

THE CORPORATION OF THE TOWN OF AMHERSTBURG

BY-LAW NO. 2016 - 61

**By-law to provide for the Repair and Improvement
of the Shaw Drain North based on
the Drainage Report by N.J. Peralta Engineering Ltd.**

WHEREAS as request for repair and improvement of the Shaw Drain North was received under section 78 of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg felt it necessary to appoint an engineer for the purpose of preparation of an engineer's report for the repair and improvement under section 78 of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg has authorized Shane McVitty, P. Eng., N.J. Peralta Engineering Ltd. to prepare a report and said report dated May 20th, 2016 is attached hereto and forms part of this by-law;

WHERE AS \$ 31,924.00 is the amount to be contributed by the Town of Amherstburg of the total \$75,644.00 for the drainage works; and,

WHEREAS the report was reconsidered and adopted by the Amherstburg Drainage Board at the meeting held on Tuesday, June 7, 2016.

NOW THEREFORE the Council of the Corporation of the Town of Amherstburg hereby enacts as follows:

1. AUTHORIZATION

The attached report is adopted and the drainage works is authorized and shall be completed as specified in the report

2. BORROWING

The Corporation of the Town of Amherstburg may borrow on the credit of the Corporation the amount of \$75,644.00 being the amount necessary for the improvements of the drainage works.

This project being the Shaw Drain North.

3. DEBENTURE(S)

The Corporation may issue debenture(s) for the amount borrowed less the total amount of:

- (a) Grants received under section 85 of the Drainage Act;
- (b) Monies paid as allowances;
- (c) Commuted payments made in respect of lands and roads assessed with the municipality;
- (d) Money paid under subsection 61(3) of the Drainage Act; and
- (e) Money assessed in and payable by another municipality.

4. PAYMENT

Such debenture(s) shall be made payable within 5 years from the date of the debenture(s) shall bear interest at a rate not higher than 2% more than the municipal lending rates as posted by Infrastructure Ontario on the date of sale of such debenture(s).

- (1) A special equal annual rate sufficient to redeem the principal and interest on the debenture(s) shall be levied upon the lands and roads as shown in the schedule and shall be collected in the same manner and at the same as other taxes are collected in each year for 5 years after the passing of this by-law.
- (2) For paying the amount \$43,562.00 being the amount assessed upon the lands and roads belonging to or controlled by the municipality a special rate sufficient to pay the amount assessed plus interest thereon shall be levied upon the whole rateable property in the Town of Amherstburg in each year for 5 years after the passing of this by-law to be collected in the same manner and at the same time as other taxes collected.
- (3) All assessments of \$500.00 or less are payable in the first year in which the assessments are imposed.

5. SCHEDULE OF ASSESSMENTS OF LANDS AND ROADS

Lot or Part Lot No.	Property Description			Estimated Assessment as per Report	Estimated Grants 33 1/3%	Equal Bi-Annual Rate to be Imposed
	Concession	Geographic Township	Parcel Roll No.			
Part Lot 9	4	Anderdon	450-07150	\$9,186.00		\$2,045.30
Part Lot 9	4	Anderdon	450-06900	\$1,192.00		\$265.40
Part Lot 9	4	Anderdon	450-06800	\$1,201.00		\$267.40
Part Lot 10	4	Anderdon	450-06600	\$8,029.00		\$1,787.68
Part Lot 11	4	Anderdon	490-08100	\$1,095.00		\$243.80
Part Lot 11	4	Anderdon	490-08200	\$1,098.00		\$244.48
Part Lot 8	4	Anderdon	450-07200	\$4,861.00	\$1,620.33	\$721.54
Part Lot 9	4	Anderdon	450-07100	\$2,913.00	\$971.00	\$432.40
Part Lot 9	4	Anderdon	450-07000	\$9,692.00	\$3,230.67	\$1,438.64
Part Lot 9	4	Anderdon	450-06700	\$3,071.00	\$1,023.67	\$455.84
Part Lot 10	4	Anderdon	450-06500	\$1,224.00	\$408.00	\$181.68
Total				\$43,562.00	\$7,253.67	\$8,084.16

Read a first and second time and provisionally adopted this 13th day of June, 2016.


MAYOR – ALDO DICARLO


CLERK – PAULA PARKER

Read a third time and finally passed this 8 day of Aug, 2016.


MAYOR – ALDO DICARLO


CLERK – PAULA PARKER

BRIDGES OVER THE SHAW DRAIN NORTH

(Geographic Township of Anderdon)

TOWN OF AMHERSTBURG

Reconsidered Report

N. J. PERALTA ENGINEERING LTD.

Consulting Engineers

45 Division St. N., Kingsville, Ontario N9Y 1E1

Tel. (519) 733-6587

Project No. D-14-027

(PWD-MD-2014-016)

May 20th, 2016

Mayor and Municipal Council
Corporation of the Town of Amherstburg
571 Sandwich Street South
Amherstburg, Ontario
N9V 3A5

Mayor Dicarlo and Members of Council:

SUBJECT: BRIDGES OVER THE SHAW DRAIN NORTH (PWD-MD-2014-016)
(Geographic Township of Anderdon)
RECONSIDERED REPORT
Town of Amherstburg, County of Essex
Project No. D-14-027

I. INTRODUCTION

In accordance with instructions issued by the Drainage Board at the May 10th, 2016 Consideration meeting of our initial report, we have considered same to address the concerns brought forward at the meeting. These primarily relate to the proposed bridge replacement for Stanley and Sheila Grondin (Roll No. 450-06600), owners of **Bridge ①**. At the Consideration meeting, the Grondin's requested that their new bridge be completed with sloped, quarried limestone end protection, in lieu of the concrete filled jute bag walls proposed under the original report. We have amended our report to accommodate this request, and have made the appropriate changes as required to the report plans, and specifications. Also, we have adjusted the construction estimate and incidentals accordingly to reflect the amendment to **Bridge ①** as well as the Construction Schedule of Assessment.

In accordance with the instructions received by letter of September 23rd, 2014, from the Manager of Public Works, Mr. Eric Chamberlain, and subsequent instructions from Mr. Chamberlain to proceed with the complete evaluation of each of the bridges within the Shaw Drain North, we have prepared the following report that provides for the repairs and improvements to two (2) bridges and a single enclosure within the Shaw Drain North. We have also provided design requirements and maintenance provisions for all of the other bridges and enclosures within the drain to be utilised by the Municipality in the future when bridge improvements are necessary. These investigations were initiated by a resolution passed by Council for our firm to undertake all necessary municipal drainage reports for this drain in accordance with the Drainage Act. A plan showing the alignment of the Shaw Drain North, the general location of all of the existing structures within the drain, and the lands and roads affected within the general watershed area, is included herein as part of this report.

Our appointment and the works related to the general improvements to the Shaw Drain North, along with the replacement and/or improvements to the various existing structures within the Shaw Drain North, proposed under this report, is in accordance with Section 78 of the "Drainage Act, R.S.O. 1990,

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Chapter D.17, as amended in 2010". We have performed all of the necessary survey, investigations, etc., for the Shaw Drain North, and its structure improvements, and we report thereon as follows.

II. BACKGROUND

Our review of the Town of Amherstburg's drainage records indicate that the Shaw Drain North is an existing open Municipal Drain that has been repaired and improved on previous occasions under the provisions of the Drainage Act. The Shaw Drain North is located along the west side of the Concession 5 Road North. With its upper end located approximately 1.2 kilometers north of Middle Sideroad, the drain extends for approximately 1.8 kilometers northerly before turning eastward where it crosses beneath the Concession 5 Road North. The drain then travels easterly for approximately 200 meters before discharging into the Canard River.

From our review of the information provided from the Town of Amherstburg's drainage files, we have utilized the following Engineer's Reports as reference for carrying out this project:

- 1) July 2nd, 1949 Engineer's Report for the "Shaw Drain" prepared by C.G.R. Armstrong, P.Eng., which generally provided for the construction of a new Municipal Drain along the west side of Concession 5 Road North through the auspices of the Drainage Act. In addition, this report provided for the construction of five (5) new access bridges as well the adoption of a single access bridge to be made part of the Municipal Drain under the auspices of the Drainage Act.
- 2) February 9th, 1959 reconsideration of the September 30th, 1958 Engineer's Report for the "Shaw Drain", which was generally for the relocation of the existing drain further westerly off of the road right-of-way, in order to provide adequate protection to the travelled portion of the road. This report provided compensation for damages and for the value of land taken to move the drain off the Concession 5 Road North. In addition, five (5) access culverts were relocated and moved further westerly within the new drain alignment
- 3) November 21st, 1969 Engineer's Report for the "Shaw Drain" by C.G.R. Armstrong, P.Eng., which generally provided for excavation and cleanout of the existing open drain along its entire length to its outlet at the Canard River.
- 4) February 24th, 1983 Engineer's Report for the "Shaw Drain" prepared by E.O. Lafontaine, P.Eng., which generally provided for the cleaning of the Shaw Drain from the

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Concession 5 Road crossing culvert to the outlet at the Canard River.

- 5) March 22nd, 1996 Engineer's Report for the "Shaw Drain" prepared by Nick J. Peralta, P.Eng., which generally provided for a complete cleanout and re-grading of the Shaw Drain from its upstream end all the way to the outlet at the Canard River. In addition, selected areas of the open drain were stabilized using stone erosion protection.

As part of the work completed under this report, all of the existing access bridges were analysed and reviewed. Repairs and/or improvements were identified under the report ranging from no repairs required to the complete replacements of structures. In total, eight (8) access bridges, two (2) enclosures, and two (2) road crossings were identified. At present, of the total thirteen (13) structures identified under this report, with the exception of a single access bridge, all remain within the drain.

- 6) May 21st, 1997 Engineer's Report for the "Bridge over the Shaw Drain (for Ronald and Christine McGuire 080-071), Part Lot 9, Concession 4", prepared by Gerard Rood, P.Eng., and Nick J. Peralta, P.Eng., which generally provided for a new bridge culvert installation to serve as the primary access to the agricultural property currently owned by Ronald and Christine McGuire (450-07100).

The access bridge within the above mentioned report is identified within this drainage report as **Bridge ②**. This access bridge has been installed under a Town of Amherstburg By-law and therefore, represents a legal entity with respect to the Shaw Drain North.

- 7) March 4th, 2004 Engineer's Report for the "New Farm Access Culvert over the Shaw Drain: Owner Jeanne LaFramboise" prepared by Bruce D. Crozier, P.Eng., which generally provided for a new bridge culvert installation to serve as the primary access to the residential property currently owned by Jeanne LaFramboise (490-00100) within Lot 11, Concession 4, Geographic Township of Anderdon.

The access bridge within the above mentioned report is identified within this drainage report as **Bridge ⑩**. This access bridge has been installed under a Town of Amherstburg By-law and therefore, represents a legal entity with respect to the Shaw Drain North.

As part of our review of the Municipality's files, we have determined that each of the existing bridges and enclosures within the Shaw Drain North have been identified in Engineer's Reports and, as such, they are all considered to have legal status within the municipal drain.

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III. PRELIMINARY EXAMINATION AND ON-SITE MEETING

After reviewing all of the available drainage information and documentation provided by the Drainage Superintendent, we arranged to schedule an on-site meeting for November 25th, 2014 at 5690 Concession 5 Road North. In attendance were the following: Sheila Grondin, Stanley Grondin, Ernie Renaud, Ryan Evon, Tony Simon, John McKinley, Chris Garland, Bob Souchereau, Eric Chamberlain, (Drainage Superintendent), and Shane McVitty (N.J. Peralta Engineering Ltd.).

At the onset of the meeting, Mr. Chamberlain explained that the Town responded to a concern raised by Mr. Stan Grondin regarding a sink hole that had opened up in his driveway over top of his existing steel culvert at Mun. No 5690 Concession 5 Road North. Upon visiting Mr. Grondin's property and temporarily repairing the sink hole with gravel and a steel plate, Mr. Chamberlain reviewed the condition of the access culvert further and decided to proceed with its full replacement through an Engineer's Report. Mr. Chamberlain further explained that there are other bridges within the drain that are were installed at the same time as the Grondin bridge and are in a similar state of deterioration. Accordingly, the Municipality has appointed an Engineer to review all of the bridges within the Shaw Drain North and provide recommendations for repair, improvement, or replacement. Mr. Chamberlain added that the Engineer has also been instructed by the Municipality to provide as part of his report the necessary parameters for the future replacement of those bridges within the course of the drain that may not require immediate replacement. Mr. Chamberlain added that this will provide the Municipality with the information it needs to replace these bridges in the future without going back to an Engineer for a report. He further added that the Engineer has been instructed to provide cost sharing provisions for each bridge, including those to be replaced in the future, so that the Municipality has the means to distribute the costs of future bridge replacements or improvements when the time comes. Currently, the existing by-law report does not provide any cost sharing mechanism for bridges, thus restricting the Municipality in how it apportions any costs associated with bridge improvements or replacements. Mr. Chamberlain indicated that Mr. McVitty's report will stream-line the process of future bridge replacement and reduce the overall costs to the ratepayers in the long-run by eliminating the need for a new Engineer's Report each time a bridge needs replacing in the future.

Following Mr. Chamberlain's introduction of Mr. McVitty as the Engineer appointed by the Town to perform an investigation of the subject drainage works, Mr. McVitty explained the purpose of the meeting and provided a brief description of the Shaw Drain

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North. Mr. McVitty re-iterated that the instruction to complete a full blown evaluation of all of the bridges in the drain was given to him by the Municipality. Mr. McVitty went on to explain that he and Mr. Chamberlain recently performed a cursory review of each of the bridges within the drain. This included a visual inspection of each culvert interior, headwalls, and adjacent drain banks. Through this inspection, it was determined that at a minimum, three (3) bridges need to be replaced. These include the following bridges:

5628 Concession 5 Road North - 42.0 metres long

5644 Concession 5 Road North - 6.2 metres long

5690 Concession 5 Road North - 8.8 metres long

Based on his preliminary research, Mr. McVitty indicated that these three culverts were installed at some time between 1949 and 1958. With the exception of two (2) others, the remaining eight (8) culverts within the drain were either installed or improved under the June 12th, 1996 Engineer's Report by N.J. Peralta, P.Eng. Bridges owned by Ernest and Christine McGuire and Jeanne Laframboise were installed under Engineer's Reports in 1997 and 2004 respectively.

Mr. Garland inquired about his bridge and suggested that perhaps the enclosure portion could be removed and the drain be opened up in front of his property, leaving only his driveway access, to save on overall costs. Mr. McVitty indicated that this would not likely be possible due to the drain set back requirements from his home. Mr. McVitty indicated that the enclosure was likely installed when the drain was relocated off of the Town right-of-way under the 1958 Engineer's Report to protect Mr. Garland's home. Mr. McVitty then explained that if this was the case, then the road authority will be responsible for the replacement costs of the lawn piping portion of the enclosure, while the rest of the enclosure (ie. the driveway access width) will be cost shared between Mr. Garland and the upstream landowners. Mr. Garland indicated that if this were to be the case, then he would prefer to replace the full length of the enclosure.

Mr. McVitty indicated that his research of the previous Engineer's Reports has shown that all of the existing bridges within the drain have been established under by-law. Therefore, the cost of their improvement, replacement, or evaluation will be cost shared. The proportion of cost sharing for each bridge will be established within the Engineer's Report based on its the location within the drain reach. Mr. McVitty added that the owner of the bridge will pay a certain percentage of the total cost for the bridge, and all of the upstream lands whose water flows through that bridge, will share the remainder of the cost. The cost to evaluate, analyze and complete a design for future

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bridge replacement will be assessed to the landowners in the same way as the costs for a complete bridge replacement. The only difference will be that there will be no actual construction costs; only engineering.

Mr. McVitty added that there are certain features that a landowner may want to have incorporated into their new bridge that may not be eligible for cost sharing with the upstream lands. These include culvert extensions required to provide a drivable access width beyond 6.10 metres (20feet), specialty type headwalls such as decorative blocks or concrete, and hard driveway surfaces such as asphalt or concrete. Mr. McVitty explained that if an owner wished to have any of these items included as part of their bridge replacement, then that owner would be responsible for the associated additional costs. The balance of the costs would then be shared between the bridge owner and the upstream lands within the watershed.

Mr. McVitty further elaborated on the nature of the work that will be conducted as part of this project. As indicated, preliminary inspections suggest that only three (3) of the thirteen (13) culvert structures within the drain require immediate replacement. Mr. McVitty indicated that these culverts will be completely surveyed and analyzed as required to design their replacements. The remaining structures will also be surveyed and evaluated in order to analyze and provide the necessary design parameters for their future replacement. Mr. McVitty indicated that design criteria such as pipe size, grade, inverts, and conveyance will be reviewed. He added that the top-width and headwalls will also be examined. These characteristics will be reviewed for each of the bridges in the drain.

Mr. McVitty indicated that he is obligated to follow design criteria set by government regulations, including embedment depths of pipe required to satisfy D.F.O. and E.R.C.A requirements for fish passage. In some cases, this may require a larger culvert. It was argued by some in attendance that there are no fish within the drain. Mr. McVitty indicated that nonetheless, he is obliged to follow these requirements as part of his design unless otherwise stipulated or approved by the environmental regulating authorities.

Mr. Renaud questioned the need for an Engineer's Report and felt that costs could be saved by replacing the bridges privately. He added that this is the way it was done in the past and that unnecessary costs were being expended. Mr. Grondin added that he personally installed his own bridge headwalls years ago. Mr. Chamberlain indicated that improvements to a Municipal Drain must be completed under the Drainage Act which requires an Engineer's Report. He added that the report provides a complete design of the new bridges as well as a means to assess the costs of the work. It was also explained that private bridge

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replacement does not provide a fair means of sharing costs and can often lead to disputes amongst landowners. Also, private replacements are often done incorrectly, leading to drainage problems that can end up forcing the Municipality to fix the problem at the owner's expense. Mr. Chamberlain also added that the Municipality is undertaking a number of similar projects and is finding that many of the bridges within the Town's drains are failing and reaching the end of their service lives. He also added that by undertaking improvements on multiple bridges within a drain under a single report, and by tendering them all at once, the costs to replace the bridges in the long run are reduced. Mr. McVitty added that agricultural grants from O.M.A.F.R.A. are not available for private bridge installations, thus making these kind of replacements undesirable to farmers and agricultural landowners.

Mr. Renaud questioned the means by which a contractor would be selected to do the work and suggested that a cheaper price for the work could be achieved if the landowners found their own contractor. Mr. Chamberlain indicated that he typically has a pool of fifteen (15) qualified drainage contractors that will bid on these sort of jobs. He added that the project will be publically tendered to ensure that the project will be completed for the lowest price.

Mr. Souchereau brought up the issue of emergency access into the Grondin lot and indicated that he has had a previous experience whereby the fire department would not cross a bridge that was failing during a house fire at his residence. He indicated that at the time, his driveway had sink holes due to a failing culvert pipe and the fire department refused to allow their trucks to cross over the bridge. He suggested that Mr. Grondin may be risking the same fate in the event of a fire or similar circumstance where a heavy vehicle requires access onto his property. Mr. Chamberlain indicated that the Town has quickly responded to Mr. Grondin's phone calls and concerns to date by filling the sink holes with gravel and installing a large steel plate over top of the problem areas. He added that there are provisions within the Drainage Act to have culverts replaced if the situation is considered to be an emergency. This requires emergency designation by the Minister. Mr. Chamberlain indicated that he strongly believes that the present condition of Mr. Grondin's bridge would not constitute an emergency and therefore application to the Minister for emergency designation would not be fruitful. If the bridge continues to a point of failure, Mr. Chamberlain indicated that he will re-evaluate this position and pursue the emergency designation and bridge replacement. Until then, the Municipality will continue to monitor and repair Mr. Grondin's culvert as needed and will immediately respond to any of his calls regarding the condition of the bridge.

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Mr. Souchereau emphasized the importance of preventative maintenance within the drain and questioned whether the Municipality could make an effort to clean the drain on a more frequent and regular basis. He added that the drain often does not flow and feels that the cat tails and weed growth is a major part of the problem. Mr. Grondin added that the front yard of his property often experiences flooding during heavy rainfall when the drain banks are breached. He indicated that his property is naturally low, and the situation was made worse when the road grades were lifted years ago. Mr. Chamberlain responded that there are drains within the Municipality that he performs regularly maintain on but stressed that the landowners pay the cost of said maintenance. If regular maintenance on the Shaw Drain North is desired by the landowners, then a formal request to the Municipality is required. Mr. Chamberlain also suggested that if the landowners wished to expand on the scope of the project to include a full review of not only the bridges, but also the functionality of the drain itself, then now would be a good time to do so. This would include a more thorough review by the engineer, thereby increasing the overall cost of the project. None of the landowners in attendance indicated that they wished to have the scope of work expanded in this manner.

Mr. Chamberlain further described the process by which municipal drainage works are conducted under the Drainage Act. He explained that the first step in responding to the Town's request for the drain improvement is the on-site meeting with the ratepayers. Mr. Chamberlain then went on to explain the next steps in the process, including the Engineer's Report, consideration of the report by the Town Counsel, and the appeals processes through the Court of Revision and Tribunal. The attendees were told that they would be notified of these meetings in advance and would be provided a copy of the Engineer's Report prior to the Meeting to Consider.

The timeline of the project was questioned. Mr. McVitty indicated that the first step in the process will be a survey of the drain. He indicated that the winter weather may make it difficult to complete the survey before the spring and especially if there is snow in the drain. Also, environmental restrictions will not likely allow any construction work within the drain to take place between March 15th and June 30th due to fish spawning. Based on all of this, construction will not likely be completed until mid to late 2015.

At the completion of the meeting, Mr. McVitty indicated that he would be in contact with each of the bridge owners once he has completed his survey and review. In the meantime, if they had any questions regarding the project, they should feel free to contact himself or the Mr. Chamberlain directly.

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IV. FIELD SURVEY AND INVESTIGATIONS

Following the on-site meeting, we arranged for our Survey Crew to attend the site and perform a topographic survey, including taking necessary levels and details, along the length of the Shaw Drain from its upstream end to the existing road crossing beneath Concession 5 Road North. We also took numerous cross-sections of the Shaw Drain North as necessary, for us to complete our design calculations, estimates and specifications.

Detailed surveys were also completed at each bridge location. Bench Marks were looped from previous work carried out on the drain in order to establish a site bench mark along the drain and near the location of each of the access bridges being evaluated under this report.

For the purposes of establishing the watershed area for each of the pipe designs, and to assist in our determination of the pipe size for each access bridge, we referenced the watershed areas included in the March 22nd, 1996 report by Nick J. Peralta, P. Eng. All of the above investigations not only provided us with the correct watershed area affecting the size of each access bridge, but also provided us with the accurate information to assist us with the preparation of our Construction Schedule of Assessment and cost sharing provisions for future maintenance of all bridges identified under this report.

A Ministry of Natural Resources (M.N.R.) Species at Risk screening request pursuant to the Endangered Species Act, 2007, under the agreement in place with M.N.R. under Section 23, for the Municipal drainage works, was submitted to the Town of Amherstburg on March 26th, 2015, for this project. On April 14th, 2015, we received a response from the Town of Amherstburg on behalf of the M.N.R.

We reviewed the E.R.C.A. and D.F.O. Species at Risk Mapping and submitted a request for review to the E.R.C.A. on October 16th, 2015. We also submitted preliminary design details to the E.R.C.A. at their request. From previous correspondence with the E.R.C.A., we have learned that the partnership agreements between the Department of Fisheries and Oceans (D.F.O.) and the Conservation Authorities have lapsed and therefore, E.R.C.A. was no longer able to provide comments on behalf of D.F.O. As such, we subsequently reviewed D.F.O.'s Self Assessment process as it related to the works being carried out under this project.

V. FINDINGS AND RECOMMENDATIONS

E.R.C.A., D.F.O. and M.N.R. Considerations

During the course of our investigations, this drainage project was discussed and reviewed in detail with Ms. Cynthia

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Casagrande, of the E.R.C.A., to deal with any E.R.C.A. issues and comments related to this Municipal Drain. The Shaw Drain North is located within the regulated area and is under the jurisdiction of E.R.C.A., and therefore an E.R.C.A. permit is required for construction of the proposed access bridge and drain improvement work. Further to the above, E.R.C.A. provided us with their comments and concerns through a series of email correspondence, and said emails are included herein as Appendix "A".

With respect to concerns and comments from the Department of Fisheries and Oceans, due to amendments to the Fisheries Act coming into effect, the existing partnership agreements between D.F.O. and the E.R.C.A. have lapsed as of November 25th, 2013. As a result, the proposed works to the Shaw Drain North was self-assessed by the Engineer, through the D.F.O. website, to determine whether this project required review by the D.F.O. Based on the D.F.O. Self Assessment website, it was determined that a formal request for review by the D.F.O. would not be required, given that standard mitigations for fish habitat, migration and protection are provided under our report. Typically these measures include a minimum 10% embedment of the invert for all new bridge culverts below the existing drain bottom or design bottom of the drain, whichever is lower, to ensure a continued path for fish migration through the culvert. Further mitigations include conducting work in dry conditions, immediate bank stabilization, sediment controls, removal of sediment traps, controlled activities to prevent entry of deleterious substances, and restricted culvert lengths. The D.F.O. Species at Risk Screening Maps, confirm that there are no species at risk, fish or muscles identified in this area.

In addition to the self assessment process described above, we had email correspondence with Ms. Maude Tremblay of the D.F.O. and provided project details for her review. Through this correspondence, Ms. Tremblay confirmed that a formal review of this project by the D.F.O. would not be required. Said email correspondence is included herein as Appendix "A".

Through our correspondence with Cynthia Casagrande, of the E.R.C.A., and our self assessment of the project through the D.F.O. website, we have provided for all of the E.R.C.A. and D.F.O. concerns and issues in our design and recommend that this drainage works be constructed in total compliance with said E.R.C.A. and D.F.O. comments and requirements.

Under the Species at Risk Provincial Legislation, set in place with the Ministry of Natural Resources (M.N.R.), Section 23.9 of the Endangered Species Act, 2007, allows the Municipality to conduct eligible repair, maintenance, and improvement work under the Drainage Act that exempts these works from Sections 9 and 10 of this Act, so long as they follow the rules within Ontario Regulation 242/08.

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Furthermore, in response to our email request dated March 26th, 2015, the Town of Amherstburg Drainage Department has reviewed the details of the proposed access bridge and enclosure work with respect to the Endangered Species Act. This review has been conducted by the Town of Amherstburg pursuant to their former agreement with the M.N.R. under Section 23 of Ontario Regulation 242/08 of the Endangered Species Act. Said agreement formally allowed the municipality to review drainage projects under certain sections of the Drainage Act to determine potential impacts on Endangered Species identified as existing within the Town of Amherstburg.

In a letter dated April 14th, 2015, the Town's Drainage Department identified the potential presence of endangered turtle and snake species. These include:

<u>Turtle Species</u>	<u>Threat Level</u>	<u>Snake Species</u>	<u>Threat Level</u>
Spotted Turtle	Endangered	Butler's Garter Snake	Endangered
Spiny Softshell	Threatened		
Blanding's Turtle	Threatened		
Eastern Musk Turtle	Threatened		

In recognition of the impacts that these species may experience as a result of the subject works, the Town of Amherstburg has provided comprehensive mitigation measures as well as species identification guides for reference. These references will be provided as part of the Tender documents for use by the Contractor and shall be available for viewing at the Municipal office for those interested.

It should be noted, that the aforementioned agreement between the M.N.R. and the Town of Amherstburg has lapsed since completion of the Town's review letter dated April 14th, 2015, and new policies have been set in place by the M.N.R. As such, we have recommended that the Municipality register the drainage activities proposed under this report with the M.N.R. and follow any guidelines and recommendations resulting from said registration and/or any new policies or guidelines outlined by the M.N.R. with respect to endangered and/or threatened species.

Bridges over the Shaw Drain North - Improvements

Based on our detailed survey, investigations, examinations, and discussions and review with the affected property owners, we

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offer the following findings and recommendations relative to the drainage works to be carried out in the Shaw Drain North.

Firstly, over the course of our investigations and through numerous discussions and correspondence with Mr. Eric Chamberlain, Manager of Public Works for the Town of Amherstburg, we were instructed to complete the following tasks as part of our scope of work for the improvements within the Shaw Drain North:

- 1) Provide full provisions for all bridges requiring immediate replacement or improvements including the cost sharing assessments for same.
- 2) Provide full provisions for all bridges requiring future replacement including the cost sharing assessments for same.
- 3) Provide full maintenance cost sharing percentages for all access bridges within the drain.

As part of our survey work, we also investigated all of the existing bridges along the full length of the Shaw Drain North. In order to establish a basis for replacement or improvement to each structure, we reviewed and analyzed each structure based on the following criteria:

1. The vintage of each structure.
2. The condition of the existing culvert and headwalls.
3. The culvert size and the capacity required for a minimum 1:2 year storm event according to prevalent rainfall intensity data.
4. The invert elevations of the culvert pipe relative to the design grade.
5. Prevalent design requirements and recommendations set by E.R.C.A., D.F.O., and the M.N.R.

Throughout our work we had on-going discussions with Mr. Eric Chamberlin, Manager of the Public Works for the Town of Amherstburg, regarding the replacement and/or improvements to each of the structures within the Shaw Drain North. From these discussions, we learned that the road crossings beneath the North Sideroad and Concession 5 Road North have been independently evaluated by a third party engineering consulting firm. It is our understanding that both of these structures have been earmarked for replacement and that said replacements are being undertaken by the Town of Amherstburg Public Works Department, with the cost associated with same to be completely borne by the Town of Amherstburg. Accordingly, we have not made

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any recommendations regarding the replacement of these structures, but have simply identified them on our plans and within our report as **Bridge ⑨** (crossing beneath North Sideroad) and **Bridge ⑩** (crossing beneath Concession 5 Road North).

As part of our examinations we noted that several bridges within the Shaw Drain North are expected to last for a few years before requiring any significant work. We have inspected each of these bridges and find that they conform to the general requirements of access bridges within the Municipal Drains. Accordingly, we recommend that the Town maintains these bridges as part of the drainage works in the future. We further recommend that all future maintenance works to these access bridges be carried out as provided for in this report and that the cost shall be assessed to the affected owners and upstream lands and roads in the proportions established in this report.

From our survey, investigations, and the criteria mentioned herein, we find and recommend the following:

Enclosure ① (Justin Gignac & Rozlyn Charette, 450-07150)

The existing enclosure extending from Station 0+272.8 to Station 0+313.9, serving as the primary access to the residential lands of Justin Gignac and Rozlyn Charette (450-07150) within Lot 9, Concession 4, was noted within the September 30th, 1958 report by C.G.R. Armstrong as well as the March 22nd, 1996 Nick J. Peralta report. We find that the existing enclosure, culvert, and headwalls to be in poor condition. Therefore, based on the vintage and condition of the overall enclosure, we recommend that same be entirely replaced as part of this report. This structure has been labelled herein as **Enclosure ①**.

All of the particulars with respect to the replacement of **Enclosure ①** were discussed and reviewed with Mr. Justin Gignac. As part of this, we discussed that the existing driveway access adjacent to Concession 5 Road North, shall be improved to accommodate a 6.60 metre wide (21.7 ft.) driveway topwidth and that same shall be blended into the existing driveway access to a point identified within the plans.

The existing **Enclosure ①** consists of an access bridge portion and a lawn piping portion. We recommend that the cost of the access bridge portion be shared by the bridge user and all lands and roads within the drain watershed upstream of this structure. We also recommend that all the costs of the lawn piping portion be entirely assessed to the Town of Amherstburg for the Concession 5 Road North, as it is our opinion that the extended length of the enclosure was originally installed to protect the travelled portion of the adjacent roadway when the drain was moved further west. All of same has been provided for within the Construction Schedule of Assessment included within this report.

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Bridge ② (Ronald & Christine McGuire, 450-07100)

The existing access bridge extending from Station 0+319.9 to Station 0+332.0, serving as the primary access to the agricultural lands of Ronald and Christine McGuire (450-07100), within Lot 9, Concession 4, was constructed under the May 21st, 1997 Engineer's Report prepared by Gerard Rood, P.Eng., and Nick J. Peralta, P.Eng. We find that the existing access bridge culvert to be in fair condition, adequately sized and on grade; therefore, based on the vintage and condition of the existing access bridge we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Bridge ②**.

Bridge ③ (James & Druscilla Travis, 450-07000)

The existing access bridge extending from Station 0+421.0 to Station 0+427.6, serving as the primary access to the residential and agricultural lands of James and Druscilla Travis (450-0700), within Lot 9, Concession 4, was identified and relocated off of the road right-of-way within the September 30th, 1958 C.G.R. Armstrong, P.Eng., report. This bridge was also identified within the March 22nd, 1996 Nick J. Peralta report, although no work was completed to this bridge under said Peralta report. We find that the existing access bridge culvert to be in poor condition. Therefore, based on the vintage and the condition of the existing access bridge, we recommend that same be entirely replaced as part of the report. This structure has been labelled herein as **Bridge ③**.

All of the particulars with respect to this bridge replacement were discussed and reviewed in detail with Ms. Druscilla Travis. We discussed the provisions for a minimum 6.10 metre (20.0 ft.) topwidth and provided Ms. Travis with preliminary cost estimates for a variety of different endwall treatments. Following these discussions Ms. Travis indicated that it was her preference to construct the new bridge using a sloped quarried limestone erosion protection and plastic piping.

We further recommend that the cost for the construction of this new access bridge be shared by the bridge user and all lands and roads within the drains watershed upstream of this structure. All of same has been provided for in within the Construction Schedule of Assessment included within this report.

Bridge ④ (Tracy Gurbin, 450-06900)

The existing access bridge extending from Station 0+547.3 to Station 0+554.3, serving as the primary access to the residential lands of Tracy Gurbin (450-06900), within Lot 9, Concession 4, was identified within the March 22nd, 1996 Engineering Report prepared by Nick J. Peralta, P.Eng. We find

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the existing access bridge culvert to be in fair condition, adequately sized and on-grade. We also find the existing concrete filled jute bag headwalls to be in good condition. Therefore, based on the vintage and the condition of the existing access bridge, we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Bridge ④**.

Bridge ⑤ (Ryan & Angela Evon, 450-06700)

The existing access bridge extending from Station 0+574.4 to Station 0+580.3, serving as the primary access to the residential lands of Ryan and Angela Evon (450-06700), within Lot 9, Concession 4, was identified within the March 22nd, 1996 Engineering Report prepared by Nick J. Peralta, P.Eng. We find the existing access bridge culvert to be in fair condition, adequately sized and on-grade. We also find the existing concrete filled jute bag headwalls to be in good condition. Therefore, based on the vintage and the condition of the existing access bridge, we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Bridge ⑤**.

Bridge ⑥ (James & Tanya Sinasac, 450-06800)

The existing access bridge extending from Station 0+730.5 to Station 0+740.0, serving as the primary access to the residential lands of James and Tanya Sinasac (450-06800), within Lot 9, Concession 4, was identified within the March 22nd, 1996 Engineering Report prepared by Nick J. Peralta, P.Eng. We find the existing access bridge culvert to be in fair condition, adequately sized and on-grade. We also find the existing slopped stone erosion protection endwalls to be in good condition. Therefore, based on the vintage and the condition of the existing access bridge, we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Bridge ⑥**.

Bridge ⑦ (Stanley & Sheila Grondin, 450-06600)

The existing access bridge extending from Station 0+897.0 to Station 0+904.1, serving as the primary access to the residential lands of Stanley and Sheila Grondin (450-06600), within Lot 10, Concession 4, was identified within the March 22nd, 1996 Nick J. Peralta report. Under said Peralta report, no works of improvement were completed to this bridge. From our research, it is our opinion that this bridge was likely installed under the September 30th, 1958 Engineer's Report by C.G.R. Armstrong, when the drain was relocated away from the adjacent roadway. We find that the existing access bridge culvert and headwalls to be in poor condition, and further note that recent failures in the culvert have necessitated emergency repair work by the Municipality in order to keep the driveway

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passable. Therefore, based on the condition of the existing access bridge, we recommend that same be entirely replaced as part of this report. This structure has been labelled herein as **Bridge ⑦**.

All of the particulars with respect to this bridge replacement were discussed and reviewed in detail with Mr. Stanley Grondin. As part of these discussions, the Owner confirmed that the standard 6.10 metres (20.0 ft.) would be sufficient for his purposes and initially requested that the end treatments for the new bridge be completed using concrete filled jute bag headwalls. At the May 10th Consideration meeting, the owner requested that sloped quarried limestone end protection be installed in lieu of the concrete filled jute bag headwalls. As part of our review and discussions with Mr. Grondin, we provided preliminary cost estimates for the replacement of his access bridge.

We further recommend that the cost for the construction of the new access bridge be shared by the bridge user and all lands and roads within the drains watershed upstream of this structure. All of same has been provided for in within the Construction Schedule of Assessment including within this report.

Bridge ⑧ (Stanley Grondin, 450-06500)

The existing access bridge extending from Station 1+010.8 to Station 1+023.6, serving as the primary access to the agricultural lands of Stanley Grondin (450-06500), within Lot 10, Concession 4, was constructed under the March 22nd, 1996 Engineer's Report prepared by Nick J. Peralta, P.Eng. We find the existing access bridge culvert to be in fair condition, adequately sized and on-grade. We also find the existing slopped stone erosion protection endwalls to be in good condition. Therefore, based on the vintage and the condition of the existing access bridge, we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Bridge ⑧**.

Road Crossing ⑨ (North Sideroad)

As part of our work under this report, our examinations of the existing concrete span bridge crossing North Sideroad were limited. It was conveyed to us by the Manager of Public Works, Mr. Eric Chamberlain, that the replacement of the road crossing structure was currently being designed and managed by a third party engineering consulting firm. As such, we have not made recommendations for any works relating to the improvement or replacement of this road crossing.

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Bridge ⑩ (Jeanne Laframboise, 490-00100)

The existing access bridge extending from Station 1+637.8 to Station 1+651.9, serving as the primary access to the residential and agricultural lands of Jeanne Laframboise (490-00100), within Lot 11, Concession 4, was constructed under the March 4th, 2004 Engineer's Report prepared by Bruce D. Crozier, P.Eng. We find that the existing access bridge culvert to be in fair condition, adequately sized and on-grade. We also find the existing sloped stone erosion protection endwalls to be in good condition. Therefore, based on the vintage and the condition of the existing access bridge, we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Bridge ⑩**.

Bridge ⑪ (Robert & Yvette Souchereau 490-08200)

The existing access bridge extending from Station 1+723.4 to Station 1+730.4, serving as the primary access to the residential lands of Robert and Yvette Souchereau(490-08200), within Lot 11, Concession 4, was identified within the March 22nd, 1996 Engineering Report prepared by Nick J. Peralta, P.Eng. We find the existing access bridge culvert to be in fair condition, adequately sized and on-grade. We also find the existing concrete headwalls to be in good condition. Therefore, based on the vintage and the condition of the existing access bridge, we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Bridge ⑪**.

Enclosure ⑫ (Robert & Yvette Souchereau 490-08100)

The existing access bridge extending from Station 1+755.4 to Station 1+781.6, serving as the primary access to the residential lands of Robert and Yvette Souchereau(490-08100), was constructed under the March 22nd, 1996 Engineer's Report prepared by Nick J. Peralta, P.Eng. We find the existing enclosure culvert and headwalls to be in fair condition, adequately sized, and on-grade. Therefore, based on the vintage and the condition of the existing enclosure, we recommend that no improvements are required to this structure as part of this report. This structure has been labelled herein as **Enclosure ⑫**.

Road Crossing ⑬ (Concession 5 Road North)

As part of our work under this report our examinations of the existing concrete span bridge crossing Concession 5 Road North were limited. It was conveyed to us by the Manager of Public Works, Mr. Eric Chamberlain, that the replacement of the road crossing structure was currently being designed and managed by a third party engineering consulting firm. As such, we have not made recommendations for any works relating to the improvement or replacement of this road crossing.

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Based on all of the above, we therefore recommend that **Enclosure ①, Bridge ③, and Bridge ⑦** be replaced and improved and that all of same be provided within this report, the attached specifications, and the accompanying drawings, and that all works associated with each of same be carried out in accordance with Section 78 of the "Drainage Act. R.S.O. 1990, Chapter D.17, as amended 2010".

VI. ALLOWANCES AND COMPENSATION

All of the work under this project shall be carried out along the west limit of Concession 5 Road North. All areas disturbed by this work are specified for full restoration; therefore, these works shall not result in any loss of production of agricultural property, or any indirect damages to the non-agricultural areas. Therefore, no allowances or compensation has been provided for under this report.

VII. ESTIMATE OF COST

Our estimate of the total cost of this work, including all incidental expenses, is the sum of **SEVENTY FIVE THOUSAND SIX HUNDRED AND FORTY FOUR DOLLARS (\$75,644.00)** made up as follows:

CONSTRUCTION

Item 1) **Enclosure ① (Station 0+270.4 to Station 0+313.9)**; Excavate, completely remove and dispose of the existing enclosure culvert and concrete headwalls; provide all labour and equipment to construct a new enclosure consisting of 43.5 metres (142.7 ft.) of 750mm diameter, solid, heavy duty, 320 kPa, Smoothwall H.D.P.E. plastic pipe including filter cloth wrapped split coupler joints, sloped quarried limestone end protection, granular bedding and backfill, asphalt restoration through the trench across the existing asphalt driveway, supply and installation of a new, 600mm diameter, 320 kPa H.D.P.E. shop fabricated in-line CB1 approximately 700mm deep and set into the new H.D.P.E. enclosure pipe, complete with cast iron inset catch basin grate, granular backfill in all gore areas, excavation, compaction, topsoil, seeding and mulching, cleanup and restoration, complete. Lump Sum \$ 19,700.00

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Item 2) **Bridge ③ (Station 0+418.3 to Station 0+430.3)**; Excavate, completely remove and dispose of existing access bridge culvert and concrete end treatments; provide all labour, equipment and materials to construct a new access bridge consisting of 12.0 metres (39.37 ft.) of 750mm diameter solid heavy duty, 320 kPa, Smoothwall H.D.P.E. plastic pipe, including filter cloth wrapped split coupler joints, excavation, granular bedding and backfill, including sloped quarried limestone erosion protection, granular driveway approach and transition, granular backfill in all gore areas, tile diversion and connection into the new plastic culvert pipe excavation, compaction, topsoil, seeding and mulching, cleanup and restoration, complete.

Lump Sum \$ 7,800.00

Item 3) **Bridge ⑦ (Station 0+896.5 to Station 0+904.5)**; Excavate, completely remove and dispose of existing access bridge culvert and concrete end treatments; provide all labour, equipment and materials to construct a new access bridge consisting of 12.0 metres (39.37 ft.) of 900mm diameter (36.0 in.) solid heavy duty, 320 kPa, Smoothwall H.D.P.E. plastic pipe, including filter cloth wrapped split coupler joints, excavation, granular bedding and backfill, including sloped quarried limestone erosion protection granular driveway approach and transition, granular backfill in all gore areas, excavation, compaction, topsoil, seeding and mulching, cleanup and restoration, complete.

Lump Sum \$ 8,500.00

Item 4) Net H.S.T. on above items (1.76%) \$ 634.00

TOTAL FOR CONSTRUCTION **\$ 36,634.00**

INCIDENTALS

1) Report, Estimate, and Specifications \$ 18,200.00

2) Survey, Assistants, Expenses, and Drawings \$ 11,350.00

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3) Duplication Costs of Drawings and Report	\$ 700.00
4) Duplication Costs of Reconsidered Report	\$ 700.00
4) Estimated Cost of Letting the Contract including Preparation of Tender Documents and Tender Review	\$ 1,100.00
5) Estimated Cost for Full-Time On-Site Inspection, and Project Management during Construction (based on a 6.0 day duration)	\$ 5,500.00
6) Net H.S.T on Items above (1.76%)	\$ 660.00
7) Estimated Cost for E.R.C.A. Permit (if required)	\$ 800.00
TOTAL FOR INCIDENTALS	\$ 39,010.00
TOTAL FOR CONSTRUCTION (brought forward)	\$ 36,634.00
TOTAL ESTIMATE	\$ 75,644.00

VIII. DRAWINGS AND SPECIFICATIONS

As part of this report, we have attached design drawings for the Bridges over the Shaw Drain North, consisting of Sheets 1, 2, and 3. The design drawings show the alignment of the Shaw Drain North, and the approximate locations of all of the access bridges as part of this project. The drawings also illustrate the affected landowners, the approximate limit of the drain watershed, and the details relative to the various replacements and improvements of the bridges where applicable.

Furthermore, Bench Marks have been established along the course of the drain and for each structure detail. The drawings attached herein have been reduced in size and the scale therefore varies; however, full scale drawings can be viewed at the Amherstburg Municipal Office, if required.

Also attached, we have prepared Specifications which set out the required construction details for the various aspects of the works to be conducted under this report. We have also included Standard Specifications and details related to the intended works, labelled herein as **Appendix "C"**.

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IX. CONSTRUCTION SCHEDULE OF ASSESSMENT

We recommend that the above estimated costs for the works proposed under this report be assessed against the affected lands and roads as shown in the attached **Construction Schedule of Assessment**. In general terms, the lands and roads included in the Construction Schedule of Assessment are those within the limits of the watershed and use the Shaw Drain North for drainage purposes.

The attached Schedule of Assessment also reflects sharing of the bridge repair and improvement costs, partially as a Benefit to the lands served by the access bridge, with remaining costs assessed as an Outlet Liability charged to all of the upstream lands and roads affected by each bridge. The costs for the bridges were shared by the abutting landowner and upstream lands in accordance with the percentages shown in the following table:

TABLE SHOWING COST SHARING FOR ACCESS BRIDGES

<u>BRIDGE/ ENCLOSURE NUMBER</u>	<u>ROLL NUMBER</u>	<u>OWNERS</u>	<u>% TO ABUTTING OWNER</u>	<u>% UPSTREAM LANDS AND ROADS</u>
1.	450-07150	Justin Gignac & Rozlyn Charette	31.0%	11.0%
		Concession 5 Road North (Town of Amherstburg)	*58.0%	-
3.	450-07000	James & Druscilla Travis	72.0%	28.0%
7.	450-06600	Stanley & Sheila Grondin	63.0%	37.0%

*Percentage value associated with lawn piping portion of the enclosure.

The Owners' share of the bridge improvements is assessed as a Benefit in the attached Schedule of Assessment with the balance of the cost for each bridge assessed to all of the upstream affected lands and roads as an Outlet Liability.

We further find that the existing **Enclosure ①**, access **Bridge ③**, and access **Bridge ⑦** all have legal status in the Shaw Drain North and therefore the estimated construction costs plus incidental costs for same shall be shared between the bridge user and all of the lands and roads that exist upstream of said access bridge sites and use the Shaw Drain North for drainage purposes. The sharing percentages between the bridge user and

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the upstream lands and roads affected by said bridges have been established on the basis of where it is located relative to the entire reach of the drain. The bridge users share is assessed within the Construction Schedule of Assessment as a Benefit Assessment, and is based in part on a standard top width access bridge while the affected upstream lands and roads share is assessed as an Outlet Liability.

For **Enclosure ①**, being replaced under this report, the estimate of construction cost plus related incidental cost for the access bridge portion of this enclosure shall be shared between the bridge user and all the lands and roads within the drain watershed area that exists upstream of this enclosure and use the Shaw Drain North for drainage purposes. The balance of the enclosure is considered to be the lawn piping portion of the enclosure. Since the lawn piping was necessary to protect the travelled portion of Concession 5 Road North, pursuant to the 1958 Engineer's Report, all the construction costs plus related incidental costs for same have been assessed entirely to the Town of Amherstburg, for Concession 5 Road North.

In addition, the attached Construction Schedule of Assessment also reflects the sharing of the engineering costs associated with the work required to produce this report. The Owner's share of the costs is assessed as a benefit in the Construction Schedule of Assessment with the balance of the costs assessed to all of the upstream affected lands and roads as an Outlet Liability.

We recommend that all of the costs included under this report be charged against the lands and roads affected in accordance with the attached Construction Schedule of Assessment included herein. Lands which are used for agricultural purposes have been listed in the Construction Schedule of Assessment under Subheading **"5. Privately Owned - Agricultural Lands (grantable)"**. In general the lands and roads included in this Schedule of Assessment are all those who benefit from and/or use the Shaw Drain North for drainage purposes.

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 either the "Farm Property Class Tax Rate", the "Managed Forest Tax Incentive Program", or the

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"Conservation Land Tax Incentive Program". The Municipal Clerk has provided this information to the Engineer from the current property tax roll. Properties that meet the criteria for "lands used for agricultural purposes" are shown in the attached Assessment Schedule under the subheading "**5. Privately Owned - Agricultural Lands (grantable)**" and are expected to be eligible for the 1/3 grant from O.M.A.F.R.A. In accordance with same, we expect that this project will qualify for the grant normally available for agricultural lands. We would therefore, recommend that the Town of Amherstburg make an application, on their behalf, for a Grant from the Ontario Ministry of Agriculture, Food, and Rural Affairs (O.M.A.F.R.A.) in the amount of 1/3 of their total assessment for this project, in accordance with the provisions of Sections 85 and 88 of the "Drainage Act. R.S.O. 1990, Chapter D.17, as amended 2010". Even though it is our opinion that certain lands shall likely be eligible for grants, there is no guarantee that these lands will qualify or that grants may be available in the future.

X. FUTURE MAINTENANCE

After the completion of all of the works associated with this Engineer's Report, we recommend that the Bridges over the Shaw Drain North be kept up and maintained in the future by the Town of Amherstburg. As part of this project, we have provided a separate **Bridge Maintenance Schedule of Assessment** to be used, in part, for the distribution of costs for the future maintenance of the bridges and enclosures within the Shaw Drain North. This Maintenance Schedule of Assessment has been included herein as **Appendix "D"**.

For the **Bridge Maintenance Schedule of Assessment**, the assessment proportions as outlined therein have been established on the basis of an estimated future maintenance cost of **\$3,000.00**. It should be clearly understood that the amounts shown within this Schedule are only for pro-rating future maintenance costs and do not form part of the current cost for the work.

It must also be understood, that the **Bridge Maintenance Schedule of Assessment** for the Bridges over the Shaw Drain North is for maintenance of the existing access bridges and enclosures only and is not to be utilized for any future maintenance works conducted on the open drain portions. Maintenance on the open drain portions of the drain is to be conducted and assessed according to the provisions set in the March 22nd, 1996 Engineer's Report prepared by Nick J. Peralta, P.Eng.

We would further recommend that all bridges, enclosures, and the roadway crossings beneath the Concession 5 Road North and the North Sideroad within the Shaw Drain North be maintained in the future on the basis of the percentages provided in the table

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below, and also in conjunction with the **Bridge Maintenance Schedule of Assessment** as described herein.

In the table below, the "% TO ABUTTING OWNER" represents the maintenance cost to the owner of the access bridge and shall be assessed as a Benefit to said owner. The "% TO UPSTREAM LANDS AND ROADS" represents the maintenance costs to be assessed as an Outlet liability against the lands and roads within the watershed lying upstream of said access bridge, in the same proportions as the Outlet Assessments shown in the **Bridge Maintenance Schedule of Assessment** established and included herein for the Shaw Drain North:

<u>BRIDGE/ ENCLOSURE NUMBER</u>	<u>ROLL NUMBER</u>	<u>OWNERS</u>	<u>% TO ABUTTING OWNER</u>	<u>% UPSTREAM LANDS AND ROADS</u>
1.	450-07150	Justin Gignac & Rozlyn Charette	31.0%	11.0%
		Concession 5 Road North (Town of Amherstburg)	*58.0%	-
2.	450-07100	Ronald & Christine McGuire	74.0%	26.0%
3.	450-07000	James & Druscilla Travis	72.0%	28.0%
4.	450-06900	Tracy Gurbin	69.5%	30.5%
5.	450-06700	Ryan & Angela Evon	69.0%	31.0%
6.	450-06800	James & Tonya Sinasc	66.0%	34.0%
7.	450-06600	Stanley & Sheila Grondin	63.0%	34.0%
8.	450-06500	Stanley Grondin	60.0%	40.0%
9.	Roadway Crossing	Town of Amherstburg (North Sideroad)	100.0%	0.0%
10.	490-00100	Jeanne Laframboise	52.0%	48.0%
11.	490-08200	Robert & Yvette Souchereau	47.0%	53.0%
12.	490-08100	Robert & Yvette Souchereau	67.0%	33.0%

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13.	Roadway Crossing	Town of Amherstburg (Concession 5 Road North)	100.0%	0.0%
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*Percentage value associated with lawn piping portion of the enclosure.

It should be noted that the mechanisms provided herein afford the Municipality the means to undertake future maintenance works on the access bridges and enclosures and so that the future maintenance costs for same can be properly assessed to the affected landowners. Accordingly, we recommend that all of these structures within the Shaw Drain North, for which future maintenance costs are to be shared with upstream lands and roads within the watershed, be maintained by the Municipality. Said maintenance work would include works to the access bridge culvert, bedding and backfill, end treatment and other ancillary work. Should concrete or asphalt driveway surfaces over these access bridge driveways require removal as part of the maintenance work, these surfaces should be repaired or replaced as part of the work. However, the cost of the supply and installation of any special surface material other than Granular "A" material or native fill topping, where applicable, shall be totally assessed to the benefiting landowner served by said access bridge.

All of the above provisions for future maintenance of the above listed bridge structures under this report, shall remain as aforesaid until otherwise determined under the provisions of the "Drainage Act, R.S.O. 1990, Chapter, D.17, as amended 2010".

All of which is respectfully submitted.

N. J. PERALTA ENGINEERING LTD.


Shane R. McVitty, P.Eng.

SRM/sa

Att.

N. J. PERALTA ENGINEERING LTD.
Consulting Engineers
45 Division Street North
KINGSVILLE, Ontario
N9Y 1E1



RECONSIDERED CONSTRUCTION SCHEDULE OF ASSESSMENT

BRIDGES OVER THE SHAW DRAIN NORTH

(Geographic Township of Anderdon)

Town of Amherstburg

3. MUNICIPAL LANDS:

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Aff't'd	Hectares Aff't'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
Concession 5 Road North			4.42	1.789	Town of Amherstburg	\$ 30,006.00	\$ 1,918.00	\$ -	\$ 31,924.00
North Sideroad			1.53	0.619	Town of Amherstburg	\$ -	\$ 16.00	\$ -	\$ 16.00
Total on Municipal Lands.....						\$ 30,006.00	\$ 1,934.00	\$ -	\$ 31,940.00

4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Aff't'd	Hectares Aff't'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
450-07150	4	9	0.63	0.255	Justin Gignac & Rozlyn Charette	\$ 7,735.00	\$ 318.00	\$ 1,133.00	\$ 9,186.00
450-06900	4	9	0.53	0.214	Tracy Gurbin	\$ 1,082.00	\$ 110.00	\$ -	\$ 1,192.00
450-06800	4	9	0.69	0.279	James & Tanya Sinasac	\$ 1,082.00	\$ 119.00	\$ -	\$ 1,201.00
450-06600	4	10	0.53	0.214	Stanley & Sheila Grondin	\$ 7,936.00	\$ 93.00	\$ -	\$ 8,029.00
490-08100	4	11	0.92	0.372	Robert & Yvette Souchereau	\$ 1,082.00	\$ 13.00	\$ -	\$ 1,095.00
490-08200	4	11	0.92	0.372	Robert & Yvette Souchereau	\$ 1,082.00	\$ 16.00	\$ -	\$ 1,098.00
Total on Privately Owned - Non-Agricultural Lands.....						\$ 19,999.00	\$ 669.00	\$ 1,133.00	\$ 21,801.00

**Construction Schedule of Assessment -
Bridges over the Shaw Drain North
Town of Amherstburg - D-14-027**

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
450-07200	4	8	20.00	8.094	Debra Renaud	\$ -	\$ 4,861.00	\$ -	\$ 4,861.00
450-07100	4	9	14.38	5.820	Ronald & Christine McGuire	\$ 1,082.00	\$ 1,831.00	\$ -	\$ 2,913.00
450-07000	4	9	14.82	5.998	James & Druscilla Travis	\$ 7,876.00	\$ 1,816.00	\$ -	\$ 9,692.00
450-06700	4	9	40.06	16.212	Ryan & Angela Evon	\$ 1,082.00	\$ 1,989.00	\$ -	\$ 3,071.00
450-06500	4	10	43.37	17.552	Stanley Grondin	\$ 1,082.00	\$ 142.00	\$ -	\$ 1,224.00
450-06400	4	10	35.75	14.468	Yvonne Simon	\$ -	\$ 88.00	\$ -	\$ 88.00
490-00100	4	11	20.00	8.094	Jeanne Laframboise	\$ -	\$ 54.00	\$ -	\$ 54.00
Total on Privately Owned - Agricultural Lands (grantable).....						\$ 11,122.00	\$ 10,781.00	\$ -	\$ 21,903.00
TOTAL ASSESSMENT			197.02	79.73		\$ 61,127.00	\$ 13,384.00	\$ 1,133.00	\$ 75,644.00

1 Hectare = 2.471 Acres
D-14-027
Reconsidered May 20th, 2016

SPECIFICATIONS

BRIDGES OVER THE SHAW DRAIN NORTH

(Geographic Township of Anderdon)

TOWN OF AMHERSTBURG

I. GENERAL SCOPE OF WORK

The Shaw Drain North comprises of an open Municipal Drain generally located on the west side of Concession 5 Road North extending from approximately the midpoint of Lot 8, Concession 4, northerly to approximately the midpoint of field Lot 11, Concession 4 and then proceeding easterly under Concession 5 Road North and downstream to its outlet into the Canard River. The work under this project generally comprises of the removal and replacement of two (2) existing access bridges and one (1) existing drain enclosure. These works include the removal of existing culverts and headwalls, the installation of new culvert pipes, new end protection comprising of sloped quarried limestone end protection, swale construction, sloped quarried limestone erosion protection, granular bedding, granular approach and backfill, granular transition areas, swale grading, and all ancillary work related thereto including cleanup and restoration.

All work shall be carried out in accordance with these specifications, the plans forming part of this drainage project, comply in all regards with Appendix "A", Appendix "B", as well as the Standard Specifications included in Appendix "C". The structure improvements shall be of the size, type, depth, etc., as is shown in the accompanying drawings, as determined from the Benchmarks, and as may be further laid out at the site at the time of construction. All work carried out under this project shall be completed to the full satisfaction of the Town Drainage Superintendent and the Consulting 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 minimize the amount of silt and sediment being carried downstream into the Canard River. 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 sites subsequent to construction. The Contractor may be required to provide temporary silt fencing and straw bales as outlined further in these specifications.

Reconsidered Specifications -Bridges over the Shaw Drain North
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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, along with all of the notes within Appendix "A". The Contractor is advised that no work shall be carried out in the existing drain from March 15th to June 30th, of any given year, because the drain is directly connected to a downstream drain that is classified as sensitive to impacts on aquatic life and habitat by E.R.C.A. and D.F.O.

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. CONSIDERATIONS

The Contractor is advised that the Municipality has conducted an "Endangered Species Act Review" for the Shaw Drain North and said review is included within Appendix "B".

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(Geographic Township of Anderdon)
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The Town of Amherstburg, in pursuant to the Endangered Species Act Municipal Agreement, has identified the potential presence of certain species within the project area. It is the responsibility of the Contractor to make certain that necessary provisions are undertaken to ensure the protection of all species at risk and their habitats throughout the course of construction. It is also the responsibility of the Contractor to make itself familiar with the following documents:

1. Town of Amherstburg — Additional Mitigation Measures for Snakes Species
2. Town of Amherstburg — Additional Mitigation Measures for Turtle Species
3. Snakes of Ontario Identifier Guide
4. Turtles of Ontario Identifier Guide

These documents will be provided to the successful Tenderer.

The Contractor will be responsible for providing the necessary equipment and materials required by the mitigation plans and shall contact the Town of Amherstburg Drainage Superintendent immediately if any endangered species are encountered during construction.

IV. ACCESS TO WORK

The Contractor is advised that the majority of the work to be carried out on this project extends along the west side of Concession 5 Road North. The Contractor shall have access for the full width of the roadway abutting the proposed drainage works. The Contractor may use the entire width of Concession 5 Road North right-of-way as necessary to permit the completion of the work required to be carried out for the completion of this project.

The Contractor shall ensure that the travelling public is protected at all times while utilizing the roadway for its access. The Contractor shall provide traffic control, including flag persons when required. The Contractor shall be required to submit a Traffic Control Plan to the Consulting Engineer for approval from the governing Road Authorities. The Traffic Control Plan shall be carried out in accordance with the requirements of the Ontario Traffic Manual's Book 7 for Temporary Conditions. Should the Contractor have to close Concession 5 Road North for the proposed works, it shall obtain authorization from the Road Authority and arrange to provide the necessary notification of detours around the site. The Contractor shall also ensure that all emergency services, school bus companies, etc. are contacted about the disruption to access

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at least 48 hours in advance of same. All detour routes shall be established in consultation with the Municipal and County Roads Department.

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. This will be of particular concern along the lawn areas of residential properties. Due to the extent of the work and the area for carrying out the work, the Contractor will be required to carry out all of the necessary steps to direct traffic and provide temporary diversion of traffic around work sites, including provision of all lights, signs, flag persons, and barricades required to protect the safety of the travelling public. Any accesses or areas used in carrying out the works are to be fully restored to their original conditions by the Contractor, including topsoil placement and lawn restoration as directed by the Town Drainage Superintendent and/or the Consulting Engineer. Restoration shall include but not be limited to all necessary levelling, grading, shaping, topsoil, seeding and 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, including the full width of the 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 Contractor shall also pay particular attention to protecting all of the existing decorative trees and shrubs, especially where the works are being carried out along the frontage of a residential grassed area. The Contractor shall remove all stumps and associated tree roots in areas where the existing enclosures are being replaced, and as identified within the plans.

The Contractor shall particularly note that for Enclosure ①, the existing trees identified within the plans are intended to remain and the Contractor is to make every effort to protect their root system while replacing the subject enclosure. Careful excavation shall be required while working in the area adjacent to existing trees. In order to ensure that the absolute minimum amount of damage is done to these trees during the drainage work, the Contractor shall be expected to carry out its excavations in a very careful and conscientious fashion. It is anticipated that work through these areas will be labour-intensive and may require hand-digging.

The following methodologies must be followed when working around existing trees:

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- a) Trench widths, at all times, must be kept as narrow as possible to minimize damage to tree roots; all tree roots encountered must be treated carefully
- b) Prior to pipe installation, tree roots found to be within the limits of the pipe trench are to be cut cleanly using a vertical saw, chain-saw or similar. The use of a excavation machine to remove tree roots will not be permitted.
- c) During excavation for the installation of the new pipe or removal of the existing pipe, any roots encountered having a diameter greater than 75mm (3") that will be in direct conflict with the installation of the new drain pipe are to be neatly cut using a chain-saw, pruning shears, or similar.
- d) Any tree roots encountered during excavations that require trimming are to be cut cleanly with clean tools and covered with soil as soon as possible to prevent drying out. Tree roots are not to be left exposed overnight.

While working adjacent to any existing trees not labelled for removal, the Contractor shall make all efforts to keep the width of all excavated trenches to an absolute minimum so as to reduce the potential impact on said trees. Additionally, during construction, no equipment, materials or tools should be stored within the drip lines of any tree.

The brush and trees removed along the course of the work are to be put into piles by the Contractor in locations 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. 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 will be required to notify the local fire authorities and co-operate with them in the carrying out of any work. The removal of brush and trees shall be carried out in close consultation with the Town Drainage Superintendent or Consulting 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 within the roadway allowances and on private lands.

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 Consulting Engineer, and the Owners, to be removed as part of the works. The Contractor shall note that protecting and saving the trees may require the

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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 culverts 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 replacing 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. DETAILS OF BRIDGES AND ENCLOSURE WORK

The Contractor shall provide all material, labour and equipment to replace existing access bridges and enclosures, within the Shaw Drain North requiring work, as outlined on the plans, the Schedule of Items, and in these specifications.

All existing corrugated steel pipes slated to be removed for the two (2) existing access bridges and one (1) enclosure, along the Shaw Drain North shall be replaced with new Boss 2000 H.D.P.E. Smoothwall plastic pipe (or approved equivalent). Plastic piping shall be connected together with filter cloth wrapped split couplers installed in accordance with the manufactures recommendation. Each coupler shall be wrapped in filter cloth material around the complete circumference to ensure that there will be no soil migration through the joints and into the pipe through the connections.

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All culvert pipes within this project shall be set to the grades as shown on the plans or as otherwise established herein and the Town Drainage Superintendent or the Consulting Engineer may make minor changes to the bridge alignment as they deem necessary to suit the site conditions. All work shall be carried out in general accordance with the "STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION INCLUDING ENDWALL TREATMENT, BACKFILLING AND INSTALLATION PROCEDURES" attached to this report and labelled Appendix "C".

VIII. ALUMINIZED STEEL PIPE AND H.D.P.E. PIPE INSTALLATION

All new plastic bridge and enclosure piping installed under this project shall consist of 320 kPa, Smooth Wall H.D.P.E. plastic pipe assembled together with the use of split couplers with filter cloth wrapped connections.

The new Smooth Wall plastic pipe to be installed on this project are required to be provided as one (1) continuous length wherever possible; However, where it is absolutely necessary, and only with the approval of the Town Drainage Superintendent or the Consulting Engineer, the Contractor may be allowed to utilize two (2) lengths of pipe coupled together with filter cloth wrapped split couplers, unless otherwise noted in the accompanying drawings. The filter cloth is to be wrapped around the pipe circumference and overlap a minimum of 600mm and the width of this filter cloth shall extend beyond the outer limits of the coupler, a minimum of 300mm. The filter cloth to be used for this wrap shall be non-woven geo-textile filter fabric "Armtec Class 1 GMN160" or approved equal. The installation of all couplers and filter cloth wrap must be inspected and approved by the Drainage Superintendent or Consulting Engineer prior to backfilling of same.

For bridges and enclosures having culverts comprised of plastic pipe and requiring sloped quarried limestone endwalls, prior to the installation of the stone endwalls, the Contractor shall ensure that the pipe ends are securely anchored against floatation utilizing two (2) steel T-bar fence posts, one on each side of the pipe, with heavy galvanized wires secured between them across the top of the pipe or other approved methods satisfactory to the Drainage Superintendent or the Consulting Engineer. The cost of these floatation anchors are to be included in the price of the item for each bridge as described herein.

The Aluminized Steel Type II Corrugated Hel-Cor pipe to be installed in the future under maintenance projects, shall be installed with a minimum number of couplers and longer pipe sections are to be utilized whenever possible. Under no circumstances shall the culvert sections be less than 6.00 metres in length. All pipe lengths shall be of the size and

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gauge noted in the drawings and shall be coupled together with Aluminized Steel 10C (Corrugation) bolted couplers with similar thickness as the associated culvert pipe, unless otherwise noted in the accompanying drawings. The Aluminized Steel Type II Corrugated pipe for this installation must be inspected and approved by the Town Drainage Superintendent or the Consulting Engineer prior to its placement in the drain. For all bridge and enclosures being replaced under this project, the Contractor shall complete same using Smooth Wall H.D.P.E plastic pipe.

The Contractor shall note that the placement of any new culvert pipe shall 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 the Consulting Engineer. As part of the work, the Contractor will be required to clean out the drain along the full length of the pipe and for a distance of 3.05 metres (10 ft.) upstream and downstream of the pipe.

The installation of the complete length of the culvert pipes, including all appurtenances, shall be completely inspected by the Town Drainage Superintendent or the Consulting Engineer's Inspector prior to backfilling any portions of same. Under no circumstance shall the Contractor commence the construction or backfill of the new culvert pipe without the site presence of the Town Drainage Superintendent or the Consulting Engineer's Inspector to inspect and approve said installation. The Contractor shall provide a minimum of forty-eight (48) hours notice to the Town Drainage Superintendent or the Consulting Engineer prior to commencement of the work. The installation of the new culvert structures are to be performed during normal working hours of the Town Drainage Superintendent and the Consulting Engineer from Monday to Friday unless written authorization is provided by them to amend said working hours.

The Contractor shall backfill the new enclosure pipes with good clean native fill material, with the exception of where the new enclosure pipes are being installed under any existing gravel driveways. Where the new enclosure pipes are located under an existing driveway, the Contractor shall backfill the entire trench for the width of the driveway with Granular "B" backfill compacted in place to a minimum 98% of Standard Proctor Density with the exception of the top 300mm which shall be backfilled with Granular "A" material also compacted in place to a minimum Standard Proctor Density of 98%. For Enclosure ① the Contractor shall neatly saw-cut the existing asphalt and provide a new asphalt surface within the limits of the saw-cut as detailed on the plans. The asphalt driveway shall be restored using compacted granular materials as set out in the general specifications and as shown on the drawings. The Contractor shall provide a minimum 100mm thick, compacted hot mix HL-3 asphalt to restore the existing asphalt driveway or match the existing thickness of the existing asphalt that is there.

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Where the new enclosure pipes are located along a lawn area, the Contractor shall be required to backfill the entire trench with good, clean, native backfill material with the exception of the top 100mm which shall be good clean black loamy topsoil readied for seeding and mulching. It should be noted that if there is a shortage of native backfill material available once the existing culverts are removed, the Contractor shall supply same all at its own cost. The Contractor should also note that prior to commencing its excavation that all existing topsoil should be scavenged for reuse on the project; if there is a shortage, the Contractor shall be required to supply the balance of the topsoil needed, all at its own cost. All of the native backfill material and the topsoil shall be compacted in place to a minimum Standard Proctor Density of 96%.

All native backfill material shall be placed in compacted lifts approximately 300mm thick. Fill material shall be compacted to achieve a minimum Standard Proctor Density of 96%. The Contractor is required to provide whatever mechanical equipment necessary, such as jumping jack and/or plate tamper, in order to achieve the necessary compaction levels, especially along the haunches of the new pipe. All areas shall be graded in accordance with the cross-sections shown in the accompanying drawings, including provision of cross-fall on boulevard areas as shown therein.

The Contractor shall be required to extend and connect all intercepted tiles into the new enclosure pipe, to the full satisfaction of the Drainage Superintendent and the Consulting Engineer as part of the works and payment shall be made for same.

Where shown on the drawings or provided for in the schedule of items and prices, the Contractor shall provide online catch basins that are 600mm (24") in diameter. These catch basins shall be manufactured by the pipe supplier as saddle tees on the mainline pipe and shall include a suitable cast iron grate that mounts securely in the top of the basin. The top of all catch basin grates shall be set approximately 50mm (2") below the adjacent land grade and all surface areas in the proximity of the basin shall be graded to the basin to ensure positive drainage.

The Contractor shall also note that the placing of the new access bridge and enclosure culverts shall be completed so that they totally comply with the parameters established and noted in the Bridge Details. These culverts shall be set on an even grade and the placement shall be performed totally in the dry, and the Contractor should be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The Contractor shall also be required to supply a minimum of 150mm (6") of 20mm (3/4") clear stone bedding underneath the culvert pipe extending from the bottom of the drain to the culvert

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invert grade, all to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. Furthermore, if an unsound base is encountered, it must be removed and replaced with 20mm (3/4") clear stone satisfactorily compacted in place to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The Contractor is to note that when replacing the existing structures, it shall be required to excavate a trench having a width not less than the new pipe outside diameter plus a 600mm working width on both sides of the new pipe.

The location of the pipes and appurtenances as shown on the drawings is approximate and may be changed by the Engineer if deemed advantageous for the progress of the work. The trenches are to be excavated where directed. If any part of the bottom of the trench is found to be unsound or in any way unsuitable to lay the pipe in the Town Drainage Superintendent's or the Engineer's opinion, it may direct that the location of said trench be changed if it is possible to avoid unsound soil by doing so.

IX. EXCAVATION, REMOVALS AND DISPOSAL

During the course of its excavation operations, the Contractor will be required to salvage all available topsoil. Where necessary, this material shall be stockpiled by the Contractor in order to avoid contamination and shall be utilized in carrying out the 100mm thick topsoil placement along all specified newly excavated and filled or disturbed areas, in preparation for the seeding and mulching operation to be carried out as part of the restoration works.

All unsuitable or deleterious materials from the excavation and removal of existing culverts and the drain shall be hauled away and disposed of by the Contractor to a site to be obtained by it at its own expense. Likewise, where indicated in the plans, or in the Schedule of Items, or in the Specifications, the Contractor shall remove the existing culvert pipe and dispose of all of same at a site to be obtained by it at its own expense. In all cases, the disposal of any trucked material shall be the responsibility of the Contractor and it shall ensure that any permits required for fill disposal are obtained from the appropriate authority. The Contractor will be responsible for keeping all private and public roadways free and clear of mud and debris resulting from its use of same for access and hauling purposes.

As part of the work, the Contractor shall be required to excavate, transition and clean the drain bottom for a distance of 3.05m (10 ft.) both upstream and downstream of the access bridge and enclosure pipes at each structure replacement site. The sediment material from this excavation shall under no circumstance be utilized for the backfilling of any of the

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access bridge or enclosure pipe, and same must be totally trucked away and disposed of at a site to be obtained by it at its own expense.

When carrying out the excavation and backfilling work, the Contractor shall satisfy itself as to the exact location, nature, and extent of any existing structures, utility, or other object which it may encounter during the course of the work. The Contractor is advised that it is to coordinate any work on the utilities with the utility company. The Contractor shall ensure that it protects all of the underground utility works against damage during the course of its operations, and especially those noted on the drawings.

All roadways, driveways and access bridges, or any other means of access onto the job site shall be fully restored to their former condition at the Contractor's expense. Before authorizing Final Payment, the Town Drainage Superintendent or the Consulting Engineering 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 to be deducted from any monies owing to the Contractor.

The whole of the work shall be satisfactorily cleaned up, and during the course of the construction, no portion shall be left in any untidy or incomplete state before subsequent portions are undertaken.

X. SLOPED QUARRIED LIMESTONE END PROTECTION

Once the new culvert pipe has been set in place, the Contractor shall install sloped quarried limestone end protection at both ends of each access, where identified within the accompanying drawings. The top 305mm (12") of backfill material over the ends of the corrugated steel pipe, from the invert of said pipe to the top of the driveway elevation of the access bridge, shall be quarried limestone. The quarried limestone shall be provided as shown and detailed on the plan or as indicated in the Standard Specifications in Appendix "C" and shall be graded in size from a minimum of 100mm (4") to a maximum of 250mm (10"). The quarried limestone to be placed on the sloped ends of the access bridge or enclosure shall be underlain with a synthetic non-woven geotextile filter fabric. The sloped quarried limestone protection is to be rounded as shown on the plan details and shall also extend along the drain side slopes to a point directly in line with the ends of the culvert pipe. The road side approach to the entrance shall be provided with a minimum 5.0m radius at each end of the driveway entrance. All work shall be completed to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer.

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The quarried limestone shall be provided as is shown and detailed and shall vary in size from a minimum of 100mm (4") to a maximum of 250mm (10"). The quarried limestone pieces shall be carefully tamped into place with the use of a shovel bucket so that, when complete, the quarried limestone erosion protection shall be consistent, uniform, and tightly laid in place. Prior to placing the quarried limestone, the Contractor shall place non-woven geotextile filter fabric "GMN160" conforming to O.P.S.S. 1860 Class 1 or approved equal, as an underlay. The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried limestone. The placement of the geotextile filter fabric and the quarried limestone, and the completion of the quarried limestone erosion protection shall be conducted to the full satisfaction of the Town Drainage Superintendent or Consulting Engineer.

The installation of the sloped quarried limestone end protection, unless otherwise specified herein, shall be provided in total compliance with Item 2, Item 3, and Item 4 of the **"STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION INCLUDING ENDWALL TREATMENT, BACKFILLING AND INSTALLATION PROCEDURES"**. These are attached to the back of these specifications and labelled **Appendix "C"**. The Contractor shall comply in all respects with the General Conditions included in Item 4 and the **"Typical Quarried Limestone End Protection"** detail also in **Appendix "C"**.

XI. CONCRETE FILLED JUTE BAG HEADWALLS

Unless otherwise shown or noted, the Contractor is to provide new, concrete filled jute bag headwalls for the access bridges and enclosures identified under this project.

The concrete filled jute bags are to be provided and laid out as is shown and detailed in the accompanying drawings and as is noted in the details shown on Sheet 1 of the drawings. In all cases, the concrete filled jute bag headwalls shall be topped with a minimum 150mm (6") thick continuous concrete cap for the entire length of the headwalls. The headwalls shall be installed on an inward batter to be not less than 1 horizontal to 5 vertical, and under no circumstances shall this batter, which is measured from the top of the headwall to the projection of the end of the pipe, be less than 400mm (16").

Where identified in the accompanying drawings, the concrete filled jute bag headwalls are to be installed so that daylighting is provided off of the travelled roadway, and same are to be designed to deflect outwardly as shown in the accompanying drawings. The outwardly projection of the new headwalls shall be deflected at the specified angle to the straight portion of the finished headwall. The top elevations of the daylighted headwalls are to be set no less than 75mm (3")

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below the existing ground elevation. The alignment of these headwalls shall be preformed to the full satisfaction of the Town Drainage Superintendent or Consulting Engineer.

The Contractor shall also be required to satisfactorily backfill the area in behind the headwalls with granular material similar to the rest of the structure, and the same compaction levels specified herein for the backfilling of the bridge culvert shall be provided. The placement of the jute bag headwalls and the placement of the compacted granular material shall be carried out simultaneously. The alignment of these headwalls shall be to the full satisfaction of the Town Drainage Superintendent and the Consulting Engineer.

The installation of the concrete filled jute bag headwalls, unless otherwise specified, shall be provided in total compliance with the Items identified in the **"STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION INCLUDING ENDWALL TREATMENT, BACKFILLING AND INSTALLATION PROCEDURES"**. These are attached to the back of this report and labelled **Appendix "C"**. The Contractor shall comply in all respects with the General Conditions included in Item 4 and the **"Typical Concrete Filled Jute Bag Headwall"** details also shown on Sheet 1 of the drawings.

XII. SLOPED QUARRIED LIMESTONE EROSION PROTECTION

At all of the bridge locations with new concrete filled jute bag headwalls, it is required that quarried limestone erosion protection be provided on the drain slopes adjacent and along all of the new concrete filled jute bag headwalls, at the locations indicated and to the widths generally shown within the details included in the accompanying drawings.

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 Consulting Engineer during construction. In placing the erosion protection the Contractor shall carefully tamp the quarried limestone pieces into place with the use of a shovel 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 Limited, or equal. The quarried limestone to be used shall be

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graded in size from a minimum of 100mm to a maximum of 250mm, and is available from Amherst Quarries Ltd., in Amherstburg, Ontario, or equal.

XIII. BENCHMARKS

Also, for use by the Contractor, we have established Benchmarks along the course of the work and especially at the locations where structures are being replaced.

For each of the structures, the plans include details illustrating the work to be carried out. For each bridge detail a Benchmark has been indicated and the Elevation has been shown and may be utilized by the Contractor in carrying out its work. The Contractor shall note that in each case a specific design elevation grade has been provided for the invert at each end of the pipe in the table accompanying each detail. The table also sets out the pipe size, materials, and other requirements relative to the installation of the culvert structure. In all cases, the Contractor is to utilize the specified drain grade to set any new pipe installation. The Contractor shall ensure that it takes note of the direction of flow and sets all pipes to assure that all grades flow from upstream to downstream to match the direction of flow within the drain.

XIV. SWALE CONSTRUCTION

As part of the enclosure replacements, the Contractor shall be required to construct shallow swales where shown and detailed in the accompanying drawings. The top 100mm of the backfill material along the length of these enclosures shall be provided with either scavenged topsoil available from the sites or good clean black loamy topsoil to be provided by the Contractor if a shortage of scavenged topsoil exists to complete the works. All swales shall be constructed to the lines, levels, and grades shown and detailed on the profiles and cross sections in the accompanying drawings. The Contractor is advised that it will be required to make some adjustments, where necessary, in order to provide positive drainage to the new swales and where the abutting ground elevations requires same. This may entail carrying out handwork around shrubs, trees and bushes, where necessary in order to protect and save as much vegetation as possible. All excess material not required to fill the existing swale and all deleterious materials shall be loaded up and hauled away by the Contractor to a site to be obtained by it at its own expense.

As already mentioned, the swales shall be excavated to the lines, levels, grades, and cross sections shown in the accompanying drawings or as may further be established by the Consulting Engineer at the time of construction. All swales shall be V-shaped and the gentle slopes shall conform to the

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dimensions grades established on the drawings. The swale slopes shall vary as noted to accommodate the positive drainage of all areas into the drainage system. In no case shall the swale bottoms project above the design grade line shown in the accompanied drawings or as determined from the Bench Marks.

The alignment of the swales throughout shall be to the full satisfaction of the Town Drainage Superintendent and the Consulting Engineer. All of the work shall be done in a neat, thorough, and workmanlike manner also to their full satisfaction.

XV. ANCILLARY WORK

During the course of any repair or improvements to the structures, the Contractor will be required to protect or extend any existing tile ends and connect them to the drainage works to maintain the drainage from the adjacent lands. All existing tiles shall be extended utilizing solid standard duty Big 'O' 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 manufacturer's coupling wherever 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 diverted to the downstream end of the new pipe unless otherwise noted in the accompanying drawings. All cuts or nicks to steel structures shall be touched up with a thick coat of zinc rich paint (Galvicon or equal) in accordance with the manufacturer's recommendations.

Where the structure installation interferes with the discharge of an existing swale, 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.

The Contractor shall also be required as part of the structure replacements to excavate and widen the drain bottom where required to fit the new pipes in order to provide a smooth transition between the new bridge culvert installations and the existing drain.

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The Contractor, when doing his excavation or any other portion of the work, shall be very careful not to interfere with, plug up or damage, any existing surface drains, swales and lateral or main tile ends. If it is found that said existing drains are interfered with in any way, the Contractor will be required to unplug or repair said drains immediately, at no extra cost to the project. If it is found that any existing lateral tiles or main tile drains or tile ends have been cut off or damaged in any way during the course of the work, the Contractor will be required to either repair or replace same, to the full satisfaction of the Town Drainage Superintendent and the Consulting Engineer.

Where the work encroaches on the existing asphalt roadway or driveways, the Contractor shall neatly saw-cut the asphalt and same shall be restored with fully compacted Granular "A" backfill and a minimum of 100mm thick HL-3 Hot mix asphalt, to be placed in two (2) equal lifts, or to the existing asphalt thickness if greater, to match the existing roadway elevation. All asphalt shall be saw cut to a point 150mm beyond the trench limits and shall be restored as shown in the Notes on Sheet 2 of the accompanying drawings. The Contractor shall be required to dispose of all removed asphalt material, and shall compact the Granular "A" as well as the hot mix asphalt to 100% of Standard proctor Density, and complete all of the roadway restoration to the full satisfaction of the Town Drainage Superintendent, and the Consulting Engineer.

The new pipes for these installations are to be provided with a minimum depth of cover from the top of the pipe of 300mm (12"). If the bridge culvert structures are placed at their proper elevations, same should be achieved. If the Contractor finds that the minimum cover is not being met, they shall notify the Drainage Superintendent and the Consulting Engineer immediately so that steps can be taken to rectify the condition prior to the placement of any backfill. The minimum cover requirement is critical and must be attained. In order for these new access bridge structures to properly fit the channel parameters, all of the design grade elevations must be strictly adhered to.

As a check, all of the above access bridge structure design grade elevations should be confirmed before commencing to the next stage of the access bridge or enclosure installation. The Contractor is also to check that the pipe invert grades and set structure elevations are correct by referencing the Benchmark.

Each driveway access shall have a minimum top width of 6.10 metres (20.0ft.) and the roadside approach entrance shall be provided with a minimum 5.0 metre radius starting at the edge of the gravel shoulder, as shown and detailed in the plans. The Contractor shall provide a minimum of 300mm thick of compacted Granular "A" for the full width of the driveway access and shall be transitioned to the existing driveway width as outlined within the accompanying drawings.

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Although it is anticipated that the bridge structure installation at each 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 culvert site during the time of construction. The straw bale check dam shall be to the satisfaction of the Town Drainage Superintendent or Consulting 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 and enclosure replacements.

The Contractor shall take steps to protect all legal survey bars during the course of its work. If any bars are removed or damaged, the Contractor shall arrange for an Ontario Land Surveyor licensed in the Province of Ontario to replace same, all at its cost.

All of the work required towards the installation and improvements to all access bridges shall be performed in a neat and workmanlike manner and the general site shall be restored to its' original condition, and all of same is to be performed to the full satisfaction of the Town Drainage Superintendent and the Consulting Engineer.

XVI. TOPSOIL, SEED AND MULCH

As part of the project, all disturbed and newly filled areas and the surface of all newly graded shallow swales shall be covered with approximately 100mm of scavenged topsoil, fine graded and readied for the seeding and mulching process. If there is a shortage of scavenged topsoil material, the Contractor shall supply the balance of the topsoil needed, all at its own expense. Along the frontage of residential properties, the lawn areas shall be restored by the placement of good quality OSECO Lawn Seed Mixture Canada No. 1 or equal. All existing roadway grass boulevard areas and open drain side slopes shall be restored utilizing a seed and mulch mixture which shall thoroughly restore same to their pre-construction conditions, or better. The placing and grading of all topsoil shall be carefully and meticulously carried out according to Ontario Provincial Standard Specifications, Form 570, dated November 2007, or as subsequently amended or as amended by these Specifications.

The Contractor is advised that control of erosion and sedimentation is a major requirement of this project. The Contractor will be expected to implement control measures including, but not limited to, utilizing silt fences and straw bales in the swale and drain bottoms to reduce the amount of sediment escaping downstream into the receiving water bodies.

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Said work shall be carried out in general conformance with Ontario Provincial Standard Specifications, Form 577, dated November 2006, or as subsequently amended or as amended by these Specifications. As an integral part of the sedimentation control, the Contractor will be required to carry out seeding and mulching on a timely basis so that no portion of the new swales or newly filled areas or open drain restored areas are left exposed for an extended period of time.

The seeding and mulching operations shall be carried out according to Ontario Provincial Standard Specifications, Form 572, dated November 2003, or as subsequently amended or as amended by these Specifications.

As part of the seeding and mulching operation, the Contractor will be required to provide either a hydraulic mulch mix or spread straw mulch with an adhesive binder in accordance with O.P.S.S. 1103.05.03, dated November 2007, or as subsequently amended, to ensure that the grass seed will be protected during germination and provide a thick uniform cover to protect against erosion, where necessary. The Contractor shall provide for the watering of newly seeded areas in accordance with O.P.S.S. requirements, and as part of the work, the Contractor must provide a full one (1) year guarantee on all seeding and mulching work, and will be required to repair all areas that erode or where the grass cover fails to catch. All work shall be meticulously done and completed in a good and workmanlike manner to the complete satisfaction of the Town Drainage Superintendent and the Consulting Engineer.

XVII. SPECIAL PROVISIONS FOR REPLACEMENT AND IMPROVEMENTS

The Contractor shall provide for the construction and improvements to structures along the Shaw Drain North. We are providing below not only the general description of the works being carried out for each structure, but also detailed information regarding any special provisions also being provided as part of the structure improvements, as follows:

Enclosure ① (Justin Gignac & Rozlyn Charette, 450-07150)

The contractor shall completely remove the existing corrugated steel pipe and concrete headwalls and dispose of same as outlined previously in the Specifications. The Contractor shall then supply and install a new enclosure pipe as well as a shop fabricated stub mounted catch basin comprised of a 600mm diameter, 320 kPa H.D.P.E. stub, as set out in the enclosure detail and profile for Enclosure ① on the plans. The new catch basin, once installed, shall also be required to have a cast iron grate that mounts securely in the top of the basin. As part of the enclosure work, the Contractor shall provide for a swale construction to the location and grades established within the accompanying detail and profile. The Contractor shall

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provide sloped quarried limestone end treatments at each end of the new enclosure installation.

As part of the work, the Contractor shall be required to neatly saw-cut the existing asphalt driveway and install new asphalt within the limits of the trench and to the limits shown in the accompanying drawings and as outlined previously in the Specifications.

The Contractor is to note that as part of the work of replacing the existing enclosure culvert, he shall be required to protect adjacent trees and to ensure that same are not damaged throughout the course construction. Detailed instructions have been provided herein regarding working in close proximity to trees and it is expected that the Contractor become familiar with same.

The Contractor's attention is drawn to the presence of an existing hydro pole and support wire located in the vicinity of the proposed work. The Contractor shall make every effort to avoid the hydro pole and support wire and shall at all times be responsible for their protection and care throughout the course of the work. Prior to commencing work, a pre-construction meeting shall be held where a representative from Hydro One shall be invited to discuss the particulars of working around these hydro poles and support wires. Should additional support, bracing, and or holding of the existing hydro pole be required by Hydro One, the Contractor shall be responsible for arranging with Hydro One to ensure that these measures are implemented to the full satisfaction of the utility company.

Bridge ③ (James & Druscilla Travis, 450-07000)

The Contractor shall supply and install a new access bridge culvert as set out in the chart forming part of the details for Bridge ③ on the plans. The Contractor shall provide sloped quarried limestone end protection at each end of the new culvert installation. The Contractor's attention shall be drawn to the existing tile outlet on the south end of the proposed structure. The Contractor shall ensure that the existing tile is deflected and extended as illustrated on the plans, to discharge same into the proposed sloped quarried limestone erosion protection.

All works shall be carried out in accordance with these specifications and the requirements in **Appendix "C"**.

Bridge ⑦ (Stanley & Sheila Grondin, 450-06600)

The Contractor shall supply and install a new access bridge culvert as set out in the chart forming part of the details for Bridge ⑦ on the plans. The Contractor shall provide sloped quarried limestone end protection at each end of the new culvert installation. The Contractor's shall note the presence of nearby existing water service valves, legal survey bars, Bell

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telephone pedestal, hydro pole and support wire. The Contractor shall ensure that all of these utility structures are protected throughout construction and if any become damaged by the Contractor in any way it shall be the responsibility of the Contractor to restore same, all at its cost.

All works shall be carried out in accordance with these specifications and the requirements in Appendix "C".

XVIII. UTILITIES

All pipe shall be laid in trenches in the general location shown on the accompanying drawings or as may be specifically directed and laid out by the Engineer at the time of construction. The trench shall be located to clear all existing utilities and structures above, on, or below the ground level.

The Contractor shall arrange for locates prior to any works performed under this project. The Contractor shall also protect all other services located in the vicinity of the proposed drainage works including any sanitary sewers and connections, watermains and connections, telephone, hydro and gas services, along with any private systems and services. Any damaged components shall be replaced by the Contractor, totally at its own expense and it shall fully restore the functionality of same.

The Contractor shall further contact or notify such Utility Company or Commission of its intention to carry out work in the area and co-operate with such Utility Company or Commission in the location, maintenance and preservation of all such utilities.

The Contractor's attention is drawn to a number of hydro poles and hydro poles support wires located within the vicinity of the proposed work. The Contractor shall make every effort to avoid said hydro poles and support wires and shall at all times be responsible for their protection and care throughout the course of the work. Prior to commencing work, a preconstruction meeting shall be held where a representative from Hydro One shall be invited to discuss the particulars of working around these hydro poles and support wires. Should additional support, bracing, and/or holding of the existing hydro poles be required by Hydro One, the Contractor shall be responsible for arranging with Hydro One to ensure that these measures are implemented to the full satisfaction of the utility company.

XIX. 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.

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- 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 Amherstburg and the Consulting Engineer and its' representatives for any damages which it may cause or sustain during the progress of the work. It shall not hold the Town of Amherstburg 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 with 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, etc., 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. A Traffic Control Plan is required on this project. The Traffic Control Plan is to comply with The Ontario Traffic Manual's Book 7 for Temporary Conditions. A suitable Traffic Control Plan must be submitted to the Consulting Engineer, the Town and/or the County of Essex for approval, where applicable.
- f) 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.

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- g) 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.
- h) 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.
- i) 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 and the Contractor will 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.
- j) 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 unless otherwise established within the Tender Documents. 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.
- k) The Contractor shall be required, as part of this Contract, to provide Comprehensive Liability Insurance coverage for not less than \$5,000,000.00 on this project unless otherwise established in the Tender Documents, and shall name the Town of Amherstburg 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

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both the Town Clerk and the Consulting Engineer prior to the commencement of work.

- 1) 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.

- m) 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 C.C.D.C. shall govern and be used to establish the requirements of the work.

APPENDIX "A"

Subject: RE: Shaw Drain North Bridge Replacements
From: "Tremblay, Maude" <Maude.Tremblay@dfo-mpo.gc.ca>
Date: 2015-10-19 1:10 PM
To: Shane McVitty <Shane@peraltaengineering.com>
CC: Eric Chamberlain <echamberlain@amherstburg.ca>

Thanks for the info, Shane – sounds like you are right that you can self-assess.

Best,
Maude

From: Shane McVitty [mailto:Shane@peraltaengineering.com]
Sent: 2015-October-15 3:01 PM
To: Tremblay, Maude
Cc: Eric Chamberlain
Subject: Re: Shaw Drain North Bridge Replacements

Hi Maude,

There is already an existing 42 metre long enclosure culvert in place which was installed back in 1958. Our intention is simply to replace the existing pipe. We call it an "enclosure" because it represents a structure that is longer than what is required for a simple access bridge.

Hope this helps,

Shane McVitty, P.Eng.

N.J. Peralta Engineering Ltd.
45 Division Street North
Kingsville, ON
N9Y 1E1
(519)733-6587 office
(519)733-6588 fax

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On 2015-10-15 2:55 PM, Tremblay, Maude wrote:

Hi Shane,
Based on your description it sounds like this might be a 42 metre open drain enclosure, but I may be mistaken. Can you please clarify?
Thanks,
Maude

From: Shane McVitty [mailto:Shane@peraltaengineering.com]
Sent: 2015-October-09 9:47 AM
To: Tremblay, Maude
Cc: Eric Chamberlain; Balint, David; Fisheries Protection
Subject: Re: RE: Shaw Drain North Bridge Replacements

Good Morning Maude,

I'd like to follow up with you on some correspondence that you were involved with back in April of this year regarding a drainage project in the Town of Amherstburg. I am the Engineer working on this project, which is

being undertaken under Section 78 of the Drainage Act. Essentially, the project will involve the replacement of two (2) residential access culverts (both approximately 8.0m in length) as well as a 42.0m long enclosure pipe within the Shaw Drain North.

Typically, for these types of bridge replacement projects, we've been completing a Self Assessment according to the DFO web-site and submitting review requests to your triage if we feel that a review from DFO is warranted. For this particular project, we have concluded from our review of the 'Project Activities where DFO review is not required' that a review is not necessary. As such, my intention was to carry forward without any further involvement from the DFO.

Based on the above, we do not normally send drafts of our Drainage Reports to the DFO. If there is a need for a formal review, please advise and we will submit our "Request for Review", complete with all of the necessary supporting documentation.

Please feel free to contact myself directly to discuss if you'd like.

Regards,

Shane McVitty, P.Eng.

N.J. Peralta Engineering Ltd.
45 Division Street North
Kingsville, ON
N9Y 1E1
(519)733-6587 office
(519)733-6588 fax

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On 2015-04-23 8:04 AM, Eric Chamberlain wrote:

Good morning Maude:

The report is still in the process of being prepared. The report will be f

Please contact Shane or myself if you have any questions.

Regards

Eric

From: Fisheries Protection [<mailto:fisheriesprotection@dfo-mpo.gc.ca>]
Sent: April-22-15 3:01 PM
To: Eric Chamberlain
Cc: Balint, David
Subject: RE: Shaw Drain North Bridge Replacements

Hi Eric,

Can you please send the draft drainage report in addition to photographs of

Also just so you know, the Fisheries Protection Program now uses a "one-win

Thanks,

Maude

From: Eric Chamberlain [<mailto:echamberlain@amherstburg.ca>]
Sent: 2015-April-14 11:37 AM
To: 'Shane McVitty' (Shane@peraltaengineering.com<<mailto:Shane@peraltaengine>
Cc: Veenhof, Dustin (MNRF) (Dustin.Veenhof@ontario.ca<<mailto:Dustin.Veenhof>

Subject: Shaw Drain North Bridge Replacements

Good morning Shane:

Please find the following items attached:

1. Letter for the ESA Agreement Review
2. ESA-SAR Maps - Site Identified
3. Mitigation Plans for Snakes and Turtles
4. Species Identification Factsheets for Snakes and Turtles

As noted in the attached letter, the site has federal and provincial fish s:

Please contact me if you have any questions or concerns.

Regards

Eric

Eric Chamberlain
Manager of Public Works
Town of Amherstburg
512 Sandwich St South, Amherstburg, ON, N9V 3R2
Tel: 519-736-3664 x312 Fax: 519-736-7080

The information in this e-mail is confidential, privileged and is subject t:

Eric Chamberlain
Manager of Public Works
Town of Amherstburg
512 Sandwich St South, Amherstburg, ON, N9V 3R2
Tel: 519-736-3664 x312 Fax: 519-736-7080

The information in this e-mail is confidential, privileged and is subject t:

Subject: Bridges Over the Shaw Drain North - Preliminary Design
From: Shane McVitty <Shane@peraltaengineering.com>
Date: 2015-10-16 7:40 AM
To: Cynthia Casagrande <CCasagrande@erca.org>
CC: "John Henderson, P.Eng." <jhenderson@erca.org>, Eric Chamberlain <echamberlain@amherstburg.ca>

Good Morning Cynthia,

Back in November of last year, we provided you with some preliminary information regarding a drainage project in the Town of Amherstburg within the Shaw Drain North.

We have completed our design of the drainage works for the subject drain and have attached a preliminary drawings of same for your review. To summarize our design proposal, we offer the following:

- Under this project, we will be replacing three (3) of the (13) existing access bridges, one of which is an existing 42m long enclosure near the top end of the drain. With the exception of the two (2) crossings (one beneath North Sideroad and the other beneath the 5th Concession Road North), we will be providing the Municipality with future maintenance provisions for all other bridges not being immediately replaced under our report.
- The bridges that are being recommended for replacement are labeled **Enclosure 1, Bridge 3 and Bridge 7.**
- We have analyzed the design capacity of each bridge and have provided all of the necessary information that the Town will require to replace the bridges in the future. This includes location, pipe size, lengths and inverts. Our report will have full specifications for same.
- We understand that the two road crossing mentioned above are currently being addressed by the Town outside of our report. As such, we will not be including any design or replacement provisions for these road crossings within our report.

We trust that this information is satisfactory. However, if you have any concerns or require additional information, please contact us at your earliest opportunity. Finally, a copy of our final drainage report will be forwarded to your office by the Municipality for review.

Regards,

—

Shane McVitty, P.Eng.

N.J. Peralta Engineering Ltd.
45 Division Street North
Kingsville, ON
N9Y 1E1
(519)733-6587 office

Bridges Over the Shaw Drain North - Preliminary Design

(519)733-6588 fax

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— Attachments: —

151015 - D14027S1 - Bridges Over the Shaw Drain North - ERCA Review.pdf

2.2 MB

Subject: RE: Shaw Drain North Bridge Improvements - D14-027
From: "Cynthia Casagrande" <CCasagrande@erca.org>
Date: 2014-11-28 1:57 PM
To: "Shane McVitty" <Shane@peraltaengineering.com>
CC: "Eric Chamberlain" <echamberlain@amherstburg.ca>, "John Henderson" <JHenderson@erca.org>

Dear Shane:

Thank you for providing the preliminary information with respect to proposed bridge improvements over the Shaw Drain North.

A review of our floodplain mapping for the Shaw Drain North 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. We look forward to receiving your preliminary design for review.

If further information or clarification is required, please do not hesitate to contact this office.

Yours truly,



Cynthia Casagrande
Regulations Technician
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex ON N8M 1Y6
(519) 776-5209, Ext. 349

From: Shane McVitty [mailto:Shane@peraltaengineering.com]
Sent: Tuesday, November 25, 2014 2:05 PM
To: Cynthia Casagrande
Cc: Eric Chamberlain; John Henderson
Subject: Shaw Drain North Bridge Improvements - D14-027

Good afternoon Cynthia,

We have been appointed by the Town of Amherstburg, under Section 78 of the Drainage Act, to review all of the bridges within the Shaw Drain North and make the appropriate recommendations for the replacement or improvement to those that are in need.

Following the discussions that took place at today's on-site meeting, and in light of our preliminary inspection of the thirteen (13) culverts within the drain, it is likely that at least three (3) of the existing bridges within the drain will require some form of improvement or replacement. Attached are plans illustrating the location of the municipal drain and the subject culverts, labeled 1-3.

The Shaw Drain North is located on the west side of Concession 5 N, between Middle Sideroad and to a point approximately 315m north of North Sideroad, Concession 4 in the Town of Amherstburg (Geographic Township of Anderdon). As indicated, there are currently thirteen (13) culverts in the drain, of which two (2) are roadway crossings, two (2) are drain enclosures, and the remaining nine (9) are access bridges for residential and farm properties. The length of the access bridges in the drain

generally range between 7m and 14m with sizes in the range of 762mm to 1200mm. The two road crossings, which cross beneath North Sideroad and Concession 5N, are both concrete span bridges with open bottoms. The drain enclosures are 42m and 28m long and are located on residential properties.

From our preliminary review, most of the bridges were installed or improved under an engineer's report in 1996 and do not warrant replacement based on our preliminary review. The three that we have identified as likely requiring replacement under this report were likely installed under reports that date back as early as 1958 and possibly 1949. For your information, we offer the following details regarding these structures:

- Bridge 1 - 42m Long, 762mm diameter, CSP enclosure along the frontage of the residential property at 5628 Conc. 5N
- Bridge 2 - 6.2m Long, 762mm diameter, CSP access bridge located at 5644 Conc. 5N
- Bridge 3 - 8.8m Long, 914mm diameter, CSP access bridge located at 5690 Conc. 5N

Other than some minor details discussed at the on-site meeting, we do not have specifics regarding the bridge improvements at this stage. However, at this point, we would assume that 'like-for-like' replacements will take place, subject of course to the results of our topographic survey, hydraulic analysis, and environmental considerations. We also anticipate that our design will incorporate a standard 6.1m (20ft.) driveway top width with additional pipe lengths to accommodate sloped limestone erosion protection, unless there are cases where a landowner would prefer a vertical headwall, in which case the pipe length may be reduced. Based on a preliminary review of the drain depth, we do not anticipate any culvert lengths to exceed 10-15m, with the exception of the enclosure, whose length will likely stay the same.

At this time, we would appreciate ERCA comments, concerns or considerations that may impact this project. Please note that it is our intention to notify your office again once we have a preliminary design in place for your review.

We understand that the existing partnership agreements between DFO and Conservation Authorities (CA's) have lapsed and accordingly, we will be undertaking a self-assessment of the proposed works within the Shaw Drain North through the DFO website. The results of this assessment will determine whether a formal submission to the DFO for a "Request for Review" is warranted. If this is to be the case, then we will submit a request to the DFO and will copy your office on the submission.

We will also be contacting the Town of Amherstburg regarding the MNR screening process under Section 23 of the Endangered Species Act, 2007. We intend on incorporating the MNR mitigation measures, as required, as part of our report.

Thank you for your time and attention to this matter. If you require any further information or clarification, please feel free to contact us.

Shane McVitty, P.Eng.

N.J. Peralta Engineering Ltd.
45 Division Street North
Kingsville, ON
N9Y 1E1
(519)733-6587 office
(519)733-6588 fax

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APPENDIX "B"

Note: The Endangered Species Act Review attachments have not been included herein. However, these attachments shall be included as part of the Tender Documents for use by the Contractor, during construction. A copy of these attachments shall be available for viewing at the Municipal Office for those interested.



The Corporation of The Town of Amherstburg

April 14, 2015

Shane McVitty, P.Eng
N.J. Peralta Engineering Ltd.
45 Division Street North
Kingsville, ON
N9Y 1E1

Attention: Shane McVitty, P.Eng.

Subject: Endangered Species Act Review
Shaw Drain North Bridge Replacements

File No. PWD-MD-2014-016

Dear Shane:

The Town of Amherstburg has reviewed your firm's request to complete the screen of the Endangered Species Act Agreement for the Improvement to the Shaw Drain North Bridge Replacements. Accordingly, the Public Works Department provides the following comments for your consideration and attention.

A. BACKGROUND:

The Shaw Drain North is located in Lots 8 to 11, Concession 4 and adjacent to Concession 5 North. The proposed work is as follows:

- Repair and improvement of 3 existing structures on the drain

B. ENDANGERED SPECIES ACT MUNICIPAL AGREEMENT

Please be advised that the Town of Amherstburg has entered into an agreement with the Ministry of Natural Resources and Forestry under Section 23 of Ontario Regulation 242/08 of the Endangered Species Act. This noted agreement allows the municipality to review drainage projects under the following sections of the Drainage Act to determine potential impact on Endangered Species identified as existing within the Town of Amherstburg:

- a) Section 3(18) of the Drainage Act - Maintenance of a ditch constructed under the former Ditches and Watercourses Act
- b) Section 74 of the Drainage Act - Maintenance and repairs of existing drains
- c) Section 77 & 78 of the Drainage Act- Improvement of existing drains
- d) Section 124 of the Drainage Act - Emergency work

Since the proposed work on the Shaw Drain North will be completed under section 78 of Drainage Act, please be advised that the Town of Amherstburg has completed the review of the endangered species under the Endangered Species Act. The following is the list of endangered species which may be encountered at this project site.

1. Fish Species

PWD review of the Sensitive Areas Map for Fish Species at Risk shows presence of endangered fish species in the proposed construction site.

2. Mussels Species

PWD review of the Sensitive Areas Map for Mussels Species at Risk showed no presence of endangered mussel species in the proposed construction site.

3. Bird Species

PWD review of the Sensitive Areas Map for bird Species at Risk showed no presence of endangered bird species in the proposed construction site.

4. Turtle Species

PWD review of the Sensitive Areas Map for Turtle Species at Risk identifies the presence of endangered turtle species. The Endangered Species Agreement identifies the Spotted Turtle as endangered and the Spiny Softshell, Blanding's Turtle and Eastern Musk Turtle as threatened. Attached is the turtle mitigation plan that must be followed. Also attached is a Turtles of Ontario Identifier Guide for further information.

5. Snake Species

PWD review of the Sensitive Areas Map for Snake Species at Risk identifies the presence of endangered snake species. The Endangered Species Act agreement identifies the Bulter's Garter Snake as threatened. Attached is the snake mitigation plan that must be followed. Also attached is a Snakes of Ontario Identifier Guide for further information.

C. EXECUTIVE SUMMARY:

Based on the review of the Endangered Species Act Municipal Agreement, please be aware of the following endangered species that may be present during construction:

- a) The Endangered Species Agreement identifies the presence of fish species protected under the Species at Risk Act. Further review must be completed by Department of Fisheries and Oceans and Ministry of Natural Resources and Forestry.
- b) The Endangered Species Agreement identifies the Spotted Turtle as endangered and the Spiny Softshell, Blanding's Turtle and Eastern Musk Turtle as threatened. The mitigation plan and MNR Factsheet for turtles is attached.
- c) The Endangered Species Agreement identifies the Bulter's Garter Snake as threatened under the Endangered Species Act. The mitigation plan and MNR Factsheet for turtles is attached.

Further consultation with Department of Fisheries and Oceans and Ministry of Natural Resources and Forestry will be required regarding the possibility of endangered fish presence.

The mitigation plans and Ontario Identifier Guides for turtles and snakes that are included with this letter must be included in the engineer's report and tender documents. The Contractor will be responsible for providing the necessary equipment and materials required in the mitigation plans. The Contractor shall contact the Town of Amherstburg Drainage Superintendent immediately if any endangered species are encountered during construction.

Please contact me if you have any concerns or comments regarding the information provided.

Respectfully yours,



Eric Chamberlain, C.E.T.
Manager of Public Works

EC/

Attachments:

- Turtles of Ontario Identifier Guide
- Snakes of Ontario Identifier Guide
- Town of Amherstburg – Additional Mitigation Measures for Turtle Species
- Town of Amherstburg – Additional Mitigation Measures for Snake Species

Cc: Dave Balint, DFO SARA Biologist
Dustin Veenhof, A/IRM Technical Specialist
Cynthia Casagrande, ERCA Regulations Office

APPENDIX "C"

STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION INCLUDING ENDWALL TREATMENT, BACKFILLING AND INSTALLATION PROCEDURES

1. CONCRETE FILLED JUTE BAG HEADWALLS

After the Contractor has set in place the new pipe, it shall completely backfill the same and install new concrete jute bag headwalls at the locations and parameters indicated on the drawing. When constructing the concrete 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 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 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 21 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 of a single bag wall construction. 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 from 305mm (12") below the bottom of the culvert pipe to a minimum of 305mm (12") above the bottom of the culvert pipe invert.

All concrete used for the footing, cap and bags shall have a minimum compressive strength of 21 Mpa in 28 days and 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 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 sections 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.

2. QUARRIED LIMESTONE ENDWALLS

The backfill over the ends of the corrugated steel pipe shall be set on a slope of 1-½ metres horizontal to 1 metre vertical from the bottom of the corrugated steel pipe to the top of each sideslope and between drain sideslopes. 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 metres horizontal to 1 metre vertical from the bottom of the corrugated steel pipe to the top of each sideslope of the drain and between both sideslopes. The quarried limestone shall have a minimum dimension of 100mm (4") and a maximum dimension of 250mm (10"). It 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, 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 sideslope of the drain and between both sideslopes of the drain.

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 sideslope 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.

4. GENERAL

Prior to the work commencing, the Town Drainage Superintendent must be notified, and under no circumstances shall work begin without the Superintendent being at the site. Furthermore, the grade setting of the pipe must be checked, confirmed, and approved by the Superintendent 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 Town Drainage Superintendent and the Engineer for 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 flagmen, 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 under this sub-heading, are to be carried out and performed to the full satisfaction of the Town Drainage Superintendent.

APPENDIX "D"

BRIDGE MAINTENANCE SCHEDULE OF ASSESSMENT

BRIDGES OVER THE SHAW DRAIN NORTH

(Geographic Township of Anderdon)

Town of Amherstburg

3. MUNICIPAL LANDS:

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Aff't'd	Hectares Aff't'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
Concession 5 Road North			4.42	1.789	Town of Amherstburg	\$ -	\$ 266.00	\$ -	\$ 266.00
North Sideroad			1.53	0.619	Town of Amherstburg	\$ -	\$ 92.00	\$ -	\$ 92.00
Total on Municipal Lands.....						\$ -	\$ 358.00	\$ -	\$ 358.00

4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Aff't'd	Hectares Aff't'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
450-07150	4	9	0.63	0.255	Justin Gignac & Rozlyn Charette	\$ -	\$ 24.00	\$ -	\$ 24.00
450-06900	4	9	0.53	0.214	Tracy Gurbin	\$ -	\$ 21.00	\$ -	\$ 21.00
450-06800	4	9	0.69	0.279	James & Tanya Sinasac	\$ -	\$ 27.00	\$ -	\$ 27.00
450-06600	4	10	0.53	0.214	Stanley & Sheila Grondin	\$ -	\$ 21.00	\$ -	\$ 21.00
490-08100	4	11	0.92	0.372	Robert & Yvette Souchereau	\$ -	\$ 38.00	\$ -	\$ 38.00
490-08200	4	11	0.92	0.372	Robert & Yvette Souchereau	\$ -	\$ 38.00	\$ -	\$ 38.00
Total on Privately Owned - Non-Agricultural Lands.....						\$ -	\$ 169.00	\$ -	\$ 169.00

**Bridge Maintenance Schedule of Assessment -
Bridges over the Shaw Drain North
Town of Amherstburg - D-14-027**

5. PRIVATELY OWNED - AGRICULTURAL LANDS (grantable):

<u>Tax Roll No.</u>	<u>Con. or Plan No.</u>	<u>Lot or Part of Lot</u>	<u>Acres Aff't'd</u>	<u>Hectares Aff't'd</u>	<u>Owner's Name</u>	<u>Value of Benefit</u>	<u>Value of Outlet</u>	<u>Value of Special Benefit</u>	<u>TOTAL VALUE</u>
450-07200	4	8	20.00	8.094	Debra Renaud	\$ -	\$ 241.00	\$ -	\$ 241.00
450-07100	4	9	14.38	5.820	Ronald & Christine McGuire	\$ -	\$ 173.00	\$ -	\$ 173.00
450-07000	4	9	14.82	5.998	James & Druscilla Travis	\$ -	\$ 381.00	\$ -	\$ 381.00
450-06700	4	9	40.06	16.212	Ryan & Angela Evon	\$ -	\$ 483.00	\$ -	\$ 483.00
450-06500	4	10	43.37	17.552	Stanley Grondin	\$ -	\$ 523.00	\$ -	\$ 523.00
450-06400	4	10	35.75	14.468	Yvonne Simon	\$ -	\$ 431.00	\$ -	\$ 431.00
490-00100	4	11	20.00	8.094	Jeanne Laframboise	\$ -	\$ 241.00	\$ -	\$ 241.00
Total on Privately Owned - Agricultural Lands (grantable).....						\$ -	\$ 2,473.00	\$ -	\$ 2,473.00
TOTAL ASSESSMENT			198.55	80.35		\$ -	\$ 3,000.00	\$ -	\$ 3,000.00

1 Hectare = 2.471 Acres
D14-027
Reconsidered May 20th, 2016

APPENDIX "E"

PLANS, PROFILE & SECTIONS

OF THE

BRIDGES OVER THE SHAW DRAIN NORTH

IN THE

TOWN OF AMHERSTBURG (Geographic Township of Anderdon)

IN THE

COUNTY OF ESSEX • ONTARIO

Sketch



N.J. PERALTA ENGINEERING LTD.

40 BRIMLEY STREET NORTH
KINGSTON, ONTARIO

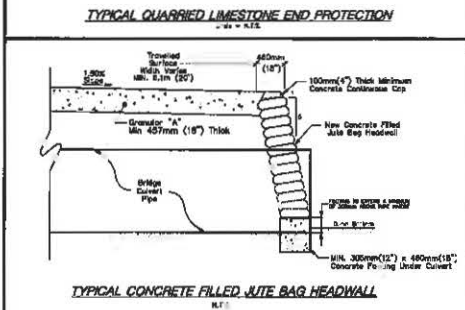
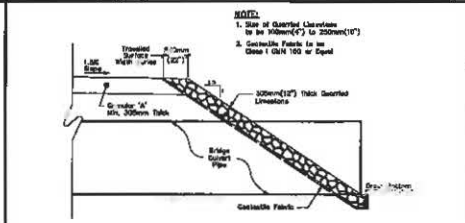
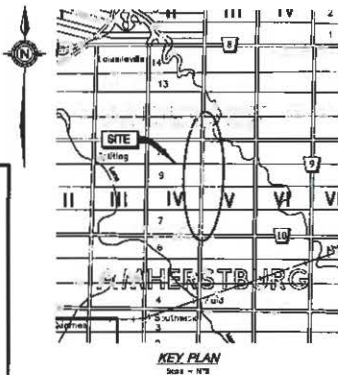
DATE: November 6th, 2018
REVISIONS: May 20th, 2019

TOWN OF AMHERSTBURG

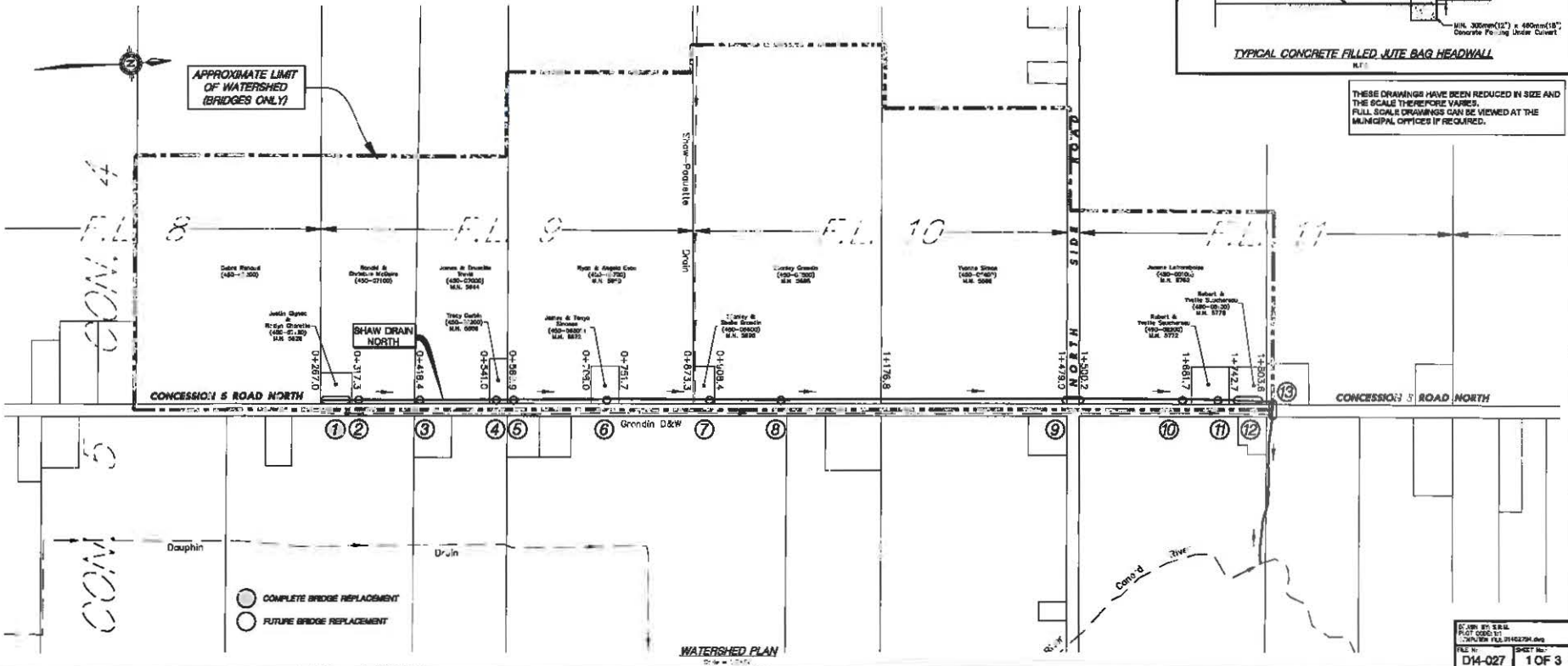
WALTON ALDO DEKALD
CLERK WENDY GREENHART
DRAINAGE SUPERINTENDENT ERIC CHAMBERLAIN

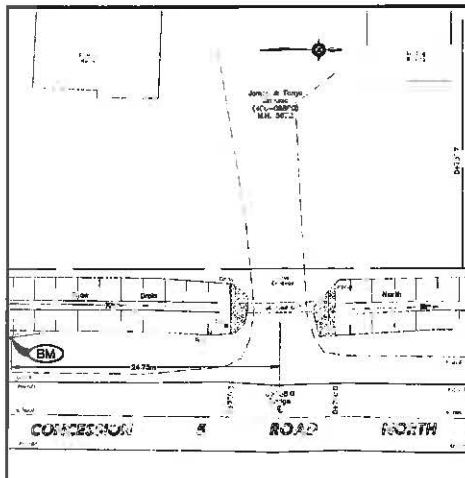
BENCHMARKS:

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 5698, APPROXIMATELY 25m SOUTH OF NORTH END OF BRIDGE (1).
ELEV. = 11.620m. | 5. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, IN FRONT OF MUNICIPAL NO. 5699, APPROXIMATELY 2m NORTH OF NORTH END OF BRIDGE (5).
ELEV. = 10.593m. |
| 2. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 5644, APPROXIMATELY 12m NORTH OF BRIDGE (2).
ELEV. = 11.278m. | 6. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, IN FRONT OF MUNICIPAL NO. 5699, APPROXIMATELY 18m NORTH OF BRIDGE (6).
ELEV. = 10.420m. |
| 3. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 5694, APPROXIMATELY 18.5m NORTH OF NORTH END OF BRIDGE (3).
ELEV. = 11.274m. | 7. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, IN FRONT OF MUNICIPAL NO. 5776, APPROXIMATELY 13m SOUTH OF SOUTH END OF BRIDGE (7).
ELEV. = 8.816m. |
| 4. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, IN FRONT OF MUNICIPAL NO. 5675, APPROXIMATELY 20.5m SOUTH OF SOUTH END OF BRIDGE (4).
ELEV. = 10.863m. | 8. NAIL SET IN EAST FACE OF HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 5 ROAD NORTH, IN FRONT OF MUNICIPAL NO. 5776, APPROXIMATELY 19m NORTH OF NORTH END OF BRIDGE (8).
ELEV. = 8.403m. |



THESE DRAWINGS HAVE BEEN REDUCED IN SIZE AND THE SCALE THEREFORE VARIES. FULL SCALE DRAWINGS CAN BE VIEWED AT THE MUNICIPAL OFFICES IF REQUIRED.



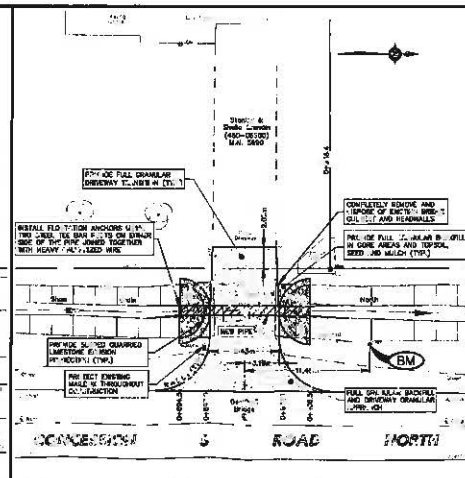


BRIDGE 6 DETAIL
Scale = 1" = 10'

FUTURE MAINTENANCE

BENCHMARK:
NAIL SET IN EAST FACE OF HYDRIC POLE LOCATED ON THE WEST SIDE OF CONCESSION 8 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 678, APPROXIMATELY 30' SOUTH OF SOUTH END OF BRIDGE 6. ELEV. = 10.860m

LINE NO.	DESCRIPTION	DATE	BY	CHECKED	DATE
101	1" = 10' (1:304.8)	04/13/13	...	...	...

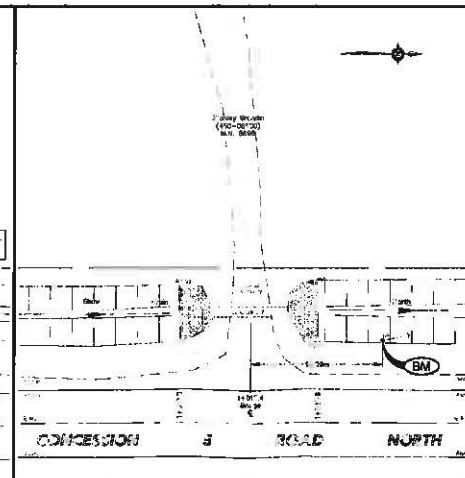


BRIDGE 7 DETAIL
Scale = 1" = 10'

BRIDGE REPLACEMENT

BENCHMARK:
NAIL SET IN EAST FACE OF HYDRIC POLE LOCATED ON THE WEST SIDE OF CONCESSION 8 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 678, APPROXIMATELY 7' NORTH OF NORTH END OF BRIDGE 7. ELEV. = 10.860m

LINE NO.	DESCRIPTION	DATE	BY	CHECKED	DATE
102	1" = 10' (1:304.8)	04/13/13	...	...	...

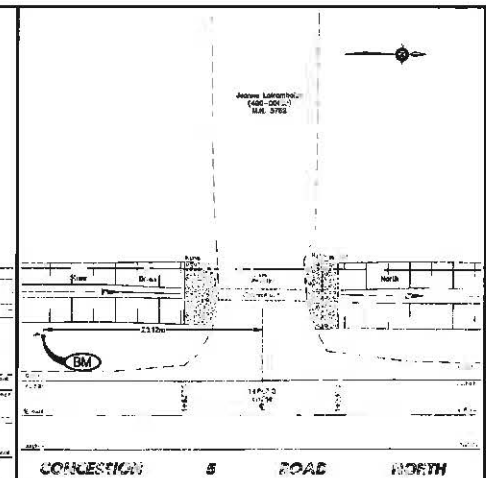


BRIDGE 8 DETAIL
Scale = 1" = 10'

FUTURE MAINTENANCE

BENCHMARK:
NAIL SET IN EAST FACE OF HYDRIC POLE LOCATED ON THE WEST SIDE OF CONCESSION 8 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 678, APPROXIMATELY 30' SOUTH OF SOUTH END OF BRIDGE 8. ELEV. = 10.860m

LINE NO.	DESCRIPTION	DATE	BY	CHECKED	DATE
103	1" = 10' (1:304.8)	04/13/13	...	...	...

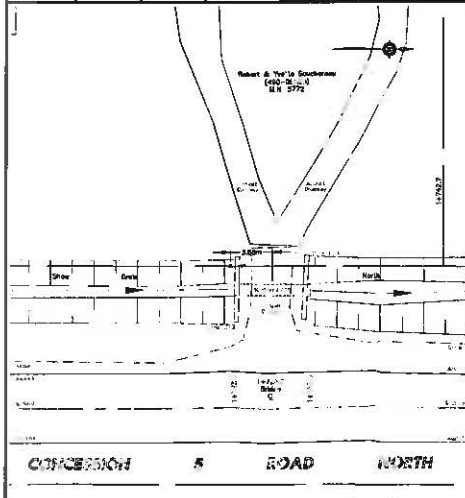


BRIDGE 10 DETAIL
Scale = 1" = 10'

FUTURE MAINTENANCE

BENCHMARK:
NAIL SET IN EAST FACE OF HYDRIC POLE LOCATED ON THE WEST SIDE OF CONCESSION 8 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 678, APPROXIMATELY 30' SOUTH OF SOUTH END OF BRIDGE 10. ELEV. = 10.860m

LINE NO.	DESCRIPTION	DATE	BY	CHECKED	DATE
104	1" = 10' (1:304.8)	04/13/13	...	...	...

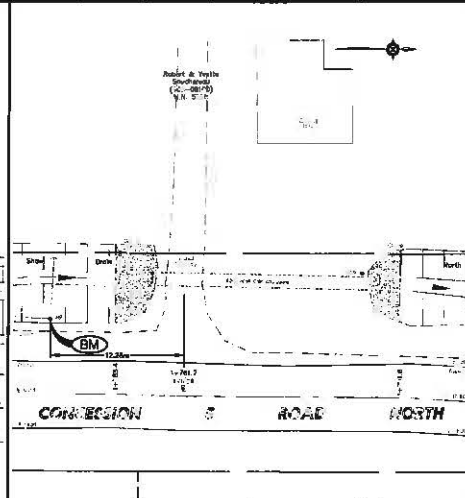


BRIDGE 11 DETAIL
Scale = 1" = 10'

FUTURE MAINTENANCE

BENCHMARK:
NAIL SET IN EAST FACE OF HYDRIC POLE LOCATED ON THE WEST SIDE OF CONCESSION 8 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 678, APPROXIMATELY 30' NORTH OF NORTH END OF BRIDGE 11. ELEV. = 8.400m

LINE NO.	DESCRIPTION	DATE	BY	CHECKED	DATE
105	1" = 10' (1:304.8)	04/13/13	...	...	...



ENCLOSURE 12 DETAIL
Scale = 1" = 10'

FUTURE MAINTENANCE

BENCHMARK:
NAIL SET IN EAST FACE OF HYDRIC POLE LOCATED ON THE WEST SIDE OF CONCESSION 8 ROAD NORTH, DIRECTLY IN FRONT OF MUNICIPAL NO. 678, APPROXIMATELY 30' SOUTH OF SOUTH END OF BRIDGE 12. ELEV. = 8.400m

LINE NO.	DESCRIPTION	DATE	BY	CHECKED	DATE
106	1" = 10' (1:304.8)	04/13/13

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