

B. A. 476

REPORT  
ON THE  
FOUNDATION INVESTIGATION  
FOR THE  
PROPOSED OVERPASS  
AT  
BRANT STREET (FW #4) STATION 53+09  
C. A. H. TOWNSHIP OF NELSON  
NEAR BURLINGTON  
PROJECT F 55-34

Copies to: Mr. A. Tove Bridge Engineer (2)  
Mr. H. Tregaskes Construction Engineer (1)  
Mr. J. Walter Design Engineer (1)  
Mr. E. Richardson District Engineer (1)  
Mr. G. Farantatos (1)  
File (1)

Plans F 2407-26  
E 3021-1

Profile F 2407-27

### SOIL CONDITIONS (see drwg. F55-34A)

Generally the area is one of a laminated clay shale formation which occurs frequently in this locality. The amount of hard shale in any section of the soil mass appears to increase with depth as is indicated by the core recovery shown on the log of borehole No. 1. The soft shale which exists generally below the elevation of 338.0 was penetrated for a depth of 14'0" with maximum core recovery of 90%. The core is invariably shattered and has indications of small separating clay layers.

### WATER CONDITIONS

No evidence of static water table was observed, but seepage occurred along the upper face of the top impervious shale layer, and also at greater depths. The rest level of the water was found to be some 5'0" below ground level.

### RECOMMENDATIONS

It is probable that the base of the footing will be founded at an elevation of approximately 338.0. If this is the case it will rest on a soft shattered shale rock strata, in which case a stress of 6000 lb/sq.ft. should be allowed on this material for a rigid frame structure. If the proposed structure is simply supported a further 1000 lbs/sq. ft. is permissible.

In any case the base of the foundation should be below frost penetration and located upon sound material.

G. M. Parantatos  
Foundation Engineer.

## INTRODUCTION

An investigation was recently completed to ascertain the soil profile beneath the footings of the proposed structure at the intersection of Brant Street, Burlington, and the proposed centre-line of the C.A.H. at station 53+09. (see plan F55-34A). This proposed overpass appears on the 1956-57 preparation list under project number WP44-56.

Due to the terrain and the type of equipment used it proved impossible to locate the boreholes exactly on centre-line of the abutments, but in view of the uniformity in the soil conditions the small displacement from centre-line is of little consequence.

## PROCEDURE

At the site of the structure four preliminary holes were bored by power auger to an approximate depth of 13'0", when progress became difficult due to the nature of the material.

The operations of the power auger were followed by core drilling unit in an attempt to ascertain the strength properties of the soil strata.

Difficulty was experienced in obtaining samples of the soil type due to the existence of layers of hard material close to the surface. It was found impossible to recover samples in the tubes, except in the upper 4'0", and penetration refusal of the sampling tubes was frequent.

## SOIL TESTING

Due to the friable nature of this soil material and, to some extent, the disturbance which takes place in sampling and handling, it proved difficult to deliver to the laboratory suitable samples for testing. Consequently, there are no unconfined compression results available.

W. P. 46-56

BRANT STREET

C. A. H

TWP. NELSON

30MS-57

SAMPLE CONDITION	SAMPLE TYPES	ABBREVIATIONS
 DISTURBED	C-3 - CHUNK	V - IN-SITU VIBRE SHEAR TEST      X - UNIT WEIGHT
0600	D-0 - DRIVE OPEN	M - MECHANICAL ANALYSIS      K - PERMEABILITY
	D-F - DRIVE FOOT VALVE	U - UNCONFINED COMPRESSION      C - COMBOLATION
1.05T	TO - TIEH WALLED CORE	Q - TRIAXIAL CONSOLIDATED CORE      CA - CASING
	W/S - WASHED SAMPLE	S - TRIAXIAL SHEAR      N - NATURAL STATE
	RC - ROCK CORE	T - TRIAXIAL SLURRY      WT - WATER TABLE IN TREN

SOIL PROFILE			SHEAR STRENGTH TONS/500 FT. TO CORRECTION		WATER CONTENT %		SAMPLES				
ELEV. DEPTH	WATER CONTENTS	DESCRIPTION	TEST PLUG	ELEVATION SCALE	PENETRATION TEST RESISTANCE BLOWS PER FOOT		OTHER TESTS	CORRECTION TYPE	NO.	CORRECTION TYPE	ELEV. RECON.
					15 P.W.	15 C.W.					
0											
2											
4											
6		RED BROWN CLAY WITH SMALL SHALE LENSES									
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DRILL LOG 84 JOB 1-55-34 BRILLING NO. 2  
CASING IN (STANDARD SAMPLERS TO FIT UNLESS NOTED) DATUM 341.58 O.G. STD 23109.28 C.A.H. DATE REPORT 2 MAY 55  
SAMPLER HAMMER WT. # DIAP. INCHES COMPILED BY CHECKED BY DRIVING DATE 2 MAY 55

SAMPLE CONDITION

SAMPLE TYPES

ABBREVIATIONS

DISTURBED

GOOD

LOST

C-3 - CHUCK

D-0 - DRIVE OPEN

D-F - DRIVE FOOT VALVE

TO - THIN WALLED OPEN

W-S - WASHED SAMPLE

R-0 - ROCK CORE

V - INSTRUMENTAL

M - MECHANICAL ANALYSIS

U - UNCONSOLIDATED

Q - TRIAXIAL CONSOLIDATED QUICK

S - TRIAXIAL SLOW

W - WEIGHT

K - PERMEABILITY

C - CONSOLIDATION

CA - CASING

WL - WATER LEVEL IN CASING

WT - WATER TABLE IN SOIL

SOIL PROFILE

SHEAR STRENGTH  
TORSION/STRENGTH

WATER CONTENT  
W %

SAMPLES

ELEVATION  
DEPTH

WATER  
CONDITION

DESCRIPTION

STRAT. NO.

ELEVATION  
SCALE

PENETRATION TEST  
RESISTANCE PLAIN FOOT

D PW

Δ LV

OTHER  
TESTS

CONDITION

TYPE

HT

PENETRATION  
RESISTANCE

ELEV  
INCHES

RED BROWN  
CLAY WITH  
THIN SHALE  
LAYERS

WATER TABLE

100%

SOME DEFECTS IN NEGATIVE DUE

TO CONDITION OF ORIGINAL DOCUMENTS

MATERIALS LABORATORY DEPARTMENT OF HIGHWAYS - ONTARIO  
**OFFICE REPORT ON SOIL EXPLORATION**

DRILL NO. 100 JOB F. 55.34 BORING NO. 100  
 CASING OK (STANDARD SAMPLERS TO FIT UNLESS NOTED) DATE REPORT APR 1955  
 SAMPLER (HAMMER) WT GROUP INCHES DATUM 3/16.57 G.L. 310.53100.40 CHECKED BY ... BORING DATE APR 1955

**SAMPLE CONDITION**  
 DISTURBED ☒ GOOD ☒ LOSE ☒

**SAMPLE TYPES**  
 CC - CHURK  
 DO - DRIVE OPEN  
 DS - DRIVE FOOT VALVE  
 TO - THIN WALLED OPEN

**ABBREVIATIONS**  
 V - VIBRO VANE SHEAR TEST  
 M - MECHANICAL ANALYSIS  
 U - UNCONFINED COMPRESSION  
 Q - TRIAXIAL CONSOLIDATED QUICK  
 S - TRIAXIAL SLOW  
 W - WASHED SAMPLE  
 WL - WATER LEVEL IN CASING  
 WT - WATER TABLE IN SOIL

**SOIL PROFILE**  
 ELEV. DEPTH  
 DESCRIPTION  
 STR. NOT. ELEV. SCALE  
 SHEAR STRENGTH (TONS/SQ. FT. OR  $Q_{u/2}$ )  
 WATER CONTENT (%)  
 PENETRATION TEST (RESISTANCE SLOWS PER FOOT)  
 D PW A LV  
 OTHER TESTS  
 CONDITION TYPE NO. PENETRATION RESISTANCE ELEV. RECON. %

RED BROWN CLAY WITH THIN LAYERS OF SHALE  
 100%  
 100%

MATERIALS LABORATORY DEPARTMENT OF HIGHWAYS - ONTARIO  
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 DISTURBED ☒ GOOD ☒ LOSE ☒

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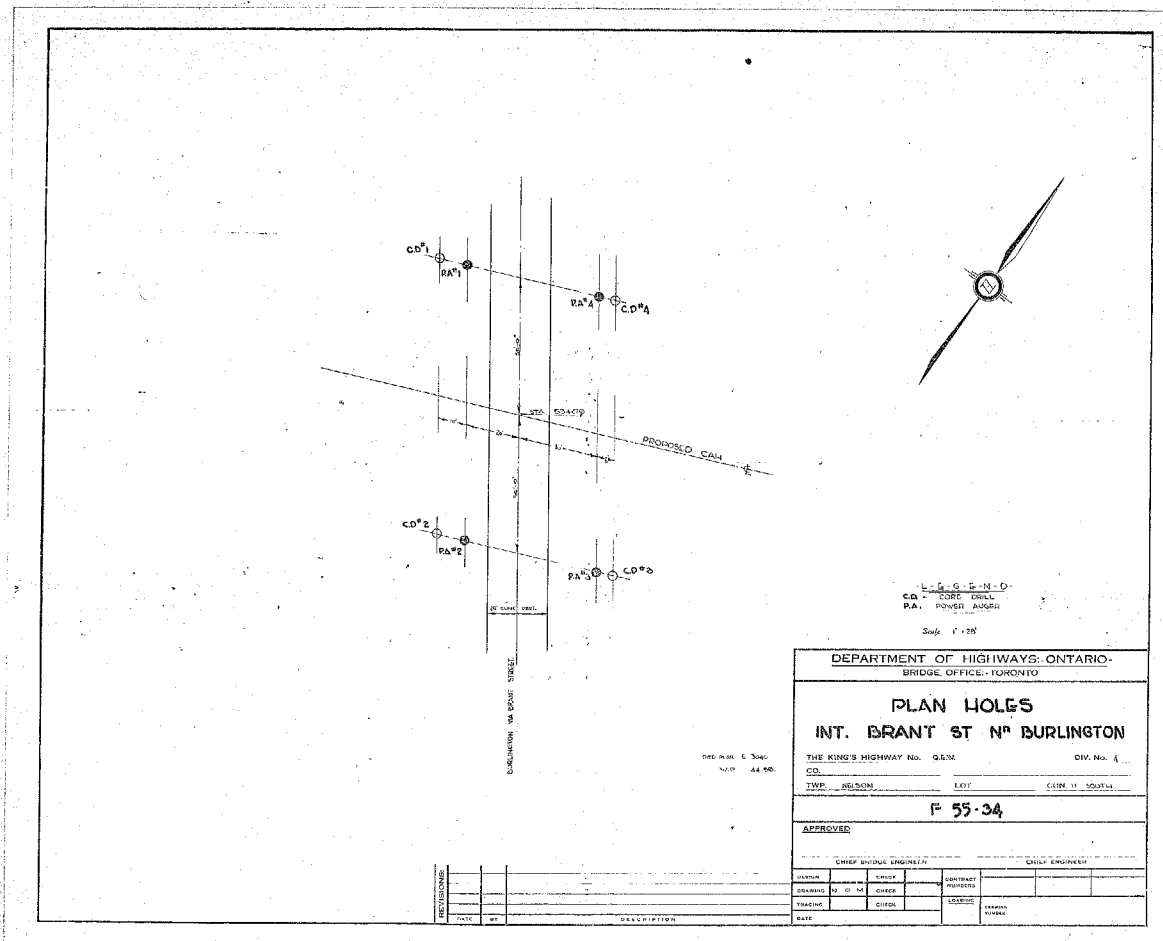
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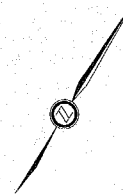
**SOIL PROFILE**  
 ELEV. DEPTH  
 DESCRIPTION  
 STR. NOT. ELEV. SCALE  
 SHEAR STRENGTH (TONS/SQ. FT. OR  $Q_{u/2}$ )  
 WATER CONTENT (%)  
 PENETRATION TEST (RESISTANCE SLOWS PER FOOT)  
 D PW A LV  
 OTHER TESTS  
 CONDITION TYPE NO. PENETRATION RESISTANCE ELEV. RECON. %

RED BROWN CLAY WITH THIN LAYERS OF SHALE  
 100%  
 100%

SOME DEFECTS IN NEGATIVE DUE

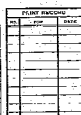
TO CONDITION OF ORIGINAL DOCUMENTS





② POWER AUGER  
① CORE DRILL

Horizontal  $r = 20'$   
Vertical  $r = 20'$

[illegible]



