

THE CORPORATION OF THE TOWN OF AMHERSTBURG

BY-LAW NO. 2016 - 51

**By-law to provide for the Petition for Drainage Works
of the DiCecco Drain No. 2 & 3 and Branches based on
the Drainage Report by Dillon Consulting Ltd.**

WHEREAS as petition for drainage works was received under section 4(1)b of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg felt it necessary to appoint an engineer for the purpose of preparation of an engineer's report for the repair and improvement under section 4(1)b of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg has authorized Chris Thibert, Dillon Consulting Ltd. to prepare a report and said report dated April 27, 2016, is attached hereto and forms part of this by-law;

WHERE AS \$ 000.00 is the amount to be contributed by the Town of Amherstburg of the total \$99,850.00 for the drainage works; and,

WHEREAS the report was considered and adopted by Drainage Board at the meeting held on Tuesday, May 10, 2016.

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 \$99,850.00 being the amount necessary for the improvements of the drainage works.

This project being the DiCecco Drain No. 2 & 3 and Branches.

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) shall bear interest at a rate not higher than 2% more than the municipal lending rates as posted by Bank of Canada 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 as shown in the schedule 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) For paying the amount \$99,850.00 being the amount assessed upon the lands and roads belonging to or controlled by the municipality a special rate sufficient to pay the amount assessed plus interest thereon shall be levied upon the whole rateable property in the Town of Amherstburg in each year for 5 years after the passing of this by-law to be collected in the same manner and at the same time as other taxes collected.
- (3) All assessments of \$1,000.00 or less are payable in the first year in which the assessments are imposed.

5. SCHEDULE OF ASSESSMENTS OF LANDS AND ROADS

Property Description				Estimated Assessment as per Report	Estimated Grants 33 1/3%	Annual Rate to be Imposed Equal Bi-Annually
Lot or Part Lot No.	Concession	Geographic Township	Parcel Roll No.			
Part Lot 29	3	Malden	590-02800	\$99,850.00		\$11,115.95
Total				\$99,850.00		\$111,159.54

Read a first and second time and provisionally adopted this 24th day of May, 2016.



 MAYOR – ALDO DICARLO



 CLERK – PAULA PARKER

Read a third time and finally passed this 8 day of August 2016.



 MAYOR – ALDO DICARLO



 CLERK – PAULA PARKER

**DRAINAGE REPORT
FOR THE**

**DICECCO DRAIN NO. 2 & 3
& BRANCHES**

**TOWN OF AMHERSTBURG
COUNTY OF ESSEX**



**27 APRIL 2016
CHRIS D. THIBERT, P.ENG.
FILE No. 15-1463**

File No. 15-1463

Mayor and Members of Council
The Corporation of the Town of Amherstburg
271 Sandwich St. South
Amherstburg, Ontario
N9V 2A5

**Drainage Report for the
DiCECCO DRAIN NO. 2 & 3 & BRANCHES
In the Town of Amherstburg
County of Essex**

Mayor and Members of Council:

Instructions

The Municipality received a Section 4 petition from the landowners of property Roll No. 590-02800 to provide improved drainage and sufficient outlet for storm runoff from their property. The property is planned to be severed into five (5) residential lots that require separate municipal drainage outlets, formalized under the Drainage Act, into the adjacent Big Creek Drain.

The Section 4 petition for drainage improvements was signed by the owners of property Roll No. 590-02800 on the 14th October, 2014. At that time and without any further survey and investigation, the petition was valid under Section 4(1)(b) with the entire property Roll No. 590-02800 representing over 60% of the area requiring drainage. Council accepted the valid petition under Section 4 of the Drainage Act and on 18th November 2014 appointed Dillon Consulting Limited to prepare a report.

During the on-site meeting, it was determined that the proposed drainage works for the planned residential Lot 1 be separated from the other planned residential lots due to lands and roads to the east requiring drainage through this portion of the property as well. Therefore, the Section 4 petition for drainage improvements for residential Lot 1 is no longer valid under Section 4(1)(b) for the petitioner no longer makes up at least 60% of the area requiring drainage. The Town of Amherstburg Road Authority, on 21 April 2016, signed the Section 4 petition to now validate under Section 4(1)(c) of the Drainage Act.

This report provides for the establishment of a new drainage works under the provisions of the Drainage Act, to be known as the DiCecco Drain No. 2, Branch No. 2, DiCecco Drain No. 3 and Branch No. 3 which is located in the proposed residential Lots No. 2 to 5 of property Roll No. 590-02800. The Municipal Drains for the proposed residential Lot 1 of property Roll No. 590-02800 will be under a separate report.

Watershed Description

The area requiring drainage, as intended by the petition, is in Lot 29, Concession 3 (former Township of Anderdon) between Creek Road and Big Creek. This area is further identified as property Roll No. 590-02800, and is to be eventually subdivided into five (5) separate residential lots as shown on the attached drawings.



10 Fifth Street South
Chatham, Ontario
Canada
N7M 4V4
Telephone
(519) 354-7802
Fax
(519) 354-2050

Roll numbers have not been assigned to the lots at this time, but they will be assigned as the land development process proceeds. For purposes of this report, we have shown the five (5) lots as Lots 1 to 5 on the attached drawings.

The area requiring drainage under this report for DiCecco Drain No. 2 and Branch No. 2 is approximately 1.7 hectares (4.3 acres) and approximately 2 hectares (5 acres) for DiCecco Drain No. 3 and Branch No. 3.

On-Site Meeting

We conducted an on-site meeting on 24th February 2015. A record of the meeting is provided in Schedule 'A', which is appended hereto.

Survey and Existing Conditions

Our survey and examination of the surrounding lands was carried out on 9th August 2013 as part of the pre-development planning stage. The survey comprised the recording of topographic data and examining the area for available options necessary to provide sufficient drainage.

The overall topography of the entire property Roll No. 590-02800 is rolling and currently is not well suited for residential development. Final lot grading is to be provided by the developer and/or property owner and reviewed by the municipality. All individual lot drainage is to be maintained and directed, in accordance with the Town of Amherstburg's lot grading and services information standard, to the west limits of each individual property and east to the Creek Road open ditch.

Based on information obtained from the site meetings, topographic survey and review of additional information provided by landowners, we understand currently there is no drainage outlet under the Drainage Act for the properties within the area requiring drainage.

Design Considerations

The new drain has been designed to convey a 1:2 year design storm which is generally acceptable for semi-urban areas. There will likely be some temporary ponding at the west limits of each property, during heavier intense rain events based on the capacity available, however that will dissipate over time after the storm event has passed.

The Essex Region Conservation Authority (ERCA) determined that any works within the 1:100 year flood limits to Big Creek would result in harmful alteration, disruption or destruction of habitat. It is understood that the lands and roads within these specified watershed limits currently drain by sheet flow to Big Creek but ERCA would like the flows maintained through new municipal drains with a limited number of outlets into Big Creek as well as with consideration provided to control heavier flows.

Portions of the proposed works for the DiCecco Drain No. 2, Branch No. 2, DiCecco Drain No. 3 and Branch No. 3 are within the existing Big Creek 100 year floodplain as delineated on the Canard River and Big Creek floodplain mapping study (Proctor & Redfern Ltd., 1982) Map. No. ER5-50. The proposed works within the existing floodplain include construction of new swales, berms and enclosed tile drains.

The proposed berms along the west limits of the property will have cuts below the 100 year water surface elevation (176.00) to maintain a hydraulic connection to the floodplain. In addition, flood waters will be conveyed around the berms at the north and south limits of the property and will therefore not restrict the extent of the existing floodplain.

A cut-fill assessment of floodplain storage volume was also considered using the elevation of 176.00 meters. Below the 100 year elevation, it is anticipated that approximately 185 cubic meters of fill will be required for the construction of the proposed berms and 70 cubic meters of cut will be required for the construction of the proposed swales. Given the overall size of the Big Creek watershed, the small reduction in available storage within the delineated 100 year floodplain will be negligible.

Allowances

All of the recommended works are being done on the future residential properties (Roll No. 590-02800) where full restoration of the lands is included as part of the works. Therefore, we have not awarded any damages under Section 30 of the Drainage Act. In accordance with Section 29 of the Drainage Act we have determined land allowances for right of way associated with the new drains. Schedule 'B' which is a schedule for allowances is appended to this report.

Section 29 allowances were determined with a value of land taken to construct and incorporate the drains at a rate of \$10,000 per acre (\$24,710 per hectare). For the covered drains incorporated under this report and for the new berms and swales, an allowance for land is made to acknowledge the presence of the covered drains as part of the DiCecco Drain No. 2, DiCecco Drain No. 3, Branch No. 2 and Branch No. 3 and the existence of a working corridor for the purposes of future maintenance. This working corridor must remain unobstructed to allow for future works on the drains as required. The total amount of allowances for land shown in Schedule 'B' is \$8,050.00.

Recommendations and Cost Estimate

Based on our review of the history, the information obtained during the site meeting and our examination and analysis of the survey data, we recommend that the DiCecco Drain No. 2 & 3 and Branches be constructed as described below:

Item	Description	Amount
<u>DICECCO DRAIN NO. 2</u>		
1.	Station 0+000 to Station 0+124 – Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to the tile drain installation. All topsoil materials shall be temporarily stockpiled east of the new tile drain within the designated working corridor and kept separate from trench excavation materials to be later spread back over working area and fine graded.	\$3,700.00
2.	Station 0+000 to Station 0+124 - Supply and install 124 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with wrapped split coupler joints. Pipe installation is to include Class 'B' bedding up to pipe springline (approximately 65 tonnes) and native backfill beyond. Works include the construction of an earth berm over the new tile drain and the excavation and grading of a new swale east of the tile/berm. New berm/swale corridor and working area to be seeded (approximately, 1,300 m ²).	\$17,500.00

Item	Description	Amount
3.	Supply and installation of catch basins as follows:	
	a) CB1 – Station 0+000 – Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m ²).	\$2,000.00
	b) CB2 – Station 0+054 – Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m ²).	\$2,000.00
	c) CB3 – Station 0+124 – Supply and install one (1) new in-line 900 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate. Works include the installation of a 2.0 meter long, 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe extending east from CB3 into the bottom of the new swale complete with rodent gate and rip-rap w/filter fabric around pipe and swale banks (approximately 5 m ²).	\$3,200.00
4.	Outlet spillway Station 0+124 to Station 0+133:	
	a) Station 0+124 to Station 0+127 – Supply and install 3.0 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with rodent gate extending west from CB3 into outlet spillway.	\$500.00

Item	Description	Amount
	b) Station 0+127 to Station 0+133 – Excavation and grading of spillway section and placement of stone rip-rap minimum 300 mm thickness c/w filter cloth underlay on downstream end of tile drain including rock check dam (approximately 25 m ²).	\$1,400.00
5.	Temporary silt control measures during construction.	\$600.00
	SUB-TOTAL – DICECCO DRAIN NO. 2	\$30,900.00
6.	Allowances under Section 29	\$3,150.00
7.	Survey, Report, Assessment and Final Inspection (cost portion)	\$8,000.00

8.	Expenses and incidentals (cost portion)	\$500.00
9.	Contract administration and periodic inspection (cost portion)	\$1,500.00
	TOTAL – DICECCO DRAIN NO. 2	\$44,050.00

BRANCH NO. 2		
1.	Station 0+000A to Station 0+044A – Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to excavation. All topsoil materials shall be temporarily stockpiled east of the new berm/swale corridor within the designated working corridor and kept separate from excavation materials to be later spread back over working area and fine graded.	\$1,350.00
2.	Station 0+000A to Station 0+044A - Excavate (construct) and grade new swale with 3:1 side slopes and 0.5 m bottom width (approximately 12 m ³).	\$800.00
3.	Station 0+000A to Station 0+044A - Construct earth berm west of grassed swale using clean native material from swale and/or imported native materials (approximately 28 m ³) compacted and sloped with 2:1 side slopes and 0.9 m top width.	\$1,600.00
4.	Seeding of swale/berm corridor (approximately 350 m ²).	\$1,500.00
	SUB-TOTAL – BRANCH NO. 2	\$5,250.00
5.	Allowances under Section 29	\$1,100.00
6.	Survey, Report, Assessment and Final Inspection (cost portion)	\$1,250.00

Item	Description	Amount
7.	Expenses and incidentals (cost portion)	\$200.00
8.	Contract administration and periodic inspection (cost portion)	\$400.00
TOTAL - BRANCH NO. 2		\$8,200.00

DICECCO DRAIN NO. 3		
1.	Station 0+000B to Station 0+098B - Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to the tile drain installation. All topsoil materials shall be temporarily stockpiled east of the new tile drain within the designated working corridor and kept separate from trench excavation materials to be later spread back over working area and fine graded.	\$3,000.00
2.	Station 0+000B to Station 0+098B - Supply and install 98 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with wrapped split coupler joints. Pipe installation is to include Class 'B' bedding up to pipe springline (approximately 50 tonnes) and native backfill beyond. Works include the construction of an earth berm over the new tile drain and the excavation and grading of a new swale east of the tile/berm. New berm/swale corridor and working area to be seeded (approximately 1,000 m ²).	\$13,800.00
3.	Supply and installation of catch basins as follows:	
	a) CB4 - Station 0+000B - Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m²).	\$2,000.00

Item	Description	Amount
	b) CB5 – Station 0+075B – Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m ²).	\$2,000.00
	c) CB6 – Station 0+098B – Supply and install one (1) new in-line 900 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate. Works include the installation of a 2.0 meter long, 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe extending east from CB6 into the bottom of the new swale complete with rodent gate and rip-rap w/filter fabric around pipe and swale banks (approximately 5 m ²).	\$3,200.00
4.	Outlet spillway Station 0+098B to Station 0+107B	
	a) Station 0+098B to Station 0+101B – Supply and install 3.0 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with rodent gate extending west from CB6 into outlet spillway.	\$500.00
	b) Station 0+101B to Station 0+107B – Excavation and grading of spillway section and placement of stone rip-rap minimum 300 mm thickness c/w filter cloth underlay on downstream end of tile drain including rock check dam (approximately 25 m ²).	\$1,400.00
5.	Temporary silt control measures during construction.	<u>\$600.00</u>
	SUB-TOTAL – DICECCO DRAIN NO. 3	\$26,500.00
6.	Allowances under Section 29	\$2,450.00
7.	Survey, Report, Assessment and Final Inspection (cost portion)	\$7,500.00

Item	Description	Amount
8.	Expenses and incidentals (cost portion)	\$400.00
9.	Contract administration and periodic inspection (cost portion)	<u>\$1,300.00</u>
	TOTAL – DICECCO DRAIN NO. 3	\$38,150.00
	<u>BRANCH NO. 3</u>	
1.	Station 0+000C to Station 0+055C – Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to excavation. All topsoil materials shall be temporarily stockpiled east of the new berm/swale corridor within the designated working corridor and kept separate from excavation materials to be later spread back over working area and fine graded.	\$1,600.00
2.	Station 0+000C to Station 0+055C - Excavate (construct) and grade new swale with 3:1 side slopes and 0.5 m bottom width (approximately 20 m ³).	\$1,000.00
3.	Station 0+000C to Station 0+055C - Construct earth berm west of grassed swale using clean native material from swale and/or imported native materials (approximately 18 m ³) compacted and sloped with 2:1 side slopes and 0.9 m top width.	\$1,800.00
4.	Seeding of swale/berm corridor (approximately 450 m ²).	<u>\$1,800.00</u>
	SUB-TOTAL – BRANCH NO. 3	\$6,200.00
5.	Allowances under Section 29	\$1,350.00
6.	Survey, Report, Assessment and Final Inspection (cost portion)	\$1,300.00
7.	Expenses and incidentals (cost portion)	\$200.00
8.	Contract administration and periodic inspection (cost portion)	<u>\$400.00</u>
	TOTAL – BRANCH NO. 3	\$9,450.00
	OVERALL TOTAL DICECCO DRAIN NO. 2 & 3 AND BRANCHES	\$99,850.00

The estimate provided in this report was prepared according to current materials and installation prices as of the date of this report. Included within the estimate above are also the costs of temporary financing (interest costs) and the non-rebated portion of the HST (1.76%) that comprise a part of the costs of the drainage works, in accordance with Sections 73(1) and 88(2) of the Drainage Act. In the event of delays from the time of filing of the report by the Engineer to the time of tendering the work, it is understood that the estimate of the cost is subject to inflation. The rate of inflation shall be calculated using the Consumer Price Index applied to the cost of construction from the date of the report to the date of tendering.

Assessment of Costs

The individual assessments are comprised of three (3) assessment components:

- i. Benefit (*advantages relating to the betterment of lands, roads, buildings, or other structures resulting from the improvement to the drain*).
- ii. Outlet Liability (*part of cost required to provide outlet for lands and roads*).
- iii. Special Benefit (*additional work or feature that may not affect function of the drain*).

We have assessed the estimated costs against the affected lands as listed in Schedules 'C-1', 'C-2', 'C-3' and 'C-4' under "Value of Special Benefit," "Value of Benefit" and "Value of Outlet". Details of the Value of Special Benefit, denoted as Schedule 'D', are not required and therefore not included in this report. Schedule 'C-1' represents a schedule for the DiCecco Drain No. 2, Schedule 'C-2' represents a schedule for Branch No. 2, Schedule 'C-3' represents a schedule for DiCecco Drain No. 3 and Schedule 'C-4' represents a schedule for Branch No. 3.

Assessment Rationale

We have assessed the above estimated cost for the installation of the DiCecco Drain No. 2, Branch No. 2, DiCecco Drain No. 3 and Branch No. 3 against the affected land listed in Schedule 'C-1', 'C-2', 'C-3' and 'C-4' respectively under "Special Benefit".

1. The assessments related to DiCecco Drain No. 2, Branch No. 2, DiCecco Drain No. 3 and Branch No. 3 have been assessed 100% against Roll No. 590-02800.

Utilities

It may become necessary to temporarily or permanently relocate utilities that may conflict with the construction recommended under this report. In accordance with Section 26 of the Drainage Act, we assess any relocation cost against the public utility having jurisdiction. Under Section 69 of the Drainage Act, the public utility is at liberty to do the work with its own forces, but if it should not exercise this option within a reasonable time, the Municipality will arrange to have this work completed and the costs will be charged to the appropriate public utility.

Future Maintenance

We recommend that future work of repair and maintenance of the DiCecco Drain No. 2 be carried out by the Municipality and the costs assessed against the affected lands as shown in Schedule "E-1".

We recommend that future work of repair and maintenance of the Branch No. 2 be carried out by the Municipality and the costs assessed against the affected lands as shown in Schedule "E-2".

We recommend that future work of repair and maintenance of the DiCecco Drain No. 3 be carried out by the Municipality and the costs assessed against the affected lands as shown in Schedule "E-3".

We recommend that future work of repair and maintenance of the Branch No. 3 be carried out by the Municipality and the costs assessed against the affected lands as shown in Schedule "E-4".

Assessments are to be levied out by the Town of Amherstburg against the upstream lands herein assessed in each schedule in the same relative proportions subject, of course, to any variations that may be made under the authority of the Drainage Act. The assessments are based on arbitrary amounts of \$10,000.00.

Drawings and Specifications

Attached to this report is "Schedule F," which contains specifications setting out the details of the recommended works, and "Schedule G," which represents the following drawings that are also attached to this report:

Page 1 of 8: Overall Plan & Big Creek Plan

Page 2 of 8: DiCecco Drain No. 2 & Branch No. 2 Detail Plan

Page 3 of 8: DiCecco Drain No. 2 Profile

Page 4 of 8: Branch No. 2 Profile & Cross Sections

Page 5 of 8: DiCecco Drain No. 3 & Branch No. 3 Detail Plan

Page 6 of 8: DiCecco Drain No. 3 Profile

Page 7 of 8: Branch No. 3 Profile & Cross Sections

Page 8 of 8: Details

Fisheries Issues

The DiCecco Drain No. 2 and No. 3 and Branches are new closed tile drain systems. Standard practices shall be followed to minimize disruption to fish habitat within the Big Creek.

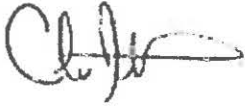
At the time of construction or maintenance, the Drainage Superintendent shall contact the governing Conservation Authority (acting liaison for DFO) or equivalent regulatory agency to confirm any construction limitations including timing windows or limitations related to in-stream work etc. as required.

All disturbed areas should be stabilized immediately. Upon completion of the work, or as soon as conditions allow, all disturbed areas shall be returned to a pre-disturbed state or better.

Grants

In accordance with the provisions of Sections 85, 86 and 87 of the Drainage Act, a grant in the amount of 33-1/3 percent of the assessment eligible for a grant may be made in respect to the assessment made under this report upon privately owned lands used for agricultural purposes. The assessments levied against privately owned agricultural land must also satisfy all other eligibility criteria set out in the Agricultural Drainage Infrastructure Program policies. In this particular circumstance, the entire cost of the work will be levied against Roll No. 590-02800 which is a proposed residential development and therefore, none of the assessed cost is eligible for a grant from the Ministry of Agriculture and Food.

Respectfully submitted,
DILLON CONSULTING LIMITED



Chris D. Thibert, P.Eng.

CDT:prc:wlb:ges



SCHEDULE 'A'
DiCECCO DRAINS
RECORD OF ENGINEERING ON-SITE MEETING
February 24, 2015 - 9:00 - 11:00 a.m.

Record of Attendance:

Eric Chamberlain	Town of Amherstburg
Nicole Humber	Town of Amherstburg
Tim Byrne	Essex Region Conservation Authority
Chris Thibert	Dillon Consulting Limited
Chris Patten	Dillon Consulting Limited
Robert Oliver	Landowner
Dan Paquette	Landowner
Ryan Varney	Landowner
Joe DiCecco	Landowner
Brain & Pam Hutchins	Landowner
Winona Dent	Landowner
Robert & Sharon Dent	Landowner

Introductions and a brief explanation of the reason for the meeting was made by Eric Chamberlain, Drainage Superintendent and Manager of Public Works for the Town of Amherstburg. Eric explained that this meeting was to discuss a Section 4 petition under the Drainage Act by Mr. DiCecco to satisfy drainage constraints as required by Essex Region Conservation Authority (ERCA) and the Town of Amherstburg. Eric then turned the meeting over to Chris Thibert as Drainage Engineer for the project.

Chris outlined the process of submitting a report under Section 4 of the Drainage Act and explained that the next steps are to have the drain surveyed and then prepare a report. He explained that since a survey was already completed for a different aspect of the project that a new survey may not be required if the topographical information was sufficient for design and construction of these new Section 4 drains. He also explained that the main purpose of a Section 4 drainage on-site is to gather information about the existing drainage systems from the adjacent landowners to better determine watershed limits and areas requiring drainage which is why additional landowners beyond the limits of the assumed watershed were invited to attend.

Chris further explained that the purpose of these Section 4 drains within the DiCecco property is due to proposed lot severances and development. There presently is no municipal drain in this area and portions of properties east of Creek Road outlet through the DiCecco property to Big Creek. If Mr. DiCecco develops the residential properties, this would cut off lands and roads to the east and therefore a drainage system needs to be in place. Chris proposed that a new municipal drain along the north property line of the DiCecco property including a new road crossing, sized to properly accommodate the upstream lands and roads, would be the best approach and would redirect and control the flows that currently cut through the center of the property to Big Creek. Chris explained that options for either an open drain or closed drain would be discussed with the landowner and a separate report would be completed for this new drain for it involves additional landowners east of Creek Road (including Creek Road) which will be included in a schedule of assessment for future maintenance for they will use this drain as outlet to Big Creek.

Chris mentioned that all costs related to the proposed drainage works on the DiCecco property would be paid for by Mr. DiCecco as owner of the property Roll. No. 590-02800 and all costs related to a new road crossing would be paid for by the Town of Amherstburg under Section 26 of the Drainage Act. The costs to Mr. DiCecco would be a one-time 'Special Benefit' assessment to establish these municipal drains as he is the landowner requiring them but in the future, all lands and roads identified in the report/watershed would be assessed for any required maintenance to the municipal drain. Chris explained that the current petition is only valid to do work on the DiCecco and road property and therefore the municipal drain would stop just east of Creek Road. If any other landowners east of Creek Road wish to connect by having the drain extend to their property, they would have to either sign the petition or start a new one. At this time, no other landowners expressed interest in signing but were provided contact information if they wish to do so.

Tim Byrne explained that Big Creek is a regulated watercourse and would like to see only three (3) storm water outlets into Big Creek as a result of the proposed residential development and controlled by being new municipal drains which gives the Town of Amherstburg the ability to properly maintain them under the Drainage Act. Tim also would like to see grassed swales over top any proposed tile drain system. Tim also explained that lands on the east side of Creek Road have no prescriptive right to drain through the DiCecco property and presently do not have a legal outlet. Tim expressed that these landowners should therefore sign onto this Section 4 petition.

Brain Hutchins explained that there is a 6" tile coming from his property that crosses Creek Road and outlets into Big Creek. Chris said that this tile would have to be located and would be picked up in the new drainage system.

Landowners on the east side of Creek Road explained that runoff used to travel south to the Whelan Drain but only part now goes this way with the installation of the existing 450 mm CSP road crossing. Ever since this road crossing was installed there have been problems both upstream and immediately downstream of the crossing that landowners would like to see addressed. Landowners also explained that there could be development on the agricultural property east of Creek Road. Chris explained that if this does happen then the Town of Amherstburg would have to be notified for this would be part of the Whelan Drain.

Both Winona Dent and Ryan Varney explained that their drainage does not go this direction and flows north directly to Big Creek.

Robert and Sharon Dent explained that there have been significant flooding problems on their property ever since the road crossing was installed and they have tried to fix this many times. They also requested that the new drain (location and/or construction) does not impact their property. Chris explained that this new municipal drain can be aligned to avoid their property and will ultimately resolve the flooding concerns as well.

Notes taken by Chris Thibert

"SCHEDULE B"
SCHEDULE OF ALLOWANCES
DICECCO DRAIN NO. 2 & 3 AND BRANCH NO. 2 & 3
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

Roll No.	Con.	Description	Owner	Section 30 Damages	Section 29 Land	Total Allowances
590-02800	3	Pt. Lot 29	Giuseppe & Anne DiCecco	\$0.00	\$8,050.00	\$8,050.00
TOTAL ALLOWANCES				\$0.00	\$8,050.00	\$8,050.00

"SCHEDULE C-1"
SCHEDULE OF ASSESSMENT
DICECCO DRAIN NO. 2
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
590-02800	3	Pt. Lot 29	3.26	1.32	Giuseppe & Anne DiCecco	\$44,050.00	\$0.00	\$0.00	\$44,050.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$44,050.00	\$0.00	\$0.00	\$44,050.00
TOTAL ASSESSMENT						\$44,050.00	\$0.00	\$0.00	\$44,050.00
			(Acres)	(Ha.)					
Total Area:			3.26	1.32					

"SCHEDULE C-2"
SCHEDULE OF ASSESSMENT
BRANCH NO. 2
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
590-02800	3	Pt. Lot 29	0.94	0.38	Giuseppe & Anne DiCecco	\$8,200.00	\$0.00	\$0.00	\$8,200.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$8,200.00	\$0.00	\$0.00	\$8,200.00
TOTAL ASSESSMENT						\$8,200.00	\$0.00	\$0.00	\$8,200.00
			(Acres)	(Ha.)					
Total Area:			0.94	0.38					

"SCHEDULE C-3"
SCHEDULE OF ASSESSMENT
DICECCO DRAIN NO. 3
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
590-02800	3	Pt. Lot 29	3.21	1.30	Giuseppe & Anne DiCecco	\$38,150.00	\$0.00	\$0.00	\$38,150.00
Total on Privately-Owned - Non-Agricultural Lands						\$38,150.00	\$0.00	\$0.00	\$38,150.00
TOTAL ASSESSMENT						\$38,150.00	\$0.00	\$0.00	\$38,150.00
			(Acres)	(Ha.)					
Total Area:			3.21	1.30					

"SCHEDULE C-4"
SCHEDULE OF ASSESSMENT
BRANCH NO. 3
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
590-02800	3	Pt. Lot 29	1.73	0.70	Giuseppe & Anne DiCecco	\$9,450.00	\$0.00	\$0.00	\$9,450.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$9,450.00	\$0.00	\$0.00	\$9,450.00
TOTAL ASSESSMENT						\$9,450.00	\$0.00	\$0.00	\$9,450.00
			(Acres)	(Ha.)					
Total Area:			1.73	0.70					

"SCHEDULE E-1"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE
DICECCO DRAIN NO. 2
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
590-02800	3	Pt. Lot 29	3.26	1.32	Giuseppe & Anne DiCecco	\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
TOTAL ASSESSMENT						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
			(Acres)	(Ha.)					
Total Area:			3.26	1.32					

"SCHEDULE E-2"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE
BRANCH NO. 2
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
590-02800	3	Pt. Lot 29	0.94	0.38	Gluseppe & Anne DiCecco	\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
TOTAL ASSESSMENT						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
			(Acres)	(Ha.)					
Total Area:			0.94	0.38					

"SCHEDULE E-3"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE
DICECCO DRAIN NO. 3
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
590-02800	3	Pt. Lot 29	3.21	1.30	Giuseppe & Anne DiCecco	\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
TOTAL ASSESSMENT						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
			(Acres)	(Ha.)					
Total Area:			3.21	1.30					

"SCHEDULE E-4"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE
BRANCH NO. 3
TOWN OF AMHERSTBURG (COUNTY OF ESSEX)

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
590-02800	3	Pt. Lot 29	1.73	0.70	Giuseppe & Anne DiCecco	\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
TOTAL ASSESSMENT						\$0.00	\$7,500.00	\$2,500.00	\$10,000.00
			(Acres)	(Ha.)					
Total Area:			1.73	0.70					

"SCHEDULE F"
DRAINAGE REPORT FOR THE
DiCecco Drain No. 2 & 3 & BRANCHES
TOWN OF AMHERSTBURG
COUNTY OF ESSEX

SPECIAL PROVISIONS - GENERAL

1.0 GENERAL SPECIFICATIONS

The General Specifications attached hereto is part of "Schedule F." It also forms part of this specification and is to be read with it, but where there is a difference between the requirements of the General Specifications and those of the Special Provisions which follow, the Special Provisions will take precedence.

2.0 DESCRIPTION OF WORK

The work to be carried out under this Contract includes, but is not limited to, the supply of all **labour, equipment and materials** to complete the following items:

DiCecco Drain No.2

- Station 0+000 to Station 0+124 – Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to the tile drain installation. **All topsoil materials shall be temporarily stockpiled east of the new tile drain within the designated working corridor and kept separate from trench excavation materials to be later spread back over working area and fine graded.**
- Station 0+000 to Station 0+124 - Supply and install 124 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with wrapped split coupler joints. Pipe installation is to include Class 'B' bedding up to pipe springline (approximately 65 tonnes) and native backfill beyond. Works include the construction of an earth berm over the new tile drain and the excavation and grading of a new swale east of the tile/berm. New berm/swale corridor and working area to be seeded (approximately 1,300 m²).
- Supply and installation of catch basins as follows:
 - **CB1** – Station 0+000 – Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m²).
 - **CB2** – Station 0+054 – Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density

polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m²).

- **CB3** – Station 0+124 – Supply and install one (1) new in-line 900 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate. Works include the installation of a 2.0 meter long, 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe extending east from CB3 into the bottom of the new swale complete with rodent gate and rip-rap w/filter fabric around pipe and swale banks (approximately 5 m²).
- **Outlet spillway Station 0+124 to Station 0+133:**
 - Station 0+124 to Station 0+127 – Supply and install 3.0 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with rodent gate extending west from CB3 into outlet spillway.
 - Station 0+127 to Station 0+133 – Excavation and grading of spillway section and placement of stone rip-rap minimum 300 mm thickness c/w filter cloth underlay on downstream end of tile drain including rock check dam (approximately 25 m²).
- **Temporary silt control measures during construction.**

Branch No. 2

- Station 0+000A to Station 0+044A – Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to excavation. **All topsoil materials shall be temporarily stockpiled east of the new berm/swale corridor within the designated working corridor and kept separate from excavation materials to be later spread back over working area and fine graded.**
- Station 0+000A to Station 0+044A - Excavate (construct) and grade new swale with 3:1 side slopes and 0.5 m bottom width (approximately 12 m³).
- Station 0+000A to Station 0+044A - Construct earth berm west of grassed swale using clean native material from swale and/or imported native materials (approximately 28 m³) compacted and sloped with 2:1 side slopes and 0.9 m top width.
- Seeding of swale/berm corridor (approximately 350 m²).

DiCecco Drain No. 3

- Station 0+000B to Station 0+098B – Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to the tile drain installation. **All topsoil materials shall be temporarily stockpiled east of the new tile drain within the designated working corridor and kept separate from trench excavation materials to be later spread back over working area and fine graded.**

- Station 0+000B to Station 0+098B - Supply and install 98 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with wrapped split coupler joints. Pipe installation is to include Class 'B' bedding up to pipe springline (approximately 50 tonnes) and native backfill beyond. Works include the construction of an earth berm over the new tile drain and the excavation and grading of a new swale east of the tile/berm. New berm/swale corridor and working area to be seeded (approximately 1,000 m²).
- Supply and installation of catch basins as follows:
 - **CB4** – Station 0+000B – Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m²).
 - **CB5** – Station 0+075B – Supply and install one (1) new off-set 600 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate and 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe connection (2.0 m length) to new 300 mm diameter tile drain (Boss 2000 or approved equal) complete with wrapped split coupler joints. Works include the placement of stone rip-rap, 500 mm wide, around catch basin grate complete with filter fabric underlay (approximately 5 m²).
 - **CB6** – Station 0+098B – Supply and install one (1) new in-line 900 mm diameter 320 kPa, smooth wall solid corrugated high density polyethylene (H.D.P.E.) catch basin (Boss 2000 or approved equal) complete with cast iron grate. Works include the installation of a 2.0 meter long, 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe extending east from CB6 into the bottom of the new swale complete with rodent gate and rip-rap w/filter fabric around pipe and swale banks (approximately 5 m²).
- Outlet spillway Station 0+098B to Station 0+107B:
 - Station 0+098B to Station 0+101B – Supply and install 3.0 m of 300 mm diameter 320 kPa, non-perforated high density polyethylene (H.D.P.E.) pipe (Boss 2000 or approved equal) complete with rodent gate extending west from CB6 into outlet spillway.
 - Station 0+101B to Station 0+107B – Excavation and grading of spillway section and placement of stone rip-rap minimum 300 mm thickness c/w filter cloth underlay on downstream end of tile drain including rock check dam (approximately 25 m²).
- Temporary silt control measures during construction.

Branch No. 3

- Station 0+000C to Station 0+055C – Strip and replace topsoil a minimum of 150 mm depth within the specified berm/swale corridor prior to excavation. **All topsoil materials shall be temporarily stockpiled east of the new berm/swale corridor within the designated working corridor and kept separate from excavation materials to be later spread back over working area and fine graded.**
- Station 0+000C to Station 0+055C - Excavate (construct) and grade new swale with 3:1 side slopes and 0.5 m bottom width (approximately 20 m³).
- Station 0+000C to Station 0+055C - Construct earth berm west of grassed swale using clean native material from swale and/or imported native materials (approximately 18 m³) compacted and sloped with 2:1 side slopes and 0.9 m top width.
- Seeding of swale/berm corridor (approximately 450 m²).

3.0 ACCESS TO THE WORK

Access to the drain shall be from the unopened road allowance for South Sideroad off of Creek Road and off of property Roll No 590-02800. The Contractor shall make his/her own arrangements for any additional access for his/her convenience. All road areas and grass lawn areas disturbed shall be restored to original conditions at the Contractor's expense.

4.0 WORKING AREA

Working corridors are as follows:

Drain/Station	Working Area
DiCecco Drain No. 2 – Station 0+000 to Station 0+124	10 m wide measured east of the chainlink fence.
DiCecco Drain No. 2 Spillway Outlet – Station 0+124 to Station 0+133	12 m wide centered on the centerline alignment of the spillway.
Branch No. 2 – Station 0+000A to Station 0+044A	10 m wide measured east of the chainlink fence.

Drain/Station	Working Area
DiCecco Drain No. 3 – Station 0+000B to Station 0+098B	10 m wide measured east of the chainlink fence.
DiCecco Drain No. 3 Spillway Outlet – Station 0+098B to Station 0+107B	12 m wide centered on the centerline alignment of the spillway
Branch No. 3 – Station 0+000C to Station 0+055C	10 m wide measured east of the chainlink fence.

These working areas will also provide access for equipment and temporary placement of excavating materials. Any damages to lands and/or roads from the Contractor's work within the working areas shall be rectified to pre-existing conditions at his expense.

The Contractor shall restrict his equipment to the working corridors as specified in this Section. Any damage resulting from non-compliance with this Section shall be borne by the Contractor.

For future drain maintenance activities, the working corridors specified above shall govern. No re-grading will be permitted within the specified corridors and municipal drain easements.

SPECIAL PROVISIONS – TILE DRAIN

5.0 DRAINAGE PIPE CONSTRUCTION

5.1 Setting Out

The Engineer shall provide the Contractor in writing with benchmarks and points of reference. From these benchmarks and points of reference, the contractor will do his own setting out. The setting out by the Contractor shall include but shall not be limited to the preparation of grade sheets, the installation of centerline stakes, grade stakes, offsets, and sight rails.

If, during the setting out, the contractor finds an error in the benchmarks or points of reference provided by the Engineer or is uncertain as to the interpretation of the information provided or the work intended, he shall notify the Engineer immediately for additional verification or clarification before proceeding with construction.

The Contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the work.

The Contractor shall be responsible to ensure that the alignment selected results in a minimum depth of cover of 300 mm over the top of the drainage pipe to be installed.

If, at any time during the progress of the works, an error shall appear or arise in the position, levels, dimensions or alignment of any part of the works, the Contractor shall, at his own expense, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer.

5.2 Profile

The drainage pipe shall be laid so that its invert shall be at the gradeline shown on the profile, which gradeline is governed by the benchmarks. The profile shows, for the convenience of the Contractors and others, the approximate depth of cut from the surface of the ground at 25 metre intervals, to the final invert of the drainage pipe in metres and decimals of a metre. Benchmarks, which have been established along the course of the drain, shall govern the final elevation of the drain. The locations and elevations of the benchmarks are shown on the General Details.

A variation in grade may be tolerated where the actual capacity of the drain exceeds the required capacity. The as-constructed invert of the drainage pipe shall not deviate from the specified gradeline more than 10% of the internal diameter of the drainage pipe. These deviations are allowable, provided they are gradual over a distance of not less than 10 m. No reverse grade shall be allowed.

5.3 Obstructions

All brush, timber, logs, stumps, stones or other obstructions that interfere with the construction of the drain, encountered along the course of the drain are to be removed by the Contractor and disposed of off-site. Timber, logs, stumps, large stones and other similar material are to be dealt with in the same manner as specified for brush and trees.

5.4 Location of New Tile Drains

The new tile drains shall be installed as shown on the drawings attached hereto.

5.5 Drainage Pipe Materials

5.5.1 H.D.P.E. Pipe

DiCecco Drain No.2 Tile Drain (Sta. 0+000 to Sta. 0+127) *New 300 mm (12") diameter (perforated) corrugated high density polyethylene (H.D.P.E.) smooth wall interior (Armtec Boss 2000 or approved equivalent) unless otherwise specified conforming to the following specifications: ASTM @3350, CSA B182.8-02 and OPSS 1840. The pipe is to provide a minimum pipe stiffness of 320 kPa.*

DiCecco Drain No. 3 (Sta. 0+000B to Sta. 0+0101B) *Joined using (soil tight) "split" coupler joining system (Split couplers manufactured by Armtec Limited or approved equal), supplied by the pipe manufacturer and conforming to ASTM D3350, CSA 182.8-02 and OPSS 1840. Joints wrapped in "Non-Woven" geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 446, Mirafi 140NC or approved equivalent.*

Pipe Bedding Under Entire Pipe *Granular 'A' conforming to OPSS Division 10 or 19 mm clearstone.*

Backfill up to Pipe Springline *Granular 'A' conforming to OPSS Division 10 or 19 mm clearstone.*

Native Backfill Up to Existing Conditions *Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances.*

Filter Fabric *"Non-Woven" geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC or approved equivalent.*

Erosion Stone *All stone to be used for erosion protection shall be 125 – 250 mm clear quarried rock or OPSS 1001, minimum 300 mm thickness.*

The pipe to be used for the enclosed drain tile of the DiCecco Drain No. 2 and DiCecco Drain No. 3 shall be solid corrugated high density polyethylene pipe (H.D.P.E.) smooth interior wall pipe meeting the following specifications:

ASTM D3350, CSA B182.8-02 and OPSS 1840. The pipe is to provide a minimum pipe stiffness of 320 kPa. Shall be joined using (soil tight) "split" coupler joining system (Split couplers manufactured by Armtec Limited or approved equal), supplied by the pipe manufacturer and conforming to ASTM D3350, CSA B182.8-02 and OPSS 1840. Connections to the catch basin shall be completely parged in place with an approved non-shrink grout.

All joints of the H.D.P.E. pipe are to be wrapped with non-woven filter fabric as per the specifications in Section 5.8. The filter fabric shall be a minimum of 1 m wide and centered over the pipe joint. The filter fabric shall be installed neatly around the circumference of the tile without any unnecessary bunching or folding of the material so that voids between the filter fabric and the tile are avoided.

5.6 Stripping of Topsoil

Topsoil shall be stripped for a minimum depth of 150 mm from the proposed drain alignment for DiCecco Drain No. 2 Station 0+000 to Station 0+124 including the location of the berm and swale.

The topsoil shall be stockpiled east of the proposed swale for DiCecco Drain No. 2 in a temporary 10.0 m wide corridor. Later, the topsoil will be spread on the new berm and swale. A minimum depth of topsoil is 100 mm.

Topsoil shall be stripped for a minimum depth of 150 mm from the proposed drain alignment for DiCecco Drain No. 3 Station 0+000B to Station 0+098B including the location of the berm and swale. The topsoil shall be stockpiled east of the proposed swale for DiCecco Drain No. 3 in a temporary 10.0 m wide corridor. Later, the topsoil will be spread on the new berm and swale. A minimum depth of topsoil is 100 mm.

Excess topsoil shall not be removed from the site. Excess topsoil shall be used to repair settlements and increase the topsoil thickness over the filled alignment.

It is anticipated that the amount of topsoil stripped from proposed open channel alignments will be greater than the amount required to dress the entire surface of the filled alignment however, if needed, the Contractor shall import screened topsoil to complete the work at their expense

5.7 Excavating the Trench

Construction of the trench shall normally start at the outlet and proceed upstream and be by excavator. The trench walls may be cut vertically to a height of 1 metre from the trench bottom. Beyond 1 metre of the trench bottom the walls are to be cut no steeper than 1:1 side slopes unless a trench box is utilized.

Minimum width of trench, measured at the top of the drainage pipe, shall be equal to the outside diameter of the drainage pipe plus approximately half of the outside pipe diameter on both sides of the pipe, to permit proper granular material bedding placement around the drainage pipe.

The bottom of the trench shall be cut to a minimum of 150 mm below the gradeline to allow for the Class 'B' bedding materials.

Any additional excavated material not required for backfilling purposes shall be disposed of off-site.

The topsoil is to be separated from the subsoil and during the backfilling operation it shall be replaced as the top layer.

5.8 Laying Drainage Pipe

DiCecco Drain No. 2 Station 0+000 to Station 0+127 and DiCecco Drain No. 3 Station 0+000B to Station 0+101B

The Contractor shall supply and install Class 'B' granular material for bedding, placed to a depth of 150 mm below the design invert of the pipe and shaped to receive the pipe. After pipe placement, Class 'B' backfill shall be placed and compacted to the springline of the pipe throughout its entire length.

Laying of the drainage pipe shall normally begin at the lower end of the drain and progress upstream.

All soil or debris in the drainage pipe shall be removed before installation.

All drainage pipes shall be free from clinging wet or frozen material that would hinder the laying of the drainage pipe on grade.

Before work is suspended for the day, all drainage pipe laid in trenches shall be blinded and any open ends closed.

Care must be taken in handling plastic drain pipe in cold weather to avoid causing damage.

Plastic drain pipe shall be held in position on planned grade immediately after installation by careful placement of backfill material.

5.9 Connections

Drains carrying sewage or farmstead wastes shall not be connected to the drainage system.

Plastic tubing connections to rigid drainage pipe shall be made with manufactured plastic adapters.

Directional changes in plastic tubing may be made without the use of fittings provided that the centre line radius of the bend is not less than five times the tubing diameter.

Manufactured "T", "Y", or elbow fittings shall be used for connections at the junction of two drains.

All connections shall be carried out by the Contractor as part of his work. The cost of connections shall be an expense of the drain.

The Contractor shall plug the existing tile in the wall of the trench, on the opposite side on which the connection is made, if the tile extends across the trench.

5.10 Blinding

As the laying of drainage pipe progresses, the drainage pipe shall be blinded by placing crumbly sub-soils from the springline of the pipe to a minimum depth of 150 mm above the top of pipe.

Drainage pipe laid in open trenches shall be blinded by the end of each day.

Large stones and frozen lumps of soil shall not be permitted in the blinding material.

On steep grades, or where the topsoil contains fine sand, loam or clay soil (if available from the sides of the trench) shall be used as blinding material.

5.11 Backfilling

After the Drainage Superintendent has inspected the laying of the drainage pipe, earth excavated from the trench shall be used as backfill material. Surplus soil shall be spread and heaped evenly to a maximum of 400 mm above the trench of DiCecco Drain No. 2 and DiCecco Drain No. 3 only to avoid depressions following settlement. Topsoil shall then be replaced over the heaped material. If necessary the contractor shall return for additional levelling no later than one year from the time of project completion.

Large stones, roots, broken pipe and other material likely to impede or damage field equipment shall be removed from the backfill and placed in a suitable disposal area by the Contractor.

To avoid the danger of damaging the drainage pipe, large stones and lumps of frozen earth may not be placed in the trench during the backfill operation.

Where plastic tubing is not blinded in a separate operation, a backfilling method shall be used that permits backfill material to roll into the trench and provide uniform soil placement around tubing, immediately after installation.

Except at laneways and road crossings, backfill material shall not be compacted; compaction shall be allowed to occur naturally.

5.12 New Catch Basins (CB)

The Contractor shall arrange for the supply and installation of catch basins and lawn type catch basins at the locations and elevations as shown on the drawing Details and Profiles. The price bid for the catch basin installations shall include all material, equipment and labour necessary to complete the catch basin installations including connections to the covered drain. This specification refers to the following catch basins:

DiCecco Drain No. 2	Stations 0+000, 0+054 and 0+124/0+044A
DiCecco Drain No. 3	Stations 0+000B, 0+075B and 0+098B/0+055C

The lawn type catch basins at Stations 0+000, 0+054, 0+000B and 0+075B shall be 600 mm diameter solid corrugated high density polyethylene (H.D.P.E.) smooth wall 320 kPa pipe (Boss 2000 or approved equal) pipe with flat cast iron grates and a 9.5 mm welded bottom. The catch basins shall be off-set from the new tile drain and set in the bottom of the new swale east of the tile drain, connected to the new tile drain with a 150 mm diameter H.D.P.E. lead pipe. The catch basins shall have an overall height as shown on the drawings with a sump of 300 mm. The control elevations for the lawn type catch basins shall be set to the elevations shown on the profile. The catch basins shall have a 500 mm wide rip-rap layer, as specified in section 5.13, around the open grates.

The catch basins at Station 0+124/0+044A and Station 0+098B/0+055C shall be 900 mm diameter solid corrugated high density polyethylene (H.D.P.E.) smooth wall 320 kPa pipe (Boss 2000 or approved equal) pipe with flat cast iron grates and a 9.5 mm welded bottom. The catch basin shall have an overall height as shown on the drawings with a sump of 300 mm. The control elevations for the lawn type catch basins shall be set to the elevations shown on the profile.

All work must be carried out to the satisfaction of the Drainage Superintendent. The proposed location of each catch basin must be staked in the field by the contractor for approval by the Drainage Superintendent prior to construction.

All pipes are to be securely grouted into the catch basins. All catch basins are to be installed on a 300 mm thick base of 19 mm size clear stone.

Pipe placed in the walls for inlet and outlet connections shall extend through the wall a sufficient distance to allow for connections. The pipes shall be trimmed flush with the inside wall and shall be securely sealed into place using grout or manufactured water tight 'tee' connections.

5.13 Stone Erosion Protection (SEP)

The Contractor shall supply and install the required quantities of graded stone rip-rap erosion protection materials where specified. All stone to be used for erosion protection shall be 125-250 mm clear quarried rock or OPSS 1001 placed over a non-woven filter fabric – Terrafix 270R or approved equal. **Concrete rip-rap will not be permitted.** The minimum thickness requirement of the erosion stone layer is 300 mm with no portion of the filter fabric to be exposed.

5.14 Spillway Outlets to Big Creek (DiCecco Drain No. 2 Station 0+127 to Station 0+133 and DiCecco Drain No. 3 Station 0+I01B to Station 0+107B)

Erosion protection for the outlet spillways and rock check dams, as specified in the location on the drawings, shall be constructed of quarry stone rip-rap consisting of 150-250 mm sized clear quarried angular limestone materials placed over a non-woven filter fabric Terrafix 270R or approved equal. The rock check dams shall be constructed in accordance with OPSD 219.211 as shown on the drawings.

The center of the spillways from Station 0+127 to Station 0+133 and Station 0+101B to Station 0+107B shall be excavated 300 mm deep, with materials excavated compacted along the sides forming side slopes at a maximum of 1.5:1. The minimum thickness requirement of the erosion stone layer is 300 mm with no portion of the filter fabric to be exposed.

The contractor shall supply and install a galvanized rodent gate over the outlets of the 450 mm diameter H.D.P.E. pipes at Station 0+127 and Station 0+101B.

SPECIAL PROVISIONS – BERM & SWALE

6.0 SWALE EXCAVATION

The contractor will be required to construct a swale east of the new tile drain for DiCecco Drain No. 2 (Station 0+000 to Station 0+124), for Branch No. 2 (Station 0+000A to Station 0+044A), for DiCecco Drain No. 3 (Station 0+000B to Station 0+098B) and for Branch No. 3 (Station 0+000C to Station 0+055C).

Topsoil shall be stripped for a minimum depth of 150 mm from the proposed berm/swale alignments for Branch No. 2 Station 0+000A to Station 0+044A and for Branch No. 3 Station 0+000C to Station 0+055C. The topsoil shall be stockpiled east of the proposed swale for Branch No. 2 and Branch No. 3 in a temporary 10.0 m wide corridor. Later, the topsoil will be spread on the new berms and swales. A minimum depth of topsoil is 100 mm.

Excess topsoil shall not be removed from the site. Excess topsoil shall be used to repair settlements and increase the topsoil thickness over the filled alignment.

It is anticipated that the amount of topsoil stripped will be greater than the amount required to dress the entire surface of the filled alignment however, if needed, the Contractor shall import screened topsoil to complete the work at their expense.

The trapezoidal shaped swales shall be excavated to the grade and elevation provided on the drawings and constructed with a 500 mm bottom width and 3:1 side slopes.

Once the swales are shaped to the dimensions defined herein, the surface of the swales shall be covered with a minimum 100 mm thick layer of salvaged topsoil and seeded as per Special Provision No. 8.

7.0 BERM CONSTRUCTION

The contractor shall construct the berm as outlined on the drawings appended hereto at the location as shown to the dimensions as shown.

The excavated materials from the swale excavation shall be used to construct the berm. If there is insufficient material to construct the berm, the contractor shall import clean native fill. The materials shall be free of debris, weeds and other deleterious materials. The Contractor shall grade and place the material to a depth of 300 mm for compaction to a minimum 95% of the maximum standard proctor density.

The berm shall be constructed with 2:1 (H:V) side slopes with a top width of 0.9 m. Once the berm is shaped to the dimensions defined herein, the surface of the berm shall be covered with a minimum 100 mm thick layer of salvaged topsoil and seeded as per Special Provision No. 8.

8.0 SEEDING OF SWALE AND BERM

All existing grassed areas disturbed by construction or as identified as new seeded areas shall be seeded as specified herein. The existing ground surface to be seeded shall be loosened to a depth of 25 mm and shall be rendered uniformly loose for that 25 mm depth. The surface shall be predominantly fine and free from weeds and other unwanted vegetation. All other loose surface litter shall be removed and disposed of. If mulching is required, it shall be carried out by the contractor as part of the item's tendered price.

Grass seed shall be Canada No. 1 grass seed mixture meeting the requirements of a Waterway Slough Mixture as supplied by Growmark or approved equal, as follows:

<i>Creeping Red Fescue</i>	20%
<i>Meadow Fescue</i>	30%
<i>Tall Fescue</i>	30%
<i>Timothy</i>	10%
<i>White Clover</i>	10%

Bags shall bear the label of the supplier indicating the content by species, grade and mass. Seed shall be applied at a rate of 200 kg per 10,000 m².

Fertilizer shall be 8-32-16 applied at 350 kg per 10,000 m². It shall be in granular form, dry, free from lumps and in bags bearing the label of the manufacturer, indicating mass and analysis.

The seeding shall be deemed "Completed by the Contractor" when the seed has established in all areas to the satisfaction of the Engineer. Re-seeding and/or other methods required to establish the grass will be given consideration to achieve the end result and the costs shall be incidental to the works.

GENERAL SPECIFICATIONS

1.0 AGREEMENT AND GENERAL CONDITIONS

The part of the Specifications headed "Special Provisions" which is attached hereto forms part of this Specification and is to be read with it. Where there is any difference between the requirements of this General Specification and those of the Special Provisions, the Special Provisions shall govern.

Where the word "Drainage Superintendent" 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.

Tenders will be received and contracts awarded only in the form of a lump sum contract for the completion of the whole work or of specified sections thereof. The Tenderer agrees to enter into a formal contract with the Municipality upon acceptance of the tender. The General Conditions of the contract and Form of Agreement shall be those of the Stipulated Price Contract CCDC2-Engineers, 1994 or the most recent revision of this document.

2.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

Each tenderer must visit the site and review the plans and specifications before submitting his/her tender and must satisfy himself/herself as to the extent of the work and local conditions to be met during the construction. Claims made at any time after submission of his/her tender that there was any misunderstanding of the terms and conditions of the contract relating to site conditions, will not be allowed. The Contractor will be at liberty, before bidding to examine any data in the possession of the Municipality or of the Engineer.

The quantities shown or indicated on the drawings or in the report are estimates only and are for the sole purpose of indicating to the tenderers the general magnitude of the work. The tenderer is responsible for checking the quantities for accuracy prior to submitting his/her tender.

3.0 MAINTENANCE PERIOD

The successful Tenderer shall guarantee the work for a period of one (1) year from the date of acceptance thereof from deficiencies that, in the opinion of the Engineer, were caused by faulty workmanship or materials. The successful Tenderer shall, at his/her own expense, make good and repair deficiencies and every part thereof, all to the satisfaction of the Engineer. Should the successful Tenderer for any cause, fail to do so, then the Municipality may do so and employ such other person or persons as the Engineer may deem proper to make such repairs or do such work, and the whole costs, charges and expense so incurred may be deducted from any amount due to the Tenderer or may be collected otherwise by the Municipality from the Tenderer.

4.0 GENERAL CO-ORDINATION

The Contractor shall be responsible for the coordination between the working forces of other organizations and utility companies in connection with this work. The Contractor shall have no cause of action against the Municipality or the Engineer for delays based on the allegation that the site of the work was not made available to him by the Municipality or the Engineer by reason of the acts, omissions, misfeasance or non-feasance of other organizations or utility companies engaged in other work.

5.0 RESPONSIBILITY FOR DAMAGES TO UTILITIES

The Contractor shall note that overhead and underground utilities such as hydro, gas, telephone and water are not necessarily shown on the drawings. It is the Contractor's responsibility to contact utility companies for information regarding utilities, to exercise the necessary care in construction operations and to take other precautions to safeguard the utilities from damage. All work on or adjacent to any utility, pipeline, railway, etc., is to be carried out in accordance with the requirements of the utility, pipeline, railway, or other, as the case may be, and its specifications for such work are to be followed as if they were part of this specification. The Contractor will be liable for any damage to utilities.

6.0 CONTRACTOR'S LIABILITY

The Contractor, his/her agents and all workmen or persons under his/her control including sub-contractors, shall use due care that no person or property is injured and that no rights are infringed in the prosecution of the work. The Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect to any injury to persons or property of whatever description and in respect of any infringement of any right, privilege or easement whatever, occasioned in the carrying on of the work, or by any neglect on the Contractor's part.

The Contractor, shall indemnify and hold harmless the Municipality and the Engineer, their agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or attributable to the Contractor's performance of the contract.

7.0 PROPERTY BARS AND SURVEY MONUMENTS

The Contractor shall be responsible for marking and protecting all property bars and survey monuments during construction. All missing, disturbed or damaged property bars and survey monuments shall be replaced at the Contractor's expense, by an Ontario Land Surveyor.

8.0 MAINTENANCE OF FLOW

The Contractor shall, at his/her own cost and expense, permanently provide for and maintain the flow of all drains, ditches and water courses that may be encountered during the progress of the work.

9.0 ONTARIO PROVINCIAL STANDARDS

Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD) shall apply and govern at all times unless otherwise amended or extended in these Specifications or on the Drawing. Access to the electronic version of the Ontario Provincial Standards is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to <http://www.mto.gov.on.ca/english/transrd/>. Under the title Technical Manuals is a link to the Ontario Provincial Standards. Users require Adobe Acrobat to view all pdf files.

10.0 APPROVALS, PERMITS AND NOTICES

The construction of the works and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced in this Contract. The Contractor shall obtain all approvals and permits and notify the affected authorities when carrying out work in the vicinity of any public utility, power, underground cables, railways, etc.

11.0 SUBLETTING

The Contractor shall keep the work under his/her personal control, and shall not assign, transfer, or sublet any portion without first obtaining the written consent of the Municipality.

12.0 TIME OF COMPLETION

The Contractor shall complete all work on or before the date fixed at the time of tendering. The Contractor will be held liable for any damages or expenses occasioned by his/her failure to complete the work on time and for any expenses of inspection, superintending, re-tendering or re-surveying, due to their neglect or failure to carry out the work in a timely manner.

13.0 TRAFFIC CONTROL

The Contractor will be required to control vehicular and pedestrian traffic along roads at all times and shall, at his/her own expense, provide for placing and maintaining such barricades, signs, flags, lights and flag persons as may be required to ensure public safety. The Contractor will be solely responsible for controlling traffic and shall appoint a representative to maintain the signs and warning lights at night, on weekends and holidays and at all other times that work is not in progress. All traffic control

during construction shall be strictly in accordance with the **Occupational Health and Safety Act** and the current version of the **Ontario Traffic Manuals**. Access to the electronic version of the **Ontario Traffic Manual** is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to <http://www.mto.gov.on.ca/english/transrd/>, click on "Library Catalogue," under the "Title," enter "Ontario Traffic Manual" as the search. Open the applicable "Manual(s)" by choosing the "Access Key," once open look for the "Attachment," click the pdf file. Users require Adobe Acrobat to view all pdf files.

Contractors are reminded of the requirements of the Occupational Health and Safety Act pertaining to Traffic Protection Plans for workers and Traffic Control Plan for Public Safety.

14.0 SITE CLEANUP AND RESTORATION

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.

15.0 UTILITY RELOCATION WORKS

In accordance with Section 26 of the Drainage Act, if utilities are encountered during the installation of the drainage works that conflict with the placement of the new culvert, the operating utility company shall relocate the utility at their own costs. The Contractor however will be responsible to co-ordinate these required relocations (if any) and their co-ordination work shall be considered incidental to the drainage works.

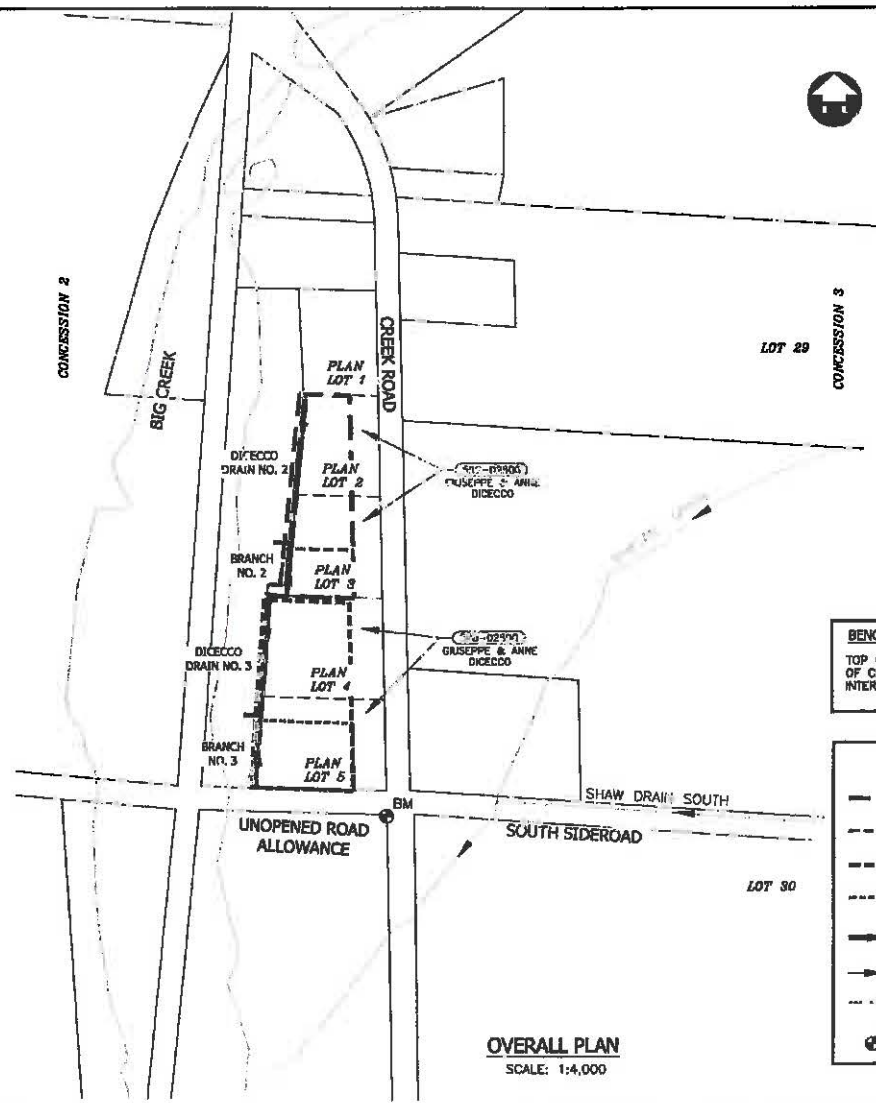
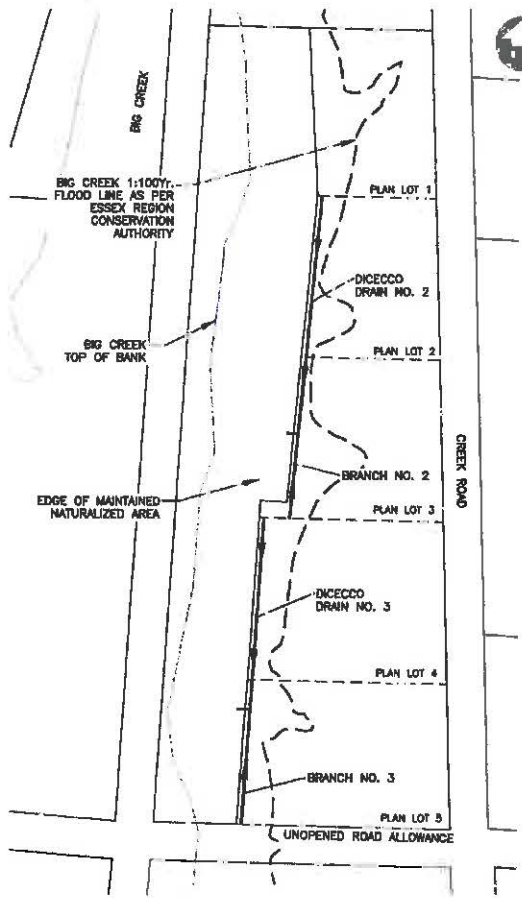
16.0 FINAL INSPECTION

All work shall be carried out to the satisfaction of the Drainage Superintendent for the Municipality, in compliance with the specifications, drawings and the Drainage Act. Upon completion of the project, the work will be inspected by the Engineer and the Drainage Superintendent. Any deficiencies noted during the final inspection shall be immediately rectified by the Contractor.

Final inspection will be made by the Engineer within 20 days after the Drainage Superintendent has received notice in writing from the Contractor that the work is completed, or as soon thereafter as weather conditions permit.

17.0 FISHERIES CONCERNS

Standard practices to be followed to minimize disruption to fish habitat include embedment of the culvert a minimum 10% below grade, constructing the work 'in the dry' and cutting only trees necessary to do the work (no clear-cutting). No in-water work is to occur during the timing window unless otherwise approved by the appropriate authorities.



BENCHMARK
TOP OF FIRE HYDRANT ON WEST SIDE OF CREEK ROAD AT SOUTH SIDEROAD INTERSECTION.
ELEV. = 176.28m

LEGEND

- DICECCO DRAIN NO. 2 & 3 AND BRANCH NO. 2 DRAINAGE AREA
- - - BRANCH NO. 2 SUB-WATERSHED LIMITS
- - - DICECCO DRAIN NO. 3 & BRANCH NO. 3 DRAINAGE AREA
- - - BRANCH NO. 3 SUB-WATERSHED LIMITS
- DICECCO DRAIN NO. 2 & 3 AND BRANCHES NO. 2 & 3
- OTHER DRAINS
- - - FUTURE PLAN LOT PROPERTY LINES
- BM LOCAL BENCHMARK

"SCHEDULE G"

Drainage Report for the
DICECCO DRAIN NO. 2 & 3 AND BRANCHES NO. 2 & 3
Town of Amherstburg

OVERALL PLAN & BIG CREEK PLAN



Conditions of Use

Verify elevations and/or dimensions on drawing prior to use.
Report any discrepancies to Dillon Consulting Limited.
Do not scale dimensions from drawing.
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NO.	ISSUED FOR	DATE	BY
1	FINAL REPORT	APR 27/16	CDT

DESIGN	REVIEWED BY
CDT	FRF
DRAWN	CHECKED BY
WLB	TRO
DATE	APRIL 27, 2016
SCALE	AS SHOWN

DILLON CONSULTING

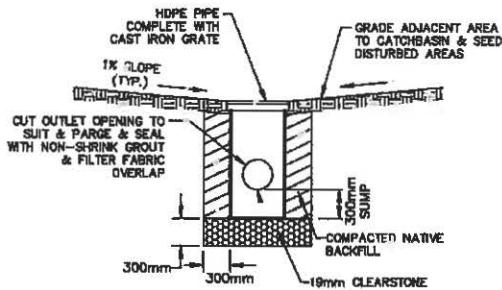
PROJECT NO: 15-1463

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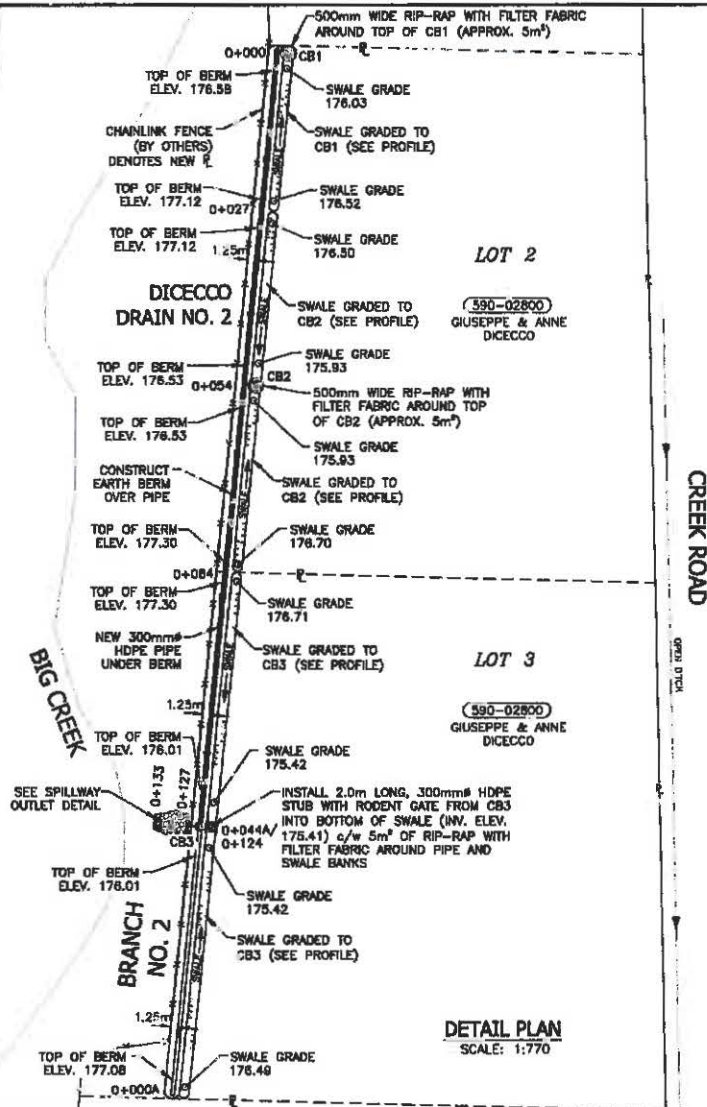
UTILITIES

THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THESE DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HERSELF/HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM



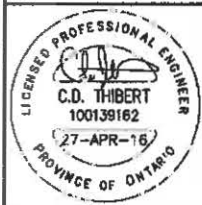
HDPE CATCH BASIN DETAIL
NOT TO SCALE

DICECCO DRAIN NO. 2 CATCH BASIN DETAILS						
CB No.	SIZE(mm)	TOP ELEV. (m)	INV. ELEVATIONS. (m)			
CB1	600# HDPE	176.03	175.53(W)			
CB2	600# HDPE	175.93	175.48(W)			
CB3	900# HDPE	176.00	175.41(N)	175.41(E)	175.41(W)	



DETAIL PLAN
SCALE: 1:770

NOTE
FINAL LOT GRADING TO BE PROVIDED BY DEVELOPER AND/OR PROPERTY OWNER AND REVIEWED BY MUNICIPALITY. ALL INDIVIDUAL LOT DRAINAGE TO BE MAINTAINED AND DIRECTED, IN ACCORDANCE WITH THE TOWN OF AMHERSTBURG'S LOT GRADING AND SERVICES INFORMATION STANDARD, TO THE WEST LIMITS OF THE PROPERTY AND EAST TO THE CREEK ROAD OPEN DITCH. NO REGRADING WILL BE PERMITTED WITHIN NEW MUNICIPAL DRAINAGE EASEMENTS AS SPECIFIED IN REPORT.



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NO.	ISSUED FOR	DATE	BY
1	FINAL REPORT	APR 27/16	CDT

DESIGN: CDT
DRAWN: WLB
DATE: APRIL 27, 2016
SCALE: AS SHOWN

REVIEWED BY: FRP
CHECKED BY: TRC

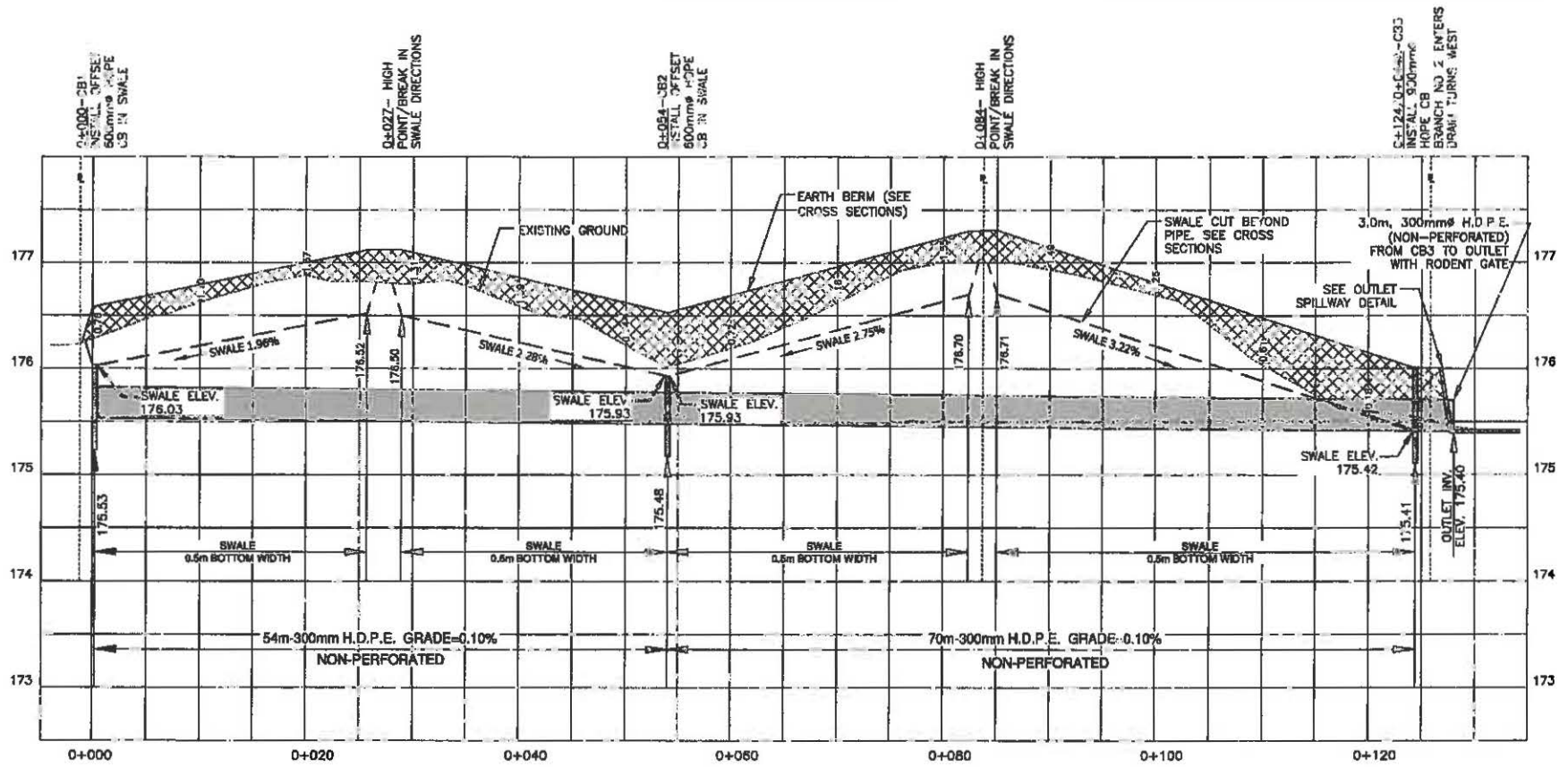
DILLON CONSULTING
PROJECT NO: 15-1463
DRAWING SCALES BASED ON A 11" X 17" SHEET

SCHEDULE 'G'
Drainage Report for the
**DICECCO DRAIN NO. 2 & 3 AND
BRANCHES NO. 2 & 3**
Town of Amherstburg

SHEET TITLE:
**DICECCO DRAIN NO. 2 & BRANCH NO. 2
DETAIL PLAN**

FRAME NO:
2 of 8

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DICECCO DRAIN NO. 2 PROFILE

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VERT. = 1:400

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DESIGN	CDT	REVIEWED BY	FRF
DRAWN	WLB	ORDERED BY	TRO
DATE	APRIL 27, 2016		
SCALE	AS SHOWN		
1	FINAL REPORT	APR 27/16	CDT
No.	ISSUED FOR	DATE	BY



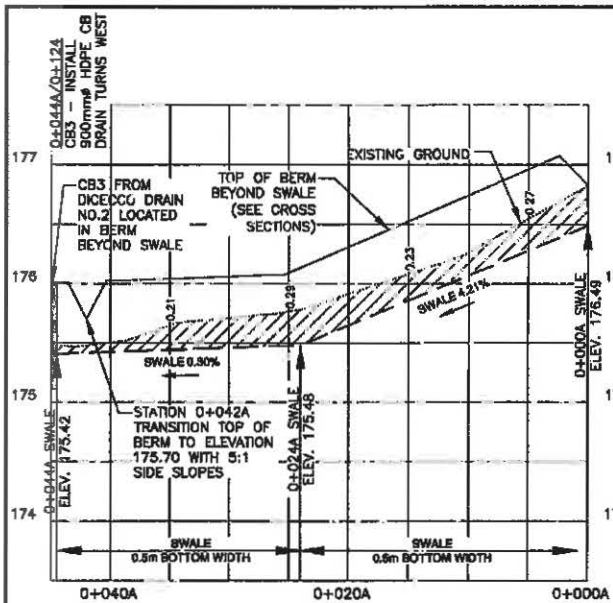
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DRAWING SCALE BASED ON A 11" X 17" SHEET

'SCHEDULE G'

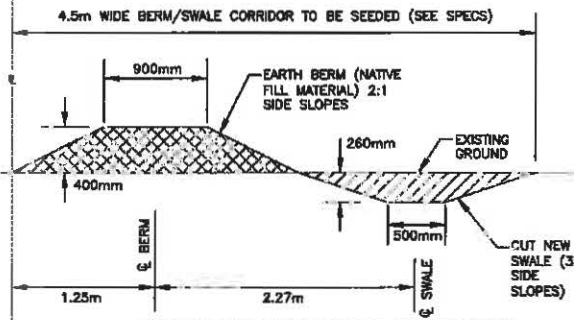
Drainage Report for the
**DICECCO DRAIN NO. 2 & 3 AND
BRANCHES NO. 2 & 3**
Town of Amherstburg

SHEET TITLE
DICECCO DRAIN NO. 2 PROFILE

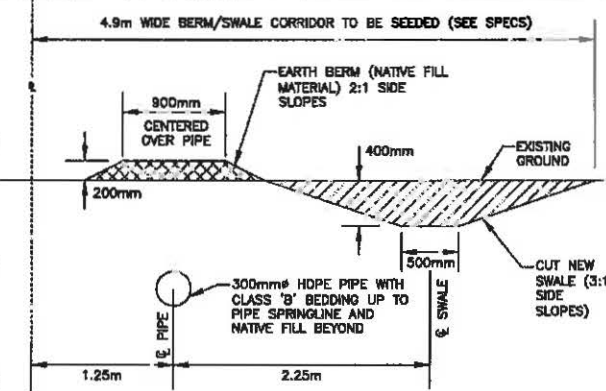
PAGE NO
3 of 8



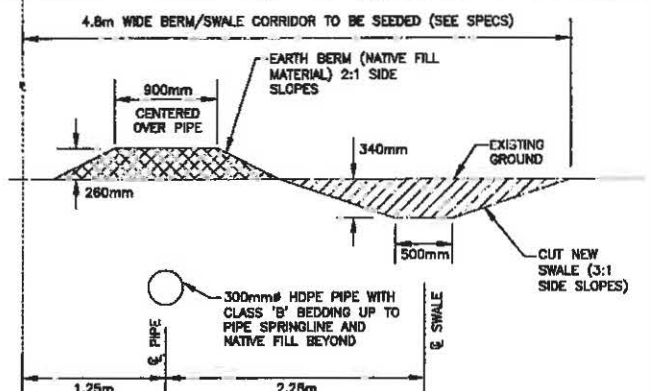
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VERT. = 1:400



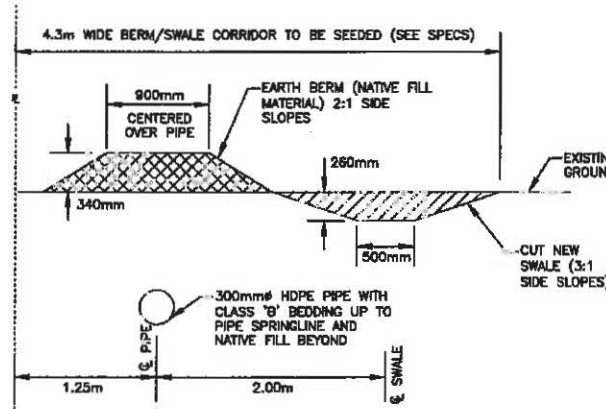
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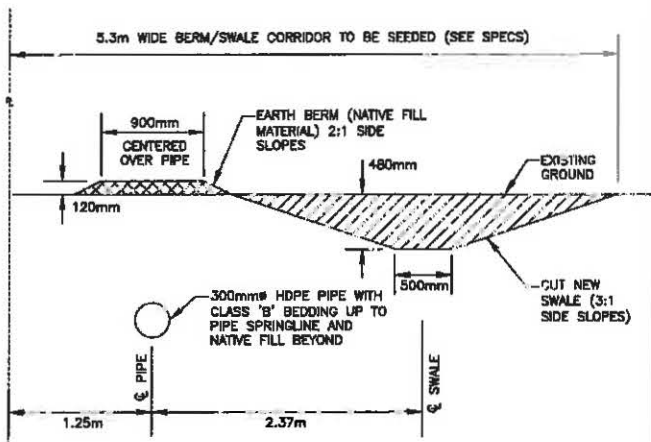
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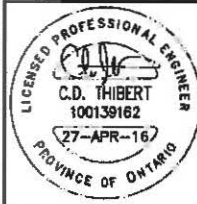
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NOT TO SCALE



DICECCO DRAIN NO. 2 CROSS SECTION STATION 0+070
NOT TO SCALE



DICECCO DRAIN NO. 2 CROSS SECTION STATION 0+100
NOT TO SCALE



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DATE	APRIL 27, 2016		
SCALE	AS SHOWN		
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	FINAL REPORT	BY	CDT

"SCHEDULE G"

Drainage Report for the
**DICECCO DRAIN NO. 2 & 3 AND
BRANCHES NO. 2 & 3**
Town of Amherstburg



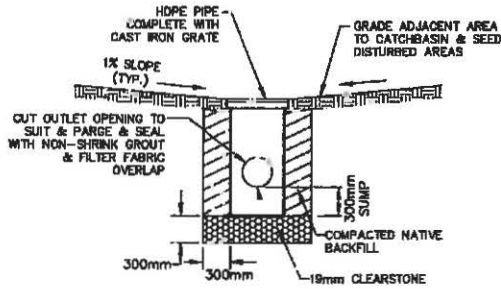
PROJECT NO.
15-1463
DRAWING SCALES BASED
ON A 11" x 17" SHEET

SHEET TITLE
BRANCH NO. 2 PROFILE & CROSS SECTIONS

PAGE NO.
4 of 8

UTILITIES

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THESE DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HERSELF/HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM

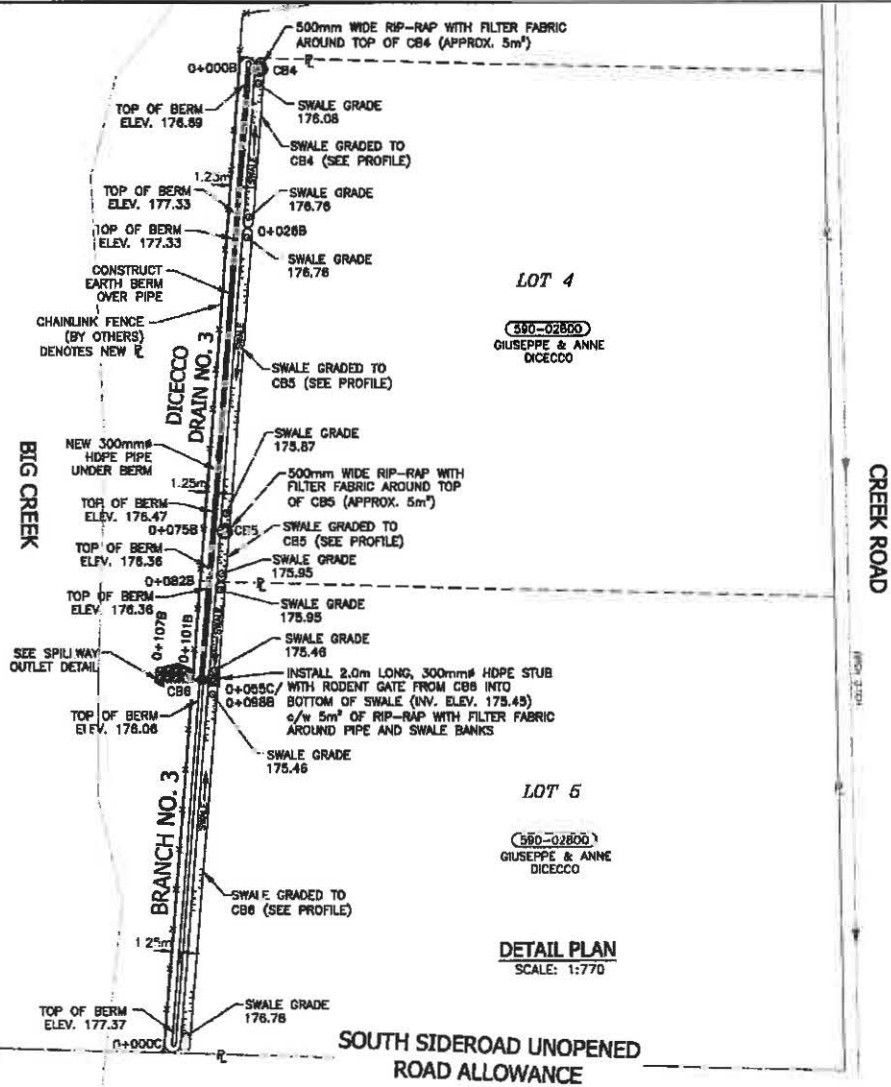


HDPE CATCH BASIN DETAIL
NOT TO SCALE

DICECCO DRAIN NO. 3 CATCH BASIN DETAILS					
CB No.	SIZE(mm)	TOP ELEV. (m)	INV. ELEVATIONS. (m)		
CB4	800# HDPE	176.08	175.58(W)		
CB5	800# HDPE	175.87	175.48(W)		
CB6	900# HDPE	178.06	175.45(N)	175.45(E)	175.45(W)

NOTE

FINAL LOT GRADING TO BE PROVIDED BY DEVELOPER AND/OR PROPERTY OWNER AND REVIEWED BY MUNICIPALITY. ALL INDIVIDUAL LOT DRAINAGE TO BE MAINTAINED AND DIRECTED, IN ACCORDANCE WITH THE TOWN OF AMHERSTBURG'S LOT GRADING AND SERVICES INFORMATION STANDARD, TO THE WEST LIMITS OF THE PROPERTY AND EAST TO THE CREEK ROAD OPEN DITCH. NO REGRADING WILL BE PERMITTED WITHIN NEW MUNICIPAL DRAINAGE EASEMENTS AS SPECIFIED IN REPORT.



LOT 4
(590-02800)
GIUSEPPE & ANNE
DICECCO

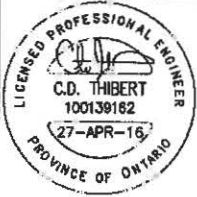
LOT 5
(590-02800)
GIUSEPPE & ANNE
DICECCO

DETAIL PLAN
SCALE: 1:770

**SOUTH SIDEROAD UNOPENED
ROAD ALLOWANCE**

SCHEDULE 0'

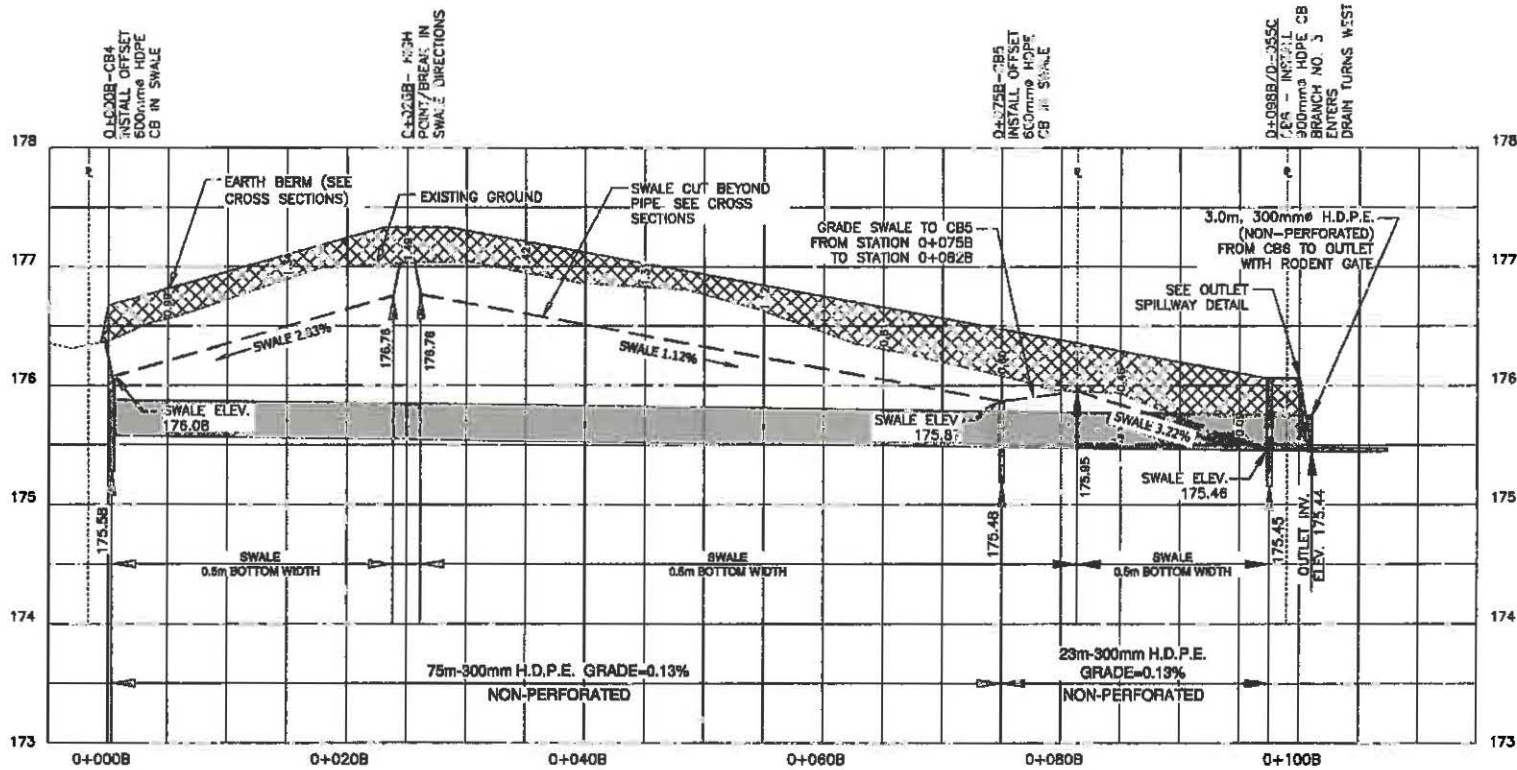
Apr 27, 2016 - 11:20am c:\p\proj\2016\15-1463\15-1463-030.dwg



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Conditions of Use				DATE		SCALE		PROJECT NO		SHEET TITLE	
1	FINAL REPORT	APR 27/16	CDT	AS SHOWN	15-1463	DICECCO DRAIN NO. 3 & BRANCH NO. 3 DETAIL PLAN					
Conditions of Use: Verify conditions and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited. Do not scale dimensions from drawings. Do not modify drawing, reuse it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.				DATE	BY	DRAWING SCALES BASED ON A 11" X 17" SHEET		PAGE NO.		5 of 8	



DICECCO DRAIN NO. 3 PROFILE

SCALE: HORIZ.=1:400
VERT.=1:400

Apr 27, 2016 - 11:00am C:\projects\working_dir\amherst\proj\2016\15-1463\DWG\2016-203.dwg



Conditions of Use

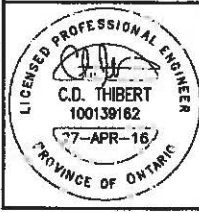
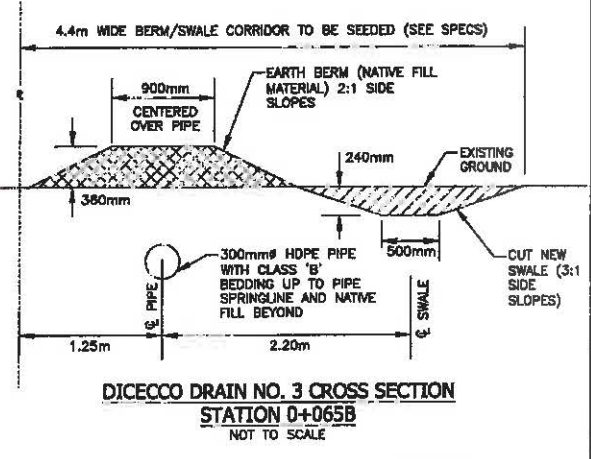
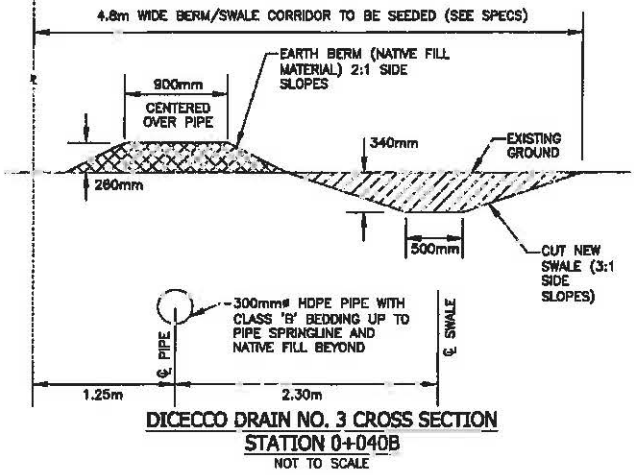
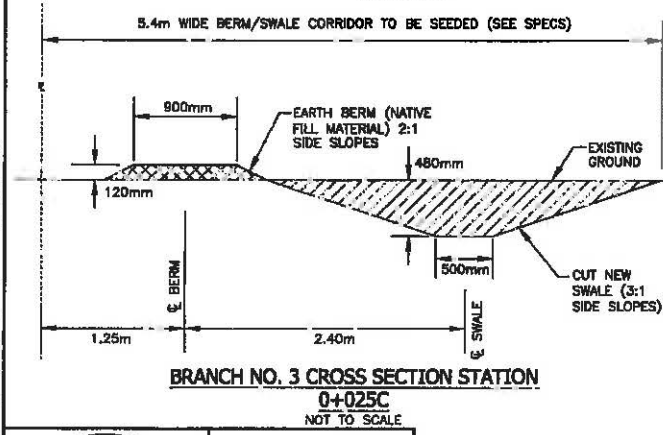
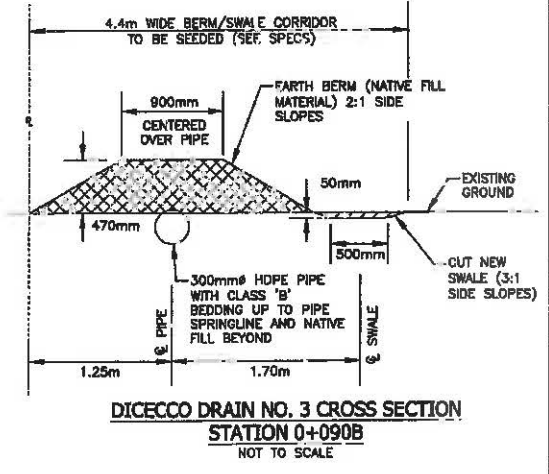
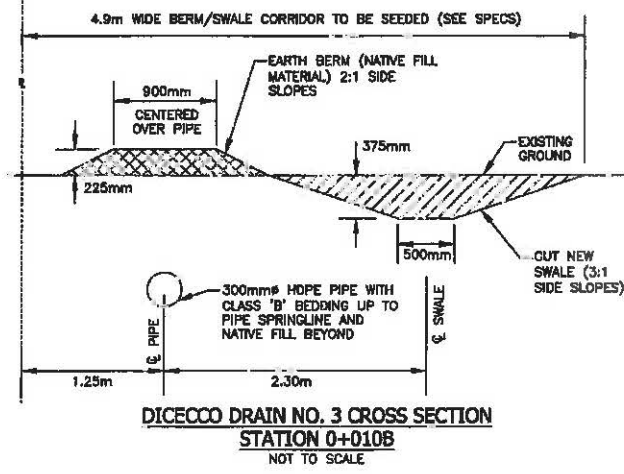
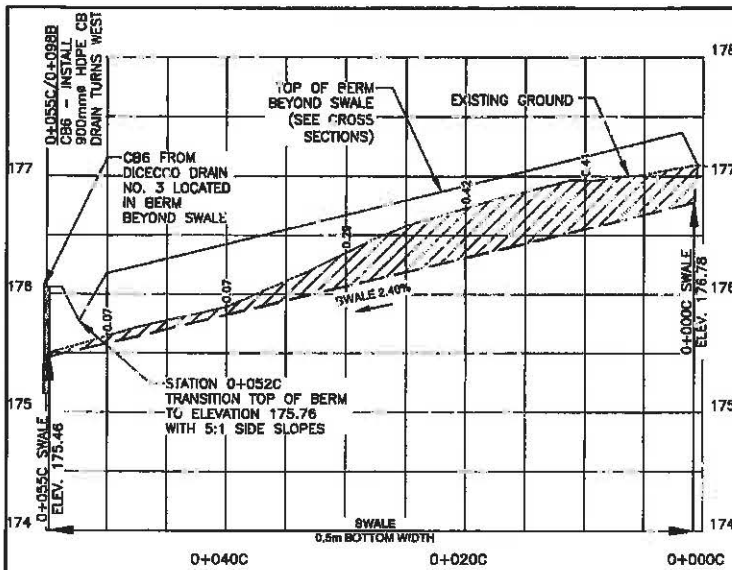
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DESIGN	CDT	REVIEWED BY	FRF
DRAWN	WLB	CHECKED BY	TRO
DATE	APRIL 27, 2016		
SCALE	AS SHOWN		
NO.	ISSUED FOR	DATE	BY
1	FINAL REPORT	APR 27/16	CDT

PROJECT NO.	15-1463
DRAWING SCALE	BASED ON A 11" X 17" SHEET



SCHEDULE G	
(Training) Report for the DICECCO DRAIN NO. 2 & 3 AND BRANCHES NO. 2 & 3 Town of Amherstburg	
DICECCO DRAIN NO. 3 PROFILE	
PAGE NO.	6 of 8



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No.	ISSUED FOR	DATE	BY
1	FINAL REPORT	APR 27/16	CDT

DESIGN	REVIEWED BY
CDT	FRP
DRAWN	CHECKED BY
WLB	TRO
DATE	APRIL 27, 2016
SCALE	AS SHOWN

PROJECT NO: 15-1483
 DRAWING SCALES BASED ON A 11" X 17" SHEET

SCHEDULE 'C'

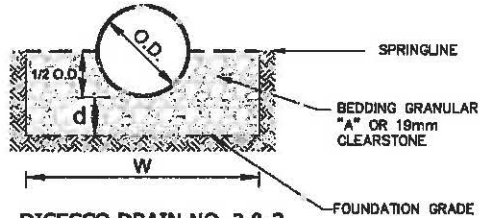
Drainage Report for the
**DICECCO DRAIN NO. 2 & 3 AND
 BRANCHES NO. 2 & 3**
 Town of Amherstburg

SHEET TITLE
BRANCH NO. 3 PROFILE & CROSS SECTIONS

PAGE NO.
7 of 8

Apr 27, 2016 - 11:05am C:\projects\amherstburg\drainage\reports\2016\15-1483\15-1483-000-2.dwg

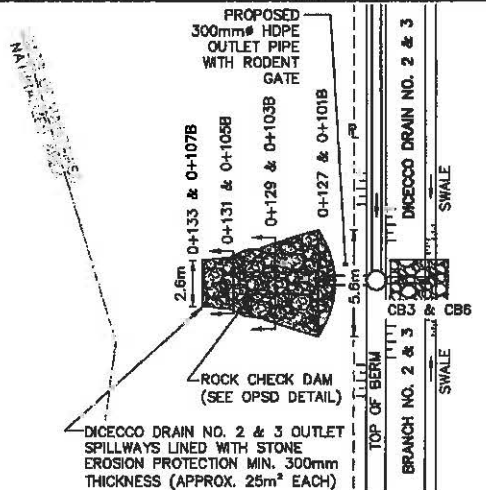
NOMINAL PIPE INSIDE DIAMETER D (mm)	MINIMUM TRENCH WIDTH W (mm)	MINIMUM BEDDING BELOW d (mm) (SEE NOTE 2)
FLEXIBLE PIPE under 1200	O.D. + 800	150



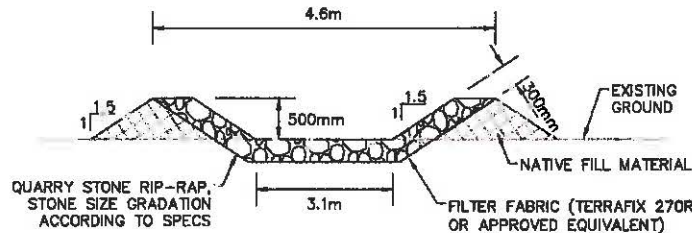
**DICECCO DRAIN NO. 2 & 3
CLASS 'B' BEDDING DETAIL**
SCALE: N.T.S.

BEDDING NOTES

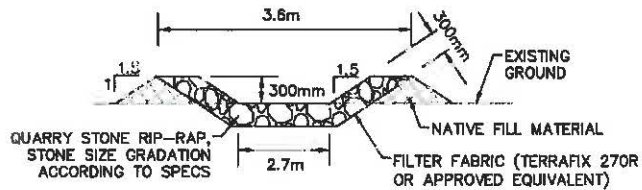
- O.D. = OUTSIDE DIAMETER OF PIPE
- IN ROCK TRENCHES, BEDDING DEPTH (d) BELOW PIPES SHALL BE INCREASED TO 300mm
- BACKFILL MATERIALS ABOVE PIPE SPRINGLINE TO BE NATIVE FILL UNLESS SPECIFIED OTHERWISE
- GRANULAR "A" BEDDING SHALL NOT CONTAIN RECYCLED ASPHALT
- ALL BEDDING MATERIAL MUST BE COMPACTED TO 98% STANDARD PROCTOR DENSITY



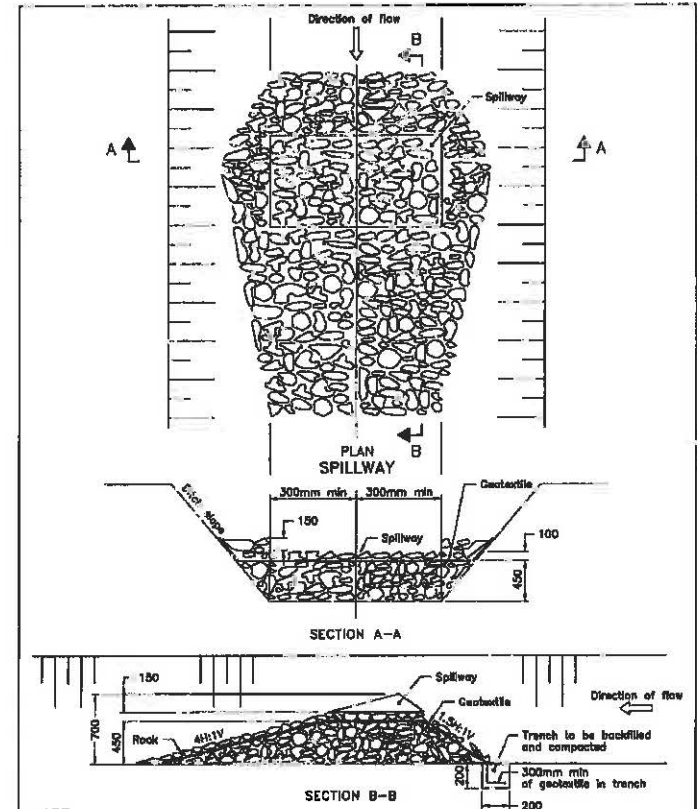
DICECCO DRAIN NO. 2 & 3 SPILLWAY OUTLET DETAIL
NOT TO SCALE



SPILLWAY SECTION STATION 0+129 & 0+103B
NOT TO SCALE

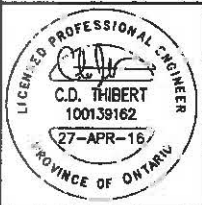


SPILLWAY SECTION STATION 0+131 & 0+105B
NOT TO SCALE



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1	
ROCK FLOW CHECK DAM FLAT BOTTOM DITCH			
OPSD 219.211			



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No.	ISSUED FOR	DATE	BY
1	FINAL REPORT	APR 27/16	CDT

DESIGNED BY CDT	REVIEWED BY FRF
DRAWN BY WLB	CHECKED BY TRO
DATE APRIL 27, 2016	
SCALE AS SHOWN	

PROJECT NO.
15-1483

DRAWING SCALES SHALL BE ON A 11" X 17" SHEET

SCHEDULE G	
Drainage Report for the: DICECCO DRAIN NO. 2 & 3 AND BRANCHES NO. 2 & 3 Town of Amherburg	
SHEET TITLE DETAILS	FIGURE NO. 8 of 8

Apr 27, 2016 - 11:01 am C:\proj\amherburg\working\drawing\amherburg\mains\mains\15-1483\219.211.dwg