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REPORT
ON THE
FOUNDATION INVESTIGATION
FOR THE PROPOSED C.N.R. OVERHEAD FOR WEST BOUND LANE
AT STATION C.A.H.
IN THE TOWNSHIP OF
NELSON
NEAR
BURLINGTON
PROJECT F 55-38

Copies to:

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SOIL CONDITIONS (see dw'g. F55 36A)

Generally a shattered shale layer occurs at a depth of some 15'0" at an approximate elevation of 329.0. The shale below this elevation was penetrated for some 7'0" revealing up to 90% of shale core. Above the 329.0 elevation the soil mass was sampled by use of a core barrel and reveals some 65% of shale core between the elevations of 329.0 and 339.0. The core was broken but indicated that the layers of shale were separated by a clay layer, and observation of the hydraulic penetration device on the machine indicated a maximum separation clay layer of 4".

From ground level for a depth of up to 5'0" to the elevation of 339.0 a dry clay occurs. This was the only layer which could be sampled with the normal soil sampling devices (see appendix II).

WATER CONDITIONS

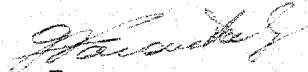
No evidence of a static water table was found on this site, but seepage occurred along the upper face of the top impervious shale layer at a depth some 8'0" below ground level. (elev. 335.0).

RECOMMENDATIONS

The laminated soil layer is suitable for a rigid framed structure if a bearing strength of 5000 lb/squ.ft. is not exceeded.

This allowable bearing stress can be increased to a maximum of 6000 lb/squ. ft. if a simply supported structure is constructed.

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


G. Farantatos
Foundation Engineer.

INTRODUCTION

An investigation was completed recently to ascertain the soil profile beneath the footings of the proposed structure at the junction of the angle line C.N.R. track and the centre line of the West bound lane of the C.A.H. at station 26+60.80, profile F 2407-27 in the Township of Nelson (see plan F55-38A).

Due to the terrain and the type of equipment used it proved impossible at times to locate the machines exactly on the line of the footing, but in view of the uniformity of soil in the area the small displacements of the holes from the footing centre lines is of little consequence.

PROCEDURE

At the site of the structure four holes some 20'0" deep were bored by the power auger boring machine. (see appendix I). The work of the power auger was followed immediately by the core drilling unit in an attempt to ascertain soil strengths and rock quality.

Difficulty was experienced in sampling the soil stratas below the footings due to the existence to hard layers close to the original ground level. Penetration refusal of sampling tubes was frequent throughout the soil mass except on the upper 4'0" - 5'0".

SOIL TESTING

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

W.P. 1-56

C.N.R. OVERHEAD

STN. C.A.H.

30MS-54

MATERIALS LABORATORY-DEPARTMENT OF HIGHWAYS - CHICAGO
OFFICE REPORT ON SOIL EXPLORATIO

DRILL RIG 2 JOB F-55-36 BORING NO. 3
CASING 5X (STANDARD SAMPLERS TO FIT UNLESS NOTED) DATUM 744.64 ON 25160.90 U.S. LAWS C.A.H. DATE REPORT
SAMPLER HAMMER WT. 4 DIAP. INCHES COMPILED BY AT CHECKED BY DATE BORING DATE 3/1/55

SAMPLE CONDITION

DISTURBED
GOOD
LOST

SAMPLE TYPES

CS - CHUCK
DO - DRIVE OPEN
DF - DRIVE FOOT VALVE
TO - THIN WALLED OPEN
WS - WASHED SAMPLE
RC - ROCK CORE

ABBREVIATIONS

ABBREVIATIONS

V-IN-SITU VANE SHEAR TEST	γ - UNIT WEIGHT
M-MECHANICAL ANALYSIS	K - PERMEABILITY
U-UNCONFINED COMPRESSION	C-CONSOLIDATION
Q _c -TRIAXIAL CONSOLIDATED QUICK	CA - CASING
Q - TRIAXIAL QUICK	WL - WATER LEVEL IN CASING
S - TRIAXIAL SLOW	WT - WATER TABLE IN SOIL

SOIL PROFILE

ELEVATION	DEPTH	DESCRIPTION
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SHEAR STRENGTH
TONS/SQ FT. ON $\alpha/2$

PENETRATION TEST
RESISTANCE BLOWS PER FOOT

WATER CONTENT
W %

$$\Delta PW = \Delta LW$$

SAMPLES

OTHER TESTS	NOTATION	DEPTH	NO.	ORIENTATION	DISTANCE	ELEV. (FEET)
-------------	----------	-------	-----	-------------	----------	--------------

RED BROWN
CLAY WITH
THIN SHALE
LAYERS

SHALE WITH
THIN LAYERS
OF RED BROWN
CLAY

TABLE 1

47%
2000
1000
500
0

MATERIALS LABORATORY-DEPARTMENT OF HIGHWAYS - OMAHA
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 1 JOB F 85 20 BORING NO. 1
CASING 31 (STANDARD SAMPLERS TO FIT UNLESS NOTED) DATUM 44.7 O.S. 26.1 B.M. C-4 DATE REPORT
SAMPLER HAMMER WT. DROPS INCHES COMPILED BY AT CHECKED BY AT BORING DATE 4/10/68

SAMPLE CONDITION

DISTURBED
GOOD
LOST

SAMPLE TYPES

CS - CHUCK
 DO - DRIVE OPEN
 DF - DRIVE FOOT VALVE
 TO - THIN WALLED OPEN
 WS - WASHED SAMPLE
 RC - ROCK CORE

ABBREVIATIONS

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V - INSITU VANE SHEAR TEST	Y - UNIT WEIGHT
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Q - TRIAXIAL QUICK	WL - WATER LEVEL IN CASING
S - TRIAXIAL SLOW	WT - WATER TABLE IN SOIL

SOIL PROFILE

ELEV DEPTH	INTER VATIONS	DESCRIPTION
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SHARP STRENGTH
TONS/SQ FT OR GPa

PENETRATION TEST
RESISTANCE PLYS PER FOOT

WATER CONTENT	
W%	
1	10.0
2	10.0
3	10.0
4	10.0
5	10.0
6	10.0
7	10.0
8	10.0
9	10.0
10	10.0
11	10.0
12	10.0
13	10.0
14	10.0
15	10.0
16	10.0
17	10.0
18	10.0
19	10.0
20	10.0
21	10.0
22	10.0
23	10.0
24	10.0
25	10.0
26	10.0
27	10.0
28	10.0
29	10.0
30	10.0
31	10.0
32	10.0
33	10.0
34	10.0
35	10.0
36	10.0
37	10.0
38	10.0
39	10.0
40	10.0
41	10.0
42	10.0
43	10.0
44	10.0
45	10.0
46	10.0
47	10.0
48	10.0
49	10.0
50	10.0
51	10.0
52	10.0
53	10.0
54	10.0
55	10.0
56	10.0
57	10.0
58	10.0
59	10.0
60	10.0
61	10.0
62	10.0
63	10.0
64	10.0
65	10.0
66	10.0
67	10.0
68	10.0
69	10.0
70	10.0
71	10.0
72	10.0
73	10.0
74	10.0
75	10.0
76	10.0
77	10.0
78	10.0
79	10.0
80	10.0
81	10.0
82	10.0
83	10.0
84	10.0
85	10.0
86	10.0
87	10.0
88	10.0
89	10.0
90	10.0
91	10.0
92	10.0
93	10.0
94	10.0
95	10.0
96	10.0
97	10.0
98	10.0
99	10.0
100	10.0

DPW, ΔIW

SAMPLES

OTHER TESTS	LOCATION	PIPE	NR	ORIENTATION DISTANCE	ELEV
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RED BROWN CLAY
WITH THIN SHALE
LAYERS

610 611

410 GARCIA

$$\frac{\partial \sigma}{\partial \tau}$$

1002

