

FUNK SOUTH DRAIN 2023
Municipality of Strathroy Caradoc



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FUNK SOUTH DRAIN 2023
Municipality of Strathroy Caradoc

To the Mayor and Council of
The Municipality of Strathroy Caradoc

Mayor and Council:

We are pleased to present our report on the reconstruction of the Funk South Municipal Drain serving parts of Lots 10 and 11, Concession 7 in the Municipality of Strathroy Caradoc. The total watershed area contains approximately 43 hectares.

AUTHORIZATION

This report was prepared pursuant to Section 78 of the Drainage Act. Instructions were received from your Municipality with respect to a motion of Council. The work was initiated by a request signed by one of the affected landowners.

HISTORY

The Funk South Drains were originally constructed pursuant to a report submitted by J. P. McIntyre, P. Eng. dated October 8, 1974 as part of a larger report titled "The Campbell Drain Extension". This report provided for the extension of the existing Campbell Drain open ditch to function as an outlet for various tile drains, including the Funk South Drains. The Funk South Drains consist of a Main Drain and two Branch Drains with a total of approximately 755 meters of 150mm to 350mm farm tile. The Main Drain extends south from its outlet in the Campbell Drain open ditch just west of the line between Lots 10 and 11, Concession 7. It continues south crossing into the south half of Lot 10 before reaching its end at the line between Lots 10 and 11 in the north part of the south half of Concession 7.

EXISTING DRAINAGE CONDITIONS

At a site meeting held with respect to the project and through later discussions, the owners reported the following:

- that the existing Main Drain tile is in poor working condition and requires frequent maintenance
- it was requested that we investigate replacing the portion of the drain in Lot 10



EXISTING DRAINAGE CONDITIONS (cont'd)

A field investigation and survey were completed. Upon reviewing our findings, we note the following:

- that the Funk South Drain is undersized by today's standards and requires frequent repairs
- that the existing Campbell Drain open ditch has had maintenance work completed fairly recently, but would benefit from a minor follow up cleanout

Preliminary design, cost estimates and assessments were prepared, and an informal public meeting was held to review the findings and preliminary proposals. Further input and requests were provided by the affected owners at that time and at later dates.

- that we also replace Branch G of the Funk South Drain with a new tile drain

DESIGN CRITERIA AND CONSIDERATIONS

The Drainage Coefficient method contained in the "DRAINAGE GUIDE FOR ONTARIO", Publication 29 by the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) is typically used to design municipal drains. The Drainage Coefficient defines a depth of water that can be removed in a 24-hour period and is expressed in millimetres per 24 hours. The coefficient used to design this drain with respect to capacity was 31mm per 24 hrs.

We would like to point out that there have been indications of sandy and unstable soil conditions. It should be noted that no formal soil investigation has been made, with this information being provided by the owners.

The proposed design and report have been generally completed using the "GUIDE FOR ENGINEERS WORKING UNDER THE DRAINAGE ACT IN ONTARIO" OMAFRA Publication 852.

RECOMMENDATIONS

We are therefore recommending the following:

- that the existing ditch bottom of the Campbell Drain open ditch be cleaned out under maintenance to provide a proper sub-surface drainage outlet
- that the existing Funk South Drain be replaced with a new 250mm to 525mm concrete and plastic tile including related appurtenances
- that the existing Branch G Drain be replaced with 250mm plastic tile including related appurtenances
- that the remaining existing portions of the Funk South Drain tile be officially abandoned as municipal drains under Section 19 of the Drainage Act. The owners may maintain the intact portions as private header tiles if they so wish



RECOMMENDATIONS (cont'd)

- that catchbasins be installed at various locations on the proposed drains to allow direct surface water entry into the tiles and thereby reduce surface flow and erosion
- that Branch F of the Funk South Drain be officially abandoned from municipal status pursuant to Section 19 of the Drainage Act

Due to the indications of poor soil conditions our design includes the wrapping of tile joints with geotextile and a contingency allowance for crushed stone bedding wrapped with geotextile where and if necessary. These areas are typically identified at the time of construction but may only become apparent after construction is completed. In this case, the extra costs for removal and reinstallation on stone bedding would be an extra to the project and if already billed become a supplementary billing.

ENVIRONMENTAL CONSIDERATIONS AND MITIGATION MEASURES

Based on the information available, there are no significant wetlands, sensitive areas, or endangered species along the route of the drains. The proposed construction of the Funk South Drain 2023 includes quarry stone outlet protection and surface inlets which help reduce the overland surface flows and any subsequent erosion. A temporary flow check of silt fencing is to be installed in the ditch downstream of the tile outlet for the duration of the construction.

SUMMARY OF PROPOSED WORK

The proposed work consists of approximately 797 lineal meters of 250mm to 525mm concrete plastic field tile including related appurtenances. Maintenance work is to be completed on the Campbell Drain open portion.

SCHEDULES

Three schedules are attached hereto and form part of this report, being Schedule 'A' - Allowances, Schedule 'B' - Cost Estimate, and Schedule 'C' - Assessment for Construction.

Schedule 'A' - Allowances. In accordance with Sections 29 and 30 of the Drainage Act, allowances are provided for right-of-way and damages to lands and crops along the route of the drain as defined below.

Schedule 'B' - Cost Estimate. This schedule provides for a detailed cost estimate of the proposed work which is in the amount of \$115,800.00. This estimate includes engineering and administrative costs associated with this project.

Schedule 'C' - Assessment for Construction. This schedule outlines the distribution of the total estimated cost of construction over the roads and lands which are involved.

Drawing No. 1, Job No. 222170 and specifications form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.



ALLOWANCES

RIGHT-OF-WAY: Section 29 of the Drainage Act provides for an allowance to the owners whose land must be used for the construction, repair, or future maintenance of a drainage works.

For tile drains where the owners will be able to continue to use the land, the allowance provides for the right to enter upon such lands, and at various times for the purpose of inspecting such drain, removing obstructions, and making repairs. Also, the allowance provides for the restrictions imposed on those lands to protect the right-of-way from obstruction or derogation. The amounts granted for right-of-way on tile drains is based on a percentage of the value of the land designated for future maintenance. Therefore, the amounts granted are based on \$9,000.00/ha. through cropped lands. This value is multiplied by the hectares derived from the width granted for future maintenance and the applicable lengths. No right-of-way was previously provided for any of the existing drains being replaced or twinned.

DAMAGES: Section 30 of the Drainage Act provides for the compensation to landowners along the drain for damages to lands and crops caused by the construction of the drain. The amount granted is based on \$5,500.00/ha for closed drains installed with a wheel machine. This base rate is multiplied by the hectares derived from the working widths shown on the plans and the applicable lengths.

ASSESSMENT DEFINITIONS

In accordance with the Drainage Act, lands that make use of a drainage works are liable for assessment for part of the cost of constructing and maintaining the system. These assessments are known as benefit, outlet liability and special benefit as set out under Sections 22 and 23 of the Act.

SECTION 22

Benefit as defined in the Drainage Act means the advantages to any lands, roads, buildings or other structures from the construction, improvement, repair, or maintenance of a drainage works such as will result in a higher market value or increased crop production or improved appearance or better control of surface water, or any other advantages relating to the betterment of lands, roads, buildings, or other structures.

SECTION 23

Outlet liability is assessed to lands or roads that may make use of a drainage works as an outlet either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek, or watercourse.

In addition, a Public Utility or Road Authority shall be assessed for and pay all the increased cost to a drainage works due to the construction and operation of the Public Utility or Road Authority. This may be shown as either benefit or special assessment.



ASSESSMENT

A modified "Todgham Method" is typically used to calculate the assessments shown on Schedule 'C' - Assessment for Construction. This entails breaking down the costs of the drain into sections along its route. Special Assessments and Special Benefit Assessments are then extracted from each section.

The remainder is then separated into Benefit and Outlet Assessments. The Benefit is distributed to those properties receiving benefit as defined under "Assessment Definitions", with such properties usually being located along or close to the route of the drain. The Outlet is distributed to all properties within the watershed area of that section on an adjusted basis. The areas are adjusted for location along that section and relative run-off rates. Due to their different relative run-off rates forested lands are assessed for outlet at lower rates than cleared lands. Also, roads and residential properties are assessed for outlet at higher rates than cleared farmlands.

The actual cost of the work involving this report is to be assessed on a pro-rata basis against the lands and roads liable for assessment for benefit and outlet as shown in detail on Schedule 'C' - Assessment for Construction.

The cost to restore water supply for any well determined to be impacted by any construction covered under this report shall become part of this report and be pro-rated with the costs provided for in this report.

GRANTS

In accordance with the provisions of Section 85 of the Drainage Act, a grant **may** be available for assessments against privately owned parcels of land which are used for agricultural purposes and eligible for the Farm Property Class Tax rate. Section 88 of the Drainage Act directs the Municipality to make application for this grant upon certification of completion of this drain. The Municipality will then deduct the grant from the assessments prior to collecting the final assessments.

MAINTENANCE

Upon completion of construction, all owners are hereby made aware of Sections 80 and 82 of the Drainage Act which forbid the obstruction of or damage or injury to a municipal drain. This includes tree roots penetrating tiles from trees planted by owners or naturally occurring. For tiles through bush areas, we recommend the owner maintain the cleared space by either mowing (hay) or growing a crop over it. If no maintenance is completed over several years, we recommend the Municipality complete the mowing/clearing as part of maintenance at the discretion of the Drainage Superintendent.

After completion, the entire Funk South Drain shall be maintained by the Municipality of Strathroy Caradoc at the expense of all upstream lands and roads assessed in Schedule 'C' - Assessment for Construction and in the same relative until such time as the assessment is changed under the Drainage Act.

Respectfully submitted,

SPRIET ASSOCIATES LIMITED



M.P. DeVos, P. Eng.



SPRIET ASSOCIATES
engineers & architects

SCHEDULE 'A' - ALLOWANCES

FUNK SOUTH DRAIN 2023

Municipality of Strathroy - Caradoc

CON.	LOT	ROLL NUMBER (Owner)	Section 29 Right-of-Way	Section 30 Damages	TOTALS
MAIN DRAIN					
7	Pt. 10	014-060-212 (Cuddy Farms Limited 2008)	\$ 5,930.00	\$ 7,250.00	\$ 13,180.00
Total Allowances			\$ 5,930.00	\$ 7,250.00	\$ 13,180.00
TOTAL ALLOWANCES ON THE MAIN DRAIN					\$ 13,180.00
BRANCH G					
7	Pt. 10	014-060-212 (Cuddy Farms Limited 2008)		\$ 1,410.00	\$ 1,410.00
7	Pt. 11	014-060-217-01 (2033643 Ontario Inc.)		70.00	70.00
Total Allowances			\$	\$ 1,480.00	\$ 1,480.00
TOTAL ALLOWANCES ON THE BRANCH G					\$ 1,480.00
TOTAL ALLOWANCES ON THE FUNK SOUTH DRAIN 2023					\$ 14,660.00

SCHEDULE 'B' - COST ESTIMATE

FUNK SOUTH DRAIN 2023

Municipality of Strathroy - Caradoc

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

MAIN DRAIN

Mobilization of equipment	\$ 1,000.00
Supply & install 6 meters of 525mm dia., H.D.P.E. plastic sewer pipe including rodent gate and quarry stone rip-rap protection around pipe and end of ditch (Approximately 4m ³ quarry stone req'd)	\$ 2,780.00
Installation of the following concrete tile on crushed stone bedding, including supply and installation of geotextile around tile joints.	
72 meters of 450mm dia. concrete tile	\$ 4,540.00
171 meters of 525mm dia. concrete tile	\$ 11,670.00
Supply of the above listed tile/pipe	\$ 11,850.00
Supply & delivery of 19mm crushed stone (Approx. 125 tonnes req'd)	\$ 4,400.00
Installation of the following coilable dual wall solid plastic pipe by approved drainage plow, including stripping and redistribution of topsoil for scalping if required	
182 meters of 200mm dia. solid plastic pipe	\$ 2,970.00
75 meters of 250mm dia. solid plastic pipe	\$ 1,380.00
153 meters of 375mm dia. solid plastic pipe	\$ 4,060.00
Supply of the above listed tile/pipe	\$ 12,990.00
Strip, stockpile and releve topsoil from tile trench and adjacent working area (4m wide) for concrete tiles (approx. 249m)	\$ 1,490.00
Supply and install one 600mm x 600mm ditch inlet catchbasin including berm with turfmat overflow chute and grate	\$ 3,800.00
Clearing and grubbing	\$ 300.00
Tile connections as noted on plan	\$ 1,700.00
Contract security financing	\$ 970.00
Tile connections and contingencies	\$ 1,800.00
Allowances under Sections 29 & 30 of the Drainage Act	\$ 13,180.00

BRANCH G

Mobilization of equipment	\$ 200.00
Installation of the following coillable dual wall solid plastic pipe by approved drainage plow, including stripping and redistribution of topsoil for scalping if required	
115 meters of 250mm dia. solid plastic pipe	\$ 2,070.00
Supply of the above listed tile/pipe	\$ 2,650.00
Supply and install one 600mm x 600mm standard catchbasin including grate and removal and disposal of existing catchbasins	\$ 4,050.00
Clearing and grubbing	\$ 300.00
Contract security financing	\$ 140.00
Tile connections and contingencies	\$ 500.00
Allowances under Sections 29 & 30 of the Drainage Act	\$ 1,480.00

ADMINISTRATION

Conservation Authority Review Fee	\$ 300.00
Interest and Net Harmonized Sales Tax	\$ 3,527.00
Survey, Plan and Final Report	\$ 14,217.00
Expenses	\$ 1,486.00
Contract Administration, Supervision and Final Inspection	\$ <u>4,000.00</u>

TOTAL ESTIMATED COST **\$ 115,800.00**

SCHEDULE 'C' - ASSESSMENT FOR CONSTRUCTION

FUNK SOUTH DRAIN 2023

Municipality of Strathroy - Caradoc

Job No. 222170

July 6, 2023

* = Non-agricultural

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	BENEFIT	OUTLET	TOTAL
MAIN DRAIN						
7	Pt. 10	19.8	014-060-212 (Cuddy Farms Limited 2008)	\$ 52,040.00	\$ 23,567.00	\$ 75,607.00
7	Pt. 10&11	15.1	014-060-223 (Glengyle Farm Organics Ltd.)	1,200.00	17,514.00	18,714.00
7	Pt. 11	8.2	014-060-217-01 (2033643 Ontario Inc.)		6,319.00	6,319.00
TOTAL ASSESSMENT ON LANDS				\$ 53,240.00	\$ 47,400.00	\$ 100,640.00
TOTAL ASSESSMENT ON THE MAIN DRAIN						<u><u>\$ 100,640.00</u></u>
BRANCH G						
7	Pt. 10	1.0	014-060-212 (Cuddy Farms Limited 2008)	\$ 7,440.00	\$ 458.00	\$ 7,898.00
7	Pt. 10&11	4.5	014-060-223 (Glengyle Farm Organics Ltd.)		2,643.00	2,643.00
7	Pt. 11	6.2	014-060-217-01 (2033643 Ontario Inc.)	1,200.00	3,419.00	4,619.00
TOTAL ASSESSMENT ON LANDS				\$ 8,640.00	\$ 6,520.00	\$ 15,160.00
TOTAL ASSESSMENT ON BRANCH G						<u><u>\$ 15,160.00</u></u>
TOTAL ASSESSMENT ON THE FUNK SOUTH DRAIN 2023						<u><u>\$ 115,800.00</u></u>

SCHEDULE OF NET ASSESSMENT

FUNK SOUTH DRAIN 2023

Municipality of Strathroy - Caradoc

Job No. 222170

July 6, 2023

* = *Non-agricultural*

ROLL NUMBER (OWNER)	TOTAL ASSESSMENT	GRANT	ALLOWANCES	APPROX. NET
014-060-212 (Cuddy Farms Limited 20 \$	83,505.00 \$	27,835.00 \$	14,590.00 \$	41,080.00
014-060-223 (Glengyle Farm Organics Ltc	21,357.00	7,119.00		14,238.00
014-060-217-01 (2033643 Ontario Inc.)	10,938.00	3,646.00	70.00	7,222.00
	\$ 115,800.00	\$ 38,600.00	\$ 14,660.00	\$ 62,540.00