

c.c. Foundation Section.

Mr. A. Toye.

August 20th, 1957.

Bridge Engineer.

Re: Foundation Report

Mr. F.C. Brownridge.

Hwy. 401. Road Allowance between

Cons. 7 & 8, Trafalgar Twp.

W.P. 42-57. W.J.F 57-20.

We are forwarding herewith two copies of the above mentioned Foundation Report. In view of the sub-soil, which consists primarily of till, spread footing foundations with a bearing capacity of 2.5 tons per square foot will be satisfactory.

F. C. Brownridge.  
Materials & Research Engineer.

per:



A. Rutka.  
Principal Soils Engineer.

c.c. Mr. H. Tregaskes.  
Mr. C.O. Ramsay.  
Mr. J.B. Wilkes.  
Foundation Section.  
File.

Foundation Report

on

Underpass Bridge at Hwy. 401

"Line A" Crossing Road Allowance (Con.  
7 and 8) about 1 mile South of Hornby.

Plan No. F-3523-8

Station: 157+23.36

Distribution:

Mr. A. Toye  
Bridge Engineer (2)

Mr. H. Tregaskes  
Construction Engineer (1)

Mr. D. G. Ramsay  
Design Engineer (1)

Mr. J. B. Wilkes  
District Engineer  
Toronto, Ontario (1)

Foundation Section (1)

File (1)

W. P. 42-57

W.J. F-57-20

## Introduction

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

The location is about 1 mile South of Hornby, where new Highway 401 Line "A" crosses the road allowance between Concessions 7 and 8, (Profile No. F-3529-9, Station 157+23.36). The work started on June 24, 1957 and was completed on July 11, 1957.

## Procedure

The investigations were carried out by means of skid mounted coredrill machine. In the course of investigations, three boreholes with three dynamic cone penetration tests were made.

The locations of the boreholes are shown on drawing F-57-20A, and their logs under Appendix I.

## Subsoil Findings and Analysis

The terrain is till plain. The investigations revealed the following stratigraphy:

Under the topsoil the layer is gravelly brown clay till. However, at different elevations, a considerable amount of silt and sand was found mixed with clay. At about elevation 650 ft. some three foot deep layer of fine sand was detected.

From the boreholes, samples were extracted and tested in the laboratories. The test results identify the soil as inorganic and of no to very low plasticity. The attempts for unconfined compression tests, due to the nature of the soil, yielded unreliable results. The field standard penetration results performed during sampling confirm the hard and compact nature of the subsoil. Some water was observed in the boreholes, but it is

considered to be infiltration water and the layer is assumed to be impervious.

With these considerations, the layer is convenient for supporting spread footing type foundations and can provide a bearing value of 2.5 t.s.f.

#### Conclusions and Recommendations

From the above discussion, it follows that:

1. The layer is bouldery clay till becoming loamy with silt and sand at different elevations. Also, some interbedded sand layers have been detected.
2. It will be convenient to support the proposed structure on spread footing foundations. If the footings are placed at about elevation 655 ft., the layer can provide a bearing value of 2.5 t.s.f., with a safety factor of 3.
3. The approach fills to the new structure do not present any stability problem.

V. Korlu

Foundation Engineer

VK:GGP

APPENDIX I

DRILL RIG 54-2 OPERATION BORE & PENET'N JOB F-57-20 WP. 42-57 BORING 1 STA. 156-82 (33 21)  
CASING BK (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JULY 1967  
SAMPLER HAMMER WT. 250 LBS. DROP 23 INCHES COMPILED BY HJ CHECKED BY AL DATE BORING 25 JUNE 1967

## SAMPLE TYPES

**SAMPLE CONDITION**

ACCESSION NO.				SAMPLE		CORRECTION	
1- INSITU VANE SHEAR TEST	Q- TRIAXIAL QUICK	K- PERMIABILITY	C.S.- CHUNK	S.S.- SLEEVE SAMPLE		DISTURBED FAIR GOOD LOST	
2- MECHANICAL ANALYSIS	S- TRIAXIAL SLOW	C- CONSOLIDATION	D.O.- DRIVE OPEN	P.S.- PISTON SAMPLE			
3- UNCONFINED COMPRESSION	WL- WATER LEVEL IN CASING	CA- CASING	D.F.- DRIVE FOOT VALVE	WS- WASHED SAMPLE			
4- TRIAXIAL CONSOLIDATED QUICK	WT- WATER TABLE IN SOIL	Q- UNIT WEIGHT	T.D.- THIN WALLED OPEN	RC- ROCK CORE			



DISTURBED  
FAIR  
GOOD  
LOST

# SAMPLES

[illegible]

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

DRILL RIG 54-2 OPERATION BORE & PENET JOB F-57-20 WP 42-57 BORING 2 STA 157-68 (121)  
CASING BX (standard samplers to fit unless noted) DATUM CIODETIC DATE REPORT JULY 1957  
SAMPLER HAMMER WT. 250 LBS. DROP 23 INCHES COMPILED BY H.I. CHECKED BY AL DATE BORING 11 JULY 1957

**ABBREVIATIONS**

V - INSITU VANE SHEAR TEST O - TRIAXIAL QUICK K - PERMIABILITY  
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION  
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING  
O - TRIAXIAL CONSOLIDATED-QUICK WT - WATER TABLE IN SOIL D - UNIT WEIGHT

**SAMPLE TYPES**

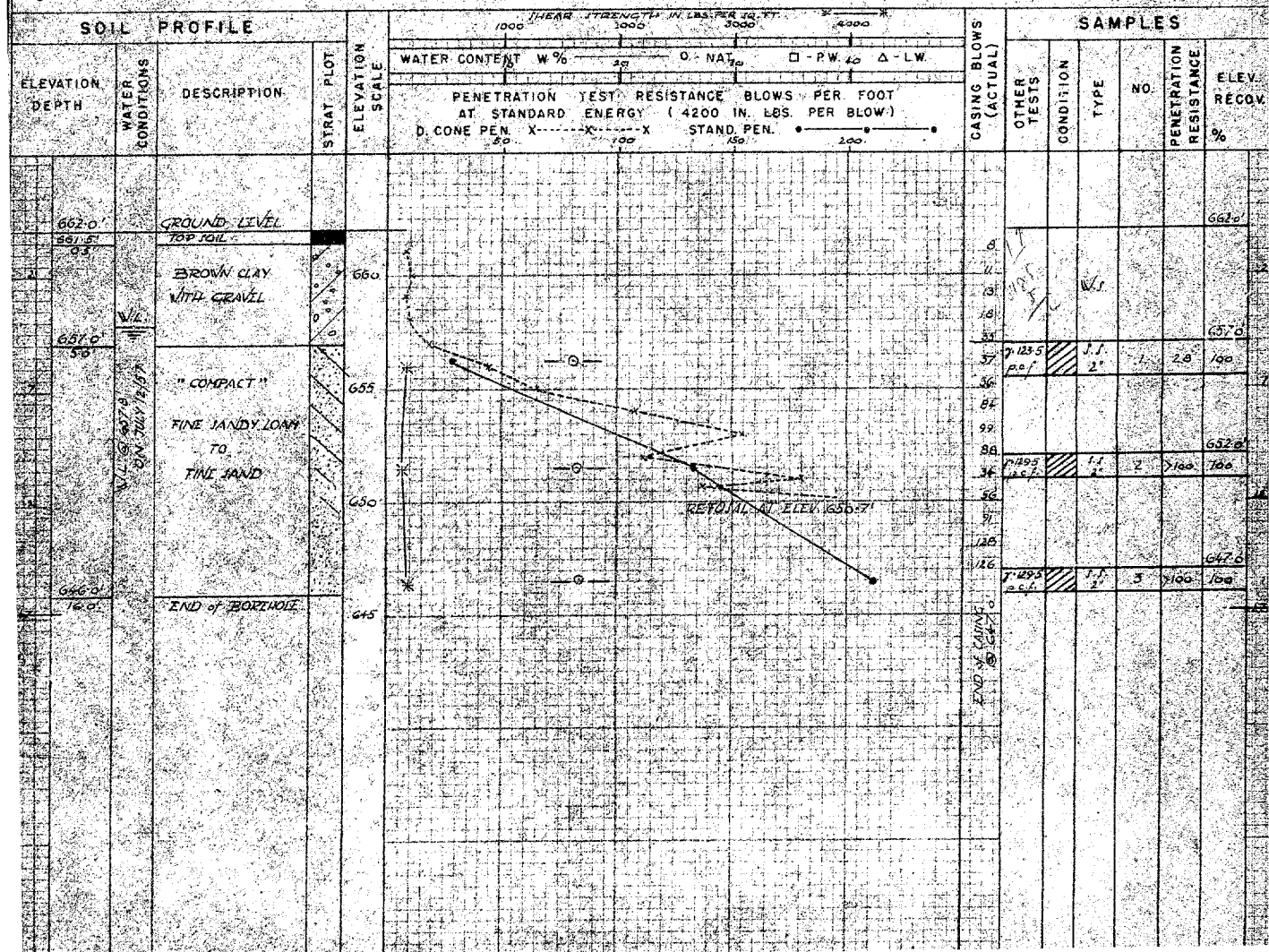
CS - CHUNK S.S. - SLEEVE SAMPLE  
DO - DRIVE OPEN PS - PISTON SAMPLE  
DF - DRIVE FOOT VALVE WS - WASHED SAMPLE  
TO - THIN WALLED OPEN RC - ROCK CORE

**SAMPLE CONDITION**

 - DISTURBED  
- FAIR  
- GOOD  
- LOST

**SOIL PROFILE**

**SAMPLES**



DRILL RIG 54-2 OPERATION BORE & PENET'N JOB F-57-20 WP. 42-57 BORING 3 STA. 157+63 (41 FT.)  
CASING B8 (standard samplers to fit unless noted) DATUM GYODETIC DATE REPORT JULY 1957  
SAMPLER HAMMER WT. 250 LBS. DROP 23 INCHES COMPILED BY HS CHECKED BY AL DATE BORING 9 JULY 1957

## SAMPLE TYPES

**SAMPLE CONDITION**

- DISTURBED
- FAIR
- GOOD
- LOST

### SOIL PROFILE

SHEAR STRENGTH IN LBS PER SQ. FT. \*-----\*

WATER CONTENT W% 0 - NAT ☐ - P.W. ☐ - L.W.

PENETRATION TEST RESISTANCE BLOWS PER FOOT  
AT STANDARD ENERGY (4200 IN. LBS. PER BLOW)

D. CONE PEN. X-----X-----X      STAND. PEN. ●-----●-----●

## SAMPLES

DATE	DESCRIPTION	AMOUNT	CUMULATIVE	REMARKS
12-1-78	CASING BLOWS (ACTUAL)	100.00	100.00	

### CONDITION

TYPE

NO.

ENETRAT  
EFICISAN

EL  
RE  
%

100

GROUND LEVEL

TOP SOIL

BROWN.  
CLAY LOAM  
WITH GRAVEL

COMPACT,  
FINE TO VERY FINE  
SAND

• COMPACT  
JANDY CLAY LOAM

END of BOREHOLE

REMOULDED SHEAR STRENGTH

RETURN AT FLIV 649.95'

END OF CASING  
② 630-36

13-0-0

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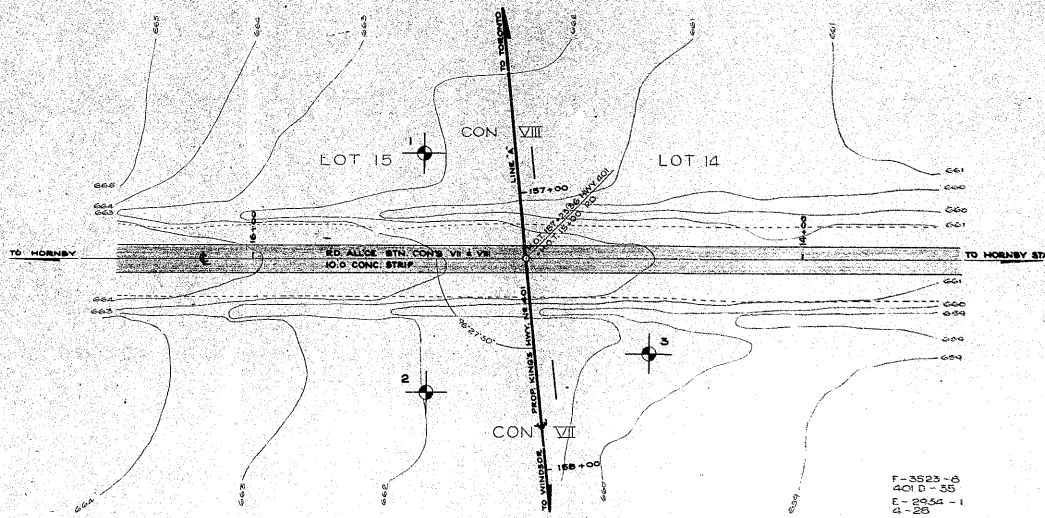
630

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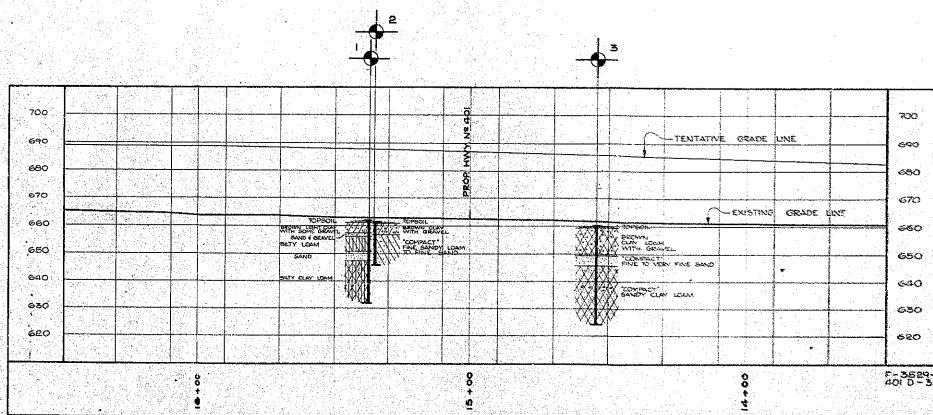


# 57-F-20  
W.P.# 42-57  
Hwy. # 401  
UNDERPASS BR.  
CON. # 7' # 8  
1 MILE S. OF  
HORNBY





PLAN SCALE 1 IN = 20 FT



PROFILE SCALE HOR 1 IN = 20 FT  
VER 1 IN = 20 FT

LEGEND			
BORE HOLE			
PENETRATION HOLE			
BORE & PENETRATION HOLE			
HOLE NO.	ELEVATION	STATION	DISTANCE FROM 401 &
1	662.16'	156+62'	33' RT
2	662.0'	157+60'	41' RT
3	660.36'	157+65'	41' 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.

DEPARTMENT OF HIGHWAYS, ONTARIO			
MATERIALS & RESEARCH SECTION - DOWNSVIEW			
<b>CONCRETE ROAD PROPOSED CROSSING 3/4 MILE N.W. OF HORNBY STA.</b>			
THE KING'S HIGHWAY No. 401 (LINE "A")		DIV. No. 6	
CC. HALTON			
TWP. TRAFALGAR		LOT 14 & 15 CON. VII & VIII	
POSITION & ELEVATION OF HOLES			
APPROVED			
ENGINEER		CHIEF ENGINEER	
VERSION	CHECK	REVISIONS	DATE
DRAWING	D.F. CHECK	42-57	
TRACING	CHECK		
DATE AUGUST 5, 1957		F-57-20 A	