



Ainley Graham and Associates Limited

Consulting Engineers and Planners

2724 Fenton Road, Gloucester, Ontario K1T 3T7
Tel: (613) 822-1052 • Fax: (613) 822-1573

File No. 93004-1

October 11, 1996

Township of Front of Leeds & Lansdowne
Box 129
Lansdowne, Ontario
K0E 1L0

Attn: **Mrs. Gloria Crawford**
Treasurer

Ref: **Maintenance Inspection**
Poldervaart-Webster Municipal Drain

Dear Mrs. Crawford:

On October 8, 1996 our inspector met with C. Poldervaart, Pt. Lots 12, 13, 14 Conc 2, at the County Rd culvert on the Poldervaart-Webster Municipal Drain. The problem area was identified as being upstream of Sta. 106+80 and mostly related to silting of the drain. When the ditch was first dug, the ditch ranged from 5' to 6' deep, especially at the top end where Mr. Poldervaart has tile outlets which presently are either buried or close to it. The surrounding soil type is a soft silty clay which has washed into the ditch. We shall have to conduct a centreline survey to determine how much excavation is possible, especially at the top end. We have a fixed outlet at the County Rd culvert which will limit the proposed ditch bottom grade line. The survey would range from Sta. 106+80 to Sta. 130+00.

After finishing with Mr. Poldervaart, our inspector moved to the north side of the County Rd to check the ditch outletting from the Road Culvert. From Sta. 106+15 to Sta. 93+86 we found that the owner, J. Best S 1/4, 14 Conc 3 has proceeded on his own to maintain the ditch. He has also relocated part of the drain as shown on the attached drawings. As far as we know permission was not given either by Council or the Drainage Superintendent. However, the ditching has been well done and provides an excellent outlet for the lands south of the County Rd.

The access culvert installed as shown in the drawings is not acceptable. It is an old water boiler with the ends removed. During installation the downstream end of the culvert was badly damaged. Being an access crossing we would recommend a 60" (1500 mm) dia culvert be installed. Rip-rap with filter cloth is required at the junctions of the relocated ditch and filled in channels.



COLLINGWOOD

BARRIE



BELLEVILLE

OTTAWA



Revised 11/96

The new relocation involves only about $1/3 \pm$ of the existing channel. The remaining $2/3 \pm$ was excavated in the usual maintenance fashion. The new relocated channel is more cost effective than the one shown on the Consents B-35, 36, 37/95. We would recommend that the people involved with the above consents be advised of the revised alignment.

Under normal circumstances we would recommend that J. Best, Contractor, be reimbursed for providing an outlet for water flowing from the lands south of the County Rd. Our experience with previous projects involving relocation of the drain is that only maintenance costs relating to the original drain can be considered. The relocation is the owner's responsibility. Based on equipment rental costs for maintenance construction in S $1/2$, Lot 15, Conc 3, the cost in S $1/2$, Lot 14 would be \$684.80 including G.S.T.

The following options were suggested by Sid Vanderveen, P.Eng., Ministry of Agriculture:

1. Council could insist that the landowner restore the drain to its original condition at his cost.
2. Advise the landowner that a full Engineer's Report would be required to cover the relocation and subsequent abandonment of the old channel. A legal by-law could then be issued. The landowner would be responsible for all costs.
3. Make note of the new alignment and document it in the new by-law. A sketch should be attached. If the ditch construction was done to Council's satisfaction, it may decide to reimburse the contractor for maintenance construction based on the old channel in S $1/2$, Lot 14, Conc 3 for the amount of \$684.80. At the same time Council should advise J. Best that this type of incident will not be tolerated in the future.

Sid Vanderveen also suggested that the options are rather severe and recommends option 3. We advise that if Council selects option 3 that the \$684.80 be held back until the access crossing is replaced.

We recommend that Council authorize the Drainage Superintendent to survey and subsequently use equipment rental to maintain the Poldervaart-Webster Municipal Drain south of County Rd #34. The actual cost of this work would be chargeable to all properties south of County Rd #34 in the Poldervaart-Webster Drain drainage area. The amounts would be pro-rata with their assessments under the 1974 report.

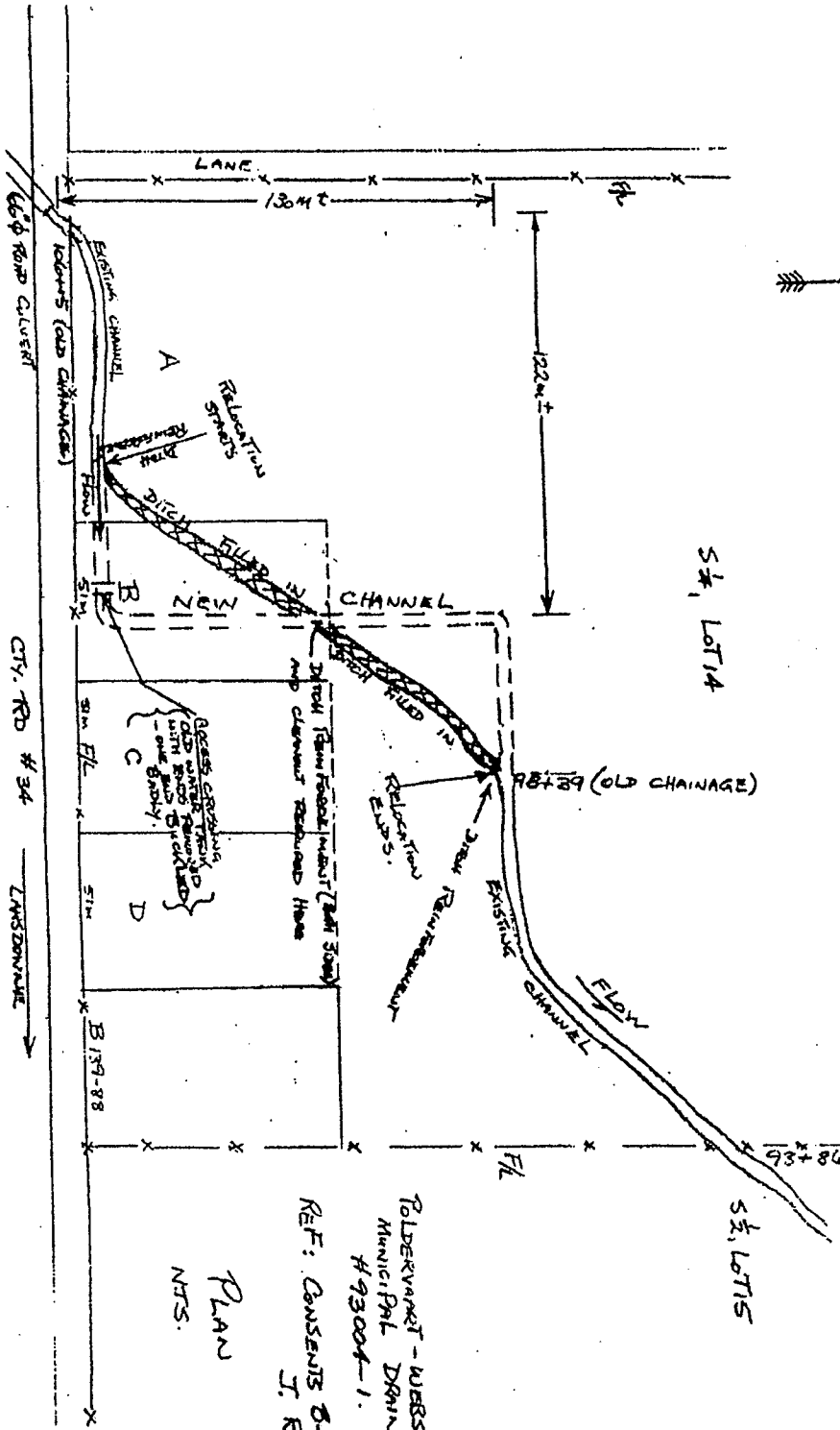
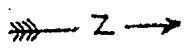
Yours very truly,

AINLEY GRAHAM AND ASSOCIATES LIMITED,



Charles Auld
Drainage Superintendent

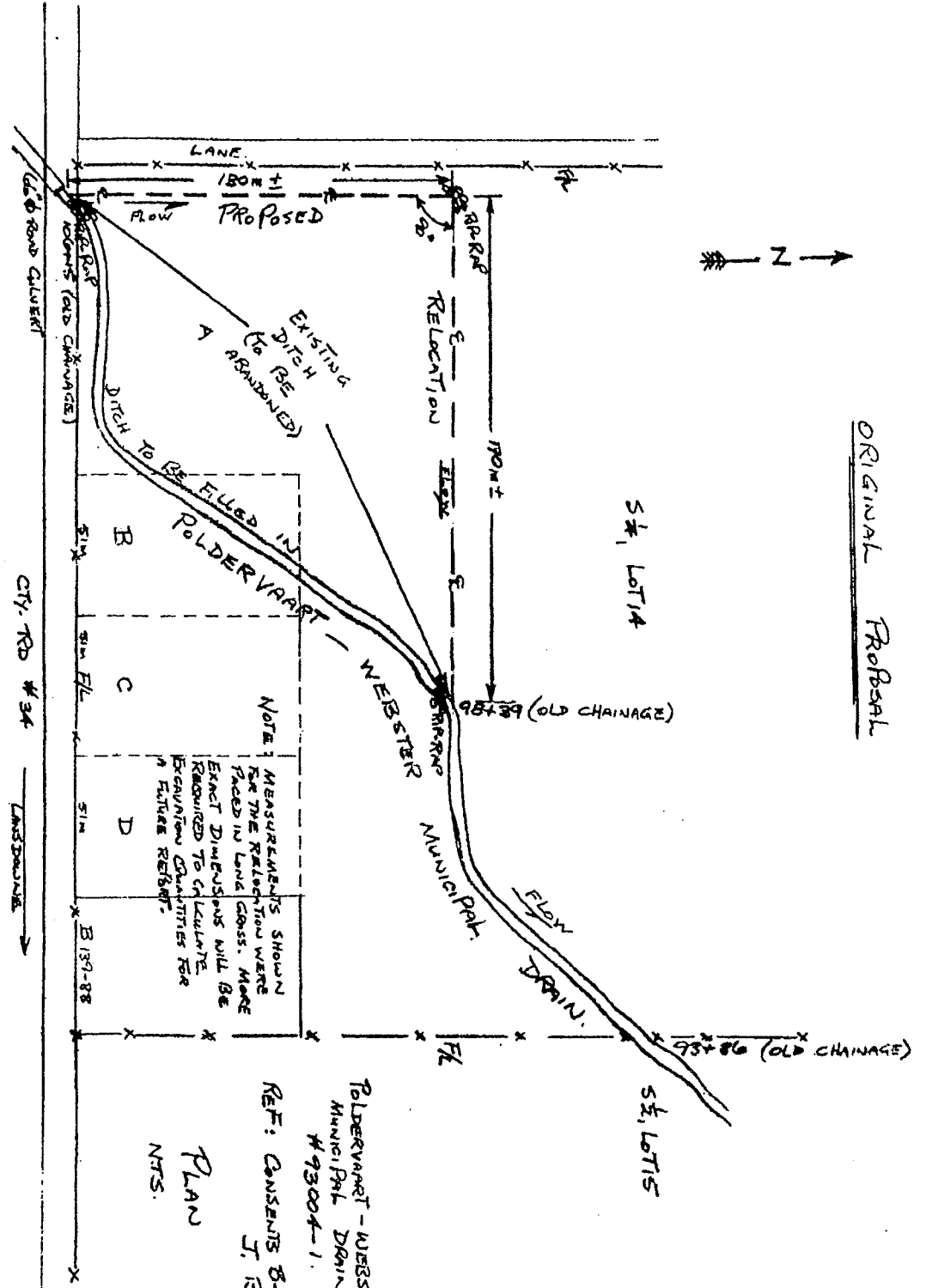
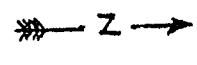
AS CONSTRUCTED
OCTOBER 9/1966



ROLDERVANKI - WEBSTER
MUNICIPAL DRAIN
#93004-1.
REF: CONSENTS 8-35, 86, 37/45
J. RESTI.

PLAN
NTS.

ORIGINAL Proposal



NOTE: MEASUREMENTS SHOWN FOR THE RELOCATION WERE TAKEN IN LONG CROSS. MORE EXACT DIMENSIONS WILL BE REQUIRED TO CALCULATE EXACT QUANTITIES FOR A FUTURE REBID.

REF: CONSENTS B-351, 36, 37/95
 J. BEST.
 POLDERVAART - WEBSTER
 MUNICIPAL DRAIN
 #93004-1.

PLAN
 NTS.

ENGINEER'S REPORT
POLDERVAART - WEBSTER BRANCH
OF THE
SMITH - BOLGER MUNICIPAL DRAINAGE WORKS
TOWNSHIP OF THE
FRONT OF LEEDS AND LANSDOWNE

Project No. 2388

A. J. Graham Engineering
Consultants Limited
2277 Riverside Drive
Suite 208
Ottawa, Ontario
K1H 7X6

December 7, 1973
Revised January 22, 1974.
Revised February 19, 1974.
Revised April 1, 1974

December 7, 1973
Revised January 22, 1974
Revised February 19, 1974

The Reeve and Members of Council
Front of Leeds and Lansdowne
Lansdowne, Ontario

Gentlemen:

Report of the Proposed Poldervaart - Webster Branch
of the Smith-Bolger Municipal Drainage Works

In compliance with your resolution of 3 July, 1973, we submit herewith, our report on the proposed Poldervaart - Webster Branch of the Smith-Bolger Drain, Drain, written under the Municipal Drainage Act, 1972 as amended - Section 3.

Our work has been undertaken following a petition submitted to Council, signed by the majority of owners in the area requiring drainage, as described on the petition.

Inspection and Survey:

Our inspection, meetings with property owners and survey, were undertaken on the watercourse within the area, in the fall of the year, and from the data gathered, we have compiled the following information:

The watercourse is generally of a sufficient depth and cross-section to provide a surface water outlet to the properties along its course, in Concession 3.

Work was undertaken very recently, by the owners of the S $\frac{1}{2}$ of lot 14 and N $\frac{1}{2}$ of lot 15, Concession 3, to deepen the drain and generally improve its cross-section.

The drain has a rock bottom throughout lot 16, Concession 3.

The owners of the west part of lot 14, Concession 2, and N $\frac{1}{2}$, 15, Concession 3, have requested a tile drain outlet for their property, within the natural drainage area perimeter.

The remaining owners require relief for surface drainage.

Location of the Drainage Works:

The present watercourse has its head on the lot line between 13 and 14 of the 2nd concession, approximately 1,800' south of the road between Concessions 2 and 3; it thence flows north-westerly to the central part of lot 13, then north and easterly to the road between Concessions 2 and 3. We recommend a re-alignment of the drain on lot 13, and the existing watercourse within the area re-aligned, shall be abandoned as a Municipal Drain.

The drain flows north-easterly across lots 14, 15 and 16 to approximately the mid-part of Concession 3, thence turns north-westerly and flows across lots 16, 15 and 14 and the road between Concessions 3 and 4 and reaches its outlet in the Smith-Bolger Main Drain Municipal Drain, on lot 13, Concession 4.

We recommend that the entire watercourse as above described, be incorporated as a Municipal Drain.

Recommendations:

We recommend that the existing watercourse be improved by deepening and widening on lot 14 and lot 15, Concession 3. On lot 13, Concession 2, approximately 750' of the existing drain is to be re-aligned, and the remaining portion be deepened and widened. All work shall be carried out in accordance with the accompanying plan and profile.

The work shall provide a tile drain outlet for part of lots 13 and 14, Concession 2, N $\frac{1}{2}$ lot 15, Concession 3 and an improved surface water outlet for the remaining lands affected.

The capacity of the drain has been designated using criteria recommended for excellent drainage on grain crops.

No work has been recommended in lot 16, Concession 3, since the present drain bottom is rock.

We have provided for the construction of the downstream portion of the drain through lots 15 to 14, Concession 3 to its outlet and further alignment revisions in the above noted lots has been included in the report dated February 19, 1974. We have lowered this portion of the drain such that an increased capacity for surface drainage and an improved outlet for tile drainage may be expected by the adjoining lands.

Cost:

The total cost of the drainage works has been estimated to be \$34,799.00 and is shown in detail in Annex "A" attached hereto.

Laterals:

The owners of lands along the drain should note that the proposed construction will not immediately improve all wet areas until lateral drains have been constructed or repaired.

Fences:

Fence lines crossing the drain tend to collect debris and often cause a restriction in the drain's flow. Further, they are often damaged during spring break-up.

We therefore recommend that the respective property owners install fence crossings, as detailed in Standard Drawing No. 3 attached, where new crossings are required.

ALLOWANCES

Land or Crop Damage:

Section 8(1) The Drainage Act

Allowances for land or crop damage as detailed in Annex "B" hereto, will in our opinion, compensate the property owners indicated for land or crop damage, if any, caused by the construction of this drainage project.

Incorporation of Existing Drains:

Section 8(7) The Drainage Act

As provided for within the Drainage Act, an allowance is made to the owners on whose land the drain was improved this year. Allowances are detailed in Annex "B", attached.

Land Allowance:

Section 8(8) The Drainage Act

Allowances for land, as detailed in Annex "B" hereto will, in our opinion, adequately compensate the property owners indicated for the land required to construct the drainage works.

BRIDGES OR CULVERTS

Road Culverts: Section 8(2) The Drainage Act

(i) County Road #34 - Station 106+41

The existing 7' x 3' concrete culvert on the road between Concessions 2 and 3 at lot 14, is sufficient in size for its location on the drain. However, the footings are not at a sufficient depth to allow lowering of the existing drain bottom a distance of over two feet, as proposed herein.

Using present M.T.C. design criteria, it is our recommendation that a new structure be installed in this location on a skew number of 120.

Cost Analysis

Supply 1 - 66" C.S.P. x 12 gauge x 70'		\$1,930.00
Remove existing structure		500.00
Excavate for and place new culvert		1,250.00
Granular "C" Backfill	450 c.y.	900.00
Granular "A" Backfill	90 c.y.	270.00
Reinstate pavement		<u>400.00</u>
Total Construction Estimate		\$5,250.00
Engineering and Contingencies		<u>790.00</u>
		<u>\$6,040.00</u>

The cost of this installation has not been included in the estimate of cost as it has been assumed that the United Counties of Leeds and Grenville will accept this responsibility as part of its Road Program.

(ii) Township Road Culvert - Station 3+06.

The existing concrete structure through the Township Road at station 3+06 of the Main Drain has sufficient end area to satisfy the present drainage requirements. However, in order to provide a satisfactory outlet for tile drainage, a lower invert elevation is required.

It is, therefore, our recommendation that a channel be constructed through the structure and lined with hand laid rip-rap. Sufficient rip-rap material will be available from the rock cuts adjacent to the culvert.

Cost Analysis

Excavation of Channel	55 c.y.	\$ 300.00
Hand Laid Rip-Rap	27 c.y.	<u>810.00</u>
Total Estimated Cost		<u>\$1,110.00</u>

The cost of this work has not been included in the estimated cost, as it has been assumed that the Township will accept the responsibility of this work as part of its Road Program.

PROJECT NO.
2388.

ROAD STRUCTURE AT STA. 3+06.
OF POLDERVAART - WEBSTER BRANCH
OF SMITH-BOLGER MUN. DRAIN.

DATE

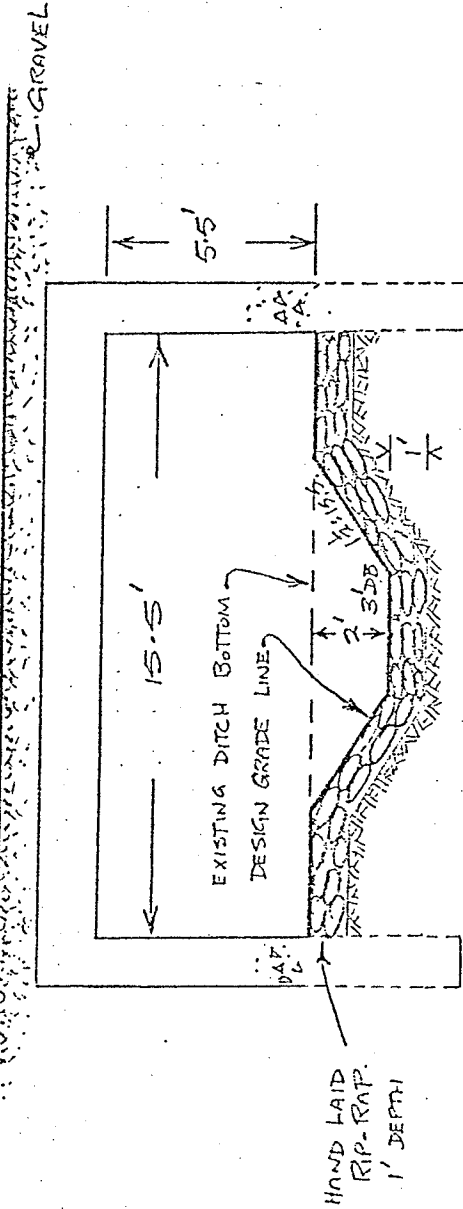
JAN. 22/74.

FRONT OF LEEDS & LANDSDOWNE.

END VIEW - ROAD STRUCTURE.

N. T. S.

ROAD SURFACE.

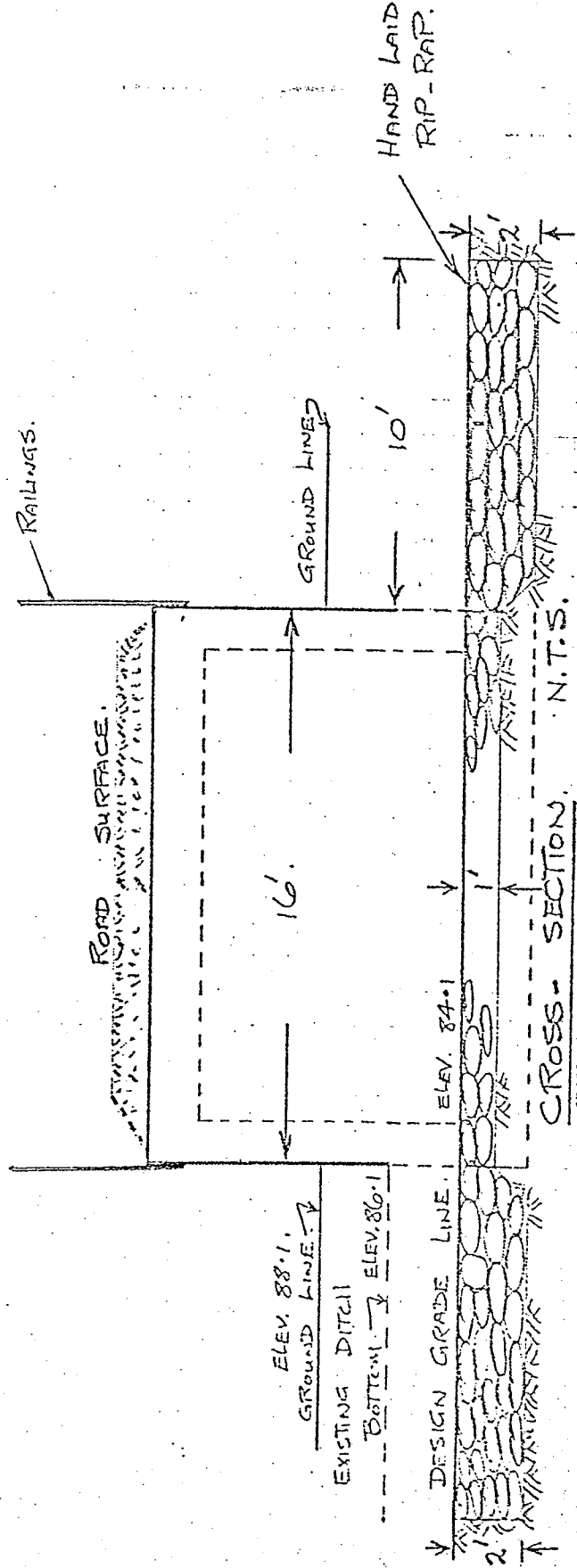


A. J. GRAHAM ENG. CONSULT L

OTTAWA;

ONTARIO.

NOTE :- RIP-RAP TO BE
FLARED INTO THE
STREAM BANKS AT
1 1/2 : 1 S.S.



Farm Crossings: Section 8(5) The Drainage Act

Farm Crossings are detailed in Annex "C" hereto. Culverts to be installed will be supplied by the Township, installed by the Contractor and paid for by the drain.

Future maintenance of these crossings will be the responsibility of the respective property owners on whose lands they are installed, and this work is recommended to be carried out annually.

Centreline:

The Centreline of the Drain shall be the centre line of the existing, except where relocation is to be carried out on lot 13, Concession 2 and lots 14 and 15, Concession 3. These portions shall be staked by the Engineer, prior to construction.

Distribution of Costs:

The estimated costs for this construction are apportioned to the properties responsible for benefit and outlet as determined by their areas, locations and run-off.

The detailed estimated Schedule of Assessment is attached in Annex "D" hereto, together with estimated abatements of grant and allowances, and our estimate of the net cost to each land owner on this project.

Grants:

Under Section 62, 64 and 65 of the Drainage Act 1972, a Provincial Grant of 33 1/3% of the cost of the project assessable to agricultural lands, may be obtained.

A subsequent Federal A.R.D.A. Grant, administered through the Provincial Grant Administration Media, will further reduce assessments by another one-third.

Agricultural assessments are then payable two-thirds by Grant and one-third by property assessment.

Future Maintenance:

Future maintenance of the drain shall be the responsibility of the Municipality of the Front of Leeds and Lansdowne. The cost of the maintenance within the area constructed under this report shall be borne by the properties assessed and in the same relative proportions as set out in the Schedule of Assessment, Annex "D", of this report.

Plans and Specifications:

The plan, profiles and special provisions to the General Specifications form a part of this report and are attached in Annex "E". The construction of the project shall be in accordance with these documents and the General Specifications, which are available for reference at the Township Office.

Respectfully submitted for Council's consideration this 7th day of December, 1973. and re-submitted January 22, 1974, revised February 19, 1974 and April 1, 1974.



A. J. Graham

A. J. Graham, P.Eng.

A. J. GRAHAM ENGINEERING CONSULTANTS LIMITED.

EXHIBIT "A"

ESTIMATED COST

Project No. 2388

<u>ITEM</u>	<u>UNIT</u>	<u>QUANTITY</u>	<u>AMOUNT</u>
Hardpan Excavation	c.y.	60	150.00
Earth Excavation & Spreading	c.y.	8880	12,000.00
Rock Excavation & Disposal	c.y.	503	9,054.00
Clearing & Disposal	Lump Sum		500.00
Installation of Farm Culverts	ea.	5	1,150.00
Rip-Rap (Hand Laid) for Fram Crossings	c.y.	14	350.00
Rip-Rap (Random)	c.y.	14	280.00
			<hr/>
		Total Estimated Tender	\$23,484.00
 <u>Material Supplied by Township</u>			
Supply Farm Culverts	ea.	5	\$ 2,938.00
 <u>Allowances</u>			
Section 8(1) - Land or Crop Damage			\$ 1,383.00
Section 8(7) - Incorporation of Existing Drains			1,105.00
Section 8(8) - Land			439.00
			<hr/>
		Total Allowance	\$ 2,297.00
 <u>Administration:</u>			
Engineer's Fees and Expenses for Survey, Plan and Report			\$ 2,800.00
Clerk's Fees			300.00
Printing of Reports and By-Laws			100.00
Engineer's preparation for and attendance at meetings for consideration of report and Court of Revision			250.00
Fees for administration and supervision of construction by Township Drainage Commissioner and Engineer			1,100.00
Contingencies			900.00
			<hr/>
		Total Administration Cost	\$ 5,450.00
			<hr/>
		TOTAL ESTIMATED COST	\$34,799.00
			<hr/> <hr/>

ANNEX "B"

ALLOWANCES

Section 8(1) - Land or Crop Damage
 Section 8(7) - Incorporation of Existing Drains
 Section 8(8) - Land

Con.	Lot	Owners	Section 8(1)	Section 8(7)	Section 8(8)	Total
2	Pt.Lot 13	C. Poldervaart	480.00		190.00	670.00
3	Pt.S $\frac{1}{4}$,14	J. McDonald	135.00	205.00	40.00	480.00
3	S $\frac{1}{2}$ Lot 15	U. Warren	195.00		55.00	250.00
3	N $\frac{1}{2}$ Lot 15	A.R.D.A.	345.00	900.00	87.00	1,232.00
3	N $\frac{1}{2}$, 14	G. McDonald	181.00		67.00	248.00
4	S.E.Pt.13	M. Bolger	47.00		-	47.00
TOTAL			1,383.00	1,105.00	439.00	4,927.00

* Allowances for the value of work previously done under Section 8(7) have been allowed to the property where the work was conducted.

ANNEX "C"

Farm Crossings: Section 8(5) Of The Drainage Act

Con.	Lot	Owner	Description of Proposed Crossings and Approximate Location	Rip-Rap	Estimate of Cost
2	Pt. Lot 13	C. Poldervaart	Station 125+00 48" x 30' CSP 12G	-	\$ 650.00
	Pt. Lot 13	C. Poldervaart	Station 110+00 48" x 30' CSP 12 G	-	650.00
3	S $\frac{1}{2}$ Lot 15	U. Warren	Station 72+50 60" x 32' CSP 12G		910.00
3	N $\frac{1}{2}$ Lot 15	A.R.D.A.	1 - 6'9" x 5'0" x 20' C.S.S.P.A.	8 c.y.	1,500.00
3	N $\frac{1}{2}$ Lot 15	A.R.D.A.	66" x 20' CSP 12G	6 c.y.	928.00
TOTAL ESTIMATED COST OF FARM CROSSINGS					4,638.00

AREA "D"

SCHEDULE OF ASSESSMENT

POLDERVAART - WEBSTER BRANCH
of the
SMITH-BOLGER MUNICIPAL DRAIN

Front of Leeds & Lansdowne

Con.	Lot	Owner	Approx. Acres Affected	Benefit	Outlet	Total
2	Pt. 10	A.R.D.A.	7		98.00	98.00
	Pt. 11	H. Crombach	56		785.00	785.00
	Pt. 12	Front of Leeds & Lansdowne	15		216.00	216.00
	Pt. 12	C. Poldervaart	25		358.00	358.00
	Lot 13	C. Poldervaart	115	8,035.00	1,600.00	9,635.00
	Pt. 14	C. Poldervaart	50	3,805.00	1,136.00	4,941.00
	Pt. 14	W. Keyes	40		890.00	890.00
	Pt. 15	E. Warren	25		551.00	551.00
	Pt. 16	E. Warren	15		306.00	306.00
	3	Pt. 11	A. Gordon	3		42.00
W $\frac{1}{2}$, 12		M. Lappan	62		392.00	392.00
SE $\frac{1}{4}$, 12		H. Crombach	50		235.00	235.00
NE $\frac{1}{4}$, 12		J. McDonald	22		23.00	23.00
NW $\frac{1}{4}$, 13		J. McDonald	34		36.00	36.00
S $\frac{3}{4}$, 13		C. Poldervaart	140		427.00	427.00
N $\frac{1}{2}$, 14		G. McDonald	100	1,617.00	107.00	1,634.00
SW Pt. 14		R. Tracy	16		89.00	89.00
S $\frac{1}{4}$, 14		J. McDonald	84	1,725.00	457.00	2,182.00
S $\frac{1}{2}$, 15		U. Warren	125	2,640.00	295.00	2,935.00
N $\frac{1}{2}$, 15		A.R.D.A.	100	6,014.00	107.00	6,121.00
S $\frac{1}{2}$, 16		U. Warren	116		840.00	840.00
N $\frac{1}{2}$, 16		E. Webster	100		270.00	270.00
S.Pt. 17		I. Doak	72		439.00	439.00
NW Pt. 17		J. McDonald	45		122.00	122.00
* NE Pt. 17	J. VanWeert	34		92.00	92.00	
* Pt. 18	J. Grey	27		73.00	73.00	
4	SE Pt. 13	M. Bolger	2			
2 & 3		County Rd. #34	8	50.00	412.00	462.00
3 & 4		Twp. Road	5	503.00	5.00	508.00
3	Lots 11/12	Twp. Road	4		7.00	7.00
			1500 Ac.	24,389.00	10,410.00	\$34,799.00

ANNEX "E"
SPECIAL PROVISIONS
CONSTRUCTION OF THE
POLDERVAART - WEBSTER BRANCH
OF THE

SMITH - BOLGER MUNICIPAL DRAINAGE WORKS

Project No. 2388

A. J. Graham Engineering Consultants Ltd.,
Suite 208
2277 Riverside Drive
Ottawa, Ontario
K1H 7X6

December 7, 1973

Re-submitted January 22, 1974
Revised February 19, 1974
Revised April 1, 1974

(A)

MUNICIPAL DRAINAGE

TENDERING REQUIREMENTS

- (a) The tender must be on the TENDER FORM supplied.
- (b) The Tender must be legible and all items must be bid with the unit price for every item and other entries being fully clear.
- (c) Adjustments by telegram or letter to a Tender already submitted will not be considered.
- (d) Bids which are restricted by added statements to the Tender form may be disallowed.
- (e) Tenders must be in a sealed envelope clearly marked as to contents and addressed to the Township Clerk or as otherwise stipulated in the official tender call advertisement.
- (f) The tender must be in the Clerk's office no later than the time and date specified on page one of the Tendering documents.
- (g) The Tender forms must be signed and witnessed in the space provided on the form, with the signature of the Bidder or of a responsible official of the organization bidding.
- (h) The Tender must be accompanied by a certified cheque in the amount of no less than 10% of the total bid and made payable to the Treasurer of the Township receiving the bids.
- (i) BONDING REQUIREMENTS

Unless a Performance Bond is requested in the Tender call advertisement, the successful bidder may elect to file a 100% performance bond with the Township Clerk or in lieu thereof, his tender deposit cheque will be held until after acceptance of the works.

(B) Special Provisions for Contract

LIQUIDATED DAMAGES

1. TIME

Time shall be the essence of this agreement.

2. The Contractor shall diligently prosecute his work on this Contract to completion by the date entered for completion of the works on the Tender Form.

An extension of time may be granted in accordance with section 17.2 of the General Conditions for the Contract.

3. LIQUIDATED DAMAGES

It is agreed by the parties to the Contract that in case all the work called for under the Contract is not finished or completed within the time for completion as set forth in the Special Provisions, damage will be sustained by the Township and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the Township will sustain in the event of and by any reason of such delay and the parties hereto agree that the Contractor will pay to the Township the sum of Twenty-Five Dollars (\$25.00) per day for liquidated damages for each and every calendar day's delay in finishing the work in excess of the time allowed for completion of the work and it is agreed that this amount is an estimate of the actual damage to the Township which will accrue during the period in excess of the designated completion date.

The Township may deduct any amount due under this paragraph from any moneys that may be due or payable to the Contractor on any account whatsoever. The liquidated damages payable under this paragraph are in addition to and without prejudice to any other remedy, action or other alternative that may be available to the Township.

The Contractor shall not be assessed with Liquidated Damages for any delay caused by Acts of God, or of the Public Enemy, Acts of the Province, or of any Foreign State, Fire, Flood, Epidemics, Quarantine, Restrictions, Embargoes or delays of Sub-Contractors due to such causes.

(c) SPECIAL PROVISIONS

Earth Excavation and Spreading

The Contractor shall place and level excavated earth material in low areas within 200' of the drain, prior to disposal by spreading. The low areas to be filled shall be as directed by the Engineer or Commissioner.

The location of the work shall be the location of the existing drain except where a new drain is to be constructed station 110+00 to 120+00, approximately and 3+06 to 13+82 = 12+00 ahead.

Re-located areas shall be staked by the Engineer prior to the time of construction.

Clearing

All brush and branches are to be placed in piles and burned by the Contractor. It will be his responsibility to obtain necessary permits for this work. All other work shall be in accordance with Section 2.11 of the General Specifications.

Installation of Farm Culverts

Schedule of pipes to be placed:

Approximately station 125+00 - Lot 13, Concession 2	48"x30' CSP 12G	
Approximately station 110+00 - Lot 13, Concession 2	48"x30' CSP 12G	
Approximately station 72+50 - S $\frac{1}{2}$ 15, Concession 3	60"x32' CSP 12G	
Approximately station 28+00 - N $\frac{1}{2}$ 15, Concession 3	66"x20' CSP 12G	- 6 c.y. Rip-Rap.
Approximately station 10+00 - N $\frac{1}{2}$, 15, Concession 3	1-6'9"x5'0"x20'	- 8 c.y. Rip-Rap

PUBLIC UTILITIES

Buried Cables

The Contractor is advised there may be buried cables in the vicinity of construction. It is the responsibility of the Contractor to notify the respective authority, and obtain the cable locations, before commencing work.

Existing Farm Crossings

All existing farm crossings shall remain the property of the respective owners and it will be their responsibility to remove them from the site after the Contractor has excavated them from the drain.

(C) SPECIAL PROVISIONS

Pipelines

A Trans Northern transmission lines is located at approximately station 30+08. This location is beyond the area of construction.

Material excavated between stations 9+82 and 13+82 is to be used to fill existing ditch in re-located area within 200 feet of the re-location. Filling or shaping of the existing ditch beyond this limit shall be the responsibility of the property owner.

Rip-Rap

Random rip-rap will be required on the north bank station 13+82 = 12+00 and on bottom of inlet channel south of station 9+82.

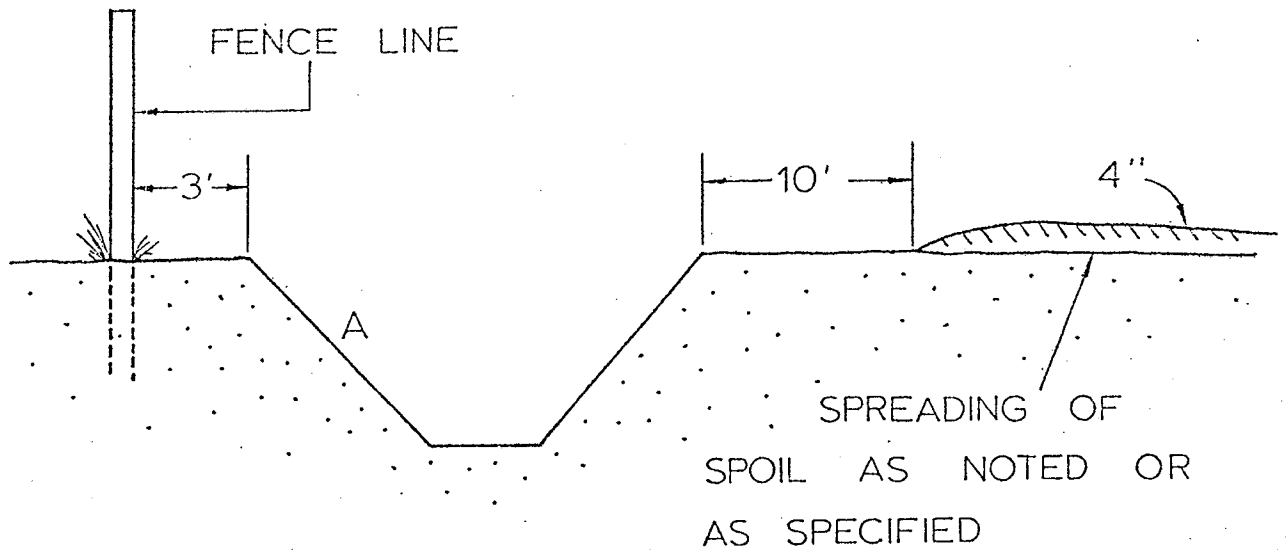
MARCH 1, 1972

STANDARD
DRAWINGS
FOR
OPEN &
TILE DRAINS

GEC

A. J. Graham Engineering Consultants Ltd.

TYPICAL SECTION: EARTH CUT



NOTE :

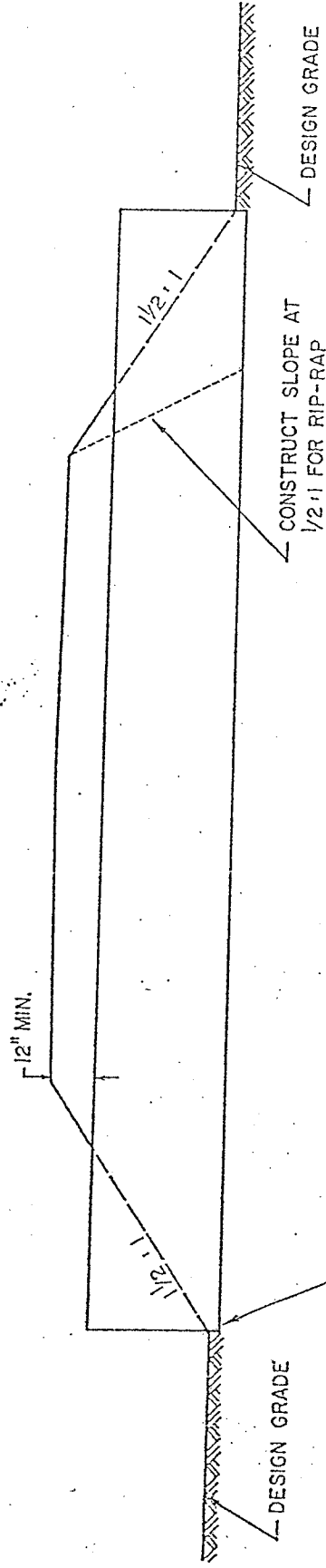
If existing top slope is closer than 3' from the fence line do not disturb the existing bank. A

Side slopes to be 1 1/2 : 1 unless otherwise specified.

may 23, 1973.

INSTALLATION OF FARM CULVERTS

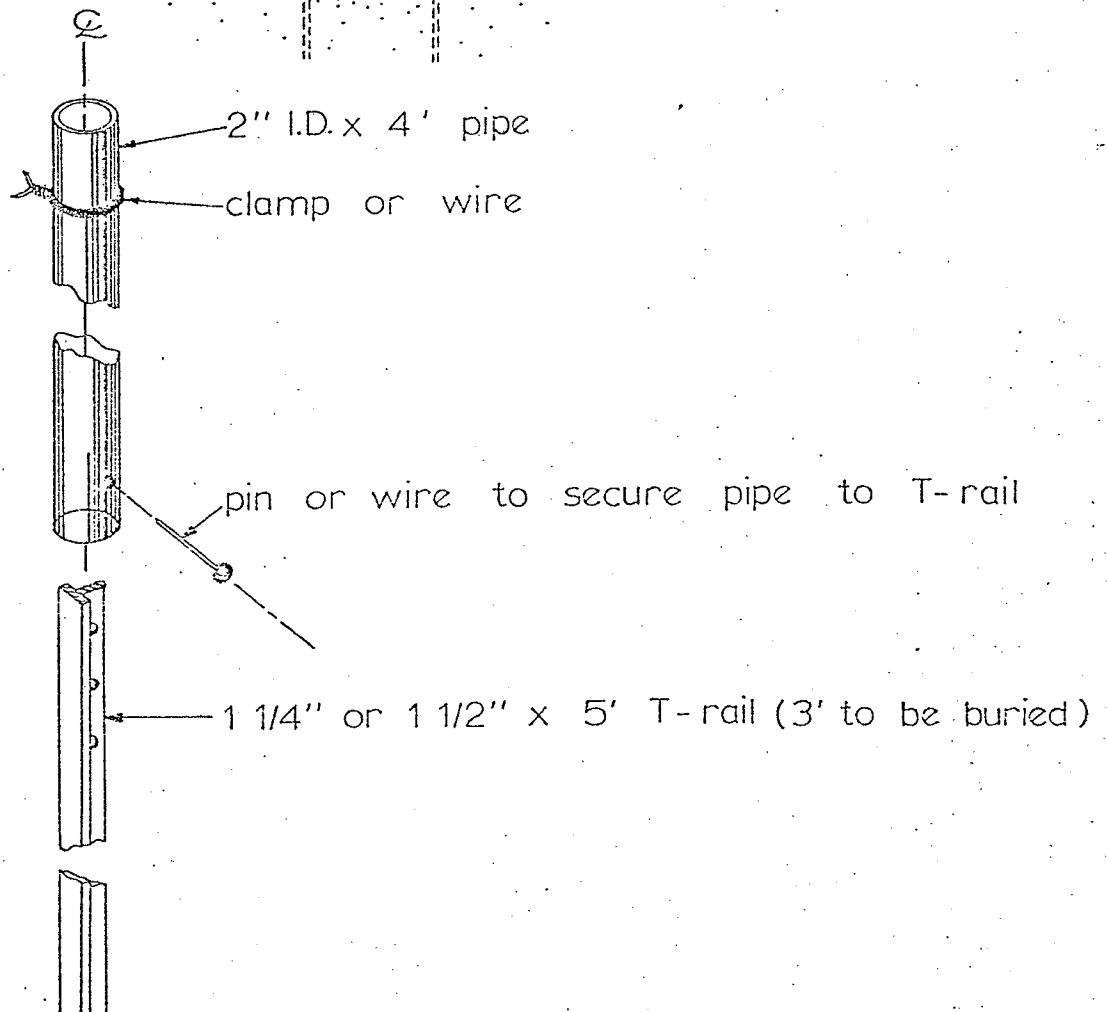
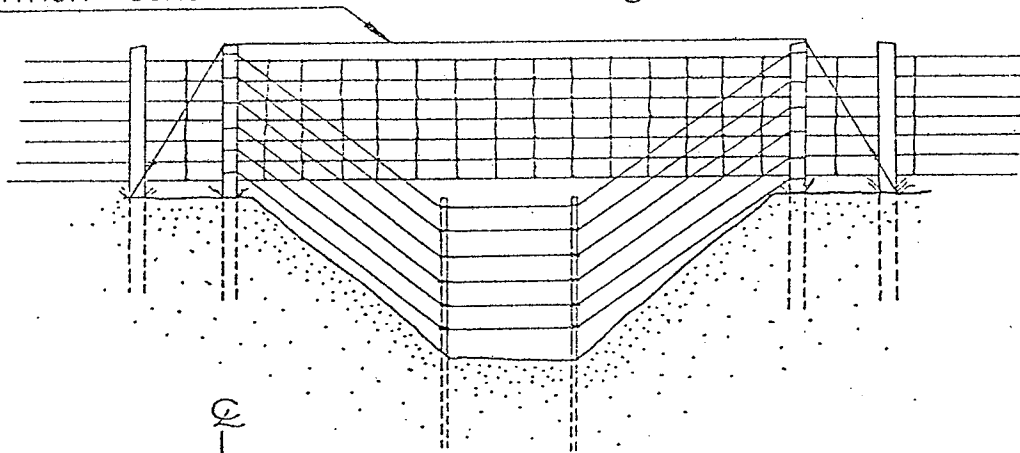
- NOTES :
- BACKFILL WITH LOCAL STABLE MATERIAL, FREE OF BOULDERS. BACKFILL SHALL BE COMPACTED IN 12" LAYERS.
 - CONTRACTOR TO CONTACT PROPERTY OWNER BEFORE INSTALLATION TO ESTABLISH EXACT LOCATION OF CROSSING



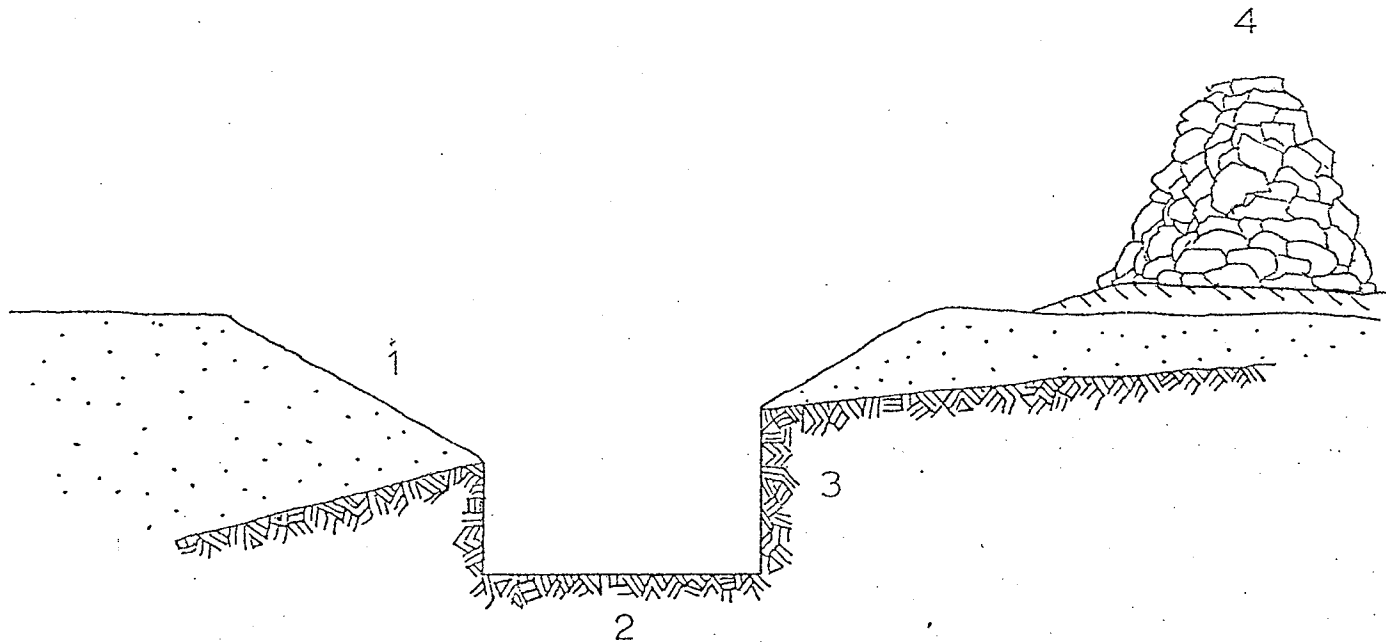
INVERT OF PIPE TO BE 10% OF DIAMETER OR RISE BELOW DESIGN GRADE. DOWNSTREAM INVERT TO BE 0.2 LOWER THAN UPSTREAM.

FENCE CROSSING.

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.



TYPICAL SECTION : ROCK AND EARTH CUT
(ROCK UNDERLYING)



1. Side slopes as specified for earth cut.
2. Ditch bottom as specified.
3. Rock side slopes vertical.
4. Excavated rock to be placed in neat piles 10' back from the drain and approximately 100' apart.

NOTE : Rock must not be blasted until measured by the Engineer.

Rock must not be placed on top of unspread earth spoil.



a. j. graham engineering consultants ltd.
agricultural department
ottawa

MARCH 1, 1972

STD - 2