BKM

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 91-67 DATE: BEGIN 3-6-91 PAGE 1 / 2

JOB NO. 14G446 COMPLETE ______ 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 13 ft., ELEV. ______ ft., at end of Drilling

WEATHER SUNNY & CLEAR

DRILLER ROBERT TANKERSLEY LOGGER JOHN R. GENTRY

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE / SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	1.5	LIGHT GRAY *	CLAY	Stiff	SANDY	* & TAN w/ ROOTS
		2	2.5	LIGHT GRAY *	CLAY	VERY Stiff		* & TAN w/ Sand POCKETS 2'-4'
5		3	1.5	LIGHT GRAY	CLAY	Stiff	SANDY	* & T w/ CALC NODS 4'-6 & SAND LAYERS
		4	1.5	"	"	Stiff	"	
		5	2.5	DARK GRAY	"	VERY Stiff	"	w/ ROOTS 8'-11' & Sa LAYERS 8'-16
10		6	3.0	"	"	"	"	
		7	2.5	"	"	"	"	
15		8	3.0	* "	"	"	"	* & LIGHT GRAY
20	☒	9	19/34/47	LIGHT GRAY	SAND	DENSE		
		10	4.5+	LIGHT GRAY *	CLAY	HARD		* & TAN
25		11	4.5+	"	"	"		- w/ CALC NODS & FERROUS 24'-28'
		12	4.5+	"	"	"		
		13	4.25	"	"	"		
30		14	4.25	"	"	"		
		15	4.5	"	"	"		- w/ CALC NODS 32'-38
35		16	4.5+	"	"	"		

GEOTEST ENGINEERING, INC.

U.S. ARMY CORPS OF ENGINEERS

BORING NO. 91-67 DATE: BEGIN 3-6-91 PAGE 2 / 2
JOB NO. 14446 COMPLETE _____ 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 13 ft., ELEV. _____ ft., at end of Drilling
WEATHER SUNNY & CLEAR
DRILLER ROBERT TANKERSLEY LOGGER JOHN A. CENTKY

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35				LIGHT GRAY	CLAY	HARD		W/ TAN
		17	4.5	"	"	"		
		18	4.5	"	"	"		
40		19	4.5+	"	"	"		
			4.5+	"	"	"		W/ SAND STONES 42'-44'
								W/ CALC Below 44'
45		21	4.5+	"	"	"		
		22	4.5+	"	"	"		W/ SAND Pocket Below 46'
		23	4.5+	"	"	"		BENT TUBE WHILE PUSHING SAMPLE
50								BOTTOM OF 9467
55								
60								
65								
70								

GEOTEST ENGINEERING, INC.

Project : Channel enlargement channel to victoria,Victoria,Texas

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-67 El. 23.5' 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					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
1	0-2	1.50		Gray,Clay,Stiff	CH	28.3											
2	2-4	1.50		Gray&yellowish brown,Clay,Stiff,w/calca-reous nodules	CH	28.6	93.4	120.0	55	22	99.3	98.4	97.2		87.4		.94
3	4-6	1.75		Gray&yellowish brown,Clay,Stiff,w/calca-reous nodules	CH	21.9											
4	6-8	1.50		Gray,Clay,Stiff,w/calcareous nodules	CH	33.9											
5	8-10	2.00		Dark gray,Clay,Very stiff	CH	28.4											
6	10-12	2.50		Dark gray,Clay,Very stiff,Sandy,w/sand pockets	CL	22.1	101.8	124.3									
7	12-14	2.50		Dark gray,Clay,Very stiff,Sandy,w/sand pockets	CL	20.2											
8	14-16	3.00		Gray&dark gray,Clay,Very stiff,Sandy	CL	20.8											
9	18.5-20		51	Tan,Sand,Very dense,Silty	SP-SM						100.0	99.1	87.5		5.5		
10	22-24	4.5+		Gray,Clay,Hard,w/calcareous nodules	CH	21.9	107.4	130.8	75	27	99.7	99.3	98.8		78.3		
11	24-26	3.50		Gray&yellowish brown,Clay,Very stiff,w/calcar-eous&ferrous nodules and slickensided	CH	28.6											
12	26-28	3.50		Gray&yellowish brown,Clay,Very stiff,w/calcar-eous nodules ,slickensided and blocky structure	CH	28.4											
13	28-30	3.50		Gray&yellowish brown,Clay,Very stiff,w/calcar-eous&ferrous nodules ,slickensided	CH	25.4											
14	30-32	4.00		Gray&yellowish brown,Clay,Very stiff,w/ferrous stain and slickensided	CH	32.1											
15	32-34	4.5+		Gray&yellowish brown,Clay,Hard,w/calcareous nodules and slickensided	CH	21.0											
16	34-36	4.5+		Gray&yellowish brown,Clay,Hard,w/calcareous nodules and slickensided	CH	16.1											
17	36-38	4.5+		Gray&yellowish brown,Clay,Hard,w/calcareous nodules and ferrous stain	CH	18.6	115.0	136.4	56	22	100.0	99.8	99.4		90.1		4.68

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

Project : Channel enlargement channel to victoria,Victoria,Texas

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-67

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					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
18	38-40	4.5+		Yellowish brown&gry,Clay,Hard,w/calcareous nodules	CH	24.3											
19	40-42	4.5+		Yellowish brown&gray,Clay,Hard,w/calcareous nodules	CH	27.9											
20	42-44	4.5+		Gray,Clay,Hard,Silty,w/calcareous nodules	CL	19.7											
21	44-46	4.5+		Gray,Clay,Hard,Silty,w/calcareous nodules	CL	19.0	116.4	138.5	44	19	100.0	99.6	98.7		81.6		
22	46-48	4.5+		Gray,Clay,Hard,Silty,w/calcareous nodules	CL	15.8											
23	48-50	4.5+		Gray,Clay,Hard,Silty,w/calcareous nodules	CL	14.1											

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 5/10/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

BORING NO. 91-67 SAMPLE NO. 2 DEPTH 2-4 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & yellowish brown, Clay, Stiff, w/ calcareous nodules

Tare No.	P-4	Height	5.595 in.
Tare plus Wet Specimen	1151.63 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	905.33 gm	Initial Area	6.290 sq in.
Water Weight	246.30 gm	Volume	35.194 cu in.
Tare Weight	42.86 gm	Volume of Solids	cu in.
Wet Specimen	1108.77 gm	Void Ratio	
Dry Specimen	862.47 gm	Saturation	%
Water Content	28.56 %	Dry Density	93.4 lb/cu ft

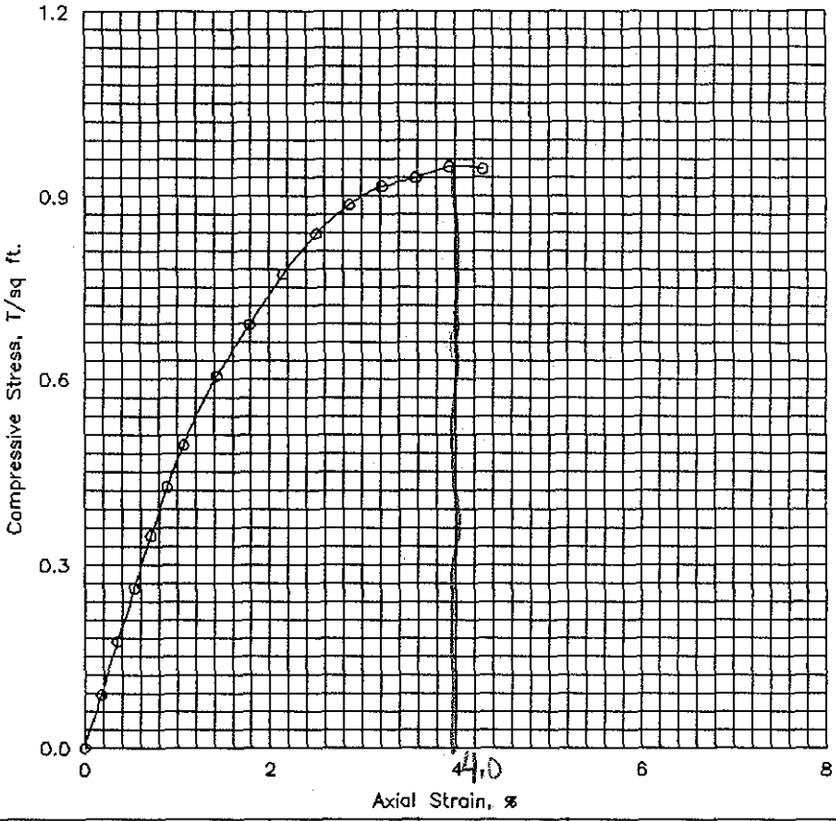
Specific Gravity of Solids
LL = 55 PL = 22 PI = 33

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	10.0	7.7	.002	6.30	.088
.4	20.	.020	20.0	15.3	.004	6.31	.175
.5	30.	.030	30.0	23.0	.005	6.32	.262
.7	40.	.040	40.0	30.6	.007	6.34	.348
.9	50.	.050	49.0	37.5	.009	6.35	.426
1.1	60.	.060	57.0	43.7	.011	6.36	.494
1.4	80.	.080	70.0	53.6	.014	6.38	.605
1.7	100.	.100	80.0	61.3	.018	6.40	.689
2.1	120.	.120	90.0	68.9	.021	6.43	.772
2.5	140.	.140	98.0	75.1	.025	6.45	.838
2.8	160.	.160	104.0	79.7	.029	6.48	.886
3.1	180.	.180	108.0	82.7	.032	6.50	.916
3.4	200.	.200	110.0	84.3	.036	6.52	.930
3.7	220.	.220	112.5	86.2	.039	6.55	.948
4.1	240.	.240	112.5	86.2	.043	6.57	.944

Job No. 146459

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	28.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	93.4			
Time to failure, min		t_f	3.73			
Unconfined compressive strength, T/sq ft		q_u	.95			
Undrained shear strength, T/sq ft		S_u	.47			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Gray & yellowish brown, Clay, Stiff, w/ calcareous nodules

LL	55	PL	22	PI	33	G_s	

Remarks

Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA

Area Victoria, Texas

Boring No. 91-67 | Sample No. 2

Depth El 2-4 ft | Date 5/10/91

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 3659
1 JUN 65

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 14G459 DATE 5/11/91

PROJECT CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA, TEXAS

BORING NO. 91-67 SAMPLE NO. 17 DEPTH 36-38 ft

SPECIMEN NO. 1

CLASSIFICATION
Gray & yellowish brown, Clay, Hard, w/ Calcareous nodules & ferrous stains

Tare No.	P-29	Height	5.595 in.
Tare plus Wet Specimen	583.09 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	498.25 gm	Initial Area	6.290 sq in.
Water Weight	84.84 gm	Volume	35.194 cu in.
Tare Weight	43.01 gm	Volume of Solids	cu in.
Wet Specimen	1260.16 gm	Void Ratio	
Dry Specimen	1062.20 gm	Saturation	%
Water Content	18.64 %	Dry Density	115.0 lb/cu ft

Specific Gravity of Solids
LL = 56 PL = 22 PI = 34

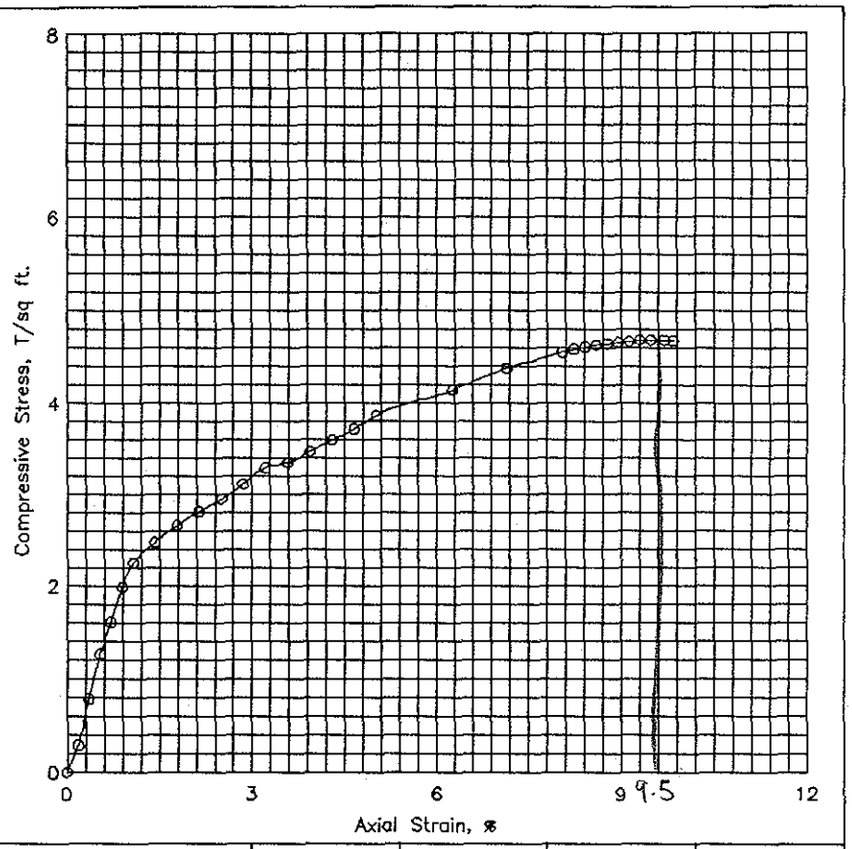
Proving Ring No. 10170
Proving Ring Constant, K = .766 lbs/div.

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
.3	10.	.010	33.0	25.3	.002	6.30	.289
.5	20.	.020	90.0	68.9	.004	6.31	.786
.8	30.	.030	145.0	111.1	.005	6.32	1.265
1.0	40.	.040	185.0	141.7	.007	6.34	1.610
1.4	50.	.050	229.0	175.4	.009	6.35	1.990
1.8	60.	.060	260.0	199.2	.011	6.36	2.255
2.2	80.	.080	287.0	219.8	.014	6.38	2.480
2.5	100.	.100	309.0	236.7	.018	6.40	2.661
2.8	120.	.120	328.0	251.2	.021	6.43	2.814
3.2	140.	.140	345.0	264.3	.025	6.45	2.949
3.5	160.	.160	365.0	279.6	.029	6.48	3.109
3.9	180.	.180	388.0	297.2	.032	6.50	3.293
4.2	200.	.200	396.0	303.3	.036	6.52	3.348
4.6	220.	.220	412.0	315.6	.039	6.55	3.470
4.9	240.	.240	429.0	328.6	.043	6.57	3.600
5.2	260.	.260	445.0	340.9	.046	6.60	3.720
5.7	280.	.280	464.0	355.4	.050	6.62	3.865
6.5	350.	.350	504.0	386.1	.063	6.71	4.143
7.3	400.	.400	538.0	412.1	.071	6.77	4.380
8.2	450.	.450	565.0	432.8	.080	6.84	4.555
8.4	460.	.460	570.0	436.6	.082	6.85	4.587
8.6	470.	.470	574.0	439.7	.084	6.87	4.610
8.7	480.	.480	578.0	442.7	.086	6.88	4.633
8.9	490.	.490	581.0	445.0	.088	6.89	4.648
9.0	500.	.500	583.0	446.6	.089	6.91	4.655
9.2	510.	.510	586.0	448.9	.091	6.92	4.670
9.4	520.	.520	589.0	451.2	.093	6.93	4.684

9.5	530.	.530	590.0	451.9	.095	6.95	4.683
9.7	542.	.542	592.0	453.5	.097	6.96	4.688
9.9	550.	.550	592.0	453.5	.098	6.98	4.680

Job No. 140459

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	18.6 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	115.0			
Time to failure, min		t_f	9.68			
Unconfined compressive strength, T/sq ft		q_u	4.69			
Undrained shear strength, T/sq ft		S_u	2.34			
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, Hard, w/ Calcareous nodules & ferrous stains

LL	56	PL	22	PI	34	G_s

Remarks

Project CHANNEL ENLARGEMENT, CHANNEL TO VICTORIA

Area Victoria, Texas

Boring No. 91-67 | Sample No. 17

Depth El 36-38 ft | Date 5/11/91

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 3659
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PLATE XI-2