

cc: Foundation Section

Mr. A. Teye,
Bridge Engineer.

November 19, 1957.

Mr. F. C. Brownridge,
Per: Mr. A. Rutka.

Re: Foundation Report -
Wey. #401 and Road Allowance between
Lots 16 & 17, Conc. 1, 3 miles east
of Newcastle.

W.P. 85-57 - W.J. F-57-35

We are forwarding herewith two copies of
the above mentioned Foundation Report.

The subsoil consists of a fairly dense
granular type material and spread foot foundations for
the structure will be satisfactory.

F. C. Brownridge,
MATERIALS & RESEARCH ENGR.
Per:

R R

(A. Rutka,
Principal Soils Engr.)

AR: bidef
Encl.

cc: Messrs. A. Teye
E. Trepashkes
D. G. Ramsay
S. O. Duff
Foundation Section ✓
File

Foundation Report

on

New Bridge at Highway 401 crossing
Road allowance between lots 16 & 17
(Con. 1) about 3 miles east of New Castle.

Plan No. 3234-1

Station: 1001/18

Distribution.

Mr. A. Toye
Bridge Engineer (2)

Mr. H. Tregaskes
Construction Engineer (1)

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

Mr. H. B. Duff,
District Engineer, Port Hope (1)

Foundation Section (1)

File (1)

W. P. 85-57

W. J. 5-57-35.

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 where new highway 401 crosses road allowance between lots 16 & 17 (concession 1) about 3 miles east of New Castle, (station 1001/18, profile F-3130-1).

The job started on October 2, 1957 and was completed on October 10, 1957.

Procedure.

The subsoil investigations were carried out by means of a skid mounted core drill machine. In the course of investigations four boreholes with dynamic cone penetration were made.

The location of the boreholes is shown on drawing F-57-35A, and their elevations on log sheets under Appendix 1.

Subsoil findings and Analysis.

The area is within the late lake Iroquois shoreline. The stratigraphy revealed from the explorations presents basically till formation of compact sandy clay loam with gravel. This layer is overlain by fine sand in borehole no. 3 from elevation 476.5 ft. to 470 ft., in borehole no. 4 from elevation 475.70 to 472 feet. In boreholes no. 1 and 2 this top sand layer could not be detected.

The samples tested in the laboratory indicated the moisture content of the subsoil about 7%, and density about 155 Pcf. No plasticity or liquid limit measurements could be made. The presence of 7 - 20% gravel made the unconfined compression results rather unreliable.

The standard penetration test performed in the field while extracting samples, registered over hundred blows per foot penetration.

Due to the compactness of the layer most of the boring was done by drilling the casing with a BX casing shoe.

Conclusions and Recommendations.

From the above discussion it will follow that:

1. The stratigraphy is a fairly uniform compact sandy clay loam with gravel. The subsoil situation as such is favourable for using spread footing type foundations.
2. The new grade line raises the road surface to elevation 480 ft. The footings would be conveniently placed at elevation about 472 ft. At this elevation the layer can provide 3 T.s.f. bearing value to support the foundations of the proposed structure.
3. The approach fills to the structure do not present any stability problem.

V. Korlu

Foundation Engineer.

VK/jy.

APPENDIX 1.

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

DRILL RIG 50-2 OPERATION BOREHOLE PENETRATION JOB 7-57-55 WP. 85 OF BORING 1001-00 (42' LT)
CASING BA (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT OCT. 1957
SAMPLER HAMMER WT. 200 LBS. DROP 22 INCHES COMPILED BY H.S. CHECKED BY 14 DATE BORING 2 OCT. 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 GA - CASING
QC - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL D - UNIT WEIGHT

SAMPLE TYPES

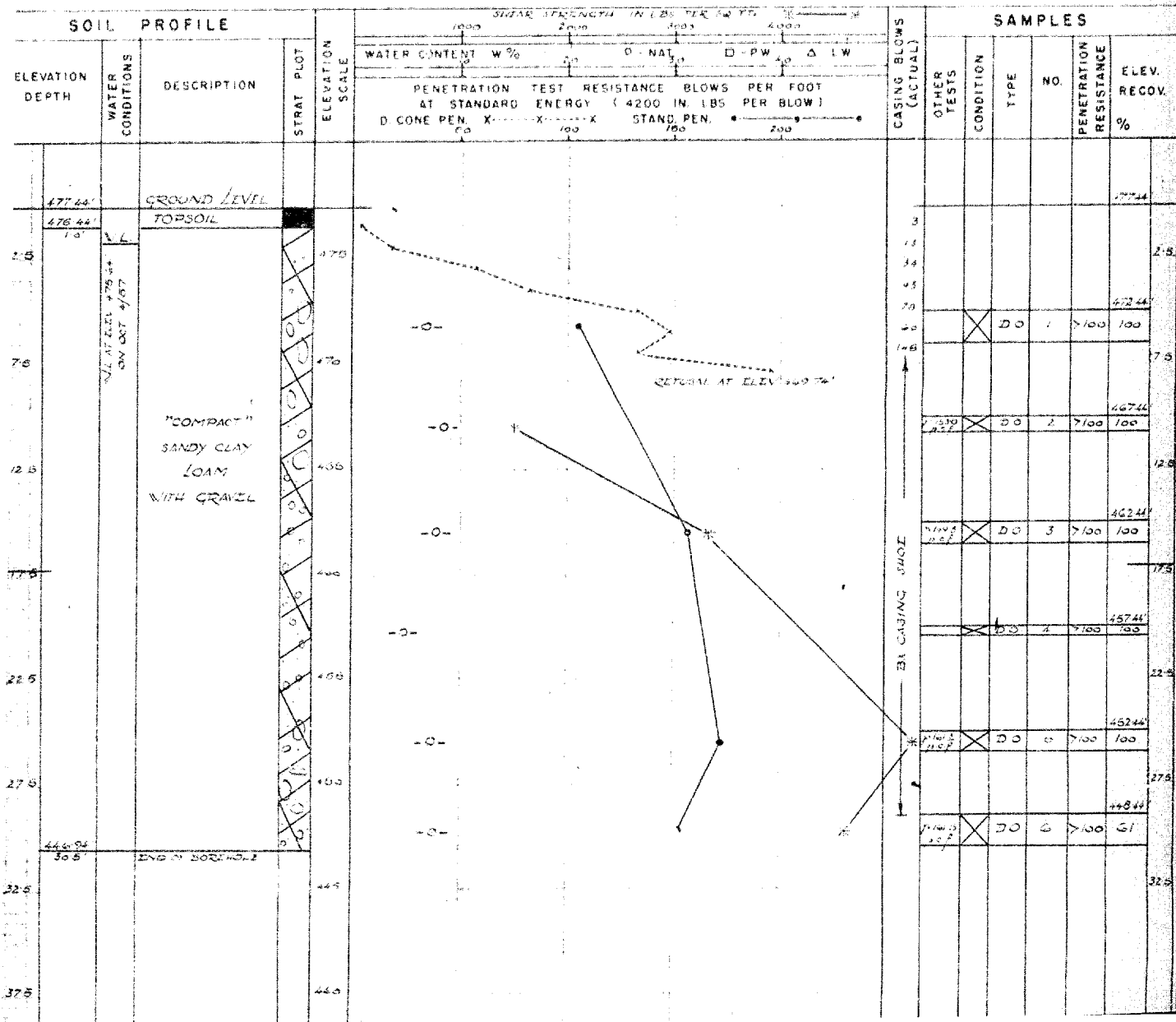
CS - CHUNK SS - SLEEVE SAMPLE
DO - DRIVE OPEN PS - PISTON SAMPLE
DF - DRIVE FOOT VALVE WS - WASHED SAMPLE
TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION

 - DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE

SAMPLES



MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG S-1 OPERATION BORE / REASON JOB 507-15 WP 35-57 BORING 2 STA 000 88460 07
CASING 3 (standard samplers to fit unless noted) DATUM GEODIC DATE REPORT 007 1957
SAMPLER HAMMER WT 200 LBS. DROP 15 INCHES COMPILED BY CHECKED BY 41 DATE BORING 3 007 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

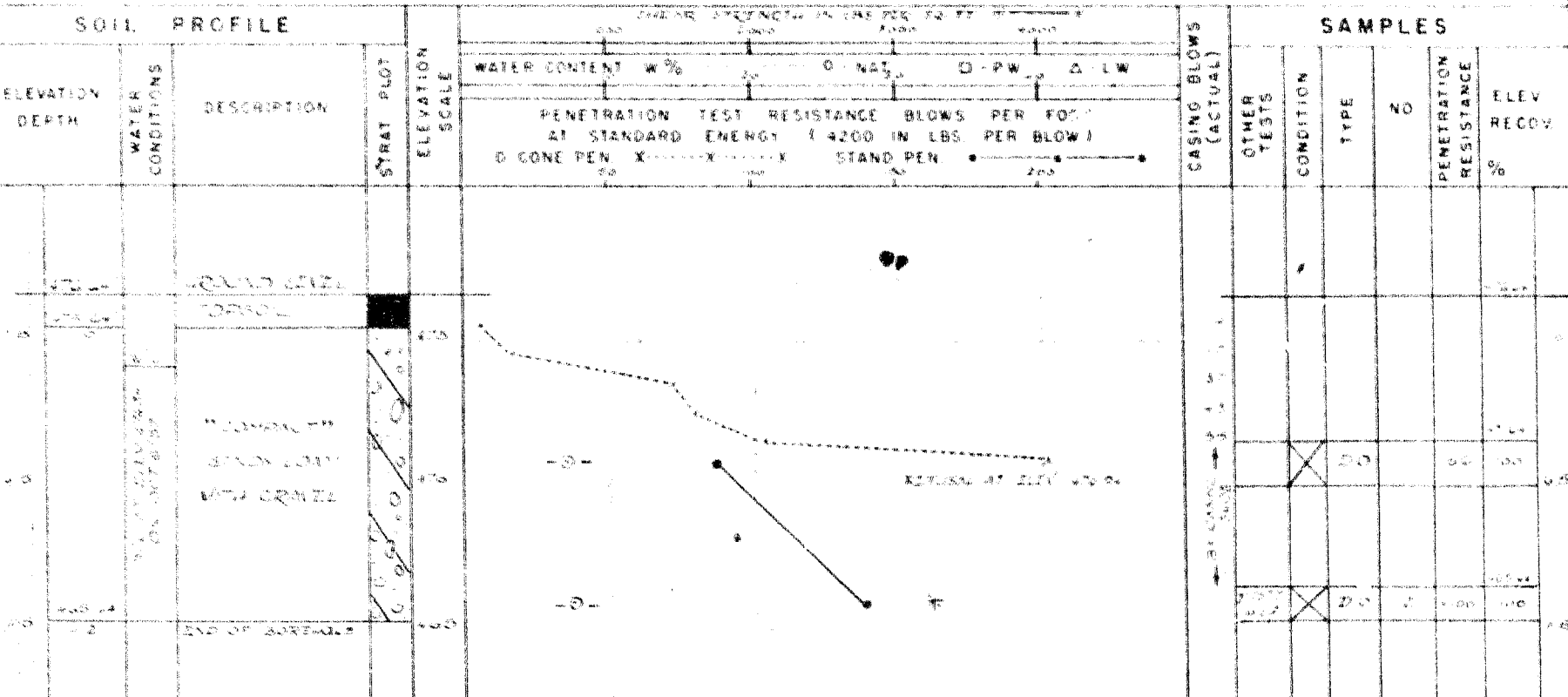
CS - CHUNK	SS - SLEEVE SAMPLE
DO - DRIVE OPEN	PS - PISTON SAMPLE
DF - DRIVE FOOT VALVE	WS - WASHED SAMPLE
TO - THIN WALLED OPEN	RC - ROCK CORE

SAMPLE CONDITION



- DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE



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

DRILL RIG 5-1 OPERATION BORE + PENET JOB 457-35 WP 50-57 BORING 3 STA. 161+75.40 DIT
CASING BA (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT OCT 1957
SAMPLER HAMMER WT. 250 LBS. DROP 32 INCHES COMPILED BY HS CHECKED BY AL DATE BORING 7 OCT 1957

ABBREVIATIONS

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

SAMPLE TYPES

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

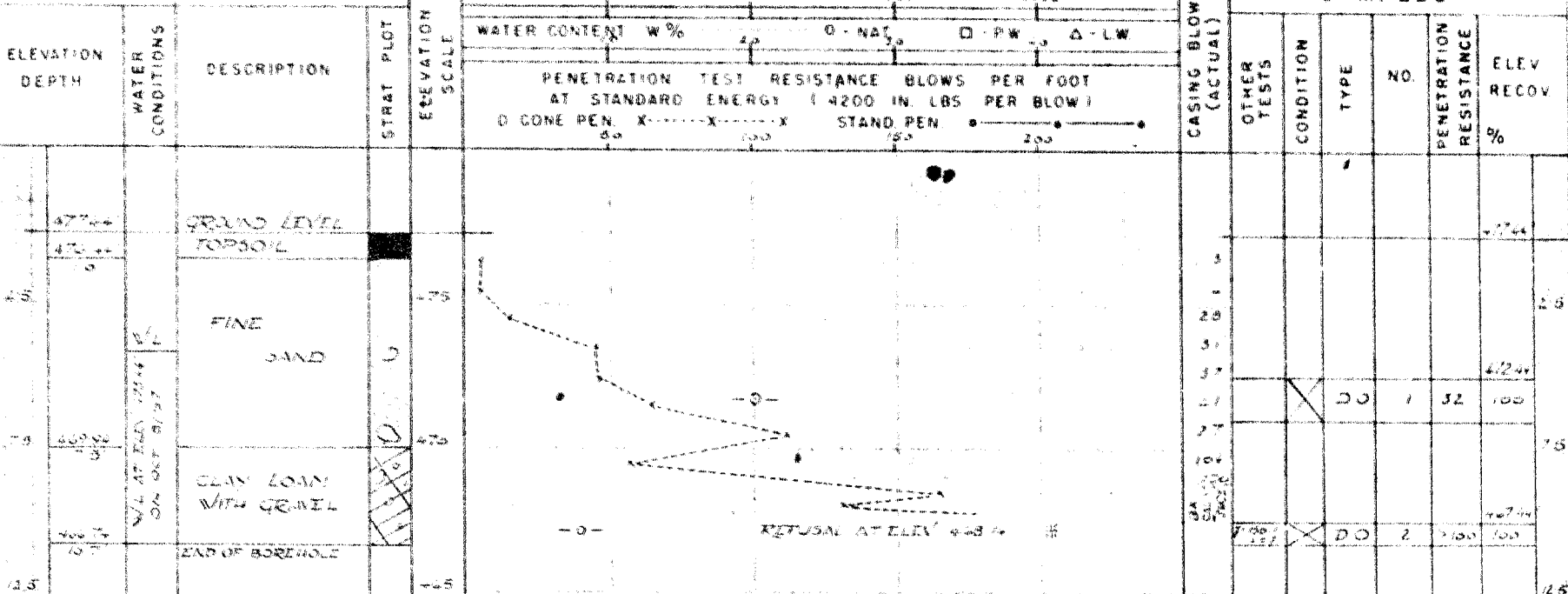
SAMPLE CONDITION



- DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE

SAMPLES



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

DRILL RIG 54-2 OPERATION BORE HOLE 17 N JOB 1001-426 (40' 27") BORING 1 STA 1001-426 (40' 27")
CASING 3X (standard samplers to fit unless noted) DATUM 1001-426 DATE REPORT OCT 1957
SAMPLER HAMMER WT. 250 LBS DROP 22 INCHES COMPILED BY 48 CHECKED BY 48 DATE BORING 8 OCT 1957

ABBREVIATIONS

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

SAMPLE TYPES

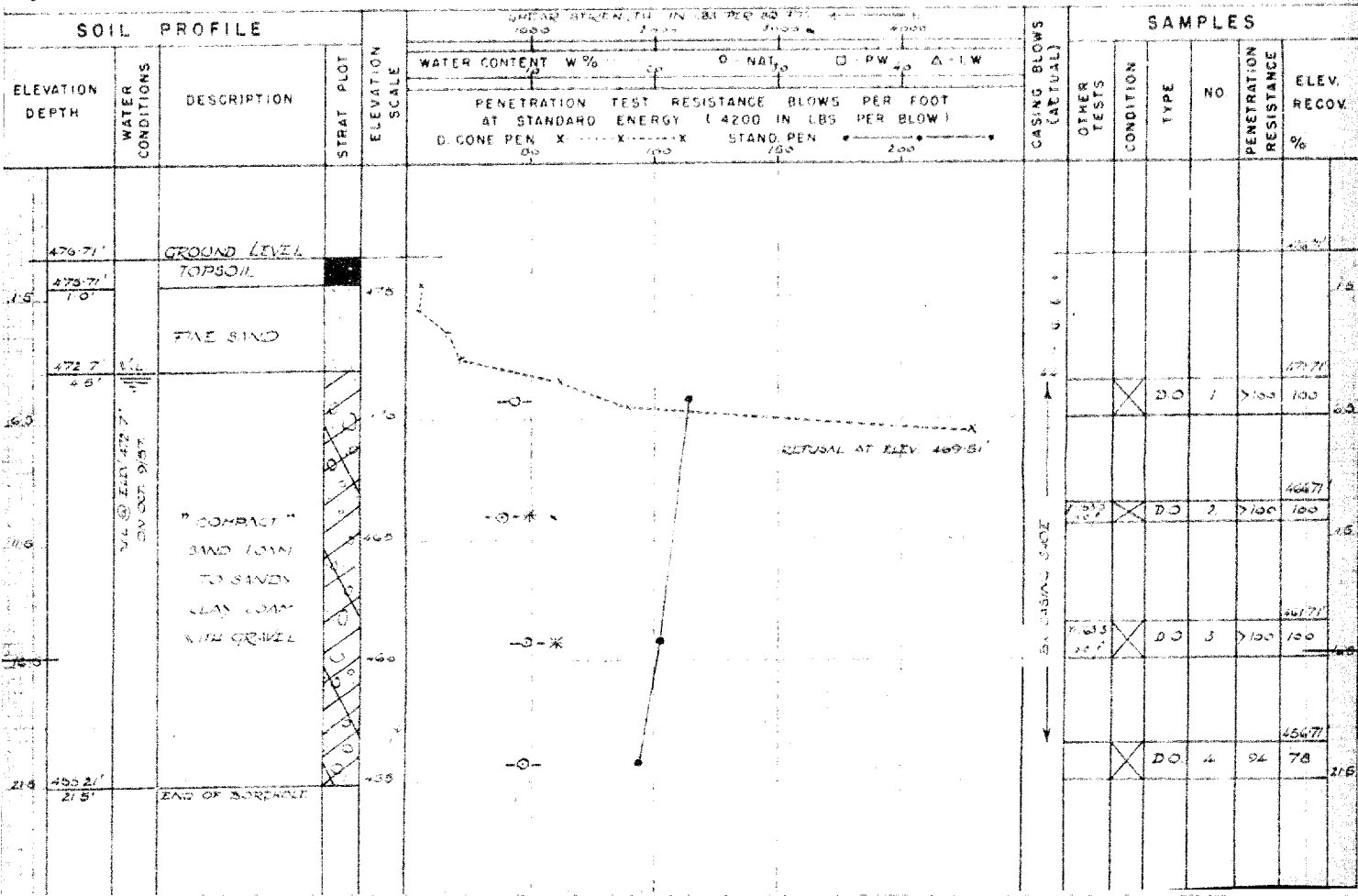
CS - CHUNK SS - SLEEVE SAMPLE
DO - DRIVE OPEN PS - PISTON SAMPLE
DF - DRIVE FOOT VALVE WS - WASHED SAMPLE
TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION



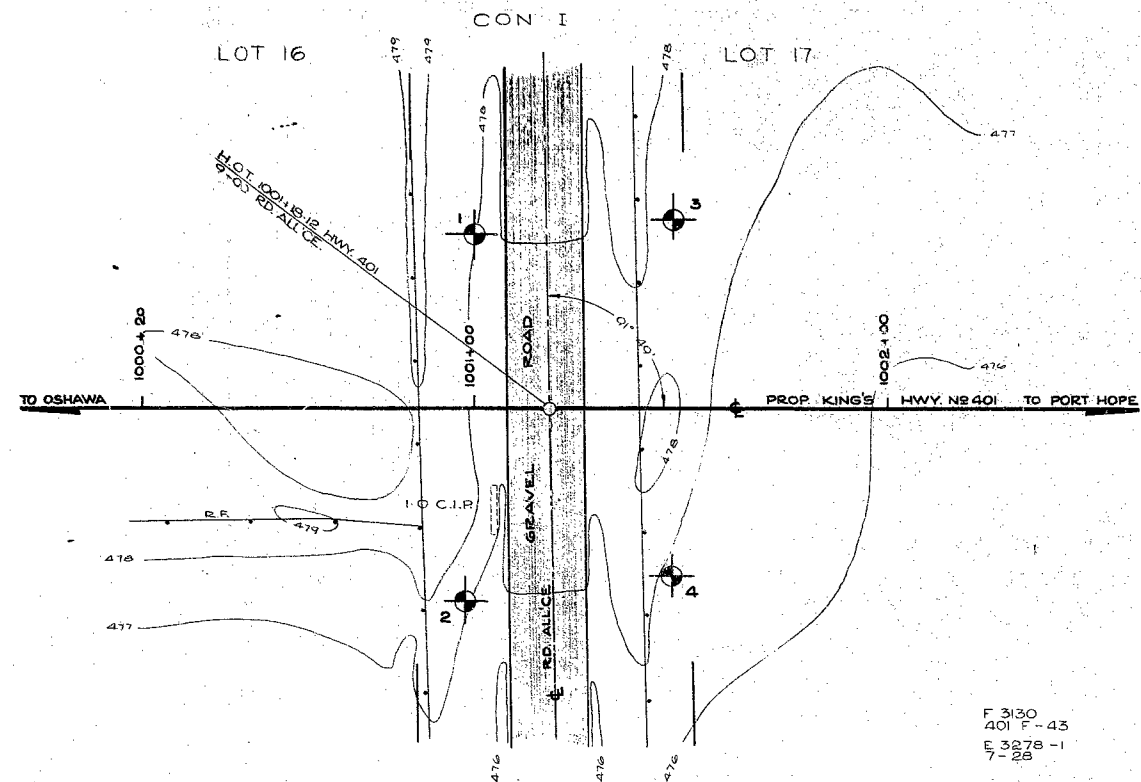
- DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE

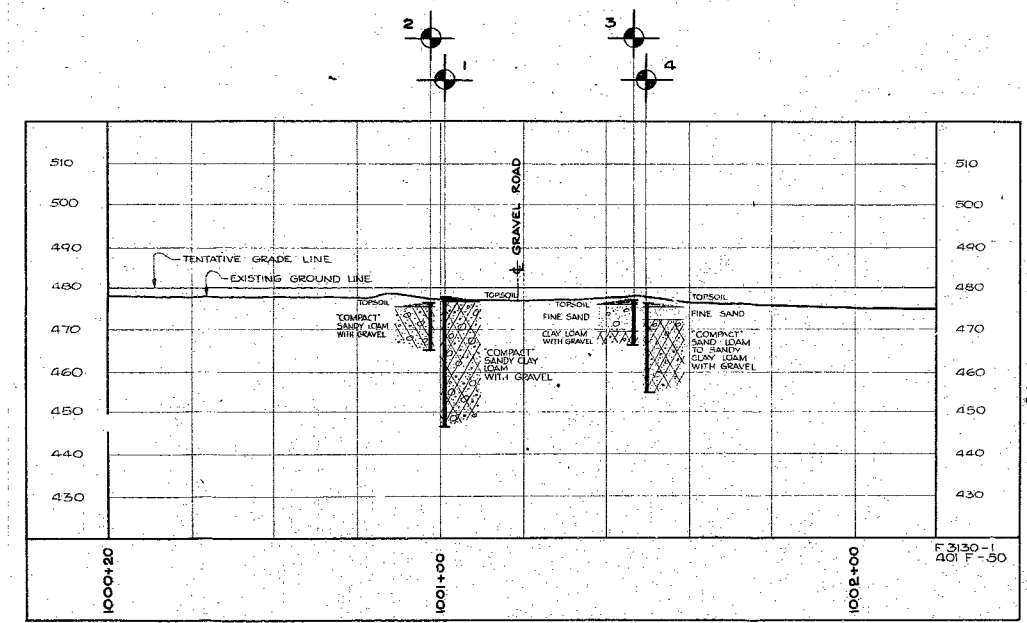


57-F-35
W.P. # 85-57
Hwy. # 401
CON. # 1
3 MILES E. OF
NEWCASTLE

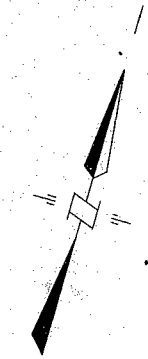
EDITED
FOR MICROFILMING
BY *AB* DATE *1/11/72*



PLAN SCALE 1 IN = 20 FT



PROFILE SCALE 1 IN = 20 FT



LEGEND			
BORE HOLE			
PENETRATION HOLE			
BORE & PENETRATION HOLE			
HOLE NO.	ELEVATION	STATION	DISTANCE FROM E.
1	477.44'	1001+00'	42' LT
2	476.64'	1000+98'	46.5' RT
3	477.44'	1001+47.6'	45.5' LT
4	476.71'	1001+47.6'	40' 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 PROPOSED CROSSING 3 MILES E. OF NEWCASTLE SHOWING POSITION & ELEVATION OF HOLES		
HWY. NO. 401	W.P. 85-57	DIV. NO. 7
CO. DURHAM	LOT 16 & 17	CON. I
TWP. CLARKE		
SCALE AS SHOWN	SUBMITTED BY	DATE 31 OCT. 1957
DRAWN BY R.E.F.	APPROVED BY	DRAWING NO. F-57-35A