

**Jackson and Schultz Municipal Drains 2017  
Township of North Huron  
(East Wawanosh Ward)**



**DIETRICH ENGINEERING LIMITED**  
CONSULTING ENGINEERS

*Reference No. 1632*

*January 30, 2017*

Jackson and Schultz Municipal Drains 2017  
Township of North Huron  
(East Wawanosh Ward)

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Waterloo, Ontario

January 30, 2017

**Jackson and Schultz Municipal Drains 2017**  
**Township of North Huron**  
**(East Wawanosh Ward)**

**To the Reeve and Council  
of the Township of North Huron**

**Members of Council:**

**Introduction**

We are pleased to present our report on the "Jackson and Schultz Municipal Drains 2017", serving parts of Lots 36 to 38, Concession 3 and parts of Lots 36 to 38, Concession 4 in the Township of North Huron, East Wawanosh Ward, County of Huron.

Authority to prepare this report was obtained by a resolution of the Township of North Huron Council at its July 4, 2016 meeting to appoint Dietrich Engineering Limited to prepare an Engineer's Report.

In accordance with your instructions pursuant to a request received by Council under Section 78 of the Drainage Act, R.S.O. 1990, we have made an examination and survey of the affected area and submit herewith our Report which includes Plan, Profiles and Specifications for this work.

The attached Plan and Profiles, Drawing No. 1 to 3, Reference No. 1632, Specifications and the Instructions to Tenderers form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.

**History**

The Jackson Municipal Drain was originally constructed under the authority of a report prepared by Gamsby and Mannerow Limited, dated July 4, 1969. Three (3) drainage systems were constructed under this report.

'A' Drain consisted of the construction of 1130 feet of open ditch and 2150 feet of 6" to 14" diameter tile. 'A' Drain outlets into the Hallahan Municipal Drain in Lot 37, Concession 3. The upstream end of 'A' Drain is on the westerly side of Scott Line adjacent to Lot 36, Concession 4.

'B' Drain consisted of the installation of 2145 feet of 6" to 8" diameter tile from an outlet into 'A' Drain in Lot 37, Concession 3 upstream into Lot 36, Concession 3.

'C' Drain consisted of the installation of 1912 feet of 6" to 8" diameter tile from an outlet into 'A' Drain in Lot 37, Concession 3 upstream to the property line between Lots 37 and 38, Concession 4.

In June 1985, the open portion 'A' Drain was enclosed by means of a 400mm (16") diameter tile drainage system. This tile was incorporated as a Municipal Drain under the authority of a report submitted by Huron-Middlesex Engineering Ltd, dated November 5, 1985.

The Schultz Municipal Drain was constructed under the authority of a report prepared by Gamsby and Mannerow Limited, dated April 21, 1969. This drainage system consisted of the installation of 3550 feet of 6" to 18" diameter tile. The Schultz Drain outlets into the Hallahan Drain in Lot 37, Concession 3. The upper end of this drain is at the property line between Lots 35 and 36, Concession 3.

The latest report on the Hallahan Municipal Drain was prepared by Gamsby and Mannerow Limited, dated February 21, 1977

### **On-Site Meeting**

In accordance with Section 9(1) of the Drainage Act, R.S.O. 1990, an on-site meeting was held on Friday, November 18, 2016. The place of meeting was on the Scott Line Road Allowance adjacent to the Vaughn Toll property; Lot 37, Concession 3. Persons in attendance were:

William Dietrich, P. Eng.	Dietrich Engineering Limited
Jim Campbell	Deputy-Reeve, Township of North Perth
Ray Hallahan	Councillor, Township of North Perth
Wayne Cantelon	Landowner
Vaughn Toll	Landowner
Dirk Nauwelaerts	Landowner
Ron Howatt	Landowner

### **Information Meeting**

An information meeting was held on January 23, 2017 at the Township of North Huron Municipal Office. Persons in attendance were:

William Dietrich, P. Eng.	Dietrich Engineering Limited
Neil Vincent	Reeve, Township of North Perth
Jim Campbell	Deputy-Reeve, Township of North Perth
Ray Hallahan	Councillor, Township of North Perth
Vaughn Toll	Landowner
Dirk Nauwelaerts	Landowner
Dan Snell	Landowner
Ron Howatt	Landowner

The information provided proposed upgrading the Jackson and Schultz Municipal drainage systems to today's standards. This meeting provided a review of the design of the proposed drainage systems, the estimated costs of the project and proposed assessments.

### **Findings**

We have made an examination of the drainage area and have found the following:

1. The existing Jackson and Schultz Municipal Drains are in a poor state of repair and is neither of sufficient capacity nor depth to drain the surrounding and upstream lands within the watershed at today's standards of drainage.

## Recommendations

It is our recommendation that:

### 1. Jackson Municipal Drain

A new tile drainage system be constructed and the existing tile drainage system constructed under the authority of the report prepared by Gamsby and Mannerow Limited, dated July 4, 1969 shall be abandoned.

- a) 'A' Drain shall include the installation of 965 metres of 250mm to 600mm diameter tile from an outlet in the Hallahan Municipal Drain in Lot 37, Concession 3 upstream to the westerly side of the Scott Line adjacent to Lot 36, Concession 4.
- b) 'B' Drain shall include the installation of 419 metres of 250mm to 300mm diameter tile from an outlet into 'A' Drain in Lot 37, Concession 3 upstream, to the westerly side of Scott Line adjacent to Lot 36, Concession 3.
- c) 'C' Drain shall include the installation of 408 metres of 250mm to 300mm diameter tile from an outlet into 'A' Drain in Lot 37, Concession 3 upstream to the property in between Lots 37 and 38, Concession 4.

### 2. Schultz Municipal Drain

The Lower portion of the Schultz Municipal Drain shall be replaced with a new tile drainage system consisting of 252 metres of 750mm diameter tile from the westerly side of Scott Line adjacent to Lot 36, Concession 3 to the outlet in the Hallahan Municipal Drain in Lot 37, Concession 3.

The existing tile drainage constructed under the authority of the report prepared by Gamsby and Mannerow Limited, dated April 21, 1969 shall be abandoned.

3. This new drainage system shall be known as the "Jackson and Schultz Municipal Drains 2017".
4. The drainage coefficient design standard used for this drain is 38mm of rainfall per 24 hours.
5. The Hallahan Municipal Drain drainage system shall be cleaned out from the outlet of the Jackson Drain to Moncrief Road under the municipal drain maintenance program.

## Summary of Proposed Works

The proposed work consists of the installation of approximately 2044 metres of 250mm to 750mm diameter concrete field tile and HDPE pipes; and the installation of seven (7) concrete catch basins.

## Working Area

The working area for construction purposes shall be a width of twenty (20) metres centered on the proposed tile drain. The working area for maintenance purposes shall be a width of ten (10) metres centered on the proposed tile drain. Each landowner on whose property the drainage work is to be constructed shall designate access to and from the working area.

## Watershed Characteristics

The Drainage Area comprises approximately 197.2 hectares. Land use within the watershed is primarily agricultural.

### Allowances

In accordance with Sections 29 and 30 of the Drainage Act, R.S.O. 1990, we determine the allowances payable to Owners entitled thereto as follows.

Lot or Part	Con.	Owner	Roll No.	Right-of-Way (Section 29)	Damages to Lands and Crops (Section 30)	Total Allowances
<b>Jackson Municipal Drain 2017</b>						
A) <u>'A' Drain</u>						
37	3	V. & M. Toll	3-020	\$5,860	\$5,370	\$11,230
36	4	R., S. & D. Snell	4-021		\$500	\$500
37	4	R. Howatt	4-022	\$4,610	\$4,280	\$8,890
<b>Total Allowances, 'A' Drain</b>				<b>\$10,470</b>	<b>\$10,150</b>	<b>\$20,620</b>
B) <u>'B' Drain</u>						
36	3	D. Nauwelaerts & N. Nauwelaerts-Vannueten	3-018		\$500	\$500
37	3	V. & M. Toll	3-020	\$3,690	\$3,190	\$6,880
<b>Total Allowances, 'B' Drain</b>				<b>\$3,690</b>	<b>\$3,690</b>	<b>\$7,380</b>
C) <u>'C' Drain</u>						
37	3	V. & M. Toll	3-020	\$980	\$850	\$1,830
37	4	R. Howatt	4-022	\$1890	\$1,060	\$2,950
38	4	Cantelon Farms Ltd.	4-023		\$500	\$500
<b>Total Allowances, 'C' Drain</b>				<b>\$2,870</b>	<b>\$2,410</b>	<b>5,280</b>
<b>Total Allowances, Jackson Municipal Drain</b>				<b>\$17,030</b>	<b>\$16,250</b>	<b>\$33,280</b>
<b>Schultz Municipal Drain 2017</b>						
36	3	D. Nauwelaerts & N. Nauwelaerts-Vannueten	3-018		\$500	\$500
37	3	V. & M. Toll	3-020	\$2,150	\$2,160	\$4,310
<b>Total Allowances, Schultz Municipal Drain</b>				<b>\$2,150</b>	<b>\$2,660</b>	<b>\$4,810</b>
<b>Total Allowances – Jackson and Schultz Municipal Drains 2017</b>				<b>\$19,180</b>	<b>\$18,910</b>	<b>\$38,090</b>

Total Allowances, under Sections 29 and 30 of the Drainage Act, R.S.O. 1990;  
Jackson and Schultz Municipal Drains 2017.

**\$38,090**

The agricultural land values used for calculating allowances for Right-of-Way was \$37,000/ha.

The allowances for Right-of-Way under Section 29 of the Drainage Act, R.S.O. 1990 were calculated based on 25% of the land value for a 10 metre Right-of-Way.

Allowances for Right-of-Way were not provided in the Jackson drainage report prepared by Gamsby and Mannerow Limited, dated July 4, 1969 nor the Schultz drainage report prepared by Gamsby and Mannerow Limited, dated April 21, 1969, which authorized the construction of the existing drains.

## Estimated Construction Costs

We have made an estimate of the cost of the proposed work which is outlined in detail as follows:

### Labour, Equipment, and Materials

#### Jackson Municipal Drain

##### A) 'A' Drain

	<u>Description</u>	<u>Quantity</u>	<u>\$/Unit</u>	<u>Total</u>
1)	Supply 600mm diameter H.D.P.E. (320 kPa) Solid pipe complete with rodent grate	6 m	\$ 100.00	\$ 600.00
	Installation of 600mm diameter outlet pipe complete with quarry stone rip-rap protection and geotextile filter material (20m <sup>2</sup> )	l.s.		\$ 2,000.00
2)	Supply 600mm diameter concrete field tile	355 m	\$ 48.00	\$ 17,040.00
	Installation by means of wheel trencher (Sta. 0+006 - Sta. 0+361)	355 m	\$ 28.00	\$ 9,940.00
3)	Supply 525mm diameter concrete field tile	273 m	\$ 34.00	\$ 9,282.00
	Installation by means of wheel trencher (Sta. 0+361 - Sta. 0+534)	173 m	\$ 27.00	\$ 4,671.00
	Installation by means of excavator on crushed stone bedding (Sta. 0+534 - Sta. 0+634)	100 m	\$ 60.00	\$ 6,000.00
4)	Supply 300mm diameter concrete field tile	130 m	\$ 16.00	\$ 2,080.00
	Installation by means of wheel trencher (Sta. 0+634 - Sta. 0+764)	130 m	\$ 25.00	\$ 3,250.00
5)	Supply 250mm diameter concrete field tile	181 m	\$ 15.00	\$ 2,715.00
	Installation by means of wheel trencher (Sta. 0+764 - Sta. 0+945)	181 m	\$ 22.00	\$ 3,982.00
6)	Supply and install 900mm X 1800mm concrete catch basin at Sta. 0+361 (inline type)	1 ea.	\$ 4,000.00	\$ 4,000.00
7)	Supply and install 525mm x 300mm H.D.P.E. wye at Sta. 0+506	1 ea.	\$ 500.00	\$ 500.00
8)	Supply and install 900mm X 1200mm concrete catch basin at Sta. 0+634 (inline type)	1 ea.	\$ 2,000.00	\$ 2,000.00



9) Offset concrete ditch inlet catch basin 187m  
northeast of Sta. 0+634:

a) Supply 400mm diameter concrete field tile	187 m	\$	25.00	\$	4,675.00
Installation by means of wheel trencher					
(Sta. 0+000 - Sta. 0+187)	187 m	\$	26.00	\$	4,862.00
b) Supply and install 600mm x 600mm concrete ditch inlet catch basin at Sta. 0+187 (inline type)	1 ea.	\$	1,800.00	\$	1,800.00
c) Supply and install 450mm x 250mm H.D.P.E. wye at Sta. 0+107	1 ea.	\$	300.00	\$	300.00
10) Tile connections	I.s.			\$	1,903.00
<b>Sub-Total</b>				<b>\$</b>	<b>81,600.00</b>

11) Work to be done on the Township of North Huron Road Allowance, Scott Line  
(Sta. 0+945 to Sta. 0+965)

a) Supply 250mm diameter H.D.P.E. pipe (coupler joints)	20 m	\$	25.00	\$	500.00
Installation of 250mm diameter H.D.P.E. pipe by excavator including granular base and backfill (open cut method)	I.s.			\$	4,000.00
b) Supply and install 600mm X 600mm concrete catch basin at Sta. 0+965 (Inline type)	1 ea.	\$	2,000.00	\$	2,000.00
<b>Sub-Total</b>				<b>\$</b>	<b>6,500.00</b>

**TOTAL ESTIMATED CONSTRUCTION COSTS**  
**'A' Drain**

**\$ 88,100.00**

**B) 'B' Drain**

<u>Description</u>	<u>Quantity</u>		<u>\$/Unit</u>		<u>Total</u>
1) Supply 300mm diameter concrete field tile	200 m	\$	16.00	\$	3,200.00
Installation by means of wheel trencher					
(Sta. 0+000 - Sta. 0+200)	200 m	\$	25.00	\$	5,000.00
2) Supply 250mm diameter concrete field tile	199 m	\$	15.00	\$	2,985.00
Installation by means of wheel trencher					
(Sta. 0+200 - Sta. 0+399)	199 m	\$	22.00	\$	4,378.00
3) Tile connections	I.s.			\$	507.00
<b>Sub-Total</b>				<b>\$</b>	<b>16,070.00</b>

4) Work to be done on the Township of North Huron Road Allowance, Scott Line  
(Sta. 0+399 to Sta. 0+419)

a) Supply 250mm diameter H.D.P.E. pipe (coupler joints)	20 m	\$ 25.00	\$ 500.00
Installation of 250mm diameter H.D.P.E. pipe by excavator including granular base and backfill (open cut method)	I.s.		\$ 4,000.00
b) Supply and install 600mm X 600mm concrete catch basin at Sta. 0+419 (Inline type)	1 ea.	\$ 2,000.00	\$ 2,000.00
<b>Sub-Total</b>			<b>\$ 6,500.00</b>

**TOTAL ESTIMATED CONSTRUCTION COSTS**  
**'B' Drain**

**\$ 22,570.00**

**C) 'C' Drain**

<u>Description</u>	<u>Quantity</u>	<u>\$/Unit</u>	<u>Total</u>
1) Supply 300mm diameter concrete field tile	104 m	\$ 16.00	\$ 1,664.00
Installation by means of wheel trencher (Sta. 0+000 - Sta. 0+104)	104 m	\$ 25.00	\$ 2,600.00
2) Supply 300mm diameter H.D.P.E. pipe (Boss 2000 or equivalent)	6 m	\$ 30.00	\$ 180.00
Installation by means of wheel trencher (Sta. 0+104 - Sta. 0+110)	6 m	\$ 50.00	\$ 300.00
3) Supply 250mm diameter non perforated H.D.P.E. agricultural sub drain tubing	298 m	\$ 13.00	\$ 3,874.00
Installation by means of drainage plow (Sta. 0+110 - Sta. 0+408)	298 m	\$ 15.00	\$ 4,470.00
4) Supply and install 600mm X 600mm concrete catch basins at Sta. 0+110 and Sta. 408 (inline type)	2 ea.	\$ 1,800.00	\$ 3,600.00
5) Dewatering and removing stumps	I.s.		\$ 1,000.00
6) Tile connections	I.s.		\$ 492.00

**TOTAL ESTIMATED CONSTRUCTION COSTS**  
**'C' Drain**

**\$ 18,180.00**

**TOTAL ESTIMATED CONSTRUCTION COSTS**  
**Jackson Municipal Drain 2017**

**\$ 128,850.00**

### A) Schultz Municipal Drain

<u>Description</u>	<u>Quantity</u>	<u>\$/Unit</u>	<u>Total</u>
1) Supply 750mm diameter H.D.P.E. (320 kPa) Solid pipe complete with rodent grate	6 m	\$ 130.00	\$ 780.00
Installation of 750mm diameter outlet pipe complete with quarry stone rip-rap protection and geotextile filter material (20m <sup>2</sup> )	l.s.		\$ 2,000.00
2) Supply 750mm diameter concrete field tile	226 m	\$ 75.00	\$ 16,950.00
Installation by means of wheel trencher (Sta. 0+006 - Sta. 0+232)	226 m	\$ 35.00	\$ 7,910.00
3) Tile connections	l.s.		\$ 1,020.00
<b>Sub-Total</b>			<b>\$ 28,660.00</b>

### 4) Work to be done on the Township of North Huron Road Allowance, Scott Line (Sta. 0+232 to Sta. 0+252)

a) Supply 750mm diameter H.D.P.E. pipe (coupler joints)	20 m	\$ 120.00	\$ 2,400.00
Installation of 750mm diameter H.D.P.E. pipe by excavator including granular base and backfill (open cut method)	l.s.		\$ 4,000.00
b) Supply and install 900mm X 1200mm concrete catch basin at Sta. 0+252 (Inline type)	1 ea.	\$ 3,000.00	\$ 3,000.00
<b>Sub-Total</b>			<b>\$ 9,400.00</b>

### TOTAL ESTIMATED CONSTRUCTION COSTS

**Schultz Municipal Drain** **\$ 38,060.00**

## Summary of Construction Costs

### Jackson Municipal Drain

A) Total Estimated Construction Costs - 'A' Drain	\$ 88,100.00
B) Total Estimated Construction Costs - 'B' Drain	\$ 22,570.00
C) Total Estimated Construction Costs - 'C' Drain	\$ 18,180.00

### TOTAL ESTIMATED CONSTRUCTION COSTS

**Jackson Municipal Drain** **\$ 128,850.00**

**Schultz Municipal Drain**

A) Total Estimated Construction Costs \$ 38,060.00

**TOTAL ESTIMATED CONSTRUCTION COSTS**

**Schultz Municipal Drain** **\$ 38,060.00**

Total Estimated Materials \$ 69,425.00

Total Estimated Labour and Equipment \$ 97,485.00

**TOTAL ESTIMATED CONSTRUCTION COSTS**

**JACKSON AND SCHULTZ MUNICIPAL DRAINS** **\$ 166,910.00**

**Summary of Costs**

Allowances under Sections 29, and 30 of the Drainage Act, R.S.O. 1990 \$ 38,090.00

Total Estimated Construction Costs \$ 166,910.00

Meetings, survey, design, preparation of preliminary cost estimates \$ 29,600.00

Preparation of contract documents, contract administration, \$ 19,100.00

Contingencies, Interest, tile repairs, and net H.S.T. \$ 8,800.00

**TOTAL ESTIMATED COSTS**

**JACKSON AND SCHULTZ MUNICIPAL DRAINS 2017** **\$ 262,500.00**

The estimated cost of the work in the Township of North Huron is \$262,500.00

**Assessment**

We assess the cost of this work against the lands and roads liable for assessment for benefit and outlet as shown on the annexed Schedules of Assessment. We have determined that there is no injuring liability assessment involved.

The existing Jackson Municipal Drain constructed under the authority of reports prepared by Gamsby and Mannerow Limited, dated July 4, 1969 and Huron Middlesex Engineering Limited, dated November 5, 1985 shall be abandoned and cease to be a municipal drain after the Jackson and Schultz Municipal Drains 2017 is constructed. The existing Schultz Municipal Drain constructed under the authority of a report prepared by Gamsby and Mannerow Limited, dated April 21, 1969 shall be abandoned and cease to be a municipal drain after the Jackson and Schultz Municipal Drains 2017 is constructed. The ownership of the existing tile drains shall be reverted to the landowners for that portion of the drain which is situated on their respective properties.

Whether or not the Township of North Huron elects to do the work on their property, Sta. 0+945 to Sta. 0+965 Jackson Drain, 'A' Drain; Sta. 0+399 to Sta. 0+419 Jackson Drain, 'B' Drain; and Sta. 0+232 to Sta. 0+252 Schultz Drain, they shall be assessed the actual increased costs to the drainage works due to the construction and operation of the road as Special Assessments in addition to any benefit and outlet assessments. The Special Assessments shall be made up of the actual construction costs plus an allowance for administration costs.

**Maintenance**

After completion, the Jackson and Schultz Municipal Drains 2017 shall be maintained by the Township of North Huron at the expense of all the lands and roads assessed in the attached Schedules of Assessment for Maintenance and in the same relative proportions until such time as the assessment is changed under the Drainage Act.

Respectfully submitted,

**DIETRICH ENGINEERING LIMITED**

  
W. J. Dietrich, P.Eng.

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**SCHEDULE OF ASSESSMENT FOR CONSTRUCTION  
Jackson Municipal Drain 2017  
Township of North Huron  
(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	(SEC. 22) BENEFIT LIABILITY	(SEC. 23) OUTLET LIABILITY	(SEC. 26) SPECIAL ASSESSMENT	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
<b>"A" Drain</b>											
36	3	10.1	D. Nauwelaerts & N. Nauwelaerts-Vannueten	(3-018)		\$3,332		\$3,332	\$1,111		\$2,221
37	3	17.4	V. & M. Toll	(3-020)	\$40,000	\$5,371		\$45,371	\$15,124	\$11,230	\$19,017
38	3	0.8	Sigma Farms Ltd.	(3-022)		\$159		\$159	\$53		\$106
36	4	9.3	R., S. & D. Snell	(4-021)	\$2,000	\$6,037		\$8,037	\$2,679	\$500	\$4,858
37	4	48.6	R. Howatt	(4-022)	\$35,200	\$25,136		\$60,336	\$20,112	\$8,890	\$31,334
38	4	12.5	Cantelon Farms Ltd.	(4-023)		\$5,583		\$5,583	\$1,861		\$3,722
Total Assessment on Lands					<u>\$77,200</u>	<u>\$45,618</u>		<u>\$122,818</u>	<u>\$40,940</u>	<u>\$20,620</u>	<u>\$61,258</u>
Scott Line		2.0	Township of North Huron		<u>\$7,000</u>	<u>\$4,042</u>	<u>\$8,040</u>	<u>\$19,082</u>			<u>\$19,082</u>
Total Assessment on Roads					<u>\$7,000</u>	<u>\$4,042</u>	<u>\$8,040</u>	<u>\$19,082</u>			<u>\$19,082</u>
<b>Total Assessment on Lands and Roads, Jackson Municipal Drain 2017 ("A" Drain)</b>					<u><b>\$84,200</b></u>	<u><b>\$49,660</b></u>	<u><b>\$8,040</b></u>	<u><b>\$141,900</b></u>	<u><b>\$40,940</b></u>	<u><b>\$20,620</b></u>	<u><b>\$80,340</b></u>

- NOTES: 1. All above lands are used for agricultural purposes.  
2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.  
3. The NET ASSESSMENT is provided for information purposes only.

**SCHEDULE OF ASSESSMENT FOR CONSTRUCTION**  
**Jackson Municipal Drain 2017**  
**Township of North Huron**  
**(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	(SEC. 22) BENEFIT LIABILITY	(SEC. 23) OUTLET LIABILITY	(SEC. 26) SPECIAL ASSESSMENT	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
<b>"B" Drain</b>											
36	3	10.1	D. Nauwelaerts & N. Nauwelaerts-Vannueten	(3-018)	\$4,500	\$6,797		\$11,297	\$3,766	\$500	\$7,031
37	3	6.5	V. & M. Toll	(3-020)	\$11,700	\$217		\$11,917	\$3,972	\$6,880	\$1,065
36	4	1.6	R., S. & D. Snell	(4-021)		\$1,087		\$1,087	\$362		\$725
37	4	0.8	R. Howatt	(4-022)		\$28		\$28	\$9		\$19
Total Assessment on Lands					<u>\$16,200</u>	<u>\$8,129</u>		<u>\$24,329</u>	<u>\$8,109</u>	<u>\$7,380</u>	<u>\$8,840</u>
Scott Line					<u>\$2,000</u>	<u>\$1,631</u>	<u>\$8,040</u>	<u>\$11,671</u>			<u>\$11,671</u>
Total Assessment on Roads					<u>\$2,000</u>	<u>\$1,631</u>	<u>\$8,040</u>	<u>\$11,671</u>			<u>\$11,671</u>
<b>Total Assessment on Lands and Roads, Jackson Municipal Drain 2017 ("B" Drain)</b>					<u><u>\$18,200</u></u>	<u><u>\$9,760</u></u>	<u><u>\$8,040</u></u>	<u><u>\$36,000</u></u>	<u><u>\$8,109</u></u>	<u><u>\$7,380</u></u>	<u><u>\$20,511</u></u>

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**SCHEDULE OF ASSESSMENT FOR CONSTRUCTION  
Jackson Municipal Drain 2017  
Township of North Huron  
(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	(SEC. 22) BENEFIT LIABILITY	(SEC. 23) OUTLET LIABILITY	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
<b>"C" Drain</b>										
37	3	2.0	V. & M. Toll	(3-020)	\$3,500	\$207	\$3,707	\$1,236	\$1,830	\$641
37	4	4.0	R. Howatt	(4-022)	\$5,000	\$881	\$5,881	\$1,960	\$2,950	\$971
38	4	12.5	Cantelon Farms Ltd.	(4-023)	\$3,000	\$16,212	\$19,212	\$6,404	\$500	\$12,308
Total Assessment on Lands					<u>\$11,500</u>	<u>\$17,300</u>	<u>\$28,800</u>	<u>\$9,600</u>	<u>\$5,280</u>	<u>\$13,920</u>
Total Assessments on Lands and Roads, Jackson Municipal Drain 2017 ("C" Drain)					<u><u>\$11,500</u></u>	<u><u>\$17,300</u></u>	<u><u>\$28,800</u></u>	<u><u>\$9,600</u></u>	<u><u>\$5,280</u></u>	<u><u>\$13,920</u></u>

- NOTES: 1. All above lands are used for agricultural purposes.  
2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.  
3. The NET ASSESSMENT is provided for information purposes only.



**SCHEDULE OF ASSESSMENT FOR CONSTRUCTION  
Schultz Municipal Drain 2017  
Township of North Huron  
(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	(SEC. 22) BENEFIT LIABILITY	(SEC. 23) OUTLET LIABILITY	(SEC. 26) SPECIAL ASSESSMENT	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
36	3	93.1	D. Nauwelaerts & N. Nauwelaerts-Vannueten	(3-018)	\$8,000	\$17,435		\$25,435	\$8,478	\$500	\$16,457
37	3	1.6	V. & M. Toll	(3-020)	\$12,000	\$301		\$12,301	\$4,100	\$4,310	\$3,891
Total Assessment on Lands					<u>\$20,000</u>	<u>\$17,736</u>		<u>\$37,736</u>	<u>\$12,578</u>	<u>\$4,810</u>	<u>\$20,348</u>
Scott Line		1.4	Township of North Huron		\$6,000	\$859	\$10,960	\$17,819			\$17,819
Moncrief Road		0.4	Township of North Huron			\$245		\$245			\$245
Total Assessment on Roads					<u>\$6,000</u>	<u>\$1,104</u>	<u>\$10,960</u>	<u>\$18,064</u>			<u>\$18,064</u>
<b>Total Assessment on Lands and Roads, Schultz Municipal Drain 2017</b>					<u><b>\$26,000</b></u>	<u><b>\$18,840</b></u>	<u><b>\$10,960</b></u>	<u><b>\$55,800</b></u>	<u><b>\$12,578</b></u>	<u><b>\$4,810</b></u>	<u><b>\$38,412</b></u>

- NOTES: 1. All above lands are used for agricultural purposes.  
2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.  
3. The NET ASSESSMENT is provided for information purposes only.

**SCHEDULE OF NET ASSESSMENT FOR CONSTRUCTION  
Jackson and Schultz Municipal Drains 2017  
Township of North Huron  
(East Wawanosh Ward)**

LOT OR PART	CON.	OWNER	ROLL NO.	Jackson Drain "A" DRAIN	"B" Drain	"C" Drain	Schultz Drain	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
36	3	D. Nauwelaerts & N. Nauwelaerts-Vannueten	(3-018)	\$3,332	\$11,297		\$25,435	\$40,064	\$13,355	\$1,000	\$25,709
37	3	V. & M. Toll	(3-020)	\$45,371	\$11,917	\$3,707	\$12,301	\$73,296	\$24,432	\$24,250	\$24,614
38	3	Sigma Farms Ltd.	(3-022)	\$159				\$159	\$53		\$106
36	4	R., S. & D. Snell	(4-021)	\$8,037	\$1,087			\$9,124	\$3,041	\$500	\$5,583
37	4	R. Howatt	(4-022)	\$60,336	\$28	\$5,881		\$66,245	\$22,082	\$11,840	\$32,323
38	4	Cantelon Farms Ltd.	(4-023)	\$5,583		\$19,212		\$24,795	\$8,265	\$500	\$16,030
Total Assessment on Lands				<u>\$122,818</u>	<u>\$24,329</u>	<u>\$28,800</u>	<u>\$37,736</u>	<u>\$213,683</u>	<u>\$71,228</u>	<u>\$38,090</u>	<u>\$104,365</u>
Scott Line				\$19,082	\$11,671		\$17,819	\$48,572			\$48,572
Moncrief Road							\$245	\$245			\$245
Total Assessment on Roads				<u>\$19,082</u>	<u>\$11,671</u>		<u>\$18,064</u>	<u>\$48,817</u>			<u>\$48,817</u>
<b>Total Assessment on Lands and Roads, Jackson and Schultz Municipal Drains 2017</b>				<u><u>\$141,900</u></u>	<u><u>\$36,000</u></u>	<u><u>\$28,800</u></u>	<u><u>\$55,800</u></u>	<u><u>\$262,500</u></u>	<u><u>\$71,228</u></u>	<u><u>\$38,090</u></u>	<u><u>\$153,182</u></u>

- NOTES:
1. All above lands are used for agricultural purposes.
  2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.
  3. The NET ASSESSMENT is provided for information purposes only.

**SCHEDULE OF ASSESSMENT FOR MAINTENANCE  
Jackson Municipal Drain 2017  
Township of North Huron  
(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	PORTION OF MAINTENANCE COST
<b><u>"A" Drain</u></b>					
36	3	10.1	D. Nauwelaerts & N. Nauwelaerts-Vannueten	(3-018)	10.7%
37	3	17.4	V. & M. Toll	(3-020)	17.5%
38	3	0.8	Sigma Farms Ltd.	(3-022)	0.5%
36	4	9.3	R., S. & D. Snell	(4-021)	8.2%
37	4	48.6	R. Howatt	(4-022)	44.0%
38	4	12.5	Cantelon Farms Ltd.	(4-023)	12.7%
Total Assessment on Lands					<u>93.6%</u>
Scott Line		2.0	Township of North Huron		<u>6.4%</u>
Total Assessment on Roads					<u>6.4%</u>
<b>Total Assessment for Maintenance, Jackson Municipal Drain 2017 ("A" Drain)</b>					<b><u>100.0%</u></b>

NOTES: 1. All above lands are used for agricultural purposes.

**SCHEDULE OF ASSESSMENT FOR MAINTENANCE**  
**Jackson Municipal Drain 2017**  
**Township of North Huron**  
**(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	PORTION OF MAINTENANCE COST
<b><u>"B" Drain</u></b>					
36	3	10.1	D. Nauwelaerts & N. Nauwelaerts-Vannueten	(3-018)	47.2%
37	3	6.5	V. & M. Toll	(3-020)	30.2%
36	4	1.6	R., S. & D. Snell	(4-021)	7.5%
37	4	0.8	R. Howatt	(4-022)	3.8%
Total Assessment on Lands					<u>88.7%</u>
Scott Line		0.8	Township of North Huron		<u>11.3%</u>
Total Assessment on Roads					<u>11.3%</u>
<b>Total Assessment for Maintenance, Jackson Municipal Drain 2017 ("B" Drain)</b>					<b><u><u>100.0%</u></u></b>

NOTES: 1. All above lands are used for agricultural purposes.

**SCHEDULE OF ASSESSMENT FOR MAINTENANCE  
Jackson Municipal Drain 2017  
Township of North Huron  
(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	PORTION OF MAINTENANCE COST
<b><u>"C" Drain</u></b>					
37	3	2.0	V. & M. Toll	(3-020)	9.6%
37	4	4.0	R. Howatt	(4-022)	15.2%
38	4	12.5	Cantelon Farms Ltd.	(4-023)	75.2%
Total Assessment on Lands					<u>100.0%</u>
<b>Total Assessment for Maintenance, Jackson Municipal Drain 2017 ("C" Drain)</b>					<u><u>100.0%</u></u>

NOTES: 1. All above lands are used for agricultural purposes.

**SCHEDULE OF ASSESSMENT FOR MAINTENANCE**  
**Schultz Municipal Drain 2017**  
**Township of North Huron**  
**(East Wawanosh Ward)**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	PORTION OF MAINTENANCE COST
36	3	93.1	D. Nauwelaerts & N. Nauwelaerts-Vannueten	(3-018)	92.4%
37	3	1.6	V. & M. Toll	(3-020)	1.7%
Total Assessment on Lands					94.1%
Scott Line		1.4	Township of North Huron		4.6%
Moncrief Road		0.4	Township of North Huron		1.3%
Total Assessment on Roads					5.9%
<b>Total Assessment for Maintenance, Schultz Municipal Drain 2017</b>					<b>100.0%</b>

NOTES: 1. All above lands are used for agricultural purposes.

**SPECIFICATIONS FOR THE CONSTRUCTION OF  
MUNICIPAL DRAINAGE WORKS**

**DIVISION A – General Conditions**

**DIVISION C – Specification for Tile Drains**

**DIVISION H – Special Provisions**

# DIVISION A

## GENERAL CONDITIONS

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# **DIVISION A**

## **GENERAL CONDITIONS**

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### **A.1 SCOPE**

The work to be done under this contract consists of supplying all labour, equipment and materials to construct the drainage work as outlined in the Scope of Work, Drawings, General Conditions and other Specifications.

### **A.2 TENDERS**

Tenders are to be submitted on a lump sum basis for the complete works or a portion thereof, as instructed by the Municipality. The Scope of Work must be completed and submitted with the Form of Tender and Agreement. A certified cheque is required as Tender Security, payable to the Treasurer of the Municipality.

All certified cheques, except that of the bidder to whom the work is awarded will be returned within ten (10) days of the time the Contract is awarded. The certified cheque of the bidder to whom the work is awarded will be retained as Contract Security and returned when the Municipality receives a Completion Certificate for the work.

A certified cheque is not required if the Contractor provides an alternate form of Contract Security such as a Performance Bond for 100% of the amount of the Tender or other satisfactory security, if required/permitted by the Municipality. A Performance Bond may also be required to insure maintenance of the work for a period of one (1) year after the date of the Completion Certificate.

### **A.3 EXAMINATIONS OF SITE, DRAWINGS AND SPECIFICATIONS**

The Tenderer must examine the premises and site to compare them with the Drawings and Specifications in order to satisfy himself of the existing conditions and extent of the work to be done before submission of his Tender. No allowance shall subsequently be made on behalf of the Contractor by reason of any error on his part. Any estimates of quantities shown or indicated on the Drawings, or elsewhere are provided for the convenience of the Tenderer. Any use made of these quantities by the Tenderer in calculating his Tender shall be done at his own risk. The Tenderer for his own protection should check these quantities for accuracy.

The standard specifications (Divisions B through G) shall be considered complementary and where a project is controlled under one of the Divisions, the remaining Divisions will apply for miscellaneous works.

In case of any inconsistency or conflict between the Drawings and Specifications, the following order of precedence shall apply:

- Direction of the Engineer
- Special Provisions (Division H)
- Scope of Work
- Contract Drawings
- Standard Specifications (Divisions B through G)
- General Conditions (Division A)

#### A.4 PAYMENT

Progress payments equal to 87±% of the value of work completed and materials incorporated in the work will be made to the Contractor monthly. An additional ten per cent (10±%) will be paid 45 days after the final acceptance by the Engineer, and three per cent (3±%) of the Contract price may be reserved by the Municipality as a maintenance holdback for a one (1) year period from the date of the Completion Certificate. A greater percentage of the Contract price may be reserved by the Municipality for the same one (1) year period if in the opinion of the Engineer, particular conditions of the Contract requires such greater holdback.

After the completion of the work, any part of this reserve may be used to correct defects developed within that time from faulty workmanship and materials, provided that notice shall first be given to the Contractor and that he may promptly make good such defects.

#### A.5 CONTRACTOR'S LIABILITY INSURANCE

Prior to commencement of any work, the Contractor shall file with the Municipality evidence of compliance with all Municipality insurance requirements (Liability Insurance, WSIB, etc.) for no less than the minimum amounts as stated in the Purchasing Procedures of the Municipality. All insurance coverage shall remain in force for the entire contract period including the warranty period which expires one year after the date of the Completion Certificate.

The following are to be named as co-insured: Successful Contractor  
Sub-Contractor  
Municipality  
Dietrich Engineering Ltd.

#### A.6 LOSSES DUE TO ACTS OF NATURE, ETC.

All damage, loss, expense and delay incurred or experienced by the Contractor in the performance of the work, by reason of unanticipated difficulties, bad weather, strikes, acts of nature, or other mischances shall be borne by the Contractor and shall not be the subject of a claim for additional compensation.

#### A.7 COMMENCEMENT AND COMPLETION OF WORK

The work must commence as specified in the Form of Tender and Agreement. If conditions are unsuitable due to poor weather, the Contractor may be required, at the discretion of the Engineer to postpone or halt work until conditions become acceptable and shall not be subject of a claim for additional compensation.

The Contractor shall give the Engineer a minimum of 48 hours notice before commencement of work. The Contractor shall then arrange a meeting to be held on the site with Contractor, Engineer, and affected Landowners to review in detail the construction scheduling and other details of the work.

If the Contractor leaves the job site for a period of time after initiation of work, he shall give the Engineer and the Municipality a minimum of 24 hours notice prior to returning to the project. If any work is commenced without notice to the Engineer, the Contractor shall be fully responsible for all such work undertaken prior to such notification.

The work must proceed in such a manner as to ensure its completion at the earliest possible date and within the time limit set out in the Form of Tender and Agreement.

#### A.8 WORKING AREA AND ACCESS

Where any part of the drain is on a road allowance, the road allowance shall be the working area. For all other areas, the working area available to the Contractor to construct the drain is specified in the Special Provisions (Division H).

Should the specified widths become inadequate due to unusual conditions, the Contractor shall notify the Engineer immediately. Where the Contractor exceeds the specified working widths without authorization, he shall be held responsible for the costs of all additional damages.

If access off an adjacent road allowance is not possible, each Landowner on whose property the drainage works is to be constructed, shall designate access to and from the working area. The Contractor shall not enter any other lands without permission of the Landowner and he shall compensate the Landowner for damage caused by such entry.

#### A.9 SUB-CONTRACTORS

The Contractor shall not sublet the whole or part of this Contract without the approval of the Engineer.

#### A.10 PERMITS, NOTICES, LAWS AND RULES

The Contractor shall obtain and pay for all necessary permits or licenses required for the execution of the work (but this shall not include MTO encroachment permits, County Road permits permanent easement or rights of servitude). The Contractor shall give all necessary notices and pay for all fees required by law and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of the public's health and safety.

#### A.11 RAILWAYS, HIGHWAYS AND UTILITIES

A minimum of 72 hours' notice to the Railway or Highways, exclusive of Saturdays, Sundays, and Statutory Holidays, is required by the Contractor prior to any work activities on or affecting the applicable property. In the case of affected Utilities, a minimum of 48 hours' notice to the utility owner is required.

#### A.12 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 on his own shall be done at his own risk. Any additional cost incurred by the Contractor to remedy the wrong decision on his part shall be borne by the Contractor. The Engineer shall make the alterations necessary to correct errors or to adjust for unusual conditions during which time it will be the Contractor's responsibility to keep his men and equipment gainfully employed elsewhere on the project.

The Contract amount shall be adjusted in accordance with a fair evaluation of the work added or deleted.

#### A.13 ALTERATIONS AND ADDITIONS

The Engineer shall have the power to make alterations in the work shown or described in the Drawings and 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 deleted. The valuation shall be determined as a result of negotiations between the Contractor and the Engineer, but in all cases the Engineer shall maintain the final responsibility for the decision. Such alterations and variations shall in no way render the Contract void. No claims for a variation or alteration 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 such case shall the Contractor commence work which he considers to be extra before receiving the Engineer's approval.

#### A.14 SUPERVISION

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

#### A.15 FIELD MEETINGS

At the discretion of the Engineer, a field meeting with the Contractor or his representative, the Engineer and with those others that the Engineer deems to be affected, shall be held at the location and time specified by the Engineer.

#### A.16 PERIODIC AND FINAL INSPECTIONS

Periodic inspections by the Engineer will be made during the performance of the work. If ordered by the Engineer, the Contractor shall expose the drain as needed to facilitate inspection by the Engineer.

Final inspection by the Engineer will be made within twenty (20) days after he has received notice from the Contractor that the work is complete.

#### A.17 ACCEPTANCE BY THE MUNICIPALITY

Before any work shall be accepted by the Municipality, the Contractor shall correct all deficiencies identified by the Engineer and the Contractor shall leave the site neat and presentable.

#### A.18 WARRANTY

The Contractor shall repair and make good any damages or faults in the drain that may appear within one (1) year after its completion (as dated on the Completion Certificate) as the result of the imperfect or defective work done or materials furnished if certified by the Engineer as being due to one or both of these causes; but nothing herein contained shall be construed as in any way restricting or limiting the liability of the Contractor under the laws of the Country, Province or Locality in which the work is being done. Neither the Completion Certificate nor any payment there under, nor any provision in the Contract Documents shall relieve the Contractor from his responsibility.

#### A.19 TERMINATION OF CONTRACT BY THE MUNICIPALITY

If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should refuse or fail to supply enough properly skilled workmen or proper materials after having received seven (7) days notice in writing from the Engineer to supply additional workmen or materials to commence or complete the works, or if he should fail to make prompt payment to Sub-Contractors, or for material, or labour, or persistently disregards laws, ordinances, or the instruction of the Engineer, or otherwise be guilty of a substantial violation of the provisions of the Contract, then the Municipality, upon the certificate of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy, by giving the Contractor written notice, terminate the employment of the Contractor and take possession of the premises, and of all materials, tools and appliances thereon, and may finish the work by whatever method the Engineer may deem expedient but without delay or expense. In such a case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price will exceed the expense of finishing the work including compensation to the Engineer for his additional services and including the other damages of every name and nature, such excess shall be paid by the Contractor. If such expense will exceed such unpaid balance, the Contractor shall pay the difference to the Municipality. The expense incurred by the Municipality, as herein provided, shall be certified by the Engineer.

# **DIVISION H**

## **SPECIAL PROVISIONS**

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**Jackson and Schultz Municipal Drains 2017**  
**Township of North Huron**

**Reference No. 1632**

Special provisions means special directions containing requirements peculiar to the work not adequately provided for by the standard or supplemental Specifications. Special provisions shall take precedence and govern any standard or supplemental Specifications.

### **H.1 GENERAL**

The Contractor shall notify the Landowners and the Engineer forty-eight (48) hours prior to construction, and arrange a pre-construction meeting.

The Contractor shall notify the road superintendent forty-eight (48) hours prior to any commencement of work across Scott Line.

The Contractor shall verify the location of the new drainage system with the Engineer and the landowners prior to construction.

The Contractor shall check and verify all dimensions and elevations and report any discrepancies to the Engineer prior to proceeding with the work.

The Contractor shall be responsible to arrange all traffic control signals, signs and devices that are required for safe and proper traffic management during the installation of the drainage system. The Contractor shall contact the Township of North Huron for specified local procedures, guidelines and timelines. Traffic control shall meet the standards of Book 7 of the Ontario Traffic Manual.

The Contractor shall be responsible for notifying the public of any road closures or detours unless otherwise stated by the Township of North Huron.

The Contractor must maintain access to all driveways along the route of the drain as well as maintain access for all emergency vehicles at all times during construction.

The Contractor shall be responsible for all trench settlement.

### **H.2 UTILITIES**

All utilities shall be located and uncovered in the affected areas by the Contractor prior to construction.

The locations and elevations of all utilities shown on the drawings are approximate locations. Actual locations and elevations of all utilities must be verified by the Contractor prior to construction.

The Contractor shall arrange to have a representative of the utility owner on site during construction if it is a requirement by the utility owner.

### **H.3 WORKING AREA AND ACCESS**

Each landowner on whose property the drainage work is to be constructed shall designate access to and from the working area.

The working area for construction purposes shall be a width of twenty (20) metres centered on the proposed tile drain.

#### H.4 SEEDING

The Contractor shall supply and spread an approved grass seed mixture over any disturbed areas within the road allowance.

#### H.5 TOPSOIL, STRIPPING AND FINE GRADING

Where the drain is to be installed by means of an approved wheel trencher, the Contractor shall strip the topsoil for a width of 4 metres centred on the proposed drain. Where the drain is to be installed by means of an approved hydraulic excavator, the Contractor shall strip the topsoil for a width equal to the trench width.

The Contractor shall stockpile the topsoil and later spread it over the backfilled trench. The Contractor shall use a trim dozer to fine grade the topsoil once it has been placed on the trench.

The Contractor shall shape and grade the existing ditch to dewater the bush area (Jackson Drain, 'C' Drain, Sta. 0+106 to Sta. 0+408) prior to plowing in the 250mm diameter plastic drain. The Contractor shall reconstruct the berm behind the catch basin at Sta. 0+110 (Jackson Drain, 'C' Drain) after the tile drain is installed. The Contractor shall fine grade and fill in the surface swale after the drain is installed, Jackson Drain, 'C' Drain, Sta. 0+106 to Sta. 0+408.

#### H.6 PIPE, INSTALLATION, BEDDING & BACKFILL

##### H.6.1 Concrete Field Tile

An approved wheel trencher shall be used to install the concrete field tile. If poor soil conditions are encountered, the Contractor shall install the tile in accordance with the attached typical concrete pipe installation with wrapped bedding details.

All concrete tile with diameters 250mm to 525mm shall be Heavy-Duty Extra Quality Concrete Drain Tile 1500D. All concrete tile with diameters 600mm or greater shall be Heavy-Duty Extra Quality Concrete Drain Tile 2000D.

All concrete field tile shall be backfilled using native material. The backfill shall not be compacted but a sufficient mound shall be left over the trench by the Contractor to allow for settlement flush with adjacent lands. The Contractor shall be responsible for all trench settlement.

The Contractor shall supply and wrap all concrete tile joints with geotextile filter material as part of this contract. The width of the filter material should be:

- 300mm wide for tile sizes 150mm diameter to 350mm diameter.
- 400mm wide for tile sizes 400mm diameter to 750mm diameter.

The filter material shall completely cover the tile joint and shall have a minimum overlap of 300mm. The type of filter material shall be Mirafi 160NC.

### H.6.2 High Density Polyethylene Pipe (H.D.P.E.)

An approved hydraulic excavator shall be used for the installation of all H.D.P.E. pipe.

All H.D.P.E. pipe shall be BOSS 2000 (or equivalent) CSA B182.8-02/320 KPa with split coupler joining systems.

All H.D.P.E. pipe shall be installed using 19mm (3/4") crushed stone bedding from 150mm below the pipe to the spring line of the pipe. Suitable native material shall be used as backfill from the spring line to the underside of the topsoil.

As determined by the Engineer, unsuitable backfill material must be hauled off-site by the Contractor and Granular "B" shall be used as replacement backfill material.

### H.7 OUTLET STRUCTURE INSTALLATION

The Contractor shall install the new outlet pipes such that the side slopes of the ditch match typical side slopes, and the Contractor shall place geotextile material and stone rip-rap for long term bank stabilization.

### H.8 CATCH BASINS & MANHOLES

All catch basins shall be precast concrete catch basins (Coldstream Concrete Ltd. or approved equal).

The Contractor shall supply and install catch basin markers beside all catch basins.

All catch basins to have 300mm sumps.

The catch basin grate elevations shall be set to the satisfaction of the Engineer.

All catch basin grates shall be fastened to the new catch basins.

All catch basins shall have bid cage grates.

Knockouts shall be provided in all catch basins.

All catch basins and manholes structures shall be installed on 150mm crushed stone bedding.

Structures within the road allowances shall have 300mm minimum M.T.O. Granular 'A' backfill around all sides up to the underside of the topsoil layer. Structures on private property shall be backfilled using approved native material up to the underside of the topsoil layer.

All backfill material shall be placed and thoroughly compacted evenly around each structure in lifts not exceeding 300mm so as to minimize settlement around the structures.

The Contractor shall place quarry stone rip-rap material around all sides of the catch basin for a width of 1m and shall be placed on an approved geo-textile filter material.

Lifts (modulocs) shall be placed by the Contractor on all catch basins or manholes if necessary to achieve the desired elevation when field setting the structures.

All holes for catch basin pipe connections to be cored by the manufacturer.

The Contractor shall be responsible to repair or reapply grout for all grouted connections into any catch basin or manhole for a period of one year after the completion certificate has been issued.



All existing catch basins and manholes to be removed shall be disposed of off-site by the Contractor.

#### H.9 DESTROY EXISTIN DRAIN

The existing Jackson municipal drain, Sta. 0+361 to Sta. 0+965 ('A' Drain), shall be destroyed by the Contractor. In locations where the new municipal drain is being installed on an alignment offset from the existing drain, the Contractor shall expose and destroy the existing drain. All private drain connections shall be connected to the new municipal drain by the Contractor. The Contractor shall install the Jackson Drain, Sta. 0+000 to Sta. 0+361 ('A' Drain) parallel to the existing 400mm diameter drain.

#### H.10 RIP-RAP

All stone rip-rap material shall be quarry stone 150 mm to 300 mm dia. and placed to a depth of 450 mm. All rip-rap material shall be placed on geo-textile filter material (Mirafi 180N).

#### H.11 EXISTING DRAINS/TILE CONNECTIONS

The Contractor shall make all tributary tile drain connections in accordance with the Typical Tile Connection Detail included in the attached drawing set.

The Contractor shall be responsible for all tile connections for a period of one year after the issuance of the completion certificate. The tile connections required to be made within this warranty period shall be made at the same rate as defined on the Form of Tender and Agreement. After construction, the Contractor will be given the option to make any subsequent tile connections or have the Municipality make said connections and have the costs of which deducted from the holdback.