U.S. ARMY CORPS OF ENGINEERS

BORING NO. 93-293 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
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	0.25	Gray	clay	soft		
		2	0.50	Gray	clay	M.stiff		
5		3	0.75	Gray	clay	M.stiff		
		4	2.25	Brown	clay	Very stiff		-w/Fe st
		5	2.00	Brown	clay	Very stiff		-w/Fe Nod
10		6	1.75	Brown	clay	stiff	silty	-w/silt sms
		7	0.75	Brown	clay	M.stiff	silty	sand 14'
15	X	8	3/4/4	Gray	Sand	loose	silty	
	X	9	3/4/5	Gray	Sand	loose	silty	
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. 93-293 Top @ 12.04

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	0.50		Dark gray,Clay,Medium stiff	CH	31.0											
2	2 - 4	0.75		Dark gray,Clay,Medium stiff,w/blocky structure	CH	28.3	90.7	116.3	53		100.0	100.0	99.8	98.8	94.4		0.77
3	4 - 6	1.00		Dark gray,Clay,Stiff	CH	26.6											
4	6 - 8	1.50		Brown,Clay,Stiff	CH	22.6											
5	8 - 10	1.75		Brown,Clay,Stiff,w/calcareous nodules	CH	23.3	102.0	125.7	57	24	100.0	100.0	99.6	98.3	97.8		1.34
6	10 - 12	2.00		Brown,Clay,Very stiff,Silty	CL	24.3											
7	12 - 14	0.25		Brown,Clay,Soft,Silty	CL	28.5											
8	14 - 15.5		8	Brown,Sand,Loose,Silty	SM												
9	18.5 - 20		9	Brown,Sand,Loose,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. 93-293 SAMPLE NO. 2 DEPTH 2-4 ft

SPECIMEN NO. 1

CLASSIFICATION
Dark gray,Clay,Medium stiff,w/blocky structure

Tare No.	KL-11	Height	5.595 in.
Tare plus Wet Specimen	393.17 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	315.92 gm	Initial Area	6.290 sq in.
Water Weight	77.25 gm	Volume	35.194 cu in.
Tare Weight	42.64 gm	Volume of Solids	cu in.
Wet Specimen	1074.66 gm	Void Ratio	
Dry Specimen	837.83 gm	Saturation	%
Water Content	28.27 %	Dry Density	90.7 lb/cu ft
Specific Gravity of Solids			

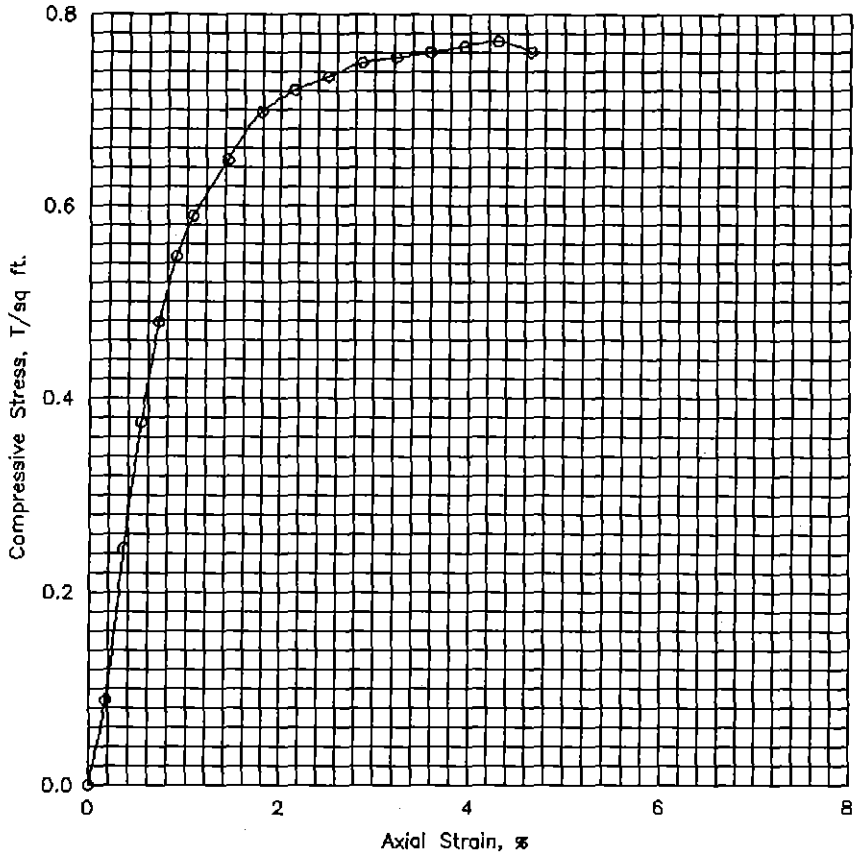
LL = 53 PL = PI =

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
.3	10.	.010	10.0	7.7	.002	6.30	.088
.5	20.	.020	28.0	21.4	.004	6.31	.245
.6	30.	.030	43.0	32.9	.005	6.32	.375
.8	40.	.040	55.0	42.1	.007	6.34	.479
.9	50.	.050	63.0	48.3	.009	6.35	.547
1.1	60.	.060	68.0	52.1	.011	6.36	.590
1.5	80.	.080	75.0	57.4	.014	6.38	.648
1.8	100.	.100	81.0	62.0	.018	6.40	.698
2.2	120.	.120	84.0	64.3	.021	6.43	.721
2.5	140.	.140	86.0	65.9	.025	6.45	.735
2.8	160.	.160	88.0	67.4	.029	6.48	.750
3.1	180.	.180	89.0	68.2	.032	6.50	.755
3.5	200.	.200	90.0	68.9	.036	6.52	.761
3.8	220.	.220	91.0	69.7	.039	6.55	.767
4.0	240.	.240	92.0	70.5	.043	6.57	.772
4.5	260.	.260	91.0	69.7	.046	6.60	.761

Job No. 14G634

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	28.3 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	90.7			
Time to failure, min		t_f	4.02			
Unconfined compressive strength, T/sq ft		q_u	.77			
Undrained shear strength, T/sq ft		S_u	.39			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Dark gray,Clay,Medium stiff,w/blocky structure

LL	53	PL		PI		G_s

Remarks

Project Brazos Island Harbor Project
Brownsville Shipchannel
Area near Brownsville, Texas
Boring No. 93-293 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.

PLATE

JOB NO. 14G634 DATE 8/2/93

PROJECT Brazos Island Harbor Project
Brownsville Shipchannel

AREA near Brownsville, Texas

BORING NO. 93-293 SAMPLE NO. 5 DEPTH 8-10 ft

SPECIMEN NO. 1

CLASSIFICATION
Brown,Clay,Stiff,w/calcareous nodules

Tare No.	P-30	Height	5.595 in.
Tare plus Wet Specimen	659.22 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	542.81 gm	Initial Area	6.290 sq in.
Water Weight	116.41 gm	Volume	35.194 cu in.
Tare Weight	43.07 gm	Volume of Solids	cu in.
Wet Specimen	1161.33 gm	Void Ratio	
Dry Specimen	941.92 gm	Saturation	%
Water Content	23.29 %	Dry Density	102.0 lb/cu ft
Specific Gravity of Solids			

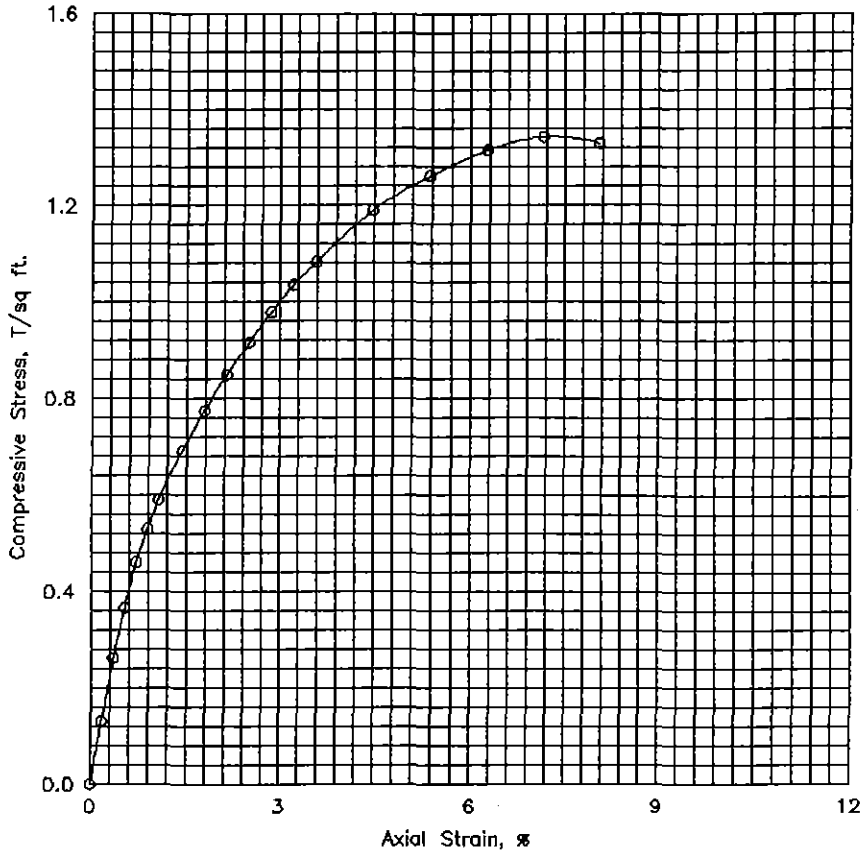
LL = 57 PL = 24 PI = 33

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	15.0	11.5	.002	6.30	.131
.5	20.	.020	30.0	23.0	.004	6.31	.262
.6	30.	.030	42.0	32.2	.005	6.32	.366
.9	40.	.040	53.0	40.6	.007	6.34	.461
1.0	50.	.050	61.0	46.7	.009	6.35	.530
1.3	60.	.060	68.0	52.1	.011	6.36	.590
1.5	80.	.080	80.0	61.3	.014	6.38	.691
1.9	100.	.100	90.0	68.9	.018	6.40	.775
2.2	120.	.120	99.0	75.8	.021	6.43	.849
2.5	140.	.140	107.0	82.0	.025	6.45	.915
2.9	160.	.160	115.0	88.1	.029	6.48	.979
3.2	180.	.180	122.0	93.5	.032	6.50	1.035
3.6	200.	.200	128.0	98.0	.036	6.52	1.082
4.4	250.	.250	142.0	108.8	.045	6.58	1.189
5.2	300.	.300	152.0	116.4	.054	6.65	1.261
6.0	350.	.350	160.0	122.6	.063	6.71	1.315
6.8	400.	.400	165.0	126.4	.071	6.77	1.343
7.7	450.	.450	165.0	126.4	.080	6.84	1.330

Job No. 140634

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	23.3 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	102.0			
Time to failure, min		t_f	6.83			
Unconfined compressive strength, T/sq ft		q_u	1.34			
Undrained shear strength, T/sq ft		S_u	.67			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Brown,Clay,Stiff,w/calcareous nodules

LL	57	PL	24	PI	33	G_s	

Remarks

Project	Brazos Island Harbor Project
	Brownsville Shipchannel
Area	near Brownsville, Texas
Boring No. 93-293	Sample No. 5
Depth El 8-10 ft	Date 8/2/93
UNCONFINED COMPRESSION TEST REPORT	

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

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