

U.S. ARMY CORPS OF ENGINEERS

DEPTH, FEET		SAMPLE NO.	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	BORING NO. <u>9A-10</u>	DATE: BEGIN <u>9/16/94</u>	PAGE <u>1/2</u>		
					JOB NO. <u>146727-B</u>	COMPLETE <u>9/16/94</u> Thin Walled Tube			
					PROJECT <u>Wallisville Lake, Trinity River & Tributaries</u>	☒ 3" ☐ 6"			
					LOCATION <u>Near Wallisville, Texas</u>				
					ELEVATION OF HOLE _____				
					MANUFACTURER'S DESIGNATION OF DRILL RIG <u>FALING 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 KOSMOWSKI</u>			
					COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	1.75		dk. gray	clay	v. stiff		
		2	2.0		dk. gray	clay	v. stiff		
5		3	2.0		Yellowish Brown	clay	v. stiff		
		4	2.0		Yellowish Brown	clay	v. stiff		
		5	2.2		Yellowish Brown & Gray	clay	v. stiff		
10		6	2.5		Yellowish Brown & Gray	clay	v. stiff		
		7	3.0		Yellowish Brown & Gray	clay	v. stiff		w/ calc nods
15		8	1.25		Yellowish Brown & Gray	clay	stiff	sand	w/ calc nods
		9	1.25		Yellowish Brown & Gray	clay	stiff	sand	encounter water @ 18'
		10			Yellowish Brown	sand		clay	clayey sand 18'-18.5'
20		11	3.5		Yellowish Brown	silt	v. stiff	sand	sandy silt 18.5'-19'
		12	3.5		Yellowish Brown	clay	v. stiff		clay 19'-20' w/ calc nods
		13	3.25		Yellowish Brown	clay	v. stiff		w/ sand partings 20-22'
		14	2.75		Yellowish Brown	clay	v. stiff	silt	sand layer 22'-22.5' sample 5-14a
25		15	3.25		Yellowish Brown	clay	v. stiff		
		16	4.0		Yellowish Brown	clay	Hard		w/ sand partings, calc nods
		17	4.5		Yellowish Brown	clay	Hard		ferr nods
30		18	3.25		Yellowish Brown	clay	v. stiff		calc nods
		19	2.5		Riddish Brown	clay	v. stiff		calc nods
35		20	2.5		Riddish Brown	clay	v. stiff	silt	w/ ferr nods silt 35.5'-36'

U.S. ARMY CORPS OF ENGINEERS

DEPTH, FEET		SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	BORING NO. <u>94-10</u> DATE: BEGIN <u>9/16/94</u> PAGE <u>2 / 2</u> JOB NO. <u>146727-6</u> COMPLETE <u>9/16/94</u> Thin Walled Tube PROJECT <u>Wallisville Lake, Trinity River & Tributaries</u> ☒ 3" ☐ 6" LOCATION <u>near Wallisville, Texas</u> ELEVATION OF HOLE _____ MANUFACTURER'S DESIGNATION OF DRILL RIG <u>FATUNG 36</u> GROUNDWATER: DEPTH <u>0</u> ft., ELEV. _____ ft., at end of Drilling WEATHER <u>Overcast, cool</u> DRILLER <u>Randy Gorden</u> LOGGER <u>Peter Kosman</u>				
				COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35		19	3.75	Reddish Brown	clay	very stiff		cl s, silt 20'-31.5'
40		20	4.5	Reddish Brown	clay	hard		w/ calc nodules
45								
50								
55								
60								
65								
70								

** water level at end of Drilling

JOB NO. 14G727-12

DATE 4/7/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-10

SAMPLE NO. 3

DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION

Yellowish gray, Clay, Very stiff

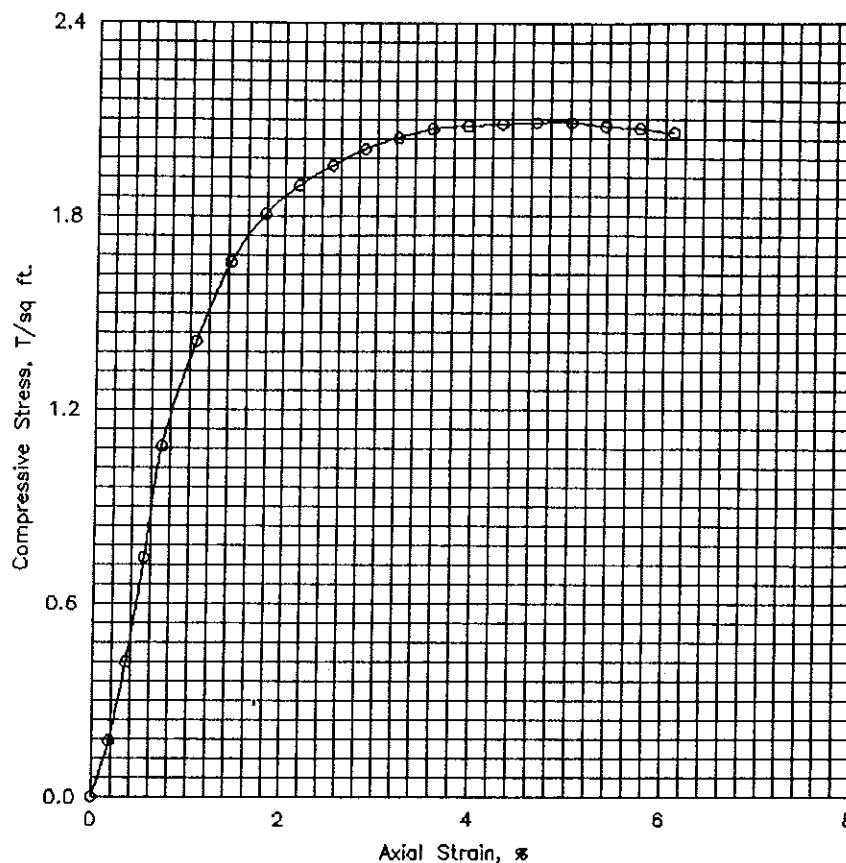
Tare No.	W-6	Height	5.595 in.
Tare plus Wet Specimen	373.94 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	308.51 gm	Initial Area	6.290 sq in.
Water Weight	65.43 gm	Volume	35.194 cu in.
Tare Weight	42.51 gm	Volume of Solids	cu in.
Wet Specimen	1154.28 gm	Void Ratio	
Dry Specimen	926.41 gm	Saturation	%
Water Content	24.60 %	Dry Density	100.3 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	20.0	15.3	.002	6.30	.175
.3	20.	.020	48.0	36.8	.004	6.31	.419
.5	30.	.030	85.0	65.1	.005	6.32	.741
.8	40.	.040	125.0	95.8	.007	6.34	1.088
1.1	60.	.060	163.0	124.9	.011	6.36	1.414
1.5	80.	.080	192.0	147.1	.014	6.38	1.659
1.8	100.	.100	210.0	160.9	.018	6.40	1.808
2.1	120.	.120	221.0	169.3	.021	6.43	1.896
2.4	140.	.140	229.0	175.4	.025	6.45	1.958
2.8	160.	.160	236.0	180.8	.029	6.48	2.010
3.2	180.	.180	241.0	184.6	.032	6.50	2.045
3.4	200.	.200	245.0	187.7	.036	6.52	2.071
3.7	220.	.220	247.0	189.2	.039	6.55	2.081
4.1	240.	.240	248.5	190.4	.043	6.57	2.085
4.4	260.	.260	250.0	191.5	.046	6.60	2.090
4.7	280.	.280	251.0	192.3	.050	6.62	2.091
5.0	300.	.300	250.5	191.9	.054	6.65	2.079
5.4	320.	.320	250.5	191.9	.057	6.67	2.071
5.7	340.	.340	250.0	191.5	.061	6.70	2.059

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen %		Undisturbed			
Initial	Water content	w_0	24.6 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	100.3		
Time to failure, min		t_f	4.72		
Unconfined compressive strength, T/sq ft		q_u	2.09		
Undrained shear strength, T/sq ft		S_u	1.05		
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

LL	68	PL	PI	G_s
Remarks		Project Lake Wallisville, Trinity River		
		and Tributaries,		
		Area near Wallisville, Texas		
		Boring No. 94-10	Sample No. 3	
Depth		4-6 ft	Date	4/7/94
EI		UNCONFINED COMPRESSION TEST REPORT		

JOB NO. 14G727-12

DATE 4/7/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-10

SAMPLE NO. 6

DEPTH 10-12 ft

SPECIMEN NO. 1

CLASSIFICATION

Yellowish gray, Clay, Very stiff, w/blocky structure

Tare No.	K1-32	Height	5.595 in.
Tare plus Wet Specimen	415.43 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	333.07 gm	Initial Area	6.290 sq in.
Water Weight	82.36 gm	Volume	35.194 cu in.
Tare Weight	42.60 gm	Volume of Solids	cu in.
Wet Specimen	1137.12 gm	Void Ratio	
Dry Specimen	885.92 gm	Saturation	%
Water Content	28.35 %	Dry Density	95.9 lb/cu ft
Specific Gravity of Solids			
LL = 75	PL =	PI =	

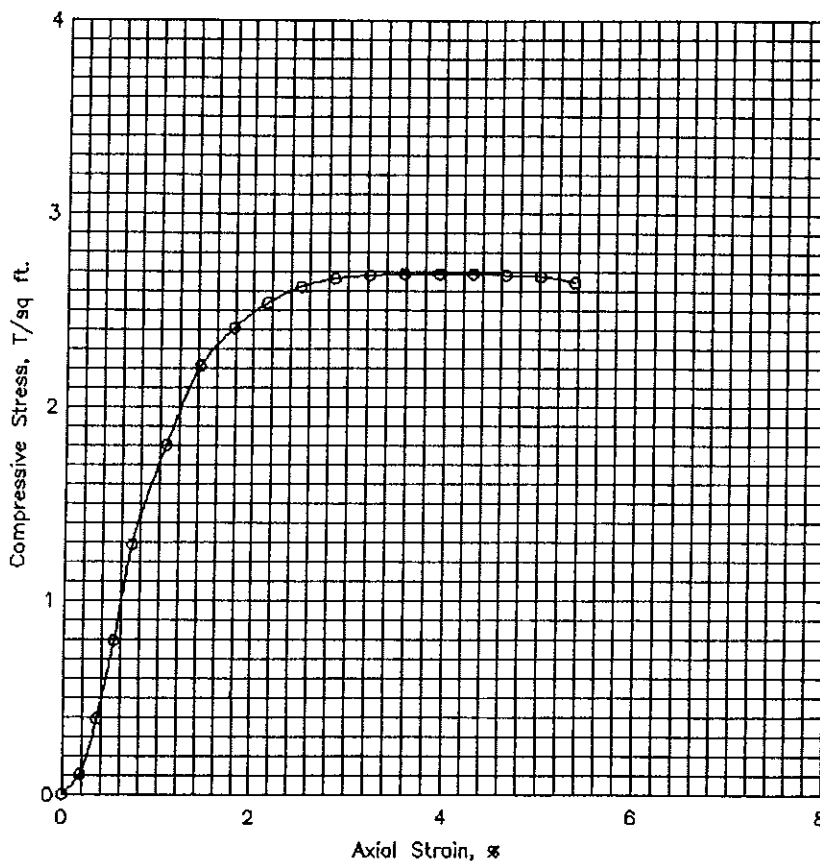
Proving Ring No. 10170

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	45.0	34.5	.004	6.31	.393
.6	30.	.030	91.0	69.7	.005	6.32	.794
.7	40.	.040	148.0	113.4	.007	6.34	1.288
1.0	60.	.060	208.0	159.3	.011	6.36	1.804
1.3	80.	.080	256.0	196.1	.014	6.38	2.213
1.6	100.	.100	280.0	214.5	.018	6.40	2.411
2.0	120.	.120	296.0	226.7	.021	6.43	2.540
2.3	140.	.140	307.0	235.2	.025	6.45	2.624
2.6	160.	.160	313.0	239.8	.029	6.48	2.666
2.9	180.	.180	316.0	242.1	.032	6.50	2.682
3.3	200.	.200	318.0	243.6	.036	6.52	2.689
3.6	220.	.220	319.5	244.7	.039	6.55	2.691
3.9	240.	.240	320.5	245.5	.043	6.57	2.690
4.2	260.	.260	321.0	245.9	.046	6.60	2.684
4.5	280.	.280	321.5	246.3	.050	6.62	2.678
4.8	300.	.300	319.0	244.4	.054	6.65	2.647

Job No. 14G727-12

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	28.4 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	95.9		
Time to failure, min		t_f	3.57		
Unconfined compressive strength, T/sq ft		q_u	2.69		
Undrained shear strength, T/sq ft		S_u	1.35		
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/blocky structure					
LL	75	PL		PI	G_c
Remarks		Project Lake Wallisville, Trinity River			
		and Tributaries,			
		Area near Wallisville, Texas			
		Boring No. 94-10	Sample No. 6		
		Depth 10-12 ft	Date 4/7/94		
		UNCONFINED COMPRESSION TEST REPORT			

JOB NO. 14G727-12

DATE 4/7/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-10

SAMPLE NO. 9

DEPTH 16-18 ft

SPECIMEN NO. 1

CLASSIFICATION

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

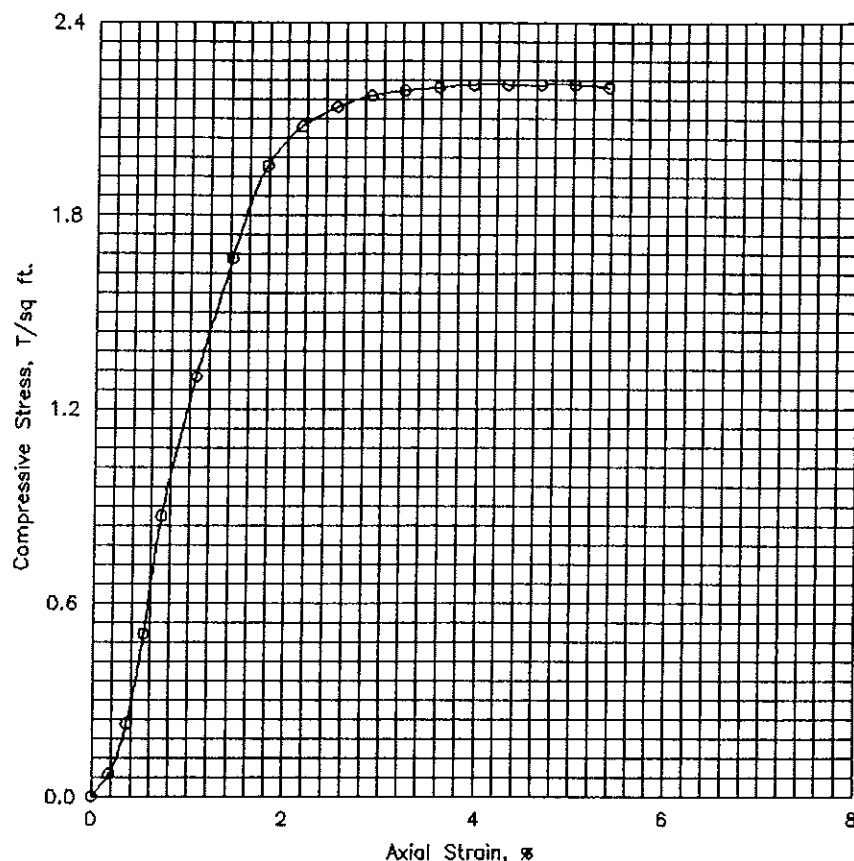
Tare No.	GE-9	Height	5.595 in.
Tare plus Wet Specimen	382.69 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	325.71 gm	Initial Area	6.290 sq in.
Water Weight	56.98 gm	Volume	35.194 cu in.
Tare Weight	42.43 gm	Volume of Solids	cu in.
Wet Specimen	1194.22 gm	Void Ratio	
Dry Specimen	994.24 gm	Saturation	%
Water Content	20.11 %	Dry Density	107.6 lb/cu ft
Specific Gravity of Solids			
LL = 31	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	8.0	6.1	.002	6.30	.070
.3	20.	.020	26.0	19.9	.004	6.31	.227
.5	30.	.030	58.0	44.4	.005	6.32	.506
.7	40.	.040	100.0	76.6	.007	6.34	.871
1.0	60.	.060	150.0	114.9	.011	6.36	1.301
1.4	80.	.080	193.0	147.8	.014	6.38	1.668
1.7	100.	.100	227.0	173.9	.018	6.40	1.955
2.0	120.	.120	242.0	185.4	.021	6.43	2.076
2.3	140.	.140	250.0	191.5	.025	6.45	2.137
2.7	160.	.160	255.0	195.3	.029	6.48	2.172
3.0	180.	.180	258.0	197.6	.032	6.50	2.189
3.3	200.	.200	260.0	199.2	.036	6.52	2.198
3.7	220.	.220	262.0	200.7	.039	6.55	2.207
4.0	240.	.240	263.0	201.5	.043	6.57	2.207
4.3	260.	.260	264.0	202.2	.046	6.60	2.207
4.7	280.	.280	265.0	203.0	.050	6.62	2.207
4.9	300.	.300	265.0	203.0	.054	6.65	2.199

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	20.1 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	107.6		
Time to failure, min		t_f	4.65		
Unconfined compressive strength, T/sq ft		q_u	2.21		
Undrained shear strength, T/sq ft		S_u	1.10		
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, Sandy, w/calcareous nodules					
LL	31	PL		PI	G_s
Remarks		Project Lake Wallisville, Trinity River			
		and Tributaries,			
		Area near Wallisville, Texas			
		Boring No. 94-10		Sample No. 9	
		Depth 16-18 ft		Date 4/7/94	
		UNCONFINED COMPRESSION TEST REPORT			

JOB NO. 14G727-12

DATE 4/7/94

PROJECT Lake Wallisville, Trinity River
and Tributaries,

AREA near Wallisville, Texas

BORING NO. 94-10

SAMPLE NO. 14

DEPTH 22.5-24 ft

SPECIMEN NO. 1

CLASSIFICATION

Yellowish gray, Clay, Very stiff, w/sand pockets

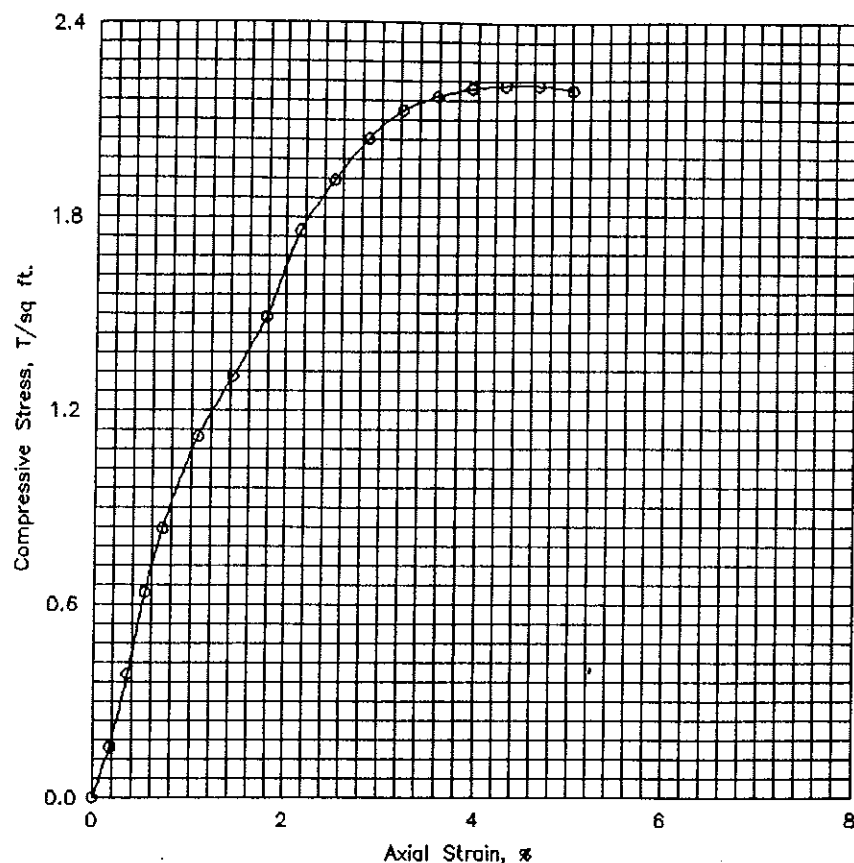
Tare No.	K1-17	Height	5.595 in.
Tare plus Wet Specimen	399.06 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	332.49 gm	Initial Area	6.290 sq in.
Water Weight	66.57 gm	Volume	35.194 cu in.
Tare Weight	42.58 gm	Volume of Solids	cu in.
Wet Specimen	1156.46 gm	Void Ratio	
Dry Specimen	940.50 gm	Saturation	%
Water Content	22.96 %	Dry Density	101.8 lb/cu ft
Specific Gravity of Solids			
LL = 67	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
.3	20.	.020	44.0	33.7	.004	6.31	.384
.5	30.	.030	73.0	55.9	.005	6.32	.637
.7	40.	.040	96.0	73.5	.007	6.34	.836
1.1	60.	.060	129.0	98.8	.011	6.36	1.119
1.4	80.	.080	151.0	115.7	.014	6.38	1.305
1.8	100.	.100	173.0	132.5	.018	6.40	1.490
2.2	120.	.120	205.0	157.0	.021	6.43	1.759
2.5	140.	.140	224.0	171.6	.025	6.45	1.915
2.8	160.	.160	240.0	183.8	.029	6.48	2.044
3.1	180.	.180	251.0	192.3	.032	6.50	2.130
3.5	200.	.200	257.0	196.9	.036	6.52	2.173
3.8	220.	.220	261.0	199.9	.039	6.55	2.198
4.2	240.	.240	263.0	201.5	.043	6.57	2.207
4.4	260.	.260	264.0	202.2	.046	6.60	2.207
4.8	280.	.280	263.0	201.5	.050	6.62	2.191

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	23.0 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	101.8		
Time to failure, min		t_f	4.45		
Unconfined compressive strength, T/sq ft		q_u	2.21		
Undrained shear strength, T/sq ft		S_u	1.10		
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/sand pockets					
LL	67	PL		PI	G_s
Remarks		Project Lake Wallisville, Trinity River			
		and Tributaries,			
		Area near Wallisville, Texas			
		Boring No. 94-10		Sample No. 14	
		Depth 22.5-24 ft		Date 4/7/94	
		UNCONFINED COMPRESSION TEST REPORT			

SUMMARY OF LABORATORY TEST RESULTS

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

Boring No. 94-10

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	Mo (%)	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	2.00		Dark gray,Clay,Very stiff,w/grass roots	C H	27.5											
2	2 - 4	2.00		Gray,Clay,Very stiff	C H	20.9											
3	4 - 6	2.00		Yellowish gray,Clay,Very stiff	C H	24.6	100.3	124.9	68		100.0	100.0	99.6	99.1	98.9		2.09
4	6 - 8	2.50		Yellowish gray,Clay,Very stiff	C H	22.6											
5	8 - 10	2.50		Yellowish gray,Clay,Very stiff	C H	23.7											
6	10 - 12	2.50		Yellowish gray,Clay,Very stiff,w/blocky structure	C H	28.4	95.9	123.1	75		100.0	100.0	99.6	98.8	98.7		2.69
7	12 - 14	2.50		Yellowish gray,Clay,Very stiff,w/blocky structure	C H	27.9											
8	14 - 16	2.50		Yellowish gray,Clay,Very stiff,sandy,w/calcareous nodules	C H	19.6											
9	16 - 18	2.00		Yellowish gray,Clay,Very stiff,Sandy,w/calcareous nodules	C L	20.1	107.6	129.3	31		100.0	99.6	97.1	87.6	69.5		2.21
10	18-18.5			Yellowish gray,Sand,Clayey	S C	21.6											
11	18.5-19	0.75		Yellowish gray,Clay,Medium stiff,Sandy,w/calcareous nodules	C L	21.9											
12	19-20	3.50		Yellowish gray,Clay,Very stiff,w/sand parting	C H	24.3											
13	20-22	3.50		Yellowish gray,Clay,Very stiff,w/sand parting	C H	24.7											
14a	22-22.5			Yellowish gray,Sand,Clayey	S C	26.3											
14	22.5-24	2.50		Yellowish gray,Clay,Very stiff,w/sand pockets	C H	23.0	101.8	125.2	67		100.0	100.0	99.6	98.9	98.4		2.21
15	24-26	3.25		Yellowish gray,Clay,Very stiff,w/sand pockets	C H	22.4											
16	26-28	3.75		Yellowish gray,Clay,Very stiff,w/calcareous nodules	C H	22.3											
17	28-30	4.25		Yellowish gray,Clay,Hard,w/calcareous nodules	C H	21.9											
18	30-32	3.75		Yellowish gray,Clay,Very stiff,w/calcareous & ferrous nodules	C H	19.3											
19	32-34	3.75		Yellowish gray,Clay,Very stiff,w/calcareous & ferrous nodules	C H	23.7											

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

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 94-10

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