



**ZAVITZ MUNICIPAL DRAIN
SHERKSTON NORTH BRANCH DRAIN
EAST & WEST TRAIL BRANCH DRAINS**

**TOWN OF FORT ERIE
CITY OF PORT COLBORNE**

ENGINEER'S REPORT

Submitted to:

**Town of Fort Erie
City of Port Colborne
Infrastructure Services**

Submitted by:

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October 2016

Project No: TP110120 / TP110120A



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October 31, 2016

Our File: TP110120 / TP110120A

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ATTENTION: Margarete E. Taddeo, Records Management Assistant

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ATTENTION: Henri Bennemeer & Alana Vander Veen, Drainage Superintendent's

Dear Madam and Sir:

**RE: Zavitz Municipal Drain
Sherkston North Branch Drain
East & West Trail Branch Drains
Final Draft Engineer's Report
Fort Erie and Port Colborne, Ontario**

Thank you for selecting AMEC Environment & Infrastructure to provide the engineering services for updating the existing Engineer's Report for the Zavitz Drain in the Town of Fort Erie and City of Port Colborne.

The purpose of this Report is to examine the existing Zavitz Drain within the Town of Fort Erie and the City of Port Colborne, to assess existing drainage conditions and the level of service currently being provided by the existing drain, to establish the updated working space and maintenance corridors, and to prepare an updated assessment schedule for the proposed construction works and future maintenance. Since a significant amount of investigation and design was previously completed by Wiebe Engineering Group Inc., AMEC Environment & Infrastructure has used this information where appropriate.

Through further investigation of drainage issues in the watershed, the City of Port Colborne requested the inclusion of a Branch Drain to improve drainage in the Hamlet of Sherkston. Several options were considered, however, the Sherkston North Branch Drain and the East & West Trail Branch Drains were selected as preferred routes to optimize existing drainage patterns and land uses as well as costs borne by the property owners and the municipality.

The report includes a description of all work, and associated plans, cost estimates, and assessment schedules for the proposed work on the existing Zavitz Drain as well as for the construction of the Branch Drains. The report has been prepared in accordance with the requirements of the *Drainage Act, Chapter D.17 of the Revised Statutes of Ontario, Sections 4 and 78*.



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If you have any questions regarding content of this report, please do not hesitate to contact the undersigned.

Yours very truly,

Amec Foster Wheeler ENVIRONMENT & INFRASTRUCTURE,
a division of Amec Foster Wheeler Americas Limited

Per: Paul Marsh, P. Eng.
Senior Engineer



EXECUTIVE SUMMARY

This report has been revised in accordance with the directions from the Drainage Tribunal findings from the Interim Decision #1 dated September 28, 2015 and updated based on the Interim Decision #2 dated April 14th, 2016.

On October 12, 2010, the Town of Fort Erie approved the appointment of a Drainage Engineer, Paul Smeltzer from AMEC Earth & Environmental, presently known as AMEC Environment & Infrastructure, in accordance with the *Drainage Act, Chapter D.17 of the Revised Statutes of Ontario, Section 78* to prepare an Engineer's Report for the portion of Zavitz Drain within the Town of Fort Erie (Town of Fort Erie By-Law 119-10).

On May 12, 2011, the City of Port Colborne also approved the appointment of a Drainage Engineer, Paul Smeltzer, in accordance with the *Drainage Act, Chapter D.17, Sections 4 and 78* to prepare an Engineer's Report for the portion of Zavitz Drain within the City of Port Colborne (By-Law No. 5606/36/11), including the assessment of a new Sherkston North Branch Drain as well as the East & West Trail Branch Drains.

The need for improvements to the Zavitz Drain was initially recognized in 2004 and 2006 by way of appointment of Wiebe Engineering Group Inc. from the Town of Fort Erie and the City of Port Colborne, respectively. The By-Laws for appointing Wiebe have been rescinded by both municipalities. Wiebe has been replaced as the Drainage Engineer on Record as they are no longer providing drainage or engineering services.

The Engineer's Report for the City of Port Colborne's portion of the Zavitz Drain is all inclusive with that of the Engineer's Report prepared for the Zavitz Drain in the Town of Fort Erie, all in accordance with the *Drainage Act* and as provided for in the Port Colborne By-Law 5791-46/12. For the purposes of administration, the Town of Fort Erie is considered the initiating municipality as defined in the *Drainage Act*.

The purpose of this Engineer's Report is to determine if drainage works are required, to quantify the works through an engineering investigation and to assess the cost for the drainage works in accordance with the *Drainage Act*. The investigation included a review of the existing Zavitz Drain and a summary of the works is as follows (in accordance with the *Drainage Act, Chapter D.17, Section 78*):

- 2901 m of existing drain is to be cleaned and grubbed along with the clearing of a 10 m wide work area along the drain to permit access (within the Town of Fort Erie and City of Port of Colborne).
- Cleaning of the municipal culverts at Holloway Bay Road and Pleasant Beach Road.
- Replacement of the municipal culvert at Mathews Road (design by others).
- Replacement of the private culverts on Clark, D.M. (Roll No. 20018336000000), Damude, R. (Roll No. 271104000105300), Clee, J. (Roll No. 271104000138400) properties and Woronchak (Roll No. 020018335000000).
- Removal of the private culvert on the Beach, D.C. (Roll No. 20018337010000) property.

In addition to the above works under *Chapter D.17, Section 78*, the City of Port Colborne has petitioned a Branch Drain, in accordance with *Chapter D.17, Section 4*. To improve drainage in the areas of Sherkston Road, Pleasant Beach Road and the Friendship Trail, the North Sherkston North Branch Drain and the East & West Trail Branch Drains have been designed. The Sherkston North Branch Drain will commence on the north side of Sherkston Road and travel north to the Friendship Trail between the Neal and Hilmayer/Priebe properties. The Sherkston North Branch Drain will be conveyed via a new 900mm HDPE culvert under the Friendship Trail, and then travel north through the Cosby and Lochhead properties to intersect the existing main Zavitz Drain. The East Trail Branch Drain commences at the Sherkston North Branch Drain and continues East 312.3m towards Holloway Bay Road and the West Trail Branch Drain commences at the Sherkston North Branch Drain and continues Westerly 480m Crossing Pleasant Beach Road continuing toward Sherkston Road. Both the East & West Trail Branch Drains will convey flows east and west along the south ditches of the Friendship Trail to the connection with the Sherkston North Branch Drain. The Branch Drains will convey drainage from the properties bounded by the Friendship Trail to the north, the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 2711104000119800) property line to the west, Sherkston Road to the south, and Holloway Bay Road and a portion of the Van Duzen (Roll No. 271104000104200) property to the east as well as a portion of the properties east of Pleasant Beach Road south of the main Zavitz Drain. Drawings for the delineation of the subwatershed areas for the Branch Drains are shown on **Drawing No. F1 (Appendix F)**.

The overall area to be drained by Zavitz Drain is approximately 278.4 ha. The area within the overall watershed that is to be drained by the Sherkston North Branch Drain and East & West Branch Drains (City of Port Colborne) is approximately 15.49 ha. The Zavitz Drain outlets to the Outlet Drain at Point Abino Road, where the Outlet Drain travels north to Beaver Creek and then into the Niagara River. Overall watershed and subwatershed plans are included in **Appendix E** and **Appendix F**.

The total estimated cost of the work along the main Zavitz Drain is \$241,741.54 with \$122,840.94 assessed to the Town of Fort Erie private property owners, \$77,283.81 assessed to the City of Port Colborne private property owners and the remainder to the Municipalities, Region of Niagara, Province of Ontario, and utilities. The total estimated cost of the work along the Sherkston North Branch Drain is \$71,370.01, with \$22,059.65 being assessed to the City of Port Colborne private property owners and the remainder to the Municipality. The total estimated cost of the work along the East Trail Branch Drain is \$21,872.92, with \$6,183.24 being assessed to the City of Port Colborne private property owners and the remainder to the Municipality. The total estimated cost of the work along the West Trail Branch Drain is \$33,941.88, with \$4,446.96 being assessed to the City of Port Colborne private property owners and the remainder to the Municipality.

Appendix C, Appendix F and **Appendix G** provide an assessment of the costs for the Zavitz Drain and associated Branch Drains work against the affected lands and roads. These schedules will be used by the municipalities to levy the final costs for the drainage work. Separate Assessment Schedules have been created for the three Branch Drains in the City of Port Colborne.

Under the *Drainage Act, Chapter D.17, Section 74*, the Town of Fort Erie and the City of Port Colborne will be responsible for future maintenance of the Zavitz Drain, and associated new Branch Drains, in accordance with the maintenance provisions in this Engineer's Report. **Appendix C** will be used to pro-rate future maintenance costs on the Zavitz Drain and Branch Drains are in Appendices F & G.



TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	i
1.0 INTRODUCTION.....	1
1.1 Authority to Prepare Report.....	1
1.2 Description of Report Requirements.....	2
1.3 History of the Drainage Area	2
1.4 Drainage Area	8
2.0 MEETING AND DISCUSSIONS	9
2.1 Meetings with Property Owners (Conducted by AMEC).....	9
2.2 Meetings with Property Owners (Conducted by Wiebe).....	16
2.3 Meetings and Discussions with Road Authorities.....	19
2.4 Agency Involvement (Conducted by AMEC).....	19
2.5 Agency Involvement (Conducted by Wiebe Engineering Group)	19
2.6 Council Endorsement for Branch Drains in the Sherkston Hamlet (City of Port Colborne) 20	
3.0 INVESTIGATION AND FIELD WORK	21
3.1 Existing Land Use	21
3.2 Soil and Topographic Conditions	21
3.3 Description of Field Work – Main Zavitz Drain	22
3.4 Description of Field Work – Sherkston North Branch Drain and East & West Trail Branch Drains 23	
3.5 Existing Conditions of the Drain.....	23
3.6 Location and Condition of Outlet.....	24
3.7 Utilities25	
3.8 Directed Investigations	25
4.0 DESIGN – MAIN ZAVITZ DRAIN.....	30
4.1 Design Criteria and Analysis.....	30
4.2 Description of Proposed Work.....	31
4.3 Municipal Road Crossings	33
4.4 Private Crossings	34
5.0 DESIGN – SHERKSTON NORTH BRANCH DRAIN AND EAST & WEST TRAIL BRANCH DRAINS.....	35
5.1 Description of Proposed Work.....	36
5.2 Municipal Crossings	37
5.3 Private Crossings	38
5.4 Benner Award Drain	39
6.0 EROSION AND SEDIMENT CONTROL.....	40
6.1 Buffer Strips.....	40
6.2 Revegetation	40
6.3 Erosion Susceptible Sites	40
6.4 Sediment Basins	41
6.5 Spoil Material.....	41
7.0 WORKING SPACE.....	42
8.0 COST ESTIMATE – MAIN ZAVITZ DRAIN.....	43
8.1 Total Cost Estimate	43
8.2 Allowances	43
8.3 Special Assessments	44
8.4 Assessment of Costs.....	45



9.0	COST ESTIMATE – SHERKSTON NORTH BRANCH DRAIN AND EAST & WEST TRAIL BRANCH DRAINS.....	46
9.1	Total Cost Estimate	46
9.2	Allowances	46
9.3	Special Benefit Assessments	47
9.4	Assessment of Costs.....	48
10.0	AVAILABLE GRANTS	49
10.1	OMAFRA Grant for Agricultural Lands.....	49
11.0	FUTURE DRAIN MAINTENANCE, IMPROVEMENT AND REPAIR	50
12.0	CHANGES TO DRAIN AFTER BY-LAW IS PASSED	52
13.0	SUMMARY AND CONCLUSION	53

List of Appendices

Appendix A	Main Zavitz Drain – Estimated Cost Summary and Cost Estimate
Appendix B	Main Zavitz Drain – Allowance Calculations
Appendix C	Main Zavitz Drain – Assessment Schedule
Appendix D	OMAFRA Fact Sheet – Understanding Drainage Assessments
Appendix E	Main Zavitz Drain – Drawings
Appendix F	Sherkston North Branch Drain
Appendix G	East & West Trail Branch Drains
Appendix H	General Conditions and Construction Specifications

1.0 INTRODUCTION

1.1 Authority to Prepare Report

On October 12, 2010, the Town of Fort Erie approved the appointment of a Drainage Engineer, Paul Smeltzer from AMEC Earth & Environmental, presently known as AMEC Environment & Infrastructure (AMEC), in accordance with the *Drainage Act, Chapter D.17 of the Revised Statutes of Ontario* (hereinafter referred to as the *Drainage Act*), *Section 78*, to prepare an Engineer's Report for the portion of the Zavitz Drain within the Town of Fort Erie (Town of Fort Erie By-Law 119-10).

On May 12, 2011, the City of Port Colborne also approved the appointment of a Drainage Engineer, Paul Smeltzer, in accordance with the *Drainage Act, Chapter D.17, Sections 4 and 78*, to prepare an Engineer's Report for the portion of Zavitz Drain within the City of Port Colborne (By-Law No. 5606/36/11), including the assessment of a new Sherkston North Branch Drain as well as the East & West Trail Branch Drains (further description of these Branch Drains in the following paragraphs and Sections 2, 3 and 4).

In November 2004, Wiebe Engineering Group Inc. (Wiebe) was appointed by the Town of Fort Erie to prepare an Engineer's Report for the Baer, Schooley, Zavitz and Outlet Municipal Drains in accordance with the *Drainage Act, Chapter D.17, Section 78*. On March 13, 2006, Wiebe was appointed by the City of Port Colborne to prepare an Engineer's Report for the Zavitz Municipal Drain in accordance with the *Drainage Act, Chapter D.17, Section 78*. The By-Laws for appointing Wiebe have been rescinded by both municipalities. Wiebe has been replaced as the Drainage Engineer on Record as they are no longer providing drainage or engineering services.

As part of this Project, the Town of Fort Erie and the City of Port Colborne elected to have one report prepared for the entire Zavitz Municipal Drain to provide cost savings and an effective delivery of service to the property owners. The City of Port Colborne Engineering and Operations Report #2011-20, dated April 11, 2011 and Report #2012-15, dated May 14, 2012, identify that the report shall be included with the Fort Erie Report and By-Law.

The Engineer's Report for the City of Port Colborne's portion of the Zavitz Drain is all inclusive with that of the Engineer's Report prepared for the Zavitz Drain in the Town of Fort Erie, all in accordance with the *Drainage Act* and as provided for in the Port Colborne By-Law 5791-46/12. For the purposes of administration, the Town of Fort Erie is considered the initiating municipality as defined in the *Drainage Act*.

The purpose of this Engineer's Report is to examine the existing Zavitz Drain, to assess existing drainage problems and the level of service currently being provided by the existing drain, to establish the updated working space and maintenance corridors, and to prepare an updated assessment schedule for the proposed construction works and future maintenance. Since a significant amount of investigation and design was completed by Wiebe, the Drainage Engineer, Paul Smeltzer, has used this information where appropriate. This Engineer's Report also includes a description of the work, plans, cost estimates, and assessment schedules for the proposed work

on the new Sherkston North Branch Drain and East & West Trail Branch Drains. The report has been prepared in accordance with the requirements of the *Drainage Act, Chapter D.17, Sections 4 and 78*.

This report has been revised in accordance with the directions from the Drainage Tribunal findings from the Interim Decision dated September 28, 2015 and April 14, 2016.

1.2 Description of Report Requirements

At present, a large portion of the western rural area of Fort Erie and the eastern portion of Port Colborne is drained by the Zavitz, Baer, and Schooley Drains, which outlet to the Outlet Drain at Point Abino Road. In general, the entire Zavitz Drain watershed is bounded by the Friendship Trail or Sherkston Road to the south and Point Abino Road to the east, and extends north beyond Highway 3 and west beyond Pleasant Beach Road. The entire drainage system generally flows from southwest to northeast and outlets to the Outlet Drain, which is currently under review by others. The Outlet Drain drains to Beaver Creek and then into the Niagara River.

The City of Port Colborne portion of the watershed is bounded by Holloway Bay Road to the east, Sherkston Road to the south and extends north beyond Highway 3 and west beyond Pleasant Beach Road. The portion of the watershed within the Town of Fort Erie is confined by Holloway Bay Road to the west, Point Abino Road to the east, the Friendship Trail to the south and extends beyond Highway 3 to the north. The watershed areas are shown in **Drawing No. E-1A and E-1B (Appendix E)**. (Drawing No. E-1A has been revised as of January 2016 to reflect property changes as was provided by Henri Bennemeer, Drainage Superintendent by email dated, January 29, 2016)

The Branch Drains within the Hamlet of Sherkston will convey drainage from the properties bounded by the Friendship Trail to the north, the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 2711104000119800) property line to the west, Sherkston Road to the south, and Holloway Bay Road and a portion of the Van Duzen (Roll No. 271104000104200) property to the east as well as a portion of the properties east of Pleasant Beach Road south of the main Zavitz Drain. Three Branch Drains have been proposed: Sherkston North Branch Drain, the East Trail Branch Drain and the West Trail Branch Drain. The subwatershed areas for the Branch Drains are shown in **Drawing No. F-1 (Appendix F)**.

The Engineer's Report was initiated in 2004 and 2006 by Wiebe as appointed by the Town of Fort Erie and the City of Port Colborne, respectively. The report was to address property owner complaints regarding rural drainage problems, as well as a formal request for maintenance. AMEC has utilized Wiebe's information where appropriate.

1.3 History of the Drainage Area

Background information relating to the Zavitz Drain was provided by the Town of Fort Erie and the City of Port Colborne. The files included a chronology, dating back to 1890, of Engineer's

Reports, petitions from property owners regarding drainage issues, By-Laws developed to address the drainage issues, and records of Court of Revisions dates.

As can be determined from the historical review, the Zavitz Drain and other Municipal Drains have been in continuous operation for more than 100 years. Updating Engineer's Reports has been a practice used by the municipalities to maintain an up-to-date drainage system and related assessment schedule for the Zavitz Drain.

The original extent of the Zavitz Drain in 1890 was that of its origin at Pleasant Beach Road, north-easterly to and along present day Nigh Road conjoining with the Baer Drain east of present day Point Abino Road and southerly to a watercourse (creek) in the south half of Lot 31 Con 3 LE Bertie, a distance of 123+00 feet. In 1895, under the Outlet Drain Report, the extent or outlet of the Zavitz Drain was extended further downstream along the aforementioned watercourse to the middle of Lot 1 Con 14 NR a distance of some 34+68 feet. In 1947, the Zavitz Drain was relocated south of present day Nigh Road through Lots 32 through 35 Con 2 LE, Bertie to its confluence with the Baer Drain on the east side of present day Point Abino Road, to follow the more natural route of the Zavitz Drain.

The history of the drainage works along the Municipal Drain is as follows:

By-Law 305:

<i>Township:</i>	Humberstone (presently City of Port Colborne)
<i>Engineer's Report:</i>	August 30, 1890
<i>Provisionally Adopted:</i>	September 22, 1890
<i>Adopted and Passed:</i>	October 15, 1890
<i>Nature of By-Law:</i>	Construction of the Zavitz Drain under the provision of the Municipal Drainage Act.
<i>Location:</i>	Draining north parts of lots 2 and 1 in the 1 st Concession in the Township of Humberstone, and along the road allowance between the 2nd and 3rd Concessions (currently Nigh Road) from Lake Erie in the Township of Bertie, from the town line to the outlet running north through Lot 31, 2 nd Concession.
<i>Assessment Amount:</i>	\$814.00
<i>Engineer:</i>	George Ross, O.L.S.
<i>Assessment Schedule:</i>	Provided in By-Law

By-Law 582:

<i>Township:</i>	Bertie (presently Town of Fort Erie)
<i>Engineer's Report:</i>	August 30, 1890
<i>Provisionally Adopted:</i>	October 31, 1890
<i>Adopted and Passed:</i>	November 29, 1890
<i>Nature of By-Law:</i>	Construction of the Zavitz Drain under the provision of the Municipal Drainage Act.
<i>Location:</i>	Draining north parts of lots 2 and 1 in the 1 st Concession in the Township of Humberstone, and along the road allowance between the 2nd and 3rd Concessions (currently Nigh Road) from Lake Erie in the Township of Bertie, from the town line to the outlet running north through Lot 31, 2 nd Concession.

Assessment Amount: \$442.00
Engineer: George Ross, O.L.S.
Assessment Schedule: Provided in By-Law

By-Law 641:

Township: Bertie
Engineer's Report: September 24, 1895
Provisionally Adopted: August 25, 1896
Adopted and Passed: September 26, 1896
Nature of By-Law: Improve the outlet for the Schooley, Baer and Zavitz Drain in the Township of Bertie. Recommended deepening of the outlet by 1', the width of the bottom running from 5' at the upper end to 9' at the lower end, and the grade of the drain is a uniform rate of 4' 3" per mile.

Location: Draining north parts of lots 1 and 2 in the Township of Humberstone, and also draining portions of lots 31, 32, 33, 34 and 35 in the 1st, 2nd and 3rd Concessions in the Township of Bertie.

Assessment Amount: \$460.00
Engineer: George Ross, O.L.S.
Assessment Schedule: Provided in By-Law

By-Law 374:

Township: Humberstone
Engineer's Report: March 30, 1905
Provisionally Adopted: June 5, 1905
Adopted and Passed: July 22, 1905
Nature of By-Law: Repair Zavitz Drain. Repairs to the culvert at concession road in Bertie, and the renewal of the culvert leading from the roadway at M. Michael's farm.

Location: Across Lots 2 and 1 in the 1st Concession of Humberstone to an outlet into the Township of Bertie. Culverts at Station 36 and 74 in plan.

Assessment Amount: \$356.77
Engineer: E. Gardiner, P.L.S.
Assessment Schedule: Provided in By-Law

By-Law 737:

Township: Bertie
Engineer's Report: March 30, 1905
Provisionally Adopted: July 6, 1905
Adopted and Passed: August 3, 1905
Nature of By-Law: Repair Zavitz Drain. Repairs to the culvert at concession road in Bertie, and the renewal of the culvert leading from the roadway at former M. Michael's farm.

Location: Culverts at Station 36 and 74 in plan

Assessment Amount: \$193.77
Engineer: E. Gardiner, P.L.S.
Assessment Schedule: Provided in By-Law

By-Law 524:

Township: Humberstone
Engineer's Report: June 10, 1922
Provisionally Adopted: July 3, 1922
Adopted and Passed: September 11, 1922
Nature of By-Law: Repair and improve Zavitz Drain. In Humberstone, slight deepening and removal of weeds, brush and small obstructions. In Bertie, removal of brush and deepening of the drain.
Location: Across Lots 2 and 1 in 1st Concession of Humberstone to an outlet in the Township of Bertie.
Assessment Amount: \$419.50
Engineer: Ross and Scott (per. J.R. Scott)
Assessment Schedule: Provided in By-Law

By-Law 1143:

Township: Bertie
Engineer's Report: September 8, 1928
Provisionally Adopted: October 3, 1929
Adopted and Passed: December 5, 1929
Nature of By-Law: Repair and improve Zavitz Drain. In Humberstone, slight deepening and removal of weeds, brush and small obstructions. In Bertie, removal of brush and deepening of the drain.
Location: Along Concession Road between Concessions 2 and 3, and deepening in front of Lot 32.
Assessment Amount: \$347.52
Engineer: Ross and Scott (per. J.R. Scott)
Assessment Schedule: Provided in By-Law

By-Law 1116:

Township: Bertie
Engineer's Report: September 8, 1928
Provisionally Adopted: September 27, 1928
Adopted and Passed: November 14, 1928
Nature of By-Law: Improvement to the Baer Drain and Outlet of Schooley, Baer and Zavitz Drains.
Location: Approximate acreage is 221 acres in Humberstone Township and 1751 acres in Bertie Township.
Assessment Amount: \$2,255.30
Drainage Engineer: Ross and Scott (per. J.R. Scott)
Assessment Schedule: Provided in By-Law

By-Law 603:

Township: Humberstone
Engineer's Report: September 8, 1928
Provisionally Adopted: November 5, 1928
Adopted and Passed: February 11, 1929
Nature of By-Law: Improvement to the Outlet of Schooley, Baer and Zavitz Drains.
Location: Approximate acreage is 221 acres in Humberstone Township and 1751 acres in Bertie Township.
Assessment Amount: \$129.00
Drainage Engineer: Ross and Scott (per. J.R. Scott)
Assessment Schedule: Provided in By-Law

By-Law 843:

Township: Humberstone
Engineer's Report: June 11, 1947
Provisionally Adopted: April 9, 1947
Adopted and Passed: Not acted on.
Nature of By-Law: Realignment of the Zavitz Drain south into Concession 2, with an outlet along into the outlet of the Baer Drain.
Location: Realignment in the Township of Bertie, Lots 32, 33, 34 and 35, Concession 2
Assessment Amount: \$2,854.75
Drainage Engineer: R.B. Erwin, Civil Engineer
Assessment Schedule: Provided in By-Law

By-Law 849:

Township: Humberstone
Engineer's Report: June 11, 1947
Provisionally Adopted: June 16, 1947
Adopted and Passed: August 2, 1947
Nature of By-Law: Realignment of the Zavitz Drain south into Concession 2, with an outlet along into the outlet of the Baer Drain.
Location: Realignment in the Township of Bertie, Lots 32, 33, 34 and 35, Concession 2
Assessment Amount: \$1,235.54
Drainage Engineer: R.B. Erwin, Civil Engineer
Assessment Schedule: Provided in By-Law

By-Law 1427:

Township: Bertie
Engineer's Report: June 11, 1947
Provisionally Adopted: June 18, 1947
Adopted and Passed: July 18, 1947
Nature of By-Law: Realignment of the Zavitz Drain south into Concession 2, with an outlet along into the outlet of the Baer Drain.
Location: Realignment in the Township of Bertie, Lots 32, 33, 34 and 35, Concession 2
Assessment Amount: \$2,148.28
Drainage Engineer: R.B. Erwin, Civil Engineer
Assessment Schedule: Provided in By-Law

By-Law 1101:

Township: Humberstone
Engineer's Report: September 16, 1957
Provisionally Adopted: October 7, 1957
Adopted and Passed: Not acted on.
Nature of By-Law: Repair and improve the Baer Drain and the Outlet for the Schooley, Baer and Zavitz Drains.
Location: Outlet to the Zavitz Drain
Assessment Amount: \$326.00
Drainage Engineer: J.R. Scott
Assessment Schedule: Provided in By-Law

By-Law 1831:

Township: Bertie
Engineer's Report: September 16, 1957
Provisionally Adopted: October 28, 1957
Adopted and Passed: February 19, 1958
Nature of By-Law: Repair and improve the Baer Drain and the Outlet for the Schooley, Baer and Zavitz Drains.
Location: Outlet to the Zavitz Drain
Assessment Amount: \$3,043.00
Drainage Engineer: J.R. Scott
Assessment Schedule: Provided in By-Law

By-Law 984/55/80:

Township: City of Port Colborne (formerly Township of Humberstone)
Engineer's Report: October 17, 1979
Provisionally Adopted: June 11, 1980
Adopted and Passed: October 27, 1980
Nature of By-Law: Repair and improve Zavitz Drain and the Outlet for the Schooley, Baer and Zavitz Drains.
Location: Zavitz Drain and the Outlet to the Schooley, Baer and Zavitz Drain.
Assessment Amount: \$11,852.00
Drainage Engineer: C.J. Clarke
Assessment Schedule: Provided in By-Law

By-Law 1239/80:

Township: Town of Fort Erie (formerly Township of Bertie)
Engineer's Report: October 17, 1979
Provisionally Adopted: March 10, 1980
Adopted and Passed: October 27, 1980
Nature of By-Law: Repair and improve Zavitz Drain and the Outlet for the Schooley, Baer and Zavitz Drains.
Location: Zavitz Drain and the Outlet to the Schooley, Baer and Zavitz Drain.
Assessment Amount: \$24,483.00
Drainage Engineer: C.J. Clarke
Assessment Schedule: Provided in By-Law

The 1979 report was appealed to the Ontario Drainage Tribunal in 1981. The appellants were concerned that the Outlet Drain cleanout should have continued downstream of Highway 3 to provide a proper outlet for the upstream improvements on the Outlet and Zavitz Drains. The Drainage Tribunal ordered that the work outlined in the Engineer's Report be undertaken and that a Preliminary report be prepared to address the issue of improving the Outlet Drain downstream (north) from Highway 3. There is information by way of Fort Erie Report PW-201-82 to Council dated Dec. 13, 1982 and By-Law 1882-82 dated Dec. 20, 1982 calling for a preliminary feasibility study of that portion of the Zavitz Drain north of Highway #3 west of House Road and to appoint C.J. Clarke Niagara Ltd to undertake this study to a maximum cost of \$2,500.00, but no record of the preliminary report, other than correspondence dated March 20, 1984 indicating a fee of \$2,485.00 for said report was found. At the time, none of the parties involved were aware of the Beaver Creek Municipal Drain status or the extent of the Outlet Drain as per the report of Geo. Ross of September 24, 1895. A report to improve the Outlet Drain including the portion north of Highway 3 is currently in progress by others.

1.4 Drainage Area

The Zavitz Drain has an approximate drainage area of 279.82 ha, including 108.80 ha of land located within the City of Port Colborne.

The Sherkston North Branch Drain and East & West Trail Branch Drains, as described in **Section 5.0**, have an approximate drainage area of 23.18 ha, which includes the properties bounded by the Friendship Trail to the north, the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 2711104000119800) property line to the west, Sherkston Road to the south, and Holloway Bay Road and a portion of the Van Duzen (Roll No. 271104000104200) property to the east as well as portions of the properties east of Pleasant Beach Road south of the main Zavitz Drain.

Drawing No. E-1 in **Appendix E** illustrates the approximate alignment and watershed boundary of the Zavitz Drain, and **Drawing No. F-1** in **Appendix F** illustrates the approximate alignment and subwatershed boundary of the Sherkston North Branch Drain and East & West Trail Branch Drains.

2.0 MEETING AND DISCUSSIONS

2.1 Meetings with Property Owners (Conducted by AMEC)

Public meetings were held with property owners in Fort Erie and Port Colborne on January 13, 2011, February 9, 2011, November 22, 2011 and April 10, 2012. Additional individual site meetings were held with property owners on May 11, 2011 (Lattimer, Diplock and Stevens). The following comments were summarized from the meetings.

Public Meeting – January 13, 2011 and February 9, 2011 (Fort Erie Property Owners)

These public meetings were held in Fort Erie and the property owners were provided with a map outlining the Zavitz Drain and watershed boundary, as well as a preliminary assessment schedule. The following comments were summarized from the meetings.

- Lattimer, J. & J. (Roll no. 20025041000000) are concerned with the roadside drainage along the old Nigh Rd. road allowance. The roadside ditch to the southeast of their property appears to be blocked, and during a rain event water will overflow onto their property. During the meeting, Mr. Smeltzer and Mr. Ruck reviewed the MNR Wetland Mapping (2007) with the resident, and it was discovered that the majority of the property is designated as wetland. Mr. Ruck recommended that the residents contact the Town in the spring, and Mr. Ruck and the Roads Superintendent will visit the property to assess the drainage situation. If nothing can be done to mitigate the drainage issue, the Resident may be encouraged to petition for a branch drain to Zavitz so that future maintenance will be done under the *Drainage Act*.

See 'Meeting with Lattimer (5177 Nigh Road) – May 11, 2011' below for resolution.

- Woronchak, M. (Roll no. 020018335000000) is concerned that the drain outlet past Highway 3 is the main problem. He requested to postpone any drainage construction work till his crops are harvested, and for the property to be left tidy and clean after the construction is complete.

Public Meeting – January 13, 2011 and February 9, 2011 (Port Colborne Property Owners)

- Buick, R. & L. (Roll no. 271104000120000) are concerned with the delineation of the Zavitz Drain. Mr. Buick claims there is a ridge north of his property, forcing drainage from his property southerly toward Lake Erie. Mr. Smeltzer agreed to assess the lands in the spring, when the snow has melted.

See 'Meeting with Buick (5212 Sherkston Road) – May 11, 2011' below for resolution.

- Kilts, W. & W. (Roll no. 271104000121400) are concerned with the adequacy of the roadside ditches and culvert along Pleasant Beach Road. Mr. Kilts indicated that the inlet of the drain does not allow stormwater to flow freely, the water backs up into the roadside ditches and basements of the residents. Mrs. Kilts noted that in 2008 there was a major flood of several basements along Pleasant Beach Road, and she is concerned that this will happen again.
- Damude, R. (Roll no. 271104000105300) is concerned that the Outlet Drain is the main issue for drainage, and that work done to the Zavitz Drain will be more effective if work is done to the Outlet Drain. Mr. Smeltzer noted to Mr. Damude that work was being done simultaneously on the Outlet Drain, and he anticipates that drainage improvements will be conducted on the Outlet Drain as well. Mr. Damude also indicated that he wants a new culvert on his property. The culvert is over his primary access. Mr. Smeltzer indicated that this cost will be divided amongst all property owners. All secondary access culverts will be considered a Special Assessment and the cost will be put to the individual property owners.
- Lobbezoo, J. & P. (Roll no. 271104000105200) are concerned with the culvert configuration, “goose neck”, at Highway 3 and Holloway Bay Road. During a rain event, there is backflow from the Highway 3 box culvert down to his property along Holloway Bay Road. Mr. Damude (property just north of Mr. Lobbezoo) agreed with this. Mr. Smeltzer described that this backflow occurred because of the bends in the drain, both where the drain intersects with Holloway Bay Road and where it intersects with Highway 3. The culvert configuration at this location will be assessed as part of this project. Mr. and Mrs. Lobbezoo are also concerned with the amount that Port Colborne residents are paying verses Fort Erie residents. Mr. Smeltzer noted that the assessment schedule is based on direct benefits and outlet benefits. Direct benefits are for property owners abutting the drain, and outlet benefits depend on the travel length from the property to the outlet. Port Colborne residents have a longer travel length than Fort Erie residents.

In May 2011, Mr. Smeltzer visited the site to assess the condition and configuration of the culvert at Holloway Bay Road and Highway 3. The existing concrete box culvert is in good condition. With proper cleanout of the surrounding drain, the flows will be conveyed much more efficiently in this area. There is adequate gradient to convey flows along this portion of the drain.

- Johnston, B. & B. is not within the study area.
- Hansen, J. & D. (Roll no. 271104000121600) are concerned with roadside ditching along Pleasant Beach Road. Mr. Smeltzer and Mr. Bennemeer will assess the adequacy of the Drain inlet and the roadside ditches. If the roadside ditches are not flowing properly, this will be the responsibility of the City of Port Colborne Engineering Services. Mr. and Mrs. Hansen are also interested in how the City of Port Colborne will charge residents for their assessment amount. Mr. Bennemeer described that the City might have an option if the amount is over a certain dollar value, to pay the amount over 5 years plus interest. Otherwise residents will be required to pay in full. They are Interested when the exact amount charged to their property will be known. Mr. Smeltzer described that the amount provided at this public meeting is preliminary,

and may be subject to change once finalized. However, after the Engineer's Report and Assessment Schedule have been approved by the City, agencies and property owners, the works will go to the tender. Property owners will be notified of changes to the final assessment amount if the tender amount exceeds the final assessment by 133%. Once construction is completed, the property owners will be billed.

- Diplock, D. & C. (Roll no. 271104000106700) are concerned with the delineation of the Zavitz Drain. Mr. Diplock claims that water drains southerly from his property toward Lake Erie. Mr. Smeltzer agreed to assess the lands in the spring, when the snow has melted.

See 'Meeting with Diplock (5488 Sherkston Road) – May 11, 2011' below for resolution.

- Veenstra, A. & D. (Roll no. 271104000138301) encouraged all property owners to obtain the farmland classification to receive the 1/3 OMAFRA grant.
- Kenworthy, R. & P. (Roll no. 271104000138200) are concerned why their property has not been classified as farmland, but it has been farmed for years. Mr. Smeltzer recommended he contact OMAFRA to see if his land is eligible for this designation.
- Lyons, R. (Roll no. 271104000121501) expressed interest to be contacted by Mr. Smeltzer for a site visit in the spring.
- Stevens, A. & L. (Roll no. 271104000121500) expressed interest to be contacted by Mr. Smeltzer for a site visit in the spring.
- Horning, A. & D. (Roll no. 271104000121300) is interested in the Contractor placing spoil on his property. If so, can he obtain credits for the spoil and who does he contact regarding this? Mr. Smeltzer and Mr. Bennemeer will consider placing the spoil on Mr. Horning's property.

Meeting with Lattimer (5177 Nigh Road) – May 11, 2011

Mr. Smeltzer visited the Lattimer property at 5177 Nigh Road in May 2011, and confirmed the conditions described by Mr. and Mrs. Lattimer at the January 2011 public meeting. The roadside ditch along the unopened road allowance, Nigh Road and Mathews Road was surveyed by AMEC in June 2011. The drainage within the unopened road allowance does not form part of the Zavitz Drain and any works shall be the responsibility of the Town of Fort Erie. AMEC has designed a Branch Drain along the roadside ditches of Nigh Road and Mathews Road to help address the drainage issues at 5177 Nigh Road. The works will be completed at the same time as the construction along the Zavitz Drain.

Meeting with Diplock (5488 Sherkston Road) – May 11, 2011

Mr. Smeltzer visited the Diplock property at 5488 Sherkston Road in May 2011 to confirm the conditions described by Mr. Diplock at the January 2011 public meeting. Mr. Smeltzer confirmed that the water drains southerly from the Diplock property toward Lake Erie. However, as the City of Port Colborne identified the need to improve drainage in the area of Sherkston Road, Pleasant

Beach Road and the Friendship Trail, AMEC has designed a Branch Drain system that will convey flows from the Sherkston North neighbourhood north to the Zavitz Drain.

Mr. Smeltzer has determined a new Sherkston North Branch Drain and East & West Trail Branch Drains to be constructed in this area. The western portion of the Branch Drain watersheds will extend approximately 275m west of Pleasant Beach Road along the centerline of the Friendship Trail, south along the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 2711104000119800) property line, and east along Sherkston Road to Pleasant Beach Road. The eastern portion of the Branch Drain watershed will extend approximately 515m east of Pleasant Beach Road along the centerline of the Friendship Trail, south to intersect the Van Duzen (Roll No. 271104000104200) property, and then turns west at the intersection of Holloway Bay Road and Sherkston Road back to Pleasant Beach Road. The watershed area will be drained via the Sherkston North Branch Drain, the East Trail Branch Drain and the West Trail Branch Drain. Refer to **Section 5.0** for further discussion on the Design of the Branch Drains, **Appendix F** and **Appendix G** for cost estimates and assessment schedules for the Branch Drains and **Appendix F, Drawing No. F-1** for the subwatershed boundary.

Meeting with Buick (5212 Sherkston Road) – May 11, 2011

Mr. Smeltzer visited the Buick property at 5212 Sherkston Road in May 2011, and confirmed the conditions described by Mr. Buick at the January 2011 public meeting. Surveys of the south ditches of the Friendship Trail by the City of Port Colborne confirmed that the breakpoint is at the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 2711104000119800) property line. The surveys in June 2011 confirmed that the drainage boundary is in fact delineated approximately 75 m north of the Friendship Trail on the Elmer property. The watershed has been delineated to capture stormwater from the Vorstenbosch property easterly via ditching along the southside of the Friendship Trail and northside of Sherkston Road. The three properties bounded by Sherkston Road to the south and the Friendship Trail to the north are not included in the watershed. Refer to **Appendix F, Drawing No. F-1** for the subwatershed boundary.

Public Meeting – November 22, 2011 (Port Colborne Property Owners)

The purpose of the public meeting was to introduce the Sherkston North Branch Drain and the East & West Trail Branch Drains, and provide information on lands drained by the Branch Drains, estimated costs of works and assessment of cost to property owners. The Branch Drains will provide better drainage for lands in the area of Pleasant Beach and Sherkston Roads with an outlet into the Zavitz Drain.

- Beach, D.C. (Roll no. 20018337010000) Ms. Beach will discuss with her husband whether or not culvert to be replaced along the Drain. AMEC will check the material of the culvert. She believes the culvert is concrete, however, AMEC's records show CSP. If the culvert is in adequate condition, it does not need to be replaced, however, it will need to reset to the new grade.
- Farkas, J. (Roll no. 271104000119501) concerned with the charges being assessed to property owners as well as the changes in the drainage scheme. He wants to ensure proper drainage for the properties. Mr. Smeltzer outlined the rationale for the assessment schedule,

primarily based on travel length, and area and land use of each property. Since the previous meetings, further survey has been conducted to confirm several boundary locations, especially in the Hamlet of Sherkston.

- Farkas, J. (Roll no. 271104000119501) inquired that once the Zavitz drain is complete, will further work be completed in Port Colborne. Mr. Bennemeer informed that the City will be working on the Bearss and William Michael drains. Assessments will be determined at that time.
- Zimmerman, V. (Roll No. 271104000104400) wants to find the culvert on his property. He also suggested that better roadside ditching is required prior to the Drain work
- Diplock, D. (Roll no. 271104000106700) is concerned that the ditches along Sherkston Road are too deep and not draining properly. Mr. Smeltzer and Mr. Bennemeer informed that these drainage issues will be addressed as part of the design of the Branch Drains.
- Diplock, D. (Roll no. 271104000106700) is concerned that the drainage on his property will not be improved. Mr. Smeltzer and Mr. Bennemeer informed that these drainage issues will be addressed as part of the design of the Branch Drains.
- Philp, P. (Hilmayer, D. & Priebe, T.) (Roll no. 271104000106400) concerned that he currently pays for two drains. Mr. Smeltzer informed that he would only be assessed for the Zavitz Drain and Branch Drain based on the new watershed boundary.
- Philp, P. (Hilmayer, D. & Priebe, T.) (Roll no. 271104000106400) inquired about the timing for construction. Mr. Smeltzer informed that construction would commence in Fall 2012. The Drain cannot be constructed in spring or summer. Mr. Philp informed that there are frogs in the Branch Drain area.
- Philp, P. (Hilmayer, D. & Priebe, T.) (Roll no. 271104000106400) inquired if he can have the ditch filed in front of his house as he is the high point. Based on the configuration of the new Sherkston North Branch Drain, the Philp property will no longer be the high point. It will now be the low point of the ditching along the north side Sherkston Road, at the upstream end of the Sherkston North Branch Drain (see **Sections 3** and **4** for further description).
- Buick, R. & L. (Roll no. 271104000120000) inquired if someone will clean out the area after the breakpoint. Mr. Bennemeer informed that the City will be responsible for the cleanout of this and this work will be part of a future endeavour.

Public Meeting – April 10, 2012 (Port Colborne Property Owners)

The purpose of the public meeting was to illustrate the changes made to the Sherkston North Branch Drain and the East & West Trail Branch Drains, and provide information on lands drained by the Branch Drain, estimated costs of works and revised assessment of cost to property owners. The Branch Drain will provide better drainage for lands in the area of Pleasant Beach and Sherkston Roads with an outlet into the Zavitz Drain.

The property owners present in the public meeting were:

- Kilts, W. & W. (Roll no. 271104000121400)
- Farkas, J. (Roll no. 271104000119501)
- Bowerman, G. (Roll no. 271104000104700)
- Pidsadnick, G. & T. (Roll no. 271104000105800)
- Philp, P. (Hilmayer, D. & Priebe, T.) (Roll no. 271104000106400)
- Diplock, D. (Roll no. 271104000106700)

The property owners expressed a concern regarding the assessment costs and project timelines; Mr. Smeltzer identified several available grants and outlined the next steps of the project.

Public Meeting – June 19, 2013 (Port Colborne and Fort Erie Property Owners)

The fourth public meeting was held on Wednesday, June 19th to discuss the final report, including updates to the Assessment Schedules and Design of the Sherkston North Branch Drain and the East & West Trail Branch Drains. All property owners within the entire Zavitz Drain watershed were invited to attend the meeting, however, the meeting focused on the Branch Drains due to the updates from the information presented at the April 2012 public meeting.

- Woronchak, M. (Roll no. 020018335000000) discussed the following comments / concerns at the meeting:
 - What will happen with the private culverts along the Drain? Mr. Smeltzer informed that most private culverts will be replaced due to the condition of the culverts and the need to match the proposed design grade. Mr. Woronchak's private culvert will be replaced. AMEC, with the assistance of Mr. Woronchak, will direct the Contractor to ensure the culvert is placed in the correct location.
 - What will happen with the culvert along Matthews Road? Mr. Smeltzer informed that the culvert will be replaced by the Town of Fort Erie, and that the culvert is being designed by others. AMEC has assisted by providing invert elevations to the other Firm to ensure the culvert matches the proposed design grade. The proposed culvert will be assessed entirely to the Town as a Special Assessment under the Drainage Act. The property owners will not be assessed for this work. The culvert will be concrete or twin CSP.

- The culvert at outlet at Point Abino Road should be placed on an angle to allow for more efficient flows from the Baer and Zavitz Drains into the Outlet Drains. Mr. Smeltzer informed that the culvert is not part of the Zavitz Drain. This issue will likely be addressed as part of the assessment of the Outlet Drain (by Others). The Engineer assessing the Outlet Drain will review the configuration and capacity of each culvert within the Drain.
- Where will the spoil be placed from the Drain works? Mr. Smeltzer informed that the spoil will be approximately 15" high with breaks in the piles for drainage.
- Woronchak, L (Representing Elmer, D., Roll No. 271104000120200)
 - Have the assessments gone down since the last public meeting? Mr. Smeltzer informed that the assessments have decreased for the Sherkston North Branch Drains and the East & West Trail Branch Drains as the overall costs of the works have decreased. The assessments for the main Zavitz Drain have slightly decreased as the property owners from the Sherkston Branch Drain have been included in the assessment schedule and the costs of works have no changed. Thus, property owners are assessed less because the same cost is divided amongst more property owners.
 - How much will the existing main Zavitz Drain be deepened? Mr. Smeltzer informed that the majority of the deepening will take place downstream of Holloway Bay Road. The average cut will be 6 to 8".
 - Interested in extending the Zavitz Drain beyond Pleasant Beach Road to the Elmer property. See discussion point below (**).
- Kilts, W. & W. (Roll no. 271104000121400)
 - Concerned with the ditching along Pleasant Beach. This property was recently flooded during a severe storm event. The property receives flows from several properties to the southwest, west and northwest. Mr. Smeltzer informed that the majority of the drainage issues experienced are due to poor drainage downstream. The drainage issues should be alleviated once the work is done downstream. The ditching was completed prior to the Drain works, thus, the water had no outlet. Mr. Bennemeer informed that the City now ensures no ditch work is completed prior to Municipal Drain works. Ditching is the responsibility of the Roads Superintendent not the Drainage Superintendent. See discussion point below (**).
 - How will the Contractor access the Clee / Cosby properties? There are 50 to 60 foot Maple trees in the Drain. Mr. Smeltzer informed that the Contractor will clear and brush the Drain to allow for cleaning of the Drain.
 - How do payments work for the improvements to the Municipal Drain? Mr. Smeltzer informed that the City will send a bill to each property owner identifying several payment options. The assessment will be added to your tax bill.
 - When will construction occur? Mr. Smeltzer informed that fall construction is anticipated. The final Report is near completion for submission to Town of Fort Erie Council for consideration, and then the appeal process will begin. Construction is anticipated for October / November, and should take about 8 to 10 weeks.

- What will happen to all of the wildlife that lives in the Drain during construction? Mr. Smeltzer informed that only Species at Risk require mitigation measures during construction. The construction will likely disrupt the wildlife for 8 to 10 weeks. The machinery will scare them off during construction, however, they are likely to return after the work is complete.

** Mr. L. Woronchak (representing the Elmer property, Roll no. 271104000120200) and Ms. Kilts are concerned with the drainage along the Celuch / Buck and the Kilts / Horning property lines. The Kilts property experiences flows from several properties to the southwest, west and northwest. During storm events in summer of 2013, the Kilts property has experienced flooding at the upstream end of the main Zavitz Drain (west side of Pleasant Beach Road). Mr. Smeltzer informed that the majority of the drainage issues in this area are occurring due to the obstructions and lack of drainage further downstream. Once this work is complete, the flows from west of Pleasant Beach Road should have sufficient outlet to flow freely downstream. Mr. Bennemeer met with the landowners in late June 2013 to discuss the drainage issues. The landowners decided to resolve the drainage issues privately, rather than under provisions of the Drainage Act.

2.2 Meetings with Property Owners (Conducted by Wiebe)

Public Meeting - August 25th, 2005

This meeting was held, as per the *Drainage Act, Chapter D.17, Section 9*, in order to explain what initiated the project, the various aspects and procedures of the Drainage Act, particularly as they relate to this project and the exchange of information among the Town of Fort Erie, property owners and regulatory agencies. Property owners were given the opportunity to ask questions, and express concerns. The following is a brief summary of the items discussed at that meeting, as well as comments received during and after the meeting:

- Brett Ruck, Drainage Superintendent for the Town of Fort Erie opened the meeting by introducing the project team and giving a brief description of the project. Kent A. Schachowskoj of Wiebe Engineering Group Inc. then presented the status of the project to date, a general overview of the Drainage Act Process and the future anticipated steps in this project.
- Spironello, A. (Roll No. 020018339000000) does not have any drainage problems. She would prefer any work required to be done on the north side of the drain.
- Parisee, T. & A. & T. (Roll No. 271104000122200) do not have any drainage problems. They would like to have the main ditches on Hwy. #3 done. They have subsurface drainage tiles that outlets in the back ditch. Mr. Parisee requested confirmation that the property is in the drainage area.
- Woronchak, M. (Roll No. 020018335000000) does not have any drainage problems. He would like any work done on the Outlet drain from Highway 3 to Nigh Road on the east side, and for the Zavitz drain, on the south side along Pt. Abino Road. He requested that spoil material be trucked to the west end of the field. There is an angled culvert on his property. Mr. Woronchak wants the trees cut and put aside with the limbs and brush disposed of properly. He does not

want any work done until his crops are harvested. The property should be left level, neat and tidy. Mr. Woronchak feels that the outlet past Hwy. 3 is the main problem.

- Buick, R. (Roll No. 271104000120000) wanted to know how he was impacted.
- Bell Canada (Fucile, F.) indicated that it has no objections or concerns with the introductory information listed on the fact sheet circulated, on a high level overview. Bell Canada would like the opportunity to investigate and comment as required when the final design is completed and potential conflicts with any Bell Canada cables are identified.

Public Meeting - March 2nd, 2006

A second public meeting for the entire watershed was held on Thursday, March 2nd at the Town of Fort Erie Town Hall. The meeting was generally informal in nature, though the engineer made a brief presentation describing the proposed works and the general procedures under the Drainage Act. Those in attendance were encouraged to ask questions and to review the material describing the proposed construction works. Members of the Town of Fort Erie Engineering Department and Wiebe Staff were present to answer questions, and record any comments and/or concerns raised by property owners in attendance.

The following is a brief summary of the comments received at the Public Meeting:

- Woronchak, M. (Roll No. 20025017000000 – 4877 Nigh Road) asked if he can plant crops this year or if the Town would pay for his crop loss. Mr. Ruck advised part of the reason for Public Meetings is so all parties can work together to come up with a date for the commencement of the work. Kent Schachowskoj stated that the right-of-way is created so work can be done from that space. The owner may use that area, but it must be left accessible for when work is required. Mr. Woronchak wanted to know the ditch dimensions at the back of the property and along the Trail. Mr. Ruck replied that when the ditch was constructed, a budget was set, but extra trees had to be removed, causing a shortage of funds. Trees were removed from the bottom of the channel based on available funding. If more maintenance is required, it is best to fill out a comment sheet so that work can be considered.
- Beach, C. (Roll No. 20018338000000) wanted to know how the engineer could determine costs before the report was completed. Kent Schachowskoj advised that it is an estimate and could change. If there are overruns and all appeals are settled, Town Council has the authority to revisit the process. Ms. Beach was concerned that the final cost will be more than the estimate. Mr. Ruck replied that the Zavitz and Baer drain estimates are for maintenance and therefore unlikely to change much. The Schooley and Outlet drains may change more as there is more than maintenance being considered.

Public Meeting – May 16th, 2006 (Port Colborne Property Owners)

A public meeting was held on Tuesday, May 16th, 2006, at the City of Port Colborne City Hall for property owners in Port Colborne only within the watershed of the Zavitz and Baer drain. This meeting, though not a requirement of the Drainage Act, was requested by the City of Port Colborne to discuss issues pertaining to works within their municipality on the Zavitz Drain with property owners, and to obtain their comments prior to the finalization of the Engineer's Report. The meeting was generally informal in nature, though the engineer presented a brief presentation describing the proposed works and the general procedures under the Drainage Act. The meeting was poorly attended, with only four residents representing three properties at the meeting. Those in attendance were encouraged to ask questions and to review the material describing the proposed construction works. Members of the City of Port Colborne Engineering Department and Wiebe Staff were present to answer questions, and record any comments and/or concerns raised by property owners in attendance.

The following is a brief summary of the items discussed at that meeting:

- Cosby, D. & N. (Roll No. 271104000105400) advised that they do not have drainage problems. There was a detailed discussion regarding the possibility of undertaking a portion of the work on the drain from the south (Cosby owned) side. It was agreed that the Drainage Superintendent for the City of Port Colborne would meet on-site with the property owners and report back to Wiebe about this possibility. (From this discussion, Wiebe decided that approximately half (100 metres) of the shared section of the drain on the Cosby property will be cleared from their side).

The following comments were received from property owners after the public meetings:

- Zimmerman, V. (Roll No. 271104000104400) advised that he paid a drainage bill a few years ago. Investigation revealed that the Point Abino Drain Report assessed his property for ½ acre within the Point Abino Drain watershed. The remainder of his property is in the Zavitz Drain watershed.

Public Meeting – July 26th, 2006

A public meeting was held on Wednesday, July 26th, 2006 at the Town of Fort Erie Town Hall. The meeting was requested by the Town due to a number of concerns raised by property owners regarding the scope of potential assessments. The meeting was generally informal in nature, though the engineer presented a brief presentation describing the proposed works and the general procedures under the Drainage Act. Those in attendance were encouraged to ask questions and to review the material describing the proposed construction works. Members of the Town of Fort Erie Engineering Department and Wiebe Staff were present to answer questions, and record any comments and/or concerns raised by property owners in attendance. No comments were documented in the Wiebe Report.

2.3 Meetings and Discussions with Road Authorities (Conducted by Wiebe Engineering Group)

A meeting was not held with Road Authorities as part of the investigation completed by the Engineer. However, a meeting was held with representatives from Wiebe Engineering Group Inc., Town of Fort Erie, and the Regional Municipality of Niagara on August 31, 2005. The majority of the discussion surrounded the potential relocation of the Schooley Drain off of Point Abino Road (Regional Road 12) right-of-way and onto private property. There were no comments received on the Zavitz Drain project.

2.4 Agency Involvement (Conducted by AMEC)

Consultation with Niagara Peninsula Conservation Authority and Department of Fisheries and Oceans

In May 2013, the Project team contacted NPCA to investigate potential aquatic Species at Risk in the watershed. Zavitz Drain is shown on the DFO SAR mapping to have mussel species as well as Grass Pickerel, Northern Brook Lamprey and / or River Redhorse. Based on the mapping, these species have a potential to reside within this section of the Drain, or further downstream.

On June 3rd, 2013, the Project team met with NPCA to discuss potential Species at Risk in the Drain. NPCA identified that the flow through the Zavitz Drain is intermittent throughout the year. It is not anticipated that there will be any mussels present in the Drain, however, there are likely Grass Pickerel present intermittently. As Fall construction is anticipated, there should not be any issues in terms of aquatic Species at Risk as they will have migrated further downstream to higher water levels. The requirements for NPCA / DFO approval include:

- Letter of Advice issued on behalf of DFO outlining mitigation measures, such as sediment and erosion control for the Drain.
- Notification Form for the works proposed along the mainline Zavitz Drain and the East & West Trail Branch Drains. These works follow standard protocol for drainage works.
- Permit application for the works proposed for the new construction of the Sherkston North Branch Drain.

AMEC anticipates submitting the permit application, notification form and letter of advice to NPCA after the Court of Revision to ensure approval prior to Construction.

2.5 Agency Involvement (Conducted by Wiebe Engineering Group)

At the initiation of the Zavitz Municipal Drain assessment by Wiebe, as required under the *Drainage Act, Chapter D.17, Section 6(1)*, the City of Port Colborne and the Niagara Peninsula Conservation Authority were given the opportunity to request that an environmental appraisal be prepared on the effects of the drainage works on the area. None of these agencies have made such a request.

Consultation with Niagara Peninsula Conservation Authority

The Town of Fort Erie received comments from the Niagara Peninsula Conservation Authority (NPCA) concerning the preliminary design proposal and drawings submitted on June 15, 2006 by Wiebe. The comments regarding the Zavitz Drain are as follows:

- The NPCA has no objection to the proposed sediment removal from existing culverts and the installation of rip rap protection for any exposed footings.
- The NPCA has no objection to the proposed construction of sediment basins.
- The NPCA requests that dredged material be placed adjacent to wetland areas to help prevent direct water runoff from flooded woodlots and maintain wetted conditions within the swamps. (*Wiebe replied that this cannot be completed, as there is no working space on the south side due to trees.*)

Consultation with Department of Fisheries and Ocean

A telephone conference with Shelly Dunn of the Department of Fisheries and Oceans was held on Monday July 25th, 2006. In attendance were Brett Ruck (Town of Fort Erie Drainage Superintendent) and Kent A. Schachowskoj, P. Eng. from Wiebe. No further discussions were held with the Department of Fisheries and Oceans.

2.6 Council Endorsement for Branch Drains in the Sherkston Hamlet (City of Port Colborne)

By way of the Engineering & Operations Report, 2012-15 (May 14, 2012), the City of Port Colborne Staff recommended to City Council that a petition for a Branch Drain be investigated to service the lands south of the Friendship Trail within the watershed of the Zavitz Drain. Council endorsed the motion put forth by Staff. Upon further investigation, with the view to storm water management for the Village/Hamlet of Sherkston, Staff undertook an in-house review of potential options/issues including the watersheds of the Point Abino & Baer Municipal Drains for AMEC's consideration and recommendation.

AMEC reviewed the options presented by the City of Port Colborne, and revised the designs where necessary. The Sherkston North Branch Drain and the East & West Trail Branch Drains have been designed to improve drainage in the areas of Sherkston Road, Pleasant Beach Road and the Friendship Trail. Additional information on the purpose and design of these Branch Drains is discussed in **Section 5.0**. The design drawings, cost estimate and assessment schedules are also included in **Appendix F** and **Appendix G**.

3.0 INVESTIGATION AND FIELD WORK

The following description of the existing conditions was taken from the Zavitz, Baer, Schooley, and Outlet Municipal Drains, Draft Engineer's Report (July 21, 2006 by Wiebe) and from field work undertaken by AMEC from October 2010 to June 2011. Where possible, the Drainage Engineer has used work completed previously by Wiebe to minimize additional expense to the property owners.

3.1 Existing Land Use

The majority of the privately owned lands within this drainage basin are used primarily for agricultural and pastureland purposes. There is also a significant portion of undeveloped or unimproved open space/vacant land. There are also localized concentrations of rural residential properties.

Based on aerial imagery within the Town of Fort Erie, the area percentage of worked land is approximately 71.5% and wooded area is approximately 20.5%. Within the City of Port Colborne, the area percentage of worked land is approximately 71.0% and wooded area is approximately 17.5%. The remainder of the lands is Municipal road allowances and the Friendship Trail. Based on the *Fort Erie Creeks – Watershed Plan* (AMEC, previously Philips, March 2008), the majority of the wooded areas are wetlands that are Provincially or Regionally Significant Environmental Protection Areas. This is illustrated in Figure NH2 and NH5 of the *Fort Erie Creeks - Watershed Plan*.

3.2 Soil and Topographic Conditions

The description of soil and topographic conditions is based on field observations in conjunction with information contained in soils reports and maps prepared by the Ontario Institute of Pedology.

The soils within the drainage area consist mainly of Reddish Hued Clay Loam Till of the Jeddo and Chinguacousy series, Toledo series Reddish Hued Lacustrine Silty Clay and Shallow Depth variable soil textures over Bedrock of the Franktown Series. Natural drainage for these soil types would generally be classified as imperfect to poor.

Natural topography of the drainage basin is generally flat to very gently sloping. In addition to the preponderance of open space (agricultural, pastoral, or vacant/unimproved) there are also significant areas of medium to heavy density bush and forested areas within the watershed. As well, the overall poor drainage character of the watershed has resulted in several low-lying swampy areas both along and adjacent to the existing drain. The existing predominant soil types do not readily lend themselves to infiltration and drainage through the soil.

3.3 Description of Field Work – Main Zavitz Drain

The field work undertaken for the main Zavitz Drain component of this project included the following:

- A field inspection of the watershed to determine drainage area limits, subcatchment boundaries and general existing conditions along the Zavitz Drain was conducted by Wiebe and confirmed by AMEC.

Based on the field survey undertaken by the Drainage Engineer, the review of documents provided by the City of Port Colborne and field reconnaissance during the Baer Drain project, the boundaries of the Baer Drain and Zavitz Drain were revised. It was determined that the east limit of the Zavitz Drain (on the Baer Drain boundary) is the centreline of Holloway Bay Road. This location is the boundary between the Zavitz Municipal Drain and the Baer Municipal Drain. The review of the limit, although undertaken during the Baer Drain Project, has been included in the costs for the Zavitz Municipal Drain as survey work was conducted in determining in the Zavitz Drain boundary. The cost of this additional work was \$7,300.00 (not including HST).

- Wiebe conducted a field inspection and level survey of the Outlet Drain from its upstream limit to its current outlet at Hwy. #3, and further downstream to the existing culvert crossing at House Road. Field inspections were also conducted for the Zavitz, Baer and both the existing and relocated Schooley Drains from their respective upstream limits to their respective outlets into the Outlet Drain. As this survey work was at least 5 years old, AMEC conducted a new complete topographical survey of the Zavitz Drain in November 2010. The total length of the Zavitz Drain survey is approximately 2900 metres.
- Measurements and inspections of all municipal road and private crossings of the Zavitz Drain were conducted by Wiebe. The Mathews Road concrete box culvert is owned by the Town of Fort Erie, and has been recommended for replacement based on the Town's asset management program. A design and estimate is currently being conducted by others. The specifications and design will be included in the tender documents. The Holloway Bay Road culvert is owned by MTO and the Pleasant Beach Road culvert is owned by the City of Port Colborne. AMEC has recommended that these culverts remain and be cleaned out and set to the design grade during construction.
- A photographic record detailing existing conditions along the Zavitz Drain was completed.
- A site inspection (drain "walkthrough") was undertaken by AMEC and the Drainage Superintendent for the Town of Fort Erie along portions of the Zavitz Drain. AMEC undertook a separate site inspection with the Drainage Superintendent for the City of Port Colborne along the section of the Zavitz Drain situated in Port Colborne.

All of the survey information, including the approximate location and profile, of the existing and proposed drains is illustrated on the enclosed plan and profile drawings in **Appendix E**. The information has been extracted from field work undertaken by Wiebe and verified by AMEC in November 2010 to June 2011.

3.4 Description of Field Work – Sherkston North Branch Drain and East & West Trail Branch Drains

To improve drainage in the areas of Sherkston Road, Pleasant Beach Road and the Friendship Trail, the Sherkston North Branch Drain and the East & West Trail Branch Drains have been designed. From spring to fall 2011, AMEC conducted additional survey work and field investigations to confirm existing drainage patterns and issues within the Hamlet of Sherkston. There were public meetings and individual on-site meetings held to determine localized issues. From the investigation, AMEC has determined an appropriate drainage course to convey flows from the areas of Sherkston Road, Pleasant Beach Road and the Friendship Trail to the main Zavitz Drain. **Section 4.0** includes a detailed description of the proposed Branch Drains. All of the survey information, including the approximate location and profile, of the proposed Branch Drains is illustrated on the enclosed plan and profile drawings in **Appendix F** and **Appendix G**.

3.5 Existing Conditions of the Drain

The description of the existing conditions of the various drains within the watershed is based on the accumulative investigations of Wiebe as well as the survey work and numerous site visits by AMEC, both in the company of the Drainage Superintendent's for both the Town of Fort Erie and the City of Port Colborne, and independently.

Generally, the existing Zavitz Drain has a well defined course throughout its length. The channel cross-sections throughout are well defined and basically trapezoidal in shape, with variable depths and widths. Notwithstanding the shape of the channel, the drain needs to be cleaned out due to sediments being deposited, brush overgrown along the drain, etc.

Zavitz Drain (Fort Erie Section)

- Drain route well defined and trapezoidal in shape throughout its length. Evidence of some heavier siltation in lower reaches, as well as significant vegetation growth in the drain itself.
- Recommend general cleanout, as well as deepening of lower reaches to provide a better outlet for upstream lands.
- Generally in keeping with the design profile of the 1979 Engineer's Report, except with shallower (more stable) bank side slopes, due to sedimentation.

Zavitz Drain (Port Colborne Section)

- Drain route and shape well defined throughout.
- Some evidence of sedimentation throughout, however only a few scattered areas where debris and obstructions have blocked the drain to any extent.

- Along the Damude property, spoil from previous cleanout piled quite high and in fairly close proximity to top of bank on north side of drain. As well, some drainage from north cutoff from entering the drain due to channels cut across the spoil piles not being deep enough. Significant ponded areas occurring to the north of the drain beyond the working space.
- Recommend general clean out of drain only, with some leveling of previous spoil piles along the Damude property, including deepening of surface drainage cuts to allow adjacent area a proper direct outlet. General cleanout will ensure a proper outlet for the Sherkston North Branch Drain.
- Recommend cleanout of the inlet at Pleasant Beach Road.

Sherkston North Branch Drain (Port Colborne)

Several branch drain route options were evaluated, however, cost and effectiveness of conveying flows discounted the options. The Sherkston North Branch Drain will travel along the property line of Neal and (Hilmayer & Priebe) (north of Sherkston Road) to the Friendship Trail. These properties are rural residential with an existing swale between the properties. The Sherkston North Branch Drain will be conveyed under the Friendship Trail via a 900mm HDPE culvert, then travel north to Zavitz Drain through the Cosby and Lochhead properties.

East & West Trail Branch Drains (Port Colborne)

The East & West Trail Branch Drains are proposed along the existing south ditches of the Friendship Trail. The East Trail Branch Drain commences at the Sherkston North Branch Drain and continues East 312.3m towards Holloway Bay Road and the West Trail Branch Drain commences at the Sherkston North Branch Drain and continues Westerly 480m Crossing Pleasant Beach Road continuing toward Sherkston Road. Both the East & West Trail Branch Drains will convey flows east and west along the south ditches of the Friendship Trail to the connection with the Sherkston North Branch Drain. The Branch Drains will convey drainage from the properties bounded by the Friendship Trail to the north, the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 271104000119800) property line to the west, Sherkston Road to the south, and Holloway Bay Road and a portion of the Van Duzen(271104000104200) property to the east as well as a portion of the properties east of Pleasant Beach Road south of the main Zavitz Drain. As part of construction, the Contractor will clean and lower the existing ditches where necessary to accommodate the proposed design grade.

Drawings for the delineation of the subwatershed areas for the Branch Drains are shown on ***Drawing No. F1 (Appendix F)***.

3.6 Location and Condition of Outlet

The Zavitz Drain outlets to the Outlet Drain along the west side of Point Abino Road, approximately 400 m north of the Friendship Trail. The Outlet Drain travels north along Point Abino Road for approximately 60 m, until it crosses under Point Abino Road and meanders to Highway 3. The system ultimately outlets to Beaver Creek and the Niagara River. The Outlet

Drain has been surveyed by Wiebe and is of minimum grade and overgrown. To ensure the long-term viability of the Zavitz Drain, the Outlet Municipal Drain is currently being assessed for maintenance, original grade reinstatement and vegetation removal. In 2010, K. Smart and Associates' Engineer, John Kuntze was appointed the Drainage Engineer for the Outlet Drain. The design grade of the Zavitz Drain will be matched into the design grade of the Outlet Drain. Mr. Kuntze has confirmed an upstream invert of 183.61 m.

3.7 Utilities

Representatives of all local utilities (Hydro, Bell, Cable TV and Enbridge Gas) were invited to each of the meetings with property owners as described in **Section 2.0**, both in 2005/2006 (conducted by Wiebe). As well, copies of the overall plan were previously circulated to all Utilities so that utilities crossing each of the drains could be identified. All utility locate information provided has been added to the Overall Plan. Further consultation with the utility companies will be required prior to construction in an attempt to minimize or eliminate potential conflicts, and to ensure that proper precautions are taken during construction phases. Any relocation of utilities required as a result of the Zavitz Drain maintenance will be assessed to the utility in accordance with the *Drainage Act, Chapter D.17, Section 26*.

3.8 Directed Investigations

Tribunal Orders issued 14th, April 2016 and the response to same.

1. Mr. Marsh and Mr. Maiden shall contact Mr. Woronchak and attend at the Mathews Road culvert with him to measure the travel width between the guardrails and try to reach a solution that will allow Mr. Woronchak's farming equipment to pass over the new culvert to gain access to his fields;

On the morning of April 11, 2016, Mr. Marsh and Mr. Maiden attended the Mathews Road culvert location and measured the distance between guard rails. It was found to be 6.4m at the narrowest point and have an overall average width of 6.82m. The equipment was measured in the Woronchak's yard and found to be 6.1m in width. It can be said that the equipment will fit between the guardrails.

With respect to:

2. Mr. Marsh and Mr. Maiden shall attend at the Woronchak property to determine whether or not a new culvert is required. If a new culvert is required, changes to the assessment schedule will be necessary. However, if the existing culvert is deemed appropriate and can be incorporated into the drain, no further costs shall be assessed to the Woronchak property;

On the morning of April 11, 2016 and with Mr. Woronchak in attendance, Mr. Marsh and Mr. Maiden visited the culvert crossing the ditch as installed by Mr. Woronchak. The culvert was found to be 6.2m in length and having a nominal diameter of 1.2m. The culvert end was observed to be out of round probably caused during installation but may have been a pre-existing defect. The gauge of the culvert was not assessed nor the grade of the culvert. It was noted that the flow through the culvert was faster than either upstream or immediately downstream. The following photos shows the existing installed culvert.



Figure 1: Outlet side of existing 1.2m diameter culvert



Figure 2: Inlet side of installed 1.2m culvert

The existing culvert is not acceptable as the diameter is smaller than the recommended design diameter of 1.5m.

A new culvert shall remain in the schedule and the benefit calculation, omitted in the last version, has been changed to reflect the special benefit received.

With respect to:

3. Mr. Marsh and Mr. Bennemeer will attend at the Clee property to determine whether the replacement culvert that he has available is of a sufficient size and quality to be incorporated into the drain. The assessment schedule shall be adjusted accordingly if this culvert can be used instead of a new one;

Mr. Marsh, Mr Maiden and Ms. Vander Veen attended the Clee property on the morning of April 11, 2016 and measured the culvert indicated by Mr. Clee to Mr. Maiden as the proposed culvert to be used. The measurements were found to be; nominal diameter = 0.5m and with a length of 3.0m. The culvert was new and in a suitable condition. The length of the culvert is inadequate for a crossing and a new culvert is recommended unless a similar diameter culvert is supplied that meets a 6m length or an additional 3m of .5m culvert is attached to the Clee culvert with a suitable coupling.

With respect to:

4. Mr. Marsh and Mr. Bennemeer shall review Mr. Clee's calculation concerning his Section 30 allowance to determine whether or not there is a mathematical error. If necessary, the Engineer's Report shall be adjusted accordingly;

The calculation was reviewed and found as follows:

The form of the calculation performed in the spreadsheet is correct. The example shown in the sheet provided by the Tribunal shows that the difference between the existing and proposed top width is used in the calculation. Mr. Clee's channel allowance is based on the top width increasing to 2.5 from 2.2 on the left bank and to 2.5 from 2.1 on the right bank. Not from 2.0 as shown in the calculation.

The allowance is calculated correctly at \$74.

With respect to:

5. Mr. Marsh shall review the allowances to reflect shifting of the drain onto the Hilmayer & Priebe property from the Neal property. If necessary, the allowances shall be adjusted accordingly;

The original allowance was shared equally between the two properties.

In reviewing the plans showing the closed conduit portion of the drain and the open channel portion of the drain being entirely on the Hilmayer & Priebe property, the allowance calculation has been revised.

A 5m working easement is identified on both sides of the drain, this will be 5m width on each property, which has more of an impact on the Hilmayer & Priebe property by virtue of the top width of the drain being located on their property.

With respect to:

6. Mr. Marsh shall revise the Engineer's Report to indicate that the excavated material resulting from the construction of the open portion of the North Sherkston Branch shall be left on the Hilmayer & Priebe property, if possible;

From attendance at the Hilmayer & Priebe property by Mr. Marsh, Mr. Maiden and Ms. Vander Veen on the morning of April 11, 2016, the excavated material can be left on the Hilmayer & Priebe property and as indicated is acceptable to Mr. Priebe. The following changes have been shown to the report and associated schedule, a reduction in the cost of construction from \$17/m to \$15/m.

With respect to:

7. Appendices F1 and G1 shall be deleted from the Engineer's Report;
The Appendices F1 and G1 are deleted from the Engineer's Report.

With respect to:

8. The future maintenance schedule for the Sherkston North Branch Drain shall be based only on the outlet assessments contained in the construction assessment schedule as per Appendix F of the February 2016 Engineer's Report, at the ratio of approximately 56.3% to the privately-owned lands and 43.7% to the Port Colborne-owned lands, as currently shown, and the text in the Report amended accordingly, if necessary;
The ratio of outlet assessments are.
Privately owned lands \$18,860; 56%
City of Port Colborne \$7,794; 23%
Other Lands in Port Colborne \$6,850 20%

With respect to:

9. The future maintenance schedule for the West Trail Branch shall be based only on the outlet assessments contained in the construction assessment schedule, as per Appendix G of the February 2016 Engineer's Report, at the ratio of approximately 47.2% to the privately-owned lands and 52.8% to the lands owned by Port Colborne, as currently shown, and the text in the Report amended accordingly, if necessary;
The ratio of outlet assessments are.
Privately owned lands \$4,447; 47%
City of Port Colborne \$856; 9%
Other Lands in Port Colborne \$4,128; 44%
Total for Port Colborne lands 53%

With respect to:

10. The future maintenance schedule for the East Trail Branch shall be based only on the outlet assessments contained in the construction assessment schedule, as set out in Appendix G of the February 2016 Engineer's Report, with 50% assessed to the privately-owned lands and 50% assessed to the Friendship Trail lands owned by Port Colborne, and the text in the Report amended accordingly, if necessary;
This statement was added to the report.

With respect to:

11. The allocation of the total engineering fees for the Zavitz Drain shall be proportional to the travel length of the drain situated in each municipality, with approximately thirty-three percent (33%) allocated to Port Colborne and sixty seven percent (67%) allocated to the Town of Fort

Erie, with an allocation schedule of capital costs showing construction, allowances and engineering fees for each municipality;

A table summarizing the estimated capital costs for the construction of the drain, along with the allowances and engineering fees for each municipality is included in the Zavitz Drain schedule.

Total Capital Construction Cost of Zavitz Drain = \$171,297.29

Engineering Fee @ 23% Construction Cost = \$39,398.38

With respect to:

12. Mr. Marsh shall advise the Tribunal of any impacts associated with the calculation of and allocation of the total engineering fees resulting from the inclusion of the \$75,000 cost for the Mathews Road culvert, specifically with respect to item 11 above and the City of Port Colborne; As the Mathews Road culvert was completed by others and no part of the engineering for the design or construction was completed through the Drainage works proposed within this Drainage Engineer's Report, the capital cost value of the works has been removed from the calculation of % of engineer fee based on the total capital construction estimate.

With respect to:

13. Within a period of one week from the issuance of this Interim Decision #2, Mr. Bennemeer shall provide Mr. Marsh with a comprehensive list of any and all concerns and possible errors in the Engineer's Report including, but not limited to, errors in the assessment schedules, so they can be reconciled and resolved prior to the issuance of the revised Engineer's Report; Mr. Bennemeer contacted Mr. Marsh on or about the 12th of April, 2014 and discussed the assessment schedule. Mr. Bennemeer was asked for written points indicating errors in assessment schedule of any type along with any relevant information that could be used to address same errors. Mr. Bennemeer pointed to the original assessment schedules of 2013 and to the revised schedules of 2014 that were addressed according to information contained within the Paul Smeltzer Letter to Mr. Judd dated April 9, 2014.

Additional report corrections were provided by Alana Vander Veen, in subsequent reviews.

4.0 DESIGN – MAIN ZAVITZ DRAIN

The design of Zavitz Drain was undertaken based on field information gathered by Wiebe, and confirmed by AMEC in the fall 2010 and spring 2011. The information has been reviewed and a field audit undertaken to satisfy the Drainage Engineer of the relative integrity of the information.

The following describes the design criteria and process used for improvements to the Zavitz Drain as well as construction of the new Branch Drains.

4.1 Design Criteria and Analysis

The original design characteristics of the existing Zavitz Drain were reviewed with consideration for the Design and Construction Guidelines prepared by the Ontario Ministry of Agriculture, Food and Rural Affairs. Generally, municipal drains are designed to convey the flows resulting from a two-year storm event. Generally, travelled road crossings are designed to convey a minimum of 25-year peak flow rates without backing up, and flooding into the roadway is desired only under extreme storm conditions (50 or 100 year return periods). Private Drain crossings would generally be designed to convey the 2-year design storm event.

The drainage area, soils types, drainage basin characteristics, land use and cover, and channel slope are factors applied when calculating design flows. Rainfall data for this analysis was obtained from Environment Canada Rainfall Intensity Duration-Frequency curves from the rain gauge station located in Port Colborne.

A hydrologic analysis of the drainage basin has been conducted using the SWMHYMO computer program. SWMHYMO utilizes unit hydrograph techniques to simulate the precipitation-to-runoff response characteristics of a drainage basin. The resulting runoff hydrographs were routed and combined by SWMHYMO to provide an accurate gauge of runoff flows. SWMHYMO drainage models were created representing existing runoff conditions. The drainage model for this watershed was simulated to the 2-year return period design storm conditions. Resulting SWMHYMO output provides expected peak runoff rates at various locations within the drainage network. This output was then utilized to assess the performance of various existing drainage elements, and used to aid in the design of the proposed improvements.

A hydraulic analysis of the Zavitz Drain was completed using the HEC-RAS computer program. HEC-RAS is designed to perform one-dimensional hydraulic calculations for a full network of natural and constructed channels. The HEC-RAS system contains four (4) one-dimensional river analysis components for: steady flow water surface profile computations; unsteady flow simulations; movable boundary sediment transport computations; and water quality analysis. Utilizing the SWMHYMO hydrologic peak runoff output and surveyed cross-sections of the Drain, a HEC-RAS model was developed to calculate the steady flow water surface profile. The output was then utilized to assess the performance of various existing drainage elements and to aid in the design of the proposed improvements.

4.2 Description of Proposed Work

The proposed work on the existing main Zavitz Drain generally consists of channel improvements and cleanout, culvert replacement and improvement work, and sediment control and erosion control. The following is a summary of the works proposed for the main Zavitz Drain.

Location	Description of Works
Zavitz Drain – Fort Erie	
20018335000000 Woronchak, M. & N. (both sides)	STA 0+000 to STA 0+137.2 Clean and deepen approximately 137.2 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Existing culvert to be replaced with 1.5m CSP Culvert at STA 0+130 Construct, clean and maintain rock check dam, and sediment basin at STA 0+010.2. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from south side of drain.
20018336000000 Clark, D.M. (both sides)	STA 0+137.2 to STA 0+407.1 Clean and deepen approximately 271.1 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Existing 1.5m CSP culvert at STA 0+133.7 to be replaced. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from south side of drain.
20018337010000 Beach, D. & C. (both sides)	STA 0+407.1 to STA 0+639.3 Clean and deepen approximately 269.9 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Existing 1.5m CSP culvert at STA 0+407.6 to be removed. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from south side of drain.
20018337000000 Green, K.R. (both sides)	STA 0+639.3 to STA 0+900.5 Clean and deepen approximately 232.2 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from south side of drain.
Mathews Road ROW Town of Fort Erie (both sides)	STA 0+900.5 to STA 0+921.0 Clean and deepen approximately 13.1 m of existing roadside channel upstream and downstream of the culvert to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Install sediment basin at upstream end of culvert (west side). Install rip rap culvert footing protection as shown on the enclosed plans (See <i>Drawing E3in Appendix E</i>). Spoil to be trucked off site for disposal. Construct, clean and maintain rock check dam, and sediment basin at STA 0+918.4.0
20018338000000 Beach, C.M. (both sides)	STA 0+921.0 to STA 1+326.2 Clean and deepen approximately 405.2m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>).

Location	Description of Works
20018339000000 Spironello, A. (both sides)	Work to be undertaken from south side of drain. STA 1+1+326.2 to STA 1+756.0 Clean out approximately 429.8 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Construct, clean and maintain rock check dam, and sediment basin at STA 1+750.1. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from south side of drain.
Holloway Bay Road ROW Town of Fort Erie (both sides)	STA 1+756.0 to STA 1+905.7 Clean out approximately 175.8 m of existing roadside channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Spoil to be trucked off site for disposal (see <i>Section 6.5</i>). Work to be undertaken completely within Road Allowance ROW.
Hwy. #3 ROW Ministry of Transportation (both sides)	STA 1+905.7 to STA 1+967.0 Clean out approximately 1.7 m of existing roadside channel downstream of the culvert to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Clean out silt and debris from existing concrete box cross culvert (15m) to match new drain bottom grade. Spoil to be trucked off site for disposal (see <i>Section 6.5</i>). Work to be undertaken completely within Road Allowance ROW.
Zavitz Drain – Port Colborne	
271104000105300 Damude, R.D. (both sides)	STA 1+967.0 to STA 2+268.2 Clean out approximately 301.2 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Existing 500mm CSP Culvert crossing at STA 2+190 to be replaced. Construct, clean and maintain rock check dam, and sediment basin at STA 2+034.25. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from north side of drain.
271104000138400 Clee, J. R. (both sides)	STA 2+268.2 to STA 2+685.2 Clean out approximately 417.0 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Remove existing culvert and replace with new 500mm CSP culvert at STA 2+601.8 to be installed. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from north and west side of drain.
271104000138400 Clee, J. R. (north side) and 271104000105400 Cosby, D. (south side)	STA 2+685.2 to STA 2+878.5 Clean out approximately 193.3 m of existing channel to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from south side of drain
Pleasant Beach Road ROW City of Port Colborne (both sides)	STA 2+878.5 to STA 2+898.6 Clean out approximately 7.5 m of existing roadside channel downstream of the culvert to the design grade and dimensions as noted on the enclosed plans, including removal of debris and obstructions. Clean out silt and debris from existing concrete box cross culvert (10.9m) to match new drain bottom grade. Gas Line protection

Location	Description of Works
	during construction by Enbridge Gas and lowering if required (STA. 2+890.0 to STA 2+901.6). Spoil to be trucked off site for disposal (see <i>Section 6.5</i>). Work to be undertaken completely within Road Allowance ROW.

Details of the proposed works are shown on the enclosed **Drawing No. E-2A to E-2E** in **Appendix E**.

It is the property owner's responsibility to bring to the attention of the Drainage Engineer or Contractor, any tile outlets or property markers that could be damaged during construction. It is the responsibility of the Contractor to replace property bars due to construction unless a surveyor has been retained to reference bars.

4.3 Municipal Road Crossings

The Existing Matthews Road culvert as per the report Dated October 17, 1979 by C.J. Clarke was a concrete box culvert. That culvert was replaced at the expense of near \$68,000.00 to the Town of Fort Erie in September of 2014 as indicated by their Bridges and Culverts Report. A total length of 13.5m of Twin 1600mm diameter CSP culverts were installed. This work was completed prior to the report and the details within this report will indicate cleaning only.

The following is a list of municipal road crossings that presently exist along the drain system and are to be incorporated as part of the drainage works:

Location & Owner	Size (mm)	Description & Material*	Length (m)	Proposed Works
Zavitz Drain – Fort Erie				
Mathews Road (FE)	1600mm	Twin CSP	13.5 m	Cleanout
Holloway Bay Road (MTO)	3050 x 1246	COFBC	30.5 m	Cleanout
Zavitz Drain – Port Colborne				
Pleasant Beach Road (PC)	3050 x 683	Concrete Arch with Rectangular Concrete Box Extensions	10.9 m	Cleanout

Notes: * COFBC – Concrete Open Footing Box Culvert

Repair, replacement, cleanout, and future maintenance on any culvert located within a road allowance shall be charged directly to the Road Authority involved, and not against the Drain.

4.4 Private Crossings

The following table is a summary of all private crossings located along the main Zavitz Drain and the proposed improvements to be undertaken on each. These new culverts will form part of the Zavitz Drain and are under jurisdiction of the municipality. The existing crossings being removed are to become the property of the affected property owner. The cost of private culvert removal at this time will be 50% assessed directly to the property on which it is located, and 50% assessed to the upstream property owners.

Roll No. & Owner	Size (mm)	Description & Material	Existing Length (m)	Proposed Works
Zavitz Drain – Fort Erie				
Woronchak, M&N (020018335000000)	1000 mm dia.	CSP		Original culvert
	1200 mm dia.	CSP	6.2m	Current culvert to be replaced with 6.0m 1500mm dia. CSP
Clark, D.M. (20018336000000)	1500 mm dia.	CSP	4.5 m	Replace with 6.0m 1500mm dia. CSP
Zavitz Drain – Port Colborne				
Damude, R. (271104000105300)	500 mm dia.	CSP	6.0 m	Replace with 6.0m 500mm dia. CSP
Clee, J. (271104000138400)	400 mm dia.	CSP	5.7 m	Replace with 6.0 m 500mm dia. CSP

New private culvert crossings are required to be 6.0m with end wall treatment (as per OPSD 804.030).

Future maintenance costs of private crossings which are part of the drain will be 50% assessed directly to the property on which it is located, and 50% assessed to the upstream property owners including culvert, headwall, rip-rap, etc.

Any new crossings requested in the future are to be sized and designed by a qualified Drainage Engineer and the costs assessed according to the requirements of the *Drainage Act, Chapter D.17, Section 78*. Generally, the initial costs of installing a new private crossing are charged completely to the property owners requesting the same.

The cost of extending any culvert that forms part of this drain is to be assessed to the property owner requesting the work.

We have not investigated the structural adequacy of any of the private crossings as the culvert replacement is required to comply the new design specifications.

If, in the future, a property owner requests the removal of a culvert that was incorporated into this report, the cost of such removal is to be assessed directly to the property owner.

5.0 DESIGN – SHERKSTON NORTH BRANCH DRAIN AND EAST & WEST TRAIL BRANCH DRAINS

Under the *Drainage Act, Chapter D.17, Section 4*, the City of Port Colborne has petitioned for the design and construction of a Branch Drain to improve drainage in the areas of Sherkston Road, Pleasant Beach Road and the Friendship Trail. As such, the design of the Sherkston North Branch Drain, the East Trail Branch Drain and the West Trail Branch Drain was completed.

AMEC, along with the City of Port Colborne, conducted additional survey work, field investigations and on-site meetings to confirm existing drainage patterns and issues within the Hamlet of Sherkston. AMEC has determined an appropriate drainage course to convey flows from the areas of Sherkston Road, Pleasant Beach Road and the Friendship Trail to the main Zavitz Drain. Several branch drain route options were evaluated, however, cost and effectiveness of conveying flows discounted the options.

The Sherkston North Branch Drain will commence on the north side of Sherkston Road and travel north to the Friendship Trail between the Neal (Roll No. 271104000106500) and Hilmayer & Priebe (Roll No. 271104000106400) properties. This Branch Drain will be conveyed via a 900mm HDPE culvert under the Friendship Trail, and then travel north through the Cosby (Roll no. 271104000105400) and Lochhead (Roll no. 271104000105600) properties to intersect with the existing main Zavitz Drain (at STA 2+685).

The East Trail Branch Drain commences at the Sherkston North Branch Drain and continues East 312.3m towards Holloway Bay Road and the West Trail Branch Drain commences at the Sherkston North Branch Drain and continues Westerly 480m Crossing Pleasant Beach Road continuing toward Sherkston Road. Both the East & West Trail Branch Drains will convey flows east and west along the south ditches of the Friendship Trail to the connection with the Sherkston North Branch Drain. The Branch Drains will convey drainage from the properties bounded by the Friendship Trail to the north, the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 2711104000119800) property line to the west, Sherkston Road to the south, and Holloway Bay Road and a portion of the Van Duzen (Roll No. 271104000104200) property to the east as well as a portion of the properties east of Pleasant Beach Road south of the main Zavitz Drain.

The Branch Drains will convey drainage from the properties bounded by the Friendship Trail to the north, the Hayter (Roll No. 271104000119700) / Vorstenbosch (Roll No. 2711104000119800) property line to the west, Sherkston Road to the south, and Holloway Bay Road and a portion of the Eberly Trucking (Roll no. 271104000104005) property to the east as well as a portion of the properties east of Pleasant Beach Road south of the main Zavitz Drain.

Details of the proposed works for the Sherkston North Branch Drain are shown on the enclosed **Drawing No. F-1** in **Appendix F**. Details of the proposed works for the East & West Trail Branch Drains are shown on the enclosed **Drawing No. G-1** and **G-2** in **Appendix G**. The subwatershed areas for the Branch Drains are shown in **Drawing No. F-1** in **Appendix F**.

5.1 Description of Proposed Work

The proposed work for the Sherkston North Branch Drain generally consists of excavation of the new channel to the proposed design grade and installation of a 375 mm diameter HDPE pipe on the Neal property. The following is a summary of the works proposed for the Sherkston North Branch Drain.

Location	Description of Works
271104000105400 Cosby, D. (both sides)	STA 0+007.9 to STA 0+107.6 STA 0+157.9 to STA 0+277.7 Excavate new open channel to design grade. Install two new 500mm CSP culverts for private property access across new Drain. Proposed locations are 0+060 and 0+250 (to be confirmed with the property owner during construction). Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from west side of drain.
271104000105600 Lochhead, A. & K. (both sides)	STA 0+107.6 to STA 0+157.9 Excavate new open channel to design grade. Install new 500mm CSP culvert for private property access across new Drain. Proposed location is 0+140 (to be confirmed with the property owner during construction). Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from west side of drain.
271104000106500 Neal, T. & L. (right side) and 271104000106400 Hilmayer, D & Priebe, T. (left side)	STA 0+313.1 to STA 0+384.0 Excavate new open channel to design grade. Spoil to be levelled adjacent to the drain (see <i>Section 6.5</i>). Work to be undertaken from east side of drain.
271104000106500 Neal, T. & L. (right side) and 271104000106400 Hilmayer, D & Priebe, T. (left side)	STA 0+384.0 to STA 0+474.0 Supply and install 375mm diameter HDPE storm sewer pipe, including granular 'A' for bedding and cover and native backfill. The proposed storm sewer pipe will be installed 2.2m from the property line. The storm sewer will be installed with a water tight joint as per OPSS 1840. Storm sewer will be connected to a 600mm Catchbasin installed in the Right of Way at the edge of the property line. Work to be undertaken from east side of drain.

The proposed work for the East & West Trail Branch Drains generally consists of cleaning out and lowering (where necessary) of the existing south ditches along the Friendship Trail to match the proposed design grade. The existing 450mm HDPE cross-culvert along the south ditch of the Friendship Trail (part of the West Trail Branch Drain) crossing under Pleasant Beach Road will be lowered to match the proposed design grade, as noted on the drawings.

5.2 Municipal Crossings

The following is the work for the municipal crossings that will be completed as part of the Sherkston North Branch Drain and East & West Trail Branch Drains:

Location & Owner	Size (mm)	Description & Material*	Length (m)	Proposed Works
Sherkston North Branch Drain				
Friendship Trail* City of Port Colborne	900mm dia.	HDPE	15.0 m	Block Existing 900mm CSP west of Sherkston North Branch Drain. Install new 900mm HDPE at Sherkston North Branch Drain (STA 0+275)
Sherkston Road City of Port Colborne	600x600 mm	Catchbasin	-	Supply and Install at Sherkston North Branch Drain on Sherkston Road (STA 0+470.53)

* In essence the Friendship Trail is a private crossing, however, as it is Municipal-owned land, it is considered under the Municipal crossing section.

Removal, installation, and future maintenance of the 900 mm HDPE culvert along the Sherkston North Branch Drain shall be a Special Benefit Assessment to the City of Port Colborne.

Location & Owner	Size (mm)	Description & Material*	Length (m)	Proposed Works
East & West Trail Branch Drains				
Pleasant Beach Road City of Port Colborne (Part of West Trail Branch Drain)	450mm dia.	HDPE	8.0 m	Lower existing 450mm HDPE Cross-culvert along the Friendship Trail at Pleasant Beach Road to match proposed design grade (STA 0+221.77)

No Municipal crossing work is required along the East Trail Branch Drain.

5.3 Private Crossings

The following table is a summary of the proposed private crossings located along the Sherkston North Branch Drain. These new culverts will form part of the Branch Drain and are under jurisdiction of the municipality. The cost of private culvert at this time will be 50% assessed directly to the property on which it is located, and 50% assessed to the upstream property owners.

Roll No. & Owner	Size (mm)	Description & Material	Existing Length (m)	Proposed Works
Cosby, D. (271104000105400)	500 mm dia.	CSP	6.0 m	Install two new 6.0m 500mm dia. CSP culverts at STA 0+060 and 0+250 (locations to be confirmed during construction)
Lochhead, A. & K. (271104000105600)	500 mm dia.	CSP	6.0 m	Install new 6.0m 500mm dia. CSP culvert at STA 0+140 (location to be confirmed during construction)

No private culverts are proposed for the East & West Trail Branch Drains.

New private culvert crossings are required to be 6.0 m with end wall treatment (as per OPSD 804.030).

Future maintenance costs of private crossings which are part of the drain will be 50% assessed directly to the property on which it is located, and 50% assessed to the upstream property owners including culvert, headwall, rip-rap, etc.

Any new crossings requested in the future are to be sized and designed by a qualified Drainage Engineer and the costs assessed according to the requirements of the *Drainage Act, Chapter D.17, Section 78*. Generally, the initial costs of installing a new private crossing are charged completely to the property owners requesting the same.

The cost of extending any culvert that forms part of this drain is to be assessed to the property owner requesting the work.

If, in the future, a property owner requests the removal of a culvert that was incorporated into this report, the cost of such removal is to be assessed directly to the property owner.

5.4 Benner Award Drain

The Benner Award Drain is an existing ditch located within Pleasant Beach Road allowance that commences approximately 30.5 m south of the Friendship Trail and continues north along the east side of the road to the Zavitz Drain. The Benner Award Drain includes a 600 mm HDPE culvert on Pleasant Beach Road crossing under the Friendship Trail.

As part of this project, an option was developed to include the Benner Award Drain as a closed system as part of the new Branch Drain system in the Hamlet of Sherkston. Based on several evaluation factors, including cost and effectiveness at conveying flows, the Benner Award Drain was discounted as a preferred option.

For the purposes of the *Drainage Act, Chapter D.17, Section 3(18)* in which “every ditch constructed under the Ditches and Watercourses Act, being Chapter 109 of the Revised Statutes of Ontario, 1960, shall be maintained in accordance with the award of the Engineer providing for such maintenance until such ditch is brought under the provisions of this Act by requisition in the manner prescribed by Subsection 3(1) or by petition as set out in *Section 4*” and given the provisions of *Chapter D.17, Section 19* whereby “the Engineer in his report may recommend the abandonment of any drain or part thereof that is no longer useful or that is being supplanted by a new drainage works”, it is hereby deemed by way of this Report for the Zavitz Drain, Sherkston North Branch Drain and the East & West Trail Branch Drains that the Benner Award Drain is abandoned and that there be no further proceedings under the award as laid out by John Russell Scott, dated July 4, 1931.

6.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures are to be applied in order to reduce and/or eliminate the loss of productive land, sedimentation of the channel and deterioration of the quality of water within the system.

6.1 Buffer Strips

As part of the Fort Erie Creeks – Watershed Plan (AMEC previously Philips, March 2008), a recommendation was made to add buffer strips to the upper tributary of the Beaver Creek system, namely, the Zavitz Drain. As such, 9.0 m buffer strips will be established on both sides of the drain for all properties which abut the drain. If appropriate soil management practices are demonstrated on the property, 3.0 m buffer strips on both sides of the drain for uncultivated properties and 3.75 m buffer strips on both sides of the drain for cultivated properties will be accepted, as approved by the Drainage Superintendent. The buffer strip will provide sediment and nutrient traps that improve water quality and promote drain bank stability. With properly established buffer strips, the maintenance cycle on drains can be increased significantly, thereby reducing the overall cost to property owners.

6.2 Revegetation

Drain banks and exposed soil areas within areas disturbed during the maintenance of the drain are to be seeded as quickly as possible by the contractor. The drain banks should be seeded, preferably on the same day of excavation, and the spoil should be seeded on the day of leveling. Seeding should not take place prior to late April or after mid October, where practical.

Seed mixture used shall be applied at a rate of 40 kg/ha in the following proportions:

- | | | |
|-----------------------|--------------|------------|
| • Creeping red fescue | 20 kg | 50% |
| • Perennial rye grass | 8 kg | 20% |
| • Birdsfoot trefoil | <u>12 kg</u> | <u>30%</u> |
| • Total | 40 kg/ha | 100% |

6.3 Erosion Susceptible Sites

Areas found to be suffering from erosion are to be protected with rip-rap complete with filter fabric underlay. A provision has been made in the construction document to provide for these works. In the future, the Municipality has authority to undertake the placement of rip-rap in erosion prone areas of the drain as maintenance and the cost shall be assessed as per normal maintenance to all upstream property owners.

Where surface flow of water from adjacent lands is directed into the drain by abutting property owners, the property owners shall ensure that measures are taken to prevent bank erosion. A rock chute spillway or rip-rap sluiceway complete with filter fabric underlay should be installed and inspected by the Drainage Superintendent.

Any new drainage outlets being installed by individual property owners are to be a rigid steel pipe, complete with steel marker, one size larger in diameter than the tile and a minimum of three metres in length, subject to the approval of the Town of Fort Erie and / or the City of Port Colborne. Rip-rap is to be placed by the property owner at the tile outlets to prevent scouring and erosion from the drain discharge to the satisfaction of the Town of Fort Erie and / or the City of Port Colborne.

6.4 Sediment Basins

Sediment basins are to be constructed at the locations and to the specifications indicated on the attached drawings. The Contractor will maintain these sediment basins during construction, as directed by the Engineer and/or his designate. The basins are considered to be part of the Municipal Drain and will be maintained in future by the Municipality at the expense of all upstream land and roads owners herein assessed as shown on the attached assessment schedule. Properly maintained sediment basins reduce the incidents of drain maintenance clean out and therefore reduce overall maintenance costs for property owners.

6.5 Spoil Material

Where specified, excavated spoil material shall be disposed of and levelled a minimum of 2.5 m from the top of bank to ensure that sediment does not re-enter the drain. Spoil placed next to the drain shall be spread to permit access across the berm area and shall be placed to a maximum height of 0.6m. Spoil excavated along existing travelled road allowances, and on private property where requested, shall be disposed of by the Contractor off site. The cost of spoil trucked from the property shall be borne by the benefiting property owner.

Spoil shall be disposed of as noted in the description of the proposed work. Generally the spoil will be disposed of adjacent to the drain unless otherwise specified. Should any property owner require that all or a portion of the spoil be trucked away from their property, the cost of trucking spoil shall be assessed totally to the property owner requesting same, and will not form part of the total cost of the drainage system. The cost of trucking away spoil from any future maintenance work will be assessed directly to the property owner requesting the same. Debris will be removed from the property.

With respect to the reaches of drain that are within travelled Municipal road allowances, the spoil will be trucked away during both the initial construction and any future maintenance work.

Access channels shall be provided through the levelled spoil material at every location where existing drainage outlets, and additional access channels shall be constructed at a maximum spacing of 30 m. The invert of the access channels shall be consistent with the drain cross-section at that location except at Gillespie, where the drain is to be lowered.

7.0 WORKING SPACE

As per the *Drainage Act, Chapter D.17, Section 63*, the total working space required will include the top width of the improved drain and a maximum 10 m working space, measured from the top of bank on the designated working side of the drain. This is not a permanent loss of land use, but rather it is temporary to permit access to the drain for repair. No allowance is to be paid for the working space.

The entire working space may not be required for construction, future drain clean outs or spoil disposal. However, it is to be available to the Municipality if required. Working space required at road crossings or for work being undertaken on the roadside drainage work and enclosures within the road allowance will be the total width of the road allowance. Use of the alternate side of drain as working space may be required, if the leveled spoil makes use of the identified area impractical. Spoil from roadside drains will be removed from the drain area at the cost of the Road Authority.

A narrower working space may be acceptable on lands where immovable structures existed at the time of the preparation of this report. Immovable and/or permanent structures and permanent crops are not to be built/planted within this working space. A 10 m working space, measured from the top of bank on the designated working side of the drain, will be required at all times for regular maintenance, including the mowing and brushing of the drains.

The Niagara Peninsula Conservation Authority has requested working space be kept to a minimum through woodlots and in those areas, the working space will be reduced to the minimum width of equipment to access the area.

In areas along the drains where significant mature tree growth can be preserved within the working space, the Contractor will be directed to attempt to work around these areas. Maintaining some of the screening and shading benefits of the existing trees on the drains will be given serious consideration, however, it will only be implemented where practical and reasonable, due to the increase in construction costs that will be incurred.

8.0 COST ESTIMATE – MAIN ZAVITZ DRAIN

8.1 Total Cost Estimate

The total estimated cost of the work along the main Zavitz Drain is \$ 241,741.54 with \$ 122,840.94 assessed to the Town of Fort Erie private property owners and \$ 77,283.81 assessed to the City of Port Colborne private property owners. A breakdown of the cost estimate is included in **Appendix A**.

As required by the *Drainage Act, Chapter D.17, Section 59(1)*, Council may call a meeting if the contract price exceeds 133 percent of the estimated construction costs.

8.2 Allowances

The *Drainage Act* provides a mechanism to compensate property owners for impact on lands due to drainage works. The *Drainage Act, Chapter D.17, Section 29* provides for allowances to be paid for construction or improvement of drainage works and the permanent impact on lands due to disposal of excavated material. No allowances have been granted under *Chapter D.17, Section 29* as the work anticipated does not meet the requirements as set out in *Chapter D.17, Section 29*.

The *Drainage Act, Chapter D.17, Section 30* provides for allowances to be paid for damage to ornamental trees, lawns, fences, lands and crops caused by the repair of the drain.

The allowances paid under the *Drainage Act, Chapter D.17, Section 29* are based on a value of \$1,000 per hectare for wooded areas, \$2,000 per hectare for cultivated lands and \$5000 per hectare for the lands that are mostly residential and being in use.

A detailed worksheet containing the allowance calculations is included in **Appendix B**, for reference. A summary of the allowances is as follows:

Roll No.	Property Owner Name	Chapter D.17, Section 29	Chapter D.17, Section 30	Total
Zavitz Drain – Fort Erie				
20018339000000	Spironello, A.	--	\$ 880	\$ 880
20018338000000	Beach, C.M.	--	\$ 827	\$ 827
20118337000000	Green, K.R.	--	\$ 533	\$ 533
20018337010000	Beach, D. & C.	--	\$ 474	\$ 474
20018336000000	Clark, D.M.	--	\$ 551	\$ 551
20018335000000	Woronchak, M. & N.	--	\$ 280	\$ 280
Total Allowances – Fort Erie				\$ 3,543
Zavitz Drain – Port Colborne				
271104000105400	Cosby, D.	--	\$ 406	\$ 406
271104000138400	Clee, J.	--	\$ 1,294	\$ 1,294
271104000105300	Damude, R.	--	\$ 307	\$ 307
Total Allowances – Port Colborne				\$ 2,008
Total Allowances – Zavitz Drain				\$ 5,551

The above noted rationale provides fair compensation for property owners impacted by the proposed drain construction by essentially paying full value for current active farmlands taken out of production. The above allowances are one-time payments and are to be omitted when levying for future maintenance.

8.3 Special Assessments

The increased cost associated with any works within a road allowance will be assessed directly to the Road Authority as a Special Assessment as per the *Drainage Act, Chapter D.17, Section 26*. The *Drainage Act, Chapter D.17, Section 69(1)* allows the Road Authority the option of undertaking the work within their allowance using their own forces. Should the Road Authority elect to do this work, the construction costs associated with the Special Assessment would be waived.

The Special Assessment shall be made up of the actual cost of the work and shall not apply when prorating future maintenance costs. The estimated costs of the Special Assessments are enclosed in this report. The remaining costs associated with this project are assessed to all lands and roads within the drainage area as shown on the enclosed plans.

In compliance with the *Drainage Act, Chapter D.17, Section 26*, the costs for the relocation of any utilities which would conflict with construction of the relocation of this drain, such as telephone cables, telephone and/or hydro poles, gas mains, water lines, etc., shall be borne by the company which owns or operates the particular utility.

All the proposed works along open Municipal Road Allowances have been included in a Special Assessment against the particular Road Authority (see **Appendix C**).

Crossing	Road Authority/Utility	Const. Est.	Admin. Cost	Total
Mathews Road	Town of Fort Erie	\$ 1,217	\$ 57	\$ 1,274
Holloway Bay Road	Town of Fort Erie	\$ 1, 206	\$ 347	\$ 1, 553
Highway 3	MTO	\$ 494	\$ 142	\$ 636
Pleasant Beach Road	City of Port Colborne	\$ 162	\$ 47	\$ 209
Pleasant Beach Road	Enbridge Gas	\$ 2,000	\$ 576	\$ 2,576
Total Special Assessments – Zavitz Drain				\$ 6, 248

8.4 Assessment of Costs

The schedule assessments for the affected property owners based on the estimated cost are shown in **Appendix C**.

The *Drainage Act, Chapter D.17, Section 21* directs the Drainage Engineer to assess each parcel of land and road a portion of the cost of the project for Benefit [*Chapter D.17, Section 22*], Outlet Liability [*Chapter D.17, Section 23(1)*], and Injuring Liability [*Chapter D.17, Section 23(2)*]. Lands and roads that are increased in value, or are more easily maintained as a result of the works may be assessed for Benefit (*Chapter D.17, Section 22*). Lands and roads that use the works as an outlet, or are provided with an improved outlet, either directly or indirectly, may be assessed for Outlet Liability (*Chapter D.17, Section 23*). Lands or roads that cause water to artificially flow upon and injure any other land or road may be assessed for Injuring Liability.

The assessment of Outlet Liability and Injuring Liability is based upon the volume and rate of flow of the water. Generally, the assessment is based upon a unit value per hectare. Lands located at the upper reaches of the watershed typically have a higher unit charge than those in the lower reaches, or nearer to the drain outlet, since the water from those higher lands make use of a greater length of drain (referred to as travel length in the assessment schedules). The unit charge may also vary, due to types of soil or land use, or the distance to the drain. The travel length is calculated using the downstream length of the drain along a property. In some cases with the Zavitz Drain and Branch Drains, properties have been assigned multiple travel lengths due to split drainage of the property. The travel lengths assigned are based on the specific split drainage areas. The 'Summary Net Assessments' column #13 has been created in the Assessment Schedule to illustrate the total assessment for duplicated properties.

Enclosed in **Appendix D** is an OMAFRA Fact sheet entitled *Understanding Drainage Assessments* that provides a further explanation.

The rationale employed in the division of the costs associated with the proposed municipal drain is that the costs associated with all works taking place within municipal road allowances be assessed either as a special assessment or as a benefit assessment directly to the road authority involved. Maintenance and Improvement works, consisting of drain and culvert clean out and deepening, and erosion protection works are also proposed to be implemented under the authority of this Report. The costs associated with this clean out and maintenance of the drain has been assessed as outlet liability to all properties within the designated watershed limits.

The division of costs for the Zavitz Drain construction is included with the enclosed Cost Estimate (see **Appendix A**).

9.0 COST ESTIMATE – SHERKSTON NORTH BRANCH DRAIN AND EAST & WEST TRAIL BRANCH DRAINS

9.1 Total Cost Estimate

The total estimated cost of the work along the Sherkston North Branch Drain is \$71,370.01, with \$22,059.65 being assessed to the City of Port Colborne private property owners and the remainder to the Municipality. The total estimated cost of the work along the East Trail Branch Drain is \$21,872.92, with \$6,183.24 being assessed to the City of Port Colborne private property owners and the remainder to the Municipality. The total estimated cost of the work along the West Trail Branch Drain is \$33,941.88, with \$4,446.96 being assessed to the City of Port Colborne private property owners and the remainder to the Municipality. A breakdown of the cost estimate for the proposed Sherkston North Branch Drain is included in **Appendix F**, and for the proposed East & West Trail Branch Drains is included in **Appendix G** (provided as Separate Assessment Schedules).

As required by the *Drainage Act, Chapter D.17, Section 59(1)*, Council may call a meeting if the contract price exceeds 133 percent of the estimated construction costs.

9.2 Allowances

Descriptions of the *Drainage Act, Chapter D.17, Sections 29 and 30* are as provided in *Section 8.2 Allowances* above.

A detailed worksheet containing the allowance calculations is included in **Appendix F** for the Sherkston North Branch Drain. A summary of the allowances for the Sherkston North Branch Drain is as follows:

Roll No.	Property Owner Name	Chapter D.17, Section 29	Chapter D.17, Section 30	Total
Sherkston North Branch Drain				
271104000105400	Cosby, D.	\$ 140	\$ 439	\$ 579
271104000105600	Lochhead, A. & K.	\$ 11	\$ 50	\$ 61
271104000106500	Neal, T. & L.	\$ 0	\$ 439	\$ 439
271104000106400	Hilmayer, D. & Priebe, T.	\$ 314	\$ 439	\$ 753
Total Allowances – Sherkston North Branch Drain				\$ 1,832

No Allowances under *Chapter D.17, Sections 29 and 30* have been granted for the East & West Trail Branch Drains. The existing south Friendship Trail ditches are an integral component of the Friendship Trail as it was at the time the railway operated along this corridor. It is deemed that the proposed East & West Trail Branch Drains will not result in any further loss of land or increased encumbrance to the trail system. The existing ditch that is to be incorporated has little compensation value due to its condition and the extent of improvement required.

The above noted rationale provides fair compensation for property owners impacted by the proposed drain construction by essentially paying full value for current active farmlands taken out of production. The above allowances are one-time payments and are to be omitted when levying for future maintenances.

9.3 Special Benefit Assessments

The City of Port Colborne has been assessed a Special Benefit Assessment as per the *Drainage Act, Chapter D.17, Section 24* as part of this Engineer's Report for the Sherkston North Branch Drain and the East & West Trail Branch Drains. The Special Benefit Assessment to the City for the Sherkston North Branch Drain includes 100% of the total cost estimate for the proposed 375mm HDPE storm sewer between the Hilmayer & Priebe and Neal properties, the 600mm x 600mm catchbasin at the upstream limit of the Drain at Sherkston Road, and the 900mm cross-culvert works at the Friendship Trail crossing. This Branch Drain will convey drainage from Sherkston Road to the Friendship Trail and north to the main Zavitz Drain. Additional ditching work along the northside of Sherkston Road will be conducted by the Road Authority in the future, and has not been assessed as part of this study.

The Special Benefit Assessment to the City for the East & West Trail Branch Drains includes 75% of the total cost estimate for the proposed cleaning and brushing of the south ditches along the Friendship Trail and the lowering of the existing cross-culvert under Pleasant Beach Road.

Item	Road Authority	Const. Est.	Admin. Cost	Total
Sherkston North Branch Drain				
HDPE Storm Sewer Pipe at Hilmayer & Priebe and Neal properties and 600 x 600mm Catchbasin at Sherkston Road	City of Port Colborne	\$ 21,780	\$6,701	\$ 28,481
Block existing 900mm CSP cross-culvert and install new 900mm HDPE cross-culvert at Friendship Trail	City of Port Colborne	\$ 4,730	\$ 1,455	\$ 6,185
East & West Trail Branch Drains				
Friendship Trail South Drain (East Trail Branch Drain)	City of Port Colborne	\$ 12,110	\$ 2981	\$ 15,091
Friendship Trail South Drain (West Trail Branch Drain)	City of Port Colborne	\$ 18,901	\$ 4,650	\$ 23,551
Total Special Benefit Assessments				\$ 73,308

9.4 Assessment of Costs

The division of costs for the construction of the Sherkston North Branch Drain and the East & West Trail Branch Drains is included with the enclosed Cost Estimates (see **Appendix F** and **Appendix G**, respectively). See **Section 8.4** above for the description of the Assessment.

Within the Sherkston North Branch Drain Assessment Schedule, some properties may contain multiple assessments due to split drainage on their property and varying travel lengths for such areas. The travel length is calculated using the downstream length of the drain along a property. The travel lengths assigned are based on the specific front and back split drainage areas. These properties have been grouped together in the spreadsheets for ease of understanding for the reader. The 'Summary Net Assessments' column #13 has been created in the Assessment Schedule to illustrate the total assessment for duplicated properties.

10.0 AVAILABLE GRANTS

10.1 OMAFRA Grant for Agricultural Lands

Owners of qualifying agricultural land are presently eligible for a grant of up to one-third of the cost of their assessment from the Ontario Ministry of Agriculture and Food. This grant would be applied for by the Town of Fort Erie and the City of Port Colborne, and applied to the property owners' assessment at the time of final billing. The Assessment Schedule indicates lands that, based on information provided by the municipality, qualify for the agricultural land use rebate. The final determination of eligibility is the decision of the Ontario Ministry of Agriculture and Food. To be eligible for a grant, the property owner must have a Farm Property Class Tax Rate or in combination with the Managed Forest Tax Incentive Program or the Conservation Land Tax Incentive Program for the lands to be drained by the Zavitz Drain.

For additional information on the Agricultural Drainage Infrastructure Program refer to the OMAFRA website at www.omafra.gov.on.ca.

11.0 FUTURE DRAIN MAINTENANCE, IMPROVEMENT AND REPAIR

The *Drainage Act, Chapter D.17, Sections 74 through 84* governs future maintenance, improvement and repair to any Drainage Works constructed under a By-Law passed under this Act, or any predecessor of this Act.

Upon completion of the Zavitz Drain works prescribed in the Engineer's Report, the Town of Fort Erie and the City of Port Colborne will be responsible for future maintenance of the drain with the cost assessed to the upstream lands and roads using the Assessment Schedule in **Appendix C**, **Appendix F** and **Appendix G** and pro-rating the assessment based on the actual cost using the Outlet Liability Assessment. Special Assessment shall not apply to maintenance work.

With respect to:

The future maintenance schedule for the Sherkston North Branch shall be based only on the outlet assessments contained in the construction assessment schedule as per of Appendix F of the February 2016 Engineer's Report, at the ratio of approximately 56.3% to the privately-owned lands and 43.7% to the Port Colborne-owned lands, as shown.

The future maintenance schedule for the West Trail Branch shall be based only on the outlet assessments contained in the construction assessment schedule, as per Appendix G of the February 2016 Engineer's Report, at the ratio of approximately 47.2% to the privately-owned lands and 52.8% to the lands owned by Port Colborne.

The future maintenance schedule for the East Trail Branch shall be based only on the outlet assessments contained in the construction assessment schedule, as set out in Appendix G of the February 2016 Engineer's Report. Future maintenance costs shall be assessed 50% to the City of Port Colborne and the remaining 50% shall be assessed as per the construction assessment schedule.

Maintenance work may include the removal of brush, accumulated sediment within the drain, and the replacement of slope protection and check dams within the drain. If any culverts should require structural repair, maintenance or replacement, the costs will be 50% assessed directly to the property on which it is located, and 50% assessed to the upstream property owners including culvert, headwall, rip-rap, etc. Removal of sediment from a culvert shall be considered as normal maintenance. Refer to **Sections 4.3** and **4.4** for municipal and private culvert crossings.

All parties within the Zavitz Drain are encouraged to inspect the drain periodically and report any visible or suspected problems to the Town of Fort Erie or City of Port Colborne Drainage Superintendents. Repeated inspection and timely maintenance should allow the drain to perform as designed for several years. Each owner shall provide an access route to the drain for maintenance purposes and it shall be equal to the working area prescribed in the Engineer's Report and as provided for on the drawings in **Appendix E**, **Appendix F** and **Appendix G**.

In accordance with the *Drainage Act, Chapter D.17, Section 85*, a grant not exceeding one-third of the value of the maintenance work may be available for the future maintenance assessment

levied to the privately-owned parcels of land used for agricultural purposes, if the maintenance, improvement and/or repair is undertaken on the recommendation and supervision of the Town of Fort Erie or City of Port Colborne Drainage Superintendents. Lands eligible for grant will be confirmed by the municipality at the time of maintenance. Only those lands with a Farm Property Tax Class will be eligible, as per ADIP policy.

It is understood that each municipality will be responsible for the maintenance of the portions of each drain falling within their jurisdiction.

12.0 CHANGES TO DRAIN AFTER BY-LAW IS PASSED

Changes, deletions or extensions to the drain as proposed in this report that are requested or required after the By-Law is passed cannot be undertaken unless the Report is amended. Exceptions to this would be minor works provided for within the General Conditions or items provided for within the Contingency Allowance which may exceed the quantities listed and may cause the cost to increase beyond the construction estimate. The cost of minor changes to the drain and increased cost from the Contingency Allowance may be pro-rated against some or all of the assessed lands as directed by the Drainage Engineer.

If any individual or group requires additional work on the Zavitz Drain and are prepared to pay for such, they may make their own arrangements with the Contractor to have such work completed. The Drainage Engineer should pre-approve such additions to ensure the intent of the drainage works are not affected. The additional work shall not form part of the drain for purposes of future maintenance.

13.0 SUMMARY AND CONCLUSION

In conclusion, the purpose of this Engineers Report is to investigate and describe the works necessary to provide a sufficient outlet to the area requiring drainage, to provide design drawings, to establish the working and maintenance corridor, and to include a cost estimate and assessment schedule for those works. The works proposed include improvements to the existing Zavitz Drain within the Town of Fort Erie and the City of Port Colborne, as well as, construction of the new Sherkston North Branch Drain and the East & West Trail Branch Drains in the City of Port Colborne. All previous report pertaining to the Zavitz Municipal Drain as outlined in **Section 1.3 History of the Drainage Area** or otherwise are now superseded by this report.

The Road Authorities have the option of undertaking the proposed and future work within their right-of-way using their own forces, provided the work is carried out expeditiously, and under direct supervision and control of the Municipalities.

The detailed topographic survey has been limited to the drain and does not include the lands within the affected watershed area. This report is not intended to show how any of these lands are surface drained, or underdrained by means of a tile system.

General Conditions and Construction Specifications are attached to this report in **Appendix H**. Fully detailed construction specifications for this project will be prepared and included in the Tender and Contract Documents prior to construction.

Upon filing this report with the municipalities, Town of Fort Erie and City of Port Colborne Councils must decide whether or not they will adopt this report and continue with the process. If Council chooses not to adopt this report, the municipalities are responsible for the costs accrued on the project, to that date, and any Petitioner has the right to appeal that decision directly to the Ontario Drainage Tribunal.

Based on the above report, it is respectfully recommended that the Town of Fort Erie and the City of Port Colborne adopt this report through By-Law, under authority of the *Drainage Act*. According to the *Drainage Act*, Chapter D.17, Section 58(1), a provisional By-Law must be given third reading and passed by Council before commencing construction. It is the Town and City Clerk's responsibility to follow, and arrange, the appropriate procedures according to the *Drainage Act*. It is recommended that the Town of Fort Erie and the City of Port Colborne rescind all previous By-laws pertaining to the Zavitz Municipal Drain.

Appendix A

Main Zavitz Drain Estimated Cost Summary and Cost Estimate

ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

ZAVITZ DRAIN - ESTIMATED COST SUMMARY

I. CONSTRUCTION	
A. General	\$ 11,543.97
B. Channel Improvement Works	
1) Private Lands	\$ 34,177.26
2) Roads and Utilities	\$ 4,946.32
C. Culvert Improvement Works	
1) Private Lands	\$ 7,800.00
2) Roads and Utilities	\$ 2,747.56
D. Erosion & Sediment Control Works	
1) Private Lands	\$ 86,538.64
2) Roads and Utilities	\$ 7,275.47
E. Other Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
SUBTOTAL	\$ 155,029.21
Contingency Allowance	\$ 16,268.08
TOTAL CONSTRUCTION	\$ 171,297.29
II. ALLOWANCES	\$ 5,551.05
III. ADMINISTRATION	\$ 64,893.20
TOTAL ESTIMATED COSTS - ZAVITZ DRAIN	\$ 241,741.54

ZAVITZ DRAIN - DIVISION OF COSTS

	City of Port Colborne	Town of Fort Erie	Region of Niagara	Province of Ontario	Enbridge Gas	TOTAL
A. Benefit Assessment (Section 22)						
1) Private Lands	\$ 3,646	\$ 7,241	\$ -	\$ -	\$ -	\$ 10,887
2) Roads and Utilities	\$ -	\$ 381	\$ -	\$ 245	\$ -	\$ 627
B. Outlet Liability Assessment (Section 23)						
1) Private Lands	\$ 56,181	\$ 91,019	\$ -	\$ -	\$ -	\$ 147,200
2) Roads and Utilities	\$ 15,869	\$ 16,637	\$ -	\$ 37,933	\$ -	\$ 70,439
C. Special Benefit Assessment (Section 24)						
1) Private Lands	\$ 1,365	\$ 4,550	\$ -	\$ -	\$ -	\$ 5,915
2) Roads and Utilities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
D. Special Assessments (Section 26)						
1) Private Lands	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2) Roads and Utilities	\$ 223	\$ 3,012	\$ -	\$ 681	\$ 2,758	\$ 6,674
TOTAL ESTIMATED COSTS - ZAVITZ DRAIN	\$ 77,284	\$ 122,841	\$ -	\$ 38,859	\$ 2,758	\$ 241,742

ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

ZAVITZ DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
I. CONSTRUCTION								
SECTION "A" - GENERAL								
A1	NPSCD A1	--	--	Bonding		L.S.		\$ 4,304.56
A2	NPSCD A8	--	--	Allowance for Construction Signs, Traffic Control and Traffic Management Plan		L.S.		\$ 4,304.56
A3	NPSCD A4	--	--	Construction Layout		L.S.		\$ 1,434.85
A4	NPSCD A7	--	--	Install, Maintain and Remove Silt Control Devices		L.S.		\$ 1,500.00
TOTAL SECTION "A" - GENERAL								\$ 11,543.97
SECTION "B" - CHANNEL WORKS								
B1 Channel Improvement Works - Private Property								
B1.1		0.0	137.2	Roll # 020018335000000 (Woronchak, M. & N.) Clean and deepen existing open channel including leveling of spoil	137.2	m	\$ 13.00	\$ 1,783.60
B1.2		137.2	407.1	Roll # 020018336000000 (Clark, D.M.) Clean and deepen existing open channel including leveling of spoil	263.9	m	\$ 13.00	\$ 3,430.70
B1.3		407.1	639.3	Roll # 020018338000000 (Beach, D. & C.) Clean and deepen existing open channel including leveling of spoil	232.2	m	\$ 13.00	\$ 3,018.60
B1.4		639.3	900.5	Roll # 020018337000000 (Clark, S.E.) Clean and deepen existing open channel including leveling of spoil	261.2	m	\$ 13.00	\$ 3,395.60
B1.5		921.0	1326.2	Roll # 020018338000000 (Beach, C.M.) Clean and deepen existing open channel including leveling of spoil	405.2	m	\$ 13.00	\$ 5,267.60
B1.6		1326.2	1756.0	Roll # 020018339000000 (Spironello, A.) Clean and deepen existing open channel including leveling of spoil	429.8	m	\$ 13.00	\$ 5,587.66
B1.7		1967.0	2268.2	Roll # 271104000105300 (Damude, R.) Clean and deepen existing open channel including leveling of spoil	295.2	m	\$ 13.00	\$ 3,837.60
B1.8		2268.2	2685.2	Roll # 271104000138400 (Clee, J.) Clean and deepen existing open channel including leveling of spoil	411.0	m	\$ 13.00	\$ 5,343.00
B1.9		2685.2	2878.5	Roll # 271104000105400 (Cosby, D.) Roll # 271104000138400 (Clee, J.) Clean and deepen existing open channel including leveling of spoil	193.3	m	\$ 13.00	\$ 2,512.90
B2 Channel Improvement Works - Road/Utility Allowances								
B2.1		900.5	921.0	Mathews Road ROW (Fort Erie; East and West)- Clean and deepen existing open channel including trucking of spoil (50% assessed as Special Assessment to Municipality)	7.0	m	\$ 15.00	\$ 105.45
B2.2		1756.0	1905.7	Holloway Bay Road ROW (Fort Erie; East side) - Clean and deepen existing open channel including trucking of spoil (50% assessed as Special Assessment to Municipality)	149.7	m	\$ 15.00	\$ 2,245.20
B2.3		1905.7	1967.0	Higway 3 ROW (MTO; East and West) - Clean and deepen existing open channel including trucking of spoil (50% assessed as Special Assessment to Municipality)	30.6	m	\$ 15.00	\$ 458.25

ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

ZAVITZ DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
B2.4		2878.5	2898.6	Pleasant Beach Road (Port Colborne; East and West) - Clean and deepen existing open channel including trucking of spoil (50% assessed as Special Assessment to Municipality)	9.2	m	\$ 15.00	\$ 137.42
B2.5		2890.0	2901.6	Pleasant Beach Road (Enbridge Gas; West of culvert) - Enbridge Gas Line Protection during construction and lowering if required	1.0	ea	\$ 2,000.00	\$ 2,000.00
TOTAL SECTION "B" - CHANNEL WORKS								\$ 39,123.58
SECTION "C" - CULVERT WORKS								
C1	Culvert Improvement Works - Private Property							
C1.0		130.0	136.0	Roll # 020018335000000 (Woronchak, M. & N.) Replace existing 1500mm CSP culvert, and set to design grade	6.0	m	\$ 500.00	\$ 3,000.00
C1.1		137.5	141.9	Roll # 020018336000000 (Clark, D.M.) Replace existing 1500mm CSP culvert, and set to design grade	6.0	m	\$ 500.00	\$ 3,000.00
C1.2		2189.5	2195.9	Roll # 271104000105300 (Damude, R.) Replace existing 500mm CSP culvert, and set to design grade	6.0	m	\$ 150.00	\$ 900.00
C1.3		2601.8	2607.9	Roll # 271104000138400 (Clee, G.) Replace existing 500mm CSP culvert, and set to design grade	6.0	m	\$ 150.00	\$ 900.00
C2	Culvert Improvement Works - Road/Utility Allowances							
C2.1		905.0	917.3	Mathews Road (Fort Erie) - Clean silt and debris from existing culvert and truck away, Twin 1600 mm diameter	13.5	L.S.	\$ 80.00	\$ 1,080.00
C2.2		1926.6	1957.4	Highway 3 ROW (MTO) - Clean silt and debris from existing culvert and truck away	30.8	m	\$ 40.00	\$ 1,230.00
C2.3		2883.8	2894.8	Pleasant Beach Road (Port Colborne) - Clean silt and debris from existing culvert and truck away	10.9	m	\$ 40.00	\$ 437.56
TOTAL SECTION "C" - CULVERT WORKS								\$ 10,547.56
SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								
D1	Erosion and Sediment Control Works - Private Property							
D1.1		0.0	900.5	Point Abino Road to Mathews Road - Clearing and brushing of drain and working space	894.5	m	\$ 30.00	\$ 26,835.00
D1.2		921.0	1756.0	Mathews Road to Holloway Bay Road - Clearing and brushing of drain and working space	835.0	m	\$ 30.00	\$ 25,050.60
D1.3		1967.0	2878.5	Holloway Bay Road to Pleasant Beach Road - Clearing and brushing of drain and working space	899.5	m	\$ 30.00	\$ 26,985.00
D1.4		0.0	900.5	Point Abino Road to Mathews Road - Seeding of channel and working space	894.5	m	\$ 2.00	\$ 1,789.00
D1.5		921.0	1756.0	Mathews Road to Holloway Bay Road - Seeding of channel and working space	835.0	m	\$ 2.00	\$ 1,670.04
D1.6		1967.0	2878.5	Holloway Bay Road to Pleasant Beach Road - Seeding of channel and working space	899.5	m	\$ 2.00	\$ 1,799.00

ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

ZAVITZ DRAIN - COST ESTIMATE

** All Municipally owned properties have been categorized under roads and utilities

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
D1.7		10.2	16.5	Point Abino Road to Mathews Road - Construct, clean and maintain rock check dam, and sediment basin	1	ea	\$ 750.00	\$ 750.00
D1.8		1743.5	1750.1	Mathews Road to Holloway Bay Road - Construct, clean and maintain rock check dam, and sediment basin	1	ea	\$ 750.00	\$ 750.00
D1.9		2034.3	2040.6	Holloway Bay Road to Pleasant Beach Road - Construct, clean and maintain rock check dam, and sediment basin	1	ea	\$ 750.00	\$ 750.00
D1.10		--	--	Supply and Install Rip Rap complete with Filter Fabric underlay at bends and culverts	4	t	\$ 40.00	\$ 160.00
D2	Erosion and Sediment Control Works - Road/Utility Allowances							
D2.1		900.5	921.0	Mathews Road ROW (Fort Erie) - Clearing and brushing of drain and working space	7.0	m	\$ 30.00	\$ 210.90
D2.2		1756.0	1905.7	Holloway Bay Road (Fort Erie) - Clearing and brushing of drain and working space	149.7	m	\$ 30.00	\$ 4,490.40
D2.3		1905.7	1967.0	Highway 3 ROW (MTO) - Clearing and brushing of drain and working space	30.6	m	\$ 30.00	\$ 916.50
D2.4		2878.5	2898.6	Pleasant Beach Road (Port Colborne) - Clearing and brushing of drain and working space	9.2	m	\$ 30.00	\$ 274.83
D2.5		900.5	921.0	Mathews Road ROW (Fort Erie) - Seeding of channel and working space	7.0	m	\$ 2.00	\$ 14.06
D2.6		1756.0	1905.7	Holloway Bay Road (Fort Erie) - Seeding of channel and working space	149.7	m	\$ 2.00	\$ 299.36
D2.7		1905.7	1967.0	Highway 3 ROW (MTO) - Seeding of channel and working space	30.6	m	\$ 2.00	\$ 61.10
D2.8		2878.5	2898.6	Pleasant Beach Road (Port Colborne) - Seeding of channel and working space	9.2	m	\$ 2.00	\$ 18.32
D2.9		918.4	924.9	Mathews Road to Holloway Bay Road - Construct, clean and maintain rock check dam, and sediment basin	1	ea	\$ 750.00	\$ 750.00
D2.10		--	--	Supply and install rip rap complete with filter fabric underlay at bends and culverts	6	t	\$ 40.00	\$ 240.00
TOTAL SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								\$ 93,814.11
SECTION "E" - OTHER WORKS								
E1	Other Improvement Works - Private Property							
a)				Install Tile Outlet		ea	\$ 200.00	\$ -
b)				Repair Damaged Field Tile		ea	\$ 100.00	\$ -
E2	Other Improvement Works - Road/Utility Allowances							
a)				Install Tile Outlet		ea	\$ 200.00	\$ -
b)				Repair Damaged Field Tile		ea	\$ 100.00	\$ -
TOTAL SECTION "E" - OTHER WORKS								\$ -
SUBTOTAL								\$ 155,029.21
CONTINGENCY ALLOWANCE								\$ 16,268.08
TOTAL CONSTRUCTION - ZAVITZ DRAIN								\$ 171,297.29

ZAVITZ MUNICIPAL DRAIN

TOWN OF FORT ERIE & CITY OF PORT COLBORNE

Regional Municipality of Niagara

ZAVITZ DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
II. ALLOWANCES								
1.				Allowances for Right-of-Way (Section 29)				\$ -
2.				Allowances for Damages (Section 30)				\$ 5,551.05
3.				Allowances for Existing Drains (Section 31)				\$ -
4.				Allowances due to Insufficient Outlet (Section 32)				\$ -
5.				Allowances for Loss of Access (Section 33)				\$ -
TOTAL ALLOWANCES - ZAVITZ DRAIN								\$ 5,551.05

ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

ZAVITZ DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
III. ADMINISTRATION AND ENGINEERING								
1.				Interim Financing Allowance				\$ 5,138.92
2.				Preliminary Design and Report				\$ -
3.				Survey, Design, Plans, Engineer's Report and Assessment Schedule (Wiebe)*				\$ 11,761.00
4.				Survey, Design, Plans, Engineer's Report and Assessment Schedule (AMEC)* - Fort Erie Portion				\$ 18,517.04
5.				Survey, Design, Plans, Engineer's Report and Assessment Schedule (AMEC)* - City of Port Colborne Portion				\$ 9,120.33
6.				Tendering, Contract Administration and Construction Inspection (estimated) - Fort Erie Portion				\$ 12,505.00
7.				Tendering, Contract Administration and Construction Inspection (estimated) - Port Colborne Portion				\$ 7,850.91
TOTAL ADMINISTRATION AND ENGINEERING - ZAVITZ DRAIN								\$ 64,893.20
TOTAL ESTIMATED COSTS - ZAVITZ DRAIN								\$ 241,741.54

* Does not include any costs associated with Ontario Drainage Tribunal Hearing, if required.

Appendix B

Main Zavitz Drain Allowance Calculations

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

LANDOWNER INFORMATION - ZAVITZ DRAIN

Updated January, 2016

Property Roll No.	Con.	Lot	Landowner Name	Address	Property Value (\$/ha)	Area					OMAFRA Qualified	Abutting Length				Travel Length
						Wooded	Worked	Surfaced	Tiled Out	Total		Left		Right		
												From Sta	To Sta	From Sta	To Sta	
Landowners in the City of Port Colborne																
271104000119800			VORSTENBOSCH, C.M.						0.036						2,685.2	
271104000119700			HAYTER, S.						0.556						2,685.2	
271104000119600			LUNDY, JOHN MARK						0.404						2,685.2	
271104000119502			MISKOLCZI, A. & M.						0.430						2,685.2	
271104000119501			FARKAS, J. & C.						0.466						2,685.2	
271104000119500			CAPITAN, RODICA						0.630						2,685.2	
271104000105800			PIDSADNICK, G.						0.620						2,685.2	
271104000106700			DIPLOCK, D. & C.						1.342						2,685.2	
271104000106600			KING, M. & S.						0.478						2,685.2	
271104000106500			NEAL, T. & L.						0.500						2,685.2	
271104000106400			HILMAYER, D. & PRIEBE, T.						0.827						2,685.2	
271104000104700			BOWERMAN, G. & C.A.						0.504						2,685.2	
271104000104600			MINOR, R. & J.						1.110						2,685.2	
271104000104500			SIDER, I.						0.438						2,685.2	
271104000104400			ZIMMERMAN, V. & I.						0.428						2,685.2	
271104000104300			FIDLER, R. & D.M.						0.366						2,685.2	
271104000122300			UNITED BRETHERN CEMETARY						0.120						2,898.6	
271104000138600			SHERKSTON UNITED CHURCH						0.330						1,925.4	
271104000138700			FIRST UNITED CHURCH						0.390						1,925.4	
271104000138301			VEENSTRA, D.						1.770						1,925.4	
271104000138500			SMITH, T.M.						2.740						1,925.4	
271104000138800			VEENSTRA, A. & D.						1.200						1,925.4	
271104000138300			SIX BROTHERS INVESTMENTS INC.						2.340						1,925.4	
271104000138200			KENWORTHY, R. & P.						6.150						1,925.4	
271104000138000			FRASER, J. & C.						4.150						1,925.4	
271104000122200			PARISEE, T. & A.						0.500						2,898.6	
271104000122100			GERMAIN, DEVON WILLIAM						0.350						2,898.6	
271104000120200			ELMER, D.						7.290						2,898.6	
271104000122000			CELUCH, L.						4.520						2,898.6	
271104000121900			BAIN JAY ARTHUR						0.140						2,898.6	
271104000121400			KILTS, D.						0.430						2,898.6	
271104000121300			HORNING, A. & W.						1.570						2,898.6	
271104000121302			HORNING, A. & W.						1.560						2,898.6	
MERGED WITH ABOVE			HORNING, A. & W.						0.00							
271104000121200			BUCK, T.						3.590						2,898.6	
271104000121805			VILLENEUVE, J. & E.						0.430						2,898.6	
271104000121800			VILLENEUVE, J. & E.						0.400						2,898.6	
271104000121700			MITCHELL, C.						0.480						2,898.6	
271104000121600			RAMSEY, MATTHEW						0.570						2,898.6	
271104000121501			LYONS, R.						0.440						2,898.6	
271104000121500			STEVENS, A. & L.						1.320						2,898.6	
271104000121401			MCPHERSON, B. & T.						0.440						2,898.6	
271104000105500			NEWBY, ANTHONY TODD						0.150						2,878.5	
271104000105400			COSBY, D.					0.450							2,685.2	
271104000105400			COSBY, D.		\$ 2,000	4.846	3.754		8.60			2685.2	2878.5		2,878.5	
271104000105600			LOCHHEAD, A. & K.			0.100			0.10						2,685.2	
271104000105600			LOCHHEAD, A. & K.			0.604	1.226		1.83						2,878.5	
271104000121210			BUGEJA, M. & A.				0.590		0.59						2,898.5	
271104000138400			CLEE, G.		\$ 2,000	9.19	4.000		13.19			2268.2	2685.2	2268.2	2878.5	
271104000105300			DAMUDE, R.		\$ 1,000	3.60	0.990		4.59			1967.0	2268.2	1967.0	2268.2	
271104000105200			LOBBEZOO, J. & P.			5.90	0.222		6.12						1,970.0	
271104000105100			BUCK, J.			3.27	1.591		4.86						1,970.0	
271104000104000			VAN DUZEN, A. & S.				0.640		0.64						2,685.2	
271104000104000			VAN DUZEN, A. & S.				0.380		0.38						1,970.0	
271104000104200			VAN DUZEN, A. & S.				1.370		1.37						2,685.2	

ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

LANDOWNER INFORMATION - ZAVITZ DRAIN

Updated January, 2016

Property Roll No.	Con.	Lot	Landowner Name	Address	Property Value (\$/ha)	Area					OMAFRA Qualified	Abutting Length				Travel Length
						Wooded	Worked	Surfaced	Tiled Out	Total		Left		Right		
												From Sta	To Sta	From Sta	To Sta	
271104000104200			VAN DUZEN, A. & S.				1.680			1.68					1,970.0	
271104000104005			EBERLY TRUCKING LTD.				0.550			0.55					2,685.2	
271104000104005			EBERLY TRUCKING LTD.				0.050			0.05					1,970.0	
271104000138100			SMITH, ANDREW CHRISTOPHER				0.400			0.40					1,925.4	
TOTAL : Landowners in the City of Port Colborne							27.96	69.947	0.00	0.00	97.83					

City of Port Colborne Road Allowances

Pleasant Beach Road							1.22			1.22					2,878.5
Pleasant Beach Road (for Branch Drains)							0.26			0.26					2,685.2
Sherkston Road							1.18			1.18					2,685.2
Holloway Bay Road (South of Highway 3)							0.86			0.86					1,970.0
Holloway Bay Road (South of Highway 3) (for Branch Drains)							0.06			0.06					2,685.2
Holloway Bay Road (North of Highway 3)							0.46			0.46					1,925.4
Unopened Road Allowance (Zavitz Rd) between Roll #271104000138301 & #271104000138300							0.29			0.29					1,925.4
TOTAL: City of Port Colborne Road Allowances						0.00	0.29	4.03	0.00	4.32					

Provincial Road Allowances in Port Colborne

Highway 3							5.09			5.09		1942.7	1967.0	1942.7	1967.0	1,942.7
TOTAL: Provincial Road Allowances in Port Colborne						0.00	0.00	5.09	0.00	5.09						

Other Lands in Port Colborne

Friendship Trail - West of Pleasant Beach Road							0.56			0.56						2,685.2
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road							0.39			0.39						2,685.2
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road							0.61			0.61						2,685.2
TOTAL: Other Lands in Port Colborne						0.00	0.00	1.56	0.00	1.56						

SUBTOTAL: Lands and Roads in the City of Port Colborne

						27.96	70.24	10.68	0.00	108.79						
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Landowners in the Town of Fort Erie

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

LANDOWNER INFORMATION - ZAVITZ DRAIN

Updated January, 2016

Property Roll No.	Con.	Lot	Landowner Name	Address	Property Value (\$/ha)	Area					OMAFRA Qualified	Abutting Length				Travel Length
						Wooded	Worked	Surfaced	Tiled Out	Total		Left		Right		
												From Sta	To Sta	From Sta	To Sta	
020025038010000			GRIMES, D.A.				0.810			0.81						1,925.4
020025040000000			ANDY VEENSTRA FARMS LTD.			4.62	19.830			24.45	1					1,925.4
020018339000000			SPIRONELLO, A.		\$ 2,000	7.54	15.930			23.47	1	1326.2	1756.0	1326.2	1905.7	1,925.4
020018338000000			BEACH, C.M.		\$ 2,000	7.66	17.820			25.48	1	921.0	1326.2	921.0	1326.2	1,326.2
020025041000000			BARRON, J. & M.			1.47	0.223			1.69						921.0
020025040010000			CAMPBELL, J & J.M.			3.95	3.297			7.25						912.8
020025035000000			VENTURINI, J. & A.				6.958			6.96	1					912.8
020025018000000			MCDONALD, J.			2.22				2.22	1					900.5
020018337000000			GREEN, K.R.		\$ 2,000	7.76	9.053			16.81	1	639.3	900.5	639.3	900.5	900.5
020018337010000			BEACH, D. & C.		\$ 2,000		18.370			18.37	1	407.1	639.3	407.1	639.3	639.3
020018336000000			CLARK, D.M.		\$ 2,000		21.910			21.91	1	137.2	407.1	137.2	407.1	407.1
020018335000000			WORONCHAK, M. & N.		\$ 2,000		8.790			8.79	1	0.0	137.2	0.0	137.2	137.2
TOTAL : Landowners in the Town of Fort Erie						35.22	122.992	0.00	0.00	158.21						
Town of Fort Erie Road Allowances																
Holloway Bay Road (South of Highway 3)								0.46		0.46		1756.0	1905.7			1,970.0
Holloway Bay Road (North of Highway 3)								0.46		0.46						1,925.4
Mathews Road								2.72		2.72		900.5	921.0	900.5	921.0	921.0
Nigh Road								1.47		1.47						921.0
Unopened Road Allowance between Concession 2 LE & 3 LE, Lot 34								1.25		1.25						921.0
TOTAL: Town of Fort Erie Road Allowances						0.00	0.00	6.36	0.00	6.36						
Provincial Road Allowances in Fort Erie																
Highway 3								6.02		6.02		1905.7	1942.7	1905.7	1942.7	1,942.7
TOTAL: Provincial Road Allowances in Fort Erie						0.00	0.00	6.02	0.00	6.02						
Other Lands in Fort Erie																
Friendship Trail								0.43		0.43						912.8
TOTAL: Other Lands in Fort Erie						0.00	0.00	0.43	0.00	0.43						
SUBTOTAL: Lands and Roads in the Town of Fort Erie						35.22	122.99	12.81	0.00	171.02						
TOTAL: Zavitz Municipal Drain						63.18	193.23	23.49	0.00	279.82						

ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

ALLOWANCE CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Property Value (\$/ha)	Abutting Length				Channel Left				Channel Right				Channel Allowances		Working Space				Working Space Allow		Total Allowances	
					Left		Right		Existing Top Width	Proposed Top Width	Length (m)	Area (ha)	Existing Top Width	Proposed Top Width	Length (m)	Area (ha)	Sec 29	Sec 30 100%	Left Width	Right Width	Left Area (ha)	Right Area (ha)	Sec 29	Sec 30 100%	Sec 29 (\$)	Sec 30 (\$)
					From Sta	To Sta	From Sta	To Sta																		
Other Lands in Port Colborne																										
Friendship Trail - West of Pleasant Beach Road																										
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road																										
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road																										
TOTAL: Other Lands in Port Colborne																										
SUBTOTAL: Lands and Roads in the City of Port Colborne																										
Landowners in the Town of Fort Erie																										
20025038010000 GRIMES, D.A. \$ -																										
20025040000000 ANDY VEENSTRA FARMS LTD. \$ -																										
20018339000000 SPIRONELLO, A. \$ 2,000 1326.2 1756.0 1326.2 1905.7 3.0 3.1 429.8 0.004 3.0 3.1 579.5 0.006 \$ - \$ 20 10.0 0.430 \$ - \$ 860 \$ - \$ 880																										
20018338000000 BEACH, C.M. \$ 2,000 921.0 1326.2 921.0 1326.2 2.9 3.0 405.2 0.004 2.9 3.0 405.2 0.004 \$ - \$ 16 10.0 0.405 \$ - \$ 810 \$ - \$ 827																										
20025041000000 BARRON, J. & M. \$ -																										
20025040010000 CAMPBELL, J & J.M. \$ -																										
20025035000000 VENTURINI, J. & A. \$ -																										
20025018000000 MCDONALD, J. \$ -																										
20018337000000 GREEN, K.R. \$ 2,000 639.3 900.5 639.3 900.5 3.0 3.1 261.2 0.003 3.0 3.1 261.2 0.003 \$ - \$ 10 10.0 0.261 \$ - \$ 522 \$ - \$ 533																										
20018337010000 BEACH, D. & C. \$ 2,000 407.1 639.3 407.1 639.3 3.5 3.6 232.2 0.002 3.5 3.6 232.2 0.002 \$ - \$ 9 10.0 0.232 \$ - \$ 464 \$ - \$ 474																										
20018336000000 CLARK, D.M. \$ 2,000 137.2 407.1 137.2 407.1 2.2 2.4 269.9 0.005 2.3 2.3 269.9 \$ - \$ 11 10.0 0.270 \$ - \$ 540 \$ - \$ 551																										
20018335000000 WORONCHAK, M. & N. \$ 2,000 137.2 137.2 137.2 3.1 3.2 137.2 0.001 \$ - \$ 5 10.0 0.137 \$ - \$ 274 \$ - \$ 280																										
TOTAL : Landowners in the Town of Fort Erie																										
Town of Fort Erie Road Allowances																										
Holloway Bay Road (South of Highway 3) 1756.0 1905.7 149.7 \$ - \$ - \$ - \$ -																										
Holloway Bay Road (North of Highway 3) \$ - \$ - \$ - \$ -																										
Mathews Road 900.5 921.0 900.5 921.0 20.5 \$ - \$ - \$ - \$ -																										
Nigh Road \$ - \$ - \$ - \$ -																										
Unopened Road Allowance between Concession 2 LE & 3 LE, Lot 34 \$ - \$ - \$ - \$ -																										
TOTAL: Town of Fort Erie Road Allowances																										
Provincial Road Allowances in Fort Erie																										
Highway 3 1905.7 1942.7 1905.7 1942.7 37.0 \$ - \$ - \$ - \$ -																										
TOTAL: Provincial Road Allowances in Fort Erie																										
Other Lands in Fort Erie																										
Friendship Trail \$ - \$ - \$ - \$ -																										
TOTAL: Other Lands in Fort Erie																										
SUBTOTAL: Lands and Roads in the Town of Fort Erie																										
TOTAL: Zavitz Municipal Drain																										
Total Allowances \$ 5,551																										

Appendix C

Main Zavitz Drain Assessment Schedule

ZAVITZ MUNICIPAL DRAIN

TOWN OF FORT ERIE & CITY OF PORT COLBORNE

Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - ZAVITZ DRAIN

LANDOWNER NAME	ADDRESS	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)	
1		2	3	4	5		6	7	8	9	10	11	12
Landowners in the City of Port Colborne													
VORSTENBOSCH, C.M.		271104000119800			0.04		\$ -	\$ -	\$ -	\$ 27	\$ 27	\$ 27	
HAYTER, S.		271104000119700			0.56		\$ -	\$ -	\$ -	\$ 411	\$ 411	\$ 411	
LUNDY, JOHN MARK		271104000119600			0.40		\$ -	\$ -	\$ -	\$ 298	\$ 298	\$ 298	
MISKOLCZI, A. & M.		271104000119502			0.43		\$ -	\$ -	\$ -	\$ 318	\$ 318	\$ 318	
FARKAS, J. & C.		271104000119501			0.47		\$ -	\$ -	\$ -	\$ 344	\$ 344	\$ 344	
CAPITAN, RODICA		271104000119500			0.63		\$ -	\$ -	\$ -	\$ 465	\$ 465	\$ 465	
PIDSADNICK, G.		271104000105800			0.62		\$ -	\$ -	\$ -	\$ 458	\$ 458	\$ 458	
DIPLOCK, D. & C.		271104000106700			1.34		\$ -	\$ -	\$ -	\$ 991	\$ 991	\$ 991	
KING, M. & S.		271104000106600			0.48		\$ -	\$ -	\$ -	\$ 353	\$ 353	\$ 353	
NEAL, T. & L.		271104000106500			0.50		\$ -	\$ -	\$ -	\$ 369	\$ 369	\$ 369	
HILMAYER, D. & PRIEBE, T.		271104000106400			0.83		\$ -	\$ -	\$ -	\$ 611	\$ 611	\$ 611	
BOWERMAN, G. & C.A.		271104000104700			0.50		\$ -	\$ -	\$ -	\$ 372	\$ 372	\$ 372	
MINOR, R. & J.		271104000104600			1.11		\$ -	\$ -	\$ -	\$ 820	\$ 820	\$ 820	
SIDER, I.		271104000104500			0.44		\$ -	\$ -	\$ -	\$ 324	\$ 324	\$ 324	
ZIMMERMAN, V. & I.		271104000104400			0.43		\$ -	\$ -	\$ -	\$ 316	\$ 316	\$ 316	
FIDLER, R. & D.M.		271104000104300			0.37		\$ -	\$ -	\$ -	\$ 270	\$ 270	\$ 270	
UNITED BRETHREN CEMETARY		271104000122300			0.12		\$ -	\$ -	\$ -	\$ 96	\$ 96	\$ 96	
SHERKSTON UNITED CHURCH		271104000138600			0.33		\$ -	\$ -	\$ -	\$ 175	\$ 175	\$ 175	
FIRST UNITED CHURCH		271104000138700			0.39		\$ -	\$ -	\$ -	\$ 207	\$ 207	\$ 207	
VEENSTRA, D.		271104000138301			1.77		\$ -	\$ -	\$ -	\$ 938	\$ 938	\$ 625 *	
SMITH, T.M.		271104000138500			2.74		\$ -	\$ -	\$ -	\$ 1,451	\$ 1,451	\$ 968 *	
VEENSTRA, A. & D.		271104000138800			1.20		\$ -	\$ -	\$ -	\$ 636	\$ 636	\$ 424 *	
SIX BROTHERS INVESTMENTS INC.		271104000138300			2.34		\$ -	\$ -	\$ -	\$ 1,239	\$ 1,239	\$ 1,239	
KENWORHTY, R. & P.		271104000138200			6.15		\$ -	\$ -	\$ -	\$ 3,257	\$ 3,257	\$ 2,172 *	
FRASER, J. & C.		271104000138000			4.15		\$ -	\$ -	\$ -	\$ 2,198	\$ 2,198	\$ 1,465 *	
PARISEE, T. & A.		271104000122200			0.50		\$ -	\$ -	\$ -	\$ 399	\$ 399	\$ 399	
GERMAIN, DEVON WILLIAM		271104000122100			0.35		\$ -	\$ -	\$ -	\$ 279	\$ 279	\$ 279	
ELMER, D.		271104000120200			7.29		\$ -	\$ -	\$ -	\$ 5,813	\$ 5,813	\$ 3,875 *	
CELUCH, L.		271104000122000			4.52		\$ -	\$ -	\$ -	\$ 3,604	\$ 3,604	\$ 2,403 *	
BAIN JAY ARTHUR		271104000121900			0.14		\$ -	\$ -	\$ -	\$ 112	\$ 112	\$ 112	
KILTS, D.		271104000121400			0.43		\$ -	\$ -	\$ -	\$ 343	\$ 343	\$ 343	
HORNING, A. & W.		271104000121300			1.57		\$ -	\$ -	\$ -	\$ 1,252	\$ 1,252	\$ 1,252	
HORNING, A. & W.		271104000121302			1.56		\$ -	\$ -	\$ -	\$ 1,244	\$ 1,244	\$ 1,244	
HORNING, A. & W.		MERGED WITH ABOVE					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
BUCK, T.		271104000121200			3.59		\$ -	\$ -	\$ -	\$ 2,770	\$ 2,770	\$ 2,770	
VILLENEUVE, J. & E.		271104000121805			0.43		\$ -	\$ -	\$ -	\$ 343	\$ 343	\$ 343	
VILLENEUVE, J. & E.		271104000121800			0.40		\$ -	\$ -	\$ -	\$ 319	\$ 319	\$ 319	
MITCHELL, C.		271104000121700			0.48		\$ -	\$ -	\$ -	\$ 383	\$ 383	\$ 383	
RAMSEY, MATTHEW		271104000121600			0.57		\$ -	\$ -	\$ -	\$ 455	\$ 455	\$ 455	
LYONS, R.		271104000121501			0.44		\$ -	\$ -	\$ -	\$ 351	\$ 351	\$ 351	
STEVENS, A. & L.		271104000121500			1.32		\$ -	\$ -	\$ -	\$ 1,053	\$ 1,053	\$ 1,053	

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - ZAVITZ DRAIN

LANDOWNER NAME	ADDRESS	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)	
1		2	3	4	5		6	7	8	9	10	11	12
MCPHERSON, B. & T.		271104000121401			0.44		\$ -	\$ -	\$ -	\$ 351	\$ 351	\$ 351	
NEWBY, ANTHONY TODD		271104000105500			0.15		\$ -	\$ -	\$ -	\$ 119	\$ 119	\$ 119	
COSBY, D.		271104000105400			0.45		\$ -	\$ -	\$ -	\$ 166	\$ 166	\$ 166	
COSBY, D.		271104000105400			8.60	193.3	\$ 406	\$ 387	\$ -	\$ 4,891	\$ 5,278	\$ 4,872	
LOCHHEAD, A. & K.		271104000105600			0.10		\$ -	\$ -	\$ -	\$ 37	\$ 37	\$ 37	
LOCHHEAD, A. & K.		271104000105600			1.83		\$ -	\$ -	\$ -	\$ 1,210	\$ 1,210	\$ 1,210	
BUGEJA, M. & A.		271104000121210			0.59		\$ -	\$ -	\$ -	\$ 470	\$ 470	\$ 470	
CLEE, G.		271104000138400			13.19	1027.3	\$ 1,294	\$ 2,055	\$ 683	\$ 5,363	\$ 8,100	\$ 6,806	
DAMUDE, R.		271104000105300			4.59	602.4	\$ 307	\$ 1,205	\$ 683	\$ 1,512	\$ 3,399	\$ 3,092	
LOBBEZOO, J. & P.		271104000105200			6.12		\$ -	\$ -	\$ -	\$ 1,718	\$ 1,718	\$ 1,718	
BUCK, J.		271104000105100			4.86		\$ -	\$ -	\$ -	\$ 1,748	\$ 1,748	\$ 1,748	
VAN DUZEN, A. & S.		271104000104000			0.64		\$ -	\$ -	\$ -	\$ 498	\$ 498	\$ 498	
VAN DUZEN, A. & S.		271104000104000			0.38		\$ -	\$ -	\$ -	\$ 206	\$ 206	\$ 206	
VAN DUZEN, A. & S.		271104000104200			1.37		\$ -	\$ -	\$ -	\$ 862	\$ 862	\$ 862	
VAN DUZEN, A. & S.		271104000104200			1.68		\$ -	\$ -	\$ -	\$ 796	\$ 796	\$ 796	
EBERLY TRUCKING LTD.		271104000104005			0.55		\$ -	\$ -	\$ -	\$ 332	\$ 332	\$ 332	
EBERLY TRUCKING LTD.		271104000104005			0.05		\$ -	\$ -	\$ -	\$ 27	\$ 27	\$ 27	
SMITH, ANDREW CHRISTOPHER		271104000138100			0.40		\$ -	\$ -	\$ -	\$ 212	\$ 212	\$ 212	
TOTAL : Landowners in the City of Port Colborne					97.83	1823.0	\$ 2,008	\$ 3,646	\$ 1,365	\$ 56,181	\$ 61,192	\$ 53,219	

City of Port Colborne Road Allowances

Pleasant Beach Road	1.22	\$ -	\$ -	\$ -	\$ 3,848	\$ 3,848	\$ 3,848	
Pleasant Beach Road (for Branch Drains)	0.26	\$ -	\$ -	\$ -	\$ 768	\$ 768	\$ 768	
Sherkston Road	1.18	\$ -	\$ -	\$ -	\$ 3,487	\$ 3,487	\$ 3,487	
Holloway Bay Road (South of Highway 3)	0.86	\$ -	\$ -	\$ -	\$ 1,853	\$ 1,853	\$ 1,853	
Holloway Bay Road (South of Highway 3) (for Branch Drains)	0.06	\$ -	\$ -	\$ -	\$ 174	\$ 174	\$ 174	
Holloway Bay Road (North of Highway 3)	0.46	\$ -	\$ -	\$ -	\$ 975	\$ 975	\$ 975	
Unopened Road Allowance (Zavitz Rd) between Roll #271104000138301 & #271104000138300	0.29	\$ -	\$ -	\$ -	\$ 154	\$ 154	\$ 154	
TOTAL: City of Port Colborne Road Allowances	4.32	\$ -	\$ -	\$ -	\$ 11,259	\$ 11,259	\$ 11,259	

Provincial Road Allowances in Port Colborne

Highway 3	5.09	48.6	\$ -	\$ 97	\$ 10,881	\$ 10,978	\$ 10,978	
TOTAL: Provincial Road Allowances in Port Colborne	5.09	48.60	\$ -	\$ 97	\$ 10,881	\$ 10,978	\$ 10,978	

Other Lands in Port Colborne

Friendship Trail - West of Pleasant Beach Road	0.56	\$ -	\$ -	\$ -	\$ 1,655	\$ 1,655	\$ 1,655	
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road	0.39	\$ -	\$ -	\$ -	\$ 1,152	\$ 1,152	\$ 1,152	
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road	0.61	\$ -	\$ -	\$ -	\$ 1,802	\$ 1,802	\$ 1,802	
TOTAL: Other Lands in Port Colborne	1.56	\$ -	\$ -	\$ -	\$ 4,609	\$ 4,609	\$ 4,609	

Special Assessments to Port Colborne

ZAVITZ MUNICIPAL DRAIN

TOWN OF FORT ERIE & CITY OF PORT COLBORNE

Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - ZAVITZ DRAIN

LANDOWNER NAME	ADDRESS	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)		
1		2	3	4	5		6	7	8	9	10	11	12	
IV. CITY OF PORT COLBORNE (Pleasant Beach Rd)											\$	223		
TOTAL - Special Assessments to Port Colborne											\$	223		

SUBTOTAL: Lands and Roads in the City of Port Colborne					108.79	1871.60	\$ 2,008	\$ 3,743	\$ 1,365	\$ 82,930	\$ 88,262	\$ 80,065	
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Landowners in the Town of Fort Erie

GRIMES, D.A.		20025038010000			0.81		\$ -	\$ -	\$ -	\$ 902	\$ 902	\$ 902	
ANDY VEENSTRA FARMS LTD		20025040000000			24.45		\$ -	\$ -	\$ -	\$ 24,653	\$ 24,653	\$ 16,435	*
SPIRONELLO, A.		20018339000000			23.47	1009.3	\$ 880	\$ 2,019	\$ -	\$ 21,936	\$ 23,955	\$ 15,090	*
BEACH, C.M.		20018338000000			25.48	810.4	\$ 827	\$ 1,621	\$ -	\$ 16,603	\$ 18,224	\$ 11,322	*
BARRON, J. & M.		20025041000000			1.69		\$ -	\$ -	\$ -	\$ 509	\$ 509	\$ 509	
CAMPBELL, J & J.M.		20025040010000			7.25		\$ -	\$ -	\$ -	\$ 2,784	\$ 2,784	\$ 2,784	
VENTURINI, J. & A.		20025035000000			6.96		\$ -	\$ -	\$ -	\$ 3,673	\$ 3,673	\$ 2,449	*
MCDONALD, J.		20025018000000			2.22		\$ -	\$ -	\$ -	\$ 578	\$ 578	\$ 385	*
GREEN, K.R.		20018337000000			16.81	522.4	\$ 533	\$ 1,045	\$ -	\$ 6,734	\$ 7,779	\$ 4,653	*
BEACH, D. & C.		20018337010000			18.37	464.4	\$ 474	\$ 929	\$ -	\$ 6,791	\$ 7,720	\$ 4,673	*
CLARK, D.M.		20018336000000			21.91	539.8	\$ 551	\$ 1,080	\$ 2,275	\$ 5,158	\$ 8,513	\$ 5,125	*
WORONCHAK, M. & N.		20018335000000			8.79	274.4	\$ 280	\$ 549	\$ 2,275	\$ 697	\$ 3,521	\$ 2,068	*
TOTAL : Landowners in the Town of Fort Erie					158.21	3620.7	\$ 3,543	\$ 7,241	\$ 4,550	\$ 91,019	\$ 102,810	\$ 66,395	

Town of Fort Erie Road Allowances

Holloway Bay Road (South of Highway 3)					0.46	149.7	\$ -	\$ 299	\$ -	\$ 2,092	\$ 2,391	\$ 2,391	
Holloway Bay Road (North of Highway 3)					0.46		\$ -	\$ -	\$ -	\$ 2,049	\$ 2,049	\$ 2,049	
Mathews Road					2.72	41.0	\$ -	\$ 82	\$ -	\$ 5,795	\$ 5,877	\$ 5,877	
Nigh Road					1.47		\$ -	\$ -	\$ -	\$ 3,132	\$ 3,132	\$ 3,132	
Unopened Road Allowance between Concession 2 LE & 3 LE, Lot 34					1.25		\$ -	\$ -	\$ -	\$ 2,663	\$ 2,663	\$ 2,663	
TOTAL: Town of Fort Erie Road Allowances					6.36	190.68	\$ -	\$ 381	\$ -	\$ 15,730	\$ 16,111	\$ 16,111	

Provincial Road Allowances in Fort Erie

Highway 3					6.02	74.0	\$ -	\$ 148	\$ -	\$ 27,052	\$ 27,200	\$ 27,200	
TOTAL: Provincial Road Allowances in Fort Erie					6.02	74.00	\$ -	\$ 148	\$ -	\$ 27,052	\$ 27,200	\$ 27,200	

Other Lands in Fort Erie

Friendship Trail					0.43		\$ -	\$ -	\$ -	\$ 908	\$ 908	\$ 908	
TOTAL: Other Lands in Fort Erie					0.43		\$ -	\$ -	\$ -	\$ 908	\$ 908	\$ 908	

Special Assessments to Fort Erie

I. TOWN OF FORT ERIE (Mathews Road)											\$	1,349		
II. TOWN OF FORT ERIE (East Side of Holloway Bay Rd)											\$	1,663		
TOTAL - Special Assessments											\$	3,012		

Special Assessments to Others

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - ZAVITZ DRAIN

LANDOWNER NAME	ADDRESS	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)	
1		2	3	4	5		6	7	8	9	10	11	12
III. MINISTRY OF TRANSPORTATION ONTARIO (HIGHWAY 3 ROW)											\$ 681		
V. ENBRIDGE GAS (PLEASANT BEACH ROAD)											\$ 2,758		
TOTAL - Special Assessments											\$ 3,439		
SUBTOTAL: Lands and Roads in the Town of Fort Erie					171.02	3885.40	\$ 3,543	\$ 7,771	\$ 4,550	\$ 134,708	\$ 153,480	\$ 110,614	
TOTAL: Zavitz Municipal Drain					279.82	5757.00	\$ 5,551	\$ 11,514	\$ 5,915	\$ 217,639	\$ 241,742	\$ 190,679	

Future Maintenance costs shall be assessed in the same relative proportion as the outlet assessment for each property.

Description of Information contained in the Assessment Schedule

- Column 1 Name of Landowner from Assessment Roll maintained by MPAC.
- Column 2 Property Roll Number from Assessment Roll maintained by MPAC.
- Column 3 Township Concession where lands located.
- Column 4 Township Lot where lands located.
- Column 5 Approx. area of land, in hectares, to be drained by Zavitz Municipal Drain.
- Column 6 In accordance with Sections 29 and 30 of the Drainage Act, allowance to be paid to landowner based on value of land lost due to:
 - construction or improvement of drainage works
 - disposal of excavated material
 - damage to trees, lawns, fences, lands and crops
- Column 7 In accordance with Section 22 of the Drainage Act, increased value of land adjacent to the Drain due to improvement to the Drain
- Column 8 In accordance with Section 24 of the Drainage Act, additional work to the drain which has no effect on the functioning of the Drain
- Column 9 In accordance Section 23 of the Drainage Act, increased value of land due to improved outlet for lands to be drained.
- Column 10 Total Assessment is the Sum of Column 7 (Benefit), Column 8 (Special Benefit), and Column 9 (Outlet)
- Column 11 Net Assessment is Column 10 (Total Assessment) less Column 6 (Total Allowance).
- Column 12 * Indicates agricultural land which is potentially eligible for OMAFRA subsidy.
 Net Assessment can be calculated by subtracting the OMAFRA subsidy from the Net Assessment.

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

DIRECT BENEFIT CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 50%	Culvert Works 50%	Erosion Control 25%	Other Works 50%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL DIRECT BENEFIT
Landowners in the City of Port Colborne												
271104000119800			VORSTENBOSCH, C.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119700			HAYTER, S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119600			LUNDY, JOHN MARK					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119502			MISKOLCZI, A. & M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119501			FARKAS, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119500			CAPITAN, RODICA					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105800			PIDSADNICK, G.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106700			DIPLOCK, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106600			KING, M. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106500			NEAL, T. & L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106400			HILMAYER, D. & PRIEBE, T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104700			BOWERMAN, G. & C.A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104600			MINOR, R. & J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104500			SIDER, I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104400			ZIMMERMAN, V. & I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104300			FIDLER, R. & D.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122300			UNITED BRETHREN CEMETARY					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138600			SHERKSTON UNITED CHURCH					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138700			FIRST UNITED CHURCH					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138301			VEENSTRA, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138500			SMITH, T.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138800			VEENSTRA, A. & D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138300			SIX BROTHERS INVESTMENTS INC.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138200			KENWORHTY, R. & P.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138000			FRASER, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122200			PARISEE, T. & A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122100			GERMAIN, DEVON WILLIAM					\$ -	\$ -	\$ -	\$ -	\$ -
271104000120200			ELMER, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122000			CELUCH, L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121900			BAIN JAY ARTHUR					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121400			KILTS, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121300			HORNING, A. & W.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121302			HORNING, A. & W.					\$ -	\$ -	\$ -	\$ -	\$ -
MERGED WITH ABOVE			HORNING, A. & W.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121200			BUCK, T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121805			VILLENEUVE, J. & E.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121800			VILLENEUVE, J. & E.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121700			MITCHELL, C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121600			RAMSEY, MATTHEW					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121501			LYONS, R.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121500			STEVENS, A. & L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121401			MCPHERSON, B. & T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105500			NEWBY, ANTHONY TODD					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105400			COSBY, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105400			COSBY, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105600			LOCHHEAD, A. & K.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105600			LOCHHEAD, A. & K.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121210			BUGEJA, M. & A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138400			CLEE, G.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105300			DAMUDE, R.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105200			LOBBEZOO, J. & P.					\$ -	\$ -	\$ -	\$ -	\$ -

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

DIRECT BENEFIT CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 50%	Culvert Works 50%	Erosion Control 25%	Other Works 50%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL DIRECT BENEFIT
271104000105100			BUCK, J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104000			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104000			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104200			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104200			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104005			EBERLY TRUCKING LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104005			EBERLY TRUCKING LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138100			SMITH, ANDREW CHRISTOPHER					\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : Landowners in the City of Port Colborne				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

City of Port Colborne Road Allowances

Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Pleasant Beach Road (for Branch Drains)								\$ -	\$ -	\$ -	\$ -	\$ -
Sherkston Road								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (South of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (South of Highway 3) (for Branch Drains)								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (North of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Unopened Road Allowance (Zavitz Rd) between Roll #271104000138301 & #271104000138300								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : City of Port Colborne Road Allowances				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Provincial Road Allowances in Port Colborne

Highway 3								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : Provincial Road Allowances in Port Colborne				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Other Lands in Port Colborne

Friendship Trail - West of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -

SUBTOTAL: Lands and Roads in the City of Port Colborne

				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
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Landowners in the Town of Fort Erie

20025038010000			GRIMES, D.A.					\$ -	\$ -	\$ -	\$ -	\$ -
20025040000000			ANDY VEENSTRA FARMS LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
20018339000000			SPIRONELLO, A.					\$ -	\$ -	\$ -	\$ -	\$ -
20018338000000			BEACH, C.M.					\$ -	\$ -	\$ -	\$ -	\$ -
20025041000000			BARRON, J. & M.					\$ -	\$ -	\$ -	\$ -	\$ -
20025040010000			CAMPBELL, J & J.M.					\$ -	\$ -	\$ -	\$ -	\$ -
20025035000000			VENTURINI, J. & A.					\$ -	\$ -	\$ -	\$ -	\$ -
20025018000000			MCDONALD, J.					\$ -	\$ -	\$ -	\$ -	\$ -
20018337000000			GREEN, K.R.					\$ -	\$ -	\$ -	\$ -	\$ -
20018337010000			BEACH, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
20018336000000			CLARK, D.M.					\$ -	\$ -	\$ -	\$ -	\$ -
20018335000000			WORONCHAK, M. & N.					\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : Landowners in the Town of Fort Erie				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Town of Fort Erie Road Allowances

Holloway Bay Road (South of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (North of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Mathews Road								\$ -	\$ -	\$ -	\$ -	\$ -

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

DIRECT BENEFIT CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 50%	Culvert Works 50%	Erosion Control 25%	Other Works 50%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL DIRECT BENEFIT
Nigh Road								\$ -	\$ -	\$ -	\$ -	\$ -
Unopened Road Allowance between Concession 2 LE & 3 LE, Lot 34								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL: Town of Fort Erie Road Allowances				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

DIRECT BENEFIT CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 50%	Culvert Works 50%	Erosion Control 25%	Other Works 50%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL DIRECT BENEFIT
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Provincial Road Allowances in Fort Erie

Highway 3								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL: Provincial Road Allowances in Fort Erie				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Other Lands in Fort Erie

Friendship Trail								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL: Other Lands in Fort Erie				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

SUBTOTAL: Lands and Roads in the Town of Fort Erie				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
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TOTAL: Zavitz Municipal Drain				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
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ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

SPECIAL BENEFIT CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 100%	Culvert Works 50%	Erosion Control 100%	Other Works 100%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL SPECIAL BENEFIT
Landowners in the City of Port Colborne												
271104000119800			VORSTENBOSCH, C.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119700			HAYTER, S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119600			LUNDY, JOHN MARK					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119502			MISKOLCZI, A. & M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119501			FARKAS, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119500			CAPITAN, RODICA					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105800			PIDSADNICK, G.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106700			DIPLOCK, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106600			KING, M. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106500			NEAL, T. & L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106400			HILMAYER, D. & PRIEBE, T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104700			BOWERMAN, G. & C.A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104600			MINOR, R. & J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104500			SIDER, I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104400			ZIMMERMAN, V. & I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104300			FIDLER, R. & D.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122300			UNITED BRETHREN CEMETARY					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138600			SHERKSTON UNITED CHURCH					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138700			FIRST UNITED CHURCH					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138301			VEENSTRA, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138500			SMITH, T.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138800			VEENSTRA, A. & D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138300			SIX BROTHERS INVESTMENTS INC.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138200			KENWORHTY, R. & P.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138000			FRASER, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122200			PARISEE, T. & A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122100			GERMAIN, DEVON WILLIAM					\$ -	\$ -	\$ -	\$ -	\$ -
271104000120200			ELMER, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000122000			CELUCH, L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121900			BAIN JAY ARTHUR					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121400			KILTS, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121300			HORNING, A. & W.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121302			HORNING, A. & W.					\$ -	\$ -	\$ -	\$ -	\$ -
MERGED WITH ABOVE			HORNING, A. & W.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121200			BUCK, T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121805			VILLENEUVE, J. & E.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121800			VILLENEUVE, J. & E.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121700			MITCHELL, C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121600			RAMSEY, MATTHEW					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121501			LYONS, R.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121500			STEVENS, A. & L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121401			MCPHERSON, B. & T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105500			NEWBY, ANTHONY TODD					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105400			COSBY, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105400			COSBY, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105600			LOCHHEAD, A. & K.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105600			LOCHHEAD, A. & K.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000121210			BUGEJA, M. & A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138400			CLEE, G.		\$ 900.00			\$ 450	\$ 45	\$ 495	\$ 188	\$ 683
271104000105300			DAMUDE, R.		\$ 900.00			\$ 450	\$ 45	\$ 495	\$ 188	\$ 683
271104000105200			LOBBEZOO, J. & P.					\$ -	\$ -	\$ -	\$ -	\$ -

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

SPECIAL BENEFIT CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 100%	Culvert Works 50%	Erosion Control 100%	Other Works 100%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL SPECIAL BENEFIT
271104000105100			BUCK, J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104000			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104000			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104200			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104200			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104005			EBERLY TRUCKING LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104005			EBERLY TRUCKING LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000138100			SMITH, ANDREW CHRISTOPHER					\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : Landowners in the City of Port Colborne				\$ -	\$ 1,800	\$ -	\$ -	\$ 900	\$ 90	\$ 990	\$ 375	\$ 1,365

City of Port Colborne Road Allowances

Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Pleasant Beach Road (for Branch Drains)								\$ -	\$ -	\$ -	\$ -	\$ -
Sherkston Road								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (South of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (South of Highway 3) (for Branch Drains)								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (North of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Unopened Road Allowance (Zavitz Rd) between Roll #271104000138301 & #271104000138300								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : City of Port Colborne Road Allowances				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Provincial Road Allowances in Port Colborne

Highway 3								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : Provincial Road Allowances in Port Colborne				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Other Lands in Port Colborne

Friendship Trail - West of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -

SUBTOTAL: Lands and Roads in the City of Port Colborne

SUBTOTAL: Lands and Roads in the City of Port Colborne				\$ -	\$ 1,800	\$ -	\$ -	\$ 900	\$ 90	\$ 990	\$ 375	\$ 1,365
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Landowners in the Town of Fort Erie

20025038010000			GRIMES, D.A.					\$ -	\$ -	\$ -	\$ -	\$ -
20025040000000			ANDY VEENSTRA FARMS LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
20018339000000			SPIRONELLO, A.					\$ -	\$ -	\$ -	\$ -	\$ -
20018338000000			BEACH, C.M.					\$ -	\$ -	\$ -	\$ -	\$ -
20025041000000			BARRON, J. & M.					\$ -	\$ -	\$ -	\$ -	\$ -
20025040010000			CAMPBELL, J & J.M.					\$ -	\$ -	\$ -	\$ -	\$ -
20025035000000			VENTURINI, J. & A.					\$ -	\$ -	\$ -	\$ -	\$ -
20025018000000			MCDONALD, J.					\$ -	\$ -	\$ -	\$ -	\$ -
20018337000000			GREEN, K.R.					\$ -	\$ -	\$ -	\$ -	\$ -
20018337010000			BEACH, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
20018336000000			CLARK, D.M.		\$ 3,000.00			\$ 1,500	\$ 150	\$ 1,650	\$ 625	\$ 2,275
20018335000000			WORONCHAK, M. & N.		\$ 3,000.00			\$ 1,500	\$ 150	\$ 1,650	\$ 625	\$ 2,275
TOTAL : Landowners in the Town of Fort Erie				\$ -	\$ 6,000	\$ -	\$ -	\$ 3,000	\$ 300	\$ 3,300	\$ 1,250	\$ 4,550

Town of Fort Erie Road Allowances

Holloway Bay Road (South of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road (North of Highway 3)								\$ -	\$ -	\$ -	\$ -	\$ -
Mathews Road								\$ -	\$ -	\$ -	\$ -	\$ -

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

SPECIAL BENEFIT CALCULATIONS - ZAVITZ DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 100%	Culvert Works 50%	Erosion Control 100%	Other Works 100%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL SPECIAL BENEFIT
Nigh Road												
Unopened Road Allowance between Concession 2 LE & 3 LE, Lot 34												
TOTAL: Town of Fort Erie Road Allowances				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Provincial Road Allowances in Fort Erie

Highway 3												
TOTAL: Provincial Road Allowances in Fort Erie				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Other Lands in Fort Erie

Friendship Trail												
TOTAL: Other Lands in Fort Erie				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

SUBTOTAL: Lands and Roads in the Town of Fort Erie				\$ -	\$ 6,000	\$ -	\$ -	\$ 3,000	\$ 300	\$ 3,300	\$ 1,250	\$ 4,550
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TOTAL: Zavitz Municipal Drain				\$ -	\$ 7,800	\$ -	\$ -	\$ 3,900	\$ 390	\$ 4,290	\$ 1,625	\$ 5,915
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ZAVITZ MUNICIPAL DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

SPECIAL ASSESSMENTS - ZAVITZ DRAIN

As per Section 26 of the Drainage Act, the following costs are to be charged directly to the Road Authorities listed as SPECIAL ASSESSMENTS.

I. TOWN OF FORT ERIE (Mathews Road)

A. Portion of General Construction Costs	\$	84
B. Channel Improvement Works		
B2.1 Clean out existing open channel including trucking of spoil (Assess 50% for trucking)	\$	53
C. Culvert Improvement Works		
C2.1 Replace Existing Concrete Box Culvert	\$	1,080
D. Erosion and Sediment Control Works	\$	-
E. Other Improvement Works	\$	-
Total Construction Costs	\$	1,217
Portion of Administration Costs	\$	132
TOTAL SPECIAL ASSESSMENT - Mathews ROAD	\$	1,349

II. TOWN OF FORT ERIE (East Side of Holloway Bay Rd)

A. Portion of General Construction Costs	\$	84
B. Channel Improvement Works		
B2.2 Clean out existing open channel including trucking of spoil (Assess 50% for trucking)	\$	1,123
C. Culvert Improvement Works	\$	-
D. Erosion and Sediment Control Works	\$	-
E. Other Improvement Works	\$	-
Total Construction Costs	\$	1,206
Portion of Administration Costs	\$	457
TOTAL SPECIAL ASSESSMENT - HOLLOWAY BAY ROAD	\$	1,663

III. MINISTRY OF TRANSPORTATION ONTARIO (HIGHWAY 3 ROW)

A. Portion of General Construction Costs	\$	34
B. Channel Improvement Works		
B2.3 Clean and deepen existing open channel including trucking of spoil (Assessed 50 % for trucking)	\$	229
C. Culvert Improvement Works		
C2.2 Clean Silt and Debris from Existing Culvert (Assessed for trucking)	\$	231
D. Erosion and Sediment Control Works	\$	-
E. Other Improvement Works	\$	-
Total Construction Costs	\$	494
Portion of Administration Costs	\$	187
TOTAL SPECIAL ASSESSMENT - GARRISON ROW	\$	681

ZAVITZ MUNICIPAL DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

SPECIAL ASSESSMENTS - ZAVITZ DRAIN

As per Section 26 of the Drainage Act, the following costs are to be charged directly to the Road Authorities listed as SPECIAL ASSESSMENTS.

IV. CITY OF PORT COLBORNE (Pleasant Beach Rd)

A. Portion of General Construction Costs	\$ 11
B. Channel Improvement Works	
B2.5 Clean out existing open channel including trucking of spoil (Assess 50% for trucking)	\$ 69
C. Culvert Improvement Works	
C2.3 Clean Silt and Debris from Existing Culvert (Assessed for trucking)	\$ 82
D. Erosion and Sediment Control Works	\$ -
E. Other Improvement Works	\$ -
Total Construction Costs	\$ 162
Portion of Administration Costs	\$ 61
TOTAL SPECIAL ASSESSMENT - PLEASANT BEACH RD	\$ 223

V. ENBRIDGE GAS (PLEASANT BEACH ROAD)

B. Channel Improvement Works	
B2.1 Pleasant Beach Road - Gas Line Protection during construction and lowering if required	\$ 2,000
Total Construction Costs	\$ 2,000
Portion of Administration Costs	\$ 758
TOTAL SPECIAL ASSESSMENT - PLEASANT BEACH RD	\$ 2,758

TOTAL SPECIAL ASSESSMENTS - ZAVITZ DRAIN \$ **6,674**

Appendix D

OMAFRA Fact Sheet Understanding Drainage Assessments

FACTSHEET



ORDER NO. 92-035

FEBRUARY 1992

AGDEX 557



Ontario

Ministry of Agriculture,
Food and Rural Affairs

AGRICULTURAL
ENGINEERING

UNDERSTANDING DRAINAGE ASSESSMENTS

Agriculture and Rural Division
(Reprinted March 1997)

The *Drainage Act* provides a legal procedure by which an "area requiring drainage" may have an outlet drain constructed to dispose of excess water.

The drainage work is initiated by interested individuals within an "area requiring drainage" who will benefit from the construction of the drain. A petition form, obtained from the municipal clerk, is signed by interested landowners. In order to be valid or sufficient, the petition must be signed by the majority of the owners in the "area requiring drainage" or by owners that represent at least 60% of the lands in this area. The "area requiring drainage" is usually described by lot and concession, or other legal land description. By taking this action, it is presumed that the owners signing the petition have made a decision that the drain will be of benefit to them and that the probable cost will be lower than the anticipated benefits. The initial benefit-cost decision is made at this point by the landowners, not the engineer or Council.

The petition is presented to and considered by Council. If the petition represents a proper "area requiring drainage", that is a real drainage basin, and appears to be valid, the Council may decide to proceed. Council then notifies each of the petitioners of this decision as well as any other municipality affected and the local Conservation Authority and the Ministry of Natural Resources.

Council then appoints an engineer. The engineer is an employee of Council, hired to design this specific drain. Under *The Drainage Act*, Section 9(2), the engineer is required to hold an on-site meeting to determine (1) the area requiring drainage, (2) if the petition is valid, (3) the drainage needs of the area. The engineer is then required "to make an examination of the area requiring drainage as described in the petition and to prepare a report which shall include:

- (a) plans, profiles and specifications of the drainage works;
- (b) a description of the area requiring drainage;
- (c) an estimate of the total cost thereof;
- (d) an assessment of the amount or proportion of the cost of the works to be assessed against every parcel of land and road for benefit, outlet liability and injuring liability;

- (e) allowances, if any, to be paid to the owners of land affected by the drainage works and
- (f) such other matters as are provided for under this Act."

The engineer's report is presented to Council, who then notifies all persons assessed and calls a special meeting where the report is considered. General objections to the report may be raised at this time. At this meeting signatures may be added or removed from the petition and this determines if the project will continue. Unresolved problems, depending on the subject, may be appealed to the Court of Revision, the Ontario Drainage Tribunal or the Drainage Referee. Details on appeal procedures may be found in *The Drainage Act** or in Ontario Ministry of Agriculture, Food and Rural Affairs Factsheet, Drainage Legislation.

The engineer's report includes two important items:

1. The estimated cost of the work — No matter how individual assessments are arrived at, this total estimated cost must always be equal to the total amount assessed, otherwise the work cannot proceed.
2. The assessment liability — This may be spread over several pages if an owner owns several parcels of land and if there are branch drains. It may be summarized.

Let us examine the obligations regarding this assessment.

RESPONSIBILITIES UNDER COMMON LAW

A natural watercourse is defined generally as a stream of water which flows along a defined channel, with bed and banks, for a sufficient time to give it substantial existence. This may include streams that dry up periodically.

**The Drainage Act may be found in the Revised Statutes of Ontario 1980, Chapter 126, available in most public libraries. Individual copies may be purchased from the Ontario Government Bookstore, 1-800-668-9938.*

A riparian landowner (owner of lands that abut upon a natural watercourse) has the right to drain his or her lands into the natural stream, but may not bring water in from another watershed. He or she can collect water in ditches and drains and discharge it into the watercourse even though it results in an increase in volume and rate of flow.

Where a natural watercourse becomes a part of a drain, it is no longer a natural watercourse. When this occurs, the riparian rights, as described earlier, are lost.

Surface water not flowing in a natural watercourse (i.e. not having discernible bed and banks) has no right of drainage. An owner of lower land may, at his or her own choice, either allow the water from higher land to flow over it or by dams or banks, keep such water off his or her property. No owner has the right to collect such surface water by ditches or drains and discharge it on lands of another. He or she has a responsibility to take this water to a sufficient outlet, i.e., a natural watercourse or a drain constructed under *The Drainage Act*.

Since there is no right to drain surface water, the owner of each parcel of land in the watershed is generally assessed for "outlet liability". In other words, his or her Common Law liability is removed by paying for the increased size or cost of the drain due to the volume of water which is discharged from his or her property, even though the drain may not provide a direct outlet for this water. The authority for this liability is set out in Section 23(1).

Since, through Common Law, a landowner is also liable for any damage he or she may cause from water which he or she collects in drains and discharges on other land without a sufficient outlet, he or she may be assessed for relief from such "injuring liability" if the new drain serves as an outlet for his or her drains and prevents this injury from occurring. The authority for this liability is set out in Section 23(2).

Injuring liability is frequently difficult to distinguish from outlet liability, consequently many engineers' reports do not contain such an item.

The assessment for outlet liability and injuring liability is based on the volume and rate of flow of the water artificially caused to flow from an owner's property. Generally, the assessment is based upon a unit value per hectare. Owners at higher elevations on a watershed may have a higher unit charge than those owners near the outlet since the water from their land makes use of a greater length of drain. A difference may be made in the unit outlet charge due to varying types of soil or land use, or the distance to the drain.

RESPONSIBILITY UNDER THE DRAINAGE ACT

In addition to the Common Law responsibility, an owner may also be assessed for benefit.

Benefit will vary between different lands, according to their differences of elevation, quantity of water to be drained from each, distance of undrained land from the course of the proposed ditch, and the presence or absence of existing drains, and other like factors.

To consider whether a parcel of land will receive any benefit from the construction, it is proper to consider whether any enhanced financial value will accrue to it as a result of the drain construction. This may occur through the increased productive power of the land or by rendering it more salable and at a better price, or by preventing water from entering on to it.

If the proposed drainage works can be of no possible benefit to the owner, or is of no commercial or agricultural value, the Act does not authorize a contribution for benefit.

Sometimes, an owner has an undeveloped area that he or she intends to leave in this condition. The owner may feel that he or she should not be assessed since the drain will be of no benefit. However, the property could change hands and the new owner might want to drain and develop it. It is with this in mind that the engineer must make an assessment, regardless of the present owner's intentions.

It is the duty of the engineer to determine whether or not a parcel of land will benefit from the project. When appealing a benefit assessment, the landowner must prove that the land does not benefit from the drain.

An owner has no responsibility for work done upstream from his or her property unless the work provides a benefit by "cutting off" a harmful flow of water across the property.

In some instances, a "special benefit assessment" may be levied against the property. This value usually represents the difference in cost between that which was originally designed and the increased level of design requested by a landowner. Examples include a closed or tile drain where open ditches would ordinarily suffice, or the construction of ponds beside the drain, or other special requests by a landowner specifically for this benefit. The authority for this liability is set out in Section 24.

ENGINEER'S REPORT

The Engineer's report should contain a plan and profile of the drain, as well as details on the drain design and the assessment schedule.

The plan shows the location of drains and the limits of the watershed. The profile shows ground elevations along the drain and the present and proposed drain bottom. The specifications give details on how the drain is to be constructed.

The Schedule of Assessment contains several columns. The first group contains the names of owners with a description of each parcel of land assessed.

The hectarage shown in the schedule for which an owner is assessed is only approximate. No survey is made to accurately establish the watershed boundary or farm areas. Any minor error in hectarage assessed is not a valid basis for appeal nor does it greatly affect the assessment. The other columns in the Schedule set forth the assessment liability for each drain and/or branch drain. These values are only estimates. The final value will not be known until the construction work is finished. The assessment will then be prorated to recover the actual cost.

Allowances to lands injured by the work are set out in a separate schedule by the engineer as authorized in Sections 29 to 33 of *The Drainage Act*.

Damage to crops during construction and disposal of waste material will vary depending on the time of year that the work is constructed. Crop damage due to spreading the spoil on the banks is based on a decreasing yearly loss of crop over several years. All or part of the cost of access bridges from a public road to the property may be assessed to the property owner.

Farm bridges are constructed as a part of the work. In certain circumstances a severance allowance may be paid instead of building the bridge. The allowance will depend upon the value of the land severed, or the cost of the bridge that would be required. The cost, or part of the cost of farm bridges or the severance allowance may be assessed across the property.

Where private drains are incorporated into the new drain, a nominal allowance may be paid based on any saving that may result from using the private drain. These allowances may not be included in the Summary of Assessments but are usually shown in a separate Schedule of Allowances.

RELEVANT OMAFRA FACTSHEETS

Drainage Legislation.

This Factsheet was authored by Sid Vander Veen, P.Eng., Resources Management Branch.

Appendix E

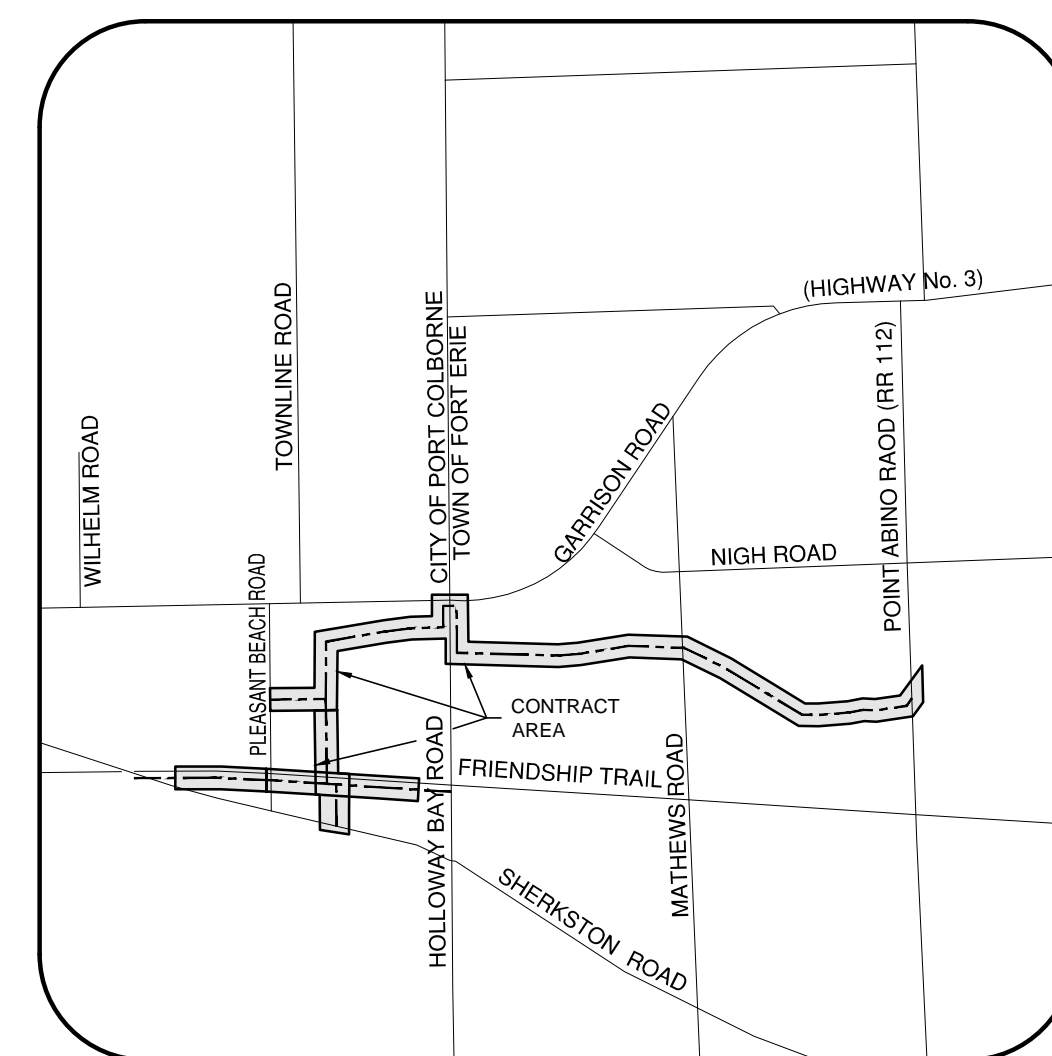
Main Zavitz Drain Drawings

ZAVITZ MUNICIPAL DRAIN

TOWN OF FORT ERIE CITY OF PORT COLBORNE

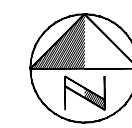
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INDEX TO DRAWINGS

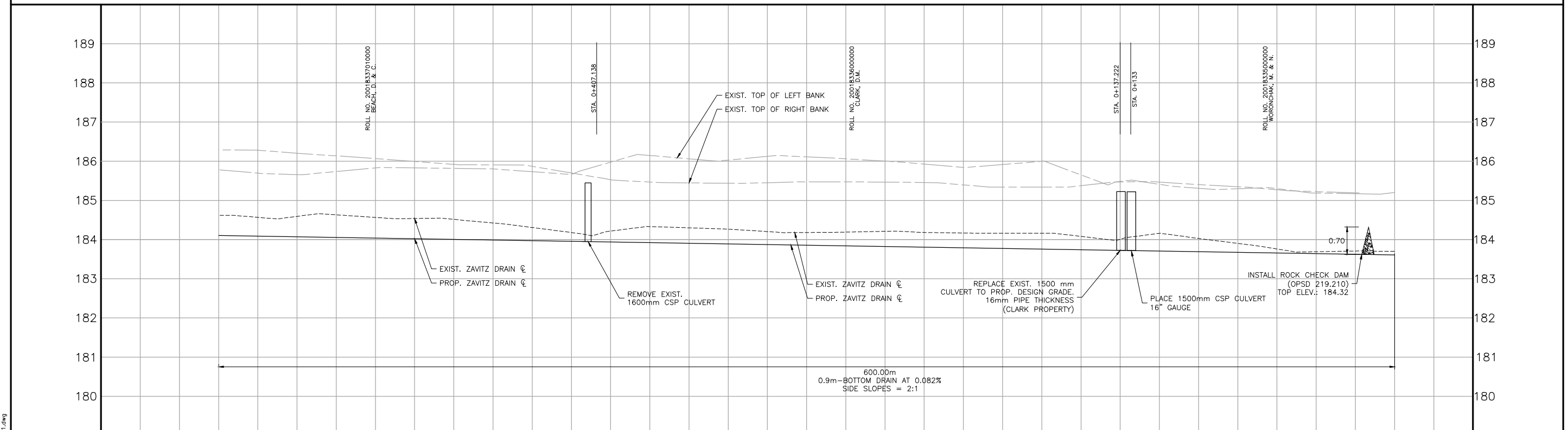
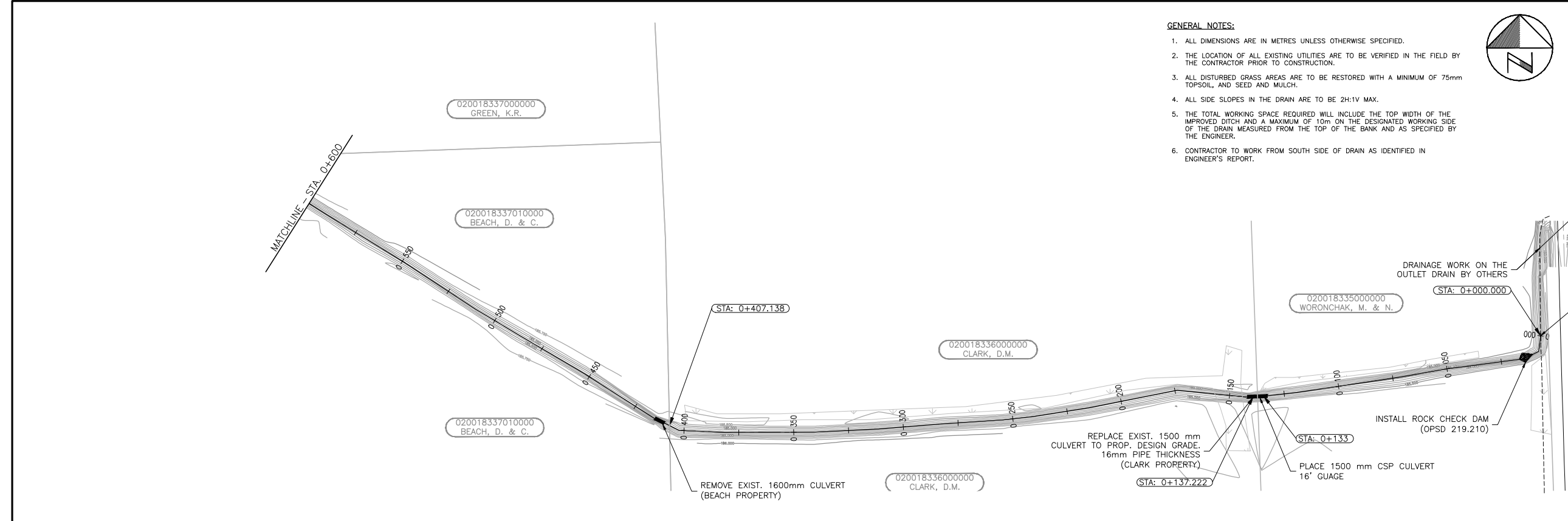
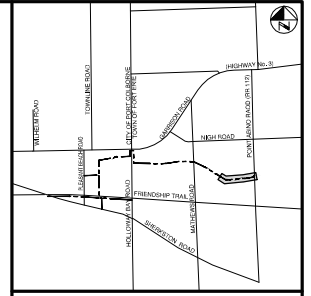


KEY PLAN

SHEET No.	DESCRIPTION
1	ZAVITZ DRAIN Sta 0+000 to Sta 0+600
2	ZAVITZ DRAIN Sta 0+600 to Sta 1+200
3	ZAVITZ DRAIN Sta 1+200 to Sta 1+900
4	ZAVITZ DRAIN Sta 1+900 to Sta 2+500
5	ZAVITZ DRAIN Sta 2+500 to Sta 2+901.579
6	TRAIL BRANCH DRAIN Sta 0+000 to Sta 0+294.476
7	BRANCH DRAIN ALONG FRIENDSHIP TRAIL
7	BRANCH DRAIN ALONG PLEASANT BEACH ROAD
8	ZAVITZ DRAIN DETAILS



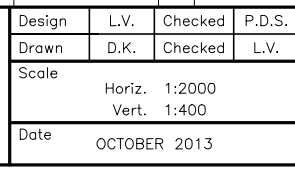
- GENERAL NOTES:**
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
 2. THE LOCATION OF ALL EXISTING UTILITIES ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
 3. ALL DISTURBED GRASS AREAS ARE TO BE RESTORED WITH A MINIMUM OF 75mm TOPSOIL, AND SEED AND MULCH.
 4. ALL SIDE SLOPES IN THE DRAIN ARE TO BE 2H:1V MAX.
 5. THE TOTAL WORKING SPACE REQUIRED WILL INCLUDE THE TOP WIDTH OF THE IMPROVED DITCH AND A MAXIMUM OF 10m ON THE DESIGNATED WORKING SIDE OF THE DRAIN MEASURED FROM THE TOP OF THE BANK AND AS SPECIFIED BY THE ENGINEER.
 6. CONTRACTOR TO WORK FROM SOUTH SIDE OF DRAIN AS IDENTIFIED IN ENGINEER'S REPORT.



CHAINAGE/ PROPOSED ELEVATION	0+600 184.120	0+550 184.061	0+500 184.020	0+450 183.979	0+409.9 183.95 0+400 183.938	0+350 183.897	0+300 183.856	0+250 183.815	0+200 183.774	0+150 183.733 0+137.4 183.723	0+100 183.692	0+050 183.651	0+013.3 183.621 0+000 183.610
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No.	DATE	BY	REVISIONS	MAN	CAD
7.	01/12/15	M.K.	REVISED PER TRIBUNAL ORDERS		
6.	07/04/14	D.K.	REVISED PER COURT OF REVISION		
5.	04/07/13	L.V.	COUNCIL CONSIDERATION		
4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

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Drawn	D.K.	Checked	L.V.
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Date	OCTOBER 2013		



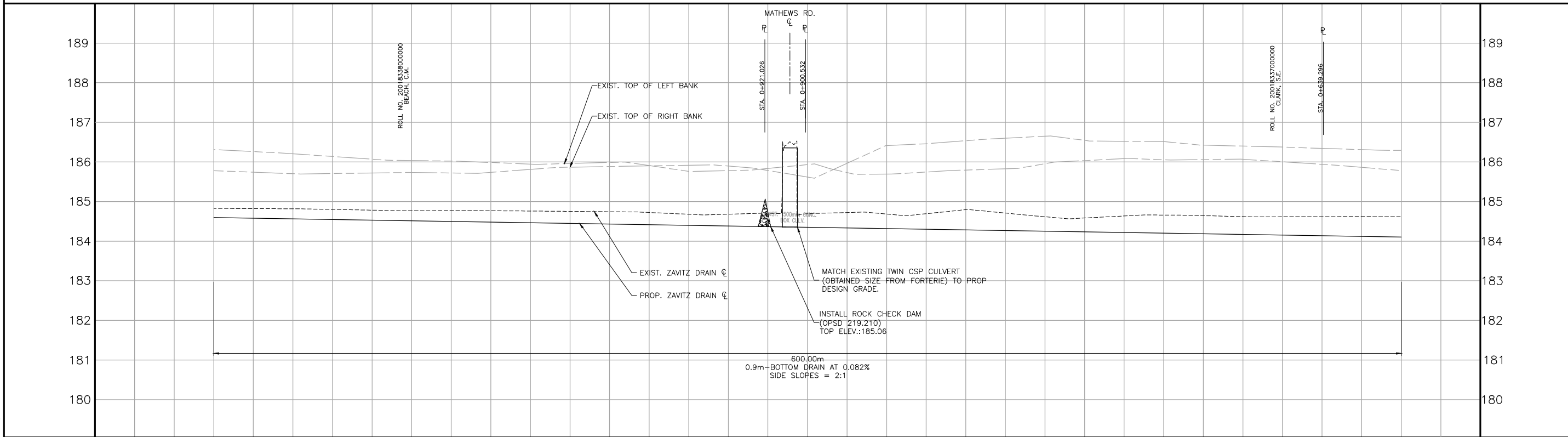
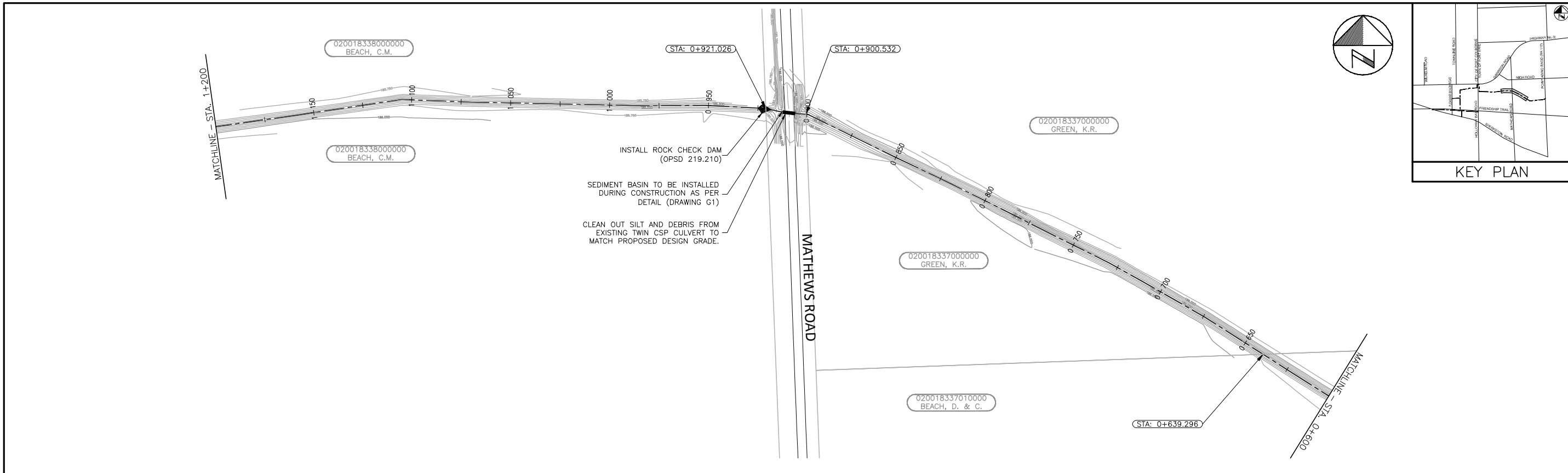
ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN
PLAN AND PROFILE
STA 0+000 TO STA 0+600



Contract No.	
Consultant File No.	110120
Drawing No.	E-2A

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No.	DATE	BY	REVISIONS	MAN	CAD
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4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

Design	L.V.	Checked	P.D.S.
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Date	OCTOBER 2013		



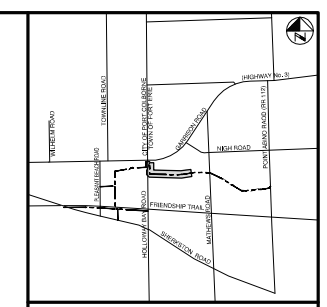
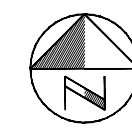
ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN
PLAN AND PROFILE
STA 0+600 TO STA 1+200

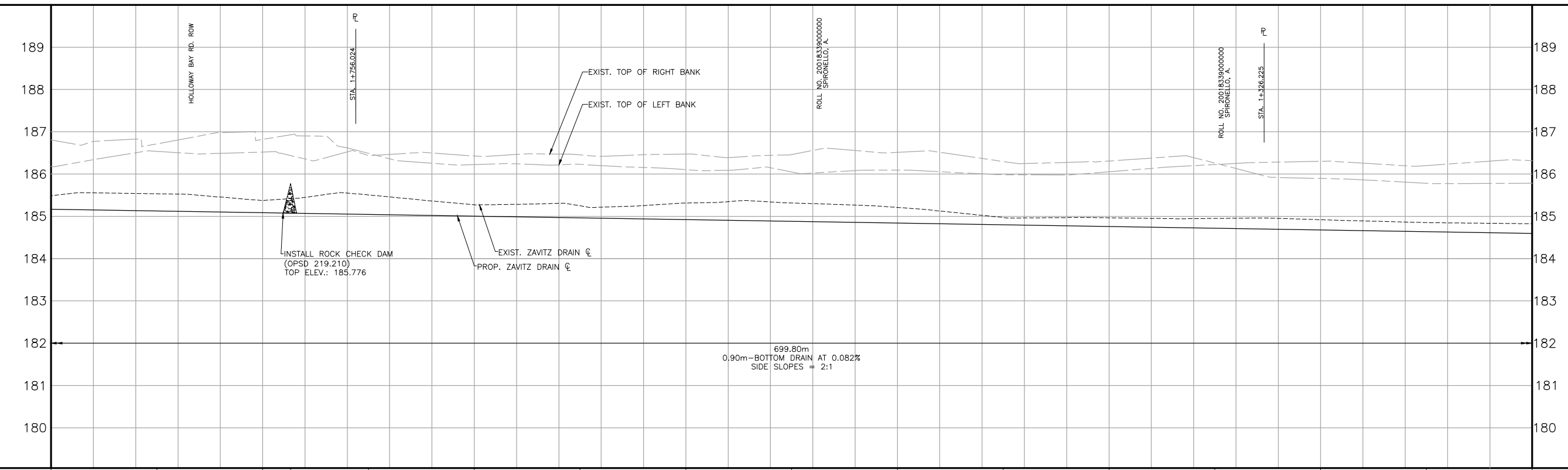
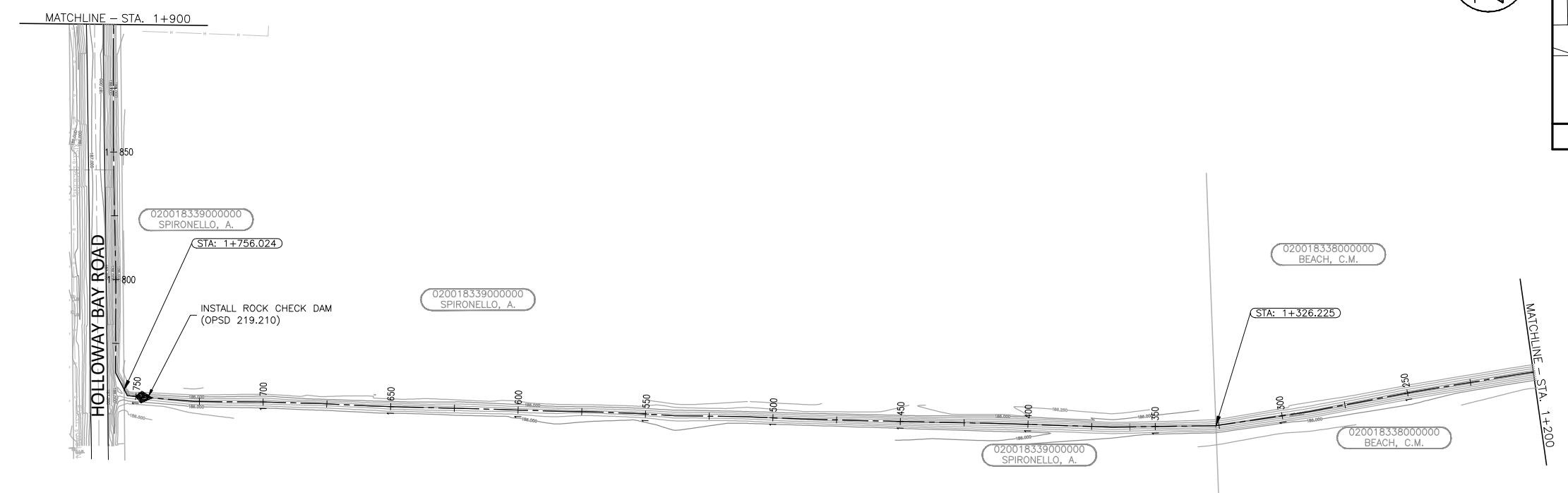


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Consultant File No.	110120
Drawing No.	E-2B

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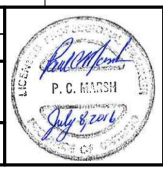
KEY PLAN



CHAINAGE/ PROPOSED ELEVATION	1+900 185.168	1+850 185.127	1+800 185.086	1+786.82 185.075	1+750 185.045	1+700 185.004	1+650 184.963	1+600 184.922	1+550 184.881	1+500 184.840	1+450 184.799	1+400 184.758	1+350 184.717	1+300 184.676	1+250 184.635	1+200 184.594
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No.	DATE	BY	REVISIONS	MAN	CAD
7.	01/12/15	M.K.	REVISED PER TRIBUNAL ORDERS		
6.	07/04/14	D.K.	REVISED PER COURT OF REVISION		
5.	04/07/13	L.V.	COUNCIL CONSIDERATION		
4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

Design	L.V.	Checked	P.D.S.
Drawn	D.K.	Checked	L.V.
Scale	Horiz. 1:2000 Vert. 1:400		
Date	OCTOBER 2013		



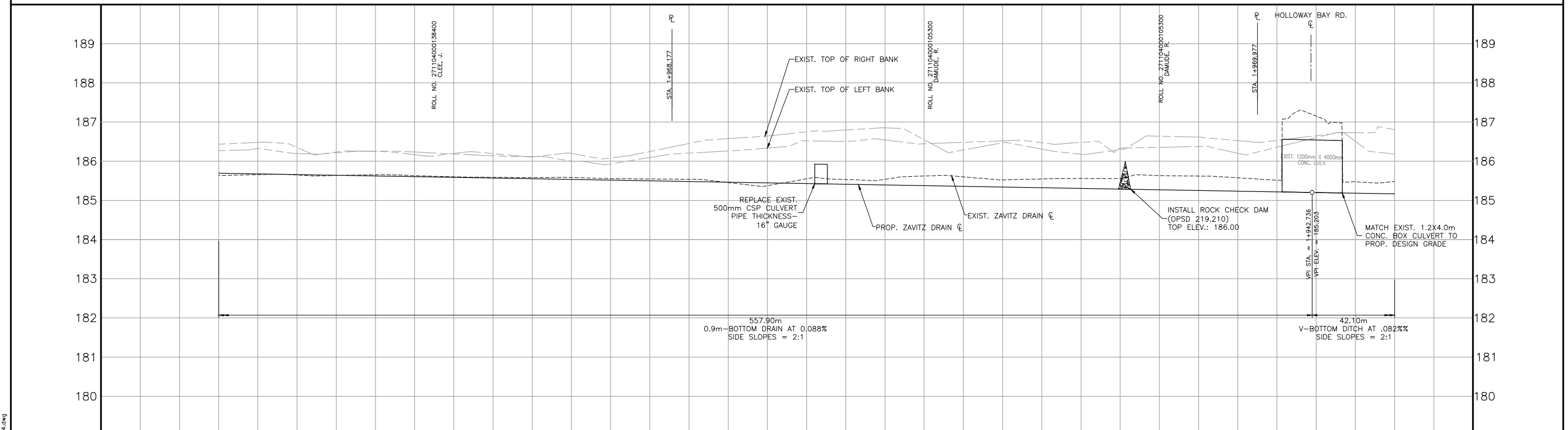
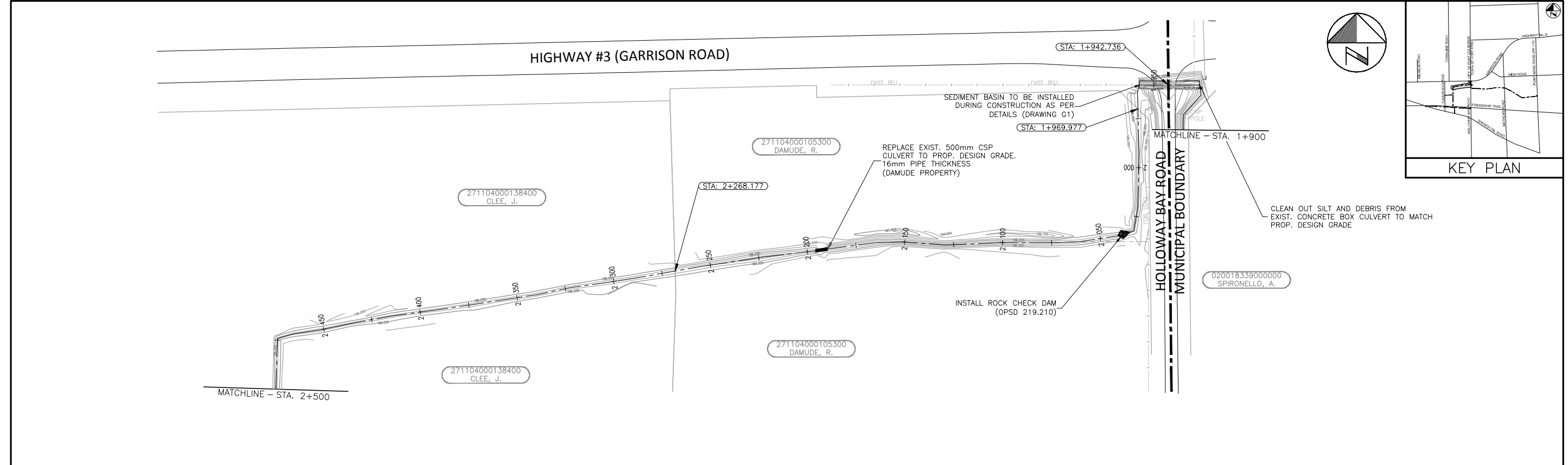
ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN
PLAN AND PROFILE
STA 1+200 TO STA 1+900



Contract No.	
Consultant File No.	110120
Drawing No.	E-2C

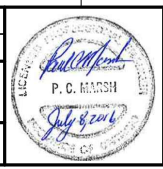
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CHAINAGE/ PROPOSED C ELEVATION	2+500 185.694	2+450 185.650	2+400 185.606	2+350 185.562	2+300 185.518	2+250 185.474	2+200 185.430 2+189.76 185.420	2+150 185.386	2+100 185.341	2+050 185.297 2+037.4 185.287	2+000 185.253	1+950 185.209	1+900 185.168
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No.	DATE	BY	REVISIONS	MAN	CAD
7.	01/12/15	M.K.	REVISED PER TRIBUNAL ORDERS		
6.	07/04/14	D.K.	REVISED PER COURT OF REVISION		
5.	04/07/13	L.V.	COUNCIL CONSIDERATION		
4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

Design	L.V.	Checked	P.D.S.
Drawn	D.K.	Checked	L.V.
Scale	Horiz. 1:2000 Vert. 1:400		
Date	OCTOBER 2013		



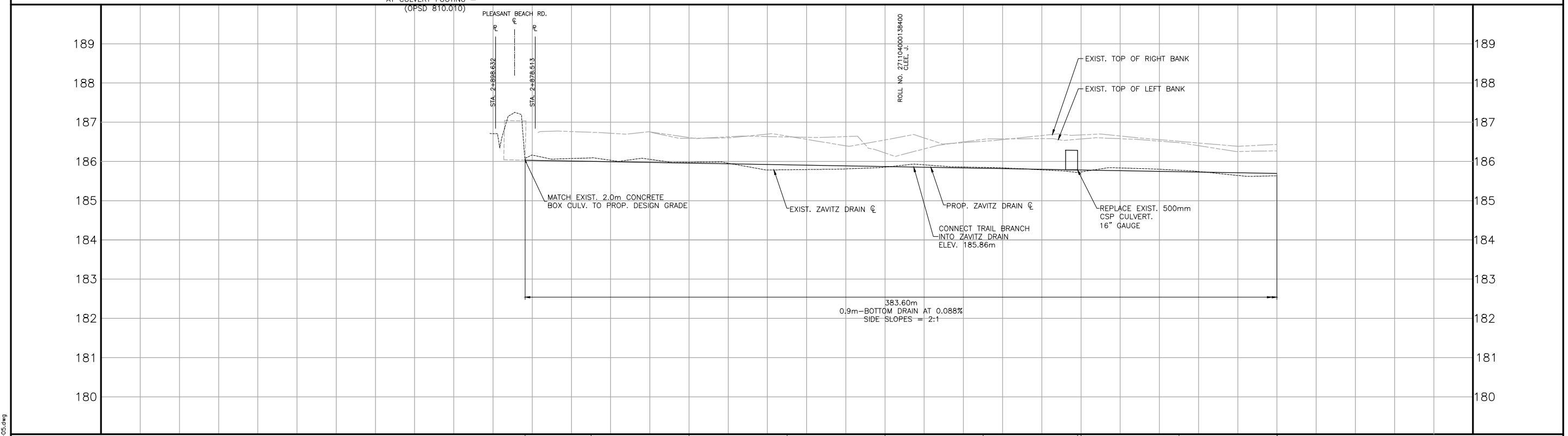
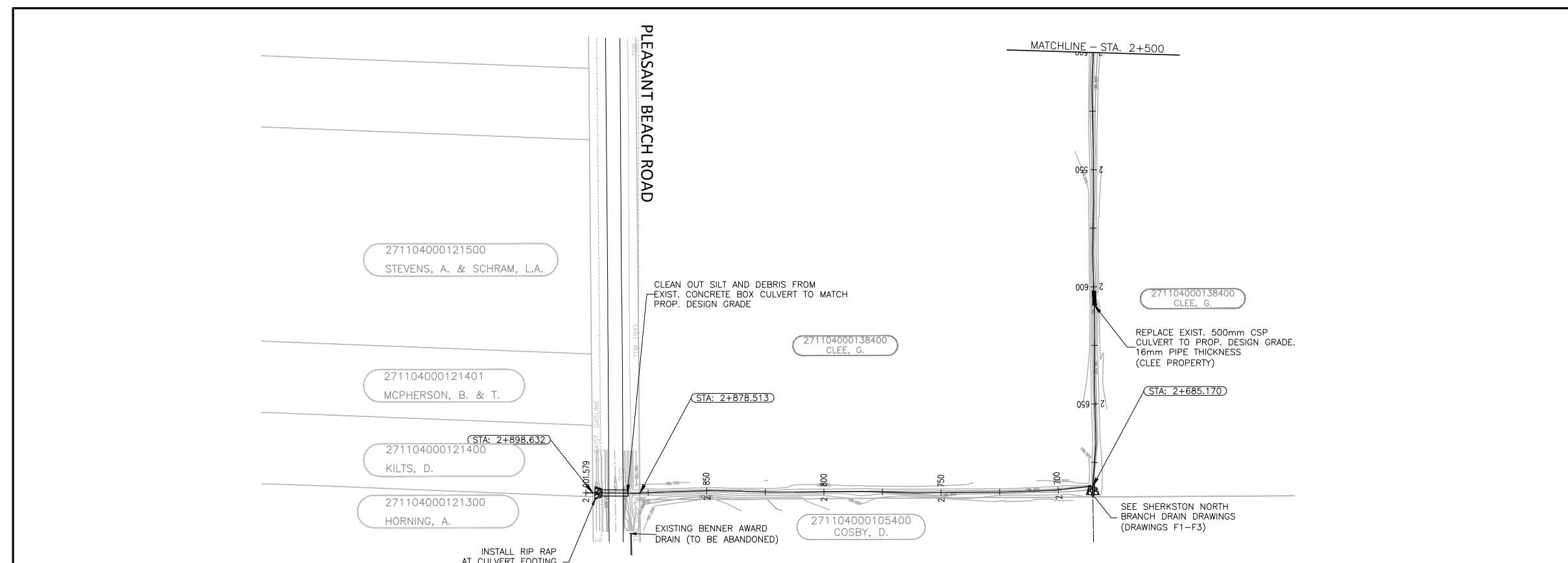
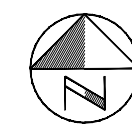
ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN
PLAN AND PROFILE
STA 1+900 TO STA 2+500



Contract No.	
Consultant File No.	110120
Drawing No.	E-2D

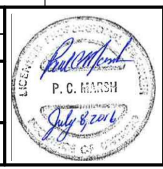
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No.	DATE	BY	REVISIONS	MAN	CAD
7.	01/12/15	M.K.	REVISED PER TRIBUNAL ORDERS		
6.	07/04/14	D.K.	REVISED PER COURT OF REVISION		
5.	04/07/13	L.V.	COUNCIL CONSIDERATION		
4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

Design	L.V.	Checked	P.D.S.
Drawn	D.K.	Checked	L.V.
Scale	Horiz. 1:2000 Vert. 1:400		
Date	OCTOBER 2013		



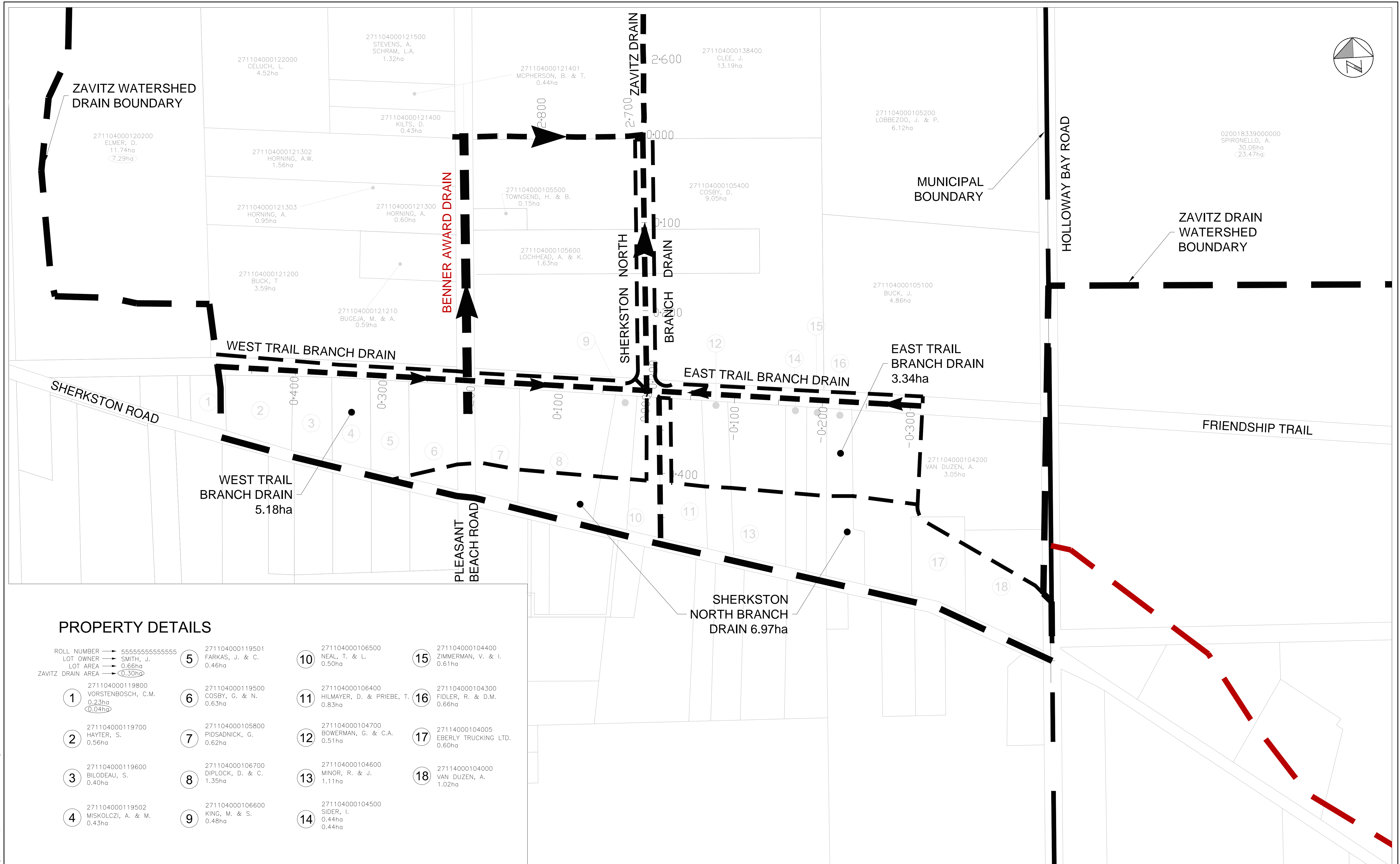
ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN
PLAN AND PROFILE
STA 2+500 TO STA 2+901.579



Contract No.	
Consultant File No.	110120
Drawing No.	E-2E

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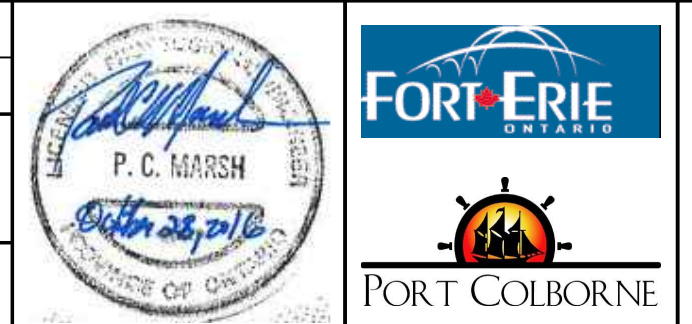
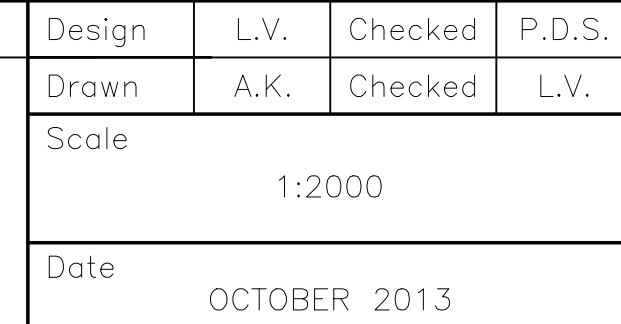
PROPERTY DETAILS

ROLL NUMBER → 55555555555555	271104000119501	271104000106500	271104000104400
LOT OWNER → SMITH, J.	FARKAS, J. & C.	NEAL, T. & L.	ZIMMERMAN, V. & I.
LOT AREA → 0.66ha	0.46ha	0.50ha	0.61ha
ZAVITZ DRAIN AREA → 0.30ha			
1 271104000119800	271104000119500	271104000106400	271104000104300
VORSTENBOSCH, C.M.	COSBY, G. & N.	HILMAYER, D. & PRIEBE, T.	FIDLER, R. & D.M.
0.23ha	0.63ha	0.83ha	0.66ha
2 271104000119700	271104000105800	271104000104700	27114000104005
HAYTER, S.	PIDSADNICK, G.	BOWERMAN, G. & C.A.	EBERLY TRUCKING LTD.
0.56ha	0.62ha	0.51ha	0.60ha
3 271104000119600	271104000106700	271104000104600	27114000104000
BILODEAU, S.	DIPLOCK, D. & C.	MINOR, R. & J.	VAN DUZEN, A.
0.40ha	1.35ha	1.11ha	1.02ha
4 271104000119502	271104000106600	271104000104500	
MISKOLCZI, A. & M.	KING, M. & S.	SIDER, I.	
0.43ha	0.48ha	0.44ha	

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No.	DATE	BY	REVISIONS	MAN	CAD
2	07/04/14	DK	REVISED PER COURT OF REVISION		
1	10/08/13	PD	FINAL REPORT ISSUED		

APPROVALS			
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Drawn	A.K.	Checked	L.V.
Scale	1:2000		
Date	OCTOBER 2013		

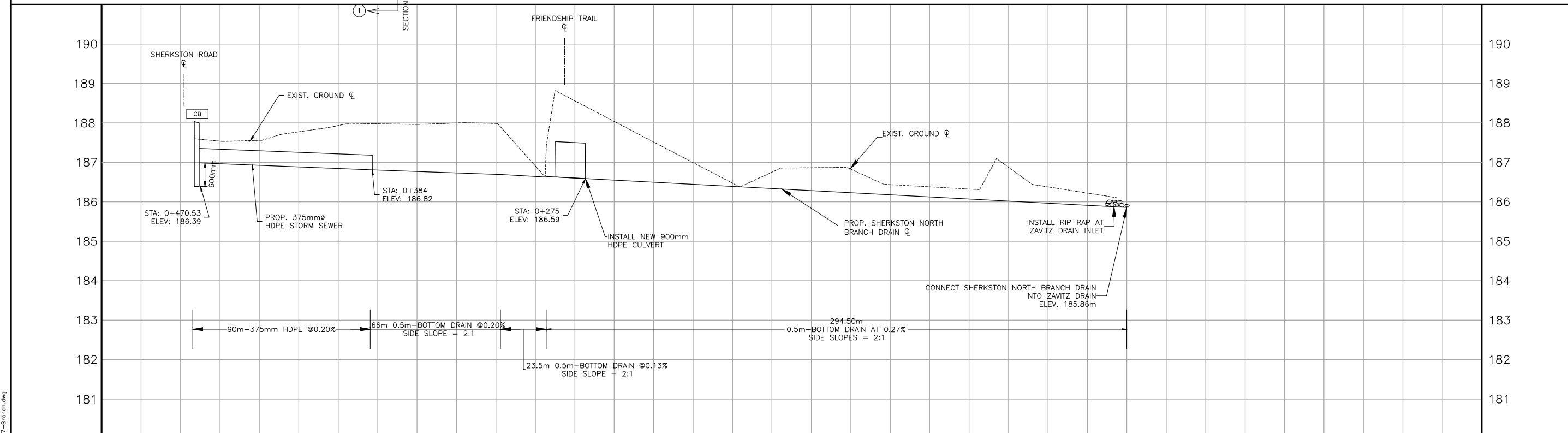
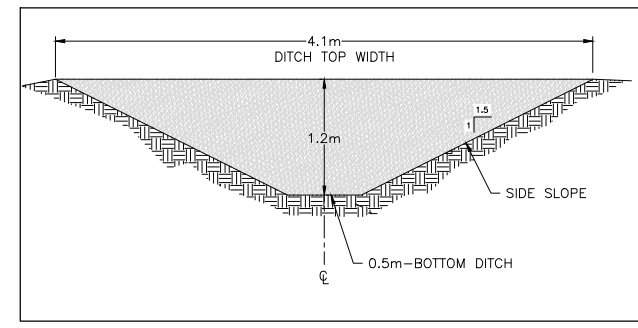
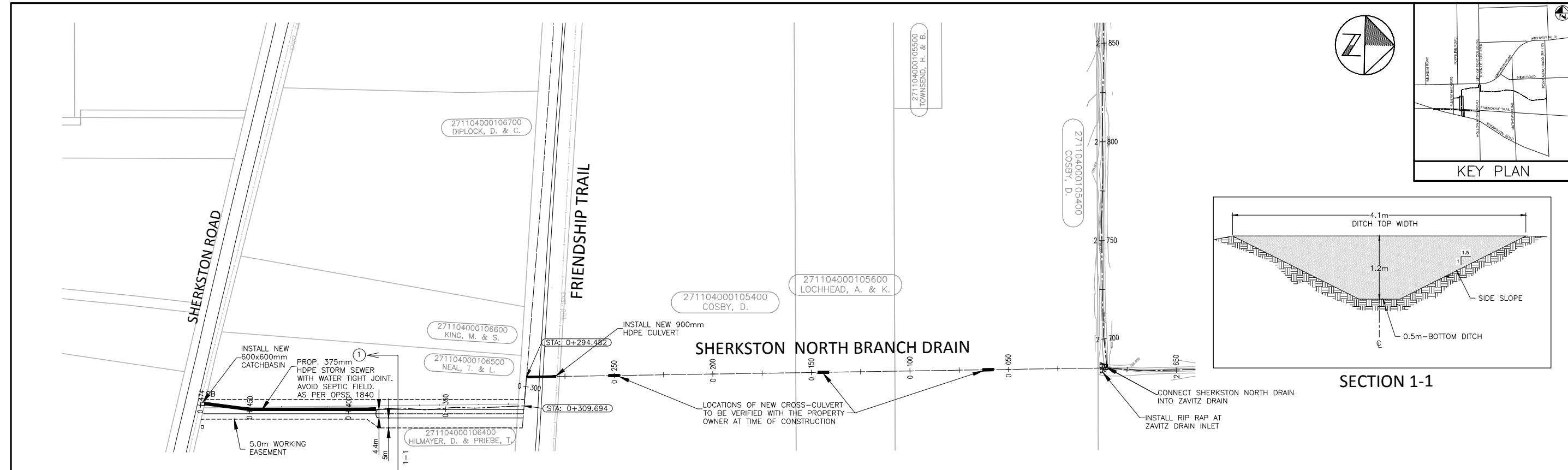


ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

NORTH BRANCH DRAIN, EAST & WEST TRAIL BRANCH DRAINS
SUB WATERSHED



Contract No.	
Consultant File No.	110120
Drawing No.	F1



CHAINAGE/ PROPOSED ELEVATION	0+474 187.00	0+450 186.95	0+400 186.85	0+350 186.75	0+318 186.68	0+294.476 186.64	0+280 186.60	0+240 186.50	0+200 186.39	0+160 186.28	0+120 186.18	0+080 186.07	0+040 185.96	0+000 185.86
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No.	DATE	BY	REVISIONS	MAN	CAD
7.	01/12/15	M.K.	REVISED PER TRIBUNAL ORDERS		
6.	07/04/14	D.K.	REVISED PER COURT OF REVISION		
5.	04/07/13	L.V.	COUNCIL CONSIDERATION		
4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

Design	L.V.	Checked	P.D.S.
Drawn	D.K.	Checked	L.V.
Scale	Horiz. 1:2000 Vert. 1:400		
Date	OCTOBER 2013		



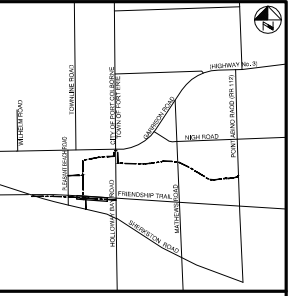
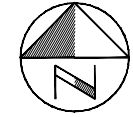
ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN
PLAN AND PROFILE
SHERKSTON NORTH BRANCH DRAIN

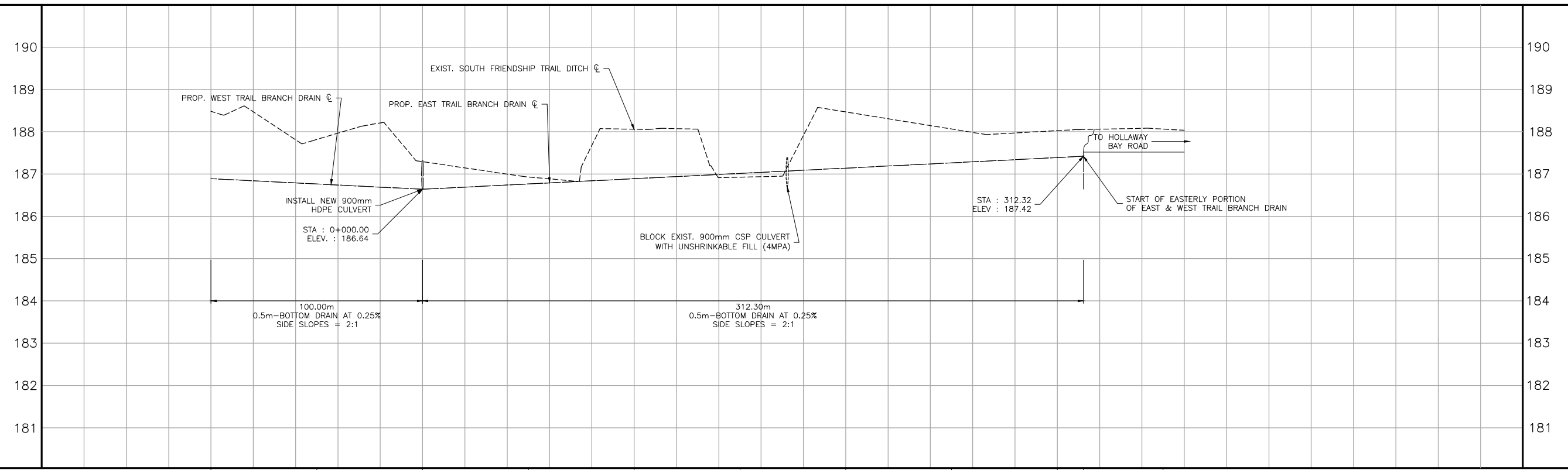
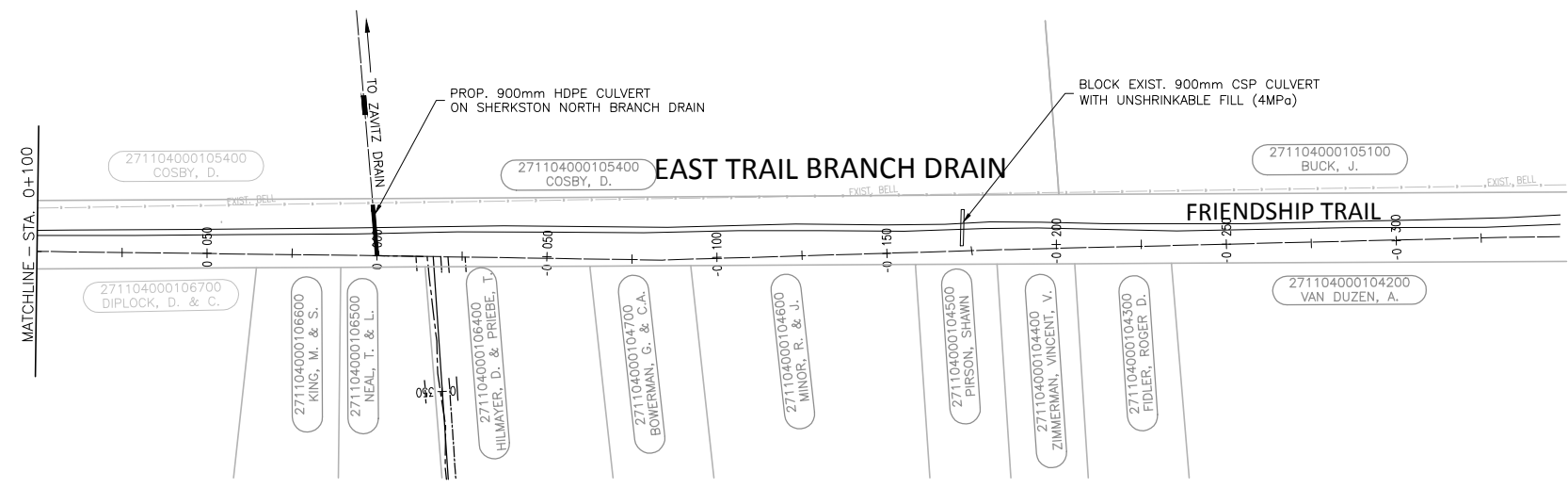


Contract No.	
Consultant File No.	110120
Drawing No.	F2

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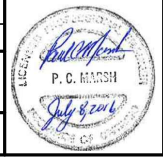
KEY PLAN



CHAINAGE/ PROPOSED CL ELEVATION
0+100 186.890
0+050 186.765
0+000 186.640
-0+050 186.765
-0+100 186.890
-0+150 187.015
-0+200 187.139
-0+250 187.264
-0+300 187.389
-0+312.32 187.42
-0+350 -

No.	DATE	BY	REVISIONS	MAN	CAD
7.	01/12/15	M.K.	REVISED PER TRIBUNAL ORDERS		
6.	07/04/14	D.K.	REVISED PER COURT OF REVISION		
5.	04/07/13	L.V.	COUNCIL CONSIDERATION		
4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

Design	L.V.	Checked	P.D.S.
Drawn	D.K.	Checked	L.V.
Scale	Horiz. 1:2000 Vert. 1:400		
Date	OCTOBER 2013		



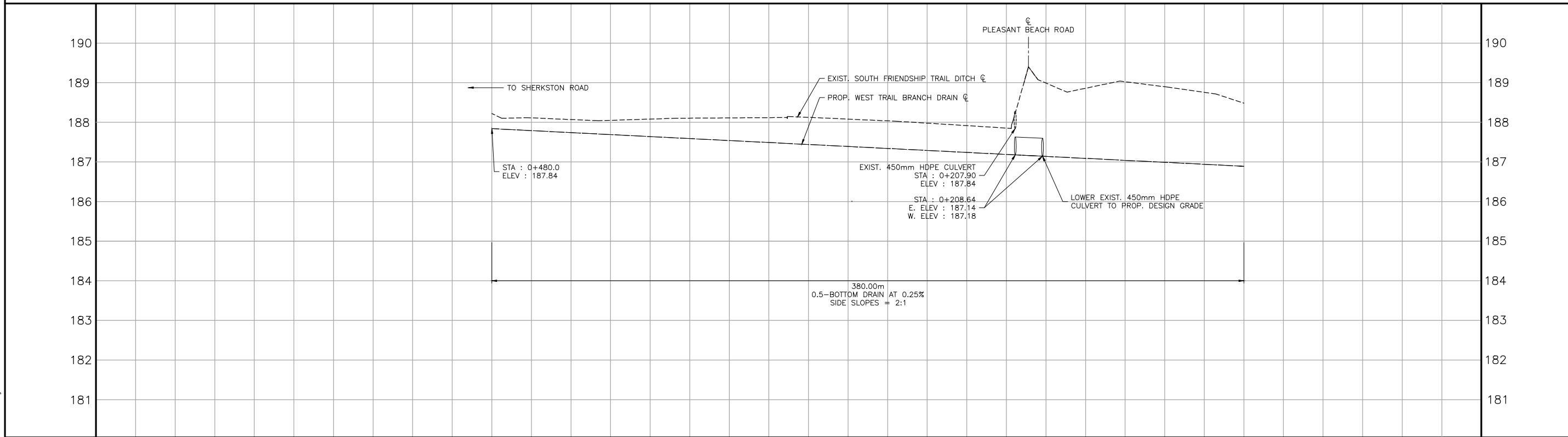
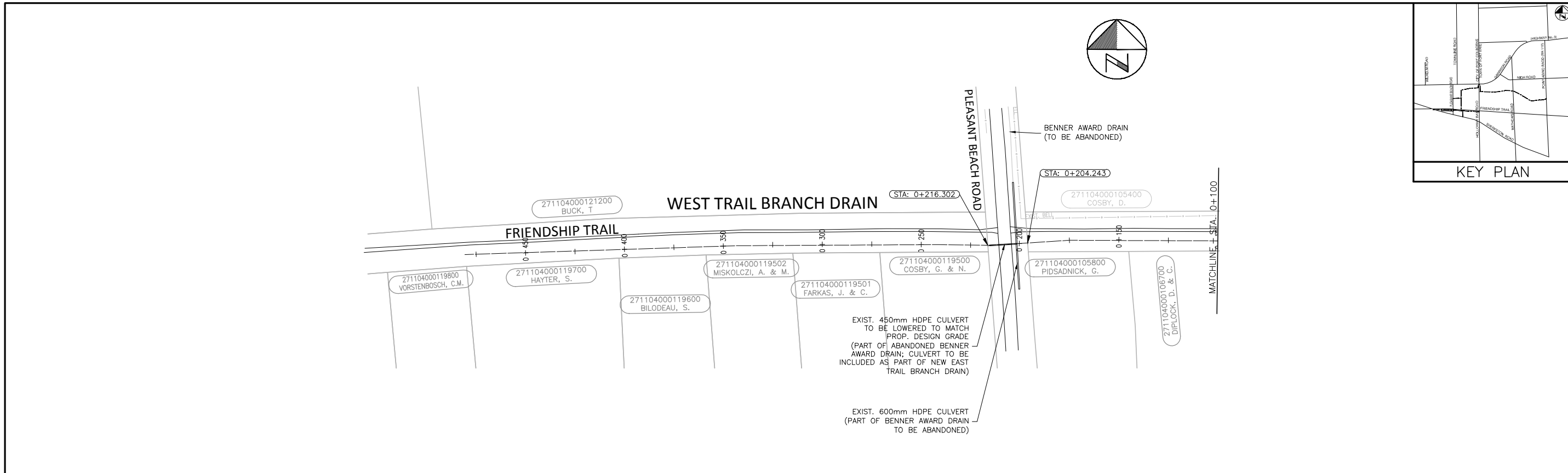
ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN
PLAN AND PROFILE
EAST & WEST TRAIL BRANCH DRAINS



Contract No.	
Consultant File No.	110120
Drawing No.	G1

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CHAINAGE/ PROPOSED ELEVATION	0+450 187.765	0+400 177.640	0+350 187.515	0+300 187.390	0+250 187.265	0+200 187.140	0+150 187.015	0+100 186.890
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No.	DATE	BY	REVISIONS	MAN	CAD
7.	01/12/15	M.K.	REVISED PER TRIBUNAL ORDERS		
6.	07/04/14	D.K.	REVISED PER COURT OF REVISION		
5.	04/07/13	L.V.	COUNCIL CONSIDERATION		
4.	07/05/13	D.K.	REVISED PER CITY COMMENTS		
3.	01/10/12	D.K.	REVISED PER TOWN COMMENTS		
2.	01/10/12	D.K.	ISSUED FOR REVIEW		
1.	01/10/12	D.K.	ISSUED FOR UTILITIES REVIEW		

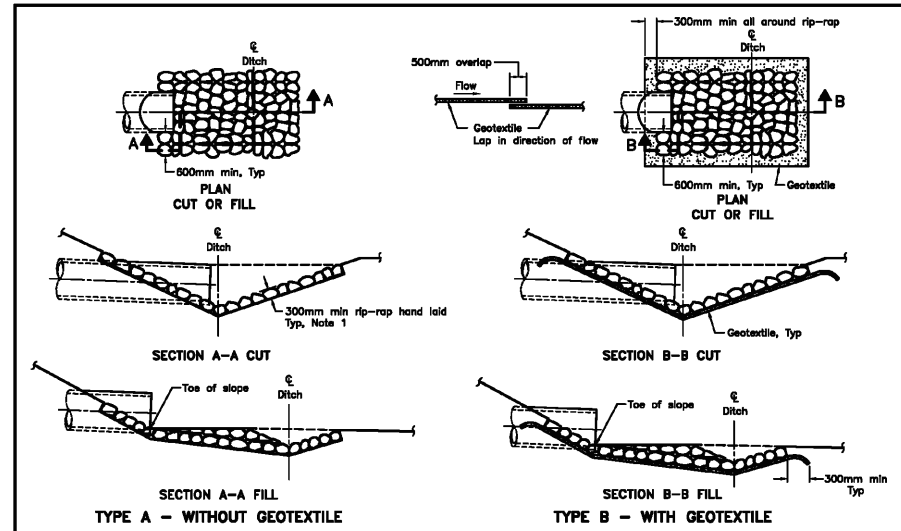
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Drawn	D.K.	Checked	L.V.
Scale	Horiz. 1:2000 Vert. 1:400		
Date	OCTOBER 2013		

ZAVITZ DRAIN
 TOWN OF FORT ERIE
 CITY OF PORT COLBORNE

ZAVITZ DRAIN
 PLAN AND PROFILE
 EAST & WEST TRAIL BRANCH DRAINS

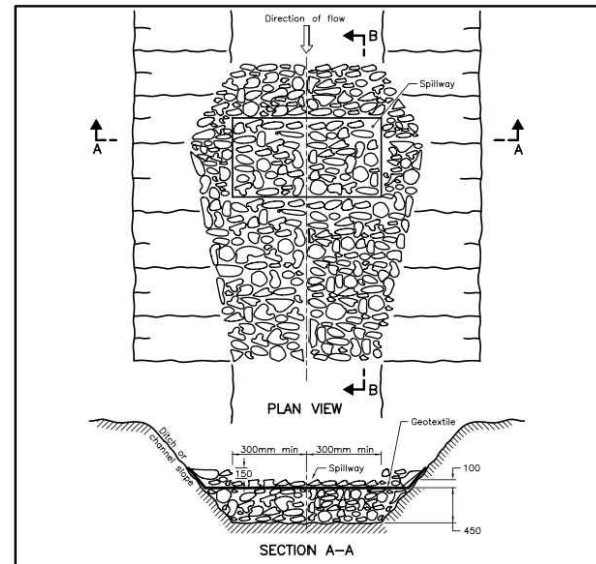
Contract No.	
Consultant File No.	110120
Drawing No.	G2

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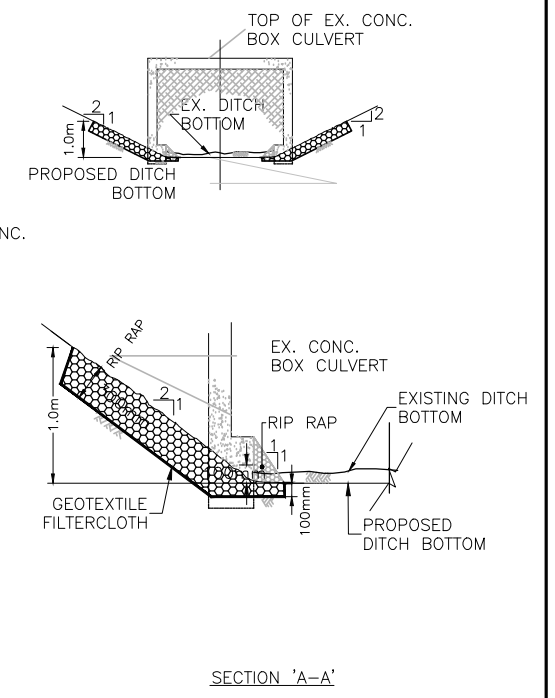
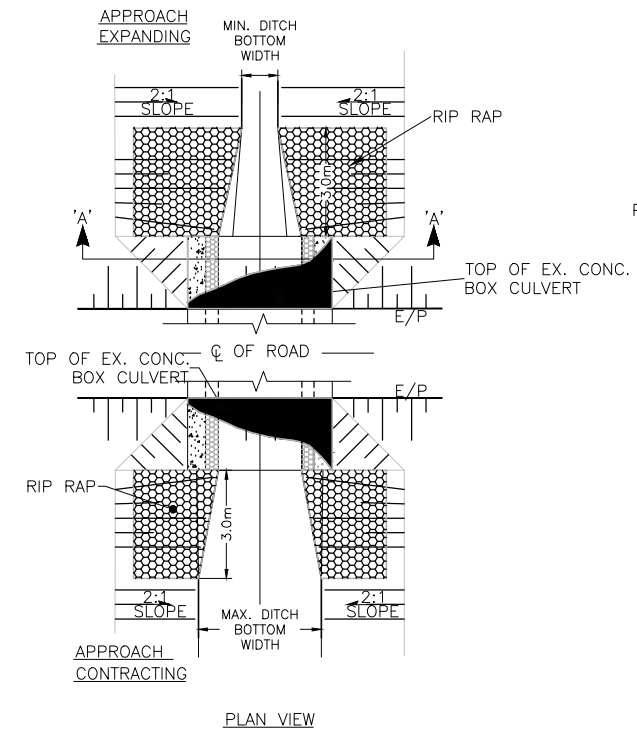
NOTES:
 1 The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.
 A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2007	Rev 1
RIP-RAP TREATMENT FOR SEWER AND CULVERT OUTLETS		
OPSD 810.010		

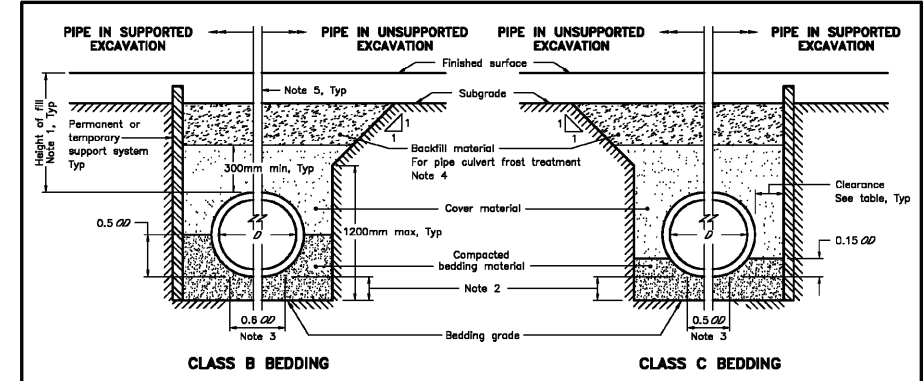


NOTE:
 A All dimensions are in millimetres or metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	1996 02 01	Rev
TEMPORARY ROCK FLOW CHECK		
FLAT BOTTOM DITCH OR CHANNEL		
OPSD - 219.211		



PROPOSED CULVERT EROSION FOOTING PROTECTION DETAIL
 N.T.S.

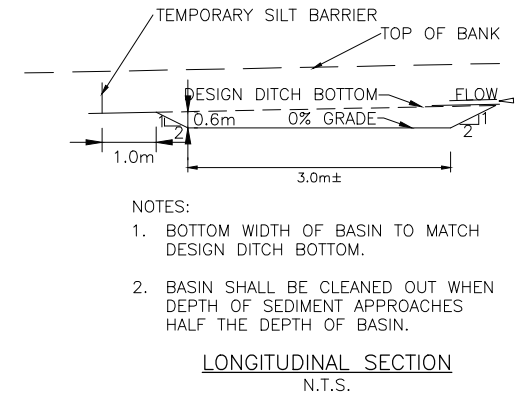


NOTES:
 1 Height of fill is measured from the finished surface to top of pipe.
 2 The minimum bedding depth below the pipe shall be 0.15m in no case shall this dimension be less than 150mm or greater than 300mm.
 3 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
 4 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
 5 Condition of excavation is symmetrical about centreline of pipe.
 A Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
 B All dimensions are in metres unless otherwise shown.

LEGEND:
 D - Inside diameter
 OD - Outside diameter

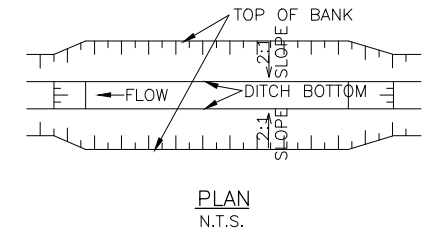
Clearance Table	Clearance mm
Pipe Inside Diameter mm	900 or less
	300
	Over 900
	500

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2010	Rev 2
RIGID PIPE BEDDING, COVER, AND BACKFILL		
TYPE 1 OR 2 SOIL - EARTH EXCAVATION		
OPSD 802.030		

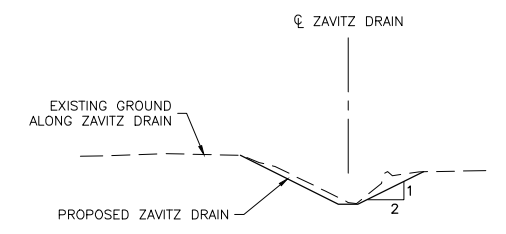


NOTES:
 1. BOTTOM WIDTH OF BASIN TO MATCH DESIGN DITCH BOTTOM.
 2. BASIN SHALL BE CLEANED OUT WHEN DEPTH OF SEDIMENT APPROACHES HALF THE DEPTH OF BASIN.

LONGITUDINAL SECTION
 N.T.S.



PLAN
 N.T.S.



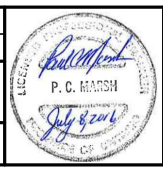
0.9m-BOTTOM DITCH DETAIL
 N.T.S.

SEDIMENT BASIN DETAIL
 (U/S OF MATHEWS ROAD CULVERT 0+912.3)
 (U/S OF HOLLOWAY BAY ROAD CULVERT 1+957.7)

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No.	DATE	BY	REVISIONS	MAN	CAD
3	06/05/13	DK	REVISED PER CITY COMMENTS		
2	2011	LV	ISSUED TO CITY FOR REVIEW		
1	2011	LV	ISSUED TO UTILITIES FOR REVIEW		

APPROVALS			
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Drawn	A.K.	Checked	L.V.
Scale	N.T.S.		
Date	APRIL 2014		

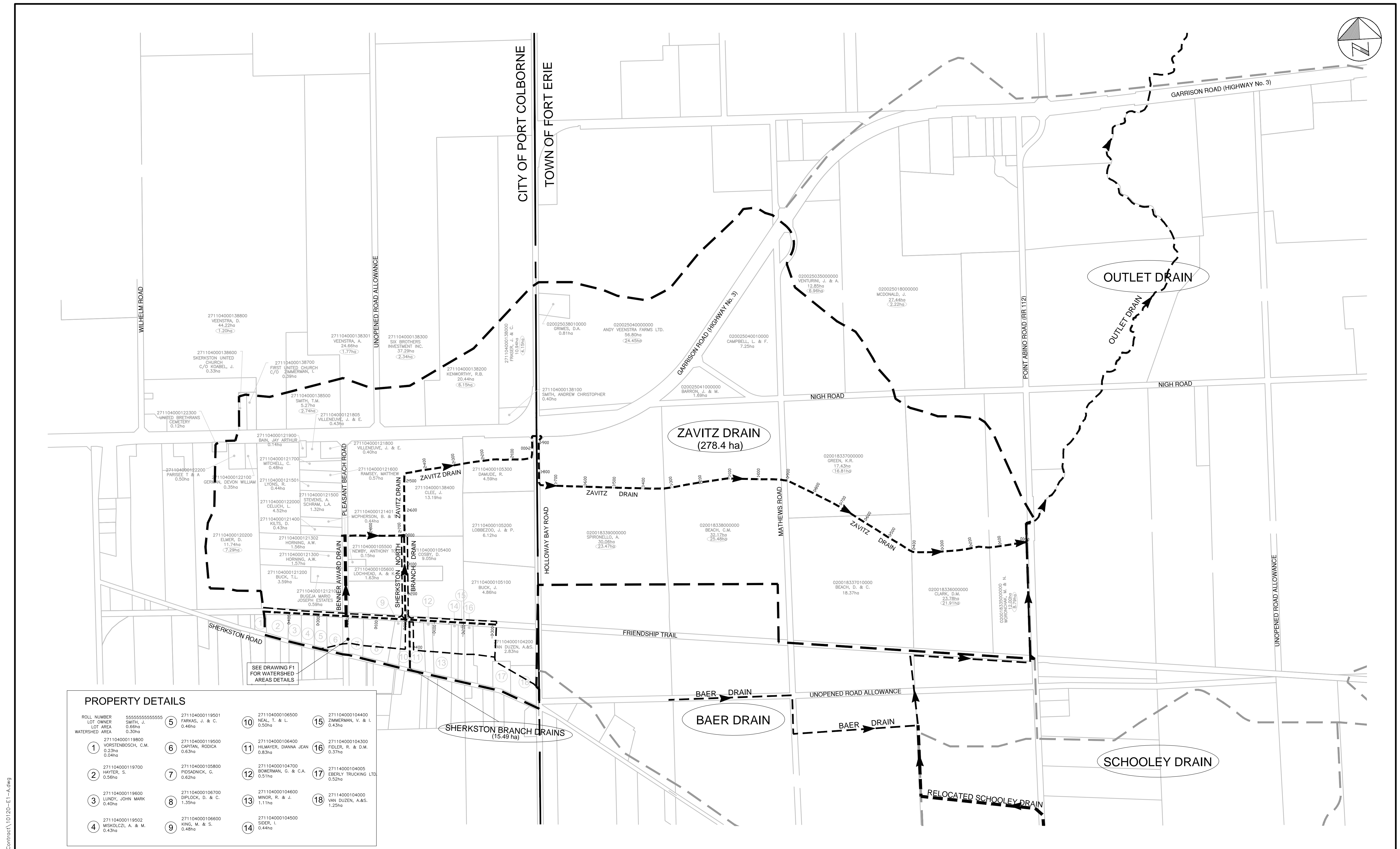
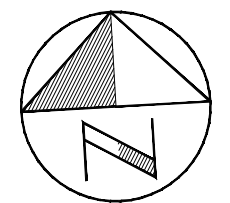


ZAVITZ DRAIN
 TOWN OF FORT ERIE
 CITY OF PORT COLBORNE

DETAILS



Contract No.	
Consultant File No.	110120
Drawing No.	E3



PROPERTY DETAILS			
ROLL NUMBER	LOT OWNER	LOT AREA	WATERSHED AREA
271104000119501	SMITH, J.	0.68ha	0.30ha
271104000119800	VORSTENBOSCH, C.M.	0.23ha	0.04ha
271104000119700	HAYTER, S.	0.56ha	
271104000119600	LUNDY, JOHN MARK	0.40ha	
271104000119502	MISKOLCZI, A. & M.	0.43ha	
271104000106500	FARKAS, J. & C.	0.46ha	
271104000119500	CAPITAN, RODICA	0.63ha	
271104000105800	PIDSADNICK, C.	0.62ha	
271104000106700	DIPLOCK, D. & C.	1.35ha	
271104000106600	KING, M. & S.	0.48ha	
271104000106500	NEAL, T. & L.	0.50ha	
271104000106400	HILMAYER, DIANNA JEAN	0.83ha	
271104000104700	BOWERMAN, G. & C.A.	0.51ha	
271104000104600	MINOR, R. & J.	1.11ha	
271104000104500	SIDER, I.	0.44ha	
271104000104400	ZIMMERMAN, V. & I.	0.43ha	
271104000104300	FIDLER, R. & D.M.	0.37ha	
271104000104200	EBERLY TRUCKING LTD.	0.52ha	
271104000104000	VAN DUZEN, A.&S.	1.25ha	

No.	DATE	BY	REVISIONS	MAN	CAD
4	07/04/14	DK	REVISED PER COURT OF REVISION		
3	06/05/13	DK	REVISED PER CITY COMMENTS		
2	2011	LV	ISSUED TO CITY FOR REVIEW		
1	2011	LV	ISSUED TO UTILITIES FOR REVIEW		

APPROVALS			
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Drawn	A.K.	Checked	L.V.
Scale	1:6000		
Date	APRIL 2014		

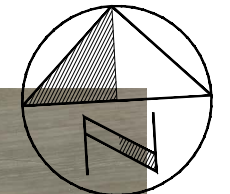
ZAVITZ DRAIN
 TOWN OF FORT ERIE
 CITY OF PORT COLBORNE

**ZAVITZ DRAIN AND SHERKSTON
 NORTH BRANCH DRAIN, EAST &
 WEST TRAIL BRANCH DRAINS
 WATERSHED**



Contract No.	
Consultant File No.	110120
Drawing No.	E-1A

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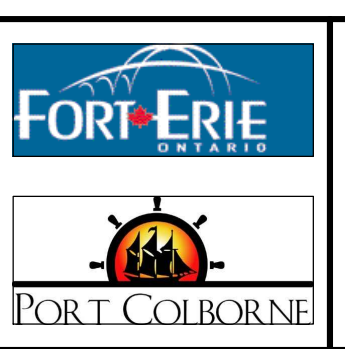
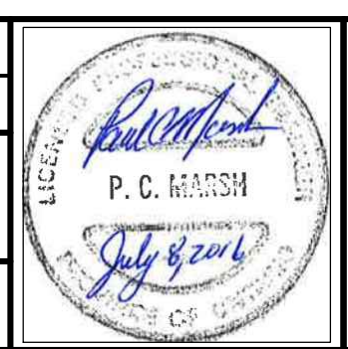


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No.	DATE	BY	REVISIONS	MAN	CAD
3	06/05/13	DK	REVISED PER CITY COMMENTS		
2	2011	LV	ISSUED TO CITY FOR REVIEW		
1	2011	LV	ISSUED TO UTILITIES FOR REVIEW		

APPROVALS	

Design	L.V.	Checked	P.D.S.
Drawn	A.K.	Checked	L.V.
Scale	1:6000		
Date	APRIL 2014		



ZAVITZ DRAIN
TOWN OF FORT ERIE
CITY OF PORT COLBORNE

ZAVITZ DRAIN AND SHERKSTON
NORTH BRANCH DRAIN, EAST &
WEST TRAIL BRANCH DRAINS
WATERSHED



Contract No.	
Consultant File No.	110120
Drawing No.	E-1B

Appendix F

Sherkston North Branch Drain

Assessment Schedules Allowances Cost Estimates Drawings

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

SHERKSTON NORTH BRANCH DRAIN - ESTIMATED COST SUMMARY

I. CONSTRUCTION	
A. General	\$ 3,629.93
B. Channel Improvement Works	
1) Private Lands	\$ 5,111.10
2) Roads and Utilities	\$ 530.25
C. Culvert Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
D. Erosion & Sediment Control Works	
1) Private Lands	\$ 10,903.68
2) Roads and Utilities	\$ 400.00
E. Other Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 19,800.00
SUBTOTAL	\$ 40,374.96
Contingency Allowance	\$ 4,834.32
TOTAL CONSTRUCTION	\$ 53,177.47
II. ALLOWANCES	\$ 1,832.15
III. ADMINISTRATION	\$ 16,360.39
TOTAL ESTIMATED COSTS - BRANCH DRAIN	\$ 71,370.01

SHERKSTON NORTH BRANCH DRAIN - DIVISION OF COSTS

	City of Port Colborne
A. Benefit Assessment (Section 22)	
1) Private Lands	\$ 3,199.47
2) Roads and Utilities	\$ -
B. Outlet Liability Assessment (Section 23)	
1) Private Lands	\$ 18,860.18
2) Roads and Utilities	\$ 14,644.39
C. Special Benefit Assessment (Section 24)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 34,665.97
D. Special Assessments (Section 26)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
TOTAL ESTIMATED COSTS - BRANCH DRAIN	\$ 71,370.01

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

SHERKSTON NORTH BRANCH DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
I. CONSTRUCTION								
SECTION "A" - GENERAL								
A1	SPC-A1	--	--	Bonding		L.S.		\$ 1,341.40
A2	SPC-A8	--	--	Allowance for Construction Signs, Traffic Control and Traffic Management Plan		L.S.		\$ 1,341.40
A3	SPC-A4	--	--	Construction Layout		L.S.		\$ 447.13
A4	SPC-A7	--	--	Install, Maintain and Remove Silt Control Devices		L.S.		\$ 500.00
TOTAL SECTION "A" - GENERAL								\$3,629.93
SECTION "B" - CHANNEL WORKS								
B1 Channel Improvement Works - Private Property								
B1.1		7.9	107.6	Roll # 271104000105400 (Cosby, D.) Excavate new open channel to design grade including leveling of spoil	99.7	m	\$ 15.00	\$ 1,495.95
B1.2		107.6	157.9	Roll # 271104000105600 (Lochhead, A. & K.) Excavate new open channel to design grade including leveling of spoil	50.3	m	\$ 15.00	\$ 754.35
B1.3		157.9	277.7	Roll # 271104000105400 (Cosby, D.) Excavate new open channel to design grade including leveling of spoil	119.8	m	\$ 15.00	\$ 1,796.55
B1.4		313.1	384.0	Roll # 271104000106500 (Neal, T. & L.) and Roll # 271104000106400 (Hilmayer, D. & Priebe, T.) Excavate new open channel to design grade including leveling of spoil	71.0	m	\$ 15.00	\$ 1,064.25
B1.5		0.0	7.9	Connection of Branch Drain to Zavitz Drain Excavate new branch drain to install rip rap	7.9	m	\$ 15.00	\$ 118.50
B2 Channel Improvement Works - Road/Utility Allowances								
B2.1		0.0	7.9	Connection of Branch Drain to Zavitz Drain Excavate new branch drain to install rip rap	7.9	m	\$ 15.00	\$ 118.50
B2.2		277.7	313.1	Friendship Trail at Branch Drain Excavate new branch drain to design grade including leveling of spoil	35.4	m	\$ 15.00	\$ 530.25
TOTAL SECTION "B" - CHANNEL WORKS								\$5,878.35
SECTION "C" - CULVERT WORKS								
C1 Culvert Improvement Works - Private Property								
C1.1		60.0	66.0	Roll # 271104000105400 (Cosby, D.) Supply and install new 500mm CSP culvert along Branch Drain	6.0	m	\$ 150.00	\$ 900.00
C1.2		250.0	256.0	Roll # 271104000105400 (Cosby, D.) Supply and install new 500mm CSP culvert along Branch Drain	6.0	m	\$ 150.00	\$ 900.00
C1.3		140.0	146.0	Roll # 271104000105600 (Lochhead, A. & K.) Supply and install new 500mm CSP culvert along Branch Drain	6.0	m	\$ 150.00	\$ 900.00
C2 Culvert Improvement Works - Road/Utility Allowances								
C2.1		--	--	Friendship Trail - Block 900mm dia. CSP Culvert with Unshrinkable Fill (4 MPa)	1.0	L.S.	\$ 150.00	\$ 150.00
C2.2		280.0	295.0	Friendship Trail - Supply and Install new 900mm dia. HDPE Culvert, Including Granular 'A' for Bedding and Cover and Native Backfill, Asphalt Restoration	15.0	m	\$ 250.00	\$ 3,750.00
TOTAL SECTION "C" - CULVERT WORKS								\$6,600.00

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

SHERKSTON NORTH BRANCH DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								
D1	Erosion and Sediment Control Works - Private Property							
D1.1		7.9	107.6	Roll # 271104000105400 (Cosby, D.) Clearing and brushing of proposed drain and working space	99.7	m	\$ 30.00	\$ 2,991.90
D1.2		107.6	157.9	Roll # 271104000105600 (Lochhead, A. & K.) Clearing and brushing of proposed drain and working space	50.3	m	\$ 30.00	\$ 1,508.70
D1.3		157.9	277.7	Roll # 271104000105400 (Cosby, D.) Clearing and brushing of proposed drain and working space	119.8	m	\$ 30.00	\$ 3,593.10
D1.4		313.1	384.0	Roll # 271104000106500 (Neal, T. & L.) and Roll # 271104000106400 (Hilmayer, D. & Priebe, T.) Clearing and brushing of proposed drain and working space	71.0	m	\$ 30.00	\$ 2,128.50
D1.5		7.9	107.6	Roll # 271104000105400 (Cosby, D.) Seeding of channel and working space	99.7	m	\$ 2.00	\$ 199.46
D1.6		107.6	157.9	Roll # 271104000105600 (Lochhead, A. & K.) Seeding of channel and working space	50.3	m	\$ 2.00	\$ 100.58
D1.7		157.9	277.7	Roll # 271104000105400 (Cosby, D.) Seeding of channel and working space	119.8	m	\$ 2.00	\$ 239.54
D1.8		313.1	384.0	Roll # 271104000106500 (Neal, T. & L.) and Roll # 271104000106400 (Hilmayer, D. & Priebe, T.) Seeding of channel and working space	71.0	m	\$ 2.00	\$ 141.90
D2	Erosion and Sediment Control Works - Road/Utility Allowances							
D2.1		277.7	313.1	Friendship Trail at Branch Drain Clearing and brushing of proposed drain and working space	35.4	m	\$ 30.00	\$ 1,060.50
D2.2		277.7	313.1	Friendship Trail at Branch Drain Seeding of channel and working space	35.4	m	\$ 2.00	\$ 70.70
D2.3				Supply and install rip rap complete with filter fabric underlay at end of 900mmØ CSP Culvert & Zavitz Connection	10.0	t	\$ 40.00	\$ 400.00
TOTAL SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								\$12,434.88
SECTION "E" - OTHER WORKS								
E1	Other Improvement Works - Private Property							
E2.1		384.0	474.0	Roll # 271104000106500 ((Neal, T. & L.) and Roll # 271104000106400 (Hilmayer, D. & Priebe, T.) Supply and install 375mm dia. HDPE Storm Sewer Pipe, Including Granular 'A' for Bedding and Cover and Native Backfill	90.0	m	\$ 200.00	\$ 18,000.00
E2	Other Improvement Works - Road/Utility Allowances							
E2.2		--	--	Sherkston Road - Supply and Install 600 x 600mm Catchbasin	1.0	ea	\$ 1,800.00	\$ 1,800.00
TOTAL SECTION "E" - OTHER WORKS								\$19,800.00
SUBTOTAL								\$ 48,343.16
CONTINGENCY ALLOWANCE								\$ 4,834.32
TOTAL CONSTRUCTION - SHERKSTON NORTH BRANCH DRAIN								\$ 53,177.47
II. ALLOWANCES								
1. Allowances for Right-of-Way (Section 29)								\$ 465.35
2. Allowances for Damages (Section 30)								\$ 1,366.80
3. Allowances for Existing Drains (Section 31)								\$ -
4. Allowances due to Insufficient Outlet (Section 32)								\$ -
5. Allowances for Loss of Access (Section 33)								\$ -
TOTAL ALLOWANCES - SHERKSTON NORTH BRANCH DRAIN								\$ 1,832.15
III. ADMINISTRATION AND ENGINEERING								

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

SHERKSTON NORTH BRANCH DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
1.				Interim Financing Allowance				\$ 1,595.32
2.				Preliminary Design and Report				\$ -
4.				Survey, Design, Plans, Engineer's Report and Assessment Schedule (AMEC)*				\$ 10,417.59
5.				Expenses				\$ 625.06
6.				Tendering, Contract Administration and Construction Inspection (estimated)				\$ 3,722.42
TOTAL ADMINISTRATION AND ENGINEERING - SHERKSTON NORTH BRANCH DRAIN								\$ 16,360.39
TOTAL ESTIMATED COSTS - SHERKSTON NORTH BRANCH DRAIN								\$ 71,370.01

** Does not include any costs associated with Ontario Drainage Tribunal Hearing, if required.*

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

LANDOWNER INFORMATION - SHERKSTON NORTH BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name*	Address	Property Value (\$/ha)	Area				OMAFRA Qualified	Abutting Length				Travel Length	
						Wooded	Worked	Surfaced	Tiled Out		Total	Left		Right		
												From Sta	To Sta	From Sta		To Sta
Landowners in the City of Port Colborne																
271104000119800			VORSTENBOSCH, C.M.					0.036			0.04				294.5	
271104000119700			HAYTER, S.					0.556			0.56				294.5	
271104000119600			BILODEAU, S.					0.404			0.40				294.5	
271104000119502			MISKOLCZI, A. & M.					0.430			0.43				294.5	
271104000119501			FARKAS, J. & C.					0.002			0.00				474.0	
271104000119501			FARKAS, J. & C.					0.464			0.46				294.5	
271104000119500			COSBY, G. & N.					0.091			0.09				474.0	
271104000119500			COSBY, G. & N.					0.539			0.54				294.5	
271104000105800			PIDSADNICK, G.					0.174			0.17				474.0	
271104000105800			PIDSADNICK, G.					0.446			0.45				294.5	
271104000106700			DIPLOCK, D. & C.					0.399			0.40				474.0	
271104000106700			DIPLOCK, D. & C.					0.943			0.94				294.5	
271104000106600			KING, M. & S.					0.201			0.20				474.0	
271104000106600			KING, M. & S.					0.277			0.28				294.5	
271104000104700			BOWERMAN, G. & C.A.					0.217			0.22				474.0	
271104000104700			BOWERMAN, G. & C.A.					0.287			0.29				294.5	
271104000104600			MINOR, R. & J.					0.483			0.48				474.0	
271104000104600			MINOR, R. & J.					0.627			0.63				294.5	
271104000104500			SIDER, I.					0.202			0.20				474.0	
271104000104500			SIDER, I.					0.236			0.24				294.5	
271104000104400			ZIMMERMAN, V. & I.					0.202			0.20				474.0	
271104000104400			ZIMMERMAN, V. & I.					0.226			0.23				294.5	
271104000104300			FIDLER, R. & D.M.					0.366			0.37				474.0	
271104000104300			FIDLER, R. & D.M.					0.29			0.29				294.5	
271104000104000			VAN DUZEN, A. & S.				0.29	1.250			1.25				474.0	
271104000104200			VAN DUZEN, A. & S.					0.770			0.77				294.5	
271104000104005			EBERLY TRUCKING LTD.					0.513			0.51				474.0	
271104000106500			NEAL, T. & L.		\$ 5,000			0.358			0.36	294.5	474.0	294.5	474.0	
271104000106400			HILMAYER, D. & PRIEBE, T.		\$ 5,000			0.831			0.83	294.5	474.0	294.5	474.0	
271104000105400			COSBY, D.		\$ 2,000	0.244					0.24	157.9	277.7	157.9	277.7	
271104000105400			COSBY, D.		\$ 2,000	0.206					0.21	7.9	107.6	7.9	107.6	
271104000105600			LOCHHEAD, A. & K.		\$ 1,000	0.10					0.10	107.6	157.9	107.6	157.9	
TOTAL : Landowners in the City of Port Colborne								0.84	11.53	0.00	0.00	12.37				
City of Port Colborne Road Allowances																
Pleasant Beach Road (from East & West Trail Branch Drains)								0.210			0.21				294.5	
Pleasant Beach Road (from Sherkston North Branch Drain)								0.062			0.06				474.0	
Sherkston Road Outlet								0.663			0.66				474.0	
Holloway Bay Road								0.060			0.06				474.0	
TOTAL: City of Port Colborne Road Allowances								0.00	0.00	1.00	0.00	1.00				
Other Lands in Port Colborne																
Friendship Trail - West of Pleasant Beach Road								0.431			0.43				294.5	
Friendship Trail - Pleasant Beach Road to 200m east of Pleasant Beach Road								0.310			0.31				294.5	
Friendship Trail - 145m west of Holloway Bay Road to 200m east of Pleasant Beach Road								0.554			0.55				294.5	
TOTAL: Other Lands in Port Colborne								0.00	0.00	1.29	0.00	1.29				
TOTAL: SHERKSTON NORTH BRANCH DRAIN								0.84	11.53	2.29	0.00	14.66				

* Some properties may contain multiple assessments due to split drainage on their property and varying travel lengths for such areas. Such properties have been grouped together for ease of understanding for the reader

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

ALLOWANCE CALCULATIONS - SHERKSTON NORTH BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Property Value (\$/ha)	Abutting Length				Channel Left				Channel Right				Total Allowances	
					Left		Right		Existing Top Width	Proposed Top Width	Length (m)	Area (ha)	Existing Top Width	Proposed Top Width	Length (m)	Area (ha)	Sec 29 (\$)	Sec 30 (\$)
					From Sta	To Sta	From Sta	To Sta										
Landowners in the City of Port Colborne																		
271104000119800			VORSTENBOSCH, C.M.	\$ -														
271104000119700			HAYTER, S.	\$ -													\$ -	
271104000119600			BILODEAU, S.	\$ -													\$ -	
271104000119502			MISKOLCZI, A. & M.	\$ -													\$ -	
271104000119501			FARKAS, J. & C.	\$ -													\$ -	
271104000119501			FARKAS, J. & C.	\$ -													\$ -	
271104000119500			COSBY, G. & N.	\$ -													\$ -	
271104000119500			COSBY, G. & N.	\$ -													\$ -	
271104000105800			PIDSADNICK, G.	\$ -													\$ -	
271104000105800			PIDSADNICK, G.	\$ -													\$ -	
271104000106700			DIPLOCK, D. & C.	\$ -													\$ -	
271104000106700			DIPLOCK, D. & C.	\$ -													\$ -	
271104000106600			KING, M. & S.	\$ -													\$ -	
271104000106600			KING, M. & S.	\$ -													\$ -	
271104000104700			BOWERMAN, G. & C.A.	\$ -													\$ -	
271104000104700			BOWERMAN, G. & C.A.	\$ -													\$ -	
271104000104600			MINOR, R. & J.	\$ -													\$ -	
271104000104600			MINOR, R. & J.	\$ -													\$ -	
271104000104500			SIDER, I.	\$ -													\$ -	
271104000104500			SIDER, I.	\$ -													\$ -	
271104000104400			ZIMMERMAN, V. & I.	\$ -													\$ -	
271104000104400			ZIMMERMAN, V. & I.	\$ -													\$ -	
271104000104300			FIDLER, R. & D.M.	\$ -													\$ -	
271104000104300			FIDLER, R. & D.M.	\$ -													\$ -	
271104000104000			VAN DUZEN, A. & S.	\$ -													\$ -	
271104000104200			VAN DUZEN, A. & S.	\$ -													\$ -	
271104000104005			EBERLY TRUCKING LTD.	\$ -													\$ -	
271104000106500			NEAL, T. & L.	\$ 5,000	294.5	470.0	294.5	470.0			175.5			175.5			\$ 439	
271104000106400			HILMAYER, D. & PRIEBE, T.	\$ 5,000	294.5	470.0	294.5	470.0		2.2	90.0	0.020		4.8	89.5	0.043	\$ 314	
271104000105400			COSBY, D.	\$ 2,000	157.9	277.7	157.9	277.7		1.6	119.8	0.019		1.6	119.8	0.019	\$ 77	
271104000105400			COSBY, D.	\$ 2,000	7.9	107.6	7.9	107.6		1.6	99.7	0.016		1.6	99.7	0.016	\$ 64	
271104000105600			LOCHHEAD, A. & K.	\$ 1,000	107.6	157.9	107.6	157.9		1.1	50.3	0.006		1.1	50.3	0.006	\$ 11	
TOTAL : Landowners in the City of Port Colborne											535.3	0.060			534.8	0.084	\$ 465	\$ 1,367

City of Port Colborne Road Allowances

Pleasant Beach Road (from East & West Trail Branch Drains)																	\$ -	\$ -
Pleasant Beach Road (from Sherkston North Branch Drain)																	\$ -	\$ -
Sherkston Road Outlet																	\$ -	\$ -
Holloway Bay Road																	\$ -	\$ -
TOTAL: City of Port Colborne Road Allowances																	\$ -	\$ -

Other Lands in Port Colborne

Friendship Trail - West of Pleasant Beach Road																	\$ -	\$ -
Friendship Trail - Pleasant Beach Road to 200m east of Pleasant Beach Road																	\$ -	\$ -
Friendship Trail - 145m west of Holloway Bay Road to 200m east of Pleasant Beach Road																	\$ -	\$ -

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - SHERKSTON NORTH BRANCH DRAIN

LANDOWNER NAME	ADDRESS	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	BENEFIT DIRECT (\$)	ASSESS ABUT (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)		SUMMARY NET ASSESS. (\$)
1		2	3	4	5		6			7	8	9	10	11	12	13
Landowners in the City of Port Colborne																
VORSTENBOSCH, C.M.		271104000119800			0.04		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 48	\$ 48	\$ 48		\$ 48
HAYTER, S.		271104000119700			0.56		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 736	\$ 736	\$ 736		\$ 736
BILODEAU, S.		271104000119600			0.40		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 534	\$ 534	\$ 534		\$ 534
MISKOLCZI, A. & M.		271104000119502			0.43		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 569	\$ 569	\$ 569		\$ 569
FARKAS, J. & C.		271104000119501			0.00		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4	\$ 4	\$ 4		\$ 4
FARKAS, J. & C.		271104000119501			0.46		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 614	\$ 614	\$ 614		\$ 614
COSBY, G. & N.		271104000119500			0.09		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 194	\$ 194	\$ 194		\$ 194
COSBY, G. & N.		271104000119500			0.54		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 713	\$ 713	\$ 713		\$ 713
PIDSADNICK, G.		271104000105800			0.17		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 370	\$ 370	\$ 370		\$ 370
PIDSADNICK, G.		271104000105800			0.45		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 590	\$ 590	\$ 590		\$ 590
DIPLOCK, D. & C.		271104000106700			0.40		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 849	\$ 849	\$ 849		\$ 849
DIPLOCK, D. & C.		271104000106700			0.94		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,247	\$ 1,247	\$ 1,247		\$ 1,247
KING, M. & S.		271104000106600			0.20		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 428	\$ 428	\$ 428		\$ 428
KING, M. & S.		271104000106600			0.28		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 366	\$ 366	\$ 366		\$ 366
BOWERMAN, G. & C.A.		271104000104700			0.22		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 462	\$ 462	\$ 462		\$ 462
BOWERMAN, G. & C.A.		271104000104700			0.29		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 380	\$ 380	\$ 380		\$ 380
MINOR, R. & J.		271104000104600			0.48		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,028	\$ 1,028	\$ 1,028		\$ 1,028
MINOR, R. & J.		271104000104600			0.63		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 829	\$ 829	\$ 829		\$ 829
SIDER, I.		271104000104500			0.20		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 430	\$ 430	\$ 430		\$ 430
SIDER, I.		271104000104500			0.24		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 312	\$ 312	\$ 312		\$ 312
ZIMMERMAN, V. & I.		271104000104400			0.20		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 430	\$ 430	\$ 430		\$ 430
ZIMMERMAN, V. & I.		271104000104400			0.23		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 299	\$ 299	\$ 299		\$ 299
FIDLER, R. & D.M.		271104000104300			0.37		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 779	\$ 779	\$ 779		\$ 779
FIDLER, R. & D.M.		271104000104300			0.29		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 192	\$ 192	\$ 192		\$ 192
VAN DUZEN, A. & S.		271104000104000			1.25		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,661	\$ 2,661	\$ 2,661		\$ 2,661
VAN DUZEN, A. & S.		271104000104200			0.77		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,018	\$ 1,018	\$ 1,018		\$ 1,018
EBERLY TRUCKING LTD.		271104000104005			0.51		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,092	\$ 1,092	\$ 1,092		\$ 1,092
NEAL, T. & L.		271104000106500			0.36	359.0	\$ 439	\$ -	\$ 359	\$ 359	\$ -	\$ 473	\$ 832	\$ 394		\$ 394
HILMAYER, D. & PRIEBE, T.		271104000106400			0.83	359.0	\$ 753	\$ -	\$ 359	\$ 359	\$ -	\$ 1,099	\$ 1,458	\$ 706		\$ 706
COSBY, D.		271104000105400			0.24	239.6	\$ 316	\$ 647	\$ 240	\$ 887	\$ -	\$ 87	\$ 973	\$ 657		\$ 657
COSBY, D.		271104000105400			0.21	199.4	\$ 263	\$ 647	\$ 199	\$ 847	\$ -	\$ 4	\$ 850	\$ 587		\$ 587
LOCHHEAD, A. & K.		271104000105600			0.10	100.6	\$ 61	\$ 647	\$ 101	\$ 748	\$ -	\$ 24	\$ 772	\$ 711		\$ 711
TOTAL : Landowners in the City of Port Colborne					12.37	1257.60	\$ 1,832	\$ 1,942	\$ 1,258	\$ 3,199	\$ -	\$ 18,860	\$ 22,060	\$ 20,228		\$ 20,228
City of Port Colborne Road Allowances																
Pleasant Beach Road (from East & West Trail Branch Drains)					0.21		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,111	\$ 1,111	\$ 1,111		\$ 1,111
Pleasant Beach Road (from Sherkston North Branch Drain)					0.06		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 528	\$ 528	\$ 528		\$ 528
Sherkston Road Outlet					0.66		\$ -	\$ -	\$ -	\$ -	\$ 28,481	\$ 5,645	\$ 34,126	\$ 34,126		\$ 34,126
Holloway Bay Road					0.06		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 511	\$ 511	\$ 511		\$ 511
TOTAL: City of Port Colborne Road Allowances					1.00		\$ -	\$ -	\$ -	\$ -	\$ 28,481	\$ 7,794	\$ 36,275	\$ 36,275		\$ 36,275

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - SHERKSTON NORTH BRANCH DRAIN

LANDOWNER NAME	ADDRESS	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	BENEFIT DIRECT (\$)	ASSESS ABUT (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)		SUMMARY NET ASSESS. (\$)
1		2	3	4	5		6			7	8	9	10	11	12	13
Other Lands in Port Colborne																
Friendship Trail - West of Pleasant Beach Road					0.43		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,280	\$ 2,280	\$ 2,280		
Friendship Trail - Pleasant Beach Road to 200m east of Pleasant Beach Road					0.31		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,639	\$ 1,639	\$ 1,639		\$ 13,035
Friendship Trail - 145m west of Holloway Bay Road to 200m east of Pleasant Beach Road					0.55		\$ -	\$ -	\$ -	\$ -	\$ 6,185	\$ 2,931	\$ 9,116	\$ 9,116		
TOTAL: Other Lands in Port Colborne					1.29		\$ -	\$ -	\$ -	\$ -	\$ 6,185	\$ 6,850	\$ 13,035	\$ 13,035		\$ 13,035
TOTAL: SHERKSTON NORTH BRANCH DRAIN					14.66	1257.60	\$ 1,832	\$ 1,942	\$ 1,258	\$ 3,199	\$ 34,666	\$ 33,505	\$ 71,370	\$ 69,538		\$ 69,538

Future Maintenance costs shall be assessed in the same relative proportion as the outlet assessment for each property.

Description of Information contained in the Assessment Schedule

- Column 1 Name of Landowner from Assessment Roll maintained by MPAC.
- Column 2 Property Roll Number from Assessment Roll maintained by MPAC.
- Column 3 Township Concession where lands located.
- Column 4 Township Lot where lands located.
- Column 5 Approx. area of land, in hectares, to be drained by Sherkston North Branch Drain.
- Column 6 In accordance with Sections 29 and 30 of the Drainage Act, allowance to be paid to landowner based on value of land lost due to:
 - construction or improvement of drainage works
 - disposal of excavated material
 - damage to trees, lawns, fences, lands and crops
- Column 7 In accordance with Section 22 of the Drainage Act, increased value of land adjacent to the Drain due to improvement to the Drain
- Column 8 In accordance with Section 24 of the Drainage Act, additional work to the drain which has no effect on the functioning of the Drain
- Column 9 In accordance Section 23 of the Drainage Act, increased value of land due to improved outlet for lands to be drained.
- Column 10 Total Assessment is the Sum of Column 7 (Benefit), Column 8 (Special Benefit), and Column 9 (Outlet)
- Column 11 Net Assessment is Column 10 (Total Assessment) less Column 6 (Total Allowance).
- Column 12 * Indicates agricultural land which is potentially eligible for OMAFRA subsidy.
 Net Assessment can be calculated by subtracting the OMAFRA subsidy from the Net Assessment.
- Column 13 Summary of Net Assessment is the entire assessment to one property owner. Some properties may contain multiple assessments due to split drainage on their property and varying travel lengths for such areas.

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

DIRECT BENEFIT CALCULATIONS - SHERKSTON NORTH BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 50%	Culvert Works 50%	Erosion Control 25%	Other Works 50%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL DIRECT BENEFIT
Landowners in the City of Port Colborne												
271104000119800			VORSTENBOSCH, C.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119700			HAYTER, S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119600			BILODEAU, S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119502			MISKOLCZI, A. & M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119501			FARKAS, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119501			FARKAS, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119500			COSBY, G. & N.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119500			COSBY, G. & N.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105800			PIDSADNICK, G.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105800			PIDSADNICK, G.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106700			DIPLOCK, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106700			DIPLOCK, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106600			KING, M. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106600			KING, M. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104700			BOWERMAN, G. & C.A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104700			BOWERMAN, G. & C.A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104600			MINOR, R. & J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104600			MINOR, R. & J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104500			SIDER, I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104500			SIDER, I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104400			ZIMMERMAN, V. & I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104400			ZIMMERMAN, V. & I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104300			FIDLER, R. & D.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104300			FIDLER, R. & D.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104000			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104200			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104005			EBERLY TRUCKING LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106500			NEAL, T. & L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106400			HILMAYER, D. & PRIEBE, T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105400			COSBY, D.		900			\$ 450	\$ 45	\$ 495	\$ 152	\$ 647
271104000105400			COSBY, D.		900			\$ 450	\$ 45	\$ 495	\$ 152	\$ 647
271104000105600			LOCHHEAD, A. & K.		900			\$ 450	\$ 45	\$ 495	\$ 152	\$ 647
TOTAL : Landowners in the City of Port Colborne				\$ -	\$ 2,700	\$ -	\$ -	\$ 1,350	\$ 135	\$ 1,485	\$ 457	\$ 1,942
City of Port Colborne Road Allowances												
Pleasant Beach Road (from East & West Trail Branch Drains)								\$ -	\$ -	\$ -	\$ -	\$ -
Pleasant Beach Road (from Sherkston North Branch Drain)								\$ -	\$ -	\$ -	\$ -	\$ -
Sherkston Road Outlet								\$ -	\$ -	\$ -	\$ -	\$ -
Holloway Bay Road								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL: City of Port Colborne Road Allowances				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Lands in Port Colborne												
Friendship Trail - West of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - Pleasant Beach Road to 200m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
Friendship Trail - 145m west of Holloway Bay Road to 200m east of Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL: Other Lands in Port Colborne				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL: SHERKSTON NORTH BRANCH DRAIN				\$ -	\$ 2,700	\$ -	\$ -	\$ 1,350	\$ 135	\$ 1,485	\$ 457	\$ 1,942

ZAVITZ MUNICIPAL DRAIN - SHERKSTON NORTH BRANCH DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

SPECIAL BENEFIT CALCULATIONS - SHERKSTON NORTH BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 100%	Culvert Works 100%	Erosion Control 100%	Other Works 100%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin	TOTAL SPECIAL BENEFIT
Landowners in the City of Port Colborne												
271104000119800			VORSTENBOSCH, C.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119700			HAYTER, S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119600			BILODEAU, S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119502			MISKOLCZI, A. & M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119501			FARKAS, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119501			FARKAS, J. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119500			COSBY, G. & N.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000119500			COSBY, G. & N.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105800			PIDSADNICK, G.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105800			PIDSADNICK, G.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106700			DIPLOCK, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106700			DIPLOCK, D. & C.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106600			KING, M. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106600			KING, M. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104700			BOWERMAN, G. & C.A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104700			BOWERMAN, G. & C.A.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104600			MINOR, R. & J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104600			MINOR, R. & J.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104500			SIDER, I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104500			SIDER, I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104400			ZIMMERMAN, V. & I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104400			ZIMMERMAN, V. & I.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104300			FIDLER, R. & D.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104300			FIDLER, R. & D.M.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104000			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104200			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000104005			EBERLY TRUCKING LTD.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106500			NEAL, T. & L.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000106400			HILMAYER, D. & PRIEBE, T.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105400			COSBY, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105400			COSBY, D.					\$ -	\$ -	\$ -	\$ -	\$ -
271104000105600			LOCHHEAD, A. & K.					\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL : Landowners in the City of Port Colborne				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
City of Port Colborne Road Allowances												
Pleasant Beach Road (from East & West Trail Branch Drains)								\$ -	\$ -	\$ -	\$ -	\$ -
Pleasant Beach Road (from Sherkston North Branch Drain)								\$ -	\$ -	\$ -	\$ -	\$ -
Sherkston Road Outlet							19800	\$ 19,800	\$ 1,980	\$ 21,780	\$ 6,701	\$ 28,481
Holloway Bay Road								\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL: City of Port Colborne Road Allowances				\$ -	\$ -	\$ -	\$ 19,800	\$ 19,800	\$ 1,980	\$ 21,780	\$ 6,701	\$ 28,481

Appendix G

East & West Trail Branch Drains

Assessment Schedules Allowances Cost Estimates Drawings

ZAVITZ MUNICIPAL DRAIN - EAST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

EAST TRAIL BRANCH DRAIN - ESTIMATED COST SUMMARY

I. CONSTRUCTION	
A. General	\$ 1,277.53
B. Channel Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 4,684.80
C. Culvert Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
D. Erosion & Sediment Control Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 9,994.24
E. Other Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
SUBTOTAL	\$ 15,956.57
Contingency Allowance	\$ 1,595.66
TOTAL CONSTRUCTION	\$ 17,552.23
II. ALLOWANCES	\$ -
III. ADMINISTRATION	\$ 4,320.69
TOTAL ESTIMATED COSTS - EAST TRAIL	\$ 21,872.92

EAST TRAIL BRANCH DRAIN - DIVISION OF COSTS

	City of Port Colborne
A. Benefit Assessment (Section 22)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 598.40
B. Outlet Liability Assessment (Section 23)	
1) Private Lands	\$ 6,183.24
2) Roads and Utilities	\$ -
C. Special Benefit Assessment (Section 24)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 15,091.28
D. Special Assessments (Section 26)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
TOTAL ESTIMATED COSTS - EAST TRAIL	\$ 21,872.92

ZAVITZ MUNICIPAL DRAIN - EAST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

EAST TRAIL BRANCH DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
I. CONSTRUCTION								
SECTION "A" - GENERAL								
A1	SPC-A1	--	--	Bonding		L.S.		\$ 440.37
A2	SPC-A8	--	--	Allowance for Construction Signs, Traffic Control and Traffic Management Plan		L.S.		\$ 440.37
A3	SPC-A4	--	--	Construction Layout		L.S.		\$ 146.79
A4	SPC-A7	--	--	Install, Maintain and Remove Silt Control Devices		L.S.		\$ 250.00
TOTAL SECTION "A" - GENERAL								\$1,277.53
SECTION "B" - CHANNEL WORKS								
B1	Channel Improvement Works - Private Property - N/A							
B2	Channel Improvement Works - Road/Utility Allowances							
B2.3		0.0	312.32	Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road Clean out existing open channel including trucking of spoil	312.32	m	\$ 15.00	\$ 4,684.80
TOTAL SECTION "B" - CHANNEL WORKS								\$4,684.80
SECTION "C" - CULVERT WORKS								
C1	Culvert Improvement Works - Private Property - N/A							
C2	Culvert Improvement Works - Road/Utility Allowances - N/A							
TOTAL SECTION "C" - CULVERT WORKS								\$0.00
SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								
D1	Erosion and Sediment Control Works - Private Property - N/A							
D2	Erosion and Sediment Control Works - Road/Utility Allowances							
D2.3		0.0	312.32	Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road Clearing and brushing of south ditch of Friendship Trail and working space	312.32	m	\$ 30.00	\$ 9,369.60
D2.6		0.0	312.32	Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road Hydroseeding of south ditch of Friendship Trail and working space	312.32	m	\$ 2.00	\$ 624.64
TOTAL SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								\$9,994.24
SECTION "E" - OTHER WORKS								
E1	Other Improvement Works - Private Property - N/A							
E2	Other Improvement Works - Road/Utility Allowances - N/A							
TOTAL SECTION "E" - OTHER WORKS								\$0.00
SUBTOTAL								\$ 15,956.57
CONTINGENCY ALLOWANCE								\$ 1,595.66
TOTAL CONSTRUCTION - EAST TRAIL BRANCH DRAIN								\$ 17,552.23
II. ALLOWANCES								
1. Allowances for Right-of-Way (Section 29)								\$ -
2. Allowances for Damages (Section 30)								\$ -
3. Allowances for Existing Drains (Section 31)								\$ -
4. Allowances due to Insufficient Outlet (Section 32)								\$ -
5. Allowances for Loss of Access (Section 33)								\$ -
TOTAL ALLOWANCES - EAST TRAIL BRANCH DRAIN								\$ -
III. ADMINISTRATION AND ENGINEERING								
1. Interim Financing Allowance								\$ 526.57
2. Preliminary Design and Report								\$ -
4. Survey, Design, Plans, Engineer's Report and Assessment Schedule (AMEC)*								\$ 2,375.43
5. Expenses								\$ 190.03
6. Tendering, Contract Administration and Construction Inspection (estimated)								\$ 1,228.66
TOTAL ADMINISTRATION AND ENGINEERING - EAST TRAIL BRANCH DRAIN								\$ 4,320.69
TOTAL ESTIMATED COSTS - EAST TRAIL BRANCH DRAIN								\$ 21,872.92

* Does not include any costs associated with Ontario Drainage Tribunal Hearing, if required.

ZAVITZ MUNICIPAL DRAIN - EAST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

LANDOWNER INFORMATION - EAST TRAIL BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Property Value (\$/ha)	Area					OMAFRA Qualified
					Wooded	Worked	Surfaced	Tiled Out	Total	
Landowners in the City of Port Colborne										
271104000104200			VAN DUZEN, A. & S.			0.770				0.77
271104000104300			FIDLER, R. & D.M.		0.29					0.29
271104000104400			ZIMMERMAN, V. & I.			0.226				0.23
271104000104500			SIDER, I.			0.236				0.24
271104000104600			MINOR, R. & J.			0.627				0.63
271104000104700			BOWERMAN, G. & C.A.			0.287				0.29
271104000106400			HILMAYER, D. & PRIEBE, T.			0.353				0.35
TOTAL : Landowners in the City of Port Colborne					0.29	2.50	0.00	0.00		2.79
Other Lands in Port Colborne										
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road							0.554			0.55
TOTAL: Other Lands in Port Colborne					0.00	0.00	0.55	0.00		0.55
TOTAL: EAST TRAIL BRANCH DRAIN					0.29	2.50	0.55	0.00		3.34

ZAVITZ MUNICIPAL DRAIN - EAST TRAIL BRANCH DRAIN

TOWN OF FORT ERIE & CITY OF PORT COLBORNE

Regional Municipality of Niagara

ALLOWANCE CALCULATIONS - EAST TRAIL BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Property Value (\$/ha)	Abutting Length				Channel Left			Working Space		Working Space Allow		Total Allowances			
					Left		Right		Existing Top Width	Proposed Top Width	Length (m)	Right Width	Left Area (ha)	Sec 29	Sec 30 100%	Sec 29 (\$)	Sec 30 (\$)		
					From Sta	To Sta	From Sta	To Sta											
Landowners in the City of Port Colborne																			
271104000104200			VAN DUZEN, A. & S.	\$ -										\$ -	\$ -	\$ -	\$ -		
271104000104300			FIDLER, R. & D.M.	\$ -										\$ -	\$ -	\$ -	\$ -		
271104000104400			ZIMMERMAN, V. & I.	\$ -										\$ -	\$ -	\$ -	\$ -		
271104000104500			SIDER, I.	\$ -										\$ -	\$ -	\$ -	\$ -		
271104000104600			MINOR, R. & J.	\$ -										\$ -	\$ -	\$ -	\$ -		
271104000104700			BOWERMAN, G. & C.A.	\$ -										\$ -	\$ -	\$ -	\$ -		
271104000106400			HILMAYER, D. & PRIEBE, T.	\$ -										\$ -	\$ -	\$ -	\$ -		
TOTAL : Landowners in the City of Port Colborne																			
Other Lands in Port Colborne																			
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road							299.2		299.2			299.2				\$ -	\$ -	\$ -	\$ -
TOTAL: Other Lands in Port Colborne																			
TOTAL: EAST TRAIL BRANCH DRAIN																			
														\$ -	\$ -	\$ -	\$ -		
														Total Allowances		\$ -			

ZAVITZ MUNICIPAL DRAIN - EAST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - EAST TRAIL BRANCH DRAIN

LANDOWNER NAME	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	BENEFIT DIRECT (\$)	ASSESS ABUT (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)	
1	2	3	4	5		6			7	8	9	10	11	12
Landowners in the City of Port Colborne														
VAN DUZEN, A. & S.	271104000104200			0.77		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,107	\$ 3,107	\$ 3,107	
FIDLER, R. & D.M.	271104000104300			0.29		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 509	\$ 509	\$ 509	
ZIMMERMAN, V. & I.	271104000104400			0.23		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 699	\$ 699	\$ 699	
SIDER, I.	271104000104500			0.24		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 626	\$ 626	\$ 626	
MINOR, R. & J.	271104000104600			0.63		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 901	\$ 901	\$ 901	
BOWERMAN, G. & C.A.	271104000104700			0.29		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 256	\$ 256	\$ 256	
HILMAYER, D. & PRIEBE, T.	271104000106400			0.35		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 85	\$ 85	\$ 85	
TOTAL : Landowners in the City of Port Colborne				2.79		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 6,183	\$ 6,183	\$ 6,183	
Other Lands in Port Colborne														
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant				0.55	598.4	\$ -	\$ -	\$ 598	\$ 598	\$ 15,091	\$ -	\$ 15,690	\$ 15,690	
TOTAL: Other Lands in Port Colborne				0.55	598.4	\$ -	\$ -	\$ 598	\$ 598	\$ 15,091	\$ -	\$ 15,690	\$ 15,690	
TOTAL: EAST TRAIL BRANCH DRAIN				3.34	598.4	\$ -	\$ -	\$ 598	\$ 598	\$ 15,091	\$ 6,183	\$ 21,873	\$ 21,873	

Future Maintenance costs shall be assessed 50% to the Friendship trail and 50% to private lands as per the outlet assessment.

Description of Information contained in the Assessment Schedule

- Column 1 Name of Landowner from Assessment Roll maintained by MPAC.
Column 2 Property Roll Number from Assessment Roll maintained by MPAC.
Column 3 Township Concession where lands located.
Column 4 Township Lot where lands located.
Column 5 Approx. area of land, in hectares, to be drained by East Trail Branch Drain
Column 6 In accordance with Sections 29 and 30 of the Drainage Act, allowance to be paid to landowner based on value of land lost due to:
- construction or improvement of drainage works
- disposal of excavated material
- damage to trees, lawns, fences, lands and crops
Column 7 In accordance with Section 22 of the Drainage Act, increased value of land adjacent to the Drain due to improvement to the Drain
Column 8 In accordance with Section 24 of the Drainage Act, ad
Column 9 In accordance Section 23 of the Drainage Act, increased value of land due to improved outlet for lands to be drained.
Column 10 Total Assessment is the Sum of Column 7 (Benefit), Column 8 (Special Benefit), and Column 9 (Outlet)
Column 11 Net Assessment is Column 10 (Total Assessment) less Column 6 (Total Allowance).
Column 12 * Indicates agricultural land which is potentially eligible for OMAFRA subsidy.
Net Assessment can be calculated by subtracting the OMAFRA subsidy from the Net Assessment.

ZAVITZ MUNICIPAL DRAIN - EAST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

SPECIAL BENEFIT CALCULATIONS - EAST TRAIL BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 75%	Culvert Works 75%	Erosion Control 75%	Other Works 75%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin
Landowners in the City of Port Colborne											
271104000104200			VAN DUZEN, A. & S.					\$ -	\$ -	\$ -	\$ -
271104000104300			FIDLER, R. & D.M.					\$ -	\$ -	\$ -	\$ -
271104000104400			ZIMMERMAN, V. & I.					\$ -	\$ -	\$ -	\$ -
271104000104500			SIDER, I.					\$ -	\$ -	\$ -	\$ -
271104000104600			MINOR, R. & J.					\$ -	\$ -	\$ -	\$ -
271104000104700			BOWERMAN, G. & C.A.					\$ -	\$ -	\$ -	\$ -
271104000106400			HILMAYER, D. & PRIEBE, T.					\$ -	\$ -	\$ -	\$ -
TOTAL : Landowners in the City of Port Colborne				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Lands in Port Colborne											
Friendship Trail - 145m west of Holloway Bay Road to 205m east of Pleasant Beach Road				4684.8		9994.2		\$ 11,009	\$ 1,101	\$ 12,110	\$ 2,981
TOTAL: Other Lands in Port Colborne				\$ 4,685	\$ -	\$ 9,994	\$ -	\$ 11,009	\$ 1,101	\$ 12,110	\$ 2,981
TOTAL: EAST TRAIL BRANCH DRAIN				\$ 4,685	\$ -	\$ 9,994	\$ -	\$ 11,009	\$ 1,101	\$ 12,110	\$ 2,981

ZAVITZ MUNICIPAL DRAIN - WEST TRAIL BRANCH DRAIN

TOWN OF FORT ERIE & CITY OF PORT COLBORNE

Regional Municipality of Niagara

WEST TRAIL BRANCH DRAIN - ESTIMATED COST SUMMARY

I. CONSTRUCTION	
A. General	\$ 1,853.68
B. Channel Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 6,990.15
C. Culvert Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 559.60
D. Erosion & Sediment Control Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 15,360.00
E. Other Improvement Works	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
SUBTOTAL	\$ 24,763.43
Contingency Allowance	\$ 2,476.34
TOTAL CONSTRUCTION	\$ 27,239.78
II. ALLOWANCES	\$ -
III. ADMINISTRATION	\$ 6,702.10
TOTAL ESTIMATED COSTS - WEST TRAIL	\$ 33,941.88

WEST TRAIL BRANCH DRAIN - DIVISION OF COSTS

	City of Port Colborne
A. Benefit Assessment (Section 22)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 960.00
B. Outlet Liability Assessment (Section 23)	
1) Private Lands	\$ 4,446.96
2) Roads and Utilities	\$ 4,984.07
C. Special Benefit Assessment (Section 24)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ 23,550.85
D. Special Assessments (Section 26)	
1) Private Lands	\$ -
2) Roads and Utilities	\$ -
TOTAL ESTIMATED COSTS - WEST TRAIL	\$ 33,941.88

ZAVITZ MUNICIPAL DRAIN - WEST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

WEST TRAIL BRANCH DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
I. CONSTRUCTION								
SECTION "A" - GENERAL								
A1	SPC-A1	--	--	Bonding		L.S.		\$ 687.29
A2	SPC-A8	--	--	Allowance for Construction Signs, Traffic Control and Traffic Management Plan		L.S.		\$ 687.29
A3	SPC-A4	--	--	Construction Layout		L.S.		\$ 229.10
A4	SPC-A7	--	--	Install, Maintain and Remove Silt Control Devices		L.S.		\$ 250.00
TOTAL SECTION "A" - GENERAL								\$1,853.68
SECTION "B" - CHANNEL WORKS								
B1 Channel Improvement Works - Private Property - N/A								
B2 Channel Improvement Works - Road/Utility Allowances								
B2.1		204.24	480.00	Friendship Trail - West of Pleasant Beach Road Clean out existing open channel including trucking of spoil	261.77	m	\$ 15.00	\$ 3,926.55
B2.2		0.00	204.24	Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road Clean out existing open channel including trucking of spoil	204.24	m	\$ 15.00	\$ 3,063.60
TOTAL SECTION "B" - CHANNEL WORKS								\$6,990.15
SECTION "C" - CULVERT WORKS								
C1 Culvert Improvement Works - Private Property - N/A								
C2 Culvert Improvement Works - Road/Utility Allowances								
C2.1		201.50	215.49	Pleasant Beach Road & the Friendship Trail Lower existing 450mm dia. HDPE Storm Sewer Pipe to design grade, Including Granular 'A' for Bedding and Cover and Native Backfill, Asphalt Restoration	13.99	m	\$ 40.00	\$ 559.60
TOTAL SECTION "C" - CULVERT WORKS								\$559.60
SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								
D1 Erosion and Sediment Control Works - Private Property - N/A								
D2 Erosion and Sediment Control Works - Road/Utility Allowances								
D2.1		204.24	480.00	Friendship Trail - West of Pleasant Beach Road Clearing and brushing of south ditch of Friendship Trail and working space	275.76	m	\$ 30.00	\$ 8,272.80
D2.2		0.00	204.24	Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road Clearing and brushing of south ditch of Friendship Trail and working space	204.24	m	\$ 30.00	\$ 6,127.20
D2.4		204.24	480.00	Friendship Trail - West of Pleasant Beach Road Hydroseeding of south ditch of Friendship Trail and working space	275.76	m	\$ 2.00	\$ 551.52
D2.5		0.00	204.24	Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road Hydroseeding of south ditch of Friendship Trail and working space	204.24	m	\$ 2.00	\$ 408.48
TOTAL SECTION "D" - EROSION AND SEDIMENT CONTROL WORKS								\$15,360.00
SECTION "E" - OTHER WORKS								
E1 Other Improvement Works - Private Property - N/A								
E2 Other Improvement Works - Road/Utility Allowances - N/A								
TOTAL SECTION "E" - OTHER WORKS								\$0.00
SUBTOTAL								\$ 24,763.43
CONTINGENCY ALLOWANCE								\$ 2,476.34
TOTAL CONSTRUCTION - WEST TRAIL BRANCH DRAIN								\$ 27,239.78

ZAVITZ MUNICIPAL DRAIN - WEST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

WEST TRAIL BRANCH DRAIN - COST ESTIMATE

*** All Municipally owned properties have been categorized under roads and utilities*

Item	Spec. No.	From Sta	To Sta	Description	Estimated Quantity	Unit	Unit Price	Amount
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II. ALLOWANCES

1.				Allowances for Right-of-Way (Section 29)				\$ -
2.				Allowances for Damages (Section 30)				\$ -
3.				Allowances for Existing Drains (Section 31)				\$ -
4.				Allowances due to Insufficient Outlet (Section 32)				\$ -
5.				Allowances for Loss of Access (Section 33)				\$ -
TOTAL ALLOWANCES - WEST TRAIL BRANCH DRAIN								\$ -

III. ADMINISTRATION AND ENGINEERING

1.				Interim Financing Allowance				\$ 817.19
2.				Preliminary Design and Report				\$ -
4.				Survey, Design, Plans, Engineer's Report and Assessment Schedule (AMEC)*				\$ 3,683.45
5.				Expenses				\$ 294.68
6.				Tendering, Contract Administration and Construction Inspection (estimated)				\$ 1,906.78
TOTAL ADMINISTRATION AND ENGINEERING - WEST TRAIL BRANCH DRAIN								\$ 6,702.10

TOTAL ESTIMATED COSTS - WEST TRAIL BRANCH DRAIN								\$ 33,941.88
--	--	--	--	--	--	--	--	---------------------

** Does not include any costs associated with Ontario Drainage Tribunal Hearing, if required.*

ZAVITZ MUNICIPAL DRAIN - WEST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

LANDOWNER INFORMATION - WEST TRAIL BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Property Value (\$/ha)	Area					OMAFRA Qualified
					Wooded	Worked	Surfaced	Tiled Out	Total	
Landowners in the City of Port Colborne										
271104000119800			VORSTENBOSCH, C.M.			0.036				0.04
271104000119700			HAYTER, S.			0.556				0.56
271104000119600			BILODEAU, S.			0.404				0.40
271104000119502			MISKOLCZI, A. & M.			0.430				0.43
271104000119501			FARKAS, J. & C.			0.464				0.46
271104000119500			COSBY, G. & N.			0.539				0.54
271104000105800			PIDSADNICK, G.			0.446				0.45
271104000106700			DIPLOCK, D. & C.			0.943				0.94
271104000106600			KING, M. & S.			0.277				0.28
271104000106500			NEAL, T. & L.			0.137				0.14
TOTAL : Landowners in the City of Port Colborne						0.00	4.23	0.00	0.00	4.23
City of Port Colborne Road Allowances										
Pleasant Beach Road							0.210			0.21
TOTAL: City of Port Colborne Road Allowances						0.00	0.00	0.21	0.00	0.21
Other Lands in Port Colborne										
Friendship Trail - West of Pleasant Beach Road							0.431			0.43
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road							0.310			0.31
TOTAL: Other Lands in Port Colborne						0.00	0.00	0.74	0.00	0.74
TOTAL: WEST TRAIL BRANCH DRAIN						0.00	4.23	0.95	0.00	5.18

ZAVITZ MUNICIPAL DRAIN - WEST TRAIL BRANCH DRAIN

TOWN OF FORT ERIE & CITY OF PORT COLBORNE

Regional Municipality of Niagara

ALLOWANCE CALCULATIONS - WEST TRAIL BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Property Value (\$/ha)	Abutting Length				Channel Left				Working Space		Working Space Allow		Total Allowances			
					Left		Right		Existing Top Width	Proposed Top Width	Length (m)	Right Width	Left Area (ha)	Right Area (ha)	Sec 29	Sec 30 100%	Sec 29 (\$)	Sec 30 (\$)		
					From Sta	To Sta	From Sta	To Sta												
Landowners in the City of Port Colborne																				
271104000119800			VORSTENBOSCH, C.M.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000119700			HAYTER, S.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000119600			BILODEAU, S.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000119502			MISKOLCZI, A. & M.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000119501			FARKAS, J. & C.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000119500			COSBY, G. & N.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000105800			PIDSADNICK, G.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000106700			DIPLOCK, D. & C.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000106600			KING, M. & S.	\$ -												\$ -	\$ -	\$ -	\$ -	
271104000106500			NEAL, T. & L.	\$ -												\$ -	\$ -	\$ -	\$ -	
TOTAL : Landowners in the City of Port Colborne																\$ -	\$ -	\$ -	\$ -	
City of Port Colborne Road Allowances																				
Pleasant Beach Road					204.2	216.3	204.2	216.3			12.1						\$ -	\$ -	\$ -	\$ -
TOTAL: City of Port Colborne Road Allowances																\$ -	\$ -	\$ -	\$ -	
Other Lands in Port Colborne																				
Friendship Trail - West of Pleasant Beach Road					216.3	480.0	216.3	480.0			263.7						\$ -	\$ -	\$ -	\$ -
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road						204.2		204.2			204.2						\$ -	\$ -	\$ -	\$ -
TOTAL: Other Lands in Port Colborne																\$ -	\$ -	\$ -	\$ -	
TOTAL: WEST TRAIL BRANCH DRAIN																\$ -	\$ -	\$ -	\$ -	
																Total Allowances		\$ -	\$ -	

ZAVITZ MUNICIPAL DRAIN - WEST TRAIL BRANCH DRAIN
 TOWN OF FORT ERIE & CITY OF PORT COLBORNE
 Regional Municipality of Niagara

ASSESSMENT SCHEDULE BASED ON ESTIMATED COSTS - WEST TRAIL BRANCH DRAIN

LANDOWNER NAME	ADDRESS	PROPERTY ROLL NO.	CON.	LOT	APPROX. AREA AFFECT. (ha)	APPROX. ABUT. LENGTH (m)	TOTAL ALLOW. (\$)	BENEFIT DIRECT (\$)	ASSESS ABUT (\$)	TOTAL BENEFIT (\$)	SPECIAL BENEFIT (\$)	TOTAL OUTLET (\$)	TOTAL ASSESS. (\$)	NET ASSESS. (\$)	12
1		2	3	4	5		6			7	8	9	10	11	
Landowners in the City of Port Colborne															
VORSTENBOSCH, C.M.		271104000119800			0.04		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 86	\$ 86	\$ 86	
HAYTER, S.		271104000119700			0.56		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,118	\$ 1,118	\$ 1,118	
BILODEAU, S.		271104000119600			0.40		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 723	\$ 723	\$ 723	
MISKOLCZI, A. & M.		271104000119502			0.43		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 676	\$ 676	\$ 676	
FARKAS, J. & C.		271104000119501			0.46		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 627	\$ 627	\$ 627	
COSBY, G. & N.		271104000119500			0.54		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 582	\$ 582	\$ 582	
PIDSADNICK, G.		271104000105800			0.45		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 454	\$ 454	\$ 454	
DIPLOCK, D. & C.		271104000106700			0.94		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 166	\$ 166	\$ 166	
KING, M. & S.		271104000106600			0.28		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15	\$ 15	\$ 15	
NEAL, T. & L.		271104000106500			0.14		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOTAL : Landowners in the City of Port Colborne					4.23		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,447	\$ 4,447	\$ 4,447	
City of Port Colborne Road Allowances															
Pleasant Beach Road					0.21	24.1	\$ -	\$ -	\$ 24	\$ 24	\$ -	\$ 856	\$ 880	\$ 880	
TOTAL: City of Port Colborne Road Allowances					0.21	24.12	\$ -	\$ -	\$ 24	\$ 24	\$ -	\$ 856	\$ 880	\$ 880	
Other Lands in Port Colborne															
Friendship Trail - West of Pleasant Beach Road					0.43	527.4	\$ -	\$ -	\$ 527	\$ 527	\$ 13,108	\$ 4,128	\$ 17,763	\$ 17,763	
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road					0.31	408.5	\$ -	\$ -	\$ 408	\$ 408	\$ 10,443	\$ -	\$ 10,852	\$ 10,852	
TOTAL: Other Lands in Port Colborne					0.74	935.88	\$ -	\$ -	\$ 936	\$ 936	\$ 23,551	\$ 4,128	\$ 28,615	\$ 28,615	
TOTAL: WEST TRAIL BRANCH DRAIN					5.18	960.00	\$ -	\$ -	\$ 960	\$ 960	\$ 23,551	\$ 9,431	\$ 33,942	\$ 33,942	

Future Maintenance costs shall be assessed in the same relative proportion as the outlet assessment for each property.

Description of Information contained in the Assessment Schedule

- Column 1 Name of Landowner from Assessment Roll maintained by MPAC.
- Column 2 Property Roll Number from Assessment Roll maintained by MPAC.
- Column 3 Township Concession where lands located.
- Column 4 Township Lot where lands located.
- Column 5 Approx. area of land, in hectares, to be drained by West Trail Branch Drain.
- Column 6 In accordance with Sections 29 and 30 of the Drainage Act, allowance to be paid to landowner based on value of land lost due to:
 - construction or improvement of drainage works
 - disposal of excavated material
 - damage to trees, lawns, fences, lands and crops
- Column 7 In accordance with Section 22 of the Drainage Act, increased value of land adjacent to the Drain due to improvement to the Drain
- Column 8 In accordance with Section 24 of the Drainage Act, additional work to the drain which has no effect on the functioning of the Drain
- Column 9 In accordance Section 23 of the Drainage Act, increased value of land due to improved outlet for lands to be drained.
- Column 10 Total Assessment is the Sum of Column 7 (Benefit), Column 8 (Special Benefit), and Column 9 (Outlet)
- Column 11 Net Assessment is Column 10 (Total Assessment) less Column 6 (Total Allowance).
- Column 12 * Indicates agricultural land which is potentially eligible for OMAFRA subsidy.
 Net Assessment can be calculated by subtracting the OMAFRA subsidy from the Net Assessment.

ZAVITZ MUNICIPAL DRAIN - WEST TRAIL BRANCH DRAIN
TOWN OF FORT ERIE & CITY OF PORT COLBORNE
Regional Municipality of Niagara

SPECIAL BENEFIT CALCULATIONS - WEST TRAIL BRANCH DRAIN

Property Roll No.	Con.	Lot	Landowner Name	Channel Works 75%	Culvert Works 75%	Erosion Control 75%	Other Works 75%	Construction Subtotal	Contingency Allowance	Construction Total	Portion Eng & Admin
Landowners in the City of Port Colborne											
271104000119800			VORSTENBOSCH, C.M.					\$ -	\$ -	\$ -	\$ -
271104000119700			HAYTER, S.					\$ -	\$ -	\$ -	\$ -
271104000119600			BILODEAU, S.					\$ -	\$ -	\$ -	\$ -
271104000119502			MISKOLCZI, A. & M.					\$ -	\$ -	\$ -	\$ -
271104000119501			FARKAS, J. & C.					\$ -	\$ -	\$ -	\$ -
271104000119500			COSBY, G. & N.					\$ -	\$ -	\$ -	\$ -
271104000105800			PIDSADNICK, G.					\$ -	\$ -	\$ -	\$ -
271104000106700			DIPLOCK, D. & C.					\$ -	\$ -	\$ -	\$ -
271104000106600			KING, M. & S.					\$ -	\$ -	\$ -	\$ -
271104000106500			NEAL, T. & L.					\$ -	\$ -	\$ -	\$ -
TOTAL : Landowners in the City of Port Colborne				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
City of Port Colborne Road Allowances											
Pleasant Beach Road								\$ -	\$ -	\$ -	\$ -
TOTAL: City of Port Colborne Road Allowances				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Lands in Port Colborne											
Friendship Trail - West of Pleasant Beach Road				3926.6		8824.3		\$ 9,563	\$ 956	\$ 10,519	\$ 2,588
Friendship Trail - Pleasant Beach Road to 205m east of Pleasant Beach Road				3063.6	559.6	6535.7		\$ 7,619	\$ 762	\$ 8,381	\$ 2,062
TOTAL: Other Lands in Port Colborne				\$ 6,990	\$ 560	\$ 15,360	\$ -	\$ 17,182	\$ 1,718	\$ 18,901	\$ 4,650
TOTAL: WEST TRAIL BRANCH DRAIN				\$ 6,990	\$ 560	\$ 15,360	\$ -	\$ 17,182	\$ 1,718	\$ 18,901	\$ 4,650

Appendix H

General Conditions and Construction Specifications

(To be included in the Final Report)



SPECIAL PROVISIONS - GENERAL
(Refer to Niagara Peninsula Standard Contract Documents)

SPECIAL PROVISIONS - CONTRACT ITEMS
(Refer to Niagara Peninsula Standard Contract Documents)



SPECIAL PROVISIONS

GENERAL SUPPLEMENTARY – AMEC



SPECIAL PROVISIONS – GENERAL SUPPLEMENTARY – AMEC

TABLE OF CONTENTS	Page
1. DEFINITIONS	4
2. MUNICIPALITY	4
3. DRAINAGE SUPERINTENDENT.....	4
4. GENERAL.....	4
5. MATERIALS.....	5
6. WORKING AREA.....	5
7. ACCESS	5
8. REPLACEMENT OF STAKES	5
9. ERRORS AND UNUSUAL CONDITIONS.....	6
10. ALTERATIONS AND ADDITIONS	6
11. OPENING UP OF FINISHED WORK.....	6
12. SUPERVISION.....	6
13. LIMITATIONS OF OPERATIONS	7
14. COLD WEATHER	7
15. FENCES	7
16. BRUSH AND TREES	8
17. TRIBUTARY OUTLETS	9
18. ROAD CROSSINGS	9
19. LIVESTOCK.....	10
20. CROPS	10
21. LAWN RESTORATION.....	10
22. SEEDING OF SIDE SLOPES	11
23. SURPLUS GRAVEL.....	11
24. LOCATIONS OF EXISTING UTILITIES.....	11
25. RAILWAYS, HIGHWAYS AND UTILITIES.....	11
26. FILTER FABRIC (GEOTEXTILE).....	11
27. FINAL INSPECTION.....	12
28. CLEANING UP BEFORE ACCEPTANCE.....	12

1. DEFINITIONS

- i) M.T.O. means the Ministry of Transportation of Ontario.
- ii) A.S.T.M. means the American Society for Testing Materials.
- iii) C.S.A. means the Canadian Standard Association.
- iv) O.P.S.D. means Ontario Provincial Standard Drawings
- v) O.P.S.S. means Ontario Provincial Standard Specifications

2. MUNICIPALITY

Municipality refers to a municipal corporation in the Province of Ontario. Where reference to Township, County, Region, Town, City or Owner appears in the specifications it shall be deemed to be the same as the word Municipality. Where reference to "owner" appears in the specifications it is usually in reference to the owner of the property on which the drain is being constructed.

3. DRAINAGE SUPERINTENDENT

Where a Drainage Superintendent is appointed by the Municipality, the Drainage Superintendent will act as the Contract Administrator. The Superintendent shall have the power to direct the execution of the work and to make any necessary minor adjustments. Any instructions given by the Drainage Superintendent which changes considerably the proposed work or with which the Contractor does not agree shall be referred to the Engineer for a final decision.

4. GENERAL

The work shall include the supplying of all labour, tools, equipment and materials required for the clearing of all trees, roots, brush, debris; the excavation of all open channels; the leveling or disposal of all spoil as directed; the cutting re-erection of all fences; the construction of all required roadway and laneway crossings; the supply and placement of erosion protection; and all other items indicated in the Description of Works as shown on the drawings.

The General Construction Specifications shall be read in conjunction with the Niagara Peninsula Standard Specifications.

5. MATERIALS

- i) Corrugated Metal – corrugated metal pipe shall comply with CSA G400 and shall be to standard gauges as indicated on the drawings. Unless otherwise specified, the pipe shall have a 60 gram galvanized coating.
- ii) Reinforced Concrete – all reinforced concrete culverts shall comply with CSA A257 and OPSS 410.
- iii) Ready-Mix Concrete – cast-in-place ready-mix concrete shall comply with OPSS and be a minimum compressive strength of 20 MPa.
- iv) Granular Materials – granular material used for pipe bedding, backfill and laneways shall be Granular A in accordance with OPSS

6. WORKING AREA

Where any part of the drain is on a road allowance, the road allowance shall be the working area. For a closed drain, the working area shall be a ten (10) metre width on either side of the trench or any combination not exceeding twenty (20) metres. For an open drain, the working area shall be twelve (12) metres on the side for leveling and three (3) metres on the opposite side. If any part of the drain is close to a property line, then the fence line shall be one of the limits of the work area. Restricted or increased working areas will be described in detail on the drawings.

7. ACCESS

The Contractor shall have access to the drain by entering the working area directly from road allowances or along access routes shown on the plan. All specifications governing fences, livestock and crops during drain construction shall apply to access routes. No other access routes shall be used unless first approved by the Engineer and the affected landowner. The Contractor shall contact each owner prior to using the designated access routes. Contractor shall make good any damages caused by using the designated access routes. The Contractor when using another access point will have a letter of permission from the landowner, signed, dated and terms to which the agreement is based upon. This letter will be submitted to the Engineer or his designate.

8. REPLACEMENT OF STAKES

The Contractor shall be held liable for the cost of replacing any stakes or bench marks destroyed during the course of construction. The drain shall be liable for the cost of replacing stakes or benchmarks prior to construction.

9. ERRORS AND UNUSUAL CONDITIONS

The Contractor shall notify the Engineer immediately of any error or unusual conditions, which may be found. Any attempt by the Contractor to correct the error or unusual conditions shall be done at the Contractor's risk. Any additional cost incurred to remedy a wrong decision made by the Contractor shall be borne by the Contractor. The Engineer shall make the alteration necessary to correct errors or to adjust for unusual conditions. The contract amount shall be adjusted in accordance with a fair evaluation of the work added or deleted.

10. ALTERATIONS AND ADDITIONS

The Engineer shall have the power to make alterations in the work as shown or described in the drawings or specifications and the Contractor shall proceed to make such changes without causing delay. In every such case, the price agreed to be paid for the work under the contract shall be increased or decreased as the case may require according to a fair and reasonable evaluation of the work added or omitted. Where such changes involve work similar to items in the contract, the price agreed to be paid shall be determined after due consideration has been given to the ratio of the new quantity for the item to the quantity for the item in the tender. Such alterations and variations shall in no way render void the contract. No claims for variations or alterations in the increased or decreased price shall be valid unless done in pursuance of an order from the Engineer and notice of such claims made in writing before commencement of such work. In no case shall the Contractor commence work, which he considers to be extra work before receiving the Engineer's approval.

11. OPENING UP OF FINISHED WORK

If ordered by the Engineer, the Contractor shall make such openings in the work as are needed to re-examine the work, and shall forthwith make the work good again. Should the Engineer find the work so opened up to be faulty in any respect, the whole of the expense of opening, inspecting and making good shall be borne by the Contractor and should the Engineer find the work opened up to be in an acceptance condition, such expense will be borne by the Municipality, unless the Contractor has been obligated by any specification to leave the work open for the Engineer's inspection.

12. SUPERVISION

The Contractor shall give the work his constant supervision and shall keep a competent foreman in charge at the site.

13. LIMITATIONS OF OPERATIONS

Except for such work as may be required by the Engineer to maintain the works in a safe and satisfactory condition, the Contractor shall not carry on his operations under the contract on Sundays, or Statutory Holidays, without permission in writing of the Engineer. The Engineer may, in writing, require the Contractor to cease or limit his operations under the contract, on any day or days if the operations are of such a nature, or if the work is so located, or if the traffic is of such a volume that the Engineer deems it necessary or expedient so to do.

14. COLD WEATHER

When work is permitted or ordered by the Engineer to be done in cold weather, the Contractor shall provide suitable means for heating and protection, and all the materials shall be heated and protected. Unless the Engineer directs otherwise, all work such as masonry, concrete and painting that may be injured by frost, and which cannot be satisfactorily completed, shall be put in a proper and satisfactory condition, and shall be protected from damage by frost. Unless otherwise specified, the cost of such protection shall be borne by the Contractor. All backfilling operations shall be done as soon as possible to avoid backfilling with ground containing frozen particles. The Contractor will assume all responsibility for damages to any tile drains and for settlements or bank slippages that may result from work in cold weather.

15. FENCES

No earth is to be placed against fences. All fences removed by a Contractor are to be replaced in as good a condition as existing materials permit. Where practical and where required by the landowner, the Contractor shall take down an existing fence at the nearest anchor post and roll the fence back rather than cutting the fence and attempting to patch it. The replacement of the fences shall be done to the satisfaction of the Engineer or Superintendent. Any fences found in such poor condition that replacement is not possible shall be noted and verified with the Engineer or Superintendent prior to commencement of work. Where directed by the Engineer, additional steel posts shall be placed to adequately support a fence upon re-erection. All fences shall be properly stretched and fastened. Where the Engineer directs that new fencing material be erected, additional payment will be provided.

Any fences paralleling an open drain, that are not line fences, that hinder the proper working of the excavating machinery shall be removed and rebuilt by the landowner at his own expense. If such parallel fences are line fences they shall be removed and rebuilt by the Contractor.

16. BRUSH AND TREES

Where the existing bottom widths and side slopes of the drain are sufficient to permit the specified deepening of the drain without disturbing the existing banks above the present drain bottom, the Contractor will be required to cut the brush and trees on the sloping banks flush with the surface of the banks, but he will not be required to remove their roots and stumps unless they will obviously create obstructions to the flow of water in the drain.

Where it is necessary to widen the drain and excavate material from the sloping banks, all brush and trees within the limits of the channel and within 1 m of the top of the drain banks and within the spread area are to be cut and those roots and stumps in the drain bottom and on the banks where the widening takes place shall be completely removed unless the Drainage Superintendent permits the contractor to cut the roots and stumps flush with the surface of the finished banks.

Where there is a fence adjoining the drain, he will be required to cut the brush in the fence line and on the side of the fence opposite the drain only if the excavating equipment will be operated from this side or excavated material is to be placed and leveled on this side.

The Contractor shall cut off flush with the ground all brush and trees having a diameter of 150 mm or less from the disposal area. Should the Contractor find it necessary to remove trees having a diameter of 150 mm or larger from the disposal area in order to permit the efficient excavation of the drain or spreading of excavated material, he will be at liberty to do so only on permission of the Drainage Superintendent in charge of the work.

All trees over 200 mm in diameter that are cut are to be trimmed of branches, and the trunks, along with branches over 200 mm in diameter, are to be cut up into log lengths and piled for the use of the adjoining owner unless the owner advised the Drainage Superintendent he does not want them, in which case they are to be disposed of by the Contractor along with the other brush. Small branches and limbs are to be disposed of by the Contractor along with the other brush.

Following completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which remain standing, disposing of the branches cut off along with other brush and leaving the trees in a neat and tidy condition.

The Contractor will be required to brush rake the excavated material to remove brush and trees from the spoil if so instructed by the Drainage Superintendent.

17. TRIBUTARY OUTLETS

The Contractor shall guard against damaging the outlets of tributary drains. The Contractor is responsible for contacting the landowner prior to construction to determine the locations of any field tile outlets along the ditch route. Any tributary tile outlet which has been disturbed or damaged during the work operation, shall be restored to its original condition by the Contractor.

Where existing tile outlet pipes of case iron, asbestos cement, corrugated steel or other rigid material are encountered along the course of the drain, and where they will be removed or rendered useless by the work, the Contractor, as part of this work, shall reinstall the outlet pipes in the regraded bank.

Where, in the course of the grading operation, tile drains having no outlet pipe are encountered or the existing outlet pipe is not suitable for re-installation, the Contractor shall install an outlet pipe manufactured for that purpose. The outlet pipe shall be one size larger than the diameter of the tile, 3 m in length, and embedded 2.5 m into the bank of the drain and protrude 0.5 m beyond its face. The outlet end shall be fitted with a removable wire rodent guard.

Where a drain adjoining a road is relocated, all existing private and road drains which cross beneath the road are to be extended across the old course of the drain to the drain in its new location. The cost of all pipe materials to extend these drains together with the installation costs will be borne by the Road Authority having jurisdiction over the road.

18. ROAD CROSSINGS

All road crossings may be made with open cut unless otherwise note. The location of the road crossing shall be confirmed in the field by the road authority or the Engineer.

A minimum depth of 150 mm of well compacted granular material shall be placed as a base for each new culvert crossing. All pipes crossing roads shall be backfilled with granular material for the width of the traveled portion plus 1.25 m on either side of the culvert. The material shall be placed in lifts not exceeding 300 mm in depth and shall be thoroughly compacted with an approved type mechanical vibrating compactor. Any settling of the granular backfill shall be repaired by the Contractor as soon as required.

The existing pavement, whether it be asphalt or concrete, shall be replaced in accordance with the drawings by the Contractor.

All road crossing restoration shall meet the approval of the Road Authority.

19. LIVESTOCK

If any construction will be within a fenced field containing livestock or other customary farm animals or fowl (hereafter referred to as livestock, etc.), that are evident or have been made known to the Contractor, the Contractor shall notify the owner or attendant of the field or livestock, etc., thirty-six (36) hours in advance of his entrance into the field. Thereafter, the owner or attendant shall be responsible for the protection and damage to all livestock, etc., on said property during construction and shall be liable for any damages caused by such livestock, etc. Where the owner or attendant so directs or where the Contractor has failed to reach the owner or attendant, the Contractor shall adequately re-erect all fences at the end of each working day and shall have any open trench backfilled within seventy-two (72) hours, including weekends and statutory holidays. In all cases, the trench shall be backfilled within seven (7) days. Failure of the Contractor to notify or to attempt to notify the owner or attendant, or failure of the Contractor to erect the fencing or to backfill the trench as described in this paragraph, shall render the Contractor responsible for the protection of or damage to livestock, etc., on the property and the damage they may cause.

Where livestock may be encountered on any property, the Contractor shall notify the Engineer promptly so that arrangements may be made to inspect the drainage works before this time required for backfilling.

20. CROPS

The Contractor shall not be held responsible for damages to crops within the working area for the drain with the exception of those crops ready to be harvested or that can be salvaged and where the Contractor has failed to, or has not attempted to, notify the owner forty-eight (48) hours prior to commencement of the excavation on that portion.

21. LAWN RESTORATION

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.

22. SEEDING OF SIDE SLOPES

The Contractor shall seed the excavated surfaces of the drain and any disturbed soil areas. Seeding shall be done at the completion of each working day using a cyclone type hand seeder. Seed shall be applied at the rate of 40 kg per hectare using a seed mixture approved by the Engineer.

23. SURPLUS GRAVEL

If as a result of any work crushed stone or any type of granular is required and not all the granular or crushed stone is used in the construction of the works, the Contractor shall haul away such surplus material.

24. LOCATIONS OF EXISTING UTILITIES

The position of pole lines, watermains, sewers or any other type of utility conduit or structure whether underground or above ground are not necessarily shown on the Contract Drawings, and, where shown, the accuracy of the position of such utilities and structures is not guaranteed. Before starting work, the Contractor shall have all utilities within road allowances and on private lands located. All utilities shall be exposed to the satisfaction of the utility company to verify that the construction proposed will not conflict with the utility structure. Additional payment will be allowed for relocation of utilities if conflicts should occur. Additional cost for utility relocation will be assessed to the utility company under Section 26 of the Drainage Act.

The Contractor is responsible for protecting all located and exposed utilities from damage during construction. The Contractor shall assume liability for damage caused to all properly located utilities.

25. RAILWAYS, HIGHWAYS AND UTILITIES

A minimum of forty-eight (48) hours notice in writing to any Railway's Division Engineer, MTO's District Engineer, or any Utility Company, exclusive of Saturdays, Sundays, and Holidays, is required by the Contractor prior to any work being performed on or affecting the applicable property and in the case of a pipe being installed by open cutting or boring, a minimum of seventy-two (72) hours notice is required.

26. FILTER FABRIC (GEOTEXTILE)

Filter fabric shall be in conformance with OPSS 511 and OPSS 1860. It shall be non-woven fabric that is rot proof, non-biodegradable, chemically resistant to

acidic or alkaline soils and is dimensionally stable under different hydraulic conditions. The filter fabric is to be a material whose primary function is to act as a highly permeable, non-clogging soil separator for fine soils. Contractor is responsible for acquiring and following manufacturer's recommendations for cutting, installation and precautions necessary to avoid damage to fabric.

27. FINAL INSPECTION

Final inspection by the Engineer will be made within twenty (20) days after receiving notice in writing from the Contractor that work is complete, or as soon thereafter as weather conditions permit. All the work included in the contract must at the time of final inspection have the full dimensions and cross-sections.

Prior to commencing the final inspection an on-site meeting may be held with the landowners directly affected by the construction of the drain. The Contractor will be requested to attend this meeting upon written notice by the Engineer.

28. CLEANING UP BEFORE ACCEPTANCE

Before any work shall be finally accepted by the Municipality, the Contractor shall replace improper materials and make corrections of faulty workmanship as have been directed by the Engineer and do such trimming and disposal of rubbish and surplus materials as to leave the work neat and presentable.



SPECIAL PROVISIONS CONTRACT ITEMS SUPPLEMENTARY



SPECIAL PROVISIONS – CONTRACT ITEMS SUPPLEMENTARY

<u>TABLE OF CONTENTS</u>	Page
A4. CONSTRUCTION LAYOUT	3
A4.1AS-CONSTRUCTED	3
A7. INSTALL, MAINTAIN AND REMOVE SILT CONTROL DEVICES.....	3
A8. ALLOWANCE FOR CONSTRUCTION AND TRAFFIC CONTROL SIGNS	4
B.2 EARTH EXCAVATION.....	6
B.2.1 CONSTRUCTION	6
B.7 INSTALLATION OF NEW CULVERT.....	9
B.20HAND LAND RIP RAP WITH FILTER CLOTH	10

A4. CONSTRUCTION LAYOUT

Conditions stipulated in the Niagara Peninsula Standard Contract Document also apply.

Failure to comply with these conditions will result in a reduction in payment to this item.

A4.1 AS-CONSTRUCTED

For the 'as-constructed' works, the Contractor must provide the Town of Fort Erie with an electronic copy of the final drainage works, to be imported into AutoCAD. This copy must confirm that the design grade and cross-section details for all ditch work and the invert elevations and lengths for all culverts complies with the current Engineer's Report. All work must be in an acceptable electronic format that the Town of Fort Erie can utilize and all work must be completed using the verified geodetic benchmarks in the Engineer's Report.

In the AutoCAD drawing, all items that are picked up must be on correct layer name and correct blocks are to be inserted, in accordance to the Town of Fort Erie's current guidelines.

The Town will certify the as-constructed files with respect to their completeness.

Failure to complete a certified as-built file will result in the delay of substantial completion and/or contract completion.

PAYMENT

Payment in full at the lump sum bid price for this item shall be made only upon completion and approval by the Contract Administrator.

A7. INSTALL, MAINTAIN AND REMOVE SILT CONTROL DEVICES

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 577, the following shall also apply:

SILT FENCE

Silt fence shall be installed in accordance with OPSD 219.190 except that the minimum height above the invert of the drain shall be 500 mm. Silt fence materials shall be in accordance with OPSS 577.05.02.02 for geotextile and OPSS 577.05.03 for stakes. Stakes shall be 1.5 m minimum height.

The silt fence shall remain in place for the duration of the project and the Contractor shall make every effort to maintain it throughout the project. The removal of the silt fence shall not be removed without the approval of the Engineer or the Drainage Superintendent. Prior to the removal of the silt fence, the accumulated silt shall be

removed and leveled adjacent to the drain in accordance with the disposal of excavated material section.

SEDIMENT BASINS

Sediment basins have been provided along the length of the drain in an effort to minimize the transport of sediment. The Contractor shall construct the sediment basins in accordance with the construction drawings in the locations indicated. Relocation of sediment basins can only be undertaken upon approval of the Engineer.

ROCK CHECK DAM

The Contractor shall place a rock check dam as outlined on the Contract Drawings. Removal at the completion of construction may not be required and is not to be part of the contract price. Additional payment will be approved if the Contractor is directed to remove the rock check dam after construction is completed.

PAYMENT

For progress payment, fifty (50) percent of the lump sum price will be paid upon installation with the balance to be paid with the final payment.

A8. ALLOWANCE FOR CONSTRUCTION AND TRAFFIC CONTROL SIGNS

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall also apply:

Interference with normal flow of traffic shall be kept to a minimum.

The Contractor shall supply, locate, relocate, erect, operate, maintain and remove all construction signs, delineators, barricades and flashing lights that may be required for complete control of both pedestrians and vehicular traffic including competent flag persons in accordance with the Ontario Traffic Manual (OTM), Book 7.

The Contractor shall further provide a Traffic Control Plan in accordance with the Occupational Health and Safety Act (OHSA) and Regulations for construction projects.

CONSTRUCTION SIGNS

Construction signs mean all traffic control devices and signs identified in the OTM, including vehicles, etc. provided to support signs and equipment to supply sign lighting but excluding the contract identification signs and Niagara road number markers.

The Owner may supply up to two (2) project signs for display at the construction limits, for which the Contractor shall install and display for the duration of the contract. Upon project completion, the Contractor shall dismantle the signs as directed by the Contract Administrator.

The Contractor is responsible for the installation and removal of all construction signage and is responsible for daily maintenance of all signage throughout the contract.

Signs shall be in placed in advance of any traffic-impacting works. They shall be well maintained and be effective at all times and remain operational throughout the duration of the operation, including the shutdown periods.

Regulatory signs cannot be removed without approval of the Town.

Any existing signs removed by the Contractor to accommodate construction shall be kept operational by placement of a temporary support and shall be reinstated in accordance with the OTM, once the work operation is complete. Temporarily located existing signs shall be kept at the same height, offset and basic location from traffic as before removal.

All signs shall be constructed in accordance with the OTM and shall have reflective surfaces conforming to C.G.S.B. Standard 62-GP- IIM for classifications (Section 4), Type I, reflectively Level 2, and any class. Material upon which reflective sheeting is mounted to prepare signs shall be sufficiently durable to retain its shape during any weather condition. Construction marker supports may be constructed of metal or wood.

TRAFFIC CONTROL

A minimum of one lane of traffic shall be maintained at all times during construction. Two lanes of traffic shall be maintained at all other times. All hazards and obstructions shall be properly barricaded and delineated with flashers in accordance with the OTM.

Traffic control must be in accordance with the Handbook for Municipal Traffic Control Persons. This handbook is to be in the flag person's possession at all times while on site and the flag person shall be fully conversant with the requirements and stipulations in the handbook.

The lump sum price bid for this item shall include the utilization of at least two flag persons whenever any part of the travelled portion of a roadway is blocked.

No road closures will be allowed unless specifically authorized by the contract Administrator.

ACCESS

It will be the Contractor's responsibility to inform the various businesses and residences of, and/or the placement of no parking signs the day before, in order to reduce/eliminate any problems with parked vehicles that may interfere with their operations. Access to the abutting businesses and residences must be maintained at all times.

The Contractor shall advise the Police Department, Fire Department and Niagara Emergency Medical Service on a daily basis, with current status of the construction as it pertains to the passage of traffic within the contract limits.

The Contractor will co-ordinate with local transit to ensure minimum interruption to bus schedules. Transit, school buses and garbage service vehicles will be given priority to maintain their schedule.

The Contractor shall also maintain/provide existing pedestrian access at all times to the businesses and residents during all phases of construction in an acceptable manner.

PAYMENT

Payment at the lump sum bid for this item shall be full compensation for all labour, equipment and materials necessary to meet the above requirements.

Fifty (50) percent of the lump sum price will be paid on the first payment certificate. The balance will be prorated over the remainder of the working period.

B.2 EARTH EXCAVATION

Work under this item shall include the supply of all labour, equipment and materials required for ditch excavation or any other type of excavation or earth work as outlined on the Contract Drawings. Ditch work involves excavation, leveling, seeding and clearing as required. Specifications and information on the Contract Drawings shall take precedence over the standard specifications outlined below. The specifications below shall take precedence over the Niagara Peninsula Standard Contract Document Special Provisions B2.

B.2.1 CONSTRUCTION

a) Stakes

Stakes may have been set along the course of the drain at intervals of twenty-five (25) metres during the survey. The Engineer does not guarantee that stakes set during the survey will exist at the time of construction. Contractor is responsible for setting any layout, alignment or grade control stakes required for construction.

b) Excavation

The bottom width and the side slopes of the ditch shall be as shown on the profile(s) and/or cross-sections on the Contract Drawings. Side slopes are normally one and one-half metre horizontal to one metre vertical (1.5:1) unless otherwise noted on the Contract Drawings. If a bottom width is not specified then any excavation required shall be from the bottom of the ditch without disturbing the bank slopes subject to the clearing of brush required as described in Section B.2.2 (h).

c) Profile

The profile(s) on the Contract Drawings show the depth and grade for the ditch improvements. The upper solid line on the profile represents the existing ground level along the ditch. A lower dashed line represents the bottom of the existing ditch. The grade line for the bottom of the ditch is shown as a solid, bold line with the percent grade shown below the line. Starting and ending ditch bottom elevations are shown below the grade line for each different grade interval. Numbers that appear above the existing ground line on the profile indicate the approximate depth of the ditch in metres measured from the ground elevation at the top of the bank slope for the ditch. Numbers that appear above the existing ditch bottom line indicate the approximate depth of cut from the existing ditch bottom to the new ditch bottom. The description and elevation of benchmarks that were established during the survey are shown on the profile(s) in the approximate location for each benchmark.

d) Line

The ditch shall follow the course of the existing ditch and/or shall be constructed in a straight line as outlined on the Contract Drawings. A uniform grade shall be maintained in accordance with the profile(s). The Contractor shall over dig the bottom by one hundred to one hundred and fifty millimetres (100mm-150mm) in depth to allow for sediment accumulation during or following excavation. A variation of one hundred millimeters (100mm) above the required grade will require the Contractor to remedy this discrepancy. The Contractor may be required to backfill any portion of the ditch that is excavated more than two hundred millimeters (200mm) below the required grade. All curves shall be made with a minimum radius of fifteen metres (15m).

e) Excavated Material

Excavated material (spoil) shall be deposited on either or both sides of the drain as directed on the Contract Drawings. Spoil upon excavation shall be placed a minimum one (1) metre back from the top of the bank, either existing or new. In general, the material shall be dumped on the low side of the ditch or opposite trees and fences. No excavated material shall be placed in tributary drains, depressions, or low areas, which direct or channel water into the ditch so that no water will be trapped behind the spoil bank. The excavated material shall be placed and leveled to a maximum depth of three hundred millimeters (300mm); unless otherwise instructed. The edge of the spoil bank away from the ditch shall be feathered down to existing ground. The edge of the spoil bank nearest the ditch shall have a maximum slope of 2:1. The material shall be leveled such that it may be cultivated with ordinary equipment without causing undue hardship on farm machinery and farm personnel. Wherever clearing is necessary prior to leveling, the Contractor shall remove all stumps unless the Contract Drawings specify that stumps can be covered with the leveled spoil. No excavated material shall cover any logs, brush or rubbish of any kind. Large stones or boulders in the leveled spoil that are heavier than fifteen kilograms (15kg) shall be moved to the edge of the leveled spoil nearest to the ditch but in general no closer than one metre (1) to the top of bank.

Where it is necessary to straighten any unnecessary bends or irregularities in the alignment of the ditch or to relocate any portion of an existing ditch, the excavation from the new cut shall be used for backfilling the original ditch. Regardless of the distance between the new ditch and old ditch, no extra compensation will be allowed for this work.

If the Contractor obtains written permission from an affected landowner stating that the owner does not wish the spoil to be leveled and such is approved by the Engineer, the Engineer may release the Contractor from the obligation to level the spoil. If spoil is not leveled that was to be leveled as part of the Contract, the Engineer shall determine the credit to be applied to the Contractor's payment. No additional compensation is provided to the owner if the spoil is not leveled.

The Engineer may require the Contractor to obtain written statements from any or all of the landowners affected by the leveling of the spoil. A written statement from the owners indicating their complete satisfaction with the leveling of the spoil is sufficient to comply with this specification. The final decision, with respect to leveling of the spoil, shall be made by the Engineer.

f) Excavation Through Woodlots

The Contractor shall minimize disturbance through woodlots by reducing the limit of excavation to the bottom width of the drain and a minimum side slopes. The drain shall be routed around existing trees at the direction of the Engineer.

g) Excavation at Bridge and Culvert Sites

The Contractor shall excavate or clean through all bridges and culverts to match the grade line and the downstream channel cross-section. Bridges that span from bank to bank may be carefully removed to permit excavation below the bridge and then replaced to original condition. Permanent bridges must, if at all possible, be left intact. All necessary care and precautions shall be taken to protect the structure. The Contractor shall notify the Engineer before completing excavation in the area of a bridge or culvert if the excavation will expose the footings or otherwise cause structural instability.

Where the invert of any pipe culvert is above the grade line, the Contractor will be required to dig up the culvert, clean and relay it, so that the invert of the culvert is one hundred and fifty millimetres (150mm) below the grade for the ditch bottom at this location.

h) Obstructions

All trees, brush, fallen timber and debris shall be moved from the ditch cross-section and to such a distance on each side to eliminate any interference with the spreading of the spoil. The roots shall be left in the banks if no bank excavation is required as part of the new channel excavation. In wooded or heavily overgrown areas all cleared material

may be pushed into piles or rows along the edge of the cleared path and away from leveled spoil. All dead trees along either side of the drain that may impede the performance of the drain if allowed to remain and fall into the ditch, shall be removed prior to excavation and put in piles, unless directed otherwise by the Engineer.

i) Tile Outlets

The location of all existing tile outlets may not be shown on the profile for the drain. The Contractor shall contact each owner and ensure that all tile outlets are marked prior to commencing excavation on the owner's property. If a marked tile outlet is damaged during or altered due to construction, the Contractor shall repair or replace the damaged or altered outlet as part of the Contract. If an existing outlet pipe does require replacement the Contractor shall confirm the replacement outlet pipe with the Engineer. Additional payment will be allowed for the repair or replacement of any unmarked tile outlets encountered during excavation. Where stone or concrete riprap protection exists at any existing tile outlet such protection shall be removed and replaced as necessary to protect the outlet after reconstruction of the channel.

If any outlet becomes plugged as a result of construction, the Contractor shall be obligated to free such outlet of any impediments. Where any damage results to tile leading to and upstream of the outlet, as a consequence of such construction, the Engineer may direct the Contractor to repair such tile and shall determine a fair compensation to be paid to the Contractor for performing the work.

j) Completion

At the time of final inspection, all work in the contract shall have the full dimensions and cross-sections specified.

B.7 INSTALLATION OF NEW CULVERT

Work under this item shall include the supply of all labour, equipment and materials required for supply and installation of culverts as outlined on the Contract Drawings. The Niagara Peninsula Standard Contract Document Special Provision B7 shall apply but the specifications and information on the Contract Drawings shall take precedence over Special Provision B7.

Payment shall be as per Plan Quantity.

The size and material for any new ditch crossings shall be as specified on the Contract Drawings. Any crossings assembled on-site shall be assembled in accordance with the manufacturer's specifications for on-site assembly.

Where a new crossing replaces an existing crossing the following shall apply: If directed on the drawings that the existing crossing is to be salvaged for the owner the

Contractor shall carefully remove the existing crossing and leave along the ditch or haul to a location as specified on the Drawings.

If the existing crossing is not to be saved then the Contractor shall remove and dispose of the existing crossing. Disposal by burying on-site must be approved by the Engineer.

All new pipe crossings shall be installed a minimum of 100mm below design grade (not as-constructed grade) or at the invert elevations as specified on the Drawings. If the ditch is over excavated greater than 200mm the Contractor shall confirm with the Engineer the elevations for installation of the new pipe crossing.

When an existing crossing is being replaced the contractor shall save all granular and riprap. New crossings can be backfilled with compacted on-site native material that is free of large rocks or stones. Contractor responsible for any damage to a culvert pipe as a result of rocks or stones in the backfill.

All new crossings shall have a minimum 6m laneway width and end slopes shall be at 1:1 slope or flatter. Finished crossing elevation shall provide a minimum of 300mm cover. Finished crossing surface shall be a minimum 150mm depth of Granular A for the minimum 6m width and extending from top of bank to top of bank using salvaged granular or imported granular as required.

Installation of private crossings during construction must be approved by the Engineer before the culvert is installed.

Where riprap protection is called for at either or both ends of a new culvert, such riprap shall be in accordance with Special Provision B20. Payment will be based on plan quantity.

Riprap to be adequately keyed in along the bottom of the slope. Riprap to extend to top of pipe or as directed on the Drawings. No riprap is required in the ditch bottom on the upstream side of a crossing. If riprap is required in the ditch bottom on the downstream side of a crossing it shall be specified on the Drawings. Any new end face slope not protected by riprap shall be seeded as per specifications for ditch bank seeding.

B.20 HAND LAND RIP RAP WITH FILTER CLOTH

Rip rap complete with filter fabric underlay (geotextile) shall be placed by the Contractor at the locations shown on the drawing or as requested by the Drainage Superintendent. Rip rap shall consist of 200 – 250 mm dia. stones (min.) and shall be placed at 300 mm minimum thickness. Along upstream edges, where surface water will enter the drain, the underlay shall extend a minimum of 300 mm upstream from the rip rap and be keyed into the soil a minimum of 300 mm. The finished elevation of the rip rap shall be at design elevation or flush with the ground.

Work under this item shall include the supply of all labour, equipment and materials required for placing riprap as outlined on the Contract Drawings. The Niagara Peninsula Standard Contract Document Special Provision B20 shall apply but the specifications and information on the Contract Drawings shall take precedence over Special Provision B20.

Payment shall be as per Plan Quantity.

LABOUR CONDITIONS & FAIR WAGE SCHEDULE
(Refer to Niagara Peninsula Standard Contract Documents)

STANDARD DRAWINGS
(Refer to Niagara Peninsula Standard Contract Documents)

SUPPLEMENTARY GENERAL
CONDITIONS OF CONTRACT
(Refer to Niagara Peninsula Standard Contract Documents)

OPS GENERAL CONDITIONS OF CONTRACT
(Refer to Niagara Peninsula Standard Contract Documents)

CONTRACT DRAWINGS
(Refer to Appendix E, F and G)