U.S. ARMY CORPS OF ENGINEERS

BORING NO. 91-78 DATE: BEGIN 3-27-91 PAGE 1 / 1
JOB NO. 146448 COMPLETE 3-27-91 Thin Walled Tube
PROJECT Bray's Bayou ☑ 3" ☐ 6"
LOCATION Bray's Bayou South Bank
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG Diedrich D-50
GROUNDWATER: DEPTH 7'4" ft., ELEV. ____ ft., at end of Drilling
WEATHER Cloudy, Warm
DRILLER D. Mitchell LOGGER T Berry

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	2.75	Gray	Clay	very stiff/hard		w/sand's
		2	4.5+	"	"	"		
5		3	4.5+	"	"	"		
		4	4.5+	Tan & Gray	"	"		w/sand. Nods.
		5	4.5+	"	"	"		w/sand. Nods.
10		6	4.5+	"	"	"		
		7	4.5+	"	"	"		
15		8	3.5	"	"	very stiff/hard	Silt	
		9	4.5+	"	"	hard	"	
		10	3.5	Tan & Gray	Clay	very stiff/hard	Silt	
20		11	1.25	"	"	stiff/hard	"	
		12	2.5	"	"	very stiff	"	w/sand. & clay seams
25		13	3.75	Tan & Gray	Clay	"		w/ silt seams
		14	4.5+	"	"	hard		
		15	4.5+	"	"	"		
30								Bottom of 91-78 (30')
35								

GEOTEST ENGINEERING, INC.

Project : Brays and Sims bayou and Fondren Ditch, Houston, Texas
Contract No.DACW64-91-D-0001 Delivery Order No. 0016

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-78

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	2.25		Dark gray, clay, very stiff, w/ roots	CH	28.9											
2	2-4	2.25		Dark gray, clay, very stiff, w/ roots	CH	29.6											
3	4-6	4.5+		Dark gray, clay, hard, w/ ferrous nodules	CH	21.4	102.3	124.2	78	29	100.0	99.9	99.5		90.4		5.51
4	6-8	3.0+		Gray & brown, clay, very stiff, w/ calcareous nodules	CH	25.1											
5	8-10	4.00		Gray & brown, clay, very stiff, w/ calcareous nodules & silt pockets	CH	18.5			68								
6	10-12	4.5+		Gray & yellowish brown, clay, hard, sandy, w/ ferrous stains	CL	17.4											
7	12-14	4.5+		Gray & yellowish brown, clay, hard, sandy, w/ ferrous stains, slickensided	CL	16.8											
8	14-16	3.00		Gray & yellowish brown, clay, very stiff, silty, w/ ferrous nodules	CL	19.9	108.2	129.8	41	19	100.0	99.8	99.6		91.1		2.31
9	16-18	3.25		Gray & yellowish brown, clay, very stiff, silty, w/ sand pockets	CL	20.0											
10	18-20	1.00		Gray & yellowish brown, clay, stiff,silty,	CL	23.9											
11	20-22	1.00		Gray & yellowish brown, clay, stiff,silty,	CL	27.1											
12	22-24	1.75		Gray & yellowish brown, clay, stiff, sandy	CL	22.4	102.7	125.8	27	16	99.4	96.8	90.4		68.2		0.74
13	24-26	3.00		Gray & yellowish brown, clay, very stiff, sandy, w/silt seams, slickensided	CL	23.6											
14	26-28	3.00		Gray & yellowish brown, clay, very stiff, slickensided	CH	27.1											
15	28-30	3.00		Gray & yellowish brown, clay, very stiff, slickensided	CH	26.4											

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

JOB NO. 14G487 DATE 7/02/91

PROJECT BRAYS BAYOU, SIMS BAYOU AND FONDREN DITCH

BORING NO. 91-78 SAMPLE NO. 3 DEPTH 4-6 ft

SPECIMEN NO. 1

CLASSIFICATION
Dark gray, clay, hard, w/ ferrous nodules

Tare No.	GE-2	Height	5.595 in.
Tare plus Wet Specimen	623.73 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	521.23 gm	Initial Area	6.290 sq in.
Water Weight	102.50 gm	Volume	35.194 cu in.
Tare Weight	42.59 gm	Volume of Solids	cu in.
Wet Specimen	1147.59 gm	Void Ratio	
Dry Specimen	945.18 gm	Saturation	%
Water Content	21.41 %	Dry Density	102.3 lb/cu ft

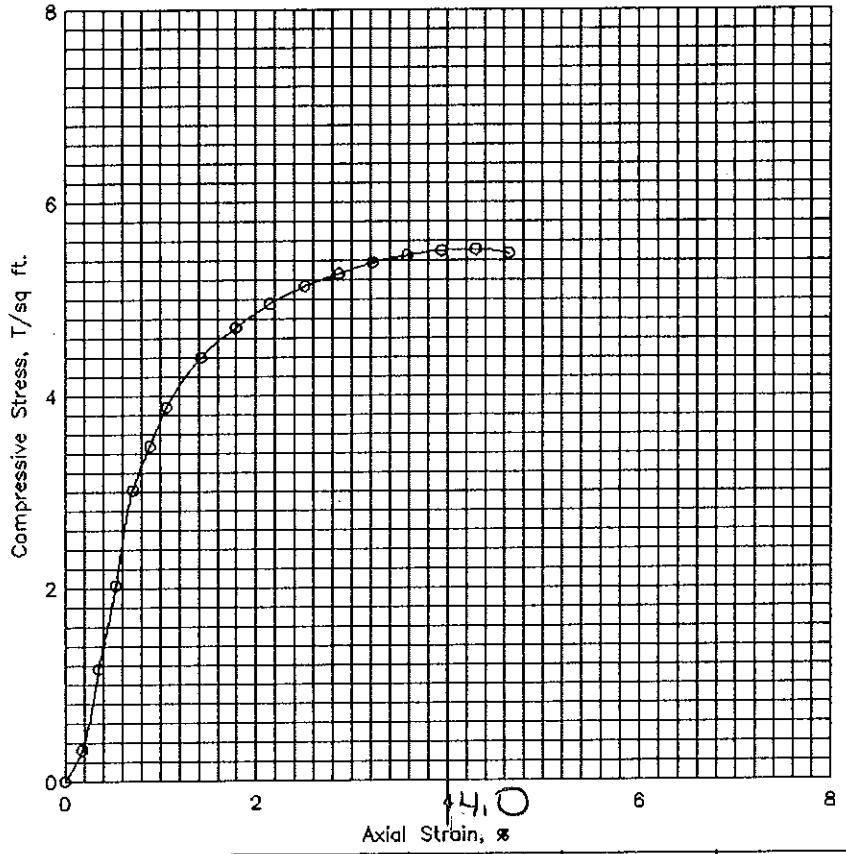
Specific Gravity of Solids
LL = 78 PL = 29 PI = 49

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
.3	10.	.010	37.0	28.3	.002	6.30	.324
.6	20.	.020	133.0	101.9	.004	6.31	1.162
1.0	30.	.030	233.0	178.5	.005	6.32	2.032
1.3	40.	.040	347.0	265.8	.007	6.34	3.021
1.5	50.	.050	400.0	306.4	.009	6.35	3.476
1.8	60.	.060	448.0	343.2	.011	6.36	3.886
2.2	80.	.080	510.0	390.7	.014	6.38	4.408
2.5	100.	.100	547.0	419.0	.018	6.40	4.710
2.9	120.	.120	578.0	442.7	.021	6.43	4.959
3.3	140.	.140	601.0	460.4	.025	6.45	5.138
3.6	160.	.160	618.0	473.4	.029	6.48	5.264
4.0	180.	.180	634.0	485.6	.032	6.50	5.380
4.3	200.	.200	645.0	494.1	.036	6.52	5.453
4.6	220.	.220	653.0	500.2	.039	6.55	5.500
4.9	240.	.240	657.0	503.3	.043	6.57	5.513
5.3	260.	.260	655.0	501.7	.046	6.60	5.476

Job No. 146487

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	21.4 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	102.3			
Time to failure, min		t_f	4.95			
Unconfined compressive strength, T/sq ft		q_u	5.51			
Undrained shear strength, T/sq ft		S_u	2.76			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Dark gray, clay, hard, w/ ferrous nodules

LL	78	PL	29	PI	49	G_s	

Remarks

Project BRAYS BAYOU, SIMS BAYOU AND FONDREN DITCH

Area Houston, Texas

Boring No. 91-78 | Sample No. 3

Depth 4-6 ft | Date 7/02/91

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PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G487 DATE 7/02/91

PROJECT BRAYS BAYOU, SIMS BAYOU AND FONDREN DITCH

BORING NO. 91-78 SAMPLE NO. 8 DEPTH 14-16 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & yellowish brown, clay, very stiff, silty, w/ ferrous nodules

Tare No.	MI	Height	5.595 in.
Tare plus Wet Specimen	741.71 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	627.57 gm	Initial Area	6.290 sq in.
Water Weight	114.14 gm	Volume	35.194 cu in.
Tare Weight	54.11 gm	Volume of Solids	cu in.
Wet Specimen	1198.92 gm	Void Ratio	
Dry Specimen	999.90 gm	Saturation	%
Water Content	19.90 %	Dry Density	108.2 lb/cu ft

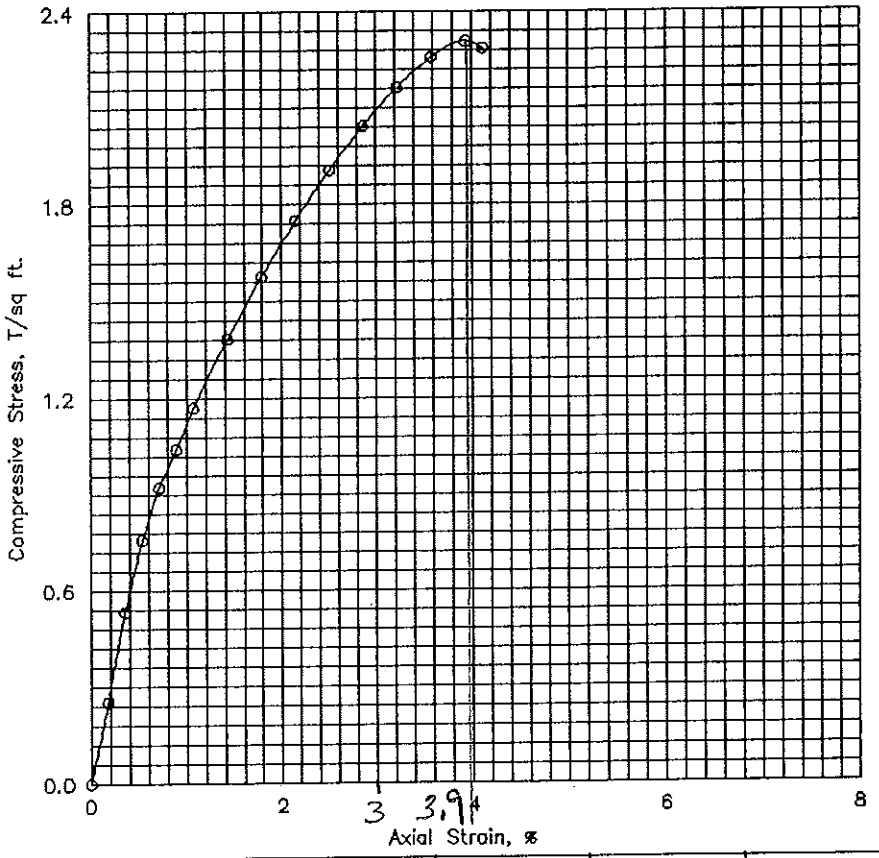
Specific Gravity of Solids
LL = 41 PL = 19 PI = 22

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
.3	10.	.010	29.0	22.2	.002	6.30	.254
.5	20.	.020	61.0	46.7	.004	6.31	.533
.7	30.	.030	87.0	66.6	.005	6.32	.759
.9	40.	.040	106.0	81.2	.007	6.34	.923
1.0	50.	.050	120.0	91.9	.009	6.35	1.043
1.3	60.	.060	135.0	103.4	.011	6.36	1.171
1.6	80.	.080	160.0	122.6	.014	6.38	1.383
2.0	100.	.100	183.0	140.2	.018	6.40	1.576
2.3	120.	.120	204.0	156.3	.021	6.43	1.750
2.7	140.	.140	223.0	170.8	.025	6.45	1.906
3.0	160.	.160	240.0	183.8	.029	6.48	2.044
3.3	180.	.180	255.0	195.3	.032	6.50	2.164
3.7	200.	.200	267.0	204.5	.036	6.52	2.257
4.0	220.	.220	274.0	209.9	.039	6.55	2.308
4.2	230.	.230	272.0	208.4	.041	6.56	2.287

Job No. 14G487

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial: Water content	w_o	19.9 %	%	%	%
Initial: Void ratio	e_o				
Initial: Saturation	S_o	%	%	%	%
Initial: Dry density, lb/cu ft	γ_d	108.2			
Time to failure, min	t_f	4.02			
Unconfined compressive strength, T/sq ft	q_u	2.31			
Undrained shear strength, T/sq ft	S_u	1.15			
Sensitivity ratio	S_t				
Initial specimen diameter, in.	D_o	2.830			
Initial specimen height, in.	H_o	5.595			

Classification Gray & yellowish brown, clay, very stiff, silty, w/ ferrous nodules

LL	PL	PI	G_s
41	19	22	

Remarks

Project BRAYS BAYOU, SIMS BAYOU AND FONDREN DITCH

Area Houston, Texas

Boring No. 91-78 | Sample No. 8

Depth El 14-16 ft | Date 7/02/91

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PLATE XI-2

JOB NO. 14G487 DATE 7/02/91

PROJECT BRAYS BAYOU, SIMS BAYOU AND FONDREN DITCH

BORING NO. 91-78 SAMPLE NO. 12 DEPTH 22-24 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & yellowish brown, clay, stiff, sandy

Tare No.	GE-9	Height	5.595 in.
Tare plus Wet Specimen	363.00 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	304.34 gm	Initial Area	6.290 sq in.
Water Weight	58.66 gm	Volume	35.194 cu in.
Tare Weight	42.36 gm	Volume of Solids	cu in.
Wet Specimen	1161.68 gm	Void Ratio	
Dry Specimen	949.15 gm	Saturation	%
Water Content	22.39 %	Dry Density	102.7 lb/cu ft

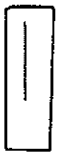
Specific Gravity of Solids
LL = 27 PL = 16 PI = 11

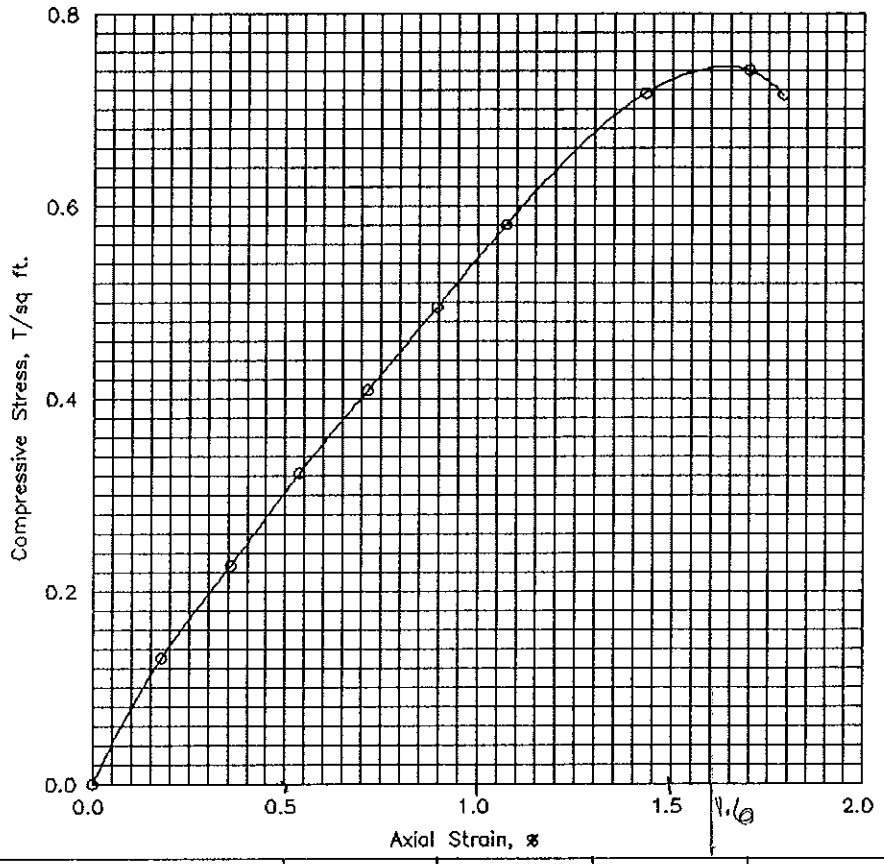
Proving Ring No. 10170
Proving Ring Constant, K = .766 lbs/div.

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
.3	10.	.010	15.0	11.5	.002	6.30	.131
.4	20.	.020	26.0	19.9	.004	6.31	.227
.6	30.	.030	37.0	28.3	.005	6.32	.323
.8	40.	.040	47.0	36.0	.007	6.34	.409
1.0	50.	.050	57.0	43.7	.009	6.35	.495
1.1	60.	.060	67.0	51.3	.011	6.36	.581
1.5	80.	.080	83.0	63.6	.014	6.38	.717
1.8	95.	.095	86.0	65.9	.017	6.40	.741
1.8	100.	.100	83.0	63.6	.018	6.40	.715

Job No. 14G487

Failure Sketches





☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	22.4 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	102.7			
Time to failure, min		t_f	1.80			
Unconfined compressive strength, T/sq ft		q_u	.74			
Undrained shear strength, T/sq ft		S_u	.37			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Gray & yellowish brown, clay, stiff, sandy

LL	PL	PI	G_s
27	16	11	

Remarks

Project BRAYS BAYOU, SIMS BAYOU AND FONDREN DITCH

Area Houston, Texas

Boring No. 91-78 | Sample No. 12

Depth El 22-24 ft | Date 7/02/91

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PLATE XI-2

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