



Section 78 – Access Culvert Relocation over the Hooker Drain For Blytheswood Auto Ltd.

In the Municipality of Leamington

May 10, 2018

Project No. 18-055

May 10, 2018

Mayor and Municipal Council
Corporation of the Municipality of Leamington
111 Erie Street North
Leamington, Ontario
N8H 2Z9

Mayor Paterson and Councilors

Subject: New Access Culvert for Blytheswood Auto Ltd. - Hooker Drain
636 Mersea Road 8
In the Municipality of Leamington
Our File Reference 18-055

1.0 Authorization

Pursuant to Section 78 of The Drainage Act, 1990 (the Act), the Municipality of Leamington received a request for the relocation of an existing access culvert for a proposed auto sales development for Blytheswood Auto Ltd. The firm of Baird AE was subsequently appointed on March 15, 2018 to prepare report a under the provisions of the Act.

As requested by Council, we have made an examination of the area being part of Lot 6, Concession 7 in the Municipality of Leamington (Roll No. 760-04800). The site is located at the southwest corner of Mersea Road 8 and Highway 77.

2.0 Current Drainage Report

From our review, we have determined that the last major works for the subject drain were completed under a report by Gerard Rood, P.Eng., dated November 6, 2007. This report provided for the cleaning of the drain along its entire length and the replacement or repair of twenty-five (25) bridges.

3.0 Purpose of Report

The purpose of this report is to provide for the relocation of an existing access culvert for a proposed development. The culvert requires relocation to satisfy Ministry of Transportation (MTO) requirements.

This report provides a description and estimated cost of the proposed work and a recommendation for distribution of the construction and incidental costs related to the work. This report further provides for the distribution of future maintenance costs. The assessments provided in this report are based upon the estimated cost of the work. These assessments will be pro-rated to the actual cost of the project upon completion of the works.

4.0 Site Meeting

On April 5, 2018 at 9:00 am, a meeting was held at the site to discuss the proposed work.

The following people were in attendance:

Name	Address
Larry Neil	518 Mersea Road 8
Corny Wall	624 Mersea Road 8
Tony & Sherry DeGoey	632 Mersea Road 8
Jake Neufeld	816 Hwy 77
Herman Harms	816 Hwy 77
Aganetha Neufeld	816 Hwy 77
Lu-Ann Marentette	Municipality of Leamington
Lindsay Dean	Municipality of Leamington
Halliday Pearson, P.Eng	Baird AE
David Basilious, EIT	Baird AE

Ms. Dean began the meeting. This property is being developed for commercial purposes. Mr. Basilious explained that the existing culvert was being relocated to the western edge of the property to satisfy MTO requirements relating to proximity of the existing entrance to the intersection with Highway 77. The cost to relocate the culvert will be 100% the owner's cost as this is required as part of the development of the parcel. Future maintenance costs will be shared with the upstream lands and roads.

The report will be provided to all affected landowners along with invitations to attend the Meeting to Consider.

Landowners asked when construction would begin. After the Municipality receives the report, the Drainage Act process typically takes three (3) months. The project will be tendered, once adopted by Council. Works may not be undertaken in the drain between March 15 and June 30.

5.0 Survey and Investigation

The Hooker Drain is located directly north of the subject parcel. A plan showing the drain layout and the existing and proposed culvert location along the drain is included herein as part of the report and can be found in Appendix 'C'.

The existing culvert is constructed of 18.0 metres of 1200mm diameter corrugated Hel-Cor pipe. Similarly, the upstream culvert is a 1200mm diameter corrugated pipe. Downstream is a 2.75 metre by 1.75 metre box culvert.

A survey was undertaken at the desired location of the new access culvert. Elevations were checked at the upstream and downstream culverts and a centreline profile of the ditch bottom was taken along the drain. Cross sections of the Hooker Drain were taken at the general locations of the new access culvert and will provide the information needed to complete the design, quantity estimates and specifications.

6.0 Recommendations

The culverts in the 2007 Rood report correspond with the current culverts in the drain. We have therefore used those grades and other design parameters to establish the design in this report.

Using our survey, site investigations and discussions with the land owner and governing authorities we would recommend the following:

STA: 0+015 – Existing 1200mmØ Corrugated Hel-Cor Pipe to be removed

We would recommend the salvage and removal of the existing 1200mm diameter corrugated Hel-Cor Pipe and gabion stone end of pipe protection for reuse at Station 0+052. The existing granular material shall be removed and disposed of offsite. The disturbed drain banks shall be restored using topsoil and grass seed. The drain cross-section shall be restored to match the upstream and downstream drain sections at the existing location.

STA: 0+052 – Relocation of Existing 1200mmØ Corrugated Hel-Cor Pipe

The existing 18.0 metres of 1200mm diameter galvanized corrugated steel pipe, 2.0mm thick with 125mm x 25mm corrugations, and gabion stone end protection shall be relocated to the new location as shown in the accompanying drawings. The culvert will have a driveable top width of 9.0 metres when measured at the property line.

We would further recommend that the above work be performed according to this report, the attached specifications and the accompanying drawings and that this work be carried out under the provisions of the Act.

7.0 Fisheries Issues

The Hooker Drain is a Type 'F' drain. We would recommend the following measures be utilized to mitigate damage to the drain during construction:

- No work shall be undertaken between March 15 and June 30;
- All work shall be completed in the dry;
- Culverts shall be installed with a minimum of 10.0% embedment;
- All disturbed soils shall be stabilized upon completion of the work;
- Sediment control shall be implemented during construction;
- Contractor shall prevent entry of petroleum products, debris and deleterious substances into the water.

An ERCA permit will be required for the construction of this access culvert since the Hooker Drain is located within the regulated area and is under the jurisdiction of ERCA.

A Species at Risk Screening pursuant the Endangered Species Act, 2007, was completed. The former Agreement plans indicate that snake species are a concern for this work area. The agreement includes mitigation measures to be followed as outlined in Appendix 'B' of this document.

A self-assessment was completed to determine if Fisheries and Oceans Canada (DFO) would need to review this project. Based on the DFO Self-Assessment Website we have determined

that the work laid out in this report does not require DFO review. However, standard measures for fish and habitat migration should be implemented.

8.0 Drawing and Specifications

Attached to this report is Drawing No. 17-093, Sheets 1 to 2, which consist of plans showing the location of the proposed drainage works and the land affected by the work, together with the detail and cross sections of the recommended work. The design drawings are attached to this report in Appendix 'C.'

Specifications are included in this report showing the dimensions, grades, disposal of material, working areas for construction and future maintenance, and other particulars of the recommended work. Specifications can be found in Appendix 'A' of this report.

9.0 Working Area

The contractor shall complete the work from a 10.0m maintenance corridor along lands with Roll No. 760-04800 measured southerly from the south top of bank as provided for under Section 63 of the Act.

10.0 Estimate of Cost

Our estimate of the total cost of this work, including all incidental expenses, is the sum of TWENTY SIX THOUSAND, EIGHT HUNDRED AND EIGHTY ----- dollars (**\$26,880.00**) made up as follows:

CONSTRUCTION

1. L.S. Price includes salvage and reset of existing 18.0 metres of 1200mm diameter corrugated Hel-Cor pipe, 2.0mm thick with 125x25mm corrugations and gabion stone end protection; disposal of existing granular material; supply, placement and compaction of new granular 'A' and 'B' material; supply and placement of additional 10 square metres of gabion stone (300mm thick) on filter fabric; existing 300mm diameter CPP to be extended 12m downstream; existing 400 mm diameter CSP to be capped; removal and disposal of steel guide rail near STA: 0+015; restoration of disturbed drain bank near STA: 0+015; cleaning of existing drain 6.0 metres from each end of pipe; traffic control (as required) supply, installation and maintenance of silt fence downstream of culvert

\$ 18,000.00

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Total for Construction (Excluding H.S.T.)

\$ 18,000.00

INCIDENTALS

Estimated cost of site meeting and survey	\$ 500.00
Estimate cost of design, report, assessment, estimate and specifications	\$ 3,500.00
Estimated cost of assistants, expenses and drafting	\$ 1,750.00
Estimated cost of letting contract	\$ 800.00
Estimated cost of supervisions and inspection during construction	\$ 1,000.00
Attendance at public meetings	\$ 750.00
Estimated cost of ERCA permit	\$ 115.00
	=====
Total for Incidentals (excluding HST)	\$ 8,415.00
Total for Construction (brought forward)	\$ 18,000.00
Sub-Total for Incidentals and Construction	\$ 26,415.00
HST Payable (1.76% non-recoverable HST)	\$ 465.00
	=====
TOTAL ESTIMATE	\$ 26,880.00
	=====

11.0 Construction Assessment

This relocated culvert provides primary access to the property. As the relocation is occurring as a result of proposed development, 100% of the construction and incidental costs associated with this culvert shall be assessed as Special Benefit to the lands with Roll No. 760-04800.

12.0 Maintenance Assessment

Future maintenance of the culvert shall be shared between the benefitting and upstream lands in accordance with the following provisions and the 2007 Rood report.

We would recommend that 80% of the future maintenance cost be assessed as Benefit to the lands with Roll No. 760-06700 with the remaining 20% being assessed as Outlet to the upstream lands and roads.

The cost of future maintenance on surface materials other than Granular 'A' and the cost of any special features shall also be assessed 100% as Benefit to the lands served by the access culvert.

13.0 Grant

In accordance with the Agricultural Drainage Infrastructure Program (ADIP) policies and the provisions of Sections 85, 86 and 87 of the Act, a grant in the amount of 33 – 1/3% of the assessment is not available for this project as the culvert provides access to a non-agricultural property.

BAIRD AE
27 PRINCESS STREET, SUITE 102
LEAMINGTON, ONTARIO
N8H 2X8

Halliday Pearson
Halliday P. Pearson, P. Eng



APPENDIX 'A'

Specifications:
Access Culvert over the
Hooker Drain
Project Reference 15-055

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1.0 Pipe Material

The Contractor shall relocate the existing 1200mm diameter corrugated Hel-Cor pipe, 2.0mm thick with 125mm x 25mm corrugations being 18.00 metres long.

2.0 Working Area

The contractor shall complete the work from a 10.0m maintenance corridor along lands with Roll No. 760-04800 measured southerly from the south top of bank as provided for under Section 63 of the Act. The contractor will be responsible for the disposal of any material that will result from drain cleaning.

3.0 Disposal of Excavated Material

The Contractor shall dispose of all surplus excavated material, at a site to be determined by him and at his expense.

4.0 Location and Elevation of Culvert

The proposed location and elevations of the culvert shall be according to the drawings, 18-055.

5.0 Placement of Culvert

- a) The Contractor shall excavate all vegetation, topsoil and existing granular material from the bank slopes and bottom of the existing drain, complete along with hauling materials off site. The required work includes, salvaging and relocated an existing 18.00 metre corrugated Hel-Cor pipe with gabion stone end treatment. The Contractor shall supply new granular A and granular B materials.
- b) The Contractor shall carefully unload, handle and place the specified pipe so as not to damage. Damaged material or distorted from improper installation will not be accepted.
- c) The Contractor shall perform the excavation, placement of pipe and backfill in a dry condition and shall provide all required pumps and/or equipment to enable the work to proceed in the dry.

6.0 Pipe Backfill

After the pipe has been set, the Contractor shall backfill the pipe with granular material, O.P.S.S. Spec 1010 according to the attached plan. The backfill material shall be carefully placed so damage to or movement of the culvert is avoided and backfill materials shall be placed in layers not exceeding 300 mm in thickness, loose measurement. Each layer shall be thoroughly compacted in place to a Standard Proctor Density of 98% by means of

mechanical compactors. The equipment and method of compacting the backfill material shall be to the full satisfaction of the Commissioner in charge.

7.0 Quarried Rock End Protection

Where specified and after the pipe has been set and backfilled the Contractor shall install quarried rock erosion protection at each end of the pipe.

The backfill over the ends of the pipe shall be set on a slope of 1½ metres horizontal to 1 metre vertical from the bottom of the pipe to the top of each side slope and between both side slopes. The top 300 mm in thickness of the backfill over the ends of the pipe shall be quarried rock. The quarried rock shall have a minimum dimension of 100 mm and a maximum dimension of 225 mm. Prior to placing quarried rock end protection over the granular material, the Contractor shall lay a non-woven geotextile filter fabric equal to a "Terrafix 270R" or approved equal. The geotextile filter fabric shall extend from the bottom of the pipe to the top of each side slope of the drain and between both side slopes of the drain. The Contractor shall take extreme care not to damage the geotextile filter fabric when placing the quarried rock on top of the filter fabric. The geotextile filter fabric and quarried rock shall be placed to the complete satisfaction of the Drainage Superintendent.

8.0 Alignment

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

9.0 Location of Structures, Etc.

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

10.0 Damage to Travelled Portion of Municipal Road

The Contractor will be responsible for any damage caused by him to any portion of the municipal road system, especially to the travelled portion. When excavation work is being carried out and the excavation equipment is placed on the travelled portion of a road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any parts of the travelled portion of the road is damaged by the Contractor, the road authority 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 road authority.

11.0 Construction Safety

The Contractor shall comply with all the requirements of the Occupational Health and Safety Act, 1990 and the regulations passed in connection therewith, as administered by the Ontario Ministry of Labour and all subsequent amendments of the said Act.

The Contractor shall exercise all possible precaution against injury to persons or property resulting from his work. The Contractor shall leave no trenches, pits, holes or excavations uncovered, without providing sufficient protection at all times. The Contractor shall install, erect and provide barricades, signs, traffic cones, flashers, lights, plates, warning and other devices, materials and personnel as may be required and at his own expense in order to provide for the safe passage and control of traffic and to ensure public safety. All traffic control shall be in accordance with the latest standards of the Ministry of Transportation.

12.0 Certificate of Clearance

The Contractor will be required to submit to the Municipality a Certificate of Good Standing from the Workplace Safety & Insurance Board prior to the commencement of the work and the Contractor will be required to submit to the Municipality, a Certificate of Clearance for the project from the Workplace Safety & Insurance Board before final payment is made to the Contractor.

13.0 Progress Orders

Monthly progress orders for payment shall be furnished to the Contractor by the Commissioner in charge; said orders shall not be for more than 90% of the value of the work done and the materials furnished on the site. The paying of the full 90% does not imply that any portion of the work has been accepted. The remaining 10% will be paid 45 days after the final acceptance and completion of the work.

14.0 Cleaning Up

The Contractor shall leave the whole of the site of the work in a neat, thorough and workmanlike appearance to the full satisfaction of the Drainage Superintendent or Engineer. He shall haul away any excess earth from the site. He shall haul to the site, sufficient earth to fill any depressions caused by his work at his own expense. The site shall be left as close as possible in the same condition as it was prior to the commencement of the work.

15.0 Measurement and Payment

Payment for the work shall be on a unit price basis unless otherwise indicated and shall include all the work shown on the accompanying drawings and specifications.

16.0 Maintaining Flow

The Contractor shall maintain the flow of any drainage works encountered in the progress of

the work and at no expense to the Owner. The Contractor shall obtain written approval from the Drainage Superintendent or Engineer in charge to stop up any drain and if necessary provide pumping equipment, build necessary by-passes, etc. at no expense to the Owner.

17.0 Notification of Work

Prior to commencing any work of installing the extension of the culvert or removing any existing structures, the Contractor shall inform the Drainage Superintendent of his intent to commence work at least 48 hours prior to commencing any work. The Owner or Contractor shall endeavour to install and complete the new structure without delay once he has commenced the work. If for any reason the work does not proceed continuously then the Owner or Contractor shall notify the Drainage Superintendent in advance of any backfilling operation or headwall construction so that he may schedule inspection of same. The completed work must be done to the satisfaction of the Drainage Superintendent and be approved by him.

18.0 Maintenance

The Contractor shall repair and make good at his expense any damages or faults in the work that may appear within one year after its completion (as evidenced by the final inspection report), as the result of imperfect or defective work done or materials furnished. Nothing herein contained shall be construed as any way restricting or limiting the liability of the Contractor under the appropriate laws under which the work is being done.

Specifications:
Environmental Protection Special Provisions
Hooker Drain
Project Reference 18-055

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1.0 General

These Environmental Protection Special Provisions shall apply and form part of this Contract. All costs associated to conforming with these Special Provisions shall be included in the Tender prices bid.

2.0 Fires

Fires and burning of rubbish on site will be permitted only with special approval from the Municipality.

3.0 Disposal of Wastes

The Contractor shall not bury rubbish and waste materials on site unless approved by the Engineer and all applicable approving authorities. The site shall be maintained free of accumulated waste and rubbish. All waste materials should be disposed of in a legal manner at a site approved by all local approving authorities and the Engineer.

The Contractor shall not allow deleterious substances, waste or volatile materials such as mineral spirits, or paint thinner, to enter into waterways, storm or sanitary sewers.

The disposal of dredge material where applicable shall be in accordance with the above.

4.0 Pollution Control

The Contractor shall maintain under this Contract temporary erosion, sediment and pollution control features installed. The Contractor shall control emissions from equipment and plant to local authorities' emission requirements. The Contractor shall not cause excessive turbidity when performing in-water work. The Contractor shall not allow any debris, fill or other foreign matter to enter into the waterway. The Contractor shall remove from the waterway, all extraneous materials resulting from in-water work.

The Contractor shall abide by local noise By-Laws for the duration of the Contract.

Spills of deleterious substances into waterways and on land shall be immediately contained by the Contractor and the Contractor shall clean up in accordance with Provincial regulatory requirements. All spills shall be reported to the Ontario Spills Action Centre (1-800-268-6060), local authorities having jurisdiction and the Engineer.

To reduce the risk of fuel entering the waterway, refuelling of machinery must take place a safe distance from the waterway. The Contractor shall note that the Engineer or the Owner takes no responsibility for spills, this shall be the sole responsibility of the Contractor.

5.0 WHMIS

The Contractor shall comply with the requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials and regarding labelling and the provision of material safety data sheets acceptable to Labour Canada.

6.0 Drainage

The Contractor shall not pump water containing suspended materials into waterways, sewers or drainage systems. The Contractor shall be solely responsible for the control, disposal or runoff of water containing suspended materials or other harmful substances in accordance with these specifications, and local authority requirements. The Contractor shall provide temporary drainage and pumping as necessary to keep excavations and site free from water. The Contractor shall install and maintain sediment control devices as indicated on the Contract Drawing and as directed by the Engineer.

7.0 Protection of Vegetation

The Contractor shall exercise the utmost caution to ensure that existing trees and plants on-site and on adjacent properties are not damaged or disturbed unless noted otherwise in the Removals Special Provisions of this Contract. The Contractor shall restrict tree removal to areas indicated on the Contract Drawings and/or designated on-site. No trees or shrubs shall be removed without the approval of the Engineer.

8.0 Dust Control

The Contractor will be solely responsible for controlling dust nuisance resulting from his operations, both on the site and within adjacent right-of-ways.

Water and calcium chloride shall be applied to areas on or adjacent to the site as authorized by the Engineer as being necessary and unavoidable for the prevention of dust nuisance or hazard to the public. No payment will be made for dust control unless otherwise specified in the Special Provisions.

9.0 Restrictions for In-Water Works

The Contractor shall only perform in-water works during times when conditions permit reasonable production rates to be achieved. The Contractor shall be required to adopt good housekeeping practices that minimize disturbance to the site and the adjacent waterway.

The Contractor shall note that this Project is subject to approval from the Essex Region Conservation Authority and as such, any possible turbidity caused by the construction of the shore protection works is of key importance.

The Contractor shall minimize the turbidity (sedimentation) produced by any in-water works

9.0 Restrictions for In-Water Works - Continued

construction or operations. The Contractor will be ordered to cease operations if, in the opinion of the Engineer or authorities having jurisdiction, the in-water work is producing unacceptable amounts of turbidity in the waterway. Based on this, the Contractor shall either adjust his operation(s) to produce lower turbidity levels, wait for more favourable conditions before operations will be allowed to continue, or undertake approved mitigating measures (e.g. sediment control, etc.). All costs associated with the above will be the sole responsibility of the Contractor, and no claims for extras or delays will be considered.

10.0 Fish Habitat

No work shall be undertaken when there is likelihood of adverse effects on fish spawning or fish habitat in downstream water.

APPENDIX 'B'

MITIGATION PLAN

The Municipality shall undertake measures to minimize adverse effects on species at risk in accordance with the general conditions described in Part B and taxa-specific conditions described in Part C, and the monitoring and reporting requirements described in Part D of this Mitigation Plan.

PART A. DEFINITIONS

1. Definitions:

1.1. In this Schedule, the following words shall have the following meanings:

"DFO" means Fisheries and Oceans Canada;

"MNR" means the Aylmer District Office of the Ministry of Natural Resources;

"Contact" means to contact the MNR in accordance with the notification/contact schedule provided to the Municipality by the MNR Designated Representative from time to time;

"Holding Tub" means a large, light-coloured container fitted with a non-airtight latchable lid approved by the MNR for the temporary storage of captured snakes, turtles, amphibians, birds or eggs;

"Interagency Notification Form" means the form issued by DFO, available at www.dfo-mpo.gc.ca, which is required to be completed when a drain is being maintained or constructed;

"Monitoring and Reporting Form" means the document that must be completed by the Municipality in accordance with Part D to this Schedule and will be provided to the Municipality;

"Ontario Operational Statement" means one of the documents issued by DFO, available at www.dfo-mpo.gc.ca, that sets out the conditions and measures to be incorporated into a project in order to avoid negative impacts to fish and fish habitat in Ontario, as modified from time to time;

"Process Charts" means the charts attached as Part E to this Schedule which describe the steps set out in this Mitigation Plan;

"Seasonal Timing Windows Chart" means the chart attached as Part G to this schedule which describes the Sensitive Periods applicable to each Taxonomic Group;

"Sensitive Area" means a geographic area in the Municipality where additional mitigation measures are required to be undertaken for one or more Taxonomic Groups;

"Sensitive Areas Map" means any one of the maps attached as Part F to this schedule which sets out the applicable Sensitive Areas;

"Sensitive Period" means a time of year set out in the Seasonal Timing Windows Chart during which taxa-specific mitigation measures are required to be undertaken for a Taxonomic Group because of ambient air/water temperatures, water-levels or important life-history stages;

"Taxonomic Group" means the distinct group comprising one or more Species based on their taxonomic relationship and common approaches to mitigating adverse effects (i.e., fish, mussels, turtles, snakes, amphibians, birds or plants); and

"Work Zone" means the geographic area in the Municipality where an Activity in respect of one of the Drainage Works is being conducted.

- 1.2. For greater certainty, any defined terms that are not defined in section 1.1 have the same meanings as in the Agreement.

PART B. GENERAL MEASURES TO MINIMIZE ADVERSE EFFECTS

2. Process Charts

- 2.1. The general steps set out in this Part B are visually described in the Process Charts (Part E).

3. Review of Documentation

- 3.1. Prior to conducting any Activities in respect of the Drainage Works the Municipality shall determine if conditions apply to the place, time or manner in which the Municipality wishes to pursue them by reviewing:
 - (a) the Sensitive Areas Maps (Part F) to determine if the Work Zone for the proposed Activities will occur within a Sensitive Area;
 - (b) the DFO Reference Guide for Fish and Mussel Species at Risk Distribution Maps: A Referral Review Tool for Projects Affecting Aquatic Species at Risk;
 - (c) the Seasonal Timing Windows Chart (Part G) to determine if the proposed Activities will occur during a Sensitive Period for one or more of the Taxonomic Groups; and
 - (d) the Process Charts to determine if prior notification is required;
 - (e) the mitigation measures for each applicable Taxonomic Group in Part C to determine what additional site-specific mitigation measures, if any, are required.
- 3.2. The Municipality shall document the results of the review undertaken in accordance with section 3.1 using the Monitoring and Reporting Form.

4. Sensitive Areas Maps

- 4.1. The Sensitive Areas Maps contain sensitive information about the distribution of species at risk, are provided for the sole purpose of informing this Agreement and are not to be copied or distributed for any other purposes or to any other party without the prior written authorization of the MNR Designated Representative.

5. Prior Notification to Seek Direction

- 5.1. If, after completing the review of documents described in section 3.1, the Municipality determines that the proposed Activities will be undertaken:
 - (a) in a place;
 - (b) at a time; or
 - (c) in a manner,that requires prior notification in accordance with the Process Charts, the Municipality shall provide prior notification to the MNR in order for the MNR to determine if the Municipality must undertake additional site-specific or Species-specific mitigation

measures to minimize adverse effects on the Species and, if applicable, to identify such measures.

- 5.2. The prior notification under section 5.1 shall include a completed Interagency Notification Form:
- (a) in respect of maintenance/repair where the proposed Activities are being undertaken pursuant to subsection 3(18) or section 74 of the *Drainage Act*; or
 - (b) in respect of construction/improvement where the proposed Activities are being undertaken pursuant to section 77 or 78 of the *Drainage Act*.
- 5.3. Where an Activity is undertaken in accordance with section 124 of the *Drainage Act* and would otherwise have required prior notification under section 5.1, the Municipality shall Contact the MNR by email prior to the commencement of the Activity, and complete and submit the applicable Interagency Notification Form within one week of the Activity's completion, unless otherwise directed in writing by the MNR Designated Representative.

6. General Mitigation Measures

- 6.1. Notwithstanding that prior notification or additional mitigation measures may be required in accordance with this schedule, in undertaking any Activity at any time in respect of the Drainage Works the Municipality shall:
- (a) undertake the mitigation measures for sediment control and for erosion control and bank stabilization set out in The Drain Primer (Cliff Evanitski 2008) published by DFO (ISBN 978-0-662-48027-3), unless otherwise authorized in writing by the MNR Designated Representative;
 - (b) use net free, 100% biodegradable erosion control blanket for all erosion control or bank stabilization done in conjunction with their Activities or, if authorized in writing by the MNR Designated Representative, alternative erosion control blankets that provide equal or greater protection to individual Species; and
 - (c) where applicable, follow the guidelines set out in the following Ontario Operational Statements:
 - (i) Beaver Dam Removal;
 - (ii) Bridge Maintenance;
 - (iii) Culvert Maintenance;
 - (iv) Isolated Pond Construction;
 - (v) Maintenance of Riparian Vegetation in Existing Right of Ways; and
 - (vi) Temporary Stream Crossing.

PART C. TAXA-SPECIFIC MEASURES TO MINIMIZE ADVERSE EFFECTS

ADDITIONAL MITIGATION MEASURES FOR FISH SPECIES

7. Activities undertaken in Sensitive Areas for Fish

- 7.1. Subject to section 7.2, where a proposed Activity will occur in a Sensitive Area for a fish Species, the Municipality shall contact the MNR to seek further direction.
- 7.2. Section 7.1 does not apply where the applicable Drainage Works are:
 - (a) in a naturally dry condition;
 - (b) classified as a Class F drain under DFO's *Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario* (ISBN 0-662-72748-7); or
 - (c) a closed drain.

ADDITIONAL MITIGATION MEASURES FOR MUSSEL SPECIES

8. Activities undertaken in Sensitive Areas for Mussels

- 8.1. Subject to section 8.2, where a proposed Activity will occur in a Sensitive Area for a mussel Species, the Municipality shall Contact the MNR to seek further direction.
- 8.2. Section 8.1 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.

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.

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.

ADDITIONAL MITIGATION MEASURES FOR BIRD SPECIES

23. Activities Undertaken in Sensitive Areas and Sensitive Periods for Birds

- 23.1. Where a proposed Activity will occur in a Sensitive Area for any bird Species during a Sensitive Period for that Species, the Municipality shall:
- (a) not undertake any Activities that would disturb nesting habitat or nesting birds unless otherwise authorized; and
 - (b) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative.

24. Measures for Encounters with Birds during a Sensitive Period

- 24.1. Where one or more individuals belonging to a bird 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) immediately stop any Activities that disturb vegetation, water levels, or cause birds to take flight in any part of the Work Zone within 100 metres of where the individual of that bird Species was encountered;
 - (b) capture and transfer any non-mobile individuals injured as a result of conducting the Activities into a Holding Tub;
 - (c) ensure that the Holding Tub with the captured injured individuals is stored out of direct sunlight; and
 - (d) immediately Contact the MNR to seek direction.

25. Measures for Encounters with Birds outside a Sensitive Period

- 25.1. Where one or more individuals belonging to a bird 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 a Sensitive Period for that Species, the Municipality shall:
- (a) temporarily stop the Activity for a reasonable period of time to allow any uninjured individual birds of that Species to leave the Work Zone;
 - (b) if the individuals do not leave the Work Zone after the Activity is temporarily stopped in accordance with (a) above, recommence Activities while ensuring no harm results to any individual birds of that Species;
 - (c) capture and transfer any non-mobile individuals injured as a result of conducting the Activities into a Holding Tub;

- (d) ensure that the Holding Tub with the captured injured individuals is stored out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for the transfer of any captured injured individuals; and
- (e) where there are no injured individuals, Contact the MNR via email within 72 hours of the encounter to provide information on the name of the Drainage Works, the location of the encounter and the measures taken.

ADDITIONAL MITIGATION MEASURES FOR HERBACEOUS PLANTS

26. Activities Undertaken in Sensitive Areas for Herbaceous Plants

- 26.1. Where a proposed Activity will occur that involves physical disturbance to vegetated banks or the killing and/or removal of vegetation through chemical or mechanical means in a Sensitive Area for any herbaceous plant Species, the Municipality shall:
- (a) undertake the Activity outside of the Sensitive Period, unless otherwise authorized;
 - (b) limit equipment access and operations to the side of the Drainage Works that will minimize disturbances where any of the plant Species occur;
 - (c) locate temporary storage sites for excavated sediments or bank materials on areas of open soil away from where any of the plant Species are likely to occur;
 - (d) not use any broad spectrum herbicides in Sensitive Areas; and
 - (e) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative.

ADDITIONAL MITIGATION MEASURES FOR TREE SPECIES

27. Additional Measures for Butternut

- 27.1. Where Butternuts may exist in a Work Zone and may be affected by an Activity, the Municipality shall:
- (a) identify and mark as retainable trees all individual Butternut trees within the Work Zone during work planning site visits unless the individual Butternut has been assessed as a non-retainable tree due to infection by Butternut canker by a person designated by the Minister as a Butternut Health Assessor;
 - (b) retain and avoid disturbance to all individuals identified under (a) above that have been identified as retainable trees or that have not been assessed, unless otherwise authorized in writing by the MNR Designated Representative;
 - (c) conduct Activities by:
 - (i) limiting equipment access and operations to the side of the Drainage Works that will minimize disturbance to where any of the individual Butternut trees occur,
 - (ii) working around trees,
 - (iii) avoiding compacting and/or disturbing the soil by keeping excavation and other heavy equipment a minimum of 2 metres away from the main stem of retained individuals to avoid damaging roots and stems,
 - (iv) placing excavated materials on areas not within 2 metres of the main stem of retained individuals, and

- (v) where branches are required to be removed to allow for safe operation of equipment, removing them using appropriate equipment, such as pruning saws, chain saws or lopping shears, in accordance with good forestry practices.

28. Measures for Other Trees

- 28.1. Where Kentucky Coffee-tree, Common Hoptree, Eastern Flowering Dogwood and American Chestnut may exist in a Work Zone and may be affected by an Activity, the Municipality shall:
- (a) identify and mark all individual Kentucky Coffee-tree, Common Hoptree, Eastern Flowering Dogwood and American Chestnut within the Work Zone during work planning site visits;
 - (b) avoid disturbance to all individuals identified under (a) above, unless otherwise authorized in writing by the MNR Designated Representative;
 - (c) conduct Activities by:
 - (i) limiting equipment access and operations to the side of the Drainage Works that will minimize disturbance where any of the individuals occur,
 - (ii) working around trees,
 - (iii) avoiding compacting and/or disturbing the soil by keeping excavation and other heavy equipment a minimum of 2 metres away from the main stem of retained individuals to avoid damaging roots and stems, and
 - (iv) placing excavated materials on areas not within 2 metres of the main stem of retained individuals; and
 - (d) where branches are required to be removed to allow for safe operation of equipment, remove them using appropriate equipment, such as pruning saws, chain saws or lopping shears, in accordance with good forestry practices.

PART D. MONITORING AND REPORTING REQUIREMENTS

29. Compliance Monitoring.

- 29.1. The Municipality shall inspect the undertaking of the Activities at the locations described in Part F of this Schedule C, and shall record the results of the inspections in the Monitoring and Reporting Form.
- 29.2. The Municipality shall record all encounters with Species and the resulting mitigation measures taken by the Municipality in the Monitoring and Reporting Form.

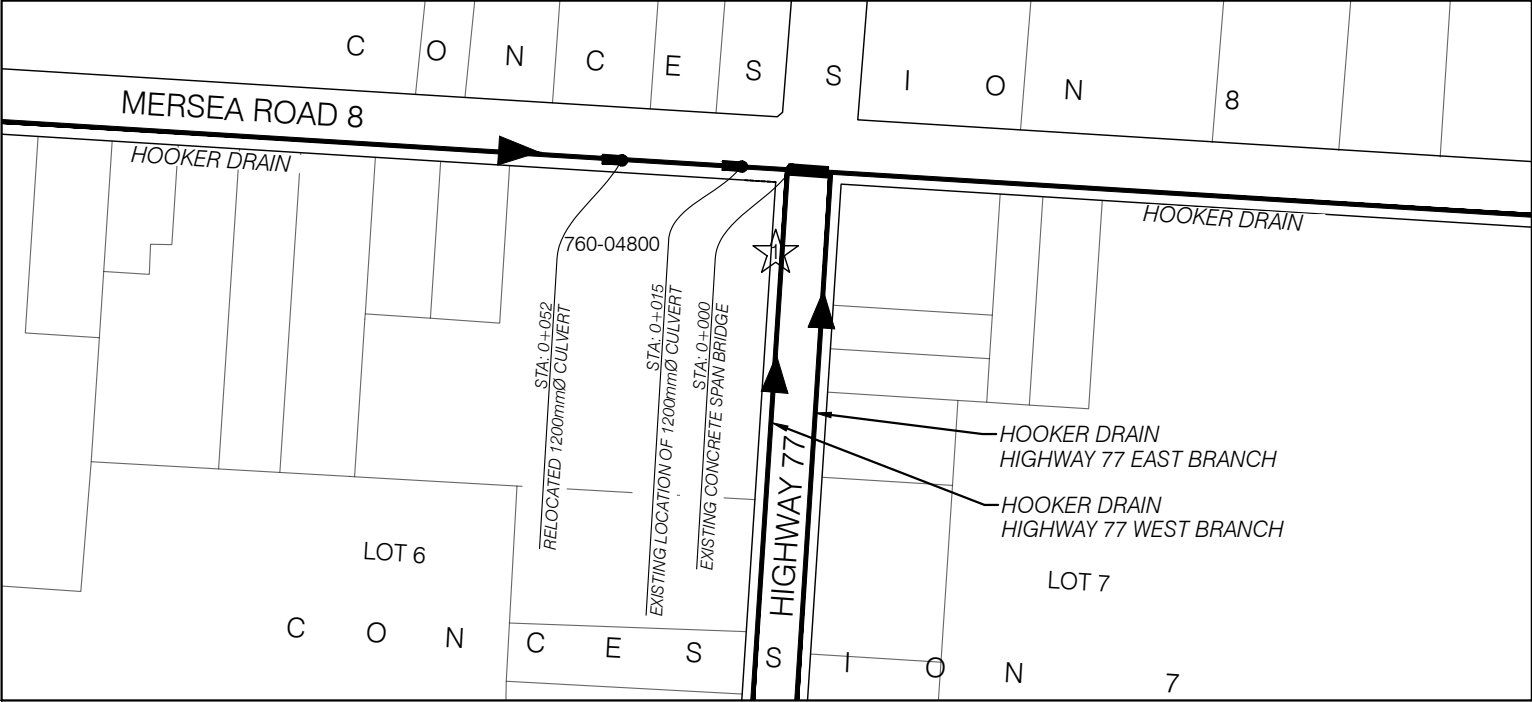
30. Reporting

- 30.1. Prior to March 31 of each year the Mitigation Plan is in effect, the Municipality shall submit a completed Monitoring and Reporting Form containing all of the information collected under sections 29.1 and 29.2 during the previous twelve months to the MNR Designated Representative.

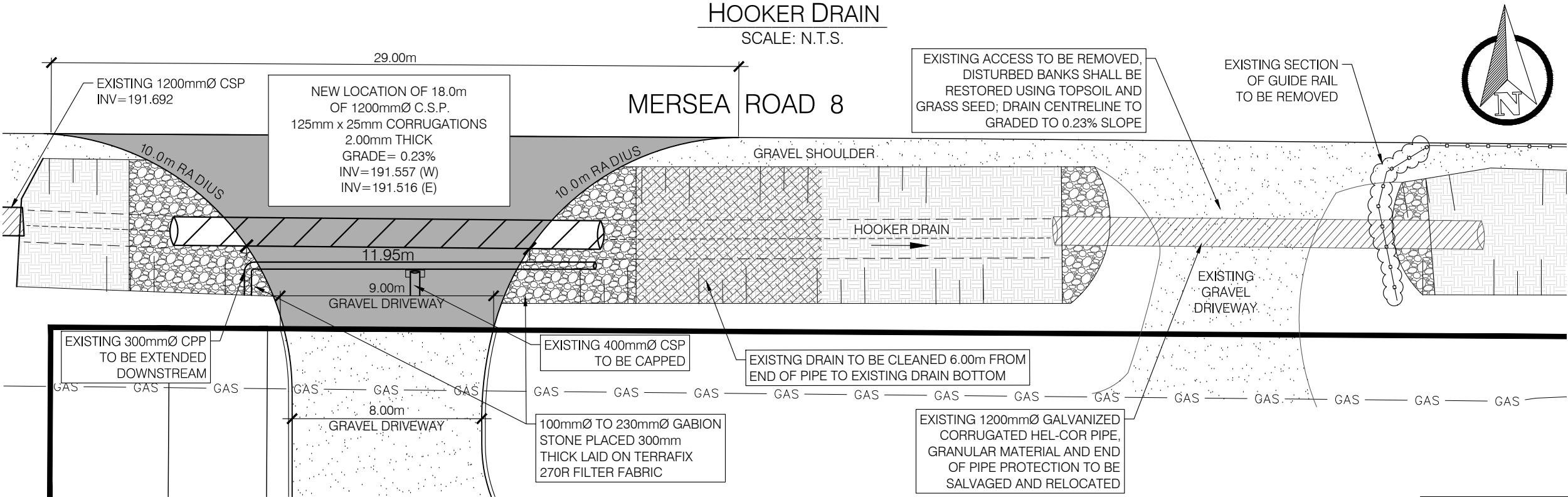
31. Review

- 31.1. Within six months of the expiry of this Mitigation Plan but no later than three months from the time of its expiry, the Parties shall meet to review the measures and actions taken and the Activities undertaken during its term and to discuss the terms and conditions of the next Mitigation Plan.

APPENDIX 'C'



BENCHMARK:
BENCHMARK 1: ☆
TOP NUT OF FIRE HYDRANT | LOCATED APPROXIMTAELY
27m SOUTH OF SOUTHEAST CORNER OF MERSEA ROAD 8
AND HIGHWAY 77
ELEVATION 194.264



PLAN VIEW
SCALE: 1:200

ASPHALT SURFACE
-50mm HL4 BASE COURSE
-40mm HL3 SURFACE COURSE



27 PRINCESS STREET, SUITE #102
LEAMINGTON, ONTARIO
N8H 2X8

1000 - 267 PELISSIER STREET,
WINDSOR, ONTARIO
N9A 4K4.

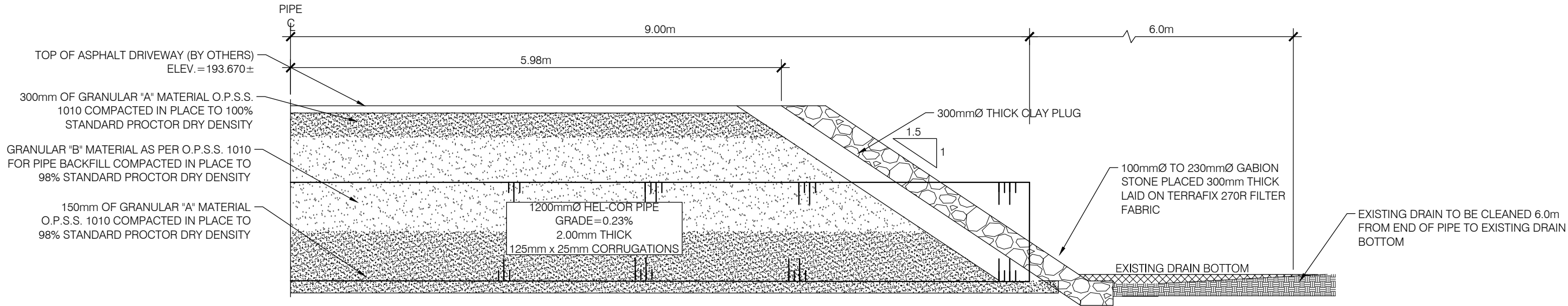
PROJECT TITLE:
SECTION 78 - HOOKER DRAIN
636 MERSEA ROAD 8, LEAMINGTON ON

SHEET:
TITLE PAGE & KEY PLAN

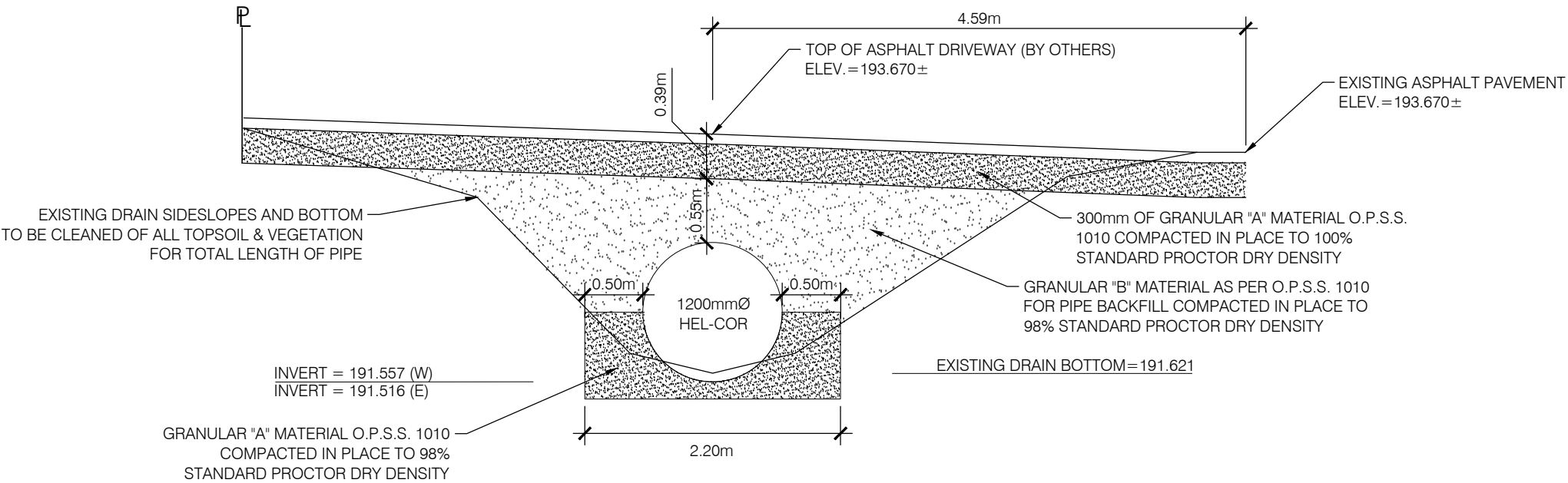


Halliday Pearson
HALLIDAY P. PEARSON, P. ENG.

DRAWN BY: D.B.	SCALE: AS NOTED	DATE: MAY 10, 2018
CHKD BY: H.P.P.	SHEET No.: 1 OF 2	PROJECT No.: 18-055



CULVERT LONGITUDINAL SECTION
SCALE 1 : 50



CULVERT END SECTION
SCALE 1 : 75

PROJECT TITLE: SECTION 78 - HOOKER DRAIN				BENCH MARK ELEVATION: 194.264		BENCH MARK LOCATION: TOP NUT OF FIRE HYDRANT LOCATED APPROXIMTAELY 27m SOUTH OF SOUTHEAST CORNER OF MERSEA ROAD 8 AND HIGHWAY 77				
636 MERSEA ROAD 8, LEAMINGTON ON				CULVERT SIZE	PIPE LENGTH	PIPE GAUGE	CORRUGATIONS	CULVERT TYPE	PIPE INVERT ELEVATIONS	FINISHED DRIVEWAY ELEVATIONS
SHEET TITLE: CROSS-SECTIONS	DRAWN BY: D.B.	SCALE: AS NOTED	DATE: MAY 10, 2018	1200mm	18.0m	2.0mm	125mm x 25mm	CORRUGATED HEL-COR	UPSTREAM END: 191.557	193.670
	CHK'D BY: H.P.P.	SHEET No. : 2 OF 2	PROJECT No. : 18-055						DOWNSTREAM END: 191.516	