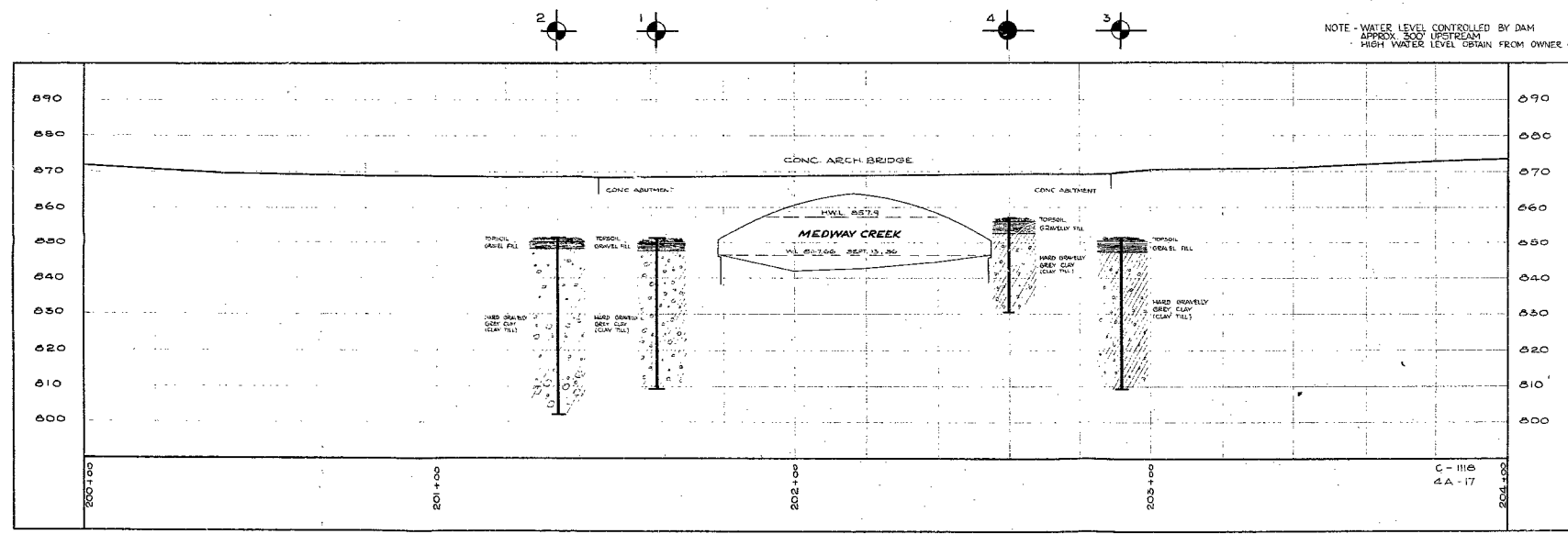
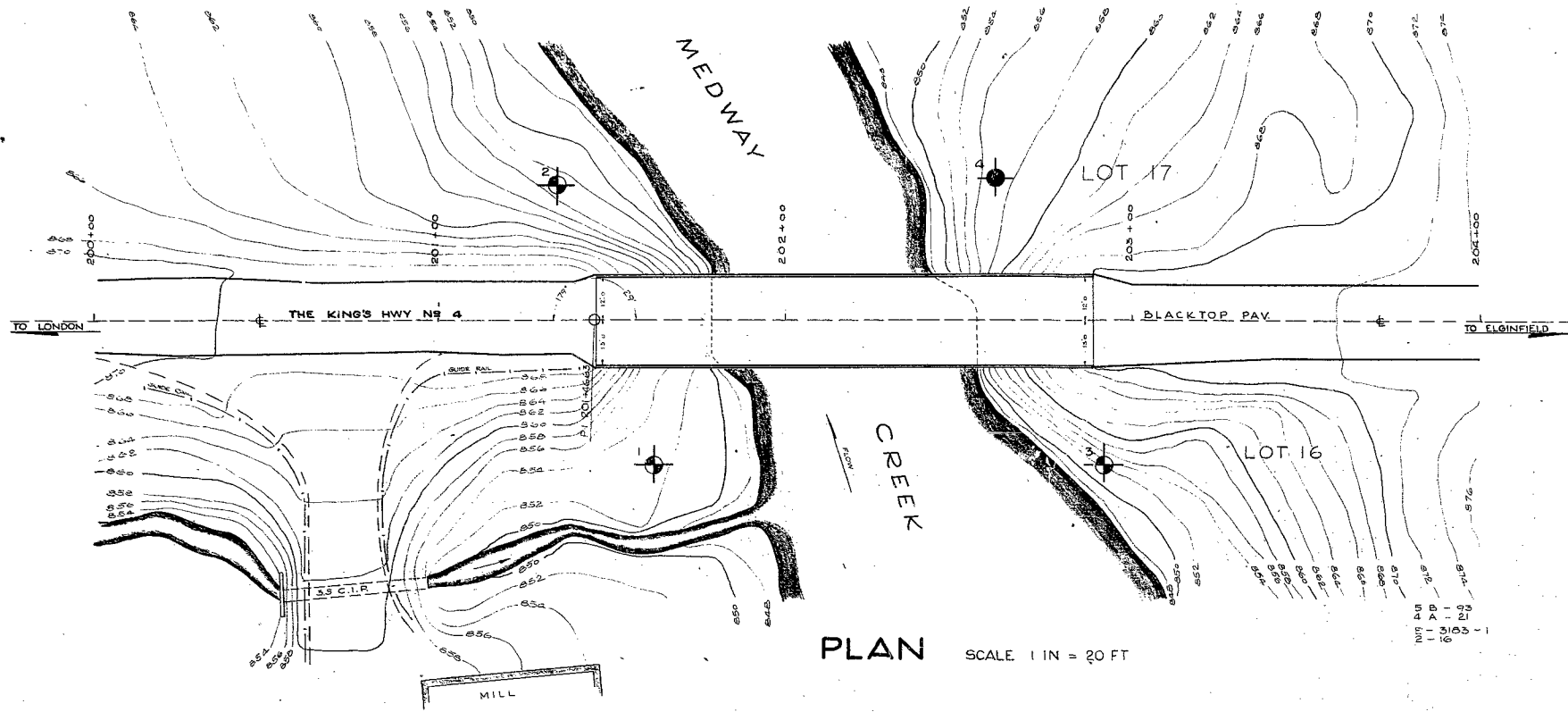


57-F-5
W.P.#519-56
Hwy.# 4
MEDWAY RIVER
CROSSING
LONDON





LEGEND			
BORE HOLES			
PENETRATION HOLE			
BORE & PENETRATION HOLE			
HOLE NO.	ELEVATION	STATION	DISTANCE FROM E
1	650.8'	201+62'	41.5' RT
2	651.3'	201+34'	36.5' LT
3	651.58'	202+92'	41.3' RT
4	657.0'	202+60'	40.5' 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

**MEDWAY CREEK
PROPOSED CROSSING
3.5 MILES NORTH OF LONDON**

THE KING'S HIGHWAY No. 4 DIV. No. 2
CO. MIDDLESEX
TWP. LONDON LOT. 16 & 17 CON. VII

POSITION & ELEVATION OF HOLES

APPROVED

ENGINEER CHIEF ENGINEER

DESIGN CHECK W.P. CONTRACT NO. 519-56
DRAWING D.F. CHECK DRAWING NO. F-57-5A
TRACING CHECK
DATE MAY 2, 1957

cc: Foundation Section

Mr. A. Toye,
Bridge Engineer.

F. C. Brownridge

per: A. Rutka

July 4, 1957.

Re: Foundation Report -
Medway River at Arva
Hwy. #4 - W.P. 519-
W.J. F-57-

Attached herewith are two copies of the above mentioned foundation report. Spread footing foundations appear to be satisfactory for this structure; however, it also appears that some protection against scouring will also be required.


This structure was indicated on the 1957-1958 construction program; however, it has now been deleted and does not appear on any recent list for re-construction.

AR/ndef
Attach.

cc: Messrs. A. Toye
H. Tregaskos
D.G. Ramsay
W. L. Fraser

F. C. Brownridge,
MATERIALS & RESEARCH ENGR.

Per:


A. Rutka,
PRINCIPAL CIVILS ENGINEER.

Foundation Section
File

FOUNDATION REPORT

on

New Bridge at Highway No. 4 and Medway River crossing
some 5 miles north of London.

Site Plan No. E-3183-1

Station: 202+20

Distribution:

Mr. A. Toye
Bridge Engineer (2)

Mr. H. Tregaskes
Construction Engineer (1)

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

Mr. W.L. Fraser
Dist. Eng. London, Ont. (1)

Foundation Section (1)

FILE (1)

W. J. F-57-5

W. P. 519-56

INTRODUCTION

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

The location is some five miles north of London where Highway No. 4 crosses the Madway River (Station 202+20, profile No. C-1118). The proposed new structure is meant to replace the existing one at the same location. The existing bridge is a single span arch which has been widened some three feet by addition to the older arch. The structure is supported on piers. Some hundred yards to the east the waters of the creek have been dammed. The water head is being used by an operating flour mill located on the southeast side of the bridge. In between the mill and the highway there is a small stream flowing into the creek not very far from the south abutment of the bridge. It was observed that the eastern corner of the south pier has been exposed and the water depth is quite considerable at this point. The existing situation at this point is due to scouring.

The investigation work started on January 22, 1957 and was completed on February 23, 1957.

PROCEDURE

The subsoil investigation was carried out by means of a skid mounted core drill machine.

Four boreholes were made two on each side of the existing bridge. The location of the boreholes is shown on drawing F-57-5A and the elevations on log sheets under Appendix I.

SUBSOIL FINDINGS AND ANALYSIS

The terrain is till plain. The flow of the river is controlled by the existing dam some hundred yards to the east of the bridge. Although during the times of flood the high water level is recorded approx. 10' higher than the normal level.

The subsil investigations revealed the following stratigraphy:

Under the topsoil some fill material was encountered which reached down to elevation 847.5 ft. Below this the soil is hard gravelly clay till. The boreholes were carried down some 40 ft. below the surface ground and stopped. At the top of the layer some seepage water was encountered but no underground water exists and the layer is considered to be impervious.

Some undisturbed samples were extracted and the laboratory tests performed. From the test results the average liquid limit is about 20% and plastic limit about 10%. The average natural moisture content is about 9% and the average density of the layer about 140 p. c. f. The soil is identified as inorganic clay of low plasticity.

The unconfined compression results on clay samples without boulders, etc. showed an average shear strength of over 2 T.s.f. The average standard penetration within the top twenty foot depth is about 80 blows per foot. From these results the soil can provide a conservative bearing value of 2.5 T.s.f. with a safety factor of 3.

CONCLUSIONS AND RECOMMENDATIONS

From the above discussion it will follow that:

1. The soil at the site has all the properties of bouldery clay till.
2. From the field and laboratory test results the layer can be credited with a bearing value of 2.5 T.s.f. to support spread footing foundations.
3. It will be convenient to place spread footing foundations at elevation about 840 feet.
4. Unless the footings are placed deep enough in the till layer some scouring hazards can not be eliminated.
5. The approach fills to the structure do not present any problem.
6. It would appear advisable to improve the approach grades to the structure

CONCLUSIONS AND RECOMMENDATIONS (continued)

by raising the elevation of the new replacing bridge. This raise will not affect the above conclusions about the new foundations.

V. Korlu
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 & PENET'N JOB F-57-5 WP 519-56 BORING 1 STA. 201+62 (415' RT.)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT APRIL 1957
SAMPLER HAMMER WT. 250 LBS. DROP 20 1/4 INCHES COMPILED BY H.J. CHECKED BY A.L. DATE BORING 26 FEB 1957

ABBREVIATIONS

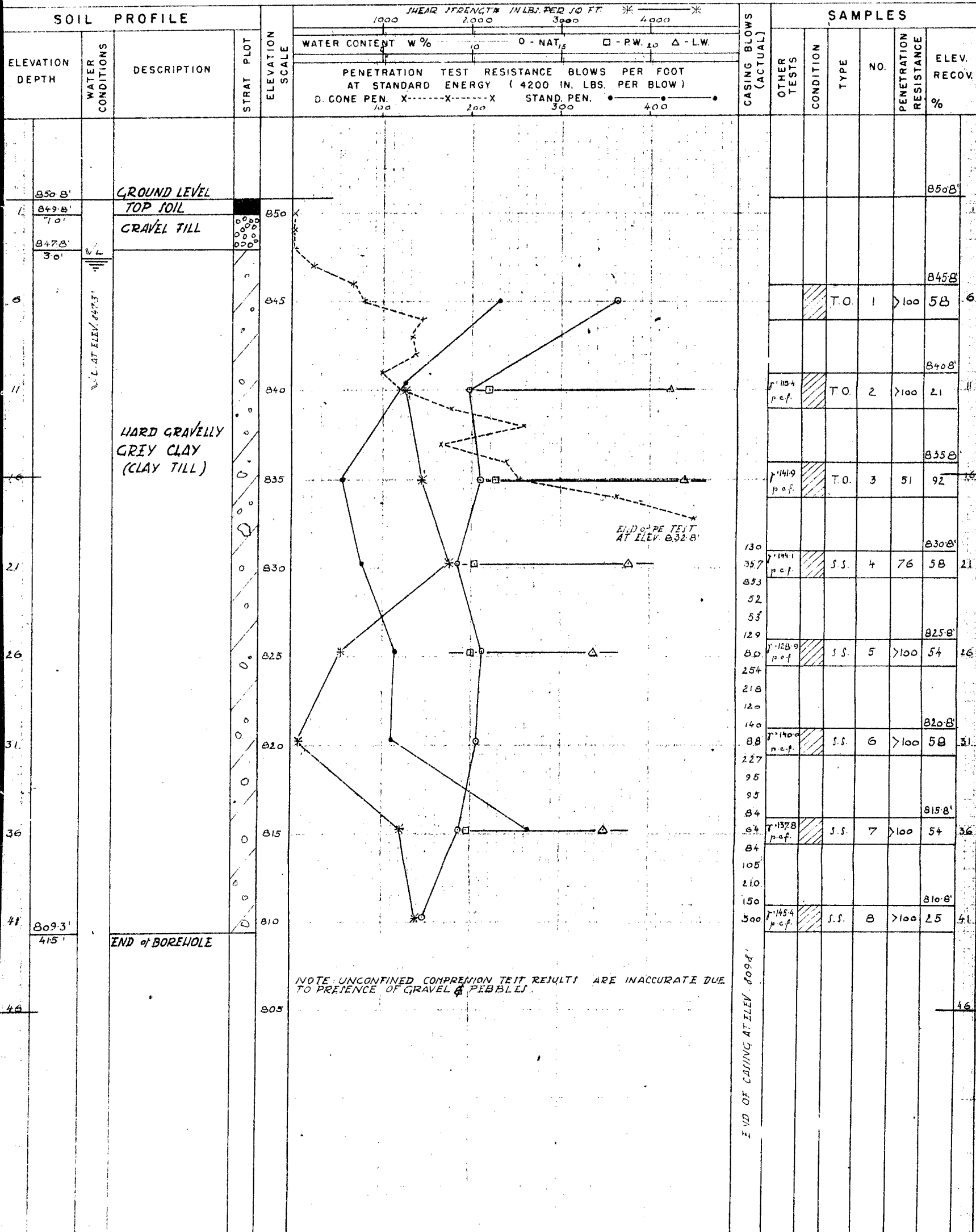
V - INSITU VANE SHEAR TEST Q - TRIAXIAL QUICK K - PERMIABILITY
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING
QC - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL γ - UNIT WEIGHT

SAMPLE TYPES

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


SAMPLE CONDITION

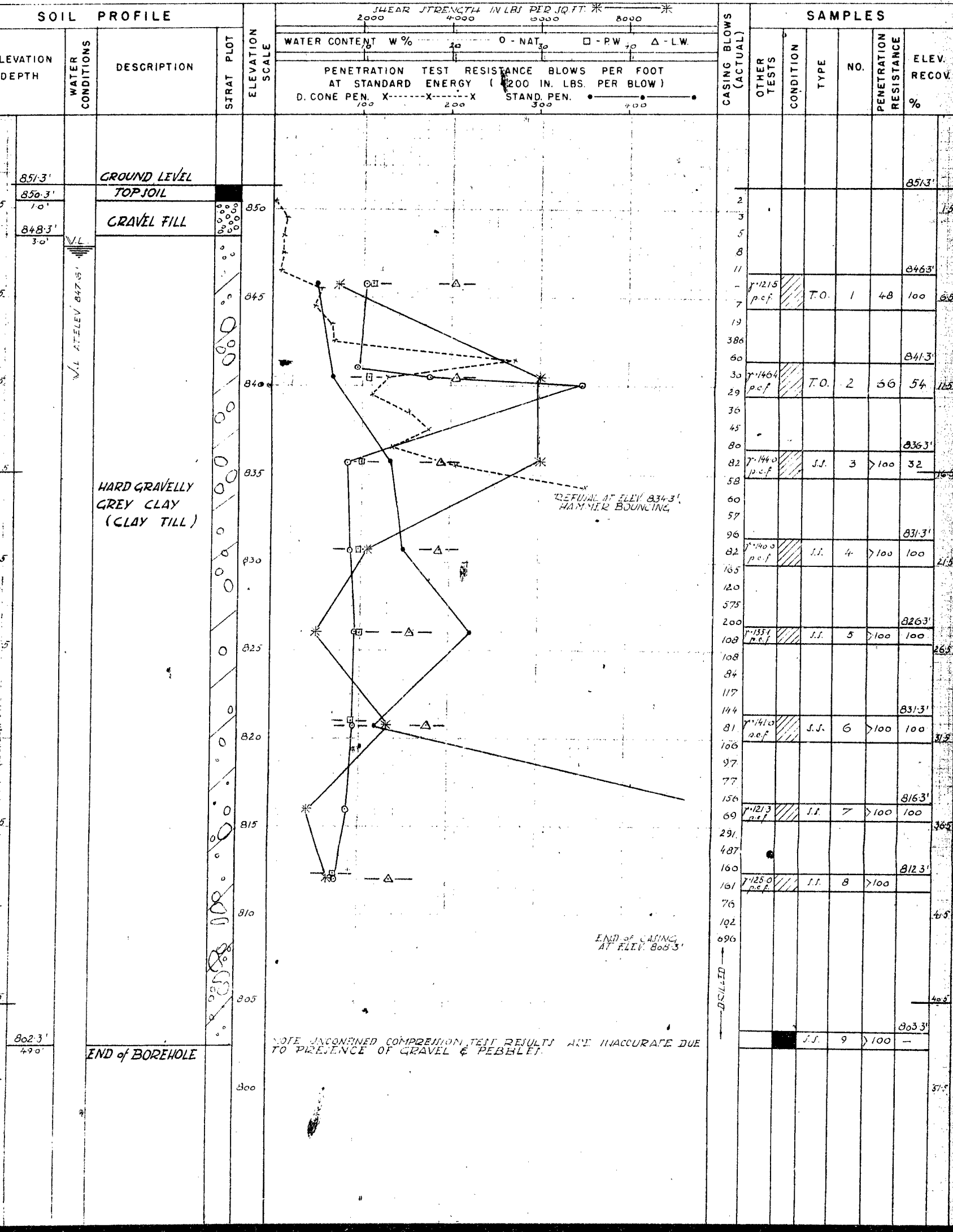
 - DISTURBED
 - FAIR
 - GOOD
 - LOST



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

DRILL RIG 54-1 OPERATION BORE & PENET JOB F-57-5 W.P. 519-56 BORING 2 STA. 201+34(38.5' LT)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT APRIL 1957
SAMPLER HAMMER WT. 250 LBS. DROP 20 1/2 INCHES COMPILED BY H.J. CHECKED BY A.L. DATE BORING 6 MARCH 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



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-57-5 WP. 519-56 BORING 3 STA. 202+92(413' 21")
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT APRIL 1957
SAMPLER HAMMER WT. 250 LBS. DROP 20 1/4 INCHES COMPILED BY H.J. CHECKED BY AL DATE BORING 14 MARCH 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

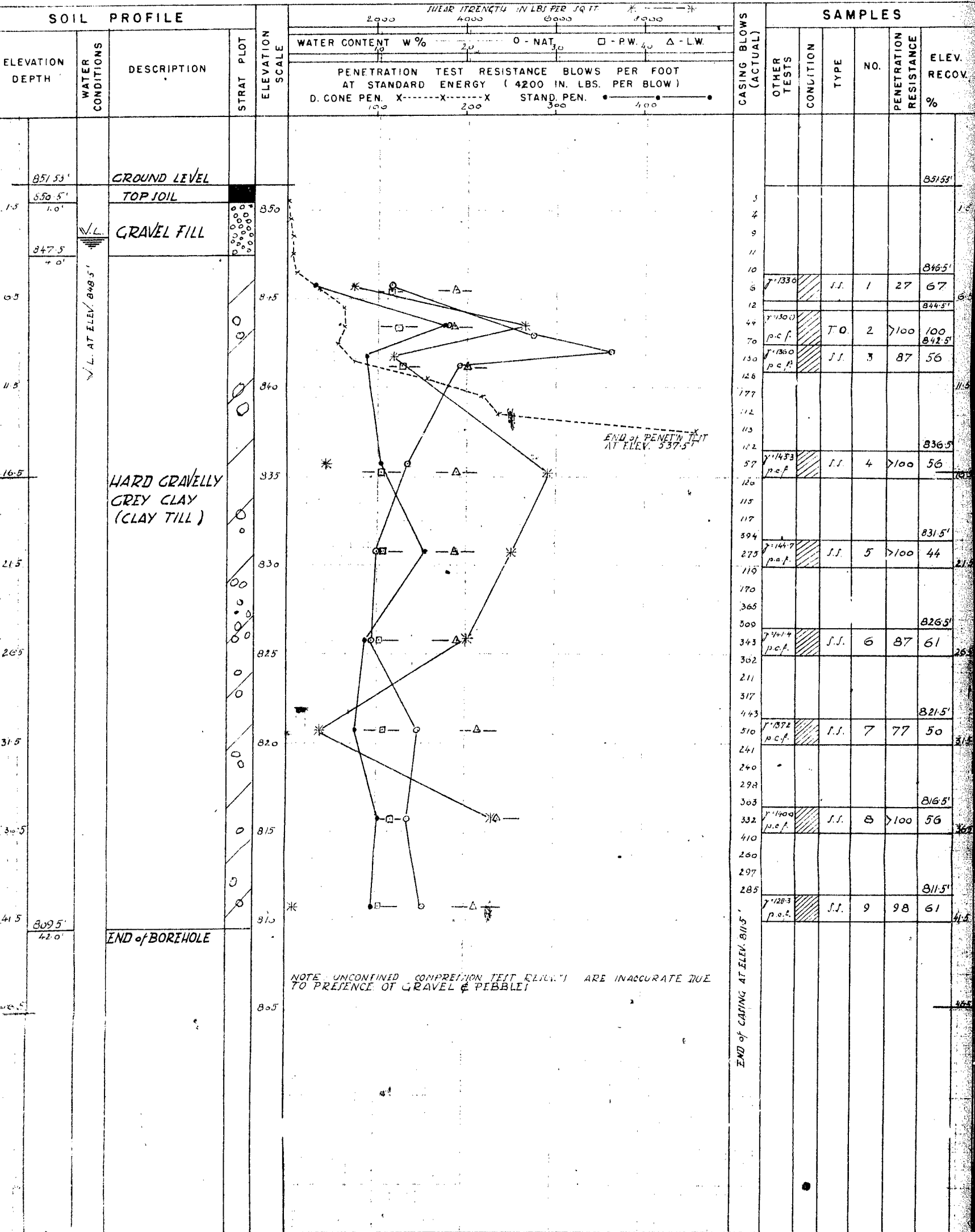
SAMPLE TYPES

SS - SLEEVE SAMPLE PS - PISTON SAMPLE
DO - DRIVE OPEN WS - WASHED SAMPLE
DF - DRIVE FOOT VALVE R.C. - ROCK CORE
T.O. - THIN WALLED OPEN

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 BORI JOB F-57-5 WP 519-56 BORING 4 STA. 202+60(405+17)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT APRIL 1957
SAMPLER HAMMER WT. 250 LBS. DROP 20 1/2 INCHES COMPILED BY H.S. CHECKED BY AL DATE BORING 21 MARCH 1957

- ABBREVIATIONS
V - INSITU VANE SHEAR TEST
M - MECHANICAL ANALYSIS
U - UNCONFINED COMPRESSION
QC - TRIAXIAL CONSOLIDATED CLICK
- 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
SS - SLEEVE SAMPLE
PS - PISTON SAMPLE
WS - WASHED SAMPLE
RC - ROCK CORE
- SAMPLE CONDITION
 - DISTURBED
 - FAIR
 - GOOD
 - LOST

