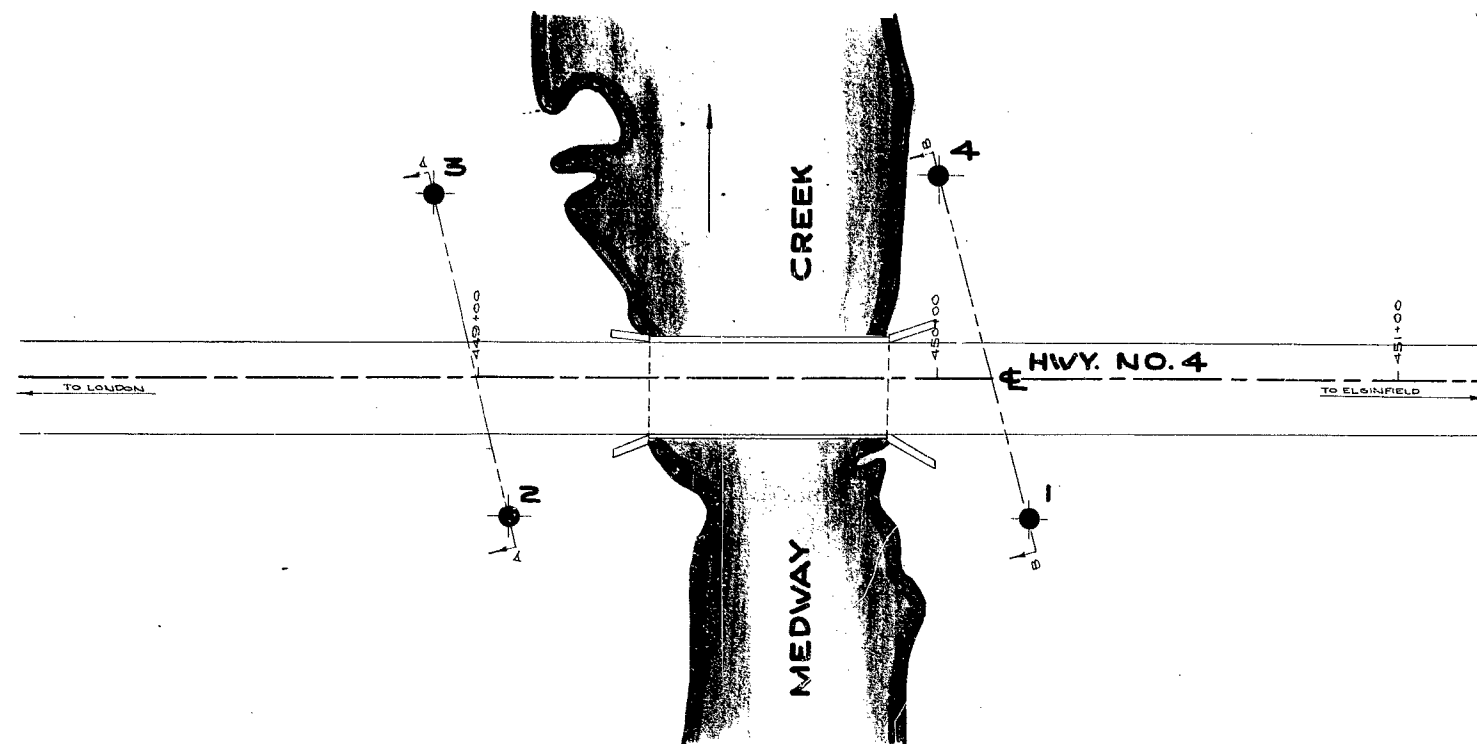
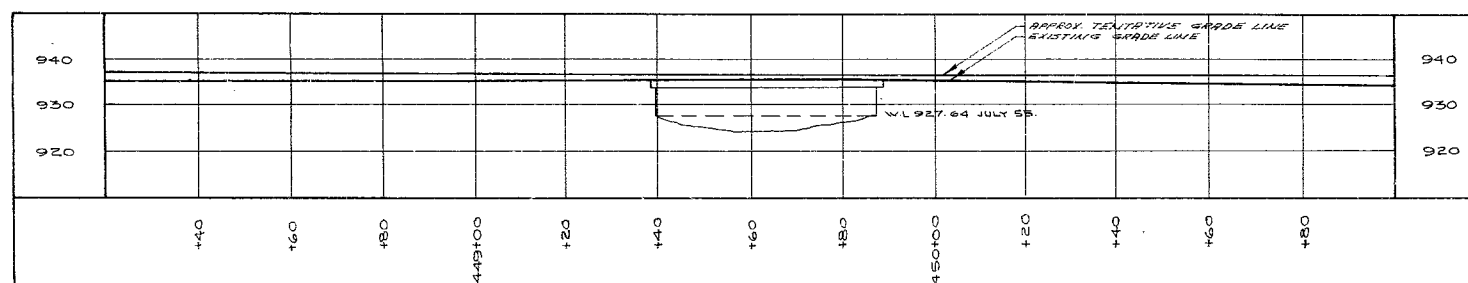


59-F-9
W.P. # 150-59
Hwy. # 4
CROSSING
MEDWAY CREEK
LONDON TWP.



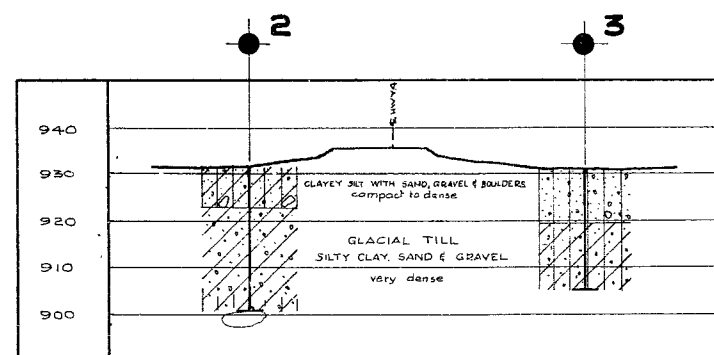
PLAN

63045-1 2-5
9.8.95

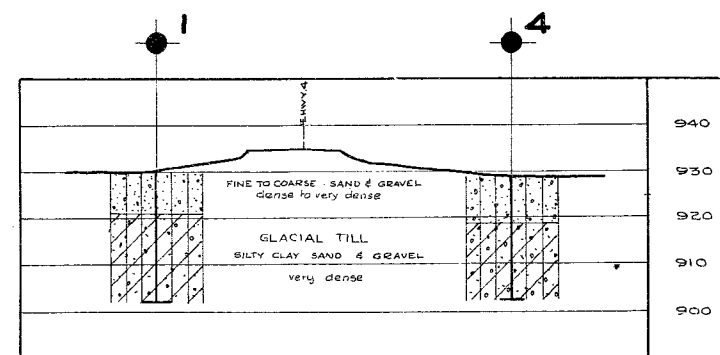


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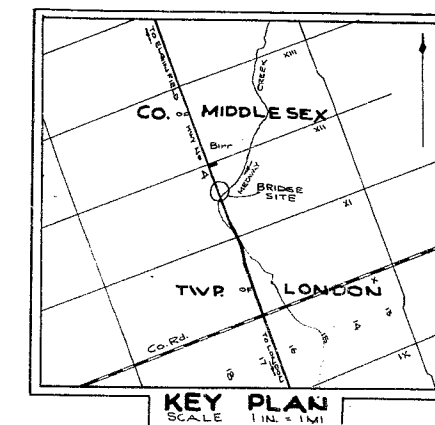
CH118-2
4A-18



A-A



B-B



LEGEND

- BORE HOLE
- PENETRATION HOLE
- BORE & PENETRATION HOLE

HOLE NO.	ELEVATION	STATION	DISTANCE FROM E.
1	930.0'	450+20	35' RT
2	931.5'	443+07	30' RT
3	931.0'	448+90	40' LT
4	929.0'	450+00	44' LT

- NOTE -

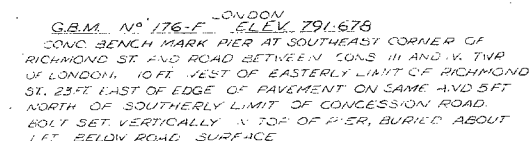
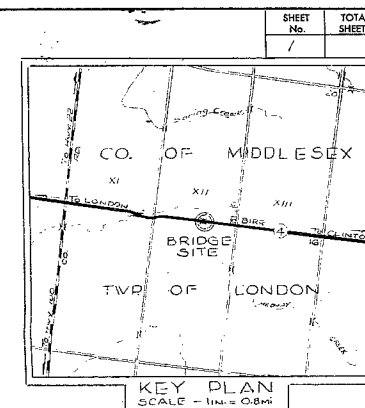
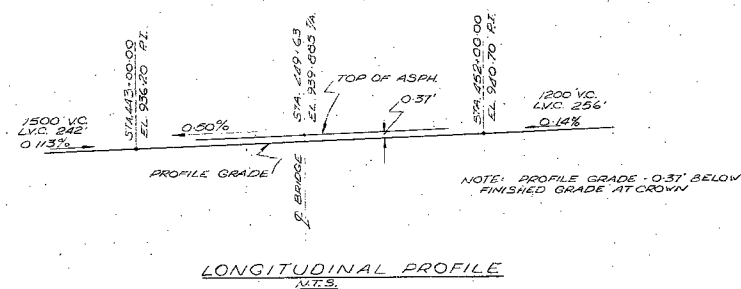
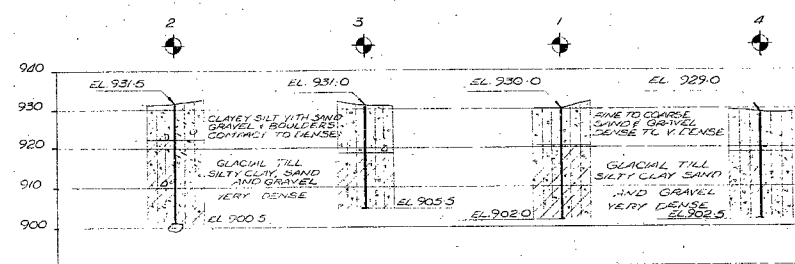
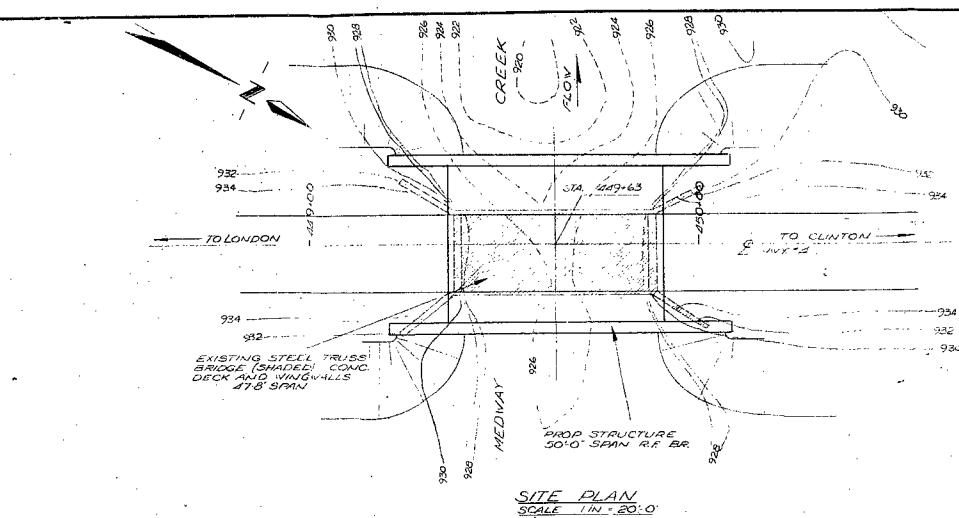
THE BOUNDARIES BETWEEN SOIL STRATA HAVE BEEN ESTABLISHED ONLY AT BORE HOLE LOCATIONS. BETWEEN BORE HOLES THE BOUNDARIES ARE ASSUMED FROM GEOLOGICAL EVIDENCE AND MAY BE SUBJECT TO CONSIDERABLE ERROR.

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH SECTION

**MEDWAY CREEK
PROPOSED CROSSING**

SHOWING POSITIONS & ELEVATIONS OF HOLES

HWY. 4	DISTRICT 2	COUNTY MIDDLESEX
TOWNSHIP LONDON	LOT 16 & 17	CON. X11
LOCATION APP. 10 MI. N. OF LONDON		
DRAWN BY: T. MELLORES	CHECKED BY:	W.P. 150-59
DATE: 4 JUNE 1959	APPROVED BY:	
SCALE: 1 IN. = 20 FT.		F59-9A

[illegible]

DEPARTMENT OF HIGHWAYS ONTARIO BRIDGE DIVISION			
<u>MEDWAY CREEK BRIDGE</u> 3.7 MILES SOUTH OF HWY. NO. 7			
KING'S HIGHWAY No. <u>4</u>		DIST. No. <u>2</u>	
CO. <u>MIDDLESEX</u>		LOT <u>6817</u>	
TWP. <u>LONDON</u>		CON. <u>XII</u>	
<u>PRELIMINARY PLAN</u>			
APPROVED _____ <small>BRIDGE ENGINEER</small>		SITE No. _____ W.P. No. <u>150-5</u>	
DESIGN <u>AP</u>	CHECK <u>M.M.</u>	CONTRACT No. _____	
DRAWING <u>M.P.</u>	CHECK <u>M.M.</u>	_____	
DATE <u>JAN 2</u>	LOGGING <u>Y/20</u>	DRAWING No. <u>D-5014-A</u>	

REFERENCE PLAN
E-4047-1
F-4029
C-1118-2
BA. 1235
BW 290

[illegible]

23-62-223

Mr. A. M. Tove,
Bridge Engineer.
Materials & Research Section,
(Foundations Office).

July 20, 1961.

D.H.C. FOUNDATION INVESTIGATION
REPORT.
W.J. 59-8-9 -- W.P. 150-59.

Attention: Mr. J. MacDonagh.

Re: Proposed Crossing - Medway Creek - Hwy. #4,
Twp. of London, Co. of Middlesex, Dist. #2.

Accompanying this memo, is our detailed foundation
report on the subsill conditions existing at the above site.

We believe the conclusions and recommendations con-
tained therein, should prove adequate for your future design work.

If we can be of further assistance in connection with
this project, please do not hesitate to contact our Office.

L. G. Soderman,
PRINCIPAL FOUNDATION ENGR.
Per:

Alsterman
(A. G. Soderman,
SUPERVISING FOUNDATION ENGR.)

AL/DMF
attach.

cc: Messrs. A. M. Tove (2)
H. A. Dragosken
B. D. McMillan
A. Gater
W. L. Frazer
J. Roy
T. J. Kovich
J. C. Gruspier
E. B. Saint
P. Moran
A. Watt
Foundations Office/
Gen. Files.

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 6. SUMMARY.
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-

FOUNDATION INVESTIGATION

For

Medway Creek

Proposed Crossing - Hwy. #4,
Twp. of London, Co. of Middlesex, Dist. #2,

W.J. F-59-9 -- W.P. 150-59.

1. INTRODUCTION:

This report contains the detailed results of field soil investigation and laboratory findings, together with recommendations for the foundations for the proposed new bridge at Hwy. #4 and Medway Creek.

The site is located about 10 miles North of London in Lots #16 & #17 (Con. XII), Twp. of London. The existing structure is a single span (48') concrete bridge 40' in width. It is proposed to construct a new bridge at the same location with the same span, but with a raise in grade of approximately 2.0'. The centre-line of the structure will remain unchanged.

2. DESCRIPTION OF SITE AND GEOLOGY:

The site is in the physiographic region of "Lucan Moraine". The topography is undulating with a broad valley through which the Medway Creek meanders.

During the recession of the glaciers at certain sections, the ice lobes re-advanced, overriding the recently deposited drift, and at the terminus of each advance, moraines were formed. During this process, the drainage of the melting ice formed spillways which deposited the sand and gravel released from the melting ice.

Medway Creek was the drainage channel of the "Lucan Moraine".

cont'd. /2 ...

3. FIELD AND LABORATORY WORK:

The investigations were carried out by means of a core drill machine adapted for soil sampling. The work comprised of four sampled boreholes.

In granular soils, samples were taken by means of a 2" O.D. split barrelled spoon. The dimensions of the spoon sampler and the energy used in driving it, conform to the requirements of the Standard Penetration Test.

The split spoon samples were visually examined in the field and representative samples were brought to the laboratory for further testing.

The logs of the boreholes and their locations are shown on Drawing No. F-59-9A, attached under Appendix I.

4. SOIL TYPES ENCOUNTERED:

The investigations at the site revealed the following subsoil conditions:

The top material, about 10 ft., is a granular deposit of silty sand and gravel. Underlying this top material is a layer of dense silty, sandy clay till with pebbles.

4.1) Silty Sand and Gravel:

This top deposit is made up of granular material and varies in depth from 9' to 12'. The grain size distribution curve indicates that the material is made up of particles ranging in size from silt to gravel. Below 4 ft., this deposit is in a dense state of compaction.

4. SOIL TYPES ENCOUNTERED: (cont'd.) ...

4.2) Silty Clay with Sand and Gravel (Glacial Till):

This material immediately underlies the upper layer of sand and gravel and was observed in all boreholes. The lower contact was not penetrated. The grain size distribution curve indicates a range of particle sizes varying from clay silt to pebbles. The matrix is mainly silty clay. The material in the layer has been reworked and has a grey colour. The boreholes were advanced about 20 ft. into the layer and the Standard Penetration Test results indicate that the consistency of the matrix may be classified as hard.

5. DISCUSSION AND RECOMMENDATIONS:

The subsoil at the site consists of a granular deposit overlying a dense till layer. Conditions are favourable for founding the new bridge on spread footings.

The Standard Penetration Test results indicate that below elevation 925 ft., the subsoil is in a very dense state (average 58 blows per foot). Calculated on this basis, the subsoil's safe bearing pressure for 6 ft. wide footings is about 3.5 T.S.F. This value incorporates a safety factor of 3 and safeguards against more than one inch settlement of the structure.

It is recommended to found the footings at or below elevation 925 ft. with a safe bearing pressure of 3.5 T.S.F.

At times of high water level, the existing footings are partly submerged by water and a slight scouring action at the corners

cont d. /s ...

5. DISCUSSION AND RECOMMENDATIONS: (cont'd.) ...

can be observed. This indicates the necessity for some form of scour protection.

During the investigation the ground water level was found in the boreholes to vary from elev. 925.5' in B.H. #3 to elev. 929.0' in B.H. #2. As the recommended footing level is below elev. 925.0' dewatering of the excavations will most probably be necessary. Sheet piling driven approximately 12" below the lower footing level and into the dense till stratum, should prove suitable for this purpose; however, other methods may be used. The choice of the dewatering procedure (if at all necessary) will depend on the ground water level during actual construction.

6. SUMMARY:

The subsoil at the site consists of granular top material underlain by a dense glacial till layer.

It is recommended to found the new structure on spread footings at or below elevation 925.0'. A safe bearing pressure of 3.5 Tons/sq.ft. can be used for design purposes. Protection of footings against scour has to be carried out. Dewatering of the excavation during footing construction will most probably be necessary.

7. MISCELLANEOUS:

The field work was carried out during February 11 to 28, 1959, under the supervision of Project Foundation Engineer, V. Korlu. All the lab. testing was done by the Materials & Research Section.

July 1961. REPORT PREPARED BY:

.....*V. Korlu*.....
V. Korlu, Project Foundation Engr.

REPORT APPROVED BY:

.....*A. C. Starnac*.....
A. C. Starnac, Supervising Fdn. Engr.

APPENDIX I.

SUMMARY OF FIELD & LABORATORY TESTS

JOB 59-9

W.P. 150-59

HOLE NO.	SAMP NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
1	S1	3'-4.5'	Fine to coarse sand and gravel.	45	8.1	-	-	-	-	
	S2	6'-7.5'	" " " "	80	-	-	-	-	-	
	S3	8'-9.5'	" " " "	37	7.8	-	-	-	-	
	S4	10'-11.5'	Silty clay, sand, and gravel (Till)	58	11.0	10.8	19.6	-	148.5	
	S5	18'-19.5'	" " " "	55	15.2	13.4	24.4	1700	144.2	
	T6	24'-26'	" " " "	63	14.6	-	-	4520	139.0	
2	T1	3'-5'	Sandy silt some fine fine gravel.	4	23.1	-	-	-	141.7	
	T2	6'-8'	Clayey silt, sand and gravel.	44	15.8	-	-	-	123.5	
	S3	9'-10.5'	Silty clay, sand, and gravel (Till)	40	11.5	12.5	20.8	-	146.5	
	S4	14'-15.5'	" " " "	74	14.6	-	-	-	142.0	
	S5	18'-19.5'	" " " "	87	14.7	-	-	-	138.5	
	S6	25'-26.5'	" " " "	50	10.2	-	-	-	152.2	
	S7	30'-31'	" " " "	54	11.6	-	-	-	-	
3	T1	3'-5'	Clayey silt sand and gravel	23	27.4	-	-	1180	125.0	
	T2	6'-8'	Gravelly sand, some silt.	31	6.8	-	-	-	132.0	
	T3	9'-11'	Gravelly sand, some silt.	45	-	-	-	-	-	
	S4	14'-15.5'	Silty clay sand and gravel (Till)	47	10.9	-	-	-	148.5	

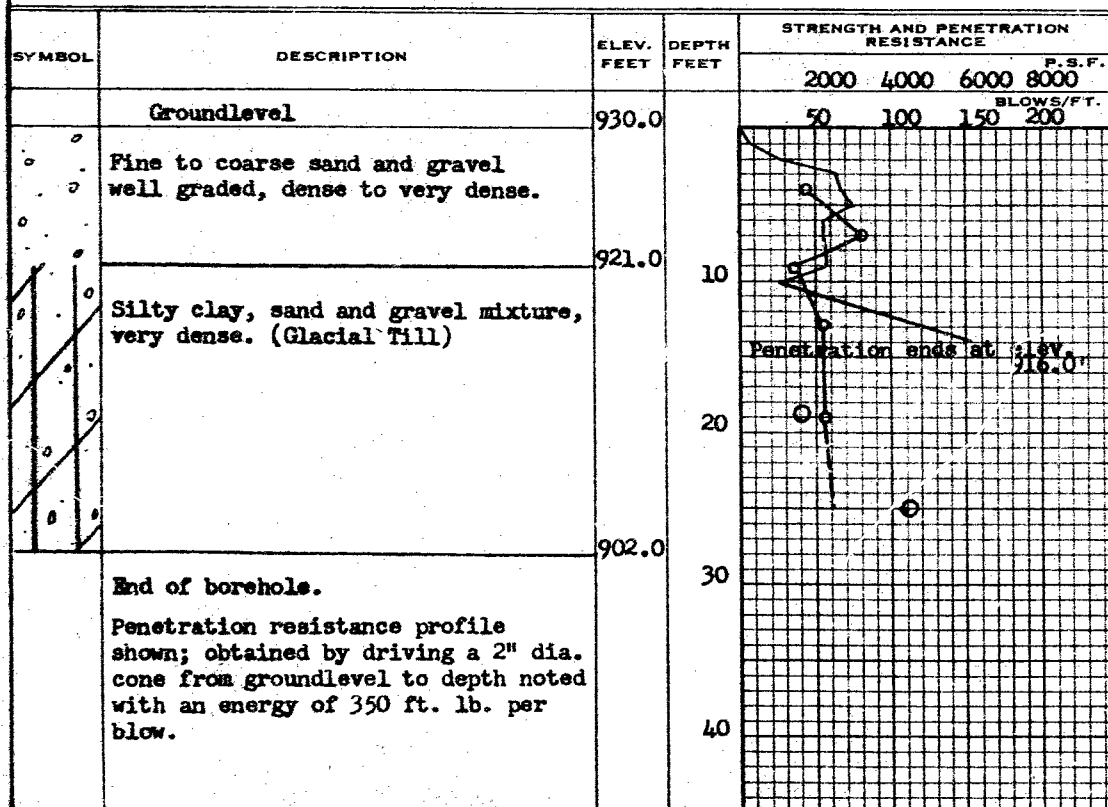
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

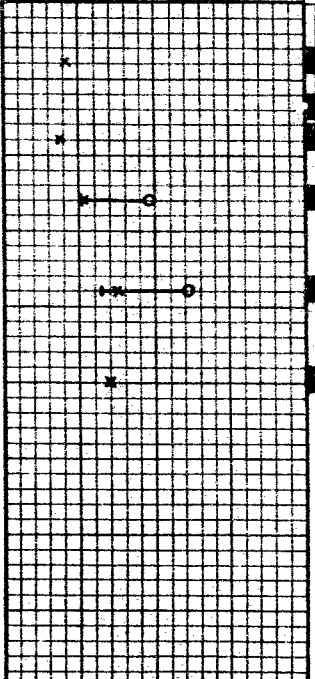
W.P. 150-59 BORE HOLE NO. 1
 JOB P-59-9 STATION 450+20 (35' Rt.)
 DATUM Geodetic COMPILED BY B.K.
 BORING DATE Feb. 11/59 CHECKED BY V.K.

2" DIA. SPLIT TUBE _____
 2" SHELBY TUBE _____
 2" SPLIT TUBE _____
 2" DIA. CONE _____
 2" SHELBY _____
 CASING _____

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) _____ O
 VANE TEST (C) AND SENSITIVITY (S) _____ +
 NATURAL MOISTURE AND LIQUIDITY INDEX _____ LI
 LIQUID LIMIT _____ X
 PLASTIC LIMIT _____



CONSISTENCY			SAMPLE	NATURAL UNIT WT P.C.F.
MOIST. CONTENT- % DRY WT.				
10	20	30		
			SS1	-
			SS2	-
			SS3	-
			SS4	148.5
			SS5	144.2
			TW6	139.0

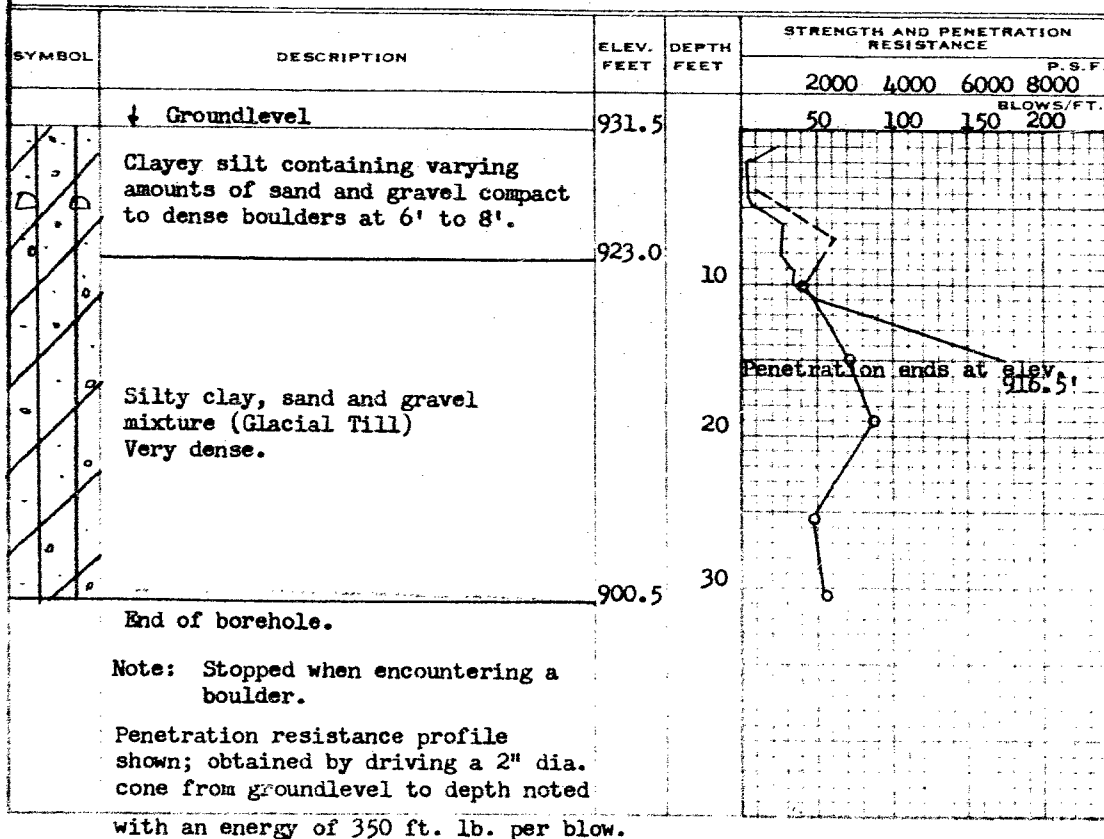
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MATERIALS AND RESEARCH SECTION

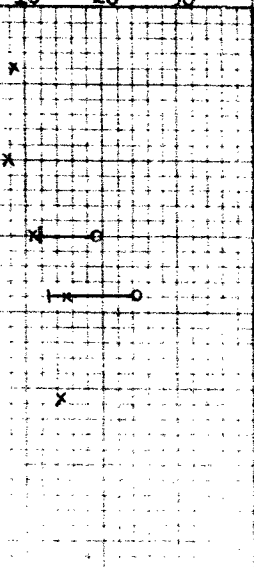
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 JOB F-59-9 STATION 449+07 (30' Rt.)
 DATUM Geodetic COMPILED BY B.K.
 BORING DATE Feb. 7/59 CHECKED BY V.K.

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 2" SHELBY
 CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Q_u)
 VANE TEST (C) AND SENSITIVITY (S)
 NATURAL MOISTURE AND LIQUIDITY INDEX
 LIQUID LIMIT
 PLASTIC LIMIT



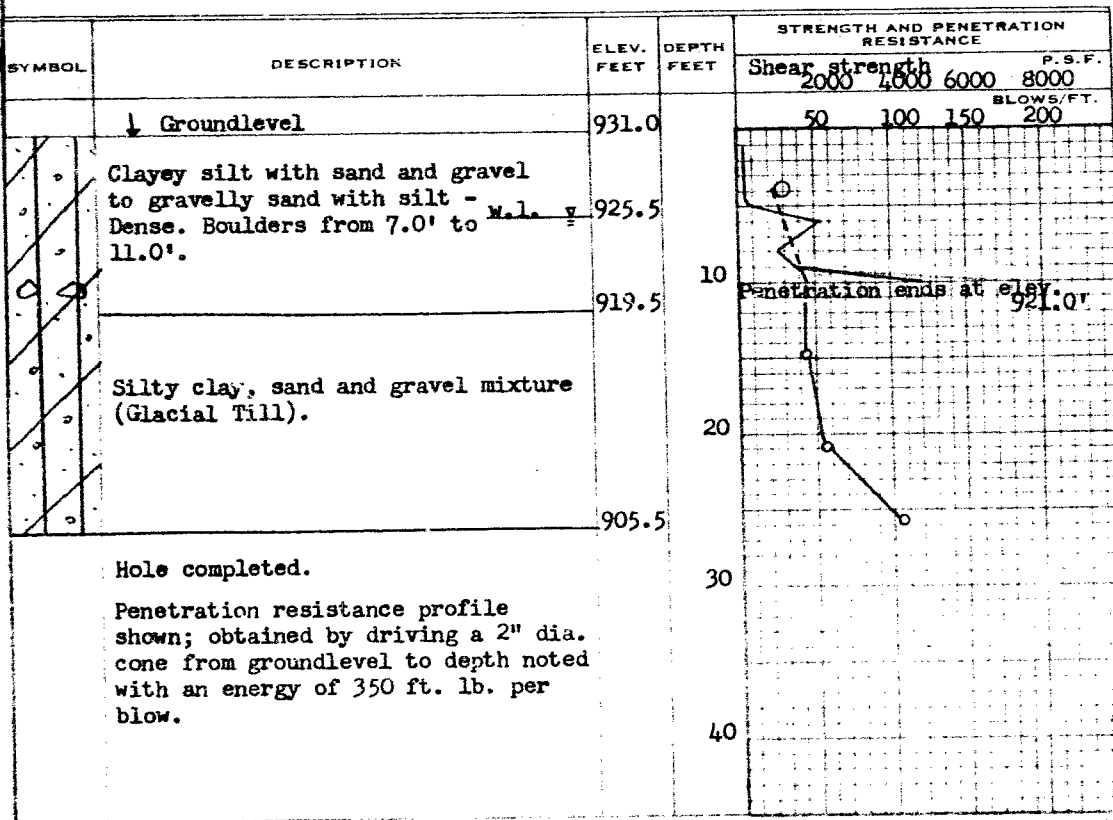
CONSISTENCY		SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT - % DRY WT.			
10	20	30	
			
		TW1	141.7
		TW2	123.5
		SS3	146.5
		SS4	142.0
		SS5	138.5
		SS6	152.2
		SS7	-

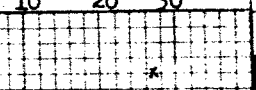

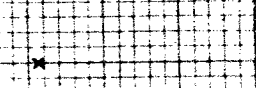
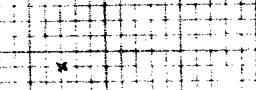
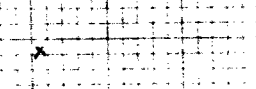
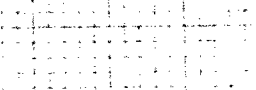
DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

W.P. 150-59 BORE HOLE NO. 3
JOB E-59-9 STATION 448+90 (40' Lt.)
DATUM Geodetic COMPILED BY B.K.
BORING DATE Feb. 24/59 CHECKED BY V.K.

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) — O
VANE TEST (C) AND SENSITIVITY (S) — +
NATURAL MOISTURE AND LIQUIDITY INDEX — LI
LIQUID LIMIT — X
PLASTIC LIMIT — I



CONSISTENCY			SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT - % DRY WT.				
10	20	30		
			TW1	125.0
			TW2	132.0
			TW3	-
			SS4	148.5
			SS5	144.5
			SS6	149.5

