

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 31 G-174

G.I.-30 SEPT. 1976

W. P. No. \_\_\_\_\_

CONT. No. \_\_\_\_\_

W. O. No. \_\_\_\_\_

STR. SITE No. \_\_\_\_\_

HWY. No. \_\_\_\_\_

LOCATION PROP. NEW BRIDGE,  
CINNAMON DRAIN, LOTS 5 & 6-  
CON.S 9 & 10, WINCHESTER TWP.

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OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

NONE

REMARKS: \_\_\_\_\_

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

CONSULTING ENGINEERS & GEOLOGISTS

OTTAWA, CANADA

MEMBERS:

ASSOC. OF PROFESSIONAL ENGINEERS OF ONTARIO  
AMERICAN CONCRETE INSTITUTE

INSPECTION SERVICES  
LABORATORY TESTING  
APPRAISALS, RESEARCH  
SOIL INVESTIGATIONS

Head Office:  
250 BESSERER ST.  
TEL. CE 4-4587

Laboratory:  
818A BOYD AVE.  
TEL. PA 9-3722

BA 14 98

31G-174  
GEOCREs No.

REPORT OF SOIL INVESTIGATION

PROPOSED NEW BRIDGE

CINNAMON DRAIN

LOTS 5 & 6 - CONCESSIONS 9 & 10

TOWNSHIP OF WINCHESTER

REPORT NO. S 291 - 62

OTTAWA, AUGUST 16, 1962



### Introduction:

At the request of Mr. Alex. J. Graham, P. Eng., on behalf of the Township of Winchester, a soil investigation was conducted at the site of a proposed bridge over the Cinnamon Drain on Lots 5 and 6, between Concessions IX and X.

The existing bridge is in extremely poor repair and the concrete of the abutments and deck has failed in several places. Traffic continues to pass over the bridge although it is posted with "Bridge Out" signs.

Although there is two feet of water under the bridge there is no flow of water in the ditch.

### Fieldwork Procedure:

Two test holes were put down on diagonally opposite sides of the bridge as shown on the Test Boring Plan.

At Hole 1 a cone probe was driven to refusal and the clay and glacial till soils sampled to a depth of 44.3 feet. At Hole 2 a cone probe was driven to 29 feet and the clay sampled to the glacial till layer.

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

The firm of F. E. Johnston Drilling Company was employed for all drilling operations. Their work was supervised and directed at all times by an engineer 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:

Samples of the clay soils recovered from Holes 1 and 2 by means of thin-walled Shelby tubes were taken to the laboratory, extruded and tested for unconfined compressive strength.

With each split spoon sample taken in the glacial till the standard penetration test was conducted. These results are recorded as "N" values. The samples were retained in plastic bags.

At a depth of 39.3 feet the glacial till was so dense that it required drilling to penetrate it.

### Observations:

(a) Soil Types. .....

Observations:

(a) Soil Types.

In Hole 1 the following soil profile occurs:

- 0 - 1' Clayey topsoil with some sand.
- 1' - 3' Soft weathered sandy clay.
- 3' - 7' Medium stiff, weathered, varved clay and silt.
- 7' - 18' Medium stiff, grey, silty clay interbanded with stiff, grey, silty clay. Intermittent fissuring observed.
- 18' - 29' Glacial till varying in density from medium dense to dense.
- 29' - 35' Dense glacial till.
- 35' - 44.3' Very dense glacial till.

In Hole 2 the following soil profile occurs:

- 0 - 4' Clay fill with some sand.
- 4' - 8' Medium stiff, weathered, varved clay and silt.
- 8' - 21' Medium stiff, pinkish-grey, silty clay with a soft clay layer 13 to 14.5 feet. Intermittent fissuring and an odd, small, isolated pebble observed.
- 21' - 29' Glacial till varying in density from medium dense to dense.

(b) Groundwater.

Because of the water used in washing out the bore holes the groundwater level could not be definitely established. However, it is expected to be equivalent to or to vary slightly with the rise and fall of water in the drainage ditch.

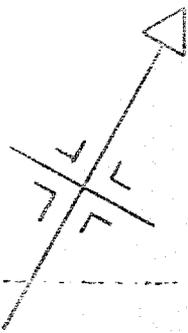
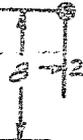
(c) Test Results.

The results of the unconfined compressive strength tests indicate that the clay is of a medium stiff consistency at possible footing elevations.

Conclusions & Recommendations:

The clay at and below elevation 82 which is 4.5 feet below the bottom of the drainage ditch is suitable material on which to place spread footings. Undisturbed clay at this elevation has a safe soil loading of 1800 lbs. per square foot. Water is not expected to be a problem after spring runoff. However, because the ditch is deeper under the bridge, water has a tendency to accumulate in the depression. This water should be pumped away before any excavation work is undertaken.

NO 2  
96.3



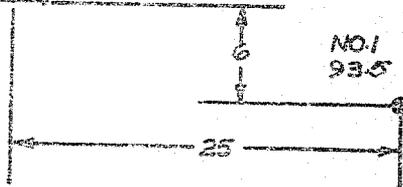
BM. ELEV 97.72  
NAIL S.W. SIDE HYDRO  
POLE N. CORNER  
OF BRIDGE

DRAINAGE  
(CINNAMON DRAIN)

▲ 97.3

DITCH (NO FLOW)  
▲ 88.7 water level

NO 1  
93.5



TEST BORING PLAN  
PROPOSED BRIDGE  
LOTS 5 & 6 CON 1X & X  
TOWNSHIP of WINCHESTER

SCALE 1" = 10'

AUG 1962



