Hole No. 07-234

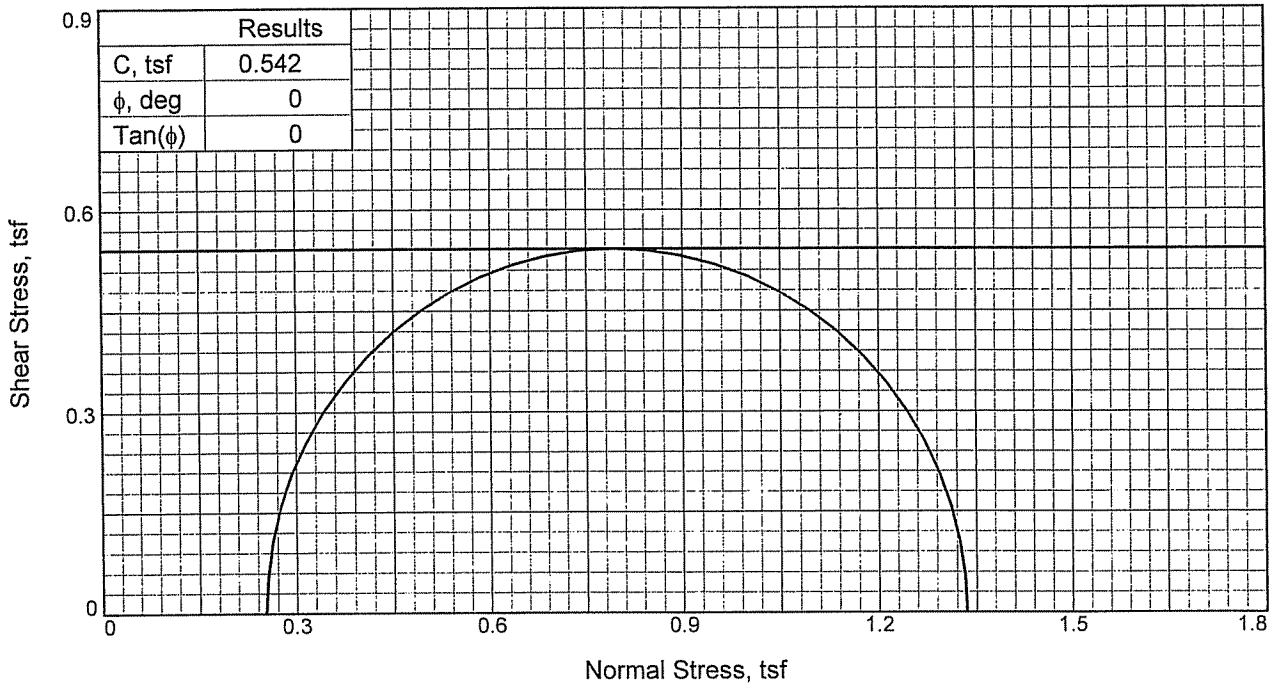
BORING LOG	DISTRICT	INSTALLATION	SHEET 1 OF 1 SHEETS

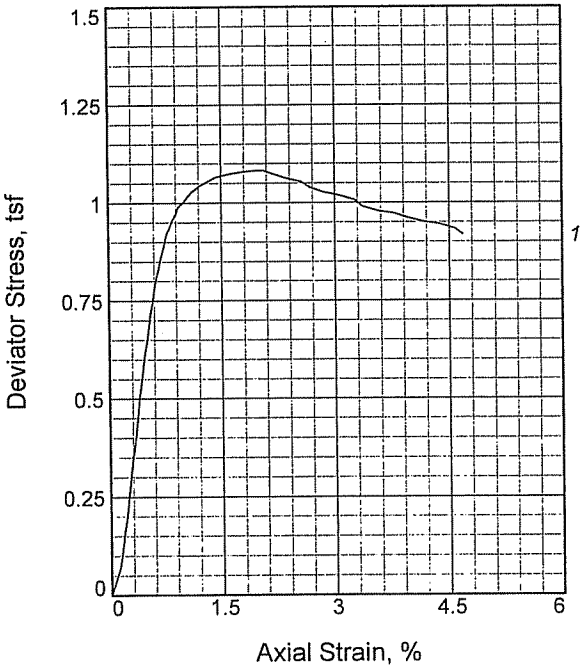
1. PROJECT Galveston Channel and Pelican Island PA	7. ELEVATION OF HOLE
2. LOCATION (Coordinates or Station) N=13692033 E=3313284	8. DATUM FOR ELEVATION
3. DRILLING AGENCY Dempsey (Geotest Engineering, Inc.)	9. ELEVATION OF GROUNDWATER ▽ TOD: ▼ 24-HR:
4. LABORATORY TESTING AGENCY Tolunay-Wong Engineers, 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)
			SANDY LEAN CLAY(CL), very soft, gray, w/ shell fragments & sand seams	X	1		WOP							
				X	2		WOP			51.0				
5			**CLAYEY SAND(SC)**, very loose, gray, w/ shell fragments & sand seams	X	3		1			40.7	42	17	25	24
			SANDY LEAN CLAY(CL), very soft, gray, w/ shell fragments & sand seams	X	4		2			46.5				
			FAT CLAY(CH), firm to stiff, tan & gray -w/ slickensides @ 8' - 10'		5			1.50	88	30.9	75	24	51	98.4
10			-w/ sand seams @ 10' - 12'		6			1.25	102.5	20.6				
			SANDY SILT(ML), tan & gray, w/ clay & silt seams		7			1.25	98.2	24.6				
15			**LEAN CLAY(CL)**, stiff, tan & gray, w/ silt & sand seams		8			1.50	97.7	25.7	26	15	11	98
			FAT CLAY(CH), stiff, gray & tan, w/ silt & sand seams		9			1.75	92.2	30.3				
			SILTY CLAY WITH SAND(CL-ML), stiff, brown & gray, w/ silt seams		10			1.75	103.6	24.9				
20			**SILTY WITH SAND(ML)**, stiff, tan & brown, w/ silt seams & clay pockets		11			2.00	96.8	25.6				
			FAT CLAY(CH), firm to stiff, gray & tan, w/ silt & sand seams		12			1.75	93.8	27.2				
			-tan & brown @ 24' - 26'											
25					13			1.50	85.3	34.6	52	20	32	99.6
			-gray below 26'		14			1.75	86.3	32.4				
					15			1.25	86.7	31.2				
30														

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

ENG FORM: SWG 1836 BOR





Sample No.		1
Initial	Water Content, %	30.9
	Dry Density, pcf	88.0
	Saturation, %	91.0
	Void Ratio	0.9159
	Diameter, in.	2.78
	Height, in.	6.00
At Test	Water Content, %	30.5
	Dry Density, pcf	88.0
	Saturation, %	89.9
	Void Ratio	0.9159
	Diameter, in.	2.78
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.25
Fail. Stress, tsf		1.08
Ult. Stress, tsf		
σ_1 Failure, tsf		1.34
σ_3 Failure, tsf		0.25

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Tan and gray FAT CLAY

LL= 75 **PL=** 24 **PI=** 51

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 2.00
Failure type: Slickensided

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: 07-234 **Depth:** 8-10

Sample Number: 5

Proj. No.: 08.18.918 **Date Sampled:** 7/17/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/25/2008
7:02 AM

Date:	7/17/08
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:	07-234
Depth:	8-10 **Sample Number:** 5
Description:	Tan and gray FAT CLAY
Remarks:	
	Test method: ASTM D 2850
	Pocket pen; tsf: 2.00
	Failure type: Slickensided
Type of Sample:	Undisturbed

Assumed Specific Gravity=2.70 **LL=**75 **PL=**24 **PI=**51

Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	134.490	91.160
Moisture content: Dry soil+tare, gms.	110.270	77.180
Moisture content: Tare, gms.	31.800	31.320
Moisture, %	30.9	30.5
Moist specimen weight, gms.	1100.6	
Diameter, in.	2.78	
Area, in.²	6.07	
Height, in.	6.00	
Wet Density, pcf	115.1	
Dry density, pcf	88.0	
Void ratio	0.9159	
Saturation, %	91.0	

Test Readings for Specimen No. 1

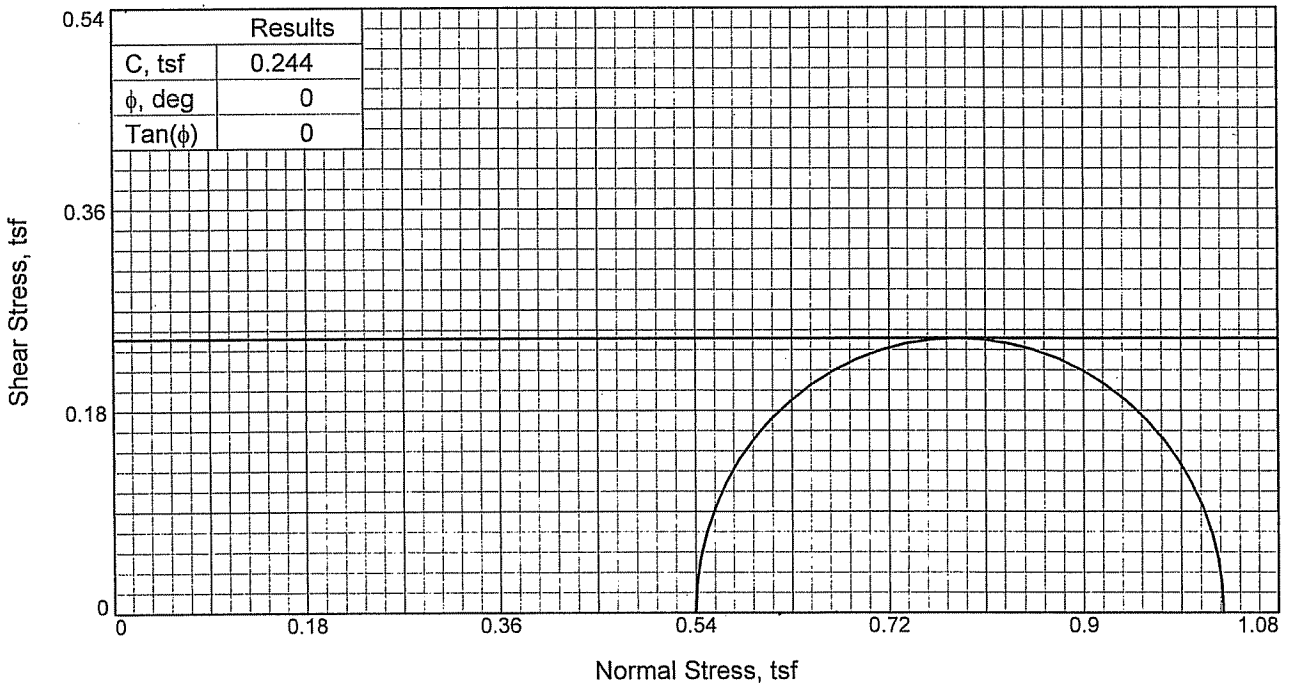
Membrane modulus = .130 kN/cm²
Membrane thickness = .031 cm
Cell pressure = 3.50 psi (0.252 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 1.083 tsf **at reading no.** 39

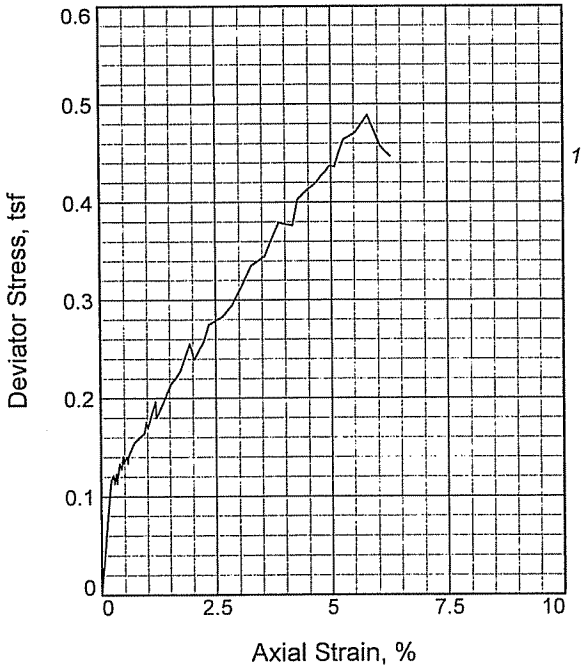
Test Readings for Specimen No. 1

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	0.0240	0.000	0.0	0.0	0.000	0.252	0.252	1.00	0.252	0.000
1	0.0310	5.836	5.8	0.1	0.069	0.252	0.321	1.27	0.287	0.035
2	0.0326	8.298	8.3	0.1	0.098	0.252	0.350	1.39	0.301	0.049
3	0.0339	10.975	11.0	0.2	0.130	0.252	0.382	1.52	0.317	0.065
4	0.0352	13.716	13.7	0.2	0.162	0.252	0.414	1.64	0.333	0.081
5	0.0372	17.011	17.0	0.2	0.201	0.252	0.453	1.80	0.353	0.101
6	0.0385	20.771	20.8	0.2	0.246	0.252	0.498	1.98	0.375	0.123
7	0.0404	24.986	25.0	0.3	0.296	0.252	0.548	2.17	0.400	0.148
8	0.0417	28.565	28.6	0.3	0.338	0.252	0.590	2.34	0.421	0.169
9	0.0430	31.409	31.4	0.3	0.371	0.252	0.623	2.47	0.438	0.186
10	0.0450	35.111	35.1	0.3	0.415	0.252	0.667	2.65	0.460	0.208
11	0.0462	38.449	38.4	0.4	0.454	0.252	0.706	2.80	0.479	0.227
12	0.0475	42.450	42.5	0.4	0.502	0.252	0.754	2.99	0.503	0.251
13	0.0496	46.191	46.2	0.4	0.546	0.252	0.798	3.16	0.525	0.273
14	0.0509	49.563	49.6	0.4	0.585	0.252	0.837	3.32	0.545	0.293
15	0.0521	52.163	52.2	0.5	0.616	0.252	0.868	3.44	0.560	0.308
16	0.0542	55.111	55.1	0.5	0.650	0.252	0.902	3.58	0.577	0.325
17	0.0555	57.898	57.9	0.5	0.683	0.252	0.935	3.71	0.594	0.342
18	0.0567	60.824	60.8	0.5	0.718	0.252	0.970	3.85	0.611	0.359
19	0.0588	63.428	63.4	0.6	0.748	0.252	1.000	3.97	0.626	0.374
20	0.0601	66.062	66.1	0.6	0.779	0.252	1.031	4.09	0.641	0.389
21	0.0613	68.149	68.1	0.6	0.803	0.252	1.055	4.19	0.654	0.402
22	0.0634	70.207	70.2	0.7	0.827	0.252	1.079	4.28	0.666	0.414
23	0.0647	71.963	72.0	0.7	0.848	0.252	1.100	4.36	0.676	0.424
24	0.0659	73.379	73.4	0.7	0.864	0.252	1.116	4.43	0.684	0.432
25	0.0680	75.345	75.3	0.7	0.887	0.252	1.139	4.52	0.696	0.444
26	0.0693	76.916	76.9	0.8	0.905	0.252	1.157	4.59	0.705	0.453
27	0.0705	78.340	78.3	0.8	0.922	0.252	1.174	4.66	0.713	0.461
28	0.0726	79.390	79.4	0.8	0.934	0.252	1.186	4.71	0.719	0.467
29	0.0751	81.147	81.1	0.9	0.954	0.252	1.206	4.79	0.729	0.477
30	0.0785	82.873	82.9	0.9	0.974	0.252	1.226	4.87	0.739	0.487
31	0.0798	84.056	84.1	0.9	0.988	0.252	1.240	4.92	0.746	0.494
32	0.0843	85.290	85.3	1.0	1.002	0.252	1.254	4.97	0.753	0.501
33	0.0876	86.583	86.6	1.1	1.016	0.252	1.268	5.03	0.760	0.508
34	0.0910	87.677	87.7	1.1	1.028	0.252	1.280	5.08	0.766	0.514
35	0.0981	89.228	89.2	1.2	1.045	0.252	1.297	5.15	0.775	0.523
36	0.1103	91.195	91.2	1.4	1.066	0.252	1.318	5.23	0.785	0.533
37	0.1225	92.138	92.1	1.6	1.075	0.252	1.327	5.27	0.789	0.537
38	0.1347	92.844	92.8	1.8	1.081	0.252	1.333	5.29	0.792	0.540
39	0.1469	93.225	93.2	2.0	1.083	0.252	1.335	5.30	0.794	0.542
40	0.1533	92.783	92.8	2.2	1.077	0.252	1.329	5.27	0.790	0.538
41	0.1655	91.814	91.8	2.4	1.063	0.252	1.315	5.22	0.784	0.532
42	0.1776	91.150	91.2	2.6	1.054	0.252	1.306	5.18	0.779	0.527
43	0.1834	90.120	90.1	2.7	1.041	0.252	1.293	5.13	0.772	0.520
44	0.1956	89.125	89.1	2.9	1.027	0.252	1.279	5.08	0.765	0.513
45	0.2078	88.651	88.7	3.1	1.019	0.252	1.271	5.05	0.762	0.510
46	0.2199	87.833	87.8	3.3	1.008	0.252	1.260	5.00	0.756	0.504

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	0.2257	86.475	86.5	3.4	0.991	0.252	1.243	4.93	0.748	0.496
48	0.2380	85.565	85.6	3.6	0.979	0.252	1.231	4.88	0.741	0.489
49	0.2502	85.238	85.2	3.8	0.973	0.252	1.225	4.86	0.738	0.486
50	0.2624	84.305	84.3	4.0	0.960	0.252	1.212	4.81	0.732	0.480
51	0.2746	83.661	83.7	4.2	0.951	0.252	1.203	4.77	0.727	0.475
52	0.2869	83.310	83.3	4.4	0.945	0.252	1.197	4.75	0.724	0.472
53	0.2984	82.439	82.4	4.6	0.933	0.252	1.185	4.70	0.719	0.467
54	0.3050	81.218	81.2	4.7	0.918	0.252	1.170	4.64	0.711	0.459





Sample No.		1
Initial	Water Content, %	24.9
	Dry Density, pcf	103.7
	Saturation, %	98.9
	Void Ratio	0.7165
	Diameter, in.	1.96
	Height, in.	3.81
At Test	Water Content, %	23.6
	Dry Density, pcf	103.7
	Saturation, %	94.0
	Void Ratio	0.7165
	Diameter, in.	1.96
	Height, in.	3.81
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.54
Fail. Stress, tsf		0.49
Ult. Stress, tsf		
σ_1 Failure, tsf		1.03
σ_3 Failure, tsf		0.54

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Brown and gray SILTY CLAY with SAND

Assumed Specific Gravity= 2.85

Remarks:
Test method: ASTM D 2850
Torvane; tsf: 0.225
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: 07-234 **Depth:** 18-20

Sample Number: 10

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

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/24/2008
12:49 PM

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:	07-234
Depth:	18-20 **Sample Number:** 10
Description:	Brown and gray SILTY CLAY with SAND
Remarks:	
	Test method: ASTM D 2850
	Torvane; tsf: 0.225
	Failure type: Bulge
Type of Sample:	Undisturbed
Assumed Specific Gravity=2.85	**LL=** **PL=** **PI=**
Test Method:	ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	130.650	97.000
Moisture content: Dry soil+tare, gms.	110.920	84.420
Moisture content: Tare, gms.	31.600	31.190
Moisture, %	24.9	23.6
Moist specimen weight, gms.	389.5	
Diameter, in.	1.96	
Area, in.²	3.01	
Height, in.	3.81	
Wet Density, pcf	129.4	
Dry density, pcf	103.7	
Void ratio	0.7165	
Saturation, %	98.9	

Test Readings for Specimen No. 1

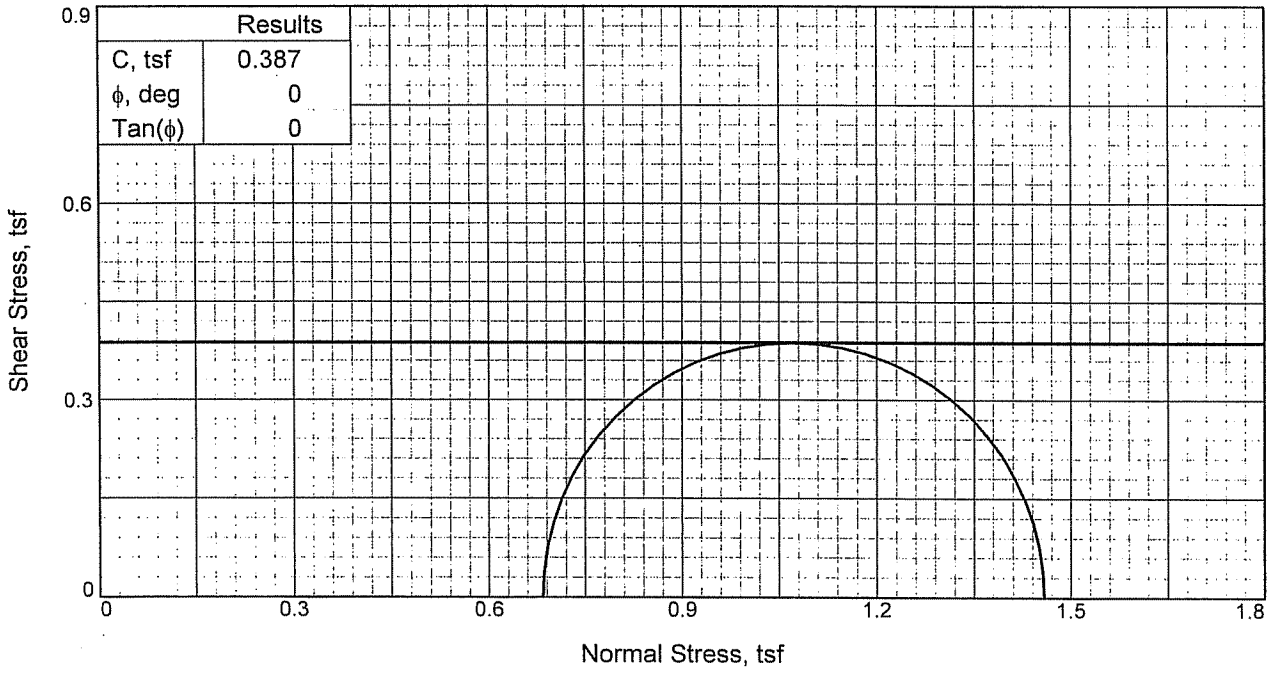
Membrane modulus = .130 kN/cm²
Membrane thickness = .031 cm
Cell pressure = 7.50 psi (0.540 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 0.489 tsf **at reading no.** 51

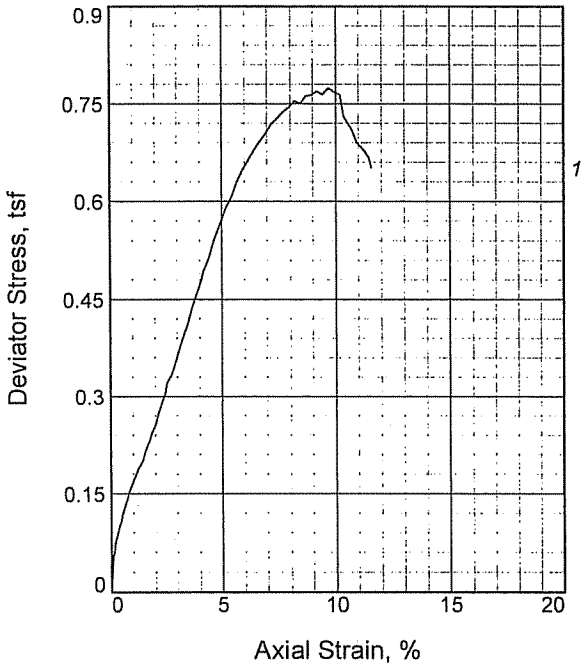
Test Readings for Specimen No. 1

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	0.0498	0.000	0.0	0.0	0.000	0.540	0.540	1.00	0.540	0.000
1	0.0580	4.827	4.8	0.2	0.115	0.540	0.655	1.21	0.598	0.058
2	0.0600	5.081	5.1	0.3	0.121	0.540	0.661	1.22	0.601	0.061
3	0.0608	4.722	4.7	0.3	0.113	0.540	0.653	1.21	0.596	0.056
4	0.0620	5.147	5.1	0.3	0.123	0.540	0.663	1.23	0.601	0.061
5	0.0628	4.747	4.7	0.3	0.113	0.540	0.653	1.21	0.597	0.057
6	0.0636	5.151	5.2	0.4	0.123	0.540	0.663	1.23	0.601	0.061
7	0.0649	5.582	5.6	0.4	0.133	0.540	0.673	1.25	0.606	0.066
8	0.0666	5.353	5.4	0.4	0.127	0.540	0.667	1.24	0.604	0.064
9	0.0679	5.911	5.9	0.5	0.141	0.540	0.681	1.26	0.610	0.070
10	0.0687	5.617	5.6	0.5	0.134	0.540	0.674	1.25	0.607	0.067
11	0.0708	5.906	5.9	0.6	0.140	0.540	0.680	1.26	0.610	0.070
12	0.0716	5.626	5.6	0.6	0.134	0.540	0.674	1.25	0.607	0.067
13	0.0724	5.920	5.9	0.6	0.141	0.540	0.681	1.26	0.610	0.070
14	0.0753	6.291	6.3	0.7	0.149	0.540	0.689	1.28	0.615	0.075
15	0.0774	6.524	6.5	0.7	0.155	0.540	0.695	1.29	0.617	0.077
16	0.0854	6.942	6.9	0.9	0.164	0.540	0.704	1.30	0.622	0.082
17	0.0870	7.428	7.4	1.0	0.176	0.540	0.716	1.33	0.628	0.088
18	0.0883	7.166	7.2	1.0	0.170	0.540	0.710	1.31	0.625	0.085
19	0.0912	7.691	7.7	1.1	0.182	0.540	0.722	1.34	0.631	0.091
20	0.0949	8.311	8.3	1.2	0.196	0.540	0.736	1.36	0.638	0.098
21	0.0958	7.616	7.6	1.2	0.180	0.540	0.720	1.33	0.630	0.090
22	0.1007	8.161	8.2	1.3	0.193	0.540	0.733	1.36	0.636	0.096
23	0.1044	8.625	8.6	1.4	0.203	0.540	0.743	1.38	0.642	0.102
24	0.1085	9.135	9.1	1.5	0.215	0.540	0.755	1.40	0.648	0.108
25	0.1122	9.379	9.4	1.6	0.221	0.540	0.761	1.41	0.650	0.110
26	0.1159	9.701	9.7	1.7	0.228	0.540	0.768	1.42	0.654	0.114
27	0.1237	10.871	10.9	1.9	0.255	0.540	0.795	1.47	0.667	0.127
28	0.1274	10.197	10.2	2.0	0.239	0.540	0.779	1.44	0.659	0.119
29	0.1315	10.649	10.6	2.1	0.249	0.540	0.789	1.46	0.665	0.125
30	0.1351	11.009	11.0	2.2	0.257	0.540	0.797	1.48	0.669	0.129
31	0.1392	11.753	11.8	2.3	0.274	0.540	0.814	1.51	0.677	0.137
32	0.1506	12.158	12.2	2.6	0.283	0.540	0.823	1.52	0.682	0.142
33	0.1584	12.683	12.7	2.9	0.295	0.540	0.835	1.55	0.687	0.147
34	0.1624	13.144	13.1	3.0	0.305	0.540	0.845	1.56	0.692	0.152
35	0.1661	13.531	13.5	3.1	0.314	0.540	0.854	1.58	0.697	0.157
36	0.1740	14.479	14.5	3.3	0.335	0.540	0.875	1.62	0.707	0.167
37	0.1853	14.952	15.0	3.6	0.345	0.540	0.885	1.64	0.712	0.172
38	0.1894	15.526	15.5	3.7	0.358	0.540	0.898	1.66	0.719	0.179
39	0.1971	16.483	16.5	3.9	0.379	0.540	0.919	1.70	0.729	0.189
40	0.2085	16.425	16.4	4.2	0.376	0.540	0.916	1.70	0.728	0.188
41	0.2126	17.589	17.6	4.3	0.403	0.540	0.943	1.75	0.741	0.201
42	0.2199	18.050	18.0	4.5	0.412	0.540	0.952	1.76	0.746	0.206
43	0.2278	18.431	18.4	4.7	0.420	0.540	0.960	1.78	0.750	0.210
44	0.2318	18.725	18.7	4.8	0.426	0.540	0.966	1.79	0.753	0.213
45	0.2355	18.944	18.9	4.9	0.431	0.540	0.971	1.80	0.755	0.215
46	0.2392	19.237	19.2	5.0	0.437	0.540	0.977	1.81	0.759	0.219

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	0.2433	19.212	19.2	5.1	0.436	0.540	0.976	1.81	0.758	0.218
48	0.2470	19.901	19.9	5.2	0.451	0.540	0.991	1.84	0.766	0.226
49	0.2506	20.475	20.5	5.3	0.464	0.540	1.004	1.86	0.772	0.232
50	0.2605	20.835	20.8	5.5	0.471	0.540	1.011	1.87	0.775	0.235
51	0.2704	21.703	21.7	5.8	0.489	0.540	1.029	1.91	0.784	0.244
52	0.2807	20.338	20.3	6.1	0.457	0.540	0.997	1.85	0.768	0.228
53	0.2888	19.936	19.9	6.3	0.447	0.540	0.987	1.83	0.763	0.223





Sample No.		1
Initial	Water Content, %	34.6
	Dry Density, pcf	85.3
	Saturation, %	95.8
	Void Ratio	0.9768
	Diameter, in.	2.83
	Height, in.	5.96
At Test	Water Content, %	35.4
	Dry Density, pcf	85.3
	Saturation, %	97.8
	Void Ratio	0.9768
	Diameter, in.	2.83
	Height, in.	5.96
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.68
Fail. Stress, tsf		0.77
Ult. Stress, tsf		
σ_1 Failure, tsf		1.46
σ_3 Failure, tsf		0.68

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Tan and brown FAT CLAY

LL= 52 **PL=** 20 **PI=** 32

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.50
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: 07-234 **Depth:** 24-26

Sample Number: 13

Proj. No.: 08.18.918 **Date Sampled:** 7/17/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/25/2008
10:28 AM

Date:	7/17/08
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:	07-234
Depth:	24-26 **Sample Number:** 13
Description:	Tan and brown FAT CLAY
Remarks:	
	Test method: ASTM D 2850
	Pocket pen; tsf: 1.50
	Failure type: Bulge
Type of Sample:	Undisturbed

Assumed Specific Gravity=2.70 **LL**=52 **PL**=20 **PI**=32

Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	131.190	94.490
Moisture content: Dry soil+tare, gms.	105.580	78.060
Moisture content: Tare, gms.	31.660	31.600
Moisture, %	34.6	35.4
Moist specimen weight, gms.	1126.2	
Diameter, in.	2.83	
Area, in.²	6.27	
Height, in.	5.96	
Wet Density, pcf	114.8	
Dry density, pcf	85.3	
Void ratio	0.9768	
Saturation, %	95.8	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm²

Membrane thickness = .031 cm

Cell pressure = 9.50 psi (0.684 tsf)

Back pressure = 0.00 psi (0.000 tsf)

Strain rate, %/min. = 1.00

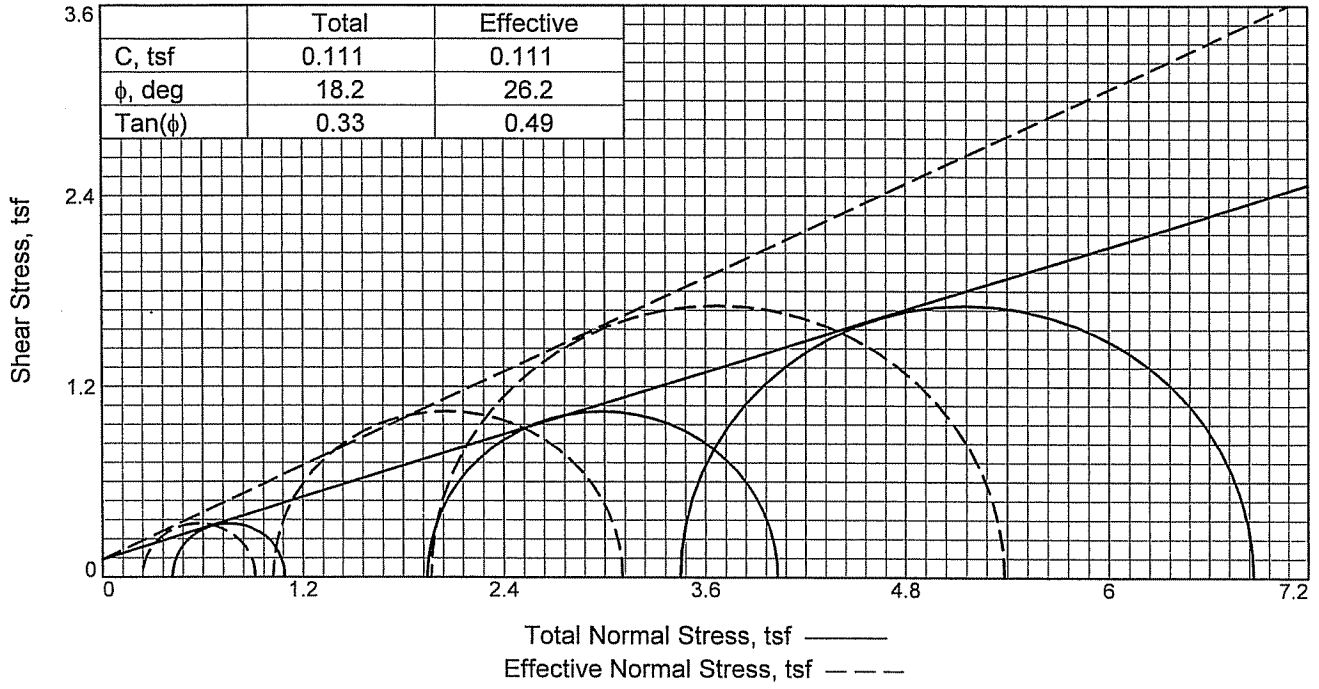
Fail. Stress = 0.774 tsf **at reading no.** 60

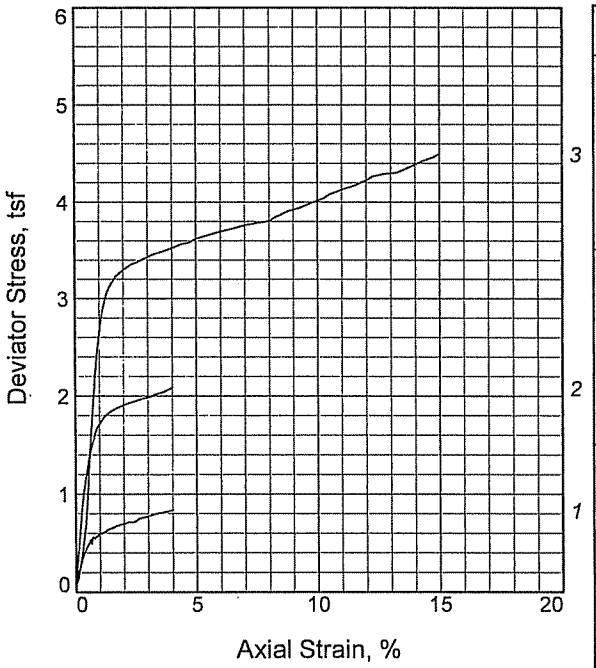
Test Readings for Specimen No. 1

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	0.0553	0.000	0.0	0.0	0.000	0.684	0.684	1.00	0.684	0.000
1	0.0603	4.666	4.7	0.1	0.054	0.684	0.738	1.08	0.711	0.027
2	0.0633	5.452	5.5	0.1	0.063	0.684	0.747	1.09	0.715	0.031
3	0.0665	6.443	6.4	0.2	0.074	0.684	0.758	1.11	0.721	0.037
4	0.0729	7.689	7.7	0.3	0.088	0.684	0.772	1.13	0.728	0.044
5	0.0761	8.475	8.5	0.3	0.097	0.684	0.781	1.14	0.733	0.049
6	0.0825	9.304	9.3	0.5	0.106	0.684	0.790	1.16	0.737	0.053
7	0.0869	10.400	10.4	0.5	0.119	0.684	0.803	1.17	0.743	0.059
8	0.0915	11.151	11.2	0.6	0.127	0.684	0.811	1.19	0.748	0.064
9	0.0993	12.304	12.3	0.7	0.140	0.684	0.824	1.21	0.754	0.070
10	0.1039	13.204	13.2	0.8	0.150	0.684	0.834	1.22	0.759	0.075
11	0.1130	14.472	14.5	1.0	0.165	0.684	0.849	1.24	0.766	0.082
12	0.1221	15.647	15.6	1.1	0.178	0.684	0.862	1.26	0.773	0.089
13	0.1286	16.560	16.6	1.2	0.188	0.684	0.872	1.27	0.778	0.094
14	0.1407	17.600	17.6	1.4	0.199	0.684	0.883	1.29	0.784	0.100
15	0.1464	18.721	18.7	1.5	0.212	0.684	0.896	1.31	0.790	0.106
16	0.1528	19.578	19.6	1.6	0.221	0.684	0.905	1.32	0.795	0.111
17	0.1586	20.345	20.3	1.7	0.230	0.684	0.914	1.34	0.799	0.115
18	0.1649	21.543	21.5	1.8	0.243	0.684	0.927	1.36	0.805	0.121
19	0.1770	22.885	22.9	2.0	0.258	0.684	0.942	1.38	0.813	0.129
20	0.1828	24.260	24.3	2.1	0.273	0.684	0.957	1.40	0.820	0.136
21	0.1948	26.115	26.1	2.3	0.293	0.684	0.977	1.43	0.830	0.146
22	0.2012	27.088	27.1	2.4	0.304	0.684	0.988	1.44	0.836	0.152
23	0.2070	28.638	28.6	2.5	0.321	0.684	1.005	1.47	0.844	0.160
24	0.2191	29.805	29.8	2.7	0.333	0.684	1.017	1.49	0.850	0.166
25	0.2255	30.782	30.8	2.9	0.344	0.684	1.028	1.50	0.856	0.172
26	0.2312	31.968	32.0	3.0	0.356	0.684	1.040	1.52	0.862	0.178
27	0.2433	34.056	34.1	3.2	0.379	0.684	1.063	1.55	0.873	0.189
28	0.2490	35.102	35.1	3.2	0.390	0.684	1.074	1.57	0.879	0.195
29	0.2555	36.156	36.2	3.4	0.401	0.684	1.085	1.59	0.885	0.201
30	0.2613	37.008	37.0	3.5	0.410	0.684	1.094	1.60	0.889	0.205
31	0.2734	39.438	39.4	3.7	0.436	0.684	1.120	1.64	0.902	0.218
32	0.2855	41.359	41.4	3.9	0.457	0.684	1.141	1.67	0.912	0.228
33	0.2913	42.346	42.3	4.0	0.467	0.684	1.151	1.68	0.918	0.234
34	0.2977	43.435	43.4	4.1	0.479	0.684	1.163	1.70	0.923	0.239
35	0.3035	44.715	44.7	4.2	0.492	0.684	1.176	1.72	0.930	0.246
36	0.3157	46.400	46.4	4.4	0.510	0.684	1.194	1.75	0.939	0.255
37	0.3214	47.361	47.4	4.5	0.520	0.684	1.204	1.76	0.944	0.260
38	0.3278	48.533	48.5	4.6	0.532	0.684	1.216	1.78	0.950	0.266
39	0.3336	49.532	49.5	4.7	0.542	0.684	1.226	1.79	0.955	0.271
40	0.3457	51.247	51.2	4.9	0.560	0.684	1.244	1.82	0.964	0.280
41	0.3521	52.261	52.3	5.0	0.570	0.684	1.254	1.83	0.969	0.285
42	0.3635	54.002	54.0	5.2	0.588	0.684	1.272	1.86	0.978	0.294
43	0.3789	55.789	55.8	5.4	0.606	0.684	1.290	1.89	0.987	0.303
44	0.3936	58.116	58.1	5.7	0.630	0.684	1.314	1.92	0.999	0.315
45	0.4089	60.017	60.0	5.9	0.649	0.684	1.333	1.95	1.008	0.324
46	0.4235	61.491	61.5	6.2	0.663	0.684	1.347	1.97	1.015	0.331

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	0.4388	63.107	63.1	6.4	0.678	0.684	1.362	1.99	1.023	0.339
48	0.4535	64.521	64.5	6.7	0.692	0.684	1.376	2.01	1.030	0.346
49	0.4687	65.778	65.8	6.9	0.703	0.684	1.387	2.03	1.036	0.352
50	0.4834	67.299	67.3	7.2	0.718	0.684	1.402	2.05	1.043	0.359
51	0.4987	68.418	68.4	7.4	0.727	0.684	1.411	2.06	1.048	0.364
52	0.5134	69.471	69.5	7.7	0.737	0.684	1.421	2.08	1.052	0.368
53	0.5287	70.389	70.4	7.9	0.744	0.684	1.428	2.09	1.056	0.372
54	0.5433	71.538	71.5	8.2	0.754	0.684	1.438	2.10	1.061	0.377
55	0.5580	71.314	71.3	8.4	0.750	0.684	1.434	2.10	1.059	0.375
56	0.5734	72.631	72.6	8.7	0.762	0.684	1.446	2.11	1.065	0.381
57	0.5881	72.951	73.0	8.9	0.763	0.684	1.447	2.12	1.066	0.382
58	0.6033	73.731	73.7	9.2	0.769	0.684	1.453	2.12	1.069	0.385
59	0.6180	73.485	73.5	9.4	0.764	0.684	1.448	2.12	1.066	0.382
60	0.6333	74.626	74.6	9.7	0.774	0.684	1.458	2.13	1.071	0.387
61	0.6479	74.222	74.2	9.9	0.768	0.684	1.452	2.12	1.068	0.384
62	0.6632	74.047	74.0	10.2	0.764	0.684	1.448	2.12	1.066	0.382
63	0.6728	70.986	71.0	10.4	0.731	0.684	1.415	2.07	1.049	0.365
64	0.6932	69.257	69.3	10.7	0.710	0.684	1.394	2.04	1.039	0.355
65	0.7078	67.485	67.5	10.9	0.690	0.684	1.374	2.01	1.029	0.345
66	0.7231	66.713	66.7	11.2	0.680	0.684	1.364	1.99	1.024	0.340
67	0.7377	65.540	65.5	11.4	0.667	0.684	1.351	1.97	1.017	0.333
68	0.7447	64.151	64.2	11.6	0.652	0.684	1.336	1.95	1.010	0.326





Sample No.		1	2	3
Initial	Water Content, %	25.7	25.7	25.7
	Dry Density, pcf	97.8	97.8	97.8
	Saturation, %	95.8	95.8	95.8
	Void Ratio	0.7241	0.7241	0.7241
	Diameter, in.	2.00	2.00	2.00
	Height, in.	3.86	3.86	3.86
At Test	Water Content, %	26.0	26.0	26.0
	Dry Density, pcf	99.0	99.0	99.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7018	0.7018	0.7018
	Diameter, in.	2.00	2.03	2.07
	Height, in.	3.84	3.71	3.58
Strain rate, %/min.		0.05	0.05	0.05
Back Pressure, tsf		2.17	2.17	2.17
Cell Pressure, tsf		2.58	4.11	5.62
Fail. Stress, tsf		0.67	2.09	3.42
Excess Pore Pr., tsf		0.18	0.92	1.48
Ult. Stress, tsf		0.84	2.09	4.50
Excess Pore Pr., tsf		0.11	0.92	0.89
$\bar{\sigma}_1$ Failure, tsf		0.91	3.11	5.38
$\bar{\sigma}_3$ Failure, tsf		0.24	1.02	1.97

Type of Test:
CU with Pore Pressures

Sample Type: Undisturbed

Description: Tan and gray LEAN CLAY

LL= 26 **PL=** 15 **PI=** 11

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D 4767
Pocket pen; tsf: 2.00
Failure type: Multiple 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

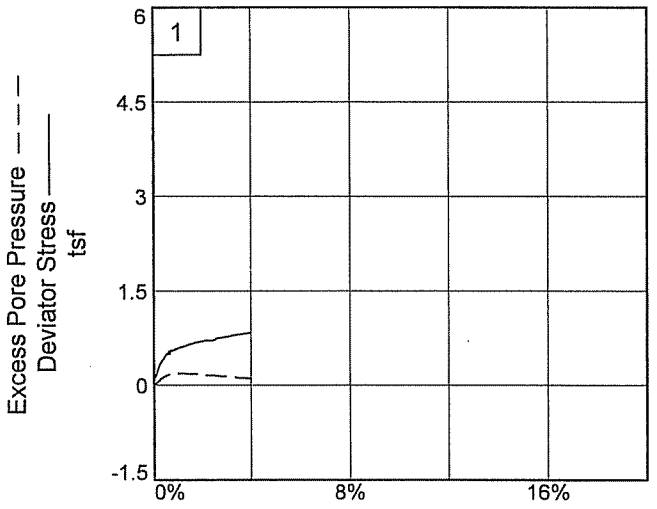
Source of Sample: 07-234 **Depth:** 14-16

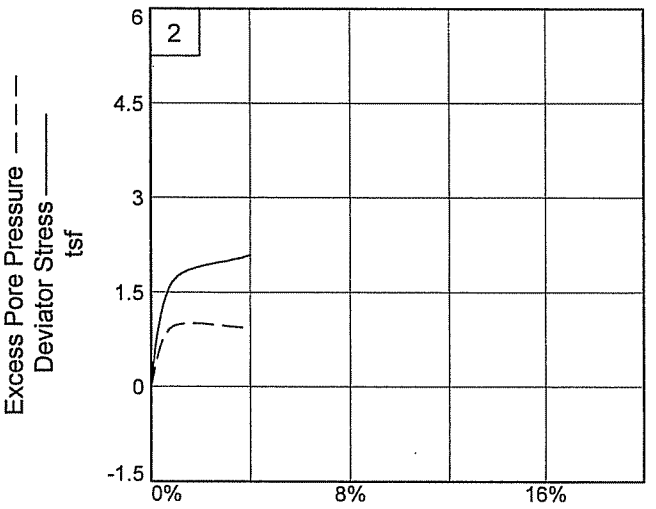
Sample Number: 8

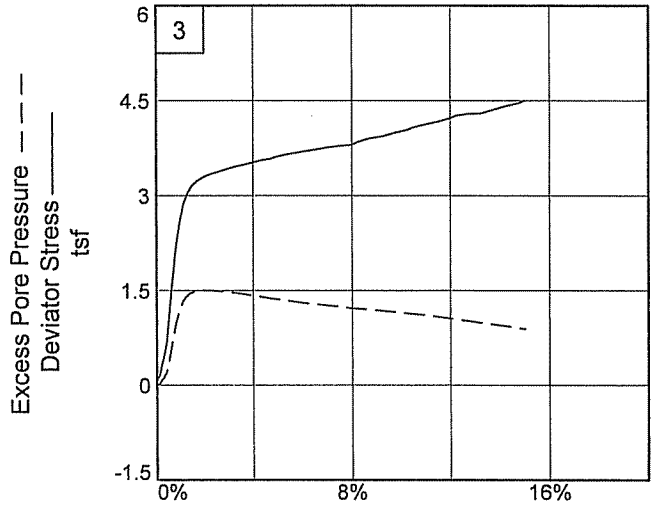
Proj. No.: 08.18.918 **Date Sampled:** 8/14/08

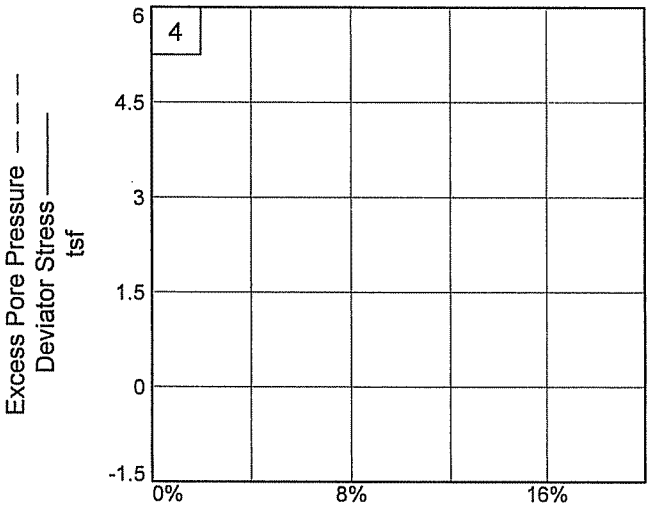
TRIAXIAL SHEAR TEST REPORT

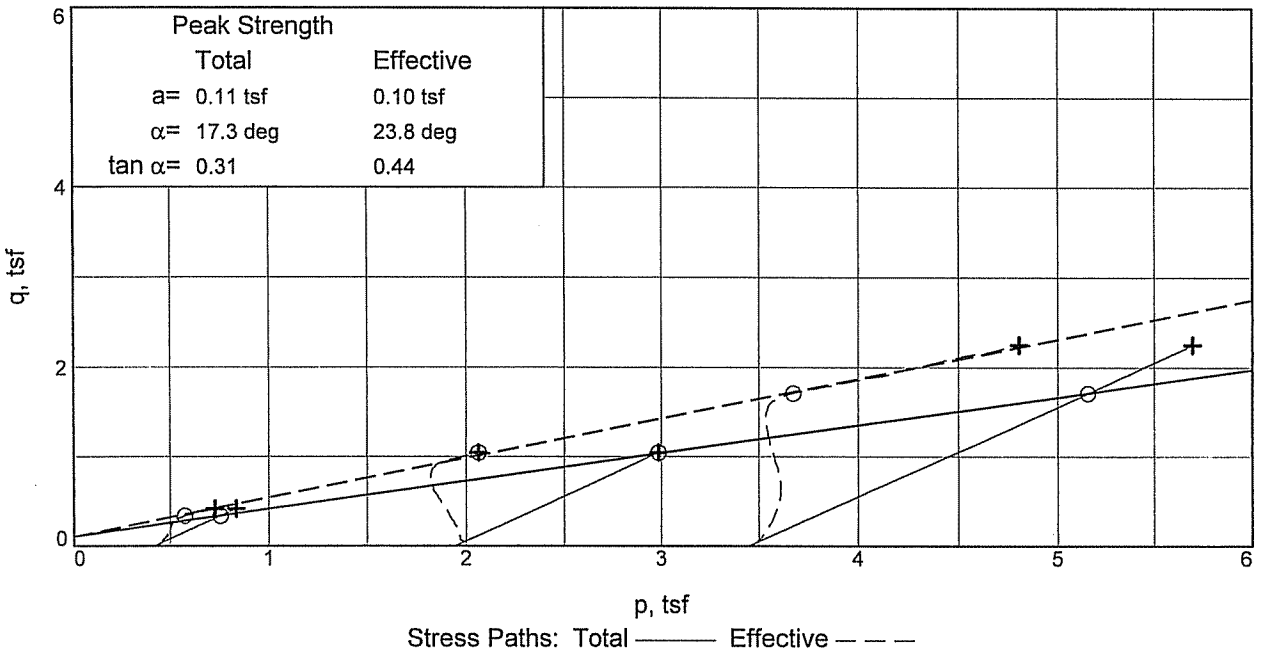
Tolunay-Wong Engineers, Inc.











Client: United States Army Corps of Engineers

Project: Galveston Channel and Pelican Island PA

Source of Sample: 07-234 **Depth:** 14-16 **Sample Number:** 8

Project No.: 08.18.918

TOLUNAY-WONG ENGINEERS, INC.

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

8/27/2008
12:55 PM

Date: 8/14/08
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: 07-234
Depth: 14-16 **Sample Number:** 8
Description: Tan and gray LEAN CLAY
Remarks:
Test method: ASTM D 4767
Pocket pen; tsf: 2.00
Failure type: Multiple shear
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=**26 **PL=**15 **PI=**11
Test Method: ASTM D 4767 Method B

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	102.660			101.660
Moisture content: Dry soil+tare, gms.	87.940			87.000
Moisture content: Tare, gms.	30.620			30.600
Moisture, %	25.7	27.0	26.0	26.0
Moist specimen weight, gms.	392.1			
Diameter, in.	2.00	2.01	2.00	
Area, in.^{2}	3.15	3.17	3.13	
Height, in.	3.86	3.85	3.84	
Net decrease in height, in.		0.01	0.01	
Net decrease in water volume, cc.			3.20	
Wet Density, pcf	122.9	123.8	124.8	
Dry density, pcf	97.8	97.5	99.0	
Void ratio	0.7241	0.7295	0.7018	
Saturation, %	95.8	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 = 35.90 psi (2.585 tsf)
Consolidation back pressure = 30.10 psi (2.167 tsf)
Consolidation effective confining stress = 0.418 tsf
Strain rate, %/min. = 0.05
Fail. Stress = 0.674 tsf **at reading no.** 40
Ult. Stress = 0.835 tsf **at reading no.** 54

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	-0.0855	0.000	0.0	0.0	0.000	0.421	0.421	1.00	30.05	0.421	0.000
1	-0.0854	0.000	0.0	0.0	0.000	0.421	0.421	1.00	30.05	0.421	0.000
2	-0.0853	3.477	3.5	0.0	0.080	0.421	0.501	1.19	30.05	0.461	0.040
3	-0.0843	4.287	4.3	0.0	0.099	0.411	0.509	1.24	30.20	0.460	0.049
4	-0.0833	5.479	5.5	0.1	0.126	0.404	0.530	1.31	30.29	0.467	0.063
5	-0.0824	5.970	6.0	0.1	0.137	0.395	0.532	1.35	30.42	0.463	0.069
6	-0.0814	7.950	7.9	0.1	0.183	0.385	0.568	1.48	30.56	0.476	0.091
7	-0.0805	9.335	9.3	0.1	0.215	0.375	0.590	1.57	30.69	0.482	0.107
8	-0.0795	10.572	10.6	0.2	0.243	0.367	0.610	1.66	30.80	0.489	0.122
9	-0.0785	11.064	11.1	0.2	0.254	0.360	0.614	1.71	30.91	0.487	0.127
10	-0.0776	12.426	12.4	0.2	0.286	0.352	0.638	1.81	31.01	0.495	0.143
11	-0.0766	13.562	13.6	0.2	0.312	0.344	0.655	1.91	31.13	0.499	0.156
12	-0.0756	14.543	14.5	0.3	0.334	0.334	0.668	2.00	31.26	0.501	0.167
13	-0.0747	15.262	15.3	0.3	0.350	0.321	0.671	2.09	31.45	0.496	0.175
14	-0.0737	15.920	15.9	0.3	0.365	0.316	0.681	2.16	31.52	0.498	0.183
15	-0.0728	16.436	16.4	0.3	0.377	0.308	0.685	2.22	31.62	0.497	0.189
16	-0.0718	17.433	17.4	0.4	0.400	0.301	0.701	2.33	31.71	0.501	0.200
17	-0.0699	18.509	18.5	0.4	0.424	0.291	0.716	2.46	31.86	0.503	0.212
18	-0.0689	19.326	19.3	0.4	0.443	0.284	0.727	2.56	31.95	0.506	0.222
19	-0.0670	20.279	20.3	0.5	0.465	0.273	0.738	2.70	32.11	0.506	0.232
20	-0.0660	21.128	21.1	0.5	0.484	0.269	0.753	2.80	32.17	0.511	0.242
21	-0.0651	21.684	21.7	0.5	0.497	0.265	0.762	2.88	32.22	0.513	0.248
22	-0.0641	21.214	21.2	0.6	0.486	0.262	0.748	2.86	32.27	0.505	0.243
23	-0.0631	22.219	22.2	0.6	0.509	0.257	0.766	2.98	32.32	0.512	0.254
24	-0.0622	22.934	22.9	0.6	0.525	0.254	0.779	3.07	32.37	0.516	0.262
25	-0.0612	23.350	23.4	0.6	0.534	0.251	0.786	3.13	32.41	0.519	0.267
26	-0.0603	22.582	22.6	0.7	0.491	0.250	0.741	2.96	32.42	0.496	0.245
27	-0.0593	23.634	23.6	0.7	0.541	0.250	0.790	3.17	32.43	0.520	0.270
28	-0.0583	24.401	24.4	0.7	0.558	0.247	0.805	3.26	32.48	0.526	0.279
29	-0.0555	25.111	25.1	0.8	0.543	0.244	0.787	3.22	32.51	0.516	0.271
30	-0.0545	25.550	25.5	0.8	0.552	0.243	0.795	3.27	32.52	0.519	0.276
31	-0.0535	25.972	26.0	0.8	0.560	0.241	0.802	3.32	32.55	0.522	0.280
32	-0.0506	26.412	26.4	0.9	0.567	0.242	0.809	3.34	32.54	0.526	0.284
33	-0.0497	27.101	27.1	0.9	0.582	0.232	0.814	3.50	32.67	0.523	0.291
34	-0.0430	28.243	28.2	1.1	0.600	0.229	0.829	3.62	32.72	0.529	0.300
35	-0.0391	29.015	29.0	1.2	0.613	0.229	0.842	3.67	32.71	0.536	0.306
36	-0.0353	29.862	29.9	1.3	0.627	0.231	0.858	3.71	32.69	0.545	0.314
37	-0.0314	30.746	30.7	1.4	0.643	0.235	0.877	3.74	32.64	0.556	0.321
38	-0.0276	31.333	31.3	1.5	0.651	0.239	0.891	3.72	32.57	0.565	0.326
39	-0.0237	32.030	32.0	1.6	0.662	0.234	0.897	3.83	32.65	0.565	0.331
40	-0.0199	32.753	32.8	1.7	0.674	0.237	0.911	3.84	32.61	0.574	0.337
41	-0.0161	33.237	33.2	1.8	0.680	0.240	0.921	3.83	32.57	0.580	0.340
42	-0.0122	33.833	33.8	1.9	0.689	0.243	0.932	3.84	32.53	0.587	0.345
43	-0.0084	34.273	34.3	2.0	0.695	0.247	0.942	3.81	32.47	0.594	0.347
44	-0.0007	35.239	35.2	2.2	0.715	0.259	0.974	3.76	32.30	0.617	0.357
45	0.0070	35.048	35.0	2.4	0.709	0.258	0.967	3.75	32.32	0.612	0.355
46	0.0108	35.684	35.7	2.5	0.723	0.262	0.984	3.76	32.26	0.623	0.361

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	0.0147	36.767	36.8	2.6	0.746	0.265	1.011	3.81	32.22	0.638	0.373
48	0.0224	37.391	37.4	2.8	0.758	0.277	1.036	3.73	32.05	0.656	0.379
49	0.0339	38.445	38.4	3.1	0.779	0.281	1.060	3.77	32.00	0.670	0.390
50	0.0416	39.311	39.3	3.3	0.797	0.288	1.084	3.77	31.90	0.686	0.398
51	0.0493	39.856	39.9	3.5	0.807	0.299	1.106	3.70	31.74	0.703	0.403
52	0.0570	40.350	40.4	3.7	0.816	0.299	1.115	3.73	31.75	0.707	0.408
53	0.0647	40.936	40.9	3.9	0.827	0.305	1.133	3.71	31.66	0.719	0.414
54	0.0685	41.352	41.4	4.0	0.835	0.309	1.145	3.70	31.60	0.727	0.418

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	102.660			101.660
Moisture content: Dry soil+tare, gms.	87.940			87.000
Moisture content: Tare, gms.	30.620			30.600
Moisture, %	25.7	28.1	26.0	26.0
Moist specimen weight, gms.	392.1			
Diameter, in.	2.00	2.03	2.03	
Area, in.^{2}	3.15	3.22	3.24	
Height, in.	3.86	3.85	3.71	
Net decrease in height, in.		0.01	0.14	
Net decrease in water volume, cc.			6.50	
Wet Density, pcf	122.9	122.8	124.8	
Dry density, pcf	97.8	95.9	99.0	
Void ratio	0.7241	0.7581	0.7018	
Saturation, %	95.8	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 = 57.10 psi (4.111 tsf)

Consolidation back pressure = 30.10 psi (2.167 tsf)

Consolidation effective confining stress = 1.944 tsf

Strain rate, %/min. = 0.05

Fail. Stress = 2.086 tsf **at reading no.** 50

Ult. Stress = 2.086 tsf **at reading no.** 50

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	0.0503	0.000	0.0	0.0	0.000	1.943	1.943	1.00	30.11	1.943	0.000
1	0.0504	0.000	0.0	0.0	0.000	1.943	1.943	1.00	30.11	1.943	0.000
2	0.0505	4.456	4.5	0.0	0.099	1.943	2.042	1.05	30.11	1.993	0.050
3	0.0514	6.033	6.0	0.0	0.134	1.905	2.040	1.07	30.64	1.973	0.067
4	0.0524	9.876	9.9	0.1	0.220	1.858	2.078	1.12	31.30	1.968	0.110
5	0.0533	14.478	14.5	0.1	0.322	1.805	2.127	1.18	32.03	1.966	0.161
6	0.0542	18.082	18.1	0.1	0.402	1.756	2.158	1.23	32.70	1.957	0.201
7	0.0552	21.178	21.2	0.1	0.471	1.712	2.182	1.27	33.33	1.947	0.235
8	0.0561	24.583	24.6	0.2	0.546	1.665	2.211	1.33	33.97	1.938	0.273

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
9	0.0570	27.665	27.7	0.2	0.615	1.619	2.234	1.38	34.61	1.927	0.307
10	0.0579	30.865	30.9	0.2	0.685	1.575	2.261	1.44	35.22	1.918	0.343
11	0.0589	34.078	34.1	0.2	0.757	1.532	2.289	1.49	35.82	1.910	0.378
12	0.0598	36.984	37.0	0.3	0.821	1.492	2.313	1.55	36.38	1.902	0.410
13	0.0607	39.640	39.6	0.3	0.880	1.453	2.333	1.61	36.92	1.893	0.440
14	0.0617	41.907	41.9	0.3	0.930	1.417	2.347	1.66	37.42	1.882	0.465
15	0.0626	44.422	44.4	0.3	0.985	1.383	2.368	1.71	37.89	1.876	0.493
16	0.0635	46.856	46.9	0.4	1.039	1.350	2.389	1.77	38.35	1.870	0.520
17	0.0644	48.782	48.8	0.4	1.082	1.320	2.401	1.82	38.77	1.861	0.541
18	0.0654	51.211	51.2	0.4	1.135	1.291	2.426	1.88	39.16	1.859	0.568
19	0.0663	52.640	52.6	0.4	1.166	1.265	2.431	1.92	39.53	1.848	0.583
20	0.0672	54.518	54.5	0.5	1.208	1.240	2.448	1.97	39.88	1.844	0.604
21	0.0682	55.754	55.8	0.5	1.235	1.217	2.452	2.01	40.19	1.835	0.617
22	0.0691	57.967	58.0	0.5	1.284	1.195	2.479	2.07	40.50	1.837	0.642
23	0.0700	59.484	59.5	0.5	1.317	1.175	2.492	2.12	40.78	1.834	0.658
24	0.0709	61.108	61.1	0.6	1.352	1.157	2.509	2.17	41.03	1.833	0.676
25	0.0719	62.149	62.1	0.6	1.375	1.139	2.514	2.21	41.28	1.827	0.688
26	0.0728	64.012	64.0	0.6	1.416	1.121	2.537	2.26	41.52	1.829	0.708
27	0.0737	65.116	65.1	0.6	1.440	1.107	2.547	2.30	41.72	1.827	0.720
28	0.0747	66.360	66.4	0.7	1.467	1.090	2.558	2.35	41.96	1.824	0.734
29	0.0756	67.625	67.6	0.7	1.495	1.074	2.569	2.39	42.19	1.821	0.747
30	0.0775	69.739	69.7	0.7	1.541	1.051	2.591	2.47	42.51	1.821	0.770
31	0.0784	70.852	70.9	0.8	1.565	1.038	2.603	2.51	42.68	1.821	0.782
32	0.0802	72.910	72.9	0.8	1.610	1.020	2.629	2.58	42.94	1.825	0.805
33	0.0821	74.224	74.2	0.9	1.638	1.005	2.643	2.63	43.14	1.824	0.819
34	0.0830	75.292	75.3	0.9	1.661	0.997	2.658	2.67	43.25	1.828	0.830
35	0.0849	76.270	76.3	0.9	1.682	0.986	2.668	2.70	43.40	1.827	0.841
36	0.0867	77.322	77.3	1.0	1.704	0.977	2.681	2.74	43.53	1.829	0.852
37	0.0914	79.617	79.6	1.1	1.752	0.962	2.714	2.82	43.74	1.838	0.876
38	0.0951	81.189	81.2	1.2	1.785	0.955	2.740	2.87	43.83	1.848	0.893
39	0.0988	82.186	82.2	1.3	1.805	0.946	2.751	2.91	43.97	1.848	0.903
40	0.1062	84.170	84.2	1.5	1.845	0.940	2.785	2.96	44.05	1.862	0.922
41	0.1137	85.533	85.5	1.7	1.871	0.940	2.811	2.99	44.05	1.875	0.936
42	0.1248	87.345	87.3	2.0	1.905	0.941	2.846	3.02	44.03	1.893	0.952
43	0.1323	88.466	88.5	2.2	1.925	0.947	2.872	3.03	43.95	1.910	0.963
44	0.1434	89.820	89.8	2.5	1.949	0.960	2.908	3.03	43.77	1.934	0.974
45	0.1546	91.306	91.3	2.8	1.975	0.967	2.942	3.04	43.67	1.955	0.987
46	0.1657	92.325	92.3	3.1	1.991	0.985	2.975	3.02	43.43	1.980	0.995
47	0.1732	93.649	93.6	3.3	2.015	0.988	3.003	3.04	43.38	1.996	1.008
48	0.1843	94.982	95.0	3.6	2.037	1.003	3.040	3.03	43.17	2.021	1.019
49	0.1917	96.266	96.3	3.8	2.061	1.011	3.071	3.04	43.06	2.041	1.030
50	0.1991	97.667	97.7	4.0	2.086	1.019	3.106	3.05	42.94	2.062	1.043

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	102.660			101.660
Moisture content: Dry soil+tare, gms.	87.940			87.000
Moisture content: Tare, gms.	30.620			30.600
Moisture, %	25.7	28.9	26.0	26.0
Moist specimen weight, gms.	392.1			
Diameter, in.	2.00	2.04	2.07	
Area, in.^{2}	3.15	3.26	3.35	
Height, in.	3.86	3.85	3.58	
Net decrease in height, in.		0.01	0.27	
Net decrease in water volume, cc.			9.00	
Wet Density, pcf	122.9	122.1	124.8	
Dry density, pcf	97.8	94.7	99.0	
Void ratio	0.7241	0.7797	0.7018	
Saturation, %	95.8	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 = 78.00 psi (5.616 tsf)

Consolidation back pressure = 30.10 psi (2.167 tsf)

Consolidation effective confining stress = 3.449 tsf

Strain rate, %/min. = 0.05

Fail. Stress = 3.417 tsf **at reading no.** 43

Ult. Stress = 4.499 tsf **at reading no.** 72

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	0.0383	0.000	0.0	0.0	0.000	3.448	3.448	1.00	30.11	3.448	0.000
1	0.0384	0.000	0.0	0.0	0.000	3.448	3.448	1.00	30.11	3.448	0.000
2	0.0385	3.513	3.5	0.0	0.075	3.448	3.523	1.02	30.11	3.486	0.038
3	0.0421	6.455	6.5	0.1	0.139	3.435	3.574	1.04	30.29	3.504	0.069
4	0.0439	10.544	10.5	0.2	0.226	3.408	3.634	1.07	30.67	3.521	0.113
5	0.0457	14.425	14.4	0.2	0.309	3.380	3.689	1.09	31.06	3.534	0.155
6	0.0475	17.583	17.6	0.3	0.377	3.355	3.732	1.11	31.40	3.544	0.188
7	0.0493	21.109	21.1	0.3	0.452	3.329	3.781	1.14	31.77	3.555	0.226
8	0.0502	23.669	23.7	0.3	0.507	3.309	3.816	1.15	32.04	3.562	0.253
9	0.0511	26.424	26.4	0.4	0.566	3.288	3.854	1.17	32.33	3.571	0.283
10	0.0529	30.625	30.6	0.4	0.655	3.250	3.905	1.20	32.86	3.578	0.328
11	0.0538	34.506	34.5	0.4	0.738	3.217	3.955	1.23	33.32	3.586	0.369
12	0.0546	38.595	38.6	0.5	0.825	3.181	4.006	1.26	33.82	3.593	0.413
13	0.0556	42.850	42.8	0.5	0.916	3.142	4.058	1.29	34.37	3.600	0.458
14	0.0564	48.086	48.1	0.5	1.028	3.093	4.121	1.33	35.04	3.607	0.514
15	0.0573	53.353	53.4	0.5	1.140	3.040	4.180	1.37	35.78	3.610	0.570
16	0.0582	58.018	58.0	0.6	1.239	2.990	4.229	1.41	36.48	3.609	0.620
17	0.0591	63.202	63.2	0.6	1.350	2.935	4.285	1.46	37.24	3.610	0.675
18	0.0600	68.427	68.4	0.6	1.461	2.879	4.340	1.51	38.02	3.609	0.730
19	0.0609	73.472	73.5	0.6	1.568	2.824	4.392	1.56	38.78	3.608	0.784
20	0.0618	77.277	77.3	0.7	1.649	2.775	4.424	1.59	39.46	3.599	0.825

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	0.0627	82.062	82.1	0.7	1.751	2.721	4.471	1.64	40.21	3.596	0.875
22	0.0636	86.059	86.1	0.7	1.836	2.670	4.505	1.69	40.92	3.587	0.918
23	0.0645	90.286	90.3	0.7	1.925	2.619	4.544	1.74	41.63	3.581	0.963
24	0.0654	94.504	94.5	0.8	2.015	2.571	4.586	1.78	42.29	3.579	1.007
25	0.0663	98.436	98.4	0.8	2.098	2.524	4.622	1.83	42.95	3.573	1.049
26	0.0672	102.048	102.0	0.8	2.174	2.480	4.654	1.88	43.56	3.567	1.087
27	0.0681	105.090	105.1	0.8	2.239	2.440	4.679	1.92	44.11	3.559	1.119
28	0.0690	108.790	108.8	0.9	2.317	2.399	4.716	1.97	44.67	3.558	1.158
29	0.0699	112.228	112.2	0.9	2.389	2.361	4.750	2.01	45.21	3.556	1.195
30	0.0708	115.109	115.1	0.9	2.450	2.325	4.775	2.05	45.71	3.550	1.225
31	0.0717	118.115	118.1	0.9	2.514	2.293	4.806	2.10	46.16	3.549	1.257
32	0.0726	120.751	120.8	1.0	2.569	2.261	4.830	2.14	46.60	3.545	1.284
33	0.0744	125.702	125.7	1.0	2.673	2.205	4.878	2.21	47.37	3.542	1.336
34	0.0780	133.786	133.8	1.1	2.842	2.119	4.961	2.34	48.57	3.540	1.421
35	0.0815	139.084	139.1	1.2	2.952	2.061	5.012	2.43	49.38	3.536	1.476
36	0.0851	143.615	143.6	1.3	3.045	2.023	5.068	2.50	49.90	3.546	1.522
37	0.0887	146.785	146.8	1.4	3.109	1.994	5.103	2.56	50.30	3.549	1.554
38	0.0923	149.252	149.3	1.5	3.158	1.975	5.133	2.60	50.56	3.554	1.579
39	0.0995	152.991	153.0	1.7	3.230	1.954	5.184	2.65	50.86	3.569	1.615
40	0.1102	156.669	156.7	2.0	3.298	1.946	5.244	2.69	50.97	3.595	1.649
41	0.1210	159.569	159.6	2.3	3.349	1.946	5.294	2.72	50.98	3.620	1.674
42	0.1317	161.496	161.5	2.6	3.379	1.956	5.335	2.73	50.83	3.646	1.689
43	0.1425	163.843	163.8	2.9	3.417	1.967	5.384	2.74	50.69	3.675	1.709
44	0.1532	166.115	166.1	3.2	3.454	1.984	5.438	2.74	50.44	3.711	1.727
45	0.1639	167.776	167.8	3.5	3.478	2.000	5.477	2.74	50.23	3.739	1.739
46	0.1747	169.583	169.6	3.8	3.504	2.018	5.522	2.74	49.98	3.770	1.752
47	0.1854	171.471	171.5	4.1	3.532	2.035	5.567	2.74	49.74	3.801	1.766
48	0.1962	173.576	173.6	4.4	3.564	2.052	5.616	2.74	49.50	3.834	1.782
49	0.2069	174.917	174.9	4.7	3.580	2.073	5.653	2.73	49.21	3.863	1.790
50	0.2177	177.322	177.3	5.0	3.618	2.088	5.706	2.73	49.00	3.897	1.809
51	0.2356	180.170	180.2	5.5	3.657	2.116	5.773	2.73	48.62	3.944	1.828
52	0.2535	183.024	183.0	6.0	3.695	2.142	5.837	2.73	48.25	3.990	1.848
53	0.2714	185.425	185.4	6.5	3.724	2.162	5.886	2.72	47.97	4.024	1.862
54	0.2893	188.193	188.2	7.0	3.759	2.184	5.943	2.72	47.67	4.063	1.880
55	0.3072	190.435	190.4	7.5	3.783	2.206	5.990	2.71	47.36	4.098	1.892
56	0.3251	192.348	192.3	8.0	3.801	2.227	6.028	2.71	47.06	4.128	1.900
57	0.3341	195.070	195.1	8.3	3.844	2.233	6.077	2.72	46.98	4.155	1.922
58	0.3520	199.247	199.2	8.8	3.905	2.251	6.156	2.74	46.74	4.203	1.952
59	0.3699	202.018	202.0	9.3	3.938	2.271	6.209	2.73	46.46	4.240	1.969
60	0.3878	205.846	205.8	9.8	3.990	2.288	6.278	2.74	46.23	4.283	1.995
61	0.4057	209.472	209.5	10.3	4.038	2.307	6.345	2.75	45.95	4.326	2.019
62	0.4146	212.103	212.1	10.5	4.077	2.320	6.397	2.76	45.78	4.359	2.039
63	0.4325	215.989	216.0	11.0	4.129	2.341	6.470	2.76	45.49	4.405	2.064
64	0.4504	219.245	219.2	11.5	4.167	2.364	6.531	2.76	45.17	4.447	2.084
65	0.4684	223.333	223.3	12.0	4.221	2.390	6.611	2.77	44.81	4.500	2.111
66	0.4773	226.168	226.2	12.3	4.262	2.403	6.666	2.77	44.62	4.534	2.131
67	0.4952	228.988	229.0	12.8	4.291	2.432	6.723	2.76	44.23	4.577	2.146

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	0.5131	230.826	230.8	13.3	4.301	2.461	6.762	2.75	43.82	4.611	2.150
69	0.5310	235.259	235.3	13.8	4.358	2.487	6.845	2.75	43.46	4.666	2.179
70	0.5489	239.780	239.8	14.3	4.416	2.512	6.928	2.76	43.12	4.720	2.208
71	0.5668	243.652	243.7	14.8	4.461	2.541	7.002	2.76	42.71	4.771	2.231
72	0.5758	246.424	246.4	15.0	4.499	2.557	7.055	2.76	42.49	4.806	2.249

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
	12	35-36.5	Gray SILTY SAND; shell fragments	SM						19.2					
	13	38.5-40	Gray CLAYEY SAND; shell fragments	SC											
07-233															
	2	2.5-4	Gray FAT CLAY	CH	157.0										
	3	4.5-6	Gray FAT CLAY	CH	146.2		115	30	85	93.5					
	4	6.5-8	Gray FAT CLAY	CH	139.9										
	5	8.5-10	Gray FAT CLAY	CH	125.0										
	6	10.5-12	Gray FAT CLAY	CH	136.0		119	30	89	95.4					
	7	12.5-14	Gray FAT CLAY	CH	121.0										
	8	14.5-16	Gray FAT CLAY	CH	120.3										
	9	16.5-18	Gray FAT CLAY	CH	105.5		114	28	86	90.9					
	10	18-20	Gray SANDY LEAN CLAY	CL	23.2	96.7						0.78	10.6		Bulge
	11	20-22	Gray LEAN CLAY	CL	26.1	98.5	33	16	17	96.3					Multiple shear
	12	22-24	Tan and light gray LEAN CLAY	CL	27.3	96.2						0.48	9.8		
	13	24-26	Gray LEAN CLAY	CL	28.0	92.0	33	16	17	97.3		0.40	5.8	9.5	Bulge
	14	26-28	Tan and gray SANDY SILT; clay seams	ML	27.3	93.6									
	15	28-30	Tan and gray LEAN CLAY	CL			30	16	14	98.2					
	16	30-32	Tan and gray SANDY SILT; clay seams	ML	27.1	93.8									
	17	32-34	Tan and brown LEAN CLAY	CL	36.5	85.3	43	18	25	99.5		0.81	15.0	13.0	Bulge
	18	34-35	Gray FAT CLAY; sand seans	CH	33.0	87.4									
07-234															
	2	2.5-4	Gray SANDY LEAN CLAY; shell fragments	CL	51.0										
	3	4.5-6	Gray CLAYEY SAND; shell fragments	SC	40.7		42	17	25	24.0					
	4	6.5-8	Gray SANDY LEAN CLAY; shell fragments	CL	46.5										
	5	8-10	Tan and gray FAT CLAY	CH	30.9	88.0	75	24	51	98.4		1.08	2.0	3.5	Slickensided
	6	10-12	Gray FAT CLAY; sand seams	CH	20.6	102.5									
	7	12-14	Tan and gray SANDY SILT; clay seams	ML	24.6	98.2						0.66	5.5		Vertical shear
	8	14-16	Tan and gray LEAN CLAY	CL	25.7	97.7	26	15	11	98.0					
	9	16-18	Gray and tan FAT CLAY; sand seams	CH	30.3	92.2									
	10	18-20	Brown and gray SILTY CLAY with SAND	CL-ML	24.9	103.6						0.49	5.8	7.5	Bulge
	11	20-22	Tan and brown SILTY SAND; clay pockets	SM	25.6	96.8									
	12	22-24	Gray and tan FAT CLAY; sand seams	CH	27.2	93.8						0.81	3.3		Vertical shear
	13	24-26	Tan and brown FAT CLAY	CH	34.6	85.3	52	20	32	99.6		0.77	9.7	9.5	Bulge
	14	26-28	Gray FAT CLAY; sand seams	CH	32.4	86.3									
	15	28-30	Gray FAT CLAY	CH	31.2	86.7						0.98	8.1		Vertical shear
07-235															
	2	2.5-4	Gray FAT CLAY	CH	84.9										