U.S. ARMY CORPS OF ENGINEERS

BORING NO. 9A-12 DATE: BEGIN 3/16/94 PAGE 1 / 2
JOB NO. 146727-B COMPLETE 3/16/94 Thin Walled Tube
PROJECT Wallisville Lake, Trinity River & Tributaries ■ 3" ☐ 6"
LOCATION
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG FAILING 36
GROUNDWATER: DEPTH 0** ft., ELEV. ____ ft., at end of Drilling
WEATHER SUNNY, WARM
DRILLER RANDY GREEN LOGGER PETER ROSMOSKI

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0								
		1	1.0	Dark gray	clay	stiff		w/ ferr nods
		2	1.0	Dark gray	clay	stiff		w/ calc nods (small)
5		3	1.5	Dark gray	clay	stiff		w/ calc nods
		4	2.25	Yellowish Brown	clay	v. stiff		w/ calc nods
		5	3.0	Yellowish Brown	clay	v. stiff		
10		6	2.5	Yellowish Brown	clay	v. stiff		
		7	3.25	Yellowish Brown	clay	v. stiff		
15		8	2.75	Yellowish Brown	clay	v. stiff		
		9	3.0	Yellowish Brown	clay	v. stiff		
		10	3.5	Yellowish Brown	clay	v. stiff		* encounter water @ 20'
20		11	3.25	Yellowish Brown	clay	v. stiff		
		12	3.0	Yellowish Brown	clay	v. stiff		w/ calc nod
25		13	2.5	Yellowish Brown	clay	v. stiff		w/ calc nods (small) ferr nods
		14	3.5	Yellowish Brown & gray	clay	v. stiff		w/ calc nods (small) ferr nods
		15	2.75	Yellowish Brown & gray	clay	v. stiff		w/ ferr nods
30		16	3.0	Yellowish Brown & gray	clay	v. stiff		w/ calc nods
		17	3.25	Reddish Brown	clay	v. stiff		w/ calc nods,
35		18	3.5	Reddish Brown	clay	v. stiff	sand	w/ calc nods

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 9A-12 DATE: BEGIN 3/16/94 PAGE 2 /2
JOB NO. 146727-6 COMPLETE 3/16/94 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 SUNNY, WARM
DRILLER RANDY GERLAND LOGGER PETER KOSMOSKI

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE / SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35								
	▨	19	2.25	Reddish Brown	clay	v. stiff	sand	w/few nods
	▨	20	4.5	Reddish Brown	clay	hard		sls, blocky structure w/ 2" layer of silt, fine sand at bottom
40								
								** water level at end of Drilling
45								
50								
55								
60								
65								
70								

GEOTEST ENGINEERING, INC.

JOB NO. 14G727-12 DATE 4/11/94

PROJECT Lake Wallisville,Trinity River and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-12 SAMPLE NO. 3 DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray,Clay,stiff,w/calcareous nodules

Tare No.	W13	Height	5.595 in.
Tare plus Wet Specimen	647.29 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	513.75 gm	Initial Area	6.290 sq in.
Water Weight	133.54 gm	Volume	35.194 cu in.
Tare Weight	42.47 gm	Volume of Solids	cu in.
Wet Specimen	1110.92 gm	Void Ratio	
Dry Specimen	865.64 gm	Saturation	%
Water Content	28.34 %	Dry Density	93.7 lb/cu ft

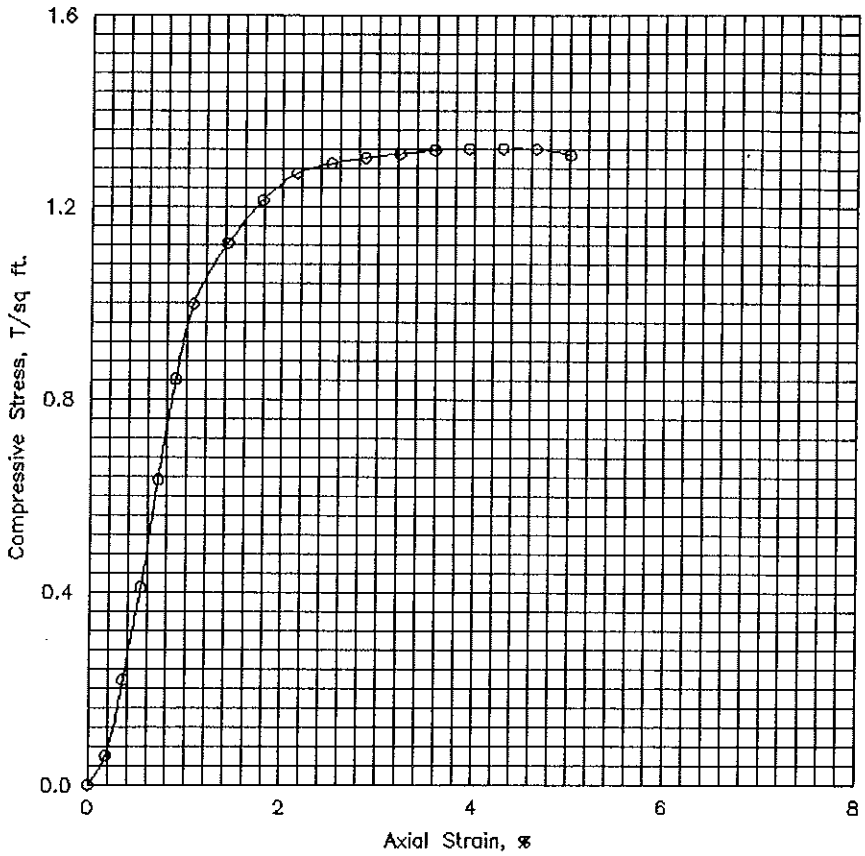
Specific Gravity of Solids
LL = 68 PL = PI =

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	7.0	5.4	.002	6.30	.061
.4	20.	.020	25.0	19.1	.004	6.31	.218
.6	30.	.030	47.0	36.0	.005	6.32	.410
.7	40.	.040	73.0	55.9	.007	6.34	.635
.9	50.	.050	97.0	74.3	.009	6.35	.843
1.0	60.	.060	115.0	88.1	.011	6.36	.998
1.4	80.	.080	130.0	99.6	.014	6.38	1.124
1.7	100.	.100	141.0	108.0	.018	6.40	1.214
2.0	120.	.120	148.0	113.4	.021	6.43	1.270
2.3	140.	.140	151.0	115.7	.025	6.45	1.291
2.6	160.	.160	153.0	117.2	.029	6.48	1.303
2.9	180.	.180	154.5	118.3	.032	6.50	1.311
3.3	200.	.200	156.0	119.5	.036	6.52	1.319
3.6	220.	.220	157.0	120.3	.039	6.55	1.322
3.9	240.	.240	157.5	120.6	.043	6.57	1.322
4.2	260.	.260	158.0	121.0	.046	6.60	1.321
4.6	280.	.280	157.0	120.3	.050	6.62	1.308

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	28.3 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	93.7			
Time to failure, min		t_f	3.57			
Unconfined compressive strength, T/sq ft		q_u	1.32			
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 Gray,Clay,stiff,w/calcareous nodules

LL 68	PL	PI	G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,

Area near Wallisville, Texas

Boring No. 94-12 | Sample No. 3

Depth El 4-6 ft | Date 4/11/94

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G727-12 DATE 4/11/94

PROJECT Lake Wallisville,Trinity River
and Tributaries,

AREA near Wallisville, Texas

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

SPECIMEN NO. 1

CLASSIFICATION
Yellowish gray,Clay,Very stiff,w/calcareous nodules

Tare No.	P24	Height	5.595 in.
Tare plus Wet Specimen	665.00 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	554.72 gm	Initial Area	6.290 sq in.
Water Weight	110.28 gm	Volume	35.194 cu in.
Tare Weight	42.46 gm	Volume of Solids	cu in.
Wet Specimen	1208.88 gm	Void Ratio	
Dry Specimen	994.73 gm	Saturation	%
Water Content	21.53 %	Dry Density	107.7 lb/cu ft
Specific Gravity of Solids			

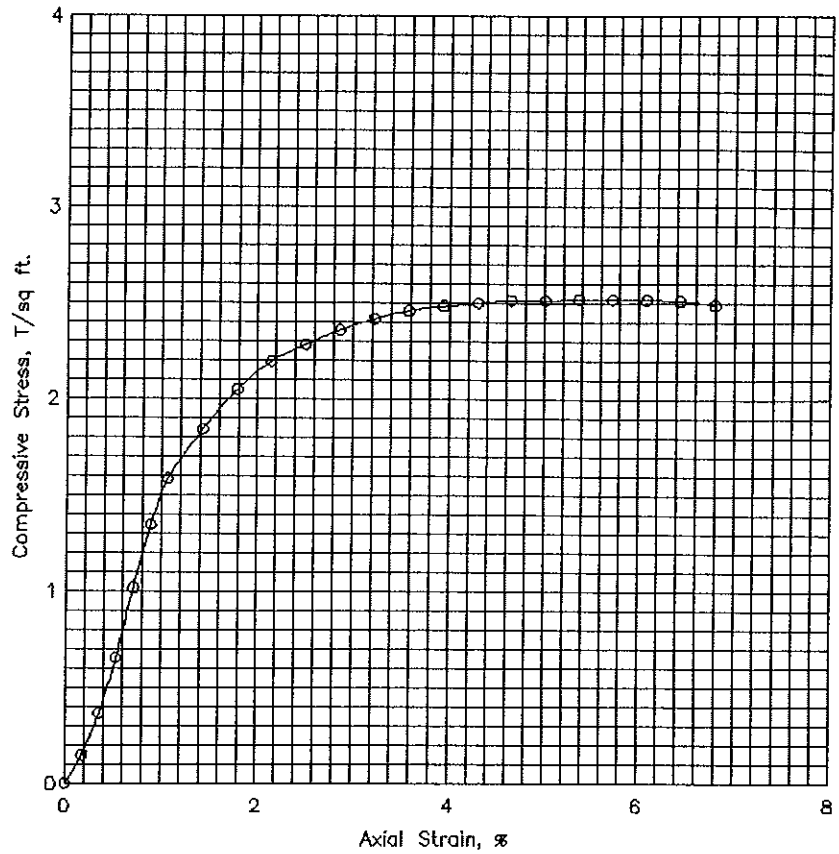
LL = 64 PL = PI =

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	17.0	13.0	.002	6.30	.149
.4	20.	.020	42.0	32.2	.004	6.31	.367
.6	30.	.030	75.0	57.4	.005	6.32	.654
.7	40.	.040	117.0	89.6	.007	6.34	1.019
.9	50.	.050	155.0	118.7	.009	6.35	1.347
1.1	60.	.060	183.0	140.2	.011	6.36	1.587
1.4	80.	.080	213.0	163.2	.014	6.38	1.841
1.7	100.	.100	238.0	182.3	.018	6.40	2.049
2.0	120.	.120	256.0	196.1	.021	6.43	2.196
2.3	140.	.140	267.0	204.5	.025	6.45	2.282
2.7	160.	.160	277.0	212.2	.029	6.48	2.359
3.0	180.	.180	285.0	218.3	.032	6.50	2.418
3.3	200.	.200	291.0	222.9	.036	6.52	2.460
3.6	220.	.220	295.0	226.0	.039	6.55	2.485
3.9	240.	.240	298.0	228.3	.043	6.57	2.501
4.2	260.	.260	301.0	230.6	.046	6.60	2.517
4.6	280.	.280	302.0	231.3	.050	6.62	2.515
4.9	300.	.300	304.0	232.9	.054	6.65	2.523
5.2	320.	.320	305.0	233.6	.057	6.67	2.521
5.5	340.	.340	306.0	234.4	.061	6.70	2.520
5.8	360.	.360	306.5	234.8	.064	6.72	2.514
6.1	380.	.380	305.0	233.6	.068	6.75	2.493

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	21.5 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	107.7			
Time to failure, min		t_f	4.87			
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_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Yellowish gray,Clay,Very stiff,w/calcareous nodules

LL	64	PL		PI		G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,

Area near Wallisville, Texas

Boring No. 94-12 | Sample No. 6

Depth El 10-12 ft | Date 4/11/94

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G727-12 DATE 4/11/94

PROJECT Lake Wallisville,Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-12 SAMPLE NO. 9 DEPTH 16-18 ft

SPECIMEN NO. 1

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

Tare No.	K1-34	Height	5.595 in.
Tare plus Wet Specimen	605.80 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	487.81 gm	Initial Area	6.290 sq in.
Water Weight	117.99 gm	Volume	35.194 cu in.
Tare Weight	42.56 gm	Volume of Solids	cu in.
Wet Specimen	1157.64 gm	Void Ratio	
Dry Specimen	915.13 gm	Saturation	%
Water Content	26.50 %	Dry Density	99.1 lb/cu ft
Specific Gravity of Solids			

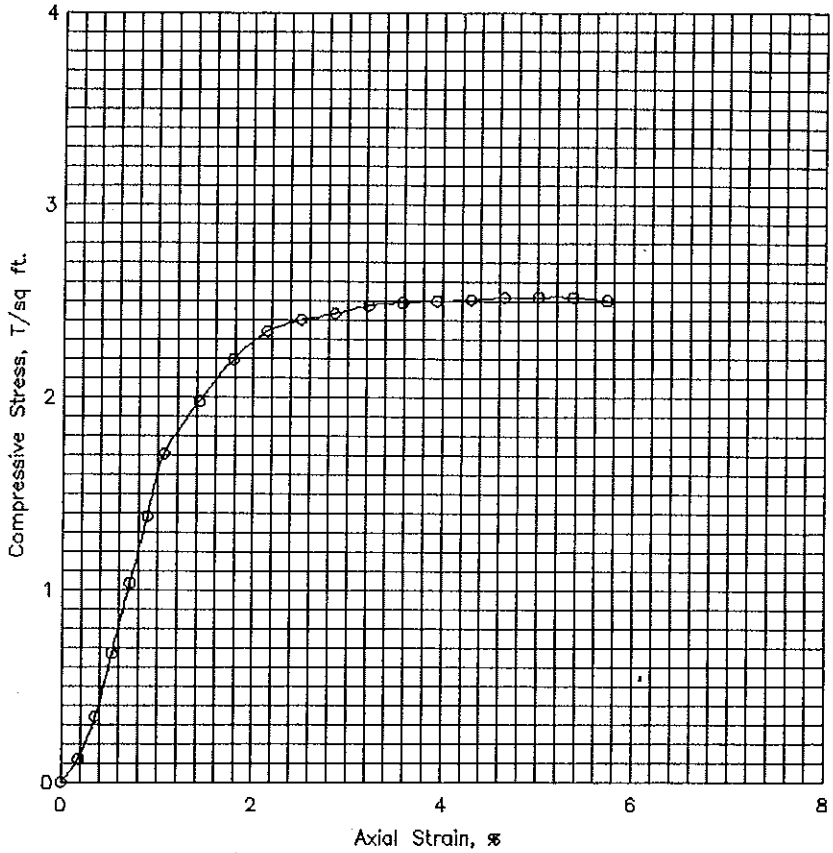
LL = 77 PL = PI =

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	14.0	10.7	.002	6.30	.123
.4	20.	.020	39.0	29.9	.004	6.31	.341
.6	30.	.030	77.0	59.0	.005	6.32	.672
.8	40.	.040	119.0	91.2	.007	6.34	1.036
.9	50.	.050	159.0	121.8	.009	6.35	1.382
1.1	60.	.060	197.0	150.9	.011	6.36	1.709
1.4	80.	.080	229.0	175.4	.014	6.38	1.979
1.8	100.	.100	255.0	195.3	.018	6.40	2.196
2.1	120.	.120	273.0	209.1	.021	6.43	2.342
2.4	140.	.140	281.0	215.2	.025	6.45	2.402
2.9	160.	.160	286.0	219.1	.029	6.48	2.436
3.2	180.	.180	292.0	223.7	.032	6.50	2.478
3.6	200.	.200	295.0	226.0	.036	6.52	2.494
3.9	220.	.220	297.0	227.5	.039	6.55	2.502
4.2	240.	.240	299.0	229.0	.043	6.57	2.509
4.5	260.	.260	301.5	230.9	.046	6.60	2.521
4.9	280.	.280	303.0	232.1	.050	6.62	2.524
5.2	300.	.300	304.0	232.9	.054	6.65	2.523
5.5	320.	.320	303.0	232.1	.057	6.67	2.505

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	26.5 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	99.1			
Time to failure, min		t_f	4.87			
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 Olive gray,Clay,Very stiff,w/calcareous nodules&ferrous stains

LL 77	PL	PI	G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,

Area near Wallisville, Texas

Boring No. 94-12 | Sample No. 9

Depth El 16-18 ft | Date 4/11/94

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G727-12 DATE 4/11/94

PROJECT Lake Wallisville,Trinity River
and Tributaries,

AREA near Wallisville, Texas

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

SPECIMEN NO. 1

CLASSIFICATION
Olive gray,Clay,Very stiff,w/calcareous nodules

Tare No.	W-2	Height	5.595 in.
Tare plus Wet Specimen	528.12 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	425.87 gm	Initial Area	6.290 sq in.
Water Weight	102.25 gm	Volume	35.194 cu in.
Tare Weight	42.59 gm	Volume of Solids	cu in.
Wet Specimen	1166.25 gm	Void Ratio	
Dry Specimen	920.64 gm	Saturation	%
Water Content	26.68 %	Dry Density	99.7 lb/cu ft
Specific Gravity of Solids			

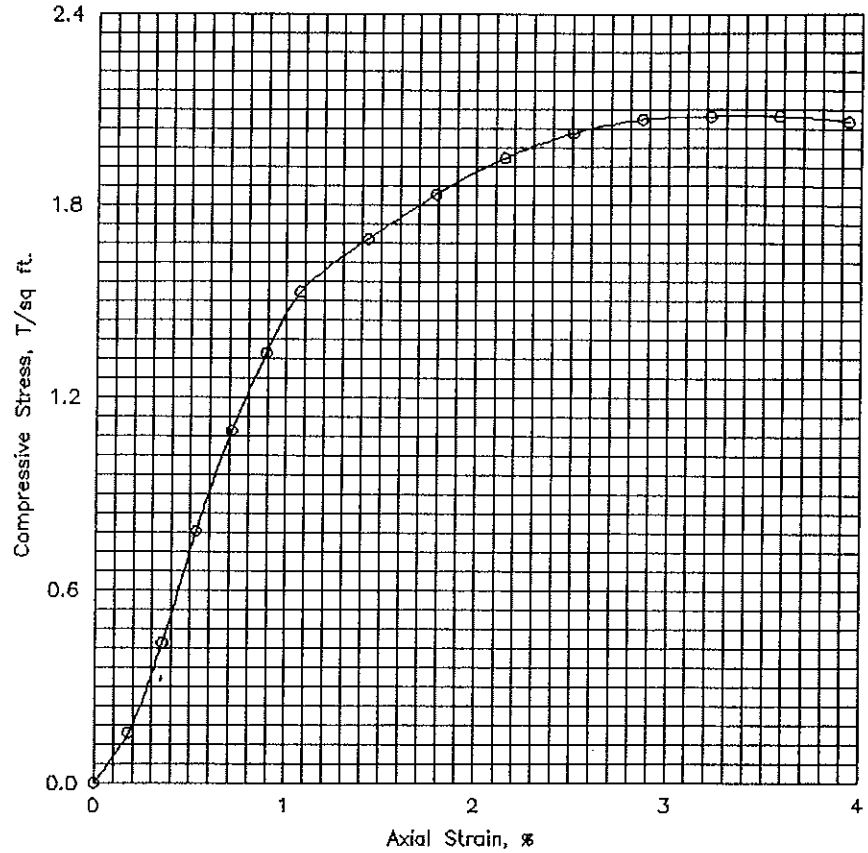
LL = 70 PL = PI =

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	50.0	38.3	.004	6.31	.437
.6	30.	.030	90.0	68.9	.005	6.32	.785
.7	40.	.040	126.0	96.5	.007	6.34	1.097
.9	50.	.050	154.0	118.0	.009	6.35	1.338
1.1	60.	.060	176.0	134.8	.011	6.36	1.527
1.4	80.	.080	196.0	150.1	.014	6.38	1.694
1.7	100.	.100	213.0	163.2	.018	6.40	1.834
2.1	120.	.120	227.0	173.9	.021	6.43	1.948
2.4	140.	.140	237.0	181.5	.025	6.45	2.026
2.7	160.	.160	243.0	186.1	.029	6.48	2.070
3.0	180.	.180	245.0	187.7	.032	6.50	2.079
3.3	200.	.200	246.0	188.4	.036	6.52	2.080
3.7	220.	.220	245.0	187.7	.039	6.55	2.064

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	26.7 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	99.7			
Time to failure, min		t_f	3.33			
Unconfined compressive strength, T/sq ft		q_u	2.08			
Undrained shear strength, T/sq ft		S_u	1.04			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Olive gray,Clay,Very stiff,w/calcareous nodules

LL 70	PL	PI	G_s

Remarks

Project Lake Wallisville,Trinity River and Tributaries,

Area near Wallisville, Texas

Boring No. 94-12 | Sample No. 12

Depth El 22-24 ft | Date 4/11/94

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. 94-12

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	1.00		Dark gray,Clay,Stiff,w/roots	C H	27.9											
2	2 - 4	1.00		Dark gray,Clay,Stiff	C H	28.9											
3	4 - 6	1.25		Gray,Clay,Stiff,w/calcareous nodules	C H	28.3	93.7	120.3	68		100.0	100.0	99.7	98.8	98.5		1.32
4	6 - 8	1.75		Light gray,Clay,Stiff,w/calcareous nodules	C H	23.5											
5	8 - 10	2.50		Olive gray,Clay,very stiff	C H	20.3											
6	10 - 12	2.25		Yellowish gray,Clay,Very stiff,w/calcareous nodules	C H	21.5	107.7	130.9	64		100.0	100.0	99.6	98.6	97.6		2.52
7	12 - 14	2.75		Yellowish gray,Clay,Very stiff	C H	29.7											
8	14 - 16	2.25		Olive gray,Clay,Very stiff,w/calcareous nodules	C H	30.2											
9	16 - 18	3.00		Olive gray,Clay,Very stiff,w/calcareous nodules and ferrous stain	C H	26.5	99.1	125.3	77		100.0	100.0	99.9	99.4	99.0		2.52
10	18 - 20	2.75		Olive gray,Clay,Very stiff,w/calcareous nodules&ferrous stain	C H	26.6											
11	20 - 22	2.50		Olive gray,Clay,Very stiff,Slickensided	C H	25.3											
12	22 - 24	2.25		Olive gray,Clay,Very stiff,w/calcareous nodules	C H	26.7	99.7	126.2	70		100.0	99.6	98.7	98.6	98.0		2.08
13	24 - 26	2.50		Yellowish gray,Clay,Very stiff,w/calcareous nodules	C H	26.1											
14	26 - 28	2.50		Olive gray,Clay,Very stiff,w/calcareous nodules,slickensided	C H	28.3											
15	28 - 30	3.00		Olive gray,Clay,Very stiff,w/calcareous noduels,slickensided	C H	24.9											
16	30 - 32	3.50		Light gray,Clay,Very stiff,w/calcareous nodules,slickensided	C H	24.9											
17	32 - 34	3.25		Reddish brown,Clay,Very stiff,w/calcareous nodules	C H	24.4											
18	34 - 36	3.25		Reddish brown,Clay,Very stiff,Sandy,w/ calcareous nodules	C L	24.3											
19	36 - 38	2.25		Reddish brown,Clay,Very stiff,Sandy,w/ calcareous nodules&ferrous stain	C L	21.7											
20	38 - 40	4.50		Brown,Clay,Hard,w/calcareous nodules &ferrous stain	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