U.S. ARMY CORPS OF ENGINEERS

BKM

BORING NO. 91-64 DATE: BEGIN 03-07-91 PAGE 1 / 2
JOB NO. 146446 COMPLETE 03-07-91 Thin Walled Tube
PROJECT CHANNEL TO VICTORIA ☐ 3" ☐ 6"
LOCATION VICTORIA CHANNEL
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG F-36
GROUNDWATER: DEPTH 14 ft., ELEV. ____ ft., at end of Drilling
WEATHER
DRILLER ROBERT TANKERSLEY 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	X	1	2/3/4	LIGHT GRAY*	SAND	LOOSE		*TAN w/ROOTS (FILL) 0'-14'
		2	1.75	"	CLAY	STIFF	SANDY	w/Sa LAYERS 2'-4'
5		3	4.25	GRAY	"	HARD	"	-w/CALC NODS 4'-14'
		4	3.0	"	"	VERY STIFF	"	
		5	4.5	"	"	HARD	"	-w/ROCKS & SHELL 8'-14'
10		6	4.5+	"	"	"	"	
		7	4.5+	"	"	"	"	
15	X	8	2/2/2	"	CLAY	~~LOOSE~~ SOFT	SANDY	w/Sand SEAMS 14'-24'
		9	0	GRAY	"	VERY SOFT	"	-w/SHELL FRAGMENTS 18'-24'
		10	0.25	"	"	SOFT	"	
20		11	0.25	"	"	"	"	
		12	0.5	GRAY*	"	Medium Stiff	"	*TAN
25		13	1.0	"	"	STIFF	"	
		14	2.5	LIGHT GRAY*	"	VERY STIFF	"	*TAN
		15	3.0	"	"	"	"	
30		16	1.25	"	"	STIFF	"	-w/Sa LAYERS & CALC NODS 30'-34'
		17	1.0	"	"	"	"	
35	X	18	11/19/19	LIGHT GRAY*	SAND	DENSE		*TAN

GEOTEST ENGINEERING, INC.

BKM

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 91-64 DATE: BEGIN 03-07-91 PAGE 2 / 2
JOB NO. 146 446 COMPLETE 3-7-91 Thin Walled Tube
PROJECT CHANNEL TO VICTORIA ☐ 3" ☐ 6"
LOCATION VICTORIA CHANNEL
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG F-3L
GROUNDWATER: DEPTH 14 ft., ELEV. ____ ft., at end of Drilling
WEATHER CLOUDY
DRILLER ROBERT TANKERSLEY 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				LIGHT GRAY	SAND	DENSE		& TAN
	▽	20	12/13/19	"	"	"		
40								BOTTOM 91-64
45								
50								
55								
60								
65								
70								

GEOTEST ENGINEERING, INC.

Project : Channel enlargement channel to Victoria, Victoria, Texas

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-64 El. 15.4' NGVD

Contract No. DACW64-91-D-0001 Delivery Order No.0009

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 #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0.5-1		7	Light brown,Sand,Loose,Silty	S M												
2	2-4	2.50		Light brown,Clay,Very stiff,Sandy,w/clay pocket (Fill material)	C L	19.8											
3	4-6	4.00		Light Brown,Clay,Very stiff,Sandy,w/sand layer and shell fragments.(Fill material)	C L	18.5											
4	6-8	3.50		Yellowish Brown,Sand,Very dense,Clayey,w/gravel and shell fragments.(Fill material)	S C	17.2	107.8	126.3	NP	NP	73.8	57.2	46.4		32.0		
5	8-10	3.50		Yellowish brown,Clay,Very stff,Sandy,w/gravel and shell&brocken glass.(Fill material)	C L	18.5											
6	10-12	4.50		Yellowish brown,Clay,Hard,Sandy,w/gravel and shell.(Fill material)	C L	22.4											
7	12-14	4.50		Yellowish brown,Clay,Hard,Sandy,w/gravel and shell.(Fill material)	C L	17.8	111.2	130.3	45	20	92.7	84.0	76.4*		51.8		2.46
8	14.5-16		4	Yellowish brown,Clay,Medium stiff,Sandy,w/ gravel and shell.(Fill material)	C L												
9	16-18	0.00		Dark gray&yellowish brown,Clay,Very soft,Sandy	C L	28.6										0.20 .40	
10	18-20	0.75		Dark gray,Clay,Medium stiff,Sandy,w/shell fragments	C L	35.5	87.2	118.1	31	16	100.0	99.9	98.8		50.2	0.20 .40	.24
11	20-22	0.00		Dark gray,Clay,Very soft,Sandy,w/shell fragments	C L	32.5										0.20 .40	
12	22-24	0.50		Gray&yellowish brown,Clay,Medium stiff,Sandy	C L	34.3	86.2	115.7	36	18	98.3	97.8	97.3		55.5		.22
13	24-26	1.75		Olive gray,Clay,Stiff,Sandy	C L	23.3											
14	26-28	1.50		Gray&light brown,Clay,Stiff,Sandy,w/calcareous nodules	C L	25.7											
15	28-30	1.50		Gray&light brown,Clay,Stiff,Sandy,w/calcareous nodules	C L	21.4											
16	30-32	1.50		Gray&light brown,Clay,Stiff,Sandy,w/calcareous nodules	C L	21.4											
17	32-34	0.75		Gray&yellowish brown,Clay,Medium stiff,Sandy, w/calcareous nodules	C L	24.6											

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 coarser than No.40 sieve are gravel and shell fragments

Project : Channel enlargement channel to victoria,Victoria,Texas

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-64

Contract No. DACW64-91-D-0001 Delivery Order No. 0009

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 #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
18	34-35.5		38	Light brown,Sand,Dense,Silty	S M	24.6											
19	38.5-40		32	Light brown,Sand,Dense,Silty	S M						99.8	99.1	98.7		35.5		

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. 14G459 DATE 5/1/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

BORING NO. 91-64 SAMPLE NO. 7 DEPTH 12-14 ft

SPECIMEN NO. 1

CLASSIFICATION
Yellowish brown,clay,hard, sandy,w/shell & gravel

Tare No.	P-7	Height	5.595 in.
Tare plus Wet Specimen	1246.27 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	1064.62 gm	Initial Area	6.290 sq in.
Water Weight	181.65 gm	Volume	35.194 cu in.
Tare Weight	42.53 gm	Volume of Solids	cu in.
Wet Specimen	1203.74 gm	Void Ratio	
Dry Specimen	1022.09 gm	Saturation	%
Water Content	17.77 %	Dry Density	110.6 lb/cu ft
Specific Gravity of Solids			

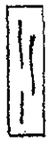
LL = 45 PL = 20 PI = 25

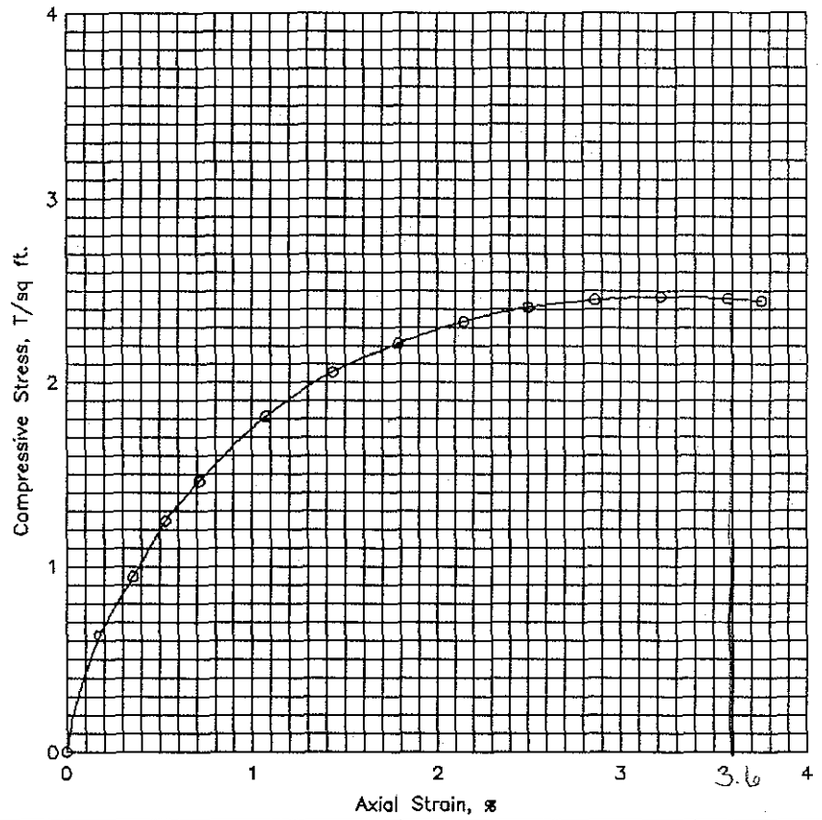
Proving Ring No. 10170
Proving Ring Constant, K = .766 lbs/div.

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	72.0	55.2	.002	6.30	.630
.5	20.	.020	108.0	82.7	.004	6.31	.944
.6	30.	.030	143.0	109.5	.005	6.32	1.247
.9	40.	.040	168.0	128.7	.007	6.34	1.462
1.3	60.	.060	209.0	160.1	.011	6.36	1.813
1.7	80.	.080	238.0	182.3	.014	6.38	2.057
2.1	100.	.100	257.0	196.9	.018	6.40	2.213
2.4	120.	.120	272.0	208.4	.021	6.43	2.334
2.8	140.	.140	282.0	216.0	.025	6.45	2.411
3.1	160.	.160	288.0	220.6	.029	6.48	2.453
3.4	180.	.180	291.0	222.9	.032	6.50	2.469
3.8	200.	.200	291.0	222.9	.036	6.52	2.460
3.9	210.	.210	290.0	222.1	.038	6.54	2.447

Job No. 14G459

Failure Sketches





☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	17.8 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	110.6			
Time to failure, min		t_f	3.42			
Unconfined compressive strength, T/sq ft		q_u	2.47			
Undrained shear strength, T/sq ft		S_u	1.23			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.830			
Initial specimen height, in.		H_o	5.595			

Classification Yellowish brown,clay,hard, sandy,w/shell & gravel

LL	45	PL	20	PI	25	G_s

Remarks

Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA

Area Victoria, Texas

Boring No. 91-64 | Sample No. 7

Depth El 12-14 ft | Date 5/1/91

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G459 DATE 5/1/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

BORING NO. 91-64 SAMPLE NO. 10 DEPTH 18-20 ft

SPECIMEN NO. 1

CLASSIFICATION
Dark gray, Clay, Medium stiff, Sandy, w/shell fragments

Tare No.	P-9	Height	5.595 in.
Tare plus Wet Specimen	730.79 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	550.57 gm	Initial Area	6.290 sq in.
Water Weight	180.22 gm	Volume	35.194 cu in.
Tare Weight	42.63 gm	Volume of Solids	cu in.
Wet Specimen	1091.38 gm	Void Ratio	
Dry Specimen	805.56 gm	Saturation	%
Water Content	35.48 %	Dry Density	87.2 lb/cu ft
Specific Gravity of Solids			

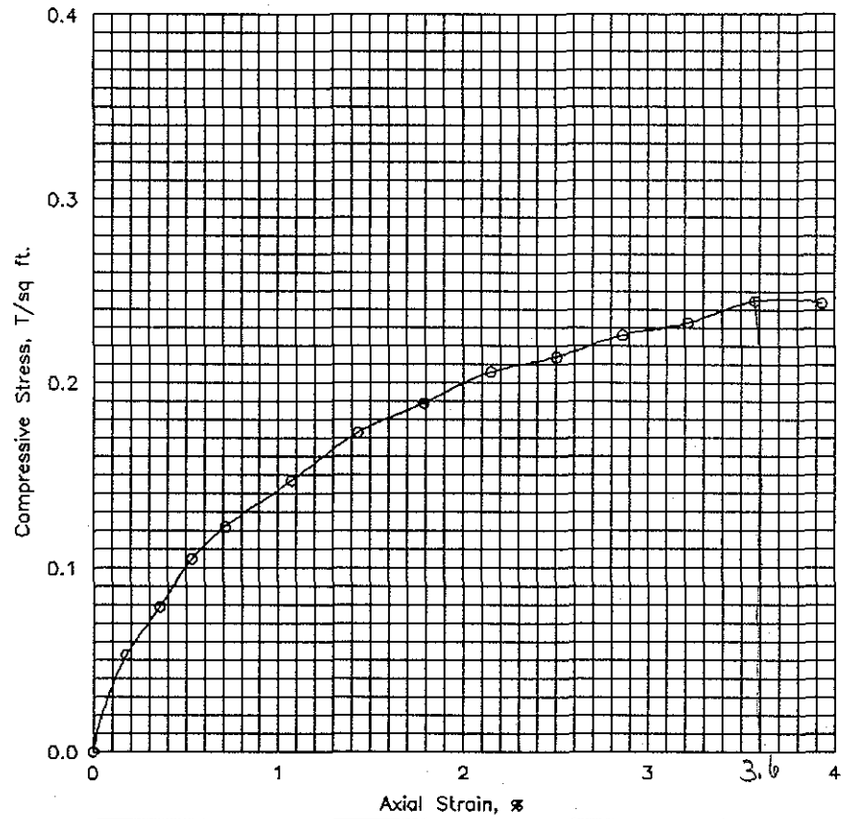
LL = 31 PL = 16 PI = 15

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	6.0	4.6	.002	6.30	.053
.4	20.	.020	9.0	6.9	.004	6.31	.079
.6	30.	.030	12.0	9.2	.005	6.32	.105
.7	40.	.040	14.0	10.7	.007	6.34	.122
1.1	60.	.060	17.0	13.0	.011	6.36	.147
1.4	80.	.080	20.0	15.3	.014	6.38	.173
1.7	100.	.100	22.0	16.9	.018	6.40	.189
2.1	120.	.120	24.0	18.4	.021	6.43	.206
2.4	140.	.140	25.0	19.1	.025	6.45	.214
2.7	160.	.160	26.5	20.3	.029	6.48	.226
3.0	180.	.180	27.5	21.1	.032	6.50	.233
3.3	200.	.200	29.0	22.2	.036	6.52	.245
3.7	220.	.220	29.0	22.2	.039	6.55	.244

Job No. 14G459

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	35.5 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	87.2			
Time to failure, min		t_f	3.33			
Unconfined compressive strength, T/sq ft		q_u	.25			
Undrained shear strength, T/sq ft		S_u	.12			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Dark gray, Clay, Medium stiff, Sandy, w/shell fragments

LL	31	PL	16	PI	15	G_s	

Remarks

Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA

Area Victoria, Texas

Boring No. 91-64 | Sample No. 10

Depth El 18-20 ft | Date 5/1/91

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

JOB NO. 14G459 DATE 5/1/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

BORING NO. 91-64 SAMPLE NO. 12 DEPTH 22-24 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & yellowish brown, Clay, Medium Stiff, Sandy

Tare No.	P-29	Height	5.595 in.
Tare plus Wet Specimen	1111.91 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	838.09 gm	Initial Area	6.290 sq in.
Water Weight	273.82 gm	Volume	35.194 cu in.
Tare Weight	42.80 gm	Volume of Solids	cu in.
Wet Specimen	1069.11 gm	Void Ratio	
Dry Specimen	795.29 gm	Saturation	%
Water Content	34.43 %	Dry Density	86.1 lb/cu ft
Specific Gravity of Solids			

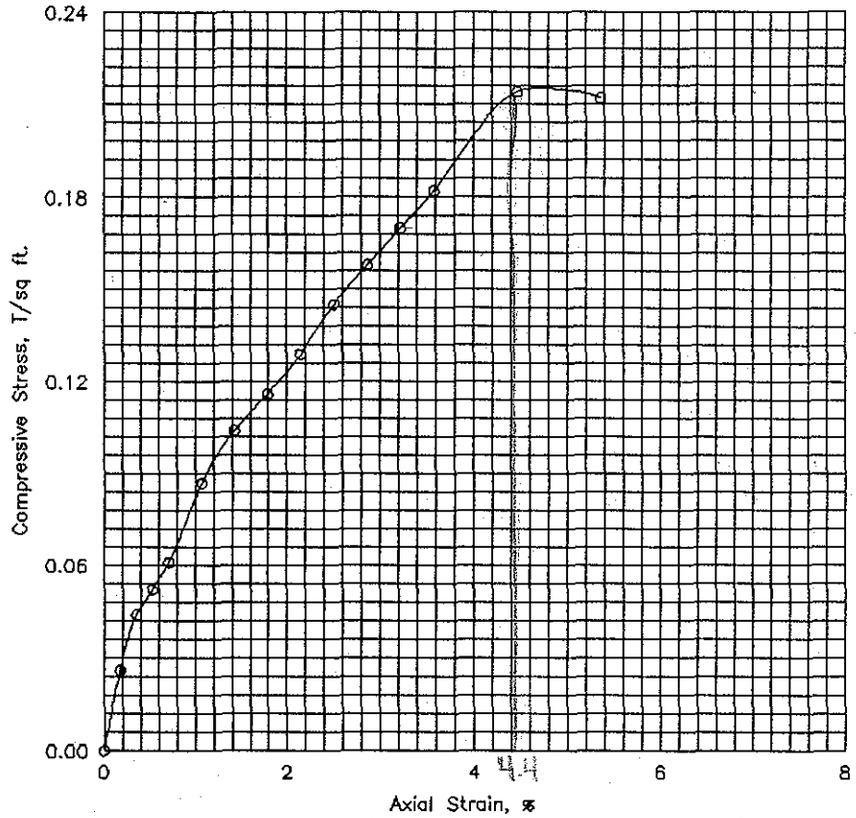
LL = 36 PL = 18 PI = 18

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	3.0	2.3	.002	6.30	.026
.3	20.	.020	5.0	3.8	.004	6.31	.044
.5	30.	.030	6.0	4.6	.005	6.32	.052
.7	40.	.040	7.0	5.4	.007	6.34	.061
1.0	60.	.060	10.0	7.7	.011	6.36	.087
1.3	80.	.080	12.0	9.2	.014	6.38	.104
1.7	100.	.100	13.5	10.3	.018	6.40	.116
2.0	120.	.120	15.0	11.5	.021	6.43	.129
2.3	140.	.140	17.0	13.0	.025	6.45	.145
2.7	160.	.160	18.5	14.2	.029	6.48	.158
3.0	180.	.180	20.0	15.3	.032	6.50	.170
3.3	200.	.200	21.5	16.5	.036	6.52	.182
4.1	250.	.250	25.5	19.5	.045	6.58	.214
5.0	300.	.300	25.5	19.5	.054	6.65	.212

Job No. 14G459

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	34.4 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	86.1			
Time to failure, min		t_f	4.10			
Unconfined compressive strength, T/sq ft		q_u	.21			
Undrained shear strength, T/sq ft		S_u	.11			
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, Medium Stiff, Sandy

LL	36	PL	18	PI	18	G_s

Remarks

Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA

Area Victoria, Texas

Boring No. 91-64 | Sample No. 12

Depth El 22-24 ft | Date 5/1/91

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.