

#62-F-303 M

CTY. RD. #18

NEW BRIDGE

HOASIC CREEK

WILLIAMSBURGH TWP.

Mr. A. M. Teye,
Bridge Engineer.
Materials & Research Division,
(Foundation Section)

June 1, 1962.

REVIEW OF SOILS REPORT BY
JOHN D. PATERSON, CONSULTING
ENGINEERS, OTTAWA.

(Bridge Office Ref. BA 1425)

Attention: Mr. K. L. Kleinsteinber,
Municipal Bridge Liaison Engr.

Re: United Counties of Stormont
Dundas & Glengarry
Bridge over Hoasic Creek
Twp. of Williamsburgh,
Dist. #9.

The report on the soil investigation at the above site has been reviewed and the following comments may be made:

The soil data contained in the report is so scanty that only the safest solution may be recommended. The abutments should be founded on end-bearing piles, but it is certainly not true that timber piles will be preferable to steel 'H' piles, as the consultant stated. On the contrary, steel piles involve less danger of over-driving at a site where boulders are present.

We believe the above comments will aid you in your future design work; however, should further assistance be required, please do not hesitate to contact our office.

KYL/MdeF

cc: Foundations Office
Gen. Files.


K. V. Lo,
SUPERVISING FOUNDATION ENGR.

For:

A. G. Stermac,
PRINCIPAL FOUNDATION ENGR.

*Plan returned
to Bridge Office*



ONTARIO

DEPARTMENT OF HIGHWAYS

Memo to	Mr. A. Stermac,	Date	May 31, 1962.
	Principal Foundations Engineer		
	D.H.O. - Room 107, Lab. Bldg.,	Subject	United Counties of Stormont
	DOWNSVIEW, Ontario.		Dundas & Glengarry
From	G.C.E. Burkhardt		Bridge over Hoasic Creek
			Twp. of Williamsburgh
			Our File # BA 1425

Attached please find a copy of the Foundation Report by John D. Patterson, and a copy of the Preliminary Plan for your information.

We would like to approve the preliminary design before June 8th, 1962 and would appreciate it very much if we could have your comments prior to this date.

GCEB/bm


G. C. E. Burkhardt,
for K. L. Kleinsteinber,
Municipal Bridge Liaison Eng.

BA 1A25

JOHN D. PATERSON, B.Sc., P.Eng.

CONSULTING ENGINEERS & GEOLOGISTS
OTTAWA, CANADA

MEMBERS

ASSOC. OF PROFESSIONAL ENGINEERS OF ONTARIO
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62-F-303M

REPORT OF SOIL INVESTIGATION

PROPOSED NEW BRIDGE

AND

ROAD RE-ALIGNMENT

COUNTY ROAD NO. 18

TOWNSHIP OF WILLIAMSBURGH

For

UNITED COUNTIES OF STORMONT, DUNDAS AND GLENGARRY

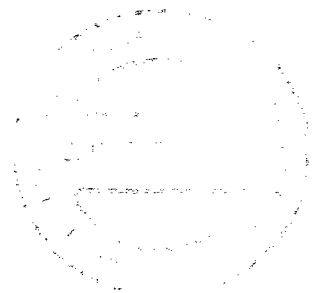
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G. C. PARKER & ASSOCIATES

DESIGN CONSULTANTS

REPORT NO. S 256-62

OTTAWA, MAY 11, 1962



Introduction:

At the request of C. C. Parker & Associates, Ltd., on behalf of the United Counties of Stormont, Dundas and Glengarry, a soil investigation was conducted at the site of a proposed new bridge over Hoasic Creek on Road No. 18, in the Township of Williamsburgh.

The present bridge consists of timber abutments supporting "I" beams and a wooden deck.

The flooding conditions at the bridge were first observed on April 4, 1962 and reported to Mr. Gramm by letter April 6, 1962. Flooding still exists at the site although the water level has dropped a foot to Elevation 97.7.

To eliminate a sharp curve in the road it is proposed to realign the new approaches somewhat to the south.

In addition to the soil investigation it was requested that recommendations be made regarding new road construction for the realigned sections.

Fieldwork Procedure:

Because of continued flooding conditions at the time of the investigation it was not possible to place bore holes at the recommended locations and three test holes were, therefore, put down at the locations shown on the Test Borings Plan.

Each hole consisted of a cone probe driven to refusal to check the uniformity of the soils and a sample hole in which the soils were sampled at regular intervals to 4.5, 36.5, and 64.0 in Holes 1, 2 and 3, respectively.

The firm of R. E. Johnston Drilling Company was employed for all drilling operations. Their work was supervised at all times by a member of our staff. The equipment used consisted of a standard drilling rig, equipped for soil testing and mounted on a trailer.

Sampling and Testing:

Hole 2 was sampled in detail at and below a possible footing elevation.

Samples of clay soils were recovered by means of Shelby thin-walled tubes, which were taken to the laboratory, extruded, and tested for unconfined compressive strength.

Samples of granular soils were recovered by means of the split spoon sampler. Each sample was retained in a plastic bag. With each split spoon sample taken the Standard Penetration Test was conducted and the results are recorded as "N" values.

A core sample of a boulder was recovered by diamond drilling.

Holes 1 and 3

Holes 1 and 3 were sampled only deep enough to establish the peat horizon. The split spoon sampler was used for this purpose.

Observations:

(a) Soil Types.

A layer of peat 3.3' thick at Hole 3 pinches out between Holes 1 and 2. Below the peat is a 10-foot band of loose glacial till which in turn is underlain by denser glacial till.

Details of the test holes are shown on the Soil Profile and Laboratory Test Sheets which form part of this report.

(b) Groundwater.

Because of the general flooding conditions the groundwater table can be expected to rise and fall with the existing water conditions.

(c) Test Results.

Unconfined compressive strength test results on the Shelby tube samples indicate that the soft clay overlying the till has a strength of 0.28 tons per square foot.

Conclusions and Recommendations:

The soil conditions underlying the proposed new bridge site indicate that the abutments must be supported by piles driven to the dense till layer, which occurs approximately at Elevation 79. Assuming that the piles will penetrate the dense till layer three or four feet the expected cut-off length of creosoted timber piles will be about 16 feet. If an individual pile is driven to refusal above Elevation 79 it can be assumed that a boulder has been encountered.

We feel that creosoted timber piles will be quite satisfactory at this site and preferable to steel "H" piles because of the existence of these random boulders.

Subgrade Preparation, New Road Alignment:

The existence of a layer of peat has been proven in Test Holes Nos. 2 and 3 and the western limits of the peat were observed to be approximately 100 feet from the creek at the centre line of the proposed re-alignment. Therefore, within these limits, the peat must be excavated prior to the construction of the new road embankment.

If possible, the new fill should be granular in nature and well compacted. Except for removal of organic surface material no excavation of ex-

isting soil

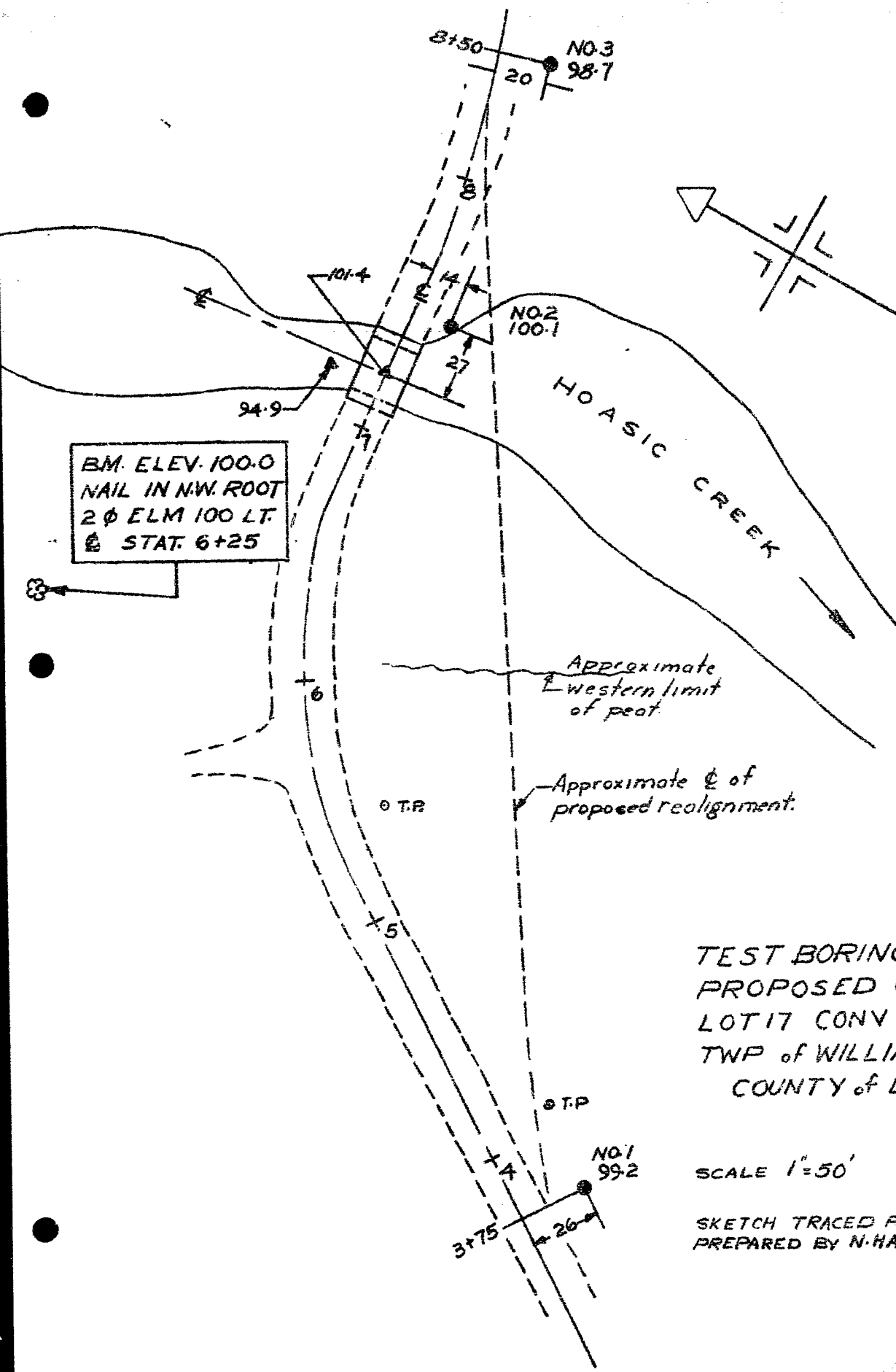
isting soil is considered necessary for the section of new road between the western limits of the peat and the existing road at Station 3 + 75.



J. D. Paterson, P. Eng.

Ottawa, May 11, 1962.

JDP/MMC.



BM. ELEV. 100.0
NAIL IN N.W. ROOT
2" ϕ ELM 100 LT.
STAT. 6+25

NO. 2
100.1

NO. 3
98.7

NO. 1
99.2

TEST BORING PLAN
PROPOSED CULVERT
LOT 17 CONY ROAD 18
TWP. of WILLIAMSBURGH
COUNTY of DUNDAS

SCALE 1"=50' MAY 1962

SKETCH TRACED FROM PLAN
PREPARED BY N. HANLAN.

JOHN D. PATTERSON CONSULTING ENGINEERS OTTAWA CANADA				SOIL PROFILE AND LABORATORY TESTS																	
				Location: Lot 17, Con. V, Road No. 18. Township of Williamsburgh.																	
Elevation (Zero Depth): No. 1, 99.2; No. 3, 98.7. Remarks: Cone Probes and Test Boring.										Sheet No: 1 of 2											
Borings by: F.E. Johnston Drilling Co., Ltd. Date: April 30, 1962.										Hole No: 1 and 3											
Blows per Foot	Soil Description Hole 1	Samples		U's T/N'	N	Depth in Feet	Elev.	Moisture Content													
								30	40	50	60	70									
Cone	Ground Surface					0	99.2														
2	Loose weathered glacial till	SS	16		8																
7																					
17	3	SS	17		41	2	97.2														
76	Very dense glacial till.					4	95.2														
60						4.5															
for 0.5																					
	Hole 3																				
	Ground Surface					0	98.7														
1	Soft, loamy topsoil with roots.	SS	13		6																
2																					
10	Black fibrous peat with shells and gravel 5.3 to 5.7.	SS	14		2	2															
4																					
9																					
6	5.7	SS	15		5	4															
6	Soft, grey clay and/or loose glacial till.					6															
5																					
4																					
4																					
5											10	88.7									
4											12										
5						12															
7																					
20											14										
16																					
17											16										
21						Medium dense glacial till.					18										
19																					
17																					
22											20	78.7									
20											22										
120	22																				

Note:
Interpretation of
Hole 3 from 6 - 22'
based on cone blows per
foot.

SOIL PROFILE AND LABORATORY TESTS

Location. Lot 17, Concession V, Road No. 18,
Township of Williamsburgh.

Elevation (Zero Depth): 100.1.

Remarks: Cone Probe and Test Boring.

Sheet No:

2 of 2

Borings by: F.F. Johnston Drilling Co., Ltd. **Date:** April 26 & 27, 1962.

Hole No:

2

[illegible]