



BURNSIDE

Stinson Drainage Works, D Drain

Township of Melancthon

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

**March 2015
300035333.0000**



March 25, 2015

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

Mayor White and Members of Council:

Re: Stinson Drainage Works, D Drain
File No.: D-ME-154
Project No.: 300035333.0000

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

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:kc

Enclosure(s) Stinson Drainage Works, D Drain Report

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1.0 Background

On March 25, 2014 the Township of Melancthon received a petition for drainage works signed by Nelson and Amanda Martin, owners of Pt. Lot 11, Concession 5 NE. On April 3, 2014 Council accepted the petition and our firm was appointed to prepare a report under the provisions of the Drainage Act. Our appointment was acknowledged and a site meeting date set.

2.0 Site Meeting

On May 2, 2014 a site meeting was held at the intersection of the 5th Line and the 270 Sideroad. The meeting was well attended and a good discussion took place. Mr. Martin indicated the petition was submitted in order to provide an outlet for pending underdrainage in Pt. Lot 11, Concession 5 NE. From our discussions at the site meeting, it appeared the preferred alternative was a closed drain commencing at the Martin/Ringler property line and continuing downstream across the 5th Line just south of the driveway into the Ringler property. The proposed drain would then outlet on the east side of the road into the existing Stinson Drainage Works, B Drain.

3.0 Area Requiring Drainage

Based on the petition, discussions at the site meeting and our examination of the area, the area requiring drainage was determined as being Pt. Lot 11, Concession 5 NE comprising approximately 6.0 ha (14.8 ac). The petition, in our opinion, complied with Section 4(a) and 4(b) of the Drainage Act.

4.0 Investigation

Our investigation confirmed that the closed drain and road crossing on the 5th Line, as discussed at the site meeting, were quite feasible. The road crossing appeared to be best done using an open cut method due to the poor soils in the area. Minor deepening of the Stinson Drainage Works, B Drain was also found to be required. The additional depth can easily be provided as part of the maintenance operations on the Stinson Drainage Works which are currently underway.

5.0 Proposed Design and Appurtenances

This report provides for the installation of 64 m of closed drain including one road crossing. 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 hour period. The tile size required is 250 mm (10 in) diameter throughout. The design also provides for the installation of one catchbasin and one junction box as part of the work.

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Appurtenances associated with the work on private lands include the stripping and replacing of topsoil along the tile route. Appurtenances associated with the work on 5th Line include the stripping and replacing of topsoil and the seeding of all disturbed areas.

The Plan and Profile (Figure 1) indicates the location of the work and the lands affected by it; shows 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	Damage to Lands, Crops, etc. (Section 30) \$
1-279-50	5 NE	Pt. 11	N. & A. Martin	50.00
1-280-00		Pt. 11	K. Ringler	250.00
Total Allowances				
Stinson Drainage Works, D Drain				\$300.00

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. A disrupted area of 10 m along the tile route has been used to calculate the applicable compensation. The allowance granted is also considered sufficient to allow right-of-way for any future maintenance work that may be required.

The allowance for disturbed lawn area in the Ringler property has been based on \$9,000.00 per ha or \$3,600.00 per ac. The topsoil will be replaced by the Contractor, however the final grading and seeding will be the owners responsibility. A minimum damage allowance of \$50.00 was granted to the Martin property to compensate for any minor damage created by the installation of the junction box at the upstream end of the proposed drain.

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
Work on 5th Line			
1.0	Supply and install 250 mm dia. HDPE outlet pipe with insert rodent grate including clear stone bedding and stripping and replacing topsoil (Sta. 000 to Sta. 006)	6 lin.m	\$1,000.00
2.0	Supply and place quarry stone rip-rap (500 mm thickness) on geotextile underlay as splash pad, embankment and tile outlet protection (Sta. 000)	20 sq.m	\$1,500.00
3.0	Supply and install 250 mm dia. bell and gasket HDPE pipe including clear stone bedding, saw cutting and removing existing asphalt, stripping and replacing topsoil, removal and disposal of any excess material, supply, placement and compaction of all granular materials, connection to new catchbasin and seeding of all disturbed areas (Sta. 006 to Sta. 025)	19 lin.m	\$5,000.00
4.0	Supply and install 600 mm x 600 mm on-line concrete catchbasin with bird cage style grate including quarry stone rip-rap inlet apron (Sta. 025)	1 ea.	\$1,500.00
5.0	Supply and install 250 mm dia. bell and gasket HDPE pipe including clear stone bedding and stripping and releveling of topsoil (Sta. 025 to Sta. 038)	13 lin.m	\$1,000.00
Contingencies			
6.0	Contingency for unforeseen conditions including additional clear stone bedding in areas of soil instability, etc.		\$1,250.00

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Item	Descriptions	Approx. Quantity	Cost Estimate
Work on Private Lands			
7.0	Supply and install 250 mm dia. bell and gasket HDPE pipe including clear stone bedding and stripping and releveling of topsoil (Sta. 038 to Sta. 064)	26 lin.m	\$2,000.00
8.0	Supply and install 600 mm x 600 mm pre-benched concrete junction box (Sta. 064)	1 ea.	\$1,000.00
Contingencies			
9.0	Contingency for unforeseen conditions including additional clear stone bedding in areas of soil instability, etc.		\$750.00
Total Estimated Cost for the Construction of the Stinson Drainage Works, D Drain			\$15,000.00

Allowances to Owners

Damage to Lands, Crops, etc. (Section 30). \$300.00

Preparation of Report

Site Meeting,
Investigations and Field Survey,
Watershed Plan, Design and Profile,
Report Preparation including Allowances,
Construction Assessment Schedule
and Maintenance Provisions. \$8,250.00

Meetings and Procedure

Preparation of Report Copies for Distribution,
Preparation and Attendance at the
Consideration of the Report
and Assistance on Procedure. \$1,500.00

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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. \$3,750.00

Administration and Financing

Administrative Costs,
Net HST (Construction and Engineering)
and Interest Charges Incurred by the
Municipality until the Cost is Levied. \$1,200.00

Total Estimated Cost	
Stinson Drainage Works, D Drain	\$30,000.00

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.

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8.0 Special Assessment

Pursuant to Section 26 of the Drainage Act the following Special Assessment is made:

Work on 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:

Construction Costs	- Equivalent Drain	+ Engineering/ Administration	= Special Assessment
Consisting of Items Item 1.0, Item 2.0, Item 3.0, Item 4.0, Item 5.0 and Item 6.0 in the estimate of the cost of the work plus net HST.	Consisting of 38 m of 250 mm dia. HDPE pipe plus net HST.	Consisting of Survey, design, determination of special assessment, construction layout, inspection and determination of final costs plus net HST.	
\$11,448.00	- \$2,808.00	+ \$6,360.00	= \$15,000.00

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 \$11,448.00) minus the actual cost of an equivalent drain (estimated as \$2,808.00) plus engineering/administration (estimated as \$6,360.00) 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 \$30,000.00 is assessed as benefit, outlet liability and Special Assessment against the lands and road 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.

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“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.

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 \$
1-279-50	N. & A. Martin	5 NE	Pt. 11	6.0	A	4,500.00	10,500.00	15,000.00
Total Lands						4,500.00	10,500.00	15,000.00
Special Assessment, Work on 5th Line								15,000.00
Total Assessment								
Stinson Drainage Works, D Drain								\$30,000.00

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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. The work on the 5th Line constructed as part of the drainage works and assessed as Special Assessment 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.

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11.0 Summary

This report has been respectfully prepared based on our investigation and subsequent discussions with the affected owners 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:kc



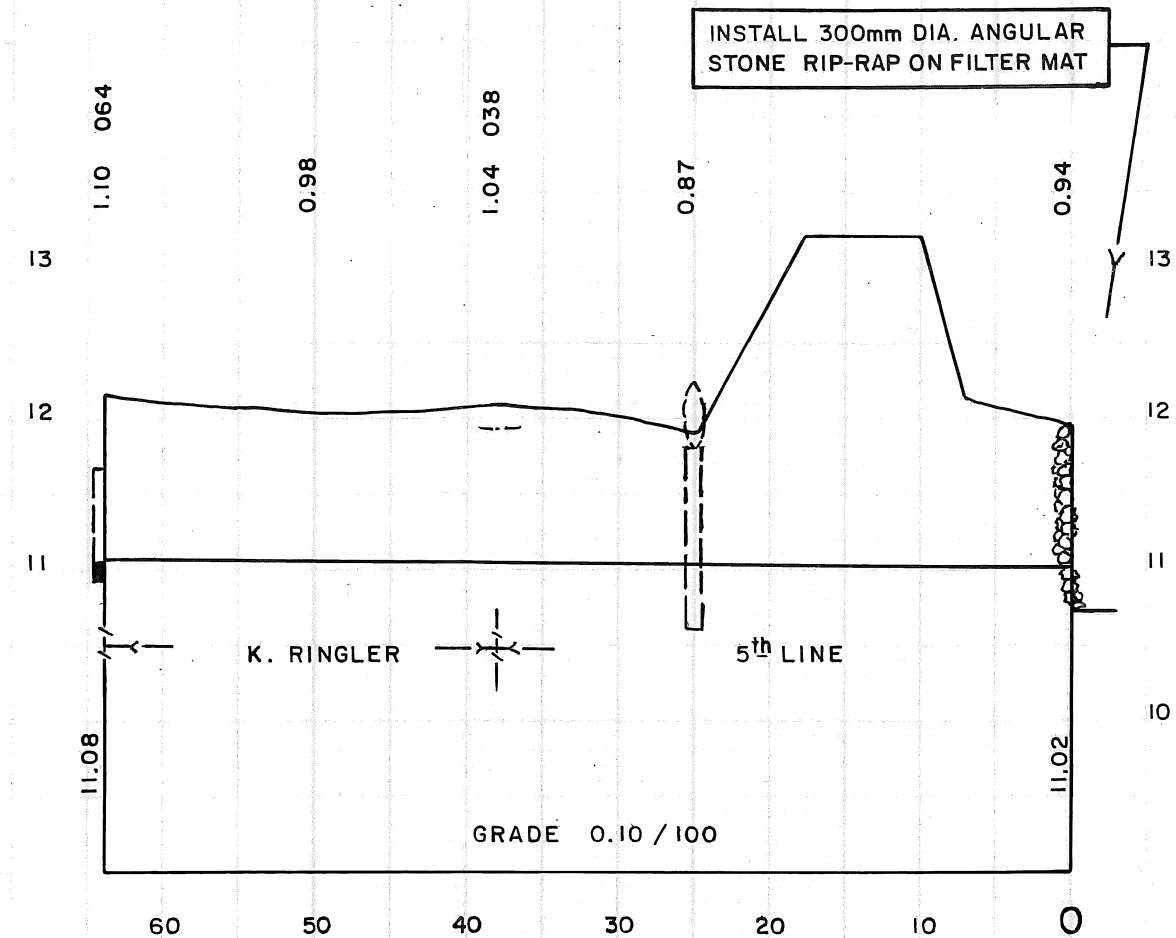
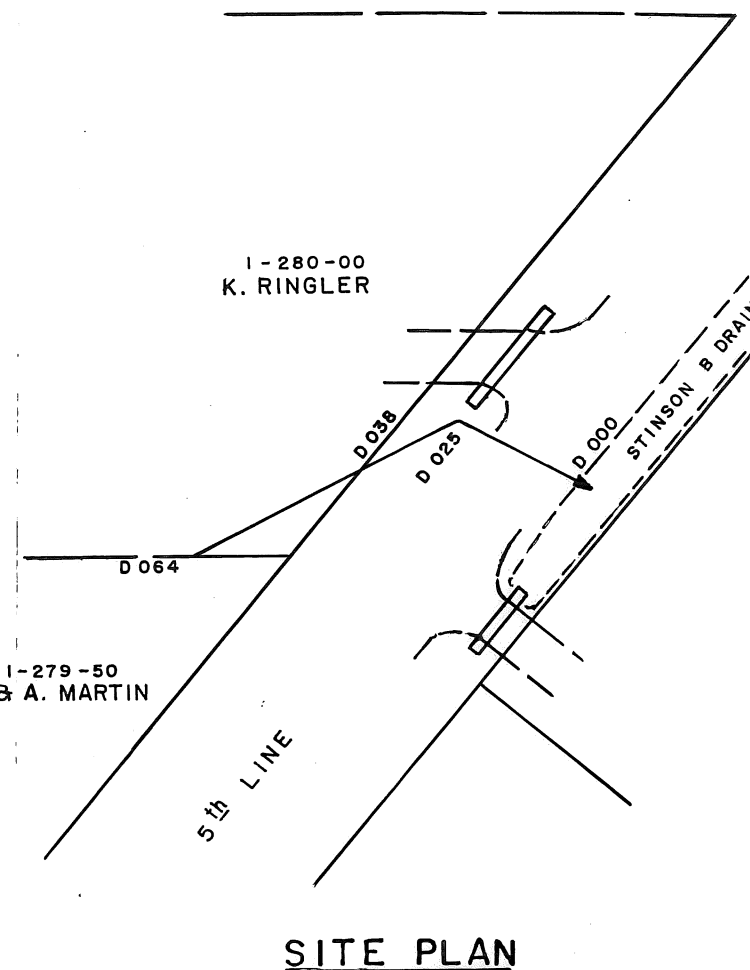
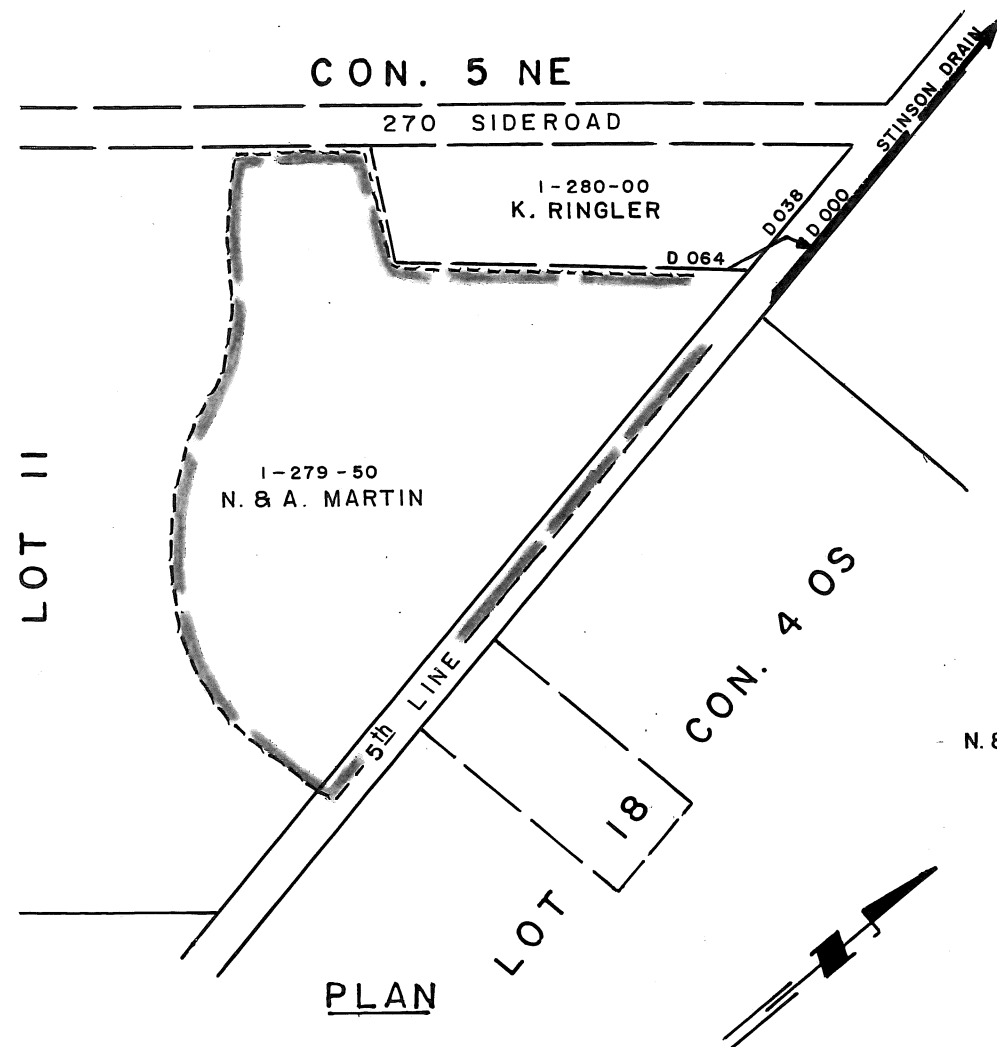


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Figure 1

Plan and Profile



PLAN and PROFILE

OF THE

STINSON DRAINAGE WORKS, D DRAIN

IN THE

TOWNSHIP OF MELANCTHON

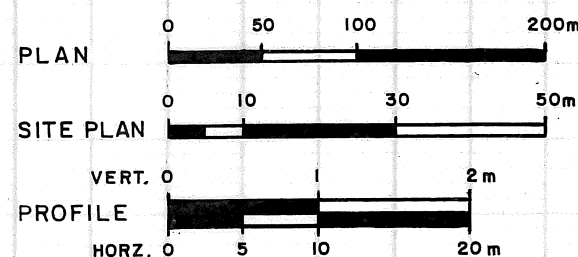
TILE SIZES

000 - 006	6m	250mm DIA. POLYETHYLENE PIPE WITH GRATE
006 - 025	19m	250mm DIA. POLYETHYLENE PIPE
025 - 064	39m	250mm DIA. POLYETHYLENE PIPE
CATCH BASIN:	025	
JUNCTION BOX:	064	

BENCH MARK

003 SPIKE IN HYDRO POLE 30m S. 12.77

SCALE S



DATED, 2015 03 25

Orangeville, Ontario



SIGNED, *Tom Pridham*, P. Eng.
R. J. BURNSIDE & ASSOCIATES LTD.
 Engineers, Hydrogeologists, Environmental Consultants

NOTE : Elevation Datum Same As STINSON DRAINAGE WORKS, 1993

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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, profile and specifications shall be kept by the operator at the construction site at all times.

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

STINSON DRAINAGE WORKS, D DRAIN

Township of Melancthon

EXTENT OF THE WORK:

64 m of Closed Drain plus Related Appurtenances
Including One Road Crossing

SPECIAL PROVISIONS:

CLOSED WORK - GENERAL

All pipe for the drain and road crossing shall be smoothwalled polyethylene pipe (HDPE) per Boss 2000 (320 kPa) with bell and gasket joints per CSA B182.08.02 or an approved equivalent.

Throughout the work the pipe shall be installed on a minimum of 100 mm Granular 'A' or 19 mm clear stone bedding.

On private lands the Contractor is not required to reinstate the disturbed lawn area other than replacing the topsoil. Final grading and re-seeding will be the responsibility of the owner. Care shall however be taken to minimize any damage.

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

STRUCTURES			
STATION	DESCRIPTION	INVERT OF DRAIN/LEAD	LOW WALL/INLET ELEVATION
Sta. 025	600 x 600 ON-LINE CB	11.05 m (250 mmØ HDPE) E 11.05 m (250 mmØ HDPE) S	11.80 m
Sta. 064	600 x 600 PRE-BENCHED JUNCTION BOX	11.08 m (250 mmØ HDPE) N 11.13 m (200 mmØ DRGE TUBING) S	

- CATCHBASIN TO HAVE 300 mm DEEP SUMP
- JUNCTION BOX SHALL BE PRE-BENCHED TO ONE-HALF THE DIAMETER OF THE INCOMING AND OUTGOING TILE

The location of the catchbasin 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.

The catchbasin 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 catchbasin 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 600 mm x 600 mm catchbasin shall be 4 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.

STA. 000 TO STA. C038 (5TH LINE)

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 crossing location will be provided by the Engineer at the time of construction. The existing asphalt shall be saw cut and removed and disposed of at the site arranged by the Contractor. 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.

At Sta. 000, roughly 20 sq.m of 150 mm to 300 mm dia. quarried stone shall be placed as bank protection and 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.

From Sta. 008 to Sta. 020, the HDPE road crossing 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 removed and disposed of at a site arranged by the Contractor.

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.

At Sta. 025, the new 600 mm x 600 mm online catchbasin shall be installed 2 m south of the existing driveway culvert as directed by the Engineer at the time of construction. After the catchbasin installation the road ditch shall be graded to the new inlet elevation.

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

All work on 5th Line 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. 038 TO STA. C064

Prior to commencing work, the topsoil shall be stripped for later reinstatement. Excavation shall be parallel to the pipe installation to avoid additional damage to the lawn area.

At Sta. 064, the junction box shall be installed on the Martin property such that the north-west corner lines up with the property line. The approximate property line and junction box location will be provided by the Engineer at the time of construction.

After the completion of the work the topsoil shall be reinstated for final grading and seeding by the owner.

WORKING SPACE

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

The working space shall be an average of 10 m along the drain route to allow for stripping, stockpiling and releveling of the topsoil.

ACCESS ROUTES

Access to the working space shall be off the 5th Line.

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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 Mirafi 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 (Tile Work)

APPENDIX C

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 D

Instruction to Bidders

APPENDIX D

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.