCHMARKS	
BENCHMARK No. 1	ELEVATION=271.54m NAIL IN NORTHWEST FACE OF 200mmØ DECIDUOUS TREE AT THE EDGE OF THE FIELD APPROX. 40m EAST OF STATION 0+000.
BENCHMARK No. 2	ELEVATION=279.48m NAIL IN NORTHWEST FACE OF HYDRO POLE EAST OF LANEWAY TO 505996 OLD STAGE ROAD, APPROX. 10m SOUTH OF STATION 0+592.
BENCHMARK No. 3	ELEVATION=281.42m NAIL IN WEST FACE OF HYDRO POLE (ID: CBXMB8) SOUTH OF OLD STAGE ROAD, APPROX. 3m EAST OF STATION 0+675.

RICHARDSON DRAIN IMPROVEMENT 2026

STREAMLINE
ENGINEERING INC.

ISSUE / REVISION	DATE
ON-SITE MEETING	OCT 2025
INFORMATION MEETING	APR 2026
ENGINEER'S REPORT	MAY 2026

CLIENT	TOWNSHIP OF NORWICH
DRAWING	WATERSHED PLAN, PROFILE AND DETAILS
DESIGNED	CK/MS
DRAWN	MS
CHECKED	TK
PROJECT NO.	0031
DRAWING NO.	1 OF 1

