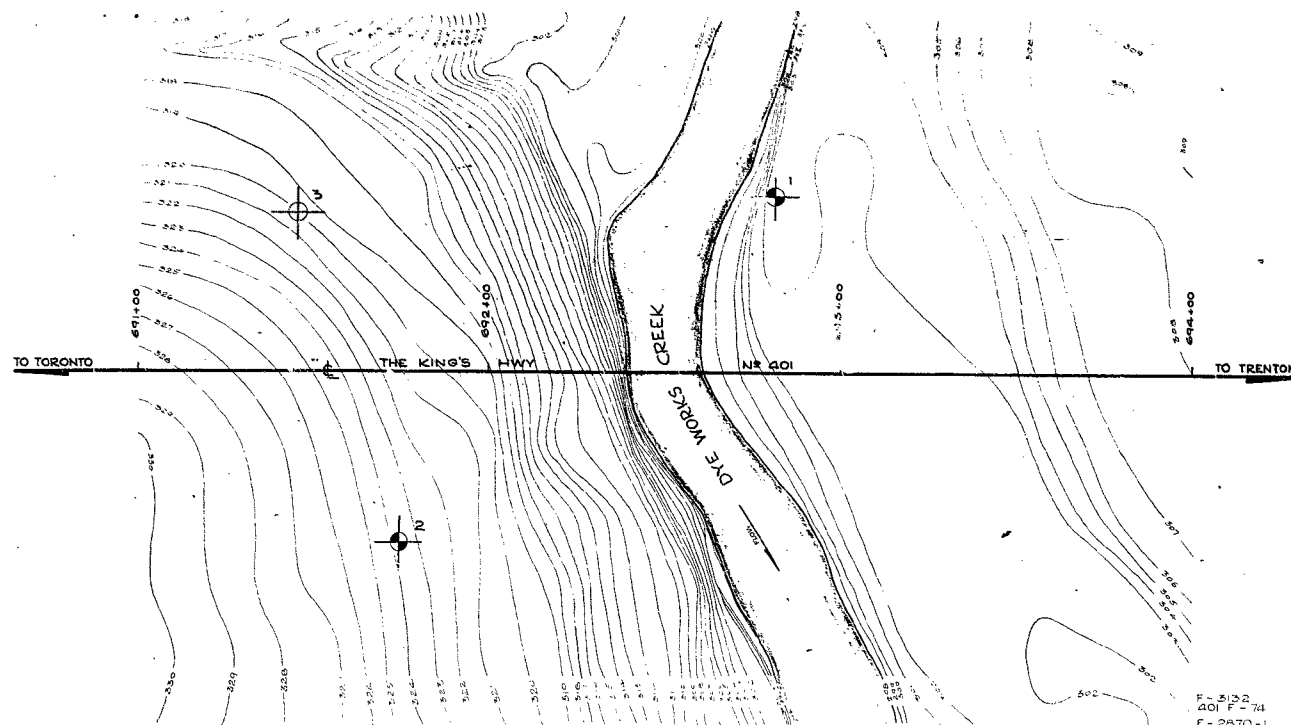


57-F-17
W.P.# 50-57
Hwy.# 401
DYE WORKS
CREEK
1 MILE N. OF
COBOURG

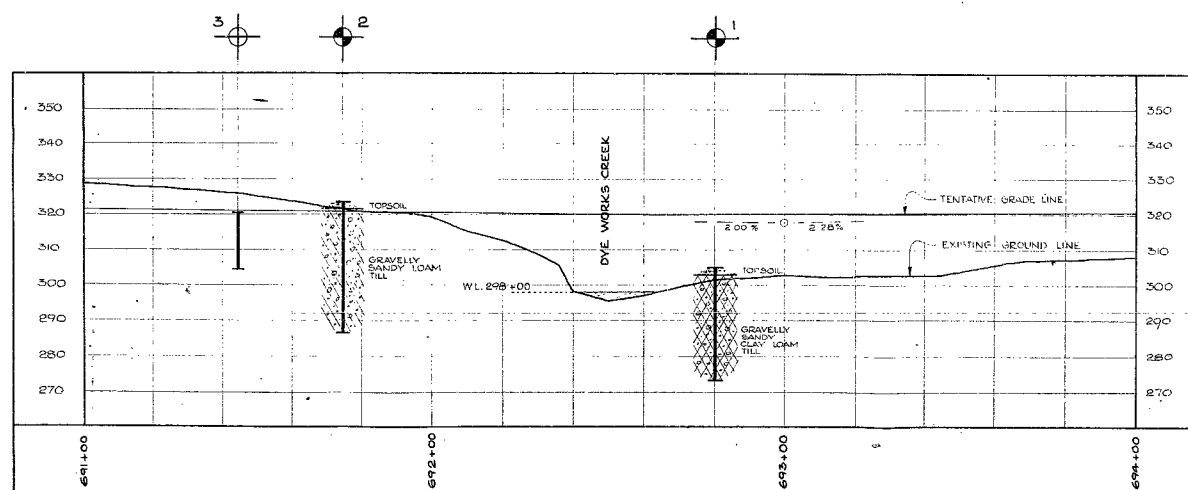
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FOR MICROFILMING
BY *LB* DATE *4/1/72*



PLAN SCALE 1 IN = 20 FT

LEGEND			
BORE HOLES			
PENETRATION HOLE			
BORE & PENETRATION HOLE			
HOLE NO.	ELEVATION	STATION	DISTANCE FROM E
1	305.4'	692+00'	50' LT
2	323.8'	691+75'	48' RT
3	320.2'	691+45'	45' LT

NOTE
THE BOUNDARIES BETWEEN SOIL STRATA HAVE BEEN ESTABLISHED ONLY AT BORE HOLE LOCATIONS. BETWEEN BORE HOLES THE BOUNDARIES ARE ASSUMED FROM GEOLOGICAL EVIDENCE AND MAY BE SUBJECT TO CONSIDERABLE ERROR.



PROFILE SCALE HOR VER 1 IN = 20 FT

DEPARTMENT OF HIGHWAYS, ONTARIO			
MATERIALS & RESEARCH SECTION - DOWNSVIEW			
DYE WORKS CREEK		PROPOSED CROSSING	
IN THE TOWN OF COBOURG			
THE KING'S HIGHWAY No. 401		DIV. No. 7	
CO. NORTHUMBERLAND			
TWP. HAMILTON		LOT	CON.
POSITION & ELEVATION OF HOLES			
APPROVED			
ENGINEER		CHIEF ENGINEER	
DESIGNED	CHECKED	CONTRACT NUMBER	W.P. 50-57
BY	DATE	LOADING	REMARKS
JULY 25, 1987		F-57-17 A	

Mr. A. Toye,

August 15, 1957.

Bridge Engineer.

Materials & Research Section.

Foundation Report -
Hwy. No. 401 at Dye Works Creek,
Cobourg Township -
W.J. F 57-17

Two copies of the above mentioned Foundation Report are being forwarded herewith. In view of the dense till in this area, spread footing foundations will be satisfactory. The subsoil has a bearing value of approximately three tons per square foot.

F. C. Brownridge,
MATERIALS & RESEARCH ENGR.

Per:



(A. Rutka,
Principal Soils Engr.)

AR/MeF

Attach.

cc: Messrs. H. Tregaskes
D. G. Ramsay
R. D. Duff

Foundation Section ✓
File

FOUNDATION REPORT

on

Bridge at New Highway 401, crossing
Dye Works Creek, about one mile north of Cobourg.

Plan No: F-3132
Station: 692 / 50

Distribution:

Mr. A. Toye Bridge Engineer	(2)
Mr. H. Tregaskes Construction Engineer	(1)
Mr. D. G. Ramsay Design Engineer	(1)
Mr. H. D. Duff Dist.Eng. Port Hope	(1)
Foundation Section	(1)
File	(1)

W.P. 50-57
W.J. F-57-17

INTRODUCTION

A subsoil investigation was carried out to determine the bearing values of the layers for supporting the foundations of the proposed structure.

The location is about one mile north of Cobourg, where the new Highway 401 crosses the Dye Works Creek, (profile No: F-3132-2, station 692 + 50).

The work started on June 5, 1957, and was completed on June 14, 1957.

PROCEDURE

The subsoil investigation was carried out by means of a skid mounted coredrill machine. In the course of investigations two boreholes with two dynamic cone penetration tests (Nos. 1 and 2), and one separate dynamic cone penetration test were made.

The locations of the boreholes are shown on drawing F-57-17A, and their elevations on logs under Appendix I.

SUBSOIL FINDINGS AND ANALYSIS

The terrain is till plain. The waters of the creek were very shallow and flowing gently. The West bank has been eroded by the creek and has the shape of a regular cross section with a 2 to 1 slope. Here the stratigraphy of the layer is well exposed for observation. So the boreholes 2 and 3 were made purposely further to the west in order to confirm the exposed stratigraphy. On the eastern side the ground is level and is probably the base of the rather wide ravine. The ground level elevation on the east side is about 18-20 feet lower than the western side.

The investigations revealed the layer to be gravelly sandy loam till. The loaminess of the layer is quite conspicuous with different soil colours on the exposed west bank.

The samples extracted from the boreholes were tested in the laboratories. The test results show that the layer is mostly made of granular material and is non-plastic. Some of the samples extracted from borehole No. 2 (on the western side) contained a considerable amount of clay material. From these samples attempts were made for unconfined compression tests; some gave results up to 2.5 T.S.F. However, in general most of the results were considered to be unreliable. The field standard penetration tests performed during sampling, indicated high values of resistance (mostly more than 100 blows per foot penetration), confirming the hard and compact nature of the subsoil. No underground water level was observed in the boreholes - the layer is considered to be impervious.

The layer is competent to support spread footing type foundations and can provide 2.5-3 T.s.f. bearing value.

CONCLUSIONS AND RECOMMENDATIONS

From the above discussion it will follow that:

1. The layer is hard and compact soil in the form of gravel, sand, silt and clay loam.
2. It will be convenient to use spread footing type foundations to support the bridge. At elevation about 295 feet on the eastern side; and at elevation about 310 feet on the western side, the layer can provide ~~2 - 3~~ T.s.f. bearing value with a safety factor of 3.
2.5-3

3. The tendency of the creek waters is to erode the western bank. This point should be given due consideration when choosing the place for footings. Also, due consideration should be given to scouring hazards at this site.

4. The approach fill to the new structure on the eastern side does not present any stability problem.

V. Korlu
Foundation Engineer.

A P P E N D I X I .

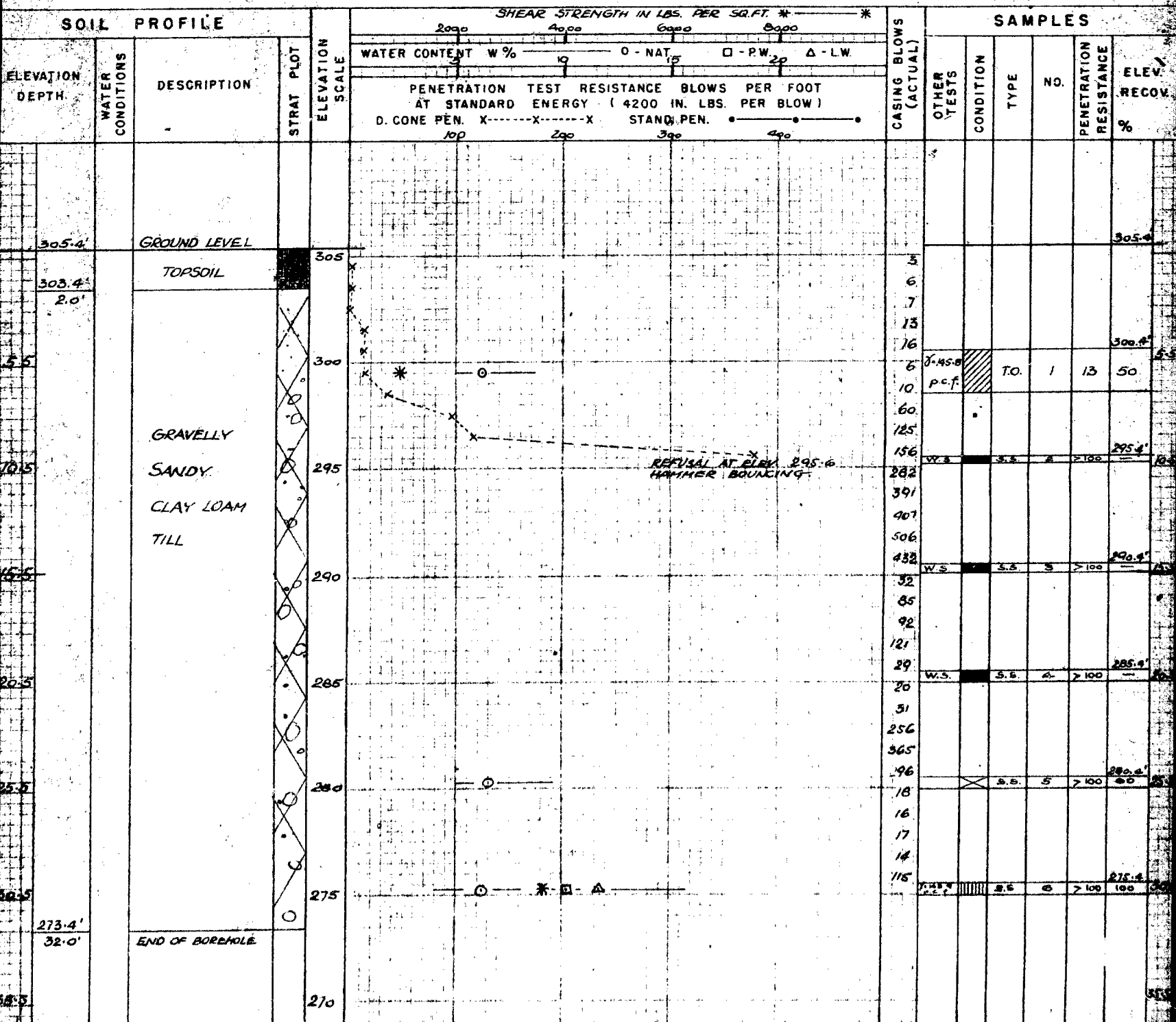
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-1 OPERATION BORE & PENET N JOB F-57-17 W.P. 50-57 BORING 1 STA. 692+80 (50' LT)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JULY 1957
SAMPLER HAMMER WT. 250 LBS. DROP 19 INCHES COMPILED BY H.S. CHECKED BY A.L. DATE BORING 5 JUNE 1957

ABBREVIATIONS
V - INSITU VANE SHEAR TEST Q - TRIAXIAL QUICK K - PERMIABILITY C.S. - CHUNK S.S. - SLEEVE SAMPLE
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION D.O. - DRIVE OPEN P.S. - PISTON SAMPLE
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING D.F. - DRIVE FOOT VALVE W.S. - WASHED SAMPLE
C - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL γ - UNIT WEIGHT T.O. - THIN WALLED OPEN R.C. - ROCK CORE

SAMPLE TYPES
S.S. - SLEEVE SAMPLE
P.S. - PISTON SAMPLE
W.S. - WASHED SAMPLE
R.C. - ROCK CORE

SAMPLE CONDITION
- DISTURBED
- FAIR
- GOOD
- LOST



DRILL RIG 54-1 OPERATION BORE & PENET'N JOB F-57-17 WP. 50-57 BORING 2 STA. 691+75 (48' RT)
CASING Bx (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JULY 1957
SAMPLER HAMMER WT. 250 LBS. DROP 19 INCHES COMPILED BY H.S. CHECKED BY AL DATE BORING JUNE 1957

SAMPLE CONDITION

- DISTURBED
- FAIR
- GOOD
- LOST

SAMPLES

ELEVATION DEPTH	WATER CONDITIONS	DESCRIPTION	STRAT. PLOT	ELEVATION SCALE	WATER CONTENT W% PENETRATION TEST RESISTANCE BLOWS PER FOOT AT STANDARD ENERGY (4200 W. LBS. PER BLOW) D. CGNE PEN. X-----X STAND. PEN.	CASING BLOW (ACTUAL)	OTHER TESTS	CONDITION	TYPE	NO.	PENETRATION RESISTANCE %	ELEV. RECOV
323.8'		GROUND LEVEL										323.8'
321.8' 2.0'		TOPSOIL										
9		GRAVELLY SANDY LOAM TILL		320		5						
14				315		13						
19				310		19						
24				305		27						
29				300		55						
34				295		74	J-1380 p.c.f.	/	T.O.	1	26	100
39				290		113						
				285		147	J-480 p.c.f.	/	T.O.	2	72	67
						251						
						284	J-1175 p.c.f.	/	S.S.	3	94	78
						34	J-1455 p.c.f.	/	S.S.	4	89	33
						62						
						69						
						107						
						98	J-1183.9 p.c.f.	/	S.S.	5	>100	100
						19						
						19						
						53						
						124	J-1465 p.c.f.	/	S.S.	6	>100	100
						44						
						15						
						23						
						29						
						47						
280.8' 5'-0"		END OF BOREHOLE					W.S.		S.S.	7	>100	

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-1 OPERATION PENETRATION JOB F-57-17 WP 50-57 BORING 3 STA. 691+45 (45' LT)
CASING Bx (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JULY 1957
SAMPLER HAMMER WT. 250 LBS. DROP 12 INCHES COMPILED BY H.S. CHECKED BY A.L. DATE BORING 14 JUNE 1957


- ABBREVIATIONS
- V - INSITU VANE SHEAR TEST
M - MECHANICAL ANALYSIS
U - UNCONFINED COMPRESSION
Qc - TRIAXIAL CONSOLIDATED QUICK

Q - TRIAXIAL QUICK
S - TRIAXIAL SLOW
WL - WATER LEVEL IN CASING
WT - WATER TABLE IN SOIL

K - PERMIABILITY
C - CONSOLIDATION
CA - CASING
γ - UNIT WEIGHT
- SAMPLE TYPES

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

S.S. - SLEEVE SAMPLE
P.S. - PISTON SAMPLE
W.S. - WASHED SAMPLE
R.C. - ROCK CORE
- SAMPLE CONDITION

 - DISTURBED
- FAIR
- GOOD
- LOST

