

THORNTON DRAIN 2024
Municipality of Strathroy-Caradoc



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THORNTON DRAIN 2024
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 portions of the Thornton Municipal Drain serving parts of Lot 22, Concession 2 (geographic Caradoc) in the Municipality of Strathroy-Caradoc. The total watershed area contains approximately 8.9 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 Thornton Drain was originally constructed pursuant to a report submitted by A. J. DeVos, P. Eng. dated August 31, 1968 and consisted of a Main Drain and two branch drains with a combined total length of approximately 454 meters. The Main Drain extends north from its outlet in a natural gully area in the south part of Lot 22, Concession 2. It continues north, crossing the Parkhouse Drive road allowance into the north half of Lot 22, then heading east to its end near the east limit of Lot 22, Concession 2. The two Branch Drains, 'A' and 'B', service several existing residential lots on the north half of Lot 22.

A subsequent report dated May 30, 1997 saw to the construction of an additional branch, Drain 'C', that consists of approximately 39 meters of 200mm tile.

EXISTING DRAINAGE CONDITIONS

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

- that the owner of a larger property within the watershed had severed residential lots along the route of the existing drain and would like us to investigate relocating the drain east to accommodate the severances



EXISTING DRAINAGE CONDITIONS (cont'd)

- that no upstream landowner has issues with capacity of the existing drain
- that the owner asked that we investigate a combination outlet with the existing Berko Drain to the east as its outlet needed repair anyway

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

- that the existing drain is in working condition
- that the existing Berko Drain outlets down a gulley bank and is experiencing erosion down the bank below the pipe

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 investigate an alternative location for the new tile to determine what, if any, cost savings could be made

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 analyse the capacity of the existing and new drain with respect to capacity was determined to be 60mm per 24 hrs.

We would like to point out that there have been no indications of any adverse 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 Thornton Drain downstream of Parkhouse Drive be reconstructed and relocated with a new 300mm to 375mm pipe including related appurtenances and that the existing tile be destroyed where possible
- that the existing portion of the Thornton Drain being replaced be officially abandoned from municipal drain status under Section 19 of the Drainage Act.
- that a catchbasin be installed at the connection point at the upstream end of the new work



RECOMMENDATIONS (cont'd)

It is recommended that basement, cellar, or crawlspace drains be directed to a sump and then discharged onto the ground surface well away from foundations and septic systems or should owners desire to connect these drains to the new outlet drain, then it is suggested that they not be directly connected to the drains. Rather it is suggested that such a connection be made by an indirect method such as by sump pump with an open-air connection such as a mini-catchbasin, crushed stone filled excavation connected to a storm P.D.C. and should include a check valve and be piped above foundation level. It is noted that there is still a risk of flooding even with indirect methods of connection and any/all responsibility shall be borne by the owner. Downspouts from eavestroughs should be directed onto the ground surface well away from foundations and septic systems and are **not** permitted to be connected to the Municipal Drain.

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 Thornton Drain 2024 includes quarry stone outlet protection and surface inlets which greatly 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 271 lineal meters of 300mm to 375 meters plastic tile and HDPE sewer pipe, including outlet rock chute, stubs, and related appurtenances.

SCHEDULES

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

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 \$86,700.00. This estimate includes engineering and administrative costs associated with this project.

Schedule 'C' - Assessment for Maintenance. In accordance with Section 38 of the Drainage Act, this schedule outlines the distribution of future repair and/or maintenance costs for portions of, or the entire drainage works.

Drawing No. 1, Job No. 222268 and specifications form part of this report. It shows and describes in detail the location and extent of the work to be done and the lands which are affected.

ALLOWANCES

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 amount granted is based on \$9,000.00/ha. through cropped lands. This value is multiplied by the hectares derived from the width granted for future maintenance.

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.

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

The portion of the work on the outlet of the Berko Drain is to be billed out in accordance with the current bylaw.

We assess the entire cost of this report to the property being serviced for building lots identified by Roll No. 014-030-060. It is to be noted that the cost of this report is not eligible for the Provincial Agricultural Grant.

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.

After completion, the Thornton Drain 2024 shall be maintained by the Municipality of Strathroy-Caradoc at the expense of all the upstream lands and roads assessed in Schedule "C" – Assessment for Maintenance and in the same relative proportions until such time as the assessment is changed under the Drainage Act.

Respectfully submitted,

SPRIET ASSOCIATES LONDON LIMITED

M.P. DeVos, P. Eng.



MPD:ms



SCHEDULE 'A' - ALLOWANCES

THORNTON DRAIN 2024

Municipality of Strathroy-Caradoc

In accordance with Sections 29 and 30 of the Drainage Act, we determine the allowances payable to owners entitled thereto as follows:

CON.	LOT	ROLL NUMBER (Owner)	Section 29 Right-of-Way	Section 30 Damages	TOTALS
<i>Geographic Caradoc</i>					
2	Pt. 22	014-030-060 (L. Smits)	\$	\$ 2,810.00	\$ 2,810.00
Total Allowances			\$	\$ 2,810.00	\$ 2,810.00
TOTAL ALLOWANCES ON THE THORNTON DRAIN 2024					\$ 2,810.00

SCHEDULE 'B' - COST ESTIMATE

THORNTON DRAIN 2024

Municipality of Strathroy-Caradoc

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

CONSTRUCTION

Mobilization of equipment	\$ 1,000.00
Construct working platform down slope for rock chute construction including cutting and filling as required	\$ 9,000.00
Supply & install 6 meters of 375mm dia. HDPE pipe outlet pipe on end of existing Berko Drain including rodent gate	\$ 760.00
Supply and install quarry stone rip-rap rock chute down slope including geotextile (Approx. 18m ³ quarry stone required)	\$ 6,930.00
Supply and install quarry stone stilling basin at bottom of slope (3mx3m) including grading and geotextile (approx. 4m ³ quarry stone req'd)	\$ 1,200.00
Supply and palce imported topsoil, seed and NAG S75 erosion control balanket on newly disruded slopes (approx. 450m ² req'd)	\$ 3,600.00
Installation of the following solid HDPE sewer pipe/coilable dual wall pipe including scalping where required and installation and compaction of bedding materials if required	
131.5 meters of 300mm dia. solid pipe	\$ 4,490.00
137 meters of 375mm dia. solid pipe	\$ 3,930.00
2 meters of 300mm dia. sewer pipe	\$ 120.00
Supply of the above listed tile/pipe	\$ 13,630.00
Contingency amount for increased cost due to poor soil conditions: (not applicable for installation with plow)	
Installation of tile on crushed stone bedding with excavator (140 meters)	\$ 2,800.00
Supply & delivery of 19mm crushed (Approx. 210 tonnes req'd)	\$ 1,670.00
Strip, stockpile and relevel topsoil from tile trench and adjacent working area (4m wide) specified on drawings (approx. 270m)	\$ 1,730.00
Supply & install 2 - 6m lengths of 150mm HDPE sewer pipe and tee connection	\$ 900.00
Supply and install one 900mm x 1200mm standard catchbasin includig benching, grate, removal and disposal of existing catchbasin	\$ 4,050.00
Clearing and Grubbing	\$ 5,000.00
Exposing and locating existing tile drains (report)	\$ 220.00
Contract security financing	\$ 920.00

SCHEDULE 'B' - COST ESTIMATE (cont'd)

THORNTON DRAIN 2024
Municipality of Strathroy-Caradoc**CONSTRUCTION (cont'd)**

Tile connections and contingencies	\$ 1,000.00
Allowances under Sections 29 & 30 of the Drainage Act	\$ 2,810.00

ADMINISTRATION

Conservation Authority Review Fee	\$ 300.00
Interest and Net Harmonized Sales Tax	\$ 2,771.00
Survey, Plan and Final Report	\$ 11,546.00
Expenses	\$ 1,023.00
Supervision and Final Inspection	\$ <u>5,300.00</u>

TOTAL ESTIMATED COST	\$ <u><u>86,700.00</u></u>
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SCHEDULE ' C ' - ASSESSMENT FOR MAINTENANCE

THORNTON DRAIN 2024

Municipality of Strathroy - Caradoc

Job No. 222268

February 25, 2024

* = Non-agricultural

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	BENEFIT	OUTLET	TOTAL
MAIN DRAIN						
*	2	Pt.22	2.0 030-068		2.60 %	2.60 %
*	2	Pt.22	2.2 030-066-08		2.70	2.70
*	2	Pt.22	2.8 030-066-06		3.40	3.40
*	2	Pt.22	3.1 030-066-04		3.70	3.70
*	2	Pt.22	1.5 030-066-02		1.80	1.80
*	2	Pt.22	0.54 030-066-03		0.70	0.70
*	2	Pt.22	0.44 030-066-10		0.60	0.60
*	2	Pt.22	0.8 030-066		2.30	2.30
*	2	Pt.22	1.0 030-065		2.40	2.40
*	2	Pt.22	0.8 030-064		2.40	2.40
*	2	Pt.22	0.8 030-063		2.40	2.40
*	2	Pt.22	0.25 030-062		1.10	1.10
*	2	Pt.22	0.60 Part 1	14.80	0.70	15.50
*	2	Pt.22	0.84 Part 2	19.90	1.00	20.90
	2	Pt.22	1.56 030-060	18.80	1.70	20.50
TOTAL ASSESSMENT ON LANDS				53.50 %	29.50 %	83.00 %
Troops Road & Parkhouse Drive		3.0	Municipality of Strathroy - Caradoc	%	17.00 %	17.00 %
TOTAL ASSESSMENT ON ROADS				%	17.00 %	17.00 %
TOTAL ASSESSMENT ON THE THORNTON DRAIN 2024						<u>100.00 %</u>