NEW ACCESS CULVERT OVER THE HOOKER DRAIN

Municipality of Leamington

March 04, 2016

Project No. 15-093

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

Drainage Board Members

Subject: New Access Culvert over the Hooker Drain
In the Municipality of Leamington
Our File Reference 15-093

1.0 Authorization

Pursuant to Section 78 of The Drainage Act, 1990 (the Act), the Municipality of Leamington received a request from Abram Wiebe for the construction of a new access culvert. The firm of Baird AE was subsequently appointed to prepare a report for the installation of a new access bridge under the provisions of the Act.

As requested by Council, we have made an examination of the area being part of Lot 5, Concession 7 in the Municipality of Leamington. (Roll No. 3706 760 000 03400) The site is located on the south side of Mersea Road 8 approximately 0.66 kilometres west of Highway 77. At this time the new culvert will be a secondary access to the site.

2.0 Current Drainage Report

Gerard Rood, P.Eng, prepared the current drainage report for the Hooker Drain dated November 6, 2007. This report provided for the cleaning of the drain along its entire length and the replacement/repair of 25 bridges.

3.0 Purpose of Report

The purpose of this report is to provide for the construction of a new access culvert for a residential property.

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 and Inspection

On September 11, 2015 at 9:00 am, a meeting was held at the site to discuss the proposed work.

The following people were in attendance:

Name	Address
Abe Wiebe	560 Mersea Road 8
Lu-Ann Barreto	Municipality of Leamington
Lindsay Dean	Municipality of Leamington
David Basilious	Baird AE
Halliday Pearson	Baird AE

Abe Wiebe indicated the new access was being installed as a second access for a new residential development occurring on the site.

Lu-Ann Barreto introduced those present and stated that this meeting was being held as Abe Wiebe has requested a new secondary access to his site.

Halliday Pearson pointed out that because this is a secondary access culvert not only will the initial cost be assessed 100% to the owner but so will the maintenance costs in the future.

Lu-Ann pointed out that the drain bottom was cleaned last year and as a result of this cleaning the side slopes have caved in at some areas. Halliday asked if the latest report could be sent to us, Lu-Ann stated that it would be and it was from 2007 and created by Gerard Rood P.Eng.

David asked Abe what type of end treatment he preferred. Abe indicated that since it will be used for residential purposes a 20 ft (6m) wide driveway would be sufficient. He was considering to construct either gabion stone or concrete block end treatment. Halliday said we would get a cost estimate for both and he can make the final decision.

Lu-Ann asked Abe if he took over the old registration number when he purchased the lot, Abe informed us he was assigned a new registration number. It was pointed out that since this lot was not used for agricultural purposes there would be no grant money available for this project.

David went through the drainage process, allocating roughly 6 weeks for the design and report to be completed, than it would be sent to the Municipality for review. Once the final drawings and report are completed the owner would receive a copy in the mail. At this time a consideration meeting will be held to review the technical information of the report. We would then have to wait 30 days for the court of revision, which would give a chance for any land owner to inquire about their assessment. Since Abe is paying the full cost of this culvert he can choose to waive the 21 days after the court of revision to start the tender, and start the tender process right away.

Lindsay stated there would be no reason to waive the 21 days since due to the MNR restrictions we would probably end up waiting that long anyways. Lu-Ann explained the restrictions on working in the drain that ends up giving us a 2 weeks period (March 1- March 15, 2016) to construct the new access culvert, if we cannot complete the culvert by than we would have to wait till July 2016.

Abe stated that this was too long and was expecting to get it constructed a lot sooner.

Lu-Ann informed him that there is a process in place that cannot be fast tracked.

Abe inquired about moving the culvert a few feet over in one direction. Halliday and Lu-Ann said

that it wouldn't be a problem.

The meeting was adjourned at 9:30 am.

5.0 Survey

A survey was undertaken at the desired location for the new access culvert. Elevations were checked at the upstream and downstream culverts and a centreline profile of the ditch bottom was taken to the downstream culvert.

The existing downstream culvert approximately 60 metres to the east is a galvanized corrugated 1200mm CSP, 2.0mm thick with 125mm x 25mm corrugations and the existing upstream culvert approximately 45 metres west is a galvanized corrugated 1000mm CSP, 2.0mm thick with 68mm x 13mm corrugations.

6.0 Recommendations

We would recommend the supply and placement of 7.50 metres of 1200mm diameter Galvanized Corrugated Steel Pipe 2.0mm thick steel pipe with engineered concrete lock blocks for end of pipe protection. This is sized for a 25 year storm and is consistent with the upstream design.

The access driveway over the culvert will have a finished width of 6.0 metres.

We would further recommend that the above work be performed in accordance with 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.

The municipality has received a request to screen as a part of the registry with the Ministry of Natural Resources and Forestry (MNRF.) The Drainage Superintendent has reviewed the endangered species maps and has carried out an Endangered Species Act review. The Municipality's Mitigation plan should be used if an Endangered Species is encountered by the Contractor during construction.

A self-assessment was completed to determine if The Department of Fisheries and Oceans (DFO) would need to review this project. According to DFO roadside drainage ditches and agricultural drains are existing waterbody types that do not require review by DFO.

8.0 Drawing and Specification

Attached to this report is Drawing No. 15-093, Sheet 1 to 5 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. 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.

9.0 Working Area

The work for this project will be carried out from Mersea Road 8 immediately adjacent to the location of the new access culvert. Any future maintenance as provided for under Section 63 of the Act shall be carried out from the Mersea Road 8 right-of-way.

10.0 Estimate of Cost

Our estimate of the total cost of this work, including all incidental expenses, is the sum of TWENTY-NINE THOUSAND, FIVE HUNDRED AND FIFTY-ONE---------- dollars ($29,551.00) made up as follows:

CONSTRUCTION

1. Price includes excavation and grading of existing drain side slopes; supply and install 7.50m of 1200mm diameter galvanized corrugated steel pipe 2.0mm thick; the supply, placement and compaction of granular 'A' and granular 'B'; supply and placement of engineered plane concrete block headwalls with Terrafix 270-R filter fabric and uni-axial geogrid; clean and grade existing drain 6 meters upstream and downstream of the new culvert; traffic control plan and the supply and instalment of a silt fence.

Total for Construction (Excluding H.S.T.)	=	**$ 20,375.00**

INCIDENTALS

Site Meeting and Survey	$ 900.00
Design, report, estimate and specifications	$ 3,500.00
Assistants and expenses and drafting	$ 1,800.00
Attendance at Public Meetings	$ 750.00
Tender Documents	$ 500.00
ERCA Permit Fee	$ 115.00
Construction Inspection (2 days at $550.00/day)	$ 1100.00

Total for Incidentals (Excluding H.S.T.)	**$**	**8,665.00**
Total for Construction (brought forward)	$	20,375.00
Sub-Total for Incidentals and Construction	$	29,040.00
H.S.T. Payable (1.76% Non-recoverable H.S.T.)	$	511.00
		= = = = = = =
T O T A L E S T I M A T E	**$**	**29,551.00**
		= = = = = = =

11.0 Assessment

Each parcel is guaranteed one access over a Municipal Drain. The initial cost to construct a new primary access to a parcel is assessed 100% to the benefitting land, however, the cost to clean, maintain or replace one access culvert shall be shared between the benefitting parcel and the upstream lands and roads. Should a parcel have more than one culvert, the costs associated with cleaning, maintenance or replacement of the additional culvert shall be assessed 100% to the benefitting lands. In this case, the proposed culvert will be a secondary access to the property. Therefore, the construction and incidental costs associated with the proposed access culvert shall be assessed 100% as Special Benefit to the lands.

We would recommend that all costs associated with construction of the access culvert described in this report be assessed 100% as Benefit to the lands with Roll No. 3706 760 000 03400 as this culvert provides secondary access to this parcel.

12.0 Maintenance

We would recommend that all costs associated with future maintenance of the access culvert described in this report be assessed 100% to the benefitting lands as Benefit as this culvert provides secondary access to this parcel.

13.0 Grant

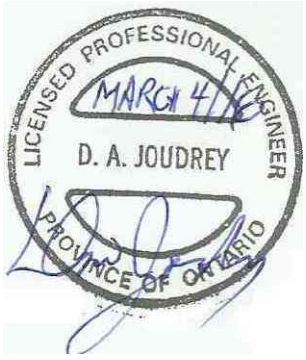
According to the Agricultural Drainage Infrastructure Program (ADIP) section 2.3i(A):

i. Farm and access crossings are eligible for grant, with the following exceptions:
(A) For every drain, every agricultural property is entitled to one drain crossing. Any additional crossing on this property will not be eligible for grant.

Since the proposed access culvert will provide secondary access to the site it will not be eligible for a grant.

All of which is respectfully submitted by:

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



Don Joudrey, P. Eng.

BAIRD|AE
architecture + engineering

Specifications:
New Access Culvert over the Hooker Drain
In The Municipality Of Leamington
Project Reference 15-093

Table of Contents

1.0 Pipe Material

The Contractor shall supply and install, a new 1200mm galvanized corrugated steel pipe, 2.0mm thick, and 7.50 metres long.

2.0 Working Area

The Contractor shall restrict his equipment to a corridor measuring 9.0 metres in width lying immediately north-east of the Hooker Drain.

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 location and elevations of the new culvert shall be according to the drawings, 15-093.

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, supplying and installing a new 7.50 m long galvanized corrugated steel pipe with concrete lock block end of pipe protection.

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 "B" and “A” 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 Concrete Block Headwalls

Where specified and after the Contractor has set in place the new culvert he shall completely backfill the same and install new concrete block headwalls at the locations indicated on the drawing. The contractor shall provide a minimum levelling course of 450mm of compacted '0-$^{7}/_{8}$" Granular 'A' material. On new culverts a minimum of 300mm of block wall will extend below the culvert to prevent scouring under the culvert. The bottom course of blocks shall be embedded into the drain bottom to achieve the desired top elevation of the wall. Blocks shall extend from the pipe invert across the full height and width of the drain and be imbedded a minimum of 300mm into the drain banks. Where possible the top of the block wall will match the height of the completed driveway. Blocks shall be placed such that all joints are staggered. Any excavation voids on the ends of block walls below subsequent block layers shall be filled with ¾" Clear Stone. Filter cloth (270R or equivalent) should be placed behind the wall to prevent the migration of fill material through the joints. The walls should be backfilled with a free draining granular fill. A uni-axial geogrid (SG350 or equivalent) should be used to tie back the headwalls where walls extend beyond 1.8m in height. The face of the block wall shall not extend beyond the end of the pipe culvert. Any gaps between the blocks and culvert shall be sealed with non-shrink grout for the full depth of the block.

8.0 Alignment

The alignment of the enclosure throughout shall be to the full satisfaction of the Commissioner in charge. The whole of the work shall be done in a neat, thorough and workmanlike manner to the full satisfaction of the Commissioner in charge.

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 Municipality 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 Municipality.

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 Commissioner. 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 Commissioner 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 Commissioner

Where the word "Commissioner" is used in this specification, it shall mean the person or persons appointed by the Council of the Municipality having jurisdiction, to superintend the work (drainage superintendent or the engineer/inspector.)

The Commissioner will be permitted to make minor variations in the work so long as these variations will result in a more satisfactory project or a more economical one. These variations, however, must not be such as to change the intent of the work performed nor are they to reduce the standard of quality.

18.0 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.

19.0 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
FOR THE HOOKER DRAIN
MUNICIPALITY OF LEAMINGTON
PROJECT REFERENCE 15-093

Table of Contents

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.

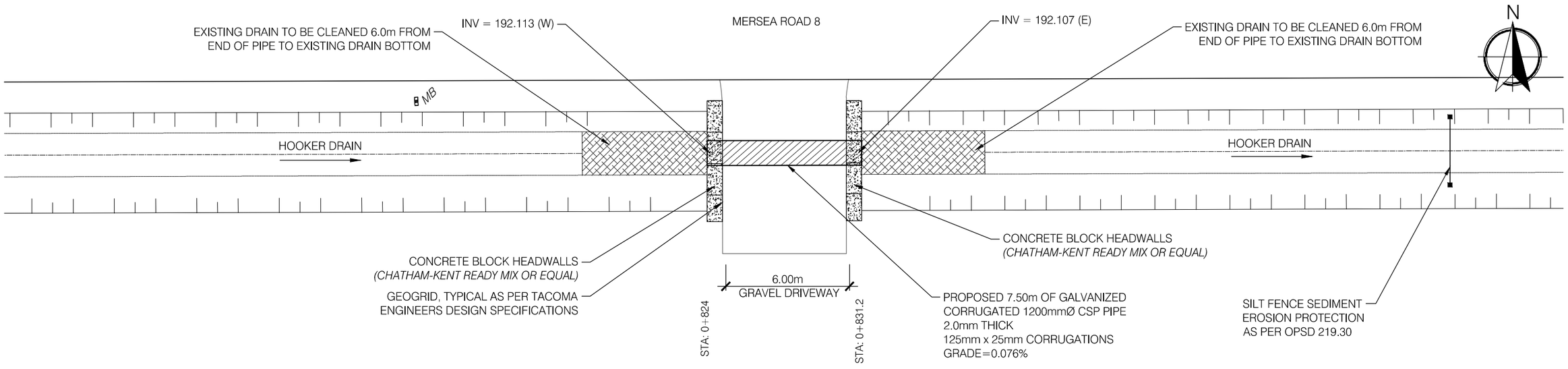
The Contractor shall minimize the turbidity (sedimentation) produced by any in-water works

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.

KEY PLAN
SCALE: N.T.S.



PLAN VIEW
SCALE: 1:200

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1000 - 267 PELISSIER STREET,
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N9A 4K4.

PROJECT TITLE:

NEW ACCESS CULVERT OVER THE HOOKER DRAIN

560 MERSEA RD. 8, LEAMINGTON ON

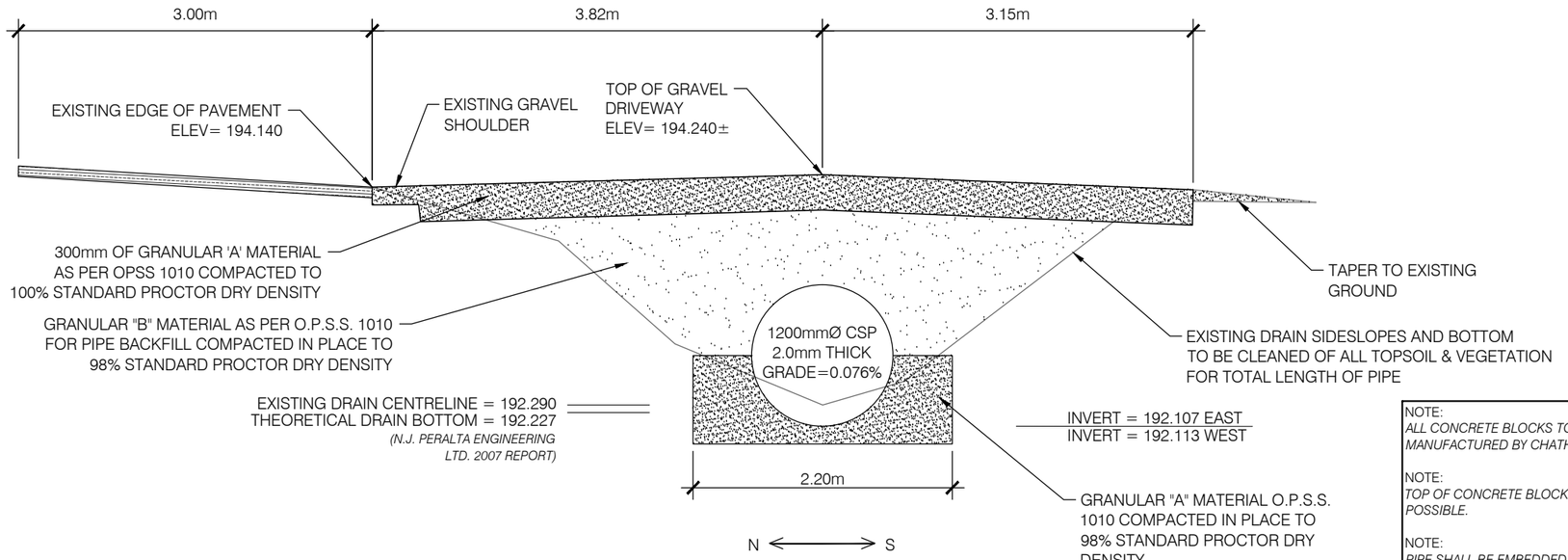
SHEET TITLE:

KEY PLAN & PLAN VIEW

LICENSED PROFESSIONAL ENGINEER
MARCH 4, 2016
D. A. JOUDREY
PROVINCE OF ONTARIO

DON J. JOUDREY, P.ENG.

DRAWN BY:	SCALE:	DATE:
D.B.	AS NOTED	MARCH 04, 2016
CHCK'D BY:	SHEET No. :	PROJECT No. :
D.A.J.	1 OF 2	15-093

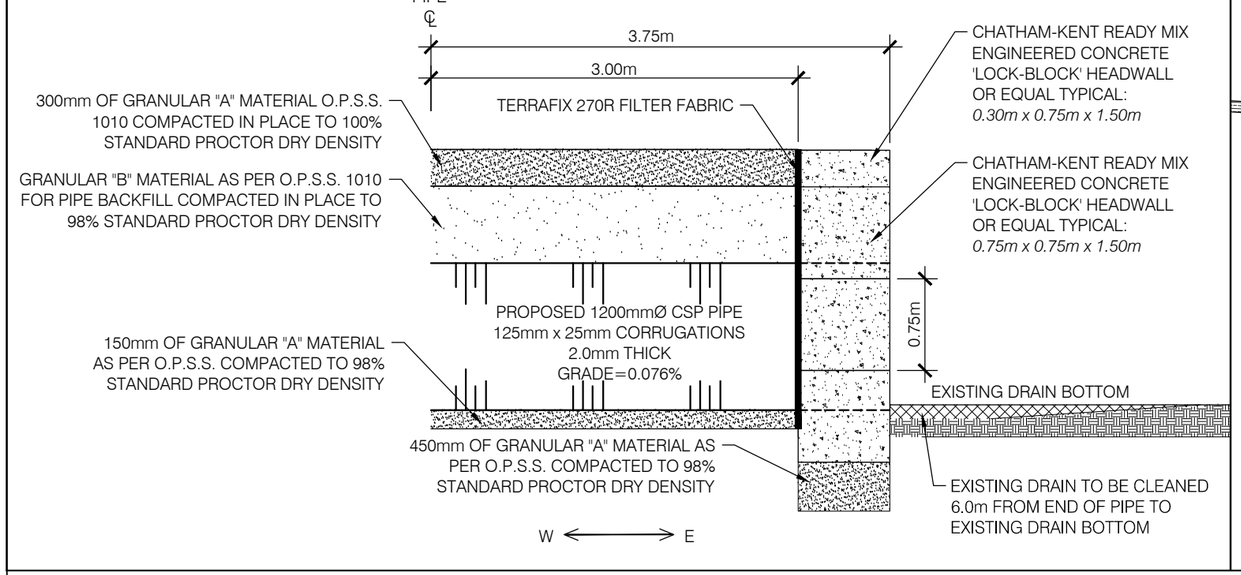


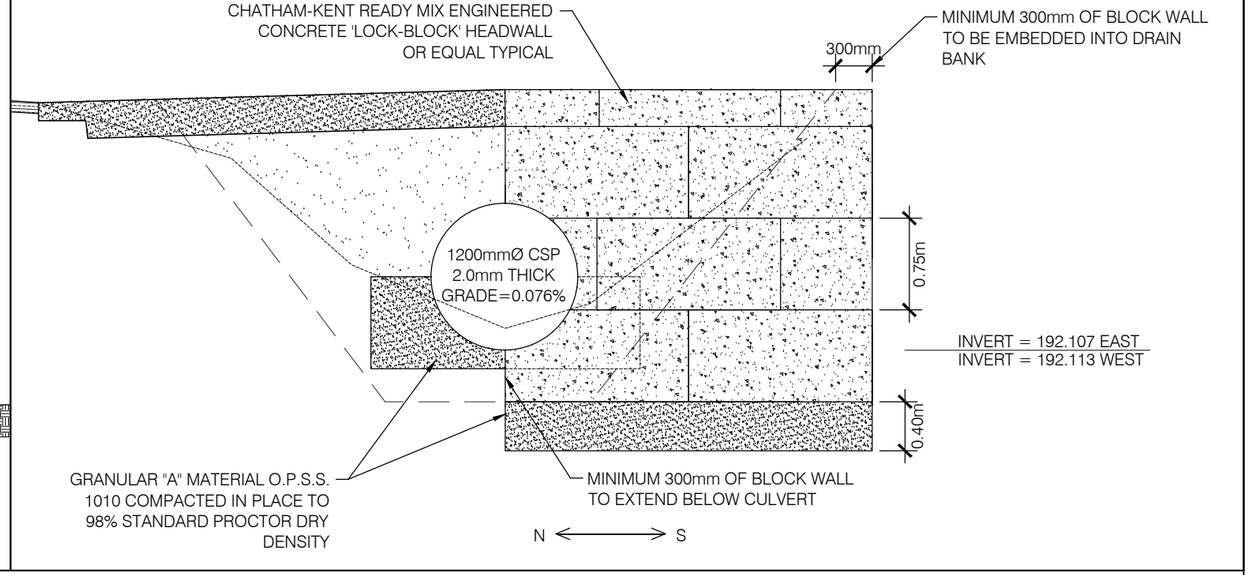
NOTE:
ALL CONCRETE BLOCKS TO BE 0.75m x 0.75m x 1.5m/0.30m x 0.75m x 1.50m AS MANUFACTURED BY CHATHAM-KENT READY MIX OR EQUIVALENT.

NOTE:
TOP OF CONCRETE BLOCK WALL SHALL MATCH HEIGHT OF COMPLETED DRIVEWAY WHERE POSSIBLE.

NOTE:
PIPE SHALL BE EMBEDDED 10% OF PIPE DIAMETER (OR EQUIVALENT DIAMETER) BELOW PROPOSED DRAIN BOTTOM TO ALLOW FOR FISH PASSAGE.

CULVERT END SECTION
SCALE 1 : 50





TYPICAL LONGITUDINAL SECTION & CULVERT END SECTION
SCALE 1 : 50

PROJECT TITLE:
NEW ACCESS CULVERT OVER THE HOOKER DRAIN

530 MERSEA ROAD 8, LEAMINGTON ON.

SHEET TITLE:
PLAN VIEW

DRAWN BY:	SCALE:	DATE:
D.B.	AS NOTED	MARCH 04, 2016
CHCK'D BY:	SHEET No. :	PROJECT No. :
D.A.J.	2 OF 2	15-093

BENCH MARK ELEVATION: 194.974

BENCH MARK LOCATION: TOP NUT OF EIXSTING FIRE HYDRANT LOCATED 66.0m EAST OF PROPOSED CULVERT

CULVERT SIZE	PIPE LENGTH	PIPE GAUGE	CORRUGATIONS	CULVERT TYPE	PIPE INVERT ELEVATIONS
1200mm	7.50m	2.00mm	125mm x 25mm	GALVANIZED CORRUGATED STEEL	UPSTREAM END: 192.113 (W) DOWNSTREAM END: 192.107 (E)