Court of Revision
AGENDA

Tuesday, June 27, 2017, 6:30 pm
Tecumseh Town Hall
www.tecumseh.ca

Pages

1. CALL TO ORDER

2. ROLL CALL

3. DISCLOSURE OF PECUNIARY INTEREST

4. INTRODUCTION AND PURPOSE OF MEETING

   The purpose of the meeting is to hear from any affected owner who wishes to appeal his/her assessment or any part thereof as set out in the Drainage Report, prepared by Baird AE, dated April 11, 2017.

5. DELEGATIONS

6. COMMUNICATIONS

   a. Notice of First Sitting of the Court of Revision — 2
      Re: East McPherson Drain

   b. Drainage Superintendent. Report No. 26/17 — 3
      Re: East McPherson Drain - Reconsider Engineer's Drainage Report

      1. BAIRD AE, Final Reconsidered Drainage Report — 9
         Re: Repair and Improvement to the East McPherson Drain

   c. By-Law 2017-40 — 76
      Being a bylaw to provide for the repair and improvements to the East McPherson Drain

   d. Essex Region Conservation Authority — 145
      Re: East McPherson Drain

7. ADJOURNMENT

June 12, 2017

To: **Affected Property Owners and Agencies**

Re: **Notice of First Sitting of the Court of Revision**
For the Repair and Improvement to the East McPherson Drain

Tecumseh Council at their meeting held on May 23, 2017, adopted the Drainage Report prepared by Baird AE, dated April 11, 2017, for improvements to the East McPherson Drain (Report) by Provisional By-law No. 2017-40 in accordance with the *Drainage Act*.

NOTICE IS HEREBY GIVEN that a Court of Revision in respect of the Drainage Report will be held as follows:

Date: **Tuesday, June 27, 2017**

Time: **6:30 p.m.**

Place: **Council Chambers**
Tecumseh Town Hall
917 Lesperance
Tecumseh, ON

The purpose of the Court of Revision is to hear any owner who wishes to appeal his/her assessment or any part thereof as set out in the Drainage Report.

Any notice of such appeal is to be served in writing on the Clerk of the Town at least ten (10) days before the meeting of said Court of Revision. Notice shall be served at the address indicated above.

Additional information regarding the *Drainage Act* process is located on the Ontario Ministry of Agriculture & Food (OMAF) website at: www.ontario.ca/drainage

Laura Moy

Director, Corporate Services & Clerk

THE CORPORATION OF THE
TOWN OF TECUMSEH

Public Works & Environmental Services
Report No. 26/17

TO: Mayor and Members of Council

FROM: Sam Paglia, P.Eng., Drainage Superintendent

DATE OF REPORT: April 27, 2017

DATE TO COUNCIL: May 23, 2017

SUBJECT: East McPherson Drain – Reconsider Engineer's Drainage Report

RECOMMENDATIONS

It is recommended:

1. That the Reconsidered Drainage Report and specifications for the East McPherson Drain ("Drain") as prepared by Ms. Halliday Pearson, P.Eng., and Mr. Don Joudrey, P.Eng., of Baird AE, Architecture & Engineering, dated April 11, 2017 ("Drainage Report") be received; and

2. That consideration be given to first and second readings of a provisional by-law to adopt the Drainage Report; and further

3. That Notice be given to all affected landowners of the Court of Revision to be held on June 27, 2017, at 6:30 pm in accordance with Section 46(1) of the *Drainage Act* subject to adoption of the provisional by-law.

BACKGROUND

The Town received a Request for Repair and Improvement of a Municipal Drain on September 9, 2013, in accordance with Section 78 of the *Drainage Act* ("Act").

On September 24, 2013, Council accepted the recommendation by the Drainage Superintendent under Public Works & Environmental Services Report No. 42/13 and passed resolution RCM-316/13 as follows:

> *THAT Crozier Baird Engineers be appointed Drainage Engineer to:*
> *a) Make and examination of the area requiring improvements on the East McPherson Drain as requested in the "Request for Repair and Improvement" of the East McPherson Drain, as submitted by Ralph Lutzmann and dated September 9, 2013; and*
> *b) Prepare a report in accordance with Section 78 of the Drainage Act.*
>
> *As recommended by the Manager, Engineering Services, under Report No. 42/13, dated September 13, 2013.*

Two onsite meetings were held with all affected landowners. The first meeting was held October 16, 2013 to discuss the proposed drainage work. The second site meeting was held January 27, 2014 to

discuss the results of the drain survey. A summary of the meetings is included in the Drain Report for consideration as per the requirements in the Act.

The Town received a draft report dated March 17, 2014 for discussion at a public meeting and invitations were sent to landowners for a Public Information Centre (PIC) that was held on April 16, 2014, in Council Chambers to discuss the content of the draft report. There were some concerns expressed at the meeting and are summarized in the Drainage Report for consideration.

In accordance with Section 57 of the Act, Council, at its July 8, 2014 Meeting to Consider, referred the report back to the Engineer for reconsideration.

A second PIC was held at Tecumseh Town Hall on September 14, 2016 to review the draft report dated June 7, 2016 and receive, document and respond to questions and concerns. The meeting minutes are included in the attached report in Appendix A.

COMMENTS

The Town received the reconsidered report dated April 11, 2017 for distribution to landowners. The Engineer reviewed and modified the Estimate of Cost; revised the limits of the drainage area; increased the Allowances for Damages; prepared revised Construction and Maintenance Schedules of Assessment; modified certain proposed works as requested by landowners; revised the allowance for construction inspection to more accurately reflect inspection services required based on similar projects recently completed in the Town of Tecumseh; and addressed landowner concerns expressed at the Meeting to Consider. The proposed works are described within the body of the attached report and is provided to Council for consideration.

Section 41 Notice of Drainage Works

(1) Upon the filing the Engineer's Drainage Report with the Clerk, and within 30 days of the filing, a copy of the Drainage Report was sent together with a notice of the date of the Council meeting at which the Drainage Report will be considered, to:

1. Affected property owners, within the initiating municipality, according to the last revised assessment roll to be the owners of lands and roads assessed for the drainage works or for which compensation or other allowances have been provided in the report;
2. The Clerk of every other municipality in which any land or road is assessed for drainage works or compensation, or other allowances provided in the Report;
3. The Secretary-Treasurer of the Essex Region Conservation Authority (ERCA);
4. Any railway, public utility or road authority affected by the report;
5. The Minister of Agriculture, Food and Rural Affairs; and
6. The Director appointed for the purposes of the Drainage Act.

Consideration by Council

Subject to the discretion of Council, the Drainage Report may be:

a. Referred back to the Drainage Engineer for reconsideration if it appears that there are, or may be errors in the report or for any other reason the report should be reconsidered ; or
b. Provisionally approve by giving first and second readings to a Provisional By-law.

Following provisional adoption of the By-law, a meeting of the Court of Revision shall be scheduled to allow any affected owner of land assessed for the drainage works to appeal their assessed costs subject to the following:

a. Any land or road has been assessed too high or too low; or
b. Any land or road that should have been assessed has not been assessed; or
c. Due consideration has not been given as to type of use of land.

Approvals

Correspondence with the Essex Regional Conservation Authority (ERCA) has been continuous and an application for approval under Section 28 of the Conservation Authorities Act will be required for the works as recommended under the Drainage Report.

The Town of Tecumseh conducted a self-assessment in respect to the Federal requirements of the Department of Fisheries and Oceans (DFO) at http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html. It has been determined that this project does not require a formal review by DFO because the Drain is considered a Class F drain. This does not eliminate the requirements under the *Fisheries Act (R.S.C., 1985, c. F-14)* to avoid causing serious harm to fish by following best practices such as minimizing the duration of in-water work and respecting the timing windows to protect fish.

Based on the comments above, it is recommended:

1. That the Reconsidered Drainage Report and specifications for the East McPherson Drain ("Drain") as prepared by Ms. Halliday Pearson, P.Eng., and Mr. Don Joudrey, P.Eng., of Baird AE, Architecture & Engineering, dated April 11, 2017 ("Drainage Report") be received; and
2. That consideration be given to first and second readings of a provisional by-law to adopt the Drainage Report; and further
3. That the Clerk give notice to all affected landowners of the Court of Revision to be held on June 27, 2017, at 6:30 pm in accordance with Section 46(1) of the *Drainage Act* subject to adoption of the provisional by-law.

CONSULTATIONS

Baird AE, Architecture & Engineering
Director Financial Services & Treasurer
Director Corporate Services & Clerk

FINANCIAL IMPLICATIONS

Engineer's Estimates for the East Townline Drain	
Description	**Estimate**
Construction	$ 102,520
Incidentals	$ 58,000
HST Payable (1.76% Non-Recoverable)	$ 2,825
Allowances/Compensation	$ 2,590
Total	**$ 165,935**
Assessment Summary	
Town of Tecumseh – Road Authority	$ 39,260
Non-Agricultural lands	$ 21,420
Privately owned Agricultural lands	**$ 70,170
Provincial Grants	*$ 35,085
Total	**$ 165,935**
**Represents 2/3 of the total value assessed to eligible lands.	
*Represents 1/3 recovered from OMAF (Provincial Grant)	

As shown in the table above, a portion of a Section 78 assessment for drainage works to agricultural lands described in an engineer's report are eligible for grants by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) through the provisions set out in Sections 85, 86 and 87 of the Act. Upon completion of the application form, the Minister may pay to the treasurer of the Town 33 1/3 per cent of the assessments eligible for grant in accordance with the Agricultural Drainage Infrastructure Program.

The Town of Tecumseh is a landowner on this project and has been assessed for Special Benefit, Benefit Liability and Outlet Liability in the Drainage Report. The Town has one (1) roadway that uses the Seventh Concession drain for stormwater conveyance – the 11th Concession Road. The total land area of 1.54 hectares is assessed for $22,905 Special Benefit, $9,550 for Benefit and $6,805 for Outlet Liability, for a total assessment based on the Engineer's estimate for the Repair and Improvement works of $39,260.

The Town's Municipal Drain Lifecycle Reserve is affected by this drainage project. Please see the table below.

Municipal Drain Lifecycle Reserve - February 28, 2017					
	2017	**2018**	**2019**	**2020**	**2021**
Reserve Balance Start of Year (est.)	$171,462	$53,143	$123,143	$193,143	$263,143
Allocation	$70,000	$70,000	$70,000	$70,000	$70,000
Road LC re 10th Conc. Windsor (5055)	$226,000				
Funds Available	**$467,462**	**$123,143**	**$193,143**	**$263,143**	**$333,143**
Committed					
South McPhee Drain (5014)	$27,928				
West Branch Delisle (5036)	$15,414				
O'Keefe (5044)	$20,719				
South Talbot/Holden Branch (5027)	$23,020				
McPherson East (5028)	**$39,260**				
South Malden (Lower) & Graham (5033)	$12,443				
10th Concession - Windsor (5055)	$247,000				
7th Conc & Extension (5047)	$28,535				
Balance Committed	**$414,319**	**$0**	**$0**	**$0**	**$0**
Balance Uncommitted	**$53,143**	**$123,143**	**$193,143**	**$263,143**	**$333,143**
Proposed					
Total Proposed	**$0**	**$0**	**$0**	**$0**	**$0**
Balance Available	**$53,143**	**$123,143**	**$193,143**	**$263,143**	**$333,143**

For assessments in excess of $5,000 the Town offers landowners the option of paying the balance plus interest over a five (5) year period; the annual payments are added as a special charge on their taxes. The applicable interest rate is based on the prime lending rate at the time of financing.

LINK TO STRATEGIC PRIORITIES

No.	2017-18 Strategic Priorities	Applicable
1.	Make the Town of Tecumseh an even better place to live, work and invest through a shared vision for our residents and newcomers.	
2.	Ensure that the Town of Tecumseh's current and future growth is built upon the principles of sustainability and strategic decision-making.	✓
3.	Integrate the principles of health and wellness into all of the Town of Tecumseh's plans and priorities.	
4.	Steward the Town's "continuous improvement" approach to municipal service delivery to residents and businesses.	✓
5.	Demonstrate the Town's leadership role in the community by promoting good governance and community engagement, by bringing together organizations serving the Town and the region to pursue common goals.	

COMMUNICATIONS

Not applicable ☒

Website ☐ Social Media ☐ News Release ☐ Local Newspaper ☐

This report has been reviewed by senior Administration as indicated below and recommended for submission by the CAO.

Prepared by:

Cheryl Curran, BES
Clerk I – Administrative Clerk

Reviewed by:

Sam Paglia, P.Eng.
Drainage Superintendent

Reviewed by:

Phil Bartnik, PMP, P.Eng.
Manager Engineering Services

Reviewed by:

Dan Piescic, P.Eng.
Director Public Works & Environmental Services

Reviewed by:

Laura Moy, Dip.M.M, CMM III HR Professional
Director Financial Services & Treasurer

Reviewed by:

Luc Gagnon, CPA, CA, BMath
Director Financial Services & Treasurer

Recommended by:

Tony Haddad, MSA, CMO, CPFA
Chief Administrative Officer

Attachment:

1. Reconsidered Drainage Report and specification for the East McPherson Drain, as prepared by Ms. Halliday Pearson, P.Eng., and Mr. Don Joudrey, P.Eng., of Baird AE, Architecture & Engineering, dated April 11, 2017

CC

Reconsidered

Repair and Improvement to the East McPherson Drain

Town of Tecumseh

March 5, 2014
(Draft – Town Review)
March 10, 2014
(Draft – Town Review)
March 17, 2014
(Draft – Public Information Centre)
June 17, 2014
(Final – Council Consideration)
April 27, 2015
(Final – Council Consideration)
June 7, 2016
(Final - Reconsideration)
April 11, 2017
(Final - Reconsideration)

Project No. 13-093

BAIRD | AE
architecture + engineering
27 Princess St., Unit 102
Leamington, ON N8H 2X8
519.326.6161 TF 1.844.842.9188
bairdAE.ca

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June 17, 2014
Reconsidered April 11, 2017

Mayor and Municipal Council
The Corporation of the Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario
N8N 1W9

Mayor McNamara and Councillors

Subject: Repair and Improvement
To the East McPherson Drain
In the Town of Tecumseh
Our File Reference 13-093

1.0 Summary of Reconsidered Report

At the July 8, 2014 Meeting to Consider, in accordance with Section 57 of The Drainage Act, 1990 (the Act), Council referred the report back to the Engineer for reconsideration. As such, we have reconsidered this report for the Repair and Improvement to the East McPherson Drain. We have reviewed and modified the Estimate of Cost; revised the limits of the drainage area; increased the Allowances for Damages; prepared revised Construction and Maintenance Schedules of Assessment; modified certain proposed works as requested by landowners; revised the allowance for construction inspection to more accurately reflect inspection services required based on similar projects recently completed in the Town of Tecumseh; and addressed landowner concerns expressed at the Meeting to Consider in Section 8.0. The proposed works are described within the body of this report.

2.0 Authorization

Pursuant to Section 78 of the Act, the Corporation of the Town of Tecumseh received a request for the repair and improvement of the East McPherson Drain. The firm of Crozier Baird Engineers, now known as Baird AE, was subsequently appointed to prepare a report as provided for under the provisions of the Act.

As requested by Council, we have made an examination of the East McPherson Drain located along the east side of the 11th Concession Road being Concession 10, Lots 2, 3 and 4 and we report thereon as follows.

3.0 Drainage Act Process

The following is the general order of procedure that is followed to repair and improve a municipal drainage system pursuant to Section 78 of the Drainage Act:

a) Council determines that repair and improvements are required.
b) Council appoints an Engineer.
c) Engineer conducts an onsite meeting.
d) Engineer conducts a survey of the drain

e) Need for preparation of a Preliminary Report is decided.
f) Engineer completes and provides a Preliminary Report, if required.
g) Council considers Preliminary Report, if required, with affected landowners and decides on an option(s) with which to proceed.
h) A Draft Report is provided to the Municipality.
i) A Public Information Centre (PIC) is held with affected landowners to discuss the report prior presenting the final report to Council.
j) Engineer prepares Final Drainage Report and provides copy to the Municipality.
k) Meeting to Consider the report held in front of Council with affected landowners.
l) At the Meeting to Consider, the Municipal Council may adopt the Drainage Report. If adopted, the Municipal Clerk prepares a provisional by-law for the recommended work and sends copies of the by-law to affected parties and arranges a second meeting of Council for the Court of Revision, within thirty days of adopting the provisional by-law.
m) The Court of Revision is typically held within 30 days at a subsequent meeting with affected landowners to discuss any disputes regarding assessment of cost to lands and roads.
n) Council passes by-law for construction of the work after statutory appeal period expires. Typically, the appeal period is a minimum of 40 days from the date of the provisional by-law.
o) Tenders are received by the Municipality to perform the recommended work and construction is carried out. Inspection of the construction work may be provided by the Town Drainage Superintendent or by an inspector from the engineering office.
p) Upon completion of construction, the Municipal Clerk will finalize all applicable costs and submit grant applications to the Ministry of Agriculture and Food, if applicable. The clerk will then send a final net assessment to the affected landowners. Only lands listed by the Municipal Property Assessment Corporation as having Farm Class Tax Rate are eligible for a 1/3 grant.

4.0 Current Drainage Report and Drain History

The latest drainage report on file for the East McPherson Drain was prepared by C.G.R. Armstrong, P.Eng. dated April 3, 1969. This report provided for the cleaning of the entire length of the drain including removal of all underbrush. The report further recommended the lowering and repair of several access culverts. We have determined that the current drainage area is approximately 43.91 ha (108.53 acres) in size and encompasses land on both the east and west sides of the 11th Concession Road.

Bruce D. Crozier, P.Eng, prepared a report dated October 1, 2002, pursuant to Section 66 of the Act, to investigate the request to subsequently connect agricultural tile drainage at 6604 Malden Road, Roll No. 410-04700, into the East McPherson Drain. Under this report, these lands were assessed a just proportion of the future drainage works for the East McPherson Drain. A portion of the drain, from Station 0+000 to approximately Station 0+530, was subsequently cleaned privately at the cost of the lands at 6604 Malden Road, Roll No. 410-04700, in 2003.

5.0 Purpose of Report

The purpose of this report is to provide for the repair and improvement of the drain and preparation of a schedule of assessment that accurately reflects the current drainage area and patterns. This report provides a description and estimated cost of the proposed work. In addition, the report provides a recommendation for distribution of the construction and incidental costs related to the work. This report further provides for the distribution of future maintenance costs. The assessments provided in this report are based upon the estimated cost of the work; these assessments will be pro-rated to the actual cost of the project upon completion of the works.

6.0 Site Meeting

On Wednesday, October 16, 2013 at 9:00am, a meeting was held at 6664 11th Concession Road to discuss the proposed work. The following people attended the site meeting:

Meeting Attendees	Municipal Address
Reg Chevalier	6925 12th Concession Road
Ralph & Joanne Lutzmann	6604 Malden Road
Wayne & Lori Farough	6664 11th Concession Road
Charles Farough	6848 11th Concession Road
Councillor Tania Jobin	Town of Tecumseh
Phil Bartnik, P.Eng.	Town of Tecumseh
Halliday Pearson, P.Eng.	Crozier Baird Engineers

Mr. Bartnik explained that a request for cleaning of the drain under Section 78 of the Act had been received. The current report was prepared in 1969. Maintenance was completed on a portion of the drain at the downstream end, approximately 530.0 metres, in conjunction with installation of a tile installed under the road in 2004 to provide tile drainage outlet for 6604 Malden Road.

Concern was expressed regarding the water level at the East McPherson Drain's outlet into the South Talbot Road Drain East.

Mr. Wayne Farough stated his concerns related to the elevation of the tile drain. Currently, the invert of the tile is below the existing drain bottom.

Ms. Farough stated that the tile is causing a portion of the east drain bank abutting her property to erode. Ms. Pearson suggested the supply and placement of gabion stone at this location would be included in the report. Ms. Farough objected to the use of gabion stone as she maintains the drain bank abutting her property and was concerned about the difficulty of maintaining the bank slope due to the presence of the gabion stone. Concerns were also raised related to weed growth within the gabion stone erosion protection. Ms. Pearson stated that filter fabric would be placed beneath the gabion stone in an effort to prevent weed growth.

Mr. Bartnik recommended that during the drain survey, that a topographical survey be undertaken on the eastern portion of the Lutzmann property to determine the elevation of the agricultural lands and verify the elevation and location of the tile on the west side of the 11th Concession. Mr. Lutzmann agreed to allow access to the surveyors.

Those present stated that cutting vegetation and leaving that vegetation within the drain does not improve flow.

Mr. Bartnik suggested that a second site meeting be held after the survey of the drain has been completed to discuss with affected landowners how to proceed and the exact location of the required improvements.

On Monday, January 27, 2014 at 9:00am a second site meeting was held at 6744 11th Concession Road to discuss the results of the drain survey. The following people attended the meeting:

Meeting Attendees	Municipal Address
Wayne & Lori Farough	6664 11th Concession Road
Charles Farough	6848 11th Concession Road
Leanne Farough	6744 11th Concession Road
Ron Lafferty	7108 11th Concession Road
Phil Bartnik, P.Eng.	Town of Tecumseh
Halliday Pearson, P.Eng.	Crozier Baird Engineers

Mr. Bartnik discussed the results of the survey. The survey indicates that in order to return the drain bottom to the theoretical design grade, a significant amount of material must be removed from the upper portion of the drain. Culvert inspections were undertaken on all culverts within the drain. The Engineer has determined that certain culverts are more than ¾ full of sediment while others are undersized, have negative slope (backfall) or are in poor condition. However, certain culverts, although they have negative slope, are in fair condition that would allow for another five to 10 years of use. The Engineer will further determine which culverts require removal and replacement and those that may remain in the drain. Mr. Bartnik further stated that the private tile that enters the drain, approximately 18.0 metres south of Culvert No. 2, would be approximately 76mm (3") above the drain bottom if the drain was cleaned to theoretical drain bottom.

Ms. Farough stated that she objects to this work due to the potential cost and that flooding has not be identified on her lands or the lands of those present at today's meeting.

Mr. Charles Farough asked why individual landowners may not replace their own culverts or retain their own contractor to complete the works according to Town specifications.

Mr. Bartnik replied that culverts replaced in a Municipal Drain are subject to the Drainage Act, being Provincial legislation. The Town is responsible for municipal drains within their boundaries and an Engineer must prepare a report including a design and specifications for the construction of the culvert. If an unqualified contractor installs culverts, the Town becomes liable should deficiencies be discovered.

Ms. Farough asked what could be done now that she has objected to the work. Mr. Bartnik stated that the Town of Tecumseh is required, under the Act, to investigate this request for cleaning and sufficient outlet. An Engineer has been appointed to identify issues with the drain including sediment built-up and culvert condition. Council must then hear and act on the recommendations put forth in the new Engineer's Report. All work is proceeding as specified in the Drainage Act.

Ms. Farough expressed concerns that cleaning of the drain will not alleviate the flooding issues experienced by the 6604 Malden Road lands.

Mr. Wayne Farough requested that the Engineer confirm the grade of the private tile.

Ms. Farough requested that an elbow be installed on the east end of the private tile to prevent further erosion to the east drain bank. Ms. Farough further requested that a rodent grate be placed on the tile. Ms. Pearson suggested the use of gabion stone to prevent further erosion. Ms. Farough indicated that an elbow extension to the existing tile was preferred.

Mr. Charles Farough indicated that approximately 3.0 acres of his property drains to the East McPherson Drain with the remaining flowing easterly. Mr. Bartnik stated that drainage areas are typically determined through review of the current drainage report and in consultation with affected landowners.

Mr. Charles Farough stated that the culvert under the road at the upper end of the drain is filled with sediment.

Mr. Lafferty stated that his water drains southerly and should not be included in the East McPherson Drain watershed.

Mr. Bartnik and Ms. Pearson stated that a draft report would be prepared and distributed to affected landowners for review. A Public Information Centre will be held at the Town Hall at which affected landowners may express their concerns with the draft report. The Public Information Centre allows affected landowners to comment on the report and allows the Engineer to revise the report prior to submission to Council.

Affected landowners will be notified by mail of the date of the Public Information Centre. The meeting was adjourned at 9:40am.

7.0 Public Information Centre

A Public Information Centre was held at Tecumseh Town Hall on Wednesday, April 16, 2014 to review the draft report dated March 17, 2014 and receive, document and respond to questions and concerns. The following people signed in at the meeting:

Meeting Attendees	Municipal Address
Wayne & Lori Farough	6664 11th Concession Road
Frank Kokovai	7035 11th Concession Road
Charles Farough	6848 11th Concession Road
Gerald Gerard	880 Hale Street, Stoney Point
Mary Jean Gerard	6988 11th Concession
Peggy Gerard	Wallaceburg
Roy & Carmen Tayfel	7188 11th Concession Road
Ron Gerard	7000 11th Concession Road
Tate Farough	6776 11th Concession Road
Sam Paglia, EI	Town of Tecumseh
Phil Bartnik, P.Eng.	Town of Tecumseh
Tania Iacobelli	Crozier Baird Engineers
Halliday Pearson, P.Eng.	Crozier Baird Engineers

Mr. Paglia introduced those present and reviewed the agenda for the meeting. Mr. Paglia provided a timeline for the project thus far.

Ms. Pearson stated that general questions related to the Drainage Act would be addressed. The Engineer would then address landowner's concerns individually.

Roll No. 400-00800 Address: 6988 11th Con. Rd Owner: Mary Jean Gerard

Issue #1: The majority of residents on this drain have no issues with flooding or damage to crops resulting from flooding. A petition signed by the residents was submitted requesting that this work be abandoned in accordance with Section 84 of the Act.

Response #1: This report was prepared as a result of a request received for maintenance on the drain. The Town has a responsibility to proceed under the Act. It is the Town's responsibility to maintain Municipal Drains and act when a request for maintenance is received. Should the Town not act, the Town becomes liable for damages resulting from flooding. Landowners may not want work to be undertaken on the drain; however, now that a request has been received the Town

must proceed in accordance with the Drainage Act.

Upon initiation of the process, Council can only stop the process. Administration has no right to stop the process; it is Council's decision. Should Council decide to stop the work and a parcel floods, the Town becomes liable for damages resulting from that flooding.

Section 84 of the Act refers to abandonment of a Municipal Drain not the abandonment of the works proposed in this report. Council at the Meeting to Consider decides how to proceed based on Administration's recommendations, the Engineer's report and the opinions expressed by affected landowners.

Issue #2: A landowner who has retiled his lands requested this drain maintenance. No other landowners are experiencing issues with the function of the drain.

Response #2: The Act is not concerned about why the request was initiated but is concerned about the Engineer's professional opinion about whether maintenance on the drain is required. The Engineer has reviewed the design profile as provided in the current by-law, visited the site and reviewed the survey data to determine the condition of the drain. The survey indicates that this drain requires maintenance.

Issue #3: We have experienced double the amount of rainfall recently and no landowner has experienced any issues except the landowner who requested the maintenance work. This project is not beneficial to the other landowners.

Response #3: The concerns expressed at the PIC will be incorporated into the revised report presented to Council at the Meeting to Consider. Council will be provided with a recommendation by Administration along with the Engineer's report.

Issue #4: Is the consent of the property owner required to access the drain or their lands?

Response #4: The Drainage Act provides the Engineer, Drainage Superintendent and the Contractor with the right to enter onto lands to investigate and maintain the drain.

Issue #5: Who guarantees that the landowners will not incur additional maintenance costs after the work has been completed?

Response #5: A final inspection is undertaken when the works are complete. The Contractor is responsible for the quality of the work for one year. Should deficiencies be noted and repaired within the one-year period, a one-year maintenance period related to those noted deficiencies will begin again. Landowners within the watershed are encouraged to notify the Drainage Superintendent of deficiencies during and after construction and within the one-year maintenance period.

It is the landowner's responsibility to notify the Drainage Superintendent of the need for maintenance on any Municipal Drain into which a landowner may be assessed. As the East McPherson Drain is a Municipal Drain, maintenance will continue to be required.

Issue #6: Culvert No. 8 is no longer required. We do not want the enclosure (Culvert No. 9) removed and replaced. Please only replace the driveway culvert portion of the enclosure.

Response #6: In subsequent conversations with the landowners who utilize Culvert No. 8 and Culvert No. 9, it was decided that these culverts would remain in the drain and be cleaned. At such time that the culverts fail, they will be removed from the drain and the driveway portion of

Culvert No. 9 will be replaced as described in Section 12.0 Recommendations.

Issue #7: The main issue is that no landowner is having an issue with the drain. The cost of drainage works is a rip off.

Response #7: The estimate provided in the report is an estimate based on tender prices gathered from similar projects. Should the tendered prices be more than 133% of the Engineer's estimate as provided in the report, Council must call a meeting with affected landowners to determine how to proceed as described in Section 59(1) of the Act.

Issue #8: Why may one landowner initiate this process when other landowners are not experiencing drainage issues? Let us sign a waiver stating that we do not want these works to proceed and will not hold the Town liable for damages resulting from flooding. The Town allowed the lay of the land to be changed on the subject property. Why are all landowners on the drain responsible for the cleaning of the drain?

Response #8: Municipal Drains are a community based, user-pay system. All affected lands in the watershed contribute to the maintenance of the drain. Any landowner within the watershed, including the Town, may trigger a request for drainage works in writing or verbally. Upon the receipt of the request for works on the East McPherson Drain the Town was required to act in accordance with the Drainage Act. Council is the only body that can decide whether to proceed; it is not a decision that can be made by landowners, Administration or the Engineer.

The Town of Tecumseh is currently undertaking a review of drains within the municipality. If a request for maintenance works had not been received from a landowner, the Town may have triggered the work as Town lands drain into the East McPherson Drain.

Issue #9: How long is an Engineer's report valid?

Response #9: The Engineer's report remains valid as long as no major development occurs within the watershed. Should a severance be approved without an apportionment, the schedule of assessment is no longer valid as it no longer accurately represents the watershed.

Should the design included in the Engineer's report remain satisfactory, but significant changes occur in the watershed, the Municipality may require the preparation of a new maintenance schedule of assessment as described in Section 76 of the Act.

Issue #10: I maintain the drain in front of my house. The Municipality does not. I should receive a credit for maintaining my portion of the drain.

Response #10: The Drainage Act does not provide provisions for the reimbursement of costs related to independent maintenance of a Municipal Drain. All requests for maintenance should be directed to the Drainage Superintendent.

It is the landowner's responsibility to bring water generated by their lands to a sufficient outlet. Section 1 of the Act provides the following definition for sufficient outlet: "**Sufficient Outlet**" *means a point at which water can be discharged safety so that it will do no damage to lands or roads*. Therefore, the landowner is responsible for a portion of the maintenance required on the drain downstream of their lands; not simply the portion of the drain abutting their property.

Issue #11: Who determines that someone may direct his or her water into a Municipal Drain?

Response #11: Section 65 of the Act allows for the subsequent connection of lands into a

Municipal Drain. In accordance with Section 65, an Engineer appointed by the Municipality shall make an inspection and assess the land for a just proportion of the drainage works. No person shall connect their lands to the drainage works without the approval of the Town Council.

Roll No. 440-01100 Address: 6988 11th Con. Rd Owner: Lori & Wayne Farough

Issue #1: The issue is the parcel at 6604 Malden Road. Why did the Town allow these changes to the property? The issue is the surface water on the subject property. The drain was cleaned from the private tile to the outlet after the private tile was installed. Landowners upstream of the private tile do not have issues with the functionality of the drain.

Response #1: The Town appointed an Engineer under Section 66 of the Act to investigate the request for a subsequent connection into the East McPherson Drain in 2002. Upon consideration of that report, Council adopted the report allowing the subsequent connection to proceed.

Upon receipt of the request for maintenance, Council appointed an Engineer who determined through a site survey and visual inspection that the East McPherson Drain was in need of repair and required excavation, culvert replacement and cleaning. The drainage issues of 6604 Malden Road, Roll No. 410-04700, have no effect on the condition of the drain upstream of the private tile crossing. Generally, there is a significant amount of sediment built-up within the drain and certain culverts are in poor condition.

Issue #2: Where are our taxes going? Why is it the landowner's responsibility to pay for the work on Municipal Drains?

Response #2: Taxes are not used to pay for the maintenance of Municipal Drains. Municipal Drains are a user-pay, community based system. All assessed lands within the drain's watershed contribute to the maintenance of the drain. Municipal Drains are not an asset of the Town; however, the Town has a duty to assist landowners in drainage matters and a responsibility under the Drainage Act in maintaining and repairing Municipal Drains.

Issue #3: The surface water on the subject property is the issue. What is the Town going to do when the surface water issue is not resolved?

Response #3: The surface water generated by 6604 Malden Road, Roll No. 400-04700, does not enter the East McPherson Drain. With the completion of a site inspection and topographical survey, it has been determined that surface water from 0.91ha of the parcel enters the South Malden Road Drain (Upper Portion) while the surface water from the remaining 11.99ha flows easterly to the Santo Drain. The East McPherson Drain accepts only agricultural tile drainage from 6604 Malden Road.

The intent of this report is to repair and improve the entirety of the East McPherson Drain and provide a solution for the tile drainage issues associated with 6604 Malden Road. As with all Municipal Drains regular maintenance is recommended and encouraged.

Issue #4: Culvert No. 2 is in good condition. Why are new headwalls recommended?

Response #4: Culvert No. 2 will now be salvaged and lowered to better accommodate the private tile at Station 0+528.16. The existing pipe will be salvaged and reused. The jute bag headwalls cannot be salvaged so will be replaced.

Issue #5: I do not want the headwalls replaced on Culvert No. 4.

Response #5: This item has been removed from the construction estimate. A provision has been included in the report to allow for future replacement of the headwalls.

Issue #6: Certain culverts were installed under the authority of a former Drainage Superintendent. Why does the new report recommend that these culverts be removed and replaced?

Response #6: Culverts not identified as part of a Municipal Drain in an Engineer's report are considered obstructions within the drain. In the past, many Municipalities did not adhere to the Drainage Act process. This causes problems now when works are proposed for the drain and no information related to these unidentified culverts exists.

In order to ensure the Municipal Drain works optimally, culverts must be installed in accordance with the current Engineer's report. The culverts identified for removal and replacement are in poor condition and the existing elevations do not correspond with the designed drain bottom.

Issue #7: As discussed previously, we want to sign a waiver that no works be undertaken on this drain. Do we have any method of appeal?

Response #7: At the Meeting to Consider Council will determine how to proceed with the report based on Administration's recommendations, the Engineer's report and input from the public. Council has the power to refer the report back to the Engineer but they cannot direct the Engineer to change the report. Council also has the right to abandon the entire project but assumes all liability upon abandonment of that project.

Should this report be provisionally adopted at the Meeting to Consider, a Court of Revision will then be scheduled. The Court of Revision hears appeals on assessments. Should third and final reading of the by-law be given, affected landowners may appeal to the Tribunal. The decisions of the Tribunal are final.

There are many opportunities to voice concerns. Notification of all public meetings related to this report will be mailed to affected landowners.

Issue #8: A road crossing outlets into the drain at the north end of Culvert No. 5.

Response #8: The report has been revised to show the location of this tile drain and recommends that the tile drain be extended to maintain flow.

Issue #9: Can we as landowners undertake the proposed works?

Response #9: Anyone is welcome to submit a tender for the project if they can provide the documents and bonding required by the Town: insurance, WSIB clearance, etc. The tenderer must provide proof of sufficient experience and have the machinery necessary to perform drainage works within the Town.

Issue #10: Could the existing backfill material be used to construct the replacement culvert instead of importing new material?

Response #10: All culverts within Municipal Drains must be constructed according to the Town's standards and specifications. The Town's standards correspond with Provincial standards. The condition of the backfill material used to construct the culverts is unknown. This material could not be recommended for use without first being tested by a geotechnical engineer.

Issue #11: Could the owner of 6604 Malden Road be made to remove the tile and redirect all

surface water to the South Malden Road Drain? This is where the water flowed prior to construction of the home on the parcel.

Response #11: No, these lands were subsequently connected to the East McPherson Drain in accordance with a report prepared under then Section 66 of the Act and adopted by Municipal Council. This is and shall remain a private agricultural tile draining into the East McPherson Drain.

Issue #12: Please confirm the areas of 6744 11th Concession Road, Roll No. 440-01001, and 6776 11th Concession Road, Roll No. 440-00905, that drain into the East McPherson Drain.

Response #12: The affected areas listed in the draft Schedule of Assessment were determined by reviewing the current Engineer's report for the East McPherson Drain. At the request of the landowner we have attended both locations to conduct a topographic survey. The survey results indicate that fewer hectares drain into the East McPherson Drain than recorded in the current 1969 Engineer's report. The Schedule of Assessment has been revised accordingly.

Roll No. 440-00900 Address: 6848 11th Con. Rd Owner: Charles Farough

Issue #1: Please confirm the area of 6848 11th Concession Road, Roll No. 440-00900, that drains into the East McPherson Drain.

Response #1: The affected areas listed in the draft Schedule of Assessment were determined by reviewing the current Engineer's report for the East McPherson Drain. At the request of the landowner we have attended the site to conduct a topographic survey. The survey results indicate that fewer hectares drain into the East McPherson Drain than recorded in the current 1969 Engineer's report. The Schedule of Assessment has been revised accordingly.

Roll No. 440-00500 Address: 7188 11th Con. Rd Owner: Carmen Tayfel

Issue #1: How can the Town justify the cost to install a private culvert according to the specifications provided in the report?

Response #1: Drainage works are tendered in accordance with the Town of Tecumseh's purchasing policy. Typically, the tendering period is two (2) weeks and is open to anyone in Ontario who can provide the required documentation (WSIB, insurance, etc.) and show that they have the equipment and knowledge to perform the necessary work.

Further, the Town distributes a Notice of Tender to all local contractors informing them of the open tender.

Issue #2: Why does the Town not rent an excavator from the County of Essex to complete maintenance works using their own forces?

Response #2: The Town does not have the workforce to complete Municipal Drainage maintenance. It is not feasible for the Town to own that type of machine if it will not be used continuously throughout the year.

Roll No. 440-01000 Address: 6776 11th Con. Rd Owner: Tate Farough

Issue #1: Are my lands eligible for the 1/3 grant?

Response #1: The Municipal Property Assessment Corporation does not identify these lands as having Farm Tax Class Rate. Only lands with this tax class rate are eligible for the 1/3 grant.

However, the Town allows assessments to be debentured over five (5) years for all assessed lands.

Issue #2: Does the use of sloped gabion stone end of pipe protection reduce the width of my driveway? I would like my driveway width to remain the same.

Response #2: Culvert No. 5 is recommended for replacement. The culvert length is being extended to accommodate the use of sloped gabion stone end of pipe protection.

Roll No. 410-05300 Address: 7035 11th Con. Rd Owner: Frank Kokovai

Issue #1: Why is my land assessed into the East McPherson Drain? My lands drain to the Santo Drain.

Response #1: The existing road crossings located at Station 0+752.88, Station 1+014.06 and Station 1+324.13 serve as overflows from the Santo Drain to the East McPherson Drain. Due to the presence of these crossings, water from this parcel has the opportunity to outlet into the East McPherson Drain and has been assessed into the East McPherson Drain.

Issue #2: Could you please confirm the area assessed into the Santo Drain and the East McPherson Drain? A road crossing conveys water to the South McPhee Drain.

Response #2: The current reports for the Santo Drain and the East McPherson Drain assess 12.14 ha (30 acres) of this parcel into their respective watersheds. However, a site investigation concludes that approximately 5.73 ha (14.16 acres) of this parcel drain to the northerly portion of the Santo Drain. The road crossings at Station 0+752.88, Station 1+014.06 and Station 1+324.13 provide that 5.73 ha with the opportunity to outlet into the Santo Drain and the East McPherson Drain, if required. However, we have determined that approximately 30% of the water, generated by the lands on the west side of the 11th Concession Road, enters the East McPherson Drain after its collection by the Santo Drain. The Santo Drain conveys the remaining 70% of the overland flow. Therefore, 30% of the affected areas of the lands with Roll No. 410-05300; 410-05200; 410-05150; 410-04600; and 410-04700 on the west side of the 11th Concession Road have been assessed. For example, approximately 5.73ha of the Kokovai lands drain to the Santo Drain. Approximately 30% of this area is conveyed to the East McPherson Drain. Therefore, the Kokovai lands are assessed 1.72 ha in the Schedule of Assessment (5.73ha x 0.3 = 1.72ha).

Modified affected areas for lands with Roll No. 410-05300; 410-05200; 410-05150; 410-04600; and 410-04700 are listed in the Schedule of Assessment.

8.0 Meeting to Consider

A Meeting to Consider was held at Tecumseh Town Hall on Tuesday, July 8, 2014 to consider the report dated June 17, 2014 and receive and respond to questions and concerns. The following issues were discussed at the meeting:

Roll No. 410-04700 Address: 6604 Malden Road Owner: Ralph & Joanne Lutzmann

Issue #1: The backslope of Culvert No. 2 will restrict flow from my tile drain and create sediment in the drain that restricts the flow of my tile. Can Culvert No. 2 be reset to eliminate the backflow?

Response #1: The backslope of Culvert No. 2 is such that it will not negatively impact the flow of water from the tile after the drain bottom is cleaned. The proposed drain bottom elevation is 8.6cm or 3.4" below the invert of the tile.

We would not recommend that Culvert No. 2 be removed and reset; there will not be noticeable improvement to the function of the drain if the culvert was removed and reset. As always, regular maintenance of any municipal drain is recommended to ensure that water flows freely and sediment does not impact the functioning of the drain.

Roll No. 410-05300 Address: 7035 11th Con. Rd Owner: Frank Kokovai

Issue #1: The Santo Drain was cleaned in 1983. The lands on the west side of the road were assessed at the time into the Santo Drain. The road crossing (RC3) drains east to west.

Response #1: Survey data confirms that the Road Crossing No. 3 drains west to east. In the current by-law for the East McPherson Drain, lands on both the east and west sides of the road were assessed into the East McPherson Drain. The presence of the road crossings, which drain west to east, confirm that a portion of the lands on the west side of the road should be assessed into the East McPherson Drain. Based on a review of the survey data and elevation of the road crossings, it appears that the Santo Drain, when in a maintained state, would utilize the East McPherson Drain as an overflow. Currently, the bottom elevation of the Santo Drain is such that the road crossings are at the bottom or below the bottom of the Santo Drain.

Assessments for the lands on the west side of the 11th Concession Road have been revised and are included in the attached Schedules of Assessment as described in Response #2 on page 11 of this report.

Roll No. 440-01100 Address: 6444 11th Con. Rd Owner: Lori & Wayne Farough

Issue #1: Why is the cost for cleaning of my culvert so high? Why is the cost of Culvert No. 4 less than mine yet 1m shorter?

Response #1: The cost to clean Culverts No. 2 and No. 4 have been revised to more accurately reflect typical cleaning costs based on tender prices received for similar projects in the Town of Tecumseh.

Issue #2: Why has the cost of site meetings and survey increased?

Response #2: The cost listed under line item “Attendance at site meeting, survey” under Incidentals on page 28 of this report increased due to the two surveys conducted at the request of certain landowners. The survey was requested to determine the extent of their land to be included in the drainage area. Those landowners have been assessed 100% of the cost of that survey as described in the attached Special Benefit Schedule. The increased cost relates to survey only and not site meetings.

Issue #3: Why is Culvert No. 3 being replaced when it was installed after others and is in better condition than others that are being replaced?

Response #3: Culvert No. 3 is being replaced because the elevation of the culvert does not correspond with the design drain bottom. This culvert was not installed under an Engineer’s report and was not installed at an elevation corresponding with the design drain bottom described in the current by-law.

Issue #4: Why is excavated material being spread on residential lands?

Response #4: Material excavated from the drain abutting residential lands is loaded, hauled and disposed of on neighbouring agricultural lands. No excavated material is placed on lawns or

driveways. Specifications included in the report describe how the material must be spread, for example:

> *The Contractor shall cast all excavated material on the adjacent agricultural lands. Excavated material shall be spread to a depth of no more than 100 mm along the east top of drain bank and shall be kept at least 1.2 metres clear from the finished edge of the drain, care being taken not to fill up any existing tiles, ditches, furrows or drains with the excavated material.*
>
> *Where the drain passes in front of any house, garden, lawn, driveway, etc., the excavated material shall be hauled and spread upon the adjacent agricultural lands.*

Issue #5: The lands on the east side of the 11th Concession have no drainage problems. How can Council go to this extent when only one landowner has issues with drainage?

Response #5: The Town, under the Act, has a duty to investigate any request for repair and improvement received from a landowner with the drainage area.

Cleaning of the drain benefits all lands utilizing the drain by removing water from their property.

The deficiencies found during the Engineer's investigation are upstream of the location at which the private tile enters the drain. Culverts are collapsing upstream and sediment is accumulating in the drain bottom; both of these factors contribute to the flow of water within the drain and are not associated with the private tile at the downstream end of the drain.

Issue #6: Costs are unreasonable.

Response #6: Construction cost estimates are based on tendered prices received for similar projects in the Town of Tecumseh. The costs provided in the report are estimated. Actual costs will be determined at the time of tendering.

The attached Construction Schedule of Assessment does not consider the allowances available to certain lands or the 1/3 grant available to eligible agricultural lands. The allowances and the grant are applied to assessments at the time of invoicing.

Issue #6: Why are tax dollars not used for the maintenance of municipal drains?

Response #6: As noted on in Response #2 on page 8 of this report, taxes are not used for to pay for the maintenance of Municipal Drains. Municipal Drains are a user-pay, community based system. All assessed lands within the drain's watershed contribute to the maintenance of the drain. Municipal Drains are not an asset of the Town; however, the Town has a duty to assist landowners in drainage matters and a responsibility under the Act in maintaining and repairing Municipal Drains.

Issue #7: Landowners can arrange for the work to be completed at much cheaper rates than what is proposed in the report.

Response #7: Any work to clean or improve the drain must be requested and undertaken through the Drainage Superintendent. Should a landowner have a preferred contractor, that contractor may participate in the tendering process provided the contractor has all necessary documents, to comply with the Town's purchasing policy, including insurance, and WSIB clearance.

Roll No. 400-00800 Address: 6988 11th Con. Rd Owner: Mary Jean Gerard

Issue #1: Why have lands on the west side of the road not been assessed a benefit?

Response #1: These lands utilize the East McPherson Drain for outlet. There is no particular benefit to the lands to utilize the drain. Typically, only lands abutting the drain are assessed a benefit. Benefit is described on page 29 this report.

Issue #2: The lands on the west side of the road have drainage problems. Why are the lands on the east side of the road being burdened with these excessive costs when no issues have been noted on lands on the east side?

Response #2: When a request for repair and improvement is received, the Town is obligated, under the Act, to investigate. A Professional Engineer has identified a number of deficiencies in the drain and the Town cannot ignore these deficiencies. Administration supports the proposed works. Council is the only body that can make the decision to abandon the works. However, as Council is now aware of the drain's deficiencies, they must respond. The Town is liable for damages resulting from not repairing the drain. The Meeting to Consider and the Court of Revision are held to allow affected landowners to voice their concerns regarding the proposed works and assessments.

Preparation of a new report allows for the development of a fair and accurate report and schedule of assessment. As noted in this report, certain culverts are not identified in the current by-law and issues related to inaccurate assessments have become apparent. Works on the drain cannot be undertaken under Section 74 Maintenance as the current by-law does not accurately reflect the conditions of the drainage area or system.

A meeting was held on June 5, 2015 attended by Mr. Sam Paglia, EI, Mr. Lutzmann, Roll No. 410-04700 and Mr. Don Joudrey, P.Eng. of Baird AE, to discuss lowering the drain bottom between Station 0+532 and the drain's outlet below the theoretical design described in the current report. A lower drain bottom would better accommodate Mr. Lutzmann's private tile at Station 0+528.16. In order to lower this section of the drain, Culvert No. 2 would also have to be lowered. Mr. Lutzmann was informed that the cost to lower the drain bottom and Culvert No. 2 would be assessed 100% to his lands.

A second Public Information Centre was held at Tecumseh Town Hall on September 14, 2016 to review the draft report dated June 7, 2016 and receive, document and respond to questions and concerns. Meeting minutes and a sign-in sheet are attached to this report in Appendix A.

9.0 Topographic Survey

We commenced our survey at the upstream end of the existing drain. The survey continued northerly, approximately 1,335 metres, to the drain's outlet into the South Talbot Road Drain East.

Additional topographic survey was carried out on the lands with Roll No. 410-04700 on the west side of the 11th Concession Road to determine the location and elevation of the existing private tile. Topographic surveys were also conducted on portions of lands with Roll No. 440-01100, Roll No. 440-01001 and Roll No. 440-00905 at the request of the landowners to determine the extent of the drainage area. It was determined through a review of the resulting topographic data that revisions were required to the affected areas of these parcels as listed in the attached Schedules of Assessment.

10.0 Existing Conditions

We find that the East McPherson Drain is in need of repair and requires cleaning and culvert replacement pursuant to Section 78 of the Act.

Further, as a result of the survey, we have found the following:

Considerable sediment has accumulated in the bottom of the drain preventing the proper flow of water, particularly between Station 0+520 and Station 1+280. Considerable vegetation is present throughout the drain, particularly between Station 0+000 and Station 0+500; Station 0+680 and Station 0+800; Station 1+000 and Station 1+200.

A private corrugated plastic tile main exists at Station 0+528.16. The tile drains private agricultural lands on the west side of 11th Concession Road. The outlet of the tile is currently below the existing drain bottom.

Bank slope erosion was noted between Station 0+527.66 and Station 0+528.66 caused by flows entering the drain from the private tile main at Station 0+528.16.

There are currently three confirmed road crossings entering the East McPherson Drain as described below:

Road Crossing No. 1– Town of Tecumseh
Station 0+752.88
The existing 200mm diameter pipe is in satisfactory condition. End of pipe protection is absent from both the west end of the pipe. This structure is not currently identified as part of the East McPherson Drain under the current by-law.

Road Crossing No. 2 – Town of Tecumseh
Station 1+013.03
The existing 600mm diameter corrugated steel pipe is in poor condition and is ¾ filled with sediment. End of pipe protection is absent from both the east and west ends of the pipe. This structure is currently identified as part of the East McPherson Drain under the current by-law.

Road Crossing No. 3 – Town of Tecumseh
Station 1+324.13
The existing 450mm diameter corrugated steel pipe is in satisfactory condition. End of pipe protection is absent from both the east and west ends of the pipe. This structure is not currently identified as part of the East McPherson Drain under the current by-law.

There are currently seven culverts within the East McPherson Drain as described below:

Culvert No. 1 – Charles Farough
Roll No. 440-01200
Station 0+245.49
The existing 900mm diameter corrugated steel pipe has been removed from the drain at the owner's request. The cost of removal was paid completely by the owner and does not form part of this report.

Culvert No. 2 – Wayne & Lori Farough
6664 11th Concession Road
Roll No. 440-01100
Station 0+501.78

The existing 900mm diameter corrugated steel pipe is in fair condition with jute bag headwalls that are in good condition. Survey data indicates the pipe has backfall and hydraulic calculations confirm that the pipe size is satisfactory. This structure provides access to residential lands and is not currently identified as part of the East McPherson Drain under the current by-law.

Private Tile Drain Outlet – Ralph & Joanne Lutzmann
6604 Malden Road
Roll No. 410-04700
Station 0+528.16
The existing 200mm diameter PVC pipe is in satisfactory condition. The grade of the tile is 0.39%. The pipe is currently below the existing drain bottom. There is no end of pipe protection visible at the east end. This structure is a private tile outlet that drains an agricultural parcel on the west side of the 11th Concession Road.

Culvert No. 3 – Ila May Farough & Wayne Farough
6744 11th Concession Road
Roll No. 440-01001
Station 0+611.49
The existing 900mm diameter corrugated steel pipe is in fair condition with concrete piece headwalls that are in poor condition; the pipe size is satisfactory. Survey data indicates that the elevation of this culvert does not correspond with the existing or theoretical drain bottom. This structure provides secondary access to agricultural lands and is not currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 4 – Ila May Farough & Wayne Farough
6744 11th Concession Road
Roll No. 440-01001
Station 0+671.32
The existing 900mm diameter corrugated steel pipe is in fair condition; the existing concrete block headwalls are in poor condition. The pipe size is satisfactory. This structure provides access to a residence on agricultural lands and is currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 5 – Tate Farough
6776 11th Concession Road
Roll No. 440-01000
Station 0+752.39
The existing 900mm diameter corrugated steel pipe is in poor condition. Headwalls are constructed of concrete pieces at the north end and poured concrete at the south end. Both headwalls are in fair condition. The pipe size is satisfactory. This structure provides access to a residence and is currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 6 – Charles Farough
6848 11th Concession Road
Roll No. 440-00900
Station 0+903.79
The landowner notified the Town on May 1, 2014 that the existing 900mm diameter corrugated steel pipe had collapsed. The landowner informed the Town that the culvert was no longer required to provide access to the residence on the parcel. This culvert was removed from the drain in April 2015 under emergency provisions; the cost of removal was paid completely by the owner and does not form part of this report. The culvert was identified as part of the East McPherson Drain under the current by-law.

Culvert No. 7 – Charles Farough
6848 11th Concession Road
Roll No. 440-00900
Station 0+989.06
The existing 900mm diameter corrugated steel pipe is in poor condition and hydraulic calculations suggest the size is appropriate. Headwalls constructed of concrete pieces are in poor condition. This structure provides secondary access to agricultural lands and is currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 8 – Danny & Mary Gerard
6988 11th Concession Road
Roll No. 440-00720
Station 1+176.75
The existing 600mm diameter corrugated steel pipe is in fair to poor condition and hydraulic calculations suggest the pipe size is appropriate. The pipe is approximately ¾ filled with sediment. Gabion stone erosion protection in fair condition is in place at the north and south ends of the culvert. This secondary structure is not currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 9 – Danny & Mary Gerard and Ronald Gerard
6988 11th Concession Road and 7000 11th Concession Road
Roll No. 440-00720 and Roll No. 440-00705
Station 1+205.12
The existing 600mm diameter corrugated steel pipe forms an enclosure spanning two properties. The pipe is in satisfactory condition and hydraulic calculations indicate the pipe is sized appropriately. The pipe is approximately ¾ filled with sediment. Gabion stone erosion protection in fair condition is in place at the north and south ends of the pipe. The driveway portion of this structure is currently identified as part of the East McPherson Drain under the current by-law and provides access to two separate parcels, being the lands with Roll No. 440-00720 and Roll No. 440-00705. Based on a review of the current report prepared by C.G.R. Armstrong, P.Eng. dated April 3, 1969, we have determined that the enclosure was added after preparation of the last report.

Based on the existing conditions and a review of the theoretical drain profile provided in the 1969 Armstrong report, we have determined that restoring the drain to the existing drain profile, between Station 0+532 and Station 1+335.50, would improve drain function.

11.0 Request for Emergency Works

On May 1, 2014 the Town's Drainage Superintendent received notice from the landowner of 6848 11th Concession Road, Roll No. 400-00900, that Culvert No. 6 at Station 0+903.78 had collapsed. The Drainage Superintendent inspected Culvert No. 6 on May 6, 2014 and determined that the culvert had deteriorated causing the top north end to collapse inward. The granular material atop the culvert then washed into the East McPherson Drain causing an obstruction in the drain and reducing the driveable top width for emergency access.

The Drainage Superintendent made an application to the Minister of Agriculture and Food to obtain approval to repair the culvert in accordance with Section 124 of the Act. An emergency designation was not awarded for this work; however, correspondence received from the Drainage Coordinator at the Ministry of Agriculture and Food indicated that the works can be completed as necessary under maintenance with the costs being assessed in accordance with this report after its adoption. Should this report not be adopted, a new report under Section 78 of the Act must be completed to address the failure and to incorporate a cost recovery scheme for the replacement

works.

The landowner indicated to the Drainage Superintendent that he had a preferred contractor to undertake removal of the failed culvert. The Drainage Superintendent provided the landowner with the requirements to allow a qualified contractor to perform work for the Town. It should be noted that any replacement culvert installed in future must be installed in accordance with the specifications provided in this report for the East McPherson Drain.

The Town has received and accepted a quote to remove this culvert as per the request from the landowner. Culvert No. 1 and No. 6 were removed from the drain in April 2015 at the cost of the requesting landowner.

In September 2016 concern was expressed about the absence of a culvert in front of the residence at 6848 11th Concession Road (the location of the former Culvert No. 6). After reviewing the site, it is apparent that the presence of the approach and driveway could cause confusion to motorists and does pose an unacceptable safety risk. We would recommend that one of the following options be implemented:

1. Reinstall Culvert No. 6 according to specifications provided within this report.
    - The cost to construct the culvert, including incidental fees, would be assessed to the benefitting lands and the upstream lands and roads as described in Section 18.0 Assessments of this report.
2. Remove all evidence of the approach on the road shoulder and driveway on private lands within 5 metres of the east top of bank. Relocate municipal number sign and mailbox to a location adjacent to Culvert No. 7.
    - The cost of this work shall be completed by the owner at the owner's cost. We recommend that this work be completed under the supervision of the Town's Drainage Superintendent.

Mr. Farough notified the Town that he wished to proceed with Option #1 Reinstallation of Culvert No. 6.

12.0 Recommendations

We would recommend the following works be performed in order to overcome the above noted deficiencies:

a) Excavation work shall be undertaken to remove accumulated sediment and vegetation within the drain:
    i. Drain shall be deepened between Station 0+000 and Station 0+500;
    ii. Excavation to design drain bottom shall be undertaken between Station 0+500 and Station 1+335.50;

b) Existing culverts and end of pipe protection shall be removed and replaced:
    i. Culvert No. 5 at Station 0+752.39: 11.7 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;
    ii. Culvert No. 7 at Station 0+989.06: 14.4 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

c) Existing culvert to be cleaned:
    i. Culvert No. 2 at Station 0+501.78: Clean existing 7.0 metres of 900mm diameter corrugated steel pipe;
    ii. Culvert No. 4 at Station 0+671.32: Clean existing 8.37 metres of 900mm diameter

corrugated steel pipe;

iii. Culvert No. 8 at Station 1+176.75: Clean existing 9.63 metres of 600mm diameter corrugated steel pipe;

iv. Culvert No. 9 at Station 1+205.12: Clean existing 38.59 metres of 600mm diameter corrugated steel pipe;

d) Supply and install culvert and end of pipe protection:
   i. Culvert No. 6 at Station 0+901.54: 12.40 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

e) Culvert No. 3 at Station 0+611.49: The culvert shall be inspected at the time of construction by the Engineer, Drainage Superintendent and landowner. Should the existing culvert be in satisfactory condition, the existing pipe shall be salvaged, reset and extended with sloped gabion stone end of pipe protection. Should salvage of the culvert not be possible, 15.0 metres of new 900mm diameter Boss 2000 320kPa pipe shall be supplied and placed with sloped gabion stone end of pipe protection;

f) Existing road crossing shall be extended:
   i. Crossing No. 1 at Station 0+752.88: Existing 200mm diameter road crossing shall be extended 1.0 metre using 200mm diameter Big 'O' tile. Sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

g) Existing road crossing shall be removed and replaced:
   i. Crossing No. 2 at Station 1+013.03: 15.2 metres of new 600mm diameter aluminized corrugated steel pipe with sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

h) Existing road crossing shall be cleaned:
   i. Crossing No. 3 at Station 1+324.13: 15.10 metres of existing 450mm diameter corrugated steel pipe shall be cleaned and sloped gabion stone erosion protection shall be placed at the east and west ends of the pipe;

i) Seeding and mulching shall be undertaken on all excavated portions of the drain sideslopes to prevent erosion;

j) Gabion stone erosion protection for field furrows shall be supplied and laid to prevent further erosion to the drain bank;

k) A 45-degree bend shall be installed at the downstream end of the private tile at Station 0+528.16 to direct flow downstream.

We would recommend that Culvert No. 2, 4, 8 and 9 remain in place; however, should these culverts fail during the proposed cleaning process, we would recommend that the culverts be replaced in accordance with the following provisions; the Future Culvert Replacement table on Drawing Sheet 6; and in consultation with the affected landowners:

a) Culvert No. 2 at Station 0+501.78: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that it be replaced under this by-law as an act of maintenance and assessed in accordance with proportions set out in the maintenance clauses of this report and any apportionment agreements in place at the time of replacement.

   We would recommend the installation of 900mm diameter Boss 2000 320kPa pipe with

sloped gabion stone end of pipe protection. The pipe length shall allow for a 6.0 metre driveable top width. The new culvert shall be installed at an elevation that is embedded 10% of the pipe diameter below the design grade of the drain as stated in the then current by-law.

b) Culvert No. 4 at Station 0+671.32: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that it be replaced under this by-law as an act of maintenance and assessed in accordance with proportions set out in the maintenance clauses of this report and any apportionment agreements in place at the time of replacement.

   We would recommend the installation of 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection. The pipe length shall allow for a 9.0 metre driveable top width. The new culvert shall be installed at an elevation that is embedded 10% of the pipe diameter below the design grade of the drain as stated in the then current by-law.

c) Culvert No. 8 at Station 1+176.75: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that this culvert be removed and not replaced at the request of the landowner.

d) Culvert No. 9 at Station 1+205.12: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that the enclosure portion of the culvert be removed at the request of the landowner. To replace the driveway portion of the enclosure we would recommend the installation of 600mm diameter Boss 2000 320 kPa pipe with slope gabion stone end of pipe protection. The pipe length shall accommodate a 12.0 metre wide drivable top width to be centred on the existing driveway that will allow for a 6.0 metre wide driveway on either side of the property line.

Should Culvert No. 1 be re-installed in the future, we would recommend that it be installed in accordance with the following provisions, Table 1. Cost Sharing for Access Culverts over the East McPherson Drain and in consultation with the affected landowners and Drainage Superintendent:

- Culvert No. 1 at Station 0+245.49: We would recommend this culvert be constructed and assessed in accordance with proportions set out in the clauses of this report and any apportionment agreements in place at the time of replacement.

  We would recommend the installation of 1200mm diameter aluminized corrugated steel pipe with sloped gabion stone end of pipe protection. The pipe length shall allow for a 9.0 metre driveable top width. The new culvert shall be installed at an elevation that is embedded 10% of the pipe diameter below the design grade of the drain as stated in the then current by-law.

  The culvert would be considered part of the East McPherson Drain provided it was constructed in accordance with the above provisions and in consultation with the Drainage Superintendent.

The three culverts listed below are not identified as part of the drain in the 1969 Engineer's Report. We would recommend these structures be incorporated into the East McPherson Drain under this report:

Culvert No.	Station	Roll Number	Owner
2	0+501.78	440-01100	Lori & Wayne Farough
3	0+611.49	440-01001	Ila May Farough & Wayne Farough
8	1+176.75	440-00720	Danny & Mary Gerard

Incorporation of these culverts into the East McPherson Drain will allow the Town to undertake future maintenance as required.

We would further recommend that at such time a request for repair and improvement is made for the Santo Drain that the assessments made under this report be considered at the time of preparation of the new report.

13.0 Fisheries Issues

The East McPherson Drain is a Type 'F' drain. A Type 'F' drain is considered to have intermittent or ephemeral flow. A drain with ephemeral flow is typically dry for more than two consecutive months.

We would recommend the following measures be utilized to mitigate damage to the drain during construction:

- No work shall be undertaken between March 15 and June 30
- All work shall be completed in the dry
- Culverts shall be installed with a minimum of 10.0% embedment
- All disturbed soils shall be stabilized upon completion of the work
- Silt fence sediment control shall be implemented during construction
- Contractor shall prevent entry of petroleum products, debris and deleterious substances into the water.

A review of the Sensitive Areas Maps for the Town of Tecumseh indicates that no endangered species, as listed under the Endangered Species Act, are expected to be encountered at the site of the proposed works.

This report was submitted to Fisheries and Oceans Canada (DFO) for review. Correspondence received recommended that standard erosion and sediment control and bank stabilization procedures be incorporated into the proposed work. No specific concerns were noted.

14.0 Drawings and Specifications

Attached to this report is Drawing No. 13-093 Sheets 1 to 6. The drawings illustrate the location of the proposed drainage works and the land affected by the work, together with the detail and cross sections of the recommended work. Specifications are included in this report showing the dimensions, grades, disposal of material, working areas for construction and future maintenance, and other particulars of the recommended work.

15.0 Working Area

The areas available to the Contractor to be used for the purpose of constructing the recommended works of this report and for construction and future maintenance as provided for under Section 63 of the Act are described as follows:

The Contractor shall utilize a 9.0 metre wide maintenance corridor on abutting agricultural

lands measured easterly from the centre line of the drain.

Where the drain passes in front of residential properties, lawns or road crossings, the Contractor shall access the drain from the road right-of-way.

16.0 Allowances for Lands Taken and Damages

In accordance with the provisions of the Act, monetary allowances are provided to those landowners from which land is required to be used for the construction of a new drain or for the establishment of an easement for the construction and future maintenance of a drain or for land required to dispose of excavated material or for land required to obtain access to a Municipal Drainage System.

We find that no land is required to be used for the construction of a new drain or for the establishment of an easement for the construction and future maintenance of a drain or for land required to obtain access to a Municipal Drainage System, therefore, we have not provided any allowance for lands taken in our estimate as is otherwise normally provided for under sub-section (a) of Section 29 of the Act.

We further find that each of the following owners is entitled to and should receive the following amounts as compensation for the damages to lands and crops, if any. We have used a rate of $3,700.00 per hectare to determine the compensation paid, if any:

1. Charles Farough
   N Pt Lt 4, Concession 11, Roll No. 440-01200
   Station 0+000 to Station 0+243
   Land being approximately 243 metres long and 9.0 metres wide
   Approximately 0.22 hectares (.54 acres) for spreading of excavated material along the east side of the drain $ 814.00

2. Lori & Wayne Farough
   N/S Pt Lt 3 & 4, Concession 11, Roll No. 440-01100
   Station 0+258 to Station 0+489
   Land being approximately 231 metres long and 9.0 metres wide
   Approximately 0.21 hectares (0.51 acres) for spreading of excavated material along the east side of the drain $ 777.00

3. Lori & Wayne Farough
   Pt N 1/2 of S ½ Lt 3, Concession 11, Roll No. 440-00905
   Station 0+799 to Station 0+890
   Land being approximately 91 metres long and 9.0 metres wide
   Approximately 0.08 hectares (0.20 acres) for spreading of excavated material along the east side of the drain $ 296.00

4. Mary Jean Gerard
   Pt Lt 2, Concession 11, Roll No. 400-00800
   Station 1+039 to Station 1+180 and Station 1+262 to Station 1+328
   Land being approximately 207 metres long and 9.0 metres wide
   Approximately 0.19 hectares (0.46 acres) for spreading of excavated material along the east side of the drain $ 703.00

Total for Damages **$ 2,590.00**

We have provided for this in our estimate as is provided for under sub-section (b) of Section 29 of the Act.

17.0 Estimate of Cost

Our estimate of the total cost of this work, including all incidental expenses and HST, is the sum of ONE HUNDRED AND SIXTY FIVE THOUSAND, NINE HUNDRED AND THIRTY FIVE---------- dollars ($165,935.00), and made up as follows:

CONSTRUCTION

1)	1,325.0	Cubic metres of excavation, including any required brushing and grubbing, to be undertaken along the length of the drain complete at $ 20.00 per cubic metre Excavated material shall be cast and spread on abutting agricultural lands. Where the drain crosses in front of residential lands, the material shall be loaded, hauled and disposed of on adjacent agricultural lands.		
		Total to Excavate Material from Drain		$ 26,500.00
2)		Existing culvert to be cleaned between Station 0+501.78 and Station 0+508.79 for Lori & Wayne Farough (Culvert No. 2):		
		i) Clean 7.0 metres of existing 900mm diameter corrugated steel pipe complete at $ 500.00 Lump Sum	$ 500.00	
		Total to Clean Culvert No. 2		$ 500.00
3)		Works to be undertaken on existing culvert Station 0+611.49 and Station 0+626.49 for Ila May Farough & Wayne Farough (Culvert No. 3):		
		i) Remove 9.8 metres of existing 900 mm diameter corrugated steel pipe and granular material and dispose of offsite complete at $ 1,250.00 Lump Sum	$ 1,250.00	
		ii) Supply and set approximately 15.0 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre	$ 4,875.00	
		iii) Supply, place and compact approximately 30.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne	$ 1,050.00	

iv) Supply, place and compact approximately 85.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,700.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Replace Culvert No. 3 — $ 11,125.00

OR

In consultation with the Engineer, Drainage Superintendent and landowner, the culvert shall be inspected at the time of construction. Should the culvert be found to be in satisfactory condition, it shall be salvaged, reset and extended as follows:

i) Salvage and reset 9.8 metres of existing 900 mm diameter corrugated steel pipe including disposal of existing granular material complete at $ 2,000.00 Lump Sum — $ 2,000.00

ii) Supply and set approximately 6.0 metres of 900mm diameter aluminized corrugated steel pipe, 2.0mm thickness with 68x13mm corrugations complete at $ 350.00 per metre — $ 2,100.00

iii) Supply, place and compact approximately 30.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 1,050.00

iv) Supply, place and compact approximately 85.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,700.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Salvage, Reset and Extend Culvert No. 3 — $ 9,100.00

4) Existing culvert to be cleaned between Station 0+671.32 and Station 0+679.69 for Ila May Farough & Wayne Farough (Culvert No. 4):

ii) Clean 8.4 metres of existing 900mm diameter corrugated steel pipe complete at $ 500.00 Lump Sum — $ 500.00

Total to Clean Culvert No. 4 — $ 500.00

5) Existing road crossing to be cleaned and extended at Station 0+752.88 (Road Crossing No. 1):

i) Clean 14.0 metres of existing 200mm Big 'O' tile complete at $ 800.00 Lump Sum. — $ 800.00

ii) Extend existing 200mm diameter Big 'O' tile northerly using 1.0 metre of new 200mm diameter Big 'O' tile existing complete at $ 50.00 per metre — $ 50.00

Total to Clean Road Crossing No. 1 — $ 850.00

6) Existing culvert to be replaced between Station 0+752.39 and Station 0+764.09 for Tate Farough (Culvert No. 5):

i) Remove 8.8 metres of existing 900 mm diameter corrugated steel pipe and granular material and dispose of offsite complete at $ 1,250.00 Lump Sum — $ 1,250.00

ii) Supply and set approximately 11.7 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre — $ 3,805.00

iii) Supply, place and compact approximately 20.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 700.00

iv) Supply, place and compact approximately 75.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,500.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Replace Culvert No. 5 — $ 9,505.00

7) Existing culvert to be replaced between Station 0+901.54 and Station 0+913.94 for Charles Farough (Culvert No. 6):

i) Supply and set approximately 12.4 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre — $ 4,030.00

ii) Supply, place and compact approximately 25.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 875.00

iii) Supply, place and compact approximately 70.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,400.00

iv) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

v) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Construct Culvert No. 6 — $ 8,555.00

8) Existing culvert to be replaced between Station 0+989.06 and Station 1+003.46 for Charles Farough (Culvert No. 7):

i) Remove 8.2 metres of existing 900 mm diameter corrugated steel pipe and granular material and dispose of offsite complete at $ 1,250.00 Lump Sum — $ 1,250.00

ii) Supply and set approximately 14.4 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre — $ 4,680.00

iii) Supply, place and compact approximately 30.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 1,050.00

iv) Supply, place and compact approximately 85.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,700.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Replace Culvert No. 7 — $ 10,930.00

9) Existing road crossing at Station 1+013.03 for the Town of Tecumseh (Road Crossing No. 2):

i) Remove 15.24 metres of existing 600 mm diameter PVC, granular material and existing road surface complete at $ 1,500.00 Lump Sum — $ 1,500.00

ii) Supply and set approximately 15.2 metres of 600 mm diameter Boss 2000 320 kPa pipe including Granular 'A' bedding and covering material, as per OPSS 1010, complete at $ 200.00 per metre — $ 3,040.00

iii) Supply, place and compact approximately 45.0 tonnes of Granular 'A' backfill, as per OPSS 1010, complete at $ 35.00 per tonne — $ 1,575.00

iv) Supply and place 20.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,300.00

v) Supply and place 10.0 square metres of tar and chip double surface road treatment complete at $ 100.00 per square metre — $ 1,000.00

Total to Replace Road Crossing No. 2 — $ 8,415.00

10) Existing culvert to be cleaned between Station 1+176.75 and Station 1+186.38 for Danny & Mary Gerard (Culvert No. 8):

i) Clean 9.5 metres of existing 600mm diameter corrugated steel pipe complete at $ 500.00 Lump Sum — $ 500.00

Total to Clean Culvert No. 8 — $ 500.00

11) Existing enclosure to be cleaned between Station 1+205.12 and Station 1+243.71 for Danny & Mary Gerard and Ronald Gerard (Culvert No. 9):

i) Clean 38.6 metres of existing 600mm diameter corrugated steel pipe complete at $ 2,000.00 Lump Sum — $ 2,000.00

Total to Clean Culvert No. 9 — $ 2,000.00

12) Existing road crossing to be cleaned and end of pipe protection to be supplied and placed at Station 1+324.13 (Road Crossing No. 3):

i) Clean 15.0 metres of existing 450mm diameter corrugated steel pipe at $ 1,000.00 Lump Sum — $ 1,000.00

ii) Supply and place 20.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric at the east and west ends of the pipe complete at $ 65.00 per square metre — $ 1,300.00

Total to Clean Road Crossing No. 3 — $ 2,300.00

13)	L.S.	Supply and spreading of good quality grass seed and mulch on all portions of excavated sideslopes complete at $ 10,000.00 Lump Sum.		$ 10,000.00
14)	L.S.	The Contractor shall provide a traffic control plan to the Town of Tecumseh for approval before construction commences. The Contractor shall supply, install and maintain the necessary signage during the construction period according to the latest revision of the Ontario Traffic Manual Book 7, Temporary Conditions, complete at $ 5,000.00 Lump Sum.		$ 5,000.00
15)	8.0	Square metres of 100 – 230mm diameter gabion stone (300 mm thick) erosion protection laid on Terrafix 270R Filter Fabric to be placed at all existing field furrows and line drains to prevent bank slope erosion complete at $ 65.00 per square metre.		$ 520.00
16)		Works to be undertaken on private tile at Station 0+497.22:		
		i) Supply and place 200mm diameter 45-degree bend at outlet of existing tile at $ 75.00 Lump Sum	$ 75.00	
		ii) Supply and place 3.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric on drain bank at $ 65.00 per square metre	$ 195.00	
		Note: The gabion stone shall be placed flush with the abutting grassed drain bank.		
		iii) Supply and place rodent grate on tile outlet at $ 50.00 per each	$ 50.00	
		Total for Works on Private Tile		$ 320.00
17)	L.S.	Contingency Allowance to be used only upon approval of Drainage Superintendent and/ or Engineer		$ 5,000.00
		SUB TOTAL FOR CONSTRUCTION		**$ 102,520.00**

INCIDENTALS

Attendance at site meeting, survey	$ 2,000.00
Report, estimate and specifications	$ 26,150.00
Engineering Fees for revisions to report, assessment schedules and plans	

(Special Benefit to Town of Tecumseh)	$ 5,000.00
Assistants and expenses, report and drawing preparation	$ 6,000.00
Attendance at Public Information Centres, Meetings to Consider and Courts of Revision	$ 5,000.00
Tender documents	$ 1,000.00
ERCA Permit Application Fee	$ 800.00
Construction Inspection	$ 12,050.00
Sub Total for Incidentals	$ 58,000.00
Sub Total for Construction (brought forward)	$ 102,520.00
Sub Total for Construction and Incidentals	$ 160,520.00
HST Payable (1.76% Non-Recoverable)	$ 2,825.00
Total for Allowances (brought forward)	$ 2,590.00
T O T A L E S T I M A T E	**$ 165,935.00**

18.0 Assessment

Assessments to lands are provided in the attached Schedule of Assessment in three separate columns being Special Benefit, Benefit and Outlet. Section 1 of the Act provides the following definitions:

"Special Benefit" *means any additional work or feature included in the construction, repair or improvement of a drainage works that has no effect on the functioning of the drainage works.* A breakdown of how the Special Benefits assessments were calculated is provided on Page 3 and 4 of 4 of the Schedule of Assessment.

"Benefit" means *the advantages to any lands, roads, buildings or other structures from the construction, improvement, repair or maintenance of a drainage works such as will result in a high market value or increased crop production or improved appearance or better control of surface or subsurface water, or any other advantages relating to the betterment of lands, roads, buildings or other structures.*

"Outlet Liability" means *the part of the cost of the construction, improvement or maintenance of a drainage works that is required to provide such outlet or improved outlet.*

We would recommend that construction and incidental costs be assessed to the affected properties in accordance with the accompanying Construction Schedule of Assessment and the provisions described below.

We have determined that the East McPherson Drain conveys approximately 30% of the water from lands on the west side of the 11th Concession Road after its collection by the Santo Drain. The Santo Drain conveys the remaining 70% of water from the lands on the west side of the 11th Concession Road to a sufficient outlet. However, due to the direct tile connection of the lands with

Roll No. 410-04700, we have estimated that 70% of the water generated from that parcel drains into the East McPherson Drain with the remaining 30% being conveyed to sufficient outlet by the Santo Drain. The information presented above and that presented in Response #2 on page 11 of this report was taken into consideration when revising the Schedules of Assessment for the parcels with Roll No. 410-05300; 410-05200; 410-05150; 410-04600; 410-04700.

Each parcel is guaranteed one access over a Municipal Drain. The cost to clean, maintain or replace this one access culvert shall be shared between the benefitting parcel and the upstream lands and roads. Should a parcel have more than one culvert, the costs associated with cleaning, maintenance or replacement of the additional culvert(s) shall be assessed 100% to the benefitting lands. Therefore, the construction costs associated with the proposed works for Culverts No. 3, 7 and 8 shall be assessed 100% to the benefitting lands as listed in Table 1. Cost Sharing for Access Culverts over the East McPherson Drain, below.

The cost to remove and replace access culverts currently identified as part of the drain shall be shared between the owner and the upstream lands and roads in accordance with the clauses below and the percentages listed in Table 1. The percentages listed in Table 1 were derived based on the culvert's approximate location within the drain. Those culverts that are not currently identified as part of the East McPherson Drain shall be assessed 100% to the benefitting landowner, as listed in Table 1.

The owner of lands with Roll No. 440-01200 and Roll No. 440-00900 previously paid 100% of the cost to remove Culvert No. 1 and Culvert No. 6 from the drain. These works were completed prior to adoption of this report.

The construction and incidental costs associated with cleaning of Culvert No. 9, 30.79 metres of which is an enclosure spanning lands with Roll No. 440-00720 and Roll No. 440-00705, shall be shared between the two parcels with proportions of 37.0% and 63.0% respectively. The existing driveway portion of the enclosure is identified as part of the East McPherson Drain, therefore, we would recommend that the 7.8 metres of the total enclosure width forming the driveway and the length required for the sloped gabion stone end of pipe protection, be assessed as listed in Table 1.

Table 1. Cost Sharing for Access Culverts over the East McPherson Drain

Culvert No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
1	Removed from drain at owner's expense and request.				
2	0+501.78	440-01100	Lori & Wayne Farough	100%	0%
3	0+611.49	440-01001	Ila May Farough & Wayne Farough	100%	0%
4	0+671.32	440-01001	Ila May Farough & Wayne Farough	50%	50%
5	0+752.39	440-01000	Tate Farough	56%	44%
6	0+901.54	400-00900	Charles Farough	68%	32%
7	0+989.06	440-00900	Charles Farough	100%	0%
8	1+176.75	440-00720	Danny & Mary Gerard	100%	0%
9	1+205.12	440-00720 440-00705	Danny & Mary Gerard Ronald Gerard	40% 40%	20%

The cost to supply and place a 200mm diameter 45-degree bend, rodent grate and gabion stone erosion protection at Station 0+497.22 shall be assessed 100% as Special Benefit to the lands owned by Ralph and Joanne Lutzmann, Roll No. 410-04700.

The cost to remove and replace or clean the existing road crossings shall be assessed as described in Table 2, Road Crossing Assessments.

Table 2. Road Crossing Assessments

Crossing No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
Private Tile	0+497.22	410-04700	Ralph & Joanne Lutzmann	100%	0%
1	0+752.88	---	Town of Tecumseh	100%	0%
2	1+013.03	---	Town of Tecumseh	100%	0%
3	1+324.13	---	Town of Tecumseh	100%	0%

The cost to supply and install gabion stone erosion protection for field furrows and line drains shall be assessed 100% as Special Benefit to the adjacent lands.

The cost to complete topographic surveys on lands as requested by certain landowners shall be assessed 100% to those lands as Special Benefit as described in the attached Special Benefit Schedule of Assessment.

The Town of Tecumseh was assessed a Special Benefit of $5,000 for revisions to the report, assessment schedules and plans.

19.0 Maintenance

We would recommend that the areas described in Section 15.0 of this report, and as listed below, be used to access the drain during works of maintenance:

> The Contractor shall utilize a 9.0 metre wide maintenance corridor on abutting agricultural lands measured easterly from the centre line of the drain.
>
> Where the drain passes in from of residential properties, lawns or road crossings, the Contractor shall access the drain from the road right-of-way.

We would recommend that future maintenance costs be assessed to the affected properties in accordance with the following provisions and accompanying Maintenance Schedule of Assessment. The Maintenance Schedule of Assessment has been prepared assuming current drainage conditions will remain in effect at the time of future maintenance.

The Maintenance Schedule of Assessment has been developed based on an assumed maintenance cost of $10,000. This amount is arbitrary and does not represent the actual costs to be assessed. Actual costs for future maintenance works, including all engineering and incidental costs, shall be assessed against the affected lands and roads in the same proportions as those shown in the attached Maintenance Schedule of Assessment.

Should an existing access culvert require replacement, we would recommend that the cost to replace the structure be assessed to the benefitting landowner and the upstream lands and roads in accordance with the percentages listed in Table 3. Cost Sharing for Access Culverts over the East McPherson Drain, below. The percentage to be shared with the upstream lands and roads shall be assessed as outlet against those lands.

Future maintenance costs associated with Culverts No. 3, 7 and 8 shall be assessed 100% as Benefit to the benefitting lands, as listed in Table 3, as these culverts provide secondary access

to the individual parcels.

We would recommend that future maintenance costs associated with removal of Culvert No. 9, being an enclosure spanning lands with Roll No. 440-00720, owned by Danny & Mary Gerard, and Roll No. 440-00705, owned by Ronald Gerard, be shared between the two parcels with proportions of 37.0% and 63.0% respectively. The cost to replace the driveway portion of the enclosure shall be assessed as listed in Table 3.

Table 3. Cost Sharing for Access Culverts over the East McPherson Drain

Culvert No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
1	Removed from the drain at owner's expense and request.				
2	0+501.78	440-01100	Lori & Wayne Farough	37%	63%
3	0+611.49	440-01001	Ila May Farough & Wayne Farough	100%	0%
4	0+671.32	440-01001	Ila May Farough & Wayne Farough	50%	50%
5	0+752.39	440-01000	Tate Farough	56%	44%
6	0+901.54	440-00900	Charles Farough	68%	32%
7	0+989.06	440-00900	Charles Farough	100%	0%
8	1+176.75	440-00720	Danny & Mary Gerard	100%	0%
9	1+205.12	440-00720 440-00705	Danny & Mary Gerard Ronald Gerard	40% 40%	20%

The cost to maintain the 200mm diameter 45-degree bend, rodent grate and gabion stone erosion protection at Station 0+497.22 shall be assessed 100% to the lands owned by Ralph and Joanne Lutzmann, Roll No. 410-04700.

Maintenance costs associated with the existing road crossings shall be assessed as described in Table 4, Road Crossing Maintenance Assessments.

Table 4. Road Crossing Maintenance Assessments

Crossing No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
Private Tile	0+500	410-04700	Ralph & Joanne Lutzmann	100%	0%
1	0+752.88	---	Town of Tecumseh	100%	0%
2	1+013.03	---	Town of Tecumseh	100%	0%
3	1+324.13	---	Town of Tecumseh	100%	0%

The cost to maintain gabion stone erosion protection for field furrows and line drains shall be assessed 100% as Benefit to the affected landowner.

20.0 Grant

In accordance with the Agricultural Drainage Infrastructure Program (ADIP) and the provisions of Sections 85, 86 and 87 of the Act, a grant in the amount of 33 -1/3% of the assessment may be available for privately owned lands identified as assessed in this report and used for agricultural purposes. We would further recommend that the Town, upon completion of the project, make an application to the Ministry of Agriculture and Food in accordance with Section 88 of the Act for this grant.

The ADIP eligible grant amounts have not been applied to the assessments shown in the attached Schedule of Assessment. If applicable, ADIP grant amounts will be deducted from the final assessments at the time of invoicing.

All of which is respectfully submitted,

BAIRD AE INC.
27 PRINCESS STREET, UNIT 102
LEAMINGTON, ONTARIO
N8H 2X8

Halliday P. Pearson, P.Eng.

Don Joudrey, P.Eng.

APPENDIX A
MEETING MINUTES AND SIGN-IN SHEET
SEPTEMBER 14, 2016

Site Meeting: East McPherson Drain		
9.14.2016	17:30 PM	Town of Tecumseh, Town Hall

Meeting called by	Sam Paglia, P.Eng., Drainage Superintendent	
Type of meeting	Site Meeting: Repair & Improvement to the East McPherson Drain	
Facilitator	Sam Paglia, P.Eng., Drainage Superintendent	
Note taker	Cheryl Curran	
Attendees	Landowners: Baird AE: Tecumseh:	See attached attendance sign-in sheet Don Joudrey, P.Eng. & Halliday Pearson, P.Eng. Sam Paglia, Phil Bartnik, Cheryl Curran

Purpose of Meeting

Discussion	*Section 78, Repair & Improvement*

Baird AE is the appointed Drainage Engineer that examined the area requiring improvements to the East McPherson Drain.

The purpose of the meeting is to discuss both the technical aspect of the draft Engineer's Report and the assessment schedule to facilitate an efficient process for by-law adoption and for future maintenance going forward.

Engineer's Report

Discussion	Draft Report

Peggy Gerard attended the meeting on behalf of Mary Jean Gerard, her mother. Mary Gerard's property (CON 11 PT LOT 2, Roll 440-00800) was retiled and drains eastward towards the 12th Concession Rd. Copies of documentation supporting this were provided to Sam Paglia (tile loan and tile plan).

Baird AE will review the documentation and adjust the Engineer's Report accordingly.

Award Drain vs Municipal Drain

The question was raised as to when the East McPherson Drain was deemed a municipal drain. Landowners thought that it was an Award Drain rather than a Municipal Drain. In order for a drain to become a municipal drain, 60% of the affected landowners have to sign the petition to construct the drain.

Municipal drains are created under the authority of the *Drainage Act*. There are 3 key elements of a municipal drain:

1. Landowners submit a petition under the Drainage Act the local municipality requesting the establishment of a municipal drain to solve a drainage problem. An engineer is appointed by Council to prepare a report, identify solutions to the problem and how costs will be shared. It is a 'communally accepted' project.
2. Following any appeals, if any, the municipality passes a by-law adopting the engineer's report. The project is then constructed. The cost is assessed to the lands affected by the drain construction.
3. Once constructed, the drain becomes a municipal drain and is to be repaired and maintained as required.

The current design of the drain should mirror the 1969 design, adopted by Council.

The Town has documentation dating 1948 where landowners requested the East McPherson Drain be maintained. The most recent by-law inclusive of assessments is dated 1969. Peggy Gerard requests a copy of both the 1948 and 1969 documentation.

Mr. Joudrey also indicated that:

- Drainage tile - Lutzman property: Drainage tile (at the road crossing) was put in below grade. Alternative options to address this issue will be investigated by the Consultant Engineer.
- Culverts No. 2, 3, and 8 are not identified under the current by-law nor are Road Crossings No. 1 and 3.
- The entire watershed is to be assessed for the drainage works (there were changes to the watershed).

On-site investigations noted that approximately one meter of sediment had accumulated within the drain.

Mr. Joudrey will investigate the 'legal' status of the access culvert #3 under the *Drainage Act*.

Mr. Joudrey will also investigate the requirements to re-install a culvert access fronting Mr. Farough's property at 6848 11th Concession. There is a second access culvert located south of the removed access that can be used for vehicular access (including emergency vehicles).

One of the meeting participants indicated that following a severance, a landowner, who was once assessed into the East McPherson Drain, installed drain tile in his field and subsequently no longer drains into the East McPherson Drain. Instead, his land now drains into the Colchester Townline Drain. If this tile installation was done without authorization, what recourse is taken?

Mr. Paglia indicated that, according to Section 65(4) of the Drainage Act,

> "*If an owner of land that is assessed for a drainage works subsequently disconnects the land from the drainage works, the clerk of the local municipality in which the land is situate shall instruct an engineer in writing to inspect the land and determine the amount by which the assessment of the land should change.*"

Open Discussion	
Discussion	Question & Answer Period

Q: Who bears the responsibility of the drain maintenance and/or improvements? Are all landowners required to pay even if they themselves have no problem with the drain function?
A: The assessment schedule provided in the Engineer's Report will be used for future maintenance costs. With respect to Phragmites removal, Town of Tecumseh staff has met with Essex Regional Conservation Authority, County of Essex and the Ministry of Transportation to collaborate on a method to combat the evasive species. There is also an Ontario working group organized to help resolve this issue.

Q: In order to save costs, can landowners remove their own access culverts?
A: No. Anyone who interferes with the channel of the drain is liable for the damages that could result from their actions. An engineer's report includes the elevation and slopes to be maintained in order for the drain to function properly for both upstream and downstream landowners and OMAF requires that only qualified drainage contractors perform work on any municipal drain.

Q: Would it be more cost effective if the drain was improved/maintained a section at a time?
A: It is more cost effective to complete the drain maintenance all as one project. The cost is generally less, as construction companies are charging one unit for set-up costs, equipment and transportation costs, etc. Economies of scale come into effect.

Q: If a landowner requests a different bridge head than what is detailed in the engineer's report, can the landowner request this?
A: Yes. This is a "special benefit assessment" and would be levied against the property (of the requestor). This value usually represents the difference in cost between that which was originally designed and the increased level of design requested by a landowner.

Q: What about road safety concerns with respect to crossings over municipal drains?
A: Road safety issues are to be brought to the road authority's attention. The Town of Tecumseh has completed a condition assessment on bridges/culverts the identified deficiencies will be addressed.

Q: What is the process when a landowner identifies deficiency in the municipal drainage work?
A: If a landowner identifies a problem with the drain improvement/maintenance work, it is the landowner's responsibility to notify the drainage superintendent as soon as possible. There is a one-year maintenance period whereby contractors are responsible to repair any deficiencies.

Q: Can the traffic control price be reassessed? It seems very high.
A: These costs are estimates but are based on current prices and the experience of the Engineers with similar projects.

Q: If the construction price for the drain project is extremely high, do the landowner's have input?
A: If the cost of the work

- is assessed over $5,000 to a landowner, the payments can be pro-rated over 5 years and added to the taxes on the lands with a current interest charge
- if the Tender submissions are substantially greater than the Engineer's estimated cost of the drainage project (as provided in the Engineer's Report), the Tenders can be rejected and the project can be re-tendered at a later date.

Follow-up

The Consultant Engineer will contact each landowner to discuss the access culverts to their respective properties.

Mr. Paglia requests that landowners contact him at any time to discuss the assessments within the Engineer's Report.

For additional information pertaining to the Drainage Act, you can either contact Sam Paglia, Town of Tecumseh Drainage Superintendent or the Ministry of Agriculture, Food and Rural Affairs website at http://www.omafra.gov.on.ca/

Meeting Adjournment & Contact Information

Meeting adjourned at 7:15 p.m.

Sam Paglia, P.Eng., Drainage Superintendent
spaglia@tecumseh.ca
Town of Tecumseh -- 519-735-2184 ext. 105

Don Joudrey, P.Eng.
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CONSTRUCTION SCHEDULE OF ASSESSMENT
EAST MCPHERSON DRAIN
IN THE
TOWN OF TECUMSEH
PROJECT REFERENCE 13-093

June 17, 2014
Reconsidered April 11, 2017

MUNICIPAL LANDS:

Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
11th Concession Road	---	---	3.80	1.54	Town of Tecumseh	$ 22,905.00	$ 9,550.00	$ 6,805.00	$ 39,260.00
Total on Municipal Lands						$ 22,905.00	$ 9,550.00	$ 6,805.00	$ 39,260.00

PRIVATELY OWNED AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
440-01200	11	N PT LT 4	27.75	11.23	4.00	1.62	Charles Farough	$ 115.00	$ 1,910.00	$ 605.00	$ 2,630.00
440-01100	11	N/S PT LT 3 & 4	36.95	14.95	15.81	6.40	Lori & Wayne Farough	$ 860.00	$ 7,545.00	$ 2,815.00	$ 11,220.00
440-01001	11	N PT LT 3	25.20	10.20	6.25	2.53	Ila May Farough & Wayne Farough	$ 17,905.00	$ 2,980.00	$ 1,285.00	$ 22,170.00
440-00905	11	PT N 1/2 OF S 1/2 LT 3	24.20	9.79	4.97	2.01	Lori & Wayne Farough	$ 160.00	$ 2,370.00	$ 1,460.00	$ 3,990.00
440-00900	11	S PT LT 3	25.00	10.12	6.97	2.82	Charles Farough	$ 26,115.00	$ 3,325.00	$ 2,725.00	$ 32,165.00
400-00800	11	PT LT 2	38.13	15.43	21.45	8.68	Mary Jean Gerard	$ 145.00	$ 10,230.00	$ 9,360.00	$ 19,735.00
410-05300	10	S PT LT 2	27.68	11.20	6.38	2.58	Patrick & Nicole Gerard	$ -	$ -	$ 3,660.00	$ 3,660.00
410-05200	10	S PT LT 3	79.14	32.03	8.04	3.25	C. Farough & P. Farough	$ -	$ -	$ 3,745.00	$ 3,745.00
410-05150	10	S PT LT 3	17.07	6.91	3.52	1.43	Norman & Rose Jobin	$ -	$ -	$ 935.00	$ 935.00
410-04600	10	S PT LT 3	20.00	8.09	2.31	0.93	R. & S. Clarkson	$ -	$ -	$ 500.00	$ 500.00
410-04700	10	N PT LT 3	31.87	12.90	20.72	8.39	Ralph & Joanne Lutzmani	$ 595.00	$ -	$ 3,910.00	$ 4,505.00

Total on Privately Owned Agricultural Lands								$ 45,895.00	$ 28,360.00	$ 31,000.00	$ 105,255.00

PRIVATELY OWNED NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
440-01000	11	S PT LT 3	0.81	0.33	0.81	0.33	Tate Farough	$ 8,250.00	$ 1,160.00	$ 690.00	$ 10,100.00
440-00720	11	PT LT 2	1.22	0.49	1.22	0.49	Danny & Mary Gerard	$ 1,815.00	$ 1,745.00	$ 1,585.00	$ 5,145.00
440-00705	11	PT LT 2	0.49	0.20	0.49	0.20	Ronald Gerard	$ 1,770.00	$ 700.00	$ 645.00	$ 3,115.00
410-05302	10	PT LT 1 & 2	1.80	0.72	1.80	0.72	Patrick & Nicole Gerard	$ -	$ -	$ 3,060.00	$ 3,060.00
Total on Privately Owned Non-Agricultural Lands								$ 11,835.00	$ 3,605.00	$ 5,980.00	$ 21,420.00
TOTAL ASSESSMENT								$ 80,635.00	$ 41,515.00	$43,785.00	$165,935.00
		Area Assessed:			108.53	43.91					

SPECIAL BENEFIT ASSESSMENTS
EAST MCPHERSON DRAIN
IN THE
TOWN OF TECUMSEH
PROJECT REFERENCE 13-093

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	SPECIAL BENEFIT ITEMS: Additional Survey & Excavation	Enclosure & Culverts	Gabion Stone	Road Crossings & Design	TOTAL Special Benefit Assessment
11th Concession Road	3.80	1.54	Town of Tecumseh	---	---	---	$ 22,905.00	$ 22,905.00
Total on Municipal Lands				---	---	---	$ 22,905.00	$ 22,905.00

PRIVATELY OWNED AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Additional Survey & Excavation	Enclosure & Culverts	Gabion Stone	Road Crossing	Special Benefit Assessment
440-01200	11	N PT LT 4	4.00	1.62	Charles Farough	---	$ -	$ 115.00	---	$ 115.00
440-01100	11	N/S PT LT 3 & 4	15.81	6.40	Lori & Wayne Farough	---	$ 775.00	$ 85.00	---	$ 860.00
440-01001	11	N PT LT 3	6.25	2.53	Ila Mae Farough & & Wayne Farough	$ 75.00	$ 17,630.00	$ 200.00	---	$ 17,905.00
440-00905	11	PT N 1/2 OF S 1/2 LT 3	4.97	2.01	Lori & Wayne Farough	$ 75.00	---	$ 85.00	---	$ 160.00
440-00900	11	S PT LT 3	6.97	2.82	Charles Farough	$ 75.00	$ 25,955.00	$ 85.00	---	$ 26,115.00
400-00800	11	PT LT 2	21.45	8.68	Mary Jean Gerard	---	---	$ 145.00	---	$ 145.00
410-05300	10	S PT LT 2	6.38	2.58	Patrick & Nicole Gerard	---	---	---	---	$ -
410-05200	10	S PT LT 3	7.80	3.25	C. Farough & P. Farough	---	---	---	---	$ -
410-05150	10	S PT LT 3	3.52	1.43	Norman & Rose Jobin	---	---	---	---	$ -
410-04600	10	S PT LT 3	2.31	0.93	R. & S. Clarkson	---	---	---	---	$ -
410-04700	10	N PT LT 3	20.72	8.39	Ralph & Joanne Lutzmann	$ 100.00	$ -	$ 495.00	---	$ 595.00

Total on Privately Owned Agricultural Lands ----------	$ 325.00	$ 44,360.00	$ 1,210.00	---	$ 45,895.00

PRIVATELY OWNED NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Additional Survey & Excavation	Enclosure & Culverts	Gabion Stone	Road Crossing	Special Benefit Assessment
440-01000	11	S PT LT 3	0.81	0.33	Tate Farough	---	$ 8,250.00	---	---	$ 8,250.00
440-00720	11	PT LT 2	1.22	0.49	Danny & Mary Gerard	---	$ 1,815.00	---	---	$ 1,815.00
440-00705	11	PT LT 2	0.49	0.20	Ronald Gerard	---	$ 1,685.00	$ 85.00	---	$ 1,770.00
410-05302	10	PT LT 1 & 2	1.80	0.72	Patrick & Nicole Gerard	---	---	---	---	$ -
Total on Privately Owned Non-Agricultural La						---	$ 11,750.00	$ 85.00	---	$ 11,835.00
TOTAL SPECIAL BENEFIT ASSESSMENT						$ 325.00	$ 56,110.00	$ 1,295.00	$22,905.00	$ 80,635.00

MAINTENANCE SCHEDULE OF ASSESSMENT
EAST MCPHERSON DRAIN
IN THE
TOWN OF TECUMSEH
PROJECT REFERENCE 13-093

June 17, 2014
Reconsidered April 11, 2017

MUNICIPAL LANDS:

Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Benefit	Outlet	Total Assessment
11th Concession Road	---	---	3.80	1.54	Town of Tecumseh	$ 1,280.00	$ 685.00	$ 1,965.00
Total on Municipal Lands						$ 1,280.00	$ 685.00	$ 1,965.00

PRIVATELY OWNED AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Benefit	Outlet	Total Assessment
440-01200	11	N PT LT 4	27.75	11.23	4.00	1.62	Charles Farough	$ 260.00	$ 75.00	$ 335.00
440-01100	11	N/S PT LT 3 & 4	36.95	14.95	15.81	6.40	Lori & Wayne Farough	$ 1,020.00	$ 365.00	$ 1,385.00
440-01001	11	N PT LT 3	25.20	10.20	6.25	2.53	Ila May Farough & Wayne Farough	$ 405.00	$ 170.00	$ 575.00
440-00905	11	PT N 1/2 OF S 1/2 LT 3	24.20	9.79	4.97	2.01	Lori & Wayne Farough	$ 320.00	$ 150.00	$ 470.00
440-00900	11	S PT LT 3	25.00	10.12	6.97	2.82	Charles Farough	$ 450.00	$ 225.00	$ 675.00
400-00800	11	PT LT 2	38.13	15.43	21.45	8.68	Mary Jean Gerard	$ 1,380.00	$ 760.00	$ 2,140.00
410-05300	10	S PT LT 2	30.00	12.14	6.38	2.58	Patrick & Nicole Gerard	$ -	$ 375.00	$ 375.00
410-05200	10	S PT LT 3	79.14	32.03	8.04	3.25	C. Farough & P. Farough	$ -	$ 335.00	$ 335.00
410-05150	10	S PT LT 3	17.07	6.91	3.52	1.43	Norman & Rose Jobin	$ -	$ 105.00	$ 105.00
410-04600	10	S PT LT 3	20.00	8.09	2.31	0.93	R. & S. Clarkson	$ -	$ 65.00	$ 65.00
410-04700	10	N PT LT 3	31.87	12.90	20.72	8.39	Ralph & Joanne Lutzmanı	$ -	$ 520.00	$ 520.00

Total on Privately Owned Agricultural Lands								$ 3,835.00	$ 3,145.00	$ 6,980.00

PRIVATELY OWNED NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Benefit	Outlet	Total Assessment
440-01000	11	S PT LT 3	0.81	0.33	0.81	0.33	Tate Farough	$ 155.00	$ 70.00	$ 225.00
440-00720	11	PT LT 2	1.22	0.49	1.22	0.49	Danny & Mary Gerard	$ 235.00	$ 130.00	$ 365.00
440-00705	11	PT LT 2	0.49	0.20	0.49	0.20	Ronald Gerard	$ 95.00	$ 55.00	$ 150.00
410-05302	10	PT LT 1&2	1.80	0.72	1.80	0.72	Patrick & Nicole Gerarc	$ -	$ 315.00	$ 315.00
Total on Privately Owned Non-Agricultural Lands								$ 485.00	$ 570.00	$ 1,055.00
TOTAL ASSESSMENT								$ 5,600.00	$4,400.00	$10,000.00
			Area Assessed:		108.53	43.91				

SPECIFICATIONS
REPLACEMENT ACCESS CULVERTS
OVER THE EAST MCPHERSON DRAIN
TOWN OF TECUMSEH
PROJECT NO. 13-093

1.0 PIPE MATERIAL

The Contractor shall supply and install, clean, remove or salvage and lower the following:

a) Existing culverts and end of pipe protection shall be removed and replaced:
   a. Culvert No. 5 at Station 0+752.39: 11.7 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;
   b. Culvert No. 7 at Station 0+989.06: 14.4 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

b) Existing culvert to be cleaned:
   a. Culvert No. 2 at Station: 0+501.78: Clean existing 7.0 metres of 900mm diameter corrugated steel pipe;
   b. Culvert No. 4 at Station 0+671.32: Clean existing 8.37 metres of 900mm diameter corrugated steel pipe;
   c. Culvert No. 8 at Station 1+176.75: Clean existing 9.63 metres of 600mm diameter corrugated steel pipe;
   d. Culvert No. 9 at Station 1+205.12: Clean existing 38.59 metres of 600mm diameter corrugated steel pipe;

c) Culvert No. 1 at Station 0+245.49 has been removed from the drain. Drain banks shall be restored using good quality topsoil and grass seed;

d) Supply and install culvert and end of pipe protection:
   a. Culvert No. 6 at Station 0+901.54: 12.40 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

e) Culvert No. 3 at Station 0+611.49: The culvert shall be inspected at the time of construction by the Engineer, Drainage Superintendent and landowner. Should the existing culvert be in satisfactory condition, the existing pipe shall be salvaged, reset and extended with sloped gabion stone end of pipe protection. Should salvage of the culvert not be possible, 15.0 metres of new 900mm diameter Boss 2000 320kPa pipe shall be supplied and placed with sloped gabion stone end of pipe protection;

f) Existing road crossing shall be extended:
   a. Crossing No. 1 at Station 0+752.88: Existing 200mm diameter road crossing shall be extended 1.0 metre using 200mm diameter Big ‘O’ tile. Sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

g) Existing road crossing shall be removed and replaced:
   a. Crossing No. 2 at Station 1+013.03: 15.2 metres of new 600mm diameter aluminized corrugated steel pipe with sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

h) Existing road crossing shall be cleaned:
   a. Crossing No. 3 at Station 1+324.13: 15.10 metres of existing 450mm diameter corrugated steel pipe shall be cleaned and sloped gabion stone erosion protection shall be placed at the east and west ends of the pipe.

1.0 PIPE MATERIAL - Continued

i) A 45-degree bend shall be installed at the downstream end of the private tile at Station 0+528.16 to direct flow downstream.

2.0 WORKING AREA

The areas available to the Contractor to be used for the purpose of constructing the recommended works of this report and for construction and future maintenance as provided for under Section 63 of the Act are described follows:

The Contractor shall utilize a 9.0 metre wide maintenance corridor on abutting agricultural lands measured easterly from the centre line of the drain.

Where the drain passes in front of residential properties or lawns, the Contractor shall access The drain from the road right-of-way. Road crossings shall be accessed from the road right-of-way.

3.0 DISPOSAL OF EXCAVATED MATERIAL

The Contractor shall cast all excavated material on the adjacent agricultural lands. Excavated material shall be spread to a depth of no more than 100 mm along the east top of drain bank and shall be kept at least 1.2 metres clear from the finished edge of the drain, care being taken not to fill up any existing tiles, ditches, furrows or drains with the excavated material.

Where the drain passes in front of any house, garden, lawn, driveway, etc., the excavated material shall be hauled and spread upon the adjacent agricultural lands.

4.0 LOCATION AND ELEVATION OF CULVERTS

The location and elevations of the new culverts shall be according to the drawings, 13-093 Sheet 1 to Sheet 6.

5.0 PLACEMENT OF CULVERTS

a) The Contractor shall excavate all vegetation, topsoil and existing granular material from the bank slopes and bottom of the existing drain complete along with hauling materials off site.

The required work includes:

i. The supply and installation of new 900mm diameter Boss 2000 pipe as described in Section 1.0 Pipe Material;
ii. The supply and installation of new 600mm diameter aluminized corrugated steel pipe as described in Section 1.0 Pipe Material;
iii. Any other works as described in Section 1.0 Pipe Material.

b) The Contractor shall perform the excavation, placement of the pipe and backfill in a dry condition and shall provide all required pumps and/or equipment to enable the work to proceed in the dry.

c) Supply and place sloped gabion stone end of pipe protection, as required;

6.0 PIPE BACKFILL

After the corrugated plastic pipe has been set, the Contractor shall backfill the culvert with granular "B" material, O.P.S.S. Spec 1010 according to the attached plan. The backfill material shall be carefully placed so damage to or movement of the culvert is avoided and backfill materials shall be placed in layers not exceeding 300 mm in thickness, loose measurement. Each layer shall be thoroughly compacted in place to a Standard Proctor Density of 98% by means of mechanical compactors. The equipment and method of compacting the backfill material shall be to the full satisfaction of the Commissioner in charge.

7.0 QUARRIED ROCK END PROTECTION

Where specified and after the corrugated plastic pipe has been set and backfilled the Contractor shall install quarried rock erosion protection at each end of the pipe.

The backfill over the ends of the corrugated plastic pipe shall be set on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope and between both side slopes.

The top 300 mm in thickness of the backfill over the ends of the corrugated plastic pipe shall be quarried rock. The quarried rock shall be placed on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes. The quarried rock shall have a minimum dimension of 100 mm and a maximum dimension of 225 mm. Prior to placing quarried rock end protection over the granular material, the Contractor shall lay a non woven geotextile filter fabric equal to a "Terrafix 270R" or approved equal. The geotextile filter fabric shall extend from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes of the drain. The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried rock on top of the filter fabric. The geotextile filter fabric and quarried rock shall be placed to the complete satisfaction of the Municipality's Drainage Superintendent.

8.0 BAGGED CONCRETE HEADWALLS – Not required.

Where specified and after the Contractor has set in place the new pipe, he shall completely backfill the same and install new concrete jute bag headwalls at the locations indicated on the drawing. When constructing the concrete jute bag headwalls, the Contractor shall place the bags so that the completed headwalls will a have a slope inward from the bottom of the pipe to the top of the finished headwalls, the slope of the headwall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill I behind the new concrete jute bag headwalls with granular material, Granular 'A', and 'B' per OPSS 1010 and the granular material shall be compacted in place with a standard proctor density of 1--%. The placing of the jute bag headwalls and the backfilling shall be performed in lifts simultaneously. The granular backfill shall be placed and compacted in lifts not to exceed 300mm in thickness.

The concrete jute bag headwalls shall be constructed by filling jute bags with concrete. All concrete used to fill the jute bags shall have a minimum compressive strength of 20.7 MPA in 28 days and shall be provided and placed only as a wet mix, under no circumstance, shall the concrete to be used for filling the jute bags, be placed as a dry mix. The jute bags, before being filled with concrete, shall have a dimension of 460mm x 660mm. The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm thick, 300mm to 380mm wide and 460mm long. The concrete jute bag headwalls to be provided at the end of the pipe shall be of sing bag wall construction or as specified otherwise. The concrete filled bags shall be laid so that the 460mm dimension is parallel with the length of the new pipe. The

8.0 BAGGED CONCRETE HEADWALLS – Continued - Not Required

concrete filled bags shall be laid on a footing of plain concrete being 460mm wide, extending for the full length of the wall, and from 300mm below the bottom of the corrugated pipe to the bottom of the culvert pipe. All concrete used for the footing shall have a minimum compressive strength of 20.7 MPA in 28 days. The completed jute bag headwalls shall be securely embedded a minimum of 500mm into the side slopes of the drain.

Upon complete of the jute bag headwall, the Contractor shall cap the top row of concrete filled bags with a layer of plain concrete, 150mm thick, and hand trowelled to obtain a pleasing appearance. The Contractor shall fill all voids between the concrete filled jute bags and the corrugated steel pipe with concrete, particular care being taken underneath the pipe haunches to fill all voids.

As an alternative to constructing a concrete filled jute bag headwall, the Contractor may construct a grouted concrete rip rap headwall. The specifications for the installation of a concrete filled jute bag headwall shall be followed with the exception that broken sections of concrete may be substituted for the jute bags. The concrete rip rap shall be approximately 460mm square and 100mm thick and shall have two flat parallel sides. The rip rap shall be fully mortared in place using a mixture composed of three parts of clean, sharp sand to one part Portland Cement.

9.0 ALIGNMENT

The alignment of the enclosure throughout shall be to the full satisfaction of the Commissioner in charge. The whole of the work shall be done in a neat, thorough and workmanlike manner to the full satisfaction of the Commissioner in charge.

10.0 LOCATION OF STRUCTURES, ETC.

The Contractor shall satisfy himself as to the exact location, nature and extent of any existing structure, utility or other object which he may encounter during the course of the work. The Contractor shall indemnify and save harmless, the Municipality and the Engineer for any damages which he may cause or sustain during the progress of the work. He shall not hold the Municipality or the Engineer liable for any legal action arising out of any claims brought about by such damage caused by him.

11.0 DAMAGE TO TRAVELLED PORTION OF MUNICIPAL ROAD

The Contractor will be responsible for any damage caused by him to any portion of the municipal road system, especially to the travelled portion. When excavation work is being carried out and the excavation equipment is placed on the travelled portion of a road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any parts of the travelled portion of the road is damaged by the Contractor, the Municipality shall have the right to have the necessary repair work done by its employees and the cost of all labour and materials used to carry out the repair work shall be deducted from the Contractor's contract and credited to the Municipality.

12.0 CONSTRUCTION SAFETY

The Contractor shall comply with all the requirements of the Occupational Health and Safety Act, 1990 and the regulations passed in connection therewith, as administered by the Ontario Ministry of Labour and all subsequent amendments of the said Act.

The Contractor shall exercise all possible precaution against injury to persons or property resulting from his work. The Contractor shall leave no trenches, pits, holes or excavations uncovered, without providing sufficient protection at all times. The Contractor shall install, erect and provide barricades, signs, traffic cones, flashers, lights, plates, warning and other devices, materials and personnel as may be required and at his own expense in order to provide for the safe passage and control of traffic and to ensure public safety. All traffic control shall be in accordance with the latest standards of the Ministry of Transportation.

13.0 CERTIFICATE OF CLEARANCE

The Contractor will be required to submit to the Municipality a Certificate of Good Standing from the Workplace Safety & Insurance Board prior to the commencement of the work and the Contractor will be required to submit to the Municipality, a Certificate of Clearance for the project from the Workplace Safety & Insurance Board before final payment is made to the Contractor.

14.0 PROGRESS ORDERS

Monthly progress orders for payment shall be furnished to the Contractor by the Commissioner in charge; said orders shall not be for more than 90% of the value of the work done and the materials furnished on the site. The paying of the full 90% does not imply that any portion of the work has been accepted. The remaining 10% will be paid 45 days after the final acceptance and completion of the work.

15.0 CLEANING UP

The Contractor shall leave the whole of the site of the work in a neat, thorough and workmanlike appearance to the full satisfaction of the Commissioner. He shall haul away any excess earth from the site. He shall haul to the site, sufficient earth to fill any depressions caused by his work at his own expense. The site shall be left as close as possible in the same condition as it was prior to the commencement of the work.

16.0 MEASUREMENT AND PAYMENT

Payment for the work shall be on a unit price basis unless otherwise indicated and shall include all the work shown on the accompanying drawings and specifications.

17.0 MAINTAINING FLOW

The Contractor shall maintain the flow of any drainage works encountered in the progress of the work and at no expense to the Owner. The Contractor shall obtain written approval from the Commissioner in charge to stop up any drain and if necessary provide pumping equipment, build necessary by-passes, etc. at no expense to the Owner.

18.0 COMMISSIONER

Where the work "Commissioner" 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.

The Commissioner will be permitted to make minor variations in the work so long as these variations will result in a more satisfactory project or a more economical one. These variations, however, must not be such as to change the intent of the work performed nor are they to reduce the standard of quality.

19.0 NOTIFICATION OF WORK

Prior to commencing any work of installing the extension of the culvert or removing any existing structures, the Contractor shall inform the Municipality's Drainage Superintendent of his intent to commence work at least 48 hours prior to commencing any work. The Owner or Contractor shall endeavour to install and complete the new structure without delay once he has commenced the work. If for any reason the work does not proceed continuously then the Owner or Contractor shall notify the Drainage Superintendent in advance of any backfilling operation or headwall construction so that he may schedule inspection of same. The completed work must be done to the satisfaction of the Municipality's Drainage Superintendent and be approved by him.

20.0 MAINTENANCE

The Contractor shall repair and make good at his expense any damages or faults in the work that may appear within one year after its completion (as evidenced by the final inspection report), as the result of imperfect or defective work done or materials furnished. Nothing herein contained shall be construed as any way restricting or limiting the liability of the Contractor under the appropriate laws under which the work is being done.

SPECIFICATIONS
ENVIRONMENTAL PROTECTION SPECIAL PROVISIONS
FOR THE
EAST MCPHERSON DRAIN
TOWN OF TECUMSEH
PROJECT NO. 13-093

1.0 GENERAL

These Environmental Protection Special Provisions shall apply and form part of this Contract. All costs associated to conforming with these Special Provisions shall be included in the Tender prices bid.

2.0 FIRES

Fires and burning of rubbish on site will be permitted only with special approval from the Municipality.

3.0 DISPOSAL OF WASTES

The Contractor shall not bury rubbish and waste materials on site unless approved by the Engineer and all applicable approving authorities. The site shall be maintained free of accumulated waste and rubbish. All waste materials should be disposed of in a legal manner at a site approved by all local approving authorities and the Engineer.

The Contractor shall not allow deleterious substances, waste or volatile materials such as mineral spirits, or paint thinner, to enter into waterways, storm or sanitary sewers.

The disposal of dredge material where applicable shall be in accordance with the above.

4.0 POLLUTION CONTROL

The Contractor shall maintain under this Contract temporary erosion, sediment and pollution control features installed.

The Contractor shall control emissions from equipment and plant to local authorities emission requirements.

The Contractor shall not cause excessive turbidity when performing in-water work. The Contractor shall not allow any debris, fill or other foreign matter to enter into the waterway. The Contractor shall remove from the waterway, all extraneous materials resulting from in-water work.

The Contractor shall abide by local noise By-Laws for the duration of the Contract.

Spills of deleterious substances into waterways and on land shall be immediately contained by the Contractor and the Contractor shall cleanup in accordance with Provincial regulatory requirements. All spills shall be reported to the Ontario Spills Action Centre (1-800-268-6060), local authorities having jurisdiction and the Engineer. To reduce the risk of fuel entering the waterway, refuelling of machinery must take place a safe distance from the waterway. The Contractor shall note that the Engineer or the Owner takes no responsibility for spills, this shall be the sole responsibility of the Contractor.

5.0 WHMIS

The Contractor shall comply with the requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials and regarding labelling and the provision of material safety data sheets acceptable to Labour Canada.

6.0 DRAINAGE

The Contractor shall not pump water containing suspended materials into waterways, sewers or drainage systems. The Contractor shall be solely responsible for the control, disposal or runoff of water containing suspended materials or other harmful substances in accordance with these specifications, and local authority requirements. The Contractor shall provide temporary drainage and pumping as necessary to keep excavations and site free from water.

The Contractor shall install and maintain sediment control devices as indicated on the Contract Drawing and as directed by the Engineer.

7.0 PROTECTION OF VEGETATION

The Contractor shall exercise the utmost caution to ensure that existing trees and plants on-site and on adjacent properties are not damaged or disturbed unless noted otherwise in the Removals Special Provisions of this Contract. The Contractor shall restrict tree removal to areas indicated on the Contract Drawings and/or designated on-site. No trees or shrubs shall be removed without the approval of the Engineer.

8.0 DUST CONTROL

The Contractor will be solely responsible for controlling dust nuisance resulting from his operations, both on the site and within adjacent right-of-ways.

Water and calcium chloride shall be applied to areas on or adjacent to the site as authorized by the Engineer as being necessary and unavoidable for the prevention of dust nuisance or hazard to the public. No payment will be made for dust control unless otherwise specified in the Special Provisions.

9.0 RESTRICTIONS FOR IN-WATER WORKS

The Contractor shall only perform in-water works during times when conditions permit reasonable production rates to be achieved. The Contractor shall be required to adopt good housekeeping practices that minimize disturbance to the site and the adjacent waterway.

The Contractor shall note that this Project is subject to approval from the Essex Region Conservation Authority and as such, any possible turbidity caused by the construction of the shore protection works is of key importance.

The Contractor shall minimize the turbidity (sedimentation) produced by any in-water works construction or operations. The Contractor will be ordered to cease operations if, in the opinion of the Engineer or authorities having jurisdiction, the in-water work is producing unacceptable amounts of turbidity in the waterway. Based on this, the Contractor shall either adjust his operation(s) to produce lower turbidity levels, wait for more favourable conditions before

9.0 RESTRICTIONS FOR IN-WATER WORKS - Continued

operations will be allowed to continue, or undertake approved mitigating measures (e.g. sediment control, etc.). All costs associated with the above will be the sole responsibility of the Contractor, and no claims for extras or delays will be considered.

10.0 FISH HABITAT

No work shall be undertaken when there is likelihood of adverse effects on fish spawning or fish habitat in downstream waters.

GENERAL SPECIFICATIONS
FOR CONSTRUCTION OF OPEN DRAINS
FOR THE
EAST MCPHERSON DRAIN
TOWN OF TECUMSEH
PROJECT NO. 13-093

1.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

Each tenderer must visit the site and review the plans and specifications before submitting his tender and must satisfy himself as to the extent of the work and local conditions to be met during the construction period. He is not to claim at any time after submission of his tender that there was any misunderstanding of the terms and conditions of the contract relating to site conditions. The quantities shown as 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 quantities for accuracy prior to submitting his tender.

2.0 SUPPLY OF MATERIALS

The Contractor shall supply all labour, equipment and materials necessary for the proper completion of the project.

3.0 PROFILE

The excavation of the drain must be at least to the depth intended by the grade line as shown on the profile, which grade line is governed by the bench marks. The profile shows, for the convenience of the Contractors and others, the approximate depth of cut from the surface of the ground at the points where the numbered stakes are set to the final invert of the channel and also the approximate depth of cut from the bottom of the existing channel to the final invert of the channel. Bench marks which have been established along the course of the drain, shall govern the final elevation of the drain. The location and elevation of the bench marks are shown on the profile.

4.0 ALIGNMENT

The alignment of the drain throughout shall be to the full satisfaction of the Commissioner in charge. The whole of the work shall be done in a neat, thorough and workmanlike manner to the full satisfaction of the Commissioner in charge. The bottom widths and side slopes of the various sections of the finished drain are to be true to line and grade as shown on the profile. When completed the drain shall have a uniform and even bottom and in no case shall such bottom project above the grade line as shown on the accompanying drawing, and as determined from the bench mark.

5.0 BRUSHING AND GRUBBING

Where there is any brush or rubbish in the course of the drain, including both side slopes of the drain, or where the earth is to be spread or on that strip of land between where the earth is to be spread and the edge of the drain, all such brush or rubbish shall be grubbed out and close cut and the whole to be burned (with Municipal approval) or removed from the drain, hauled away and disposed of by the Contractor.

5.0 BRUSHING AND GRUBBING - Continued

Existing select hardwood trees greater than 200 mm (8") in diameter situated in the drain bank within 1.0 metre from the top of the bank may be selectively left standing if the Drainage Superintendent considers the trees will not adversely affect the flow of water within the drain. Prior to removing any trees the Contractor shall meet at the site with the drainage superintendent to review if any vegetation or select trees are environmentally significant for preservation.

6.0 SPREADING EXCAVATED EARTH

The excavated material where specified to be cast onto the adjoining land shall be well and evenly spread over a sufficient area so that no portion of the excavated earth is more than 100 mm in depth or as otherwise specified and kept at least 1.2 metres clear from the finished edge of the drain, care being taken not to fill up any existing tiles, ditches, furrows or drains with the excavated material. The excavated material to be spread upon the lands shall be free from rocks, boulders, stumps, rubble, rubbish or other similar material and other materials if encountered, shall be hauled away by the Contractor and disposed of at a site to be obtained by him at his expense.

Where the drain crosses any lawn, garden, orchard or driveway, etc. the excavated material for the full width of the above mentioned areas, shall be hauled away by the Contractor and disposed of upon the adjacent agricultural lands and spread as previously specified.

7.0 FENCING

Where it is necessary to take down any fence in order to proceed with the work, the same shall be done by the Contractor across or along that portion of the work where such fence is. The Contractor will be required to exercise extreme care in the removal of any fence so as to cause a minimum of damage to the same. The Contractor will be required to replace any fence that is taken down in order to proceed with the work and the fence shall be replaced in a neat and workmanlike manner. The Contractor will not be required to procure any new materials for rebuilding the fence provided he has used reasonable care in the removing and replacing of the same. Where any fence is removed by the Contractor and the Owner thereof deems it advisable and procures new material for replacing the fence so removed, the Contractor shall replace the fence using the new materials and the materials from the present fence shall remain the property of the Owner. The Contractor is not to leave any fences open when he is not at work in the immediate vicinity.

8.0 LOCATION OF STRUCTURES AND UTILITIES

The Contractor shall satisfy himself as to the exact location, nature and extent of any existing structure, utility or other object which he may encounter during the course of the work. The Contractor shall indemnify and save harmless, the Municipality and the Engineer for any damages which he may cause or sustain during the progress of the work. He shall not hold the Municipality or the Engineer liable for any legal action arising out of any claims brought about by such damage caused by him.

9.0 ACCESS BRIDGES

The Contractor shall satisfactorily clean through all specified access bridges to the grade line as shown on the accompanying drawing.

10.0 BACKFILL FOR CULVERTS

Where specified and after the corrugated plastic pipe has been set, the Contractor shall backfill the culvert with granular "B" material, O.P.S.S. Spec. 1010. The granular backfill shall be compacted in place to a Standard Proctor Density of 100% by means of mechanical compactors. The equipment and method of compacting the backfill material shall be to the full satisfaction of the Drainage Superintendent or Engineer.

11.0 ROCK PROTECTION FOR CULVERTS

The backfill over the ends of the corrugated plastic pipe shall be set on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope and between both side slopes. The top 30 cm in thickness of the backfill over the ends of the corrugated plastic pipe shall be quarried rock. The quarried rock shall be placed on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes. The quarried rock shall have a minimum dimension of 100 mm and a maximum dimension of 225 mm. Prior to placing quarried rock end protection over the granular material, the Contractor shall lay a non woven geotextile filter fabric equal to a "Terrafix 270R" or approved equal. The geotextile filter fabric shall extend from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes of the drain. The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried rock on top of the filter fabric.

12.0 BAGGED CONCRETE HEADWALLS – Not Required

Where specified and after the Contractor has set in place the new pipe, he shall completely backfill the same and install new concrete jute bag headwalls at the locations indicated on the drawing. When constructing the concrete jute bag headwalls, the Contractor shall place the bags so that the completed headwalls will a have a slope inward from the bottom of the pipe to the top of the finished headwalls, the slope of the headwall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill I behind the new concrete jute bag headwalls with granular material, Granular ‘A’, and ‘B’ per OPSS 1010 and the granular material shall be compacted in place with a standard proctor density of 1--%. The placing of the jute bag headwalls and the backfilling shall be performed in lifts simultaneously. The granular backfill shall be placed and compacted in lifts not to exceed 300mm in thickness.

The concrete jute bag headwalls shall be constructed by filling jute bags with concrete. All concrete used to fill the jute bags shall have a minimum compressive strength of 20.7 MPA in 28 days and shall be provided and placed only as a wet mix, under no circumstance, shall the concrete to be used for filling the jute bags, be placed as a dry mix. The jute bags, before being filled with concrete, shall have a dimension of 460mm x 660mm. The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm thick, 300mm to 380mm wide and 460mm long. The concrete jute bag headwalls to be provided at the end of the pipe shall be of sing bag wall construction or as specified otherwise. The concrete filled bags shall be laid so that the 460mm dimension is parallel with the length of the new pipe. The concrete filled bags shall be laid on a footing of plain concrete being 460mm wide, extending for the full length of the wall, and from 300mm below the bottom of the corrugated pipe to the bottom of the culvert pipe. All concrete used for the footing shall have a minimum compressive strength of 20.7 MPA in 28 days. The completed jute bag headwalls shall be securely embedded a minimum of 500mm into the side slopes of the drain.

12.0 BAGGED CONCRETE HEADWALLS – Not Required - Continued

Upon complete of the jute bag headwall, the Contractor shall cap the top row of concrete filled bags with a layer of plain concrete, 150mm thick, and hand trowelled to obtain a pleasing appearance. The Contractor shall fill all voids between the concrete filled jute bags and the corrugated steel pipe with concrete, particular care being taken underneath the pipe haunches to fill all voids.

As an alternative to constructing a concrete filled jute bag headwall, the Contractor may construct a grouted concrete rip rap headwall. The specifications for the installation of a concrete filled jute bag headwall shall be followed with the exception that broken sections of concrete may be substituted for the jute bags. The concrete rip rap shall be approximately 460mm square and 100mm thick and shall have two flat parallel sides. The rip rap shall be fully mortared in place using a mixture composed of three parts of clean, sharp sand to one part Portland Cement.

13.0 PLACING OF CULVERT PIPE

When specified the Contractor shall install all culvert bridges in the location directed by the Commissioner. The excavation for placing the culvert, the type and class of bedding and backfill and culvert end treatment shall be carried out to the width, depth and alignment as specified herein. The surface on which the culvert is to be laid shall be true to grade and alignment and shaped to accept the materials to be placed. The pipe shall be laid to the alignment and grade shown in the report but may not be placed on a bed containing frozen materials. The Contractor shall carefully place the bedding and backfill material so damage to or movement of the pipe is avoided. Backfill and cover materials shall be placed in layers not exceeding 250 mm in thickness, loose measurement. Each layer shall be thoroughly compacted before the next layer is placed. Backfill on each side of the pipe shall be placed simultaneously and at no time shall the levels on each side of the pipe differ by more than 250 mm. Where native backfill is approved to be used the material shall not contain boulders larger than 150 mm or other deleterious material. The Contractor will be required to fully restore all paved driveways with materials of similar type and depths. The Contractor shall neatly saw cut all paved driveways at a distance of 300 mm beyond the edge of the excavated trench and this shall be done immediately prior to final restoration of the paved driveway.

When an access culvert or bridge does not have to be lowered or replaced, the Contractor shall clean it to its full cross sectional area using care to avoid causing damage to it in the process. Where a pipe culvert is to be reset to a new grade, the Contractor shall carefully remove it, clean it to its full cross sectional area and replace it in the drain as specified herein. Where a culvert is to be replaced, the Contractor shall carefully remove the existing pipe from the drain, clean it to its full cross sectional area and leave it on the drain bank unless otherwise specified. Should either the property owner or the Commissioner in charge not require the salvaged pipe then the Contractor shall dispose of the pipe at the Contractors expense.

The Contractor if using a batter board system for establishing the grade of the culvert pipe, shall utilize a minimum of three batter board stakes for each culvert. The Contractor shall ensure that the batter board stakes placed on the grade stakes shall line up, this being done prior to any excavation taking place for the proposed culvert.

Where pipes are scheduled to be moved or replaced the Contractor shall confirm the new location of the culvert pipe with the owner prior to installation. Where the Contractor has excavated a culvert pipe which has been scheduled to be cleaned and reinstalled and it is found that the condition of the existing culvert pipe is not satisfactory to be reused, the Contractor shall

13.0 PLACING OF CULVERT PIPE – Continued

immediately notify the Commissioner in charge who will verify the condition of the existing pipe and may instruct the Contractor to supply a new length of corrugated plastic pipe.

Where pipes are scheduled to be cleaned and flushed only, the material which is removed from the culvert pipe is to be loaded and hauled away. Over digging of the drain at the downstream end of the culvert to accommodate material flushed from a culvert pipe will not be allowed.

14.0 CUTS

The cuts as shown on the accompanying drawing are to be taken from the ground beside the stakes to the bottom of the finished drain, unless otherwise noted on the drawing.

15.0 DAMAGE TO TRAVELLED PORTION OF MUNICIPAL ROAD

The Contractor will be responsible for any damage caused by him to any portion of the municipal road system, especially to the travelled portion. When excavation work is being carried out and the excavation equipment is placed on the travelled portion of a road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any parts of the travelled portion of the road is damaged by the Contractor, the Municipality shall have the right to have the necessary repair work done by its employees and the cost of all labour and materials used to carry out the repair work shall be deducted from the Contractor's contract and credited to the Municipality.

16.0 SEEDING AND MULCHING

The Contractor shall fine grade the finished surfaces and shall apply hydroseeding and mulch. The seeding and mulching operation shall be carried out according to O.P.S.S. Spec. 572 or as amended herein and the operation shall include the supplying and placing of the following:

A)	Seed Mixture	- Creeping Red Fescue - 50%
		- Red Top - 20%
		- Canada Blue Grass - 15%
		- Kentucky Blue Grass - 15%
B)	Nurse Crop	- Oats if seeding and mulching is performed during May or June.
		- Annual Rye Grass if seeding and mulching is performed during Sept. or Oct.
C)	Fertilizer	- 5·20·10 mixture
D)	Mulch	- Wood Cellulose Fibre or Straw
E)	Adhesive	- Asphalt Emulsion if straw mulch used
		- Liquid Polyvinyl Acetate if wood fibre mulch used

The application rates shall be as follows:

A)	Grass Seed Mixture	- 90 lbs./acre
B)	Fertilizer	- 350 lbs./acre
C)	Nurse Crop Seed	- 55 lbs./acre
D)	Mulch	- 1300 lbs./acre if wood fibre used
		- 1" to 2" depth if straw used
E)	Adhesive	- 200 imp.gal/acre for Asphalt Emulsion
		- 205 lbs./acre for Liquid Polyvinyl Acetate

16.0 SEEDING AND MULCHING – Continued

The seeding and mulching operation shall be only carried out as weather conditions permit during the months of May and June in the Spring, and September and October in the Fall. If the excavation work is carried out during the months of May and June, or September or October, the Contractor has the option of contacting the Drainage Superintendent and if the Contractor receives his written permission, the seed mixture as above specified, may be placed on the excavated side slopes by the Contractor by hand, daily, at the completion of his daily excavation operation. If the Contractor has been given written permission by the Drainage Superintendent to place the seeding mixture by hand daily, at the completion of his daily excavation operation, the Contractor shall be responsible to give the side slopes a rough, harrowed texture prior to placing the seed mixture.

17.0 QUARRIED ROCK

The Contractor shall place quarried rock protection at the areas indicated on the accompanying plans. The quarried rock shall be graded in size from a minimum size of 100 mm to a maximum size of 230 mm. The quarried rock shall be placed 300 mm in thickness on a layer of geotextile filter fabric placed on the bottom of the excavation. The filter fabric shall be "Terrafix 270-R" or equal. The Contractor shall excavate for the quarried rock so that the top of the completed quarried rock protection is level with the adjacent ground.

The Contractor shall remove all trees, brush and debris from the area on which the quarried rock is to be placed. The quarried rock shall be carefully placed by the Contractor at the locations and to the dimensions as shown on the accompanying specifications. The specified filter cloth shall be hand laid and have an overlap of 600 mm and all quarried rock that is to be placed over the filter cloth shall be carefully hand or machine placed so that it does not damage the filter cloth. The filter cloth shall extend up the sides of the trench excavated to accept the quarried rock and the quarried rock shall extend 300 mm above the top of the surface inlet pipe where applicable.

18.0 MAINTAINING FLOW AND EXISTING SEWERS

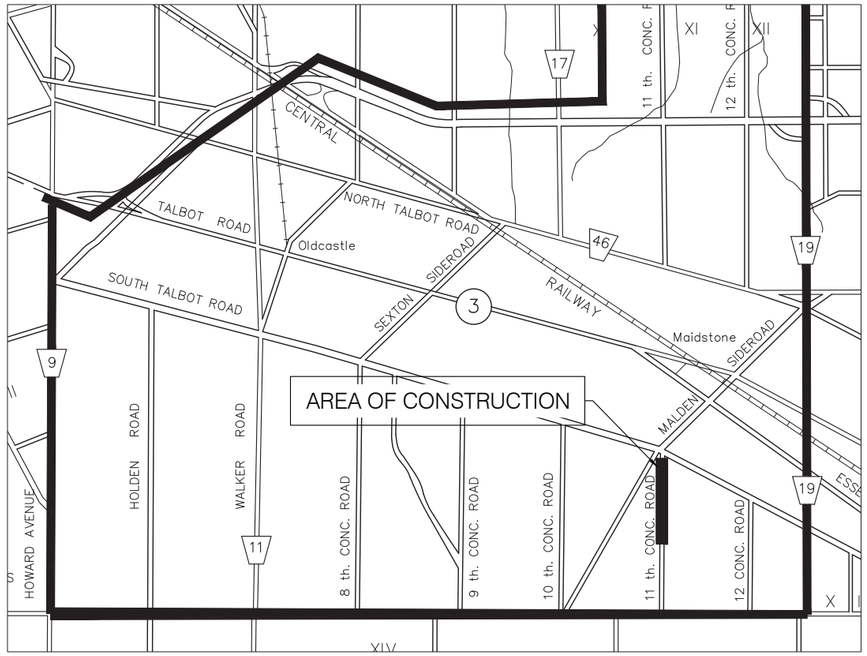
The Contractor shall support and maintain the flow and existing sewers and house connections and any other drainage works encountered in the progress of the work and at no expense to the owner. The Contractor shall obtain written approval from the engineer to stop up any drain, and if necessary, provide pumping equipment, build necessary by-passes, etc. at no expense to the owner.

19.0 SPECIAL PROVISIONS

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.

20.0 REMOVAL OF TREES

Whenever practical, existing trees not scheduled for removal will be preserved. The Contractor shall exercise the utmost caution to ensure that the trees are not damaged or disturbed in accordance with item 5.0 Brushing and Grubbing.



KEY PLAN PLAN

SCALE: NTS

ATTENTION:

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS, REVISED STATUTES OF ONTARIO, 1990 CHAPTER 0.1 AS AMENDED, ONTARIO REGULATION 213/91, R.R.O. 1990 REG. 834 AS ADMINISTERED BY THE ONTARIO MINISTRY OF LABOUR AND ALL SUBSEQUENT AMENDMENTS OF SAID ACT.

NOTE:

THE PROPERTY LINES AND DIMENSIONS SHOWN ARE BASED ON SURVEY BARS FOUND ON THE SITE AND ARE NOT BASED ON A SURVEY DRAWING PRODUCED BY AN ONTARIO LAND SURVEYOR. THE PROPERTY LINES SHOULD BE CONSIDERED AS APPROXIMATELY ONLY AND NOT A LEGAL PLAN OF SURVEY

SHEET SET TABLE:

SHEET NUMBER	SHEET TITLE
1	TITLE PAGE
2	PLAN AND PROFILE STATION 0+000 TO 0+600
3	PLAN AND PROFILE STATION 0+600 TO 1+200
4	PLAN AND PROFILE STATION 1+200 TO 1+340
5	CROSS-SECTIONS AND DETAILS
6	FUTURE CULVERT REPLACEMENTS

BENCH MARKS:

No. 1 STATION 0+152.4, NAIL IN HYDRO POLE ON WEST SIDE OF 11TH CONCESSION ROAD
GPS ELEVATION 191.927 METRES.

No. 2 STATION 0+747.09, NAIL IN HYDRO POLE ON WEST SIDE OF11TH CONCESSION ROAD
GPS ELEVATION 192.826 METRES.

No. 3 STATION 1+397.05, NAIL IN HYDRO POLE ON WEST SIDE OF 11TH CONCESSION ROAD
GPS ELEVATION 193.467 METRES.

LEGEND

◇ PRIVATE TILE

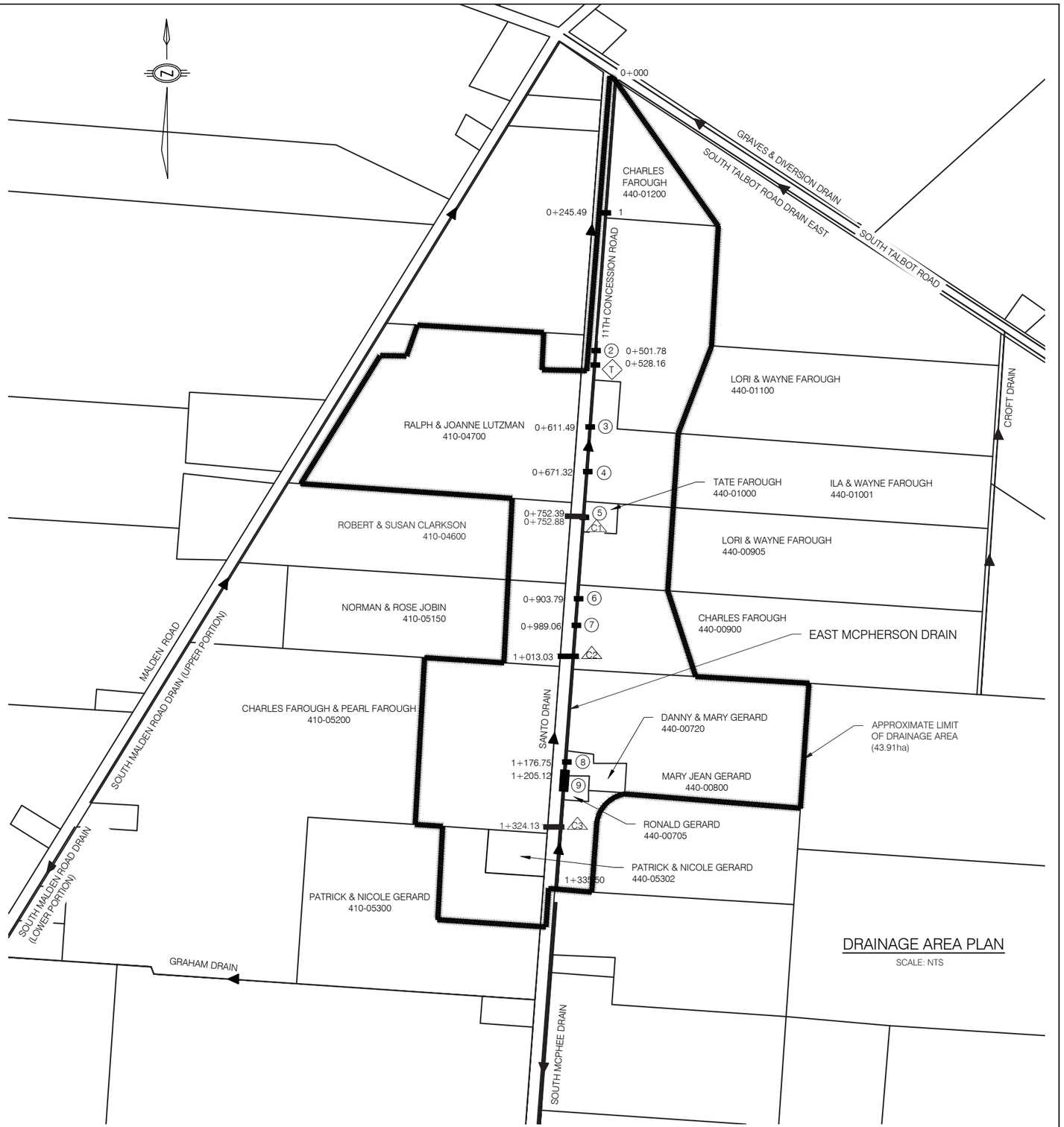
○ TO BE REPLACED OR CLEANED

△ ROAD CROSSING

1 AND 6 REMOVED AT LANDOWNER'S REQUEST

NOTE:

CULVERT NO.1 AND CULVERT NO. 6 HAVE BEEN REMOVED FROM THE DRAIN AT THE LANDOWNER'S COST AND REQUEST.



DRAINAGE AREA PLAN

SCALE: NTS

DATE	REVISIONS
05/03/14	DRAFT - SUBMITTED FOR TOWN REVIEW
10/03/14	DRAFT - SUBMITTED FOR TOWN REVIEW
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07/06/16	RECONSIDERED REPORT
07/26/16	RECONSIDERED REPORT
04/11/17	RECONSIDERED REPORT

LICENSED PROFESSIONAL ENGINEER H.P. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P.PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER D. A. JOUDREY PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

BAIRD|AE architecture + engineering
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LEAMINGTON, ONTARIO
N8H 2X8

REPAIR AND IMPROVEMENT TO THE EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE: TITLE PAGE

JUNE 17, 2014

SCALE: AS NOTED

DRAWN BY: T.Y

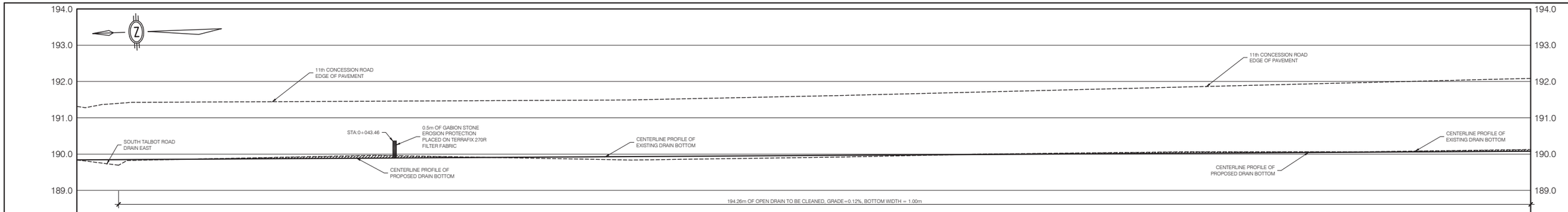
CHECKED BY: H.P.P.

13-093

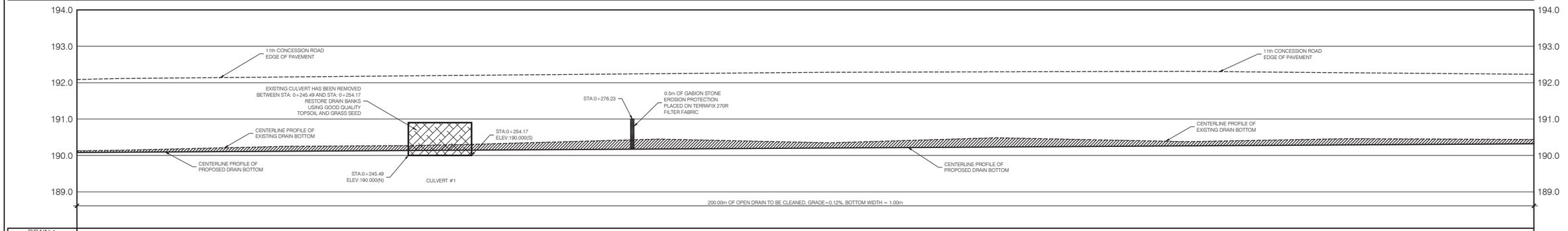
SHEET NO: 1

file no.

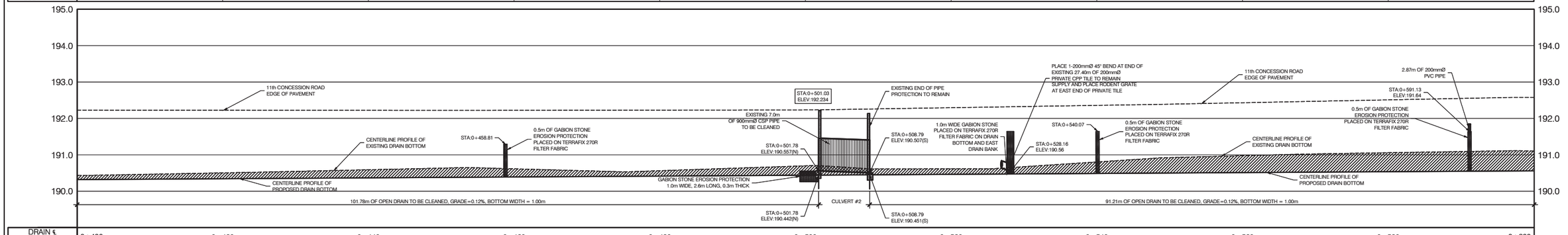
170122 Reconsidered Design.dwg 4/13/2017 1:05:15 PM



DRAIN ℄ STATIONS	0+000		0+020		0+040		0+060		0+080		0+100		0+120		0+140		0+160		0+180		0+200
EXISTING DRAIN BOTTOM ELEVATION			189.879		189.962		189.897		189.847		189.904		189.981		190.035		190.065		190.072		190.127
PROPOSED DRAIN BOTTOM ELEVATION	189.840		189.864		189.888		189.912		189.936		189.960		189.984		190.008		190.032		190.056		190.080



DRAIN ℄ STATIONS	0+200		0+220		0+240		0+260		0+280		0+300		0+320		0+340		0+360		0+380		0+400
EXISTING DRAIN BOTTOM ELEVATION	190.127		190.209		190.263		190.337		190.449		190.361		190.447		190.429		190.406		190.456		190.438
PROPOSED DRAIN BOTTOM ELEVATION	190.080		190.104		190.128		190.152		190.176		190.200		190.224		190.248		190.272		190.296		190.320



DRAIN ℄ STATIONS	0+400		0+420		0+440		0+460		0+480		0+500		0+520		0+540		0+560		0+580		0+600
EXISTING DRAIN BOTTOM ELEVATION	190.438		190.505		190.591		190.616		190.564		190.698		190.615		190.804		190.977		191.059		191.103
PROPOSED DRAIN BOTTOM ELEVATION	190.320		190.344		190.368		190.392		190.416		190.440		190.464		190.488		190.512		190.536		190.560

LICENSED PROFESSIONAL ENGINEER
A.P. PEARSON
100155996
17/04/11
PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P. PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER
D. A. JOUDREY
PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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LEAMINGTON, ONTARIO
N8H 2X8

EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE:

PROFILE STATION 0+000 TO 0+600

JUNE 17, 2014

SCALE: HOR. = 1:250
VER = 1:50

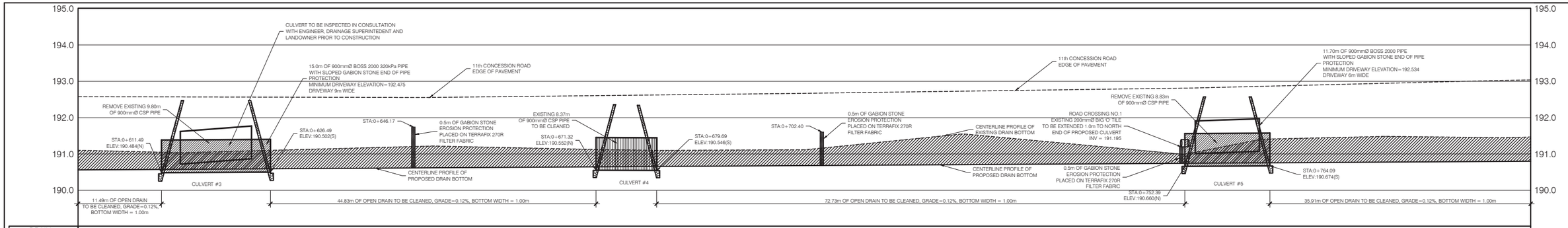
DRAWN BY: T.Y

CHECKED BY: H.P.P.

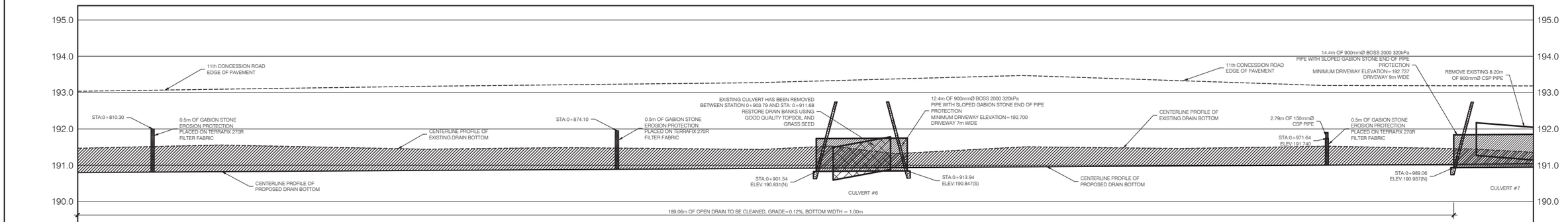
13-093

SHEET NO: 2

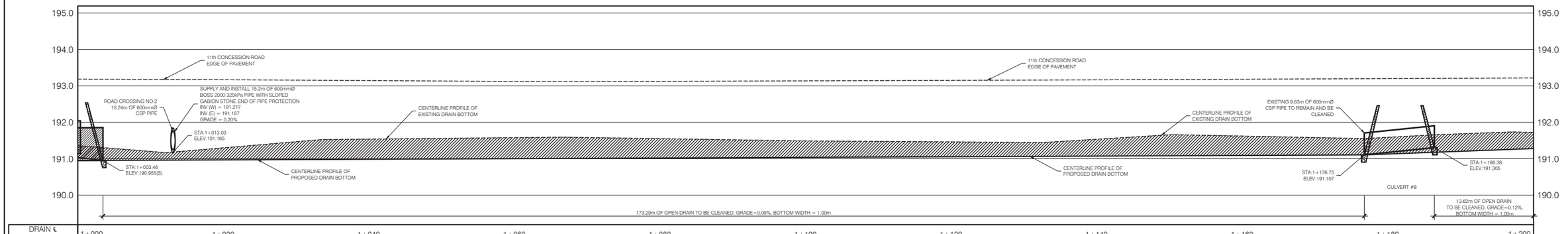
file no.



DRAIN ℄ STATIONS	0+600	0+620	0+640	0+660	0+680	0+700	0+720	0+740	0+760	0+780	0+800
EXISTING DRAIN BOTTOM ELEVATION	191.103	191.066	191.172	191.171	191.099	191.117	191.516	191.217	191.292	191.484	191.467
PROPOSED DRAIN BOTTOM ELEVATION	190.560	190.584	190.608	190.632	190.656	190.680	190.704	190.728	190.752	190.776	190.800



DRAIN ℄ STATIONS	0+800	0+820	0+840	0+860	0+880	0+900	0+920	0+940	0+960	0+980	1+000
EXISTING DRAIN BOTTOM ELEVATION	191.467	191.555	191.473	191.471	191.462	191.494	191.400	191.487	191.488	191.493	191.357
PROPOSED DRAIN BOTTOM ELEVATION	190.800	190.824	190.848	190.872	190.896	190.920	190.944	190.968	190.992	191.016	191.040



DRAIN ℄ STATIONS	1+000	1+020	1+040	1+060	1+080	1+100	1+120	1+140	1+160	1+180	1+200
EXISTING DRAIN BOTTOM ELEVATION	191.357	191.299	191.539	191.580	191.551	191.489	191.463	191.536	191.622	191.589	191.722
PROPOSED DRAIN BOTTOM ELEVATION	191.040	190.968	190.986	191.004	191.021	191.039	191.057	191.074	191.092	191.131	191.280

LICENSED PROFESSIONAL ENGINEER A.H. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P.PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER D. A. JOUDREY PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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04/11/17	RECONSIDERED REPORT

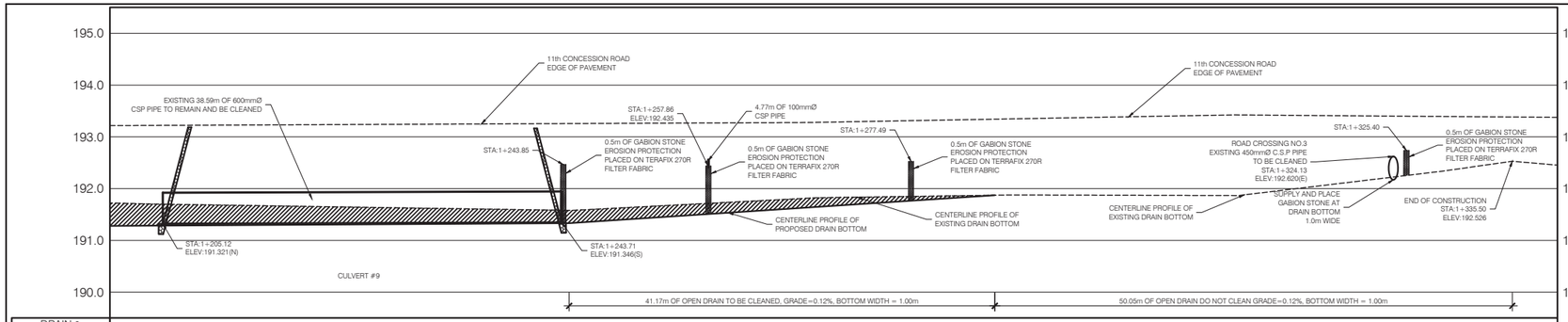
BAIRD|AE architecture + engineering
27 PRINCESS STREET, SUITE #102
LEAMINGTON, ONTARIO
N8H 2X8

PROJECT TITLE:
EAST MCPHERSON DRAIN
TOWN OF TECUMSEH

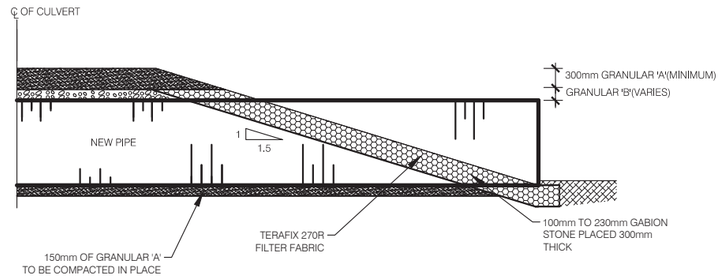
SHEET TITLE:
PROFILE STATION 0+600 TO 1+200

DATE: JUNE 17, 2014
SCALE: HOR. = 1:250 VER = 1:50
DRAWN BY: T.Y
CHECKED BY: H.P.P
PROJECT NO: 13-093
SHEET NO: 3

file no.

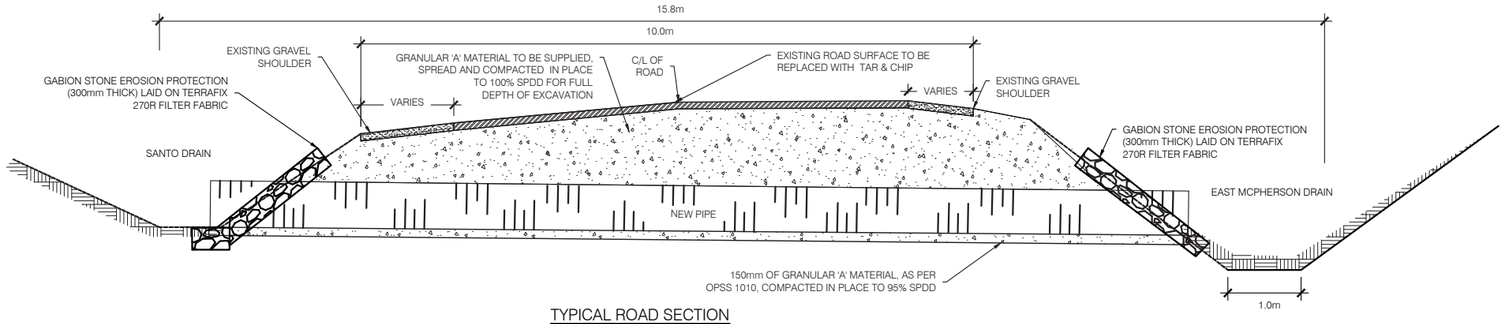


DRAIN STATIONS	1+200	1+220	1+240	1+260	1+280	1+285.60	1+300	1+320	1+340
EXISTING DRAIN BOTTOM ELEVATION	191.722	191.653	191.593	191.737	191.856		191.871	192.125	
PROPOSED DRAIN BOTTOM ELEVATION	191.280	191.304	191.328	191.537	191.799	191.872			



TYPICAL SECTION OF GABION STONE END PROTECTION

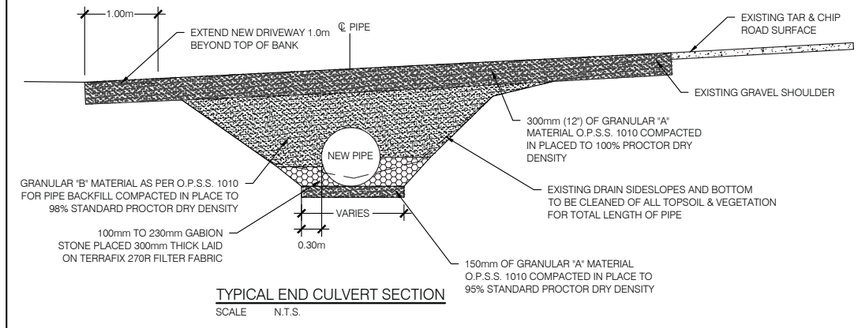
SCALE N.T.S.



TYPICAL ROAD SECTION

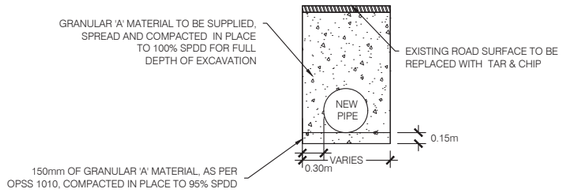
SCALE N.T.S.

W <---------->E



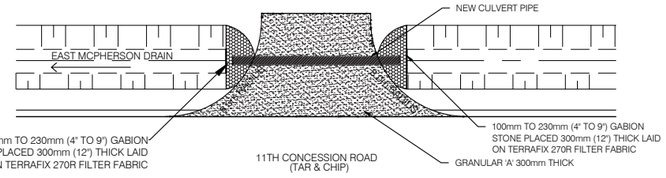
TYPICAL END CULVERT SECTION

SCALE N.T.S.



TYPICAL ROAD CROSS-SECTION

SCALE N.T.S.



TYPICAL CULVERT PLAN VIEW

SCALE N.T.S.

LICENSED PROFESSIONAL ENGINEER
A.P. PEARSON
100155996
17/04/11
PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P.PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER
D. A. JOUDREY
PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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LEAMINGTON, ONTARIO
N8H 2X8

EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE:

PROFILE STATION 1+200 TO 1+335.50

JUNE 17, 2014

SCALE: HOR. = 1:250
VER = 1:50

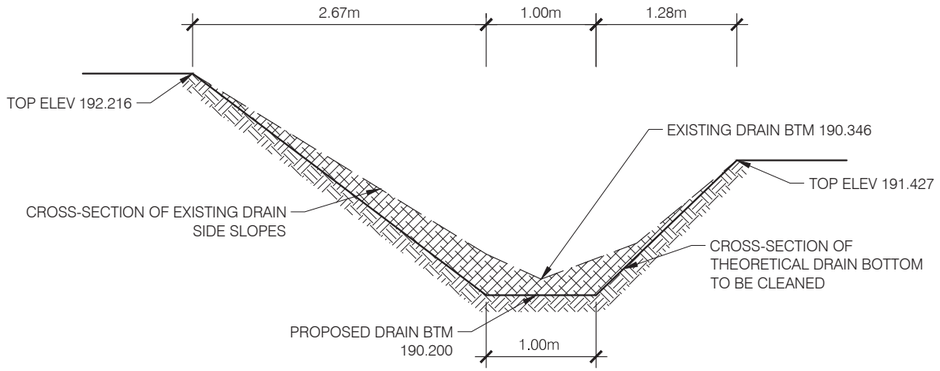
DRAWN BY: T.Y

CHECKED BY: H.P.P

13-093

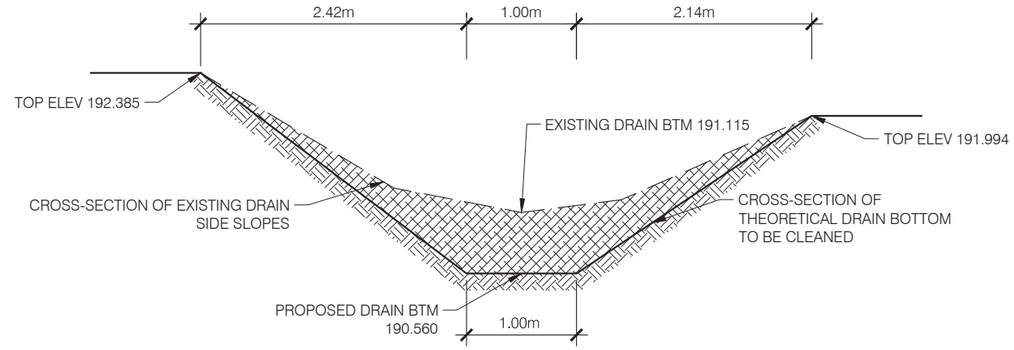
SHEET NO: 4

file no.



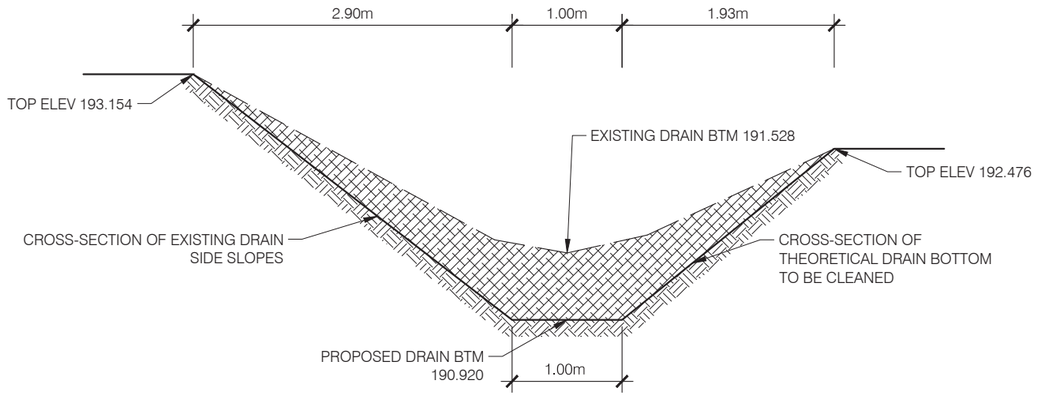
CROSS-SECTION @ STATION 0+300

SCALE 1:50



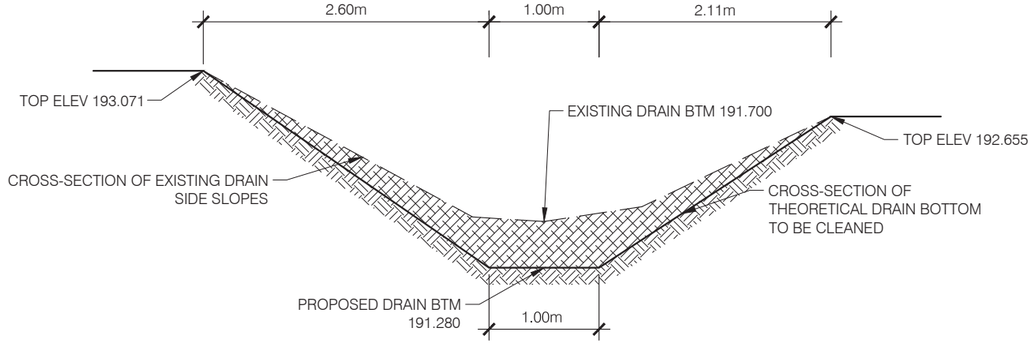
CROSS-SECTION @ STATION 0+600

SCALE 1:50



CROSS-SECTION @ STATION 0+900

SCALE 1:50



CROSS-SECTION @ STATION 1+200

SCALE 1:50

LICENSED PROFESSIONAL ENGINEER A.P. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P. PEARSON, P.ENG

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DON J. JOUDREY, P.ENG

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LEAMINGTON, ONTARIO
N8H 2X8

EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE: CROSS-SECTIONS

JUNE 17, 2014

SCALE: 1:50

DRAWN BY: T.Y

CHECKED BY: H.P.P.

13-093

SHEET NO: 5

file no.

Future Culvert Replacements

Culvert No.	Station	Length (m)	Diameter (mm)	Material	End of Pipe Protection	Invert	Slope
1	0+245.49 0+254.17	8.68	REMOVED FROM DRAIN AT OWNER'S REQUEST				
2	0+501.79 0+508.79	11.70	900	Boss 2000 320 kPa	Sloped gabion stone	190.352 (N) 190.366 (S)	0.12%
3	0+611.49 0+626.49	15.00	900	Boss 2000 320 kPa	Sloped gabion stone	190.484 (N) 190.502 (S)	0.12%
4	0+668.41 0+682.61	14.20	900	Boss 2000 320 kPa	Sloped gabion stone	190.552 (N) 190.569 (S)	0.12%
5	0+752.39 0+764.09	11.70	900	Boss 2000 320 kPa	Sloped gabion stone	190.660 (N) 190.674 (S)	0.12%
6	0+901.54 0+913.94	12.40	900	Boss 2000 320 kPa	Sloped gabion stone	190.832 (N) 190.847 (S)	0.12%
7	0+989.06 1+003.46	14.40	900	Boss 2000 320 kPa	Sloped gabion stone	190.937 (N) 190.955 (S)	0.12%
8	1+176.75 1+186.38		TO BE REMOVED FROM DRAIN UPON FAILURE				
9	1+210.72 1+228.12	18.00	600	Boss 2000 320 kPa	Sloped gabion stone	191.233 (N) 191.254 (S)	0.12%

NOTE: AT SUCH TIME THAT THE CULVERTS REQUIRE REPLACEMENT, WE WOULD RECOMMEND THAT THEY BE REPLACED IN ACCORDANCE WITH THE PROVISIONS LISTED IN SECTION 12.0 RECOMMENDATIONS OF THE ACCOMPANYING REPORT; IN CONSULTATION WITH AFFECTED LANDOWNERS; AND IN ACCORDANCE WITH THIS CHART, FUTURE CULVERT REPLACEMENTS.

LICENSED PROFESSIONAL ENGINEER A.P. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P. PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER D. A. JOUDREY PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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04/11/17	RECONSIDERED REPORT

BAIRD|AE architecture + engineering
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LEAMINGTON, ONTARIO
N8H 2X8

PROJECT TITLE: EAST MCPHERSON DRAIN
TOWN OF TECUMSEH

SHEET TITLE: CULVERT REPLACEMENT DETAIL SHEET

DATE: JUNE 17, 2014
SCALE: N.T.S
DRAWN BY: T.Y
CHECKED BY: H.P.P.
PROJECT NO: 13-093
SHEET NO: 6

file no.

THE CORPORATION OF THE TOWN OF TECUMSEH

BY-LAW NUMBER 2017-40

Being a by-law to provide for the repair and improvements to the East McPherson Drain

WHEREAS the Council of The Corporation of the Town of Tecumseh [Town] has been requested to provide for the repair and improvement of the East McPherson Drain;

AND WHEREAS the Town procured a Drainage Report for the East McPherson Drain and specifications from the consulting engineering firm of Baird AE, dated March 17, 2014 (Drainage Report);

AND WHEREAS notice of a Public Meeting to hear comments from the affected property owners was given on March 18, 2014;

AND WHEREAS the Drainage Report was sent back to the Engineer for reconsideration, by Council on July 8, 2014, at the Public Council Meeting;

AND WHEREAS the Engineer provided a Reconsidered Drainage Report for the East McPherson Drain and specifications from the consulting engineering firm of Baird AE, dated June 7, 2016 [Reconsidered Drainage Report];

AND WHEREAS notice of a Public Meeting to hear comments from the affected property owners on the Reconsidered Drainage Report was given on August 26, 2016;

AND WHEREAS the Reconsidered Drainage Report was sent back to the Engineer for reconsideration, by Council on October 11, 2016, at the Public Council Meeting;

AND WHEREAS the Engineer provided a further Reconsidered Drainage Report for the East McPherson Drain and specifications from the consulting engineering firm of Baird AE, dated April 11, 2017 (Final - Reconsidered Drainage Report);

AND WHEREAS notice of a Public Meeting to be held on May 23, 2017, to hear comments from the affected property owners on the Final - Reconsidered Drainage Report was given on April 27, 2017;

AND WHEREAS the Council of The Corporation of the Town of Tecumseh is of the opinion that the repair and improvement of the East McPherson Drain is desirable;

NOW THEREFORE the Council of The Corporation of the Town of Tecumseh, pursuant to *The Drainage Act, R.S.O.1990* (Act), hereby enacts as follows*:*

1. **THAT** the Reconsidered Drainage Report providing for the repair and improvement of the East McPherson Drain, dated April 11, 2017, as prepared by the consulting engineering firm Baird AE and attached hereto as Schedule “A” to this by-law, is hereby adopted and the drainage works as therein indicated and set forth is hereby approved and shall be completed in accordance therewith.

2. **THAT** the Treasurer, subject to the approval of Council, may agree with any bank or person for temporary advances of money to meet the costs of construction pending the completion of the drain and grants and computed payments are received.

3. **THAT** the Town may issue debentures for the amount borrowed and the amount of such debentures shall be reduced to the total amount of:
   (a) Grants received under Section 85 of the said Act;
   (b) Commuted payments made in respect of land and roads assessed.

4. **THAT** such debentures shall be made payable within five (5) years from the date of the debenture and shall bear interest at a rate as approved by resolution of Council.

5. **THAT** the specifications and General Specifications as established are adopted as set out in the Final - Reconsidered Drainage Report which forms part of this by-law.

6. **THAT** the Mayor and Clerk are authorized to cause a contract for the construction of the works to be made and entered into with some person or persons, firm or corporations, subject to the approval of the Council to be declared by resolution.

7. **THAT** this by-law shall come into force upon and after the final passing thereof.

READ a first and second time this 23th day of May, 2017.

_____
Gary McNamara, Mayor

_____
Laura Moy, Clerk

READ a third and final time, and finally passed this ___day of_____, 2017.

_____
Gary McNamara, Mayor

_____
Laura Moy, Clerk

Reconsidered

Repair and Improvement to the East McPherson Drain

Town of Tecumseh

March 5, 2014
(Draft – Town Review)
March 10, 2014
(Draft – Town Review)
March 17, 2014
(Draft – Public Information Centre)
June 17, 2014
(Final – Council Consideration)
April 27, 2015
(Final – Council Consideration)
June 7, 2016
(Final - Reconsideration)
April 11, 2017
(Final - Reconsideration)

Project No. 13-093

BAIRD | AE
architecture + engineering
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27 Princess St.
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June 17, 2014
Reconsidered April 11, 2017

Mayor and Municipal Council
The Corporation of the Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario
N8N 1W9

Mayor McNamara and Councillors

Subject: Repair and Improvement
To the East McPherson Drain
In the Town of Tecumseh
Our File Reference 13-093

1.0 Summary of Reconsidered Report

At the July 8, 2014 Meeting to Consider, in accordance with Section 57 of The Drainage Act, 1990 (the Act), Council referred the report back to the Engineer for reconsideration. As such, we have reconsidered this report for the Repair and Improvement to the East McPherson Drain. We have reviewed and modified the Estimate of Cost; revised the limits of the drainage area; increased the Allowances for Damages; prepared revised Construction and Maintenance Schedules of Assessment; modified certain proposed works as requested by landowners; revised the allowance for construction inspection to more accurately reflect inspection services required based on similar projects recently completed in the Town of Tecumseh; and addressed landowner concerns expressed at the Meeting to Consider in Section 8.0. The proposed works are described within the body of this report.

2.0 Authorization

Pursuant to Section 78 of the Act, the Corporation of the Town of Tecumseh received a request for the repair and improvement of the East McPherson Drain. The firm of Crozier Baird Engineers, now known as Baird AE, was subsequently appointed to prepare a report as provided for under the provisions of the Act.

As requested by Council, we have made an examination of the East McPherson Drain located along the east side of the 11th Concession Road being Concession 10, Lots 2, 3 and 4 and we report thereon as follows.

3.0 Drainage Act Process

The following is the general order of procedure that is followed to repair and improve a municipal drainage system pursuant to Section 78 of the Drainage Act:

a) Council determines that repair and improvements are required.
b) Council appoints an Engineer.
c) Engineer conducts an onsite meeting.
d) Engineer conducts a survey of the drain

e) Need for preparation of a Preliminary Report is decided.
f) Engineer completes and provides a Preliminary Report, if required.
g) Council considers Preliminary Report, if required, with affected landowners and decides on an option(s) with which to proceed.
h) A Draft Report is provided to the Municipality.
i) A Public Information Centre (PIC) is held with affected landowners to discuss the report prior presenting the final report to Council.
j) Engineer prepares Final Drainage Report and provides copy to the Municipality.
k) Meeting to Consider the report held in front of Council with affected landowners.
l) At the Meeting to Consider, the Municipal Council may adopt the Drainage Report. If adopted, the Municipal Clerk prepares a provisional by-law for the recommended work and sends copies of the by-law to affected parties and arranges a second meeting of Council for the Court of Revision, within thirty days of adopting the provisional by-law.
m) The Court of Revision is typically held within 30 days at a subsequent meeting with affected landowners to discuss any disputes regarding assessment of cost to lands and roads.
n) Council passes by-law for construction of the work after statutory appeal period expires. Typically, the appeal period is a minimum of 40 days from the date of the provisional by-law.
o) Tenders are received by the Municipality to perform the recommended work and construction is carried out. Inspection of the construction work may be provided by the Town Drainage Superintendent or by an inspector from the engineering office.
p) Upon completion of construction, the Municipal Clerk will finalize all applicable costs and submit grant applications to the Ministry of Agriculture and Food, if applicable. The clerk will then send a final net assessment to the affected landowners. Only lands listed by the Municipal Property Assessment Corporation as having Farm Class Tax Rate are eligible for a 1/3 grant.

4.0 Current Drainage Report and Drain History

The latest drainage report on file for the East McPherson Drain was prepared by C.G.R. Armstrong, P.Eng. dated April 3, 1969. This report provided for the cleaning of the entire length of the drain including removal of all underbrush. The report further recommended the lowering and repair of several access culverts. We have determined that the current drainage area is approximately 43.91 ha (108.53 acres) in size and encompasses land on both the east and west sides of the 11th Concession Road.

Bruce D. Crozier, P.Eng, prepared a report dated October 1, 2002, pursuant to Section 66 of the Act, to investigate the request to subsequently connect agricultural tile drainage at 6604 Malden Road, Roll No. 410-04700, into the East McPherson Drain. Under this report, these lands were assessed a just proportion of the future drainage works for the East McPherson Drain. A portion of the drain, from Station 0+000 to approximately Station 0+530, was subsequently cleaned privately at the cost of the lands at 6604 Malden Road, Roll No. 410-04700, in 2003.

5.0 Purpose of Report

The purpose of this report is to provide for the repair and improvement of the drain and preparation of a schedule of assessment that accurately reflects the current drainage area and patterns. This report provides a description and estimated cost of the proposed work. In addition, the report provides a recommendation for distribution of the construction and incidental costs related to the work. This report further provides for the distribution of future maintenance costs. The assessments provided in this report are based upon the estimated cost of the work; these assessments will be pro-rated to the actual cost of the project upon completion of the works.

6.0 Site Meeting

On Wednesday, October 16, 2013 at 9:00am, a meeting was held at 6664 11th Concession Road to discuss the proposed work. The following people attended the site meeting:

Meeting Attendees	Municipal Address
Reg Chevalier	6925 12th Concession Road
Ralph & Joanne Lutzmann	6604 Malden Road
Wayne & Lori Farough	6664 11th Concession Road
Charles Farough	6848 11th Concession Road
Councillor Tania Jobin	Town of Tecumseh
Phil Bartnik, P.Eng.	Town of Tecumseh
Halliday Pearson, P.Eng.	Crozier Baird Engineers

Mr. Bartnik explained that a request for cleaning of the drain under Section 78 of the Act had been received. The current report was prepared in 1969. Maintenance was completed on a portion of the drain at the downstream end, approximately 530.0 metres, in conjunction with installation of a tile installed under the road in 2004 to provide tile drainage outlet for 6604 Malden Road.

Concern was expressed regarding the water level at the East McPherson Drain's outlet into the South Talbot Road Drain East.

Mr. Wayne Farough stated his concerns related to the elevation of the tile drain. Currently, the invert of the tile is below the existing drain bottom.

Ms. Farough stated that the tile is causing a portion of the east drain bank abutting her property to erode. Ms. Pearson suggested the supply and placement of gabion stone at this location would be included in the report. Ms. Farough objected to the use of gabion stone as she maintains the drain bank abutting her property and was concerned about the difficulty of maintaining the bank slope due to the presence of the gabion stone. Concerns were also raised related to weed growth within the gabion stone erosion protection. Ms. Pearson stated that filter fabric would be placed beneath the gabion stone in an effort to prevent weed growth.

Mr. Bartnik recommended that during the drain survey, that a topographical survey be undertaken on the eastern portion of the Lutzmann property to determine the elevation of the agricultural lands and verify the elevation and location of the tile on the west side of the 11th Concession. Mr. Lutzmann agreed to allow access to the surveyors.

Those present stated that cutting vegetation and leaving that vegetation within the drain does not improve flow.

Mr. Bartnik suggested that a second site meeting be held after the survey of the drain has been completed to discuss with affected landowners how to proceed and the exact location of the required improvements.

On Monday, January 27, 2014 at 9:00am a second site meeting was held at 6744 11th Concession Road to discuss the results of the drain survey. The following people attended the meeting:

Meeting Attendees	Municipal Address
Wayne & Lori Farough	6664 11th Concession Road
Charles Farough	6848 11th Concession Road
Leanne Farough	6744 11th Concession Road
Ron Lafferty	7108 11th Concession Road
Phil Bartnik, P.Eng.	Town of Tecumseh
Halliday Pearson, P.Eng.	Crozier Baird Engineers

Mr. Bartnik discussed the results of the survey. The survey indicates that in order to return the drain bottom to the theoretical design grade, a significant amount of material must be removed from the upper portion of the drain. Culvert inspections were undertaken on all culverts within the drain. The Engineer has determined that certain culverts are more than ¾ full of sediment while others are undersized, have negative slope (backfall) or are in poor condition. However, certain culverts, although they have negative slope, are in fair condition that would allow for another five to 10 years of use. The Engineer will further determine which culverts require removal and replacement and those that may remain in the drain. Mr. Bartnik further stated that the private tile that enters the drain, approximately 18.0 metres south of Culvert No. 2, would be approximately 76mm (3") above the drain bottom if the drain was cleaned to theoretical drain bottom.

Ms. Farough stated that she objects to this work due to the potential cost and that flooding has not be identified on her lands or the lands of those present at today's meeting.

Mr. Charles Farough asked why individual landowners may not replace their own culverts or retain their own contractor to complete the works according to Town specifications.

Mr. Bartnik replied that culverts replaced in a Municipal Drain are subject to the Drainage Act, being Provincial legislation. The Town is responsible for municipal drains within their boundaries and an Engineer must prepare a report including a design and specifications for the construction of the culvert. If an unqualified contractor installs culverts, the Town becomes liable should deficiencies be discovered.

Ms. Farough asked what could be done now that she has objected to the work. Mr. Bartnik stated that the Town of Tecumseh is required, under the Act, to investigate this request for cleaning and sufficient outlet. An Engineer has been appointed to identify issues with the drain including sediment built-up and culvert condition. Council must then hear and act on the recommendations put forth in the new Engineer's Report. All work is proceeding as specified in the Drainage Act.

Ms. Farough expressed concerns that cleaning of the drain will not alleviate the flooding issues experienced by the 6604 Malden Road lands.

Mr. Wayne Farough requested that the Engineer confirm the grade of the private tile.

Ms. Farough requested that an elbow be installed on the east end of the private tile to prevent further erosion to the east drain bank. Ms. Farough further requested that a rodent grate be placed on the tile. Ms. Pearson suggested the use of gabion stone to prevent further erosion. Ms. Farough indicated that an elbow extension to the existing tile was preferred.

Mr. Charles Farough indicated that approximately 3.0 acres of his property drains to the East McPherson Drain with the remaining flowing easterly. Mr. Bartnik stated that drainage areas are typically determined through review of the current drainage report and in consultation with affected landowners.

Mr. Charles Farough stated that the culvert under the road at the upper end of the drain is filled with sediment.

Mr. Lafferty stated that his water drains southerly and should not be included in the East McPherson Drain watershed.

Mr. Bartnik and Ms. Pearson stated that a draft report would be prepared and distributed to affected landowners for review. A Public Information Centre will be held at the Town Hall at which affected landowners may express their concerns with the draft report. The Public Information Centre allows affected landowners to comment on the report and allows the Engineer to revise the report prior to submission to Council.

Affected landowners will be notified by mail of the date of the Public Information Centre. The meeting was adjourned at 9:40am.

7.0 Public Information Centre

A Public Information Centre was held at Tecumseh Town Hall on Wednesday, April 16, 2014 to review the draft report dated March 17, 2014 and receive, document and respond to questions and concerns. The following people signed in at the meeting:

Meeting Attendees	Municipal Address
Wayne & Lori Farough	6664 11th Concession Road
Frank Kokovai	7035 11th Concession Road
Charles Farough	6848 11th Concession Road
Gerald Gerard	880 Hale Street, Stoney Point
Mary Jean Gerard	6988 11th Concession
Peggy Gerard	Wallaceburg
Roy & Carmen Tayfel	7188 11th Concession Road
Ron Gerard	7000 11th Concession Road
Tate Farough	6776 11th Concession Road
Sam Paglia, EI	Town of Tecumseh
Phil Bartnik, P.Eng.	Town of Tecumseh
Tania Iacobelli	Crozier Baird Engineers
Halliday Pearson, P.Eng.	Crozier Baird Engineers

Mr. Paglia introduced those present and reviewed the agenda for the meeting. Mr. Paglia provided a timeline for the project thus far.

Ms. Pearson stated that general questions related to the Drainage Act would be addressed. The Engineer would then address landowner's concerns individually.

Roll No. 400-00800 Address: 6988 11th Con. Rd Owner: Mary Jean Gerard

Issue #1: The majority of residents on this drain have no issues with flooding or damage to crops resulting from flooding. A petition signed by the residents was submitted requesting that this work be abandoned in accordance with Section 84 of the Act.

Response #1: This report was prepared as a result of a request received for maintenance on the drain. The Town has a responsibility to proceed under the Act. It is the Town's responsibility to maintain Municipal Drains and act when a request for maintenance is received. Should the Town not act, the Town becomes liable for damages resulting from flooding. Landowners may not want work to be undertaken on the drain; however, now that a request has been received the Town

must proceed in accordance with the Drainage Act.

Upon initiation of the process, Council can only stop the process. Administration has no right to stop the process; it is Council's decision. Should Council decide to stop the work and a parcel floods, the Town becomes liable for damages resulting from that flooding.

Section 84 of the Act refers to abandonment of a Municipal Drain not the abandonment of the works proposed in this report. Council at the Meeting to Consider decides how to proceed based on Administration's recommendations, the Engineer's report and the opinions expressed by affected landowners.

Issue #2: A landowner who has retiled his lands requested this drain maintenance. No other landowners are experiencing issues with the function of the drain.

Response #2: The Act is not concerned about why the request was initiated but is concerned about the Engineer's professional opinion about whether maintenance on the drain is required. The Engineer has reviewed the design profile as provided in the current by-law, visited the site and reviewed the survey data to determine the condition of the drain. The survey indicates that this drain requires maintenance.

Issue #3: We have experienced double the amount of rainfall recently and no landowner has experienced any issues except the landowner who requested the maintenance work. This project is not beneficial to the other landowners.

Response #3: The concerns expressed at the PIC will be incorporated into the revised report presented to Council at the Meeting to Consider. Council will be provided with a recommendation by Administration along with the Engineer's report.

Issue #4: Is the consent of the property owner required to access the drain or their lands?

Response #4: The Drainage Act provides the Engineer, Drainage Superintendent and the Contractor with the right to enter onto lands to investigate and maintain the drain.

Issue #5: Who guarantees that the landowners will not incur additional maintenance costs after the work has been completed?

Response #5: A final inspection is undertaken when the works are complete. The Contractor is responsible for the quality of the work for one year. Should deficiencies be noted and repaired within the one-year period, a one-year maintenance period related to those noted deficiencies will begin again. Landowners within the watershed are encouraged to notify the Drainage Superintendent of deficiencies during and after construction and within the one-year maintenance period.

It is the landowner's responsibility to notify the Drainage Superintendent of the need for maintenance on any Municipal Drain into which a landowner may be assessed. As the East McPherson Drain is a Municipal Drain, maintenance will continue to be required.

Issue #6: Culvert No. 8 is no longer required. We do not want the enclosure (Culvert No. 9) removed and replaced. Please only replace the driveway culvert portion of the enclosure.

Response #6: In subsequent conversations with the landowners who utilize Culvert No. 8 and Culvert No. 9, it was decided that these culverts would remain in the drain and be cleaned. At such time that the culverts fail, they will be removed from the drain and the driveway portion of

Culvert No. 9 will be replaced as described in Section 12.0 Recommendations.

Issue #7: The main issue is that no landowner is having an issue with the drain. The cost of drainage works is a rip off.

Response #7: The estimate provided in the report is an estimate based on tender prices gathered from similar projects. Should the tendered prices be more than 133% of the Engineer's estimate as provided in the report, Council must call a meeting with affected landowners to determine how to proceed as described in Section 59(1) of the Act.

Issue #8: Why may one landowner initiate this process when other landowners are not experiencing drainage issues? Let us sign a waiver stating that we do not want these works to proceed and will not hold the Town liable for damages resulting from flooding. The Town allowed the lay of the land to be changed on the subject property. Why are all landowners on the drain responsible for the cleaning of the drain?

Response #8: Municipal Drains are a community based, user-pay system. All affected lands in the watershed contribute to the maintenance of the drain. Any landowner within the watershed, including the Town, may trigger a request for drainage works in writing or verbally. Upon the receipt of the request for works on the East McPherson Drain the Town was required to act in accordance with the Drainage Act. Council is the only body that can decide whether to proceed; it is not a decision that can be made by landowners, Administration or the Engineer.

The Town of Tecumseh is currently undertaking a review of drains within the municipality. If a request for maintenance works had not been received from a landowner, the Town may have triggered the work as Town lands drain into the East McPherson Drain.

Issue #9: How long is an Engineer's report valid?

Response #9: The Engineer's report remains valid as long as no major development occurs within the watershed. Should a severance be approved without an apportionment, the schedule of assessment is no longer valid as it no longer accurately represents the watershed.

Should the design included in the Engineer's report remain satisfactory, but significant changes occur in the watershed, the Municipality may require the preparation of a new maintenance schedule of assessment as described in Section 76 of the Act.

Issue #10: I maintain the drain in front of my house. The Municipality does not. I should receive a credit for maintaining my portion of the drain.

Response #10: The Drainage Act does not provide provisions for the reimbursement of costs related to independent maintenance of a Municipal Drain. All requests for maintenance should be directed to the Drainage Superintendent.

It is the landowner's responsibility to bring water generated by their lands to a sufficient outlet. Section 1 of the Act provides the following definition for sufficient outlet: "**Sufficient Outlet**" *means a point at which water can be discharged safety so that it will do no damage to lands or roads*. Therefore, the landowner is responsible for a portion of the maintenance required on the drain downstream of their lands; not simply the portion of the drain abutting their property.

Issue #11: Who determines that someone may direct his or her water into a Municipal Drain?

Response #11: Section 65 of the Act allows for the subsequent connection of lands into a

Municipal Drain. In accordance with Section 65, an Engineer appointed by the Municipality shall make an inspection and assess the land for a just proportion of the drainage works. No person shall connect their lands to the drainage works without the approval of the Town Council.

Roll No. 440-01100 Address: 6988 11th Con. Rd Owner: Lori & Wayne Farough

Issue #1: The issue is the parcel at 6604 Malden Road. Why did the Town allow these changes to the property? The issue is the surface water on the subject property. The drain was cleaned from the private tile to the outlet after the private tile was installed. Landowners upstream of the private tile do not have issues with the functionality of the drain.

Response #1: The Town appointed an Engineer under Section 66 of the Act to investigate the request for a subsequent connection into the East McPherson Drain in 2002. Upon consideration of that report, Council adopted the report allowing the subsequent connection to proceed.

Upon receipt of the request for maintenance, Council appointed an Engineer who determined through a site survey and visual inspection that the East McPherson Drain was in need of repair and required excavation, culvert replacement and cleaning. The drainage issues of 6604 Malden Road, Roll No. 410-04700, have no effect on the condition of the drain upstream of the private tile crossing. Generally, there is a significant amount of sediment built-up within the drain and certain culverts are in poor condition.

Issue #2: Where are our taxes going? Why is it the landowner's responsibility to pay for the work on Municipal Drains?

Response #2: Taxes are not used to pay for the maintenance of Municipal Drains. Municipal Drains are a user-pay, community based system. All assessed lands within the drain's watershed contribute to the maintenance of the drain. Municipal Drains are not an asset of the Town; however, the Town has a duty to assist landowners in drainage matters and a responsibility under the Drainage Act in maintaining and repairing Municipal Drains.

Issue #3: The surface water on the subject property is the issue. What is the Town going to do when the surface water issue is not resolved?

Response #3: The surface water generated by 6604 Malden Road, Roll No. 400-04700, does not enter the East McPherson Drain. With the completion of a site inspection and topographical survey, it has been determined that surface water from 0.91ha of the parcel enters the South Malden Road Drain (Upper Portion) while the surface water from the remaining 11.99ha flows easterly to the Santo Drain. The East McPherson Drain accepts only agricultural tile drainage from 6604 Malden Road.

The intent of this report is to repair and improve the entirety of the East McPherson Drain and provide a solution for the tile drainage issues associated with 6604 Malden Road. As with all Municipal Drains regular maintenance is recommended and encouraged.

Issue #4: Culvert No. 2 is in good condition. Why are new headwalls recommended?

Response #4: Culvert No. 2 will now be salvaged and lowered to better accommodate the private tile at Station 0+528.16. The existing pipe will be salvaged and reused. The jute bag headwalls cannot be salvaged so will be replaced.

Issue #5: I do not want the headwalls replaced on Culvert No. 4.

Response #5: This item has been removed from the construction estimate. A provision has been included in the report to allow for future replacement of the headwalls.

Issue #6: Certain culverts were installed under the authority of a former Drainage Superintendent. Why does the new report recommend that these culverts be removed and replaced?

Response #6: Culverts not identified as part of a Municipal Drain in an Engineer's report are considered obstructions within the drain. In the past, many Municipalities did not adhere to the Drainage Act process. This causes problems now when works are proposed for the drain and no information related to these unidentified culverts exists.

In order to ensure the Municipal Drain works optimally, culverts must be installed in accordance with the current Engineer's report. The culverts identified for removal and replacement are in poor condition and the existing elevations do not correspond with the designed drain bottom.

Issue #7: As discussed previously, we want to sign a waiver that no works be undertaken on this drain. Do we have any method of appeal?

Response #7: At the Meeting to Consider Council will determine how to proceed with the report based on Administration's recommendations, the Engineer's report and input from the public. Council has the power to refer the report back to the Engineer but they cannot direct the Engineer to change the report. Council also has the right to abandon the entire project but assumes all liability upon abandonment of that project.

Should this report be provisionally adopted at the Meeting to Consider, a Court of Revision will then be scheduled. The Court of Revision hears appeals on assessments. Should third and final reading of the by-law be given, affected landowners may appeal to the Tribunal. The decisions of the Tribunal are final.

There are many opportunities to voice concerns. Notification of all public meetings related to this report will be mailed to affected landowners.

Issue #8: A road crossing outlets into the drain at the north end of Culvert No. 5.

Response #8: The report has been revised to show the location of this tile drain and recommends that the tile drain be extended to maintain flow.

Issue #9: Can we as landowners undertake the proposed works?

Response #9: Anyone is welcome to submit a tender for the project if they can provide the documents and bonding required by the Town: insurance, WSIB clearance, etc. The tenderer must provide proof of sufficient experience and have the machinery necessary to perform drainage works within the Town.

Issue #10: Could the existing backfill material be used to construct the replacement culvert instead of importing new material?

Response #10: All culverts within Municipal Drains must be constructed according to the Town's standards and specifications. The Town's standards correspond with Provincial standards. The condition of the backfill material used to construct the culverts is unknown. This material could not be recommended for use without first being tested by a geotechnical engineer.

Issue #11: Could the owner of 6604 Malden Road be made to remove the tile and redirect all

surface water to the South Malden Road Drain? This is where the water flowed prior to construction of the home on the parcel.

Response #11: No, these lands were subsequently connected to the East McPherson Drain in accordance with a report prepared under then Section 66 of the Act and adopted by Municipal Council. This is and shall remain a private agricultural tile draining into the East McPherson Drain.

Issue #12: Please confirm the areas of 6744 11th Concession Road, Roll No. 440-01001, and 6776 11th Concession Road, Roll No. 440-00905, that drain into the East McPherson Drain.

Response #12: The affected areas listed in the draft Schedule of Assessment were determined by reviewing the current Engineer's report for the East McPherson Drain. At the request of the landowner we have attended both locations to conduct a topographic survey. The survey results indicate that fewer hectares drain into the East McPherson Drain than recorded in the current 1969 Engineer's report. The Schedule of Assessment has been revised accordingly.

Roll No. 440-00900 Address: 6848 11th Con. Rd Owner: Charles Farough

Issue #1: Please confirm the area of 6848 11th Concession Road, Roll No. 440-00900, that drains into the East McPherson Drain.

Response #1: The affected areas listed in the draft Schedule of Assessment were determined by reviewing the current Engineer's report for the East McPherson Drain. At the request of the landowner we have attended the site to conduct a topographic survey. The survey results indicate that fewer hectares drain into the East McPherson Drain than recorded in the current 1969 Engineer's report. The Schedule of Assessment has been revised accordingly.

Roll No. 440-00500 Address: 7188 11th Con. Rd Owner: Carmen Tayfel

Issue #1: How can the Town justify the cost to install a private culvert according to the specifications provided in the report?

Response #1: Drainage works are tendered in accordance with the Town of Tecumseh's purchasing policy. Typically, the tendering period is two (2) weeks and is open to anyone in Ontario who can provide the required documentation (WSIB, insurance, etc.) and show that they have the equipment and knowledge to perform the necessary work.

Further, the Town distributes a Notice of Tender to all local contractors informing them of the open tender.

Issue #2: Why does the Town not rent an excavator from the County of Essex to complete maintenance works using their own forces?

Response #2: The Town does not have the workforce to complete Municipal Drainage maintenance. It is not feasible for the Town to own that type of machine if it will not be used continuously throughout the year.

Roll No. 440-01000 Address: 6776 11th Con. Rd Owner: Tate Farough

Issue #1: Are my lands eligible for the 1/3 grant?

Response #1: The Municipal Property Assessment Corporation does not identify these lands as having Farm Tax Class Rate. Only lands with this tax class rate are eligible for the 1/3 grant.

However, the Town allows assessments to be debentured over five (5) years for all assessed lands.

Issue #2: Does the use of sloped gabion stone end of pipe protection reduce the width of my driveway? I would like my driveway width to remain the same.

Response #2: Culvert No. 5 is recommended for replacement. The culvert length is being extended to accommodate the use of sloped gabion stone end of pipe protection.

Roll No. 410-05300 Address: 7035 11th Con. Rd Owner: Frank Kokovai

Issue #1: Why is my land assessed into the East McPherson Drain? My lands drain to the Santo Drain.

Response #1: The existing road crossings located at Station 0+752.88, Station 1+014.06 and Station 1+324.13 serve as overflows from the Santo Drain to the East McPherson Drain. Due to the presence of these crossings, water from this parcel has the opportunity to outlet into the East McPherson Drain and has been assessed into the East McPherson Drain.

Issue #2: Could you please confirm the area assessed into the Santo Drain and the East McPherson Drain? A road crossing conveys water to the South McPhee Drain.

Response #2: The current reports for the Santo Drain and the East McPherson Drain assess 12.14 ha (30 acres) of this parcel into their respective watersheds. However, a site investigation concludes that approximately 5.73 ha (14.16 acres) of this parcel drain to the northerly portion of the Santo Drain. The road crossings at Station 0+752.88, Station 1+014.06 and Station 1+324.13 provide that 5.73 ha with the opportunity to outlet into the Santo Drain and the East McPherson Drain, if required. However, we have determined that approximately 30% of the water, generated by the lands on the west side of the 11th Concession Road, enters the East McPherson Drain after its collection by the Santo Drain. The Santo Drain conveys the remaining 70% of the overland flow. Therefore, 30% of the affected areas of the lands with Roll No. 410-05300; 410-05200; 410-05150; 410-04600; and 410-04700 on the west side of the 11th Concession Road have been assessed. For example, approximately 5.73ha of the Kokovai lands drain to the Santo Drain. Approximately 30% of this area is conveyed to the East McPherson Drain. Therefore, the Kokovai lands are assessed 1.72 ha in the Schedule of Assessment (5.73ha x 0.3 = 1.72ha).

Modified affected areas for lands with Roll No. 410-05300; 410-05200; 410-05150; 410-04600; and 410-04700 are listed in the Schedule of Assessment.

8.0 Meeting to Consider

A Meeting to Consider was held at Tecumseh Town Hall on Tuesday, July 8, 2014 to consider the report dated June 17, 2014 and receive and respond to questions and concerns. The following issues were discussed at the meeting:

Roll No. 410-04700 Address: 6604 Malden Road Owner: Ralph & Joanne Lutzmann

Issue #1: The backslope of Culvert No. 2 will restrict flow from my tile drain and create sediment in the drain that restricts the flow of my tile. Can Culvert No. 2 be reset to eliminate the backflow?

Response #1: The backslope of Culvert No. 2 is such that it will not negatively impact the flow of water from the tile after the drain bottom is cleaned. The proposed drain bottom elevation is 8.6cm or 3.4" below the invert of the tile.

We would not recommend that Culvert No. 2 be removed and reset; there will not be noticeable improvement to the function of the drain if the culvert was removed and reset. As always, regular maintenance of any municipal drain is recommended to ensure that water flows freely and sediment does not impact the functioning of the drain.

Roll No. 410-05300 Address: 7035 11th Con. Rd Owner: Frank Kokovai

Issue #1: The Santo Drain was cleaned in 1983. The lands on the west side of the road were assessed at the time into the Santo Drain. The road crossing (RC3) drains east to west.

Response #1: Survey data confirms that the Road Crossing No. 3 drains west to east. In the current by-law for the East McPherson Drain, lands on both the east and west sides of the road were assessed into the East McPherson Drain. The presence of the road crossings, which drain west to east, confirm that a portion of the lands on the west side of the road should be assessed into the East McPherson Drain. Based on a review of the survey data and elevation of the road crossings, it appears that the Santo Drain, when in a maintained state, would utilize the East McPherson Drain as an overflow. Currently, the bottom elevation of the Santo Drain is such that the road crossings are at the bottom or below the bottom of the Santo Drain.

Assessments for the lands on the west side of the 11th Concession Road have been revised and are included in the attached Schedules of Assessment as described in Response #2 on page 11 of this report.

Roll No. 440-01100 Address: 6444 11th Con. Rd Owner: Lori & Wayne Farough

Issue #1: Why is the cost for cleaning of my culvert so high? Why is the cost of Culvert No. 4 less than mine yet 1m shorter?

Response #1: The cost to clean Culverts No. 2 and No. 4 have been revised to more accurately reflect typical cleaning costs based on tender prices received for similar projects in the Town of Tecumseh.

Issue #2: Why has the cost of site meetings and survey increased?

Response #2: The cost listed under line item “Attendance at site meeting, survey” under Incidentals on page 28 of this report increased due to the two surveys conducted at the request of certain landowners. The survey was requested to determine the extent of their land to be included in the drainage area. Those landowners have been assessed 100% of the cost of that survey as described in the attached Special Benefit Schedule. The increased cost relates to survey only and not site meetings.

Issue #3: Why is Culvert No. 3 being replaced when it was installed after others and is in better condition than others that are being replaced?

Response #3: Culvert No. 3 is being replaced because the elevation of the culvert does not correspond with the design drain bottom. This culvert was not installed under an Engineer’s report and was not installed at an elevation corresponding with the design drain bottom described in the current by-law.

Issue #4: Why is excavated material being spread on residential lands?

Response #4: Material excavated from the drain abutting residential lands is loaded, hauled and disposed of on neighbouring agricultural lands. No excavated material is placed on lawns or

driveways. Specifications included in the report describe how the material must be spread, for example:

> *The Contractor shall cast all excavated material on the adjacent agricultural lands. Excavated material shall be spread to a depth of no more than 100 mm along the east top of drain bank and shall be kept at least 1.2 metres clear from the finished edge of the drain, care being taken not to fill up any existing tiles, ditches, furrows or drains with the excavated material.*
>
> *Where the drain passes in front of any house, garden, lawn, driveway, etc., the excavated material shall be hauled and spread upon the adjacent agricultural lands.*

Issue #5: The lands on the east side of the 11th Concession have no drainage problems. How can Council go to this extent when only one landowner has issues with drainage?

Response #5: The Town, under the Act, has a duty to investigate any request for repair and improvement received from a landowner with the drainage area.

Cleaning of the drain benefits all lands utilizing the drain by removing water from their property.

The deficiencies found during the Engineer's investigation are upstream of the location at which the private tile enters the drain. Culverts are collapsing upstream and sediment is accumulating in the drain bottom; both of these factors contribute to the flow of water within the drain and are not associated with the private tile at the downstream end of the drain.

Issue #6: Costs are unreasonable.

Response #6: Construction cost estimates are based on tendered prices received for similar projects in the Town of Tecumseh. The costs provided in the report are estimated. Actual costs will be determined at the time of tendering.

The attached Construction Schedule of Assessment does not consider the allowances available to certain lands or the 1/3 grant available to eligible agricultural lands. The allowances and the grant are applied to assessments at the time of invoicing.

Issue #6: Why are tax dollars not used for the maintenance of municipal drains?

Response #6: As noted on in Response #2 on page 8 of this report, taxes are not used for to pay for the maintenance of Municipal Drains. Municipal Drains are a user-pay, community based system. All assessed lands within the drain's watershed contribute to the maintenance of the drain. Municipal Drains are not an asset of the Town; however, the Town has a duty to assist landowners in drainage matters and a responsibility under the Act in maintaining and repairing Municipal Drains.

Issue #7: Landowners can arrange for the work to be completed at much cheaper rates than what is proposed in the report.

Response #7: Any work to clean or improve the drain must be requested and undertaken through the Drainage Superintendent. Should a landowner have a preferred contractor, that contractor may participate in the tendering process provided the contractor has all necessary documents, to comply with the Town's purchasing policy, including insurance, and WSIB clearance.

Roll No. 400-00800 Address: 6988 11th Con. Rd Owner: Mary Jean Gerard

Issue #1: Why have lands on the west side of the road not been assessed a benefit?

Response #1: These lands utilize the East McPherson Drain for outlet. There is no particular benefit to the lands to utilize the drain. Typically, only lands abutting the drain are assessed a benefit. Benefit is described on page 29 this report.

Issue #2: The lands on the west side of the road have drainage problems. Why are the lands on the east side of the road being burdened with these excessive costs when no issues have been noted on lands on the east side?

Response #2: When a request for repair and improvement is received, the Town is obligated, under the Act, to investigate. A Professional Engineer has identified a number of deficiencies in the drain and the Town cannot ignore these deficiencies. Administration supports the proposed works. Council is the only body that can make the decision to abandon the works. However, as Council is now aware of the drain's deficiencies, they must respond. The Town is liable for damages resulting from not repairing the drain. The Meeting to Consider and the Court of Revision are held to allow affected landowners to voice their concerns regarding the proposed works and assessments.

Preparation of a new report allows for the development of a fair and accurate report and schedule of assessment. As noted in this report, certain culverts are not identified in the current by-law and issues related to inaccurate assessments have become apparent. Works on the drain cannot be undertaken under Section 74 Maintenance as the current by-law does not accurately reflect the conditions of the drainage area or system.

A meeting was held on June 5, 2015 attended by Mr. Sam Paglia, EI, Mr. Lutzmann, Roll No. 410-04700 and Mr. Don Joudrey, P.Eng. of Baird AE, to discuss lowering the drain bottom between Station 0+532 and the drain's outlet below the theoretical design described in the current report. A lower drain bottom would better accommodate Mr. Lutzmann's private tile at Station 0+528.16. In order to lower this section of the drain, Culvert No. 2 would also have to be lowered. Mr. Lutzmann was informed that the cost to lower the drain bottom and Culvert No. 2 would be assessed 100% to his lands.

A second Public Information Centre was held at Tecumseh Town Hall on September 14, 2016 to review the draft report dated June 7, 2016 and receive, document and respond to questions and concerns. Meeting minutes and a sign-in sheet are attached to this report in Appendix A.

9.0 Topographic Survey

We commenced our survey at the upstream end of the existing drain. The survey continued northerly, approximately 1,335 metres, to the drain's outlet into the South Talbot Road Drain East.

Additional topographic survey was carried out on the lands with Roll No. 410-04700 on the west side of the 11th Concession Road to determine the location and elevation of the existing private tile. Topographic surveys were also conducted on portions of lands with Roll No. 440-01100, Roll No. 440-01001 and Roll No. 440-00905 at the request of the landowners to determine the extent of the drainage area. It was determined through a review of the resulting topographic data that revisions were required to the affected areas of these parcels as listed in the attached Schedules of Assessment.

10.0 Existing Conditions

We find that the East McPherson Drain is in need of repair and requires cleaning and culvert replacement pursuant to Section 78 of the Act.

Further, as a result of the survey, we have found the following:

Considerable sediment has accumulated in the bottom of the drain preventing the proper flow of water, particularly between Station 0+520 and Station 1+280. Considerable vegetation is present throughout the drain, particularly between Station 0+000 and Station 0+500; Station 0+680 and Station 0+800; Station 1+000 and Station 1+200.

A private corrugated plastic tile main exists at Station 0+528.16. The tile drains private agricultural lands on the west side of 11th Concession Road. The outlet of the tile is currently below the existing drain bottom.

Bank slope erosion was noted between Station 0+527.66 and Station 0+528.66 caused by flows entering the drain from the private tile main at Station 0+528.16.

There are currently three confirmed road crossings entering the East McPherson Drain as described below:

Road Crossing No. 1– Town of Tecumseh
Station 0+752.88
The existing 200mm diameter pipe is in satisfactory condition. End of pipe protection is absent from both the west end of the pipe. This structure is not currently identified as part of the East McPherson Drain under the current by-law.

Road Crossing No. 2 – Town of Tecumseh
Station 1+013.03
The existing 600mm diameter corrugated steel pipe is in poor condition and is ¾ filled with sediment. End of pipe protection is absent from both the east and west ends of the pipe. This structure is currently identified as part of the East McPherson Drain under the current by-law.

Road Crossing No. 3 – Town of Tecumseh
Station 1+324.13
The existing 450mm diameter corrugated steel pipe is in satisfactory condition. End of pipe protection is absent from both the east and west ends of the pipe. This structure is not currently identified as part of the East McPherson Drain under the current by-law.

There are currently seven culverts within the East McPherson Drain as described below:

Culvert No. 1 – Charles Farough
Roll No. 440-01200
Station 0+245.49
The existing 900mm diameter corrugated steel pipe has been removed from the drain at the owner's request. The cost of removal was paid completely by the owner and does not form part of this report.

Culvert No. 2 – Wayne & Lori Farough
6664 11th Concession Road
Roll No. 440-01100
Station 0+501.78

The existing 900mm diameter corrugated steel pipe is in fair condition with jute bag headwalls that are in good condition. Survey data indicates the pipe has backfall and hydraulic calculations confirm that the pipe size is satisfactory. This structure provides access to residential lands and is not currently identified as part of the East McPherson Drain under the current by-law.

Private Tile Drain Outlet – Ralph & Joanne Lutzmann
6604 Malden Road
Roll No. 410-04700
Station 0+528.16
The existing 200mm diameter PVC pipe is in satisfactory condition. The grade of the tile is 0.39%. The pipe is currently below the existing drain bottom. There is no end of pipe protection visible at the east end. This structure is a private tile outlet that drains an agricultural parcel on the west side of the 11th Concession Road.

Culvert No. 3 – Ila May Farough & Wayne Farough
6744 11th Concession Road
Roll No. 440-01001
Station 0+611.49
The existing 900mm diameter corrugated steel pipe is in fair condition with concrete piece headwalls that are in poor condition; the pipe size is satisfactory. Survey data indicates that the elevation of this culvert does not correspond with the existing or theoretical drain bottom. This structure provides secondary access to agricultural lands and is not currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 4 – Ila May Farough & Wayne Farough
6744 11th Concession Road
Roll No. 440-01001
Station 0+671.32
The existing 900mm diameter corrugated steel pipe is in fair condition; the existing concrete block headwalls are in poor condition. The pipe size is satisfactory. This structure provides access to a residence on agricultural lands and is currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 5 – Tate Farough
6776 11th Concession Road
Roll No. 440-01000
Station 0+752.39
The existing 900mm diameter corrugated steel pipe is in poor condition. Headwalls are constructed of concrete pieces at the north end and poured concrete at the south end. Both headwalls are in fair condition. The pipe size is satisfactory. This structure provides access to a residence and is currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 6 – Charles Farough
6848 11th Concession Road
Roll No. 440-00900
Station 0+903.79
The landowner notified the Town on May 1, 2014 that the existing 900mm diameter corrugated steel pipe had collapsed. The landowner informed the Town that the culvert was no longer required to provide access to the residence on the parcel. This culvert was removed from the drain in April 2015 under emergency provisions; the cost of removal was paid completely by the owner and does not form part of this report. The culvert was identified as part of the East McPherson Drain under the current by-law.

Culvert No. 7 – Charles Farough
6848 11th Concession Road
Roll No. 440-00900
Station 0+989.06
The existing 900mm diameter corrugated steel pipe is in poor condition and hydraulic calculations suggest the size is appropriate. Headwalls constructed of concrete pieces are in poor condition. This structure provides secondary access to agricultural lands and is currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 8 – Danny & Mary Gerard
6988 11th Concession Road
Roll No. 440-00720
Station 1+176.75
The existing 600mm diameter corrugated steel pipe is in fair to poor condition and hydraulic calculations suggest the pipe size is appropriate. The pipe is approximately ¾ filled with sediment. Gabion stone erosion protection in fair condition is in place at the north and south ends of the culvert. This secondary structure is not currently identified as part of the East McPherson Drain under the current by-law.

Culvert No. 9 – Danny & Mary Gerard and Ronald Gerard
6988 11th Concession Road and 7000 11th Concession Road
Roll No. 440-00720 and Roll No. 440-00705
Station 1+205.12
The existing 600mm diameter corrugated steel pipe forms an enclosure spanning two properties. The pipe is in satisfactory condition and hydraulic calculations indicate the pipe is sized appropriately. The pipe is approximately ¾ filled with sediment. Gabion stone erosion protection in fair condition is in place at the north and south ends of the pipe. The driveway portion of this structure is currently identified as part of the East McPherson Drain under the current by-law and provides access to two separate parcels, being the lands with Roll No. 440-00720 and Roll No. 440-00705. Based on a review of the current report prepared by C.G.R. Armstrong, P.Eng. dated April 3, 1969, we have determined that the enclosure was added after preparation of the last report.

Based on the existing conditions and a review of the theoretical drain profile provided in the 1969 Armstrong report, we have determined that restoring the drain to the existing drain profile, between Station 0+532 and Station 1+335.50, would improve drain function.

11.0 Request for Emergency Works

On May 1, 2014 the Town's Drainage Superintendent received notice from the landowner of 6848 11th Concession Road, Roll No. 400-00900, that Culvert No. 6 at Station 0+903.78 had collapsed. The Drainage Superintendent inspected Culvert No. 6 on May 6, 2014 and determined that the culvert had deteriorated causing the top north end to collapse inward. The granular material atop the culvert then washed into the East McPherson Drain causing an obstruction in the drain and reducing the driveable top width for emergency access.

The Drainage Superintendent made an application to the Minister of Agriculture and Food to obtain approval to repair the culvert in accordance with Section 124 of the Act. An emergency designation was not awarded for this work; however, correspondence received from the Drainage Coordinator at the Ministry of Agriculture and Food indicated that the works can be completed as necessary under maintenance with the costs being assessed in accordance with this report after its adoption. Should this report not be adopted, a new report under Section 78 of the Act must be completed to address the failure and to incorporate a cost recovery scheme for the replacement

works.

The landowner indicated to the Drainage Superintendent that he had a preferred contractor to undertake removal of the failed culvert. The Drainage Superintendent provided the landowner with the requirements to allow a qualified contractor to perform work for the Town. It should be noted that any replacement culvert installed in future must be installed in accordance with the specifications provided in this report for the East McPherson Drain.

The Town has received and accepted a quote to remove this culvert as per the request from the landowner. Culvert No. 1 and No. 6 were removed from the drain in April 2015 at the cost of the requesting landowner.

In September 2016 concern was expressed about the absence of a culvert in front of the residence at 6848 11th Concession Road (the location of the former Culvert No. 6). After reviewing the site, it is apparent that the presence of the approach and driveway could cause confusion to motorists and does pose an unacceptable safety risk. We would recommend that one of the following options be implemented:

1. Reinstall Culvert No. 6 according to specifications provided within this report.
    - The cost to construct the culvert, including incidental fees, would be assessed to the benefitting lands and the upstream lands and roads as described in Section 18.0 Assessments of this report.
2. Remove all evidence of the approach on the road shoulder and driveway on private lands within 5 metres of the east top of bank. Relocate municipal number sign and mailbox to a location adjacent to Culvert No. 7.
    - The cost of this work shall be completed by the owner at the owner's cost. We recommend that this work be completed under the supervision of the Town's Drainage Superintendent.

Mr. Farough notified the Town that he wished to proceed with Option #1 Reinstallation of Culvert No. 6.

12.0 Recommendations

We would recommend the following works be performed in order to overcome the above noted deficiencies:

a) Excavation work shall be undertaken to remove accumulated sediment and vegetation within the drain:
    i. Drain shall be deepened between Station 0+000 and Station 0+500;
    ii. Excavation to design drain bottom shall be undertaken between Station 0+500 and Station 1+335.50;

b) Existing culverts and end of pipe protection shall be removed and replaced:
    i. Culvert No. 5 at Station 0+752.39: 11.7 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;
    ii. Culvert No. 7 at Station 0+989.06: 14.4 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

c) Existing culvert to be cleaned:
    i. Culvert No. 2 at Station 0+501.78: Clean existing 7.0 metres of 900mm diameter corrugated steel pipe;
    ii. Culvert No. 4 at Station 0+671.32: Clean existing 8.37 metres of 900mm diameter

corrugated steel pipe;

iii. Culvert No. 8 at Station 1+176.75: Clean existing 9.63 metres of 600mm diameter corrugated steel pipe;

iv. Culvert No. 9 at Station 1+205.12: Clean existing 38.59 metres of 600mm diameter corrugated steel pipe;

d) Supply and install culvert and end of pipe protection:
   i. Culvert No. 6 at Station 0+901.54: 12.40 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

e) Culvert No. 3 at Station 0+611.49: The culvert shall be inspected at the time of construction by the Engineer, Drainage Superintendent and landowner. Should the existing culvert be in satisfactory condition, the existing pipe shall be salvaged, reset and extended with sloped gabion stone end of pipe protection. Should salvage of the culvert not be possible, 15.0 metres of new 900mm diameter Boss 2000 320kPa pipe shall be supplied and placed with sloped gabion stone end of pipe protection;

f) Existing road crossing shall be extended:
   i. Crossing No. 1 at Station 0+752.88: Existing 200mm diameter road crossing shall be extended 1.0 metre using 200mm diameter Big 'O' tile. Sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

g) Existing road crossing shall be removed and replaced:
   i. Crossing No. 2 at Station 1+013.03: 15.2 metres of new 600mm diameter aluminized corrugated steel pipe with sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

h) Existing road crossing shall be cleaned:
   i. Crossing No. 3 at Station 1+324.13: 15.10 metres of existing 450mm diameter corrugated steel pipe shall be cleaned and sloped gabion stone erosion protection shall be placed at the east and west ends of the pipe;

i) Seeding and mulching shall be undertaken on all excavated portions of the drain sideslopes to prevent erosion;

j) Gabion stone erosion protection for field furrows shall be supplied and laid to prevent further erosion to the drain bank;

k) A 45-degree bend shall be installed at the downstream end of the private tile at Station 0+528.16 to direct flow downstream.

We would recommend that Culvert No. 2, 4, 8 and 9 remain in place; however, should these culverts fail during the proposed cleaning process, we would recommend that the culverts be replaced in accordance with the following provisions; the Future Culvert Replacement table on Drawing Sheet 6; and in consultation with the affected landowners:

a) Culvert No. 2 at Station 0+501.78: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that it be replaced under this by-law as an act of maintenance and assessed in accordance with proportions set out in the maintenance clauses of this report and any apportionment agreements in place at the time of replacement.

   We would recommend the installation of 900mm diameter Boss 2000 320kPa pipe with

sloped gabion stone end of pipe protection. The pipe length shall allow for a 6.0 metre driveable top width. The new culvert shall be installed at an elevation that is embedded 10% of the pipe diameter below the design grade of the drain as stated in the then current by-law.

b) Culvert No. 4 at Station 0+671.32: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that it be replaced under this by-law as an act of maintenance and assessed in accordance with proportions set out in the maintenance clauses of this report and any apportionment agreements in place at the time of replacement.

   We would recommend the installation of 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection. The pipe length shall allow for a 9.0 metre driveable top width. The new culvert shall be installed at an elevation that is embedded 10% of the pipe diameter below the design grade of the drain as stated in the then current by-law.

c) Culvert No. 8 at Station 1+176.75: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that this culvert be removed and not replaced at the request of the landowner.

d) Culvert No. 9 at Station 1+205.12: We would recommend this culvert remain in place, however, when the culvert degrades to the point of replacement, we would recommend that the enclosure portion of the culvert be removed at the request of the landowner. To replace the driveway portion of the enclosure we would recommend the installation of 600mm diameter Boss 2000 320 kPa pipe with slope gabion stone end of pipe protection. The pipe length shall accommodate a 12.0 metre wide drivable top width to be centred on the existing driveway that will allow for a 6.0 metre wide driveway on either side of the property line.

Should Culvert No. 1 be re-installed in the future, we would recommend that it be installed in accordance with the following provisions, Table 1. Cost Sharing for Access Culverts over the East McPherson Drain and in consultation with the affected landowners and Drainage Superintendent:

- Culvert No. 1 at Station 0+245.49: We would recommend this culvert be constructed and assessed in accordance with proportions set out in the clauses of this report and any apportionment agreements in place at the time of replacement.

  We would recommend the installation of 1200mm diameter aluminized corrugated steel pipe with sloped gabion stone end of pipe protection. The pipe length shall allow for a 9.0 metre driveable top width. The new culvert shall be installed at an elevation that is embedded 10% of the pipe diameter below the design grade of the drain as stated in the then current by-law.

  The culvert would be considered part of the East McPherson Drain provided it was constructed in accordance with the above provisions and in consultation with the Drainage Superintendent.

The three culverts listed below are not identified as part of the drain in the 1969 Engineer's Report. We would recommend these structures be incorporated into the East McPherson Drain under this report:

Culvert No.	Station	Roll Number	Owner
2	0+501.78	440-01100	Lori & Wayne Farough
3	0+611.49	440-01001	Ila May Farough & Wayne Farough
8	1+176.75	440-00720	Danny & Mary Gerard

Incorporation of these culverts into the East McPherson Drain will allow the Town to undertake future maintenance as required.

We would further recommend that at such time a request for repair and improvement is made for the Santo Drain that the assessments made under this report be considered at the time of preparation of the new report.

13.0 Fisheries Issues

The East McPherson Drain is a Type 'F' drain. A Type 'F' drain is considered to have intermittent or ephemeral flow. A drain with ephemeral flow is typically dry for more than two consecutive months.

We would recommend the following measures be utilized to mitigate damage to the drain during construction:

- No work shall be undertaken between March 15 and June 30
- All work shall be completed in the dry
- Culverts shall be installed with a minimum of 10.0% embedment
- All disturbed soils shall be stabilized upon completion of the work
- Silt fence sediment control shall be implemented during construction
- Contractor shall prevent entry of petroleum products, debris and deleterious substances into the water.

A review of the Sensitive Areas Maps for the Town of Tecumseh indicates that no endangered species, as listed under the Endangered Species Act, are expected to be encountered at the site of the proposed works.

This report was submitted to Fisheries and Oceans Canada (DFO) for review. Correspondence received recommended that standard erosion and sediment control and bank stabilization procedures be incorporated into the proposed work. No specific concerns were noted.

14.0 Drawings and Specifications

Attached to this report is Drawing No. 13-093 Sheets 1 to 6. The drawings illustrate the location of the proposed drainage works and the land affected by the work, together with the detail and cross sections of the recommended work. Specifications are included in this report showing the dimensions, grades, disposal of material, working areas for construction and future maintenance, and other particulars of the recommended work.

15.0 Working Area

The areas available to the Contractor to be used for the purpose of constructing the recommended works of this report and for construction and future maintenance as provided for under Section 63 of the Act are described as follows:

The Contractor shall utilize a 9.0 metre wide maintenance corridor on abutting agricultural

lands measured easterly from the centre line of the drain.

Where the drain passes in front of residential properties, lawns or road crossings, the Contractor shall access the drain from the road right-of-way.

16.0 Allowances for Lands Taken and Damages

In accordance with the provisions of the Act, monetary allowances are provided to those landowners from which land is required to be used for the construction of a new drain or for the establishment of an easement for the construction and future maintenance of a drain or for land required to dispose of excavated material or for land required to obtain access to a Municipal Drainage System.

We find that no land is required to be used for the construction of a new drain or for the establishment of an easement for the construction and future maintenance of a drain or for land required to obtain access to a Municipal Drainage System, therefore, we have not provided any allowance for lands taken in our estimate as is otherwise normally provided for under sub-section (a) of Section 29 of the Act.

We further find that each of the following owners is entitled to and should receive the following amounts as compensation for the damages to lands and crops, if any. We have used a rate of $3,700.00 per hectare to determine the compensation paid, if any:

1. Charles Farough
   N Pt Lt 4, Concession 11, Roll No. 440-01200
   Station 0+000 to Station 0+243
   Land being approximately 243 metres long and 9.0 metres wide
   Approximately 0.22 hectares (.54 acres) for spreading of excavated material along the east side of the drain $ 814.00

2. Lori & Wayne Farough
   N/S Pt Lt 3 & 4, Concession 11, Roll No. 440-01100
   Station 0+258 to Station 0+489
   Land being approximately 231 metres long and 9.0 metres wide
   Approximately 0.21 hectares (0.51 acres) for spreading of excavated material along the east side of the drain $ 777.00

3. Lori & Wayne Farough
   Pt N 1/2 of S ½ Lt 3, Concession 11, Roll No. 440-00905
   Station 0+799 to Station 0+890
   Land being approximately 91 metres long and 9.0 metres wide
   Approximately 0.08 hectares (0.20 acres) for spreading of excavated material along the east side of the drain $ 296.00

4. Mary Jean Gerard
   Pt Lt 2, Concession 11, Roll No. 400-00800
   Station 1+039 to Station 1+180 and Station 1+262 to Station 1+328
   Land being approximately 207 metres long and 9.0 metres wide
   Approximately 0.19 hectares (0.46 acres) for spreading of excavated material along the east side of the drain $ 703.00

Total for Damages **$ 2,590.00**

We have provided for this in our estimate as is provided for under sub-section (b) of Section 29 of the Act.

17.0 Estimate of Cost

Our estimate of the total cost of this work, including all incidental expenses and HST, is the sum of ONE HUNDRED AND SIXTY FIVE THOUSAND, NINE HUNDRED AND THIRTY FIVE---------- dollars ($165,935.00), and made up as follows:

CONSTRUCTION

1)	1,325.0	Cubic metres of excavation, including any required brushing and grubbing, to be undertaken along the length of the drain complete at $ 20.00 per cubic metre Excavated material shall be cast and spread on abutting agricultural lands. Where the drain crosses in front of residential lands, the material shall be loaded, hauled and disposed of on adjacent agricultural lands.		
		Total to Excavate Material from Drain		$ 26,500.00
2)		Existing culvert to be cleaned between Station 0+501.78 and Station 0+508.79 for Lori & Wayne Farough (Culvert No. 2):		
		i) Clean 7.0 metres of existing 900mm diameter corrugated steel pipe complete at $ 500.00 Lump Sum	$ 500.00	
		Total to Clean Culvert No. 2		$ 500.00
3)		Works to be undertaken on existing culvert Station 0+611.49 and Station 0+626.49 for Ila May Farough & Wayne Farough (Culvert No. 3):		
		i) Remove 9.8 metres of existing 900 mm diameter corrugated steel pipe and granular material and dispose of offsite complete at $ 1,250.00 Lump Sum	$ 1,250.00	
		ii) Supply and set approximately 15.0 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre	$ 4,875.00	
		iii) Supply, place and compact approximately 30.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne	$ 1,050.00	

iv) Supply, place and compact approximately 85.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,700.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Replace Culvert No. 3 — $ 11,125.00

OR

In consultation with the Engineer, Drainage Superintendent and landowner, the culvert shall be inspected at the time of construction. Should the culvert be found to be in satisfactory condition, it shall be salvaged, reset and extended as follows:

i) Salvage and reset 9.8 metres of existing 900 mm diameter corrugated steel pipe including disposal of existing granular material complete at $ 2,000.00 Lump Sum — $ 2,000.00

ii) Supply and set approximately 6.0 metres of 900mm diameter aluminized corrugated steel pipe, 2.0mm thickness with 68x13mm corrugations complete at $ 350.00 per metre — $ 2,100.00

iii) Supply, place and compact approximately 30.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 1,050.00

iv) Supply, place and compact approximately 85.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,700.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Salvage, Reset and Extend Culvert No. 3 — $ 9,100.00

4) Existing culvert to be cleaned between Station 0+671.32 and Station 0+679.69 for Ila May Farough & Wayne Farough (Culvert No. 4):

ii) Clean 8.4 metres of existing 900mm diameter corrugated steel pipe complete at $ 500.00 Lump Sum — $ 500.00

Total to Clean Culvert No. 4 — $ 500.00

5) Existing road crossing to be cleaned and extended at Station 0+752.88 (Road Crossing No. 1):

i) Clean 14.0 metres of existing 200mm Big 'O' tile complete at $ 800.00 Lump Sum. — $ 800.00

ii) Extend existing 200mm diameter Big 'O' tile northerly using 1.0 metre of new 200mm diameter Big 'O' tile existing complete at $ 50.00 per metre — $ 50.00

Total to Clean Road Crossing No. 1 — $ 850.00

6) Existing culvert to be replaced between Station 0+752.39 and Station 0+764.09 for Tate Farough (Culvert No. 5):

i) Remove 8.8 metres of existing 900 mm diameter corrugated steel pipe and granular material and dispose of offsite complete at $ 1,250.00 Lump Sum — $ 1,250.00

ii) Supply and set approximately 11.7 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre — $ 3,805.00

iii) Supply, place and compact approximately 20.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 700.00

iv) Supply, place and compact approximately 75.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,500.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Replace Culvert No. 5 — $ 9,505.00

7) Existing culvert to be replaced between Station 0+901.54 and Station 0+913.94 for Charles Farough (Culvert No. 6):

i) Supply and set approximately 12.4 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre — $ 4,030.00

ii) Supply, place and compact approximately 25.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 875.00

iii) Supply, place and compact approximately 70.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,400.00

iv) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

v) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Construct Culvert No. 6 — $ 8,555.00

8) Existing culvert to be replaced between Station 0+989.06 and Station 1+003.46 for Charles Farough (Culvert No. 7):

i) Remove 8.2 metres of existing 900 mm diameter corrugated steel pipe and granular material and dispose of offsite complete at $ 1,250.00 Lump Sum — $ 1,250.00

ii) Supply and set approximately 14.4 metres of 900 mm diameter Boss 2000 320 kPa at $ 325.00 per metre — $ 4,680.00

iii) Supply, place and compact approximately 30.0 tonnes of Granular 'A', as per OPSS 1010, as bedding material and to construct driveway at $ 35.00 per tonne — $ 1,050.00

iv) Supply, place and compact approximately 85.0 tonnes of Granular 'B', as per OPSS 1010, as backfill material at $ 20.00 per tonne — $ 1,700.00

v) Supply and place 30.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,950.00

vi) Supply, install and maintain silt fence erosion protection at downstream end of culvert complete at $ 300.00 Lump Sum — $ 300.00

Total to Replace Culvert No. 7 — $ 10,930.00

9) Existing road crossing at Station 1+013.03 for the Town of Tecumseh (Road Crossing No. 2):

i) Remove 15.24 metres of existing 600 mm diameter PVC, granular material and existing road surface complete at $ 1,500.00 Lump Sum — $ 1,500.00

ii) Supply and set approximately 15.2 metres of 600 mm diameter Boss 2000 320 kPa pipe including Granular 'A' bedding and covering material, as per OPSS 1010, complete at $ 200.00 per metre — $ 3,040.00

iii) Supply, place and compact approximately 45.0 tonnes of Granular 'A' backfill, as per OPSS 1010, complete at $ 35.00 per tonne — $ 1,575.00

iv) Supply and place 20.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric complete at $ 65.00 per square metre — $ 1,300.00

v) Supply and place 10.0 square metres of tar and chip double surface road treatment complete at $ 100.00 per square metre — $ 1,000.00

Total to Replace Road Crossing No. 2 — $ 8,415.00

10) Existing culvert to be cleaned between Station 1+176.75 and Station 1+186.38 for Danny & Mary Gerard (Culvert No. 8):

i) Clean 9.5 metres of existing 600mm diameter corrugated steel pipe complete at $ 500.00 Lump Sum — $ 500.00

Total to Clean Culvert No. 8 — $ 500.00

11) Existing enclosure to be cleaned between Station 1+205.12 and Station 1+243.71 for Danny & Mary Gerard and Ronald Gerard (Culvert No. 9):

i) Clean 38.6 metres of existing 600mm diameter corrugated steel pipe complete at $ 2,000.00 Lump Sum — $ 2,000.00

Total to Clean Culvert No. 9 — $ 2,000.00

12) Existing road crossing to be cleaned and end of pipe protection to be supplied and placed at Station 1+324.13 (Road Crossing No. 3):

i) Clean 15.0 metres of existing 450mm diameter corrugated steel pipe at $ 1,000.00 Lump Sum — $ 1,000.00

ii) Supply and place 20.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric at the east and west ends of the pipe complete at $ 65.00 per square metre — $ 1,300.00

Total to Clean Road Crossing No. 3 — $ 2,300.00

13)	L.S.	Supply and spreading of good quality grass seed and mulch on all portions of excavated sideslopes complete at $ 10,000.00 Lump Sum.	$ 10,000.00
14)	L.S.	The Contractor shall provide a traffic control plan to the Town of Tecumseh for approval before construction commences. The Contractor shall supply, install and maintain the necessary signage during the construction period according to the latest revision of the Ontario Traffic Manual Book 7, Temporary Conditions, complete at $ 5,000.00 Lump Sum.	$ 5,000.00
15)	8.0	Square metres of 100 – 230mm diameter gabion stone (300 mm thick) erosion protection laid on Terrafix 270R Filter Fabric to be placed at all existing field furrows and line drains to prevent bank slope erosion complete at $ 65.00 per square metre.	$ 520.00
16)		Works to be undertaken on private tile at Station 0+497.22:	
	i)	Supply and place 200mm diameter 45-degree bend at outlet of existing tile at $ 75.00 Lump Sum	$ 75.00
	ii)	Supply and place 3.0 square metres of 100 – 230mm diameter gabion stone erosion protection (300mm thick) laid on Terrafix 270R Filter Fabric on drain bank at $ 65.00 per square metre	$ 195.00
		Note: The gabion stone shall be placed flush with the abutting grassed drain bank.	
	iii)	Supply and place rodent grate on tile outlet at $ 50.00 per each	$ 50.00
		Total for Works on Private Tile	$ 320.00
17)	L.S.	Contingency Allowance to be used only upon approval of Drainage Superintendent and/ or Engineer	$ 5,000.00
		SUB TOTAL FOR CONSTRUCTION	**$ 102,520.00**

INCIDENTALS

Attendance at site meeting, survey	$ 2,000.00
Report, estimate and specifications	$ 26,150.00
Engineering Fees for revisions to report, assessment schedules and plans	

(Special Benefit to Town of Tecumseh)	$ 5,000.00
Assistants and expenses, report and drawing preparation	$ 6,000.00
Attendance at Public Information Centres, Meetings to Consider and Courts of Revision	$ 5,000.00
Tender documents	$ 1,000.00
ERCA Permit Application Fee	$ 800.00
Construction Inspection	$ 12,050.00
Sub Total for Incidentals	$ 58,000.00
Sub Total for Construction (brought forward)	$ 102,520.00
Sub Total for Construction and Incidentals	$ 160,520.00
HST Payable (1.76% Non-Recoverable)	$ 2,825.00
Total for Allowances (brought forward)	$ 2,590.00
T O T A L E S T I M A T E	**$ 165,935.00**

18.0 Assessment

Assessments to lands are provided in the attached Schedule of Assessment in three separate columns being Special Benefit, Benefit and Outlet. Section 1 of the Act provides the following definitions:

"Special Benefit" *means any additional work or feature included in the construction, repair or improvement of a drainage works that has no effect on the functioning of the drainage works.* A breakdown of how the Special Benefits assessments were calculated is provided on Page 3 and 4 of 4 of the Schedule of Assessment.

"Benefit" means *the advantages to any lands, roads, buildings or other structures from the construction, improvement, repair or maintenance of a drainage works such as will result in a high market value or increased crop production or improved appearance or better control of surface or subsurface water, or any other advantages relating to the betterment of lands, roads, buildings or other structures.*

"Outlet Liability" means *the part of the cost of the construction, improvement or maintenance of a drainage works that is required to provide such outlet or improved outlet.*

We would recommend that construction and incidental costs be assessed to the affected properties in accordance with the accompanying Construction Schedule of Assessment and the provisions described below.

We have determined that the East McPherson Drain conveys approximately 30% of the water from lands on the west side of the 11th Concession Road after its collection by the Santo Drain. The Santo Drain conveys the remaining 70% of water from the lands on the west side of the 11th Concession Road to a sufficient outlet. However, due to the direct tile connection of the lands with

Roll No. 410-04700, we have estimated that 70% of the water generated from that parcel drains into the East McPherson Drain with the remaining 30% being conveyed to sufficient outlet by the Santo Drain. The information presented above and that presented in Response #2 on page 11 of this report was taken into consideration when revising the Schedules of Assessment for the parcels with Roll No. 410-05300; 410-05200; 410-05150; 410-04600; 410-04700.

Each parcel is guaranteed one access over a Municipal Drain. The cost to clean, maintain or replace this one access culvert shall be shared between the benefitting parcel and the upstream lands and roads. Should a parcel have more than one culvert, the costs associated with cleaning, maintenance or replacement of the additional culvert(s) shall be assessed 100% to the benefitting lands. Therefore, the construction costs associated with the proposed works for Culverts No. 3, 7 and 8 shall be assessed 100% to the benefitting lands as listed in Table 1. Cost Sharing for Access Culverts over the East McPherson Drain, below.

The cost to remove and replace access culverts currently identified as part of the drain shall be shared between the owner and the upstream lands and roads in accordance with the clauses below and the percentages listed in Table 1. The percentages listed in Table 1 were derived based on the culvert's approximate location within the drain. Those culverts that are not currently identified as part of the East McPherson Drain shall be assessed 100% to the benefitting landowner, as listed in Table 1.

The owner of lands with Roll No. 440-01200 and Roll No. 440-00900 previously paid 100% of the cost to remove Culvert No. 1 and Culvert No. 6 from the drain. These works were completed prior to adoption of this report.

The construction and incidental costs associated with cleaning of Culvert No. 9, 30.79 metres of which is an enclosure spanning lands with Roll No. 440-00720 and Roll No. 440-00705, shall be shared between the two parcels with proportions of 37.0% and 63.0% respectively. The existing driveway portion of the enclosure is identified as part of the East McPherson Drain, therefore, we would recommend that the 7.8 metres of the total enclosure width forming the driveway and the length required for the sloped gabion stone end of pipe protection, be assessed as listed in Table 1.

Table 1. Cost Sharing for Access Culverts over the East McPherson Drain

Culvert No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
1	Removed from drain at owner's expense and request.				
2	0+501.78	440-01100	Lori & Wayne Farough	100%	0%
3	0+611.49	440-01001	Ila May Farough & Wayne Farough	100%	0%
4	0+671.32	440-01001	Ila May Farough & Wayne Farough	50%	50%
5	0+752.39	440-01000	Tate Farough	56%	44%
6	0+901.54	400-00900	Charles Farough	68%	32%
7	0+989.06	440-00900	Charles Farough	100%	0%
8	1+176.75	440-00720	Danny & Mary Gerard	100%	0%
9	1+205.12	440-00720 440-00705	Danny & Mary Gerard Ronald Gerard	40% 40%	20%

The cost to supply and place a 200mm diameter 45-degree bend, rodent grate and gabion stone erosion protection at Station 0+497.22 shall be assessed 100% as Special Benefit to the lands owned by Ralph and Joanne Lutzmann, Roll No. 410-04700.

The cost to remove and replace or clean the existing road crossings shall be assessed as described in Table 2, Road Crossing Assessments.

Table 2. Road Crossing Assessments

Crossing No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
Private Tile	0+497.22	410-04700	Ralph & Joanne Lutzmann	100%	0%
1	0+752.88	---	Town of Tecumseh	100%	0%
2	1+013.03	---	Town of Tecumseh	100%	0%
3	1+324.13	---	Town of Tecumseh	100%	0%

The cost to supply and install gabion stone erosion protection for field furrows and line drains shall be assessed 100% as Special Benefit to the adjacent lands.

The cost to complete topographic surveys on lands as requested by certain landowners shall be assessed 100% to those lands as Special Benefit as described in the attached Special Benefit Schedule of Assessment.

The Town of Tecumseh was assessed a Special Benefit of $5,000 for revisions to the report, assessment schedules and plans.

19.0 Maintenance

We would recommend that the areas described in Section 15.0 of this report, and as listed below, be used to access the drain during works of maintenance:

> The Contractor shall utilize a 9.0 metre wide maintenance corridor on abutting agricultural lands measured easterly from the centre line of the drain.
>
> Where the drain passes in from of residential properties, lawns or road crossings, the Contractor shall access the drain from the road right-of-way.

We would recommend that future maintenance costs be assessed to the affected properties in accordance with the following provisions and accompanying Maintenance Schedule of Assessment. The Maintenance Schedule of Assessment has been prepared assuming current drainage conditions will remain in effect at the time of future maintenance.

The Maintenance Schedule of Assessment has been developed based on an assumed maintenance cost of $10,000. This amount is arbitrary and does not represent the actual costs to be assessed. Actual costs for future maintenance works, including all engineering and incidental costs, shall be assessed against the affected lands and roads in the same proportions as those shown in the attached Maintenance Schedule of Assessment.

Should an existing access culvert require replacement, we would recommend that the cost to replace the structure be assessed to the benefitting landowner and the upstream lands and roads in accordance with the percentages listed in Table 3. Cost Sharing for Access Culverts over the East McPherson Drain, below. The percentage to be shared with the upstream lands and roads shall be assessed as outlet against those lands.

Future maintenance costs associated with Culverts No. 3, 7 and 8 shall be assessed 100% as Benefit to the benefitting lands, as listed in Table 3, as these culverts provide secondary access

to the individual parcels.

We would recommend that future maintenance costs associated with removal of Culvert No. 9, being an enclosure spanning lands with Roll No. 440-00720, owned by Danny & Mary Gerard, and Roll No. 440-00705, owned by Ronald Gerard, be shared between the two parcels with proportions of 37.0% and 63.0% respectively. The cost to replace the driveway portion of the enclosure shall be assessed as listed in Table 3.

Table 3. Cost Sharing for Access Culverts over the East McPherson Drain

Culvert No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
1	Removed from the drain at owner's expense and request.				
2	0+501.78	440-01100	Lori & Wayne Farough	37%	63%
3	0+611.49	440-01001	Ila May Farough & Wayne Farough	100%	0%
4	0+671.32	440-01001	Ila May Farough & Wayne Farough	50%	50%
5	0+752.39	440-01000	Tate Farough	56%	44%
6	0+901.54	440-00900	Charles Farough	68%	32%
7	0+989.06	440-00900	Charles Farough	100%	0%
8	1+176.75	440-00720	Danny & Mary Gerard	100%	0%
9	1+205.12	440-00720 440-00705	Danny & Mary Gerard Ronald Gerard	40% 40%	20%

The cost to maintain the 200mm diameter 45-degree bend, rodent grate and gabion stone erosion protection at Station 0+497.22 shall be assessed 100% to the lands owned by Ralph and Joanne Lutzmann, Roll No. 410-04700.

Maintenance costs associated with the existing road crossings shall be assessed as described in Table 4, Road Crossing Maintenance Assessments.

Table 4. Road Crossing Maintenance Assessments

Crossing No.	Station	Roll Number	Owner	% To Owner	% To Upstream Lands
Private Tile	0+500	410-04700	Ralph & Joanne Lutzmann	100%	0%
1	0+752.88	---	Town of Tecumseh	100%	0%
2	1+013.03	---	Town of Tecumseh	100%	0%
3	1+324.13	---	Town of Tecumseh	100%	0%

The cost to maintain gabion stone erosion protection for field furrows and line drains shall be assessed 100% as Benefit to the affected landowner.

20.0 Grant

In accordance with the Agricultural Drainage Infrastructure Program (ADIP) and the provisions of Sections 85, 86 and 87 of the Act, a grant in the amount of 33 -1/3% of the assessment may be available for privately owned lands identified as assessed in this report and used for agricultural purposes. We would further recommend that the Town, upon completion of the project, make an application to the Ministry of Agriculture and Food in accordance with Section 88 of the Act for this grant.

The ADIP eligible grant amounts have not been applied to the assessments shown in the attached Schedule of Assessment. If applicable, ADIP grant amounts will be deducted from the final assessments at the time of invoicing.

All of which is respectfully submitted,

BAIRD AE INC.
27 PRINCESS STREET, UNIT 102
LEAMINGTON, ONTARIO
N8H 2X8

Halliday P. Pearson, P.Eng.

Don Joudrey, P.Eng.

APPENDIX A
MEETING MINUTES AND SIGN-IN SHEET
SEPTEMBER 14, 2016

Site Meeting: East McPherson Drain		
9.14.2016	17:30 PM	Town of Tecumseh, Town Hall

Meeting called by	Sam Paglia, P.Eng., Drainage Superintendent	
Type of meeting	Site Meeting: Repair & Improvement to the East McPherson Drain	
Facilitator	Sam Paglia, P.Eng., Drainage Superintendent	
Note taker	Cheryl Curran	
Attendees	Landowners: Baird AE: Tecumseh:	See attached attendance sign-in sheet Don Joudrey, P.Eng. & Halliday Pearson, P.Eng. Sam Paglia, Phil Bartnik, Cheryl Curran

Purpose of Meeting

Discussion	*Section 78, Repair & Improvement*

Baird AE is the appointed Drainage Engineer that examined the area requiring improvements to the East McPherson Drain.

The purpose of the meeting is to discuss both the technical aspect of the draft Engineer's Report and the assessment schedule to facilitate an efficient process for by-law adoption and for future maintenance going forward.

Engineer's Report

Discussion	Draft Report

Peggy Gerard attended the meeting on behalf of Mary Jean Gerard, her mother. Mary Gerard's property (CON 11 PT LOT 2, Roll 440-00800) was retiled and drains eastward towards the 12th Concession Rd. Copies of documentation supporting this were provided to Sam Paglia (tile loan and tile plan).

Baird AE will review the documentation and adjust the Engineer's Report accordingly.

Award Drain vs Municipal Drain

The question was raised as to when the East McPherson Drain was deemed a municipal drain. Landowners thought that it was an Award Drain rather than a Municipal Drain. In order for a drain to become a municipal drain, 60% of the affected landowners have to sign the petition to construct the drain.

Municipal drains are created under the authority of the *Drainage Act*. There are 3 key elements of a municipal drain:

1. Landowners submit a petition under the Drainage Act the local municipality requesting the establishment of a municipal drain to solve a drainage problem. An engineer is appointed by Council to prepare a report, identify solutions to the problem and how costs will be shared. It is a 'communally accepted' project.
2. Following any appeals, if any, the municipality passes a by-law adopting the engineer's report. The project is then constructed. The cost is assessed to the lands affected by the drain construction.
3. Once constructed, the drain becomes a municipal drain and is to be repaired and maintained as required.

The current design of the drain should mirror the 1969 design, adopted by Council.

The Town has documentation dating 1948 where landowners requested the East McPherson Drain be maintained. The most recent by-law inclusive of assessments is dated 1969. Peggy Gerard requests a copy of both the 1948 and 1969 documentation.

Mr. Joudrey also indicated that:

- Drainage tile - Lutzman property: Drainage tile (at the road crossing) was put in below grade. Alternative options to address this issue will be investigated by the Consultant Engineer.
- Culverts No. 2, 3, and 8 are not identified under the current by-law nor are Road Crossings No. 1 and 3.
- The entire watershed is to be assessed for the drainage works (there were changes to the watershed).

On-site investigations noted that approximately one meter of sediment had accumulated within the drain.

Mr. Joudrey will investigate the 'legal' status of the access culvert #3 under the *Drainage Act*.

Mr. Joudrey will also investigate the requirements to re-install a culvert access fronting Mr. Farough's property at 6848 11th Concession. There is a second access culvert located south of the removed access that can be used for vehicular access (including emergency vehicles).

One of the meeting participants indicated that following a severance, a landowner, who was once assessed into the East McPherson Drain, installed drain tile in his field and subsequently no longer drains into the East McPherson Drain. Instead, his land now drains into the Colchester Townline Drain. If this tile installation was done without authorization, what recourse is taken?

Mr. Paglia indicated that, according to Section 65(4) of the Drainage Act,

> "*If an owner of land that is assessed for a drainage works subsequently disconnects the land from the drainage works, the clerk of the local municipality in which the land is situate shall instruct an engineer in writing to inspect the land and determine the amount by which the assessment of the land should change.*"

Open Discussion	
Discussion	Question & Answer Period

Q: Who bears the responsibility of the drain maintenance and/or improvements? Are all landowners required to pay even if they themselves have no problem with the drain function?
A: The assessment schedule provided in the Engineer's Report will be used for future maintenance costs. With respect to Phragmites removal, Town of Tecumseh staff has met with Essex Regional Conservation Authority, County of Essex and the Ministry of Transportation to collaborate on a method to combat the evasive species. There is also an Ontario working group organized to help resolve this issue.

Q: In order to save costs, can landowners remove their own access culverts?
A: No. Anyone who interferes with the channel of the drain is liable for the damages that could result from their actions. An engineer's report includes the elevation and slopes to be maintained in order for the drain to function properly for both upstream and downstream landowners and OMAF requires that only qualified drainage contractors perform work on any municipal drain.

Q: Would it be more cost effective if the drain was improved/maintained a section at a time?
A: It is more cost effective to complete the drain maintenance all as one project. The cost is generally less, as construction companies are charging one unit for set-up costs, equipment and transportation costs, etc. Economies of scale come into effect.

Q: If a landowner requests a different bridge head than what is detailed in the engineer's report, can the landowner request this?
A: Yes. This is a "special benefit assessment" and would be levied against the property (of the requestor). This value usually represents the difference in cost between that which was originally designed and the increased level of design requested by a landowner.

Q: What about road safety concerns with respect to crossings over municipal drains?
A: Road safety issues are to be brought to the road authority's attention. The Town of Tecumseh has completed a condition assessment on bridges/culverts the identified deficiencies will be addressed.

Q: What is the process when a landowner identifies deficiency in the municipal drainage work?
A: If a landowner identifies a problem with the drain improvement/maintenance work, it is the landowner's responsibility to notify the drainage superintendent as soon as possible. There is a one-year maintenance period whereby contractors are responsible to repair any deficiencies.

Q: Can the traffic control price be reassessed? It seems very high.
A: These costs are estimates but are based on current prices and the experience of the Engineers with similar projects.

Q: If the construction price for the drain project is extremely high, do the landowner's have input?
A: If the cost of the work

- is assessed over $5,000 to a landowner, the payments can be pro-rated over 5 years and added to the taxes on the lands with a current interest charge
- if the Tender submissions are substantially greater than the Engineer's estimated cost of the drainage project (as provided in the Engineer's Report), the Tenders can be rejected and the project can be re-tendered at a later date.

Follow-up

The Consultant Engineer will contact each landowner to discuss the access culverts to their respective properties.

Mr. Paglia requests that landowners contact him at any time to discuss the assessments within the Engineer's Report.

For additional information pertaining to the Drainage Act, you can either contact Sam Paglia, Town of Tecumseh Drainage Superintendent or the Ministry of Agriculture, Food and Rural Affairs website at http://www.omafra.gov.on.ca/

Meeting Adjournment & Contact Information

Meeting adjourned at 7:15 p.m.

Sam Paglia, P.Eng., Drainage Superintendent
spaglia@tecumseh.ca
Town of Tecumseh -- 519-735-2184 ext. 105

Don Joudrey, P.Eng.
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CONSTRUCTION SCHEDULE OF ASSESSMENT
EAST MCPHERSON DRAIN
IN THE
TOWN OF TECUMSEH
PROJECT REFERENCE 13-093

June 17, 2014
Reconsidered April 11, 2017

MUNICIPAL LANDS:

Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
11th Concession Road	---	---	3.80	1.54	Town of Tecumseh	$ 22,905.00	$ 9,550.00	$ 6,805.00	$ 39,260.00
Total on Municipal Lands						$ 22,905.00	$ 9,550.00	$ 6,805.00	$ 39,260.00

PRIVATELY OWNED AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
440-01200	11	N PT LT 4	27.75	11.23	4.00	1.62	Charles Farough	$ 115.00	$ 1,910.00	$ 605.00	$ 2,630.00
440-01100	11	N/S PT LT 3 & 4	36.95	14.95	15.81	6.40	Lori & Wayne Farough	$ 860.00	$ 7,545.00	$ 2,815.00	$ 11,220.00
440-01001	11	N PT LT 3	25.20	10.20	6.25	2.53	Ila May Farough & Wayne Farough	$ 17,905.00	$ 2,980.00	$ 1,285.00	$ 22,170.00
440-00905	11	PT N 1/2 OF S 1/2 LT 3	24.20	9.79	4.97	2.01	Lori & Wayne Farough	$ 160.00	$ 2,370.00	$ 1,460.00	$ 3,990.00
440-00900	11	S PT LT 3	25.00	10.12	6.97	2.82	Charles Farough	$ 26,115.00	$ 3,325.00	$ 2,725.00	$ 32,165.00
400-00800	11	PT LT 2	38.13	15.43	21.45	8.68	Mary Jean Gerard	$ 145.00	$ 10,230.00	$ 9,360.00	$ 19,735.00
410-05300	10	S PT LT 2	27.68	11.20	6.38	2.58	Patrick & Nicole Gerard	$ -	$ -	$ 3,660.00	$ 3,660.00
410-05200	10	S PT LT 3	79.14	32.03	8.04	3.25	C. Farough & P. Farough	$ -	$ -	$ 3,745.00	$ 3,745.00
410-05150	10	S PT LT 3	17.07	6.91	3.52	1.43	Norman & Rose Jobin	$ -	$ -	$ 935.00	$ 935.00
410-04600	10	S PT LT 3	20.00	8.09	2.31	0.93	R. & S. Clarkson	$ -	$ -	$ 500.00	$ 500.00
410-04700	10	N PT LT 3	31.87	12.90	20.72	8.39	Ralph & Joanne Lutzmani	$ 595.00	$ -	$ 3,910.00	$ 4,505.00

Total on Privately Owned Agricultural Lands							----------	$ 45,895.00	$ 28,360.00	$ 31,000.00	$ 105,255.00

PRIVATELY OWNED NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
440-01000	11	S PT LT 3	0.81	0.33	0.81	0.33	Tate Farough	$ 8,250.00	$ 1,160.00	$ 690.00	$ 10,100.00
440-00720	11	PT LT 2	1.22	0.49	1.22	0.49	Danny & Mary Gerard	$ 1,815.00	$ 1,745.00	$ 1,585.00	$ 5,145.00
440-00705	11	PT LT 2	0.49	0.20	0.49	0.20	Ronald Gerard	$ 1,770.00	$ 700.00	$ 645.00	$ 3,115.00
410-05302	10	PT LT 1 & 2	1.80	0.72	1.80	0.72	Patrick & Nicole Gerard	$ -	$ -	$ 3,060.00	$ 3,060.00
								==========	==========	==========	=========
Total on Privately Owned Non-Agricultural Lands							----------	$ 11,835.00	$ 3,605.00	$ 5,980.00	$ 21,420.00
								==========	==========	==========	=========
TOTAL ASSESSMENT							----------	$ 80,635.00	$ 41,515.00	$43,785.00	$165,935.00
								==========	==========	==========	=========
			Area Assessed:		108.53	43.91					

SPECIAL BENEFIT ASSESSMENTS
EAST MCPHERSON DRAIN
IN THE
TOWN OF TECUMSEH
PROJECT REFERENCE 13-093

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	SPECIAL BENEFIT ITEMS: Additional Survey & Excavation	Enclosure & Culverts	Gabion Stone	Road Crossings & Design	TOTAL Special Benefit Assessment
11th Concession Road	3.80	1.54	Town of Tecumseh	---	---	---	$ 22,905.00	$ 22,905.00
Total on Municipal Lands				---	---	---	$ 22,905.00	$ 22,905.00

PRIVATELY OWNED AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Additional Survey & Excavation	Enclosure & Culverts	Gabion Stone	Road Crossing	Special Benefit Assessment
440-01200	11	N PT LT 4	4.00	1.62	Charles Farough	---	$ -	$ 115.00	---	$ 115.00
440-01100	11	N/S PT LT 3 & 4	15.81	6.40	Lori & Wayne Farough	---	$ 775.00	$ 85.00	---	$ 860.00
440-01001	11	N PT LT 3	6.25	2.53	Ila Mae Farough & & Wayne Farough	$ 75.00	$ 17,630.00	$ 200.00	---	$ 17,905.00
440-00905	11	PT N 1/2 OF S 1/2 LT 3	4.97	2.01	Lori & Wayne Farough	$ 75.00	---	$ 85.00	---	$ 160.00
440-00900	11	S PT LT 3	6.97	2.82	Charles Farough	$ 75.00	$ 25,955.00	$ 85.00	---	$ 26,115.00
400-00800	11	PT LT 2	21.45	8.68	Mary Jean Gerard	---	---	$ 145.00	---	$ 145.00
410-05300	10	S PT LT 2	6.38	2.58	Patrick & Nicole Gerard	---	---	---	---	$ -
410-05200	10	S PT LT 3	7.80	3.25	C. Farough & P. Farough	---	---	---	---	$ -
410-05150	10	S PT LT 3	3.52	1.43	Norman & Rose Jobin	---	---	---	---	$ -
410-04600	10	S PT LT 3	2.31	0.93	R. & S. Clarkson	---	---	---	---	$ -
410-04700	10	N PT LT 3	20.72	8.39	Ralph & Joanne Lutzmann	$ 100.00	$ -	$ 495.00	---	$ 595.00

Total on Privately Owned Agricultural Lands ----------	$ 325.00	$ 44,360.00	$ 1,210.00	---	$ 45,895.00

PRIVATELY OWNED NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Additional Survey & Excavation	Enclosure & Culverts	Gabion Stone	Road Crossing	Special Benefit Assessment
440-01000	11	S PT LT 3	0.81	0.33	Tate Farough	---	$ 8,250.00	---	---	$ 8,250.00
440-00720	11	PT LT 2	1.22	0.49	Danny & Mary Gerard	---	$ 1,815.00	---	---	$ 1,815.00
440-00705	11	PT LT 2	0.49	0.20	Ronald Gerard	---	$ 1,685.00	$ 85.00	---	$ 1,770.00
410-05302	10	PT LT 1 & 2	1.80	0.72	Patrick & Nicole Gerard	---	---	---	---	$ -
Total on Privately Owned Non-Agricultural La						---	$ 11,750.00	$ 85.00	---	$ 11,835.00
TOTAL SPECIAL BENEFIT ASSESSMENT						$ 325.00	$ 56,110.00	$ 1,295.00	$22,905.00	$ 80,635.00

MAINTENANCE SCHEDULE OF ASSESSMENT
EAST MCPHERSON DRAIN
IN THE
TOWN OF TECUMSEH
PROJECT REFERENCE 13-093

June 17, 2014
Reconsidered April 11, 2017

MUNICIPAL LANDS:

Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Benefit	Outlet	Total Assessment
11th Concession Road	---	---	3.80	1.54	Town of Tecumseh	$ 1,280.00	$ 685.00	$ 1,965.00
Total on Municipal Lands						$ 1,280.00	$ 685.00	$ 1,965.00

PRIVATELY OWNED AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Benefit	Outlet	Total Assessment
440-01200	11	N PT LT 4	27.75	11.23	4.00	1.62	Charles Farough	$ 260.00	$ 75.00	$ 335.00
440-01100	11	N/S PT LT 3 & 4	36.95	14.95	15.81	6.40	Lori & Wayne Farough	$ 1,020.00	$ 365.00	$ 1,385.00
440-01001	11	N PT LT 3	25.20	10.20	6.25	2.53	Ila May Farough & Wayne Farough	$ 405.00	$ 170.00	$ 575.00
440-00905	11	PT N 1/2 OF S 1/2 LT 3	24.20	9.79	4.97	2.01	Lori & Wayne Farough	$ 320.00	$ 150.00	$ 470.00
440-00900	11	S PT LT 3	25.00	10.12	6.97	2.82	Charles Farough	$ 450.00	$ 225.00	$ 675.00
400-00800	11	PT LT 2	38.13	15.43	21.45	8.68	Mary Jean Gerard	$ 1,380.00	$ 760.00	$ 2,140.00
410-05300	10	S PT LT 2	30.00	12.14	6.38	2.58	Patrick & Nicole Gerard	$ -	$ 375.00	$ 375.00
410-05200	10	S PT LT 3	79.14	32.03	8.04	3.25	C. Farough & P. Farough	$ -	$ 335.00	$ 335.00
410-05150	10	S PT LT 3	17.07	6.91	3.52	1.43	Norman & Rose Jobin	$ -	$ 105.00	$ 105.00
410-04600	10	S PT LT 3	20.00	8.09	2.31	0.93	R. & S. Clarkson	$ -	$ 65.00	$ 65.00
410-04700	10	N PT LT 3	31.87	12.90	20.72	8.39	Ralph & Joanne Lutzmanı	$ -	$ 520.00	$ 520.00

Total on Privately Owned Agricultural Lands	$ 3,835.00	$ 3,145.00	$ 6,980.00

PRIVATELY OWNED NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Owned (Acres)	Area Owned (Ha.)	Area Affected (Acres)	Area Affected (Ha.)	Owner	Benefit	Outlet	Total Assessment
440-01000	11	S PT LT 3	0.81	0.33	0.81	0.33	Tate Farough	$ 155.00	$ 70.00	$ 225.00
440-00720	11	PT LT 2	1.22	0.49	1.22	0.49	Danny & Mary Gerard	$ 235.00	$ 130.00	$ 365.00
440-00705	11	PT LT 2	0.49	0.20	0.49	0.20	Ronald Gerard	$ 95.00	$ 55.00	$ 150.00
410-05302	10	PT LT 1&2	1.80	0.72	1.80	0.72	Patrick & Nicole Gerarc	$ -	$ 315.00	$ 315.00
Total on Privately Owned Non-Agricultural Lands								$ 485.00	$ 570.00	$ 1,055.00
TOTAL ASSESSMENT								$ 5,600.00	$4,400.00	$10,000.00
			Area Assessed:		108.53	43.91				

SPECIFICATIONS
REPLACEMENT ACCESS CULVERTS
OVER THE EAST MCPHERSON DRAIN
TOWN OF TECUMSEH
PROJECT NO. 13-093

1.0 PIPE MATERIAL

The Contractor shall supply and install, clean, remove or salvage and lower the following:

a) Existing culverts and end of pipe protection shall be removed and replaced:
   a. Culvert No. 5 at Station 0+752.39: 11.7 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;
   b. Culvert No. 7 at Station 0+989.06: 14.4 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

b) Existing culvert to be cleaned:
   a. Culvert No. 2 at Station: 0+501.78: Clean existing 7.0 metres of 900mm diameter corrugated steel pipe;
   b. Culvert No. 4 at Station 0+671.32: Clean existing 8.37 metres of 900mm diameter corrugated steel pipe;
   c. Culvert No. 8 at Station 1+176.75: Clean existing 9.63 metres of 600mm diameter corrugated steel pipe;
   d. Culvert No. 9 at Station 1+205.12: Clean existing 38.59 metres of 600mm diameter corrugated steel pipe;

c) Culvert No. 1 at Station 0+245.49 has been removed from the drain. Drain banks shall be restored using good quality topsoil and grass seed;

d) Supply and install culvert and end of pipe protection:
   a. Culvert No. 6 at Station 0+901.54: 12.40 metres of new 900mm diameter Boss 2000 320kPa pipe with sloped gabion stone end of pipe protection;

e) Culvert No. 3 at Station 0+611.49: The culvert shall be inspected at the time of construction by the Engineer, Drainage Superintendent and landowner. Should the existing culvert be in satisfactory condition, the existing pipe shall be salvaged, reset and extended with sloped gabion stone end of pipe protection. Should salvage of the culvert not be possible, 15.0 metres of new 900mm diameter Boss 2000 320kPa pipe shall be supplied and placed with sloped gabion stone end of pipe protection;

f) Existing road crossing shall be extended:
   a. Crossing No. 1 at Station 0+752.88: Existing 200mm diameter road crossing shall be extended 1.0 metre using 200mm diameter Big ‘O’ tile. Sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

g) Existing road crossing shall be removed and replaced:
   a. Crossing No. 2 at Station 1+013.03: 15.2 metres of new 600mm diameter aluminized corrugated steel pipe with sloped gabion stone end of pipe protection shall be placed at the east and west ends of the pipe;

h) Existing road crossing shall be cleaned:
   a. Crossing No. 3 at Station 1+324.13: 15.10 metres of existing 450mm diameter corrugated steel pipe shall be cleaned and sloped gabion stone erosion protection shall be placed at the east and west ends of the pipe.

1.0 PIPE MATERIAL - Continued

i) A 45-degree bend shall be installed at the downstream end of the private tile at Station 0+528.16 to direct flow downstream.

2.0 WORKING AREA

The areas available to the Contractor to be used for the purpose of constructing the recommended works of this report and for construction and future maintenance as provided for under Section 63 of the Act are described follows:

The Contractor shall utilize a 9.0 metre wide maintenance corridor on abutting agricultural lands measured easterly from the centre line of the drain.

Where the drain passes in front of residential properties or lawns, the Contractor shall access The drain from the road right-of-way. Road crossings shall be accessed from the road right-of-way.

3.0 DISPOSAL OF EXCAVATED MATERIAL

The Contractor shall cast all excavated material on the adjacent agricultural lands. Excavated material shall be spread to a depth of no more than 100 mm along the east top of drain bank and shall be kept at least 1.2 metres clear from the finished edge of the drain, care being taken not to fill up any existing tiles, ditches, furrows or drains with the excavated material.

Where the drain passes in front of any house, garden, lawn, driveway, etc., the excavated material shall be hauled and spread upon the adjacent agricultural lands.

4.0 LOCATION AND ELEVATION OF CULVERTS

The location and elevations of the new culverts shall be according to the drawings, 13-093 Sheet 1 to Sheet 6.

5.0 PLACEMENT OF CULVERTS

a) The Contractor shall excavate all vegetation, topsoil and existing granular material from the bank slopes and bottom of the existing drain complete along with hauling materials off site.

The required work includes:

i. The supply and installation of new 900mm diameter Boss 2000 pipe as described in Section 1.0 Pipe Material;
ii. The supply and installation of new 600mm diameter aluminized corrugated steel pipe as described in Section 1.0 Pipe Material;
iii. Any other works as described in Section 1.0 Pipe Material.

b) The Contractor shall perform the excavation, placement of the pipe and backfill in a dry condition and shall provide all required pumps and/or equipment to enable the work to proceed in the dry.

c) Supply and place sloped gabion stone end of pipe protection, as required;

6.0 PIPE BACKFILL

After the corrugated plastic pipe has been set, the Contractor shall backfill the culvert with granular "B" material, O.P.S.S. Spec 1010 according to the attached plan. The backfill material shall be carefully placed so damage to or movement of the culvert is avoided and backfill materials shall be placed in layers not exceeding 300 mm in thickness, loose measurement. Each layer shall be thoroughly compacted in place to a Standard Proctor Density of 98% by means of mechanical compactors. The equipment and method of compacting the backfill material shall be to the full satisfaction of the Commissioner in charge.

7.0 QUARRIED ROCK END PROTECTION

Where specified and after the corrugated plastic pipe has been set and backfilled the Contractor shall install quarried rock erosion protection at each end of the pipe.

The backfill over the ends of the corrugated plastic pipe shall be set on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope and between both side slopes.

The top 300 mm in thickness of the backfill over the ends of the corrugated plastic pipe shall be quarried rock. The quarried rock shall be placed on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes. The quarried rock shall have a minimum dimension of 100 mm and a maximum dimension of 225 mm. Prior to placing quarried rock end protection over the granular material, the Contractor shall lay a non woven geotextile filter fabric equal to a "Terrafix 270R" or approved equal. The geotextile filter fabric shall extend from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes of the drain. The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried rock on top of the filter fabric. The geotextile filter fabric and quarried rock shall be placed to the complete satisfaction of the Municipality's Drainage Superintendent.

8.0 BAGGED CONCRETE HEADWALLS – Not required.

Where specified and after the Contractor has set in place the new pipe, he shall completely backfill the same and install new concrete jute bag headwalls at the locations indicated on the drawing. When constructing the concrete jute bag headwalls, the Contractor shall place the bags so that the completed headwalls will a have a slope inward from the bottom of the pipe to the top of the finished headwalls, the slope of the headwall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill I behind the new concrete jute bag headwalls with granular material, Granular 'A', and 'B' per OPSS 1010 and the granular material shall be compacted in place with a standard proctor density of 1--%. The placing of the jute bag headwalls and the backfilling shall be performed in lifts simultaneously. The granular backfill shall be placed and compacted in lifts not to exceed 300mm in thickness.

The concrete jute bag headwalls shall be constructed by filling jute bags with concrete. All concrete used to fill the jute bags shall have a minimum compressive strength of 20.7 MPA in 28 days and shall be provided and placed only as a wet mix, under no circumstance, shall the concrete to be used for filling the jute bags, be placed as a dry mix. The jute bags, before being filled with concrete, shall have a dimension of 460mm x 660mm. The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm thick, 300mm to 380mm wide and 460mm long. The concrete jute bag headwalls to be provided at the end of the pipe shall be of sing bag wall construction or as specified otherwise. The concrete filled bags shall be laid so that the 460mm dimension is parallel with the length of the new pipe. The

8.0 BAGGED CONCRETE HEADWALLS – Continued - Not Required

concrete filled bags shall be laid on a footing of plain concrete being 460mm wide, extending for the full length of the wall, and from 300mm below the bottom of the corrugated pipe to the bottom of the culvert pipe. All concrete used for the footing shall have a minimum compressive strength of 20.7 MPA in 28 days. The completed jute bag headwalls shall be securely embedded a minimum of 500mm into the side slopes of the drain.

Upon complete of the jute bag headwall, the Contractor shall cap the top row of concrete filled bags with a layer of plain concrete, 150mm thick, and hand trowelled to obtain a pleasing appearance. The Contractor shall fill all voids between the concrete filled jute bags and the corrugated steel pipe with concrete, particular care being taken underneath the pipe haunches to fill all voids.

As an alternative to constructing a concrete filled jute bag headwall, the Contractor may construct a grouted concrete rip rap headwall. The specifications for the installation of a concrete filled jute bag headwall shall be followed with the exception that broken sections of concrete may be substituted for the jute bags. The concrete rip rap shall be approximately 460mm square and 100mm thick and shall have two flat parallel sides. The rip rap shall be fully mortared in place using a mixture composed of three parts of clean, sharp sand to one part Portland Cement.

9.0 ALIGNMENT

The alignment of the enclosure throughout shall be to the full satisfaction of the Commissioner in charge. The whole of the work shall be done in a neat, thorough and workmanlike manner to the full satisfaction of the Commissioner in charge.

10.0 LOCATION OF STRUCTURES, ETC.

The Contractor shall satisfy himself as to the exact location, nature and extent of any existing structure, utility or other object which he may encounter during the course of the work. The Contractor shall indemnify and save harmless, the Municipality and the Engineer for any damages which he may cause or sustain during the progress of the work. He shall not hold the Municipality or the Engineer liable for any legal action arising out of any claims brought about by such damage caused by him.

11.0 DAMAGE TO TRAVELLED PORTION OF MUNICIPAL ROAD

The Contractor will be responsible for any damage caused by him to any portion of the municipal road system, especially to the travelled portion. When excavation work is being carried out and the excavation equipment is placed on the travelled portion of a road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any parts of the travelled portion of the road is damaged by the Contractor, the Municipality shall have the right to have the necessary repair work done by its employees and the cost of all labour and materials used to carry out the repair work shall be deducted from the Contractor's contract and credited to the Municipality.

12.0 CONSTRUCTION SAFETY

The Contractor shall comply with all the requirements of the Occupational Health and Safety Act, 1990 and the regulations passed in connection therewith, as administered by the Ontario Ministry of Labour and all subsequent amendments of the said Act.

The Contractor shall exercise all possible precaution against injury to persons or property resulting from his work. The Contractor shall leave no trenches, pits, holes or excavations uncovered, without providing sufficient protection at all times. The Contractor shall install, erect and provide barricades, signs, traffic cones, flashers, lights, plates, warning and other devices, materials and personnel as may be required and at his own expense in order to provide for the safe passage and control of traffic and to ensure public safety. All traffic control shall be in accordance with the latest standards of the Ministry of Transportation.

13.0 CERTIFICATE OF CLEARANCE

The Contractor will be required to submit to the Municipality a Certificate of Good Standing from the Workplace Safety & Insurance Board prior to the commencement of the work and the Contractor will be required to submit to the Municipality, a Certificate of Clearance for the project from the Workplace Safety & Insurance Board before final payment is made to the Contractor.

14.0 PROGRESS ORDERS

Monthly progress orders for payment shall be furnished to the Contractor by the Commissioner in charge; said orders shall not be for more than 90% of the value of the work done and the materials furnished on the site. The paying of the full 90% does not imply that any portion of the work has been accepted. The remaining 10% will be paid 45 days after the final acceptance and completion of the work.

15.0 CLEANING UP

The Contractor shall leave the whole of the site of the work in a neat, thorough and workmanlike appearance to the full satisfaction of the Commissioner. He shall haul away any excess earth from the site. He shall haul to the site, sufficient earth to fill any depressions caused by his work at his own expense. The site shall be left as close as possible in the same condition as it was prior to the commencement of the work.

16.0 MEASUREMENT AND PAYMENT

Payment for the work shall be on a unit price basis unless otherwise indicated and shall include all the work shown on the accompanying drawings and specifications.

17.0 MAINTAINING FLOW

The Contractor shall maintain the flow of any drainage works encountered in the progress of the work and at no expense to the Owner. The Contractor shall obtain written approval from the Commissioner in charge to stop up any drain and if necessary provide pumping equipment, build necessary by-passes, etc. at no expense to the Owner.

18.0 COMMISSIONER

Where the work "Commissioner" 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.

The Commissioner will be permitted to make minor variations in the work so long as these variations will result in a more satisfactory project or a more economical one. These variations, however, must not be such as to change the intent of the work performed nor are they to reduce the standard of quality.

19.0 NOTIFICATION OF WORK

Prior to commencing any work of installing the extension of the culvert or removing any existing structures, the Contractor shall inform the Municipality's Drainage Superintendent of his intent to commence work at least 48 hours prior to commencing any work. The Owner or Contractor shall endeavour to install and complete the new structure without delay once he has commenced the work. If for any reason the work does not proceed continuously then the Owner or Contractor shall notify the Drainage Superintendent in advance of any backfilling operation or headwall construction so that he may schedule inspection of same. The completed work must be done to the satisfaction of the Municipality's Drainage Superintendent and be approved by him.

20.0 MAINTENANCE

The Contractor shall repair and make good at his expense any damages or faults in the work that may appear within one year after its completion (as evidenced by the final inspection report), as the result of imperfect or defective work done or materials furnished. Nothing herein contained shall be construed as any way restricting or limiting the liability of the Contractor under the appropriate laws under which the work is being done.

SPECIFICATIONS
ENVIRONMENTAL PROTECTION SPECIAL PROVISIONS
FOR THE
EAST MCPHERSON DRAIN
TOWN OF TECUMSEH
PROJECT NO. 13-093

1.0 GENERAL

These Environmental Protection Special Provisions shall apply and form part of this Contract. All costs associated to conforming with these Special Provisions shall be included in the Tender prices bid.

2.0 FIRES

Fires and burning of rubbish on site will be permitted only with special approval from the Municipality.

3.0 DISPOSAL OF WASTES

The Contractor shall not bury rubbish and waste materials on site unless approved by the Engineer and all applicable approving authorities. The site shall be maintained free of accumulated waste and rubbish. All waste materials should be disposed of in a legal manner at a site approved by all local approving authorities and the Engineer.

The Contractor shall not allow deleterious substances, waste or volatile materials such as mineral spirits, or paint thinner, to enter into waterways, storm or sanitary sewers.

The disposal of dredge material where applicable shall be in accordance with the above.

4.0 POLLUTION CONTROL

The Contractor shall maintain under this Contract temporary erosion, sediment and pollution control features installed.

The Contractor shall control emissions from equipment and plant to local authorities emission requirements.

The Contractor shall not cause excessive turbidity when performing in-water work. The Contractor shall not allow any debris, fill or other foreign matter to enter into the waterway. The Contractor shall remove from the waterway, all extraneous materials resulting from in-water work.

The Contractor shall abide by local noise By-Laws for the duration of the Contract.

Spills of deleterious substances into waterways and on land shall be immediately contained by the Contractor and the Contractor shall cleanup in accordance with Provincial regulatory requirements. All spills shall be reported to the Ontario Spills Action Centre (1-800-268-6060), local authorities having jurisdiction and the Engineer. To reduce the risk of fuel entering the waterway, refuelling of machinery must take place a safe distance from the waterway. The Contractor shall note that the Engineer or the Owner takes no responsibility for spills, this shall be the sole responsibility of the Contractor.

5.0 WHMIS

The Contractor shall comply with the requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials and regarding labelling and the provision of material safety data sheets acceptable to Labour Canada.

6.0 DRAINAGE

The Contractor shall not pump water containing suspended materials into waterways, sewers or drainage systems. The Contractor shall be solely responsible for the control, disposal or runoff of water containing suspended materials or other harmful substances in accordance with these specifications, and local authority requirements. The Contractor shall provide temporary drainage and pumping as necessary to keep excavations and site free from water.

The Contractor shall install and maintain sediment control devices as indicated on the Contract Drawing and as directed by the Engineer.

7.0 PROTECTION OF VEGETATION

The Contractor shall exercise the utmost caution to ensure that existing trees and plants on-site and on adjacent properties are not damaged or disturbed unless noted otherwise in the Removals Special Provisions of this Contract. The Contractor shall restrict tree removal to areas indicated on the Contract Drawings and/or designated on-site. No trees or shrubs shall be removed without the approval of the Engineer.

8.0 DUST CONTROL

The Contractor will be solely responsible for controlling dust nuisance resulting from his operations, both on the site and within adjacent right-of-ways.

Water and calcium chloride shall be applied to areas on or adjacent to the site as authorized by the Engineer as being necessary and unavoidable for the prevention of dust nuisance or hazard to the public. No payment will be made for dust control unless otherwise specified in the Special Provisions.

9.0 RESTRICTIONS FOR IN-WATER WORKS

The Contractor shall only perform in-water works during times when conditions permit reasonable production rates to be achieved. The Contractor shall be required to adopt good housekeeping practices that minimize disturbance to the site and the adjacent waterway.

The Contractor shall note that this Project is subject to approval from the Essex Region Conservation Authority and as such, any possible turbidity caused by the construction of the shore protection works is of key importance.

The Contractor shall minimize the turbidity (sedimentation) produced by any in-water works construction or operations. The Contractor will be ordered to cease operations if, in the opinion of the Engineer or authorities having jurisdiction, the in-water work is producing unacceptable amounts of turbidity in the waterway. Based on this, the Contractor shall either adjust his operation(s) to produce lower turbidity levels, wait for more favourable conditions before

9.0 RESTRICTIONS FOR IN-WATER WORKS - Continued

operations will be allowed to continue, or undertake approved mitigating measures (e.g. sediment control, etc.). All costs associated with the above will be the sole responsibility of the Contractor, and no claims for extras or delays will be considered.

10.0 FISH HABITAT

No work shall be undertaken when there is likelihood of adverse effects on fish spawning or fish habitat in downstream waters.

GENERAL SPECIFICATIONS
FOR CONSTRUCTION OF OPEN DRAINS
FOR THE
EAST MCPHERSON DRAIN
TOWN OF TECUMSEH
PROJECT NO. 13-093

1.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

Each tenderer must visit the site and review the plans and specifications before submitting his tender and must satisfy himself as to the extent of the work and local conditions to be met during the construction period. He is not to claim at any time after submission of his tender that there was any misunderstanding of the terms and conditions of the contract relating to site conditions. The quantities shown as 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 quantities for accuracy prior to submitting his tender.

2.0 SUPPLY OF MATERIALS

The Contractor shall supply all labour, equipment and materials necessary for the proper completion of the project.

3.0 PROFILE

The excavation of the drain must be at least to the depth intended by the grade line as shown on the profile, which grade line is governed by the bench marks. The profile shows, for the convenience of the Contractors and others, the approximate depth of cut from the surface of the ground at the points where the numbered stakes are set to the final invert of the channel and also the approximate depth of cut from the bottom of the existing channel to the final invert of the channel. Bench marks which have been established along the course of the drain, shall govern the final elevation of the drain. The location and elevation of the bench marks are shown on the profile.

4.0 ALIGNMENT

The alignment of the drain throughout shall be to the full satisfaction of the Commissioner in charge. The whole of the work shall be done in a neat, thorough and workmanlike manner to the full satisfaction of the Commissioner in charge. The bottom widths and side slopes of the various sections of the finished drain are to be true to line and grade as shown on the profile. When completed the drain shall have a uniform and even bottom and in no case shall such bottom project above the grade line as shown on the accompanying drawing, and as determined from the bench mark.

5.0 BRUSHING AND GRUBBING

Where there is any brush or rubbish in the course of the drain, including both side slopes of the drain, or where the earth is to be spread or on that strip of land between where the earth is to be spread and the edge of the drain, all such brush or rubbish shall be grubbed out and close cut and the whole to be burned (with Municipal approval) or removed from the drain, hauled away and disposed of by the Contractor.

5.0 BRUSHING AND GRUBBING - Continued

Existing select hardwood trees greater than 200 mm (8") in diameter situated in the drain bank within 1.0 metre from the top of the bank may be selectively left standing if the Drainage Superintendent considers the trees will not adversely affect the flow of water within the drain. Prior to removing any trees the Contractor shall meet at the site with the drainage superintendent to review if any vegetation or select trees are environmentally significant for preservation.

6.0 SPREADING EXCAVATED EARTH

The excavated material where specified to be cast onto the adjoining land shall be well and evenly spread over a sufficient area so that no portion of the excavated earth is more than 100 mm in depth or as otherwise specified and kept at least 1.2 metres clear from the finished edge of the drain, care being taken not to fill up any existing tiles, ditches, furrows or drains with the excavated material. The excavated material to be spread upon the lands shall be free from rocks, boulders, stumps, rubble, rubbish or other similar material and other materials if encountered, shall be hauled away by the Contractor and disposed of at a site to be obtained by him at his expense.

Where the drain crosses any lawn, garden, orchard or driveway, etc. the excavated material for the full width of the above mentioned areas, shall be hauled away by the Contractor and disposed of upon the adjacent agricultural lands and spread as previously specified.

7.0 FENCING

Where it is necessary to take down any fence in order to proceed with the work, the same shall be done by the Contractor across or along that portion of the work where such fence is. The Contractor will be required to exercise extreme care in the removal of any fence so as to cause a minimum of damage to the same. The Contractor will be required to replace any fence that is taken down in order to proceed with the work and the fence shall be replaced in a neat and workmanlike manner. The Contractor will not be required to procure any new materials for rebuilding the fence provided he has used reasonable care in the removing and replacing of the same. Where any fence is removed by the Contractor and the Owner thereof deems it advisable and procures new material for replacing the fence so removed, the Contractor shall replace the fence using the new materials and the materials from the present fence shall remain the property of the Owner. The Contractor is not to leave any fences open when he is not at work in the immediate vicinity.

8.0 LOCATION OF STRUCTURES AND UTILITIES

The Contractor shall satisfy himself as to the exact location, nature and extent of any existing structure, utility or other object which he may encounter during the course of the work. The Contractor shall indemnify and save harmless, the Municipality and the Engineer for any damages which he may cause or sustain during the progress of the work. He shall not hold the Municipality or the Engineer liable for any legal action arising out of any claims brought about by such damage caused by him.

9.0 ACCESS BRIDGES

The Contractor shall satisfactorily clean through all specified access bridges to the grade line as shown on the accompanying drawing.

10.0 BACKFILL FOR CULVERTS

Where specified and after the corrugated plastic pipe has been set, the Contractor shall backfill the culvert with granular "B" material, O.P.S.S. Spec. 1010. The granular backfill shall be compacted in place to a Standard Proctor Density of 100% by means of mechanical compactors. The equipment and method of compacting the backfill material shall be to the full satisfaction of the Drainage Superintendent or Engineer.

11.0 ROCK PROTECTION FOR CULVERTS

The backfill over the ends of the corrugated plastic pipe shall be set on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope and between both side slopes. The top 30 cm in thickness of the backfill over the ends of the corrugated plastic pipe shall be quarried rock. The quarried rock shall be placed on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes. The quarried rock shall have a minimum dimension of 100 mm and a maximum dimension of 225 mm. Prior to placing quarried rock end protection over the granular material, the Contractor shall lay a non woven geotextile filter fabric equal to a "Terrafix 270R" or approved equal. The geotextile filter fabric shall extend from the bottom of the corrugated plastic pipe to the top of each side slope of the drain and between both side slopes of the drain. The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried rock on top of the filter fabric.

12.0 BAGGED CONCRETE HEADWALLS – Not Required

Where specified and after the Contractor has set in place the new pipe, he shall completely backfill the same and install new concrete jute bag headwalls at the locations indicated on the drawing. When constructing the concrete jute bag headwalls, the Contractor shall place the bags so that the completed headwalls will a have a slope inward from the bottom of the pipe to the top of the finished headwalls, the slope of the headwall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill I behind the new concrete jute bag headwalls with granular material, Granular ‘A’, and ‘B’ per OPSS 1010 and the granular material shall be compacted in place with a standard proctor density of 1--%. The placing of the jute bag headwalls and the backfilling shall be performed in lifts simultaneously. The granular backfill shall be placed and compacted in lifts not to exceed 300mm in thickness.

The concrete jute bag headwalls shall be constructed by filling jute bags with concrete. All concrete used to fill the jute bags shall have a minimum compressive strength of 20.7 MPA in 28 days and shall be provided and placed only as a wet mix, under no circumstance, shall the concrete to be used for filling the jute bags, be placed as a dry mix. The jute bags, before being filled with concrete, shall have a dimension of 460mm x 660mm. The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm thick, 300mm to 380mm wide and 460mm long. The concrete jute bag headwalls to be provided at the end of the pipe shall be of sing bag wall construction or as specified otherwise. The concrete filled bags shall be laid so that the 460mm dimension is parallel with the length of the new pipe. The concrete filled bags shall be laid on a footing of plain concrete being 460mm wide, extending for the full length of the wall, and from 300mm below the bottom of the corrugated pipe to the bottom of the culvert pipe. All concrete used for the footing shall have a minimum compressive strength of 20.7 MPA in 28 days. The completed jute bag headwalls shall be securely embedded a minimum of 500mm into the side slopes of the drain.

12.0 BAGGED CONCRETE HEADWALLS – Not Required - Continued

Upon complete of the jute bag headwall, the Contractor shall cap the top row of concrete filled bags with a layer of plain concrete, 150mm thick, and hand trowelled to obtain a pleasing appearance. The Contractor shall fill all voids between the concrete filled jute bags and the corrugated steel pipe with concrete, particular care being taken underneath the pipe haunches to fill all voids.

As an alternative to constructing a concrete filled jute bag headwall, the Contractor may construct a grouted concrete rip rap headwall. The specifications for the installation of a concrete filled jute bag headwall shall be followed with the exception that broken sections of concrete may be substituted for the jute bags. The concrete rip rap shall be approximately 460mm square and 100mm thick and shall have two flat parallel sides. The rip rap shall be fully mortared in place using a mixture composed of three parts of clean, sharp sand to one part Portland Cement.

13.0 PLACING OF CULVERT PIPE

When specified the Contractor shall install all culvert bridges in the location directed by the Commissioner. The excavation for placing the culvert, the type and class of bedding and backfill and culvert end treatment shall be carried out to the width, depth and alignment as specified herein. The surface on which the culvert is to be laid shall be true to grade and alignment and shaped to accept the materials to be placed. The pipe shall be laid to the alignment and grade shown in the report but may not be placed on a bed containing frozen materials. The Contractor shall carefully place the bedding and backfill material so damage to or movement of the pipe is avoided. Backfill and cover materials shall be placed in layers not exceeding 250 mm in thickness, loose measurement. Each layer shall be thoroughly compacted before the next layer is placed. Backfill on each side of the pipe shall be placed simultaneously and at no time shall the levels on each side of the pipe differ by more than 250 mm. Where native backfill is approved to be used the material shall not contain boulders larger than 150 mm or other deleterious material. The Contractor will be required to fully restore all paved driveways with materials of similar type and depths. The Contractor shall neatly saw cut all paved driveways at a distance of 300 mm beyond the edge of the excavated trench and this shall be done immediately prior to final restoration of the paved driveway.

When an access culvert or bridge does not have to be lowered or replaced, the Contractor shall clean it to its full cross sectional area using care to avoid causing damage to it in the process. Where a pipe culvert is to be reset to a new grade, the Contractor shall carefully remove it, clean it to its full cross sectional area and replace it in the drain as specified herein. Where a culvert is to be replaced, the Contractor shall carefully remove the existing pipe from the drain, clean it to its full cross sectional area and leave it on the drain bank unless otherwise specified. Should either the property owner or the Commissioner in charge not require the salvaged pipe then the Contractor shall dispose of the pipe at the Contractors expense.

The Contractor if using a batter board system for establishing the grade of the culvert pipe, shall utilize a minimum of three batter board stakes for each culvert. The Contractor shall ensure that the batter board stakes placed on the grade stakes shall line up, this being done prior to any excavation taking place for the proposed culvert.

Where pipes are scheduled to be moved or replaced the Contractor shall confirm the new location of the culvert pipe with the owner prior to installation. Where the Contractor has excavated a culvert pipe which has been scheduled to be cleaned and reinstalled and it is found that the condition of the existing culvert pipe is not satisfactory to be reused, the Contractor shall

13.0 PLACING OF CULVERT PIPE – Continued

immediately notify the Commissioner in charge who will verify the condition of the existing pipe and may instruct the Contractor to supply a new length of corrugated plastic pipe.

Where pipes are scheduled to be cleaned and flushed only, the material which is removed from the culvert pipe is to be loaded and hauled away. Over digging of the drain at the downstream end of the culvert to accommodate material flushed from a culvert pipe will not be allowed.

14.0 CUTS

The cuts as shown on the accompanying drawing are to be taken from the ground beside the stakes to the bottom of the finished drain, unless otherwise noted on the drawing.

15.0 DAMAGE TO TRAVELLED PORTION OF MUNICIPAL ROAD

The Contractor will be responsible for any damage caused by him to any portion of the municipal road system, especially to the travelled portion. When excavation work is being carried out and the excavation equipment is placed on the travelled portion of a road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any parts of the travelled portion of the road is damaged by the Contractor, the Municipality shall have the right to have the necessary repair work done by its employees and the cost of all labour and materials used to carry out the repair work shall be deducted from the Contractor's contract and credited to the Municipality.

16.0 SEEDING AND MULCHING

The Contractor shall fine grade the finished surfaces and shall apply hydroseeding and mulch. The seeding and mulching operation shall be carried out according to O.P.S.S. Spec. 572 or as amended herein and the operation shall include the supplying and placing of the following:

A)	Seed Mixture	- Creeping Red Fescue - 50%
		- Red Top - 20%
		- Canada Blue Grass - 15%
		- Kentucky Blue Grass - 15%
B)	Nurse Crop	- Oats if seeding and mulching is performed during May or June.
		- Annual Rye Grass if seeding and mulching is performed during Sept. or Oct.
C)	Fertilizer	- 5·20·10 mixture
D)	Mulch	- Wood Cellulose Fibre or Straw
E)	Adhesive	- Asphalt Emulsion if straw mulch used
		- Liquid Polyvinyl Acetate if wood fibre mulch used

The application rates shall be as follows:

A)	Grass Seed Mixture	- 90 lbs./acre
B)	Fertilizer	- 350 lbs./acre
C)	Nurse Crop Seed	- 55 lbs./acre
D)	Mulch	- 1300 lbs./acre if wood fibre used
		- 1" to 2" depth if straw used
E)	Adhesive	- 200 imp.gal/acre for Asphalt Emulsion
		- 205 lbs./acre for Liquid Polyvinyl Acetate

16.0 SEEDING AND MULCHING – Continued

The seeding and mulching operation shall be only carried out as weather conditions permit during the months of May and June in the Spring, and September and October in the Fall. If the excavation work is carried out during the months of May and June, or September or October, the Contractor has the option of contacting the Drainage Superintendent and if the Contractor receives his written permission, the seed mixture as above specified, may be placed on the excavated side slopes by the Contractor by hand, daily, at the completion of his daily excavation operation. If the Contractor has been given written permission by the Drainage Superintendent to place the seeding mixture by hand daily, at the completion of his daily excavation operation, the Contractor shall be responsible to give the side slopes a rough, harrowed texture prior to placing the seed mixture.

17.0 QUARRIED ROCK

The Contractor shall place quarried rock protection at the areas indicated on the accompanying plans. The quarried rock shall be graded in size from a minimum size of 100 mm to a maximum size of 230 mm. The quarried rock shall be placed 300 mm in thickness on a layer of geotextile filter fabric placed on the bottom of the excavation. The filter fabric shall be "Terrafix 270-R" or equal. The Contractor shall excavate for the quarried rock so that the top of the completed quarried rock protection is level with the adjacent ground.

The Contractor shall remove all trees, brush and debris from the area on which the quarried rock is to be placed. The quarried rock shall be carefully placed by the Contractor at the locations and to the dimensions as shown on the accompanying specifications. The specified filter cloth shall be hand laid and have an overlap of 600 mm and all quarried rock that is to be placed over the filter cloth shall be carefully hand or machine placed so that it does not damage the filter cloth. The filter cloth shall extend up the sides of the trench excavated to accept the quarried rock and the quarried rock shall extend 300 mm above the top of the surface inlet pipe where applicable.

18.0 MAINTAINING FLOW AND EXISTING SEWERS

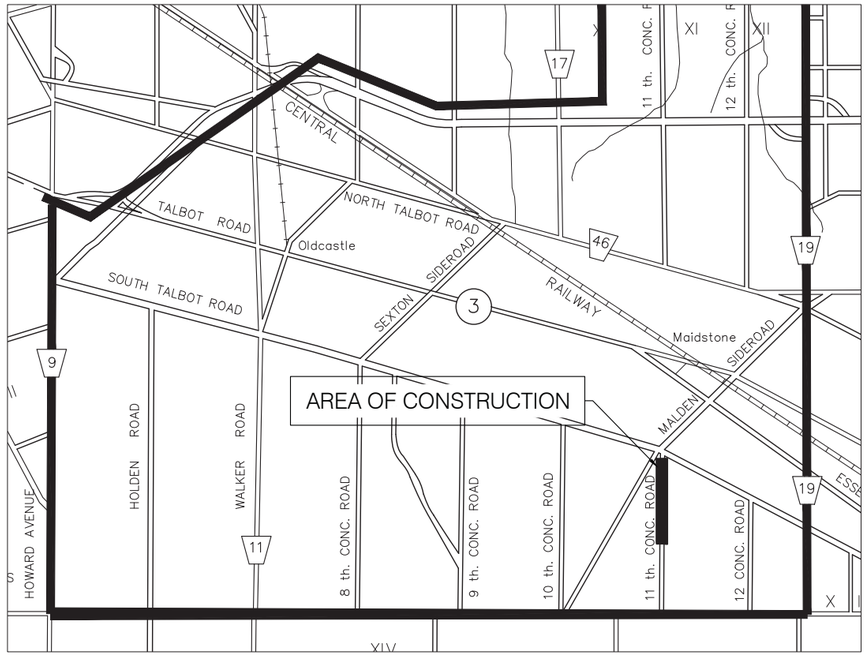
The Contractor shall support and maintain the flow and existing sewers and house connections and any other drainage works encountered in the progress of the work and at no expense to the owner. The Contractor shall obtain written approval from the engineer to stop up any drain, and if necessary, provide pumping equipment, build necessary by-passes, etc. at no expense to the owner.

19.0 SPECIAL PROVISIONS

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.

20.0 REMOVAL OF TREES

Whenever practical, existing trees not scheduled for removal will be preserved. The Contractor shall exercise the utmost caution to ensure that the trees are not damaged or disturbed in accordance with item 5.0 Brushing and Grubbing.



KEY PLAN PLAN

SCALE: NTS

ATTENTION:

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS, REVISED STATUTES OF ONTARIO, 1990 CHAPTER 0.1 AS AMENDED, ONTARIO REGULATION 213/91, R.R.O. 1990 REG. 834 AS ADMINISTERED BY THE ONTARIO MINISTRY OF LABOUR AND ALL SUBSEQUENT AMENDMENTS OF SAID ACT.

NOTE:

THE PROPERTY LINES AND DIMENSIONS SHOWN ARE BASED ON SURVEY BARS FOUND ON THE SITE AND ARE NOT BASED ON A SURVEY DRAWING PRODUCED BY AN ONTARIO LAND SURVEYOR. THE PROPERTY LINES SHOULD BE CONSIDERED AS APPROXIMATELY ONLY AND NOT A LEGAL PLAN OF SURVEY

SHEET SET TABLE:

SHEET NUMBER	SHEET TITLE
1	TITLE PAGE
2	PLAN AND PROFILE STATION 0+000 TO 0+600
3	PLAN AND PROFILE STATION 0+600 TO 1+200
4	PLAN AND PROFILE STATION 1+200 TO 1+340
5	CROSS-SECTIONS AND DETAILS
6	FUTURE CULVERT REPLACEMENTS

BENCH MARKS:

No. 1 STATION 0+152.4, NAIL IN HYDRO POLE ON WEST SIDE OF 11TH CONCESSION ROAD
GPS ELEVATION 191.927 METRES.

No. 2 STATION 0+747.09, NAIL IN HYDRO POLE ON WEST SIDE OF11TH CONCESSION ROAD
GPS ELEVATION 192.826 METRES.

No. 3 STATION 1+397.05, NAIL IN HYDRO POLE ON WEST SIDE OF 11TH CONCESSION ROAD
GPS ELEVATION 193.467 METRES.

LEGEND

◇ PRIVATE TILE

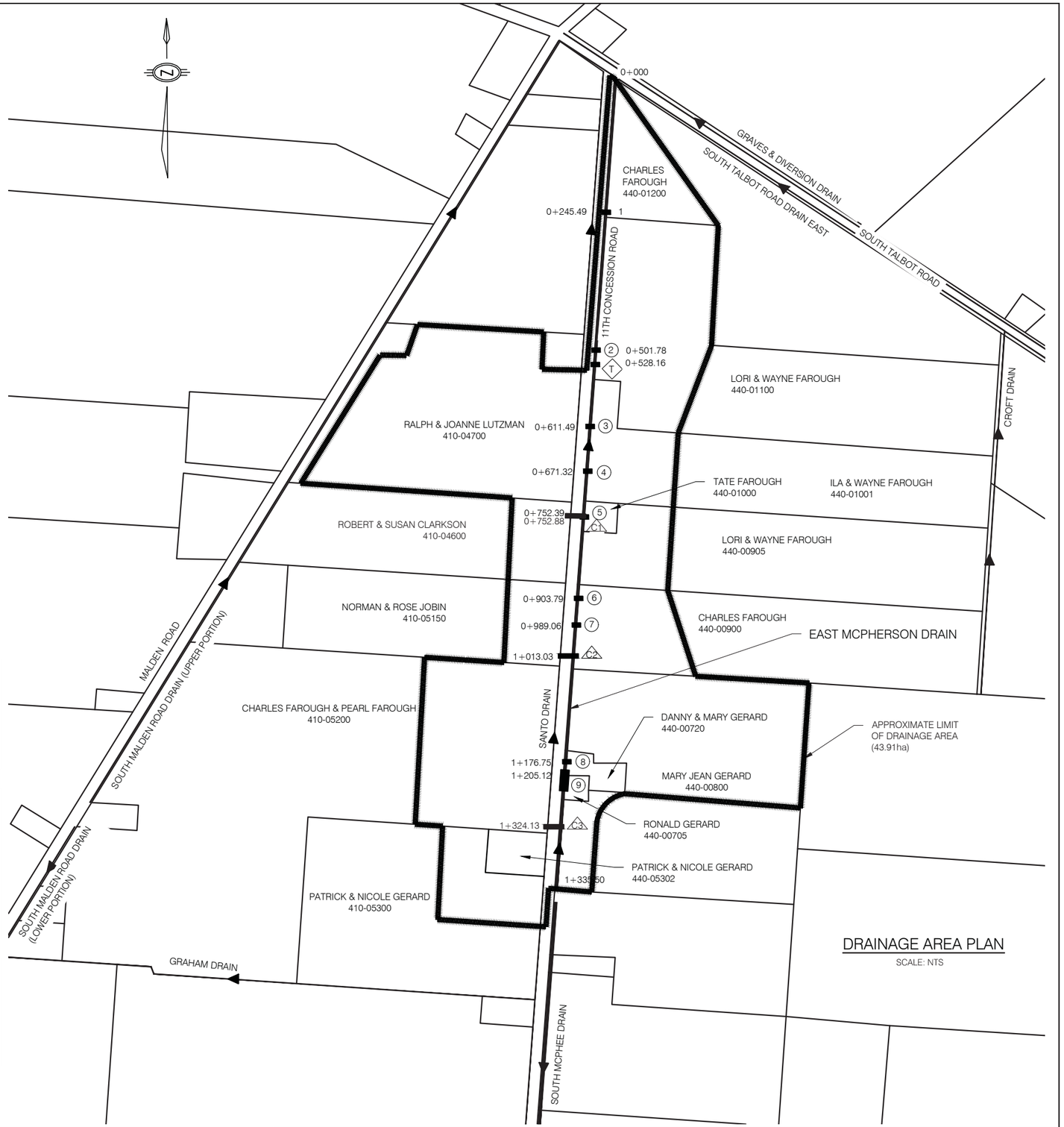
○ TO BE REPLACED OR CLEANED

△ ROAD CROSSING

1 AND 6 REMOVED AT LANDOWNER'S REQUEST

NOTE:

CULVERT NO.1 AND CULVERT NO. 6 HAVE BEEN REMOVED FROM THE DRAIN AT THE LANDOWNER'S COST AND REQUEST.



DRAINAGE AREA PLAN

SCALE: NTS

DATE	REVISIONS
05/03/14	DRAFT - SUBMITTED FOR TOWN REVIEW
10/03/14	DRAFT - SUBMITTED FOR TOWN REVIEW
17/03/14	DRAFT - PUBLIC INFORMATION CENTRE
17/06/14	FINAL - COUNCIL CONSIDERATION
02/03/15	RECONSIDERED REPORT
27/04/15	RECONSIDERED REPORT
07/06/16	RECONSIDERED REPORT
07/26/16	RECONSIDERED REPORT
04/11/17	RECONSIDERED REPORT

LICENSED PROFESSIONAL ENGINEER H.P. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P.PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER D. A. JOUDREY PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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27 PRINCESS STREET, SUITE #102
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REPAIR AND IMPROVEMENT TO THE EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE: TITLE PAGE

JUNE 17, 2014

SCALE: AS NOTED

DRAWN BY: T.Y

CHECKED BY: H.P.P.

13-093

SHEET NO: 1

file no.

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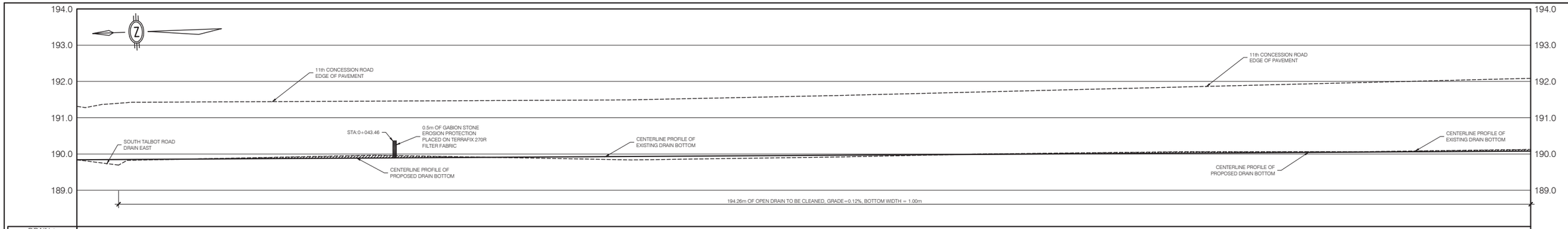
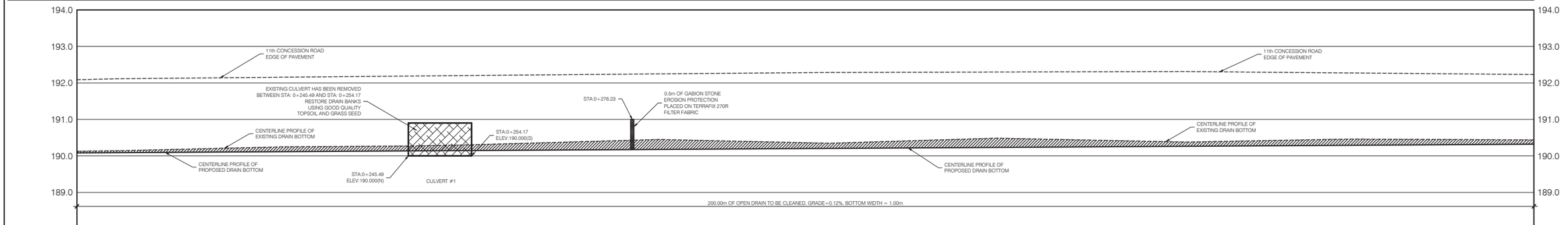
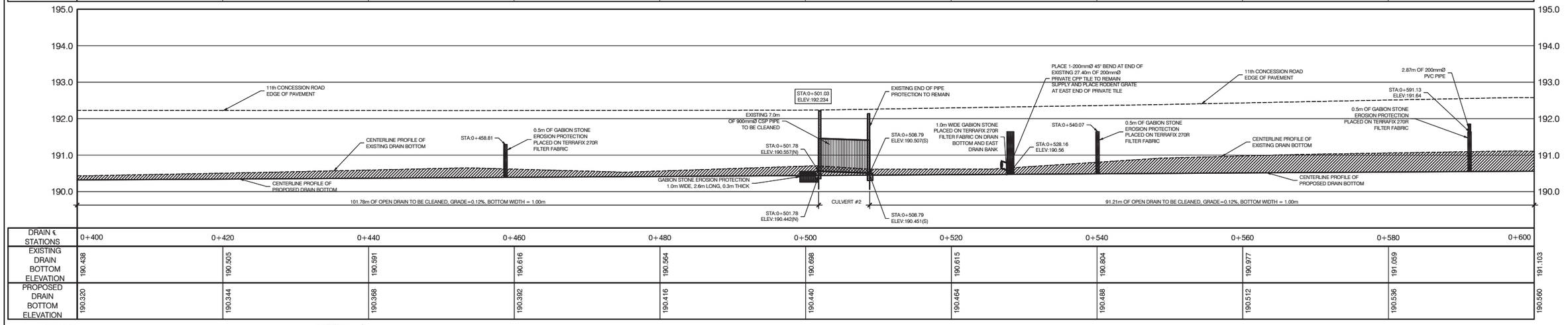


DRAIN ℄ STATIONS	0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180	0+200
EXISTING DRAIN BOTTOM ELEVATION		189.879	189.962	189.897	189.847	189.904	189.981	190.035	190.065	190.072	190.127
PROPOSED DRAIN BOTTOM ELEVATION	189.840	189.864	189.888	189.912	189.936	189.960	189.984	190.008	190.032	190.056	190.080



DRAIN ℄ STATIONS	0+200	0+220	0+240	0+260	0+280	0+300	0+320	0+340	0+360	0+380	0+400
EXISTING DRAIN BOTTOM ELEVATION	190.127	190.209	190.263	190.337	190.449	190.361	190.447	190.429	190.406	190.456	190.438
PROPOSED DRAIN BOTTOM ELEVATION	190.080	190.104	190.128	190.152	190.176	190.200	190.224	190.248	190.272	190.296	190.320



DRAIN ℄ STATIONS	0+400	0+420	0+440	0+460	0+480	0+500	0+520	0+540	0+560	0+580	0+600
EXISTING DRAIN BOTTOM ELEVATION	190.438	190.505	190.591	190.616	190.564	190.698	190.615	190.804	190.977	191.059	191.103
PROPOSED DRAIN BOTTOM ELEVATION	190.320	190.344	190.368	190.392	190.416	190.440	190.464	190.488	190.512	190.536	190.560

LICENSED PROFESSIONAL ENGINEER
A.P. PEARSON
100155996
17/04/11
PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P. PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER
D. A. JOUDREY
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04/11/17	RECONSIDERED REPORT

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EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE:

PROFILE STATION 0+000 TO 0+600

JUNE 17, 2014

13-093

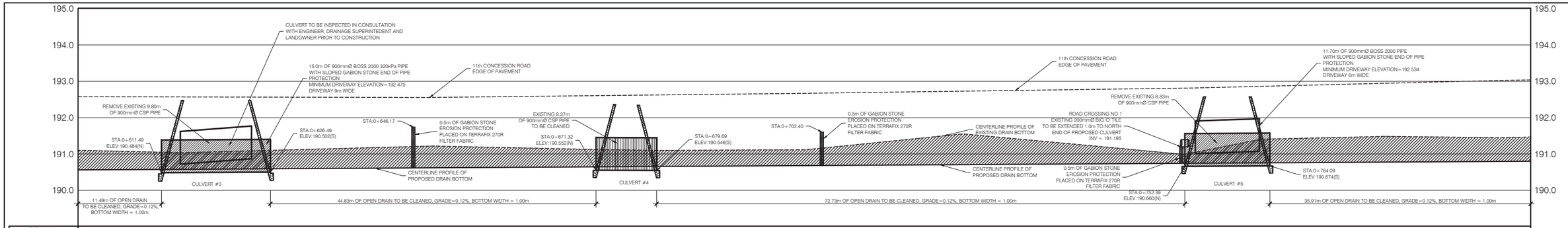
SCALE: HOR. = 1:250
VER = 1:50

DRAWN BY: T.Y

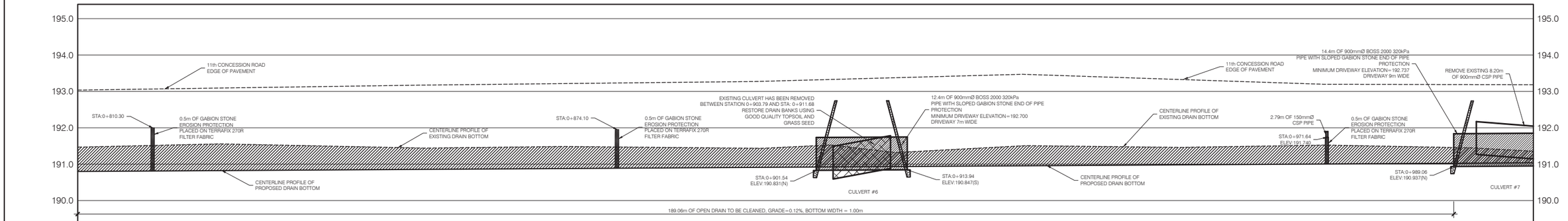
CHECKED BY: H.P.P.

SHEET NO: 2

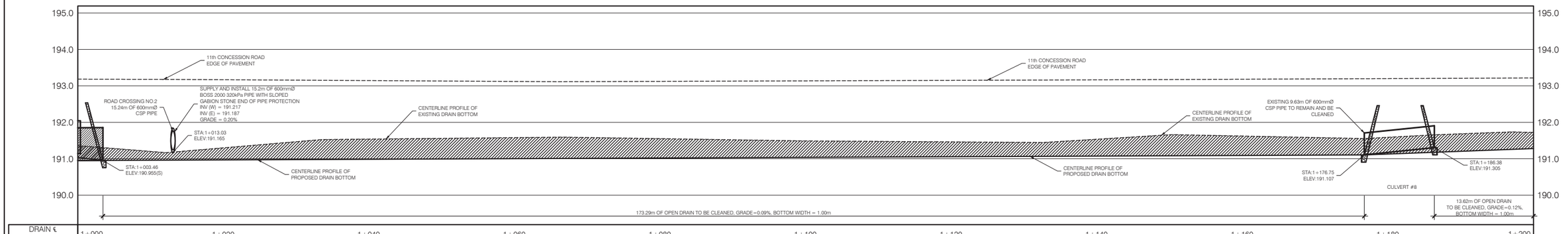
file no.



DRAIN ℄ STATIONS	0+600	0+620	0+640	0+660	0+680	0+700	0+720	0+740	0+760	0+780	0+800
EXISTING DRAIN BOTTOM ELEVATION	191.103	191.066	191.172	191.171	191.099	191.117	191.516	191.217	191.292	191.484	191.467
PROPOSED DRAIN BOTTOM ELEVATION	190.560	190.584	190.608	190.632	190.656	190.680	190.704	190.728	190.752	190.776	190.800



DRAIN ℄ STATIONS	0+800	0+820	0+840	0+860	0+880	0+900	0+920	0+940	0+960	0+980	1+000
EXISTING DRAIN BOTTOM ELEVATION	191.467	191.555	191.473	191.471	191.462	191.494	191.400	191.487	191.488	191.493	191.357
PROPOSED DRAIN BOTTOM ELEVATION	190.800	190.824	190.848	190.872	190.896	190.920	190.944	190.968	190.992	191.016	191.040



DRAIN ℄ STATIONS	1+000	1+020	1+040	1+060	1+080	1+100	1+120	1+140	1+160	1+180	1+200
EXISTING DRAIN BOTTOM ELEVATION	191.357	191.299	191.539	191.580	191.551	191.489	191.463	191.536	191.622	191.589	191.722
PROPOSED DRAIN BOTTOM ELEVATION	191.040	190.968	190.986	191.004	191.021	191.039	191.057	191.074	191.092	191.131	191.280

LICENSED PROFESSIONAL ENGINEER A.H. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P.PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER D. A. JOUDREY PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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07/06/16	RECONSIDERED REPORT
07/26/16	RECONSIDERED REPORT
04/11/17	RECONSIDERED REPORT

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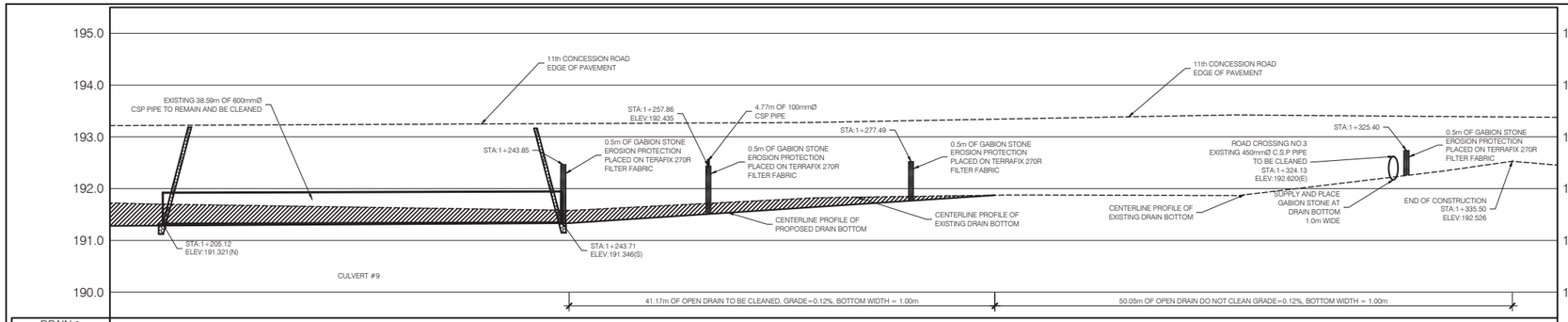
PROJECT TITLE: EAST MCPHERSON DRAIN
TOWN OF TECUMSEH

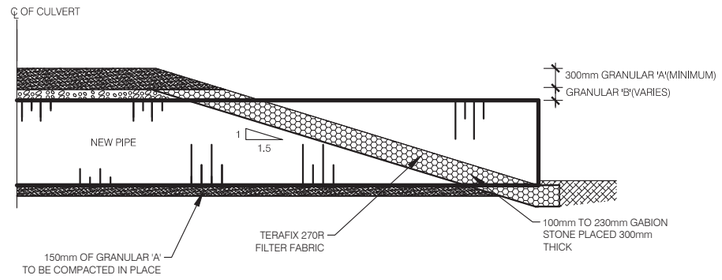
SHEET TITLE: PROFILE STATION 0+600 TO 1+200

DATE: JUNE 17, 2014
SCALE: HOR. = 1:250 VER = 1:50
DRAWN BY: T.Y
CHECKED BY: H.P.P
PROJECT NO: 13-093
SHEET NO: 3

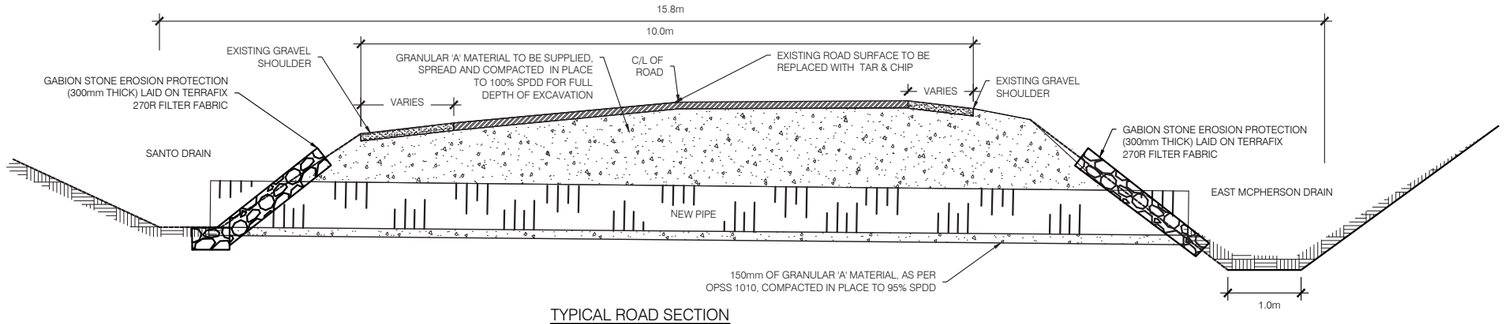
file no.



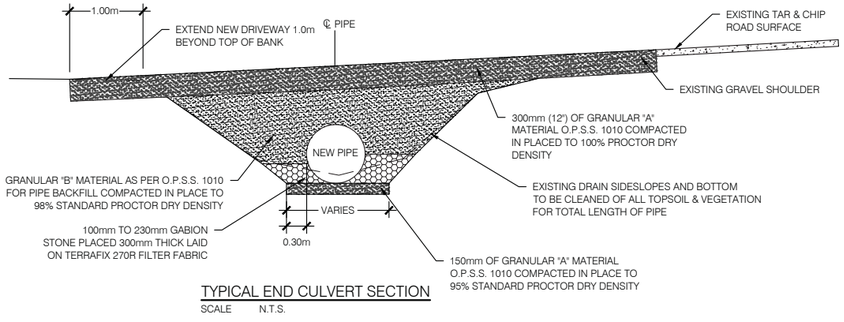
DRAIN STATIONS	1+200	1+220	1+240	1+260	1+280	1+285.60	1+300	1+320	1+340
EXISTING DRAIN BOTTOM ELEVATION	191.722	191.653	191.593	191.737	191.856		191.871	192.125	
PROPOSED DRAIN BOTTOM ELEVATION	191.280	191.304	191.328	191.537	191.799	191.872			



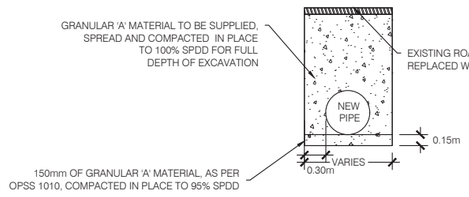
TYPICAL SECTION OF GABION STONE END PROTECTION
SCALE N.T.S.



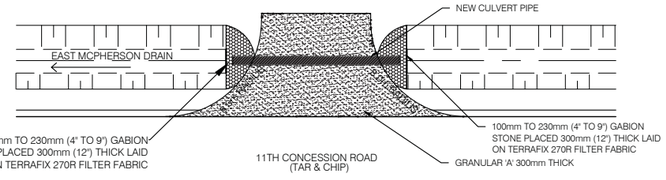
TYPICAL ROAD SECTION
SCALE N.T.S.
W <---------->E



TYPICAL END CULVERT SECTION
SCALE N.T.S.



TYPICAL ROAD CROSS-SECTION
SCALE N.T.S.



TYPICAL CULVERT PLAN VIEW
SCALE N.T.S.

LICENSED PROFESSIONAL ENGINEER
A.P. PEARSON
100155996
17/04/11
PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P.PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER
D. A. JOUDREY
PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE:

PROFILE STATION 1+200 TO 1+335.50

JUNE 17, 2014

SCALE: HOR. = 1:250
VER = 1:50

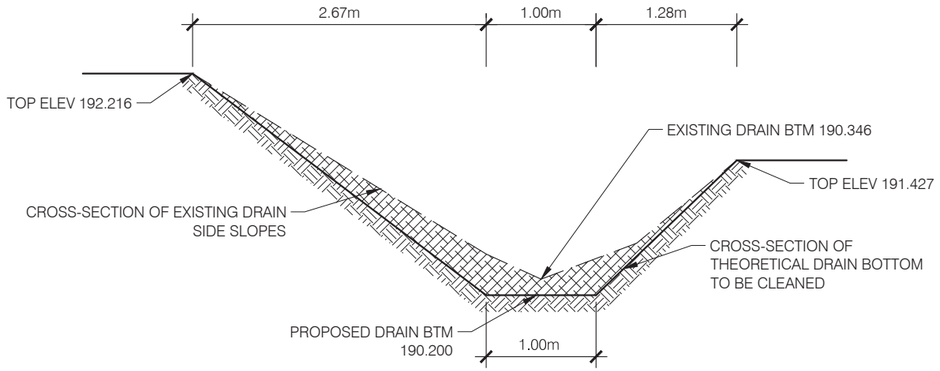
DRAWN BY: T.Y

CHECKED BY: H.P.P

13-093

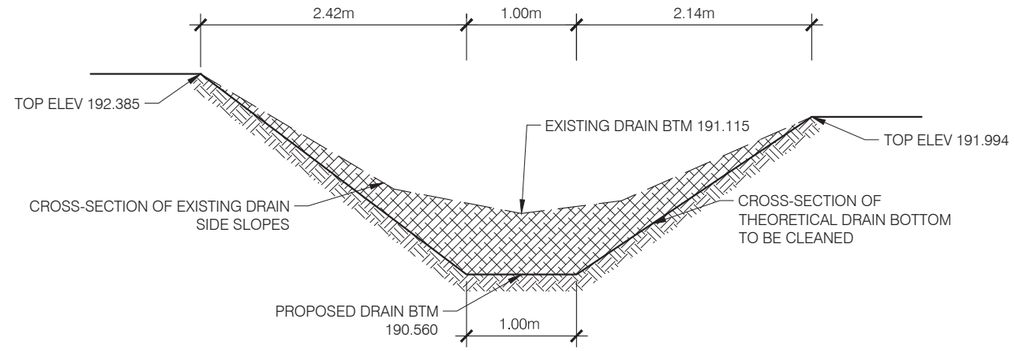
SHEET NO: 4

file no.



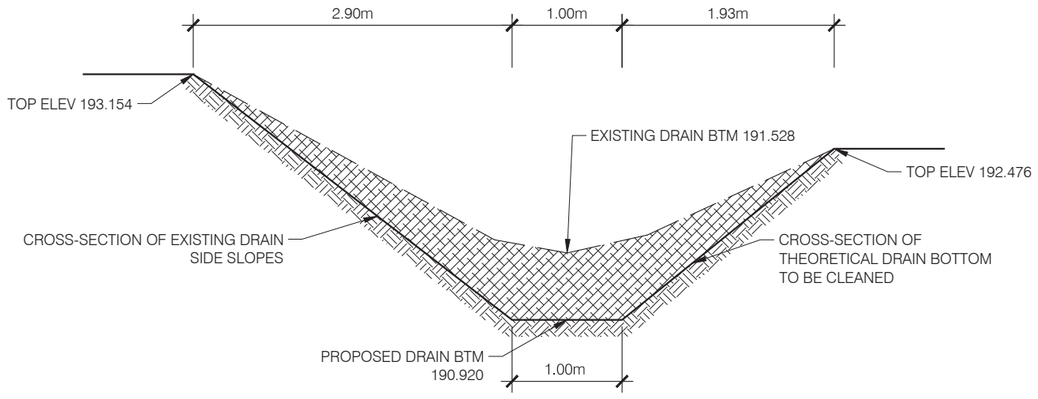
CROSS-SECTION @ STATION 0+300

SCALE 1:50



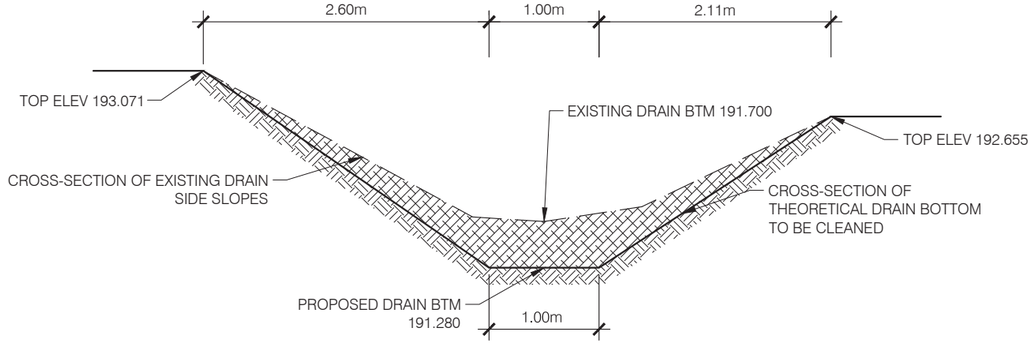
CROSS-SECTION @ STATION 0+600

SCALE 1:50



CROSS-SECTION @ STATION 0+900

SCALE 1:50



CROSS-SECTION @ STATION 1+200

SCALE 1:50

LICENSED PROFESSIONAL ENGINEER A.P. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P. PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER D. A. JOUDREY PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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N8H 2X8

EAST MCPHERSON DRAIN

TOWN OF TECUMSEH

SHEET TITLE: CROSS-SECTIONS

JUNE 17, 2014

SCALE: 1:50

DRAWN BY: T.Y

CHECKED BY: H.P.P.

13-093

SHEET NO: 5

file no.

Future Culvert Replacements

Culvert No.	Station	Length (m)	Diameter (mm)	Material	End of Pipe Protection	Invert	Slope
1	0+245.49 0+254.17	8.68	REMOVED FROM DRAIN AT OWNER'S REQUEST				
2	0+501.79 0+508.79	11.70	900	Boss 2000 320 kPa	Sloped gabion stone	190.352 (N) 190.366 (S)	0.12%
3	0+611.49 0+626.49	15.00	900	Boss 2000 320 kPa	Sloped gabion stone	190.484 (N) 190.502 (S)	0.12%
4	0+668.41 0+682.61	14.20	900	Boss 2000 320 kPa	Sloped gabion stone	190.552 (N) 190.569 (S)	0.12%
5	0+752.39 0+764.09	11.70	900	Boss 2000 320 kPa	Sloped gabion stone	190.660 (N) 190.674 (S)	0.12%
6	0+901.54 0+913.94	12.40	900	Boss 2000 320 kPa	Sloped gabion stone	190.832 (N) 190.847 (S)	0.12%
7	0+989.06 1+003.46	14.40	900	Boss 2000 320 kPa	Sloped gabion stone	190.937 (N) 190.955 (S)	0.12%
8	1+176.75 1+186.38		TO BE REMOVED FROM DRAIN UPON FAILURE				
9	1+210.72 1+228.12	18.00	600	Boss 2000 320 kPa	Sloped gabion stone	191.233 (N) 191.254 (S)	0.12%

NOTE: AT SUCH TIME THAT THE CULVERTS REQUIRE REPLACEMENT, WE WOULD RECOMMEND THAT THEY BE REPLACED IN ACCORDANCE WITH THE PROVISIONS LISTED IN SECTION 12.0 RECOMMENDATIONS OF THE ACCOMPANYING REPORT; IN CONSULTATION WITH AFFECTED LANDOWNERS; AND IN ACCORDANCE WITH THIS CHART, FUTURE CULVERT REPLACEMENTS.

LICENSED PROFESSIONAL ENGINEER A.P. PEARSON 100155996 17/04/11 PROVINCE OF ONTARIO

DATE: 27/04/15

HALLIDAY P. PEARSON, P.ENG

LICENSED PROFESSIONAL ENGINEER D. A. JOUDREY PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG

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PROJECT TITLE: EAST MCPHERSON DRAIN
TOWN OF TECUMSEH

SHEET TITLE: CULVERT REPLACEMENT DETAIL SHEET

DATE: JUNE 17, 2014
SCALE: N.T.S
DRAWN BY: T.Y
CHECKED BY: H.P.P.
PROJECT NO: 13-093
SHEET NO: 6

file no.

From: Cynthia Casagrande
Sent: June-16-17 10:24 AM
To: Laura Moy; Sam Paglia
Cc: 'halliday; don; Dan Jenner
Subject: East McPherson Drain - Notice of First Sitting of Court of Revision

Dear Laura and Sam:

This office acknowledges receipt of the Notice of First Sitting of Court of Revision scheduled for June 27, 2017 regarding the Repair and Improvement to the East McPherson Drain. Unfortunately, we are unable to attend this meeting.

We note that our comments contained in the email below are still applicable.

If further information or clarification is required, please do not hesitate to contact this office.

Yours truly,

Cynthia Casagrande
Regulations Coordinator
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex ON N8M 1Y6

From: Cynthia Casagrande
Sent: Wednesday, May 10, 2017 1:54 PM
To: 'lmoy; 'Sam Paglia'
Cc: Halliday Pearson; Don; Dan Jenner
Subject: East McPherson Drain - Notice of Reconsideration

Dear Laura and Sam:

This office acknowledges receipt of the Notice of Reconsideration Meeting scheduled for May 23, 2017 to consider the Final – Reconsideration Engineer's Report for the East McPherson Drain. Unfortunately, we are unable to attend this meeting.

This office has received a copy of the Final – Reconsideration Drainage Report prepared by Baird AE Engineering Project No. 13-093 for works to the East McPherson Drain. We have reviewed this information and find it acceptable. We will need an ERCA application for permit form and application fee of $800.00 for this project to proceed. Please forward this information and/or alternative direction at your earliest convenience.

If further information or clarification is required, please do not hesitate to contact this office.

Yours truly,

Cynthia Casagrande
Regulations Coordinator
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex ON N8M 1Y6

Essex Region Conservation Authority
sustaining the place for life
360 Fairview Ave. W., Essex, ON, N8M 1Y6, p: (519)776-5209, f: (519)776-8688, www.erca.org

APPLICATION FOR PERMIT

FOR DEVELOPMENT, INTERFERENCE WITH WETLANDS AND ALTERATION TO SHORELINES AND WATERCOURSES

☐ Section 28 - Conservation Authorities Act as amended ☐ Section 14 - Public Lands Act as amended	APPLICATION FEE	APPLICATION NUMBER

Applicant/Owner:

Name	Telephone
Complete Mailing Address - Street No. & Name, Town/City	Postal Code
E-mail Address	Cell #

Contractor/Agent: *(if applicable)*

Name	Telephone
Complete Mailing Address - Street No. & Name, Town/City	Postal Code

Location of Proposed Works:

Municipality	Waterway
Municipal Street Address	Legal Description: (Lot/Plan/Concession)

Proposed Works to be Undertaken **See Schedule "B" attached**

CONSTRUCTION OF BREAKWALL, DOCK, BOAT HOUSE/LAUNCH/RAMP etc.	
area: length: width:	OFFICE USE Floodproofing Elevation:
Construction Details:	

CONSTRUCTION OF A DWELLING, GARAGE, ADDITION, OTHER STRUCTURE	
area: length: width:	OFFICE USE Floodproofing Elevation:
Setback from Waterway:	
Drainage Details (*ie. side yard swales, retaining walls*):	

PLACEMENT & GRADING OF FILL	
Dimensions of area to be filled	length: width: depth:
Type of materials to be used	☐ sand ☐ earth ☐ gravel ☐ armour stone ☐ other
Erosion/silting prevention *(describe)*	

OTHER

Attach two (2) copies of plans depicting:
1) Location of property in relation to surrounding buildings, streets, roadways, etc. (*plot plan*)
2) Size, location and dimensions of property - all existing structures
3) Location, dimensions and elevation of all proposed structures, and fill
4) Elevation of any windows, doors, vents, or other exterior openings in relation to final grade

The above submission must be in complete final form before it will be scheduled for consideration by the Board of Directors. This application, if approved, does not preclude any approvals by any other existing laws and regulations. Any false or misleading statement contained in this application may result in withdrawal of any permit issued on the basis of this application.	Personal information on this form is collected under the authority of Conservation Authorities Act, RSO 1980, and will be used only by programme administration. Questions about the collection of personal information should be directed to: ERCA, 360 Fairview Avenue West, Essex, Ontario, N8M 1Y6

_____ _____

Applicant's Signature 146 Date