

KRAUSE DRAIN
Municipality of West Elgin



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Our Job No. 221166

October 22, 2021

London, Ontario
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KRAUSE DRAIN

Municipality of West Elgin

To the Mayor and Council of
the Municipality of West Elgin

Mayor and Council:

We are pleased to present our report on the reconstruction of parts of the Krause Municipal Drain serving parts of Lots 1 and 2, Concessions 4 to 6 in the Municipality of West Elgin. The total watershed area as described above contains approximately 84 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 some of the affected landowners.

HISTORY

The Krause Drain was last reconstructed pursuant to a report submitted by H.H. Todgham, P. Eng. dated May 12, 1959, and consisted of the cleanout of the open portion of the drain, commencing in Lot C, Concession 7, northerly to the outlet of the tile in Lot 1, Concession 5. The cleanout totalled 1,010 lineal meters in length including some minor repairs to the outlet wall.

EXISTING DRAINAGE CONDITIONS

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

- that the landowners, A. Sacher (Roll No. 40-008) and M. Sacher (Roll No. 30-136), inquired as to the possibility of enclosing the open drain through their lands to improve the workability of them.

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

- that the existing open drain contains an upstream watershed area of manageable size to permit an enclosure



EXISTING DRAINAGE CONDITIONS (cont'd)

- that any enclosure would require the replacement of the road crossing under Thomson Line
- that enclosure of the drain would greatly improve the workability of the lands requesting it

Preliminary design, cost estimates and assessments were prepared, and informal consultations were 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.

DESIGN CONSIDERATIONS

The proposed drain was designed, with respect to capacity, using the Drainage Coefficient method contained in the "DRAINAGE GUIDE FOR ONTARIO", Publication 29 by the Ontario Ministry of Agriculture, Food, and Rural Affairs. 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 for the Main Drain was 38mm per 24 hrs.

We would like to point out that there have been no indications of any adverse soil conditions, but no formal soil investigation has been made.

All of the proposed work has been generally designed and shall be constructed in accordance with the DESIGN AND CONSTRUCTION GUIDELINES FOR WORK UNDER THE DRAINAGE ACT.

RECOMMENDATIONS

We are therefore recommending the following:

- that the Krause Drain – Open Portion be enclosed, commencing at the tile outlet at the half-lot line in Lot 1, Concession 5, and continue southerly through the lands of M. Sacher (Roll No. 30-136) across Thomson Line. The enclosure will then continue southerly through the lands of A. Sacher (Roll No. 40-008) to its new outlet on the west side of Blacks Road, for a total length of 992 lineal meters
- that the road crossing under Thomson Line be replaced with a new crossing in conjunction with the works and be constructed using open cut methods
- that catchbasins be installed along the course of the drain to alleviate surface flows and ponding
- that, when future maintenance is required for the crossing under Blacks Road, it be replaced with appropriately sized pipe at an elevation at least 0.3 meters lower than the existing



ENVIRONMENTAL CONSIDERATIONS AND MITIGATION MEASURES

There are no significant wetlands or sensitive areas within the affected watershed area or along the route of the drains. The proposed construction of the Krause Drain 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 992 lineal meters of 525mm (21") to 600mm (24") diameter concrete field tile, including related appurtenances.

SCHEDULES

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

Schedule 'A' - Allowances. In accordance with Section 30 of the Drainage Act, allowances are provided for 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 \$ 173,500.00. 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.

Schedule 'D' - 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. 221166, 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

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 \$3,613.00/ha. for closed drain installed with wheel machine. This base rate is multiplied by the hectares derived from the working widths shown on the plans and the applicable lengths.

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. Under this report no allowance for right-of-way has been given as the area gained by the enclosing of the open drain is deemed sufficient and transferable to the closed drain.



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 liabilities are known as benefit, outlet liability and special benefit liability as set out under Sections 22, 23, 24 and 26 of the Act.

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 or sub-surface water, or any other advantages relating to the betterment of lands, roads, buildings, or other structures.

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" was used to calculate the assessments shown on Schedule 'C'- Assessment for Construction and Schedule 'D' - Assessment for Maintenance. This entailed breaking down the costs of the drain into sections along its route. Special Assessments were then extracted from each section.

The remainder is then separated into Benefit and Outlet costs. The Benefit cost 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 Costs are 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 have been assessed for outlet at lower rates than cleared lands. Also, roads and residential properties have been assessed for outlet at higher rates than cleared farmlands.

The actual cost of the work involving this report, with the exception of Special Assessments, is to be assessed on a pro-rata basis against the lands and roads liable for assessment for benefit and for special assessments as shown in detail below and on Schedule 'C' - Assessment for Construction. The Special Assessments shall be levied as noted in the Section "Special Assessment".



SPECIAL ASSESSMENT

In accordance with Section 26 of the Drainage Act, a Special Assessment has been made against the Municipality of West Elgin being the increased cost to the drainage work for installing a new surface and sub-surface crossing across their road allowance on the Main Drain due to the construction and operation of Thomson Line. The Special Assessment shall be made up of the actual cost of this work and both the final and estimated values of the Special Assessment are to be calculated as follows:

Drain	Cost of Work	Less Equivalent Drain Cost (Fixed)	Plus Administration Cost	Plus Interest & Net H.S.T.	Special Assessment
600mm sub-surface 900mm surface	\$13,000.00	\$1,320.00	\$3,400.00	\$380.00	\$15,460.00

The above special assessments shall not apply for future maintenance purposes.

If any additional work is required to the drainage works due to the existence of buried utilities such as gas pipelines, communications cables, etc. or if any of the utilities require relocation or repair, then, the extra costs incurred shall be borne by the utility involved in accordance with the provisions of Section 26 of the Drainage Act.

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.


After completion, the Krause Drain, enclosed in this report, shall be maintained by the Municipality of West Elgin at the expense of all upstream lands and roads assessed in Schedule 'D' - 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



JMS:bv



J.M. Spriet, P.Eng.



SCHEDULE 'A' - ALLOWANCES

KRAUSE DRAIN

Municipality of West Elgin

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

CONCESSION	LOT	ROLL NUMBER (Owner)	Section 30 Damages	TOTALS
MAIN DRAIN				
5	S½ 1	30-136 (M. Sacher)	\$ 3,700.00	\$ 3,700.00
6	Pt. 1	40-008 (A. Sacher)	1,560.00	1,560.00
Total Allowances			\$ 5,260.00	\$ 5,260.00
TOTAL ALLOWANCES ON THE MAIN DRAIN				\$ 5,260.00
TOTAL ALLOWANCES ON THE KRAUSE DRAIN				\$ 5,260.00

KRAUSE DRAIN**Municipality of West Elgin**

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

MAIN DRAIN

6 meters of 600mm dia., H.D.P.E. plastic sewer pipe including rodent gate,
quarry stone rip-rap protection around pipe and end of ditch.

(Approximately 10m³ Quarry Stone req'd)

Supply	\$ 900.00
Installation	\$ 2,000.00

Installation of the following concrete field tile, including supply and installation
of geotextile around tile joints (approx. 2000m req'd)

560 meters of 525mm dia. concrete tile \$ 14,000.00

410 meters of 600mm dia. concrete tile \$ 10,400.00

Supply of the above listed tile \$ 39,000.00

Contingency amount for increased cost due to poor soil conditions

Installation of tile on crushed stone bedding with excavator (300 meters) \$ 7,500.00

Supply & delivery of 19mm crushed (Approx. 120 tonnes req'd) \$ 3,600.00

Strip, stockpile and releve topsoil from tile trench and adjacent working area

(4m wide) specified on drawings (approx. 970m) \$ 5,800.00

Supply and install two 900mm x 1200mm ditch inlet catchbasins, and one 900mm x 1200mm
Side Inlet Catchbasin including berms, grates, ditching, all prefab fittings \$ 7,800.00

16 meters of 600 mm dia., H.D.P.E. pipe (subsurface)

14 meters of 900 mm dia., H.D.P.E. pipe (surface)

Supply \$ 6,100.00

Installation under Thompson Line by Open Cut, including removal & disposal of
existing \$ 6,900.00

Stripping of topsoil and backfilling of existing ditch using onsite materials \$ 23,900.00

Clearing and grubbing for 15m working width (Approx. 150m in length and Tree at
Thompson) \$ 5,000.00

Exposing and locating existing tile drains and utilities \$ 1,500.00

Tile connections and contingencies \$ 5,200.00

Allowances under Sections 30 of the Drainage Act \$ 5,260.00

ADMINISTRATION

Interest and Net Harmonized Sales Tax \$ 4,110.00

Survey, Plan and Final Report \$ 18,900.00

Expenses \$ 1,190.00

Supervision and Final Inspection \$ 4,440.00

TOTAL ESTIMATED COST

\$ 173,500.00

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	BENEFIT	OUTLET	TOTAL
MAIN DRAIN						
5	S½	1	30-136 (M. Sacher)	\$ 105,000.00	\$	\$ 105,000.00
6	Pt.	1	40-008 (A. Sacher)	50,270.00		50,270.00
TOTAL ASSESSMENT ON LANDS				\$ 155,270.00	\$	\$ 155,270.00
Thompson Line				\$ 2,770.00	\$	\$ 2,770.00
TOTAL ASSESSMENT ON ROADS				\$ 2,770.00	\$	\$ 2,770.00
SPECIAL ASSESSMENT against Municipality of West Elgin for the increased cost of installing a 600mm H.D.P.E. pipe (Subsurface) and a 900mm H.D.P.E. pipe (Surface) under Thompson Line by open cut.						
						\$ 15,460.00
TOTAL ASSESSMENT ON THE MAIN DRAIN						\$ 173,500.00
TOTAL ASSESSMENT ON THE KRAUSE DRAIN						\$ 173,500.00

SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE

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CON.	LOT	HECTARES		ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
MAIN DRAIN					
4	Pt.	2	6.7	30-091 (K. & E. Roodzant)	4.8 %
4	Pt.	2	0.7	30-091-10 (S. Bodnar)	0.6
4	Pt.	2	2.4	30-092 (R. & Y. Van Raes)	1.7
5	N Pt.	1	0.3	30-135 (S. Wilson & J. Martin)	0.2
5	N Pt.	1	20.7	30-135-01 (M. Fodor)	12.2
5	S Pt.	1	28.3	30-136 (M. Sacher)	47.9
5	NW¼ Pt.	2	15.0	30-137 (2652622 Ontario Inc. & E. Roodzant)	9.9
5	NW¼ Pt.	2	0.2	30-137-02 (S. Ross & S. Bodnar)	0.2
5	NE¼	2	2.1	30-138 (R. & M. Hadash)	1.5
6	N Pt.	1	4.2	40-008 (A.Sacher)	18.1
6	Pt.	1	0.4	40-008-10 (D. & C. Vanraes)	0.1
					=====
TOTAL ASSESSMENT ON LANDS					97.2 %
					=====
Blacks Road			1.1	Municipality of West Elgin	0.9 %
Thompson Line			0.6	Municipality of West Elgin	0.4
Marsh Line			0.8	Municipality of West Elgin	1.5
					=====
TOTAL ASSESSMENT ON ROADS					2.8 %
					=====
TOTAL ASSESSMENT FOR MAINTENANCE OF THE MAIN DRAIN					100.0 %

SCHEDULE OF NET ASSESSMENT

KRAUSE DRAIN

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(FOR INFORMATION PURPOSES ONLY)

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* = Non-agricultural

ROLL NUMBER (OWNER)	TOTAL ASSESSMENT	GRANT	ALLOWANCES	APPROX. NET
30-136 (M. Sacher)	105,000.00		3,700.00	101,300.00
40-008 (A. Sacher)	50,270.00		1,560.00	48,710.00
Thompson Line	2,770.00			2,770.00
Special Assessment	15,460.00			15,460.00
TOTALS	\$ 173,500.00	\$	\$ 5,260.00	\$ 168,240.00