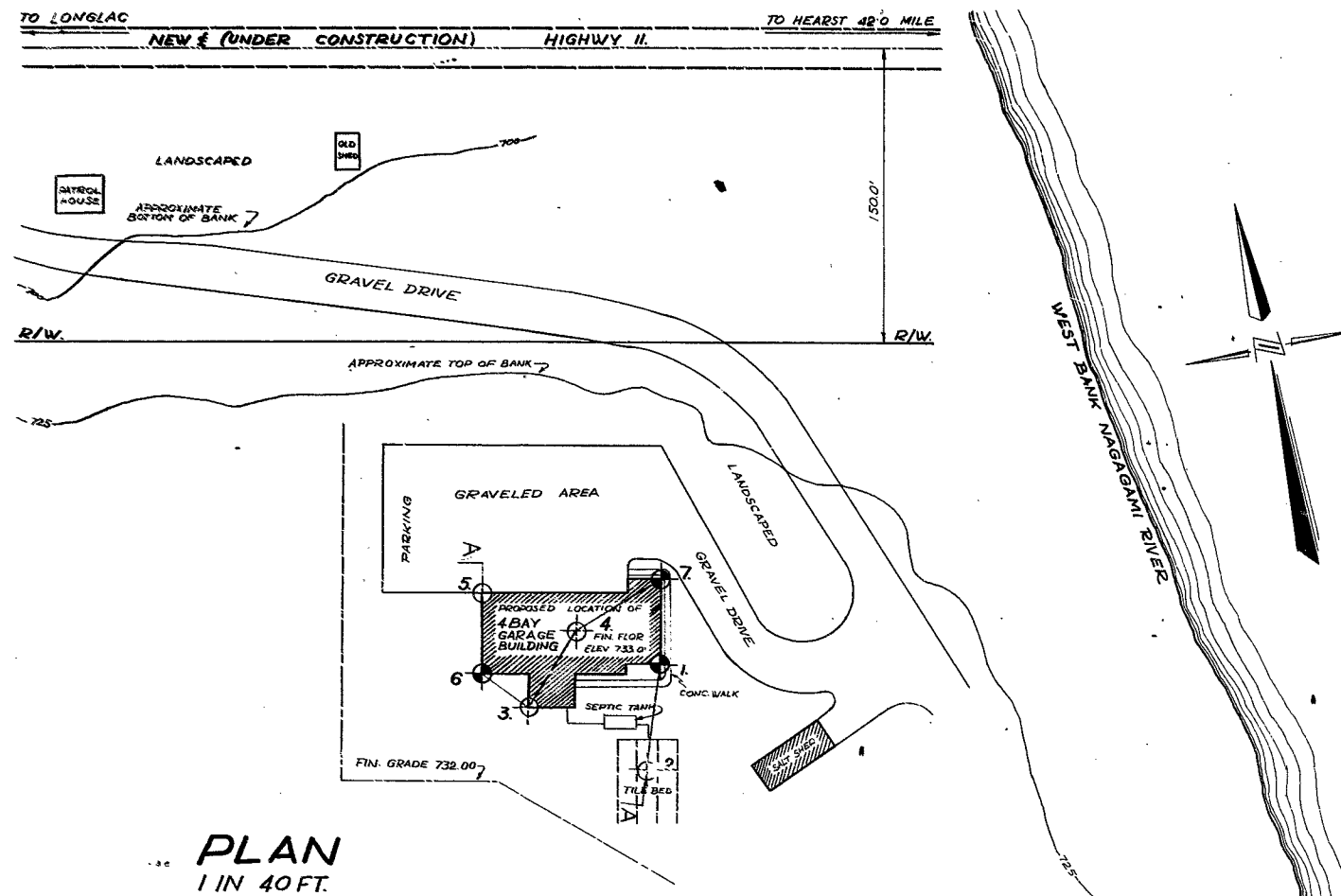
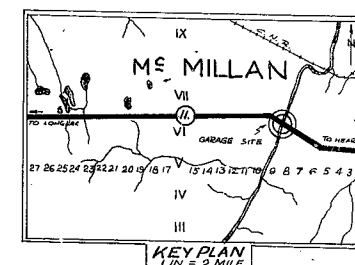
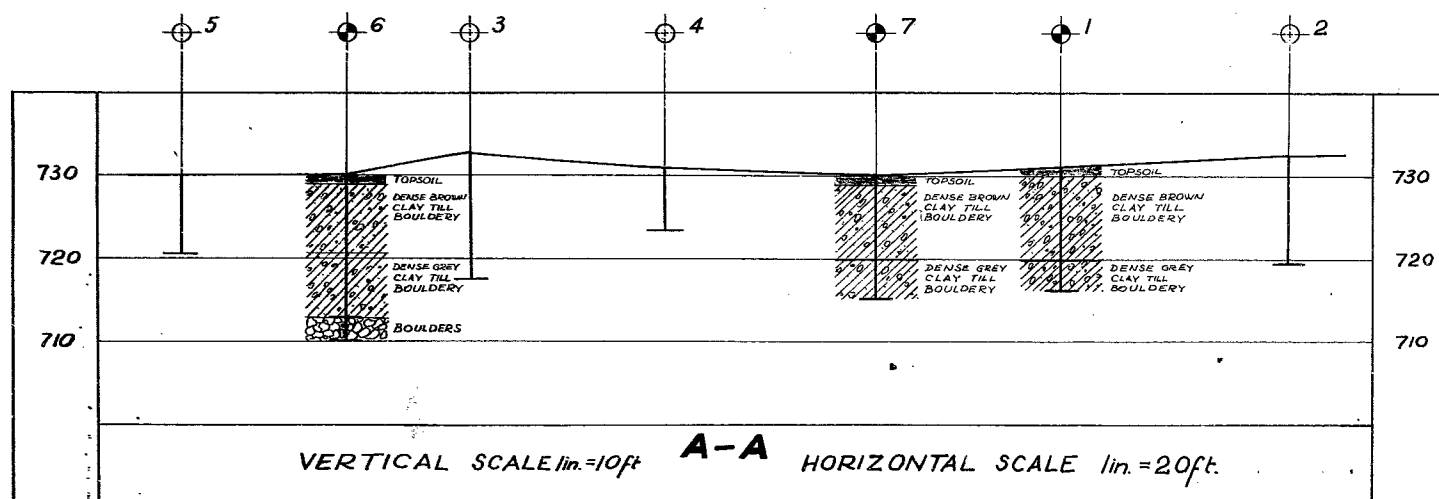


# 59-F-44  
Hwy. #11  
4-BAY GARAGE  
SITE  
NAGAGAMI R.





PLAN  
1 IN 40 FT.



LEGEND			
BORE & PENETRATION HOLE			
PENETRATION HOLE			
HOLE NO.	ELEVATION	STATION	DISTANCE FROM E
1	731.0	SEE PLAN	SEE PLAN
2	732.5	"	"
3	732.5	"	"
4	731.3	"	"
5	730.0	"	"
6	730.0	"	"
7	730.0	"	"

- 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

PROPOSED GARAGE SITE  
NAGAGAMI RIVER

SHOWING POSITIONS & ELEVATIONS OF HOLES

HWY. 11 DISTRICT 16 COUNTY COCHRANE  
TOWNSHIP MILLAN LOT 8 CON. VI  
LOCATION 42.0 MILE WEST OF HEARST (APPROX)

DRAWN BY: T. SEGURARY CHECKED BY: W.P.  
DATE 19 JUNE 1959 APPROVED BY: F-59-44A  
SCALE AS SHOWN

28-16 Conference

Mr. F. E. Cavell,

July 10, 1959.

Superintendent of Buildings.

Re: Foundation Investigation  
for 4 Bay Garage Site,

Materials & Research Section.

Nagasaki River, Hwy. 11, District 16.

Attention: Mr. J. Hamilton.

This memorandum accompanies our report on a foundation investigation recently completed at the above noted site.

Reference to the contents of this report shows that the proposed garage site is underlain by a stratum of dense glacial till. It has been recommended that spread footings be used to support the structure. A safe permissible bearing pressure of at least 8 tons/sq. ft. can be used for footings founded at Elev. 724' or below (i.e., 5 - 8 feet below existing ground surface.

If we can be of further assistance in connection with foundation considerations at this site, please contact our office.

K.P.

LSC/mtf  
Encl.

L. S. Soderman,  
PRINCIPAL SOILS & FOUNDATIONS ENGINEER.

cc: Messrs. F. E. Cavell  
H. D. McMillan  
W. A. Tregaskes  
C. Tackaberry  
S. H. Jones  
E. H. Saint  
Foundation Section ✓  
Gen. Files

# FOUNDATION INVESTIGATION

for

4-Bay Garage Site, Nagagami River,  
Hwy. 11 - District 16.

---

## INTRODUCTION:

A field investigation was carried out to determine the bearing value of the subsoil for supporting the foundations of the proposed garage located at Hwy. No. 11 and Nagagami River crossing in Cochrane District.

The field work started on May 15, 1959 and was completed on May 18, 1959.

## FIELD AND LABORATORY WORK:

The investigation was carried out by means of a core drill machine adapted for soil sampling. Three sampled boreholes and seven dynamic cone penetration profiles were carried out. Due to the granular nature of the subsoil intersected, only disturbed samples were recovered by means of a 2" O.D. split spoon sampler. The dimensions of this spoon sampler and the energy used in driving it, conform to the requirements of the Standard Penetration Test.

The laboratory work consisted of classification of the soil and determining the moisture content. The results have been summarized in Table No. 1 attached to this report. The locations and elevations of the boreholes are shown in the attached Drawing No. F-59-44A.

cont'd. / 2...

### SUBSOIL FINDINGS:

The explorations at the site revealed that under the topsoil the material is basically glacial till. It is made up of sandy, silty clay with boulders up to 6 inches in diameter. The upper 10 ft. has been oxidized to a brown colour. Standard Penetration tests carried out during sampling, gave average "N" values varying from 30 to 70 blows.

### FOUNDATION CONSIDERATIONS:

Reference to Table No. 1 shows that the subsoil is competent to provide bearing value for perimeter strip footing foundation support.

At about Elevation 724 feet, or below, strength and compressibility characteristics of the subsoil are such that for minimum 2-ft. wide footings, an allowable bearing value of 2 t.s.f. can be used. This will incorporate a safety factor of 3.

The differential settlement consequent upon application of this bearing pressure, is not expected to exceed one inch.


### SUMMARY AND RECOMMENDATIONS:

- (1) Subsoil conditions at this site consist of a shallow veneer of topsoil overlying dense glacial till. The till stratum is essentially a heterogeneous composite of silt and sand containing some gravel sizes and a low percentage of clay binder.
- (2) In-situ standard penetration tests show the till layer to have a high relative density. "N" values ranged from 30 blows/ft. to 70 blows/ft.

cont'd. /3 ...

SUMMARY AND RECOMMENDATIONS: (cont'd.) ...

- (3) It is recommended that spread footings to support the structure be founded at or below elevation 724' - i.e., 5 to 6 feet below existing ground surface. The safe permissible bearing pressure at this depth is considered to be 2 tons/sq. ft. Excavations for footings will be sensibly dry; if seepage into the excavations does occur, the inflow will be of minor quantities, only.
- (4) Access roads and parking areas should consist of at least 24 inches of granular material. This is to be made up of 18 inches of G.B.C. class 'B' material, topped with 6 inches of G.B.C. class 'A'. If paving is to be carried out, a minimum thickness of 4 inches of HL-4 is recommended.
- (5) A 6-inch diameter water well has been drilled at this site.

  
V. Korlu,  
FOUNDATION ENGINEER.

APPENDIX I.



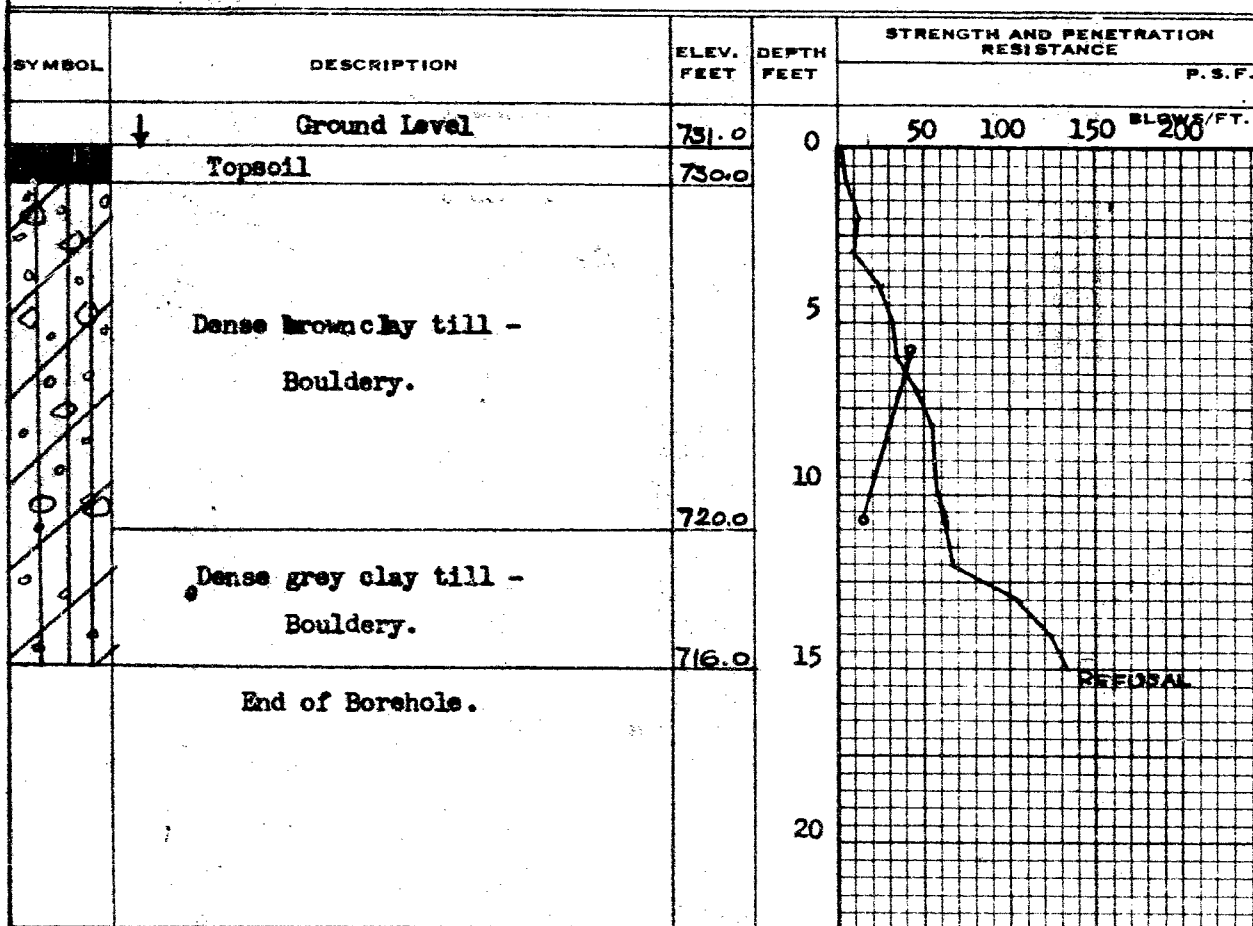
**DEPARTMENT OF HIGHWAYS - ONTARIO**  
**MATERIALS AND RESEARCH SECTION**

W.P. None BORE HOLE NO. 1a  
 JOB F 59-44 STATION (See Drawing)  
 DATUM 731.0' COMPILED BY B.K.  
 BORING DATE May 15/59 CHECKED BY A.L.

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.		
	S 1	
	S 2	

Borehole No. 1a

DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS AND RESEARCH SECTION

W.P. \_\_\_\_\_ None \_\_\_\_\_ BORE HOLE NO. \_\_\_\_\_ 2 \_\_\_\_\_  
 JOB \_\_\_\_\_ F 59-44 \_\_\_\_\_ STATION \_\_\_\_\_ See Drawing \_\_\_\_\_  
 DATUM \_\_\_\_\_ 732.5' \_\_\_\_\_ COMPILED BY \_\_\_\_\_ B. K. \_\_\_\_\_  
 BORING DATE \_\_\_\_\_ May 15/59 \_\_\_\_\_ CHECKED BY \_\_\_\_\_ A. L. \_\_\_\_\_

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) _____	+ <sup>s</sup>
NATURAL MOISTURE AND	
LIQUIDITY INDEX _____	LI
LIQUID LIMIT _____	X
PLASTIC LIMIT _____	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
↓	Ground Level	732.5	0	50	100 150 200
			5	BLOWN FOR 6"	
			10	Refused @ Elev 719.5'	
			15		
			20		

CONSISTENCY		SAMPLE	NATURAL
MOIST. CONTENT- % DRY WT.			UNIT WT. P.C.F.

**Borehole No. 2**

## OFFICE REPORT ON SOIL EXPLORATION

W.P. ----- None ----- BORE HOLE NO. ----- 3 -----  
 JOB ----- E 59-44 ----- STATION ----- See Drawing -----  
 DATUM ----- 732.5' ----- COMPILED BY ----- B. K. -----  
 BORING DATE ----- May 15/59 ----- CHECKED BY ----- A. L. -----

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 (G) AND SENSITIVITY (S)	---	+ <sup>2</sup>
NATURAL MOISTURE AND		
LIQUIDITY INDEX	---	LI
LIQUID LIMIT	---	X
PLASTIC LIMIT	---	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Ground Level	732.5	0	50	100 150 200 <small>BLOWS/FT.</small>
			5		
			10		
			15		
			20		

RECEIVED AT 10  
Elev. 717.5'

[illegible]

**Borehole No. 3**

DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS AND RESEARCH SECTION

W.P. --- None --- BORE HOLE NO. --- 4 ---  
 JOB --- F 59-44 --- STATION --- See Drawing ---  
 DATUM --- 731.0' --- COMPILED BY --- B. K. ---  
 BORING DATE --- May 15/59 --- CHECKED BY --- A. L. ---

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 _____	X
LIQUID LIMIT _____	
PLASTIC LIMIT _____	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
					P.S.F.
	↓ Ground Level	731.0	0	50 100 150 200	BLOWS/FT.
			5		
			10		
			15		
			20		

GIRALANK FOR 5'

Refined to Elev. 726.5'

[illegible]

**Borehole No. 4**

## MATERIALS AND RESEARCH SECTION

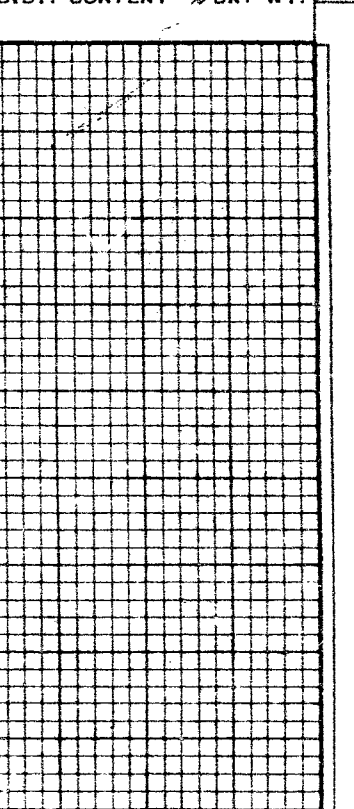
BOBING DATE May 16/59 CHECKED BY A. L.

2 SHELBY \_\_\_\_\_  
CASING \_\_\_\_\_

## LEGEND

LIQUID LIMIT \_\_\_\_\_  
PLASTIC LIMIT \_\_\_\_\_

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Ground Level	730.0	0	50	100
				150	200
				BLOWS/FT.	
			5		
			10	REFUSAL AT 9.2'	
				Refusal @ Elev 721	
			15		
			20		

CONSISTENCY		NATURAL UNIT WT. P.C.F.
MOIST. CONTENT - % DRY WT.	SAMPLE	
		

**Borehole No. 5**

OFFICE REPORT ON SOIL EXPLORATION

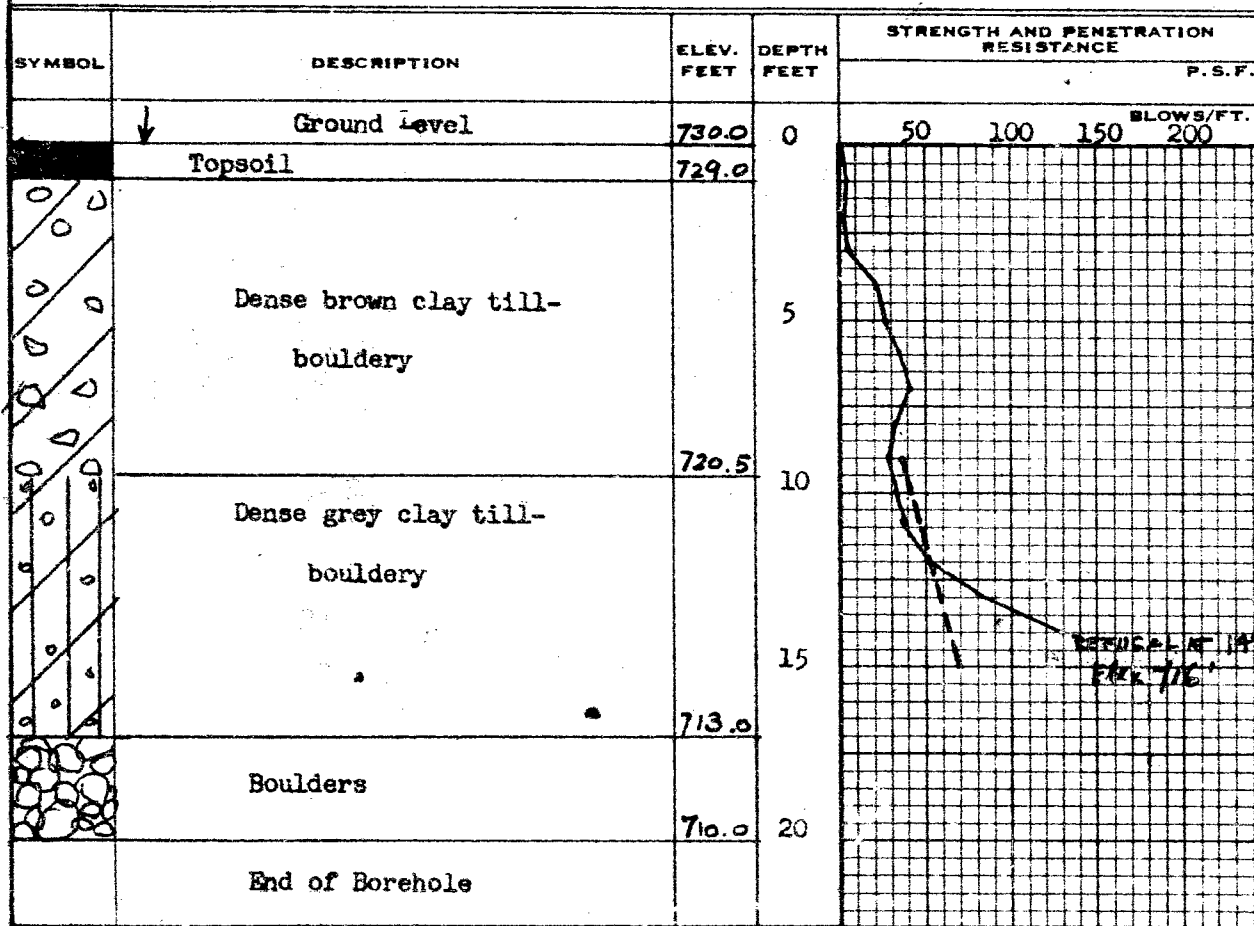
**DEPARTMENT OF HIGHWAYS - ONTARIO**  
**MATERIALS AND RESEARCH SECTION**

W.P. None BORE HOLE NO. 6  
 JOB F 59-44 STATION See Drawing  
 DATUM 730.0' COMPILED BY B. K.  
 BORING DATE May 16/59 CHECKED BY A. L.

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

**LEGEND**

1/2 UNCONFINED COMPRESSION ( $Q_u$ ) 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.		
	S1	
	T2	
	T3	

Borehole No. 6

# DEPARTMENT OF HIGHWAYS - ONTARIO

## MATERIALS AND RESEARCH SECTION

W.P. None BORE HOLE NO. 7  
 JOB P 59-44 STATION See Drawing  
 DATUM 730.0' COMPILED BY B. K.  
 BORING DATE May 18/59 CHECKED BY A. L.

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

### LEGEND

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

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P. S. F.	BLOWS/FT.
	↓ ground level	730.0	0		50 100 150 200
	Topsoil	729.0			
	Dense brown clay till- bouldery	720.0	5		
	Dense grey clay till- bouldery	715.0	15		
	End of borehole		20		

CONSISTENCY	SAMPLE	NATURAL UNIT WT. P. C. F.
MOIST. CONTENT - % DRY WT.		
	SS1	
	SS2	