

#55-F-31

Hwy. #11

ANGELINA

CREEK



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

DRILL RIG CORE DRILL 54-1

CASING 5X (STANDARD SAMPLERS TO FIT UNLESS NOTED)

SAMPLER HAMMER WT. 140 # DROP 30 INCHES

JOB 55F31 Hwy #11 Angelina Creek (524) BORING NO. 1

DATUM Sta. 1374+30 Rt 18 Ft

COMPILED BY                      CHECKED BY                     

DATE REPORT                      BORING DATE Dec. 6-8, 1955

SAMPLE CONDITION



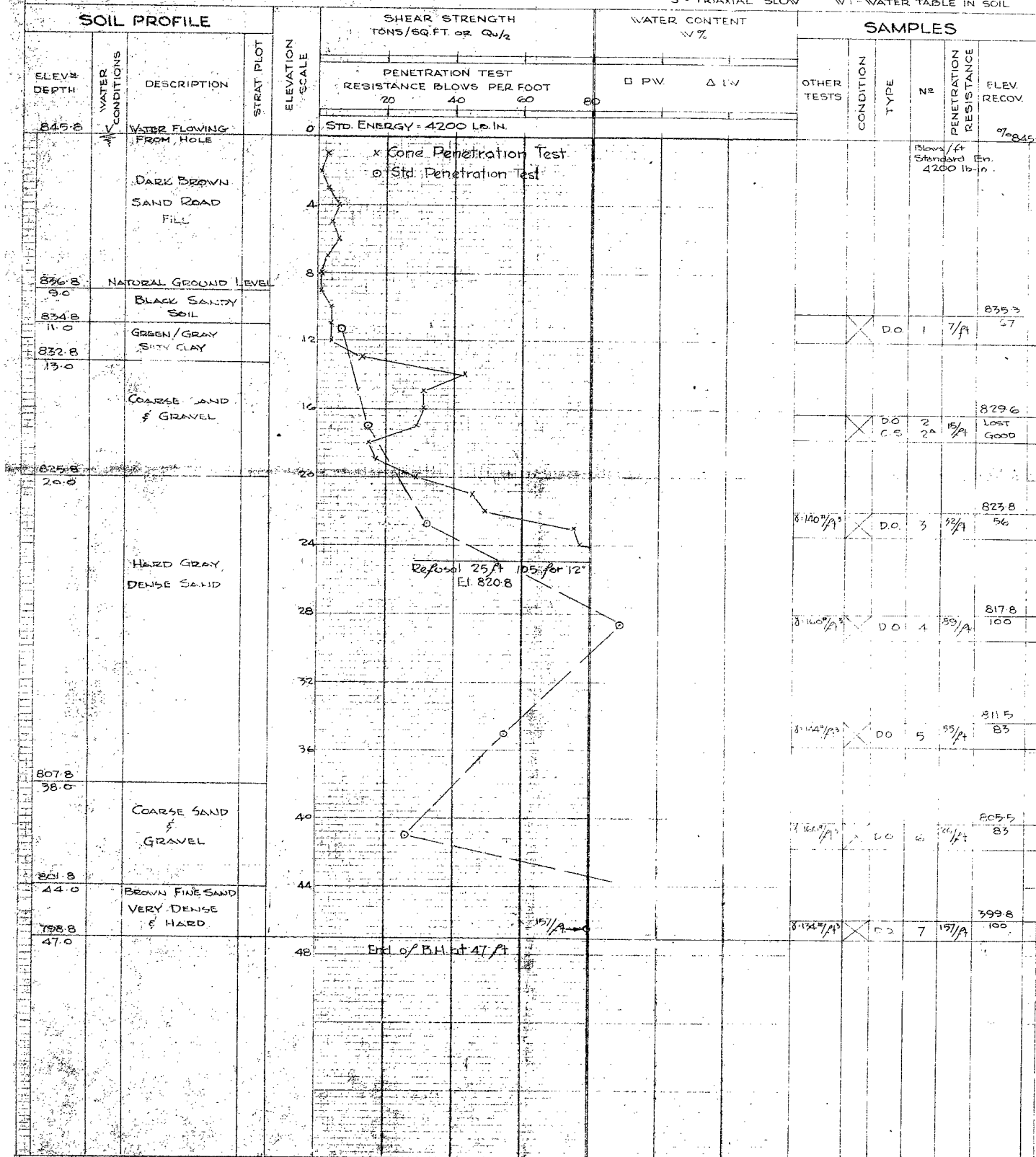
C.S. - CHUNK  
D.O. - DRIVE OPEN  
D.F. - DRIVE FOOT VALVE  
TO. - THIN WALLED OPEN

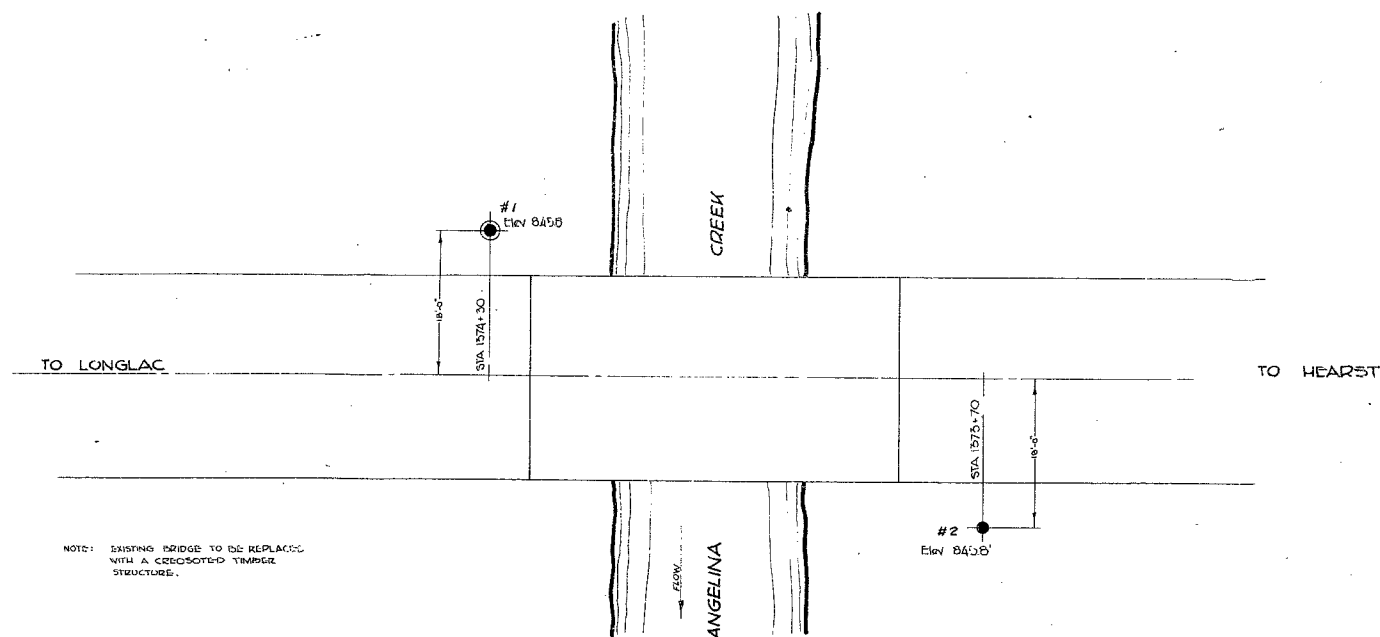
SAMPLE TYPES

WS - WASHED SAMPLE  
RC - ROCK CORE

ABBREVIATIONS

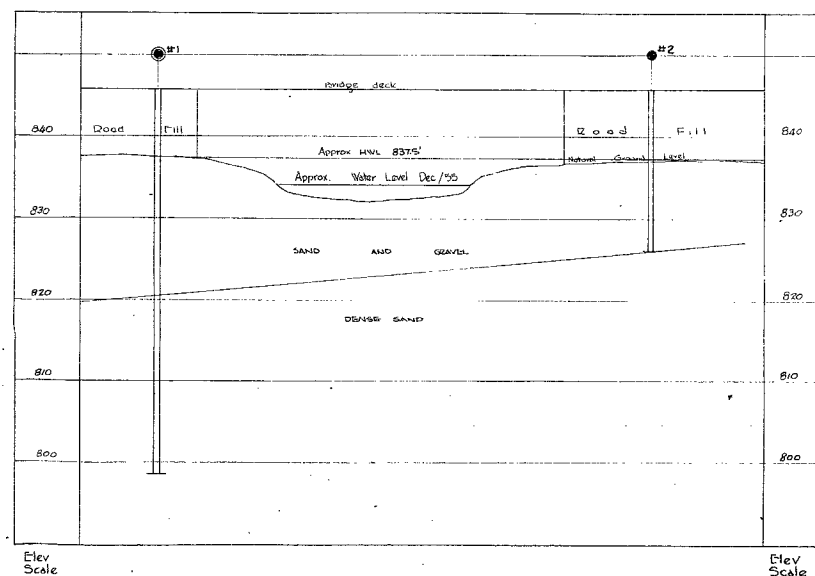
V - INSITU VANE SHEAR TEST  
M - MECHANICAL ANALYSIS  
U - UNCONFINED COMPRESSION  
Qc - TRIAXIAL CONSOLIDATED QUICK  
Q - TRIAXIAL QUICK  
S - TRIAXIAL SLOW  
γ - UNIT WEIGHT  
K - PERMEABILITY  
C - CONSOLIDATION  
CA - CASING  
WL - WATER LEVEL IN CASING  
WT - WATER TABLE IN SOIL





# PLAN

Scale 1 inch = 10 feet.



# PROFILE

Scale Horizontal / Vertical 1 inch = 10 feet

## LEGEND

- PENETRATION TEST HOLE
- ⊙ PENETRATION AND BORE HOLE

DEPARTMENT OF HIGHWAYS: ONTARIO-  
BRIDGE OFFICE: TORONTO

## STRUCTURE 542 HWY 11 AT ANGELINA CREEK LOCATION OF BOREHOLES

THE KING'S HIGHWAY No. 11 DIV. No. 10  
DISTRICT OF COCHRANE  
25 MILES WEST OF HEARST LOT UNSURVEYED CON. UNSURVEYED

### APPROVED

CHIEF BRIDGE ENGINEER CHIEF ENGINEER

DESIGN	CHECK	CONTRACT NUMBERS	
DRAWING	h.0h	CHECK	
TRACING	h.0h	CHECK	
DATE	DECEMBER 22 1955	LOADING	
		DRAWING NUMBER	F-55-31A

REVISIONS

DATE	BY	DESCRIPTION

Highways Laboratory,  
c/o New York,  
Parliament Buildings,  
Toronto, Ontario.

January 10, 1953.

Mr. A. Togo,  
Bridge Engineer

Dear Mr. Togo:

Re: Post Action Investigation, Saginaw  
Crack Map, File 111-11, U. S. of Canada, Project 22-1-51.

Attached please find one copy of the report on the above  
which is self-explanatory. One copy of this report has already  
been delivered to Mr. Bruce Lee of your office.

Yours truly,

F. C. Grosvenor,  
Materials & Research Engineer.

For:

*M. M. D.*

(R. L. Davis)

cc/2

cc/2

Mr. H. Ferguson, Const. Engineer

Mr. J. Baker, Design Engineer

Mr. E. H. Lee, Const. Engineer, Saginaw

Mr. J. Grosvenor

File

REPORT OF FOUNDATION INVESTIGATION  
BRIDGE AT ANGELINA CREEK  
ON HIGHWAY NO. 11, 25 MILES WEST OF HEARST  
(Structure 542 District of Cochrane)

Copies to:

Mr. A. Toys, Bridge Engineer.	(2)
Mr. H. Tragaskos, Const. Engineer.	(1)
Mr. J. Walter, Design Engineer.	(1)
Mr. E. Orr, Dist. Engineer, Cochrane	(1)
Mr. A. Farantatos	(1)
File	(1)

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## INTRODUCTION

A subsoil investigation at the bridge site on Hwy. # 11 at Angelina Creek (District Structure # 542) 25 miles West of Hearst has been completed.

It is proposed to replace the existing small timber bridge with a new crescented timber structure, and investigation was made to determine the foundation conditions and the depth to which the timber piles should be driven.

## SITE CONDITIONS

The stream at the site is 20 ft. wide with a medium current. The banks on each side are low and marshy for about 100 ft. and beyond that the ground level rises steeply and is thickly timbered. The existing bridge has two 20 ft. spans.

## PROCEDURE

During the period Dec. 6th to Dec. 8th 1955, a dynamic penetration test and a borehole were made on the West bank and a dynamic penetration test only on the East bank. They are located as shown on drawing F-55-31A.

The road fill at the site is about 10 ft. above the ground level and the boreholes and penetrations were made on the road shoulders. Good recovery was made from samplings.

The logs of the holes are found in Appendix I.

## SOIL CONDITIONS

Below the road fill at natural ground level the boring indicates a 4 ft. layer of black sandy soil and green gray silty clay. Below this the material was sandy for the full depth of the hole, coarse and gravelly for 7 ft. and then hard and dense for 18 ft. At 38 ft. a 6 ft. layer of coarse sand and gravel was found and below that the borehole was completed in a very dense fine brown sand which offered a high resistance to drilling.

### WATER CONDITIONS

During the process of drilling water flowed from the borehole under an artesian head.

### ANALYSIS OF TEST RESULTS AND DISCUSSIONS

The test results indicate that the sand material is firm enough to provide a good foundation for a bridge on timber piles.

The sand increases in density with depth at a uniform rate reaching a maximum value at elevation 820.0 on the West bank and at elevation 826.0 on the East bank of the creek. The piles if driven to this level would have an excellent end bearing resistance.

Since the creek is small the depth of scour would not be great and if the piles were driven to the level of dense sand the bridge would be safe. As a precaution against damage or crushing of the pile a steel driving shoe should be fitted to the end.

### CONCLUSION

The subsoil on the site is good material for a timber pile foundation.

The piles should be driven until they reach hard resistance in the dense compacted sand which is found at elevations varying from 820.0 on the West bank to 826.0 on the East bank of the creek.

To prevent crushing of the piles during driving the points should be protected with a suitable form of steel driving shoe.

G. H. Parantatos,  
Foundation Engineer.



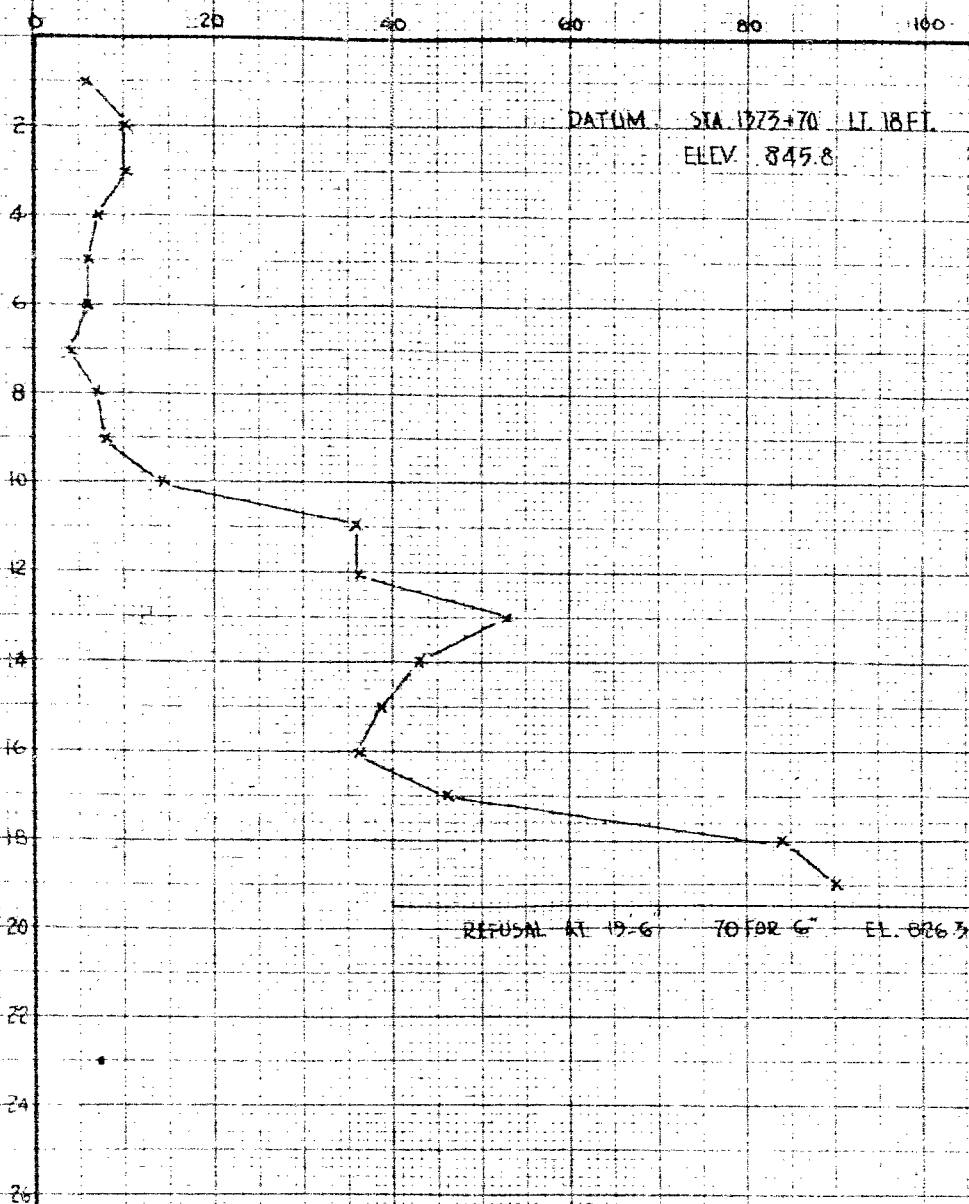
APPENDIX I

HWY #11 ANGELINA CK (542) 55 F 31 B.H. #2  
GRAPH OF CORE PENETRATION TEST

No. OF BLOWS AT STD. ENL - 4200 LB. IN

DATUM STA. 1273+70 LL 18 FT.  
ELEV. 845.8

DEPTH IN FEET



REFUSAL AT 19.6 70 FOR 6" EL. 826.3