

cc: Foundation Section

Mr. A. Toye,

August 15, 1957.

Bridge Engineer.

Materials & Research Section.

Foundation Report -
Highway No. 401 and Road Allowance -
Lot 14 - Conc. 6, Twp. of Trafalgar
W.P. 78-57 W.J. P 57-18

We are forwarding herewith
two copies of the above mentioned Foundation Report.
The subsoil consists of a fairly dense till and
spread footings will be satisfactory for the structure
foundation. No approach fill problems are anticipated.

F. C. Brownridge,
MATERIALS & RESEARCH ENGR.

Per:



(A. Rutka,
Principal Soils Engr.)

AR/WJEF
attach.

cc: Messrs. R. Tregaskes
H. G. Mansay
J. B. Wilkes

Foundation Section
File

FOUNDATION REPORT

on

Underpass Bridge at Highway 401 "Line A"
crossing Road Allowance (Lot 14, Con. VI)
one mile northwest of Lisgar.

Site Plan: F-3522-9
Station: 650+16.75

Distribution:

Mr. A. Toye
Bridge Engineer (2)

Mr. H. Gregaske
Construction Engineer (1)

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

Mr. J. E. Wilkes
Dist. Eng., Toronto (1)

Foundation Section (1)

File (1)

W.P. 72-57
H.J. F-57-18

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 northwest of Lisgar, where the new Highway 401 "line A" crosses the proposed Revision Road allowance in lot 14, concession VI, Township of Toronto and Trafalgar, (profile No. P-3522-9, station 650+16.75).

The work started on June 11, 1957 and was completed on June 18, 1957.

PROCEDURE

The subsoil investigation was carried out by means of a skid mounted coredrill machine. In the course of investigation 2 boreholes with dynamic cone penetration and 2 separate dynamic cone penetration tests were made. Boreholes No. 1 and 2 were located on the south side and boreholes No. 3 and 4 on the north side of the proposed Highway 401 centre line.

The location of the boreholes are shown in drawing No. P-57-18A and their logs under Appendix I.

SUBSOIL SAMPLING AND ANALYSIS

The terrain is till plain. From the investigations the subsoil was found to be hard bouldery clay till of brown colour changing to grey colour by depth.

The samples extracted from the boreholes were tested at the laboratory. The results of these tests showed for the layer the average values of liquid limit 41.5%, plastic limit 15%, moisture content 13%, and density about 130 p.c.f. The soil is classified as inorganic clay of low plasticity.

Due to the gravelly nature of the soil the unconfined compression results were unreliable. The field standard penetration tests confirm the very hard nature of the layer.

The water detected in the boreholes is considered to be infiltration water, otherwise the layer is assumed to be impervious.

From the above considerations the layer is suitable for spread footing foundations and can provide a bearing value of 2.5 T.s.f. for support.

CONCLUSIONS AND RECOMMENDATIONS

From the above discussion it will follow that:

1. The terrain is till plain. The subsoil layer is very hard bouldery clay till.
2. It will be convenient to support the proposed structure on spread footing foundations placed at elevation about 678 ft. At this elevation 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 structure do not present any stability problem.

V. Korlu
Foundation Engineer

APPENDIX I

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

DRILL RIG 54-2 OPERATION BORE HOLE JOB F-57-18 WP 78-57 BORING 1 STA 699+87(117)
 CASING 8X (standard samplers to fit unless noted) DATUM GEODETTIC DATE REPORT JULY 1957
 SAMPLER HAMMER WT. 250 LBS. DROP 26 INCHES COMPILED BY H.S. CHECKED BY AL DATE BORING 11 JUNE 1957

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

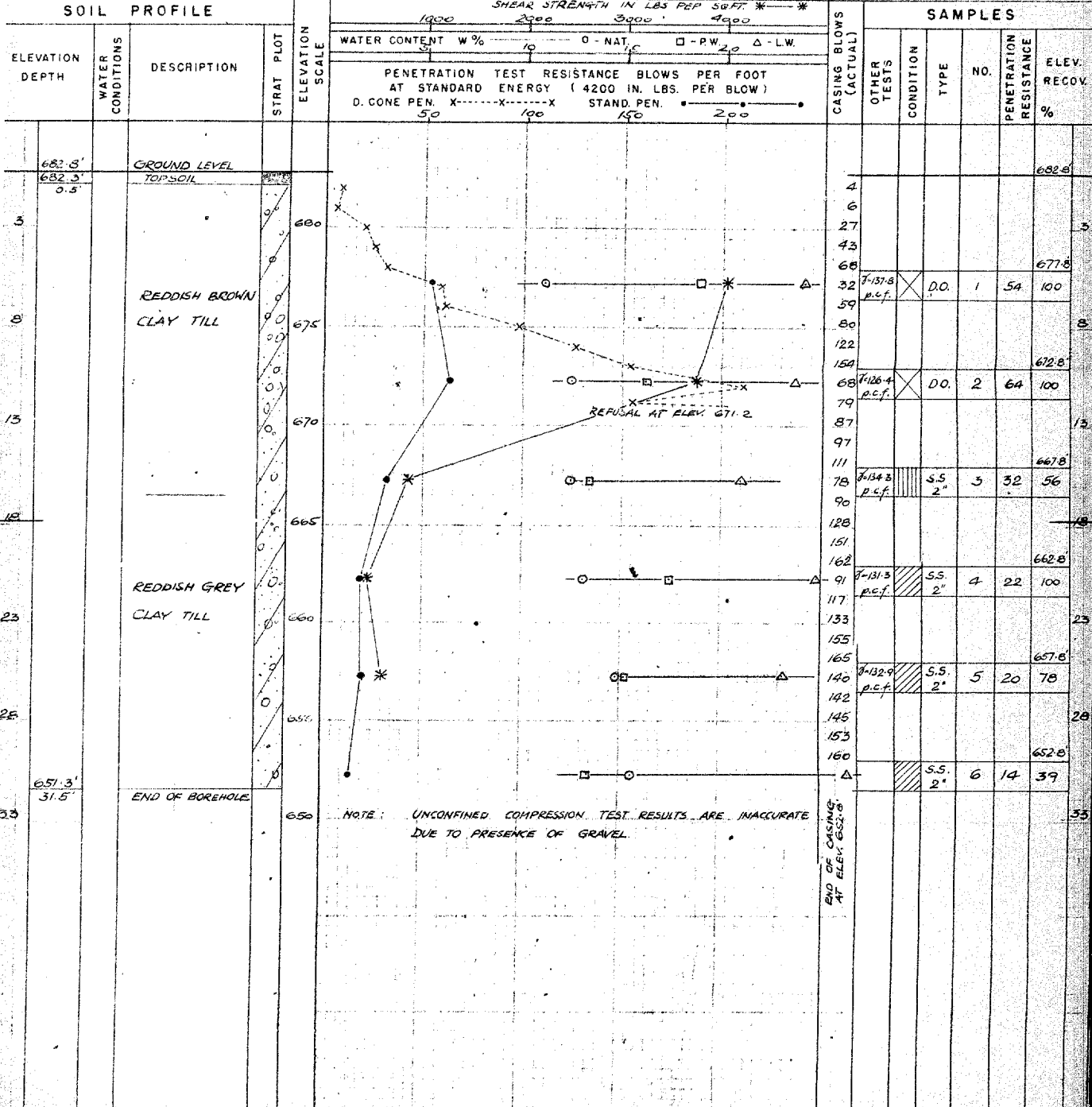
SAMPLE TYPES

CS - CHUNK DO - DRIVE OPEN SS - SLEEVE SAMPLE
 DF - DRIVE FOOT VALVE PS - PISTON SAMPLE
 T.O. - THIN WALLED OPEN WS - WASHED SAMPLE
 RC - 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 54-2 OPERATION PENETRATION JOB F-57-19 W.P. 79-57 BORING 2 STA. 650+13(42' L.T.)
 CASING BX (standard samplers to fit unless noted) DATUM GEODETTIC DATE REPORT JULY 1957
 SAMPLER HAMMER WT. 250 LBS. DROP 26 INCHES COMPILED BY H.S. CHECKED BY A.L. DATE BORING 19 JUNE 1957

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

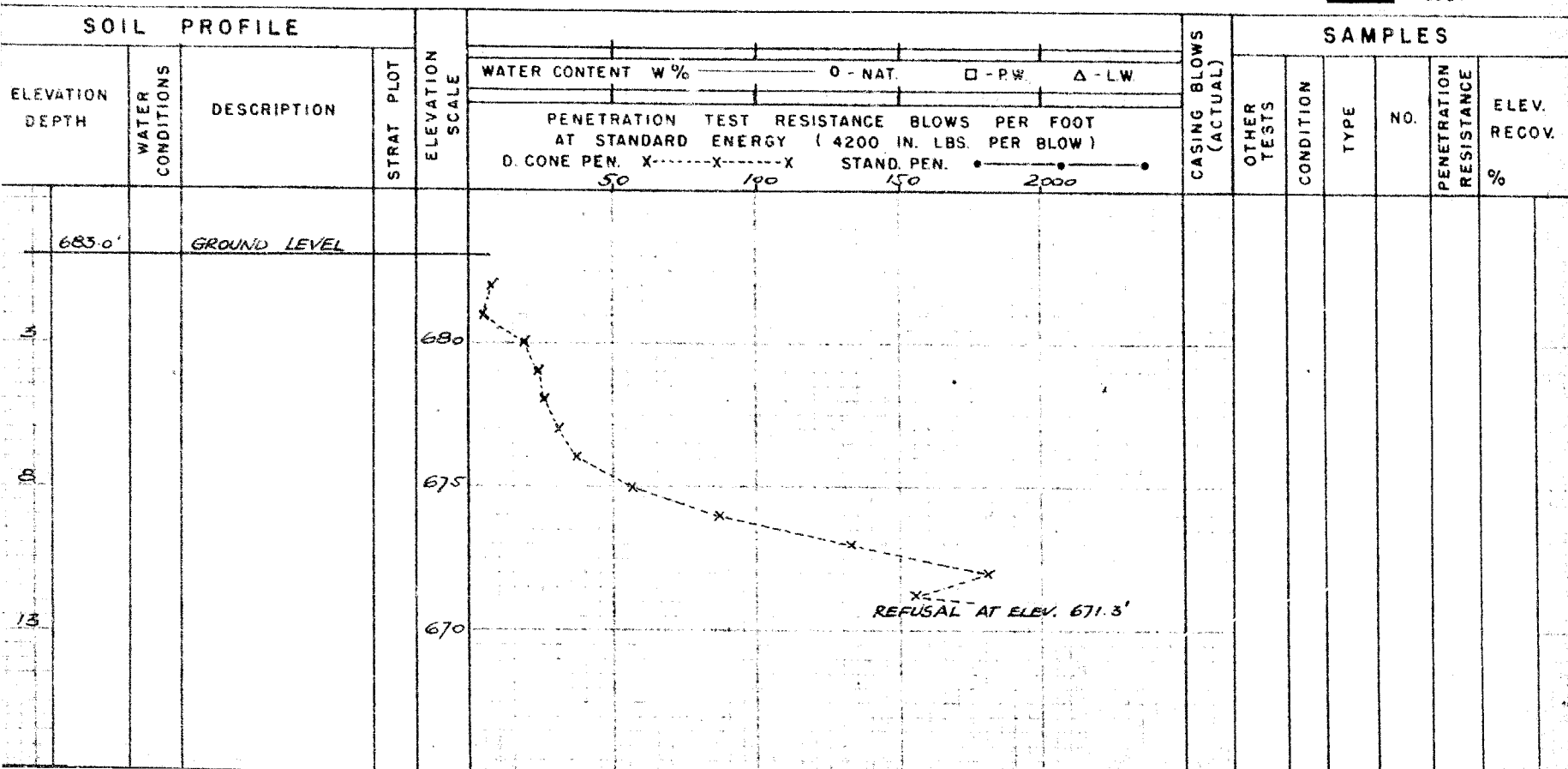
S.S. - SLEEVE SAMPLE
 DO. - DRIVE OPEN PS - PISTON SAMPLE
 DE - DRIVE FOOT VALVE WS - WASHED SAMPLE
 T.O. - THIN WALLED OPEN RC - ROCK CORE

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 52-2 OPERATION BORE & PENET'N JOB F-57-18 WP 78-57 BORING 3 STA. 650+56.5 (51.9)
CASING 8X (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JULY 1957
SAMPLER HAMMER WT. 250 LBS. DROP 26 INCHES COMPILED BY H.S. CHECKED BY ALL DATE BORING 14 JUNE 1957

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
Q_c - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL γ - UNIT WEIGHT

SAMPLE TYPES

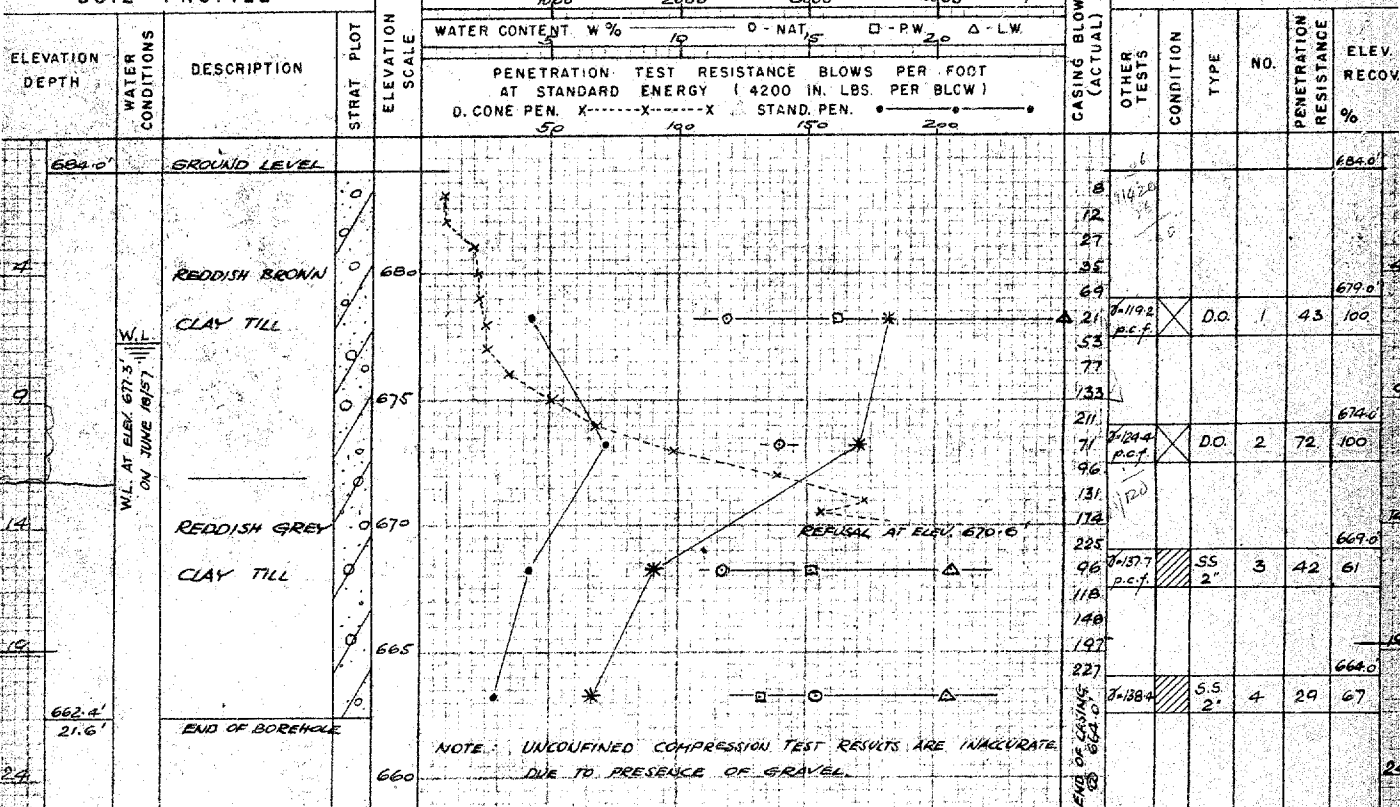
C.S. - CHUNK S.S. - SLEEVE SAMPLE
D.O. - DRIVE OPEN P.S. - PISTON SAMPLE
D.F. - DRIVE FOOT VALVE W.S. - WASHED SAMPLE
T.O. - THIN WALLED OPEN R.C. - ROCK CORE

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 54-2 OPERATION PENETRATION JOB E-57-18 WP 78-57 BORING 4 STA. 650+38 (46.6' R)
 CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JULY 1957
 SAMPLER HAMMER WT. 250 LBS. DROP 26 INCHES COMPILED BY H.S. CHECKED BY A.L. DATE BORING 18 JUNE 1957

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
 Q_c - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL γ - UNIT WEIGHT

SAMPLE TYPES

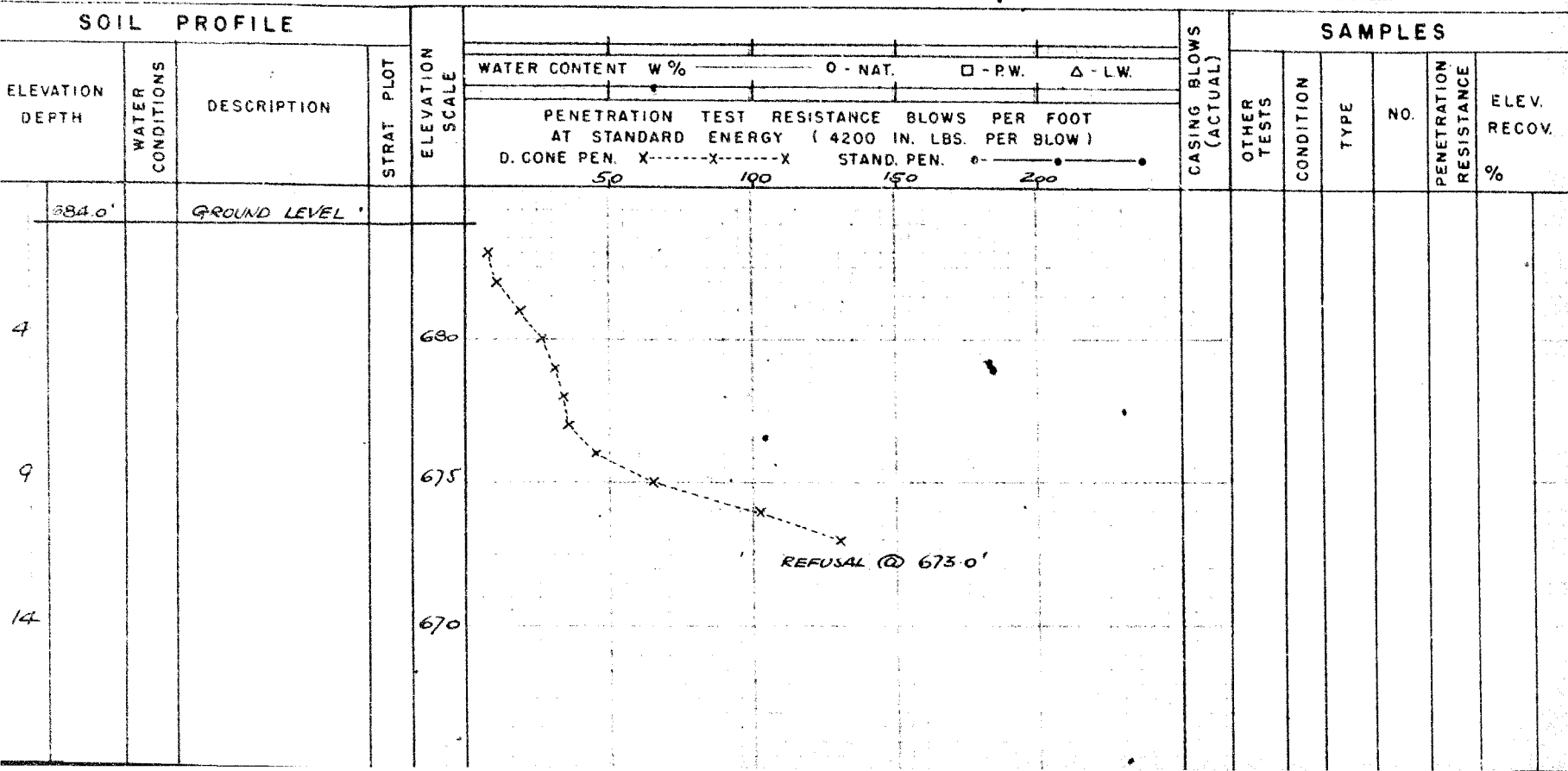
C.S. - CHUNK S.S. - SLEEVE SAMPLE
 DO - DRIVE OPEN PS - PISTON SAMPLE
 DF - DRIVE FOOT VALVE WS - WASHED SAMPLE
 TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION



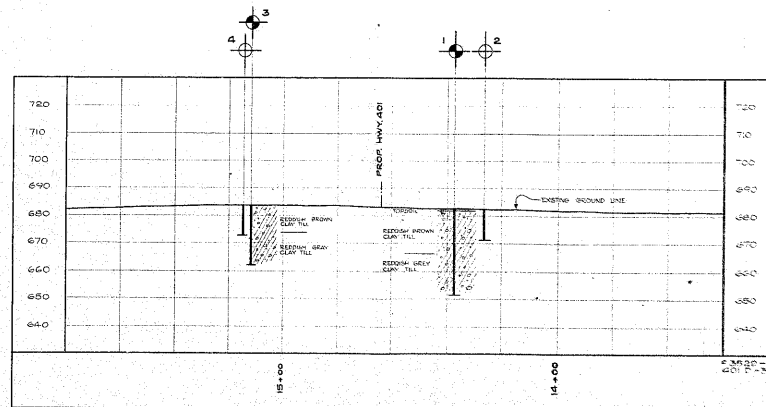
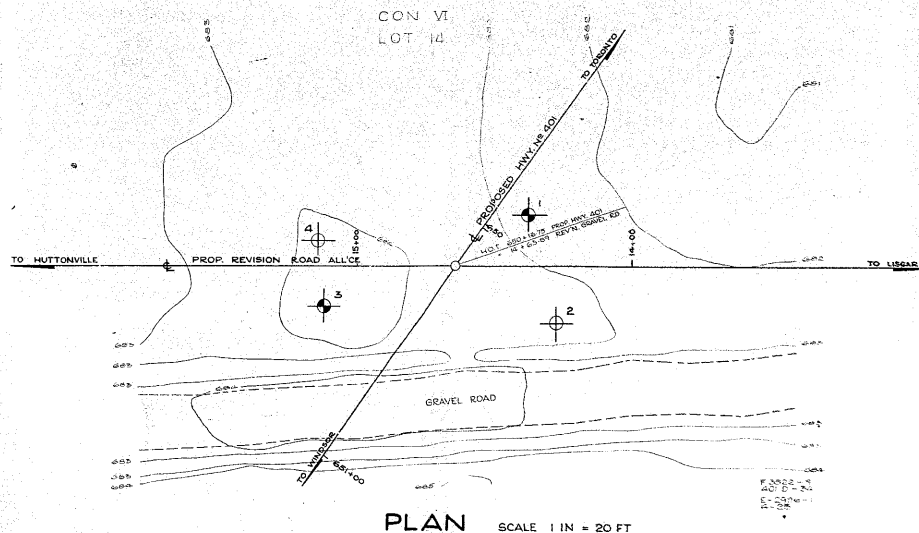
- DISTURBED
 - FAIR
 - GOOD
 - LOST

SOIL PROFILE



57-F-18
W.P. # 78-57
Hwy. # 401
UNDERPASS BR.
LOT 14, CON. 6
1 MILE N.W. OF
LISGAR





LEGEND			
FORE HOLE			
PENETRATION HOLE			
BORE & PENETRATION HOLE			
BORE NO.	ELEVATION	STATION	DISTANCE FROM JO. 4
1	652.5'	649+27'	11' LT
2	653.0'	650+15'	12' LT
3	654.0'	650+56.5'	51' RT
4	654.0'	650+58'	466' RT

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

**GRAVEL ROAD REVISION
PROPOSED CROSSING
1 MILE NW. OF LISGAR**

THE KING'S HIGHWAY NO. 401 (LINE A) DIV. NO. 4
PEEL & HALTON
TORONTO & TRAFALGAR 14 VI

POSITION & ELEVATION OF HOLES

APPROVED

ENGINEER		CHIEF ENGINEER	
DATE	1957	DATE	1957
BY	D.F.	BY	W.P.
NO.	76-57	NO.	76-57
JULY 17, 1957		F-57-18 A	