

# 56-F-3  
W.P. # 172-55  
SEC. RD. # 544  
AZILDA CREEK



MATERIALS LABORATORY-DEPARTMENT OF HIGHWAYS - ONTARIO  
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 JOB F-SC-3 BORING NO. 1 (STA. 315+15.46 ST.)  
CASING 8-X (STANDARD SAMPLERS TO FIT UNLESS NOTED) DATUM GEODETIC DATE REPORT MAY 1956  
SAMPLER HAMMER WT. 250 \* 25 INCHES COMPILED BY AL CHECKED BY J.B. BORING DATE 26 APRIL 1956

SAMPLE CONDITION



DISTURBED  
GOOD  
LOST

## SAMPLE TYPES

C.S. - CHUNK  
DO - DRIVE OPEN  
D.F. - DRIVE FOOT VALVE  
TO - THIN WALLED OPEN  
W.S. - WASHED SAMPLE  
R.C. - ROCK CORE

## ABBREVIATIONS

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

## SOIL PROFILE

[illegible]

MATERIALS LABORATORY-DEPARTMENT OF HIGHWAYS - ONTARIO  
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 JOB F-56-3 BORING NO. 2 (STAT 35+05 35.8' RT.)  
 CASING 8" (STANDARD) SAMPLERS TO FIT UNLESS NOTED. DATUM GEOPHYC DATE REPORT MAY 1956  
 SAMPLER HAMMER WT 250 # DROP 25 INCHES COMPILED BY A.L. CHECKED BY J.E. BORING DATE 27 APRIL 1956

### SAMPLE CONDITION



DISTURBED  
GOOD  
LOST

## SAMPLE TYPES

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

## ABBREVIATIONS

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

### SOIL PROFILE

[illegible]

DRILL RIG 54-2  
CASING B.X. (STANDARD SAMPLERS TO FIT UNLESS NOTED)  
SAMPLER HAMMER WT 250 # DROP 25 INCHES

JOB F-56-1  
 DATUM GEODETIC  
 COMPILED BY A.L. CHECKED BY J.B.

BORING NO 3 (STA 315+00-320' LT)  
DATE REPORT MAY 1956  
BORING DATE 28 APRIL 1956

## SAMPLE TYPES

## ABBREVIATIONS

C.S - CHUNK  
DO - DRIVE OPEN  
D.F - DRIVE FOOT VALVE  
TO - THIN WALLED OPEN

W.S. - WASHED SAMPLE  
R.C. - ROCK CORE

ABBREVIATIONS

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

## SOIL PROFILE

SHEAR STRENGTH  
TONS / SQ FT OR  $Q_{u/2}$

WATER CONTENT  
W %

## SAMPLES

TL 129  
54-90

MATERIALS LABORATORY-DEPARTMENT OF HIGHWAYS - ONTARIO  
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2  
CASING BX (STANDARD SAMPLERS TO FIT UNLESS NOTED)  
SAMPLER HAMMER WT 250 # DROP 25 INCHES

JOB F-56-3  
 DATUM GEODETIC  
 COMPILED BY A.L. CHECKED BY J.B.

BORING NO. 4 (STA 35+83.30)  
DATE REPORT - MAY 1956  
BORING DATE 27 APRIL 1956

SAMPLE CONDITION

## SAMPLE TYPES

## ABBREVIATIONS



DISTURBED

GOOD

LOST

C.S - CHUNK  
D.O - DRIVE OPEN  
D.F - DRIVE FOOT VALVE  
TO. + THIN WALLED OPEN

WS - WASHED SAMPLE  
R.C. - ROCK CORE

### ABBREVIATIONS

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

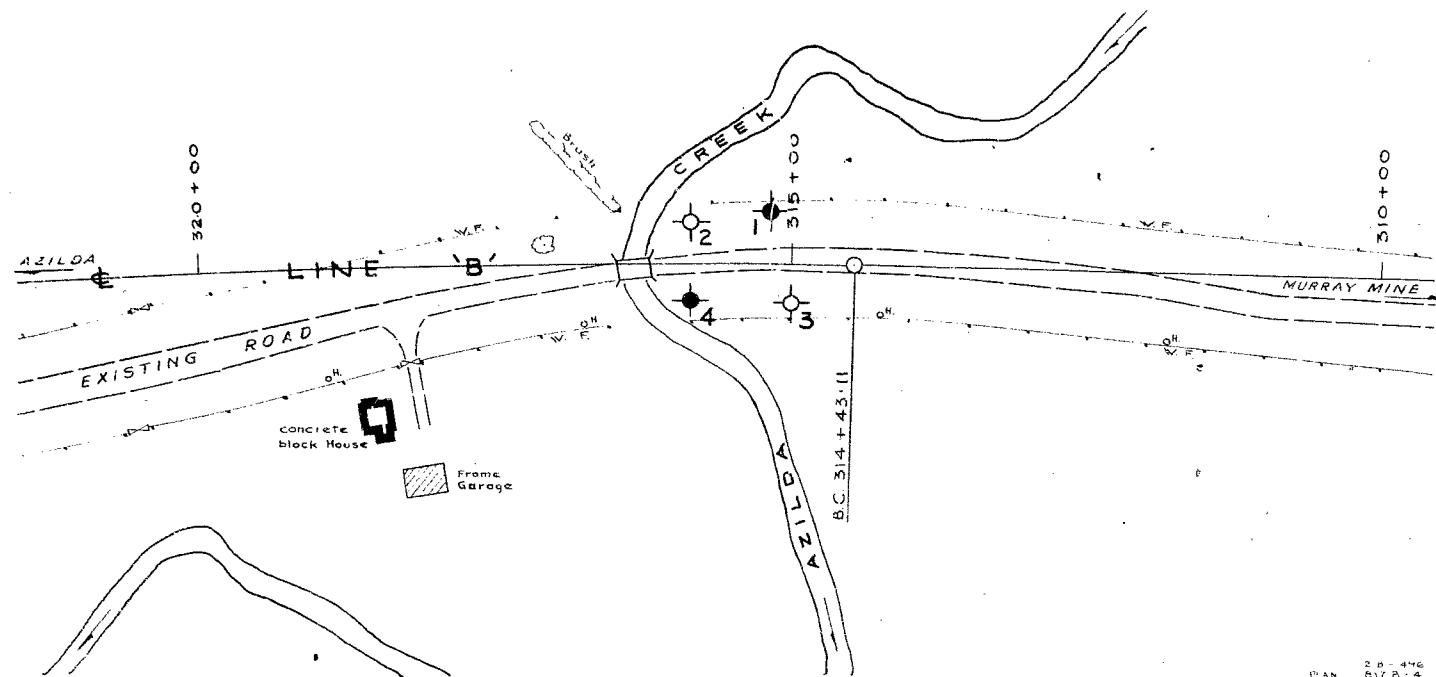
## SOIL PROFILE

SHEAR STRENGTH  
TONS/SQ. FT. OR  $Q_u/3$

WATER CONTENT

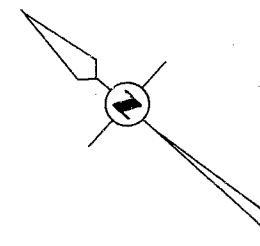
## SAMPLES

[illegible]



### PLAN

Scale - 1 inch = 100 feet



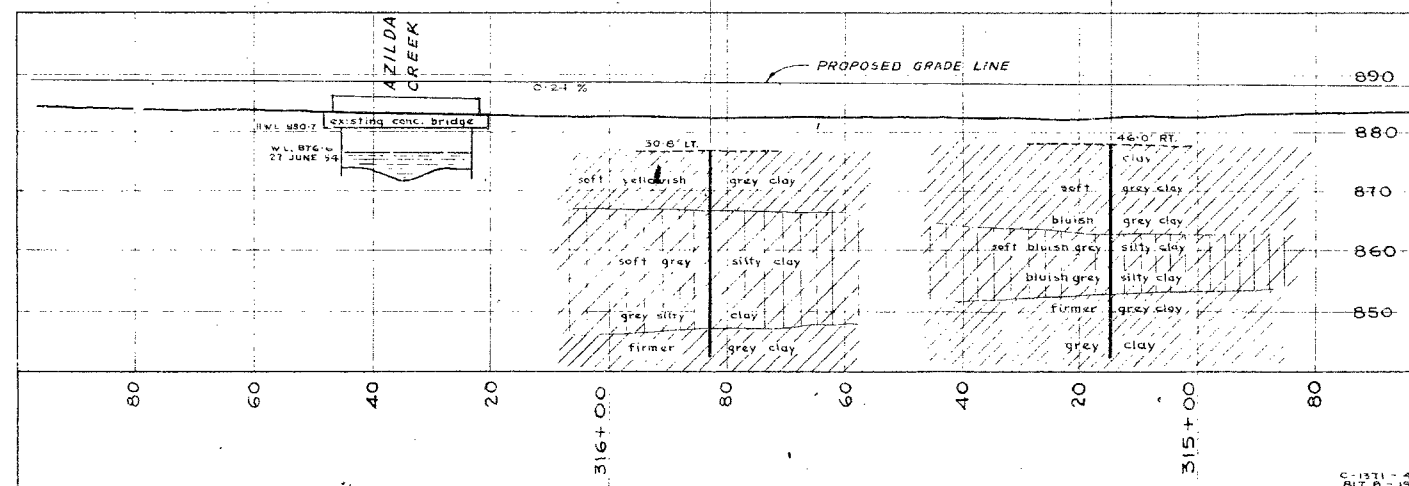
### LEGEND

Bore Hole	
Penetration Hole	
Bore & Penetration Hole	

HOLE NO.	ELEVATION	STATION	DISTANCE FROM E
1	879.0	315+15	46.0' RT.
2	876.8	315+83	35.8' RT.
3	880.0	315+00	32.0' LT.
4	876.8	315+83	30.8' 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 quite considerable error.



### PROFILE

Scale - 1 inch = 20 feet

PRINT RECORD		
NO.	FOR	DATE

REVISIONS:	DATE	BY	DESCRIPTION

DEPARTMENT OF HIGHWAYS-ONTARIO-  
MATERIALS & RESEARCH BRANCH - DOWNSVIEW

## AZILDA CREEK PROPOSED CROSSING

THE KING'S HIGHWAY No. 544 (Murray Mine-Azilda) V. No. 17

CO. SUDBURY

TWP. RAYSIDE

LOT 3

CON. I

### POSITIONS & ELEVATIONS of HOLES

APPROVED

ENGINEER

CHIEF ENGINEER

DESIGN

CHECK

CONTRACT

NUMBERS

DRAWING

CHECK

LOADING

DRAWING

NUMBER

DATE 22 MAY 1956

F-56-3 A

A REPORT ON THE SOIL CONDITIONS

AT

AZILDA CREEK NEAR AZILDA

ON ROAD 544

Project 56-F-3  
W.P. 172-55

Dispersment:

Mr. A. Teye,  
Bridge Engineer (2)

Mr. J. Walter,  
Design Engineer (1)

Mr. H. Tregaskes,  
Construction Engineer (1)

Foundation Section (1)

Mr. Cole, District Engineer,  
Sudbury, Ontario (1)

File (1)

## INDEX

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SOIL CONDITIONS	1
WATER CONDITIONS	2
ANALYSIS OF RESULTS	2
RECOMMENDATION	2
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## INTRODUCTION:

This report is concerned with the soils exploration at the Azilda Creek on road No. 544. In order to alleviate flooding it is proposed to divert the stream and the investigation has been carried out to determine the best foundation for the proposed trestle bridge to carry road 544 over the new channel.

## PROCEDURE:

The field work was carried out by a skid mounted core-drill between 25 & 30 April, 1956 and comprised of two boreholes and four penetrations.

All the soils information obtained is shown in Appendix I under logs of each hole together with locations and ground elevations.

## SOIL CONDITIONS:

Varved silty clay was found throughout the sampling depth, in a very soft condition and having moisture contents between 27 & 34%. In borehole #1 the skin friction effect on the cone penetration was examined by hammering through 30 feet of casing the lack of resistance ( as shown on the office report) indicates the softness of the material below 30 feet. At no place was bedrock located.

Due to the varved condition of the soil the results of the compression tests tend to be misleading. It was noted in the laboratory that the material was very disturbed due to its softness, particularly for the triaxial compression tests where the maximum cohesion for samples down to 25 feet was 144 lbs. per square foot.

WATER CONDITIONS:

Due to the presence of drilling water the ground water conditions were not apparent.

ANALYSIS OF RESULTS:

On the basis of the test results it is not possible to give a reliable estimate of the length of pile embedment required for an assumed safe load of 15 tons per pile using a safety factor of 3, though it is thought that the lengths of pile should exceed 50 feet.

If spread footings were considered the bearing capacity of the clay could be taken at  $\frac{1}{4}$  ton per square foot.

RECOMMENDATION:

It is therefore recommended that pile load tests be carried out to determine the lengths of embedment required. In the event of this being uneconomical, consideration should be given to flexible culverts, for example Armco etc. instead of a timber trestle.

P. Bernard.



APPENDIX I

A REPORT ON THE SOIL CONDITIONS

AT

AZILDA CREEK NEAR AZILDA

ON ROAD 544

Project 56-F-3  
W.P. 172-55

Dispersment:

Mr. A. Toye,  
Bridge Engineer (2)

Mr. J. Walter,  
Design Engineer (1)

Mr. H. Tregaskes,  
Construction Engineer (1)

Foundation Section (1)

Mr. Cole, District Engineer,  
Dudbury, Ontario (1)

File (1)

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## APPENDIX I

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F. Bernard.

APPENDIX I

File

Mr. A. Teye

May 24th, 1956.

Bridge Engineer

Foundation Report

F. C. Brownridge  
Per: A. Rutka

Azilda Creek Sec. Rd. 544  
W.P. 172-55 Project 56F-3

We are forwarding herewith 2 copies of the above mentioned report.

This investigation was requested recently by Mr. B. Davis of your office and Mr. Wilkie has inquired with regards to its progress on several occasions.

You will note that the subsoil consists of a soft clay to depths in excess of 90' and as a result piled foundations or flexible pipes are recommended. For flexible pipe, we refer you to the Aruco literature and particularly the headwall design which may be necessary for protection.

AR  
REN:JRA

F. C. Brownridge  
MATERIALS & RESEARCH ENGINEER

Per: *al*  
A. Rutka  
PRINCIPAL SOILS ENGINEER

c.c. to:

H. A. Tregaskes  
J. Walter  
W. S. Cole  
File ✓  
Foundation Section

B.A. 528



ONTARIO

DEPARTMENT OF HIGHWAYS

Memo to <u>Mr. A. Toye</u>	Date <u>May 24th, 1956.</u>
<u>Bridge Engineer</u>	Subject <u>Foundation Report</u>
From <u>F. C. Brownridge</u>	<u>Azilda Creek Sec. Rd. 544</u>
<u>Per: A. Rutka</u>	<u>W.P. 172-55 Project 56F-3</u>

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AR  
KEH:JRA

F. C. Brownridge  
MATERIALS & RESEARCH ENGINEER

Per: *A. Rutka*  
A. Rutka  
PRINCIPAL SOILS ENGINEER

c.c. to:

H. A. Tregaskes  
J. Walter  
W. S. Cole  
File  
Foundation Section