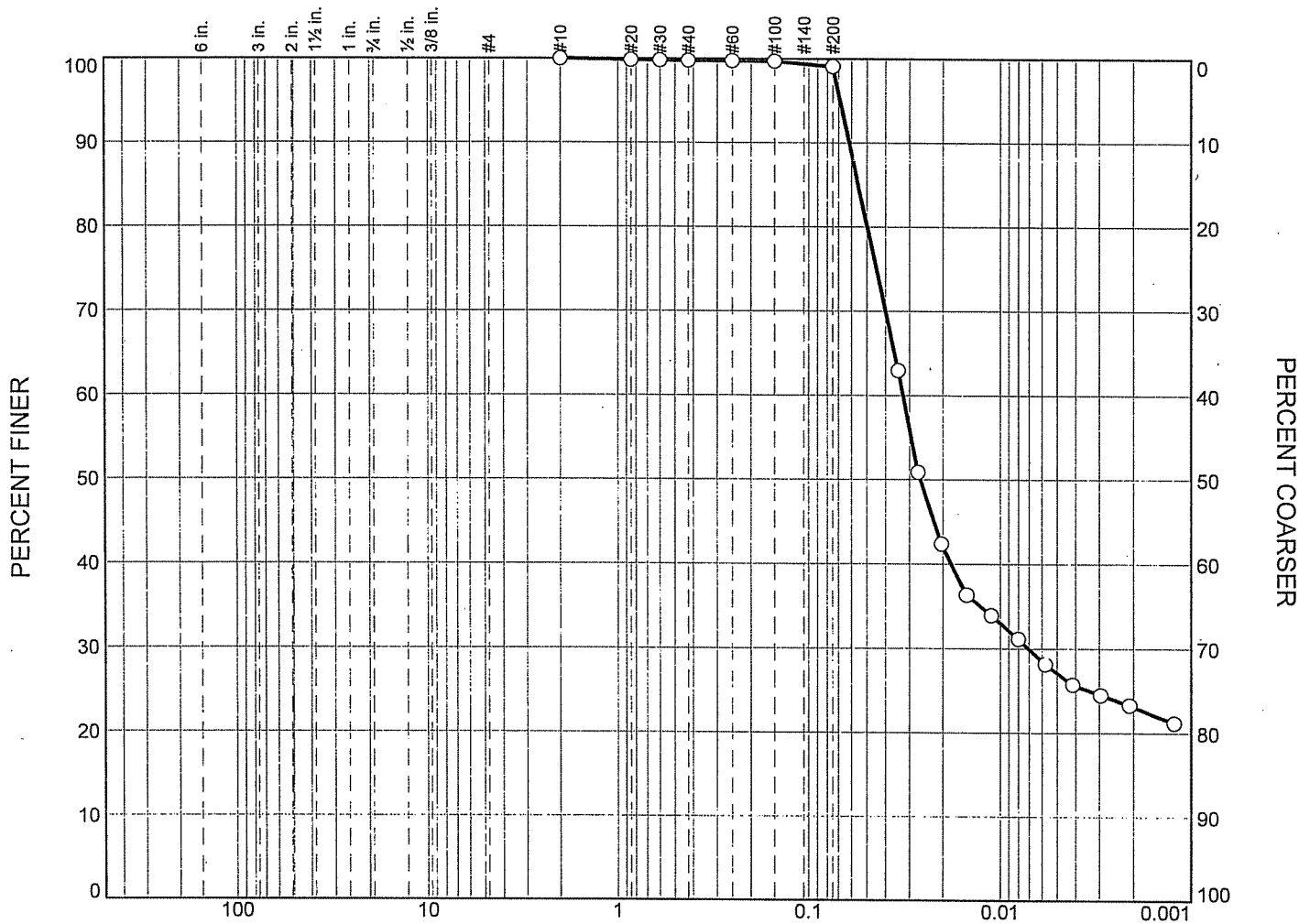


Particle Size Analysis - ASTM D 422



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.2	0.7	76.0	23.1

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	07-236	11	20-22	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: 07-236

Depth: 20-22

Sample Number: 11

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., %
299.08	217.37	217.37	3"					
			3/4"					
			#4					
			#10	217.37	100.0			
			#20	217.48	99.9			
			#30	217.52	99.8			
			#40	217.55	99.8			
			#60	217.57	99.8			
			#100	217.60	99.7			
			#200	218.13	99.1			

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 101.7

Hygroscopic moisture correction:

Moist weight and tare = 159.55

Dry weight and tare = 129.44

Tare weight = 6.79

Hygroscopic moisture = 24.5%

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: $L = 16.294964 - 0.164 \times R_m$

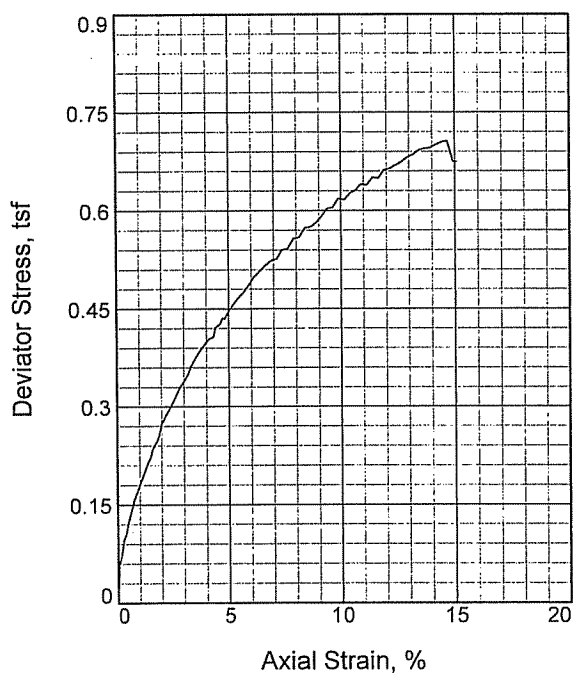
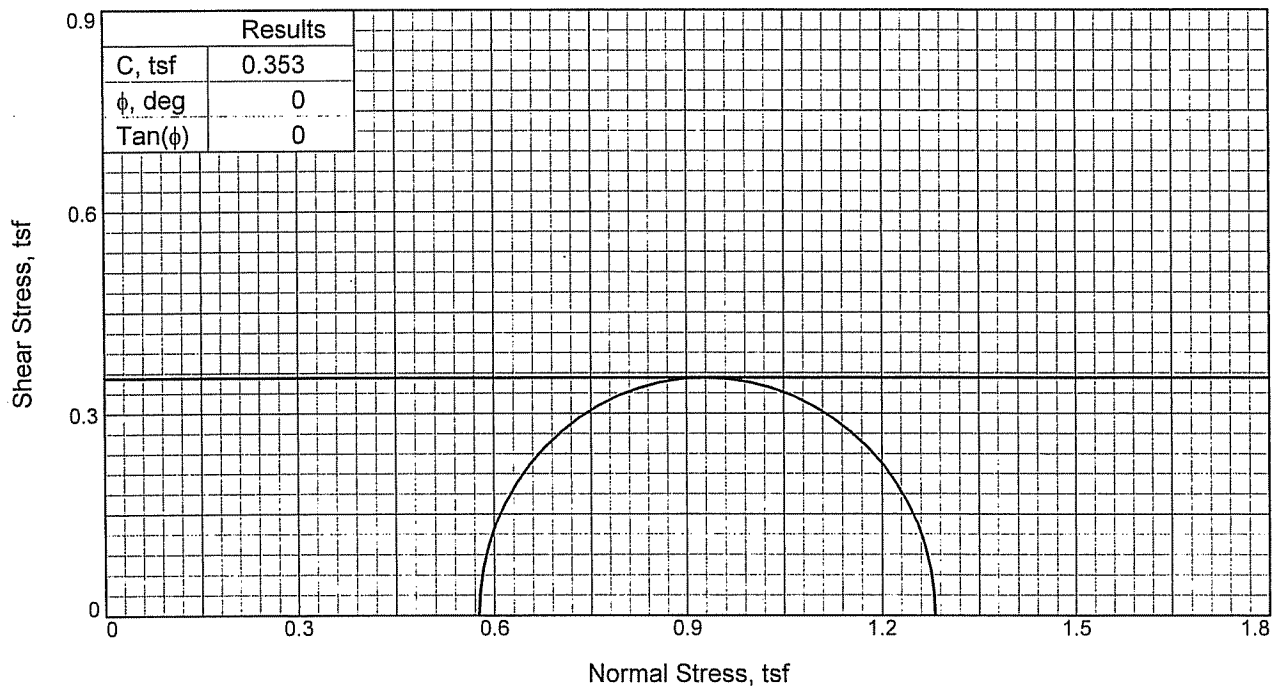
Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
1.00	22.0	57.0	52.0	0.0131	57.5	6.9	0.0344	63.0
2.00	22.0	47.0	42.0	0.0131	47.5	8.5	0.0270	50.9
4.00	22.0	40.0	35.0	0.0131	40.5	9.7	0.0204	42.4
8.00	22.0	35.0	30.0	0.0131	35.5	10.5	0.0150	36.3
15.00	22.0	33.0	28.0	0.0131	33.5	10.8	0.0111	33.9
30.00	21.8	31.0	25.7	0.0131	31.5	11.1	0.0080	31.1
60.00	21.5	29.0	23.3	0.0132	29.5	11.5	0.0058	28.2
120.00	21.5	27.0	21.3	0.0132	27.5	11.8	0.0041	25.7
240.00	21.5	26.0	20.3	0.0132	26.5	11.9	0.0029	24.5
480.00	21.5	25.0	19.3	0.0132	25.5	12.1	0.0021	23.3
1440.00	21.0	24.0	17.5	0.0133	24.5	12.3	0.0012	21.2

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	0.7	0.9	76.0	23.1	99.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0071	0.0263	0.0324	0.0497	0.0553	0.0616	0.0687

Fineness Modulus
0.01



Sample No.		1
Initial	Water Content, %	27.0
	Dry Density, pcf	98.6
	Saturation, %	97.6
	Void Ratio	0.7729
	Diameter, in.	2.76
	Height, in.	6.00
At Test	Water Content, %	26.9
	Dry Density, pcf	98.6
	Saturation, %	97.3
	Void Ratio	0.7729
	Diameter, in.	2.76
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.58
Fail. Stress, tsf		0.71
Ult. Stress, tsf		
σ_1 Failure, tsf		1.28
σ_3 Failure, tsf		0.58

Type of Test:

Unconsolidated Undrained

Sample Type: Undisturbed

Description: Tan and gray LEAN CLAY

LL= 38 PL= 17 PI= 21

Assumed Specific Gravity= 2.80

Remarks:

Test method: ASTM D 2850

Pocket pen; tsf: 0.50

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: 07-236

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

7/27/2008

3:29 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: 07-236
Depth: 20-22 **Sample Number:** 11
Description: Tan and gray LEAN CLAY
Remarks:

Test method: ASTM D 2850

Pocket pen; tsf: 0.50

Failure type: Vertical shear

Type of Sample: Undisturbed**Assumed Specific Gravity**=2.80**LL**=38**PL**=17**PI**=21**Test Method:** ASTM D 2850**Parameters for Specimen No. 1**

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	145.950	100.980
Moisture content: Dry soil+tare, gms.	121.710	86.340
Moisture content: Tare, gms.	31.770	31.860
Moisture, %	27.0	26.9
Moist specimen weight, gms.	1178.4	
Diameter, in.	2.76	
Area, in. ²	5.98	
Height, in.	6.00	
Wet Density, pcf	125.2	
Dry density, pcf	98.6	
Void ratio	0.7729	
Saturation, %	97.6	

Test Readings for Specimen No. 1Membrane modulus = .130 kN/cm²

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

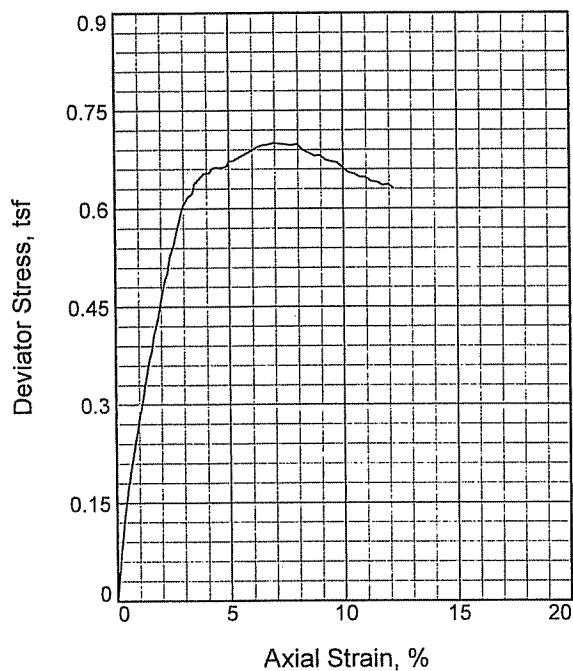
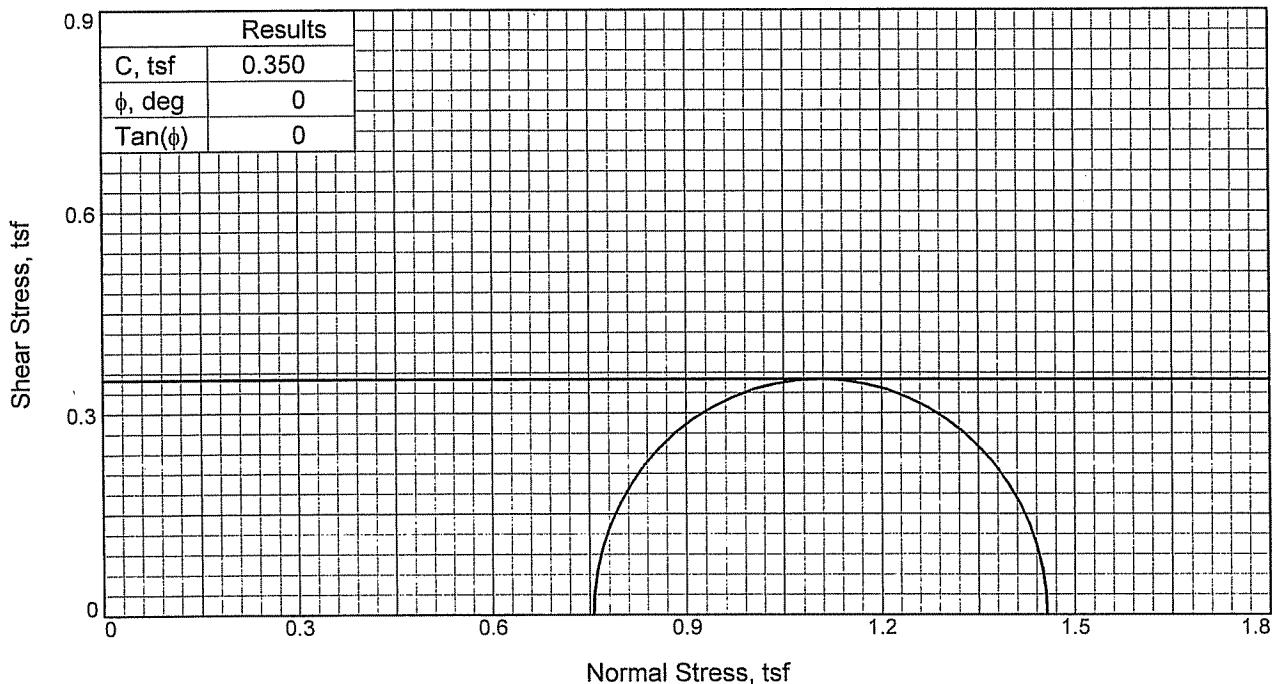
Fail. Stress = 0.706 tsf at reading no. 75

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	0.0901	0.000	0.0	0.0	0.000	0.576	0.576	1.00	0.576	0.000
1	0.0937	5.070	5.1	0.1	0.061	0.576	0.637	1.11	0.606	0.030
2	0.0955	5.060	5.1	0.1	0.061	0.576	0.637	1.11	0.606	0.030
3	0.0999	6.140	6.1	0.2	0.074	0.576	0.650	1.13	0.613	0.037
4	0.1031	6.999	7.0	0.2	0.084	0.576	0.660	1.15	0.618	0.042
5	0.1065	7.926	7.9	0.3	0.095	0.576	0.671	1.17	0.624	0.048
6	0.1124	8.631	8.6	0.4	0.103	0.576	0.679	1.18	0.628	0.052
7	0.1157	9.337	9.3	0.4	0.112	0.576	0.688	1.19	0.632	0.056
8	0.1182	10.058	10.1	0.5	0.120	0.576	0.696	1.21	0.636	0.060
9	0.1229	10.952	11.0	0.5	0.131	0.576	0.707	1.23	0.642	0.066
10	0.1295	12.136	12.1	0.7	0.145	0.576	0.721	1.25	0.649	0.073
11	0.1354	13.132	13.1	0.8	0.157	0.576	0.733	1.27	0.654	0.078
12	0.1433	14.164	14.2	0.9	0.169	0.576	0.745	1.29	0.660	0.084
13	0.1525	15.432	15.4	1.0	0.184	0.576	0.760	1.32	0.668	0.092
14	0.1616	16.550	16.5	1.2	0.197	0.576	0.773	1.34	0.674	0.098
15	0.1731	18.050	18.0	1.4	0.214	0.576	0.790	1.37	0.683	0.107
16	0.1797	18.752	18.8	1.5	0.222	0.576	0.798	1.39	0.687	0.111
17	0.1854	19.818	19.8	1.6	0.235	0.576	0.811	1.41	0.693	0.117
18	0.1977	20.901	20.9	1.8	0.247	0.576	0.823	1.43	0.700	0.124
19	0.2035	21.758	21.8	1.9	0.257	0.576	0.833	1.45	0.704	0.128
20	0.2099	23.070	23.1	2.0	0.272	0.576	0.848	1.47	0.712	0.136
21	0.2215	24.281	24.3	2.2	0.286	0.576	0.862	1.50	0.719	0.143
22	0.2338	25.359	25.4	2.4	0.298	0.576	0.874	1.52	0.725	0.149
23	0.2459	26.613	26.6	2.6	0.312	0.576	0.888	1.54	0.732	0.156
24	0.2581	27.988	28.0	2.8	0.327	0.576	0.903	1.57	0.740	0.164
25	0.2703	28.921	28.9	3.0	0.338	0.576	0.914	1.59	0.745	0.169
26	0.2825	30.146	30.1	3.2	0.351	0.576	0.927	1.61	0.752	0.176
27	0.2889	30.979	31.0	3.3	0.360	0.576	0.936	1.63	0.756	0.180
28	0.3005	32.154	32.2	3.5	0.373	0.576	0.949	1.65	0.763	0.187
29	0.3128	33.167	33.2	3.7	0.384	0.576	0.960	1.67	0.768	0.192
30	0.3249	34.090	34.1	3.9	0.394	0.576	0.970	1.68	0.773	0.197
31	0.3371	34.944	34.9	4.1	0.403	0.576	0.979	1.70	0.778	0.202
32	0.3494	35.340	35.3	4.3	0.407	0.576	0.983	1.71	0.779	0.203
33	0.3552	36.572	36.6	4.4	0.421	0.576	0.997	1.73	0.786	0.210
34	0.3673	37.208	37.2	4.6	0.427	0.576	1.003	1.74	0.790	0.214
35	0.3737	37.968	38.0	4.7	0.435	0.576	1.011	1.76	0.794	0.218
36	0.3795	37.954	38.0	4.8	0.435	0.576	1.011	1.75	0.793	0.217
37	0.3918	39.230	39.2	5.0	0.448	0.576	1.024	1.78	0.800	0.224
38	0.4123	40.784	40.8	5.4	0.464	0.576	1.040	1.81	0.808	0.232
39	0.4278	41.728	41.7	5.6	0.474	0.576	1.050	1.82	0.813	0.237
40	0.4425	42.807	42.8	5.9	0.485	0.576	1.061	1.84	0.818	0.242
41	0.4573	44.101	44.1	6.1	0.498	0.576	1.074	1.86	0.825	0.249
42	0.4728	45.011	45.0	6.4	0.507	0.576	1.083	1.88	0.830	0.254
43	0.4875	45.877	45.9	6.6	0.515	0.576	1.091	1.89	0.834	0.258
44	0.5029	46.693	46.7	6.9	0.523	0.576	1.099	1.91	0.838	0.262
45	0.5176	47.089	47.1	7.1	0.526	0.576	1.102	1.91	0.839	0.263
46	0.5330	48.456	48.5	7.4	0.540	0.576	1.116	1.94	0.846	0.270

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	0.5478	48.764	48.8	7.6	0.542	0.576	1.118	1.94	0.847	0.271
48	0.5631	50.265	50.3	7.9	0.557	0.576	1.133	1.97	0.855	0.279
49	0.5779	50.579	50.6	8.1	0.559	0.576	1.135	1.97	0.856	0.280
50	0.5933	52.024	52.0	8.4	0.574	0.576	1.150	2.00	0.863	0.287
51	0.6081	52.317	52.3	8.6	0.575	0.576	1.151	2.00	0.864	0.288
52	0.6234	53.054	53.1	8.9	0.582	0.576	1.158	2.01	0.867	0.291
53	0.6382	54.125	54.1	9.1	0.592	0.576	1.168	2.03	0.872	0.296
54	0.6536	55.310	55.3	9.4	0.603	0.576	1.179	2.05	0.878	0.302
55	0.6683	55.577	55.6	9.6	0.604	0.576	1.180	2.05	0.878	0.302
56	0.6837	57.015	57.0	9.9	0.618	0.576	1.194	2.07	0.885	0.309
57	0.6984	57.049	57.0	10.1	0.617	0.576	1.193	2.07	0.884	0.308
58	0.7137	58.113	58.1	10.4	0.627	0.576	1.203	2.09	0.889	0.313
59	0.7285	58.644	58.6	10.6	0.631	0.576	1.207	2.09	0.891	0.315
60	0.7439	59.666	59.7	10.9	0.640	0.576	1.216	2.11	0.896	0.320
61	0.7586	59.760	59.8	11.2	0.639	0.576	1.215	2.11	0.895	0.319
62	0.7741	61.008	61.0	11.4	0.650	0.576	1.226	2.13	0.901	0.325
63	0.7888	61.087	61.1	11.7	0.649	0.576	1.225	2.13	0.901	0.325
64	0.8042	62.407	62.4	11.9	0.662	0.576	1.238	2.15	0.907	0.331
65	0.8189	62.789	62.8	12.2	0.664	0.576	1.240	2.15	0.908	0.332
66	0.8343	63.465	63.5	12.4	0.669	0.576	1.245	2.16	0.910	0.334
67	0.8490	64.087	64.1	12.7	0.674	0.576	1.250	2.17	0.913	0.337
68	0.8644	64.944	64.9	12.9	0.681	0.576	1.257	2.18	0.916	0.340
69	0.8791	65.526	65.5	13.2	0.685	0.576	1.261	2.19	0.918	0.342
70	0.8945	66.399	66.4	13.4	0.692	0.576	1.268	2.20	0.922	0.346
71	0.9093	66.803	66.8	13.7	0.694	0.576	1.270	2.20	0.923	0.347
72	0.9247	67.132	67.1	13.9	0.695	0.576	1.271	2.21	0.924	0.348
73	0.9394	67.768	67.8	14.2	0.700	0.576	1.276	2.22	0.926	0.350
74	0.9548	68.378	68.4	14.4	0.704	0.576	1.280	2.22	0.928	0.352
75	0.9695	68.760	68.8	14.7	0.706	0.576	1.282	2.23	0.929	0.353
76	0.9849	69.409	69.4	14.9	0.675	0.576	1.251	2.17	0.913	0.337
77	0.9932	69.518	69.5	15.1	0.674	0.576	1.250	2.17	0.913	0.337



Sample No.		1
Initial	Water Content, %	28.2
	Dry Density, pcf	94.3
	Saturation, %	96.6
	Void Ratio	0.7879
	Diameter, in.	2.77
	Height, in.	5.98
At Test	Water Content, %	26.8
	Dry Density, pcf	94.3
	Saturation, %	92.0
	Void Ratio	0.7879
	Diameter, in.	2.77
	Height, in.	5.98
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.76
Fail. Stress, tsf		0.70
Ult. Stress, tsf		
σ_1 Failure, tsf		1.46
σ_3 Failure, tsf		0.76

Type of Test:

Unconsolidated Undrained

Sample Type: Undisturbed

Description: Tan and gray LEAN CLAY

LL= 39 PL= 17 PI= 22

Assumed Specific Gravity= 2.70

Remarks:

Test method: ASTM D 2850

Pocket pen; tsf: 1.00

Failure type: 60 degree

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: 07-236

Depth: 26-28

Sample Number: 14

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

7:17 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: 07-236
Depth: 26-28 **Sample Number:** 14
Description: Tan and gray LEAN CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.00
Failure type: 60 degree
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL**=39 **PL**=17 **PI**=22
Test Method: ASTM D 2850

Parameters for Specimen No. 1		
Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	137.590	118.450
Moisture content: Dry soil+tare, gms.	114.320	100.060
Moisture content: Tare, gms.	31.730	31.550
Moisture, %	28.2	26.8
Moist specimen weight, gms.	1143.3	
Diameter, in.	2.77	
Area, in. ²	6.03	
Height, in.	5.98	
Wet Density, pcf	120.8	
Dry density, pcf	94.3	
Void ratio	0.7879	
Saturation, %	96.6	

Test Readings for Specimen No. 1	
Membrane modulus = .130 kN/cm ²	
Membrane thickness = .031 cm	
Cell pressure = 10.50 psi (0.756 tsf)	
Back pressure = 0.00 psi (0.000 tsf)	
Strain rate, %/min. = 1.00	
Fail. Stress = 0.700 tsf at reading no. 58	

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	0.0533	0.000	0.0	0.0	0.000	0.756	0.756	1.00	0.756	0.000
1	0.0617	4.859	4.9	0.1	0.058	0.756	0.814	1.08	0.785	0.029
2	0.0633	5.725	5.7	0.2	0.068	0.756	0.824	1.09	0.790	0.034
3	0.0646	6.399	6.4	0.2	0.076	0.756	0.832	1.10	0.794	0.038
4	0.0679	7.624	7.6	0.2	0.091	0.756	0.847	1.12	0.801	0.045
5	0.0691	8.554	8.6	0.3	0.102	0.756	0.858	1.13	0.807	0.051
6	0.0725	10.191	10.2	0.3	0.121	0.756	0.877	1.16	0.817	0.061
7	0.0756	11.529	11.5	0.4	0.137	0.756	0.893	1.18	0.825	0.069
8	0.0782	12.282	12.3	0.4	0.146	0.756	0.902	1.19	0.829	0.073
9	0.0815	13.204	13.2	0.5	0.157	0.756	0.913	1.21	0.835	0.079
10	0.0828	14.195	14.2	0.5	0.169	0.756	0.925	1.22	0.840	0.084
11	0.0874	15.222	15.2	0.6	0.181	0.756	0.937	1.24	0.846	0.090
12	0.0907	16.519	16.5	0.6	0.196	0.756	0.952	1.26	0.854	0.098
13	0.0940	17.429	17.4	0.7	0.207	0.756	0.963	1.27	0.859	0.103
14	0.0965	18.232	18.2	0.7	0.216	0.756	0.972	1.29	0.864	0.108
15	0.1011	19.759	19.8	0.8	0.234	0.756	0.990	1.31	0.873	0.117
16	0.1057	21.027	21.0	0.9	0.249	0.756	1.005	1.33	0.881	0.125
17	0.1090	21.929	21.9	0.9	0.260	0.756	1.016	1.34	0.886	0.130
18	0.1123	23.032	23.0	1.0	0.272	0.756	1.028	1.36	0.892	0.136
19	0.1149	24.054	24.1	1.0	0.284	0.756	1.040	1.38	0.898	0.142
20	0.1182	24.693	24.7	1.1	0.292	0.756	1.048	1.39	0.902	0.146
21	0.1215	25.466	25.5	1.1	0.301	0.756	1.057	1.40	0.906	0.150
22	0.1285	27.786	27.8	1.3	0.328	0.756	1.084	1.43	0.920	0.164
23	0.1350	29.677	29.7	1.4	0.350	0.756	1.106	1.46	0.931	0.175
24	0.1408	31.152	31.2	1.5	0.367	0.756	1.123	1.49	0.939	0.183
25	0.1472	32.489	32.5	1.6	0.382	0.756	1.138	1.51	0.947	0.191
26	0.1529	34.595	34.6	1.7	0.406	0.756	1.162	1.54	0.959	0.203
27	0.1593	35.723	35.7	1.8	0.419	0.756	1.175	1.55	0.966	0.210
28	0.1650	37.086	37.1	1.9	0.435	0.756	1.191	1.58	0.973	0.217
29	0.1714	39.114	39.1	2.0	0.458	0.756	1.214	1.61	0.985	0.229
30	0.1772	40.442	40.4	2.1	0.473	0.756	1.229	1.63	0.993	0.237
31	0.1830	41.918	41.9	2.2	0.490	0.756	1.246	1.65	1.001	0.245
32	0.1895	42.855	42.9	2.3	0.500	0.756	1.256	1.66	1.006	0.250
33	0.1952	44.965	45.0	2.4	0.524	0.756	1.280	1.69	1.018	0.262
34	0.2016	45.891	45.9	2.5	0.535	0.756	1.291	1.71	1.023	0.267
35	0.2074	46.871	46.9	2.6	0.546	0.756	1.302	1.72	1.029	0.273
36	0.2138	48.541	48.5	2.7	0.564	0.756	1.320	1.75	1.038	0.282
37	0.2195	49.607	49.6	2.8	0.576	0.756	1.332	1.76	1.044	0.288
38	0.2259	51.112	51.1	2.9	0.593	0.756	1.349	1.78	1.053	0.297
39	0.2317	52.103	52.1	3.0	0.604	0.756	1.360	1.80	1.058	0.302
40	0.2438	53.292	53.3	3.2	0.616	0.756	1.372	1.82	1.064	0.308
41	0.2561	54.004	54.0	3.4	0.623	0.756	1.379	1.82	1.068	0.312
42	0.2618	55.275	55.3	3.5	0.637	0.756	1.393	1.84	1.075	0.319
43	0.2741	56.091	56.1	3.7	0.645	0.756	1.401	1.85	1.079	0.323
44	0.2862	56.879	56.9	3.9	0.653	0.756	1.409	1.86	1.083	0.327
45	0.2984	57.065	57.1	4.1	0.654	0.756	1.410	1.86	1.083	0.327
46	0.3105	57.913	57.9	4.3	0.662	0.756	1.418	1.88	1.087	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	0.3220	58.077	58.1	4.5	0.663	0.756	1.419	1.88	1.087	0.331
48	0.3343	58.171	58.2	4.7	0.662	0.756	1.418	1.88	1.087	0.331
49	0.3464	58.438	58.4	4.9	0.664	0.756	1.420	1.88	1.088	0.332
50	0.3528	59.214	59.2	5.0	0.672	0.756	1.428	1.89	1.092	0.336
51	0.3643	59.381	59.4	5.2	0.673	0.756	1.429	1.89	1.092	0.336
52	0.3797	60.070	60.1	5.5	0.679	0.756	1.435	1.90	1.095	0.339
53	0.3944	60.663	60.7	5.7	0.683	0.756	1.439	1.90	1.098	0.342
54	0.4098	61.238	61.2	6.0	0.688	0.756	1.444	1.91	1.100	0.344
55	0.4245	61.873	61.9	6.2	0.693	0.756	1.449	1.92	1.103	0.347
56	0.4398	62.356	62.4	6.5	0.697	0.756	1.453	1.92	1.104	0.348
57	0.4545	62.579	62.6	6.7	0.698	0.756	1.454	1.92	1.105	0.349
58	0.4699	63.000	63.0	7.0	0.700	0.756	1.456	1.93	1.106	0.350
59	0.4846	63.080	63.1	7.2	0.699	0.756	1.455	1.93	1.106	0.350
60	0.4999	63.142	63.1	7.5	0.698	0.756	1.454	1.92	1.105	0.349
61	0.5146	63.180	63.2	7.7	0.697	0.756	1.453	1.92	1.104	0.348
62	0.5300	63.559	63.6	8.0	0.699	0.756	1.455	1.92	1.105	0.349
63	0.5447	62.887	62.9	8.2	0.690	0.756	1.446	1.91	1.101	0.345
64	0.5600	62.686	62.7	8.5	0.685	0.756	1.441	1.91	1.099	0.343
65	0.5747	62.400	62.4	8.7	0.681	0.756	1.437	1.90	1.096	0.340
66	0.5901	62.636	62.6	9.0	0.681	0.756	1.437	1.90	1.097	0.341
67	0.6048	62.172	62.2	9.2	0.674	0.756	1.430	1.89	1.093	0.337
68	0.6195	62.110	62.1	9.5	0.672	0.756	1.428	1.89	1.092	0.336
69	0.6350	62.186	62.2	9.7	0.671	0.756	1.427	1.89	1.091	0.335
70	0.6497	61.583	61.6	10.0	0.662	0.756	1.418	1.88	1.087	0.331
71	0.6651	61.080	61.1	10.2	0.655	0.756	1.411	1.87	1.084	0.328
72	0.6798	61.031	61.0	10.5	0.653	0.756	1.409	1.86	1.082	0.326
73	0.6951	60.759	60.8	10.7	0.648	0.756	1.404	1.86	1.080	0.324
74	0.7098	60.917	60.9	11.0	0.648	0.756	1.404	1.86	1.080	0.324
75	0.7251	60.504	60.5	11.2	0.642	0.756	1.398	1.85	1.077	0.321
76	0.7399	60.580	60.6	11.5	0.641	0.756	1.397	1.85	1.076	0.320
77	0.7552	60.263	60.3	11.7	0.636	0.756	1.392	1.84	1.074	0.318
78	0.7698	60.570	60.6	12.0	0.637	0.756	1.393	1.84	1.074	0.318
79	0.7820	60.154	60.2	12.2	0.631	0.756	1.387	1.83	1.072	0.316

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
	3	4.5-6	Gray FAT CLAY	CH	95.0		95	26	69	92.9					
	4	6.5-8	Gray FAT CLAY	CH	75.1										
	5	8.5-10	Gray FAT CLAY	CH	84.8										
	6	10-12	Gray FAT CLAY with SAND	CH	65.5	61.2	76	24	52	77.6		0.26	4.1	4.5	Bulge
	7	12-13.5	Gray SANDY LEAN CLAY	CL	48.3										
	8	14-15.5	Gray SILTY SAND	SM						15.6					
	9	18-20	Gray FAT CLAY	CH	52.5	65.2	105	28	77	89.0		0.46	8.2		Vertical shear
	10	20-22	Gray FAT CLAY with SAND; shell fragments	CH	60.7	65.9									
	11	22-24	Gray FAT CLAY; sand seams and shell fragments	CH	41.1	79.6	61	21	40	88.5		0.54	6.7	9.0	60 degree
	12	24-26	Gray and tan FAT CLAY	CH	29.7	92.6	66	21	45	99.1					
	13	26-28	Reddish-brown and gray FAT CLAY	CH	33.1	89.4									
	14	28-30	Reddish-brown and gray FAT CLAY	CH	29.0	87.1						1.12	4.1		Slickensided
	15	30-32	Gray FAT CLAY; sand seams	CH	33.1	87.0									
	16	32-34	Tan and gray LEAN CLAY	CL	24.0	101.9	32	16	16	98.2		0.43	6.4	13.0	Bulge
	17	34-36	Tan and gray SANDY SILTY CLAY	CL-ML	23.3	104.5									
	18	36-38	Tan and gray SANDY SILTY CLAY	CL-ML	26.0	94.6									
	19	38-40	Tan LEAN CLAY	CL	25.0		32	16	16	97.8					
	20	40-42	Tan and gray SANDY LEAN CLAY	CL	24.5	95.8									
	21	42-44	Tan and gray SANDY LEAN CLAY	CL	28.9	93.4						0.97	6.1		Vertical shear
	22	44-46	Tan and gray SANDY SILTY CLAY	CL-ML	26.3	95.9									
	23	46-48	Gray and tan FAT CLAY; sand seams	CH	35.1	88.8									
	24	48-50	Gray and tan FAT CLAY; sand seams	CH	34.5	90.8									
07-236															
	2	2.5-4	Gray FAT CLAY	CH	112.7										
	3	4.5-6	Gray FAT CLAY with SAND	CH	115.2		105	28	77	84.7					
	4	6.5-8	Gray FAT CLAY	CH	107.9										
	5	8.5-10	Gray FAT CLAY	CH	110.6										
	6	10.5-12	Gray FAT CLAY	CH	112.1		107	28	79	95.9					
	7	12.5-14	Gray FAT CLAY	CH	109.0										
	8	14.5-16	Gray FAT CLAY	CH	106.2										
	9	16-18	Gray FAT CLAY	CH	111.5		110	29	81	97.9					
	10	18-20	Gray and tan SANDY LEAN CLAY	CL	27.2	86.8									
	11	20-22	Tan and gray LEAN CLAY	CL	27.0	98.6	38	17	21	99.1		0.71	14.7	8.0	Vertical shear
	12	22-24	Tan and gray SANDY LEAN CLAY	CL	20.2	101.2									
	13	24-26	Tan and gray SANDY LEAN CLAY	CL	26.3	95.1									
	14	26-28	Tan and gray LEAN CLAY	CL	28.2	94.3	39	17	22	99.3		0.70	7.0	10.5	60 degree
	15	28-30	Tan and gray SANDY SILTY CLAY	CL-ML	29.0										

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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									

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