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DEPARTMENT OF MINES
SOUTH AUSTRALIA

REPORT ON FOUNDATION TEST BORES
FOR HENLEY BEACH HIGH SCHOOL
(Second Report)

by

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SOILS GEOLOGY SECTION
GEOLOGICAL SURVEY

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G.S. 1484

D.M. 935/57

MICROFILMED

29th September, 1959

Department of Mines
South Australia

REPORT ON FOUNDATION TEST BORER
FOR PROPOSED HENLEY BEACH HIGH SCHOOL
(Second Report)

ABSTRACT

Open tube sampling in five borers entered stiff mottled brown silty clays at 26 to 35 feet, in the school grounds, extending to at least 50 feet. Overlying sediments were soft silty clays, clayey silts and unconsolidated sands. These stiff clays are expected to give effective support for foundation piling subject to the driving of a test pile.

INTRODUCTION

An initial examination of the site for the proposed new Henley Beach High School, was made by A. A. Gibson (See report 44/92 of 10/3/58). Three shallow test holes disclosed soft silty soils of low bearing capacity, considered liable to settlement under load, and inverted Tee beam footings were suggested.

Because of structural factors involved in the two storey high school design to be used, the Architect in Chief requested a further investigation to determine the feasibility of using driven piles for support. This testing was carried out in August, 1959. Five borers being required, the first three being drilled with a light percussion plant, with open tube samples taken over the full depth of each bore. The fourth and fifth borers were drilled with a larger plant, open tube samples being taken only in the stiff clays below the shallow sands and silts.

GENERAL GEOLOGY

The Manley Beach High School is located on Section 445, Hundred of Yatala, a few chains east of the coastal sand dunes at Manley Beach. The school grounds lie within Fenner's Lower Deltaic Plain, comprising part of the area known as the Head beds, which link the Patowalunga Creek with the Port River Estuary. The high water table problem formerly characteristic of the lower Torrens River in the Head beds area was overcome some years ago by construction of the Torrens Outlet Channel. A deep drain on the east side of the school site was designed to ensure low water table conditions in the immediate school area. The static water level at the time of the present investigation was six feet, but may be expected to rise somewhat after a wet winter season.

The general subsurface stratigraphy in the Manley Beach area is known from Metropolitan Water Supply bores in the vicinity, No. 80 being about 20 chains east of the school, by the Manley Beach road. This bore disclosed Recent to Pleistocene sands and sandy clays to 30 feet depth underlain by a sequence of clays extending to 142 feet. The test bores disclosed a similar sequence on the school site, soft unconsolidated sands and silty clays to clayey silts being cut to depths ranging from 26 to 35 feet. Below these sands, all five holes entered very stiff mottled brown and gray silty clays extending to the bottom of each bore. Similar clays are expected to extend to a depth of 100 feet or more, as indicated by deep water bores in the area.

The locations of the test bores are shown on the attached plan, while the accompanying sections show the sub-surface stratigraphy in each. Geological logs of these bores are appended. Penetration figures recorded for bores 1 to 3 are of comparative value only because of the light boring plant used. As a larger plant was used for bores 4 and 5, direct comparison with bores 1 to 3 is not possible.

FOUNDATION CONDITIONS

The purpose of the boring was to define the depth to which piles must be driven to meet firm support. The upper silts, sands and silty clays were for the greater part saturated with water, and were fairly soft to very soft or unconsolidated when taken from the sample tube. Such materials would offer little support either vertically or laterally, to piling. The mottled silty clays occurring below the sands are firm to quite stiff material, which may be expected to give good vertical and frictional support to driven piles. The actual depth to which piles must be driven can only be determined by driving of a test pile. However, these clays were at their shallowest depth in Bore 2, nearest the present buildings on the eastern side of the grounds. It is suggested that this would be the appropriate place for test piling, and for the siting of the new school buildings.

CONCLUSIONS

Test boring in the grounds of the Hanley Beach High School has disclosed soft unconsolidated sands, silty clays, and clayey silts underlain by stiff mottled brown silty clays at depths ranging from 26 to 35 feet. These clays are expected to extend to over 100 feet depth. It is recommended that test piling be driven near Bore 2 as the location likely to give shallowest, and therefore most economical foundation conditions. The water logged upper sands and silty clays to clayey silts are unlikely to give effective lateral support to piling, a point which may require consideration in foundation design.

PD:CEB
29/9/59


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DEPARTMENT OF MINES, ADELAIDE

PERCUSSION DRILL LOG

Locality: A. in C. Henley Beach H.S.

R.M. 955/57

Bore No: 1

Bore Serial No PD 340/60

Stratum: Yatala **Section** 445

Plan Reference S.W. Cor. of grounds.

Date Drilling commenced: 6/8/59 **Completed:** 14/8/59 **Driller** Robert

Logged by P. Dunlop

L00

From	Depth To	Penetration Depth Blows per ft.	Description
0'	3 1/2'	0-1 116 1-2 103 2-3 85	Fine light brown clayey silt, slightly micaceous
3 1/2'	5'	3-4 134 4-5 82	Dense black carbonaceous clay.
5'	13'	5-6 87 6-7 90 7-9 45 9-10 22 10-11 44 11-12 48 12-13 54	Fine grained light gray unconsolidated silt and sand.
13'	14'	13-14 46	Fine grained light gray clayey silt to silty clay.
14'	15'	14-15 58	Greenish gray to brown mottled clay.
15'	17'	15-16 122 16-17 48	Soft brown fairly stiff fine silty clay.
17'	23'	17-18' 52 18-19' 43 19-20' 51 20-21' 55 21-22' 40 22-23' 38	Fine brown clayey silt to silty clay.
23'	33'	23-24' 58 24-25' 62 25-26' 70 26-27' 85 27-28' 120 28-29' 134 29-30' 104 30-31' 92 31-32' 65 32-33' 136	Brown to light brown fine to medium grained clayey sand. Sand greenish clay at 26'. Extremely wet - 27-33'.
33'	40'	33-34' 98 34-35' 88 35-36' 90 36-37' 138 37-38' 198 38-39' 214 39-40' 220	Grading from fine silty clay to stiff finely silty brown clay with some gray mottling. Slightly micaceous, very stiff
40'	43'	40-41' 218 41-42' 298 42-43' 295	Brown fine grained stiff sandy clay, with some gray mottling.
43'	50'	43-44' 270 44-45' 356 45-46' 212 46-47' 110 47-48' 97 48-49' 197 49-50' 202	Brownish to reddish stiff sandy clay with some lime nodules, lime increasing with depth.

END OF BORE

DEPARTMENT OF MINES, ADELAIDE

PERCUSSION DRILL LOG

Project: A-12-C, Hanley Beach H.S. **D.M.** 933/57

Core No: 2

Core Serial No. PD 512/60

Number: Yatala **Section** 443

Plan Reference N.E. Cor. of grounds.

Date Drilling commenced 14/8/59

Date Drilling completed 19/8/59

Driller: K. Hubbert

Logged by P. Dunlop

LOG

Depth From To		Penetration Depth Blows per ft.		Description
0'	5'	0-1'	48	Brown to light gray fine grained slightly micaceous sand and silt. Slightly clayey.
		1-2'	26	
		2-3'	44	
		3-4'	32	
		4-5'	45	
5'	6'	5-6'	46	Dark gray to black carbonaceous clay.
		6-7'	29	
6'	7'	7-8'	22	Mottled reddish brown to gray clay with lime nodules throughout.
		8-9'	21	
7'	10'	9-10'	15	Dark gray finely silty clay, with occasional brown mottling. Soft when wet.
10'	13'	10-11'	30	Dark gray very soft finely silty clay with occasional mica flakes and brown mottling. Clay saturated.
		11-12'	28	
		12-13'	25	
13'	17'	13-14'	30	Very soft brown finely silty clay to clayey silt. Cores saturated when recovered but hard when dry.
		14-15'	25	
		15-16'	25	
		16-17'	52	
17'	26'	17-18'	95	Fine light gray to yellowish slightly clayey silt or sand, becoming more clayey at 24 ft.
		18-19'	120	
		19-20'	126	
		20-21'	147	
		21-22'	147	
		22-23'	158	
		23-24'	98	
		24-25'	168	
		25-26'	105	
26'	36'	26-27'	189	Brown to light brown stiff somewhat silty clay, with slight mica, and lime mottling. from 30 ft.
		27-28'	289	
		28-29'	392	
		29-30'	463	
		30-31'	305	
		31-32'	223	
		32-33'	120	
		33-34'	72	
		34-35'	211	
		35-36'	480	
36'	40'	36-37'	540	Mottled reddish-brown to brown to gray stiff silty clay, with lime nodules increasing with depth.
		37-38'	447	
		38-39'	425	
		39-40'	382.	

END OF BORE

DEPARTMENT OF MINES. ADELAIDE

PERCUSSION DRILL LOG

Project: A-42-C, Henley Beach
High School

Data 955/57

Bore No: 3

Bore Serial No. PD 565/60

Hundred: Yatala **Section:** 445

Plan Reference Centre of
Ground

Date Drilling Commenced: 19/8/59

Date Drilling completed: 24/8/59

Driller: K. Hubbert

Logged by: P. Dunlop

LOG

Depth From To		Penetration Depth Blows per ft.		Description
0'	2½'	0-1'	110	Mottled grey and yellow brown micaceous sandy clay.
		1-2'	114	
2½'	3'	2-3'	92	Mostly fine light brown slightly clayey sand.
3'	4'	3-4'	63	Brown sandy clay and fine sand.
4'	8'	4-5'	43	Mottled brown yellow brown and reddish-brown, sandy clay, with 3" carbonaceous band at 6'.
		5-6'	36	
		6-7'	42	
		7-8'	28	
8'	13'	8-9'	16	Gray to yellow brown soft fine sandy clay to clayey sand.
		9-10'	26	
		10-11'	28	
		11-12'	32	
13'	17'	12-13'	40	Dark brown soft somewhat sandy clay.
		13-14'	39	
		14-15'	30	
		15-16'	42	
17'	20½'	16-17'	33	Brown soft fine sandy clay.
		17-18'	36	
		18-19'	66	
		19-20'	46	
20½'	25'	20-21'	45	Gray to brown mottled fine soft unconsoli- dated slightly clayey sand (very wet).
		21-22'	60	
		22-23'	50	
		23-24'	56	
25'	27'	24-25'	35	Ditto, with water worn gravel fragments (very wet).
		25-26'	38	
		26-27'	42	
27'	31½'	27-28'	39	Yellow brown to gray fine grained sand, unconsolidated with occasional gravel fragments.
		28-29'	48	
		29-30'	49	
		30-31'	44	
31½'	32'	31-32'	60	Gray to brown mottled finely sandy clay. (very wet).
32'	35'	32-33'	68	Gray to brown somewhat clayey micaceous silt to fine sand.
		33-34'	64	
		34-35'	71	
35'	45'	35-36'	75	Very stiff brown to reddish brown silty to sandy clay, with some grey mottling. Waterworn pebbles at 41-42 ft.
		36-37'	98	
		37-38'	131	
		38-39'	133	
		39-40'	137	
		40-41'	207	
		41-42'	213	
		42-43'	218	

Depth From To		Penetration Depth Blows per ft.	Description
45'	50'	43-44' 187	Reddish brown to light brown and gray mottled, very stiff silty clay, with slight mica throughout. Lame nodules scattered throughout.
		44-45' 213	
		45-46' 225	
		46-47' 218	
		47-48' 193	
		48-49' 187	
		49-50' 202	

END OF BORE

DEPRESSION DRILL LOG

Project: A-in-C, Henley Beach G.S. B.H. 955/57

Bore No: 4

Bore Serial No PD 565/60

Hundred: Yatala

Section 445

Plan Reference N.W. Cnr of Grounds.

Date Drilling commenced: 24/8/59

Date Drilling completed: 26/8/59

Driller: K. Hubbert

Logged by: P. Dunlop

LOG

Depth From To	Penetration Depth Blows per ft.	Description
0' 10'	Open tube sampled	Dark brown to grey soft silty clay.
10' 27'	35-50 ft.	Dark brown clayey silt.
27' 35'		Light brown unconsolidated sand.
35' 42'	35-36' 130 36-37' 198 37-38' 87 38-39' 112 39-40' 118 40-41' 65 41-42' 87	Mottled reddish brown to grey stiff silty clay. Occasional lime nodules, water-worn pebbles appearing at 41 ft.
42' 45'	42-43' 89 43-44' 44 44-45' 83	Mottled red-brown to brown sandy to gritty clay and clayey sand with grit sized pebbles.
45' 46'	45-46' 95	Light brown silty clay.
46' 48'	46-47' 108 47-48' 110	Brown fine grained slightly micaceous clayey silt.
48' 50'	48-49' 147 49-50' 188	Mottled reddish-brown to grey stiff silty clay. Water-worn quartz pebbles at 49'. Slight mica throughout.

END OF LOG

DEPARTMENT OF MINES. ADELAIDE

PERCUSSION DRILL LOG

Drilling: A-42-C, Henley Beach H.S. D.M. 955/57

Core No: 5

Core Serial No PD 566/60

Number: Yatala Section 445

Plan Reference South East Cor.
of Ground.

Date Drilling commenced: 26/8/59

Date Drilling Completed: 28/8/59

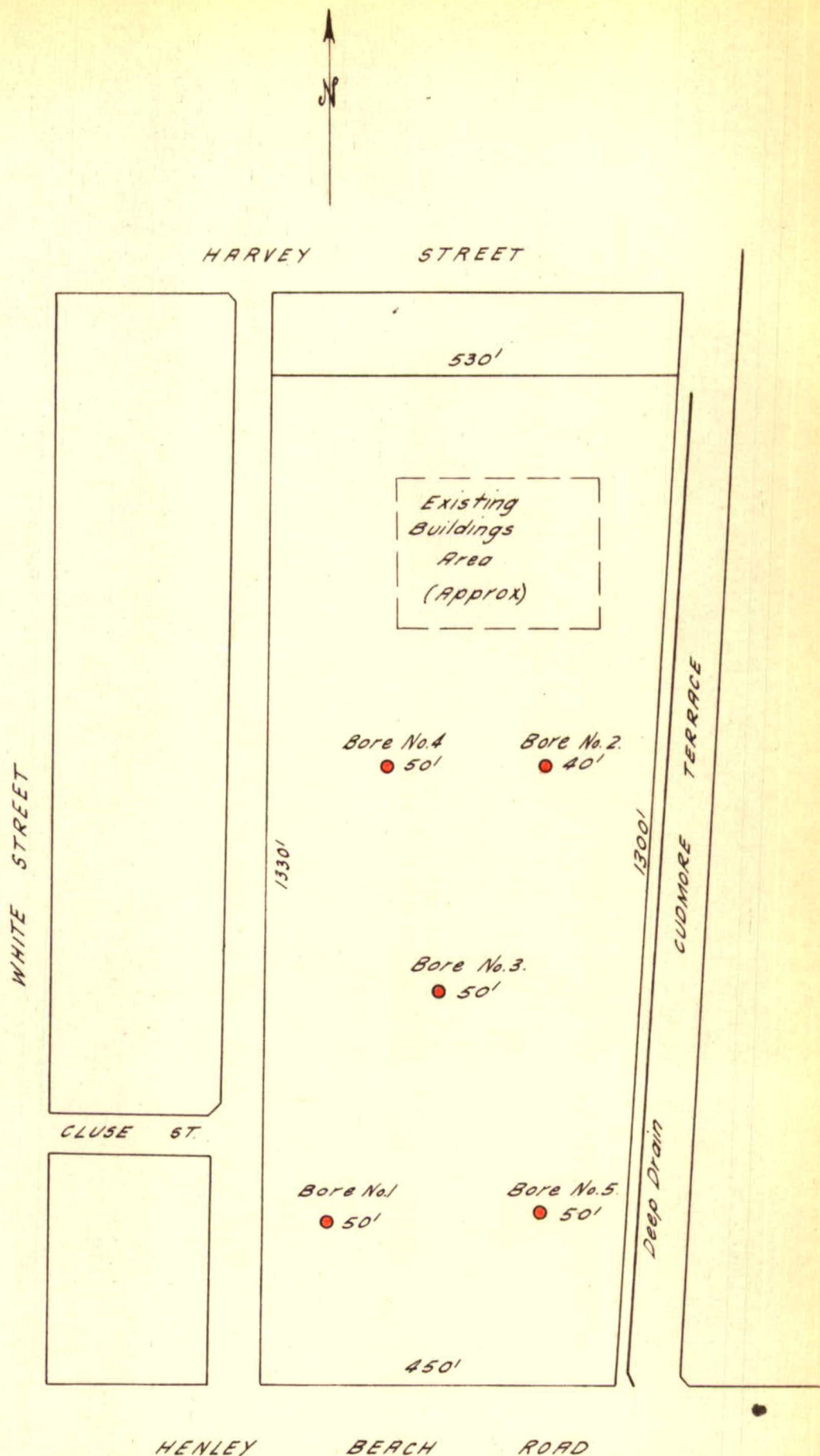
Driller: K. Hubbert

Logged by: P. Dunlop

LOG

Depth From To		Penetration Depth Meters PER Ft.		Description
0'	2'	Open tube sampled		Dark gray clayey loam.
2'	10'	30-50ft.		Dark gray silty clay, with some carbonaceous clay.
10'	25'			Dark gray clayey silt.
25'	30'			Fine grained yellow sand with some light brown clay.
30'	35'	30-31'	67	Mottled brown to gray slightly micaceous silty clay, passing into f.g. clayey sand at 35ft.
		31-32'	80	
		32-33'	77	
35'	35½'	33-34'	58	Light brown slightly clayey sand micaceous sand.
		34-35'	69	
35½'	36½'	35-36'	85	Soft light brown clay.
		36-37'	106	
36½'	48'	38-38'	85	Mottled reddish brown to gray stiff slightly silty clay, with scattered lime pockets.
		38-39'	70	
		39-40'	78	
		40-41'	132	
		41-42'	135	
		42-43'	217	
		43-44'	158	
		44-45'	164	
		45-46'	157	
		46-47'	105	
		47-48'	112	
48'	50'	48-49'	117	Mottled red brown clay with heavy lime accumulation.
		49-50'	118	

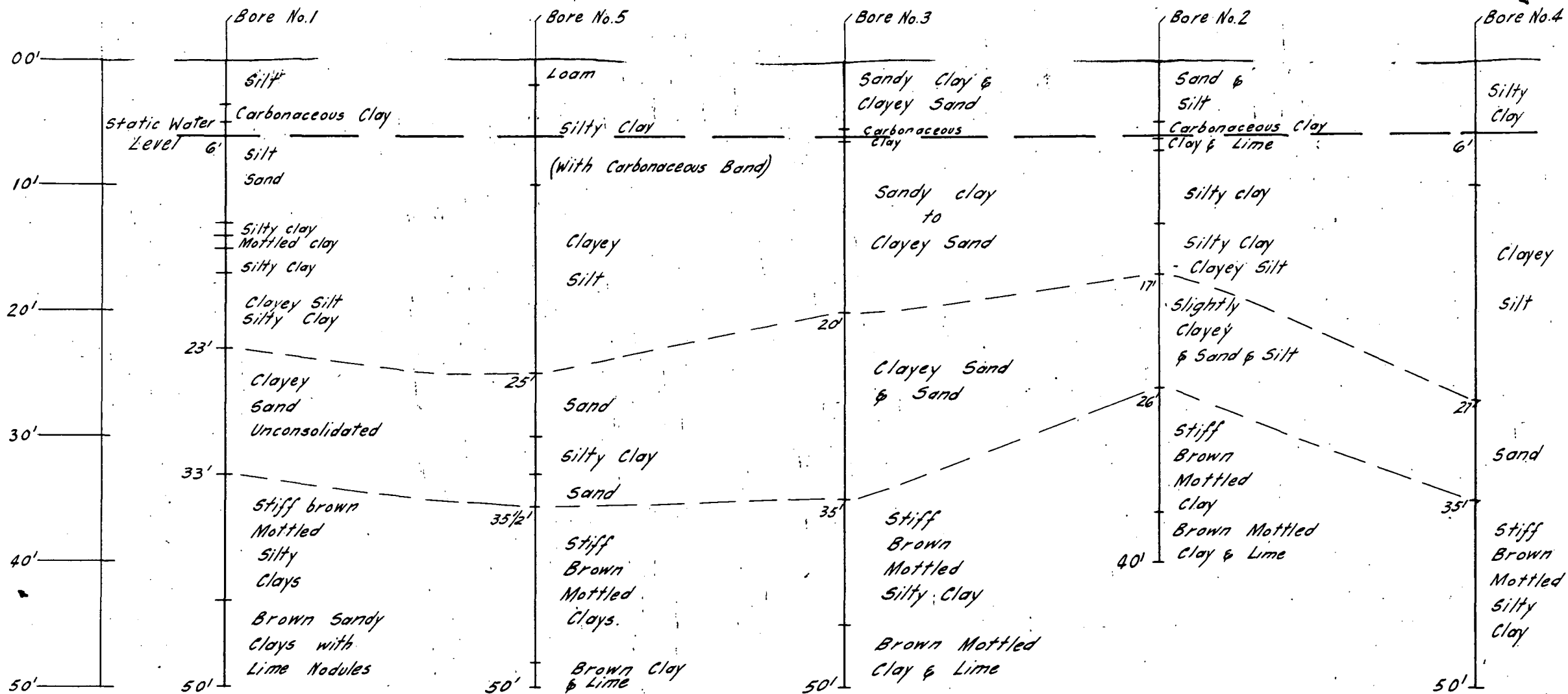
END OF BORE



To accompany report by P. Dunlop

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	HENLEY BEACH HIGH SCHOOL HD. YATALA PT. SEC. 445 FOUNDATION TEST BORES FOR PROPOSED NEW BUILDINGS	D.M. 995/57	Scale 200' to 1"
		Tcd.		Req.	52248
		Ckd.			Has
Director		Exd.			Date 28-9-59



S.A. DEPT. OF MINES
 HENLEY BEACH HIGH SCHOOL
 SECTIONS OF FOUNDATION TEST BORES
 FOR PROPOSED NEW BUILDING

52249
 Hrs

To accompany report by P. Dunlop.

28-9-59