

## **Fluney Drainage Works**

### **Township of Melancthon**

**R.J. Burnside & Associates Limited  
15 Townline  
Orangeville ON L9W 3R4 CANADA**

**August 2015  
300032772.0000**



August 6, 2015

The Mayor and Council  
Township of Melancthon  
157101 Highway 10  
Melancthon ON L9V 2E6

Mayor White and Members of Council:

**Re: Fluney Drainage Works**  
**File No.: D-ME-153**  
**Project No.: 300032772.0000**

Under the provisions of the Drainage Act R.S.O. 1990, Chapter D.17, Section 4 and in accordance with our appointments, we have made an examination and survey of the area and submit herewith our report, plan, profiles, specifications and assessments for the proposed work. The work is to be known as the Fluney Drainage Works.

Should there be any questions regarding the report, please contact the undersigned directly at 1-519-938-3077.

Yours truly,

**R.J. Burnside & Associates Limited**

T.M. Pridham, P.Eng.  
Drainage Engineer  
TMP:tw

Enclosure(s) Fluney Drainage Works Report

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## **1.0 Background**

The Township of Melancthon has received and accepted petitions for drainage works by Don and Kevin Fluney describing Pt. Lot 10, Concession 5 NE and by Nelson and Amanda Martin describing Pt. Lot 11, Concession 5 NE and Pt. Lot 12, Concession 5 NE as requiring drainage. We have been appointed by Council and directed pursuant to Section 8(4) of the Drainage Act to prepare one report as the areas requiring drainage are adjoining.

## **2.0 Site Meetings**

Subsequent to our appointments, the statutory site meetings have been held.

The petition by the owner of Lot 10, Concession 5 NE (Fluney) was submitted in order to address a flooding problem on the east side of the property. Surface flows from lands in Concession 4 OS were vented across the 5th Line through a 600 mm (24 in) diameter culvert crossing. Flows ponded on the property as a sufficient outlet was not available. Concern was expressed that surface flows from additional lands had been redirected to the culvert crossing. An interest in having sufficient depth available for future underdrainage was also expressed.

The petitions by the owners of Pt. Lot 11 and Pt. Lot 12, Concession 5 NE (Martin) were submitted to secure an outlet for pending underdrainage of both properties. A preliminary tiling plan had been prepared for Lot 11 which was helpful during the subsequent discussions.

## **3.0 Investigation**

Our investigation found that the outlet for any proposed work was the McCue Drainage Works in Lot 10, Concession 4 NE. This drain was last repaired and improved under a 1989 report which was adopted pursuant to By-Law No. 36-1989. Maintenance of this drain is currently in progress as such a sufficient outlet is readily available.

Lastly, our investigation found that lands in Lot 18, Concession 4 OS, which had previously been assessed as going northerly into the Stinson Drainage Works actually should be assessed as going southerly into the proposed drain and ultimately the McCue Drainage Works. The land is extremely flat and it is difficult to say whether an error was made in the original watershed delineation or a modest alteration to the topography has resulted in an inadvertent change in direction of the surface flows.

## **4.0 Area Requiring Drainage**

Based on the petitions, discussions at the site meetings and our examination of the area, the overall area requiring drainage was determined as being Pt. Lot 10, Pt. Lot 11 and Pt. Lot 12, Concession 5 NE comprising approximately 70.5 ha (174 ac). The petitions, in our opinion, each comply with Section 4(a) and 4(b) of the Drainage Act.

## **5.0 Proposed Design and Appurtenances**

This report provides for the construction of a main drain designated A Drain and a branch drain designated B Drain. Both drains are comprised of an open portion and a closed portion.

A total of 1,215 m of open drain is to be excavated including the installation of a new road crossing on the 4th Line NE. Appurtenances associated with the open work include the clearing and grubbing of brush and trees, the stripping and salvaging of native topsoil, the hauling and disposal of the sandy/stoney subsoil in the open fields and the spreading and levelling of the excavated material in bush lands.

A total of 519 m of closed drain is also to be installed. The design is based on removing approximately 25.4 mm (1 in) of surface and subsurface drainage water per hectare of watershed area per 24 hr. period. Appurtenances associated with the closed work include the stripping and replacing of topsoil along the tile routes and the installation of two ditch inlet catchbasins with quarry stone rip-rap inlet aprons.

Discussions have taken place with John McDonald and Adam Vander Zaag of D. & C. Vander Zaag Farms, owners in Concession 4 OS, regarding continuing the improvements across the 5th Line to service their lands. This work may be initiated at a later date in conjunction with eventual improvements to the road crossing. The capacity and grade will be available such that the upstream continuation can easily be accommodated.

The Watershed Plan (Drawing No. P1) indicates the location of the work and the lands affected by it. The Profiles (Drawing No. P2 and Drawing No. P3) show the dimensions, grades and other details of the work.

## 6.0 Allowances to Owners

The amounts to be paid in allowances to the owners entitled thereto under Section 29 - 33, where applicable, which shall become due in accordance with Section 62(3) and (4) are determined as follows:

Roll No.	Con.	Lot or Part	Owner	Land Used (Section 29) \$	Damage to Lands, Crops, etc. (Section 30) \$
1-274-00	4 NE	10	K. Fluney	200.00	100.00
1-279-00	5 NE	10	K. Fluney	13,275.00	13,800.00
1-279-50		E. Pt. 11	N. & A. Martin	2,875.00	3,175.00
1-283-00		E. Pt. 12	N. & A. Martin		650.00
Totals				16,350.00	17,725.00
<b>Total Allowances Fluney Drainage Works</b>					<b>\$34,075.00</b>

The allowance for Land Used pursuant to Section 29 has been granted for the land required for the construction of the open drain portion of the work and buffer between the property line along the north side of A Drain. The allowance has been based on \$12,500.00 per hectare or \$5,000.00 per acre. The property owners still own the land, however, for all practical purposes the land is conceded for the excavation of the open drain.

The allowance for Damage to Lands, Crops, etc., pursuant to Section 30, is an allowance for the disruption created as a result of the construction activities. The allowance granted is also considered sufficient to allow right-of-way for any future maintenance work that may be required. The allowance has been based on \$3,000.00 per ha or \$1,200.00 per ac.

A disrupted area of 20 m along the open drains has been used to calculate the applicable compensation for the excavation of the open portion of the work. An allowance has also been granted to provide for the disposal of the excavated material in Lot 10, Concession 5 NE (Fluney) and Lot 12, Concession 5 NE (Martin) as detailed in Appendix A (Special Provisions).

A disrupted area of 20 m along the tile route has been used to calculate the applicable compensation for the installation of the 300 mm diameter closed drain. A disrupted area of 30 m along the tile route has been used to calculate the applicable compensation for the installation of the 450 mm diameter closed drain as the installation is relatively deep and more working space will be required.

## 7.0 Estimate of the Cost of the Work

The estimate of the cost of all labour, equipment and material required to construct this project is as follows:

Item	Descriptions	Approx. Quantity	Cost Estimate
<b>A Drain - Work on Private Lands</b>			
1.0	Excavate open drain including stripping and salvaging topsoil, hauling and disposal of excavated material and seeding of sideslopes. (Sta. A000 to Sta. A014)	125 cu.m	\$1,250.00
<b>A Drain - Work on 4th Line NE</b>			
2.0	Excavate open drain including stripping and salvaging topsoil, hauling and disposal of excavated material and seeding of sideslopes. (Sta. A014 to Sta. A018 and Sta. A038 to Sta. A044)	100 cu.m	\$1,000.00
3.0	Supply and place 20 m, 1200 mm dia. CSP, 2.8 mmTh., 125 mm x 25 mm Corrugations at 100 mm below grade including granular bedding and backfill per OPSD 802.010. (Sta. A018 to Sta. A038)	20 lin.m	\$10,000.00
4.0	Supply and place quarry stone rip-rap (500 mm thickness) on geotextile underlay as CSP inlet and outlet protection (Sta. A018 and Sta. A038)	30 sq.m	\$1,500.00
<b>A Drain - Work on Private Lands</b>			
5.0	Excavate open drain including clearing, stripping and salvaging topsoil, hauling and disposal of excavated and cleared material and seeding of sideslopes. (Sta. A044 to Sta. A935)	9,350 cu.m	\$77,500.00
6.0	Supply and install 450 mm dia. perforated HDPE outlet pipe with non-woven geotextile filter sock and insert rodent grate including clear stone bedding and stripping and replacing topsoil. (Sta. A935 to Sta. A941)	6 lin.m	\$1,000.00

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Item	Descriptions	Approx. Quantity	Cost Estimate
7.0	Supply and place quarry stone rip-rap (500 mm thickness) on geotextile underlay as splash pad, embankment and tile outlet protection. (Sta. A935)	20 sq.m	\$1,500.00
8.0	Supply and install 450 mm dia. perforated HDPE pipe with non-woven geotextile filter sock including clear stone bedding and stripping and replacing topsoil. (Sta. A941 to Sta. A1207)	266 lin.m	\$38,500.00
<b>A Drain - Work on 5th Line</b>			
9.0	Supply and install 450 mm dia. perforated HDPE pipe with non-woven geotextile filter sock including clear stone bedding and stripping and replacing topsoil. (Sta. A1207 to Sta. A1209)	2 lin.m	\$500.00
10.0	Supply and install 900 mm x 1200 mm offset concrete ditch inlet catchbasin with bird cage style grate including connection with 4 m of 375 mm dia. HDPE pipe and a 450 mm x 375 mm HDPE tee fitting and quarry stone rip-rap inlet apron. (Sta. A1209)	1 ea.	\$3,250.00
<b>B Drain - Work on Private Lands</b>			
11.0	Excavate open drain including clearing, stripping and replacing topsoil, spreading and levelling of excavated material and seeding all disturbed areas including levelled spoil and sideslopes. (Sta. B000 to Sta. B200)	1,050 cu.m	\$5,500.00
12.0	Excavate open drain including clearing, stripping and salvaging topsoil, hauling and disposal of excavated and cleared material and seeding of sideslopes. (Sta. B200 to Sta. B280)	325 cu.m	\$3,250.00
13.0	Supply and install 300 mm dia. perforated HDPE outlet pipe with non-woven geotextile filter sock and insert rodent grate including clear stone bedding and stripping and replacing topsoil. (Sta. B280 to Sta. B286)	6 lin.m	\$1,000.00
14.0	Supply and place quarry stone rip-rap (500 mm thickness) on geotextile underlay as splash pad, embankment and tile outlet protection. (Sta. B280)	20 sq.m	\$1,500.00



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Item	Descriptions	Approx. Quantity	Cost Estimate
15.0	Supply and install 300 mm dia. perforated HDPE pipe with non-woven geotextile filter sock including clear stone bedding and stripping and replacing of topsoil as detailed. (Sta. B286 to Sta. B525)	239 lin.m	\$17,500.00
16.0	Supply and install 900 mm x 1200 mm on-line concrete ditch inlet catchbasin with bird cage style grate and quarry stone rip-rap inlet apron. (Sta. B525)	1 ea.	\$2,500.00
<b>Contingencies</b>			
17.0	Contingency for unforeseen conditions including regrading slumped sideslopes, additional clear stone bedding in areas of soil instability, etc.		\$11,500.00
<b>Total Estimated Cost for the Construction of the Fluney Drainage Works</b>			<b>\$178,750.00</b>

#### **Allowances to Owners**

Land Used (Section 29)  
and Damage to Lands, Crops, etc. (Section 30). \$34,075.00

#### **Preparation of Report**

Site Meetings,  
Investigations and Field Survey,  
Information Meetings,  
Watershed Plan, Design and Profiles,  
Report Preparation including Allowances,  
Construction Assessment Schedule  
and Maintenance Assessment Schedules. \$49,500.00

#### **Meetings and Procedure**

Preparation of Report Copies for Distribution,  
Preparation and Attendance at the  
Consideration of the Report  
and Assistance on Procedure. \$2,500.00

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### **Tendering and Construction Inspection**

Preparation and Distribution of Tender,  
Inspections During Construction,  
Payment Certificates and Related Appurtenances  
and Project Finalization and Grant Application. \$19,750.00

### **Legal Survey Assistance**

Delineation of the Lot 10-11, Concession 5 NE  
Lot Line Prior to Layout and Excavation of the Open Drain \$2,000.00

### **Administration and Financing**

Administrative Costs,  
Net HST (Construction, Engineering and Legal Surveying Assistance)  
and Interest Charges Incurred by the  
Municipality until the Cost is Levied. \$8,425.00

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<b>Total Estimated Cost</b>	
<b>Fluney Drainage Works</b>	<b>\$295,000.00</b>

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**NOTE: The above summary contains cost estimates only. It is emphasized that these estimates do NOT include costs to defend the drainage report and procedures should appeals be filed with the Court of Revision, Ontario Drainage Tribunal and/or the Ontario Drainage Referee. Unless otherwise directed, additional costs to defend the report are typically distributed in a pro-rata fashion over the assessments contained in the Construction Assessment Schedule, excluding any Special Assessments.**

Also, in addition to the work included in the above estimate, should repairs, replacements, underpinning or other alterations be required for existing bridges, culverts, overflow culverts or any other structure necessary to conduct overflow water, or water in open channels under or across a road allowance, as affected by this drainage work, the work and cost thereof, including any necessary expenses incidental thereto and if not determined otherwise, shall be the responsibility of and shall be assessed against the authority having control of such road or road allowance.

## 8.0 Special Assessments

Pursuant to Section 26 of the Drainage Act the following Special Assessments are made:

### A Drain- 4th Line NE

The Special Assessment for this portion of the work is the increased cost to the drainage works due to the presence and operation of the road and is calculated as follows:

<b>Construction Costs</b>	<b>- Equivalent Drain</b>	<b>+ Engineering/ Administration</b>	<b>= Special Assessment</b>
Consisting of Items Item 2.0, Item 3.0 and Item 4.0 in the estimate of the cost of the work plus net HST.	Consisting of 30 m of open drain excavation, hauling and disposal of excavated materials plus net HST.	Consisting of Survey, design, determination of special assessment, construction layout, inspection and determination of final costs plus net HST.	
<b>\$12,720.00</b>	<b>- \$2,580.00</b>	<b>+ \$6,360.00</b>	<b>= \$16,500.00</b>

Whether or not the Township of Melancthon elects to do the work on the 4th Line NE, they shall be assessed or pay the actual cost of the work (estimated as \$12,720.00) minus the actual cost of an equivalent drain (estimated as \$2,580.00) plus engineering/administration (estimated as \$6,360.00) as a Special Assessment.

### A Drain- 5th Line

The Special Assessment for this portion of the work is the increased cost to the drainage works due to the presence and operation of the road and is calculated as follows:

<b>Construction Costs</b>	<b>+ Engineering/ Administration</b>	<b>= Special Assessment</b>
Consisting of Items Item 9.0 and Item 10.0 in the estimate of the cost of the work plus net HST.	Consisting of Survey, design, determination of special assessment, construction layout, inspection and determination of final costs plus net HST.	
<b>\$3,816.00</b>	<b>+ \$1,434.00</b>	<b>= \$5,250.00</b>

Whether or not the Township of Melancthon elects to do the work on the 5th Line, they shall be assessed or pay the actual cost of the work (estimated as \$3,816.00) plus engineering/administration (estimated as \$1,434.00) as a Special Assessment.

In accordance with Section 69 of the Drainage Act, the Road Authority may elect to construct any or all of the works located on its road allowance.

## 9.0 Construction Assessment Schedule

This sum of \$295,000.00 is assessed as benefit, outlet liability and Special Assessments against the lands and roads affected according to the following Construction Assessment Schedule. Injuring liability is deemed not applicable.

Due to the difficulty understanding the term “outlet liability” a greater explanation of the upstream owner’s responsibility has been provided. To explain the obligations of the owners of higher lands under the Drainage Act of Ontario, the following is an excerpt from a decision given by the late Drainage Referee, his Honour Judge Sidney L. Clunis, in his Court at Windsor, Ontario on the first day of October 1975.

**“The Drainage Act has established machinery, as it were, the procedure, for dealing with disputes between high land and low land owners. The Act is designed to provide a fair method of apportionment of the cost of drainage works as between high and low lands. While it’s prime purpose was to increase the area of land that may be used efficiently for agricultural purposes, its secondary purpose was to avoid and settle disputes. It is the law of Ontario, that the owner of higher lands in which water arises, may be required to pay the cost of carrying that water to a proper outlet. This is the proportion of cost of this work which has been assessed against the lands of these appellants and other owners of high lands.”**

Lands used for agricultural purposes have traditionally been eligible for a one-third grant for assessments imposed under the Drainage Act. In the Construction Assessment Schedule the designation ‘A’ indicates the property is considered eligible for grant. The eligibility may be confirmed or rejected subject to a provincial audit during the grant application process.

The sandy/stoney subsoil is not suitable to be levelled in open fields. Stripping and replacing of the topsoil would be required in order to leave the fields productive. The new drain construction and related significant quantity of excavated material would require approximately 6 ha (15 ac) to be stripped and replaced. Our calculations found it was more economical to haul and dispose of the excavated material. Item 2.3(j) of the Agricultural Drainage Infrastructure Program, Administrative Policies indicates that the increased cost to a drainage project for hauling away of spoil material is not eligible for grant. There is no increased cost to the drain for the hauling operations. As such, the total assessments to agricultural lands should be considered eligible for grant.

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In order to determine the approximate net cost for a particular property, two items need to be considered and deducted, where appropriate, from the total assessment as shown in the Construction Assessment Schedule. As previously outlined, the properties designated 'A' are considered agricultural and eligible for the one-third grant. Secondly, the allowances previously listed are payable to those properties shown and as such, also need to be deducted where appropriate to determine the approximate net cost.

### Construction Assessment Schedule

Roll No.	Owner	Con.	Lot Or Part	Approx. ha Affected	Land Class	ASSESSMENTS		
						Benefit \$	Outlet Liability \$	Total \$
1-225-00	Bonnefield Group III Inc.	4 OS	Pt. 18	3.5	NA		4,593.00	4,593.00
1-234-00	D. & C. Vander Zaag Farms		W. Pt. 18	28.3	A		35,825.00	35,825.00
1-234-90	R. & A. McCallum		Pt. 18	0.4	NA		525.00	525.00
1-235-00	J. McDonald		W1/2 17	15.0	A		19,684.00	19,684.00
1-274-00	K. Fluney	4 NE	10	0.1	A	500.00	100.00	600.00
1-279-00	K. Fluney	5 NE	10	35.5	A	72,000.00	13,198.00	85,198.00
1-279-50	N. & A. Martin		E. Pt. 11	21.5	A	53,000.00	14,890.00	67,890.00
1-281-00	V. Gill et al		W. Pt. 11	0.0	NA	1,000.00		1,000.00
1-283-00	N. & A. Martin		E. Pt. 12	13.5	A	4,500.00	34,948.00	39,448.00
Total Lands						131,000.00	123,763.00	254,763.00
4th Line NE, Township of Melancthon						1,500.00	100.00	1,600.00
5th Line, Township of Melancthon						4,500.00	8,922.00	13,422.00
270 Sideroad, Township of Melancthon						250.00	3,215.00	3,465.00
Total Roads						6,250.00	12,237.00	18,487.00
Total Lands and Roads						137,250.00	136,000.00	273,250.00
<b>Special Assessment, Work on 4th Line NE</b>								<b>16,500.00</b>
<b>Special Assessment, Work on 5th Line</b>								<b>5,250.00</b>
<b>Total Assessment Fluney Drainage Works</b>								<b>\$295,000.00</b>

The allocation of the cost for a drainage works is generally apportioned under two headings, those being benefit assessment and outlet liability. The work and related appurtenances on the 4th Line NE and 5th Line are assessed as a Special Assessments to the Road Authority in accordance with Section 26 of the Drainage Act. No Special Assessment has been levied for work on the 270 Sideroad as the road is unopened.

After the removal of the Special Assessments, the balance of \$273,250.00 was allocated over four individual sections of the proposed work. An assessment schedule was prepared for each section and later combined to form the Construction Assessment Schedule.

Benefit assessment was generally applied on a lineal basis based on the length of drain on or adjacent to a property. Benefit assessment was also applied where the improved drain provided an improved direct outlet. Outlet liability was assessed over the natural watershed for each section. The roads (with the exception of the unopened 270 Sideroad) have been assessed at a marked up rate for outlet liability because of the higher runoff factor associated with the paved surfaces. Adjustments have also been made for bush lands. Lastly, where applicable a minimum outlet liability assessment of \$100.00 was applied.

## **10.0 Maintenance Provisions**

After construction, the drainage works shall be maintained by the Township of Melancthon in accordance with Section 74 of the Drainage Act as assessed in the Maintenance Assessment Schedules contained in Appendix F. The figures shown in the Maintenance Assessment Schedules represent one-tenth of the original assessments for each section. Owners wishing to calculate their individual assessment toward each section should simply multiply the figures by ten. We have reduced the assessments in the Maintenance Schedules to more realistically reflect how any minor maintenance cost would appear when distributed.

Sediment removed from the open drains as part of any future maintenance work shall be spread and levelled on adjacent lands to a maximum depth of 150 mm (6 in). The work on the 4th Line NE and 5th Line constructed as part of the drainage works and assessed as Special Assessments shall be maintained by the Road Authority.

Section 74 of the Drainage Act states:

**“Any drainage works constructed under a by-law passed under this Act or any predecessor of this Act, relating to the construction or improvement of a drainage works by local assessment, shall be maintained and repaired by each local municipality through which it passes, to the extent that such drainage works lies within the limits of such municipality, at the expense of all the upstream lands and roads in any way assessed for the construction or improvement of the drainage works and in the proportion determined by the then current by-law pertaining thereto until, in the case of each municipality, such provision for maintenance or repair is varied or otherwise determined by an engineer in a report or on appeal therefrom.”**

Should repair/maintenance costs be incurred by the drainage works in order to accommodate buried utilities such as gas lines, telephone cables, etc. or to relocate or perform repairs to any such plant, then under the provisions of Section 26 of the Drainage Act, the extra costs (including costs of permits, locates etc.) incurred by the drain, shall be borne by the utility affected.

Owners are reminded that catchbasin grates may become covered with vegetative debris, litter, etc. and as such, it is in their best interest to periodically check the grates and remove any debris. Likewise, any significant problems should be reported to the Township of Melancthon.

## **11.0 Additional Recommended Procedure**

As outlined in the investigation component of the report, the watershed in Concession 4 OS varies from what has previously been delineated. It is our recommendation that the assessment schedules for the McCue Drainage Works (1989 and 1994) be amended pursuant to Section 65(3) of the Drainage Act to reflect the connection of additional lands to the previously assessed watershed area.

We further recommend that the assessment schedule for the Stinson Drainage Works be amended pursuant to Section 65(4) of the Drainage Act to reflect the removal of lands from the previously assessed watershed area.

Maintenance of all three drainage works that are affected are currently in progress. This would be an ideal time to make the required amendments to ensure that the maintenance costs for each drainage scheme are appropriately distributed.

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## 12.0 Summary

This report has been respectfully prepared based on our investigation and subsequent discussions with the affected owners, the Grand River Conservation Authority and Municipal representatives. The report and final design takes into consideration all of the comments expressed. The cooperation shown by all parties is to be complimented.

**R.J. Burnside & Associates Limited**



T.M. Pridham, P.Eng.  
Drainage Engineer  
TMP:tw







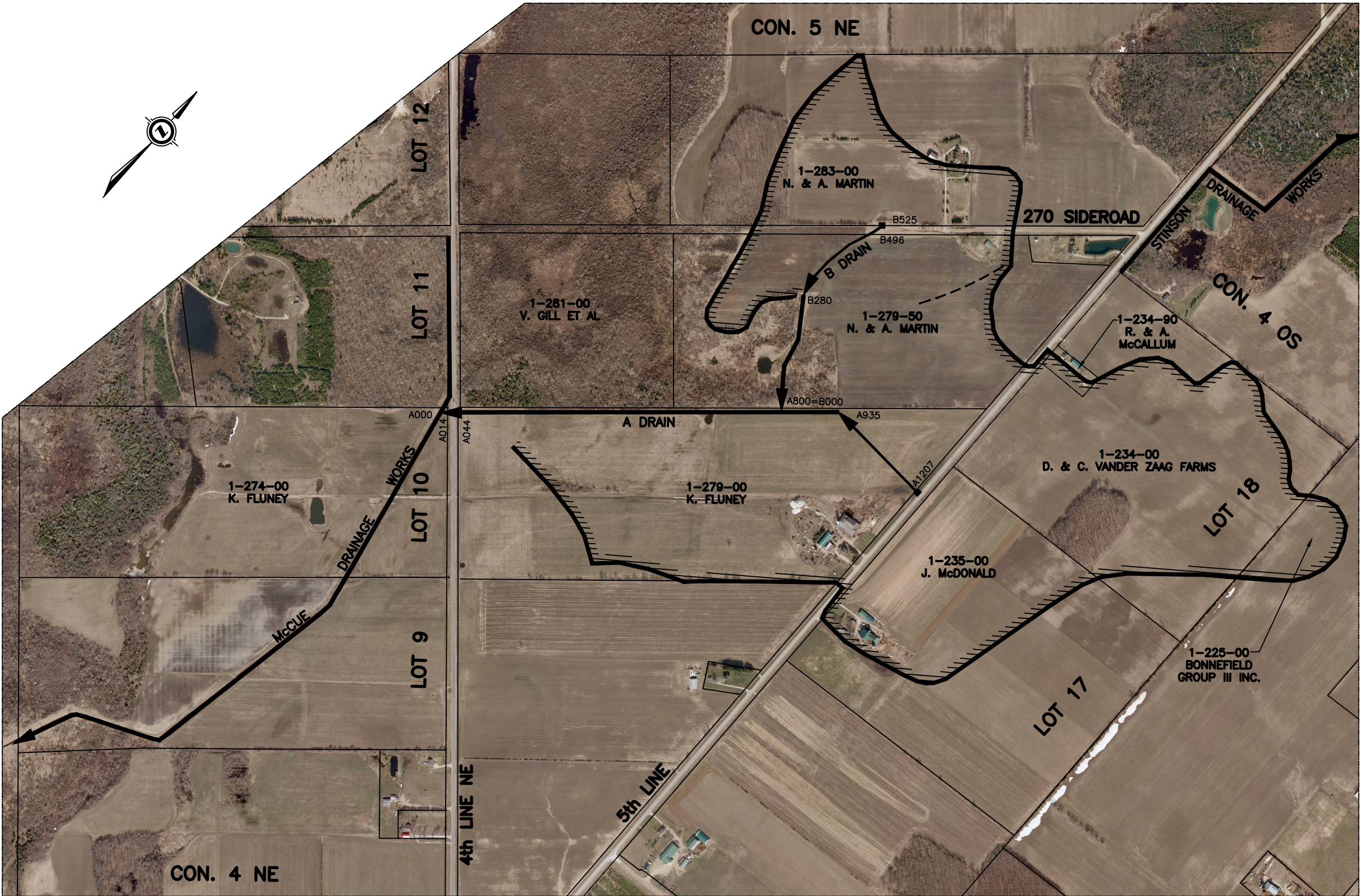
BURNSIDE

[ THE DIFFERENCE IS OUR PEOPLE ]

**Drawing No. 1**

**Watershed Plan**





THE PROPERTY LINES SHOWN ON THIS PLAN  
ARE APPROXIMATE AND FOR GENERAL  
INFORMATION ONLY.

LEGEND

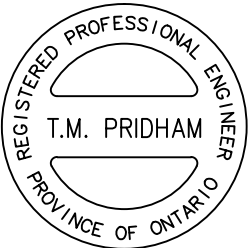
- APPROXIMATE WATERSHED LIMITS
- APPROXIMATE INTERIOR WATERSHED
- DRAIN ROUTE (OPEN DRAIN)
- DRAIN ROUTE (CLOSED DRAIN)
- STATION
- ASSESSMENT ROLL NO.
- PROPOSED CATCHBASIN

SCALE



- Notes
- This drawing is the exclusive property of R. J. Burnside & Associates Limited. The reproduction of any part without prior written consent of this office is strictly prohibited.
  - The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
  - This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

No.	Issue / Revision	Date	Auth.
1	ISSUED FOR DRAINAGE REPORT	2015/08/06	TMP



T. M. Pridham, P. Eng.



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Client  
**TOWNSHIP OF MELANCTHON**  
157101 HIGHWAY 10  
MELANCTHON, ON  
L9V 2E6

Drawing Title  
**FLUNEY DRAINAGE WORKS**  
  
WATERSHED PLAN

Drawn AKB	Checked TMP	Date 2015/08/06	Drawing No. <b>P1</b>
Scale AS SHOWN		Project No. 300032772.0000	





# BURNSIDE

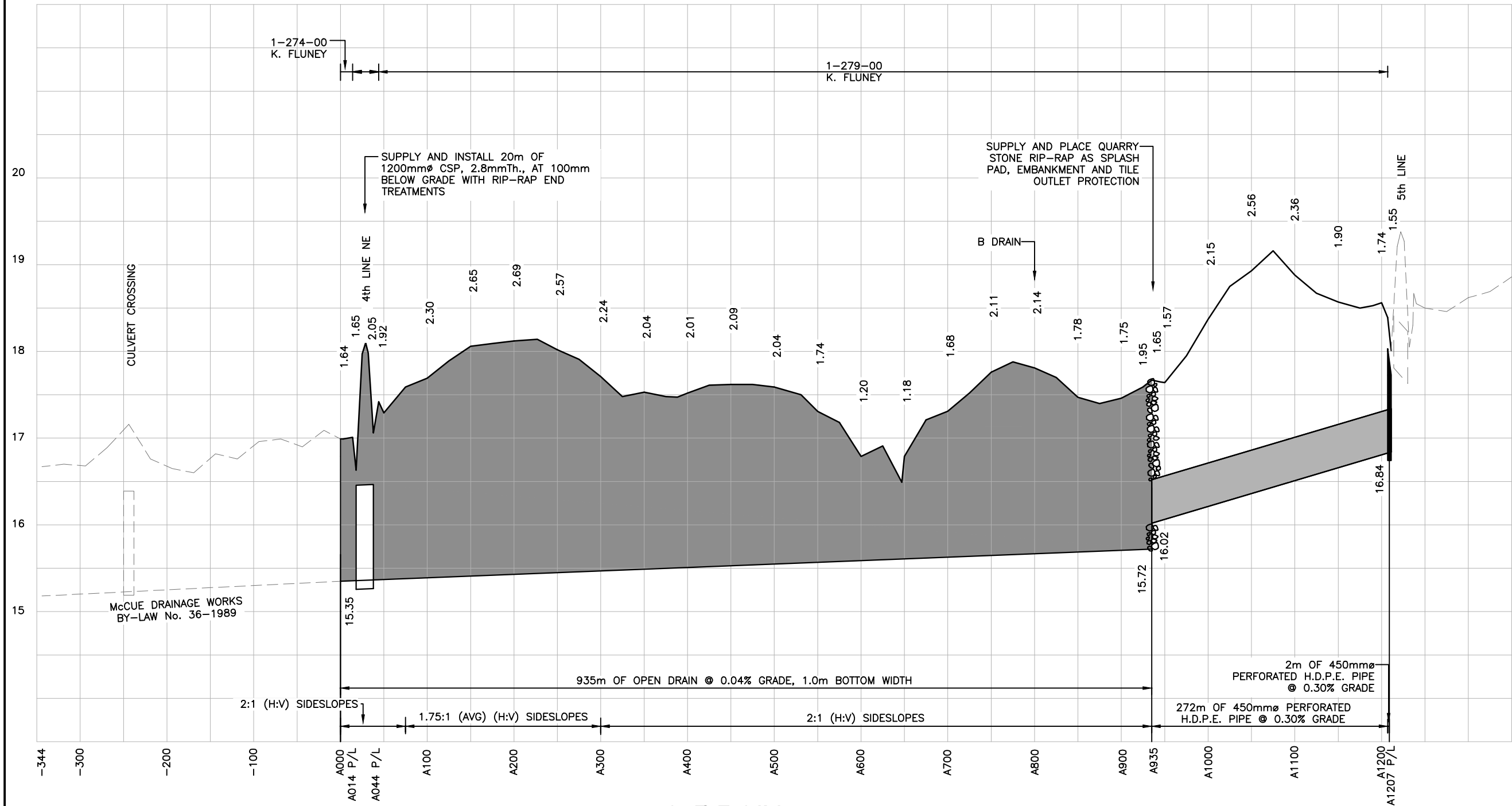
[ THE DIFFERENCE IS OUR PEOPLE ]

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**Drawing No. 2**

**Profiles – A Drain**

Drawing No. 2



### BENCHMARKS:

STA. A044 SPIKE IN WEST FACE OF CORNER FENCE POST 1m NORTH  
ELEV = 17.80

STA. A605 SPIKE IN SOUTH FACE OF 400mm TREE 5m NORTH  
ELEV = 17.36

STA. A931 SPIKE IN EAST FACE OF FENCE POST  
ELEV = 18.24

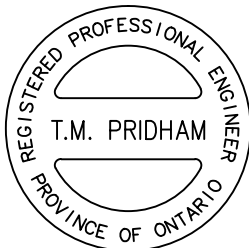

STA. A1207 SPIKE IN NORTH FACE OF HYDRO POLE 40m SOUTH EAST  
ELEV = 19.16

### SCALES

0 50 100m  
HORIZONTAL

0 1m  
VERTICAL

## A DRAIN

<div>Notes</div> <div>1. This drawing is the exclusive property of R. J. Burnside &amp; Associates Limited. The reproduction of any part without prior written consent of this office is strictly prohibited.</div> <div>2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.</div> <div>3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.</div>	No.	Issue / Revision	Date	Auth.	<div></div> <div>T. M. Pridham, P. Eng.</div>	<div> BURNSIDE</div> <div>R.J. Burnside &amp; Associates Limited 15 Townline Orangeville, Ontario, L9W 3R4 telephone (519) 941-5331 fax (519) 941-8120 web www.rjburnside.com</div>	Drawing Title			
	1	ISSUED FOR DRAINAGE REPORT	2015/08/06	TMP			FLUNEY DRAINAGE WORKS			
							PROFILES - A DRAIN			
						Client				
						TOWNSHIP OF MELANCTHON				
						157101 HIGHWAY 10 MELANCTHON, ON L9V 2E6				

Drawn	Checked	Date	Drawing No.  <b>P2</b>
AKB	TMP	2015/08/06	
Scale AS SHOWN	Project No. 300032772.0000		



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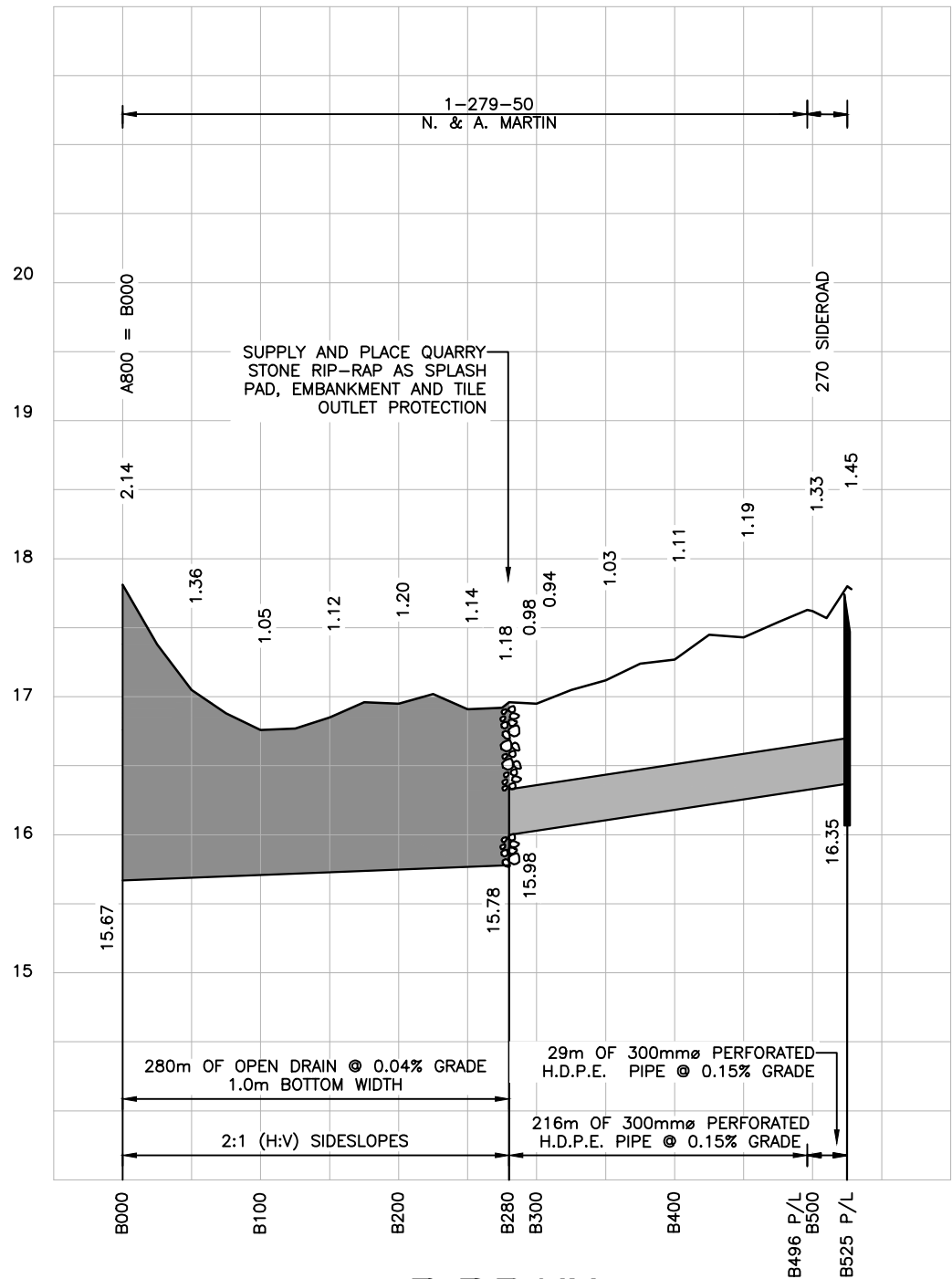
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**Drawing No. 3**

**Profiles – B Drain**

Drawing No. 3



## B DRAIN

### BENCHMARKS:

STA. A931 SPIKE IN EAST FACE  
OF FENCE POST  
ELEV = 18.24

STA. B270 SPIKE IN EAST FACE  
OF 300mm TREE 15m WEST  
ELEV = 17.30

STA. B525 SPIKE IN SOUTH FACE  
OF 500mm TREE 18m WEST  
ELEV = 18.37

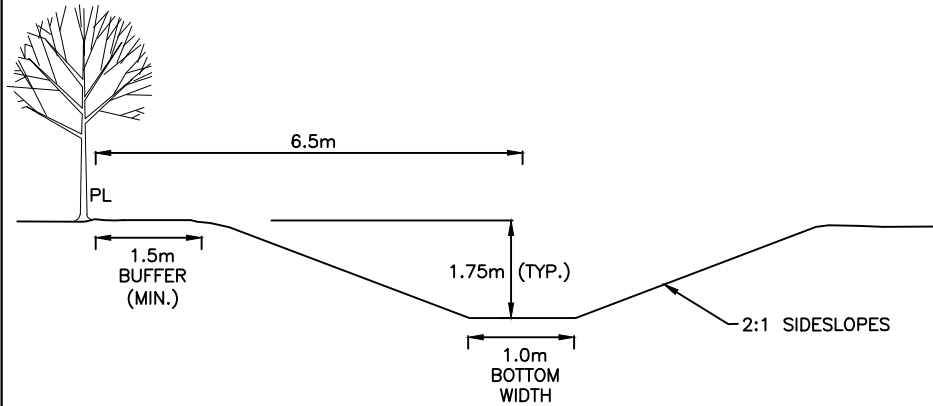
### SCALES

0 50 100m  
HORIZONTAL

0 1m  
VERTICAL

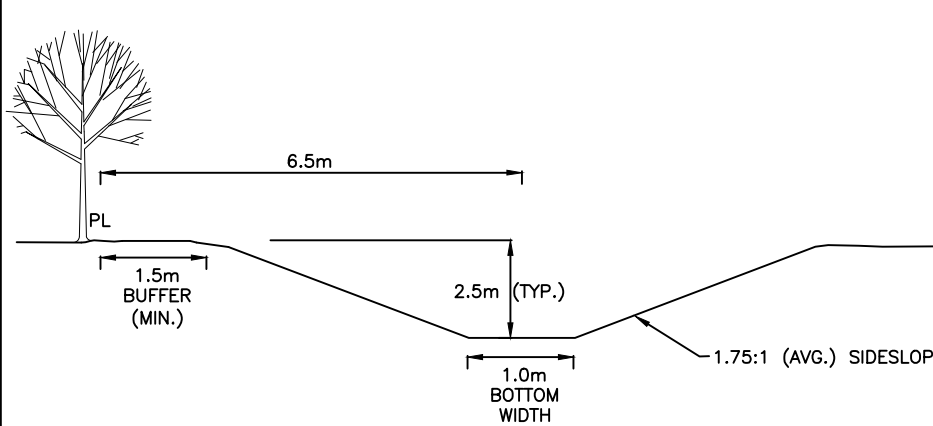
### TYPICAL CROSS SECTION

STA. A000 TO STA. A075  
STA. A300 TO STA. A935



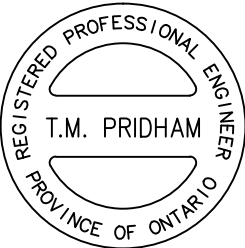
### TYPICAL CROSS SECTION

STA. A075 TO STA. A300



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  2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
  3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

No.	Issue / Revision	Date	Auth.
1	ISSUED FOR DRAINAGE REPORT	2015/08/06	TMP



T. M. Pridham, P. Eng.



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**fax** (519) 941-8120  
**web** www.rjburnside.com

Client

### TOWNSHIP OF MELANCTHON

157101 HIGHWAY 10  
MELANCTHON, ON  
L9V 2E6

Drawing Title

### FLUNEY DRAINAGE WORKS

### PROFILES - B DRAIN

Drawn AKB	Checked TMP	Date 2015/08/06	Drawing No. <b>P3</b>
Scale AS SHOWN		Project No. 300032772.0000	



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## Appendix A

### Special Provisions

## **APPENDIX A**

### **SPECIAL PROVISIONS**

R.J. BURNSIDE & ASSOCIATES LIMITED  
Engineers, Hydrogeologists, Environmental Consultants  
15 Townline  
Orangeville, Ontario  
L9W 3R4

### **DRAINAGE SPECIFICATIONS**

One complete set of plan, profiles and specifications shall be kept by the operator at the construction site at all times.

These specifications, including report, plan and profiles of the same date apply to and govern, where applicable, the construction of the

### **FLUNEY DRAINAGE WORKS**

Township of Melancthon

### **EXTENT OF THE WORK:**

1,215 m of Open Drain plus Related Appurtenances  
Including One Road Crossing  
519 m of Closed Drain plus Related Appurtenances

### **SPECIAL PROVISIONS:**

#### **OPEN WORK- GENERAL**

All ditch banks and disturbed areas in bush lands shall be seeded. Seeding shall be as specified, General Conditions, Item 13. It is not necessary to seed the stripped areas at the disposal sites.

#### **OPEN WORK**

#### **STA. A000 TO STA. A014**

The centreline of the drain shall be 6.5 m south of the property line. Centreline and top of bank stakes will be provided by the Engineer at the time of construction.



The excavated material shall be hauled and disposed of in the existing pond south of the laneway on the same property as directed by the Owner. The topsoil shall be salvaged and kept separate from the balance of the excavated material.

#### **STA. A014 TO STA. A044 (4TH LINE NE)**

The Contractor shall be responsible for signing and traffic control in accordance with Ontario Traffic Manual, Book 7 – Temporary Conditions. The Contractor shall be responsible for notification of all utilities and obtaining locates prior to construction.

The existing asphalt shall be saw cut and loaded onto Township trucks for disposal. The limits of the asphalt removal will be marked by the Engineer prior to the tendering process. Excavation shall be parallel to the pipe installation to minimize the damage to the existing asphalt.

Prior to commencing work, the topsoil shall be stripped for later reinstatement.

The culvert shall be supplied in two 10 m lengths plus a 600 mm wide coupler and shall be installed in accordance with OPSD 802.010, Type 2 Soil on a minimum of 150 mm depth of Granular 'A' or 19 mm clear stone bedding. Through the road crossing (toe of slope to toe of slope) the trench shall be completely backfilled with Granular 'A'. Compaction shall be to 100% SPD. Any excess material shall be loaded onto Township trucks for disposal.

**The asphalt restoration will be undertaken by the Municipality and as such does not need to be included in the tender price. As a temporary measure, the Contractor shall place Granular 'A' material to the finished road grade. The cost to supply and place this material shall be included in the tender price bid.**

After the culvert installation, the road ditches for 10 m on each side shall be graded to the new invert elevations.

A 500 mm thick clay seam shall be placed at each end prior to the installation of rip-rap specified below. It is anticipated that native material removed for the road ditching will be satisfactory. Any excess material shall be loaded onto Township trucks for disposal.

Approximately 30 sq.m (15 sq.m per side) of 150 mm dia. to 300 mm dia. quarried stone rip-rap shall be keyed in place on geotextile filter as inlet and outlet protection for the new crossing. The rip-rap shall be placed roughly 500 mm thick on geotextile underlay as directed by the Engineer at the time of construction. The geotextile underlay shall be Terrafix 270R or an approved equivalent. In the event extra rip-rap material is required, it will be paid for as an extra.

After the completion of the road ditching and rip-rap installation, the topsoil shall be reinstated and all disturbed areas seeded with an approved grass seed mixture.

**All work on the 4th Line NE shall be as directed and subject to the approval of Mr. Craig Micks, Road Superintendent, Township of Melancthon. Details concerning the road work may be discussed and/or confirmed with Mr. Micks at (519) 939-1957.**

### **STA. A044 TO STA. A935**

The property line will be staked prior to tendering to assist with determining the amount of clearing required.

All trees, brush and stumps south of the property line shall be cleared and disposed of at the abandoned gravel pit at the westerly end of the laneway into the property designated Roll No. 1-274-00 (Fluney) at a location as directed by the Owner. All exposed stones and rocks shall be disposed of in the abandoned pond as previously outlined for the excavated material from Sta. A000 to Sta. A014.

The centreline of the drain shall be 6.5 m south of the property line. Centreline and top of bank stakes will be provided after the completion of the clearing operations.

The excavated material shall be hauled and disposed of in the low area south of the pond at Sta. A625. Topsoil along the route of the drain shall be salvaged and used to help cover the levelled material at the disposal site.

At the disposal site, the topsoil shall be stripped and replaced. All hauled material shall be levelled such that there is a positive drainage north into the drain after the replacement of the stripped and salvaged topsoil. The exact location and configuration of the disposal area shall be as directed by the Engineer at the time of construction.

The sideslopes of the drain shall be 2:1 (H:V) with the exception from Sta. A075 to Sta. A300. Through this location the sideslopes are to be constructed such that a minimum buffer of 1.5 m remains on the north side between the drain and the property line. The minimum slope will be roughly 1.65:1 (H:V).

### **STA. B000 TO STA. B280**

The side of operation shall be the east side. Clearing shall be as specified, General Specifications (Open Work), Item 8.

From Sta. B000 to Sta. B200, the excavated material shall be spread and levelled to a maximum thickness of 150 mm (6 in) leaving a clear berm or margin of at least 2.0 m between the edge of the drain and the levelled spoil. The topsoil shall be stripped and replaced as part of the work.

From Sta. B200 to Sta. B280, cleared material shall be pushed or hauled to the south into the bush area downstream of Sta. B200 as directed by the Engineer at the time of construction. The excavated material shall be hauled and disposed of in the low area east of Sta. B525 in the property designated Roll No. 1-283-00 (Martin). Topsoil along the route of the drain shall be salvaged and used to help provide additional cover for the new tile from approximately Sta. B280 to Sta. B350.

At the disposal site, the topsoil shall be stripped and replaced. All hauled material shall be levelled such that there is a positive drainage to the south-west into the new catchbasin after the replacement of the stripped topsoil.

## **CLOSED WORK - GENERAL**

The perforated smoothwalled polyethylene pipe (HDPE) shall be per Boss 2000 (320 kPa) with a non-woven geotextile filter sock in accordance with CSA B182.8 and external split coupler joints. The prefabricated polyethylene tee, end cap and elbow shall also be per Boss 2000 or an approved equivalent.

Heavy-Duty Extra Quality concrete tile meeting the minimum Three-Edge Bearing Crushing Strength as per ASTM C412 may also be used for Item 8 and Item 15. All concrete tile joints shall be completely wrapped with drain wrap (Terrafix 270R or an approved equivalent). For the 300 mm dia. tile, 300 mm wide drain wrap shall be used. For the 450 mm dia. tile, 400 mm wide drain wrap shall be used. The wrap shall overlay at the top of the tile by 150 mm.

The HDPE pipe or concrete tile may be installed with a wheel machine or hydraulic backhoe on 100 mm depth of clear stone bedding. Throughout the work the topsoil shall be stripped and replaced for the full width of the excavation operations or the full width of the trenching machine as applicable. In the event the cuts to grade exceed the digging depth of the wheel machine, the topsoil shall be stripped and replaced for the full width of any necessary stripping operations.

The Contractor's supplier shall confirm the details of the catchbasins with the Engineer prior to fabrication and delivery. The specifications for each structure are outlined below:

<b>STRUCTURES</b>			
<b>STATION</b>	<b>DESCRIPTION</b>	<b>INVERT OF DRAIN/LEAD</b>	<b>LOW WALL/INLET ELEVATION</b>
Sta. A1209	900 x 1200 OFFSET DICB	16.99 m (375 mmØ HDPE LEAD) N	17.89 m E
Sta. B525	900 x 1200 ON-LINE DICB	16.35 m (300 mmØ HDPE) S 16.45 m (200 mmØ KNOCKOUT) N 16.45 m (200 mmØ KNOCKOUT) E 16.45 m (200 mmØ KNOCKOUT) W	17.40 m N

- ALL DITCH INLET CATCHBASINS TO HAVE 300 mm DEEP SUMP, 2:1 (H:V) INLET SLOPE AND BIRDCAGE STYLE GRATE
- AT STA. A1209 THE 1200 mm WALLS SHALL BE THE EAST AND WEST SIDES
- AT STA. B525 THE 1200 mm WALLS SHALL BE THE NORTH AND SOUTH SIDES

The location of all catchbasins shall be as directed by the Engineer at the time of construction. On road allowances, catchbasins shall be installed parallel to the road, unless otherwise directed. On private lands, catchbasins shall be installed perpendicular to the route of the drain, unless otherwise directed. Catchbasin markers are to be supplied and placed as part of the installation.

Catchbasins shall be backfilled with compacted native material. In areas of poor soil conditions, Granular 'B' or 19 mm clear stone shall be used for backfill. Granular or clear stone backfill material will be paid for as an extra if required. Pipe connections to catchbasins shall be grouted in place from the inside and outside. The connections shall also be trimmed flush on the inside wall. The outside pipe connection and any riser joints shall be wrapped with a layer of geotextile underlay. The geotextile underlay shall be Terrafix 270R or an approved equivalent.

The rip-rap inlet apron for the 900 mm x 1200 mm catchbasins shall be 6 sq.m of 100 mm to 150 mm dia. quarry stone placed 300 mm thick on geotextile underlay. The geotextile underlay shall be Terrafix 270R or an approved equivalent.

## **CLOSED WORK**

### **STA. A935 TO STA. A1207**

Throughout this section the closed drain shall be installed with a uniform alignment. Layout will be provided by the Engineer at the time of construction.

At Sta. A935, roughly 20 sq.m of 150 mm to 300 mm dia. quarried stone rip-rap shall be keyed in place on geotextile filter as bank protection and a splash pad at the new outlet pipe. The rip-rap shall be placed roughly 500 mm thick on geotextile underlay as directed by the Engineer at the time of construction. The geotextile underlay shall be Terrafix 270R or an approved equivalent. In the event extra rip-rap material is required, it will be paid for as an extra.

### **STA. A1207 TO STA. A1209 (5TH LINE)**

At Sta. A1209, a 450 mm x 375 mm polyethylene tee shall be installed approximately 4 m north of the existing overflow culvert. The upstream end of the tee shall be capped with a polyethylene end cap.

The new 900 mm x 1200 mm offset ditch inlet catchbasin shall be installed directly in front of the existing overflow culvert as directed by the Engineer at the time of construction.

### **STA. B280 TO STA. B525**

Throughout this section the closed drain shall be installed on the east side of the existing swale as directed by the Engineer at the time of construction.

At Sta. B280, roughly 20 sq.m of 150 mm to 300 mm dia. quarried stone rip-rap shall be keyed in place on geotextile filter as bank protection and a splash pad at the new outlet pipe. The rip-rap shall be placed roughly 500 mm thick on geotextile underlay as directed by the Engineer at the time of construction. The geotextile underlay shall be Terrafix 270R or an approved equivalent. In the event extra rip-rap material is required, it will be paid for as an extra.

At Sta. B525, the new 900 mm x 1200 mm ditch inlet catchbasin shall be installed parallel to the south lot line. A 45° polyethylene elbow shall be installed just downstream of the catchbasin to accommodate the bend in the drain.

At Sta. B525, a swale shall be graded from the inlet of the new catchbasin upstream approximately 15 m to connect the existing low area as directed by the Engineer at the time of construction.

## **WORKING SPACE**

The width of the working space for the construction, maintenance and repair of the Fluney Drainage Works shall be as follows:

The working space shall be an average of 20 m along the open drain routes to allow for hauling and disposal or spreading and levelling of the excavated material.

The working space shall be an average of 30 m along the installation of the 450 mm Itdiameter closed drain route to allow for stripping, stockpiling and releveled of the topsoil. The working space shall be an average of 20 m along the installation of the 300 mm diameter closed drain route to allow for stripping, stockpiling and releveled of the topsoil.

## **ACCESS ROUTES**

Access to the working space shall be off the 4th Line NE, the 5th Line and 270 Sideroad to the drain. Reasonable access shall be provided by the Owners where the drain is located.



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## Appendix B

### General Conditions

## **APPENDIX B**

### **GENERAL CONDITIONS**

1. **MUNICIPALITY** means the Corporation of the Township awarding the Contract.
2. **ENGINEER** means the Project Engineer of R.J. BURNSIDE & ASSOCIATES LTD., Municipal Drainage Consultants, who shall decide on questions arising under the Contract Documents as to the interpretation of specifications or performance of the work.
3. **INSPECTOR**, if any, means the representative of R.J. BURNSIDE & ASSOCIATES LTD. who is authorized to inspect and to oversee the construction process.
4. **DRAINAGE SUPERINTENDENT OR COMMISSIONER**, if any, means the person or persons appointed by the Municipality to assist in the construction of the drainage works.
5. **CONTRACTOR** means the Corporation, Company or person having been awarded the Contract.
6. **CONTRACT** means the signed proposal or tender offered by the Contractor and accepted by signature on behalf of the Municipality and which shall be a formal and binding document.
7. **BENCH MARKS** means the permanently established level marks, recorded on the profile as to description, location and elevation and which shall govern the drainage work. It is an offence under the Drainage Act to interfere with, remove or destroy any bench mark.
8. **STAKES** mean survey marks set twenty-five metres apart and at all fences or as shown on plan and profile and are for vertical control only. The Contractor shall not be held liable for the cost of replacing any stakes, except stakes destroyed during construction.
9. **PROFILES** show the cuts or depths from the ground at the numbered side of the stakes and from the average bottom of the present open drain to the gradeline, which shall be at the bottom of the finished drain or the invert of the tile, as the case may be. The cuts or depths are indicated in metres and parts thereof, but the bench marks must govern.
10. **FENCES** mean enclosures by wire, railing, or otherwise, which may be removed by the Contractor to the extent necessary for the construction, but they shall be repaired to as good a condition as found. In no case shall a fence be left open or unguarded. Watergates, where required, shall be constructed as part of the work.
11. **HEAVY STONE RIP-RAP AND SPILLWAYS** shall in general be keyed in place and a minimum of 500 mm thick at the toeline and fitting the contours and slopes of the banks. All installations shall include Miraf P150 filter mat or an approved equivalent. Spillways shall have a minimum slope of 2:1 (horizontal to vertical) and shall be shaped to guide the flow over the centre.

12. HIGHWAYS AND ROAD AUTHORITIES, Governmental Departments, Public or Private Utilities shall be notified in advance by the Contractor before performing any work affecting land or properties under their jurisdiction. The Contractor shall guard against damaging pipes, conduits, cables, etc. All work on roads, utility lands, etc. as to construction methods, location, type of pipes, catch basins and grates, disposal of excess material, general clean-up, etc. shall be under the direction and supervision of the authority having jurisdiction. (See Instruction to Bidders, Item 6.)
13. SEEDING permanent grass mixture, Creeping Red Fescue 35 Kg, Perennial Ryegrass 17 Kg, and Wild White Clover 6 Kg per ha. or equivalent, all Canada No. 1 grass mixture. Total 58 Kg per ha.
14. UNSTABLE SUBSOIL OR ROCK conditions, previously unknown to exist, but which may make alterations necessary, shall immediately be reported to the Engineer. Changes subsequently authorized shall not release the Contractor from obligations under his Contract.
15. MINOR CHANGES mean necessary alterations made by the Engineer as the work progresses. An amount proportionate to the amount contained in the tender being added to or deducted from the contract price to cover such changes.
16. WORKING SPACE shall mean a strip of land reasonably close to the drain and necessarily used for and during construction and shall in general be 25 m or less.
17. REASONABLE ACCESS TO THE WORK AREA shall be provided by any owner receiving allowances for damages.
18. POWER TO ENTER. Under Sec. 63 of the Drainage Act, the Contractor is entitled to enter upon whatever lands are necessary to complete the work within the designated working space. Interfering with or obstructing the contractor is an offence.





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## Appendix C

### General Specifications (Open Work)

## **APPENDIX C**

### **GENERAL SPECIFICATIONS (OPEN WORK)**

1. THE CENTRE LINE of the present ditch shall in general be the centre line of the new work. Courses shall run in long straight lines. Intersecting curves shall be smooth and gradual. At all curves and bends excavation shall be taken off the inside bank only. Centre line or off-set stakes shall be used, if necessary, to make the work uniform.
2. BOTTOM WIDTH AND SIDE SLOPES shall be as specified. Both sides of an open drain are to be sloped 1.5:1 (horizontal to vertical) or as shown on the profile. Flatter side slopes may be authorized in unstable soil.
3. EXCAVATION & LEVELLING shall be made by suitable machinery. Material shall in general be placed, spread and levelled on the lower side of the drain or on the side opposite trees and fences. The spoil, including old spoil banks on open lands, if any, shall be levelled up to a maximum depth of 0.15 metres (unless otherwise specified) leaving a clear berm or margin of at least 2 metres between the edges of the drain and the levelled spoil. It shall be left so that it may be cultivated together with adjacent lands by use of ordinary farm machinery. At every new cut the excavated material shall in general be used to fill the abandoned channel. Through bush lands the excavated material may be levelled up to twice the above maximum depth (unless otherwise specified)
4. SILT TRAPS shall be constructed 0.3 metres below grade and 25 metres long where shown on the profile. Clean-out prior to final inspection is not required.
5. INLETS FOR SURFACE WATER shall be left in the levelled spoil on each property, approximately 100 metres apart and through bush lands approximately 60 metres apart, or as necessary for surface run-off. Inlets shall extend through windrows, if any. No excavated material is to be left in any ditches, depressions, furrows, or tiles intended to conduct water into the open drain. Inlets shall have a minimum bottom width of 1 metre.
6. TRIBUTARY DITCHES shall be cut back on a gradual slope a minimum distance of 5 m.
7. TILE OUTLETS shall in general be left undisturbed, but if necessary, shall be moved back to fit the new slope. Such work shall be at extra negotiable cost. Owners are requested to mark their tile outlets prior to construction.
8. CLEARING shall mean the removal of brush, stumps, heavy stones, or other obstructions inside the slopes of the drain or along the bank of operation to a sufficient width for spreading and levelling the spoil, or as shown on the profile and in open land shall be left in piles on top of the levelled spoil. It shall be left to the owner to salvage any wood or timber.
9. EXCAVATION AT BRIDGE SITES shall be to the full depth and as nearly as possible to the full width and side slopes and shall be made by hand if not otherwise possible. Farm bridges hereafter constructed or reconstructed are recommended to have a capacity equal to the cross-sectional area, or a clear width between the abutments of twice the specified bottom width of the drain. Culverts shall be separately designed and shall be installed with the inverts approximately 150 mm below the grade line.

10. REMOVING OPEN DRAIN from a road allowance, and if not otherwise provided for, the material not needed to fill the abandoned channel shall be placed, spread and levelled on the adjoining lands. (See instruction to Bidders, Item 6 and General Conditions, Item 12.)
11. DAMAGES to crops or livestock, or by livestock within the working space shall not be the liability of the Contractor. He shall, however, give the owner concerned a reasonably advanced notice to move livestock, if any. (See Instruction to Bidders, Item 4.)



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## Appendix D

### General Specifications (Tile Work)

## APPENDIX D

### GENERAL SPECIFICATIONS (TILE WORK)

1. LINE OF CONSTRUCTION shall in general be as staked, but the drain shall run straight throughout each course and at intersections it shall run on a smooth and gradual curve.
2. CLEARING for tile shall mean the removal of trees, brush, stumps, heavy stones or other obstructions for a minimum width of 15 metres on each side of the drain, and in open land shall be left in piles. It shall be left to the owner to salvage any wood or timber.
3. MATERIAL, whether or not supplied by the Municipality, shall be arranged for and shall be accepted, or rejected if not first quality, by the Contractor at the site on delivery. Any excess or unused portions shall be stockpiled at a location determined by the Municipality.
4. TRENCHING AND LAYING shall in general be done by a wheel trencher together with accurate grade controls. The tile shall be laid with the invert at the gradeline with joints fitting properly. The minimum trench width shall be equal to the outside diameter of the tile plus 150 mm.
5. BLINDING shall be made as rapidly as is consistent with the construction progress. After inspection, the trench shall be backfilled. Minimum cover to natural surface shall in general be 750 mm.
6. TRIBUTARY TILE shown on the profile shall be connected as part of the work. Existing tile not shown shall be connected as extra work. A sufficient length of pipe, in general one size greater in diameter, shall be used through the bottom of a graded overflow run-way or if reconnection is to be made across a trench.
7. OUTLET PROTECTION shall in general be a length of standard metal pipe with a hinged rodent-proof grate. The end of the pipe shall be rip-rapped with heavy stone, which shall also extend into the bottom of the open drain. Overflow water shall not be directed over the tile outlet.
8. GRADED OVERFLOW RUNWAYS shall be constructed by cutting down the banks of a ditch that is being replaced by a tile drain. In no case shall its elevation be such as to hinder the free flow of surface water. It shall be graded to such condition that it may be cultivated by use of ordinary farm machinery. Grassed runways are recommended on heavy grades, but shall be left to the owner, if not otherwise specified.
9. CATCHBASINS shall in general be constructed of concrete (20 MPa) sides and bottom minimum 150 mm thick, inside dimensions 600 x 600 mm with a 300 mm sump, poured in place or pre-fabricated. The top shall be a standard Ministry of Transportation riveted grade or a welded metal fram with iron bars on 50 mm centres. Provisions must be made for surface water to enter, or catchbasins may be off-set into the overflow runway. A 200 mm dia. tile as cross-connection is in general sufficient. Backfill shall be firmly packed and all tile connections, bottom and side joints, shall be grouted in cement mortar.

10. JUNCTION BOXES shall be of concrete with tile grouted and fitting properly.
11. DAMAGES to crops within the working space shall not be the liability of the Contractor, nor damages to livestock or by livestock occasioned by leaving trenches open for inspection. He shall, however, give the owner concerned a reasonably advanced notice. The Contractor will be held liable for any such damages if the backfilling is delayed more than 10 days after the acceptance of the work, weather conditions permitting. (See instructions to Bidders, Item 4.)



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## Appendix E

### Instructions to Bidders

## **APPENDIX E**

### **INSTRUCTIONS TO BIDDERS**

1. TENDERS, submitted on the prescribed form and accompanied by the required bid deposit in favour of the Municipality, will be considered and contracts awarded only in the form of a lump sum for the completion of the whole works, or of such portions as specified in the tender call.
2. INVESTIGATIONS in regard to plans, profiles, specifications, the location and extent of the work should be made by the bidders themselves before tendering, and any doubt as to the exact meaning of any of the relevant documents or their intentions must be removed before signing the Contract; thereafter, the Contractor shall be bound by the decisions of the Engineer on all points.
3. GUARANTY BONDS covering the faithful performance of the Contract may be required by the Municipality prior to awarding the Contract.
4. CLAIMS OR LIABILITIES resulting from accidents, damages, losses, etc. directly or indirectly arising out of the Contract or manner of performance thereof, and if not otherwise provided for, shall be the responsibility of the Contractor. The Municipality may require proof of his insurance against any or all liabilities prior to awarding the Contract, or may withhold an equal amount to claims filed from payments then due.
5. FAULTY MATERIAL OR WORKMANSHIP shall be the responsibility of the Contractor at his own expense for a period of one year from the date of final acceptance of the work, and he shall remedy any defect and pay for any damage therefrom which may appear within such period and neither the final certificate nor payments thereunder shall relieve him from such responsibility under or by virtue of the signed Contract.
6. PERMITS AND SUPPLEMENTARY SPECIFICATIONS shall be obtained by the Contractor at his own expense before performing any work affecting any Road, Right-of-Way, Land or Property of any Governmental Department, County or Township, or of any Public or Private Utility, and he shall perform the work as though said specifications were hereto attached.
7. PAYMENTS up to 80% of the value of the work completed may be made by the Municipality on the written certificate of the Engineer, with a holdback payable after 45 days from the date of final acceptance. The Municipality may require the Contractor to furnish a complete release from sub-contractors or of all liens arising out of the Contract (other than his own) before the final payment shall become due.
8. FINAL INSPECTION will be made within two weeks after notice has been received from the Contractor that the work has been completed, or as soon thereafter as weather conditions permit. All work must at that time have the full dimensions, grades, etc. as specified and the general clean-up must be fully completed. If deficiencies are found, which should have been known to the Contractor as not complying with the specifications, the cost and expenses incidental to such inspection shall, due to his negligence, become the liability of the Contractor and may be deducted from the Contract price.



9. STATEMENTS OF SATISFACTION, voluntarily signed by the owners in regard to the treatment of the spoil, the clearing, the fences, the general clean- up, etc. may release the Contractor from further obligation in that regard.
10. TERMINATION OF CONTRACT: All work must be completed within the time limit as specified by or as extended under the Contract. If at any time, the Engineer should certify in writing, that the work is unnecessarily delayed or that conditions of the Contract are being violated, the Municipality shall have the power to terminate by written notice all work thereon, but reserving all claims against the Contractor for breach of Contract. If, however, the work has not been completed on or before the date fixed, the Contractor may apply in writing for an extension prior to the expiry date of his Contract.



BURNSIDE

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## Appendix F

### Maintenance Assessment Schedules

## MAINTENANCE ASSESSMENT SCHEDULES

### FLUNEY DRAINAGE WORKS

#### A DRAIN (OPEN) – STA. A000 TO STA. A935

						ASSESSMENTS		
Roll No.	Owner	Con.	Lot Or Part	Approx. Ha. Affected	Land Class	Benefit \$	Outlet Liability \$	Total \$
1-225-00	Bonnefield Group III Inc.	4 OS	Pt. 18	3.5	NA		160.20	160.20
1-234-00	D. & C. Vander Zaag Farms		W. Pt. 18	28.3	A		1,249.60	1,249.60
1-234-90	R. & A. McCallum		Pt. 18	0.4	NA		18.30	18.30
1-235-00	J. McDonald		W1/2 17	15.0	A		686.60	686.60
1-274-00	K. Fluney	4 NE	10	0.1	A	50.00	10.00	60.00
1-279-00	K. Fluney	5 NE	10	35.5	A	6,450.00	1,148.90	7,598.90
1-279-50	N. & A. Martin		E. Pt. 11	21.5	A	3,300.00	851.40	4,151.40
1-281-00	V. Gill et al		W. Pt. 11	0.0	NA	100.00		100.00
1-283-00	N. & A. Martin		E. Pt. 12	13.5	A		508.10	508.10
Total Lands						9,900.00	4,633.10	14,583.10
4th Line NE, Township of Melancthon						150.00	10.00	160.00
5th Line, Township of Melancthon							311.10	311.10
270 Sideroad, Township of Melancthon							45.80	45.80
Total Roads						150.00	366.90	516.90
Total Lands and Roads						10,050.00	5,000.00	15,050.00
<b>TOTAL, A DRAIN (OPEN) – STA. A000 TO STA. A935</b>								<b><u>\$15,050.00</u></b>

**MAINTENANCE ASSESSMENT SCHEDULES (CONT'D)****FLUNEY DRAINAGE WORKS****A DRAIN (CLOSED) – STA. A935 TO STA. A1207**

						ASSESSMENTS		
Roll No.	Owner	Con.	Lot Or Part	Approx. Ha. Affected	Land Class	Benefit \$	Outlet Liability \$	Total \$
1-225-00	Bonnefield Group III Inc.	4 OS	Pt. 18	3.5	NA		299.10	299.10
1-234-00	D. & C. Vander Zaag Farms		W. Pt. 18	28.3	A		2,332.90	2,332.90
1-234-90	R. & A. McCallum		Pt. 18	0.4	NA		34.20	34.20
1-235-00	J. McDonald		W1/2 17	15.0	A		1,281.80	1,281.80
1-279-00	K. Fluney	5 NE	10	35.5	A	750.00	170.90	920.90
Total Lands						750.00	4,118.90	4,868.90
5th Line, Township of Melancthon						450.00	581.10	1,031.10
Total Road						450.00	581.10	1,031.10
Total Lands and Road						1,200.00	4,700.00	5,900.00
<b>TOTAL, A DRAIN (CLOSED) – STA. A935 TO STA. A1207</b>								<b><u>\$5,900.00</u></b>

**MAINTENANCE ASSESSMENT SCHEDULES (CONT'D)****FLUNEY DRAINAGE WORKS****B DRAIN (OPEN) – STA. B000 TO STA. B280**

						ASSESSMENTS		
Roll No.	Owner	Con.	Lot Or Part	Approx. Ha. Affected	Land Class	Benefit \$	Outlet Liability \$	Total \$
1-279-50	N. & A. Martin	5 NE	E. Pt. 11	21.5	A	1,725.00	405.80	2,130.80
1-283-00	N. & A. Martin		E. Pt. 12	13.5	A		475.30	475.30
Total Lands						1,725.00	881.10	2,606.10
270 Sideroad, Township of Melancthon							43.90	43.90
Total Road							43.90	43.90
Total Lands and Road						1,725.00	925.00	2,650.00
<b>TOTAL, B DRAIN (OPEN) – STA. B000 TO STA. B280</b>								<b><u>\$2,650.00</u></b>

**MAINTENANCE ASSESSMENT SCHEDULES (CONT'D)**

**FLUNEY DRAINAGE WORKS**

**B DRAIN (CLOSED) – STA. B280 TO STA. B525**

						ASSESSMENTS		
Roll No.	Owner	Con.	Lot Or Part	Approx. Ha. Affected	Land Class	Benefit \$	Outlet Liability \$	Total \$
1-279-50	N. & A. Martin	5 NE	E. Pt. 11	21.5	A	275.00	231.80	506.80
1-283-00	N. & A. Martin		E. Pt. 12	13.5	A	450.00	2,511.40	2,961.40
Total Lands						725.00	2,743.20	3,468.20
270 Sideroad, Township of Melancthon						25.00	231.80	256.80
Total Road						25.00	231.80	256.80
Total Lands and Road						750.00	2,975.00	3,725.00
<b>TOTAL, B DRAIN (CLOSED) – STA. B0280 TO STA. B525</b>								<b><u>\$3,725.00</u></b>