U.S. ARMY CORPS OF ENGINEERS

BORING NO. 93-337 DATE: BEGIN 7-13-93 PAGE 1 / 1
JOB NO. 146630 COMPLETE 7-13-93 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 1 ft., ELEV. ____ ft., at end of Drilling
WEATHER Sunny & 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	2.25	Brown	Clay	Very stiff		
		2	2.50	Brown	clay	Very stiff		
5		3	2.75	Brown	Clay	Very stiff		
		4	2.00	Brown	Clay	Very stiff		-w/Fe Nod
		5	2.25	Brown	clay	Very stiff		-w/Fe Nod
10		6	1.75	Gray	Clay	Stiff	Sand	-w/Sand Seams, Sa D 12'
		7	1/2	Gray	Sand	loose	Silty	-w/clay Seams
15		8	1.00	olive gray	Clay	Stiff	Sand,	-w/Fe Nod
		9	3.00	olive gray	Clay	Very stiff	Sand	-w/Fe Nod & Sa pkts
		10	4.5	olive gray	Clay	Hard	Sand	-w/Fe Nod & Sa pkts
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. 93-337

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	2.00		Brown,Clay,Very stiff	CH	26.8											
2	2 - 4	1.75		Gray&brown,Clay,Stiff	CH	29.5											
3	4 - 6	1.50		Brown,Clay,Stiff,w/ferrous nodules	CH	36.1	83.2	113.3	75	29	100.0	100.0	99.7	99.1	97.7		1.16
4	6 - 8	1.75		Brown,Clay,Stiff,w/ferrous nodules	CH	28.3											
5	8 - 10	2.00		Brown,Clay,Very stiff,w/ferrous nodules	CH	28.4											
6	10 - 12	1.75		Brown,Clay,Stiff,w/silt pockers&silt seams& Ferrous nodules	CH	28.5			51								
7	12.5 - 14		5	Gray,Sand,Loose,Silty	SM												
8	14 - 16	1.00		Olive gray,Clay,Stiff,Sandy,w/ferrous nodules	CL	18.9	110.1	130.9	32		100.0	100.0	97.6	82.9	75.6		1.07
9	16 - 18	3.75		Olive gray,Clay,Very stiff,Sandy,w/ferrous nodules	CL	17.3											
10	18 -20	4.5 +		Olive gray,Clay,Hard,Sandy,w/calcareous& ferrous nodules	CL	17.4											

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 8/9/93

PROJECT Brazos Island Harbor Project
Brownsville Shipchannel

AREA near Brownsville, Texas

BORING NO. 93-337 SAMPLE NO. 3 DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION
Brown, Clay, Stiff, w/ferrous nodules

Tare No.	KL-33	Height	5.595 in.
Tare plus Wet Specimen	460.08 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	349.28 gm	Initial Area	6.290 sq in.
Water Weight	110.80 gm	Volume	35.194 cu in.
Tare Weight	42.51 gm	Volume of Solids	cu in.
Wet Specimen	1046.51 gm	Void Ratio	
Dry Specimen	768.82 gm	Saturation	%
Water Content	36.12 %	Dry Density	83.2 lb/cu ft

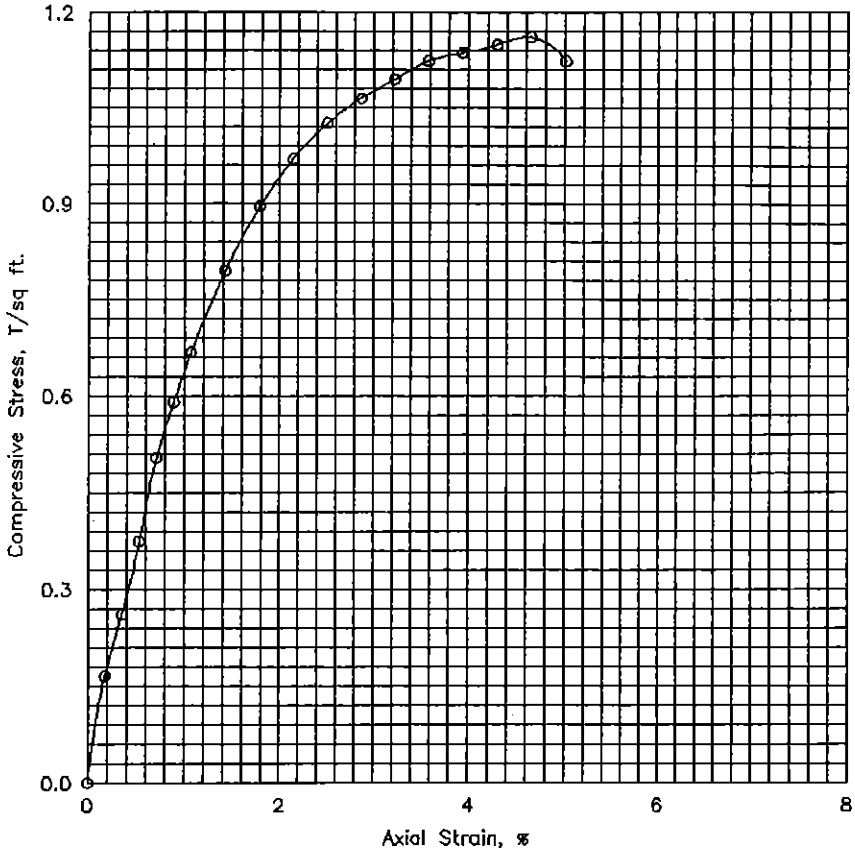
Specific Gravity of Solids
LL = 75 PL = 29 PI = 46

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	19.0	14.6	.002	6.30	.166
.3	20.	.020	30.0	23.0	.004	6.31	.262
.6	30.	.030	43.0	32.9	.005	6.32	.375
.8	40.	.040	58.0	44.4	.007	6.34	.505
.9	50.	.050	68.0	52.1	.009	6.35	.591
1.1	60.	.060	77.0	59.0	.011	6.36	.668
1.4	80.	.080	92.0	70.5	.014	6.38	.795
1.7	100.	.100	104.0	79.7	.018	6.40	.896
2.0	120.	.120	113.0	86.6	.021	6.43	.970
2.3	140.	.140	120.0	91.9	.025	6.45	1.026
2.7	160.	.160	125.0	95.8	.029	6.48	1.065
3.0	180.	.180	129.0	98.8	.032	6.50	1.095
3.3	200.	.200	133.0	101.9	.036	6.52	1.124
3.6	220.	.220	135.0	103.4	.039	6.55	1.137
3.9	240.	.240	137.0	104.9	.043	6.57	1.150
4.3	260.	.260	139.0	106.5	.046	6.60	1.162
4.6	280.	.280	135.0	103.4	.050	6.62	1.124

Job No. 14G634

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	36.1 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	83.2			
Time to failure, min		t_f	4.27			
Unconfined compressive strength, T/sq ft		q_u	1.16			
Undrained shear strength, T/sq ft		S_u	.58			
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/ferrous nodules

LL	75	PL	29	PI	46	G_s	

Remarks

Project	Brazos Island Harbor Project
	Brownsville Shipchannel
Area	near Brownsville, Texas
Boring No. 93-337	Sample No. 3
Depth El 4-6 ft	Date 8/9/93
UNCONFINED COMPRESSION TEST REPORT	

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G634 DATE 8/9/93

PROJECT Brazos Island Harbor Project
Brownsville Shipchannel

AREA near Brownsville, Texas

BORING NO. 93-337 SAMPLE NO. 8 DEPTH 14-16 ft

SPECIMEN NO. 1

CLASSIFICATION
Olive gray, Clay, Stiff, Sandy w/ferrous nodules

Tare No.	P-228	Height	5.595 in.
Tare plus Wet Specimen	557.11 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	475.30 gm	Initial Area	6.290 sq in.
Water Weight	81.81 gm	Volume	35.194 cu in.
Tare Weight	42.60 gm	Volume of Solids	cu in.
Wet Specimen	1209.38 gm	Void Ratio	
Dry Specimen	1017.08 gm	Saturation	%
Water Content	18.91 %	Dry Density	110.1 lb/cu ft
Specific Gravity of Solids			

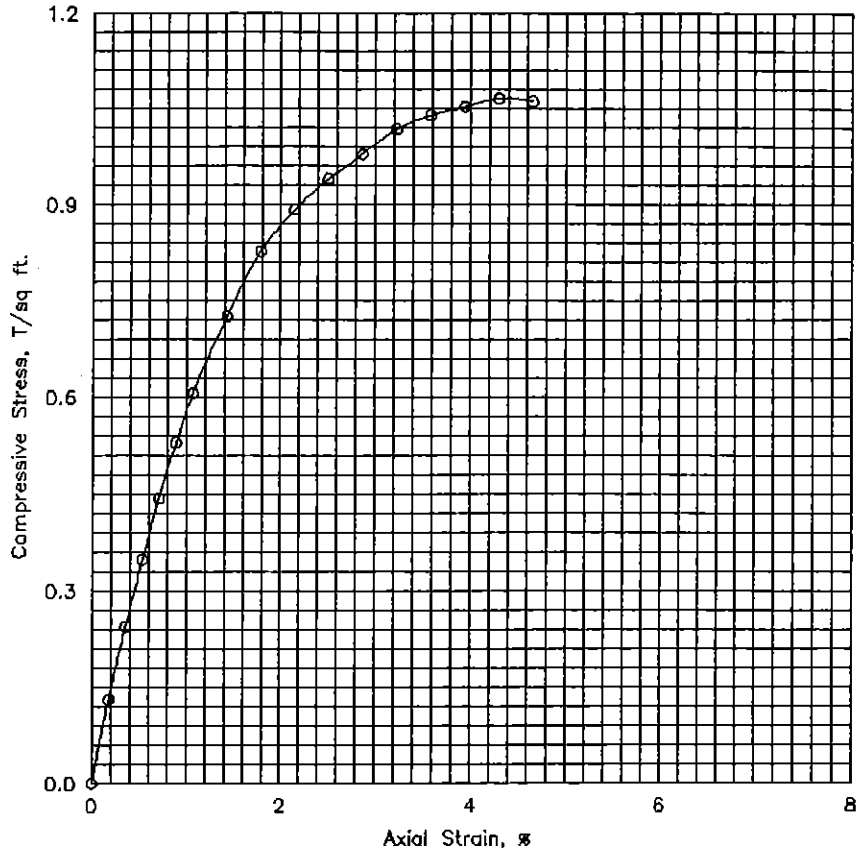
LL = 32 PL = PI =

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	15.0	11.5	.002	6.30	.131
.3	20.	.020	28.0	21.4	.004	6.31	.245
.5	30.	.030	40.0	30.6	.005	6.32	.349
.7	40.	.040	51.0	39.1	.007	6.34	.444
.9	50.	.050	61.0	46.7	.009	6.35	.530
1.0	60.	.060	70.0	53.6	.011	6.36	.607
1.4	80.	.080	84.0	64.3	.014	6.38	.726
1.7	100.	.100	96.0	73.5	.018	6.40	.827
2.0	120.	.120	104.0	79.7	.021	6.43	.892
2.3	140.	.140	110.0	84.3	.025	6.45	.940
2.7	160.	.160	115.0	88.1	.029	6.48	.979
3.0	180.	.180	120.0	91.9	.032	6.50	1.018
3.3	200.	.200	123.0	94.2	.036	6.52	1.040
3.5	220.	.220	125.0	95.8	.039	6.55	1.053
3.9	240.	.240	127.0	97.3	.043	6.57	1.066
4.2	260.	.260	127.0	97.3	.046	6.60	1.062

Job No. 14G634

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	18.9 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	110.1			
Time to failure, min		t_f	3.87			
Unconfined compressive strength, T/sq ft		q_u	1.07			
Undrained shear strength, T/sq ft		S_u	.53			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Olive gray, Clay, Stiff, Sandy w/ferrous nodules

LL	32	PL	PI	G_s

Remarks

Project	Brazos Island Harbor Project
	Brownsville Shipchannel
Area	near Brownsville, Texas
Boring No. 93-337	Sample No. 8
Depth El 14-16 ft	Date 8/9/93
UNCONFINED COMPRESSION TEST REPORT	

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PLATE XI-2

Geotest Engineering, Inc.

PLATE

B.I.H. DISPOSAL AREA NO. 8

	CORE BORING	COORDINATES X	Y	N.G. ELEV.
1	93-320	2363789.02	103773.22	12.56
2	93-321	2364323.55	103856.25	9.41
3	93-322	2364764.46	104067.99	17.49
4	93-323	2365237.93	104221.76	17.20
5	93-324	2365607.00	104552.24	15.75
6	93-325	2366123.53	104592.72	20.84
7	93-326	2366578.71	104834.40	15.89
8	93-327	2367088.58	104956.07	22.68
9	93-328	2367537.78	105191.97	23.08
10	93-329	2368014.21	105329.11	20.39
11	93-330	2368466.83	105561.97	12.21
12	93-331	2368574.14	104635.29	14.01
13	93-332	2368510.00	103633.81	14.13
14	93-333	2368542.26	102633.47	12.65
15	93-334	2368568.39	101634.32	11.91
16	93-335	2368538.72	100684.38	10.40
17	93-336	2368042.63	100675.22	10.87
18	93-337	2367237.44	100708.14	10.50
19	93-338	2367249.00	101707.25	10.60
20	93-339	2367245.36	102206.57	10.8
21	93-340	2367221.53	102747.93	13.44
22	93-341	2366605.67	102743.50	12.20
23	93-342	2365903.77	102710.82	12.98
24	93-343	2365205.46	102690.67	12.29