

PADDON DRAIN
Municipality of Central Elgin



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Our Job No. 221167

October 25, 2021

London, Ontario
October 25, 2021

PADDON DRAIN
Municipality of Central Elgin

To the Mayor and Council of
the Municipality of Central Elgin

Mayor and Council:

We are pleased to present our report on the reconstruction and extension of the Paddon Municipal Drain serving parts of Lot 15, Concession R.S.E.R., parts of Lots 14 to 16, Concession R.1.N.E.R., parts of Lots 12 to 15, Concession R.2.N.E.R., and parts of Lots 12 to 14, Concession 10 (geographic Yarmouth) in the Municipality of Central Elgin.

AUTHORIZATION

This report was prepared pursuant to Sections 4 and 78 of the Drainage Act in accordance with instructions received from your Municipality with respect to a motion of Council in accordance with Section 8 of the Drainage Act.

The work to extend the drain to the north side of Edgeware Line was initiated by a request signed by one of the affected landowners R. & N. Gurram (Roll No. 7-191), of Lot 15, Concession R.1.N.E.R.,

DRAINAGE AREA

The total watershed area as described above contains approximately 225 hectares. The area requiring drainage for extending the drain is described as the lands on the north side of Edgeware Line in Lot 15.

HISTORY

The Paddon Drain was originally constructed pursuant to a report submitted by J.A. Bell, Eng. dated May 18, 1916, and consisted of the construction of a Main Drain consisting of 1,600 lineal feet of open ditch and 1,625 lineal feet of 18" (450mm) diameter field tile with all the work located in Lot 15, Concession R.S.E.R. There was also a Branch Drain constructed at this time which consisted of 4,241 lineal feet of 4" (100mm) to 15" (375mm) diameter tile from the open portion in Lot 15, Concession R.S.E.R. to the north side of Edgeware Line in Lot 13, Concession R.1.N.E.R.



HISTORY (cont'd)

The drain was then extended downstream pursuant to a report by Fred A. Bell, dated February 3, 1964, and consisted of the reconstruction of the existing open ditch and extended the drain further in Lot 18, Concession 9, for a new total length of approximately 4,000 lineal feet.

The Branch Drain was later reconstructed, and additional branches added, pursuant to a report submitted by J.R. Dickson, P.Eng., dated August 15, 2012. The report consisted of the replacement of the branch, now called Branch 'A', and the construction of Branches 'B' to 'E', which included approximately 3,271 lineal meters of 200mm – 750mm diameter concrete drain tile, with these new branches located in Lots 13 and 14, Concession R.1.N.E.R.

EXISTING DRAINAGE CONDITIONS

A site meeting was held on Monday June 28, 2021 with respect to the project and through later discussions, the owners reported the following:

- the owner, J. & V. Davis (Roll No. 7-176-50), indicated that the existing Main Drain tile was in poor condition and needed extensive repair or replacement
- the owner, R. & N. Gurram (Roll No. 7-191), requested that the drain, if replaced, be extended into their lands on the north side of Edgeware Line
- multiple upstream owners were also present and were not requesting any improvements at this time

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

- that the existing drain, installed in 1916, is in poor condition and is considerably undersized by today's standards
- the drain could easily be extended north across Edgeware Line to serve the R. & N. Gurram (Roll No. 7-191) lands
- that the existing open portion in the J. & V. Davis (Roll No. 7-176-50) lands has erosion around some bends and some debris jams present

Preliminary design, cost estimates and assessments were prepared, and an informal public meeting was held on September 9, 2021 to review the findings and preliminary proposals. Further input and requests were provided by the affected owners at that time and at later dates. Based on the proposed design it was decided to proceed with the report.



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 was 38.1mm 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 existing Main Drain – Closed Portion be replaced in the J. & V. Davis (Roll No. 7-176-50) lands, and extended to the north side of Edgware Line to the R. & N. Gurram (Roll No. 7-191) lands with a new 900mm diameter concrete tile
- that the new drain be installed east of the existing drain, beyond the existing grassed waterway, to obtain adequate cover.
- that some maintenance work be completed on the open portion to remove any debris dams and address some of the erosion issues
- that two new catchbasins be installed to direct surface flows into the new tiles
- that the existing Paddon Main Drain – Closed Portion (1916) be officially abandoned from municipal status pursuant to Section 19 of the Drainage Act

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 Paddon 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.

It is to be noted that both the existing and newly vegetated banks as well as the existing natural and newly created buffer strips along each side of the ditch are permanent parts of the Paddon Municipal Drain and shall not be disturbed or destroyed.



SUMMARY OF PROPOSED WORK

The proposed work consists of approximately 496 lineal meters of 900mm (36") diameter concrete field tile and HDPE sewer pipe 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 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 \$154,000.00. 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. 221167, 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.

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 \$6,670.00/ha. through cropped lands. This value is multiplied by the hectares derived from the width granted for future maintenance 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 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. 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 outlet 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 Central Elgin being the increased cost to the drainage work for installing a 900mm diameter sewer pipe across their road allowance on the Main Drain due to the construction and operation of Edgeware 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:



SPECIAL ASSESSMENT (cont'd)

Drain	Cost of Work	Less Equivalent Drain Cost (Fixed)	Plus Administration Cost	Plus Interest & Net H.S.T.	Special Assessment
Main Drain 900mm	\$23,300.00	\$3,340.00	\$4,900.00	\$620.00	\$25,480.00

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.

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. Assessments to agricultural lands are based on an agricultural 38mm design. 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.

After completion, the Paddon Drain – Main Drain shall be maintained by the Municipality of Central 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.

Special Assessments shall **not** be pro-rated for future maintenance purposes.

Repairs or improvements to any road culvert or bridge or sub-surface road crossing required by the performance of this work and for future repair and/or replacement, shall be the responsibility of the applicable Road Authority, entirely at their cost.



Respectfully submitted,

SPRIET ASSOCIATES LONDON LIMITED

B. Widner, P.Eng.



SPRIET ASSOCIATES
engineers & architects

SCHEDULE 'A' - ALLOWANCES

PADDON DRAIN

Municipality of Central Elgin

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

CONCESSION	LOT	ROLL NUMBER (Owner)	Section 29 Right-of-Way	Section 30 Damages	TOTALS
MAIN DRAIN					
R S.E.R	15	7-176-50 (J. & V. Davis)	\$ 3,130.00	\$ 2,550.00	\$ 5,680.00
R1 N.E.R	15	7-191 (R. & N. Gurram)	40.00	30.00	70.00
			=====		
Total Allowances			\$ 3,170.00	\$ 2,580.00	\$ 5,750.00
			=====		
TOTAL ALLOWANCES ON THE MAIN DRAIN					\$ 5,750.00
					=====
TOTAL ALLOWANCES ON THE PADDON DRAIN					\$ 5,750.00
					=====

PADDON DRAIN**Municipality of Central 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 900mm dia., H.D.P.E. plastic sewer pipe including rodent gate,
quarry stone rip-rap protection around pipe and end of ditch
(Approximately 8m³ quarry stone req'd)

Supply	\$	1,700.00
Installation	\$	1,600.00

Installation of the following concrete field tile including supply
& installation of geotextile around tile joints (approx. 2300m req'd)
470 meters of 900mm dia. concrete tile

470 meters of 900mm dia. concrete tile	\$	15,000.00
Supply of the above listed tile	\$	63,500.00

Strip, stockpile and releve topsoil from tile trench and adjacent working area
(4m wide) specified on drawings (approx. 470m)

\$ 2,400.00

20 meters of 900mm dia., 65-D Concrete Sewer Pipe

Supply	\$	10,400.00
Installation under Edgeware Line by Open Cut	\$	7,900.00
Grout Existing Pipe under Edgeware Line	\$	1,000.00
Restoration of Edgeware Line with 50mm HL8 and 50mm HL3	\$	4,000.00

Supply and install two 900mm x 1200mm ditch inlet catchbasins
including grates, leads, ditching, removal and disposal of existing catchbasin, including
supply and installation of concrete blocks, prefabricated fittings, wyes, and rip-rap

\$ 8,800.00

Exposing and locating existing tile drains and utilities

\$ 1,000.00

Tile connections and contingencies

\$ 5,000.00

Allowances under Sections 29 & 30 of the Drainage Act

\$ 5,750.00

ADMINISTRATION

Interest and Net Harmonized Sales Tax

\$ 3,600.00

Survey, Plan and Final Report

\$ 17,900.00

Expenses

\$ 930.00

Supervision and Final Inspection

\$ 3,520.00

TOTAL ESTIMATED COST

\$ 154,000.00

SCHEDULE 'C' - ASSESSMENT FOR CONSTRUCTION

PADDON DRAIN

Municipality of Central Elgin

Job No. 221167

October 25, 2021

* = Non-agricultural

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	BENEFIT	OUTLET	TOTAL
MAIN DRAIN						
R S.E.R	15	10.40	7-176-50 (J. & V. Davis)	\$ 54,330.00	\$ 1,562.00	\$ 55,892.00
R1 N.E.R	E½ 13 & 14	5.10	7-190 (T. Martin & D. Dubois)		721.00	721.00
R1 N.E.R	15	38.70	7-191 (R. & N. Gurram)	2,720.00	10,319.00	13,039.00
R1 N.E.R	Pt 15	1.30	7-191-01 (A. & J. Erickson)		490.00	490.00
R1 N.E.R	16	6.10	7-192 (Yorkland Farms Ltd.)		1,833.00	1,833.00
R2 N.E.R.	12	1.80	6-187 (M. Goodhue)		541.00	541.00
R2 N.E.R.	Pt 12	0.20	6-194 (C. Bennett)		75.00	75.00
R2 N.E.R.	13	17.80	6-195 (Yorkland Farms Ltd. & P. Vandebroek)		5,347.00	5,347.00
R2 N.E.R.	14	46.50	7-213 (Glen Manor Farms Ltd.)		13,525.00	13,525.00
R2 N.E.R. 15 & W½	16	12.10	7-214 (R. & L. Kohler & A. Gredig)		3,338.00	3,338.00
10	S½ 12	0.40	9-012 (Gredig Farms Ltd.)		120.00	120.00
10	S½ Pt 12	0.80	9-010 (R. Cherry & S. Katerina)		240.00	240.00
10	Pt 12	0.40	9-011 (J. & S. Obeda)		150.00	150.00
10	N½ 13	8.90	7-227 (G. Reid)		2,445.00	2,445.00
10	S½ 13	32.40	7-226 (P. Gredig)		8,862.00	8,862.00
10	N½ 14	10.10	7-229 (K & R Davis Farms Ltd.)		2,689.00	2,689.00
10	S½ 14	25.90	7-228 (Glen Manor Farms Ltd. & C. Lee)		6,853.00	6,853.00
TOTAL ASSESSMENT ON LANDS				\$ 57,050.00	\$ 59,110.00	\$ 116,160.00
* Edgeware Line	1.00		Municipality of Central Elgin	\$ 5,780.00	\$ 901.00	\$ 6,681.00
* Yarmouth Centre Road	0.70		Municipality of Central Elgin		631.00	631.00
* Ron McNeil Line	4.20		County of Elgin		5,048.00	5,048.00
TOTAL ASSESSMENT ON ROADS				\$ 5,780.00	\$ 6,580.00	\$ 12,360.00

SPECIAL ASSESSMENT against the Municipality of Central Elgin

for the increased cost of installing 900mm dia. Sewer Pipe under Edgeware Line

\$ 25,480.00

TOTAL ASSESSMENT ON THE MAIN DRAIN \$ 154,000.00

SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE

PADDON DRAIN

Municipality of Central Elgin

Job No. 221167

October 25, 2021

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
MAIN DRAIN				
R S.E.R		15 10.4	7-176-50 (J. & V. Davis)	29.6 %
R1 N.E.R	E½ 13 &	14 5.1	7-190 (T. Martin & D. Dubois)	0.7
R1 N.E.R		15 38.7	7-191 (R. & N. Gurram)	12.0
R1 N.E.R	Pt	15 1.3	7-191-01 (A. & J. Erickson)	0.5
R1 N.E.R		16 6.1	7-192 (Yorkland Farms Ltd.)	1.9
R2 N.E.R.		12 1.8	6-187 (M. Goodhue)	0.6
R2 N.E.R.	Pt	12 0.2	6-194 (C. Bennett)	0.1
R2 N.E.R.		13 17.8	6-195 (Yorkland Farms Ltd. & P. Vandenbroek)	5.5
R2 N.E.R.		14 46.5	7-213 (Glen Manor Farms Ltd.)	13.9
R2 N.E.R.	15 & W½	16 12.1	7-214 (R. & L. Kohler & A. Gredig)	3.4
10	S½	12 0.4	9-012 (Gredig Farms Ltd.)	0.1
10	S½ Pt	12 0.8	9-010 (R. Cherry & S. Katerina)	0.2
10	Pt	12 0.4	9-011 (J. & S. Obeda)	0.2
10	N½	13 8.9	7-227 (G. Reid)	2.5
10	S½	13 32.4	7-226 (P. Gredig)	9.1
10	N½	14 10.1	7-229 (K & R Davis Farms Ltd.)	2.8
10	S½	14 25.9	7-228 (Glen Manor Farms Ltd. & C. Lee)	7.1
TOTAL ASSESSMENT ON LANDS				90.2 %
* Edgeware Line		1.0	Municipality of Central Elgin	3.9 %
* Yarmouth Centre Road		0.7	Municipality of Central Elgin	0.6
* Ron McNeil Line		4.2	County of Elgin	5.3
TOTAL ASSESSMENT ON ROADS				9.8 %
TOTAL ASSESSMENT FOR MAINTENANCE OF THE MAIN DRAIN				<u>100.0 %</u>

SCHEDULE OF NET ASSESSMENT

PADDON DRAIN

Municipality of Central Elgin

(FOR INFORMATION PURPOSES ONLY)

Job No. 221167

October 25, 2021

* = Non-agricultural

	ROLL NUMBER (OWNER)	TOTAL ASSESSMENT	GRANT	ALLOWANCES	APPROX. NET
	7-176-50 (J. & V. Davis)	\$ 55,892.00	\$ 18,631.00	\$ 5,680.00	\$ 31,581.00
	7-190 (T. Martin & D. Dubois)	721.00	240.00		481.00
	7-191 (R. & N. Gurram)	13,039.00	4,346.00	70.00	8,623.00
*	7-191-01 (A. & J. Erickson)	490.00			490.00
	7-192 (Yorkland Farms Ltd.)	1,833.00	611.00		1,222.00
	6-187 (M. Goodhue)	541.00	180.00		361.00
*	6-194 (C. Bennett)	75.00			75.00
	6-195 (Yorkland Farms Ltd. & P. Vandenbroek)	5,347.00	1,782.00		3,565.00
	7-213 (Glen Manor Farms Ltd.)	13,525.00	4,508.00		9,017.00
	7-214 (R. & L. Kohler & A. Gredig)	3,338.00	1,113.00		2,225.00
	9-012 (Gredig Farms Ltd.)	120.00	40.00		80.00
	9-010 (R. Cherry & S. Katerina)	240.00	80.00		160.00
*	9-011 (J. & S. Obeda)	150.00			150.00
	7-227 (G. Reid)	2,445.00	815.00		1,630.00
	7-226 (P. Gredig)	8,862.00	2,954.00		5,908.00
	7-229 (K & R Davis Farms Ltd.)	2,689.00	896.00		1,793.00
	7-228 (Glen Manor Farms Ltd. & C. Lee)	6,853.00	2,284.00		4,569.00
*	Edgware Line	\$ 6,681.00	\$	\$	\$ 6,681.00
	Special Assessment	25,480.00			25,480.00
*	Yarmouth Centre Road	631.00			631.00
*	Ron McNeil Line	5,048.00			5,048.00
TOTALS		\$ 154,000.00	\$ 38,480.00	\$ 5,750.00	\$ 109,770.00