

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 30M13-41

W.P. No. _____

CONT. No. -

W. O. No. -

STR. SITE No. _____

HWY. No. 7

LOCATION PLUNKETT'S CREEK
VAUGHAN TWP.

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. NONE

REMARKS: _____

G.I.-30 SEPT. 1976

30M13-41

BA 652

UNIVERSAL
GEOTECHNIQUE

LIMITED



30M13-41
COPIES No.

REPORT

on

SUBSURFACE EXPLORATION

at

PROPOSED CROSSING

of

HIGHWAY N° 7 & PLUNKETT'S CREEK

VAUGHAN TOWNSHIP, COUNTY OF YORK

ONTARIO

2924 Bloor Street West,
Toronto 18, Ontario.

REPORT
on
SUBSURFACE EXPLORATION
at
PROPOSED CROSSING
of
HIGHWAY N° 7 & PLUNKETT'S CREEK
VAUGHAN TOWNSHIP, COUNTY OF YORK
ONTARIO

INTRODUCTION

The Highways Department of the Province of Ontario are planning the replacement of the existing bridge that at present carries Highway N° 7 over Plunkett's Creek in Vaughan Township just West of Woodbridge.

In order to evaluate the properties of the overburden and determine the depth to the underlying rock, the Department authorized subsurface exploration at the proposed location of the bridge. Soil boring and diamond drilling was accordingly carried out by GEOTECHNIQUE during the period 4th to the 14th of September, 1957.

PHYSIOGRAPHIC FEATURES

Plunkett's Creek, upstream and downstream of the explored site, exhibits a fairly wide flood plain bordered by comparatively steep banks of the surrounding till plain. The area is underlain by shale which can be observed outcropping about 100 feet North and South of the existing bridge. The shale shows considerable weathering and exhibits practically horizontal bedding.

SUBSURFACE EXPLORATION

The extent of exploration conformed to the information given on D.H.O. drawing E-3224-1 but in order to expedite the work the locations of boreholes BH.2 and BH.3 were moved from the originally contemplated positions to more accessible ground a few feet away.

Subsurface exploration comprised a total of 4 exploratory boreholes in positions as shown on the plan accompanying this Report. The originally contemplated positions of the boreholes were staked by the Surveying Crew

of D.H.O. but relocation of certain boreholes and revised elevations were by the Staff of GEOTECHNIQUE. All levels were referred to the Bench-Mark on the South abutment.

All boreholes were taken to bedrock and thereafter core drilling was continued to ascertain the formation and determine its condition.

Wherever possible split barrel samples were obtained in the overburden and the state of compaction and consistency were determined by standard penetration tests taken at intervals of not more than 5 feet. (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 in the boreholes and the results of standard penetration tests, together with section A-A' showing the soil and rock profile and a 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 CONDITIONS

From the information disclosed by the investigation the strata underlying the proposed site can be divided into the following categories:

(a) TOP SOIL

(b) FILL

Fill material was encountered in borehole BH.3 down to the surface of the bedrock. It consists of sand and gravel overlain by a few feet of sandy clay and probably constitutes the material used to backfill the original excavation which was made for the footings of the existing bridge.

(c) SAND

Under the term 'sand' we have included the generally firm sandy subsoil that exists on the Eastern shore of Plunkett's Creek.

(d) TILL

The brown sandy clayey till found in boreholes BH.1, 2 and 4 is similar and of the same origin as the till observed on the high banks bordering the flood plain, though some reworking by a fluvial agency is noticeable in the samples obtained.

(a) BEDROCK

Bedrock is represented by the Humber member of the Dundas formation. It is a somewhat soft gray laminated shale with a number of thin calcareous bands or lenses. Although the upper one or two feet are undoubtedly weathered and occasional layers of soft shale are present, the rock can generally be considered as fairly sound.

Free ground water was encountered at an approximate elevation of 500.5 feet which was a close approximation to the water level of the creek during the period of exploration.

CONCLUSIONS

From the results of the subsurface exploration it is clear that very little overburden exists above the underlying bedrock and normal spread footings will provide an obvious and very satisfactory type of foundation to the proposed bridge.

Regarding the design of spread footings founded on the shale, it is considered that a figure of 10 tons/sq.ft. may be used in the design for footings founded at elevation 498 for the West abutment and elevation 490 at the East abutment. It is to be observed that soft shale occurs in boreholes BH.3 and BH.4 and it is for this reason that an allowable bearing capacity of 10 tons/sq.ft. cannot be suggested at a higher elevation than 490. The shale in borehole BH.3 could support a load of 4 tons/sq.ft. at elevation 498 and a similar loading could be imposed at elevation 493 on the material encountered in BH.4. However, uniformity of bearing pressure is desirable and for this reason we consider that the softer weathered shale should be removed and the foundations located on the firm underlying rock.

Universal GEOTECHNIQUE Limited,

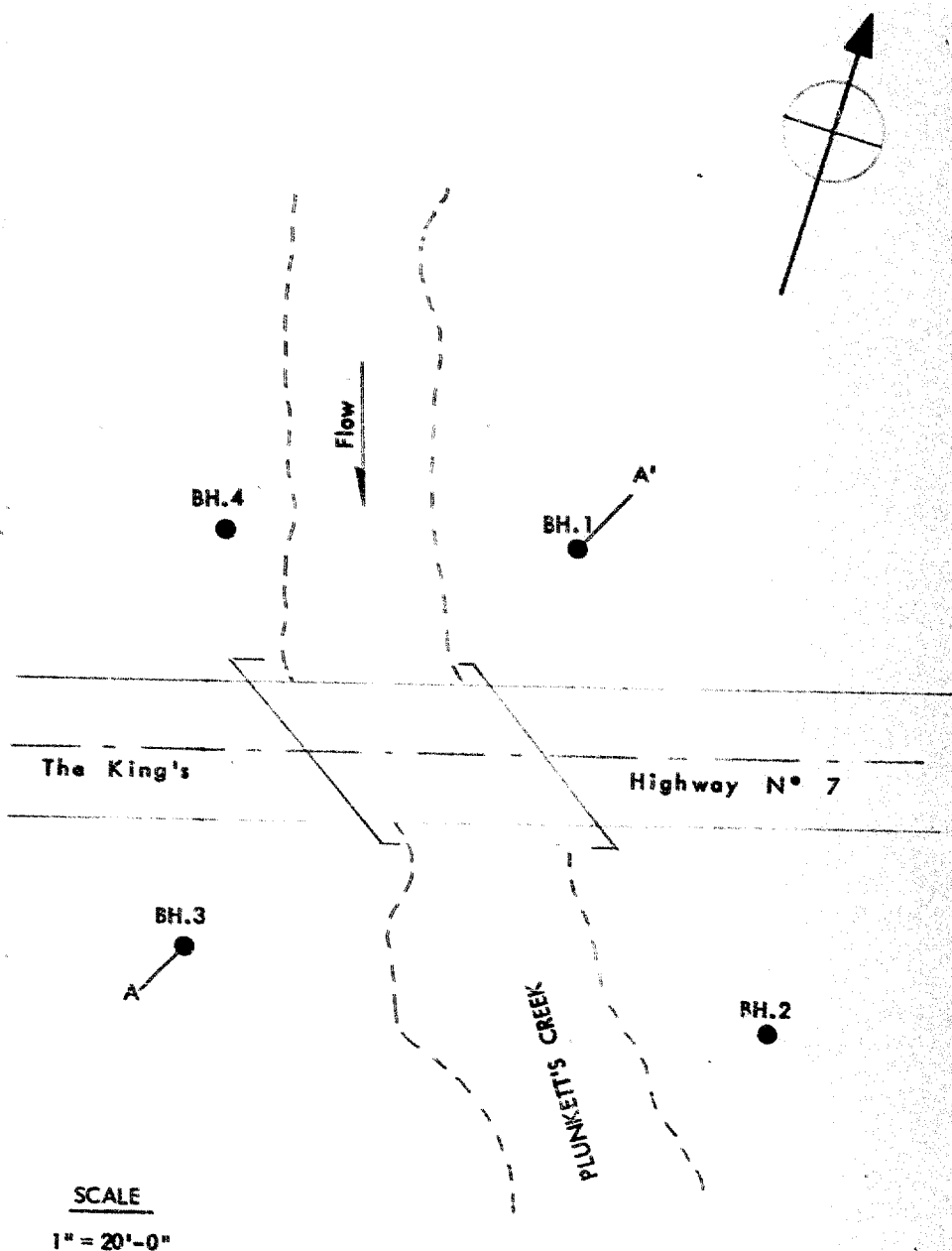


L. Baskin, P. Eng.
Engineering Geologist.

Report N° T.248/57

September, 1957.

*With abutment should read H. Humber
and vice versa. Refer to a H. H.
from Universal Geotechnique of 11 Apr. 58.
H. H. H.*



This sketch is a copy of a section of plan N° E-3224-1, Project W.P. 573B-56 supplied by the D.H.O.

PROJECT Plunkett's Creek Bridge, Highway N° 7,

TITLE Sorehole Location Plan

DRG. NO. 1 ORDER NO. T.248/57

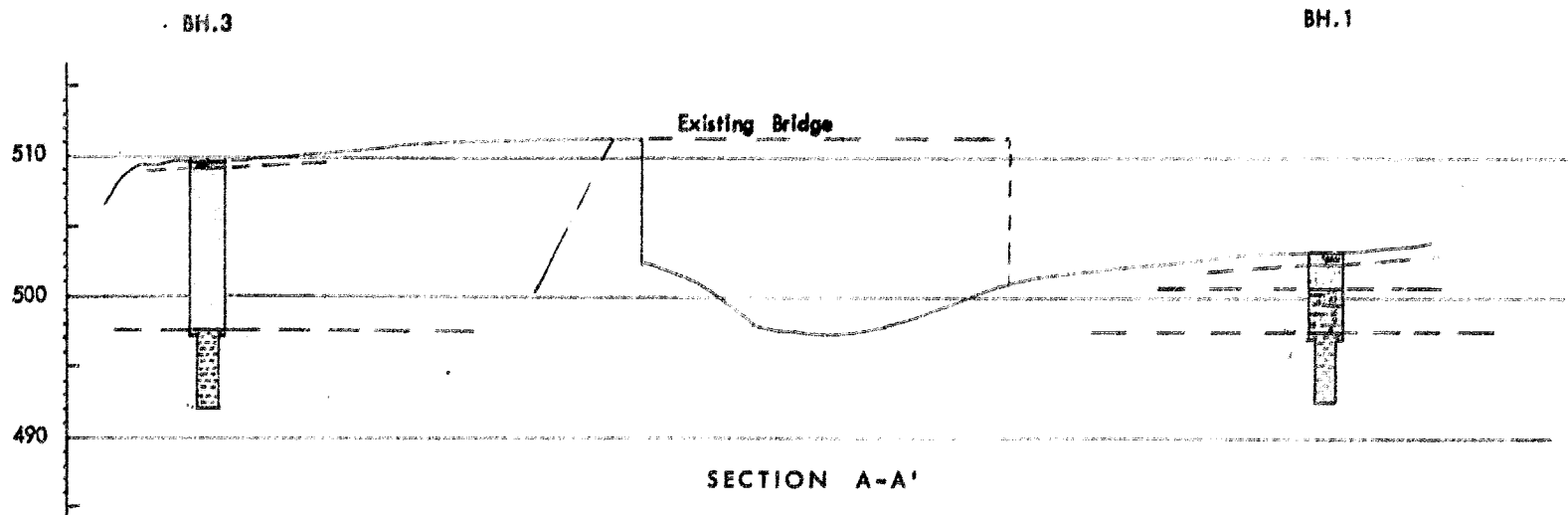


UNIVERSAL
GEOTECHNIQUE
LIMITED

PROJECT Plunkett's Creek Bridge, Highway N° 7,
TITLE Borehole Section
DRG. NO. 2 ORDER NO. T. 248/57



UNIVERSAL
GEOTECHNIQUE
LIMITED



SCALE
1" = 10'-0"

LEGEND



TOP SOIL



FILL



SAND



TILL



GREY SHALE
(Dundas Formation)

SOIL MECHANICS LABORATORY

BOREHOLE LOG

PROJECT Plunkett's Creek Bridge, Highway N° 7, Vaughan Twp., Ontario ORDER NO. T.248/57

CLIENT Department of Highways, Ontario.

BOREHOLE No. BH. 1 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
<p>TOP SOIL</p> <p>Firm brown clayey SAND with gravel and organic matter.</p> <p>Stiff grey brown dessicated sandy silty CLAY with gravel.</p> <p>Hard brown sandy silty CLAY. Iron stained fissures.</p> <p>Brown to grey weathered SHALE.</p> <p>Grey laminated shale with thin calcareous bands. Sound rock. Humber member of the Dundas formation.</p>	505.2		<p>• 1</p> <p>• 2</p> <p>• 3</p> <p>• 4</p>	<p>Zero</p> <p>1'-0"</p> <p>2'-7"</p> <p>4'-6"</p> <p>5'-9"</p> <p>10'-6"</p> <p>End of Borehole</p>	<p>Water Seepage</p> <p>—</p>	<p>11</p> <p>8</p> <p>30</p>	<p>Damp</p> <p>Moist</p> <p>6'-2" to 10'-8" Core recovery 70%</p>

SCALE: 1" = 5'-0"

• DISTURBED SAMPLE

■ UNDISTURBED SAMPLE

SOIL MECHANICS LABORATORY

BOREHOLE LOG

PROJECT Plunkett's Creek Bridge, Highway N° 7, Vaughan Twp., Ontario ORDER NO. T.248/57

CLIENT Department of Highways, Ontario.

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
TOP SOIL Firm brown clayey SAND with gravel and fragments of shale. Some organic matter. Stiff brown sandy CLAY with fine subangular to rounded gravel. Badly weathered brown shale. Gray laminated shale with thin calcareous bands. Some jointing at 10° to core length. Fairly sound rock. Humber member of Dundas formation.	503.5		• 1 • 2 • 3	Zero 0'-8" 3'-0" 4'-6" 5'-7" 9'-8" End of Borehole	Free Water 10 12 30 (3")	10 12 30 (3")	Damp Moist High dry strength. 4'-9" to 5'-7" Core Recovery 80%. 5'-7" to 9'-8" Core Recovery 76%

SCALE: 1" = 5'-0"

• DISTURBED SAMPLE

■ UNDISTURBED SAMPLE

SOIL MECHANICS LABORATORY


BOREHOLE LOG

PROJECT Plunkett's Creek Bridge, Highway N° 7, Vaughan Twp., Ontario ORDER NO. I.248/57

CLIENT Department of Highways, Ontario.

BOREHOLE NO. BH.3 DIAMETER 2-1/2" CASING 2-1/2"


BOREHOLE LOCATION See Plan INCLINATION Vertical BEARING

DESCRIPTION OF STRATA	ELEVATION	LEGEND	SAMPLE	DEPTH	THICKNESS	IN	REMARKS
TOP SOIL Firm dark grey brown sandy clay with gravel and ashes. FILL.	509.9		• 1	Zero 0'-8"		5	Moist
Loose brown medium to coarse SAND with fine gravel, subangular to rounded.			• 2	4'-0"		6	do
do			• 3	Free Water ▼		8	do
Weathered shale. Grey laminated shale with hard calcareous bands and soft layers. Some joints parallel to core length.			• 4	12'-0" 12'-4"		50	12'-4" to 14'-6" Core Recovery 88%.
do No calcareous bands. Softer rock from 14'-6" down. Humber member of the Dundas formation.				17'-6" End of Borehole			14'-6" to 17'-6" Core Recovery 48%

FORM G-14 (5/5)
UNIVERSAL GEOTECHNIQUE

SOIL MECHANICS LABORATORY

BOREHOLE LOGPROJECT Plunkett's Creek Bridge, Highway N° 7, Vaughan Twp., Ontario ORDER NO. T.248/57CLIENT Department of Highways, Ontario.BOREHOLE NO. BH.4 DIAMETER 2-1/2" CASING 2-1/2"BOREHOLE LOCATION See Plan INCLINATION Vertical BEARING ---FORM G-1A 800
UNIVERSITY OF TORONTO

DESCRIPTION OF STRATA	ELEVATION	LEGEND	SAMPLE	DEPTH	THICKNESS	N	REMARKS
TOP SOIL Stiff brown very sandy CLAY. Occasional gravel and some organic matter. Stiff brown grey gravelly CLAY.	503.2		• 1 • 2 • 3	Zero 0'-10" 2'-7" 3'-6" 8'-0" 14'-0"	Free Water	9 25 62	Moist. Medium dry strength. do Damp. Medium to high dry strength. 8'-0" to 14'-0" Core Recovery 60%
Stiff grey calcareous very silty clay and grey weathered SHALE.							
Dark grey laminated shale with calcareous bands. Some jointing about parallel to core length. Fairly sound rock. Humber member of the Dundas formation.							
				End of Borehole			

SCALE: 1" = 5'-0" • DISTURBED SAMPLE

■ UNDISTURBED SAMPLE

GEOTECHNIQUE



TO
K LUCZKA

11th April, 1962.

Ontario Department of Highways,
Foundation Section,
Parliament Buildings,
Queens Park,
Toronto, Ontario.

Attention: Mr. K. Selby

W.P. 5738-56 PLUNKETT'S CREEK Highway #7

Gentlemen:

We refer to our telephone conversation of to-day and we confirm that shortly after our Report #T.2-8/57 was submitted in September, 1957, our Mr. Baskin, in a telephone conversation with Mr. Grebski, of the Bridge Office, referred to a typographical error that had occurred in the conclusions to our Report: In the conclusions to the Report the reference to the east abutment should have been to the west and vice-versa.

Yours truly,

Universal GEOTECHNIQUE Limited,

jol/md

J. Owen Lake.