

Tuesday, July 25, 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 Rood Engineering Inc., dated June 1, 2017.

5. **DELEGATIONS**

6. **COMMUNICATIONS**

- a. Notice of First Sitting of the Court of Revision 2

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Re: Webster Drain - Pearce Bridge Replacement

7. **ADJOURNMENT**

June 28, 2017

**To: Affected Property Owners and Agencies**

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

Tecumseh Council at their meeting held on June 27, 2017, adopted the Drainage Report prepared by Gerard Rood of Rood Engineering Inc., dated June 1, 2017, for improvements to the Webster Drain (Report) by Provisional By-law No. 2017-46 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, July 25, 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](http://www.ontario.ca/drainage)

Laura Moy

Director, Corporate Services & Clerk



# THE CORPORATION OF THE TOWN OF TECUMSEH

## BY-LAW NUMBER 2017-46

Being a by-law to provide for the repair and improvements to the Webster 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 Webster Drain;

**AND WHEREAS** the Town procured a Drainage Report for the Webster Drain and specifications from the consulting engineering firm of Rood Engineering Inc., dated June 1, 2017 [Drainage Report];

**AND WHEREAS** notice of a Public Meeting to hear comments from the affected property owners was mailed on June 9, 2017;

**AND WHEREAS** a Public Meeting of Council was held on Tuesday, June 27, 2017, at 6:45 p.m. to hear from any affected property owners on the Drainage Report;

**AND WHEREAS** the Council of The Corporation of the Town of Tecumseh is of the opinion that the repair and improvement of the Webster 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 Drainage Report providing for the repair and improvement of the Webster Drain, dated June 1, 2017, as prepared by the consulting engineering firm Rood Engineering Inc. 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 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 27<sup>th</sup> day of June, 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

# WEBSTER DRAIN

E09WE(110)

Pearce Bridge Replacement

Geographic Township of Sandwich South

TOWN OF TECUMSEH



***Town of Tecumseh***  
***917 Lesperance Road***  
***Tecumseh, Ontario N8N 1W9***  
***519-735-2184***

***Rood Engineering Inc.***

***Consulting Engineers***  
***9 Nelson Street***  
***Leamington, Ontario N8H 1G6***  
***519-322-1621***

*REI Project 2016D058*  
*June 1st, 2017*



June 1st, 2017

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

Mayor McNamara and Members of Council:

**WEBSTER DRAIN E09WE(110)**  
**Replacement Bridge for Craig & Christine Pearce (410-00700)**  
**Geographic Twp. of Sandwich South**  
**REI Project 2016D058**  
**Town of Tecumseh, County of Essex**

## **I. INTRODUCTION**

In accordance with the instructions provided at your January 24th, 2017 meeting and received from the Town by letter dated March 14th, 2017, from Laura Moy, your Director Staff Services/Clerk, we have prepared the following report that provides for a replacement access bridge serving the agricultural lands owned by Craig and Christine Pearce, in the North Part of Lot 2, Concession 9, in the former geographic township of Sandwich South, Town of Tecumseh. The Webster Drain comprises of an open channel drain which generally runs westerly, starting at the 10th Concession Road, crossing the 9th and 8th Concession Roads, and Walker Road before extending to its outlet in the Merrick Creek. The drain was constructed pursuant to the Drainage Act. A plan showing the Webster Drain alignment, as well as the general location of the above-mentioned bridge, is included herein as part of the report.

Our appointment and the works relative to the construction of the above-mentioned replacement access bridge in the Webster Drain, proposed under this report, is in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2010". We have performed all of the necessary survey, investigations, etcetera, for the proposed bridge replacement installation, and we report thereon as follows.

## **II. BACKGROUND**

From our review of the information provided from the Town's drainage files we have established the following reports that we utilized as reference for carrying out this project:

- |    |                    |                     |                           |
|----|--------------------|---------------------|---------------------------|
| 1) | July 26th, 1983    | Webster Drain       | Maurice Armstrong, P.Eng. |
| 2) | January 7th, 2002  | Webster Drain       | Bruce D. Crozier, P.Eng.  |
| 3) | November 4th, 1967 | E.A. Sullivan Drain | C.G.R. Armstrong, P.Eng.  |
| 4) | December 22, 1992  | Mergl Drain         | Lou Zarlenga, P.Eng.      |

The 1983 report by Maurice Armstrong, P.Eng. provided for general repairs and improvements to the entire length of the drain and has the latest profile for the grading of the drain. Subsequent to said report there was a repair, improvement, and relocation report downstream of the proposed drainage works in 2002 by Bruce D. Crozier, P.Eng. The E.A. Sullivan Drain report prepared by C.G.R. Armstrong, P.Eng. in 1967, provided information for the subwatershed entering the Webster Drain downstream of the replacement access bridge location. The Mergl Drain report prepared by Lou Zarlenga, P.Eng. in 1992 provided information on the south watershed limits of the drain upstream of the replacement bridge.

We have utilized the plan and profile within the 1983 Maurice Armstrong, P.Eng. report to establish the size parameters for the drain and the details to be used in establishing the replacement bridge culvert installation. We have also used this Engineer's report to establish the drain profile grades, and to assist us in establishing the design grade for the subject replacement access bridge installation. The Maurice Armstrong and Crozier reports for the Webster Drain, the C.G.R. Armstrong report for the E.A. Sullivan Drain, and the Zarlenga report for Mergl Drain were used to establish the upstream watershed limits for design of the replacement bridge size and establishing the assessment schedule for the works. We also reviewed reports for the abutting drains and spoke to the owners to help in establishing the current watershed limit for the Webster Drain.

### **III. PRELIMINARY EXAMINATION AND ON-SITE MEETING**

After reviewing all of the drainage information provided by the Town, we arranged with the Town Drainage Superintendent Sam Paglia, P.Eng., to schedule an on-site meeting for March 8th, 2017. The following people were in attendance at said meeting: Shirley Wilson, Sam Paglia (Town Drainage Superintendent), and Gerard Rood (Rood Engineering).

Gerard Rood did an introduction of the purpose of the meeting. The Town has been alerted to the need for a bridge replacement. The owner was not present for the on-site meeting, however the owner present for the meeting was advised of the history of the drain as outlined above. They were also informed about the July 26th, 1983 report for the drain prepared by Maurice Armstrong, P.Eng.

Important design constraints and options were discussed through correspondence and telephone communication with Christine Pearce. Mrs. Pearce explained that a wider top driveway width was needed for safer access. With a hydro pole obstructing the possibility of extending the driveway southerly from the existing location, it was discussed that the relocation of the existing bridge to the centre of hydro poles two and three from the north property limit will allow for the extra driveway top width desired to be achieved. Additionally, end options were discussed through correspondence.

The owner was advised that the minimum standard top width for an access bridge is 6.1 metres (20 ft.) and that any extra length will be charged 100% to the land owner for construction and future maintenance. The owner requested a top width of 12.2 metres (40 ft.) for ease of access for equipment entering the agricultural lands. The owner was also advised that because the existing bridge is part of the drain, the entire cost of a standard replacement access bridge construction, as well as all the cost for the preparation of the Engineer's Report, will be shared between the affected Owner of the parcel served by the bridge and the upstream lands and roads. The sharing of cost will be as set out in the report. We went on to discuss that sloped quarried limestone on filter cloth ends for the installation is expected to be the most economical end treatment, but the Engineer would contact the owner to advise if there was any change to this. The owner was also advised that the bridge will be installed centred between hydro poles

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two and three from the north property limit which is south of the existing bridge with a minimum 12.2m (40 feet) top width as per their request. A standard 5 metre turning radius will be provided at the gravel shoulder to enhance access across the bridge.

The overall drainage report procedure, future maintenance processes and grant eligibility were generally reviewed with the owner. The owner was advised that because the Parcel is not designated Farm Property Tax Class Rate it is not grant eligible. It was discussed that owners may debenture the cost of \$5,000.00 or greater for the drainage work over a 5 year period to reduce the immediate cost burden of their assessment for the work.

The owner was also advised that the works will be subject to the approval of the Department of Fisheries and Oceans (D.F.O.), the Ministry of Natural Resources and Forestry (M.N.R.F.), and the Essex Region Conservation Authority (E.R.C.A.). We further discussed bridge maintenance, sizing, and use of aluminized steel material for the bridge installation.

#### **IV. FIELD SURVEY AND INVESTIGATIONS**

Following the on-site meeting we arranged for our survey crew to attend at the site and perform a topographic survey, including recording of necessary levels and details to establish the design parameters for the installation of the replacement bridge. We further arranged to get updated assessment roll information from the Town, and obtained information on the tax class of each of the properties affected by the Municipal Drain.

A bench mark was established from the July 26th, 1983 Maurice Armstrong, P.Eng. report, on the centreline of east curb of highway bridge under Snake Lane Road. This said benchmark was utilized in establishing a correlation between the old report and new survey for the bridge. We also surveyed the drain both upstream and downstream of the proposed replacement access bridge and picked up the existing bench mark and culvert elevations in order to establish a design grade profile for the installation of the replacement bridge. We also took cross-sections of the Webster Drain at the general location of the proposed replacement bridge, as necessary for us to complete our design calculations, estimates and specifications.

The Town made initial submissions to the Essex Region Conservation Authority (E.R.C.A.) regarding their requirements or any D.F.O. (Department of Fisheries and Oceans) requirements for work that would be proposed to be carried out on the Webster Drain. A response from the Conservation Authority was received by email on October 12th, 2016 and indicated that the Town must apply for a permit and follow standard mitigation requirements. We also reviewed the Town maps for fish and mussel species at risk for this Class F Drain and find that there are no species indicated in the vicinity of this project. A copy of the concerns and requirements to satisfy E.R.C.A. and D.F.O. is included in **Appendix "REI-A"** of this report.

We also arranged to review the Ministry of Natural Resources & Forestry (M.N.R.F.) Species at Risk (S.A.R.) former agreement made with the Town pursuant to the Endangered Species Act, 2007. The Agreement plans indicate that snake species are a concern for this work area and although turtles are not indicated, they are mobile and could be encountered. The Agreement includes mitigation measures to be followed as outlined in "Schedule C Mitigation Measures" of the former agreement document and a copy of same as it relates to turtles and snakes is included herein in **Appendix "REI-B"**.

For the purposes of establishing the watershed area upstream of the proposed bridge, and determining the pipe size required, we investigated and reviewed the Engineer Reports of Maurice Armstrong, P.Eng. and Bruce D. Crozier, P.Eng. on the Webster Drain, the C.G.R.

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Armstrong, P.Eng. report on the E.A. Sullivan Drain, and the Lou Zarlenga, P.Eng. report on the Mergl Drain, and their respective Schedules of Assessment.

#### **V. P.I.C. MEETING, DRAINAGE INFORMATION AND THE DRAINAGE ACT**

The Town scheduled a Public Information Centre (P.I.C.) meeting on May 30th, 2017. The meeting was attended by land owners Patricia and Craig Pearce, their site contractor Andy Germani, Sam Paglia (Town Drainage Superintendent), and Gerard Rood (Rood Engineering). Details of the work were discussed and it was established that the owners preferred a top width of 40 feet (12.2m) for easier access by trucks and trailers. They also requested that the replacement bridge be constructed further south along the drain to suit their development plans. The preferred location was established to be between the 2nd and 3rd hydro poles south of their north property limit. We discussed that any increase in costs due to the extra length and location change would be borne by the parcel being served by the access.

Timelines for submission of the final report and scheduling of the Consideration and Court of Revision meetings was discussed. Provided that there are no appeals, it is expected that construction may proceed in September. The tender process will establish the most cost effective price for the works. Contractors who wish to bid on the project must be able to provide the required bonds and insurance and meet the other Town requirements for procurement of services. It was pointed out that the drainage report only includes estimates of the cost for the drainage works and the final billings to the affected owners will be based on the actual final cost to complete the project and be assessed on a pro-rata basis with the values shown in the assessment schedule of the drainage report.

Owners are reminded that they have the opportunity to present their concerns to Council regarding the report details at the Consideration meeting and assessment questions at the Court of Revision meeting, along with appeal rights to the Ontario Ministry of Agriculture, Food and Rural Affairs (O.M.A.F.R.A.) Appeals Tribunal, and to the Drainage Referee as provided for in the Drainage Act.

The Drainage Act definitions and applicable clarifications are as follows:

“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 higher 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. Lands and roads that use a drainage works as an outlet, or for which, when the drainage works is constructed or improved, an improved outlet is provided either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek or watercourse, may be assessed for outlet liability. The assessment for outlet liability shall be based upon the volume and rate of flow of the water artificially caused to flow upon the injured land or road or into the drainage works from the lands and roads liable for such assessments. Every drainage works constructed under this Act shall be continued to a sufficient outlet.

Owners are advised that they have a legal responsibility to convey their drainage to a sufficient outlet. For this reason they have a share in the cost for upkeep of the drain downstream of their lands and this obligation is reflected in the assessment for Outlet Liability. Owners are reminded

that the responsibility for carrying out maintenance on a Municipal drain rests with the Town as set out in the Drainage Act. Any owner can notify the Town that the drain requires maintenance and the Town has to take action pursuant to the Act. This system is generally reactive and requires the property owners to raise their concerns and issues to the Town. Owners are reminded that keeping brush clear along their portion of the drain and having buffer strips provides them with a direct benefit of improved crop yield and preservation of topsoil on their lands. Owners have an Outlet Liability for the downstream portion of the drain. The owners are reminded that Municipal drainage is a communal project and basically a user pay system. As an example, when work is carried out on the Webster Drain downstream of the E.A. Sullivan Drain, the owners in the E.A. Sullivan Drain watershed that are outletting to the Webster Drain will be responsible for a portion of the cost, along with the other owners in the Webster Drain watershed upstream of the drainage works that is conducted. Owners are advised of the 1/3 grant available to agricultural lands that qualify for the Farm Property Tax Class and should be aware that the Town administers the grant process and reflects any available grant on the final billing to each qualified owner.

Owners may appeal their assessment as set out in the drainage report. They are advised that they should submit their appeal to the Court of Revision 10 days before the scheduled date of the meeting; however, the Court of Revision can agree to hear appeals presented at the meeting. If owners are still dissatisfied with the report after that meeting, they may submit an appeal to the O.M.A.F.R.A. Appeals Tribunal through the Town Clerk within 21 days of the closing of the Court of Revision pursuant to Section 54 of the Drainage Act.

The cost sharing for bridges is based on the location of same along the overall length of the drainage system. Each owner has the right for one access across each Municipal drain. The owner generally pays 100% of the cost for the first bridge installation and it becomes part of the drain when included in an engineer's report and is then to be maintained by the drain with costs shared as set out in the drainage report.

Owners should be aware that existing grass buffers and accesses will be protected and maintained as set out in the report specifications. Allowances are to offset damages to lands from the construction work and excavated material disposal. Owners are advised that the Contractor is responsible to remove any sticks and rocks (cobbles) etcetera from the spread materials and the Contractor is responsible to guarantee the work performed on the drain with a maintenance period of one year from the date of substantial completion.

## **VI. FINDINGS AND RECOMMENDATIONS**

We find that the profile included in the 1983 report plans by engineer Maurice Armstrong, P.Eng. provides a good fit to the existing profile of the drain. Said report provided for general repairs and improvements to the entire length of the drain that still appear to suit the current conditions of the watershed.

Based on our detailed survey, investigations, examinations, and discussions with the affected Owners and governing Authorities, we would recommend that bridge replacement works be carried out as follows:

- a) We recommend that all drain improvements, be carried out in accordance with the requirements established by E.R.C.A. and D.F.O. as set out in the documents within **Appendix "REI-A"** attached to this report.

- b) As this is an existing Municipal drain, and conditions have not changed and there is no information to indicate any new species concerns, the repair and improvement can be carried out based on the provisions included within the former Agreement that the Municipality had with M.N.R.F. and the mitigation measures included within same. A copy of said mitigation measures is included in **Appendix "REI-B"** within this report. We recommend that any work being completed shall be carried out in accordance with the **Schedule "C" Mitigation Plan** of the former agreement as included in **Appendix "REI-B"** for reference by the land owners, the Town of Tecumseh, and the Contractor who will be conducting the works.
- c) As provided for by Section 78 of the Drainage Act we recommend that the subject Pearce bridge located in the Webster Drain be repaired and improved as outlined further in this report including the specifications and the plans that form part of the report.
- d) We discussed with the bridge owners that the drain will need to be cleaned downstream of the new bridge to design grade to allow for a sufficient outlet for the new replacement 900mm H.D.P.E. pipe. The owners have accepted this and understand the excavated sediment materials will be spread onto their lands. Since all of the work will be carried out at the existing and proposed new driveway entrance, and within the Pearce Parcel, and because full drain restoration will be provided at the existing bridge, we find that there is no requirement for damages or allowances pursuant to Sections 29 and 30 of the Drainage Act.

Based on all of the above, we recommend that a new replacement access bridge be constructed in the Webster Drain to serve the farm lands of Craig & Christine Pearce, Parcel 410-00700 in Part of Lot 2, Concession 9, former geographic township of Sandwich South at MN 6950 9th Concession Road, Town of Tecumseh. We further recommend that all work shall be done in accordance with this report, the attached specifications and the accompanying drawings, and that all works associated with same be carried out in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2010".

## **VII. ESTIMATE OF COST**

Our estimate of the Total Cost of this work, including all incidental expenses, is the sum of **THIRTY ONE THOUSAND NINE HUNDRED DOLLARS (\$31,900.00)**, made up as follows:

### **CONSTRUCTION**

- Item 1) Provide all labour, equipment and material to construct a new replacement access bridge consisting of 20.0 metres (65.6 ft.) of 900mm diameter, 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe with wrap couplers; remove and dispose of existing pipe, deleterious material, and broken concrete headwalls forming the existing bridge; restore drain embankments and bottom to design grade at existing bridge location; clean to design grade approx. 120 metres of the drain downstream of the bridge new location (to the road crossing culvert); remove and dispose of existing brush, sod, and deleterious material at the new bridge; provide sloped quarried limestone on filter cloth end protection, granular bedding, Granular 'B' backfill, and Granular 'A' approaches; excavation, compaction, silt and sediment controls, quarried

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limestone on filter cloth protection, tile diversions and extensions as needed, cleanup and restoration, complete. (Pearce Bridge)	Lump Sum	\$	20,100.00
Net H.S.T. (1.76%) on Construction		\$	350.00
<b>TOTAL FOR CONSTRUCTION</b>		<b>\$</b>	<b>20,450.00</b>

**INCIDENTALS**

1) Report, Estimate, & Specifications		\$	3,500.00
2) Survey, Assistants, Expenses, and Drawings		\$	4,000.00
3) Duplication Cost of Report and Drawings		\$	800.00
4) Estimated Cost of Letting Contract		\$	1,000.00
5) Estimated Cost of Layout and Staking		\$	500.00
6) Estimated Cost of Part-Time Supervision and Inspection During Construction (based on 1 day duration)		\$	800.00
7) Net H.S.T. on Incidental Items Above (1.76%)		\$	190.00
8) Estimated Cost of Interim Financing		\$	200.00
9) Contingency Allowance		\$	460.00
<b>TOTAL FOR INCIDENTALS</b>		<b>\$</b>	<b>11,450.00</b>
<b>TOTAL FOR CONSTRUCTION (brought forward)</b>		<b>\$</b>	<b>20,450.00</b>
<b>TOTAL ESTIMATE</b>		<b>\$</b>	<b>31,900.00</b>

**VIII. DRAWINGS AND SPECIFICATIONS**

As part of this report, we have attached design drawings for the construction of the bridge replacement. The design drawings show the subject bridge location and the details of the work, as well as the approximate location within the watershed area. The design drawings are attached to the back of this report and are labelled **Appendix "REI-E"**.

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Also attached, we have prepared Specifications which set out the required construction details for the drain repair and improvements, which also include Standard Specifications labelled therein as **Appendix "REI-C"**.

#### **IX. CONSTRUCTION SCHEDULE OF ASSESSMENT**

We would recommend that the Total Cost associated with the construction of this replacement access bridge, including incidental costs, be charged against the affected lands and roads in the former geographic township of Sandwich South, Town of Tecumseh in accordance with the attached Schedule of Assessment.

On September 22nd, 2005, the Ontario Ministry of Agriculture, Food and Rural Affairs (O.M.A.F.R.A.) issued Administrative Policies for the Agricultural Drainage Infrastructure Program (A.D.I.P.). This program has re-instated financial assistance for eligible costs and assessed lands pursuant to the Drainage Act. Sections 85 to 90 of the Drainage Act allow the Minister to provide grants for various activities under said Act. Sections 85 and 87 make it very clear that grants are provided at the discretion of the Minister. Based on the current A.D.I.P., "lands used for agricultural purposes" may be eligible for a grant in the amount of 1/3 of their total assessment. The new policies define "lands used for agricultural purposes" as those lands eligible for the "Farm Property Class Tax Rate". The Town provides this information to the Engineer from the current property tax roll. Properties that do not meet the criteria are not eligible for grants. In accordance with same we expect that this project will be qualified for the grant normally available for agricultural lands. The Ministry however, is continually reviewing their policy for grants, and we recommend that the Town monitor the policies, and make application to the Ministry for any grant should same become available through the A.D.I.P. program or other available funds.

#### **X. FUTURE MAINTENANCE**

After the completion of the construction of this replacement access bridge, all of same shall be maintained in the future by the Town of Tecumseh.

Furthermore, if any maintenance work is required to the replacement access bridge in the future, we recommend that 73.0% of the future maintenance costs shall be assessed as a Benefit against the abutting property (Parcel 470-00700) being served by the access bridge, which is currently owned by Craig & Christine Pearce, in North Part of Lot 2, Concession 9, and the remaining balance of 27.0% be assessed against the affected upstream lands and roads based on prorating their Outlet Liability assessment in the attached Schedule of Assessment.

We recommend that the bridge structure as identified herein, be maintained in the future as part of the drainage works. We would also recommend that this access bridge in the drain, for which the future maintenance costs are to be borne by the abutting affected landowners and upstream lands and roads, be maintained by the Town and that said maintenance would include works to the bridge culvert, bedding, backfill and end treatment. Where concrete, asphalt or other decorative driveway surfaces over the bridge culvert requires removal as part of the maintenance works, these surfaces should also be repaired or replaced as part of the works. Likewise, if any fencing, gate, decorative walls, guard rails or other special features exist that will be impacted by the maintenance work, they are also to be removed and restored or replaced as part of the bridge maintenance work. However, the cost of the supply and installation of any surface material other than Granular "A" material, and the cost of removal and restoration or replacement, if necessary, of any special features, shall be totally assessed to the benefiting adjoining parcel served by said access bridge.

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We further recommend that the maintenance cost sharing as set out above shall remain as aforesaid until otherwise determined and re-established under the provisions of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2010".

All of which is respectfully submitted.

**Rood Engineering Inc.**



Gerard Rood, P.Eng.



att.

**Rood Engineering Inc.**

Consulting Engineers

9 Nelson Street

LEAMINGTON, Ontario N8H 1G6



**SCHEDULE OF ASSESSMENT**  
**WEBSTER DRAIN E09WE(110)**  
**(Bridge for Craig & Christine Pearce)**  
**TOWN OF TECUMSEH**

**3. MUNICIPAL LANDS:**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
		9th Concession Road	1.43	0.579	Town of Tecumseh	\$ -	\$ 259.00	\$ -	\$ 259.00
		10th Concession Road	4.01	1.623	Town of Tecumseh	\$ -	\$ 717.00	\$ -	\$ 717.00
<b>Total on Municipal Lands.....</b>						<b>\$ -</b>	<b>\$ 976.00</b>	<b>\$ -</b>	<b>\$ 976.00</b>

**4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-00500	9	Pt. Lot 2	0.37	0.150	Robert Nesbit	\$ -	\$ 47.00	\$ -	\$ 47.00
410-02530	9	Pt. Lot 1	0.49	0.198	Eleanor Mergl	\$ -	\$ 57.00	\$ -	\$ 57.00
<b>Total on Privately Owned - Non-Agricultural Lands.....</b>						<b>\$ -</b>	<b>\$ 104.00</b>	<b>\$ -</b>	<b>\$ 104.00</b>

**5. PRIVATELY OWNED - AGRICULTURAL LANDS (grantable):**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-02300	9	Pt. Lot 2	25.32	10.245	Randy & Phyllis Neels	\$ -	\$ 832.00	\$ -	\$ 832.00
410-02400	9	Pt. Lot 2	24.64	9.972	Gregory & Cheryl Markham	\$ -	\$ 810.00	\$ -	\$ 810.00
410-02500	9	Pt. Lot 2	23.68	9.584	William & Joanne Leon	\$ -	\$ 778.00	\$ -	\$ 778.00
410-02540	9	Pt. Lot 2	4.94	1.999	Mergl Seeds Ltd.	\$ -	\$ 163.00	\$ -	\$ 163.00

**Webster Drain E09WE(110) (Pearce Bridge)**

Town of Tecumseh

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-03600	10	Pt. Lot 2	25.01	10.120	Dwight & Jody Farough	\$ -	\$ 822.00	\$ -	\$ 822.00
410-03900	10	Pt. Lot 2	50.01	20.240	Iskandar El-Khoury	\$ -	\$ 1,643.00	\$ -	\$ 1,643.00
<b>Total on Privately Owned - Agricultural Lands (grantable).....</b>						<b>\$ -</b>	<b>\$ 5,048.00</b>	<b>\$ -</b>	<b>\$ 5,048.00</b>

**5. PRIVATELY OWNED - AGRICULTURAL LANDS (non-grantable):**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-00600	9	Pt. Lot 2	57.10	23.107	Royal Estate Golf Club Ltd.	\$ -	\$ 1,876.00	\$ -	\$ 1,876.00
410-00700	9	Pt. Lot 2	25.70	10.401	Craig & Christine Pearce	\$ 23,051.00	\$ 845.00	\$ -	\$ 23,896.00
<b>Total on Privately Owned - Agricultural Lands (non-grantable).....</b>						<b>\$ 23,051.00</b>	<b>\$ 2,721.00</b>	<b>\$ -</b>	<b>\$ 25,772.00</b>
<b>TOTAL ASSESSMENT</b>			242.70	98.217		<b>\$ 23,051.00</b>	<b>\$ 8,849.00</b>	<b>\$ -</b>	<b>\$ 31,900.00</b>

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1 Hectare = 2.471 Acres  
 Project No. REI2016D058  
 June 1st, 2017

## SPECIFICATIONS

### WEBSTER DRAIN E09WE(110)

#### Pearce Bridge Replacement

#### (Geographic Township of Sandwich South)

### TOWN OF TECUMSEH

#### **I. GENERAL SCOPE OF WORK**

The Contractor shall provide all material, labour, and equipment to construct a new replacement access bridge for the Pearce Parcel south of Municipal Number 6850 Concession Road 9 consisting of 20.0 metres (65.6 ft.) of 900mm diameter, 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe with wrap couplers in the Webster Drain. The drain is to be cleaned to design grade 3.0 metres upstream of the bridge and approximately 117 metres downstream to the road crossing bridge running under the 9th Concession Road with the excavated material spread on the abutting land. The new replacement access bridge shall be constructed so that the pipe is centred approximately between hydro poles two and three with respect to the north property limit, with the existing 100mm tile outlets abutting Parcel 700-00700 diverted and extended through the new quarried limestone end walls. This location shall be the exact designated location of this access bridge culvert unless otherwise directed by the property owner and the Town Drainage Superintendent, prior to the construction of same. Any changes to the location of the new access bridge must be approved in writing by the Engineer. The general layout of the access bridge and other ancillary work shall be provided as shown and detailed in the accompanying drawing attached within **Appendix "REI-E"**. A Bench Mark has been set near the proposed access bridge so that same can be utilized for the setting of the new bridge culvert invert grades. The **Bench Mark** is described in the detail plan for the bridge culvert installation along with its elevation.

All work shall be carried out in accordance with these specifications, the plans forming part of this drainage project, as well as the Standard Details included in **Appendix "REI-C"**. All work carried out under this project shall be completed to the full satisfaction of the Town Drainage Superintendent and the Engineer.

#### **II. E.R.C.A. AND D.F.O. CONSIDERATIONS**

The Contractor will be required to implement stringent erosion and sedimentation controls during the course of the work to help minimize the amount of silt and sediment being carried downstream and into the Merrick Creek Drain. It is intended that work on this project be carried out during relatively dry weather to ensure proper site and drain conditions and to avoid conflicts with sediment being deposited into the outlet drainage systems. All disturbed areas shall be restored as quickly as possible with grass seeding and mulching installed to ensure a protective cover and to minimize any erosion from the work site subsequent to construction. The Contractor may be required to provide temporary silt fencing and straw bales as outlined further in these specifications.

All of the work shall be carried out in accordance with any permits or authorizations issued by the Essex Region Conservation Authority (E.R.C.A.) or the Department of Fisheries and Oceans (D.F.O.), copies of which will be provided, if available. The standard mitigation response received from E.R.C.A. shall be followed and a copy of same is included within **Appendix “REI-A”**.

As part of its work, the Contractor will implement the following measures that will ensure that any potential adverse effects on fish and fish habitat will be mitigated:

- a) As per standard requirements, work will not be conducted at times when flows in the drain are elevated due to local rain events, storms, or seasonal floods. Work will be done in the dry.
- b) All disturbed soils on the drain banks and within the channel, including spoil, must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works. The spoil material must be hauled away and disposed of at a suitable site, or spread an appropriate distance from the top of the drain bank to ensure that it is not washed back into the drain.
- c) To prevent sediment entry into the Drain, in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and their Contractors to ensure that sediment and erosion control measures are functioning properly and are maintained and upgraded as required.
- d) Silt or sand accumulated in the barrier traps must be removed and stabilized on land once the site is stabilized.
- e) All activities including maintenance procedures should be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicular refuelling and maintenance should be conducted away from the water.

### **III. M.N.R.F. CONSIDERATIONS**

The Contractor is to note that this project has gone through the Ministry of Natural Resources and Forestry (M.N.R.F.) screening process by way of a Species at Risk (S.A.R.) former Municipal Agreement review. A copy of the relevant information that was provided in the Agreement applicable to this work is included herein as part of **Appendix “REI-B”**.

The Contractor is to review **Appendix “REI-B”** in detail and is required to comply, in all regards, with the contents of said M.N.R.F. information, or any future requirements, and follow the special requirements therein included, during construction.

Notwithstanding the above, the Contractor is advised that the Town had a signed **Agreement** with the Ministry of Natural Resources and Forestry (M.N.R.F.) regarding the maintenance operations on Municipal drains and the Endangered Species Act (E.S.A.) 2007. We have reviewed the endangered species maps and any concerns will be provided in **Appendix “REI-B”**. Certain species such as turtles and snakes are mobile and may be encountered during construction. Therefore, the **“SCHEDULE C MITIGATION PLAN”** of the former **Agreement** (pages 13 through 23) has been included in **Appendix “REI-B”** in its entirety for further information and use by the Contractor.

The Contractor shall contact the Drainage Superintendent if an endangered species is encountered during construction. The Contractor shall be responsible for providing the necessary equipment and materials outlined in the “**SCHEDULE C MITIGATION PLAN**” to address the handling of any endangered species encountered during the course of the construction work. The Contractor shall cooperate fully and assist the Drainage Superintendent or M.N.R.F. staff in the proper handling of the endangered species as outlined in the “**MITIGATION PLAN**”, and as may be further directed by the Drainage Superintendent or the M.N.R.F., and shall govern all its operations accordingly.

#### **IV. BRIDGE CONSTRUCTION**

When completed, the new replacement access bridge along the centreline of the new culvert shall have a total top width, including the top width of the quarried limestone on filter cloth end walls, of approximately 13.40 metres (44.0ft.) and a travelled driveway width of 12.3 metres (40.4 ft.). The quarried limestone on filter cloth end wall protection shall be installed on a slope no steeper than 1.5 horizontal to 1.0 vertical, and shall extend from the end of the new 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe to the top elevation of the driveway.

The 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe to be provided for this project is to be supplied as no more than three (3) approximately equal lengths of pipe for the bridge, which are to be coupled together with the use of a wrap coupler, secured in accordance with the manufacturer’s recommendations. Under no circumstance shall the access culvert for the bridge be provided with more than three (3) lengths of pipe. The 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe to be utilized for this bridge installation must have a C.S.A. stamp and be approved by the Town Drainage Superintendent or Engineer, prior to its placement in the drain.

The Contractor shall also note that the placement of the new access bridge culvert is to be performed totally in the dry, and it shall be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Town Drainage Superintendent or Engineer. As part of the work, the Contractor will be required to clean out the drain to design grade along the full length of the bridge pipe and for a distance of 3.05 metres (10.0 ft.) upstream and 117.0 metres (383.9 ft.) downstream of said pipe. Additionally, the drain banks and bottom must be restored to proper slopes and grade where the existing bridge is removed for relocation. The design parameters of the Webster Drain at the location of this new access bridge installation consists of a 0.91m (3.0 ft.) bottom width, 0.05% grade, and 1.5 horizontal to 1.0 vertical sideslopes. The Contractor shall be required to cut any brush and strip the existing drain sideslopes of any vegetation as part of the grubbing operation at the relocated bridge site. The Contractor shall also be required to dispose of all excavated and deleterious materials, as well as any grubbed out materials from this work, to a site to be obtained by it at its own expense. The Contractor shall note that the survey indicates that the existing drain bottom is well above the design grade. The Contractor shall be required to provide any and all labour, material and equipment to set the pipe to the required design grades. The Contractor shall also be required to supply, if necessary for a solid base, a minimum thickness of 150mm (6”) of 20mm (3/4”) clear stone bedding underneath the culvert pipe, extending from the bottom of the excavation to the culvert invert grade, all to the full satisfaction of the Town Drainage Superintendent or Engineer. Downstream to the north of the new location of the replacement bridge, the Contractor shall clean out the drain bottom to the design grade noted as far as the road crossing pipe. The excavated material shall be placed on the adjacent Pearce lands in a windrow or spread out as established with the Drainage Superintendent and the owners. Fill material shall not block any low areas or furrows currently entering the drain.

The installation of the complete length of the new access bridge culvert, including all appurtenances, shall be completely inspected by the Town Drainage Superintendent or Engineer prior to backfilling any portions of same. Under no circumstance shall the Contractor backfill same until the Town Drainage Superintendent or Engineer inspects and approves said pipe installation. The Contractor shall provide a minimum notice of 2 working days to the Town Drainage Superintendent or Engineer prior to the commencement of this work. The installation of this new access bridge is to be performed during the normal working hours from Monday to Friday of the Town Drainage Superintendent or Engineer.

Once the 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe has been satisfactorily set in place at the site, the Contractor shall completely backfill same with granular material M.T.O. Type “B” O.P.S.S. (Ontario Provincial Standard Specification) Form 1010, with the exception of the top 305mm (12”) of the backfill material for the full top width of the drain and the access bridge, which shall be granular material M.T.O. Type “A” O.P.S.S. Form 1010. The Contractor shall secure the pipe ends against floating. The end slopes of the backfill material over the 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe from the invert of said pipe to the top of driveway elevation shall be quarried limestone on filter cloth erosion protection. The end walls shall be extended around onto the drain banks in line with the end of the replacement pipe, all as shown on the plans included in **Appendix “REI-E”**.

The Contractor shall also perform the necessary excavation from the west bank of the drain to the east limit of the roadway pavement to relocate the driveway southerly. This driveway approach from the existing edge of gravel shoulder to approximately the west top of bank shall consist of a minimum of 305mm (12”) of granular material M.T.O. Type “A” satisfactorily compacted in place. The gravel apron shall extend for the full width of the access culvert top, and include a gore section at the roadside curved protection with a 5.0m radius to the edge of the roadway shoulder, as shown on the plans. The gravel backfill shall also extend across the pipe to approximately 1m beyond the east top of bank as shown on the plans. The pipe shall have a minimum of 1.20m of cover, and then be graded down to the existing field level at a maximum of 10% grade.

Once the new 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe has been set in place at the required location, the Contractor shall completely backfill same with granular material, and install the quarried limestone on filter cloth protection on both ends of the bridge. The installation of the endwalls, as well as the backfilling of the pipe where applicable, shall be provided in compliance with Items 2), 3), and 4) of the "**Standard Specifications for Access Bridge Construction**" attached within **Appendix "REI-C"** and in total compliance and in all respects with the General Conditions included in Item 4) of said Appendix. The Contractor, in all cases, shall comply with these specifications and upon completion of the sloped quarried limestone end protection installation shall restore the adjacent areas to their original conditions.

The 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe for this installation shall be provided with a depth of cover measured from the top of the H.D.P.E. pipe to the top of the granular backfill of approximately 1.20m (47.2”) for the new bridge and if the culvert is placed at its proper elevations, this should be easily achieved. If the Contractor finds that the specified cover is not being met, they shall notify the Drainage Superintendent and the Engineer immediately so that steps can be taken to rectify the condition prior to the placement of any backfill. The cover requirement is **critical** and must be attained. In order for this new access bridge culvert to properly fit the channel parameters, all of the design grade elevations provided below must be strictly adhered to.

Also, for use by the Contractor, we have established a Bench Mark near the site. This Bench Mark is the “*west obvert of 1200mm diameter CSP on Webster Drain crossing 9th Concession Road fronting MN 6950*”, with same being **Elevation 54.862 metres**. The new pipe culvert and the backfilling are to be placed on the following basis:

- i) The **south (upstream) invert** of the proposed bridge culvert is to be set at Elevation **53.767** metres.
- ii) The north (**downstream) invert** of the proposed bridge culvert is to be set at Elevation **53.757** metres.
- iii) The centreline of driveway for this bridge installation shall be set to approximately Elevation **56.091** metres at the existing pavement edge, Elevation **55.961** metres at the culvert pipe centreline, and Elevation **55.778** metres at approximately 1 metre east of the east top of bank to match to the existing field grade. The access bridge driveway, in all cases, shall be graded with a cross-fall from the centreline of the driveway to the outer edges of the driveway at an approximate grade of 1.50%.

As a check, all of the above design grade elevations should be confirmed before commencing to the next stage of the new access bridge installation. The Contractor is also to check that the pipe invert grades are correct by referencing the Bench Mark provided for the site.

The Contractor shall also be required to provide all labour, equipment and material to provide granular fill to all gore areas at the road as noted on the plans. The Contractor shall provide a 5.0 meter radius on each side of the entrance and protect any existing landscape features during the course of the work.

As part of the work provided for the construction of the access bridge, the Contractor shall be required to protect or extend any existing lateral tile ends which conflict with the bridge installation. All existing lateral tile drains, where required, shall be diverted and extended to the ends of the new access bridge culvert and shall be extended and installed in accordance with the “Standard Lateral Tile Detail” as shown in **Appendix “REI-C”**, unless otherwise noted. Connections shall be made using manufacturer’s couplers wherever possible. All other connections shall be completely sealed with concrete grout around the full exterior perimeter of each joint.

The Contractor is to note that the granular driveway approaches extending from the east edge of roadway pavement to the west top of bank of the drain shall consist of granular material M.T.O. Type “A” O.P.S.S. Form 1010 and is to be provided to a minimum depth of 305mm (12”), and be satisfactorily compacted in place. The Contractor is to also note that all granular material being placed as backfill for this bridge installation shall be compacted in place to a minimum Standard Proctor Density of 98%, and that all native fill material to be used for the construction shall be compacted in place to a minimum Standard Proctor Density of 96%.

All of the granular backfill, native fill, and the compaction levels for same shall be provided to the full satisfaction of the Town Drainage Superintendent or the Engineer. The Contractor shall also note that any sediment being removed from the drain bottom as previously specified herein, shall not be utilized for the construction of the driveway, and shall be disposed of by the Contractor to a site to be obtained by it at its own expense.

The Contractor shall be required to restore any and all drain sideslopes damaged by the access bridge installation, utilizing the available scavenged topsoil, and shall seed and mulch over all of said areas.

The placing and grading of any topsoil shall be carefully and meticulously carried out in accordance with Ontario Provincial Standard Specifications, Form 802 dated November 2010, or as subsequently amended, or as amended by these specifications and be readied for the seeding and mulching process. The seeding and mulching of all of the above mentioned areas shall comply in all regards to Ontario Provincial Standard Specifications, Form 803 dated November 2010 and Form 804, dated November 2013, or as subsequently amended, or as amended by these specifications. The seeding mixture shall be the Standard Roadside Mix (Canada No. 1 Lawn Grass Seed Mixture) as set out in O.P.S.S. 804. All cleanup and restoration work shall be performed to the full satisfaction of the Town Drainage Superintendent or Engineer.

When all of the work for this installation has been completed, the Contractor shall ensure that positive drainage is provided to all areas, and shall ensure that the site is left in a neat and workmanlike manner, all to the full satisfaction of the Town Drainage Superintendent or Engineer.

The Contractor shall ensure that the traveling public is protected at all times while utilizing the roadway for its access. The Contractor shall provide traffic control, including flag persons when required.

Throughout the course of the work it is imperative that the Contractor protect as much landscaping and vegetation as possible when accessing along the drain. Any accesses or areas used in carrying out the works are to be fully restored to their original conditions by the Contractor at its cost, including topsoil placement and lawn restoration as directed by the Town Drainage Superintendent and the Consulting Engineer. Restoration shall include but not be limited to all necessary levelling, grading, shaping, topsoil placement, seeding, mulching, and granular placement required to make good any damage caused.

#### **V. REMOVAL OF BRUSH, TREES AND RUBBISH**

Where there is any brush, trees or rubbish along the course of the drainage works from top of bank to top of bank, including the full width of the work access, all such brush, trees or rubbish shall be close cut and grubbed out, and the whole shall be chipped up for recycling, burned or otherwise satisfactorily disposed of by the Contractor. The brush and trees removed along the course of the work are to be cut as close to the ground as practical and within the drain banks parallel to the sideslopes. Except as noted herein, stumps shall be left in place and shall be sprayed with a single application of stump killer (Diphenoprop BK700 or approved equal). All removed materials shall be put into piles by the Contractor in locations adjacent to the drain and within the working corridors, where they can be safely chipped and disposed of, or burned by it, or hauled away and disposed of by the Contractor to a site to be obtained by it at its expense. In all cases, trees and brush shall be stockpiled on the property on which they were cut. Prior to and during the course of any burning operations, the Contractor shall comply with the guidelines prepared by the Air Quality Branch of the Ontario Ministry of the Environment, and shall ensure that the Environmental Protection Act is not violated. The Contractor shall assume all responsibility for control of the burn, obtaining all utility locates in the area of each burn site, all responsibility for liabilities related to the burning of the brush and smoke generated, and will be required to notify the local fire authorities to obtain any permits and co-operate with them in the carrying out of any work. All work shall be carried out in conformance with the Town by-laws for

same as attached to these specifications in **Appendix “REI-D”**. The removal of brush and trees shall be carried out in close consultation with the Town Drainage Superintendent or Engineer to ensure that no decorative trees or shrubs are disturbed by the operations of the Contractor that can be saved. It is the intent of this project to save as many trees and bushes as practical on private lands adjacent to the drain and within the working corridors, especially mature trees beyond the drain sideslopes. The landowners will be requested to mark trees that they wish to save if possible and the Contractor shall review the removal of trees with the Drainage Superintendent or Engineer.

The Contractor shall protect all other trees, bushes, and shrubs located along the length of the drainage works except for those trees that are established, in consultation with the Town Drainage Superintendent, the Engineer, and the landowners, to be removed as part of the works. The Contractor shall note that protecting and saving the trees may require the Contractor to carry out hand work around the trees, bushes, and shrubs to complete the necessary final site grading and restoration.

Following the completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which are to remain standing, and it shall dispose of said branches along with other brush, thus leaving the trees in a neat and tidy condition.

The Contractor shall remove all deleterious materials and rubbish along the course of the open drain and any such materials located in the bridge culvert while carrying out its cleaning of same. All such deleterious materials and rubbish shall be loaded up and hauled away by the Contractor to a site to be obtained by it at its cost.

## **VI. FENCING**

Where it is necessary to take down any fence 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 located. The Contractor will be required to exercise extreme care in the removal of any fencing so as to cause a minimum of damage to 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 that it has used reasonable care in the removal and replacement of same. When 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.

## **VII. GENERAL QUARRIED LIMESTONE EROSION PROTECTION**

The quarried limestone erosion protection shall be embedded into the sideslopes of the drain a minimum thickness of 305mm and shall be underlain in all cases with non-woven synthetic filter mat. The filter mat shall not only be laid along the flat portion of the erosion protection, but also contoured to the exterior limits of the quarried limestone and the unprotected slope. The width of the general erosion protection shall be as established in the accompanying drawings or as otherwise directed by the Town Drainage Superintendent or the Engineer during construction. In placing the erosion protection the Contractor shall carefully tamp the quarried limestone pieces into place with the use of the equipment bucket so that the erosion protection when completed will be consistent, uniform and tightly laid. In no instance shall the quarried limestone protrude

beyond the exterior contour of the unprotected drain sideslopes along either side of said protection. The synthetic filter mat to be used shall be non-woven geotextile GMN160 conforming to O.P.S.S. 1860 Class I, as available from Armtec Construction Products, or equal. The quarried limestone to be used shall be graded in size from a minimum of 100mm to a maximum of 250mm, and is available from Walker Industries Amherstburg Quarry, in Amherstburg, Ontario, or equal.

### **VIII. BENCH MARKS**

Also, for use by the Contractor, we have established a Bench Mark along the course of the work at the west obvert of the 1200mm diameter C.S.P. on the Webster Drain crossing the 9th Concession Road fronting MN 6950, as shown on the plans. The Contractor shall work with the Drainage Superintendent or Engineer to transfer the bench mark as necessary to be used in setting the drain and pipe design grades.

In all cases, the Contractor is to utilize the specified bench mark and drain grades to control its work. The Contractor shall ensure that it takes note of the direction of flow and sets all grades to assure that all flows go northerly to match the direction of flow within the drain. The drain bottom design elevation is 10% of the pipe diameter above the replacement pipe invert at the north end of the pipe, being 90mm for the proposed replacement pipe, and has a grade of 0.05% bottom slope.

### **IX. ANCILLARY WORK**

During the course of any work to the replacement bridge access, the Contractor will be required to protect or extend any existing tile ends or swales and connect them to the drainage works to maintain the drainage from the adjacent lands. All existing tiles shall be extended utilizing solid Big 'O' "standard tile ends" or equal plastic pipe of the same diameter as the existing tile and shall be installed in accordance with the "**Standard Lateral Tile Detail**" included in the plans, unless otherwise noted. Connections shall be made using a manufactured coupling where possible. For other connections, the Contractor shall utilize a grouted connection. Grouted mortar joints shall be composed of three (3) parts of clean, sharp sand to one (1) part of Portland cement with just sufficient water added to provide a stiff plastic mix, and the mortar connection shall be performed to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The mortar joint shall be of a sufficient mass around the full circumference of the joint on the exterior side to ensure a tight, solid seal. The Contractor is to note that any intercepted pipes along the length of the existing culverts are to be extended and connected to the open drain unless otherwise noted in the accompanying drawings.

The Contractor shall re-grade the existing swales to allow for the surface flows to freely enter the drain. Any disturbed grass areas shall be fully restored with topsoil, seed and mulch.

Although it is anticipated that the bridge work on-site shall be undertaken in the dry, the Contractor shall supply and install a temporary straw bale check dam in the drain bottom immediately downstream of each bridge site during the time of construction. The straw bale check dam shall be to the satisfaction of the Town Drainage Superintendent or the Engineer and must be removed upon completion of the construction. The straw bales may be reused at each site subject to their condition. All costs associated with the supply and installation of this straw bale check dam shall be included in the cost bid for the bridge repair and improvement.

**X. TOPSOIL, SEED AND MULCH**

The Contractor will be required to protect grass buffers and driveway accesses along the top of the drain bank where they currently exist. Where any of these are damaged, they shall be fully restored including placement of topsoil. The topsoil shall be prepared for seeding as noted further in these specifications. Should the existing topsoil be treated to prevent grass growth, the Contractor shall strip the existing topsoil material back and spread it on the adjacent field and supply 50mm thick imported topsoil, or topsoil material scavenged from the drain banks at rock protection locations, that is suitable for growing grass.

The placing and grading of any topsoil shall be carefully and meticulously carried out in accordance with Ontario Provincial Standard Specifications, Form 802 dated November 2010, or as subsequently amended, or as amended by these specifications and be readied for the seeding and mulching process. The seeding and mulching of all of the above mentioned areas shall comply in all regards to Ontario Provincial Standard Specifications, Form 803 dated November 2010 and Form 804, dated November 2013, or as subsequently amended, or as amended by these specifications. The seeding mixture shall be the Standard Roadside Mix (Canada No. 1 Lawn Grass Seed Mixture) as set out in O.P.S.S. 804. All cleanup and restoration work shall be performed to the full satisfaction of the Town Drainage Superintendent or Engineer.

All of the work relative to the placement of topsoil and the seeding and mulching operation shall be meticulously done and completed in a good and workmanlike manner all to the full satisfaction of the Town Drainage Superintendent and the Engineer.

**XI. GENERAL CONDITIONS**

- a) The Town Drainage Superintendent or Consulting Engineer shall have authority to carry out minor changes to the work where such changes do not lessen the efficiency of the work.
- b) The Contractor shall satisfy itself as to the exact location, nature and extent of any existing structure, utility or other object which it may encounter during the course of the work. The Contractor shall indemnify and save harmless the Town of Tecumseh, and the Consulting Engineer and their representatives for any damages which it may cause or sustain during the progress of the work. It shall not hold the Town of Tecumseh or the Consulting Engineer liable for any legal action arising out of any claims brought about by such damage caused by it.
- c) The Contractor shall provide a sufficient number of layout stakes and grade points so that the Drainage Superintendent and Consulting Engineer can review same and check that the work will generally conform to the design and project intent.
- d) The Contractor will be responsible for any damage caused by it 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 the road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any part of the travelled portion of the road is damaged by the Contractor, the Town 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 Town. The Contractor, upon completing the works, shall clean all debris and junk, etcetera, from the roadside of the drain, and leave the site in a neat and workmanlike manner. The Contractor shall be responsible for keeping all public roadways utilized for hauling materials free and clear of mud and debris.
- e) The Contractor shall provide all necessary lights, signs, and barricades to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. If traffic control is required on this project, signing is to comply with the M.T.O. Manual of Uniform Traffic Control Devices (M.U.T.C.D.) for Roadway Work Operations and Ontario Traffic Manual Book 7.
  - f) During the course of the work the Contractor shall be required to connect existing drainage pipes to the Municipal Drain. In the event that polluted flows are discovered, the Contractor shall delay the connection of the pipe and leave the end exposed and alert the Town, the Drainage Superintendent and the Consulting Engineer so that steps can be taken by the Town to address the concern with the owner and the appropriate authorities. Where necessary the Contractor shall cooperate with the Town in providing temporary measures to divert the drain or safely barricade same. Should the connection be found acceptable by the authorities, the Contractor shall complete the connection of the drain as provided for in the specifications, at no extra cost to the project.
  - g) Following the completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which are to remain standing, and it shall dispose of said branches along with other brush, thus leaving the trees in a neat and tidy condition.
  - h) The whole of the work shall be satisfactorily cleaned up, and during the course of the construction, no work shall be left in any untidy or incomplete state before subsequent portions are undertaken.
  - i) All driveways, laneways and access bridges, or any other means of access on to the job site shall be fully restored to their former condition at the Contractor's expense. Before authorizing Final Payment, the Town Drainage Superintendent and the Consulting Engineer shall inspect the work in order to be sure that the proper restoration has been performed. In the event that the Contractor fails to satisfactorily clean up any portion of these accesses, the Consulting Engineer shall order such cleanup to be carried out by others and the cost of same be deducted from any monies owing to the Contractor.
  - j) The Contractor will be required to submit to the Town a Certificate of Good Standing from the Workplace Safety and Insurance Board prior to the commencement of the work. The Contractor will also be required to submit to the Town a Certificate of Clearance for the project from the Workplace Safety and Insurance Board before Final Payment is made to the Contractor.
  - k) The Contractor shall furnish a Performance and Maintenance Bond along with a separate Labour and Material Payment Bond within ten (10) days after notification of the execution of the Agreement by the Owner. One copy of said bonds shall be bound into each of the executed sets of the Contract. Each Performance and Maintenance Bond and Labour and Material Payment Bond shall be in the amount of 100% of the total Tender Price. All Bonds shall be executed under corporate seal by the Contractor and a surety company, authorized by law to carry out business in the Province of Ontario. The Bonds shall be acceptable to the

Owner in every way and shall guarantee faithful performance of the contract during the period of the contract, including the period of guaranteed maintenance which will be in effect for twelve (12) months after substantial completion of the works.

The Tenderer shall include the cost of bonds in the unit price of the Tender items as no additional payment will be made in this regard.

- l) The Contractor shall be required, as part of this Contract, to provide Comprehensive Liability Insurance coverage for not less than \$2,000,000.00 on this project, and shall name the Town of Tecumseh and its officials, and the Consulting Engineer and its staff as additional insured under the policy. The Contractor must submit a copy of this policy to both the Municipal Clerk and the Consulting Engineer prior to the commencement of work.
- m) Monthly progress orders for payment shall be furnished the Contractor by the Town Drainage Superintendent. Said orders shall be for not 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 and payment shall not be authorized until the Contractor provides the following:
  - i) a Certificate of Clearance for the project from the Workplace Safety and Insurance Board
  - ii) proof of advertising
  - iii) a Statutory Declaration, in a form satisfactory to the Consulting Engineer and the Town, that all liabilities incurred by the Contractor and its Sub-Contractors in carrying out the Contract have been discharged and that all liens in respect of the Contract and Sub-Contracts thereunder have expired or have been satisfied, discharged or provided for by payment into Court.

The Contractor shall satisfy the Consulting Engineer or Town that there are no liens or claims against the work and that all of the requirements as per the Construction Lien Act, 1983 and its subsequent amendments have been adhered to by the Contractor.

- n) In the event that the Specifications, Information to Tenderers, or the Form of Agreement do not apply to a specific condition or circumstance with respect to this project, the applicable section or sections from the Canadian Construction Documents Committee CCDC2 shall govern and be used to establish the requirements of the work.



## APPENDIX "REI-A"



Gmail

Gerard Rood &lt;gerard.reinc@gmail.com&gt;

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**FW: Webster Drain - Notice of On-Site Meeting - E09WE(110)**

1 message

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**Cynthia Casagrande** <CCasagrande@erca.org>

Wed, Mar 8, 2017 at 11:05 AM

To: Sam Paglia &lt;spaglia@tecumseh.ca&gt;

Cc: "Imoy@tecumseh.ca" &lt;Imoy@tecumseh.ca&gt;, Gerard Rood &lt;gerard@roodengineering.ca&gt;, Dan Jenner &lt;DJenner@erca.org&gt;

Dear Sam:

This office has received the Notice of On-Site Meeting scheduled for today, March 08, 2017 regarding the proposed repair and maintenance to the Webster Drain. Unfortunately, we are unable to attend this meeting.

We note that the 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

(519) 776-5209, Ext. 349

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**From:** Cynthia Casagrande**Sent:** Wednesday, October 12, 2016 10:23 AM**To:** 'Sam Paglia' <spaglia@tecumseh.ca>**Cc:** 'Gerard Rood' <gerard@roodengineering.ca>; 'pbartnik@tecumseh.ca' <pbartnik@tecumseh.ca>; Dan Jenner <DJenner@ERCA.org>**Subject:** Webster Drain - Notice of Request for Repair and Improvement - E09WE(110)

Dear Sam:

Your File No.: E09WE(110)

This office acknowledges receipt of the Notice of Request for Repair and Improvement to the Webster Drain.

A review of our floodplain mapping for the Webster Drain indicates that this drain is located within an area that is under the jurisdiction of the Essex Region Conservation Authority (ERCA) (Section 28 of the *Conservation Authorities Act*). Prior to undertaking works, a permit is required from this office.

At this time, we do not expect that there will be any extraneous comments or concerns with respect to this project. However, we cannot be more specific in this regard without an actual proposal to review.

With respect to Department of Fisheries and Oceans (DFO) concerns and comments, the proposed works to the Webster Drain will need to be self-assessed by you, the proponent, through the DFO website at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>. Through the self-assessment process, you will be able to determine if these works require a formal authorization under the *Fisheries Act*.

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

(519) 776-5209, Ext. 349

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**From:** Sam Paglia [<mailto:spaglia@tecumseh.ca>]

**Sent:** Thursday, October 6, 2016 9:43 AM

**To:** Cynthia Casagrande <[CCasagrande@erca.org](mailto:CCasagrande@erca.org)>

**Cc:** Gerard Rood <[gerard@roodengineering.ca](mailto:gerard@roodengineering.ca)>; John Henderson <[JHenderson@erca.org](mailto:JHenderson@erca.org)>; Phil Bartnik <[pbartnik@tecumseh.ca](mailto:pbartnik@tecumseh.ca)>

**Subject:** E09WE(110) - 2016-10-06-Webster Drain

Good morning Cynthia,

Please find attached, a letter notifying ERCA of expected drainage improvements to the Webster Drain.

A map of the Drain, the Request for Improvement form and a parcel information report are also attached for reference.

A hard copy of the letter will be sent to you by regular mail.

If there is any other information that you may require in order to advise on this project, please advise.

Kindest Regards,

Sam Paglia, P.Eng.

Drainage Superintendent

The Corporation of the Town of Tecumseh

Phone (519) 735-2184 - Ext 105

Fax (519) 735-6712

Cell (519) 818-0101

[www.tecumseh.ca](http://www.tecumseh.ca)

[spaglia@tecumseh.ca](mailto:spaglia@tecumseh.ca)

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 **Sam Paglia**  
**Drainage Superintendent/Engineering Technologist**  
[spaglia@tecumseh.ca](mailto:spaglia@tecumseh.ca)  
Town of Tecumseh - - Tecumseh, ON. - N8N1W9  
Phone: Fax: - [www.tecumseh.ca](http://www.tecumseh.ca)

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# Measures to Avoid Causing Harm to Fish and Fish Habitat

If you are conducting a project near water, it is your responsibility to ensure you avoid causing [serious harm to fish](#) in compliance with the *Fisheries Act*. The following advice will help you avoid causing harm and comply with the *Act*.

**PLEASE NOTE:** This advice applies to all project types and replaces all “Operational Statements” previously produced by DFO for different project types in all regions.

## Measures

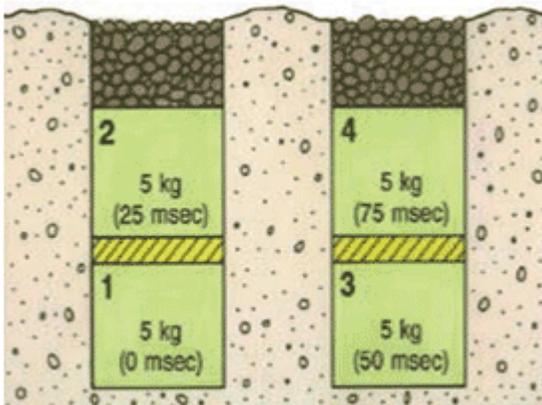
- Time work in water to respect [timing windows](#) to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.
- Minimize duration of in-water work.
- Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.
- Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
  
- Design and plan activities and works in waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
- Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
- Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures.
- Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.
  
- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

- Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear. The plan should, where applicable, include:
  - Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
  - Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.
  - Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging, underwater cable installation).
  - Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.
  - Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.
  - Repairs to erosion and sediment control measures and structures if damage occurs.
  - Removal of non-biodegradable erosion and sediment control materials once site is stabilized.
- Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
- Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.
- Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
- Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.
- If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
- Remove all construction materials from site upon project completion.

- Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.
- Retain a qualified environmental professional to ensure applicable permits for relocating fish are obtained and to capture any fish trapped within an isolated/enclosed area at the work site and safely relocate them to an appropriate location in the same waters. Fish may need to be relocated again, should flooding occur on the site.
- Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.
  - In freshwater, follow these measures for design and installation of intake end of pipe fish screens to protect fish where water is extracted from fish-bearing waters:
    - Screens should be located in areas and depths of water with low concentrations of fish throughout the year.
    - Screens should be located away from natural or artificial structures that may attract fish that are migrating, spawning, or in rearing habitat.
    - The screen face should be oriented in the same direction as the flow.
    - Ensure openings in the guides and seals are less than the opening criteria to make “fish tight”.
    - Screens should be located a minimum of 300 mm (12 in.) above the bottom of the watercourse to prevent entrainment of sediment and aquatic organisms associated with the bottom area.
    - Structural support should be provided to the screen panels to prevent sagging and collapse of the screen.
    - Large cylindrical and box-type screens should have a manifold installed in them to ensure even water velocity distribution across the screen surface. The ends of the structure should be made out of solid materials and the end of the manifold capped.
    - Heavier cages or trash racks can be fabricated out of bar or grating to protect the finer fish screen, especially where there is debris loading (woody material, leaves, algae mats, etc.). A 150 mm (6 in.) spacing between bars is typical.
    - Provision should be made for the removal, inspection, and cleaning of screens.
    - Ensure regular maintenance and repair of cleaning apparatus, seals, and screens is carried out to prevent debris-fouling and impingement of fish.
    - Pumps should be shut down when fish screens are removed for inspection and cleaning.
- Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.
  - If explosives are required as part of a project (e.g., removal of structures such as piers, pilings, footings; removal of obstructions such as beaver dams; or preparation of a river or lake bottom for installation of a structure such as a dam or water intake), the potential for impacts to fish and fish habitat should be minimized by implementing the following measures:

- Time in-water work requiring the use of explosives to prevent disruption of vulnerable fish life stages, including eggs and larvae, by adhering to appropriate fisheries [timing windows](#).
- Isolate the work site to exclude fish from within the blast area by using bubble/air curtains (i.e., a column of bubbled water extending from the substrate to the water surface as generated by forcing large volumes of air through a perforated pipe/hose), cofferdams or aquadams.
- Remove any fish trapped within the isolated area and release unharmed beyond the blast area prior to initiating blasting
- Minimize blast charge weights used and subdivide each charge into a series of smaller charges in blast holes (i.e., decking) with a minimum 25 millisecond (1/1000 seconds) delay between charge detonations (see Figure 1).
- Back-fill blast holes (stemmed) with sand or gravel to grade or to streambed/water interface to confine the blast.
- Place blasting mats over top of holes to minimize scattering of blast debris around the area.
- Do not use ammonium nitrate based explosives in or near water due to the production of toxic by-products.
- Remove all blasting debris and other associated equipment/products from the blast area.

**Figure 1: Sample Blasting Arrangement**



Per Fig. 1: 20 kg total weight of charge; 25 msec delay between charges and blast holes; and decking of charges within holes.

- Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.

- Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
- Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
- Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.
- Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.

Date modified:  
2013-11-25



## APPENDIX "REI-B"



**SCHEDULE C**  
**MITIGATION PLAN**

The Mitigation Plan shall be in effect until June 30, 2015.

The Municipality shall undertake measures to minimize adverse effects on species at risk in accordance with the general conditions described in Part B and taxa-specific conditions described in Part C, and the monitoring and reporting requirements described in Part D of this Mitigation Plan.

**PART A. DEFINITIONS**

**1. Definitions:**

1.1. In this Schedule, the following words shall have the following meanings:

"DFO" means Fisheries and Oceans Canada;

"MNR" means the Aylmer District Office of the Ministry of Natural Resources;

"Contact" means to contact the MNR in accordance with the notification/contact schedule provided to the Municipality by the MNR Designated Representative from time to time;

"Holding Tub" means a large, light-coloured container fitted with a non-airtight latching lid approved by the MNR for the temporary storage of captured snakes, turtles, amphibians, birds or eggs;

"Interagency Notification Form" means the form issued by DFO, available at [www.dfo-mpo.gc.ca](http://www.dfo-mpo.gc.ca), which is required to be completed when a drain is being maintained or constructed;

"Monitoring and Reporting Form" means the document that must be completed by the Municipality in accordance with Part D to this Schedule and will be provided to the Municipality;

"Ontario Operational Statement" means one of the documents issued by DFO, available at [www.dfo-mpo.gc.ca](http://www.dfo-mpo.gc.ca), that sets out the conditions and measures to be incorporated into a project in order to avoid negative impacts to fish and fish habitat in Ontario, as modified from time to time;

"Process Charts" means the charts attached as Part E to this Schedule which describe the steps set out in this Mitigation Plan;

"Seasonal Timing Windows Chart" means the chart attached as Part G to this schedule which describes the Sensitive Periods applicable to each Taxonomic Group;

"Sensitive Area" means a geographic area in the Municipality where additional mitigation measures are required to be undertaken for one or more Taxonomic Groups;

"Sensitive Areas Map" means any one of the maps attached as Part F to this schedule which sets out the applicable Sensitive Areas;

"Sensitive Period" means a time of year set out in the Seasonal Timing Windows Chart during which taxa-specific mitigation measures are required to be undertaken for a Taxonomic Group because of ambient air/water temperatures, water-levels or important life-history stages;

"Taxonomic Group" means the distinct group comprising one or more Species based on their taxonomic relationship and common approaches to mitigating adverse effects (i.e., fish, mussels, turtles, snakes, amphibians, birds or plants); and

"Work Zone" means the geographic area in the Municipality where an Activity in respect of one of the Drainage Works is being conducted.

- 1.2. For greater certainty, any defined terms that are not defined in section 1.1 have the same meanings as in the Agreement.

## **PART B. GENERAL MEASURES TO MINIMIZE ADVERSE EFFECTS**

### **2. Process Charts**

- 2.1. The general steps set out in this Part B are visually described in the Process Charts (Part E).

### **3. Review of Documentation**

- 3.1. Prior to conducting any Activities in respect of the Drainage Works the Municipality shall determine if conditions apply to the place, time or manner in which the Municipality wishes to pursue them by reviewing:
  - (a) the Sensitive Areas Maps (Part F) to determine if the Work Zone for the proposed Activities will occur within a Sensitive Area;
  - (b) the DFO Reference Guide for Fish and Mussel Species at Risk Distribution Maps: A Referral Review Tool for Projects Affecting Aquatic Species at Risk;
  - (c) the Seasonal Timing Windows Chart (Part G) to determine if the proposed Activities will occur during a Sensitive Period for one or more of the Taxonomic Groups; and
  - (d) the Process Charts to determine if prior notification is required;
  - (e) the mitigation measures for each applicable Taxonomic Group in Part C to determine what additional site-specific mitigation measures, if any, are required.
- 3.2. The Municipality shall document the results of the review undertaken in accordance with section 3.1 using the Monitoring and Reporting Form.

### **4. Sensitive Areas Maps**

- 4.1. The Sensitive Areas Maps contain sensitive information about the distribution of species at risk, are provided for the sole purpose of informing this Agreement and are not to be copied or distributed for any other purposes or to any other party without the prior written authorization of the MNR Designated Representative.

### **5. Prior Notification to Seek Direction**

- 5.1. If, after completing the review of documents described in section 3.1, the Municipality determines that the proposed Activities will be undertaken:
  - (a) in a place;
  - (b) at a time; or
  - (c) in a manner,

that requires prior notification in accordance with the Process Charts, the Municipality shall provide prior notification to the MNR in order for the MNR to determine if the Municipality must undertake additional site-specific or Species-specific mitigation

measures to minimize adverse effects on the Species and, if applicable, to identify such measures.

- 5.2. The prior notification under section 5.1 shall include a completed Interagency Notification Form:
  - (a) in respect of maintenance/repair where the proposed Activities are being undertaken pursuant to subsection 3(18) or section 74 of the *Drainage Act*, or
  - (b) in respect of construction/improvement where the proposed Activities are being undertaken pursuant to section 77 or 78 of the *Drainage Act*.
- 5.3. Where an Activity is undertaken in accordance with section 124 of the *Drainage Act* and would otherwise have required prior notification under section 5.1, the Municipality shall Contact the MNR by email prior to the commencement of the Activity, and complete and submit the applicable Interagency Notification Form within one week of the Activity's completion, unless otherwise directed in writing by the MNR Designated Representative.

## **6. General Mitigation Measures**

- 6.1. Notwithstanding that prior notification or additional mitigation measures may be required in accordance with this schedule, in undertaking any Activity at any time in respect of the Drainage Works the Municipality shall:
  - (a) undertake the mitigation measures for sediment control and for erosion control and bank stabilization set out in The Drain Primer (Cliff Evanitski 2008) published by DFO (ISBN 978-0-662-48027-3), unless otherwise authorized in writing by the MNR Designated Representative;
  - (b) use net free, 100% biodegradable erosion control blanket for all erosion control or bank stabilization done in conjunction with their Activities or, if authorized in writing by the MNR Designated Representative, alternative erosion control blankets that provide equal or greater protection to individual Species; and
  - (c) where applicable, follow the guidelines set out in the following Ontario Operational Statements:
    - (i) Beaver Dam Removal;
    - (ii) Bridge Maintenance;
    - (iii) Culvert Maintenance;
    - (iv) Isolated Pond Construction;
    - (v) Maintenance of Riparian Vegetation in Existing Right of Ways; and
    - (vi) Temporary Stream Crossing.

## **PART C. TAXA-SPECIFIC MEASURES TO MINIMIZE ADVERSE EFFECTS**

### **ADDITIONAL MITIGATION MEASURES FOR FISH SPECIES**

#### **7. Activities undertaken in Sensitive Areas for Fish**

- 7.1. Subject to section 7.2, where a proposed Activity will occur in a Sensitive Area for a fish Species, the Municipality shall Contact the MNR to seek further direction.
- 7.2. Section 7.1 does not apply where the applicable Drainage Works are:
  - (a) in a naturally dry condition;
  - (b) classified as a Class F drain under DFO's *Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario* (ISBN 0-662-72748-7); or
  - (c) a closed drain.

### **ADDITIONAL MITIGATION MEASURES FOR MUSSEL SPECIES**

#### **8. Activities undertaken in Sensitive Areas for Mussels**

- 8.1. Subject to section 8.2, where a proposed Activity will occur in a Sensitive Area for a mussel Species, the Municipality shall Contact the MNR to seek further direction.
- 8.2. Section 8.1 does not apply where the applicable Drainage Works are:
  - (a) in a naturally dry condition;
  - (b) classified as a Class F drain in DFO's *Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario* (ISBN 0-662-72748-7); or
  - (c) a closed drain.

### **ADDITIONAL MITIGATION MEASURES FOR TURTLE SPECIES**

#### **9. Training and Required On Site Materials for Turtles**

- 9.1. The Municipality will ensure any person:
  - (a) involved in the capture, temporary holding, transfer and release of any turtle Species has received training in proper turtle handling procedures; and
  - (b) who undertakes an Activity has a minimum of two Holding Tubs and cotton sacks on site at all times.

#### **10. Activities undertaken in Sensitive Areas and Sensitive Periods for Turtles**

- 10.1. Subject to section 10.2, where a proposed Activity will occur in a Sensitive Area for any turtle Species and during a Sensitive Period for that Species, the Municipality shall:
  - (a) not undertake any Activities that include the excavation of sediment or disturbance to banks during the applicable Sensitive Period unless otherwise authorized;
  - (b) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative;
  - (c) avoid draw-down and de-watering of the Sensitive Area during the applicable Sensitive Period; and

- (d) if authorized by the MNR Designated Representative under (a) above to undertake Activities that include excavation of sediment or disturbance of banks, in addition to any other measures required under (b) above, ensure any person undertaking an Activity has at least two Holding Tubs on site at all times.

10.2. Section 10.1 does not apply where the applicable Drainage Works are:

- (a) in a naturally dry condition;
- (b) classified as a Class F drain in DFO's *Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario* (ISBN 0-662-72748-7); or
- (c) a closed drain.

#### **11. Measures for Encounters with Turtles During a Sensitive Period**

- 11.1. Where one or more individuals belonging to a turtle Species is encountered in the undertaking of an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:
- (a) capture and transfer all uninjured individuals of that Species into a Holding Tub;
  - (b) capture and transfer all individuals injured as a result of the Activities into a Holding Tub separate from any Holding Tub containing uninjured individuals;
  - (c) ensure that the Holding Tubs with the captured individuals are stored at a cool temperature to prevent freezing until the individuals can be transferred; and
  - (d) immediately Contact the MNR to seek direction and to arrange for the transfer of the individual turtles.

#### **12. Measures for Encounters with Turtles Laying Eggs or Nest Sites**

- 12.1. Where one or more individuals belonging to a turtle Species laying eggs, or an active nest site of any turtle Species, is encountered in undertaking an Activity in a Work Zone, the Municipality shall:
- (a) not disturb a turtle encountered laying eggs and not conduct any Activities within 20 metres of the turtle while it is laying eggs;
  - (b) collect any displaced or damaged eggs and capture any injured dispersing juveniles and transfer them to a Holding Tub;
  - (c) store all captured injured individuals and collected eggs out of direct sunlight;
  - (d) immediately Contact the MNR to seek direction and to arrange for the transfer of any injured individuals and eggs;
  - (e) immediately stop any disturbance to the nest site and recover exposed portions with soil or organic material to protect the integrity of the remaining individuals;
  - (f) not drive any equipment over the nest site or conduct any Activities within 5 metres of the nest site;
  - (g) not place any dredged materials removed from the Drainage Works on top of the nest site;
  - (h) mark out the physical location of the nest site for the duration of the project but not by any means that might increase the susceptibility of the nest to predation or poaching; and
  - (i) where there are no collected eggs or captured individuals, record relevant information and Contact the MNR within 72 hours to provide information on the location of the nest site.

### **13. Measures for Encounters with Turtles Outside of a Sensitive Period**

- 13.1. Where one or more individuals belonging to a turtle Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:
- (a) briefly stop the Activity for a reasonable period of time to allow any uninjured individual turtles of that Species to leave the Work Zone;
  - (b) where individuals do not leave the Work Zone after the Activity is briefly stopped in accordance with (a) above, capture all uninjured individuals and release them in accordance with section 14.1;
  - (c) where circumstances do not allow for their immediate release, transfer captured uninjured individuals for a maximum of 24 hours into a Holding Tub which shall be stored out of direct sunlight and then release them in accordance with section 14.1;
  - (d) capture and transfer any individuals that have been injured into a Holding Tub separate from any Holding Tub containing uninjured individuals; and
  - (e) store all captured injured individuals out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for their transfer.

### **14. Release of Captured Individuals Outside of a Sensitive Period**

- 14.1. Where uninjured individuals are captured under section 13.1, they shall be released:
- (a) within 24 hours of capture;
  - (b) in an area immediately adjacent to the Drainage Works;
  - (c) in an area that will not be further impacted by the undertaking of any Activity; and
  - (d) not more than 250 metres from the capture site.
- 14.2. Following a release under section 14.1, the Municipality shall Contact the MNR within 72 hours of the release to provide information on the name of the Drainage Works, the location of the encounter and the location of the release site.

### **15. Measures for Dead Turtles**

- 15.1. Where one or more individuals of a turtle Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a turtle Species within the Work Zone, the Municipality shall:
- (a) place any dead turtles in a Holding Tub outside of direct sunlight; and
  - (b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the dead individuals.

## **ADDITIONAL MITIGATION MEASURES FOR SNAKE SPECIES**

### **16. Training and Required On Site Materials for Snakes**

- 16.1. The Municipality will ensure any person:
- (a) involved in the capture, temporary holding, transfer and release of any snake Species has received training in proper snake handling procedures; and
  - (b) who undertakes an Activity has a minimum of two Holding Tubs and cotton sacks on site at all times.

## **17. Activities undertaken in Sensitive Areas and Sensitive Periods for Snakes**

- 17.1. Where a proposed Activity involves physical infrastructure (e.g., culverts, pump houses, etc.) and will occur in a Sensitive Area for any snake Species and during a *Sensitive Period – Hibernation* for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.
- 17.2. Where a proposed Activity will occur at or adjacent to a known hibernacula (as identified by the MNR) for any snake Species and during a *Sensitive Period – Staging* for that Species, the Municipality shall:
  - (a) erect effective temporary snake barriers approved by the MNR that will not pose a risk of entanglement for snakes and that shall be secured so that individual snakes may not pass over or under the barrier or between any openings to enter or re-enter the Work Zone;
  - (b) inspect the temporary snake barriers daily during periods when snakes are active, capture any individuals incidentally encountered within the area bounded by the snake barrier and release the captured individuals in accordance with section 21.1; and
  - (c) remove the temporary snake barriers immediately upon completion of the Activity.
- 17.3. Where a proposed Activity that does not involve physical infrastructure will occur in a Sensitive Area for any snake Species and during a *Sensitive Period – Staging* for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.

## **18. Measures for Encounters with Snakes During a Sensitive Period**

- 18.1. Where one or more individuals belonging to a snake Species is encountered, or should an active hibernacula be uncovered, while conducting an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:
  - (a) capture and transfer all injured and uninjured individual snakes of that Species into individual light-coloured, drawstring cotton sacks;
  - (b) place all cotton sacks filled with the captured individuals into a Holding Tub;
  - (c) ensure that the Holding Tub with the captured individuals is stored at a cool temperature to protect the snakes from freezing until the individuals can be retrieved or transferred;
  - (d) if an active hibernacula is uncovered, cease all Activities at the hibernacula site; and
  - (e) immediately Contact the MNR to seek direction and to arrange for the transfer and/or retrieval.

## **19. Measures for Encounters with Snake Nests**

- 19.1. Where an active nest of any of the snake Species is encountered and disturbed while undertaking an Activity in any part of a Work Zone, the Municipality shall:
  - (a) collect any displaced or damaged eggs and transfer them to a Holding Tub;
  - (b) capture and transfer all injured dispersing juveniles of that Species into a light-coloured drawstring cotton sack;
  - (c) place all cotton sacks with the captured injured individuals into a Holding Tub;

- (d) ensure that the Holding Tub with the captured injured individuals is stored out of direct sunlight;
- (e) immediately Contact the MNR to seek direction and to arrange for the transfer of the injured individuals;
- (f) immediately stop any disturbance to the nest site and loosely cover exposed portions with soil or organic material to protect the integrity of the remaining individuals;
- (g) not drive any equipment over the nest site or conduct any Activities within 5 metres of the nest site;
- (h) not place any dredged materials removed from the Drainage Works on top of the nest site;
- (i) mark out the physical location of the nest site but not by any means that might increase the susceptibility of the nest to predation or poaching; and
- (j) where there are no collected eggs or captured individuals, Contact the MNR within 72 hours to provide information on the location of the nest site.

## **20. Measures for Encounters with Snakes Outside of a Sensitive Period**

- 20.1. Where one or more individuals belonging to a snake Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:
- (a) follow the requirements in section 16;
  - (b) briefly stop the Activity for a reasonable period of time to allow any uninjured individual snakes of that Species to leave the Work Zone;
  - (c) if the individuals do not leave the Work Zone after the Activity is briefly stopped in accordance with (b) above, capture all uninjured individuals and release them in accordance with section 21.1;
  - (d) where circumstances do not allow for the immediate release of captured uninjured individuals, they may be transferred into individual, light-coloured, drawstring cotton sacks before placing them in a Holding Tub which shall be stored out of direct sunlight for a maximum of 24 hours before releasing them in accordance with section 21.1;
  - (e) capture and transfer any individuals injured as a result of conducting the Activities into a Holding Tub separate from any Holding Tub containing uninjured individuals; and
  - (f) store all captured injured individuals out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for their transfer.

## **21. Release of Captured Individuals Outside of a Sensitive Period**

- 21.1. Where uninjured individuals are captured under section 20.1, they shall be released:
- (a) within 24 hours of capture;
  - (b) in an area immediately adjacent to the Drainage Works where there is natural vegetation cover;
  - (c) in an area that will not be further impacted by the undertaking of any Activity; and
  - (d) not more than 250 metres from the capture site.

- 21.2. Following a release under section 21.1, the Municipality shall Contact the MNR within 72 hours of the release to provide information on the name of the Drainage Works, the location of the encounter and the location of the release site.

## **22. Measures for Dead Snakes**

- 22.1. Where one or more individuals belonging to a snake Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a snake Species within the Work Zone, the Municipality shall:
- (a) collect and transfer any dead individuals into a Holding Tub outside of direct sunlight; and
  - (b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the carcasses of the dead individuals.

## **ADDITIONAL MITIGATION MEASURES FOR HERBACEOUS PLANTS**

### **23. Activities Undertaken in Sensitive Areas for Herbaceous Plants**

- 23.1. Where a proposed Activity will occur that involves physical disturbance to vegetated banks or the killing and/or removal of vegetation through chemical or mechanical means in a Sensitive Area for any herbaceous plant Species, the Municipality shall:
- (a) undertake the Activity outside of the Sensitive Period, unless otherwise authorized;
  - (b) limit equipment access and operations to the side of the Drainage Works that will minimize disturbances where any of the plant Species occur;
  - (c) locate temporary storage sites for excavated sediments or bank materials on areas of open soil away from where any of the plant Species are likely to occur;
  - (d) not use any broad spectrum herbicides in Sensitive Areas; and
  - (e) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative.

## **ADDITIONAL MITIGATION MEASURES FOR TREE SPECIES**

### **24. Additional Measures for Butternut**

- 24.1. Where Butternuts may exist in a Work Zone and may be affected by an Activity, the Municipality shall:
- (a) identify and mark as retainable trees all individual Butternut trees within the Work Zone during work planning site visits unless the individual Butternut has been assessed as a non-retainable tree due to infection by Butternut canker by a person designated by the Minister as a Butternut Health Assessor;
  - (b) retain and avoid disturbance to all individuals identified under (a) above that have been identified as retainable trees or that have not been assessed, unless otherwise authorized in writing by the MNR Designated Representative;
  - (c) conduct Activities by:
    - (i) limiting equipment access and operations to the side of the Drainage Works that will minimize disturbance to where any of the individual Butternut trees occur,
    - (ii) working around trees,

- (iii) avoiding compacting and/or disturbing the soil by keeping excavation and other heavy equipment a minimum of 2 metres away from the main stem of retained individuals to avoid damaging roots and stems,
- (iv) placing excavated materials on areas not within 2 metres of the main stem of retained individuals, and
- (v) where branches are required to be removed to allow for safe operation of equipment, removing them using appropriate equipment, such as pruning saws, chain saws or lopping shears, in accordance with good forestry practices.

**25. Measures for Other Trees**

- 25.1. Where Kentucky Coffee-tree may exist in a Work Zone and may be affected by an Activity, the Municipality shall:
- (a) identify and mark all individual Kentucky Coffee-tree within the Work Zone during work planning site visits;
  - (b) avoid disturbance to all individuals identified under (a) above, unless otherwise authorized in writing by the MNR Designated Representative;
  - (c) conduct Activities by:
    - (i) limiting equipment access and operations to the side of the Drainage Works that will minimize disturbance where any of the individuals occur,
    - (ii) working around trees,
    - (iii) avoiding compacting and/or disturbing the soil by keeping excavation and other heavy equipment a minimum of 2 metres away from the main stem of retained individuals to avoid damaging roots and stems, and
    - (iv) placing excavated materials on areas not within 2 metres of the main stem of retained individuals; and
  - (d) where branches are required to be removed to allow for safe operation of equipment, remove them using appropriate equipment, such as pruning saws, chain saws or lopping shears, in accordance with good forestry practices.

**PART D. MONITORING AND REPORTING REQUIREMENTS**

**26. Compliance Monitoring.**

- 26.1. The Municipality shall inspect the undertaking of the Activities at the locations described in Part F of this Schedule C, and shall record the results of the inspections in the Monitoring and Reporting Form.
- 26.2. The Municipality shall record all encounters with Species and the resulting mitigation measures taken by the Municipality in the Monitoring and Reporting Form.

**27. Reporting**

- 27.1. Prior to March 31 of each year the Mitigation Plan is in effect, the Municipality shall submit a completed Monitoring and Reporting Form containing all of the information collected under sections 26.1 and 26.2 during the previous twelve months to the MNR Designated Representative.

## **28. Review**

- 28.1. Within six months of the expiry of this Mitigation Plan but no later than three months from the time of its expiry, the Parties shall meet to review the measures and actions taken and the Activities undertaken during its term and to discuss the terms and conditions of the next Mitigation Plan.



## APPENDIX "REI-C"



## STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION

### 1. CONCRETE FILLED JUTE BAG HEADWALLS

After the Contractor has set the new pipe in place, it shall completely backfill same and install new concrete filled jute bag headwalls at the locations and parameters indicated on the drawing. When constructing the concrete filled jute bag headwalls, the Contractor shall place the bags so that the completed headwall will have a slope inward from the bottom of the pipe to the top of the finished headwall. The slope of the headwall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill behind the new concrete filled jute bag headwalls with Granular "B" and Granular "A" material as per O.P.S.S. Form 1010 and the granular material shall be compacted in place to a Standard Proctor Density of 100%. 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 305mm (12") in thickness.

The concrete filled 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 25 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 (18") x 660mm (26"). The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm (4") thick, 305mm (12") to 380mm (15") wide and 460mm (18") long.

The concrete jute bag headwall to be provided at the end of the bridge pipe shall be a single or double bag wall construction as set out in the specifications. The concrete filled bags shall be laid so that the 460mm (18") dimension is parallel with the length of the new pipe. The concrete filled jute bags shall be laid on a footing of plain concrete being 460mm (18") wide, extending for the full length of the wall, and 305mm (12") thick extending below the bottom of the culvert pipe.

All concrete used for the footing, cap and bags shall have a minimum compressive strength of 25 Mpa at 28 days and shall include 6% ± 1% air entrainment.

Upon completion of the jute bag headwall the Contractor shall cap the top row of concrete filled bags with a layer of plain concrete, minimum 100mm (4") thick, and hand trowelled to obtain a pleasing appearance. If the cap is made more than 100mm thick, the Contractor shall provide two (2) continuous 15M reinforcing bars set at mid-depth and equally spaced in the cap. 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.

The completed jute bag headwalls shall be securely embedded into the drain bank a minimum of 500mm (20") measured perpendicular to the sideslopes of the drain.

As an alternate 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 pieces of concrete may be substituted for the jute bags. The concrete rip rap shall be approximately 460mm (18") square and 100mm (4") thick and shall have two (2) flat parallel sides. The concrete rip rap shall be fully mortared in place using a mixture composed of three (3) parts of clean sharp sand and one (1) part of Portland cement.

The complete placement and backfilling of the headwalls shall be performed to the full satisfaction of the Town Drainage Superintendent and the Engineer.

### 2. QUARRIED LIMESTONE ENDWALLS

The backfill over the ends of the corrugated steel pipe shall be set on a slope of 1-½ units horizontal to 1 unit vertical from the bottom of the corrugated steel pipe to the top of each end slope and between the drain banks. The top 305mm (12") in thickness of the backfill over the ends of the corrugated steel pipe shall be quarried limestone. The quarried limestone shall also be placed on a slope of 1-½ units horizontal to 1 unit vertical from the bottom of the corrugated steel pipe to the top of each bank of the drain adjacent each end slope. The quarried limestone shall have a minimum dimension of 100mm (4") and a maximum dimension of 250mm (10"). The end slope protection shall be placed with the quarried limestone pieces carefully tamped into place with the use of a shovel bucket so that, when complete, the end protection shall be consistent, uniform, and tightly laid in place.

Prior to placing the quarried limestone end protection over the granular backfill and on the drain banks, the Contractor shall lay non-woven geotextile filter fabric "GMN160" conforming to O.P.S.S. 1860 Class I or approved equal. The geotextile filter fabric shall extend from the bottom of the corrugated steel pipe to the top of each end slope of the bridge and along both banks of the drain to a point opposite the ends of the pipe.

The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried limestone on top of the filter fabric.

### **3. BRIDGE BACKFILL**

After the corrugated steel pipe has been set in place, the Contractor shall backfill the pipe with Granular "B" material, O.P.S.S. Form 1010 with the exception of the top 305mm (12") of the backfill. The top 305mm (12") of the backfill for the full width of the excavated area (between each bank of the drain) and for the top width of the driveway, shall be Granular "A" material, O.P.S.S. Form 1010. The granular backfill shall be compacted in place to a Standard Proctor Density of 100% by means of mechanical compactors. All of the backfill material, equipment used, and method of compacting the backfill material shall be inspected and approved and meet with the full satisfaction of the Town Drainage Superintendent and Engineer.

### **4. GENERAL**

Prior to the work commencing, the Town Drainage Superintendent and Engineer must be notified, and under no circumstances shall work begin without one of them being at the site. Furthermore, the grade setting of the pipe must be checked, confirmed, and approved by the Superintendent or Engineer prior to continuing on with the bridge installation.

The alignment of the new bridge culvert pipe shall be in the centreline of the existing drain, and the placing of same must be performed totally in the dry.

Prior to the installation of the new access bridge culvert, the existing sediment build-up in the drain bottom must be excavated and completely removed. This must be done not only along the drain where the bridge culvert pipe is to be installed, but also for a distance of 3.05 metres (10 ft.) both upstream and downstream of said new access bridge culvert. When setting the new bridge culvert pipe in place it must be founded on a good undisturbed base. If unsound soil is encountered, it must be totally removed and replaced with 20mm (3/4") clear stone, satisfactorily compacted in place.

When doing the excavation work or any other portion of the work relative to the bridge installation, care should be taken not to interfere with, plug up, or damage any existing surface drains, swales, and lateral or main tile ends. Where damage is encountered, repairs to correct same must be performed immediately as part of the work.

The Contractor and/or landowner performing the bridge installation shall satisfy themselves as to the exact location, nature and extent of any existing structure, utility or other object that they may encounter during the course of the work. The Contractor shall indemnify and save harmless the Town, the Engineer and their staff from any damages which it may cause or sustain during the progress of the work. It shall not hold them liable for any legal action arising out of any claims brought about by such damage caused by it.

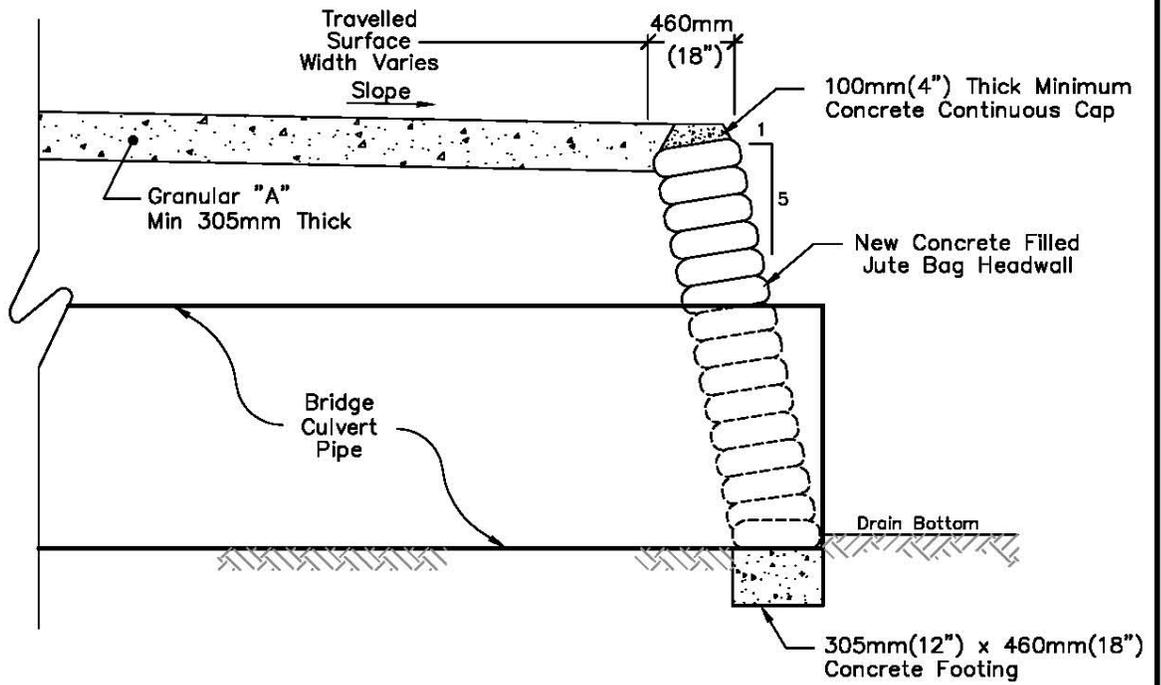
Where applicable, the Contractor and/or landowner constructing the new bridge shall be responsible for any damage caused by them to any portion of the Town road right-of-way. They shall take whatever precautions are necessary to cause a minimum of damage to same and must restore the roadway to its original condition upon completion of the works.

When working along a municipal roadway, the Contractor shall provide all necessary lights, signs, barricades and flagpersons as required to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. If traffic control is required on this project, it is to comply with the M.T.O. Traffic Control Manual for Roadway Work Operations.

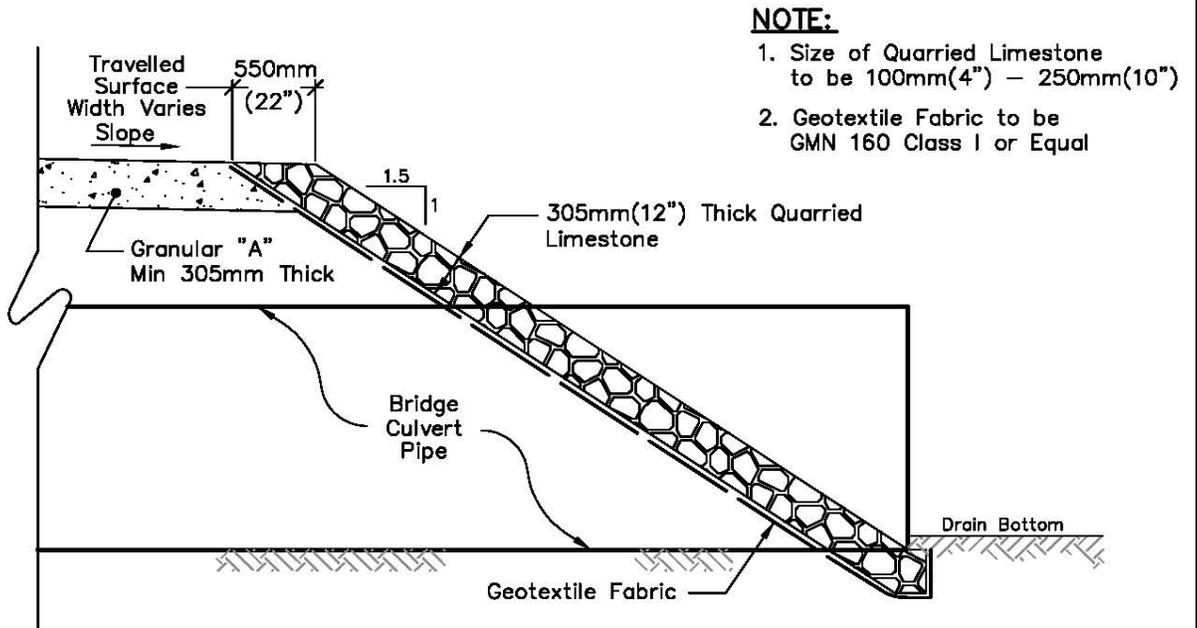
Once the bridge installation has been completed, the drain sideslopes directly adjacent the new headwalls and/or endwalls are to be completely restored including revegetation, where necessary.

All of the work required towards the installation of the bridge shall be performed in a neat and workmanlike manner. The general site shall be restored to its' original condition, and the general area shall be cleaned of all debris and junk, etc. caused by the work

All of the excavation, installation procedures, and parameters as above mentioned are to be carried out and performed to the full satisfaction of the Town Drainage Superintendent and Engineer.



**Typical Jute Bag Headwall**



**Typical Quarried Limestone End Protection**

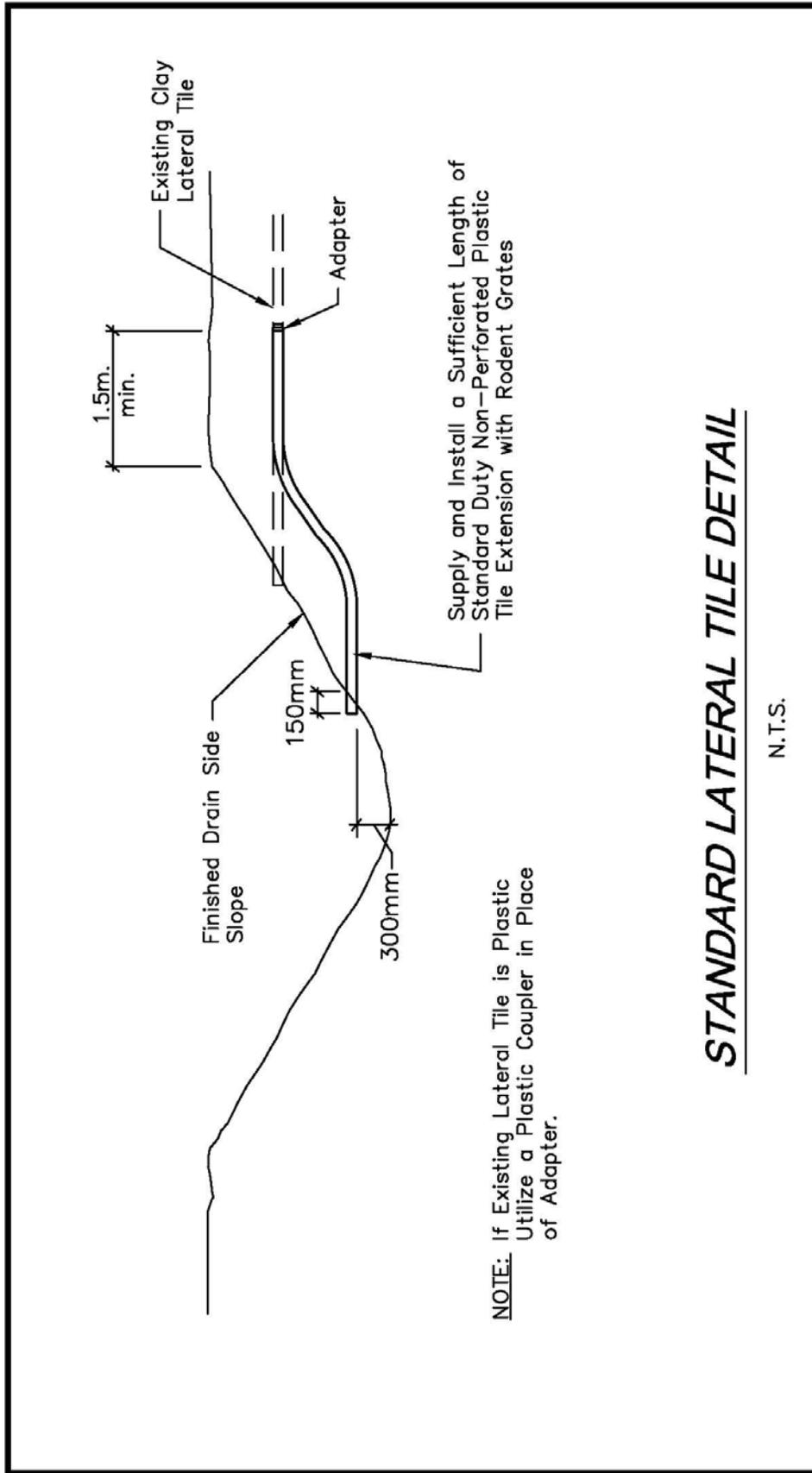
**Rood Engineering Inc.**

**Consulting Engineers**

**9 Nelson Street**

**Leamington, Ontario N8H 1G6**

**519-322-1621**



## STANDARD LATERAL TILE DETAIL

N.T.S.

### **Block Headwall Installation Instructions for Culverts**

1. A swift lift device will be required to place the blocks. A 75mm eye bolt will be required to place the caps.
2. The bottom course of blocks shall be founded on a firm solid base. The contractor shall provide a minimum levelling course of 150mm of compacted 3/4" Clear Stone, or a 100% compacted granular A, or lean concrete as a foundation base.
3. Ensure that the base is level and flat as this will greatly improve speed of installation.
4. On new culverts a minimum of 150mm of block wall will extend below the culvert to prevent scouring under the culvert.
5. The bottom course of blocks shall be embedded into the drain bottom to achieve the desired top elevation of the wall.
6. Blocks shall extend from the pipe invert across the full height and width of the drain and be imbedded a minimum of 300mm into the drain banks. Where possible the top of the block wall will match the height of the completed driveway.
7. Blocks shall be placed such that all joints are staggered.
8. Any excavation voids on the ends of block walls below subsequent block layers shall be filled with 3/4" Clear Stone.
9. Where block walls extend beyond three blocks in height, they should be battered a minimum of 1 unit horizontal for every 10 units vertical throughout the wall's full height and width. This can be achieved using pre-battered base blocks, or by careful preparation of the base.
10. Filter cloth (270R or equivalent) should be placed behind the wall to prevent the migration of fill material through the joints.
11. The walls should be backfilled with a free draining granular fill.
12. A uni-axial geogrid (SG350 or equivalent) should be used to tie back the headwalls where walls extend beyond 1.8m in height.
13. The face of the block wall shall not extend beyond the end of the pipe culvert.
14. Any gaps between the blocks and culvert shall be sealed with non-shrink grout for the full depth of the block.



## APPENDIX "REI-D"



THE CORPORATION OF THE TOWN OF TECUMSEH

BY-LAW NO. 2007-51

Being a by-law to amend By-law No. 2007-41 to regulate the setting of open air fires and identify the precautions and conditions to be observed for such fires within The Corporation of the Town of Tecumseh.

**WHEREAS** Council considers excessive smoke, smell, airborne sparks or embers to be or could become or cause public nuisances by creating negative health effects on neighbouring residents, increasing fire exposure hazards, infringing the enjoyment of the use of neighbouring properties and generating false or nuisance alarms;

**AND WHEREAS** Council is empowered under Section 128 of the *Municipal Act* 2001, S.O. 2001, c. 25 as amended, to pass by-laws to prohibit and regulate public nuisances, including matters that, in the opinion of Council are, or could become or cause public nuisances;

**AND WHEREAS** in accordance with Section 425 of the *Municipal Act* 2001, S.O. 2001, c. 25 as amended, a municipality may pass by-laws providing that a person who contravenes a by-law of the municipality passed under this Act is guilty of an offence;

**AND WHEREAS** Section 444 of the *Municipal Act* 2001, c. 25 states if a municipality is satisfied that a contravention of a by-law of the municipality passed under this Act has occurred, the municipality may make an order requiring the person who contravened the by-law or who caused or permitted the contravention or the owner or occupier of the land on which the contravention occurred to discontinue the contravening activity;

**AND WHEREAS** the Council of The Corporation of the Town of Tecumseh enacted By-law No. 2007-41 on the 26<sup>th</sup> day of June, 2007 to regulate the setting of open air fires and identify the precautions and conditions to be observed for such fires within The Corporation of the Town of Tecumseh;

**AND WHEREAS** the Council of The Corporation of the Town of Tecumseh is desirous of amending By-law No. 2007-41;

**NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWN OF TECUMSEH ENACTS AS FOLLOWS:**

1. **That** paragraph 4.9 be deleted and replaced with the following paragraph:
  - 4.9 Permitted fires, except those described in Section 4.4, shall,
    - a) be kept to manageable size that shall not be greater than one (1) square metre with flames no higher than one (1) metre in height; and,
    - b) in residentially zoned areas, be completely extinguished by 2:00 a.m.
2. **That** paragraph 5.2 be deleted and replaced with the following paragraph:
  - 5.2 An application for a Permit must be completed on the form/forms provided by the Tecumseh Fire/Rescue Services.

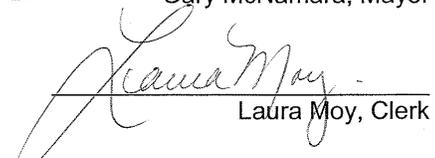
3. **That** paragraph 5.3 be deleted and replaced with the following paragraph:

5.3 An application must be filed with the Chief Fire Official of the Tecumseh Fire/Rescue Services. Approved permits must be retained and presented to an attending fire official in the event that there is a need for a fire official to attend at the burn location due to complaint.

4. **That** this by-law shall take full force and effect on the third and final reading.

**READ** a first, second, third time and finally passed this 11<sup>th</sup> day of September, 2007.

  
Gary McNamara, Mayor

  
Laura Moy, Clerk

**THE CORPORATION OF THE TOWN OF TECUMSEH**

**BY-LAW NUMBER 2007-41**

A by-law to regulate the setting of open air fires and identify the precautions and conditions to be observed for such fires within The Corporation of the Town of Tecumseh.

**WHEREAS** Council considers excessive smoke, smell, airborne sparks or embers to be or could become or cause public nuisances by creating negative health effects on neighbouring residents, increasing fire exposure hazards, infringing on the enjoyment of the use of neighbouring properties and generating false or nuisance alarms;

**AND WHEREAS** Council is empowered under Section 128 of the *Municipal Act 2001*, S.O. 2001, c. 25 as amended, to pass bylaws to prohibit and regulate public nuisances, including matters that, in the opinion of Council are, or could become or cause public nuisances;

**AND WHEREAS** in accordance with Section 425 of the *Municipal Act 2001*, S.O. 2001, c. 25 as amended, a municipality may pass by-laws providing that a person who contravenes a by-law of the municipality passed under this Act is guilty of an offence;

**AND WHEREAS** Section 444 of the *Municipal Act 2001* c. 25 states if a municipality is satisfied that a contravention of a by-law of the municipality passed under this Act has occurred, the municipality may make an order requiring the person who contravened the by-law or who caused or permitted the contravention or the owner or occupier of the land on which the contravention occurred to discontinue the contravening activity;

**AND WHEREAS** Section 446(1) of the *Municipal Act 2001* c.25 states that if a municipality has the authority under this or any other Act or under a by-law under this or any other Act to direct or require a person to do a matter or thing, the municipality may:

- provide that, in default of it being done by the person directed or required to do it, the matter or thing shall be done at the person's expense;
- enter upon land at any reasonable time;
- recover the costs of doing a matter or thing from the person directed or required to do it by action or by adding the costs to the tax roll and collecting them in the same manner as property taxes; and
- that costs include interest calculated at a rate of 15 per cent or such lesser rate as may be determined by the municipality, calculated for the period commencing on the day the municipality incurs the costs;
- the costs, including interest, constitutes a lien on the land upon the registration in the proper land registry office of a notice of lien;

**AND WHEREAS** Section 390 of the *Municipal Act 2001* c.25 provides that a "person" includes a municipality and a local board and the Crown;

**AND WHEREAS** Section 426 of the *Municipal Act 2001* c. 25 provides that no person shall hinder or obstruct, or attempt to hinder or obstruct any person exercising a power or performing a duty under this Act or a by-law under this Act and that any person who contravenes subsection (1) is guilty of an offence;

**NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWN OF TECUMSEH ENACTS AS FOLLOWS:**

**1. DEFINITIONS**

In this By-law:

- 1.1 "Burning Appliance" means any device designed or engineered to have a fire set within a contained area and totally enclosed by various means of screening and/or other methods.
- 1.2 "By-law Enforcement Officer" means the municipal person appointed by the Town of Tecumseh who shall be responsible for the enforcement of the provisions of this by-law.
- 1.3 "Chief Fire Official" means the Fire Chief of the Tecumseh Fire/ Rescue Services or designate.
- 1.4 "Competent Adult" means any person (18 years of age or older) who, in the opinion of those charged with enforcement of this By-Law, is capable of exercising the required judgement and capable of performing the necessary actions to control and prevent its unwanted spread.
- 1.5 "Farmer" means the owner or operator of an agricultural operation within an area zoned for agricultural pursuant to the *Farming & Food Protection Act*, 1998.
- 1.6 "Farmlands" means land designated "agricultural".
- 1.7 "Firefighter" means any person or any rank of person employed in, or appointed to the Tecumseh Fire/Rescue Services and assigned to undertake fire protection or fire prevention services.
- 1.8 "Full Cost Recovery Basis" has the meaning as described in Schedule "A" attached hereto.
- 1.9 "Open Air" means any open place, yard, field, lot, part lot or construction area which is not enclosed by a building or structure.
- 1.10 "Open Air Burning" means any fire set in the Open Air.
- 1.11 "Owner" means the registered owner or any person, firm or corporation having control over, or possession, of any portion of the building or property under consideration and includes the persons in the building or on the property.
- 1.12 "Permit" means a permit issued by the Chief Fire Official to set a fire in the Open Air for a specified date and period of time.
- 1.13 "Person" means an individual, business, a partnership or a corporation.
- 1.14 "Pit" means an area dug into the ground and/or surrounded by materials designed to contain the fire and prevent its spread to areas beyond the Pit.
- 1.15 "Police Officer" means any member of the Ontario Provincial Police.
- 1.16 "Tenant" means the occupant having possession or Person having control of a property or premises.
- 1.17 "Town" means The Corporation of the Town of Tecumseh.

**2. ADMINISTRATION AND ENFORCEMENT**

- 2.1 The Chief Fire Official shall be responsible for the administration of this by-law.
- 2.2 Enforcement of this by-law is the responsibility of the Chief Fire Official, any Fire-fighter, any Police Officer or any By-law Enforcement Officer.
- 2.3 The Chief Fire Official may refuse to issue a Permit or revoke any or all issued Permits.
- 2.4 The Fire Chief, Firefighters or Police Officers may, at all times enter and inspect any property or premises in order to ascertain whether the provisions of this by-law are complied with and to enforce or carry into effect the by-law.
- 2.5 Any person who fails to comply with the provisions of this by-law or fails to extinguish a fire once notification to do so has been given to him by the Chief Fire Official, a Police Officer or a Firefighter shall, in addition to any penalty provided herein, be liable to the municipality for all expenses incurred for the purposes of controlling and extinguishing of any fire so set or left to burn and such expenses may be recovered by court action or in a like manner as municipal taxes.

**3. ENVIRONMENT**

- 3.1 All Open Air Burning shall comply with the provisions of the *Environmental Protection Act*, R.S.O. 1990. c. E19.
- 3.2 No Open Air Burning shall be permitted when a smog alert has been issued for the region of Essex County, which includes the Town.
- 3.3 No Open Fire shall be started or maintained when wind condition is in such direction or intensity so as to cause any or all of the following:
  - (a) decrease in visibility on any highway or roadway;
  - (b) threaten a rapid spread of fire through a grass or brush area;
  - (c) smoke which causes annoyance or irritation to adjacent persons, properties or premises.

**4. GENERAL PROVISIONS**

- 4.1 No Person being the Owner or Tenant in possession of lands within the Town shall allow a fire to be set or burn on such lands unless a Permit has been obtained.
- 4.2 No Person shall allow a fire to be set or burned exceeding the requirements of Sections 4.8 and 4.9.
- 4.3 Notwithstanding any provisions herein, no Person shall set or maintain a fire,
  - (a) in contravention of the *Ontario Fire Code*, the *Environmental Protection Act* or any other statutory requirements of the Province of Ontario or the Government of Canada;
  - (b) where the consumption of material or size and area of the fire will exceed the limits set by the Chief Fire Official and/or listed within this by-law in Sections 4.8 and 4.9.

- 4.4 (a) No Permit shall be required for domestic barbeques or permanent outdoor fireplaces used solely for the cooking of food on a grill and extinguished immediately upon completion of the cooking process or any Burning Appliance, or a Pit or open area where the requirements of Sections 4.8 and 4.9 are not exceeded;
- (b) installation and location of Burning Appliances must meet the manufacturer's specifications.
- 4.5 (a) A farmer who intends to set or maintain a fire in the Open Air on a specified day for disposal of vegetable matter or vegetation on Farmlands which is normal and incidental for farming purposes shall obtain a Permit to cover the period of the proposed Open Air fire, and will be required to notify the Tecumseh Fire/Rescue Services for each day that the proposed Open Air fire will take place;
- (b) an Open Air fire shall be supervised by a Competent Adult equipped with sufficient equipment to control and contain the Open Air fire to prevent the spread of the Open Air fire that would endanger or put at risk other properties or premises;
- (c) an Open Air fire shall be restricted to daylight hours only;
- (d) an Open Air fire shall be surrounded by a tilled area wide enough to prevent an Open Air fire from jumping across the tilled area and to maintain the area of the burn to be no greater than one (1) hectare in size;
- (e) the leading edge of the flame of an Open Air fire shall not exceed thirty (30) metres in length.
- 4.6 No Person shall set any fire in the Open Air to burn asphalt products, tires, treated wood, construction materials or rubble, kitchen garbage or any garbage or trash, rubber plastics and like items.
- 4.7 No Person shall set any fire in the Open Air except where permitted and only in the presence of a Competent Adult. The Competent Adult shall not leave the burning operation until such time as the fire has been completely extinguished and there is no threat of re-ignition or spreading of the fire.
- 4.8 Every Person that starts a fire in the Open Air shall ensure that there are adequate tools and/or water on hand to contain or extinguish the fire.
- 4.9 Permitted fires, except those described in Section 4.4, shall be kept to manageable size that shall not be greater than one (1) square metre with flames no higher than one (1) metre in height.
- 4.10 Every Person who sets an Open Air fire in the Town of Tecumseh shall be:
- (a) responsible and liable for any damage to property or injury to person occasioned by said fire;
- (b) liable for all costs incurred by the Town of Tecumseh, including but not limited to, the Fire/Rescue Services, including personnel and other agencies called to control and extinguish said fire on a Full Cost Recovery Basis. All fees and charges to be paid under this subsection shall be payable in the manner and subject any interest and penalties set forth in paragraph 5 and 6 of the Administrative Fees and Charges By-law 2007-12, as may be amended or repealed from time to time;

- (c) the fees and charges under this section shall not be payable by that class of persons which have obtained a permit for an Open Air fire and complied with the terms of such permit.

- 4.11 Notwithstanding the aforementioned sections listed herein, the Fire Chief may issue a Permit upon application and approve the setting of any fire subject to the fire being adequately supervised and controlled through special conditions addressed by the Chief Fire Official.
- 4.12 No fire shall be set to dispose of commercial, industrial or construction waste or other like materials in areas zoned for commercial or industrial occupancies and such aforementioned materials shall not be transported to residential or agricultural areas for burning purposes.
- 4.13 No fires shall be set at construction and/or demolition sites for the purpose of disposing of waste, building material or rubble.

## 5. FIRES REQUIRING PERMITS

- 5.1 Except as provided in section 4.3 of this by-law, no Person shall set, maintain or cause to be set or maintained, a fire in the Open Air unless a Permit has been issued by the Chief Fire Official.
- 5.2 An application for a Permit must be completed on the form/forms provided by the Tecumseh Fire/Rescue Services. Such forms are available to fill out by telephone call to Tecumseh Fire Station No. 1, Monday to Friday from 08:30 hr to 16:30 hr.
- 5.3 Each completed application for a Permit must be filed with the Chief Fire Official of the Tecumseh Fire/Rescue Services, at the administration offices located at 985 Lesperance Road, Tecumseh, Ontario.
- 5.4 In issuing a Permit under this part for Open Air Burning, the Chief Fire Official may impose any additional requirements or conditions as may be deemed necessary.

## 6. OFFENCES

- 6.1 (a) Any person who contravenes any of the provisions of this by-law is guilty of an Offence;
- (b) any person who hinders or obstructs a person lawfully carrying out the enforcement of this by-law is guilty of an Offence.

## 7. FINES

- 7.1 Every Person who is convicted of an Offence is liable to a Fine of not more than Five Thousand (\$5,000.00) Dollars as provided for in the *Provincial Offences Act*, R. S.O. 1990, Chap. P.33.

## 8. SEVERABILITY

- 8.1 If any section or sections of this by-law or parts thereof are found in any court to be illegal or beyond the power of Council to enact, such section or sections or parts thereof shall be deemed severable and all other sections or parts of this by-law shall be deemed separate and independent there from and enacted as such.

9. **SHORT TITLE**

9.1 The short title of this by-law shall be TECUMSEH OPEN AIR BURNING BY-LAW.

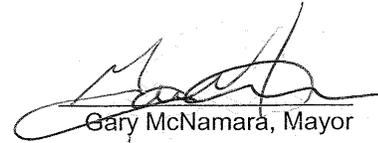
10. **EFFECTIVE DATE**

10.1 This by-law shall come into full force and take effect on the 1<sup>st</sup> day of July, 2007.

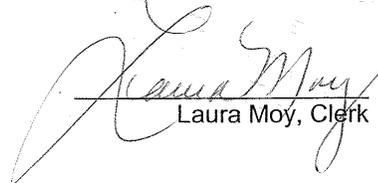
11. **REPEAL**

11.1 By-law No. 2005-57 is hereby repealed.

**READ** a first, second, third time and finally passed this 26<sup>th</sup> day of June, 2007.



Gary McNamara, Mayor



Laura Moy, Clerk

SCHEDULE "A"  
By-law Number 2007-41

**THE CORPORATION OF THE TOWN OF TECUMSEH  
TECUMSEH FIRE/RESCUE SERVICES EQUIPMENT SERVICES RATES**

**"Full Cost Recovery Basis"** includes any and all charges and costs howsoever incurred by the Town directly or indirectly in controlling and extinguishing the Open Air fire and shall include without limitations:

**Emergency Services Rendered:**

- (a) \$350.00 first hour or part thereof per piece of equipment;
- (b) \$175.00 each additional half-hour or part thereof per piece of equipment;
- (c) \$42.00 first hour or part thereof per firefighter who responds to the call;
- (d) \$27.50 for each additional hour or part thereof per firefighter until all equipment is cleaned, checked and returned to service;
- (e) the cost of all extinguishing agents required to extinguish the fire.

**No Emergency Services Rendered:**

- (a) \$350.00 flat rate per piece of equipment where services are not required nor provided;
- (b) \$42.00 flat rate per firefighter who responds to the call for service.



## APPENDIX "REI-E"



WATERSHED & KEY PLAN

OF THE

# WEBSTER DRAIN

Bridge Replacement for Craig & Christine Pearce (410-00700)

(Geographic Township of Sandwich South)

IN THE

TOWN OF TECUMSEH

IN THE

COUNTY OF ESSEX • ONTARIO

*Gerard Road*  
GERARD ROOD, P.ENG.



**ROOD**  
**ENGINEERING**  
**INC.** CONSULTING ENGINEERS  
Leamington, Ontario  
519-322-1621

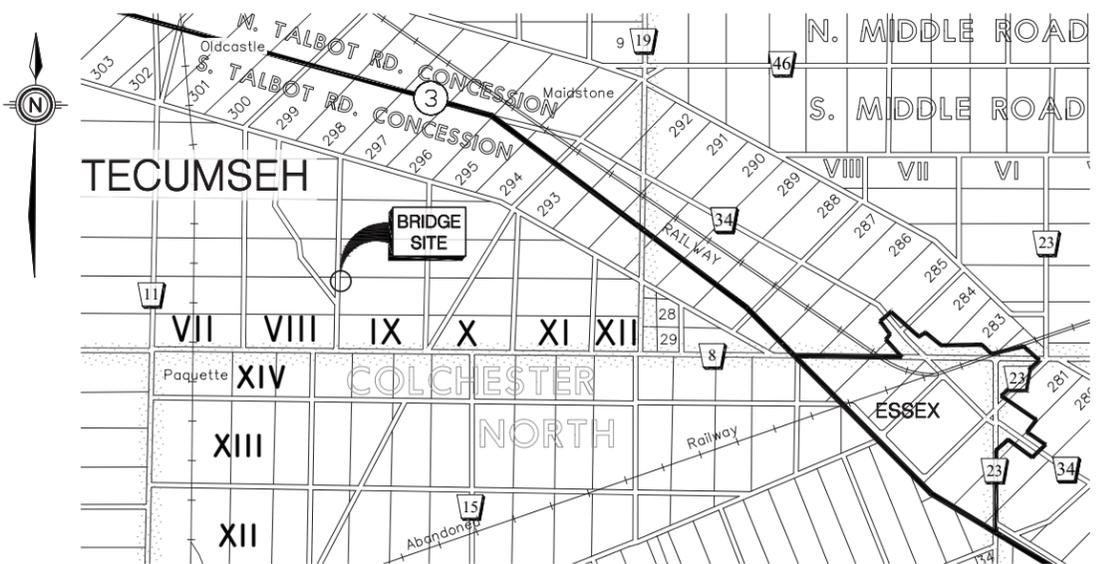
DATE: June 1st, 2017

**TOWN OF TECUMSEH**

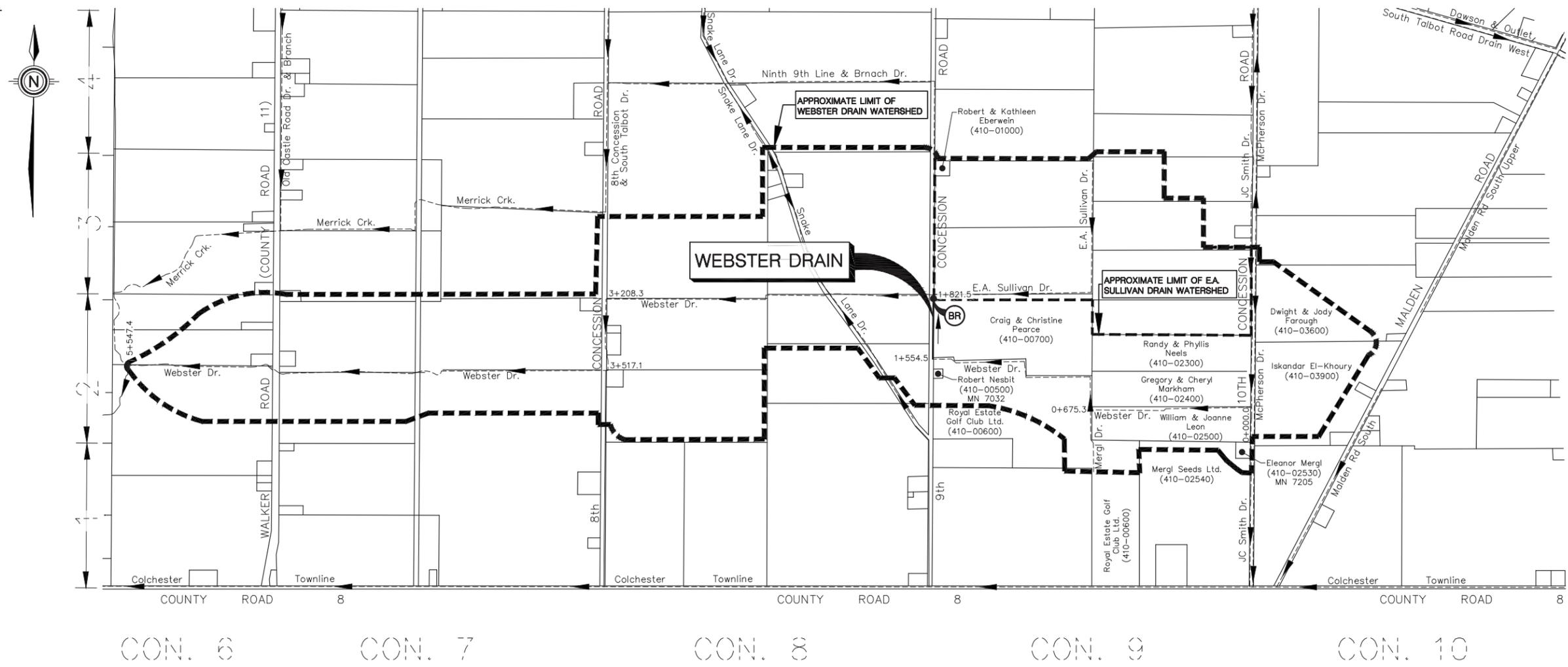
MAYOR: Cary McNamara  
CLERK: Laura Moy  
DRAINAGE SUPERINTENDENT: Sam Paglia, P.Eng.

**BENCHMARKS:**

WEST OBVERT 1200mm CSP  
CULVERT CROSSING 9TH CONCESSION  
OVER WEBSTER DRAIN  
**ELEV. = 54.862 m.**



**KEY PLAN**  
Scale = 1:50,000



**WATERSHED PLAN**  
Scale = 1:10,000

THESE PLANS HAVE BEEN REDUCED  
AND THE SCALE THEREFORE VARIES.  
FULL SCALE PLANS MAY BE VIEWED  
AT THE MUNICIPAL OFFICE.

DRAWN BY: G.S. PLOT CODE: 1:1 COMPUTER FILE: REI2016D058.DWG	
FILE No.: REI2016D058	SHEET No.: 1 OF 2

E09WE(110)

C:\URBANSYSTEMS\PROJECTS\Projects\_2016\REI-2016D058 - Webster Dr. (Pearce BR). EDR\WET(110)\Webster\2017-06-05-31\_REI2016D058.dwg 2017-06-05







## THE CORPORATION OF THE TOWN OF TECUMSEH

Public Works & Environmental Services  
Report No. 30/17

**TO:** Mayor and Members of Council  
**FROM:** Sam Paglia, P.Eng., Drainage Superintendent  
**DATE OF REPORT:** May 17, 2017  
**DATE TO COUNCIL:** June 27, 2017  
**SUBJECT:** Webster Drain [Pearce Bridge] – Consider Engineer’s Drainage Report

---

### **RECOMMENDATIONS**

It is recommended:

1. That the Drainage Report and specifications for the Webster Drain, as prepared by Mr. Gerard Rood, P.Eng., of Rood Engineering Inc., dated June 1, 2017 (Drainage Report) be received; and that
2. Consideration be given to first and second readings of a provisional by-law to adopt the Drainage Report; and further that
3. Notice be given to all affected landowners of the Court of Revision to be held on July 25, 2017, at 6:30 p.m. 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 October 5, 2016, in accordance with Section 78 of the *Drainage Act* (Act).

On January 24, 2017, Council accepted the recommendation by the Drainage Superintendent under Public Works & Environmental Services Report No. 07/17 and passed resolution [RCM-17/17] as follows:

***THAT*** Gerard Rood P.Eng., of Rood Engineering Inc. be appointed Drainage Engineer to:

- (i) make an examination of the drainage area as submitted by Christine and Craig Pearce of Roll No. 410000000700000 in the Notice of Request for Drain Improvement dated October 5, 2016; and
- (ii) to prepare a Drainage Report for the Webster Drain (Drain) in accordance with Section 78 of the *Drainage Act*, including provisions for future maintenance of the Drain.

*As recommended by the Drainage Superintendent, under Report No. 07/17.*

An on-site meeting was held on March 8, 2017 with all affected landowners respecting the culvert at 6950 9<sup>th</sup> Concession Road and the request received from Christine and Craig Pearce to replace and extend it. Mr. & Mrs. Pearce indicated that they would like to replace and extend the existing culvert to facilitate access to a proposed equestrian horse ranch on the farm in the North Part of Lot 2,

Concession 9. A summary of the meeting is included in the Drainage Report for consideration as per the requirements in the Act.

The Town received a draft report dated April 21, 2017. Invitations were sent to landowners for a Public Information Centre (PIC) that was held on May 30, 2017 in Council Chambers to discuss the content of the draft report. Details of the work were discussed and it was established that Mr. & Mrs. Pearce preferred a bridge top width of 40 feet (12.2 m) for easier access by trucks and trailers. They also requested that the replacement bridge be constructed further south along the drain to suit their development plans. The preferred location was established between the second and third hydro poles south of their north property limit. Mr. & Mrs. Pearce were advised that any increase in costs due to the extra length and location change would be borne by the parcel being served by the access. These aforementioned changes were incorporated in the final report dated June 1, 2017 which is appended as Attachment 1 to this report.

Provided there are no appeals, it is expected that construction may proceed in September 2017.

## **COMMENTS**

### 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

On October 6, 2017, the Town sent notification to the Essex Region Conservation Authority (ERCA) regarding their requirements for approval under Section 28 of the *Conservation Authorities Act*. A response from ERCA was received by email on October 12, 2016 and indicated that the Town must apply for a permit and follow standard mitigation requirements.

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 as well as an Agricultural Drainage Ditch. 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 that:

1. The Drainage Report and specifications for the Webster Drain as prepared by Mr. Gerard Rood, P.Eng., of Rood Engineering Inc., dated June 1, 2017 be received; and that
2. Consideration be given to first and second readings of a provisional by-law to adopt the Drainage Report; and further that
3. Notice be given to all affected landowners of the Court of Revision to be held on July 25, 2017, at 6:30 p.m. in accordance with Section 46(1) of the *Drainage Act* subject to adoption of the provisional by-law.

## **CONSULTATIONS**

Rood Engineering Inc.  
 Director Financial Services & Treasurer  
 Director Corporate Services & Clerk

## **FINANCIAL IMPLICATIONS**

<b>Engineer's Estimates for the Webster Drain</b>	
<b>Description</b>	<b>Estimate</b>
Construction	\$20,100
Incidentals	\$10,800
HST Payable (1.76% Non-Recoverable)	\$540
Allowances/Compensation	\$460
<b>Total</b>	<b>\$31,900</b>
<b>Assessment Summary</b>	
Town of Tecumseh - Road Authority	\$976
Non-Agricultural lands	\$104
Agricultural lands (non-grantable)	\$25,772
Privately owned Agricultural lands **	\$3,367
Provincial Grants *	\$1,681
<b>Total</b>	<b>\$31,900</b>
**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 *Drainage 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 lands have been assessed in the engineer's report for Outlet Liability (\$976) for works involving 0.579 hectares (1.43 acres) of 9<sup>th</sup> Concession Road and 1.623 hectares (4.01 acres) of 10<sup>th</sup> Concession Road.

For assessments in excess of \$5,000 the Town offers landowners the option of paying the balance, plus interest at 3.1%, over a five (5) year period; the annual payments are added as a special charge on their taxes.

Other than costs to administer the project, the cost of constructing the project is 100% recoverable by affected lands including the Town's portion of land mentioned above and detailed in the Assessment Schedule included in the engineer's report dated June 1, 2017. The Town will utilize the Municipal Drain Lifecycle Reserve to pay for the Town's drainage assessment. A copy of the Municipal Drain Lifecycle Reserve is included below for reference.

<b>Municipal Drain Lifecycle Reserve - February 28, 2017</b>					
	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Reserve Balance Start of Year (est.)	\$171,462	\$52,167	\$122,167	\$192,167	\$262,167
Allocation	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000
Road LC re 10th Conc. Windsor (5055)	\$226,000				
<b>Funds Available</b>	<b>\$467,462</b>	<b>\$122,167</b>	<b>\$192,167</b>	<b>\$262,167</b>	<b>\$332,167</b>
<b>Committed</b>					
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				
<b>Webster Drain (Bridge - Pearce)</b>	<b>\$976</b>				
<b>Balance Committed</b>	<b>\$415,295</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Balance Uncommitted</b>	<b>\$52,167</b>	<b>\$122,167</b>	<b>\$192,167</b>	<b>\$262,167</b>	<b>\$332,167</b>
<b>Proposed</b>					
<b>Total Proposed</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Balance Available</b>	<b>\$52,167</b>	<b>\$122,167</b>	<b>\$192,167</b>	<b>\$262,167</b>	<b>\$332,167</b>

**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:

Reviewed by:

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Cheryl Curran, BES  
Clerk I – Administrative Clerk

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Sam Paglia, P.Eng.  
Drainage Superintendent

Reviewed by:

Reviewed by:

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

---

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

Reviewed by:

Reviewed by:

---

Laura Moy, Dip.M.M, CMM III HR Professional  
Director Corporate Services & Clerk

---

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

Recommended by:

---

Tony Haddad, MSA, CMO, CPFA  
Chief Administrative Officer

Attachment:

1. Drainage Report and specifications, for the Webster Drain as prepared by Mr. Gerard Rood, P.Eng., of Rood Engineering Inc., dated June 1, 2017

CC

# WEBSTER DRAIN

E09WE(110)

## Pearce Bridge Replacement

Geographic Township of Sandwich South

## TOWN OF TECUMSEH



***Town of Tecumseh***  
***917 Lesperance Road***  
***Tecumseh, Ontario N8N 1W9***  
***519-735-2184***

## ***Rood Engineering Inc.***

***Consulting Engineers***  
***9 Nelson Street***  
***Leamington, Ontario N8H 1G6***  
***519-322-1621***

*REI Project 2016D058*  
*June 1st, 2017*



June 1st, 2017

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

Mayor McNamara and Members of Council:

**WEBSTER DRAIN E09WE(110)**  
**Replacement Bridge for Craig & Christine Pearce (410-00700)**  
**Geographic Twp. of Sandwich South**  
**REI Project 2016D058**  
**Town of Tecumseh, County of Essex**

## **I. INTRODUCTION**

In accordance with the instructions provided at your January 24th, 2017 meeting and received from the Town by letter dated March 14th, 2017, from Laura Moy, your Director Staff Services/Clerk, we have prepared the following report that provides for a replacement access bridge serving the agricultural lands owned by Craig and Christine Pearce, in the North Part of Lot 2, Concession 9, in the former geographic township of Sandwich South, Town of Tecumseh. The Webster Drain comprises of an open channel drain which generally runs westerly, starting at the 10th Concession Road, crossing the 9th and 8th Concession Roads, and Walker Road before extending to its outlet in the Merrick Creek. The drain was constructed pursuant to the Drainage Act. A plan showing the Webster Drain alignment, as well as the general location of the above-mentioned bridge, is included herein as part of the report.

Our appointment and the works relative to the construction of the above-mentioned replacement access bridge in the Webster Drain, proposed under this report, is in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2010". We have performed all of the necessary survey, investigations, etcetera, for the proposed bridge replacement installation, and we report thereon as follows.

## **II. BACKGROUND**

From our review of the information provided from the Town's drainage files we have established the following reports that we utilized as reference for carrying out this project:

- |    |                    |                     |                           |
|----|--------------------|---------------------|---------------------------|
| 1) | July 26th, 1983    | Webster Drain       | Maurice Armstrong, P.Eng. |
| 2) | January 7th, 2002  | Webster Drain       | Bruce D. Crozier, P.Eng.  |
| 3) | November 4th, 1967 | E.A. Sullivan Drain | C.G.R. Armstrong, P.Eng.  |
| 4) | December 22, 1992  | Mergl Drain         | Lou Zarlenga, P.Eng.      |

The 1983 report by Maurice Armstrong, P.Eng. provided for general repairs and improvements to the entire length of the drain and has the latest profile for the grading of the drain. Subsequent to said report there was a repair, improvement, and relocation report downstream of the proposed drainage works in 2002 by Bruce D. Crozier, P.Eng. The E.A. Sullivan Drain report prepared by C.G.R. Armstrong, P.Eng. in 1967, provided information for the subwatershed entering the Webster Drain downstream of the replacement access bridge location. The Mergl Drain report prepared by Lou Zarlenga, P.Eng. in 1992 provided information on the south watershed limits of the drain upstream of the replacement bridge.

We have utilized the plan and profile within the 1983 Maurice Armstrong, P.Eng. report to establish the size parameters for the drain and the details to be used in establishing the replacement bridge culvert installation. We have also used this Engineer's report to establish the drain profile grades, and to assist us in establishing the design grade for the subject replacement access bridge installation. The Maurice Armstrong and Crozier reports for the Webster Drain, the C.G.R. Armstrong report for the E.A. Sullivan Drain, and the Zarlenga report for Mergl Drain were used to establish the upstream watershed limits for design of the replacement bridge size and establishing the assessment schedule for the works. We also reviewed reports for the abutting drains and spoke to the owners to help in establishing the current watershed limit for the Webster Drain.

### **III. PRELIMINARY EXAMINATION AND ON-SITE MEETING**

After reviewing all of the drainage information provided by the Town, we arranged with the Town Drainage Superintendent Sam Paglia, P.Eng., to schedule an on-site meeting for March 8th, 2017. The following people were in attendance at said meeting: Shirley Wilson, Sam Paglia (Town Drainage Superintendent), and Gerard Rood (Rood Engineering).

Gerard Rood did an introduction of the purpose of the meeting. The Town has been alerted to the need for a bridge replacement. The owner was not present for the on-site meeting, however the owner present for the meeting was advised of the history of the drain as outlined above. They were also informed about the July 26th, 1983 report for the drain prepared by Maurice Armstrong, P.Eng.

Important design constraints and options were discussed through correspondence and telephone communication with Christine Pearce. Mrs. Pearce explained that a wider top driveway width was needed for safer access. With a hydro pole obstructing the possibility of extending the driveway southerly from the existing location, it was discussed that the relocation of the existing bridge to the centre of hydro poles two and three from the north property limit will allow for the extra driveway top width desired to be achieved. Additionally, end options were discussed through correspondence.

The owner was advised that the minimum standard top width for an access bridge is 6.1 metres (20 ft.) and that any extra length will be charged 100% to the land owner for construction and future maintenance. The owner requested a top width of 12.2 metres (40 ft.) for ease of access for equipment entering the agricultural lands. The owner was also advised that because the existing bridge is part of the drain, the entire cost of a standard replacement access bridge construction, as well as all the cost for the preparation of the Engineer's Report, will be shared between the affected Owner of the parcel served by the bridge and the upstream lands and roads. The sharing of cost will be as set out in the report. We went on to discuss that sloped quarried limestone on filter cloth ends for the installation is expected to be the most economical end treatment, but the Engineer would contact the owner to advise if there was any change to this. The owner was also advised that the bridge will be installed centred between hydro poles

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two and three from the north property limit which is south of the existing bridge with a minimum 12.2m (40 feet) top width as per their request. A standard 5 metre turning radius will be provided at the gravel shoulder to enhance access across the bridge.

The overall drainage report procedure, future maintenance processes and grant eligibility were generally reviewed with the owner. The owner was advised that because the Parcel is not designated Farm Property Tax Class Rate it is not grant eligible. It was discussed that owners may debenture the cost of \$5,000.00 or greater for the drainage work over a 5 year period to reduce the immediate cost burden of their assessment for the work.

The owner was also advised that the works will be subject to the approval of the Department of Fisheries and Oceans (D.F.O.), the Ministry of Natural Resources and Forestry (M.N.R.F.), and the Essex Region Conservation Authority (E.R.C.A.). We further discussed bridge maintenance, sizing, and use of aluminized steel material for the bridge installation.

#### **IV. FIELD SURVEY AND INVESTIGATIONS**

Following the on-site meeting we arranged for our survey crew to attend at the site and perform a topographic survey, including recording of necessary levels and details to establish the design parameters for the installation of the replacement bridge. We further arranged to get updated assessment roll information from the Town, and obtained information on the tax class of each of the properties affected by the Municipal Drain.

A bench mark was established from the July 26th, 1983 Maurice Armstrong, P.Eng. report, on the centreline of east curb of highway bridge under Snake Lane Road. This said benchmark was utilized in establishing a correlation between the old report and new survey for the bridge. We also surveyed the drain both upstream and downstream of the proposed replacement access bridge and picked up the existing bench mark and culvert elevations in order to establish a design grade profile for the installation of the replacement bridge. We also took cross-sections of the Webster Drain at the general location of the proposed replacement bridge, as necessary for us to complete our design calculations, estimates and specifications.

The Town made initial submissions to the Essex Region Conservation Authority (E.R.C.A.) regarding their requirements or any D.F.O. (Department of Fisheries and Oceans) requirements for work that would be proposed to be carried out on the Webster Drain. A response from the Conservation Authority was received by email on October 12th, 2016 and indicated that the Town must apply for a permit and follow standard mitigation requirements. We also reviewed the Town maps for fish and mussel species at risk for this Class F Drain and find that there are no species indicated in the vicinity of this project. A copy of the concerns and requirements to satisfy E.R.C.A. and D.F.O. is included in **Appendix "REI-A"** of this report.

We also arranged to review the Ministry of Natural Resources & Forestry (M.N.R.F.) Species at Risk (S.A.R.) former agreement made with the Town pursuant to the Endangered Species Act, 2007. The Agreement plans indicate that snake species are a concern for this work area and although turtles are not indicated, they are mobile and could be encountered. The Agreement includes mitigation measures to be followed as outlined in "Schedule C Mitigation Measures" of the former agreement document and a copy of same as it relates to turtles and snakes is included herein in **Appendix "REI-B"**.

For the purposes of establishing the watershed area upstream of the proposed bridge, and determining the pipe size required, we investigated and reviewed the Engineer Reports of Maurice Armstrong, P.Eng. and Bruce D. Crozier, P.Eng. on the Webster Drain, the C.G.R.

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Armstrong, P.Eng. report on the E.A. Sullivan Drain, and the Lou Zarlenga, P.Eng. report on the Mergl Drain, and their respective Schedules of Assessment.

#### **V. P.I.C. MEETING, DRAINAGE INFORMATION AND THE DRAINAGE ACT**

The Town scheduled a Public Information Centre (P.I.C.) meeting on May 30th, 2017. The meeting was attended by land owners Patricia and Craig Pearce, their site contractor Andy Germani, Sam Paglia (Town Drainage Superintendent), and Gerard Rood (Rood Engineering). Details of the work were discussed and it was established that the owners preferred a top width of 40 feet (12.2m) for easier access by trucks and trailers. They also requested that the replacement bridge be constructed further south along the drain to suit their development plans. The preferred location was established to be between the 2nd and 3rd hydro poles south of their north property limit. We discussed that any increase in costs due to the extra length and location change would be borne by the parcel being served by the access.

Timelines for submission of the final report and scheduling of the Consideration and Court of Revision meetings was discussed. Provided that there are no appeals, it is expected that construction may proceed in September. The tender process will establish the most cost effective price for the works. Contractors who wish to bid on the project must be able to provide the required bonds and insurance and meet the other Town requirements for procurement of services. It was pointed out that the drainage report only includes estimates of the cost for the drainage works and the final billings to the affected owners will be based on the actual final cost to complete the project and be assessed on a pro-rata basis with the values shown in the assessment schedule of the drainage report.

Owners are reminded that they have the opportunity to present their concerns to Council regarding the report details at the Consideration meeting and assessment questions at the Court of Revision meeting, along with appeal rights to the Ontario Ministry of Agriculture, Food and Rural Affairs (O.M.A.F.R.A.) Appeals Tribunal, and to the Drainage Referee as provided for in the Drainage Act.

The Drainage Act definitions and applicable clarifications are as follows:

“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 higher 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. Lands and roads that use a drainage works as an outlet, or for which, when the drainage works is constructed or improved, an improved outlet is provided either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek or watercourse, may be assessed for outlet liability. The assessment for outlet liability shall be based upon the volume and rate of flow of the water artificially caused to flow upon the injured land or road or into the drainage works from the lands and roads liable for such assessments. Every drainage works constructed under this Act shall be continued to a sufficient outlet.

Owners are advised that they have a legal responsibility to convey their drainage to a sufficient outlet. For this reason they have a share in the cost for upkeep of the drain downstream of their lands and this obligation is reflected in the assessment for Outlet Liability. Owners are reminded

that the responsibility for carrying out maintenance on a Municipal drain rests with the Town as set out in the Drainage Act. Any owner can notify the Town that the drain requires maintenance and the Town has to take action pursuant to the Act. This system is generally reactive and requires the property owners to raise their concerns and issues to the Town. Owners are reminded that keeping brush clear along their portion of the drain and having buffer strips provides them with a direct benefit of improved crop yield and preservation of topsoil on their lands. Owners have an Outlet Liability for the downstream portion of the drain. The owners are reminded that Municipal drainage is a communal project and basically a user pay system. As an example, when work is carried out on the Webster Drain downstream of the E.A. Sullivan Drain, the owners in the E.A. Sullivan Drain watershed that are outletting to the Webster Drain will be responsible for a portion of the cost, along with the other owners in the Webster Drain watershed upstream of the drainage works that is conducted. Owners are advised of the 1/3 grant available to agricultural lands that qualify for the Farm Property Tax Class and should be aware that the Town administers the grant process and reflects any available grant on the final billing to each qualified owner.

Owners may appeal their assessment as set out in the drainage report. They are advised that they should submit their appeal to the Court of Revision 10 days before the scheduled date of the meeting; however, the Court of Revision can agree to hear appeals presented at the meeting. If owners are still dissatisfied with the report after that meeting, they may submit an appeal to the O.M.A.F.R.A. Appeals Tribunal through the Town Clerk within 21 days of the closing of the Court of Revision pursuant to Section 54 of the Drainage Act.

The cost sharing for bridges is based on the location of same along the overall length of the drainage system. Each owner has the right for one access across each Municipal drain. The owner generally pays 100% of the cost for the first bridge installation and it becomes part of the drain when included in an engineer's report and is then to be maintained by the drain with costs shared as set out in the drainage report.

Owners should be aware that existing grass buffers and accesses will be protected and maintained as set out in the report specifications. Allowances are to offset damages to lands from the construction work and excavated material disposal. Owners are advised that the Contractor is responsible to remove any sticks and rocks (cobbles) etcetera from the spread materials and the Contractor is responsible to guarantee the work performed on the drain with a maintenance period of one year from the date of substantial completion.

## **VI. FINDINGS AND RECOMMENDATIONS**

We find that the profile included in the 1983 report plans by engineer Maurice Armstrong, P.Eng. provides a good fit to the existing profile of the drain. Said report provided for general repairs and improvements to the entire length of the drain that still appear to suit the current conditions of the watershed.

Based on our detailed survey, investigations, examinations, and discussions with the affected Owners and governing Authorities, we would recommend that bridge replacement works be carried out as follows:

- a) We recommend that all drain improvements, be carried out in accordance with the requirements established by E.R.C.A. and D.F.O. as set out in the documents within **Appendix "REI-A"** attached to this report.

- b) As this is an existing Municipal drain, and conditions have not changed and there is no information to indicate any new species concerns, the repair and improvement can be carried out based on the provisions included within the former Agreement that the Municipality had with M.N.R.F. and the mitigation measures included within same. A copy of said mitigation measures is included in **Appendix "REI-B"** within this report. We recommend that any work being completed shall be carried out in accordance with the **Schedule "C" Mitigation Plan** of the former agreement as included in **Appendix "REI-B"** for reference by the land owners, the Town of Tecumseh, and the Contractor who will be conducting the works.
- c) As provided for by Section 78 of the Drainage Act we recommend that the subject Pearce bridge located in the Webster Drain be repaired and improved as outlined further in this report including the specifications and the plans that form part of the report.
- d) We discussed with the bridge owners that the drain will need to be cleaned downstream of the new bridge to design grade to allow for a sufficient outlet for the new replacement 900mm H.D.P.E. pipe. The owners have accepted this and understand the excavated sediment materials will be spread onto their lands. Since all of the work will be carried out at the existing and proposed new driveway entrance, and within the Pearce Parcel, and because full drain restoration will be provided at the existing bridge, we find that there is no requirement for damages or allowances pursuant to Sections 29 and 30 of the Drainage Act.

Based on all of the above, we recommend that a new replacement access bridge be constructed in the Webster Drain to serve the farm lands of Craig & Christine Pearce, Parcel 410-00700 in Part of Lot 2, Concession 9, former geographic township of Sandwich South at MN 6950 9th Concession Road, Town of Tecumseh. We further recommend that all work shall be done in accordance with this report, the attached specifications and the accompanying drawings, and that all works associated with same be carried out in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2010".

## **VII. ESTIMATE OF COST**

Our estimate of the Total Cost of this work, including all incidental expenses, is the sum of **THIRTY ONE THOUSAND NINE HUNDRED DOLLARS (\$31,900.00)**, made up as follows:

### **CONSTRUCTION**

- Item 1) Provide all labour, equipment and material to construct a new replacement access bridge consisting of 20.0 metres (65.6 ft.) of 900mm diameter, 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe with wrap couplers; remove and dispose of existing pipe, deleterious material, and broken concrete headwalls forming the existing bridge; restore drain embankments and bottom to design grade at existing bridge location; clean to design grade approx. 120 metres of the drain downstream of the bridge new location (to the road crossing culvert); remove and dispose of existing brush, sod, and deleterious material at the new bridge; provide sloped quarried limestone on filter cloth end protection, granular bedding, Granular 'B' backfill, and Granular 'A' approaches; excavation, compaction, silt and sediment controls, quarried

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limestone on filter cloth protection, tile diversions and extensions as needed, cleanup and restoration, complete. (Pearce Bridge)	Lump Sum	\$	20,100.00
Net H.S.T. (1.76%) on Construction		\$	350.00
<b>TOTAL FOR CONSTRUCTION</b>		<b>\$</b>	<b>20,450.00</b>

**INCIDENTALS**

1) Report, Estimate, & Specifications		\$	3,500.00
2) Survey, Assistants, Expenses, and Drawings		\$	4,000.00
3) Duplication Cost of Report and Drawings		\$	800.00
4) Estimated Cost of Letting Contract		\$	1,000.00
5) Estimated Cost of Layout and Staking		\$	500.00
6) Estimated Cost of Part-Time Supervision and Inspection During Construction (based on 1 day duration)		\$	800.00
7) Net H.S.T. on Incidental Items Above (1.76%)		\$	190.00
8) Estimated Cost of Interim Financing		\$	200.00
9) Contingency Allowance		\$	460.00
<b>TOTAL FOR INCIDENTALS</b>		<b>\$</b>	<b>11,450.00</b>
<b>TOTAL FOR CONSTRUCTION (brought forward)</b>		<b>\$</b>	<b>20,450.00</b>
<b>TOTAL ESTIMATE</b>		<b>\$</b>	<b>31,900.00</b>

**VIII. DRAWINGS AND SPECIFICATIONS**

As part of this report, we have attached design drawings for the construction of the bridge replacement. The design drawings show the subject bridge location and the details of the work, as well as the approximate location within the watershed area. The design drawings are attached to the back of this report and are labelled **Appendix "REI-E"**.

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Also attached, we have prepared Specifications which set out the required construction details for the drain repair and improvements, which also include Standard Specifications labelled therein as **Appendix "REI-C"**.

#### **IX. CONSTRUCTION SCHEDULE OF ASSESSMENT**

We would recommend that the Total Cost associated with the construction of this replacement access bridge, including incidental costs, be charged against the affected lands and roads in the former geographic township of Sandwich South, Town of Tecumseh in accordance with the attached Schedule of Assessment.

On September 22nd, 2005, the Ontario Ministry of Agriculture, Food and Rural Affairs (O.M.A.F.R.A.) issued Administrative Policies for the Agricultural Drainage Infrastructure Program (A.D.I.P.). This program has re-instated financial assistance for eligible costs and assessed lands pursuant to the Drainage Act. Sections 85 to 90 of the Drainage Act allow the Minister to provide grants for various activities under said Act. Sections 85 and 87 make it very clear that grants are provided at the discretion of the Minister. Based on the current A.D.I.P., "lands used for agricultural purposes" may be eligible for a grant in the amount of 1/3 of their total assessment. The new policies define "lands used for agricultural purposes" as those lands eligible for the "Farm Property Class Tax Rate". The Town provides this information to the Engineer from the current property tax roll. Properties that do not meet the criteria are not eligible for grants. In accordance with same we expect that this project will be qualified for the grant normally available for agricultural lands. The Ministry however, is continually reviewing their policy for grants, and we recommend that the Town monitor the policies, and make application to the Ministry for any grant should same become available through the A.D.I.P. program or other available funds.

#### **X. FUTURE MAINTENANCE**

After the completion of the construction of this replacement access bridge, all of same shall be maintained in the future by the Town of Tecumseh.

Furthermore, if any maintenance work is required to the replacement access bridge in the future, we recommend that 73.0% of the future maintenance costs shall be assessed as a Benefit against the abutting property (Parcel 470-00700) being served by the access bridge, which is currently owned by Craig & Christine Pearce, in North Part of Lot 2, Concession 9, and the remaining balance of 27.0% be assessed against the affected upstream lands and roads based on prorating their Outlet Liability assessment in the attached Schedule of Assessment.

We recommend that the bridge structure as identified herein, be maintained in the future as part of the drainage works. We would also recommend that this access bridge in the drain, for which the future maintenance costs are to be borne by the abutting affected landowners and upstream lands and roads, be maintained by the Town and that said maintenance would include works to the bridge culvert, bedding, backfill and end treatment. Where concrete, asphalt or other decorative driveway surfaces over the bridge culvert requires removal as part of the maintenance works, these surfaces should also be repaired or replaced as part of the works. Likewise, if any fencing, gate, decorative walls, guard rails or other special features exist that will be impacted by the maintenance work, they are also to be removed and restored or replaced as part of the bridge maintenance work. However, the cost of the supply and installation of any surface material other than Granular "A" material, and the cost of removal and restoration or replacement, if necessary, of any special features, shall be totally assessed to the benefiting adjoining parcel served by said access bridge.

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We further recommend that the maintenance cost sharing as set out above shall remain as aforesaid until otherwise determined and re-established under the provisions of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2010".

All of which is respectfully submitted.

**Rood Engineering Inc.**



Gerard Rood, P.Eng.



att.

**Rood Engineering Inc.**

Consulting Engineers

9 Nelson Street

LEAMINGTON, Ontario N8H 1G6



**SCHEDULE OF ASSESSMENT**  
**WEBSTER DRAIN E09WE(110)**  
**(Bridge for Craig & Christine Pearce)**  
**TOWN OF TECUMSEH**

**3. MUNICIPAL LANDS:**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
		9th Concession Road	1.43	0.579	Town of Tecumseh	\$ -	\$ 259.00	\$ -	\$ 259.00
		10th Concession Road	4.01	1.623	Town of Tecumseh	\$ -	\$ 717.00	\$ -	\$ 717.00
<b>Total on Municipal Lands.....</b>						<b>\$ -</b>	<b>\$ 976.00</b>	<b>\$ -</b>	<b>\$ 976.00</b>

**4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-00500	9	Pt. Lot 2	0.37	0.150	Robert Nesbit	\$ -	\$ 47.00	\$ -	\$ 47.00
410-02530	9	Pt. Lot 1	0.49	0.198	Eleanor Mergl	\$ -	\$ 57.00	\$ -	\$ 57.00
<b>Total on Privately Owned - Non-Agricultural Lands.....</b>						<b>\$ -</b>	<b>\$ 104.00</b>	<b>\$ -</b>	<b>\$ 104.00</b>

**5. PRIVATELY OWNED - AGRICULTURAL LANDS (grantable):**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-02300	9	Pt. Lot 2	25.32	10.245	Randy & Phyllis Neels	\$ -	\$ 832.00	\$ -	\$ 832.00
410-02400	9	Pt. Lot 2	24.64	9.972	Gregory & Cheryl Markham	\$ -	\$ 810.00	\$ -	\$ 810.00
410-02500	9	Pt. Lot 2	23.68	9.584	William & Joanne Leon	\$ -	\$ 778.00	\$ -	\$ 778.00
410-02540	9	Pt. Lot 2	4.94	1.999	Mergl Seeds Ltd.	\$ -	\$ 163.00	\$ -	\$ 163.00

**Webster Drain E09WE(110) (Pearce Bridge)**

Town of Tecumseh

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-03600	10	Pt. Lot 2	25.01	10.120	Dwight & Jody Farough	\$ -	\$ 822.00	\$ -	\$ 822.00
410-03900	10	Pt. Lot 2	50.01	20.240	Iskandar El-Khoury	\$ -	\$ 1,643.00	\$ -	\$ 1,643.00
<b>Total on Privately Owned - Agricultural Lands (grantable).....</b>						<b>\$ -</b>	<b>\$ 5,048.00</b>	<b>\$ -</b>	<b>\$ 5,048.00</b>

**5. PRIVATELY OWNED - AGRICULTURAL LANDS (non-grantable):**

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
410-00600	9	Pt. Lot 2	57.10	23.107	Royal Estate Golf Club Ltd.	\$ -	\$ 1,876.00	\$ -	\$ 1,876.00
410-00700	9	Pt. Lot 2	25.70	10.401	Craig & Christine Pearce	\$ 23,051.00	\$ 845.00	\$ -	\$ 23,896.00
<b>Total on Privately Owned - Agricultural Lands (non-grantable).....</b>						<b>\$ 23,051.00</b>	<b>\$ 2,721.00</b>	<b>\$ -</b>	<b>\$ 25,772.00</b>
<b>TOTAL ASSESSMENT</b>			242.70	98.217		<b>\$ 23,051.00</b>	<b>\$ 8,849.00</b>	<b>\$ -</b>	<b>\$ 31,900.00</b>

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1 Hectare = 2.471 Acres  
 Project No. REI2016D058  
 June 1st, 2017

## SPECIFICATIONS

### WEBSTER DRAIN E09WE(110)

#### Pearce Bridge Replacement

#### (Geographic Township of Sandwich South)

### TOWN OF TECUMSEH

#### **I. GENERAL SCOPE OF WORK**

The Contractor shall provide all material, labour, and equipment to construct a new replacement access bridge for the Pearce Parcel south of Municipal Number 6850 Concession Road 9 consisting of 20.0 metres (65.6 ft.) of 900mm diameter, 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe with wrap couplers in the Webster Drain. The drain is to be cleaned to design grade 3.0 metres upstream of the bridge and approximately 117 metres downstream to the road crossing bridge running under the 9th Concession Road with the excavated material spread on the abutting land. The new replacement access bridge shall be constructed so that the pipe is centred approximately between hydro poles two and three with respect to the north property limit, with the existing 100mm tile outlets abutting Parcel 700-00700 diverted and extended through the new quarried limestone end walls. This location shall be the exact designated location of this access bridge culvert unless otherwise directed by the property owner and the Town Drainage Superintendent, prior to the construction of same. Any changes to the location of the new access bridge must be approved in writing by the Engineer. The general layout of the access bridge and other ancillary work shall be provided as shown and detailed in the accompanying drawing attached within **Appendix "REI-E"**. A Bench Mark has been set near the proposed access bridge so that same can be utilized for the setting of the new bridge culvert invert grades. The **Bench Mark** is described in the detail plan for the bridge culvert installation along with its elevation.

All work shall be carried out in accordance with these specifications, the plans forming part of this drainage project, as well as the Standard Details included in **Appendix "REI-C"**. All work carried out under this project shall be completed to the full satisfaction of the Town Drainage Superintendent and the Engineer.

#### **II. E.R.C.A. AND D.F.O. CONSIDERATIONS**

The Contractor will be required to implement stringent erosion and sedimentation controls during the course of the work to help minimize the amount of silt and sediment being carried downstream and into the Merrick Creek Drain. It is intended that work on this project be carried out during relatively dry weather to ensure proper site and drain conditions and to avoid conflicts with sediment being deposited into the outlet drainage systems. All disturbed areas shall be restored as quickly as possible with grass seeding and mulching installed to ensure a protective cover and to minimize any erosion from the work site subsequent to construction. The Contractor may be required to provide temporary silt fencing and straw bales as outlined further in these specifications.

All of the work shall be carried out in accordance with any permits or authorizations issued by the Essex Region Conservation Authority (E.R.C.A.) or the Department of Fisheries and Oceans (D.F.O.), copies of which will be provided, if available. The standard mitigation response received from E.R.C.A. shall be followed and a copy of same is included within **Appendix “REI-A”**.

As part of its work, the Contractor will implement the following measures that will ensure that any potential adverse effects on fish and fish habitat will be mitigated:

- a) As per standard requirements, work will not be conducted at times when flows in the drain are elevated due to local rain events, storms, or seasonal floods. Work will be done in the dry.
- b) All disturbed soils on the drain banks and within the channel, including spoil, must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works. The spoil material must be hauled away and disposed of at a suitable site, or spread an appropriate distance from the top of the drain bank to ensure that it is not washed back into the drain.
- c) To prevent sediment entry into the Drain, in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and their Contractors to ensure that sediment and erosion control measures are functioning properly and are maintained and upgraded as required.
- d) Silt or sand accumulated in the barrier traps must be removed and stabilized on land once the site is stabilized.
- e) All activities including maintenance procedures should be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicular refuelling and maintenance should be conducted away from the water.

### **III. M.N.R.F. CONSIDERATIONS**

The Contractor is to note that this project has gone through the Ministry of Natural Resources and Forestry (M.N.R.F.) screening process by way of a Species at Risk (S.A.R.) former Municipal Agreement review. A copy of the relevant information that was provided in the Agreement applicable to this work is included herein as part of **Appendix “REI-B”**.

The Contractor is to review **Appendix “REI-B”** in detail and is required to comply, in all regards, with the contents of said M.N.R.F. information, or any future requirements, and follow the special requirements therein included, during construction.

Notwithstanding the above, the Contractor is advised that the Town had a signed **Agreement** with the Ministry of Natural Resources and Forestry (M.N.R.F.) regarding the maintenance operations on Municipal drains and the Endangered Species Act (E.S.A.) 2007. We have reviewed the endangered species maps and any concerns will be provided in **Appendix “REI-B”**. Certain species such as turtles and snakes are mobile and may be encountered during construction. Therefore, the **“SCHEDULE C MITIGATION PLAN”** of the former **Agreement** (pages 13 through 23) has been included in **Appendix “REI-B”** in its entirety for further information and use by the Contractor.

The Contractor shall contact the Drainage Superintendent if an endangered species is encountered during construction. The Contractor shall be responsible for providing the necessary equipment and materials outlined in the “**SCHEDULE C MITIGATION PLAN**” to address the handling of any endangered species encountered during the course of the construction work. The Contractor shall cooperate fully and assist the Drainage Superintendent or M.N.R.F. staff in the proper handling of the endangered species as outlined in the “**MITIGATION PLAN**”, and as may be further directed by the Drainage Superintendent or the M.N.R.F., and shall govern all its operations accordingly.

#### **IV. BRIDGE CONSTRUCTION**

When completed, the new replacement access bridge along the centreline of the new culvert shall have a total top width, including the top width of the quarried limestone on filter cloth end walls, of approximately 13.40 metres (44.0ft.) and a travelled driveway width of 12.3 metres (40.4 ft.). The quarried limestone on filter cloth end wall protection shall be installed on a slope no steeper than 1.5 horizontal to 1.0 vertical, and shall extend from the end of the new 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe to the top elevation of the driveway.

The 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe to be provided for this project is to be supplied as no more than three (3) approximately equal lengths of pipe for the bridge, which are to be coupled together with the use of a wrap coupler, secured in accordance with the manufacturer’s recommendations. Under no circumstance shall the access culvert for the bridge be provided with more than three (3) lengths of pipe. The 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe to be utilized for this bridge installation must have a C.S.A. stamp and be approved by the Town Drainage Superintendent or Engineer, prior to its placement in the drain.

The Contractor shall also note that the placement of the new access bridge culvert is to be performed totally in the dry, and it shall be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Town Drainage Superintendent or Engineer. As part of the work, the Contractor will be required to clean out the drain to design grade along the full length of the bridge pipe and for a distance of 3.05 metres (10.0 ft.) upstream and 117.0 metres (383.9 ft.) downstream of said pipe. Additionally, the drain banks and bottom must be restored to proper slopes and grade where the existing bridge is removed for relocation. The design parameters of the Webster Drain at the location of this new access bridge installation consists of a 0.91m (3.0 ft.) bottom width, 0.05% grade, and 1.5 horizontal to 1.0 vertical sideslopes. The Contractor shall be required to cut any brush and strip the existing drain sideslopes of any vegetation as part of the grubbing operation at the relocated bridge site. The Contractor shall also be required to dispose of all excavated and deleterious materials, as well as any grubbed out materials from this work, to a site to be obtained by it at its own expense. The Contractor shall note that the survey indicates that the existing drain bottom is well above the design grade. The Contractor shall be required to provide any and all labour, material and equipment to set the pipe to the required design grades. The Contractor shall also be required to supply, if necessary for a solid base, a minimum thickness of 150mm (6”) of 20mm (3/4”) clear stone bedding underneath the culvert pipe, extending from the bottom of the excavation to the culvert invert grade, all to the full satisfaction of the Town Drainage Superintendent or Engineer. Downstream to the north of the new location of the replacement bridge, the Contractor shall clean out the drain bottom to the design grade noted as far as the road crossing pipe. The excavated material shall be placed on the adjacent Pearce lands in a windrow or spread out as established with the Drainage Superintendent and the owners. Fill material shall not block any low areas or furrows currently entering the drain.

The installation of the complete length of the new access bridge culvert, including all appurtenances, shall be completely inspected by the Town Drainage Superintendent or Engineer prior to backfilling any portions of same. Under no circumstance shall the Contractor backfill same until the Town Drainage Superintendent or Engineer inspects and approves said pipe installation. The Contractor shall provide a minimum notice of 2 working days to the Town Drainage Superintendent or Engineer prior to the commencement of this work. The installation of this new access bridge is to be performed during the normal working hours from Monday to Friday of the Town Drainage Superintendent or Engineer.

Once the 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe has been satisfactorily set in place at the site, the Contractor shall completely backfill same with granular material M.T.O. Type “B” O.P.S.S. (Ontario Provincial Standard Specification) Form 1010, with the exception of the top 305mm (12”) of the backfill material for the full top width of the drain and the access bridge, which shall be granular material M.T.O. Type “A” O.P.S.S. Form 1010. The Contractor shall secure the pipe ends against floating. The end slopes of the backfill material over the 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe from the invert of said pipe to the top of driveway elevation shall be quarried limestone on filter cloth erosion protection. The end walls shall be extended around onto the drain banks in line with the end of the replacement pipe, all as shown on the plans included in **Appendix “REI-E”**.

The Contractor shall also perform the necessary excavation from the west bank of the drain to the east limit of the roadway pavement to relocate the driveway southerly. This driveway approach from the existing edge of gravel shoulder to approximately the west top of bank shall consist of a minimum of 305mm (12”) of granular material M.T.O. Type “A” satisfactorily compacted in place. The gravel apron shall extend for the full width of the access culvert top, and include a gore section at the roadside curved protection with a 5.0m radius to the edge of the roadway shoulder, as shown on the plans. The gravel backfill shall also extend across the pipe to approximately 1m beyond the east top of bank as shown on the plans. The pipe shall have a minimum of 1.20m of cover, and then be graded down to the existing field level at a maximum of 10% grade.

Once the new 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe has been set in place at the required location, the Contractor shall completely backfill same with granular material, and install the quarried limestone on filter cloth protection on both ends of the bridge. The installation of the endwalls, as well as the backfilling of the pipe where applicable, shall be provided in compliance with Items 2), 3), and 4) of the "**Standard Specifications for Access Bridge Construction**" attached within **Appendix "REI-C"** and in total compliance and in all respects with the General Conditions included in Item 4) of said Appendix. The Contractor, in all cases, shall comply with these specifications and upon completion of the sloped quarried limestone end protection installation shall restore the adjacent areas to their original conditions.

The 320 kPa smooth wall heavy duty H.D.P.E. plastic pipe for this installation shall be provided with a depth of cover measured from the top of the H.D.P.E. pipe to the top of the granular backfill of approximately 1.20m (47.2”) for the new bridge and if the culvert is placed at its proper elevations, this should be easily achieved. If the Contractor finds that the specified cover is not being met, they shall notify the Drainage Superintendent and the Engineer immediately so that steps can be taken to rectify the condition prior to the placement of any backfill. The cover requirement is **critical** and must be attained. In order for this new access bridge culvert to properly fit the channel parameters, all of the design grade elevations provided below must be strictly adhered to.

Also, for use by the Contractor, we have established a Bench Mark near the site. This Bench Mark is the “*west obvert of 1200mm diameter CSP on Webster Drain crossing 9th Concession Road fronting MN 6950*”, with same being **Elevation 54.862 metres**. The new pipe culvert and the backfilling are to be placed on the following basis:

- i) The **south (upstream) invert** of the proposed bridge culvert is to be set at Elevation **53.767 metres**.
- ii) The north (**downstream) invert** of the proposed bridge culvert is to be set at Elevation **53.757 metres**.
- iii) The centreline of driveway for this bridge installation shall be set to approximately Elevation **56.091 metres** at the existing pavement edge, Elevation **55.961 metres** at the culvert pipe centreline, and Elevation **55.778 metres** at approximately 1 metre east of the east top of bank to match to the existing field grade. The access bridge driveway, in all cases, shall be graded with a cross-fall from the centreline of the driveway to the outer edges of the driveway at an approximate grade of 1.50%.

As a check, all of the above design grade elevations should be confirmed before commencing to the next stage of the new access bridge installation. The Contractor is also to check that the pipe invert grades are correct by referencing the Bench Mark provided for the site.

The Contractor shall also be required to provide all labour, equipment and material to provide granular fill to all gore areas at the road as noted on the plans. The Contractor shall provide a 5.0 meter radius on each side of the entrance and protect any existing landscape features during the course of the work.

As part of the work provided for the construction of the access bridge, the Contractor shall be required to protect or extend any existing lateral tile ends which conflict with the bridge installation. All existing lateral tile drains, where required, shall be diverted and extended to the ends of the new access bridge culvert and shall be extended and installed in accordance with the “Standard Lateral Tile Detail” as shown in **Appendix “REI-C”**, unless otherwise noted. Connections shall be made using manufacturer’s couplers wherever possible. All other connections shall be completely sealed with concrete grout around the full exterior perimeter of each joint.

The Contractor is to note that the granular driveway approaches extending from the east edge of roadway pavement to the west top of bank of the drain shall consist of granular material M.T.O. Type “A” O.P.S.S. Form 1010 and is to be provided to a minimum depth of 305mm (12”), and be satisfactorily compacted in place. The Contractor is to also note that all granular material being placed as backfill for this bridge installation shall be compacted in place to a minimum Standard Proctor Density of 98%, and that all native fill material to be used for the construction shall be compacted in place to a minimum Standard Proctor Density of 96%.

All of the granular backfill, native fill, and the compaction levels for same shall be provided to the full satisfaction of the Town Drainage Superintendent or the Engineer. The Contractor shall also note that any sediment being removed from the drain bottom as previously specified herein, shall not be utilized for the construction of the driveway, and shall be disposed of by the Contractor to a site to be obtained by it at its own expense.

The Contractor shall be required to restore any and all drain sideslopes damaged by the access bridge installation, utilizing the available scavenged topsoil, and shall seed and mulch over all of said areas.

The placing and grading of any topsoil shall be carefully and meticulously carried out in accordance with Ontario Provincial Standard Specifications, Form 802 dated November 2010, or as subsequently amended, or as amended by these specifications and be readied for the seeding and mulching process. The seeding and mulching of all of the above mentioned areas shall comply in all regards to Ontario Provincial Standard Specifications, Form 803 dated November 2010 and Form 804, dated November 2013, or as subsequently amended, or as amended by these specifications. The seeding mixture shall be the Standard Roadside Mix (Canada No. 1 Lawn Grass Seed Mixture) as set out in O.P.S.S. 804. All cleanup and restoration work shall be performed to the full satisfaction of the Town Drainage Superintendent or Engineer.

When all of the work for this installation has been completed, the Contractor shall ensure that positive drainage is provided to all areas, and shall ensure that the site is left in a neat and workmanlike manner, all to the full satisfaction of the Town Drainage Superintendent or Engineer.

The Contractor shall ensure that the traveling public is protected at all times while utilizing the roadway for its access. The Contractor shall provide traffic control, including flag persons when required.

Throughout the course of the work it is imperative that the Contractor protect as much landscaping and vegetation as possible when accessing along the drain. Any accesses or areas used in carrying out the works are to be fully restored to their original conditions by the Contractor at its cost, including topsoil placement and lawn restoration as directed by the Town Drainage Superintendent and the Consulting Engineer. Restoration shall include but not be limited to all necessary levelling, grading, shaping, topsoil placement, seeding, mulching, and granular placement required to make good any damage caused.

#### **V. REMOVAL OF BRUSH, TREES AND RUBBISH**

Where there is any brush, trees or rubbish along the course of the drainage works from top of bank to top of bank, including the full width of the work access, all such brush, trees or rubbish shall be close cut and grubbed out, and the whole shall be chipped up for recycling, burned or otherwise satisfactorily disposed of by the Contractor. The brush and trees removed along the course of the work are to be cut as close to the ground as practical and within the drain banks parallel to the sideslopes. Except as noted herein, stumps shall be left in place and shall be sprayed with a single application of stump killer (Diphenoprop BK700 or approved equal). All removed materials shall be put into piles by the Contractor in locations adjacent to the drain and within the working corridors, where they can be safely chipped and disposed of, or burned by it, or hauled away and disposed of by the Contractor to a site to be obtained by it at its expense. In all cases, trees and brush shall be stockpiled on the property on which they were cut. Prior to and during the course of any burning operations, the Contractor shall comply with the guidelines prepared by the Air Quality Branch of the Ontario Ministry of the Environment, and shall ensure that the Environmental Protection Act is not violated. The Contractor shall assume all responsibility for control of the burn, obtaining all utility locates in the area of each burn site, all responsibility for liabilities related to the burning of the brush and smoke generated, and will be required to notify the local fire authorities to obtain any permits and co-operate with them in the carrying out of any work. All work shall be carried out in conformance with the Town by-laws for

same as attached to these specifications in **Appendix “REI-D”**. The removal of brush and trees shall be carried out in close consultation with the Town Drainage Superintendent or Engineer to ensure that no decorative trees or shrubs are disturbed by the operations of the Contractor that can be saved. It is the intent of this project to save as many trees and bushes as practical on private lands adjacent to the drain and within the working corridors, especially mature trees beyond the drain sideslopes. The landowners will be requested to mark trees that they wish to save if possible and the Contractor shall review the removal of trees with the Drainage Superintendent or Engineer.

The Contractor shall protect all other trees, bushes, and shrubs located along the length of the drainage works except for those trees that are established, in consultation with the Town Drainage Superintendent, the Engineer, and the landowners, to be removed as part of the works. The Contractor shall note that protecting and saving the trees may require the Contractor to carry out hand work around the trees, bushes, and shrubs to complete the necessary final site grading and restoration.

Following the completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which are to remain standing, and it shall dispose of said branches along with other brush, thus leaving the trees in a neat and tidy condition.

The Contractor shall remove all deleterious materials and rubbish along the course of the open drain and any such materials located in the bridge culvert while carrying out its cleaning of same. All such deleterious materials and rubbish shall be loaded up and hauled away by the Contractor to a site to be obtained by it at its cost.

## **VI. FENCING**

Where it is necessary to take down any fence 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 located. The Contractor will be required to exercise extreme care in the removal of any fencing so as to cause a minimum of damage to 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 that it has used reasonable care in the removal and replacement of same. When 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.

## **VII. GENERAL QUARRIED LIMESTONE EROSION PROTECTION**

The quarried limestone erosion protection shall be embedded into the sideslopes of the drain a minimum thickness of 305mm and shall be underlain in all cases with non-woven synthetic filter mat. The filter mat shall not only be laid along the flat portion of the erosion protection, but also contoured to the exterior limits of the quarried limestone and the unprotected slope. The width of the general erosion protection shall be as established in the accompanying drawings or as otherwise directed by the Town Drainage Superintendent or the Engineer during construction. In placing the erosion protection the Contractor shall carefully tamp the quarried limestone pieces into place with the use of the equipment bucket so that the erosion protection when completed will be consistent, uniform and tightly laid. In no instance shall the quarried limestone protrude

beyond the exterior contour of the unprotected drain sideslopes along either side of said protection. The synthetic filter mat to be used shall be non-woven geotextile GMN160 conforming to O.P.S.S. 1860 Class I, as available from Armtec Construction Products, or equal. The quarried limestone to be used shall be graded in size from a minimum of 100mm to a maximum of 250mm, and is available from Walker Industries Amherstburg Quarry, in Amherstburg, Ontario, or equal.

### **VIII. BENCH MARKS**

Also, for use by the Contractor, we have established a Bench Mark along the course of the work at the west obvert of the 1200mm diameter C.S.P. on the Webster Drain crossing the 9th Concession Road fronting MN 6950, as shown on the plans. The Contractor shall work with the Drainage Superintendent or Engineer to transfer the bench mark as necessary to be used in setting the drain and pipe design grades.

In all cases, the Contractor is to utilize the specified bench mark and drain grades to control its work. The Contractor shall ensure that it takes note of the direction of flow and sets all grades to assure that all flows go northerly to match the direction of flow within the drain. The drain bottom design elevation is 10% of the pipe diameter above the replacement pipe invert at the north end of the pipe, being 90mm for the proposed replacement pipe, and has a grade of 0.05% bottom slope.

### **IX. ANCILLARY WORK**

During the course of any work to the replacement bridge access, the Contractor will be required to protect or extend any existing tile ends or swales and connect them to the drainage works to maintain the drainage from the adjacent lands. All existing tiles shall be extended utilizing solid Big 'O' "standard tile ends" or equal plastic pipe of the same diameter as the existing tile and shall be installed in accordance with the "**Standard Lateral Tile Detail**" included in the plans, unless otherwise noted. Connections shall be made using a manufactured coupling where possible. For other connections, the Contractor shall utilize a grouted connection. Grouted mortar joints shall be composed of three (3) parts of clean, sharp sand to one (1) part of Portland cement with just sufficient water added to provide a stiff plastic mix, and the mortar connection shall be performed to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The mortar joint shall be of a sufficient mass around the full circumference of the joint on the exterior side to ensure a tight, solid seal. The Contractor is to note that any intercepted pipes along the length of the existing culverts are to be extended and connected to the open drain unless otherwise noted in the accompanying drawings.

The Contractor shall re-grade the existing swales to allow for the surface flows to freely enter the drain. Any disturbed grass areas shall be fully restored with topsoil, seed and mulch.

Although it is anticipated that the bridge work on-site shall be undertaken in the dry, the Contractor shall supply and install a temporary straw bale check dam in the drain bottom immediately downstream of each bridge site during the time of construction. The straw bale check dam shall be to the satisfaction of the Town Drainage Superintendent or the Engineer and must be removed upon completion of the construction. The straw bales may be reused at each site subject to their condition. All costs associated with the supply and installation of this straw bale check dam shall be included in the cost bid for the bridge repair and improvement.

**X. TOPSOIL, SEED AND MULCH**

The Contractor will be required to protect grass buffers and driveway accesses along the top of the drain bank where they currently exist. Where any of these are damaged, they shall be fully restored including placement of topsoil. The topsoil shall be prepared for seeding as noted further in these specifications. Should the existing topsoil be treated to prevent grass growth, the Contractor shall strip the existing topsoil material back and spread it on the adjacent field and supply 50mm thick imported topsoil, or topsoil material scavenged from the drain banks at rock protection locations, that is suitable for growing grass.

The placing and grading of any topsoil shall be carefully and meticulously carried out in accordance with Ontario Provincial Standard Specifications, Form 802 dated November 2010, or as subsequently amended, or as amended by these specifications and be readied for the seeding and mulching process. The seeding and mulching of all of the above mentioned areas shall comply in all regards to Ontario Provincial Standard Specifications, Form 803 dated November 2010 and Form 804, dated November 2013, or as subsequently amended, or as amended by these specifications. The seeding mixture shall be the Standard Roadside Mix (Canada No. 1 Lawn Grass Seed Mixture) as set out in O.P.S.S. 804. All cleanup and restoration work shall be performed to the full satisfaction of the Town Drainage Superintendent or Engineer.

All of the work relative to the placement of topsoil and the seeding and mulching operation shall be meticulously done and completed in a good and workmanlike manner all to the full satisfaction of the Town Drainage Superintendent and the Engineer.

**XI. GENERAL CONDITIONS**

- a) The Town Drainage Superintendent or Consulting Engineer shall have authority to carry out minor changes to the work where such changes do not lessen the efficiency of the work.
- b) The Contractor shall satisfy itself as to the exact location, nature and extent of any existing structure, utility or other object which it may encounter during the course of the work. The Contractor shall indemnify and save harmless the Town of Tecumseh, and the Consulting Engineer and their representatives for any damages which it may cause or sustain during the progress of the work. It shall not hold the Town of Tecumseh or the Consulting Engineer liable for any legal action arising out of any claims brought about by such damage caused by it.
- c) The Contractor shall provide a sufficient number of layout stakes and grade points so that the Drainage Superintendent and Consulting Engineer can review same and check that the work will generally conform to the design and project intent.
- d) The Contractor will be responsible for any damage caused by it 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 the road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any part of the travelled portion of the road is damaged by the Contractor, the Town 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 Town. The Contractor, upon completing the works, shall clean all debris and junk, etcetera, from the roadside of the drain, and leave the site in a neat and workmanlike manner. The Contractor shall be responsible for keeping all public roadways utilized for hauling materials free and clear of mud and debris.

- e) The Contractor shall provide all necessary lights, signs, and barricades to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. If traffic control is required on this project, signing is to comply with the M.T.O. Manual of Uniform Traffic Control Devices (M.U.T.C.D.) for Roadway Work Operations and Ontario Traffic Manual Book 7.
- f) During the course of the work the Contractor shall be required to connect existing drainage pipes to the Municipal Drain. In the event that polluted flows are discovered, the Contractor shall delay the connection of the pipe and leave the end exposed and alert the Town, the Drainage Superintendent and the Consulting Engineer so that steps can be taken by the Town to address the concern with the owner and the appropriate authorities. Where necessary the Contractor shall cooperate with the Town in providing temporary measures to divert the drain or safely barricade same. Should the connection be found acceptable by the authorities, the Contractor shall complete the connection of the drain as provided for in the specifications, at no extra cost to the project.
- g) Following the completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which are to remain standing, and it shall dispose of said branches along with other brush, thus leaving the trees in a neat and tidy condition.
- h) The whole of the work shall be satisfactorily cleaned up, and during the course of the construction, no work shall be left in any untidy or incomplete state before subsequent portions are undertaken.
- i) All driveways, laneways and access bridges, or any other means of access on to the job site shall be fully restored to their former condition at the Contractor's expense. Before authorizing Final Payment, the Town Drainage Superintendent and the Consulting Engineer shall inspect the work in order to be sure that the proper restoration has been performed. In the event that the Contractor fails to satisfactorily clean up any portion of these accesses, the Consulting Engineer shall order such cleanup to be carried out by others and the cost of same be deducted from any monies owing to the Contractor.
- j) The Contractor will be required to submit to the Town a Certificate of Good Standing from the Workplace Safety and Insurance Board prior to the commencement of the work. The Contractor will also be required to submit to the Town a Certificate of Clearance for the project from the Workplace Safety and Insurance Board before Final Payment is made to the Contractor.
- k) The Contractor shall furnish a Performance and Maintenance Bond along with a separate Labour and Material Payment Bond within ten (10) days after notification of the execution of the Agreement by the Owner. One copy of said bonds shall be bound into each of the executed sets of the Contract. Each Performance and Maintenance Bond and Labour and Material Payment Bond shall be in the amount of 100% of the total Tender Price. All Bonds shall be executed under corporate seal by the Contractor and a surety company, authorized by law to carry out business in the Province of Ontario. The Bonds shall be acceptable to the

Owner in every way and shall guarantee faithful performance of the contract during the period of the contract, including the period of guaranteed maintenance which will be in effect for twelve (12) months after substantial completion of the works.

The Tenderer shall include the cost of bonds in the unit price of the Tender items as no additional payment will be made in this regard.

- l) The Contractor shall be required, as part of this Contract, to provide Comprehensive Liability Insurance coverage for not less than \$2,000,000.00 on this project, and shall name the Town of Tecumseh and its officials, and the Consulting Engineer and its staff as additional insured under the policy. The Contractor must submit a copy of this policy to both the Municipal Clerk and the Consulting Engineer prior to the commencement of work.
- m) Monthly progress orders for payment shall be furnished the Contractor by the Town Drainage Superintendent. Said orders shall be for not 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 and payment shall not be authorized until the Contractor provides the following:
  - i) a Certificate of Clearance for the project from the Workplace Safety and Insurance Board
  - ii) proof of advertising
  - iii) a Statutory Declaration, in a form satisfactory to the Consulting Engineer and the Town, that all liabilities incurred by the Contractor and its Sub-Contractors in carrying out the Contract have been discharged and that all liens in respect of the Contract and Sub-Contracts thereunder have expired or have been satisfied, discharged or provided for by payment into Court.

The Contractor shall satisfy the Consulting Engineer or Town that there are no liens or claims against the work and that all of the requirements as per the Construction Lien Act, 1983 and its subsequent amendments have been adhered to by the Contractor.

- n) In the event that the Specifications, Information to Tenderers, or the Form of Agreement do not apply to a specific condition or circumstance with respect to this project, the applicable section or sections from the Canadian Construction Documents Committee CCDC2 shall govern and be used to establish the requirements of the work.



## APPENDIX "REI-A"



Gmail

Gerard Rood &lt;gerard.reinc@gmail.com&gt;

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**FW: Webster Drain - Notice of On-Site Meeting - E09WE(110)**

1 message

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**Cynthia Casagrande** <CCasagrande@erca.org>

Wed, Mar 8, 2017 at 11:05 AM

To: Sam Paglia &lt;spaglia@tecumseh.ca&gt;

Cc: "Imoy@tecumseh.ca" &lt;Imoy@tecumseh.ca&gt;, Gerard Rood &lt;gerard@roodengineering.ca&gt;, Dan Jenner &lt;DJenner@erca.org&gt;

Dear Sam:

This office has received the Notice of On-Site Meeting scheduled for today, March 08, 2017 regarding the proposed repair and maintenance to the Webster Drain. Unfortunately, we are unable to attend this meeting.

We note that the 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

(519) 776-5209, Ext. 349

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**From:** Cynthia Casagrande**Sent:** Wednesday, October 12, 2016 10:23 AM**To:** 'Sam Paglia' <spaglia@tecumseh.ca>**Cc:** 'Gerard Rood' <gerard@roodengineering.ca>; 'pbartnik@tecumseh.ca' <pbartnik@tecumseh.ca>; Dan Jenner <DJenner@ERCA.org>**Subject:** Webster Drain - Notice of Request for Repair and Improvement - E09WE(110)

Dear Sam:

Your File No.: E09WE(110)

This office acknowledges receipt of the Notice of Request for Repair and Improvement to the Webster Drain.

A review of our floodplain mapping for the Webster Drain indicates that this drain is located within an area that is under the jurisdiction of the Essex Region Conservation Authority (ERCA) (Section 28 of the *Conservation Authorities Act*). Prior to undertaking works, a permit is required from this office.

At this time, we do not expect that there will be any extraneous comments or concerns with respect to this project. However, we cannot be more specific in this regard without an actual proposal to review.

With respect to Department of Fisheries and Oceans (DFO) concerns and comments, the proposed works to the Webster Drain will need to be self-assessed by you, the proponent, through the DFO website at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>. Through the self-assessment process, you will be able to determine if these works require a formal authorization under the *Fisheries Act*.

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

(519) 776-5209, Ext. 349

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**From:** Sam Paglia [<mailto:spaglia@tecumseh.ca>]

**Sent:** Thursday, October 6, 2016 9:43 AM

**To:** Cynthia Casagrande <[CCasagrande@erca.org](mailto:CCasagrande@erca.org)>

**Cc:** Gerard Rood <[gerard@roodengineering.ca](mailto:gerard@roodengineering.ca)>; John Henderson <[JHenderson@erca.org](mailto:JHenderson@erca.org)>; Phil Bartnik <[pbartnik@tecumseh.ca](mailto:pbartnik@tecumseh.ca)>

**Subject:** E09WE(110) - 2016-10-06-Webster Drain

Good morning Cynthia,

Please find attached, a letter notifying ERCA of expected drainage improvements to the Webster Drain.

A map of the Drain, the Request for Improvement form and a parcel information report are also attached for reference.

A hard copy of the letter will be sent to you by regular mail.

If there is any other information that you may require in order to advise on this project, please advise.

Kindest Regards,

Sam Paglia, P.Eng.

Drainage Superintendent

The Corporation of the Town of Tecumseh

Phone [\(519\) 735-2184](tel:5197352184) - Ext 105

Fax [\(519\) 735-6712](tel:5197356712)

Cell [\(519\) 818-0101](tel:5198180101)

[www.tecumseh.ca](http://www.tecumseh.ca)

[spaglia@tecumseh.ca](mailto:spaglia@tecumseh.ca)

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[Image removed by sender. logo](#) **Sam Paglia**  
**Drainage Superintendent/Engineering Technologist**  
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Town of Tecumseh - - Tecumseh, ON. - N8N1W9  
Phone: Fax: - [www.tecumseh.ca](http://www.tecumseh.ca)

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# Measures to Avoid Causing Harm to Fish and Fish Habitat

If you are conducting a project near water, it is your responsibility to ensure you avoid causing [serious harm to fish](#) in compliance with the *Fisheries Act*. The following advice will help you avoid causing harm and comply with the *Act*.

**PLEASE NOTE:** This advice applies to all project types and replaces all “Operational Statements” previously produced by DFO for different project types in all regions.

## Measures

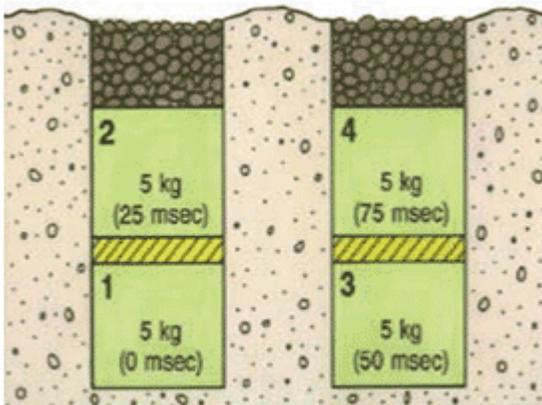
- Time work in water to respect [timing windows](#) to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.
- Minimize duration of in-water work.
- Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.
- Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
  
- Design and plan activities and works in waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
- Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
- Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures.
- Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.
  
- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

- Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear. The plan should, where applicable, include:
  - Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
  - Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.
  - Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging, underwater cable installation).
  - Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.
  - Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.
  - Repairs to erosion and sediment control measures and structures if damage occurs.
  - Removal of non-biodegradable erosion and sediment control materials once site is stabilized.
- Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
- Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.
- Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
- Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.
- If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
- Remove all construction materials from site upon project completion.

- Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.
- Retain a qualified environmental professional to ensure applicable permits for relocating fish are obtained and to capture any fish trapped within an isolated/enclosed area at the work site and safely relocate them to an appropriate location in the same waters. Fish may need to be relocated again, should flooding occur on the site.
- Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.
  - In freshwater, follow these measures for design and installation of intake end of pipe fish screens to protect fish where water is extracted from fish-bearing waters:
    - Screens should be located in areas and depths of water with low concentrations of fish throughout the year.
    - Screens should be located away from natural or artificial structures that may attract fish that are migrating, spawning, or in rearing habitat.
    - The screen face should be oriented in the same direction as the flow.
    - Ensure openings in the guides and seals are less than the opening criteria to make “fish tight”.
    - Screens should be located a minimum of 300 mm (12 in.) above the bottom of the watercourse to prevent entrainment of sediment and aquatic organisms associated with the bottom area.
    - Structural support should be provided to the screen panels to prevent sagging and collapse of the screen.
    - Large cylindrical and box-type screens should have a manifold installed in them to ensure even water velocity distribution across the screen surface. The ends of the structure should be made out of solid materials and the end of the manifold capped.
    - Heavier cages or trash racks can be fabricated out of bar or grating to protect the finer fish screen, especially where there is debris loading (woody material, leaves, algae mats, etc.). A 150 mm (6 in.) spacing between bars is typical.
    - Provision should be made for the removal, inspection, and cleaning of screens.
    - Ensure regular maintenance and repair of cleaning apparatus, seals, and screens is carried out to prevent debris-fouling and impingement of fish.
    - Pumps should be shut down when fish screens are removed for inspection and cleaning.
- Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.
  - If explosives are required as part of a project (e.g., removal of structures such as piers, pilings, footings; removal of obstructions such as beaver dams; or preparation of a river or lake bottom for installation of a structure such as a dam or water intake), the potential for impacts to fish and fish habitat should be minimized by implementing the following measures:

- Time in-water work requiring the use of explosives to prevent disruption of vulnerable fish life stages, including eggs and larvae, by adhering to appropriate fisheries [timing windows](#).
- Isolate the work site to exclude fish from within the blast area by using bubble/air curtains (i.e., a column of bubbled water extending from the substrate to the water surface as generated by forcing large volumes of air through a perforated pipe/hose), cofferdams or aquadams.
- Remove any fish trapped within the isolated area and release unharmed beyond the blast area prior to initiating blasting
- Minimize blast charge weights used and subdivide each charge into a series of smaller charges in blast holes (i.e., decking) with a minimum 25 millisecond (1/1000 seconds) delay between charge detonations (see Figure 1).
- Back-fill blast holes (stemmed) with sand or gravel to grade or to streambed/water interface to confine the blast.
- Place blasting mats over top of holes to minimize scattering of blast debris around the area.
- Do not use ammonium nitrate based explosives in or near water due to the production of toxic by-products.
- Remove all blasting debris and other associated equipment/products from the blast area.

**Figure 1: Sample Blasting Arrangement**



Per Fig. 1: 20 kg total weight of charge; 25 msecs delay between charges and blast holes; and decking of charges within holes.

- Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.

- Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
- Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
- Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.
- Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.

Date modified:  
2013-11-25



## APPENDIX "REI-B"



**SCHEDULE C**  
**MITIGATION PLAN**

The Mitigation Plan shall be in effect until June 30, 2015.

The Municipality shall undertake measures to minimize adverse effects on species at risk in accordance with the general conditions described in Part B and taxa-specific conditions described in Part C, and the monitoring and reporting requirements described in Part D of this Mitigation Plan.

**PART A. DEFINITIONS**

**1. Definitions:**

1.1. In this Schedule, the following words shall have the following meanings:

"DFO" means Fisheries and Oceans Canada;

"MNR" means the Aylmer District Office of the Ministry of Natural Resources;

"Contact" means to contact the MNR in accordance with the notification/contact schedule provided to the Municipality by the MNR Designated Representative from time to time;

"Holding Tub" means a large, light-coloured container fitted with a non-airtight latchable lid approved by the MNR for the temporary storage of captured snakes, turtles, amphibians, birds or eggs;

"Interagency Notification Form" means the form issued by DFO, available at [www.dfo-mpo.gc.ca](http://www.dfo-mpo.gc.ca), which is required to be completed when a drain is being maintained or constructed;

"Monitoring and Reporting Form" means the document that must be completed by the Municipality in accordance with Part D to this Schedule and will be provided to the Municipality;

"Ontario Operational Statement" means one of the documents issued by DFO, available at [www.dfo-mpo.gc.ca](http://www.dfo-mpo.gc.ca), that sets out the conditions and measures to be incorporated into a project in order to avoid negative impacts to fish and fish habitat in Ontario, as modified from time to time;

"Process Charts" means the charts attached as Part E to this Schedule which describe the steps set out in this Mitigation Plan;

"Seasonal Timing Windows Chart" means the chart attached as Part G to this schedule which describes the Sensitive Periods applicable to each Taxonomic Group;

"Sensitive Area" means a geographic area in the Municipality where additional mitigation measures are required to be undertaken for one or more Taxonomic Groups;

"Sensitive Areas Map" means any one of the maps attached as Part F to this schedule which sets out the applicable Sensitive Areas;

"Sensitive Period" means a time of year set out in the Seasonal Timing Windows Chart during which taxa-specific mitigation measures are required to be undertaken for a Taxonomic Group because of ambient air/water temperatures, water-levels or important life-history stages;

"Taxonomic Group" means the distinct group comprising one or more Species based on their taxonomic relationship and common approaches to mitigating adverse effects (i.e., fish, mussels, turtles, snakes, amphibians, birds or plants); and

"Work Zone" means the geographic area in the Municipality where an Activity in respect of one of the Drainage Works is being conducted.

- 1.2. For greater certainty, any defined terms that are not defined in section 1.1 have the same meanings as in the Agreement.

## **PART B. GENERAL MEASURES TO MINIMIZE ADVERSE EFFECTS**

### **2. Process Charts**

- 2.1. The general steps set out in this Part B are visually described in the Process Charts (Part E).

### **3. Review of Documentation**

- 3.1. Prior to conducting any Activities in respect of the Drainage Works the Municipality shall determine if conditions apply to the place, time or manner in which the Municipality wishes to pursue them by reviewing:
  - (a) the Sensitive Areas Maps (Part F) to determine if the Work Zone for the proposed Activities will occur within a Sensitive Area;
  - (b) the DFO Reference Guide for Fish and Mussel Species at Risk Distribution Maps: A Referral Review Tool for Projects Affecting Aquatic Species at Risk;
  - (c) the Seasonal Timing Windows Chart (Part G) to determine if the proposed Activities will occur during a Sensitive Period for one or more of the Taxonomic Groups; and
  - (d) the Process Charts to determine if prior notification is required;
  - (e) the mitigation measures for each applicable Taxonomic Group in Part C to determine what additional site-specific mitigation measures, if any, are required.
- 3.2. The Municipality shall document the results of the review undertaken in accordance with section 3.1 using the Monitoring and Reporting Form.

### **4. Sensitive Areas Maps**

- 4.1. The Sensitive Areas Maps contain sensitive information about the distribution of species at risk, are provided for the sole purpose of informing this Agreement and are not to be copied or distributed for any other purposes or to any other party without the prior written authorization of the MNR Designated Representative.

### **5. Prior Notification to Seek Direction**

- 5.1. If, after completing the review of documents described in section 3.1, the Municipality determines that the proposed Activities will be undertaken:
  - (a) in a place;
  - (b) at a time; or
  - (c) in a manner,

that requires prior notification in accordance with the Process Charts, the Municipality shall provide prior notification to the MNR in order for the MNR to determine if the Municipality must undertake additional site-specific or Species-specific mitigation

measures to minimize adverse effects on the Species and, if applicable, to identify such measures.

- 5.2. The prior notification under section 5.1 shall include a completed Interagency Notification Form:
  - (a) in respect of maintenance/repair where the proposed Activities are being undertaken pursuant to subsection 3(18) or section 74 of the *Drainage Act*, or
  - (b) in respect of construction/improvement where the proposed Activities are being undertaken pursuant to section 77 or 78 of the *Drainage Act*.
- 5.3. Where an Activity is undertaken in accordance with section 124 of the *Drainage Act* and would otherwise have required prior notification under section 5.1, the Municipality shall Contact the MNR by email prior to the commencement of the Activity, and complete and submit the applicable Interagency Notification Form within one week of the Activity's completion, unless otherwise directed in writing by the MNR Designated Representative.

## **6. General Mitigation Measures**

- 6.1. Notwithstanding that prior notification or additional mitigation measures may be required in accordance with this schedule, in undertaking any Activity at any time in respect of the Drainage Works the Municipality shall:
  - (a) undertake the mitigation measures for sediment control and for erosion control and bank stabilization set out in The Drain Primer (Cliff Evanitski 2008) published by DFO (ISBN 978-0-662-48027-3), unless otherwise authorized in writing by the MNR Designated Representative;
  - (b) use net free, 100% biodegradable erosion control blanket for all erosion control or bank stabilization done in conjunction with their Activities or, if authorized in writing by the MNR Designated Representative, alternative erosion control blankets that provide equal or greater protection to individual Species; and
  - (c) where applicable, follow the guidelines set out in the following Ontario Operational Statements:
    - (i) Beaver Dam Removal;
    - (ii) Bridge Maintenance;
    - (iii) Culvert Maintenance;
    - (iv) Isolated Pond Construction;
    - (v) Maintenance of Riparian Vegetation in Existing Right of Ways; and
    - (vi) Temporary Stream Crossing.

## **PART C. TAXA-SPECIFIC MEASURES TO MINIMIZE ADVERSE EFFECTS**

### **ADDITIONAL MITIGATION MEASURES FOR FISH SPECIES**

#### **7. Activities undertaken in Sensitive Areas for Fish**

- 7.1. Subject to section 7.2, where a proposed Activity will occur in a Sensitive Area for a fish Species, the Municipality shall Contact the MNR to seek further direction.
- 7.2. Section 7.1 does not apply where the applicable Drainage Works are:
  - (a) in a naturally dry condition;
  - (b) classified as a Class F drain under DFO's *Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario* (ISBN 0-662-72748-7); or
  - (c) a closed drain.

### **ADDITIONAL MITIGATION MEASURES FOR MUSSEL SPECIES**

#### **8. Activities undertaken in Sensitive Areas for Mussels**

- 8.1. Subject to section 8.2, where a proposed Activity will occur in a Sensitive Area for a mussel Species, the Municipality shall Contact the MNR to seek further direction.
- 8.2. Section 8.1 does not apply where the applicable Drainage Works are:
  - (a) in a naturally dry condition;
  - (b) classified as a Class F drain in DFO's *Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario* (ISBN 0-662-72748-7); or
  - (c) a closed drain.

### **ADDITIONAL MITIGATION MEASURES FOR TURTLE SPECIES**

#### **9. Training and Required On Site Materials for Turtles**

- 9.1. The Municipality will ensure any person:
  - (a) involved in the capture, temporary holding, transfer and release of any turtle Species has received training in proper turtle handling procedures; and
  - (b) who undertakes an Activity has a minimum of two Holding Tubs and cotton sacks on site at all times.

#### **10. Activities undertaken in Sensitive Areas and Sensitive Periods for Turtles**

- 10.1. Subject to section 10.2, where a proposed Activity will occur in a Sensitive Area for any turtle Species and during a Sensitive Period for that Species, the Municipality shall:
  - (a) not undertake any Activities that include the excavation of sediment or disturbance to banks during the applicable Sensitive Period unless otherwise authorized;
  - (b) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative;
  - (c) avoid draw-down and de-watering of the Sensitive Area during the applicable Sensitive Period; and

- (d) if authorized by the MNR Designated Representative under (a) above to undertake Activities that include excavation of sediment or disturbance of banks, in addition to any other measures required under (b) above, ensure any person undertaking an Activity has at least two Holding Tubs on site at all times.

10.2. Section 10.1 does not apply where the applicable Drainage Works are:

- (a) in a naturally dry condition;
- (b) classified as a Class F drain in DFO's *Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario* (ISBN 0-662-72748-7); or
- (c) a closed drain.

#### **11. Measures for Encounters with Turtles During a Sensitive Period**

- 11.1. Where one or more individuals belonging to a turtle Species is encountered in the undertaking of an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:
- (a) capture and transfer all uninjured individuals of that Species into a Holding Tub;
  - (b) capture and transfer all individuals injured as a result of the Activities into a Holding Tub separate from any Holding Tub containing uninjured individuals;
  - (c) ensure that the Holding Tubs with the captured individuals are stored at a cool temperature to prevent freezing until the individuals can be transferred; and
  - (d) immediately Contact the MNR to seek direction and to arrange for the transfer of the individual turtles.

#### **12. Measures for Encounters with Turtles Laying Eggs or Nest Sites**

- 12.1. Where one or more individuals belonging to a turtle Species laying eggs, or an active nest site of any turtle Species, is encountered in undertaking an Activity in a Work Zone, the Municipality shall:
- (a) not disturb a turtle encountered laying eggs and not conduct any Activities within 20 metres of the turtle while it is laying eggs;
  - (b) collect any displaced or damaged eggs and capture any injured dispersing juveniles and transfer them to a Holding Tub;
  - (c) store all captured injured individuals and collected eggs out of direct sunlight;
  - (d) immediately Contact the MNR to seek direction and to arrange for the transfer of any injured individuals and eggs;
  - (e) immediately stop any disturbance to the nest site and recover exposed portions with soil or organic material to protect the integrity of the remaining individuals;
  - (f) not drive any equipment over the nest site or conduct any Activities within 5 metres of the nest site;
  - (g) not place any dredged materials removed from the Drainage Works on top of the nest site;
  - (h) mark out the physical location of the nest site for the duration of the project but not by any means that might increase the susceptibility of the nest to predation or poaching; and
  - (i) where there are no collected eggs or captured individuals, record relevant information and Contact the MNR within 72 hours to provide information on the location of the nest site.

### **13. Measures for Encounters with Turtles Outside of a Sensitive Period**

- 13.1. Where one or more individuals belonging to a turtle Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:
- (a) briefly stop the Activity for a reasonable period of time to allow any uninjured individual turtles of that Species to leave the Work Zone;
  - (b) where individuals do not leave the Work Zone after the Activity is briefly stopped in accordance with (a) above, capture all uninjured individuals and release them in accordance with section 14.1;
  - (c) where circumstances do not allow for their immediate release, transfer captured uninjured individuals for a maximum of 24 hours into a Holding Tub which shall be stored out of direct sunlight and then release them in accordance with section 14.1;
  - (d) capture and transfer any individuals that have been injured into a Holding Tub separate from any Holding Tub containing uninjured individuals; and
  - (e) store all captured injured individuals out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for their transfer.

### **14. Release of Captured Individuals Outside of a Sensitive Period**

- 14.1. Where uninjured individuals are captured under section 13.1, they shall be released:
- (a) within 24 hours of capture;
  - (b) in an area immediately adjacent to the Drainage Works;
  - (c) in an area that will not be further impacted by the undertaking of any Activity; and
  - (d) not more than 250 metres from the capture site.
- 14.2. Following a release under section 14.1, the Municipality shall Contact the MNR within 72 hours of the release to provide information on the name of the Drainage Works, the location of the encounter and the location of the release site.

### **15. Measures for Dead Turtles**

- 15.1. Where one or more individuals of a turtle Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a turtle Species within the Work Zone, the Municipality shall:
- (a) place any dead turtles in a Holding Tub outside of direct sunlight; and
  - (b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the dead individuals.

## **ADDITIONAL MITIGATION MEASURES FOR SNAKE SPECIES**

### **16. Training and Required On Site Materials for Snakes**

- 16.1. The Municipality will ensure any person:
- (a) involved in the capture, temporary holding, transfer and release of any snake Species has received training in proper snake handling procedures; and
  - (b) who undertakes an Activity has a minimum of two Holding Tubs and cotton sacks on site at all times.

## **17. Activities undertaken in Sensitive Areas and Sensitive Periods for Snakes**

- 17.1. Where a proposed Activity involves physical infrastructure (e.g., culverts, pump houses, etc.) and will occur in a Sensitive Area for any snake Species and during a *Sensitive Period – Hibernation* for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.
- 17.2. Where a proposed Activity will occur at or adjacent to a known hibernacula (as identified by the MNR) for any snake Species and during a *Sensitive Period – Staging* for that Species, the Municipality shall:
  - (a) erect effective temporary snake barriers approved by the MNR that will not pose a risk of entanglement for snakes and that shall be secured so that individual snakes may not pass over or under the barrier or between any openings to enter or re-enter the Work Zone;
  - (b) inspect the temporary snake barriers daily during periods when snakes are active, capture any individuals incidentally encountered within the area bounded by the snake barrier and release the captured individuals in accordance with section 21.1; and
  - (c) remove the temporary snake barriers immediately upon completion of the Activity.
- 17.3. Where a proposed Activity that does not involve physical infrastructure will occur in a Sensitive Area for any snake Species and during a *Sensitive Period – Staging* for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.

## **18. Measures for Encounters with Snakes During a Sensitive Period**

- 18.1. Where one or more individuals belonging to a snake Species is encountered, or should an active hibernacula be uncovered, while conducting an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:
  - (a) capture and transfer all injured and uninjured individual snakes of that Species into individual light-coloured, drawstring cotton sacks;
  - (b) place all cotton sacks filled with the captured individuals into a Holding Tub;
  - (c) ensure that the Holding Tub with the captured individuals is stored at a cool temperature to protect the snakes from freezing until the individuals can be retrieved or transferred;
  - (d) if an active hibernacula is uncovered, cease all Activities at the hibernacula site; and
  - (e) immediately Contact the MNR to seek direction and to arrange for the transfer and/or retrieval.

## **19. Measures for Encounters with Snake Nests**

- 19.1. Where an active nest of any of the snake Species is encountered and disturbed while undertaking an Activity in any part of a Work Zone, the Municipality shall:
  - (a) collect any displaced or damaged eggs and transfer them to a Holding Tub;
  - (b) capture and transfer all injured dispersing juveniles of that Species into a light-coloured drawstring cotton sack;
  - (c) place all cotton sacks with the captured injured individuals into a Holding Tub;

- (d) ensure that the Holding Tub with the captured injured individuals is stored out of direct sunlight;
- (e) immediately Contact the MNR to seek direction and to arrange for the transfer of the injured individuals;
- (f) immediately stop any disturbance to the nest site and loosely cover exposed portions with soil or organic material to protect the integrity of the remaining individuals;
- (g) not drive any equipment over the nest site or conduct any Activities within 5 metres of the nest site;
- (h) not place any dredged materials removed from the Drainage Works on top of the nest site;
- (i) mark out the physical location of the nest site but not by any means that might increase the susceptibility of the nest to predation or poaching; and
- (j) where there are no collected eggs or captured individuals, Contact the MNR within 72 hours to provide information on the location of the nest site.

## **20. Measures for Encounters with Snakes Outside of a Sensitive Period**

- 20.1. Where one or more individuals belonging to a snake Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:
- (a) follow the requirements in section 16;
  - (b) briefly stop the Activity for a reasonable period of time to allow any uninjured individual snakes of that Species to leave the Work Zone;
  - (c) if the individuals do not leave the Work Zone after the Activity is briefly stopped in accordance with (b) above, capture all uninjured individuals and release them in accordance with section 21.1;
  - (d) where circumstances do not allow for the immediate release of captured uninjured individuals, they may be transferred into individual, light-coloured, drawstring cotton sacks before placing them in a Holding Tub which shall be stored out of direct sunlight for a maximum of 24 hours before releasing them in accordance with section 21.1;
  - (e) capture and transfer any individuals injured as a result of conducting the Activities into a Holding Tub separate from any Holding Tub containing uninjured individuals; and
  - (f) store all captured injured individuals out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for their transfer.

## **21. Release of Captured Individuals Outside of a Sensitive Period**

- 21.1. Where uninjured individuals are captured under section 20.1, they shall be released:
- (a) within 24 hours of capture;
  - (b) in an area immediately adjacent to the Drainage Works where there is natural vegetation cover;
  - (c) in an area that will not be further impacted by the undertaking of any Activity; and
  - (d) not more than 250 metres from the capture site.

- 21.2. Following a release under section 21.1, the Municipality shall Contact the MNR within 72 hours of the release to provide information on the name of the Drainage Works, the location of the encounter and the location of the release site.

## **22. Measures for Dead Snakes**

- 22.1. Where one or more individuals belonging to a snake Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a snake Species within the Work Zone, the Municipality shall:
- (a) collect and transfer any dead individuals into a Holding Tub outside of direct sunlight; and
  - (b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the carcasses of the dead individuals.

## **ADDITIONAL MITIGATION MEASURES FOR HERBACEOUS PLANTS**

### **23. Activities Undertaken in Sensitive Areas for Herbaceous Plants**

- 23.1. Where a proposed Activity will occur that involves physical disturbance to vegetated banks or the killing and/or removal of vegetation through chemical or mechanical means in a Sensitive Area for any herbaceous plant Species, the Municipality shall:
- (a) undertake the Activity outside of the Sensitive Period, unless otherwise authorized;
  - (b) limit equipment access and operations to the side of the Drainage Works that will minimize disturbances where any of the plant Species occur;
  - (c) locate temporary storage sites for excavated sediments or bank materials on areas of open soil away from where any of the plant Species are likely to occur;
  - (d) not use any broad spectrum herbicides in Sensitive Areas; and
  - (e) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative.

## **ADDITIONAL MITIGATION MEASURES FOR TREE SPECIES**

### **24. Additional Measures for Butternut**

- 24.1. Where Butternuts may exist in a Work Zone and may be affected by an Activity, the Municipality shall:
- (a) identify and mark as retainable trees all individual Butternut trees within the Work Zone during work planning site visits unless the individual Butternut has been assessed as a non-retainable tree due to infection by Butternut canker by a person designated by the Minister as a Butternut Health Assessor;
  - (b) retain and avoid disturbance to all individuals identified under (a) above that have been identified as retainable trees or that have not been assessed, unless otherwise authorized in writing by the MNR Designated Representative;
  - (c) conduct Activities by:
    - (i) limiting equipment access and operations to the side of the Drainage Works that will minimize disturbance to where any of the individual Butternut trees occur,
    - (ii) working around trees,

- (iii) avoiding compacting and/or disturbing the soil by keeping excavation and other heavy equipment a minimum of 2 metres away from the main stem of retained individuals to avoid damaging roots and stems,
- (iv) placing excavated materials on areas not within 2 metres of the main stem of retained individuals, and
- (v) where branches are required to be removed to allow for safe operation of equipment, removing them using appropriate equipment, such as pruning saws, chain saws or lopping shears, in accordance with good forestry practices.

**25. Measures for Other Trees**

- 25.1. Where Kentucky Coffee-tree may exist in a Work Zone and may be affected by an Activity, the Municipality shall:
- (a) identify and mark all individual Kentucky Coffee-tree within the Work Zone during work planning site visits;
  - (b) avoid disturbance to all individuals identified under (a) above, unless otherwise authorized in writing by the MNR Designated Representative;
  - (c) conduct Activities by:
    - (i) limiting equipment access and operations to the side of the Drainage Works that will minimize disturbance where any of the individuals occur,
    - (ii) working around trees,
    - (iii) avoiding compacting and/or disturbing the soil by keeping excavation and other heavy equipment a minimum of 2 metres away from the main stem of retained individuals to avoid damaging roots and stems, and
    - (iv) placing excavated materials on areas not within 2 metres of the main stem of retained individuals; and
  - (d) where branches are required to be removed to allow for safe operation of equipment, remove them using appropriate equipment, such as pruning saws, chain saws or lopping shears, in accordance with good forestry practices.

**PART D. MONITORING AND REPORTING REQUIREMENTS**

**26. Compliance Monitoring.**

- 26.1. The Municipality shall inspect the undertaking of the Activities at the locations described in Part F of this Schedule C, and shall record the results of the inspections in the Monitoring and Reporting Form.
- 26.2. The Municipality shall record all encounters with Species and the resulting mitigation measures taken by the Municipality in the Monitoring and Reporting Form.

**27. Reporting**

- 27.1. Prior to March 31 of each year the Mitigation Plan is in effect, the Municipality shall submit a completed Monitoring and Reporting Form containing all of the information collected under sections 26.1 and 26.2 during the previous twelve months to the MNR Designated Representative.

## **28. Review**

- 28.1. Within six months of the expiry of this Mitigation Plan but no later than three months from the time of its expiry, the Parties shall meet to review the measures and actions taken and the Activities undertaken during its term and to discuss the terms and conditions of the next Mitigation Plan.



## APPENDIX "REI-C"



## STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION

### 1. CONCRETE FILLED JUTE BAG HEADWALLS

After the Contractor has set the new pipe in place, it shall completely backfill same and install new concrete filled jute bag headwalls at the locations and parameters indicated on the drawing. When constructing the concrete filled jute bag headwalls, the Contractor shall place the bags so that the completed headwall will have a slope inward from the bottom of the pipe to the top of the finished headwall. The slope of the headwall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill behind the new concrete filled jute bag headwalls with Granular "B" and Granular "A" material as per O.P.S.S. Form 1010 and the granular material shall be compacted in place to a Standard Proctor Density of 100%. 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 305mm (12") in thickness.

The concrete filled 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 25 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 (18") x 660mm (26"). The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm (4") thick, 305mm (12") to 380mm (15") wide and 460mm (18") long.

The concrete jute bag headwall to be provided at the end of the bridge pipe shall be a single or double bag wall construction as set out in the specifications. The concrete filled bags shall be laid so that the 460mm (18") dimension is parallel with the length of the new pipe. The concrete filled jute bags shall be laid on a footing of plain concrete being 460mm (18") wide, extending for the full length of the wall, and 305mm (12") thick extending below the bottom of the culvert pipe.

All concrete used for the footing, cap and bags shall have a minimum compressive strength of 25 Mpa at 28 days and shall include 6% ± 1% air entrainment.

Upon completion of the jute bag headwall the Contractor shall cap the top row of concrete filled bags with a layer of plain concrete, minimum 100mm (4") thick, and hand trowelled to obtain a pleasing appearance. If the cap is made more than 100mm thick, the Contractor shall provide two (2) continuous 15M reinforcing bars set at mid-depth and equally spaced in the cap. 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.

The completed jute bag headwalls shall be securely embedded into the drain bank a minimum of 500mm (20") measured perpendicular to the sideslopes of the drain.

As an alternate 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 pieces of concrete may be substituted for the jute bags. The concrete rip rap shall be approximately 460mm (18") square and 100mm (4") thick and shall have two (2) flat parallel sides. The concrete rip rap shall be fully mortared in place using a mixture composed of three (3) parts of clean sharp sand and one (1) part of Portland cement.

The complete placement and backfilling of the headwalls shall be performed to the full satisfaction of the Town Drainage Superintendent and the Engineer.

### 2. QUARRIED LIMESTONE ENDWALLS

The backfill over the ends of the corrugated steel pipe shall be set on a slope of 1-½ units horizontal to 1 unit vertical from the bottom of the corrugated steel pipe to the top of each end slope and between the drain banks. The top 305mm (12") in thickness of the backfill over the ends of the corrugated steel pipe shall be quarried limestone. The quarried limestone shall also be placed on a slope of 1-½ units horizontal to 1 unit vertical from the bottom of the corrugated steel pipe to the top of each bank of the drain adjacent each end slope. The quarried limestone shall have a minimum dimension of 100mm (4") and a maximum dimension of 250mm (10"). The end slope protection shall be placed with the quarried limestone pieces carefully tamped into place with the use of a shovel bucket so that, when complete, the end protection shall be consistent, uniform, and tightly laid in place.

Prior to placing the quarried limestone end protection over the granular backfill and on the drain banks, the Contractor shall lay non-woven geotextile filter fabric "GMN160" conforming to O.P.S.S. 1860 Class I or approved equal. The geotextile filter fabric shall extend from the bottom of the corrugated steel pipe to the top of each end slope of the bridge and along both banks of the drain to a point opposite the ends of the pipe.

The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried limestone on top of the filter fabric.

### **3. BRIDGE BACKFILL**

After the corrugated steel pipe has been set in place, the Contractor shall backfill the pipe with Granular "B" material, O.P.S.S. Form 1010 with the exception of the top 305mm (12") of the backfill. The top 305mm (12") of the backfill for the full width of the excavated area (between each bank of the drain) and for the top width of the driveway, shall be Granular "A" material, O.P.S.S. Form 1010. The granular backfill shall be compacted in place to a Standard Proctor Density of 100% by means of mechanical compactors. All of the backfill material, equipment used, and method of compacting the backfill material shall be inspected and approved and meet with the full satisfaction of the Town Drainage Superintendent and Engineer.

### **4. GENERAL**

Prior to the work commencing, the Town Drainage Superintendent and Engineer must be notified, and under no circumstances shall work begin without one of them being at the site. Furthermore, the grade setting of the pipe must be checked, confirmed, and approved by the Superintendent or Engineer prior to continuing on with the bridge installation.

The alignment of the new bridge culvert pipe shall be in the centreline of the existing drain, and the placing of same must be performed totally in the dry.

Prior to the installation of the new access bridge culvert, the existing sediment build-up in the drain bottom must be excavated and completely removed. This must be done not only along the drain where the bridge culvert pipe is to be installed, but also for a distance of 3.05 metres (10 ft.) both upstream and downstream of said new access bridge culvert. When setting the new bridge culvert pipe in place it must be founded on a good undisturbed base. If unsound soil is encountered, it must be totally removed and replaced with 20mm (3/4") clear stone, satisfactorily compacted in place.

When doing the excavation work or any other portion of the work relative to the bridge installation, care should be taken not to interfere with, plug up, or damage any existing surface drains, swales, and lateral or main tile ends. Where damage is encountered, repairs to correct same must be performed immediately as part of the work.

The Contractor and/or landowner performing the bridge installation shall satisfy themselves as to the exact location, nature and extent of any existing structure, utility or other object that they may encounter during the course of the work. The Contractor shall indemnify and save harmless the Town, the Engineer and their staff from any damages which it may cause or sustain during the progress of the work. It shall not hold them liable for any legal action arising out of any claims brought about by such damage caused by it.

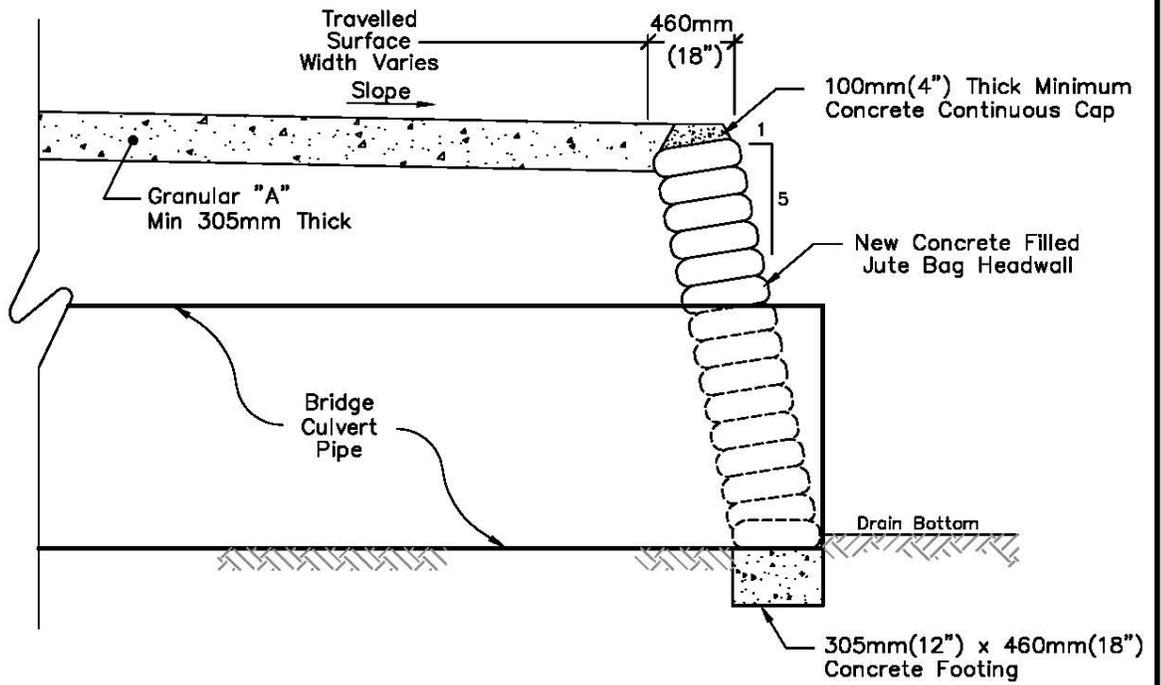
Where applicable, the Contractor and/or landowner constructing the new bridge shall be responsible for any damage caused by them to any portion of the Town road right-of-way. They shall take whatever precautions are necessary to cause a minimum of damage to same and must restore the roadway to its original condition upon completion of the works.

When working along a municipal roadway, the Contractor shall provide all necessary lights, signs, barricades and flagpersons as required to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. If traffic control is required on this project, it is to comply with the M.T.O. Traffic Control Manual for Roadway Work Operations.

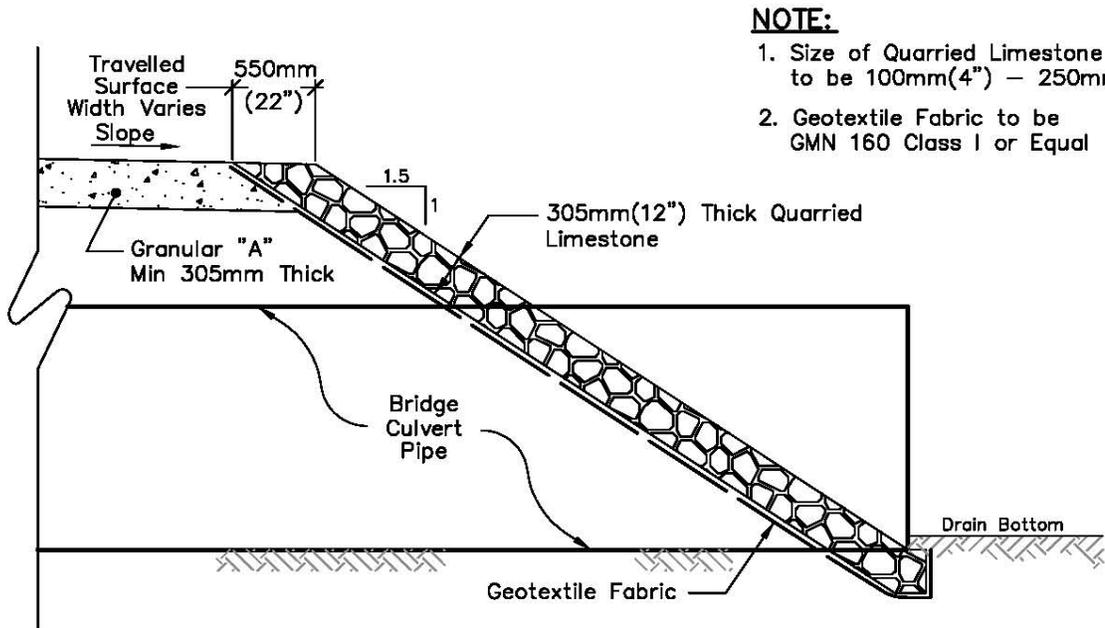
Once the bridge installation has been completed, the drain sideslopes directly adjacent the new headwalls and/or endwalls are to be completely restored including revegetation, where necessary.

All of the work required towards the installation of the bridge shall be performed in a neat and workmanlike manner. The general site shall be restored to its' original condition, and the general area shall be cleaned of all debris and junk, etc. caused by the work

All of the excavation, installation procedures, and parameters as above mentioned are to be carried out and performed to the full satisfaction of the Town Drainage Superintendent and Engineer.



**Typical Jute Bag Headwall**



**NOTE:**

1. Size of Quarried Limestone to be 100mm(4") – 250mm(10")
2. Geotextile Fabric to be GMN 160 Class I or Equal

**Typical Quarried Limestone End Protection**

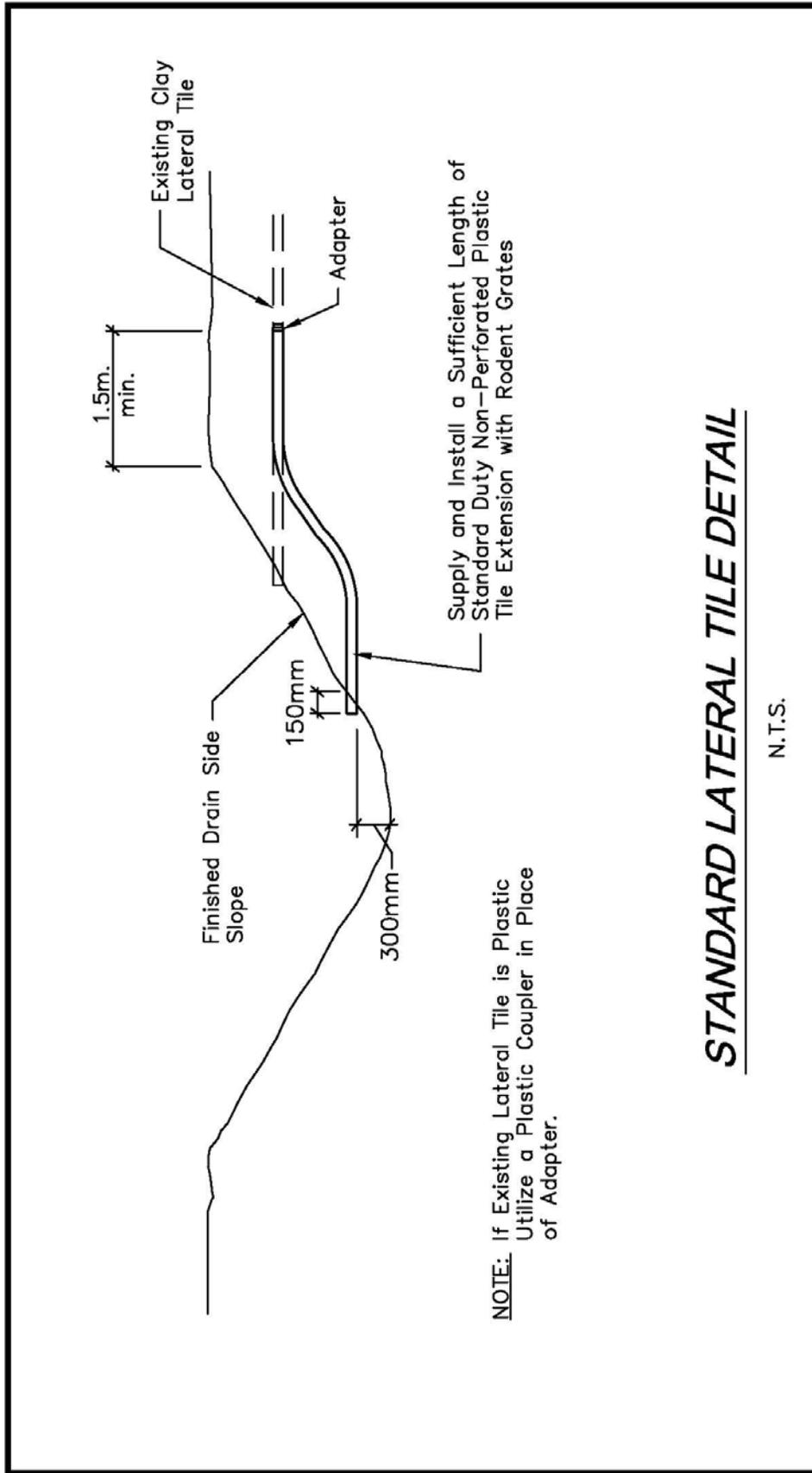
***Rood Engineering Inc.***

**Consulting Engineers**

**9 Nelson Street**

**Leamington, Ontario N8H 1G6**

**519-322-1621**



## STANDARD LATERAL TILE DETAIL

N.T.S.

### **Block Headwall Installation Instructions for Culverts**

1. A swift lift device will be required to place the blocks. A 75mm eye bolt will be required to place the caps.
2. The bottom course of blocks shall be founded on a firm solid base. The contractor shall provide a minimum levelling course of 150mm of compacted 3/4" Clear Stone, or a 100% compacted granular A, or lean concrete as a foundation base.
3. Ensure that the base is level and flat as this will greatly improve speed of installation.
4. On new culverts a minimum of 150mm of block wall will extend below the culvert to prevent scouring under the culvert.
5. The bottom course of blocks shall be embedded into the drain bottom to achieve the desired top elevation of the wall.
6. Blocks shall extend from the pipe invert across the full height and width of the drain and be imbedded a minimum of 300mm into the drain banks. Where possible the top of the block wall will match the height of the completed driveway.
7. Blocks shall be placed such that all joints are staggered.
8. Any excavation voids on the ends of block walls below subsequent block layers shall be filled with 3/4" Clear Stone.
9. Where block walls extend beyond three blocks in height, they should be battered a minimum of 1 unit horizontal for every 10 units vertical throughout the wall's full height and width. This can be achieved using pre-battered base blocks, or by careful preparation of the base.
10. Filter cloth (270R or equivalent) should be placed behind the wall to prevent the migration of fill material through the joints.
11. The walls should be backfilled with a free draining granular fill.
12. A uni-axial geogrid (SG350 or equivalent) should be used to tie back the headwalls where walls extend beyond 1.8m in height.
13. The face of the block wall shall not extend beyond the end of the pipe culvert.
14. Any gaps between the blocks and culvert shall be sealed with non-shrink grout for the full depth of the block.



## APPENDIX "REI-D"



THE CORPORATION OF THE TOWN OF TECUMSEH

BY-LAW NO. 2007-51

Being a by-law to amend By-law No. 2007-41 to regulate the setting of open air fires and identify the precautions and conditions to be observed for such fires within The Corporation of the Town of Tecumseh.

**WHEREAS** Council considers excessive smoke, smell, airborne sparks or embers to be or could become or cause public nuisances by creating negative health effects on neighbouring residents, increasing fire exposure hazards, infringing the enjoyment of the use of neighbouring properties and generating false or nuisance alarms;

**AND WHEREAS** Council is empowered under Section 128 of the *Municipal Act* 2001, S.O. 2001, c. 25 as amended, to pass by-laws to prohibit and regulate public nuisances, including matters that, in the opinion of Council are, or could become or cause public nuisances;

**AND WHEREAS** in accordance with Section 425 of the *Municipal Act* 2001, S.O. 2001, c. 25 as amended, a municipality may pass by-laws providing that a person who contravenes a by-law of the municipality passed under this Act is guilty of an offence;

**AND WHEREAS** Section 444 of the *Municipal Act* 2001, c. 25 states if a municipality is satisfied that a contravention of a by-law of the municipality passed under this Act has occurred, the municipality may make an order requiring the person who contravened the by-law or who caused or permitted the contravention or the owner or occupier of the land on which the contravention occurred to discontinue the contravening activity;

**AND WHEREAS** the Council of The Corporation of the Town of Tecumseh enacted By-law No. 2007-41 on the 26<sup>th</sup> day of June, 2007 to regulate the setting of open air fires and identify the precautions and conditions to be observed for such fires within The Corporation of the Town of Tecumseh;

**AND WHEREAS** the Council of The Corporation of the Town of Tecumseh is desirous of amending By-law No. 2007-41;

**NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWN OF TECUMSEH ENACTS AS FOLLOWS:**

1. **That** paragraph 4.9 be deleted and replaced with the following paragraph:
  - 4.9 Permitted fires, except those described in Section 4.4, shall,
    - a) be kept to manageable size that shall not be greater than one (1) square metre with flames no higher than one (1) metre in height; and,
    - b) in residentially zoned areas, be completely extinguished by 2:00 a.m.
2. **That** paragraph 5.2 be deleted and replaced with the following paragraph:
  - 5.2 An application for a Permit must be completed on the form/forms provided by the Tecumseh Fire/Rescue Services.

3. **That** paragraph 5.3 be deleted and replaced with the following paragraph:

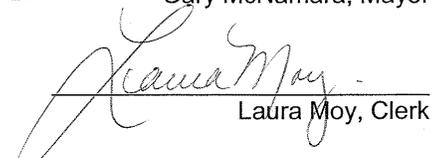
5.3 An application must be filed with the Chief Fire Official of the Tecumseh Fire/Rescue Services. Approved permits must be retained and presented to an attending fire official in the event that there is a need for a fire official to attend at the burn location due to complaint.

4. **That** this by-law shall take full force and effect on the third and final reading.

**READ** a first, second, third time and finally passed this 11<sup>th</sup> day of September, 2007.



Gary McNamara, Mayor



Laura Moy, Clerk

**THE CORPORATION OF THE TOWN OF TECUMSEH**

**BY-LAW NUMBER 2007-41**

A by-law to regulate the setting of open air fires and identify the precautions and conditions to be observed for such fires within The Corporation of the Town of Tecumseh.

**WHEREAS** Council considers excessive smoke, smell, airborne sparks or embers to be or could become or cause public nuisances by creating negative health effects on neighbouring residents, increasing fire exposure hazards, infringing on the enjoyment of the use of neighbouring properties and generating false or nuisance alarms;

**AND WHEREAS** Council is empowered under Section 128 of the *Municipal Act 2001*, S.O. 2001, c. 25 as amended, to pass bylaws to prohibit and regulate public nuisances, including matters that, in the opinion of Council are, or could become or cause public nuisances;

**AND WHEREAS** in accordance with Section 425 of the *Municipal Act 2001*, S.O. 2001, c. 25 as amended, a municipality may pass by-laws providing that a person who contravenes a by-law of the municipality passed under this Act is guilty of an offence;

**AND WHEREAS** Section 444 of the *Municipal Act 2001* c. 25 states if a municipality is satisfied that a contravention of a by-law of the municipality passed under this Act has occurred, the municipality may make an order requiring the person who contravened the by-law or who caused or permitted the contravention or the owner or occupier of the land on which the contravention occurred to discontinue the contravening activity;

**AND WHEREAS** Section 446(1) of the *Municipal Act 2001* c.25 states that if a municipality has the authority under this or any other Act or under a by-law under this or any other Act to direct or require a person to do a matter or thing, the municipality may:

- provide that, in default of it being done by the person directed or required to do it, the matter or thing shall be done at the person's expense;
- enter upon land at any reasonable time;
- recover the costs of doing a matter or thing from the person directed or required to do it by action or by adding the costs to the tax roll and collecting them in the same manner as property taxes; and
- that costs include interest calculated at a rate of 15 per cent or such lesser rate as may be determined by the municipality, calculated for the period commencing on the day the municipality incurs the costs;
- the costs, including interest, constitutes a lien on the land upon the registration in the proper land registry office of a notice of lien;

**AND WHEREAS** Section 390 of the *Municipal Act 2001* c.25 provides that a "person" includes a municipality and a local board and the Crown;

**AND WHEREAS** Section 426 of the *Municipal Act 2001* c. 25 provides that no person shall hinder or obstruct, or attempt to hinder or obstruct any person exercising a power or performing a duty under this Act or a by-law under this Act and that any person who contravenes subsection (1) is guilty of an offence;

**NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWN OF TECUMSEH ENACTS AS FOLLOWS:**

**1. DEFINITIONS**

In this By-law:

- 1.1 "Burning Appliance" means any device designed or engineered to have a fire set within a contained area and totally enclosed by various means of screening and/or other methods.
- 1.2 "By-law Enforcement Officer" means the municipal person appointed by the Town of Tecumseh who shall be responsible for the enforcement of the provisions of this by-law.
- 1.3 "Chief Fire Official" means the Fire Chief of the Tecumseh Fire/ Rescue Services or designate.
- 1.4 "Competent Adult" means any person (18 years of age or older) who, in the opinion of those charged with enforcement of this By-Law, is capable of exercising the required judgement and capable of performing the necessary actions to control and prevent its unwanted spread.
- 1.5 "Farmer" means the owner or operator of an agricultural operation within an area zoned for agricultural pursuant to the *Farming & Food Protection Act*, 1998.
- 1.6 "Farmlands" means land designated "agricultural".
- 1.7 "Firefighter" means any person or any rank of person employed in, or appointed to the Tecumseh Fire/Rescue Services and assigned to undertake fire protection or fire prevention services.
- 1.8 "Full Cost Recovery Basis" has the meaning as described in Schedule "A" attached hereto.
- 1.9 "Open Air" means any open place, yard, field, lot, part lot or construction area which is not enclosed by a building or structure.
- 1.10 "Open Air Burning" means any fire set in the Open Air.
- 1.11 "Owner" means the registered owner or any person, firm or corporation having control over, or possession, of any portion of the building or property under consideration and includes the persons in the building or on the property.
- 1.12 "Permit" means a permit issued by the Chief Fire Official to set a fire in the Open Air for a specified date and period of time.
- 1.13 "Person" means an individual, business, a partnership or a corporation.
- 1.14 "Pit" means an area dug into the ground and/or surrounded by materials designed to contain the fire and prevent its spread to areas beyond the Pit.
- 1.15 "Police Officer" means any member of the Ontario Provincial Police.
- 1.16 "Tenant" means the occupant having possession or Person having control of a property or premises.
- 1.17 "Town" means The Corporation of the Town of Tecumseh.

**2. ADMINISTRATION AND ENFORCEMENT**

- 2.1 The Chief Fire Official shall be responsible for the administration of this by-law.
- 2.2 Enforcement of this by-law is the responsibility of the Chief Fire Official, any Fire-fighter, any Police Officer or any By-law Enforcement Officer.
- 2.3 The Chief Fire Official may refuse to issue a Permit or revoke any or all issued Permits.
- 2.4 The Fire Chief, Firefighters or Police Officers may, at all times enter and inspect any property or premises in order to ascertain whether the provisions of this by-law are complied with and to enforce or carry into effect the by-law.
- 2.5 Any person who fails to comply with the provisions of this by-law or fails to extinguish a fire once notification to do so has been given to him by the Chief Fire Official, a Police Officer or a Firefighter shall, in addition to any penalty provided herein, be liable to the municipality for all expenses incurred for the purposes of controlling and extinguishing of any fire so set or left to burn and such expenses may be recovered by court action or in a like manner as municipal taxes.

**3. ENVIRONMENT**

- 3.1 All Open Air Burning shall comply with the provisions of the *Environmental Protection Act*, R.S.O. 1990. c. E19.
- 3.2 No Open Air Burning shall be permitted when a smog alert has been issued for the region of Essex County, which includes the Town.
- 3.3 No Open Fire shall be started or maintained when wind condition is in such direction or intensity so as to cause any or all of the following:
  - (a) decrease in visibility on any highway or roadway;
  - (b) threaten a rapid spread of fire through a grass or brush area;
  - (c) smoke which causes annoyance or irritation to adjacent persons, properties or premises.

**4. GENERAL PROVISIONS**

- 4.1 No Person being the Owner or Tenant in possession of lands within the Town shall allow a fire to be set or burn on such lands unless a Permit has been obtained.
- 4.2 No Person shall allow a fire to be set or burned exceeding the requirements of Sections 4.8 and 4.9.
- 4.3 Notwithstanding any provisions herein, no Person shall set or maintain a fire,
  - (a) in contravention of the *Ontario Fire Code*, the *Environmental Protection Act* or any other statutory requirements of the Province of Ontario or the Government of Canada;
  - (b) where the consumption of material or size and area of the fire will exceed the limits set by the Chief Fire Official and/or listed within this by-law in Sections 4.8 and 4.9.

- 4.4 (a) No Permit shall be required for domestic barbeques or permanent outdoor fireplaces used solely for the cooking of food on a grill and extinguished immediately upon completion of the cooking process or any Burning Appliance, or a Pit or open area where the requirements of Sections 4.8 and 4.9 are not exceeded;
- (b) installation and location of Burning Appliances must meet the manufacturer's specifications.
- 4.5 (a) A farmer who intends to set or maintain a fire in the Open Air on a specified day for disposal of vegetable matter or vegetation on Farmlands which is normal and incidental for farming purposes shall obtain a Permit to cover the period of the proposed Open Air fire, and will be required to notify the Tecumseh Fire/Rescue Services for each day that the proposed Open Air fire will take place;
- (b) an Open Air fire shall be supervised by a Competent Adult equipped with sufficient equipment to control and contain the Open Air fire to prevent the spread of the Open Air fire that would endanger or put at risk other properties or premises;
- (c) an Open Air fire shall be restricted to daylight hours only;
- (d) an Open Air fire shall be surrounded by a tilled area wide enough to prevent an Open Air fire from jumping across the tilled area and to maintain the area of the burn to be no greater than one (1) hectare in size;
- (e) the leading edge of the flame of an Open Air fire shall not exceed thirty (30) metres in length.
- 4.6 No Person shall set any fire in the Open Air to burn asphalt products, tires, treated wood, construction materials or rubble, kitchen garbage or any garbage or trash, rubber plastics and like items.
- 4.7 No Person shall set any fire in the Open Air except where permitted and only in the presence of a Competent Adult. The Competent Adult shall not leave the burning operation until such time as the fire has been completely extinguished and there is no threat of re-ignition or spreading of the fire.
- 4.8 Every Person that starts a fire in the Open Air shall ensure that there are adequate tools and/or water on hand to contain or extinguish the fire.
- 4.9 Permitted fires, except those described in Section 4.4, shall be kept to manageable size that shall not be greater than one (1) square metre with flames no higher than one (1) metre in height.
- 4.10 Every Person who sets an Open Air fire in the Town of Tecumseh shall be:
- (a) responsible and liable for any damage to property or injury to person occasioned by said fire;
- (b) liable for all costs incurred by the Town of Tecumseh, including but not limited to, the Fire/Rescue Services, including personnel and other agencies called to control and extinguish said fire on a Full Cost Recovery Basis. All fees and charges to be paid under this subsection shall be payable in the manner and subject any interest and penalties set forth in paragraph 5 and 6 of the Administrative Fees and Charges By-law 2007-12, as may be amended or repealed from time to time;

- (c) the fees and charges under this section shall not be payable by that class of persons which have obtained a permit for an Open Air fire and complied with the terms of such permit.

- 4.11 Notwithstanding the aforementioned sections listed herein, the Fire Chief may issue a Permit upon application and approve the setting of any fire subject to the fire being adequately supervised and controlled through special conditions addressed by the Chief Fire Official.
- 4.12 No fire shall be set to dispose of commercial, industrial or construction waste or other like materials in areas zoned for commercial or industrial occupancies and such aforementioned materials shall not be transported to residential or agricultural areas for burning purposes.
- 4.13 No fires shall be set at construction and/or demolition sites for the purpose of disposing of waste, building material or rubble.

## 5. FIRES REQUIRING PERMITS

- 5.1 Except as provided in section 4.3 of this by-law, no Person shall set, maintain or cause to be set or maintained, a fire in the Open Air unless a Permit has been issued by the Chief Fire Official.
- 5.2 An application for a Permit must be completed on the form/forms provided by the Tecumseh Fire/Rescue Services. Such forms are available to fill out by telephone call to Tecumseh Fire Station No. 1, Monday to Friday from 08:30 hr to 16:30 hr.
- 5.3 Each completed application for a Permit must be filed with the Chief Fire Official of the Tecumseh Fire/Rescue Services, at the administration offices located at 985 Lesperance Road, Tecumseh, Ontario.
- 5.4 In issuing a Permit under this part for Open Air Burning, the Chief Fire Official may impose any additional requirements or conditions as may be deemed necessary.

## 6. OFFENCES

- 6.1 (a) Any person who contravenes any of the provisions of this by-law is guilty of an Offence;
- (b) any person who hinders or obstructs a person lawfully carrying out the enforcement of this by-law is guilty of an Offence.

## 7. FINES

- 7.1 Every Person who is convicted of an Offence is liable to a Fine of not more than Five Thousand (\$5,000.00) Dollars as provided for in the *Provincial Offences Act*, R. S.O. 1990, Chap. P.33.

## 8. SEVERABILITY

- 8.1 If any section or sections of this by-law or parts thereof are found in any court to be illegal or beyond the power of Council to enact, such section or sections or parts thereof shall be deemed severable and all other sections or parts of this by-law shall be deemed separate and independent there from and enacted as such.

9. **SHORT TITLE**

9.1 The short title of this by-law shall be TECUMSEH OPEN AIR BURNING BY-LAW.

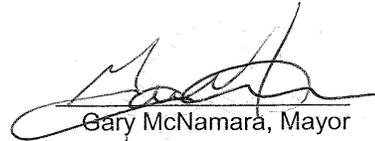
10. **EFFECTIVE DATE**

10.1 This by-law shall come into full force and take effect on the 1<sup>st</sup> day of July, 2007.

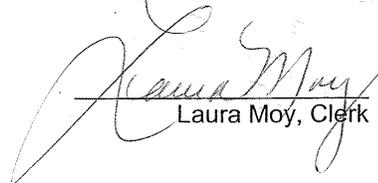
11. **REPEAL**

11.1 By-law No. 2005-57 is hereby repealed.

**READ** a first, second, third time and finally passed this 26<sup>th</sup> day of June, 2007.



Gary McNamara, Mayor



Laura Moy, Clerk

SCHEDULE "A"  
By-law Number 2007-41

THE CORPORATION OF THE TOWN OF TECUMSEH  
TECUMSEH FIRE/RESCUE SERVICES EQUIPMENT SERVICES RATES

**"Full Cost Recovery Basis"** includes any and all charges and costs howsoever incurred by the Town directly or indirectly in controlling and extinguishing the Open Air fire and shall include without limitations:

**Emergency Services Rendered:**

- (a) \$350.00 first hour or part thereof per piece of equipment;
- (b) \$175.00 each additional half-hour or part thereof per piece of equipment;
- (c) \$42.00 first hour or part thereof per firefighter who responds to the call;
- (d) \$27.50 for each additional hour or part thereof per firefighter until all equipment is cleaned, checked and returned to service;
- (e) the cost of all extinguishing agents required to extinguish the fire.

**No Emergency Services Rendered:**

- (a) \$350.00 flat rate per piece of equipment where services are not required nor provided;
- (b) \$42.00 flat rate per firefighter who responds to the call for service.



## APPENDIX "REI-E"



WATERSHED & KEY PLAN

OF THE

# WEBSTER DRAIN

Bridge Replacement for Craig & Christine Pearce (410-00700)

(Geographic Township of Sandwich South)

IN THE

TOWN OF TECUMSEH

IN THE

COUNTY OF ESSEX • ONTARIO

*Gerard Road*  
GERARD ROOD, P.ENG.



**ROOD**  
**ENGINEERING**  
**INC.** CONSULTING ENGINEERS  
Leamington, Ontario  
519-322-1621

DATE: June 1st, 2017

**TOWN OF TECUMSEH**

MAYOR: Cary McNamara  
CLERK: Laura Moy  
DRAINAGE SUPERINTENDENT: Sam Paglia, P.Eng.

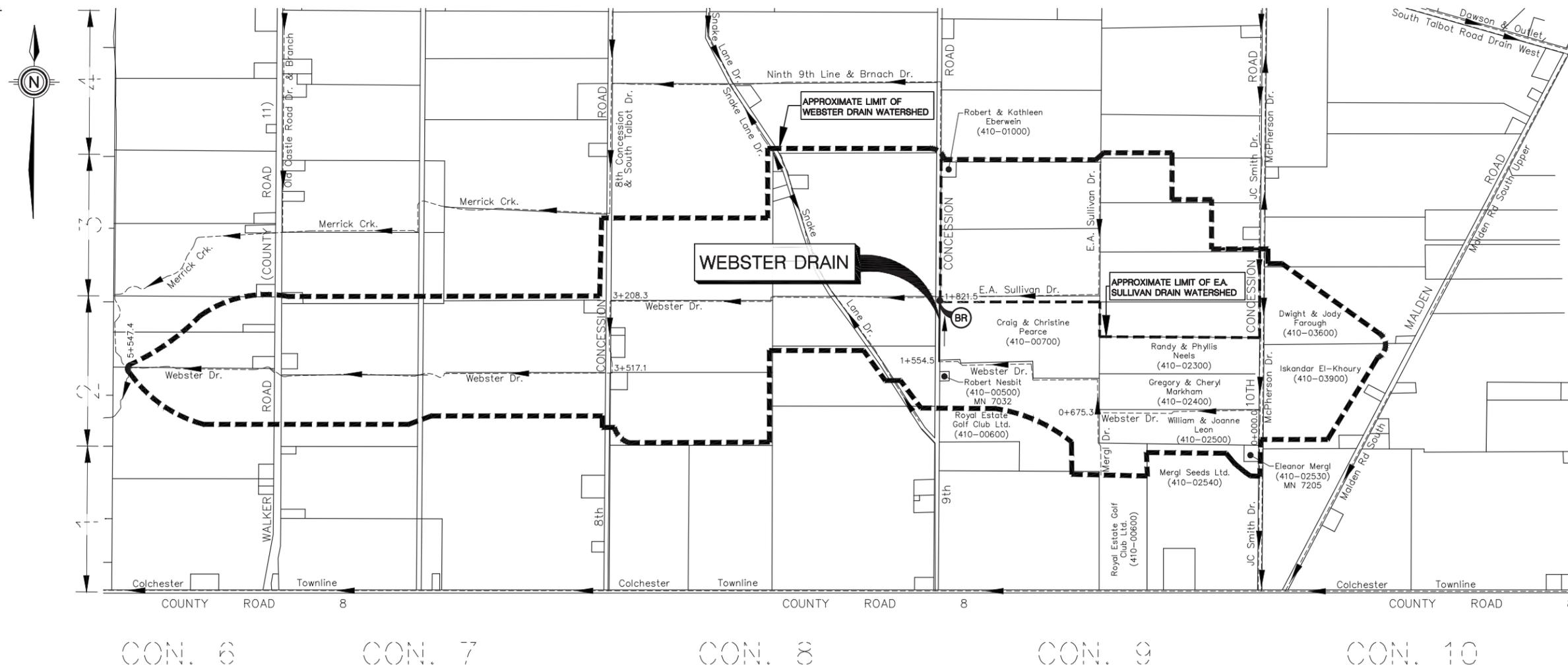
**BENCHMARKS:**

WEST OVERT 1200mm CSP  
CULVERT CROSSING 9TH CONCESSION  
OVER WEBSTER DRAIN  
ELEV. = 54.862 m.



**KEY PLAN**

Scale = 1:50,000



**WATERSHED PLAN**

Scale = 1:10,000

THESE PLANS HAVE BEEN REDUCED AND THE SCALE THEREFORE VARIES. FULL SCALE PLANS MAY BE VIEWED AT THE MUNICIPAL OFFICE.

DRAWN BY: G.S. PLOT CODE: 1:1 COMPUTER FILE: REI2016D058.DWG	
FILE No.: REI2016D058	SHEET No.: 1 OF 2

E09WE(110)

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