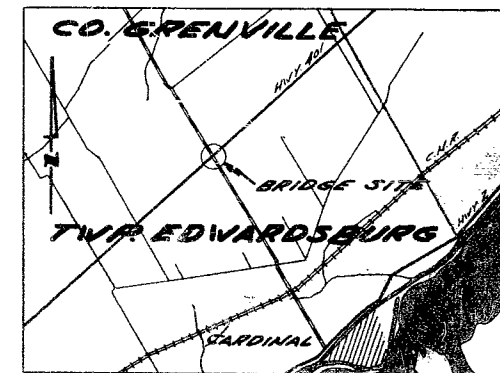
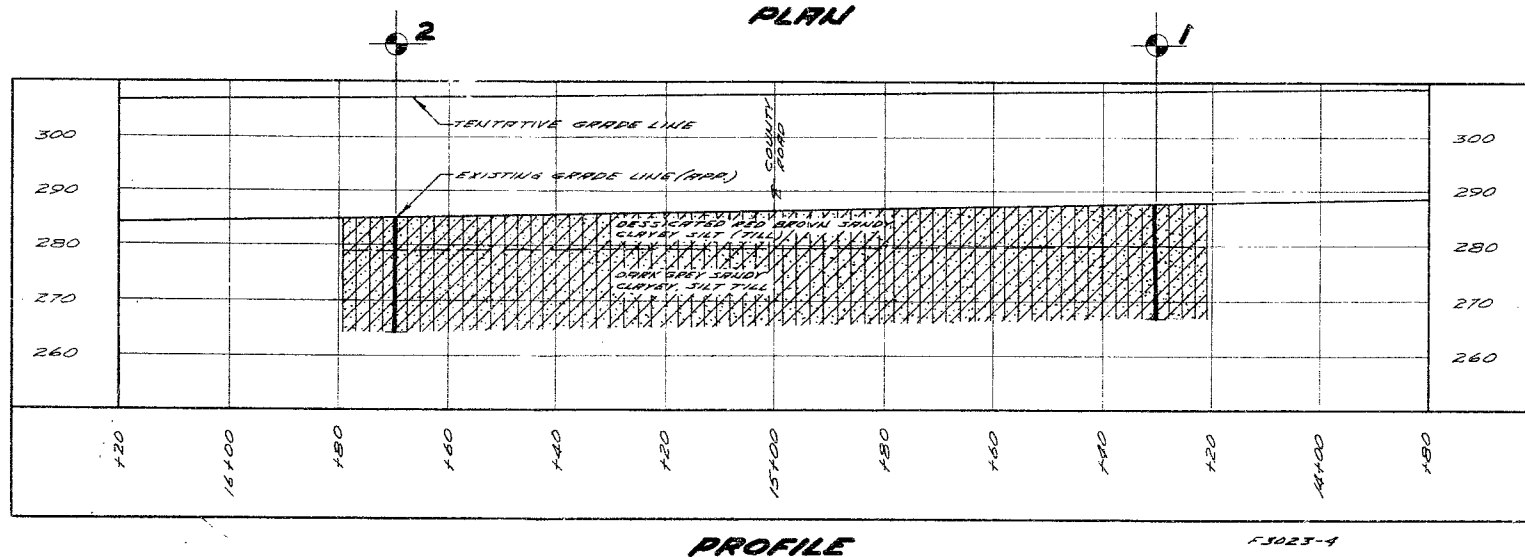
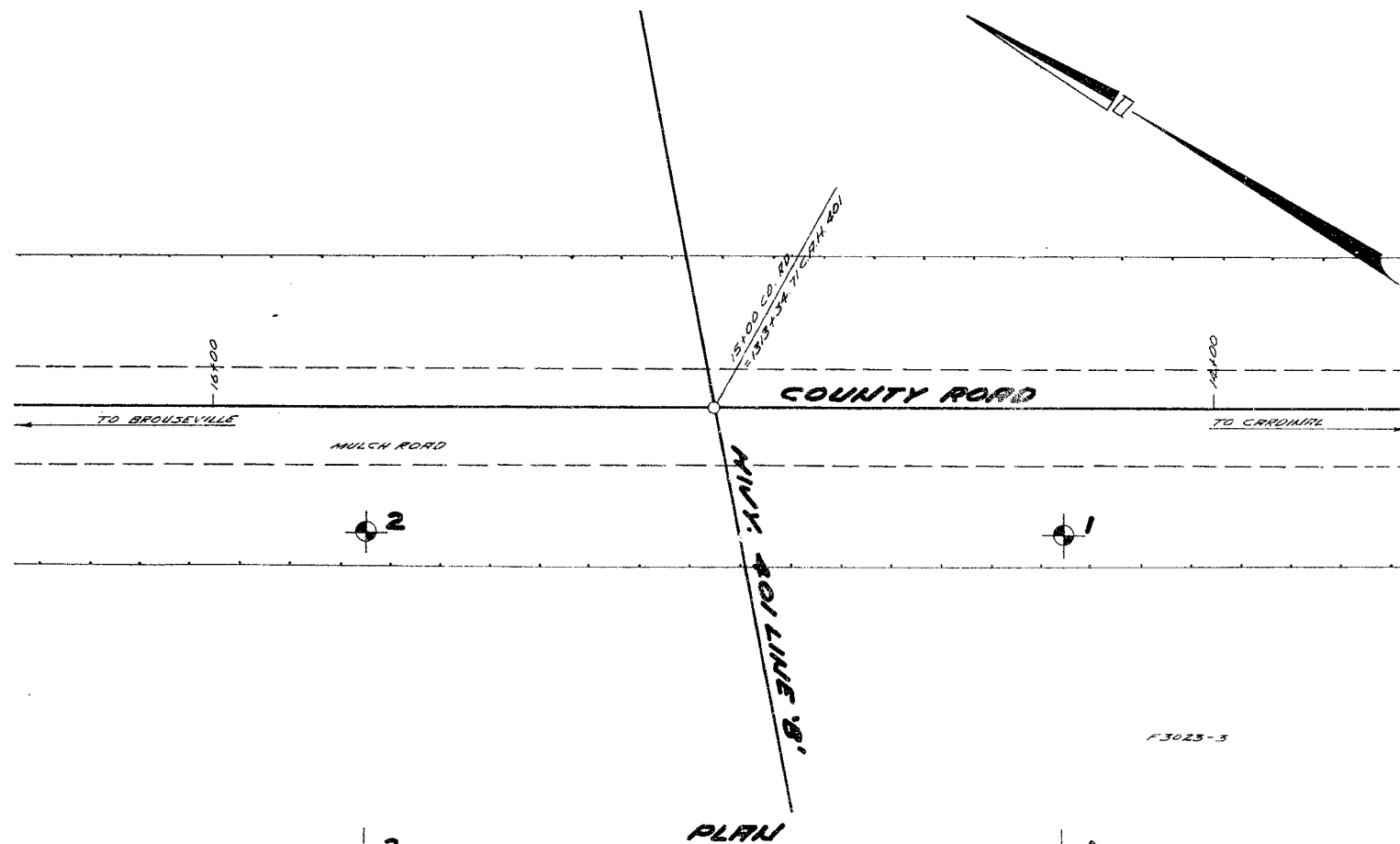


#60-F-28

W.P. #132-59

Hwy #401

EDWARDSBURG



KEY PLAN  
SCALE 1 IN. = 1 MI.

### LEGEND

BORE & PENETRATION HOLE

HOLE NO	ELEVATION	STATION	DISTANCE FROM E
1	287.5'	14+30	25' LT.
2	285.0'	15+70	25' 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

## COUNTY ROAD PROPOSED CROSSING

SHOWING POSITIONS & ELEVATIONS OF HOLES

HWY. 401 LINE 'B' - DISTRICT 9	COUNTY GRENVILLE
TOWNSHIP EDWARDSBURG	LOT 46.1 CON. II
LOCATION R.R. 2 MI. N. OF CARDINAL	
DRAWN BY: T. MELLORS	CHECKED BY: J. H.
DATE: 3 MAY 1960	APPROVED BY: J. H.
SCALE: 1 IN. = 20 FT.	W.P. 132-59 DRAWING NO. 60F-28A



Edwardsburg Bridge No. 8  
County Road No. 22  
Hwy. 401 District #9

W.P. 132-59

Recently the foundation section reviewed several bridge projects constructed in Ottawa District regarding the estimated pile length. Mr. Grebski of Bridge Office was aware of this fact and requested the foundation section to review the recommended pile length at the abutment location of the above-mentioned bridge.

The foundation section have again reviewed the subsoil conditions and observed that the site is generally underlain by very dense till, 'N' values in excess of 100 blows/ft. In the past several bridges were constructed in this area with subsoil conditions similar to the above mentioned site where small displacement piles penetrated only 8 to 10 ft. into the natural ground. This section now proposes two alternative types of foundations at the abutment location for the above-mentioned structure.

- 1) Spread footings on compacted fill.
- 2) Reduce the number and length of piles, as originally designed.

For example 10 BP42 steel 'H' piles driven to some 10 ft. into the natural ground should provide a design load of 40 tons/pile.

However, pile driving should be controlled in the field by the use of Hiley Formula.

The above recommendations were discussed with Mr. Grebski of Bridge Office on April 26th/63.

*M. Devata*  
M. Devata  
Senior Foundation Engineer.

Mr. A. Stermac,  
Principal Foundations Engineer,  
Room 107, Lab. Bldg.,  
Downsview, Ontario.

Mr. M. Stoyanoff  
Bridge Contract Engineer  
Bridge Division

C. S. Grebski

May 2, 1963.

Edwardsburg Bridge #8  
At County Rd. No. 22,  
Hwy. #401 Dist. #9,  
W.P. 132-59.

60-F-28

The Materials and Research Section have reviewed the foundations of this bridge, and have recommended we revise the piling at the abutments.

The existing plans show 40 - 12 BP 53 piles 30 feet long. The plans will be revised to show 26 - 10 BP 42 piles 22 feet long, with a design load of 40 tons.

According to K. Howe the 12 BP 53 piles had already been ordered and delivered but have subsequently been used for another project. The 10 BP 42 piles are available from Central Stores in lengths of 45 feet.

Kindly revise the D4 accordingly.

CSG:go  
c.c. A. Stermac  
K. Howe

C. S. Grebski,  
Sr. Project Design Engineer.

Mr. A. M. Toye,  
Bridge Engineer.  
Materials & Research Section.

May 10, 1960.

SOIL INVESTIGATION -- by D.H.  
O.

Attention: Mr. S. McCombie.

Re: Hwy. 401 and County Road between Lots 6 & 7,  
(Con. II), Twp. of Charlottenburgh, Dist. 9.  
W.P. 132-59 -- W.J. 60-F-28 -- Plan No. F-3023-3  
Profile No. F-3023-4 -- Station 1313 + 34.7.

A subsoil investigation has been carried out at the above mentioned site. From the field findings the subsoil stratification is as follows:-

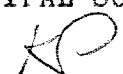
- 0' - 7.5' - desiccated red brown sandy silty clay, clayey silt till, with pebbles and boulders.
- 7.5' - 20' - Dark grey clayey silt, silty clay till with pebbles and boulders.

The subsoil intersected is hard glacial till. This till is a fairly uniform sandy silty clay with pebbles and occasional large boulders. The upper 7 - 8 ft. has changed to a brown colour due to oxidation. The material is dry and no ground water was observed in the holes.

It will be convenient to support the proposed structure on spread footings, at about elevation 281 ft. At this elevation, a safe bearing pressure of 3 t.s.f. can be used.

VK/MdeF

cc: Messrs. A. M. Toye (2)  
H. A. Tregaskes  
D. G. Ramsay  
J. Ford  
L. E. Walker  
J. E. Gruspier  
Foundations Office  
Gen. Files.

L. G. Soderman,  
PRINCIPAL SOILS & FOUNDATIONS ENGR.  
Per: 

(V. Korlu,  
PROJECT FOUNDATION ENGR.)

Mr. A. M. Toye,  
Bridge Engineer.  
Materials & Research Section.

May 18, 1960.

SUBSOIL INVESTIGATION -- by  
D.H.O.

Attention: Mr. S. McClellie.

Re: Hwy. 401 and County Road between Lots 6 & 7,  
(Con. II), Twp. of Charlottenburgh, Dist. 9.  
W.P. 132-59 -- W.J. 60-F-28 -- Plan No.F-3023-3  
Profile No. F-3023-4 -- Station 1313 + 34.7.

Following our memo of May 10th, outlining subsoil  
conditions at the above site, enclosed please find the summary  
of field & laboratory tests, bore hole logs, and Drawing No.  
60-F-28A, relating to our investigation at this location.

VK/MdeF  
Encls. (4)

cc: Messrs. A. M. Toye (2)  
H. A. Tregaskes  
D. G. Ramsay  
J. Ford  
L. E. Walker  
J. E. Crispier  
Foundations Office✓  
Gen. Files.

L. G. Soderman,  
PRINCIPAL SOILS & FOUNDATIONS ENGR.

Per:

(V. Korlu,  
PROJECT FOUNDATION ENGR.)



# SUMMARY OF FIELD & LABORATORY TESTS

JOB 60-F-28

W.P. 132-59

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'-3.8'	Dessicated red brown sandy, clayey, silt till.	160-10	9.9	-	-	-	-	
	S2	6'-6.5'	" " "	>100-6"	9.1	-	-	-	139.0	
	S3	9'-9.5'	Grey sandy, clayey silt till.	>100-6"	7.6	-	-	-	-	
	S4	15'-15.5'	" " " " "	>100-6"	8.4	-	-	-	145.0	
	S5	20'-20.5'	" " " " "	>100-6"	6.6	-	-	-	-	
2	S1	3'-4'	Dessicated red brown sandy, clayey, silt till.	77	8.4	-	-	-	-	
	S2	6'-7.5'	" " " "	101	8.3	-	-	-	-	
	S3	10'-11.5'	grey sandy, clayey silt till.	117	8.2	-	-	-	141.0	
	S4	15'-16.5'	" " " " "	>100-6"	7.2	-	-	-	143.0	
	S5	20'-21'	" " " " "	>100-6"	7.9	-	-	-	-	
			S denotes split spoon sample							

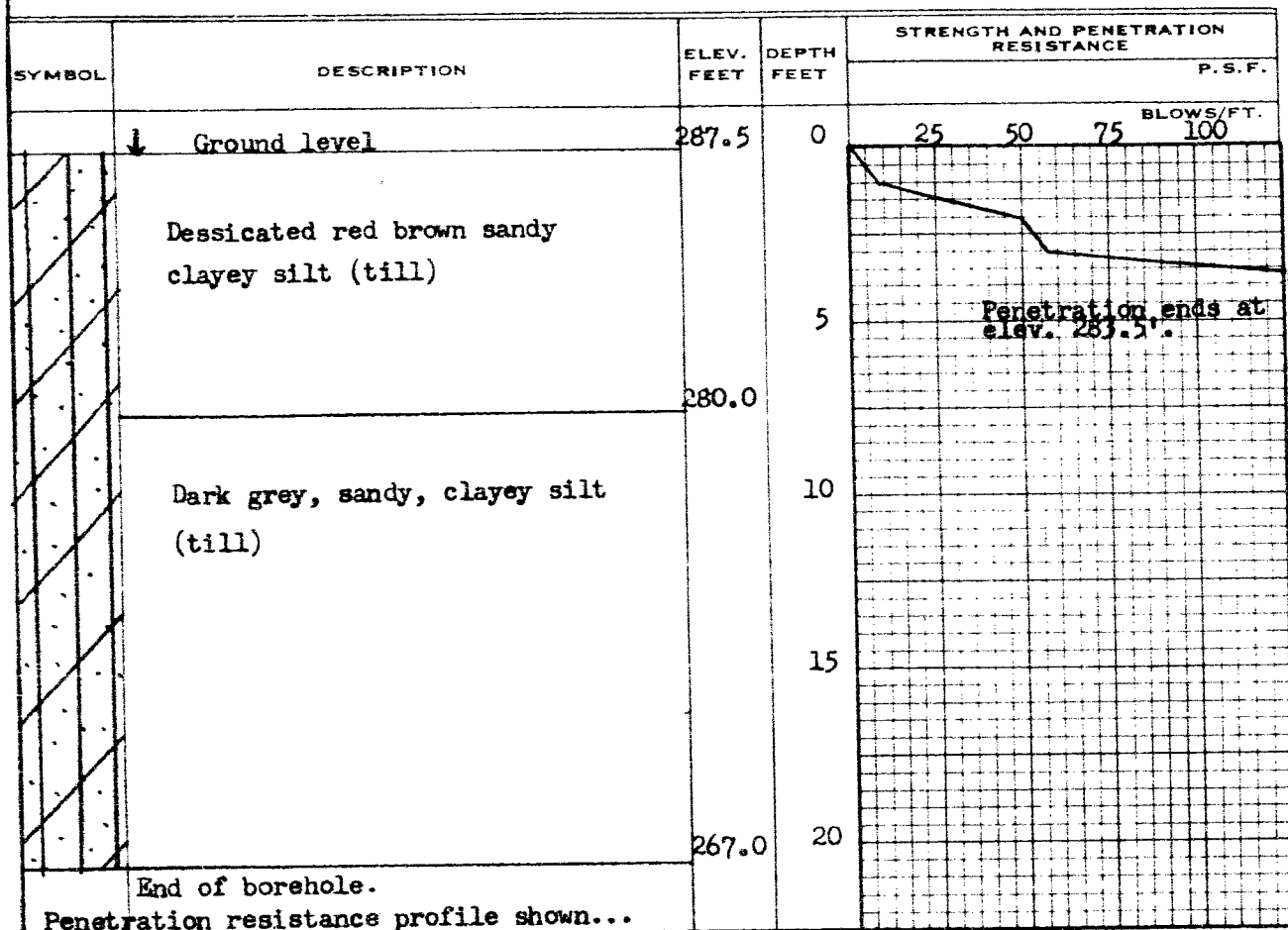
# DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

W.P. 132-59 BORE HOLE NO. 1  
JOB 60-F-28 STATION 14+30 (25' Lt.)  
DATUM 287.5' COMPILED BY B.K.  
BORING DATE Mar. 16/60 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.			
5 10			

# DEPARTMENT OF HIGHWAYS - ONTARIO

## MATERIALS AND RESEARCH SECTION

W.P. 132-59 BORE HOLE NO. 2

JOB 60-F-28 STATION 15+70 (25' Lt.)

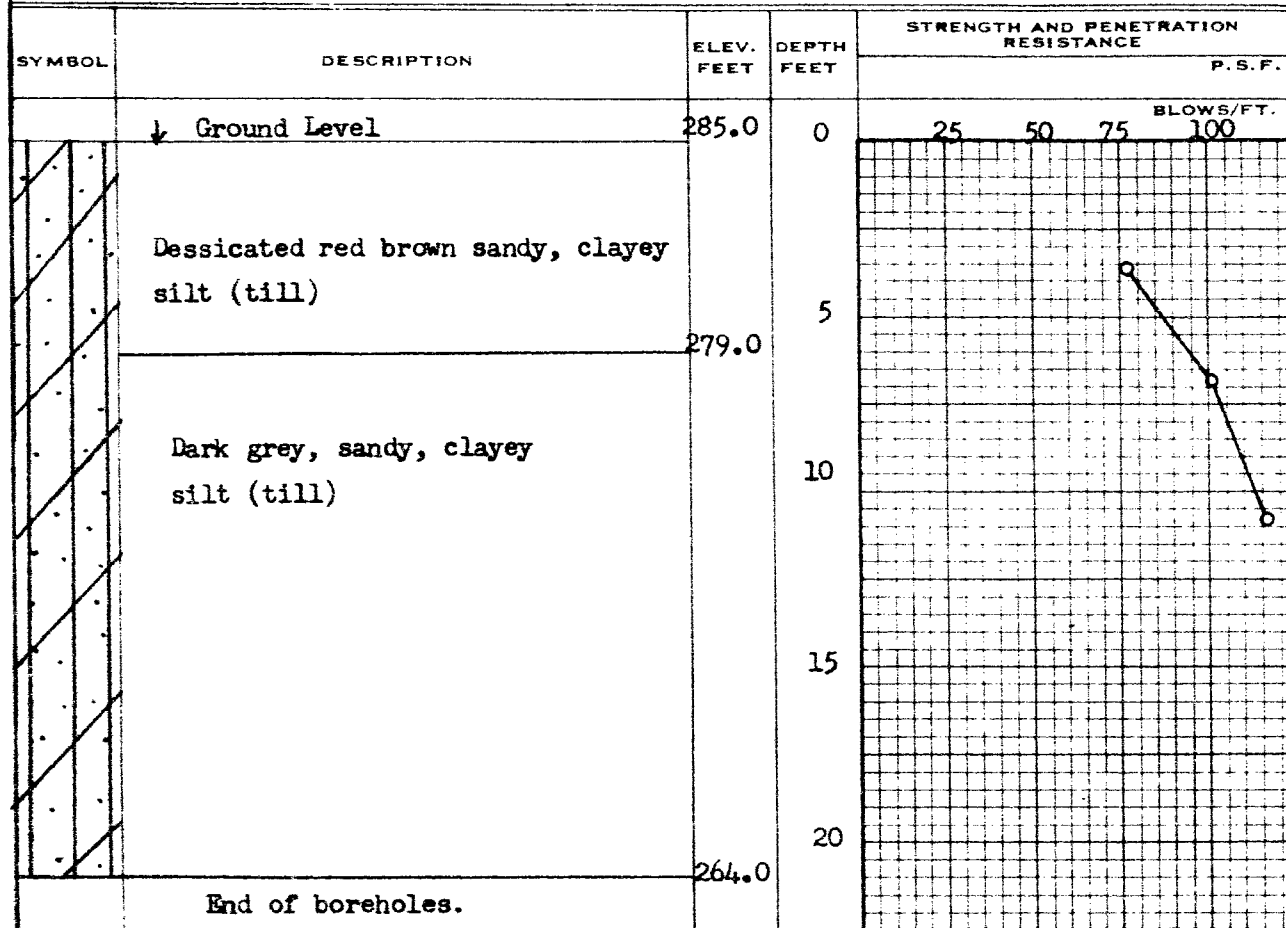
DATUM 285.0' COMPILED BY B.K.

BORING DATE Mar. 18/60 CHECKED BY Y.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 X  
LIQUID LIMIT  
PLASTIC LIMIT



CONSISTENCY	SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT - % DRY WT.		
5 10		
	S1	-
	S2	-
	S3	141.0
	S4	143.0
	S5	-

Mr. A. M. Teye,  
Bridge Engineer.

Materials & Research Section.

May 10, 1960.

SOIL INVESTIGATION -- by D.H.O.

Attention: Mr. S. McCombie.

Re: Hwy. 401 and County Road between Lots 6 & 7,  
(Con. II), Twp. of Charlottenburgh, Dist. 9.  
W.P. 132-59 -- W.J. 60-F-28 -- Plan No. F-3023-3  
Profile No. F-3023-4 -- Station 1313 + 34.7.

A subsoil investigation has been carried out at the above mentioned site. From the field findings the subsoil stratification is as follows:-

0' - 7.5' - desiccated red brown sandy silty clay,  
clayey silt till, with pebbles and  
boulders.

7.5' - 20' - Dark grey clayey silt, silty clay till  
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VK/MdeF

cc: Messrs. A. M. Teye (2)  
H. A. Tregaskes  
D. G. Ramsay  
J. Ford  
L. E. Walker  
J. E. Gruspier  
Foundations Office ✓  
Gen. Files.

L. G. Soderman,  
PRINCIPAL SOILS & FOUNDATIONS ENGR.  
Per:

*[Signature]*  
for (V. Korlu,  
PROJECT FOUNDATION ENGR.)



ONTARIO  
DEPARTMENT OF HIGHWAYS

60-F-28

Memo to Mr. L. G. Soderman Date May 20, 1960  
Principal Soils & Fdn. Eng. Subject Re: W.P. 132-59, Hwy. 401, Rd.  
From Kingston Regional Office Alice Between Lots 6 & 7  
Twp. Edwardsburg

Attention: Mr. V. Korlu

Attached are the logs of the borings carried out at the above site by the power auger as you requested. The borings were located as per the accompanying sketch.

A handwritten signature in cursive script, reading "J. E. Gruspier".

J. E. Gruspier  
Regional Soils Engineer

JEG/jfj

c.c. B. F. Jordan  
File

Handwritten initials "mak" in a cursive script.

LOGS OF BORINGS

W.P. 132-59

Road Allowance Between Lots 6 & 7

Hwy. 401

Twp. of Edwardsburg

Hole A                      Ø of Intersection

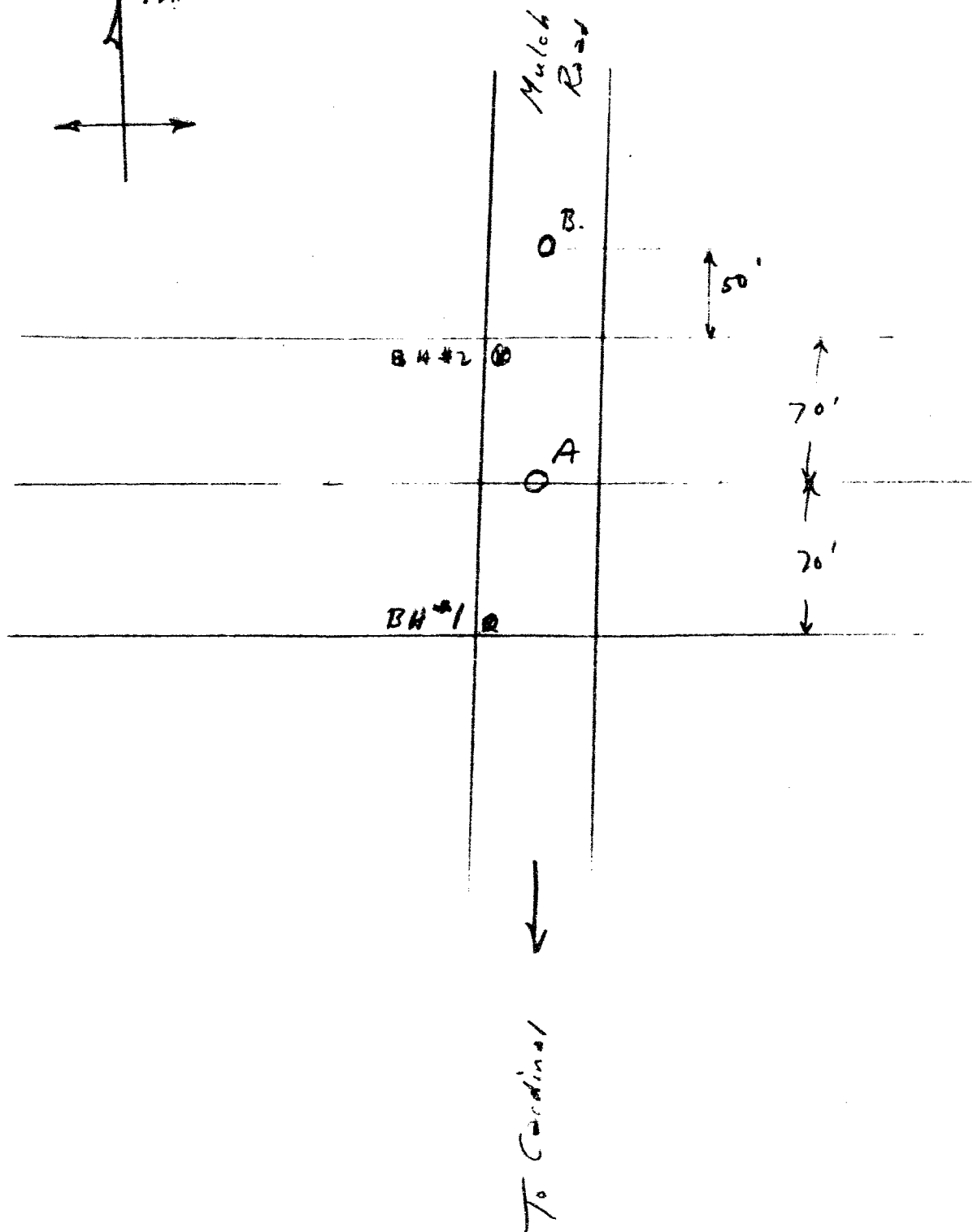
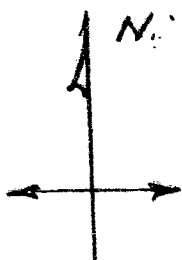
0 - 12"	Crushed Stone
12"- 10'	Br. Fi. Sa. Lo. Till
10'- 12'6"	Gr. Fi. Sa. Lo. Till
12'6" /	NFP      B/R

Hole B                      120' North of Ø Intersection

0 - 12"	Crushed Stone
12"- 11'	Br. Fi. Sa. Lo. Till
11'- 13'	Gr. V. Fi. Sa. Lo. Till
13' /	NFP      Probably B/R

Note:      These holes were placed as shown on the sketch accompanying.  
The original ground surface was a great deal higher than the  
datum for the present holes.

Hwy 401. WP 132-59.





ONTARIO

DEPARTMENT OF HIGHWAYS

Bridge Division,  
July 21, 1960.

MEMORANDUM TO:

Mr. N. D. Smith,  
Foundation Section,  
Laboratory Bldg.,  
Downsview, Ontario.

RE: W.P. 132-59,  
Edwardsburg Twp. #8,  
Hwy. #401, District #9.

Enclosed is a print of the preliminary plan  
D 4622-P<sub>1</sub>, showing the type of structure proposed  
for the above location.

The pier footings are located as recommended  
in the soil report dated May 10, 1960.

The abutments are founded on H piles through  
the fill. They will be loaded to a maximum of  
40 Tons/pile. Would you determine whether or not  
these piles can be driven into the natural ground  
and to what depth they should go.

SMC/gs  
cc. J. Curtis.

*S. McCombie*  
S. McCombie,  
Bridge Planning Engineer.



Edwardsburg Bridge No. 8  
County Road No. 22  
Hwy. 401 District #9

60-4-28

W.P. 132-59

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The foundation section have again reviewed the subsoil conditions and observed that the site is generally underlain by very dense till, 'N' values in excess of 100 blows/ft. In the past several bridges were constructed in this area with subsoil conditions similar to the above mentioned site where small displacement piles penetrated only 8 to 10 ft. into the natural ground. This section now proposes two alternative types of foundations at the abutment location for the above-mentioned structure.

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However, pile driving should be controlled in the field by the use of Hiley Formula.

The above recommendations were discussed with Mr. Grebski of Bridge Office on April 26th/63.

*M. Devata*  
M. Devata  
Senior Foundation Engineer.