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Township of Leeds & Thousand Islands

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- as per By-Law  
11-1981  
with Amendment Schedule  
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18-82.

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Township of Leeds and  
The Thousand Islands  
1 Jessie St., Box 129  
Lansdowne, ON K0E 1L0

ENGINEER'S REPORT  
FOR THE CONSTRUCTION OF THE  
BIERMAN MUNICIPAL DRAIN  
TOWNSHIP OF REAR OF LEEDS & LANSDOWNE

A.J. GRAHAM ENGINEERING CONSULTANTS LTD.  
BOX 917, R.R. #3  
OTTAWA, ONTARIO  
K1G 3N3

PROJECT 30089  
MARCH 17, 1981

BY-LAW COPY



**The Corporation of the Township of Rear of Leeds and Lansdowne**

Clerk-Treasurer — Mrs. Alexia M. Landon, B.A., AMCT  
Deputy Clerk-Treasurer — Mrs. Carole Johnston  
Roads Superintendent — Laurence Hudson



P.O. Box 180, Lyndhurst, Ont. K0E 1N0  
Offices on County Road No. 2  
Telephone: Municipal (613) 928-2423  
Roads — (613) 928-2144

November 23, 1982

TO ALL PERSONS ASSESSED ON BIERMAN DRAIN:

The enclosed Tax Bill is for your Net Assessment of the costs of the Bierman Municipal Drain. Also enclosed is a copy of Annex C - Schedule of Assessments, revised by By-law 18-1982 to reflect the increased cost and increased grants.

The increase is due to:

- (1) Construction costs - some sloughing in occurred as a result of unstable soils encountered during construction. Additional equipment rental and rip rap were required to overcome this. As well, tile outlets were found that required outlet pipes and rip rap.
- (2) Engineering costs increased as a result of the above which required additional engineering and time. The completion of the work also took longer than originally anticipated.
- (3) Further costs were incurred as interest charged by the Township on advances made from time to time from April of 1981 to October, 1982.

Alexia Landon.

THE CORPORATION OF THE TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

BY-LAW 18-1982

A BY-LAW TO AMEND BY-LAW 11-1981 BEING A BY-LAW TO PROVIDE FOR A DRAINAGE WORKS IN THE TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE IN THE COUNTY OF LEEDS AND TO RESCIND BY-LAW 17-1982

WHEREAS By-law 11-1981 authorized construction of a drainage works, known as the Bierman Drain,

AND WHEREAS the final cost of this drainage works is \$66245.30,

AND WHEREAS assessments in the Engineer's Report must therefore be increased,

NOW THEREFORE the council of the Township of Rear of Leeds and Lansdowne enacts as follows:

1. All assessments set out in Annex C-Schedule of Assessment to Engineer's Report for the construction of the Bierman Municipal Drain shall be increased by a factor of 1.31267 because of the increase in cost over estimate, and the Grant factor shall be .6279462 to reflect the Federal and Provincial grants on the actual cost of the works.
2. All assessments shall be due and payable December 15, 1982, and if not paid by such date shall be charged an interest rate thereon as provided for unpaid taxes, as set by by-law from time to time.
3. By-law 17-1982 be and the same is hereby rescinded.
4. This by-law comes into force on the passing thereof.

READ A FIRST, SECOND AND THIRD TIME THIS 22ND DAY OF NOVEMBER, 1982, AND GIVEN UNDER THE SEAL OF THE CORPORATION OF THE TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE THIS 22ND DAY OF NOVEMBER, 1982.

Ray Greenham  
REEVE

Alene M. Larche  
SECRETARY-TREASURER

SP. OF REAR OF LEES AND LANSDOWNE

PROJECT NO. 30089

1,312,671.6279462

NOVEMBER 3, 1982

	1	2	3	4	5	6	7	8	9	10
	BASIC ESTIMATED ASSESSMENT	ACTUAL PRO-RATED ASSESSMENT	ACTUAL GRANT		LESS ALLOWANCE	NET ACTUAL ASSESSMENT	DUPY 184	%		
28 12	R. VANMINDEN	229 83	301 69	189 45	112 24	112 24	76 61	44.5	112.24 - 76.61 = 35.63	
29 12	J. + M. DOUBS	1870 22	2481 24	1558 09	923 15	923 15	539 07	54.5	(830.75 - 379.72) = 451.03	76.61
9 12	J. + M. DOUBS	1236 15	1622 66	1018 94	603 72	509 22	316 55	60.5%		
9 12	E. DODGE	1518 97	1993 91	1252 07	741 84	655 84	422 52			
49 12	E. + L. LAMING	2190 85	2875 86	1805 89	1069 97	817 47	477 78			
210 12	M. REVE	2349 99	3084 75	1937 06	1147 69	744 19	379 23			
210 12	H. + G. REED	2520 45	3309 52	2077 57	1230 95	950 95	560 5			
210 12	J. + M. MOORE	37 36	490 4	30 79	18 25	18 25	12 95			
211 12	J. BERMAN	15244 11	20610 49	12565 51	7444 98	6210 48	3846 89			
11 12	S. NORES	25 00	32 82	-	32 82	32 82	25 00			
12 12	J. BERMAN	207 80	272 77	171 28	101 49	101 49	69 27			
12 12	E. + N. WALLS	8322 37	10924 53	6860 02	4064 51	3260 51	1970 12			
113 12	F. + E. GRAY	70 15	92 08	57 82	34 26	34 26	23 38			
110 13	J. FRYE	45 39	59 58	37 41	22 17	22 17	15 13			
9 13	J. FRYE	9060 95	11893 91	7468 74	4425 17	3330 17	1925 22			
28 13	W. + M. CURTIS	3281 79	4307 89	2705 12	1602 77	878 27	368 43			
48 13	A. HOWARD	1933 00	2537 39	1593 34	944 05	572 05	272 33			
7 13	G. FISCHER	25 00	32 82	20 61	12 21	85 29	178 79			
12 12	TOWNSHIP ROAD	179 79	234 69	-	234 69	234 69	178 79			
13 12	TOWNSHIP ROAD	25 00	32 82	-	32 82	32 82	25 00			
10 12	HIGHWAY #42 (MTC)	48 02	63 03	-	63 03	63 03	48 02			
8 12	TOWNSHIP ROAD	25 00	32 81	-	32 81	32 81	25 00			
	TOTALS	50466 07	66245 30	41349 71	24875 59	5538 00	19357 59	11,485 23	7,872 26 = 68.5%	

\* DENOTES NON-AGRICULTURAL LANDS

9150

CREDIT 189,172.

THE CORPORATION OF THE TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

BY-LAW 18-1982

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Ray Greenham  
REEVE

Alexa M. Laska  
SECRETARY-TREASURER

ENGINEER'S REPORT  
FOR THE CONSTRUCTION OF THE  
BIERMAN MUNICIPAL DRAIN  
TOWNSHIP OF THE REAR OF LEEDS AND LANSDOWNE

A.J. Graham Engineering Consultants Ltd.  
Box 917, R.R. 5  
Ottawa, Ontario  
K1G 3N3

Project 30089

March 17, 1981  
Revised May 6, 1981

The Reeve and Members of Council  
Rear of Leeds and Lansdowne  
Seeley's Bay, Ontario  
KOH 2NO

REPORT FOR THE CONSTRUCTION  
OF THE BIERMAN MUNICIPAL DRAIN

I am pleased to present for Council's consideration the following  
Drainage Report for the construction of the Bierman Municipal Drain.

This Report has been prepared under the authority of Section 4, The  
Drainage Act, 1975, as amended.

SYNOPSIS OF REPORT

The body of the Report deals with the various aspects of municipal  
drainage including such items as Location, Inspection, Allowances, Grant  
Structure, Future Maintenance, etc.

Once the By-Law has been passed the Municipality has no authority to alter  
the assessments or make any revisions which alter the intent of the Report  
under The Drainage Act, 1975, as amended.

It is therefore important that any desired changes relating to construction  
be requested at the Meeting to Consider the Report.

The property owners are requested to examine the entire Report as it relates  
to their own properties, with particular attention to the following items:

1. Location of the Properties

The description and ownership of the properties have been obtained  
from the last revised Municipal Assessment Rolls and may not be changed  
until the Assessment Rolls are next revised.

All assessed owners are asked to check the description and location  
of their property in this Report and point out any errors or omissions  
at the Meeting to Consider the Report.

SYNOPSIS OF REPORT (CONT'D)

2. Location of the Drain

All assessed owners are also requested to refer to the plans to confirm that the drains are located as desired on the particular properties.

3. Agricultural Land Designations (Annex "C")

Note that non-agricultural lands listed in Annex "C" are denoted with an asterisk. These lands are not eligible for subsidy under The Drainage Act, 1975, as amended. Please note that in accordance with provincial requirements, the areas in Annex "C" are expressed in hectares (1 ha = 2.47 acres).

4. Disposal of Materials

Refer to the Earth Disposal and Spoil Pile Disposal Schedules in the Special Provisions and ensure that the disposal locations, material spreading provisions, etc., are as desired on your particular property or properties.

5. Private Culverts

Refer to the Private Culverts section of the Special Provisions and ensure that you have been provided with the required number of culverts and that they are located as desired on your property or properties. Note that the lane width provided by new culverts is approximately 5 m (16 feet) unless specifically otherwise requested.

The "Annex" portion of the Report deals with the following:

Annex "A" - Estimated Construction, Allowance, and Administration Costs

Annex "B" - Schedule of Allowances (Land or Crop Damage, Land Allowance and Severance) to affected properties

Annex "C" - Schedule of Assessment (Estimated Individual Assessment)

Annex "D" - Summary of Assessment

Annex "E" - Plans and Profiles

AREA REQUIRING DRAINAGE

From an examination of the site we have determined that the "Area Requiring Drainage" is located within the following lands:

Part Lots 8 to 12      Concession 12  
Part Lots 8 & 9      Concession 13



## LOCATION OF THE DRAIN

The Bierman Municipal Drain commences in the centre of the E $\frac{1}{2}$  of Lot 8, Concession 12, at a point approximately 200 metres north of the abandoned railway line.

From this point the drain flows in an easterly direction across the W $\frac{1}{2}$  of Lot 9, then turns southeasterly through the abandoned railway line and runs parallel, following the existing course, for a distance of approximately 130 metres. At this point the drain turns north through the rail line, thence easterly through the E. Pt. of Lot 9, and the W. Pt. of Lot 10, Concession 12.

The drain then flows in a northeasterly direction across the N. Pt. of Lot 10, Lot 11, and the northwestern corner of Lot 12, thence through the Township road and across the southwestern corner of Lot 9, Concession 13 to the eastern edge of Lot 8, thence northerly through Highway 42, thence northeasterly through the Lake Street Road to its outlet in Lot 8, Concession 13.

The Bierman Municipal Drain is approximately 3,500 metres in length.

## INSPECTION

From an inspection of the area and discussions with the resident property owners the following observations were noted.

### Watershed Description

The watershed basin of the Bierman Municipal Drain is elongated with a main stream flow in a northeasterly direction.

The overall length of the drain inspected is approximately 3,500 metres and it provides outlet for approximately 235 hectares.

### Existing Ditch

Throughout the area inspected the existing ditch is relatively shallow and has an irregular profile grade.

Rock outcroppings were observed at the Township Road between Concessions 12 and 13 and in the area of Highway 42.

## INSPECTION (CONT'D)

### Existing Ditch (Cont'd)

Several tile outlets were located in lots 11 and 12 concession 12 and despite some recent private channel improvements all the outlets were deficient in free board.

### Soils

Reference to the Ministry of Agriculture and Food Soil Survey Reports indicated that the drain is located in an area of North Gower Clay Loam and Tennyson Loam.

The North Gower series is gently sloping and is stonefree while the Tennyson series is strongly sloping, is moderately stoney and is underlain with bedrock. Both series are stable and are not susceptible to erosion.

In general the Tennyson Series is location along the perimeter of the drainage basin but appears to extend to the proposed area of construction at several locations in concession 13.

Both soil classes are well suited for agricultural purposes when good drainage is available.

### RECOMMENDATIONS

It is my recommendation that the Bierman Municipal Drain be constructed in accordance with the accompanying plan and profile. I feel the recommendations contained in this Report will provide the owners with the degree of drainage necessary for a viable farming operation.

### Design

The drain shall be constructed as an open type trapezoidal channel with design dimensions as specified on Drawing No. 30089-1.

The new channel will be provided with a capacity suitable for agricultural surface drainage and sufficient profile depth to provide an outlet for all existing tile outlets. The channel provided attains sufficient outlet upstream of the Highway No. 42 culvert. Downstream of this drain, no increase in flows is estimated to occur from construction of this drain.

### Disposal of Materials

Excavated earth material shall be spread on the private lands in accordance with Schedule No. 1 annexed to this Report.

RECOMMENDATIONS (CONT'D)

Disposal of Materials (Cont'd)

Excavated rock and boulders shall be disposed of by the contractor at a site provided for by him or incorporated into the work on approval of the Engineer.

The existing spoil piles shall be removed by the contractor. The class of material contained in the spoil piles will dictate whether the material will be spread or hauled away.

Tile Outlets

The existing tile outlets affected by this construction shall be reinstated and protected with random rip-rap.

Fencing

All cross-fences shall be opened and replaced by the contractor using new materials.

An existing parallel rail fence in the east part of lot 8 concession 13 will be removed by the contractor and the salvageable materials shall be piled clear of the work.

An allowance has been provided to the owner of the aforementioned lot as compensation for the re-instatement of this rail fence by the owner following construction.

Private Culverts

Private culverts have been provided as replacement for the existing crossing sites in use within the construction area.

Erosion Control

The contractor will be required to construct only one bank of the existing channel and the completed slope shall be seeded with an approved grass and legume seed mixture during the progression of work as weather permits.

## AGRICULTURAL LAND DESIGNATION

Assessments for agricultural and non-agricultural lands are detailed in Annex "C" in accordance with Section 37 of The Drainage Act, 1975, as amended. Non-agricultural lands are denoted by an asterisk in Annex "C".

### ALLOWANCES

✓ Land Allowance: Section 29(a), The Drainage Act, 1975, as amended

Allowances for Land, as detailed in Annex "B", hereto attached will, in my opinion, adequately compensate the property owners indicated for the lands required for the construction of this drainage works.

✓ Land or Crop Damage: Section 29(b), The Drainage Act, 1975, as amended

Allowances for Land or Crop Damage as detailed in Annex "B", hereto will, in my opinion, adequately compensate the property owners indicated for Land or Crop Damage caused by the construction of this drainage project.

In order to facilitate the disposal of material the property owners are advised to remove all crops adjacent to the drains prior to the start of construction.

Allowance for Fence: Section 30 The Drainage Act, 1975 as amended

The allowance for the re-instatement of the existing rail fence as detailed in Annex "B" will in my opinion adequately compensate the owner indicated for the loss of the fence.

✓ Allowance for Private Drains: Section 31 The Drainage Act, 1975 as amended

The allowance for Private Drains as detailed in Annex "B" will in my opinion adequately compensate the owner indicated for the value of drainage work constructed privately to this project.

### BRIDGES AND CULVERTS

✓ Private Culverts: Section 18, The Drainage Act, 1975, as amended

Private culverts shall be supplied and installed by the Contractor and paid for by the drain.

BRIDGES AND CULVERTS (CONT'D)

Private Culverts (Cont'd)

Details in respect of the location of the culvert sites and required sizes may be found in the culvert schedule annexed to this Report.

Road Authority Bridges and Culverts: Section 17, The Drainage Act, 1975,  
as amended

The various Road Authority structures have been inspected throughout the course of the Drainage Works and the following improvements are recommended to provide satisfactory drainage to the agricultural lands.

Recommendations for improvements to Road Authority structures are made only when such structures are deficient in elevation or capacity necessary for agricultural drainage.

Minimum structure sizes as required in this Report are based on agricultural design criteria and are not based on the design criteria necessary to ensure the Ministry of Transportation and Communications subsidies.

The structure sizes and cost estimates recommended in this section are based on structure replacements in accordance with the Ministry of Transportation and Communications design criteria.

Site No. 1      Main Drain  
                  Sta. 2+426.6  
                  Highway No. 42

The existing structure through Highway No. 42 in the above noted location has adequate capacity to carry agricultural flows and no replacement is recommended.

Site No. 2      Township Road  
                  Sta. 2+475  
                  Main Drain

The existing culvert through the Township road in the above noted location has sufficient capacity for agricultural drainage and therefore replacement will not be necessary.

BRIDGES AND CULVERTS (CONT'D)

Road Authority Bridges and Culverts (Cont'd)

Site No. 3      Township Road  
                    Sta. 1+278  
                    Main Drain

The existing structure through the Township Road in the above noted location is deficient in size and elevation and requires replacement.

A replacement structure sized in accordance with agricultural design criteria will require an effective end area, at design grade of 1.13 M<sup>2</sup>.

Using M.T.C. design criteria the minimum effective end area of the replacement structure will be 2.01 M<sup>2</sup> and the cost of this work will be approximately \$7,800.

ROAD CULVERT COSTS

In accordance with Section 26 of The Drainage Act, 1975 as amended, the increased cost of this work caused by the existence of the road is chargeable directly to the Road Authority in addition to all other sums charged against the Road Authority when the work is completed as part of the Drainage Report. The estimated costs of replacement above have therefore been included in Annex C as a Special Assessment against the road authority.

The Road Authority may exercise the option under Section 69 of The Drainage Act, 1975, as amended, to have this work completed by their Road Department or completed as part of this Report.

Should the Road Authority opt to complete the work with their own forces, then the Special Assessment shall be deleted from this Report prior to the preparation of the final assessments.

LATERALS

It should be noted that the proposed drainage system will not immediately improve all wet areas unless lateral drains are constructed by the property owners.

The construction and maintenance of all lateral drains is the responsibility of the individual property owner and is not eligible for subsidy under the present municipal grant structure.

## GRANTS

Under Sections 87, 88, 89 and 90 of The Drainage Act, 1975, as amended a Provincial grant of one-third of the cost of the project assessable to agricultural lands may be obtained.

Under the recently signed Eastern Ontario Subsidiary Agreement, there may be Federal assistance available for this project. Based upon the general criteria guidelines in that Agreement, the amount of Federal grant is estimated at 33 1/3% of the total project costs estimated in this Report.

At the time of writing this Report, an application for Federal grant has not been processed. The Federal grant amounts in this Report are dependent upon approval of the application for grant by the Drainage Petition Review Committee.

The Schedule of Assessment, Annex "C", has been computed based upon an estimated Provincial grant of 33 1/3% and estimated Federal grant of 33 1/3% for a total grant amount of 66 2/3% in respect of assessments against agricultural lands.

## DISTRIBUTION OF COSTS

The estimated costs for this construction are apportioned to the properties responsible for Benefit and Outlet as determined by their area, locations, and run-off.

The detailed estimated Schedule of Assessment is attached in Annex "C" hereto, together with the estimated abatements of grants and allowances and my estimate of the net cost to each land owner in the project.

The estimated project cost (Annex "A") and assessment and grant amounts (Annex "C") are estimates only. The final assessments will be determined upon completion of the project based upon the actual project costs and actual grants secured with individual final assessment amounts determined pro-rata with the assessments in this Report and as may be revised by the Court of Revision.

## WATER GATES

Fence lines crossing the drain tend to collect debris and often cause a restriction in flow. Further, they are often damaged during Spring flooding.

WATER GATES (CONT'D)

I therefore suggest that the respective property owners install water gates as detailed in Standard Drawing No. 7920, attached, after the completion of construction.

Water gates must be removed each fall by the respective property owners.

FUTURE MAINTENANCE

Future Maintenance of this project shall be the responsibility of the Township of the Rear of Leeds and Lansdowne.

Future Maintenance costs shall be levied to the lands upstream from the point of maintenance pro-rata with the assessments contained in this Report.

The Contractor shall be responsible for making good any construction defects found in his work for a period of one year from the date of final acceptance of the work. This obligation shall include such items as repair of culverts but shall not include for normal erosion or sedimentation of the drain.

The repair and maintenance of all private culverts installed under this Report shall be the responsibility of the Rear of Leeds and Lansdowne. The cost of all repairs subsequent to the expiry of the Guaranteed Maintenance will be charged as a Maintenance item.

The repair and maintenance of all fences installed under this report shall be the responsibility of the respective land owners on whose lands they are installed. All fences so installed will not necessarily represent a true property line.

Special assessments are not to be considered when pro-rating maintenance costs.

Maintenance of a drainage works or part thereof is initiated by written notification from any owner affected by the condition of the drainage works on the clerk or head of the Municipality.

WORKING SPACE

For the purpose of this construction and for Future Maintenance purposes the Working Space shall be 300 feet (91 m) on each side of the drain.



PLANS, PROFILES AND SPECIFICATIONS

The Plans, Profiles and Specifications form a part of this Report and are attached in Annex "E". The construction of this drainage project shall be in accordance with the MTC General Conditions Form M-100, Form GEC 200, Form GEC 300, and Special Provisions Form GEC 500 and Standard Drawings Form GEC 600.

Respectfully submitted this 17th day of March, 1981, and revised May 6, 1981.



Brian L. Boyd, P. Eng.

ANNEX "A"

ESTIMATED COSTS

BIERMAN MUNICIPAL DRAIN

REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

Construction

Clearing	Lump Sum	\$ 3,440.00	
Earth Excavation and Spreading	7,448 m <sup>3</sup>	9,367.92	
Rock Excavation and Disposal	142 m <sup>3</sup>	5,680.00	
Spoil Pile Disposal	Lump Sum	2,341.00	
Reinstate Tile Outlets	4	200.00	
New Fence	127 m	508.00	
Remove Existing Fence	66 m	132.00	
Private Culverts	6	6,465.00	
Removal of Culverts	28 m	28.00	
Random Rip-rap	78 m	2,340.00	
Slope Seeding	20,841 m <sup>2</sup>	3,126.15	
Tender Call		200.00	
Construction Contingencies		1,600.00	
Construction Administration		<u>2,500.00</u>	
Township Road Culvert		7,800.00	
		<hr/>	
		\$45,728.07	\$45,728.07

2500.00  
7000.00  

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9,500.00

Allowances

Allowance for Private Drain	450.00	
Allowance for Land	2,040.00	
Allowance for Land and Crop Damage	3,048.00	
	<hr/>	
	\$ 5,538.00	\$ 5,538.00

Administration

Engineer's Fee (Survey, Plan and Report)	6,000.00	
On Site Meeting	200.00	
Meeting to Consider	200.00	
Court of Revision	200.00	
Printing of Reports	400.00	
	<hr/>	
	<u>\$ 7,000.00</u>	<u>\$ 7,000.00</u>

TOTAL REPORT ESTIMATE

\$58,266.07

SSA

NO	OWNER	LT CUN	DESCR	BRANCH	SPECIAL	SEVERANCE	LAND	GROUP	TOTAL
2	J+M DUNDS	8 12	E 1/2	MAIN		30.00	63.00	93.00	
3	J+M DUNDS	9 12	W1/2W1/2	MAIN		36.00	59.50	95.50	
4	E DODGE	9 12	E1/2 W1/2	MAIN		30.00	56.00	86.00	
5	E+L LAMING	9 12	E PT.	MAIN		102.00	150.50	252.50	
6	M RENN	10 12	W.PT.	MAIN		156.00	247.50	403.50	
7	H+G REED	10 12	N.PT.	MAIN		126.00	154.00	280.00	
9	J.BIERMAN	11 12	PT N 1/2	MAIN	450.00	312.00	472.50	1234.50	
12	E + N WALLS	12 12	N.PT.	MAIN		264.00	540.00	804.00	
15	J.FRYE	9 13	PT.	MAIN		420.00	675.00	1095.00	
16	M. CURTIS	8 13	W.PT.	MAIN		312.00	412.50	724.50	
17	A.HUMARD	8 13	E.PT.	MAIN		120.00	142.50	262.50	
18	G FISCHER	7 13	PT.LUT	MAIN		72.00	37.50	109.50	
MUNICIPALITY TOTAL-						450.00	2040.00	3048.00	5538.00
REAR LEEDS LANDOWNE						0.00	2040.00	3048.00	5538.00
AGGREGATE TOTALS						450.00	2040.00	3048.00	5538.00

INITIATING MIUNTY . REAR LEEDS LANSODWNE  
 PROJFCT-BIERMAN FILE 30089  
 A J GRAHAM ENGINEERING CONSULTANTS LTD

PG 1

MUNICIPALITY- REAR LEEDS LANSODWNE DATE- 81-02-17

ANNEY C-SCHEDULE OF ASSESSMENT

CN	LT	DESCR	OWNER	HA	*BRANCH	BENEFTT	OUTLET	BASIC	GRANT	ALLOW	NET
12	A	W 1/2	1 R VONMINNEN	4.40	MAIN	0.00 0.00	229.83 229.83	229.83	153.22	0.00 0.00	76.61
12	A	F 1/2	2 J+M DOWDS	7.59	MAIN	1500.03 1500.03	390.19 390.19	1890.22	1260.15	93.00 93.00	537.07
12	9	W 1/2 W 1/2	3 J+M DOWDS	6.09	MAIN	937.52 937.52	298.63 298.63	1236.15	824.10	95.50 95.50	316.55
12	9	F 1/2 W 1/2	4 E DODGE	7.59	MAIN	1147.51 1147.51	371.46 371.46	1518.97	1012.65	86.00 86.00	420.32
12	9	F PT.	5 F+L LAMING	17.58	MAIN MAIN	1406.27 0.00 1406.27	476.47 308.11 784.58	2190.85	1460.57	252.50 0.00 252.50	477.78
12	10	W.PT.	6 M RENE	25.00	MAIN MAIN	1250.02 0.00 1250.02	698.08 401.88 1099.96	2349.98	1566.65	403.50 0.00 403.50	379.83
12	10	N.PT.	7 H+G REED	25.50	MAIN	1615.02 1615.02	905.43 905.43	2520.45	1680.30	280.00 280.00	560.15
12	10	F.PT.	8 J + M MOORE	1.00	MAIN	0.00 0.00	37.36 37.36	37.36	24.91	0.00 0.00	12.45
12	11	PT N 1/2	9 J. BIERMAN	52.00	MAIN	13798.97 13798.97	1445.14 1445.14	15244.11	10162.74	1234.50 1234.50	3846.87
12	11	PT N 1/2	10 S NOKES	.50*	* MAIN	0.00 0.00	25.00 25.00	25.00	0.00	0.00 0.00	25.00
12	12	S.PT. N 1/2	11 J. BIERMAN	8.00	MAIN	0.00 0.00	207.80 207.80	207.80	138.53	0.00 0.00	69.27
12	12	N.PT.	12 E + N WALLS	24.00	MAIN	7771.88 7771.88	550.49 550.49	8322.37	5548.25	804.00 804.00	1970.12

MUNICIPALITY- REAR LEEDS LANDOWNE DATE- 81-02-17  
 ANNEX C-SCHEDULE OF ASSESSMENT

LN	DESCR	OWNER	HA *BRANCH	BENEFIT	OUTLET	BASIC	GRANT	ALLOW	NET
12	13 N.PT.	13 F.+E.GREY		0.00	70.15	70.15	46.77	0.00	23.38
13	10 9.PT.	14-J.FRYE	MAIN	0.00	45.39	45.39	30.26	0.00	15.13
13	9 PT.	15 J.FRYE	MAIN	8836.38	210.46	224.47	1095.00	1095.00	
13	8 W.PT.	14 W.+M. CURTIS	MAIN	3182.54	99.24	99.24	724.50	724.50	369.43
13	8 F.PT.	17 A.HOWARD	MAIN	1410.02	55.43	58.98	1288.67	262.50	272.33
13	7 PT.LNT	18 G.FISCHER	MAIN	0.00	25.00	25.00	16.67	97.50	-89.17
12	12 PT.9 CN.13	19 TOWNSHIP ROAD	* MAIN	88.00	90.79	90.79	0.00	0.00	178.79
12	12 PT.13	20 TWP RD	* MAIN	0.00	25.00	25.00	0.00	0.00	25.00
13	8 TD LT10	21 M.T.C. HWY 42	* MAIN	0.00	40.69	40.69	0.00	0.00	0.00
13	7 PT.8	22 TOWNSHIP RD.	* MAIN	0.00	25.00	25.00	0.00	0.00	25.00
<p>MUNICIPALITY TOTAL- REAR LEEDS LANDOWNE 229.85                  AGR HA 229.85                  NON-AG HA (*) 7.75</p>									
<p>AGGREGATE TOTALS 229.85                  AGR HA 229.85                  NON-AG HA (*) 7.75</p>									

43408.16 7057.91 50466.07 33442.84 5538.00 11485.23

ANNEX "D"

SUMMARY OF ASSESSMENT

BIERMAN MUNICIPAL DRAIN

REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

Physical Description

Total Area Assessed 235 Hectares

Total Length of Drain (Open) 3,500 Metres

Estimated Cost of the Work

Road Culvert (Special Construction Item)	\$ 7,800.00
Construction	31,463.07
Private Culverts	6,465.00
Allowances	5,538.00
Engineer's Report	6,000.00
Other Costs	1,000.00
	<u>58,266.07</u>

ANALYSIS OF ASSESSMENT

Municipal (Special Assessment - Township Culvert)	7,800.00
Ontario	48.02
Municipal	228.79
Privately Owned - Agricultural	50,164.26
Privately Owned - Non-Agricultural	25.00
	<u>58,266.07</u>

Special Assessment	7,800.00	
Estimated Provincial Grant	<del>16,715.42</del>	16,721.42 ✓
Estimated E.O.S.A. Grant	<del>16,715.42</del>	16,721.42 ✓
Allowances	5,538.00	
Estimated Net Cost	<del>11,497.23</del>	11,485.23 ✓

ESTIMATED TOTAL COST \$ 58,266.07

FORM GEC 500

SPECIAL PROVISIONS  
FOR THE CONSTRUCTION OF  
THE BIERMAN MUNICIPAL DRAIN  
REAR OF LEEDS AND LANSDOWNE

A.J. Graham Engineering Consultants Ltd.  
Box 917, R.R. 5  
Ottawa, Ontario  
K1G 3N3

Project 30089  
February 17, 1981  
Revised May 6, 1981

A.J. GRAHAM ENGINEERING CONSULTANTS LTD.

SPECIAL PROVISIONS

INDEX

<u>Section</u>	
500	General
501	Working Area
502	Trial Section
503	Clearing
504	Excavation
505	Spoil Pile Disposal
506	Reinstate Tile Outlets
507	Fencing
508	Private Culverts
509	Removal of Culverts
510	Random Rip-Rap
511	Slope Seeding
512	Utilities



A.J. GRAHAM ENGINEERING CONSULTANTS LTD.

SPECIAL PROVISIONS

500

GENERAL

These Special Provisions shall be read in conjunction with all other sections of the contract documents including:

General Conditions of Contract - MTC Form M-100

General Conditions Supplementary - Form GEC 200, dated April 1980

Specifications for Open Drains - Form GEC 300, dated April 1980

501

WORKING AREA

The working area shall be designated as 300 feet (91 m) from each side of the drain.

502

TRIAL SECTION

The Engineer may require the Contractor to complete an initial trial section of drain of adequate length to demonstrate the acceptability of the Contractor's proposed method of construction.

If the Contractor's method has not produced a drain conforming to the contract drawings and specifications, the Contractor shall, at his own expense, perform such remedial measures as are necessary to satisfy the contract requirements and shall change his method of construction and produce a further trial section. This process shall be repeated until the Contractor has demonstrated that his method of construction will produce a drain conforming to the contract requirements.

503

CLEARING

This work shall be completed in accordance with Form GEC 300, Section 301.

503.01

CLEARING SPECIAL

The contractor shall be required to close cut all trees and brush from within the cross-section of the drain between stations 2+410 to 2+500.

504 EXCAVATION

This work shall be completed in accordance with Form GEC 300, Section 303.

504.01 Earth Disposal Locations

The Contractor shall be required to spread earth material in the locations and to the depths specified in Schedule No. 1 annexed to these special provisions.

504.02 Rock Excavation

Rock excavated from the drain shall be disposed of by the Contractor at a site provided for by him.

Upon approval of the Engineer rock blasted from the drain meeting the material specifications for random rip-rap may be incorporated into the works for this purpose.

504.03 Excavations in Road Right-of-ways

There shall be no excavated materials disposed of within the Township or Highway right-of-ways.

505 SPOIL PILE DISPOSAL

This work shall be completed in accordance with Form GEC 300, Section 304.

505.01 Spoil Pile Locations

All existing spoil piles in the construction area.

506 REINSTATE TILE OUTLETS

This work shall be completed in accordance with Form GEC 300 Section 306.

506.01 Tile Outlet Schedule

<u>Sta.</u>	<u>Size of Pipe</u>	<u>Location</u>
0+678	2-150 mm	North Bank
0+678	1-150 mm	South Bank
0+955	1-150 mm	South Bank
* 0+955	1-150 mm	North Bank
0+968	1-150 mm	South Bank

\* Denotes Outlet Not To Be Disturbed By Contractor

507 FENCING

This work shall be completed in accordance with Form GEC 300, Section 308.

507.01 Fencing Schedule

Schedule No. 2 annexed to these Special Provisions.

507.02 Removal of Existing Fence

An existing rail fence as noted in Schedule No. 3 annexed to these Special Provisions shall be taken down by the Contractor and all salvaged materials shall be piled neatly clear of the construction area.

507.03 Basis of Payment for 507.02

Payment shall be made to the Contractor at the tender unit price bid and shall include for all labour and equipment required to complete the work.

508 PRIVATE CULVERTS

This work shall be completed in accordance with Form GEC 300 Section 309.

508.01 Private Culvert Schedule

Schedule No. 4 annexed to these Special Provisions.

509 REMOVAL OF CULVERTS

This work shall be completed in accordance with Form GEC 300 Section 310.

Refer to Schedule No. 4 for existing structure details.

510 RANDOM RIP-RAP

This work shall be completed in accordance with GEC Form 300 Section 311.

510.01 Random Rip-Rap Schedule

Refer to Schedule No. 5 annexed to these Special Provisions.

511 SLOPE SEEDING

This work shall be completed in accordance with Form GEC 300 Section 314 in the areas designated by the Engineer.

512 UTILITIES

The Contractor is advised there are buried and aerial in the construction area. Refer to Form GEC 200, Section 208.

SCHEDULE NO. 1

BIERMAN MUNICIPAL DRAIN

TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

SPREADING LOCATION

Page 1 of 2

---

<u>Lot Description</u>	<u>Station</u>	<u>Owner</u>	<u>Location</u>	<u>Spreading</u>
N.Pt. Lot 10 Conc. 12	0+008.9 to 0+430.5	H. & G. Reed	South Side	@ 300 mm Depth
Pt. Lot 11 Conc 12	0+430.5 to 0+686	J. Bierman	North Side	@ 150 mm Depth
Pt. Lot 11 Conc. 12	0+686 to 0+955.7	J. Bierman	North Side	@ 150 mm Depth
N.Pt. Lot 12 Conc. 12	0+955.7 to 1+057.9	E. & N. Walls	East Side	@ 150 mm Depth
N.Pt. Lot 12 Conc. 12	1+057.9 to 1+270	E. & N. Walls	North Side	@ 150 mm Depth
-	1+270 to 1+284	Township Road	Dispose Material	
Lot 9 Conc. 13	1+284 to 1+787.5	J. Frye	South Side	@ 150 mm Depth
W. Pt. Lot 8 Conc 13	1+787.5 to 1+980	W. & M. Curtis	North Side	@ 150 mm Depth
W. Pt. Lot 8 Conc 13	1+980 to 2+158	W. & M. Curtis	North Side	@ 300 mm Depth
E.Pt. Lot 8 Conc 13	2+158 to 2+354	A. Howard	Either Side	@ 300 mm Depth
E. Pt. Lot 8 Conc. 13	2+354 to 2+410	A. Howard	South Side	@ 300 mm Depth

---

SCHEDULE NO. 1

BIERMAN MUNICIPAL DRAIN

TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

SPREADING LOCATION

Page 2 of 2

---

<u>Lot Description</u>	<u>Station</u>	<u>Owner</u>	<u>Location</u>	<u>Spreading</u>
W.Pt. Lot 10 Conc. 12	0+000 to 0-250	M. Rene	South Side	@ 300 mm depth
E.Pt. Lot 9 Conc. 12	0-250 to 0-580	E. & L. Laming	South Side	@ 300 mm depth
E $\frac{1}{2}$ , W $\frac{1}{2}$ , Lot 9 Conc. 12	0-580 to 0-680	E. Dodge	South Side	@ 300 mm depth
W $\frac{1}{2}$ , W $\frac{1}{2}$ , Lot 9 Conc. 12	0-680 to 0-790	J. & M. Douds	South Side	@ 300 mm depth
E $\frac{1}{2}$ , Lot 8 Conc. 12	0-790 to 0-890	J. & M. Douds	South Side	@ 300 mm depth

---

SCHEDULE NO. 2

BIERMAN MUNICIPAL DRAIN

TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

NEW FENCING

<u>Lot Description</u>	<u>Station</u>	<u>Owner</u>	<u>Est. Quantity</u>	<u>Description Of Work</u>
N.Pt. Lot 10 Conc. 12	0+372	H. & G. Reed	11 m	Cross Fence
N.Pt. Lot 10 Conc. 12	0+430.5	H. & G. Reed	11 m	Cross Fence
Pt. Lot 11 Conc. 12	0+955.7	J. Bierman	15 m	Cross Fence
-	1+269.8	Township Road	15 m	Cross Fence
Lot 9 Conc. 13	1+787.5	F. Frye	15 m	Cross Fence
W. Pt. Lot 8 Conc. 13	2+157.9	W. & M. Curtis	15 m	Cross Fence
W $\frac{1}{2}$ , W $\frac{1}{2}$ , Lot 9 Conc. 12	0-680	J. & M. Douds	15 m	Cross Fence
E $\frac{1}{2}$ , W $\frac{1}{2}$ , Lot 9 Conc. 12	0-580	E. Dodge	15 m	Cross Fence
E.Pt. Lot 9 Conc. 12	0-250	E. & L. Laming	15 m	Cross Fence
		Total	<u>127 m</u>	

SCHEDULE NO. 3

BIERMAN MUNICIPAL DRAIN

TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

REMOVE EXISTING RAIL FENCE

---

<u>Lot Description</u>	<u>Station</u>	<u>Owner</u>	<u>Est. Quantity</u>	<u>Description Of Work</u>
E.Pt. Lot 8 Conc. 13	2+350 to 2+410	A. Howard	66 m	Parallel Fence (Rail Fence)

---

Re-instatement of this fence shall be the responsibility of the owner.

---

SCHEDULE NO. 4

BIERMAN MUNICIPAL DRAIN

TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

PRIVATE CULVERTS

---

<u>Conc.</u>	<u>Lot</u>	<u>Owner</u>	<u>Culvert Req'd.</u>	<u>Existing</u>
12	Pt.11	J. Bierman	1000 mm x 8 m x 2.0 mm	6.5 m
13	Pt. 9	J. Frye	1400 mm x 8 m x 2.8 mm	None
13	Pt.8	W. & M. Curtis	1400 mm x 8 m x 2.8 mm	4.7 m
12	E <sup>1</sup> / <sub>2</sub> , W <sup>1</sup> / <sub>2</sub> , Lot 9	E. Dodge	600 mm x 8 m x 1.6 mm	None
12	E.Pt. 9	E. & L. Laming	800 mm x 8 m x 1.6 mm	None
12	N.Pt.10	H. & G. Reed	900 mm x 8 m x 1.6 mm	Plank Crossing

---

SCHEDULE NO. 5

BIERMAN MUNICIPAL DRAIN

TOWNSHIP OF REAR OF LEEDS AND LANSDOWNE

PROJECT 30089

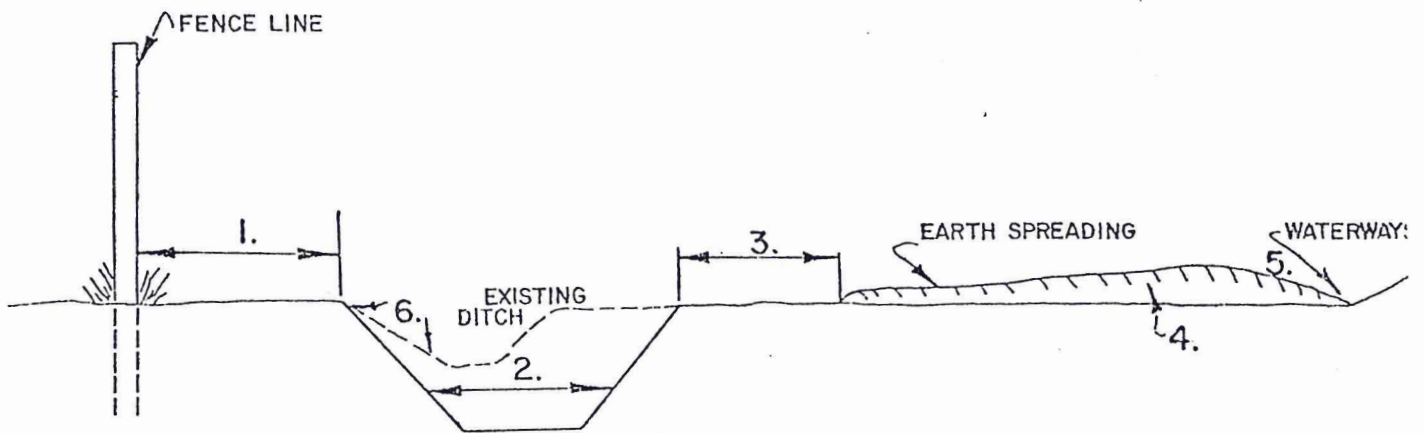
RIP-RAP

<u>Location</u>	<u>Type of Protection</u>	<u>Estimated Quantity</u>
Sta. 0+678, Both Banks, (3 Outlets)	Tile Outlet Protection	6 M <sup>3</sup>
Sta. 0+955, Both Banks, (2 Outlets)	Tile Outlet Protection	4 M <sup>3</sup>
Sta. 0+960, East Bank,	Bank, Tile Outlet, Ditch Inlet Protection	12 M <sup>3</sup>
Sta. 1+057, West Bank,	Bank and Ditch Inlet Protection	15 M <sup>3</sup>
Sta. 1+270, East Bank,	Bank Protection	15 M <sup>3</sup>
Sta. 2+390 to 2+412 East Bank	Bank and Culvert Protection	26 M <sup>3</sup>
		<hr/> 78 M <sup>3</sup>



G.E.C FORM 600

STANDARD  
DRAWINGS

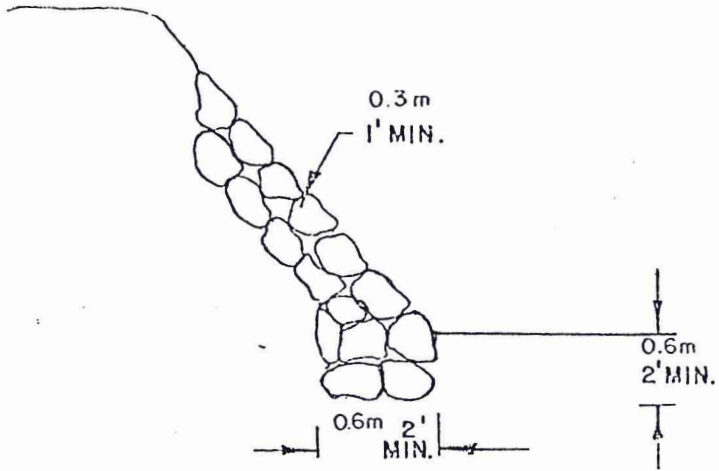


NOTES

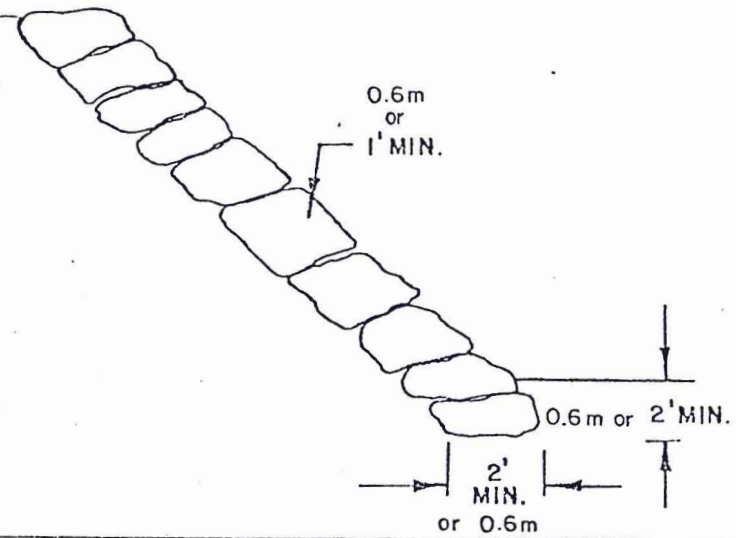
1. No excavation within 1 metre (3 feet) of existing fence line.
2. Side slopes and channel dimensions as per profile drawing.
3. No spoil or spreading within 3 metres (10 feet) of top of bank.
4. Spoil thickness, width and spreading, location to be per Special Provisions.
5. Waterways, as per G.E.C. Specifications For Open Drains.
6. Where one-sided construction is specified the existing grassed slope shall be preserved.

OPEN CHANNEL SYSTEMS				
EARTH CUT CHANNEL				
DESIGN	DRAWN M.F.	SCALE N.T.S.	DATE 79-02-15	DRAWING NO: 7902
A.J. Graham Engineering Consultants Ltd.				
GEC		Ottawa, Ontario		

**RANDOM RIP-RAP**



**HANDLAID RIP-RAP**



RIP-RAP

Rip-Rap is to consist of quarried rock fragments of a size approved by the Engineer. All rip-rap must be properly keyed as per drawing.

NOTE: ROUND FIELD STONES NOT ACCEPTABLE UNLESS ENCLOSED AT THE EXPENSE OF THE CONTRACTOR IN GABIONS OR RENO MATRESSES.

HAND LAID

- Rip-Rap shall commence in a trench below the toe of the bank to a depth of 24" (0.61 metres).
- Minimum size of material to be placed shall be 1 cu. ft.
- Stones shall be placed by machine or by hand to the required length, thickness and depth conforming to the lines given by the Engineer.
- Rock subject to marked deterioration by water or weather will not be accepted.
- The largest stones shall be placed in bottom slopes.
- Stones shall be assorted in the walls so that each rear stone will be imbedded into the slope of the embankment.
- No shaping will be required but the Rip-Rap shall be placed closely and voids chinked with spalls.

RANDOM RIP-RAP

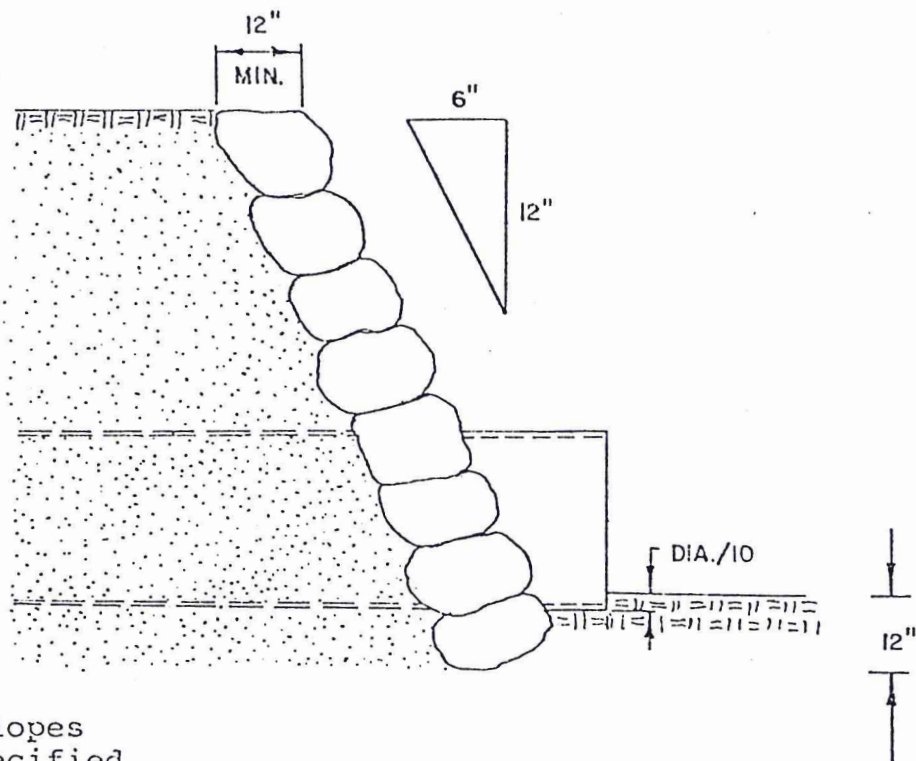
Random Rip-Rap shall be placed by dumping stones into position over the surface to be rip-rapped or placing them by other means. Care need not be taken in placing stones in any particular order.

NOTE:

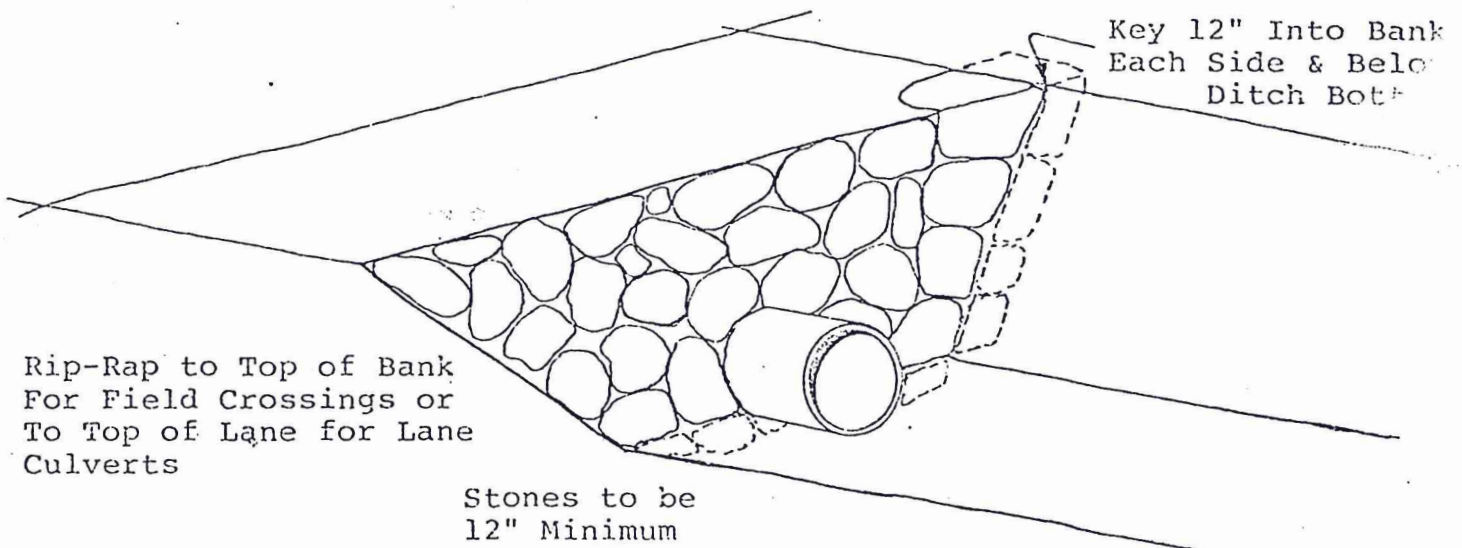
MEASUREMENT FOR PAYMENT

When Rip-Rap is called by the cubic yard, measurement shall be made in place and converted to cubic yards based on theoretical dimensions.

<b>OPEN-CHANNEL SYSTEMS</b>				
<b>RIP-RAP (BANK PROTECTION)</b>				
DESIGN	DRAWN M.F.	SCALE N.T.S.	DATE 79-02-15	DRAWING NO. 7903
A.J. Graham Engineering Consultants Ltd.				
<b>GEO</b>		Ottawa, Ontario		



Note: Bank Slopes  
as Specified



Rip-Rap to Top of Bank  
For Field Crossings or  
To Top of Lane for Lane  
Culverts

Stones to be  
12" Minimum

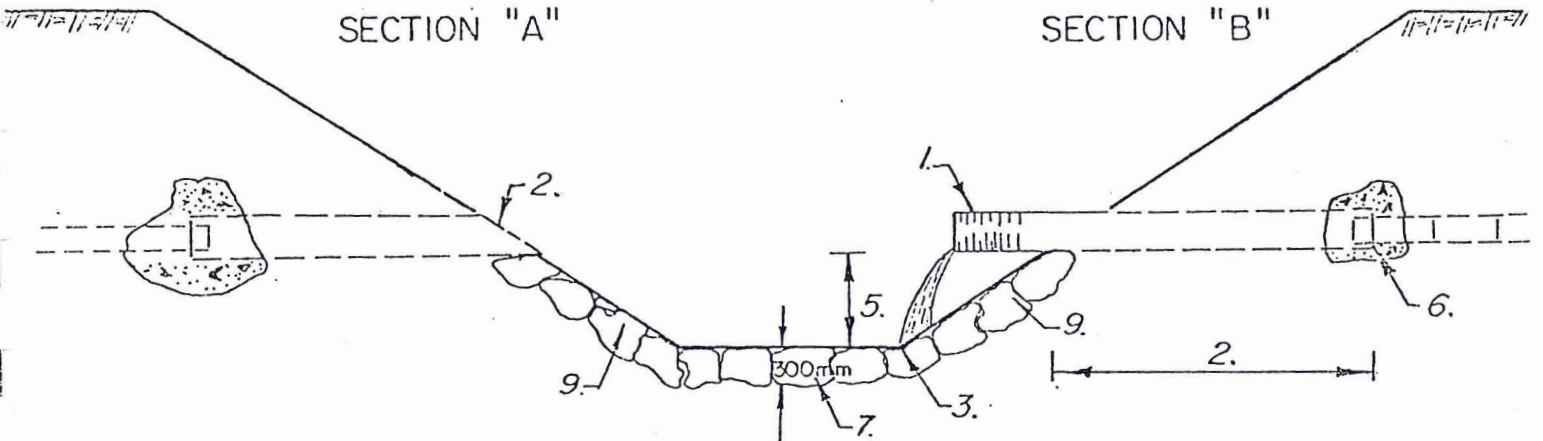
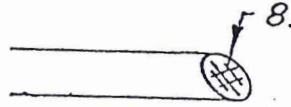
Key 12" Into Bank  
Each Side & Below  
Ditch Bottom

Note: Round Field Stones Not  
Acceptable for Rip-Rap.

Note: Rip-Rap to be on  
a Slope of 1/2:1  
Unless Otherwise  
Specified

OPEN - CHANNEL SYSTEMS				
RIP-RAP AT CULVERT				
DESIGN	DRAWN	SCALE	DATE	DRAWING NO.
	M.F.	N.T.S.	79-02-15	7904
A.J. Graham Engineering Consultants Ltd.				
		Ottawa, Ontario		

TILE OUTLET



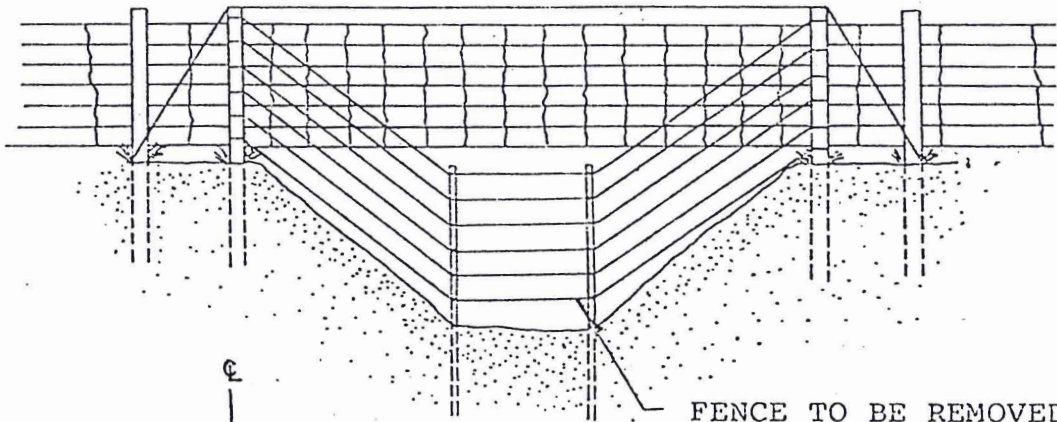
1. Outlet to be continuous rigid pipe, minimum length 4 m.
2. 2/3 of its length to be buried, per Section B, or recessed per Section A, as specified in the Special Provisions.
3. Overhang length to discharge at the toe of the bank.
4. Pipe should angle slightly downstream so as not to impede normal drain flow.
5. Outlet to be 500 mm minimum above ditch bottom or as specified.
6. Tile to be slipped 150 mm into pipe and sealed with mortar.
7. Rip-rap to be placed on ditch bottom or slope as required to prevent erosion.
8. Rodent gate to be installed at pipe end.
9. End of tile trench to be rip-rapped with stone to prevent erosion. Rip-rap to be 1 m wide from invert to ditch bottom.

SUBSURFACE SYSTEMS				
TILE OUTLET				
REVISED DATE	DRAWN	SCALE	DATE	DRAWING NO.
80-01-01	M.F.	N.T.S.	79-02-15	7910
A.J. Graham Engineering Consultants Ltd.				
GEC		Ottawa, Ontario		

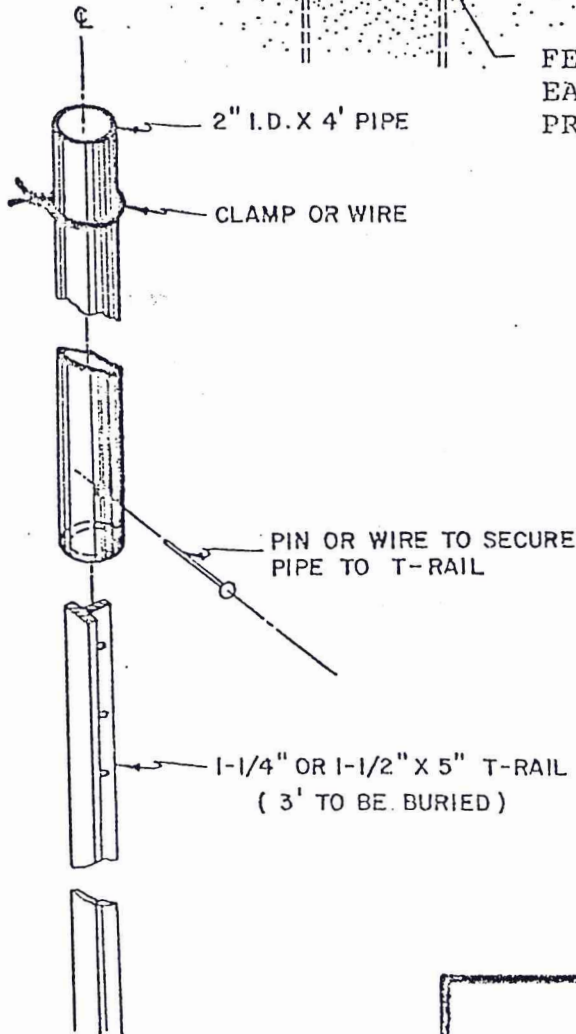
WATERGATE

(INSTALLATION TO BE MADE BY OWNERS).

One length of No. 9 wire run from the anchor posts across the top of the fence will provide a hook-up for the gate when conditions warrant raising it clear of the drain.

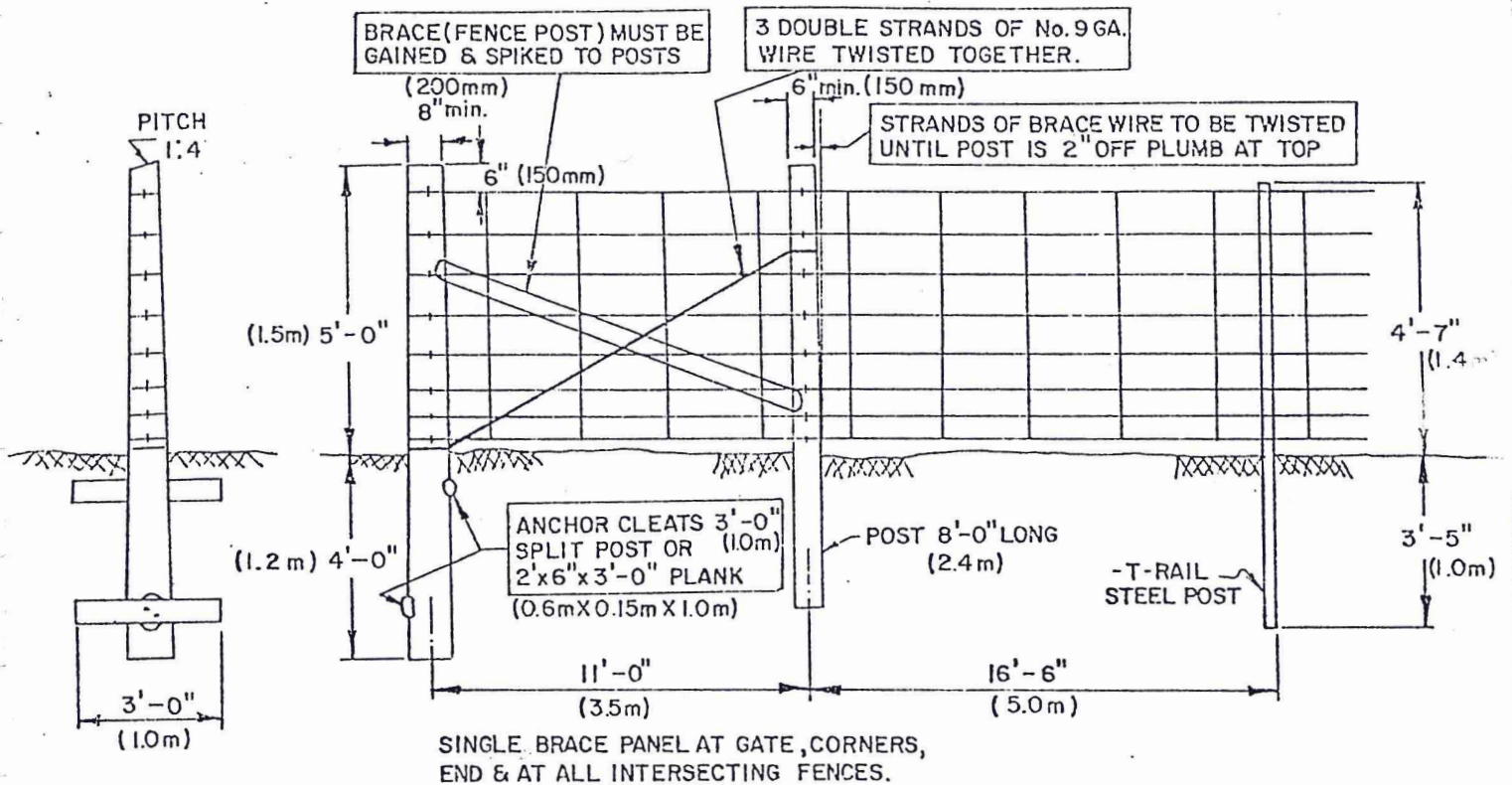


FENCE TO BE REMOVED  
EACH FALL BY  
PROPERTY OWNER.



<b>FENCING SUGGESTION</b>				
<b>WATERGATE</b>				
DESIGN C.I.A.	DRAWN M.F.	SCALE N.T.S.	DATE 79-02-15	DRAWING NO. 7920
A.J. Graham Engineering Consultants Ltd.				
<b>GEC</b>		Ottawa, Ontario		

## FENCING SPECIFICATIONS



NOTE : MAXIMUM DISTANCE BETWEEN BRACE PANELS IS 660'  
(200m)

FENCE FABRIC - No 9-3/4 STANDARD, STYLE No: 948 MEETING C.S.A. STD. G 42

FENCING STANDARDS				
FENCING SPECIFICATIONS				
DESIGN	DRAWN	SCALE	DATE	DRAWING NO:
	M.F.	N.T.S.	79-02-15	7921
A.J. Graham Engineering Consultants Ltd.				
<b>GEC</b>		Ottawa, Ontario		