

**DRAINAGE REPORT
FOR**

**NEW ACCESS BRIDGE ON
PT. LOT 17, CONCESSION 11
OVER THE
11TH CONCESSION DRAIN
(BALKWILL BRIDGE)**

**IN THE
TOWN OF TECUMSEH**



FINAL
10 DECEMBER 2024
OLIVER E. T. MOIR, P. ENG.
FILE No. 24-9049
TECUMSEH FILE No. E09EL(35)

File No. 24-9049

Mayor and Council
Town of Tecumseh
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**Drainage Report for
New Access Bridge on
Pt. Lot 17, Concession 11 over the
11TH CONCESSION DRAIN (BALKWILL BRIDGE)
In the Town of Tecumseh**

Mayor and Council:

Instructions

The Municipality received a request from the landowner of property, Roll No. 560-04005 for a new access bridge to serve a proposed residential lot along County Road No. 43 on Pt. Lot 17, Concession 11 over the 11th Concession Drain on the 26th day of June 2024. Council accepted the request under Section 78(1) of the Drainage Act and on the 13rd day of August 2024 appointed Dillon Consulting Limited to prepare a report.

Watershed Description

The 11th Concession Drain is an open drain commencing in the South Pt. Lot 17, Concession 11. The drain flows in a northerly direction along the east side of County Road No. 43 (11th Concession Road) and turns easterly along the southerly limit of County Road No. 42 to its outlet into the Klondyke Drain.

The lands comprising the watershed are predominantly under intensive agricultural production with cash crops. There are several non-agricultural residential parcels in the watershed. There is little topographic relief. From the Ontario Soil Survey, the principle surficial soil in the study area is described as Brookston Clay, which is considered to have very poor drainage.

On-Site Meeting

An on-site meeting was held on 20 September 2024. A record of the meeting is provided in Schedule 'A-1', which is appended hereto.



Drain History

The recent history of Engineers' reports for the 11th Concession Drain is as follows:

- **10 February 2014 by Mark D. Hernandez, P.Eng.:** The report recommended the incorporation of a private access culvert on Pt. Lots 19 & 20, Concession 11 as part of the 11th Concession Drain.
- **13 April 2006 by Tim R. Oliver, P.Eng.:** The report recommended the installation of a secondary access culvert for Roll No. 560-05400 under emergency provisions of the Drainage Act.
- **4 April 2000 by Lou Zarlenga, P.Eng.:** The report recommended a new farm access culvert and enclosure for Roll No. 560-04100. This report is an addendum to the 1998 report.
- **25 September 1998 by Lou Zarlenga, P.Eng.:** The report recommended the repair and improvement including widening and deepening of the open drain and the lowering and replacement of multiple access culverts.
- **16 September 1976 by Maurice Armstrong, P.Eng.:** The recommended work included the cleaning of the entire 11th Concession Drain.

Survey

Our topographic survey and examination of the 11th Concession Drain was carried out in October 2024. The topographic data was recorded for both upstream and downstream of the proposed site for the new access culvert.

Design Considerations

A Guide for Engineers working under the Drainage Act in Ontario, OMAFA Publication 852 (2018) is the current reference document used by engineers carrying out drainage work on municipal drains under the Act. The 2-year design storm is the recommended design standard applied to municipal drains within rural Ontario specific to open drain channels and low hazard agricultural field access crossings. We have applied this criterion for the proposed 11th Concession Drain bridge.

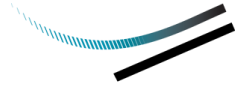
The new access culvert is designed for an upstream drainage area of approximately 1.32 hectares (3.26 acres). The size of the new culvert required is 450 mm diameter and the length designed to be 12.0 m long to accommodate a minimum 6.1 m (20 ft) top width and sloping end treatment. The culvert depth is designed to provide a minimum 10% embedment of the pipe invert below the drain bottom.

Allowances

In accordance with Sections 29 and 30 of the Drainage Act, we do not anticipate any agricultural lands being damaged or used as a result of the proposed drainage works. Any damage to the roadway or the existing grassed areas shall be restored to original conditions as part of the work. Therefore, 'Schedule B' for allowances has not been included in this report.

Recommendations and Cost Estimate

Based on our review of the history, the information obtained during the site meeting and our examination and analysis of the survey data, we recommend that the 11th Concession Drain be improved as described below:



Item	Description	Amount
1.	Mobilization and demobilization.	\$2,000.00
2.	Supply and installation of a new 12.0 m long, 450 mm diameter corrugated, solid, high-density polyethylene (HDPE) smooth wall, 320 kPa pipe, (Boss 2000 or approved equivalent) with gasketing joining system (see specifications). The work shall include site cleanup and restoration within the working area.	\$1,800.00
3.	Supply and install clear stone bedding materials (minimum 150 mm thickness) with filter fabric underlay (approximately 5 tonnes).	\$300.00
4.	Supply and install full compacted Granular 'B' and materials to the underside of the driveway material. (approximately 15 tonnes).	\$500.00
5.	Supply and placement of imported clean native backfill material for outside driveway portion to construct 500 mm wide buffer strips (approximately 20 m ³).	\$350.00
6.	Supply and install Granular 'A' (crushed limestone) driveway surface, minimum 200 mm thickness (approximately 20 tonnes) to provide a minimum 6.1 m (20 feet) wide driveway.	\$1,000.00
7.	Supply and placement of stone erosion protection for sloping end walls, minimum 300 mm thickness, c/w filter fabric underlay (approximately 10 m ²).	\$850.00
8.	Temporary silt control measures during construction.	<u>\$500.00</u>
	SUB-TOTAL	\$7,300.00
9.	Survey, report, assessment, and final inspection.	\$7,500.00
10.	Part time construction observation.	\$1,000.00
11.	Expenses and Incidentals.	\$500.00
12.	ERCA application review and permit fee.	<u>\$500.00</u>
	TOTAL ESTIMATE (excluding Net HST)	\$16,800.00

The estimate provided in this report was prepared according to current materials and installation prices as of the date of this report. In the event of delays from the time of filing of the report by the Engineer to the time of tendering the work, it is understood that the estimate of cost is subject to inflation. The rate of inflation shall be calculated using the Consumer Price Index applied to the cost of construction from the date of the report to the date of tendering.

Assessment of Costs

The individual assessments are comprised of three (3) assessment components:

- i. Benefit (*advantages relating to the betterment of lands, roads, buildings, or other structures resulting from the improvement to the drain*).
- ii. Outlet Liability (*part of cost required to provide outlet for lands and roads*).
- iii. Special Benefit (*additional work or feature that may not affect function of the drain*).

We have assessed the estimated costs against the affected lands and roads as listed in Schedule 'C' under "Value of Special Benefit," "Value of Benefit" and "Value of Outlet." Since there is only one Special Benefit assessment, a separate schedule for Details of Special Benefit (Schedule 'D') is not required or included herein.

Assessment Rationale

The proposed access would be considered a secondary access to the property Roll No. 560-04005, until at which time the proposed lot severance is completed. For the purpose of assessment of the construction costs, 100% of the costs shall be assessed against Roll. No. 560-04005 as listed under the "Value of Special Benefit".

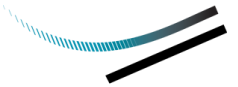
Utilities

It may become necessary to temporarily or permanently relocate utilities that may conflict with the construction recommended under this report. In accordance with Section 26 of the Drainage Act, we assess any relocation cost against the public utility having jurisdiction. Under Section 69 of the Drainage Act, the public utility is at liberty to do the work with its own forces, but if it should not exercise this option within a reasonable time, the Municipality will arrange to have this work completed and the costs will be charged to the appropriate public utility.

Future Maintenance

We recommend that all future work for repair and maintenance on the new access bridge be carried out by the Municipality and assessed 50% against the affected property (Roll No. 560-04005)(severed parcel) as a Special Benefit assessment and the remaining 50% assessed to the upstream lands and roads as Outlet liability assessment in the same relative proportions as to the amounts listed in Schedule 'E' which represents an assessment schedule for future maintenance.

The assessment is based on an arbitrary \$10,000 in future maintenance costs. These provisions for maintenance are subject, of course, to many variations that may be made under the authority of the Drainage Act.



Drawings and Specifications

Attached to this report is Schedule 'F', which are Specifications setting out the details of the recommended works and Schedule 'G' which represent the drawings that are attached to this report.

Page 1 of 2 – Watershed Plan

Page 2 of 2 – Bridge Details

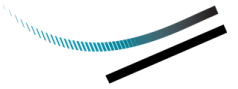
Approvals

The construction and/or improvement to a drainage works, including repair and maintenance activities, and all operations connected therewith are subject to the approval, inspection, by-law, and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced by the proposed works. Prior to any construction or maintenance works, the Municipality or proponent designated on the Municipality's behalf shall obtain all required approvals/permits and confirm any construction limitations including timing windows, mitigation/off-setting measures, standard practices or any other limitations related to in-stream works.

In terms of a review of the proposed works by the Department of Fisheries and Oceans (DFO), we have undertaken a self-assessment and have determined that application requesting review is not required. The 11th Concession Drain has been classified as a "Type F" drain by DFO and the impact zone representing 1km downstream of the proposed works is also classified as a "Type F" drain. Type F drains experience intermittent water flow only and provide minimal habitat for fish. As part of the work the following mitigation measures shall be implemented to avoid any adverse effects to the waterway.

- Works will not be conducted at times when flows are elevated due to the local rain events, storms, or seasonal floods. Work will be done in the dry.
- All disturbed soils on both banks and within the channel, including spoil must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better conditions to what existed prior to the works.
- To prevent sediment entry into the drain, in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and his/her contractors to ensure that sediment and erosion control measures are functioning and are maintained/upgraded as required.
- All activities should be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water. Vehicular refueling and maintenance should be conducted away from the water.

The 11th Concession Drain may provide habitat to species at risk listed as listed under the Endangered Species Act.



The Town of Tecumseh has developed a mitigation plan document recommending mitigation measures to minimize adverse effects on species at risk including monitoring and reporting requirements should an endangered, threatened, or special concern species (fishes, reptiles, amphibians, mollusks, birds, plants, trees) be encountered. The document will be made available to contractors during the tendering process and construction period.

In terms of review by the Essex Region Conservation Authority (ERCA), the proposed works contained herein were previously reviewed and accepted by the ERCA, refer to Schedule 'A-2'. An application for permit shall be submitted by the Municipality and accompanied by payment for the permit review fee of \$500.00 before construction of the new access bridge proceeds.

Grants

In accordance with the provisions of Sections 85, 86 and 87 of the Drainage Act, a grant in the amount of 33-1/3 percent of the assessment eligible for a grant may be made in respect to the assessment made under this report upon privately owned lands used for agricultural purposes. The assessments levied against privately owned agricultural land must also satisfy all other eligibility criteria set out in the Agricultural Drainage Infrastructure Program policies. Costs of drainage works associated with non-agricultural uses are not eligible for grant in accordance with Section 85 of the Drainage Act and Section 2.2(c) of the OMAFA Agricultural Drainage Infrastructure Program policies.

Respectfully submitted,



DILLON CONSULTING LIMITED

Oliver E.T. Moir, P.Eng.

OEM:wlb:lld



Meeting Summary

Subject: 11th Concession Drain
 Date: 20 September 2024
 Location: 11th Concession Road
 Our File: 24-9049

Attendees

Jamie Balkwill	Landowner
Erica Corey	Landowner
Anne-Marie Moniz	Town of Tecumseh (Town)
Matthew Shiha	Town
Oliver Moir	Dillon Consulting Limited

Notes

Item	Discussion	Action by
1.	Introductions:	
1.1.	The Town appointed Dillon on the 11 th Concession Drain under Section 78 of the Drainage Act to prepare the drainage report for a new residential access culvert.	INFO
2.	Project Background:	
2.1.	The property, Roll No. to be determined, requires access over the 11 th Concession Drain for a proposed residential property. There is no existing access as the property is yet to be severed from the existing farm parcel.	INFO
3.	Project Pathway:	
3.1.	Dillon explained the Drainage Act process: <ul style="list-style-type: none"> • A request under Section 78 of the Drainage Act is submitted to the Town. • The Engineer is appointed by the Town through Council. • The on-site meeting is held for the engineer to gather information from landowners. • Topographic survey is completed, and a report is prepared. • A Public Information Centre (PIC) meeting is held prior to the Meeting to Consider to give landowners the opportunity to provide comment on the report. • A meeting is held to consider the technical aspects of the report (Meeting to Consider). • A meeting is held to consider the assessment (cost sharing) aspects of the report (Court of Revision). • Following passing of the by-law, the drainage works are put out to tender. 	INFO

Item	Discussion	Action by
4.	<p data-bbox="383 247 626 275">General Discussions</p> <ul style="list-style-type: none"> <li data-bbox="397 296 1292 485">● Mr. Balkwill was informed that for new culverts over a municipal drain, 100% of the costs of construction and engineering are at the cost of the requesting landowner. Previous drainage works for similar requests have been in the range of \$25,000 - \$30,000 (construction & engineering). <li data-bbox="397 499 1292 978">● The following design aspects were discussed: <ul style="list-style-type: none"> <li data-bbox="493 541 1292 772">○ The culvert location is to be within the southerly quarter of the new lot's frontage. Mr. Balkwill can place a stake at the time of construction to define the centerline of the culvert. Sufficient space must be maintained between the new culvert and the existing hydrant access culvert located near the south limit of the proposed lot. <li data-bbox="493 787 1240 814">○ Driveway material is to be Granular 'A' (crushed limestone). <li data-bbox="493 829 906 856">○ End walls will be sloping stone. <li data-bbox="493 871 1292 978">○ Top width will be 6.1m (20') unless requested otherwise. 6.1 m top width is standard for residential access culverts over municipal drains. <li data-bbox="397 993 1292 1140">● Mr. Balkwill requested a cost estimate for an additional 5 to 10 feet of top width. He was informed that future maintenance costs associated with the additional culvert length beyond the standard 6.1 m would not be shared with upstream lands. <li data-bbox="397 1155 1292 1386">● The Town informed Mr. Balkwill that the construction work can be undertaken by a contractor of their choosing but a list of prerequisites must be completed, and evidence of previous construction experience must be presented. <ul style="list-style-type: none"> <li data-bbox="493 1318 1235 1386">○ Mr. Balkwill has a contractor that he would like to consider completing the works. <li data-bbox="397 1400 1203 1428">● Mr. Balkwill requested the report proceed as quickly as possible. <li data-bbox="397 1442 1273 1512">● Grants through A.D.I.P. are not available for this project being that the works are associated with a residential development/non-agricultural. <li data-bbox="397 1526 1292 1598">● Dillon will provide part-time construction observation and will complete a final inspection. 	INFO

Errors and/or Omissions

These minutes were prepared by Oliver Moir, who should be notified of any errors and/or omissions.

**SCHEDULE 'A-2'**

Owen, Jerome <jowen@dillon.ca>

Application for Permit - 11th Concession Drain - Balkwill Bridge (Town of Tecumseh)

Summer Locknick <SLocknick@erca.org>

Mon, Dec 2, 2024 at 7:51 AM

To: "Moir, Oliver" <omoir@dillon.ca>

Cc: Jerome Owen <jowen@dillon.ca>, Matthew Shiha <mshiha@tecumseh.ca>, Anne-Marie Moniz <amoniz@tecumseh.ca>, "249049@dillon.ca" <249049@dillon.ca>

Good morning Oliver,

Thank you for the below confirmation and for providing the attached preliminary drawings for the 11th Concession Drain culvert, Project No. 24-9049. I've had an opportunity to review the preliminary drawings and the available information and can confirm that this proposal, as presented in the preliminary stages, is something that this office can support.

We look forward to receiving the Final Drainage Report and Drawings. A completed Application for Permit form will be required from the municipality.

If you have any questions, please do not hesitate to contact this office.

[Quoted text hidden]

**11th Concession - ERCA Application Supporting Documents (1).pdf**

742K

"SCHEDULE C"
SCHEDULE OF ASSESSMENT
11th CONCESSION (BALKWILL BRIDGE)
TOWN OF TECUMSEH

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
560-04005 (Severed Parcel)	11	Pt. Lot 17	0.32	0.13	Jamie A. & Corey Balkwill	\$16,800.00	\$0.00	\$0.00	\$16,800.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$16,800.00	\$0.00	\$0.00	\$16,800.00
TOTAL ASSESSMENT						\$16,800.00	\$0.00	\$0.00	\$16,800.00
			(Acres)	(Ha.)					
Total Area:			0.32	0.13					

"SCHEDULE E"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE
11th CONCESSION (BALKWILL BRIDGE)
TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
	(Acres)	(Ha.)					
County Road No. 43 (11th Conc. Rd)	0.25	0.10	County of Essex	\$0.00	\$0.00	\$1,263.00	\$1,263.00
Total on Municipal Lands.....				\$0.00	\$0.00	\$1,263.00	\$1,263.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
560-04005 (Severed Parcel)	11	Pt. Lot 17	0.32	0.13	Jamie A. & Corey Balkwill	\$5,000.00	\$0.00	\$985.00	\$5,985.00
560-04001	11	Pt. Lot 17	1.00	0.40	Jamie Balkwill	\$0.00	\$0.00	\$1,010.00	\$1,010.00
560-04005 (Retained Parcel)	11	Pt. Lot 17	1.70	0.69	Jamie A. & Corey Balkwill	\$0.00	\$0.00	\$1,742.00	\$1,742.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$5,000.00	\$0.00	\$3,737.00	\$8,737.00

TOTAL ASSESSMENT						\$5,000.00	\$0.00	\$5,000.00	\$10,000.00
			(Acres)	(Ha.)					
Total Area:			3.28	1.32					

” SCHEDULE F”
DRAINAGE REPORT FOR A
NEW ACCESS BRIDGE ON
PT. LOT 17, CONCESSION 11
11TH CONCESSION DRAIN
IN THE TOWN OF TECUMSEH
SPECIAL PROVISIONS

1.0 GENERAL SPECIFICATIONS

The General Specifications attached hereto is part of “Schedule F.” It also forms part of this specification and is to be read with it, but where there is a difference between the requirements of the General Specifications and those of the Special Provisions which follow, the Special Provisions will take precedence.

2.0 DESCRIPTION OF WORK

The work to be carried out under this Contract includes, but is not limited to, the supply of all **labour, equipment and materials** to complete the following items:

- Mobilization and demobilization.
- Supply and installation of a new 12.0 m long, 450 mm diameter corrugated, solid, high-density polyethylene (HDPE) smooth wall, 320 kPa pipe, (Boss 2000 or approved equivalent) with gasketting joining system (see specifications). The work shall include site cleanup and restoration within the working area.
- Supply and install clearstone bedding materials (minimum 150 mm thickness) with filter fabric underlay (approximately 5 tonnes).
- Supply and install full compacted Granular ‘B’ and materials to the underside of the driveway material. (approximately 15 tonnes).
- Supply and placement of imported clean native backfill material for outside driveway portion to construct 500 mm wide buffer strips (approximately 20 m³).
- Supply and install Granular ‘A’ (crushed limestone) driveway surface, minimum 200 mm thickness (approximately 20 tonnes) to provide a minimum 6.1 m (20 feet) wide driveway.
- Supply and placement of stone erosion protection for sloping end walls, minimum 300 mm thickness, c/w filter fabric underlay (approximately 10 m²).
- Temporary silt control measures during construction.

3.0 ACCESS TO THE WORK

Access to the drain shall be from County Road No. 43 (11th Concession Road). Through traffic must be maintained at all times along municipal roads with the required traffic control as per Section 13.0 in the General Specifications. All construction materials for the bridge are to be stored on the field side of the 11th Concession Drain.

4.0 WORKING AREA

The working area at the bridge site shall be restricted to a radius of 20.0 m from the proposed centre of the new culvert.

Any damages to lands and/or roads from the Contractor's work within the working areas for the bridge sites shall be rectified to pre-existing conditions at his/her expense.

5.0 BRIDGE CONSTRUCTION

5.1 Location of New Bridge

The new bridge structure shall be located and installed as shown on the drawings attached hereto.

5.2 Materials for New Bridge

Materials shall be as follows:

<i>Culvert</i>	<i>New 450 mm diameter solid (non-perforated) corrugated High Density Polyethylene (H.D.P.E.) smooth wall interior (Armtec Boss 2000 or approved equivalent) unless otherwise specified conforming to the following specifications: ASTM @3350, CSA B182.8-02 and OPSS 1840. The pipe is to provide a minimum pipe stiffness of 320 kPa. Joined using (water tight) "bell and spigot" connection type. No single pipe length to be less than 6 metres in length.</i>
<i>Bedding Below Pipe</i>	<i>19 mm clear stone conforming to OPSS Division 10.</i>
<i>Pipe Backfill to underside of road surface materials</i>	<i>Granular 'B' conforming to OPSS Division 10.</i>
<i>Driveway Surface</i>	<i>Granular 'A' made from crushed limestone conforming to OPSS Division 10. Minimum 200 mm thickness.</i>
<i>Filter Fabric</i>	<i>"Non-Woven" geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC or approved equivalent.</i>
<i>Buffer Strips</i>	<i>Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances.</i>
<i>Erosion Stone</i>	<i>All stone to be used for erosion protection shall be 125 – 250 mm clear quarried rock or OPSS 1001, minimum 300 mm thickness.</i>

5.3 Culvert Installation

Suitable dykes shall be constructed in the drain so that the installation of the culvert can be accomplished in the dry. The drain bottom shall be cleaned, prepared, shaped and compacted to suit the new culvert configuration, as shown on the drawings. Granular materials shall be compacted to 100% of their maximum dry density; imported clean native materials shall be supplied, placed and compacted to 95% of their maximum dry density. The Contractor shall note that imported native materials are required for backfill of the new bridge culvert, and the costs shall be included as part of the work.

5.4 Sloping Stone End Walls

End walls shall be constructed of quarry stone rip-rap, as specified herein. Each end wall shall extend from the invert of the new culvert to the top of the proposed lane. The end walls shall be sloped 1 vertical to 1.5 horizontal with a filter fabric underlay surrounding the pipe and spanning across the entire width of the drain and wrapping around the drain banks to align with the ends of the new pipe culvert. The minimum thickness requirement of the erosion stone layer is 300 mm with no portion of the filter fabric to be exposed to sunlight.

5.5 Granular 'A' Driveway

The Contractor shall construct the driveway with a maximum 3% cross-fall grade consisting of a minimum 200 mm thickness of compacted Granular 'A' (crushed limestone) surface. The minimum top width of the driveway shall be as shown on the drawings.

5.6 Lateral Tile Drains

Should the Contractor encounter any lateral tiles within the proposed culvert limits not shown on attached drawings, the Contractor shall re-route the outlet tile drain(s) in consultation with the Drainage Superintendent, as required, to accommodate the new culvert. **Tile drain outlets through the wall of the new culvert pipe will not be permitted.** All costs associated with re-routing lateral tile drains (if any) shall be at the Contractor's expense.

5.7 Site Cleanup and Restoration

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.

GENERAL SPECIFICATIONS

1.0 AGREEMENT AND GENERAL CONDITIONS

The part of the Specifications headed "Special Provisions" which is attached hereto forms part of this Specification and is to be read with it. Where there is any difference between the requirements of this General Specification and those of the Special Provisions, the Special Provisions shall govern.

Where the word "Drainage Superintendent" is used in this specification, it shall mean the person, or persons appointed by the Council of the Municipality having jurisdiction to superintend the work.

Tenders will be received, and contracts awarded only in the form of a lump sum contract for the completion of the whole work or of specified sections thereof. The Tenderer agrees to enter into a formal contract with the Municipality upon acceptance of the tender. The General Conditions of the contract and Form of Agreement shall be those of the Stipulated Price Contract CCDC2-Engineers, 1994 or the most recent revision of this document.

2.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

Each tenderer must visit the site and review the plans and specifications before submitting his/her tender and must satisfy himself/herself as to the extent of the work and local conditions to be met during the construction. Claims made at any time after submission of his/her tender that there was any misunderstanding of the terms and conditions of the contract relating to site conditions, will not be allowed. The Contractor will be at liberty, before bidding to examine any data in the possession of the Municipality or of the Engineer.

The quantities shown or indicated on the drawings or in the report are estimates only and are for the sole purpose of indicating to the tenderers the general magnitude of the work. The tenderer is responsible for checking the quantities for accuracy prior to submitting his/her tender.

3.0 MAINTENANCE PERIOD

The successful Tenderer shall guarantee the work for a period of one (1) year from the date of acceptance thereof from deficiencies that, in the opinion of the Engineer, were caused by faulty workmanship or materials. The successful Tenderer shall, at his/her own expense, make good and repair deficiencies and every part thereof, all to the satisfaction of the Engineer. Should the successful Tenderer for any cause, fail to do so, then the Municipality may do so and employ such other person or persons as the Engineer may deem proper to make such repairs or do such work, and the whole costs, charges, and expense so incurred may be deducted from any amount due to the Tenderer or may be collected otherwise by the Municipality from the Tenderer.

4.0 GENERAL CO-ORDINATION

The Contractor shall be responsible for the coordination between the working forces of other organizations and utility companies in connection with this work. The Contractor shall have no cause of action against the Municipality or the Engineer for delays based on the allegation that the site of the work was not made available to him by the Municipality or the Engineer by reason of the acts, omissions, misfeasance or non-feasance of other organizations or utility companies engaged in other work.

5.0 RESPONSIBILITY FOR DAMAGES TO UTILITIES

The Contractor shall note that overhead and underground utilities such as hydro, gas, telephone and water are not necessarily shown on the drawings. It is the Contractor's responsibility to contact utility companies for information regarding utilities, to exercise the necessary care in construction operations and to take other precautions to safeguard the utilities from damage.

All work on or adjacent to any utility, pipeline, railway, etc., is to be carried out in accordance with the requirements of the utility, pipeline, railway, or other, as the case may be, and its specifications for such work are to be followed as if they were part of this specification. The Contractor will be liable for any damage to utilities.

6.0 CONTRACTOR'S LIABILITY

The Contractor, his/her agents and all workmen or persons under his/her control including sub-contractors, shall use due care that no person or property is injured and that no rights are infringed in the prosecution of the work. The Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect to any injury to persons or property of whatever description and in respect of any infringement of any right, privilege or easement whatever, occasioned in the carrying on of the work, or by any neglect on the Contractor's part.

The Contractor shall indemnify and hold harmless the Municipality and the Engineer, their agents, and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or attributable to the Contractor's performance of the contract.

7.0 PROPERTY BARS AND SURVEY MONUMENTS

The Contractor shall be responsible for marking and protecting all property bars and survey monuments during construction. All missing, disturbed, or damaged property bars and survey monuments shall be replaced at the Contractor's expense, by an Ontario Land Surveyor.

8.0 MAINTENANCE OF FLOW

The Contractor shall, at his/her own cost and expense, permanently provide for and maintain the flow of all drains, ditches and water courses that may be encountered during the progress of the work.

9.0 ONTARIO PROVINCIAL STANDARDS

Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD) shall apply and govern at all times unless otherwise amended or extended in these Specifications or on the Drawing. Access to the electronic version of the Ontario Provincial Standards is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to <http://www.mto.gov.on.ca/english/transrd/>. Under the title Technical Manuals is a link to the Ontario Provincial Standards. Users require Adobe Acrobat to view all pdf files.

10.0 APPROVALS, PERMITS AND NOTICES

The construction of the works and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced in this Contract. The Contractor shall obtain all approvals and permits and notify the affected authorities when carrying out work in the vicinity of any public utility, power, underground cables, railways, etc.

11.0 SUBLETTING

The Contractor shall keep the work under his/her personal control, and shall not assign, transfer, or sublet any portion without first obtaining the written consent of the Municipality.

12.0 TIME OF COMPLETION

The Contractor shall complete all work on or before the date fixed at the time of tendering. The Contractor will be held liable for any damages or expenses occasioned by his/her failure to complete the work on time and for any expenses of inspection, superintending, re-tendering or re-surveying, due to their neglect or failure to carry out the work in a timely manner.

13.0 TRAFFIC CONTROL

The Contractor will be required to always control vehicular and pedestrian traffic along roads and shall, at his/her own expense, provide for placing and maintaining such barricades, signs, flags, lights, and flag persons as may be required to ensure public safety. The Contractor will be solely responsible for controlling traffic and shall appoint a representative to maintain the signs and warning lights at night, on weekends and holidays and at all other times that work is not in progress.

All traffic control during construction shall be strictly in accordance with the **Occupational Health and Safety Act** and the current version of the **Ontario Traffic Manuals**. Access to the electronic version of the **Ontario Traffic Manual** is available online through the MTO website, free of charge to all users.

To access the electronic standards on the Web, go to <http://www.mto.gov.on.ca/english/transrd/>, click on "Library Catalogue," under the "Title," enter "Ontario Traffic Manual" as the search. Open the applicable "Manual(s)" by choosing the "Access Key," once open look for the "Attachment," click the pdf file. Users require Adobe Acrobat to view all pdf files.

Contractors are reminded of the requirements of the Occupational Health and Safety Act pertaining to Traffic Protection Plans for workers and Traffic Control Plan for Public Safety.

14.0 SITE CLEANUP AND RESTORATION

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.

15.0 UTILITY RELOCATION WORKS

In accordance with Section 26 of the Drainage Act, if utilities are encountered during the installation of the drainage works that conflict with the placement of the new culvert, the operating utility company shall relocate the utility at their own costs. The Contractor however will be responsible to co-ordinate these required relocations (if any) and their co-ordination work shall be considered incidental to the drainage works.

16.0 FINAL INSPECTION

All work shall be carried out to the satisfaction of the Drainage Superintendent for the Municipality, in compliance with the specifications, drawings and the Drainage Act. Upon completion of the project, the work will be inspected by the Engineer and the Drainage Superintendent. Any deficiencies noted during the final inspection shall be immediately rectified by the Contractor.

Final inspection will be made by the Engineer within 20 days after the Drainage Superintendent has received notice in writing from the Contractor that the work is completed, or as soon thereafter as weather conditions permit.

17.0 FISHERIES CONCERNS

Standard practices to be followed to minimize disruption to fish habitat include embedment of the culvert a minimum 10% below grade, constructing the work 'in the dry' and cutting only trees necessary to do the work (no clear-cutting). No in-water work is to occur during the timing window unless otherwise approved by the appropriate authorities.



LEGEND

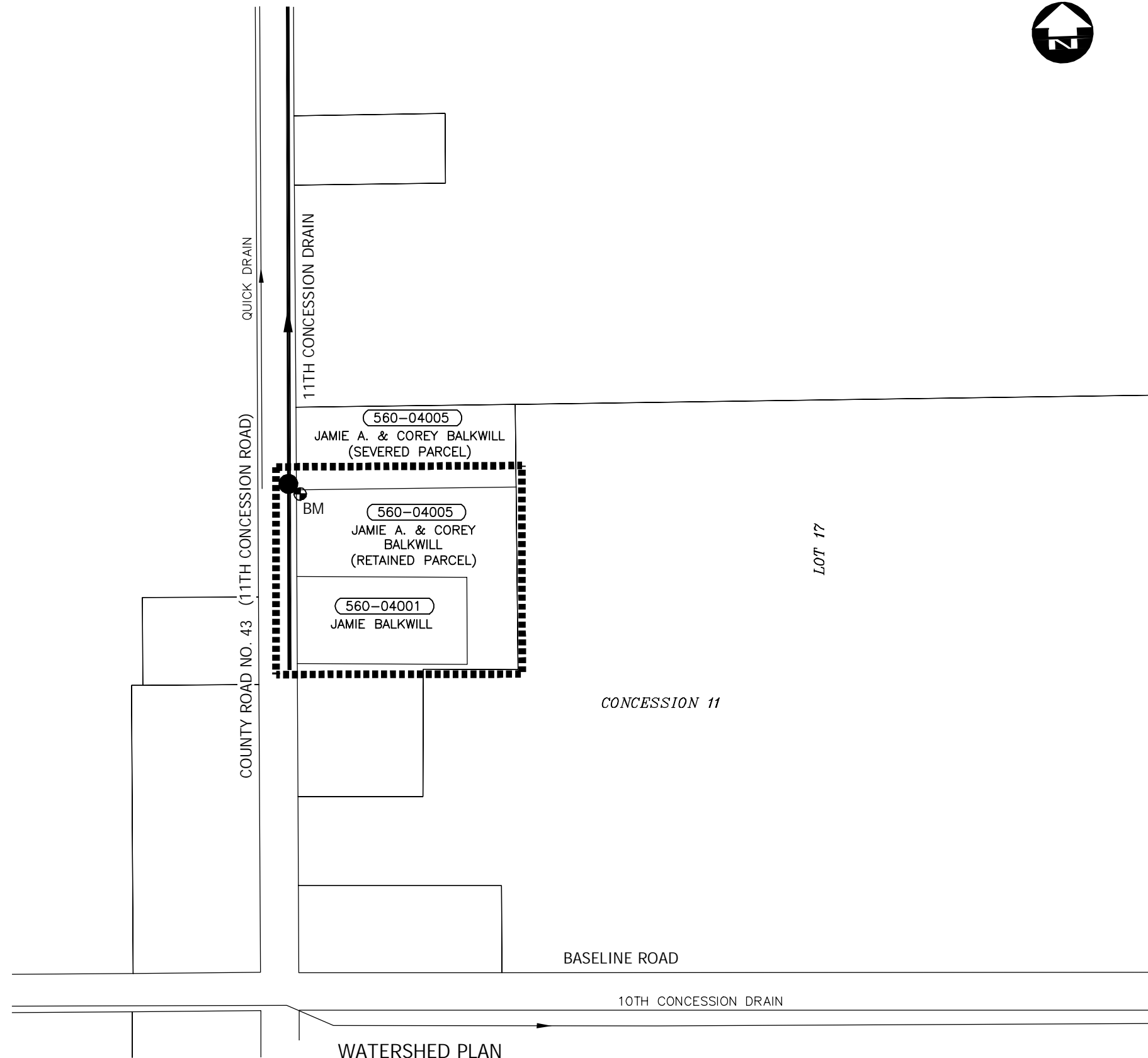
- 11TH CONCESSION DRAIN DRAINAGE AREA
- 11TH CONCESSION DRAIN
- OTHER DRAINS
- NEW BRIDGE
- BM ○ LOCAL BENCHMARK

BENCHMARK

BM1
 TOP OF OPERATING NUT ON FIRE HYDRANT ON EAST SIDE OF COUNTY ROAD NO. 43 LOCATED APPROXIMATELY 255 METRES NORTH OF NORTH LIMIT OF BASELINE ROAD.
 ELEVATION=184.69m

NOTE: CONTRACTOR TO VERIFY BENCHMARKS PRIOR TO CONSTRUCTION.

NOTE: CONTRACTOR SHALL ARRANGE TO HAVE ALL UTILITY LOCATES COMPLETED ONSITE PRIOR TO ANY EXCAVATION WORK. DILLON CONSULTING LIMITED DOES NOT GUARANTEE THE ACCURACY OF THE EXISTING UTILITIES SHOWN ON THE DRAWINGS. CONTRACTOR SHALL VERIFY THE LOCATION PRIOR TO COMMENCING WORK.



WATERSHED PLAN
 SCALE=1:2,500



Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.

No.	ISSUED FOR	DATE	BY
3	FINAL REPORT SUBMISSION	DEC. 10/24	OEM
2	PUBLIC INFORMATION CENTRE	DEC. 5/24	OEM
1	CLIENT REVIEW	NOV. 15/24	OEM

DESIGN	JAO	REVIEWED BY	VJH
DRAWN	WLB	CHECKED BY	OEM
DATE	December 10, 2024		
SCALE	AS SHOWN		

PROJECT NO. 24-9049

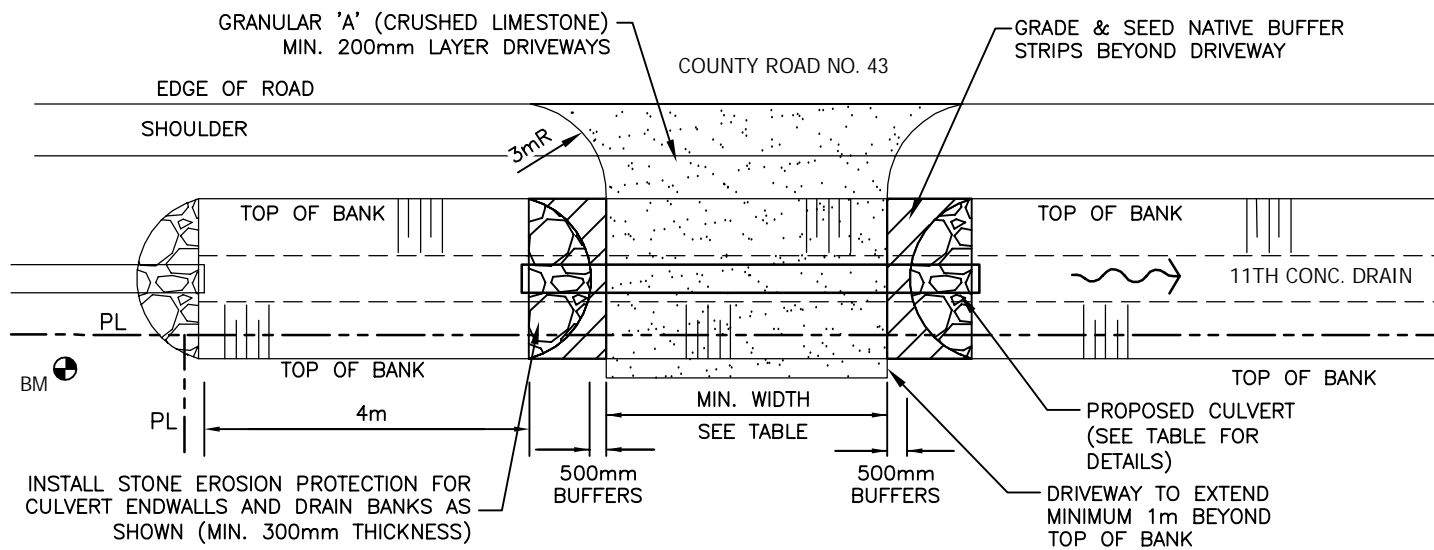
DRAWING SCALES BASED ON A 11" X 17" SHEET

'SCHEDULE G'

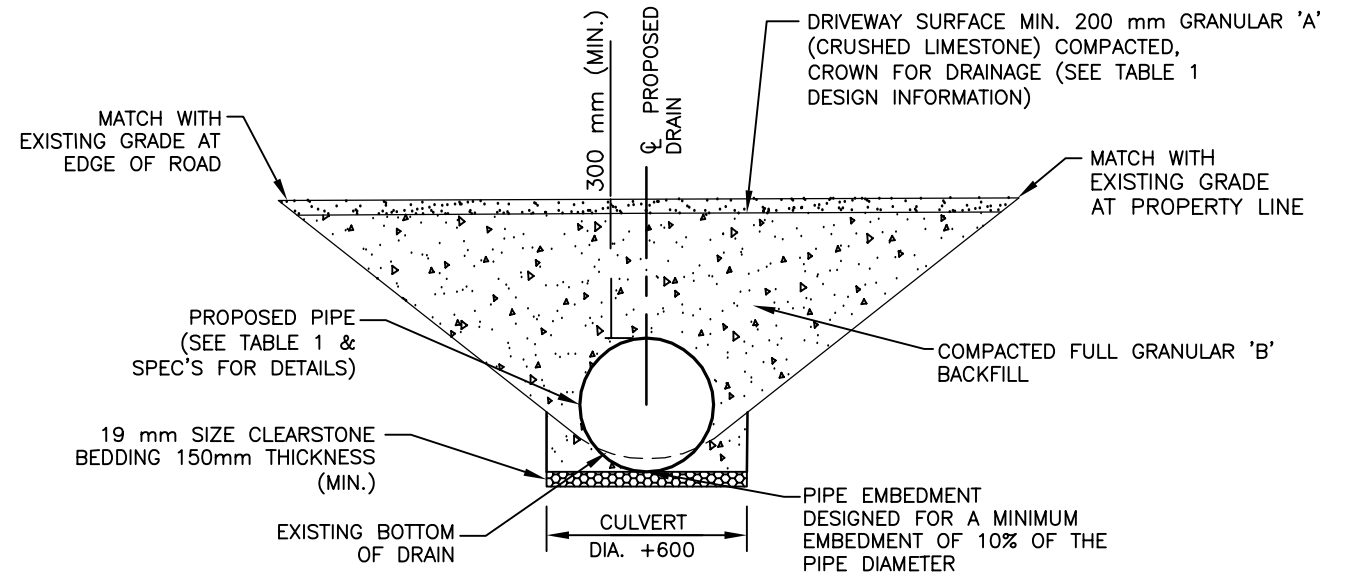
Drainage Report for the
11TH CONCESSION DRAIN
 (Balkwill Bridge)
 Town of Tecumseh

SHEET TITLE **WATERSHED PLAN**

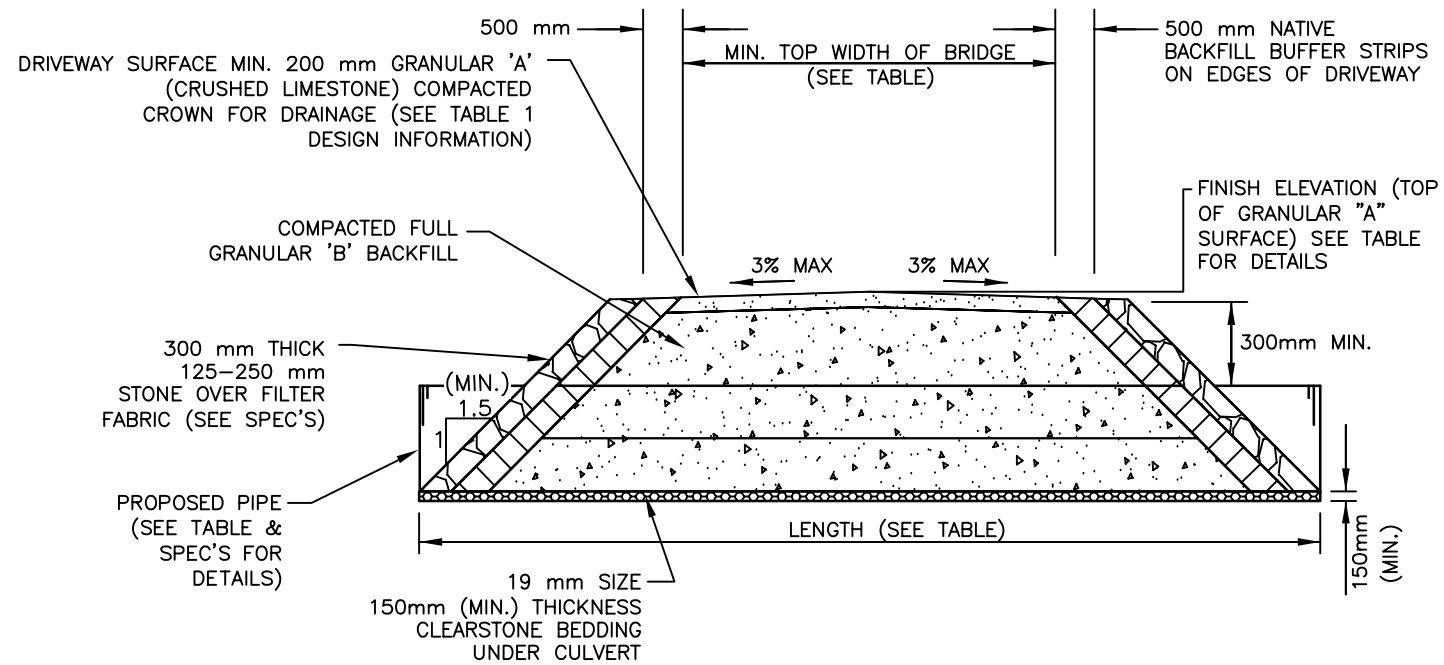
PAGE NO. 1 of 2



RESIDENTIAL BRIDGE PLAN
N.T.S.



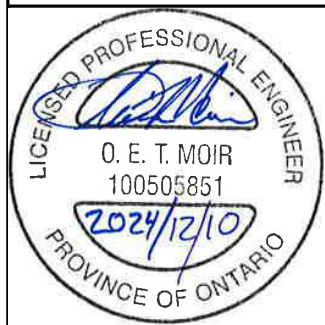
BRIDGE CROSS-SECTION
N.T.S.



BRIDGE LONGITUDINAL SECTION
N.T.S.

NOTE: CONTRACTOR TO CLEAN OUT DRAIN 3m UPSTREAM & DOWNSTREAM OF CULVERT

TABLE 1 - ACCESS BRIDGE DESIGN INFORMATION	
DESCRIPTION	BRIDGE
PIPE INVERT ELEV. U/S SIDE(m)	183.08
PIPE INVERT ELEV. D/S SIDE(m)	183.06
TOP OF C&D DRIVEWAY SURFACE ELEV. (m)	183.98
DRAIN BOTTOM (m) (DESIGN) (AT CENTRELINE OF CULVERT)	183.12
MIN. TOP WIDTH OF DRIVEWAY (m)	6.1
MIN. CULVERT GRADE (%)	0.10
CULVERT MATERIAL	H.D.P.E.
CULVERT LENGTH (m)	12.0
PIPE SIZE (mm)	450
CULVERT ENDWALL TYPE	SLOPING STONE



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DRAWING SCALES BASED ON A 11" X 17" SHEET

'SCHEDULE G'
Drainage Report for the
11TH CONCESSION DRAIN
(Balkwill Bridge)
Town of Tecumseh

SHEET TITLE: **DETAILS**
PAGE NO.: 2 of 2