

**DRAINAGE REPORT
FOR THE**

**NEW FARM BRIDGE ON
PT. LOT 2, CONCESSION 11
OVER THE
EAST MCPHERSON DRAIN
(AL-FARRA BRIDGE)**

**IN THE
TOWN OF TECUMSEH**



FINAL
9 DECEMBER, 2024
OLIVER E. T. MOIR, P. ENG.
FILE No. 24-8532
TECUMSEH FILE No. E09MC(64)

File No. 24-8532

Mayor and Council
Town of Tecumseh
917 Lesperance Rd,
Tecumseh, Ontario
N8N 1W9

**Drainage Report for the
New Farm Bridge on
Pt. Lot 2, Concession 11
Over the
EAST MCPHERSON DRAIN (AL-FARRA BRIDGE)
In the Town of Tecumseh**

Mayor and Council:

Instructions

The Municipality received a request for a new farm access bridge to serve Pt. Lot 2, Concession 11 (Roll No. 400-00800) over the East McPherson Drain, that was filed at the Town Office on the 26th day of October 2023. Council accepted the request under Section 78(1) of the Drainage Act and on the 26th day of January 2024 appointed Dillon Consulting Limited to prepare a report.

Watershed Description

The East McPherson Drain consists primarily of an open channel flowing along the easterly side of 11th Concession Road within the Town of Tecumseh. The drain commences approximately 140 m north of the boundary between Lot 1 and Lot 2, Concession 11. It proceeds northerly for approximately 1,335 m, draining into the South Talbot Road Drain East.

The lands comprising the watershed are predominantly agricultural use with some residential lots. 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 defined as having poor natural drainage.

On-Site Meeting

An on-site meeting was held on 23 July 2024. A record of the meeting is provided in Schedule 'A-1', which is appended hereto.



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Drain History

The recent history of Engineers' reports for the East McPherson Drain is as follows:

- **11 April 2017 H. Pearson, P.Eng.:** The report recommended that the entire length of the East McPherson drain be excavated to remove accumulated sediment and vegetation and that the existing culverts should either be removed, replaced, or be cleaned. Topographic survey was completed to confirm the watershed boundary. The report also determined that approximately 30% of runoff generated from lands on the west side of the 11th Concession Road, which are primarily served by the Santo Drain, flow into the East McPherson Drain through road culverts interconnecting the two drains. This report serves as the governing by-law for the drain.

Survey

Our topographic survey of the East McPherson Drain was carried out in August 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 East McPherson Drain bridge.

The new access culvert is designed for an upstream drainage area of approximately 10.5 hectares (approximately 26.0 acres). Lands on the west side of the 11th Concession Road are primarily served by the Santo Drain, however the East McPherson Drain conveys a portion of flows from the Santo Drain through road culverts which interconnect the two drains, as described in the 2017 East McPherson Drain Report.

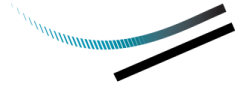
The size of the new culvert required is 750 mm diameter and the length designed to be 20.5 m to accommodate a minimum 12.2 m (40 ft) top width and sloping end treatment. A 12.2 m top width for the bridge is necessary considering the proximity of the road to the drain that limits turning radii of modern farm equipment. The culvert depth is designed to provide a minimum 10% embedment of the pipe invert below the design 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 laneway 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 from our examination and analysis of the survey data, we recommend that the East McPherson Drain be improved as described below:



Item	Description	Amount
1.	Supply and installation of a new 20.5 m long, 750 mm diameter corrugated high density polyethylene (HDPE) Boss 2000 (or approved equivalent), 320kPA including couplers (see specifications). Works includes the relocation of any existing tile downstream of new culvert.	\$7,000.00
2.	Supply and install clear stone bedding materials (minimum 150 mm thickness) with filter fabric underlay under the new culvert pipe (approximately 15 tonnes).	\$900.00
3.	Supply and install full compacted Granular 'B' bedding and backfill materials from the pipe invert to the underside of the driveway material. (approximately 200 tonnes).	\$7,000.00
4.	Supply and installation of imported clean backfill material to be used as a buffer between the Granular 'B' material and stone erosion protection. (Approximately 15 m ³). Work includes supply and placement of topsoil (100 mm thickness), fine grading and seeding of buffers.	\$600.00
5.	Supply and install full compacted Granular 'A' (crushed limestone) compacted driveway surface, minimum 200 mm thickness (approximately 50 tonnes).	\$2,500.00
6.	Supply and install stone erosion protection for sloping end walls, minimum 300 mm thickness, c/w filter fabric underlay (approximately 35 m ²).	\$3,000.00
7.	Temporary silt control measures during construction.	\$500.00
	SUB-TOTAL	\$21,500.00
8.	Survey, report, and assessment.	\$7,500.00
9.	Part-time construction observation and administration.	\$1,500.00
10.	Expenses and Incidentals.	\$500.00
11.	ERCA application review and permit fee.	<u>\$500.00</u>
	TOTAL ESTIMATE (excluding Net HST)	\$ 31,500.00

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

There is no access to property Roll No. 400-00800 across the East McPherson Drain. The present access is owned by the owner of property Roll No. 400-00720. As stated by the requesting landowner, this access will no longer be available for use after October 2024.

Special Benefit assessment shown in Schedule 'C' was therefore derived as follows:

1. For the first time access bridge across East McPherson Drain, costs have been assessed 100% of the adjoining property Roll No. 400-00800 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 future work and repair and maintenance on the new access bridge be carried out by the Municipality and assessed in the same relative proportions as to the amounts listed in Schedule 'E' which represents an Assessment schedule for the future Maintenance.

Considering the current by-law for the East McPherson Drain, we recommend that 75% of the future maintenance costs be assessed against property Roll No. 400-00800 as a Special Benefit assessment and the remaining 25% as an Outlet liability assessment against the upstream lands and roads. A reduced assessment for future maintenance has been considered for lands which have an existing woodlot and/or to lands which are primarily served by the Santo Drain but use the East McPherson Drain as a secondary outlet.

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 East McPherson 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.
- lated 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 East McPherson 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

The costs for a new access to agricultural land which is required because of a nullified access agreement with an adjoining residential land are not eligible for grant, in accordance with Section 2.3(i) of the OMAFA Agricultural Drainage Infrastructure Program policies.

Respectfully submitted,

DILLON CONSULTING LIMITED



Oliver E.T. Moir, P.Eng.
OEM:jo:lld



Meeting Summary

Subject: East McPherson – On-Site Meeting
Date: July 23, 2024
Location: 7000 11th Concession Road
Our File: 24-8532

Attendees

Ahmed Al-Farra	Landowner
Mark Fishleigh	County of Essex
Anne-Marie Moniz	Town of Tecumseh (Town)
Matt Shiha	Town
Jerome Owen	Dillon Consulting Limited (Dillon)
Oliver Moir	Dillon

Notes

Item	Discussion	Action by
1.	Introductions:	
1.1.	The Town appointed Dillon on the East McPherson Drain under Section 78 of the Drainage Act to prepare the drainage report for a new farm access culvert.	INFO
2.	Project Background:	
2.1.	The property Roll No. 400-00800 requires access over the East McPherson Drain. The proposed development requires a new farm access bridge to 11 th Concession Road. <ul style="list-style-type: none"> The lands requiring access currently have access from 11th Concession Road over an existing CSP culvert that provides access to property 440-00720 through a temporary access agreement. The agreement expires after October 2024. 	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 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.	General Discussions	INFO
	<ul style="list-style-type: none"> ● Mr. Al-Farra asked if permission is needed to tile the land. <ul style="list-style-type: none"> ○ Dillon explained that only lands within the East McPherson Drain watershed may be tiled to the East McPherson Drain without approval from the Town. The property 400-00800 is partially within the East McPherson Drain watershed. Should Mr. Al-Farra wish to tile new lands into the East McPherson Drain, a request to investigate the drain’s capacity through the Drainage Act would need to be submitted to the Town. ○ Installation of tile drainage systems need to be completed by a licensed contractor. ● Mr. Al-Farra indicated that the lands will be rented to a tenant for farming. ● Mr. Al-Farra asked if it would be possible to use the new access for a future residential access. <ul style="list-style-type: none"> ○ The Town answered the process for residential development a separate process handled by city planning section. Requirements for residential access may depend on the proposed development and would be subject to the Planning Department’s approval. ○ Mr. Al-Farra decided to leave the residential development considerations out of the drainage works. ● Mr. Al-Farra agreed with the proposed location of the bridge as shown on the invite request map. ● Dillon explained farm access culverts are generally 7.3 m (30’) wide, however given the proximity between the road and drain bank, a wider access bridge would be needed to accommodate turning movements of farm equipment and may be up to 12.1 m wide (40’). ● Culvert end protection would be sloping stone as the least costly. ● The Town informed the Mr. Al-Farra that the construction work can be undertaken privately (without the use of a contractor), but a list of prerequisites must be completed, and evidence of previous construction experience must be presented. 	

Errors and/or Omissions

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

SCHEDULE 'A-2'



Moir, Oliver <omoir@dillon.ca>

East McPherson Drain - Al-Farra Farm Access

Summer Locknick <SLocknick@erca.org>

Tue, Oct 8, 2024 at 2:59 PM

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

Cc: Jerome Owen <jowen@dillon.ca>, "248532@dillon.ca" <248532@dillon.ca>, Matthew Shiha <mshiha@tecumseh.ca>

Good afternoon,

Thank you for providing the below information. 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.

Kind regards,



SUMMER LOCKNICK

Regulations Analyst

Essex Region Conservation Authority

360 Fairview Avenue West, Suite 311 | Essex, Ontario | N8M 1Y6

slocknick@erca.org essexregionconservation.ca

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The ERCA Office is now open to the public **Tuesdays, Wednesdays and Thursdays** to provide "counter service"; however, services continue to be delivered online and through email. Please consult ERCA's website for more information and direction regarding online services (i.e. permitting, cottage bookings, seasonal passes etc.)

"SCHEDULE C"
SCHEDULE OF ASSESSMENT
EAST McPHERSON DRAIN (AL-FARRA BRIDGE)
TOWN OF TECUMSEH

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
400-00800	11	Pt. Lot 2	15.70	6.35	Ahmed S. Al-Farra	\$31,500.00	\$0.00	\$0.00	\$31,500.00
Total on Privately-Owned - Agricultural Lands.....						\$31,500.00	\$0.00	\$0.00	\$31,500.00
TOTAL ASSESSMENT						\$31,500.00	\$0.00	\$0.00	\$31,500.00
			(Acres)	(Ha.)					
Total Area:			15.70	6.35					

"SCHEDULE E"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE
EAST McPHERSON DRAIN (AL-FARRA BRIDGE)
TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
	(Acres)	(Ha.)					
11th Concession Road	0.37	0.15	Town of Tecumseh	\$0.00	\$0.00	\$233.00	\$233.00
Total on Municipal Lands.....				\$0.00	\$0.00	\$233.00	\$233.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
400-00705	11	Pt. Lot 2	0.49	0.20	Ronald W. Gerard	\$0.00	\$0.00	\$186.00	\$186.00
400-00720	11	Pt. Lot 2	1.22	0.49	Peggy A. Gerard	\$0.00	\$0.00	\$273.00	\$273.00
410-05302	10	Pt. Lot 1 & 2	1.80	0.73 *	Patrick J. Gerard	\$0.00	\$0.00	\$92.00	\$92.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$0.00	\$551.00	\$551.00

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
400-00800	11	Pt. Lot 2	15.70	6.35 *	Ahmed S. Al-Farra	\$7,500.00	\$0.00	\$1,476.00	\$8,976.00
410-05500	10	Pt. Lot 2	6.38	2.58 *	Gerald Santo	\$0.00	\$0.00	\$240.00	\$240.00

TOTAL ASSESSMENT \$7,500.00 \$0.00 \$2,500.00 \$10,000.00

(Acres) (Ha.)

Total Area: 19.58 7.92

*** DENOTES A REDUCED ASSESSMENT**

” SCHEDULE F”
DRAINAGE REPORT FOR THE
EAST MCPHERSON 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:

- Supply and installation of a new 20.5 m long, 750 mm diameter corrugated high density polyethylene (HDPE) Boss 2000 (or approved equivalent), 320kPA including couplers (see specifications).
- Supply and install clear stone bedding materials (minimum 150 mm thickness) with filter fabric underlay under the new culvert pipe (approximately 15 tonnes).
- Supply and install full compacted Granular ‘B’ bedding and backfill materials from the pipe invert to the native material (approximately 200 tonnes).
- Supply and installation of imported clean backfill material to be used as a buffer between the Granular ‘B’ material and the stone erosion protection. (Approximately 15 m³). Work includes supply and placement of topsoil (100 mm thickness), fine grading and seeding of buffers.
- Supply and install full compacted Granular ‘A’ (crushed limestone) compacted driveway surface, minimum 200mm thickness (approximately 50 tonnes).
- Supply and install stone erosion protection for sloping end walls, minimum 300 mm thickness, c/w filter fabric underlay (approximately 35 m²).
- Temporary silt control measures during construction.

3.0 ACCESS TO THE WORK

Access to the drain shall be directly from the 11th Concession Road. Contractor shall make his/her own arrangements for any additional access for his/her convenience. 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 placed on the field side of the roadside drains. Any damage resulting from the Contractor's access to the bridge site shall be restored to original conditions at the Contractor’s expense.

WORKING AREA

The working area at the bridge site shall be restricted to the 9 m wide working corridor along the east side of the drain and including the road allowance for the 11th Concession Road provided through traffic is maintained as per Section 13.0 in the General Specifications.

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.

4.0 BRIDGE CONSTRUCTION

5.1 Location

The culvert shall be located and installed as shown on the drawings attached hereto.

5.2 Materials

Materials shall be as follows:

<i>Culvert</i>	<i>New 750 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. Joints wrapped in "Non-Woven" geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 446, Mirafi 140NC or approved equivalent.</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>Topsoil over Buffer Strips</i>	<i>Salvaged or imported topsoil, fine graded and seeded. Minimum 100 mm thickness</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 Stone Erosion Protection

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 control vehicular and pedestrian traffic along roads at all times 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

- EAST MCPHERSON DRAIN DRAINAGE AREA
- EAST MCPHERSON DRAIN
- OTHER DRAINS
- NEW BRIDGE
- LOCAL BENCHMARK
- LAND ASSESSED AT REDUCED RATE

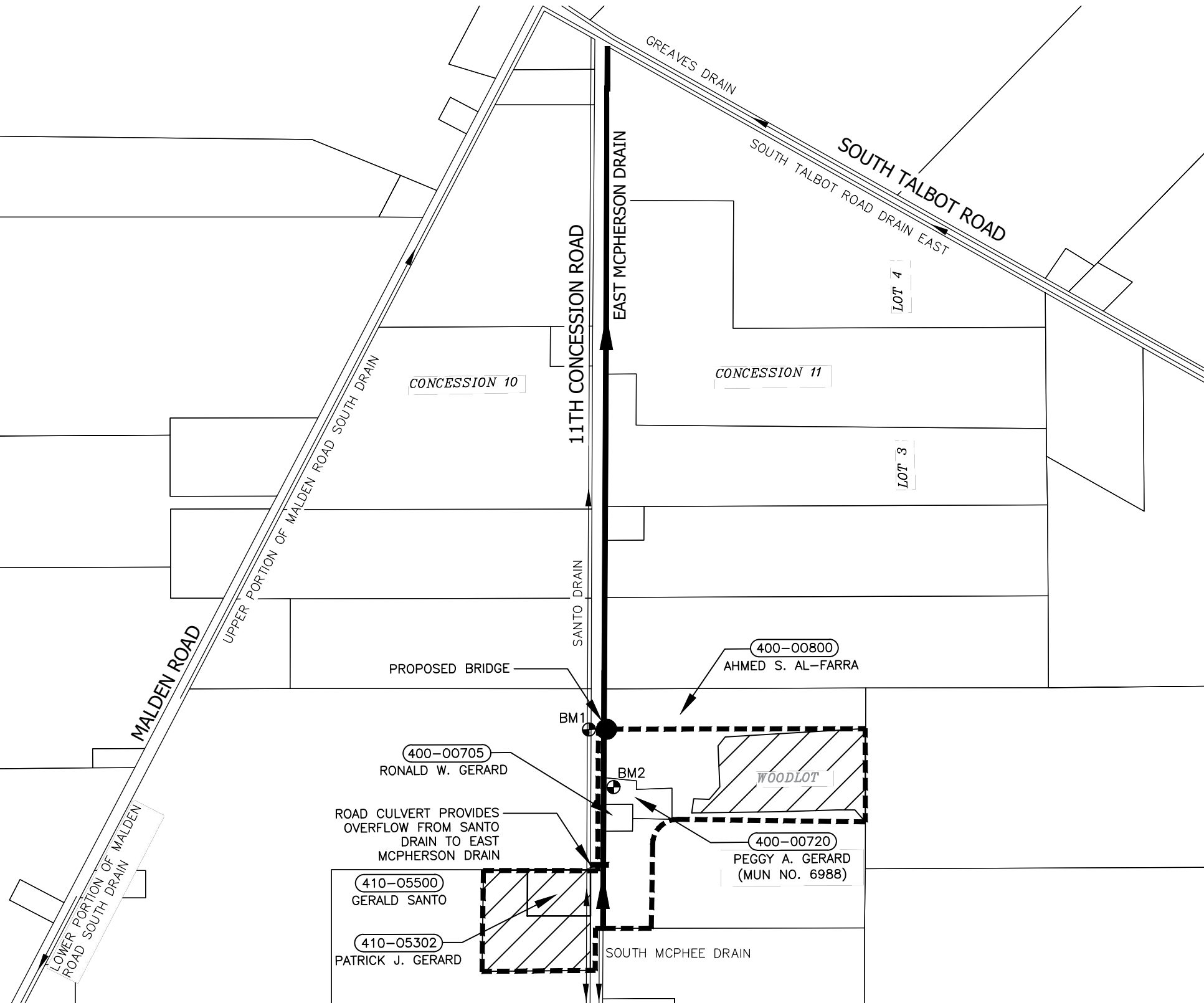
BENCHMARKS

BM1
TOP OF NAIL IN EAST FACE OF HYDRO POLE ON WEST SIDE OF 11TH CONCESSION ROAD, ACROSS FROM PROPERTY, ROLL NO. 400-00800
ELEVATION=193.35m

BM2
TOP OF 600mm CSP AT NORTH END OF ACCESS BRIDGE FOR MUN. NO. 6988 11TH CONCESSION ROAD
ELEVATION=191.92m

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=1:7,500



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. 9/24	OEM
2	PUBLIC INFORMATION CENTRE	NOV. 7/24	OEM
1	CLIENT REVIEW	OCT. 2/24	OEM

DESIGN	REVIEWED BY
OEM	VJH
DRAWN	CHECKED BY
JAO	TRO
DATE	
December 9, 2024	
SCALE	
AS SHOWN	

PROJECT NO. 24-8532

DRAWING SCALES BASED ON A 11" X 17" SHEET

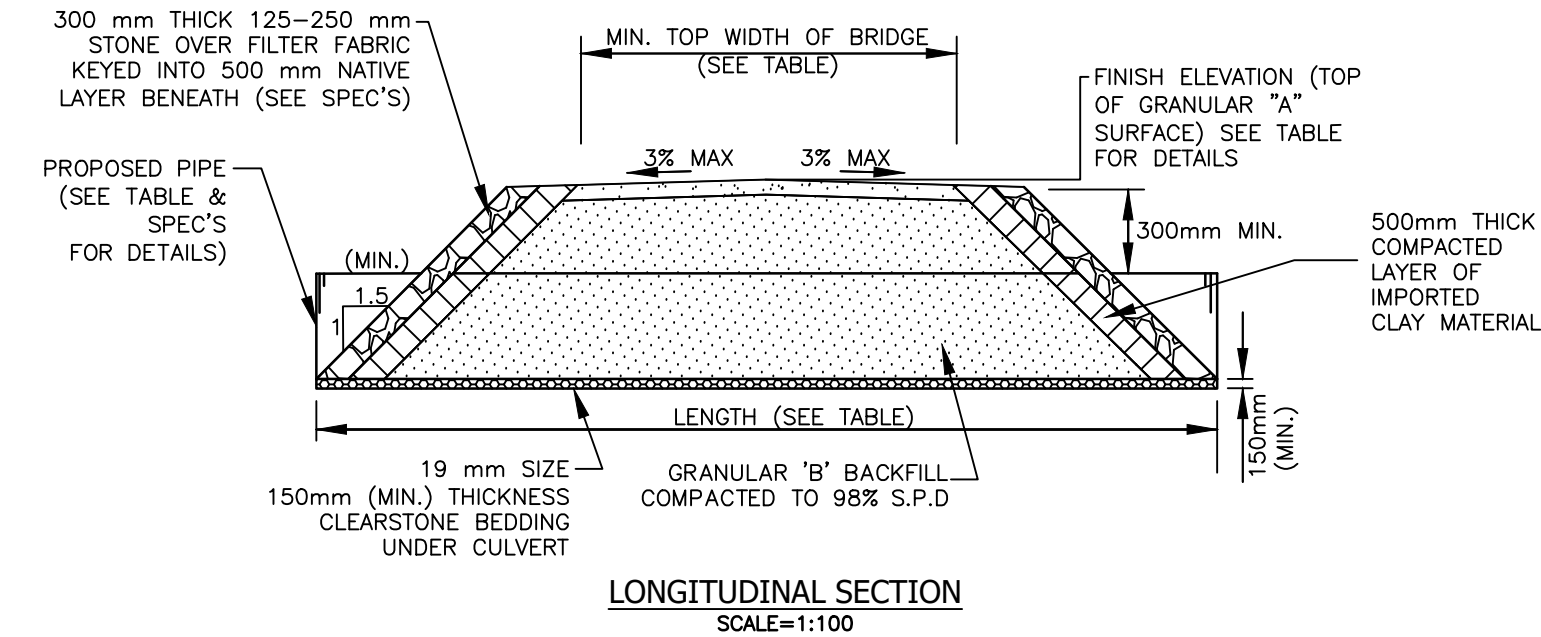
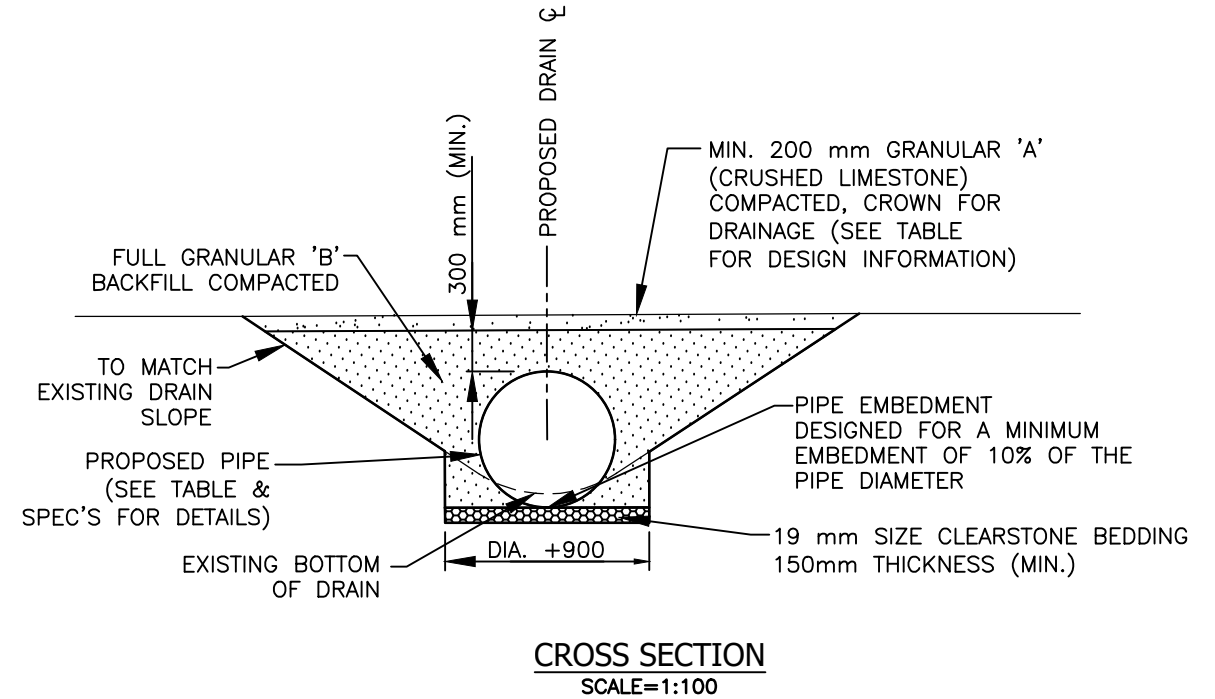
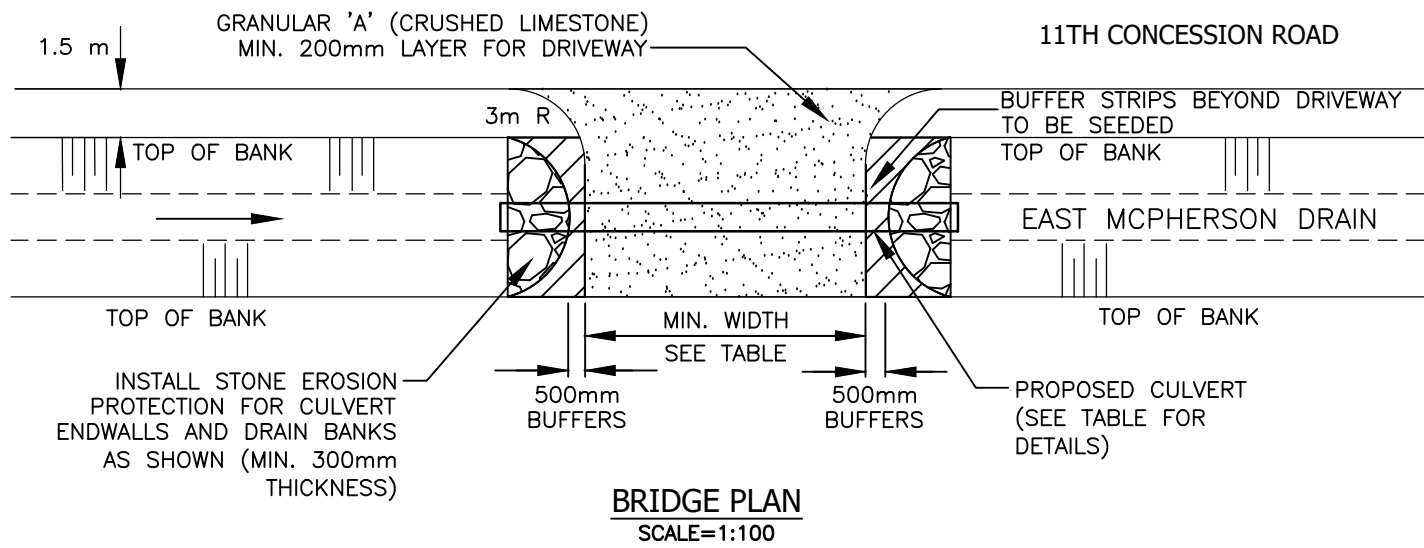
'SCHEDULE G'

Drainage Report for the
EAST MCPHERSON DRAIN (AL-FARRA BRIDGE)
Town of Tecumseh

SHEET TITLE **WATERSHED PLAN**

PAGE NO. **1 of 2**

Dec 06, 2024 - 5:28pm C:\Users\330EM\appdata\local\temp\AcPublish_20828\248532-03-DRN-CON.dwg



DESCRIPTION	BRIDGE DETAILS
PIPE INVERT ELEV. U/S SIDE(m)	190.97
PIPE INVERT ELEV. D/S SIDE(m)	190.95
TOP OF CL DRIVEWAY SURFACE ELEV. (m)	192.98
DRAIN BOTTOM (m) (DESIGN) (AT CENTRELINE OF CULVERT)	191.04
MIN. TOP WIDTH OF DRIVEWAY (m)	12.20
MIN. CULVERT GRADE (%)	0.10
CULVERT TYPE	BOSS 2000
CULVERT MATERIAL	H.D.P.E.
CULVERT LENGTH (m)	20.5
PIPE SIZE (mm)	750
CULVERT ENDWALL TYPE	SLOPING

- NOTES:
- PRIVATE LATERAL DRAIN TILE OUTLETS DISCOVERED DURING THE COURSE OF WORK SHALL BE RELOCATED DOWNSTREAM OF THE NEW CULVERT OR AS DIRECTED BY THE DRAINAGE SUPERINTENDENT
 - CULVERT LOCATION TO BE CONFIRMED WITH THE ENGINEER OR DRAINAGE SUPERINTENDENT PRIOR TO CONSTRUCTION.
 - CONTRACTOR TO CLEANOUT DRAIN 3m UPSTREAM AND DOWNSTREAM OF CULVERT



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PROJECT NO. 24-8532

DRAWING SCALES BASED ON A 11" X 17" SHEET

'SCHEDULE G'

Drainage Report for the
**EAST MCPHERSON DRAIN
(AL-FARRA BRIDGE)**
Town of Tecumseh

SHEET TITLE **BRIDGE DETAILS**

PAGE NO. **2 of 2**