

U.S. ARMY CORPS OF ENGINEERS

DEPTH, FEET		SAMPLE	SAMPLE NO.	PEN./TORVANE	SPT.-BLOW COUNT	BORING NO. <u>94-5</u> DATE: BEGIN <u>3/14/94</u> PAGE <u>1/2</u> JOB NO. <u>146727-B</u> COMPLETE <u>3/14/94</u> Thin Walled Tube PROJECT <u>Wallisville Lake, Trinity River & Tributaries</u> ☒ 3" ☐ 6" LOCATION <u>near Wallisville, TX</u> ELEVATION OF HOLE _____ MANUFACTURER'S DESIGNATION OF DRILL RIG <u>FAMING 36</u> GROUNDWATER: DEPTH <u>0</u> ft., ELEV. _____ ft., at end of Drilling WEATHER <u>Overcast</u> DRILLER <u>Ray Green</u> LOGGER <u>Peter Kosinski</u>				
						COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0			1	1.0		Dark Gray	clay	stiff		4 ferr nods
			2	2.0		Gray & red	clay	v. stiff	sand	
5			3	1.5		Gray & red	clay	stiff	sand	
			4	2.0		Yellowish Brown & gray	clay	v. stiff	sand	w/ calc nods, calc matter, ferr nods
			5	2.75		Yellowish Brown & gray	clay	v. stiff	sand	w/ calc nod s
10			6	3.0		light gray	clay	v. stiff		w/ calc nod s
			7	3.0		Yellowish Brown	clay	v. stiff		w/ calc nod s
15			8	2.25		Yellowish Brown & gray	clay	v. stiff		
			9	2.5		Yellowish Brown & gray	clay	v. stiff		
20			10	1.5		Yellowish Brown & gray	clay	stiff		* encounter water at 18'
			11	2.75		Yellowish Brown & gray	clay	v. stiff		
			12	1.75		Yellowish Brown & gray	clay	stiff		ferrous nod
25			13	1.75		Yellowish Brown	clay	stiff		
			14	2.75		Yellowish Brown & gray	clay	v. stiff		
			15	3.75		Yellowish Brown & gray	clay	v. stiff		w/ calc nod s
30			16	4.0		Yellowish Brown & gray	clay	very stiff		w/ calc nod s
			17	3.0		Yellowish Brown & gray	clay	v. stiff		w/ calc nod s & ferr nod s
35			18	3.0		Reddish Brown	clay	v. stiff		2w/ clayey sand sm s

U.S. ARMY CORPS OF ENGINEERS

DEPTH, FEET		SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	BORING NO. <u>94-5</u> DATE: BEGIN <u>3/14/94</u> PAGE <u>2</u> / <u>2</u> JOB NO. <u>146727-6</u> COMPLETE <u>3/14/94</u> Thin Walled Tube PROJECT <u>Wallisville Lake, Trinity River & Tributaries</u> ☒ 3" ☐ 6" LOCATION <u>near wallisville, Tx</u> ELEVATION OF HOLE _____ MANUFACTURER'S DESIGNATION OF DRILL RIG <u>Fauling 36</u> GROUNDWATER: DEPTH <u>0</u> ^{***} ft., ELEV. _____ ft., at end of Drilling WEATHER <u>Overcast</u> DRILLER <u>RANDY GEARIN</u> LOGGER <u>Peter Rozmoski</u>				
				COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35		19	40	Reddish Brown	clay	Hard		w/ calc nodules sandy 36'-37'
40		20	30	Reddish Brown	clay	v. stiff		w/ calc nodules
45								** water level at end of Drilling
50								
55								
60								
65								
70								

JOB NO. 14G727-12

DATE 4/6/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-5

SAMPLE NO. 3

DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION

Gray, Clay, Stiff, w/calcareous nodules & ferrous stains

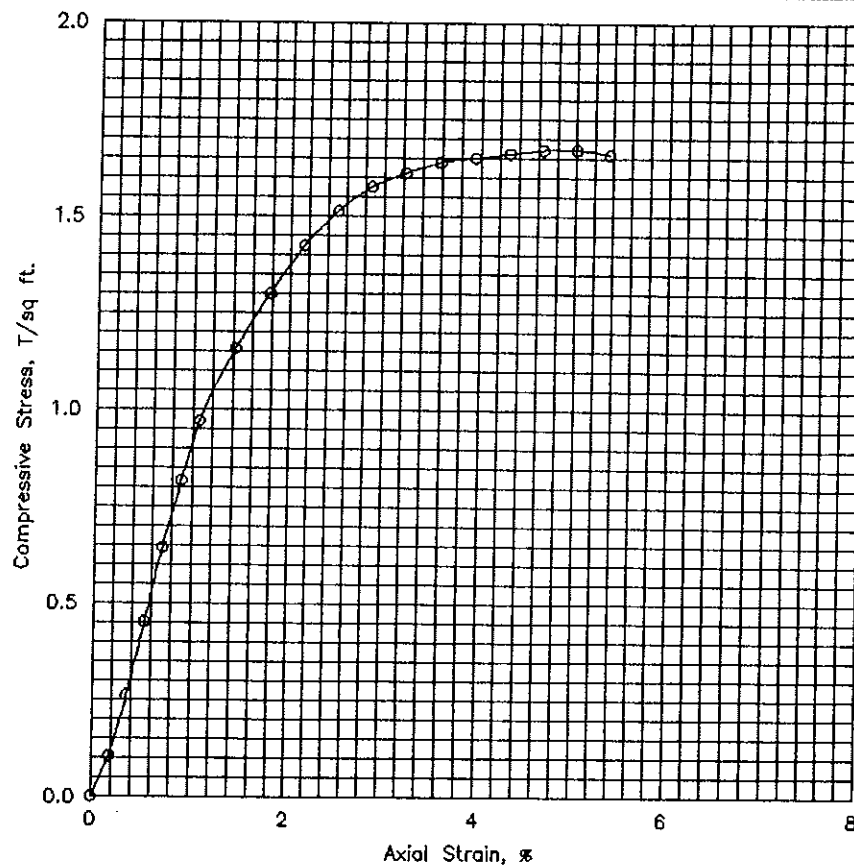
Tare No.	IM-1	Height	5.595 in.
Tare plus Wet Specimen	503.86 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	424.05 gm	Initial Area	6.290 sq in.
Water Weight	79.81 gm	Volume	35.194 cu in.
Tare Weight	42.66 gm	Volume of Solids	cu in.
Wet Specimen	1182.06 gm	Void Ratio	
Dry Specimen	977.51 gm	Saturation	%
Water Content	20.93 %	Dry Density	105.8 lb/cu ft
Specific Gravity of Solids			
LL = 54	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	12.0	9.2	.002	6.30	.105
.4	20.	.020	30.0	23.0	.004	6.31	.262
.5	30.	.030	52.0	39.8	.005	6.32	.453
.7	40.	.040	74.0	56.7	.007	6.34	.644
.9	50.	.050	94.0	72.0	.009	6.35	.817
1.1	60.	.060	112.0	85.8	.011	6.36	.971
1.4	80.	.080	134.0	102.6	.014	6.38	1.158
1.7	100.	.100	151.0	115.7	.018	6.40	1.300
2.0	120.	.120	166.0	127.2	.021	6.43	1.424
2.4	140.	.140	177.0	135.6	.025	6.45	1.513
2.7	160.	.160	185.0	141.7	.029	6.48	1.576
3.0	180.	.180	190.0	145.5	.032	6.50	1.612
3.3	200.	.200	194.0	148.6	.036	6.52	1.640
3.7	220.	.220	196.0	150.1	.039	6.55	1.651
4.0	240.	.240	198.0	151.7	.043	6.57	1.662
4.3	260.	.260	200.0	153.2	.046	6.60	1.672
4.6	280.	.280	201.0	154.0	.050	6.62	1.674
4.9	300.	.300	200.0	153.2	.054	6.65	1.660

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	20.9 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	105.8		
Time to failure, min		t_f	4.60		
Unconfined compressive strength, T/sq ft		q_u	1.67		
Undrained shear strength, T/sq ft		S_u	.84		
Sensitivity ratio		S_t			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		
Classification Gray, Clay, Stiff, w/calcareous nodules & ferrous stains					
LL	54	PL		PI	G_s
Remarks		Project Lake Wallisville, Trinity River			
		and Tributaries,			
		Area near Wallisville, Texas			
		Boring No. 94-5		Sample No. 3	
		Depth 4-6 ft		Date 4/6/94	
		UNCONFINED COMPRESSION TEST REPORT			

JOB NO. 14G727-12

DATE 4/6/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-5

SAMPLE NO. 6

DEPTH 10-12 ft

SPECIMEN NO. 1

CLASSIFICATION

Yellowish gray, Clay, Stiff, w/calcareous nodules & ferrous stains

Tare No.	P-200	Height	5.595 in.
Tare plus Wet Specimen	557.36 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	466.41 gm	Initial Area	6.290 sq in.
Water Weight	90.95 gm	Volume	35.194 cu in.
Tare Weight	42.44 gm	Volume of Solids	cu in.
Wet Specimen	1160.37 gm	Void Ratio	
Dry Specimen	955.41 gm	Saturation	%
Water Content	21.45 %	Dry Density	103.4 lb/cu ft
Specific Gravity of Solids			
LL = 60	PL =	PI =	

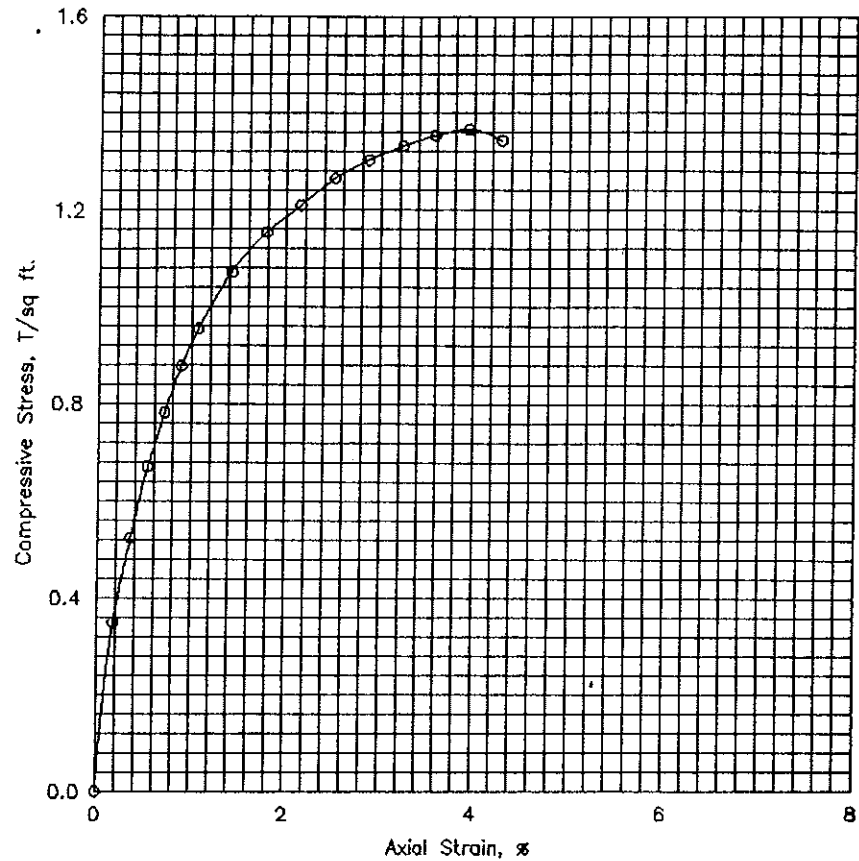
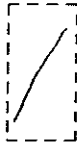
Proving Ring No. 10170

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	40.0	30.6	.002	6.30	.350
.4	20.	.020	60.0	46.0	.004	6.31	.524
.6	30.	.030	77.0	59.0	.005	6.32	.672
.7	40.	.040	90.0	68.9	.007	6.34	.783
.9	50.	.050	101.0	77.4	.009	6.35	.878
1.1	60.	.060	110.0	84.3	.011	6.36	.954
1.5	80.	.080	124.0	95.0	.014	6.38	1.072
1.8	100.	.100	134.0	102.6	.018	6.40	1.154
2.2	120.	.120	141.0	108.0	.021	6.43	1.210
2.5	140.	.140	148.0	113.4	.025	6.45	1.265
2.8	160.	.160	153.0	117.2	.029	6.48	1.303
3.2	180.	.180	157.0	120.3	.032	6.50	1.332
3.5	200.	.200	160.0	122.6	.036	6.52	1.353
3.8	220.	.220	162.0	124.1	.039	6.55	1.365
4.1	240.	.240	160.0	122.6	.043	6.57	1.343

Job No. 14G727-12

Failure Sketches



- ☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen *		Undisturbed			
Initial	Water content	w_0	21.5 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	103.4		
Time to failure, min		t_f	3.77		
Unconfined compressive strength, T/sq ft		q_u	1.36		
Undrained shear strength, T/sq ft		S_u	.68		
Sensitivity ratio		S_t			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		

Classification Yellowish gray, Clay, Stiff, w/calcareous nodules & ferrous stains

LL	60	PL	PI	G_s
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Remarks	Project Lake Wallisville, Trinity River	
	and Tributaries,	
	Area near Wallisville, Texas	
	Boring No. 94-5	Sample No. 6
	Depth 10-12 ft	Date 4/6/94
UNCONFINED COMPRESSION TEST REPORT		

JOB NO. 14G727-12

DATE 4/6/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-5

SAMPLE NO. 9

DEPTH 16-18 ft

SPECIMEN NO. 1

CLASSIFICATION

Yellowish brown, Clay, Very stiff, w/calcareous nodules & ferrous stains

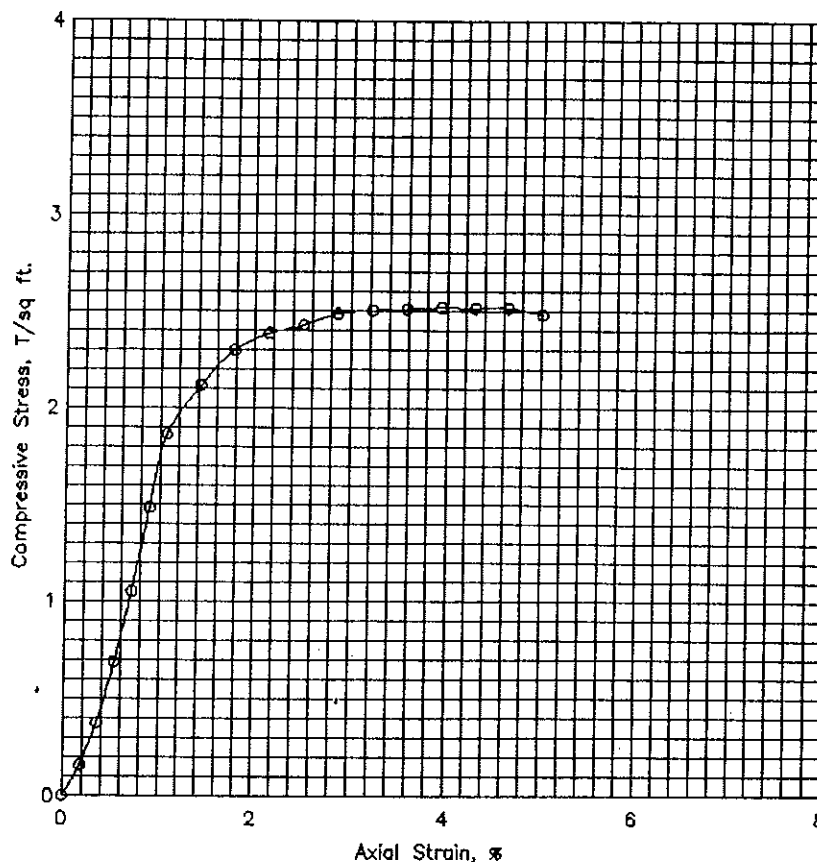
Tare No.	K1-18	Height	5.595 in.
Tare plus Wet Specimen	499.75 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	397.09 gm	Initial Area	6.290 sq in.
Water Weight	102.66 gm	Volume	35.194 cu in.
Tare Weight	42.51 gm	Volume of Solids	cu in.
Wet Specimen	1133.25 gm	Void Ratio	
Dry Specimen	878.81 gm	Saturation	%
Water Content	28.95 %	Dry Density	95.1 lb/cu ft
Specific Gravity of Solids			
LL = 74	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	18.0	13.8	.002	6.30	.158
.4	20.	.020	43.0	32.9	.004	6.31	.376
.6	30.	.030	79.0	60.5	.005	6.32	.689
.7	40.	.040	121.0	92.7	.007	6.34	1.053
.9	50.	.050	171.0	131.0	.009	6.35	1.486
1.1	60.	.060	215.0	164.7	.011	6.36	1.865
1.4	80.	.080	245.0	187.7	.014	6.38	2.117
1.8	100.	.100	267.0	204.5	.018	6.40	2.299
2.1	120.	.120	278.0	212.9	.021	6.43	2.385
2.4	140.	.140	284.0	217.5	.025	6.45	2.428
2.7	160.	.160	292.0	223.7	.029	6.48	2.487
3.0	180.	.180	295.0	226.0	.032	6.50	2.503
3.4	200.	.200	297.0	227.5	.036	6.52	2.511
3.7	220.	.220	299.0	229.0	.039	6.55	2.519
4.0	240.	.240	300.0	229.8	.043	6.57	2.518
4.3	260.	.260	301.0	230.6	.046	6.60	2.517
4.7	280.	.280	298.0	228.3	.050	6.62	2.482

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	29.0 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	95.1		
Time to failure, min		t_f	3.70		
Unconfined compressive strength, T/sq ft		q_u	2.52		
Undrained shear strength, T/sq ft		S_u	1.26		
Sensitivity ratio		S_t			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		

Classification Yellowish brown, Clay, Very stiff, w/calcareous nodules & ferrous stains

LL	74	PL		PI		G_s	
Remarks		Project Lake Wallisville, Trinity River					
		and Tributaries,					
		Area near Wallisville, Texas					
		Boring No.	94-5	Sample No.	9		
		Depth	16-18 ft	Date	4/6/94		
		El					
UNCONFINED COMPRESSION TEST REPORT							

JOB NO. 14G727-12

DATE 4/6/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-5

SAMPLE NO. 12

DEPTH 22-24 ft

SPECIMEN NO. 1

CLASSIFICATION

Yellowish brown, Clay, Stiff, w/ferrous stains

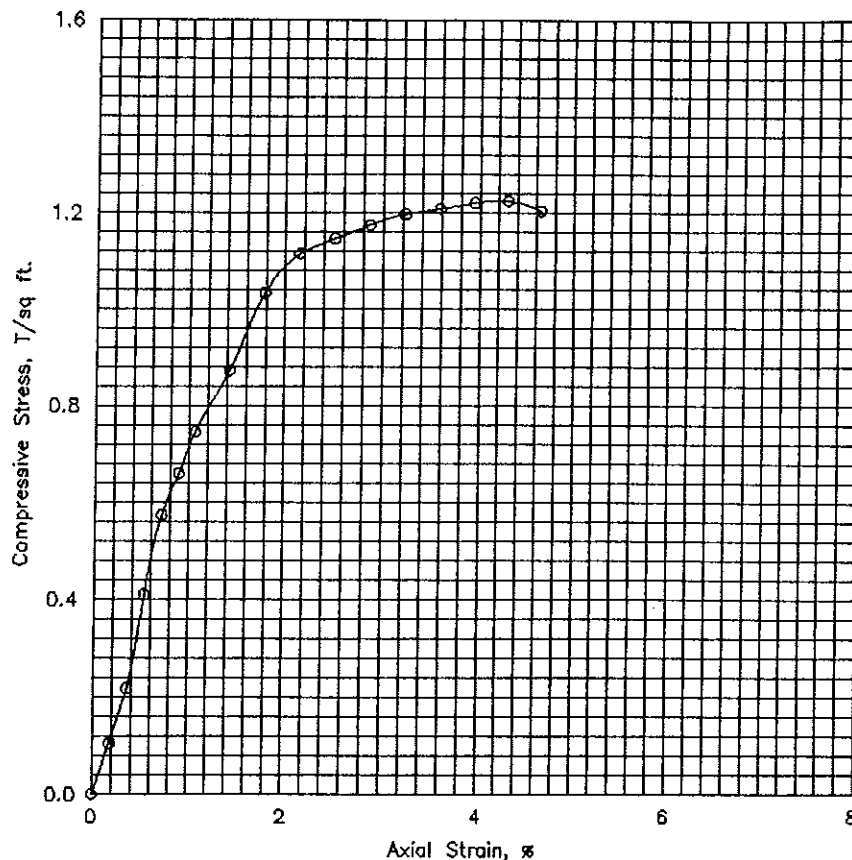
Tare No.	W-19	Height	5.595 in.
Tare plus Wet Specimen	566.40 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	449.88 gm	Initial Area	6.290 sq in.
Water Weight	116.52 gm	Volume	35.194 cu in.
Tare Weight	42.70 gm	Volume of Solids	cu in.
Wet Specimen	1124.72 gm	Void Ratio	
Dry Specimen	874.48 gm	Saturation	%
Water Content	28.62 %	Dry Density	94.7 lb/cu ft
Specific Gravity of Solids			
LL = 69	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	12.0	9.2	.002	6.30	.105
.3	20.	.020	25.0	19.1	.004	6.31	.218
.6	30.	.030	47.0	36.0	.005	6.32	.410
.8	40.	.040	66.0	50.6	.007	6.34	.575
.9	50.	.050	76.0	58.2	.009	6.35	.660
1.1	60.	.060	86.0	65.9	.011	6.36	.746
1.4	80.	.080	101.0	77.4	.014	6.38	.873
1.7	100.	.100	120.0	91.9	.018	6.40	1.033
2.0	120.	.120	130.0	99.6	.021	6.43	1.115
2.3	140.	.140	134.0	102.6	.025	6.45	1.146
2.7	160.	.160	138.0	105.7	.029	6.48	1.175
3.0	180.	.180	141.0	108.0	.032	6.50	1.197
3.3	200.	.200	143.0	109.5	.036	6.52	1.209
3.6	220.	.220	145.0	111.1	.039	6.55	1.221
3.9	240.	.240	146.0	111.8	.043	6.57	1.225
4.3	260.	.260	144.0	110.3	.046	6.60	1.204

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen ^a		Undisturbed			
Initial	Water content	w_0	28.6 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	94.7		
Time to failure, min		t_f	3.93		
Unconfined compressive strength, T/sq ft		q_u	1.23		
Undrained shear strength, T/sq ft		S_u	.61		
Sensitivity ratio		S_t			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		
Classification Yellowish brown, Clay, Stiff, w/ferrous stains					
LL	69	PL		PI	G_o
Remarks		Project Lake Wallisville, Trinity River			
		and Tributaries,			
		Area near Wallisville, Texas			
		Boring No. 94-5		Sample No. 12	
		Depth 22-24 ft		Date 4/6/94	
		UNCONFINED COMPRESSION TEST REPORT			

Project: Lake Wallisville, Trinity River and Tributaries, Texas

SUMMARY OF LABORATORY TEST RESULTS

COVE
PROPOSED BORROW AREA

Contract No. DACW64-93-D-0005 Delivery Order No. 0012

Boring No. 94-5

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					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
1	0 - 2	1.00		Dark gray, Clay, Stiff, w/roots	C H	25.9											
2	2 - 4	1.50		Gray, Clay, Stiff, w/ferrous nodules and ferrous stain	C H	25.2											
3	4 - 6	1.75		Gray, Clay, Stiff, w/calcareous nodules and ferrous stain	C H	20.9	105.8	127.9	54		100.0	99.1	98.0	97.5	97.2		1.67
4	6 - 8	1.75		Yellowish gray, Clay, Stiff, Silty, w/calcareous nodules	C L	17.5											
5	8 - 10	2.00		Yellowish gray, Clay, Very stiff, w/calcareous nodules and ferrous stain	C H	22.7											
6	10 - 12	1.75		Yellowish gray, Clay, Stiff, w/calcareous nodules and ferrous stain	C H	21.5	103.4	125.6	60		98.9	97.9	97.6	97.4	96.8		1.36
7	12 - 14	2.25		Yellowish brown & gray, Clay, Very stiff, w/calc nod & fe st, blocky structure	C H	28.0											
8	14 - 16	2.50		Yellowish brown & gray, Clay, Very stiff, w/calc nod & fe st, blocky structure	C H	27.9											
9	16 - 18	2.50		Yellowish brown, Clay, Very stiff, w/calcareous nodules and ferrous stain	C H	28.9	95.1	122.6	74		100.0	100.0	99.6	99.1	98.8		2.52
10	18 - 20	2.00		Yellowish brown, Clay, Very stiff, w/ferrous stain	C H	31.8											
11	20 - 22	1.50		Yellowish brown, Clay, Stiff, w/ferrous stain	C H	23.9											
12	22 - 24	1.50		Yellowish brown, Clay, Stiff, w/ferrous stain	C H	28.6	94.7	121.8	69		100.0	100.0	99.9	99.6	99.0		1.23
13	24 - 26	3.00		Brown & gray, Clay, Very stiff, w/calcareous nodules ferrous stain, slickensided	C H	28.2											
14	26 - 28	3.25		Brown & gray, Clay, Very stiff, w/calcareous nodules ferrous stain, slickensided	C H	25.2											
15	28 - 30	3.50		Yellowish gray & gray, Clay, Very stiff, w/sand seams and ferrous stains	C H	18.9											
16	30 - 32	3.75		Yellowish gray & gray, Clay, Very stiff, w/sand seams and calcareous nodules	C H	19.3											
17	32 - 34	3.50		Yellowish gray & gray, Clay, Very stiff, w/sand seams and calcareous nodules	C H	21.4											
18	34 - 36	3.25		Yellowish brown & gray, Clay, Very stiff, Silty, w/ferrous stain	C L	23.7											
19	36 - 38	3.00		Red & gray, Clay, Very stiff, w/calcareous nodules, ferrous stain, slickensided	C H	25.0											
20	38 - 40	3.50		Red & gray, Clay, very stiff, w/calcareous nodules and ferrous stain, slickensided	C H	22.2											

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content
q u : Uncogined Compressive Strength, W O H : Weight of hammer, W O P : Weight of Pipe