



BURNSIDE

**Engineer's Report
Minto Drain 104 - Brubacher
Minor Improvement 2024**

**Town of Minto
5941 Harriston Road
Harriston ON N0G 1Z0**



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Minto Drain 104 - Brubacher
Minor Improvement 2024**

**Town of Minto
5941 Harriston Road
Harriston ON N0G 1Z0**

**R.J. Burnside & Associates Limited
449 Josephine Street
Wingham ON N0G 2W0 CANADA**

**May 28, 2024
300058548.0000**

Distribution List

No. of Hard Copies	PDF	Email	Organization Name
8	Yes	Yes	Town of Minto
1	No	No	Landowner
1	Yes	Yes	Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

Record of Revisions

Revision	Date	Description
0	May 28, 2024	For Engineer's Report

R.J. Burnside & Associates Limited

Report Prepared By:

Edison Peel

Edison Peel, EIT
Engineering Assistant
EP/JCT:tp

Report Reviewed By:



Jeremy Taylor, P.Eng.
Project Engineer

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Disclaimer

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1.0 Project Authorization

This report is being prepared in response to an appointment by the Town of Minto on March 19, 2024, to provide an improvement to the existing Minto Drain 104 in accordance with Section 78 (5) of the Drainage Act, R.S.O. 1990 and Ontario Regulation 500/21.

This project satisfies the criteria required to be considered a minor improvement to a drainage works as outlined in Ontario Regulation 500/21 subsection 7(1).

The request for improvement dated February 21, 2024, was submitted by Stuart and Roselle Brubacher; owner of East Part Lot 19, Concession 16, Town of Minto, Wellington County.

2.0 Background Information

The on-site meeting for the drain was held on April 26, 2024, at the Brubacher property. The following were present at the meeting:

- Stuart Brubacher Landowner (Roll No. 3-154)
- Edison Peel R.J. Burnside & Associates Limited (Burnside)

The landowner expressed his request to realign Minto Drain 104 tile drain through his property to allow for the construction of a manure storage yard and future barn expansions. Copies of the existing systematic tile maps and a sketch of the proposed manure yard and barn expansions were provided.

3.0 Proposed Design

In accordance with subsection 7(1) the proposed works do not change the existing drainage capacity. The existing and proposed drainage system on the Brubacher property was investigated and summarized below.

Table 1: Municipal Drain Capacity

Condition	Tile Size (mm)	Slope (%)	Capacity (l/s)	Drainage Co-efficient (mm / in)
Existing	350	0.32	83	11 / ~ 0.5"
Proposed	400	0.22	98	12.5 / ~ 0.5"

No increased risk to any surrounding buildings or access to the buildings are anticipated in this location. The completed engineering drawing set has been included in this report.

4.0 Environmental and Fisheries Considerations

When a new Engineer's report is prepared that could affect an existing Municipal Drain, natural watercourse, wetland, or other environmental features, a review of the work is

required, and subsequent approvals and/or project requirements must be obtained from the applicable agency. These may include the local Conservation Authority (CA), The Ministry of the Environment, Conservation and Parks (MECP) and Fisheries and Oceans Canada (DFO).

No tree removal is proposed and no temporary or permanent impacts to Species at Risk (SAR) are anticipated. The Contractor will be responsible to ensure that during construction no extirpated, endangered, threatened, or special concern species or their habitats are adversely affected.

Municipal drainage tiles near permanent nutrient (manure) storage facilities are a potential pathway for leaks or spills of nutrients to be transported to surface water. Municipal tiles outlet into open drains and natural watercourses. A minimum 15 m setback has been provided between the proposed manure storage yard and the relocated portion of the municipal drain as per O.Reg. 287/03, s. 63 (2).

All the proposed works occur on tile drainage systems in active agricultural fields with row crops. The fields will remain suitable for agricultural operation after the project is complete. As a result, the MECP, and DFO have not been contacted for further review. A permit from Saugeen Valley Conservation Authority has been appended to this report.

5.0 Cost Estimate

Table 2: Construction Cost Estimate

Mobilization	\$ 4,000
Relocation of Topsoil Pile (STA. 0+550 to 0+600)	\$ 500
Supply and install two (2) 600 x 600 mm inline concrete structures	\$ 4,900
Supply and install one (1) 900 x 1200 mm inline concrete structures	\$ 3,300
Supply and install approx. 6 m of 150 mm dia HDPE (320 kPa, Bell & Spigot) by Excavator on Stone Bedding	\$ 400
Supply and install approx. 12 m of 450 mm dia. HDPE (320 kPa, Bell & Spigot) (STA. 0+381 to 0+393) by Excavator on Stone Bedding	\$ 2,600
Supply and installation approx. 207 m of 400 mm dia. CDT 2000D (STA. 0+393 to 0+600)	\$ 19,200
Supply and install approx. 6 m of 300 mm dia. HDPE (320 kPa, Bell & Spigot) (STA. 0+600 to 0+606) by Excavator on Stone Bedding	\$ 900
Supply and installation approximately 110 m of 150 mm dia. of Flexible Perforated Drainage Tile (STA. 0+486 to 0+596)	\$ 2,200
Complete approx. ten (10) 100 mm dia Tile Connections	\$ 2,000
Construction Contingency	\$ 5,000
Total Construction	\$ 45,000

Table 3: Project Cost Estimate

Construction – Municipal Drain realignment as per the accompanying drawing set.	\$ 45,000
Engineering – On-site meeting, survey, pipe capacity design review, drawings, report, Council consideration meeting, (Note: Costs for tender specifications, contractor procurement or construction review activities have not been included)	\$ 15,000
Sundry Costs – Net HST, contingencies	\$ 3,000
Total Project Cost	\$ 63,000
Less – Estimated (1/3) OMAFRA Grant	(\$ 21,000)
Net Cost to Landowner	\$ 42,000

All costs associated with this drain realignment shall be assessed to the Brubacher property (Roll No. 3-154).

6.0 Construction

A pre-construction meeting shall be held with the Minto Drainage Superintendent and the landowner prior to commencing construction activities. The drain realignment shall be completed as per the details on the accompanying drawing set. Drain construction shall commence at the downstream limit of construction. The drain shall be installed in dry weather as per best management practices.

7.0 Maintenance and Future Considerations

The existing municipal drain on Roll No. 3-154 from STA. 0+380 TO STA. 0+600 shall be abandoned in place to become the responsibility of the landowner and not considered for future maintenance of Minto Drain 104. The realigned drain shall be deemed part of Minto Drain 104 and all future maintenance costs shall be governed by Minto Drain 104 (1987) Report. Private underdrainage tiles constructed as part of this report are not considered to be part of the municipal drain for future maintenance and shall be the responsibility of the landowner to maintain.



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Appendix A

Agency Correspondence

Sent By E-Mail: stuartbrubacher@gmail.com

May 9, 2024

Stuart Brubacher
6143 – 16th Line
Clifford, Ontario
N0G 1M0

Subject: Application to Alter a Regulated Area
6143 – 16th Line
Part Lot 19 Concession 16
Roll No. 234100000315400
Geographic Township of Minto
Town of Minto
Permit No. 24-100

Dear Stuart Brubacher,

The Saugeen Valley Conservation Authority (SVCA) has approved your application for: construction of a barn, manure storage, re-routing of part of an enclosed municipal drain (drain 104), and related excavation, filling, and grading, as indicated on the attached permit.

If you are unable to meet any of the permit's conditions, do not start the project. Please immediately inform SVCA staff to work towards a solution.

Other Approvals

Municipal Building Permit

Please note, work should not begin until you have received a building permit from the Town of Minto.

Zoning and Official Plan

SVCA comments on planning applications that involve natural hazards. These comments go directly to the Town of Minto. Please contact them to learn about the zoning on your property and if a planning application is required for your project. Please note that if a planning application is required for your proposal, obtaining this permit does not guarantee that your planning application will be approved. It is the opinion of SVCA staff that the proposed barn and manure storage will not be located within the SVCA's recommended NE zone for the property.

Drinking Water Source Protection

Your project is not located within a sensitive area in the Saugeen, Grey Sauble, Northern Bruce Peninsula Drinking Water Source Protection Plan.

Choice to Appeal

If the permit has conditions you disagree with, there is a process for you to have them reviewed. This includes a review by SVCA's Board of Directors, and an appeal to the Ontario Land Tribunal.

To learn more about the Regulation, and how to appeal a decision, please visit our website at:

www.saugeenconservation.ca/appeal

Conclusion

Please read the attached permit carefully, especially the conditions. A follow-up inspection might be required, so please notify us when the work is complete. Please do not hesitate to contact Michael Oberle at m.oberle@svca.on.ca of this office if you have any questions. Thank you for working with Saugeen Conservation.

Sincerely,



Jennifer Stephens
General Manager, Secretary/Treasurer
Saugeen Conservation

JS/mo

Enclosures: SVCA permit, site plan, email dated April 16, 2024, SVCA application form

cc: Terry Kuipers, CBO, Town of Minto (via email)
Cleon Martin, agent (via email)
Steve McCabe, Authority Member representing Town of Minto, SVCA (via email)



1078 Bruce Rd. 12, Box 150
Formosa ON, N0G 1W0

PERMIT NO. 24-100

PAGE 1 OF 4

PERMIT

Conservation Authorities Act, R.S.O. 1990, Chap.C27

PERMIT ISSUE DATE: May 9, 2024 PERMIT EXPIRY DATE: May 9, 2026

Permit for Major Works Permit for Minor Works Permit for Standard or Other Works

PERMIT TO: Alter a watercourse / shoreline Place or move material Construct a building / structure

IN ACCORDANCE WITH REGULATION 41/24, PERMISSION IS GRANTED TO:

Name: Stuart Brubacher

Phone No: 519-323-6981

Mailing address: 6143 - 16th Line, Clifford, Ontario N0G 1M0

FOR THE FOLLOWING WORKS:

Construction of a barn, manure storage, re-routing of part of an enclosed municipal drain (drain 104), and related excavation, filling, and grading.

AT THE FOLLOWING PROPERTY:

6143 - 16th Line, Part Lot 19 Concession 16 Minto

Roll number: 234100000315400

Municipality: Town of Minto

FOR THE PERIOD OF: May 9, 2024 to May 9, 2026

NOTE: General and specific conditions are provided in the following pages and are integral components of this permit.

Should you disagree with any of the general or specific conditions of this permit, notify SVCA immediately and do not begin your project.



 Signature of Authority Official

General Manager, Secretary/Treasurer

 Title

Important! Read all pages of this document.

GENERAL CONDITIONS

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

1. The applicant shall comply with the Conditions of this permit.
2. This permit is valid only for the time period specified.
3. The applicant shall request an extension from Saugeen Valley Conservation Authority 60 days prior to the expiration of the permit period indicated on the permit. (See page 1).
4. This permit does not preclude any other legislation, federal or provincial, or necessary approvals from the local municipality.
5. Saugeen Valley Conservation Authority staff may, at any time, enter onto the lands which are described in this permit in order to conduct surveys, examinations, investigations or inspections which are required to ensure that the work(s) authorized by this permit are being carried out according to the terms of this permit.
6. The applicant agrees:
 - a. at all times, whether occurring during the currency of this permit or thereafter, to fully defend, indemnify, and hold harmless the Saugeen Valley Conservation Authority and its officers, employees or agents from and against all damages, expenses, losses, costs, claims, demands, actions, lawsuits and proceedings, including reasonably attorney's fees, arising out of, resulting from or in any way related to an act or omission of the owner and/or applicant or of any of his/her/its agents, employees or contractors relating to the lands, works, premises, and purposes permitted herein. This indemnity shall survive termination of this permit with respect to matters related to this permit;
 - b. that this permit shall not release the applicant from any legal liability or obligation and remains in force subject to all limitations, requirements and liabilities imposed by law;
 - c. that all complaints arising from the execution of the works authorized under this permit shall be reported by the applicant to the Saugeen Valley Conservation Authority immediately upon occurrence, and in any event, prior to the expiration of this permit. The applicant shall indicate any action which has been taken, or is planned to be taken, if any, with regard to each complaint. Notwithstanding the foregoing, the applicant shall have a continuing duty to report any complaints arising following the currency of the permit;
 - d. that the permit issued herein is based upon the plans or sketches submitted to the Saugeen Valley Conservation Authority and the accuracy of the matters contained in the application to the Authority;
 - e. that, without limiting the generality of the foregoing, all liabilities associated with the permitted matters herein shall be and are hereby assumed by the applicant.
7. This permit is not transferable.
8. The applicant acknowledges that should the works be carried out in a manner contrary to the terms of this permit, as determined by the Saugeen Valley Conservation Authority in its sole discretion, the permit may be revoked and the applicant may be in violation of the Ontario Regulation 41/24, Prohibited Activities, Exemptions and Permits, and subject to the penalties imposed under the *Conservation Authorities Act*, R.S.O., 1990, Chap. C27, as amended.

This permit is a public record which is accessible upon request. This information in this permit is collected under the authority of the *Conservation Authorities Act*, R.S.O., 1990, Chap. C27, as amended.

APPLICANT NAME: Stuart Brubacher

SCHEDULE 1 - SPECIFIC CONDITIONS

1. Work shall be in accordance with this permit and:
 - a. Site Plan Part of Lot 19 Concession 16, prepared by Wilson-Ford Surveying & Engineering, dated March 28, 2024;
 - b. Email dated April 16, 2024, from Stuart Brubacher with drain re-routing information; and
 - c. SVCA Application to Alter a Regulated Area, dated April 29, 2024.

SITE PLAN
 PART OF LOT 19
 CONCESSION 16
 (GEOGRAPHIC TOWNSHIP OF MINTO)
 TOWN OF MINTO
 COUNTY OF WELLINGTON

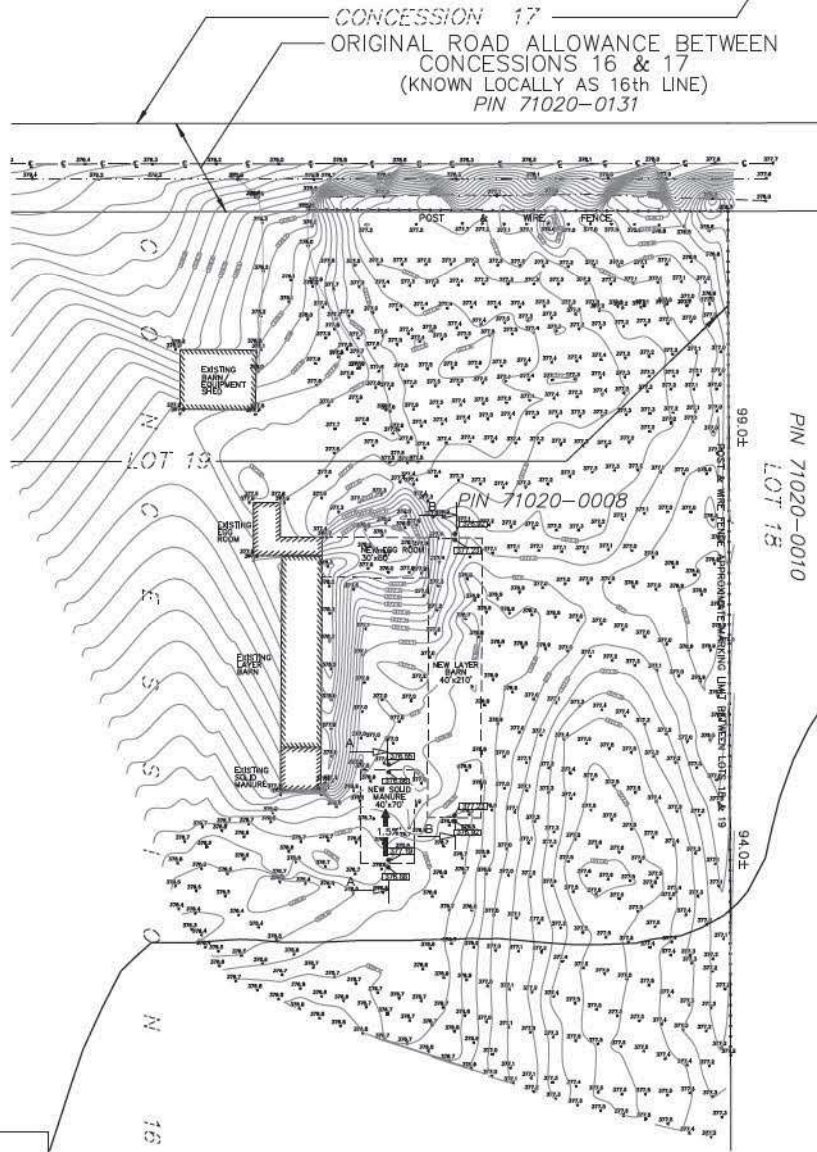
Scale: 1:500
 0 10 20 30 meters

WILSON FORD

THE INTENDED PLOT SIZE OF THE PLAN IS 80.9m IN WIDTH BY 96.5m IN HEIGHT WHEN PLOTTED AT A SCALE OF 1:500

METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

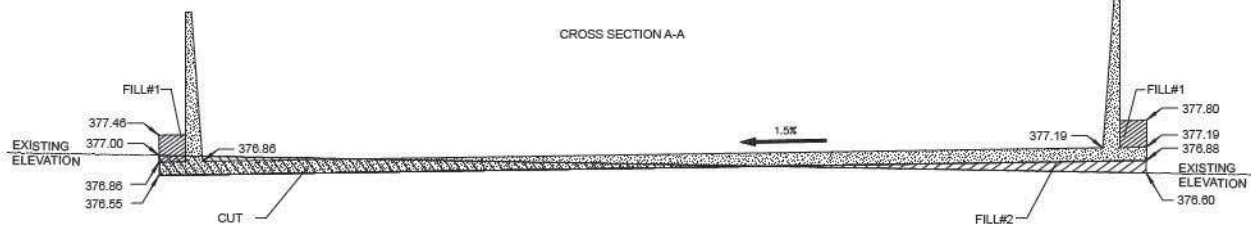


CUT & FILL MATRIX

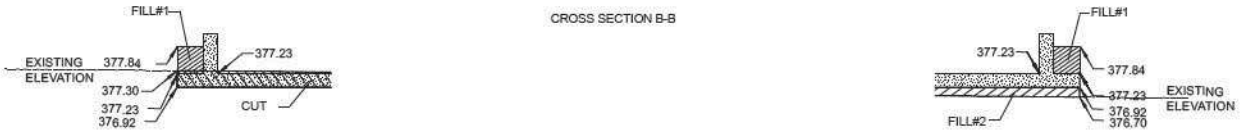
	SOLID MANURE STORAGE	NEW LAYER BARN
SOIL TO CUT	42.81m³	101.15m³
SOIL TO FILL #1	25.84m³	65.61m³
SOIL TO FILL #2	16.30m³	35.24m³
SOIL TO FILL TOTAL	42.14m³	100.85m³



CROSS SECTION A-A



CROSS SECTION B-B



LEGEND:
 - - - EXISTING GRADE
 - - - PROPOSED GRADE
 [] BELL BOX
 [] UTILITY POLE (UP)
 - - - INTERIOR HYDRO

ELEVATION:
 SITE BENCHMARK IS TOP OF SURVEY MONUMENT AT 378.00 WITH AN ELEVATION OF 378.00

CAUTION:
 THIS SKETCH IS NOT A PLAN OF SURVEY. IT WAS PREPARED FOR THE LIMITED USE OF GLED MARTIN. THIS PLAN IS TO REMAIN CONFIDENTIAL, IS PREPARED UNDER COPYRIGHT AND THE UNDERSIGNED ACCEPTS NO RESPONSIBILITY FOR USE BY OTHER PARTIES.
 © WILSON FORD SURVEYING & ENGINEERING 2024
 NO PERSON MAY COPY, REPRODUCE, ALTER OR DISTRIBUTE THIS PLAN IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF WILSON FORD SURVEYING & ENGINEERING.

28 MARCH 2024
 WILSON FORD (P) INC. (2014)
 ONTARIO LAND SURVEYOR

WILSON - FORD
 Surveying & Engineering
 120 KING ST. E., Box 294,
 MOUNT FOREST ON, N0G 2L0
 PHONE: (519) 321-2451
 PROJECT No.: 24-0002 GLED MARTIN

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From: [Stuart Brubacher](#)
To: [Michael Oberle](#)
Subject: Barn addition and drain relocation
Date: April 16, 2024 9:08:52 AM

****[CAUTION]: This email originated from outside of the organization. Do not click on links or open attachments unless you recognize the sender and know the content is safe.**

Good morning Mike, as we talked this morning we are planning to reroute the municipal drain as well, we will be starting south of existing barn and going straight east to property line and then going north towards 16th line until we get to existing drain again and connecting them there again. Thanks



1078 Bruce Road 12
P.O. Box 150
Formosa, On N0G 1W0

SAUGEEN VALLEY CONSERVATION AUTHORITY (SVCA)
APPLICATION TO ALTER A REGULATED AREA

Ontario Regulation No. 41/21, and amendments thereto,
Conservation Authorities Act, R.S.O., 1990, Chap. C.27, as amended.

Application No.
For Office Use

The SVCA will consider your proposal based upon the information that you provide in this application.
Please ensure that your proposal is clearly described and that all relevant information is included. Additional pages may be submitted as needed.

LANDOWNER INFORMATION

Name(s) Stuart Brubacher	Phone 519-323-6981
Mailing Address 6143 16TH LINE CLIFFORD ON N0G 1M0	City/Town CLIFFORD
Email stuartbrubacher@gmail.com	Postal Code N0G 1M0

APPLICANT INFORMATION

<input type="checkbox"/> Applicant is the Landowner or one of the Landowners; or	
<input checked="" type="checkbox"/> Applicant is acting on behalf of the Landowner(s) and has submitted written authorization from the Landowner(s) to SVCA.	
Applicant Name Cleon Martin	Company Name
Email nutrientplans@gmail.com	Phone 519-591-5342

LOCATION OF PROPOSED PROJECT

Street Address 6143 16TH LINE	Municipality/Town Minto
Lot(s) and Concession(s) con 16 - lot 19	Lot and Plan No.
Other Location Information	Roll No. 2341000003154000000

PROJECT DATES

Proposed Start Date April 2024	Proposed Finish Date September 2024
---------------------------------------	--

COMPLETE IF CONSTRUCTION PROPOSED

Type of Project or Work Proposed construction of layer barn, manure storage, and reroute of tile		
Intended Use of Building/Structure	Present Use of Building/Structure	
Square Footage (All Floors) of Existing	Square Footage (Footprint Only) of Existing	
Square Footage (All Floors) of Proposed	Square Footage (Footprint Only) of Proposed	
What is the height difference between the ground & the proposed building's lowest exterior opening (e.g. door, window, vent)?		
Basement/Cellar Proposed Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Crawlspace Proposed Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Deck/Porch Proposed Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Equipment to be Used (e.g. excavator, bulldozer, etc.) excavator & Bulldozer		
Any Other Relevant Information		

COMPLETE IF FILLING, GRADING OR EXCAVATION ARE PROPOSED

Purpose of Filling/Grading/Excavation see cut and fill plan	
Intended Use of Land When Finished	
Volume of Fill to Add to Site	Type of Fill and Source
Volume of Fill to Remove from Site	Excess Fill or Spoil Relocated To
How much higher or lower will the proposed ground elevation be compared to existing?	

(See Other Side)

EROSION AND SEDIMENT CONTROL

Proposed Method(s) of Erosion and Sediment Control During and After Construction

PLANS

A site plan must be included with your application. Check each box to confirm it is on the plans:
(One copy of each plan or drawing is to be submitted. Additional copies must be provided if requested by the SVCA).

- 1. Property dimensions.
- 2. Nearest streets, roadways, laneways etc.
- 3. Watercourses on or near the property.
- 4. Existing buildings and structures and distance to lot lines, centre of road, watercourse etc.
- 5. Proposed building or structure and dimensions including decks or porches.
- 6. Proposed location of filling, area of excavation, dimensions and depths (if applicable).
- 7. Elevation of finished floor, basement/crawlspace, any windows, doors, vents, or other exterior openings in relation to finished grade
- 8. Septic bed including mantle (if applicable).
- 9. North arrow.
- 10. Other relevant site features.

Additional plans or drawings should be included showing side views, cross-section, building foundation (if applicable) and details.

IMPORTANT INFORMATION

- No work can be carried out until a permit is issued by the SVCA and all other necessary approvals are obtained.
- A non-refundable Application Review Fee must be paid when the application is submitted to the SVCA office. Several methods of payment are accepted. Cheques may be made payable to "Saugeen Valley Conservation Authority".
- The applicant is responsible for obtaining any other agency, government or municipal approvals as may be required.
- The information obtained on this application is a public record collected under the authority of the *Conservation Authorities Act* and is accessible upon request in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*.

DECLARATION

Read Carefully Before Signing

- I declare the information in this application to be true;
- I agree to allow authorized representatives of the SVCA to enter onto the property to review this application;
- I recognize and accept that the information in this application is a public record and some or all of it may be released; and
- I understand that the payment of the fee does not guarantee permission from the SVCA.

Applicant Name (Print) X Cleon Martin

Applicant Signature* X _____ Date 2024.04.29

** Typed name will indicate a signature on digital applications.*

DO NOT WRITE IN THIS SPACE	
Fee Amount Received	Date Application Received



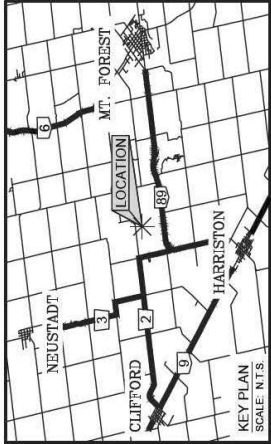
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Appendix B

Drawings

Plan and Profile	1 of 2
Details	2 of 2



NOTES

1. This drawing is the exclusive property of R. J. Burnside & Associates Limited. The reproduction of any part without prior written consent of this office is strictly prohibited.
2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
4. All property lines are approximate and for information purposes only.



No.	Issue / Revision	Date	Auth.
1	ISSUED FOR ENGINEERS REPORT	2024/05/28	GN

BURNSIDE

R.J. Burnside & Associates Limited
 449 Josephine St., P.O. Box 10
 Wingham, Ontario, N0G 2W0
 telephone 1-800-265-9662
 web www.rjburnside.com



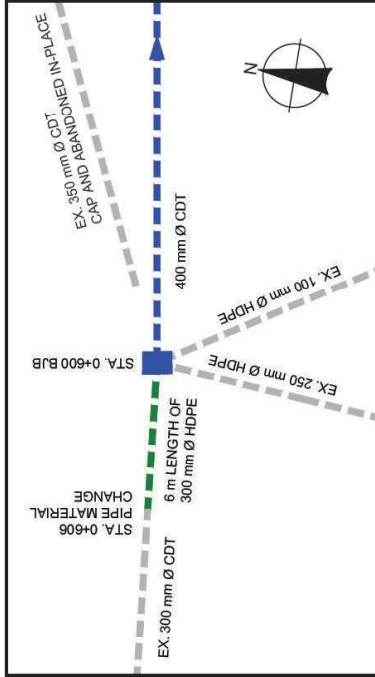
TOWN OF MINTO
 5941 HIGHWAY 89
 HARRISTON, ONTARIO
 N0G 1Z0

Drawing Title
MINTO DRAIN 104
BRUBACHER MINOR IMPROVEMENT 2024
DETAILS

Drawn	Checked	Date	Drawing No.
EP	GN	2024/05/28	20F2
Scale	Project No.		
AS SHOWN	3000558548		

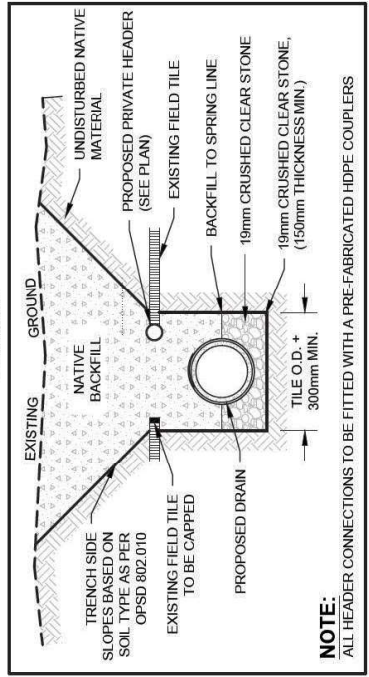
CONNECTION DETAIL (BJB STA. 0+600)

SCALE: N.T.S.



TYPICAL INSTALLATION TECHNIQUE

SCALE: N.T.S.



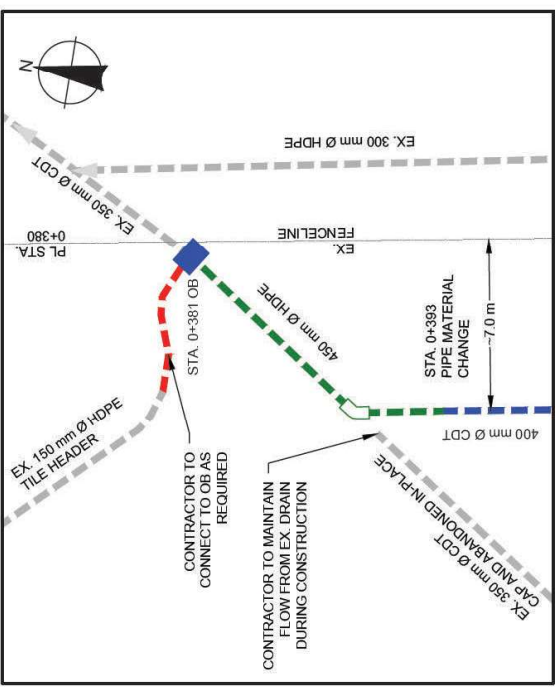
NOTE:
 ALL HEADER CONNECTIONS TO BE FITTED WITH A PRE-FABRICATED HDPE COUPLERS

STRUCTURE NOTES:

1. ANY VARIATION FROM THE ELEVATIONS AND DIMENSIONS OF THESE STRUCTURES MUST BE APPROVED BY THE ENGINEER.
2. STRUCTURES NOT MANUFACTURED AS SPECIFIED MAY BE REJECTED FOR USE AND SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL ABOVE GRADE STRUCTURES SHALL HAVE A MINIMUM SUMP OF 300mm UNLESS OTHERWISE NOTED.
4. ALL ABOVE GRADE STRUCTURES SHALL HAVE BIRDGRATE GRATES TO SUIT.
5. ALL ABOVE GRADE STRUCTURES ARE TO HAVE POSTS AND MARKERS.
6. ALL GRATES AND COVERS SHALL BE FASTENED TO THE STRUCTURE IN AN APPROVED MANNER.
7. WHERE 900mm X 1200mm STRUCTURES ARE SPECIFIED, THE MUNICIPAL DRAIN INLETS AND OUTLETS SHALL BE INSTALLED IN THE 1200mm WALLS AND THE PLUGGED INLETS SHALL BE IN THE 900mm WALLS, UNLESS NOTED OTHERWISE.
8. ALL STRUCTURES SHALL BE CAST WITH A MINIMUM OF A 150mm HIGH RISER SECTION TO ALLOW FOR ADJUSTMENT OF THE TOP ELEVATION TO SUIT FIELD CONDITIONS, ACCORDINGLY NO MONOLITHIC STRUCTURES WILL BE PERMITTED.
9. BURIED JUNCTION BOXES SHALL EXTEND A MINIMUM 150mm FROM THE TOP OF THE PIPE TO THE BASE OF THE CONCRETE UD. THE TOP OF UD SHALL HAVE A MINIMUM 0.6 m OF COVER.
10. THE FOLLOWING SHALL BE USED TO DENOTE VARIOUS CONNECTION TYPES: CATCHBASIN (CB), DITCH INLET CATCH BASIN (DICB), OBSERVATION BOX (OB), BURIED JUNCTION BOX (BJB).
11. THE CONTRACTOR SHALL INSTALL ALL TILE CONNECTIONS AS SHOWN COMPLETE WITH PARING ON THE INTERIOR AND EXTERIOR OF THE STRUCTURE.

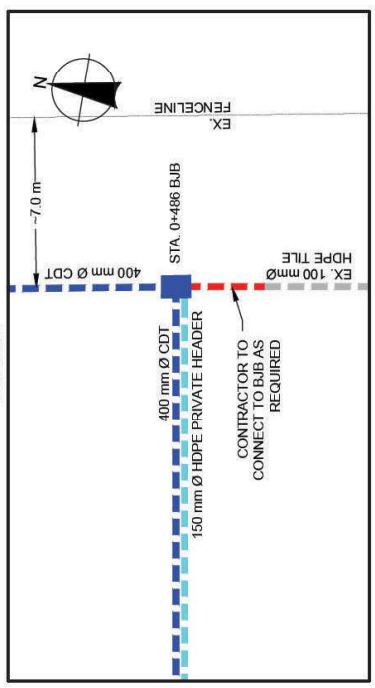
CONNECTION DETAIL (OB STA. 0+381)

SCALE: N.T.S.



CONNECTION DETAIL (BJB STA. 0+486)

SCALE: N.T.S.



PIPE NOTES:

1. ALL CONCRETE DRAINAGE TILE (CDT) SHALL BE NON-REINFORCED 2000D RATED, OR APPROVED EQUAL.
2. ALL HIGH DENSITY POLYETHYLENE (HDPE) PIPE SHALL BE DUAL-WALL, 320 kPA PIPE STIFFNESS AND CONFORM WITH OPSS MUNI 1840, OR APPROVED EQUAL UNLESS STATED OTHERWISE.
3. THE CONTRACTOR SHALL STRIP THE TOPSOIL FROM THE AREA OF EXCAVATION PRIOR TO THE INSTALLATION OF NEW TILE. TOPSOIL SHALL BE STOCKPILED SEPARATELY FROM THE NATIVE SUBSOIL.
4. ALL TILE JOINTS SHALL BE WRAPPED IN A NON-WOVEN TERRAFIX 200R (OR EQUIVALENT) AND CONFORM WITH OPSS MUNI 1860.
5. PROPOSED PRIVATE TILE HEADER SHALL BE 150mm FLEXIBLE PERFORATED HDPE ASTM F667 CERTIFIED PIPE AND ALL JOINTS TO BE PRE-FABRICATED COUPLERS

