U.S. ARMY CORPS OF ENGINEERS

BORING NO. 98-82 DATE: BEGIN 7-14-98 PAGE 1 / 2
JOB NO. 1140086157 COMPLETE 7-14-98 Thin Walled Tube
PROJECT Greens Bayou ■ 3" □ 6"
LOCATION along Greens Bayou
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG FAILING -36
GROUNDWATER: DEPTH ✗ ft., ELEV. ____ ft., at end of Drilling
WEATHER CLOUDY & RAIN
DRILLER DEMPSEY GERREN LOGGER JOHN A. GENTRY

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0	J	1	4.25	GRAY	CLAY	HARD	SANDY	-w/ROOTS 0-6
		2	2.25	GRAY	CLAY	VERY STIFF	SANDY	
5		3	1.75	GRAY	CLAY	STIFF	SANDY	
		4	2.25	GRAY & YELLOW	CLAY	VERY STIFF	SANDY	
		5	2.5	GRAY & YELLOW	CLAY	VERY STIFF		-w/SILT SEAM 8'-16
10		6	2.75	GRAY & BROWN	CLAY	VERY STIFF		
		7	4.5+	GRAY & BROWN	CLAY	HARD		SET UP WITH ROTARY AUGER -w/FERROUS NODULES 12'-16
15		8	4.5+	GRAY & BROWN	CLAY	HARD		-w/SAND SEAMS 14'-16
		9	4.5+	GRAY & RED	CLAY	HARD		-w/SILTY CLAY LAYER 16'-17
		10	4.5+	RED & GRAY	CLAY	HARD		-w/FERROUS STAINS 17'+
20		11	4.5+	RED & GRAY	CLAY	HARD		-w/CALCAREOUS Nodules 18-20
Direct shear slickensides		12	4.5+	RED & GRAY	CLAY	HARD		-w/SLICKENSIDES 18-? How many feet are slickensides
25		13	4.5+	RED & GRAY	CLAY	HARD		
		14	4.5+	RED & GRAY	CLAY	HARD		
		15	4.5+	RED & GRAY	CLAY	HARD		-w/CLAYSTONE 29-[illegible]
30		16	4.5+	RED & GRAY	CLAY	HARD		-w/SILT SEAMS [illegible]
		17	4.5	RED & GRAY	CLAY	HARD		-w/CLAY OR SILTY STONE 34-34.2
35		18	4.5+	RED & GRAY	CLAY	HARD		

GEOTEST ENGINEERING, INC.

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 98-82 DATE: BEGIN 7-14-98 PAGE 2 / 2
JOB NO. 1140086157 COMPLETE 7-14-98 Thin Walled Tube
PROJECT Greens Bayou ■ 3" □ 6"
LOCATION along Green's Bayou
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG FAILING-36
GROUNDWATER: DEPTH * ft., ELEV. ____ ft., at end of Drilling
WEATHER CLOUDY + RAIN
DRILLER DEMPSEY GEAREN LOGGER JOHN A. GENTRY

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35								-W/SLICKEN SIDES 35-
		19	4.5+	RED	CLAY	HARD		
		20	4.5+	RED	CLAY	HARD		
40		21	4.5+	RED	CLAY	HARD		
		22	4.5+	RED	CLAY	HARD		-W/Calc Nodules 42'-44'
		23	2.0	RED	CLAY	V. STIFF	SILTY	
45								
								* Drilling Fluid level after drilling @ 1'-8"
50								
55								
60								
65								
70								* J = JAR SAMPLE

GEOTEST ENGINEERING, INC.

Project: Greens Bayou

Contract No. DACW64-95-D-0007 Delivery Order No. 0047

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 97-82

EL 104.178
FL 90.0'

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 #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0 - 2	4.5+		Sandy Clay,w/roots,Hard,Gray	C L	12.7											
2	2 - 4	1.25		Sandy Clay,w/silt seams,Stiff,Gray	C L	16.9											
3	4 - 6	1.25		Silty Clay,w/sand seams,Stiff,Yellowish gray	C L	18.9	107.2	127.5	23.0	15.0	99.7	99.6	99.5	94.1	89.6		1.26
4	6 - 8	1.75		Silty Clay,w/sand seams,Stiff,Yellowish gray	C L	19.9											
5	8 - 10	1.25		Silty Clay,w/sand seams,Stiff,Yellowish gray	C L	18.1											
6	10 - 12	1.25		Silty Clay,w/sand seams,Stiff,Yellowish gray	C L	19.4											
7	12 - 14	2.25		Silty Clay,w/fer stains & sand seams,Very stiff,Yellowish gray	C L	21.5											
8	14 - 16	2.00		Clay,w/silt & sand seams,Very stiff,Red & Gray	C H	21.6	101.5	123.3	68.0	27.0	100.0	100.0	99.6	96.6	95.6		2.02
9	16 - 18	3.25		Clay,w/silt & sand seams,Very stiff,Red & Gray	C H	29.6											
10	18 - 20	4.25		Clay,slks,Hard,Red & Gray	C H	37.8											
11	20 - 22	4.5+		Clay,slks,Hard,Red & Gray	C H	28.3											
12	22 - 24	4.5+		Clay,w/calc nod,slks,Hard,Red & Gray	C H	27.0	92.9	118.1	56.0	22.0							
13	24 - 26	4.5+		Clay,w/calc nod,slks,Hard,Red & Gray	C H	26.4											
14	26 - 28	4.50		Clay,w/calc nod,slks,Hard,Red & Gray	C H	22.7											
15	28 - 30	4.50		Clay,w/calc nod,slks,Hard,Red & Gray	C H	25.0											

23

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

JOB NO. 114008614 DATE 3/3/98

PROJECT Greens Bayou

AREA Houston, Texas

BORING NO. 97-82 SAMPLE NO. 3 DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION
Silty Clay,w/sand seams,Stiff,Yellowish gray

Tare No.	SK21	Height	5.595 in.
Tare plus Wet Specimen	485.20 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	414.98 gm	Initial Area	6.290 sq in.
Water Weight	70.22 gm	Volume	35.194 cu in.
Tare Weight	43.43 gm	Volume of Solids	cu in.
Wet Specimen	1177.53 gm	Void Ratio	
Dry Specimen	990.36 gm	Saturation	%
Water Content	18.90 %	Dry Density	107.2 lb/cu ft
Specific Gravity of Solids			

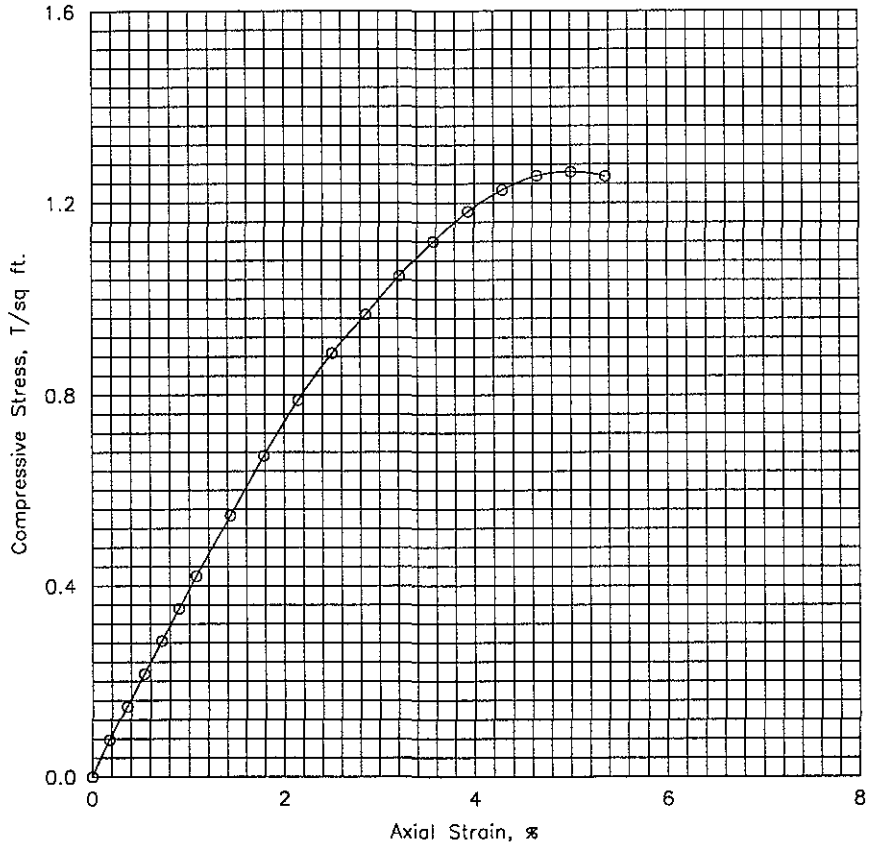
LL = 23 PL = 15 PI = 8

Proving Ring No. 10170
Proving Ring Constant, K = .757 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	9.0	6.8	.002	6.30	.078
.4	20.	.020	17.0	12.9	.004	6.31	.147
.6	30.	.030	25.0	18.9	.005	6.32	.215
.7	40.	.040	33.0	25.0	.007	6.34	.284
.9	50.	.050	41.0	31.0	.009	6.35	.352
1.1	60.	.060	49.0	37.1	.011	6.36	.420
1.4	80.	.080	64.0	48.4	.014	6.38	.547
1.7	100.	.100	79.0	59.8	.018	6.40	.672
2.0	120.	.120	93.0	70.4	.021	6.43	.789
2.3	140.	.140	105.0	79.5	.025	6.45	.887
2.7	160.	.160	115.0	87.1	.029	6.48	.968
3.0	180.	.180	125.0	94.6	.032	6.50	1.048
3.3	200.	.200	134.0	101.4	.036	6.52	1.120
3.6	220.	.220	142.0	107.5	.039	6.55	1.182
4.0	240.	.240	148.0	112.0	.043	6.57	1.227
4.3	260.	.260	152.0	115.1	.046	6.60	1.256
4.6	280.	.280	153.5	116.2	.050	6.62	1.264
5.0	300.	.300	153.0	115.8	.054	6.65	1.255

Job No. 114008614

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	18.9 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	107.2			
Time to failure, min		t_f	4.63			
Unconfined compressive strength, T/sq ft		q_u	1.26			
Undrained shear strength, T/sq ft		S_u	.63			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Silty Clay,w/sand seams,Stiff,Yellowish gray

LL	23	PL	15	PI	8	G_s	

Remarks

Project Greens Bayou

Area Houston, Texas

Boring No. 97-82 | Sample No. 3

Depth El 4-6 ft | Date 3/3/98

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 114008614 DATE 3/3/98

PROJECT Greens Bayou

.EA Houston, Texas

BORING NO. 97-82 SAMPLE NO. 8 DEPTH 14-16 ft

SPECIMEN NO. 1

CLASSIFICATION
Clay,w/silt&sand seams,Very stiff,Red & gray

Tare No.	P211	Height	5.595 in.
Tare plus Wet Specimen	485.82 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	407.19 gm	Initial Area	6.290 sq in.
Water Weight	78.63 gm	Volume	35.194 cu in.
Tare Weight	42.63 gm	Volume of Solids	cu in.
Wet Specimen	1139.42 gm	Void Ratio	
Dry Specimen	937.27 gm	Saturation	%
Water Content	21.57 %	Dry Density	101.5 lb/cu ft
Specific Gravity of Solids			

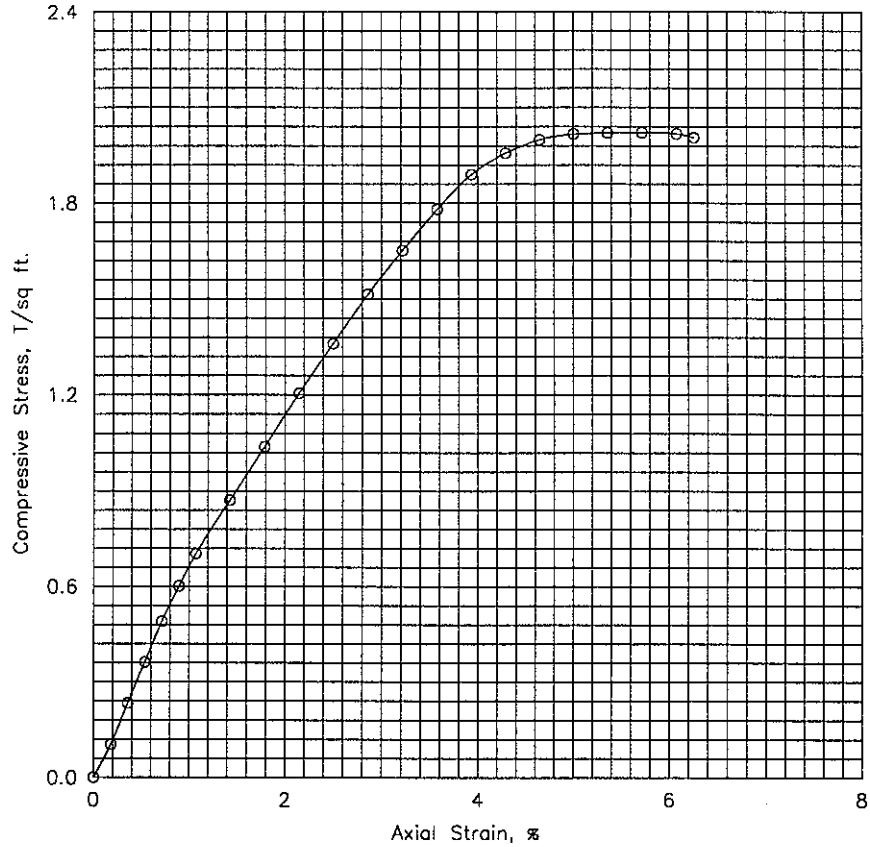
LL = 68 PL = 27 PI = 41

Proving Ring No. 10170
Proving Ring Constant, K = .757 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	9.1	.002	6.30	.104
.4	20.	.020	27.0	20.4	.004	6.31	.233
.6	30.	.030	42.0	31.8	.005	6.32	.362
.7	40.	.040	57.0	43.1	.007	6.34	.490
.9	50.	.050	70.0	53.0	.009	6.35	.601
1.1	60.	.060	82.0	62.1	.011	6.36	.703
1.4	80.	.080	102.0	77.2	.014	6.38	.871
1.7	100.	.100	122.0	92.4	.018	6.40	1.038
2.0	120.	.120	142.0	107.5	.021	6.43	1.204
2.3	140.	.140	161.0	121.9	.025	6.45	1.360
2.7	160.	.160	180.0	136.3	.029	6.48	1.515
3.0	180.	.180	197.0	149.1	.032	6.50	1.652
3.3	200.	.200	213.0	161.2	.036	6.52	1.780
3.6	220.	.220	227.0	171.8	.039	6.55	1.890
4.0	240.	.240	236.0	178.7	.043	6.57	1.957
4.3	260.	.260	242.0	183.2	.046	6.60	1.999
4.6	280.	.280	245.0	185.5	.050	6.62	2.017
5.0	300.	.300	246.5	186.6	.054	6.65	2.021
5.3	320.	.320	247.5	187.4	.057	6.67	2.022
5.7	340.	.340	248.0	187.7	.061	6.70	2.018
5.8	350.	.350	247.0	187.0	.063	6.71	2.006

Job No. 114008614

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	21.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	101.5			
Time to failure, min		t_f	5.32			
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 Clay,w/silt&sand seams,Very stiff,Red & gray

LL	68	PL	27	PI	41	G_s	

Remarks

Project Greens Bayou

Area Houston, Texas

Boring No. 97-82 | Sample No. 8

Depth El 14-16 ft | Date 3/3/98

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE