oject: Greens Bayou

SUI OF LABORATORY TEST RESULTS

Contract No. DACW64-95-D-0007 Delivery Order No. 0047

Boring No. 97-85

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	Mc (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	PL (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0 - 2	4.5+		Sandy Clay,w/roots,Hard,Gray	C L	6.6											
2	2 - 4	4.5+		Sandy Clay,w/fer stains,Hard,Gray	C L	3.5											
3	4 - 6	4.5+		Sandy Clay,w/fer stains,Hard,Gray	C L	6.3											
4	6 - 8	4.5+		Sandy Clay,w/fer stains,Hard,Yellowish gray	C L	6.7	107.1	114.3	28.0	15.0							
5	8 - 10	4.5+		Sandy Clay,w/fer stains,Hard,Yellowish gray	C L												
6	10 - 12	1.50		Sandy Clay,w/fer nod & fer stains,Stiff, Yellowish gray	C L	14.4	105.8	121.1	31.0	15.0	99.7	99.5	99.4	95.6	65.2		1.17
7	12 - 14	3.75		Sandy Clay,w/fer nod fer stains&sand seams Very stiff,Yellowish gray	C L	10.7											
8	14 - 16	4.00		Sandy Clay,w/fer nod fer stains&sand seams Very stiff,Yellowish gray	C L	9.9											
9	16 - 18	2.50		Sandy Clay,w/fer nod fer stains&sand seams Very stiff,Yellowish gray	C L	14.1											
10	18-19.5		13	Silty Sand,Medium dense,Gray	S M	21.7											
11	23-24.5		25	Silty Sand,Medium dense,Gray	S M	18.5											
12	28-29.5		36	Silty Sand,Dense,Gray	S M	19.3											
13	33-34.5		10	Clay,w/calc nod & blocky structure,Stiff, Red & Gray	C H	18.8											
14	34.5-36	4.5+		Clay,w/calc nod & blocky structure,Hard, Red & Gray	C H	19.2											
15	36-38	4.5+		Clay,w/calc nod & blocky structure,Hard, Red & Gray	C H	25.7	101.5	127.6	61.0	24.0	99.7	99.1	98.6	98.6	98.3		4.02
16	38-40	4.5+		Clay,w/calc nod & blocky structure,Hard, Red & Gray	C H												
17	40-41	4.5+		Clay,w/calc nod & blocky structure,Hard, Red & Gray	C H	15.7											
17A	41-42			Sandy Silt,Gray & Brown	M L	19.0											
18	42-44	4.5+		Clay,w/sand pockets,Hard,Red & Gray	C H	18.2											
19	44-46	4.5+		Sandy Clay,Hard,Red & Gray	C L	16.7											

3

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classifcation, M c : Moisture Content
q u : Uncogined Compressive Strength, W O H : Weight of hammer, W O P : Weight of Pipe

Project: Greens Bayou

SUMMARY OF LABORATORY TEST RESULTS

Contract No. DACW64-95-D-0007 Delivery Order No. 0047

Boring No. 97-85

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	Mc (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	PL (%)	Mechanical Analysis % Passing					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
20	46-48	4.5+		Sandy Clay,Hard,Red & Gray	C L	17.8	108.9	128.3	31.0	17.0	100.0	100.0	100.0	98.1	63.4		4.08
21	48-50	4.5+		Sandy Clay,Hard,Red & Gray	C L	17.4											

4

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classifcation, M c : Moisture Content
q u : Uncogined Compressive Strength, W O H : Weight of hammer, W O P : Weight of Pipe

JOB NO. 114008614 DATE 3/14/98

PROJECT Greens Bayou

AREA Houston, Texas

BORING NO. 97-85 SAMPLE NO. 6 DEPTH 10-12 ft

SPECIMEN NO. 1

CLASSIFICATION
Sandy Clay,w/fer nod & fer stains,Stiff,Yellowish gary

Tare No.	S2	Height	5.595 in.
Tare plus Wet Specimen	491.21 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	450.38 gm	Initial Area	6.290 sq in.
Water Weight	40.83 gm	Volume	35.194 cu in.
Tare Weight	167.68 gm	Volume of Solids	cu in.
Wet Specimen	1055.83 gm	Void Ratio	
Dry Specimen	922.58 gm	Saturation	%
Water Content	14.44 %	Dry Density	99.9 lb/cu ft

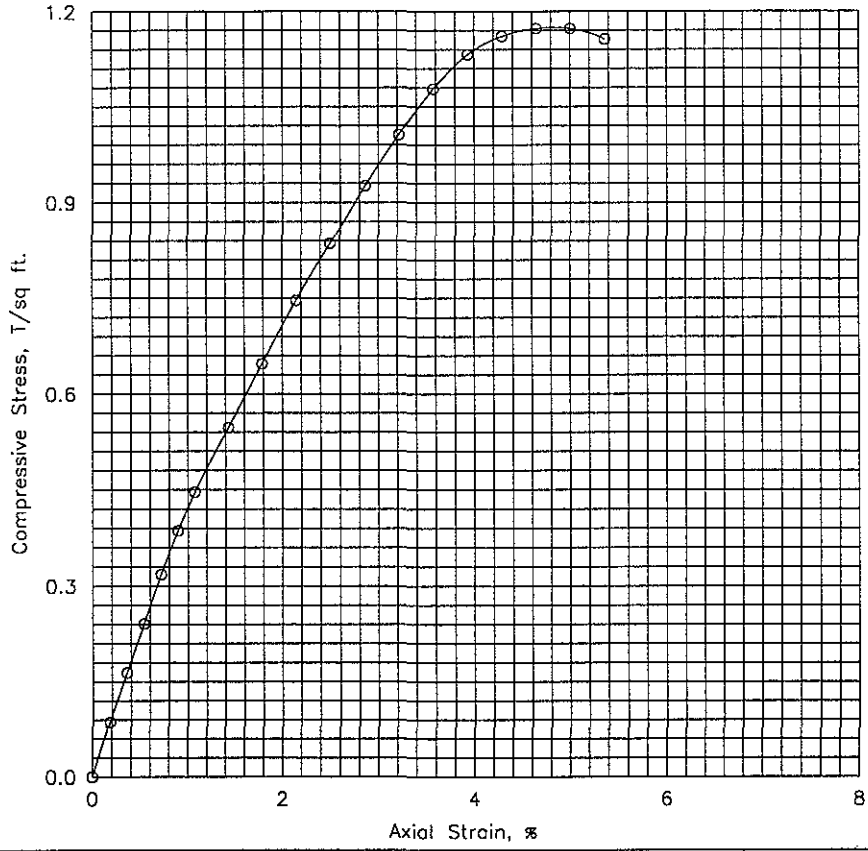
Specific Gravity of Solids
LL = 31 PL = 15 PI = 16

Proving Ring No. 10170
Proving Ring Constant, K = .757 lbs/div.

Elapsed Time min.	Dial Reading 0.001"	Cumulative Change in.	Proving Ring Dial Reading	Axial Load lb	Axial Strain	Area Corr. sq in.	Compr. Stress tsf
.0	0.	.000	.0	.0	.000	6.29	.000
.2	10.	.010	10.0	7.6	.002	6.30	.086
.3	20.	.020	19.0	14.4	.004	6.31	.164
.5	30.	.030	28.0	21.2	.005	6.32	.241
.7	40.	.040	37.0	28.0	.007	6.34	.318
.9	50.	.050	45.0	34.1	.009	6.35	.386
1.0	60.	.060	52.0	39.4	.011	6.36	.446
1.4	80.	.080	64.0	48.4	.014	6.38	.547
1.7	100.	.100	76.0	57.5	.018	6.40	.647
2.0	120.	.120	88.0	66.6	.021	6.43	.746
2.3	140.	.140	99.0	74.9	.025	6.45	.836
2.7	160.	.160	110.0	83.3	.029	6.48	.926
3.0	180.	.180	120.0	90.8	.032	6.50	1.006
3.3	200.	.200	129.0	97.7	.036	6.52	1.078
3.7	220.	.220	136.0	103.0	.039	6.55	1.132
4.0	240.	.240	140.0	106.0	.043	6.57	1.161
4.3	260.	.260	142.0	107.5	.046	6.60	1.173
4.7	280.	.280	142.5	107.9	.050	6.62	1.173
5.0	300.	.300	141.0	106.7	.054	6.65	1.156

Job No. 114008614

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	14.4 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	99.9			
Time to failure, min		t_f	4.32			
Unconfined compressive strength, T/sq ft		q_u	1.17			
Undrained shear strength, T/sq ft		S_u	.59			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Sandy Clay,w/fer nod & fer stains,Stiff,Yellowish gary

LL	31	PL	15	PI	16	G_s	

Remarks

Project Greens Bayou

Area Houston, Texas

Boring No. 97-85 | Sample No. 6

Depth El 10-12 ft | Date 3/14/98

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 114008614 DATE 3/14/98

PROJECT Greens Bayou

AREA Houston, Texas

BORING NO. 97-85 SAMPLE NO. 15 DEPTH 36-38 ft

SPECIMEN NO. 1

CLASSIFICATION
Clay,w/calc nod & blocky structure,Hard,Red & Gray

Tare No.	S3	Height	5.595 in.
Tare plus Wet Specimen	417.99 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	366.73 gm	Initial Area	6.290 sq in.
Water Weight	51.26 gm	Volume	35.194 cu in.
Tare Weight	167.55 gm	Volume of Solids	cu in.
Wet Specimen	1178.92 gm	Void Ratio	
Dry Specimen	937.62 gm	Saturation	%
Water Content	25.74 %	Dry Density	101.5 lb/cu ft
Specific Gravity of Solids			

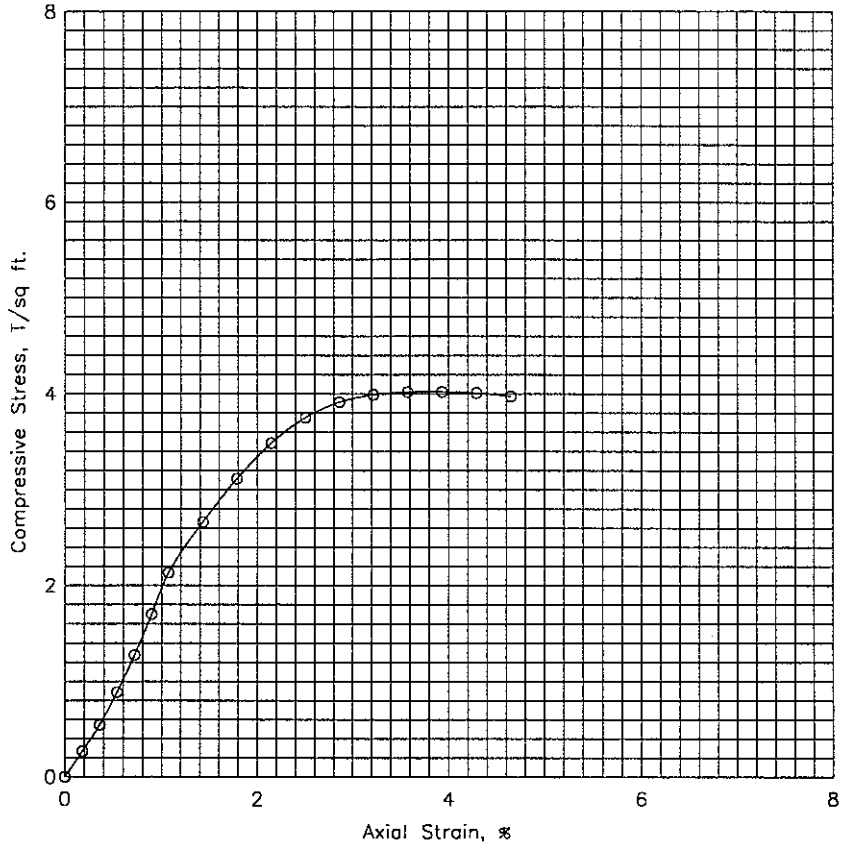
LL = 61 PL = 24 PI = 37

Proving Ring No. 10170
Proving Ring Constant, K = .757 lbs/div.

Elapsed Time min.	Dial Reading 0.001"	Cumulative Change in.	Proving Ring Dial Reading	Axial Load lb	Axial Strain	Area Corr. sq in.	Compr. Stress tsf
.0	0.	.000	.0	.0	.000	6.29	.000
.2	10.	.010	31.0	23.5	.002	6.30	.268
.3	20.	.020	63.0	47.7	.004	6.31	.544
.5	30.	.030	103.0	78.0	.005	6.32	.888
.7	40.	.040	148.0	112.0	.007	6.34	1.273
.9	50.	.050	198.0	149.9	.009	6.35	1.700
1.0	60.	.060	249.0	188.5	.011	6.36	2.134
1.3	80.	.080	312.0	236.2	.014	6.38	2.665
1.6	100.	.100	366.0	277.1	.018	6.40	3.115
2.0	120.	.120	411.0	311.1	.021	6.43	3.485
2.3	140.	.140	444.0	336.1	.025	6.45	3.751
2.6	160.	.160	465.0	352.0	.029	6.48	3.914
3.0	180.	.180	476.0	360.3	.032	6.50	3.992
3.3	200.	.200	481.0	364.1	.036	6.52	4.019
3.6	220.	.220	483.0	365.6	.039	6.55	4.021
4.0	240.	.240	483.5	366.0	.043	6.57	4.010
4.3	260.	.260	481.0	364.1	.046	6.60	3.974

Job No. 114008614

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	25.7 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	101.5			
Time to failure, min		t_f	3.62			
Unconfined compressive strength, T/sq ft		q_u	4.02			
Undrained shear strength, T/sq ft		S_u	2.01			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Clay,w/calc nod & blocky structure,Hard,Red & Gray

LL	61	PL	24	PI	37	G_s	

Remarks

Project Greens Bayou

Area Houston, Texas

Boring No. 97-85 | Sample No. 15

Depth El 36-38 ft | Date 3/14/98

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

PLATE

JOB NO. 114008614 DATE 3/14/98

PROJECT Greens Bayou

AREA Houston, Texas

BORING NO. 97-85 SAMPLE NO. 20 DEPTH 46-48 ft

SPECIMEN NO. 1

CLASSIFICATION
Sandy Clay,Hard,Red & Gray

Tare No.	HP8	Height	5.595 in.
Tare plus Wet Specimen	344.98 gm	Average Diameter	2.830 in.
Tare plus Dry Specimen	299.40 gm	Initial Area	6.290 sq in.
Water Weight	45.58 gm	Volume	35.194 cu in.
Tare Weight	43.36 gm	Volume of Solids	cu in.
Wet Specimen	1184.97 gm	Void Ratio	
Dry Specimen	1005.90 gm	Saturation	%
Water Content	17.80 %	Dry Density	108.9 lb/cu ft
Specific Gravity of Solids			

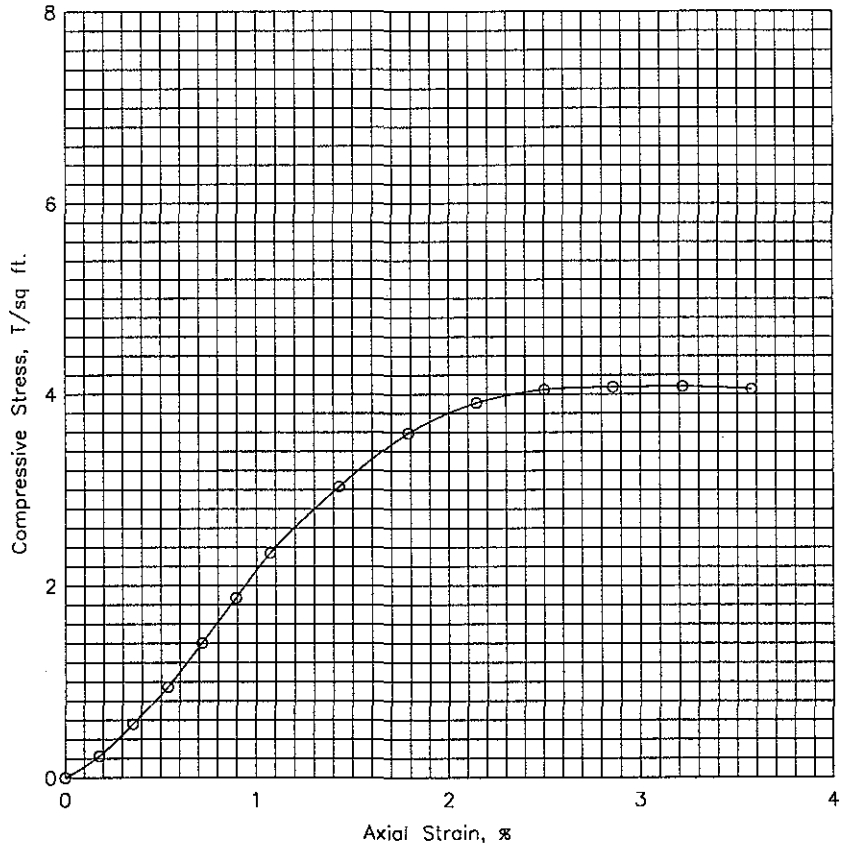
LL = 31 PL = 17 PI = 14

Proving Ring No. 10170
Proving Ring Constant, K = .757 lbs/div.

Elapsed Time min.	Dial Reading 0.001"	Cumulative Change in.	Proving Ring Dial Reading	Axial Load lb	Axial Strain	Area Corr. sq in.	Compr. Stress tsf
.0	0.	.000	.0	.0	.000	6.29	.000
.2	10.	.010	26.0	19.7	.002	6.30	.225
.3	20.	.020	65.0	49.2	.004	6.31	.561
.5	30.	.030	110.0	83.3	.005	6.32	.948
.7	40.	.040	163.0	123.4	.007	6.34	1.402
.9	50.	.050	218.0	165.0	.009	6.35	1.872
1.0	60.	.060	273.0	206.7	.011	6.36	2.340
1.3	80.	.080	355.0	268.7	.014	6.38	3.032
1.6	100.	.100	422.0	319.5	.018	6.40	3.591
2.0	120.	.120	461.0	349.0	.021	6.43	3.909
2.3	140.	.140	479.0	362.6	.025	6.45	4.047
2.6	160.	.160	484.0	366.4	.029	6.48	4.074
3.0	180.	.180	486.5	368.3	.032	6.50	4.080
3.3	200.	.200	485.0	367.1	.036	6.52	4.052

Job No. 114008614

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	17.8 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	108.9			
Time to failure, min		t_f	2.97			
Unconfined compressive strength, T/sq ft		q_u	4.08			
Undrained shear strength, T/sq ft		S_u	2.04			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.595			

Classification Sandy Clay,Hard,Red & Gray

LL	31	PL	17	PI	14	G_s	

Remarks

Project Greens Bayou

Area Houston, Texas

Boring No. 97-85 | Sample No. 20

Depth El 46-48 ft | Date 3/14/98

UNCONFINED COMPRESSION TEST REPORT

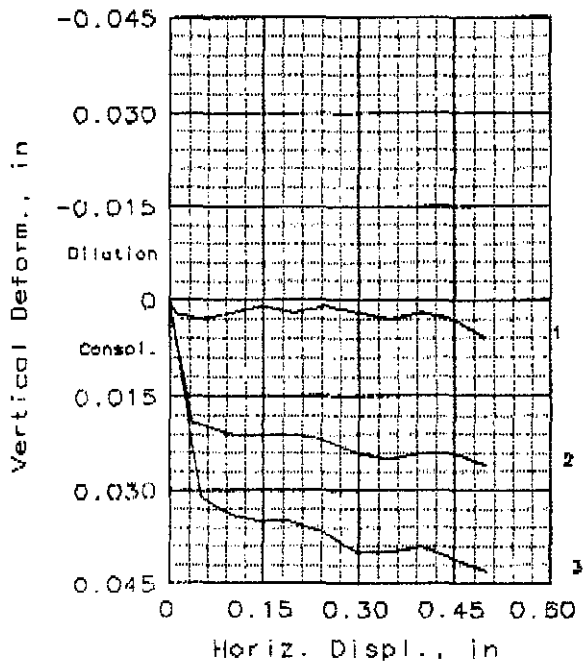
ENG FORM 1 JUN 65 3659

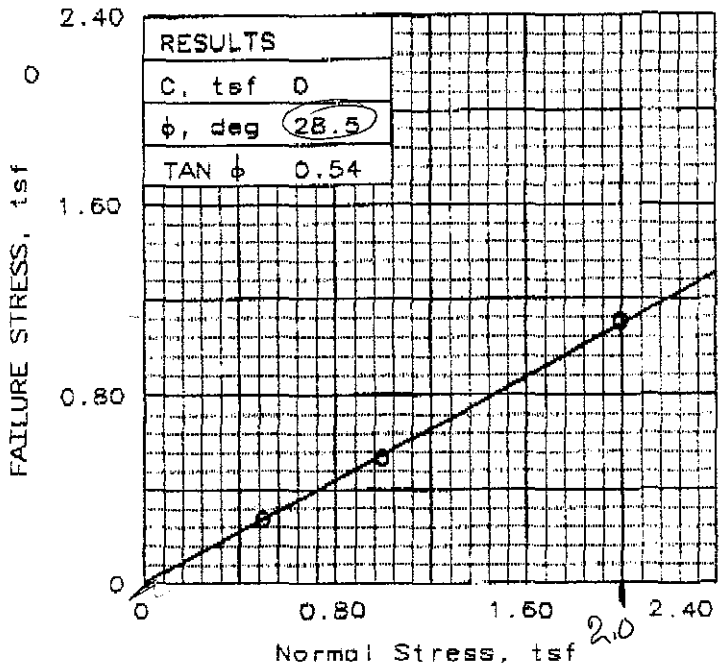
PLATE XI-2

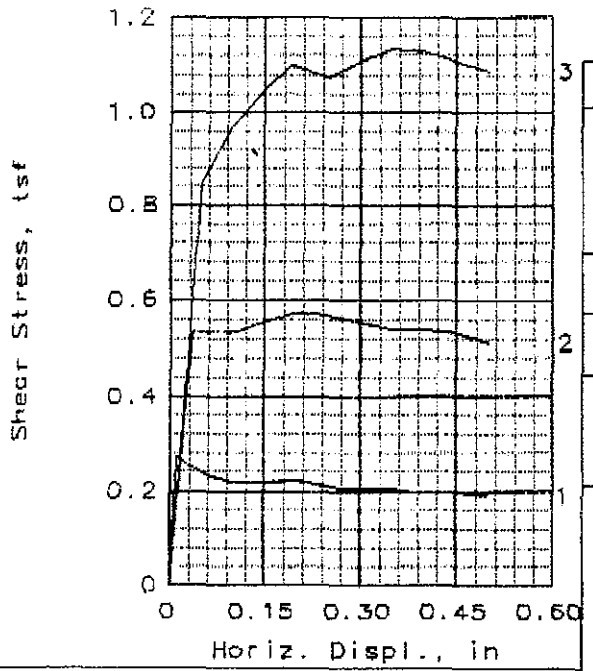
Geotest Engineering, Inc.

PLATE

does not need to be adjust thru zero







SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	8.1	7.8	7.6
	VOID RATIO	0.427	0.470	0.477
	SATURATION, %	51.5	44.7	42.9
	DRY DENSITY, pcf	118.1	114.7	114.1
VOID RATIO AFTER CONSOLIDATION		0.4168	0.4417	0.4381
TIME FOR 50% CONSOLIDATION		0	0	0
FINAL	WATER CONTENT, %	17.3	18.2	17.4
	VOID RATIO	0.409	0.407	0.380
	SATURATION, %	114.1	120.5	123.5
NORMAL STRESS, tsf		0.500	1.000	2.000
FAILURE STRESS, tsf		0.272	0.532	1.101
ACTUAL TIME TO FAILURE, MIN		59	218	1135
RATE OF STRAIN, in/MIN		0.000	0.000	0.000
ULTIMATE STRESS, tsf				

CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED | 2.500 in DIA. | 1.097 in THICK

DESCRIPTION SANDY CLAY (CL), GRAY

LL= 26 | PL= 17 | PI= 9 | Gs= 2.7

REMARKS

PROJECT GREENS BAYOU

AREA

BORING NO. 97-85 SAMPLE NO. 5

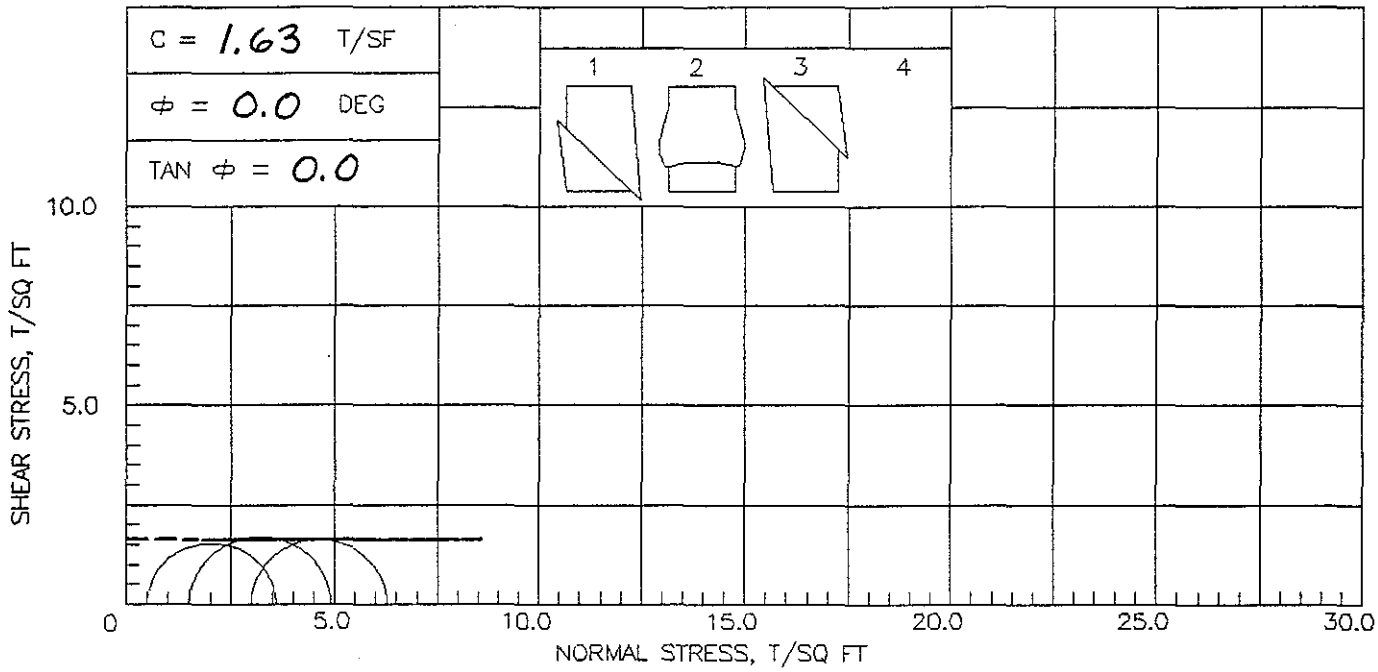
DEPTH/ELEV 8-10 DATE: 24 APR 98

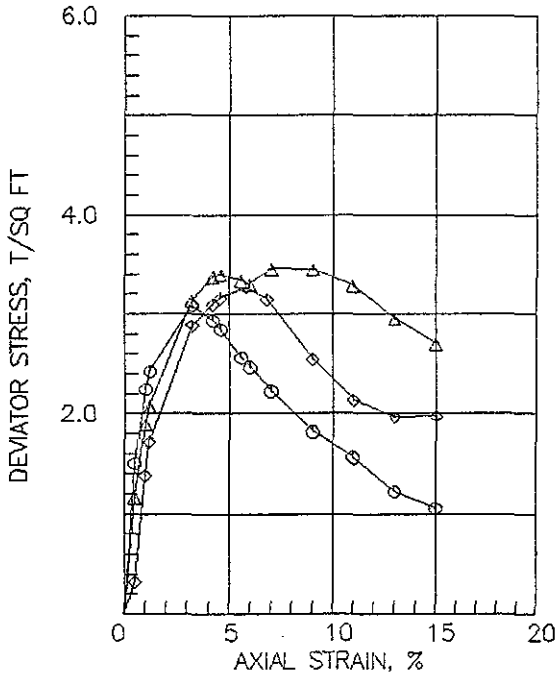
DIRECT SHEAR TEST REPORT

DEPARTMENT OF THE ARMY, WATERWAYS EXPERIMENT STATION - VICKSBURG, MISSISSIPPI

Work C No. 0998

Equilation No.





SPECIMEN NO.		○ 1	△ 2	◇ 3	4
INITIAL	WATER CONTENT, %	22.3	21.2	24.5	
	DRY DENSITY, PCF	104.2	107.3	101.0	
	SATURATION, %	97.4	100+	98.8	
	VOID RATIO	.618	.571	.670	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESSURE, TSF				
CHAMBER PRESSURE, TSF		.50	1.50	3.00	
MAX. DEV. STRESS, TSF		3.09	3.40	3.27	
TIME TO FAILURE, MIN.		9	21	27	
STRAIN RATE INCR., %			6		
INITIAL DIAMETER, IN.		1.41	1.40	1.41	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), BROWN

LL 59	PL 23	PI 36	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

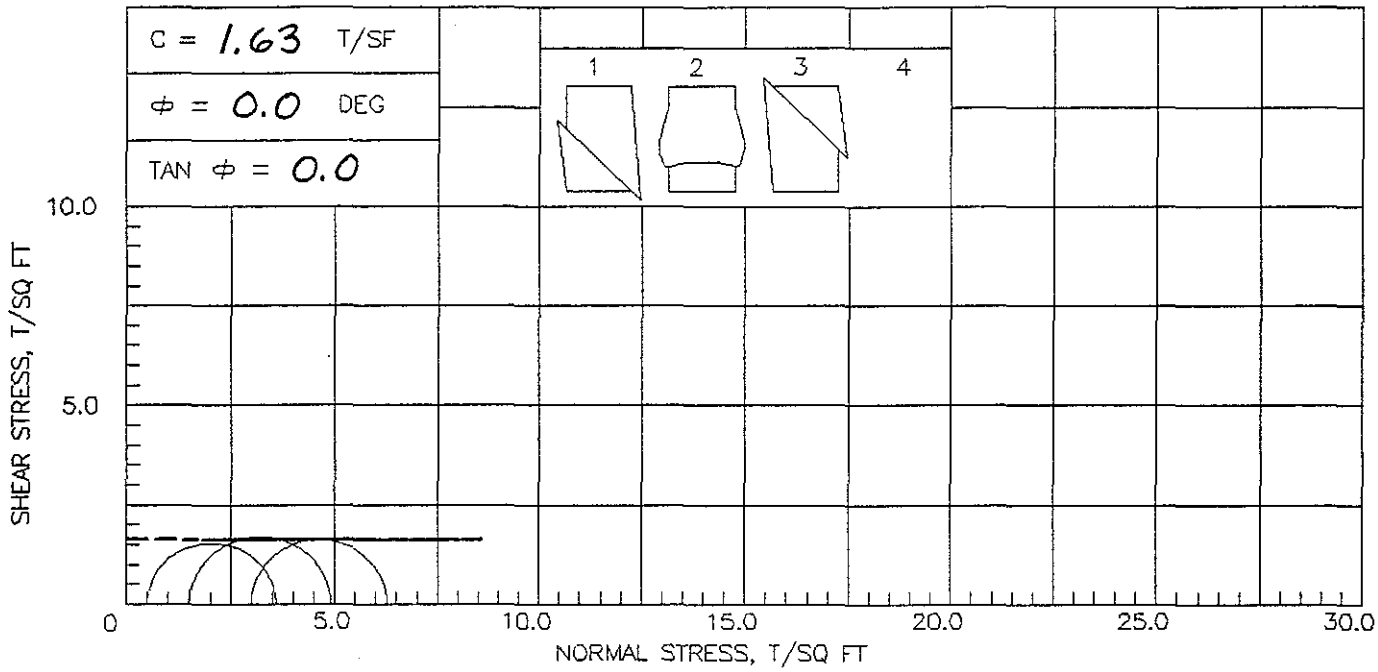
PROJECT GREENS BAYOU

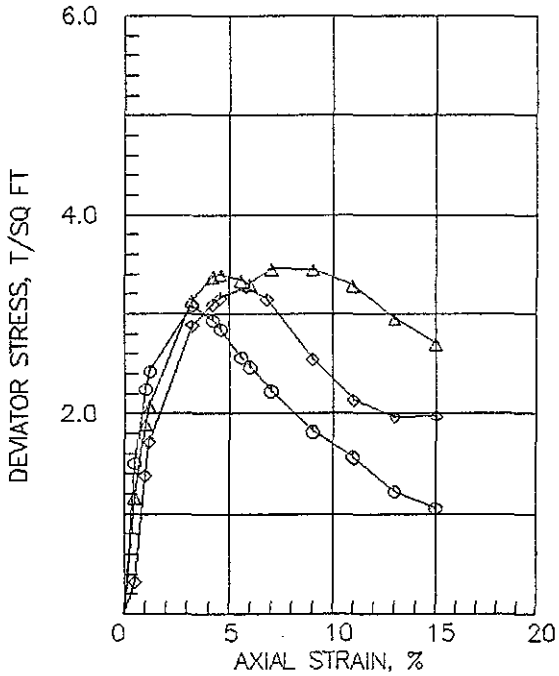
BORING NO. 97-85 | SAMPLE NO. 16

DEPTH/ELEV 38-40 | TECH. UCS

LABORATORY USAE WES - STF/GL | DATE 06 APR 98

TRIAXIAL COMPRESSION TEST REPORT





SPECIMEN NO.		○ 1	△ 2	◇ 3	4
INITIAL	WATER CONTENT, %	22.3	21.2	24.5	
	DRY DENSITY, PCF	104.2	107.3	101.0	
	SATURATION, %	97.4	100+	98.8	
	VOID RATIO	.618	.571	.670	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESSURE, TSF				
CHAMBER PRESSURE, TSF		.50	1.50	3.00	
MAX. DEV. STRESS, TSF		3.09	3.40	3.27	
TIME TO FAILURE, MIN.		9	21	27	
STRAIN RATE INCR., %			6		
INITIAL DIAMETER, IN.		1.41	1.40	1.41	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), BROWN

LL 59	PL 23	PI 36	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

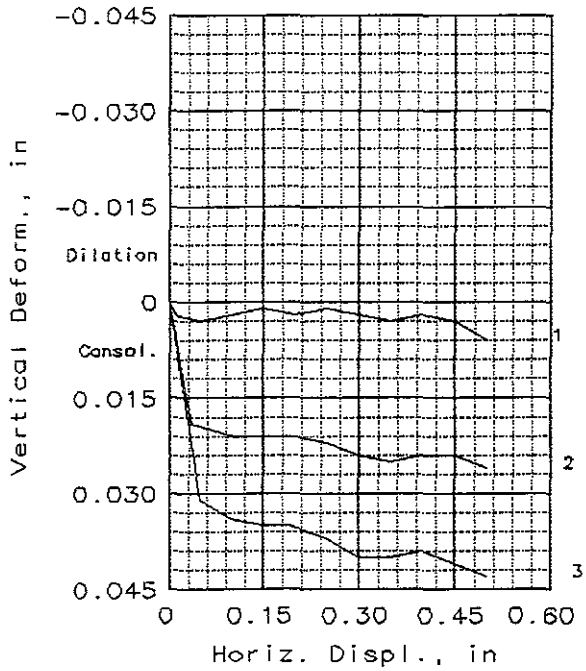
PROJECT GREENS BAYOU

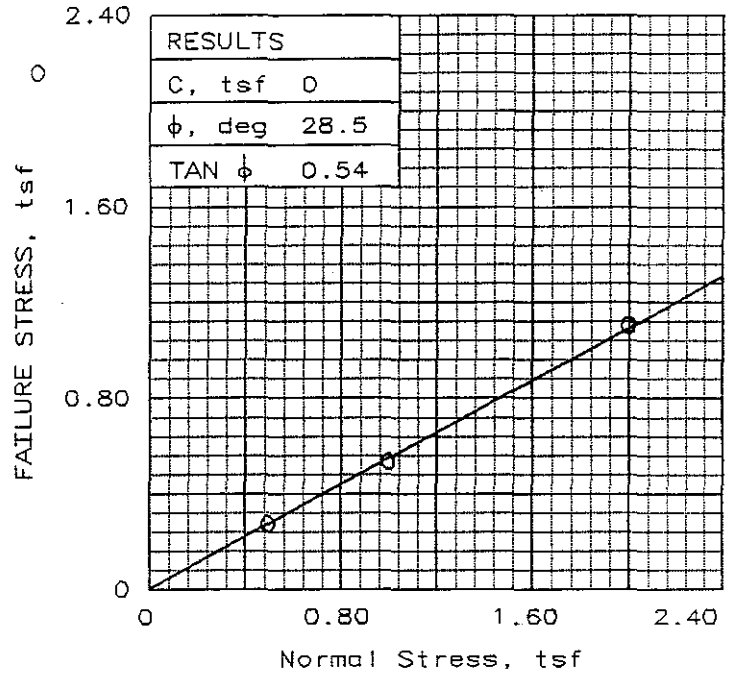
BORING NO. 97-85 | SAMPLE NO. 16

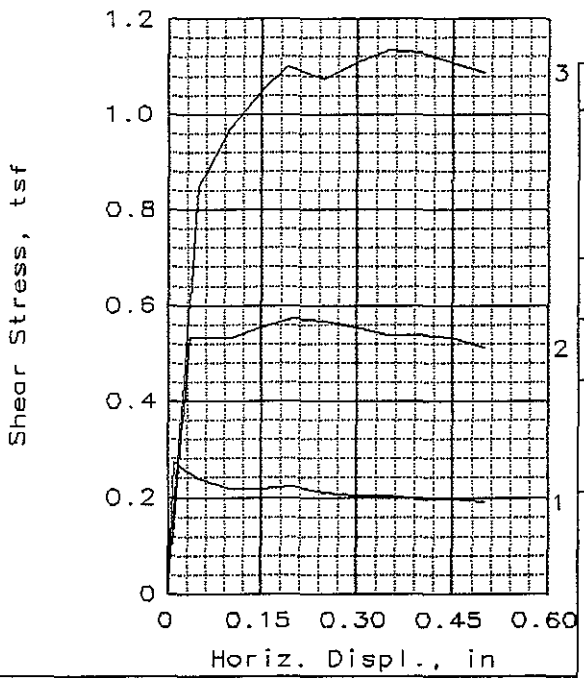
DEPTH/ELEV 38-40 | TECH. UCS

LABORATORY USAE WES - STF/GL | DATE 06 APR 98

TRIAXIAL COMPRESSION TEST REPORT







SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	8.1	7.8	7.6
	VOID RATIO	0.427	0.470	0.477
	SATURATION, %	51.5	44.7	42.9
	DRY DENSITY, pcf	118.1	114.7	114.1
VOID RATIO AFTER CONSOLIDATION		0.4168	0.4417	0.4381
TIME FOR 50% CONSOLIDATION		0	0	0
FINAL	WATER CONTENT, %	17.3	18.2	17.4
	VOID RATIO	0.409	0.407	0.380
	SATURATION, %	114.1	120.5	123.5
NORMAL STRESS, tsf		0.500	1.000	2.000
FAILURE STRESS, tsf		0.272	0.532	1.101
ACTUAL TIME TO FAILURE, MIN		59	218	1135
RATE OF STRAIN, in/MIN		0.000	0.000	0.000
ULTIMATE STRESS, tsf				

CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED | 2.500 in DIA. | 1.097 in THICK

DESCRIPTION SANDY CLAY (CL), GRAY

LL= 26 | PL= 17 | PI= 9 | Gs= 2.7

REMARKS

DRILLER'S LOG
Consistancy: Hard
PP: 4.5+

PROJECT GREENS BAYOU

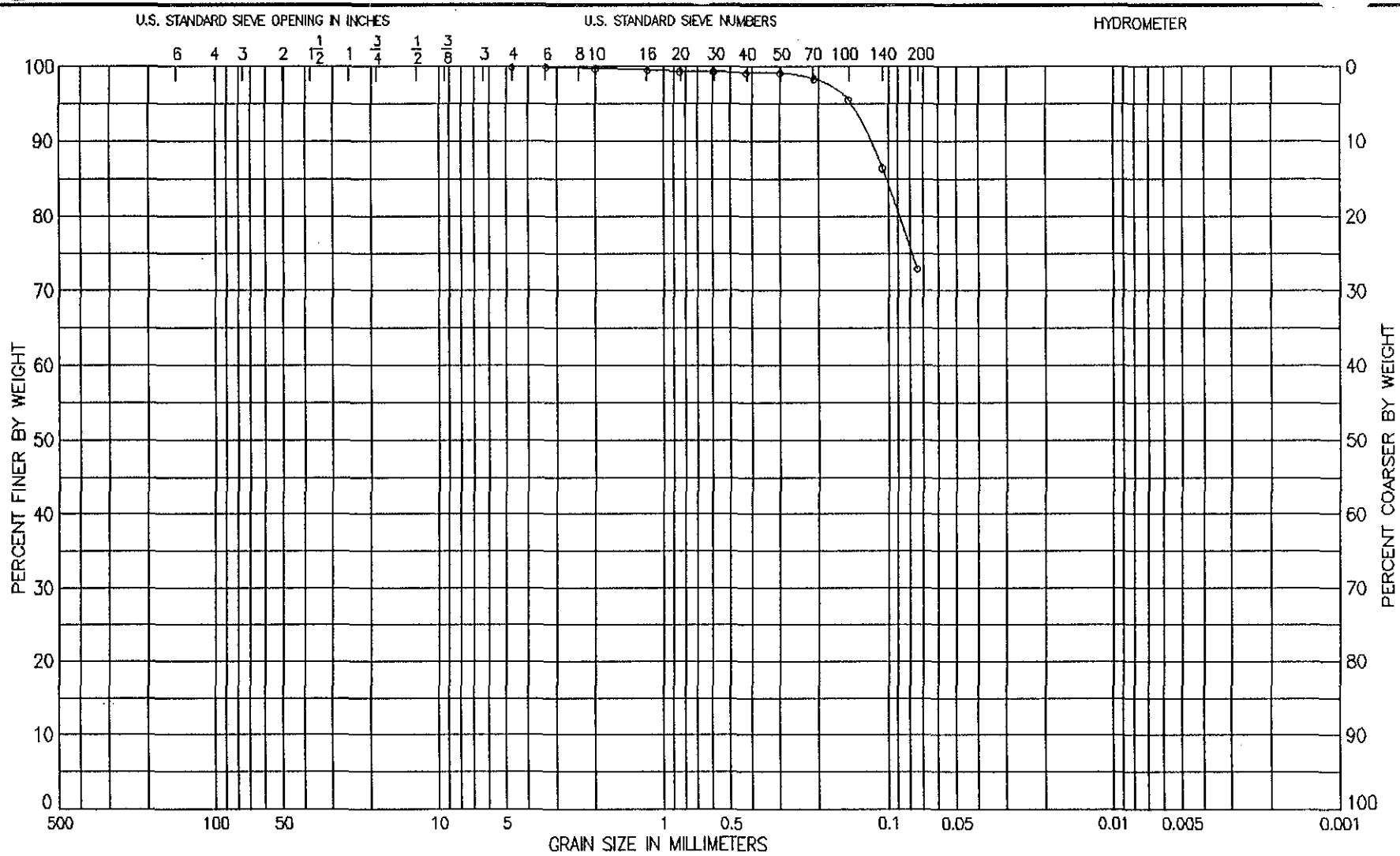
AREA

BORING NO. 97-85 SAMPLE NO. 5

DEPTH/ELEV 8-10 DATE: 24 APR 98

DIRECT SHEAR TEST REPORT

DEPARTMENT OF THE ARMY, WATERWAYS EXPERIMENT ON - VICKSBURG, MISSISSIPPI
Requisition No. Work Order No. 0008



LL	PL	PI	GS	NAT W,%	ORG,%
26	17	9			

CLASSIFICATION
SANDY CLAY (CL), GRAY

PROJECT GREENS BAYOU

BORING NO. 97-85 SAMPLE NO. 5

DEPTH/ELEV 8-10 DATE 30 APR 98

GRADATION CURVE

LABORATORY USAE WES - STF/GL

SIEVE ANALYSIS

PROJECT: GREENS BAYOU

BORING: 97-85 SAMPLE: 5 DF: PR0998 .DAT
DEPTH: 8-10 DATE: 30 APR 98

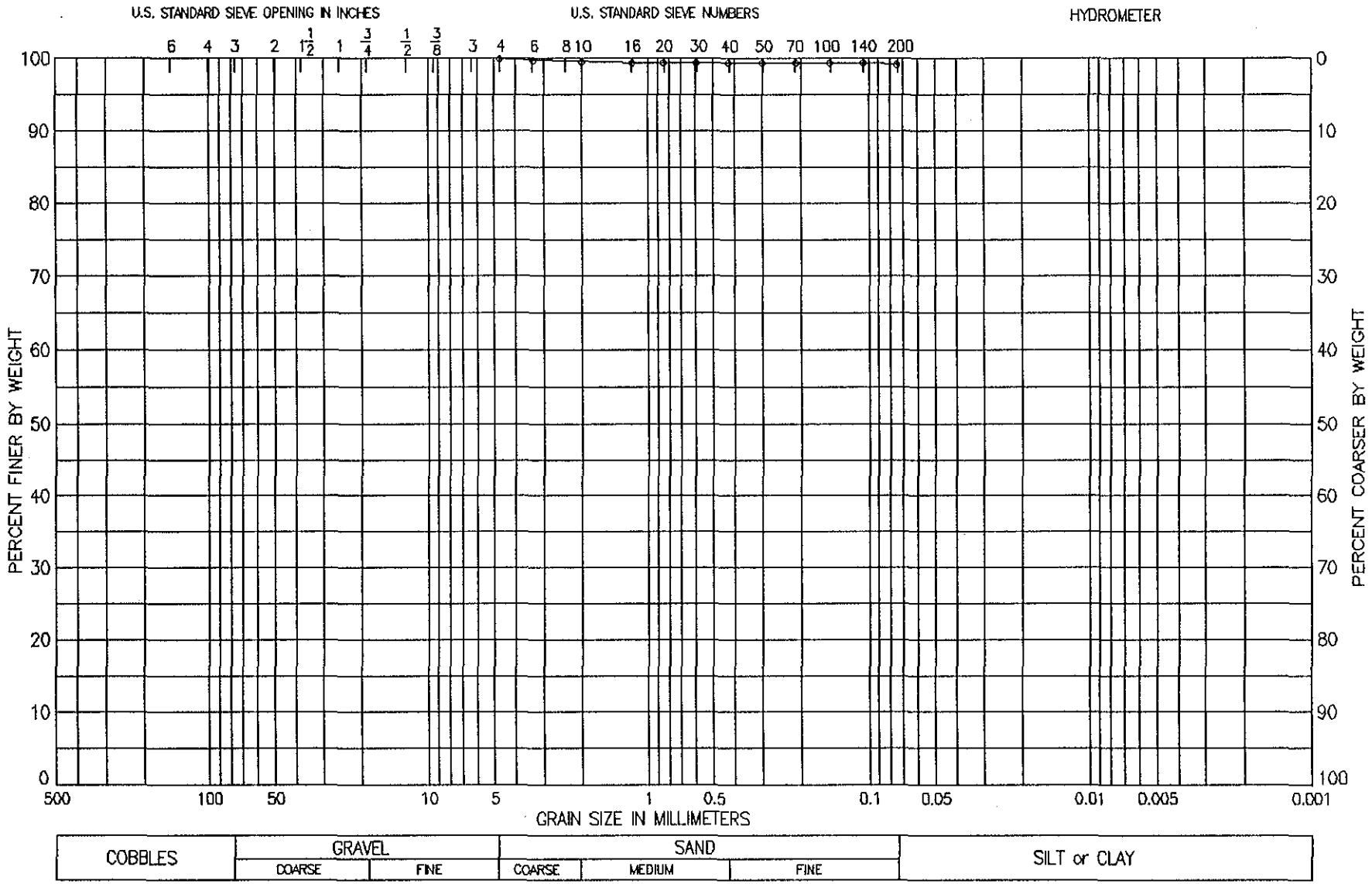
LL: 26 PL: 17 PI: 9 GS: .00 WC: .00
CLASSIFICATION: 162
SANDY CLAY (CL), GRAY

TOTAL WEIGHT OF SAMPLE: .0 gms.
PARTIAL WEIGHT AFTER SPLIT: 50.3 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	PERCENT COARSER
.0	No 4	4.750	100.0	.0
.0	No 6	3.350	100.0	.0
.1	No 10	2.000	99.8	.2
.2	No 16	1.180	99.6	.4
.3	No 20	.850	99.4	.6
.3	No 30	.600	99.4	.6
.4	No 40	.425	99.2	.8
.4	No 50	.300	99.2	.8
.8	No 70	.212	98.4	1.6
2.2	No 100	.150	95.6	4.4
6.8	No 140	.106	86.5	13.5
13.6	No 200	.075	73.0	27.0

PERCENT GRAVEL = .0
PERCENT SAND = 27.0
PERCENT FINES = 73.0

EDE



LL	PL	PI	GS	NAT W,%	ORG,%
59	23	36			

CLASSIFICATION
CLAY (CH), REDDISH BROWN

PROJECT GREENS BAYOU

BORING NO. 97-85 SAMPLE NO. 16

DEPTH/ELEV 38-40 DATE 28 APR 98

GRADATION CURVE

LABORATORY USAE WES – STF/GL

SIEVE ANALYSIS

PROJECT: GREENS BAYOU

BORING: 97-85 SAMPLE: 16 DF: PR0998 .DAT
DEPTH: 38-40 DATE: 28 APR 98

LL: 59 PL: 23 PI: 36 GS: .00 WC: .00
CLASSIFICATION: 170
CLAY (CH), REDDISH BROWN

TOTAL WEIGHT OF SAMPLE: .0 gms.
PARTIAL WEIGHT AFTER SPLIT: 52.5 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	PERCENT COARSER
.0	No 4	4.750	100.0	.0
.1	No 6	3.350	99.8	.2
.2	No 10	2.000	99.6	.4
.3	No 16	1.180	99.4	.6
.3	No 20	.850	99.4	.6
.3	No 30	.600	99.4	.6
.3	No 40	.425	99.4	.6
.3	No 50	.300	99.4	.6
.3	No 70	.212	99.4	.6
.3	No 100	.150	99.4	.6
.3	No 140	.106	99.4	.6
.4	No 200	.075	99.2	.8

PERCENT GRAVEL = .0
PERCENT SAND = .8
PERCENT FINES = 99.2

EDE