U.S. ARMY CORPS OF ENGINEERS

BORING NO. 94-6 DATE: BEGIN 3/14/94 PAGE 1 /2
JOB NO. 146727-B COMPLETE 3/14/94 Thin Walled Tube
PROJECT Wallisville Lake, Trinity River & Tributaries ■ 3" ☐ 6"
LOCATION near Wallisville, Tx
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG FAILING 36
GROUNDWATER: DEPTH 0** ft., ELEV. ____ ft., at end of Drilling
WEATHER Overcast, warm
DRILLER Randy Gearen LOGGER Peter Kosmoski

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	2.0	Dark gray	clay	v.stiff		
		2	1.25	" "	clay	stiff		
		3	2.25	Yellowish Brown	clay	v.stiff		w/calc nods (large)
5		4	2.0	Yellowish Brown	clay	v.stiff		w/calc nods (large)
		5	2.5	Yellowish Brown	clay	v.stiff		w/calc nods
10		6	3.5	Yellowish Brown	clay	v.stiff		w/calc nods
		7	2.5	Yellowish Brown & gray	clay	v.stiff		w/calc nods
15		8	2.5	Yellowish Brown & gray	clay	v.stiff		w/calc nods
		9	2.25	Yellowish Brown & gray	clay	v.stiff		
		10	2.75	Yellowish Brown & gray	clay	v.stiff		*encounter water @ 18'
20		11	2.5	Yellowish Brown & gray	clay	v.stiff	~~silt~~ sand	
		12	2.75	Yellowish Brown & gray	clay	v.stiff		
25		13	2.75	Yellowish Brown & gray	clay	v.stiff		
		14	3.0	Yellowish Brown & gray	clay	v.stiff		
		15	3.5	Yellowish Brown & gray	clay	v.stiff		w/ferr nods
30		16	3.5	Yellowish Brown & gray	clay	v.stiff		w/calc nods sandy 30'-31'
		17	3.5	Reddish Brown	clay	v.stiff	sand	w/ferr nods
35		18	3.0	Reddish Brown	clay	v.stiff	sand	w/calc nods, ferr nods

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 94-6 DATE: BEGIN 3/14/94 PAGE 2 /2
JOB NO. 146727-6 COMPLETE 3/14/94 Thin Walled Tube
PROJECT Wallisville lake, Trinity River & Tributaries ■ 3" □ 6"
LOCATION near Wallisville, Tx
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG Failing 36
GROUNDWATER: DEPTH 0** ft., ELEV. ____ ft., at end of Drilling
WEATHER Overcast, warm
DRILLER Randy Gerard LOGGER Pete Kozowski

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35								
		19	4.0	Reddish Brown & gray	clay	V. stiff		w/calc nods
		20	4.25	Reddish Brown & gray	clay	Hard		w/calc nods
40								
								** water level at end of Drilling
45								
50								
55								
60								
65								
70								

GEOTEST ENGINEERING, INC.

JOB NO. 14G727-12 DATE 4/6/94

PROJECT Lake Wallisville, Trinity River and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-6 SAMPLE NO. 3 DEPTH 4-6 ft

SPECIMEN NO. 1

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

Tare No.	P219	Height	5.595 in.
Tare plus Wet Specimen	579.87 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	474.53 gm	Initial Area	6.290 sq in.
Water Weight	105.34 gm	Volume	35.194 cu in.
Tare Weight	42.64 gm	Volume of Solids	cu in.
Wet Specimen	1153.29 gm	Void Ratio	
Dry Specimen	927.15 gm	Saturation	%
Water Content	24.39 %	Dry Density	100.4 lb/cu ft
Specific Gravity of Solids			

LL = 59 PL = PI =

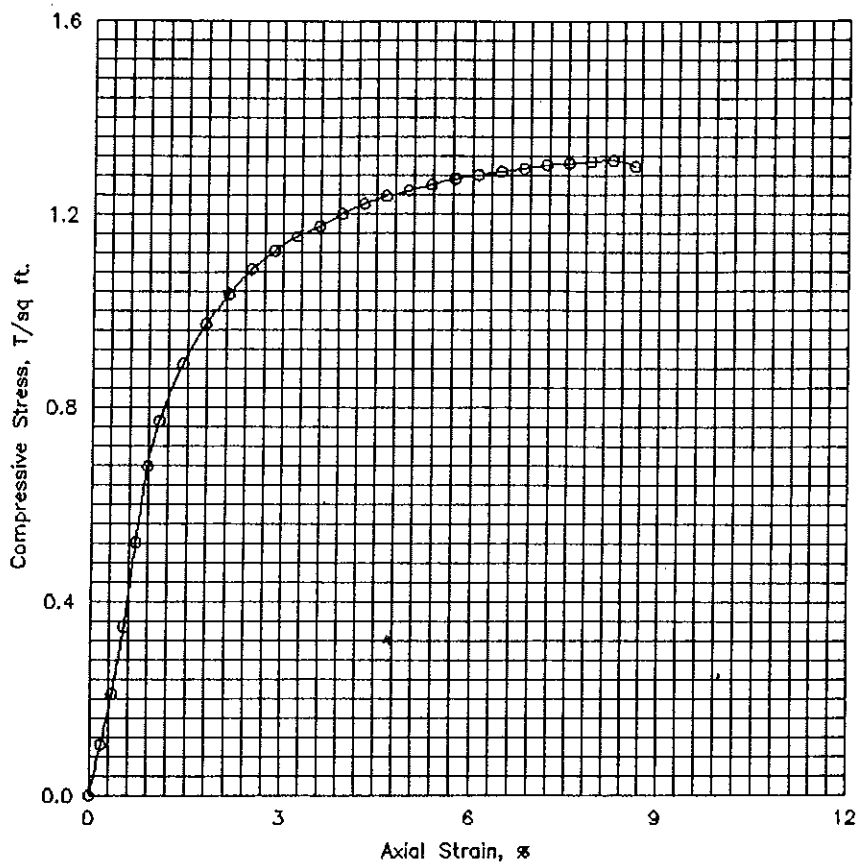
Proving Ring No. 10170
Proving Ring Constant, K = .766 lbs/div.

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	24.0	18.4	.004	6.31	.210
.5	30.	.030	40.0	30.6	.005	6.32	.349
.7	40.	.040	60.0	46.0	.007	6.34	.522
.9	50.	.050	78.0	59.7	.009	6.35	.678
1.0	60.	.060	89.0	68.2	.011	6.36	.772
1.4	80.	.080	103.0	78.9	.014	6.38	.890
1.8	100.	.100	113.0	86.6	.018	6.40	.973
2.1	120.	.120	120.5	92.3	.021	6.43	1.034
2.4	140.	.140	127.0	97.3	.025	6.45	1.086
2.8	160.	.160	132.0	101.1	.029	6.48	1.124
3.0	180.	.180	136.0	104.2	.032	6.50	1.154
3.4	200.	.200	139.0	106.5	.036	6.52	1.175
3.7	220.	.220	142.5	109.2	.039	6.55	1.200
4.1	240.	.240	145.5	111.5	.043	6.57	1.221
4.4	260.	.260	148.0	113.4	.046	6.60	1.237
4.7	280.	.280	150.0	114.9	.050	6.62	1.249
5.0	300.	.300	152.0	116.4	.054	6.65	1.261
5.3	320.	.320	154.0	118.0	.057	6.67	1.273
5.7	340.	.340	155.5	119.1	.061	6.70	1.281
6.0	360.	.360	157.0	120.3	.064	6.72	1.288
6.3	380.	.380	158.5	121.4	.068	6.75	1.295
6.7	400.	.400	160.0	122.6	.071	6.77	1.303
6.9	420.	.420	161.0	123.3	.075	6.80	1.306
7.3	440.	.440	162.0	124.1	.079	6.83	1.309

7.6	460.	.460	163.0	124.9	.082	6.85	1.312
7.9	480.	.480	162.0	124.1	.086	6.88	1.299

Job No. 146727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen *			Undisturbed			
Initial	Water content	w_0	24.4 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	100.4			
Time to failure, min		t_f	7.60			
Unconfined compressive strength, T/sq ft		q_u	1.31			
Undrained shear strength, T/sq ft		S_u	.66			
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 59	PL	PI	G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,

Area near Wallisville, Texas

Boring No. 94-6 | Sample No. 3

Depth El 4-6 ft | Date 4/6/94

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G727-12 DATE 4/6/94

PROJECT Lake Wallisville,Trinity River and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-6 SAMPLE NO. 6 DEPTH 10-12 ft

SPECIMEN NO. 1

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

Tare No.	W2	Height	5.595 in.
Tare plus Wet Specimen	596.35 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	476.33 gm	Initial Area	6.290 sq in.
Water Weight	120.02 gm	Volume	35.194 cu in.
Tare Weight	42.60 gm	Volume of Solids	cu in.
Wet Specimen	1151.97 gm	Void Ratio	
Dry Specimen	902.29 gm	Saturation	%
Water Content	27.67 %	Dry Density	97.7 lb/cu ft
Specific Gravity of Solids			

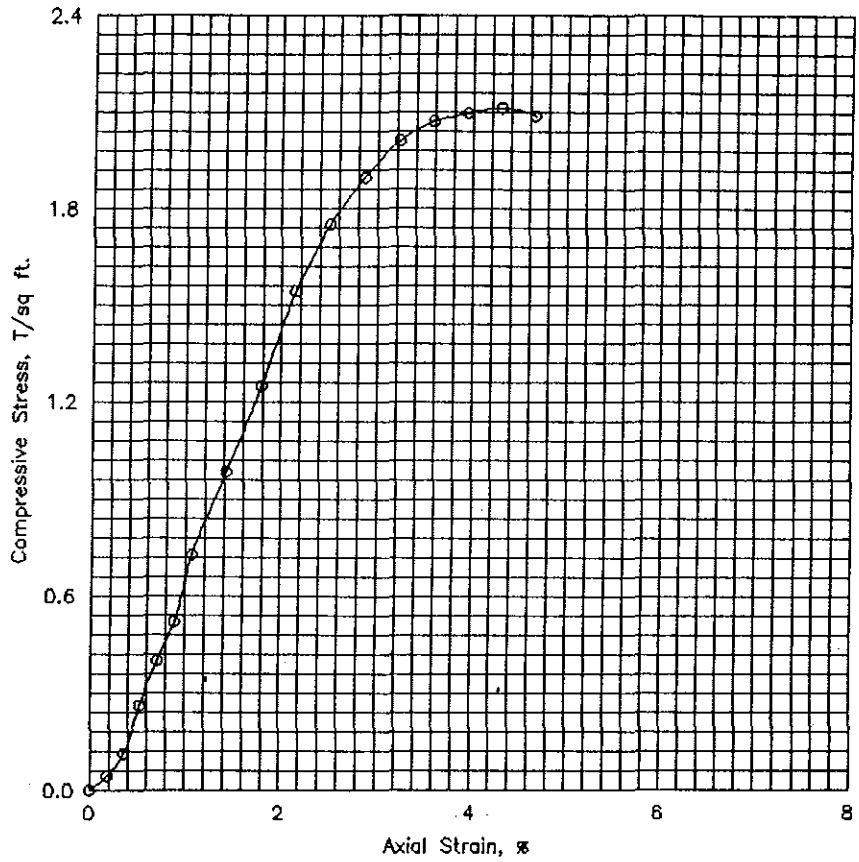
LL = 87 PL = PI =

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	13.0	10.0	.004	6.31	.114
.6	30.	.030	30.0	23.0	.005	6.32	.262
.7	40.	.040	46.0	35.2	.007	6.34	.400
.9	50.	.050	60.0	46.0	.009	6.35	.521
1.0	60.	.060	84.0	64.3	.011	6.36	.729
1.4	80.	.080	114.0	87.3	.014	6.38	.985
1.7	100.	.100	145.0	111.1	.018	6.40	1.249
2.0	120.	.120	180.0	137.9	.021	6.43	1.544
2.3	140.	.140	205.0	157.0	.025	6.45	1.752
2.7	160.	.160	223.0	170.8	.029	6.48	1.899
3.0	180.	.180	237.0	181.5	.032	6.50	2.011
3.3	200.	.200	245.0	187.7	.036	6.52	2.071
3.6	220.	.220	249.0	190.7	.039	6.55	2.097
3.9	240.	.240	252.0	193.0	.043	6.57	2.115
4.3	260.	.260	250.0	191.5	.046	6.60	2.090

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen *			Undisturbed			
Initial	Water content	w_o	27.7 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	97.7			
Time to failure, min		t_f	3.92			
Unconfined compressive strength, T/sq ft		q_u	2.11			
Undrained shear strength, T/sq ft		S_u	1.06			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

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

LL 87	PL	PI	G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,	
Area near Wallisville, Texas	
Boring No. 94-6	Sample No. 6
Depth El 10-12 ft	Date 4/6/94
UNCONFINED COMPRESSION TEST REPORT	

ENG FORM 1 JUN 65 3659

Geotest Engineering, Inc.

PLATE

JOB NO. 14G727-12 DATE 4/6/94

PROJECT Lake Wallisville,Trinity River and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-6 SAMPLE NO. 9 DEPTH 16-18 ft

SPECIMEN NO. 1

CLASSIFICATION
Yellowish gray,Clay,Very stiff,w/ferrous stains

Tare No.	W-10	Height	5.595 in.
Tare plus Wet Specimen	516.00 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	412.17 gm	Initial Area	6.290 sq in.
Water Weight	103.83 gm	Volume	35.194 cu in.
Tare Weight	42.31 gm	Volume of Solids	cu in.
Wet Specimen	1143.16 gm	Void Ratio	
Dry Specimen	892.59 gm	Saturation	%
Water Content	28.07 %	Dry Density	96.6 lb/cu ft
Specific Gravity of Solids			

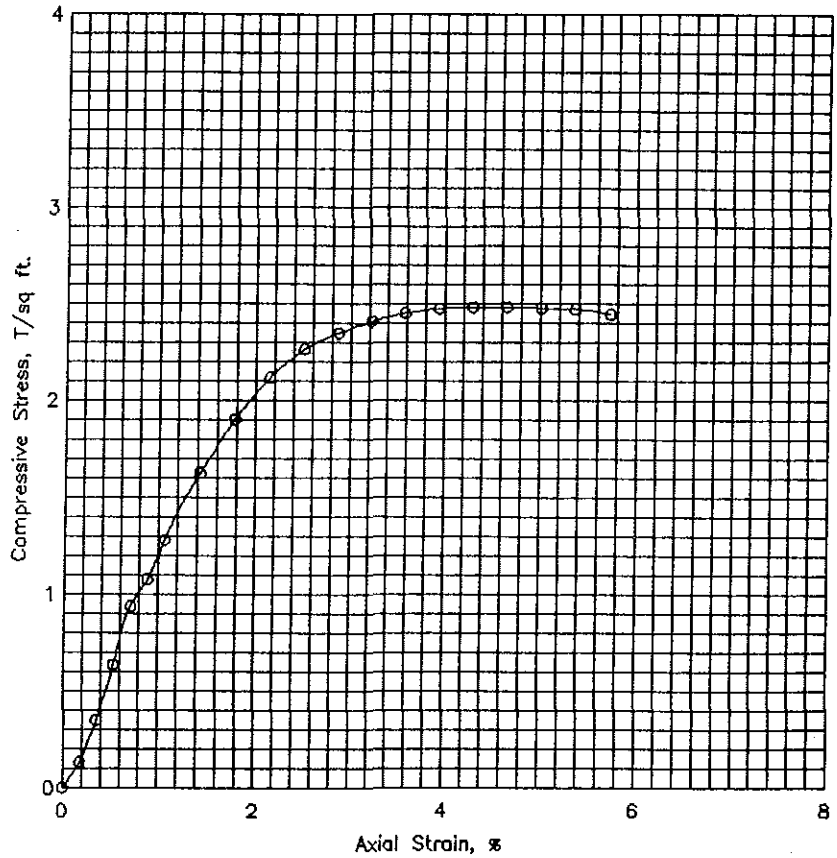
LL = 76 PL = PI =

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	40.0	30.6	.004	6.31	.349
.5	30.	.030	73.0	55.9	.005	6.32	.637
.7	40.	.040	108.0	82.7	.007	6.34	.940
.9	50.	.050	124.0	95.0	.009	6.35	1.078
1.0	60.	.060	148.0	113.4	.011	6.36	1.284
1.4	80.	.080	188.0	144.0	.014	6.38	1.625
1.7	100.	.100	221.0	169.3	.018	6.40	1.903
2.0	120.	.120	247.0	189.2	.021	6.43	2.119
2.3	140.	.140	265.0	203.0	.025	6.45	2.265
2.6	160.	.160	276.0	211.4	.029	6.48	2.351
3.0	180.	.180	284.0	217.5	.032	6.50	2.410
3.3	200.	.200	290.0	222.1	.036	6.52	2.452
3.6	220.	.220	294.0	225.2	.039	6.55	2.476
3.9	240.	.240	296.0	226.7	.043	6.57	2.484
4.3	260.	.260	297.0	227.5	.046	6.60	2.483
4.4	280.	.280	297.5	227.9	.050	6.62	2.478
4.7	300.	.300	298.0	228.3	.054	6.65	2.473
5.1	320.	.320	296.0	226.7	.057	6.67	2.447

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	28.1 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	96.6			
Time to failure, min		t_f	3.93			
Unconfined compressive strength, T/sq ft		q_u	2.48			
Undrained shear strength, T/sq ft		S_u	1.24			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Yellowish gray,Clay,Very stiff,w/ferrous stains

LL 76	PL	PI	G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,

Area near Wallisville, Texas

Boring No. 94-6 | Sample No. 9

Depth El 16-18 ft | Date 4/6/94

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G727-12 DATE 4/6/94

PROJECT Lake Wallisville,Trinity River and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-6 SAMPLE NO. 12 DEPTH 22-24 ft

SPECIMEN NO. 1

CLASSIFICATION
Yellowish gray,Clay,Very stiff,w/ferrous stains

Tare No.	W-18	Height	5.595 in.
Tare plus Wet Specimen	561.51 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	451.64 gm	Initial Area	6.290 sq in.
Water Weight	109.87 gm	Volume	35.194 cu in.
Tare Weight	42.53 gm	Volume of Solids	cu in.
Wet Specimen	1145.36 gm	Void Ratio	
Dry Specimen	902.88 gm	Saturation	%
Water Content	26.86 %	Dry Density	97.7 lb/cu ft
Specific Gravity of Solids			

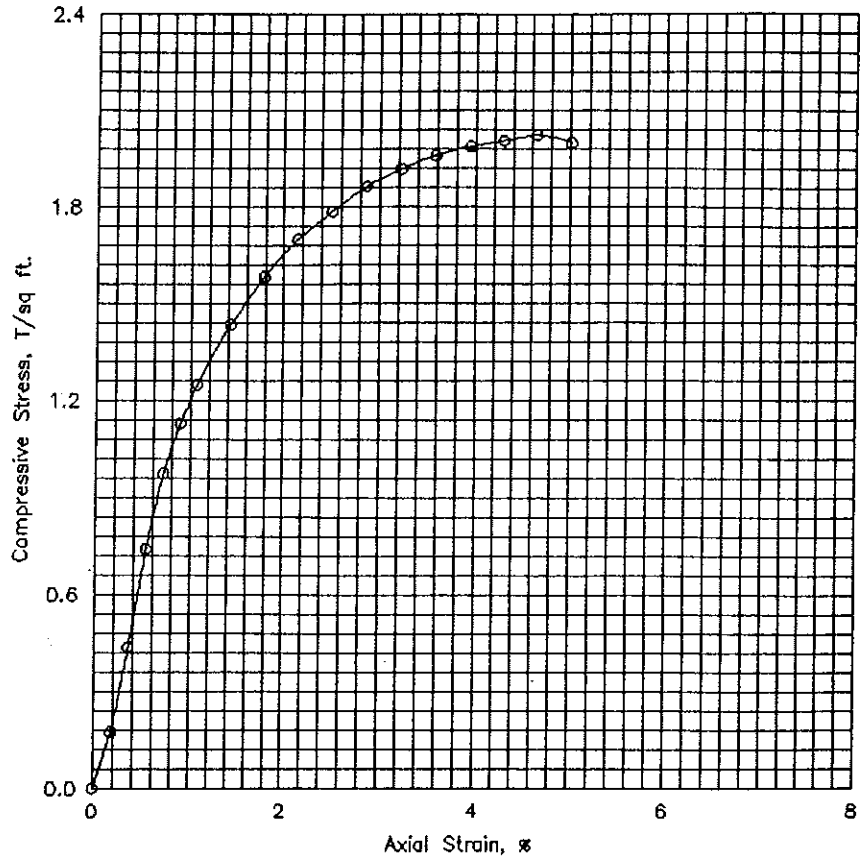
LL = 81 PL = PI =

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	20.0	15.3	.002	6.30	.175
.4	20.	.020	50.0	38.3	.004	6.31	.437
.6	30.	.030	85.0	65.1	.005	6.32	.741
.7	40.	.040	112.0	85.8	.007	6.34	.975
.9	50.	.050	130.0	99.6	.009	6.35	1.130
1.1	60.	.060	144.0	110.3	.011	6.36	1.249
1.4	80.	.080	166.0	127.2	.014	6.38	1.435
1.7	100.	.100	184.0	140.9	.018	6.40	1.584
2.0	120.	.120	198.0	151.7	.021	6.43	1.699
2.3	140.	.140	209.0	160.1	.025	6.45	1.787
2.7	160.	.160	219.0	167.8	.029	6.48	1.865
3.0	180.	.180	226.0	173.1	.032	6.50	1.918
3.3	200.	.200	232.0	177.7	.036	6.52	1.961
3.4	220.	.220	236.0	180.8	.039	6.55	1.988
3.7	240.	.240	239.0	183.1	.043	6.57	2.006
4.0	260.	.260	242.0	185.4	.046	6.60	2.023
4.3	280.	.280	240.0	183.8	.050	6.62	1.999

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	26.9 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	97.7			
Time to failure, min		t_f	4.03			
Unconfined compressive strength, T/sq ft		q_u	2.02			
Undrained shear strength, T/sq ft		S_u	1.01			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Yellowish gray,Clay,Very stiff,w/ferrous stains

LL 81	PL	PI	G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,

Area near Wallisville, Texas

Boring No. 94-6 | Sample No. 12

Depth El 22-24 ft | Date 4/6/94

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

Project: Lake Wallisville, Trinity River and Tributaries , Texas

SUMMARY OF LABORATORY TEST RESULTS

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

Boring No. 94-6

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	Mc (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	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,w/roots	C H	28.3											
2	2 - 4	1.25		Dark gray,Clay,Stiff	C H	27.6											
3	4 - 6	1.25		Yellowish gray,Clay,Stiff,w/calcareous nodules and ferrous stain	C H	24.4	100.4	124.8	59		100.0	99.6	99.0	98.7	98.6		1.31
4	6 - 8	1.50		Yellowish gray,Clay,Stiff,w/calcareous nodules	C H	26.8											
5	8 - 10	2.00		Yellowish gray,Clay,Very stiff,w/calcareous nodules	C H	22.9											
6	10 - 12	2.00		Yellowish gray,Clay,Very stiff,w/calcareous nodules and ferrous stain	C H	27.7	97.7	124.7	87		100.0	99.6	98.9	98.7	98.2		2.11
7	12 - 14	2.00		Yellowish gray,Clay,Very stiff,w/ferrous stain,slickensided	C H	28.5											
8	14 - 16	2.25		Yellowish gray,Clay,Very stiff,w/calcareous nodules and ferrous stain,slickensided	C H	28.8											
9	16 - 18	2.50		Yellowish gray,Clay,Very stiff,w/ferrous stain	C H	28.1	96.6	123.7	76		100.0	99.9	99.4	99.0	98.5		2.48
10	18 - 20	2.50		Yellowish gray,Clay,Very stiff,w/ferrous stain,slickensided	C H	29.0											
11	20 - 22	3.00		Yellowish brown,Clay,Very stiff,Silty,w/ calcareous nodules and ferrous stain	C L	21.7											
12	22 - 24	2.50		Yellowish gray,Clay,Very stiff,w/ferrous stain	C H	26.9	97.7	123.9	81		100.0	100.0	99.4	99.1	98.5		2.02
13	24 - 26	2.50		Yellowish brown,Clay,Very stiff,w/calcareous nodules and blocky structure	C H	27.7											
14	26 - 28	3.75		Yellowish brown,Clay,Very stiff,w/calcareous nodules fe st and blocky structure	C H	21.2											
15	28 - 30	3.50		Yellowish brown,Clay,Very stiff,w/calcareous nodules	C H	22.0											
16	30 - 32	3.75		Yellowish brown,Clay,Very stiff,Sandy,w/ calcareous nodules	C L	20.5											
17	32 - 34	3.75		Yellowish brown,Clay,Very stiff,Sandy,w/ calcareous nodules	C L	18.5											
18	34 - 36	3.75		Yellowish brown,Clay,Very stiff,w/calcareous nodules and ferrous stain	C H	21.0											
19	36 - 38	4.5 +		Reddish brown,Clay,Hard,w/calcareous nodules	C H	23.0											
20	38 - 40	4.5 +		Reddish brown,Clay,Hard,w/calcareous nodules	C H	24.9											

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