U.S. ARMY CORPS OF ENGINEERS

BORING NO. 93-364 DATE: BEGIN 8-24-93 PAGE 1 / 1

JOB NO. 146638 COMPLETE 8-24-93 Thin Walled Tube

PROJECT Core Drilling for enlargement of The retaining levee ■ 3" □ 6"

LOCATION for The Sabine Lake North Disposal Area, Port Arthur, Texas

ELEVATION OF HOLE

MANUFACTURER'S DESIGNATION OF DRILL RIG Ardco K4-4, C-1000

GROUNDWATER: DEPTH 1 1/2 ft., ELEV. ____ ft., at end of Drilling

WEATHER

DRILLER Scott Gregurek LOGGER Iraj Mostamand

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSIS-TENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	4.5+	Brown	clay	Hard	sandy	-w/sa pkts & sa sms & gravel
		2	1.25	Brown & gray	clay	stiff	sandy	-w/sa pkts & sa sms
5		3	0.75	olive gray	clay	M.stiff	silty	
		4	0.25	olive gray	clay	Soft	silty	
		5	0.25	Dark gray	Clay	Soft	Silty	-w/silt sms
10		6	0.25	Dark gray	clay	soft	silty	-w/ shell Fragment
		7	0.25	" "	"	"	"	" " "
15		8	0.50	olive gray	clay	M.stiff	silty	
		9	1.75	olive gray	clay	stiff	silty	-w/silt sms & Fest
		10	1.50	olive gray	clay	stiff	silty	-w/silt sms & Test
20		11	1.75	Brown	clay	stiff		-w/silt Parting
		12	1.75	Brown	clay	stiff		-w/silt Parting
25		13	2.00	Brown	clay	Very stiff		-w/silt Parting
30								
35								

GEOTEST ENGINEERING, INC.

SUMMARY OF LABORATORY TEST RESULTS

Project: Sabine lake North Disposal Area Sabine-Neches waterway Near Port Arthur, Texas
Contract No. DACW64-92-D-0005 Delivery Order No. 0025

Boring No.93-364

S#	Depth (ft.)	PP (tsf)	SPT Blows per foot	Visual Classification	U S C	M C (%)	Dry Unit Wt. (pcf)	Wet Unit Wt. (pcf)	LL (%)	PL (%)	Mechanical Analysis % passing					Torvane Shear Strength (tsf)	qu (tsf)
											#4	#10	#40	#100	#200		
1	0-2	4.00		Brown,Clay,Very stiff,Sandy,w/sand seams,grass roots and calcareous nodules	C L	19.0											
2	2-4	1.75		Brown,Clay,Stiff,Sandy,w/sand seams and shell fragments	C L	19.2	109.7	130.8	46	21							
3	4-6	0.75		Yellowish brown,Clay,Medium stiff,Silty,w/silt seams and ferrous stians	C L	36.3											
4	6-8	0.25		Olive Gray,Clay,Soft,Silty,w/silt seams and shell fragments	C L	30.7	88.5	115.6	41	21	100.0	100.0	99.6	99.0	97.9	0.13	0.25
5	8-10	0.25		Gray and Yellowish brown,Clay,Soft,Silty,w/silt seams	C L	27.5										0.14	
6	10-12	0.25		Dark Gray,Clay,Soft,Silty,w/silt seams	C L	32.0										0.13	
7	12-14	0.25		Olive Gray,Clay,Soft,Silty,w/silt seams	C L	27.3	93.2	118.9	34	18						0.14	
8	14-16	0.25		Olive Gray,Clay,Soft,Silty,w/silt seams and shell fragments	C L	29.0	91.4	117.9	38	18	100.0	100.0	100.0	99.6	99.0	0.13	0.27
9	16-18	1.25		Yellow and Gray,Clay,Stiff,Silty,w/silt seams	C L	26.6											
10	18-20	1.00		Yellow and Gray,Clay,Stiff,Silty,w/silt seams	C L	28.9											
11	20-22	1.75		Yellow and Gray,Clay,Stiff,w/silt seams	C H	30.9											
12	22-24	1.50		Yellow and Gray,Clay,Stiff,w/silt seams	C H	29.6											
13	24-26	1.50		Yellow and Gray,Clay,Stiff,w/silt seams	C H	29.2											

S#: Sample Number, PP: Pocket Penetrometer Reading, USC: Unified Soil Classification, MC: Moisture Content
qu: Unconfined Compressive Strength, WOH: Weight of Hammer, WOP: Weight of Pipe

GEOTEST ENGINEERING, INC.

JOB NO. 14G719 DATE 10/07/93

PROJECT Sabine Lake North Disposal Area
Sabine-Neches Waterway

AREA Near Port Arthur, Texas

BORING NO. 93-364 SAMPLE NO. 4 DEPTH 6-8 ft

SPECIMEN NO. 1

CLASSIFICATION
Olive gray,Clay,Soft,Silty,w/silt seams & shell fragments

Tare No.	W-17	Height	5.595 in.
Tare plus Wet Specimen	357.99 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	283.95 gm	Initial Area	6.290 sq in.
Water Weight	74.04 gm	Volume	35.194 cu in.
Tare Weight	42.36 gm	Volume of Solids	cu in.
Wet Specimen	1067.62 gm	Void Ratio	
Dry Specimen	817.18 gm	Saturation	%
Water Content	30.65 %	Dry Density	88.5 lb/cu ft
Specific Gravity of Solids			

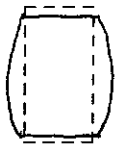
LL = 41 PL = 21 PI = 20

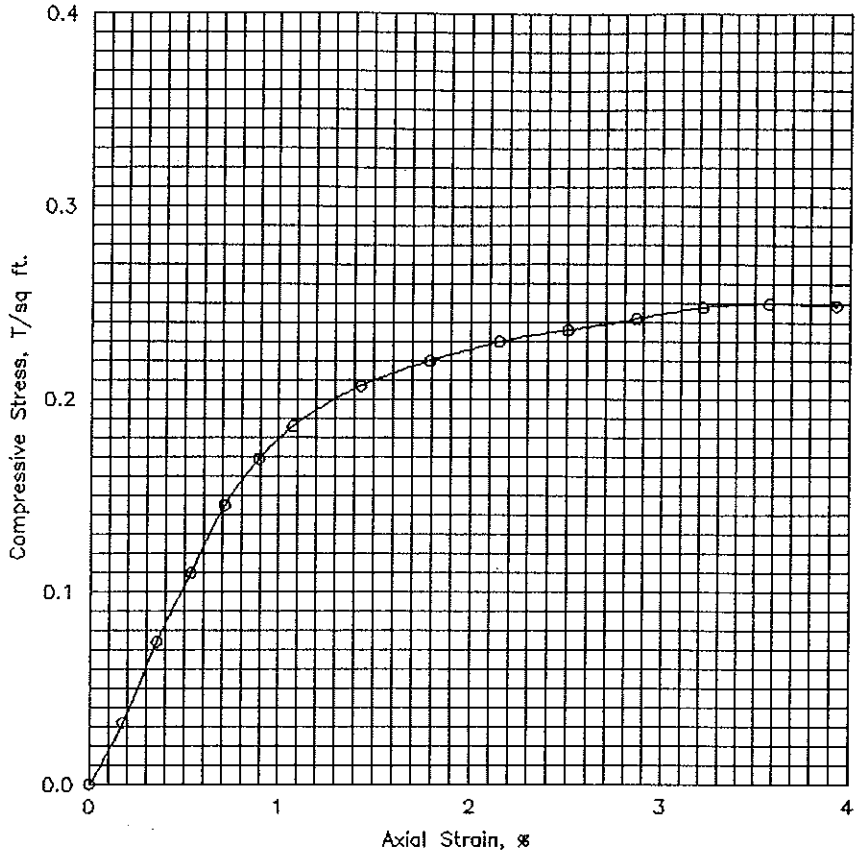
Proving Ring No. 17015
Proving Ring Constant, K = .311 lbs/div.

Elapsed Time min.	Dial Reading 0.001"	Cumulative Change in.	Proving Ring Dial Reading	Axial Load lb	Axial Strain	Area Corr. sq in.	Compr. Stress tsf
.0	0.	.000	.0	.0	.000	6.29	.000
.2	10.	.010	9.0	2.8	.002	6.30	.032
.4	20.	.020	21.0	6.5	.004	6.31	.074
.6	30.	.030	31.0	9.6	.005	6.32	.110
.8	40.	.040	41.0	12.7	.007	6.34	.145
1.0	50.	.050	48.0	14.9	.009	6.35	.169
1.1	60.	.060	53.0	16.5	.011	6.36	.186
1.5	80.	.080	59.0	18.3	.014	6.38	.207
1.8	100.	.100	63.0	19.6	.018	6.40	.220
2.0	120.	.120	66.0	20.5	.021	6.43	.230
2.2	140.	.140	68.0	21.1	.025	6.45	.236
2.8	160.	.160	70.0	21.7	.029	6.48	.242
3.0	180.	.180	72.0	22.4	.032	6.50	.248
3.3	200.	.200	73.0	22.7	.036	6.52	.250
3.7	220.	.220	73.0	22.7	.039	6.55	.249

Job No. 14G719

Failure Sketches





☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	30.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	88.5			
Time to failure, min		t_f	3.25			
Unconfined compressive strength, T/sq ft		q_u	.25			
Undrained shear strength, T/sq ft		S_u	.13			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Olive gray,Clay,Soft,Silty,w/silt seams & shell fragments

LL	41	PL	21	PI	20	G_s	

Remarks

Project Sabine Lake North Disposal Area
Sabine-Neches Waterway
Area Near Port Arthur, Texas
Boring No. 93-364 Sample No. 4
Depth 6-8 ft Date 10/07/93
El

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

Geotest Engineering, Inc.

PLATE

JOB NO. 14G719 DATE 10/07/93

PROJECT Sabine Lake North Disposal Area
Sabine-Neches Waterway

AREA Near Port Arthur, Texas

BORING NO. 93-364 SAMPLE NO. 8 DEPTH 14-16 ft

SPECIMEN NO. 1

CLASSIFICATION
Olive gray,Clay,Soft,Silty,w/silt seams & shell fragments

Tare No.	N-19	Height	5.595 in.
Tare plus Wet Specimen	367.20 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	294.22 gm	Initial Area	6.290 sq in.
Water Weight	72.98 gm	Volume	35.194 cu in.
Tare Weight	42.57 gm	Volume of Solids	cu in.
Wet Specimen	1089.21 gm	Void Ratio	
Dry Specimen	844.34 gm	Saturation	%
Water Content	29.00 %	Dry Density	91.4 lb/cu ft
Specific Gravity of Solids			

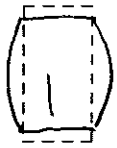
LL = 38 PL = 18 PI = 20

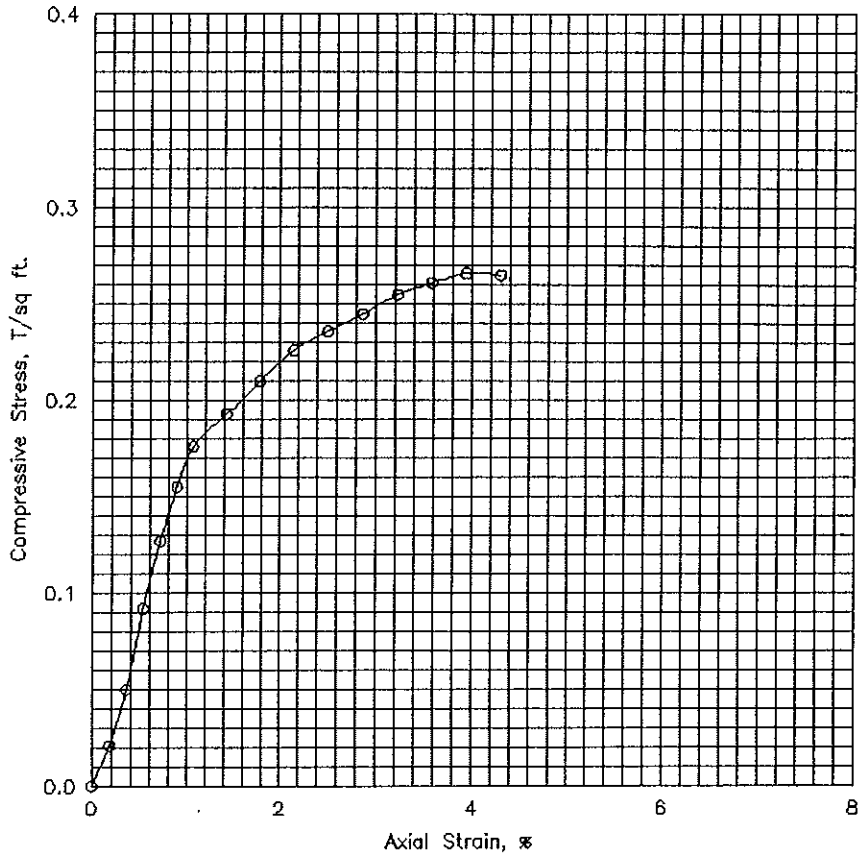
Proving Ring No. 17015
Proving Ring Constant, K = .311 lbs/div.

Elapsed Time min.	Dial Reading 0.001"	Cumulative Change in.	Proving Ring Dial Reading	Axial Load lb	Axial Strain	Area Corr. sq in.	Compr. Stress tsf
.0	0.	.000	.0	.0	.000	6.29	.000
.3	10.	.010	6.0	1.9	.002	6.30	.021
.5	20.	.020	14.0	4.3	.004	6.31	.050
.6	30.	.030	26.0	8.1	.005	6.32	.092
.8	40.	.040	36.0	11.2	.007	6.34	.127
.9	50.	.050	44.0	13.7	.009	6.35	.155
1.2	60.	.060	50.0	15.5	.011	6.36	.176
1.5	80.	.080	55.0	17.1	.014	6.38	.193
1.6	100.	.100	60.0	18.6	.018	6.40	.210
1.9	120.	.120	65.0	20.2	.021	6.43	.226
2.0	140.	.140	68.0	21.1	.025	6.45	.236
2.3	160.	.160	71.0	22.1	.029	6.48	.245
2.7	180.	.180	74.0	23.0	.032	6.50	.255
3.0	200.	.200	76.0	23.6	.036	6.52	.261
3.3	220.	.220	78.0	24.2	.039	6.55	.266
3.6	240.	.240	78.0	24.2	.043	6.57	.265

Job No. 146719

Failure Sketches





☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	29.0 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	91.4			
Time to failure, min		t_f	3.30			
Unconfined compressive strength, T/sq ft		q_u	.27			
Undrained shear strength, T/sq ft		S_u	.13			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Olive gray,Clay,Soft,Silty,w/silt seams & shell fragments

LL	38	PL	18	PI	20	G_s	

Remarks

Project Sabine Lake North Disposal Area
Sabine-Neches Waterway
Area Near Port Arthur, Texas
Boring No. 93-364 Sample No. 8
Depth El 14-16 ft Date 10/07/93

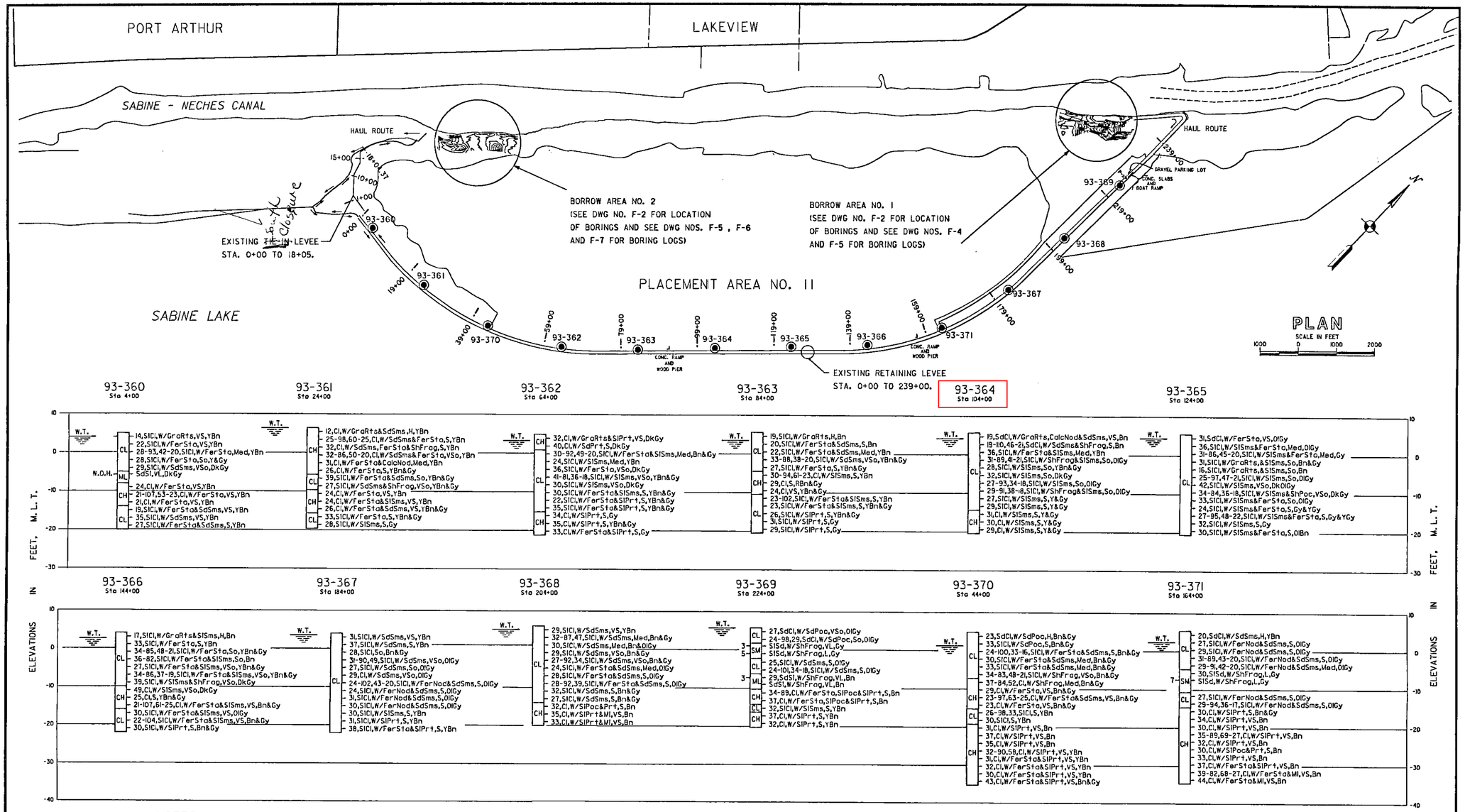
UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE



NOTES;

1. SOILS HAVE BEEN CLASSIFIED IN ACCORDANCE WITH MILITARY STANDARD 619B "UNIFIED SOIL CLASSIFICATION SYSTEM FOR ROADS, AIRFIELDS, EMBANKMENTS, AND FOUNDATIONS." CONSISTENCY OF SOILS SUCH AS SOFT, MEDIUM, HARD, LOOSE, DENSE, ETC., ARE RELATIVE TERMS BASED ON ESTIMATED UNDISTURBED SHEAR STRENGTH OF THE MATERIAL AS DETERMINED BY VISUAL CLASSIFICATION POCKET PENETROMETER TESTS AND PENETRATION RESISTANCE DURING SAMPLING.
2. FIGURES TO THE RIGHT OF BORING LOGS ARE WATER CONTENTS IN PERCENT OF THE DRY WEIGHT, DRY DENSITY, LIQUID LIMIT, PLASTIC LIMIT, AND BAR LINEAR SHRINKAGE. (MC-LDW)(LL-PL)(BL). FIGURES TO THE LEFT OF BORING LOGS ARE BLOWS PER FOOT OF PENETRATION FROM STANDARD PENETRATION TESTING.
3. BORINGS WERE DRILLED USING WET ROTARY DRILLING TECHNIQUES AND UNDISTURBED SAMPLES WHERE RECOVERED WITH A 3-INCH DIAMETER THIN WALL SAMPLER WHERE COHESIVE MATERIALS WERE ENCOUNTERED. WHERE COHESIONLESS MATERIALS WERE ENCOUNTERED, DISTURBED SAMPLES WERE TAKEN WITH A SPLIT SPOON SAMPLER DURING PERFORMANCE OF STANDARD PENETRATION TESTING.
4. WATER TABLE LEVELS SHOWN ON BORING LOGS WERE DETERMINED AFTER DRILLING BORINGS BY MEASURING THE TOP OF FLUID LEVELS IN THE BORINGS. INASMUCH AS WET ROTARY DRILLING TECHNIQUES AND DRILLING MUD WERE USED TO DRILL THE HOLES, THE LEVEL OF DRILLING FLUIDS IN THE BORE HOLES MAY NOT HAVE STABILIZED TO THE LEVEL OF THE ACTUAL WATER TABLE. ADDITIONALLY, WATER TABLES IN THE FIELD ARE LIKELY TO FLUCTUATE DEPENDING ON WEATHER CONDITIONS. THEREFORE, SOME VARIATION SHOULD BE ANTICIPATED BETWEEN WATER TABLES INDICATED AND WATER TABLES ENCOUNTERED IN THE FIELD.

VISUAL CLASSIFICATIONS

Bn Brown(ish)	Nod Nodules	Sl Silt(y)
Calc Calcerous	Ol Olive	Sms Seams
Cl Clay	Poc Pocket(s)	So Soft
Dk Dark	Prt Parting	Sta Stain(s)
Fer Ferrous	R Red	V Very
Frag Fragment(s)	Rts Root(s)	W/ With
Gra Grass	S Stiff	W.T. Water Table
Gy Gray(ish)	Sd Sand(y)	W.O.H. Weight Of Hammer
H Hard	Sh Shell(y)	Y Yellow(ish)
L Loose		
Med Medium		
Mi Mica		

LABORATORY CLASSIFICATION

CH INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, LEAN CLAYS.
ML INORGANIC SILTS AND VERY FINE SANDS, WITH SLIGHT PLASTICITY.
SM SILTY SANDS, SAND-SILT MIXTURES.

REVISION	DATE	DESCRIPTION	BY

OFFICE OF THE DISTRICT ENGINEER
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

DRAWN BY: * J.G.
DESIGNED BY: * G.M.
CHECKED BY: * G.M./L.A.A.
SUBMITTED BY: *
CHIEF, GEOTECH & SURVEYS SECTION
APPROVED: *
CHIEF, DESIGN BRANCH
APPROVED: *
CHIEF, ENGINEERING DIVISION
DATE: JULY 1995
* AS REQUIRED BY ENGINEER CIRCULAR NO. 1110-1-8152.
SCALE: AS SHOWN
SPEC. DATE:

SABINE - NECHES WATERWAY, TEXAS
SABINE - NECHES CANAL
REHABILITATION OF PLACEMENT AREA NO. 11

PLAN AND BORING LOGS

Prepared under the direction of
Robert B. Gatlin, Col., C.E.,
District Engineer

DRAWING NUMBER
F-1
SHEET 23 OF 32 FILE NO. SN 103-336