THE CORPORATION OF THE TOWN OF AMHERSTBURG

BY-LAW NO. 2022-002

By-law to provide for the McBride Road Branch of the Willow Beach Drain Conveyance Improvements based on the Drainage Report by N.J. Peralta Engineering Ltd.

WHEREAS a request for improvement of the McBride Road Branch of the Willow Beach Drain was received under section 78 of the Drainage Act;

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

WHEREAS Council of the Corporation of the Town of Amherstburg has authorized Tony Peralta, P. Eng., to prepare a report and said engineer's report dated December 20, 2021, can be referenced as Schedule A, as attached hereto;

WHEREAS $133,804.00 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 1, 2022.

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 $133,804.00 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 14th day of February, 2022.

MAYOR – ALDO DICARLO

CLERK – VALERIE CRITCHLEY

Read a third time and finally passed this 13 day of March, ~~2022.~~ 2023

MAYOR ~~– ALDO DICARLO~~
Michael Pue

CLERK ~~– VALERIE CRITCHLEY~~
Kevin Fox

DRAINAGE REPORT

MCBRIDE ROAD BRANCH OF THE WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS

(Geographic Township of Malden)

TOWN OF AMHERSTBURG

N. J. Peralta Engineering Ltd.

Consulting Engineers

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

Project No. D-19-054

December 20th, 2021

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

MCBRIDE ROAD BRANCH OF THE WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS

REPORT TABLE OF CONTENTS

APPENDICES

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

December 20th, 2021

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: **MCBRIDE ROAD BRANCH OF THE WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS**
(Geographic Township of Malden)
Town of Amherstburg, County of Essex
Project No. D-19-054

I. INTRODUCTION

In accordance with the instructions received by letter of January 14th, 2021, from the Drainage Superintendent and Engineering Coordinator, Mr. Shane McVitty, P.Eng., we have completed the necessary survey, examinations, and investigations, etc. and have prepared the following report that provides for drain conveyance improvements for the upper end the McBride Road Branch of the Willow Beach Drain, to facilitate the development of residential building lots. 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 drain, in accordance with the Drainage Act. A plan showing the alignment of the McBride Road Branch of the Willow Beach Drain, and the general details of the existing and proposed works, is included herein as part of this report.

The initial request to provide an Engineer's Report was initiated for the improvements to the McBride Road Branch of the Willow Beach Drain related to the potential enclosure of the remaining open portion of the Municipal Drain. The initial request was submitted by the original owners of the subject property, Matt and Shelley Kelly, for Lots 120 of 131 of Registered Plan 1103, Part of Caldwell Grant. The initial request was submitted on behalf of the Developer, and future property owner, Coulson Design-Build Inc. Through the progression of the project, ownership of the subject property was transferred to Coulson Design-Build Inc., where our office was instructed to continue with the drain improvements to facilitate the development. For the sake of clarity, the Owner and Developer of the subject property shall be identified herein as Coulson Design-Build Inc. (Coulson).

Our appointment and the works related to the improvements to the McBride Road Branch of the Willow Beach Drain, proposed under this report, is in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended in 2021". We have performed all of the necessary surveys, investigations, etc., for the McBride Road Branch of the Willow Beach Drain, and we report thereon as follows.

II. BACKGROUND AND WATERSHED CHARACTERISTICS

At present, Coulson is in the process of developing their lands to create additional residential lots within the subject property identified within Lots 120 to 131 of Registered Plan (R.P.) 1103, Part of Caldwell Grant. Currently, Coulson is working towards final approvals for this proposed residential development. In order to facilitate the layout for this development, together with fulfilling the Planning and Engineering requirements, it was established that drainage improvements would be required to the McBride Road Branch of the Willow Beach Drain to determine the general constraints and layout of the proposed development. With the McBride Road Branch of the Willow Beach Drain having Municipal Drain status, the required works shall be conducted through the provisions of the Drainage Act. The initial intent of the project, initiated by the Owner/Developer, was to enclose and re-align the open drain portion of the Municipal Drain to best facilitate the ideal lot severance layout provided by the Owner/Developer.

The McBride Road Branch of the Willow Beach Drain is an existing Municipal Drain that services a relatively small watershed. This Municipal Drain provides a sufficient outlet for runoff originating primarily from residential lands alongside McBride Road, McLeod Avenue and Concession 3 South. The watershed also includes agricultural lands located north of McLeod Avenue and along Concession 3 South. The Municipal Drain extends from its upper end as an open drain on the south side of McLeod Avenue and through the subject property to the east right-of-way limit of the McBride Road, where the open drain portion outlets into a ditch inlet catch basin. The Municipal Drain further extends southerly as a covered drainage system located on the east side of the McBride Road, for approximately 288.00 metres. At this point, the Municipal Drain continues downstream in a westerly direction through an easement and outlets into the Main Branch of the Willow Beach Drain.

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

III. DRAINAGE HISTORY

A review of the Town of Amherstburg's drainage records indicates that the Willow Beach Drain and its Branches are existing Municipal Drains that have been repaired and improved on a number of previous occasions through the auspicious of the Drainage Act. However, for the purposes of this project, we have focussed our research on the McBride Road Branch of the Willow Beach Drain as it directly affects the subject property.

From our review, we have found that the McBride Road Branch of the Willow Beach Drain was incorporated as a Municipal Drain through the "Willow Beach Drain and Pumping Scheme" Engineer's Report prepared by E.P. Dries, P.Eng., dated November 2nd, 2005 and was carried out under Amherstburg Drainage By-Law. Under this report, the newly constructed McBride Road essentially cut off the existing open drain portion of the Main Branch, south of McLeod Avenue. This report was prepared to incorporate this improved drainage system and identified as the McBride Road Branch of the Willow Beach Drain.

From our detailed research of the above Engineer's Report we have determined that generally speaking, the 2005 Report serves as the current governing By-Law for the entire length of the McBride Road Branch of the Willow Beach Drain. Therefore, the design parameters identified within the 2005 report were in part utilized as minimum parameters in our determination of the design for the new drain conveyance improvements under this project.

IV. PRELIMINARY INVESTIGATIONS AND INITIAL ON-SITE MEETING

After reviewing all the available drainage information and documentation provided by the Municipal Drainage Superintendent, we arranged to schedule an On-Site Meeting for March 5th, 2021. Due to the novel coronavirus (Covid-19) pandemic, in-person meetings were not permitted. As such, this meeting was scheduled through video conferencing technology. The following people virtually attended said meeting:

Drew Coulson	Coulson Design-Build Inc.
Crystal Eckmier	Landowner
Chris Charlebois	Landowner
Deborah Hills	Landowner
Jack Hills	Landowner
Terry Wynn	Landowner
Maureen Wynn	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 the meeting and upon introductions, Mr. McVitty generally advised that a written notice had been submitted by the landowners at 519 McLeod Avenue, for the re-alignment of the existing Municipal Drain through their lands. This realignment is being requested to facilitate the development of the property and to sever additional residential building lots. Mr. Coulson, who represented the Owner and development, further advised that they would prefer that the existing drain be enclosed and realigned around the parcel's perimeter and along the road right-of-way limits. Moving the Municipal Drain around the perimeter of the site would assist in maximizing the development of the subject property.

We proceeded to review the history of the McBride Road Branch of the Willow Beach Drain and the general drainage patterns of the area in question. This Municipal Drain serves as an outlet for the residential and agricultural lands directly adjacent to Concession 3 North, McLoed Avenue, and McBride Road. Mr. Peralta further explained that a Municipal Drain is a communally accepted drain and that all landowners within the watershed are considered stakeholders. Mr. Peralta further explained 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.

Prior to the scheduled meeting, Mr. Coulson provided Mr. Peralta with a Draft Site Plan Zoning By-Law Compliance diagram which illustrated the desired lot configuration for the proposed development. This plan included the retention of the existing home on the subject property, together with four (4) additional severances. Based on the lot configuration and intended scope presented by Mr. Coulson, Mr. Peralta provided conceptual illustrations of a potential alignment of the new covered drain system around the perimeter of the parcel within McLeod Avenue and McBride Road allowances. With the drainage improvements requested/required to accommodate the development of a single property, all costs associated with this project will likely be assessed entirely to the subject property.

Mr. Peralta advised that as part of this project, consultation with all of the affected environmental government agencies will be required to ensure compliance with all applicable legislation. These agencies include the Department of Fisheries and Oceans (D.F.O.), Ministry of Natural Resources and Forestry (M.N.R.F.), the Ministry of Environment, Conservation and Parks (M.E.C.P.), and the Essex Region Conservation Authority (E.R.C.A.). Through the consultation with these agencies, additional measures may need to be included as part of this project to satisfy their requirements. As a result, the approvals of these agencies would be considered an integral part of the advancement of this project.

In addition to the environmental requirements, the proposed improvements shall conform to regional design requirements related to development and Municipal Drains. As such, Mr. Peralta further identified that the drainage improvements will ensure that the minimum requirements for minor and major flow conveyance are

maintained through the system. Based on the desired drainage configuration, Mr. Peralta identified that any covered drainage system (minor) will likely be sized to convey a minimum of 1 in 5-year storm event and the overland conveyance (major) will likely be required to convey the 1 in a 100-year storm event. Mr. Peralta further emphasized that any drainage improvements to the Municipal Drain, to facilitate this development, shall not create any adverse impacts to the neighbouring lands, the subject property, nor the upstream and downstream lands within the drain's watershed. Furthermore, as part of this project, existing drainage patterns for the neighbouring properties directly utilizing the existing open drain section will need to be addressed.

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

1. Mr. Charlebois, who lives adjacent to the subject property, advised that he did not believe that their property had any direct tile drainage into the existing open drain portion.

2. Mr. and Mrs. Wynn questioned whether there were any specific issues with the existing drainage system and requested clarification on the purpose of the meeting related to their property. Mr. Peralta advised that he was unaware of any current issues with this portion of the drainage system and that the request for improvements was solely to facilitate the development of the property. This meeting is considered a formality to ensure that all stakeholders that could be affected by the proposed works are aware of the project and that their input related to drainage would be welcomed and considered. Mr. Wynn also confirmed that they did not think their property had any direct connections into this open drain.

3. There was no representation from the adjacent property at 529 Concession 3 South. However, Mr. Coulson provided input on the drainage from this property. Mr. Coulson advised us that he has walked the open drain portion alongside this property and can confirm that there is tile drainage directly connected to the existing drain. Mr. Peralta further advised that based on available online mapping and Google Streetview, there appears to be an existing berm alongside the east bank of the drain.

Mr. Peralta informed everyone present that this information was very informative and confirmed that any existing drainage connections will be verified as part of the site investigations and provisions will be made to ensure that all existing drainage features (surface and sub-surface) will be accommodated as part of the proposed drainage improvements, if needed.

The overall drainage report and future maintenance processes, and general timelines were reviewed with the landowners present. They were also advised that it would be likely that the works in this drain were not to be undertaken between March 15th and June 30th, of any given year, unless otherwise permitted by the D.F.O., E.R.C.A., M.N.R.F., and the M.E.C.P.

At the conclusion of the meeting, Mr. Peralta advised that some landowners may be contacted if additional information is required. Otherwise, Mr. Peralta will work in close consultation with Mr. Coulson, the Town of Amherstburg and the affected environmental agencies towards the completion of this project.

On this note, the On-Site Meeting had concluded.

V. FIELD SURVEY AND INVESTIGATIONS

Following our 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 existing drainage system through the subject property. Our investigations also included a topographic survey of the proposed alignment alongside the McLeod Avenue and McBride Road allowances, to gather sufficient information to allow for our design work to be carried out.

Benchmarks were looped from previous work carried out on the drain and were utilized in establishing a relative site Benchmark at each end of the project site. We also surveyed the drain for a considerable distance both upstream and downstream of the project site to verify existing parameters and establish a new design grade profile. We also took cross-sections of the existing drain alignment, noting and measuring all surface water inlet locations, and identifying all of the necessary details along the existing drain and proposed alignments.

The Ministry of Environment, Conservation and Parks (M.E.C.P.) currently regulates the Endangered Species Act, 2007. New regulation provisions under Ontario Regulation 242/08, Section 23.9 allows the 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, we understand that the Town of Amherstburg had 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 this submission, E.R.C.A. had provided general comments related to the request for improvements within the Municipal Drain.

For the purpose of establishing the watershed area, we investigated and reviewed the past Engineer's Reports on the McBride Road Branch of the Willow Beach Drain. Specifically, we utilized the governing "Willow Beach Drain and Pumping Scheme" Report prepared by E.P. Dries, P.Eng., dated November 2nd, 2005, to establish the watershed contributing to the overall drainage system. We also carried out verification of the watershed limits utilizing the most recent reports of the various drains in the vicinity of the McBride Road Branch of the Willow Beach Drain. In addition, we utilized current LiDAR information to verify the watershed limits upstream of the existing drain being improved herein.

VI. DESIGN CONSIDERATIONS

Based on the discussions with the Developer and the information gathered at the On-Site Meeting, we established that the initial scope of work shall focus on the enclosure and re-alignment of the McBride Road Branch of the Willow Beach Drain to facilitate the development of the residential properties.

"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 2-year return period (50% chance of occurring each year) storm design 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.

The Town of Amherstburg has created a Development Manual with the intent to streamline the process for "new" development works within their jurisdiction. This Development Manual is intended to work in conjunction with the requirements of Ontario Provincial Standard Specifications and Standard Drawings. This manual identifies that storm sewers in the Municipality shall be designed to a minimum 5-year return period for minor systems and a 100-year return period for major systems. Although this document is helpful when establishing design requirements for new drainage infrastructure, it does not specifically identify circumstances for addressing or retrofitting existing developments and drainage infrastructure.

In 2018, the development of the Windsor/Essex Region Stormwater Management Standards Manual (W.E.R.S.M.S.M.) was prepared to outline the general requirements for works proposed for "new" development within the Windsor/Essex Region. Based on the guidelines established within this document, the standard for a new municipal storm sewer (minor) system design is a 5-year return period (20% chance of occurring each year). As part of new development, the major drainage system (or floodproofing measures) shall consider a minimum design of a 100-year return period (1%

chance of occurring each year) that also accounts for surface ponding and floodproofing elevations. This document also refers to the minimum design requirements when drainage systems have outfall conditions affected by lake levels. Although this document is helpful when establishing design requirements for drainage infrastructure, it does not specifically identify circumstances for addressing or retrofitting existing developments and drainage infrastructure.

Based on the regional design standards, the comments and details outlined at the On-Site Meeting, and upon gathering the necessary field information, we proceeded with the general analysis and investigations towards addressing the desired configuration established by the Developer. A conceptual design was prepared that encompassed a covered drainage system that extended from the south end of the existing road crossing culvert across McLeod Avenue and extending westerly to the southeast corner of the intersection of McLeod Avenue and McBride Road. The covered drainage system then extended southerly along the east side of McBride Road to the junction where the open drain outlets into the existing storm sewer near the southern limit of the subject property. Based on this configuration, the analysis identified that the minor flows (1:5-year return period) can be satisfactorily conveyed through the proposed covered drainage system. However, based on the considerable amount of fill required to raise the proposed building lots to the appropriate floodproofing elevation, the anticipated major flows (1:100-year return period) could not be safely conveyed without adverse effects to the adjacent lands.

VII. DEVELOPMENT REQUIREMENTS AND E.R.C.A. CONSULTATION

In May of 2021, we had contacted Shane McVitty, Drainage Superintendent and Engineering Coordinator, to discuss our preliminary findings and to verify the Town's requirements for development and how they coincide with the proposed drainage improvements. Mr. McVitty advised that the requirements of development are heavily influenced by the existence and requirements of the Municipal Drain. He further identified that due to the small nature of the development and the site parameters, it would be most practical that our proposed drainage improvements include the effects created by the increase in impermeable conditions that would typically be captured within stormwater management provision for the development.

The initial E.R.C.A. comments specifically related to the McBride Road Branch of the Willow Beach Drain identified that the affected Municipal Drain is located within the 1:100-year floodplain area associated with Lake Erie. The E.R.C.A. further identified that our proposal was not expected to adequately address any flooding concerns with respect to the 1:100-year flooding event of Lake Erie. The initial comments also identified that they do not expect any extraneous comments or concerns with respect to this project. However, they could not be more specific without an actual proposal to review.

Based on the initial comments outlined by the E.C.R.A. and the findings of our original analysis, we had reached out to Ashley Gyori, of the E.R.C.A., to obtain clarification on their initial comments and to seek additional information related to floodproofing elevations and stormwater management requirements for the development. Ms. Gyori provided the minimum required floodproofing elevations for the lowest opening into any proposed structure of 176.200 metres, resulting from the raw 1:100-year flood elevation of 175.900 metres plus a 0.300-metre freeboard. Ms. Gyori also provided clarification on the E.R.C.A.'s expectations related to addressing the low-lying lands within the project site and how the infilling of the development cannot cut-off overland surface water runoff. Furthermore, the drainage improvements shall not negatively impact the adjacent parcels and how they utilize the existing drainage system. In addition to E.R.C.A.'s Municipal Drain comments, the W.E.R.S.M.S.M. document (previously identified) outlined further requirements related to the implications of stormwater management for development within the region.

Based on the requirements outlined by the Town and the clarification provided by the E.R.C.A., we recognized that in-filling of the proposed building lots would essentially cut off the natural conveyance of surface water during major storm events and potentially impact the adjacent properties. As such, we found that the preliminary design and concept to provide a covered system around the perimeter of the development would likely not be feasibly achieved.

VIII. HYDRAULIC ANALYSIS AND DESIGN OPTIONS

In light of the provisions outlined by the Town and the E.R.C.A., it became apparent that detailed analysis would be required through a Hydraulic Model to quantity the theoretical runoff and conveyance through the existing system relative to the proposed development. As such, the Hydraulic Model was conducted using PCSWMM modelling software and was prepared to evaluate the theoretical flood elevations of this Municipal Drain, relative to the 1:100 year storm event flows. Based on past general discussions and review with E.R.C.A. Staff, any hydraulic analysis must demonstrate minimal to no change in the 1:100-year storm event water surface elevation relative to the pre-development versus the post-development, per the input requirements set out within the W.E.R.S.M.S.M. guidelines. The results of this evaluation shall confirm that the proposed development and associated drainage improvements shall not create negative impacts on the overall system.

As noted within the E.R.C.A. comments, the subject lands are located within the 1:100-year lake-driven floodplain area associated with Lake Erie. The analysis of the pre-development conditions confirmed that the adjacent lands within the watershed are influenced by the 1:100-year surface elevation at approximately 175.150 metres, with approximately 1200 cubic metres of runoff being stored in the floodplain within the subject

property. At this elevation, the pre-development analysis also confirmed that certain adjacent lands are susceptible to flooding.

Once the pre-development conditions were established, we applied the post-development parameters of the development that included the preferred lot layout configuration, which included four (4) lot severances all set to the minimum floodproofing elevation, while accounting for the post-development runoff coefficients. Taking into consideration the pre-development conditions (flows, storage, and 1:100 year water surface evaluation), together with the post-development parameters, the desired enclosure to be installed around the perimeter of the site would encompass a minimum 1.8-metre high x 10.0-metres span box culvert enclosure. This solution would be impractical to install in the available space and would further be cost-prohibitive.

With the intention to facilitate the overall development and maximize the number of buildable lot severances, various alternative options were analyzed and considered. Based on this analysis, the following options proved to be the most viable and cost-effective solutions that would not create any negative impacts to any of the lands within the watershed:

Option 1 – Minimal Improvements: With minor site grading and drainage improvements, two (2) lot severance could be created from the original property creating a total of three (3) lots including the existing home. The results would provide sufficient building lot areas that meet the minimum zoning by-law requirements.

Option 2 – Reconfiguration of the Open Channel: By re-aligning, widening, and deepening the open channel to accommodate the minimum storage requirements, three (3) lot severances could be created from the original property creating a total of four (4) lots including the existing home. The results would provide sufficient building lot areas that meet the minimum zoning by-law requirements.

Option 3 – Reconfigure the Open Channel with Auxilliary Outlet Pipe: This option would be similar to Option 2, with the addition of an auxiliary outlet pipe around the perimeter of the subject property to provide additional conveyance. The auxiliary pipe will not result in any additional lots. However, it does provide additional building envelope width for the proposed lots adjacent to the open channel. The results would further enhance the lot configuration that meets the minimum zoning by-law requirements.

IX. CONSULTATION WITH THE TOWN AND DEVELOPER

Upon conducting the necessary analysis and deriving various options for consideration, a virtual meeting was scheduled on August 9th, 2021 with the affected Stakeholder to review and discuss the available design options for this project. The following people were in attendance:

Drew Coulson	Coulson Design-Build Inc.
Shane McVitty, P.Eng.	Amherstburg's Drainage Superintendent
Frank Garardo	Amherstburg's Manager of Planning Services
Emma Teskey, E.I.T.	N.J. Peralta Engineering Ltd.
Kory Snelgrove, P.Eng.	N.J. Peralta Engineering Ltd.
Tony Peralta, P.Eng.	N.J. Peralta Engineering Ltd.

Upon introductions, Mr. Peralta provided an overview of the project progression and advised the purpose of the meeting was to review the findings of our analysis and provide potential recommendations for the proposed drainage improvements related to the development of the subject property. Emphasis was made regarding the importance of not creating adverse effects to the adjacent, upstream, and downstream lands within the watershed, especially considering that the watershed is susceptible to flooding.

Based on the original lot configuration and intended drainage improvements, the analysis identified that the required drainage improvements to facilitate the desired lot configuration would not be practical, nor cost-effective. As such, Mr. Peralta had reviewed alternative lot configurations and drainage solutions that would allow the development of these lands without adversely impacting the watershed. As such, Mr. Peralta presented the three (3) alternative options as outlined above.

Following Mr. Peralta's presentation, he opened up discussions and requested that they provide their comments and concerns related to the options provided. They are as follows:

1. Mr. Garardo asked whether the lot configuration is flexible relative to the two proposed severances adjacent to the open channel. Mr. Peralta advised that the two (2) potential severances adjacent to the open channel are flexible as they surpass the minimum requirements relative to the zoning by-law. Therefore, if the Town would like to modify the configuration of these potential severances, there should be ample room to do so.

2. Mr. Garardo further identified whether consideration has been given for future maintenance provisions of the open channel. Mr. Peralta advised that all future access and maintenance corridors for the proposed improvements were considered and shall further be established within the Engineer's Report.

3. Mr. Coulson asked the Town Representatives whether they would accept an open channel relative to the desired covered drainage system. Mr. McVitty confirmed that initially, the Town was amenable to a covered drainage system around the perimeter of the subject property. However, in light of the information presented and the need to protect the watershed, they recognize that it would not be feasible to proceed in that manner. Mr. McVitty further emphasized the importance to safeguard the lands within the watershed and that the potential solution to facilitate the development of this property appears reasonable.

At the conclusion of this meeting, Mr. Peralta advised that the information presented will be issued to all parties for further review and comments. Additional details on lot dimensions and setback distances from the proposed open channel will be included with the submission. Mr. Perlta advised that he welcomed any questions, clarifications, or recommendations for adjustments towards obtaining general acceptance of the proposals. Upon addressing any questions or comments, he would request confirmation of general acceptance for the Engineering Department, Planning Department and the Developer prior to proceeding with final design details.

Upon review of the submitted information, the Town's Engineering Department identified that they have no concerns with the proposed design options and that they would be comfortable with either of the options presented. The Town's Planning Department identified that, so long as the proposed lot configurations meet the minimum lot size requirements that have no concerns with either of the options presented.

Upon review of the Town's comments, we further reviewed and discussed the various options with Mr. Coulson. Through these discussions, Mr. Coulson confirmed that he preferred to proceed with Option 2. Based on this direction, it was established that we had enough information and direction to proceed with the final analysis and design for the overall project.

X. FINDINGS AND RECOMMENDATIONS

Based on our topographic survey, detailed investigations, discussions, and review with affected landowners, Town Staff, information derived from the On-Site Meeting, together with the review and correspondence with the E.R.C.A. and other environmental government agencies; we have proceeded to establish the required details to adequately address the specified improvements within McBride Road Branch of the Willow Beach Drain. Our findings and recommendations are outlined within the following subheadings.

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. Ashley Gyori, of the E.R.C.A., to deal with any E.R.C.A. issues and comments related to this Municipal Drain and the overall development. The McBride Road Branch of the Willow Beach Drain is located within the regulated area and is under the jurisdiction of the E.R.C.A., and therefore an E.R.C.A. Permit is required for the improvements to the McBride Road Branch of the Willow Beach Drain and its Outlets. Upon their request, design proposals were submitted to the E.R.C.A. for their review and consideration. Upon their review of the design proposal, the E.R.C.A. provided us with their general acceptance and comments through email correspondence, and said email is included herein as **Appendix "A"**.

With respect to the Department of Fisheries and Oceans (D.F.O.) concerns related to the Fisheries Act, the proposed works within the Municipal Drains were "self-assessed" by the Engineer, through the D.F.O. website and the documentation prepared by D.F.O. on the "Guidance for Maintaining and Repairing Municipal Drains in Ontario". These references help to determine whether this project shall be reviewed by the D.F.O. The McBride Road Branch of the Willow Beach Drain, within the project site, resides at the top end of the overall system and is the only remaining portion of open channel. Based on the D.F.O. Self Assessment website, this section of Municipal Drain is currently rated as a Class 'D' Drain by the D.F.O. as it used to be directly connected to the Willow Beach Drain open channel. However, since this time, the entire drainage system downstream of the open drain consists of 420.0 metres of storm sewer that is directly connected to a pump station, with no gravity outlet. Based on the D.F.O. Self-Assessment website and reference documentation, 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. This evaluation was based on the fact that the system is disconnected from a waterbody and the nature of the improvements is intended to enhance the open drain portion and promote aquatic habitat that currently does not exist.

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 the 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 impact that these species may experience as a result of the subject works, the Town of Amherstburg has 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 D.F.O. Self-Assessment, and the requirements through the Endangered Species Act, we have provided for all of the E.R.C.A., D.F.O., and M.E.C.P. concerns and issues in our design and recommend that these drainage works be constructed in total compliance with all of the above.

McBride Road Branch of the Willow Beach Drain Improvements

Prior to the completion of our Engineer's Report on this project, we had discussed the details of this project with the affected Owner and the Town of Amherstburg to review the particulars of the drain improvements of the McBride Road Branch of the Willow Beach Drain, in great length and detail.

From our investigations, examinations, calculations, discussions, and determinations with the affected parties, the following findings were noted and recommendations regarding same are provided as follows:

1) Coulson Design-Build Inc., the current Owners of the subject property, is in the process of obtaining planning consent to create severances from the existing residential property. The subject severances shall require drainage improvements within the McBride Road Branch of the Willow Beach Drain to facilitate the overall development.

2) The overall development has a significant impact on the Municipal Drain and the approval of the overall development is contingent on the approval of the drainage improvements through provisions of the Drainage Act.

3) The existing low-lying lands and open drain of the subject property currently provide stormwater management storage and flow attenuation for the overall drainage system. Based on the current configuration of the open portion of this Municipal Drain, the full development of the subject property is limited without creating any adverse effects to the overall drainage system.

4) In order to ensure that no adverse effects are created by the development of the subject property, a Hydraulic Model using PCSWMM modelling software was prepared for this project to analyze the pre-development conditions relative to the post-development conditions. Through this analysis, the proposed lot configuration has been established to maximize the development while creating a "like or better" level of service that the drainage system currently provides. The results of the drainage improvements shall not create any adverse impacts on the overall drainage system and shall comply with the Drainage Act and regional guidelines.

5) At the onset of the project, the original intent was to maximize the development by creating four (4) severances from the original property for a total of five (5) residential properties, together with a covered drainage system around the perimeter of the property. Through our investigations

and analysis, it was determined that a covered drainage system around the perimeter of the site would not sufficiently provide adequate storage and flow attenuation required for the development of these lands. As such, it was determined that only three (3) lot severances with drainage improvements to the open channel would sufficiently address the requirements of development. As a result, a total of four (4) parcels shall form part of the development and each shall be identified as follows:

i. Retained Lot
ii. Severance #1
iii. Severance #2
iv. Severance #3

6) In order to best facilitate the development, we recommend that the existing open channel be re-aligned, widened, and deepened to create a two-stage conveyance channel between Station 0+419.9 and Station 0+539.4, including all appurtenances, excavation and grading as shown and detailed within the accompanying drawings and further detailed within the specifications.

7) The improved open channel is intended to provide sufficient conveyance of drainage flows from upstream while maintaining and improving the necessary runoff storage volume of the pre-development and post-development runoff. The new conveyance channel has been sized to convey and store flows from storm events up to the 1:100-year storm event. The alignment shall be constructed so that it maintains a top width between 17.00 metres to 26.50 metres, having drain side slopes no steeper than three (3) horizontal to one (1) vertical. The high-flow shelf/terrace width of the open channel shall be between 9.00 metres to 14.65 metres graded at 2.00 percent. The low-flow channel shall be constructed with a 1.00-metre bottom width and 0.15-metre depth while maintaining a minimum of three (3) horizontal to one (1) vertical side slope, as shown and detailed within the plans.

8) Through consultation with the E.R.C.A., the subject property is located within the 1:100-year floodplain area associated with Lake Erie. As such, each new lot shall maintain a minimum required floodproofing elevation for the lowest opening into any proposed structure of 176.200 metres. This elevation was derived from the raw 1:100-year flood elevation of 175.900 metres plus a 0.300-metre freeboard.

9) As part of the widening and deepening of the improved open channel, together with raising the adjacent lands to the floodproofing elevation, the top of the new channel banks elevation will exceed the existing grades of the adjacent lands. As such, the new drain banks shall be built-up and constructed with berms having a minimum top width of 2.00 metres with three (3) horizontal to one (1) vertical side slopes until a time when the building lot elevation has been achieved. With the widening of the open channel, there shall

be ample native fill material to construct the new berms. The creation of the proposed lots will require a considerable amount of fill material beyond the limits of the proposed open channel and berm. It shall be noted that the acquisition of the remaining fill material to bring the proposed lots to the floodproofing elevation shall the responsibility of the Owner/Developer.

10) In order to facilitate the open channel conveyance improvements, we recommend the removal of the existing 600mm square Ditch Inlet Catch Basin (D.I.C.B.) and replacing it with a new outlet structure that includes a new 600mm x 1200mm D.I.C.B. (identified as DICB-1) and a new 1200mm diameter Precast Concrete Maintenance Hole (identified as MH-2) as shown and detailed within the plans.

11) We recommend that the new working corridors for future maintenance, between Station 0+419.9 and Station 0+540.9, shall be established within the high-flow shelf/terrace width of the improved channel alignment ranging from 9.00 metres to 11.00 metres wide, for its entire length. This working corridor shall be a free unencumbered and uninterrupted easement in perpetuity on, in, over, under, across, alongside and through the lands described herein, for the purpose of installing, maintaining, replacing, altering, cleaning, repairing, providing and operating the open channel. We further recommend that this area shall remain free and clear of any new buildings, structures, fences, concrete or asphalt paving, or other structures or obstructions of any kind. In the event, any such item is placed on any of the lands referred to herein, the Owner or Owners of the said lands at the time shall be liable for the cost incurred by the transferee, its servants, agents and assigns, in the removal of such items.

12) In the event that the prospective property owner wishes to maximize the frontage of the building envelope for Severance #2 or Severance #3, provisions have been included herein to allow for a retaining wall to be installed outside of the 1:100-year water surface elevation. Details of which have been included and detailed within the accompanying plans. It shall be noted that the installation of any structures permitted within the drain, and outside of the 1:100-year water surface elevation, shall not form part of the Municipal Drain and shall be the full responsibility of the affected landowner for initial construction and future maintenance. Under no circumstances shall the future retaining wall (or any other structure) extend beyond the limits shown within "Detail A-A" on Sheet 4 of the accompanying plans.

13) We further recommend that all ancillary work required to complete the proper functionality of the improved open conveyance channel also be conducted and performed as part of this project and that all of the work associated with this project be provided to the full satisfaction of both the Municipality's Drainage Superintendent and the Consulting Engineer.

In summary, we would recommend that the existing open drain portion of the McBride Road Branch of the Willow Beach Drain, through the subject property, be re-aligned, widened, deepened and further improved, together with the necessary appurtenances to facilitate the development of three (3) new residential lot severances. We further recommend that all works be completed in accordance with this Report, the attached Specifications, and the accompanying Drawings and that all of the works associated with same be carried out in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

XI. ALLOWANCES AND COMPENSATION

Allowances For Land Taken

The improved open conveyance channel for the McBride Road Branch of the Willow Beach Drain shall be constructed within the subject property and partially within the McBride Road and McLeod Avenue right-of-ways. These lands have already been compensated for the land taken under previous Engineer's Reports and by-laws. Therefore, further compensation for the use of these lands to construct the improved open drain shall not be required and that only a nominal value of $1.00 per property be paid to re-establish the legal right for the improved Municipal Drain through these lands and to establish the right to access along the drain for future maintenance.

We find that the following Owners are entitled to and should receive the following amounts as compensation for the Value of Land Taken, in order to construct the McBride Road Branch of the Willow Beach Drain:

1)	Coulson Design-Build Inc.	Owner,	Lots 120 to 131, R.P. 1103	$ 1.00
2)	Town of Amherstburg for McBride Road			$ 1.00
3)	Town of Amherstburg for McLeod Avenue			$ 1.00
	TOTAL FOR LAND TAKEN			$ 3.00

This compensation shall allow for the use of the land necessary to re-align, widen, deepen, and improve the two-stage conveyance channel through the subject property, together with facilitating any future maintenance. We have used nominal values for compensation to the lands owned by Coulson Design-Build Inc., in consideration of the fact that the existing drain is located primarily within the subject property and the impact on these lands is required to facilitate the development of their lands.

We have provided for this land taken compensation in our estimate, as is provided for under Section 29 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

Compensation For Damages

All areas disturbed by this work are specified for full restoration. Therefore, the works will not have any direct or indirect damages to the affected lands. Accordingly, no allowances or compensation for damages will be provided under Section 30 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

XII. ESTIMATE OF COST

Our estimate of the total cost of this work, including all incidental expenses, is the sum of **ONE HUNDRED THIRTY-THREE THOUSAND EIGHT HUNDRED FOUR DOLLARS ($133,804.00)** made up as follows:

CONSTRUCTION

Item 1)	**Traffic Control**; Supply, install and maintain traffic control measures, including signs, flashers, flaggers, and other traffic control devices to Ontario Traffic Manuals and M.T.O. Roadside Safety Manual requirements. Remove all components at completion of the project.	Lump-Sum	$ 1,500.00
Item 2)	**Water, Sediment, and Erosion Control Plan Fish Salvage and Fish Exclusion**; Provide a Water, Sediment, and Erosion Control Plan required to obtain the necessary permits and approval; Provide all labour, equipment and materials to implement the Water, Sediment, and Erosion Control Plan, together with the Fish Salvage and Fish Exclusion Measures as outlined within the specifications, complete.	Lump-Sum	$ 3,000.00

Item 3) **Brushing, Grubbing, and Tree Removal;**
Provide all labour, equipment, and materials to remove all vegetation within the existing drain bottom, bank slopes, and top of banks **(excluding east drain bank)** for approximately 119.5 lineal metres including all flailing, cutting, piling, chipping or burning, loading, hauling and disposal, complete at $25.10 per lineal metre. $ 3,000.00

Item 4) **Station 0+419.9 to Station 0+539.4;**
Provide all labour, equipment, and material to excavate all drain bottom sediment and deleterious material, scavenging topsoil and windrowing along the existing drain outside of the new drain limits, provide all excavation to re-align, widen, deepen, and improve 119.5 lineal metres of the existing open drain (approximately 1065 cu.m.) in accordance with the accompanying plans and specifications, including grading, backfill, cleanup and restoration, complete, at approximately $427.62 per lineal metre. $51,100.00

Item 5) **Ditch Inlet Catch Basin (DICB-1);**
Supply and install a 600mm x 1200mm (Type A) precast concrete catch basin at a 3:1 grade with galvanized honeycomb grate, approximately 1.0-metre deep including excavation, bedding, connection of the proposed pipe, 450mm sump, backfill, compaction and restoration, complete, approximately 1.0 unit at $4,600.00 each. $ 4,600.00

Item 6) **Precast Concrete Maintenance Hole (MH-2);**
Remove and dispose of existing 600mm square DICB, supply and install 1200mm diameter concrete maintenance hole and base slab 2.5 metres deep with flat cap, cast iron frame and lid, including adjustment units, excavation, disposal, bedding, connection of the proposed drain pipes, 450mm sump, backfill, compaction and restoration, complete, approximately 1.0 unit at $5,400.00 each. $ 5,400.00

Item 7)	**DICB-1 to MH-2**; Remove and dispose of a portion of the existing outlet pipe; supply and install approximately 4.5 lineal metres of 525mm diameter PVC DR35 pipe including bell & gasket coupler joining system, connections, excavation, granular bedding, backfill, compaction and restoration, complete at $550.56 per lineal metre.		$ 2,500.00
Item 8)	**Quarried Limestone End Protection**; Supply and install 300mm thick quarried limestone erosion protection on non-woven geotextile at DICB-1 to the proposed top of bank, including excavation, placement, grading, complete:		
	a) Approximately 25.0 tonnes of 100mm to 250mm graded quarried limestone at $100.00 per tonne.		$ 2,500.00
	b) Approximately 30.0 square meters of non-woven filter cloth at $6.67 per square metre.		$ 200.00
Item 9)	**Topsoil, Seeding and Mulching**; Spread 50mm thick of scavenged topsoil and carry out seeding and mulching on all newly excavated drain side slopes including the top of berm, (approx. 2300 sq.m.) complete.	Lump-Sum	$ 8,000.00
Item 10)	**Final cleanup and Restoration**; Provide all labour, and materials to cleanup the project site on completion of the work, complete.	Lump-Sum	$ 2,500.00
	TOTAL FOR CONSTRUCTION		**$ 84,300.00**
	Net H.S.T. on above Items (1.76%)		**$ 1,484.00**
	TOTAL FOR CONSTRUCTION (including Net H.S.T.)		**$ 85,784.00**

INCIDENTALS

1)	Report, Estimate, and Specifications	$ 9,700.00
2)	Survey, Assistants, Expenses, and Drawings	$ 13,000.00
3)	Conduct Hydraulic Analysis and Modelling	$ 9,700.00
4)	Duplication Costs of Drawings and Report	$ 600.00
5)	Estimated Cost of preparing Tender Documents for use by the Municipality for Letting of the Contract on an invitation basis	$ 1,400.00
1)	Estimated Cost for Full-Time On-Site Inspections, and Periodic Supervision and Project Management during Construction (based on 2-week duration)	$ 12,000.00
6)	Net H.S.T. on above items (1.76%)	$ 817.00
7)	Estimated Cost for E.R.C.A. Permit	$ 800.00
	TOTAL FOR INCIDENTALS	**$ 48,017.00**
	TOTAL FOR LAND TAKEN (brought forward)	**$ 3.00**
	TOTAL FOR CONSTRUCTION (brought forward)	**$ 85,784.00**
	TOTAL ESTIMATE	**$133,804.00**

XIII. DRAWINGS AND SPECIFICATIONS

As part of this report, we have attached design drawings for the McBride Road Branch of the Willow Beach Drain Conveyance Improvements, consisting of Sheet 1 through Sheet 4. The design drawings illustrate the existing and proposed alignments of the Municipal Drain, together with the affected landowner, and the details relative to the various improvements.

Furthermore, Benchmarks were established therein for the works required for this project. The drawings attached within **Appendix "B"** 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.

Also attached, we have prepared Specifications that set out the required construction details for the various aspects of the works to be conducted under this report.

XIV. CONSTRUCTION SCHEDULE OF ASSESSMENT

We would recommend that all of the costs associated with the improvements to the McBride Road Branch of the Willow Beach Drain Conveyance Improvements, as identified and detailed herein, be assessed in accordance with the attached **Construction Schedule of Assessment.**

All construction works, together with the associated incidental and engineering costs under this project, are required to facilitate the proposed residential developments and shall be assessed to the subject property owned by Coulson Design-Build Inc., within Lots 120 to 131 of Registered Plan 1103, Part of Caldwell Grant, in the Geographic Township of Malden.

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

XV. FUTURE MAINTENANCE

Open Portion of the McBride Road Branch of the Willow Beach Drain

After the completion of all of the works associated with this Engineer's Report, we recommend that the McBride Road Branch of the Willow Beach Drain be kept up and maintained in the future by the Town of Amherstburg. When future maintenance is performed on the improved open drain channel of the Municipal Drain, between Station 0+419.9 to Station 0+539.4, the works shall include the improved open drain channel, together with its outlet into DICB-1 and its connection to MH-2, including all quarried limestone erosion protection.

Future Maintenance Costs

When future maintenance is performed on the improved portion of the open drain, as outlined above, we recommend that all future maintenance costs shall be assessed in the same proportions as the governing Schedule of Assessment identified as "Schedule A-1" Schedule of Assessment Willow Beach Drain – McBride Road Branch within the Engineer's Report prepared by E.P. Dries, P.Eng., dated November 2nd, 2005, or per subsequent amendments made thereto under the Drainage Act.

As part of the development, the subject property is currently identified as Parcel 550-04400 and will be subdivided into four (4) new parcels. With the development, the assessments to the subject property, identified within the governing report shall be adjusted to reflect the proposed lot configuration and change in use of the original parcel. As such, the following changes shall be made to the Schedule of Assessment outlined above when performing future maintenance works on the McBride Road Branch of the Willow Beach Drain:

Parcel	Affected Area (Ac.)	Benefit	Special Benefit	Outlet	Total Assessment
Original Parcel					
550-04400	1.33	$198.00	$0.00	$25.00	$223.00
New Parcels					
Retained	0.39	$ 93.00	$0.00	$10.00	$103.00
Severance #1	0.20	$ 31.00	$0.00	$ 5.00	$ 36.00
Severance #2	0.37	$ 87.00	$0.00	$10.00	$ 97.00
Severance #3	0.37	$ 87.00	$0.00	$10.00	$ 97.00
Total	**1.33**	**$298.00**	**$0.00**	**$35.00**	**$333.00**

The original property was assessed based on the use of the lands at the time when the Schedule of Assessment was initially prepared. With the development of these lands, the new lots will result in an increase in covered area and total impermeable surfaces. Therefore, the change in assessment (Benefit, Outlet and Total) outlined above is reflective of the new change in use of the affected parcels. The adjusted assessment coincides with the assessments of the adjacent properties already established within the governing Schedule of Assessment. With the adjustments established for the affected parcels, the total allocated costs for the Governing Schedule of Assessment "Schedule A-1" shall increase from $4,000.00 to $4,110.00.

Working Corridors for Future Maintenance

Once all construction has been completed for this project, the Contractor shall be expected to keep all future equipment and forces within the following working corridors for any future maintenance performed on the improved open channel of the McBride Road Branch of the Willow Beach Drain:

From Station 0+419.9 to Station 0+539.4: The Contractor shall be permitted to access the open drain from both McLeod Avenue and McBride Road. Once access is obtained, the Contractor shall work from within the drain and have access to the high-flow shelf/terrace width portion of the new widened channel alignment along its entire length that ranges from 9.00 metres to 11.00 metres wide.

Future Retaining Walls and Special Features

It shall be noted that provisions have been included within this report to allow for future retaining walls to be installed within the improved conveyance channel. These retaining walls shall be installed outside the 1:100-year water surface elevations as shown and detailed within the accompanying plans. By design, these retaining walls shall not hinder or alter the flows within the McBride Road Branch of the Willow Beach Drain. As such, these structures shall be considered private structures and shall not form part of this Municipal Drain. Therefore, the maintenance and upkeep of these structures shall be the sole responsibility of the adjacent Owner/Occupant. However, in the event that these structures extend beyond the limits shown or become an obstruction to the flows within the drain, or cause damage to the Municipal Drain, these obstructions must be addressed and/or removed through Sections 80(1) and 80(2) of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

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

CONSTRUCTION SCHEDULE OF ASSESSMENT

McBRIDE ROAD BRANCH OF THE WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS

Lots 120 to 131 of Registered Plan 1103, Part of Caldwall Grant

(Geographic Township of Malden)

TOWN OF AMHERSTBURG

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

Con. or Plan Number	Lot or Part of Lot	Acres Affected	Hectares Affected	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
1103	120 to 131	1.33	0.538	Coulson Design-Build Inc.	$ 133,804.00	$ -	$ -	$ 133,804.00
Total on Privately Owned - Agricultural Lands (non-grantable).....					**$ 133,804.00**	**$ -**	**$ -**	**$ 133,804.00**
TOTAL ASSESSMENT		1.33	0.538		**$ 133,804.00**	**$ -**	**$ -**	**$ 133,804.00**

1 Hectare = 2.471 Acres
Project No. D-19-054
December 20th, 2021

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

SPECIFICATIONS

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

MCBRIDE ROAD BRANCH OF THE WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS

SPECIFICATIONS TABLE OF CONTENTS

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

SPECIFICATIONS

MCBRIDE ROAD BRANCH OF THE WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS

(Geographic Township of Malden)

TOWN OF AMHERSTBURG

I. GENERAL SCOPE OF WORK

The Contractor is advised that the work proposed under this project consists of improving the open drain conveyance channel through the private lands of Coulson Design-Build Inc., within Lots 120 to 131 of Registered Plan (R.P.) 1103, Part of Caldwell Grant. This project includes brushing and grubbing, all excavation, grading, installation of general erosion protection, installation of a precast concrete ditch inlet catch basin and maintenance hole, new drain pipe, topsoil, seeding and mulching, restoration, and other ancillary work to provide a complete and satisfactory job. The open drain conveyance improvements shall be of the size, type, depth, etc. as shown on the accompanying drawings, as determined from the Benchmarks and as may be further laid out at the site at the time of construction.

The Contractor shall be required, as part of this project, to ensure that proper Water, Sediment, and Erosion Control Plans are submitted and approved prior to construction. It is imperative that these provisions remain in place for the duration of the project and until a good grass catch has been established to minimize soil erosion and sedimentation deposited downstream of the project site. Once the Contractor has implemented the approved Water, Sediment, and Erosion Control Plan, the construction works may commence.

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 the accompanying drawings. The works shall be of the size, type, depth, etc., as shown in the accompanying drawings, as determined from the Benchmark, and may be further laid out at the site at the time of construction. All work carried out under this project shall be completed to the full satisfaction of the Town Drainage Superintendent and/or the Consulting Engineer.

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

The Contractor will be required to implement stringent erosion and sedimentation controls during the course of the work to minimize the amount of silt and sediment being carried downstream into the Willow Beach Drain. It is intended that work on this project be carried out during relatively dry weather to ensure the proper site and drain conditions and to avoid conflicts with sediment being deposited into the Willow Beach Drain. 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.

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 because the drain is directly connected to the Puce River that is classified as sensitive to impacts on aquatic life and habitat by the E.R.C.A, D.F.O. and M.N.R.F.

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

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

b) All disturbed soils on the 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 than 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 banks to ensure that it does not wash 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 which is included within **Appendix "A"**.

III. M.E.C.P. CONSIDERATIONS

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

Prior to commencing work, the Town of Amherstburg will complete an "Endangered Species Act Review" for the McBride Road Branch of the Willow Beach 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. ADDITIONAL ENVIRONMENTAL MITIGATION PROVISIONS

Prior to any works conducted on the project, the Contractor shall submit a suitable Water, Sediment and Erosion Control Plan. All of these plans shall be submitted for review and approval from all applicable environmental approval agencies. Furthermore, the Contractor shall provide all labour and equipment to conduct a fish salvage operation to ensure that no fish, mussels, or turtles are harmed by the proposed works. Any species found within the project site shall be removed and relocated downstream of the project site. The fish salvage operations shall be completed to the full satisfaction of the Town Drainage Superintendent, E.R.C.A., D.F.O., M.E.C.P. and/or the M.N.R.F.

In addition to the fish salvage operations, the Contractor shall be responsible to provide Fish Exclusion Measures within the length of the existing open drain where work is being performed. The Fish Exclusion Measures shall be initiated prior to the start of the drain filling process by use of a standard fish seine net. This seine net shall be installed in the water and shall be dragged through the water along the entire length of the Lebo Creek Drain to be filled and abandoned. The fish seine net shall not be a permanent fixture during the course of the construction works and shall be removed once passed through the water.

The above-noted works shall be completed by the Contractor, at its own expense, and such labour, equipment and materials, and the cost for same shall form part of the Schedule of Items and Prices. Furthermore, all of the above shall be completed to the full satisfaction and compliance of the Town Drainage Superintendent, E.R.C.A., D.F.O. and/or the M.N.R.F.

V. ACCESS TO WORK, WORKING CORRIDORS, AND TRAFFIC CONTROL

ACCESS TO WORK

The Contractor is advised that the majority of the work to be carried out on this project extends alongside the McLeod Avenue and McBride Road right-of-ways and within private lands. The Contractor shall have access to the full width of the roadways abutting the proposed drainage works. The Contractor may utilize the entire McLeod Avenue and McBride Road right-of-ways necessary to permit the completion of the work required to be carried out for the initial construction and future maintenance.

WORKING CORRIDORS

Initial Construction

Once access is obtained onto private lands, the Contractor shall be expected to keep the construction equipment and forces for the construction as follows:

1) From Station 0+410.1 to Station 0+419.9: The Contractor may utilize the full right-of-way of McBride Road.

2) From Station 0+419.9 to Station 0+484.9: Once access is obtained onto the private lands, the Contractor shall be expected to keep their equipment and forces solely within the subject property. The Contractor shall limit the use of these lands to remain within the north limit of Severance #2 and to the south limit of Severance #3.

3) From Station 0+484.9 to Station 0+540.9: Once access is obtained onto the private lands, the Contractor shall be expected to keep their equipment and forces solely within the subject property. The Contractor shall limit the use of these lands to remain within 1.00 metre of the existing fence line

and house to the west and the east limit of the existing easement. **It is imperative that the Contractor protect as much vegetation as possible and refrain from removing any existing trees or vegetation along the east drain bank without written consent from the adjacent landowner.**

4) From Station 0+540.9 to Station 0+552.6: The Contractor may utilize the full right-of-way of McLeod Avenue.

The Contractor shall refrain from using any other lands unless otherwise permitted by the Owner and Drainage Superintendent during construction. Confirmation of other permitted working areas must be obtained from the Owner and Drainage Superintendent in writing. The Contractor may also be provided access by the Owner in order to stockpile any excess excavated materials for future use by the Owner.

Future Maintenance

Upon completion of the improved open drain conveyance channel, the Contractor shall be expected to keep all future equipment and forces within the following working corridors for any future maintenance performed within the improved corridor:

1) From Station 0+410.1 to Station 0+419.9: The Contractor may utilize the full right-of-way of McBride Road.

2) From Station 0+419.9 to Station 0+484.9: Once access is obtained onto the private lands, the Contractor shall be expected to keep their equipment and forces solely within the open channel. The Contractor shall work from within the drain and have access to the 11.00-metre wide high-flow shelf/terrace of the new widened channel alignment.

3) From Station 0+484.9 to Station 0+540.9: Once access is obtained onto the private lands, the Contractor shall be expected to keep their equipment and forces solely the open channel. The Contractor shall work from within the drain and have access to the 9.00-metre wide high-flow shelf/terrace of the new widened channel alignment.

4) From Station 0+540.9 to Station 0+552.6: The Contractor may utilize the full right-of-way of McLeod Avenue.

The Contractor shall refrain from using any other lands within the subject work site unless otherwise permitted by the Owner and Drainage Superintendent during construction. Confirmation of other permitted working areas must be obtained from the Owner and Drainage Superintendent in writing.

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 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. Any damages caused, resulting from non-compliance with the above-noted provisions, shall be restored by the Contractor to its original condition, at the Contractor's expense.

TRAFFIC CONTROL

The Contractor shall ensure that the travelling public is always protected while utilizing the roadway for its access. The Contractor shall be required to carry out all the necessary steps to direct traffic and provide temporary diversion of traffic around work sites, including the provision of all lights, signs, flag persons, and barricades required to protect the safety of the travelling public. 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 expected that the Contractor shall not require McLeod Avenue or McBride Road to be closed when carrying out the necessary work. However, should the Contractor have to close either roadway for the proposed works, it shall arrange to obtain the necessary authorizations from the affected Road Authorities and distribute 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 and County Roads Departments.

VI. OPEN DRAIN MAINTENANCE PROVISIONS AND TRUCKING

When future maintenance is performed within the open drain conveyance channel, from Station 0+424.3 to Station 0+539.4, the Contractor is only required to excavate the bottom of the drain to restore the low-flow channel and no bank excavation is expected. The excavated material should consist of sediment and it shall be trucked and disposed of by the Contractor to a site to be obtained by it at its own expense. When future maintenance is performed within the open drain, the costs of which shall be assessed as per the Maintenance Schedule of Assessment. The general parameters of the low-flow channel consist of a 1.00-metre (3.28 ft.) bottom width, ranging in a grade of 0.10% to 0.68%, and 3.00 horizontal to 1.00 vertical side slopes, for its entire length. Further details are included within the accompanying plans.

VII. REMOVAL OF BRUSH, TREES AND RUBBISH

Prior to the construction of the drain within the subject property, the Contractor is to prepare said site for this operation.

It shall be noted that the existing vegetation along the east drain bank of the project site shall remain and be protected throughout the course of the initial construction. Under no circumstances shall any of this vegetation be removed without the written consent of the affected property owners. Where there is any brush, trees or rubbish along the course of the drainage works, including side slopes of the drain and full access width, or where the earth is to be spread, including any trees, brush, rubbish, brush piles, rubbish piles or rock piles, all of same are to be grubbed out and close cut, and be burned or otherwise disposed of, by the Contractor, to the full satisfaction of the Town Drainage Superintendent.

Any trees that need to be removed during the maintenance process shall be cut and cleared to a maximum height of 75mm (3”). Brush and bushes shall be cut to ground level. Once all of the trees have been cut to the required level by the use of a chainsaw or other acceptable mechanical equipment, the Contractor may utilize a flail machine. The flail machine may be used to cut and trim all remaining brush and trees which are smaller than 100mm (4”) in diameter along either side slope of the drain and the access area. No excavation shall occur until after brush clearing and close cutting is completed. In all cases, the brushing shall be carried out by commencing from the top of bank, across the full drain section, and along the subject property where the brushing, excavating and spreading of excavated material is being carried out. All of the brushing shall also be carried out from within the open conveyance channel.

The brush and trees removed along the course of the work are to be put into piles by the Contractor in locations where they can be safely burned by it, or hauled away and disposed of, by the Contractor to a site to be obtained by it at its expense. Prior to and during the course of the burning operations, the Contractor shall comply with the guidelines prepared by the Air Quality Branch of the Ontario Ministry of the Environment and shall ensure that the Environmental Protection Act is not violated. The Contractor will be required to notify the local fire authorities and cooperate with them in the carrying out of any work. The removal of brush and trees shall be carried out in close consultation with the Town Drainage Superintendent or Consulting Engineer to ensure that no decorative trees or shrubs are disturbed by the operations of the Contractor that can be saved.

The Contractor shall protect all decorative trees, bushes, and shrubs located along the length of any neighbouring properties except for those trees that are established, in consultation with the Town Drainage Superintendent, the Consulting Engineer, and the Owners, to be removed as part of the works. The Contractor shall note that protecting and saving the trees may require the

Contractor to carry out handwork around the trees, bushes, and shrubs to complete the necessary final site grading and restoration.

In no case will brush, branches, trees, or rubbish be allowed to be buried in the spoil bank or within the excavated material, and the Contractor will require to brush rake the excavated material to remove all such debris if instructed by the Town Drainage Superintendent.

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. 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.

VIII. FENCING

Where it is necessary to take down any fence to proceed with initial construction or future maintenance, the work 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 the same. The Contractor will be required to replace any fence that is taken down in order to proceed with the work, and the fence shall be replaced in a neat and workmanlike manner. The Contractor will not be required to procure any new materials for rebuilding the fence provided 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.

IX. BENCHMARKS

Also, for use by the Contractor, we have established Benchmarks along the course of the work. 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 proposed drain alignment at each end of the accompanying profile. The plans also set out the drain side slopes, bottom width, and other requirements relative to its installation. In all cases, the Contractor is to utilize the specified drain grade.

X. DRAIN EXCAVATION

The Contractor is to note that the excavation of the improved McBride Road Branch of Willow Beach Drain open channel shall be done in a very meticulous manner, to the general lines, levels, grades and cross-sections as shown on the accompanying drawings, or as may be further established by the Town Drainage Superintendent or the Engineer at the time of the work. The widths of the drain channel and the side slopes of the excavation shall generally conform to the dimensions given on the drawings. In no case shall the drain bottom project above the grade line as shown on the accompanying drawings, and as determined from the Benchmarks. **The Contractor shall note that no drain improvements are required along the east drain bank between Station 0+484.9 to Station 0+540.9.**

Prior to any drain excavation, the Contractor is expected to strip all of the topsoil for the full top width of the improved open drain, including the existing drain side slopes being modified. This topsoil shall be windrowed and stockpiled within the project site area while maintaining a minimum distance of 2.0 metres beyond the improved drain limits. Once all topsoil is satisfactorily stripped from the drain area, the Contractor shall commence with any excavation works. The stripped topsoil shall be re-used for spreading over all newly excavated side slopes, high-flow shelf/terrace, low-flow channel and constructed temporary earth berm. Any surplus topsoil shall remain on-site and stockpiled for the use of the Owner.

The Contractor shall note that the excavated sediment material from the existing drain bottom shall be cast onto the adjoining open lands within Severance #2 and Severance #3 and spread evenly over on the undeveloped lands and/or (once dried) used as surplus topsoil for placement over the newly constructed drain area. If spread, the material shall be spread no more than 250mm (10”) in depth and shall be kept a minimum of 1.52 metres (5.00 ft.) clear of the finished west top of bank of the drain. The Contractor shall also ensure that no excavated material shall be spread over any existing ditches or furrows within the specified area that would impede the natural conveyance of runoff to the drain. The excavated material to be spread shall be free from rocks, boulders, stumps, rubble, or other similar material. If encountered, these deleterious materials shall be hauled away and disposed of by the Contractor.

Laser Control must be provided to maintain the minimum channel 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 and/or paid for entirely by the Contractor.

XI. TEMPORARY EARTHEN BERM CONSTRUCTION AND DISPOSAL OF FILL

The improved open channel shall be constructed to match the proposed floodproofing elevation of 175.900 metres. In order for the new drain banks to meet this elevation prior, to the development of these building lots, temporary earthen berms shall be constructed to sufficiently meet the drainage requirements. The temporary earthen berm will eventually form as part of the minimum lot elevation at the drain top bank, following the infilling of the proposed residential lots completed by the Developer. The Contractor shall provide all labour, material, and equipment, in order to construct the new temporary earthen berm along the new top bank limits of the drain area, to the lines, levels, and grades as is shown and detailed in the accompanying drawings. Overall the earthen berm shall be constructed with a minimum top width of 2.00 metres (6.56 ft.) set to a minimum elevation of 175.900 metres, as noted on the plans. The berm shall also be constructed no steeper than 3.00 horizontal to 1.00 vertical finished side slopes.

The Contractor is advised that all excess fill material from the improved open drain construction shall be utilized for the drain/berm construction, with any excess soil being stored on-site within the private lands identified as Severance #2 and Severance #3. It is expected that the excavation work from the drain construction will provide sufficient material for the construction of the entire drain and berm with surplus fill remaining.

XII. STRUCTURE INSTALLATION

All materials for the ditch inlet catch basin and maintenance hole structures 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 structures 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 drain pipe or 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 Town 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 0+424.3, the Contractor shall provide and install a 600mm x 1200mm (Type A) precast concrete ditch inlet catch basin (DICB-1) together with galvanized steel honeycomb grate, in accordance with O.P.S.D. 705.040, and O.P.S.D. 403.010.

At Station 0+419.9, the Contractor shall also be required to supply and install a 1200mm diameter precast concrete maintenance hole (MH-2) with cast iron frame and lid, in accordance with O.P.S.D. 701.010, O.P.S.D. 701.030, and O.P.S.D. 401.020 where shown on the plans.

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 drain pipes 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 catch basin maintenance holes wall for the full circumference of the drain pipe and be of a sufficient mass to produce a sealed joint, all to be performed to the full satisfaction of the Town 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.

XIII. PIPE INSTALLATION

As part of the overall functionality of the drain, the Contractor shall install a drain pipe as shown and detailed in the accompanying drawings.

Between approximately Station 0+419.9 to Station 0+424.3, the Contractor shall saw-cut and remove the existing portion of the 375mm diameter P.V.C. pipe to the east and install a 525mm diameter Polyvinyl Chloride (P.V.C.) DR35 pipe extending from the precast concrete MH-2 into the south end of the precast concrete DICB-1. The pipe shall be set to the lines and levels as shown on the Plans.

The new P.V.C. pipe for this project shall be supplied as no more than one (1) continuous length of pipe. All of which are to be joined together with the use of a water-tight bell and gasket joining system, secured in accordance with the Manufacturer’s recommendations. The P.V.C. pipe for this installation must be of the length, size, and strength identified in the Plans and approved by the Drainage Superintendent and the Consulting Engineer, prior to its placement in the drain. Any changes relative to the drain pipe must be approved by the Consulting Engineer prior to proceeding with construction. Benchmarks have been established near the site and are noted and detailed within the accompanying drawings.

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

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

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 the Contractor for any loss incurred by it in the storage and handling of the materials. Should the Contractor permit damaged pipe or materials to be installed, 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.

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 Town 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 Contractor should note that, because the drain pipe 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 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.

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.

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. All pipe 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".

XIV. GENERAL EROSION PROTECTION

Once the excavation of the improved drain has been completed and all of the necessary structures and pipes have been installed, the Contractor shall install the general erosion protection in all areas identified within the Plans. The quarried limestone erosion protection shall be provided as is shown and detailed and shall vary in size from a minimum of 100mm (4") to a maximum of 250mm (10"). The quarried limestone pieces shall be carefully tamped into place with the use of a shovel bucket so that, when complete, the quarried limestone erosion protection shall be consistent, uniform, and tightly laid in place, and in no instance shall the quarried limestone protrude beyond the exterior contour of the unprotected side slopes along either side of the rock protection. Prior to placing the quarried limestone, the Contractor shall place **non-woven** geotextile filter fabric "GMN160" conforming to O.P.S.S. 1860 Class 1 or approved equal, as an underlay. The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried limestone. The erosion protection shall be embedded into the sides lopes of the banks and have a minimum thickness of 300mm and shall be underlaid in all cases with the non-woven geotextile filter fabric.

The placement of the geotextile filter fabric and the quarried limestone, and the completion of the quarried limestone erosion protection shall be conducted to the full satisfaction of the Town Drainage Superintendent and/or Consulting Engineer.

XV. UTILITIES

The improved drain shall be 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 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 works including any sanitary sewers and connections, watermains and connections, streetlight, 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 drain is to be excavated where directed. If any part of the bottom of the drain is found to be unsound or in any way unsuitable in the Drainage Superintendent's or the Engineer's opinion, it may direct that the location of said drain be changed if it is possible to avoid unsound soil by doing so.

XVI. ANCILLARY WORK

During the course of the work, the Contractor will be required to maintain the drainage from the adjacent lands. All existing tiles intercepted by the excavation of the new drain shall be reconnected to the improved open channel utilizing solid standard duty High-Density Polyethylene (H.D.P.E.) or equal plastic pipe of the same diameter as the existing. Connections shall be made using a Manufacturer’s coupling wherever possible. For other connections, the Contractor shall utilize a grouted connection. Grouted mortar joints shall be composed of three (3) parts of clean, sharp sand to one (1) part of Portland cement with just sufficient water added to provide a stiff plastic mix, and the mortar connection shall be performed to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The mortar joint shall

be of a sufficient mass around the circumference of the connection to ensure a tight, solid seal.

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

Although it is anticipated that the drainage works shall be undertaken in the dry, the Contractor shall supply and install a temporary straw bale check dam or silt fences in the drain bottom immediately downstream of the drain site during the time of construction. These provisions shall be installed in addition to the Water, Sediment, and Erosion Control Plan. The straw bale check dam or silt fences shall conform to O.P.S.D. 219.100 and 219.130 or approved equivalent and shall be to the satisfaction of the Town Drainage Superintendent or Consulting Engineer these temporary sediment features must be removed upon completion of the construction. All costs associated with the supply and installation of this straw bale check dam shall be included in the cost bid for the drain installation.

XVII. TOPSOIL, SEEDING AND MULCHING

Once the improved open channel has been constructed, the Contractor is to cover all newly excavated side slopes with a minimum thickness of 50mm (2") of the stripped topsoil, and all of these areas are to be seeded and mulched. The Contractor shall also provide stripped topsoil with a minimum thickness of 100mm (4”) on all flat surfaces and other disturbed areas as a result of its operations so that all areas are fully restored to their original conditions. All of the above-mentioned top soiled surfaces shall be seeded and mulched with the recommended seed mixes.

Upon the completion of the project, the Contractor shall note that any surplus topsoil from the site shall be neatly stockpiled by the Contractor at a location on-site designated by the Owner and Drainage Superintendent for future use by the Owner. Under no circumstances shall the surplus topsoil be removed from the site without the expressed written permission from the Owner and/or Drainage Superintendent.

The placing and grading of all topsoil shall be carefully and meticulously carried out according to Ontario Provincial Standard Specifications, Form 802, dated November 2019, or as subsequently amended or as amended by these Specifications.

Once all 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 804, dated November 2014, 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. 804 dated November 2014, or as subsequently amended, to ensure that the grass seed shall be protected during germination and provide a thick, uniform cover to protect against erosion, where necessary. All areas hand seeded by the Contractor, if deemed necessary by the Town Drainage Superintendent, shall be covered with a straw mulch to reduce the extent of erosion and facilitate germination of the grass seed.

All of the work related to the placements of topsoil and the seeding and mulching operation shall be meticulously done and shall be carried out to the full satisfaction of the Town Drainage Superintendent and the Consulting Engineer. In addition, all work shall satisfy the Essex Region Conservation Authority (E.R.C.A.) and the Department of Fisheries and Oceans (D.F.O.) and comply with all Permits and Authorizations issued by said Authorities. Substantial Completion shall not be provided for this work until the completed seed plantings within the drain cross-section have been inspected and approved by E.R.C.A. and D.F.O.

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 and configuration of the improved drain 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 Drainage Superintendent.

The Contractor shall satisfy itself as to the exact location, nature and extent of any existing structure, utility or other objects 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 Municipality 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 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. GENERAL CONDITIONS

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

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

c) The Contractor shall provide a sufficient number of layout stakes and grade points so that the Drainage Superintendent and Consulting Engineer can review same and check that the work shall generally conform to the design and project intent.

d) The Contractor shall be responsible for any damage caused by it to any portion of the Municipal road system, especially to the travelled portion. When excavation work is being carried out and the excavation equipment is placed on the travelled portion of the road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any part of the travelled portion of the road is damaged by the Contractor, the Town shall have the right to have the necessary repair work done by its' employees and the cost of all labour and materials used to carry out the repair work shall be deducted from the Contractor's Contract and credited to the Town. The Contractor, upon completing the works, shall clean all debris and junk, etc., from the roadside of the drain, and leave the site in a neat and workmanlike manner. The Contractor shall be responsible for keeping all public roadways utilized for hauling materials free and clear of mud and debris.

e) The Contractor shall provide all necessary lights, signs, and barricades to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. A Traffic Control Plan is required 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 on to the job site shall be fully restored to their former condition at the Contractor's expense. Before authorizing Final Payment, the Town Drainage Superintendent and the Consulting Engineer shall inspect the work in order to be sure that the proper restoration has been performed. In the event that the Contractor fails to satisfactorily clean up any portion of these accesses, the Consulting Engineer shall order such cleanup to be carried out by others and the cost of same be deducted from any monies owing to the Contractor.

i) The Contractor shall be required to submit to the Town, a Certificate of Good Standing from the Workplace Safety and Insurance Board prior to the commencement of the work and the Contractor shall be required to submit to the Town, a Certificate of Clearance for the project from the Workplace Safety and Insurance Board before Final Payment is made to the Contractor.

j) The Contractor shall furnish a Performance and Maintenance Bond along with a separate Labour and Material Payment Bond within ten (10) days after notification of the execution of the Agreement by the Owner unless otherwise established within the Tender Documents. One copy of said bonds shall be bound into each of the executed sets of the Contract. Each Performance and Maintenance Bond and Labour and Material Payment Bond shall be in the amount of 100% of the total Tender Price. All Bonds shall be executed under corporate seal by the Contractor and a surety company, authorized by law to carry out business in the Province of Ontario. The Bonds shall be acceptable to the Owner in every way and shall guarantee faithful performance of the Contract during the period of the Contract, including the period of guaranteed maintenance which shall be in effect for twelve (12) months after substantial completion of the works.

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

k) The Contractor shall be required, as part of this Contract, to provide Comprehensive Liability Insurance coverage for not less than $5,000,000.00 on this project unless otherwise established in the Tender Documents, and shall name the Town of Amherstburg and its' officials, and the Consulting Engineer and its staff as additional insured under the policy. The Contractor must submit a copy of this policy to both the Town Clerk and the Consulting Engineer prior to the commencement of work.

l) Monthly progress orders for payment shall be furnished to the Contractor by the Town Drainage Superintendent. Said orders shall be for not more than 90% of the value of the work done and the materials furnished on the site. The paying of the full 90% does not imply that any portion of the work has been accepted. The remaining 10% shall be paid 60 days after the final acceptance and completion of the work and payment shall not be authorized until the Contractor provides the following:

   i) a Certificate of Clearance for the project from the Workplace Safety and Insurance Board

   ii) proof of advertising

   iii) a Statutory Declaration, in a form satisfactory to the Consulting Engineer and the Town, that all liabilities incurred by the Contractor and its Sub-Contractors in carrying out the Contract have been discharged and that all liens in respect of the Contract and Sub-Contracts thereunder have expired or have been satisfied, discharged or provided for by payment into Court.

   The Contractor shall satisfy the Consulting Engineer or Town there are no liens or claims against the work and that all of the requirements as per the Construction Act, 2018 and its' subsequent amendments have been adhered to by the Contractor.

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

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

APPENDIX "A"

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

Kory Snelgrove

From: Ashley Gyori <AGyori@erca.org>
Sent: November 4, 2021 2:56 PM
To: Kory Snelgrove
Cc: Shane McVitty; Tony Peralta
Subject: RE: McBride Road Branch of Willow Beach Drain Conveyance Improvements - Town of Amherstburg - D19-054
Attachments: 20211101 - PRELIMINARY - McBride Road Branch Drain Realignment Plans - D19-054.pdf

Good afternoon Kory,

Thank you for providing the attached Preliminary Drawings and details below for the McBride Road Branch Drain, Project No. D19-054. I've had an opportunity to review the preliminary drawings and the available information and can confirm that this proposal, as presented in the preliminary stages, is something that this office can support, provided that the final report confirms that the proposed design does not cause an adverse effect downstream.

With respect to the building envelopes, it should be noted that the typical ERCA setback from a municipal drain is 8 metres plus the depth of the drain to address erosion and stable slope allowance. However, given the engineered design of the drain and the proposed 3:1 side slopes, our office would be in a position to reduce this setback requirement and accept a minimum 6 metres setback (as presented in the attached drawings) from the closest point of any structure to the toe of the second tier of the channel (not from the low flow channel).

We look forward to receiving the Final Drainage Report and Drawings. A completed Application for Permit form will be required from the municipality.

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

Kind regards,

Essex Region Conservation Authority
sustaining the place for life

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

From: Kory Snelgrove <kory@peraltaengineering.com>
Sent: Wednesday, November 3, 2021 8:53 AM
To: Ashley Gyori <AGyori@erca.org>
Cc: Shane McVitty, P.Eng <smcvitty@amherstburg.ca>; Tony Peralta <tony@peraltaengineering.com>
Subject: McBride Road Branch of Willow Beach Drain Conveyance Improvements - Town of Amherstburg - D19-054

Good morning Ashley,

Further to our previous correspondence outlined below, we have completed our preliminary design for the above noted project. As a result, we have provided a copy of same for your review.

Based on our discussion and review at the On-Site Meeting, the Developer is looking to maximize potential lot severances and is looking to enclose the remaining open portion of the McBride Road Branch of the Willow Beach Drain. Based on these discussions a conceptual drainage plan was provided to ERCA on May 4th, 2021. As identified in your most recent comments below, the overland conveyance is to be maintained following any infilling works for this development along with any storage volume currently utilizing the low-lying lands also being preserved. Upon further review, we have determined that a covered drain system within the right of way cannot maintain overland conveyance for the upstream contributing watershed. A covered Drainage System would remove a significant amount of storage volume that currently exists in the low-lying lands. In consultation with the Developer and the Town's Planning and Engineering departments, we have reviewed and updated our design which will enhance the open drain alignment to maintain the necessary storage volume for the existing and developed lands, including modifications being made to the low-lying areas.

The following is a summary of the project design details as it pertains to E.R.C.A. and their previous comments:

Upstream of the McBride Road Branch of the Willow Beach Drain is a road crossing pipe for the McLeod Avenue which consists of a 375mm diameter smoothwall H.D.P.E. Downstream of the open drain portion consists of a 375mm diameter PVC pipe which connects into a covered storm system with pipe sizes ranging from 600 to 750mm diameter concrete pipes.

1. The proposed works is intended to enhance the open portion of the McBride Road Branch of the Willow Beach Drain with modifications being made to the existing drain cross section to maintain the existing and proposed storage volume and overland conveyance through the proposed residential development. The total length of drain improvements is approximately 115.1 metres.
2. The drain cross section/floodplain area has been sized to convey the 1:100 year storm event through the new channel alignment. Both existing and proposed conditions were modelled using PC SWMM software for the Chicago 4 hour and SCS 24-hour 100-year storms in accordance with the W.E. S.W.M. Design Manual. With the proposed improvements, we can confirm that the proposed development will not raise the existing water surface elevation by more than 0.01m.
3. The overall drain shall be widened and will consist of a two-stage drain cross section. The bottom stage shall consist of a 1.0m bottom width, having side slopes of minimum 3:1 with a total depth of 0.15m. The second stage will then slope up towards the new drain bottom banks at a 2 percent slope with the bottom width generally ranging from 9.0-11.0 metres. The second stage drain side slopes shall be a minimum of 3:1 and graded to the 1:100 year floodproof elevation of 175.900m as provided by ERCA. If you require our detailed analysis, please feel free to request same.
4. The drain improvements will outlet into a new 600x1200mm Ditch Inlet Catch Basin ("DICB-1") connected to the proposed "MH-2" and will be re-connected into the existing system through the existing 375mm diameter PVC pipe.
5. As part of the overall development, all existing drainage tiles are intended to be reconnected to the proposed drain realignment.
6. The Municipal Drain limits will be defined based on the open drain configuration. In the event that the future property owner wants to maximize their building envelope, a provision will be included for the installation of a

retaining wall outside of the modelled 1:100 year water surface elevation. This provision will have no adverse affects to the 1:100 year water surface elevation and maintain the 1:100 year conveyance.

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

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

Regards,

Kory Snelgrove, P.Eng.

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

From: Ashley Gyori <AGyori@erca.org>
Sent: May 7, 2021 12:07 PM
To: Kory Snelgrove <kory@peraltaengineering.com>
Cc: Tony Peralta <tony@peraltaengineering.com>; smcvitty@amherstburg.ca
Subject: RE: Section 78 - Drain Improvements - Realignment of the McBride Road Branch of Willow Beach Drain

Good afternoon Kory,

Thank you for submitting the additional details regarding the this proposal.

The available information indicates that the this drain will experience flooding under 1:100 year conditions as a result of it being hydraulically connected to Lake Erie. As such, the low lying area adjacent to this drain would be considered storage for this system. As we had previously discussed, ERCA can issue permits for filling within the floodplain area in certain circumstances; however, when designing a proposal under the *Drainage Act*, consideration must be given to the contributing lands of that watershed. Any infilling cannot cut off overland surface water runoff to the drain and negatively impact the adjacent parcels that have an existing lawful outlet into the system.

With respect to your submitted drawings, the design is something that this office could potentially approve, provided that the Drainage Report adequately displays that the designed system will maintain the same level of service as the existing open system and that there are no negative impacts on adjacent lands, upstream or downstream.

In addition to the above, we note that the individual parcels will be required to obtain written approvals from the Essex Region Conservation Authority prior to any development on the sites. In order to undertake development (construct a new building, major building addition/renovation or building reconstruction, etc.)

within a floodplain in the Province of Ontario, all Provincial and local Conservation Authority policies for development within hazard lands must be satisfied. These policies include the following:

- Development and site alteration is carried out in accordance with floodproofing standards, protection works standards/erosion standards
- Vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies (safe ingress and egress)
- New hazards are not created and existing hazards are not aggravated
- No adverse environmental impacts will result.

As previously discussed, the minimum required floodproofing elevation for the lowest opening (i.e. garage floor, basement window sill, vent, etc.) into any proposed structures on these sites is 176.200m G.S.C.

Should the current registered landowner wish to obtain additional site specific information related to the development of these parcels, a meeting can be requested by contacting regs@erca.org.

If you have any additional questions or require further information, please do not hesitate to contact me.

Kind regards,

Essex Region Conservation Authority
sustaining the place for life

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

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

From: Kory Snelgrove <kory@peraltaengineering.com>
Sent: Tuesday, May 4, 2021 2:54 PM
To: Ashley Gyori <AGyori@erca.org>
Cc: Tony Peralta <tony@peraltaengineering.com>; smcvitty@amherstburg.ca
Subject: RE: Section 78 - Drain Improvements - Realignment of the McBride Road Branch of Willow Beach Drain

Good afternoon Ashley,

Further to the correspondence below, please see the attached conceptual design plan for the Realignment of the McBride Road Branch.

Based on our review and discussions with the developer, these drainage improvements are intended to satisfy the development of up to 4 proposed residential lots being severed from the existing residential lot of MN 519 McLeod Avenue. For our preliminary design, we propose a series of catch basin maintenance holes and covered drainage pipes

travelling westerly in the south limit of the McLeod Ave. right of way and southerly within the private lands of Parcel 550-04400 east of the McBride Road where the system outlets into the existing storm sewer maintenance hole within the northbound lane of McBride Road. With the intention to develop these lands in the low-lying areas, we propose to completely backfill the existing open drain travelling east-west through the proposed "Lots 2-4" as seen on the attached Plan. The remaining existing open drain portion currently draining north-south adjacent to the east property limit of M.N. 519 McLeod Avenue is to be re-graded to the north and connected into the proposed covered drain system at "CBMH1".

Based on the details outlined above, we would kindly request ERCA's comments, questions or concerns related to this project.

Thank you for your time and attention to this project, we look forward to hearing from you. Please do not hesitate to contact us if you have any questions or concerns.

Regards,

Kory Snelgrove, P.Eng.

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

From: Ashley Gyori <AGyori@erca.org>
Sent: Friday, April 23, 2021 1:18 PM
To: Kory Snelgrove <kory@peraltaengineering.com>
Cc: Tony Peralta <tony@peraltaengineering.com>
Subject: RE: Section 78 - Drain Improvements - Realignment of the McBride Road Branch of Willow Beach Drain

Good afternoon Kory,

Thank you for providing the information below. As the proposed works are located within the 1:100 year floodplain of Lake Erie, landowners often associate any drainage works or improvements with potentially solving any localized drainage issues that may be a result of the low lying nature of the subject properties associated with the lake. The intent of the below statement was so that it was on record for future inquiries, that the proposed enclosure and any associated improvements does not necessarily indicate that the properties will be immune to any effects of the lake during a 1:100 year storm event.

The minimum required floodproofing elevation for the lowest opening into any proposed structures is 176.200m G.S.C. This elevation is the raw 1:100 year flood elevation of 175.900m G.S.C plus 0.3 metres of freeboard to account for vehicle and wind driven waves.

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

Have a great weekend,

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

From: Kory Snelgrove <kory@peraltaengineering.com>
Sent: Tuesday, April 13, 2021 4:51 PM
To: Ashley Gyori <AGyori@erca.org>
Cc: Dan Jenner <DJenner@erca.org>; Tony Peralta <tony@peraltaengineering.com>
Subject: RE: Section 78 - Drain Improvements - Realignment of the McBride Road Branch of Willow Beach Drain

Good afternoon Ashley,

Further to your previous correspondence with the Town of Amherstburg below, we have been appointed under Section 78 of the Drainage Act by the Town, for the Realignment of the McBride Road Branch of Willow Beach Drain to facilitate the development of 4 residential lots along the east side of McBride Road. Based on our investigations the Willow Beach Drain is an entirely pump system, with no gravity pipe outlets available. Further to the details outlined in your comments below we kindly ask if you could provide us with further clarification on ERCA's position for the design requirements of the proposed drainage works with regards to addressing any flooding concerns with respect to the 1:100 year storm event.

Additionally, as part of these works, we would like to incorporate the minimum building elevations within our design to ensure that we account for the appropriate boulevard grading. We understand that it is typical for the building elevation is set a minimum of 12" above the crown of the road. However, we further understand that these lots are within the regulated areas of ERCA. Therefore, we kindly request that ERCA provide their comments on the minimum building elevation for these severed lots at MN 519, McBride Road.

Thank you for your time and attention to this matter. If you have any questions or concerns, please feel free to contact us.

Regards,

Kory Snelgrove, P.Eng.

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

From: Ashley Gyori <AGyori@erca.org>
Sent: December 14, 2020 10:49 AM
To: Shane McVitty <smcvitty@amherstburg.ca>
Subject: RE: Notification of Request for Drainage Works

Good morning Shane,

This office acknowledges receipt of the Notice of Request for the enclosure of the McBride Road Branch of the Willow Beach Drain at 519 McLeod Ave.

A review of our floodplain mapping for the McBride Road Branch of the Willow Beach 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.

It should be noted that the McBride Road Branch of the Willow Beach Drain is located within the 1:100 year floodplain area associated with the Lake Erie. Please note that as this a lake driven floodplain, any proposed drainage improvements are not expected to adequately address any flooding concerns with respect to the 1:100 year flooding event of Lake Erie. At this time, we do not expect that there will be any extraneous comments or concerns with respect to this project; however, we cannot be more specific in this regard without an actual proposal to review.

The issuance of any approvals or comments made with respect to the proposed drainage works does not imply any authorization or approvals regarding the development of the severed lots. Prior to any construction activities related to the individual lots, it will be required that all hazard land criteria related to new development must be addressed.

With respect to Department of Fisheries and Oceans (DFO) concerns and comments, the proposed works 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 me.

Kind regards,

Essex Region Conservation Authority
sustaining the place for life

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

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

From: Shane McVitty <smcvitty@amherstburg.ca>
Sent: Wednesday, December 2, 2020 3:14 PM
To: Ashley Gyori <AGyori@erca.org>
Cc: Dan Jenner <DJenner@erca.org>; Tim Byrne <TByrne@erca.org>
Subject: Notification of Request for Drainage Works

Good Afternoon Ashley,

Please find attached a letter notifying the Essex Region Conservation Authority of a request that the Town of Amherstburg has received for improvement to the McBride Road Branch of the Willow Beach Drain. In general, the owners of the property located at 519 McLeod Avenue have requested that the open section of the drain that bi-sects their property be enclosed with a buried drainage pipe to facilitate a future lot severance.

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

Regards,
Shane

Shane McVitty
Drainage Superintendent / Engineering Coordinator
Town of Amherstburg
512 Sandwich St. South, Amherstburg, ON, N9V 3R2
Tel: 519-736-3664 x2318 Fax: 519-736-7080 TTY: 519-736-9860

TALK THE BURG
www.talktheburg.ca

APPENDIX "B"

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

PLAN, PROFILE, SECTIONS & DETAILS

OF THE

McBRIDE ROAD BRANCH OF THE WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS

(For Coulson Design-Build Inc. Development, Lots 120 to 131 of Registered Plan 1103, Part of Caldwell Grant)

IN THE

TOWN OF AMHERSTBURG (Geographic Township of Malden)

IN THE

COUNTY OF ESSEX • ONTARIO

LICENSED PROFESSIONAL ENGINEER
A. B. PERALTA
100138683
PROVINCE OF ONTARIO

ANTONIO B. PERALTA, P.ENG.

N. J. PERALTA ENGINEERING LTD.

45 DIVISION STREET NORTH
KINGSVILLE, ONTARIO
N9Y 1E1

DATE: DECEMBER 20th, 2021

TOWN OF AMHERSTBURG

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

BENCHMARKS:

1) TOP NORTHEAST CORNER OF PRECAST CONCRETE BLOCK RETAINING WALL IN FRONT OF 24 McBRIDE ROAD.
ELEV. = 175.658m

2) TOP NUT OF EXISTING FIRE HYDRANT LOCATED ON THE EAST SIDE OF McBRIDE ROAD, APPROXIMATELY 18.0m SOUTH OF THE INTERSECTION OF McBRIDE ROAD AND McLEOD AVENUE.
ELEV. = 176.436m

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 SHOWN 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 AND FIELD INFORMATION.
3. ALL DRAINAGE STRUCTURES ARE TO BE AS SPECIFIED WITH 450mm DEEP SUMP AND CAST IRON FRAME AND COVER (OPSD – 402.020), UNLESS OTHERWISE NOTED. SET TOP ELEVATION AS SET OUT WITHIN THESE PLANS WITH A MINIMUM 50mm BELOW ADJACENT GROUND AND GRADE TO SUIT.
4. ALL DRAINAGE STRUCTURES SHALL HAVE A MINIMUM OF 3 ADJUSTMENT UNITS AS PER OPSD 704.011.
5. ALL COVERED DRAIN PIPES TO HAVE MINIMUM 450mm OF COVER.
6. ENSURE THAT THERE IS A MINIMUM 0.50m VERTICAL SEPARATION WITH THE PIPE LENGTHS CENTERED OVER ANY WATERMAIN OR SANITARY SEWER.
7. 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.
8. ALL OPEN DRAIN BANKS SHALL BE FULLY BRUSHED AND GRUBBED; STRIPPING OF ALL TOPSOIL AND STOCKPILING ON SITE FOR REUSE PRIOR TO EXCAVATION OF THE DRAINAGE WORKS.
9. TOPSOIL SHALL BE PLACED ON ALL NEWLY EXCAVATED SWALE SIDE SLOPES AND DISTURBED BOULEVARD AREAS THAT SHALL BE SEEDED AND MULCHED.
10. CONTRACTOR TO REMOVE EXISTING QUARRIED LIMESTONE EROSION PROTECTION AND PROVIDE NATIVE FILL TRANSITIONING TO THE LIMITS SHOWN.
11. ALL PEDESTRIAN BRIDGE CROSSINGS SHALL BE REMOVED AND SHALL NOT BE RE-INSTALLED.

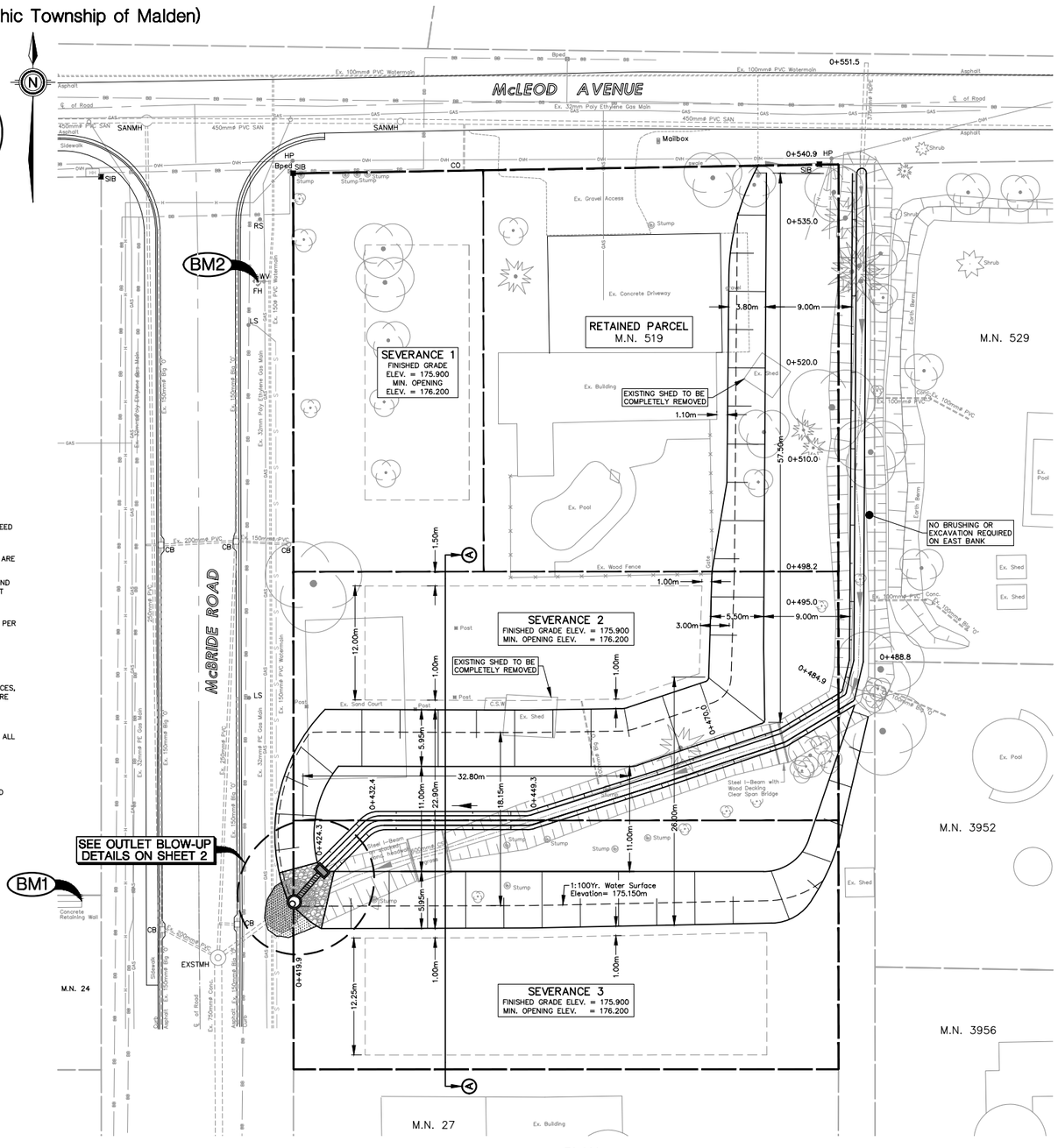
NOTE TO BUILDERS:

1. IN THE EVENT THAT THE OWNER WISHES TO MAXIMIZE THE BUILDING ENVELOPE FRONTAGE, A RETAINING WALL MAY BE INSTALLED OUTSIDE OF THE 1:100 YEAR WATER LEVEL OF THE OPEN DRAIN. FOR MORE INFORMATION, REFER TO THE OPTIONAL FUTURE RETAINING WALL DETAILS ON SHEET 4.

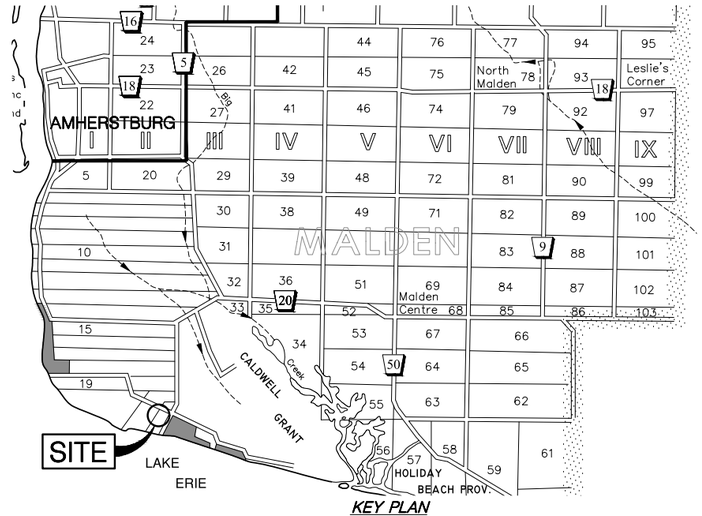
FOR DISTRIBUTION

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

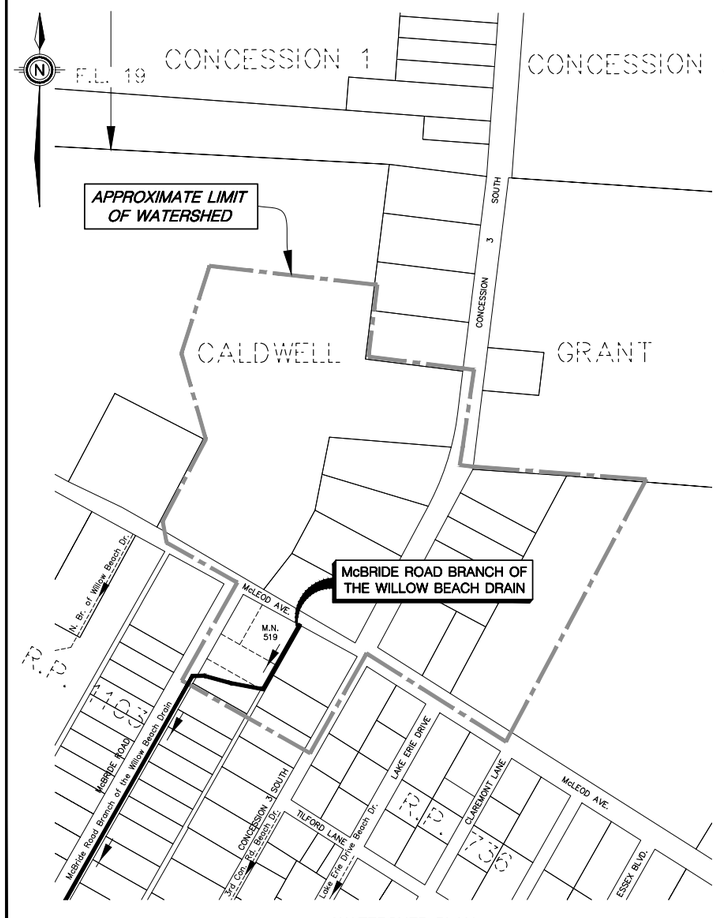
THESE DRAWINGS HAVE BEEN REDUCED IN SIZE AND THE SCALE THEREFORE VARIES.
FULL SCALE DRAWINGS CAN BE VIEWED AT THE MUNICIPAL OFFICES IF REQUIRED.



PLAN
Scale = 1:250



KEY PLAN
Scale = 1:50,000

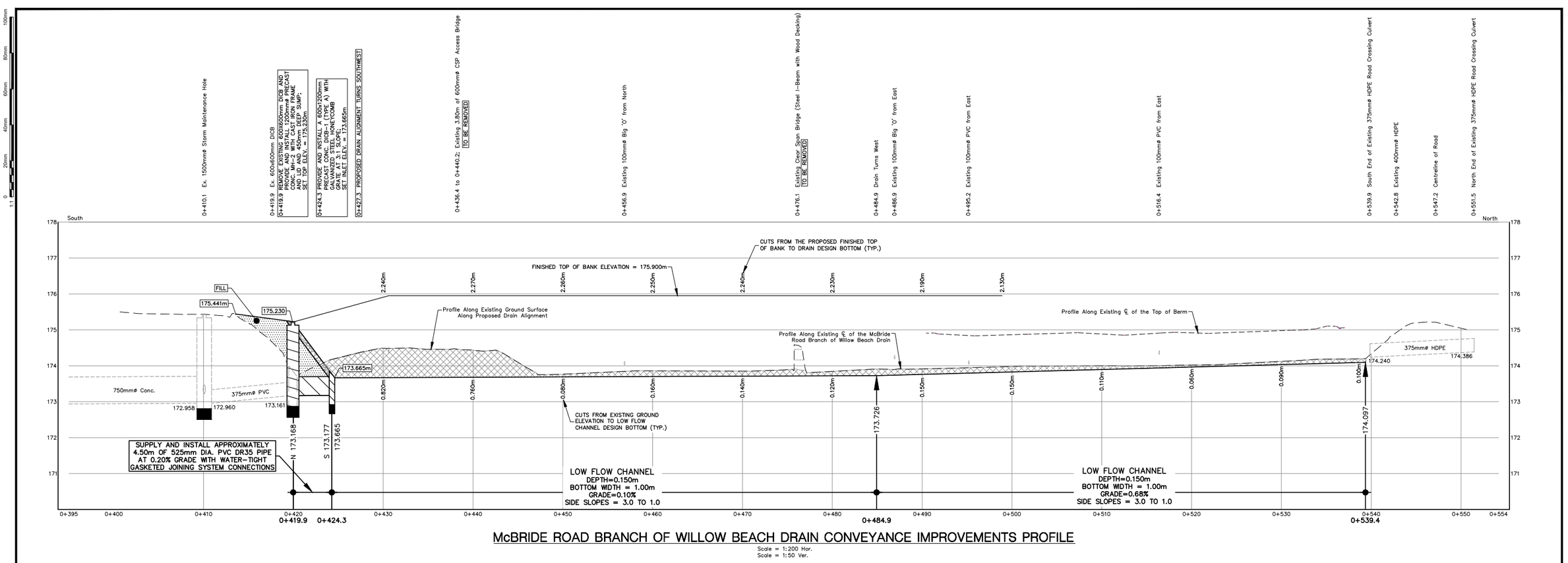


WATERSHED PLAN
Scale = 1:2,500

DRAWN BY: K.D.S.
PLOT CODE: 1:1
COMPUTER FILE: D19054S1.dwg

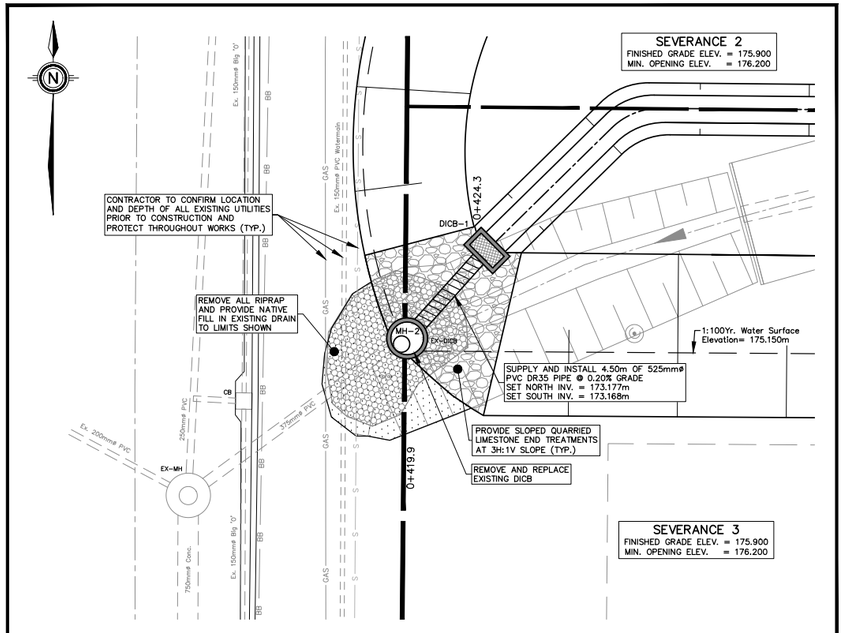
FILE No.: D19-054
SHEET No.: 1 OF 4

Z:\PROJECTS\DRAINAGE\2019\D19054\CAD\DWG\D19054S1.dwg, Last Saved: 2021/12/21



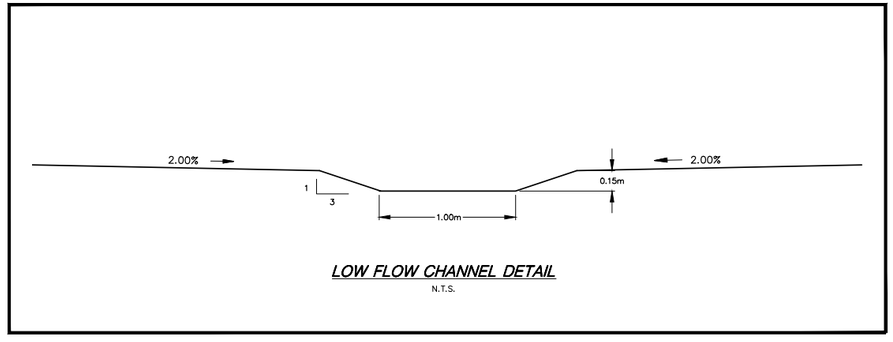
McBRIDE ROAD BRANCH OF WILLOW BEACH DRAIN CONVEYANCE IMPROVEMENTS PROFILE

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



OUTLET BLOW-UP DETAIL

Scale = 1:100



LOW FLOW CHANNEL DETAIL

N.T.S.

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

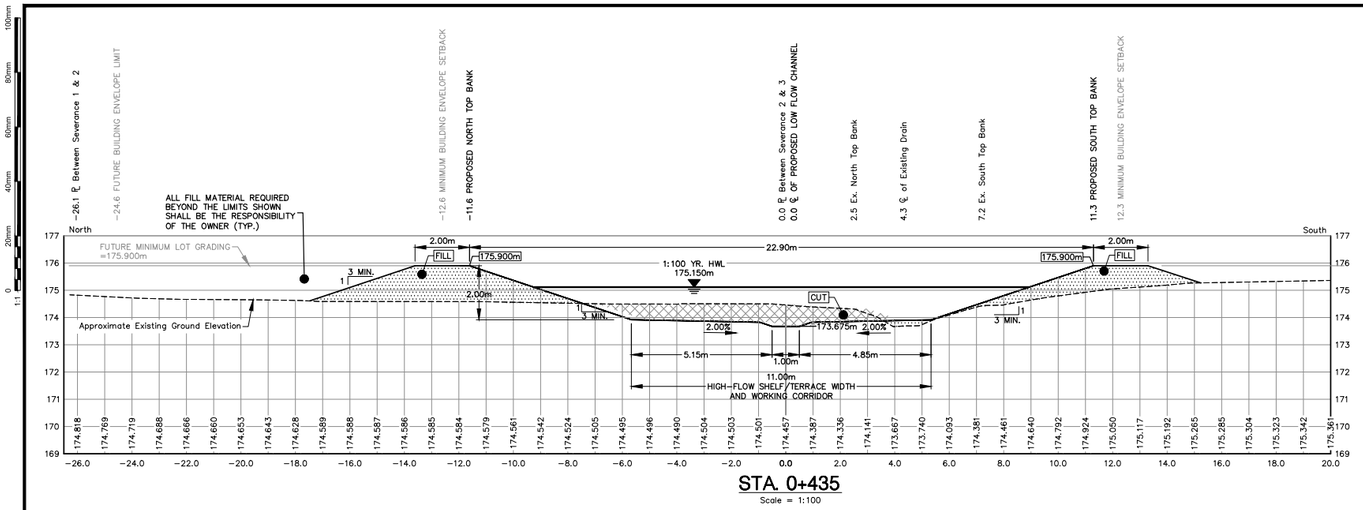
LICENSED PROFESSIONAL ENGINEER
A. B. PERALTA
100138683
PROVINCE OF ONTARIO

DRAWN BY: K.D.S.
PLOT CODE: 1:1
COMPUTER FILE: D19054S1.dwg

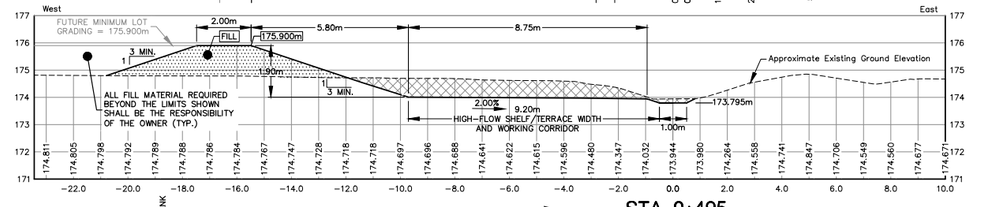
FILE No.: D19-054

SHEET No.: 2 OF 4

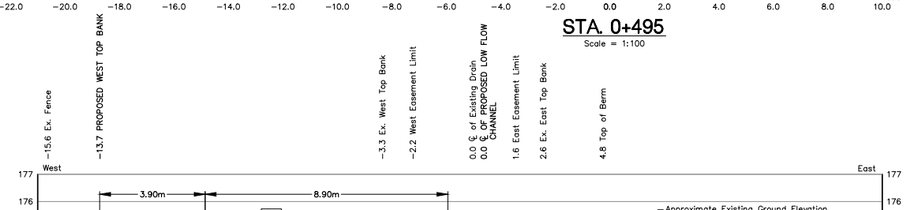
Z:\PROJECTS\D19ANACEK\D19D19054\CAD\DWG\D19054S1.dwg Last Saved: 2021/12/21



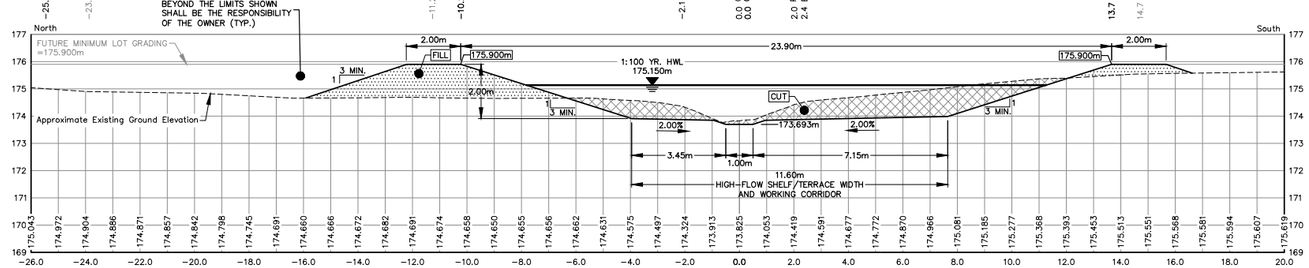
STA. 0+435
Scale = 1:100



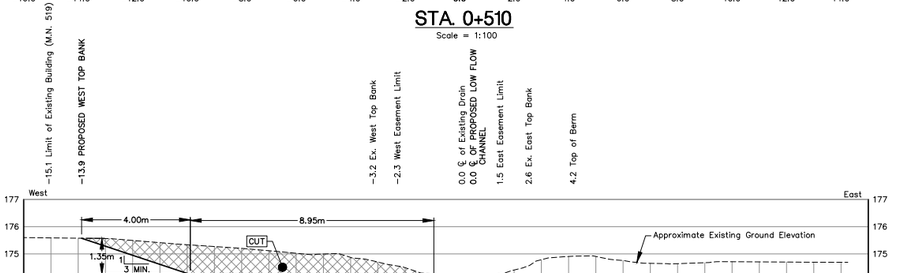
STA. 0+495
Scale = 1:100



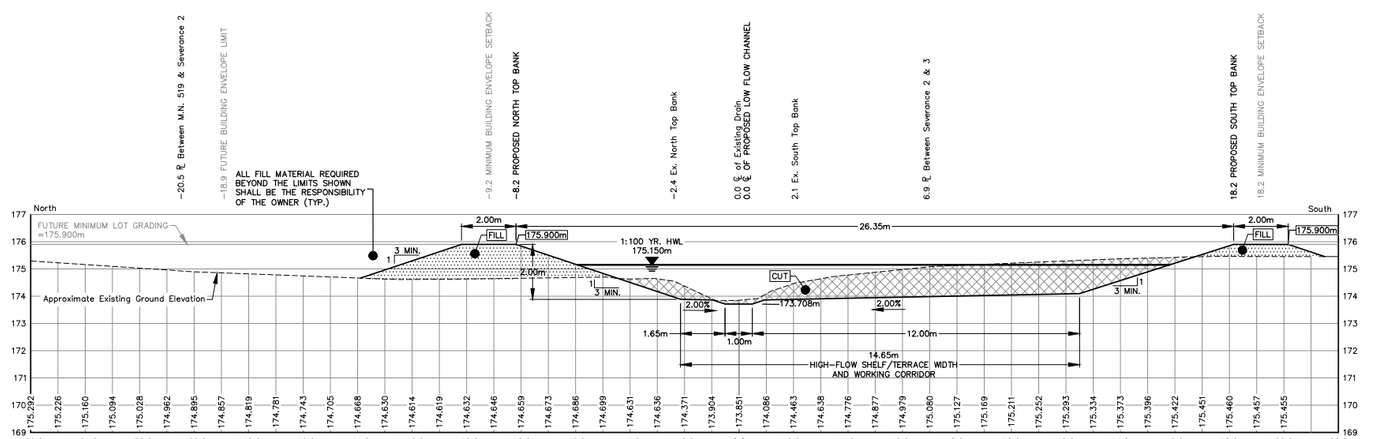
STA. 0+510
Scale = 1:100



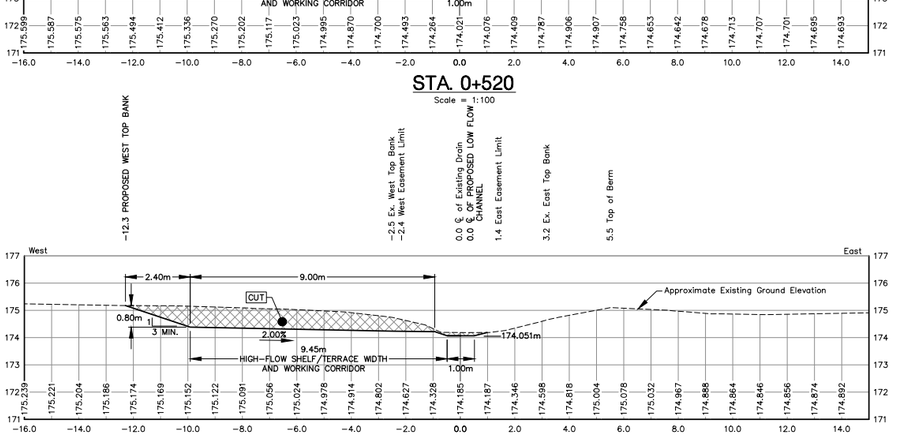
STA. 0+455
Scale = 1:100



STA. 0+520
Scale = 1:100



STA. 0+470
Scale = 1:100



STA. 0+535
Scale = 1:100

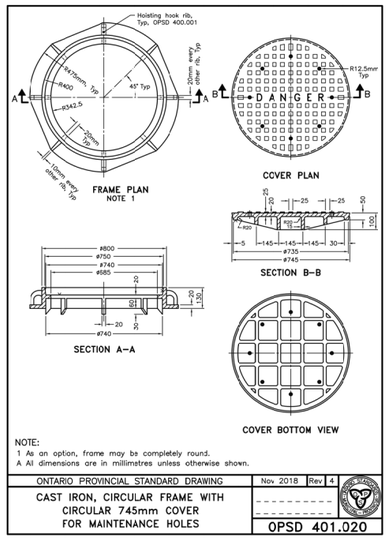
THESE DRAWINGS HAVE BEEN REDUCED IN SIZE AND THE SCALE THEREFORE VARIES.
FULL SCALE DRAWINGS CAN BE VIEWED AT THE MUNICIPAL OFFICES IF REQUIRED.

LICENSED PROFESSIONAL ENGINEER
A. B. PERALTA
100138683
PROVINCE OF ONTARIO

DRAWN BY: K.D.S.
PLOT CODE: 1:1
COMPUTER FILE: D19054S1.dwg

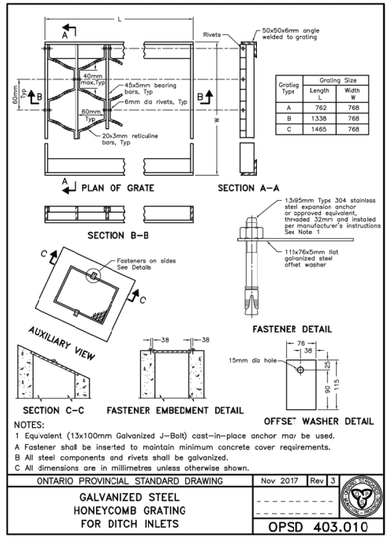
FILE No.: D19-054
SHEET No.: 3 OF 4

P:\PROJECTS\DRAINAGE\2019\D19054\CAD\DWG\D19054S1.dwg Last Saved: 2021/12/21



NOTE:
1 As an option, frame may be completely round.
A All dimensions are in millimetres unless otherwise shown.

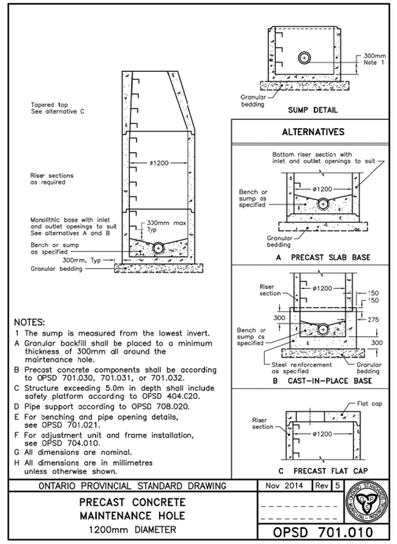
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CAST IRON, CIRCULAR FRAME WITH CIRCULAR 745mm COVER FOR MAINTENANCE HOLES		OPSD 401.020



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

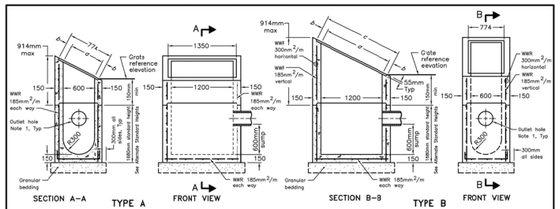
NOTES:
1 Equivalent (13x100mm Galvanized J–Bolt) cast–in–place anchor may be used.
A Fastener shall be inserted to maintain minimum concrete cover requirements.
B All steel components and rivets shall be galvanized.
C All dimensions are in millimetres unless otherwise shown.

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



NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		OPSD 701.010



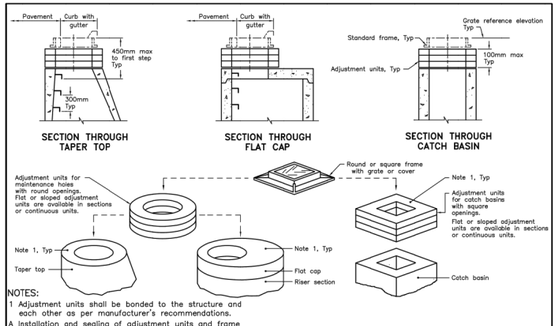
Opening Dimensions			
Grate Type	Slope	a	b
B	2H:1V	670	52
	3H:1V	632	71
	4H:1V	618	78
	HOR	609	87

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

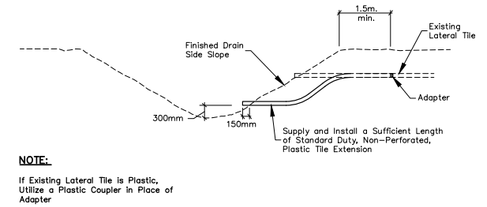
NOTES:
1 Outlet hole size 525mm max diameter.
A Where inlet is placed across ditch and is accessible to vehicular traffic, grating slope shall be 6H:1V or flatter.
B Center reinforcing in wall and base slab ±25mm.
C Lap riser horizontal wires 300mm. Laps shall be placed at corners.
D Granular backfill shall be placed to a minimum thickness of 300mm all around he 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



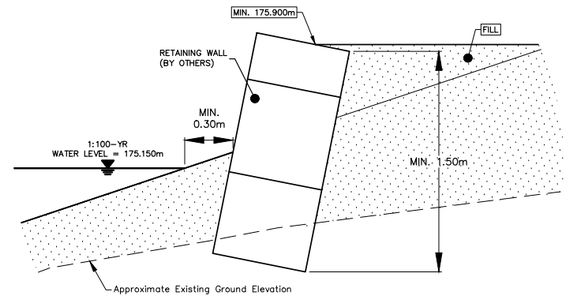
NOTES:
1 Adjustment units shall be bonded to the structure and each other as per manufacturer's recommendations.
A Installation and sealing of adjustment units and frame shall be according to adjustment unit manufacturer's recommendations.
B Adjustment units shall not extend beyond the outside edge of the structure.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 2
HIGH DENSITY POLYETHYLENE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS, AND VALVE CHAMBERS		OPSD 704.011

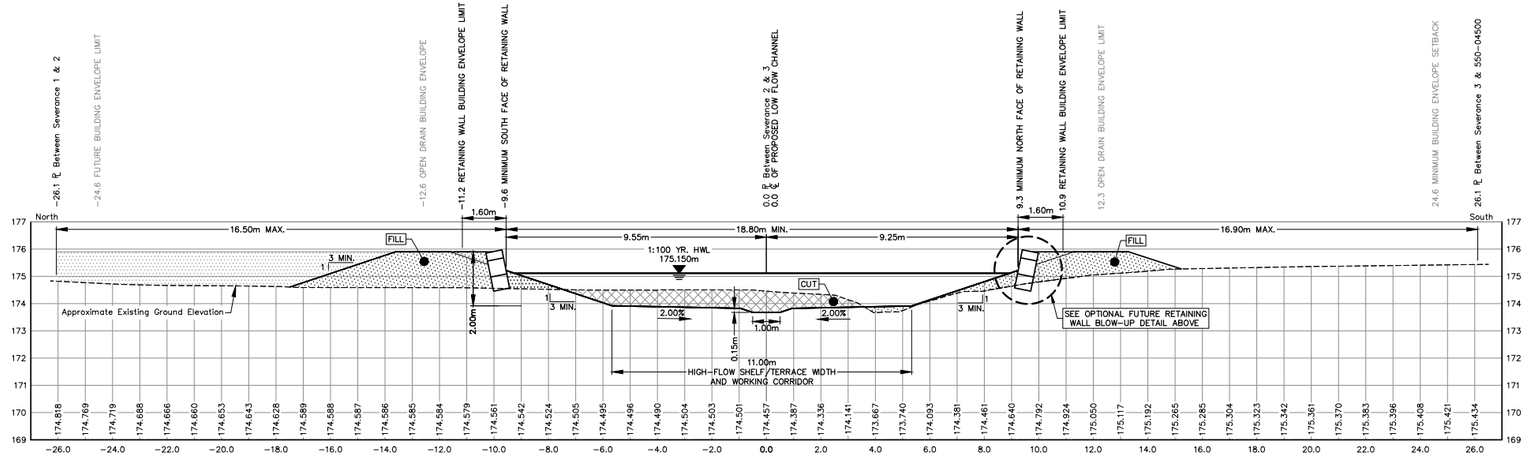


NOTE:
If Existing Lateral Tile is Plastic, Utilize a Plastic Coupler in Place of Adapter

STANDARD LATERAL TILE DETAIL
Scale = N.T.S.



OPTIONAL FUTURE RETAINING WALL BLOW–UP DETAIL
N.T.S.



OPTIONAL FUTURE RETAINING WALL DETAIL
Scale = 1:100

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

LICENSED PROFESSIONAL ENGINEER
A. B. PERALTA
100138683
PROVINCE OF ONTARIO

DRAWN BY: K.D.S.
PLOT CODE: 1:1
COMPUTER FILE: D19054S1.dwg
FILE No.: D19-054
SHEET No.: 4 OF 4

Z:\PROJECTS\DRAINAGE\2019\D19054\CAD\DWG\D19054S1.dwg Last Saved: 2021/12/21