THE CORPORATION OF THE TOWN OF AMHERSTBURG

BY-LAW NO. 2023 – 023

By-law to provide for the Dolphis Meloche Drain Improvements based on the Drainage Report by N.J. Peralta Engineering Ltd.

WHEREAS a request for improvement of the Dolphis Meloche 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 Dolphis Meloche Drain Improvements 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 June 30, 2022, can be referenced as Schedule A, as attached hereto;

WHEREAS $175,319.00 is the estimated cost of improving the drainage works;

AND WHEREAS the report was considered by the Amherstburg Drainage Board at the meeting held on February 7, 2023.

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 $175,319.00 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 13th day of February, 2023.

MAYOR – MICHAEL PRUE

CLERK – KEVIN FOX

Read a third time and finally passed this 12 day of June, 2023.

MAYOR – MICHAEL PRUE

~~CLERK – KEVIN FOX~~
Deputy Clerk - Sarah Sabihuddin

DRAINAGE REPORT

DOLPHIS MELOCHE DRAIN IMPROVEMENTS

(Geographic Township of Anderdon)

TOWN OF AMHERSTBURG

N. J. Peralta Engineering Ltd.

Consulting Engineers

45 Division St. N., Kingsville, Ontario N9Y1E1
Tel. (519) 733-6587

Project No. D-17-057

June 30th, 2022

**** This page is intentionally left blank ****

PREAMBLE

MUNICIPAL DRAINS AND THE DRAINAGE ACT

The "Drainage Act" is one of the oldest pieces of legislation in Ontario, passed in 1859. It provides a democratic procedure for the construction, improvement and maintenance of drainage works. A procedure whereby the Municipality may assist in providing a legal drainage outlet for surface and subsurface waters not attainable under common law. Accordingly, it provides assistance to facilitate the problems of obtaining a legal drainage outlet, engineering and cost distribution.

The Drainage Act administers a legal procedure by which an "area requiring drainage" may receive an outlet drain constructed to dispose of excess stormwater runoff to a sufficient outlet. This drainage infrastructure is otherwise known as a "Municipal Drain". Municipal Drains are identified by way of an Engineer's Report and adopted through Municipal By-law. The Drainage Engineer has the obligation to prepare an unbiased Engineer's Report based on information presented in written form, orally, and from visual inspection; in accordance with currently accepted design criteria.. These reports form the legal basis for construction and management of the Municipal Drain. As such, an Engineer's Report shall contain specific details such as plans, profiles, and specifications that define the location, size and depth of the drainage infrastructure, together with establishing how costs are shared amongst all stakeholders.

Through the democratic procedure, the Engineer's Report is presented to all Stakeholders in front of Municipal Council (or a Drainage Board appointed by Council) for consideration. The Drainage Act provides an appeal process to address various aspects of Municipal Drains. These appeal bodies are the Court of Revision, the Ontario Drainage Tribunal and the Drainage Referee.

For additional information, Fact Sheets, and reference materials regarding the Drainage Act and Municipal Drains, please visit: **http://www.omafra.gov.on.ca/english/landuse/drainage.htm**

**** This page is intentionally left blank ****

DOLPHIS MELOCHE DRAIN IMPROVEMENTS

REPORT TABLE OF CONTENTS

APPENDICES

**** This page is intentionally left blank ****

June 30th, 2022

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: **DOLPHIS MELOCHE DRAIN IMPROVEMENTS**
(Geographic Township of Anderdon)
Town of Amherstburg, County of Essex
Project No. D-17-057

I. INTRODUCTION AND INSTRUCTIONS

In accordance with the instructions received by letter of May 17th, 2017, from the Drainage Superintendent and Engineering Coordinator, Mr. Shane McVitty, P.Eng., together 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 replacement of various access bridges and enclosures. This report also includes the re-establishment of profile grades and future maintenance provisions for all existing access bridge structures within the Dolphis Meloche 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 Dolphis Meloche Drain is generally an open drain with a number of access bridges and enclosures, which were constructed under the auspices of the Drainage Act. A plan showing the alignment of the Dolphis Meloche Drain, the general location of the existing structures within the drain, a new drain profile, and details for the general improvements under this project are included herein as part of this report.

The initial request to provide an Engineer's Report to address improvements to the Dolphis Meloche Drain was submitted by Raymond Bastien [Parcel 9]. 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 recent maintenance works, the project scope has expanded to include the review of all existing structures within the Dolphis Meloche Drain to identify our findings and recommendations for each, together with providing associated future maintenance provisions.

Our appointment and the works related to the improvements within the Dolphis Meloche Drain, proposed under this report, are in accordance with Section 78 of the "Drainage Act, R.S.O. 1990,

Chapter D.17, as amended 2021". We have performed all of the necessary survey, investigations, etc., for the existing structures, as well as the Dolphis Meloche Drain, and we report thereon as follows.

II. BACKGROUND AND WATERSHED CHARACTERISTICS

The Dolphis Meloche Drain is an existing Municipal Drain that services a relatively small watershed within Lots 11 through Lot 12, Concession 2 and Concession 3, in the Town of Amherstburg (Geographic Township of Anderdon). This Municipal Drain extends from its upper end near the midpoint of Lot 11 and extends northerly for approximately 820.00 metres along the east side of Concession 3 North. The Dolphis Meloche Drain then crosses Concession 3 North and continues westerly and downstream through private property and terminates at its outlet into the Long Marsh Drain. The Dolphis Meloche Drain provides a sufficient outlet for primarily agricultural lands, together with some isolated residential properties. Overall, there are seven (7) existing access structures within the Dolphis Meloche Drain.

The Dolphis Meloche 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 primarily 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 Dolphis Meloche 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 Dolphis Meloche Drain. However, we have outlined the following relevant Engineer's Reports that were utilized as a reference for carrying out this project:

a) **May 18th, 1961** Reconsidered Engineer's Report for the "Dolphis Meloche Drain and Branch", prepared by C.G.R. Armstrong, P.Eng., was carried out under Anderdon Drainage By-law No. 1563. The works conducted under this report generally provided for the relocation of the existing Dolphis Meloche Drain main drain and branch along the east side of Concession 3 North right-of-way and onto private property, to facilitate the protection of the roadway.

   As outlined within this report, the new alignment of the Dolphis Meloche Drain required each access structure to be

constructed with specific culvert sizes and lengths. The report further identified that the drain shall be moved to accommodate the roadway. With the drain moving closer to the adjacent homes, the access bridge culverts were extended as lawn piping to facilitate these works and to protect the adjacent homes and lands. The report identifies the additional costs caused by the relocation works, along with the additional culvert lengths for the lawn piping was assessed to the Road Authority. As such, this report included the initial construction of the access bridge and lawn piping portion for part of **Enclosure ①**, all of **Enclosure ②**, part of **Enclosure ③**, part of **Enclosure ⑤**, and **Road Crossing ⑥**, within the Dolphis Meloche Drain.

b) **May 12th, 1967** Engineer's Report for the "Dolphis Meloche Drain & Branch", prepared by C.G.R. Armstrong, P.Eng., was carried out under Anderdon Drainage By-law No. 1801. The works conducted under this report generally provided for the deepening and widening entire length of the main drain and branch drain. The structures improved within this report include **Enclosure ③**, **Bridge ④**, and a portion of **Enclosure ⑤**.

c) **September of 1983** Engineer's Report for the "Dolphis Meloche Drain", prepared by D.A. Averill, P.Eng., was carried out under Anderdon Drainage By-law No. 2456 and 2505. The works conducted under this report generally provided for the cleaning and improvement of a portion of the main drain. This report also included the abandonment of the entire length of the branch drain. The works included as part of the report provided for the extension of **Enclosure ③**.

d) **May 30th, 1997** Reconsidered Engineer's Report for the "Dolphis Meloche Drain", prepared by E.O. LaFontaine, P.Eng., was carried out under Anderdon Drainage By-law No. 3093. The works conducted under this report generally provided for the cleaning and improvement of the entire length of the drain. The structures improved and/or identified within this report include a portion of **Enclosure ①**, **Enclosure ②**, **Enclosure ③**, **Bridge ④**, a portion of **Enclosure ⑤**, **Road Crossing ⑥**, and **Bridge ⑦**.

From our detailed research of the above-listed Engineer's Reports, we have determined that generally speaking, the 1997 Report serves as the current governing By-law for the entire length of the Dolphis Meloche Drain. This Engineer's Report currently governs the design provisions for any future maintenance works on the open channel. The cost for open drain maintenance works shall be assessed against the lands and roads as outlined within the Schedule of Assessment in the 1997 report. Based on our review, each of the access portions of the existing structures were constructed and/or identified within the above-mentioned By-laws. However, some of these structures were extended and/or modified since they were last identified. The portion of the structures identified previously would be considered legal entities with respect to the Dolphis Meloche Drain. As a result, these

identified structures are currently eligible to have a portion of the costs for their replacement and/or improvements shared with the lands and roads within the drain's watershed which contributes their runoff to the drain, upstream of said structures.

Further to our detailed review, there appears to be no record of establishment for portions of **Enclosure ①** and **Enclosure ⑤** that currently exist within the Dolphis Meloche Drain. Therefore, these portions of the structure are 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 INITIAL ON-SITE MEETING

After reviewing all the available drainage information and documentation provided by the Town Drainage Superintendent, we scheduled an On-Site Meeting for December 14th, 2017. The following people were in attendance at said meeting:

Leo & Donna Bastien	Landowners
Joe Bezaire	Landowner
Paul & Liz Morneau	Landowners
Shane McVitty, P.Eng.	Amherstburg's Drainage Superintendent
Russell Leclair, E.I.T.	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 Raymond Bastien [Parcel 9], for the replacement of an existing access bridge over the Dolphis Meloche Drain. Mr. McVitty explained how the recent maintenance has removed all sediment from the drain leaving the bottom of the culverts exposed. Upon the Town's review of the existing culverts, they found that several of the structures within the open drain may have reached the end of their serviceable life span.

Mr. Peralta provided a brief history of the drainage system and outlined its status as Municipal Drain, through the provisions of the Drainage Act. Mr. Peralta further explained that a Municipal Drain is a communally accepted drain and that all landowners within the watershed are considered stakeholders of the drain. Mr. Peralta outlined the purpose of this "On-Site Meeting" is to provide a general introduction to the project and to establish a general scope of work based on the submitted request and subsequent discussions of this meeting. Mr. Peralta encouraged landowners to provide as much input as possible to ensure that all applicable details are included within his investigations.

Mr. Peralta reviewed the general details of the Dolphis Meloche Drain and identified that the structures within the open drain consist of singular access bridges and a series of drain enclosures

throughout the length of the drainage system. Mr. Peralta explained that in order for a structure to be considered a legal entity with respect to a Municipal Drain, the structure (or parts thereof) shall be identified within previous By-laws of the drain.

In general terms, the landowners present were advised that an enclosure consists of an access bridge portion, along with a lawn piping portion. The ratepayers were advised that a minimum standard top width of the access driveway is typically 6.10 metres (20.00 ft.). As a result, the access portion of the enclosure shall consist of the equivalent culvert length to facilitate the minimum standard driveway top width for the access portion. They were further advised that if the existing bridge portion of the enclosure is a legal entity with respect to the Dolphis Meloche Drain, the replacement of the access portion would be subject to cost-sharing with upstream lands and roads. However, the lawn piping portion of the enclosure shall be assessed to those lands which benefit from its existence. Furthermore, if an access bridge top width is required (or requested) wider than the standard 6.10 metres (20.00 ft.), the additional cost for providing a top width wider than the standard, is typically assessed 100% to the benefitting property owner(s).

Based on Mr. McVitty's findings and the details provided by Mr. Peralta, it was determined that it would be prudent to review each access bridge and enclosure structure to determine its status and condition. As a result, we confirmed that all structures within the Dolphis Meloche Drain shall be reviewed and recommendations shall be provided for each. Mr. McVitty further requested that consideration of future maintenance provisions be included for each structure.

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 works under this project 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. The landowners were advised that it was likely that the works in the drain were not to be undertaken between March 15th and July 15th, 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. Mr. Peralta further advised that all landowners with access structures within the Dolphis Meloche Drain will be contacted prior to the preparation of the Engineer's Report to review the findings and discuss the recommendations.

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 Dolphis Meloche Drain from its outlet into the Long Marsh Drain, upstream to its top-end at the midpoint of Lot 11, Concession 3.

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 and enclosures. 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 structure. We also took cross-sections of the Dolphis Meloche Drain at the general location of the access structure 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 Dolphis Meloche Drain. Specifically, we utilized the governing "Dolphis Meloche Drain" Report prepared by E.O. LaFontaine, P.Eng., dated May 30th, 1997, 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 Dolphis Meloche 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 structures but also provided us with 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 allow the Municipality 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 Municipalities 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 structure designs.

VI. SUBSEQUENT ON-SITE MEETING AND REVIEW WITH LANDOWNERS

Based on the established scope of work identified at the On-Site Meeting, we have conducted a thorough review of each structure within the open drain and established our preliminary findings and recommendations associated with this project. However, due to the slow progression of this project, the number of landowners changes within the watershed, and the lack of participation at the initial On-Site Meeting, we felt it would be prudent to schedule a second On-Site Meeting with all affected landowners to ensure that they are aware of the current Municipal Drain project and understand their level of participation, together with its potential implications to each landowner. Due to the ongoing novel coronavirus (COVID-19) pandemic, in-person meetings were not permitted. Therefore, through consultation with Town Staff, a virtual meeting was scheduled utilizing video conferencing technology on May 14th, 2021 with the affected stakeholders to review and discuss the general project details. The following people were in attendance:

Joe & Melody Bezaire	Landowners
Jason & Rebecca Mortimer	Landowners
Cody Vincent	Landowner
Richard Bastien	Landowner
Brea Dupuis	Landowner
Shane McVitty, P.Eng.	Amherstburg's Drainage Superintendent
Kory Snelgrove, P.Eng.	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 this second meeting has been scheduled to provide an update on the progression of this project and an opportunity for those who were not present at the initial meeting to provide their input. Mr. McVitty further provided a general overview of the initial request for improvements and his findings during maintenance performed on the drain.

Mr. Peralta first apologized for the slow progression of this project. Since a great deal of time had elapsed and a lack of landowner participation at the initial On-Site Meeting, Mr. Peralta provided a detailed recap of the initial On-Site Meeting and the scope of work that was established. These details included a summary of a Municipal Drain through the Drainage Act, the status of access bridges and enclosures and their cost implications, environmental considerations, along other details related to the project. Mr. Peralta emphasized that this meeting was intended to ensure that each affected landowner was aware of the project and to identify the potential cost implications through the Drainage Act.

Mr. Peralta advised that a preliminary evaluation had been conducted on all structures relative to the existing condition, status, and sizing. As such, a general summary of his findings

and recommendations were provided. Due to the number of structures within the drainage system, Mr. Peralta felt that it may be advantageous to review the specific details of each structure individually with the affected structure owner(s) to discuss the findings, recommendations and cost implications of each.

Mr. Peralta opened up discussions with each landowner and requested that they provide their comments and concerns related to the information provided and the overall intended drainage improvements. They are as follows:

1. Mr. Mortimer had inquired regarding the baseline for cost estimates and cost-sharing and ultimately requested that these values be presented as part of this meeting. Mr. Peralta identified that at this point in the project, general costs have been evaluated. However, the final values will be based on the final review and direction of each affected structure owner. For instance, if an affected structure owner chose to remove or extend the existing structure, the cost estimates would drastically change. Therefore, Mr. Peralta felt that, at this stage of the project, it would be more appropriate to discuss and review these details individually before sharing this information. However, Mr. Peralta noted that once all of the details have been established, the completed Engineer's Report will provide detailed information on cost estimates and cost distribution, for each owner to review. This information will further be presented in front of the Town of Amherstburg's Drainage Board for each landowner to express their concerns and/or appeals.

2. Ms. Dupuis emphasized that she and her fiancé had recently purchased the property and had not been given any notification for this meeting, nor were they notified that this project was initiated and would be responsible for additional costs related to the property. Mr. McVitty clarified that it is very likely that due to the recent purchase of the property, the Town's parcel information may not have been updated. Mr. McVitty and Mr. Peralta explained that ongoing Municipal Drain projects are not typically identified on "Title", through the Land Title Act or Land Registry Act. However, it is common practice for Real Estate Lawyers to inquire to the Municipality regarding any encumbrances on a property being purchased. Unfortunately, many Lawyers fail to make such inquiries.

3. Mr. Bezaire noted that he understands that the most recent By-law dates back to 1997, which is less than 25 years old. He was under the understanding that steel culvert materials have a service life far exceeding 25 years. As such, he inquired whether there would be a warranty for culvert materials. Mr. Peralta explained that, although recent works on the drain were conducted in 1997, the majority of the drainage structures were installed in previous years. Most of which were initially installed within the 1961 report.

4. Mr. Mortimer shared a PowerPoint presentation on galvanized steel culvert materials and felt that based on his evaluation, his culvert has sufficient life remaining. Mr. Peralta appreciated Mr. Mortimer's presentation and emphasized that a majority of the culverts were installed over a fifty (50) year span. Over those 50 years, material standards have changed and evolved and materials used 50 years ago are not the same materials that are used today. In regards to Mr. Moriter's specific culvert evaluation, Mr. Peralta advised that he can review his findings separately with Mr. Mortimer following this meeting.

5. Mr. Mortimer suggested that the Town of Amherstburg should evaluate all structures within the Municipality to create a program to amortize costs on general taxes for each parcel. Mr. McVitty appreciated the recommendations. However, he further explained that each Municipal Drain has been established through Municipal By-law and the infrastructure varies drastically, with different timelines, purposes, and needs. Mr. McVitty explained that it would be a massive undertaking to conduct this evaluation and the outcome of this evaluation would likely not be feasible.

6. Mr. Vincent asked whether every access bridge or enclosure is being replaced as part of this project. Mr. Peralta advised that based on his review, not all structures will be replaced as part of this project. However, in an effort to reduce the need for future Engineer's Reports, future maintenance provisions will be included as part of the report to address all existing structures within the Dolphis Meloche Drain.

Towards the conclusion of the meeting, general discussion regarding the overall drainage report and future maintenance processes, general timelines, and grant eligibility were reviewed. At the conclusion of the meeting, Mr. Peralta reiterated that we would contact all landowners with access structures within the Dolphis Meloche 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.

VII. MINIMUM DESIGN REQUIREMENTS

Municipal Drains were installed based on the requirements, guidelines, land use and the desired level of service required at the time of their installation. Based on a historical review of Municipal Drains in Essex County, drainage systems were typically designed to a level of service equal to (or below) the modern 2-year return period (50% chance of occurring each year). With time and evolution, design standards change to meet current climate conditions, design requirements, and improved materials, together with changes to the landscape within the watershed. As such, the replacement of existing drainage infrastructure may require improvements to meet current standards and guidelines.

"A Guide for Engineers Working Under the Drainage Act in Ontario" - O.M.A.F.R.A. Publication 852 (2018), is the current reference documentation used by Engineer's carrying out work on Municipal Drains through provisions of the Drainage Act. Based on this document, the minimum 2-year return period (50% chance of occurring each year) storm is the recommended design standard applied to Municipal Drains within rural Ontario specific to open drain channels and low hazard agricultural access crossings. The exception is for residential, industrial and commercial properties where flooding could create significant damage to the surrounding properties. Therefore, a higher 5 to 10-year return period storm design could be utilized. Based on the land use of this rural-based watershed and the parameters of the subject site, the minimum design standard used for the open drain and drainage structures of this project shall meet a minimum 5-year return period (20% chance of occurring each year) storm design criteria.

For culverts on Municipal Drains crossing Municipal Roads, a 10-year return period (10% chance of occurring each year) storm is the recommended design criteria.

VIII. 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 Dolphis Meloche Drain is located within the regulated area and is under the jurisdiction of the E.R.C.A. Therefore, an E.R.C.A. Permit is required for the construction of the subject access 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 were "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 Dolphis Meloche 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 Dolphis Meloche 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.) has 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 Municipality to conduct the 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 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.

Dolphis Meloche Drain Improvements

Based on our detailed survey, investigations, examinations, discussions and review with the affected Owners, we offer the following findings and recommendations relative to the drainage works to be carried out within the Dolphis Meloche Drain.

Per the request of the Town's Drainage Superintendent, Mr. Shane McVitty, P.Eng., we had reviewed and analyzed the existing open drain design parameters of the Dolphis Meloche Drain. We find that the Engineer's Report prepared by E.O. LaFontaine, P.Eng., dated May 30th, 1997 for the improvements to the entire length of the Dolphis Meloche Drain within the former Township of Anderdon, currently governs the design parameters for this drain. Upon our review of these reports, we find that this drain conveys water with relatively flat grades for the majority of the drain length. We further find that the drain cross-section includes a bottom width that varies between 0.80 metres (2.62 feet) to 1.00 metres (3.28 feet) throughout the course of the drain. We also find that the design side slopes have been established at a 2.00 Horizontal to 1.00 Vertical slope throughout.

Upon our review of the report design grades and cross-sections, we find that adjustments were required to the design gradient to better fit the existing parameters of the drain and existing culverts. Based on the above, we have included a new design profile of the Dolphis Meloche Drain from its outlet into the Long Marsh Drain at Station 0+000.0, to the upper end of the Dolphis Meloche Drain at Station 1+279.3. These stations coincide with that of the governing report prepared by E.O. LaFontaine, P.Eng., dated May 30th, 1997. The profile provided herein is intended for

future maintenance purposes, and **no work of excavation is to be performed under this project.** Further to our review of the drain parameters and governing reports, we have found that there are changes to the affected lands within the drain's watershed, as a result of property severances. Taking into consideration of these new properties within the current watershed, we have included an updated Maintenance Schedule of Assessment within this report for the distribution of costs relative to future maintenance works. This Maintenance Schedule of Assessment is included herein as **Appendix "D"**.

Dolphis Meloche Drain Bridges, Road Crossing, and Enclosure Improvements

As part of our survey work, we also investigated all of the bridges, enclosures, and road crossings along the full length of the Dolphis Meloche Drain. We find that all of the structures within the Dolphis Meloche Drain were identified within the various Engineer's Reports previously mentioned. However, in order to establish a basis for replacement or improvement to each structure, we reviewed and analyzed each structure based on the following criteria:

1. The vintage of each structure.
2. The condition of the existing culvert and headwalls.
3. The culvert size and the capacity requirements.
4. The invert elevations of the culvert pipe relative to the design grade.

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

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

Enclosure ① - Shawn Bullock and Christie Bondy [Parcel 2], Brody Blanchette and Brea Dupuis [Parcel 3] and Jason & Rebecca Mortimer [Parcel 4]

The existing enclosure extends from Station 1+202.2 to Station 1+276.7, serving as the primary access and lawn piping to the residential lands of Shawn Bullock and Christie Bondy [Parcel 2], Brody Blanchette and Brea Dupuis [Parcel 3], and Jason & Rebecca Mortimer [Parcel 4], within Lot 11, Concession 3. This existing enclosure has a total length of 74.50 metres (244.42 ft.). This structure has further been labelled herein as **Enclosure ①**.

The upstream portion, from Station 1+229.2 to Station 1+276.7 and along the frontage of Parcel 2 and Parcel 3, was initially installed as part of the May 18th, 1961 Engineer's Report prepared by C.G.R. Armstrong, P.Eng. Under this report, a combined total of approximately 47.50 metres (156.00 ft.) of 600mm (24") corrugated steel pipe was installed. This portion of the enclosure was further identified within the 1967, 1983, and 1997 By-laws with similar culvert sizes, lengths, and materials. Therefore, the upstream portion of the enclosure, from Station 1+229.2 to Station 1+276.7 shall be considered a legal entity with respect to the Dolphis Meloche Drain. The remaining downstream portion of Enclosure ①, extending from Station 1+202.2 to Station 1+229.2 and along the frontage of Parcel 4, has never been identified within any of the previous By-laws and this portion of the drain was recognized as an open drain. Therefore, this portion of the existing Enclosure ① is currently not considered a legal entity with respect to the Dolphis Meloche Drain.

Based on our review of the structure's history, the upstream portion from Station 1+229.2 to Station 1+276.7 and along the frontage of Parcel 2 and Parcel 3 has never been replaced since its initial installation in 1961. This portion of the enclosure consists of 47.50 metres (156.00 ft.) of a 600mm (24") corrugated steel pipe with vertically stacked concrete jutebag headwall, which provides adequate travelled driveway top width and suitable protection for the existing homes. In regards to physical details, we find that this portion of the enclosure is adequately sized with respect to the minimum 1:5-year peak storm event and is set to an appropriate elevation and grades. However, this portion of the culvert and headwall was found to be in poor physical condition and has reached the end of its serviceable lifespan.

In regards to the downstream portion extending from Station 1+202.2 to Station 1+229.2 and along the frontage of Parcel 4 was installed sometime after the 1997 governing By-Law. This portion consists of 27.00 metres (88.58 ft.) of a 600mm (24") corrugated steel pipe with a vertical poured concrete headwall at the north end, which provides an adequate travelled driveway top width and suitable protection for the existing property. In regards to its physical details, we find the existing portion of the enclosure to be adequately sized with respect to the minimum 1:5-year peak storm event and set to an appropriate elevation and grades. Based on these details, we find that this portion of the enclosure is in fair physical condition with years of serviceable life remaining. Although this existing portion of the enclosure is in fair condition, the existing enclosure structure differs from the governing By-law. With this structure in fair physical condition and with no improvements required to this structure at this time, we are prepared to make this portion of the enclosure a legal entity within this drain, under this report. In doing so, this portion of the existing enclosure shall be maintained in the future by the Town of Amherstburg and provisions have been made within this report to address future maintenance and/or replacement of this portion of the enclosure.

The details of our findings were shared with each of the affected property owners utilizing Enclosure ①. Further to our discussions and site meeting, we reviewed the details of the enclosure replacement for the upstream portion from Station 1+229.2 to Station 1+276.7. Through these discussions, the affected owners confirmed that they prefer that the upstream enclosure portion be replaced with a similar driveway and enclosure top width using the most economical materials and end treatments available. Based on our review of the enclosure, we found that the boulevard between Parcel 2 and Parcel 3 was generally lower than the adjacent lands. As such, we recommended that an offset catch basin be installed to collect the adjacent surface runoff. Upon review with the affected landowners, the affected property owners confirmed that they prefer not to install the catch basin as they felt that it was not required. Based on our review, we recommend that the upstream portion of the existing enclosure shall be replaced with 48.00 metres (157.48 ft.) of 450mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe, together with sloped quarried limestone end treatment, while matching the existing driveway top widths. We further recommend a 600mm x 1200mm ditch inlet catch basin be connected to the retained portion of the downstream section. Upon the completion of the proposed improvements, the resulting enclosure shall have a total length of 75.60 metres (248.03 ft.). As a result of these discussions, this report and the works proposed herein have been prepared on that basis.

As part of the 1961 By-Law, the necessary repair to address the deficiencies of the Dolphis Meloche Drain would have a considerable impact on the roadway, at that time. Therefore, the Municipal Drain was relocated off the Municipal Road allowance and onto private property. With the need to relocate the drain to reside adjacent to the existing homes, the lawn piping portion from Station 1+229.2 to Station 1+276.7 was installed for the benefit of the roadway and assessed entirely to the Road Authority. As a legal entity with respect to the Dolphis Meloche Drain, we recommend that the cost to replace the existing upstream portion of the enclosure between Station 1+229.2 to Station 1+276.7, for the equivalent standard access portion of the enclosure be shared with the access users and all lands and roads within the drain watershed, upstream of this structure. The remaining lawn piping portion of the enclosure is required for the benefit of the roadway for the continued protection of the adjacent lands as a result of the current drain alignment that facilitates the needs of the roadway. As such, the costs associated with the lawn piping portion of this enclosure shall be assessed to the Town of Amherstburg, as the governing Road Authority. These details have been summarized within the **Construction Schedule of Assessment** included in this report. Furthermore, as part of this report, provisions have also been made to address future maintenance and/or replacement of the entire structure.

Enclosure ② - Joseph & Melody Bezaire [Parcel 5]

The existing enclosure extends from Station 1+155.4 to Station 1+183.8, serving as the primary access and lawn piping to the residential lands of Joseph & Melody Bezaire [Parcel 5] within Lot 11, Concession 3. The existing enclosure has a total length of 28.40 metres (93.18 ft.). This structure has further been labelled herein as **Enclosure ②**.

This access and lawn piping portion of this enclosure was initially installed in its entirety as part of the May 18th, 1961 Engineer's Report prepared by C.G.R. Armstrong, P.Eng. Under this report, approximately 26.82 metres (88.00 ft.) of 600mm (24") corrugated steel pipe was installed. This enclosure was further identified within 1967, 1983, and 1997 By-laws with similar culvert sizes, lengths, and materials. Therefore, the entire length of this enclosure shall be considered a legal entity with respect to the Dolphis Meloche Drain.

Based on our review of the structure's history, this enclosure has never been replaced since its initial installation in 1961. The existing enclosure consists of 28.40 metres (93.18 ft.) of a 600mm (24") corrugated steel pipe with vertical stacked concrete jutebag headwalls, which provides an adequate travelled driveway top width and suitable protection for the existing property. We find the existing culvert to be adequately sized with respect to the minimum 1:5-year peak storm event. However, the culvert and headwalls were found to be in poor physical condition and have reached the end of its serviceable lifespan. Based on our evaluation, we recommend that this structure be replaced as part of this report.

Through our discussions with the Owner of Parcel 5, Mr. Joseph Bezaire, he advised that he prefers that this enclosure be replaced with a similar driveway and enclosure top width using the most economical materials and end treatments available. Based on our review, we recommend that the existing enclosure shall be replaced with 30.00 metres (98.43 ft.) of 450mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe, together with sloped quarried limestone end treatments and matching the existing driveway top width. As a result of these discussions, this report and the works proposed herein have been prepared on that basis.

As part of the 1961 By-law, the necessary repair to address the deficiencies of the Dolphis Meloche Drain would have a considerable effect on the roadway, at that time. Therefore, the Municipal Drain was relocated off the Municipal Road allowance and onto private property. With the need to relocate the drain to reside adjacent to the existing homes, the lawn piping portion was installed for the benefit of the roadway and assessed entirely to the Road Authority. As a legal entity with respect to the Dolphis Meloche Drain, we recommend that the cost for the equivalent standard access portion of the enclosure be shared by the access user and all lands and roads within the drain watershed, upstream of this structure. The remaining lawn piping portion of the

enclosure is required for the benefit of the roadway, for the continued protection of the adjacent lands as a result of the current drain alignment that facilitates the needs of the roadway. As such, the costs associated with the lawn piping portion of this enclosure shall be assessed to the Town of Amherstburg, as the governing Road Authority. These details have been summarized within the **Construction Schedule of Assessment** included in this report. Furthermore, as part of this report, provisions have also been made to address future maintenance and/or replacement of the entire structure.

Enclosure ③ - John & Bernadette Beaudoin [Parcel 6]

The existing enclosure extending from Station 1+067.0 to Station 1+128.1 serves as the primary access and lawn piping to the agricultural lands of John & Bernadette Beaudoin [Parcel 6] within Lot 11, Concession 3. The existing enclosure has a total length of 61.10 metres (200.46 ft.). This structure has further been labelled herein as **Enclosure ③**.

The original downstream portion of this enclosure, from Station 1+067.0 to approximately Station 1+093.8, was initially installed as part of the May 18th, 1961 Engineer's Report prepared by C.G.R. Armstrong, P.Eng. Under this report, approximately 26.80 metres (87.93 ft.) of 600mm (24") corrugated steel pipe was installed. This portion of the enclosure was further identified within the 1967 By-law with similar culvert sizes, lengths, and materials. According to the Engineer's Report dated September 1983, prepared by D.A. Averill, P.Eng., an extension was added to the original enclosure that included approximately 36.60 metres (120.08 ft.) of 750mm (30") corrugated steel pipe. This extension was installed on the upstream portion from approximately Station 1+093.8 to Station 1+128.1. The entire length of this enclosure was further identified within the 1997 By-law. Therefore, the entire length of this enclosure shall be considered a legal entity with respect to the Dolphis Meloche Drain.

Although the governing reports include a combined total of 63.40 metres (208.00 ft.) of culvert length, the existing enclosure currently consists of 61.10 metres (200.46 ft.) of 600mm (24") and 750mm (30") diameter corrugated steel pipes with vertical stacked concrete jutebag headwalls. This enclosure provides an adequate travelled driveway top width and suitable protection for the existing property. We find the existing culvert to be adequately sized with respect to the minimum 1:5-year peak storm event. Through our review, we found that the culvert was found to be in fair condition throughout. However, the headwalls were found to be in poor physical condition and had collapsed into the open drain. Based on our review of the previous By-laws, there is no indication that the original portion of the enclosure has been replaced through an Engineer's Report since its initial installation in 1961. However, the original enclosure portion appears to be in a similar condition to the extension portion installed in 1983. Therefore, it is very likely that the original

culvert section may have been replaced under maintenance around the same time as the enclosure extension in 1983. Based on our evaluation, and the general condition of this enclosure, we recommend that only the end treatments of the structure be replaced as part of this report.

Through our discussions with Owner of Parcel 6, Ms. Bernadette Beaudoin, she was advised that the existing culverts have life remaining and was not in need of replacement at this time. However, it was recommended that the end treatments be replaced/restored to sufficiently protect the enclosure from erosion. Ms. Beaudoin confirmed that she would prefer that the headwalls be replaced using the most economical materials and end treatments available. Based on our review, we recommend that the failing stacked concrete jutebag headwalls be removed and replaced with sloped quarried limestone end treatments. As a result of these discussions, this report and the works proposed herein have been prepared on that basis.

As part of the 1961 By-law, the necessary repair to address the deficiencies of the Dolphis Meloche Drain would have a considerable effect on the roadway, at that time. Therefore, the Municipal Drain was relocated off the Municipal Road allowance and onto private property. With the need to relocate the drain to reside adjacent to the existing homes, the downstream lawn piping portion from Station 1+067.0 to approximately Station 1+093.8 was installed for the benefit of the roadway and assessed entirely to the Road Authority. As part of the 1983 By-law, this enclosure was extended upstream for the sole benefit of the adjacent property owner and the cost for this extension shall be assessed entirely to this property. As a legal entity with respect to the Dolphis Meloche Drain, we recommend that the cost for the new end treatment installation be shared by the access users and all lands and roads within the drain watershed, upstream of this structure. These details have been summarized within the **Construction Schedule of Assessment** included in this report. As part of this report, provisions have also been made to address future maintenance and/or replacement of this structure.

Bridge ④ - Raymond Bastien [Parcel 9]

The existing access bridge extending from Station 0+967.7 to Station 0+974.2, serves as the primary access to the agricultural lands of Raymond Bastien [Parcel 9], within Lot 12, Concession 3. Although this access bridge was not constructed within the 1961 report, it was accepted and lowered as part of the May 12th, 1967 Engineer's Report prepared by C.G.R. Armstrong, P.Eng. This bridge was further identified within the 1983 and 1997 By-laws. Therefore, this bridge is currently a legal entity with respect to the Dolphis Meloche Drain. This structure has further been labelled herein as **Bridge ④**

This existing culvert consists of 6.50 metres (21.33 ft.) of a 750mm (30”) corrugated steel pipe vertical stacked concrete jutebag headwalls, which provide approximately 5.10 metres (16.73 ft.) of travelled top width. We find the existing culvert is slightly undersized with respect to the minimum 1:5-year peak storm event. Additionally, the entire access bridge is found to be in poor physical condition and has reached the end of this serviceable lifespan. Based on our evaluation, we recommend that this structure be replaced as part of this report.

Through our discussions with the Parcel 9 representative, Mr. Richard Bastien, we were advised that he would like to see the 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 minimum of 9.14 meters (30.00 ft.) 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 16.00 metres (52.49 ft.) of 900mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe, together with sloped quarried limestone end treatments resulting in a driveway top width of approximately 9.90 metres (32.48 ft.). As a result of these discussions, this report and the works proposed herein have been prepared on that basis.

With this structure deemed a legal entity with respect to this Municipal Drain, the costs for the standard 6.10 metres (20.00ft.) access bridge top width be shared by the adjoining Bridge Owner and the lands and roads within the watershed, located upstream of this structure. The additional top width, beyond the 6.10 metres (20.00 ft.), shall be assessed entirely to the Bridge Owner. These details have been summarized within the **Construction Schedule of Assessment** included in this report. As part of this report, provisions have also been made to address future maintenance and/or replacement of this structure.

Enclosure ⑤ - Richard Bastien [Parcel 7] and Raymond & Michelle Bastien [Parcel 8]

The existing enclosure extending from Station 0+823.9 to Station 0+912.9 serves as the primary access and lawn piping to the residential lands of Richard Bastien [Parcel 7] and Raymond & Michelle Bastien [Parcel 8] within Lot 12, Concession 3. The existing enclosure has a total length of 89.00 metres (292.00ft.). This structure has further been labelled herein as **Enclosure ⑤**.

The original upstream portion of this enclosure, from approximately Station 0+890.6 to Station 0+912.9, was initially installed as part of the May 18th, 1961 Engineer’s Report prepared by C.G.R. Armstrong, P.Eng. Under this report, approximately 22.30 metres (73.16 ft.) of 760mm (30”) corrugated steel pipe was installed. This portion of the enclosure was further identified within the 1967, 1983 and 1997 By-laws with similar culvert sizes,

lengths, and materials. According to the Engineer's Report dated May 30th, 1997, prepared by E.O. LaFontaine, P.Eng., a new enclosure consisting of 60.00 metres (196.85 ft.) of 1000mm (39") corrugated steel pipe be installed along the frontage of the Richard Bastien [Parcel 7] property. This new enclosure was installed downstream of the original enclosure previously identified and located between Station 0+823.9 to approximately Station 0+883.9. Therefore, the full length of the two enclosures identified within the previous By-laws shall be considered a legal entity with respect to the Dolphis Meloche Drain. The governing 1997 report also illustrated a small portion of open drain that remained between the two enclosures located at approximately Station 0+883.9 to Station 0+890.7 and having a length of 6.70 metres (21.98 ft.). At some point following the 1997 report, it appears that the remaining open drain portion between the two enclosures had been enclosed without the auspices of the Drainage Act. As such, this portion is currently not considered a legal entity with respect to the Dolphis Meloche Drain.

The entire length of the existing enclosure currently consists of 89.00 metres (292.00 ft.) of 760mm (30") and 1000mm (39") diameter corrugated steel pipes with vertical stacked concrete jutebag headwalls. Based on our review of the structure's history, the original upstream portion from approximately Station 0+890.7 to Station 0+912.9 and along the frontage of Richard Bastien [Parcel 7] has never been replaced since its initial installation in 1961. This portion of the enclosure consists of 22.30 metres (73.16 ft.) of a 760mm (30") corrugated steel pipe with a vertically stacked concrete jutebag headwall at the south end which provides adequate travelled driveway top width and suitable protection for the existing property. In regards to physical details, we find that this portion of the enclosure is adequately sized with respect to the minimum 1:5-year peak storm event and is set to an appropriate elevation and grades. However, this portion of the culvert and headwall was found to be in poor physical condition and has reached the end of this serviceable lifespan.

In regards to the downstream portion extending from Station 0+823.9 to approximately Station 0+890.7 and along the frontage of Raymond & Michelle Bastien [Parcel 8], together with the short section enclosed after the 1997 Report consists of 66.70 metres (218.83 ft.) of a 1000mm (39") corrugated steel pipe with a concrete-filled jute bag headwall at the north end. This portion of the enclosure provides an adequate travelled driveway top width and suitable protection for the existing property. In regards to its physical details, we find the existing portion of the enclosure to be adequately sized with respect to the minimum 1:5-year peak storm event and set to an appropriate elevation and grades. Based on these details, we find that this portion of the enclosure is in fair physical condition with years of serviceable life remaining. The existing short portion between the identified enclosures differs from the governing By-Law. With this short portion in fair physical condition and with no improvements required at this time, we are prepared to make this portion of the enclosure a legal entity within this drain, under this report. In doing so, this

portion of the existing enclosure shall be maintained in the future by the Town of Amherstburg and provisions have been made within this report to address future maintenance and/or replacement of this portion of the enclosure.

Through our discussions with the Owner of Parcel 7 and representative of Parcel 8, Mr. Richard Bastien, he confirmed that he would like to see the upstream portion of this enclosure be replaced with a similar driveway and enclosure top width using the most economical materials and end treatments available. Based on our review, we recommend that the upstream portion of the existing enclosure shall be replaced with 23.00 metres (75.46 ft.) of 900mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe between Station 0+890.7 and Station 0+913.7, together with sloped quarried limestone end treatment, and matching the existing driveway top width. Upon the completion of these improvements, the resulting enclosure shall have a total length of 89.90 metres (294.95 ft.). As a result of these discussions, this report and the works proposed herein have been prepared on that basis.

As part of the 1961 By-law, the necessary repair to address the deficiencies of the Dolphis Meloche Drain would have a considerable effect on the roadway, at that time. Therefore, the Municipal Drain was relocated off the Municipal Road allowance and onto private property. With the need to relocate the drain to reside adjacent to the existing homes, the downstream lawn piping portion from Station 0+890.7 to Station 0+913.7 was installed for the benefit of the roadway and assessed entirely to the Road Authority. As part of the 1997 By-law, together with the portion subsequently added, this enclosure was extended downstream for the sole benefit of the adjacent property owners and the cost for this extension shall be assessed entirely to these properties. As such, the costs associated with the lawn piping portion of this enclosure shall be assessed to the Town of Amherstburg, as the governing Road Authority. These details have been summarized within the **Construction Schedule of Assessment** included in this report. Furthermore, as part of this report, provisions have also been made to address future maintenance and/or replacement of the entire structure.

Road Crossing ⑥ - Town Of Amherstburg For Concession 3 North

The existing road crossing extending from Station 0+802.7 to Station 0+820.5, across Concession 3 North, was installed as part of the May 30th, 1997 Engineer's Report prepared by E.O. LaFontaine, P.Eng. Therefore, this structure is considered a legal entity with respect to the Dolphis Meloche Drain. The existing road crossing culvert consists of 17.80 metres (58.40 ft.) of a 1200mm corrugated steel pipe with vertical stacked concrete-filled jutebag headwalls. This road crossing provides an adequate travelled top width for Concession 3 North.

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 **Road Crossing ⑥.**

Bridge ⑦ - Raymond Bastien [Parcel 18]

The existing access bridge extending from Station 0+007.4 to Station 0+017.6, serves as the primary access to the agricultural lands of Raymond Bastien [Parcel 18], within Lot 12, Concession 2. This access bridge was constructed pursuant to an Engineer's Report dated May 30th, 1997 Engineer's Report prepared by E.O. LaFontaine, P.Eng. Therefore, this structure is currently a legal entity with respect to the Dolphis Meloche Drain. This existing culvert consists of 10.20 metres (33.46 ft.) of a 1390mm span x 970mm rise corrugated steel pipe arch with vegetative end treatments, which provides approximately 6.80 metres (22.31 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 ⑦.**

SUMMARY

In summary, we have reviewed all of the existing structures within the Dolphis Meloche Drain and provided our recommendations as detailed herein, which include improvements to **Enclosure ①**, **Enclosure ②**, **Enclosure ③**, **Bridge ④**, and **Enclosure ⑤** 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 2021".

IX. ALLOWANCES AND COMPENSATION

All of the work carried out under this project is located within and adjacent to the Concession 3 North 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 under Sections 29 and 30 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

X. ESTIMATE OF COSTS

Our estimate of the Total Cost of this work, including all incidental expenses, is the sum of **ONE HUNDRED SEVENTY-FIVE THOUSAND THREE HUNDRED NINETEEN DOLLARS ($175,319.00)**, made up as follows:

CONSTRUCTION

Item 1) **Enclosure ① (Sta. 1+229.6 to Sta. 1+277.8)**;

Excavate, completely remove and dispose of existing enclosure culvert and end treatments; Provide all labour and equipment to construct a new enclosure consisting of 48.00 metres (157.48 ft.) of 450mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe with water-tight gasketed joining system, including sloped quarried limestone end treatment, 600mm x 1200mm pre-cast concrete ditch inlet catch basin, 1.90 metres deep, with galvanized steel honeycomb grate with horizontal grade, installation of floatation anchors, granular bedding, granular backfill within driveway limits, granular transition, native backfill within lawn piping portion, excavation, compaction, swale grading, topsoil, seeding and mulching, clean-up and restoration, complete. Lump-Sum $ 41,900.00

Item 2) **Enclosure ② (Sta. 1+155.2 to Sta. 1+185.2)**;

Excavate, completely remove and dispose of existing enclosure culvert and end treatments; Provide all labour and equipment to construct a new enclosure consisting of 30.00 metres (98.43 ft.) of 450mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe with water-tight gasketed joining system, including sloped quarried limestone end treatment, installation of floatation anchors, granular bedding, granular backfill within driveway limits, granular transition, native backfill within lawn piping portion, excavation, compaction, swale grading, topsoil, seeding and mulching, clean-up and restoration, complete. Lump-Sum $ 23,400.00

Item 3) **Enclosure ③ (Quarried Limestone End Protection)**;

Excavate, completely remove and dispose of existing end treatments; Provide all labour and equipment to supply and install 300mm thick quarried limestone erosion protection on non-woven geotextile filter cloth on each end of the existing enclosure, including excavation, placement, grading, complete.

Lump-Sum $ 4,000.00

Item 4) **Bridge ④ (Sta. 0+960.9 to Sta. 0+976.9)**;

Excavate, completely remove and dispose of the existing corrugated steel pipe, end treatments, and all deleterious materials; Provide all labour, equipment and materials to construct a new access bridge consisting of 16.00 metres (52.49 ft.) of 900mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe with water-tight gasketed joining system, including sloped quarried limestone end treatment, installation of floatation anchors, granular bedding and backfill, granular approaches and transitions, excavation, compaction, clean-up and restoration, complete. Lump-Sum $ 24,200.00

Item 5) **Enclosure ⑤ (Sta. 0+891.0 to Sta. 0+914.0)**;

Excavate, completely remove and dispose of existing enclosure culvert and end treatments; Provide all labour and equipment to construct a new enclosure consisting of 23.00 metres (75.46 ft.) of 900mm diameter, 320kPa Smoothwall High Density Polyethylene (H.D.P.E.) plastic pipe with water-tight gasketed joining system, including sloped quarried limestone end treatment, connections, installation of floatation anchors, granular bedding, granular backfill within driveway limits, granular transition, native backfill within lawn piping portion, excavation, compaction, swale grading, topsoil, seeding and mulching, clean-up and restoration, complete. Lump-Sum $ 28,700.00

Item 6) Net H.S.T. for above items (1.76%) $ 2,151.00

TOTAL FOR CONSTRUCTION **$124,351.00**

INCIDENTALS

1)	Report, Estimates, & Specifications	$ 17,100.00
2)	Survey, Assistants, Expenses, and Drawings	$ 14,000.00
3)	Review future maintenance provisions for Structures and Provide an Updated Maintenance Schedule	$ 4,500.00
4)	Re-establish Profile Grades	$ 2,000.00
5)	Duplication Costs of Report and Drawings	$ 1,000.00
6)	Estimated Cost of Preparing Tender Documents, Tender process on an invitation basis, and Tender review	$ 1,500.00
7)	Estimated Cost of Providing Supervision and Full-Time Inspection During Construction for Installations and Removal (Based on a 2-week duration)	$ 9,200.00
8)	Estimated Net H.S.T. on Above Items (1.76%)	$ 868.00
9)	Estimated Cost for E.R.C.A. Permit	$ 800.00
	TOTAL FOR INCIDENTALS	**$ 50,968.00**
	TOTAL FOR CONSTRUCTION (brought forward)	**$124,351.00**
	TOTAL ESTIMATE	**$175,319.00**

XI. DRAWINGS AND SPECIFICATIONS

As part of this report, we have attached a design drawing for the Dolphis Meloche Drain Improvements. The design drawing shows the alignment of the Dolphis Meloche Drain, and the approximate location of all structures 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. 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.

We have also 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 structures, labelled herein as **Appendix "B"**.

XII. COST DISTRIBUTION AND CONSTRUCTION ASSESSMENT RATIONALE

We would recommend that all of the costs associated with the construction of the improvements to the Dolphis Meloche 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 structure sites and use the Dolphis Meloche Drain for drainage purposes.

Assessment Components

The total individual assessments within the Schedules of Assessment comprise 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 decreased run-off factor applied to their assessment.

As it relates to the replacement of **Enclosure ①**, **Enclosure ②**, and **Enclosure ⑤**, these structures include an access portion and lawn piping portions. These structures have been established as legal entities with respect to the Dolphis Meloche Drain. As a legal entity with respect to this Municipal Drain, we recommend that the cost for the equivalent length of culvert to facilitate the standard access portion of the enclosure be shared by the access users and all lands and roads within the drain watershed, upstream of each structure. The sharing percentage between the access user and the upstream lands and roads affected by said enclosures has been established on the basis of where it is located relative to the entire reach of the drain. The access user's share is assessed within the Construction Schedule of Assessment as a Benefit Assessment and the affected upstream lands and roads share for a standard top width access are assessed as an Outlet Assessment. The remaining lawn piping portion of the enclosure, adjacent to the homesteads, shall be assessed to the Town of Amherstburg as a Benefit Assessment for the continued protection of the adjacent lands as a result of the current drain alignment that facilitates the needs of the roadway. All of same has been provided for within the Construction Schedule of Assessment included within this report. Therefore, the estimated construction plus incidental costs for the replacement of these enclosures shall be shared between the access user, the Road Authority, and all of the lands and roads that exist upstream of said access site and use the Dolphis Meloche Drain for drainage purposes.

As it relates to **Enclosure** ③, only minor improvements are recommended under this report that include the replacement of the existing end treatments. End treatments are considered part of the access portion of the enclosure and shall be assessed accordingly. As such, the cost associated with these improvements shall be shared by the access users and all lands and roads within the drain watershed, upstream of each structure. The sharing percentage between the access user and the upstream lands and roads affected by said enclosures has been established on the basis of where it is located relative to the entire reach of the drain. The access user's share is assessed within the Construction Schedule of Assessment as a Benefit Assessment and the affected upstream lands and roads share for a standard top width access are assessed as an Outlet Assessment.

As it relates to **Bridge** ④, this structure is also considered a legal entity with respect to the Dolphis Meloche Drain and serves as the primary access to the agricultural lands. Therefore, the estimated construction plus incidental costs for the standard 6.10 metres (20.00ft.) access bridge top width shall be shared between the structure user and all of the lands and roads that exist upstream of said structure sites and use the Dolphis Meloche Drain for drainage purposes. The additional top width, beyond the 6.10 metres (20.00 ft.), shall be assessed entirely to the Bridge Owner. The standard access bridge sharing percentage between the structure user and the upstream lands and roads affected by said structures has been established on the basis of where it is located relative to the entire reach of the drain. The structure user's share, including the cost for the added top width, 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 structures, included under this report be charged against the lands and roads affected in accordance with the attached Construction Schedule of Assessment included herein. In general, the lands and roads included in this Schedule of Assessment are all those lying upstream of each structure.

Re-Establishing Design Profile Grade

In addition to addressing the access structures within the Dolphis Meloche Drain, we have also reviewed and re-established the design grades for the entire length of the Dolphis Meloche Drain to coincide with the existing and/or proposed structures to maximize conveyance. The engineering costs for establishing the new profile design grades have been assessed to all lands and roads within the Dolphis Meloche Drain watershed per the governing Schedule of Assessment established within the May 30th, 1997 Engineer's Report prepared by E.O. LaFontaine, P.Eng. with the necessary adjustment to reflect the parcel changes since the time of this report. (less any Special Benefit costs).

Cost Sharing Provisions for Access Bridges

As it relates to the cost-sharing provisions for future work performed on each structure within this drain, all costs associated with the identification and preparation of the Future Maintenance Provisions of each structure have been assessed at a nominal value of $500.00 plus applicable net H.S.T. This value has been assessed in a similar fashion to that of the bridge/enclosures being replaced under this project and as further outlined within the subsequent "Future Maintenance" heading.

Agricultural Grants and Grant Eligibility

The Ontario Ministry of Agriculture, Food, and Rural Affairs (O.M.A.F.R.A.) has 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.

As part of this project, we have provided a separate **Maintenance Schedule of Assessment** for the Dolphis Meloche Drain. It should be noted that the preparation of a new Maintenance Schedule of Assessment under Section 76 of the Drainage Act is not normally eligible for the grant. However, pursuant to Section 2.3(e) of the "Agricultural Drainage Infrastructure Program: Administrative policies", where the cost of developing new Assessment Schedules are less than 25% of the engineering costs for the total project, the engineering cost expended towards the preparation of same shall be eligible for the grant. Since the engineering costs for the preparation of Maintenance Schedules of Assessment included herein are **less** than 25% of the overall engineering costs, we would expect that all of the agricultural assessments associated with the preparation of the new maintenance schedule **shall** be eligible for the grant.

We would recommend that the Municipality 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 2021" for any grants that may be available for this project. The Ministry is continually reviewing its 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.

Distribution of Unforeseen Costs (Special Assessments Section 26)

During construction, it may become necessary to temporarily or permanently relocate existing utilities that may conflict with the works outlined within this report. Under these circumstances, the relocation of these utilities shall be assessed any relocation costs against the public utility having jurisdiction in accordance with Section 26 of the Drainage Act. In accordance with Section 69 of the Drainage Act, the utility company is allowed the option to carry out this work utilizing their own forces and at their own cost. However, should they not exercise this option within a reasonable time, the Municipality may arrange to have this work completed and the costs for same shall be charged to the appropriate public utility. Furthermore, any unforeseen construction costs directly related to the Section 26 works shall be assessed entirely, as an extra, to the applicable Road Authority or Utility.

XIII. FUTURE MAINTENANCE

After the completion of the construction works under this project, all of same shall be maintained in the future by the Town of Amherstburg.

Dolphis Meloche Drain – Open Drain Maintenance

When future maintenance is performed on the open drain portions of the Dolphis Meloche Drain, we recommend that these works be conducted per the governing By-law established through the Engineer's Report prepared by E.O. LaFontaine, P.Eng., dated May 30th, 1997, together with the new profile established under this report, or subsequent amendments made thereto under the provisions of the Drainage Act. These provisions include the access to work and maintenance corridors as established within this report.

Through the progression of this project, it was found that some of the lands within the watershed boundaries of the Dolphis Meloche Drain have been altered. In order to properly assess any future maintenance works to the open portion of this Municipal Drain, it will be necessary to vary the current governing Schedule of Assessment which was prepared by E.O. LaFontaine, P.Eng. in 1997. As such, we recommend that the current Maintenance Schedule of Assessment be varied as outlined within this report.

The assessment proportions as outlined in the attached **Maintenance Schedule of Assessment** for the Dolphis Meloche Drain have been established based on an estimated future maintenance cost of **$10,000.00.** However, these assessment charges shall not be made until such time that maintenance works are conducted and expended to said drain in the future. Therefore, when **$10,000.00** worth of future maintenance work is expended on this drain, the assessment to each of the individual affected property owners and roads shall be levied per the attached Maintenance Schedule of Assessment. It should be clearly understood that the amounts shown within this Schedule do not authorize the expenditure of this amount, but only provides an arbitrary value to establish a relative distribution of cost amongst the Property Owners affected by the maintenance work.

It must also be understood, that the new Maintenance Schedule of Assessment for the Dolphis Meloche Drain is for maintenance of the open drain portions only and are not to be utilized for any of the maintenance works being conducted to the existing access bridges or enclosure within the drain. These structures are to be assessed per the subsequent section.

Dolphis Meloche 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 provisions:

a) **Enclosure ①:** The enclosure located between Station 1+202.2 and Station 1+277.8, and along the frontage of the lands of Shawn Bullock and Christie Bondy [Parcel 2], Brody Blanchette and Brea Dupuis [Parcel 3], and Jason & Rebecca Mortimer [Parcel 4] within Lot 11, Concession 3, consists of an access portion and lawn piping portion. The total length of this enclosure consists of 75.6 metres (248.03 ft.). The access portion of the enclosure to each adjacent property consists of the equivalent 12.00 metres (39.37 ft.) of pipe together with granular backfill and sloped quarried limestone end walls, the costs for same being shared between the owner gaining said access as a Benefit Assessment and all upstream owners of lands and roads within the drains watershed as an Outlet Liability. The original installation of lawn piping along the frontage of the lands currently owned by Shawn Bullock and Christie Bondy [Parcel 2] and Brody Blanchette and

Brea Dupuis [Parcel 3] was installed under the 1961 By-Law for the protection of the adjacent homes to facilitate the needs of the roadway. The cost of future maintenance for this portion of lawn piping shall remain the responsibility and be assessed to the Town of Amherstburg as a Benefit Assessment. The remainder of the lawn piping along the frontage of the Jason & Rebecca Mortimer [Parcel 4] was installed sometime after the 1997 By-Law for the sole benefit of the property. Therefore, the cost of maintenance for this portion of the lawn piping shall remain the responsibility of the benefiting property.

Taking all of the above under consideration, when future maintenance is required for **Enclosure ①**, we recommend the following cost-sharing provisions:

PARCEL ID NUMBER	**OWNERS**	**OVERALL FUTURE MAINTENANCE SHARE**
2	Shawn Bullock and Christie Bondy	14.4%
3	Brody Blanchette and Brea Dupuis	14.4%
4	Jason & Rebecca Mortimer	34.4%
--	Town of Amherstburg	33.4%
--	Upstream Lands	3.4%

b) **Enclosure ②**: The enclosure located between Station 1+155.2 and Station 1+185.2, and along the frontage of the lands of Joseph & Melody Bezaire [Parcel 5] within Lot 11, Concession 3, consists of an access portion and lawn piping portion. The total length of this enclosure consists of 30.00 metres (98.43 ft.). The access portion of the enclosure to each adjacent property consists of the equivalent 13.00 metres (42.65 ft.) of pipe together with granular backfill and sloped quarried limestone end walls, the costs for same being shared between the owner gaining said access as a Benefit Assessment and all upstream lands and roads within the drains watershed as an Outlet Liability. The original installation of lawn piping along the frontage of these lands was installed under the 1961 By-law for the protection of the adjacent homes to facilitate the needs of the roadway. The cost of future maintenance for this portion of lawn piping shall remain the responsibility and be assessed to the Town of Amherstburg as a Benefit Assessment.

Taking all of the above under consideration, when future maintenance is required for **Enclosure ②**, we recommend the following cost-sharing provisions:

PARCEL ID NUMBER	OWNERS	OVERALL FUTURE MAINTENANCE SHARE
5	Joseph & Melody Bezaire	45.6%
--	Town of Amherstburg	47.4%
--	Upstream Lands	7.0%

c) **Enclosure ③:** The enclosure located between Station 1+067.0 and Station 1+128.1, and along the frontage of the lands of John & Bernadette Beaudoin [Parcel 6] within Lot 11, Concession 3, consists of an access portion and lawn piping portion. The total length of this enclosure consists of 61.10 metres (200.45 ft.). The access portion of the enclosure to each adjacent property consists of the equivalent 13.00 metres (42.65 ft.) of pipe together with granular backfill and sloped quarried limestone end walls, the costs for same being shared between the owner gaining said access as a Benefit Assessment and all upstream lands and roads within the drains watershed as an Outlet Liability. The original installation of lawn piping at the downstream end of this enclosure was installed under the 1961 By-law for the protection of the adjacent homes to facilitate the needs of the roadway. The cost of future maintenance for this portion of lawn piping shall remain the responsibility and be assessed to the Town of Amherstburg as a Benefit assessment. The remainder of the lawn piping at the upstream end of this enclosure was installed as part of the 1984 By-law at the cost and for the sole benefit of the property. Therefore, the cost of maintenance for this portion of the lawn piping shall remain the responsibility of the benefiting property.

Taking all of the above under consideration, when future maintenance is required for **Enclosure ③**, we recommend the following cost-sharing provisions:

PARCEL ID NUMBER	OWNERS	OVERALL FUTURE MAINTENANCE SHARE
6	John & Bernadette Beaudoin	53.9%
--	Town of Amherstburg	42.3%
--	Upstream Lands	3.8%

d) **Bridge ④:** This access bridge located between Station 0+960.9 and Station 0+976.9, having a total culvert length of 16.00 metres (52.49 ft.), currently serves as the primary access for the agricultural lands of the Raymond Bastien [Parcel 9], within Lot 12, Concession 3. When future maintenance is performed on this structure, it shall be maintained in the future on the basis that **75.8%** of all maintenance costs for said access bridge shall be assessed as a Benefit to the bridge user, and the remaining **24.2%** of the maintenance costs shall be assessed as an Outlet Liability against the lands and roads within the watershed lying upstream of said access bridge. The percentages above account for the bridge users share of the increased pipe length beyond the standard 6.10 metre (20.00 ft.) minimum driveway top width.

e) **Enclosure ⑤:** The enclosure located between Station 0+823.9 and Station 0+913.7, and along the frontage of the lands of Richard Bastien [Parcel 7] and Raymond & Michelle Bastien [Parcel 8] within Lot 12, Concession 3, consists of an access portion and lawn piping portion. The total length of this enclosure consists of 89.80 metres (294.62 ft.). The access portion of the enclosure to each adjacent property consists of the equivalent 13.00 metres (42.65 ft.) of pipe together with granular backfill and sloped quarried limestone end walls, the costs for same being shared between the owner gaining said access as a Benefit Assessment and all upstream lands and roads within the drains watershed as an Outlet Liability. The original installation of lawn piping along the upstream portion of frontage of the lands currently owned by Richard Bastien [Parcel 7] was installed under the 1961 By-law for the protection of the adjacent homes to facilitate the needs of the roadway. The cost of future maintenance for this portion of lawn piping shall remain the responsibility and be assessed to the Town of Amherstburg as a Benefit Assessment. An additional length of lawn piping was installed along the remaining portion of frontage of the Richard Bastien [Parcel 7] and Raymond & Michelle Bastien [Parcel 8] was installed as part of the 1997 By-law for the sole benefit of the adjoining property. The remaining section of open drain along the frontage of Richard Bastien [Parcel 7] was further enclosed sometime after the 1997 By-law for the sole benefit of the property. Therefore, the cost of maintenance for the additional lengths of lawn piping shall remain the responsibility of the benefiting property.

Taking all of the above under consideration, when future maintenance is required for **Enclosure ⑤**, we recommend the following cost-sharing provisions:

PARCEL ID NUMBER	OWNERS	OVERALL FUTURE MAINTENANCE SHARE
7	Richard Bastien	33.4%
8	Raymond & Michelle Bastien	45.4%
--	Town of Amherstburg	10.5%
--	Upstream Lands	10.7%

f) **Road Crossing ⑥:** This existing road crossing culvert between Station 0+802.7 and Station 0+820.5, and having a total culvert length of 17.80 metres (58.40 ft.), currently serves Concession 3 North roadway, within Lot 12, between Concession 2 and Concession 3. When future maintenance is performed on this structure, it shall be maintained in the future on the basis that **100.0%** of all maintenance costs for said road crossing shall be assessed as a Benefit to the Town of Amherstburg, as the governing Road Authority.

g) **Bridge ⑦:** This existing access bridge located between Station 0+007.4 and Station 0+017.6, having a total culvert length of 10.20 metres (33.46 ft.), currently serves as the primary access for the agricultural lands of the Raymond Bastien (500-01300) [Parcel 18], within Lot 12, Concession 2. When future maintenance is performed on this structure, it shall be maintained in the future on the basis that **49.3%** of all maintenance costs for said access bridge shall be assessed as a Benefit to the bridge user, and the remaining **50.7%** of the maintenance costs shall be assessed as an Outlet Liability against the lands and roads within the watershed lying upstream of said access bridge.

General Access Structure Cost-Sharing Provisions

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 Dolphis Meloche Drain watershed lying upstream of said structures. These Outlet Assessments shall be shared in the same proportions as the outlet assessment established within the May 30th, 1997, Schedule of Assessment prepared by E.O. LaFontaine, P.Eng., or per subsequent amendments made thereto through provisions of the Drainage Act. 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.

All of the above provisions for future maintenance under this report shall govern until otherwise determined through the provisions of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

All of which is respectfully submitted.

N.J. PERALTA ENGINEERING LTD.

_____
Antonio B. Peralta, P.Eng.

ABP/amm

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

**** This page is intentionally left blank ****

CONSTRUCTION SCHEDULE OF ASSESSMENT

DOLPHIS MELOCHE DRAIN

TOWN OF AMHERSTBURG

3. MUNICIPAL LANDS:

Parcel ID	Con. or Plan Number	Lot or Part of Lot	Acres Owned	Acres Affected	Hectares Affected	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
	Concession 3 North			4.05	1.640	Town of Amherstburg	$ 56,903.00	$ 1,924.00	$ -	$ 58,827.00
	Total on Municipal Lands.....						**$ 56,903.00**	**$ 1,924.00**	**$ -**	**$ 58,827.00**

4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:

Parcel ID	Con. or Plan Number	Lot or Part of Lot	Acres Owned	Acres Affected	Hectares Affected	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
1	3	11	0.49	0.49	0.199	Cody Vincent & Olivia Presley	$ 15.00	$ 310.00	$ -	$ 325.00
2	3	11	0.25	0.25	0.101	Shawn Bullock and Christie Bondy	$ 14,255.00	$ 239.00	$ -	$ 14,494.00
3	3	11	0.24	0.24	0.097	Brody Blanchette and Brea Dupuis	$ 14,254.00	$ 223.00	$ -	$ 14,477.00
4	3	11	0.46	0.46	0.186	Jason & Rebecca Mortimer	$ 1,915.00	$ 370.00	$ -	$ 2,285.00
7	3	12	0.53	0.79	0.320	Richard Bastien	$ 14,712.00	$ 119.00	$ -	$ 14,831.00
8	3	12	0.57	0.72	0.291	Raymond & Michelle Bastien	$ 247.00	$ 108.00	$ -	$ 355.00
11	3	12	0.48	0.48	0.195	Christine Tatomir	$ 14.00	$ 10.00	$ -	$ 24.00
13	3	12	0.56	0.56	0.225	Richard & Caron Woods	$ 20.00	$ 14.00	$ -	$ 34.00
14	3	12	0.95	0.48	0.195	Marcel Gagnier and Michelle Ras	$ 10.00	$ 8.00	$ -	$ 18.00
16	2	12	0.69	0.69	0.279	Paul & Elizabeth Morneau	$ 18.00	$ 16.00	$ -	$ 34.00
17	2	12	0.65	0.65	0.263	Brian & Sarah Prieur	$ 17.00	$ 15.00	$ -	$ 32.00
19	2	12	0.57	0.57	0.232	Craig Church and Christina Rocheleau	$ 13.00	$ 10.00	$ -	$ 23.00
20	2	12	0.92	0.92	0.373	Peter Tiefenbach and Peter Johnson	$ 17.00	$ 11.00	$ -	$ 28.00
	Total on Privately Owned - Non-Agricultural Lands.....						**$ 45,507.00**	**$ 1,453.00**	**$ -**	**$ 46,960.00**

5. PRIVATELY OWNED - AGRICULTURAL LANDS (grantable):

Parcel ID	Con. or Plan Number	Lot or Part of Lot	Acres Owned	Acres Affected	Hectares Affected	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
5	3	11	50.18	24.54	9.930	Joseph & Melody Bezaire	$ 15,087.00	$ 2,959.00	$ -	$ 18,046.00
6	3	11	50.07	42.87	17.350	John & Bernadette Beaudoin	$ 5,007.00	$ 4,618.00	$ -	$ 9,625.00
9	3	12	24.13	23.72	9.599	Raymond Bastien	$ 25,815.00	$ 1,118.00	$ -	$ 26,933.00
10	3	12	25.23	16.14	6.530	Raymond Bastien	$ 77.00	$ 744.00	$ -	$ 821.00
12	3	12	72.78	24.52	9.925	Raymond Bastien	$ 125.00	$ 5,533.00	$ -	$ 5,658.00
15	2	12	25.61	25.61	10.363	Raymond, Donna & Leo Bastein	$ 131.00	$ 5,669.00	$ -	$ 5,800.00
18	2	12	45.63	24.21	9.798	Raymond Bastien	$ 375.00	$ 1,014.00	$ -	$ 1,389.00
21	2	12	136.85	29.65	11.998	Anthony & Yvonne Simon	$ 71.00	$ 1,189.00	$ -	$ 1,260.00
	Total on Privately Owned - Agricultural Lands (grantable).....						**$ 46,688.00**	**$ 22,844.00**	**$ -**	**$ 69,532.00**
				222.61	90.089		**$ 149,098.00**	**$ 26,221.00**	**$ -**	**$ 175,319.00**

1 Hectare = 2.471 Acres
D17-057
June 30th, 2022

SPECIFICATIONS

**** This page is intentionally left blank ****

DOLPHIS MELOCHE DRAIN IMPROVEMENTS

SPECIFICATIONS TABLE OF CONTENTS

**** This page is intentionally left blank ****

SPECIFICATIONS

DOLPHIS MELOCHE DRAIN IMPROVEMENTS

(Geographic Township of Anderdon)

TOWN OF AMHERSTBURG

I. GENERAL SCOPE OF WORK

These Specifications and the accompanying drawings consider the furnishing of all labour, materials, equipment and supplies required for the performance of all operations related to the improvements to the Dolphis Meloche Drain, as noted and shown in the accompanying drawings. The Dolphis Meloche Drain comprises of an open Municipal Drain with a number of enclosures and access bridge structures. The Dolphis Meloche Drain extends from its upper end near the midpoint of Lot 11 and extends northerly along the east side of Concession 3 North. The Dolphis Meloche Drain then crosses Concession 3 North and continues westerly and downstream through private property and terminates at its outlet into the Long Marsh Drain.

The general scope of work to be provided under this project consists of the full or partial removal and replacement of three (3) existing enclosures and one (1) access bridge. Additionally, end treatments are to be replaced on one (1) existing enclosure. These works include the removal of existing culverts and end walls, the installation of new 320kPa, smoothwall H.D.P.E. plastic pipe with water-tight gasketed joining systems, new end protection comprising of sloped quarried limestone erosion protection on non-woven geotextile fabric, granular bedding, granular approach and backfill within the driveway limits, native backfill, lateral tile extensions, scavenging of all available topsoil, swale construction, precast concrete ditch inlet catch basin structure, topsoil, seeding and mulching, drain bottom cleanout, and all ancillary work which provides a complete and satisfactory job.

All work shall be carried out in accordance with these Specifications that serve to supplement and/or amend the current Ontario Provincial Standard Specifications and Standard Drawings, adopted by the Ontario Municipal Engineers Association. The Contractor shall review the information outlined within **Appendix "A"**. The works shall be further carried out in accordance with these Specifications and shall comply in all regards with **Appendix "A"**, **Appendix "B"**, as well as the accompanying drawings labelled herein as **Appendix "C"**. The enclosure and access bridge 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 Drainage Superintendent 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 sites 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 no work shall be carried out in the existing drain from March 15th to July 15th, of any given year.

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

a) As per standard requirements, work will not be conducted at times when flows in the drain are elevated due to local rain events, storms, or seasonal floods. Work will be done in the dry.

b) All disturbed soils on the drain banks and within the channel, including spoil, must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works. The spoil material must be hauled away and disposed of at a suitable site or spread an appropriate distance from the top of the drain bank to ensure that it is not washed back into the drain.

c) To prevent sediment entry into the Drain, in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and their Contractors to ensure that sediment and erosion control measures are functioning properly and are maintained and upgraded as required.

d) Silt or sand accumulated in the barrier traps must be removed and stabilized on land once the site is stabilized.

e) All activities including maintenance procedures should be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicular refuelling and maintenance should be conducted away from the water.

Not only shall the Contractor comply with all of the above, it shall also be required to further comply with notes included within the email from the E.R.C.A. 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 have been 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 Municipality to conduct eligible repair, maintenance, and improvement work under the Drainage Act that exempts these works from Sections 9 and 10 of this Act, so long as they follow the rules within Ontario Regulation 242/08.

Prior to commencing work, the Town of Amherstburg will complete an "Endangered Species Act Review" for the subject 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, WORKING CORRIDORS AND TRAFFIC CONTROL

Access to Work and Working Corridors

The Contractor is advised that the majority of the work to be carried out on this project extends along the east side of Concession 3 North. The Contractor shall have access for the full width of the roadway abutting the proposed drainage works. The Contractor may use the entire width of the Concession 3 North right-of-way as necessary to permit the completion of the work required to be carried out for this project. Furthermore, in order

to perform the necessary work identified within this project, the Contractor shall have access onto private lands to the east of Concession 3 North right-of-way limit for a distance of 5.00 metres, for the excavation and restoration of the required works.

The Contractor is advised that all excavated material from the work along residential and lawn areas shall be hauled away and disposed of by the Contractor at their own expense. In all cases, the disposal of any trucked material will be the responsibility of the Contractor, and any work at the disposal site shall be established between the Contractor and the Site Owner. The Contractor shall ensure that any permits required for fill disposal are obtained from the appropriate authority. The Contractor shall be responsible for keeping all private and public roadways free and clear of mud and debris resulting from its use of same for access and hauling purposes.

Traffic Control

The Contractor shall ensure that the travelling public is protected at all times while utilizing the roadway for its access. The Contractor shall provide traffic control, including flag persons when required. The Contractor shall be required to submit a Traffic Control Plan to the Consulting Engineer for approval from the governing Road Authorities. The Traffic Control Plan shall be carried out in accordance with the requirements of the Ontario Traffic Manual's Book 7 for Temporary Conditions. It is anticipated that Concession 3 North shall remain open to the travelling public during these works. However, should the Contractor have to close a portion of Concession 3 North for the proposed works, it shall make a formal request and obtain authorization from the Town of Amherstburg and arrange to provide the necessary notification of detours around the site. The Contractor shall also ensure that all emergency services, school bus companies, etc. are contacted about the disruption to access at least 48 hours in advance of same. All detour routes shall be established in consultation with the Town of Amherstburg Roads Department.

Due to the extent of the work and the area for carrying out the work, the Contractor will be required to carry out all of the necessary steps to direct traffic and provide temporary diversion of traffic around work sites, including provision of all lights, signs, flag persons, and barricades required to protect the safety of the travelling public. Any accesses or areas used in carrying out the works are to be fully restored to their original conditions by the Contractor, including topsoil placement and lawn restoration as directed by the Town Drainage Superintendent and/or the Consulting Engineer. Restoration shall include but not be limited to all necessary levelling, grading, shaping, topsoil, seeding and mulching, and granular placement required to make good any damage caused.

V. REMOVAL OF BRUSH, TREES AND RUBBISH

The Contractor shall pay particular attention to protecting all of the existing decorative trees and shrubs, especially where the works are being carried out along the frontage of a residential grassed area. The only decorative trees and shrubs to be removed are those that are referred to within the accompanying drawings and the specifications. The Contractor shall remove all stumps and associated tree roots in areas where the existing enclosure and bridge structures are being replaced, and as identified within the plans.

Any brush and trees removed along the course of the work are to be put into piles by the Contractor in locations where they can be safely chipped and disposed of, burned by it, or hauled away and disposed of by the Contractor to a site to be obtained by it at its expense. Prior to and during the course of any burning operations, the Contractor shall comply with the guidelines prepared by the Air Quality Branch of the Ontario Ministry of the Environment and shall ensure that the Environmental Protection Act is not violated. The Contractor will be required to notify the local fire authorities and 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 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 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 hand work around the trees, bushes, and shrubs to complete the necessary final site grading and restoration.

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

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

VI. FENCING

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

VII. DETAILS OF BRIDGE AND ENCLOSURE WORK

The Contractor shall provide all material, labour and equipment for the replacement of the existing access bridge and enclosure structures within the Dolphis Meloche Drain requiring work, as outlined on the plans, the schedule of items, and in these specifications.

All existing culvert pipes slated to be removed from the existing access bridge and enclosures along the Dolphis Meloche Drain shall be replaced with new 320kPa smoothwall H.D.P.E. plastic pipe with water-tight gasketed bell and spigot joining systems. All culvert pipes within this project shall be set to the grades as shown on the plans or as otherwise established herein and the Drainage Superintendent or the Consulting Engineer may make minor changes to the bridge alignment as they deem necessary to suit the site conditions. All work shall be carried out in general accordance with the **"Standard Specifications For Access Bridge Construction Including Endwall Treatment, Backfilling And Installation Procedures"** attached to this report and labelled **Appendix "B"**.

VIII. EXCAVATION, REMOVALS AND DISPOSAL

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

All unsuitable or deleterious materials from the excavation and removal of existing culverts and the drain shall be hauled away and disposed of by the Contractor to a site to be obtained by it at its own expense. Likewise, where indicated in the plans, schedule of

items, or in the specifications, the Contractor shall remove the existing culvert pipe and dispose of all of same at a site to be obtained by it at its own expense. In all cases, the disposal of any trucked material with be the responsibility of the Contractor and it shall ensure that any permits required for fill disposal are obtained from the appropriate authority. The Contractor will be responsible for keeping all private and public roadways free and clear of mud and debris resulting from its use of same for access and hauling purposes.

As part of the work, the Contractor shall be required to excavate, transition and clean the drain bottom for a distance of 3.05 metres (10.00 ft.) both upstream and downstream of the bridge and enclosure pipes at each structure replacement site. The sediment material from this excavation shall under no circumstance be utilized for the backfilling of any of the bridge or enclosure pipes, and same must be totally trucked away and disposed of at a site to be obtained by it at its own expense.

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

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

IX. PIPE INSTALLATION

The Contractor shall note that the placement of any new culvert pipe shall be performed totally in the dry and it shall be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Drainage Superintendent or the Consulting Engineer.

The installation of the complete length of the culvert pipes, including all appurtenances, shall be completely inspected by the Drainage Superintendent or the Consulting Engineer's Inspector prior to backfilling any portions of same and under no circumstance shall the Contractor commence the construction or backfill of the new replacement culvert pipes without the site presence of the 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 Drainage Superintendent or the Consulting Engineer prior to commencement of the work. The installation of the new culvert structures are to

be performed during normal working hours of the Drainage Superintendent and the Consulting Engineer from Monday to Friday unless written authorization is provided by them to amend said working hours.

The new bridge and enclosure structures shall be set in the alignment and to the grade elevations established in the accompanying drawings. This shall be the exact length and location of said structures unless otherwise directed by the Drainage Superintendent or Consulting Engineer prior to construction of same. Any changes relative to the structures must be approved by the Consulting Engineer prior to proceeding with construction. Benchmarks have been established near each structure site and are noted and detailed within the accompanying drawing.

For new smoothwall H.D.P.E. culvert pipes that are shown on the plans to have sloped quarried limestone erosion protection at their ends, both ends of the pipe shall be securely anchored against floatation utilizing two (2) steel T-bar fence posts having a minimum length of 1.80 metres (6.00 ft.) or approved equal, on each side of the pipe, together with heavy steel galvanized wire secured between them across the top of the pipe. The top of each post shall be set no higher than the top of the proposed culvert. Pipe anchors shall be installed in accordance with the **"Floatation Anchor Details"** outlined within the accompanying drawings.

All pipe materials shall be stored and handled by the Contractor at its own expense. It shall be responsible for the safe storage of all materials, for obtaining storage areas, for the safe transportation and distribution of all the materials at the job site, and for inspection in order to determine defects and breakage. No additional recompense will be allowed to the Contractor for any loss incurred by it in the storage and handling of the materials.

Pipe, fittings, and all accessory appurtenances must be loaded and unloaded by lifting with means of a hoist or a skid so as to avoid shock or damage. Under no circumstances shall any drain material or materials for drain appurtenances be dropped.

All excavation shall be made in compliance with the drawings and in such a manner and at such depths and widths as will give ample room for installing the pipe, the bracing, sheeting, or otherwise supporting the sides of the excavation and for the pumping of groundwater if encountered. The Contractor is fully responsible for the safety of all its men and equipment and must conform completely with the provisions of the "Construction Safety Act" and "Regulations for Construction Projects".

The bottom of the trenches must be carefully excavated and trimmed to the elevation and shape of the bottom of the pipe. The bottom of the trenches shall be recessed to receive the pipe in order to allow the pipe to be uniformly supported on firm undisturbed earth for its' entire length. Corrections in depth of excavation caused by the Contractor excavating to an extent greater than that

required for the elevation of the pipe shall be made by bedding the pipe with 20mm (3/4") clear stone granular material placed at the time that the pipes are being installed, at the Contractors expense. If any part of the bottom of the trench is found to be unsound or in any way unsuitable in the Drainage Superintendent's or the Engineer's opinion to lay drain pipe, the Contractor shall remove as much material as may be required and shall replace same with sufficient approved 20mm (3/4") clear stone granular material to form a sound bed for the pipe.

The trenches shall be excavated to the depths given by the Engineer and only as far in advance of the pipe laying as permitted by the said Engineer or the Town Drainage Superintendent.

No extras will be allowed for excavating any hardpan, boulders, rocks, ice or other obstacles found in the excavation or in the line of the trench or for any pumping or baling of water required in the excavation of the work. The trench must be drained or pumped in order to avoid the necessity of making joints under water. The trench must also be drained to avoid any possibility of groundwater entering the pipe in the trench until the installation has been successfully completed.

The Contractor shall lay the bridge and enclosure pipes to the lines, levels, and grades as shown in the accompanying drawings or as may be laid out and established by the Engineer prior to the time of construction. The Contractor shall be held responsible for said lines, levels and grades of the drain pipe and should the Engineer determine that the Contractor has not satisfactorily adhered to such lines, levels and grades, it may direct the Contractor to take up and re-lay any portion of the drain which does not conform to such lines, levels and grades.

Laser control must be provided to maintain drain line and grades, and the Contractor shall have a qualified Operator to set up and operate the equipment. In some instances, but only at the discretion of the Engineer, an approved system of batter boards may be utilized for this purpose; However, the cost of placing grade stakes and determining the cut information shall be provided by or paid for entirely by the Contractor.

The Contractor shall be responsible for the safe and proper handling of the pipe and shall inspect all pipes to ensure that no cracks, chips or defects exist in the pipe prior to placing the pipe in the sewer line. Should the Contractor permit damaged pipe or materials to be installed in the sewer, it shall be responsible for the removal and replacement of same at its own expense, should the Engineer require such removal and replacement.

If the drain pipe is laid in freezing weather, the Contractor shall take all the necessary precautions to prevent damage to the pipe or to any of the materials used in the construction of the work. In addition, the Contractor shall take care that no frozen ground or backfill is placed in the trench backfilling adjacent to the drain pipe. All pipe and the various other materials used in the

placing of said pipe shall be installed in strict compliance with the Manufacturer's recommendations.

X. STRUCTURE INSTALLATION

All materials used for the ditch inlet catch basin structure shall comply with Ontario Provincial Standard Specifications (O.P.S.S.) and Ontario Provincial Standard Drawings (O.P.S.D.) with respect to materials, qualities, and installation details. The structure shall be founded on a good, dry, firm, undisturbed earth base for its entire bottom surface area, or 20mm (3/4") clear stone bedding, if necessary. Corrections in depth of excavation caused by the Contractor excavating to an extent greater than that required for the structures shall be backfilled to the proper grade elevation by embedding the catch basin maintenance holes floor area with 20mm (3/4") clear stone granular bedding. A sump is to be provided in each structure which shall be a minimum of 450mm deep measured from the proposed invert of the connection to the proposed concrete floor elevation of the structure. The structure shall be set to allow for connection of all of the inlet and outlet pipes and shall be installed as shown and detailed on the plans. The top elevation of the structure shall be installed to the elevations noted on the plans or as further directed by the Drainage Superintendent or the Consulting Engineer. All structure sections and adjustment units shall be joined together with standard gasket material, caulking, or grout as required by the manufacturer, or as set out in the applicable O.P.S.S. and O.P.S.D.

At Station 1+229.6, the Contractor shall provide and install a 600mm x 1200mm Type 'A' precast concrete ditch inlet catch basin together with a horizontal galvanized steel honeycomb grate, in accordance with O.P.S.D. 705.040 and O.P.S.D. 403.010.

All structures, where applicable, shall include a minimum of three (3) adjustment units in accordance with O.P.S.D. 704.011. All work shall be completed as shown and detailed on the plans.

The Contractor shall connect all enclosed drains and connections in the structures with the use of a mortar joint or standard rubber boot cast into the units by the Manufacturer. Said mortar joint shall be provided at the internal and exterior of the ditch inlet catch basin wall for the full circumference of the enclosed drain and be of a sufficient mass to produce a sealed joint, all to be performed to the full satisfaction of the Drainage Superintendent or the Consulting Engineer. Where possible, the Contractor shall employ a standard factory fitting or adapter to connect between the various pipes, tiles, and catch basin maintenance holes, otherwise, a mortar joint connection can be utilized.

XI. ENCLOSURE AND BRIDGE BACKFILL

Where the new enclosure or bridge pipe is located under the driveway, the Contractor shall backfill the entire trench for the width of

the driveway with Granular "B" compacted in place to a minimum 98% of the Standard Proctor Density with the exception of the topped 300mm which should be backfilled with Granular "A" material also compacted in place to a Standard Proctor Density of 98%, as outlined within the **"Typical Driveway Crossing Backfill Detail"** on Sheet 3 of the accompanying plans. Where the new enclosure pipe is located along the lawn area, the Contractor shall be required to backfill the entire trench with good clean native backfill material with the exception of the top 100mm which shall be good clean black loamy topsoil readied for seeding and mulching. It should be noted that if there is a shortage of native backfill material available once the existing culverts are removed, the Contractor shall supply same all at its own expense. The Contractor should also note that prior to commencing its excavation that all existing topsoil should be scavenged for reuse on the project; if there is a shortage, the Contractor shall be required to supply the balance of the topsoil needed, all at its own expense. All of the native backfill material shall be compacted in place to a minimum Standard Proctor Density of 96%, as outlined in **"Typical Enclosure Backfill Detail"** on Sheet 3 of the accompanying plans.

The Contractor should note that, because the enclosed drain is being installed with an excavator, it is expected that they will provide approximately 150mm (6") of either compacted M.T.O. Granular 'A' or Granular 'B' (Type II) bedding material, as outlined within O.P.S.S. Form 1010, to the spring line of the proposed pipe, at a minimum, and throughout the entire length of the enclosure pipe. The Contractor shall ensure that a good firm base is provided under the drain pipe, and they shall provide for this item as part of their tender price.

All backfill material shall be placed in compacted lifts approximately 150mm thick. The Contractor is required to provide whatever mechanical equipment necessary, such as jumping jack and/or plate tamper, in order to achieve the necessary compaction levels, especially along the haunches of the new pipe. All areas shall be graded in accordance with the profile and cross-sections shown in the accompanying drawings, including the provision of cross-fall on boulevard areas as shown therein.

The Contractor shall also note that the placing of the new culverts shall be completed so that they comply with the parameters established and noted in the drawings. The culvert shall be set on an even grade and the placement shall be performed totally in the dry, and the Contractor should be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Drainage Superintendent or the Consulting Engineer. The Contractor shall also be required to supply a minimum of 150mm (6") of 20mm (3/4") clear stone bedding underneath the culvert pipe extending from the bottom of the drain to the culvert invert grade, all to the full satisfaction of the Drainage Superintendent or the Consulting Engineer. Furthermore, if an unsound base is encountered, it must be removed and replaced with 20mm (3/4") clear stone satisfactorily compacted in place to the full satisfaction of the Drainage Superintendent or the Consulting Engineer. The

Contractor is to note that when replacing the existing structures, it shall be required to excavate a trench having a width not less than the new pipe outside diameter plus a 600mm working width on both sides of the new pipe.

XII. CONSTRUCTING NEW SWALES

The Contractor shall provide all labour, material, and equipment, in order to construct the swales, to the lines, levels, and grades as is shown and detailed in the accompanying drawings. The centerline of the finished swale grade elevation and swale cross-section, at various locations along the length of the drain, is to be provided as shown and detailed in the design drawings. The Contractor shall be required to strictly adhere to this swale design unless otherwise directed and approved by the Consulting Engineer.

The swales shall generally be constructed with a V-section centred on the proposed enclosure pipes to ensure positive flow of the surface drainage into the drain. All materials excavated from the swale including all deleterious materials shall be hauled away and disposed of by the Contractor to a site to be obtained by it at its own expense. The alignment of the swales throughout shall be to the full satisfaction of the Drainage Superintendent and the Consulting Engineer. All of the work shall be done in a neat, thorough, and workmanlike manner also to their full satisfaction.

XIII. SLOPED QUARRIED LIMESTONE END PROTECTION

Once the new enclosure and bridge pipes have been set in place, the Contractor shall install sloped quarried limestone end protection on the pipe ends as outlined within the accompanying plans. The quarried limestone shall be provided as shown and detailed on the plans 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 and enclosures shall be underlain with a synthetic **non-woven** geotextile filter fabric. The sloped quarried limestone protection is to be rounded as shown on the plan details and shall also extend along the drain side slopes to a point directly in line with the ends of the culvert pipe.

The 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 “MacTex MX140” (or approved equal) 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 Drainage Superintendent and/or Consulting Engineer.

XIV. UTILITIES

All pipe shall be laid in trenches in the general location shown on the accompanying drawings or as may be specifically directed and laid out by the Engineer at the time of construction. The trench shall be located to clear all existing utilities and structures above, on, or below the ground level. The Contractor will be responsible at all times for complete investigation to determine the location of all such utilities or structures known or unknown, and it shall indemnify and save harmless the Engineer and the Town for any responsibility, injury, or liability arising from any damage to such utilities or structures by the Contractor.

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

The Contractor shall further contact or notify such Utility Company or Commission of its intention to carry out work in the area and cooperate with such Utility Company or Commission in the location, maintenance and preservation of all such utilities. The location of the pipes and appurtenances as shown on the drawings is approximate and may be changed by the Engineer if deemed advantageous for the progress of the work. The trenches are to be excavated where directed. If any part of the bottom of the trench is found to be unsound or in any way unsuitable to lay the pipe in the Drainage Superintendent's or the Engineer's opinion, it may direct that the location of said trench be changed if it is possible to avoid unsound soil by doing so.

XV. BENCHMARKS

Also, for use by the Contractor, we have established multiple Benchmarks near the location where the structures are being replaced. The plans include details illustrating the work to be carried out. Benchmarks have been indicated and the Elevations have been shown and shall 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 pipes in the accompanying profile. The profile also sets out the pipe size, materials, and other requirements relative to the installation of the proposed drainage works. In all cases, the Contractor is to utilize the specified drain grade to set any new pipe installation. The Contractor shall ensure that it takes note of the direction of flow and sets all pipes to assure that all

grades flow from upstream to downstream to match the direction of flow within the drain.

XVI. ANCILLARY WORK

During the course of any repair or improvements to the structures, the Contractor will be required to protect or extend any existing tile ends and connect them to the drainage works to maintain the drainage from the adjacent lands. All existing tiles shall be extended utilizing solid standard duty Big 'O' or equal plastic pipe of the same diameter as the existing tile and shall be installed in accordance with the **"Standard Lateral Tile Detail"** included within the accompanying drawings unless otherwise noted. In the event that existing lateral tile connections are connected to the existing enclosure, the connection shall be made using a Manufacturer's coupling wherever possible. All Manufacturer connections shall be made utilizing factory tees, saddles, and fittings installed in accordance with the Manufacturer's recommendations. 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 Drainage Superintendent or the Consulting Engineer. The mortar joint shall be of a sufficient mass around the full circumference of the joint on the exterior side to ensure a tight, solid seal. The Contractor is to note that any intercepted pipes along the length of the existing culverts are to be reconnected to the new pipe unless otherwise noted in the accompanying drawings.

Where the enclosure installation interferes with the discharge of an existing swale, the Contractor shall regrade the existing swales to allow for the surface flows to freely enter the drain. Any disturbed grass areas shall be fully restored with topsoil, seed and mulch.

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

XVII. TOPSOIL, SEED AND MULCH

Once all of the enclosure backfilling has been satisfactorily completed, the Contractor shall adequately fine grade the topsoil and prepare for the seeding and mulching of the enclosure as well as the lawn area. The Contractor is to note that prior to fine grading the topsoil over the backfilled areas, positive drainage is to be provided off of these areas and into the swales, and the Contractor shall also be required to make minor changes where necessary to ensure same. The Contractor shall be required to restore all existing grassed areas, and roadway boulevard areas

damaged by the work, and shall provide topsoil, seed, and mulch over all of these areas. 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 100mm of good, clean, dry topsoil, 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 802, dated November 2010, 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 2016, or as subsequently amended, to ensure that the grass seed will be protected during germination and provide a thick, uniform cover to protect against erosion, where necessary.

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 Drainage Superintendent or Consulting Engineer.

XVIII. GENERAL CONSTRUCTION PROVISIONS

The Contractor is to note that several legal survey bars exist within the work area and it is to take whatever steps necessary to protect all of same. If any iron bars are damaged or removed by the Contractor, it shall arrange for an Ontario Land Surveyor licensed in the Province of Ontario to restore same, all at its cost.

The alignment of drainage works throughout shall be to the full satisfaction of the Town Drainage Superintendent. The whole of the work shall be done in a neat, thorough and workmanlike manner to the full satisfaction of the Town Drainage Superintendent.

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

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

XIX. SPECIAL PROVISIONS FOR REPLACEMENT AND IMPROVEMENTS

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

Enclosure ① - Shawn Bullock and Christie Bondy [Parcel 2], Brody Blanchette and Brea Dupuis [Parcel 3] and Jason & Rebecca Mortimer [Parcel 4]

The Contractor shall remove the existing corrugated steel pipe and south end treatment from Station 1+229.2 to Station 1+276.7 and dispose of same as outlined previously in these specifications. The Contractor shall then supply and install a new 450mm diameter 320kPa smoothwall H.D.P.E enclosure pipe with bell and gasket joining system, as set out in the enclosure detail and profile for **Enclosure ①** on the plans. As part of the enclosure work, the Contractor shall provide for a swale construction to the location and grades established within the accompanying detail and profile. The Contractor is to provide and install a Type 'A' 600mm x 1200mm precast concrete ditch inlet catch basin (DICB-1) with a horizontal galvanized honeycomb grate at Station 1+229.6 including the connection to the existing 600mm diameter corrugated steel enclosure pipe to the north.

The Contractor shall particularly note that the existing trees identified within the plans on each side of the enclosure, are intended to remain and the Contractor is to make every effort to protect its root system while replacing the subject enclosure. If it's found that small trees require removal to perform the enclosure work, the Contractor shall make every effort to temporarily transplant and restore the tree to its original location. Furthermore, while working adjacent to the existing trees, the Contractor shall make all efforts to keep the width of all excavation trenches to an absolute minimum so as to reduce the potential impact on said trees. To ensure a safe separation distance is maintained, the Contractor shall install tree protection fencing at the projected limit of the excavation and beneath the drip line of the adjacent tree. The fencing shall be comprised of orange vinyl snow fencing secured at 3.00 metre intervals with iron T-posts driven 600mm into the ground and should be in place until construction work is completed. During construction, no equipment, materials or tools shall be stored beyond the tree protection fencing.

The Contractor shall provide sloped quarried limestone end treatment at the south end of the new enclosure installation. The Contractor shall install and ensure all replaced pipe ends are to be secured by the use of floatation anchors, constructed in accordance with the **"Floatation Anchor Details".** All works shall be carried out in accordance with these specifications and the requirements in **Appendix "C"**.

Enclosure ② - Joseph & Melody Bezaire [Parcel 5]

The Contractor shall completely remove the existing corrugated steel pipe and end treatments from Station 1+155.4 to Station 1+183.8 and dispose of same as outlined previously in these specifications. The Contractor shall then supply and install a new 450mm diameter 320kPa smoothwall H.D.P.E enclosure pipe with bell and gasket joining system, as set out in the enclosure detail and profile for **Enclosure ②** on the plans. As part of the enclosure work, the Contractor shall provide for a swale construction to the location and grades established within the accompanying detail and profile. The Contractor shall provide sloped quarried limestone end treatments at both ends of the new enclosure installation. The Contractor shall install and ensure all replaced pipe ends are to be secured by the use of floatation anchors, constructed in accordance with the **"Floatation Anchor Details".** All works shall be carried out in accordance with these specifications and the requirements in **Appendix "C"**.

Enclosure ③ - John & Bernadette Beaudoin [Parcel 6]

The Contractor shall completely remove the existing vertical stacked concrete jute bag end treatments and dispose of same as outlined previously in these specifications. The Contractor shall provide sloped quarried limestone end treatments at both ends of the new enclosure installation, as set out in the enclosure detail for **Enclosure ③** on the plans.

Bridge ④ - Raymond Bastien [Parcel 9]

The Contractor shall completely remove the existing corrugated steel pipe and end treatments from Station 0+967.7 to Station 0+974.2 and dispose of same as outlined previously in these specifications. The Contractor shall then supply and install a new 900mm diameter 320kPa smoothwall H.D.P.E culvert pipe with bell and gasket joining system, as set out in the bridge detail for **Bridge ④** on the plans. The replacement access bridge shall be backfilled according to the preceding specifications. The Contractor shall provide sloped quarried limestone end treatments at both ends of the new enclosure installation. The Contractor shall install and ensure all replaced pipe ends are to be secured by the use of floatation anchors, constructed in accordance with the **"Floatation Anchor Details".** All works shall be carried out in accordance with these specifications and the requirements in **Appendix "C"**.

Enclosure ⑤ - Richard Bastien [Parcel 7]

The Contractor shall completely remove the existing corrugated steel pipe and the end treatment to the south from Station 0+890.7 to Station 0+912.9 and dispose of same as outlined previously in these specifications. The Contractor shall then supply and install a new 900mm diameter 320kPa smoothwall H.D.P.E enclosure pipe with bell and gasket joining system, as set out in the enclosure detail and profile for **Enclosure ⑤** on the plans. As part of the enclosure work, the Contractor shall provide for a swale construction to the location and grades established within the accompanying detail and profile. The Contractor shall provide sloped quarried limestone end treatment at the south end of the new enclosure installation. The Contractor shall install and ensure all replaced pipe ends are to be secured by the use of floatation anchors, constructed in accordance with the **"Floatation Anchor Details"**. The Contractor is to establish a secure connection to the existing 1000mm diameter corrugated steel pipe to the north. All works shall be carried out in accordance with these specifications and the requirements in **Appendix "C"**.

XX. GENERAL CONDITIONS

a) The 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 for 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 to the job site shall be fully restored to their former condition at the Contractor's expense. Before authorizing Final Payment, the 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 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.

APPENDIX “A”

**** This page is intentionally left blank ****

Essex Region Conservation Authority

Correspondence

**** This page is intentionally left blank ****

From: Ashley Gyori
Sent: June 30, 2022 11:31 AM
To: Kory Snelgrove
Cc: smcvitty@amherstburg.ca; Nicole Humber; Tony Peralta; Matthew Shiha
Subject: RE: Notification of Request for Drainage Works - Dolphis Meloche Drain - D17-057
Attachments: 20220617 PRELIMINARY - Dolphis Meloche Drain - D17-057.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 Dolphis-Meloche Drain. We have reviewed the plans for the proposed works prepared by your office, Project No. D17-057, and can confirm that this office's concerns with respect to Section 28 of the *Conservation Authorities Act* have been addressed.

For this project to proceed, we will need a copy of the signed and stamped final report drawings and an ERCA Application for Permit Form, completed by the municipality.

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

Kind regards,

ASHLEY GYORI
Regulations Analyst
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311 • Essex, Ontario • N8M 1Y6
agyori@erca.org • essexregionconservation.ca

From: Kory Snelgrove <kory@peraltaengineering.com>
Sent: Friday, June 17, 2022 9:14 AM
To: Ashley Gyori <AGyori@erca.org>
Cc: smcvitty@amherstburg.ca; Nicole Humber <nhumber@amherstburg.ca>; Tony Peralta <tony@peraltaengineering.com>; Matthew Shiha <matthew@peraltaengineering.com>
Subject: RE: Notification of Request for Drainage Works - Dolphis Meloche Drain - D17-057

Good morning Ashely,

Further to the correspondence below, our office was appointed under Section 78 of the Drainage Act for the replacement of a new farm access bridge over the Dolphis Meloche Drain. However, based on the information outlined below, and as discussed at the on-site meeting this project had expanded to include a full review of all seven (7) structures within this Municipal Drain, together with providing future maintenance provisions for each. **As a result, the construction recommended under this report is for Structures 1 to 5 as identified within the preliminary**

drawings. We have now completed our review of the drainage structures over the Dolphis Meloche Drain and as a result, we wish to provide you with the requested proposal, together with a copy of our preliminary drawings for your review.

Based on our preliminary design, we have determined the following details:

- **Enclosure No. 1** – represents an existing enclosure structure serving Parcel 2, Parcel 3, and Parcel 4. The existing enclosure structure consists of approximately 74.50m of 600mm diameter C.S.P. with vertical concrete end treatments. **However, only the upstream end of the enclosure serving Parcels 2 and 3 is to be replaced** and shall consist of approximately 48.00m of 450mm diameter 320 kPa smoothwall H.D.P.E. pipe with sloped quarried limestone end treatments, together with 45mm of pipe embedment below the existing drain bottom. This enclosure is intended to match existing driveway widths with the remaining pipe portion consisting of lawn piping for the protection of the existing homesteads as established in previous engineer reports. Additionally, cost-sharing for future maintenance on the enclosure has been provided.

- **Enclosure No. 2** – represents an existing enclosure structure serving Parcel 5. The existing enclosure structure consists of approximately 28.40m of 600mm diameter C.S.P. with vertical stacked concrete jute bag headwalls. The proposed enclosure replacement shall consist of approximately 30.00m of 450mm diameter 320 kPa smoothwall H.D.P.E. pipe with sloped quarried limestone end treatments, together with 45mm of pipe embedment below the existing drain bottom. This enclosure is intended to match existing driveway widths with the remaining pipe portion consisting of lawn piping for the protection of the existing homesteads as established in previous engineer reports. Additionally, cost-sharing for future maintenance on the enclosure has been provided.

- **Enclosure No. 3** – represents an existing enclosure structure serving Parcel 5. The existing enclosure structure consists of approximately 61.10m of 600mm and 750mm diameter C.S.P. with vertical stacked concrete jute bag headwalls. The existing stacked concrete jutebag headwalls are in poor shape and need repairs. **This enclosure is intended to remain with new sloped quarried limestone end treatments being installed on the structure.** Additionally, cost-sharing for future maintenance on the enclosure has been provided.

- **Bridge No. 4 –** represents the access for Parcel 9. This existing access bridge consists of approximately 6.50m of 750mm diameter corrugated steel pipe with vertical concrete jutebag headwalls. The proposed access bridge replacement shall consist of approximately 16.0m of 900mm diameter 320 kPa smoothwall H.D.P.E. pipe with sloped quarried limestone end treatments, together with 90mm of pipe embedment below the existing drain bottom. This access bridge is intended to provide a top width of 9.90m (32.5'). Additionally, cost-sharing for future maintenance on the enclosure has been provided.

- **Enclosure No. 5** – represents an existing enclosure structure serving Parcel 7 and Parcel 8. The existing enclosure structure consists of approximately 89.00m of 760mm and 1000mm diameter C.S.P. with vertical concrete end treatments. **Only the upstream end of the enclosure serving Parcel 7 is to be replaced** and shall consist of approximately 23.00m of 900mm diameter 320 kPa smoothwall H.D.P.E. pipe with sloped quarried limestone end treatments, together with 90mm of pipe embedment below the existing drain bottom. Additionally, cost-sharing for future maintenance on the enclosure has been provided.

- **Bridge No. 6** – represents the road crossing culvert across Concession 3 North. This crossing consists of approximately 17.80m of 1200mm Corrugated Steel pipe with vertical concrete jute bag 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. 7** – represents an existing farm access bridge for Parcel 18. The existing bridge consists of approximately 10.20m of 1390x970mm C.S.P. arch with vegetative 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 also reviewed the DFO website as it relates to the Fisheries Act and has performed a "Self Assessment" for this project. Also, as it relates to 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 at your earliest opportunity as we intend on finalizing this report as soon as practical.

Regards,

Kory Snelgrove, P.Eng.

N.J. Peralta Engineering Ltd.
P: 519-733-6587 x 150
www.peraltaengineering.com

From: Cynthia Casagrande <CCasagrande@erca.org>
Sent: April 25, 2017 10:37 AM
To: Shane McVitty <smcvitty@amherstburg.ca>
Cc: tony@peraltaengineering.com; Dan Jenner <DJenner@erca.org>; Nicole Humber <nhumber@amherstburg.ca>
Subject: RE: Notification of Request for Drainage Works - Dolphis Meloche Drain

Dear Shane:

Re: E09-2017-009

This office acknowledges receipt of the Notice of Request for Repair & Improvement to the Dolphis Meloche Drain.

A review of our floodplain mapping for the Dolphis Meloche 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 a proposed project on this drain. However, we cannot be more specific in this regard without an actual proposal(s) to review.

With respect to Department of Fisheries and Oceans (DFO) concerns and comments, the proposed works to the Dolphis Meloche 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, April 24, 2017 5:28 PM
To: Cynthia Casagrande <CCasagrande@erca.org>
Cc: John Henderson <JHenderson@erca.org>; tony@peraltaengineering.com
Subject: Notification of Request for Drainage Works - Dolphis Meloche 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 Dolphis Meloche Drain. In general, a landowner has requested the replacement of an existing farm access bridge to accommodate larger farm equipment, located in Concession 3, part of Lot 12, in the former Geographic Township of Anderdon (Roll No. 490-02000). Given that many of the existing bridges within the subject drain are older and are exhibiting signs of deterioration and/or failure, we anticipate that there may be additional bridge replacements that will form part of this project. Of course, this remains unknown until such time that we can conduct the on-site meeting and are provided further insight from landowners and the examining engineer.

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

**** This page is intentionally left blank ****

Department of Fisheries and Oceans

Best Management Practices
Culvert Replacements in Municipal Drains

**** This page is intentionally left blank ****

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

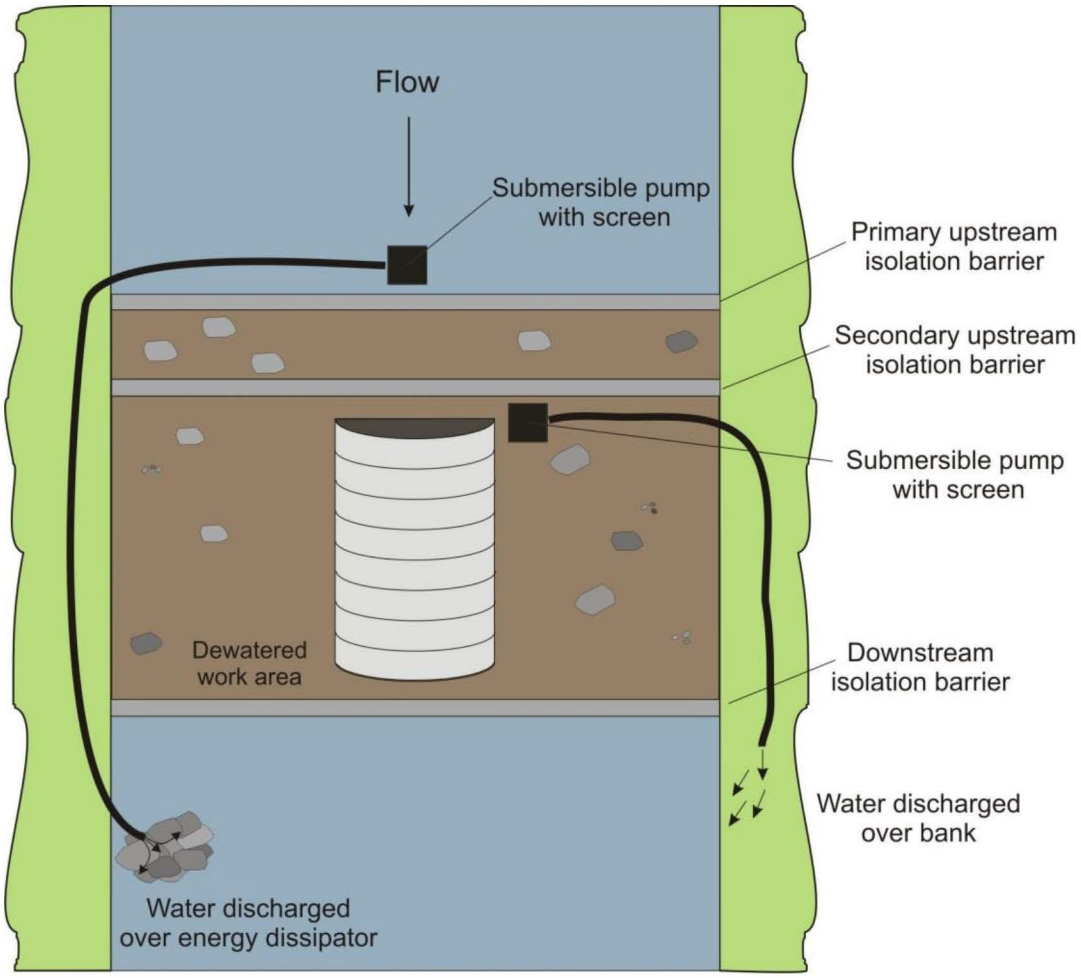


Figure 3. Isolation and Bypass Diversion when Working In-Water

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”

**** This page is intentionally left blank ****

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

1. CONCRETE FILLED JUTE BAG HEADWALLS

After the Contractor has set in place the new pipe, it shall completely backfill the same and install new concrete jute bag headwalls at the locations and parameters indicated on the drawing. When constructing the concrete jute bag headwalls, the Contractor shall place the bags so that the completed headwall will have a slope inward from the bottom of the pipe to the top of the finished headwall. The slope of the headwall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill behind the new concrete jute bag headwalls with Granular "B" and Granular "A" material as per O.P.S.S. Form 1010 and the granular material shall be compacted in place to a Standard Proctor Density of 100%. The placing of the jute bag headwalls and the backfilling shall be performed in lifts simultaneously. The granular backfill shall be placed and compacted in lifts not to exceed 305mm (12") in thickness.

The concrete jute bag headwalls shall be constructed by filling jute bags with concrete. All concrete used to fill the jute bags shall have a minimum compressive strength of 21 MPa in 28 days and shall be provided and placed only as a wet mix. Under no circumstance shall the concrete to be used for filling the jute bags be placed as a dry mix. The jute bags, before being filled with concrete, shall have a dimension of 460mm (18") x 660mm (26"). The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm (4") thick, 305mm (12") to 380mm (15") wide and 460mm (18") long.

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

All concrete used for the footing, cap and bags shall have a minimum compressive strength of 21 Mpa in 28 days and include 6% ± 1% air entrainment.

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

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

As an alternate to constructing a concrete filled jute bag headwall, the Contractor may construct a grouted concrete rip rap headwall. The specifications for the installation of a concrete filled jute bag headwall shall be followed with the exception that broken sections of concrete may be substituted for the jute bags. The concrete rip rap shall be approximately 460mm (18") square and 100mm (4") thick and shall have two (2) flat parallel sides. The concrete rip rap shall be fully mortared in place using a mixture composed of three (3) parts of clean sharp sand and one (1) part of Portland Cement.

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

2. PRECAST INTERLOCKING CONCRETE BLOCK HEADWALLS

With the authorization of the Owner, the Town Drainage Superintendent and the Consulting Engineer, the Contractor shall install interlocking concrete block headwalls in lieu of concrete filled jute bag headwalls.

The standard precast interlocking concrete blocks shall be rectangular in shape with square corners and be a minimum size of 600mm x 600mm x 1200mm (2' x 2' x 4'), as available from Underground Specialties Inc./Wolseley Inc., or approved equal. Blocks with modified lengths may be utilized to fill in staggered sections of the block wall. All blocks shall be cast in one pour with no cold joints and shall have minimum compression strength of 20MPa at 28 days. All precast concrete blocks shall be formed with interlocking pockets and tenons and each block shall be assembled in a staggered formation to prevent

sliding at the interface between blocks. All precast concrete blocks shall be uniform in size with relatively smooth and consistent joints. All precast concrete blocks shall have a smooth and consistent exterior finish. Each block shall be fitted with a lifting ring that will not interfere with the assembly of the block wall once they are set in place. Cap blocks shall be utilized on the top course of the wall with the top of the cap blocks having a smooth, uniform finish.

Precast interlocking blocks that abut the culvert pipe shall be cast as once solid piece and shall be cut and shaped to fit closely around the perimeter of the pipe. The face of the wall shall not extend beyond the end of the pipe. All minor gaps between the blocks and the pipe shall be sealed with no shrink grout for the full depth of the blocks. At the base of the wall, a base block shall be used at the bottom of the interlocking block wall. The base block shall be founded on a firm solid base. When necessary, the Contractor shall provide a minimum of 150mm thickness of level compacted granular bedding, or a lean concrete footing, as a firm foundation for the blocks. The base block shall be set level and shall convey a vertical projection throughout its full height and shall include filter cloth behind the wall for the full height of the blocks to prevent soil migration though any joints. Filter cloth fabric shall be non-woven geotextile material and be minimum GMN-160 meeting O.P.S.S. Class I. Both headwalls shall be assembled concurrently with a continuous uni-axial geogrid SG350, or equal, installed across the entire structure at every second course of blocks, to tie each headwall to each other. Both the non-woven filter cloth and the uni-axial geogrid are available from Armtec Construction Products or approved equal.

The blocks shall extend up from the pipe invert and cross the full width of the drain and be embedded a minimum of 500mm into the drain banks. Where required for the top of the block wall to match the height of the completed driveway, the Contractor shall embed the bottom course of blocks into the drain bottom the appropriate depth to achieve the required top elevation of the wall.

The Contractor shall arrange for the supplier to provide a interlocking block layout drawings outlining block assembly of the proposed headwall to the Consulting Engineer for approval prior to proceeding with fabrication and assembly of same. The Contractor shall arrange with the supplier for technical assistance with the assembly of the structure on-site in full accordance with the requirements of the supplier. All assembly installation shall be carried out to avoid any damage to the culvert and shall follow the supplier's recommendation in every respect to ensure a proper and safe installation.

The precast interlocking concrete block headwalls shall be installed vertically, and shall extend from the end of the Aluminized Steel Corrugated Hel-Cor Pipe to the top elevation of the driveway. Under no circumstances shall the interlocking block wall be installed with an outward projection. When complete, the outside face of the headwall shall be installed flush with the end of the proposed culvert. The precast interlocking concrete block headwall shall be installed perpendicular to the drain banks. The Contractor shall also be required to satisfactorily backfill the area in behind the new headwall with granular fill as already specified in the preceding paragraphs for backfilling of the bridge culvert. The top elevation of the headwalls, opposite the travelled roadway, are to be set no less than 75mm (3"), below the existing ground elevation. The alignment of these headwalls shall be performed to the full satisfaction of the Drainage Superintendent or the Consulting Engineer. The installation of the precast interlocking concrete block headwalls shall also comply with the "Block Headwall Installation Instructions for Culverts" provided by Underground Specialties Inc./Wolseley Inc.

3. 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.

4. 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.

5. 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.

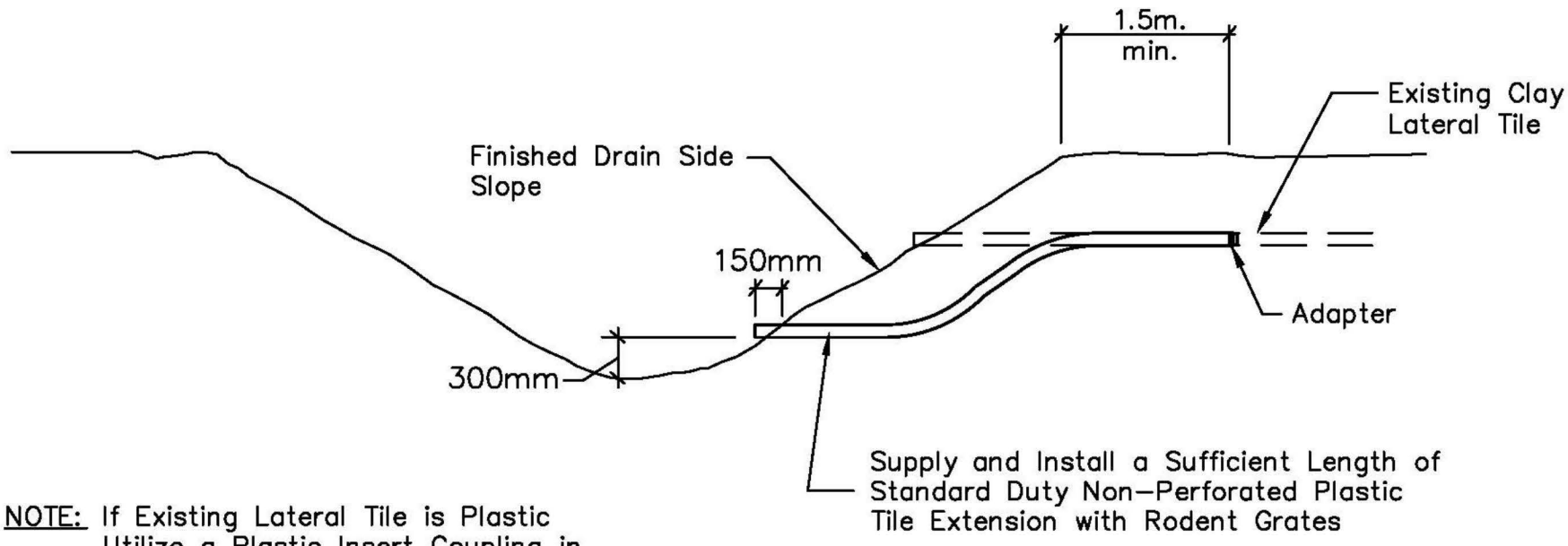
Where applicable, the Contractor and/or landowner constructing the new bridge shall be responsible for any damage caused by them to any portion of the Town road right-of-way. They shall take whatever precautions are necessary to cause a minimum of damage to same and must restore the roadway to its' original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

APPENDIX "C"

**** This page is intentionally left blank ****

PLANS, PROFILE & DETAILS

OF THE

DOLPHIS MELOCHE DRAIN IMPROVEMENTS

IN THE

TOWN OF AMHERSTBURG (Geographic Township of Anderdon)

IN THE

COUNTY OF ESSEX • ONTARIO

ANTONIO B. PERALTA, P.ENG.

N. J. PERALTA ENGINEERING LTD.

45 DIVISION STREET NORTH
KINGSVILLE, ONTARIO
N9Y 1E1

LICENSED PROFESSIONAL ENGINEER — A. B. PERALTA — 100138683 — 2022-06-30 — PROVINCE OF ONTARIO

DATE: JUNE 30th, 2022

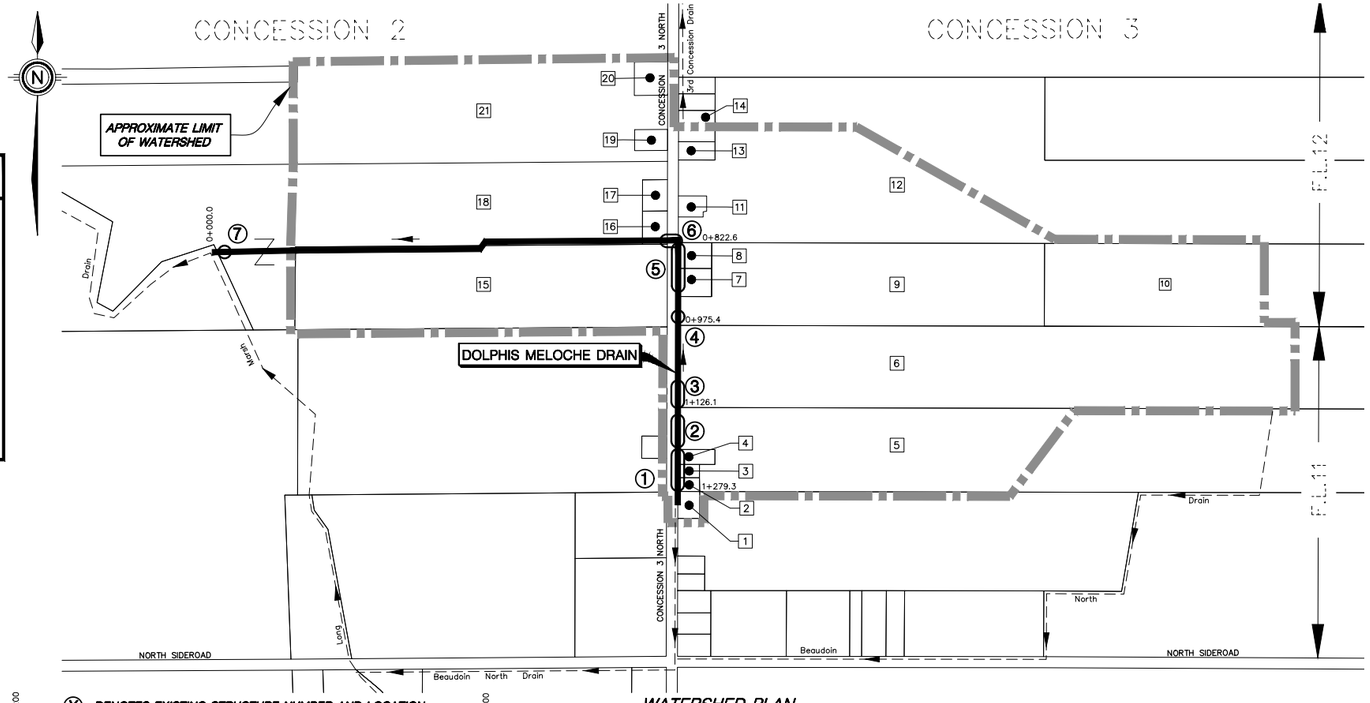
TOWN OF AMHERSTBURG

MAYOR: ALDO DICARLO
CLERK: VALERIE CRITCHLEY
DRAINAGE SUPERINTENDENT: SHANE McVITTY, P.ENG.

PARCEL I.D. #	OWNER NAMES
1	Cody Vincent & Olivia Presley
2	Shawn Bullock & Christie Bondy
3	Brody Blanchette & Brea Dupuis
4	Jason & Rebecca Mortimer
5	Joseph & Melody Bezaire
6	John & Bernadette Beaudoin
7	Richard Bastien
8	Raymond & Michelle Bastien
9	Raymond Bastien
10	Raymond Bastien
11	Christine Tatomir
12	Raymond Bastien
13	Richard & Caron Woods
14	Marcel Gagnier & Michelle Ras
15	Raymond & Leo & Donna Bastien
16	Paul & Elizabeth Morneau
17	Brian & Sarah Prieur
18	Raymond Bastien
19	Craig Church & Christina Rocheleau
20	Peter Tiefenbach & Peter Johnson
21	Anthony & Yvonne Simon

BENCHMARKS:

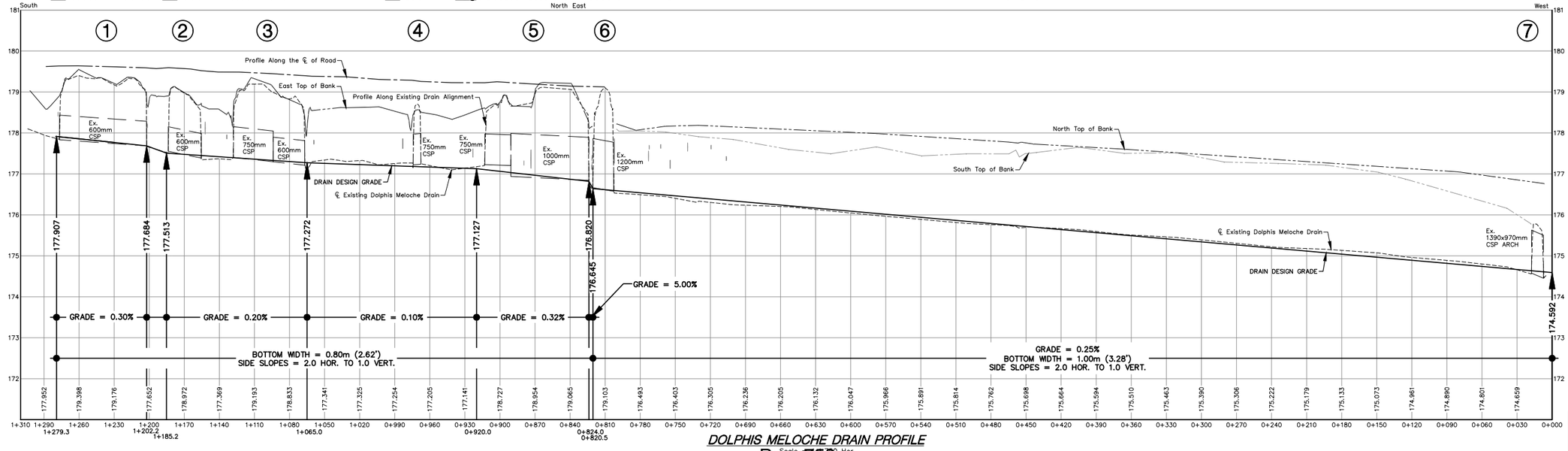
1. TOP OF NAIL SET IN EAST FACE OF EXISTING HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH, DIRECTLY ACROSS FROM M.N. 3785, AT THE SOUTH END OF ENCLOSURE ①.
   ELEV. = 179.308m
2. TOP OF NAIL SET IN EAST FACE OF EXISTING HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH, DIRECTLY ACROSS FROM M.N. 3803, AT THE SOUTH END OF ENCLOSURE ③.
   ELEV. = 178.993m
3. TOP NUT OF EXISTING FIRE HYDRANT LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH, DIRECTLY ACROSS FROM BRIDGE ④.
   ELEV. = 179.608m
4. TOP CENTER OF BOTTOM STEP TO HOUSE AT M.N. 3828, LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH AND DIRECTLY ACROSS FROM THE NORTH END OF ENCLOSURE ⑤.
   ELEV. = 178.888m



Ⓧ DENOTES EXISTING STRUCTURE NUMBER AND LOCATION
[X] DENOTES PARCEL ID#

WATERSHED PLAN
Scale = 1:5,000

1+229.3	End of Drain	
1+229.6	Between 490-01600 & 490-01500	
1+229.6 TO 1+277.6: COMPLETELY REMOVE AND REPLACE THE EXISTING ENCLOSURE; SEE ENCLOSURE ② DETAIL		
1+276.7	South End of Existing 600mm CSP	
1+278.9	North End of Asphalt Driveway for M.N. 3788	
1+284.4	North End of Asphalt Driveway for M.N. 3787	
1+254.0	Property Line Between 490-01700 & 490-01600	
1+232.1	Property Line Between 490-01800 & 490-01700	
1+241.2	North End of Existing Concrete Driveway for M.N. 3787	
1+229.6	Property Line Between 490-01750 & 490-01700	
1+218.5	South End of Existing Gravel Driveway for M.N. 3791	
1+211.4	North End of Existing Gravel Driveway for M.N. 3791	
1+202.2	North End of Existing 600mm CSP	
1+202.1	Property Line Between 490-01800 & 490-01750	
1+185.2	Swale Enters From East	
1+155.2 TO 1+185.2: COMPLETELY REMOVE AND REPLACE THE EXISTING ENCLOSURE; SEE ENCLOSURE ② DETAIL		
1+181.8	South End of Existing 600mm CSP	
1+181.6	South End of Existing Gravel Driveway for M.N. 3795	
1+178.5	North End of Gravel Driveway for M.N. 3795	
1+155.4	North End of Existing 600mm CSP	
1+128.5	Swale Enters From East	
1+128.1	South End of Existing 750mm CSP	
1+120.9	South End of Gravel Driveway for M.N. 3803	
1+118.5	North End of Gravel Driveway for M.N. 3803	
1+094.0	Approximate Location of Change in Pipe Size	
1+087.3	South End of Gravel Driveway for M.N. 3803	
1+084.7	North End of Gravel Driveway for M.N. 3803	
1+067.0	North End of Existing 600mm CSP	
1+065.9	Swale Enters From East	
0+980.7 TO 0+982.9: COMPLETELY REMOVE AND REPLACE THE EXISTING ACCESS BRIDGE; SEE BRIDGE ④ DETAIL		
0+975.4	South End of Existing 490-02000	
0+973.2	South End of Existing 750mm CSP	
0+967.7	North End of Existing 490-01900	
0+967.7 TO 0+913.7: COMPLETELY REMOVE AND REPLACE THE EXISTING ENCLOSURE; SEE ENCLOSURE		
0+941.5	Property Line Between 490-02100 & 490-02000	
0+912.9	South End of Existing 750mm CSP Pipe	
0+898.8	South End of Gravel Driveway for M.N. 3825	
0+897.6	South End of Sinkhole	
0+897.4	North End of Gravel Driveway for M.N. 3825	
0+895.7	Approximate Location of Pipe Size Change	
0+823.1	Existing Catchbasin East of Drain	
0+863.2	South End of Existing Asphalt Driveway at M.N. 3829	
0+862.4	North End of Existing Asphalt Driveway at M.N. 3829	
0+823.9	North End of Existing 600mm CSP	
0+822.6	Property Line Between 490-02200 & 490-02120	
0+821.2	Drain Turns South	
0+820.1	East End of Existing 1200mm CSP Road Crossing	
0+803.1	East R.O.W. Limit of Concession 3 North	
0+802.7	West End of Existing 1200mm CSP Road Crossing	
0+800.0	West R.O.W. Limit of Concession 3 North	
0+754.3	Property Line Between 500-01300 & 500-01200	
0+465.2	Drain Turns South West	
0+452.3	Property Line Between 500-01300 & 500-01100	
0+441.1	Drain Turns West	
0+017.6	East End of Existing 1390x970mm CSP Arch	
0+007.4	West End of Existing 1390x970mm CSP Arch	
0+000.0	Drain Outlets into the Long Marsh Drain	



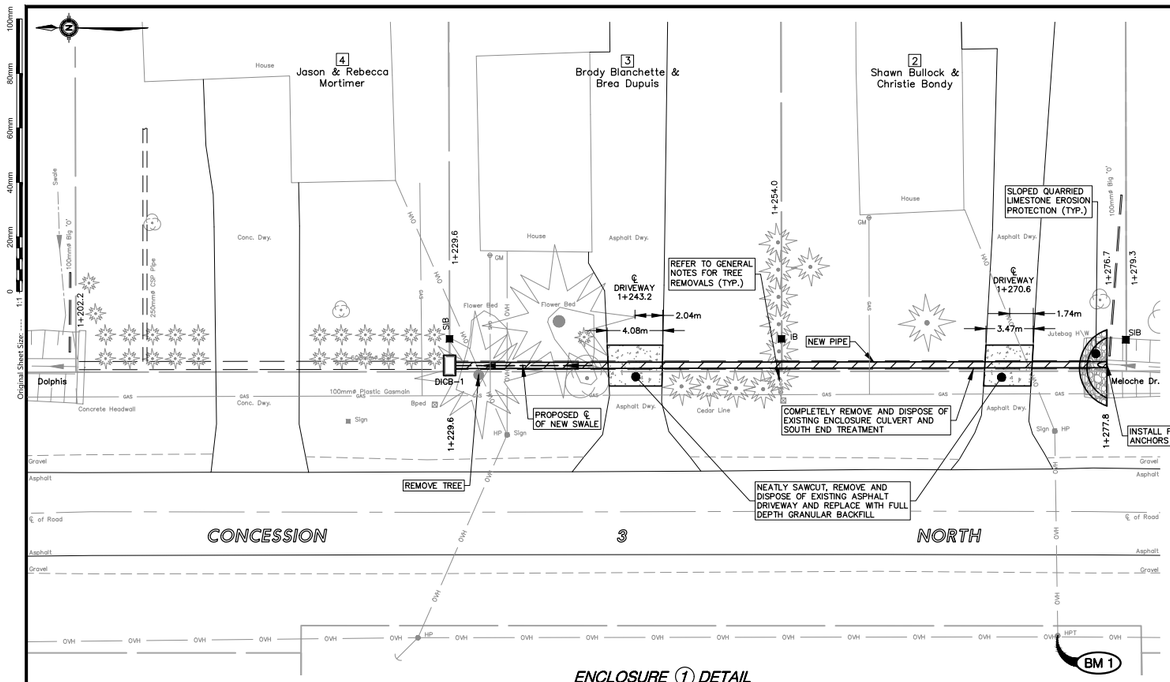
DOLPHIS MELOCHE DRAIN PROFILE
Scale - 1:500 Hor.
1:100 Vert.

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

DRAWN BY: M.J.S.
PLOT CODE: 1:1
COMPUTER FILE: D17057S1.dwg

FILE No.: D17-057
SHEET No.: 1 OF 4

Z:\PROJECTS\DRAINAGE\2017\D17057\CAD\DWG\D17057S1.dwn, Last Saved: 2022/06/20



ENCLOSURE (1) DETAIL

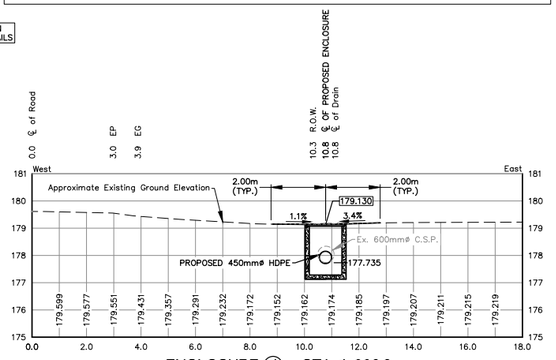
Scale = 1:200

BENCHMARK 1:
TOP OF NAIL SET IN EAST FACE OF EXISTING HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH, DIRECTLY ACROSS FROM M.N. 3785, AT THE SOUTH END OF ENCLOSURE (1).

ELEV. = 179.308m

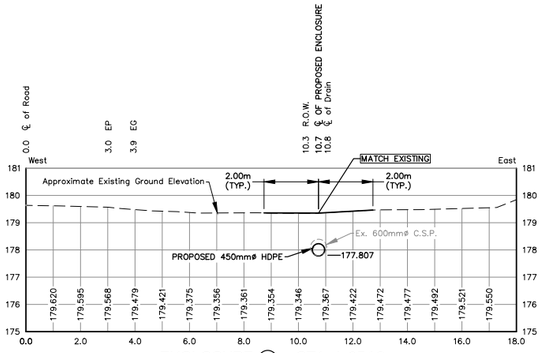
GENERAL NOTES:

1. THE ACCURACY OF THE UTILITIES SHOWN ON THESE DRAWINGS ARE NOT GUARANTEED BY THE OWNER OR N. J. PERALTA ENGINEERING LTD. OTHER UTILITIES MAY BE PRESENT OR THE UTILITIES MAY DIFFER IN SIZE OR LOCATION SHOWN.
2. ALL DIMENSIONS SHOWN IN METRES UNLESS NOTED OTHERWISE. PROPERTY LINES ARE ARE BASED ON THE TOWN OF AMHERSTBURG GIS DATA & FIELD INFORMATION.
3. THE CONTRACTOR IS TO ENSURE THAT POSITIVE DRAINAGE IS PROVIDED FROM ADJACENT LANDS AND ROADS TO THE NEW SWALES.
4. ALL DRAINAGE STRUCTURES ARE TO BE AS SPECIFIED WITH 450mm DEEP SUMP. SET TOP ELEVATION AS SET OUT WITHIN THESE PLANS WITH A MINIMUM 50mm BELOW ADJACENT GROUND AND GRADE TO SUIT.
5. ALL DRAINAGE STRUCTURES SHALL HAVE A MINIMUM OF 3 ADJUSTMENT UNITS AS PER OPSD 704.011.
6. ALL ENCLOSED DRAINS TO HAVE MINIMUM 450mm OF COVER.
7. ENSURE THAT THERE IS A MINIMUM 0.50m VERTICAL SEPARATION WITH THE PIPE LENGTHS CENTERED OVER ANY WATERMAIN OR SANITARY SEWER.
8. CONTRACTOR IS RESPONSIBLE TO PROTECT ALL PRIVATE FEATURES (SUCH AS FENCES, GATES, SPRINKLERS, FLOWER BEDS, ETC.). IN THE EVENT THAT A PRIVATE FEATURE IS IN THE ALIGNMENT OF THE NEW DRAIN ENCLOSURE, THE CONTRACTOR SHALL REMOVE AND RE-INSTALL THE PRIVATE FEATURE TO ITS ORIGINAL STATE, UNLESS OTHERWISE NOTED.
9. ALL EXISTING ENCLOSURE PIPE SHALL BE REMOVED AND DISPOSED OF. RESTORE ALL EXISTING DRIVEWAYS WITH FULL DEPTH GRANULAR BACKFILL.
10. CONTRACTOR SHALL ENSURE THAT PRECAUTIONARY MEASURES ARE TAKEN TO AVOID DAMAGE TO REMAINING AND NEW LAWN PIPING THROUGHOUT THE INSTALLATION PROCESS.
11. TOPSOIL SHALL BE PLACED ON ALL NEWLY EXCAVATED SWALE SIDE SLOPES AND DISTURBED BOULEVARD AREAS THAT SHALL BE SEEDED AND MULCHED.
12. THE CONTRACTOR SHALL REMOVE ANY EXISTING VEGETATION SUCH AS TREES, SHRUBS, BRUSH ETC. WITHIN THE ALIGNMENT OF THE NEW DRAIN ENCLOSURE IN CONSULTATION WITH THE OWNER, DRAINAGE SUPERINTENDENT, OR CONSULTING ENGINEER.



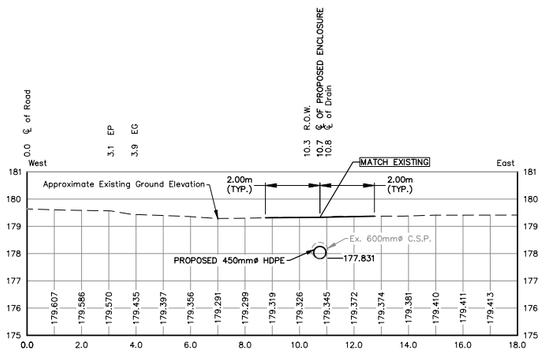
ENCLOSURE (1) - STA. 1+229.6

Scale = 1:100



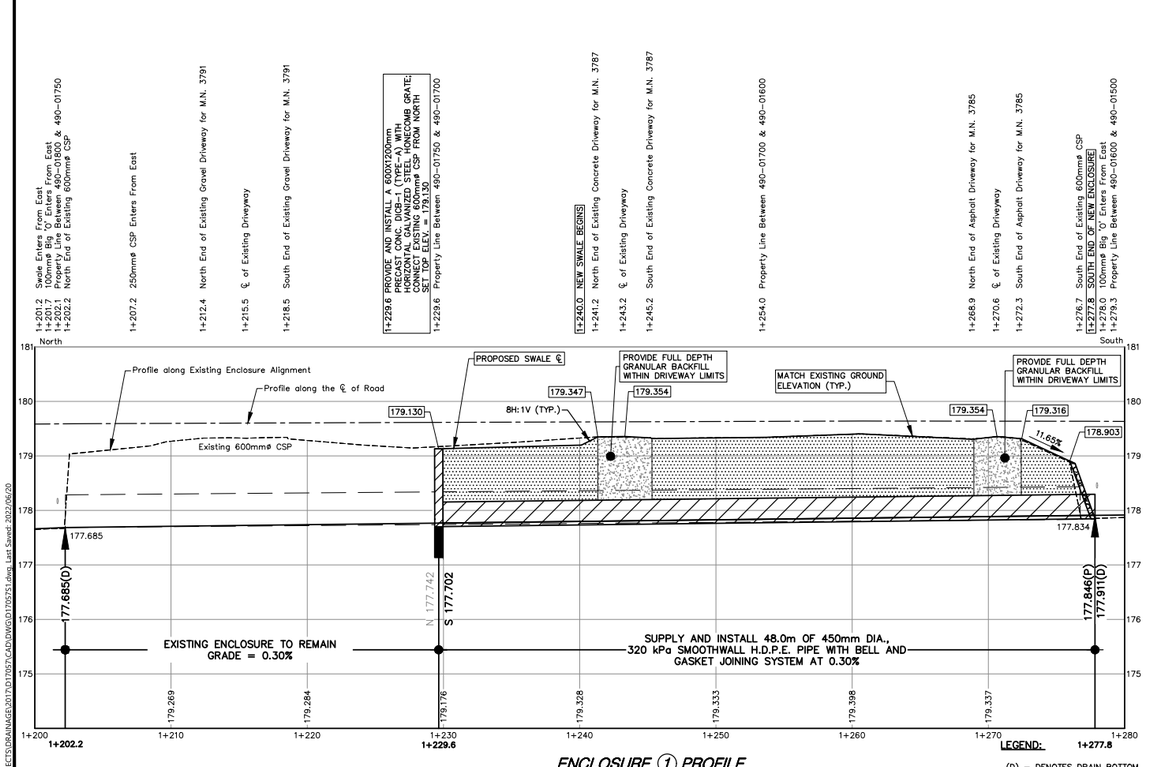
ENCLOSURE (1) - STA. 1+254.0

Scale = 1:100



ENCLOSURE (1) - STA. 1+266.7

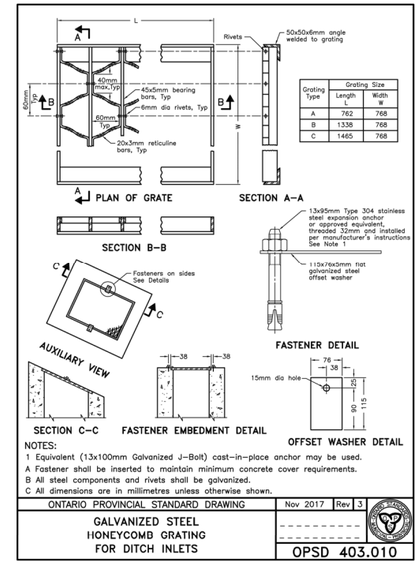
Scale = 1:100



ENCLOSURE (1) PROFILE

Scale = 1:200 Hor.
1:50 Vert.

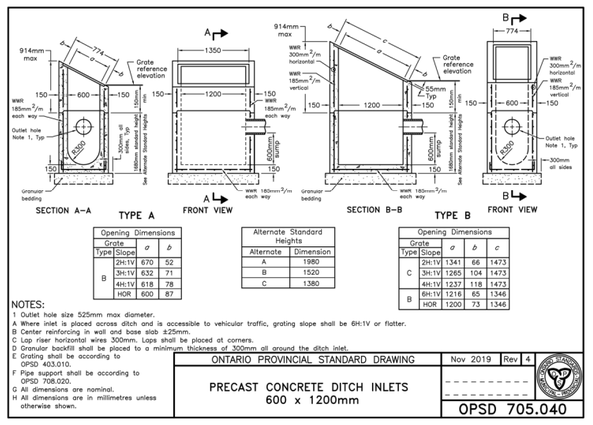
1+201.2	Swale Enters From East	
1+201.7	100mmø Big 'O' Enters From East	
1+202.2	Property Line Between 490-01800 & 490-01750	
1+202.2	North End of Existing 600mmø CSP	
1+207.2	250mmø CSP Enters From East	
1+212.4	North End of Existing Gravel Driveway for M.N. 3791	
1+215.5	℄ of Existing Driveway	
1+218.5	South End of Existing Gravel Driveway for M.N. 3791	
1+229.6	PROVIDE AND INSTALL A 600X1200mm PRECAST CONC. DICB-1 (TYPE-A) WITH HORIZONTAL GALVANIZED STEEL HONEYCOMB GRATE. CONNECT EXISTING 600mmø CSP FROM NORTH SET TOP ELEV. = 179.130	
1+229.6	Property Line Between 490-01750 & 490-01700	
1+240.0	NEW SWALE BEGINS	
1+241.2	North End of Existing Concrete Driveway for M.N. 3787	
1+243.2	℄ of Existing Driveway	
1+245.2	South End of Existing Concrete Driveway for M.N. 3787	
1+254.0	Property Line Between 490-01700 & 490-01600	
1+268.9	North End of Asphalt Driveway for M.N. 3785	
1+270.6	℄ of Existing Driveway	
1+272.3	South End of Asphalt Driveway for M.N. 3785	
1+276.7	South End of Existing 600mmø CSP	
1+278.0	100mmø Big 'O' Enters From East	
1+279.3	Property Line Between 490-01600 & 490-01500	



Grating Type	Grating Size Length L	Width W
A	762	768
B	1338	768
C	1465	768

NOTES:
1 Equivalent (13x100mm Galvanized J-Bolt) cast-in-place anchor may be used.
A Fastener shall be inserted to maintain minimum concrete cover requirements.
B All steel components and rivets shall be galvanized.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2017	Rev 3
GALVANIZED STEEL HONEYCOMB GRATING FOR DITCH INLETS		OPSD 403.010



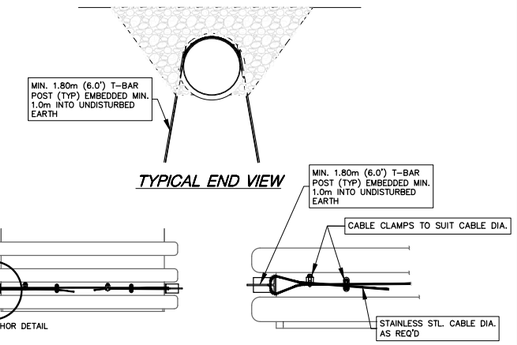
Opening Dimensions Grate Type	Slope	a	b
B	2H:1V	670	52
	3H:1V	632	71
	4H:1V	618	78
	HOR	600	87

Alternate Standard Heights Alternate	Dimension
A	1980
B	1520
C	1380

Opening Dimensions Grate Type	Slope	a	b	c
C	2H:1V	1341	66	1473
	3H:1V	1265	104	1473
	4H:1V	1237	118	1473
B	6H:1V	1216	65	1346
	HOR	1200	73	1346

NOTES:
1 Outlet hole size 525mm max diameter.
A Where inlet is placed across ditch and is accessible to vehicular traffic, grating slope shall be 6H:1V or flatter.
B Center reinforcing in wall and base slab ±25mm.
C Lap riser horizontal wires 300mm. Laps shall be placed at corners.
D Granular backfill shall be placed to a minimum thickness of 300mm all around the ditch inlet.
E Grating shall be according to OPSD 403.010.
F Pipe support shall be according to OPSD 708.020.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 4
PRECAST CONCRETE DITCH INLETS 600 x 1200mm		OPSD 705.040



FLOTATION ANCHOR DETAILS

LICENSED PROFESSIONAL ENGINEER A. B. PERALTA 100138683 PROVINCE OF ONTARIO 2022-06-30

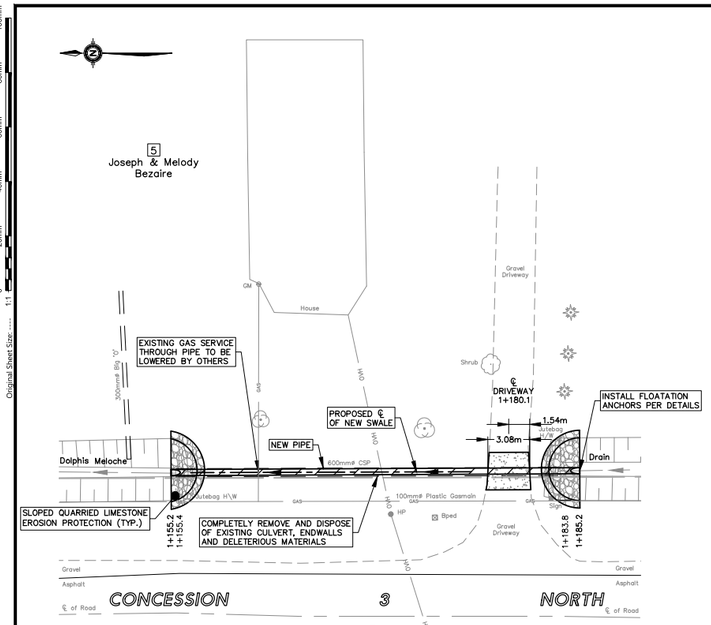
THESE DRAWINGS HAVE BEEN REDUCED IN SIZE AND THE SCALE THEREFORE VARIES. FULL SCALE DRAWINGS CAN BE VIEWED AT THE MUNICIPAL OFFICES IF REQUIRED.

DRAWN BY: M.J.S.
PLOT CODE: 1:1
COMPUTER FILE: D17057S1.dwg

FILE No.: D17-057
SHEET No.: 2 OF 4

Original Sheet Size:-----

Z:\PROJECTS\DRAWAGE\2017\D17057\CAD\DWG\D17057S1.dwg Last Saved: 2022/06/29

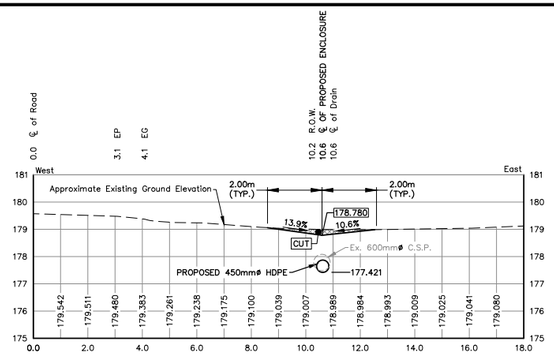


ENCLOSURE ② DETAIL

Scale = 1:200

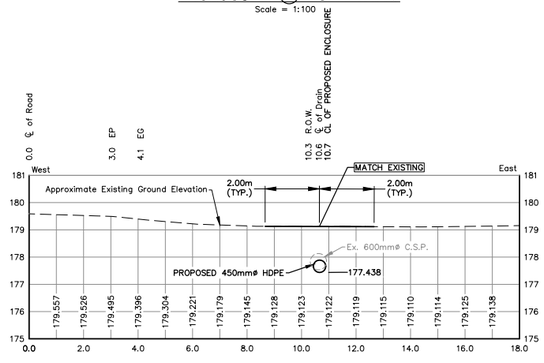
BENCHMARK 2:
TOP OF NAIL SET IN EAST FACE OF EXISTING HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH, DIRECTLY ACROSS FROM M.N. 3803, AT THE SOUTH END OF ENCLOSURE ② .

ELEV. = 178.993m



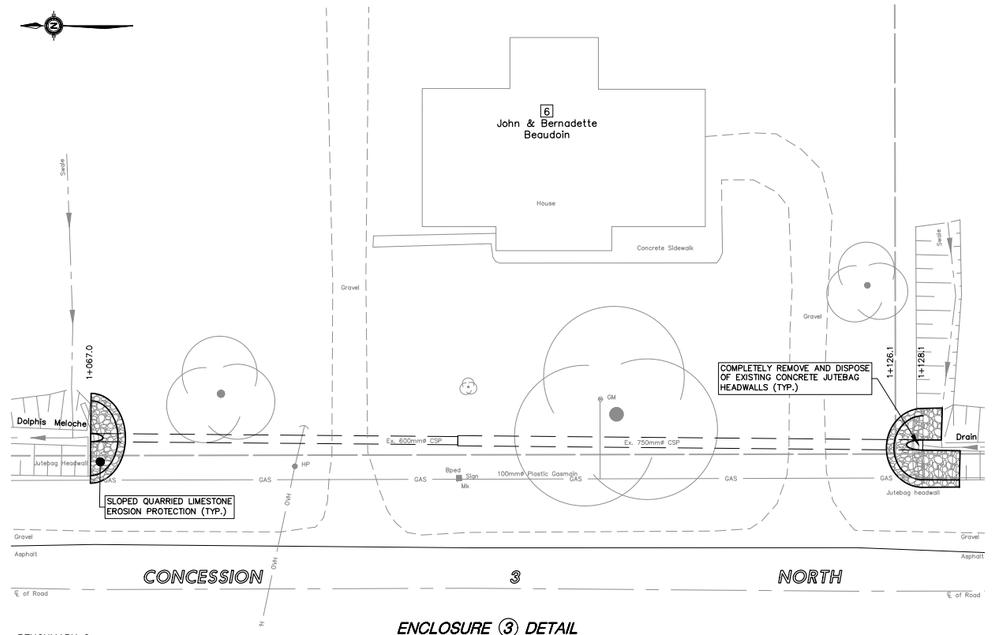
ENCLOSURE ② - STA. 1+171.3

Scale = 1:100



ENCLOSURE ② - STA. 1+180.1

Scale = 1:100

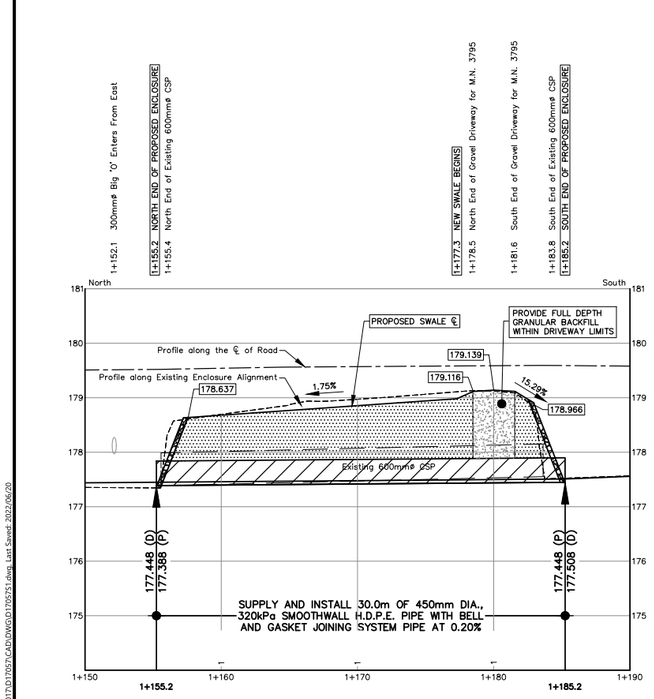


ENCLOSURE ③ DETAIL

Scale = 1:200

BENCHMARK 2:
TOP OF NAIL SET IN THE EAST FACE OF EXISTING HYDRO POLE LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH, DIRECTLY ACROSS FROM M.N. 3803, AT THE SOUTH END OF ENCLOSURE ③.

ELEV. = 178.993m



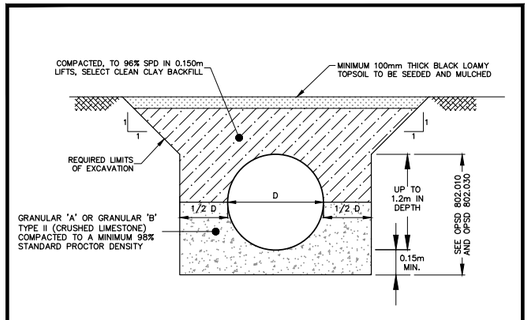
LEGEND:

(D) – DENOTES DRAIN BOTTOM

(P) – DENOTES PIPE INVERT

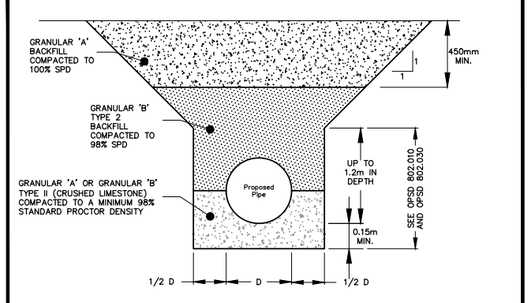
ENCLOSURE ② PROFILE

Scale = 1:200 Hor.
1:50 Vert.



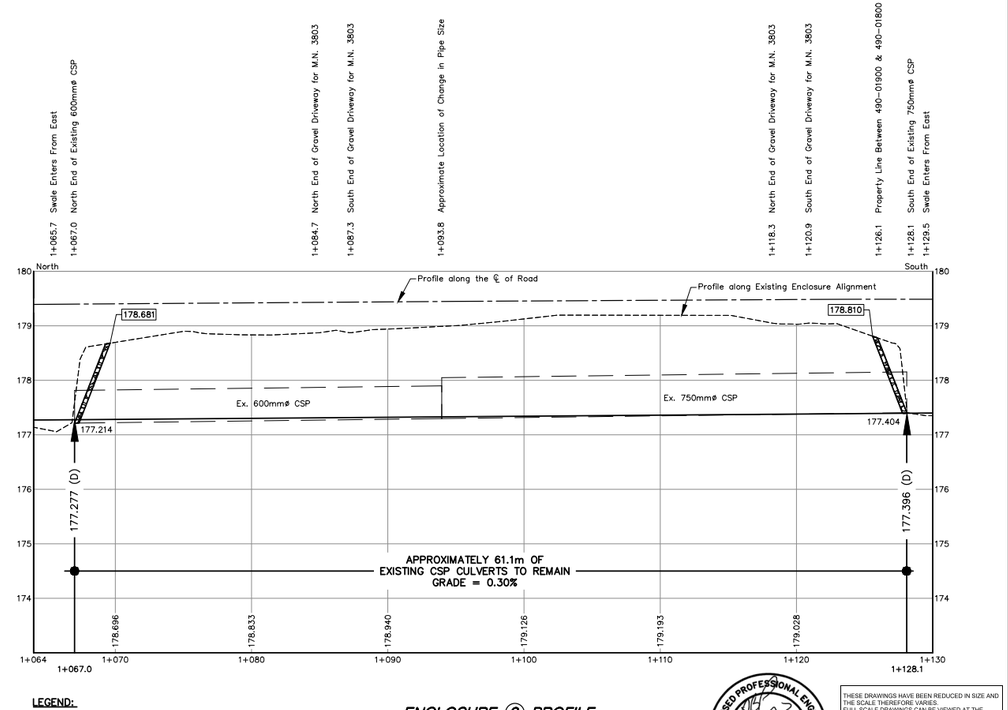
TYPICAL ENCLOSURE BACKFILL DETAIL

Scale = N.T.S.



TYPICAL DRIVEWAY CROSSING BACKFILL DETAIL

Scale = N.T.S.



LEGEND:

(D) – DENOTES DRAIN BOTTOM

ENCLOSURE ③ PROFILE

Scale = 1:200 Hor.
1:50 Vert.

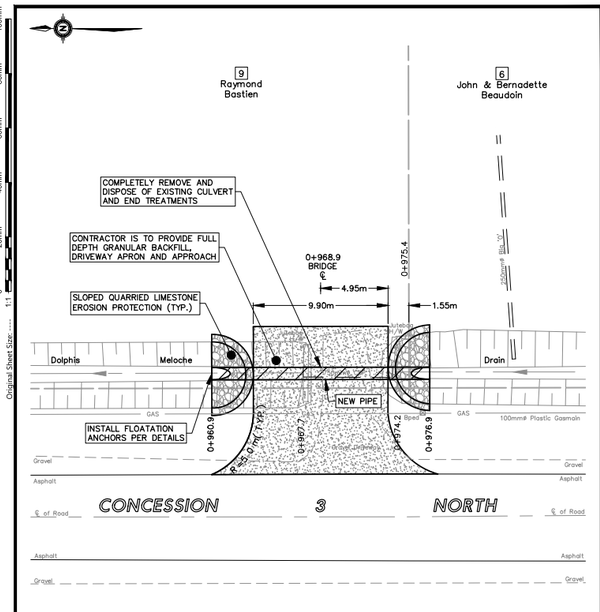
LICENSED PROFESSIONAL ENGINEER
A. B. PERALTA
100138883
2022-06-30
PROVINCE OF ONTARIO

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

DRAWN BY: M.J.S.
PLOT CODE: 1:1
COMPUTER FILE: D17057S1.dwg

FILE No.: D17-057

SHEET No.: 3 OF 4



BRIDGE ④ DETAIL

Scale = 1:200

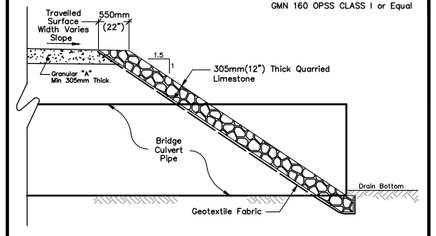
BENCHMARK 3:
TOP NUT OF EXISTING FIRE HYDRANT LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH, DIRECTLY ACROSS FROM BRIDGE ④.

ELEV. = 179.608m

PIPE SIZE:	PIPE LENGTH:	PIPE GAUGE:	CORRUGATIONS:	TYPE OF PIPE:
900mmø	16.0m (52.49 FT.)	320kPa	SMOOTHWALL INTERIOR	H.D.P.E.

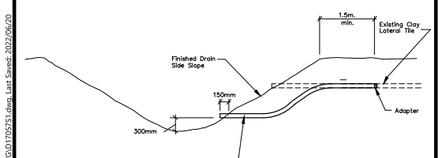
PIPE & DRIVEWAY ELEVATIONS:
UPSTREAM INV. (S) = 177.122m
DOWNSTREAM INV. (N) = 177.106m
℄ OF DRIVEWAY AT ROADWAY EDGE = 179.148m
℄ OF DRIVEWAY AT PIPE CENTRELINE = 178.735m
℄ OF DRIVEWAY 4.5m SOUTH OF R.O.W. LIMIT = 178.558m
DRIVEWAY CROSSFALL FROM CENTRELINE TO TOP OUT END OF END WALL = 1.50%

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



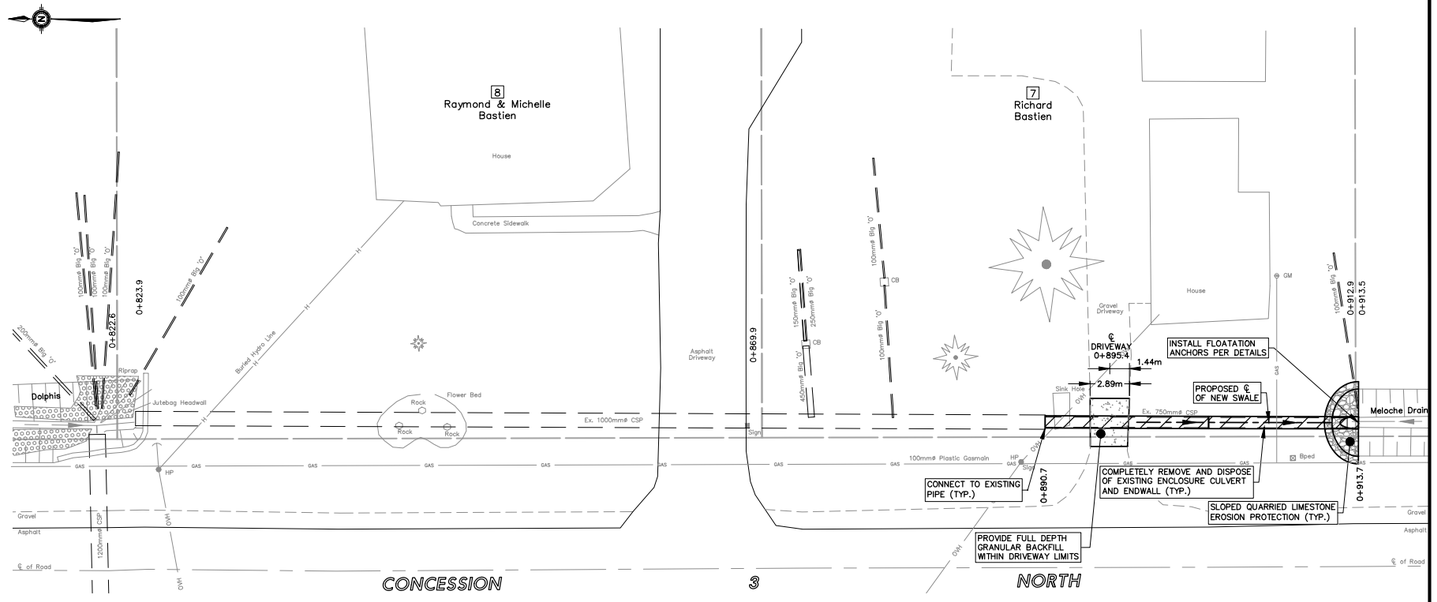
TYPICAL QUARRIED LIMESTONE END PROTECTION

Scale = N.T.S.



STANDARD LATERAL TILE DETAIL

Scale = N.T.S.

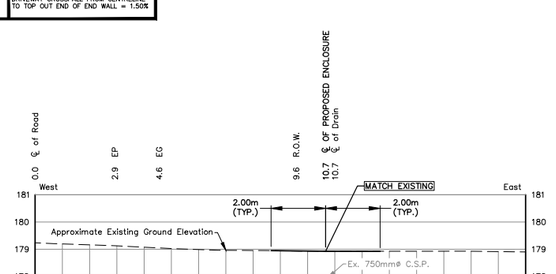


BENCHMARK 4:
TOP CENTER OF BOTTOM STEP TO HOUSE AT M.N. 3828, LOCATED ON THE WEST SIDE OF CONCESSION 3 NORTH AND DIRECTLY ACROSS FROM THE NORTH END OF ENCLOSURE⑤.

ELEV. = 178.888m

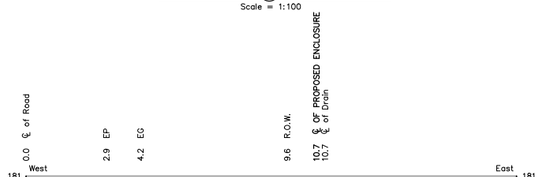
ENCLOSURE ⑤ DETAIL

Scale = 1:200



ENCLOSURE ⑤ - STA. 0+895.4

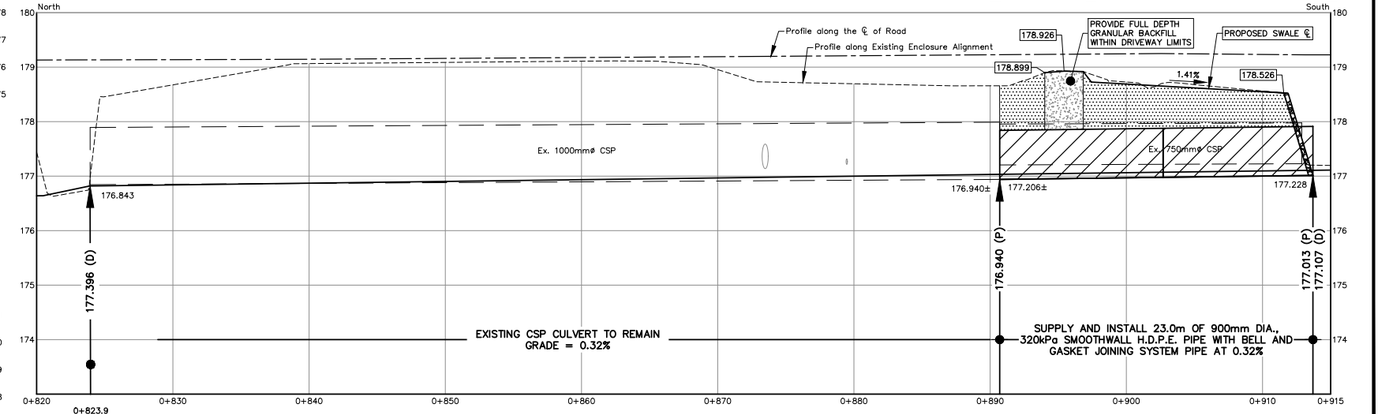
Scale = 1:100



ENCLOSURE ⑤ - STA. 0+902.3

Scale = 1:100

0+821.2 Drain Turns South
0+821.2 100mmø Big 'O' Enters From East
0+821.5 100mmø Big 'O' Enters From East
0+822.6 Property Line Between 490-02200 & 490-02120
0+823.9 100mmø Big 'O' Enters From East
0+823.9 North End of Existing 1000mmø CSP
0+862.4 North End of Existing Asphalt Driveway at M.N. 3829
0+868.7 South End of Existing Asphalt Driveway at M.N. 3829
0+869.9 Property Line Between 490-02120 & 490-02100
0+873.5 450mmø Big 'O' Enters From East
0+879.5 100mmø Big 'O' Enters From East
0+890.7 NORTH END OF PROPOSED ENCLOSURE
0+891.4 North End of Sinkhole
0+892.5 South End of Sinkhole
0+894.0 North End of Gravel Driveway for M.N. 3825
0+896.8 South End of Gravel Driveway for M.N. 3825
0+897.4 SWALE START
0+912.9 South End of Existing 750mmø CSP Pipe
0+913.5 Property Line Between 490-02200 & 490-02000
0+913.7 100mmø Big 'O' Enters From East
0+914.0 SOUTH END OF PROPOSED ENCLOSURE



LEGEND:

(D) – DENOTES DRAIN BOTTOM

(P) – DENOTES PIPE INVERT

ENCLOSURE ⑤ PROFILE

Scale = 1:200 Hor.
1:50 Vert.

A. B. PERALTA
100138683
2022-06-30
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

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

DRAWN BY: M.J.S.
PLOT CODE: 1:1
COMPUTER FILE: D17057S1.dwg

FILE No.: D17-057
SHEET No.: 4 OF 4

Z:\PROJECTS\DRAINAGE\2017\D17057\CAD\DWG\D17057S1.dwg Last Saved: 2022/06/29

APPENDIX "D"

**** This page is intentionally left blank ****

MAINTENANCE SCHEDULE OF ASSESSMENT

DOLPHIS MELOCHE DRAIN

TOWN OF AMHERSTBURG

3. MUNICIPAL LANDS:

Parcel ID	Con. or Plan Number	Lot or Part of Lot	Acres Owned	Acres Affected	Hectares Affected	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
	Concession 3 North			4.05	1.640	Town of Amherstburg	$ 363.00	$ 485.00	$ -	$ 848.00
	Total on Municipal Lands.....						**$ 363.00**	**$ 485.00**	**$ -**	**$ 848.00**

4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:

Parcel ID	Con. or Plan Number	Lot or Part of Lot	Acres Owned	Acres Affected	Hectares Affected	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
1	3	11	0.49	0.49	0.199	Cody Vincent & Olivia Presley	$ 49.00	$ 38.00	$ -	$ 87.00
2	3	11	0.25	0.25	0.101	Shawn Bullock and Christie Bondy	$ 38.00	$ 19.00	$ -	$ 57.00
3	3	11	0.24	0.24	0.097	Brody Blanchette and Brea Dupuis	$ 36.00	$ 18.00	$ -	$ 54.00
4	3	11	0.46	0.46	0.186	Jason & Rebecca Mortimer	$ 47.00	$ 37.00	$ -	$ 84.00
7	3	12	0.53	0.79	0.320	Richard Bastien	$ 56.00	$ 42.00	$ -	$ 98.00
8	3	12	0.57	0.72	0.291	Raymond & Michelle Bastien	$ 51.00	$ 38.00	$ -	$ 89.00
11	3	12	0.48	0.48	0.195	Christine Tatomir	$ 46.00	$ 32.00	$ -	$ 78.00
13	3	12	0.56	0.56	0.225	Richard & Caron Woods	$ 66.00	$ 44.00	$ -	$ 110.00
14	3	12	0.95	0.48	0.195	Marcel Gagnier and Michelle Ras	$ 32.00	$ 26.00	$ -	$ 58.00
16	2	12	0.69	0.69	0.279	Paul & Elizabeth Morneau	$ 58.00	$ 51.00	$ -	$ 109.00
17	2	12	0.65	0.65	0.263	Brian & Sarah Prieur	$ 55.00	$ 48.00	$ -	$ 103.00
19	2	12	0.57	0.57	0.232	Craig Church and Christina Rocheleau	$ 41.00	$ 33.00	$ -	$ 74.00
20	2	12	0.92	0.92	0.373	Peter Tiefenbach and Peter Johnson	$ 55.00	$ 37.00	$ -	$ 92.00
	Total on Privately Owned - Non-Agricultural Lands.....						**$ 630.00**	**$ 463.00**	**$ -**	**$ 1,093.00**

5. PRIVATELY OWNED - AGRICULTURAL LANDS (grantable):

Parcel ID	Con. or Plan Number	Lot or Part of Lot	Acres Owned	Acres Affected	Hectares Affected	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
5	3	11	50.18	24.54	9.930	Joseph & Melody Bezaire	$ 437.00	$ 717.00	$ -	$ 1,154.00
6	3	11	50.07	42.87	17.350	John & Bernadette Beaudoin	$ 725.00	$ 1,253.00	$ -	$ 1,978.00
9	3	12	24.13	23.72	9.599	Raymond Bastien	$ 361.00	$ 659.00	$ -	$ 1,020.00
10	3	12	25.23	16.14	6.530	Raymond Bastien	$ 253.00	$ 463.00	$ -	$ 716.00
12	3	12	72.78	24.52	9.925	Raymond Bastien	$ 411.00	$ 704.00	$ -	$ 1,115.00
15	2	12	25.61	25.61	10.363	Raymond, Donna & Leo Bastein	$ 429.00	$ 381.00	$ -	$ 810.00
18	2	12	45.63	24.21	9.798	Raymond Bastien	$ 405.00	$ 360.00	$ -	$ 765.00
21	2	12	136.85	29.65	11.998	Anthony & Yvonne Simon	$ 233.00	$ 268.00	$ -	$ 501.00
	Total on Privately Owned - Agricultural Lands (grantable).....						**$ 3,254.00**	**$ 4,805.00**	**$ -**	**$ 8,059.00**
				659.73	90.089		**$ 4,247.00**	**$ 5,753.00**	**$ -**	**$ 10,000.00**

1 Hectare = 2.471 Acres
D17-057
June 30th, 2022