

REPORT
ON THE
FOUNDATION INVESTIGATION
AT THE
PROPOSED STRUCTURE FW #6
AT STATION 84+60 ON THE
TORONTO TO NIAGARA FALLS LANE
AT THE HIGH SPEED INTERCHANGE
NEAR BURLINGTON

Project F 55-43

Copies to:

Plan DM 44 05

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INTRODUCTION

An investigation was recently carried out to ascertain the soil profile below the footings of the proposed structure at the high speed interchange near Burlington. This structure is one of the three in the same locality, and carries the Hamilton to Niagara Falls lane over the Toronto to Niagara Falls lane at Station 84+60. (WP. 45E-56-1956. Preparation List).

PROCEDURE

Four power auger holes were drilled to depths of 17'0" - 23'0" to determine the nature of the soil mass. (see plan).

The power auger operations were followed immediately by core drilling in an attempt to obtain undisturbed samples for testing.

Difficulty was experienced in obtaining undisturbed samples and even legitimate results on driven samples. Refusal to penetration of sampling equipment was frequent.

SOIL CONDITIONS

Generally the soil at this site is of the laminated clay shale type which is common to this locality. The amount of soft shale which occurred in any section of the soil mass appeared to increase with depth - by field observation of the drilling - but core recovery of shale was very small. However, since the shale is quite soft this is not unusual especially if the individual thickness of any shale layer is small.

WATER CONDITIONS

There was no evidence to support the existence of a static water table since at all depths the material was dry and dense except at isolated elevations where seepage occurs.

WATER CONDITIONS (continued)

The water seeping into the boreholes appeared to be under a hydraulic head as after 24 hours the water level reached a general elevation of 340.0.

RECOMMENDATIONS

It is probable that the footing base elevation will be approximately 336.0. If this is the case it will rest upon the laminated clay shale formation, in which case a maximum stress of 6000 lbs/sq.ft. should be allowed for a rigid framed structure. If a simply supported structure is contemplated then the maximum allowable stress can be increased.


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

G. N. Farantatos,
Foundation Engineer.

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

DRILL RIG	4	308	E. 25-43	BORING NO.
CASING	IN. (STANDARD SAMPLERS TO FIT UNLESS NOTED)	DATUM EA. 5410	SI 5056	DATE REPORT
SAMPLER	HAMMER WT. #	COMPILED BY	CHK. BY	BORING DATE
	DROP - INCHES	BY	BY	10 NOV 54

SAMPLE CONDITION



DISTURBED
GOOD
LOST

SAMPLE TYPES

C.S - CHUCK
DO - DRIVE OPEN
DF - DRIVE FOOT VALVE
TO - THIN WALLED OPEN

ABBREVIATIONS

V-INSITU 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.

SHEAR STRENGTH

WATER CONTENT

SAMPLES

[illegible]

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

DRILL RIG 96 JOB 95-43 BORING NO. 2
CASING BY STANDARD SAMPLERS TO FIT UNLESS NOTED DATE 28 Feb 68 UTM 3475 UPRATE REPORT
SAMPLER HAMMER WT 0 FEET 0 INCHES COMPILED BY AT CHECKED BY BORING DATE 10 Nov 55

SAMPLE CONDITION



DISTURBED
GOOD
LOST

SAMPLE TYPES

C.S - CHUNK
D.O. - DRIVE OPEN
D.F - DRIVE FOOT VALVE
T.O. - THIN WALLED OPEN

ABBREVIATIONS

V - VERTICAL 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

SHEAR STRENGTH
TONS/50 FT. OF D.

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

SAMPLES

[illegible]

