

DOCUMENT MICROFILMING IDENTIFICATION

G.I.-30 SEPT. 1976

GEOCRES No. 316-185

DIST. 9 REGION EASTERN

W.P. No. _____

CONT. No. _____

W. O. No. _____

STR. SITE No. _____

HWY. No. _____

LOCATION LOT 15 CON. 8 & 9

CLARENCE TWP. ($\frac{1}{2}$ mi. North of Hammond)

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. _____

REMARKS: _____

INSPECTION SERVICES
LABORATORY TESTING
APPRAISALS, RESEARCH
SOIL INVESTIGATIONS

JOHN D. PATERSON & ASSOCIATES

CONSULTING ENGINEERS & GEOLOGISTS

OTTAWA 3, CANADA

OFFICES AND LABORATORY:

1479 LAPERRIERE AVE.

TEL. PA 8-3505

REPORT OF SOIL INVESTIGATION

316 - 185

GEOCRES No.

PROPOSED NEW STRUCTURE

1/4 MILE NORTH OF HAMMOND

TOWNSHIP OF CLARENCE

CO. OF RUSSELL

RAYMOND C. GAUTHIER

CONSULTING ENGINEER

REPORT NO. S333-63

OTTAWA, JULY 23RD, 1963



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INTRODUCTION

At the request of Mr. R. C. Gauthier, Consulting Engineer on behalf of the Township of Clarence a soil investigation was conducted at the site of a proposed bridge replacement 0.25 miles north of Hammond. The existing bridge is in poor repair and has partially collapsed.

FIELD WORK PROCEDURE

Two test holes were put down at locations shown on the Test Boring Plan. At hole 1 a cone probe was driven to 75 feet and the soils sampled to 27.5 feet. At hole 2 the soils were sampled to 27.5 feet.

The firm of F. 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, fully equipped for soil testing and mounted on a trailer.

SAMPLING AND TESTING

Samples of the various soils were taken at the holes by means of Shelby thin-walled sample tubes (for clay soils) and by split spoon sampler (for granular soils).

The Shelby tube samples were taken to the laboratory for extrusion and testing for unconfined compressive strength.

The Standard Penetration Test was conducted on each of the split spoon samples and the results were recorded as "N" values. The split spoon samples were retained in plastic bags.

The cone probe was driven continuously to a depth of 60 feet and continued to 75 feet after a two hour delay.

OBSERVATIONS

(a) Soil Types:

In hole No. 1 the following soil profile occurs

0	-	0.5	Topsoil
0.5	-	3	Mixed sand and clay
3	-	7	Stiff oxidized silty clay
7	-	9	Loose saturated silt
9	-	27.5	Medium stiff, pinkish grey, silty clay with black organic mottling and minor thin lenses of silt
27.5	-	60	Soft (silty) clay
60	-	75	Dense Glacial Till

...../2

In hole No. 2 the following soil profile occurs:

0	-	2	Sand fill
2	-	7	Fine grained sand with some clay
7	-	11.5	Stiff oxidized silty clay
11.5	-	13	Loose saturated silt
13	-	27.5	Medium stiff pinkish grey silty clay with black organic mottling and minor lenses of silt.

Details of the bore holes are shown on the Soil Profile sheets.

(b) Ground Water:

At the completion of the field work the ground water level was found to be 4.3 and 7.0 feet below ground surface in holes 1 and 2 respectively, (Elevations 92.2 & 93.4).


(c) Test Results:

The results of the unconfined compressive strength tests indicate that the clay at and below elevation 87.5 is of medium stiff consistency.

CONCLUSIONS AND RECOMMENDATIONS

Soil conditions underlying this site were found to be relatively uniform. The clay commencing at Elevation 87.5 is capable of sustaining a load of 1200 pounds per square foot (safety factor of 3).

If a bridge structure is considered necessary it will have to be founded on piles dependent upon friction. In view of the secondary nature of this road a box culvert is probably the most economical structure and will present less problems in design. Care should be taken to ensure that the soil at and below the base level is undisturbed prior to the placing of concrete.


John D. Waterson, P. Eng.

JOHN D. PATERSON & ASSOCIATES
CONSULTING ENGINEERS
OTTAWA CANADA

SOIL PROFILE AND LABORATORY TESTS

Location: 0.25 Mile North of Hammond
Clarence Township

Elevation (Zero Depth): 97.0

Remarks: Cone probe and test boring. PP = pocket penetrometer

Borings by: R. E. Johnston Drilling Co.

Date: July 11, 1963

Sheet No. 1 of 2

Hole No. 1

Blows per Foot	Soil Description	Sample Type	U _c UNUS SOFT	N	Depth in Feet	Elev.	Moisture Content Per Cent				
							30	40	50	60	70
0	Ground Surface				0	97.0					
1	Mixed sand and clay overlain by topsoil.	SS	1	11	1						
2	Stiff oxidized silty clay	TW	2		5						
3	Loose saturated silt	SS	3	7							
4	Medium	TW	4		10	87.0					
5	Stiff, pinkish grey, silty clay with	TW	5								
6	black organic	TW	6		15						
7	mottling and minor thin lenses of silt.	TW	7								
8		TW	8		20	77.0					
9		TW	9		25						
10				PP							
11					30	67.0					
12					35						
13											
14					40	57.0					
15					45						
16											
17					50	47.0					
18											
19					55						
20											
21					60	37.0					
22											
23					65						
24											
25					70	27.0					
26											
27					75						

JOHN D. PATERSON & ASSOCIATES
CONSULTING ENGINEERS
OTTAWA CANADA

SOIL PROFILE AND LABORATORY TESTS

Location: 0.25 Mile North of Hammond
Clarence Township

Elevation (Zero Depth): 100.4

Remarks: Test boring P.P. = pocket penetrometer

Borings by: F.E. Johnston Drilling Co.

Date: July 12/63

Sheet No. 2 of 2

Hole No. 2

Blows per Foot	Soil Description	Samples		N	Depth in Feet	Elev.	Moisture Content Per Cent				
		Type	No.	TONS SQ. FT.			30	40	50	60	70
	Ground Surface										
	Sand fill		2			100.4					
	Fine grained sand with some clay		7			98.4					
	Stiff oxidized silty clay		11.5								
	Loose saturated silt	TW	13								
		SS	71		5	12	88.4				
	Medium Stiff pinkish gray silty clay with black organic mottling and minor lenses of silt	TW	12	0.58		15					
		TW	13	0.51		18	82.4				
		TW	14	0.56		21					
						24	76.4				
						27					
		TW	15	0.77	PP	27					
						30	70.4				

BRIDGE
CLARENCE TWP.

GRAVEL ROAD

OLD RAILWAY
GRADE

10

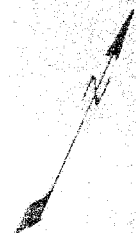
BMND
100.4

21

DELTA R
100.3

36

B.M. - NAIL IN
1" Ø ELM EL
100.00



FLOW

25

TO HAMMOND

7
RE
005
CLARENCE TWP.

STATE