

Mr. A. Toye

June 22nd, 1956.

Bridge Engineer

Foundation Report

F. C. Brownridge

C.N.R. and Hwy #27 Sudbury

Per: A. Rutka

W.P. 106-56 Project F56-4

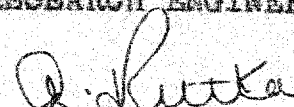
Attached herewith are 2 copies of the above mentioned foundation report.

If the present scheme is followed, the foundation of the structure will be located on a soft shale bedrock which according to the National Building Code will permit a bearing of 5 tons/sq. foot.

F. C. Brownridge  
MATERIALS & RESEARCH ENGINEER

AR:JA  
Encl.

Per:



A. Rutka

c. c. to:

Mr. H. Tregaskes  
Mr. J. Walter  
Mr. F. Fownes  
Foundation Section  
File

Mr. W. A. Castle,

June 7, 1956

Location Engineer,

Re: Hwy. 27 Proposed GNR.

Materials & Res. Section.

Subway Structures 106-56.

About one week ago, you may recall that I advised you of finding bedrock very close to the surface during our foundation investigation for this structure and the approaches. We have now completed this investigation and are submitting the following data:

<u>Location of Borehole</u>	<u>Approx. Overburden</u>	<u>Approx. Bedrock Elev.</u>
Station 1490 130' Lt. S/L	10'	297.0
" 2458 C/L	10'	299.0
" 3467 C/L	13'	297.0
" 4495 120' Lt. C/L	8'	302.0
" 7474 C/L	12'	304.0
" 11400 9' Lt. C/L	12'	304.0
" 14400 C/L	15'	307.0

This bedrock consists of interbedded layers of very soft shale which are quite deep and thinner layers of harder shaly limestone. It was quite difficult to determine the precise bedrock elevations because of its general softness but nevertheless the elevations should be accurate within 1'.

The grade line, as shown on profile C-912, indicates a maximum of a 30' cut at the structure, the bottom 17 feet of which will be bedrock.

In view of the proximity of the buildings, you may wish to review the consequence of the use of dynamite in such an area.

The overburden consists of fine till.

W. C. Brownridge  
Materials and Research Engineer

Per:

*D. Lutka*  
(A. Lutka)

AK/RS.

**FOUNDATION REPORT**

**C.H.R. and Hwy. No. 27**

**LONG BRANCH**

**Dispersement:**

**Mr. A. Foye**  
**Bridge Engineer** (2)

**Mr. H. Tregaskes**  
**Construction Engineer** (1)

**Mr. John Walter**  
**Design Engineer** (1)

**Mr. W.S. Cole**  
**Dist. Engineer, Etobicoke** (1)

**Foundation Section** (1)

**File** (1)

**E.P. No. 106-56**  
**Project 56-4**

## 1. INTRODUCTION

Subsoil investigation has been conducted in connection with the construction of an underpass at the crossing of the Canadian National Railway and Highway No. 27 at North limits of Long Branch, Township of Etobicoke (Lot 10) and County of York (Con. 1). The work was carried out from May 22-29, 1956.

## 2. PROCEDURE

The field explorations at the site have been performed by a core-drill machine and Flite Auger.

The locations and elevations of the boreholes are shown in drawing No. F 56-4A and their logs are found under Appendix I.

## 3. SUBSOIL FINDINGS

The investigation of the subsoil structure by boreholes reveals:

- a) Clay layer from the surface to a depth of approx. 10'.  
This clay shows shades of brown colour, medium grain size, and varies in consistency with depth from stiff to very stiff.
- b) Shale layer underlying the clay layer stretches at least to the depth of 30', as indicated by borehole No. 1. In this stretch the shale layer is interbedded with soft shale and shaley limestone, and these layers are not uniform. The strength of the shale varies depending upon the type of shale layer encountered.

#### 4. WATER SITUATION

No evidence of ground water was found in any of the bore holes.

#### 5. CONCLUSION

- a) In the immediate vicinity of the proposed construction site the investigations have not revealed the presence of any underground water level.
- b) From the clay samples the unconfined compressive strength has been found to be 1.4 tons/sq.ft. at 3' depth and 2.5 tons/sq.ft. at 9' depth. As for the allowable bearing strength of the soft shale layer underlying the clay layer the National Building Code of Canada recommends 5 tons/sq.ft.
- c) In the light of these findings spread footing foundations will be satisfactory for the proposed bridge structure. The top of the bedrock is approximately at elevation 102', and the footings will be located at elevation 260' approximately.

V. Korin,  
Foundation Engineer.

APPENDIX


I

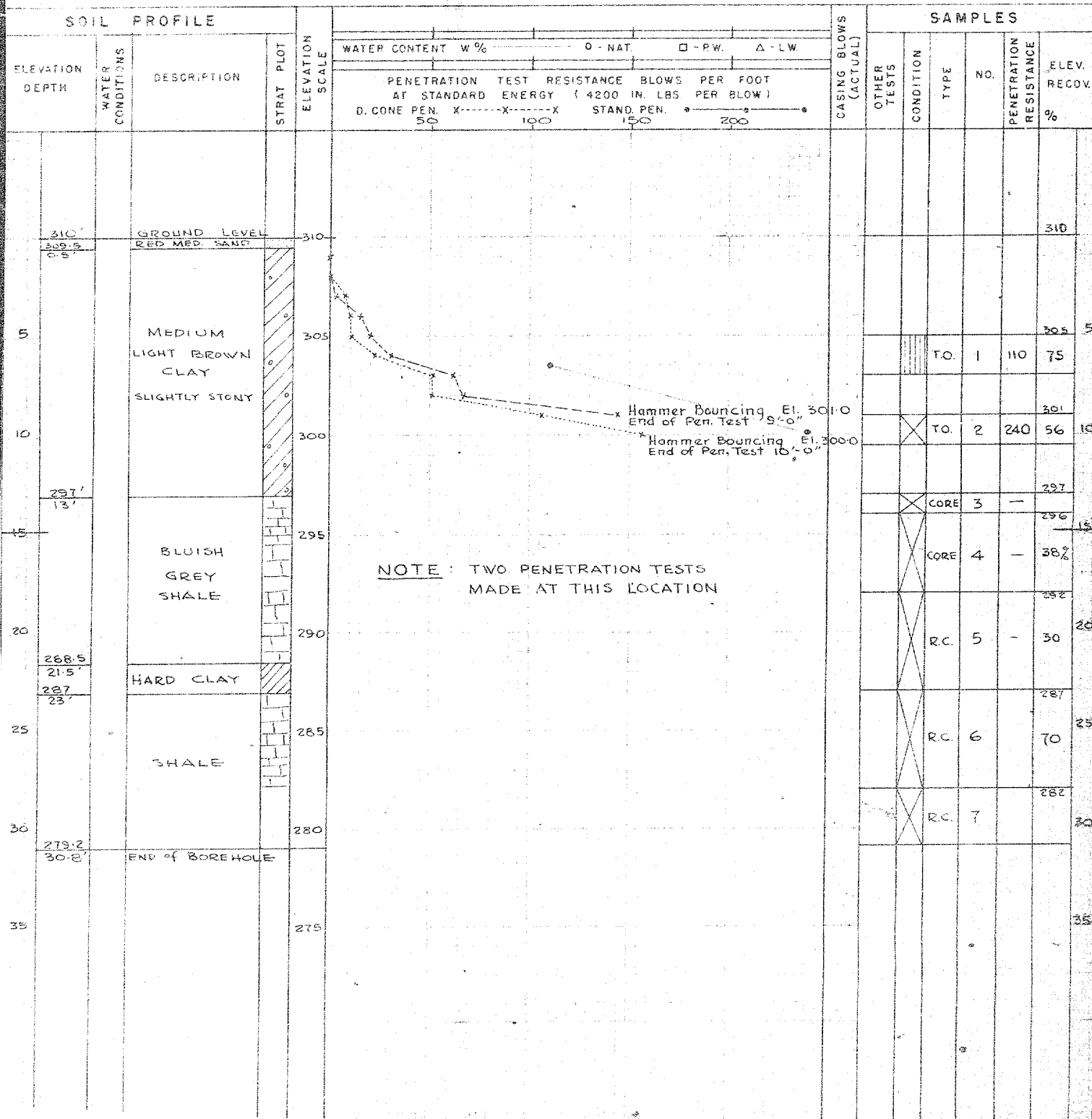
DEPARTMENT OF HIGHWAYS - ONTARIO  
 MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW  
**OFFICE REPORT ON SOIL EXPLORATION**

DRILL RIG 54-1 OPERATION BORE & PENETRAT'N JOB F-56-4 WP. 106-56 BORING 1 STA. 3+67.4 RT.  
 CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT MAY 1956  
 SAMPLER HAMMER WT. 250 LBS. DROP 23 INCHES COMPILED BY H.S. CHECKED BY DATE BORING 22 MAY 1956

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

**SAMPLE TYPES**  
 SS - SLEEVE SAMPLE  
 PS - PISTON SAMPLE  
 WS - WASHED SAMPLE  
 RC - ROCK CORE

**SAMPLE CONDITION**  
  
 - DISTURBED  
 - FAIR  
 - GOOD  
 - LOST



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

DRILL RIG 54-1 OPERATION BORE # PEN. JOB F-56-4 WP 106-56 BORING 2 STA. 2+58.5 1/2 RT.  
 CASING B.X. (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT MAY 1956  
 SAMPLER HAMMER WT. 250 LBS. DROP 23 INCHES. COMPILED BY H.S. CHECKED BY     DATE BORING 26 MAY 1956

## ABBREVIATIONS

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

## SAMPLE TYPES

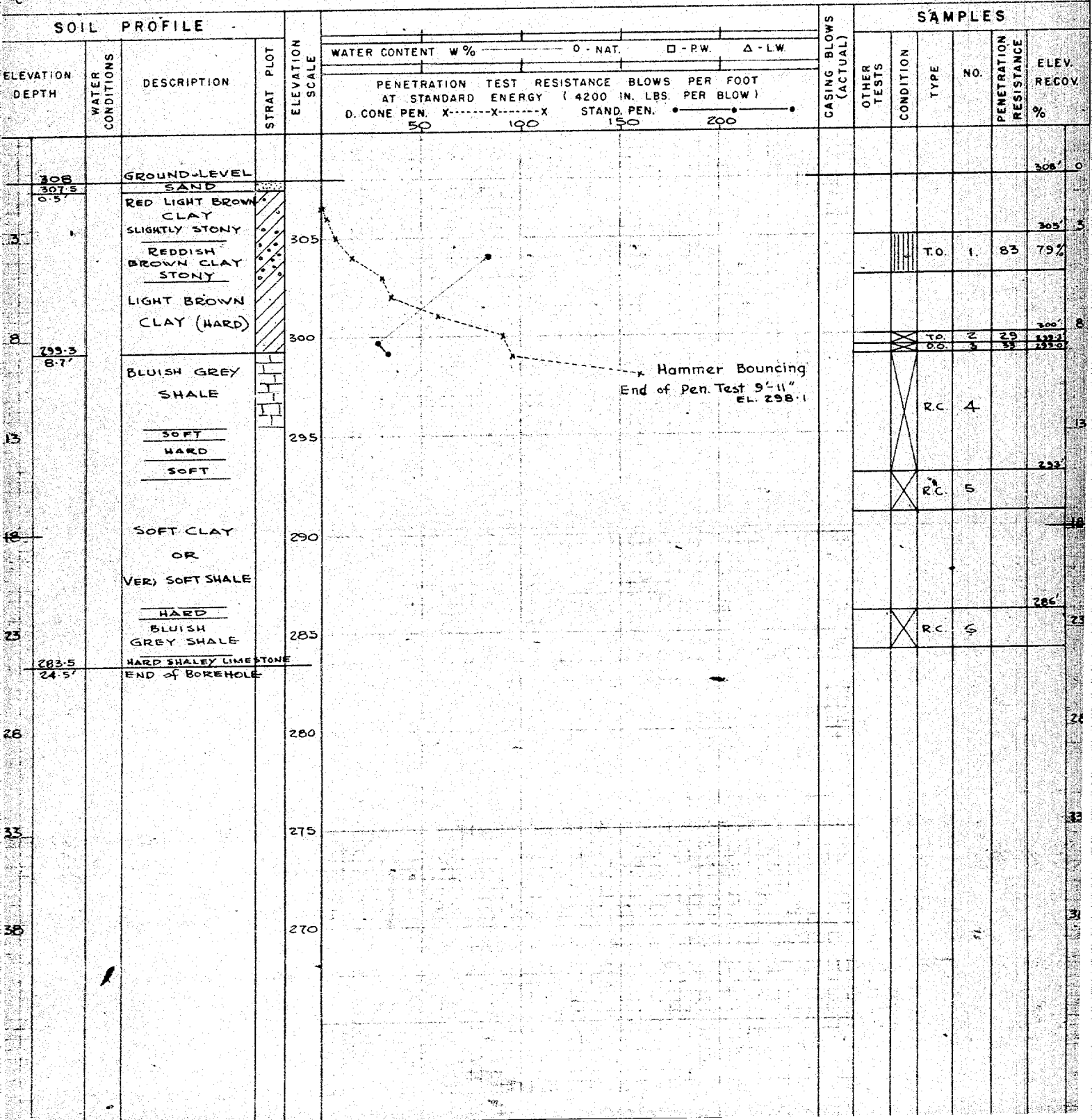
C.S. - CHUNK S.S. - SLEEVE SAMPLE  
 D.O. - DRIVE OPEN RS - PISTON SAMPLE  
 D.F. - DRIVE FOOT VALVE WS - WASHED SAMPLE  
 T.O. - THIN WALLED OPEN R.C. - ROCK CORE

## SAMPLE CONDITION



- DISTURBED  
 - FAIR  
 - GOOD  
 - LOST


## SOIL PROFILE

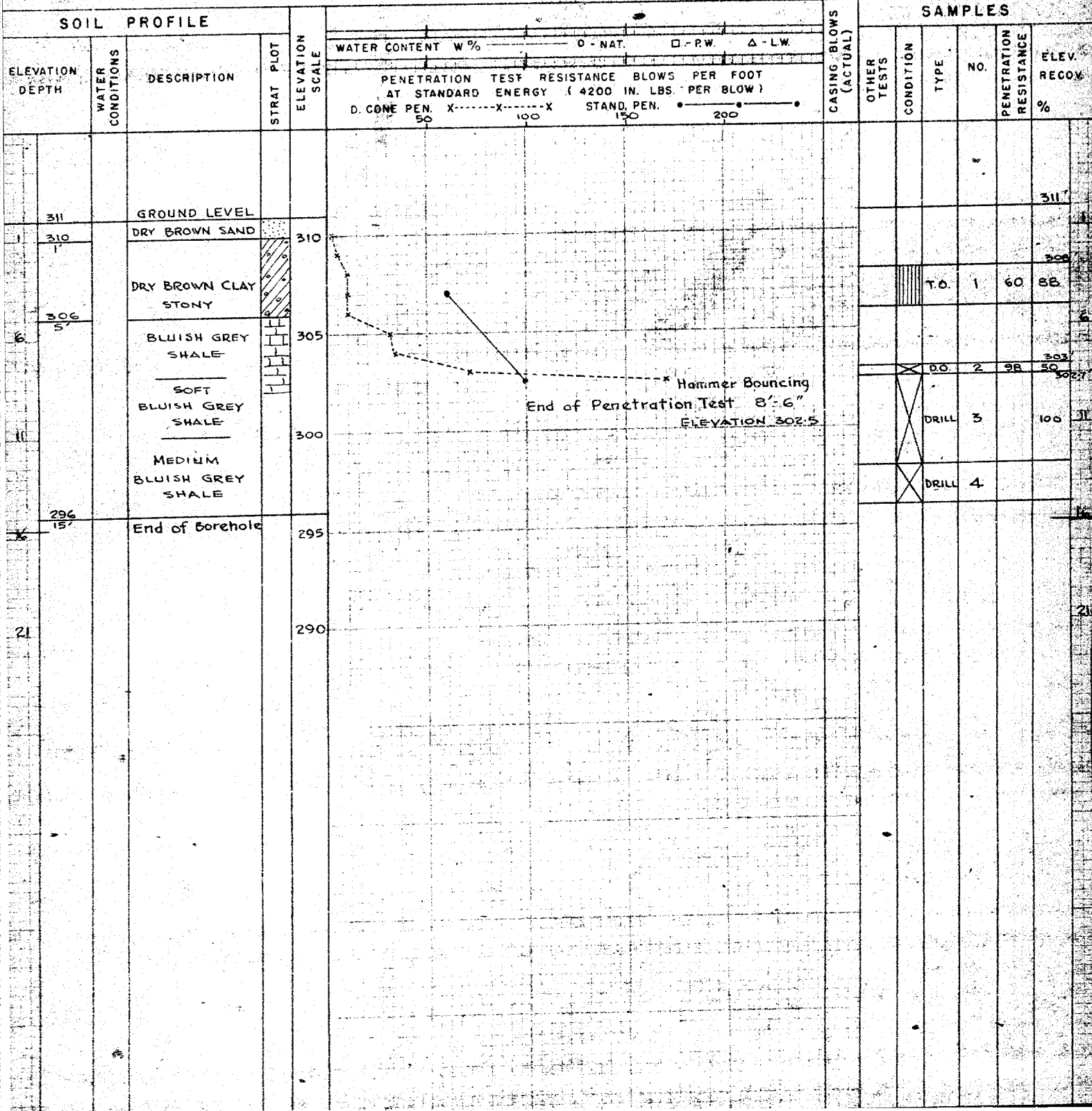




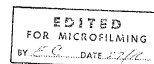
DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW  
**OFFICE REPORT ON SOIL EXPLORATION**

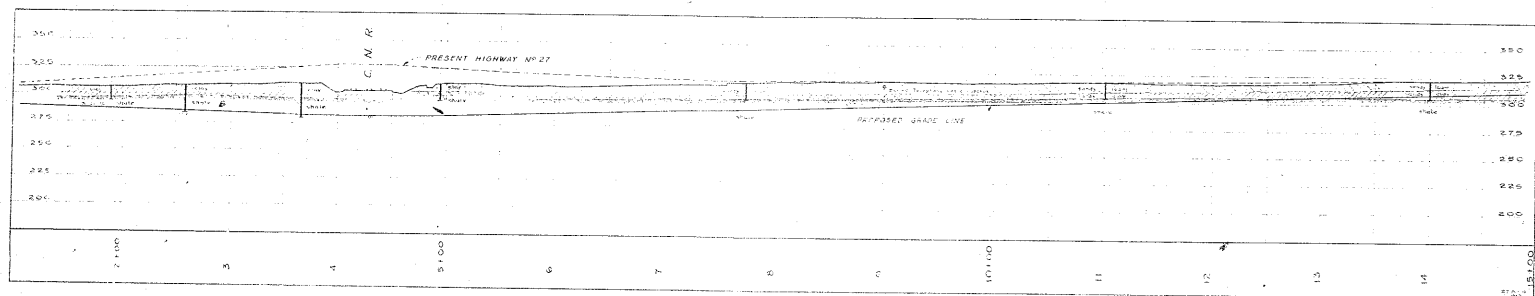
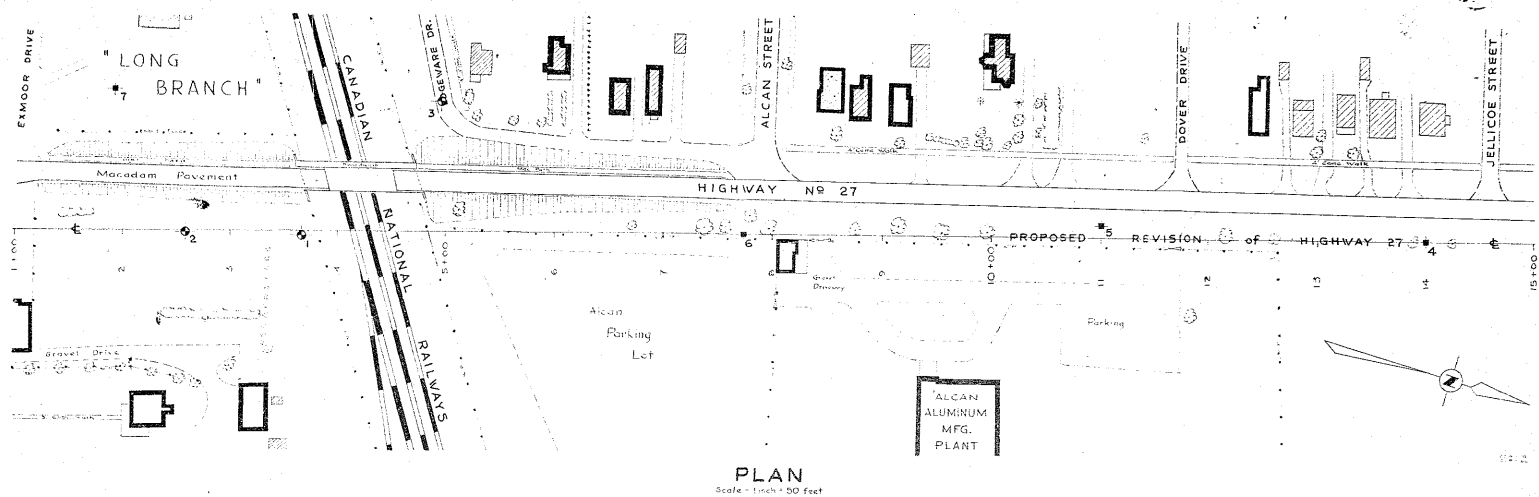
DRILL RIG 54-1 OPERATION BORE & PENET. JOB F-56-4 WP 106-56 BORING 3 STA. 4+95.120 LT  
CASING B.X. (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT MAY 1956  
SAMPLER HAMMER WT. 250 LBS. DROP 23 INCHES COMPILED BY H.S. CHECKED BY --- DATE BORING 29 MAY 1956

- ABBREVIATIONS  
V - INSITU VANE SHEAR TEST  
M - MECHANICAL ANALYSIS  
U - UNCONFINED COMPRESSION  
Q - 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
- C.S. - CHUNK  
D.O. - DRIVE OPEN  
D.F. - DRIVE FOOT VALVE  
T.O. - THIN WALLED OPEN
- SAMPLE TYPES  
S.S. - SLEEVE SAMPLE  
P.S. - PISTON SAMPLE  
W.S. - WASHED SAMPLE  
R.C. - ROCK CORE
- SAMPLE CONDITION  
 DISTURBED  
- FAIR  
- GOOD  
- LOST



# 56-F-4  
W.P. # 106-56  
Hwy. # 27 ;  
C.N.R.  
LONG BRANCH





LEGEND			
Bore Hole	●	HOLE NO.	ELEVATION
Penetration Hole	⊙	STATION	DISTANCE FROM C.
Bore & Penetration Hole	⊙		
Power Auger Hole	■		

1	310'-0"	3+4.7	4' RT
2	308'-0"	2+50.0	10' RT
3	311'-0"	2+95	120' LT
4	322'-0"	14+0.0	C.
5	317'-3"	11+0.0	6' LT
6	312'-2"	7+7.4	4'
7	301'-0"	14+95	150' LT

— NOTE —  
THE BOUNDARIES BETWEEN SOIL STRATA HAVE BEEN ESTABLISHED BY WAY OF BORING LOGS. THEREFORE, THE POSITIONS OF THE BORE HOLES IN THE PLAN MAY BE SUBJECT TO CONSIDERABLE ERROR.

DEPARTMENT OF HIGHWAYS, ONTARIO			
MATERIALS & RESEARCH BRANCH - DOWNSVIEW			
<b>PROPOSED C.N.R. UNDERPASS AT LONGBRANCH</b>			
THE ENGINEER'S DRAWING NO. 27 (Revision)		DATE: JUN 6	
BY: YORK	CHKD: ETOBICOKE	DATE: 10-6-11	CON: I
POSITIONS & ELEVATIONS OF HOLES			
APPROVED:			
THOMSON		CHIEF ENGINEER	
482	106-56		
20 JUNE 1956		F-56-4 A	