Hole No. 07-237

BORING LOG	DISTRICT	INSTALLATION	SHEET 1 OF 1 SHEETS

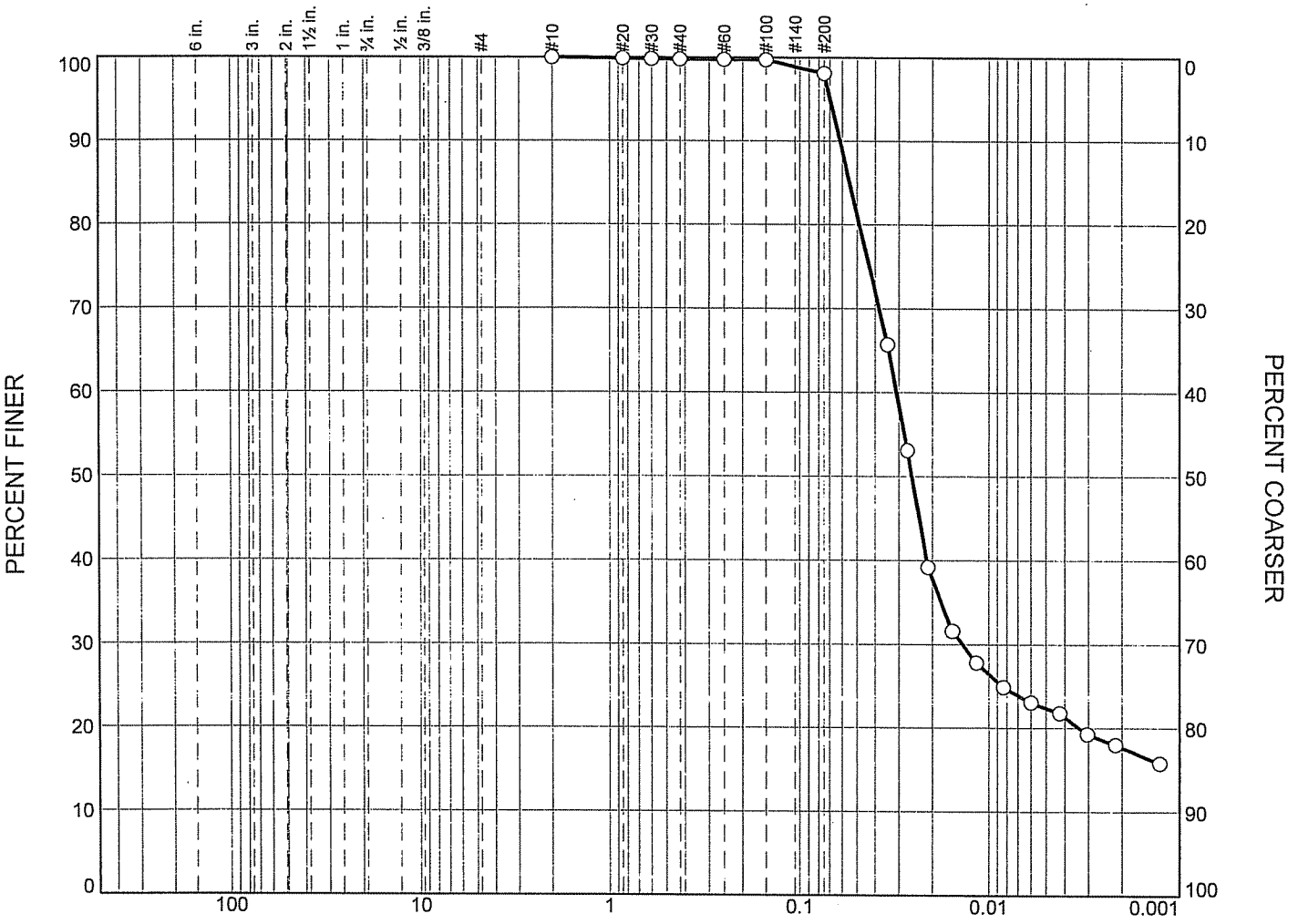
1. PROJECT Galveston Channel and Pelican Island PA	7. ELEVATION OF HOLE
2. LOCATION (Coordinates or Station) N=13684937 E=3308830	8. DATUM FOR ELEVATION
3. DRILLING AGENCY Dempsey (Geotest Engineering, Inc.)	9. ELEVATION OF GROUNDWATER ▽ TOD: ▼ 24-HR:
4. LABORATORY TESTING AGENCY Tolunay-Wong Engineers, Inc.	10. DRILLING DATE and TIME STARTED: COMPLETED:
5. DEPTH OF WATER ▽ TOD: ▼ 24-HR:	11. CLASSIFICATION REFERENCE
6. DEPTH OF HOLE 30 ft	12. ENGINEER

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	NUMBER	RECOVERY (%)	SPT (N)	PENETROMETER (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (% <200)
			FAT CLAY(CH), very soft to soft, gray		1			0		104.4				
			-reddish brown & gray w/ silt seams @ 2' - 4'		2			0.50	87.9	33.4	79	24	55	99
5			**SANDY LEAN CLAY(CL)**, stiff, tan & gray, w/ silt seams & ferrous nodules		3			2.50		20.8				
			LEAN CLAY(CL), stiff, tan & gray, w/ silt seams & ferrous nodules		4			1.75	104.0	21.5	33	16	17	98.1
			SANDY SILTY CLAY(CL-ML), firm, tan & gray, w/ silt seams & ferrous nodules		5			0.75	103.7	21.3				
10			-tan & brown @ 10' - 12'		6			0.75	98.1	26.4				
			LEAN CLAY(CL), firm, tan & gray, w/ silt seams		7			0.75	98.7	26.6	34	16	18	97.6
15			**SILTY CLAY WITH SAND(CL-ML)**, firm, light gray & tan, w/ silt seams		8			0.75	87.4	32.9				
			SILT WITH SAND(ML), gray & tan, w/ clay pockets		9			0.75	90.5	25.1				
			FAT CLAY(CH), firm, gray, w/ sand & silt seams		10			1.25	90.5	30.4				
20			**LEAN CLAY(CL)**, firm, tan, brown & gray, w/ clay seams		11			1.00	90.2	32.1	31	16	15	99.6
			SILTY CLAY(CL-ML), firm, gray, w/ sand & clay seams		12			0.75	92.0	29.4				
25			**FAT CLAY(CH)**, firm, gray, w/ sand & silt seams		13			0.75	85.6	33.4				
			LEAN CLAY(CL), firm, gray, w/ silt seams		14			1.00	84.4	36.3	44	17	27	99.8
			FAT CLAY(CH), firm, gray, w/ silt seams		15			1.25	82.7	35.5				
30														

SWG 1836 BOR 08.18.918.GPJ TOLUNAY-WONG ENGINEERS.GDT 10/2/08

ENG FORM: SWG 1836 BOR

Particle Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.2	1.7	80.4	17.7

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	07-237	4	6-8	Tan and gray LEAN CLAY	CL

Tolunay-Wong Engineers, Inc.
Houston, Texas

Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077

Project No.: 08.18.918

GRAIN SIZE DISTRIBUTION TEST DATA

7/27/2008

Client: United States Army Corps of Engineers
Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077
Project Number: 08.18.918
Location: 07-237
Depth: 6-8 **Sample Number:** 4
Material Description: Tan and gray LEAN CLAY
USCS: CL
Material specification: (no specification envelope)

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Lower Spec. Limit, %	Upper Spec. Limit, %	Deviation From Spec., %
296.35	218.07	218.07	3"					
			3/4"					
			#4					
			#10	218.07	100.0			
			#20	218.16	99.9			
			#30	218.21	99.8			
			#40	218.24	99.8			
			#60	218.26	99.8			
			#100	218.28	99.7			
			#200	219.57	98.1			

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =95.8
Hygroscopic moisture correction:
Moist weight and tare = 170.47
Dry weight and tare = 140.49
Tare weight = 6.72
Hygroscopic moisture = 22.4%
Table of composite correction values:

Temp., deg. C:	22.0	21.0
Comp. corr.:	-5.0	-6.5

Meniscus correction only = 0.5
Specific gravity of solids = 2.70
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

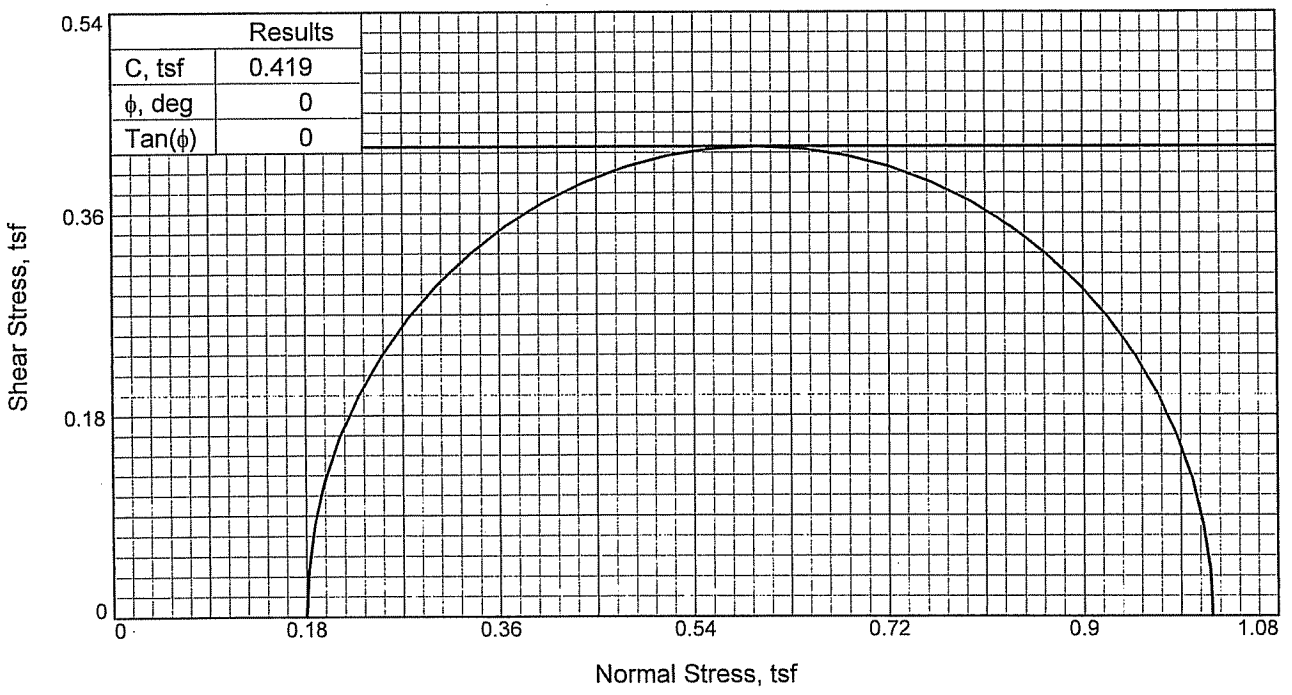
Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
1.00	22.0	57.0	52.0	0.0131	57.5	6.9	0.0344	65.7
2.00	22.0	47.0	42.0	0.0131	47.5	8.5	0.0270	53.1
4.00	22.0	36.0	31.0	0.0131	36.5	10.3	0.0211	39.2
8.00	22.0	30.0	25.0	0.0131	30.5	11.3	0.0156	31.6
15.00	22.0	27.0	22.0	0.0131	27.5	11.8	0.0116	27.8
30.00	21.8	25.0	19.7	0.0131	25.5	12.1	0.0084	24.9
60.00	21.5	24.0	18.3	0.0132	24.5	12.3	0.0060	23.1
120.00	21.5	23.0	17.3	0.0132	23.5	12.4	0.0042	21.8
240.00	21.5	21.0	15.3	0.0132	21.5	12.8	0.0030	19.3
480.00	21.5	20.0	14.3	0.0132	20.5	12.9	0.0022	18.0
1440.00	21.0	19.0	12.5	0.0133	19.5	13.1	0.0013	15.8

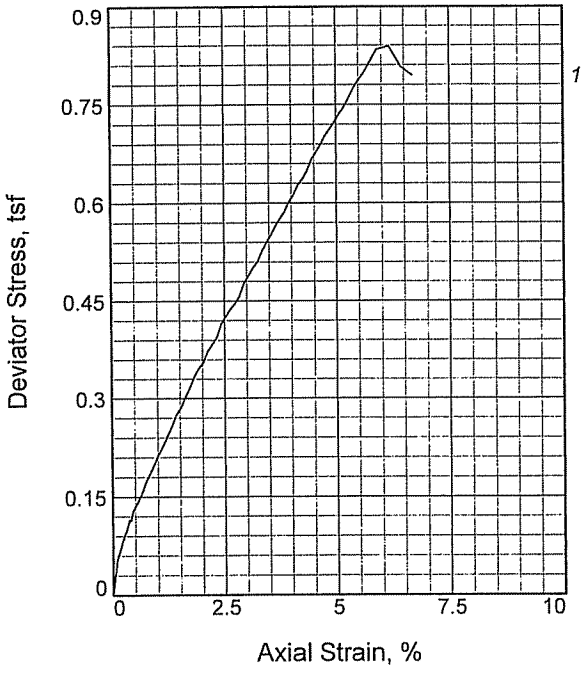
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	1.7	1.9	80.4	17.7	98.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0034	0.0138	0.0256	0.0308	0.0485	0.0547	0.0617	0.0696

Fineness Modulus
0.01





Sample No.		1
Initial	Water Content, %	21.5
	Dry Density, pcf	104.0
	Saturation, %	93.5
	Void Ratio	0.6200
	Diameter, in.	2.80
	Height, in.	5.98
At Test	Water Content, %	21.9
	Dry Density, pcf	104.0
	Saturation, %	95.2
	Void Ratio	0.6200
	Diameter, in.	2.80
	Height, in.	5.98
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.18
Fail. Stress, tsf		0.84
Ult. Stress, tsf		
σ_1 Failure, tsf		1.02
σ_3 Failure, tsf		0.18

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Tan and gray LEAN CLAY with SAND

LL= 33 **PL=** 16 **PI=** 17

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.50
Failure type: Vertical shear

Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077

Source of Sample: 07-237 **Depth:** 6-8

Sample Number: 4

Proj. No.: 08.18.918 **Date Sampled:** 7/18/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/25/2008
7:20 AM

Date: 7/18/08
Client: United States Army Corps of Engineers
Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077
Project No.: 08.18.918
Location: 07-237
Depth: 6-8 **Sample Number:** 4
Description: Tan and gray LEAN CLAY with SAND
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.50
Failure type: Vertical shear
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=**33 **PL=**16 **PI=**17
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	147.780	105.110
Moisture content: Dry soil+tare, gms.	127.240	91.870
Moisture content: Tare, gms.	31.600	31.320
Moisture, %	21.5	21.9
Moist specimen weight, gms.	1222.5	
Diameter, in.	2.80	
Area, in.^{2}	6.16	
Height, in.	5.98	
Wet Density, pcf	126.4	
Dry density, pcf	104.0	
Void ratio	0.6200	
Saturation, %	93.5	

Test Readings for Specimen No. 1

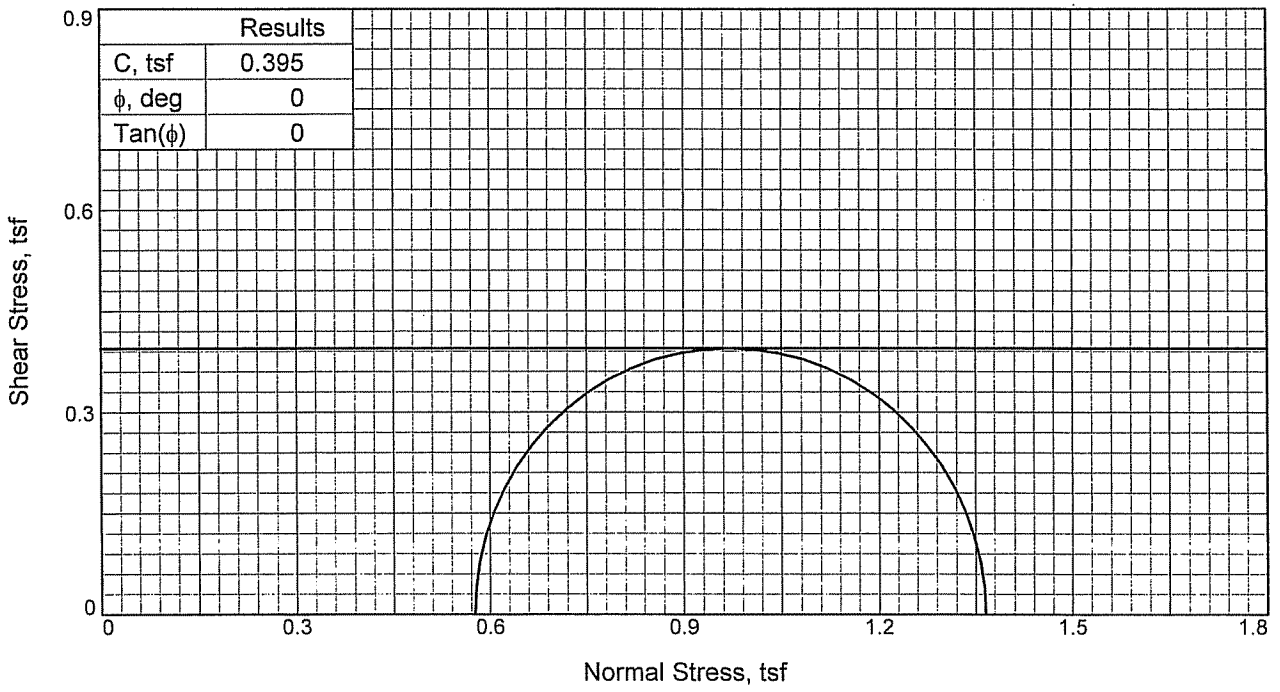
Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 2.50 psi (0.180 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 0.839 tsf **at reading no.** 55

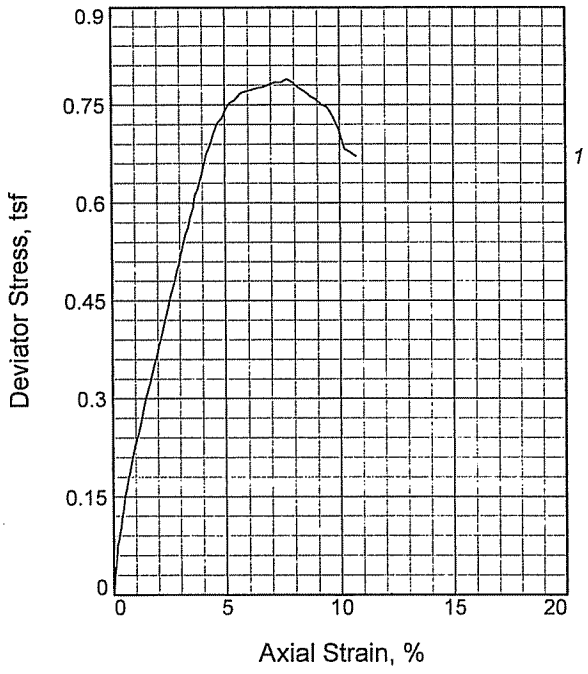
Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
0	0.0701	0.000	0.0	0.0	0.000	0.180	0.180	1.00	0.180	0.000
1	0.0756	4.515	4.5	0.1	0.053	0.180	0.233	1.29	0.206	0.026
2	0.0804	5.932	5.9	0.2	0.069	0.180	0.249	1.38	0.215	0.035
3	0.0829	6.940	6.9	0.2	0.081	0.180	0.261	1.45	0.220	0.040
4	0.0881	8.396	8.4	0.3	0.098	0.180	0.278	1.54	0.229	0.049
5	0.0927	9.844	9.8	0.4	0.115	0.180	0.295	1.64	0.237	0.057
6	0.0940	9.683	9.7	0.4	0.113	0.180	0.293	1.63	0.236	0.056
7	0.0973	10.998	11.0	0.5	0.128	0.180	0.308	1.71	0.244	0.064
8	0.1019	11.831	11.8	0.5	0.138	0.180	0.318	1.76	0.249	0.069
9	0.1077	13.043	13.0	0.6	0.152	0.180	0.332	1.84	0.256	0.076
10	0.1111	13.978	14.0	0.7	0.162	0.180	0.342	1.90	0.261	0.081
11	0.1136	14.780	14.8	0.7	0.172	0.180	0.352	1.95	0.266	0.086
12	0.1182	15.727	15.7	0.8	0.182	0.180	0.362	2.01	0.271	0.091
13	0.1228	16.732	16.7	0.9	0.194	0.180	0.374	2.08	0.277	0.097
14	0.1274	17.667	17.7	1.0	0.205	0.180	0.385	2.14	0.282	0.102
15	0.1307	18.457	18.5	1.0	0.214	0.180	0.394	2.19	0.287	0.107
16	0.1366	19.618	19.6	1.1	0.227	0.180	0.407	2.26	0.293	0.113
17	0.1431	21.001	21.0	1.2	0.243	0.180	0.423	2.35	0.301	0.121
18	0.1488	22.272	22.3	1.3	0.257	0.180	0.437	2.43	0.309	0.129
19	0.1546	23.787	23.8	1.4	0.274	0.180	0.454	2.52	0.317	0.137
20	0.1611	24.769	24.8	1.5	0.285	0.180	0.465	2.58	0.323	0.143
21	0.1669	26.212	26.2	1.6	0.302	0.180	0.482	2.68	0.331	0.151
22	0.1727	27.357	27.4	1.7	0.314	0.180	0.494	2.75	0.337	0.157
23	0.1792	29.069	29.1	1.8	0.334	0.180	0.514	2.85	0.347	0.167
24	0.1849	30.122	30.1	1.9	0.345	0.180	0.525	2.92	0.353	0.173
25	0.1913	30.976	31.0	2.0	0.355	0.180	0.535	2.97	0.357	0.177
26	0.1971	32.583	32.6	2.1	0.373	0.180	0.553	3.07	0.366	0.186
27	0.2094	34.508	34.5	2.3	0.394	0.180	0.574	3.19	0.377	0.197
28	0.2152	36.236	36.2	2.4	0.413	0.180	0.593	3.30	0.387	0.207
29	0.2273	38.330	38.3	2.6	0.436	0.180	0.616	3.42	0.398	0.218
30	0.2331	39.097	39.1	2.7	0.445	0.180	0.625	3.47	0.402	0.222
31	0.2396	40.137	40.1	2.8	0.456	0.180	0.636	3.53	0.408	0.228
32	0.2454	41.887	41.9	2.9	0.475	0.180	0.655	3.64	0.418	0.238
33	0.2518	43.027	43.0	3.0	0.488	0.180	0.668	3.71	0.424	0.244
34	0.2575	44.093	44.1	3.1	0.499	0.180	0.679	3.77	0.430	0.250
35	0.2639	45.063	45.1	3.2	0.510	0.180	0.690	3.83	0.435	0.255
36	0.2697	46.420	46.4	3.3	0.525	0.180	0.705	3.91	0.442	0.262
37	0.2761	47.714	47.7	3.4	0.539	0.180	0.719	3.99	0.449	0.269
38	0.2818	48.814	48.8	3.5	0.551	0.180	0.731	4.06	0.455	0.275
39	0.2882	50.157	50.2	3.6	0.565	0.180	0.745	4.14	0.463	0.283
40	0.3004	52.147	52.1	3.8	0.586	0.180	0.766	4.26	0.473	0.293
41	0.3061	53.473	53.5	3.9	0.601	0.180	0.781	4.34	0.480	0.300
42	0.3119	54.425	54.4	4.0	0.611	0.180	0.791	4.39	0.485	0.305
43	0.3184	55.929	55.9	4.1	0.627	0.180	0.807	4.48	0.493	0.313
44	0.3242	56.789	56.8	4.2	0.636	0.180	0.816	4.53	0.498	0.318
45	0.3299	57.961	58.0	4.3	0.648	0.180	0.828	4.60	0.504	0.324
46	0.3365	59.698	59.7	4.5	0.667	0.180	0.847	4.71	0.513	0.333

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
47	0.3486	61.756	61.8	4.7	0.689	0.180	0.869	4.83	0.524	0.344
48	0.3543	63.006	63.0	4.7	0.702	0.180	0.882	4.90	0.531	0.351
49	0.3665	64.963	65.0	5.0	0.722	0.180	0.902	5.01	0.541	0.361
50	0.3729	66.214	66.2	5.1	0.735	0.180	0.915	5.08	0.548	0.368
51	0.3786	67.086	67.1	5.2	0.744	0.180	0.924	5.13	0.552	0.372
52	0.3939	70.156	70.2	5.4	0.776	0.180	0.956	5.31	0.568	0.388
53	0.4086	72.723	72.7	5.7	0.802	0.180	0.982	5.46	0.581	0.401
54	0.4240	75.781	75.8	5.9	0.834	0.180	1.014	5.63	0.597	0.417
55	0.4394	76.453	76.5	6.2	0.839	0.180	1.019	5.66	0.599	0.419
56	0.4548	73.846	73.8	6.4	0.808	0.180	0.988	5.49	0.584	0.404
57	0.4702	72.791	72.8	6.7	0.794	0.180	0.974	5.41	0.577	0.397





Sample No.		1
Initial	Water Content, %	32.1
	Dry Density, pcf	90.2
	Saturation, %	99.9
	Void Ratio	0.8686
	Diameter, in.	2.77
	Height, in.	6.00
At Test	Water Content, %	31.3
	Dry Density, pcf	90.2
	Saturation, %	97.4
	Void Ratio	0.8686
	Diameter, in.	2.77
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.58
Fail. Stress, tsf		0.79
Ult. Stress, tsf		
σ_1 Failure, tsf		1.37
σ_3 Failure, tsf		0.58

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Tan, brown and gray LEAN CLAY

LL= 31 **PL=** 16 **PI=** 15

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.25
Failure type: Vertical shear

Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077

Source of Sample: 07-237 **Depth:** 20-22

Sample Number: 11

Proj. No.: 08.18.918 **Date Sampled:** 7/18/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/25/2008
7:24 AM

Date: 7/18/08
Client: United States Army Corps of Engineers
Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077
Project No.: 08.18.918
Location: 07-237
Depth: 20-22 **Sample Number:** 11
Description: Tan, brown and gray LEAN CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.25
Failure type: Vertical shear
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=**31 **PL=**16 **PI=**15
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	134.390	116.670
Moisture content: Dry soil+tare, gms.	109.240	96.400
Moisture content: Tare, gms.	30.980	31.720
Moisture, %	32.1	31.3
Moist specimen weight, gms.	1135.4	
Diameter, in.	2.77	
Area, in.^{2}	6.05	
Height, in.	6.00	
Wet Density, pcf	119.2	
Dry density, pcf	90.2	
Void ratio	0.8686	
Saturation, %	99.9	

Test Readings for Specimen No. 1

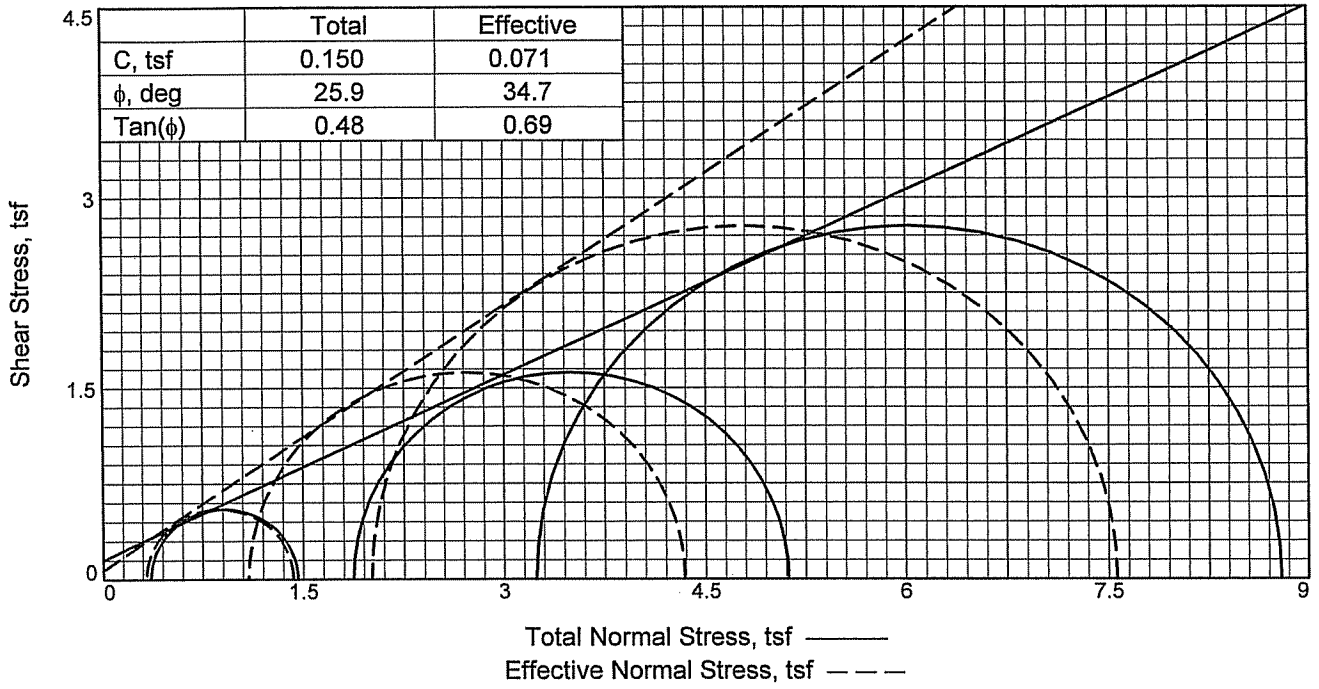
Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 8.00 psi (0.576 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 0.789 tsf **at reading no.** 61

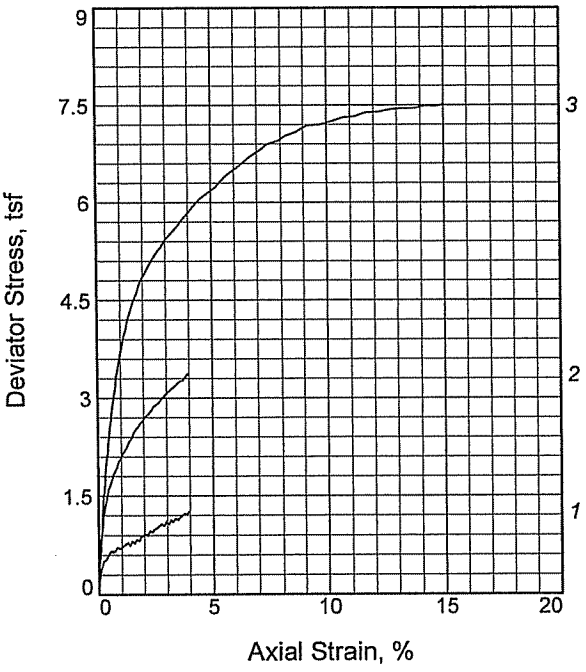
Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
0	0.0627	0.000	0.0	0.0	0.000	0.576	0.576	1.00	0.576	0.000
1	0.0701	4.289	4.3	0.1	0.051	0.576	0.627	1.09	0.602	0.026
2	0.0717	5.361	5.4	0.1	0.064	0.576	0.640	1.11	0.608	0.032
3	0.0729	6.234	6.2	0.2	0.074	0.576	0.650	1.13	0.613	0.037
4	0.0781	7.233	7.2	0.3	0.086	0.576	0.662	1.15	0.619	0.043
5	0.0826	8.739	8.7	0.3	0.104	0.576	0.680	1.18	0.628	0.052
6	0.0852	9.897	9.9	0.4	0.117	0.576	0.693	1.20	0.635	0.059
7	0.0885	10.687	10.7	0.4	0.127	0.576	0.703	1.22	0.639	0.063
8	0.0918	11.867	11.9	0.5	0.141	0.576	0.717	1.24	0.646	0.070
9	0.0944	12.735	12.7	0.5	0.151	0.576	0.727	1.26	0.651	0.075
10	0.0990	13.739	13.7	0.6	0.163	0.576	0.739	1.28	0.657	0.081
11	0.1023	14.875	14.9	0.7	0.176	0.576	0.752	1.31	0.664	0.088
12	0.1069	15.657	15.7	0.7	0.185	0.576	0.761	1.32	0.669	0.093
13	0.1115	17.024	17.0	0.8	0.201	0.576	0.777	1.35	0.677	0.101
14	0.1174	18.351	18.4	0.9	0.216	0.576	0.792	1.38	0.684	0.108
15	0.1207	19.135	19.1	1.0	0.226	0.576	0.802	1.39	0.689	0.113
16	0.1253	19.970	20.0	1.0	0.235	0.576	0.811	1.41	0.694	0.118
17	0.1312	21.106	21.1	1.1	0.248	0.576	0.824	1.43	0.700	0.124
18	0.1377	22.391	22.4	1.3	0.263	0.576	0.839	1.46	0.708	0.132
19	0.1435	24.041	24.0	1.3	0.282	0.576	0.858	1.49	0.717	0.141
20	0.1499	25.603	25.6	1.5	0.300	0.576	0.876	1.52	0.726	0.150
21	0.1620	27.721	27.7	1.7	0.325	0.576	0.901	1.56	0.738	0.162
22	0.1736	30.282	30.3	1.8	0.354	0.576	0.930	1.61	0.753	0.177
23	0.1802	31.178	31.2	2.0	0.364	0.576	0.940	1.63	0.758	0.182
24	0.1860	32.669	32.7	2.1	0.381	0.576	0.957	1.66	0.766	0.190
25	0.1917	33.679	33.7	2.2	0.392	0.576	0.968	1.68	0.772	0.196
26	0.1982	35.209	35.2	2.3	0.410	0.576	0.986	1.71	0.781	0.205
27	0.2040	36.307	36.3	2.4	0.422	0.576	0.998	1.73	0.787	0.211
28	0.2098	37.491	37.5	2.5	0.435	0.576	1.011	1.76	0.794	0.218
29	0.2164	39.185	39.2	2.6	0.455	0.576	1.031	1.79	0.803	0.227
30	0.2221	40.276	40.3	2.7	0.467	0.576	1.043	1.81	0.809	0.233
31	0.2285	41.361	41.4	2.8	0.479	0.576	1.055	1.83	0.815	0.239
32	0.2343	42.755	42.8	2.9	0.494	0.576	1.070	1.86	0.823	0.247
33	0.2407	43.879	43.9	3.0	0.507	0.576	1.083	1.88	0.829	0.253
34	0.2465	45.325	45.3	3.1	0.523	0.576	1.099	1.91	0.838	0.262
35	0.2529	46.796	46.8	3.2	0.539	0.576	1.115	1.94	0.846	0.270
36	0.2587	48.073	48.1	3.3	0.554	0.576	1.130	1.96	0.853	0.277
37	0.2651	48.823	48.8	3.4	0.562	0.576	1.138	1.98	0.857	0.281
38	0.2708	50.358	50.4	3.5	0.579	0.576	1.155	2.00	0.865	0.289
39	0.2772	51.418	51.4	3.6	0.590	0.576	1.166	2.02	0.871	0.295
40	0.2830	53.248	53.2	3.7	0.611	0.576	1.187	2.06	0.881	0.305
41	0.2894	54.030	54.0	3.8	0.619	0.576	1.195	2.07	0.885	0.309
42	0.2952	55.117	55.1	3.9	0.631	0.576	1.207	2.10	0.891	0.315
43	0.3016	56.236	56.2	4.0	0.643	0.576	1.219	2.12	0.897	0.321
44	0.3073	57.584	57.6	4.1	0.658	0.576	1.234	2.14	0.905	0.329
45	0.3131	59.018	59.0	4.2	0.673	0.576	1.249	2.17	0.913	0.337
46	0.3254	60.576	60.6	4.4	0.690	0.576	1.266	2.20	0.921	0.345

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
47	0.3318	61.949	61.9	4.5	0.704	0.576	1.280	2.22	0.928	0.352
48	0.3433	63.572	63.6	4.7	0.721	0.576	1.297	2.25	0.937	0.361
49	0.3556	64.449	64.4	4.9	0.730	0.576	1.306	2.27	0.941	0.365
50	0.3620	65.309	65.3	5.0	0.739	0.576	1.315	2.28	0.945	0.369
51	0.3742	66.558	66.6	5.2	0.751	0.576	1.327	2.30	0.952	0.376
52	0.3889	67.278	67.3	5.4	0.757	0.576	1.333	2.31	0.955	0.379
53	0.4043	68.367	68.4	5.7	0.768	0.576	1.344	2.33	0.960	0.384
54	0.4191	68.801	68.8	5.9	0.770	0.576	1.346	2.34	0.961	0.385
55	0.4345	69.221	69.2	6.2	0.773	0.576	1.349	2.34	0.962	0.386
56	0.4492	69.648	69.6	6.4	0.776	0.576	1.352	2.35	0.964	0.388
57	0.4646	69.951	70.0	6.7	0.777	0.576	1.353	2.35	0.964	0.388
58	0.4793	70.521	70.5	6.9	0.781	0.576	1.357	2.36	0.967	0.391
59	0.4947	71.011	71.0	7.2	0.784	0.576	1.360	2.36	0.968	0.392
60	0.5095	71.148	71.1	7.4	0.784	0.576	1.360	2.36	0.968	0.392
61	0.5249	71.827	71.8	7.7	0.789	0.576	1.365	2.37	0.971	0.395
62	0.5396	71.564	71.6	7.9	0.784	0.576	1.360	2.36	0.968	0.392
63	0.5550	71.078	71.1	8.2	0.777	0.576	1.353	2.35	0.964	0.388
64	0.5697	70.726	70.7	8.4	0.771	0.576	1.347	2.34	0.961	0.385
65	0.5851	70.200	70.2	8.7	0.763	0.576	1.339	2.32	0.957	0.381
66	0.5999	69.980	70.0	9.0	0.759	0.576	1.335	2.32	0.955	0.379
67	0.6152	69.428	69.4	9.2	0.750	0.576	1.326	2.30	0.951	0.375
68	0.6300	69.249	69.2	9.5	0.746	0.576	1.322	2.30	0.949	0.373
69	0.6454	68.060	68.1	9.7	0.732	0.576	1.308	2.27	0.942	0.366
70	0.6601	66.444	66.4	10.0	0.712	0.576	1.288	2.24	0.932	0.356
71	0.6755	63.860	63.9	10.2	0.683	0.576	1.259	2.19	0.917	0.341
72	0.6902	63.531	63.5	10.5	0.677	0.576	1.253	2.18	0.915	0.339
73	0.7056	63.195	63.2	10.7	0.672	0.576	1.248	2.17	0.912	0.336





Sample No.		1	2	3
Initial	Water Content, %	26.6	26.6	26.6
	Dry Density, pcf	98.8	98.8	98.8
	Saturation, %	99.0	99.0	99.0
	Void Ratio	0.7382	0.7382	0.7382
	Diameter, in.	1.99	1.99	1.99
	Height, in.	3.74	3.74	3.74
At Test	Water Content, %	23.1	23.1	23.1
	Dry Density, pcf	104.9	104.9	104.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6364	0.6364	0.6364
	Diameter, in.	1.93	1.96	2.00
	Height, in.	3.73	3.63	3.46
Strain rate, %/min.		0.05	0.05	0.05
Back Pressure, tsf		2.17	2.17	2.17
Cell Pressure, tsf		2.53	4.04	5.41
Fail. Stress, tsf		1.10	3.25	5.55
Excess Pore Pr., tsf		0.03	0.78	1.23
Ult. Stress, tsf		1.26	3.37	7.51
Excess Pore Pr., tsf		-0.02	0.74	0.00
$\bar{\sigma}_1$ Failure, tsf		1.43	4.34	7.56
$\bar{\sigma}_3$ Failure, tsf		0.33	1.09	2.01

Type of Test:
CU with Pore Pressures

Sample Type: Undisturbed

Description: Tan and gray LEAN CLAY

LL= 34 **PL=** 16 **PI=** 18

Assumed Specific Gravity= 2.75

Remarks:
Test method: ASTM D 4767
Pocket pen; tsf: 1.00
Failure type: Bulge

Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077

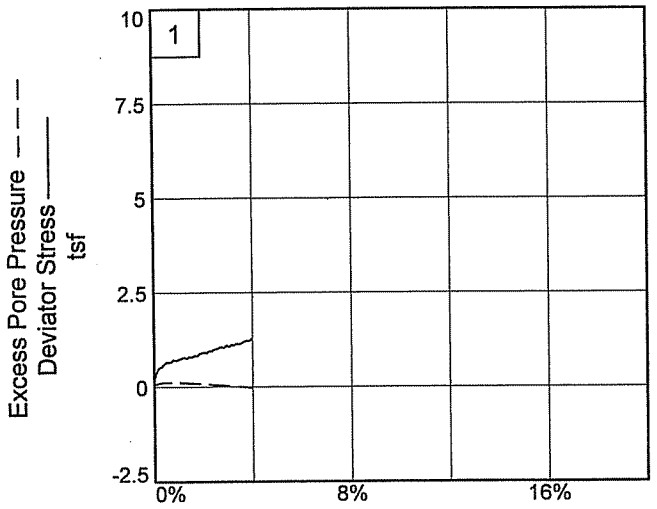
Source of Sample: 07-237 **Depth:** 12-14

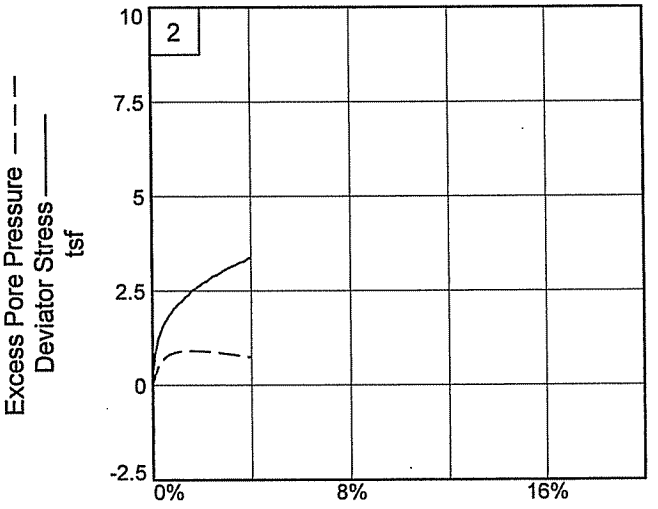
Sample Number: 7

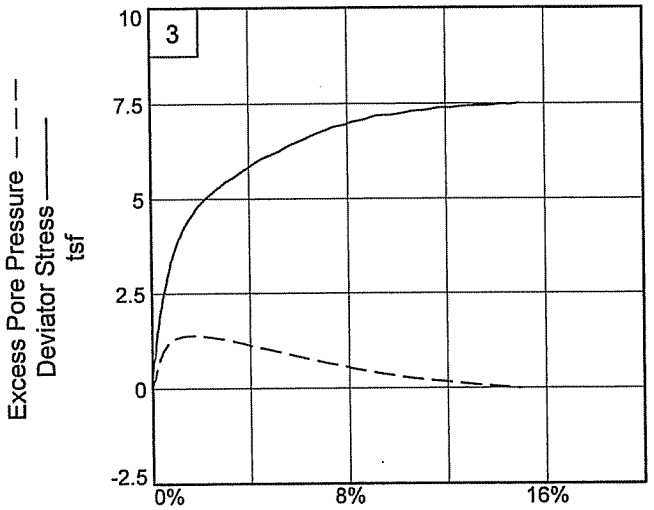
Proj. No.: 08.18.918 **Date Sampled:** 8/12/08

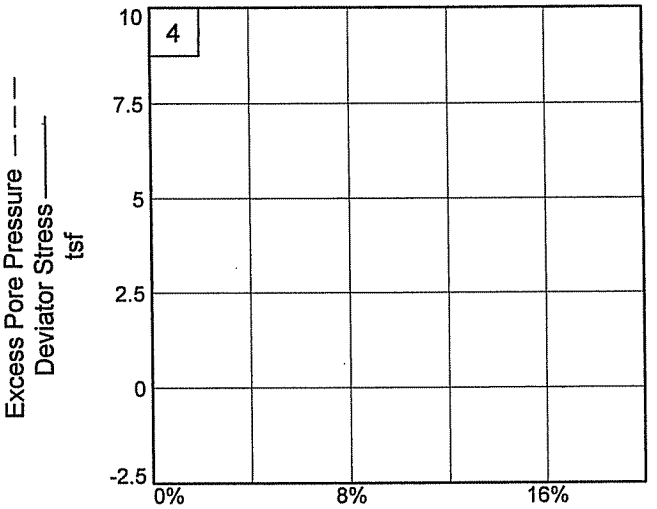
TRIAXIAL SHEAR TEST REPORT

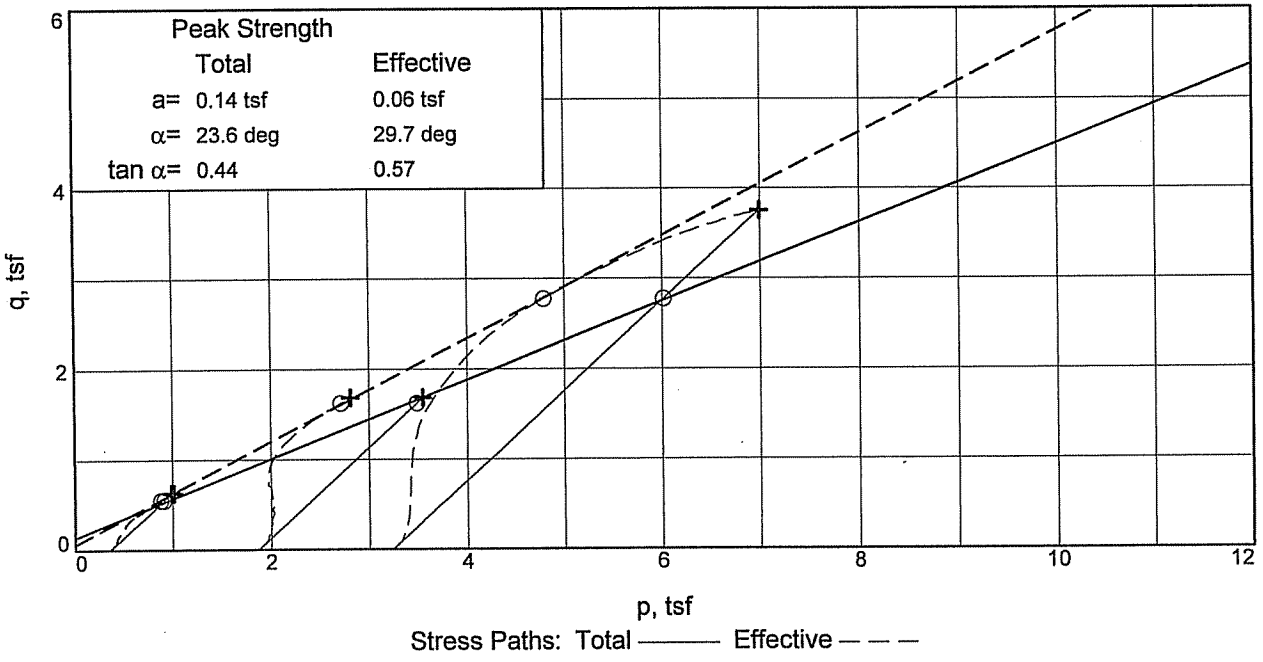
Tolunay-Wong Engineers, Inc.











Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA

Source of Sample: 07-237 **Depth:** 12-14 **Sample Number:** 7

Project No.: 08.18.918

TOLUNAY-WONG ENGINEERS, INC.

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

8/19/2008
3:23 PM

Date: 8/12/08
Client: United States Army Corps of Engineers
Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077
Project No.: 08.18.918
Location: 07-237
Depth: 12-14 **Sample Number:** 7
Description: Tan and gray LEAN CLAY
Remarks:
Test method: ASTM D 4767
Pocket pen; tsf: 1.00
Failure type: Bulge
Type of Sample: Undisturbed
Assumed Specific Gravity=2.75 **LL=**34 **PL=**16 **PI=**18
Test Method: ASTM D 4767 Method B

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	92.900			185.700
Moisture content: Dry soil+tare, gms.	79.820			156.590
Moisture content: Tare, gms.	30.600			30.810
Moisture, %	26.6	23.9	23.1	23.1
Moist specimen weight, gms.	380.1			
Diameter, in.	1.99	1.94	1.93	
Area, in.^{2}	3.09	2.96	2.92	
Height, in.	3.74	3.74	3.73	
Net decrease in height, in.		0.01	0.00	
Net decrease in water volume, cc.			2.40	
Wet Density, pcf	125.0	128.3	129.2	
Dry density, pcf	98.8	103.5	104.9	
Void ratio	0.7382	0.6584	0.6364	
Saturation, %	99.0	100.0	100.0	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Filter paper coefficient = 0.0019 kN/cm
Filter paper coverage = 50%
Consolidation cell pressure = 35.20 psi (2.534 tsf)
Consolidation back pressure = 30.20 psi (2.174 tsf)
Consolidation effective confining stress = 0.360 tsf
Strain rate, %/min. = 0.05
Fail. Stress = 1.100 tsf **at reading no.** 37
Ult. Stress = 1.258 tsf **at reading no.** 47

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Eff. Stress tsf	Major Eff. Stress tsf	1:3 Ratio	Pore Press. psi	P tsf	Q tsf
0	0.0006	0.000	0.0	0.0	0.000	0.358	0.358	1.00	30.23	0.358	0.000
1	0.0007	6.219	6.2	0.0	0.153	0.358	0.511	1.43	30.23	0.434	0.077
2	0.0008	8.048	8.0	0.0	0.198	0.327	0.526	1.61	30.66	0.426	0.099
3	0.0019	10.064	10.1	0.0	0.248	0.311	0.559	1.80	30.88	0.435	0.124
4	0.0027	11.212	11.2	0.1	0.276	0.302	0.578	1.92	31.01	0.440	0.138
5	0.0038	13.985	14.0	0.1	0.344	0.294	0.638	2.17	31.12	0.466	0.172
6	0.0049	15.586	15.6	0.1	0.384	0.286	0.670	2.34	31.23	0.478	0.192
7	0.0057	17.151	17.2	0.1	0.422	0.280	0.702	2.51	31.32	0.491	0.211
8	0.0064	17.865	17.9	0.2	0.440	0.275	0.715	2.60	31.38	0.495	0.220
9	0.0072	18.973	19.0	0.2	0.467	0.268	0.734	2.74	31.48	0.501	0.233
10	0.0079	20.369	20.4	0.2	0.501	0.263	0.764	2.90	31.54	0.514	0.251
11	0.0124	21.523	21.5	0.3	0.529	0.249	0.777	3.13	31.75	0.513	0.264
12	0.0152	23.578	23.6	0.4	0.579	0.243	0.821	3.39	31.83	0.532	0.289
13	0.0163	24.262	24.3	0.4	0.595	0.240	0.835	3.48	31.87	0.538	0.298
14	0.0188	25.688	25.7	0.5	0.630	0.239	0.869	3.63	31.88	0.554	0.315
15	0.0195	26.388	26.4	0.5	0.647	0.240	0.887	3.70	31.87	0.563	0.324
16	0.0220	27.256	27.3	0.6	0.668	0.238	0.906	3.81	31.89	0.572	0.334
17	0.0231	25.987	26.0	0.6	0.637	0.236	0.873	3.69	31.92	0.555	0.318
18	0.0281	27.504	27.5	0.7	0.673	0.236	0.909	3.85	31.92	0.573	0.336
19	0.0308	29.476	29.5	0.8	0.721	0.237	0.957	4.04	31.91	0.597	0.360
20	0.0348	30.109	30.1	0.9	0.697	0.237	0.934	3.94	31.91	0.586	0.349
21	0.0407	32.204	32.2	1.1	0.740	0.243	0.984	4.04	31.82	0.614	0.370
22	0.0483	34.633	34.6	1.3	0.789	0.251	1.040	4.15	31.72	0.645	0.395
23	0.0511	33.052	33.1	1.4	0.747	0.252	0.999	3.97	31.70	0.625	0.374
24	0.0554	35.908	35.9	1.5	0.811	0.258	1.069	4.15	31.62	0.663	0.405
25	0.0595	34.905	34.9	1.6	0.781	0.259	1.040	4.02	31.61	0.649	0.390
26	0.0624	37.291	37.3	1.7	0.835	0.264	1.099	4.17	31.54	0.681	0.417
27	0.0667	36.625	36.6	1.8	0.813	0.268	1.081	4.03	31.47	0.675	0.406
28	0.0700	39.271	39.3	1.9	0.872	0.272	1.144	4.21	31.42	0.708	0.436
29	0.0778	41.406	41.4	2.1	0.916	0.284	1.200	4.22	31.25	0.742	0.458
30	0.0807	40.531	40.5	2.1	0.894	0.286	1.180	4.12	31.22	0.733	0.447
31	0.0852	43.459	43.5	2.3	0.963	0.294	1.258	4.27	31.11	0.776	0.482
32	0.0885	42.515	42.5	2.4	0.940	0.297	1.237	4.17	31.08	0.767	0.470
33	0.0920	44.347	44.3	2.4	0.983	0.304	1.286	4.24	30.98	0.795	0.491
34	0.0957	45.188	45.2	2.5	1.002	0.307	1.309	4.27	30.94	0.808	0.501
35	0.1040	47.849	47.8	2.8	1.063	0.318	1.381	4.34	30.78	0.850	0.532
36	0.1074	46.686	46.7	2.9	1.034	0.320	1.354	4.23	30.76	0.837	0.517
37	0.1114	49.477	49.5	3.0	1.100	0.328	1.428	4.35	30.64	0.878	0.550
38	0.1151	47.928	47.9	3.1	1.062	0.330	1.392	4.22	30.61	0.861	0.531
39	0.1185	50.499	50.5	3.2	1.122	0.339	1.461	4.31	30.49	0.900	0.561
40	0.1217	49.348	49.3	3.2	1.093	0.341	1.434	4.21	30.46	0.888	0.547
41	0.1259	51.691	51.7	3.4	1.148	0.350	1.497	4.28	30.34	0.924	0.574
42	0.1299	50.903	50.9	3.5	1.128	0.352	1.480	4.20	30.31	0.916	0.564
43	0.1334	52.486	52.5	3.6	1.164	0.357	1.522	4.26	30.24	0.939	0.582
44	0.1374	53.728	53.7	3.7	1.192	0.363	1.555	4.29	30.16	0.959	0.596
45	0.1413	55.350	55.4	3.8	1.229	0.369	1.598	4.33	30.08	0.984	0.615
46	0.1447	54.463	54.5	3.9	1.207	0.375	1.582	4.22	30.00	0.978	0.604

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Eff. Stress tsf	Major Eff. Stress tsf	1:3 Ratio	Pore Press. psi	P tsf	Q tsf
47	0.1487	56.670	56.7	4.0	1.258	0.383	1.641	4.29	29.89	1.012	0.629

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	92.900			185.700
Moisture content: Dry soil+tare, gms.	79.820			156.590
Moisture content: Tare, gms.	30.600			30.810
Moisture, %	26.6	25.7	23.1	23.1
Moist specimen weight, gms.	380.1			
Diameter, in.	1.99	1.97	1.96	
Area, in.^{2}	3.09	3.04	3.00	
Height, in.	3.74	3.74	3.63	
Net decrease in height, in.		0.01	0.10	
Net decrease in water volume, cc.			7.60	
Wet Density, pcf	125.0	126.5	129.2	
Dry density, pcf	98.8	100.6	104.9	
Void ratio	0.7382	0.7060	0.6364	
Saturation, %	99.0	100.0	100.0	

Test Readings for Specimen No. 2

Membrane modulus = .130 kN/cm^2

Membrane thickness = .031 cm

Filter paper coefficient = 0.0019 kN/cm

Filter paper coverage = 50%

Consolidation cell pressure = 56.10 psi (4.039 tsf)

Consolidation back pressure = 30.10 psi (2.167 tsf)

Consolidation effective confining stress = 1.872 tsf

Strain rate, %/min. = 0.05

Fail. Stress = 3.247 tsf **at reading no.** 48

Ult. Stress = 3.366 tsf **at reading no.** 52

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Eff. Stress tsf	Major Eff. Stress tsf	1:3 Ratio	Pore Press. psi	P tsf	Q tsf
0	0.0004	0.000	0.0	0.0	0.000	1.868	1.868	1.00	30.15	1.868	0.000
1	0.0005	7.695	7.7	0.0	0.184	1.869	2.053	1.10	30.15	1.961	0.092
2	0.0006	12.402	12.4	0.0	0.297	1.829	2.126	1.16	30.70	1.978	0.149
3	0.0013	18.557	18.6	0.0	0.445	1.775	2.220	1.25	31.44	1.998	0.222
4	0.0030	23.841	23.8	0.1	0.571	1.725	2.296	1.33	32.14	2.011	0.286
5	0.0037	27.774	27.8	0.1	0.665	1.675	2.340	1.40	32.84	2.007	0.333
6	0.0039	34.049	34.0	0.1	0.815	1.626	2.442	1.50	33.51	2.034	0.408
7	0.0049	36.630	36.6	0.1	0.877	1.577	2.454	1.56	34.20	2.015	0.439
8	0.0065	41.568	41.6	0.2	0.995	1.535	2.530	1.65	34.78	2.033	0.497
9	0.0070	43.339	43.3	0.2	1.037	1.492	2.529	1.69	35.37	2.011	0.519
10	0.0075	46.895	46.9	0.2	1.122	1.454	2.576	1.77	35.90	2.015	0.561
11	0.0082	49.674	49.7	0.2	1.188	1.419	2.608	1.84	36.39	2.014	0.594
12	0.0106	54.313	54.3	0.3	1.298	1.356	2.655	1.96	37.26	2.006	0.649
13	0.0123	58.439	58.4	0.3	1.396	1.301	2.698	2.07	38.03	1.999	0.698
14	0.0135	59.977	60.0	0.4	1.433	1.252	2.684	2.14	38.72	1.968	0.716
15	0.0146	62.281	62.3	0.4	1.487	1.232	2.719	2.21	38.99	1.976	0.744

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Eff. Stress tsf	Major Eff. Stress tsf	1:3 Ratio	Pore Press. psi	P tsf	Q tsf
16	0.0161	66.037	66.0	0.4	1.576	1.196	2.773	2.32	39.48	1.985	0.788
17	0.0193	69.750	69.8	0.5	1.663	1.149	2.813	2.45	40.14	1.981	0.832
18	0.0212	71.628	71.6	0.6	1.707	1.123	2.830	2.52	40.51	1.976	0.854
19	0.0231	73.975	74.0	0.6	1.762	1.101	2.863	2.60	40.81	1.982	0.881
20	0.0250	76.905	76.9	0.7	1.831	1.073	2.904	2.71	41.20	1.988	0.916
21	0.0277	79.132	79.1	0.8	1.883	1.057	2.940	2.78	41.41	1.999	0.941
22	0.0298	81.288	81.3	0.8	1.933	1.044	2.977	2.85	41.60	2.010	0.966
23	0.0314	83.987	84.0	0.9	1.996	1.027	3.023	2.94	41.84	2.025	0.998
24	0.0335	85.630	85.6	0.9	2.034	1.017	3.051	3.00	41.97	2.034	1.017
25	0.0360	87.131	87.1	1.0	2.068	1.010	3.078	3.05	42.07	2.044	1.034
26	0.0392	90.290	90.3	1.1	2.141	0.994	3.136	3.15	42.29	2.065	1.071
27	0.0433	92.842	92.8	1.2	2.199	0.984	3.183	3.24	42.43	2.084	1.100
28	0.0466	95.574	95.6	1.3	2.262	0.976	3.238	3.32	42.54	2.107	1.131
29	0.0498	98.397	98.4	1.4	2.327	0.971	3.298	3.40	42.62	2.134	1.163
30	0.0537	100.557	100.6	1.5	2.375	0.967	3.343	3.46	42.66	2.155	1.188
31	0.0572	104.323	104.3	1.6	2.462	0.968	3.430	3.54	42.65	2.199	1.231
32	0.0606	106.701	106.7	1.7	2.516	0.967	3.482	3.60	42.67	2.224	1.258
33	0.0646	108.545	108.5	1.8	2.556	0.967	3.523	3.64	42.67	2.245	1.278
34	0.0678	110.754	110.8	1.9	2.606	0.969	3.575	3.69	42.64	2.272	1.303
35	0.0720	112.713	112.7	2.0	2.649	0.971	3.620	3.73	42.61	2.295	1.324
36	0.0747	114.920	114.9	2.0	2.699	0.977	3.675	3.76	42.53	2.326	1.349
37	0.0819	117.734	117.7	2.2	2.759	0.988	3.747	3.79	42.38	2.367	1.380
38	0.0861	120.470	120.5	2.4	2.820	0.992	3.812	3.84	42.32	2.402	1.410
39	0.0892	122.609	122.6	2.4	2.867	0.998	3.865	3.87	42.24	2.432	1.434
40	0.0965	124.871	124.9	2.6	2.914	1.013	3.927	3.88	42.04	2.470	1.457
41	0.1008	127.377	127.4	2.8	2.969	1.021	3.991	3.91	41.91	2.506	1.485
42	0.1037	129.092	129.1	2.8	3.007	1.030	4.037	3.92	41.79	2.534	1.503
43	0.1073	130.848	130.8	2.9	3.045	1.039	4.083	3.93	41.67	2.561	1.522
44	0.1115	132.770	132.8	3.1	3.086	1.046	4.132	3.95	41.57	2.589	1.543
45	0.1180	135.411	135.4	3.2	3.141	1.063	4.204	3.95	41.33	2.634	1.571
46	0.1222	137.093	137.1	3.4	3.176	1.075	4.251	3.96	41.17	2.663	1.588
47	0.1258	138.768	138.8	3.5	3.212	1.083	4.295	3.97	41.06	2.689	1.606
48	0.1293	140.421	140.4	3.5	3.247	1.093	4.340	3.97	40.92	2.717	1.623
49	0.1365	141.896	141.9	3.7	3.274	1.111	4.385	3.95	40.67	2.748	1.637
50	0.1396	144.053	144.1	3.8	3.321	1.122	4.443	3.96	40.52	2.782	1.661
51	0.1436	146.356	146.4	3.9	3.370	1.134	4.504	3.97	40.35	2.819	1.685
52	0.1441	146.178	146.2	4.0	3.366	1.132	4.498	3.97	40.37	2.815	1.683

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	92.900			185.700
Moisture content: Dry soil+tare, gms.	79.820			156.590
Moisture content: Tare, gms.	30.600			30.810
Moisture, %	26.6	26.2	23.1	23.1
Moist specimen weight, gms.	380.1			
Diameter, in.	1.99	1.98	2.00	
Area, in.^{2}	3.09	3.07	3.15	
Height, in.	3.74	3.74	3.46	
Net decrease in height, in.		0.01	0.28	
Net decrease in water volume, cc.			9.10	
Wet Density, pcf	125.0	126.0	129.2	
Dry density, pcf	98.8	99.8	104.9	
Void ratio	0.7382	0.7198	0.6364	
Saturation, %	99.0	100.0	100.0	

Test Readings for Specimen No. 3

Membrane modulus = .130 kN/cm^2

Membrane thickness = .031 cm

Filter paper coefficient = 0.0019 kN/cm

Filter paper coverage = 50%

Consolidation cell pressure = 75.10 psi (5.407 tsf)

Consolidation back pressure = 30.10 psi (2.167 tsf)

Consolidation effective confining stress = 3.240 tsf

Strain rate, %/min. = 0.05

Fail. Stress = 5.555 tsf **at reading no.** 45

Ult. Stress = 7.506 tsf **at reading no.** 75

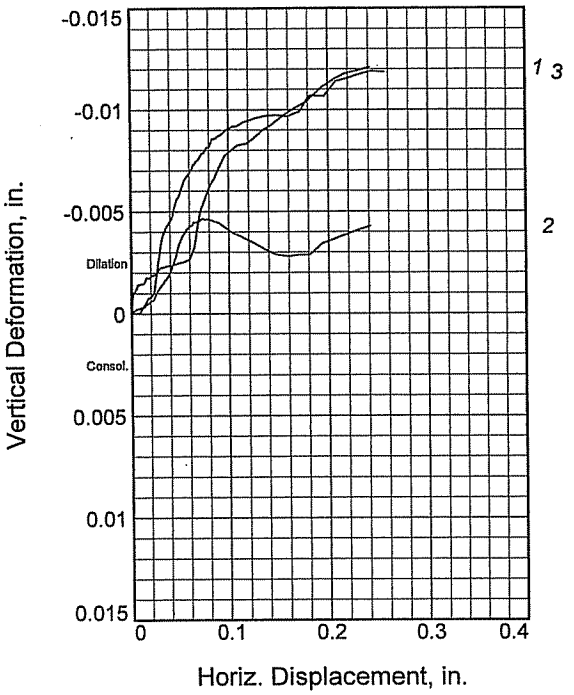
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Eff. Stress tsf	Major Eff. Stress tsf	1:3 Ratio	Pore Press. psi	P tsf	Q tsf
0	0.0002	0.000	0.0	0.0	0.000	3.242	3.242	1.00	30.07	3.242	0.000
1	0.0003	7.557	7.6	0.0	0.173	3.242	3.414	1.05	30.07	3.328	0.086
2	0.0004	12.747	12.7	0.0	0.291	3.205	3.496	1.09	30.59	3.351	0.146
3	0.0011	19.285	19.3	0.0	0.440	3.158	3.598	1.14	31.24	3.378	0.220
4	0.0018	24.797	24.8	0.0	0.566	3.107	3.674	1.18	31.94	3.390	0.283
5	0.0028	30.444	30.4	0.1	0.695	3.056	3.751	1.23	32.66	3.404	0.347
6	0.0042	35.452	35.5	0.1	0.809	3.004	3.813	1.27	33.38	3.408	0.404
7	0.0050	40.509	40.5	0.1	0.924	2.949	3.873	1.31	34.14	3.411	0.462
8	0.0058	45.381	45.4	0.2	1.035	2.896	3.931	1.36	34.88	3.413	0.518
9	0.0059	50.313	50.3	0.2	1.147	2.843	3.991	1.40	35.61	3.417	0.574
10	0.0066	55.264	55.3	0.2	1.260	2.791	4.051	1.45	36.34	3.421	0.630
11	0.0076	60.009	60.0	0.2	1.368	2.739	4.107	1.50	37.06	3.423	0.684
12	0.0081	64.870	64.9	0.2	1.479	2.687	4.165	1.55	37.78	3.426	0.739
13	0.0095	68.826	68.8	0.3	1.568	2.639	4.207	1.59	38.44	3.423	0.784
14	0.0102	73.957	74.0	0.3	1.685	2.591	4.276	1.65	39.11	3.434	0.842
15	0.0109	78.494	78.5	0.3	1.788	2.542	4.330	1.70	39.79	3.436	0.894
16	0.0113	82.488	82.5	0.3	1.878	2.496	4.375	1.75	40.43	3.436	0.939
17	0.0123	86.952	87.0	0.4	1.979	2.454	4.433	1.81	41.02	3.444	0.990
18	0.0143	94.422	94.4	0.4	2.148	2.372	4.520	1.91	42.16	3.446	1.074
19	0.0148	98.361	98.4	0.4	2.237	2.336	4.574	1.96	42.65	3.455	1.119
20	0.0164	104.900	104.9	0.5	2.385	2.271	4.656	2.05	43.56	3.463	1.193

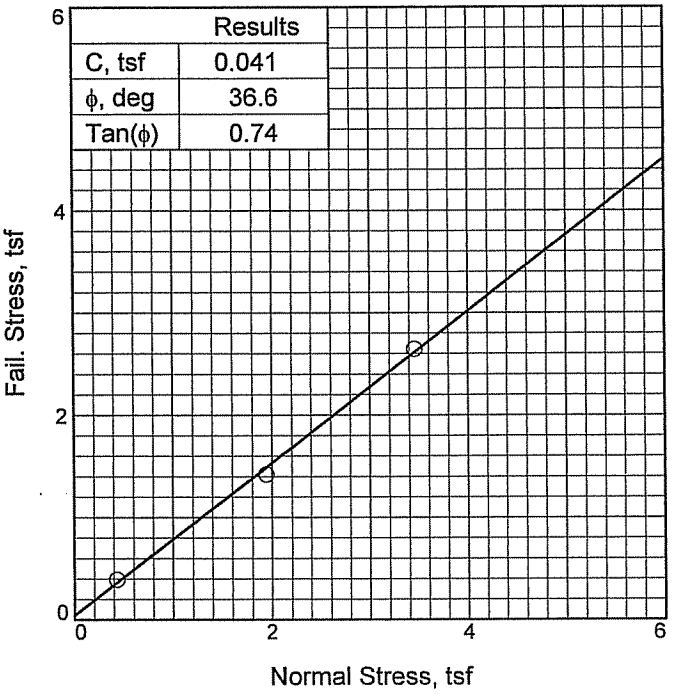
Test Readings for Specimen No. 3

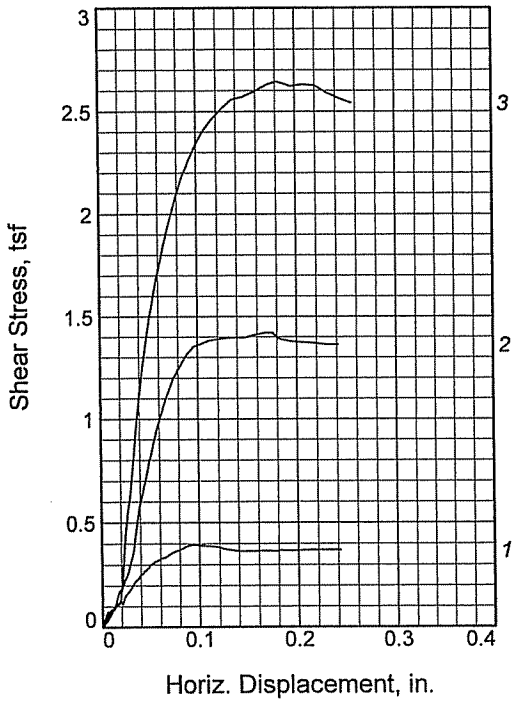
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Eff. Stress tsf	Major Eff. Stress tsf	1:3 Ratio	Pore Press. psi	P tsf	Q tsf
21	0.0184	112.502	112.5	0.5	2.557	2.215	4.771	2.15	44.34	3.493	1.278
22	0.0203	117.798	117.8	0.6	2.675	2.162	4.838	2.24	45.07	3.500	1.338
23	0.0215	123.665	123.7	0.6	2.808	2.119	4.927	2.32	45.67	3.523	1.404
24	0.0230	129.276	129.3	0.7	2.934	2.082	5.016	2.41	46.19	3.549	1.467
25	0.0249	134.622	134.6	0.7	3.053	2.050	5.103	2.49	46.63	3.576	1.527
26	0.0268	140.322	140.3	0.8	3.181	2.024	5.205	2.57	46.99	3.614	1.590
27	0.0276	145.868	145.9	0.8	3.306	1.998	5.303	2.65	47.36	3.651	1.653
28	0.0299	150.689	150.7	0.9	3.413	1.976	5.389	2.73	47.66	3.682	1.706
29	0.0313	154.593	154.6	0.9	3.500	1.959	5.458	2.79	47.90	3.708	1.750
30	0.0357	165.365	165.4	1.0	3.739	1.923	5.662	2.94	48.40	3.792	1.869
31	0.0390	173.371	173.4	1.1	3.916	1.901	5.817	3.06	48.70	3.859	1.958
32	0.0427	178.739	178.7	1.2	4.033	1.883	5.916	3.14	48.95	3.899	2.017
33	0.0458	185.842	185.8	1.3	4.189	1.871	6.060	3.24	49.11	3.966	2.095
34	0.0497	191.860	191.9	1.4	4.320	1.862	6.183	3.32	49.23	4.023	2.160
35	0.0533	197.242	197.2	1.5	4.437	1.856	6.293	3.39	49.32	4.074	2.218
36	0.0602	205.364	205.4	1.7	4.610	1.853	6.463	3.49	49.37	4.158	2.305
37	0.0638	210.740	210.7	1.8	4.726	1.855	6.581	3.55	49.33	4.218	2.363
38	0.0670	214.615	214.6	1.9	4.808	1.858	6.666	3.59	49.30	4.262	2.404
39	0.0737	220.362	220.4	2.1	4.927	1.868	6.795	3.64	49.16	4.332	2.464
40	0.0780	224.257	224.3	2.2	5.008	1.877	6.885	3.67	49.03	4.381	2.504
41	0.0841	229.256	229.3	2.4	5.110	1.896	7.006	3.70	48.77	4.451	2.555
42	0.0918	235.467	235.5	2.6	5.237	1.917	7.154	3.73	48.48	4.535	2.618
43	0.0983	239.633	239.6	2.8	5.319	1.941	7.260	3.74	48.14	4.601	2.660
44	0.1050	245.429	245.4	3.0	5.437	1.969	7.405	3.76	47.76	4.687	2.718
45	0.1158	251.552	251.6	3.3	5.555	2.008	7.562	3.77	47.21	4.785	2.777
46	0.1225	255.758	255.8	3.5	5.636	2.039	7.675	3.76	46.78	4.857	2.818
47	0.1293	260.383	260.4	3.7	5.726	2.068	7.794	3.77	46.38	4.931	2.863
48	0.1392	266.286	266.3	4.0	5.839	2.113	7.952	3.76	45.75	5.032	2.919
49	0.1467	271.341	271.3	4.2	5.936	2.144	8.080	3.77	45.33	5.112	2.968
50	0.1571	277.648	277.6	4.5	6.055	2.189	8.244	3.77	44.70	5.216	3.028
51	0.1672	282.081	282.1	4.8	6.133	2.235	8.368	3.74	44.06	5.301	3.066
52	0.1800	287.625	287.6	5.2	6.229	2.290	8.519	3.72	43.30	5.404	3.115
53	0.1882	292.765	292.8	5.4	6.325	2.327	8.652	3.72	42.78	5.489	3.162
54	0.1969	297.722	297.7	5.7	6.415	2.365	8.780	3.71	42.25	5.572	3.207
55	0.2139	305.325	305.3	6.2	6.544	2.439	8.984	3.68	41.22	5.711	3.272
56	0.2226	309.643	309.6	6.4	6.619	2.476	9.095	3.67	40.71	5.786	3.309
57	0.2308	313.832	313.8	6.7	6.691	2.511	9.203	3.66	40.22	5.857	3.346
58	0.2482	321.157	321.2	7.2	6.811	2.583	9.394	3.64	39.22	5.988	3.405
59	0.2572	325.856	325.9	7.4	6.891	2.618	9.509	3.63	38.74	6.063	3.446
60	0.2753	330.791	330.8	8.0	6.956	2.688	9.644	3.59	37.77	6.166	3.478
61	0.2838	334.845	334.8	8.2	7.022	2.724	9.746	3.58	37.27	6.235	3.511
62	0.3012	339.612	339.6	8.7	7.083	2.789	9.872	3.54	36.37	6.330	3.542
63	0.3187	346.609	346.6	9.2	7.189	2.847	10.036	3.53	35.56	6.441	3.595
64	0.3361	348.840	348.8	9.7	7.195	2.894	10.089	3.49	34.91	6.492	3.598
65	0.3532	353.120	353.1	10.2	7.244	2.943	10.187	3.46	34.23	6.565	3.622
66	0.3703	358.329	358.3	10.7	7.310	2.984	10.294	3.45	33.66	6.639	3.655
67	0.3877	361.040	361.0	11.2	7.324	3.018	10.342	3.43	33.18	6.680	3.662

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Eff. Stress tsf	Major Eff. Stress tsf	1:3 Ratio	Pore Press. psi	P tsf	Q tsf
68	0.4050	366.224	366.2	11.7	7.387	3.053	10.440	3.42	32.70	6.747	3.694
69	0.4228	368.645	368.6	12.2	7.393	3.089	10.482	3.39	32.20	6.785	3.696
70	0.4399	372.602	372.6	12.7	7.430	3.122	10.552	3.38	31.74	6.837	3.715
71	0.4580	375.998	376.0	13.2	7.453	3.153	10.605	3.36	31.31	6.879	3.726
72	0.4756	377.999	378.0	13.7	7.449	3.181	10.630	3.34	30.91	6.906	3.724
73	0.4921	382.171	382.2	14.2	7.489	3.208	10.697	3.33	30.55	6.952	3.745
74	0.5096	384.241	384.2	14.7	7.485	3.233	10.718	3.32	30.20	6.975	3.743
75	0.5181	386.440	386.4	15.0	7.506	3.244	10.750	3.31	30.05	6.997	3.753







Sample No.		1	2	3
Initial	Water Content, %	32.9	26.4	27.7
	Dry Density, pcf	87.4	97.4	96.3
	Saturation, %	95.6	97.7	99.7
	Void Ratio	0.9279	0.7312	0.7503
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	32.3	24.4	25.2
	Dry Density, pcf	88.6	97.8	97.0
	Saturation, %	96.5	91.0	92.0
	Void Ratio	0.9028	0.7243	0.7382
	Diameter, in.	2.50	2.50	2.50
	Height, in.	0.99	1.00	0.99
Normal Stress, tsf		0.432	1.944	3.456
Fail. Stress, tsf		0.395	1.421	2.644
Displacement, in.		0.10	0.17	0.18
Ult. Stress, tsf				
Displacement, in.				
Strain rate, %/min.		0.04	0.03	0.0081

Sample Type: Undisturbed

Description: Light gray and tan SILTY CLAY with SAND

Assumed Specific Gravity= 2.70

Remarks:

Test method: ASTM D 3080

Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077

Source of Sample: 07-237 **Depth:** 14-16

Sample Number: 8

Proj. No.: 08.18.918 **Date Sampled:** 8/1/08

DIRECT SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

DIRECT SHEAR TEST

8/12/2008

Date: 8/1/08
Client: United States Army Corps of Engineers
Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077
Project No.: 08.18.918
Location: 07-237
Depth: 14-16 **Sample Number:** 8
Description: Light gray and tan SILTY CLAY with SAND
Remarks:
Test method: ASTM D 3080
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=** **PL=** **PI=**

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	367.830		367.140
Moisture content: Dry soil+tare, gms.	330.740		330.740
Moisture content: Tare, gms.	217.880		217.880
Moisture, %	32.9	32.3	32.3
Moist specimen weight, gms.	150.0		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.00	0.99	
Net decrease in height, in.		0.01	
Wet Density, pcf	116.2	117.2	
Dry density, pcf	87.4	88.6	
Void ratio	0.9279	0.9028	
Saturation, %	95.6	96.5	

Test Readings for Specimen No. 1

Normal stress = 0.432 tsf
Strain rate, %/min. = 0.04
Fail. Stress = 0.395 tsf **at reading no.** 57

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
0	0.0500	0.000	0.0	0.000	0.6492
1	0.0502	1.592	1.6	0.023	0.6492
2	0.0512	1.977	2.0	0.029	0.6500
3	0.0517	2.274	2.3	0.033	0.6501
4	0.0522	2.683	2.7	0.039	0.6502
5	0.0527	2.977	3.0	0.044	0.6503
6	0.0532	3.375	3.4	0.049	0.6502
7	0.0537	3.836	3.8	0.056	0.6502
8	0.0547	4.312	4.3	0.063	0.6504
9	0.0552	4.683	4.7	0.069	0.6504
10	0.0557	5.015	5.0	0.073	0.6504
11	0.0567	4.522	4.5	0.066	0.6506
12	0.0572	5.033	5.0	0.074	0.6506

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
13	0.0582	5.355	5.4	0.078	0.6506
14	0.0622	5.737	5.7	0.084	0.6507
15	0.0627	6.106	6.1	0.089	0.6507
16	0.0637	6.618	6.6	0.097	0.6507
17	0.0653	6.943	6.9	0.102	0.6509
18	0.0658	7.486	7.5	0.110	0.6510
19	0.0663	7.820	7.8	0.115	0.6509
20	0.0673	8.188	8.2	0.120	0.6509
21	0.0698	8.512	8.5	0.125	0.6510
22	0.0713	7.616	7.6	0.112	0.6510
23	0.0718	8.343	8.3	0.122	0.6511
24	0.0723	8.766	8.8	0.128	0.6511
25	0.0728	9.228	9.2	0.135	0.6511
26	0.0733	9.772	9.8	0.143	0.6511
27	0.0743	10.363	10.4	0.152	0.6511
28	0.0748	10.643	10.6	0.156	0.6511
29	0.0788	12.156	12.2	0.178	0.6513
30	0.0803	12.835	12.8	0.188	0.6514
31	0.0818	13.698	13.7	0.201	0.6515
32	0.0833	14.563	14.6	0.213	0.6515
33	0.0848	15.131	15.1	0.222	0.6515
34	0.0878	15.898	15.9	0.233	0.6515
35	0.0893	16.834	16.8	0.247	0.6515
36	0.0908	17.207	17.2	0.252	0.6515
37	0.0923	17.627	17.6	0.258	0.6516
38	0.0938	18.336	18.3	0.269	0.6516
39	0.0953	18.657	18.7	0.273	0.6516
40	0.0968	19.143	19.1	0.281	0.6516
41	0.0983	19.631	19.6	0.288	0.6517
42	0.0998	20.305	20.3	0.298	0.6517
43	0.1028	20.818	20.8	0.305	0.6517
44	0.1043	21.350	21.4	0.313	0.6517
45	0.1058	21.622	21.6	0.317	0.6518
46	0.1088	22.148	22.1	0.325	0.6518
47	0.1103	22.491	22.5	0.330	0.6519
48	0.1148	22.881	22.9	0.335	0.6524
49	0.1178	23.378	23.4	0.343	0.6533
50	0.1208	24.036	24.0	0.352	0.6541
51	0.1254	24.796	24.8	0.363	0.6548
52	0.1284	25.081	25.1	0.368	0.6551
53	0.1314	25.555	25.6	0.375	0.6555
54	0.1344	25.967	26.0	0.381	0.6557
55	0.1359	26.318	26.3	0.386	0.6558
56	0.1404	26.786	26.8	0.393	0.6564
57	0.1464	26.936	26.9	0.395	0.6569
58	0.1479	26.839	26.8	0.393	0.6570
59	0.1599	26.581	26.6	0.390	0.6575

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
60	0.1689	26.257	26.3	0.385	0.6575
61	0.1749	25.670	25.7	0.376	0.6578
62	0.1839	25.208	25.2	0.369	0.6582
63	0.1929	24.906	24.9	0.365	0.6584
64	0.2049	24.869	24.9	0.364	0.6589
65	0.2169	25.025	25.0	0.367	0.6593
66	0.2289	24.940	24.9	0.366	0.6596
67	0.2319	25.209	25.2	0.369	0.6598
68	0.2440	25.016	25.0	0.367	0.6603
69	0.2560	25.175	25.2	0.369	0.6607
70	0.2680	25.272	25.3	0.370	0.6610
71	0.2800	25.282	25.3	0.371	0.6611
72	0.2920	25.308	25.3	0.371	0.6613

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	370.090		367.520
Moisture content: Dry soil+tare, gms.	336.850		336.850
Moisture content: Tare, gms.	211.170		211.170
Moisture, %	26.4	24.4	24.4
Moist specimen weight, gms.	158.9		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.00	1.00	
Net decrease in height, in.		0.00	
Wet Density, pcf	123.1	121.6	
Dry density, pcf	97.4	97.8	
Void ratio	0.7312	0.7243	
Saturation, %	97.7	91.0	

Test Readings for Specimen No. 2

Normal stress = 1.944 tsf

Strain rate, %/min. = 0.03

Fail. Stress = 1.421 tsf **at reading no.** 61

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
0	0.0000	0.531	0.0	0.000	0.6740
1	0.0005	0.499	0.0	0.000	0.6741
2	0.0030	1.744	1.2	0.018	0.6741
3	0.0055	2.798	2.3	0.033	0.6742
4	0.0075	3.969	3.4	0.050	0.6742
5	0.0100	5.275	4.7	0.070	0.6743
6	0.0120	6.680	6.1	0.090	0.6743
7	0.0140	7.976	7.4	0.109	0.6743
8	0.0150	9.415	8.9	0.130	0.6744
9	0.0160	10.471	9.9	0.146	0.6744
10	0.0175	11.933	11.4	0.167	0.6745
11	0.0200	13.157	12.6	0.185	0.6746

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
12	0.0225	14.490	14.0	0.205	0.6746
13	0.0230	15.557	15.0	0.220	0.6747
14	0.0250	16.807	16.3	0.239	0.6748
15	0.0270	18.487	18.0	0.263	0.6751
16	0.0286	20.287	19.8	0.290	0.6752
17	0.0316	23.688	23.2	0.339	0.6754
18	0.0331	26.096	25.6	0.375	0.6755
19	0.0346	29.571	29.0	0.426	0.6756
20	0.0361	32.931	32.4	0.475	0.6757
21	0.0376	36.141	35.6	0.522	0.6758
22	0.0391	39.085	38.6	0.565	0.6759
23	0.0406	41.610	41.1	0.602	0.6760
24	0.0421	43.039	42.5	0.623	0.6762
25	0.0436	45.856	45.3	0.664	0.6764
26	0.0451	47.879	47.3	0.694	0.6767
27	0.0466	49.708	49.2	0.721	0.6768
28	0.0481	52.183	51.7	0.757	0.6772
29	0.0496	54.594	54.1	0.792	0.6774
30	0.0511	56.385	55.9	0.819	0.6776
31	0.0526	58.514	58.0	0.850	0.6777
32	0.0541	60.734	60.2	0.882	0.6779
33	0.0556	62.643	62.1	0.910	0.6780
34	0.0571	64.517	64.0	0.938	0.6781
35	0.0586	66.454	65.9	0.966	0.6782
36	0.0601	68.275	67.7	0.993	0.6782
37	0.0616	69.968	69.4	1.018	0.6783
38	0.0631	71.474	70.9	1.040	0.6783
39	0.0646	73.133	72.6	1.064	0.6784
40	0.0661	74.580	74.0	1.085	0.6784
41	0.0676	76.030	75.5	1.107	0.6785
42	0.0691	77.314	76.8	1.125	0.6785
43	0.0706	78.666	78.1	1.145	0.6785
44	0.0721	79.832	79.3	1.162	0.6786
45	0.0736	81.110	80.6	1.181	0.6786
46	0.0751	82.224	81.7	1.197	0.6786
47	0.0781	83.917	83.4	1.222	0.6786
48	0.0796	85.013	84.5	1.238	0.6786
49	0.0826	86.466	85.9	1.259	0.6786
50	0.0841	87.589	87.1	1.276	0.6785
51	0.0871	89.036	88.5	1.297	0.6785
52	0.0901	90.499	90.0	1.319	0.6784
53	0.0931	91.639	91.1	1.335	0.6783
54	0.0961	92.739	92.2	1.351	0.6782
55	0.1036	93.766	93.2	1.366	0.6779
56	0.1126	94.846	94.3	1.382	0.6778
57	0.1246	95.540	95.0	1.392	0.6774
58	0.1366	95.906	95.4	1.398	0.6771

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
59	0.1486	95.857	95.3	1.397	0.6769
60	0.1606	96.950	96.4	1.413	0.6768
61	0.1696	97.455	96.9	1.421	0.6768
62	0.1756	97.395	96.9	1.420	0.6768
63	0.1816	95.521	95.0	1.392	0.6769
64	0.1937	94.566	94.0	1.378	0.6774
65	0.2057	94.262	93.7	1.374	0.6776
66	0.2177	94.074	93.5	1.371	0.6778
67	0.2297	93.566	93.0	1.364	0.6781
68	0.2417	93.475	92.9	1.362	0.6783

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	375.960		372.790
Moisture content: Dry soil+tare, gms.	341.510		341.510
Moisture content: Tare, gms.	217.200		217.200
Moisture, %	27.7	25.2	25.2
Moist specimen weight, gms.	158.8		
Diameter, in.	2.50	2.50	
Area, in.²	4.91	4.91	
Height, in.	1.00	0.99	
Net decrease in height, in.		0.01	
Wet Density, pcf	123.0	121.4	
Dry density, pcf	96.3	97.0	
Void ratio	0.7503	0.7382	
Saturation, %	99.7	92.0	

Test Readings for Specimen No. 3

Normal stress = 3.456 tsf

Strain rate, %/min. = 0.0081

Fail. Stress = 2.644 tsf **at reading no.** 65

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
0	0.0309	0.000	0.0	0.000	0.6794
1	0.0394	5.506	5.5	0.081	0.6794
2	0.0494	7.794	7.8	0.114	0.6802
3	0.0504	11.007	11.0	0.161	0.6802
4	0.0519	12.932	12.9	0.190	0.6802
5	0.0524	16.084	16.1	0.236	0.6802
6	0.0529	18.758	18.8	0.275	0.6803
7	0.0534	21.490	21.5	0.315	0.6803
8	0.0539	23.904	23.9	0.350	0.6804
9	0.0544	26.183	26.2	0.384	0.6804
10	0.0549	28.020	28.0	0.411	0.6805
11	0.0559	31.164	31.2	0.457	0.6809
12	0.0569	33.596	33.6	0.492	0.6812
13	0.0579	37.164	37.2	0.545	0.6814
14	0.0589	39.055	39.1	0.572	0.6819

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
15	0.0599	41.525	41.5	0.609	0.6822
16	0.0609	44.353	44.4	0.650	0.6826
17	0.0619	47.527	47.5	0.697	0.6829
18	0.0629	50.816	50.8	0.745	0.6831
19	0.0639	54.257	54.3	0.795	0.6832
20	0.0649	57.310	57.3	0.840	0.6833
21	0.0664	62.243	62.2	0.912	0.6835
22	0.0679	67.126	67.1	0.984	0.6837
23	0.0694	71.796	71.8	1.052	0.6838
24	0.0709	76.021	76.0	1.114	0.6839
25	0.0724	80.060	80.1	1.173	0.6840
26	0.0739	84.132	84.1	1.233	0.6842
27	0.0754	87.625	87.6	1.284	0.6845
28	0.0769	91.515	91.5	1.341	0.6848
29	0.0784	94.732	94.7	1.388	0.6850
30	0.0799	97.995	98.0	1.436	0.6851
31	0.0814	100.974	101.0	1.480	0.6852
32	0.0829	103.825	103.8	1.522	0.6855
33	0.0844	106.548	106.5	1.562	0.6857
34	0.0859	109.215	109.2	1.601	0.6859
35	0.0874	111.926	111.9	1.640	0.6860
36	0.0889	114.391	114.4	1.677	0.6861
37	0.0904	116.578	116.6	1.709	0.6862
38	0.0919	118.921	118.9	1.743	0.6864
39	0.0934	121.259	121.3	1.777	0.6864
40	0.0949	123.629	123.6	1.812	0.6867
41	0.0964	125.769	125.8	1.843	0.6867
42	0.0979	127.926	127.9	1.875	0.6868
43	0.0995	129.779	129.8	1.902	0.6869
44	0.1010	131.795	131.8	1.932	0.6870
45	0.1040	135.157	135.2	1.981	0.6872
46	0.1055	137.005	137.0	2.008	0.6873
47	0.1085	140.485	140.5	2.059	0.6875
48	0.1115	143.849	143.8	2.108	0.6876
49	0.1145	146.957	147.0	2.154	0.6879
50	0.1175	149.629	149.6	2.193	0.6880
51	0.1205	151.847	151.8	2.225	0.6881
52	0.1235	154.347	154.3	2.262	0.6882
53	0.1265	156.273	156.3	2.290	0.6883
54	0.1295	158.395	158.4	2.321	0.6884
55	0.1325	160.468	160.5	2.352	0.6885
56	0.1355	162.471	162.5	2.381	0.6886
57	0.1400	164.662	164.7	2.413	0.6886
58	0.1460	167.451	167.5	2.454	0.6888
59	0.1520	169.667	169.7	2.487	0.6889
60	0.1580	171.745	171.7	2.517	0.6890
61	0.1670	174.406	174.4	2.556	0.6891

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Shear Stress tsf	Vertical Def. Dial in.
62	0.1790	175.388	175.4	2.570	0.6891
63	0.1910	177.194	177.2	2.597	0.6891
64	0.2030	179.380	179.4	2.629	0.6893
65	0.2120	180.374	180.4	2.644	0.6900
66	0.2150	180.169	180.2	2.641	0.6901
67	0.2271	178.940	178.9	2.623	0.6901
68	0.2391	179.487	179.5	2.631	0.6908
69	0.2511	179.147	179.1	2.626	0.6909
70	0.2631	176.643	176.6	2.589	0.6912
71	0.2751	175.023	175.0	2.565	0.6913
72	0.2871	173.446	173.4	2.542	0.6913

SUMMARY OF LABORATORY TESTS

Project No. 08.18.918

Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA
Contract No. DACW64-03-D-0008, Task Order No. 0077

Boring No.	Sample No.	Depth (ft)	Soil Description	USCS	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plast. Index	Finer than #200 Sieve (%)	Lab Vane (tsf)	Uc/UU. Compr. (tsf)	Failure Strain (%)	Conf. Pres. (psi)	Failure Type
	16	30-32	Brown SILT; clay seams	ML	29.2	100.4									
	17	32-34	Gray and tan LEAN CLAY	CL	29.4	90.4									
	18	34-35	Gray and tan LEAN CLAY with SAND	CL	26.5	106.3									
07-237															
	1	0-2	Gray FAT CLAY	CH	104.4										
	2	2-4	Reddish-brown and gray FAT CLAY	CH	33.4	87.9	79	24	55	99.0		0.65	15.0		60 degree
	3	4-6	Tan and gray SANDY LEAN CLAY	CL	20.8										
	4	6-8	Tan and gray LEAN CLAY	CL	21.5	104.0	33	16	17	98.1		0.84	6.2	2.5	Vertical shear
	5	8-10	Tan and gray SANDY SILTY CLAY	CL-ML	21.3	103.7									
	6	10-12	Tan and brown SANDY SILTY CLAY	CL-ML	26.4	98.1						0.80	5.4		Vertical shear
	7	12-14	Tan and gray LEAN CLAY	CL	26.6	98.7	34	16	18	97.6					
	8	14-16	Light gray and tan SILTY CLAY with SAND	CL-ML	32.9	87.4						0.40	3.9		
	9	16-18	Tan and gray SILT with SAND; clay pockets	ML	25.1	90.5									
	10	18-20	Gray FAT CLAY; sand seams	CH	30.4	90.5									
	11	20-22	Tan, brown and gray LEAN CLAY	CL	32.1	90.2	31	16	15	99.6		0.79	7.7	8.0	Vertical shear
	12	22-24	Gray SILTY CLAY; sand seams	CL-ML	29.4	92.0									
	13	24-26	Gray FAT CLAY; sand seams	CH	33.4	85.6									
	14	26-28	Gray LEAN CLAY	CL	36.3	84.4	44	17	27	99.8		1.98	4.2		Vertical shear
	15	28-30	Gray FAT CLAY	CH	35.5	82.7									
07-238															
	2	2-4	Gray FAT CLAY	CH	116.6		118	29	89	98.1					
	3	4-6	Gray FAT CLAY	CH	99.6										
	4	6-8	Gray FAT CLAY	CH	99.0										
	5	8-10	Gray FAT CLAY	CH	28.4	95.7									
	6	10-12	Tan and reddish-brown FAT CLAY	CH	31.7	89.1	72	22	50	99.4		1.12	3.5	4.5	Slickensided
	7	12-14	Gray FAT CLAY	CH	36.1	81.9									
	8	14-16	Gray FAT CLAY	CH	24.9	95.9	64	21	43	98.9		0.80	15.0	6.0	Bulge
	9	16-18	Gray SILTY CLAY with SAND	CL-ML	25.9	98.6									
	10	18-20	Gray SILTY CLAY with SAND	CL-ML	27.7	96.6									
	11	20-22	Brown and gray LEAN CLAY	CL	28.4	86.0	31	16	15	99.4					
	12	22-24	Gray and tan SILTY CLAY; sand pockets	CL-ML	30.5	93.1									
	13	24-26	Gray FAT CLAY; sand pockets	CH	29.9	94.2									
	14	26-28	Gray FAT CLAY; sand pockets and calcareous nodules	CH	30.7	91.7									
	15	28-30	Gray LEAN CLAY	CL	27.0	94.3	33	16	17	99.1		1.17	4.0		Slickensided
	16	30-32	Gray FAT CLAY	CH	33.1	87.9									
	17	32-34	Gray FAT CLAY	CH	38.8	83.8									
	18	34-35	Gray FAT CLAY	CH	36.4	82.1									