(1)

U.S. ARMY CORPS OF ENGINEERS

EL +26 MLT

BORING NO. 92-67 DATE: BEGIN 5-14-92 PAGE 1 / 2
JOB NO. 146540 COMPLETE 5-22-92 Thin Walled Tube
PROJECT Spilman Island ☒ 3" ☐ 6"
LOCATION Spilman Island Disposal Area
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG F-750
GROUNDWATER: DEPTH 13 ft., ELEV. ____ ft., at end of Drilling
WEATHER Partly Cloudy partly sunny
DRILLER Scott Ward LOGGER Ahmad Noubani

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	2.5	Tan & Gray	clay	v. stiff	sandy	Fill
		2	1.5	Tan & Gray	clay	stiff	sandy	
5		3	1.0	Tan & R. Brown	clay	stiff	sandy	
		4	2.5	Tan & R. Brown	clay	v. stiff		Natural Soil
UC		5	2.0	Tan & R. Brown	clay	v. stiff	sandy	
10		6	4.5	Tan & Gray	clay	Hard	sandy	
		7	4.0	Tan & Gray	clay	v. stiff	sandy	
15		8	3.5	Tan & Gray	clay	v. stiff	sandy	
UC		9	1.0	Brown & Gray	clay	stiff	sandy	w/ Shell Fragment
UC		10	0.5	Blk & R. Brown	clay	Not very stiff	sandy	
20		11	1.25	Black	clay	stiff		Disposal (Petroleum Smell)
		12	NA	Dark Gray	sand			
25	X	13	7/11/14	Dark Gray	Sand	M/Dense	silty	
30	X	14	12/12/9	Gray	Sand	M. Dense	silty	
35	X	15	3/3/4	Gray	sand	loose	clayey	

GEOTEST ENGINEERING INC.

(2)

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 92-67 DATE: BEGIN 5-14-92 PAGE 2 12
JOB NO. KG540 COMPLETE 5-22-92 Thin Walled Tube
PROJECT Salmon Island ☒ 3" ☐ 6"
LOCATION Salmon Island Disposal Area
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG F-750
GROUNDWATER: DEPTH 13 ft., ELEV. ____ ft., at end of Drilling
WEATHER partly cloudy partly sunny
DRILLER Scott Ward LOGGER Ahmad Noubani

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35	X	16	3/2/3	Gray	sand	loose	silt	
40	X	17	2/1/4	Gray	sand	loose	silt	
45	X	18	3/2/2	Gray	sand	loose	silt	
50	X	19	1/1/3	Gray	sand	loose	silt	
55	X	20	2/2/3	Gray	sand	loose	silt	w/shell Fragment
60	X	21	3/3/4	Gray	sand	loose	silt	
								Bottom of 92-67 @ 60'
65								
70								

Project : Spilman Island Disposal Area for the Houston - Galveston Navigation Channels
Contract No. DACW64-92-D-0001 Delivery order No. 0024

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 92-67

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)	LL (%)	PL (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0 - 2	1.50		Brown&gray,Clay,Stiff,w/calcareous nodules, slickensided	CH	23.2											
2	2 - 4	1.25		Brown&gray,Clay,Stiff,w/calcareous nodules	CH	27.7											
3	4 - 6	0.50		Yellowish brown,Clay,Medium stiff,w/calcareous nodules	CH	27.3											
4	6 - 8	1.75		Yellowish brown,Clay,Stiff,w/calcareous nodules	CH	23.5											
5	8 - 10	0.75		Gray&brown,Clay,Medium stiff,w/ferrous stains and sand pockets	CH	24.6	100.0	124.5	50	21	99.5	98.9	98.1	92.8	91.9		0.75
6	10 - 12	3.25		Brown&gray,Clay,Very stiff,w/shell fragments calcareous noduels & ferrous stains	CH	18.0											
7	12 - 14	4.50+		Brown&gray,Clay,Hard,w/calcareous nodules ferrous stains	CH	18.1											
8	14 - 16	4.50+		Yellowish gray&brown,Clay,Hard,w/calcareous nodules and sand pockets	CH	20.5											
9	16 - 18	0.75		Gray&brown,Clay,Medium stiff,w/calcareous nodules & ferrous stains and sand seams	CH	25.2	99.6	124.7	59	24	96.2*	93.2*	89.6	86.1	85.4		0.65
10	18 - 20	0.50		Gray&brown,Clay,Medium stiff,w/ferrous stains and sand seams	CH	30.6	90.7	118.4	57	23	98.6*	98.1*	97.3	94.9	93.9		0.54
11	20 - 22	0.50		Dark gray,Clay,Medium stiff,w/black dredged material pockets(Hydrocarbon)	CH	49.3											
12	22 - 24			Gray,Sand,Medium dense,Silty,w/shell fragments	S M	21.9											
13	24 - 25.5		25	Gray,Sand,Medium dense,Silty	S M												
14	28.5 - 30		21	Gray,Sand,Medium dense,Silty	S M												
15	33.5 - 35		7	Gray,Sand,Loose,Silty	S M												
16	35 - 36.5		5	Gray,Sand,Loose,Silty	S M												
17	38.5 - 40		5	Gray,Sand,Loose,Silty	S M												

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
* : Material retained are calcareous nodules

Geotest Engineering, Inc.

Project : Spilman Island Disposal Area for the Houston - Galveston Navigation Channels

Contract No. DACW64-92-D-0001 Delivery order No. 0024

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 92-67

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)	LL (%)	P L (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
18	43.5 - 45		4	Gray,Sand,Loose,Silty	S M												
19	48.5 - 50		4	Gray,Sand,Loose,Silty	S M												
20	53.5 - 55		5	Gray,Sand,Loose,Silty	S M												
21	58.5 - 60		7	Gray,Sand,Loose,Silty	S M												

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

Geotest Engineering, Inc.

JOB NO. 14G601 DATE 8/20/92

PROJECT Spilman Island Disposal Area for the Houston-Galveston Navigation Channels

AREA Houston, Texas

BORING NO. 92-67 SAMPLE NO. 5 DEPTH 8-10 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & Brown,Clay,Medium stiff,w/Ferrous stains & Sand pockets

Tare No.	KL-4	Height	5.595 in.
Tare plus Wet Specimen	588.35 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	480.67 gm	Initial Area	6.290 sq in.
Water Weight	107.68 gm	Volume	35.194 cu in.
Tare Weight	42.41 gm	Volume of Solids	cu in.
Wet Specimen	1150.59 gm	Void Ratio	
Dry Specimen	923.65 gm	Saturation	%
Water Content	24.57 %	Dry Density	100.0 lb/cu ft
Specific Gravity of Solids			

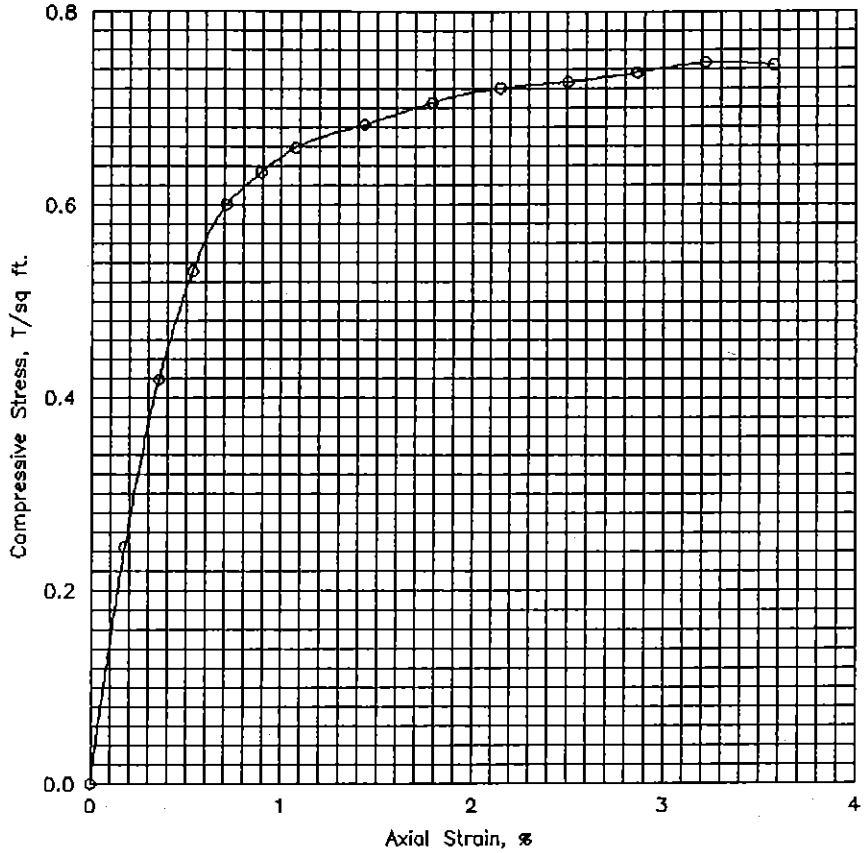
LL = 50 PL = 21 PI = 29

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	28.0	21.4	.002	6.30	.245
.4	20.	.020	48.0	36.8	.004	6.31	.419
.6	30.	.030	61.0	46.7	.005	6.32	.532
.7	40.	.040	69.0	52.9	.007	6.34	.601
.9	50.	.050	73.0	55.9	.009	6.35	.634
1.1	60.	.060	76.0	58.2	.011	6.36	.659
1.4	80.	.080	79.0	60.5	.014	6.38	.683
1.7	100.	.100	82.0	62.8	.018	6.40	.706
2.0	120.	.120	84.0	64.3	.021	6.43	.721
2.3	140.	.140	85.0	65.1	.025	6.45	.727
2.7	160.	.160	86.5	66.3	.029	6.48	.737
3.0	180.	.180	88.0	67.4	.032	6.50	.747
3.3	200.	.200	88.0	67.4	.036	6.52	.744

Job No. 14G601

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	100.0			
Time to failure, min		t_f	3.02			
Unconfined compressive strength, T/sq ft		q_u	.75			
Undrained shear strength, T/sq ft		S_u	.37			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray & Brown,Clay,Medium stiff,w/Ferrous stains & Sand pockets

LL	50	PL	21	PI	29	G_s	

Remarks

Project Spilman Island Disposal Area for the Houston-Galveston Navigation Channels

Area Houston, Texas

Boring No. 92-67 Sample No. 5

Depth El 8-10 ft Date 8/20/92

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G601 DATE 8/20/92

PROJECT Spilman Island Disposal Area for the Houston-Galveston Navigation Channels

AREA Houston, Texas

BORING NO. 92-67 SAMPLE NO. 9 DEPTH 16-18 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & Brown,Clay,Medium stiff,w/Calc nod Fe st & sand pockets

Tare No.	KL-7	Height	5.595 in.
Tare plus Wet Specimen	591.26 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	480.72 gm	Initial Area	6.290 sq in.
Water Weight	110.54 gm	Volume	35.194 cu in.
Tare Weight	42.51 gm	Volume of Solids	cu in.
Wet Specimen	1152.31 gm	Void Ratio	
Dry Specimen	920.19 gm	Saturation	%
Water Content	25.23 %	Dry Density	99.6 lb/cu ft
Specific Gravity of Solids			

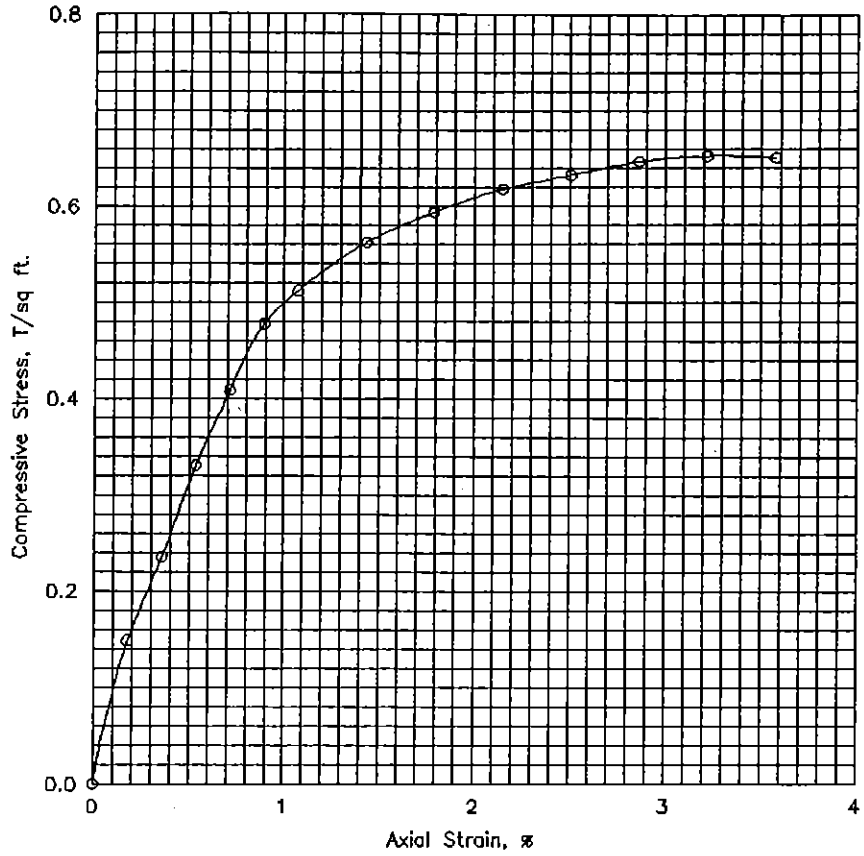
LL = 59 PL = 24 PI = 35

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	27.0	20.7	.004	6.31	.236
.5	30.	.030	38.0	29.1	.005	6.32	.331
.7	40.	.040	47.0	36.0	.007	6.34	.409
.9	50.	.050	55.0	42.1	.009	6.35	.478
1.1	60.	.060	59.0	45.2	.011	6.36	.512
1.4	80.	.080	65.0	49.8	.014	6.38	.562
1.7	100.	.100	69.0	52.9	.018	6.40	.594
2.0	120.	.120	72.0	55.2	.021	6.43	.618
2.4	140.	.140	74.0	56.7	.025	6.45	.633
2.7	160.	.160	76.0	58.2	.029	6.48	.647
3.0	180.	.180	77.0	59.0	.032	6.50	.653
3.3	200.	.200	77.0	59.0	.036	6.52	.651

Job No. 14G601

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	25.2 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	99.6			
Time to failure, min		t_f	3.00			
Unconfined compressive strength, T/sq ft		q_u	.65			
Undrained shear strength, T/sq ft		S_u	.33			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray & Brown,Clay,Medium stiff,w/Calc nod Fe st & sand pockets

LL	59	PL	24	PI	35	G_s

Remarks

Project Spilman Island Disposal Area for the Houston-Galveston Navigation Channels

Area Houston, Texas

Boring No. 92-67 Sample No. 9

Depth El 16-18 ft Date 8/20/92

UNCONFINED COMPRESSION TEST REPORT

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PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G601 DATE 8/20/92

PROJECT Spilman Island Disposal Area for the Houston-Galveston Navigation Channels

AREA Houston, Texas

BORING NO. 92-67 SAMPLE NO. 10 DEPTH 18-20 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & Brown,Clay,Medium stiff

Tare No.	KL-6	Height	5.595 in.
Tare plus Wet Specimen	530.30 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	416.06 gm	Initial Area	6.290 sq in.
Water Weight	114.24 gm	Volume	35.194 cu in.
Tare Weight	42.30 gm	Volume of Solids	cu in.
Wet Specimen	1093.46 gm	Void Ratio	
Dry Specimen	837.48 gm	Saturation	%
Water Content	30.57 %	Dry Density	90.7 lb/cu ft

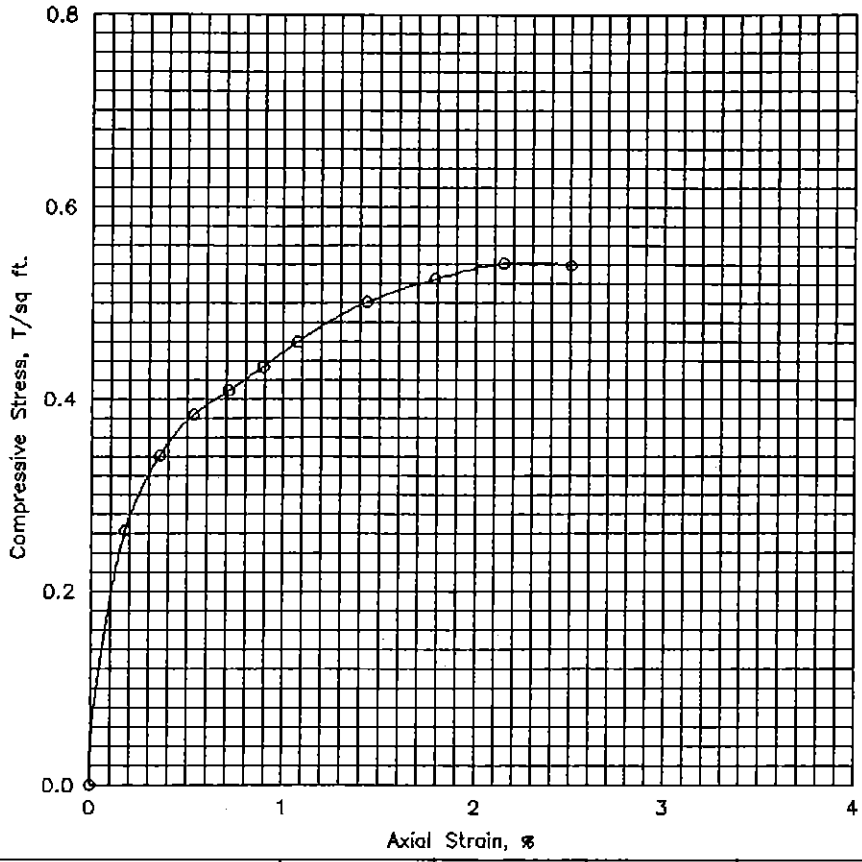
Specific Gravity of Solids
LL = 57 PL = 23 PI = 34

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	30.0	23.0	.002	6.30	.263
.4	20.	.020	39.0	29.9	.004	6.31	.341
.6	30.	.030	44.0	33.7	.005	6.32	.384
.8	40.	.040	47.0	36.0	.007	6.34	.409
.9	50.	.050	50.0	38.3	.009	6.35	.434
1.1	60.	.060	53.0	40.6	.011	6.36	.460
1.3	80.	.080	58.0	44.4	.014	6.38	.501
1.7	100.	.100	61.0	46.7	.018	6.40	.525
2.0	120.	.120	63.0	48.3	.021	6.43	.541
2.3	140.	.140	63.0	48.3	.025	6.45	.539

Job No. 14G601

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	30.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	90.7			
Time to failure, min		t_f	2.00			
Unconfined compressive strength, T/sq ft		q_u	.54			
Undrained shear strength, T/sq ft		S_u	.27			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray & Brown,Clay,Medium stiff

LL	57	PL	23	PI	34	G_s	

Remarks

Project Spilman Island Disposal Area for the Houston-Galveston Navigation Channels

Area Houston, Texas

Boring No. 92-67 | Sample No. 10

Depth 18-20 ft | Date 8/20/92

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UNCONFINED COMPRESSION TEST REPORT

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PLATE XI-2

Geotest Engineering, Inc.