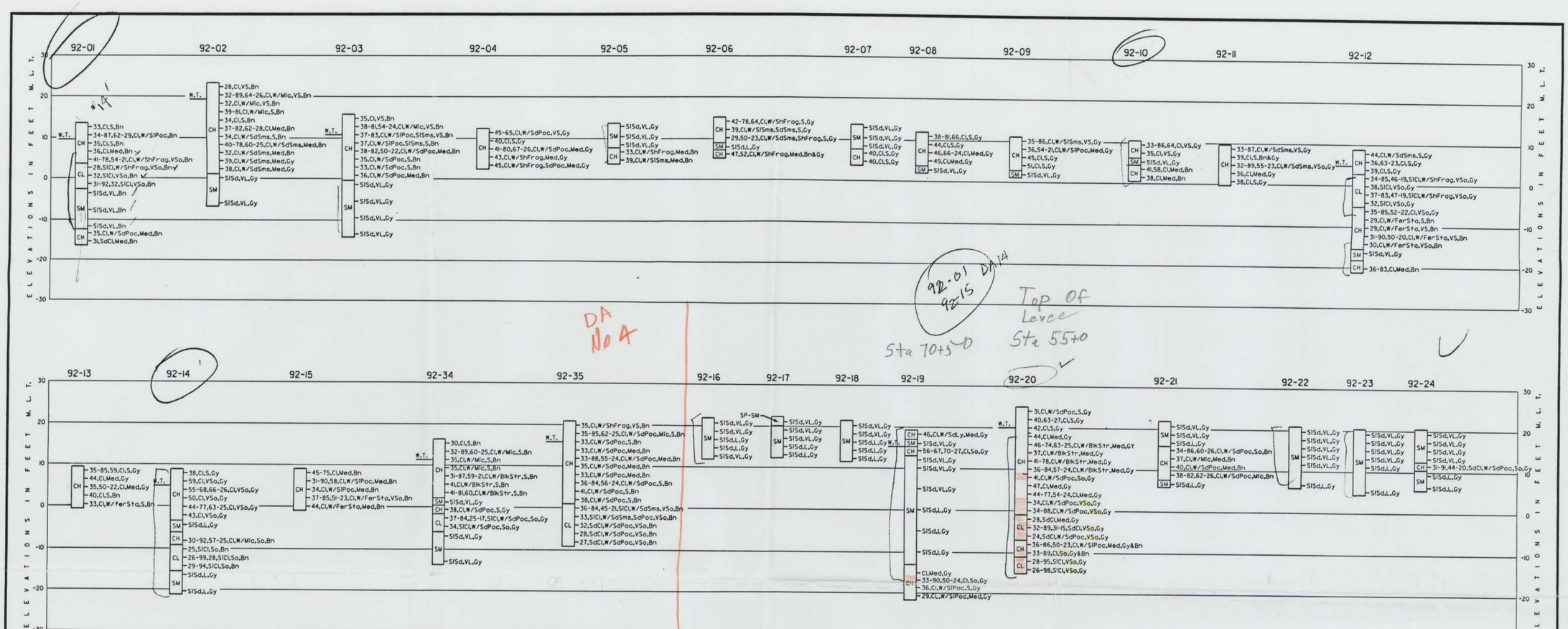
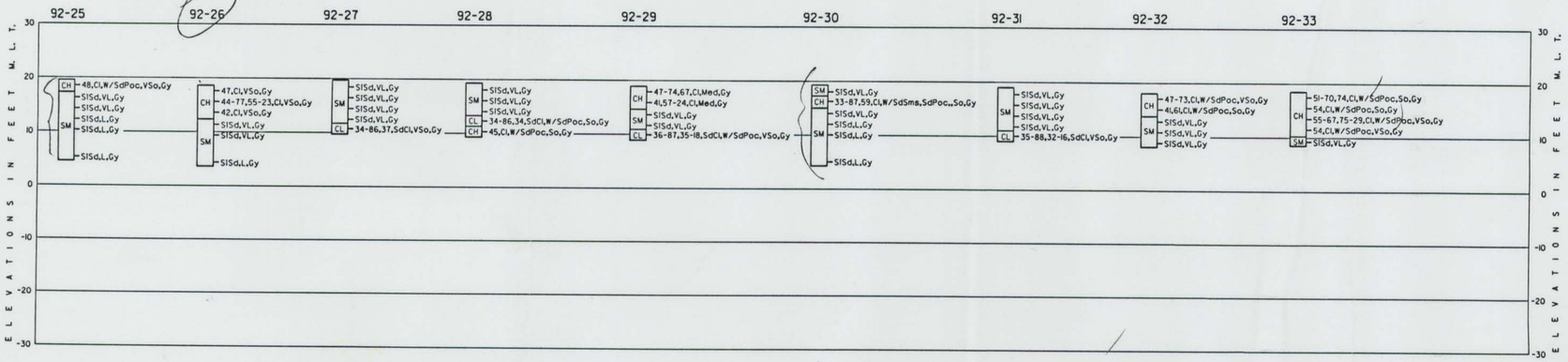




NOTE: SEE DRAWING NUMBER F-6 FOR SOILS NOTES .

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: David D. Campbell, CHIEF, SOILS DESIGN SECTION
APPROVED: David D. Campbell, CHIEF, GEOTECH. & SURVEYS BRANCH
APPROVED: for CHIEF ENGINEERING DIVISION
DATE: MAY 1992
SCALE: AS SHOWN
SPEC. DATE:
DRAWING NUMBER: F-7
SHEET 14 OF 17 FILE NO. RIO 901-240

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

78.6

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 92-14 DATE: BEGIN 3-20-92 PAGE 1 / 1
JOB NO. 146535 COMPLETE 3-20-92 Thin Walled Tube
PROJECT Brownsville Disp. Area #4 ☑ 3" ☐ 6"
LOCATION " Ship Channel
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG ARDCO - C-1000
GROUNDWATER: DEPTH 4 ft., ELEV. ____ ft., at end of Drilling
WEATHER P.C. Warm - Windy
DRILLER D. Mitchell LOGGER T. Berg

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	1.0	TAN	Clay	Stiff	Sand	
		2	.25	GRAY	"	Soft		
5		3	.25	"	"	"		
		4	.25	"	"	Soft		
		5	.25	"	"	"		
10		6	.25	"	"	"		
	X	7	2/3/3	TAN	Sand	Loose		Sa. at 12'
15								
		8	.25	TAN	Clay	Soft	Silt	Cl. at 16'
		9	.25	"	"	"	"	
20		10	.25	TAN	"	"	"	
		11	1.5	Gray	Clay	Stiff	Silt	
25	X	12	2/3/3	TAN	Sand	Loose		Sa. at 24'
	X	13	2/3/3	"	"	"		
30								Bottom of 92-14 30'
35								

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. 92-14

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 (%)	P L (%)	Mechanical Analysis % Passing					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
1	0-2	1.25		Gray,Clay,Stiff	CH	37.5											
2	2-4	0.00		Gray,Clay,Very soft	CH	59.4										0.08	
3	4-6	0.00		Gray,Clay,Very soft	CH	55.2	67.6	104.9	66	26	100.0	100.0	100.0	100.0	100.0	0.08	0.12
4	6-8	0.00		Gray,Clay,Very soft	CH	50.2										0.07	
5	8-10	0.00		Gray,Clay,Very soft	CH	43.9	77.3	111.2	63	25						0.08	0.11
6	10-12	0.00		Gray,Clay,Very soft	CH	43.2										0.08	
7	12.5-14		6	Gray,Sand,Loose,Silty	S M						100.0	100.0	100.0	96.6	38.9		
8	16-18	0.25		Brown,Clay,Soft,w/mica	CH	30.4	91.6	119.5	57	25						0.16	0.38
9	18-20	0.25		Brown,Clay,Soft,Silty	CL	25.1										0.18	
10	20-22	0.25		Brown,Clay,Soft,Silty	CL	25.5	98.8	124.0	28		100.0	100.0	99.7	99.4	97.1	0.18	0.43
11	22-24	0.25		Brown,Clay,Soft,Silty	CL	29.3	94.1	121.7								0.16	0.34
12	24.5-26		5	Gray,Sand,Loose,Silty	S M												
13	28.5-30		6	Gray,Sand,Loose,Silty	S M												

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

JOB NO. 14G538 DATE 4/6/92

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

BORING NO. 92-14 SAMPLE NO. 3 DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,very soft

Tare No.	P-217	Height	5.595 in.
Tare plus Wet Specimen	418.29 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	284.65 gm	Initial Area	6.290 sq in.
Water Weight	133.64 gm	Volume	35.194 cu in.
Tare Weight	42.48 gm	Volume of Solids	cu in.
Wet Specimen	968.93 gm	Void Ratio	
Dry Specimen	624.37 gm	Saturation	%
Water Content	55.18 %	Dry Density	67.6 lb/cu ft

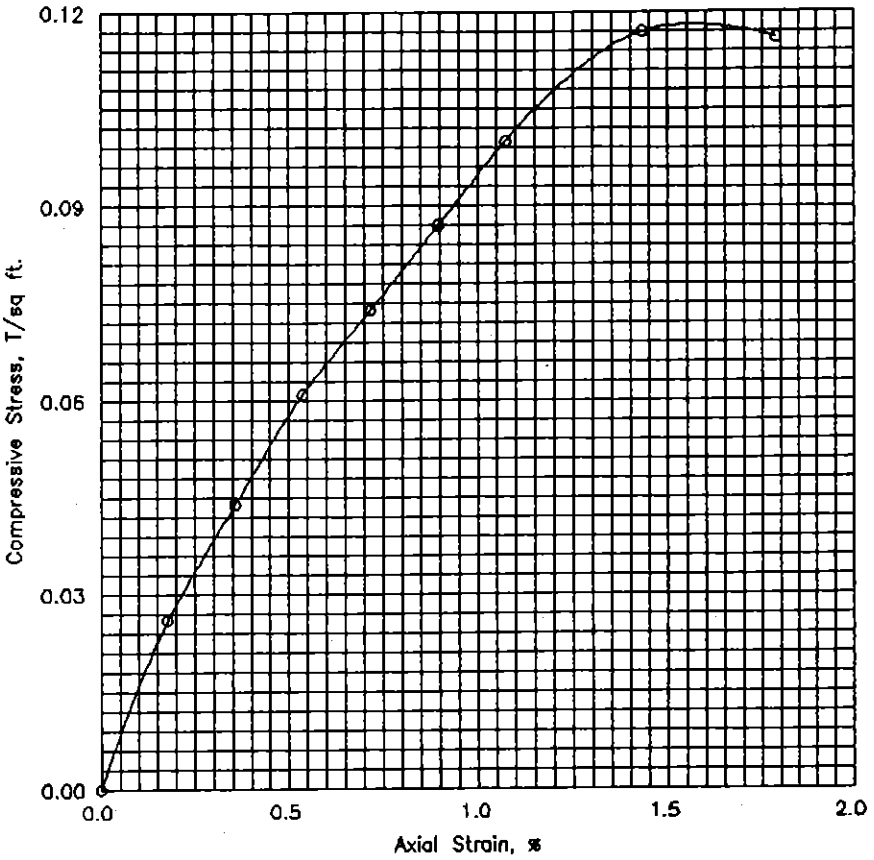
Specific Gravity of Solids
LL = 66 PL = 26 PI = 40

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
.3	20.	.020	5.0	3.8	.004	6.31	.044
.5	30.	.030	7.0	5.4	.005	6.32	.061
.7	40.	.040	8.5	6.5	.007	6.34	.074
.9	50.	.050	10.0	7.7	.009	6.35	.087
1.0	60.	.060	11.5	8.8	.011	6.36	.100
1.3	80.	.080	13.5	10.3	.014	6.38	.117
1.6	100.	.100	13.5	10.3	.018	6.40	.116

Job No. 146538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	55.2 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	67.6			
Time to failure, min		t_f	1.33			
Unconfined compressive strength, T/sq ft		q_u	.12			
Undrained shear strength, T/sq ft		S_u	.06			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Gray,Clay,very soft

LL	PL	PI	G_s
66	26	40	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-14 | Sample No. 3

Depth El 4-6 ft | Date 4/6/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 3659
1 JUN 65

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G538 DATE 4/6/92

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

BORING NO. 92-14 SAMPLE NO. 5 DEPTH 8-10 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,very soft

Tare No.	P-210	Height	5.595 in.
Tare plus Wet Specimen	453.78 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	328.31 gm	Initial Area	6.290 sq in.
Water Weight	125.47 gm	Volume	35.194 cu in.
Tare Weight	42.62 gm	Volume of Solids	cu in.
Wet Specimen	1027.30 gm	Void Ratio	
Dry Specimen	713.81 gm	Saturation	%
Water Content	43.92 %	Dry Density	77.3 lb/cu ft

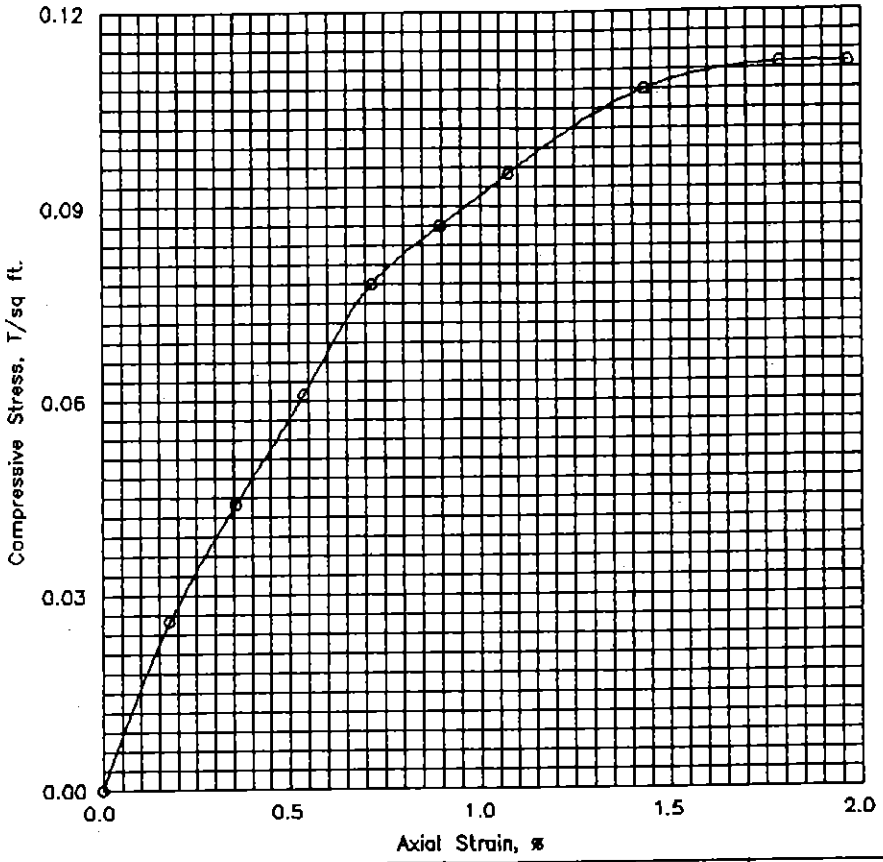
Specific Gravity of Solids
LL = 63 PL = 25 PI = 38

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	3.0	2.3	.002	6.30	.026
.4	20.	.020	5.0	3.8	.004	6.31	.044
.5	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
1.3	80.	.080	12.5	9.6	.014	6.38	.108
1.6	100.	.100	13.0	10.0	.018	6.40	.112
1.8	110.	.110	13.0	10.0	.020	6.42	.112

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	43.9 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	77.3			
Time to failure, min		t_f	1.58			
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_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Gray,Clay,very soft

LL	PL	PI	G_s
63	25	38	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-14 | Sample No. 5

Depth El 8-10 ft | Date 4/6/92

UNCONFINED COMPRESSION TEST REPORT

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PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G538 DATE 4/6/92

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

BORING NO. 92-14 SAMPLE NO. 8 DEPTH 16-18 ft

SPECIMEN NO. 1

CLASSIFICATION
Brown,Clay,Soft, w/mica

Tare No.	P-220	Height	5.595 in.
Tare plus Wet Specimen	362.79 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	288.11 gm	Initial Area	6.290 sq in.
Water Weight	74.68 gm	Volume	35.194 cu in.
Tare Weight	42.79 gm	Volume of Solids	cu in.
Wet Specimen	1103.63 gm	Void Ratio	
Dry Specimen	846.07 gm	Saturation	%
Water Content	30.44 %	Dry Density	91.6 lb/cu ft

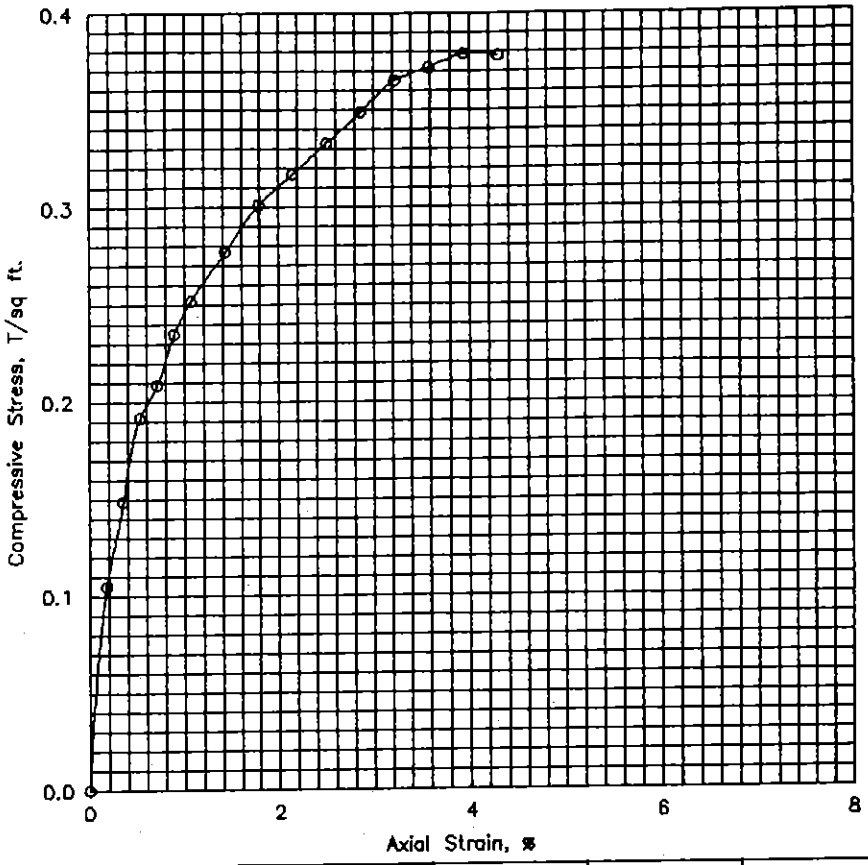
Specific Gravity of Solids
LL = 57 PL = 25 PI = 32

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	12.0	9.2	.002	6.30	.105
.4	20.	.020	17.0	13.0	.004	6.31	.149
.5	30.	.030	22.0	16.9	.005	6.32	.192
.7	40.	.040	24.0	18.4	.007	6.34	.209
.9	50.	.050	27.0	20.7	.009	6.35	.235
1.1	60.	.060	29.0	22.2	.011	6.36	.252
1.4	80.	.080	32.0	24.5	.014	6.38	.277
1.7	100.	.100	35.0	26.8	.018	6.40	.301
2.0	120.	.120	37.0	28.3	.021	6.43	.317
2.4	140.	.140	39.0	29.9	.025	6.45	.333
2.7	160.	.160	41.0	31.4	.029	6.48	.349
3.1	180.	.180	43.0	32.9	.032	6.50	.365
3.3	200.	.200	44.0	33.7	.036	6.52	.372
3.7	220.	.220	45.0	34.5	.039	6.55	.379
4.0	240.	.240	45.0	34.5	.043	6.57	.378

Job No. 146538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	30.4 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	91.6			
Time to failure, min		t_f	3.65			
Unconfined compressive strength, T/sq ft		q_u	.38			
Undrained shear strength, T/sq ft		S_u	.19			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Brown,Clay,Soft, w/mica

LL	PL	PI	G_s
57	25	32	

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-14 | Sample No. 8

Depth El 16-18 ft | Date 4/6/92

UNCONFINED COMPRESSION TEST REPORT

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PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G538 DATE 4/6/92

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

BORING NO. 92-14 SAMPLE NO. 10 DEPTH 20-22 ft

SPECIMEN NO. 1

CLASSIFICATION
Brown,Clay,Soft,Silty

Tare No.	P-13	Height	5.595 in.
Tare plus Wet Specimen	474.20 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	386.54 gm	Initial Area	6.290 sq in.
Water Weight	87.66 gm	Volume	35.194 cu in.
Tare Weight	42.50 gm	Volume of Solids	cu in.
Wet Specimen	1145.83 gm	Void Ratio	
Dry Specimen	913.16 gm	Saturation	%
Water Content	25.48 %	Dry Density	98.8 lb/cu ft

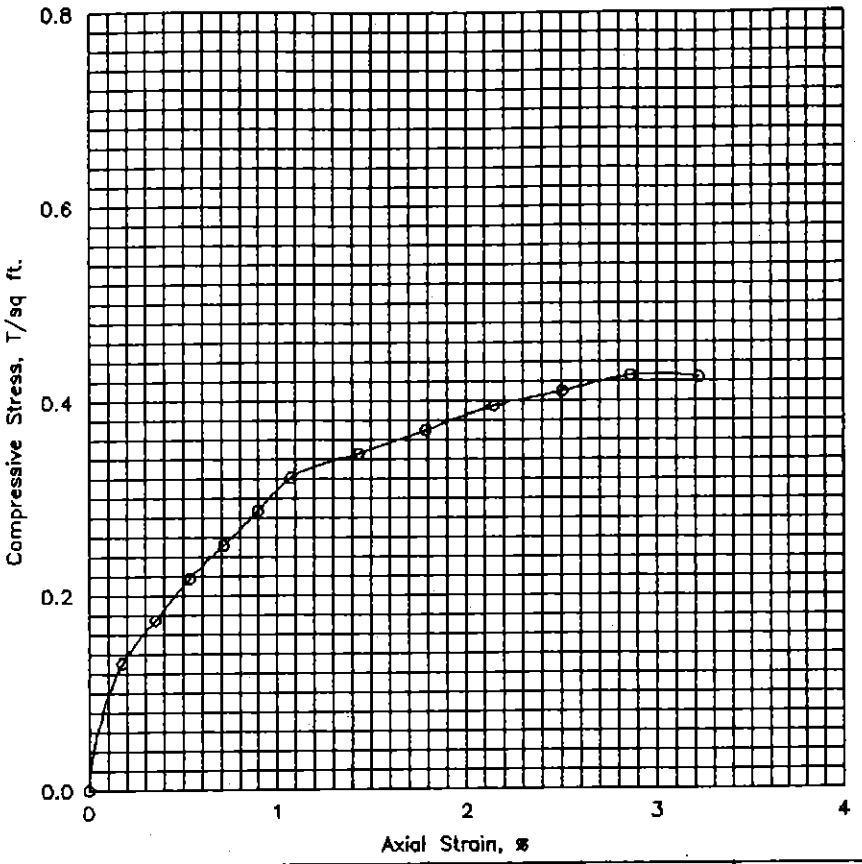
Specific Gravity of Solids
LL = 28 PL = PI =

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
.4	20.	.020	20.0	15.3	.004	6.31	.175
.5	30.	.030	25.0	19.1	.005	6.32	.218
.7	40.	.040	29.0	22.2	.007	6.34	.252
.9	50.	.050	33.0	25.3	.009	6.35	.287
1.1	60.	.060	37.0	28.3	.011	6.36	.321
1.4	80.	.080	40.0	30.6	.014	6.38	.346
1.7	100.	.100	43.0	32.9	.018	6.40	.370
2.0	120.	.120	46.0	35.2	.021	6.43	.395
2.3	140.	.140	48.0	36.8	.025	6.45	.410
2.6	160.	.160	50.0	38.3	.029	6.48	.426
2.7	180.	.180	50.0	38.3	.032	6.50	.424

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	25.5 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	98.8			
Time to failure, min		t_f	2.57			
Unconfined compressive strength, T/sq ft		q_u	.43			
Undrained shear strength, T/sq ft		S_u	.21			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Brown,Clay,Soft,Silty

LL	PL	PI	G_s
28			

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-14 | Sample No. 10

Depth El 20-22 ft | Date 4/6/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 3659
1 JUN 65

PLATE XI-2

JOB NO. 14G538 DATE 4/6/92

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

BORING NO. 92-14 SAMPLE NO. 11 DEPTH 22-24 ft

SPECIMEN NO. 1

CLASSIFICATION
Brown,Clay,Soft,Silty

Tare No.	P-14	Height	5.595 in.
Tare plus Wet Specimen	545.90 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	431.69 gm	Initial Area	6.290 sq in.
Water Weight	114.21 gm	Volume	35.194 cu in.
Tare Weight	42.52 gm	Volume of Solids	cu in.
Wet Specimen	1123.98 gm	Void Ratio	
Dry Specimen	868.96 gm	Saturation	%
Water Content	29.35 %	Dry Density	94.1 lb/cu ft

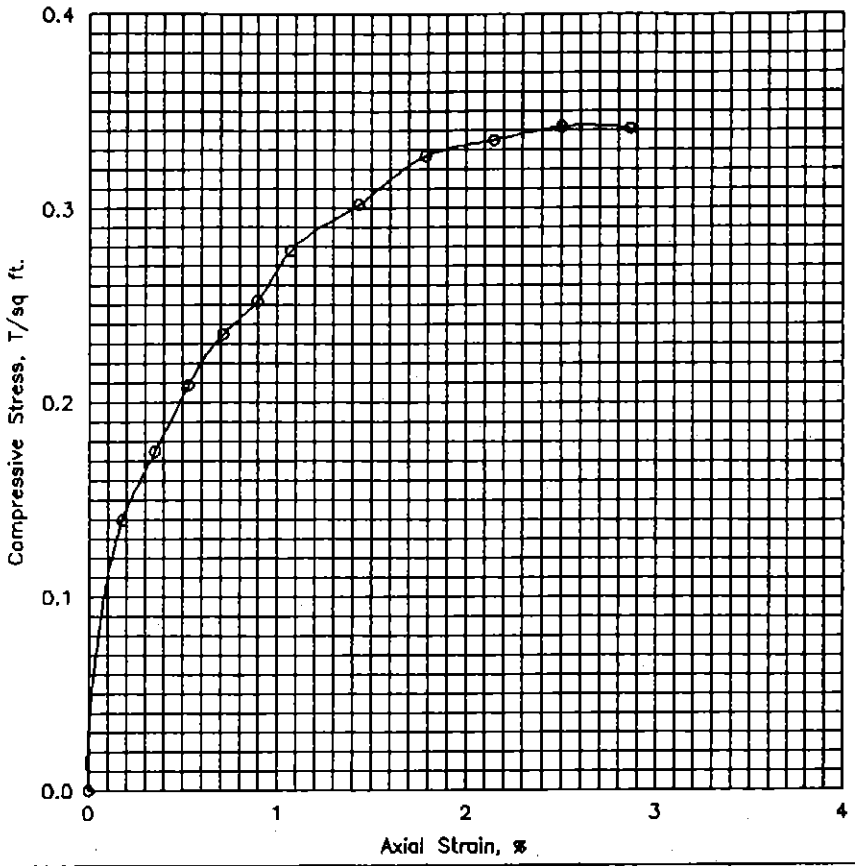
Specific Gravity of Solids
LL = PL = PI =

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	16.0	12.3	.002	6.30	.140
.3	20.	.020	20.0	15.3	.004	6.31	.175
.5	30.	.030	24.0	18.4	.005	6.32	.209
.7	40.	.040	27.0	20.7	.007	6.34	.235
.9	50.	.050	29.0	22.2	.009	6.35	.252
1.0	60.	.060	32.0	24.5	.011	6.36	.278
1.3	80.	.080	35.0	26.8	.014	6.38	.302
1.6	100.	.100	38.0	29.1	.018	6.40	.327
1.9	120.	.120	39.0	29.9	.021	6.43	.335
2.2	140.	.140	40.0	30.6	.025	6.45	.342
2.4	160.	.160	40.0	30.6	.029	6.48	.341

Job No. 140538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	29.3 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	94.1			
Time to failure, min		t_f	2.15			
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 Brown,Clay,Soft,Silty

LL	PL	PI	G_s

Remarks

Project Disposal Areas Nos. 2 and 4 for Brownsville

Area Ship Channel, Brownsville, Texas

Boring No. 92-14 | Sample No. 11

Depth El 22-24 ft | Date 4/6/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 3659
1 JUN 65

PLATE XI-2

Geotest Engineering, Inc.

PLATE