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GEOCRES No. 31G-173

G.I.-30 SEPT. 1976

W.P. No. _____

CONT. No. _____

W. O. No. _____

STR. SITE No. _____

HWY. No. _____

LOCATION NEW STR. OVER CREEK CO. RD. # 16, ROXBOROUGH TWP.

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. NONE

REMARKS: _____

BA 1468
31G-173

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OTTAWA, CANADA

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31G-173
GEOCRES No.

REPORT OF SOIL INVESTIGATION

PROPOSED NEW STRUCTURE

OVER CREEK

COUNTY ROAD NO. 16

TOWNSHIP OF ROXBOROUGH

FOR

UNITED COUNTIES OF STORMONT, DUNDAS AND GLENGARRY

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C. C. PARKER AND ASSOCIATES, LTD.

DESIGN CONSULTANTS

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REPORT NO. S 254 - 62

OTTAWA, MAY 9, 1962

REGISTERED PROFESSIONAL ENGINEER
J. D. PATERSON
PROVINCE OF ONTARIO

Introduction:

At the request of C. C. Parker & Associates, Limited, on behalf of the United Counties of Stormont, Dundas and Glengarry, a soil investigation was conducted at the site of a proposed new structure on County Road No. 16, Township of Roxborough.

The present structure consists of "I" beams supporting a 2" x 4" laminated timber deck. It is proposed to replace this structure with a small bridge or culvert.

Fieldwork Procedure:

Two test holes were put down at diagonally opposite sides of the existing bridge. Hole 1 consisted of a cone probe driven to refusal. Hole 2 consisted of a cone probe driven to refusal and a sample hole to 22.7 feet.

The cone probes were driven to check the uniformity of the soils.

Drilling operations conducted by the firm of F. E. Johnston Drilling Company were supervised at all times by a member of our staff. The equipment used consisted of a standard drilling rig fully equipped for soils testing and mounted on a trailer.

Sampling and Testing:

Only cohesive soils were encountered below the surface peat so that all samples were taken by means of Shelby thin-walled tubes. These were taken to the laboratory, extruded and tested for unconfined compressive strength.

Observations:

(a) Soil Types.

In Hole No. 2 the following soil profile occurs:

0 - 2.5'	-	Black fibrous peat
2.5' - 4.5'	-	Stiff weathered silty clay with fissured lumps and minor organic inclusions.
4.5' - 6.5'	-	Medium stiff, weathered, silty clay with minor organic inclusions.
6.5' - 8.5'	-	Medium stiff to soft, lightly weathered, silty clay.
8.5' - 22.5'	-	Soft, pinkish grey, slightly silty clay, easily broken along several horizontal planes of weakness.

(b) Groundwater:

At the completion of the investigation the water level in Hole 2 was 0.3' below ground surface which is almost equivalent to the stream elevation at the bridge.

(c) Test Results. .....

(c) Test Results.

The results of the unconfined compressive strength tests indicate that the clay to Elevation 89 is of stiff consistency and below this the clay is of medium to soft consistency.

Conclusions & Recommendations:

Below the relatively stiff upper layer of clay approximately 6 feet thick the clay becomes soft and cannot be loaded heavily.

Disregarding the flow in this creek of which we have no knowledge three types of structure may be considered: a bridge, a concrete culvert or a pipe culvert.

Bridge: If a bridge structure is considered necessary, piles to support the abutments will be required. These piles will have to be driven to refusal at a depth of 29 to 30 feet, or, approximately, to Elevation 65. Cut-off length will be approximately 25 feet and creosoted timber piles should be quite satisfactory.

Concrete Culvert: If a concrete culvert is considered the footings will have to be large and the recommended maximum soil loading at a depth of 4 feet below stream bottom is 1000 pounds per square foot. However, some settlement can be expected and because of differential loading due to road embankment we feel that this type of structure will be subjected to heavy stresses.

Pipe Culvert: Providing there is sufficient height a corrugated iron pipe culvert would probably be the cheapest solution. The pipe should be installed on a 6" thick mat of granular material and with a minimum camber of 6" at the centre line of the road.

Approach Fills or Road Embankment:

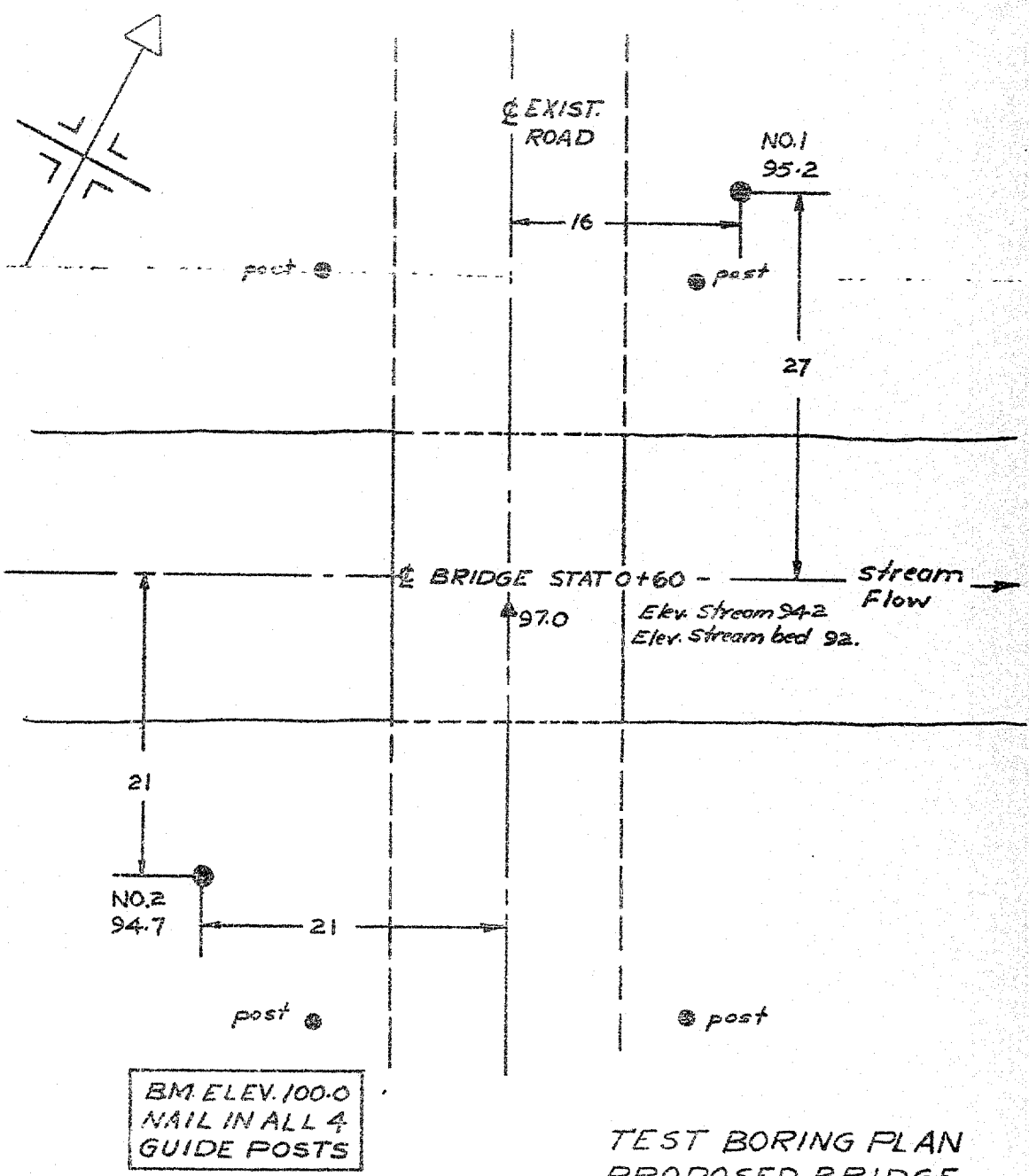
If a bridge structure is decided upon all traces of peat should be removed and a minimum of two feet of granular material placed over the silty clay. Backfill material around a culvert should be granular material and the road embankment should be built up so that there is a minimum of two feet of granular material on top.

Judging by the surrounding terrain it would appear that approach fills or embankments would not be in excess of two or three feet, and, therefore, no problem with embankment stability is foreseen providing the material is properly compacted.

J. D. Paterson, P. Eng.

Ottawa, May 9, 1962.

JDP/MMC.



BM. ELEV. 100.0
NAIL IN ALL 4
GUIDE POSTS

TEST BORING PLAN
PROPOSED BRIDGE
LOT 12 & 13 CON I
ROAD NO. 16
TWP of ROXBOROUGH
COUNTY of STORMONT

SCALE 1"=10' MAY 1962

JOHN D. PATERSON
CONSULTING ENGINEERS
OTTAWA CANADA

SOIL PROFILE
&
LABORATORY TESTS

Location: Lots 12 & 13, Concession I,
Road No. 16, Twp. of Roxborough.

ELEVATION (Zero Depth): 95.2.
Remarks: Cone Probe only.

Sheet No: 1 of 2

Hole No: 1

Borings by: F.E.Johnston Drilling Co., Ltd. Date: April 23, 1962.

BLOWS PER FOOT	SOIL DESCRIPTION	Samples	Uncon.Comp. Strength Tons/Sq.Ft.	Depth in Feet	ELEV.	MOISTURE CONTENT PER CENT. 30 40 50 60 70
Cone	Ground Surface.			0	95.2	
2						
1						
1	Black Fibrous Peat.			2		
3	3.5.					
6	Stiff, weathered, silty			4		
7	clay.					
9	7.			6		
12						
12				8		
15						
14				10	85.2	
13						
12				12		
13	Med. to soft, silty, grey					
12	clay.			14		
11						
11				16		
9						
10				18		
10						
13				20	75.2	
11						
9				22		
9						
10				24		
9						
11				26		
13						
28				28		
90	29.6.					
for 0.6'				30	65.2	

Note:

Interpretation based on cone blows per foot and associated Bore Hole No. 2.

JOHN D. PATERSON
CONSULTING ENGINEERS
OTTAWA CANADA

SOIL PROFILE
&
LABORATORY TESTS

Location: Lots 12 and 13, Concession I, Road No.16, Twp. of Roxborough.

ELEVATION (Zero Depth): 94.7.
Remarks: Cone Probe and Test Boring.

Sheet No: 2 of 2
Hole No: 2

Borings by: F.E.Johnston Drilling Co., Ltd. Date: April 23, 1962.

BLOWS PER FOOT	SOIL DESCRIPTION	Samples		Uncon.Comp. Strength Tons/Sq.Ft.	Depth in Feet	ELEV.	MOISTURE CONTENT PER CENT. 30 40 50 60 70
	Ground Surface				0	94.7	Ground Water Level 0.3 Feet, April 23, 1962.
1 2 2	Black Fibrous Peat. 2.5				2		
6 8	Stiff weathered silty clay with fissured lumps. 4.5	TW	2	1.18	4		
11 10	Mod., weathered, silty clay with minor organic inclusions. 6.5	TW	3	1.11	6		
11 12	Mod. to soft, lightly weathered, silty clay. 8.5	TW	4	0.58	8		
12 11 8 7 7 8 8 7 7 8 10 9 8 8	Soft, pinkish grey, slightly silty clay, easily broken along several horizontal planes of weakness. 22.5	TW	5	0.43	10	84.7	
		TW	6	0.40	12		
		TW	7	0.33	14		
					16		
					18		
					20	74.7	
		TW	8	0.43	22		
8 8 8 8 8 8 33	Probably soft, pinkish grey, silty clay. 29.3				24		
					26		
					28		
61 for 0.3	Probably bedrock.				30	64.7	