

JOB NO. 14G783-4

DATE 8/25/94

PROJECT Houston-Galveston Navigation
Channel

AREA Houston, Texas

BORING NO. 93-86

SAMPLE NO. 7

DEPTH 16-18 ft

SPECIMEN NO. 1

CLASSIFICATION

Gray, Clay, Very soft, w/ sand seams

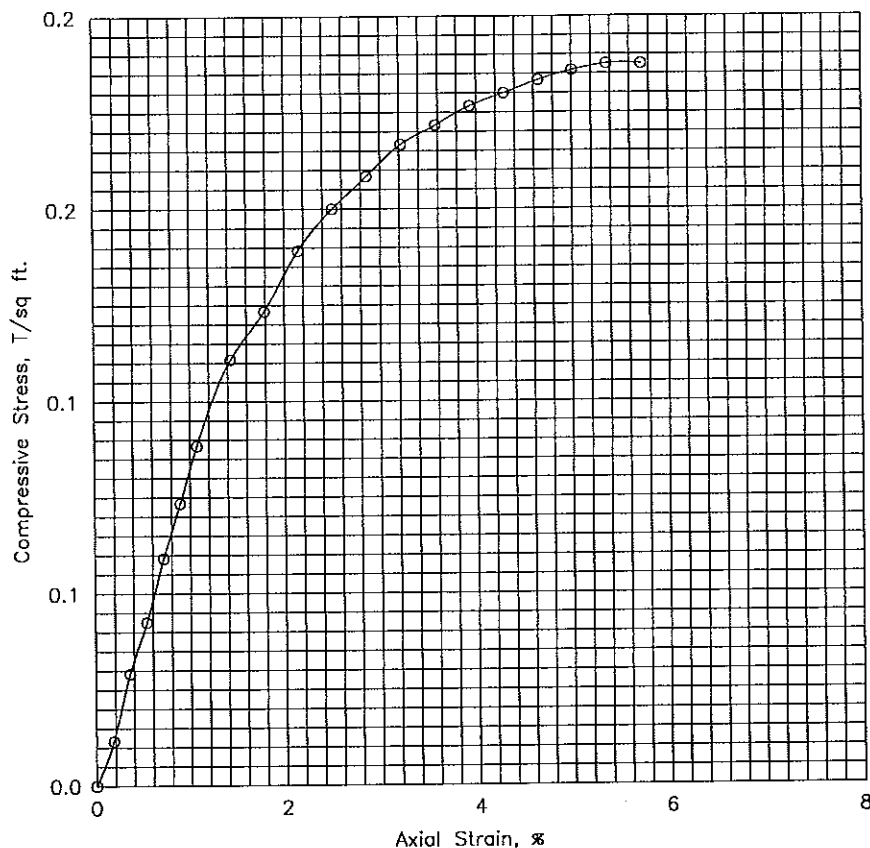
Tare No.	P-218	Height	5.595 in.
Tare plus Wet Specimen	343.40 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	228.74 gm	Initial Area	6.290 sq in.
Water Weight	114.66 gm	Volume	35.194 cu in.
Tare Weight	42.47 gm	Volume of Solids	cu in.
Wet Specimen	962.28 gm	Void Ratio	
Dry Specimen	595.63 gm	Saturation	%
Water Content	61.56 %	Dry Density	64.5 lb/cu ft
Specific Gravity of Solids			
LL = 99	PL = 35	PI = 64	

Proving Ring No. 17015

Proving Ring Constant, K = .311 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	4.0	1.2	.002	6.30	.014
.3	20.	.020	10.0	3.1	.004	6.31	.035
.5	30.	.030	14.5	4.5	.005	6.32	.051
.7	40.	.040	20.0	6.2	.007	6.34	.071
.9	50.	.050	25.0	7.8	.009	6.35	.088
1.0	60.	.060	30.0	9.3	.011	6.36	.106
1.4	80.	.080	38.0	11.8	.014	6.38	.133
1.7	100.	.100	42.5	13.2	.018	6.40	.148
2.0	120.	.120	48.0	14.9	.021	6.43	.167
2.5	140.	.140	52.0	16.2	.025	6.45	.180
2.7	160.	.160	55.0	17.1	.029	6.48	.190
3.0	180.	.180	58.0	18.0	.032	6.50	.200
3.4	200.	.200	60.0	18.6	.036	6.52	.206
3.7	220.	.220	62.0	19.3	.039	6.55	.212
4.0	240.	.240	63.5	19.7	.043	6.57	.216
4.3	260.	.260	65.0	20.2	.046	6.60	.220
4.7	280.	.280	66.0	20.5	.050	6.62	.223
5.0	300.	.300	67.0	20.8	.054	6.65	.225
5.3	320.	.320	67.0	20.8	.057	6.67	.225

Failure Sketches



□ Controlled stress
 ⊗ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	61.6 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	64.5		
Time to failure, min		t_f	5.00		
Unconfined compressive strength, T/sq ft		q_u	.23		
Undrained shear strength, T/sq ft		S_u	.11		
Sensitivity ratio		S_t			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		
Classification Gray, Clay, Very soft, w/ sand seams					
LL	99	PL	35	PI	64
				G_s	
Remarks		Project Houston-Galveston Navigation			
		Channel			
		Area Houston, Texas			
		Boring No. 93-86		Sample No. 7	
		Depth 16-18 ft		Date 8/25/94	
		UNCONFINED COMPRESSION TEST REPORT			

JOB NO. 14G783-4

DATE 8/25/94

PROJECT Houston-Galveston Navigation
Channel

AREA Houston, Texas

BORING NO. 93-86

SAMPLE NO. 11

DEPTH 24-26 ft

SPECIMEN NO. 1

CLASSIFICATION

Gray, Clay, Soft, Sandy, w/ shell fragments

Tare No.	W-7	Height	5.595 in.
Tare plus Wet Specimen	524.77 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	425.56 gm	Initial Area	6.290 sq in.
Water Weight	99.21 gm	Volume	35.194 cu in.
Tare Weight	42.54 gm	Volume of Solids	cu in.
Wet Specimen	1180.80 gm	Void Ratio	
Dry Specimen	937.87 gm	Saturation	%
Water Content	25.90 %	Dry Density	101.5 lb/cu ft
Specific Gravity of Solids			
LL = 24	PL = 14	PI = 10	

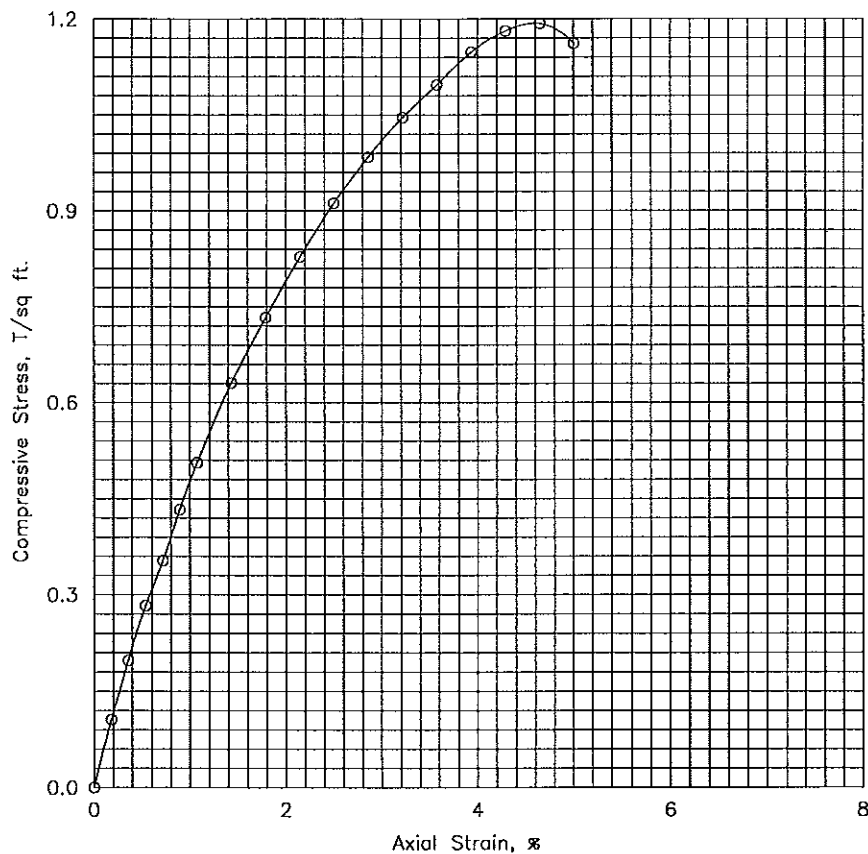
Proving Ring No. 17015

Proving Ring Constant, K = .311 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	4.0	1.2	.002	6.30	.014
.3	20.	.020	6.0	1.9	.004	6.31	.021
.5	30.	.030	10.0	3.1	.005	6.32	.035
.7	40.	.040	12.0	3.7	.007	6.34	.042
.8	50.	.050	13.0	4.0	.009	6.35	.046
1.0	60.	.060	14.5	4.5	.011	6.36	.051
1.3	80.	.080	17.0	5.3	.014	6.38	.060
1.6	100.	.100	20.0	6.2	.018	6.40	.070
2.0	120.	.120	23.0	7.1	.021	6.43	.080
2.3	140.	.140	26.0	8.1	.025	6.45	.090
2.6	160.	.160	29.0	9.0	.029	6.48	.100
3.0	180.	.180	32.0	9.9	.032	6.50	.110
3.3	200.	.200	34.0	10.6	.036	6.52	.117
3.6	220.	.220	37.0	11.5	.039	6.55	.126
3.9	240.	.240	40.0	12.4	.043	6.57	.136
4.3	260.	.260	42.0	13.0	.046	6.60	.142
4.6	280.	.280	44.0	13.7	.050	6.62	.149
4.9	300.	.300	46.0	14.3	.054	6.65	.155
5.2	320.	.320	48.0	14.9	.057	6.67	.161
5.5	340.	.340	51.0	15.8	.061	6.70	.170
5.9	360.	.360	53.0	16.5	.064	6.72	.176
6.2	380.	.380	55.0	17.1	.068	6.75	.182
6.5	400.	.400	57.5	17.9	.071	6.77	.190
7.3	450.	.450	62.0	19.3	.080	6.84	.203
8.1	500.	.500	66.0	20.5	.089	6.91	.214

9.0	550.	.550	70.5	21.9	.098	6.98	.226
9.8	600.	.600	73.5	22.8	.107	7.05	.233
10.6	650.	.650	76.0	23.6	.116	7.12	.239
11.4	700.	.700	79.0	24.5	.125	7.19	.246
12.3	750.	.750	81.5	25.3	.134	7.26	.251
13.2	800.	.800	83.0	25.8	.143	7.34	.253
13.8	839.	.839	83.0	25.8	.150	7.40	.251

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial	Water content	w_0	21.7 %	%	%
	Void ratio	e_0			
	Saturation	S_0	%	%	%
	Dry density, lb/cu ft	γ_d	100.0		
Time to failure, min		t_f	4.40		
Unconfined compressive strength, T/sq ft		q_u	1.19		
Undrained shear strength, T/sq ft		S_u	.60		
Sensitivity ratio		S_l			
Initial specimen diameter, in.		D_0	2.830		
Initial specimen height, in.		H_0	5.595		
Classification Yellowish gray, Clay, Stiff, Sandy					
LL	33	PL	19	PI	14
		G_s			
Remarks		Project Houston-Galveston Navigation			
		Channel			
		Area Houston, Texas			
		Boring No. 93-86		Sample No. 14	
		Depth 30-32 ft		Date 8/25/94	
		UNCONFINED COMPRESSION TEST REPORT			

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 93-86 DATE: BEGIN 7-22-94 PAGE 112
 JOB NO. 946783-1 COMPLETE 7-22-94 Thin Walled Tube
 PROJECT HOUSTON-GALVESTON Navigation Channel ☒ 3" ☐ 6"
 LOCATION DISPOSAL AREA 15
 ELEVATION OF HOLE _____
 MANUFACTURER'S DESIGNATION OF DRILL RIG Adco R4X4, C-1000 Marsh Buggy
 GROUNDWATER: DEPTH 0 ft., ELEV. _____ ft., at end of Drilling
 WEATHER SUNNY & 40°
 DRILLER SCOTT GREGUREK LOGGER JOHN A GENTRY

DEPTH, FEET	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSIS- TENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
Torvane Reading							
0	1	0/0.04	BROWN	CLAY	VERY SOFT	SANDY	
0.2	2	0/0.04	BROWN	CLAY	VERY SOFT	SANDY	
0.2	3		GRAY	SAND	VERY LOOSE	SILTY	FINE 4'-14'
	4	1.04	GRAY	SAND	VERY LOOSE	SILTY	
	5	4.12	GRAY	SAND	MEDIUM DENSE	SILTY	
0.4	6	0/0.08	GRAY	CLAY	VERY SOFT		- w/ SAND SEAMS 14'-16'
0.4	7	0/0.08	GRAY	CLAY	VERY SOFT		
0.35	8	0/0.07	GRAY	CLAY	VERY SOFT		- w/ SAND SEAMS 18'-20'
	9		GRAY	SAND	LOOSE	SILTY	FINE 20'-22' - w/ CLAY SEAMS
0.15	10	0/0.03	GRAY	CLAY	VERY SOFT	SANDY	- w/ SILT 22'-30'
0.15	11	0/0.03	GRAY	CLAY	VERY SOFT	SANDY	
0.4	12	0/0.08	GRAY	CLAY	VERY SOFT		
0.43	13	0/0.09	GRAY	CLAY	VERY SOFT		
	14	0.75	GRAY	CLAY	MEDIUM STIFF	SANDY	+ BROWN 30'-34'
	15	2.25	GRAY	CLAY	VERY STIFF		
35	16	5.8	BROWN	SAND	MEDIUM DENSE	SILTY	+ GRAY 34'-35.5'

DEPTH, FEET		SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	BORING NO. <u>93-86</u> DATE: BEGIN <u>7-22-94</u> PAGE <u>2 1 2</u> JOB NO. <u>946783.1</u> COMPLETE <u>7-22-94</u> Thin Walled Tube PROJECT <u>Houston-Galveston Navigation Channel</u> ☒ 3" ☐ 6" LOCATION <u>DISPOSAL AREA 15</u> ELEVATION OF HOLE _____ MANUFACTURER'S DESIGNATION OF DRILL RIG <u>Ardeco K4X4, C-1000 Marsh Buggy</u> GROUNDWATER: DEPTH <u>0</u> ft., ELEV. _____ ft., at end of Drilling WEATHER <u>544NN / JH07</u> DRILLER <u>SC077 CREW</u> LOGGER <u>JOHN A GENTLEY</u>				
				COLOR	MATERIAL TYPE	CONSIS- TENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35								
40	X 17 1/2	Brown	SAND	DENSE	SILTY	FINE 35-40 Torque Multiplier 0.2 W.O.H: Weight of Hammer		
45								
50								
55								
60								
65								
70								

Project: Galveston-Galveston Navigation Channel

SUMMARY OF LABORATORY TEST RESULTS

Contract No. DACW64-94-C-0040Boring No. 93-86

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	0.00		Brown, Clay, Very soft, Sandy, w/organic material	C L	20.9											
2	2 - 4	0.00		Gray & brown, Clay, Very soft, Sandy	C L	35.2											
3	4 - 6			Gray, Sand, Very loose, Silty	S M												
4	6-7.5		W.O.H	Gray, Sand, Very loose, Silty	S M						100.0	100.0	99.5	88.3	30.1		
5	11-12.5		19	Gray, Sand, Medium dense, Silty	S M												
6	14-16	0.00		Gray, Clay, Very soft, w/sand seams	C H	69.3											
7	16-18	0.00		Gray, Clay, Very soft, w/sand seams	C H	61.6	64.5	104.2	99	35	100.0	100.0	100.0	99.5	96.9		0.23
8	18-20	0.00		Gray, Clay, Very soft, w/sand seams	C H	64.4											
9	20-22			Gray, Sand, Loose, Silty	S M						100.0	99.9	99.8	84.2	44.6		
10	22-24	0.25		Gray, Clay, Soft, Sandy, w/shell fragments	C L	27.3											
11	24-26	0.25		Gray, Clay, Soft, Sandy, w/shell fragments	C L	25.9	101.5	127.8	24	14	99.2	98.9	98.5	90.5	57.4		0.25
12	26-28	0.00		Gray, Clay, Very soft, Sandy, w/shell fragments	C L	32.9											
13	28-30	0.00		Gray, Clay, Very soft, Sandy, w/shell fragments	C L	31.5											
14	30-32	1.25		Yellowish gray, Clay, Stiff, Sandy	C L	21.7	100.0	121.7	33	19	100.0	100.0	99.9	96.3	55.8		1.19
15	32-34	2.50		Yellowish gray, Clay, Very stiff, w/sand parting	C L	23.5											
16	34-35.5		14	Brown, Sand, Medium dense, Silty	S M												
17	38.5-40		45	Brown, Sand, Dense, Silty	S M												

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