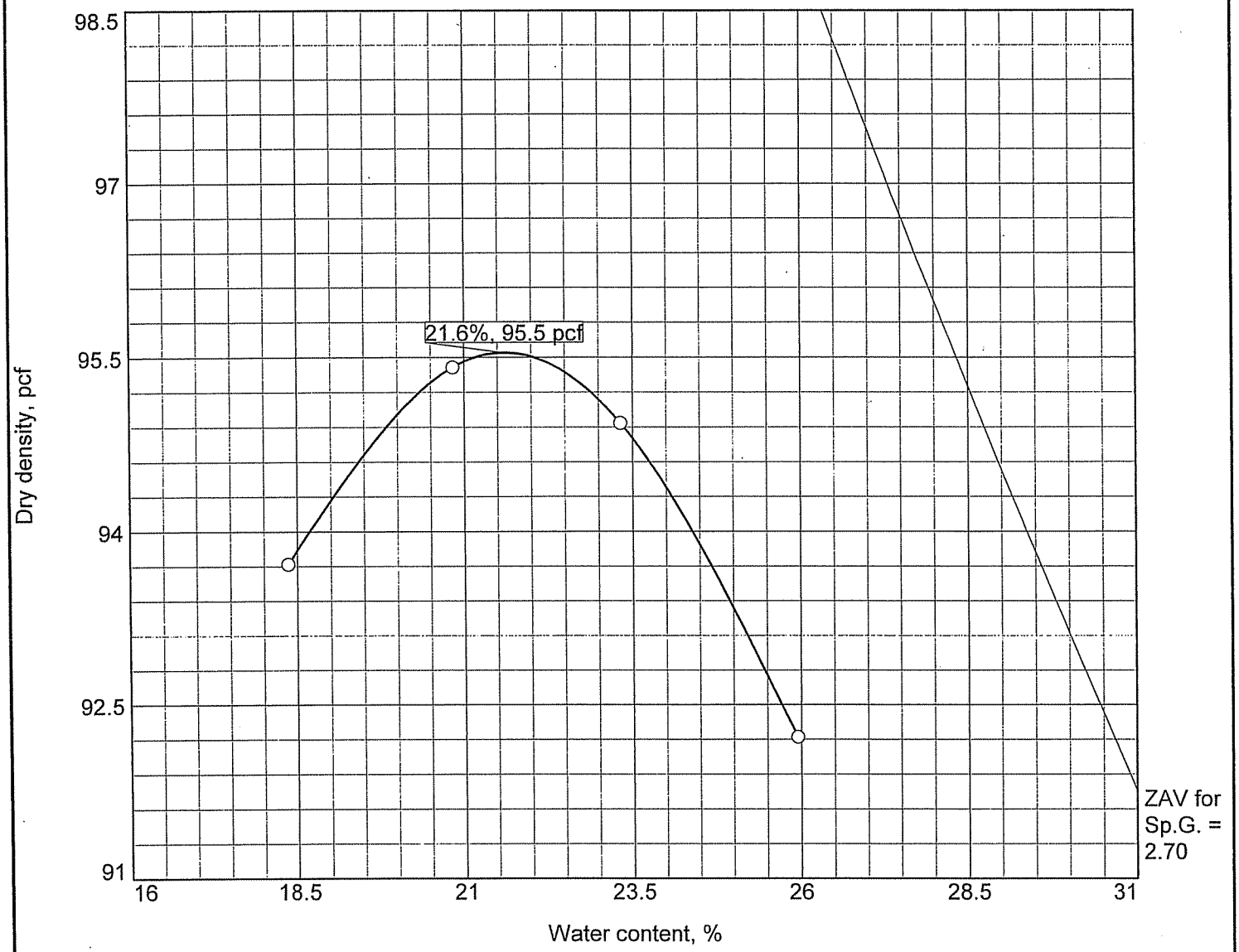
	5	8-10	Reddish-brown LEAN CLAY	CL	31.9	95.8	45	18	27	99.8	1.01	12	9	Bulge
	6	10-12	Reddish-brown SANDY SILTY CLAY	CL-ML	25.4	97.5								
	7	12-14	Reddish-brown and gray FAT CLAY	CH	27.8	97.9								
	8	14-16	Reddish-brown and gray FAT CLAY	CH	21.0	105.9								
	9	16-18	Reddish-brown and gray LEAN CLAY with SAND	CL	15.8	113.2								
	10	18-20	Reddish-brown and gray LEAN CLAY with SAND	CL	26.5	97.4								
08-94			**El. 9.25, E=3185568 N=13646170**											
	1	0-2	Gray and tan SANDY LEAN CLAY	CL	11.3	106.3								
	2	2-4	Gray and tan FAT CLAY	CH	24.9	100.1								
	3	4-6	Tan and gray FAT CLAY	CH	24.5	99.7	60	21	39	90.7	1.20	11.4	6	60 degree
	4	6-8	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	29.6	96.0								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	28.9	95.4								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	22.0	107.1	50	20	30	97.8	1.13	11.2	11	60 degree
	7	12-14	Reddish-brown and gray SANDY SILTY CLAY	CL-ML	23.8	99.5					0.84	3.4		Vertical shear
	8	14-16	Reddish-brown gray FAT CLAY; calcareous nodules	CH	27.5	97.5								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	25.4	98.4	67	21	46	98.0	2.28	6.7	15	Slickensided
	10	18-20	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.0	98.0								
08-95			**El. 11.00, E=3184767 N=13646549**											
	1	0-2	Gray and tan SANDY LEAN CLAY	CL	9.9	108.8								
	2	2-4	Tan and gray SANDY LEAN CLAY	CL	20.9	105.1								
	3	4-6	Tan and gray FAT CLAY; ferrous nodules	CH	23.5	103.0	61	21	40		2.01	11.2	6	Bulge
	4	6-8	Reddish-brown and gray FAT CLAY; calcareous	CH	24.2	101.6					1.72	11.2		60 degree
	5	8-10	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	28.1	95.9								
	6	10-12	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.5	94.7								
	7	12-14	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	30.1	95.6								
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.6	97.3								
	9	16-18	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	26.2	99.2								
	10	18-20	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	24.1	100.5								
08-96			**El. 11.50, E=3184441 N=13647279**											
	1	0-2	Gray SANDY LEAN CLAY	CL	17.8	106.6								
	2	2-4	Gray and tan FAT CLAY	CH	20.1	103.5								
	3	4-6	Reddish-brown and gray FAT CLAY	CH	32.9	89.8	64	21	43	93.1	0.85	6.2	6	60 degree
	4	6-8	Reddish-brown and gray FAT CLAY	CH	27.6	94.3								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	30.6	90.8								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	25.7	95.8	66	21	45	98.8	1.54	2.6		Slickensided
	7	12-14	Reddish-brown and gray FAT CLAY	CH	24.9	102.6								
	8	14-16	Reddish-brown LEAN CLAY with SAND	CL	24.1	97.7								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	26.0	97.9								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	26.3	98.0								
08-97			**El. 11.25, E=3185190 N=13647332**											
	1	0-2	Gray SANDY LEAN CLAY	CL	15.8	109.4								
	2	2-4	Gray FAT CLAY with SAND	CH	21.1	105.3								
	3	4-6	Tan and gray FAT CLAY; ferrous and calcareous nodules	CH	21.2	108.2								
	4	6-8	Reddish-brown and gray FAT CLAY; ferrous nodules	CH	30.4	89.6								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	40.9	86.4	66	21	45	98.0	0.44	9.5	9	60 degree
	6	10-12	Reddish-brown and gray SILTY CLAY with SAND	CL-ML	35.6									
	7	12-14	Reddish-brown and gray SILTY CLAY with SAND	CL-ML	27.0	95.8					0.58	5.8		Vertical shear
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	25.4	99.0								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	25.1	98.8								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	28.9	98.7								
08-98			**El. 11.00, E=3184452 N=13647824**											
	1	0-2	Gray SANDY LEAN CLAY	CL	13.2	105.9								
	2	2-4	Tan and gray FAT CLAY	CH	19.8	98.9								
	3	4-6	Tan and gray FAT CLAY	CH	17.1	109.6								
	4	6-8	Reddish-brown and gray FAT CLAY	CH	29.1	93.3	67	21	46	98.3	1.22	6.1		Slickensided
	5	8-10	Reddish-brown and gray FAT CLAY	CH	32.4	88.6								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	24.5	99.6	62	20	42	95.2	1.75	5.1	11	Slickensided
	7	12-14	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	37.8	87.0								
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	26.0	98.0								
	9	16-18	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	24.4	102.5								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	27.6	96.5								
08-99														

COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	CH			2.70			0.0	

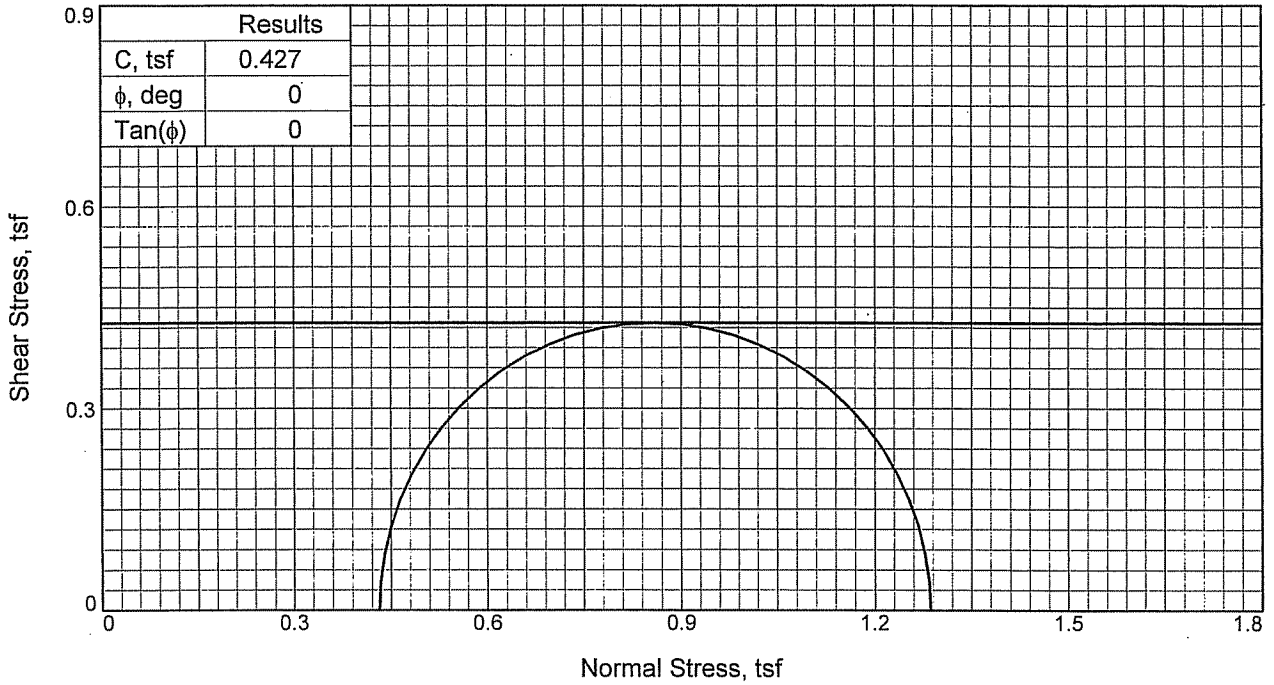
TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 95.5 pcf Optimum moisture = 21.6 %	Reddish-brown FAT CLAY

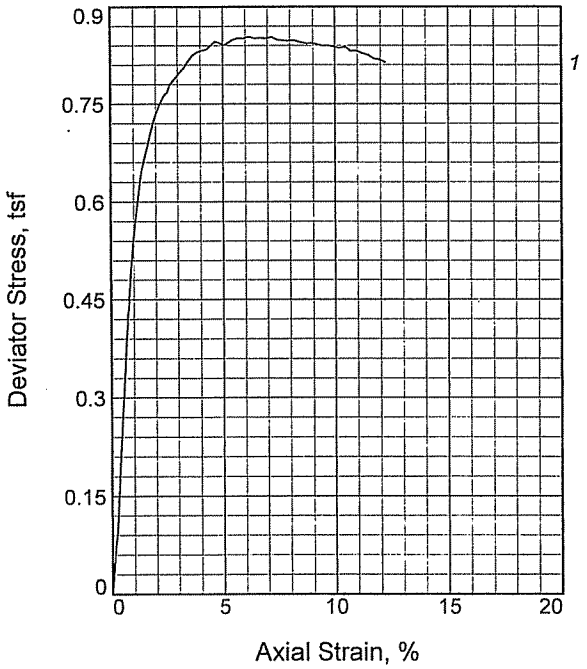
Project No. 08.18.921 **Client:** United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
○ **Source of Sample:** 08-96 **Sample Number:** 5

Remarks:
Test method: ASTM D 698
Preparation Method: Wet
Specific Gravity: Assumed

Tolunay-Wong Engineers, Inc.

Houston, Texas





Sample No.		1
Initial	Water Content, %	32.9
	Dry Density, pcf	89.8
	Saturation, %	99.1
	Void Ratio	0.9114
	Diameter, in.	2.85
	Height, in.	6.00
At Test	Water Content, %	26.0
	Dry Density, pcf	89.8
	Saturation, %	78.3
	Void Ratio	0.9114
	Diameter, in.	2.85
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.43
Fail. Stress, tsf		0.85
Ult. Stress, tsf		
σ_1 Failure, tsf		1.29
σ_3 Failure, tsf		0.43

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: 1.25
Failure type: 60 degree

Client: United States Army Corps of Engineers

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

Source of Sample: 08-96 **Depth:** 4-6

Sample Number: 3

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
2:08 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: 08-96
Depth: 4-6 **Sample Number:** 3
Description: Reddish-brown and gray FAT CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.25
Failure type: 60 degree
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.	152.200	123.870
Moisture content: Dry soil+tare, gms.	122.380	104.870
Moisture content: Tare, gms.	31.620	31.660
Moisture, %	32.9	26.0
Moist specimen weight, gms.	1194.7	
Diameter, in.	2.85	
Area, in.^{2}	6.36	
Height, in.	6.00	
Wet Density, pcf	119.3	
Dry density, pcf	89.8	
Void ratio	0.9114	
Saturation, %	99.1	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 6.00 psi (0.432 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 0.854 tsf **at reading no.** 62

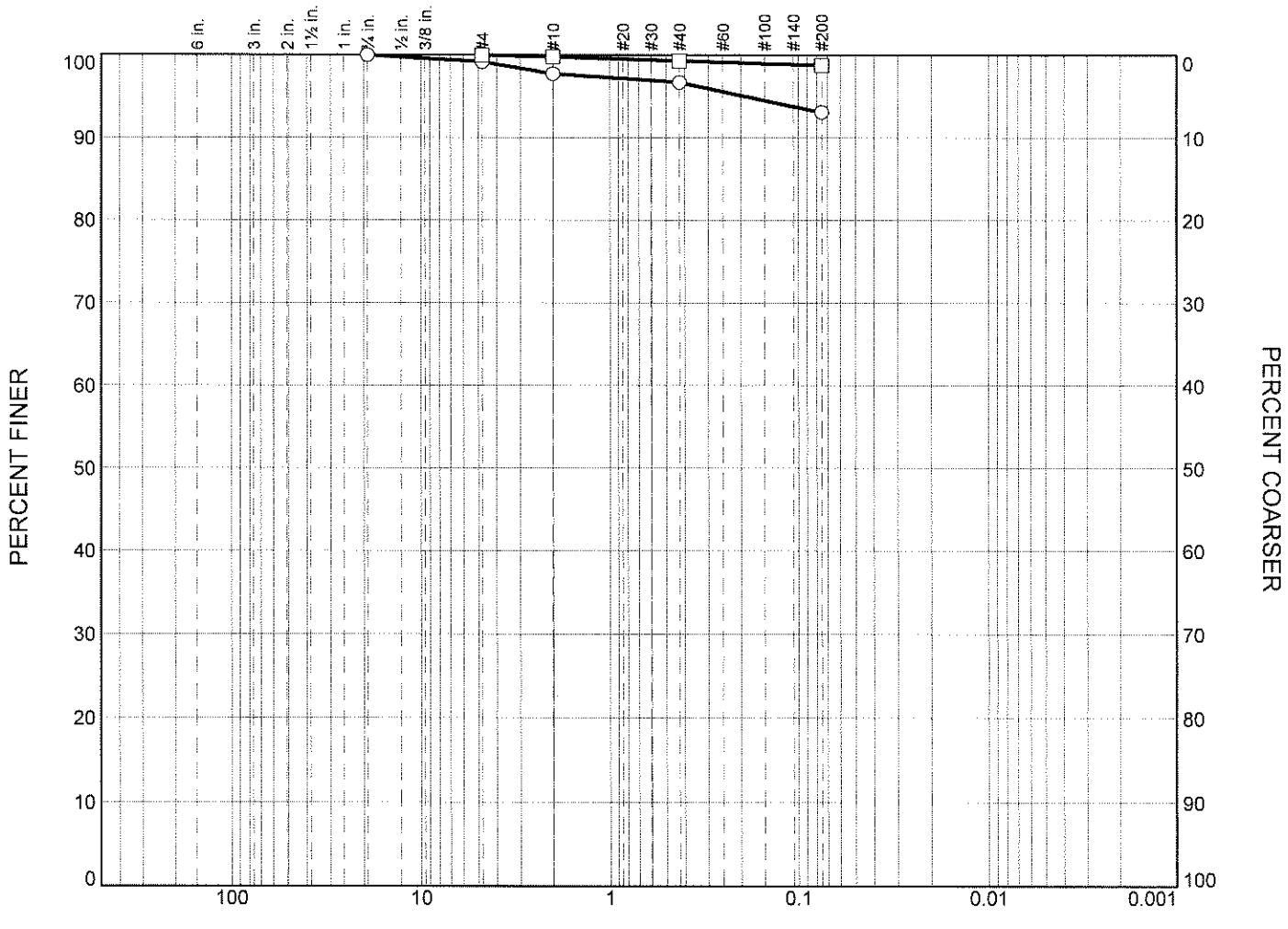
Test Readings for Specimen No. 1

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	0.0630	0.000	0.0	0.0	0.000	0.432	0.432	1.00	0.432	0.000
1	0.0703	5.160	5.2	0.1	0.058	0.432	0.490	1.14	0.461	0.029
2	0.0733	6.890	6.9	0.2	0.078	0.432	0.510	1.18	0.471	0.039
3	0.0765	7.951	8.0	0.2	0.090	0.432	0.522	1.21	0.477	0.045
4	0.0784	9.350	9.4	0.3	0.106	0.432	0.538	1.24	0.485	0.053
5	0.0797	11.021	11.0	0.3	0.124	0.432	0.556	1.29	0.494	0.062
6	0.0810	12.611	12.6	0.3	0.142	0.432	0.574	1.33	0.503	0.071
7	0.0830	14.198	14.2	0.3	0.160	0.432	0.592	1.37	0.512	0.080
8	0.0842	15.768	15.8	0.4	0.178	0.432	0.610	1.41	0.521	0.089
9	0.0862	17.577	17.6	0.4	0.198	0.432	0.630	1.46	0.531	0.099
10	0.0875	18.884	18.9	0.4	0.213	0.432	0.645	1.49	0.539	0.107
11	0.0888	20.041	20.0	0.4	0.226	0.432	0.658	1.52	0.545	0.113
12	0.0908	21.827	21.8	0.5	0.246	0.432	0.678	1.57	0.555	0.123
13	0.0921	23.267	23.3	0.5	0.262	0.432	0.694	1.61	0.563	0.131
14	0.0933	25.162	25.2	0.5	0.284	0.432	0.716	1.66	0.574	0.142
15	0.0954	26.459	26.5	0.5	0.298	0.432	0.730	1.69	0.581	0.149
16	0.0966	27.889	27.9	0.6	0.314	0.432	0.746	1.73	0.589	0.157
17	0.0979	29.330	29.3	0.6	0.330	0.432	0.762	1.76	0.597	0.165
18	0.1000	31.058	31.1	0.6	0.350	0.432	0.782	1.81	0.607	0.175
19	0.1013	32.541	32.5	0.6	0.366	0.432	0.798	1.85	0.615	0.183
20	0.1025	33.962	34.0	0.7	0.382	0.432	0.814	1.88	0.623	0.191
21	0.1046	35.532	35.5	0.7	0.400	0.432	0.832	1.93	0.632	0.200
22	0.1059	36.717	36.7	0.7	0.413	0.432	0.845	1.96	0.638	0.206
23	0.1071	37.918	37.9	0.7	0.426	0.432	0.858	1.99	0.645	0.213
24	0.1092	38.955	39.0	0.8	0.438	0.432	0.870	2.01	0.651	0.219
25	0.1105	40.120	40.1	0.8	0.451	0.432	0.883	2.04	0.657	0.225
26	0.1118	41.609	41.6	0.8	0.467	0.432	0.899	2.08	0.666	0.234
27	0.1138	42.503	42.5	0.8	0.477	0.432	0.909	2.10	0.671	0.239
28	0.1150	43.596	43.6	0.9	0.489	0.432	0.921	2.13	0.677	0.245
29	0.1184	45.560	45.6	0.9	0.511	0.432	0.943	2.18	0.688	0.256
30	0.1197	46.559	46.6	0.9	0.522	0.432	0.954	2.21	0.693	0.261
31	0.1210	47.549	47.5	1.0	0.533	0.432	0.965	2.23	0.699	0.267
32	0.1230	48.534	48.5	1.0	0.544	0.432	0.976	2.26	0.704	0.272
33	0.1255	49.925	49.9	1.0	0.560	0.432	0.992	2.30	0.712	0.280
34	0.1288	51.387	51.4	1.1	0.576	0.432	1.008	2.33	0.720	0.288
35	0.1322	52.844	52.8	1.2	0.592	0.432	1.024	2.37	0.728	0.296
36	0.1379	55.033	55.0	1.2	0.616	0.432	1.048	2.42	0.740	0.308
37	0.1444	57.743	57.7	1.4	0.645	0.432	1.077	2.49	0.755	0.323
38	0.1565	60.464	60.5	1.6	0.674	0.432	1.106	2.56	0.769	0.337
39	0.1623	61.709	61.7	1.7	0.687	0.432	1.119	2.59	0.776	0.344
40	0.1681	63.209	63.2	1.8	0.703	0.432	1.135	2.63	0.784	0.352
41	0.1746	64.394	64.4	1.9	0.716	0.432	1.148	2.66	0.790	0.358
42	0.1804	65.583	65.6	2.0	0.728	0.432	1.160	2.69	0.796	0.364
43	0.1925	67.391	67.4	2.2	0.747	0.432	1.179	2.73	0.805	0.373
44	0.2047	68.815	68.8	2.4	0.761	0.432	1.193	2.76	0.812	0.380
45	0.2171	69.671	69.7	2.6	0.769	0.432	1.201	2.78	0.816	0.384
46	0.2228	70.686	70.7	2.7	0.779	0.432	1.211	2.80	0.822	0.390

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	0.2350	71.638	71.6	2.9	0.788	0.432	1.220	2.82	0.826	0.394
48	0.2472	72.638	72.6	3.1	0.797	0.432	1.229	2.85	0.831	0.399
49	0.2596	73.440	73.4	3.3	0.805	0.432	1.237	2.86	0.834	0.402
50	0.2712	74.541	74.5	3.5	0.815	0.432	1.247	2.89	0.839	0.407
51	0.2835	75.652	75.7	3.7	0.825	0.432	1.257	2.91	0.845	0.413
52	0.2958	76.231	76.2	3.9	0.830	0.432	1.262	2.92	0.847	0.415
53	0.3080	76.621	76.6	4.1	0.832	0.432	1.264	2.93	0.848	0.416
54	0.3195	76.915	76.9	4.3	0.834	0.432	1.266	2.93	0.849	0.417
55	0.3319	77.647	77.6	4.5	0.840	0.432	1.272	2.94	0.852	0.420
56	0.3442	78.401	78.4	4.7	0.846	0.432	1.278	2.96	0.855	0.423
57	0.3558	78.315	78.3	4.9	0.844	0.432	1.276	2.95	0.854	0.422
58	0.3681	78.212	78.2	5.1	0.841	0.432	1.273	2.95	0.852	0.420
59	0.3892	79.223	79.2	5.4	0.848	0.432	1.280	2.96	0.856	0.424
60	0.4046	79.705	79.7	5.7	0.851	0.432	1.283	2.97	0.858	0.426
61	0.4194	79.881	79.9	5.9	0.851	0.432	1.283	2.97	0.857	0.425
62	0.4342	80.392	80.4	6.2	0.854	0.432	1.286	2.98	0.859	0.427
63	0.4497	80.306	80.3	6.4	0.851	0.432	1.283	2.97	0.857	0.425
64	0.4644	80.634	80.6	6.7	0.852	0.432	1.284	2.97	0.858	0.426
65	0.4798	80.766	80.8	6.9	0.851	0.432	1.283	2.97	0.858	0.426
66	0.4946	81.196	81.2	7.2	0.853	0.432	1.285	2.98	0.859	0.427
67	0.5099	81.015	81.0	7.4	0.849	0.432	1.281	2.97	0.857	0.425
68	0.5248	81.117	81.1	7.7	0.848	0.432	1.280	2.96	0.856	0.424
69	0.5402	81.289	81.3	8.0	0.847	0.432	1.279	2.96	0.856	0.424
70	0.5550	81.627	81.6	8.2	0.849	0.432	1.281	2.96	0.856	0.424
71	0.5704	81.564	81.6	8.5	0.846	0.432	1.278	2.96	0.855	0.423
72	0.5851	81.557	81.6	8.7	0.843	0.432	1.275	2.95	0.854	0.422
73	0.6005	81.793	81.8	9.0	0.843	0.432	1.275	2.95	0.854	0.422
74	0.6153	81.893	81.9	9.2	0.842	0.432	1.274	2.95	0.853	0.421
75	0.6301	81.863	81.9	9.5	0.840	0.432	1.272	2.94	0.852	0.420
76	0.6456	82.180	82.2	9.7	0.840	0.432	1.272	2.95	0.852	0.420
77	0.6603	82.258	82.3	10.0	0.839	0.432	1.271	2.94	0.851	0.419
78	0.6757	82.249	82.2	10.2	0.836	0.432	1.268	2.94	0.850	0.418
79	0.6905	82.671	82.7	10.5	0.838	0.432	1.270	2.94	0.851	0.419
80	0.7059	82.192	82.2	10.7	0.831	0.432	1.263	2.92	0.848	0.416
81	0.7206	82.512	82.5	11.0	0.832	0.432	1.264	2.93	0.848	0.416
82	0.7360	82.398	82.4	11.2	0.829	0.432	1.261	2.92	0.846	0.414
83	0.7508	82.360	82.4	11.5	0.826	0.432	1.258	2.91	0.845	0.413
84	0.7662	81.987	82.0	11.7	0.820	0.432	1.252	2.90	0.842	0.410
85	0.7810	82.114	82.1	12.0	0.819	0.432	1.251	2.90	0.841	0.409
86	0.7964	81.863	81.9	12.2	0.814	0.432	1.246	2.88	0.839	0.407

Particle Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.8	1.4	1.1	3.6	93.1	
□	0.0	0.0	0.0	0.2	0.5	0.5	98.8	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	08-96	3	4-6	Reddish-brown and gray FAT CLAY	CH
□	08-96	6	10-12	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