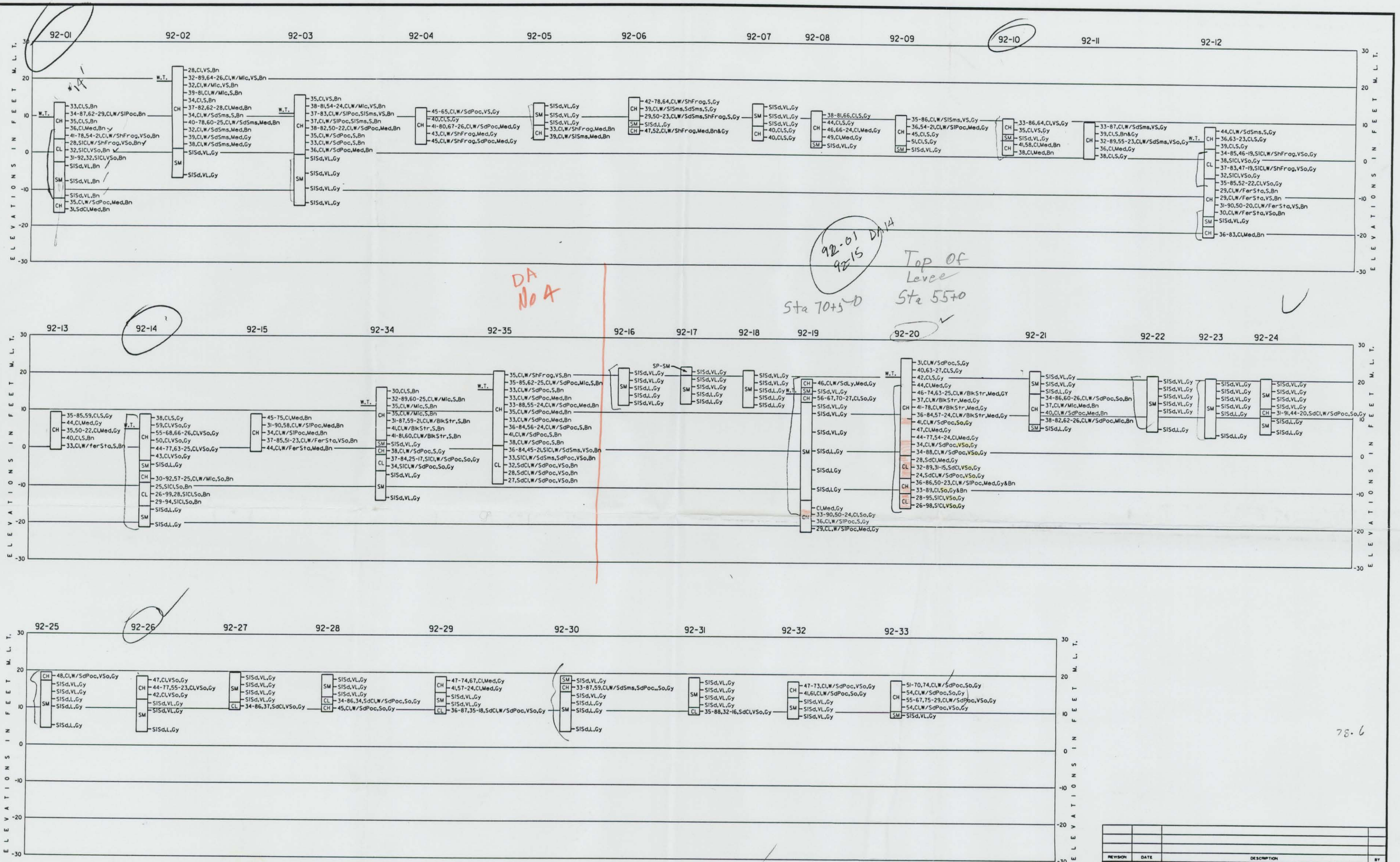




NOTE: SEE DRAWING NUMBER F-6 FOR SOILS NOTES.

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.		Brazos Island Harbor, Texas Brownsville Channel Dredging Inshore Reach No. 1 DISPOSAL AREAS Nos. 2 & 4 BORING LOGS		
CHECKED BY: J.T.F.		DATE: MAY 1992		
SUBMITTED BY: [Signature]		APPROVED BY: [Signature]		
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. RID 901-240		

U.S. ARMY CORPS OF ENGINEERS

DEPTH, FEET		SAMPLE	SAMPLE NO.	PEN./TORVANE	SPT.-BLOW COUNT	BORING NO. <u>92-12</u> DATE: BEGIN <u>3-21-92</u> PAGE <u>1 / 1</u> JOB NO. <u>146535</u> COMPLETE <u>3-21-92</u> Thin Walled Tube PROJECT <u>Brownsville Disp-Area #4</u> ☒ 3" ☐ 6" LOCATION <u>" Ship Channel</u> ELEVATION OF HOLE _____ MANUFACTURER'S DESIGNATION OF DRILL RIG <u>ARDCO-C-1000</u> GROUNDWATER: DEPTH <u>4'</u> ft., ELEV. _____ ft., at end of Drilling WEATHER <u>P.C. - Warm - Windy</u> DRILLER <u>D. Mitchell</u> LOGGER <u>J. Berg</u>				
		COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS				
0		1	1.0	TAN	clay	stiff				
		2	.5	"	"	Med. stiff				
5		3	.5	GRAY TAN	"	"				
		4	.25	"	"	soft				
		5	.25	TAN	"	"				
10		6	.25	"	"	"				
		7	.25	"	"	"				
15		8	.25	TAN GRAY	clay	"				
		9	.25	GRAY TAN	"	"				
20		10	2.25	"	clay	very stiff				
		11	1.5	GRAY	"	stiff				
		12	.25	Tan	"	very soft				
25		13	1 1/2	GRAY	Silt	very loose	Sil. at 24'			
		14	1.25	GRAY	clay	stiff	cl. at 28'			
30							W/Si. Sms. Bottom of 92-12 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. 92-12

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	1.00		Gray,Clay,Stiff,w/sand seams	CH	43.6										0.50	
2	2-4	1.00		Gray,Clay,Stiff	CH	36.2			63	23						0.45	
3	4-6	1.00		Gray,Clay,Stiff	CH	39.1										0.45	
4	6-8	0.00		Gray,Clay,Very soft,Silty,w/shell fragments	CL	34.4	85.1	114.4	46	19	99.5	99.4	99.0	98.5	98.5	0.08	0.10
5	8-10	0.00		Gray,Clay,Very soft, silty	CL	38.4										0.08	
6	10-12	0.00		Gray,Clay,Very soft,Silty,w/shell fragments	CL	36.8	82.7	113.2	47	19	99.6	99.5	99.4	99.0	98.4	0.09	0.11
7	12-14	0.00		Gray,Clay,Very soft,Silty	CL	31.6										0.10	
8	14-16	0.00		Gray,Clay,Very soft	CH	34.5	85.3	114.7	52	22	100.0	100.0	100.0	100.0	100.0	0.08	0.12
9	16-18	1.00		Brown,Clay,Stiff,w/ferrous stains	CH	28.7										0.50	
10	18-20	2.00		Brown,Clay,Very stiff,w/ferrous stains	CH	26.5										1.00	
11	20-22	0.00		Brown,Clay,Very soft,w/ferrous stains	CH	30.6	90.3	117.9	50	20	100.0	99.9	99.5	99.4	98.9	0.11	0.19
12	22-24	0.75		Brown,Clay,Medium stiff	CH	30.3										0.35	
13	24.5-26		3	Gray,Sand,Very loose,Silty	S M												
14	28-30	0.50		Brown,Clay,Medium stiff	CH	36.2	83.3	113.5									0.55

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. 14G538

DATE 4/6/92

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

BORING NO. 92-12

SAMPLE NO. 4

DEPTH 6-8 ft

SPECIMEN NO. 1

CLASSIFICATION

Gray, Clay, very soft, Silty, w/shell fragments

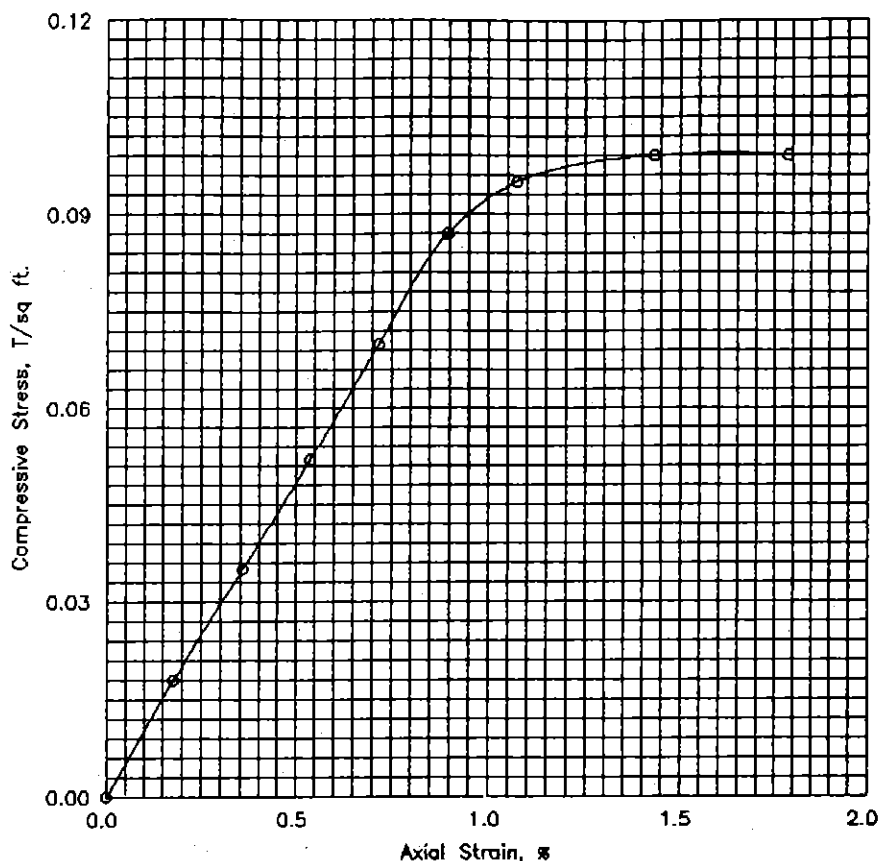
Tare No.	KL-35	Height	5.595 in.
Tare plus Wet Specimen	454.53 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	349.12 gm	Initial Area	6.290 sq in.
Water Weight	105.41 gm	Volume	35.194 cu in.
Tare Weight	42.59 gm	Volume of Solids	cu in.
Wet Specimen	1056.31 gm	Void Ratio	
Dry Specimen	786.01 gm	Saturation	%
Water Content	34.39 %	Dry Density	85.1 lb/cu ft
Specific Gravity of Solids			
LL = 46	PL = 19	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	2.0	1.5	.002	6.30	.018
.3	20.	.020	4.0	3.1	.004	6.31	.035
.5	30.	.030	6.0	4.6	.005	6.32	.052
.7	40.	.040	8.0	6.1	.007	6.34	.070
.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	11.5	8.8	.014	6.38	.099
1.6	100.	.100	11.5	8.8	.018	6.40	.099

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	34.4 %		
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	85.1		
Time to failure, min		t_f	1.35		
Unconfined compressive strength, T/sq ft		q_u	.10		
Undrained shear strength, T/sq ft		S_u	.05		
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, w/shell fragments					
LL	46	PL	19	PI	27
				G_s	
Remarks		Project Disposal Areas Nos. 2 and 4 for Brownsville			
		Area Ship Channel, Brownsville, Texas			
		Boring No. 92-12		Sample No. 4	
		Depth 6-8 ft		Date 4/6/92	
		UNCONFINED COMPRESSION TEST REPORT			

JOB NO. 14G538

DATE 4/6/92

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

CORING NO. 92-12

SAMPLE NO. 6

DEPTH 10-12 ft

SPECIMEN NO. 1

CLASSIFICATION

Gray, Clay, very soft, Silty, w/shell fragments

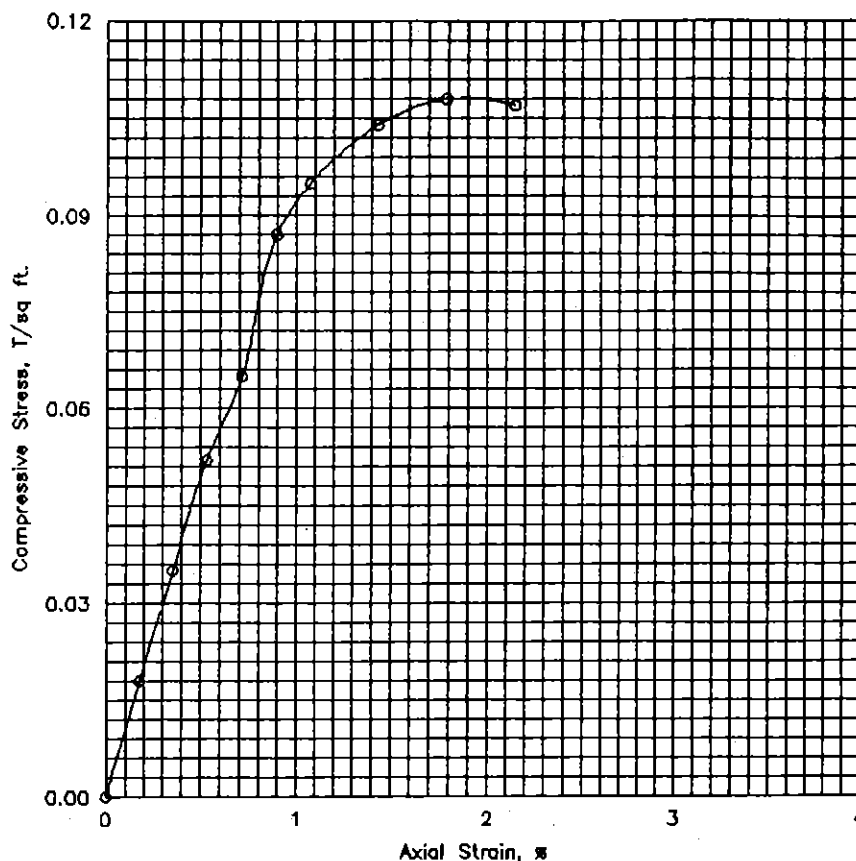
Tare No.	P12	Height	5.595 in.
Tare plus Wet Specimen	415.36 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	315.09 gm	Initial Area	6.290 sq in.
Water Weight	100.27 gm	Volume	35.194 cu in.
Tare Weight	42.66 gm	Volume of Solids	cu in.
Wet Specimen	1045.60 gm	Void Ratio	
Dry Specimen	764.30 gm	Saturation	%
Water Content	36.81 %	Dry Density	82.7 lb/cu ft
Specific Gravity of Solids			
LL = 47	PL = 19	PI = 28	

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	2.0	1.5	.002	6.30	.018
.3	20.	.020	4.0	3.1	.004	6.31	.035
.5	30.	.030	6.0	4.6	.005	6.32	.052
.7	40.	.040	7.5	5.7	.007	6.34	.065
.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	12.0	9.2	.014	6.38	.104
1.6	100.	.100	12.5	9.6	.018	6.40	.108
1.9	120.	.120	12.5	9.6	.021	6.43	.107

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	36.8 %		
	Void ratio	e_0			
	Saturation	S_0			
	Dry density, lb/cu ft	γ_d	82.7		
Time to failure, min		t_f	1.65		
Unconfined compressive strength, T/sq ft		q_u	.11		
Undrained shear strength, T/sq ft		S_u	.05		
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, w/shell fragments					
LL	47	PL	19	PI	28
				G_s	
Remarks		Project Disposal Areas Nos. 2 and 4 for Brownsville			
		Area Ship Channel, Brownsville, Texas			
		Boring No. 92-12		Sample No. 6	
		Depth 10-12 ft		Date 4/6/92	
		UNCONFINED COMPRESSION TEST REPORT			

JOB NO. 14G538

DATE 4/6/92

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

LOGGING NO. 92-12

SAMPLE NO. 8

DEPTH 14-16 ft

SPECIMEN NO. 1

CLASSIFICATION

Gray, Clay, very soft

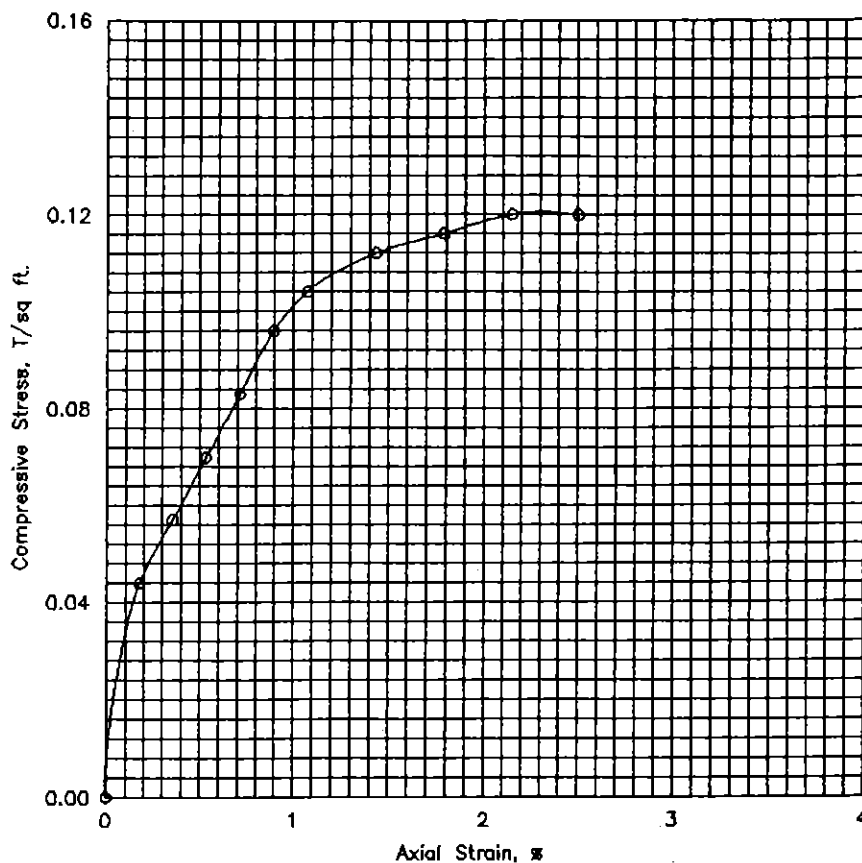
Tare No.	KL 32	Height	5.595 in.
Tare plus Wet Specimen	432.70 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	332.64 gm	Initial Area	6.290 sq in.
Water Weight	100.06 gm	Volume	35.194 cu in.
Tare Weight	42.48 gm	Volume of Solids	cu in.
Wet Specimen	1059.99 gm	Void Ratio	
Dry Specimen	788.19 gm	Saturation	%
Water Content	34.48 %	Dry Density	85.3 lb/cu ft
Specific Gravity of Solids			
LL = 52	PL = 22	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	5.0	3.8	.002	6.30	.044
.3	20.	.020	6.5	5.0	.004	6.31	.057
.5	30.	.030	8.0	6.1	.005	6.32	.070
.7	40.	.040	9.5	7.3	.007	6.34	.083
.9	50.	.050	11.0	8.4	.009	6.35	.096
1.0	60.	.060	12.0	9.2	.011	6.36	.104
1.3	80.	.080	13.0	10.0	.014	6.38	.112
1.6	100.	.100	13.5	10.3	.018	6.40	.116
1.9	120.	.120	14.0	10.7	.021	6.43	.120
2.2	140.	.140	14.0	10.7	.025	6.45	.120

Failure Sketches



- ☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	34.5 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	85.3		
Time to failure, min		t_f	1.92		
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_0	2.830		
Initial specimen height, in.		H_0	5.595		
Classification Gray, Clay, very soft					
LL	52	PL	22	PI	30
				G_s	
Remarks		Project Disposal Areas Nos. 2 and 4 for Brownsville			
		Area Ship Channel, Brownsville, Texas			
		Boring No. 92-12		Sample No. 8	
		Depth 14-16 ft		Date 4/6/92	
		UNCONFINED COMPRESSION TEST REPORT			

JOB NO. 14G538

DATE 4/6/92

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

LORING NO. 92-12

SAMPLE NO. 11

DEPTH 20-22 ft

SPECIMEN NO. 1

CLASSIFICATION

Brown, Clay, very soft, w/ferrous stains

Tare No.	KL-34	Height	5.595 in.
Tare plus Wet Specimen	378.14 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	299.43 gm	Initial Area	6.290 sq in.
Water Weight	78.71 gm	Volume	35.194 cu in.
Tare Weight	42.50 gm	Volume of Solids	cu in.
Wet Specimen	1089.48 gm	Void Ratio	
Dry Specimen	833.99 gm	Saturation	%
Water Content	30.63 %	Dry Density	90.3 lb/cu ft
Specific Gravity of Solids			
LL = 50	PL = 20	PI = 30	

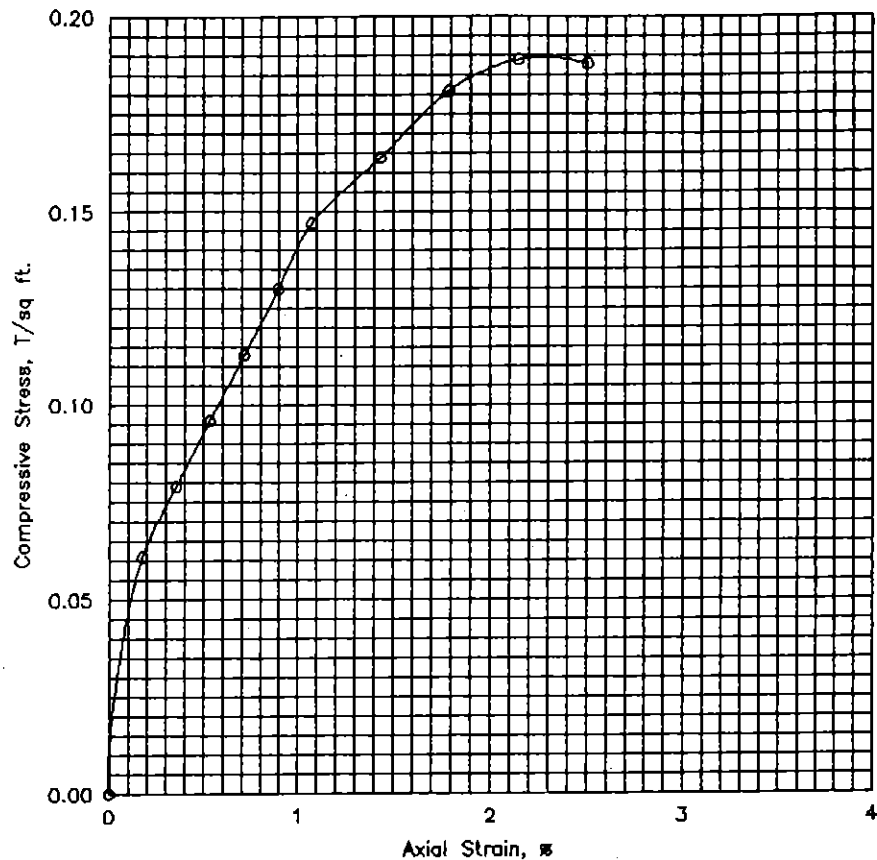
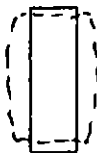
Proving Ring No. 10170

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	7.0	5.4	.002	6.30	.061
.4	20.	.020	9.0	6.9	.004	6.31	.079
.6	30.	.030	11.0	8.4	.005	6.32	.096
.8	40.	.040	13.0	10.0	.007	6.34	.113
1.0	50.	.050	15.0	11.5	.009	6.35	.130
1.1	60.	.060	17.0	13.0	.011	6.36	.147
1.5	80.	.080	19.0	14.6	.014	6.38	.164
1.8	100.	.100	21.0	16.1	.018	6.40	.181
2.1	120.	.120	22.0	16.9	.021	6.43	.189
2.5	140.	.140	22.0	16.9	.025	6.45	.188

Job No. 14G538

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	30.6 %		
	Void ratio	e_0			
	Saturation	S_0	%		
	Dry density, lb/cu ft	γ_d	90.3		
Time to failure, min		t_f	2.10		
Unconfined compressive strength, T/sq ft		q_u	.19		
Undrained shear strength, T/sq ft		S_u	.09		
Sensitivity ratio		S_t			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		
Classification Brown, Clay, very soft, w/ferrous stains					
LL	50	PL	20	PI	30
Remarks		Project Disposal Areas Nos. 2 and 4 for Brownsville Area Ship Channel, Brownsville, Texas Boring No. 92-12 Sample No. 11 Depth 20-22 ft Date 4/6/92 EI			
UNCONFINED COMPRESSION TEST REPORT					

JOB NO. 14G538

DATE 4/6/92

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

CORING NO. 92-12

SAMPLE NO. 14

DEPTH 28-30 ft

SPECIMEN NO. 1

CLASSIFICATION

Brown,Clay,Medium stiff

Tare No.	P8	Height	5.595 in.
Tare plus Wet Specimen	423.59 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	322.26 gm	Initial Area	6.290 sq in.
Water Weight	101.33 gm	Volume	35.194 cu in.
Tare Weight	42.60 gm	Volume of Solids	cu in.
Wet Specimen	1048.38 gm	Void Ratio	
Dry Specimen	769.55 gm	Saturation	%
Water Content	36.23 %	Dry Density	83.3 lb/cu ft
Specific Gravity of Solids			
LL =	PL =	PI =	

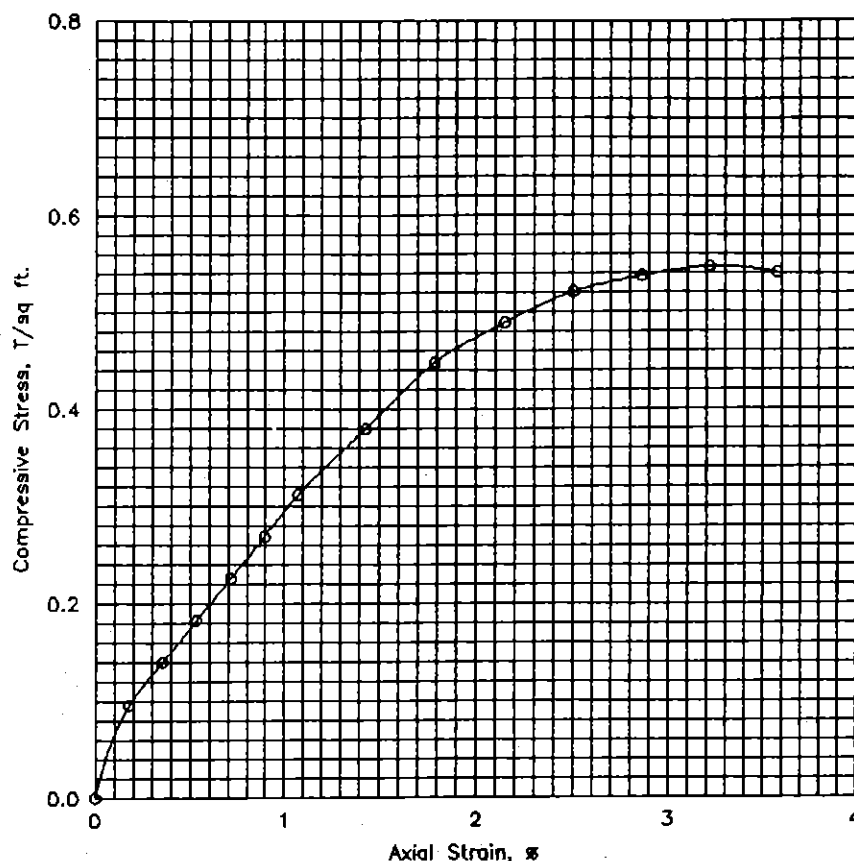
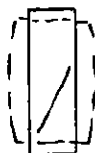
Proving Ring No. 10170

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	11.0	8.4	.002	6.30	.096
.3	20.	.020	16.0	12.3	.004	6.31	.140
.5	30.	.030	21.0	16.1	.005	6.32	.183
.7	40.	.040	26.0	19.9	.007	6.34	.226
.9	50.	.050	31.0	23.7	.009	6.35	.269
1.0	60.	.060	36.0	27.6	.011	6.36	.312
1.4	80.	.080	44.0	33.7	.014	6.38	.380
1.6	100.	.100	52.0	39.8	.018	6.40	.448
1.9	120.	.120	57.0	43.7	.021	6.43	.489
2.0	140.	.140	61.0	46.7	.025	6.45	.521
2.3	160.	.160	63.0	48.3	.029	6.48	.537
2.6	180.	.180	64.5	49.4	.032	6.50	.547
2.9	200.	.200	64.0	49.0	.036	6.52	.541

Job No. 146538

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	83.3
Time to failure, min		t_f	2.63
Unconfined compressive strength, T/sq ft		q_u	.55
Undrained shear strength, T/sq ft		S_u	.27
Sensitivity ratio		S_s	
Initial specimen diameter, in.		D_0	2.830
Initial specimen height, in.		H_0	5.595
Classification Brown, Clay, Medium stiff			
LL	PL	PI	G_o
Remarks		Project Disposal Areas Nos. 2 and 4 for Brownsville	
		Area Ship Channel, Brownsville, Texas	
		Boring No. 92-12	Sample No. 14
		Depth 28-30 ft	Date 4/6/92
		UNCONFINED COMPRESSION TEST REPORT	

DATE 4/28/92 INITIALS LAA PC

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.

DATE 3/27/92 INITIALS LAA pc

SUMMARY OF QUESTIONABLE
ERRONEOUS OR MISSING DATA
FOR

PROJECT: CORE DRILLING, BROWNSVILLE DISPOSAL AREA DELIVERY ORDER NO. 0004

BORING NO.	SAMPLE NO.	COMMENTS ON DRILLING RESULTS
92-12	12	Penetrometer reading given (.25), consistency given is very soft, should be soft

Comments: All except 3 of the 10 & 15 foot holes have a groundwater depth of "DRY" this seems questionable.

Some of the penetrometer readings of .50 are called medium stiff and some are called soft - should be consistent