

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 30M13-39

W.P. No. 93-57

CONT. No. -

W. O. No. -

STR. SITE No. -

HWY. No. 400 , DIST. N. 6

LOCATION TESTON RD. O'PASS

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OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. NONE

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

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\_\_\_\_\_

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2004 BLOOR STREET WEST • TORONTO 12, ONTARIO, CANADA

9th July, 1957.

The Ontario Department of Highways,  
280 Davenport Road,  
Toronto, Ontario.

Attention: Mr. J. C. McAllister

HIGHWAY 400 & TESTON ROAD OVERPASS

District N° 6, Vaughan Township, Ont.

Gentlemen:

We have now completed our Report concerning the soil investigation recently carried out in connection with the above-mentioned project and 3 copies of this Report are forwarded herewith.

We trust that we have understood your requirements correctly and that if we can be of further service you will not hesitate to inform us.

Yours truly,  
Universal GEOTECHNIQUE Limited,

L. Baskin.

LB/sg  
Encls.

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BA 616

30M13-39

5. 1972

REPORT

on

SUBSURFACE EXPLORATION

at

HIGHWAY 400 AND TESTON ROAD

OVERPASS

DISTRICT N° 6

VAUGHAN TOWNSHIP

ONTARIO

2924 Bloor Street West,  
Toronto 18, Ontario.

REPORT

on

SUBSURFACE EXPLORATION

at

HIGHWAY 400 AND TESTON ROADOVERPASSDISTRICT N° 6VAUGHAN TOWNSHIPONTARIOINTRODUCTION

The Highways Department of the Province of Ontario are planning the construction of an overpass at the junction of Highway 400 and Teston Road in Vaughan Township.

In order to determine the properties of the underlying formations, the Department authorized subsurface exploration at the location of the proposed bridge foundations. Soil boring was accordingly carried out between 3rd and 10th June, 1957.

The extent of exploration conformed to the information given on drawing N° F-3256-1.

PHYSIOGRAPHIC FEATURES

The site is at a cutting on Highway 400, lots 25 & 26, in Vaughan Township. Physiographically it is part of a clay till plain adjoining a ground moraine, while the topography is greatly influenced by the creek flowing to the Northwest of the site. The surface run-off water has eroded a number of small valleys directed towards the lower elevation of the restricted flood valley of the creek.

SUBSURFACE EXPLORATION

Subsurface exploration comprised a total of 4 exploratory boreholes located in the positions requested by D.H.O. and shown on the borehole location plan accompanying this Report.

The positions of the boreholes were staked and levelled by the Staff of D.H.O.

Soil samples were obtained approximately every 2-1/2 feet down to the depth of 15 feet and thereafter at intervals of about 5 feet. Where noticeable changes of strata occurred the depths of such changes were recorded.

The state of compaction and consistency were determined by standard penetration tests taken at the above-mentioned intervals. (The standard penetration test, as referred to in this Report, involves the recording of the number of blows (N) of a 140 lb. hammer falling 30 inches that are required to drive a 2 inch diameter split barrel sampler 1 foot into the soil at the bottom of the borehole after an initial penetration of 6 inches.)

Details of the strata encountered and the results of standard penetration tests, together with borehole sections A-A' and B-B' as well as the location plan, form part of this Report.

Subsurface conditions given in this Report are those indicated by material encountered in the boreholes. The accuracy of extrapolation to obtain the soil profile should be associated directly with the geological conditions and inversely with the spacing of the boreholes.

## GEOLOGICAL FEATURES

From the information derived from the boreholes it may be concluded that the material down to the explored depth can be divided into the following categories.

(a) TOP SOIL

(b) UPPER BROWN TILL

This till consists of sandy clay and exhibits a certain amount of dessication.

(c) GREY TILL

The grey till is of the same composition as the brown till and the essential difference is in colour; it seems to be devoid of any signs of weathering.

(d) LOWER BROWN TILL

This lower brown till is very similar to the upper brown till and shows an extensive dessication particularly in its upper layers.

(e) SAND

The lower brown till is underlain by a fine brown sand; it is rather silty and was found to contain gravel in boreholes BH.3 and BH.4. Traces of organic matter were encountered in BH.4, while the sand showed unmistakable signs of bedding in BH.1.

(f) SILT

Dense grey wet silt was met in borehole BH.4.

A perched water table exists at about 5 feet below the ground surface. We suspect that the amount of water that percolates along the fissures is rather limited and should not seriously affect any projected work. The sand stratum that underlies the till is water bearing and under artesian pressure. Some uncertainty in the precise level of free water has been noted in the boreholes, due probably to variation in fine constituents: With the increase of the silt content the stabilization of the water elevation became slowest and would have required a more extensive period of observation which was not considered justifiable due to the sand stratum being below the probable depth to which excavation would be required.

We suggest that 3 different till formations are present. The similarity between the upper brown till and the lower brown till is striking, but the weathering features seem to preclude the possibility of these strata belonging to the same depositional period. An unusual combination of the grey and probably lower brown till adjoining one another has been observed in BH.1. A rather complicated erosional process would be required in order to explain this feature and any such attempt would be outside the scope of this Report.

DISCUSSION

The type of bridge proposed for this site is not known at present but presumably spread footings located at a depth of about 5 feet below the existing ground surface would be a first consideration and it can be stated that the soil conditions are eminently suitable for such type of construction.

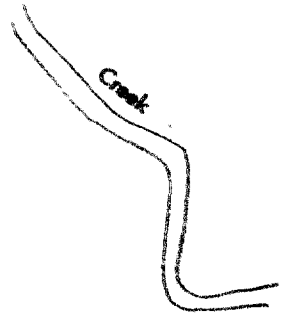
The safe bearing capacity for normal spread footings located at an elevation of approximately 95 feet may be taken as 7000 lbs./sq.ft. provided the width of such footings does not exceed 10 feet. If footings in excess of 10 feet are to form part of the design then, because of somewhat less firm material having been found in borehole BH.2 between a depth of 12'-6" and 16'-0", it is considered expedient to limit the bearing capacity to 5000 lbs./sq.ft. Of course the bearing capacity does not vary abruptly when the width of the footing exceeds 10 feet but the refinement of specifying the transition between the value of 7000 and 5000 lbs./sq.ft. is probably not justified unless the load distribution on the footing is known.

Due to the relative impermeability of the material on which spread footings would normally be founded, no difficulties in construction due to ground water are expected.

Universal GEOTECHNIQUE Limited,



L. Baskin, P. Eng.  
Engineering Geologist.



TESTON ROAD

BH.1

BH.2

HIGHWAY 400

BH.3

BH.4

SCALE: 1" = 100'-0"

This sketch is an approximate copy of a section of plan N° F 3256-1 supplied by D.H.O.

PROJECT Teston Rd. Overpass, Vaughan Twp.

TITLE Borehole Location Plan

DRG NO 1 ORDER NO T.219/57

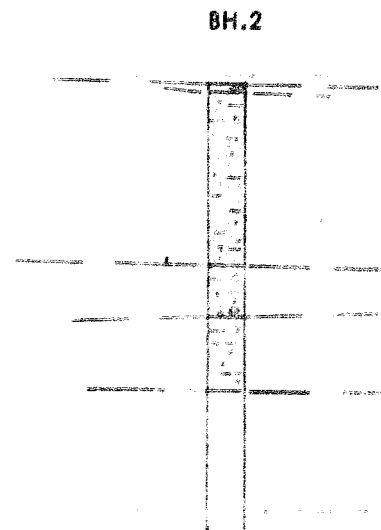
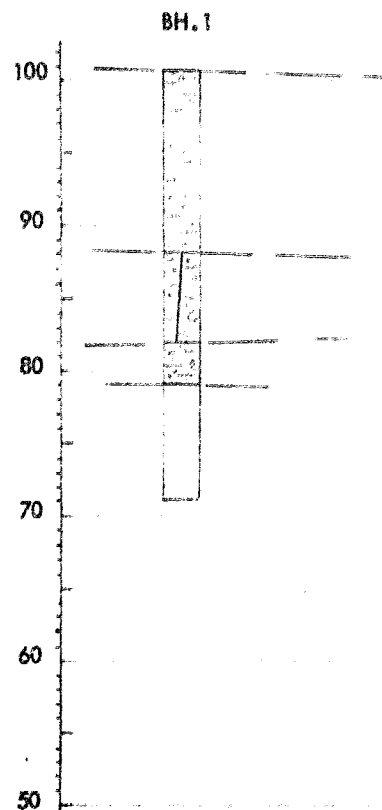


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PROJECT Istaiton Rd. Overpass, Vaughan Twp.  
TITLE Borehole Section  
DRG. NO. 2 ORDER NO. T.219/57



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LEGEND

- TOP SOIL
- UPPER BROWN TILL
- GREY TILL
- LOWER BROWN TILL
- SAND
- SANDY SILT

SECTION A-A'

SCALE

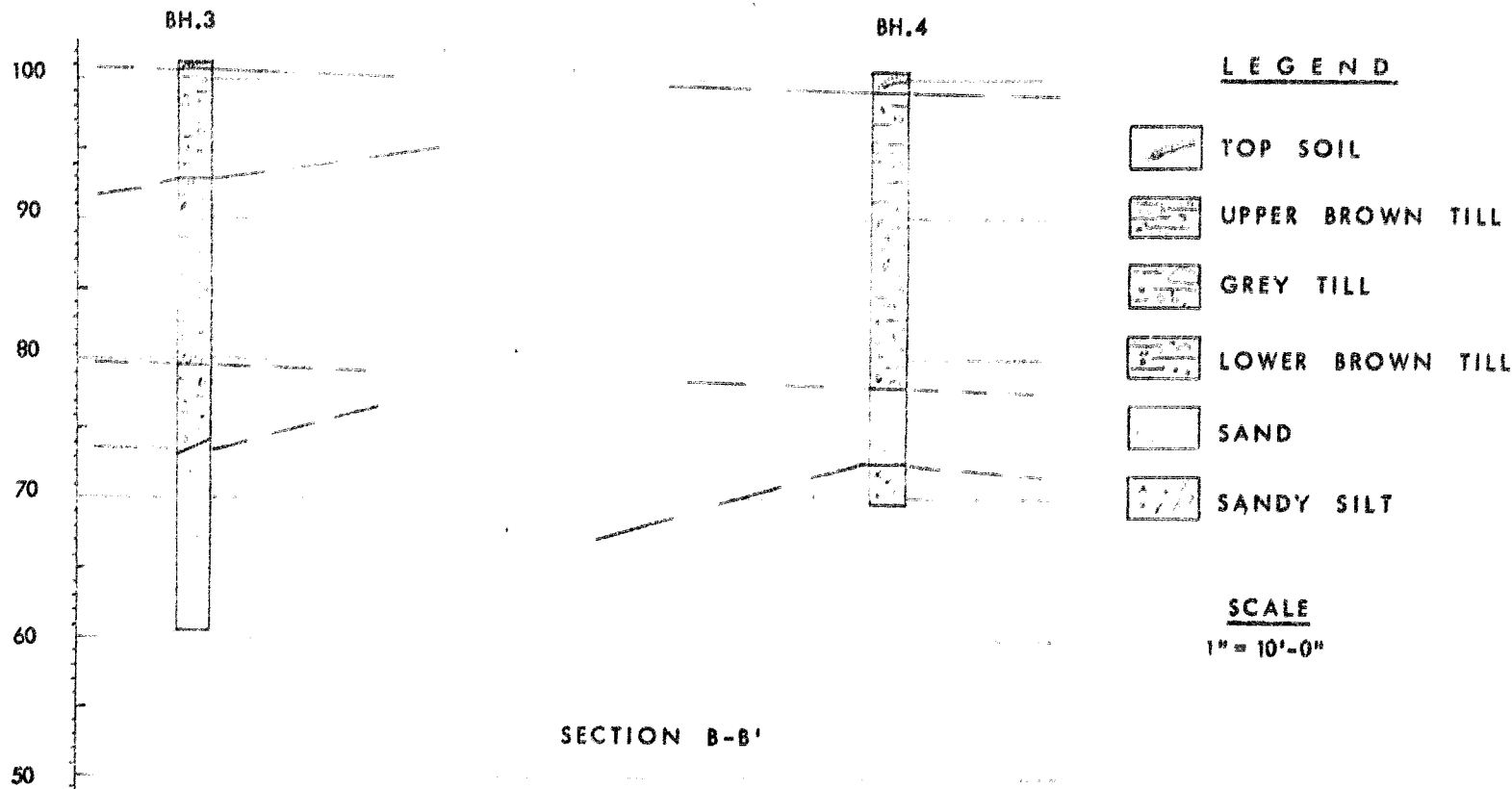
1" = 10'-0"



PROJECT Teton Rd. Overpass, Vaughan, Twp.  
TITLE Borehole Section  
DRG. NO. 3 ORDER NO. T.219/57



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## SOIL MECHANICS LABORATORY

# BOREHOLE LOG

PROJECT Teston Road Overpass, Vaughan Twp., Lots 25 & 26, Hwy. 400, ORDER NO L219/57

CLIENT Department of Highways, Ontario.

BOREHOLE NO. BH. 1

DIAMETER 2-1/2"

CASING 2-1/2"

BOREHOLE LOCATION See PlanINCLINATION Vertical

BEARING \_\_\_\_\_

DESCRIPTION OF STRATA	DEPTH IN FEET	DIAMETER IN FEET	TEMPERATURE IN DEGREES F	WATER CONTENT PERCENT	SHRINKAGE PERCENT	WATER MARKS
Hard brown calcareous sandy CLAY with fine to medium subangular to rounded gravel. Fissured.	100.86		Zero			
do						
Fissures iron-stained						
do						
do						
Hard brown and adjoining grey calcareous sandy CLAY with fine to medium gravel. Some fissuring. Brown clay exhibits iron staining.						
do						
Hard brown calcareous sandy CLAY with fine to medium subrounded gravel. Iron stained fissures.						
do						
Very dense calcareous fine brown silty SAND, exhibits bedding.						
do						

SCALE: 1" = 5'-0" • DISTURBED SAMPLE

UNDISTURBED SAMPLE

## SOIL MECHANICS LABORATORY

## BOREHOLE LOG

PROJECT Teston Road Overpass, Vaughan Twp., Lots 25 & 26, Hwy. 400, ORDER NO. L219/57  
 CLIENT Department of Highways, Ontario. Dist. 6

BOREHOLE NO. BH.2 DIAMETER 2-1/2" CASING 2-1/2"  
 BOREHOLE LOCATION See Plan INCLINATION Vertical BEARING       

DESCRIPTION OF STRATA	ELEVATION	DEPTH	THICKNESS	REMARKS
Brown sandy CLAY. Some organic matter.	99.44	Zero	0'-6"	
Hard brown calcareous sandy CLAY with fine to medium subangular to subrounded gravel. Some iron stained fissures.		• 1	42	Damp High dry strength.
do		• 2	53 (9")	do
do		• 3	55	do
do		• 4	60	do
Stiff grey calcareous silty sandy CLAY with fine to large subangular to subrounded gravel.		• 5	12'-6"	Moist High dry strength.
Hard brown calcareous sandy CLAY with fine subrounded gravel. traces of bedding and iron-stained fissures.		• 6	16'-0"	Free Water 75 (9") Damp High dry strength.
		• 7	21'-0"	50 (6") do
Dense brown fine calcareous silty SAND with fine to medium gravel. Some iron staining.		• 8	82 (6")	Moist Low dry strength.
do		• 9	55 (6")	do
		End of Borehole		

SCALE: 1" = 5'-0"

• DISTURBED SAMPLE

■ UNDISTURBED SAMPLE

## SOIL MECHANICS LABORATORY

## BOREHOLE LOG

PROJECT Teston Road Overpass, Vaughan Twp., Lots 25 & 26, Hwy. 400, ORDER No. T.219/57CLIENT Department of Highways, Ontario.

Dist. 6

BOREHOLE NO. BH.2 DIAMETER 2-1/2" CASING 2-1/2"BOREHOLE LOCATION See Plan INCLINATION Vertical BEARING       

DESCRIPTION OF STRATA	ELEVATION	LEGEND	SAMPLE	DEPTH	THICKNESS	N	REMARKS
Brown sandy CLAY. Some organic matter.	99.44			Zero			
Hard brown calcareous sandy CLAY with fine to medium subangular to subrounded gravel. Some iron stained fissures.			● 1	0'-6"		42	Damp High dry strength.
do			● 2			53 (9")	do
do			● 3			55	do
do			● 4			60	do
Stiff gray calcareous silty sandy CLAY with fine to large subangular to subrounded gravel.			● 5	12'-6"		28	Moist High dry strength.
Hard brown calcareous sandy CLAY with fine subrounded gravel, traces of bedding and iron-stained fissures.			● 6	16'-0"	Free Water	75 (9")	Damp High dry strength.
			● 7	21'-0"		50 (6")	do
Dense brown fine calcareous silty SAND with fine to medium gravel. Some iron staining.			● 8			82 (6")	Moist Low dry strength.
do			● 9	30'-6"		55 (6")	do
				End of Borehole			

FORM G-1A 500-6-54  
UNITED STATES OF AMERICA

SCALE: 1" = 5'-0"

● DISTURBED SAMPLE

■ UNDISTURBED SAMPLE

## SOIL MECHANICS LABORATORY

**BOREHOLE LOG**PROJECT Teston Road Overpass, Vaughan Twp., Lchs 25 & 26, Hwy. 400, ORDER NO. T.219/57CLIENT Department of Highways, Ontario. Dist. 6BOREHOLE NO. BH.4 DIAMETER 2-1/2" CASING 2-1/2"BOREHOLE LOCATION See Plan INCLINATION Vertical BEARING       

DESCRIPTION OF STRATA	ELEVATION	DEPTH (FEET)	DEPTH (INCHES)	IN	REMARKS
Brown sand and grey sandy CLAY & organic matter. TOP SOIL.			Zero		
Hard grey calcareous sandy CLAY with fine to large subangular to rounded gravel.		1'-6"		24	Damp High dry strength.
do			Free Water	38	do
do			Free Water	37	do
do				40	do
Dense grey calcareous fine to medium subrounded SAND.		12'-10"		33	do
Hard grey calcareous sandy CLAY with fine subangular gravel.		14'-0"		29	Sand: Low dry strength. Moist. High dry strength.
do				72	do
Very dense brown calcareous fine silty SAND with fine to medium rounded gravel. Some iron staining and traces of organic matter.		22'-6"		75 (9")	Moist Low dry strength.
Dense grey calcareous sandy SILT.		28'-0"		45 (9")	Wet Low to medium dry strength.
		30'-9"			
		End of Borehole			

SCALE: 1" = 5'-0" \* DISTURBED SAMPLE

■ UNDISTURBED SAMPLE