U.S. ARMY CORPS OF ENGINEERS

BORING NO. 93-360 DATE: BEGIN 8-23-93 PAGE 1 / 1
JOB NO. 146638 COMPLETE 8-23-93 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* ft., ELEV. ft., at end of Drilling
WEATHER Clear & Hot
DRILLER Scott Gregurek LOGGER Iraj Mostamand

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	2.75	Gray & Brown	Clay	Very stiff	Silty	-w/gravel
		2	3.00	Gray & Brown	clay	Very stiff	Silty	-w/Fest & sa pkts
5		3	1.00	Gray & Brown	clay	stiff	Silty	-w/Fest
		4	0.50	Gray & Brown	clay	M. stiff	Silty	-w/Fest
		5	0.00	Gray	clay	Very soft	Silty	* encounter water @ 8' -sample bulge on extrudsion
10	X	6	W.O.H	Dark gray	Silt	Very loose	Sand	-w/silt @ bottom of sample clay @ 13'
		7	2.25	olive gray	clay	Very stiff		-w/Fest
15		8	2.50	olive gray	clay	Very stiff		-w/Fest
		9	3.00	Gray & Brown	clay	Very stiff	Silty	-w/Fest & Sa seams
20		10	3.25	Gray & Brown	clay	Very stiff	Silty	-w/Fest & Sa seams
		11	2.75	Gray & Brown	clay	Very stiff	Silty	-w/Sa seams
		12	1.75	" "	"	stiff	"	" " "
25								
30								W.O.H: weight of hammer * encounter water @ 8' Start wet rotary @ 11½' water level after drilling!
35								

GEOTEST ENGINEERING, INC.

JOB NO. 14G719 DATE 9/29/93

PROJECT Sabine Lake North Disposal Area
Sabine-Neches Waterway

AREA Near Port Arthur, Texas

BORING NO. 93-360 SAMPLE NO. 3 DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION
Yellowish brown,Clay,Medium stiff,Silty,w/ferrous stains

Tare No.	P-220	Height	5.595 in.
Tare plus Wet Specimen	385.86 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	310.83 gm	Initial Area	6.290 sq in.
Water Weight	75.03 gm	Volume	35.194 cu in.
Tare Weight	42.84 gm	Volume of Solids	cu in.
Wet Specimen	1094.97 gm	Void Ratio	
Dry Specimen	855.46 gm	Saturation	%
Water Content	28.00 %	Dry Density	92.6 lb/cu ft
Specific Gravity of Solids			

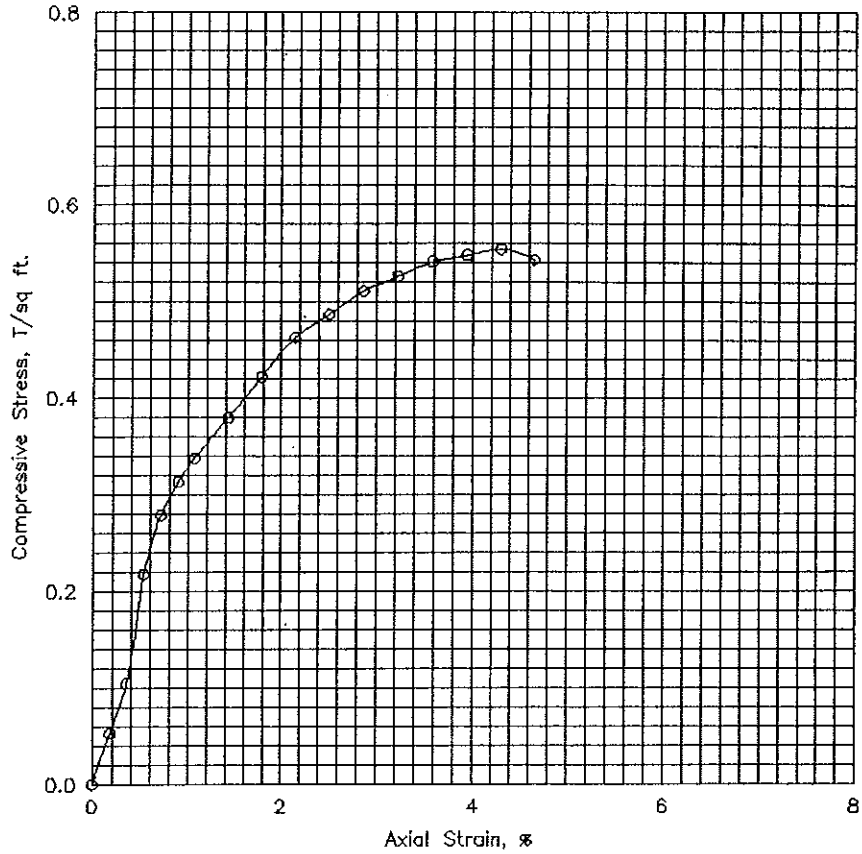
LL = 42 PL = 20 PI = 22

Proving Ring No. 10170
Proving Ring Constant, K = .766 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	4.6	.002	6.30	.053
.4	20.	.020	12.0	9.2	.004	6.31	.105
.6	30.	.030	25.0	19.1	.005	6.32	.218
.8	40.	.040	32.0	24.5	.007	6.34	.279
1.0	50.	.050	36.0	27.6	.009	6.35	.313
1.2	60.	.060	39.0	29.9	.011	6.36	.338
1.5	80.	.080	44.0	33.7	.014	6.38	.380
1.8	100.	.100	49.0	37.5	.018	6.40	.422
2.2	120.	.120	54.0	41.4	.021	6.43	.463
2.5	140.	.140	57.0	43.7	.025	6.45	.487
2.8	160.	.160	60.0	46.0	.029	6.48	.511
3.1	180.	.180	62.0	47.5	.032	6.50	.526
3.5	200.	.200	64.0	49.0	.036	6.52	.541
3.8	220.	.220	65.0	49.8	.039	6.55	.548
4.1	240.	.240	66.0	50.6	.043	6.57	.554
4.4	260.	.260	65.0	49.8	.046	6.60	.543

Job No. 146719

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	28.0 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	92.6			
Time to failure, min		t_f	4.13			
Unconfined compressive strength, T/sq ft		q_u	.55			
Undrained shear strength, T/sq ft		S_u	.28			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Yellowish brown,Clay,Medium stiff,Silty,w/ferrous stains

LL	42	PL	20	PI	22	G_s	

Remarks

Project Sabine Lake North Disposal Area	
Sabine-Neches Waterway	
Area Near Port Arthur, Texas	
Boring No. 93-360	Sample No. 3
Depth El 4-6 ft	Date 9/29/93
UNCONFINED COMPRESSION TEST REPORT	

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G719 DATE 9/29/93

PROJECT Sabine Lake North Disposal Area
Sabine-Neches Waterway

AREA Near Port Arthur, Texas

BORING NO. 93-360 SAMPLE NO. 8 DEPTH 15-17 ft

SPECIMEN NO. 1

CLASSIFICATION
Yellowish brown,Clay,Very stiff,w/ferrous stains

Tare No.	GE-1	Height	5.595 in.
Tare plus Wet Specimen	607.35 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	510.39 gm	Initial Area	6.290 sq in.
Water Weight	96.96 gm	Volume	35.194 cu in.
Tare Weight	42.32 gm	Volume of Solids	cu in.
Wet Specimen	1198.21 gm	Void Ratio	
Dry Specimen	992.60 gm	Saturation	%
Water Content	20.71 %	Dry Density	107.4 lb/cu ft
Specific Gravity of Solids			

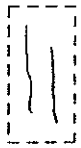
LL = 53 PL = 23 PI = 30

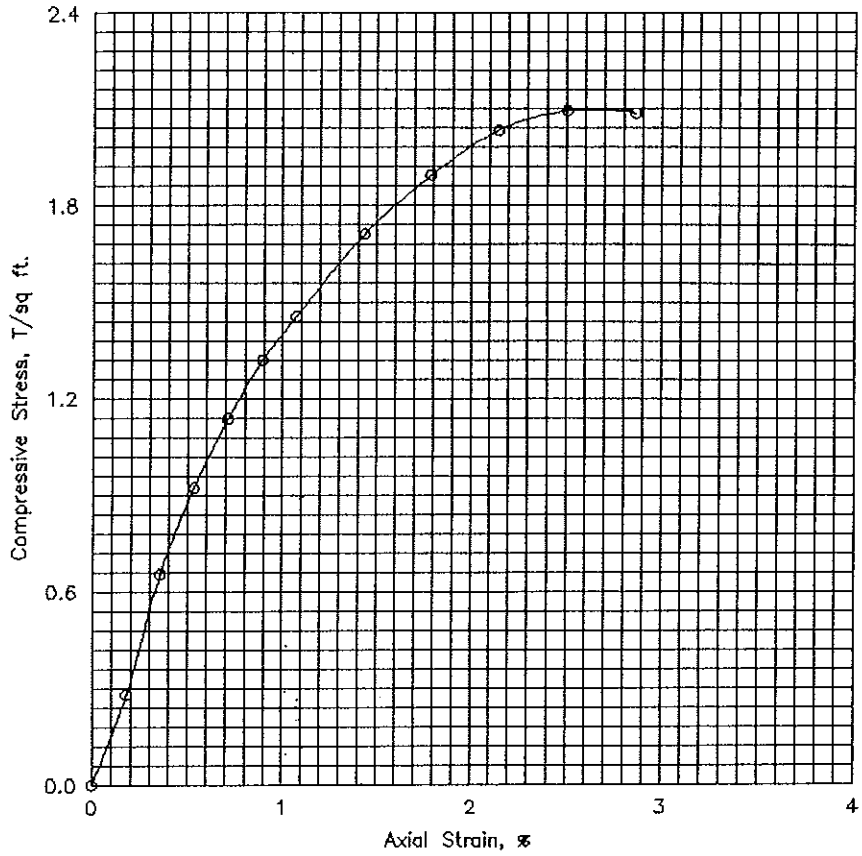
Proving Ring No. 10170
Proving Ring Constant, K = .766 lbs/div.

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	32.0	24.5	.002	6.30	.280
.5	20.	.020	75.0	57.4	.004	6.31	.655
.8	30.	.030	106.0	81.2	.005	6.32	.924
1.0	40.	.040	131.0	100.3	.007	6.34	1.140
1.2	50.	.050	152.0	116.4	.009	6.35	1.321
1.5	60.	.060	168.0	128.7	.011	6.36	1.457
1.8	80.	.080	198.0	151.7	.014	6.38	1.711
2.2	100.	.100	220.0	168.5	.018	6.40	1.894
2.6	120.	.120	237.0	181.5	.021	6.43	2.033
2.9	140.	.140	245.0	187.7	.025	6.45	2.094
3.2	160.	.160	245.0	187.7	.029	6.48	2.087

Job No. 14G719

Failure Sketches





☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	20.7 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	107.4			
Time to failure, min		t_f	2.90			
Unconfined compressive strength, T/sq ft		q_u	2.09			
Undrained shear strength, T/sq ft		S_u	1.05			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Yellowish brown,Clay,Very stiff,w/ferrous stains

LL	53	PL	23	PI	30	G_s	

Remarks

Project Sabine Lake North Disposal Area
Sabine-Neches Waterway
Area Near Port Arthur, Texas
Boring No. 93-360 Sample No. 8
Depth 15-17 ft Date 9/29/93
El

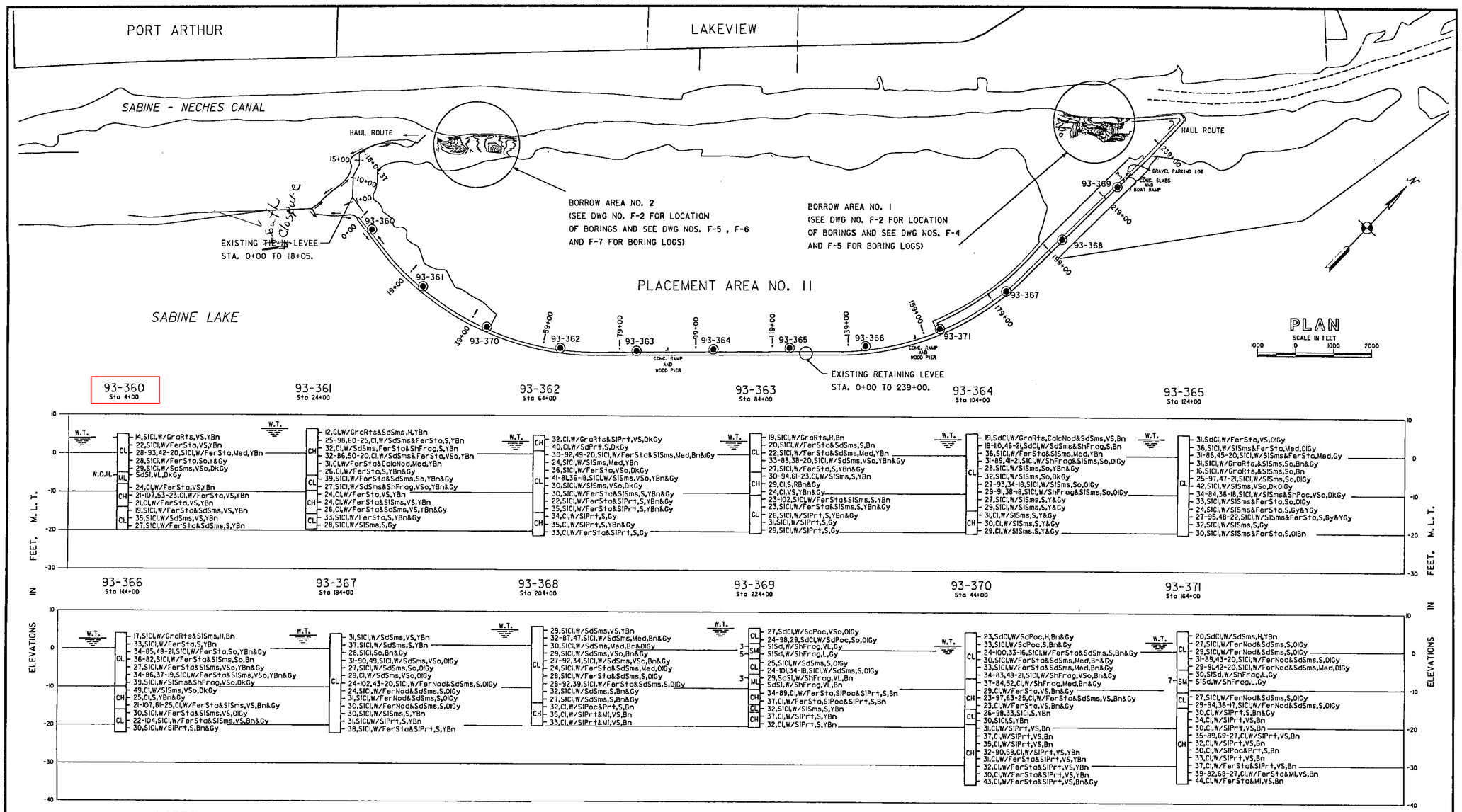
UNCONFINED COMPRESSION TEST REPORT

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). SJ= 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
EFFEC. 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