THE CORPORATION OF THE TOWN OF AMHERSTBURG

BY-LAW NO. 2021 – 002

By-law to provide for the Bridges Over the Cook Drain based on the Drainage Report by N.J. Peralta Engineering Ltd.

WHEREAS a request for improvement of the Cook Drain was received under section 78 of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg appointed an engineer for the purpose of preparation of an engineer's report for the improvements of the Cook Drain under section 78 of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg has authorized Tony Peralta, P. Eng., to prepare a report and said engineer's report dated November 6, 2020, can be referenced as Schedule A, as attached hereto;

WHEREAS $54,428.00 is the estimated cost of repairing and improving the drainage works;

AND WHEREAS the report was considered by the Amherstburg Drainage Board at the meeting held on January 5, 2021.

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 $54,428.00 being the amount necessary for the improvements of the drainage works.

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) and shall bear interest at a rate not higher than 1% more than the municipal lending rates as posted by The Town of Amherstburg's Bank's Prime Lending Rate 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 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) All assessments of $1000.00 or less are payable in the first year in which the assessments are imposed.

Read a first and second time and provisionally adopted this 11th day of January, 2021.

MAYOR – ALDO DICARLO

CLERK – PAULA PARKER

Read a third time and finally passed this 8 day of March, 2021.

MAYOR – ALDO DICARLO

CLERK – PAULA PARKER

FOR DISTRIBUTION
This copy of the Drainage Report complies with the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA)

DRAINAGE REPORT

BRIDGES OVER THE COOK DRAIN

(Geographic Township of Anderdon)

TOWN OF AMHERSTBURG

N. J. Peralta Engineering Ltd.

Consulting Engineers

45 Division St. N., Kingsville, Ontario N9Y 1E1
Tel. (519) 733-6587

Project No. D-18-035

November 6th, 2020

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BRIDGES OVER THE COOK DRAIN

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N. J. Peralta Engineering Ltd.

Consulting Engineers

November 6th, 2020

Mayor and Municipal Council
Corporation of the Town of Amherstburg
512 Sandwich Street South
Amherstburg, Ontario
N9V 3R2

Mayor DiCarlo and Members of Council:

PROJECT: **BRIDGES OVER THE COOK DRAIN**
(Geographic Township of Anderdon)
Town of Amherstburg, County of Essex
Project No. D-18-035

I. INTRODUCTION

In accordance with the instructions received by letter of March 21st, 2018, from the Drainage Superintendent and Engineering Coordinator, Mr. Shane McVitty, P.Eng., along with additional instructions through the overall process, we have completed the necessary survey, examinations, and investigations, etc. and have prepared the following report to provide for the installation of new access bridges, together with establishing future maintenance provisions for all existing access bridge structures within the Cook Drain. These investigations were initiated by a resolution passed by Council for our firm to undertake the preparation of an Engineer's Report for the works within this Municipal Drain, in accordance with the Drainage Act. The Cook Drain is generally an open drain with a number of access bridges, which were constructed under the auspices of the Drainage Act. A plan showing the alignment of the Cook Drain, the general location of the existing structures within the drain and details for the general improvements under this project is included herein as part of this report.

The initial request to provide an Engineer's Report to address improvements to the Cook Drain was submitted by Ulric Renaud (Parcel 11). This request was initiated to address a deteriorated access bridge culvert to the subject property. Upon conducting the required On-Site Meeting for this project, and subsequent to reviewing the details of the governing report, the attendees at this meeting felt it would be prudent to review all of the current access bridges within the Cook Drain and provide our recommendations, together with providing future maintenance provisions for each.

Our appointment and the works related to the access bridges within the Cook Drain, proposed under this report, are in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as

amended 2020". We have performed all of the necessary survey, investigations, etc., for the proposed bridges, as well as the Cook Drain, and we report thereon as follows.

II. BACKGROUND AND WATERSHED CHARACTERISTICS

The Cook Drain is an existing Municipal Drain that services a relatively small watershed within Lots 1 through Lot 4, Concession 4, in the Town of Amherstburg (Geographic Township of Anderdon). This Municipal Drain extends from its upper end near the northern limit of Lot 1 and extends northerly through the midpoint of Concession 4, to the south limit of the Texas Road right-of-way. The Cook Drain continues downstream in an easterly direction along the south side of the Texas Road for approximately 400.00 metres before crossing to the north side of Texas Road where it meanders in a northeasterly direction and terminates at its outlet into the Long Marsh Drain. The Cook Drain provides for a sufficient outlet for primarily agricultural lands, together with some isolated residential properties. Overall, there are five (5) existing access bridges within the Cook Drain.

The Cook Drain is predominantly located within the Brookston Clay soil type. This soil is categorized as Hydrological Soil Group 'D' and is described as having a very low infiltration rate when thoroughly wetted and consists chiefly of clay soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material. As a result, these soils require effective artificial drainage to be productive.

III. DRAINAGE HISTORY

A review of the Town of Amherstburg's drainage records indicate that the Cook Drain is an existing open Municipal Drain that has been repaired and improved on a number of previous occasions through the auspicious of the Drainage Act.

From our review, we have found several Engineer's Reports prepared through the provisions of the Drainage Act for the Cook Drain. However, we have outlined the following relevant Engineer's Reports that we utilized as a reference for carrying out this project:

a) **October 25th, 1962** Engineer's Report for the "Cook Drain", prepared by C.G.R. Armstrong, P.Eng., was carried out under Anderdon Drainage By-law. The works conducted under this report generally provided for the deepening and widening of the entire length of this Municipal Drain. This report also provided for the relocation of the downstream portion of the drain onto private lands along the south and north side of Texas Road. This report also provided for the installation of a new access bridge. The structures identified within this report include **Bridge ④** and **Bridge ⑤**.

b) **August of 1981** Engineer's Report for the "Cook Drain", prepared by D.A. Averill, P.Eng., was carried out under Anderdon Drainage By-law No. 2367. The works conducted under this report generally provided for the deepening and widening of the lower portion of this Municipal Drain located adjacent to Texas Road and further to its outlet into the Long Marsh Drain. This report also provided for the installation of a new access bridge. The structures identified within this report include **Bridge ①**, **Bridge ③** and **Bridge ④**.

c) **March 28th, 2001** Engineer's Report for the "Cook Drain", prepared by L. Zarlenga, P.Eng., was carried out under Amherstburg Drainage By-law. The works conducted under this report generally provided for a new Maintenance Schedule of Assessment for the re-assessment of costs related to any future maintenance works on the drain to ensure that these costs may be fairly distributed to all affected properties. As part of this report, no physical work was performed on this drain.

From our detailed research of the above-listed Engineer's Reports, we have determined that generally speaking, the 1962 and 1981 Reports serve as the current governing By-laws for the entire length of the Cook Drain. These Engineer's Reports govern the design provisions for any future maintenance works on the open channel. The cost for such maintenance works shall be assessed against the lands and roads as outlined within the 2001 Updated Maintenance Schedule report. Based on our review, existing **Bridge ①**, **Bridge ③**, **Bridge ④** and **Bridge ⑤** were all constructed and/or identified within the above-mentioned By-laws. As a result, these identified structures would be considered legal entities with respect to the Cook Drain. As a result, these identified structures are currently eligible to have the costs for their replacement and/or improvements shared with the lands and roads within the drain's watershed contributing their runoff into the drain, upstream of said structures.

Further to our detailed review, there appears to be no record of establishment for **Bridge ②** that currently exists within the Cook Drain. Therefore, this structure is currently considered to be a private structure within this Municipal Drain until such time that it is addressed through an Engineer's Report and established under the auspicious of the Drainage Act.

IV. PRELIMINARY EXAMINATION AND ON-SITE MEETING

After reviewing all the available drainage information and documentation provided by the Town Drainage Superintendent, we arranged to schedule an On-Site Meeting for April 24th, 2018. The following people were in attendance at said meeting:

Report - Bridges Over the Cook Drain
(Geographic Township of Anderdon)
Town of Amherstburg - D-18-035

Ulric J. Renaud (Landowner - 4521 Texas Road)
John Sparrow (Landowner - 4641 Texas Road)
Josh Mailloux (Landowner - 4760 Alma Street)
Don Shaw (Representative of Kathleen Beaudoin - 4151 Conc. 4 North)
Darwin Wismer (Landowner - 4104 Concession 4 North)
Unidentified Landowner (Representative of 6545 Conc. 6 North)
Shane McVitty, P.Eng. (Drainage Superintendent)
Joshua King (N.J. Peralta Engineering Ltd.)
Tony Peralta, P.Eng. (N.J. Peralta Engineering Ltd.)

At the onset of this meeting, Mr. McVitty made introductions and generally advised that a written notice had been submitted by Ulric Renaud to replace an existing access bridge over the Cook Drain. Mr. McVitty explained how the recent maintenance has removed all sediment from the drain leaving the bottom of the culverts exposed. Correspondingly, the bottom of the culvert serving Mr. Renaud's property had deteriorated to a state which allowed backfilled material to migrate through the unprotected culvert. This has caused sinkholes to form at the driveway surface. The Town has since placed steel plates over the sinkholes to facilitate the temporary use of this access.

Mr. Peralta reviewed the legal status of the two (2) access bridges to the subject property, along with their general details with respect to the Cook Drain. Mr. Peralta explained that the subject access bridge to the homestead was the original access to the property and serves as the primary access. As such, the replacement of this access bridge would be eligible for cost-sharing with upstream lands and roads contributing their runoff through this culvert. Mr. Peralta confirmed that the bridge serving the agricultural portion of these lands is a secondary access which is not eligible for cost-sharing. Mr. Renaud advised that the homesteads fuel source is propane which requires frequent deliveries from large trucks. We reviewed and discussed an appropriate location for the new access bridge serving the homestead. Upon considerable review and discussion, it was confirmed that the new access shall be located at the same location as the existing access bridge.

Mr. Renaud was advised that a minimum standard top width of driveway is 6.10 metres (20.00 ft.). Furthermore, if he wishes to provide a top width wider than the standard 6.10 metres (20.00 ft.), the additional cost for providing a top width wider than the standard, shall be assessed 100% to the abutting Owner for both the initial construction and future maintenance. Mr. Renaud confirmed that the standard top width of 6.10 metres (20.00 ft.) should be sufficient for facilitating the trucks required for the frequent propane deliveries. We further discussed end treatment options for Mr. Renaud's primary access bridge. Mr. Renaud expressed that he would prefer the most cost-effective end treatment option. However, we further established that the final design may be governed by the requirements of the Department of Fisheries and Oceans (D.F.O.) and the Essex Region Conservation Authority (E.R.C.A.).

All landowners present were reminded that the costs associated with the replacement of the primary access bridge, serving Mr. Renaud's homestead, will be assessed to the subject property together with all upstream lands and roads contributing their runoff through this culvert. These costs would include the construction, together with all associated engineering and incidental fees. All landowners indicated that they were aware of these conditions and understood that they are responsible for their share of the costs due to their contributing lands within the watershed.

Landowners present at the meeting expressed concerns for the current condition of Mr. Renaud's access bridge and asked if it could be replaced immediately. Mr. Peralta explained to the landowners that typically under the Drainage Act, no work should be completed until an Engineer's Report has been adopted through By-law. However, Mr. Peralta advised that there are provisions under the Drainage Act that allow for emergency works to be completed prior to the adoption of the Drainage Report. Mr. Peralta explained to those present that authorization for emergency works is requested through the Ontario Ministry of Agriculture, Food and Rural Affairs (O.M.A.F.R.A.) and must obtain authorization from the O.M.A.F.R.A. Minister in order to proceed. Mr. Peralta warned that the request may not be approved. If this is this case, it would be recommended that the bridge be replaced following the passing of the By-law.

The condition of all other bridges within the Cook Drain were generally discussed. The Town has recently been advised of a sinkhole starting to develop on Mr. Sparrow's access bridge. However, they have been unable to inspect the bridge due to recent high-water levels within the drain. Mr. Peralta confirmed that further investigations can be completed once the current meeting had adjourned. Mr. Wismer expressed his concerns with the existing culvert elevations relative to the design grades for all bridges within the Cook Drain as he explained that they have appeared to be perched. Based on the condition of these culverts and the concerns expressed by landowners with regards to the culvert grades, it was discussed that all access bridges should be evaluated. Mr. Peralta further identified that the governing By-laws currently do not include provisions for future maintenance on any of the access bridge structures. As such, as part of the review, future cost-sharing provisions could be provided to address any future maintenance on these structures. Based on these discussions, all landowners present unanimously agreed to include the review of all structures within the drain and include future maintenance provisions as part of the report.

All landowners present were further advised that this project is under the jurisdiction of the Department of Fisheries and Oceans (D.F.O.), the Essex Region Conservation Authority (E.R.C.A.), and the Ministry of Natural Resources and Forestry (M.N.R.F.). Therefore, it was noted that the new access bridge installation will be subject to further approvals and mitigation measures of these agencies.

The overall drainage report and future maintenance processes, general timelines, and grant eligibility were generally reviewed with those in attendance. Mr. Renaud was advised that it was likely that the works in the drain were not to be undertaken between March 15th and June 30th, unless otherwise permitted by the D.F.O., E.R.C.A. and the M.E.C.P.

At the conclusion of the meeting, Mr. Peralta reiterated the scope of the project to include the review of all structures within the drain and provide future maintenance provisions for each. We further advised that we would contact all landowners with access bridges within the Cook Drain, prior to the preparation of our Engineer's Report, to review the details of our findings and discuss all future cost-sharing provisions provided. All landowners present were invited to review the access bridge to Mr. Sparrow's property. The following people accompanied Mr. Sparrow to inspect the condition of his access bridge: Shane McVitty, P.Eng. (Drainage Superintendent), Joshua King (N.J. Peralta Engineering Ltd.), and Tony Peralta, P.Eng. (N.J. Peralta Engineering Ltd.).

With the water levels lowered, we were able to see the condition of the bottom of the culvert. It was evident that the culvert has rotted through along the entire bottom of the culvert. The most recent Engineer's Report was reviewed with Mr. Sparrow, as prepared by D.A. Averill, P.Eng. dated August of 1981. This report provided for drainage works throughout the downstream portion of the Cook Drain and through the location of Mr. Sparrow's access bridge. Mr. Peralta confirmed that the access bridge was not identified within the 1981 report. Mr. Sparrow advised that the house was built in approximately 1984 and suspected that the culvert was likely installed at that time. Mr. Sparrow was advised that if the access bridge is found to not be a legal entity of the drain, it is likely that 100% of the costs associated with the replacement of the said bridge shall be assessed to the subject property.

V. FIELD SURVEY AND INVESTIGATIONS

Following the On-Site Meeting, we arranged for our Survey Crew to attend the site to perform a topographic survey, including taking all necessary levels and details, of the Cook Drain from Texas Road, upstream to its top end within Lot 1 Concession 4

Benchmarks were established from previous work carried out on the drain, including a geodetic reference, and were utilized in establishing relative site Benchmarks near the location of the subject access bridges. We also surveyed the drain for a considerable distance both upstream and downstream of the proposed access sites in order to verify the design grade profile for each access bridge culvert. We also took cross-sections of the Cook Drain at the general location of the access bridge sites, as necessary, for us to complete our design calculations, estimates and specifications.

For the purpose of establishing the watershed area, we investigated and reviewed all of the past Engineer's Reports on the Cook Drain. Specifically, we utilized the governing "Cook Drain" Report prepared by L. Zarlenga, P.Eng., dated March 28th, 2001, to establish the watershed contributing to the overall drainage system. We also carried out cross-checks of the watershed limits utilizing the most recent reports of the various drains in the vicinity of the Cook Drain. In addition, we utilized current LiDAR information to cross-check the watershed limits upstream of each subject access bridge being improved herein. All of the above investigations not only provided us with the correct watershed area affecting the size of the affected access bridges but also provided us with the accurate information to assist us with the preparation of our Construction Schedule of Assessment for this project.

The Ministry of Environment, Conservation and Parks (M.E.C.P.) currently regulates the Endangered Species Act, 2007. New regulation provisions under Ontario Regulation 242/08, Section 23.9 allows the Township to conduct repairs, maintenance, and improvements, within existing Municipal Drains, under the Drainage Act and these works are exempt from Section 9 and 10 of the Endangered Species Act, so long as the rules in the regulation are followed. If eligible, the regulatory provision allows Townships to give notice to the Ministry by registering their drainage activities through an online registry system.

Prior to our appointment to this project, the Town of Amherstburg provided the Essex Region Conservation Authority (E.R.C.A.) with a notice advising of the proposed drainage works, as required under Section 78(2) of the Drainage Act. Based on their comments, we engaged in further correspondence with the E.R.C.A., regarding specific requirements for the approval of the proposed bridge designs.

VI. REQUEST FOR EMERGENCY DESIGNATION

Further to the discussions at the On-Site Meeting, a number of landowners have expressed their desire to fast track the replacement of the existing access bridge serving Ulric & Mary Ann Renaud (Parcel 11). The condition of the existing culvert serving the homestead is in poor condition and is currently failing. It was further identified that Mr. Renaud requires the access bridge to receive frequent propane deliveries which his home largely depends on.

With the current pipe failing, the Town of Amherstburg had concerns that the approval and implementation of these drainage improvements would not be able to proceed in a timely manner. If halted, the Town recognized the risk of failure and damages would greatly increase as a result of the current condition of the pipe. As a result, the Town of Amherstburg felt that it would be prudent to request authorization from the Minister of Agriculture, Food and Rural Affairs (O.M.A.F.R.A.) for "Emergency Designation" to

proceed with the construction of the proposed access bridge replacement, prior to adopting the Engineer's Report. This request is pursuant to Section 124 of the Drainage Act and was submitted to the Minister on July 19th, 2018.

On July 25th, 2018, the Town of Amherstburg received a response from the Minister of Agriculture, Food and Rural Affairs. The response noted that the existing driveway is still being used by light vehicle traffic with steel plates placed over the failed culvert and that the property owner is expecting heavy loads in the early fall due to heating oil delivery and crop harvest. The response outlined the insufficient timelines for authorizing the work using normal drain construction procedures under the Drainage Act. Based on the current situation, the Minister deemed that this project qualifies for "Emergency Designation" on the condition that the crossing is replaced under the supervision of the Engineer appointed under the Drainage Act, and that the property Owners be given the opportunity to appeal their share of the project costs to the appeal bodies established under the Drainage Act.

VII. FINDINGS AND RECOMMENDATIONS

E.R.C.A., D.F.O. AND M.E.C.P. CONSIDERATIONS

During the course of our investigations, this drainage project was discussed and reviewed in detail with Ms. Cynthia Casagrande and Ms. Ashely Gyori of the E.R.C.A., to deal with any E.R.C.A. issues and comments related to this Municipal Drain. The Cook Drain is located within the regulated area and is under the jurisdiction of the E.R.C.A. and therefore, an E.R.C.A. Permit is required for the construction of the subject access bridge structures. Further to the above, the E.R.C.A. provided us with their comments and concerns through email correspondence and said email is included within **Appendix "A"**.

As outlined in our discussions with the E.R.C.A., and with respect to the Department of Fisheries and Oceans (D.F.O.) concerns and comments, the proposed works within this Municipal Drain was "self-assessed" by the Engineer, through the D.F.O. website and the utilization of the "Guidance for Maintaining and Repairing Municipal Drain in Ontario" to determine whether this project shall be reviewed by the D.F.O. The Cook Drain has been established as a Class 'F' Drain by the D.F.O. from the downstream end of the road crossing at Texas Road to the upstream end of the Cook Drain located in Lot 1, Concession 4. Based on the D.F.O. Self-Assessment website and the guidance document, we have determined that the project activities would not require a D.F.O. review for the works proposed under this project, so long as standard measures for fish habitat and migration are implemented.

The Ministry of Natural Resources and Forestry (M.N.R.F.) have transitioned responsibilities of the Species at Risk Provincial Legislation to the Ministry of Environment, Conservation and Parks

(M.E.C.P.). Section 23.9 of the Endangered Species Act, 2007 allows the Township 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.

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 shall be provided to the successful Tenderer and shall be available for viewing at the Municipal Office for those interested.

Through correspondence with the E.R.C.A., the self-assessment through the D.F.O., and the mitigation measures related to the Endangered Species Act, we have provided for all of the E.R.C.A., D.F.O., and M.E.C.P. concerns and issues in our design and recommend that these drainage works be constructed in total compliance with all of the above.

ACCESS BRIDGE STRUCTURES

Prior to the completion of our Engineer's Report for this project, we had discussions with each access bridge Owner and the Town of Amherstburg, to discuss and review the particulars of the structure improvements, in detail.

From our review of the existing access structures within the Cook Drain, the following findings were noted and recommendations provided regarding the structures within the Cook Drain and we report as follows:

BRIDGE ① - Town Of Amherstburg For Texas Road

The existing road crossing extending from Station 1+785.5 to Station 1+802.9, across Texas Road, was identified within the August 1981 Engineer's Report prepared by D.A. Averill, P.Eng. Therefore, this structure is considered a legal entity with respect to the Cook Drain. The existing road crossing culvert consists of 17.40 metres of a 1200mm x 1800mm arch corrugated steel pipe with vegetation and stone rip-rap end treatments. This road crossing provides an adequate travelled top width for Texas Road.

It shall be noted that the typical design criteria for Municipal Drain road crossings, such as Texas Road, are sized to a minimum 1:10 year peak storm event. We find the existing access structure to be adequately sized for the 1:10-year peak storm event and in fair physical condition with years of serviceable life remaining. Based on our evaluation, we recommend that no improvements are required to this structure as part of this report, at this time. However, as part of this report, provisions have been made to address future maintenance and/or replacement of this structure. This structure has further been labelled herein as **Bridge ①**.

BRIDGE ② - John Sparrow, Parcel 12

The existing access bridge extending from Station 1+685.4 to Station 1+693.1, serving as the primary access to the residential lands of John Sparrow (Parcel 12) at 4641 Texas Road, within Lot 3, Concession 4. This access bridge has not been identified within any existing By-laws for the Cook Drain. Therefore, this structure is not currently a legal entity with respect to the Cook Drain and is currently considered a private structure within this Municipal Drain. From our discussions with the Owner, he believes that this access bridge was installed at the time of construction of the home in 1984, after the governing report prepared by D.A. Averill, P.Eng. dated August 1981. The existing culvert consists of 7.70 metres of a 1200mm (48") corrugated steel pipe with concrete jutebag headwalls, which provides an adequate travelled top width. We find the existing access structure to be adequately sized with respect to the minimum 1:5-year peak storm event. The culvert is found to be in poor condition and failing, resulting in granular backfill material migrating through the culvert which has caused sinkholes to form on the driveway surface. This structure has further been labelled herein as **Bridge ②.**

Through our discussions with the affected property Owner, Mr. Sparrow would prefer that the structure be replaced with a similar driveway top width using the most economical materials available. Furthermore, he would like to ensure that the granular driveway topping be regraded and restored as part of the work to ensure no ponding from the road runoff occurs. **Based on our review with the property owner, we recommend that the existing access bridge shall be replaced with 14.00 metres (45.93 ft.) of 1400mm diameter Aluminized Steel corrugated Hel-Cor pipe together with sloped quarried limestone end treatments resulting in a driveway top width of approximately 6.75 metres (22.15 ft.).** Mr. Sparrow was reminded that because the existing access bridge has never been identified, nor installed through auspices of the Drainage Act, the existing structure is not considered a legal entity with respect to the Cook Drain. Furthermore, based on the physical condition of the current access bridge, relative to the vintage of all other access bridges within this Municipal Drain, the initial replacement of this structure shall be assessed entirely to the subject property. Upon its initial replacement, this structure shall be deemed a legal entity with respect to the Cook Drain and eligible for future maintenance cost-sharing. As a result of these discussions, this report and the works proposed herein have been prepared on that basis. As part of this report, provisions have been made to address future maintenance of this structure.

BRIDGE ③ - Ulric & Mary Ann Renaud, Parcel 11

The existing access bridge extending from Station 1+566.5 to Station 1+572.7, serves as the secondary access to the agricultural lands of Ulric & Mary Ann Renaud (Parcel 11) at 4521 Texas Road, within Lot 3, Concession 4. This access bridge was constructed pursuant to an Engineer's Report dated August 1981 prepared by D.A. Averill, P.Eng. Therefore, this structure is currently a legal entity with respect to the Cook Drain. This existing culvert

consists of 6.20 metres of a 1200mm (48") corrugated steel pipe with vegetation and stone rip-rap end treatments, which provides approximately 5.20 metres (17.06 ft.) of travelled top width. We find the existing access structure to be adequately sized with respect to the minimum 1:5-year peak storm event and in fair physical condition with years of serviceable life remaining. Based on our evaluation, we recommend that no improvements are required to this structure at this time. This structure has further been labelled herein as **Bridge ③.**

Through our discussions with Mr. Ulric Renaud understood that the existing access is in fair condition and is not in immediate need of replacement. However, he identified that we would like to see the future replacement of this access bridge include a wider top width to facilitate larger farm equipment. As a result, he has requested that we include provisions in this report to provide a 9.14 meters (30.00 ft.) driveway top width when future maintenance and/or replacement of this structure is required. **Therefore, when future maintenance and/or replacement is required for this structure, we recommend that it be replaced in its entirety with a 1400mm diameter Aluminized Steel Type II corrugated steel pipe having a total culvert length of 16.00 metres (52.49 ft.) together with sloped quarried limestone end treatments, resulting in a driveway top width of approximately 9.34 meters (30.64 ft.).** Details of its future replacement has been included within the accompanying plans.

BRIDGE ④ - Ulric & Mary Ann Renaud, Parcel 11

The existing access bridge extending from Station 1+521.6 to Station 1+528.4, serves as the primary access to the agricultural lands of Ulric & Mary Ann Renaud (Parcel 11) at 4521 Texas Road, within Lot 3, Concession 4, and serves as the access to the homestead. This access bridge was initially constructed pursuant to an Engineer's Report dated October 25th, 1962, prepared by C.G.R. Armstrong, P.Eng., and is currently a legal entity with respect to the Cook Drain. This existing culvert consists of 6.80 metres of a 1200mm (48") corrugated steel pipe with rubble stone and broken concrete piece headwalls, which provides approximately 4.70 metres (15.42 ft.) of travelled top width. We find the existing access structure to be adequately sized with respect to the minimum 1:5 year peak storm event. The culvert and headwalls are found to be in poor condition and failing, resulting in granular backfill material migrating through the culvert which has caused sinkholes to form on the driveway surface. This structure has further been labelled herein as **Bridge ④.**

Due to the extremely poor condition of this access bridge and further to the discussions and directions at the On-Site Meeting, a request to O.M.A.F.R.A. was submitted and subsequently granted to replace this access under "Emergency Designation" through Section 124 of the Drainage Act. As a result, this access bridge has already been replaced and the details of the installation, specifications and assessments has been included as part of this report.

Through our discussions with Mr. Renaud, he advised that he prefer that this access bridge be replaced with a similar driveway top width using the most economical materials and end treatments available. **Based on our review with the property owner, we recommend that the existing access bridge shall be replaced with 13.00 metres (42.65 ft.) of 1400mm diameter Aluminized Steel corrugated Hel-Cor pipe together with sloped quarried limestone end treatments resulting in a driveway top width of approximately 6.50 metres (21.33 ft.).** Mr. Renaud was reminded that, because the existing access bridge is a legal entity of the Cook Drain, all costs associated to these improvements shall be shared with and all affected upstream lands and roads within the drains watershed. As a result of these discussions, this report and the works proposed herein has been prepared on that basis. As part of this report, provisions have been made to address future maintenance and/or replacement of this structure.

BRIDGE ⑤ – Ethel Wismer, Parcel 6 and Ethel & Darwin Wismer, Parcel 5

The existing access bridge extending from Station 0+302.5 to Station 0+315.0 serves as a shared primary access to the agricultural lands of Ethel Wismer (Parcel 6) and Ethel & Darwin Wismer (Parcel 5) within Lot 2, Concession 4. This farm bridge was constructed pursuant to an Engineer's Report dated October 25th, 1962 prepared by C.G.R. Armstrong, P.Eng., extending from Station 0+296.6 to 0+300.6 and is currently a legal entity with respect to the Cook Drain. This existing culvert presently consists of 12.50 metres of a 900mm (36") High Density Polyethylene (H.D.P.E.) pipe with broken concrete vertical headwalls, which provides approximately 9.50 metres (31.17 ft.) of travelled top width. We find the existing access structure to be adequately sized with respect to the minimum 1:5-year storm event and is in fair physical condition with years of service life remaining. Based on our evaluation, we recommend that no improvements are required to this structure as part of this report. This structure has further been labelled herein as **Bridge ⑤**.

Through our discussions with the affected property owner, Mr. Wismer advised that this structure was replaced recently and extended to better facilitate larger farm equipment. Mr. Peralta confirmed that the new bridge appeared to be centred on the property line and shared between the two farm parcels.

Although the existing access bridge is in good physical condition, the existing structure differs from the governing By-law. With this structure being installed with appropriate materials, to the current construction standards, and with no improvements required to this structure at this time, the current structure details shall supersede those outlined within the governing Engineer's Report. As a result, when future maintenance is required to this structure, we recommend that it be replaced in its entirety utilizing the same pipe grade, together with equivalent materials, length, culvert size and end treatments. We would further recommend that all costs associated with the future maintenance of this structure

shall be shared with the adjoining properties, together with all affected upstream lands and roads within the drain's watershed.

SUMMARY

In summary, we have reviewed all of the existing structures within the Cook Drain and provided our recommendations as detailed herein, which includes the replacement of **Bridge ②** and **Bridge ④** as detailed within the accompanying drawings and in accordance with this report and the attached specifications. Furthermore, all of the works associated with this project shall be carried out in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2020".

VIII. ALLOWANCES AND COMPENSATION

All of the work carried out under this project is located alongside and within the Texas Road right-of-way. Furthermore, all areas disturbed by this work are specified for full restoration. Therefore, these works shall not require land to be taken, nor result in any loss of production of agricultural property or any indirect damages to the non-agricultural areas. Therefore, no allowances or compensation shall be provided for under Section 29 and 30 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2020".

IX. ESTIMATE OF COSTS

Our estimate of the Total Cost of this work, including all incidental expenses, is the sum of **FIFTY-FOUR THOUSAND FOUR HUNDRED TWENTY-EIGHT DOLLARS ($54,428.00)**, made up as follows:

CONSTRUCTION

Item 1)	**Bridge ② (Station 1+682.3 to Station 1+696.3)**; Excavate, completely remove and dispose of the existing corrugated steel pipe, concrete jutebag headwalls, and deleterious materials; Provide all labour, equipment and materials to construct a new access bridge consisting of 14.00 metres (45.93 ft.) of 1400mm diameter, 2.0mm thick, Aluminized Steel Type II corrugated Hel-Cor with 125mm x 25mm corrugation profile pipe, including sloped quarried limestone end treatments, granular bedding and backfill, granular approaches and transitions, excavation, compaction, topsoil, seeding and mulching, cleanup and restoration, complete.	Lump-Sum	$ 18,900.00

Item 2)	**Bridge ④ (Station 1+518.2 to Station 1+531.2)**; Excavate, completely remove and dispose of the existing corrugated steel pipe and all deleterious materials; Provide all labour, equipment and materials to construct a new access bridge consisting of 13.00 metres (42.65 ft.) of 1400mm diameter, 2.8mm thick, Aluminized Steel Type II corrugated Hel-Cor with 125mm x 25mm corrugation profile pipe, including sloped quarried limestone end treatments, granular bedding and backfill, granular approaches and transitions, excavation, compaction, topsoil, seeding and mulching, cleanup and restoration, complete.	Lump-Sum	$ 17,900.00
Item 3)	Net H.S.T. for above items (1.76%)		$ 648.00
	TOTAL FOR CONSTRUCTION		**$ 37,448.00**

INCIDENTALS

1)	Report, Estimates, & Specifications	$ 5,200.00
2)	Survey, Assistants, Expenses, and Drawings	$ 4,200.00
3)	Review future maintenance provisions for structures	$ 2,500.00
4)	Duplication Costs of Report and Drawings	$ 600.00
5)	Estimated Cost of Preparing Tender Documents, Tender process on an invitation basis, and Tender review	$ 1,200.00
6)	Estimated Cost of Providing Supervision and Full-Time Inspection During Construction for Installations and Removal (Based on a 3.0 day duration)	$ 2,200.00
7)	Estimated Net H.S.T. on Above Items (1.76%)	$ 280.00
8)	Estimated Cost for E.R.C.A. Permit	$ 800.00
	TOTAL FOR INCIDENTALS	**$ 16,980.00**
	TOTAL FOR CONSTRUCTION (brought forward)	**$ 37,448.00**
	TOTAL ESTIMATE	**$ 54,428.00**

X. DRAWINGS AND SPECIFICATIONS

As part of this report, we have attached a design drawing for the Bridges Over the Cook Drain. The design drawing shows the alignment of the Cook Drain, and the approximate location of all access bridges within this drain. The drawings also illustrate the affected landowners, the approximate limit of the drain watershed, and the details relative to the various improvements of the structures, where applicable.

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 related to the construction and/or replacement of access bridges structures, labelled herein as **Appendix "B"**.

Furthermore, Benchmarks were established therein for each structure detail. The drawings attached within **Appendix "C"** have been reduced in size and the scale therefore varies; however, full scale drawings can be viewed at the Town of Amherstburg Municipal Office, if required.

XI. COST DISTRIBUTION AND CONSTRUCTION ASSESSMENT RATIONALE

We would recommend that all of the costs associated with the construction of the improvements to the Bridges Over The Cook Drain, be assessed in accordance with the attached **Construction Schedule of Assessment.** In general terms, the lands and roads included in the Construction Schedule of Assessment are those that exist upstream of the replacement access bridge sites and use the Cook Drain for drainage purposes.

Assessment Components

The total individual assessments within the Schedules of Assessment, comprises of three (3) separate assessment components, including:

i) **Benefit** *defined as advantages to any lands, roads, buildings or other structures from the construction, improvement, repair or maintenance of a drainage works such as will result in a higher market value or increased crop production or improved appearance or better control of surface or subsurface water, or any other advantages relating to the betterment of lands, roads, buildings or other structures, as it relates to Section 22 of the Drainage Act.*

ii) **Special Benefit** *defined as additional work or feature included in the construction, repair or improvement of a drainage works that has no effect on the functioning of the drainage works.*

iii) **Outlet Liability** *defined as part of the cost of the construction, improvement or maintenance of a drainage works that is required to provide such outlet or improved outlet, as it relates to Section 23 of the Drainage Act.*

Access Structure Assessment Rationale

Benefit Assessment - properties which reside adjacent to the open drain are entitled to access their lands. These lands gain an advantage from an access bridge structure constructed within the Municipal Drain for the purposes of accessing their lands. Therefore, a Benefit Assessment is levied against those properties who gain an advantage related to the betterment of their lands, based on the definition provided above.

Special Benefit Assessment - Any special feature requested or required for the sole betterment of a single property, that does not affect the functionality of the drainage system shall be assessed a Special Benefit Assessment. This Special Benefit Assessment would also include any special features to enhance an access bridge structure (such as decorative headwalls, surface pavement, etc.).

Outlet Assessment - According to the parameters set within Section 23 of the Drainage Act, all lands which utilize the Municipal Drain as a drainage outlet may be assessed for Outlet Liability. As further outlined within Section 23(3) of the Drainage Act, the Outlet Assessment is *"…based on the volume and rate of flow of the water artificially caused to flow…"*. Based on the characteristics of the lands that contribute flow to the drainage system, runoff factors have been applied based on the land use of each property to reflect the actual amount of water that is artificially collected and discharged through the proposed structures. Therefore, developed lands (residential, commercial lots and roads) have an increased run-off factor applied to their assessment. Contrarily, lands which have surface (or subsurface) runoff that exits the watershed, or contain woodlots, would have a decrease run-off factor applied to their assessment.

As it relates to the replacement of **Bridge ②**, this structure has not been identified within any existing By-laws for the Cook Drain. Therefore, this structure is not currently established as a legal entity with respect to the Cook Drain. Based on its current status within this Municipal Drain, its poor condition relative to the vintage of all other access bridges within this Municipal Drain, the estimated construction plus incidental costs for the initial replacement of this structure shall be assessed 100.0% to the subject property.

As it relates to **Bridge ④**, this structure is considered a legal entity with respect to the Cook Drain. Therefore, the estimated construction 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 Cook Drain for drainage purposes. The sharing percentage between the bridge user and 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 user's share is assessed within the Construction Schedule of Assessment as a Benefit Assessment and the affected upstream Owners' share for a standard top width access bridge is assessed as an Outlet Assessment.

We would therefore recommend that all of the costs associated with the access bridge replacement included under this report be charged against the lands and roads affected within the attached Construction Schedule of Assessment included herein. Lands which are used for agricultural purposes have been listed in the 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 lying upstream of the subject bridges.

It should be noted that the attached Construction Schedule of Assessment is to be utilized for the sharing of the costs related to the construction works being provided for under this report and this Construction Schedule of Assessment shall **not** be utilized for the sharing of any future maintenance works conducted to the bridge replaced under this report.

Agricultural Grants and Grant Eligibility

The Ontario Ministry of Agriculture, Food, and Rural Affairs (O.M.A.F.R.A.) have 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 "Conservation Land Tax Incentive Program". The Municipal Clerk has provided this information to the Engineer from the current property tax roll and the Engineer has further confirmed this information with the Ag Maps Geographic Information Portal services through the O.M.A.F.R.A. 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 the O.M.A.F.R.A. In accordance with same, we expect that a portion of this project will qualify for the grant normally available for agricultural lands.

We would recommend that the Township make an Application for Grants to the O.M.A.F.R.A. in accordance with Section 88 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2010" for any grants that may be available for this project. The Ministry is

continually reviewing their policy for grants, and 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.

Cost-sharing Provisions for Access Bridges

As part of this project, we have provided for cost-sharing provisions for future work performed to each structure within Cook Drain. We would recommend that all the costs associated to the additional survey, identification and the preparation of these provisions be charged against all upstream lands and roads contributing flows through these structures. These assessments are based on the distribution of outlet assessments previously identified.

XII. FUTURE MAINTENANCE

After the completion of the construction works to these subject access bridges, all of same shall be maintained in the future by the Town of Amherstburg.

Cook Drain - Access Structures

It should be noted that a mechanism shall be provided herein so that the Town can undertake future maintenance works on the subject access structures and further allocate future maintenance costs to all affected landowners. We would therefore recommend that all of the structures identified within this report, for which future maintenance costs are to be shared with upstream lands and roads within the watershed, be maintained by the Town of Amherstburg.

Should any works of maintenance be required in the future to the structures identified within this report, the following provisions with respect to cost-sharing for each of same, shall be shared by the abutting landowner and upstream affected lands and roads in accordance with the following table:

				BLENDED COST-SHARING	
Bridge Number	**Parcel Number**	**Owners**	**Standard Bridge Benefit Share (Primary)**	**% to Abutting Owner**	**% to Upstream Lands And Roads**
1.	Texas Road	Town of Amherstburg	--	100.0%	0.0%
2.	Parcel 12	John Sparrow	70.0%	70.0%	30.0%

				BLENDED COST-SHARING	
Bridge Number	**Parcel Number**	**Owners**	**Standard Bridge Benefit Share (Primary)**	**% to Abutting Owner**	**% to Upstream Lands And Roads**
3.	Parcel 11	Ulric & Mary Ann Renaud	--	100.0%	0.0%
4.	Parcel 11	Ulric & Mary Ann Renaud	71.0%	71.0%	29.0%
5.	Parcel 5	Ethel & Darwin Wismer	78.2%	39.10%	21.8%
	Parcel 6	Ethel Wismer		39.10%	

The sharing percentages between the abutting owner and the upstream lands and roads affected by said structures have been established on the basis of where it is located relative to the entire reach of the drain. The percentages to the abutting Owner shall be assessed as a Benefit Assessment.

The percentage to the upstream lands and roads as established above shall be assessed as an Outlet Liability towards the lands and roads within the Cook Drain watershed lying upstream of said structures. These Outlet Assessments shall be shared in the same proportions as the outlet assessment established within the March 28th, 2001, Engineer's Report prepared by L. Zarlenga, P.Eng. which provided for an Updated Maintenance Schedule of Assessment. The future maintenance costs for each affected structure within the drain shall be levied pro-rata on only the affected lands and roads that are situated upstream of the particular structure for which future maintenance works has been carried out.

Said maintenance work would include works to the structure, 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. Likewise, if any fencing, gate, decorative walls, guard rails or other special features exist that will be impacted by the maintenance work, they are also to be removed and restored or replaced as part of the structure maintenance work. However, the cost of the supply and installation of any surface material other than Granular "A" material, and the cost of removal and restoration or replacement, of any special features, if necessary, shall be totally assessed to the benefiting adjoining Owner served by said access bridge.

Open Drain Portions

When future maintenance is performed on the open drain portions of the Cook Drain, we recommend that all costs associated to these works be assessed based on the Updated Maintenance Schedule Engineer's Report prepared by L. Zarlenga, P.Eng., dated March 28th, 2001, or subsequent amendments made thereto under the provisions of the Drainage Act.

In regards to the physical works of maintenance on the Cook Drain, we wish to identify the following governing By-laws that outline the working corridors and details of the necessary works, with respect to the identified sections of open drain:

From Station 0+000.0 to Station 1+364.0 - All future maintenance provisions for the open drain shall adhere to the details outlined within the Engineer's Report prepared by C.G.R. Armstrong, P.Eng., dated October 25th, 1962.

From Station 1+364.0 to Station 2+039.0 - All future maintenance provisions for the open drain shall adhere to the details outlined within the Engineer's Report prepared by D.A. Averill, P.Eng., dated August 1981.

The above provisions for the future maintenance 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 2020".

All of which is respectfully submitted.

N. J. PERALTA ENGINEERING LTD.

Antonio B. Peralta, P.Eng.

ABP/amm

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PROVINCE OF ONTARIO

N. J. PERALTA ENGINEERING LTD.
Consulting Engineers
45 Division Street North
Kingsville, Ontario
N9Y1E1

CONSTRUCTION SCHEDULE OF ASSESSMENT

BRIDGES OVER THE COOK DRAIN

TOWN OF AMHERSTBURG

FOR DISTRIBUTION

This copy of the Drainage Report complies with the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA)

3. MUNICIPAL LANDS:

Parcel No.	Con. or Plan No.	Lot or Part of Lot	Acres Owned	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
	Texas Road			1.10	0.445	Town of Amherstburg	$ -	$ 209.00	$ -	$ 209.00
	Total on Municipal Lands						**$ -**	**$ 209.00**	**$ -**	**$ 209.00**

4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:

Parcel No.	Con. or Plan No.	Lot or Part of Lot	Acres Owned	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
13	4	3	4.40	0.30	0.121	Essex Region Conservation Authority	$ -	$ 31.00	$ -	$ 31.00
1	4	1	0.78	0.78	0.316	Leonard & Deborah Mailloux	$ -	$ 127.00	$ -	$ 127.00
12	4	3	0.76	0.10	0.040	John Sparrow	$ 26,647.00	$ 4.00	$ -	$ 26,651.00
	Total on Privately Owned - Non-Agricultural Lands						**$ 26,647.00**	**$ 162.00**	**$ -**	**$ 26,809.00**

5. PRIVATELY OWNED - AGRICULTURAL LANDS (grantable):

Parcel No.	Con. or Plan No.	Lot or Part of Lot	Acres Owned	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
4	4	1	52.19	19.99	8.090	Patricia Goodchild and Timothy & David Coyle	$ -	$ 924.00	$ -	$ 924.00
2	4	1	14.18	34.21	13.845	Mailloux Farms Ltd.	$ -	$ 1,897.00	$ -	$ 1,897.00
7	4	2	48.00	32.99	13.351	William & Marianne Mailloux	$ -	$ 1,525.00	$ -	$ 1,525.00
11	4	3	46.14	46.14	18.673	Ulric & Mary Ann Renaud	$ 17,919.00	$ 1,445.00	$ -	$ 19,364.00
10	4	3	32.36	10.01	4.051	Robert & Connie Carnahan	$ -	$ 463.00	$ -	$ 463.00

Parcel No.	Con. or Plan No.	Lot or Part of Lot	Acres Owned	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
9	4	3	50.13	12.01	4.860	Ronald & Marisa Wismer	$ -	$ 555.00	$ -	$ 555.00
8	4	2	49.54	10.01	4.051	Kathleen Beaudoin	$ -	$ 463.00	$ -	$ 463.00
6	4	2	50.34	21.99	8.899	Ethel Wismer	$ -	$ 1,017.00	$ -	$ 1,017.00
5	4	2	49.08	21.00	8.499	Ethel & Darwin Wismer	$ -	$ 971.00	$ -	$ 971.00
3	4	1	24.30	4.99	2.019	Rose-Marie, Philip & Paul Jobin	$ -	$ 231.00	$ -	$ 231.00
	Total on Privately Owned - Agricultural Lands (grantable)						**$ 17,919.00**	**$ 9,491.00**	**$ -**	**$ 27,410.00**
				215.62	87.260		**$ 44,566.00**	**$ 9,862.00**	**$ -**	**$ 54,428.00**

1 Hectare = 2.471 Acres
D18-035
November 6th 2020

SPECIFICATIONS

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BRIDGES OVER THE COOK DRAIN

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SPECIFICATIONS

BRIDGE OVER THE COOK DRAIN

(Geographic Township of Anderdon)

TOWN OF AMHERSTBURG

I. GENERAL SCOPE OF WORK

The Contractor is advised that the work proposed under this project consists of the removal and replacement of two (2) existing access bridges within the Cook Drain, serving the lands of John Sparrow (Parcel 12) and Ulric & Mary Ann Renaud (Parcel 11).

For **Bridge ②**, serving the lands of John Sparrow (Parcel 12),the Contractor shall provide all material, labour, and equipment to remove and replace an existing 1200mm diameter corrugated steel culvert with a new 1400mm aluminized corrugated steel culvert, together with sloped quarried limestone end protection, and all other ancillary work. All works under this project shall provide us with a complete and satisfactory job.

Furthermore, for **Bridge ④**, serving the lands of Ulric & Mary Ann Renaud (Parcel 11), the Contractor shall provide all material, labour, and equipment to remove and replace an existing 1200mm diameter corrugated steel culvert with a new 1400mm aluminized corrugated steel culvert, together with sloped quarried limestone end protection, and all other ancillary work. All works under this project shall provide us with a complete and satisfactory job.

The location of the new replacement access bridges shall be the exact designated location as shown on the plan unless otherwise directed by the Property Owner in conjunction with the Town Drainage Superintendent, prior to the construction of same. Any changes to the location of the new access bridge must be approved in writing by the Consulting Engineer.

All work shall be carried out in accordance with these Specifications and serve to supplement and/or amend the current Ontario Provincial Standard Specifications and Standard Drawings, adopted by the Ontario Municipal Engineers Association. All work shall also comply in all regards with **Appendix "A"**, as well as the Standard Specifications included in **Appendix "B"**. The works shall be carried out in accordance with the plan labelled herein as **Appendix "C"**. The structures shall be of the size, type, depth, etc., as is shown in the accompanying drawings, as determined from the **Benchmark**, 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/or the Consulting Engineer.

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

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

All of the work shall be carried out in accordance with any permits or authorizations issued by the Essex Region Conservation Authority (E.R.C.A.) or the Department of Fisheries and Oceans (D.F.O.), copies of which will be provided, if available. The Contractor is advised that work shall not be carried out in the existing drain from March 15th to June 30th of any given year.

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 his/her Contractors to ensure that sediment and erosion control measures are functioning properly and are maintained/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.

Not only shall the Contractor comply with all of the above, it shall also be required to further comply with all of the comments and mitigation measures included within the E.R.C.A. emails. Furthermore, the Contractor shall also review and comply with the "Best Management Practices - Culvert Replacements in Municipal Drains" document prepared by the D.F.O. Both of which are included within **Appendix "A"**.

III. M.E.C.P. CONSIDERATIONS

Under the Species at Risk Provincial Legislation, set in place with the Ministry of Environment, Conservation and Parks (M.E.C.P.), Section 23.9 of the Endangered Species Act, 2007, allows the Town 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.

Prior to commencing work, the Town of Amherstburg will complete an "Endangered Species Act Review" for the Cook Drain and will provide the Contractor with the results of said review, including Town documents for the purpose of identification of known species at risk within the project area and mitigation measures for species and habitat protection. 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.

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 AND TRAFFIC CONTROL

The Contractor is advised that all of the work to be carried out on this project extends along the south side of Texas Road. The Contractor may utilize the full road right-of-way as necessary to permit the completion of all the work required to be completed for this project. The Contractor shall ensure that the travelling public is protected at all times while utilizing the roadway for its access. Accordingly, the Contractor will be required to carry out all of the necessary steps to direct traffic and the public and provide temporary diversion of traffic around the work site including provisions of all lights, signs, flag persons, and barricades required to protect the safety of the travelling public.

It is expected that the Contractor shall not require Texas Road to be closed when carrying out the necessary work. However, if the Contractor prefers to close the road, **it may not do so unless it receives approval from the Town of Amherstburg Roads Superintendent.** In any case, the Contractor shall provide all necessary lights, signs, and barricades to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. If a road closure is allowed, all road closures signs and traffic control signs shall be required on this project at the Contractor's expense and shall ensure that all emergency services, school bus companies, etc. are contacted about the disruption at least 48 hours of same. All signage is to comply with the Ontario Traffic Manual's Book 7 for Temporary Conditions. Regardless of the traffic control methods used, a suitable Traffic Control Plan must be submitted to the Town of Amherstburg and the County of Essex for approval prior to commencing any work within the road right-of-way.

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 shall 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 shall 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.

The Contractor shall note that any deviation from the above-mentioned access for the construction of the access bridge without the explicit approval of the adjacent landowners and the Town Drainage Superintendent could result in the Contractor being liable for damages sustained. The value for such damage shall be determined by the Town Drainage Superintendent and the Consulting Engineer, and be subsequently deducted from the Contract Price.

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 burned or otherwise satisfactorily disposed of by the Contractor. 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 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 the 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 cooperate 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 Contractor to carry out handwork 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 shall be required to exercise extreme care in the removal of any fencing so as to cause a minimum of damage to same. The Contractor shall 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 shall 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 BRIDGE WORK

Bridge ② - John Sparrow (Parcel 12)

The Contractor shall provide all material, labour and equipment to remove and replace the existing access bridge serving the residential lands of John Sparrow (Parcel 12), within the Cook Drain. This access bridge has been identified as **Bridge ②.**

The existing corrugated steel pipe slated to be removed for the access bridge shall be replaced with a new Aluminized Steel Type II Corrugated Hel-Cor Pipe with rolled annular ends, as shown and detailed on the plan, with the pipe to have a minimum thickness and the corrugation profile shown.

When complete, the access bridge along the centreline of the new culvert shall have total top width, including the top width of the sloped quarried limestone end treatments, of approximately 7.85 metres (25.75 ft.) and a travelled driveway width of 6.75 metres (22.15 ft.). The quarried limestone end treatments shall be installed on a slope no steeper than 1.50 horizontal to 1.00 vertical, and shall extend from the end of the new Aluminized Steel Type II Corrugated Hel-Cor Pipe to the top elevation of the driveway.

The culvert replacement on 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 the Specifications and labelled **Appendix "B"**.

Bridge ④ - Ulric & Mary Ann Renaud (Parcel 11)

The Contractor shall provide all material, labour and equipment to remove and replace the existing access bridge serving the agricultural lands of Ulric & Mary Ann Renaud (Parcel 11), within the Cook Drain. This access bridge has been identified as **Bridge ④.**

The existing corrugated steel pipe slated to be removed for the access bridge shall be replaced with a new Aluminized Steel Type II Corrugated Hel-Cor Pipe with rolled annular ends, as shown and detailed on the plan, with the pipe to have a minimum thickness and the corrugation profile shown.

When complete, the access bridge along the centreline of the new culvert shall have a total top width, including the top width of the sloped quarried limestone end treatments, of approximately 7.60 metres (24.93 ft.) and a travelled driveway top width of 6.50 metres (21.33 ft.). The quarried limestone end protection shall be installed on a slope no steeper than 1.50 horizontal to 1.00

vertical, and shall extend from the end of the new Aluminized Steel Type II Corrugated Hel-Cor Pipe to the top elevation of the driveway.

The culvert replacement on this project shall be set to the grades as shown on the plans or as otherwise established herein and the Town Drainage Superintendent and/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 Treatments, Backfilling And Installation Procedures"** attached to the Specifications and labelled **Appendix "B"**.

VIII. ALUMINIZED STEEL PIPE INSTALLATION

The new Aluminized Corrugated Steel Hel-Cor pipe to be installed on this project, is required to be provided as one (1) continuous length. However, where it is absolutely necessary, and only with the approval of the Town Drainage Superintendent and/or the Consulting Engineer, the Contractor may be allowed to utilize two (2) approximately equal lengths of pipe coupled together with an Aluminized Steel Type II 10C bolted coupler of equivalent thickness, and having a minimum pipe length of 6.00 metres. The Aluminized Corrugated Steel pipe for this installation must be of the length, size, and thickness as identified in the plans and approved by the Town Drainage Superintendent and/or the Consulting Engineer prior to its placement in the drain.

In the event that the Contractor is granted permission to utilize two (2) equal lengths, the Contractor shall wrap the coupler with filter cloth. The Contractor shall supply all material and labour in order to provide a non-woven filter cloth wrap around the full circumference of the coupler joint connection. The filter cloth wrapped connection shall be a minimum of 250mm (10") wider than the width of the proposed coupler and shall overlap a minimum of 200mm (8"), as available from Underground Specialties Inc., of Windsor, Ontario, or equal. The specific type to be utilized shall be approved by the Town Drainage Superintendent and the Engineer prior to its' placement. The installation of all joints must be inspected and approved by the Town Drainage Superintendent or Consulting Engineer prior to any backfilling of same.

The Contractor shall also note that the placement of the new access bridge culvert is to be performed totally in the dry, and it shall be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Town Drainage Superintendent or Consulting Engineer. As part of the work, the Contractor will be required to clean out the drain along the full length of the bridge pipe and for a distance of 3.05 metres (10.00 ft.) both upstream and downstream of said pipe. The design parameters of the Cook Drain at the locations of the replacement access bridge installations consists of a 1.00 meter (3.28 ft.) bottom width, 0.33% grade, and 1.50 horizontal to 1.00 vertical side slopes. The Contractor shall be required to cut any brush and denude the

existing drain side slopes of any vegetation as part of the grubbing operation. The Contractor shall also be required to dispose of all excavated and deleterious materials, as well as any grubbed-out materials, to a site to be obtained by it at its own expense. The Contractor shall be required to provide any and all labour, materials and equipment to set the pipe to the required design grades. The Contractor shall also be required to supply, if necessary, 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 invert grade, all to the full satisfaction of the Town Drainage Superintendent or 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 installation of the complete length of the new culvert pipe, 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 replacement 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 replacement culvert structure is 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 also note that the placing of the replacement access bridge culvert shall be completed so that it totally complies with the parameters established and noted in the bridge plan. The placement of the culvert shall be on an even grade and 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 Consulting Engineer.

IX. BRIDGE CONSTRUCTION

Once the new Aluminized Corrugated Steel pipe has been satisfactorily set in place, the Contractor shall completely backfill same with granular material M.T.O. Type "B" O.P.S.S. Form 1010 with the following exception. The top 305mm (12") of the backfill material for the full top width of the access, the full top width of the drain, and the approach to the north and transitions to the south shall be M.T.O. Type "A" O.P.S.S. Form 1010, or local approved equivalent. The backfilling of the Aluminized Corrugated Steel pipe shall be provided in total compliance with the Standard Specifications included in **Appendix "B"**.

All granular backfill for the bridge installation shall be satisfactorily compacted in place to a minimum standard proctor density of 98% by means of mechanical compaction equipment. All of the backfill material, equipment used, and method of compacting the backfill material shall be provided and performed to the satisfaction of the Town Drainage Superintendent or Consulting Engineer.

The new Aluminized Corrugated Steel pipe, for this installation, is to be provided with a minimum depth of cover measured from the top of the pipe of 305mm (12"). If the bridge culvert is placed at its proper elevations, same should be achieved. The above specified minimum requirement is **critical** and must be attained. Obviously, in order for the new access bridge culvert to properly fit the channel parameters, **all of the design grade elevations must be strictly adhered to**.

As a check, all of the access bridge culvert design grade elevations shall be confirmed before commencing to the next stage of the access bridge installation. The Contractor is also to check that the pipe invert grades are correct by referencing the Benchmark and the information provided on the detail within the plans.

Although it is anticipated that the bridge structure installation shall be undertaken in the dry, the Contractor shall supply and install a temporary straw bale check dam or silt fences in the drain bottom immediately downstream of the culvert site during the time of construction. The straw bale check dam or silt fences shall conform to O.P.S.D. 219.130 or approved equivalent and shall be to the satisfaction of the Town Drainage Superintendent or Consulting Engineer these temporary sediment features must be removed upon completion of the construction. All costs associated with the supply and installation of this straw bale check dam shall be included in the cost bid for the structure replacements.

X. REMOVALS

The Contractor shall be required to excavate and completely remove the existing culverts and end treatments in their entirety, as well as any other deleterious materials that may be encountered in removing same. The Contractor shall also be required to cut any brush and denude the existing drain side slopes of any vegetation as part of the grubbing operation. However, the Contractor is asked to create minimal disturbance to existing vegetation beyond the limits of the proposed access bridge.

All unsuitable and deleterious materials from the excavation and removal of the existing bridge culvert and drain shall be hauled away and disposed of by the Contractor to a site to be obtained by it at its expense. Likewise, any material excavated to allow for the granular approaches to the bridge, driveway transitions, or installation of new end walls shall also be hauled away and disposed of by the Contractor.

XI. SLOPED QUARRIED LIMESTONE EROSION PROTECTION

Once the new Aluminized Corrugated Steel pipe has been set in place, the Contractor shall install sloped quarried limestone end protection at both ends of the access. The top 305mm (12") of backfill material over the ends of the Aluminized 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 "B"** 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 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. All work shall be completed to the full satisfaction of the Town Drainage Superintendent and/or the Consulting Engineer.

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 and/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 "B"**. The Contractor shall comply in all respects with the General Conditions included in Item 4 and the "**Typical Quarried Limestone End Protection**" detail illustrated within the plan.

XII. BENCHMARKS

Also, for use by the Contractor, we have established a Benchmark near the location of the new access bridge structures.

For the new bridges, the plans include details illustrating the work to be completed. For the bridge details, Benchmarks have been indicated and the elevations have been shown and may be utilized by the Contractor in carrying out its work. The Contractor shall note that a specific design elevation grade has been provided for the invert at each end of the pipe in the table accompanying the details. The table also sets out the pipe size, materials, and other requirements relative to the installation of the bridge structure. In all cases, the Contractor is to utilize the specified drain slope to set any new pipe installation. The Contractor shall ensure that it takes note of the direction of flow and sets the pipe to assure that the grade flows from west to east to match the direction of flow within the drain. The Contractor's attention is drawn to the fact that the pipe invert grades established herein provide for same to be set approximately 10% of its diameter below the existing drain bottom.

XIII. ANCILLARY WORK

During the course of any repair or improvements, the Contractor will be required to protect or extend any existing tile ends or swales to maintain the drainage from the adjacent lands. All existing tiles shall be extended utilizing Boss 2000 or equal plastic pipe of the same diameter as the existing tile and shall be installed in accordance with the **"Standard Lateral Tile Detail"** as shown in the details included in **Appendix "B"** 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.

As outlined within the plans, the existing tile main located within the residential lands of Municipal Number (M.N.) 4641, shall be located and diverted north, so that it does not interfere with the installation of new access bridge culvert of **Bridge ②**. The tile main shall be diverted and extended through the west endwall utilizing a minimum of 3.00 metres of the equivalent diameter smoothwall H.D.P.E. plastic pipe. The outlet end of the diverted tile main shall be set with a minimum of 0.30 metres (1.00 ft.) above the design bottom of the existing open drain. The Contractor shall utilize the appropriate fittings and connections using Manufacturer's couplings wherever possible.

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

XIV. TOPSOIL, SEED AND MULCH

The Contractor shall be required to restore all existing grassed areas and drain side slopes damaged by the structure installation, and place topsoil and seed and mulch over said areas including any specific areas noted on the plans. The Contractor shall be required to use the scavenged topsoil stripped from the drain banks. The balance of the topsoil required shall be obtained by the Contractor at its own expense. The Contractor shall provide all the material to cover the above-mentioned surface areas with approximately 50mm of good, clean, dry topsoil on slopes and 100mm of good, clean, dry topsoil on horizontal surfaces, fine graded and spread in place ready for seeding and mulching. The placing and grading of all topsoil shall be carefully carried out according to Ontario Provincial Standard Specifications, Form 570, dated November, 2007, or as subsequently amended or as amended by these Specifications. Once the topsoil has been properly placed and fine graded, the Contractor shall seed and mulch the area. 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. The seeding mixture shall be OSECO Seed Mixture Canada No. 1, as available from Morse Growers Supply in Leamington, or equal. As part of the seeding and mulching operation, the Contractor shall be required to provide either a hydraulic mulch mix or a 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 shall be protected during germination and provide a thick, uniform cover to protect against erosion, where necessary. All work shall be completed to the full satisfaction of the Town Drainage Superintendent and/or the Consulting Engineer.

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

XV. GENERAL CONDITIONS

a) The Town Drainage Superintendent or Consulting Engineer shall have authority to carry out minor changes to the work where such changes do not lessen the efficiency of the work.

b) The Contractor shall satisfy itself as to the exact location, nature and extent of any existing structure, utility or other object which it may encounter during the course of the work. The Contractor shall indemnify and save harmless the Town of 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 shall generally conform to the design and project intent.

d) The Contractor shall 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.

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

l) 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% shall be paid 60 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 there are no liens or claims against the work and that all of the requirements as per the Construction Act, 2018 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.

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APPENDIX "A"

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E.R.C.A.
CORRESPONDENCE

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From: Ashley Gyori <AGyori@erca.org>
Sent: Wednesday, October 28, 2020 8:38 AM
To: kory@peraltaengineering.com
Cc: Shane McVitty; Nicole Humber; 'Tony Peralta'
Subject: RE: Bridges over the Cook Drain - Town of Amherstburg - D18-035
Attachments: 201013 PRELIMINARY - Bridges over the Cook Drain - D18-035.pdf; ERCA Watershed Management Services 2020 Fee Schedule.pdf

Good morning Kory,

Thank you for providing a copy of the attached Preliminary Plans and the supplementary information below for the proposed drainage works to the Cook Drain. We have reviewed the plans prepared by your office, Project No. D18-035, and have determined that the draft proposal satisfies this office's concerns with respect to Section 28 of the *Conservation Authorities Act.*

For this project to proceed, we will need a copy of the signed and sealed final drainage report and drawings and an ERCA application for permit form, completed by the municipality. Our office will invoice the Town of Amherstburg the application for permit fee of $800.00 in accordance with Item 22 of the attached Board-approved Fee Schedule, upon issuance of the approval.

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

Kind regards,

Essex Region Conservation Authority
sustaining the place for life

ASHLEY GYORI
Regulations Analyst
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311 • Essex, Ontario • N8M 1Y6
P. 519-776-5209 x 247 • F. 519-776-8688
agyori@erca.org • essexregionconservation.ca

**** Please note that the ERCA office is closed to the public; however, staff are continuing to respond to inquiries and review applications in a modified capacity. We appreciate your understanding and patience at this time.****

From: kory@peraltaengineering.com <kory@peraltaengineering.com>
Sent: Tuesday, October 13, 2020 11:41 AM
To: Ashley Gyori <AGyori@erca.org>
Cc: Dan Jenner <DJenner@erca.org>; smcvitty@amherstburg.ca; Nicole Humber <nhumber@amherstburg.ca>; tony@peraltaengineering.com
Subject: Bridges over the Cook Drain - Town of Amherstburg - D18-035

Good morning Ashely,

Further to the correspondence below and the bridge replacement for Ulric Renaud ( ) through the OMAFRA emergency designation, we have completed the design of the remaining access bridges within the Cook Drain.

The initial scope of work was intended to include the replacement of one existing access bridge. However, based on the information outlined below, and as discussed at the On-Site meeting for this project we have provided for the replacement of one additional access bridge serving John Sparrow ( ) and have also provided for the future maintenance provisions for all five bridge structures along the entire length of this drain. As a result, the only remaining construction recommended under this report is for the bridge of John Sparrow as identified within the preliminary drawings.

In accordance with your request for a preliminary design proposal for this project, attached you will find the preliminary design drawings for your review. Based on our preliminary design, we have determined the following details:

- Bridge No. 1 – represents the road crossing culvert across Texas Road. This crossing consists of approximately 17.4m of 1200x1800mm Arch Corrugated Steel pipe with vegetation and broken concrete end treatments. No work is being completed to this access within this report, however cost sharing for future maintenance on the bridge has been provided.

- Bridge No. 2 – represents the access for John Sparrow ( ), at 4641 Texas Road. This existing access bridge consist of approximately 7.70m of 1200mm diameter corrugated steel pipe with vertical concrete jutebag headwalls. The proposed access bridge shall consist of approximately 14.0m of 1400mm diameter Aluminized Corrugated Steel Type II pipe with sloped quarried limestone end treatments, together with 140mm of pipe embedment below the existing drain bottom. This access bridge is intended to provide a top width of 6.75m (22.1').

- Bridge No. 3 – represents the farm access bridge for Ulric Renaud ( ), at 4521 Texas Road. The existing access bridge consists of approximately 6.20m of 1200mm diameter corrugated steel pipe with vegetation and broken concrete end treatments. **Design details for a wider driveway top width are being provided for future replacement**, and shall consist of approximately 16.0m of 1400mm diameter Aluminized Corrugated Steel Type II pipe with sloped quarried limestone end treatments, together with 140mm of pipe embedment below the existing drain bottom. This access bridge is intended to provide a top width of 9.34m (30.6').

- Bridge No. 4 – represents the primary access for the homestead for Ulric Renaud ( ) at 4521 Texas Road. The existing access bridge consisted of approximately 6.80m of 1200mm diameter corrugated steel pipe with broken concrete end treatments which has since been replaced through the emergency designation. The new access bridge consists of approximately 13.0m of 1400mm diameter Aluminized Corrugated Steel Type II pipe with sloped quarried limestone end treatments, together with 140mm of pipe embedment below the existing drain bottom. This access bridge is intended to provide a top width of 6.50m (21.3'). These replacement details will be incorporated as part of this report.

- Bridge No. 5 – represents the farm crossing culvert for Ethel & Darwin Wismer (&). The existing bridge consists of approximately 12.5m of 900mm diameter High Density Polyethylene pipe with stacked broken concrete end treatments. No work is being completed to this access within this report, however cost sharing for future maintenance on the bridge has been provided.

We have reviewed the DFO website as it relates to the Fisheries Act and have performed a "Self Assessment" for this project. Also, as it relates the Endangered Species Act, we have contacted the Town of Amherstburg to ensure that this project is covered under the new ESA Regulation 242/08.

We trust that this information is satisfactory. However, if you have any concerns or require additional information, please feel free to contact us.

Kindest Regards,

Kory Snelgrove

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

From: Tony Peralta <tony@peraltaengineering.com>
Sent: July 15, 2018 12:41 PM
To: Cynthia Casagrande <CCasagrande@erca.org>
Cc: Shane McVitty <smcvitty@amherstburg.ca>; Nicole Humber <nhumber@amherstburg.ca>; Dan Jenner <DJenner@erca.org>; josh@peraltaengineering.com
Subject: Re: Cook Drain - Notification of Site Meeting

Good afternoon Cynthia;

Further to the information outlined below, and as discussed at the On-Site meeting for this project, in addition to the replacement of the deteriorated access bridge we will also be looking at all access bridges within the Cook Drain as it relates to future maintenance provisions. Due to its current condition of the Renaud bridge, all landowners present have explicitly requested that we proceed with the replacement of the deteriorated culvert prior to the completion of the Engineer's Report. The final Engineer's Report will include the details and cost sharing of the access bridge replacement for Ulric Renaud ( ), located at 4521 Texas Road. Attached you will find a map of the drain and subject access bridge location.

Further to your request, we wish to provide you with the preliminary design proposal for the bridge replacement for Ulric Renaud ( ). Stamped drawings and construction specifications will be provided to the Town for the permit and construction of this access bridge.

The existing access bridge to be replaced is the access to the homestead. Approximately 1200m upstream of the subject bridge (near the upper end of the drain) consists of farm crossing culvert having 12.2m of 900mm diameter HDPE pipe. Approximately 38.0m downstream of the subject access bridge consisting of a farm access (within the same property) having 6.1m of 1200mm diameter CSP pipe.

Based on our preliminary design, we have determined that the replacement access bridge shall consist of approximately 13.0m of 1400mm diameter CSP with sloped quarried limestone end treatments.

We have reviewed the DFO website as it relates to the Fisheries Act and have performed a "Self Assessment" for this project. Also, as it relates the the Endangered Species Act, we have contacted the Town of Amherstburg to ensure that this project is covered under the new ESA Regulation 242/08.

We trust that this information is satisfactory. However, if you have any concerns or require additional information, please contact us at your earliest opportunity as we intend on finalizing this report as soon as possible.

Regards,

Tony Peralta, P.Eng.

N.J. Peralta Engineering Ltd.
45 Division Street North

Kingsville, ON
N9Y 1E1
(519)733-6587 office
(519)733-6588 fax

-------- Original Message --------
Subject: Cook Drain - Notification of Site Meeting
From: Cynthia Casagrande <CCasagrande@erca.org>
To: Shane McVitty <smcvitty@amherstburg.ca>
Cc: Nicole Humber <nhumber@amherstburg.ca>, Tony Peralta
Date: Fri, 13 Apr 2018 12:34:58 +0000

Dear Shane:

This office acknowledges receipt of the Notice of Site Meeting scheduled for April 24, 2018 regarding the proposed repairs and improvements (replacement culvert) over the Cook Drain. Unfortunately, we are unable to attend this meeting.

We note that our comments contained in the email below are still applicable.

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

Yours truly,

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

From: Cynthia Casagrande
Sent: Friday, December 8, 2017 8:29 AM
To: 'Shane McVitty' <smcvitty@amherstburg.ca>
Cc: John Henderson <JHenderson@ERCA.org>; Dan Jenner <DJenner@ERCA.org>; Nicole Humber <nhumber@amherstburg.ca>
Subject: Cook Drain - Notification of Request for Drainage Works

Dear Shane:

Re: Your File Number: E09-2017-019

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

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

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

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

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

Yours truly,

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

From: Shane McVitty [mailto:smcvitty@amherstburg.ca]
Sent: Monday, December 4, 2017 3:34 PM
To: Cynthia Casagrande <CCasagrande@erca.org>
Cc: John Henderson <JHenderson@erca.org>
Subject: Notification of Request for Drainage Works - Cook Drain

Good Afternoon Cynthia,

Please find attached a letter notifying the Essex Region Conservation Authority of a request that the Town of Amherstburg has received for an improvement to the Cook Drain. In general, a landowner has requested the replacement of a single existing farm / residential access bridge due to its current deteriorated condition. The subject bridge is located at 4521 Texas Road, Concession 4, part of Lot 3, in the former Geographic Township of Anderdon.

If you have any questions or concerns, please do not hesitate to contact myself directly.

Regards,
Shane

Shane McVitty
Drainage Superintendent / Engineering Coordinator

512 Sandwich St. South, Amherstburg, ON, N9V 3R2
Tel: 519-736-3664 Fax: 519-736-7080 TTY: 519-736-9860

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D.F.O.
BEST MANAGEMENT PRACTICES – CULVERT REPLACEMENTS IN MUNICIPAL DRAINS

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Best Management Practices – Culvert Replacements in Municipal Drains

This document describes the conditions on which one may proceed with a culvert replacement in a municipal drain without DFO approval/notification. All municipal, provincial, or federal legislation that applies to the work being proposed must be respected. If the conditions/requirements below cannot be met, please complete the drain notification form and submit it to the Fisheries Protection Program form review at: FisheriesProtection@dfo-mpo.gc.ca.

Potential Impacts to Fish Habitat

- Infilling fish habitat by encroachment of the water crossing footprint or channel realignment to accommodate culvert
- Harmful substrate alteration of fish habitat (e.g. blockage of groundwater upwellings, critical SAR habitat, spawning areas)
- Removal of riparian vegetation and cover along the banks of the municipal drain
- Removal of edge habitat (e.g. undercut bank, shallower areas with lower velocity, aquatic vegetation) creation of barriers to fish movement (e.g. perched crossings, velocity barriers, alteration of the natural stream gradient)
- Alteration of channel flow velocity and/or depth (e.g. oversized culvert resulting in insufficient depth for fish passage at low flow or undersized culvert resulting in a flow velocity barrier at high flow)
- Alteration of channel morphology and sediment transport processes caused by the physical structure of the crossing resulting in upstream and downstream sediment aggradation/erosion
- Re-entry of sediment that was removed/stockpiled into the watercourse
- Erosion downstream from sudden release of water due to the failure of site isolation
- Stranding of fish in isolated ponds following de-watering of the site
- Impingement or entrainment of fish when de-watering pumps are used
- Short term or chronic transport of deleterious substances, including sediment, into fish habitat from construction or road drainage

Requirements

The following requirements must be met:

- There are no aquatic Species at Risk present in the work zone or impact zone. To confirm there are no aquatic Species at Risk present, refer to the document, A Guide for Interpreting Fish and Mussel Species at Risk Maps in Ontario which can be found at: http://www.dfo-mpo.gc.ca/Library/356763.pdf. Links for Ontario Conservation Area specific fish and mussel maps that include critical habitat extents and a list of aquatic Species at Risk found within the conversation authority boundary can be found on Page 5 of A Guide for Interpreting Fish and Mussel Species at Risk Maps in Ontario.
- The culvert is embedded into the streambed and must allow for the free passage of fish.
- The work involves like-for-like replacements of existing road or private access culverts on all drain types without SAR.
- On C and F Drains only, this can also include replacements with extensions and end walls for the purposes of providing the property or road with safe access, but the project permanent footprint will not increase more than 250 m^2 below the high water mark.
- The project does not involve replacing a bridge or arch with one or more culverts installed in parallel or a larger-diameter culvert with more than one culvert installed in parallel.

- The project does not involve building more than one culvert installed in parallel on a single watercourse crossing site (e.g. twin culvert).
- The project does not involve temporarily narrowing the watercourse to an extent or for a duration that is likely to cause erosion, structural instability or fish passage problems.
- The municipal drain has no flow/low flow or is frozen to the bottom at the time of the replacement.
- In-water work is scheduled to respect timing windows (Tables 1 and 2) to protect fish, including their eggs, juveniles, spawning adults, and/or the organisms upon which they feed.
- The work can be conducted using the Culvert Removal Method described below and Standard Measures to Avoid Causing *Serious Harm to Fish* will be implemented when required.

Note: If your project must be conducted without delay in response to an emergency (e.g. the project is required to address an emergency that poses a risk to public health or safety or to the environment or property), you may apply for an Emergency Authorization (http://www.dfo-mpo.gc.ca/asp/forceDownload.asp?FilePath=/pnw-ppe/reviews-revues/Emergency-Authorizations-Autorisations-Urgences-eng.pdf).

Culvert Removal Methodology

- Plan/manage the work site in a manner that prevents sediment from entering the municipal drain by installing sediment and erosion control materials where required. Ensure that a sediment and erosion control plan is developed and modified as necessary for the site.
- Where required, install effective erosion and sediment control measures before starting work to prevent sediment from entering the municipal drain.
- Implement site isolation measures when in-water work is required.
    - Install an impervious barrier upstream of the work area (Figure 1). If possible, install a secondary barrier upstream of the work area for added protection.
    - Attempt to drive out the fish from the work area and then install the impervious barrier downstream of the work area. This may reduce or eliminate the need for a fish salvage.
    - When the drain is flowing, maintain downstream flows (e.g. bypass water around the work site using pumps or flume pipes; Figure 2). Provide temporary energy dissipation measures (e.g. rip-rap) at discharge point of the hose or temporary outlet pipe when required. Routinely inspect bypass pump and hose or pipe to ensure proper operation. Inspect discharge point for erosion and reposition hose/pipe or install additional temporary energy dissipation material as needed.
    - Dewater the isolated work area. The hose for a pump may discharge along the top of the bank into existing vegetation; however, the area should be monitored for signs of erosion. Reposition the hose or install additional temporary energy dissipation material as needed.
    - A fish screen with openings no larger than 2.54 mm (0.10 inches) should be equipped on any pump used during the operation. Note: Additional information regarding fish screens can be found in the DFO Freshwater Intake End-of-Pipe Fish Screen Guideline document (http://www.dfo-mpo.gc.ca/Library/223669.pdf).
    - Collect any fish present in the isolated work area and relocate them downstream.
    - Fish salvage operations must be conducted under a license issued by the Ontario Ministry of Natural Resources and Forestry (MNRF). The MNRF should be contacted well in advance of any work to obtain the required fish collection license.
- Install the culvert so that it is embedded into the streambed; ensure the culvert remains passable (e.g. does not become perched) by fish and wildlife.

- Decommission the site isolation in a manner that minimizes the introduction of sediment. The downstream isolation barrier shall gradually be removed first, to equalize water levels inside and outside of the isolated area and to allow suspended sediments to settle.
- Stabilize and remove waste from the site.
- Where required, maintain effective erosion and sediment control measures until complete re-vegetation of disturbed areas is achieved.

Figure 2. Isolation of Site

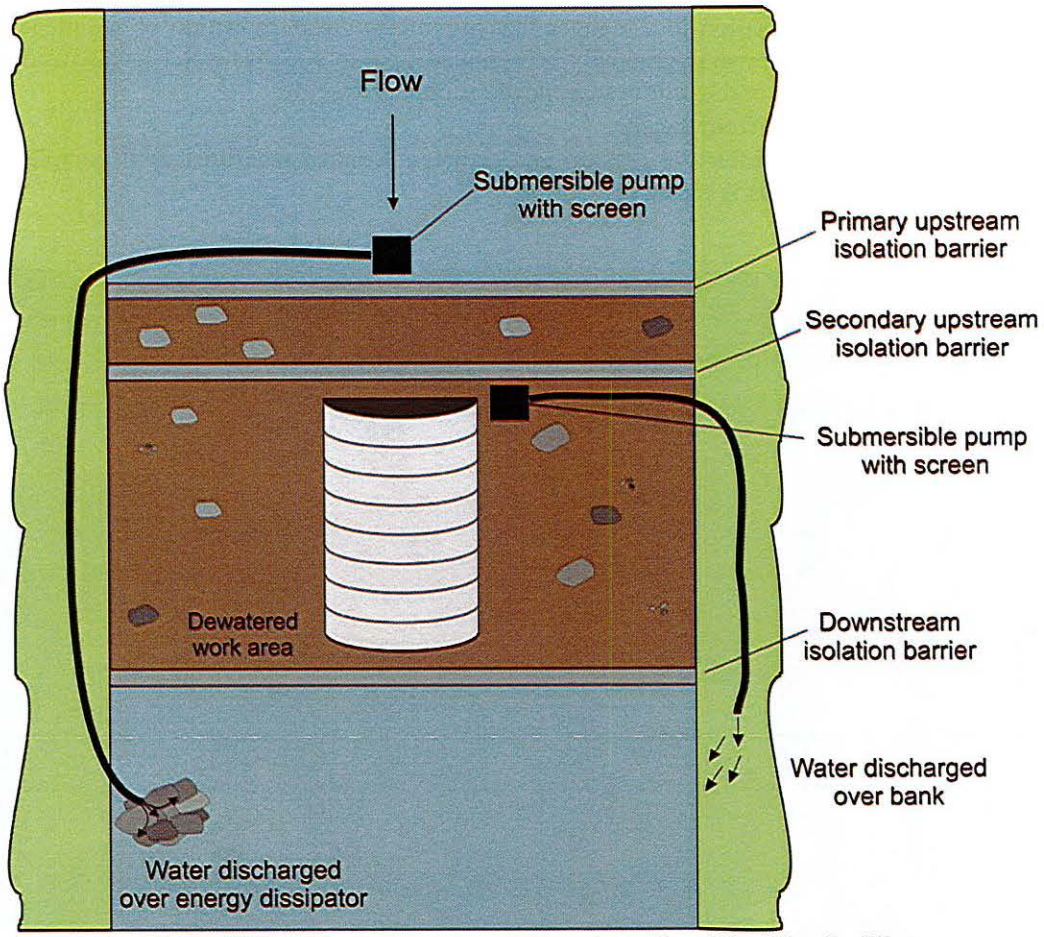

Figure 3. Isolation and Bypass Diversion when Working In-Water

Timing Windows

Figure 1 and Tables 1 and 2 can be used to determine the Restricted Activity period for the drain based on its classification. Note: Timing windows identified on Conservation Authority permits or Ministry of Natural Resources (Government of Ontario) work permits may differ and take precedence.

Figure 1. Ontario's Northern and Southern Region boundaries for determining application of restricted activity timing windows.

Table 1. Restricted Activity timing windows for the protection of spawning fish and developing eggs and fry in the Northern Region. Dates represent when work should be avoided.

Drain Type	Restricted Activity Period
A	September 1 to July 15
B	September 1 to July 15
C	April 1 to July 15
D	September 1 to July 15
E	April 1 to July 15

Table 2. Restricted Activity timing windows for the protection of spawning fish and developing eggs and fry in the Southern Region. Dates represent when work should be avoided.

Drain Type	Restricted Activity Period
A	September 15 to July 15
B	March 15 to July 15
C	March 15 to July 15
D	October 1 to July 15
E	March 15 to July 15

Standard Measures to Avoid Causing *Serious Harm to Fish*

When implementing a culvert removal project in a municipal drain, the *Fisheries Act* still requires an individual/company to ensure they avoid causing *serious harm to fish* during any activities in or near water. The following advice will help one avoid causing harm and comply with the *Act* (for additional information see http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html).

1. Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
2. Whenever possible, operate machinery on land above the high water mark or on ice and in a manner that minimizes disturbance to the banks and bed of the municipal drain.
   - Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks.
   - Limit machinery fording of the municipal drain to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the municipal drain are required, construct a temporary crossing structure.
   - Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
   - Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
3. Install effective sediment and erosion control measures before starting work to prevent sediment from entering the municipal drain. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.
4. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the municipal drain and runoff water is clear.
5. Undertake all in-water activities in isolation of open or flowing water while maintaining the natural flow of water downstream and avoid introducing sediment into the municipal drain.
6. Ensure applicable permits for relocating fish are obtained and relocate any fish that become trapped in isolated pools or stranded in newly flooded areas to the main channel of the watercourse.
7. Ensure that the water that is being pumped/diverted from the site is filtered (sediment remove) prior to being released (e.g. pumping/diversion of water to a vegetated area).
8. Implement measures for containing and stabilizing waste material (e.g. dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.
9. Stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
10. If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
11. Remove all construction materials from site upon project completion.

APPENDIX "B"

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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 the bottom of the culvert pipe.

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.

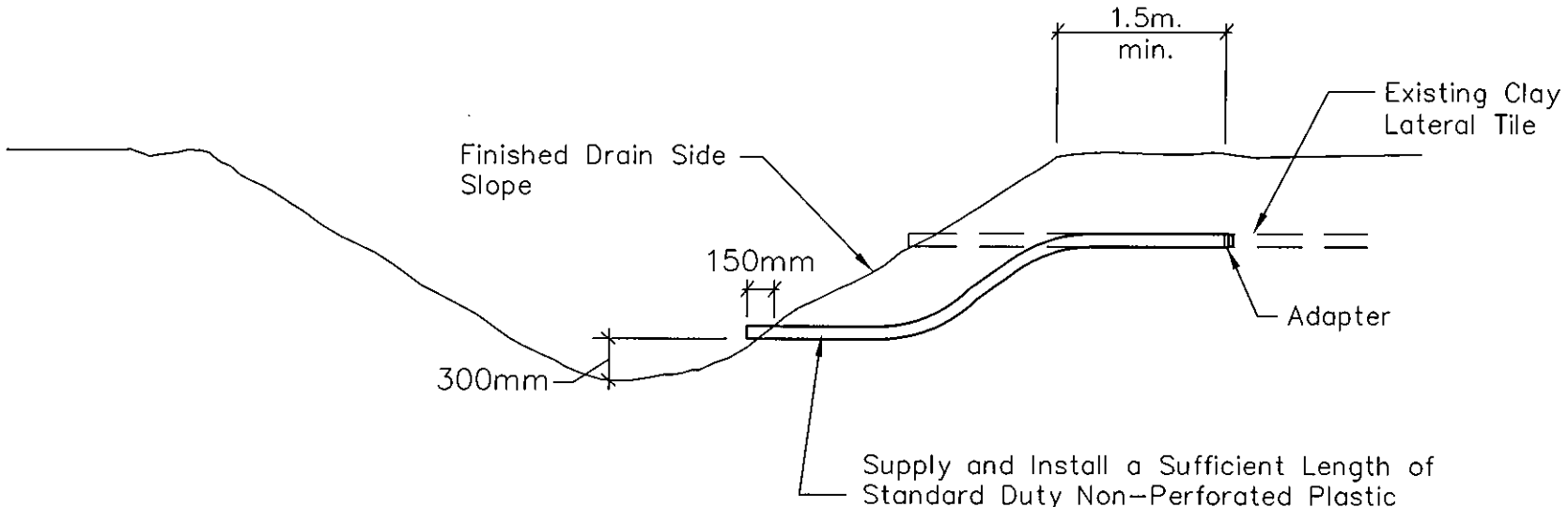
Where applicable, the Contractor and/or landowner constructing the new bridge shall be responsible for any damage caused by them to any portion of the Town road right-of-way. They shall take whatever precautions are necessary to cause a minimum of damage to same and must restore the roadway to its' original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



NOTE: If Existing Lateral Tile is Plastic Utilize a Plastic Insert Coupling in Place of Adapter.

STANDARD LATERAL TILE DETAIL

SCALE = N.T.S.

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APPENDIX "C"

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PLANS & DETAILS

OF THE

BRIDGES OVER THE COOK DRAIN

IN THE

TOWN OF AMHERSTBURG (Geographic Township of Anderdon)

IN THE

COUNTY OF ESSEX • ONTARIO

FOR DISTRIBUTION
the copy of this Plan complies with the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA)

ANTONIO B. PERALTA, P.ENG.

A. B. PERALTA
100136983
LICENCE
PROVINCE OF ONTARIO

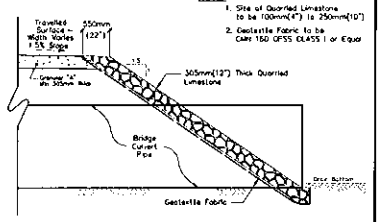
N. J. PERALTA ENGINEERING LTD.
45 DIVISION STREET NORTH
KINGSVILLE, ONTARIO
N9Y 1E1

DATE: NOVEMBER 6th, 2020

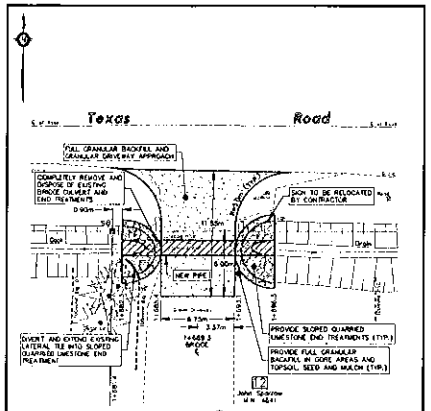
TOWN OF AMHERSTBURG

MAYOR: ALDO DICARLO
CLERK: PAULA PARKER
DRAINAGE SUPERINTENDENT: SHANE McWATTY P.Eng.

NOTE:
1. Size of Quarried Limestone to be 100mm(4") to 250mm(10")
2. Geotextile Fabric to be CAN/ 150 OPSS 1860 CLASS I or Equal



TYPICAL QUARRIED LIMESTONE END PROTECTION
N.T.S.



BRIDGE ② PLAN
Scale = 1:200

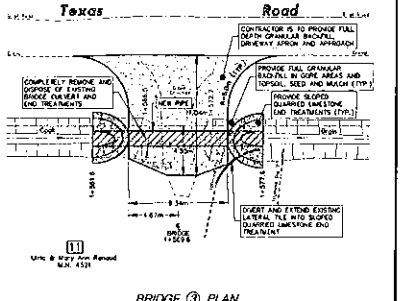
BRIDGE REPLACEMENT

BENCHMARK:
TOP OF NAIL SET IN SOUTH FACE OF EXISTING HYDRO POLE LOCATED ON THE NORTH SIDE OF TEXAS RD. IN FRONT OF MN. 4631 APPROXIMATELY 230m EAST OF PROPOSED BRIDGE ②

ELEV. = 183.334m

U/S & D/S CHANNEL ELEVATIONS

PIPE SIZE	PIPE LENGTH	PIPE GAUGE	CORRUGATIONS	TYPE OF PIPE
1400mm ø	11.0m (43.93 FT.)	2.0mm (14 GA.)	125mm x 25mm (5.0" x 1.0")	ALUMINIZED STEEL TYPE 2 CORRUGATED HEL-COR PIPE



BRIDGE ③ PLAN
Scale = 1:200

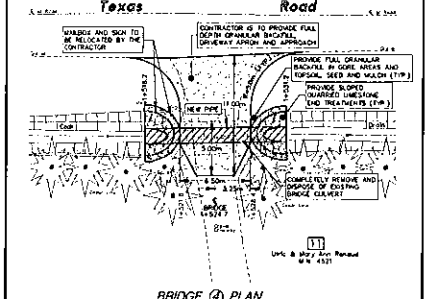
FUTURE BRIDGE DESIGN

BENCHMARK:
TOP OF NAIL SET IN SOUTH FACE OF EXISTING HYDRO POLE LOCATED ON THE NORTH SIDE OF TEXAS RD. IN FRONT OF MN. 4631 APPROXIMATELY 230m EAST OF PROPOSED BRIDGE ③

ELEV. = 183.334m

U/S & D/S CHANNEL ELEVATIONS

PIPE SIZE	PIPE LENGTH	PIPE GAUGE	CORRUGATIONS	TYPE OF PIPE
1400mm ø	11.0m (43.93 FT.)	2.0mm (14 GA.)	125mm x 25mm (5.0" x 1.0")	ALUMINIZED STEEL TYPE 2 CORRUGATED HEL-COR PIPE



BRIDGE ④ PLAN
Scale = 1:200

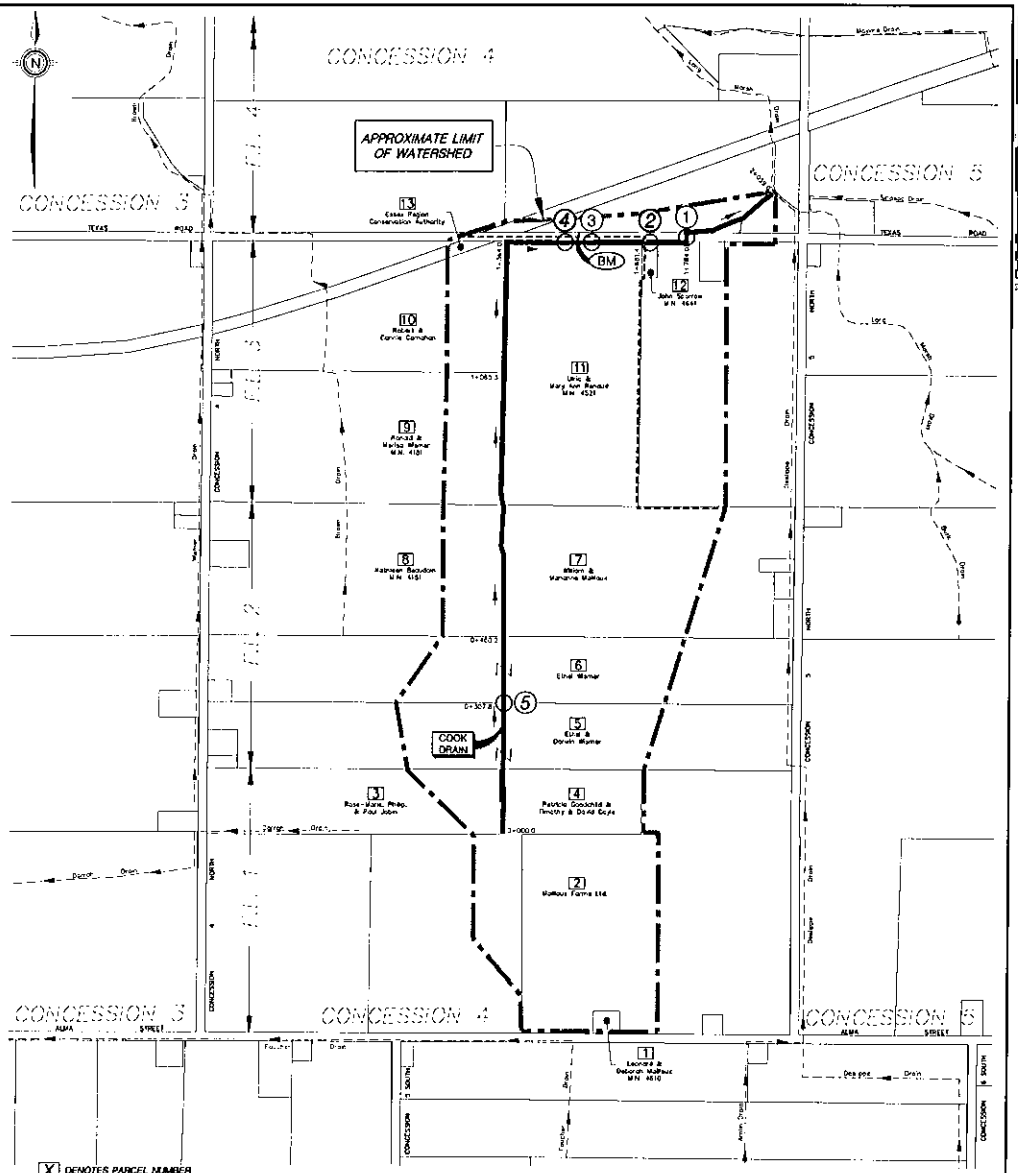
BRIDGE REPLACEMENT

BENCHMARK:
TOP OF NAIL SET IN SOUTH FACE OF EXISTING HYDRO POLE LOCATED ON THE NORTH SIDE OF TEXAS RD. IN FRONT OF MN. 4521 APPROXIMATELY 230m EAST OF PROPOSED BRIDGE ④

ELEV. = 183.334m

U/S & D/S CHANNEL ELEVATIONS

PIPE SIZE	PIPE LENGTH	PIPE GAUGE	CORRUGATIONS	TYPE OF PIPE
1400mm ø	13.0m (42.65 FT.)	2.0mm (14 GA.)	125mm x 25mm (5.0" x 1.0")	ALUMINIZED STEEL TYPE 2 CORRUGATED HEL-COR PIPE



WATERSHED PLAN
Scale = 1:5000

X DENOTES PARCEL NUMBER
(X) DENOTES COMPLETE BRIDGE REPLACEMENT
(X) DENOTES FUTURE BRIDGE REPLACEMENT
- - - - DENOTES SUB-WATERSHED LIMITS FOR SHARED ACCESS BRIDGES

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

24 Mars 81 KDS
PLOT CODE: 1:1
COMPUTER FILE: D1803552.dwg

FILE No. D18-035

SHEET No. 1 OF 1