

cc: Foundation Section

Mr. A. Toye,
Bridge Engineer.

F. C. Brownridge
per: A. Rutka

May 22, 1957.

Re: Foundation Report -
Oxbow Creek - Hwy. #22
7 miles West of London
W.P. 705-56 W.J. F-56-29

We are forwarding herewith two copies of the above mentioned foundation report which you will find self-explanatory. This structure had originally been scheduled for the 1957 construction program, but has now been postponed until the 1958-1959 program.

F. C. Brownridge
MATERIALS & RESEARCH ENGR.

per:



A. Rutka
PRINCIPAL SOILS ENGR.

AR/MdeF

Encls.(2)

cc: Messrs. H. A. Tregaskes
D. G. Ramsay
W. L. Fraser✓

Foundation Section
File

Foundation Report
on
New Bridge at Highway No. 22
crossing Oxbow Creek, about 7 miles
West of London, Ont.,

Site plan: 22-A-7

Station: 10/50

Distribution

Mr. A. Toye Bridge Engineer	(2)
Mr. H. Tregaskes Construction Engineer	(1)
Mr. D.G. Ramsay Design Engineer	(1)
Mr. W. L. Fraser Dist. Eng. London, Ont.,	(1)
Foundation Section	(1)
File	(1)

W.P. 705-56

W.J. F-56-23

INTRODUCTION

A subsoil investigation was carried out to determine the bearing values of the soil layers to support the foundations of a proposed new bridge.

The site is about 7 miles west of London where Highway No. 22 crosses the Oxbow Creek (station 10+50, profile No. C-1023).

The work started on December 17, 1956 and was completed on January 21, 1957.

PROCEDURE

The soil investigation was carried out with a skid mounted core drill machine. Two boreholes and two dynamic penetrations were made on either side of the creek.

The elevations of the layers are shown in log sheets and the locations of borings on the site plan N. F-56-29A, under Appendix I.

SUBSOIL FINDINGS AND ANALYSIS

The terrain is Till-Moraine spillway. The creek waters flow slowly on a flat ground. The investigations revealed the following subsoil stratigraphy. Below the topsoil down to elevation about 835 ft. the layer is dense gravel, mixed with some loam. Between elevations 835 and 825 ft. there is a concentration of fine sand. Starting with elevation 825 ft. down to 802 ft. the layer is dense loam with silt and clay. At about elevation 802 ft. the layer becomes hard medium grey clay (till). The boring was stopped at about elevation 796 ft.

From the boreholes soil samples were extracted and tested in the laboratory. Also, in the field dynamic and standard penetration tests were carried out. In the upper layers where the soil is mostly granular the results of the unconfined compression tests were unsatisfactory.

While in the lower layers where the loam was more clayey and silty, some satisfactory test results were obtained, no underground water table was encountered. The layer is considered as impervious.

From laboratory test results, in the upper gravel and sand layers the average liquid and plastic limits were found to be less than 10%, the moisture content 17% and density 118 p.c.f. While in the lower loam layer the average liquid limit was found to be 24%, plastic limit 14%, moisture content 15.5% and density about 130 p.c.f. From these results, the soil in the upper layers is classified as cohesionless soil, while in the lower layers it is inorganic soil of low plasticity.

Spread footing foundations will be considered. From the field test results the average standard penetration value is more than 40 blows per foot. Considering the fact that the soil is cohesionless and not saturated, the above penetration result accredits the layer with a bearing value of 2.0 T.s.f. for one inch settlement, with a safety factor of 3.

CONCLUSIONS AND RECOMMENDATIONS

From the above discussion it follows that:

1. The upper layer down to elevation 829 ft. is made up of cohesionless soil, and is not saturated.
2. If spread footing foundations are placed at elevation 813 ft. the effective pressure will be confined to the cohesionless soil layer.
3. This layer, at this elevation measured from the field standard penetration results, can provide a conservative bearing value of 2.0 T.s.f. for one inch settlement, with a safety factor of 3.
4. There is no indicated change in the existing grade line.
5. At present there are no indications of any scouring. However, the hazard for eventual scouring is apparent and necessary precautions in this respect should not be neglected.

V. Berlin

Foundation Engineer

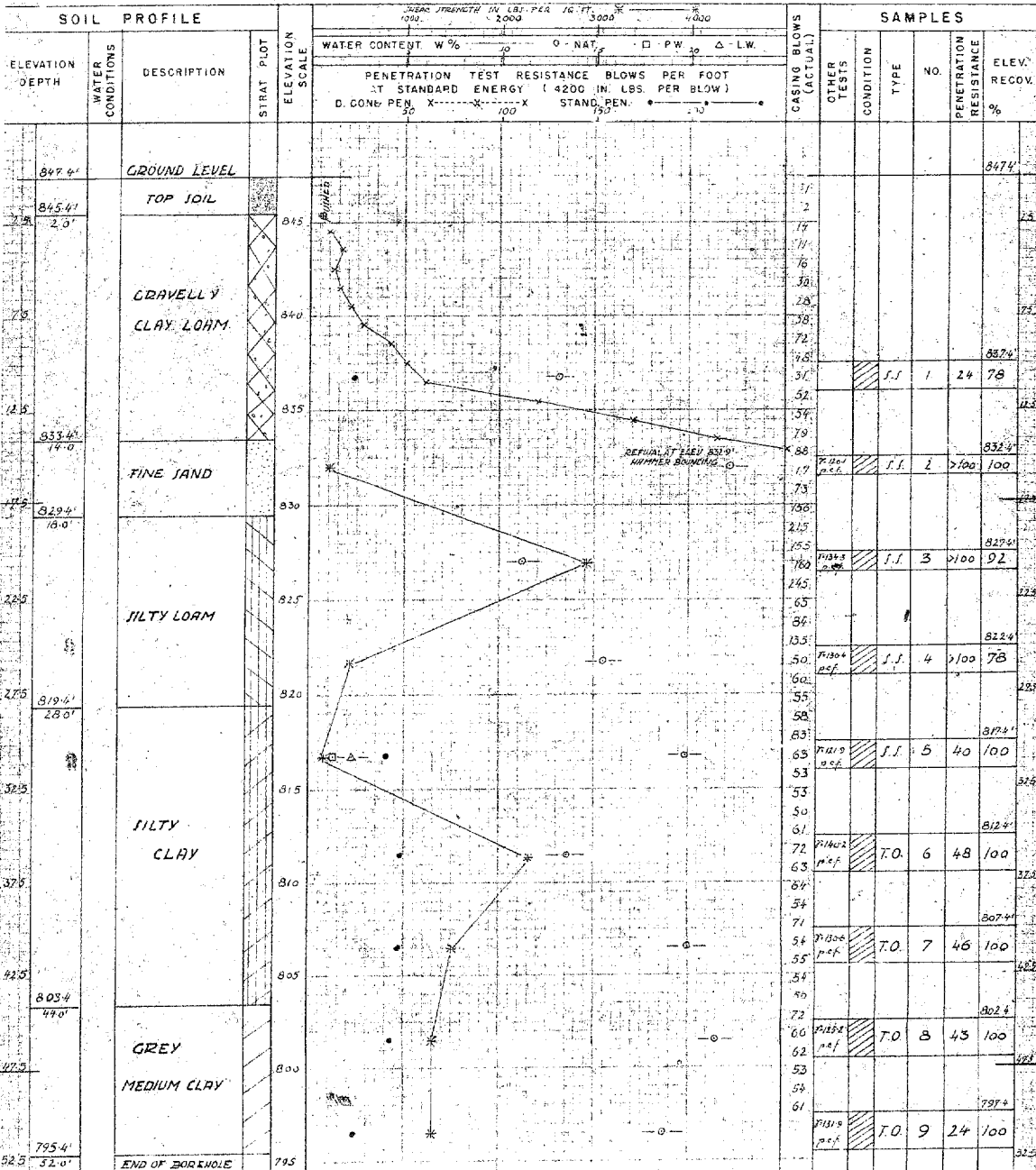
APPENDIX I

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

DRILL RIG 54-1 OPERATION BORE PENETRY JOB F-56-29 WP 705-36 BORING 2 STA. 9+82 (42' BT)
CASING BK (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JAN. 1957
SAMPLER HAMMER WT. 250 LBS. DROP 20 1/4 INCHES COMPILED BY H.S. CHECKED BY _____ DATE BORING JAN 1957

ABBREVIATIONS
V - INSITU VANE SHEAR TEST O - TRIAXIAL QUICK K - PERMIABILITY C.S. - CHUNK S.S. - SLEEVE SAMPLE
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION D.O. - DRIVE OPEN PS - PISTON SAMPLE
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING D.F. - DRIVE FOOT VALVE WS - WASHED SAMPLE
Qc - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL γ - UNIT WEIGHT 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 *PENETRATION JOB F-56-29 WP 705-56 BORING 3 STA. 10+15 (26' LT)
CASING BK (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JAN. 1957
SAMPLER HAMMER WT. 250 LBS. DROP 20 1/2 INCHES COMPILED BY H.S. CHECKED BY _____ DATE BORING 17 JAN. 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 - 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

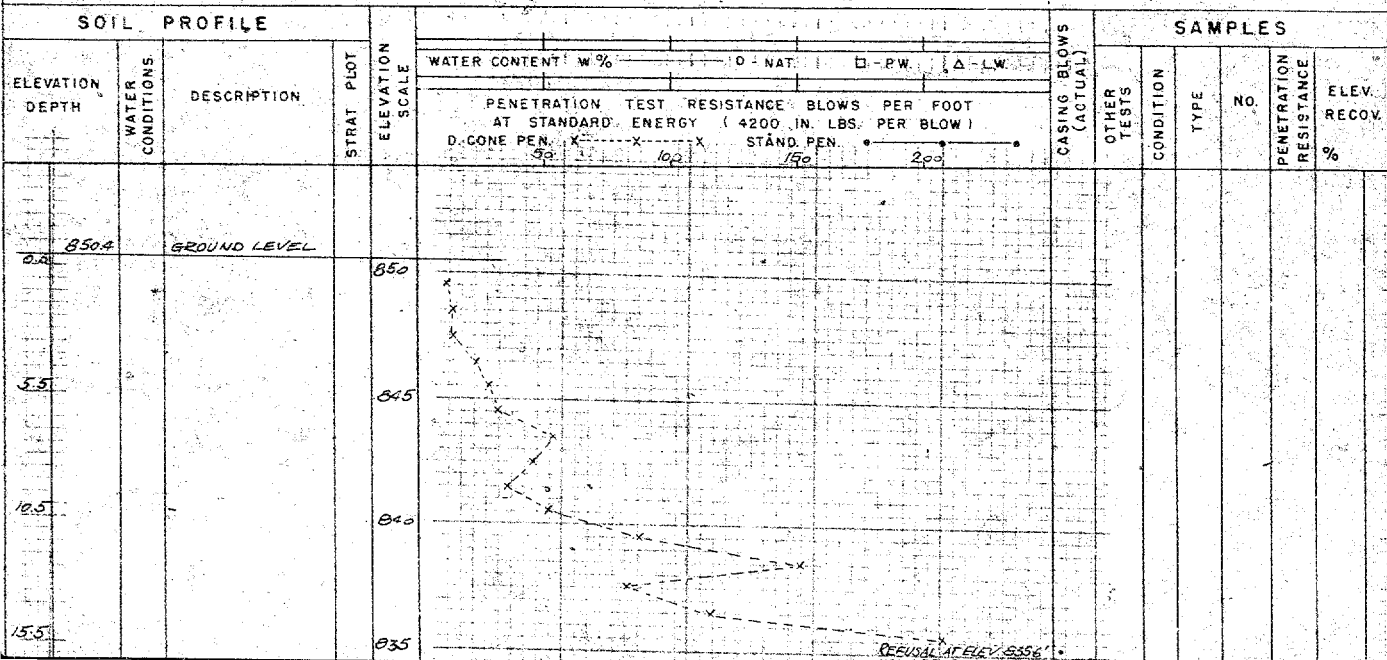
SAMPLE CONDITION



- DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE

SAMPLES



DRILL RIG 54-1 OPERATION PENETRATION JOB F-55-29 W.P. 705-56 BORING 4 STA. 10+85 (32' RT.)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JAN. 1957
SAMPLER HAMMER WT. 250 LBS. DROP 20 1/2 INCHES COMPILED BY HS CHECKED BY _____ DATE BORING 21 JAN. 1957

SAMPLE TYPES

SAMPLE CONDITION

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

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

- DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE

SAMPLES

[illegible]

#56-F-29

WP. 705-56

Hwy #22

CROSSING

OXBOW CREEK



