U.S. ARMY CORPS OF ENGINEERS

BORING NO. 93-292 DATE: BEGIN 7-8-93 PAGE 1 / 1
JOB NO. 146630 COMPLETE 7-8-93 Thin Walled Tube
PROJECT Brazos Island Harbor Project ■ 3" □ 6"
LOCATION Brownsville ship channel near Brownsville, Tx
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG Ardco K 4X4
GROUNDWATER: DEPTH 0 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	CONSIS-TENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	4.5	Gray	Clay	Hard		-w/grass roots
		2	2.25	Brown	Clay	Very stiff		
5		3	2.75	Brown	Clay	Very stiff		
		4	0.50	Brown	Clay	M. stiff	Silty	-w/Sand
		5	0.25	Brown	Clay	Soft	Silty	-w/silt layer 9-10'
10	X	6	4/3/5	Gray	Silt	Loose	Sand	
15	X	7	4/5/6	Gray	Silt	M. Dense	Sand	
	X	8	5/6/7	Gray	Silt	M. Dense	Sand	
20								Bottom of 93-292 @ 20'
25								
30								
35								

GEOTEST ENGINEERING INC.

Project : Brazos Island Harbor Project, Brownsville Shipchannel near Brownsville, Texas
Contract No. DACW64-92-D-0005 Delivery order No. 0018

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 93-292 Top @ 12-96 MLT

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	M c (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	P L (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0 - 2	4.00		Brown,Clay,Very stiff	CH	20.2											
2	2 - 4	3.00		Brown,Clay,Very stiff	CH	28.0	94.1	120.4	61		100.0	100.0	100.0	100.0	100.0		2.99
3	4 - 6	3.00		Brown,Clay,Very stiff	CH	28.3											
4	6 - 8	0.75		Brown,Clay,Medium stiff,Silty	CL	28.1	94.8	121.4	38	17	100.0	100.0	99.6	99.0	97.9		0.52
5	8 - 10	0.25		Brown,Clay,Soft,Silty,w/sand partings&sand pockets	CL	20.9										0.13	
6	10.5 - 12		8	Brown,Sand,Loose,Silty	SM												
7	13.5 - 15		11	Brown,Sand,Medim dense,Silty	SM						100.0	100.0	99.8	88.7	30.6		
8	18.5 - 10 20		13	Brown,Sand,Medium dense,Silty	SM												

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content
q u : Unconfined Compressive Strength, W O H : Weight of hammer, W O P : Weight of pipe

Geotest Engineering, Inc.

JOB NO. 14G634 DATE 8/2/93

PROJECT Brazos Island Harbor Project
Brownsville Shipchannel

AREA near Brownsville, Texas

BORING NO. 93-292 SAMPLE NO. 2 DEPTH 2-4 ft

SPECIMEN NO. 1

CLASSIFICATION
Brown,Clay,Very stiff

Tare No.	55F	Height	5.595 in.
Tare plus Wet Specimen	112.08 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	94.52 gm	Initial Area	6.290 sq in.
Water Weight	17.56 gm	Volume	35.194 cu in.
Tare Weight	31.71 gm	Volume of Solids	cu in.
Wet Specimen	1112.29 gm	Void Ratio	
Dry Specimen	869.27 gm	Saturation	%
Water Content	27.96 %	Dry Density	94.1 lb/cu ft
Specific Gravity of Solids			

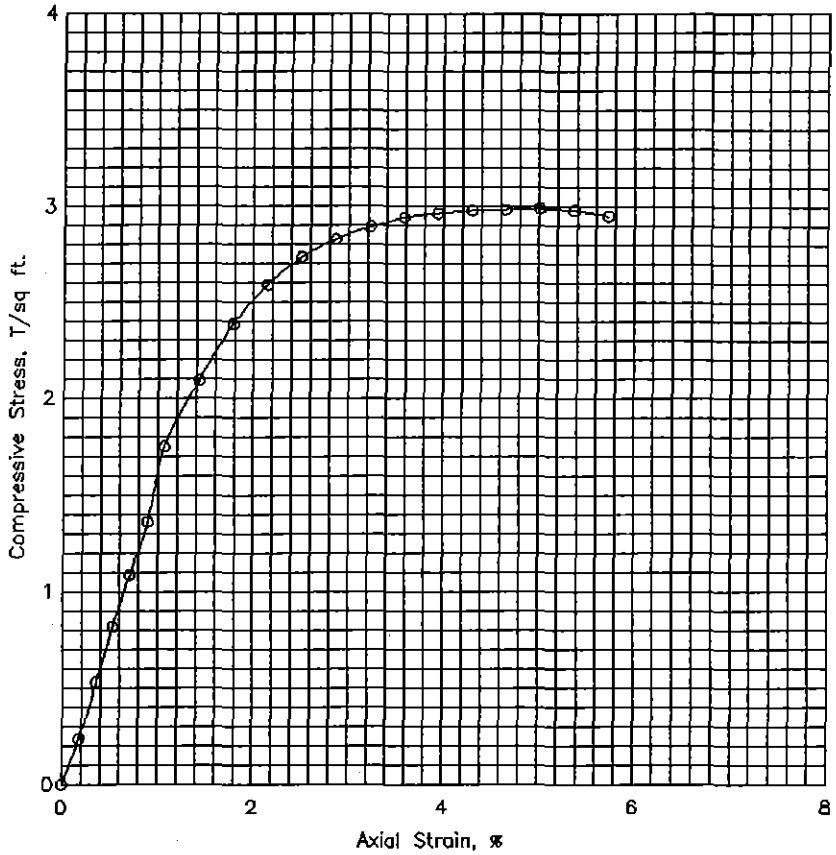
LL = 61 PL = PI =

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
.2	10.	.010	27.0	20.7	.002	6.30	.236
.3	20.	.020	61.0	46.7	.004	6.31	.533
.5	30.	.030	94.0	72.0	.005	6.32	.820
.7	40.	.040	125.0	95.8	.007	6.34	1.088
.9	50.	.050	157.0	120.3	.009	6.35	1.364
1.0	60.	.060	202.0	154.7	.011	6.36	1.752
1.4	80.	.080	242.0	185.4	.014	6.38	2.092
1.7	100.	.100	277.0	212.2	.018	6.40	2.385
2.0	120.	.120	302.0	231.3	.021	6.43	2.591
2.3	140.	.140	320.0	245.1	.025	6.45	2.736
2.6	160.	.160	332.0	254.3	.029	6.48	2.828
2.9	180.	.180	341.0	261.2	.032	6.50	2.894
3.3	200.	.200	348.0	266.6	.036	6.52	2.942
3.6	220.	.220	352.0	269.6	.039	6.55	2.965
3.9	240.	.240	355.0	271.9	.043	6.57	2.979
4.2	260.	.260	357.0	273.5	.046	6.60	2.985
4.5	280.	.280	359.0	275.0	.050	6.62	2.990
4.7	300.	.300	359.0	275.0	.054	6.65	2.979
5.0	320.	.320	357.0	273.5	.057	6.67	2.951

Job No. 146634

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	28.0 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	94.1			
Time to failure, min		t_f	4.48			
Unconfined compressive strength, T/sq ft		q_u	2.99			
Undrained shear strength, T/sq ft		S_u	1.50			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Brown,Clay,Very stiff

LL	61	PL		PI		G_s

Remarks

Project	Brazos Island Harbor Project
	Brownsville Shipchannel
Area	near Brownsville, Texas
Boring No. 93-292	Sample No. 2
Depth El 2-4 ft	Date 8/2/93
UNCONFINED COMPRESSION TEST REPORT	

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G634 DATE 8/2/93

PROJECT Brazos Island Harbor Project
Brownsville Shipchannel

AREA near Brownsville, Texas

BORING NO. 93-292 SAMPLE NO. 4 DEPTH 6-8 ft

SPECIMEN NO. 1

CLASSIFICATION
Brown,Clay,Medium stiff,Silty

Tare No.	P-29	Height	5.595 in.
Tare plus Wet Specimen	263.45 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	215.12 gm	Initial Area	6.290 sq in.
Water Weight	48.33 gm	Volume	35.194 cu in.
Tare Weight	43.05 gm	Volume of Solids	cu in.
Wet Specimen	1121.55 gm	Void Ratio	
Dry Specimen	875.61 gm	Saturation	%
Water Content	28.09 %	Dry Density	94.8 lb/cu ft
Specific Gravity of Solids			

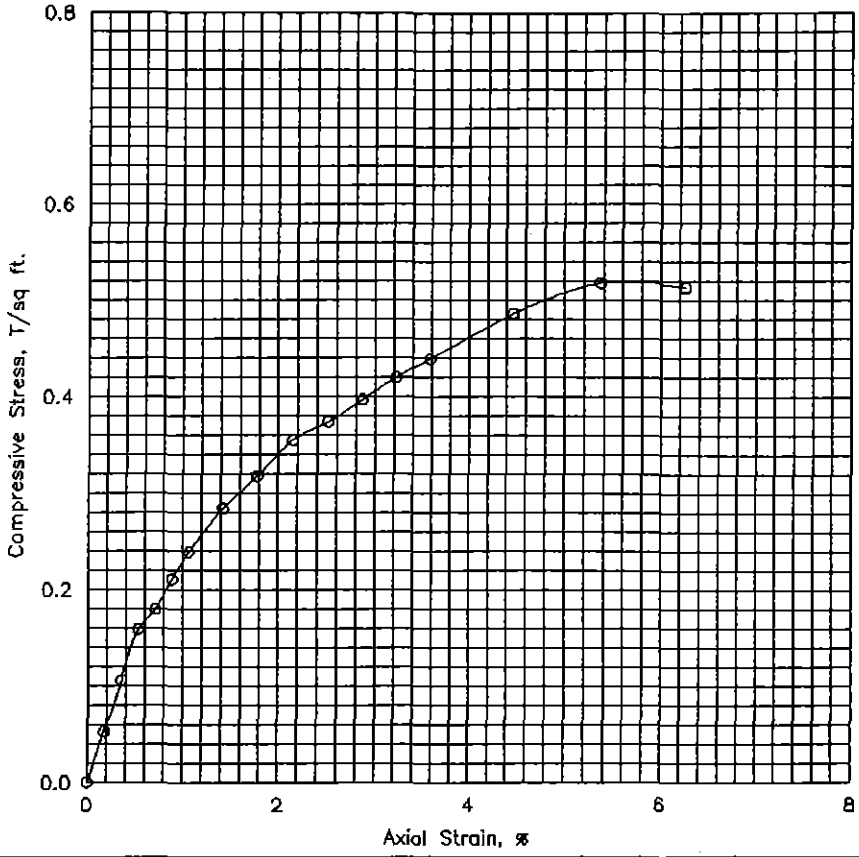
LL = 38 PL = 17 PI = 21

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
.1	10.	.010	15.0	4.7	.002	6.30	.053
.3	20.	.020	30.0	9.3	.004	6.31	.106
.5	30.	.030	45.0	14.0	.005	6.32	.159
.6	40.	.040	51.0	15.8	.007	6.34	.180
.9	50.	.050	60.0	18.6	.009	6.35	.211
1.0	60.	.060	68.0	21.1	.011	6.36	.239
1.4	80.	.080	81.0	25.2	.014	6.38	.284
1.6	100.	.100	91.0	28.3	.018	6.40	.318
2.0	120.	.120	102.0	31.7	.021	6.43	.355
2.3	140.	.140	108.0	33.5	.025	6.45	.374
2.7	160.	.160	115.0	35.7	.029	6.48	.397
3.0	180.	.180	122.0	37.9	.032	6.50	.420
3.3	200.	.200	128.0	39.8	.036	6.52	.439
4.1	250.	.250	143.0	44.4	.045	6.58	.486
4.9	300.	.300	154.0	47.8	.054	6.65	.518
5.5	350.	.350	154.0	47.8	.063	6.71	.513

Job No. 14G634

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	28.1 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	94.8			
Time to failure, min		t_f	4.93			
Unconfined compressive strength, T/sq ft		q_u	.52			
Undrained shear strength, T/sq ft		S_u	.26			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Brown,Clay,Medium stiff,Silty

LL	38	PL	17	PI	21	G_s	

Remarks

Project	Brazos Island Harbor Project
	Brownsville Shipchannel
Area	near Brownsville, Texas
Boring No. 93-292	Sample No. 4
Depth Elt 6-8 ft	Date 8/2/93

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

July - 7 93

B.I.H. DISPOSAL AREA NO. 7

	CORE BORING	COORDINATES X	Y	N.G. ELEV.
1	93-287	2383453.79	111575.35	16.58
2	93-288	2383436.80	111066.77	11.95
3	93-289	2383374.07	110464.25	12.20
4	93-290	2382897.16	110196.68	12.09
5	93-291	2382591.22	109981.03	12.07
6	93-292	2382291.49	109638.88	12.96
7	93-293	2381679.22	108909.68	12.04
8 *	93-294			
9	93-295	2379514.51	108372.33	10.17
10	93-296	2378761.80	107960.82	10.07
11	93-297	2378293.91	107778.32	9.86
12	93-298	2377829.21	107589.17	9.80
13	93-299	2377365.46	107404.67	9.91
14	93-300	2376904.99	107220.19	9.8
15	93-301	2376438.60	107038.62	9.75
16	93-302	2375977.69	106850.65	9.66
17 *	93-303			
18	93-304	2375768.65	107744.19	9.92
19	93-305	2376232.67	107932.15	10.1
20	93-306	2376693.94	108120.23	10.28
21	93-307	2377157.54	108305.60	10.32
22	93-308	2377622.55	108490.28	10.51
23	93-309	2378086.61	108679.32	10.18
24	93-310	2378551.34	108868.16	9.99