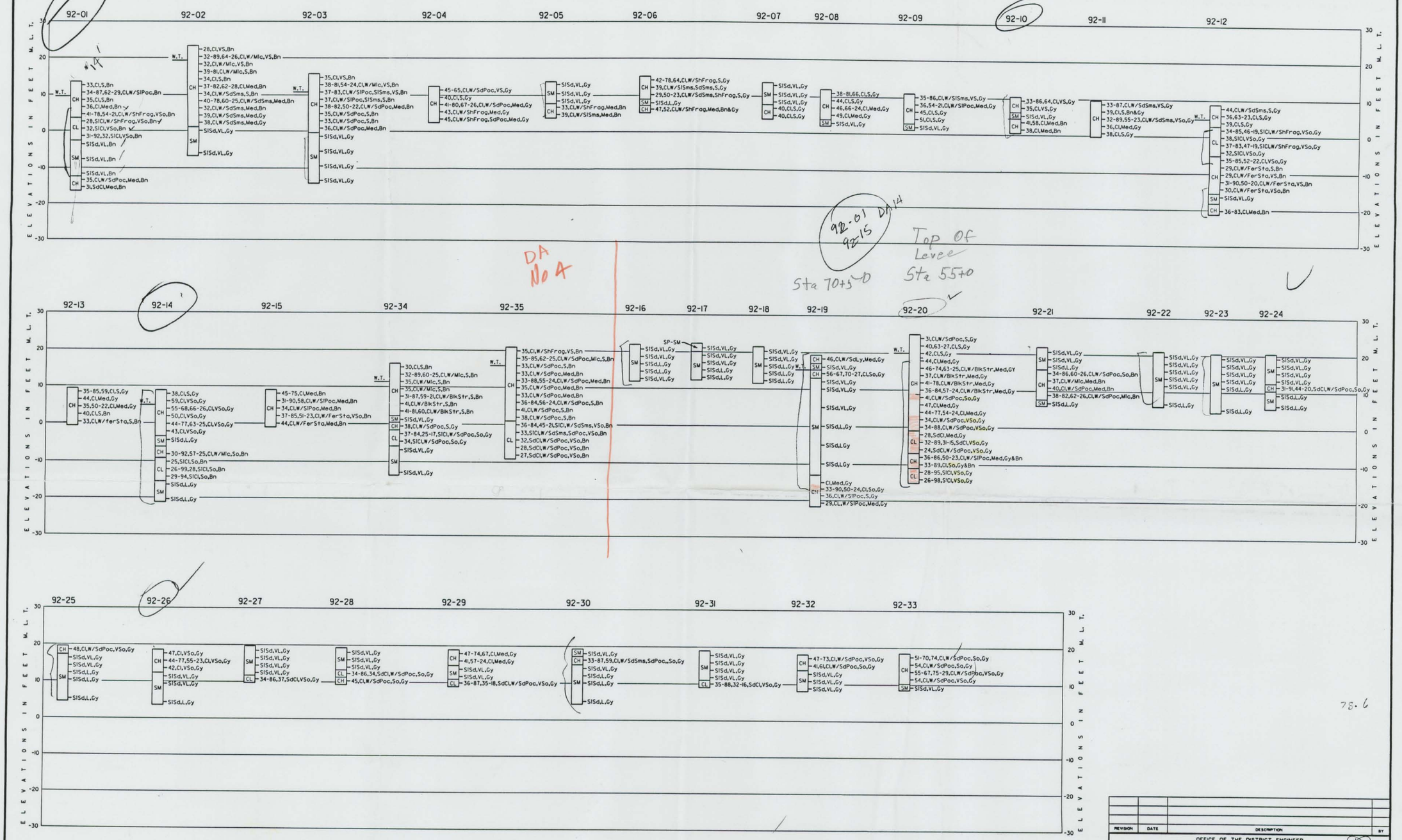


NOTE: SEE DRAWING NUMBER F-6 FOR SOILS NOTES .

REVISION	DATE	DESCRIPTION	BY

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

DRAWN BY: P.B.S.
TRACED BY:
CHECKED BY: J.T.F.
SUBMITTED BY: for David D. Campbell, CHIEF, SOILS DESIGN SECTION
APPROVED: David D. Campbell, CHIEF, GEOTECH. & SURVEYS BRANCH
APPROVED: for CHIEF ENGINEERING DIVISION
DATE: MAY 1992

BRAZOS ISLAND HARBOR, TEXAS
BROWNSVILLE CHANNEL
DREDGING INSHORE REACH No. 1
DISPOSAL AREAS Nos. 2 & 4
BORING LOGS

Prepared under the direction of
Brink P. Miller, Col., C.E.,
District Engineer

SCALE: AS SHOWN
SPEC. DATE:
DRAWING NUMBER F-7
SHEET 14 OF 17 FILE NO. RIO 90I-240

Project : Disposal Areas Nos.2 and 4 for Brownsville Ship Channel
Brownsville, Texas
Contract No. DACW64-92-D-0001 Delivery order No. 0008

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 92-20

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)	LL (%)	PL (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0-2	1.00		Gray,Clay,Stiff,w/sand pockets	CH	31.1											
2	2-4	1.25		Gray,Clay,Stiff	CH	39.5			63	27							
3	4-6	1.00		Gray,Clay,Stiff	CH	41.7										0.50	
4	6-8	0.75		Gray,Clay,Medium stiff	CH	44.0										0.35	
5	8-10	0.50		Gray,Clay,Medium stiff,w/blocky structure	CH	45.8	74.0	107.9	63	25	100.0	100.0	99.7	99.1	98.7	0.25	0.29
6	10-12	0.50		Gray,Clay,Medium stiff,w/blocky structure	CH	37.0										0.25	
7	12-14	0.50		Gray,Clay,Medium stiff,w/blocky structure	CH	41.3	77.9	110.1								0.25	0.20
8	14-16	0.50		Gray,Clay,Medium stiff,w/blocky structure	CH	36.2	84.1	114.6	57	24	100.0	99.9	99.5	99.3	98.8	0.25	0.34
9	16-18	0.25		Gray,Clay,Soft,w/sand pockets	CH	40.5										0.12	
10	18-20	0.50		Gray,Clay,Medium stiff	CH	47.2										0.25	
11	20-22	0.50		Gray,Clay,Medium stiff	CH	44.2	76.7	110.6	54	24	100.0	99.6	99.5	99.4	99.0	0.25	0.48
12	22-24	0.00		Gray,Clay,Very soft,w/sand pockets	CH	33.7										0.08	
13	24-26	0.00		Gray,Clay,Very soft,w/sand pockets	CH	33.6	87.6	117.0								0.08	0.14
14	26-28	0.50		Gray,Clay,Medium stiff,Sandy	CL	27.8										0.25	
15	28-30	0.00		Gray,Clay,Very soft,Sandy	CL	31.6	89.0	117.1	31	15	100.0	100.0	99.7	90.7	75.8	0.08	0.11
16	30-32	0.00		Gray,Clay,Very soft,Sandy,w/sand pockets	CL	24.4										0.09	
17	32-34	0.75		Gray & Brown,Clay,Medium stiff,w/silt pockets	CH	35.5	86.4	117.2	50	23	100.0	100.0	100.0	99.6	99.1	0.35	0.53

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.

Project : Disposal Areas Nos.2 and 4 for Brownsville Ship Channel
Brownsville, Texas
Contract No. DACW64-92-D-0001 Delivery order No. 0008

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 92-20

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)
18	34-36	0.25		Gray & Brown,Clay,Soft	CH	32.5	89.3	118.3								0.12	0.26
19	36-38	0.00		Gray,Clay,Very soft,Silty	CL	27.6	94.7	120.8								0.08	0.13
20	38-40	0.00		Gray,Clay,Very soft,Silty	CL	26.0	98.2	123.7								0.07	0.15

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.

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 92-20 DATE: BEGIN 3-18-92 PAGE 1 / 1
JOB NO. 146535 COMPLETE 3-18-92 Thin Walled Tube
PROJECT Brownsville Disp. Area ☑ 3" ☐ 6"
LOCATION " Ship Channel
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG ARDCO - C-1000
GROUNDWATER: DEPTH 5 ft., ELEV. ____ ft., at end of Drilling
WEATHER Cloudy - Warm - Showers
DRILLER D. Mitchell LOGGER J. Berg

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	2.5	Tan	Clay	very stiff		
		2	1.0	Gray	"	stiff		
5		3	.25	Gray	"	Soft		
		4	.5	"	"	Med stiff		
		5	.25	"	"	soft		
10		6	.25	"	"	"		
		7	.25	Gray	Clay	Soft	Sand	
15		8	.5	"	"	Med stiff	"	
		9	.25	"	"	soft	"	
		10	.5	"	"	Med. stiff	Silt	
20		11	.25	"	"	soft	"	
		12	.25	"	"	"	"	
25		13	.25	"	"	"	Silt	
		14	.25	"	"	"	"	w/Sa Snds
		15	.25	"	"	"	"	
30		16	.25	"	"	"	Sand	
		17	1.0	Tan + Gray	"	Stiff	Silt	
35		18	.25			soft		

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 92-20 DATE: BEGIN 3-18-92 PAGE 2 / 2
JOB NO. 144535 COMPLETE 3-18-92 Thin Walled Tube
PROJECT Brownsville Ship Channel ☑ 3" ☐ 6"
LOCATION " Disp. Area # 2
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG ARDCO-C-1000
GROUNDWATER: DEPTH 5 ft., ELEV. ____ ft., at end of Drilling
WEATHER Cloudy · Warm - Showers
DRILLER D. Mitchell LOGGER T. Rupe

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35								
		19	.5	Gray	Clay	med stiff	Silt	
		20	.75	Gray & Tan	"	med stiff	"	
40								Bottom of 91-20 40'
45								
50								
55								
60								
65								
70								

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

BORING NO. 92-20 SAMPLE NO. 5 DEPTH 8-10 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Medium stiff,w/blocky structure

Tare No.	KL-35	Height	5.595 in.
Tare plus Wet Specimen	437.54 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	313.50 gm	Initial Area	6.290 sq in.
Water Weight	124.04 gm	Volume	35.194 cu in.
Tare Weight	42.67 gm	Volume of Solids	cu in.
Wet Specimen	997.08 gm	Void Ratio	
Dry Specimen	683.87 gm	Saturation	%
Water Content	45.80 %	Dry Density	74.0 lb/cu ft
Specific Gravity of Solids			

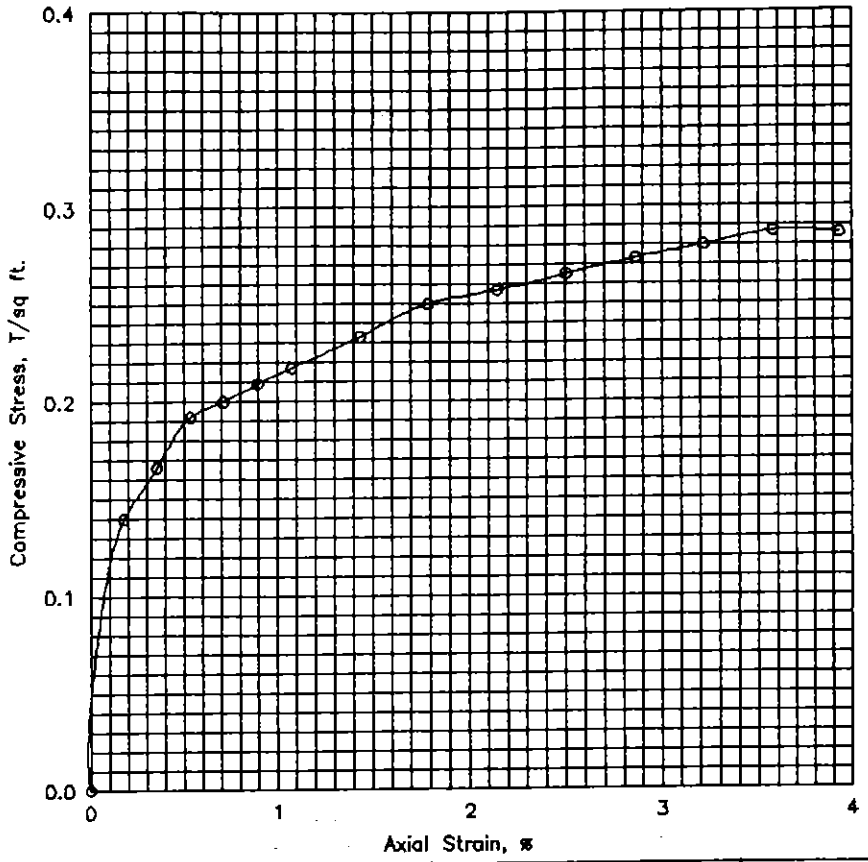
LL = 63 PL = 25 PI = 38

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	16.0	12.3	.002	6.30	.140
.3	20.	.020	19.0	14.6	.004	6.31	.166
.5	30.	.030	22.0	16.9	.005	6.32	.192
.7	40.	.040	23.0	17.6	.007	6.34	.200
.9	50.	.050	24.0	18.4	.009	6.35	.209
1.0	60.	.060	25.0	19.1	.011	6.36	.217
1.3	80.	.080	27.0	20.7	.014	6.38	.233
1.7	100.	.100	29.0	22.2	.018	6.40	.250
2.0	120.	.120	30.0	23.0	.021	6.43	.257
2.3	140.	.140	31.0	23.7	.025	6.45	.265
2.7	160.	.160	32.0	24.5	.029	6.48	.273
3.0	180.	.180	33.0	25.3	.032	6.50	.280
3.3	200.	.200	34.0	26.0	.036	6.52	.287
3.7	220.	.220	34.0	26.0	.039	6.55	.286

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	45.8 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	74.0			
Time to failure, min		t_f	3.30			
Unconfined compressive strength, T/sq ft		q_u	.29			
Undrained shear strength, T/sq ft		S_u	.14			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Medium stiff,w/blocky structure

LL	63	PL	25	PI	38	G_s	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-20 | Sample No. 5

Depth El 8-10 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

BORING NO. 92-20 SAMPLE NO. 7 DEPTH 12-14 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Medium stiff,w/blocky structure

Tare No.	P-203	Height	5.595 in.
Tare plus Wet Specimen	538.48 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	393.63 gm	Initial Area	6.290 sq in.
Water Weight	144.85 gm	Volume	35.194 cu in.
Tare Weight	42.69 gm	Volume of Solids	cu in.
Wet Specimen	1016.56 gm	Void Ratio	
Dry Specimen	719.56 gm	Saturation	%
Water Content	41.27 %	Dry Density	77.9 lb/cu ft
Specific Gravity of Solids			

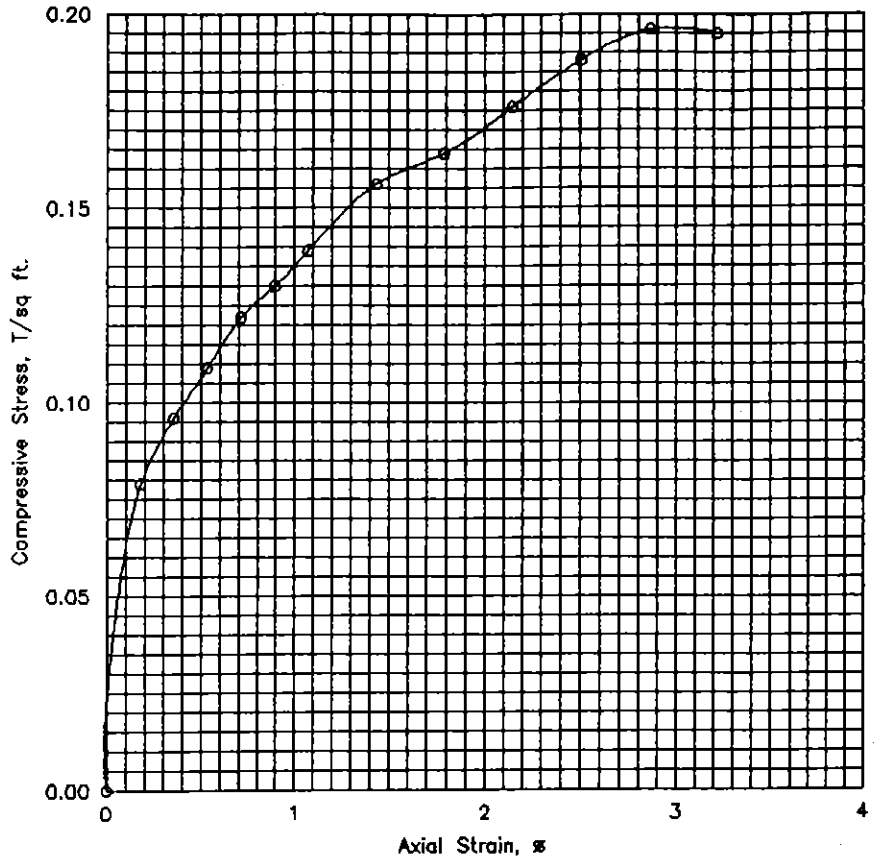
LL = PL = PI =

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	9.0	6.9	.002	6.30	.079
.4	20.	.020	11.0	8.4	.004	6.31	.096
.6	30.	.030	12.5	9.6	.005	6.32	.109
.8	40.	.040	14.0	10.7	.007	6.34	.122
.9	50.	.050	15.0	11.5	.009	6.35	.130
1.1	60.	.060	16.0	12.3	.011	6.36	.139
1.4	80.	.080	18.0	13.8	.014	6.38	.156
1.7	100.	.100	19.0	14.6	.018	6.40	.164
2.0	120.	.120	20.5	15.7	.021	6.43	.176
2.4	140.	.140	22.0	16.9	.025	6.45	.188
2.7	160.	.160	23.0	17.6	.029	6.48	.196
3.0	180.	.180	23.0	17.6	.032	6.50	.195

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	41.3 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	77.9			
Time to failure, min		t_f	2.68			
Unconfined compressive strength, T/sq ft		q_u	.20			
Undrained shear strength, T/sq ft		S_u	.10			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Medium stiff,w/blocky structure

LL	PL	PI	G_s

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-2D | Sample No. 7

Depth El 12-14 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G538 DATE 4/8/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

ORING NO. 92-20 SAMPLE NO. 8 DEPTH 14-16 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Medium stiff,w/blocky structure

Tare No.	P-205	Height	5.595 in.
Tare plus Wet Specimen	546.10 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	412.29 gm	Initial Area	6.290 sq in.
Water Weight	133.81 gm	Volume	35.194 cu in.
Tare Weight	42.55 gm	Volume of Solids	cu in.
Wet Specimen	1058.37 gm	Void Ratio	
Dry Specimen	777.13 gm	Saturation	%
Water Content	36.19 %	Dry Density	84.1 lb/cu ft
Specific Gravity of Solids			

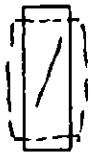
LL = 57 PL = 24 PI = 33

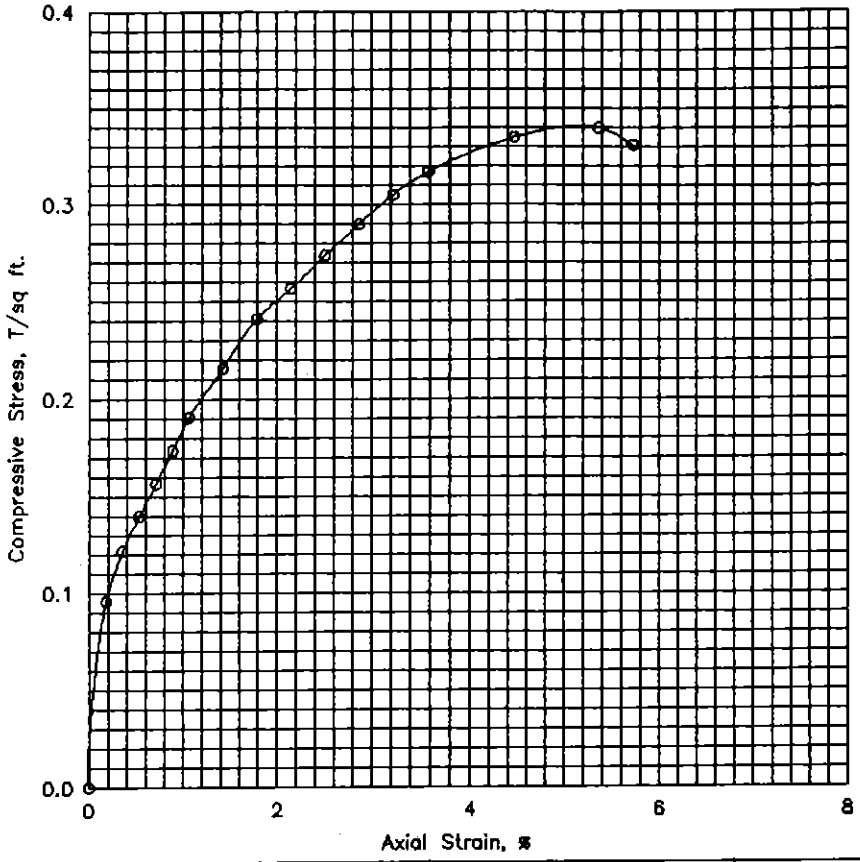
Proving Ring No. 10170
Proving Ring Constant, K = .766 lbs/div.

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	11.0	8.4	.002	6.30	.096
.4	20.	.020	14.0	10.7	.004	6.31	.122
.5	30.	.030	16.0	12.3	.005	6.32	.140
.7	40.	.040	18.0	13.8	.007	6.34	.157
.9	50.	.050	20.0	15.3	.009	6.35	.174
1.0	60.	.060	22.0	16.9	.011	6.36	.191
1.4	80.	.080	25.0	19.1	.014	6.38	.216
1.7	100.	.100	28.0	21.4	.018	6.40	.241
2.0	120.	.120	30.0	23.0	.021	6.43	.257
2.3	140.	.140	32.0	24.5	.025	6.45	.274
2.6	160.	.160	34.0	26.0	.029	6.48	.290
3.0	180.	.180	36.0	27.6	.032	6.50	.305
3.3	200.	.200	37.5	28.7	.036	6.52	.317
4.1	250.	.250	40.0	30.6	.045	6.58	.335
4.9	300.	.300	41.0	31.4	.054	6.65	.340
5.2	320.	.320	40.0	30.6	.057	6.67	.331

Job No. 14G538

Failure Sketches





☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	36.2 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	84.1			
Time to failure, min		t_f	4.92			
Unconfined compressive strength, T/sq ft		q_u	.34			
Undrained shear strength, T/sq ft		S_u	.17			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Medium stiff,w/blocky structure

LL	57	PL	24	PI	33	G_s	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-2D | Sample No. 8

Depth El 14-16 ft | Date 4/8/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

BORING NO. 92-20 SAMPLE NO. 11 DEPTH 20-22 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Medium stiff

Tare No.	P-200	Height	5.595 in.
Tare plus Wet Specimen	492.50 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	354.50 gm	Initial Area	6.290 sq in.
Water Weight	138.00 gm	Volume	35.194 cu in.
Tare Weight	42.40 gm	Volume of Solids	cu in.
Wet Specimen	1022.48 gm	Void Ratio	
Dry Specimen	708.99 gm	Saturation	%
Water Content	44.22 %	Dry Density	76.7 lb/cu ft
Specific Gravity of Solids			

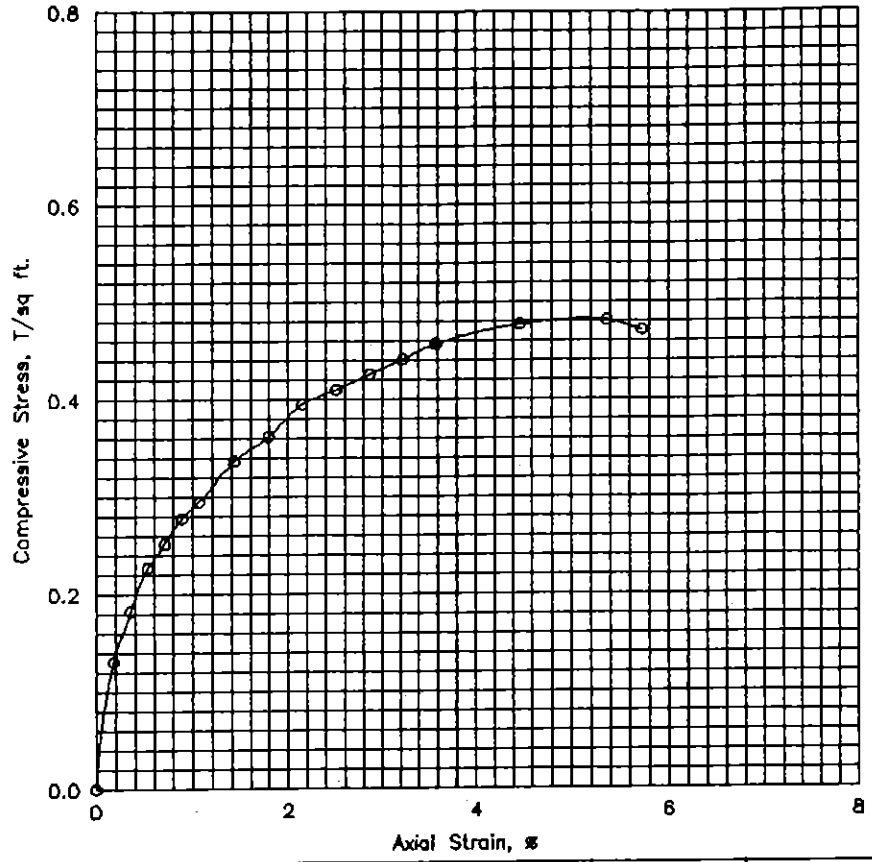
LL = 54 PL = 24 PI = 30

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
.2	10.	.010	15.0	11.5	.002	6.30	.131
.4	20.	.020	21.0	16.1	.004	6.31	.183
.6	30.	.030	26.0	19.9	.005	6.32	.227
.7	40.	.040	29.0	22.2	.007	6.34	.252
.9	50.	.050	32.0	24.5	.009	6.35	.278
1.0	60.	.060	34.0	26.0	.011	6.36	.295
1.4	80.	.080	39.0	29.9	.014	6.38	.337
1.7	100.	.100	42.0	32.2	.018	6.40	.362
2.0	120.	.120	46.0	35.2	.021	6.43	.395
2.4	140.	.140	48.0	36.8	.025	6.45	.410
2.7	160.	.160	50.0	38.3	.029	6.48	.426
3.0	180.	.180	52.0	39.8	.032	6.50	.441
3.3	200.	.200	54.0	41.4	.036	6.52	.457
4.2	250.	.250	57.0	43.7	.045	6.58	.477
4.9	300.	.300	58.0	44.4	.054	6.65	.481
5.3	320.	.320	57.0	43.7	.057	6.67	.471

Job No. 146538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	44.2 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	76.7			
Time to failure, min		t_f	4.93			
Unconfined compressive strength, T/sq ft		q_u	.48			
Undrained shear strength, T/sq ft		S_u	.24			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Medium stiff

LL	54	PL	24	PI	30	G_s	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-20 | Sample No. 11

Depth El 20-22 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

BORING NO. 92-20 SAMPLE NO. 13 DEPTH 24-26 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Very soft, w/sand pockets

Tare No.	KL-27	Height	5.595 in.
Tare plus Wet Specimen	601.85 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	461.24 gm	Initial Area	6.290 sq in.
Water Weight	140.61 gm	Volume	35.194 cu in.
Tare Weight	42.41 gm	Volume of Solids	cu in.
Wet Specimen	1080.94 gm	Void Ratio	
Dry Specimen	809.26 gm	Saturation	%
Water Content	33.57 %	Dry Density	87.6 lb/cu ft

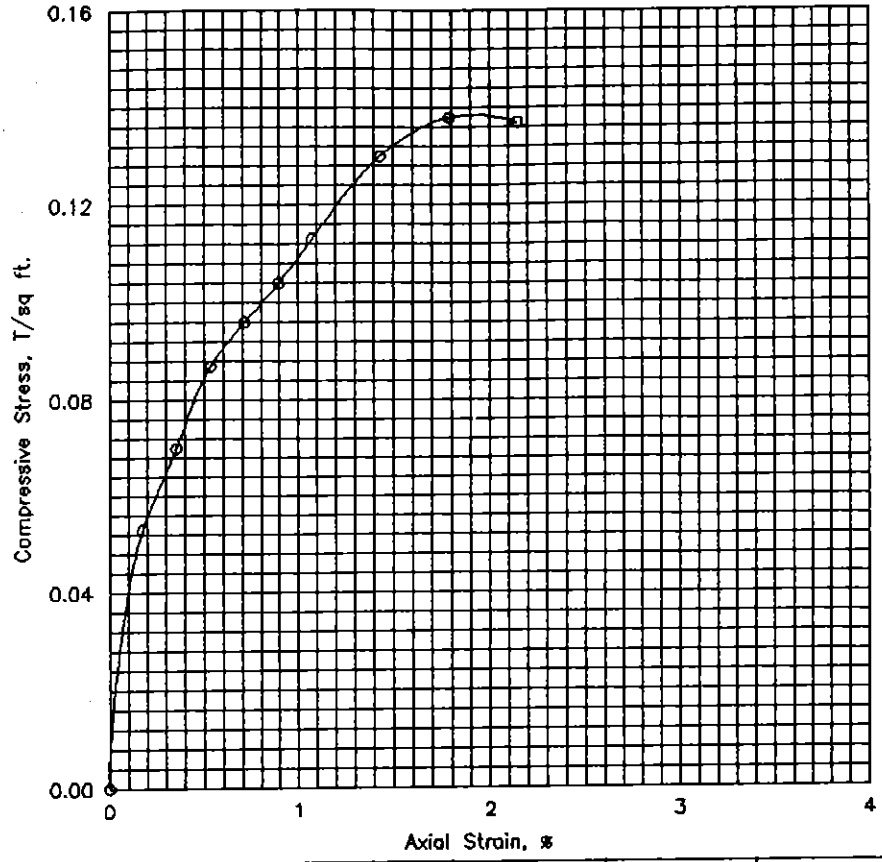
Specific Gravity of Solids
LL = PL = PI =

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	6.0	4.6	.002	6.30	.053
.3	20.	.020	8.0	6.1	.004	6.31	.070
.4	30.	.030	10.0	7.7	.005	6.32	.087
.6	40.	.040	11.0	8.4	.007	6.34	.096
.8	50.	.050	12.0	9.2	.009	6.35	.104
1.0	60.	.060	13.0	10.0	.011	6.36	.113
1.4	80.	.080	15.0	11.5	.014	6.38	.130
1.7	100.	.100	16.0	12.3	.018	6.40	.138
2.0	120.	.120	16.0	12.3	.021	6.43	.137

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	33.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	87.6			
Time to failure, min		t_f	1.72			
Unconfined compressive strength, T/sq ft		q_u	.14			
Undrained shear strength, T/sq ft		S_u	.07			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Very soft, w/sand pockets

LL	PL	PI	G_s

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-20 | Sample No. 13

Depth El 24-26 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

ORING NO. 92-20 SAMPLE NO. 15 DEPTH 28-30 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Very soft,Sandy

Tare No.	KL-23	Height	5.595 in.
Tare plus Wet Specimen	506.68 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	395.26 gm	Initial Area	6.290 sq in.
Water Weight	111.42 gm	Volume	35.194 cu in.
Tare Weight	42.31 gm	Volume of Solids	cu in.
Wet Specimen	1081.74 gm	Void Ratio	
Dry Specimen	822.19 gm	Saturation	%
Water Content	31.57 %	Dry Density	89.0 lb/cu ft
Specific Gravity of Solids			

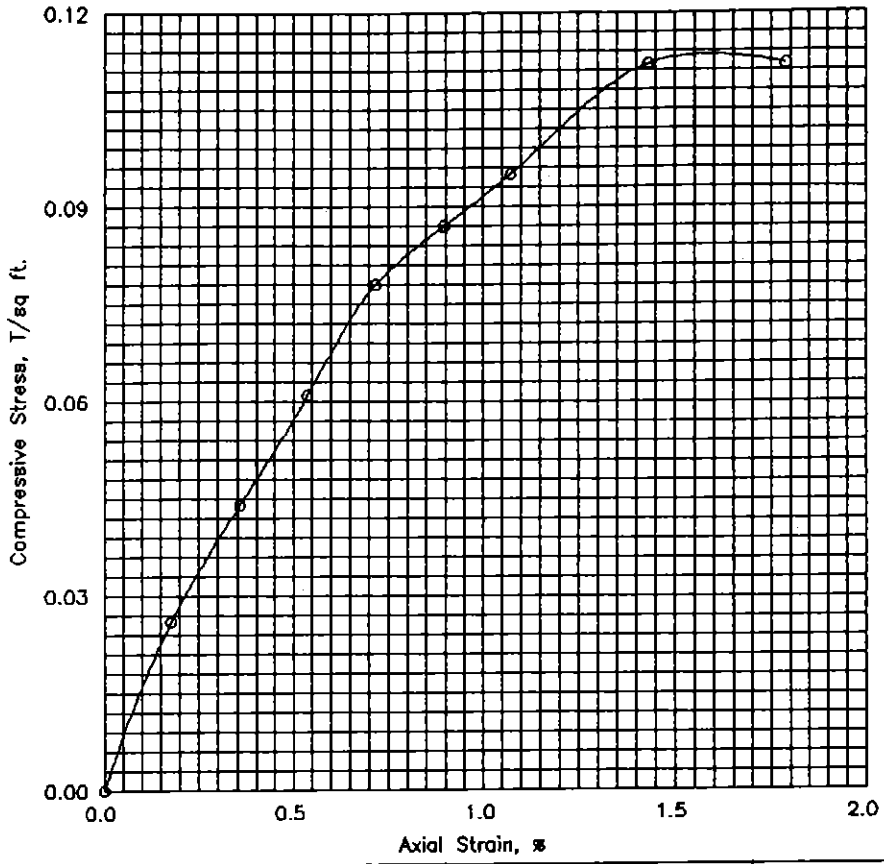
LL = 31 PL = 15 PI = 16

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	3.0	2.3	.002	6.30	.026
.4	20.	.020	5.0	3.8	.004	6.31	.044
.6	30.	.030	7.0	5.4	.005	6.32	.061
.7	40.	.040	9.0	6.9	.007	6.34	.078
.9	50.	.050	10.0	7.7	.009	6.35	.087
1.0	60.	.060	11.0	8.4	.011	6.36	.095
1.4	80.	.080	13.0	10.0	.014	6.38	.112
1.6	100.	.100	13.0	10.0	.018	6.40	.112

Job No. 146538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	31.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	89.0			
Time to failure, min		t_f	1.35			
Unconfined compressive strength, T/sq ft		q_u	.11			
Undrained shear strength, T/sq ft		S_u	.06			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Very soft,Sandy

LL	31	PL	15	PI	16	G_s	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-20 | Sample No. 15

Depth El 28-30 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

BORING NO. 92-20 SAMPLE NO. 17 DEPTH 32-34 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Medium stiff,w/silt pockets

Tare No.	P-219	Height	5.595 in.
Tare plus Wet Specimen	461.72 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	352.00 gm	Initial Area	6.290 sq in.
Water Weight	109.72 gm	Volume	35.194 cu in.
Tare Weight	42.59 gm	Volume of Solids	cu in.
Wet Specimen	1082.00 gm	Void Ratio	
Dry Specimen	798.75 gm	Saturation	%
Water Content	35.46 %	Dry Density	86.5 lb/cu ft
Specific Gravity of Solids			

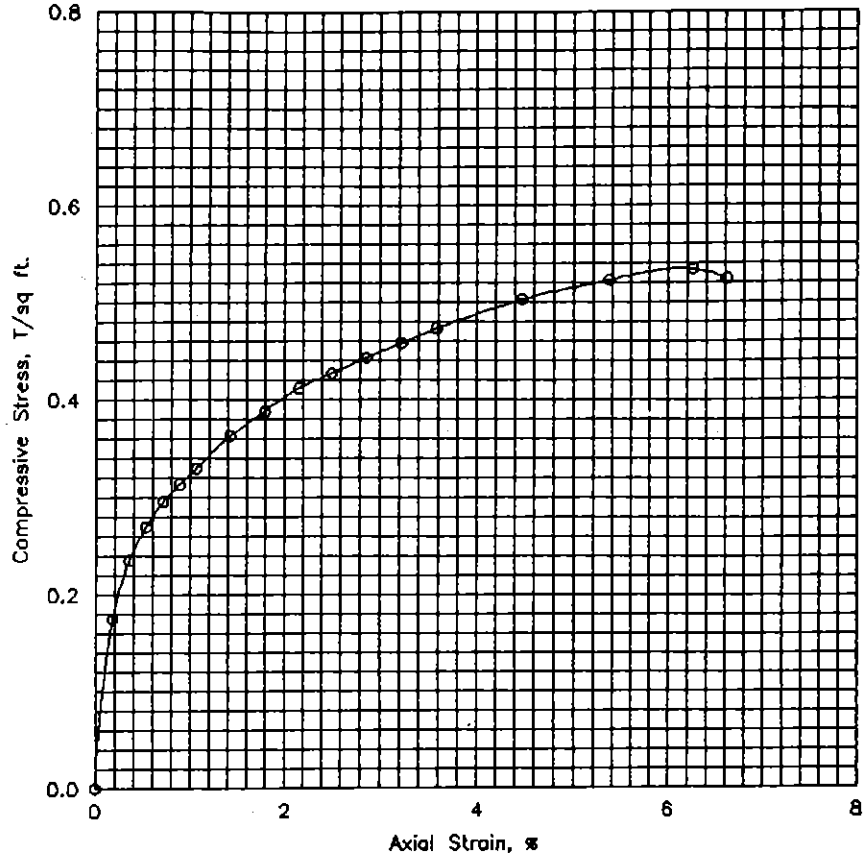
LL = 50 PL = 23 PI = 27

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	20.0	15.3	.002	6.30	.175
.4	20.	.020	27.0	20.7	.004	6.31	.236
.5	30.	.030	31.0	23.7	.005	6.32	.270
.7	40.	.040	34.0	26.0	.007	6.34	.296
.9	50.	.050	36.0	27.6	.009	6.35	.313
1.0	60.	.060	38.0	29.1	.011	6.36	.330
1.4	80.	.080	42.0	32.2	.014	6.38	.363
1.7	100.	.100	45.0	34.5	.018	6.40	.388
2.0	120.	.120	48.0	36.8	.021	6.43	.412
2.4	140.	.140	50.0	38.3	.025	6.45	.427
2.7	160.	.160	52.0	39.8	.029	6.48	.443
3.0	180.	.180	54.0	41.4	.032	6.50	.458
3.4	200.	.200	56.0	42.9	.036	6.52	.473
4.2	250.	.250	60.0	46.0	.045	6.58	.503
4.9	300.	.300	63.0	48.3	.054	6.65	.523
5.8	350.	.350	65.0	49.8	.063	6.71	.534
6.1	370.	.370	64.0	49.0	.066	6.74	.524

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	35.5 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	86.5			
Time to failure, min		t_f	5.82			
Unconfined compressive strength, T/sq ft		q_u	.53			
Undrained shear strength, T/sq ft		S_u	.27			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Gray,Clay,Medium stiff,w/silt pockets

LL	50	PL	23	PI	27	G_s	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-20 | Sample No. 17

Depth El 32-34 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

BORING NO. 92-20 SAMPLE NO. 18 DEPTH 34-36 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & Brown,Clay,Soft

Tare No.	KL-30	Height	5.595 in.
Tare plus Wet Specimen	373.63 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	292.39 gm	Initial Area	6.290 sq in.
Water Weight	81.24 gm	Volume	35.194 cu in.
Tare Weight	42.25 gm	Volume of Solids	cu in.
Wet Specimen	1093.03 gm	Void Ratio	
Dry Specimen	825.07 gm	Saturation	%
Water Content	32.48 %	Dry Density	89.3 lb/cu ft

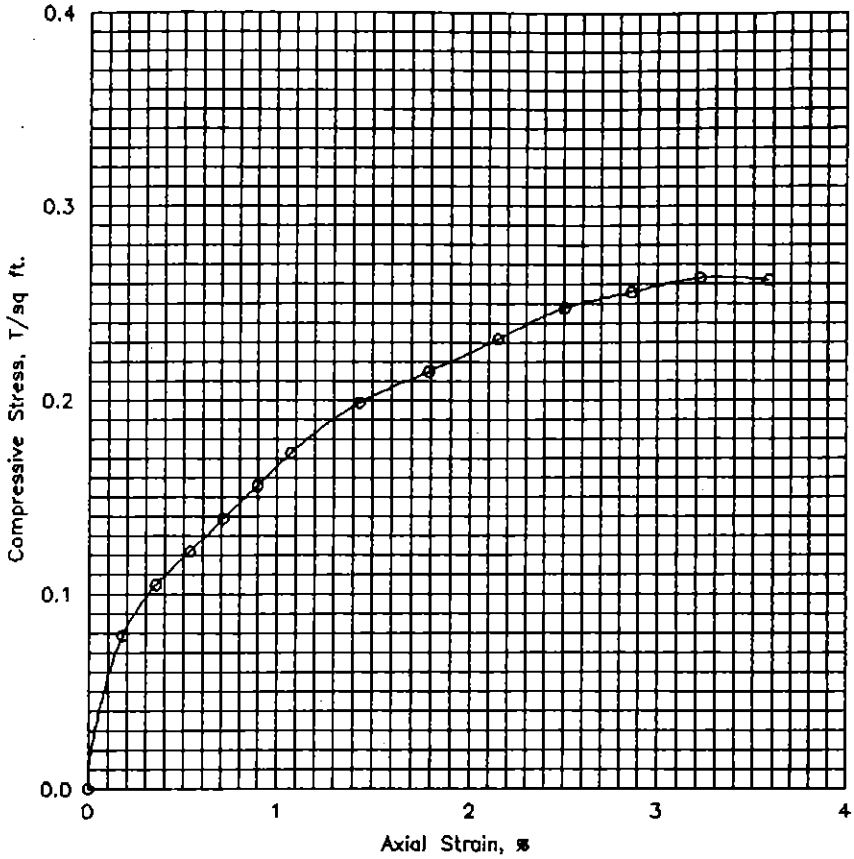
Specific Gravity of Solids
LL = PL = PI =

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	9.0	6.9	.002	6.30	.079
.3	20.	.020	12.0	9.2	.004	6.31	.105
.5	30.	.030	14.0	10.7	.005	6.32	.122
.7	40.	.040	16.0	12.3	.007	6.34	.139
.9	50.	.050	18.0	13.8	.009	6.35	.156
1.0	60.	.060	20.0	15.3	.011	6.36	.173
1.4	80.	.080	23.0	17.6	.014	6.38	.199
1.6	100.	.100	25.0	19.1	.018	6.40	.215
2.0	120.	.120	27.0	20.7	.021	6.43	.232
2.3	140.	.140	29.0	22.2	.025	6.45	.248
2.7	160.	.160	30.0	23.0	.029	6.48	.256
3.0	180.	.180	31.0	23.7	.032	6.50	.263
3.3	200.	.200	31.0	23.7	.036	6.52	.262

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	32.5 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	89.3			
Time to failure, min		t_f	2.98			
Unconfined compressive strength, T/sq ft		q_u	.26			
Undrained shear strength, T/sq ft		S_u	.13			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Gray & Brown,Clay,Soft

LL	PL	PI	G_s

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-2D | Sample No. 18

Depth El 34-36 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

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PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

ORING NO. 92-20 SAMPLE NO. 19 DEPTH 36-38 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Very soft,Silty

Tare No.	P-213	Height	5.595 in.
Tare plus Wet Specimen	634.14 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	506.06 gm	Initial Area	6.290 sq in.
Water Weight	128.08 gm	Volume	35.194 cu in.
Tare Weight	42.30 gm	Volume of Solids	cu in.
Wet Specimen	1116.35 gm	Void Ratio	
Dry Specimen	874.76 gm	Saturation	%
Water Content	27.62 %	Dry Density	94.7 lb/cu ft
Specific Gravity of Solids			

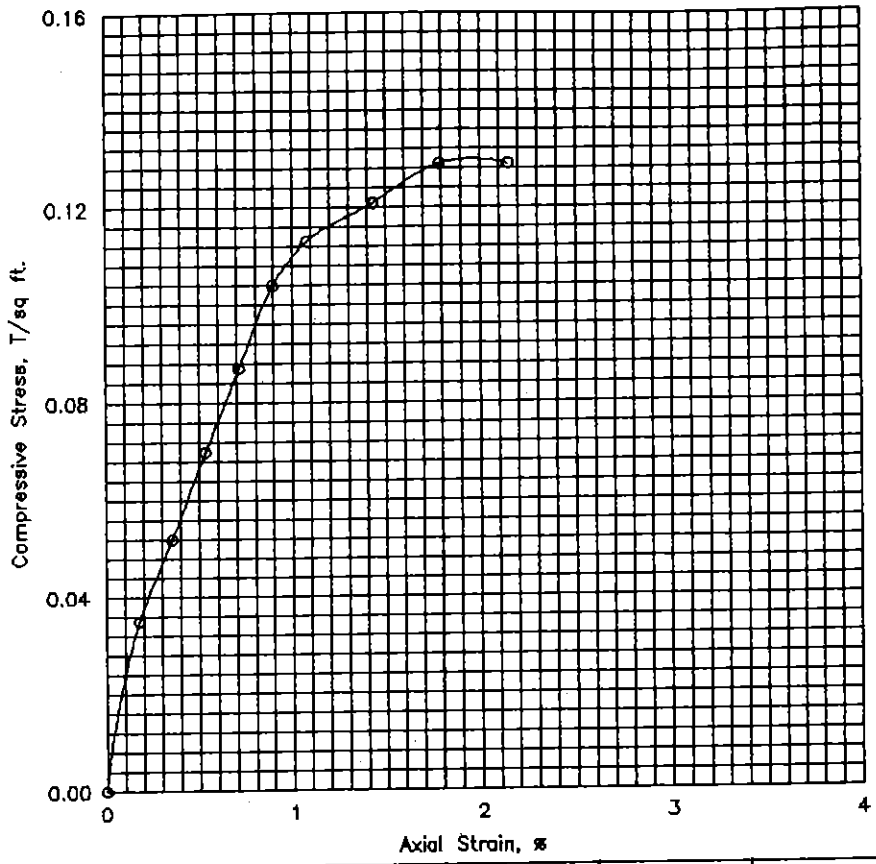
LL = PL = PI =

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	4.0	3.1	.002	6.30	.035
.3	20.	.020	6.0	4.6	.004	6.31	.052
.5	30.	.030	8.0	6.1	.005	6.32	.070
.7	40.	.040	10.0	7.7	.007	6.34	.087
.9	50.	.050	12.0	9.2	.009	6.35	.104
1.0	60.	.060	13.0	10.0	.011	6.36	.113
1.3	80.	.080	14.0	10.7	.014	6.38	.121
1.6	100.	.100	15.0	11.5	.018	6.40	.129
1.9	120.	.120	15.0	11.5	.021	6.43	.129

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	27.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	94.7			
Time to failure, min		t_f	1.63			
Unconfined compressive strength, T/sq ft		q_u	.13			
Undrained shear strength, T/sq ft		S_u	.06			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Very soft,Silty

LL	PL	PI	G_s

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-20 | Sample No. 19

Depth El 36-38 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G538 DATE 4/7/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

ORING NO. 92-20 SAMPLE NO. 20 DEPTH 38-40 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,Very soft,Silty

Tare No.	KL-28	Height	5.595 in.
Tare plus Wet Specimen	493.20 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	400.24 gm	Initial Area	6.290 sq in.
Water Weight	92.96 gm	Volume	35.194 cu in.
Tare Weight	42.75 gm	Volume of Solids	cu in.
Wet Specimen	1143.32 gm	Void Ratio	
Dry Specimen	907.37 gm	Saturation	%
Water Content	26.00 %	Dry Density	98.2 lb/cu ft
Specific Gravity of Solids			

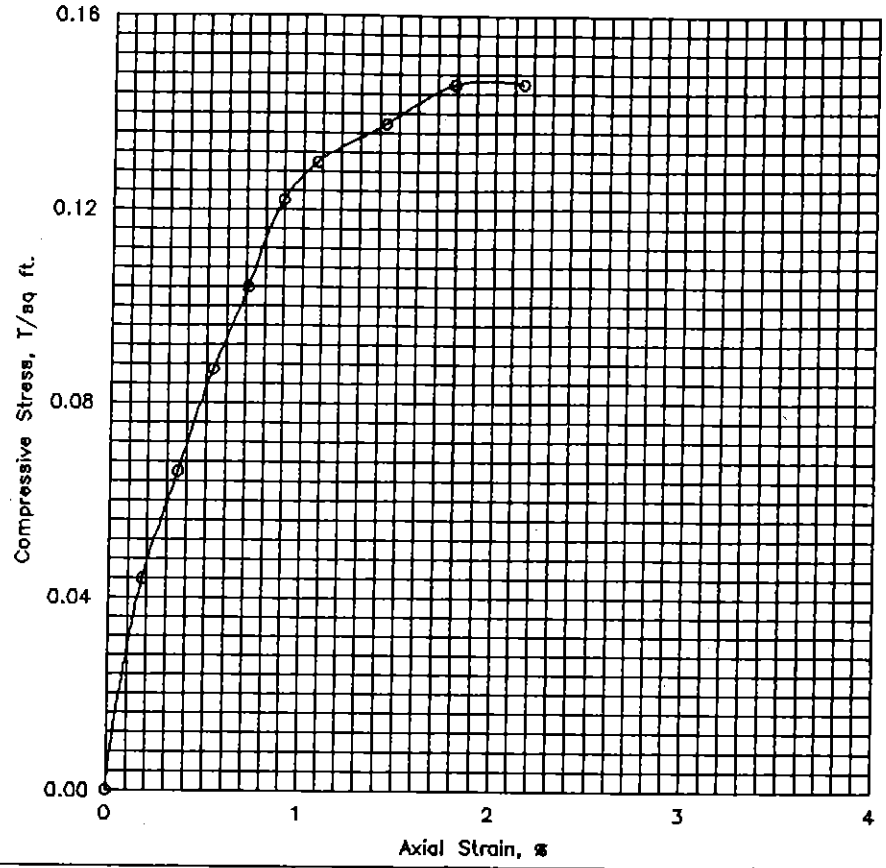
LL = PL = PI =

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	5.0	3.8	.002	6.30	.044
.4	20.	.020	7.5	5.7	.004	6.31	.066
.5	30.	.030	10.0	7.7	.005	6.32	.087
.7	40.	.040	12.0	9.2	.007	6.34	.104
.9	50.	.050	14.0	10.7	.009	6.35	.122
1.0	60.	.060	15.0	11.5	.011	6.36	.130
1.3	80.	.080	16.0	12.3	.014	6.38	.138
1.6	100.	.100	17.0	13.0	.018	6.40	.146
1.9	120.	.120	17.0	13.0	.021	6.43	.146

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	26.0 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	98.2			
Time to failure, min		t_f	1.63			
Unconfined compressive strength, T/sq ft		q_u	.15			
Undrained shear strength, T/sq ft		S_u	.07			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray,Clay,Very soft,Silty

LL	PL	PI	G_s

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-20 | Sample No. 20

Depth El 36-40 ft | Date 4/7/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

DATE 4/28/92 INITIALS

SUMMARY OF QUESTIONABLE
ERRONEOUS OR MISSING DATA
FOR
CONTRACT NO. DACW64-92-D-0001

PROJECT: LABORATORY TESTING OF SOIL SAMPLES, DISPOSAL AREA NOS. 2 & 4 BROWNSVILLE SHIP CHANNEL, DELIVERY ORDER 0008

BORING NO.	SAMPLE NO.	COMMENTS ON TEST RESULTS
92-08	3	Pocket penetrometer results (0.75) indicate soil is medium torvane results (.75 doubled) indicates stiff.
92-12	1	Torvane performed not ordered
	2, 3	Pocket penetrometer results (1.00) indicate soil is stiff torvane results (.45 doubled) indicate medium
	14	Unit dry weight performed, not ordered
92-20	5 & 8	Pocket penetrometer results (0.50) indicate soil is medium torvane results (.25 doubled) indicate medium, unconfined results indicate soft.
	7	Pocket penetrometer results (0.50) indicate soil is medium torvane results (.25 doubled) indicate medium, unconfined results indicate very soft.
	18-20	Unit dry weight performed, not ordered
92-21	4	Pocket penetrometer results (.25) indicate soil is soft, unconfined results (.21) torvane results (.12 doubled) indicate very soft
92-24	5	Pocket penetrometer results (.25) indicate soil is soft, torvane results (0.24), unconfined results (.14) indicates very soft.