

#58-F-244-C

HWY. #401 E

CLARKE TWP. RD.

1 MI. W. OF

NEWCASTLE

BA 705

RACEY, MACCALLUM AND ASSOCIATES
LIMITED

58-F-2440

A COMPANY OWNED, DIRECTED AND OPERATED BY

Consulting Engineers
AND ASSOCIATED STAFF

MONTREAL



VANCOUVER

TORONTO

TORONTO DIVISION
27 CARLTON STREET

Reference: S-500/1-1049

14 February, 1958

Department of Highways,
280, Davenport Road,
TORONTO - Ontario.

Attention: Mr. J. C. McAllister

RE: BRIDGE SITE INVESTIGATION FOR HIGHWAY 401
OVERPASS, CLARK TOWNSHIP NO. 5, NEWCASTLE,
ONTARIO.

Dear Sirs,

The enclosed report presents the results of our site investigation at the above location.

We hope the report is satisfactory to you; if you have any questions about it do not hesitate to get in touch with us.

Thank you for this opportunity of being of service to you.

Yours sincerely,

P. B. M. Mack, P. Eng.

RM/YDP

Department of Highways of Ontario,
280, Bavenport Road,
Toronto - Ontario.

BRIDGE SITE INVESTIGATION FOR HIGHWAY
401 OVERPASS, CLARK TOWNSHIP RD. 5 -
MILLISTE - ONTARIO.

Reference: E-500/T-1019

Racey, MacCallum and Associates
Limited.

14 February, 1958

Reference: 2-500/1-1042

14 February, 1958

RE: BRIDGE SITE INVESTIGATION FOR HIGHWAY
 142 OVERTPASS, CLARK TOWNSHIP NO 5 -
 APPROXIMATELY ONE MILE WEST OF NEWCASTLE
 ONTARIO.

LOCATION OF THE SITE AND SCOPE OF THE REPORT :

The bridge site is located approximately one mile west of Newcastle, Ontario, between lots 32 and 33 in the Township of Clark, and is shown on Enclosure No 1.

This report covers the field investigation which was undertaken and gives the allowable bearing capacity at the proposed foundation depth. Comments are included concerning ground water conditions to be expected during excavation. Elevations are referred to the contour lines shown on the Department of Highways, Ontario, drawing H-3345-1, which were checked with the latest grade elevations given by the Port Hope Divisional Office.

FIELD INVESTIGATION AND THE LOCATION OF THE BORERHOLES :

The location of the investigation borerholes is shown on Enclosure No 2, and the engineering data for each borerhole is shown on Enclosures 3 - 6 inclusive. Reference to the Data Sheets indicates that below a depth of approximately 6 feet below existing ground surface the soil is extremely dense. Due to the granular nature of the soil below this depth, a 2-inch O.D. standard split spoon was used to obtain the samples, which indicated that the subsoil was very dense and of glacial origin. The soil is very similar in appearance to what are known as the "warm Scarborough beds" in Eastern Metropolitan Toronto, which characteristically possess a layering of silty sand and sandy silt with some sand seams. No true water table can be given since each predominantly sandy layer carries water at some period of the year. From the field results, however, it is thought probable that sand layers below a depth of 10 - 15 feet below ground surface are water bearing all year.

DISCUSSION OF THE RESULTS :

For a dense material such as that encountered at this site, the allowable bearing capacity may be taken to be 3 tsf, at which intensity of loading the settlements should not exceed one inch.

The site is located at almost the highest elevation in the immediate vicinity, and it is proposed to excavate

- 2 -

approximately 20 feet of soil to the proposed grade of Highway No 401 at this crossing. The existing gravel side road will be carried over Highway No 401 at an elevation 10 feet higher than at present. It is thought probable, therefore, that the water which is at this time to be found in the sandy strata at depths 10 to 20 feet below existing ground surface will drain away during the grading operations for Highway 401.

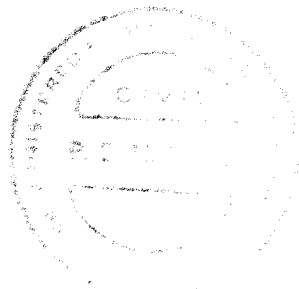
CONCLUSIONS :

1. The subsoil below a depth of 5 - 6 feet below existing ground surface is in a dense condition and may be assumed to have an allowable bearing capacity of 3 tsf. The settlements under this loading should not exceed one inch.

2. The grading for Highway No 401 will require approximately 20 feet of excavation. It is considered probable, therefore, that the water table which exists in the granular layers at this time will have drained away by the time Highway 401 has been taken to finished grade.

3. Some water may remain in the granular soil below the finished grade of Highway 401. It seems probable that such water, if it exists, will be contained in a pocket or bowl of relatively impervious material which will prevent drainage through to the finished Highway 401. Drainage for the excavations, if necessary, should not prove difficult.

P. E. M. Monk, P. Eng.,
P. E. M. Monk, P. Eng.,

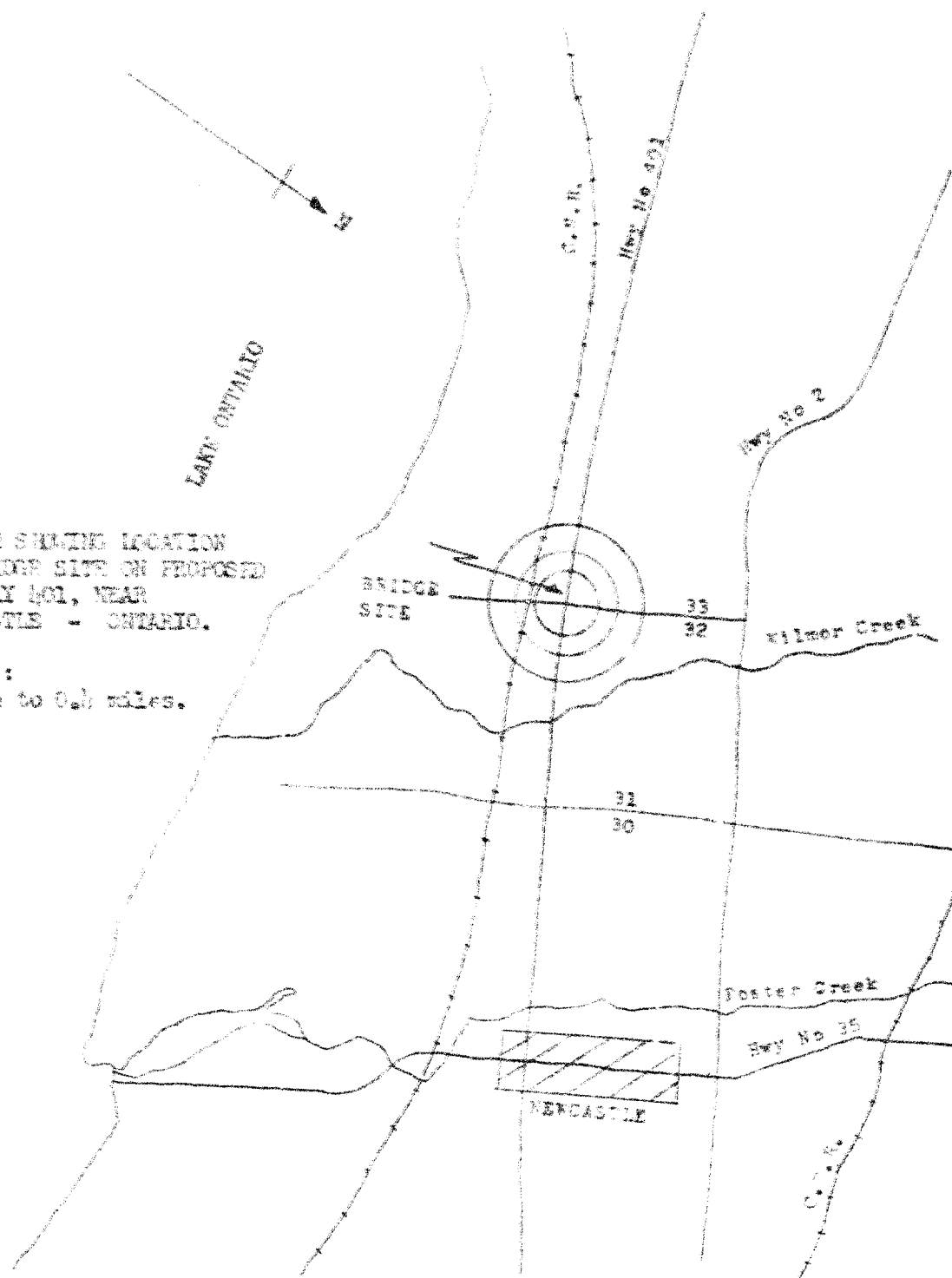


PER/IMP

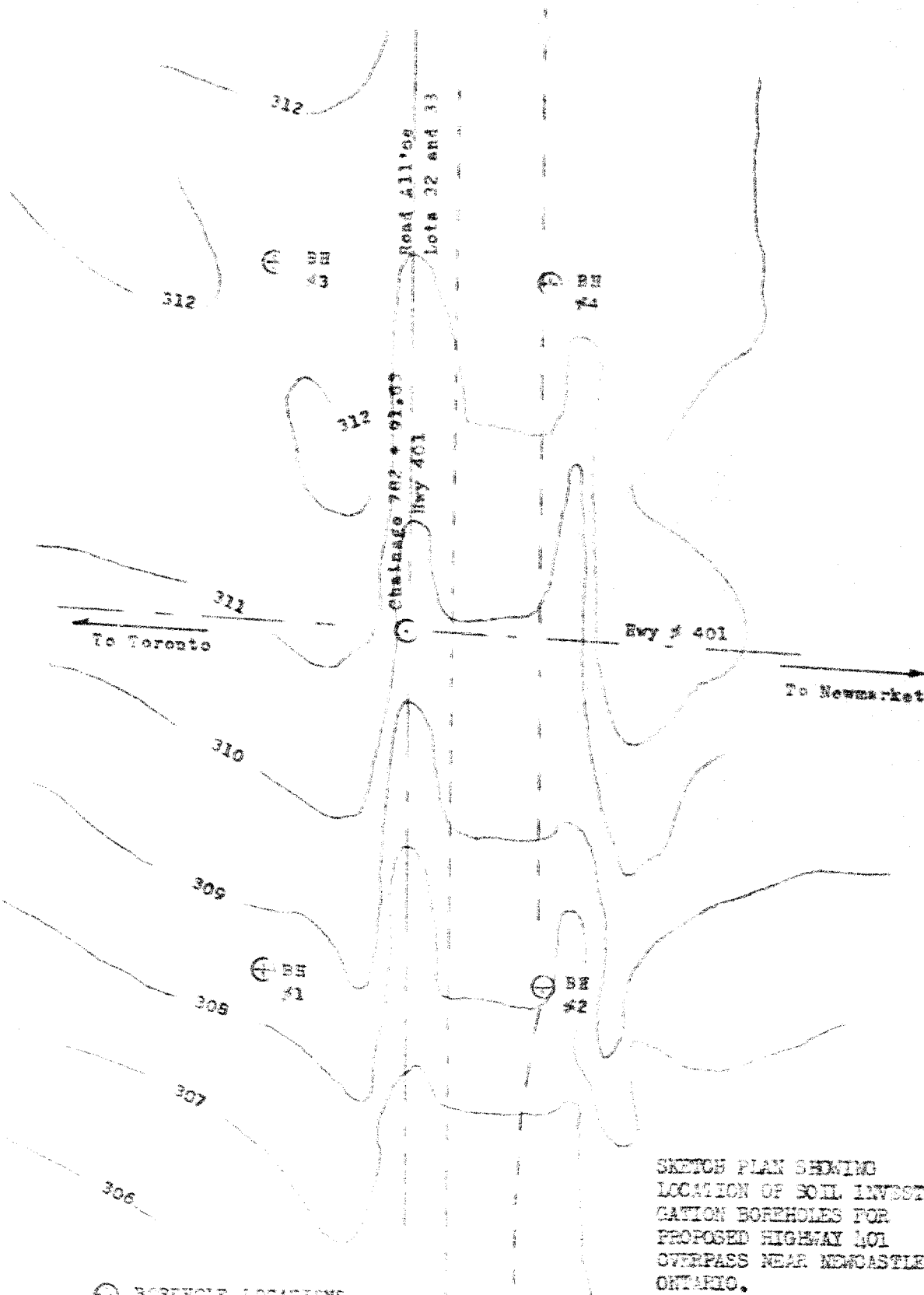
Page 8.

SKETCH SHOWING LOCATION
OF BRIDGE SITE ON PROPOSED
HIGHWAY 401, NEAR
NEWCASTLE - ONTARIO.

SCALE :
1 inch to 0.4 miles.



Prep. B. P.M.



⊕ BOREHOLE LOCATIONS

SKETCH PLAN SHOWING
LOCATION OF SOIL INVESTI-
GATION BOREHOLES FOR
PROPOSED HIGHWAY 401
OVERPASS NEAR NEWCASTLE
ONTARIO.

SCALE : 1 inch to 20 ft.

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Foundation Engineering Division

Engineering Data Sheet for Borehole: 1

Project **BRIDGE SITE INVESTIGATION HWY 101 OVERPASS,**
Location **WEST OF NEWCASTLE, ONTARIO.** **CLARETWP #51**

Hole Location See Enclosure No 1.

Hole Elevation and Datum: **308.5 Geodetic**Field Supervisor: **M.C.** Prep: **F.M.**

Drafter:

Checked:

Date:

LEGEND

Shear Strength (C)

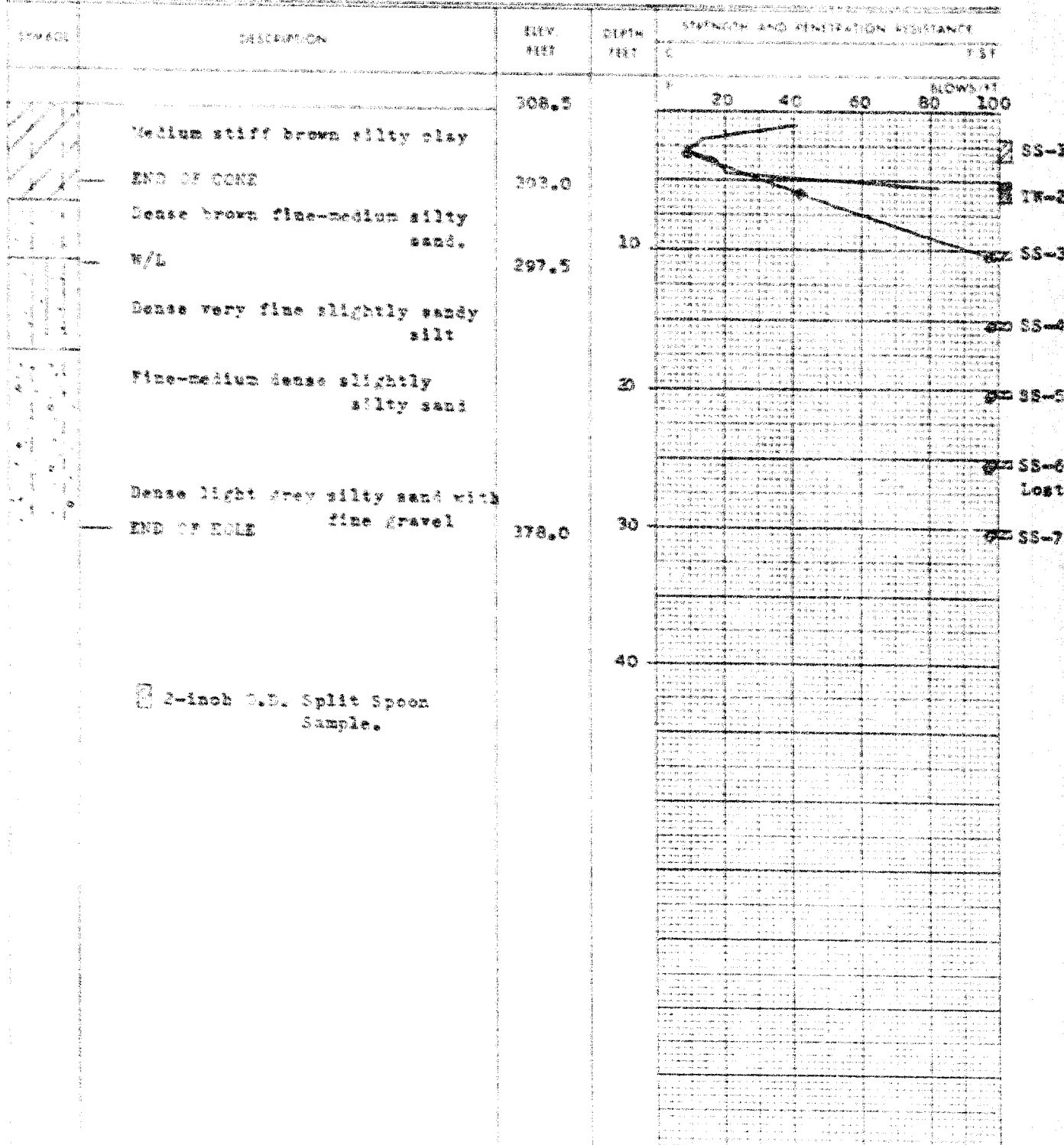
Unconfined Compression
Vane Test and sensitivity (S)

Penetration Resistance (P)

2" Split Tube

2" Dia. Cone

Logging



RACEY MacCALLUM AND ASSOCIATES LTD.

Foundation Engineering Division

Engineering Data Sheet for Borehole: 2

Project: BRIDGE SITE INVESTIGATION HWY 401 OVERPASS

Location: WEST OF NEWCASTLE, ONTARIO.

CLARKETWP # 5

Hole location: See Enclosure No 1.

Hole Elevation and Datum: 309.0

Field Supervisor: W.C. Prep: P.M.

Order:

Checked:

Date:

LOGS

Soil Strength (C)

Unconfined compression

Vane test and sensitivity (S)

Penetration Resistance (P)

1. Split tube

2. Tip Cone

Coring

DEPTH FEET	DESCRIPTION	ELEV. FEET	STRENGTH AND PENETRATION RESISTANCE				
			C	S	P	PSF	Blows/ft
		309.0					0 20 40 60 80 100
	Brown silty clay						SS-1
	Dense light brown silty sand with 1/2 inch gravel, large gravel at 8 feet						SS-2
10	Dense sandy silt with 1/2 inch angular gravel						SS-3
	Slightly clayey dense fine sand with fine gravel						SS-4
20							SS-5
							SS-6
	Dense medium-coarse gray sand						SS-7
30	END OF HOLE	278.5					
40							

RACEY MacCALLUM AND ASSOCIATES LTD.

Foundation Engineering Division

Engineering Data Sheet for Borehole

Project: BRIDGE SITE INVESTIGATION MAY 1961 OVERTASK

Location: WEST OF NEW BRIDGE, WYOMING. 'CLARK' NW 15'

Hole location: See Enclosure No 1.

Hole elevation and depth: 111.5 Geomatic

Field Supervisor: W.C. Prep: E.M.

Driller:

Checked:

Date:

LOG NO.

Soil Strength: 5

Unclassified penetration

Moisture test and description: 15

Penetration Resistance: 0

2" Split Tube

2" Dia. Cone

Coring

