

**Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**



Waterloo, Ontario
December 8, 2006

Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock

To the Mayor and Council
of the Township of East Zorra-Tavistock

Members of Council:

We are pleased to present our report on the "Tavistock Municipal Drain 2006", serving parts of Lots 20 and 21, Concession 4 and parts of Lots 18 to 22, Concession 5 in the Township of Perth East (South Easthope Ward), parts of the Village of Tavistock and parts of Lots 35 and 36, Concession 14 in the Township of East Zorra-Tavistock (former Township of East Zorra).

In accordance with your instructions pursuant to a petition under Section 4.(1)(c) of the Drainage Act, R.S.O. 1990, signed by Dennis O'Neil, Public Works Manager for the Township of East Zorra-Tavistock, we have made an examination and survey of the affected area and submit herewith our Report which includes Plan, Profile and Specifications for this work.

The attached Plan and Profile, Drawing No.'s 1 to 3, Reference No. 0539, 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 Rudy Municipal Drain 1960 was constructed by the authority of a report prepared by R. M. Dawson P.Eng, Consulting Engineer, dated August 8, 1960. This report provided for the installation of 1,429 feet of 12" diameter field tile commencing at a point east of Henry Street in the Village of Tavistock upstream to the north side of a laneway on the Dietview Farms Ltd. property (Roll # 2-62) in Lot 20, Concession 5 in the Township of Perth East (South Easthope Ward).

The Bowles Municipal Drain 1979 was originally constructed by the authority of a report prepared by E. H. Uderstadt Inc., dated August 24, 1979. This report provided for the the construction of 'A' Drain which included the installation of 354 metres of 200mm to 300mm diameter field tile and the incorporation of a 38 metre section of the highway drainage system. This municipal drainage system commenced at a junction with the upstream end of the Rudy Municipal Drain 1960 in Lot 20, Concession 5 in the Township of Perth East (South Easthope Ward) upstream across Perth County Road 107 to the west side of the Jutzi Holdings Inc. property (Roll # 2-78) in Lot 21, Concession 5. This report also provided for the construction of 'B' Drain consisting of

the installation of 106 metres of 200mm diameter field tile commencing at an outlet in 'A' Drain at the west side of Perth County Road 107 upstream to the west side of the R. & D. Harris property (Roll # 2-74) in the Township of Perth East (South Easthope Ward).

The Kaufman Municipal Drain was constructed in the early part of the century. The Kaufman Municipal Drain consists of 200mm and 250mm diameter field tile commencing at a point on the north side of Perth County Road 101/Oxford County Road 24 in Lot 18, Concession 5 in the Township of Perth East (South Easthope Ward) upstream to the east half of Lot 19, Concession 5 in the Township of Perth East (South Easthope Ward).

The Tavistock Municipal Drain 1974 was constructed by the authority of a report prepared by Kelley & Smart Ltd, Consulting Engineers, dated April 18, 1974. This report provided for the installation of 5,300 feet of 30" to 54" diameter reinforced concrete sewer pipe and 134 feet of 12" to 18" diameter tile commencing at an outlet in the Shakespeare Municipal Drain on the north side of Perth County Road 101 in the Township of Perth East (South Easthope Ward) upstream paralleling the north side Hope Street East then proceeding north-westerly to a point 273 feet west of Woodstock Street North in the Village of Tavistock.

The Tavistock Municipal Drain 1979 was constructed by the authority of a report prepared by K. Smart Associates Ltd., dated January 15, 1979. This report provided for the installation of 5,261 feet of 21" to 42" diameter reinforced concrete sewer pipe, twin 27" diameter concrete field tile and incorporating approximately 674 feet of existing 8" to 18" diameter corrugated steel pipe. The Main Drain commenced at an open ditch outlet known as the Hohner Municipal Drain in Lot 34, Concession 13 in the former Township of East Zorra, upstream in a north-westerly direction through Hope Street East and Woodstock Street North to a point just south of Jacob Street West in the Village of Tavistock.

The Tavistock Municipal Drain 1979 provided for the construction of the Main Drain and two (2) tile drains known as Branch 'A' and Branch 'B' commencing from the outlet into the Tavistock Municipal Drain 1974 upstream approximately 1,992 feet along Hope Street East to the west side of the former Canadian National Railway just east of the junction for Woodstock Street North and Hope Street East. Branch 'A' consisted of installing approximately 1,532 feet of 18" to 24" diameter reinforced concrete sewer pipe and Branch 'B' consisted of installing approximately 460 feet of 10" and 12" diameter reinforced concrete sewer pipe. These branch drains served to drain only road waters along Hope Street East from Woodstock Street North easterly to the Tavistock Municipal Drain 1974.

Discussion

Since the construction of the Tavistock Drain 1974 there has been extensive residential development of lands specifically on the west side of Woodstock Street North along Dietrich Road, Janelle Drive and Jacob Street, and in an area known as the Bender Subdivision located north of Hope Street East and west of the eastern limits of the Village of Tavistock. The Tavistock Drain 1974 is not of sufficient capacity to effectively drain the watershed from the surface and subsurface flows.

In order to provide adequate drainage for the current watershed, the Bowles Municipal Drain, Rudy Municipal Drain and the Tavistock Drain 1974 would require extensive reconstruction in their entirety with the addition of overland flow routes through developed areas in the Village of Tavistock to accommodate the runoff from major storm events. With this in mind, it was determined that this option was not economically nor practically feasible and therefore a drainage system located around the northeast limits of the Village of Tavistock in the Township of Perth East was investigated.

There were four alternative alignments considered for the location of the drain. Each alternative was surveyed and analyzed for its cost effectiveness, location, impact on adjacent land use and the ability of each alternative to satisfy the design objectives. All of the alternatives commenced at an outlet in the Shakespeare Municipal Drain and generally proceeded upstream in a northwesterly direction around the northeast limits of the Village of Tavistock.

After careful consideration and discussion with Township officials, engineering representatives from R.J. Burnside and Associates Limited for the Village of Tavistock "Tavistock Storm System Master Plan" and representatives from both Perth and Oxford Counties, the chosen alternative commences at an outlet in the Shakespeare Municipal Drain approximately 200 metres downstream of the Perth County Road 101/Oxford County Road 24 bridge, proceeds upstream in a westerly direction along the lot line between Lots 35 and 36, Concession 14 in the Township of East Zorra-Tavistock (former Township of East Zorra), then north across the boundary road for Perth and Oxford Counties, around the Village of Tavistock eastern and northern limits in the Township of Perth East (South Easthope Ward), then proceeds westerly through Lots 19 and 20, Concession 5 in the Township of Perth East to a point on the west side of the Jutzi Holdings Ltd. property (Roll # 2-78) in Lot 21, Concession 5.

In response to the letter from the Upper Thames River Conservation Authority regarding this project the following comments are being provided.

1. Future stormwater management needs in other areas within the drainage basin of the proposed drainage system will be considered in the formal "Tavistock Storm System Master Plan" study by R. J. Burnside and Associates Limited.

Recommendations for stormwater management systems and their need in various areas within the watershed will be addressed at that time.

2. It will be the responsibility of the Township of East Zorra-Tavistock to further develop any existing policies regarding stormwater quality and quantity issues pertaining to the protection and improvement of environmental conditions as a result of future developments.
3. It is understood that the Township of East Zorra-Tavistock is currently seeking volunteers to monitor and log data retrieved from manual rainfall gauges throughout the Village of Tavistock in order to determine which amounts of rainfall contribute to the flooding issues and which levels could safely be accommodated by existing drainage systems within the Village of Tavistock. The Township also has records of residents within the Village who have experienced some form of flooding from past rainfall events and encourages people to contact Township officials in the event of future flooding on their respective properties so areas in the Village could be identified and isolated as potential zones for certain rainfall events. However, any current monitoring of baseline conditions in the Village of Tavistock is beyond the scope of our appointment.
4. The Township of East Zorra-Tavistock and the Township of Perth East will be responsible for the future maintenance and monitoring of all aspects of the proposed drainage system. However efforts will be made to monitor the drainage system at the time of construction in order to protect adjacent properties, downstream lands, watercourses and environmentally sensitive areas from any potential threats resulting from the installation of the proposed drain.
5. The proposed drainage system will provide the Bowles Municipal Drain and the Kaufman Municipal Drain with an improved outlet since their current outlets and sections of these drains are in a poor state of repair. After construction of the new drain, these existing municipal drains will be abandoned.
6. Alterations to the Shakespeare Municipal Drain are not proposed under the Tavistock Municipal Drain 2006 report. However maintenance of the existing Shakespeare Municipal Drain downstream of the Tavistock Municipal Drain 2006 is recommended.
7. By using the rational method for determining flow rates during various storm events and surveying approximately 1,300m of the Shakespeare Municipal Drain, we believe that the existing open ditch can accommodate the flows from a 5 to 10 year storm which is a typical design standard for open ditches within rural areas.

8. An existing laneway culvert crossing the Shakespeare drain on the James McKay property (roll # 50-17) is an obstruction that backs up the water to a level where the banks would flood prematurely and thus increase flooding on adjacent lands. We propose to remove the existing 1800mm diameter crossing and replace it with a new low level crossing consisting of 3-910mm x 660mm C.M.P.A. culverts that will allow for unobstructed passage of flows through the Shakespeare Drain.
9. We also propose to protect the banks along two areas of the Shakespeare Drain that are heavily eroded due to high flow conditions with quarry stone rip-rap protection and geotextile filter material. This measure will mitigate the deposit of earth and silt in the open ditch as a result of bank erosion during high flow conditions.
10. Silt fences will be erected and maintained during construction in two locations along the Shakespeare Drain:
 - a) downstream of our intended outlet at sta. 1+763
 - b) downstream of the existing 1800mm dia. crossing that will be removed at sta. 0+431 on the Shakespeare Drain (approximately 200 metres downstream of our outlet) which will also serve as protection from the installation of the new low level crossing approximately 20 metres upstream of the existing culvert

Meetings

On-Site Meeting

An on-site meeting was held on Monday, November 21, 2005.

Public Meeting

A public meeting was held on Monday, July 25, 2006.

Preliminary Meeting

A preliminary meeting open to the public was held on Tuesday, October 17, 2006 to present the preliminary design of the proposed drainage system, the estimated costs and proposed assessment.

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

1. The existing Rudy Municipal Drain (1960) is not of sufficient capacity to drain the surrounding and upstream lands. The existing tile drainage system is in a poor state of repair.
2. The existing Tavistock Drain 1974 is not of sufficient capacity to drain surrounding and upstream lands at today's standards of drainage for urban areas since there has been extensive development within the watershed after the construction of the Tavistock Drain 1974.
3. There are insufficient overland flow routes through the Village of Tavistock, specifically along the route of the Tavistock Drain 1974, to accommodate the increase in surface runoff from surrounding and upstream lands.
4. There are insufficient overland flow routes along the Rudy Municipal Drain (1960) to safely convey surface runoff from upstream agricultural and urban lands in the Township of Perth East to a sufficient downstream outlet.
5. The northwest corner of the Bender Subdivision in the Village of Tavistock receives storm water runoff from the agricultural lands to the north during heavy rainfall events. This uncontrolled flow is believed to cause damage to some residential properties along the north part of Bender Avenue.
6. The existing road culvert through Perth County Road 107 discharges ponded storm water from the upstream side of the County Road directly onto downstream properties.
7. There is a considerable amount of ponding on the E. & M. Bender (2-68) property during heavy rainfall events because the storm water has difficulty draining through the existing Tavistock Drain 1974 on the north side of Perth County Road 101/Oxford County Road 24.
8. There is an insufficient outlet for storm water runoff generated from the northwest part of the watershed in the Township of Perth East and the northern part of the Village of Tavistock. The majority of this runoff currently flows overland through an existing laneway culvert on the Dietview Farms Ltd. (2-62) property in a south-easterly direction towards the Bender Subdivision.
9. The existing Kaufman Municipal Drain is not of sufficient capacity to drain the surrounding and upstream lands at today's standards of drainage as recommended by the Ministry of Agriculture, Food and Rural Affairs and is in a poor state of repair.

10. The existing 1800mm dia. C.M.P. laneway culvert on the Shakespeare Municipal Drain at sta. 0+431 is not of sufficient capacity.

It is our recommendation that:

1. A new closed drainage system be installed to replace the existing Bowles Municipal Drain (1979), Rudy Municipal Drain (1960) and the Kaufman Municipal Drain. This new drain shall be installed commencing at an outlet in the Shakespeare Municipal Drain, approximately 200m downstream of the existing Perth County Road 101/Oxford County Road 24 bridge, upstream around the north-east boundary for the Village of Tavistock, to the westerly side of the Jutzi Holdings Inc. property (2-78) in the Township of Perth East (South Easthope Ward) which is the upstream end of the existing Bowles Municipal Drain (1979).
2. This new drainage system shall consist of installing approximately 2,217m of 600mm dia. to 1350mm dia. pipe varying in material types from Boss 2000 pipe, concrete field tile, reinforced concrete sewer pipe and smooth wall steel casing; 6m of 1800mm dia. corrugated metal outlet pipe; nine (9) concrete catch basins, one (1) concrete junction box and three (3) reinforced concrete manholes.
3. The subsurface component of the new Tavistock Municipal Drain 2006 be designed to accommodate a 5 year design storm and the surface component for a 100 year design storm.
4. The existing 1800mm dia. C.M.P. laneway culvert in the Shakespeare Municipal Drain at sta. 0+431 be removed and replaced with a new low level crossing at sta. 0+413 which consists of installing three (3) new 910mm x 660mm corrugated metal pipe arch culverts.
5. Approximately 350 metres of the Shakespeare Municipal Drain be cleaned out.
6. The existing Bowles Municipal Drain (1979), Rudy Municipal Drain (1960) and Kaufman Municipal Drain be abandoned in their entirety and will cease to be municipal drains after the Tavistock Municipal Drain 2006 is constructed. The ownership of those existing drains shall become the property of the land owners who have sections of these drains located on their properties.
7. Direct basement drain or roof drain connections to the new municipal drain are not recommended for existing properties or any future developments. The township will not be responsible for any damages to property resulting from storm water or sanitary surcharging through direct private drain connections.
8. The existing 750mm dia. C.M.P. laneway culvert on the Dietview Farms Ltd. property (roll No. 2-62) be removed in order to ensure the runoff from the

northwest portion of the watershed enters the new Tavistock Municipal Drain 2006.

9. The existing 54" diameter reinforced concrete sewer pipe on the Tavistock Municipal Drain 1974 be connected into the new catch basin at sta. 1+115 in order to provide another outlet for the upstream lands for which that drain serves.
10. Any future development using the Tavistock Municipal Drain 2006 as a storm water outlet for their development must address all water quality and quantity issues within the boundaries of their development prior to doing so.

Working Area

CLOSED WORK

The working area for construction and maintenance purposes shall be a width of twenty (20) metres centred on the proposed tile drain in agricultural areas and a width of fifteen (15) metres centred on the proposed tile drain in developed urban areas. Each landowner on whose property the drainage work is to be constructed shall designate access to and from the working area.

The proposed work consists of the installation of approximately 2,192 metres of 600mm to 1350mm reinforced concrete sewer pipe, concrete field tile, Boss 2000 pipe and metal pipes; the installation of nine (9) concrete catch basins, the installation of one (1) concrete junction box and three (3) reinforced concrete manholes; the installation of 31 metres of 750mm O.D. smooth wall steel casing by the Boring Method; and the installation of a new low level crossing on the Shakespeare Municipal Drain.

The Drainage Area comprises approximately 151.7 hectares. This area consists of paved roads, residential, commercial, industrial and predominately agricultural lands.

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 & Crops (Section 30)	Total Allowances
<u>Tavistock Municipal Drain 2006</u>						
<u>Township of Perth East (South Easthope Ward)</u>						
Pt. 19	5	Dietview Farms Ltd.	2-38	\$4,500	\$2,850	\$7,350
Pt. 20	5	E. & L. Schurink	2-56		\$300	\$300
Pt. 20	5	1459624 Omntario Inc.	2-57		\$500	\$500
Pt. 20	5	Dietview Farms Ltd.	2-62	\$5,000	\$2,060	\$7,060
Pt. 18	5	E. & M. Bender	2-68		\$3,670	\$3,670
Pt. 21	5	M. Aarts	2-75		\$300	\$300
Pt. 21	5	Jutzi Holdings Inc.	2-78		\$1,200	\$1,200
Pts. 21,22	5	Steeplehigh Holsteins Inc.	2-81		\$200	\$200
Sub-Total				\$9,500	\$11,080	\$20,580
<u>Township of East Zorra-Tavistock</u>						
Wpt. 35	14	J. McKay	50-171		\$4,250	\$4,250
Wpt. 36	14	B. & D. Kropf	50-172		\$1,600	\$1,600
Sub-Total					\$5,850	\$5,850
<u>Village of Tavistock</u>						
Pt. 20	5	Dietview Farms Ltd	219-00		\$1,740	\$1,740
Sub-Total					\$1,740	\$1,740
TOTAL ALLOWANCES				\$9,500	\$18,670	\$28,170

Total Allowances, under Sections 29 and 30
of the Drainage Act, R.S.O. 1990;
Tavistock Municipal Drain 2006

\$28,170

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

1)	Open drain maintenance (Shakespeare Drain) Excavating and leveling of excavated material	\$ 1,500
2)	Clearing and grubbing	\$ 500
3)	Supply 1 - 6 metre length of 1800 mm dia. corrugated metal outlet pipe, 2.80mm thickness (125mm x 25mm corrugations)	\$ 1,500
	Installation of 1800mm dia. corrugated outlet pipe (sta. 1+757 to sta. 1+763) complete with quarry stone rip-rap protection and geotextile filter material (approximately 50 m ²)	\$ 1,500
4)	Supply 618 metres of 1350mm diameter reinforced concrete sewer pipe (CSA A257.2 CLASS 50-D)	\$ 271,840
	Installation (sta. 1+139 to sta. 1+757)	\$ 92,700
5)	Supply 1,345 metres of 750mm diameter concrete field tile	\$ 67,250
	Installation (sta. 0+075 to sta. 0+628, sta. 0+713 to sta. 1+109)	\$ 20,150
6)	Supply 75 metres of 750mm diameter Boss 2000 Pipe	\$ 9,750
	Installation (sta. 0+000 to sta. 0+075)	\$ 4,500
7)	Supply 85 metres of 900mm diameter Boss 2000 Pipe	\$ 14,450
	Installation (sta. 0+628 to sta. 0+713)	\$ 5,100
8)	Supply 132 metres of 600mm diameter concrete field tile	\$ 4,750
	Installation a) sta. -0+240 to -0+205	\$ 500
	b) sta. -0+175 to -0+078	\$ 1,350
9)	Supply 293 metres of 600mm diameter Boss 2000 Pipe	\$ 23,440
	Installation a) sta. -0+460 to -0+372	\$ 5,280
	b) sta. -0+337 to -0+240	\$ 5,820
	c) sta. -0+205 to -0+175	\$ 1,800
	d) sta. -0+078 to 0+000	\$ 4,680

10)	Supply and install 1 standard 900mm x 1200mm concrete ditch inlet catch basin at sta. -0+460 (inline type)	\$ 1,500
11)	Supply and install 1 standard 900mm x 1200mm concrete ditch inlet catch basin offset 10 metres south of sta. 0+323	\$ 1,500
12)	Supply 10 metres of 450mm diameter Boss 2000 Pipe	\$ 550
	Installation (offset ditch inlet catch basin @ sta. 0+323)	\$ 200
13)	Supply and install 750mm x 450mm tee @ sta. 0+323	\$ 500
14)	Supply and install 1 standard 600mm x 900mm concrete catch basin at sta. -0+412 (inline type)	\$ 1,200
15)	Supply and install 3 reinforced concrete manholes	
	a) MH1 – 1500mm dia. @ sta. -0+329	\$ 4,000
	b) MH2 – 1800mm dia. @ sta. 0+000	\$ 4,000
	c) MH3 – 3000mm dia. @ sta. 1+254	\$ 11,000
16)	Supply and install 1 standard 900mm x 1200mm concrete catch basin at sta. -0+240 (inline type)	\$ 1,500
17)	Supply and install 1 standard 900mm x 1500mm concrete ditch inlet catch basin offset 30 metres north of sta. 0+000	\$ 3,000
18)	Supply 30 metres of 600mm diameter Boss 2000 Pipe	\$ 2,400
	Installation (offset ditch inlet catch basin @ sta. 0+000)	\$ 1,800
19)	Supply and install 1 standard 900mm x 1500mm concrete catch basin at sta. 0+628 (inline type)	\$ 3,000
20)	Supply and install 1 standard 900mm x 2200mm concrete catch basin at sta. 0+713 (inline type)	\$ 6,000
21)	Supply and install 1 standard 2200mm x 2200mm concrete junction box at sta. 0+870 (inline type)	\$ 9,000
22)	Supply and install 3 – 600mm dia. Boss 2000 Pipe elbows	
	a) 60 degree elbow @ sta. -0+430	\$ 500
	b) 45 degree elbow @ sta. -0+094	\$ 500
	c) 45 degree elbow @ sta. -0+050	\$ 500

23)	Supply and install 2 – 1350mm dia. reinforced concrete elbows	
	a) 14 degree elbow @ sta. 1+345	\$ 2,500
	b) 21 degree elbow @ sta. 1+696	\$ 2,500
24)	Supply 3 – 10 metre lengths of 910mm x 660mm, 2.80mm thickness corrugated metal pipe arch culverts for low level crossing	\$ 3,000
	Construction of low level crossing at sta. 0+412 (Shakespeare Municipal Drain) consisting of the installation of 3 - 10 metre lengths of 910mm x 660mm corrugated metal pipe arch culverts, granular base and backfill and 150mm reinforced concrete slab on top of pipes and approaches (approx. 20m ³ of concrete) (See attached detail)	\$ 11,600
25)	Supply and place rip-rap protection and geotextile filter material on eroded areas along Shakespeare Municipal Drain at sta. 0+105 & sta. 0+278 (approximately 60 m ²)	\$ 2,000
26)	Supply and place 100mm of topsoil and approved grass seed mixture for lawn restoration (mulch and hydroseed) (approximately 1500m ²)	\$ 1,500
	a) sta. -0+460 to sta. -0+448	
	b) sta. -0+433 to sta. -0+396	
	c) sta. 0+628 to sta. 0+718	
	d) sta. 1+139 to sta. 1+270	
27)	Construction of berm and swale from sta. 0+323 to sta. 0+628 and seeded with an approved grass seed mixture	\$ 2,000
28)	Gravel driveway restoration from sta. -0+329 to sta. -0+250	
	a) supply and place MTO Granular 'A' @ 150mm depth	\$ 2,000
	b) supply and place MTO Granular 'B' @ 300mm depth	\$ 2,600
29)	Asphalt driveway restoration from sta. -0+396 to sta. -0+385	
	a) supply and place MTO Granular 'A' @ 150mm depth	\$ 300
	b) supply and place MTO Granular 'B' @ 300mm depth	\$ 400
	c) supply and place hot mix HL3 asphalt @ 75mm depth	\$ 2,500
30)	Asphalt driveway restoration from sta. -0+433 to sta. -0+448	
	a) supply and place MTO Granular 'A' @ 150mm depth	\$ 400
	b) supply and place MTO Granular 'B' @ 300mm depth	\$ 600
	c) supply and place hot mix HL3 asphalt @ 75mm depth	<u>\$ 2,500</u>
	Sub-Total	<u>\$ 627,410</u>

31)	Work to be done on the Perth County Road Allowance, Perth County Road 107 (sta. -0+337 to sta. -0+372)	
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a)	Supply 31 metres of 750mm O.D. smooth wall steel casing, 6.35mm (0.25") wall thickness	\$ 7,750
	Installation of 31 metres of 750mm O.D. smooth wall steel casing by the Boring Method (sta. -0+337 to sta. -0+372)	\$ 9,000
b)	Supply 4 metres of 600mm diameter Boss 2000 Pipe	\$ 320
	Installation of 4 metres of 600mm diameter Boss 2000 Pipe (sta. -0+368 to -0+372)	\$ 240
c)	Supply and install 1 standard 900mm x 1200mm concrete ditch inlet catch basin at sta. -0+372	\$ 1,500
	Sub-Total	<u>\$ 18,810</u>
32)	Work to be done on the Perth County & Oxford County Road Allowance, Perth County Road 101/Oxford County Road 24 (sta. 1+109 to sta. 1+339)	
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a)	Supply 24 metres of 1350mm diameter reinforced concrete sewer pipe (CSA A257.2 CLASS 65-D)	\$ 10,900
	Installation (sta. 1+115 to sta. 1+139)	\$ 13,000
b)	Supply 12 metres of 750mm Boss 2000 Pipe	\$ 1,560
	Installation (sta. 1+109 to sta. 1+115)	\$ 720
c)	Supply and install 1 standard 2000mm x 2400mm concrete catch basin at sta. 1+115 (inline type)	<u>\$ 10,000</u>
	Sub-Total	<u>\$ 36,180</u>
	TOTAL ESTIMATED CONSTRUCTION COSTS TAVISTOCK MUNICIPAL DRAIN 2006	<u>\$ 682,400</u>
	Total Estimated Materials	<u>\$ 419,460</u>
	Total Estimated Labour and Equipment	<u>\$ 262,940</u>
	Total Estimated Construction Costs	<u>\$ 682,400</u>

Summary of Costs

Allowances under Sections 29 and 30 of the Drainage Act, R.S.O. 1990	\$ 28,170
Total Estimated Construction Costs	\$ 682,400
Meetings, survey, design, preparation of preliminary cost estimates and reports, geotechnical engineering report, preparation of final drainage report, consideration of report and court of revision	\$ 94,500
Preparation of contract documents, contract administration, supervision and inspection of construction	\$ 39,000
Contingencies, tile connections and Interest	<u>\$ 16,030</u>
TOTAL ESTIMATED COST FOR THE TAVISTOCK MUNICIPAL DRAIN 2006	<u>\$ 860,100</u>

The estimated cost of the work in the Township of East Zorra-Tavistock is \$ 551,700
The estimated cost of the work in the Township of Perth East is \$ 308,400.

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

Whether or not the County of Perth elects to do the work on their property (Perth County Road 107), sta. -0+337 to sta. -0+368, they shall be assessed the actual increased costs to the drainage works due to the construction and operation of the road as a Special Assessment in addition to any benefit and outlet assessments. The Special Assessment shall be made up of the actual construction costs plus an allowance for administration costs.

Whether or not the County of Oxford and the County of Perth elects to do the work on their property (Oxford County Road 24 / Perth County Road 101), sta. 1+109 to sta. 1+139, they shall be assessed the actual increased costs to the drainage works due to the construction and operation of the road as a Special Assessment in addition to any benefit and outlet assessments. The Special Assessment shall be made up of the actual construction costs plus an allowance for administration costs.

The existing Bowles Municipal Drain constructed under the E. H. Uderstadt, O.L.S. report, dated July 24, 1979, the existing Kaufman Municipal Drain and the existing Rudy Municipal Drain constructed under the R. M. Dawson report, dated August 8, 1960 shall be abandoned after the Tavistock Municipal Drain 2006 is constructed. Ownership of

the existing Bowles Municipal Drain, Kaufman Municipal Drain and Rudy Municipal Drain shall revert to those owners whose property contains a section of the aforementioned drains.

After completion, that portion of the drain located in the Township of East Zorra-Tavistock shall be maintained by the Township of East Zorra-Tavistock at the expense of all the lands and roads assessed in the attached Schedule of Assessment using the outlet liability assessment only and in the same relative proportions until such time as the assessment is changed under the Drainage Act.

After completion, that portion of the drain located in the Township of Perth East shall be maintained by the Township of Perth East at the expense of all the lands and roads assessed in the attached Schedule of Assessment using the outlet liability assessment only 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.

WJD:mt

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
<u>TOWNSHIP OF PERTH EAST</u>											
<u>(South Easthope Ward)</u>											
* Pt. 20	4	0.19	D. & M. Ruby	2-17-05		\$403		\$403			\$403
* Pt. 20	4	0.28	D. & M. Garrett	2-18		\$587		\$587			\$587
* Pt. 20	4	0.18	D. & S. Wilhelm	2-19		\$375		\$375			\$375
* Pt. 20	4	0.27	P. & K. Bryn	2-19-05		\$572		\$572			\$572
* Pt. 20	4	0.28	R. & L. Huber	2-19-10		\$587		\$587			\$587
Pt. 20	4	0.81	Dietview Farms Ltd.	2-21		\$851		\$851	\$284		\$567
* Pt. 21	4	2.87	Trinity Lutheran Church	2-24		\$1,808		\$1,808			\$1,808
Pt. 19	5	9.71	Dietview Farms Ltd.	2-38	\$6,500	\$2,830		\$9,330	\$3,110	\$7,350	-\$1,130
* Pt. 20	5	0.11	D. & D. Wiffen	2-44		\$223		\$223			\$223
* Pt. 20	5	0.20	P. Baechler	2-45		\$427		\$427			\$427
* Pt. 20	5	0.20	K. Zehr	2-46		\$427		\$427			\$427
* Pt. 20	5	0.36	K. & I. & A. Zehr	2-47		\$766		\$766			\$766
* Pt. 20	5	0.36	J. Koch	2-48		\$766		\$766			\$766
* Pt. 20	5	0.28	B. & A. Tedford	2-49		\$578		\$578			\$578
* Pt. 20	5	0.20	V. & L. Schwass	2-50		\$416		\$416			\$416
* Pt. 20	5	0.20	K. Urlando	2-51		\$427		\$427			\$427
* Pt. 20	5	0.18	M. Kaufmann	2-52		\$383		\$383			\$383
* Pt. 20	5	0.18	E. & I. Van't Voort	2-53		\$383		\$383			\$383
* Pt. 20	5	0.18	B. & D. Swarzentruher	2-54		\$383		\$383			\$383
* Pt. 20	5	0.18	J. & A. Hoppe	2-55		\$383		\$383			\$383
* Pt. 20	5	0.53	E. & L. Schurink	2-56	\$500	\$831		\$1,331		\$300	\$1,031
* Pt. 20	5	0.40	1459624 Ontario Inc.	2-57	\$500	\$851		\$1,351		\$500	\$851
* Pt. 20	5	0.25	P. & G. Roth	2-58		\$520		\$520			\$520
* Pt. 20	5	0.74	M. Heinbuch	2-60		\$1,173		\$1,173			\$1,173
* Pt. 20	5	0.18	K. & C. Zehr	2-61		\$128		\$128			\$128
Pt. 20	5	8.50	Dietview Farms Ltd.	2-62	\$12,000	\$3,244		\$15,244	\$5,081	\$7,060	\$3,103
* Pt. 20	5	0.14	D. & E. Riehl	2-63		\$100		\$100			\$100

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
Pt. 18	5	4.81	E. & M. Bender	2-68	\$6,000	\$865		\$6,865	\$2,288	\$3,670	\$907
* Pt. 18	5	1.78	Tavistock Farm Equipment Supply Ltd.	2-68-15		\$433		\$433			\$433
Pt. 18	5	10.52	D. Guthrie	2-69	\$4,000	\$2,665		\$6,665	\$2,222		\$4,443
* Pt. 21	5	0.19	B. Tucker	2-72		\$420		\$420			\$420
* Pt. 21	5	0.11	D. Ramseyer	2-73		\$251		\$251			\$251
* Pt. 21	5	0.15	R. & D. Harris	2-74		\$323		\$323			\$323
* Pt. 21	5	0.16	D. & K. Beehler	2-74-05		\$351		\$351			\$351
* Pt. 21	5	0.14	M. Aarts	2-75	\$300	\$316		\$616		\$300	\$316
* Pt. 21	5	0.32	Jutzi Holdings Inc.	2-78	\$2,000	\$710		\$2,710		\$1,200	\$1,510
* Pt. 21	5	0.03	Union Gas Limited	2-78-05		\$71		\$71			\$71
* Pt. 21	5	0.28	T. & L. McNeish	2-79		\$611		\$611			\$611
* Pt. 21	5	0.10	D. Dietrich	2-80		\$227		\$227			\$227
Pts. 21 & 22	5	47.75	Steeplehigh Holsteins Inc.	2-81	\$1,500	\$12,662		\$14,162	\$4,721	\$200	\$9,241
* Pt. 21	5	0.14	R. & M. Dietrich	2-82		\$307		\$307			\$307
Total Assessment on Lands					\$33,300	\$40,634		\$73,934	\$17,706	\$20,580	\$35,648
Line 29		1.01	Township of Perth East			\$1,966		\$1,966			\$1,966
Perth County Road 107		1.82	County of Perth		\$25,000	\$3,736	\$20,870	\$49,606			\$49,606
Perth County Road 101		0.28	County of Perth		\$10,000	\$184	\$20,205	\$30,389			\$30,389
Total Assessment on Roads					\$35,000	\$5,886	\$41,075	\$81,961			\$81,961
Total Assessment on Lands and Roads, Township of Perth East					\$68,300	\$46,520	\$41,075	\$155,895	\$17,706	\$20,580	\$117,609

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
<u>TOWNSHIP OF EAST ZORRA-TAVISTOCK</u>											
<u>(Former Township of East Zorra)</u>											
Wpt. 35	14		J. McKay	50-171	\$5,000			\$5,000	\$1,667	\$4,250	-\$917
* Wpt. 36	14	2.02	B. & D. Kropf	50-172	<u>\$1,500</u>	<u>\$416</u>		<u>\$1,916</u>		<u>\$1,600</u>	<u>\$316</u>
Total Assessment on Lands					<u>\$6,500</u>	<u>\$416</u>		<u>\$6,916</u>	<u>\$1,667</u>	<u>\$5,850</u>	<u>-\$601</u>
Oxford County Road 24		0.28	County of Oxford		<u>\$10,000</u>	<u>\$184</u>	<u>\$20,205</u>	<u>\$30,389</u>			<u>\$30,389</u>
Total Assessment on Lands and Roads, Former Township of East Zorra					<u>\$16,500</u>	<u>\$600</u>	<u>\$20,205</u>	<u>\$37,305</u>	<u>\$1,667</u>	<u>\$5,850</u>	<u>\$29,788</u>

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
<u>(Village of Tavistock)</u>											
* PLAN 307 Pt. 8		0.05	R. & J. McDermott	001-00	\$500	\$155		\$655			\$655
* PLAN 307 Pt. 8		0.08	M. & J. Harvey	002-00	\$500	\$213		\$713			\$713
* PLAN 307 Pt. 8		0.08	S. Houle & A. Routly-Houle	003-00	\$500	\$232		\$732			\$732
* PLAN 307 Pt. 12		0.07	S. & S. Haight	004-00	\$500	\$213		\$713			\$713
* PLAN 307 Pt. 12		0.08	E. Morgenroth	005-00	\$500	\$232		\$732			\$732
* PLAN 307 Pt. 12		0.08	R. & B. Berger	006-00	\$500	\$213		\$713			\$713
* Pt. 20	5	0.11	W. & R. Wettlaufer	006-05	\$500	\$329		\$829			\$829
* Pts. 19 & 20	5	2.17	W. Wettlaufer	007-00	\$1,500	\$2,496		\$3,996			\$3,996
* PLAN 307 Pt. D		0.10	R. & C. Yausie	007-01	\$500	\$271		\$771			\$771
* Pt. 20	5	0.07	G. & J. Lupton	007-02	\$500	\$213		\$713			\$713
* Pt. 20	5	0.11	A. & S. Sparling	007-04	\$500	\$329		\$829			\$829
* PLAN 307 Pt. 7		0.05	E. Bender	009-00	\$500	\$135		\$635			\$635
* PLAN 307 N.Pt. 7		0.06	M. Fisher	010-00	\$500	\$155		\$655			\$655
* PLAN 307 Pt. 7, Pt. 14		0.16	R. & H. Schildermans	011-00	\$500	\$464		\$964			\$964
* PLAN 307 N.Pt. 14		0.11	P. McCallum	012-00	\$500	\$310		\$810			\$810
* PLAN 307 S.Pt. 10		0.08	Canada Farm Distributors Ltd.	013-00	\$500	\$213		\$713			\$713
* PLAN 307 Pt. 10		0.08	P. & L. Wilker	014-00	\$500	\$213		\$713			\$713
* PLAN 307 Pt. 10		0.08	G. & H. Noble	015-00	\$500	\$213		\$713			\$713
* PLAN 367, 4		0.06	C. & A. Sauder	016-00	\$500	\$174		\$674			\$674
* PLAN 367, 5		0.06	R. & G. Kaufman	017-00	\$500	\$174		\$674			\$674
* PLAN 367, 6 Pt. 7		0.06	J. & J. Harris	018-00	\$500	\$174		\$674			\$674
* PLAN 367, 8 Pt. 7		0.12	S. Ramseyer & H. Gerber	019-00	\$500	\$329		\$829			\$829
* PLAN 367 Pt. 9, 10		0.11	D. Rellinger	020-00	\$500	\$310		\$810			\$810
* PLAN 307 E.Pt. 36		0.04	K. Cahill	021-00	\$500	\$116		\$616			\$616
* PLAN 307 E.Pt. 36 TO 38		0.08	J. & D. Yausie	022-00	\$500	\$213		\$713			\$713
* PLAN 367, 11 to 14, C		1.22	E. & A. Matresky	023-00	\$1,000	\$1,393		\$2,393			\$2,393
* Pt. 20	5	0.05	East Zorra-Tavistock	023-02	\$500	\$155		\$655			\$655
* Pt. 20	5	0.05	County of Oxford	024-00	\$500	\$155		\$655			\$655

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN 307 Pt. C		0.05	M. & G. Ropp	031-05	\$500	\$135		\$635			\$635
* PLAN 307 Pt. C		0.31	Mohr Carpentry Ltd. & Agcore Contracting Ltd.	032-00	\$500	\$890		\$1,390			\$1,390
* Pt. 20	5	0.09	K. & D. Matresky	032-01	\$500	\$252		\$752			\$752
* PLAN 307, J, Pt. K		0.16	R. Ramseyer	033-00	\$500	\$445		\$945			\$945
* PLAN 307 Pt. A		0.08	J. & M. Wettlaufer	041-01	\$500	\$213		\$713			\$713
* PLAN 307 S.Pt. B		0.11	G. & L. Barker	042-00	\$500	\$310		\$810			\$810
* PLAN 307 Pt. B		0.11	H. & L. Becker	043-00	\$500	\$310		\$810			\$810
* PLAN 307 N.Pt. B		0.10	R. Becker	044-00	\$500	\$271		\$771			\$771
* PLAN 307 N.Pt. B		0.10	K-S Consulting & Design Ltd.	045-00	\$500	\$271		\$771			\$771
* PLAN 307, 1		0.13	S. McKay-Payne & C. McKay	046-00	\$500	\$368		\$868			\$868
* PLAN 307 Pt. C		0.10	M. & T. Neumeister	055-00	\$500	\$290		\$790			\$790
* PLAN 307 Pt. C		0.16	H. & T. Meister	056-00	\$500	\$464		\$964			\$964
* PLAN 307 Pt. C		0.13	M. & L. Kennel	057-00	\$500	\$368		\$868			\$868
* PLAN 307 Pt.17, Pt.Blk.D Pt.1		0.08	D. & R. Berg	058-00	\$500	\$232		\$732			\$732
* PLAN 307, 18 Pt. D		0.10	W. & R. Gingerich	058-01	\$500	\$271		\$771			\$771
* PLAN 307 Pt.17, Pt.Blk.D Pt.2		0.13	S. & S. Haight	058-05	\$500	\$368		\$868			\$868
* PLAN 307, 19 Pt. D		0.10	B. Welfred	059-00	\$500	\$271		\$771			\$771
* PLAN 307, 20		0.08	D. Seyler	060-00	\$500	\$252		\$752			\$752
* PLAN 307, 21		0.08	D. Lawson & C. Emerson	061-00	\$500	\$252		\$752			\$752
* PLAN 307, 22, Pt. 23		0.08	S. Green & C. Gibbs	062-00	\$500	\$232		\$732			\$732
* PLAN 307 Pt. 23		0.15	R. Kropf	063-00	\$500	\$426		\$926			\$926
* PLAN 307 Pt. 7, Pt. 8		0.08	H. Baechler	072-00	\$500	\$213		\$713			\$713
* PLAN 307 E.Pt. 8		0.08	C. Snarey	073-00	\$500	\$213		\$713			\$713
* PLAN 307, 9		0.12	V. Merklinger	074-00	\$500	\$329		\$829			\$829
* PLAN 307 W.Pt. 24		0.19	M. & M. Sullivan	075-00	\$500	\$406		\$906			\$906
* PLAN 307 Pt. 24		0.13	B. & B. Larsen	076-00	\$500	\$368		\$868			\$868
* PLAN 307 Pt. 28		0.91	Ontario Refrigerated Services	077-00	\$800	\$1,316		\$2,116			\$2,116
* PLAN 307 W.Pt. 7		0.14	J. & S. Cates	155-00	\$500	\$406		\$906			\$906
* PLAN 307 Pt. 7		0.19	R. & M. Kropf	156-00	\$500	\$542		\$1,042			\$1,042

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN 307 W.Pt. 8		0.04	W. & L. Vanderworp	157-00	\$500	\$116		\$616			\$616
* PLAN 307 Pt. 8		0.04	J. & S. Brennan	158-00	\$500	\$116		\$616			\$616
* PLAN 307 Pt. 8, Pt. 25		0.05	B. & R. Hempey	159-00	\$500	\$135		\$635			\$635
* PLAN 307 Pt. 25		0.08	G. Cossey	160-00	\$500	\$232		\$732			\$732
* PLAN 307 Pt. 25		0.13	M. Neeb	161-00	\$500	\$368		\$868			\$868
* PLAN 307 Pt. 24		0.13	L. Farrell	162-00	\$500	\$368		\$868			\$868
* PLAN 307 W.Pt. Blk. L		0.15	K. Vlossak	163-00	\$500	\$445		\$945			\$945
* PLAN 307 Pt. Blk. L		0.15	R. Oesch	164-00	\$500	\$445		\$945			\$945
* PLAN 307 Pt. Blk. L		0.10	G. & E. Schwass	165-00	\$500	\$290		\$790			\$790
* PLAN 307 Pt. Blk. M		0.08	G. Schwass	166-00	\$500	\$252		\$752			\$752
* PLAN 307 Pt. Blk M		0.10	M. & D. Gerber	167-00	\$500	\$271		\$771			\$771
* PLAN 307 Pt. 28		0.38	900975 Ontario Inc.	168-00	\$800	\$1,103		\$1,903			\$1,903
* PLAN M69, 25		0.08	P. & M. Willson	169-01	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 24		0.14	L. & M. Lichti	169-02	\$800	\$406		\$1,206			\$1,206
* PLAN M69, 23		0.09	M. & A. Warnick	169-03	\$800	\$271		\$1,071			\$1,071
* PLAN M69, 22		0.08	G. & A. Steinman	169-04	\$800	\$232		\$1,032			\$1,032
* PLAN M69, 21		0.08	R. & P. Seyler	169-05	\$800	\$232		\$1,032			\$1,032
* PLAN M69, 20		0.08	D. & D. Gregory	169-06	\$800	\$232		\$1,032			\$1,032
* PLAN M69, 19 & Blk. D		0.10	J. & J. Hauss	169-07	\$800	\$271		\$1,071			\$1,071
* PLAN M69, 18		0.08	D. Gole	169-08	\$800	\$232		\$1,032			\$1,032
* PLAN M69, 17		0.08	B. & H. Wagler	169-09	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 16		0.08	G. & M. Hyde	169-10	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 15		0.08	R. & B. McLaren	169-11	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 14		0.09	M. Bullock	169-12	\$800	\$252		\$1,052			\$1,052
* PLAN M69, 13		0.08	L. & R. Kropf	169-13	\$800	\$232		\$1,032			\$1,032
* PLAN M69, 12		0.08	C. & J. Ziegler	169-14	\$800	\$232		\$1,032			\$1,032
* PLAN M69, 11		0.08	E. Leis	169-15	\$800	\$252		\$1,052			\$1,052
* PLAN M69, 10		0.08	W. & C. Zehr	169-16	\$800	\$232		\$1,032			\$1,032
* PLAN M69, 9		0.08	P. & L. Nador	169-17	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 8		0.08	R. & D. Calder	169-18	\$800	\$252		\$1,052			\$1,052

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M69, 7		0.10	R. & J. Bourne	169-19	\$800	\$290		\$1,090			\$1,090
* PLAN M69, 6		0.08	W. & V. Bender	169-20	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 5		0.08	M. Roppel	169-21	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 4		0.08	J. & T. Boyd	169-22	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 3		0.07	R. Noom	169-23	\$800	\$213		\$1,013			\$1,013
* PLAN M69, 2		0.09	J. & A. Bean	169-24	\$800	\$252		\$1,052			\$1,052
* PLAN M69, 1		0.08	V. & I. Ruby	169-25	\$800	\$252		\$1,052			\$1,052
* PLAN 307 Pt. 28		0.15	K. Sommers	170-00	\$800	\$445		\$1,245			\$1,245
* PLAN 307 E.Pt. 28		0.09	G. Bender	170-01	\$800	\$271		\$1,071			\$1,071
* PLAN 307, 26		0.10	C. & L. Desjardins	171-00	\$800	\$290		\$1,090			\$1,090
* PLAN 307 Pt. 28		0.10	J. & S. Funk	172-00	\$800	\$290		\$1,090			\$1,090
* PLAN 307 Pt. 28		0.10	K. & D. Roi	173-00	\$800	\$290		\$1,090			\$1,090
* PLAN 307 Pt. 28		0.10	W. & E. Steinman	174-00	\$800	\$290		\$1,090			\$1,090
* PLAN 307 Pt. 29		0.09	R. & E. Sippel	175-00	\$800	\$271		\$1,071			\$1,071
* PLAN M62, 7		0.08	R. & E. Yungblut	175-02	\$800	\$252		\$1,052			\$1,052
* PLAN M62, 6		0.15	R. & J. Fleming	175-03	\$800	\$445		\$1,245			\$1,245
* PLAN M62, 5		0.15	L. & L. Clark	175-04	\$800	\$445		\$1,245			\$1,245
* PLAN M62, 4		0.14	W. & J. Dear	175-05	\$800	\$387		\$1,187			\$1,187
* PLAN M62, 3		0.15	E. & J. Zehr	175-06	\$800	\$426		\$1,226			\$1,226
* PLAN M62, 2		0.14	B. & C. Witmer	175-07	\$800	\$406		\$1,206			\$1,206
* PLAN M62, 1		0.09	C. Schreuders	175-08	\$800	\$252		\$1,052			\$1,052
* PLAN 307 S.Pt. 27 & 28		0.14	L. & M. Lichti	176-00	\$800	\$387		\$1,187			\$1,187
* PLAN 307 Pt. 27		0.16	E. & C. Yantzi	176-01	\$800	\$445		\$1,245			\$1,245
* PLAN 307 Pt. 27		0.18	J. & M. Martin	177-00	\$800	\$503		\$1,303			\$1,303
* S.Pt. 18	5	0.21	W. McFarlane	177-01	\$800	\$619		\$1,419			\$1,419
* S.Pt. 18	5	0.13	L. Zehr	177-02	\$800	\$368		\$1,168			\$1,168
* S.Pt. 18	5	0.09	E. & E. Ropp	177-03	\$800	\$271		\$1,071			\$1,071
* Pt. 18	5	0.08	M. & B. Blair	177-05	\$800	\$252		\$1,052			\$1,052
* Pt. 18	5	0.11	O. & G. Brunk	177-06	\$800	\$329		\$1,129			\$1,129
* PLAN M31, 18		0.06	J. & M. Currah	177-07	\$800	\$155		\$955			\$955

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M31, 17		0.09	F. & C. Steinman	177-08	\$800	\$271		\$1,071			\$1,071
* PLAN M31, 16		0.08	S. & E. Wagler	177-09	\$800	\$232		\$1,032			\$1,032
* PLAN M31, 15		0.08	K. & P. Jantzi	177-10	\$800	\$252		\$1,052			\$1,052
* PLAN M31, 14		0.08	J. Lichti	177-12	\$800	\$252		\$1,052			\$1,052
* PLAN M31, 13		0.08	J. & T. Knechtel	177-13	\$800	\$252		\$1,052			\$1,052
* PLAN M31, 12		0.08	B. & J. Reibling	177-14	\$800	\$213		\$1,013			\$1,013
* PLAN M31, 11		0.08	H. & D. Rutledge	177-15	\$800	\$232		\$1,032			\$1,032
* PLAN M31, 10		0.08	F. & B. Pearson	177-19	\$800	\$213		\$1,013			\$1,013
* PLAN M31, 9		0.08	M. Steckle	177-20	\$800	\$213		\$1,013			\$1,013
* PLAN M31, 8		0.09	R. Yantzi	177-21	\$800	\$252		\$1,052			\$1,052
* PLAN M31, 7		0.09	W. & J. Murray	177-23	\$800	\$271		\$1,071			\$1,071
* PLAN M31, 6		0.08	R. & D. Lange	177-24	\$800	\$213		\$1,013			\$1,013
* PLAN M31, 5		0.11	J. Mayne & S. George	177-25	\$800	\$310		\$1,110			\$1,110
* PLAN M31, 4		0.09	M. & C. Stone	177-26	\$800	\$252		\$1,052			\$1,052
* PLAN M31, 3		0.09	H. & M. Dhariwal	177-27	\$800	\$252		\$1,052			\$1,052
* PLAN M31 Pt. Blk. C, Pt. 18		0.09	C. & S. Gerber	177-29	\$800	\$252		\$1,052			\$1,052
* PLAN M31 Pt. Blk. C		0.09	S. & L. Habel	177-30	\$800	\$271		\$1,071			\$1,071
* PLAN M31, 2		0.10	G. & L. Snider	177-31	\$800	\$290		\$1,090			\$1,090
* PLAN M31 Pt. 1		0.10	G. & P. Poetker	177-32	\$800	\$290		\$1,090			\$1,090
* S.Pt. 18	5	0.11	R. & S. Schoonderwoerd	177-33	\$800	\$310		\$1,110			\$1,110
* Pt. 18	5	0.11	R. & S. Ramseyer	177-41	\$800	\$329		\$1,129			\$1,129
* Pt. 18	5	0.10	W. & J. McGrath	177-45	\$800	\$271		\$1,071			\$1,071
* PLAN 307, 32		0.21	A. & K. Klein	198-00	\$500	\$619		\$1,119			\$1,119
* PLAN 307 Pt. 33		0.06	J. & A. Burchatzki	199-01	\$500	\$193		\$693			\$693
* PLAN 307 Pt. 13		0.40	C. & C. Schwartzentruber	200-00	\$500	\$871		\$1,371			\$1,371
* PLAN 367, 1		0.08	J. & A. Burchatzki	201-00	\$500	\$213		\$713			\$713
* PLAN 307 Pt. 35		0.06	M. Schmidt	202-00	\$500	\$193		\$693			\$693
* PLAN 367 Pt. 3		0.06	J. Schultz	203-00	\$500	\$174		\$674			\$674
* PLAN 307, L W.Pt. 36		0.11	M. & E. Kaufman	204-00	\$500	\$310		\$810			\$810
* PLAN 307, L W.Pt. 37		0.11	R. & K. Burklen	205-00	\$500	\$310		\$810			\$810

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN 307 Pt. 38		0.17	K. & S. Winhold	206-00	\$500	\$484		\$984			\$984
* PLAN 307, 39		0.20	C. Junker	207-00	\$500	\$580		\$1,080			\$1,080
* PLAN 307, 40		0.13	D. Hodgkinson & P. Kaiser	208-00	\$500	\$387		\$887			\$887
* PLAN 307, 41		0.13	B. Neeb	209-00	\$500	\$387		\$887			\$887
* PLAN 307, 42		0.13	K. Rellinger	210-00	\$500	\$387		\$887			\$887
* PLAN 307, 43		0.13	J. & S. Wagner	211-00	\$500	\$387		\$887			\$887
* PLAN 307, 44		0.14	R. & S. Spicer	212-00	\$500	\$387		\$887			\$887
* PLAN 307 Pt. 45		0.14	T. Bauld	213-00	\$500	\$387		\$887			\$887
* PLAN 307 Pt. 45		0.17	D. & G. Matthews	214-00	\$500	\$503		\$1,003			\$1,003
* PLAN 307 Pt. 45		0.11	M. Wettlaufer	215-00	\$500	\$310		\$810			\$810
* PLAN 307, 46		0.13	1389417 Ontario Inc.	216-00	\$500	\$368		\$868			\$868
* PLAN 307 Pt. 6		0.10	C. Zapalac & K. Miller	217-00	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 6		0.10	C. & M. Ditner	217-01	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 6		0.10	H. & A. Kwasnick	217-02	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 6		0.10	V. Riehl & A. Brodhagen	217-03	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 47		0.15	A. & L. Meunier	218-00	\$500	\$426		\$926			\$926
* PLAN 307 Pt. 47		0.12	K. Becker	218-02	\$500	\$329		\$829			\$829
Pt. 20	5	6.48	Dietview Farms Ltd.	219-00	\$500	\$5,565		\$6,065	\$2,022	\$1,740	\$2,303
* PLAN M70, 13		0.14	L. & L. Ropp	237-12	\$500	\$387		\$887			\$887
* PLAN M70, 14		0.10	S. & M. Ropp	237-13	\$500	\$271		\$771			\$771
* PLAN M70, 15		0.07	F. & I. Oleksinski	237-14	\$500	\$213		\$713			\$713
* PLAN M70, 16		0.07	W. & F. Blum	237-15	\$500	\$213		\$713			\$713
* PLAN M70, 17		0.07	M. & K. Wirth	237-16	\$500	\$213		\$713			\$713
* PLAN M70, 18		0.07	W. & L. Stock	237-17	\$500	\$213		\$713			\$713
* PLAN M70, 19		0.08	B. & J. Wettlaufer	237-18	\$500	\$252		\$752			\$752
* PLAN M70, 20		0.10	L. Sinclair	237-19	\$500	\$271		\$771			\$771
* PLAN M70, 21		0.11	H. & H. Kropf	237-20	\$500	\$310		\$810			\$810
* PLAN M70, 22		0.11	C. & C. Zehr	237-21	\$500	\$310		\$810			\$810
* PLAN M70, 23		0.13	J. & J. Ramseyer	237-22	\$500	\$387		\$887			\$887
* PLAN M70, 24		0.15	W. & C. Shewfelt	237-23	\$500	\$426		\$926			\$926

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M70, 25		0.15	B. & D. Swartzentruber	237-24	\$500	\$426		\$926			\$926
* PLAN M70, 26		0.10	D. & B. Ramseyer	237-25	\$500	\$290		\$790			\$790
* PLAN M70, 27		0.13	N. Yantzie-Kropf	237-26	\$500	\$368		\$868			\$868
* PLAN M70, 28		0.12	O. & O. Bender	237-27	\$500	\$329		\$829			\$829
* PLAN M70, 29		0.12	W. & J. Yantzi	237-28	\$500	\$348		\$848			\$848
* PLAN M70, 30		0.10	F. & H. Kropf	237-29	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 8		0.19	R. & K. Vandenbrink	240-00	\$500	\$542		\$1,042			\$1,042
* PLAN 307 Pt. 8		0.10	B. & M. Bender	241-00	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 8		0.10	W. Wickie	242-00	\$500	\$290		\$790			\$790
* PLAN 307 Pt. Blk. G		0.11	L. Powers	243-00	\$500	\$310		\$810			\$810
* PLAN 307 Pt. G		0.11	D. & H. Clement	244-00	\$500	\$310		\$810			\$810
* PLAN 307 Pt. G		0.11	M. & W. Loree	245-00	\$500	\$310		\$810			\$810
* PLAN 307 Pt. G & Pt. 9		0.18	K. & A Loschnig	246-00	\$500	\$503		\$1,003			\$1,003
* PLAN 307 Pt. 9		0.19	J. Kirkbride & A. Reibling	247-00	\$500	\$561		\$1,061			\$1,061
* PLAN 307 Pt. 9		0.10	E. & J. Roth	248-00	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 9		0.10	C. Huber & A. Moss-Huber	249-00	\$500	\$290		\$790			\$790
* PLAN 307 S.Pt. 53		0.20	K. & T. Horst	250-00	\$500	\$580		\$1,080			\$1,080
* PLAN 307 N.Pt. 53		0.20	L. & R. Zehr	251-00	\$500	\$580		\$1,080			\$1,080
* PLAN 307, 52		0.10	J. & A. Becker	252-00	\$500	\$290		\$790			\$790
* PLAN 307, 51		0.20	C. & D. Dolson	253-00	\$500	\$580		\$1,080			\$1,080
* PLAN 307, 50		0.10	L. & B. Mutch	254-00	\$500	\$290		\$790			\$790
* PLAN 307 S.Pt. 49		0.10	T. & N. Lawry	255-00	\$500	\$290		\$790			\$790
* PLAN 307 Pt. 49		0.11	N. Croft	256-00	\$500	\$310		\$810			\$810
* PLAN 307 Pt. 49		0.20	J. & F. McCartney	257-00	\$500	\$580		\$1,080			\$1,080
* PLAN 307 Pt. 49		0.13	L. & L. Ruby	258-00	\$500	\$387		\$887			\$887
* PLAN 307 N.Pt. 49		0.27	Oxford Carriage Door Ltd.	259-00	\$500	\$774		\$1,274			\$1,274
* PLAN 307 S.Pt. 48		0.17	Jaly Holdings Ltd.	261-00	\$500	\$484		\$984			\$984
* PLAN 307 N.Pt. 48		0.13	M. & L. Blikman	262-00	\$500	\$387		\$887			\$887
* PLAN 307 N.Pt. 48		0.06	W. & M. Clemmer	262-05	\$500	\$174		\$674			\$674
* PLAN 307 N.Pt. 48		0.06	M. Fryfogel	262-07	\$500	\$174		\$674			\$674

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M106, 6		0.13	R. & J. Ferguson	263-00	\$500	\$368		\$868			\$868
* PLAN M106, 7		0.14	D. McClintock	263-03	\$500	\$406		\$906			\$906
* PLAN M106, 8		0.15	J. & A. Yantzi	263-06	\$500	\$426		\$926			\$926
* PLAN M106, 9		0.15	J. & H. Kaufman	263-09	\$500	\$426		\$926			\$926
* PLAN M106, 10		0.14	M. & J. Sauder	263-12	\$500	\$387		\$887			\$887
* PLAN M114, 7-1		0.11	W. & J. Bender	263-15	\$500	\$329		\$829			\$829
* PLAN M114, 8-1		0.11	B. & D. Tettman	263-17	\$500	\$329		\$829			\$829
* PLAN M114, 9-1		0.11	A. & C. Gray	263-19	\$500	\$329		\$829			\$829
* PLAN M114, 10-1		0.11	J. & K. Tuffnail	263-21	\$500	\$329		\$829			\$829
* PLAN M114, 11-1		0.11	R. & L. Iutzi	263-23	\$500	\$329		\$829			\$829
* PLAN M114, 12-1		0.13	T. & J. Berg	263-25	\$500	\$368		\$868			\$868
* PLAN M114, 13-1		0.08	R. & A. Cole	263-57	\$500	\$232		\$732			\$732
* PLAN M114, 14-1		0.08	L. & R. Lange	263-59	\$500	\$232		\$732			\$732
* PLAN M114, 15-1		0.08	A. & A. Boyd	263-61	\$500	\$232		\$732			\$732
* PLAN M114, 16		0.08	G. & H. Bontaine	263-63	\$500	\$232		\$732			\$732
* PLAN M114, 17		0.08	J. & C. James	263-65	\$500	\$232		\$732			\$732
* PLAN M114, 18-1		0.08	L. & K. Hohner	263-67	\$500	\$232		\$732			\$732
* PLAN M114, 19-1		0.08	D. Carman & G. Thistle	263-69	\$500	\$232		\$732			\$732
* PLAN M114, 20-1		0.08	M. & B. Roth	263-71	\$500	\$232		\$732			\$732
* PLAN M114, 21-1		0.08	D. & M. Lamond	263-73	\$500	\$252		\$752			\$752
* PLAN M114, 1		0.13	D. & A. Wagler	263-75	\$500	\$368		\$868			\$868
* PLAN M114, 2-1		0.10	R. & S. Malson	263-77	\$500	\$290		\$790			\$790
* PLAN M114, 3-1		0.10	R. & M. Radke	263-79	\$500	\$290		\$790			\$790
* PLAN M114, 4-1		0.10	M. & S. Waymouth	263-81	\$500	\$290		\$790			\$790
* PLAN M114, 5-1		0.10	C. & B. Wettlaufer	263-83	\$500	\$290		\$790			\$790
* PLAN M114, 6-1		0.09	K. & M. Carter	263-85	\$500	\$271		\$771			\$771
* PLAN M106, 1		0.09	D. & P. Shantz	263-87	\$500	\$252		\$752			\$752
* PLAN M106, 2		0.07	G. & D. Wettlaufer	263-90	\$500	\$213		\$713			\$713
* PLAN M106, 3		0.06	B. Corsaut & J. Harwood	263-93	\$500	\$193		\$693			\$693
* PLAN M106, 4		0.07	P. & J. Kalbfleisch	263-95	\$500	\$193		\$693			\$693

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M106, 5		0.08	L. Kalbfleisch	263-98	\$500	\$232		\$732			\$732
* PLAN M118, 17-1		0.12	H. & D. Winhold	400-00	\$800	\$348		\$1,148			\$1,148
* PLAN M118, 16-1		0.12	C. & K. Holdsworth	401-00	\$800	\$348		\$1,148			\$1,148
* PLAN M118, 15-1		0.11	D. & K. Shirray	402-00	\$800	\$329		\$1,129			\$1,129
* PLAN M118, 14-1		0.12	G. & E. Yantzi	403-00	\$800	\$348		\$1,148			\$1,148
* PLAN M118, 13-1		0.12	J. & C. Saranchuk	404-00	\$800	\$348		\$1,148			\$1,148
* PLAN M118, 12-1		0.11	D. Yantzi	405-00	\$800	\$310		\$1,110			\$1,110
* PLAN M118, 11-1		0.11	B. & B. Blum	406-00	\$800	\$310		\$1,110			\$1,110
* PLAN M118, 10-1		0.12	L. & E. Bott	407-00	\$800	\$329		\$1,129			\$1,129
* PLAN M118, 9-1		0.14	J. & B. Kropf	408-00	\$800	\$406		\$1,206			\$1,206
* PLAN M118, 8-1		0.13	C. & P. Roth	409-00	\$800	\$368		\$1,168			\$1,168
* PLAN M118, 7-1		0.09	D. & M. Marshall	410-00	\$800	\$271		\$1,071			\$1,071
* PLAN M118, 6		0.10	D. & A. Bender	411-00	\$800	\$271		\$1,071			\$1,071
* PLAN M130, 15-1		0.08	R. & S. Taylor	411-02	\$800	\$252		\$1,052			\$1,052
* PLAN M130, 16-1		0.08	K. & M. Ruby	411-04	\$800	\$252		\$1,052			\$1,052
* PLAN M130, 17-1		0.07	R. & A. Van Boekel	411-06	\$800	\$193		\$993			\$993
* PLAN M130, 18-1		0.10	E. & B. Mossman	411-09	\$800	\$271		\$1,071			\$1,071
* PLAN M130, 19-1		0.12	J. & B. Entwistle	411-12	\$800	\$329		\$1,129			\$1,129
* PLAN M130, 20-1		0.07	M. & J. Newcombe	411-15	\$800	\$193		\$993			\$993
* PLAN M130, 21-1		0.07	G. & T. Kaufman	411-18	\$800	\$193		\$993			\$993
* PLAN M130, 22-1		0.07	B. Barr	411-20	\$800	\$193		\$993			\$993
* PLAN M130, 23-1		0.08	B. & M. Schultz	411-22	\$800	\$252		\$1,052			\$1,052
* PLAN M161, 34		0.08	W. & L. Schumm	411-24	\$800	\$213		\$1,013			\$1,013
* PLAN M161, 33		0.06	L. & D. Berger	411-26	\$800	\$193		\$993			\$993
* PLAN M161, 32		0.06	G. & T. Alexander	411-28	\$800	\$193		\$993			\$993
* PLAN M161, 31		0.06	M. & W. Longworth	411-30	\$800	\$193		\$993			\$993
* PLAN M161, 30		0.04	D. Nafziger	411-32	\$800	\$135		\$935			\$935
* PLAN M161, 29		0.04	T. & J. Hergott	411-34	\$800	\$116		\$916			\$916
* PLAN M161, 28		0.04	H. & A. Bender	411-36	\$800	\$116		\$916			\$916
* PLAN M161, 27		0.07	C. Hachborn & T. Horst	411-38	\$800	\$193		\$993			\$993

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M161, 26		0.07	R. Gushue & S. Witter	411-40	\$800	\$213		\$1,013			\$1,013
* PLAN M161, 25		0.07	P. & A. Schlegel	411-42	\$800	\$193		\$993			\$993
* PLAN M161, 24		0.07	P. & D. Hammer	411-44	\$800	\$193		\$993			\$993
* PLAN M161, 23		0.07	S. & L. Patton	411-46	\$800	\$213		\$1,013			\$1,013
* PLAN M161, 22		0.07	G. & N. Sword	411-48	\$800	\$213		\$1,013			\$1,013
* PLAN M118, 18-1		0.12	G. & C. Nibbelink	450-00	\$800	\$348		\$1,148			\$1,148
* PLAN M118, 19-1		0.09	D. & S. Walkom	451-00	\$800	\$252		\$1,052			\$1,052
* PLAN M118, 20-1		0.09	A. Yantzi	452-00	\$800	\$271		\$1,071			\$1,071
* PLAN M118, 21-1		0.09	J. Van Boekel	453-00	\$800	\$271		\$1,071			\$1,071
* PLAN M118, 22-1		0.08	D. & K. Ledingham	454-00	\$800	\$213		\$1,013			\$1,013
* PLAN M118, 1-1		0.07	D. Yantzi	455-00	\$800	\$213		\$1,013			\$1,013
* PLAN M118, 2-1		0.07	H. Maier	456-00	\$800	\$213		\$1,013			\$1,013
* PLAN M118, 3		0.07	J. Roth	457-00	\$800	\$213		\$1,013			\$1,013
* PLAN M118, 4-1		0.07	S. & L. Skinner	458-00	\$800	\$213		\$1,013			\$1,013
* PLAN M118, 5-1		0.08	M. & S. Erb	459-00	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 14-1		0.08	M. & S. Baechler	459-02	\$800	\$232		\$1,032			\$1,032
* PLAN M130, 13-1		0.07	B. Duguay & L. Concoran	459-04	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 12-1		0.07	L. Wagler	459-06	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 11-1		0.07	F. & K. Maier	459-08	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 10		0.07	L. Gillies & S. Wolfgram	459-10	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 9-1		0.07	T. & L. Quehl	459-12	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 8-1		0.07	D. & K. Jantzi	459-14	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 7-1		0.07	P. & T. Smith	459-16	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 6-1		0.07	F. & A. Meconi	459-18	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 5-1		0.07	D. & C. Mordue	459-20	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 4-1		0.07	A. & C. McArthur	459-22	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 3-1		0.07	B. & M. Brenneman	459-24	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 2-1		0.07	K. & P. Schmidt	459-26	\$800	\$213		\$1,013			\$1,013
* PLAN M130, 1-1		0.09	P. & B. Bowman	459-28	\$800	\$271		\$1,071			\$1,071
* PLAN M130, 28-1		0.08	R. & S. Quehl	462-00	\$800	\$252		\$1,052			\$1,052

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M130, 29-1		0.07	R. & R. Sim	462-02	\$800	\$193		\$993			\$993
* PLAN M130, 30-1		0.07	W. Seyler	462-04	\$800	\$193		\$993			\$993
* PLAN M130, 31-1		0.07	D. & E. Epp	462-06	\$800	\$193		\$993			\$993
* PLAN M130, 32-1		0.09	R. & B. Zehr	462-08	\$800	\$271		\$1,071			\$1,071
* PLAN M130 Pt. 33		0.04	M. Schwartzentruber	462-10	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 33		0.04	D. Witter	462-11	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 34		0.04	M. Holst-Weicker	462-12	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 34		0.04	K. Albrecht & W. Janssen	462-13	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 35		0.04	W. & D. Wiegand	462-14	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 35		0.04	D. & Y. Roth	462-15	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 36-1		0.04	T. Wilhelm	462-16	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 36		0.04	P. Reibling	462-17	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 37		0.08	W. Kropf	462-18	\$700	\$232		\$932			\$932
* PLAN M130 Pt. 37		0.04	C. McLaren	462-19	\$700	\$116		\$816			\$816
* PLAN M161, 21		0.10	A. Ritsma	464-78	\$800	\$271		\$1,071			\$1,071
* PLAN M161, 20		0.10	R. & C. Hyde	464-80	\$800	\$271		\$1,071			\$1,071
* PLAN M161, 19		0.09	S. Jantzi & R. Robinson	464-82	\$800	\$252		\$1,052			\$1,052
* PLAN M161, 18		0.07	T. Fulton	464-84	\$800	\$213		\$1,013			\$1,013
* PLAN M161, 17		0.07	J. & S. McKay	464-86	\$800	\$193		\$993			\$993
* PLAN M161, 16		0.08	G. & H. Dionne	464-88	\$800	\$213		\$1,013			\$1,013
* PLAN M161, 15		0.06	D. & K. Bailey	464-90	\$800	\$174		\$974			\$974
* PLAN M161, 14		0.05	L. & S. Wettlaufer	464-92	\$800	\$155		\$955			\$955
* PLAN M161, 13		0.05	D. & D. Robinson	464-94	\$800	\$135		\$935			\$935
* PLAN M161, 12		0.06	N. Williamson & S. Byatt	464-96	\$800	\$193		\$993			\$993
* PLAN M161, 11		0.07	R. & N. Ruby	464-98	\$800	\$193		\$993			\$993
* PLAN M130, 24-1		0.08	V. & T. Romano	465-00	\$800	\$252		\$1,052			\$1,052
* PLAN M130, 25-1		0.07	L. & T. Lobsinger	465-02	\$800	\$193		\$993			\$993
* PLAN M130, 26-1		0.07	B. & D. Winhold	465-04	\$800	\$193		\$993			\$993
* PLAN M130, 27-1		0.08	D. Mohr	465-06	\$800	\$252		\$1,052			\$1,052
* PLAN M161 Pt. 10		0.04	G. & D. Suteu	465-08	\$700	\$97		\$797			\$797

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN 41M161 Pt. 10		0.04	P. Dubblestyne & M. Lalonde	465-09	\$700	\$116		\$816			\$816
* PLAN 41M161 Pt. 9		0.04	V. Verhoeven	465-10	\$700	\$116		\$816			\$816
* PLAN 41M161 Pt. 9		0.04	R. Lichti	465-11	\$700	\$116		\$816			\$816
* PLAN M161 Pt. 8		0.03	P. Fortier & C Perrin	465-12	\$700	\$97		\$797			\$797
* PLAN M161 Pt. 8		0.04	C. & M. Church	465-13	\$700	\$97		\$797			\$797
* PLAN M161 Pt. 7		0.05	S. O'Leary & H. Smith	465-14	\$700	\$155		\$855			\$855
* PLAN M161 Pt. 7		0.08	M. Coulson & D. Hajovic	465-15	\$700	\$213		\$913			\$913
* PLAN 41M161 Pt. 6		0.03	C. Beam & C. Kropf	465-16	\$700	\$97		\$797			\$797
* PLAN 41M161 Pt. 6		0.02	G. Diamond	465-17	\$700	\$58		\$758			\$758
* PLAN M161 Pt. 5		0.05	S. & K. Garrick	465-18	\$700	\$155		\$855			\$855
* PLAN M161 Pt. 5		0.02	R. Yantzi & C. Wilhelm	465-19	\$700	\$77		\$777			\$777
* PLAN M161 Pt. 4		0.06	R. & L. Bray	465-20	\$700	\$193		\$893			\$893
* PLAN M161 Pt. 4		0.05	D. Bender	465-21	\$700	\$135		\$835			\$835
* PLAN M161 Pt. 3		0.03	C. & T. Riehl	465-22	\$700	\$97		\$797			\$797
* PLAN M161 Pt. 3		0.04	R. Ingram & D. Schmidt	465-23	\$700	\$97		\$797			\$797
* PLAN M161 Pt. 2		0.04	W. & J. Bender	465-24	\$700	\$135		\$835			\$835
* PLAN M161 Pt. 2		0.05	K. Mogk	465-25	\$700	\$135		\$835			\$835
* PLAN M161 Pt. 1		0.05	M. McFadden & S. Bourgeois	465-26	\$700	\$135		\$835			\$835
* PLAN M161 Pt. 1		0.05	B. & A. Roth	465-27	\$700	\$155		\$855			\$855
* PLAN M130, 47-1		0.11	N. & R. Yantzi	470-00	\$800	\$310		\$1,110			\$1,110
* PLAN M130, 46-1		0.08	L. & D. Zehr	470-02	\$800	\$232		\$1,032			\$1,032
* PLAN M130, 45-1		0.08	O. & S. Kropf	470-04	\$800	\$252		\$1,052			\$1,052
* PLAN M130 Blk. 48-1		0.45	East-Zorra Tavistock	470-06	\$800	\$1,277		\$2,077			\$2,077
* PLAN M130 Pt. 44		0.04	E. Zehr	471-00	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 44		0.04	D. Doan	471-01	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 43		0.04	R. & K. Dunn	471-02	\$700	\$116		\$816			\$816
* PLAN 41M130 Pt. 43		0.04	R. & H. Brown	471-03	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 42		0.04	S. & R. Hundal	471-04	\$700	\$135		\$835			\$835
* PLAN M130 Pt. 42		0.04	S. McLaren	471-05	\$700	\$135		\$835			\$835
* PLAN M130 Pt. 41		0.08	W. & V. Mogk	471-06	\$700	\$252		\$952			\$952

**SCHEDULE OF ASSESSMENT
Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock**

LOT OR PART	CON.	APPROX. HECTARES AFFECTED	OWNER	ROLL NO.	BENEFIT LIABILITY (SEC. 22)	OUTLET LIABILITY (SEC. 23)	SPECIAL ASSESSMENT (SEC. 26)	TOTAL ASSESSMENT	LESS 1/3 GOV'T GRANT	LESS ALLOWANCES	NET ASSESSMENT
* PLAN M130 Pt. 41		0.04	H. Mogk	471-07	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 40		0.04	S. Wilson	471-08	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 40		0.04	S. Sippel	471-09	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 39		0.04	D. Weszner	471-10	\$700	\$116		\$816			\$816
* PLAN M130 Pt. 39		0.04	C. Griffi	471-11	\$700	\$135		\$835			\$835
* PLAN M130 Pt. 38		0.06	A. Sedgemore	471-12	\$700	\$174		\$874			\$874
* PLAN M130 Pt. 38		0.04	P. & B. Vandervliet	471-13	\$700	\$116		\$816			\$816
Total Assessment on Lands					\$238,500	\$109,400		\$347,900	\$2,022	\$1,740	\$344,138
Village of Tavistock Roads					\$170,000	\$45,887		\$215,887			\$215,887
Woodstock Street North					\$15,000	\$4,830		\$19,830			\$19,830
Hope Street East					\$70,000	\$13,283		\$83,283			\$83,283
Total Assessment on Roads					\$255,000	\$64,000		\$319,000			\$319,000
Total Assessment on Lands and Roads, Village of Tavistock					\$493,500	\$173,400		\$666,900	\$2,022	\$1,740	\$663,138
Total Assessment on Lands and Roads, Tavistock Municipal Drain 2006					\$578,300	\$220,520	\$61,280	\$860,100	\$21,395	\$28,170	\$810,535

NOTES: *1. Denotes non-agricultural lands.
2. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.

SPECIFICATIONS FOR THE CONSTRUCTION OF MUNICIPAL DRAINAGE WORKS

DIVISION A – General Conditions

DIVISION B – Specifications for Open Drains

DIVISION C – Specification for Tile Drains

**DIVISION E – Specification for Drainage Crossings
By the Boring Method**

**DIVISION F – Specification for Storm Drains
and Appurtenances**

DIVISION H – Special Provisions

DIVISION A

GENERAL CONDITIONS

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DIVISION A

GENERAL CONDITIONS

A.1 SCOPE

These Specifications, the Report And Drawings, govern the supply of labour, materials, and equipment necessary to construct the works as shown on, described by or reasonably inferable from the Report, Specifications and Drawings. In some Municipalities, the Contractor shall supply all materials. The accompanying Form of Tender and Agreement and Scope of Work list materials which are to be supplied by the Contractor.

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 lowest or any Tender will not necessarily be accepted. A deposit of Ten percent (10%) of the amount tendered for the Labour and equipment portion only of the total tendered amount in the form of a certified cheque payable to the Treasurer of the Municipality, must accompany each Tender as guarantee of good faith.

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 returned with the final payment on the work or will be retained until the successful Tenderer furnishes a Performance Bond for One Hundred per cent (100%) of the amount of the Tender or other satisfactory security, if required by the Municipality. A Performance Bond shall insure completion of the work and maintenance of the work for a period of one (1) year after the date of the completion certificate.

A.3 EXAMINATIONS OF SITE, PLANS AND SPECIFICATIONS

The Tenderer must examine the premises and site to compare them with the Plans 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 Plan, or in the Report 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 Tenderer must satisfy himself that he understands the meaning and intent of the Plans and Specifications before submission of his Tender. In case of any

inconsistency or conflict between the Plans and Specifications, the notes on the Plans shall take precedence over the Specifications.

A.4 PAYMENT

Progress payments in cash equal to Eighty per cent (80%) of the value of work done and materials incorporated in the work will be made to the Contractor monthly on written request of the Contractor to the Engineer. An additional Seventeen per cent (17%) will be paid thirty-seven (37) days after the final acceptance by the Engineer, and Three per cent (3%) of the Contract price may be reserved by the Municipality for one (1) year.

A greater percentage of the Contract price may be reserved by the Municipality for the same (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 if he desires.

A.5 WORKING AREA AND ACCESS

On a closed drain, the working area for construction purposes shall be a width of twenty (20) metres centred on the proposed drain. On an open drain, the working area shall be fifteen (15) metres on the side of the drain where the excavated material is to be placed unless additional width is required to level the excavated material.

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.6 INSPECTION

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

A.7 COMPLETION OF WORK

The work must commence immediately after the Contractor is notified of the acceptance of his Tender or at a later date if set out as a condition of the Tender. If weather and ground conditions are unsuitable, work may be started at a later date from either of these two (2) dates if such delay is approved by the Engineer.

The work must be proceed in such a manner as to ensure its completion at the earliest possible date consistent with the first class workmanship and within the time limit set out in the Tender or in the Contract Documents.

A.8 ALTERATIONS AND ADDITIONS

The Engineer shall have the power to make alterations in the work 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 deleted. Where such changes involve work additional and similar to the items in the Main Contract, the price agreed to be paid shall be determined after due consideration has been given to the ratio of the Tendered amount to the Engineer's estimate of the Contract. 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.9 SUPERVISION

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

A.10 MAINTENANCE

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 evident by the final payment 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 final payment certificate nor payment there under, nor any provision in the Contract Documents shall relieve the Contractor from his responsibility.

A.11 CONTRACTOR'S LIABILITY INSURANCE

The Contractor shall protect himself and indemnify and save the Owner harmless from any and all claims which may arise from the Contractor's operations under the Contract where bodily injury, death, or property damage is caused and for this purpose shall, without restricting the generality of the foregoing, maintain insurance acceptable to the Owner, and subject to the limits of not less than One Million Dollars (\$1,000,000.00) inclusive, per occurrence for bodily injury, death, and damage to property including loss of use thereof.

The Contractor shall furnish evidence of compliance with all requirements of the applicable Workmen's Compensation Act or Ordinance of the Province or Territory concerned including payments due there under.

Prior to commencement of any work hereunder, the Contractor shall file with the Owner a copy of each insurance policy and certificate required. All such insurance shall be maintained until final completion of the work including the making good of faulty work or materials; except that coverage of completed operations liability shall in any event be maintained for twelve (12) months from the date of substantial completion as certified by the Engineer.

A.12 FLOODS OR CASUALTIES

The Contractor shall take all risks from floods or casualties of any kind.

A.13 SUB-CONTRACTORS

If the Municipality so directs, the Contractor shall not sublet the whole or part of this Contract without the approval of the Engineer.

A.14 ROAD CROSSINGS

All road crossings may be made with an open cut unless otherwise noted. The exact location of the crossings shall be verified and approved by the Road Authority or the Engineer. A 150 mm depth of pit run gravel, well compacted, shall be placed as a base for each pipe crossing. The pipe shall be backfilled with a granular material for the width of the travelled portion plus 1200 mm on either side. 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 where so required by the Engineer. The top 150 mm of the roadway backfill shall consist of crushed granular material meeting the Specifications of the Ministry of Transportation of Ontario for Granular Base Course Class "A" (Granular "A") material. Existing pavement, if any, shall not be replaced by the Contractor unless noted differently on the Plan.

The Contractor shall be responsible, however, for subsequent uneven joints in the pavement due to settling of the backfill. The Contractor should arrange with a local resident to keep the crossing in repair if unable to do such personally. A small load of Granular "A" gravel at the side of the road may be advisable so that if any settlement does occur, the local resident can add additional gravel. All road crossings shall meet the approval of the Road Authority. For County road crossings, see Division D – "Specifications for Municipal Drains Crossing County Roads". In doing work on or across any public road, care must be taken to protect the travelling public, the Contractor being required to erect and maintain, until the completion of the work, all signs, barricades, and lights necessary to indicate or warn the travelling public that the work is being undertaken, all satisfactory to the Road Authority having jurisdiction.

The excavated material from the travelled portion of the road and 1200 mm or the full width of the graveled shoulder, whichever is greater, on each side of the travelled portion shall be removed. Excavated material may be spread on the right-of-way with consent of the Road Authority. Surplus excavated material must be removed from the job site

If the Engineer deems a gravel road to have been damaged by the construction of a drain either across or along the said road, the Engineer may direct the Contractor to supply and place sufficient crushed granular material on the roadway to restore it to a safe and passable condition at the Contractor's expense.

A.15 LANEWAYS

All pipes crossing laneways shall be backfilled with material that is clean, free of foreign material or frozen particles and readily tamped or compacted in place unless otherwise specified. Laneway culverts on open ditch projects shall be backfilled with material that also is not easily erodable. All backfill material shall be thoroughly compacted as directed by the Engineer.

All structural plate pipe culverts whether located on public roads or laneways shall be backfilled with granular material to a minimum distance of 900 mm beyond each side of the culvert. Three hundred millimeters (300 mm) of granular material shall be placed under the culvert as a base. Granular material shall be placed simultaneously on each side of the culvert in 150 mm layers and compacted to a ninety-five per cent (95%) Proctor Density. All culverts to be assembled according to the Engineer's and Manufacturer's Specifications. Culverts to be installed 300 mm below design grade with a minimum of 600 mm of cover over the pipe unless otherwise noted on Drawings.

The backfill over culverts and subsurface pipes at all existing laneways that have granular surfaces on open ditch and closed drainage projects shall be surfaced with a minimum of 300 mm of pit run granular material and 150 mm of crushed

granular material. All backfill shall be thoroughly compacted as directed by the Engineer. All granular material shall be placed to the full width of the travelled portion.

Any settling of backfilled material shall be repaired by or at the expense of the Contractor during the warranty period of the project and as soon as required. Any existing bituminous pavement on laneways shall be placed to its original condition by the Contractor.

A.16 FENCES

No earth is to be placed against fences and all fences removed by the Contractor shall be replaced by him in as good a condition as found. Where practical the Contractor shall take down new existing fences in good condition at the nearest anchor post and roll it 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 Drainage Commissioner/Superintendent. Any fences found in such poor condition that replacement is not necessary, shall be noted and verified with the Engineer or Drainage Commissioner/Superintendent prior to commencement of work. Any fences paralleling an open ditch that are not line fences that hinder the proper working of the excavating machinery, shall be removed and rebuilt by the Land owner at his own expense. The Contractor shall not leave fences open when he is not at work in the immediate vicinity.

A.17 LIVESTOCK

The Owner of the property on which the drain is located shall be responsible for the protection of all livestock on said property during construction and shall also be liable for any damages caused by such livestock.

A.18 STANDING CROPS

The Contractor shall be responsible for damages to standing crops which are ready to be harvested or salvaged along the course of the drain if the Contractor has failed to notify the Owners forty-eight (48) hours prior to commencement of the work on that portion of the drain.

A.19 SURPLUS GRAVEL

If as a result of any work, gravel or crushed stone is required and not all the gravel or crushed stone is used in the construction of the works, the Contractor shall haul away such surplus gravel or stone. This does not apply to a road crossing where surplus gravel is left to allow for building up the trench after settlement occurs.

A.20 PERMITS, NOTICES, LAWS AND RULES

The Contractor shall apply and pay for all necessary permits or licenses required for the execution of the work (but this shall not include the obtaining of 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 and if the Specifications and Drawings are at variance therewith, any resulting additional expenses incurred by the Contractor shall constitute an addition to the Contract price.

A.21 RAILWAYS, HIGHWAYS AND UTILITIES

A minimum of forty-eight (48) hours notice in writing to the Railway's Division Engineer, the M.T.O. District Engineer, or the Utility Company, exclusive of Saturdays, Sundays, and Statutory Holidays, is required by the Contractor prior to any work performed on or affecting the applicable property and in the case of a pipe being installed by open cut, a minimum of seventy-two (72) hours notice is required; and if boring, a minimum of five (5) days notice is required

A.22 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 Owner, 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 Owner 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, including the certified cheque and deposit as provided by A.2 "Tenders", the Contractor shall pay the difference to the Owner. The

expense incurred by the Owner, as herein provided, shall be certified by the Engineer.

If the Contract is terminated by the Owner due to the Contractor's failure to properly commence the works, the Contractor shall forfeit the certified cheque bid deposit and furthermore shall pay to the Municipality an amount to cover the increased costs, if any, associated with a new Tender for the Contract being terminated.

If any unpaid balance and the certified cheque do not match the monies owed by the Contractor upon termination of the Contract, the Municipality may also charge such expense against any money which may thereafter grow due to the Contractor.

A.23 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. The Contract amount shall be adjusted in accordance with a fair evaluation of the work added or deleted.

A.24 EXCESS TILE

If the tile is supplied by the Municipality, the Contractor shall stockpile all excess tile in one (1) readily accessible location for pickup by the Municipality at the end of the project. If the tile is supplied by the Contractor he shall remove all excess tile from the job site.

A.25 REPLACEMENT OF STAKES

The Contractor shall be held liable for the cost of replacing any stakes or benchmarks destroyed during the course of construction. The municipal drain shall be liable for the cost of replacing stakes or benchmarks destroyed or removed before commencement of construction.

A.26 DRAINAGE COMMISSIONER/SUPERINTENDENT

Where a Drainage Commissioner/Superintendent is appointed by the Municipality, the Drainage Commissioner/Superintendent will act as the Engineer's representative. The Commissioner/Superintendent shall have the power to direct the execution of the work and to make any necessary minor adjustments.

Any instructions given by the Commissioner/Superintendent which change considerably the proposed work, or with which the Contractor does not agree, shall be referred to the Engineer for his decision.

A.27 TESTS

The cost for the testing of materials supplied to the job by the Contractor shall be borne by the Contractor. The cost of testing materials supplied by the Municipality shall be borne on the Municipality. The Engineer reserves the right to subject any lengths of any tile or pipe to a competent testing laboratory to ensure the adequacy of the tile or pipe. If any tile supplied by the Contractor is determined to be inadequate to meet the applicable A.S.T.M. standards, the Contractor shall bear full responsibility to remove and/or replace all such inadequate tile in the Contract with tile capable of meeting the A.S.T.M. Standards.

A.28 ONTARIO MUNICIPAL BOARD

The award of the Contract shall be subject to the approval of the project by the Ontario Municipal Board.

A.29 NOTICE RE. COMMENCEMENT OF WORK

The Contractor shall give the Engineer and the Drainage Commissioner/Superintendent a minimum of forty-eight (48) hours advance notice before commencement of work on any municipal drain.

If the Contractor leaves the job site for a period of time after initiation of work, he shall give the Engineer and the Drainage Commissioner/Superintendent a minimum of forty-eight (48) hours advance notice prior to returning to the job.

If any work is commenced without such advance notice, the Contractor shall be fully responsible for all such work undertaken prior to such notification and shall make good any works or materials used judged to be inadequate or constructed in a manner that may have been subject to alteration if made known to the Engineer prior to commencement of construction.

A.30 FIELD MEETINGS

At the Engineer's discretion, 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 after notification of commencement of work has been given and prior to commencement of, or during construction.

DIVISION B

SPECIFICATION FOR OPEN DRAINS

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DIVISION B

SPECIFICATION FOR OPEN DRAINS

B.1 STAKES

Stakes are set along the course of the drain at intervals of twenty-five (25) metres. The Contractor shall ensure that the stakes are not disturbed unless approval is obtained from the Engineer. Any stakes removed by the Contractor without the authority of the Engineer, shall be replaced at the expense of the Contractor; any stakes which are removed by livestock or others, shall be replaced at the expense of the drain. If the Contractor is unable to locate any stakes along the drain, the Contractor shall clear, if necessary a path for re-staking and contact the Engineer with regard to re-staking any part or all of the drain. If required, the Contractor shall assist the Engineer in re-staking the drain.

B.2 EXCAVATION

The bottom width and the side slopes of the ditch shall be those shown on the Profile Drawing. Side slopes are normally 1.5 metres horizontally to 1.0 metre vertically unless otherwise noted on the Profile Drawing. Bottom widths will vary with the size of the drain. Where the width of the bottom of the existing ditch is sufficient to permit the desired width, depth and back slopes for the new ditch to be constructed without disturbing existing banks, such banks shall be left as is, subject to clearing required as described in Section B.9 "Obstructions".

B.3 PROFILE

The Profile Drawing shows the depth of cuts from the ground beside the stake to the final invert of the ditch in metres and decimals of a metre, and also the approximate depth of cuts from the bottom of the existing ditch to the final invert of the ditch. These cuts are established for the convenience of the Contractor; however, bench marks (established along the course of the drain) will govern the final elevation of the drain. The location and elevation of the bench marks are given on the Profile Drawing.

B.4 LINE

The drain shall be constructed in a straight line and shall follow the course of the present drain or water run except where necessary to straighten any unnecessary bend or irregularities in alignment. Where there are such unnecessary bends or irregularities on the existing course of the drain, the Contractor shall contact the Engineer before commencing work to verify the manner in which such irregularities or bends shall be removed from the drain. All curves shall be made with a minimum radius of fifteen (15) metres. A uniform grade shall be maintained between stakes in accordance with the Profile Drawing. A variation of 25 mm from the proposed Profile shall be sufficient to require the Contractor to remedy the discrepancy.

B.5 EXCAVATED MATERIAL

Excavated material shall be deposited on either or both sides of the drain as directed by the Engineer. In general, the material shall be placed on the low side of the drain or opposite trees and fences. The Contractor shall contact all Owners before proceeding with the work to verify the location to place and level the excavated material.

A berm of not less than 600 mm shall be left along the top edges of the drain. No excavated material shall be placed in tributary drains, depressions, or low areas which direct water behind the spoil bank. Inlets shall be left in the levelled spoil approximately every ninety (90) metres in order that surface water is not trapped behind the spoil bank.

Beyond the berm, the excavated material shall be placed and levelled to a maximum depth of 200 mm, unless instructed otherwise. The edge of the spoil bank away from the ditch shall be feathered down to the existing ground, the edge of the spoil bank nearest the ditch shall have a maximum slope of two to one (2:1). The material shall be levelled such that it may be cultivated with ordinary farm equipment without causing undue hardship to the farm machinery and farm personnel. No excavated material shall cover any logs, brush or rubbish of any kind.

Any large stones or boulders which exceed 500 mm in diameter shall be bulldozed into a pile and left near the ditch banks or a nearby fence line or bush, or such other convenient location as approved by the Landowner.

Where it is necessary to straighten any unnecessary bends or irregularities in the alignment of the ditch or to relocate any portion or all of an existing ditch, the excavated material from the new cut shall be used for backfilling the original ditch. Regardless of the distance between the new ditch and the old ditch, no extra compensation will be allowed for this work and must be included in the Contractor's lump sum price for the open work.

A written statement from the Owners indicating their complete satisfaction with the levelling of the spoil bank is sufficient to comply with this Specification. The final decision with respect to levelling the spoil bank shall be by the Engineer.

B.6 EXCAVATION AT BRIDGE SITES

The Contractor shall excavate the drain to the full specified depth under all bridges and to the full width between abutments. Temporary bridges may be carefully removed and left on the bank of the drain. 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 Owner if excavation will expose the footings or otherwise cause the structure to undermine or collapse such that the Owner may take precautions for repair of the bridge.

B.7 BRIDGES

All structures constructed on a Municipal drainage works shall be of adequate capacity, structural strength and shall be constructed at an approved elevation as determined by the Engineer. If an Owner at the time of construction has furnished a suitable culvert at the site, the Contractor shall install it as part of the work at the Owner's expense, with the invert 150 mm below the grade of the drain, and with a suitable earth backfill such that a crossing with normal farm machinery can be made. Final grading, shaping or rip-rapping of backfill shall be the responsibility of the Landowner(s) involved. A minimum of 400 mm of cover shall be placed over each culvert.

B.8 RIP-RAP PROTECTION FOR CULVERTS

Where rip-rap protection is called for at either or both ends of a new culvert such rip-rap shall be sacked concrete or heavy field stone rip-rap protection with geotextile filter material (Mirafi P-150 or approved equal). The rip-rap shall extend a minimum of 550 mm below the culvert invert for the full ditch bottom width and 300 mm minimum into undisturbed soil along the banks adjacent to the culvert and shall extend to the top of the finished roadway or laneway over the culvert. Maximum slopes for rip-rap shall be one-quarter to one (1/4:1) or as directed by the Engineer.

The Contractor shall be responsible for any defects or damages that may develop in the rip-rap or the earth behind the rip-rap that the Engineer deems to have been fully or partially caused by the faulty workmanship of materials for a period of one (1) year from the time of the final payment certificate.

B.9 OBSTRUCTIONS

All brush, bushes, fallen timber and debris shall be removed from the banks and slopes of the drain and to such a distance on each side to eliminate any interference with the spreading of the spoil bank. Grubbing shall include the removal and disposal of all stumps to the satisfaction of the Engineer. The slopes shall be cleared whether or not they are directly affected by the excavation. The roots shall be left in the banks if no bank excavation is required as part of the new channel excavation. Any trees necessarily removed, are to be brushed and left for the Owner. In wooded or heavily overgrown areas, the brush, limbs, etc. may be pushed into piles back out of the way. All dead elms or other dead trees alongside the drain that 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. All brush, limbs, debris, etc. shall be put in piles for disposal by the Owner.

B.10 ROADS

Where an open drain is being removed from the road allowance, it must be reconstructed wholly on the adjacent farm land with a minimum berm width of 1200 mm on the roadway side of the ditch, unless otherwise noted on the Drawings. The excavated material shall be used to fill the existing open ditch and any excess excavated material shall be placed and levelled on the adjacent farm land. Any work done on road allowances with respect to excavation, disposal of materials, installation of culverts, cleaning under bridges, etc., shall be to the satisfaction of the Road Authority. Any metal pipe culvert laid under the traveled portion of the road allowance shall be backfilled to the surface with acceptable granular material. The top 400 mm shall be made up of 250 mm Granular "B" material and 150 mm of Granular "A" material. The material shall be placed in lifts not exceeding 250 mm in depth and shall be thoroughly compacted with an approved type mechanical vibrating compactor.

All excavated excess material from the construction of a road culvert or cleanout through culverts on any road allowance shall be trucked away or deposited and spread on the road allowance if permitted by the Road Authority. Any culverts suitable for salvage shall become the property of the Owner, if the Owner wishes to retain same, otherwise the Contractor shall be responsible for the disposal of the culvert to the satisfaction of the Engineer.

B.11 TILE OUTLETS IN EXISTING DITCHES

All tile outlets in existing ditches shall be noted by the Contractor prior to excavation. The Contractor shall contact all Owners and ask them to mark all their tile outlets which enter the ditch. Any tile drain outlets that were marked and are subsequently damaged by the Contractor shall be repaired by the Contractor at his expense. If any ditch bank is altered due to the construction at the tile outlet, the Contractor shall replace the altered outlet.

In general, if the existing outlet is tile only, the new outlet shall consist of undamaged lengths of tile. If the existing outlet is a metal pipe with or without a rodent grate, such outlet shall either be relocated to adjust to the new banks or shall be repaired if damaged. If any outlet becomes plugged as a result of construction, the Contractor shall be obliged to free such outlet of impediments. Where stone or concrete rip-rap protection exists at any existing outlet, such protection shall be moved as necessary to protect the outlet after reconstruction of the channel. Where any damage results to tile leading to, and upstream of the outlet as a consequence of construction, the Engineer may direct the Contractor to repair such tile and shall determine fair compensation to be paid to the Contractor for performing the work.

B.12 GRASS SEED AND FERTILIZER

The ditch slopes where disturbed shall be seeded using an approved seed mixture. The grass seed and fertilizer shall be applied the same day as the excavation of the open ditch.

Grass seed shall be fresh, clean and new crop seed, meeting the requirements of the Seed Act for Canada No. 1 seed and composed of the following varieties mixed in the proportion by weight as follows:

- 40% - Creeping Red Fescue
- 30% - Certified No. 1 Birdsfoot Trefoil
- 30% - Perennial Rye Grass

Grass seed shall be applied at the rate of 85 kg/ha (75 lbs./acre) and the fertilizer shall be applied at the rate of 450 kg/ha (400 lbs./acre), or as directed otherwise. Fertilizer shall be 10-10-10.

B.13 EQUIPMENT

An approved hydraulic backhoe shall be used to carry out the excavation of the open ditch unless otherwise directed by the Engineer.

B.14 COMPLETION

At the time of completion and final inspection, all work in the Contract shall have the full dimensions and cross-sections specified without any allowance for caving of banks or sediment in the ditch bottom.

DIVISION C

SPECIFICATION FOR TILE DRAINS

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DIVISION C

SPECIFICATION FOR TILE DRAINS

C.1 TILE

The Contractor is to state the type and manufacturer of the tile which he proposes to use and is to be prepared to submit alternative prices for concrete or clay tile in the sizes available, if required.

Standard clay tile shall meet all A.S.T.M. Specifications as set out in Designation C4-62 and Designation C498-65 with the exception of the Absorption Factor and the Freeze and Thaw test. Extra quality drain tile and heavy duty drain tile shall meet all Specifications as set out in Designation C4-62 and Designation C498-65.

Concrete tile shall be extra quality drain tile which meets all A.S.T.M. Specifications as set out in Designation C412 with the exception that the nominal lengths of drain tile 150 mm to 300 mm in diameter inclusive, shall not be less than 300 mm; and that tile of 350 mm to 750 mm in diameter inclusive, shall have nominal lengths of not less than the diameters.

Where any of the above referred to standards are amended or superseded, such amendments or revisions shall apply.

C.2 STAKES

Stakes are set along the course of the drain at intervals of twenty-five (25) metres. Benchmarks have been established which are to govern the elevations of the drain. The location and elevations of the benchmarks are given on the Plan and Profile drawings. The Contractor will ensure that the stakes are not disturbed unless approval is obtained from the Engineer.

C.3 LINE

The drain shall run in as straight a line as possible throughout its length, except that at intersections of other watercourses or at sharp corners, it shall run on a curve of at least fifteen (15) metres radius. The new tile drain shall be constructed at an offset from and parallel with any ditch or defined watercourse in order that fresh backfill in the trench will not be eroded by the flow of surface water.

The Contractor shall exercise care not to disturb any existing tile drain or drains which parallel the course of the new drain, particularly where the new and existing tile act together to provide the necessary capacity. Where any such existing drain is disturbed or damaged, the Contractor shall perform the

necessary correction or repair at his expense. The Engineer will designate the general location of the tile drain, but the Landowners may indicate the exact location if approval is given by the Engineer. A variation of 20 mm from the proposed Profile shall be sufficient to require the Contractor to remedy this discrepancy.

The Contractor shall verify the location of the new tile drain with the Engineer, Drainage Commissioner/Superintendent and the Landowners before proceeding with the work.

C.4 LAYING

The tile is to be laid with close joints and in regular grade and alignment in accordance with the Plan and Profile Drawings. The Contractor is to erect cross-arm sights and use a boning rod in the laying of the tile. The tiles are to be bevelled, if necessary to ensure close joints. Rather than bevelling the tile on sharp bends, the Contractor may wrap the wide joints with a 130 mm wide band of felt building paper. The inside of the tile is to be kept clear when laid. Any joints with a gap greater than 5 mm are to be wrapped with plastic or geotextile filter material at no extra cost.

Where soil conditions warrant, the Engineer may require that the tile be wrapped with a geotextile filter material, Mirafi P-50, manufactured by Dominion Textile, Inc., 415 Norwich Street, Woodstock, Ontario (519) 539-9877, or an approved equal. Any such work shall be considered an extra to the Contract. The Contractor shall submit with his Tender the extra cost for wrapping the tiles, if necessary.

The sides of the tile are to be supported by partial filling of the trench prior to inspection by the Engineer. The remainder of the excavated material shall be used to restore and maintain the natural surface of the ground. No tile shall be backfilled until inspected by the Drainage Commissioner/Superintendent or Engineer unless directed otherwise by the Engineer. The tile shall be backfilled such that a sufficient mound of backfill is placed over the trench to ensure that no depression remains after settling occurs in the backfill.

C.5 LOWERING OF SURFACE GRADES

Where required, the Contractor shall strip back and stockpile the topsoil, and strip the subsoil in order that the tiling machine may trench to the correct depths. After the tile is installed, the trench shall be backfilled, subsoil replaced and the topsoil shall be spread over the disturbed area. The Contractor's Tender price shall include the cost of stripping the topsoil, bulldozing of the subsoil to the depth required and subsequent replacement of subsoil and topsoil.

C.6 TRIBUTARY DRAINS

Any tributary tile encountered in the course of the drain is to be carefully taken up by the Contractor and placed clear of the excavated earth. If the tributary drains encountered are clean or reasonably clean, they shall be connected into the new drain. The type of materials used to make the tributary tile drain connections shall be verified with the Owners. Where the existing drains are full of sediment, the decision to connect or not to connect to the new drain shall be left to the Engineer or Drainage Commissioner/Superintendent. The Contractor shall be paid for each tributary drain connection as outlined in the Form of Tender and Agreement.

Where the Contractor is required by the Engineer or Drainage Commissioner/Superintendent to hook up an existing tile which is not encountered in the course of the drain, the cost of such work shall constitute an extra and the basis for payment shall be determined by the Engineer or Drainage Commissioner/Superintendent subject to the provision of Section A.7 "Completion of Work". The method and materials proposed for the connection are to be approved by the Engineer or Drainage Commissioner/Superintendent. Mortared joints are required for all tributary tile drain connections.

C.7 OUTLET PROTECTION

Riveted corrugated metal pipe shall be used to protect the tile at its outlet. The joint between the metal pipe and the field tile shall be sealed with mortar. Sacked concrete rip-rap protection or heavy field stone rip-rap protection and geotextile filter material (Mirafi P-150 or approved equal) unless otherwise specified, shall be installed around the corrugated metal pipe and extended downstream a minimum distance of three (3) metres. The protection shall extend to the top of the backfilled trench and below the pipe to 300 mm under the streambed. The protection shall also extend 600 mm into undisturbed soil on either side of the backfilled trench.

Where the outlet occurs at the end of an open ditch, the above sacked concrete or heavy field stone rip-rap protection will extend all around the end of the ditch and to a point 800 mm downstream on either side. Where heavy overflow is likely to occur, sufficient additional rip-rap and filter material shall be placed as directed by the Engineer to prevent the water cutting around the protection. A concrete structure may be required to protect against heavy overflow if so indicated on the Drawings. The corrugated metal pipe shall have a hinged metal grate on the outlet end to prevent the entry of small animals. Maximum spacing between bars shall be 50 mm.

C.8 CATCH BASINS

Cast-in-place catch basins shall be constructed using a minimum of 20 MPa concrete with inside dimensions as specified on the Drawings or in the Scope of Work, walls and floors – 150 mm thick, and the bottom – 450 mm below the invert of the tile. The catch basin top shall be substantial iron grate approved by the Engineer, easily removable for cleaning. Precast catch basins and manholes may be used if prior approval is given by the Engineer. Minimum wall thickness permitted for catch basins without reinforcement is 150 mm, and with reinforcement is 100 mm; provided that either is acceptable by the Engineer.

Where a catch basin is located on a road allowance, the type of catch basin and grate to be used and its proposed elevations shall be approved by the Engineer or the Road Superintendent. Catch basins may be offset from the drain, where practical and shall have 200 mm concrete tile or metal pipe leads unless otherwise specified. Catch basin leads shall have a minimum cover of 750 mm.

The joints between sectional precast catch basins shall be mortared and such mortar shall be applied to each lower section before the upper section is added on. All tile or pipe connected to the catch basin shall be mortared in place so that no gaps remain in the wall. Mortar is to be applied from the outside of the walls.

Catch basins located on Highways shall be M.T.O. Type Standard DD-702 or M.T.O. Precast Type Standard DD-711. The catch basin top shall be M.T.O. Standard DD-706 (if required, contact the Engineer for applicable Standards). Standard DD-716-A shall apply for ditch inlet catch basins.

All catch basins located on Highways, County roads, and Township roads shall be backfilled with porous backfill placed to a minimum thickness of 300 mm on all sides. The backfilled material shall be satisfactorily tamped. If settling occurs after construction, the Contractor shall supply and place sufficient granular material to maintain the backfill level flush with adjacent ground as part of the Contract.

Heavy field stone rip-rap protection shall be placed around all catch basins and shall extend a minimum distance of 600 mm away from the outer edge of each side of the catch basin, and shall be placed so that the finished surface of the rip-rap is flush with the existing ground.

Catch basin grates shall be fabricated from angle iron for the frame and welded steel bearing pads spaced at 75 mm centres. Any grate used is subject to the Engineer's approval. Unless otherwise noted, the tops of all standard catch basins shall be 100 mm above adjacent ground levels.

If there are no existing drains to be connected to the catch basin at the top end of the drain, a plugged tile shall be placed in the upstream wall with the same diameter and elevations as the outlet tile.

C.9 BRUSH, TREES, DEBRIS, ETC.

The Contractor is to include the removal of all excavation of whatever nature, disposal of material, removal and cutting of all brush, supplying of all labour and completing the whole work in accordance with the Plan, Profile and Specifications. Any trees necessarily removed are to be brushed and left for the Owner of the property on which they are found. All brush, limbs, etc. are to be put in piles by the Contractor and left for disposal by the Owner. No additional payment will be made for brushing of scattered trees where required by the Engineer.

Where, in the opinion of the Engineer, the drain or proposed location of the drain is heavily overgrown with small trees and brush, the Contractor may use a bulldozer or other such equipment to clear a minimum width of thirty (30) metres. The resulting debris shall be placed where directed by the Engineer and/or the Owner(s) and left for disposal by the Owner(s). Where roots may interfere with the new drain, all such roots shall be grubbed and placed in a pile convenient for disposal by the Owner. No additional payment will be made for such work.

C.10 QUICKSAND

The Contractor shall immediately contact the Engineer or Drainage Commissioner/Superintendent if quicksand is encountered. The Engineer or Drainage Commissioner/Superintendent shall direct the Contractor to construct a temporary open drain to lower the water table or to lay the tile on a crushed stone mat and wrap the tile joints with filter material, or to take such action as may be necessary. The basis of payment for such work shall be determined by the Engineer or Drainage Commissioner/Superintendent.

C.11 ROCKS

The Contractor shall immediately contact the Engineer or Drainage Commissioner/Superintendent if boulders of sufficient size and number are encountered such that the Contractor cannot continue trenching with a tiling machine. The Engineer or Drainage Commissioner/Superintendent may direct the Contractor to use some other method of excavating to install the drain. The basis of payment for this work shall be determined by the Engineer or Drainage Commissioner/Superintendent.

If only scattered large stone or boulders are removed on any project, the Contractor shall either excavate a hole to bury same adjacent to the drain, or he shall haul same to a nearby bush or fence line, or such other convenient location as approved by the Landowner(s).

C.12 BROKEN OR DAMAGED TILE

The Contractor shall either bury or remove all damaged tile or tiles not required elsewhere. NO tile shall be left on the grounds for the Landowner(s) to dispose.

C.13 ROADS

On any road crossing, the Contractor may use original ground as backfill to within 600 mm of finished grade only if adequate compaction and if the use of the original ground backfill has been approved beforehand by the affected Road Authority. For further information for roadway crossings, refer to Section A.14 – “Road Crossings” of the General Conditions (Division A).

C.14 JUNCTION BOXES

Junction Boxes shall be constructed using a minimum of 20 MPa concrete with inside dimensions as specified in the Drawings or in the Scope of Work. The sides, bottom and top shall be 150 mm thick. The top of the junction box should have a minimum ground cover of 600 mm.

C.15 FILLING IN EXISTING DITCHES

The Contractor shall backfill the ditch sufficiently for traversing by farm machinery. If sufficient material is not available from the old spoil banks to fill in the existing ditch, the topsoil shall be stripped and the subsoil shall be bulldozed into the ditch and the topsoil shall then be spread over the backfilled waterway.

C.16 CONSTRUCTION OF GRASSED WATERWAYS

Where the Contractor is required to construct a grassed waterway, the existing waterway shall be filled in, regraded, shaped and a seed bed prepared prior to applying the grass seed and fertilizer. The grass seed shall be fresh, clean and new crop seed, meeting the requirements of the Seed Act for Canada No. 1 seed and composed of the following varieties: 45% creeping red fescue; 20% bromegrass; 15% Kentucky Bluegrass; 5% white clover; 5% birdsfoot trefoil; and 10% perennial ryegrass. A cover crop of mixed grain or winter rye or wheat is also to be used (2 bushels/acre). Grass seed shall be applied at the rate of 68 kg/ha (60lbs/acre) and fertilizer shall be applied at the rate of 450 kg/ha (400 lbs/acre). Fertilizer shall be 10-10-10.

C.17 RECOMMENDED PRACTICE FOR CONSTRUCTION OF SUBSURFACE DRAINAGE SYSTEMS

The latest report of the Ontario Farm Drainage Association (O.F.D.A.), Construction Standard Committee dealing with the construction of Subsurface Drainage Systems, shall be the guide to all methods and materials to be used in the construction of tile drains except where superceded by other Specifications of the Contract.

DIVISION E

SPECIFICATION FOR DRAINAGE CROSSINGS

BY THE BORING METHOD

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DIVISION E

SPECIFICATION FOR DRAINAGE CROSSINGS

BY THE BORING METHOD

E.1 GENERAL REQUIREMENTS

When a drainage crossing of a Roadway, Railway, etc. is to be carried out by the Boring Method, the following Specifications for this work shall apply. The Authority having jurisdiction over the lands involved with the crossing will supply no labour, equipment or materials for the construction of the crossing unless otherwise specified.

The Contractor shall be fully responsible for availing himself of, and satisfying any further Specifications that may apply to borings affecting the Authority having jurisdiction over the lands involved with the crossing.

E.2 NOTIFICATION

The Contractor shall give the Authority responsible for the lands being crossed at least five (5) days notice before he commences any work on the crossing.

E.3 PIPE

The pipe or casing used in the crossing shall be smooth wall welded steel pipe with a minimum wall thickness as specified on the Plan and Profile. All pipe shall be new and manufactured from weldable steel having a minimum yield strength of 241 MPa. Pipe ends shall be bevel edged in the intrude to an angle of thirty (30) degrees for butt weld splicing. The name or trademark of the manufacturer and the heat number shall be clearly marked in the inside of the section of the pipe.

The pipe shall be of sufficient length so that during placement, no part of any excavation shall be closer than three (3) metres to the edge of a pavement and the slope of the excavation from the edge of shoulder, or other point as specified to the invert of the pipe shall be no less than one (1) metre vertical to one (1) metre horizontal (1:1) [See item E.5 "Auger Pit"].

E.4 INSTALLATION

The pipe or casing shall be placed by means of continuous flight augering inside the casing and simultaneous jacking to advance the casing immediately behind the tip of the auger. Complete augering of a tunnel slightly larger than the pipe and placing the entire length by pulling or jacking after completion of the tunnel will not be acceptable unless the method to be adopted is approved in advance by both the Engineer and the Authority responsible for the lands being crossed.

E.5 AUGER PIT

The pit excavated to accommodate the boring machine shall be so constructed so that the top edge of the pit shall not be closer than three (3) metres to the edge of the pavement. The slope of the pit from the top edge at the shoulder to the bottom of the pit shall not be steeper than one (1) metre vertical to one (1) metre horizontal (1:1). Shoring, sheeting, etc. shall be in accordance with the applicable and most recent Provincial Statutes.

The pit shall be left open for an absolute minimum of time, and if at all possible work shall be so scheduled so that excavation, placement of pipe and backfilling take place in one (1) working day. If this is not possible, every effort should be made to schedule the work so that the pit is not left open for more than one (1) day before and one (1) day after the boring operation.

E.6 CONSTRUCTION

During excavation, every effort should be made to place the top 300 mm of spoil (topsoil) in a separate pile for replacement on top on completion of the backfill operation. If this is not possible or practical, the Contractor shall import and place a minimum of 150 mm of good quality topsoil over the excavated and backfilled area. The finished work shall be left in a clean and orderly condition flush or slightly higher than the adjacent ground so that after settlement, it will conform to the surrounding ground. Excess earth (if any) shall be disposed of as directed by the Engineer and no additional payment will be allotted for such work.

The Contractor shall at his expense supply, erect and maintain suitable and adequate barricades, flashing lights, warning signs and/or flagmen to the satisfaction of the Engineer to adequately warn and protect the motoring public.

Any areas disturbed within the Right-of-Way of a County Road or King's Highway during construction, shall be covered with a minimum of 75 mm of topsoil, fertilized and seeded with an approved grass seed mixture.

E.7 ACCEPTANCE

All work undertaken by the Contractor shall be to the satisfaction of the Engineer.

DIVISION F
SPECIFICATIONS FOR STORM DRAINS
AND APPURTENANCES

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DIVISION F
SPECIFICATIONS FOR STORM DRAINS
AND APPURTENANCES

F.1 WORK INCLUDED

The Contractor shall provide all labour, materials and equipment necessary to complete the work of this section, as shown or described by or reasonably inferable from the drawings or specifications, including the following:

- a) Excavation
- b) Laying sewers
- c) Construction of appurtenances
- d) Installation of stubs where required

Specifications for construction of municipal drainage works shall form part of this specification and shall be observed at all times.

F.2 EXCAVATION

F.2.1 General

The Contractor shall do all excavation of whatever substances encountered to line and depth as shown on drawings. Excavated materials not required for fill or backfill shall be removed from site as directed by the Engineer and disposed of by the Contractor. At the bottom, the trench shall be shaped so as to conform, as near as possible, to the outside diameter of the pipe. Particular care is to be taken to recess the bottom of the trench to relieve the bell of the pipe of all load.

Excavation shall not be carried below the required level. Excess excavation below the required level shall be backfilled at the Contractor's expense with earth, sand, gravel or concrete, as directed by the Engineer, and thoroughly tamped.

Unstable soil shall be removed and replaced with gravel, crushed stone or crushed slag, which shall be thoroughly tamped. The Engineer shall determine the depth of removal of unstable soil. The Contractor will be paid extra for removing unstable soil and replacing it with gravel.

Ground adjacent to all excavations shall be graded to prevent surface flows from entering the excavation.

The Contractor shall remove, by pumping or other means approved by the Engineer, any water accumulated in the excavation at his own expense.

F.2.2 Trench Excavation

The trench shall be excavated in strict accordance with the Trench Excavation Protection Act.

F.2.3 Rock Excavation

Shall include removal of boulders larger than ¼ cubic metre in volume and ledge rock, concrete or masonry structures that required drilling or blasting. Payment for this will be additional to the contract amount.

F.2.4 Bracing and Shoring

The Contractor shall do all bracing, sheathing and shoring necessary to perform and protect all excavations as indicated on the plans, as required for safety, as directed by the Engineer or to conform to governing laws at his own expense.

F.2.5 Temporary Bridges

Temporary bridges or crossings shall be built by the Contractor, where required, to maintain traffic.

F.3 BACKFILLING

F.3.1 General

After pipes have been tested and approved, backfilling shall be done with approved material free from large clods or stones.

F.3.2 Roadway Crossings

Where the drain crosses roadways or laneways, the Contractor is to supply and place 600 mm of approved granular material in the top of the trench for the full width of the travelled portions. The bottom 300 mm shall be of clean pit run gravel meeting M.T.O. Granular "B" or suitable sand cushion specifications and shall be thoroughly mechanically compacted. The top 300 mm shall be thoroughly mechanically compacted. The top 300 mm shall be clean crushed gravel meeting M.T.O. Granular "A" specifications (maximum size 20 mm) and be thoroughly mechanically compacted in lifts not exceeding 150 mm in depth. All roadway crossings shall be constructed using extra strength concrete pipe.

Where the drain crosses under a pavement surface, the Contractor is to repave the trench to the satisfaction of the Engineer. This shall apply to both roadways and laneways.

F.3.3 Trenches

Approved on-site backfill material shall be placed evenly and carefully around and over the pipe and shall be thoroughly tamped. Care must be taken that connections will not be injured or thrown out of line. The remaining backfill shall consist of approved excavated material and shall be satisfactorily compacted in 300 mm layers by means of backhoe bucket or similar means.

F.3.4 Manholes and Other Structures

All forms, trash and debris shall be removed and cleared away. Approved backfill material may be from excavation or borrow; it shall be free from rock, lumber or debris. Backfill material shall be placed symmetrically on all sides in 200 mm maximum layers. Each layer shall be moistened and compacted with mechanical or hand tampers.

F.3.5 Maintenance

The Contractor shall refill any settlement occurring in all backfilled areas.

F.4 PIPE

Bell and spigot concrete sewer pipe shall be used unless otherwise specified on the drawings.

All concrete pipe, 450 mm in diameter or less, shall conform to A.S.T.M. Specification C14 for standard strength pipe and extra strength pipe.

All concrete pipe, greater than 450 mm in diameter, shall conform to A.S.T.M. Specification C76 for all classes specified.

F.5 JOINTS

F.5.1 General

All concrete sewer pipe shall be laid with open joints unless tight joints are specified on the drawings.

F.5.2 Tight Joints

The sewer shall have rubber gasket joints. These gaskets shall be "Tylox or Rexon K" as manufactured by the Hamilton-Kent Manufacturing Co., Kent, Ohio or Best Seal Rubber Joint as manufactured by the Best Pipe Co. or approved equal. The gaskets shall be cemented according to the manufacturer's instructions.

F.5.3 Open Joints

The sewer pipe shall be laid without rubber gaskets, grout, caulk or other materials commonly used for tight pipe joints.

F.6 LAYING PIPE

F.6.1 General

All sewers shall be laid true to line and grade with bells upgrade. The sections of the pipe shall be so laid and fitted together that when complete, the sewer will have a smooth and uniform invert. The pipe shall be kept thoroughly clean. Each pipe shall be inspected for defects before lowered into the trench.

Before the pipe is laid, the Contractor shall establish and maintain all lines and grades for construction. Substantial batter boards, lines and secondary benchmarks shall be constructed and maintained.

The Engineer may check all grades and levels; however, this in no way relieves the Contractor of his responsibility of constructing the drain to the correct elevation.

F.6.2 Water in Trenches

Water shall not be allowed in the trenches while the pipes are being laid.

F.6.3 Limit of Trench Opened

Not more than 30 metres of trench shall be opened in advance of pipe laying unless permitted by the Engineer.

F.6.4 Exposed Ends Protected

The excavation of trenches shall be fully completed a sufficient distance in advance of the laying of the sewer and the exposed end of all pipes shall be fully protected with a board or other approved stopper to prevent earth or other substances from entering the pipe.

F.6.5 Pipes Kept Clean

The interior of the sewer shall be carefully free from all dirt, cement or superfluous material of every description as the work progresses. Pipes shall be thoroughly flushed at the completion of the work of laying and jointing.

F.7 CONNECTIONS

All connections, which are for future use, shall be properly capped. No pipe shall be cut for connections except when permitted by the Engineer.

F.8 INSPECTION OF JOINTS

Joints shall not be covered until approved by the Engineer.

F.9 APPROVAL OF MATERIALS

F.9.1 Manufacturer's Certificate

Materials may be used if accompanied by the manufacturer's certificate of compliance, pending any test which may be made by the Engineer in accordance with A.27 in Division A "General Conditions".

F.10 MANHOLES AND CATCH BASINS

F.10.1 General

Concrete manholes shall be constructed to the dimensions shown on the drawings and in the locations designated on the plans and profiles or as directed by the Engineer. The Ministry of Transportation of Ontario Specifications for concrete shall apply to all concrete for manholes, catch basins and appurtenances. The concrete shall attain a minimum compressive strength at 28 days of 20 MPa. The M.T.O. Specifications for reinforcing steel shall apply to all reinforcing used in the construction.

F.10.2 Benching or Channels

Channels shall be smooth and true to line and grade and may be Constructed of concrete formed to the dimensions shown on the drawings or of sewer pipe neatly cut off as shown. A shoulder or bench of concrete shall be formed from the channel to the manhole walls as shown. Where the pipe size increases at a manhole, the channel shall be so formed as to form a straight line and grade between the inside of the inlet and outlet pipes. Where indicated or directed, a drop structure shall be constructed by the Contractor in accordance with the details shown on the drawings.

F.10.3 Frames and Covers

All manholes and catch basins shall be supplied with cast iron frames and covers, DD-704 and DD-706 M.T.O. Standards. See copy of the standard in this specification.

Ditch inlet catch basins shall be supplied with M.T.O. type DD-710 frames and covers or approved equals.

All brick used in the construction of manholes shall conform to the current A.S.T.M. C-32 Grade S.A. Specifications. "Hard Common Everhard Sewer Brick" manufactured by Cooksville-LaPrairie Brick Limited, is an example of a brick conforming to these specifications. A minimum of 150 mm of brick work shall be required at each manhole and catch basin.

F.10.4 Location

Locations of all manholes and catch basins shall be verified in the field by the Engineer or Commissioner.

F.10.5 Steps

Manhole steps shall be supplied and installed by the Contractor. All steps shall be approved by the Engineer prior to use and may be steel galvanized safety type steps or cast iron steps, weighing at least 3.5 kg each, provided that approval for their use is obtained.

F.10.6 Catch basins

Standard 600 mm x 600 mm and 1200 mm catch basins shall be M.T.O. Type DD-702 and DD-701-A respectively. Standard 600 mm x 600 mm and 600 mm x 1200 mm ditch inlet catch basins shall be M.T.O. type DD-716-A and DD-716-B respectively. Standard 600 mm x 600 mm precast catch basin shall be M.T.O. type DD-711.

F.10.7 Manholes

Shall be M.T.O. Standard DD-701-A or approved precast concrete manhole.

F.10.8 Catch basin Leads

Shall be 200 mm diameter concrete pipe C14-65 extra strength and shall have a one (1) percent minimum grade.

F.10.9 Backfill

All catch basins and manholes shall have porous backfill placed to a minimum thickness of 300 mm on all sides as per above M.T.O. Standards. The backfill shall be satisfactorily compacted.

F.11 PRIVATE SERVICE CONNECTIONS

F.11.1 Materials

Asbestos cement pipe, 100 mm diameter shall be used. The pipe and couplings shall be manufactured in accordance with current A.S.T.M. Specification C-428. Couplings shall be of the sleeve type with rubber rings (A.S.T.M. Spec. D-1869).

Connections to concrete pipe shall be by means of a shop fabricated tee in the sewer line. Ends of private drain connections (P.D.C.) shall be plugged with expanding plastic flange plugs as supplied by Johns-Manville or equal.

F.11.2 Construction

The instruction for the installation of sewers shall generally apply to the installation of P.D.C.'s. P.D.C.'s shall terminate at the lot line and shall be plugged as specified. Joints shall be made in accordance with the manufacturer's instruction.

F.11.3 Location of P.D.C.

The locations of P.D.C.'s shall be determined from the property owner at the time of construction by the Contractor.

F.11.4 Marker Stakes

A 50 mm x 50 mm wooden stake shall be placed above the end of each P.D.C. The top of the marker stake shall be 300 mm below finished grade.

It is essential that complete records be kept of the exact location of all house connections. The Contractor is to co-operate in every way possible with the Engineer to secure this information.

F.12 MAINTENANCE OF TRAFFIC

The Contractor shall maintain a minimum one lane of traffic during construction. Restoration of the roadway shall be completed as soon as practical after installation of the sewer.

F.13 EXISTING SERVICES

The Contractor shall take all necessary precautions to protect buildings or other structures, pavements, sidewalks, existing sewers, drains, watermains, and private water connections, gas mains and private gas connections, poles, wires, lawns, trees, ornamental bushes, gardens, etc. and shall be responsible for any damages to same. In case of injury, it shall be made good by the Contractor immediately without additional compensation unless directed otherwise by the Engineer.

All underground services shall be field located by the Contractor before construction begins.

In case any sewer, drain or watermain should be encountered whose present grade should require changing on account of the new sewer, the work necessary for this shall be performed by the Contractor according to the directions of the Engineer and shall be paid for as extra work. Should the Contractor fail to connect up any house or field drain without advance approval of the Engineer such work shall be made good at the Contractor's expense.

F.14 RESTORATION

Roads, lawns, driveways, and other surfaces shall be restored to the original conditions, with the exception that the lawns may either be covered with 50 mm topsoil and sod, or 100 mm topsoil and be seeded with a high quality grass seed. The Contractor's tender price shall include the cost of this work.

F.15 ROADSIDE DITCHES

All roadside ditches shall be properly graded to the new catch basins. All laneway culverts shall also be adjusted, where necessary, to the grade of the roadside ditch.

Division H

SPECIAL PROVISIONS

Tavistock Municipal Drain 2006
Township of East Zorra-Tavistock

Reference No. 0539

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 over any standard or supplemental Specifications.

The following special provisions shall apply to this project:

1. The Contractor shall notify the owners along the route of the drain, the Drainage Superintendent and the Engineer forty-eight (48) hours prior to construction.
2. The Contractor shall check and verify all dimensions and elevations and report any discrepancies to the Engineer prior to proceeding with the work.
3. The working area for construction purposes shall be twenty (20) metres centred on the proposed tile drain through agricultural areas and fifteen (15) metres centred on the proposed tile drain through developed urban areas. Each landowner on whose property the drainage works is to be constructed shall designate access to and from the working area.
4. The Contractor shall access the site using a private laneway on the B. & D. Kropf property on the south side of Perth County Road 101/Oxford County Road 24; through the E. & M. Bender property off of Victoria Street; at the west end of Bender Avenue, through the Dietview Farm Ltd. property; using the Dietview Farms Ltd. driveway off Perth County Road 107 and access off the east and west sides of Perth County Road 107.
5. All areas used for access during the construction of the drain shall be restored to their original conditions by the Contractor.
6. All utilities, water lines, telephone lines, gas lines, hydro lines, etc., shall be located by the Contractor prior to construction.
7. All utilities shall be located and uncovered in the affected areas by the Contractor prior to construction.
8. The actual locations and elevations of all utilities must be verified by the Contractor prior to construction.
9. The Contractor shall verify the location of the new tile drainage system with the Engineer prior to construction.

10. The Contractor shall review the locations of the road crossings with the Road Authorities before installing the drains.
11. All objects or obstructions such as signs, mailboxes, etc., that interfere with the installation of the drain shall be removed and re-erected in a location satisfactory to the owner.
12. The Contractor shall construct and maintain a silt trap in the Shakespeare Municipal Drain during construction.
13. Any areas disturbed within the County of Perth and County of Oxford Right-of-Way during construction shall be top soiled and seeded with an approved grass seed mixture.
14. Stone rip-rap protection and geotextile material (Mirafi 180N) shall be placed around all catch basins as part of this contract.
15. All catch basins grates shall be hot dipped galvanized birdcage grates (Coldstream Concrete Ltd. or approved equal).
16. All catch basin grates shall be fastened to the new catch basins.
17. All stone rip-rap material shall be quarry stone 150 mm to 300 mm dia. and placed to a depth of 400 mm around catch basins and on the sideslopes of the open drain.
18. All concrete tile shall be Heavy-Duty Extra Quality Concrete Drain Tile. All high density polyethylene pipe shall be BOSS 2000 (or equivalent) CSA B182.8-02/320 KPa (soil tight joining system)
19. The type of materials used to make the tributary tile drain connections shall be verified with the Owners and the Engineer. The Contractor shall supply all necessary materials to complete the connections of the existing drains to the new drain.
20. The Contractor shall be responsible for all trench settlement.
21. Quarry stone rip-rap protection and geotextile (Mirafi180N) material shall be placed at the outlet at sta. 1+763 as directed by the Engineer. The rip-rap shall be 450mm to 600mm diameter and placed to a depth of 750mm. This will include the construction of a plunge pool.

22. 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:
300 mm wide for tile sizes 150 mm diameter to 350 mm diameter
400 mm wide for tile sizes 400 mm diameter to 750 mm diameter

The filter material shall completely cover the tile joint and shall have a minimum overlap of 300 mm.
The type of filter material shall be Mirafi 140NC for clay and loam conditions and Mirafi 160N for sandy or silty conditions.
23. An approved ditching machine (wheel trencher) shall be used to install the concrete field tile.
24. The Contractor shall strip the topsoil for a width equivalent to the trench width centred on the drain before installing the tile drain. The topsoil shall be later spread over the backfilled trench.
25. All reinforced concrete sewer pipe shall be installed using Class B bedding. Bedding material shall be MTO Granular 'A' compacted to at least 95% Standard Proctor up to the spring line of the pipe. Native material to be used for backfilling the trench from spring line to grade.
26. All granular and native material used to backfill the trench shall be placed in 300mm maximum lifts compacted to 95% Standard Proctor maximum dry density using an approved mechanical vibrating compactor to minimize trench settlement.
27. Reinforced concrete sewer pipe shall be sealed and installed according to the manufacturers installation instructions using all recommended equipment and appurtenances.
28. All catch basins shall be precast concrete catch basins (Coldstream Concrete Ltd. or approved equal).
29. All manholes to be OPSD compliant with 1200mm diameter taper cones (as per OPSD 701.03) where applicable, and closed cast iron grates (as per OPSD 401.01).
30. MH1 and MH2 to have 0.30m sump and MH3 to be benched.
31. All catch` basin grates shall be welded steel birdcage grates unless otherwise noted (Coldstream Concrete Ltd. or approved equal).
32. The grates for the catch basins at sta. -0+412 and 0+713 shall be heavy duty flat top grates (Coldstream Concrete Ltd. or approved equal).

33. All disturbed areas grass covered at the time of construction shall be hydroseeded and mulched with an approved lawn seed mixture.
34. An approved fertilizer shall be supplied and spread using the seed manufacturers recommendations.
35. The excess excavated material shall be hauled off-site by the Contractor.
36. The Contractor shall connect all existing drains that are cut off by the installation of the new tile drainage system by coring through the wall of the pipe where necessary, as determined by the Engineer.
37. MTO granular material shall be used as the base material for the restoration of the parking lots. This granular material shall be placed in 150mm maximum lifts and compacted to at least 95% Standard Proctor maximum dry density using an approved mechanical vibrating compactor.
38. The drain is to be installed by means of a backhoe on stone from sta. -0+066 to sta. 0+155. The drain shall be installed using 19mm crushed stone bedding from 300mm below the tile to the springline of the tile.
39. The Contractor shall construct a berm and swale from sta. 0+323 to 0+628 using native material approved by the Engineer. The berm and swale shall be approximately 305 metres in length with 4:1 sideslopes and a 1 metre bottom width. The berm shall be constructed from the Corporation Limits for the Village of Tavistock. A quarry stone spillway shall be constructed at sta. 0+628 as a part of this contract. The spillway shall be lined with geotextile filter cloth prior to placing the quarry stone.
40. The earth berm and swale shall have 100mm of topsoil spread over the berm and swale and shall be seeded with an approved grass seed mixture.
41. The Contractor shall remove and dispose of the existing 750mm dia. C.M.P. laneway culvert 4 metres east of sta. 0+000 off-site.
42. The Contractor shall remove and dispose of the existing 1800mm dia. structural steel plate culvert at sta. 0+431 of the Shakespeare Municipal Drain.
43. Access to the Jutzi Holdings Inc. property shall be maintained at all times during construction.
44. The section of drain from sta. -0+240 to sta. -0+094 shall be installed 10 metres east of the Dietview Farms Ltd. (Roll # 2-62) property line.

45. The section of tile drain from sta. 0+323 to sta. 0+628 shall be installed 10 metres north of the Corporation Limits for the Village of Tavistock.
46. The existing C.M.P. riser and catch basin at sta. 1+116 shall be removed and disposed of off-site. The existing 54" diameter reinforced concrete sewer pipe part of the Tavistock Municipal Drain 1974 shall be connected into the new 2000mm x 2400mm catch basin at sta. 1+116.