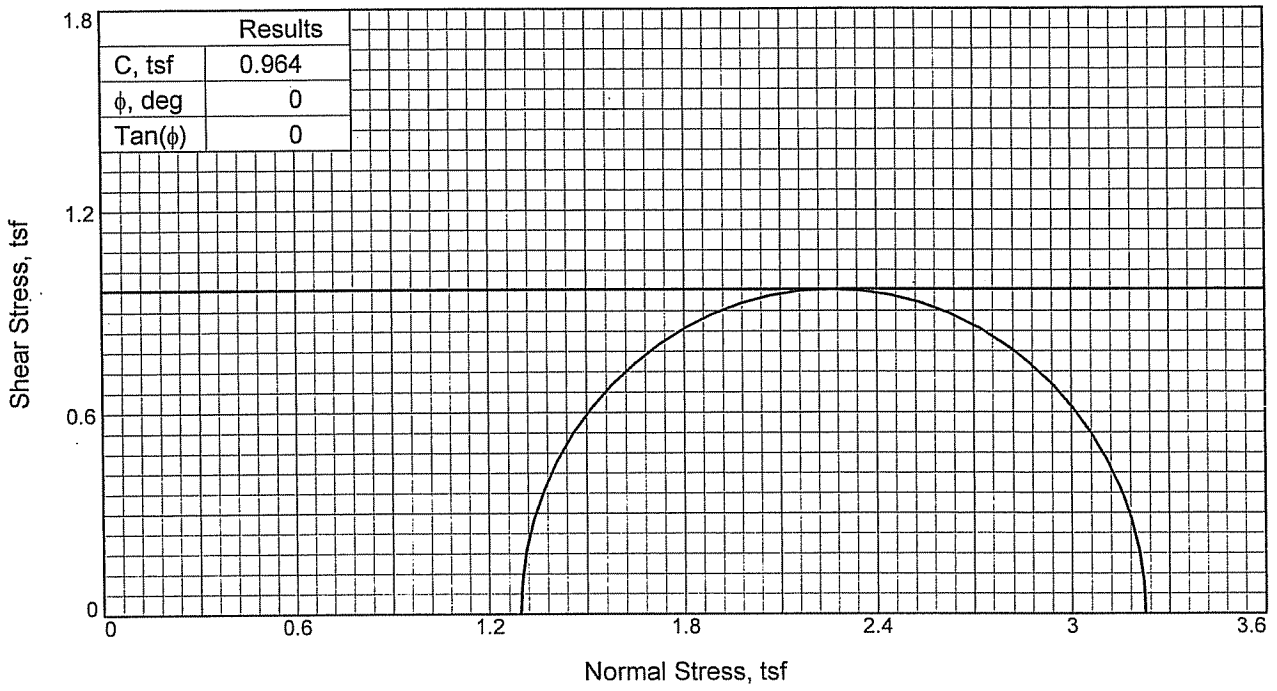
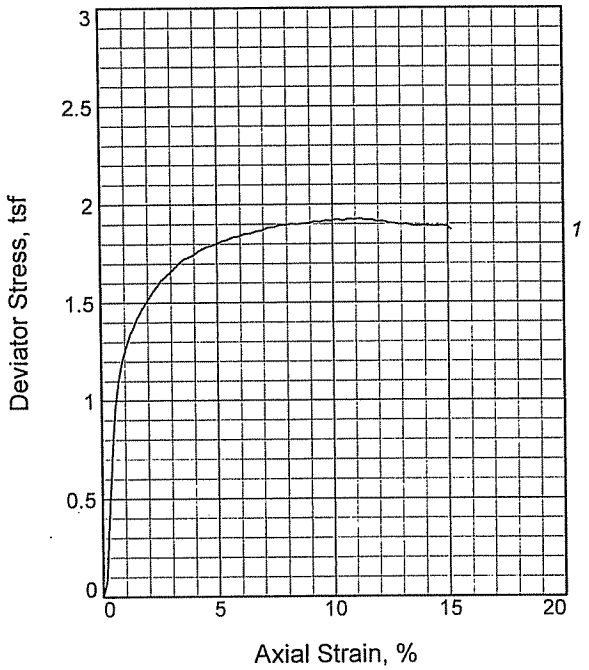
	1	0-2	Gray and tan SANDY LEAN CLAY	CL	16.5	102.7								
	2	2-4	Tan and gray SANDY LEAN CLAY	CL	22.1	101.4								
	3	4-6	Tan and gray FAT CLAY with SAND	CH	22.3	100.8								
	4	6-8	Reddish-brown and gray LEAN CLAY	CL	23.5	104.2	34	16	18	93.5	1.18	14.2	8	Bulge
	5	8-10	Reddish-brown and gray FAT CLAY; part silty clay with sand	CH	28.1	97.1					1.16	10.1		Vertical shear
	6	10-12	Reddish-brown and gray FAT CLAY	CH	31.1	90.4								
	7	12-14	Reddish-brown and gray FAT CLAY	CH	30.8	90.2								
	8	14-16	Reddish-brown and gray FAT CLAY	CH	24.1	101.2								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	27.8	95.6								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	25.3	99.3								
08-100			**El. 19.50, E=3183395 N=13646859**											
	2	2-4	Reddish-brown and gray FAT CLAY	CH	30.6	86.6								
	3	4-6	Reddish-brown and gray FAT CLAY	CH	36.6	81.7								
	4	6-8	Gray and tan FAT CLAY	CH	29.4	94.1								
	5	8-10	Gray and tan FAT CLAY	CH	27.7	93.7								
	6	10-12	Tan and gray FAT CLAY	CH	29.2	91.8								
	7	12-14	Gray FAT CLAY	CH	35.8	83.2								
	8	14-16	Tan and gray FAT CLAY; calcareous nodules	CH	28.2	94.1								
	9	16-18	Tan and gray FAT CLAY; calcareous nodules	CH	20.2	103.1								
	10	18-20	Tan and gray FAT CLAY; calcareous nodules	CH	18.6	110.1								
	11	20-22	Reddish-brown and gray FAT CLAY	CH	21.9	106.4	64	21	43	97.8	1.93	11.2	18	Slickensided
	12	22-24	Reddish-brown and gray FAT CLAY	CH	26.8	97.4								
	13	24-26	Reddish-brown and gray FAT CLAY	CH	26.0	97.3								
	14	26-28	Reddish-brown and gray FAT CLAY	CH	28.5	93.7								
	15	28-30	Reddish-brown and gray FAT CLAY	CH	26.0	96.3								
	16	30-32	Reddish-brown and gray FAT CLAY	CH	25.7	99.1								
	17	32-34	Reddish-brown and gray FAT CLAY	CH	29.1	93.8								
	18	34-36	Reddish-brown and gray FAT CLAY	CH	24.9	97.8	72	22	50	99.9	2.07	3.1		Slickensided
	19	36-38	Reddish-brown and gray FAT CLAY	CH	29.1	93.9								
	20	38-40	Reddish-brown and gray FAT CLAY	CH	29.0	92.4								
08-101			**El. 17.0, E=3183228 N=13647757**											
	1	0-2	Gray and tan FAT CLAY	CH	26.2	84.8								
	2	2-4	Gray and tan FAT CLAY with SAND	CH	29.9	86.3								
	3	4-6	Gray and tan FAT CLAY	CH	27.1	89.1								
	4	6-8	Gray FAT CLAY	CH	24.0	98.1								
	5	8-10	Gray FAT CLAY	CH	31.2	87.4								
	6	10-12	Tan and gray FAT CLAY	CH	22.1	101.5								
	7	12-14	Tan and gray FAT CLAY; calcareous nodules	CH	17.6	113.9								
	8	14-16	Reddish-brown and tan FAT CLAY; calcareous nodules	CH	20.7	112.2								
	9	16-18	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	21.0	109.7								
	10	18-20	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	26.0	99.3								
	11	20-22	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.1	100.2								
	12	22-24	Reddish-brown and gray FAT CLAY	CH	24.8	100.9	65	21	44	99.1	1.68	14.7	20	Slickensided
	13	24-26	Reddish-brown and gray FAT CLAY	CH	25.1	98.4								
	14	26-28	Reddish-brown and gray FAT CLAY	CH	24.1	99.8								
	15	28-30	Reddish-brown SILTY CLAY with SAND	CL-ML	25.4	97.8								
	16	30-32	Reddish-brown and gray FAT CLAY	CH	24.7	99.1								
	17	32-34	Reddish-brown and gray FAT CLAY	CH	25.0	95.4	67	21	46	97.7	2.30	9.2		60 degree
	18	34-36	Reddish-brown and gray FAT CLAY	CH	23.5	100.3								
	19	36-38	Reddish-brown and gray FAT CLAY	CH	24.4	98.7								
	20	38-40	Reddish-brown and gray FAT CLAY	CH	32.8	90.3								





Sample No.		1
Initial	Water Content, %	21.9
	Dry Density, pcf	106.4
	Saturation, %	98.2
	Void Ratio	0.6137
	Diameter, in.	2.85
	Height, in.	6.00
At Test	Water Content, %	23.8
	Dry Density, pcf	106.4
	Saturation, %	106.7
	Void Ratio	0.6137
	Diameter, in.	2.85
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		1.30
Fail. Stress, tsf		1.93
Ult. Stress, tsf		
σ_1 Failure, tsf		3.22
σ_3 Failure, tsf		1.30

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Reddish-brown and gray FAT CLAY

LL= 64 **PL=** 21 **PI=** 43

Assumed Specific Gravity= 2.75

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 3.00
Failure type: Slickensided

Client: United States Army Corps of Engineers

Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079

Source of Sample: 08-100 **Depth:** 20-22

Sample Number: 11

Proj. No.: 08.18.921 **Date Sampled:** 8/16/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

8/19/2008
2:15 PM

Date: 8/16/08
Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921
Location: 08-100
Depth: 20-22 **Sample Number:** 11
Description: Reddish-brown and gray FAT CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 3.00
Failure type: Slickensided
Type of Sample: Undisturbed
Assumed Specific Gravity=2.75 **LL=**64 **PL=**21 **PI=**43
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	154.850	110.050
Moisture content: Dry soil+tare, gms.	132.710	94.980
Moisture content: Tare, gms.	31.730	31.720
Moisture, %	21.9	23.8
Moist specimen weight, gms.	1303.3	
Diameter, in.	2.85	
Area, in.^{2}	6.38	
Height, in.	6.00	
Wet Density, pcf	129.7	
Dry density, pcf	106.4	
Void ratio	0.6137	
Saturation, %	98.2	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 18.00 psi (1.296 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 1.928 tsf **at reading no.** 78

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	0.0396	0.000	0.0	0.0	0.000	1.296	1.296	1.00	1.296	0.000
1	0.0473	5.220	5.2	0.1	0.059	1.296	1.355	1.05	1.325	0.029
2	0.0491	7.628	7.6	0.2	0.086	1.296	1.382	1.07	1.339	0.043
3	0.0504	11.370	11.4	0.2	0.128	1.296	1.424	1.10	1.360	0.064
4	0.0517	16.754	16.8	0.2	0.189	1.296	1.485	1.15	1.390	0.094
5	0.0537	22.485	22.5	0.2	0.253	1.296	1.549	1.20	1.423	0.127
6	0.0550	27.808	27.8	0.3	0.313	1.296	1.609	1.24	1.453	0.157
7	0.0563	32.752	32.8	0.3	0.369	1.296	1.665	1.28	1.480	0.184
8	0.0583	38.241	38.2	0.3	0.430	1.296	1.726	1.33	1.511	0.215
9	0.0596	42.715	42.7	0.3	0.480	1.296	1.776	1.37	1.536	0.240
10	0.0609	47.520	47.5	0.4	0.534	1.296	1.830	1.41	1.563	0.267
11	0.0629	52.915	52.9	0.4	0.595	1.296	1.891	1.46	1.593	0.297
12	0.0642	58.290	58.3	0.4	0.655	1.296	1.951	1.51	1.624	0.328
13	0.0655	62.940	62.9	0.4	0.707	1.296	2.003	1.55	1.650	0.354
14	0.0675	67.212	67.2	0.5	0.755	1.296	2.051	1.58	1.674	0.378
15	0.0688	71.341	71.3	0.5	0.801	1.296	2.097	1.62	1.697	0.401
16	0.0701	74.960	75.0	0.5	0.842	1.296	2.138	1.65	1.717	0.421
17	0.0721	79.238	79.2	0.5	0.889	1.296	2.185	1.69	1.741	0.445
18	0.0734	82.663	82.7	0.6	0.928	1.296	2.224	1.72	1.760	0.464
19	0.0747	86.107	86.1	0.6	0.966	1.296	2.262	1.75	1.779	0.483
20	0.0767	88.534	88.5	0.6	0.993	1.296	2.289	1.77	1.793	0.497
21	0.0793	92.522	92.5	0.7	1.037	1.296	2.333	1.80	1.815	0.519
22	0.0813	94.974	95.0	0.7	1.064	1.296	2.360	1.82	1.828	0.532
23	0.0826	97.087	97.1	0.7	1.088	1.296	2.384	1.84	1.840	0.544
24	0.0859	100.357	100.4	0.8	1.124	1.296	2.420	1.87	1.858	0.562
25	0.0885	102.910	102.9	0.8	1.152	1.296	2.448	1.89	1.872	0.576
26	0.0918	105.949	105.9	0.9	1.185	1.296	2.481	1.91	1.889	0.593
27	0.0951	108.401	108.4	0.9	1.212	1.296	2.508	1.94	1.902	0.606
28	0.0996	111.297	111.3	1.0	1.244	1.296	2.540	1.96	1.918	0.622
29	0.1029	113.724	113.7	1.1	1.270	1.296	2.566	1.98	1.931	0.635
30	0.1075	115.965	116.0	1.1	1.294	1.296	2.590	2.00	1.943	0.647
31	0.1146	120.277	120.3	1.2	1.341	1.296	2.637	2.03	1.966	0.670
32	0.1211	122.454	122.5	1.4	1.363	1.296	2.659	2.05	1.978	0.682
33	0.1269	125.318	125.3	1.5	1.394	1.296	2.690	2.08	1.993	0.697
34	0.1333	127.748	127.7	1.6	1.419	1.296	2.715	2.10	2.006	0.710
35	0.1390	129.921	129.9	1.7	1.442	1.296	2.738	2.11	2.017	0.721
36	0.1454	132.337	132.3	1.8	1.467	1.296	2.763	2.13	2.030	0.734
37	0.1576	135.860	135.9	2.0	1.503	1.296	2.799	2.16	2.048	0.752
38	0.1634	138.001	138.0	2.1	1.525	1.296	2.821	2.18	2.059	0.763
39	0.1755	141.405	141.4	2.3	1.560	1.296	2.856	2.20	2.076	0.780
40	0.1877	144.449	144.4	2.5	1.590	1.296	2.886	2.23	2.091	0.795
41	0.1935	146.447	146.4	2.6	1.610	1.296	2.906	2.24	2.101	0.805
42	0.2058	148.749	148.7	2.8	1.632	1.296	2.928	2.26	2.112	0.816
43	0.2180	151.140	151.1	3.0	1.655	1.296	2.951	2.28	2.124	0.828
44	0.2302	153.562	153.6	3.2	1.678	1.296	2.974	2.29	2.135	0.839
45	0.2423	156.102	156.1	3.4	1.702	1.296	2.998	2.31	2.147	0.851
46	0.2545	158.211	158.2	3.6	1.722	1.296	3.018	2.33	2.157	0.861

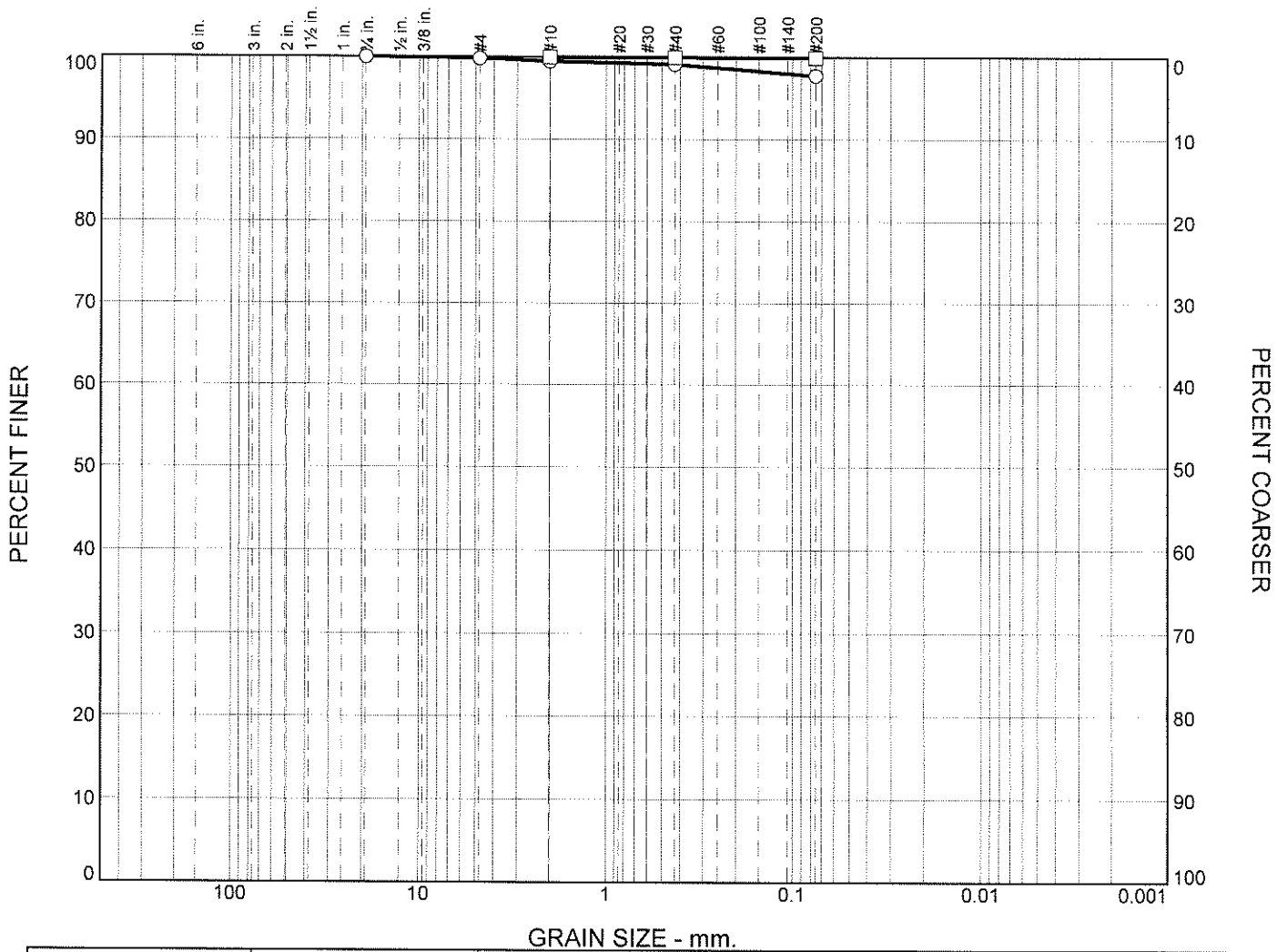
Test Readings for Specimen No. 1

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	0.2668	159.454	159.5	3.8	1.732	1.296	3.028	2.34	2.162	0.866
48	0.2784	160.876	160.9	4.0	1.743	1.296	3.039	2.35	2.168	0.872
49	0.2907	162.945	162.9	4.2	1.762	1.296	3.058	2.36	2.177	0.881
50	0.3029	164.416	164.4	4.4	1.774	1.296	3.070	2.37	2.183	0.887
51	0.3150	165.946	165.9	4.6	1.787	1.296	3.083	2.38	2.189	0.893
52	0.3273	166.775	166.8	4.8	1.792	1.296	3.088	2.38	2.192	0.896
53	0.3395	168.035	168.0	5.0	1.802	1.296	3.098	2.39	2.197	0.901
54	0.3517	169.478	169.5	5.2	1.813	1.296	3.109	2.40	2.203	0.907
55	0.3665	170.457	170.5	5.4	1.819	1.296	3.115	2.40	2.206	0.910
56	0.3819	172.308	172.3	5.7	1.834	1.296	3.130	2.41	2.213	0.917
57	0.3966	173.040	173.0	5.9	1.837	1.296	3.133	2.42	2.214	0.918
58	0.4120	174.764	174.8	6.2	1.850	1.296	3.146	2.43	2.221	0.925
59	0.4268	175.366	175.4	6.5	1.852	1.296	3.148	2.43	2.222	0.926
60	0.4422	176.966	177.0	6.7	1.863	1.296	3.159	2.44	2.228	0.932
61	0.4570	177.796	177.8	7.0	1.867	1.296	3.163	2.44	2.230	0.934
62	0.4717	179.639	179.6	7.2	1.881	1.296	3.177	2.45	2.237	0.941
63	0.4872	180.291	180.3	7.5	1.883	1.296	3.179	2.45	2.238	0.942
64	0.5020	181.959	182.0	7.7	1.895	1.296	3.191	2.46	2.244	0.948
65	0.5173	182.392	182.4	8.0	1.895	1.296	3.191	2.46	2.243	0.947
66	0.5321	183.561	183.6	8.2	1.902	1.296	3.198	2.47	2.247	0.951
67	0.5475	183.796	183.8	8.5	1.899	1.296	3.195	2.47	2.245	0.949
68	0.5623	184.750	184.7	8.7	1.904	1.296	3.200	2.47	2.248	0.952
69	0.5776	185.359	185.4	9.0	1.904	1.296	3.200	2.47	2.248	0.952
70	0.5924	186.671	186.7	9.2	1.913	1.296	3.209	2.48	2.252	0.956
71	0.6078	186.841	186.8	9.5	1.909	1.296	3.205	2.47	2.251	0.955
72	0.6225	188.280	188.3	9.7	1.919	1.296	3.215	2.48	2.255	0.959
73	0.6379	188.645	188.6	10.0	1.917	1.296	3.213	2.48	2.254	0.958
74	0.6527	189.912	189.9	10.2	1.924	1.296	3.220	2.48	2.258	0.962
75	0.6681	189.676	189.7	10.5	1.917	1.296	3.213	2.48	2.254	0.958
76	0.6828	191.118	191.1	10.7	1.926	1.296	3.222	2.49	2.259	0.963
77	0.6982	191.412	191.4	11.0	1.923	1.296	3.219	2.48	2.258	0.962
78	0.7129	192.444	192.4	11.2	1.928	1.296	3.224	2.49	2.260	0.964
79	0.7283	192.136	192.1	11.5	1.920	1.296	3.216	2.48	2.256	0.960
80	0.7431	192.984	193.0	11.7	1.923	1.296	3.219	2.48	2.257	0.961
81	0.7585	192.379	192.4	12.0	1.911	1.296	3.207	2.47	2.252	0.956
82	0.7732	193.316	193.3	12.2	1.915	1.296	3.211	2.48	2.254	0.958
83	0.7886	192.778	192.8	12.5	1.904	1.296	3.200	2.47	2.248	0.952
84	0.8034	193.195	193.2	12.7	1.903	1.296	3.199	2.47	2.247	0.951
85	0.8187	193.053	193.1	13.0	1.896	1.296	3.192	2.46	2.244	0.948
86	0.8335	193.930	193.9	13.2	1.899	1.296	3.195	2.47	2.246	0.950
87	0.8489	193.566	193.6	13.5	1.890	1.296	3.186	2.46	2.241	0.945
88	0.8636	194.120	194.1	13.7	1.890	1.296	3.186	2.46	2.241	0.945
89	0.8790	194.786	194.8	14.0	1.891	1.296	3.187	2.46	2.241	0.945
90	0.8938	195.247	195.2	14.2	1.890	1.296	3.186	2.46	2.241	0.945
91	0.9092	195.633	195.6	14.5	1.888	1.296	3.184	2.46	2.240	0.944
92	0.9239	196.555	196.6	14.7	1.891	1.296	3.187	2.46	2.242	0.946
93	0.9393	196.830	196.8	15.0	1.888	1.296	3.184	2.46	2.240	0.944

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
94	0.9477	195.211	195.2	15.1	1.870	1.296	3.166	2.44	2.231	0.935

Particle Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.1	0.4	0.3	1.4	97.8	
□	0.0	0.0	0.0	0.0	0.0	0.1	99.9	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	08-100	11	20-22	Reddish-brown and gray FAT CLAY	CH
□	08-100	18	34-36	Reddish-brown and gray FAT CLAY	CH

Tolunay-Wong Engineers, Inc.
Houston, Texas

Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921