TOWN OF AMHERSTBURG
DRAINAGE BOARD
Tuesday, September 5, 2023
6:00 PM

MINUTES

PRESENT

Allan Major
Anthony Campigotto
Brad Laramie
Murray Sellars
Brian Renaud
Sam Paglia, Drainage Superintendent/Engineering Coordinator
Nicole Humber, Recording Secretary
Karly Kennedy, Policy and Committee Coordinator

ABSENT

1. CALL TO ORDER

The Chair called the meeting to order at 6:01 p.m.

2. DISCLOSURE OF PECUNIARY INTEREST & GENERAL NATURE THEREOF

There were none.

3. The Chair read the following land acknowledgement:

"We will begin by acknowledging that the land on which we gather is the traditional territory of the Three Fires Confederacy of First Nations (comprising the Ojibway, the Odawa, and the Potawatomie Peoples), and of the Huron- Wendat and Wyandot Peoples. We recognize the land as an expression of gratitude to those whose traditional territory we reside on, and a way of honouring the Indigenous people who have been living and thriving on the land since time immemorial. We value the significant historical and contemporary contributions of local and regional First Nations and all of the Original Peoples of Turtle Island."

4. CONSIDERATION OF FINAL DRAINAGE REPORT

4.1 Ouellette Drain West – Relocation and Enclosure

Gerard Rood, P.Eng of Rood Engineering Inc. explained his report in detail for the Ouellette Drain West Relocation and Enclosure. Mr. Rood advised he had received the appointment in 2016 due to a development in the Golfview Estates Subdivision. Mr. Rood stated that the report is to address relocation of the Ouellette Drain West due to the development of Phase 5 in Golfview Park Estates, and has been working with the developer and the County of Essex to ensure the needs are met. The engineer's estimate is $422,000.00, which would be paid for by the developer for the relocation of the drain, and the County of Essex for culvert replacement and other drainage works. A schedule of assessment for future maintenance was also included in the report.

Board Chair Anthony Campigotto asked if anyone in the gallery had any questions.

There were none.

Board Chair Anthony Campigotto asked if any of the Board Members had any questions.

There were none.

Board Chair Anthony Campigotto mentioned that the total length of the project is 496.9 meters and wanted to clarify that was correct.

Mr. Rood indicated that the figures that were mentioned sounded to be correct and they would satisfy the needs of the project and County requirements.

Mr. Paglia reviewed the report, and the main purpose is for the development. Mr. Paglia commented from a Superintendent's stand point, if the development for whatever reason, did not advance, the assessment to Nicolas St would not be assessable should the project not go through.

Brian Renaud moved, Allan Major seconded;

That:

1. **The engineer's report, prepared by Rood Engineering Inc. dated May 30, 2023 for the Ouellette Drain West Relocation and Enclosure BE RECEIVED;**

2. **The engineer's report for the Ouellette Drain West Relocation and Enclosure BE CONSIDERED;**

3. **The PROVISIONAL ADOPTION of By-law 2023-096 which appends the engineer's report for the Ouellette Drain West Relocation and Enclosure BE BROUGHT to the next Regular Council meeting for Council's consideration; and,**

4. **Administration BE DIRECTED to proceed with the scheduling of the Public Meeting of the Court of Revision for the Ouellette Drain West Relocation and Enclosure.**

Motion Carried

5. NEW BUSINESS

Mr. Paglia addressed the Board regarding a decision that the Drainage Board made on August 9, 2023 for the Lakewood Pump No. 3. Mr. Paglia explained with the last rain event that the Town received, there were power failures to multiple pump stations. Mr. Paglia stated that although discussions at the previous meeting were had regarding backup power on the Lakewood Pump No. 3 project, Infrastructure Services, as the requesting landowner, will support the addition of backup power to the project and would like the watershed to be involved in making that determination/request. Ultimately, it was suggested that the Board may want to discuss the technical aspects of the report in further

detail and potentially reconsider the engineer's report for the Lakewood Pump No. 3 which will also provide the affected landowners the opportunity to include options for back-up power supply to be included with the report. Mr. Paglia noted that the minutes of this meeting would reflect the motion/ recommendations, and correspondence would be sent to landowners informing them of the reconsideration if the Board chooses to go that route.

Board Chair Anthony Campigotto commented that he is a landowner in the Willow Beach area, and during the recent rain event the pump station that services his home was working due to the back-up diesel powered generator that exists at that pump station. Mr. Campigotto added that he would like to see that all of the Towns pump stations have back-up power systems to assist in rain events like the last where the power failures have occurred.

Murray Sellars moved, Brad Laramie seconded;

That:

The engineer's report for the Lakewood Pump No. 3 BE RECONSIDERED to include a back-up power system, and affected landowners be notified of a future public meeting to discuss.

Motion Carried

5.1 Subsequent Connection - Ouellette Drain West and Subsequent Disconnection - Cornwall Drain

The Section 65 subsequent connection and disconnection was brought to the Board regarding the development for the Golfview Park Estates. The developer is required to do a Section 65 subsequent disconnection from the Cornwall Drain, a Section 65 subsequent connection to the Ouellette Drain West and a Section 76 report to prepare an updated the maintenance schedule of assessment for the Cornwall Drain.

Gerard Rood indicated he followed all requirements for the Section 65 report including adjustments that needed to be made for assessment schedules for proper future maintenance billing. Mr. Rood stated there had been no questions or concerns with regard to the report.

Board Chair Anthony Campigotto asked if anyone in the gallery had any questions.

There were none.

Board Chair Anthony Campigotto asked if any of the Board Members had any questions.

Board Member Murray Sellars mentioned that there were some names on the assessment schedules who no longer are the owners of said property.

Mr. Paglia stated that the names could be updated in the report, however it is important to realize that drainage assessments under the Act are to the “lands” not the owners shown at the time of adoption of the report. The Town bills the lands according to the schedule of assessment, and the current owner of that land at the time of billing will receive the invoice for the drainage works.

Allan Major moved, Brian seconded;

That:

1. **The report from the Drainage Superintendent and Engineering Coordinator dated August 22, 2023, regarding the Subsequent Connection to the Ouellette Drain West (ODW) and the Subsequent Disconnection to the Cornwall Drain (Golfview Park Estates Section 65) BE RECEIVED;**

2. **The engineer’s report, prepared by Rood Engineering Inc. on August 1, 2023, for the ODW and Cornwall Drain respectively BE RECEIVED;**

3. **The assessment adjustments as listed in the engineering report prepared by Rood Engineering Inc. BE APPROVED, and;**

4. **The amount to be collected by Golfview Park Estates BE APPLIED to the account of the ODW as per Section 65(12) for the future use of the drain watershed, and;**

5. **Administration BRING FORWARD the Drainage Board’s recommendation to approve the assessment adjustments at a future Regular Council Meeting.**

Motion Carried

6. NEXT MEETING DATE

October 3, 2023 at 6:00 p.m.

7. ADJOURNMENT

Murray Sellars moved, Allan Major seconded;

That:

The Board rise and adjourn at 6.27 p.m.

Motion Carried

OUELLETTE DRAIN WEST
Relocation and Enclosure

(Geographic Township of Anderdon)

(PWD-MD-2016-012)

Town of Amherstburg

271 Sandwich Street South
Amherstburg, Ontario N9V 2A5
519-736-0012

Rood Engineering Inc.

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

REI Project 2016D055
May 30th, 2023

Rood Engineering Inc.

Consulting Engineers

May 30th, 2023

Mayor and Municipal Council
Corporation of the Town of Amherstburg
271 Sandwich Street South
Amherstburg, Ontario
N9V 2A5

Mayor Prue and Members of Council:

OUELLETTE DRAIN WEST
Relocation and Enclosure
(PWD-MD-2016-012 & E09-2023-014)
Project REI2016D055
Town of Amherstburg, County of Essex

I. INTRODUCTION

In accordance with the instructions received from you at your November 9th, 2015 meeting and confirmed by letter dated September 30th, 2016, from your former Drainage Superintendent and Engineering Coordinator, Shane McVitty, P.Eng., we have prepared the following report that provides for repair and improvement of the Ouellette Drain West including diversion of the drain around Phase 5 of the Golfview Park Estates Development and improvements to the County Road 10 bridge located along the drain. The Ouellette Drain West extends from its outlet in the Detroit River at Part Lot 14, Concession 1, in a northeasterly direction through Pointe West Golf Club, under Middle Sideroad (County Road 10) and upstream to the Essex Terminal Railway. A plan showing the Ouellette Drain West, its approximate watershed, as well as the general location of the County Road 10 bridge along the covered drain, is included herein as part of the report.

Our appointment and the works relative to the repair and improvement of the Ouellette Drain West, proposed under this report, is in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021". We have performed all of the necessary survey, investigations, etcetera, for the proposed enclosure diversion and drain improvements, and we report thereon as follows.

II. BACKGROUND

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

1)	April 8th, 1996	New culvert and sedimentation basin construction	C. McLellan, P.Eng.
2)	September 21st, 1988	Enclosure of part of the Ouellette Drain West	Nick Peralta, P.Eng.
3)	February 19th, 2016	Separation of the East and West portions of the drain	Don Joudrey, P.Eng.

4)	November 11th, 2019	New Maintenance Schedule of Assessment for the Cornwall Drain	Tony Peralta, P.Eng.

The 1996 Report by C. McLellan, P.Eng. provided for construction of a new culvert to be constructed along with a new sedimentation basin and the latest profile for the grading of the drain. The Nick Peralta, P.Eng. report provided for extension on the southwest end of the pipe under the County road. The Don Joudrey, P.Eng. report provided for separating the East Portion from the West Portion of the drain at the Essex Terminal Railroad corridor. The Tony Peralta, P.Eng. report provided for all of the Golfview Park Estates Development to go through the Cornwall Drain and steps have been taken to allow for the Phase 5 of the Development to return its predevelopment flow rates to the Ouellette Drain West with Storm Water Management (S.W.M.) system being provided. We arranged with the Town to provide us with the updated assessment roll information for the affected parcels.

III. PRELIMINARY EXAMINATION AND ON-SITE MEETING

After reviewing all of the drainage information provided by the Town, we arranged with the Drainage Superintendent, Shane McVitty, to schedule an on-site meeting for December 7th, 2016. The following people were in attendance at said meeting: Brandon Riddiford, Adam McKinnon, Aldo Politti, Mark Seeger, Rob Filipov (Amico), Shane McVitty (Drainage Superintendent) and Gerard Rood (Rood Engineering). Mr. McVitty provided an introduction. He noted that the Town had received a request from Golfview Park Estates Inc. for drain maintenance and relocation to allow for the final Phase 5 to proceed and he described the location. There is a possible concern with the culvert failing at the road crossing portion of the drain. The latest and current drainage report for the drain section affected provided by the Town is the May 14th, 1964 report by C.G.R. Armstrong, P.Eng. The 1964 report shows a 6" tile from the west side of the Essex Terminal Railway extending southwesterly to where a Branch Drain enters from the south side of County Road 10 (18-19 Sideroad). The tile then increased in size to 12" diameter and continued westerly along the north side of the road to the point where a small ditch entered from the north. The tile then increased to 14" diameter and continued westerly to the point where the drain crossed under the road through a 15" diameter C.S.P. alongside a 36" concrete pipe under the road near Station 22+10 shown as the South limit of the road. Reports in 1971 by Armstrong, 1985 by Becker, 1987 by Boscariol, 1988 by Peralta and 1996 by LaFontaine provided for repairs and improvements southwesterly of County Road 10, some involving work to allow for the West Pointe Development and golf course to proceed. Work for the new report is proceeding in accordance with Section 78 of the Drainage Act. This section provides for repair and improvement of an existing Municipal drain. The owners of the lands where the drain is located are looking at proceeding with the next stage of their development. This will involve extending Nicklaus Court southeasterly to a point near the north side of the roadway and a proposed S.W.M. and green area. The report for the repair and improvement of the Ouellette Drain West will make the necessary provisions for the development to be extended. Since the work on the drain is being carried out to facilitate the expansion of the development, all costs will be borne by the development owner. A request was made for information on any special requirements that the development requires for the drain work to satisfy their needs.

Mr. McVitty asked about where the re-alignment would be noting that the hydro poles along the north side of the road are a consideration. It was noted that Hydro One requires 5' (1.5m) of clearance from the poles with no concerns if work is proceeded with beyond this limit. Mr. Filipov responded that they did not have plans yet due to sewer limits designs and process.

Mr. McVitty explained work on the East Branch and the West Branch has to handle some Essex Terminal Railway lands and abutting lands to the west. Mr. Filipov explained the possible road layout for the development with a possible alignment going south near the east limit of their lands. It was discussed that all storm water needs to be taken out through a S.W.M. pond and the current design was to take all flows northwesterly and out through the Cornwall Drain. They will investigate any needs that they have for drainage.

Mr. McVitty and Mr. Rood will try to contact the owner to the east to discuss the re-alignment of the drain and their needs. The County uses the ditch to take flows west and into the drain. Hydro One would require a 7 letter process if work is done too close to their poles. Mr. McVitty noted that the culvert under the Essex Terminal Railroad will be blocked to separate the East Portion and West Portion of the Ouellette Drain.

IV. FIELD SURVEY AND INVESTIGATIONS

Subsequent to the on-site meeting we arranged for a topographic survey of the drain and bridges to be completed. We further arranged to get updated roll information from the Town, including information on the tax class of each of the properties affected by the Municipal Drain. After completing a visual inspection of the access culvert under County Road 10 (Middle Sideroad) revealed that the pipe is in questionable condition, we contacted the County of Essex to consult on how they wanted to proceed with the repair. The County requested that the access bridge be replaced. We carried out some additional survey work and prepared preliminary plans for the bridge replacement. In consultation with the County of Essex and the Town, we established that a new aluminized CSP would be suitable.

The Ministry of Natural Resources and Forestry (M.N.R.F.) Endangered Species Act Municipal Drain Agreements, under Section 23 of the Act, with the Town had expired as of June 30th, 2015. New regulations provisions have replaced these existing drain agreements under Ontario Regulation 242/08, Section 23.9 administered under the Ministry of Environment Conservation and Parks (M.E.C.P.) which allows the Town to conduct repairs, maintenance and improvements, within the existing Municipal Drains, under the Drainage Act to be exempt from Sections 9 and 10 of the Endangered Species Act, so long as the rules in the regulation are followed. If eligible, the regulatory provision allows Towns to give notice to the Ministry by registering their drainage activities through an online registry system.

Upon our appointment to this project, we received a copy of the email from E.R.C.A. to the Town regarding their preliminary comments which pertain to this project. The drain is under the regulated area of E.R.C.A. and a permit will be required for proceeding with the construction. The proposed drainage works will need to be designed to provide an equivalent level of service to the affected lands and the outlet pipe needs to be confirmed to have appropriate sizing and does not affect the level of service of the drain.

We also made initial investigations of any D.F.O. requirements for work that would be proposed to be carried out on the drain and access bridge within the Ouellette Drain West. Due to the covered nature of the existing and proposed drain there were no concerns for the work area, but the downstream reach needs to be protected from any silt and sedimentation to protect possible endangered species and habitat. A copy of mitigation requirements is included in the Specifications and **Appendix "REI-A"** of this report.

We also arranged for the Town to review the Ministry of Natural Resources and Forestry (M.N.R.F.) Species at Risk (S.A.R.) former agreement made with the Town pursuant to the Endangered Species Act, 2007. The former Agreement plans indicate that turtle and snake species are a concern for this work area as outlined in the letter from the Town dated January

18th, 2013. The former Agreement includes mitigation measures to be followed as outlined in "Schedule C Mitigation Measures" of the document and a copy of same as it relates to turtles and snakes is included herein in **Appendix "REI-B"**. The N.H.I.C. mapping was checked and information on species was downloaded. A copy of the special species table is included in **Appendix "REI-B"** and the Contractor will be required to monitor for them all and carry out mitigation measures as needed and provided in the Appendix.

V. BRIDGE REVIEW

As part of our investigations, we made a detailed inspection of the bridge under County Road 10 at the outlet to the open drain. It was found to be in very deteriorated condition. When the Developer of Golfview Park Estates became prepared to proceed with their Phase 5 of the project in 2022, arrangements were made for site meetings with them, the County of Essex and the Drainage Superintendent to discuss the details for the work to proceed. The Developer has provided updated plans for Phase 5 that includes a proposed S.W.M. pond at the southeast corner of their site. The County initially requested a camera inspection of their culvert, but the depth of standing water and sediment accumulation prevented the work from proceeding. In a recent subsequent site meeting it was confirmed that the pipe replacement can be included in the drainage report and a maintenance hole would be desired at the northeast corner of Golfview Drive and County Road 10 to eliminate the deep open area for the 3 pipes that connect and provide for stabilizing the road shoulders and enhance safety and future maintenance. It was also discussed that an offset catch basin would be beneficial on the south side of the roadway east of the drain and west of Ironwood Drive to direct road runoff into the drain without flowing over the brick walkway. The County also provided information on road restoration that will be included in the Specifications.

VI. FINDINGS AND RECOMMENDATIONS

We referenced the past reports as noted in the table above to establish the updated watershed boundary and details for the existing covered drain and for the County Road 10 crossing culvert. Our field survey included probing and measurements for the existing covered drain northeast of its outlet into the road crossing. We have reviewed the E.R.C.A. requirements for the drainage works. Our analysis of the updated smaller watershed for the drain and its existing covered drain system was used to establish the requirements for the diversion of the covered drain around the development site. The diverted covered drain will provide the standard drainage capacity requirements to provide an equivalent level of service that the existing covered drain had and will not create any adverse impacts to the upstream or downstream portion of the drainage works. Our report will only address the requirements under the Drainage Act and the E.R.C.A. permit for the works will only be for proceeding with the construction of the drainage improvements as outlined in this report. E.R.C.A. will require application for additional approvals and permits for any storm water management facilities and any development of the adjacent land areas. Any development on neighbouring sites to the drainage works will be required to meet all hazard land management criteria and will need to be addressed with the appropriate process through the E.R.C.A. office for proceeding with any of those other works.

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

In recognition of the impact that any species may experience as a result of the subject works, the Town of Amherstburg has provided comprehensive mitigation measures, as well as species identification guides for reference. These references shall be provided to the successful Tenderer and shall be available for viewing at the Town office for those interested.

We have inspected the County Road bridge affected by the section of drain to be re-aligned and repaired and improved and find that it requires replacement. Once the new bridge has been constructed, we recommend that the Town keep up and maintain this bridge as part of the drainage works in the future. We recommend that standard maintenance works such as flushing and cleaning and endwall repair be carried out in accordance with the provisions of this report and the standard practice requirements and regulations at the time of the work.

We further recommend that all future maintenance work to the access bridge be carried out as provided for in this report and that the costs shall be assessed to the affected owner and upstream lands and roads in the proportions as established in this report.

Existing unpolluted connections to the bridge pipe and enclosures will be connected to the new replacement bridge and enclosure or diverted and extended to outlet to the open drain. The Town will work with the Owner, the Health Unit, and the Ministry of the Environment and Climate Change (M.O.E.C.C.) to address any sanitary system problems that are discovered. The Owners are advised that septic flows cannot be allowed to the storm drainage system pursuant to applicable legislation.

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

a) The badly deteriorated County Road 10 bridge is to be replaced with new pipe that will be set to match the existing pipe invert at the outlet and sufficient grade upstream to handle the existing flows from the lands and roads being served.
b) The open drain portion southwest of the road culvert from Station 0+000 to Station 0+022 will be excavated and repaired for 22 metres downstream to restore the original drain cross section and remove fallen trees and brush and slumped bank materials in the drain. All trees and brush from top of bank to top of bank shall be completely removed and disposed of along this portion of the open drain as set out in the Specifications.
c) A new road crossing culvert shall be installed to replace the existing pipe with all old materials to be completely removed and disposed of.
d) Once the new road culvert has been installed and the open drain repaired, quarried limestone on filter cloth end protection and restoration shall be provided as set out the Specifications.
e) An offset catch basin is to be provided on the east side of the new road culvert between the brick walkway and south road shoulder to safely transfer flows into the drain and reduce the risk of flows over the walkway. Any existing connections to the road crossing culvert shall be reconnected to the new culvert during the installation.
f) A catch basin maintenance hole (CBMH) be provided at the northeast corner of County Road 10 and Golfview Drive as a junction for the three (3) pipes that connect there. The CBMH top will be fitted with a sloped ditch inlet cover with honeycomb grate to capture any surface flows.
g) The newly aligned covered drain shall be constructed extending east to the north of the hydro pole line to the southeast corner of Phase 5 of Golfview Park Estates and then proceed northwesterly along the east side of the Phase 5 lands to connect to the existing catch basin and covered drain coming from the northeast with a new concrete

catch basin to be provided to replace the deteriorating C.S.P. basin and the drain from the northeast connected into the system.

h) Once the new re-aligned covered drain has been installed, the existing covered drain across the Golfview Park Estates parcel to the existing C.S.P. basin near its east limit shall be completely removed and disposed of with the lands restored with well compacted native material.

i) New concrete CBMH's shall be provided along the course of the re-aligned drain as shown and detailed on the plans and provide for road and other surface drainage and connection of pipes from the south side of the roadway.

j) The new drain alignment will be typically backfilled with well compacted native material except at its crossing of the new roadway proposed from Phase 5 to the County Road where the trench shall be backfilled with Granular 'B' and Granular 'A' in accordance with the standard specifications for access bridges included in the Appendices. All grass areas shall include 100mm of topsoil and seed and mulch. Work in the field area will include stripping of the topsoil before the new covered drain installation and restoration of the work area with the stripped topsoil.

k) The County Road crossing shall be backfilled with Granular 'B' or recycled granular materials to a point 575mm below the existing asphalt surface. The next 450mm shall be backfilled with Granular 'A' material compacted to 100% S.P.D. The remaining 125mm depth shall be restored with H.L.3 or equivalent Superpave SP 12.5 mixture installed in accordance with the Specifications. The entire works shall be conducted in accordance with the standard bridge specifications in **Appendix "REI-C"**.

We recommend that the Ouellette Drain West be repaired and improved with its re-alignment, including the bridge as outlined, in accordance with this report, the attached specifications and the accompanying drawings, and that all works associated with same be carried out pursuant to Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2010".

VII. ALLOWANCES

We find that the work on the drain will impact some of the lands, particularly at the new alignment on the farmland to the east of Phase 5 of Golfview Park Estates, and these agricultural lands require payment for the land taken by same. We therefore recommend that the following owners be compensated for the land taken for drain relocation as follows, namely:

1)	1486134 Ontario Ltd., (460-01000)	Owner,	Part of Lot 19, Concession 1,	$	1,047.00
2)	County of Essex, (County Road 10)	Owner,	County Road 10,	$	10.00
	TOTAL FOR LAND TAKEN			**$**	**1,057.00**

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 2010".

This compensation shall allow for all of the land necessary to construct the new Municipal drain alignment, as well as access along the lands for the future maintenance and upkeep of the drainage system. We have allowed for a swale to be constructed over the enclosed portion of the drain as shown on the cross sections, and for the complete area of the new drain. A value of $8,546.00 per acre ($21,117.00 per hectare) for the drain swale and new enclosure construction has

been provided. The allowances provided shall establish the legal right for the Municipal drainage system to be constructed in its proposed location and establish the right to access along each side of the drain for future maintenance. A nominal value has been used for the County allowance to reflect that these are public lands. The allowance provides for the construction and for the future maintenance of the drain by the Town on the County roadway.

We find that all of the bridge work will generally be completed within the confines of the existing drain limits and road right-of-way and have provided for full restoration works to be carried out at all disturbed areas. We recommend that any materials removed from the open drain, or existing bridges and enclosures along lawn areas, be loaded up and hauled away for disposal by the Contractor.

Based on the above we find that no allowances for damages are necessary pursuant to Section 30 of the Drainage Act for those portions of the road and parcels having lawn areas.

VIII. ESTIMATE OF COST

Our estimate of the Total Cost of this work, including all incidental expenses, is the sum of **FOUR HUNDRED TWENTY TWO THOUSAND DOLLARS ($422,000.00)**, made up as follows:

CONSTRUCTION

Item 1)	**Station 0+022.0 to Station 0+088.5;** provide all labour, equipment and materials to remove existing C.S.P. crossing County Road 10 while protecting any connections to the existing pipe, supply and install approximately 66.5 metres of 900mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including wrap couplers with filter cloth wrap around each; connect existing pipes into the new pipe with appropriate H.D.P.E. fittings and secure connection to the existing pipes including all grouting and parging required for sealed joints; provide all granular bedding, Gran "B" and Gran "A" backfill as set out in the plans and specifications including placement and compaction; supply and install SuperPave asphalt as set out in the specifications; salvage the existing brick walkway and restore it after the pipe installation; provide topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	91,300.00
Item 2)	**Station 0+045.0**; provide all labour, equipment and materials to install an offset 600mm square 1.2m deep precast concrete CB with 450mm sump in the south road boulevard with cast iron frame and grate, riser rings, and 200mm diameter smooth wall pipe connection to the new road crossing pipe including inserta-tee connection; all excavation, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	1,800.00

Item 3)	**Station 0+088.5 CBMH1**; provide all labour, equipment and materials to install CBMH1 including 2400mm diameter precast concrete maintenance hole with 450mm deep sump, aluminum ladder rungs, sloped 2:1 concrete top with standard galvanized honeycomb grating for ditch inlet; riser rings, connection of all three (3) pipes that enter the CBMH including all necessary fittings, grouting and parging; all excavation, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$ 24,200.00
Item 4)	**Station 0+088.5 to Station 0+114.0;** provide all labour, equipment, and materials to install 25.5 metres of 750mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including connection to the new maintenance hole catch basins including all connections, parging and grouting; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$ 15,500.00
Item 5)	**Station 0+114.0 CB2**; provide all labour, equipment, and materials to install a 600mm X 1200mm precast concrete double CB with 450mm deep sump in the north road boulevard with cast iron frames and grates, riser rings, and connections to the new covered drain alignment; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$ 2,500.00
Item 6)	**Station 0+114.0 to Station 0+160.0;** provide all labour, equipment, and materials to install 46.0 metres of 750mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including connection to the new maintenance hole catch basins including all connections, parging and grouting; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$ 27,100.00
Item 7)	**Station 0+160.0 CB3**; provide all labour, equipment, and materials to install a 600mm X 1200mm precast concrete double CB with 450mm deep sump in the north road boulevard with cast iron frames and grates, riser rings, and connections to the new covered drain alignment; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$ 2,500.00
Item 8)	**Station 0+160.0 to Station 0+280.0;** provide all labour, equipment, and materials to install 120.0 metres of		

	600mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including connection to the new maintenance hole catch basins including all connections, parging and grouting; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	68,600.00
Item 9)	**Station 0+280.0 CB4**; provide all labour, equipment, and materials to install a 600mm X 1200mm precast concrete double CB with 450mm deep sump in the north road boulevard with cast iron frames and grates, riser rings, and connections to the new covered drain alignment; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	2,500.00
Item 10)	**Station 0+280.0 to Station 0+360.0;** provide all labour, equipment, and materials to install 80.0 metres of 525mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including connection to the new maintenance hole catch basins including all connections, parging and grouting; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	24,900.00
Item 11)	**Station 0+360.0 CB5**; provide all labour, equipment, and materials to install a 600mm square precast concrete CB with 450mm deep sump in the north road boulevard with cast iron frame and grate, riser rings, and connections to the new covered drain alignment; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	2,100.00
Item 12)	**Station 0+360.0 to Station 0+461.9;** provide all labour, equipment, and materials to install 101.9 metres of 525mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including connection to the new maintenance hole catch basins including all connections, parging and grouting; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	36,500.00
Item 13)	**Station 0+461.9 CB6**; provide all labour, equipment, and materials to install a 600mm square precast concrete CB with 450mm deep sump in the north road boulevard with cast iron frame and grate, riser rings, and connections to the new covered drain alignment; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.	Lump Sum	$	2,100.00

Item 14)	**Station 0+461.9 to Station 0+464.9;** provide all labour, equipment, and materials to install 3.0 metres of 450mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including connection to the new maintenance hole catch basins including all connections, parging and grouting; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.		
	Lump Sum	$	1,700.00
Item 15)	**Station 0+464.9 CB7**; provide all labour, equipment, and materials to install a 600mm square precast concrete CB with 450mm deep sump in the north road boulevard with cast iron frame and grate, riser rings, and connections to the new covered drain alignment; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.		
	Lump Sum	$	2,100.00
Item 16)	**Station 0+464.9 to Station 0+518.9;** provide all labour, equipment, and materials to install 54.0 metres of 450mm diameter 320 kPa H.D.P.E. Boss 2000 smooth wall pipe including connection to the new maintenance hole catch basins including all connections, parging and grouting; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.		
	Lump Sum	$	15,700.00
Item 17)	**Station 0+518.9 CB8**; provide all labour, equipment, and materials to remove and dispose of existing C.S.P. CB; install a 600mm square precast concrete CB with 450mm deep sump in the field low point with cast iron frame and grate, riser rings, and connections to the new covered drain alignment and existing drain; all excavation, bedding, backfill and compaction; topsoil placement, seeding and mulching, and restoration and clean up, complete.		
	Lump Sum	$	2,100.00
Item 18)	**Station 0+000.0 to Station 0+022.0;** Carry out bottom dipping and excavation of the drain to remove accumulated sediment and debris and restore the drain to the profile grade and sections shown on the plans, including all leveling, hauling and disposal of material where specified, approximately 22 metres (50 cubic metres) at $55.00 per lineal metre.	$	1,210.00
Item 19)	**Station 0+000.0 to Station 0+022.0;** Provide quarried limestone rip rap on filter cloth general erosion protection on drain banks at drain outlets and slumped bank areas, including excavation, removal of any deleterious materials, all hauling and disposal of material, supply and place rock on filter cloth, complete:		

	a) Quarried limestone: approximately 40.0 tonnes at $65.00 per tonne	$	2,600.00
	b) Filter cloth: approximately 80 square metres at $5.00 per square metre	$	400.00
Item 20)	Contingency Amount for Construction	$	32,700.00
	SUBTOTAL FOR CONSTRUCTION	**$**	**360,110.00**
	Estimated Net H.S.T. (1.76%) on Construction	**$**	**6,338.00**
	TOTAL FOR CONSTRUCTION	**$**	**366,448.00**

INCIDENTALS

1)	Report, Estimate, & Specifications	$	12,000.00
2)	Survey, Assistants, Expenses, and Drawings	$	24,000.00
3)	Duplication Cost of Report and Drawings	$	1,000.00
4)	Estimated Cost of Letting Contract	$	1,500.00
5)	Estimated Cost of Layout and Staking	$	1,800.00
6)	Estimated Cost of Full-Time Supervision and Inspection During Construction (based on 2 week duration)	$	12,000.00
7)	Estimated Net H.S.T. on Items Above (1.76 %)	$	920.00
8)	Estimated Cost of E.R.C.A. Permit	$	800.00
9)	Contingency Allowance	$	475.00
	TOTAL FOR INCIDENTALS	**$**	**54,495.00**
	TOTAL FOR ALLOWANCES (brought forward)	**$**	**1,057.00**
	TOTAL FOR CONSTRUCTION (brought forward)	**$**	**366,448.00**
	TOTAL ESTIMATE	**$**	**422,000.00**

IX. DRAWINGS AND SPECIFICATIONS

As part of this report, we have attached design drawings for the construction of the County Road access culvert and the covered drain re-alignment, repairs and improvements. The design drawings show the subject bridge and improvement locations and the details of the covered drain and swale installations, as well as the approximate location within the watershed area. The design drawings are attached to the back of this report and are labelled **Appendix "REI-E"**.

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

X. SCHEDULE OF ASSESSMENT

We would recommend that the Total Cost for construction of this project, including incidental costs, be charged against the lands and roads affected in accordance with the attached Construction Schedule of Assessment.

Pursuant to Section 26 of the Drainage Act, the Road Authority is responsible for all increase in cost to the drainage works due to the existence of their roadway. This requirement has been reflected in the assessment schedule related to sharing of future maintenance costs for the access culvert. This provision shall apply to the County Road 10 (Middle Sideroad) crossing for the County of Essex.

XI. FUTURE MAINTENANCE

When maintenance work is carried out in the future on the drain portion updated in this drainage report, the cost for said future maintenance shall be assessed in accordance with the "Schedule of Assessment" in the current or any updated applicable report and by-law for work on the entire Ouellette Drain West, with costs to the abutting and upstream lands and roads, excluding any Special Benefit shown in the past assessment schedule or any future updated report with a maintenance assessment schedule for works along the entire length of the drain. The actual future maintenance cost shall be assessed on a pro-rata basis on the Benefit and Outlet Liability assessments in the current applicable drainage report and by-law for the entire drain. We recommend that the bridge structure, drain enclosure and swale as identified herein, be maintained in the future as part of the drainage works. We would also recommend that the bridges, for which the maintenance costs are to be shared with the upstream lands and roads within the watershed, be maintained by the Town and that said maintenance would include works to the bridge culvert, bedding, backfill and end treatment. Should concrete, asphalt, or other decorative driveway surfaces over the bridge culvert require removal as part of the maintenance works, these surfaces shall also be repaired or replaced as part of the works. Likewise, if any fencing, gate, decorative walls, guardrails, or other special features exist that will be impacted by the maintenance work, they are also to be removed and restored or replaced as part of the bridge maintenance work. However, the cost of the supply and installation of any surface materials other than Granular "A" material and the cost of removal and restoration or replacement, if necessary, of any special features, shall be totally assessed to the benefiting adjoining Owner(s) served by said access bridge.

After the completion of all of the works included within this report, all existing access bridges and the roadway crossings within the Ouellette Drain West shall be maintained in the future by the

Town of Amherstburg and should any maintenance works be required to any of same, all costs are to be shared by the abutting landowner, and upstream affected lands and roads in accordance with the percentages shown in the table which follows herein.

TABLE A
MAINTENANCE SHARING
FOR ACCESS BRIDGES

BRIDGE NO.	ROLL NUMBER	OWNERS	% TO ABUTTING OWNER	% TO UPSTREAM OWNERS
1	County Road 10	County of Essex	98.0%	2.0%
2	Nicklaus Street	Town of Amherstburg	98.0%	2.0%

When the maintenance costs of the individual access bridges and enclosures are being shared with upstream lands and roads, it should be noted that the percentages to be shared with the upstream lands and roads shall be assessed as an Outlet Liability against the affected lands and roads lying upstream of the access bridge or enclosure in question, including the proportion of the abutting lands located upstream of the bridge or enclosure being maintained. The cost sharing for upstream lands shall be prorated in the same proportions as the Outlet Liability values shown in the current applicable by-law “Schedule of Assessment”. The share to the abutting owner(s) shall be assessed as a Benefit to the owner(s) of the parcel abutting the access bridge.

We further recommend that the maintenance cost sharing as set out above shall remain as aforesaid until otherwise determined and re-established under the provisions of the “Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2021".

All of which is respectfully submitted.

REGISTERED PROFESSIONAL ENGINEER
G.ROOD
2023-07-03
PROVINCE OF ONTARIO

***R**ood **E**ngineering **I**nc.*

Gerard Rood

Gerard Rood, P.Eng.

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att.

ROOD ENGINEERING INC.
Consulting Engineers
9 Nelson Street
LEAMINGTON, Ontario N8H 1G6

SCHEDULE OF ASSESSMENT
OUELLETTE DRAIN WEST
(Road Crossing & Re-Alignment)
Town of Amherstburg

3. MUNICIPAL LANDS:

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Owned	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
		County Road 10 (Middle Sideroad)				County of Essex	$ -	$ -	$ 102,780.00	$ 102,780.00
		Total on Municipal Lands					**$ -**	**$ -**	**$ 102,780.00**	**$ 102,780.00**

4. PRIVATELY OWNED - NON-AGRICULTURAL LANDS:

Tax Roll No.	Con. or Plan No.	Lot or Part of Lot	Acres Owned	Acres Afft'd	Hectares Afft'd	Owner's Name	Value of Benefit	Value of Outlet	Value of Special Benefit	TOTAL VALUE
460-41226	1	Pt. 19 & 20	6.03	6.03	2.440	Golfview Park Estates Inc.	$ 159,610.00	$ 159,610.00	$ -	$ 319,220.00
		Total on Privately Owned - Non-Agricultural Lands					**$ 159,610.00**	**$ 159,610.00**	**$ -**	**$ 319,220.00**
		TOTAL ASSESSMENT		6.03	2.44		**$ 159,610.00**	**$ 159,610.00**	**$ 102,780.00**	**$ 422,000.00**

1 Hectare = 2.471 Acres
Project No. REI2016D055
May 30th, 2023

SPECIFICATIONS

OUELLETTE DRAIN WEST

Relocation and Enclosure

(Geographic Township of Anderdon)

TOWN OF AMHERSTBURG

I. GENERAL SCOPE OF WORK

The Ouellette Drain West currently comprises of an open Municipal drain which extends from its outlet in the Detroit River at Part Lot 14, Concession 1, in a north easterly direction through Pointe West Golf Club, under County Road 10 (Middle Sideroad) to the Essex Terminal Railway. The work under this project generally comprises of re-alignment, repairs, and improvements to the existing covered drain and improvements to the bridge under County Road 10 located along the drain. The work on the bridge being improved includes the removal of the existing structure approximately between Station 0+022 and Station 0+088; the installation of new culvert at the existing bridge; new culvert end treatment comprising of sloped quarried limestone on filter cloth end protection; road restoration, and connection of existing pipes and a new offset catch basin. The open drain shall be repaired and improved for approximately 22 metres downstream of the culvert outlet on the south side of the roadway. The existing covered drain on the north side of the roadway shall be removed and the new covered drain and swale including maintenance holes and catch basins shall be installed to the south and east of Golfview Park Estates Phase 5.

All work shall be carried out in accordance with these specifications, the plans forming part of this drainage project, as well as the Standard Details included in **Appendix "REI-C"**. The bridge improvements and new construction shall be of the size, type, depth, etcetera, as is shown in the accompanying drawings, as determined from the Bench Marks, and as may be further laid out at the site at the time of construction. All work carried out under this project shall be completed to the full satisfaction of the Town Drainage Superintendent and the Consulting Engineer.

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

The Contractor will be required to implement stringent erosion and sedimentation controls during the course of the work to help minimize the amount of silt and sediment being carried downstream into the Detroit River. It is intended that work on this project be carried out during relatively dry weather to ensure proper site and drain conditions and to avoid conflicts with sediment being deposited into the outlet drainage system. 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, and the notes in **Appendix "REI-A"**. The

Contractor is advised that no work may be carried out in the existing open drain from March 15th to June 30th of any given year because the drain is directly connected to a downstream area that is classified as sensitive to impacts on aquatic life and habitat by E.R.C.A. and D.F.O.

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

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

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

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

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

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

III. M.N.R.F. CONSIDERATIONS

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

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

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

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

Under the Species at Risk Provincial Legislation, administered by the Ministry of Environment, Conservation and Parks (M.E.C.P.), Section 23.9 of the Endangered Species Act, 2007, allows the Town to conduct eligible repair, maintenance and improvement work under the Drainage Act that exempts these works from Sections 9 and 10 of this Act, so long as they follow the rules within Ontario Regulation 242/08.

Prior to commencing work, the Town of Amherstburg will complete an "Endangered Species Act Review" for the Ouellette Drain West 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. Species concerns from the N.H.I.C. mapping site is included in **Appendix "REI-B"**. 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. The Contractor shall work with the Town and M.N.R.F. or M.E.C.P. staff to handle any species as provided for in the appendices.

IV. ACCESS TO WORK

The Contractor is advised that the majority of the work to be carried out on this project extends across and along the north side of County Road 10 (Middle Sideroad) and along the east side of Golfview Park Estates Phase 5. The Contractor shall have access for the full width of the roadway abutting the proposed drainage works. The Contractor may utilize the right-of-way as necessary, to permit the completion of all of the work required to be carried out for this project. The Contractor shall also have access as necessary to carry out the removal of the existing access bridge and to construct the new replacement access bridge, as set out on the plans and in these specifications, along with a sufficient area in the vicinity of the bridge to carry out the required construction of the removal and new structure installation and ancillary work.

The Contractor shall ensure that the traveling public is protected at all times while utilizing the roadway for its access. The Contractor shall provide traffic control, including flag persons when required. Should the Contractor have to close County Road 10 (Middle Sideroad) for the proposed works, it shall obtain the permission of the County of Essex, the Town Drainage Superintendent or Consulting Engineer and arrange to provide the necessary notification of detours around the site. The Contractor shall also ensure that all emergency services, school bus companies, etcetera 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 County and Amherstburg Works Departments.

Throughout the course of the work it is imperative that the Contractor protect as much landscaping and vegetation as possible when accessing along the drain. This will be of particular concern along the lawn areas of residential properties. Due to the extent of the work and the area for carrying out the work, the Contractor will be required to carry out all of the necessary steps to direct traffic and provide temporary diversion of traffic around work sites, including provision of all lights, signs, flag persons, and barricades required to protect the safety of the traveling public. Any accesses or areas used in carrying out the works are to be fully restored to their original conditions by the Contractor at its cost, including topsoil placement and lawn restoration as directed by the Town Drainage Superintendent and the Consulting Engineer. Restoration shall include but not be limited to all necessary levelling, grading, shaping, topsoil, seeding, mulching, and granular placement along with asphalt roadway repair required to make good any damage caused.

V. REMOVAL OF BRUSH, TREES AND RUBBISH

Where there is any brush, trees or rubbish along the course of the drainage works, including the full width of the work access, all such brush, trees or rubbish shall be close cut and grubbed out, and the whole shall be chipped up for recycling, burned or otherwise satisfactorily disposed of by the Contractor. The brush and trees removed along the course of the work are to be put into piles by the Contractor in locations where they can be safely chipped and disposed of, or burned by it, or hauled away and disposed of by the Contractor to a site to be obtained by it at its expense. Prior to and during the course of any burning operations, the Contractor shall comply with the guidelines prepared by the Air Quality Branch of the Ontario Ministry of the Environment, and shall ensure that the Environmental Protection Act is not violated. The Contractor will be required to notify the local fire authorities to obtain any permits and co-operate with them in the carrying out of any work. The removal of brush and trees shall be carried out in close consultation with the Town Drainage Superintendent or Consulting Engineer to ensure that no decorative trees or shrubs are disturbed by the operations of the Contractor that can be saved. It is the intent of this project to save as many trees and bushes as practical within the roadway allowances and on private lands. Where decorative trees or shrubs are located directly over drainage pipes, the Contractor shall carefully extract same and turn them over to the Owner when requested to do so, and shall cooperate with the Owner in the reinstallation of same if required.

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

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

The Contractor shall remove all deleterious materials and rubbish along the course of the open drain in the location of the work areas and any such materials located in the bridge culvert and

enclosures while carrying out its cleaning of same. All such deleterious materials and rubbish shall be loaded up and hauled away by the Contractor to a site to be obtained by it at its cost.

VI. FENCING

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

VII. DETAILS OF OPEN DRAIN WORK

The open drain shall be excavated to the 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 drain shall be carefully excavated so as not to disturb the existing banks, rock protection and vegetation, except for those portions of the drain where widening or restoration of a stable drain bank configuration is required. The bottom width of the drain and the sideslopes of the excavation shall conform to the dimensions given on the drawings.

The drain shall be of the size, type, depth, etcetera as shown on the accompanying drawings. When completed, the drain shall have a uniform and even bottom and in no case shall such bottom project above the grade line, as shown on the accompanying drawings, and as determined from the Bench Marks. The finished side slopes of the drain shall be 1.5 metres horizontal to 1.0 metre vertical.

Where the drain crosses any lawn, garden, orchard, roadway or driveway, etcetera, the excavated material for the full width of the above-mentioned areas shall be hauled away by the Contractor and disposed of to a site to be obtained by the Contractor at its expense. All work at the disposal site shall be established between the Contractor and the site owner. The Contractor shall be responsible for any permits required and shall provide copies of same to the Town and Consulting Engineer when requested.

Where there is any brush or rubbish in the course of the drain, including both side slopes of the drain, all such brush or rubbish shall be close cut and grubbed out. Where there is any brush or rubbish where the earth is to be spread, or on that strip of land between where the earth is to be spread and the edge of the drain, all such brush or rubbish shall be close cut and grubbed out. The whole is to be burned, chipped or otherwise satisfactorily disposed of by the Contractor.

VIII. DETAILS OF BRIDGE WORK

The Contractor shall provide all material, labour and equipment to repair and improve the existing access bridge in the Ouellette Drain West requiring work, along with endwall repairs and other improvements as noted.

The existing corrugated steel pipe (C.S.P.) bridge slated to be removed shall be replaced with new smooth wall 320kPa Boss 2000 H.D.P.E. pipe or equal. The new access bridge installation shall comprise of corrugated heavy duty high density polyethylene pipe. All piping sections shall be connected by the use H.D.P.E. wrap couplers installed around the complete circumference of the pipe in accordance with the manufacturer's recommendation. Each coupler shall be wrapped in filter cloth material around the complete circumference to ensure that there will be no soil migration through the joints and into the pipe through said connections.

The culvert pipe replacement and new pipe installation on this project shall be set to the grades as shown on the plans or as otherwise established herein and the Town Drainage Superintendent or the Consulting Engineer may make minor changes to the bridge alignment as they deem necessary to suit the site conditions. All work shall be carried out in general accordance with the items in the "**STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION"** attached to this report and labelled **Appendix "REI-C"**.

IX. HIGH DENSITY POLY ETHYLENE (H.D.P.E.) PIPE INSTALLATION

The new plastic pipe (H.D.P.E.) to be installed on this project is required to be provided in the longest lengths that are available and shall not be less than 3.0 metres and shall comprise of 320 kPa heavy duty smooth wall plastic pipe. Where the overall access pipe length exceeds the standard pipe lengths, the Contractor shall connect the pipe sections together by use of a manufactured wrap coupler installed in accordance with the manufacturer's recommendations. All coupler joints shall be wrapped with a layer of filter cloth around the complete circumference so that it extends a minimum of 100mm beyond the coupler on each end, to ensure a positive seal against soil migration through the joints.

The Contractor shall note that the placement of any new culvert pipe or covered drain shall be performed totally in the dry and it shall be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. As part of the work, the Contractor will be required to clean out the drain along the full length of the pipe and for a distance of 3.05 metres (10 ft.) upstream and downstream of the pipe for open drain sections. The Contractor shall note that the pipe inverts are generally set to match the existing pipes and to meet the minimum cover requirements for the pipe.

The installation of the complete length of the new culvert and covered drain, including all appurtenances, shall be completely inspected by the Town Drainage Superintendent or the Consulting Engineer's Inspector prior to backfilling any portions of same. Under no circumstance shall the Contractor commence the construction or backfill of the new culvert pipe or covered drain 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 two (2) working days' notice to the Town Drainage Superintendent or the Consulting Engineer prior to commencement of the work. The installation of the new culvert structure or covered drain 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.

For the access bridge installation, once the new H.D.P.E. pipe has been satisfactorily set in place, the Contractor shall completely backfill same with granular material M.T.O. Type "B" O.P.S.S. Form 1010 with the following exception. The top 450mm (18") of the backfill material for the full top width of the access, and the full top width of the drain or the excavated trench, and any approaches to the south and transitions to the north shall be granular material M.T.O. Type "A" O.P.S.S. Form 1010. All of the boulevard approach areas extending from the Town roadway to the ends of the new bridge culvert shall be backfilled with compacted granular material M.T.O. Type "A" O.P.S.S. Form 1010, but only after all topsoil material has been completely removed and disposed of, and the minimum thickness of this granular material shall be 450mm (18"). All areas outside of the access roadway and boulevard shall be backfilled with native material compacted to 96% of Standard Proctor Density and topped with a minimum of 100mm of topsoil and shall be seeded and mulched.

For hard surface roadway crossing, the top 450 (18") of the backfill over the pipe below the hard surface treatment shall comprise granular material M.T.O. Type "A" O.P.S.S. Form 1010 compacted to a minimum of 100% Standard Proctor Density. The Contractor shall at all times be very careful when performing its backfilling and compaction operations so that no damage is caused to the pipe. To ensure that no damage is caused to the proposed pipe, alternative methods of achieving the required backfill compaction shall be submitted to the Consulting Engineer or the Town Drainage Superintendent for their approval prior to the commencement of this work. The Contractor shall restore the asphalt surface by placing a minimum of the existing thickness or a 125mm minimum thickness of Type HL-4 hot mix or Superpave 12.5 asphalt. The asphalt shall be supplied and placed in three (3) approximately equal lifts compacted to a value ranging from 92% to 96% of maximum relative density as per O.P.S.S. 310. For any existing concrete driveways, the Contractor shall carefully remove the concrete to the nearest expansion joint. Any concrete driveway shall be restored to the original length and width that was removed and include 150mm thick, 30mPa concrete, with 6% ±1% air entrainment and 6x6-6/6 welded wire fabric reinforcing installed at the midpoint of the slab. All slab surfaces shall be finished to provide an appearance approximating the finish on the existing concrete driveway abutting the replacement.

The Contractor will be responsible to restore any damage caused to the roadways at its cost. All damaged hard surface roadway areas shall be neatly saw cut and the damaged materials removed and disposed of by the Contractor prior to carrying out any restoration work. The extent of the repairs shall be established in consultation with the Town Drainage Superintendent, the Road Authority, and the Consulting Engineer and the repairs shall be completed to their full satisfaction.

The Contractor is to note that any intercepted pipes or tiles along the length of the proposed culvert are to be extended and connected at its cost to the new culvert unless otherwise noted in the accompanying drawings.

The Contractor shall also note that the placing of the new access bridge culvert shall be completed so that it totally complies with the parameters established and noted in the plans for the culvert replacement. The culvert shall be set on an even grade and the placement shall be performed totally in the dry, and the Contractor should be prepared to take whatever steps are necessary to ensure same, all to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The Contractor shall also be required to supply a minimum of 100mm (4") of 20mm (3/4") clear stone bedding underneath the culvert pipe extending from the bottom of the drain to the culvert invert grade, all to the full satisfaction of the Town Drainage

Superintendent or the Consulting Engineer. Furthermore, if an unsound base is encountered, it must be removed and replaced with 20mm (3/4") clear stone satisfactorily compacted in place to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The Contractor is to note that when replacing an access bridge or enclosure culvert, it shall be required to excavate a trench having a width not less than the new pipe outside diameter plus a 600mm working width on both sides of the new pipe to allow for proper installation of granular backfill and compaction of same.

the Contractor shall supply and install precast concrete maintenance hole as outlined on the plans and as set out in the Schedule of Items and Prices. The contractor shall supply offset and online catch basins as noted on the plans and in the Schedule of Items and Prices. Each precast concrete unit shall conform to the sizes and depths indicated on the plans and in the Schedule of Items. The maintenance holes and catch basins shall be fitted with frames, lids, and grates as shown and noted on the plans. All maintenance holes along the new drain alignment shall be fitted with a flat top with standard 600mm access opening unless noted otherwise. The opening shall be extended up to finished grade with 600mm riser sections as needed including aluminum steps in accordance with the OPSD 704.010 and as shown on the plans. All catch basin and maintenance holes shall include a minimum 450mm deep sump and be fitted with cast iron frames and grates and lift rings, or honeycomb galvanized steel grating as outlined on the plans and in the Schedule of Items and Prices. The Contractor shall note that all concrete units shall be fitted with a minimum of three and a maximum of six High Density Poly Ethylene (H.D.P.E.) lift rings, secured in place in accordance with the manufacturer's recommendations. Catch basin tops shall generally be set 50mm below the adjacent boulevard ground elevation and be graded to ensure positive drainage and that all flows will enter the top of the unit. Shop drawings shall be provided from the supplier for any structures as noted on the plans and Schedule of Items.

The Contractor shall connect all covered drains to the concrete units with the use of a mortar joint. Said mortar joint shall be provided at the exterior of the concrete unit walls for the full circumference of the covered drain and be of a sufficient mass to produce a sealed joint, all to be performed to the full satisfaction of the Town Drainage Superintendent and the Engineer. All grout for the mortar joint shall be provided in unopened pre-mixed bags or shall comprise of 3 parts of clean sharp sand to 1 part Portland cement with just sufficient water added to provide a stiff plastic mix. Where possible, the Contractor shall employ a standard factory fitting or adapter to connect between the various units, pipes and tiles. For offset catch basins and subdrains being connected directly to the mainline covered drain, the Contractor shall make the connection with the use of an Inserta-Tee fitting. The Inserta-Tee shall be installed by coring a properly sized hole in the side of the H.D.P.E. pipe and securing the fitting into the mainline pipe wall in accordance with the manufacturer's recommendations.

The Contractor, as part of this project, is to connect all existing drain connections into the new covered drainage system unless the pipe is noted to be abandoned and plugged off. In the event that a lateral drain pipe is being abandoned, the plug shall comprise a minimum 305mm (12 in.) long concrete grout plug, securely packed into the end of the abandoned pipe for the full internal diameter of the pipe or be a manufactured cap designed for the purpose. The connection of the existing tile drains and the entire installation of the new covered drain shall be performed to the full satisfaction of the Town Drainage Superintendent and the Engineer.

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

The Contractor shall lay the covered drain to the lines, levels and grades as shown in the accompanying drawings or as may be otherwise laid out and approved by the Drainage Superintendent or the Engineer prior to the time of construction. The Contractor will be held responsible for said lines, levels, and grades of the drain pipe. Should the Engineer determine that the Contractor has not satisfactorily adhered to such lines, levels, and grades, the Engineer

may direct the Contractor to take up and relay any portion of the drain which does not conform to such lines, levels and grades.

A laser beam shall be used to maintain line and grade and the Contractor shall have a qualified operator to set up and operate the equipment.

The Contractor should note that, because the covered drain is being installed with an excavator, it is expected that they will provide approximately 100mm (4") of either granular material or 19mm (3/4") clear stone bedding throughout the length of this drain pipe to ensure that a good firm base is provided under the drain pipe, and they shall provide for this item as part of their tender price.

All 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 area, 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.

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

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

The Contractor shall further contact or notify such utility company or commission of its intention to carry out work in the area and co-operate with such utility company or commission in the location, maintenance and preservation of all such utilities. The Contractor shall note that if the trench passes in close proximity to hydro poles, it shall temporarily brace or secure such poles as it deems necessary to prevent any damage to the utility. The location of the pipes and appurtenances as shown on the drawings is approximate and may be changed by the Engineer if deemed advantageous for the progress of the work.

The trenches are to be excavated where directed. If any part of the bottom of the trench is found to be unsound or in any way unsuitable to lay the pipe in the Town Drainage Superintendent's or the Engineer's opinion, they may direct that the location of said trench be changed if it is possible to avoid unsound soil by doing so. The Contractor shall note that exploratory digs may be required by it to establish the depth of water services, particularly along the deepest portions of the proposed Municipal drainage system. The covered drain should clear all service connections that have been provided to the private lands, but the Contractor shall take steps to ensure that these are protected from any damage during the course of its works particularly where those service connections are shallow and may be just below the covered drain invert level. Where water services are impacted by the covered drain installation, the Contractor shall coordinate its lowering operations with the Town Water Department and ensure that all of their requirements are met, including notice to any Owners who may be affected by temporary shutdown of the water supply.

Should the Contractor discover any utility conflicts with existing utilities during the course of the work, that requires the relocation of same as established by the Town Drainage Superintendent or Engineer, the Contractor shall give that utility the opportunity to make any adjustments to their services if required, which work shall be done by the utility at the expense of the utility pursuant to Section 26 of the Drainage Act. The Contractor shall note that the water services or mains that are to be lowered by them shall be done on a unit cost basis as set out in the Schedule

of Items and Prices. The Contractor shall provide all couplings, fittings and pipe necessary to carry out any lowering of the water services and mains along the project. All work shall be carried out in accordance with the Town Water Department requirements for same and shall be completed to their full satisfaction including utilization of proper materials and disinfection procedures to ensure that no contamination of the existing water system will occur, and there shall be no leaks.

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

The bottoms of the trenches must be carefully excavated and trimmed to the elevation and shape of the bottom of the pipe. The bottom of each trench shall be recessed to receive the pipe in order to allow the pipe to be uniformly supported on firm undisturbed earth or compacted bedding 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 granular material 20mm (3/4") clear stone placed at the time that the pipes are being installed.

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

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 granular material 20mm (3/4") clear stone to form a sound bed for the pipe. The Contractor shall be paid an extra for such additional excavation and for supplying and placing of the granular material in place of unsound soil as per the unit price established for same in the Form of Tender.

No extras will be allowed for excavating any hardpan, boulders, rocks, cobbles, ice or other obstacles found in the excavation or in the line of the trench or for any pumping or bailing of water required in the execution 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 ground water entering the pipe in the trench until the installation has been successfully completed.

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

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

All drain pipes and the various other materials used in the placing of said pipe shall be installed in strict compliance with the manufacturer's recommendations.

The Contractor shall also be required, as part of the drain pipe installation, to satisfactorily connect all intercepted tiles or pipes into the new covered drain. When intercepted tiles or pipes are to be connected, the Contractor shall be required to utilize a standard tee fitting or neatly cut the pipe walls with either a hole saw, concrete saw or welding torch where applicable, and connect the existing tiles or pipes to the new covered drain with a mortar joint or where possible, a plastic connecting adapter. The Contractor shall provide all of the above equipment and materials required to connect all intercepted tiles or pipes at no extra cost to the project, and all

of same shall be performed to the full satisfaction of the Town Drainage Superintendent or the Engineer and shall not be backfilled until it is inspected by them.

Backfill for the drain pipe shall be in accordance with the specifications noted previously. In the roadway areas, the Contractor shall provide all granular backfill comprising Granular "B", compacted to 98% S.P.D. to within 450mm of the underside of any existing roadway. The top 450mm of the granular backfill shall comprise Granular "A" compacted to 100% S.P.D. Asphalt surfaces shall be restored as noted above. The Contractor shall at all times be very careful when performing its backfilling and compaction operations so that no damage is caused to the covered drain. To ensure that no damage is caused to the proposed drain pipe, alternative methods of achieving the required backfill compaction shall be submitted to the Engineer or the Town Drainage Superintendent for their approval prior to the commencement of this work.

The Contractor shall note that during future maintenance it will also be required to cut across any asphalt and concrete that may be intercepted by the covered drain work. Said areas shall also be restored utilizing hot mix asphalt or concrete placed in accordance with the requirements established previously in these specifications.

The Contractor shall take steps to protect all legal survey bars and markers during the course of its work. If any bars are removed or damaged, the Contractor shall arrange for a legal surveyor to replace same, all at its cost.

All of the work towards the construction of the covered drain 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 Engineer. Excess soils shall be handled as set out in any special provisions of the tender documents and may include temporary storage, loading, and hauling to a required disposal site.

The Contractor will be required to provide topsoil and sod or seed and mulch all areas along the length of the new covered drain installation and areas where the old pipe has been removed. Outside of the roadway limits the topsoil shall consist of good clean, dry loam, fine graded and compacted in place and ready for sodding or seeding and mulching in accordance with O.P.S.S. Form 802. The seeding and mulching operation shall be carried out according to O.P.S.S. Form 804 and all of this work is to be performed to the full satisfaction of the Town Drainage Superintendent and Engineer.

X. REMOVALS

Where existing access bridges and covered drains are to be completely removed and replaced, the Contractor shall be required to excavate and completely extract the existing concrete structure or culvert pipe and the existing endwalls in their entirety, as well as any other deleterious materials that may be encountered in removing same, excluding poured concrete headwalls that are to be reused. The Contractor shall neatly saw cut any concrete or asphalt surfaces over the pipes for a sufficient width to allow for the safe removal of same or go to the nearest expansion joint panel of the concrete driveways. The Contractor shall also be required to completely dispose of all removed materials to a site to be obtained by it at its own expense. The Contractor shall note that when headwalls are shown to be left in place, the Contractor shall protect same and carry out its work for the pipe replacement as noted above and dispose of any debris resulting from the work.

All unsuitable and deleterious materials from the excavation and removal of the existing bridge and enclosure culverts and drain cleaning shall be hauled away and disposed of by the Contractor to a site to be obtained by it at its expense. Likewise, any material excavated to allow for the

granular approaches to the bridge, roadway transitions, or installation of new headwalls shall also be hauled away and disposed of by the Contractor.

XI. CONCRETE FILLED JUTE BAG HEADWALL AND SLOPED END PROTECTION

Unless otherwise shown or noted, the Contractor is to provide new concrete filled jute bag headwalls or sloped quarried limestone on non-woven filter cloth end protection for the access bridges and enclosures being replaced or constructed under this project.

The concrete filled jute bags are to be provided and laid out as is shown and detailed in the accompanying drawings and as is noted in the Standard Specifications in **Appendix "REI-C"**. In all cases, the concrete filled jute bag headwalls shall be topped with a minimum 100mm (4") thick continuous concrete cap for the entire length of the headwalls. The headwalls shall be installed on an inward batter to be not less than 1 horizontal to 5 vertical, and under no circumstances shall this batter, which is measured from the top of the headwall to the projection of the end of the pipe, be less than 305mm (12"). From the midpoint of the pipe height down to the concrete footing, the wall shall be a double concrete filled jute bag installation. On the road side the walls shall be deflected as shown to provide daylighting and a better approach across the new bridge.

The installation of the concrete filled jute bag headwalls, unless otherwise specified, shall be provided in total compliance with the Items 1, 3, and 4 included in the "**STANDARD SPECIFICATIONS FOR ACCESS BRIDGE CONSTRUCTION".** These are attached to the back of this report and labelled **Appendix "REI-C"**. The Contractor shall comply in all respects with the General Conditions included in Item 4 and the **"Typical Concrete Filled Jute Bag Headwall End Protection"** detail also shown therein.

Where sloped end protection is specified, the top 305mm (12") of backfill material over the ends of the access pipe, from the invert of said pipe to the top of the driveway elevation of the access bridge or enclosure, shall be quarried limestone. The quarried limestone shall be provided as shown and detailed on the plans or as indicated in the Standard Specifications in **Appendix "REI-C"** and shall be graded in size from a minimum of 100mm (4") to a maximum of 250mm (10"). The quarried limestone to be placed on the sloped ends of an access bridge or enclosure shall be underlain with a synthetic **non-woven** geotextile filter fabric. The sloped quarried limestone protection is to be rounded as shown on the plan details and shall also extend along the drain side slopes to a point directly in line with the ends of the culvert pipe or the end of the current protection where repairs are needed. All work shall be completed to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer.

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

The quarried limestone erosion protection shall be embedded into the sideslopes of the drain a minimum thickness of 305mm and shall be underlain in all cases with non-woven synthetic filter mat. The filter mat shall not only be laid along the flat portion of the erosion protection, but also contoured to the exterior limits of the quarried limestone and the unprotected slope. The width of the erosion protection shall be as established in the accompanying drawings or as otherwise

directed by the Town Drainage Superintendent or the Consulting Engineer during construction. In placing the erosion protection, the Contractor shall carefully tamp the quarried limestone pieces into place with the use of the excavator bucket so that the erosion protection when completed will be consistent, uniform and tightly laid. In no instance shall the quarried limestone protrude beyond the exterior contour of the unprotected drain sideslopes along either side of said protection. The synthetic filter mat to be used shall be non-woven geotextile GMN160 conforming to O.P.S.S. 1860 Class I, as available from Armtec Construction Products, or equal. The quarried limestone to be used shall be graded in size from a minimum of 100mm to a maximum of 250mm, and is available from Walker Aggregates Amherst Quarries, in Amherstburg, Ontario, or equal.

XII. BENCH MARKS

Also, for use by the Contractor, we have established a Bench Mark along the course of the work to be used at the locations where the existing access bridge is being replaced and the covered drain is being reconstructed.

For the bridge replacement and reconstructed drain, the plans include details illustrating the work to be carried out. For the bridge detail a Bench Mark has been indicated and the Elevation has been shown and may be utilized by the Contractor in carrying out its work. The Contractor shall note that in each case a specific design elevation grade has been provided for the invert at each end of the pipes as shown on the plans. The plans also set out the pipe size, materials, and other requirements relative to the installation of the culvert and covered drain structure. In all cases, the Contractor is to utilize the specified drain grade to set any new pipe installation. The Contractor shall ensure that it takes note of the direction of flow and sets all pipes to assure that all grades flow from northeast to southwest to match the direction of flow within the drain. The Contractor's attention is drawn to the fact that the pipe invert grades established herein provide for the pipes to be set to match the existing pipes or provide the required capacity for each section.

XIII. ANCILLARY WORK

During the course of any work to the bridge and covered drain along the length of the project, the Contractor will be required to protect or extend any existing tile ends or swales and connect them to the drainage works to maintain the drainage from the adjacent lands. All existing tiles shall be extended utilizing solid Big 'O' "standard tile ends" or equal plastic pipe of the same diameter as the existing tile and shall be installed in accordance with the **"Standard Lateral Tile Detail"** included in the plans, unless otherwise noted. Connections shall be made using a manufacturer's coupling where possible. Wherever possible, tiles shall be extended to outlet beyond the end of any access culverts. When required, openings into new pipes shall be neatly bored, saw cut or burned with a torch to the satisfaction of the Town Drainage Superintendent or the Consulting Engineer. All cuts to steel pipes shall be touched up with a thick coat of zinc rich paint (Galvicon or equal) in accordance with the manufacturer's recommendations. For other connections, the Contractor shall utilize an Inserta-Tee fitting for Big 'O' pipe or use a grouted connection. Grouted mortar joints shall be composed of premixed bag material or three (3) parts of clean, sharp sand to one (1) part of Portland cement with just sufficient water added to provide a stiff plastic mix, and the mortar connection shall be performed to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The mortar joint shall be of a sufficient mass around the full circumference of the joint on the exterior side to ensure a tight, solid seal. The Contractor is to note that any intercepted pipes along the length of the existing

culvert and covered drain are to be extended and connected to the new drain unless otherwise noted in the accompanying drawings. As part of the work, the Contractor shall ensure that all of the grouted connections for the new H.D.P.E. plastic pipe are grouted solidly and securely to the proposed concrete structures. The grout connection must be solid and thick enough to resist any head pressure build up and prevent leaking and washout of the pipe or surrounding soils. It is anticipated that a fillet of concrete with a surface length of a minimum 305mm at a 45 degree bevel will be required around the complete circumference of the H.D.P.E. plastic pipe to achieve same.

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

All granular backfill for the bridge and covered drain installations shall be satisfactorily compacted in place to a minimum Standard Proctor Density of 100% by means of mechanical compaction equipment. All other good, clean, native fill material or topsoil to be utilized, where applicable, shall be compacted in place to a minimum Standard Proctor Density of 95%. All of the backfill material, equipment used, and method of compacting the backfill material shall be provided and performed to the full satisfaction of the Town Drainage Superintendent or Consulting Engineer.

Where the Contractor removes concrete or asphalt hard surfaces over the pipes, the Contractor shall restore the hard surfaces as previously outlined. The Contractor will be responsible to restore any damage caused to these roadways at its cost. All damaged hard surface roadway areas shall be neatly saw cut and the damaged materials removed and disposed of by the Contractor prior to carrying out any restoration work.

The new corrugated 320 kPa H.D.P.E. smooth wall pipes for these installations are to be provided with a minimum depth of cover measured from the top of the pipe of 305mm (12") for a round pipe and 500mm for a pipe arch. If the bridge culvert and covered drain pipes are placed at their proper elevations, same should be achieved. If the Contractor finds that the minimum cover is not being met, they shall notify the Town Drainage Superintendent and the Consulting Engineer immediately so that steps can be taken to rectify the condition prior to the placement of any backfill. The minimum cover requirement is **critical** and must be attained. In order for the new access bridge culvert to properly fit the channel parameters, **all of the design grade elevations must be strictly adhered to**.

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

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

XIV. TOPSOIL, SEED AND MULCH

The Contractor shall be required to restore all existing grassed areas and drain side slopes damaged by the structure replacements, construction or cutting of the drain cross section, by placing topsoil, and then seed and mulch over said areas including any specific areas noted on the bridge details. The Contractor shall be required to provide all the material and to cover the above mentioned surfaces with approximately 50mm of good, clean, dry topsoil on slopes and 100mm of good, clean, dry topsoil on horizontal surfaces, fine graded and spread in place ready for seeding and mulching. The placing and grading of any topsoil shall be carefully and meticulously carried out in accordance with Ontario Provincial Standard Specifications, Form 802 dated November 2010, or as subsequently amended, or as amended by these specifications and be readied for the seeding and mulching process. The seeding and mulching of all of the above mentioned areas shall comply in all regards to Ontario Provincial Standard Specifications, Form 803 dated November 2010 and Form 804, dated November 2013, or as subsequently amended, or as amended by these specifications. The seeding mixture shall be the Standard Roadside Mix (Canada No. 1 Lawn Grass Seed Mixture) as set out in O.P.S.S. 804. All cleanup and restoration work shall be performed to the full satisfaction of the Town Drainage Superintendent or Engineer.

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

XV. SPECIAL PROVISIONS FOR REPLACEMENT, REPAIR AND IMPROVEMENTS

The Contractor shall provide for the construction and improvements to the access bridge and covered drain realignment along the Ouellette Drain West, for the structures noted and detailed on the plans. The existing covered drain that traverses Phase 5 lands of the Golfview Park Estates development shall be completely removed and disposed of by the Contractor to a site to be obtained by it. The trench excavation for the removal of the existing drain shall be backfilled with native clay materials and topsoil compacted to 95% S.P.D. Site grading shall be conducted to direct all surface flows to the new drain alignment and catch basins and maintenance holes.

XVI. 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 County of Essex, the Town of Amherstburg and the Consulting Engineer and their representatives for any damages which it may cause or sustain during the progress of the work. It shall not hold the County of Essex, the Town of Amherstburg or the Consulting Engineer liable for any legal action arising out of any claims brought about by such damage caused by it.

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

d) The Contractor will be responsible for any damage caused by it to any portion of the Town 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. If traffic control is required on this project, signing is to comply with the M.T.O. Manual of Uniform Traffic Control Devices (M.U.T.C.D.) for Roadway Work Operations and Ontario Traffic Manual Book 7.

f) During the course of the work the Contractor shall be required to connect existing drainage pipes to the Municipal Drain. In the event that polluted flows are discovered, the Contractor shall delay the connection of the pipe and leave the end exposed and alert the Town, the Drainage Superintendent and the Consulting Engineer so that steps can be taken by the Town to address the concern with the owner and the appropriate authorities. Where necessary the Contractor shall cooperate with the Town in providing temporary measures to divert the drain or safely barricade same. Should the connection be found acceptable by the authorities, the Contractor shall complete the connection of the drain as provided for in the specifications, at no extra cost to the project.

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

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

i) During the course of the project the Contractor shall deal with any excess soil management from the project in accordance with Ontario Reg 406/19 pursuant to the Environmental Protection Act, R.S.O. 1990, c. E.19 and any subsequent amendments to same.

j) 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.

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

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

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

m) 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; and shall name the County of Essex, the Town of Amherstburg and its' officials and the Consulting Engineer and their 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.

n) Monthly progress orders for payment shall be furnished the Contractor by the Town Drainage Superintendent. Said orders shall be for not more than 90% of the value of the work done and the materials furnished on the site. The paying of the full 90% does not imply that any portion of the work has been accepted. The remaining 10% will be paid 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 Engineer and the Town, that all liabilities incurred by the Contractor and its Sub-Contractors in carrying out the Contract have been discharged and that all liens in respect of the Contract and Sub-Contracts thereunder have expired or have been satisfied, discharged or provided for by payment into Court.

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

o) 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.2 shall govern and be used to establish the requirements of the work.

p) Should extra work be required by the Town Drainage Superintendent or Consulting Engineer, and it is done on a time and material basis, the actual cost of the work will be paid to the Contractor with a 15% markup on the total actual cost of labour, equipment and materials needed to complete the extra work.

q) The Contractor shall provide shop drawings of the proposed wall for precast concrete block headwalls for approval by the Drainage Superintendent or Engineer prior to construction.

APPENDIX “REI-A”

STANDARD E.R.C.A. AND D.F.O.
MITIGATION REQUIREMENTS

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:

- Work will not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods. In-water works will not be undertaken between March 15th and June 30th.
- New culverts are to be installed with a minimum 10 % embedment below the existing bottom or design bottom of the drain (whichever is lower).
- All new culverts must provide for fish passage. Typically, culvert lengths that do not exceed 15.0 metres do not create an obstruction to fish passage. Depending on the proposed culvert diameter, however, longer lengths may be allowed. Concerns with longer culverts relate to velocity, loss of riparian habitat, etc. (Note: IF longer culvert lengths are proposed, we recommend that they be reviewed with this office prior to finalizing the engineer's report. Ultimately, it is the proponent's responsibility to undertake the necessary studies to confirm that the proposed length will not be a barrier to fish passage.)
- All disturbed soils on both banks and within the channel, including spoil, must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works. The spoil material must be spread an appropriate distance from the top of the drain bank to ensure that it is not washed back into the drain.
- To prevent sediment entry into the drain, in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and his/her contractors to ensure that sediment and erosion control measures are functioning properly and are maintained/upgraded as required.
- Silt or sand accumulated in the barriers/traps must be removed and stabilized on land once the site is stabilized.
- 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 refueling and maintenance should be conducted away from the water.

SECTION II

SPECIFICATIONS

FOR FISH SALVAGE

GENERAL
SECTION 201

The Work shall include the capture, salvage and release of fish that are trapped or stranded as the result of the Contractor's operations, at locations identified in the Fish Salvage Plan, and in co-operation with the Essex Region Conservation Authority (E.R.C.A.).

Fish capture shall be performed prior to dewatering, and in such manner that will minimize the injury to the fish.

MATERIALS
SECTION 202

All materials required for fish capture, salvage and release shall be supplied by the Contractor.

CONSTRUCTION
SECTION 203

The Contractor shall not commence any fish capture, salvage and release work until the Fish Salvage Plan has been accepted by the Consultant and the Conservation Authority. All work shall be performed in accordance with the Fish Salvage Plan unless otherwise determined by the Consultant or the Conservation Authority.

The Contractor shall ensure an ice-free pool is maintained throughout all fish capture and release operations.

All fish shall be captured within the area specified and released at an acceptable location in the downstream water body. Fish shall be captured by electro fishing, netting, seining, trapping, or other method acceptable to the Consultant and/or the Conservation Authority.

MEASUREMENT AND PAYMENT
SECTION 204

Payment for this Work will be included in the price bid for drainage work components or made at the lump sum price bid for "Fish Capture and Release". The lump sum price will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant.

Measures to Avoid Causing Harm to Fish and Fish Habitat

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

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

Measures

- Time work in water to respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.
- Minimize duration of in-water work.
- Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.
- Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.

- Design and plan activities and works in waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
- Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
- Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures.
- Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.

- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

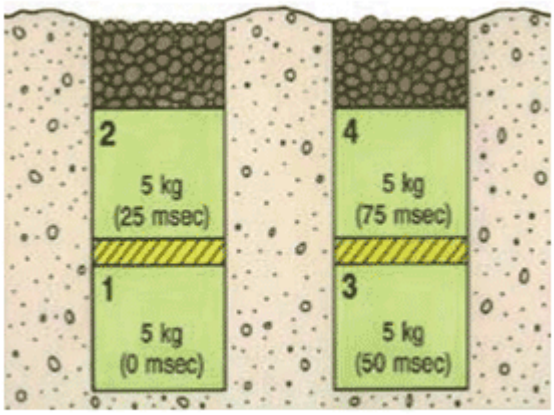
- Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear. The plan should, where applicable, include:
    - Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
    - Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.
    - Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging, underwater cable installation).
    - Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.
    - Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.
    - Repairs to erosion and sediment control measures and structures if damage occurs.
    - Removal of non-biodegradable erosion and sediment control materials once site is stabilized.

- Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
- Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.
- Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
- Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.
- If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
- Remove all construction materials from site upon project completion.

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

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

Figure 1: Sample Blasting Arrangement



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

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

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

Date modified:

2013-11-25

APPENDIX “REI-B”

TOWN OF AMHERSTBURG

ADDITIONAL MITIGATION MEASURES FOR SNAKE SPECIES

16. Training and Required On Site Materials for Snakes

16.1. The Municipality will ensure any person:

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

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

17.1. Where a proposed Activity involves physical infrastructure (e.g., culverts, pump houses, etc.) and will occur in a Sensitive Area for any snake Species and during a *Sensitive Period – Hibernation* for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.

17.2. Where a proposed Activity will occur at or adjacent to a known hibernacula (as identified by the MNR) for any snake Species and during a *Sensitive Period – Staging* for that Species, the Municipality shall:

(a) erect effective temporary snake barriers approved by the MNR that will not pose a risk of entanglement for snakes and that shall be secured so that individual snakes may not pass over or under the barrier or between any openings to enter or re-enter the Work Zone;
(b) inspect the temporary snake barriers daily during periods when snakes are active, capture any individuals incidentally encountered within the area bounded by the snake barrier and release the captured individuals in accordance with section 21.1; and
(c) remove the temporary snake barriers immediately upon completion of the Activity.

17.3. Where a proposed Activity that does not involve physical infrastructure will occur in a Sensitive Area for any snake Species and during a *Sensitive Period – Staging* for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.

18. Measures for Encounters with Snakes During a Sensitive Period

18.1. Where one or more individuals belonging to a snake Species is encountered, or should an active hibernacula be uncovered, while conducting an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:

(a) capture and transfer all injured and uninjured individual snakes of that Species into individual light-coloured, drawstring cotton sacks;
(b) place all cotton sacks filled with the captured individuals into a Holding Tub;
(c) ensure that the Holding Tub with the captured individuals is stored at a cool temperature to protect the snakes from freezing until the individuals can be retrieved or transferred;
(d) if an active hibernacula is uncovered, cease all Activities at the hibernacula site; and
(e) immediately Contact the MNR to seek direction and to arrange for the transfer and/or retrieval.

19. Measures for Encounters with Snake Nests

19.1. Where an active nest of any of the snake Species is encountered and disturbed while undertaking an Activity in any part of a Work Zone, the Municipality shall:

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

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

20.1. Where one or more individuals belonging to a snake Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:

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

21. Release of Captured Individuals Outside of a Sensitive Period

21.1. Where uninjured individuals are captured under section 20.1, they shall be released:

(a) within 24 hours of capture;
(b) in an area immediately adjacent to the Drainage Works where there is natural vegetation cover;
(c) in an area that will not be further impacted by the undertaking of any Activity; and
(d) not more than 250 metres from the capture site.

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

22. Measures for Dead Snakes

22.1. Where one or more individuals belonging to a snake Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a snake Species within the Work Zone, the Municipality shall:

(a) collect and transfer any dead individuals into a Holding Tub outside of direct sunlight; and
(b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the carcasses of the dead individuals.

TOWN OF AMHERSTBURG

ADDITIONAL MITIGATION MEASURES FOR TURTLE SPECIES

9. Training and Required On Site Materials for Turtles

9.1. The Municipality will ensure any person:

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

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

10.1. Subject to section 10.2, where a proposed Activity will occur in a Sensitive Area for any Turtle Species and during a Sensitive Period for that Species, the Municipality shall:

(a) not undertake any Activities that include the excavation of sediment or disturbance to
banks during the applicable Sensitive Period unless otherwise authorized;
(b) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative;
(c) avoid draw-down and de-watering of the Sensitive Area during the applicable Sensitive Period; and
(d) if authorized by the MNR Designated Representative under (a) above to undertake Activities that include excavation of sediment or disturbance of banks, in addition to any other measures required under (b) above, ensure any person undertaking an Activity has at least two Holding Tubs on site at all times.

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

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

11. Measures for Encounters with Turtles During a Sensitive Period

11.1. Where one or more individuals belonging to a turtle Species is encountered in the undertaking of an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:

(a) capture and transfer all uninjured individuals of that Species into a Holding Tub;
(b) capture and transfer all individuals injured as a result of the Activities into a Holding Tub separate from any Holding Tub containing uninjured individuals;
(c) ensure that the Holding Tubs with the captured individuals are stored at a cool temperature to prevent freezing until the individuals can be transferred; and
(d) immediately Contact the MNR to seek direction and to arrange for the transfer of the individual turtles.

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

12.1. Where one or more individuals belonging to a turtle Species laying eggs, or an active nest site of any turtle Species, is encountered in undertaking an Activity in a Work Zone, the Municipality shall:

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

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

13.1. Where one or more individuals belonging to a turtle Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:

(a) briefly stop the Activity for a reasonable period of time to allow any uninjured individual turtles of that Species to leave the Work Zone;
(b) where individuals do not leave the Work Zone after the Activity is briefly stopped in accordance with (a) above, capture all uninjured individuals and release them in accordance with section 14.1;
(c) where circumstances do not allow for their immediate release, transfer captured uninjured individuals for a maximum of 24 hours into a Holding Tub which shall be stored out of direct sunlight and then release them in accordance with section 14.1;
(d) capture and transfer any individuals that have been injured into a Holding Tub separate from any Holding Tub containing uninjured individuals; and
(e) store all captured injured individuals out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for their transfer.

14. Release of Captured Individuals Outside of a Sensitive Period

14.1. Where uninjured individuals are captured under section 13.1, they shall be released:

(a) within 24 hours of capture;
(b) in an area immediately adjacent to the Drainage Works;
(c) in an area that will not be further impacted by the undertaking of any Activity; and
(d) not more than 250 metres from the capture site.

14.2. Following a release under section 14.1, the Municipality shall Contact the MNR within 72 hours of the release to provide information on the name of the Drainage Works, the location of the encounter and the location of the release site.

15. Measures for Dead Turtles

15.1. Where one or more individuals of a turtle Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a turtle Species within the Work Zone, the Municipality shall:

(a) place any dead turtles in a Holding Tub outside of direct sunlight; and
(b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the dead individuals.

SNAKES OF ONTARIO IDENTIFIER

An identification guide to the Massasauga Rattlesnake and other Ontario snakes.

Recovery through education and conservation.
This guide will help you identify the Massasauga Rattlesnake and other snakes in Ontario. The Massasauga is one of five Ontario snakes with blotches. Snakes on this identifier are grouped by appearance (blotched, striped and no pattern). When you see a snake, look at its size and pattern. Does it have blotches, stripes, or no pattern?

Snakes are illustrated at quarter-life size. These snakes are not found in all Ontario regions. Consult a field guide for maps of snakes in your area. The size of snakes includes U.S. populations as listed in 'Conant, Roger and Joseph T. Collins. 1991 *A Field Guide to Reptiles and Amphibians of Eastern and Central North America.* 3rd edition. Houghton Mifflin Co. Boston'

toronto ZOO

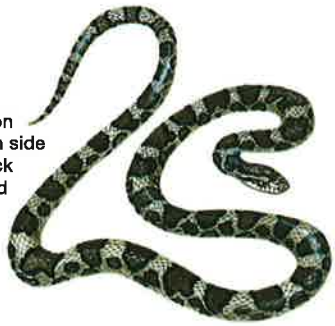
For information on the Toronto Zoo's Rattlesnake Workshop write to:

Toronto Zoo - Rattlesnakes
361-A Old Finch Ave.
Scarborough, ON, CANADA M1B 5K7
email: alentini@torontozoo.ca
Visit the Massasauga Rattlesnake Recovery Team website: www.massasauga.ca

Milk

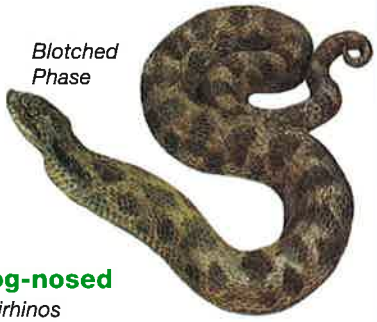
Lampropeltis triangulum

- 61-90 cm; record 132.1 cm
- Cream, tan, or light grey with red or dark brown black-bordered blotches or rings on back alternating with blotches along each side
- Young have red blotches bordered in black
- Blotch on neck may appear Y or V shaped
- Belly whitish with black checkerboard pattern
- Scales smooth; anal scale single
- Lays eggs
- SPECIAL CONCERN (COSEWIC); SPECIAL CONCERN (OMNR)



Green/Brown Phase

Blotched Phase



Eastern Hog-nosed

Heterodon platirhinos

- 51-84 cm; record 115.6 cm
- Large dark blotches down back alternating with smaller blotches along sides
- When threatened, spreads neck to display darker neck pattern and will roll over to play dead
- Can be blotched phase, plain grey, green-brown or even black
- Heavy-bodied
- Flat head with upturned snout
- Belly yellow-grey with greenish grey pattern
- Underside of tail lighter colour than body
- Scales keeled; anal scale divided
- Lays eggs
- THREATENED (COSEWIC); THREATENED (OMNR)

Northern Water

Nerodia sipedon sipedon

- 61-106.7 cm; record 140.5 cm
- Well patterned individuals have reddish brown squarish blotches down back with row of alternating blotches along each side
- At front of body, some blotches extend as saddles over back and on to sides
- Pattern on older individuals may be obscured and they appear black or brown
- Usually found in or near water
- Belly cream with irregular rows of reddish half moon crescents
- Scales keeled; anal scale divided
- Gives birth to live young

Lake Erie Water

Nerodia sipedon insularum

- 61-106.7 cm; record 140.5 cm
- A sub-species of the more wide spread Northern Water snake
- Range from uniformly grey with no markings to dark grey-brown with some banding
- Only found at western end of Lake Erie and on Pelee and surrounding islands
- Belly whitish yellow to grey
- Scales keeled; anal scale divided
- Gives birth to live young
- ENDANGERED (COSEWIC); ENDANGERED (OMNR)

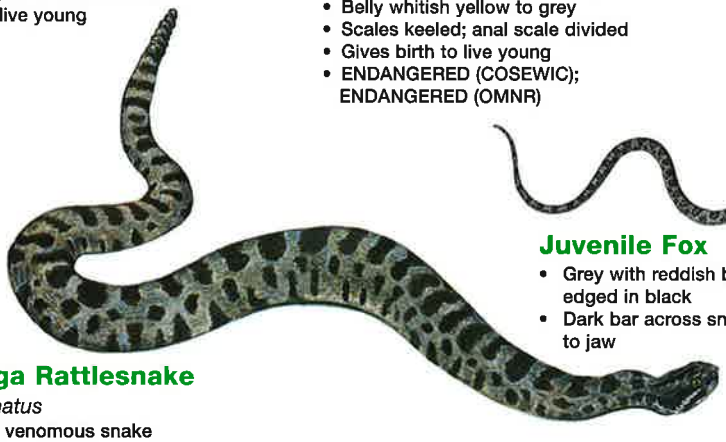
Eastern Fox

Elaphe gloydi

- 91-137 cm; record 179.1 cm (large snake)
- Yellow-brown with large brown or black blotches on back that alternate with smaller blotches along sides
- May have red-brown head
- Belly yellow with black checkerboard pattern
- Scales weakly keeled; anal scale divided
- Lays eggs
- THREATENED (COSEWIC); THREATENED (OMNR)

Juvenile Fox

- Grey with reddish brown blotches edged in black
- Dark bar across snout and from eye to jaw



Massasauga Rattlesnake

Sistrurus catenatus

- Ontario's only venomous snake
- 47.2-76 cm; record 100.3 cm
- Grey to brownish grey with darker blotches along back and several rows of alternating blotches along sides; blotches edged in white
- Black snakes with no pattern, very rare
- Pit on each side of head between eye and nostril
- Distinct segmented rattle
- Tail thick, squarish; does not taper to a point like all others
- Does not always rattle a warning; relies on pattern and remaining motionless to go undetected
- Heavy bodied; often found coiled
- Belly black
- Scales keeled; anal scale single
- Gives birth to live young
- THREATENED (COSEWIC); THREATENED (OMNR)

DeKay's Brown

Storeria dekayi

- 23-33 cm; record 49.2 cm (small snake)
- Light grey-brown to red-brown
- Two rows of spots along light coloured stripe on back
- Rows of spots may be joined by narrow lines
- Dark downward bar on side of head
- Juveniles have three yellowish spots on neck
- Belly cream or pinkish
- Scales keeled; anal scale divided
- Gives birth to live young

Northern Red-bellied

Storeria occipitomaculata occipitomaculata

- 20.3-25.4 cm; record 40.6 cm (small snake)
- Reddish brown to grey-brown in colour
- Three light brown or yellow spots on neck
- Orange-red belly; few dark spots may be present
- Scales keeled; anal scale divided
- Gives birth to live young

Smooth Green

Opheodrys vernalis

- 30.3-51 cm; record 66 cm
- Bright green and shiny
- Belly white or yellow
- Scales smooth; anal scale divided
- Lays eggs

Ring-necked

Diadophis punctatus

- 25.4-38 cm; record 70.6 cm
- Shiny steel blue, slate or brown in colour
- Neck ring and belly orange-yellow
- Scales adjacent to neck ring darker
- Belly has interrupted row of small black spots
- Scales smooth; anal scale divided
- Lays eggs

Eastern Ribbon

Thamnophis sauritus

- 45.7-66 cm; record 96.5 cm
- Black with 3 yellow stripes
- Lateral stripes on scale rows 3 and 4
- Distinct white half-moon spot in front of eye
- May have brown colour along each side of belly
- Belly yellow-green
- Scales keeled; anal scale single
- Gives birth to live young
- SPECIAL CONCERN (COSEWIC); SPECIAL CONCERN (OMNR)

Stripe on scale rows three and four

Queen

Regina septemvittata

- 38-61 cm; record 92.1cm
- Yellow-brown with yellow stripe along lower flank
- 3-5 dark stripes may be found on back
- Belly cream-yellow; brown stripes may be visible
- Usually found near rivers and marshes
- Scales keeled; anal scale divided
- Gives birth to live young
- THREATENED (COSEWIC); THREATENED (OMNR)

Eastern Garter

Thamnophis sirtalis sirtalis

- 45.7-66 cm; record 123.8 cm
- Black, green or brown with three yellow or yellow-green stripes
- Stripes may be orange or reddish in some parts of range
- Some snakes may be all black with no stripes (melanistic)
- Lateral stripes on scale rows 2 and 3
- May have dark scales or spots between stripes giving it a checkered pattern
- Belly yellowish green
- Scales keeled; anal scale single
- Gives birth to live young

Stripe on scale rows two and three

Blue Racer

Coluber constrictor foxii

- 90-152 cm; record 182.90 cm (large snake)
- Grey to greenish blue
- Head dark, throat white
- Belly light blue
- Only found on Pelee Island
- Scales smooth; anal scale divided
- Lays eggs
- ENDANGERED (COSEWIC); ENDANGERED (OMNR)

Juvenile Blue Racer

- Grey with central row of dark grey-brown blotches
- Few or no blotches on brown or grey tail
- Side of head speckled white and black

Red-sided Garter

Thamnophis sirtalis parietalis

- 41-66 cm; record 124.1 cm
- Black-brown with 3 yellow stripes
- Red bars between stripes and reddish wash on sides between scales
- Lateral stripes on scale rows 2 and 3
- Belly green-black
- In Ontario, only found along the Manitoba border
- Scales keeled; anal scale single
- Gives birth to live young

Butler's Garter

Thamnophis butleri

- 38-51 cm; record 69.2 cm
- Black or brown-green with 3 yellow stripes
- Stripes may be orange
- Lateral stripes on scale row 3 extending onto row 2 below and 4 above
- Towards back of body lateral stripe on scale rows 2 and 3
- Smallish head
- Belly green-yellow
- Only found in SW Ontario
- Scales keeled; anal scale single
- Gives birth to live young
- THREATENED (COSEWIC); THREATENED (OMNR)

Eastern Rat

Elaphe obsoleta

- 106.7-183 cm; record 256.5 cm (large snake)
- In some, faint blotched pattern may be seen
- Throat white
- Belly grey-brown wash
- Scales weakly keeled; anal scale divided
- Lays eggs
- THREATENED (COSEWIC); THREATENED (OMNR)

Juvenile Eastern Rat

- Light grey with grey-brown blotches on body and tail
- Dark bar across snout and from eye to jaw

How to count scale rows on a snake

Smooth Scales

Keeled Scales

Divided Anal Scale

Single Anal Scale

TURTLES OF ONTARIO IDENTIFIER

Illustrations are half life size.

www.torontozoo.com/adoptapond

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Toronto,ON, Canada M1B 5K7
www.torontozoo.com

Midland painted
Chrysemys picta marginata

- 11.5-14 cm; record 19.5 cm
- Females larger than males
- Smooth, olive to brownish-grey carapace with orange-red margins
- Yellow plastron with dark central blotch
- Neck, legs and tail striped with red and yellow; yellow blotch behind each eye
- Males have very long nails on front feet
- Often seen basking on logs
- Lays 3-14 oval, white, smooth-shelled eggs

Wood
Glyptemys insculpta

- 14-20 cm; record 23.4 cm
- Brown or greyish-brown, rough, heavily sculptured carapace, often with a central keel or ridge and raised concentric growth rings on each scute
- Rear margin of carapace serrated
- Plastron is yellow with black squares
- Head black; skin brown; adults with orange or yellow on neck and legs
- Found on land (the most terrestrial turtle in Ontario) and in or near streams and wet meadows
- Lays 4-12 oval, white, thin-shelled eggs
- THREATENED (COSEWIC); ENDANGERED (OMNR)

Stinkpot
Sternotherus odoratus

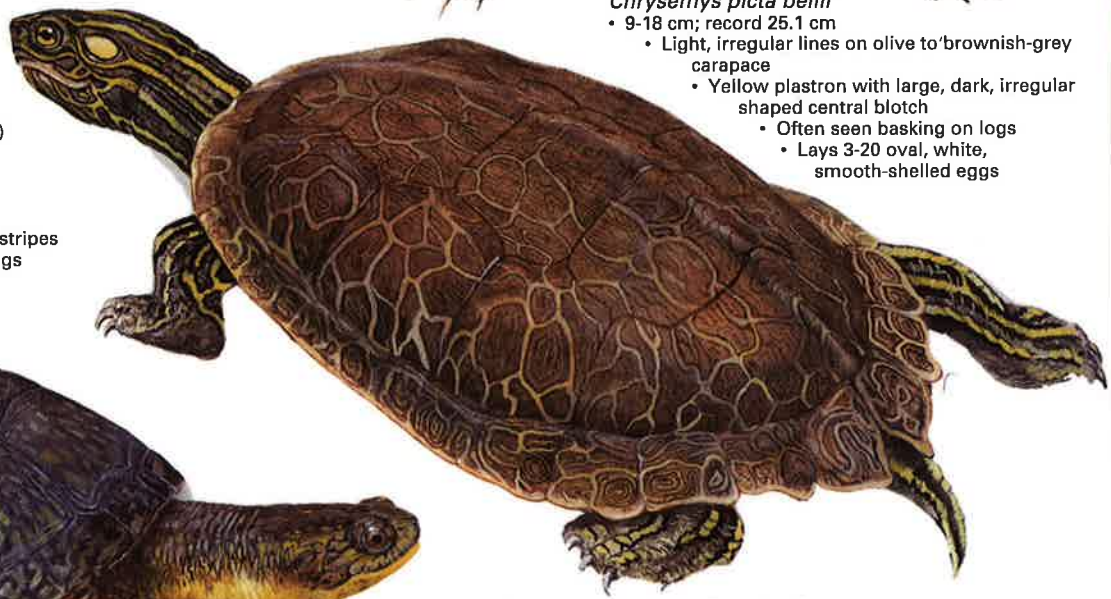
- 5.1-11.5 cm; record 13.7 cm
- Small turtle with smooth, light olive to black, high-domed, narrow carapace
- Plastron is small, yellow-brown and gives little protection to legs; a hinge runs across the front of the plastron allowing it to close upward to protect the head
- Two light stripes on each side of the head
- Barbels (fleshy projections) on chin and throat
- Named for musky odour produced when handled (also known as musk turtle)
- Lays 2-5 oval, white, hard-shelled eggs
- THREATENED (COSEWIC); THREATENED (OMNR)

Western painted
Chrysemys picta bellii

- 9-18 cm; record 25.1 cm
- Light, irregular lines on olive to brownish-grey carapace
- Yellow plastron with large, dark, irregular shaped central blotch
- Often seen basking on logs
- Lays 3-20 oval, white, smooth-shelled eggs

Map
Graptemys geographica

- Male 9-15.9 cm; Female 18-27.3 cm
- Males much smaller than females
- Numerous fine yellow lines on olive green to brownish carapace, resembling a map; may be less obvious in older turtles
- Rear margin of carapace serrated
- Carapace has a slight raised area (or keel) down centre of shell
- Yellow plastron
- Yellow spot, variable in size and shape, behind each eye
- Head and limbs may have light and dark stripes
- Lays 10-16 oblong, parchment-shelled eggs
- SPECIAL CONCERN (COSEWIC); SPECIAL CONCERN (OMNR)



Blanding's
Emydoidea blandingii

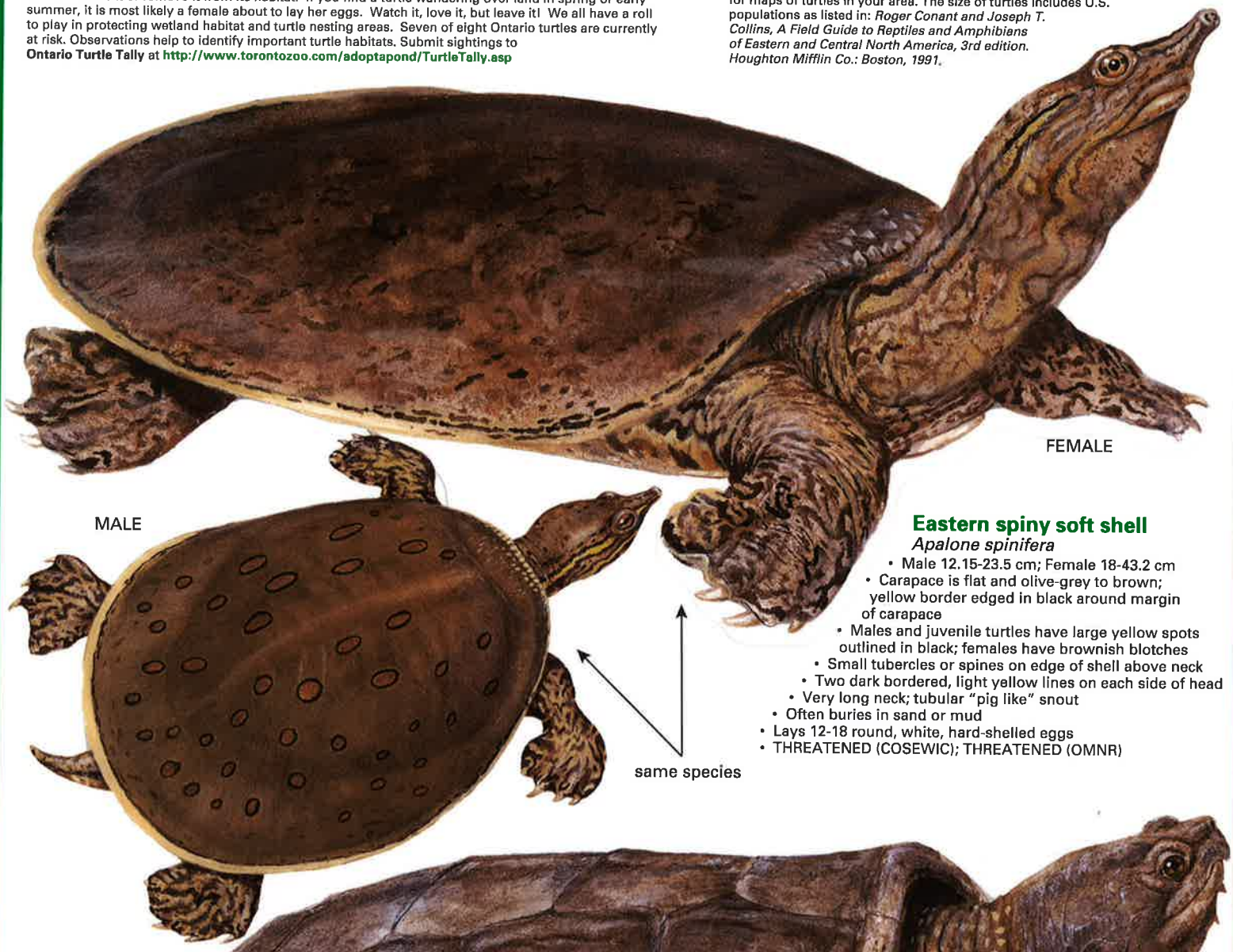
- 12.5-18 cm; record 27.4 cm
- Carapace black to greyish-brown with numerous yellowish spots or streaks
- Plastron has a flexible grooved hinge that allows lower shell to close upward to protect head and legs
- Bright yellow on chin and throat
- Protruding eyes
- Domed shell obvious while basking on logs, rocks, or clumps of vegetation
- Lays 6-11 oval, dull white, hard-shelled eggs
- THREATENED (COSEWIC); THREATENED (OMNR)

Spotted
Clemmys guttata

- 9-11.5 cm; record 12.7 cm
- Smooth black carapace with bright yellow or orange spots; spots fade in older turtles
- Plastron yellow-orange with large black blotch on each scute
- Males have tan chin and brown eyes; females have yellow chin and orange eyes
- Head, neck, limbs and tail are grey to black with yellow spots; inside of legs washed with orange
- Lays 3-8 oval, leathery textured eggs
- ENDANGERED (COSEWIC); ENDANGERED (OMNR)

Turtles in Ontario are protected under the Fish and Wildlife Conservation Act. If you find a turtle please do not disturb it or remove it from its habitat. If you find a turtle wandering over land in spring or early summer, it is most likely a female about to lay her eggs. Watch it, love it, but leave it! We all have a roll to play in protecting wetland habitat and turtle nesting areas. Seven of eight Ontario turtles are currently at risk. Observations help to identify important turtle habitats. Submit sightings to **Ontario Turtle Tally** at **http://www.torontozoo.com/adoptapond/TurtleTally.asp**

These turtles are not found in all Ontario regions. Consult a field guide for maps of turtles in your area. The size of turtles includes U.S. populations as listed in: *Roger Conant and Joseph T. Collins, A Field Guide to Reptiles and Amphibians of Eastern and Central North America, 3rd edition. Houghton Mifflin Co.: Boston, 1991.*



Eastern spiny soft shell

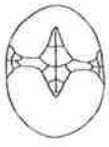
Apalone spinifera

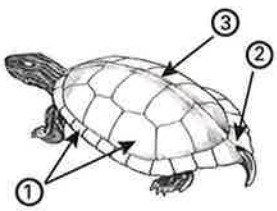
- Male 12.15-23.5 cm; Female 18-43.2 cm
- Carapace is flat and olive-grey to brown; yellow border edged in black around margin of carapace
- Males and juvenile turtles have large yellow spots outlined in black; females have brownish blotches
- Small tubercles or spines on edge of shell above neck
- Two dark bordered, light yellow lines on each side of head
- Very long neck; tubular "pig like" snout
- Often buries in sand or mud
- Lays 12-18 round, white, hard-shelled eggs
- THREATENED (COSEWIC); THREATENED (OMNR)

Snapping

Chelydra serpentina

- 20.3-36 cm; record 49.4 cm
- 4.5-16 kg; record 32 kg snapping turtle once lived at Toronto Zoo
- Carapace is light brown to black
- Young turtles have three longitudinal keels, older turtles almost smooth
- Plastron is yellowish, small, and cross-shaped; legs and skin not well protected
- Large head, two barbels on chin; rounded tubercles on neck
- Head, limbs and tail are brown
- Tail is long, same length or longer than carapace with "dinosaur-like" triangular scales projecting from the upper side
- Lays 20-40 round, ping-pong ball-like eggs
- SPECIAL CONCERN (COSEWIC)





1-scutes
2-serrated marginal scute
3-longitudinal keel
4-hinge on plastron

Red-eared slider

(not illustrated)

Trachemys scripta elegans

The red-eared slider is often sold in pet stores, but is not native to Ontario. **Do not release pet turtles to the wild.** They may carry diseases that threaten our native turtles, and are not likely to survive.

NHIC Data 2023-05-19

Ouellette Drain West
Amherstburg
Project REI2016D055

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS NAD83 IDENT	COMMENTS
679301	SPECIES	Wood Thrush	Hylocichla mustelina	S4B	SC	THR	17LG2667	
679301	SPECIES	Yellow-fruited Sedge	Carex annectens	S2			17LG2667	
679301	SPECIES	Perfoliate Horse-gentian	Triosteum perfoliatum	S1			17LG2667	
679301	SPECIES	Red-headed Woodpecker	Melanerpes erythrocephalus	S3	END	END	17LG2667	
679301	SPECIES	Biennial Gaura	Oenothera gaura	S3			17LG2667	
679301	SPECIES	Frank's Sedge	Carex frankii	S2			17LG2667	
679301	SPECIES	Climbing Prairie Rose	Rosa setigera	S2S3	SC	SC	17LG2667	
679301	SPECIES	Drooping Trillium	Trillium flexipes	S1	END	END	17LG2667	
679301	SPECIES	White Prairie Gentian	Gentiana alba	S1	END	END	17LG2667	
679301	SPECIES	Eastern Burning-bush	Euonymus atropurpureus	S3			17LG2667	
679301	SPECIES	Giant Ironweed	Vernonia gigantea	S1?			17LG2667	
679301	SPECIES	Eastern Stiff Goldenrod	Solidago rigida ssp. rigida	S3			17LG2667	
679301	SPECIES	Heart-leaved Plantain	Plantago cordata	S1	END	END	17LG2667	
679301	SPECIES	Prairie Milkweed	Asclepias sullivantii	S2S3			17LG2667	

APPENDIX “REI-C”

STANDARD SPECIFICATIONS
FOR ACCESS BRIDGE CONSTRUCTION

1. PRECAST CONCRETE BLOCK & CONCRETE FILLED JUTE BAG HEADWALLS

After the Contractor has set the endwall foundations and the new pipe in place, it shall completely backfill same and install new precast concrete blocks or concrete filled jute bag headwalls at the locations and parameters indicated on the drawing. All concrete used for headwalls shall be a minimum of 30 mPa at 28 days and include 6% +/- 1% air entrainment.

Precast concrete blocks shall be interlocking and have a minimum size of 600mmX600mmX1200mm. Half blocks shall be used to offset vertical joints. Cap blocks shall be a minimum of 300mm thick. A foundation comprising minimum 300mm thick poured concrete or precast blocks the depth of the wall and the full bottom width of the drain plus 450mm embedment into each drain bank shall be provided and placed on a firm foundation as noted below. The Contractor shall provide a levelling course comprising a minimum thickness of 150mm Granular “A” compacted to 100% Standard Proctor Density or 20mm clear stone, or a lean concrete as the base for the foundation. The base shall be constructed level and flat to improve the speed of installation. Equipment shall be provided as required and recommended by the block supplier for placing the blocks such as a swift lift device for the blocks and a 75mm eye bolt to place the concrete caps,. The headwall shall extend a minimum of 150mm below the invert of the access bridge culvert with the top of the headwall set to match the finished driveway grade, unless a 150mm high curb is specified at the edge of the driveway. To achieve the required top elevation, the bottom course of blocks and footing may require additional embedment into the drain bottom. The Contractor shall provide shop drawings of the proposed wall for approval by the Drainage Superintendent or Engineer prior to construction.

Blocks shall be placed so that all vertical joints are staggered. Excavation voids on the ends of each block course shall be backfilled with 20mm clear stone to support the next course of blocks above. Walls that are more than 3 courses in height shall be battered a minimum of 1 unit horizontal for every 5 units of vertical height. The batter shall be achieved by careful grading of the footing and foundation base, or use of pre-battered base course blocks. Filter cloth as specified below shall be placed behind the blocks to prevent the migration of any fill material through the joints. Backfill material shall be granular as specified below. Where the wall height exceeds 1.8 metres in height, a uni-axial geogrid SG350 or equivalent shall be used to tie back the walls and be installed in accordance with the manufacturer’s recommendations. The wall face shall not extend beyond the end of the access bridge pipe. Non-shrink grout shall be used to fill any gaps between the blocks and the access bridge pipe for the full depth of the wall. The grout face shall be finished to match the precast concrete block walls as closely as possible.

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

The concrete filled jute bag headwalls shall be constructed by filling jute bags with concrete. All concrete used to fill the jute bags shall have a minimum compressive strength of 25 MPa in 28 days and shall be provided and placed only as a wet mix. Under no circumstance shall the concrete to be used for filling the jute bags be placed as a dry mix. The jute bags, before being filled with concrete, shall have a dimension of 460mm (18") x 660mm (26"). The jute bags shall be filled with concrete so that when they are laid flat, they will be approximately 100mm (4") thick, 305mm (12") to 380mm (15") wide and 460mm (18") long.

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

All concrete used for the footing, cap and bags shall have a minimum compressive strength of 30 mPa at 28 days and shall include 6% ± 1% air entrainment.

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

the cap. The Contractor shall fill all voids between the concrete filled jute bags and the corrugated steel pipe with concrete, particular care being taken underneath the pipe haunches to fill all voids.

The completed jute bag headwalls shall be securely embedded into the drain bank a minimum of 450mm (18") measured perpendicular to the sideslopes of the drain.

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

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

2. QUARRIED LIMESTONE ENDWALLS

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

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

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

3. BRIDGE BACKFILL

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

4. GENERAL

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

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

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

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

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

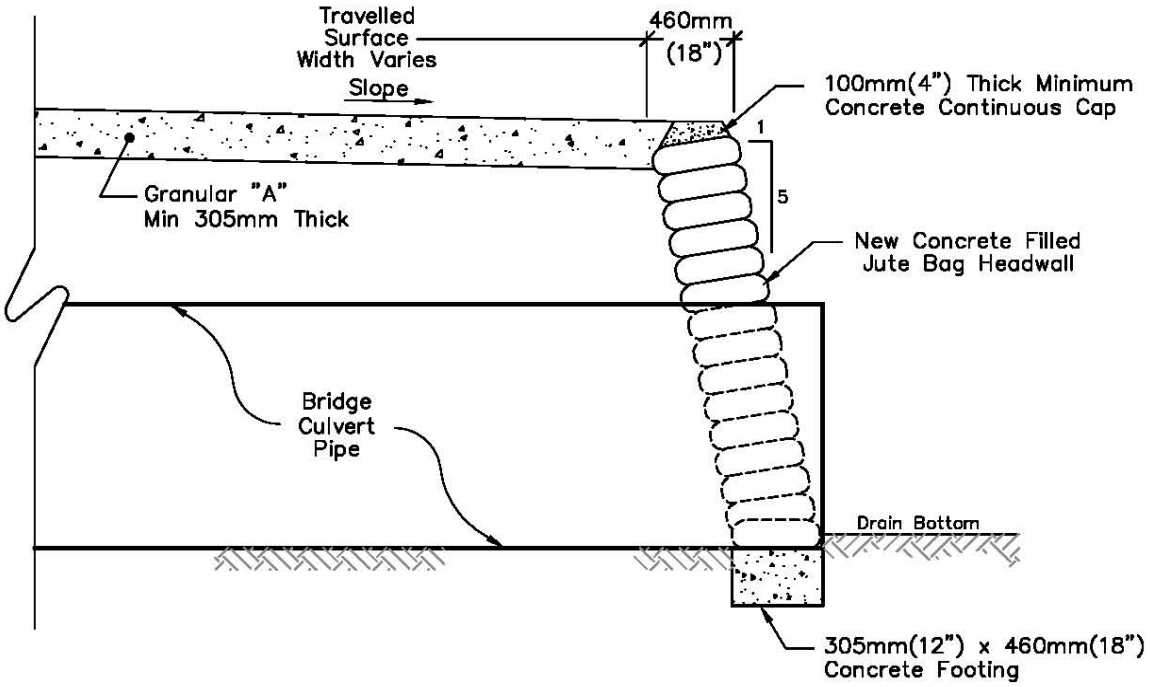
Where applicable, the Contractor and/or landowner constructing the new bridge shall be responsible for any damage caused by them to any portion of the Town road right-of-way. They shall take whatever precautions are necessary to cause a minimum of damage to same and must restore the roadway to its original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

When working along a municipal roadway, the Contractor shall provide all necessary lights, signs, barricades and flagpersons as required to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. If traffic control is required on this project, it is to comply with the M.T.O. Traffic Control Manual for Roadway Work Operations and Ontario Traffic Manual Book 7.

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

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

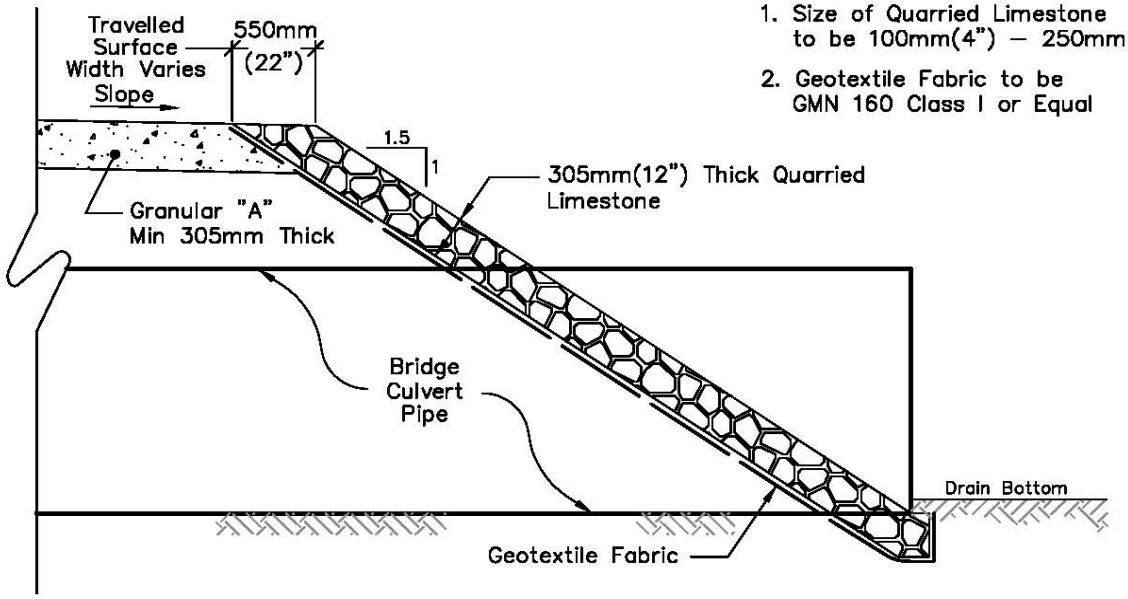
All of the excavation, installation procedures, and parameters as above mentioned are to be carried out and performed to the full satisfaction of the Drainage Superintendent and Engineer.



Typical Jute Bag Headwall

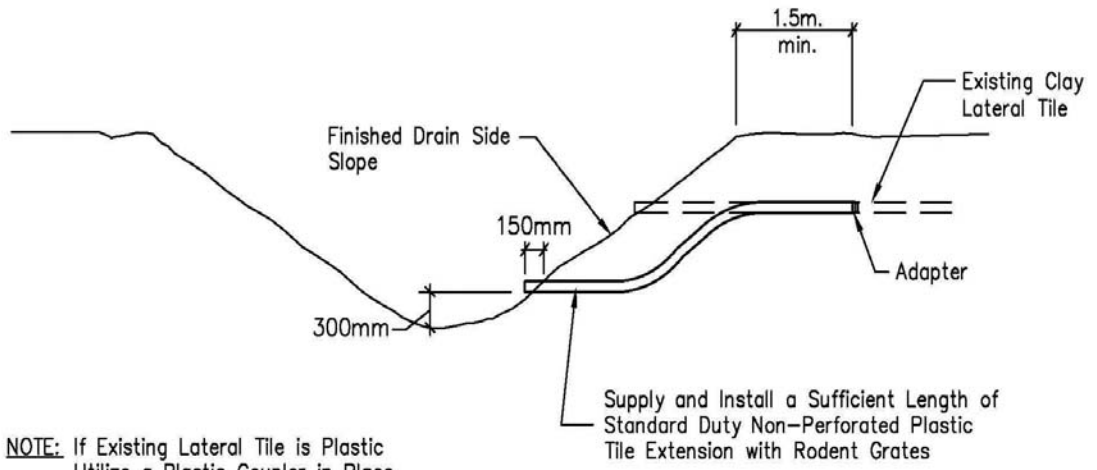
NOTE:

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



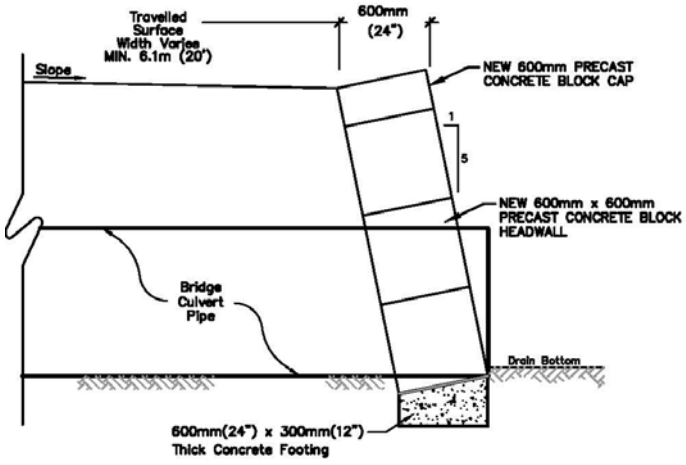
Typical Quarried Limestone End Protection

Rood Engineering Inc.
Consulting Engineers
9 Nelson Street
Leamington, Ontario N8H 1G6
519-322-1621



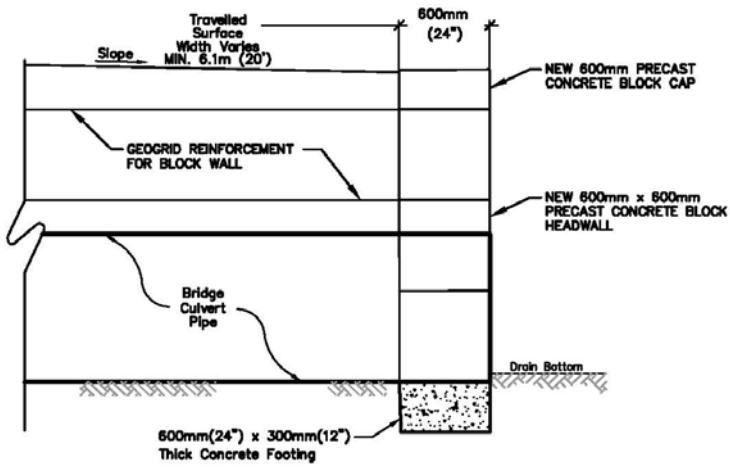
STANDARD LATERAL TILE DETAIL

N.T.S.



TYPICAL PRECAST CONCRETE BLOCK END PROTECTION

Scale = N.T.S.



TYPICAL VERTICAL PRECAST CONCRETE BLOCK END PROTECTION

Scale = N.T.S.

APPENDIX “REI-D”

ADDITIONAL INFORMATION

AS REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

(a) AS SHOWN ON PLAN	(f) AS SHOWN ON PLAN
(b) AS SHOWN ON PLAN	(g) AS SHOWN ON PLAN
(c) AS SHOWN ON PLAN	(h) PIPED MUNICIPAL WATER
(d) SINGLE FAMILY RESIDENTIAL	(i) CLAY LOAM
(e) NORTH – AGRICULTURE	(j) AS SHOWN ON PLAN
SOUTH – RIGHT OF WAY	(k) ALL SERVICES TO BE PROVIDED
EAST – AGRICULTURE	(l) AS SHOWN ON PLAN
WEST – RESIDENTIAL	

SUMMARY

NUMBER OF RESIDENTIAL BLOCKS – 15
NUMBER OF ADDITIONAL BLOCKS
0.30m RESERVE BLOCKS – 2
STORM WATER MANAGEMENT BLOCKS – 1
TOTAL NUMBER OF BLOCKS –18

TOTAL AREA OF SITE – 4.041 HECTARES
DENSITY = 3.72 RESIDENTIAL BLOCKS PER HECTARE

LEGEND AND NOTES

BEARINGS ARE UTM GRID DERIVED FROM OBSERVED REFERENCE POINTS "A" AND "B" BY REAL TIME NETWORK OBSERVATIONS.

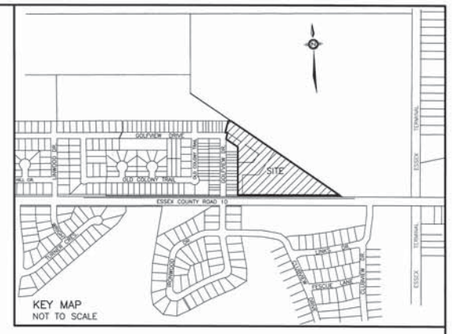
DISTANCES ON THIS PLAN ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99994607

ALL MONUMENTS SHOWN THUSLY ◘ ARE IRON BARS (IB) UNLESS OTHERWISE NOTED.

SIB	DENOTES 25mm X 25mm X 1.22m STANDARD IRON BAR
SSIB	DENOTES 25mm X 25mm X 0.61m SHORT STANDARD IRON BAR
IB	DENOTES 16mm X 16mm X 0.61m IRON BAR
IB-P	DENOTES 19mm diameter X 0.61m ROUND IRON BAR
CC	DENOTES CUT-CROSS
CP	DENOTES 5mm X 50mm STEEL PIN
■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT SET AND MARKED 1744
WIT.	DENOTES WITNESS ⊥ DENOTES PERPENDICULAR
(S)	DENOTES SET (M) DENOTES MEASURED (D) DENOTES DEED
ORP	DENOTES OBSERVED REFERENCE POINT

SSIB'S SHOWN ON THIS PLAN HAVE BEEN SET IN LIEU OF SIB'S WHERE THE POSSIBILITY THAT UNDERGROUND UTILITIES EXIST.

(S/P)	DENOTES SET PROPORTIONALLY (OU) DENOTES ORIGIN UNKNOWN
(P)	DENOTES PLAN 12M–517
(P1)	DENOTES PLAN 12R–22160
(P2)	DENOTES PLAN 12R–24633
(P3)	DENOTES PLAN 12R–22756
(1744)	DENOTES VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC., O.L.S.



KEY MAP
NOT TO SCALE

DRAFT PLAN OF SUBDIVISION
OF
BLOCK 66, PART OF BLOCK 63 and PART OF NICKLAUS COURT
(CLOSED BY THE CORPORATION OF THE TOWN OF AMHERSTBURG, REGISTERED AS CE829794)
PLAN 12M–517
IN THE
TOWN OF AMHERSTBURG
COUNTY OF ESSEX, ONTARIO

SCALE = 1:750

0 7.50 15.00 30.00 45.00 METRES 75.00

CURVE SCHEDULE				
CURVE	RADIUS	ARC	CHORD	CHORD BEARING
C1	18.00	20.30	19.24	N28°12'30"W
C2	10.00	11.28	10.69	N28°12'40"W

OWNERS CERTIFICATE

I HEREBY AUTHORIZE THE FILING OF THIS DRAFT PLAN FOR APPROVAL.

AMICO PROPERTIES INC.

DATE ____ ____ ____ ____ ____ ____

CINDY PRINCE
"I HAVE THE AUTHORITY TO BIND THE CORPORATION"

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS HAVE BEEN ACCURATELY AND CORRECTLY SHOWN.

DATE JUNE 18, 2018

ANDREW S. MANTHA
ONTARIO LAND SURVEYOR
for VERHAEGEN • STUBBERFIELD • HARTLEY
BREWER • BEZAIRE INC.

ORIGINAL ROAD ALLOWANCE BETWEEN LOTS 18 AND 19, CONCESSION 1
(MIDDLE SIDEROAD) (ESSEX COUNTY ROAD No.10)

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

WINDSOR
944 Ottawa Street
N8X 2E1
Ph: (519)258-1772
Fax: (519)258-1791

VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC.

LEAMINGTON
187 Talbot Street East
N8H 1L8
Ph: (519)322-2375
Fax: (519)322-2675

ONTARIO LAND SURVEYORS www.vshbbsurveys.com

DRAWN BY: D.J. CAD Date: June 18, 2018 9:50 AM
CHECKED BY: A.S.M. CAD File: 42868200.dwg
WORK ORDER: 4–28682 FILE NO.: E–12M–517–BLK 63 PLAN FILE NO.: C–4501

APPENDIX “REI-E”

PLAN AND PROFILE

OF THE

OUELLETTE DRAIN WEST

(RE-ALIGNMENT & ENCLOSURE)

(Geographic Township of Anderdon)

IN THE

TOWN OF AMHERSTBURG

IN THE

COUNTY OF ESSEX•ONTARIO

GERARD ROOD, P.ENG.

REGISTERED PROFESSIONAL ENGINEER G.ROOD 2023-05-31 PROVINCE OF ONTARIO

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

DATE: MAY 30th, 2023

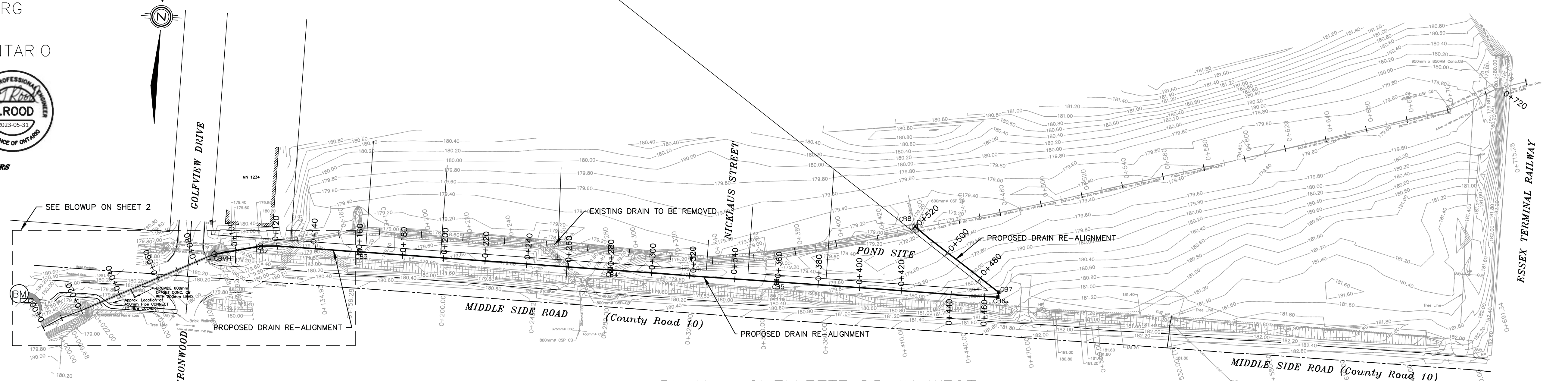
TOWN OF AMHERSTBURG

MAYOR:	MICHAEL PRUE
CLERK:	KEVIN FOX
DRAINAGE SUPERINTENDENT:	SAM PAGLIA, P.Eng.

BENCHMARKS:

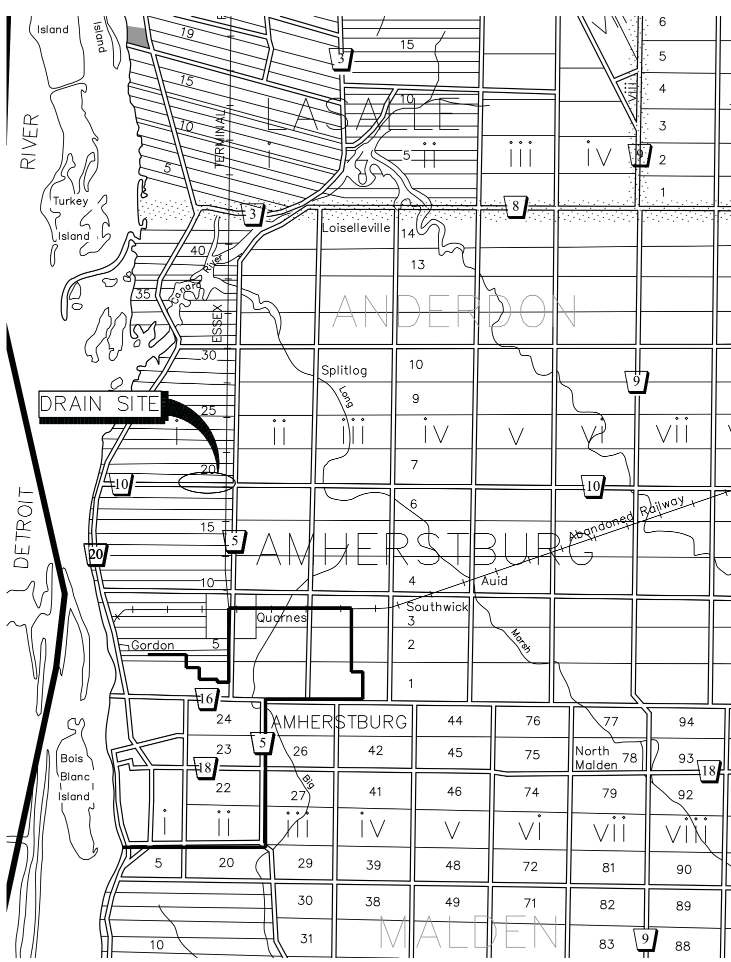
TOP OF EXISTING PUMPING STATION SOUTH OF COUNTY ROAD 10 AND NORTHWEST SIDE OF SOUTHWEST OBVERT OF 900mmø CSP DRAIN ENCLOSURE

ELEV. =180.000m



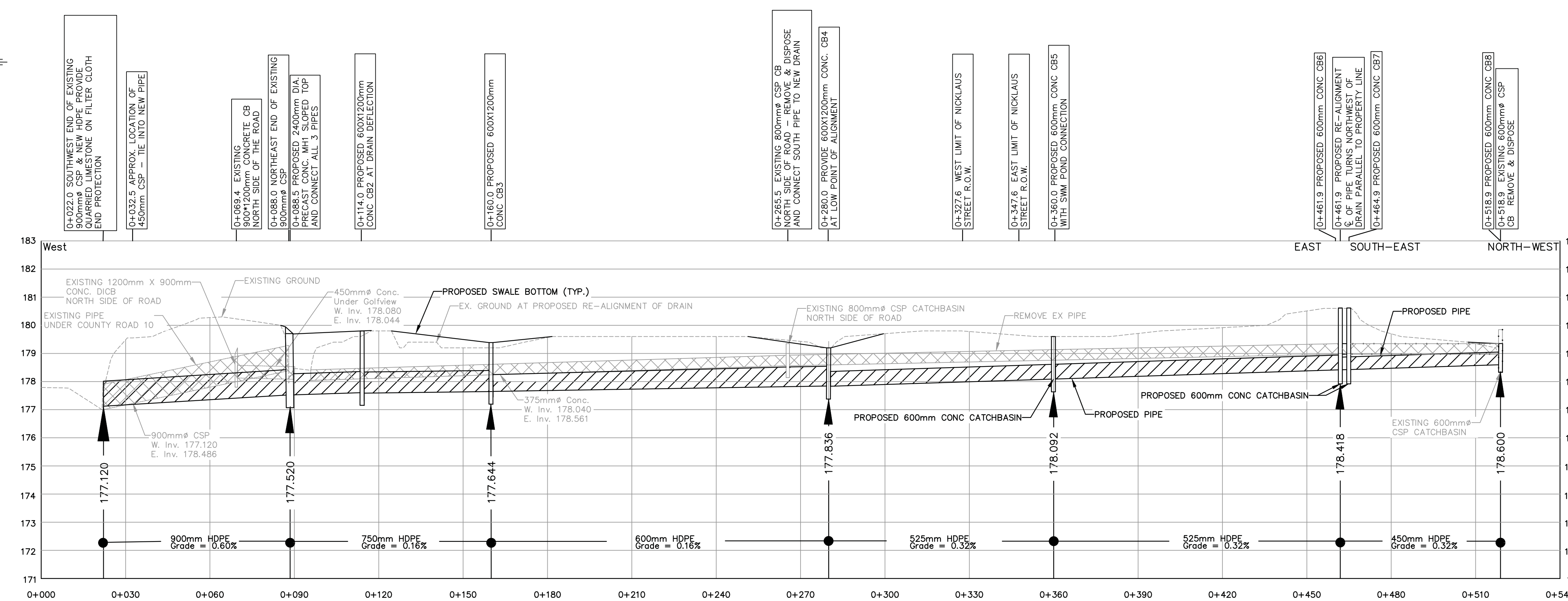
PLAN – OUELLETTE DRAIN WEST

Scale = 1:1,000



KEY PLAN

Scale = 1:60,000



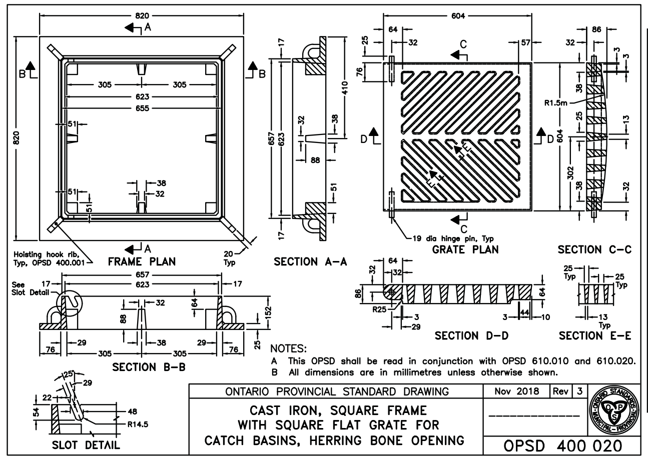
PROFILE – OUELLETTE DRAIN RE-ALIGNMENT

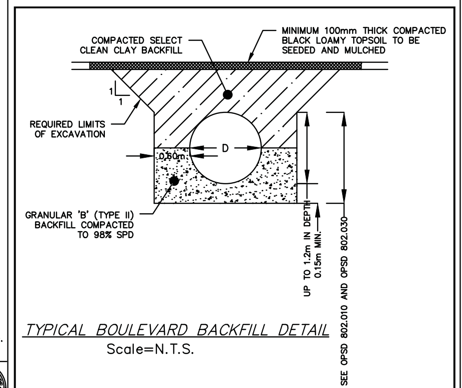
Scale = 1:1,000 Hor.
1:100 Vert.

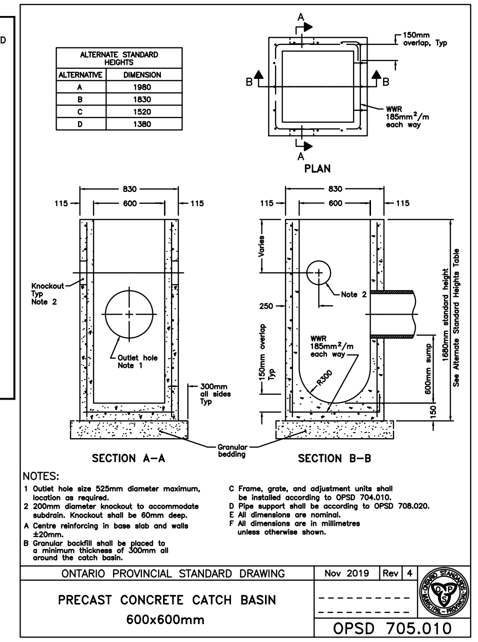
THESE PLANS HAVE BEEN REDUCED AND THE SCALE THEREFORE VARIES. FULL SCALE PLANS MAY BE VIEWED AT THE MUNICIPAL OFFICE.

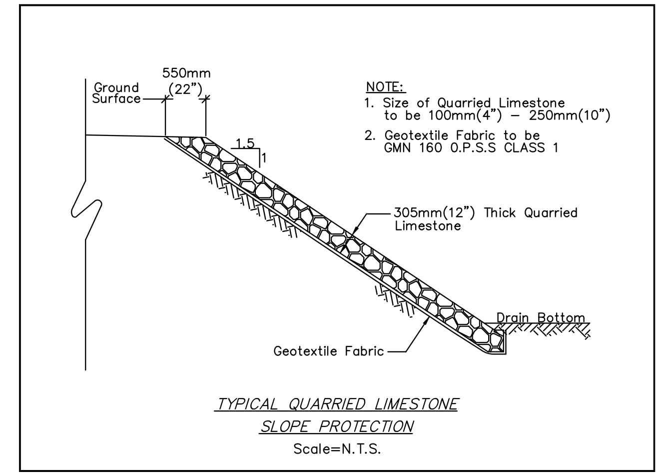
DRAWN BY: G.S. & A.C.
PLOT CODE: 1:1
COMPUTER FILE: REI2016D055.DWG

FILE No.:	SHEET No.:
REI2016D055	1 OF 4









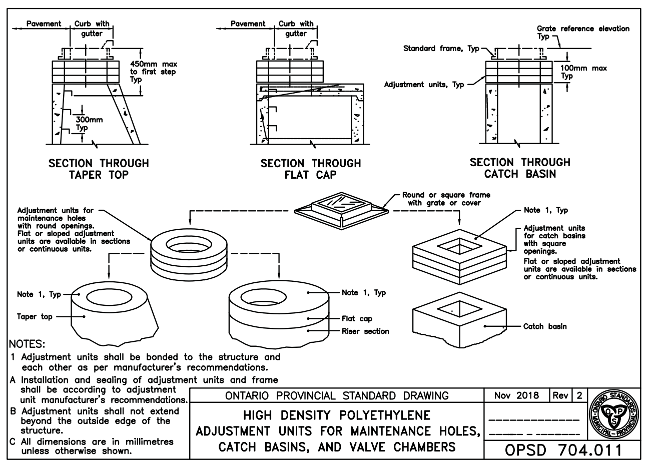
GENERAL NOTES:

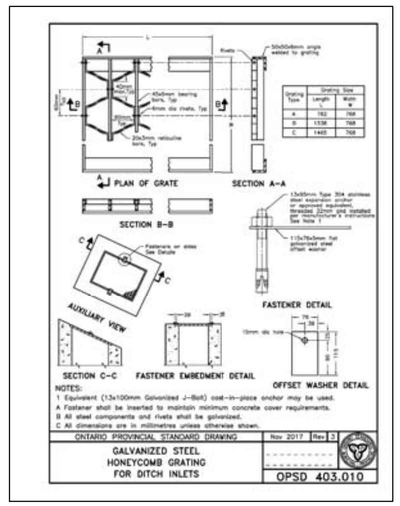
1. THE ACCURACY OF THE UTILITIES SHOWN ON THESE DRAWINGS ARE NOT GUARANTEED BY THE OWNER OR ROOD ENGINEERING INC.; OTHER UTILITIES MAY BE PRESENT, OR THE UTILITIES SHOWN MAY DIFFER IN SIZE OR LOCATION SHOWN.
2. THE CONTRACTOR SHALL LOCATE AND VERIFY DEPTHS OF ALL UTILITIES PRIOR TO CONSTRUCTION AND ADVISE ENGINEER OF ANY UTILITY CONFLICTS THAT MAY BE ENCOUNTERED.
3. ALL DIMENSIONS SHOWN IN METRES UNLESS NOTED OTHERWISE. PROPERTY LINES ARE BASED ON THE 12M–517 PLAN AND OF AMHERSTBURG GIS INFORMATION.
4. ALL CBMH'S ARE TO BE 600mm SQUARE PRECAST CONCRETE WITH 450 DEEP SUMP AND CAST IRON FRAME AND GRATE (OPSD 400.020) UNLESS OTHERWISE NOTED.
5. ALL COVERED DRAINS TO HAVE MINIMUM 300mm OF COVER.
6. TOPSOIL SHALL BE PLACED ON ALL NEWLY EXCAVATED SWALES AND ANY DISTURBED BOULEVARDS AREAS THAT WILL BE SEEDED AND MULCHED.
7. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL PRIVATE FEATURES (SUCH AS FENCES, SPRINKLERS, FLOWER BEDS, ETC.). IN THE EVENT THAT A PRIVATE FEATURE IS IN THE ALIGNMENT OF THE NEW COVERED DRAINAGE SYSTEM, THE CONTRACTOR SHALL CAREFULLY REMOVE AND RE–INSTALL THE PRIVATE FEATURE TO ITS ORIGINAL STATE, UNLESS OTHERWISE NOTED.
8. ALL CBMH'S SHALL HAVE A MINIMUM OF 3 ADJUSTMENT UNITS AS PER OPSD 704.011.
9. ALL HDPE DRAIN PIPE TO BE 320 kPa OR APPROVED EQUAL.
10. ENSURE THAT THERE IS A MINIMUM 0.50m VERTICAL SEPARATION WITH THE PIPE LENGTHS CENTERED OVER ANY WATER MAIN.
11. ALL DRIVEWAY ACCESSES TO BE A MINIMUM OF 450mm OF GRANULAR 'A' BACKFILL COMPACTED TO A MINIMUM STANDARD PROCTOR DENSITY OF 100%.
12. PROPOSED SWALES SHALL BE CENTERED OVER THE PROPOSED ENCLOSURE ALIGNMENT.

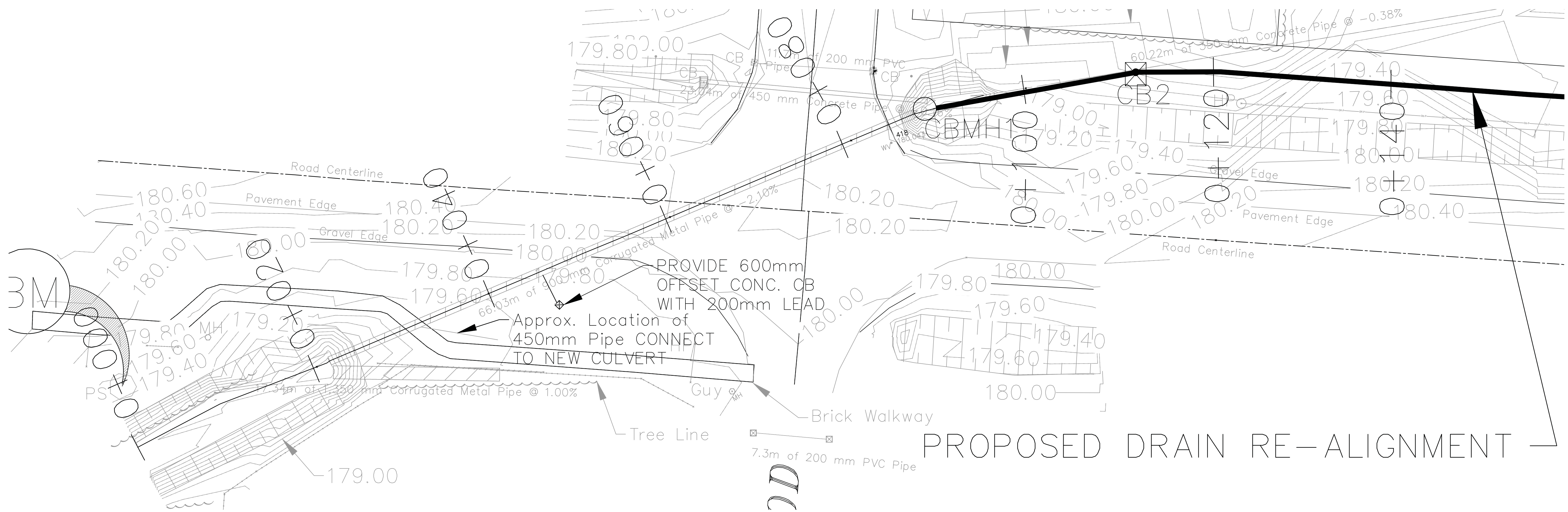
BENCHMARKS:

TOP OF EXISTING PUMPING STATION SOUTH OF COUNTY ROAD 10 AND NORTHWEST SIDE OF SOUTHWEST OBVERT OF 900mmø CSP DRAIN ENCLOSURE

ELEV. =180.000m







BLOWUP AREA OF STN 0+000 TO 0+140

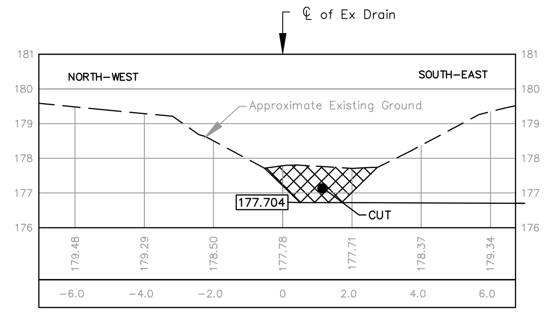
Scale = 1:200

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

DRAWN BY: G.S. & A.C.
PLOT CODE: 1:1
COMPUTER FILE: REI2016D055.DWG

FILE No.: REI2016D055

SHEET No.: 2 OF 4



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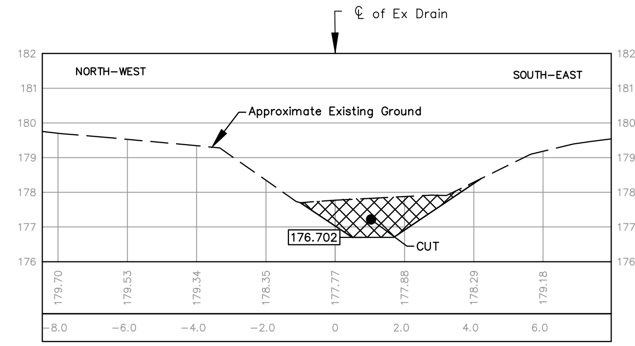

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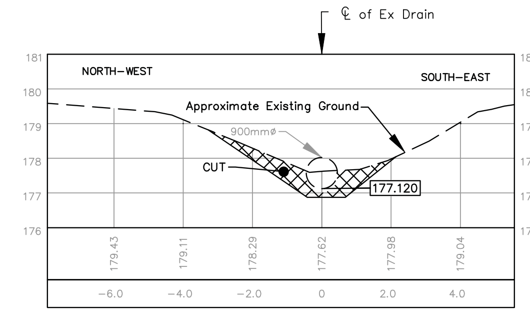

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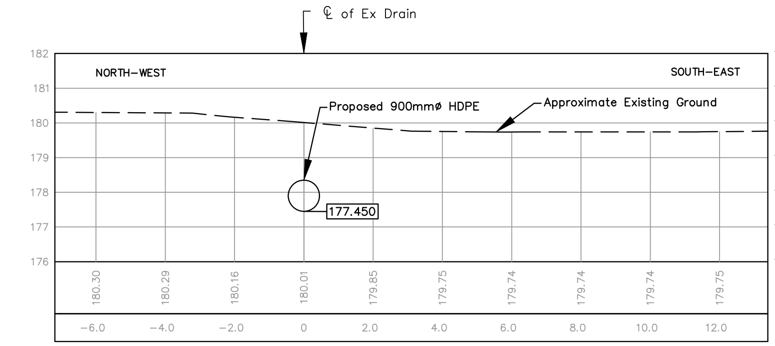

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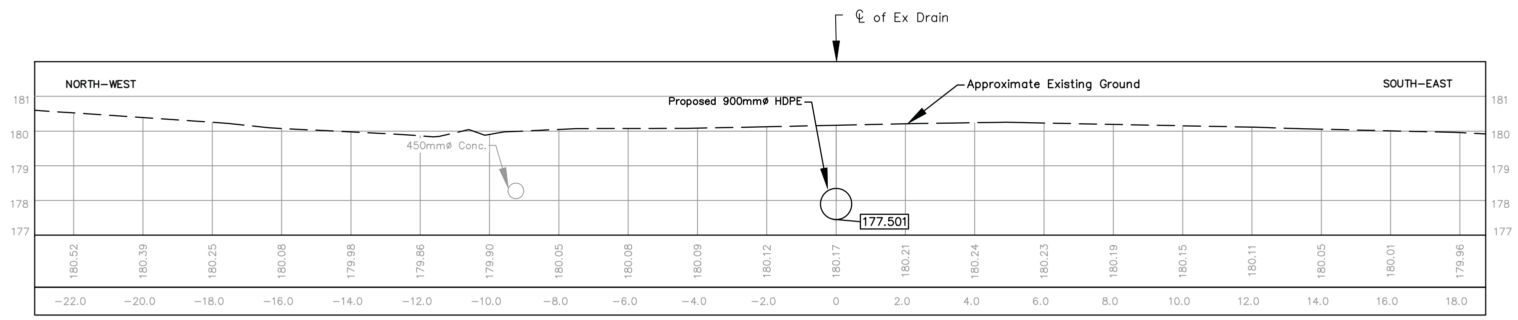

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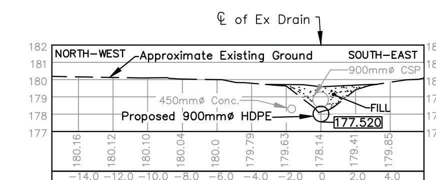

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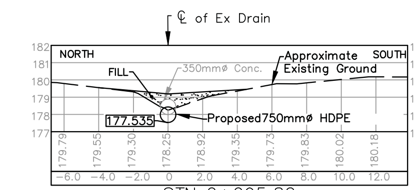

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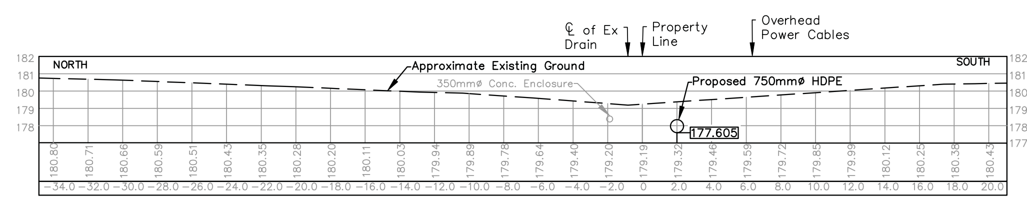

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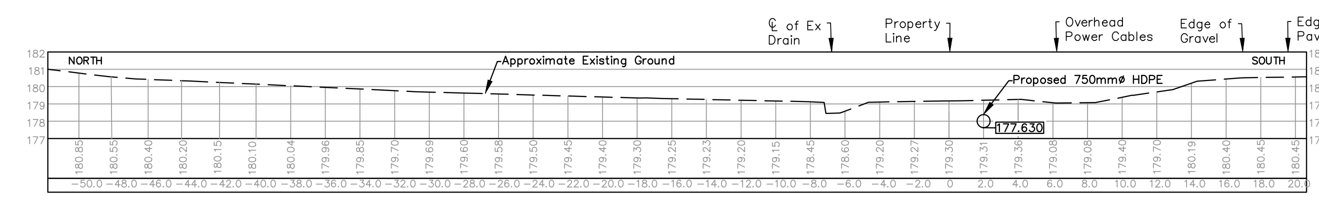

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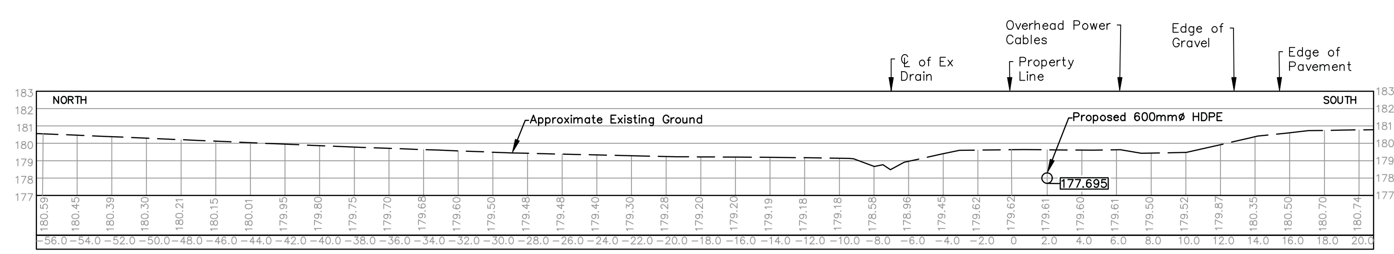

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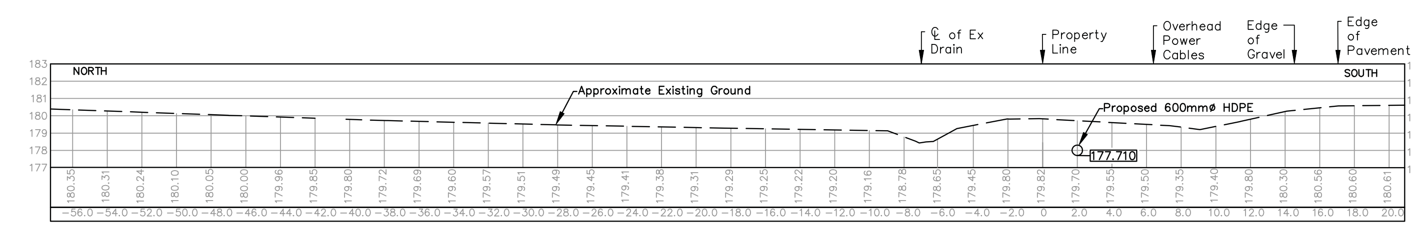

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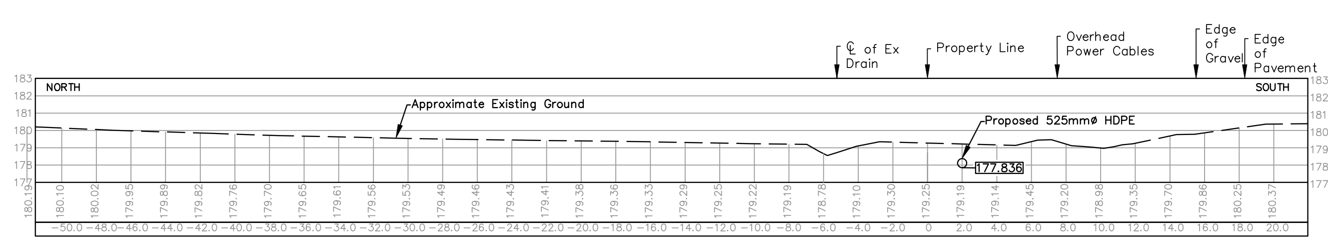

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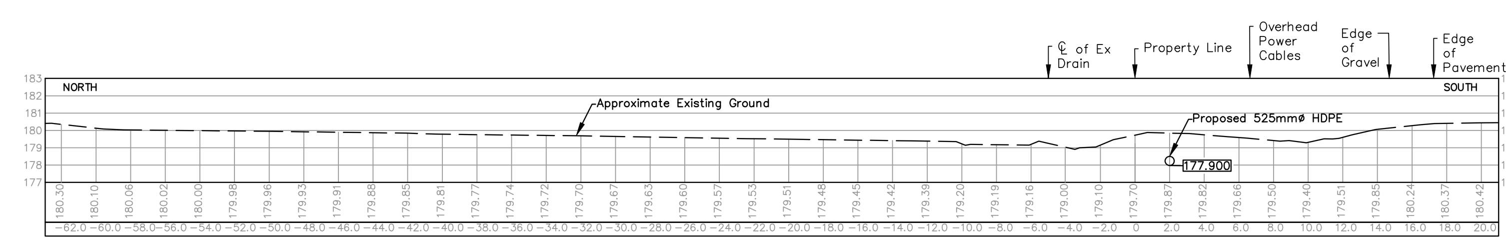

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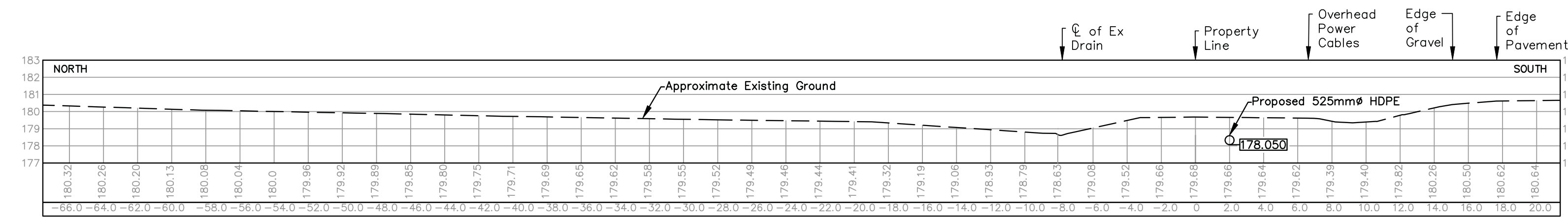
THESE PLANS HAVE BEEN REDUCED AND THE SCALE THEREFORE VARIES. FULL SCALE PLANS MAY BE VIEWED AT THE MUNICIPAL OFFICE.

DRAWN BY: G.S. & A.C.
PLOT CODE: 1:1
COMPUTER FILE: REI2016D055.DWG

FILE No.:	SHEET No.:
REI2016D055	3 OF 4



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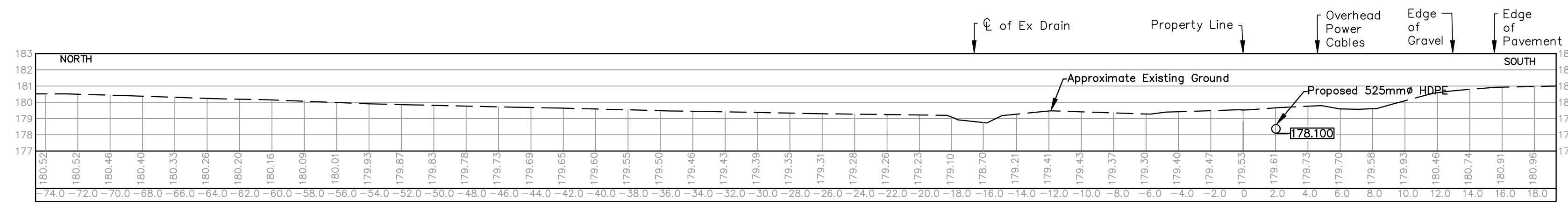

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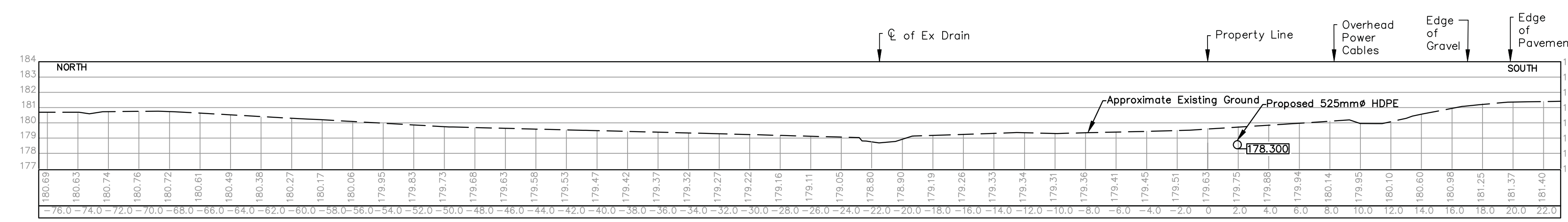

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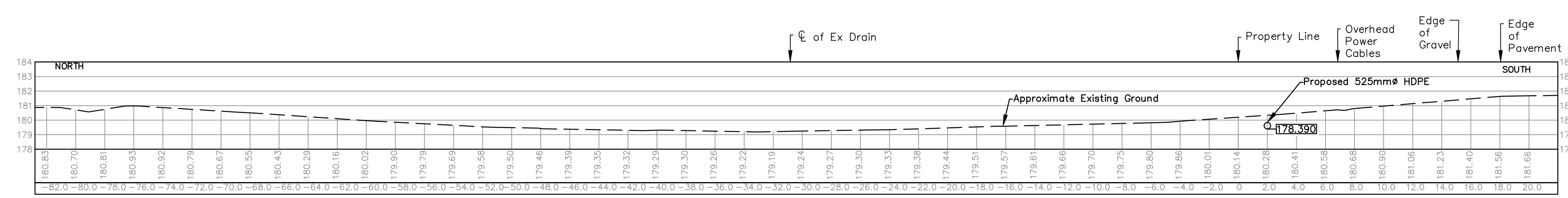

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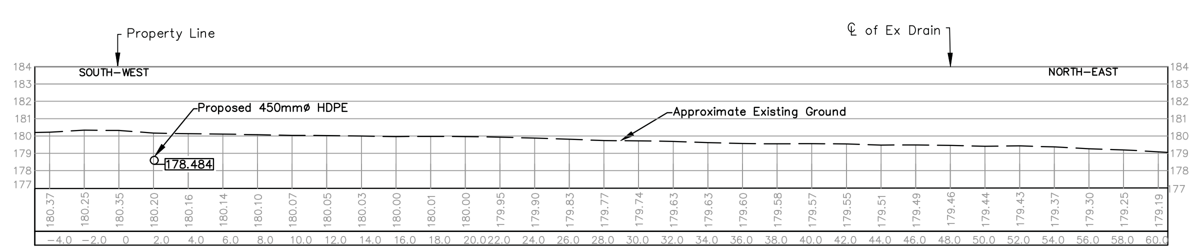

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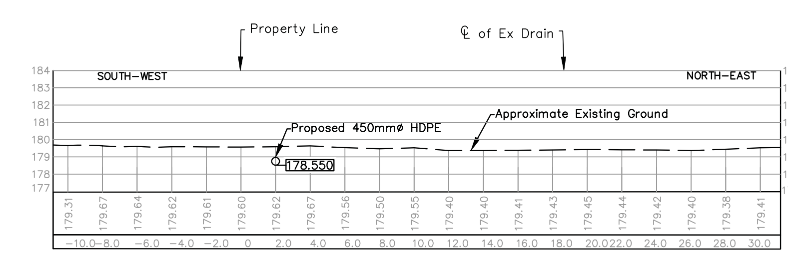

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THESE PLANS HAVE BEEN REDUCED AND THE SCALE THEREFORE VARIES. FULL SCALE PLANS MAY BE VIEWED AT THE MUNICIPAL OFFICE.

DRAWN BY: G.S. & A.C.
PLOT CODE: 1:1
COMPUTER FILE: REI2016D055.DWG

FILE No.:	SHEET No.:
REI2016D055	4 OF4

THE CORPORATION OF THE TOWN OF AMHERSTBURG

BY-LAW NO. 2023-096

By-law to provide for the Ouellette Drain West Relocation and Enclosure based on the drainage report of Gerard Rood, P.Eng of Rood Engineering Inc.

WHEREAS a request for improvement of the Ouellette Drain West 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 improvement of the Ouellette Drain West under Section 78 of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg has authorized Gerard Rood, P.Eng., of Rood Engineering Inc., to prepare a report and said engineer's report dated May 30, 2023 entitled Ouellette Drain West Relocation and Enclosure can be referenced as Schedule A, as attached hereto;

WHEREAS $422,000.00 is the estimated cost provided for the new the drainage works;

AND WHEREAS the report was considered by the Amherstburg Drainage Board at the meeting held on September 5, 2023.

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

1. AUTHORIZATION

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

2. BORROWING

The Corporation of the Town of Amherstburg may borrow on the credit of the Corporation the amount of $422,000.00 being the estimated amount necessary for the improvements of the drainage works.

3. DEBENTURE(S)

The Corporation may issue debenture(s) for the amount borrowed less the total amount of:
(a) Grants received under section 85 of the Drainage Act;
(b) Monies paid as allowances;
(c) Commuted payments made in respect of lands and roads assessed with the municipality;
(d) Money paid under subsection 61(3) of the Drainage Act; and
(e) Money assessed in and payable by another municipality.

4. PAYMENT

Such debenture(s) shall be made payable within 5 years from the date of the debenture(s) and shall bear interest at a rate not higher than 1% more than the municipal lending rates as posted by The Town of Amherstburg's Bank's Prime Lending Rate on the date of sale of such debenture(s).

(1) A special equal annual rate sufficient to redeem the principal and interest on the debenture(s) shall be levied upon the lands and roads and shall be collected in the same manner and at the same as other taxes are collected in each year for 5 years after the passing of this by-law.

(2) All assessments of $1000.00 or less are payable in the first year in which the

assessments are imposed.

Read a first and second time and provisionally adopted this 11th day of September, 2023.

_____
MAYOR – MICHAEL PRUE

_____
CLERK – KEVIN FOX

Read a third time and finally passed this ___ day of _____, 2023.

_____
MAYOR – MICHAEL PRUE

_____
CLERK – KEVIN FOX

THE CORPORATION OF THE TOWN OF AMHERSTBURG

OFFICE OF ENGINEERING AND PUBLIC WORKS

MISSION STATEMENT: Committed to delivering cost-effective and efficient services for the residents of the Town of Amherstburg with a view to improve and enhance their quality of life.

Author's Name: Sam Paglia	**Report Date: August 22, 2023**
Author's Phone: 519 736-3664 ext. 2318	**Date to Drainage Board: September 5, 2023**
Author's E-mail: spaglia@amherstburg.ca	**Resolution #: N/A**

To: **Members of the Drainage Board**

Subject: Subsequent Connection – Ouellette Drain West
Subsequent Disconnection to the Cornwall Drain

---

1. RECOMMENDATION:

It is recommended that:

1. The report from the Drainage Superintendent and Engineering Coordinator dated August 22, 2023, regarding the Subsequent Connection to the Ouellette Drain West (ODW) and the Subsequent Disconnection to the Cornwall Drain (Golfview Park Estates Section 65) **BE RECEIVED**;

2. The engineer's report, prepared by Rood Engineering Inc. on August 1, 2023, for the ODW and Cornwall Drain respectively **BE RECEIVED**;

3. The assessment adjustments as listed in the engineering report prepared by Rood Engineering Inc. **BE APPROVED**, and;

4. The amount to be collected by Golfview Park Estates **BE APPLIED** to the account of the ODW as per Section 65(12) for the future use of the drain watershed, and;

5. Administration **BRING FORWARD** the Drainage Board's recommendation to approve the assessment adjustments at a future Regular Council Meeting.

2. BACKGROUND:

A motion was passed at the April 4, 2023 Board meeting to authorize the firm of Rood Engineering Inc. to prepare a drainage report pursuant to Section 65(3) for the Subsequent Connection to a Drainage Works, and in another motion on that same day,

the Board appointed N.J. Peralta to prepare a report pursuant to Section 65(4) of the Act for the Subsequent Disconnection of the same lands.
Also on that day was the appointment of Tony Peralta to prepare a Section 76 report for the Variation in Assessment to the Cornwall Drain.

Currently, Mr. Rood is appointed for a Section 78 report for the previous phase of development and will include now, phase 5 in the final report. This report is presented as well for consideration at todays meeting of the Board.

3. DISCUSSION:

As requested, Mr. Rood has submitted the attached report that addresses the subsequent connection and disconnection and provides a fee for the developer to pay the community of landowners on the ODW. Mr. Rood's report considered the nature and extent of the land usage being proposed in his assessment rationale by assigning a dollar value to the ODW watershed. In the future, when works of maintenance are performed on the ODW, these moneys are to be credited to the account of the drain and be applied to any associated future maintenance costs.

Subsequent connection assessment details, once accepted by the Drainage Board and approved by Council through resolution, will be reflected in the assessment schedule and used for all future works of maintenance on the Ouellette Drain West, until such time as a new report is adopted under S. 78. The updated schedule becomes the mechanism in which the Town recovers cost when performing maintenance on the drain.

4. RISK ANALYSIS:

Under the Drainage Act, it is the Town's obligation to take the proper steps to examine and complete the necessary changes to Municipal Drains and their bylaws. Failing to do so could lead to unfair assessments of drain maintenance costs that do not accurately reflect the prevalent drainage conditions or parcel liabilities within the watershed. This could lead to conflicts between the Town and landowners over drainage assessments and the possible denial of agricultural grants from the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

5. FINANCIAL MATTERS:

Having requested the subsequent disconnection and the subsequent connection, the requesting landowner is required under Section 65(10) to cover the cost to do the following; but not limited to;

1. Preparation of this Section 65(3) to connect to the ODW Drain.
2. Preparation of this Section 65(4) to disconnect from the Cornwall Drain.
3. Preparation of a Variation of Assessment Report under S. 76 (1) for the Cornwall Drain.
4. Preparation of a Section 78(1) report on the ODW.

5. Any costs associated with construction and all costs associated with the engineering reports required to satisfy S. 65(3), S. 65(4) & S.76 (1) and to revise the Section 78(1) are to be bourn by the requesting landowner.

Accordingly, all costs associated with the preparation of the engineers reports will be assessed to Golfview Park Estates.

6. CONSULTATIONS:

N/A

7. CONCLUSION:

Administration is recommending that the report prepared by Rood Engineering Inc. on August 1, 2023 for the ODW and Cornwall Drain Subsequent connections be approved and that said assessment adjustments be approved by Council resolution.

Sam Paglia
Drainage Superintendent and
Engineering Coordinator

nh

Attachment(s):

- ODW Drain (Section 65) – report prepared by Gerard Rood, P.Eng., dated August 1, 2023.

OUELLETTE DRAIN WEST

(Subsequent Connection for Golfview Park Estates Inc., Parcel 460-41226)

and

CORNWALL DRAIN

(Subsequent Disconnection for Golfview Park Estates Inc., Parcel 460-41226)

(Geographic Township of Anderdon)

(E09-2023-014)

Town of Amherstburg

271 Sandwich Street South
Amherstburg, Ontario N9V 2A5
519-736-0012

Rood Engineering Inc.
Consulting Engineers
9 Nelson Street
Leamington, Ontario N8H 1G6
519-322-1621

Project REI2016D055
August 1st, 2023

***R**ood*
***E**ngineering*
***I**nc.*

Consulting Engineers

August 1st, 2023

Mayor and Municipal Council
Corporation of the Town of Amherstburg
271 Sandwich Street South
Amherstburg, Ontario
N9V 2A5

Mayor Prue and Members of Council:

OUELLETTE DRAIN WEST
Golfview Park Estates Inc. Subsequent Connection &
CORNWALL DRAIN
Golfview Park Estates Inc. Subsequent Disconnection
REI Project 2016D055
Geographic Township of Anderdon
Town of Amherstburg, County of Essex

1.0 Authorization

In accordance with instructions received from the Town by letter dated April 13th, 2023, we have made all of the necessary investigations and determinations for the preparation of a report, in accordance with Section 65 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2010". This report deals with adjustments to the Value of Benefit and Outlet Liability within the lands in Concession 1, Part Lot 19 to reflect their utilization of the "Ouellette Drain West" and disconnection from the "Cornwall Drain" to address storm water management for the development of Phase 5 of the Golfview Park Estates Inc. site. This parcel is shown on the plans in **Appendix "B"**.

Our appointment to deal with this request, where "the nature or extent of the use of a drainage works by land assessed for the drainage works is subsequently altered", is in accordance with and pursuant to Section 65.(3) and Section 65.(4) of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021". We have inserted herein a copy of Section 65 for reference purposes, labeled **Appendix "A"**. We have therefore performed all of the necessary research, investigations, and review of all pertinent documentation, etcetera for the carrying out of our study and we report thereon as follows.

2.0 Background

From plans and information provided by the Owner and the Municipality, we have established those areas that are to be developed and drained that will result in increased total areas and flow volumes to the "Ouellette Drain West" and reduced areas and flow volumes to the "Cornwall Drain". Work on the parcel will include preparation and approval of storm water management (S.W.M.) drainage plans by others and these plans must be submitted to the Town for review and approval of the S.W.M. component installations.

We have also obtained reference information from the Town Drainage Department for the affected portion of the drains, including the May 21st, 1985 report and the assessment schedule within same that are for the "Ouellette West Drain", which was prepared by Mike Horan, P.Eng. and the November 11th, 2019 "Cornwall Drain" report with updated maintenance schedule prepared by Tony Peralta, P.Eng. We find that the lands affected by the proposed S.W.M. drainage are

approximately the parcel north of the drain and southeast of the current development, and will include all of Phase 5 of the Development as shown in the reports, that was owned by Golfview Park Estates Inc., and described as Concession 1, Part Lot 19, Geographic Township of Anderdon.

3.0 Existing Drainage Conditions

From our review of the plans completed to date and currently being carried out on behalf of Golfview Park Estates by Amico, we were able to establish the overall parcel area affected by this study.

We reviewed the latest engineer's report for construction on the "Ouellette Drain West", which is the May 21st, 1985 report by Mike Horan, P.Eng., as well as the November 11th, 2019 report by Tony Peralta, P.Eng. that provided an updated Maintenance Schedule of Assessment for the "Cornwall Drain" along with the development plans provided by Amico. From the reports and plans we were able to determine which areas within the affected parcel are to utilize the "Ouellette Drain West" as an outlet.

Based on the above research and investigations, we have prepared plans included herein as **Appendix "B"** which show:

1. the boundaries of the affected Parcel 460-41226
2. the boundaries of the proposed Phase 5 development
3. the proposed S.W.M. pond installation location

Parcel 460-41226 currently comprises of approximately 2.44 hectares (6.03 acres) and is part of the same area of the original parcel assessed to the "Ouellette Drain West". The northwest corner of Phase 5 is approximately 1.54 hectares (3.81 acres). Initial plans for the development included a storm water management design with all flows for the development to be directed at controlled flow rates into the "Cornwall Drain". The parcel is presently assessed the following affected area to the "Cornwall Drain" in the current 2019 Peralta maintenance schedule report:

a) Parcel 460-41226 2.44 hectares (6.03 acres)
b) Phase 5 Pt. Block A 1.54 hectares (3.81 acres)

The original assessment is confirmed by the previous report and assessment schedule for the "Ouellette Drain West" prepared by Mike Horan, P.Eng.

4.0 Allowable Release Rates

The S.W.M. plan documentation to be provided by the Owner to the Municipality will show that a standard design is being or is intended to be utilized for the proposed drainage on the parcel in accordance with the Windsor Essex Region Stormwater Management Standards Manual (W.E.R.S.M.S.M.). Under no circumstance would the additional runoff volumes be permitted to drain into the "Ouellette Drain West" without it being provided for in the design and plans. The S.W.M. drainage system must ensure that the allowable release rate into the "Ouellette Drain West" for the parcel does not exceed the 1:2 year storm pre-development runoff rate of 0.73 cfs for the area that is affected based on utilizing a 0.10 runoff coefficient for standard municipal drain design. No increase in flow rate shall be permitted for the new area to be connected. Under no circumstance should the Municipality consider allowing the increased area and total flow volumes into the "Ouellette Drain West" unless this condition is met. Proper S.W.M. installation techniques restricting the flows to the allowable release rate will ensure that the subsequent flows will have no adverse effect on the capacity of the "Ouellette Drain West".

Tile drainage plans must be prepared for any proposed S.W.M. drainage taking the allowable release rate into consideration, and these should be submitted to the Town for review by the staff and approved by them before any work proceeds.

Rood Engineering has been appointed by the Town to prepare a drainage report for the re-alignment of the drain to clear the proposed future development of the Golfview Park Estates parcel to allow for the full development that the Town has previously approved. The drainage report for the re-alignment of the drain is currently underway with all of the necessary information and requirements now being provided by the Developer and the County. The flows from the S.W.M. pond will generally outlet near the easterly side of parcel 460-41226 frontage along the north side of the re-aligned "Ouellette Drain West" along County Road 10. We also find that the time of concentration from the S.W.M. system will be much longer than the current time of concentration at the connection point on the existing relocated Municipal drain and will therefore not increase the peak flows in the drain. Therefore, the proposed S.W.M. system drainage will not adversely impact on the downstream drain sections. Based on our findings, we believe that it is reasonable to allow for the increased area and total flow volumes from the proposed development lands, provided that the connections are constructed in accordance with standard W.E.R.S.M.S.M. requirements set out by the Essex Region Conservation Authority (E.R.C.A.).

5.0 Subsequent Connection Charges

We find that the area being drained to the "Ouellette Drain West" from the affected parcel will increase allowed flows as a result of the S.W.M. system drainage. An increase in parcel area will result in buy-in charges to the affected parcel for the additional area being brought into the drain based on the remaining life of the construction and any recent maintenance work carried out on the Municipal drain. For this project we find, from our investigations with the Town, that there are no maintenance charges impacted so that only the original construction cost is a factor. The total area from the affected parcel that will now be draining to the "Ouellette Drain West" will become 3.98 hectares (9.83 acres) which is part of the 34.59 hectares (85.5 acres) that was originally assessed for the parcel in the 1985 drainage report Schedule of Assessment. Based on the proposed reconnected area, we find that the original total assessment to the parcel should be decreased by $2,270.00 from the original amount of $2,565.00 to a new total of $295.00 to reflect the new area to be brought in. This amounts to a decrease of 88%. Since the 1985 report had a total assessment of $2,565.00 to the parcel, the decrease for the original construction would be $307.80. However, using an estimated life expectancy of 75 years we find that the buy in for the remaining estimated life of the drainage works should be 51% of the new cost or $156.98. When adjusted for inflation in accordance with the Bank of Canada inflation calculator between 1985 and 2023, an increase of approximately 149.68% is found, and based on same we recommend that the buy in cost be **$234.97**. This amount is to be collected from the owner by the Town of Amherstburg and used towards future maintenance of the drain pursuant to Section 65 of the Drainage Act.

As noted above, the proposed S.W.M. system design must restrict the outflow rate to the 1:2 year predevelopment rates from the affected area of the parcel and therefore no adverse impact on flow rates in the drain will occur.

6.0 Assessment for Increased Benefit and Flow Volumes

With implementation of a standard S.W.M. system limiting the outflows into the "Ouellette Drain West" to the standard flow rate, as outlined above, the increased total flow volumes from the affected parcel would have no adverse effect on the capacity of the "Ouellette Drain West" based

on the original area assessed to the drain. Therefore, based on the above conditions, we find that the "Ouellette Drain West" has the ability to accept the additional total flow volumes from within the affected parcel that are being diverted from the "Cornwall Drain", and we are therefore prepared to recommend the approval of this proposed S.W.M. drainage.

If the Town of Amherstburg is prepared to approve the increased total area and flow volumes from the lands of Golfview Park Estates Inc. Parcel 460-41226 and a portion of the Block A on the Peralta plan into the "Ouellette Drain West", an update to the assessments is to be established by the engineer and the cost for same is to be charged entirely to the owner of the affected lands. Section 65.(3) of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2010" requires that "*where the nature or extent of the use of a drainage works by land assessed for the drainage works is subsequently altered, an engineer appointed by the Municipality for the purpose shall make an inspection and assess the land for a just proportion of the drainage works*".

From our investigations of the Municipality's drainage files, we have determined that the drainage works for which the affected parcel must be assessed for a just proportion is the "Ouellette Drain West".

The increased assessments charged to the owner of the affected parcel for future maintenance should be based on the increased area and total flow volumes from the assessed portions to the "Ouellette Drain West".

7.0 Assessment Adjustments for Increased Area and Total Flow Volume

We find that the Parcel affected in the May 21st, 1985 report and assessment schedule owned at the time by Public Works Canada, should have its "Value of Benefit", "Value of Outlet" and "Total Value" amounts adjusted to reflect the updated area and total flow volume that will result from the proposed S.W.M. drainage on the parcel.

8.0 Future Maintenance Charges

Based on our review of the proposed area of S.W.M. installation that is to be created, we find that the following adjustments should be made to the May 21st, 1985 Schedule of Assessment for the Benefit, Outlet and Total Values excluding the Special Benefits:

Description	Ha. Afft'd	(Acres Afft'd)	Value of Benefit	Value of Outlet	Total Value
1985 former Public Works Canada	34.59	(85.50)	$570.00	$ 1,995.00	$ 2,565.00
Golfview Park Estates Inc. (460-41226) & Part Block A	**3.98**	**(9.83)**	**$66.00**	**$229.00**	**$ 295.00**
UPDATED TOTAL ON LANDS			**$4,761.00**	**$ 8,014.00**	**$ 12,775.00**
UPDATED TOTAL ASSESSMENT			**$5,351.00**	**$9,724.00**	**$15,075.00**

In accordance with Section 65.(3) of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021", we recommend that the values in the May 21st, 1985 Schedule of Assessment prepared by Mike Horan, P.Eng., which is included within the current governing by-law, be amended for the current affected parcel to show the updated values for the Golfview Park Estates Inc. Parcel 460-41226 and part of Block A as noted above. The schedule totals should also be amended as shown above to reflect the Updated Total for each. We recommend that a copy of this report be filed in the "Cornwall Drain" files so that the change in the drainage area can be accounted for in any future report for said drains.

Therefore, in accordance with Section 65.(3) of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021", we recommend that the above noted updated values be collected from the affected parcel by the Town of Amherstburg on a pro-rata basis only when there is future maintenance or repairs of the "Ouellette Drain West", pursuant to the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021". The ratios above are to be applied and used until such time as Council appoints an engineer to vary the assessments to the "Ouellette Drain West".

9.0 Subsequent Disconnection Charges

As already established herein, we have conducted a review of the "Cornwall Drain" and have determined that the total area and flow volumes for Parcel 460-41226 and part of Block A from S.W.M. system drainage, as shown on the plans within **Appendix "B"**, shall reduce the affected area to the "Cornwall Drain". The total area from the affected parcel that will now be draining into the "Ouellette Drain West" is the 3.98 hectares (9.83 acres) shown in the 2019 drainage report maintenance schedule of assessment for the "Cornwall Drain". Based on the drainage diversion, we find that the original assessment to Parcel 460-41226 and part of Block A for future maintenance should be completely removed from the 2019 maintenance schedule of assessment for the "Cornwall Drain". We recommend that any costs for the preparation of this report be fully assessed to the affected Parcel 460-41226 and part of Block A.

10.0 Assessment Adjustments for Decreased Area and Total Flow Volume

We find that the Parcel affected in the November 11th, 2019 report and maintenance schedule of assessment owned at the time by Golfview Park Estates Inc., should have its "Value of Benefit", "Value of Outlet" and "Total Value" amounts adjusted to reflect the removed area and total flow volume that will no longer be directed from the parcel to the "Cornwall Drain".

11.0 Future Maintenance Charges

Based on our review of the diverted area, we recommend that the following adjustments should be made to the November 11th, 2019 "Cornwall Drain" Maintenance Schedule of Assessment for the Benefit, Outlet and Total Values:

Description	Ha. Afft'd	(Acres Afft'd)	Value of Benefit	Value of Outlet	Total Value
Golfview Park Estates Inc. (460-41226)	2.44	(6.03)	$0.00	$ 448.00	$ 448.00
Golfview Park Estates Inc. (Part of Block A)	1.54	(3.81)	$0.00	$ 283.00	$ 283.00
Golfview Park Estates Inc. (460-41226 & Pt. Block A)	**0.00**	**(0.00)**	**$0.00**	**$0.00**	**$ 0.00**
UPDATED TOTAL ON PRIVATELY OWNED – NON-AGRICULTURAL LANDS			**$4,303.00**	**$ 9,888.00**	**$ 14,191.00**
UPDATED TOTAL ASSESSMENT			**$10,710.00**	**$18,559.00**	**$29,269.00**

In accordance with Section 65.(4) of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021", we recommend that the values in the November 11th, 2019 "Cornwall Drain" report and Maintenance Schedule of Assessment prepared by Tony Peralta, P.Eng., which is included with the current governing by-law for the "Cornwall Drain" be amended for the current affected parcels to show the updated values for the Golfview Park Estates Inc. Parcel 460-41226 and part Block A as noted above. The Schedule totals should also be amended as shown above to reflect the Updated Total for each assessment value. We recommend that a copy of this report be filed in the "Cornwall Drain" files so that the change in drainage can be accounted for in any future report for said drain. The ratios above are to be applied and used until such time as Council appoints an engineer to vary the assessments to the "Cornwall Drain".

Therefore, in accordance with Section 65.(4) of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021", we recommend that the above noted updated total values be collected from the affected parcels and roads by the Town of Amherstburg on a pro-rata basis only when there is maintenance or repairs on the "Cornwall Drain", pursuant to the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

12.0 Summary and Recommendations

As already established herein, we have conducted a review of the "Ouellette Drain West" and "Cornwall Drain" and have determined that the controlled diverted total area and flow volumes for Parcel 460-41226 and Part Block A from the parcel, as shown on the plans within **Appendix "B"**, shall not adversely affect the performance of said Municipal Drain as long as the S.W.M. drainage limits the total release rate allowed into said drain to the 1:2 year runoff from the affected lands.

We have also established herein updated Value of Benefit and Value of Outlet charges to be paid by the affected Parcel 460-41226 and Part of Block A for future maintenance, which is a representation of the increased benefit and total flow volumes into the "Ouellette Drain West" and reduction to the "Cornwall Drain".

Based on all of the above, we would therefore recommend that the Town of Amherstburg approve the proposed S.W.M. drainage of Parcel 460-41226 into the "Ouellette Drain West", as

long as all of the above requirements and conditions are complied with. We further recommend that the costs for preparation of this report be assessed 100% to the affected Parcel 460-41226 that has drainage diverted. We also recommend that the subsequent connection buy-in charge of $234.97 be collected as noted above and be deposited to the "Ouellette Drain West" account and used towards any future maintenance costs on the drain.

If the Council should have any questions regarding this "Changes in Assessment Report", please do not hesitate to contact us. It is our understanding that this report is to be approved at the earliest to allow construction works to be carried out on the proposed S.W.M. drainage as soon as all approvals are received, and future maintenance costs to each drain will be assessed as provided for above.

We respectfully remain,

Yours truly,

***R**ood **E**ngineering **I**nc.*

Gerard Rood, P.Eng.

Att.

APPENDIX "A"

SPECIAL PROVISIONS

Changes in assessment

Subsequent subdivision of land

65. (1) If, after the final revision of an engineer's assessment of land for a drainage works, the land is divided by a change in ownership of any part, the clerk of the local municipality in which the land is situate shall instruct an engineer in writing to apportion the assessment among the parts into which the land was divided, taking into account the part of the land affected by the drainage works. 2010, c. 16, Sched. 1, s. 2 (26).

Agreement on share of assessment

(2) If the owners of the subdivided land mutually agree on the share of the drainage assessment that each should pay, they may enter into a written agreement and file it with the clerk of the local municipality and, if the agreement is approved by the council by resolution, no engineer need be instructed under subsection (1). 2010, c. 16, Sched. 1, s. 2 (26).

Subsequent connection to drainage works, etc.

(3) If an owner of land that is not assessed for a drainage works subsequently connects the land with the drainage works for the purpose of drainage, or if the nature or extent of the use of a drainage works by land assessed for the drainage works is subsequently altered, the clerk of the local municipality in which the land is situate shall instruct an engineer in writing to inspect the land and assess it for a just proportion of the drainage works, taking into account any compensation paid to the owner of the land in respect of the drainage works. 2010, c. 16, Sched. 1, s. 2 (26).

Subsequent disconnection from drainage works

(4) If an owner of land that is assessed for a drainage works subsequently disconnects the land from the drainage works, the clerk of the local municipality in which the land is situate shall instruct an engineer in writing to inspect the land and determine the amount by which the assessment of the land should change. 2010, c. 16, Sched. 1, s. 2 (26).

Restriction on connection or disconnection

(5) No person shall connect to or disconnect from drainage works without the approval of the council of the municipality. 2010, c. 16, Sched. 1, s. 2 (26).

Notice of instructions

(6) The clerk of the local municipality shall send a copy of the instructions mentioned in subsection (1), (3) or (4) to the owners of the affected lands as soon as reasonably possible. 2010, c. 16, Sched. 1, s. 2 (26).

Engineer's assessment

(7) An engineer who prepares an assessment pursuant to instructions received under subsection (1), (3) or (4) shall file the assessment with the clerk of the local municipality. 2010, c. 16, Sched. 1, s. 2 (26).

Notice of assessment

(8) The clerk of the local municipality shall attach the engineer's assessment to the original assessment and send a copy of both to the owners of the affected lands. 2010, c. 16, Sched. 1, s. 2 (26).

Assessment binding

(9) Subject to subsection (11), the engineer's assessment is binding on the assessed land. 2010, c. 16, Sched. 1, s. 2 (26).

Costs

(10) The costs of the assessment, including the fees of the engineer, shall be paid by the owners of the lands in the proportion fixed by the engineer or, on appeal, by the Tribunal, and subsection 61 (4) applies to these costs. 2010, c. 16, Sched. 1, s. 2 (26).

Appeal of assessment

(11) If the engineer's assessment is for an amount greater than $500, the owner of the land may appeal to the Tribunal within 40 days after the date the clerk sends a copy of the assessment to the owner. 2010, c. 16, Sched. 1, s. 2 (26).

Use of amount collected

(12) Any amount collected under subsection (3) shall be credited to the account of the drainage works and shall be used only for the improvement, maintenance or repair of the whole or any part of the drainage works. 2010, c. 16, Sched. 1, s. 2 (26).

66. Repealed: 2010, c. 16, Sched. 1, s. 2 (26).

APPENDIX "B"

Town of Amherstburg Interactive Map

Legend

- Roads
- Parks
- DWS
- Municipal Drains
- Parcels
- Streams and Creeks
- Essex

381.0 0 190.50 381.0 Meters

Created by Town of Amherstburg Interactive Mapping

Notes

Ouellette Drain West
Re-alignment & Enclosure
REI2016D055

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Rood Engineering Inc.
Consulting Engineers
9 Nelson Street
Leamington, Ontario N8H 1G6
519-322-1621

2017-03-03

1: 7,500

REI2016D055

2023-05-08

E DRAIN WEST

LOSURE)

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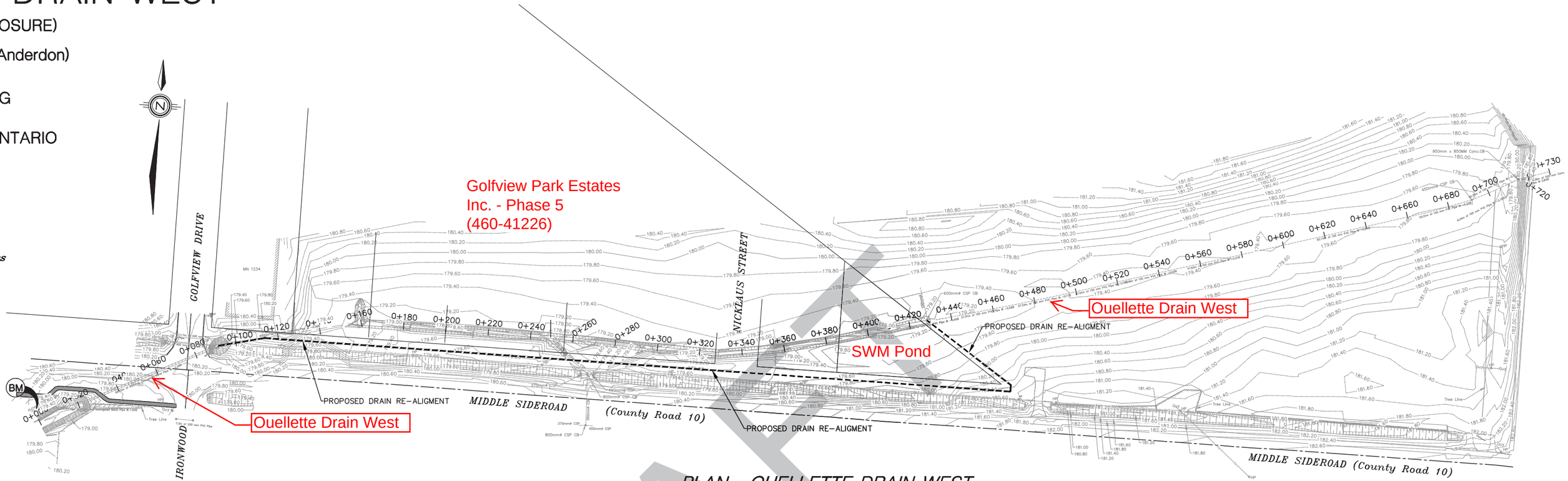
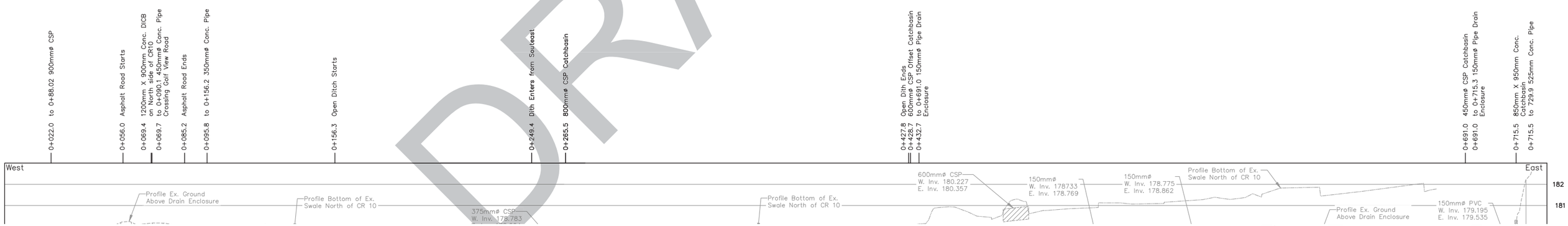


PLAN - OUELLETTE DRAIN WEST

Scale = 1:1,000 Hor.



Rood Engineering Inc.
Consulting Engineers
9 Nelson Street
Leamington, Ontario N8H 1G6
519-322-1621

STORM DRAINAGE AREAS

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

Golfview Park Estates 5 – 08012023.dwg
8/1/2023 9:41 AM BY: Kmastronardi

AMICO
ENGINEERING INC.

GENERAL NOTES:

1. DO NOT SCALE DRAWINGS.
2. THE LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY AND ARE SHOWN ON THE DRAWINGS FROM THE MOST CURRENT INFORMATION AVAILABLE.
3. THE CONTRACTOR IS RESPONSIBLE FOR ACCURATELY LOCATING UTILITIES PRIOR TO CONSTRUCTION AND FOR ADEQUATELY PROTECTING THE UTILITIES DURING CONSTRUCTION.
4. ALL WORK SHALL CONFORM TO THE TOWN OF AMHERSTBURG AND THE ONTARIO PROVINCIAL STANDARDS AS APPLICABLE.
5. DESIGN IN ACCORDANCE WITH MINISTRY OF THE ENVIRONMENT CERTIFICATE OF APPROVAL NUMBER 7336-5BGV75 AND 2497-5BGVFD.

NOTES:

1. ALL MANHOLES ARE PRECAST 1200mm DIAMETER UNLESS NOTED OTHERWISE.
2. ALL STORM MANHOLES TO HAVE MINIMUM 300mm SUMP.
3. ORIENTATE MANHOLE OPENINGS/COVERS TO BE OUT OF CURB AND GUTTER.
4. CATCHBASIN LEADS ARE 200mm DIAMETER FROM ONE CATCHBASIN AND 250mm DIAMETER FROM TWO CATCHBASINS UNLESS NOTED OTHERWISE.
5. ENSURE 2.5m CLEAR HORIZONTAL AND 0.5m VERTICAL SEPARATION FROM WATERMAINS TO ALL SEWERS.
6. ALL SANITARY SERVICES TO BE SINGLE 125mm PVC (DR-28) WITH 2-8% SLOPE AND 1.5m MIN'M DEPTH OF COVER (2.4m PREFERRED).
7. ALL STORM SERVICES TO BE SINGLE 150mm PVC (DR-28) WITH 2-8% SLOPE AND A 1.2m MIN'M DEPTH OF COVER.
8. ALL WATER SERVICES TO BE SINGLE 19mm COPPER (TYPE 'K') OR PE-RT (BLUE) WITH 1.5m MIN'M DEPTH OF COVER.
9. ALL SANITARY AND STORM SERVICES TO INCLUDE A T-WYE AND CLEANOUT AT THE PROPERTY LINE. THE CLEANOUT SHALL NOT PROJECT MORE THAN 0.3m ABOVE FINISHED GRADE ELEVATION.
10. CONTRACTOR TO SUPPLY MUNICIPALITY WITH A WATERMAIN FLUSHING FIGURE FOR APPROVAL.

BENCHMARK

CONCRETE CULVERT UNDER HIGHWAY NO.18 AT INTERSECTION WITH ESSEX COUNTY ROAD NO. 10, 4.8km. NORTH OF JUNCTION WITH RICHMOND STREET IN TOWN IMMEDIATELY SOUTH OF WYANDOTTE INDIAN CEMETERY, TABLET IN TOP OF CULVERT, 30 cm. EAST OF WEST END, 21 cm. NORTH OF SOUTH EDGE OF CULVERT.
ELEVATION 175.749 meters

SITE
BENCHMARK

TOP OF OPERATING NUT FIRE HYDRANT LOCATED AT THE SOUTHEAST CORNER OF GOLFVIEW DRIVE AND OLD COLONY TRAIL (EAST)
ELEVATION 182.726 metres

No.	Revised For	Date

No.	Issued For	Date
1	MUNICIPAL REVIEW	JUNE 15/22

Golfview Park Estates Subdivision
Phase 5
Town of Amherstburg

4
Sheet No.

SEWER DRAINAGE
AREAS

Scale: NTS
Drawn By: KM
Date: Aug. 1, 2023
Checked By: TY

WATERSHED PLAN

OF THE

CORNWALL DRAIN

IN THE

TOWN OF AMHERSTBURG (Former Township of Anderdon)

IN THE

COUNTY OF ESSEX • ONTARIO

N. J. PERALTA ENGINEERING LTD.

45 DIVISION STREET NORTH
KINGSVILLE, ONTARIO
N9Y 1E1

DATE: NOVEMBER 11th, 2019

TOWN OF AMHERSTBURG

MAYOR: ALDO DICARLO
CLERK: PAULA PARKER
DRAINAGE SUPERINTENDENT: SHANE McVITTY, P.ENG.

ANTONIO B. PERALTA, P.ENG.

LICENSED PROFESSIONAL ENGINEER — A. B. PERALTA — 100136683 — PROVINCE OF ONTARIO

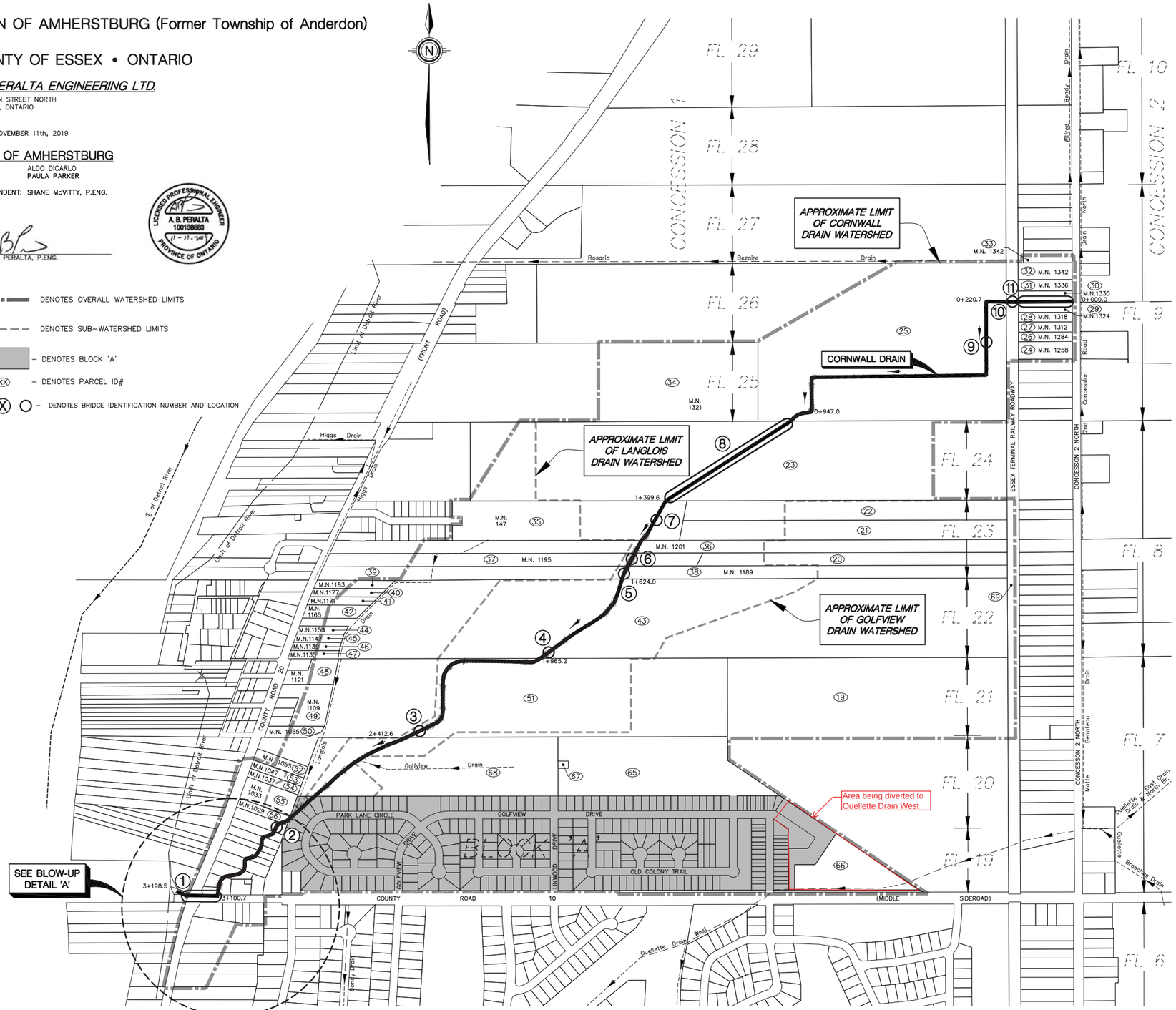
DENOTES OVERALL WATERSHED LIMITS

DENOTES SUB-WATERSHED LIMITS

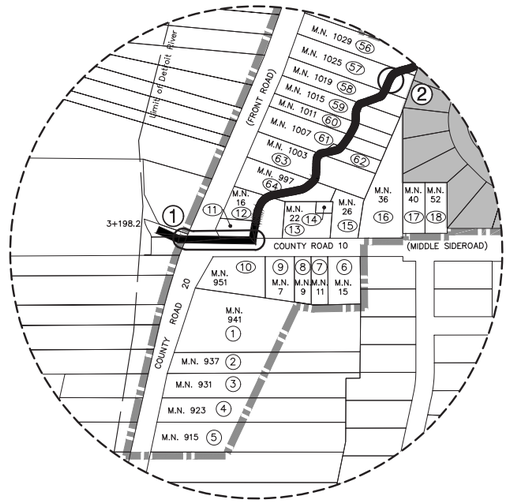
– DENOTES BLOCK 'A'

(XX) – DENOTES PARCEL ID#

(X) (O) – DENOTES BRIDGE IDENTIFICATION NUMBER AND LOCATION



WATERSHED PLAN
Scale = 1:5,000



BLOW UP DETAIL 'A'
Scale = 1:3,000

ROLL INFORMATION

AMHERSTBURG

PARCEL ID#	ROLL#	NAME
1	420-14500	Michael Lafontaine and Manola Salvi
2	420-14505	Peter & Gillian Draper
3	420-14600	Christopher & Christina Blunt
4	420-14700	Richard & Michelle Hubbell
5	420-14800	Franca Pagliarella
6	420-62700	Marco & Marisa Carroccia
7	420-62800	Gina Laderoute
8	420-62850	David & Mary Hamel
9	420-62900	John & Rose Jackson
10	420-63000	David Brown and Tetyana Katsemba
11	460-00100	Town of Amherstburg
12	460-00200	Gary & Valerie Williamson
13	460-00300	Gerald & Sandra Power
14	460-00400	1710690 Ontario Inc. C/O Prestressed Systems
15	460-00500	Joyce Pettit and Kim Laframboise
16	460-00600	Angelo & Lisa Distefano
17	460-00700	Leo Petrilli and Sarah Parent
18	460-00800	Daniel Osborne and Ruthann Comeau
19	460-01000	1486134 Ontario Limited
20	460-08100	Franco Di Pasquale & Felice Palumbo
21	460-08301	Aldo Pacitti
22	460-08401	Domenic Pacitti
23	460-08600	1099155 Ontario Limited
24	460-08750	John Debiasio and Claudina Deluca
25	460-08800	1099155 Ontario Limited
26	460-08900	Michael & Susanne Racine
27	460-09000	Darren & Serena Hillman
28	460-09100	Christopher & Allison Colman
29	460-09200	Annina Orsi
30	460-09300	Craig & Colleen Nasello
31	460-09400	Daniel Gary & Patricia Meloche
32	460-09500	Dwayne Bezaire
33	460-09700	Matthew & Jill Stoyanovich
34	460-11900	Katherine Roth and Maurice O'Callaghan
35	460-12100	Ilie & Doina Pirvulescu
36	460-12300	Sarah Van Raay
37	460-12400	Stanley & May Young
38	460-12500	Peter & Marie Mancini
39	460-12600	Phyllis Rosati
40	460-12700	Charles & Suzanne Heaton
41	460-12800	James & Michelle Monforton
42	460-12900	Mark & Carolyn Bisnett
43	460-13000	Satko Manufacturing Inc.
44	460-13100	Rocco & Anne Dipierdomenico
45	460-13200	Mary Brown
46	460-13300	James & Sally Bratt
47	460-13400	Samuel & Andrea Dipasquale
48	460-13600	James Bondy
49	460-13700	Jephte St. Pierre and Ghislaine Lafontaine
50	460-14100	Elizabeth Rose Mary & Matthew Mark Meloche
51	460-14200	Town of Amherstburg
52	460-14300	Kenneth Jacobs
53	460-14305	Graham & Rosemary Harris
54	460-14400	Stephen Patrick
55	460-14500	Sarkis Raffoul and Maria Amato
56	460-14600	Frank & Laura Vitella
57	460-14700	Benjamin Lazarus & Athena Bassakos
58	460-14800	Gregory Ouellette
59	460-14900	Gerald & Virginia Garant
60	460-15000	Valentine & Beverley Gagnon
61	460-15100	Vladimir & Jagodinka Stojkovic
62	460-15200	Town of Amherstburg
63	460-15300	Anne Kainz
64	460-15400	Michael & Deborah Ethier
65	460-41130	Town of Amherstburg
66	460-41226	Golfview Park Estate Inc.
67	460-41316	Golfview Park Estate Inc.
68	460-51000	Town of Amherstburg
69	500-31800	Essex Terminal Railway Co

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

DRAWN BY: R.A.L.
PLOT CODE: 1:1
COMPUTER FILE: D170955S1.dwg

FILE No.: D17-095

SHEET No.: 1 OF 1

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