

U.S. ARMY CORPS OF ENGINEERS

BLM

DEPTH, FEET	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	BORING NO. <u>9143</u> DATE: BEGIN <u>03-11-91</u> PAGE <u>11</u>			JOB NO. <u>146446</u> COMPLETE <u>03-11-91</u> Thin Walled Tube	
			PROJECT <u>CHANNEL TO VICTORIA</u> ☒ 3" ☐ 6"			LOCATION <u>VICTORIA CHANNEL</u>	
ELEVATION OF HOLE			MANUFACTURER'S DESIGNATION OF DRILL RIG <u>F 31</u>				
GROUNDWATER: DEPTH <u>2</u> ft., ELEV. _____ ft., at end of Drilling			WEATHER <u>PARTLY CLOUDY + WINDY</u>				
DRILLER <u>Robert Jankovsky</u> LOGGER <u>John A. Loh</u>							
			COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0	1	1.5	GRAY	CLAY	STIFF		-w/ROOT 0'-2'
	2	1.75	"	"	"		-w/SAND POCKETS
5	3	2.0	LIGHT GRAY	CLAY	VERY STIFF	SANDY	+ TAN
	4	1.25	LIGHT GRAY	CLAY	STIFF		+ TAN
	5	1.25	"	"	"		
10	6	1.25	GRAY	"	"		
	7	1.25	"	"	"		-w/SAND SEAMS 12'-17'
15	8	1.0	"	"	"		-w/SHELL FRAGMENTS Below 14'
	9	1.0	"	"	"		
	10	0.5	"	"	MEDIUM STIFF		
20	11	0.5	"	"	"		
	12	0.5	"	"	"		
25	13	0.5	"	"	"		
	14	0.5	"	"	"		
	15	0.5	"	"	"		
30	16	0.5	"	"	"		
	17	0.5	"	"	"		
35	18	3.0	GRAY	CLAY	VERY STIFF	SANDY	
BOTTOM 9143							

Project : Channel enlargement channel to Victoria, Victoria, Texas

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-43

EL. 5.1' NGVD

Contract No. DACW64-91-D-0001 Delivery Order No.0009

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					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
1	0-2	2.00		Dark gray,Clay,Very stiff	CH	29.3											
2	2-4	2.00		Dark gray,Clay,Very stiff	CH	29.7											
3	4-6	2.25		Gray&yellowish brown,Clay,Very stiff,Silty	CL	25.0	99.7	124.6	39	20	100.0	100.0	99.7		98.6		.64
4	6-8	1.00		Gray&yellowish brown,Clay,Stiff	CH	30.6											
5	8-10	1.00		Gray&yellowish brown,Clay,Stiff	CH	31.0											
6	10-12	1.50		Gray&yellowish brown,Clay,Stiff,Blocky structure	CH	35.0											
7	12-14	1.50		Gray&yellowish brown,Clay,Stiff,Blocky structure	CH	39.0	81.9	113.8	61	21	100.0	100.0	99.9		99.0		.56
8	14-16	0.50		Gray,Clay,Medium stiff,w/sand pockets and shell fragments	CH	36.8											
9	16-18	0.75		Gray,Clay,Medium stiff,w/sand pockets and shell fragments	CH	38.1											
10	18-20	0.50		Gray,Clay,Medium stiff,w/sand pockets and shell fragments	CH	38.4											
11	20-22	0.50		Gray,Clay,Medium stiff,w/sand pockets and shell fragments	CH	34.7											
12	22-24	0.50		Gray,Clay,Medium stiff,w/sand pockets and shell fragments	CH	61.3											
13	24-26	0.50		Dark gray,Clay,Medium stiff,w/shell fragments	CH	64.2	61.9	101.7	84	31	100.0	99.9	99.1		90.1		.38
14	26-28	0.50		Dark gray,Clay,Medium stiff,w/sand pockets and shell fragments	CH	41.3											
15	28-30	0.50		Dark gray,Clay,Medium stiff,w/sand pockets and shell fragments	CH	48.7											
16	30-32	0.25		Dark gray,Clay,Soft,w/sand pockets and shell fragments	CH	44.4											
17	32-34	0.50		Dark gray,Clay,Medium stiff,Sandy,w/sand pockets and shell fragments	CL	37.8	83.4	114.9	38	18	100.0	99.6	96.8		58.4		.46

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

Project : Channel enlargement channel to Victoria, Victoria, Texas

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-43

Contract No. DACW64-91-D-0001 Delivery Order No.0009

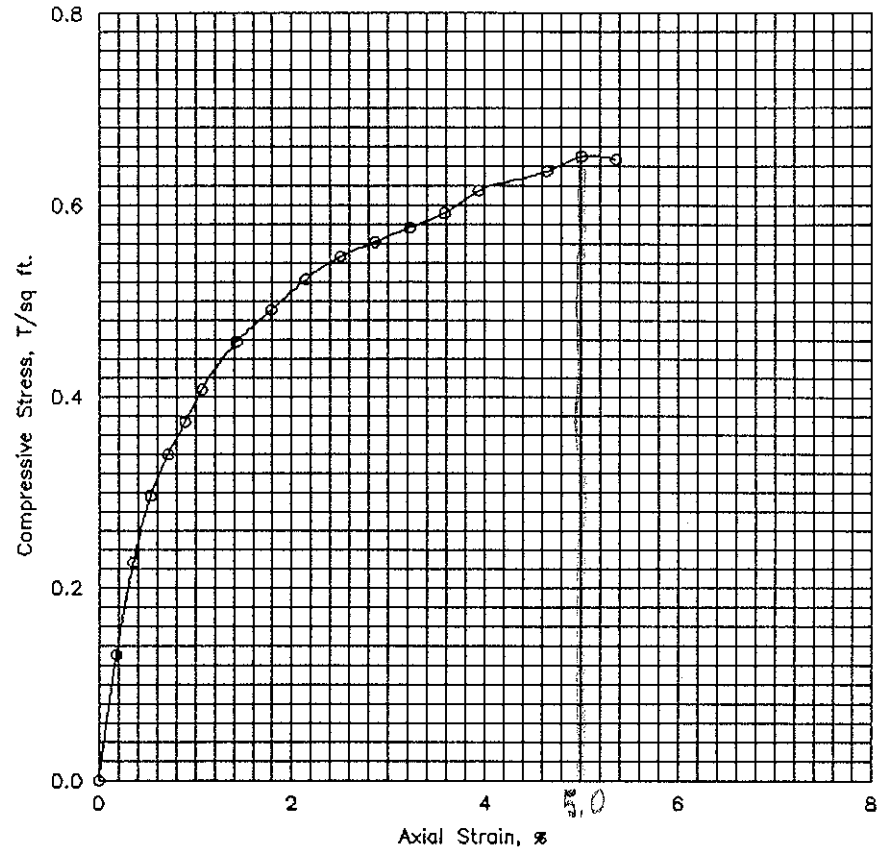
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S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content

q_u : Unconfined Compressive Strength, W_{OH} : Weight of hammer, W_{OP} : Weight of pipe

Job No. 14G459

Failure Sketches



- ☐ Controlled stress
☒ Controlled strain

Test No.		1	
Type of Specimen		Undisturbed	
Initial	Water content	w_0	25.0 %
	Void ratio	e_0	
	Saturation	S_0	%
	Dry density, lb/cu ft	γ_d	99.7
Time to failure, min		t_f	6.28
Unconfined compressive strength, T/sq ft		q_u	.65
Undrained shear strength, T/sq ft		S_u	.32
Sensitivity ratio		S_t	
Initial specimen diameter, in.		D_0	2.830
Initial specimen height, in.		H_0	5.595
Classification Gray & yellowish brown, Clay, Very stiff, Silty			
LL	39	PL	20
		PI	19
		G_s	
Remarks		Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA	
		Area Victoria, Texas	
		Boring No. 91-43	Sample No. 3
		Depth 4-6 ft	Date 4/28/91
		UNCONFINED COMPRESSION TEST REPORT	

JOB NO. 14G459

DATE 4/28/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

BORING NO. 91-43

SAMPLE NO. 7

DEPTH 12-14 ft

SPECIMEN NO. 1

CLASSIFICATION

Gray & yellowish brown, Clay, Stiff, Blocky structure

Tare No.	P-26	Height	5.595 in.
Tare plus Wet Specimen	845.08 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	619.82 gm	Initial Area	6.290 sq in.
Water Weight	225.26 gm	Volume	35.194 cu in.
Tare Weight	42.61 gm	Volume of Solids	cu in.
Wet Specimen	1051.63 gm	Void Ratio	
Dry Specimen	756.43 gm	Saturation	%
Water Content	39.03 %	Dry Density	81.9 lb/cu ft
Specific Gravity of Solids			
LL = 61	PL = 21	PI = 40	

Proving Ring No. 10170

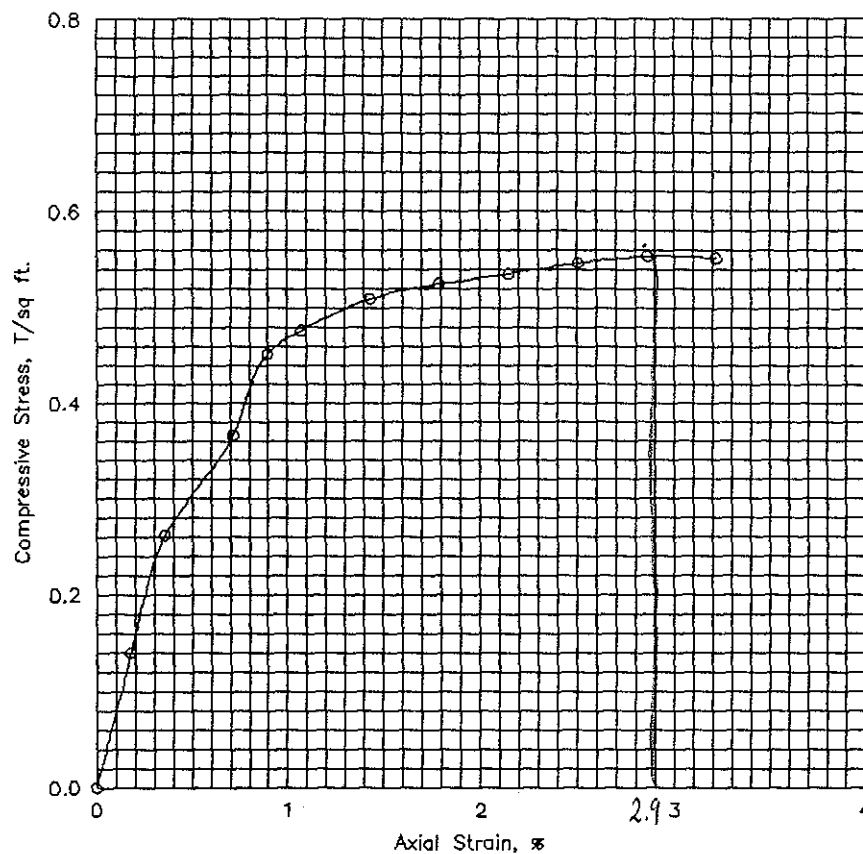
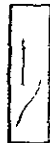
Proving Ring Constant, K = .766 lbs/div.

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
.3	10.	.010	16.0	12.3	.002	6.30	.140
.5	20.	.020	30.0	23.0	.004	6.31	.262
.8	40.	.040	42.0	32.2	.007	6.34	.366
1.3	50.	.050	52.0	39.8	.009	6.35	.452
1.5	60.	.060	55.0	42.1	.011	6.36	.477
1.9	80.	.080	59.0	45.2	.014	6.38	.510
2.3	100.	.100	61.0	46.7	.018	6.40	.525
2.8	120.	.120	62.5	47.9	.021	6.43	.536
3.2	140.	.140	64.0	49.0	.025	6.45	.547
3.7	160.	.160	65.0	49.8	.029	6.48	.554
4.1	180.	.180	65.0	49.8	.032	6.50	.552

Job No. 14G459

EM 1110-2-1906
Appendix XI
30 Nov 70

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	39.0 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	81.9		
Time to failure, min		t_f	3.68		
Unconfined compressive strength, T/sq ft		q_u	.55		
Undrained shear strength, T/sq ft		S_u	.28		
Sensitivity ratio		S_t			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		
Classification Gray & yellowish brown, Clay, Stiff, Blocky structure					
LL	61	PL	21	PI	40
Remarks		Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA			
		Area Victoria, Texas			
		Boring No. 91-43		Sample No. 7	
		Depth 12-14 ft		Date 4/28/91	
		UNCONFINED COMPRESSION TEST REPORT			

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PLATE XI-2

PLATE

JOB NO. 14G459

DATE 4/28/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

BORING NO. 91-43

SAMPLE NO. 13

DEPTH 24-26 ft

SPECIMEN NO. 1

CLASSIFICATION

Dark gray, Clay, Medium stiff, w/ shell fragments

Tare No.	P-27	Height	5.595 in.
Tare plus Wet Specimen	656.32 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	416.37 gm	Initial Area	6.290 sq in.
Water Weight	239.95 gm	Volume	35.194 cu in.
Tare Weight	42.86 gm	Volume of Solids	cu in.
Wet Specimen	939.20 gm	Void Ratio	
Dry Specimen	571.84 gm	Saturation	%
Water Content	64.24 %	Dry Density	61.9 lb/cu ft
Specific Gravity of Solids			
LL = 84	PL = 31	PI = 53	

Proving Ring No. 10170

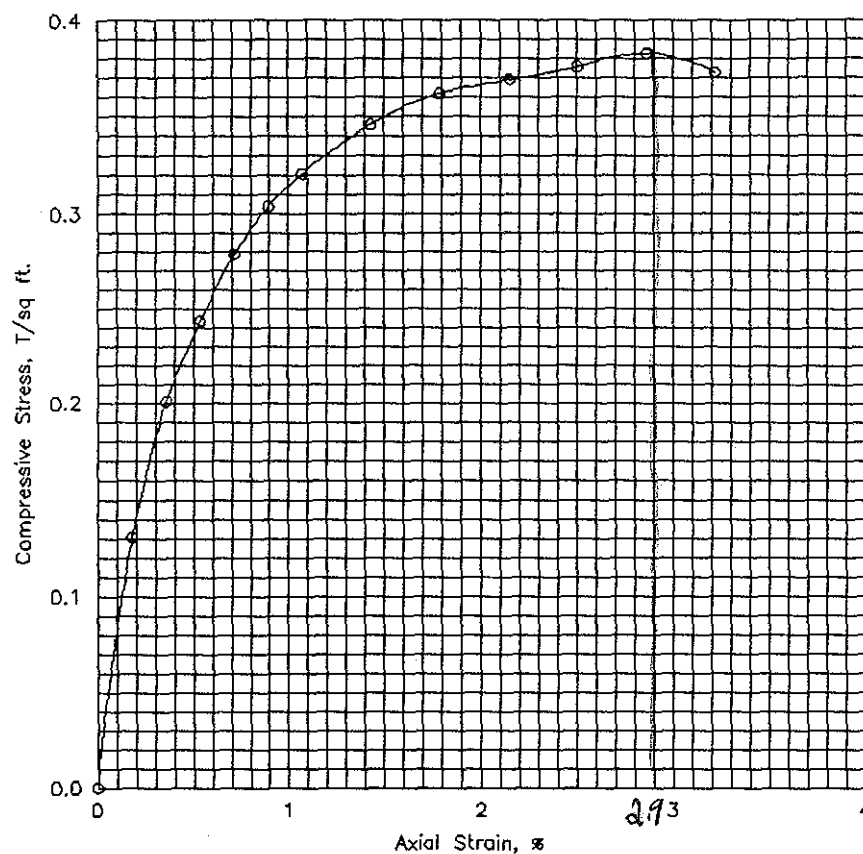
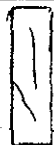
Proving Ring Constant, K = .766 lbs/div.

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	15.0	11.5	.002	6.30	.131
.5	20.	.020	23.0	17.6	.004	6.31	.201
.8	30.	.030	28.0	21.4	.005	6.32	.244
1.0	40.	.040	32.0	24.5	.007	6.34	.279
1.2	50.	.050	35.0	26.8	.009	6.35	.304
1.5	60.	.060	37.0	28.3	.011	6.36	.321
1.9	80.	.080	40.0	30.6	.014	6.38	.346
2.3	100.	.100	42.0	32.2	.018	6.40	.362
2.8	120.	.120	43.0	32.9	.021	6.43	.369
3.2	140.	.140	44.0	33.7	.025	6.45	.376
3.6	160.	.160	45.0	34.5	.029	6.48	.383
4.0	180.	.180	44.0	33.7	.032	6.50	.373

Job No. 14G459

EM 1110-2-1906
Appendix XI
30 Nov 70

Failure Sketches


☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	64.2 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	61.9		
Time to failure, min		t_f	3.60		
Unconfined compressive strength, $T/\text{sq ft}$		q_u	.38		
Undrained shear strength, $T/\text{sq ft}$		S_u	.19		
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/ shell fragments					
LL	84	PL	31	PI	53
Remarks		Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA			
		Area Victoria, Texas			
		Boring No. 91-43		Sample No. 13	
		Depth 24-26 ft		Date 4/28/91	
		UNCONFINED COMPRESSION TEST REPORT			

ENG FORM 3659
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PLATE XI-2

PLATE

JOB NO. 14G459

DATE 4/28/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

Boring NO. 91-43

SAMPLE NO. 17

DEPTH 32-34 ft

SPECIMEN NO. 1

CLASSIFICATION

Dark gray, Clay, Medium stiff, Sandy, w/ sand pockets & shell fragments

Tare No.	P-16	Height	5.595 in.
Tare plus Wet Specimen	1104.52 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	813.50 gm	Initial Area	6.290 sq in.
Water Weight	291.02 gm	Volume	35.194 cu in.
Tare Weight	42.83 gm	Volume of Solids	cu in.
Wet Specimen	1061.69 gm	Void Ratio	
Dry Specimen	770.67 gm	Saturation	%
Water Content	37.76 %	Dry Density	83.4 lb/cu ft
Specific Gravity of Solids			
LL = 38	PL = 18	PI = 20	

Proving Ring No. 10170

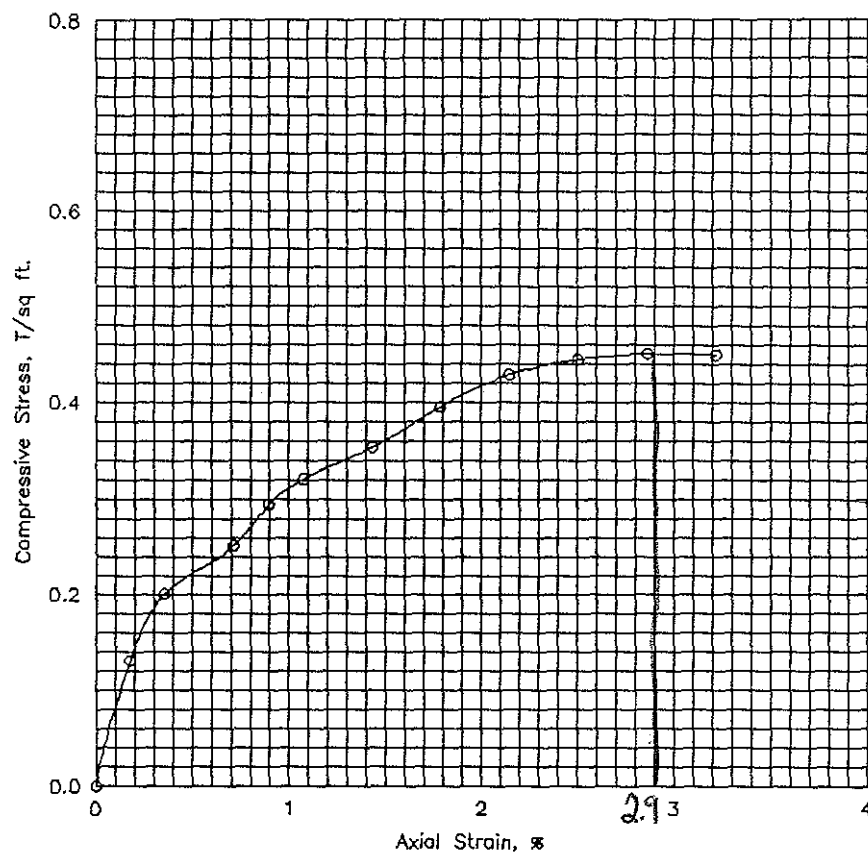
Proving Ring Constant, K = .766 lbs/div.

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	15.0	11.5	.002	6.30	.131
.5	20.	.020	23.0	17.6	.004	6.31	.201
.8	40.	.040	29.0	22.2	.007	6.34	.252
1.3	50.	.050	34.0	26.0	.009	6.35	.295
1.5	60.	.060	37.0	28.3	.011	6.36	.321
1.9	80.	.080	41.0	31.4	.014	6.38	.354
2.3	100.	.100	46.0	35.2	.018	6.40	.396
2.8	120.	.120	50.0	38.3	.021	6.43	.429
3.2	140.	.140	52.0	39.8	.025	6.45	.445
3.7	160.	.160	53.0	40.6	.029	6.48	.451
4.1	180.	.180	53.0	40.6	.032	6.50	.450

Job No. 14G459

EM 1110-2-1906
Appendix XI
30 Nov 70

Failure Sketches



□ Controlled stress
 ⊗ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	37.8 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	83.4		
Time to failure, min		t_f	3.68		
Unconfined compressive strength, T/sq ft		q_u	.45		
Undrained shear strength, T/sq ft		S_u	.23		
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, Sandy, w/ sand pockets & shell fragments					
LL	38	PL	18	PI	20
Remarks		Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA Area Victoria, Texas Boring No. 91-43 Sample No. 17 Depth 32-34 ft Date 4/28/91 EI			
UNCONFINED COMPRESSION TEST REPORT					

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PLATE XI-2

PLATE