Project : BROWNSVILLE SHIP CHANNEL, TEXAS

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 89-42

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	M c (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	P L (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0 - 2	0.25		Gray, CLAYEY SILT, with sand	M L	32.4											
2	2 - 4	0.25		Gray, CLAYEY SILT, with sand	M L	32.6					100.0	100.0	100.0	99.8	85.5		
3	4 - 6	0.25		Gray, CLAYEY SILT, with sand	M L	31.0											
4	6 - 7.5		W.O.H.	Gray, SILT, very loose	M L	34.5											
5	8 - 10	0.75		Gray, CLAY, firm, slightly sandy	CH	35.9	85.4	116.1	55	22							0.32
6	10 - 12	0.75		Gray, CLAY, firm, slightly sandy	CH	36.1	84.3	114.7	57	22	100.0	10.0	100.0	99.7	90.5	0.20	0.21
7	12 - 14	1.25		Gray, CLAY, stiff, slightly sandy	CH	34.9											
8	14 - 16	1.50		Gray, CLAY, stiff	CH	33.3											
9	16 - 18	1.50		Gray, CLAY, stiff	CH	29.9	90.0	116.9	67	25	100.0	100.0	100.0	99.9	99.6		0.81
10	18 - 20	1.50		Gray, CLAY, stiff	CH	30.8											
11	20 - 22	1.50		Gray, CLAY, stiff	CH	32.3											
12	22 - 23.5		W.O.H.	Gray, SANDY CLAY	CL	35.7			31	15							
13	24 - 26	0.75		Gray, CLAY, firm, sandy	CL	30.9											
14	26 - 28	0.75		Gray, CLAY, firm, with sand partings	CL	28.5											
15	28 - 30	0.75		Gray, LEAN CLAY, firm	CL	33.5	79.7	106.4	48	20	100.0	100.0	99.8	99.7	99.6	0.40	0.42
16	30 - 32	0.75		Gray, CLAY, firm	CL	28.4											
17	32 - 34	0.75		Gray, CLAY, firm, slightly sandy, with shell layer fragment	CL	26.1											
18	34 - 36	0.75		Gray, LEAN CLAY, slightly sandy, with shell fragments	CL	28.7	94.4	121.5	34	15	100.0	99.1	98.2	96.9	94.7	0.40	0.44

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content, q u : Unconfined Compressive Strength

Project : BROWNSVILLE SHIP CHANNEL, TEXAS

SUMMARY OF LABORATORY TEST RESULTS

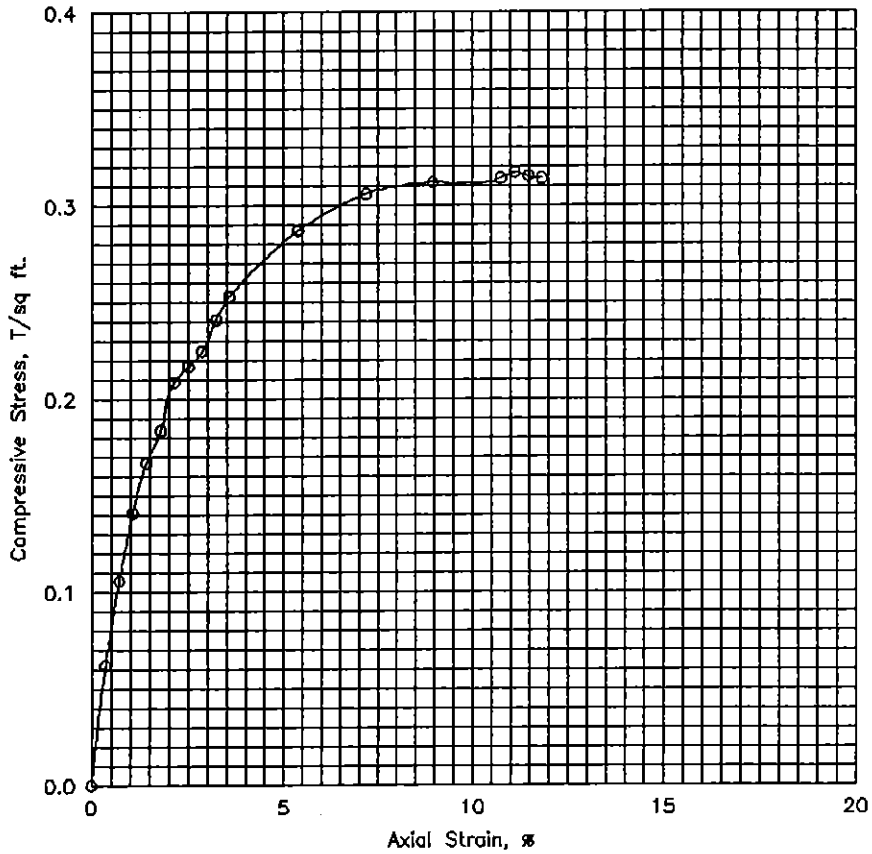
Boring No. 89-42

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	M c (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	LL (%)	PL (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
19	36 - 38	1.00		Gray, SILTY CLAY, stiff, with silty clay layer	CL	27.2											
20	38 - 40	1.00		Gray, CLAY, stiff	CH	29.3											
21	40 - 42	0.50		Gray, CLAY, firm	CH	32.4	83.5	110.6	58	22	100.0	99.9	99.9	99.3	98.5		0.14
22	42 - 44	1.50		Gray, CLAY, stiff	CH	29.4											
23	44 - 46	1.50		Gray, CLAY, stiff	CH	26.9											
24	46 - 48	1.50		Gray, CLAY, stiff	CH	26.6											

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content, q u : Unconfined Compressive Strength

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	35.9 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	85.4			
Time to failure, min		t_f	10.07			
Unconfined compressive strength, T/sq ft		q_u	.32			
Undrained shear strength, T/sq ft		S_u	.16			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.815			
Initial specimen height, in.		H_0	5.585			

Classification Gray, CLAY, Soft, w/ Sand

LL	52	PL	22	PI	30	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-42 | Sample No. 5

Depth El 8-10 ft | Date 6/28/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

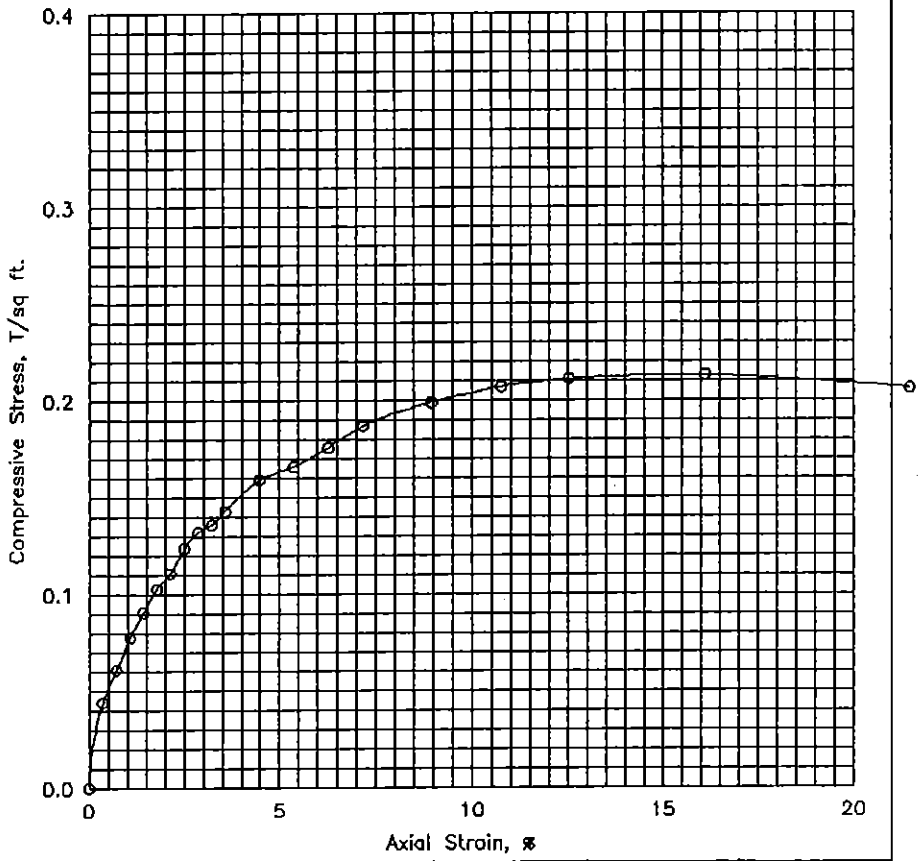
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	36.1 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	84.3			
Time to failure, min		t_f	14.08			
Unconfined compressive strength, T/sq ft		q_u	.21			
Undrained shear strength, T/sq ft		S_u	.11			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.840			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Soft, w/Sand

LL	57	PL	22	PI	35	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-42 | Sample No. 6

Depth El 10-12 ft | Date 6/28/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

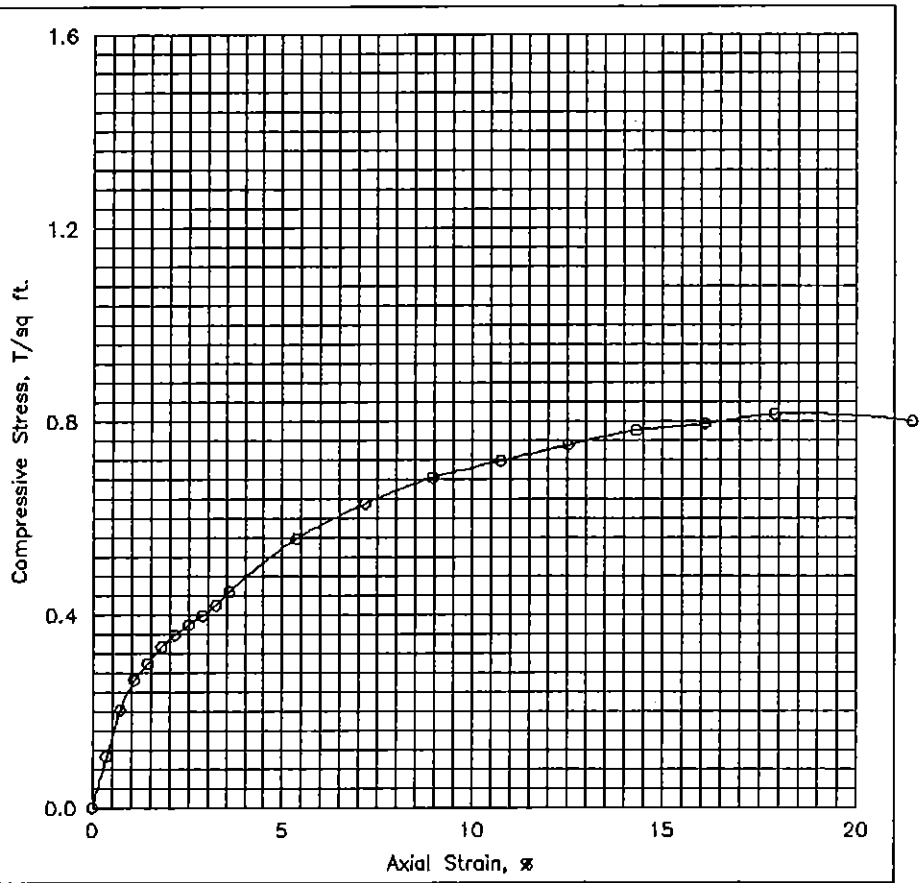
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	29.9 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	90.0			
Time to failure, min		t_f	16.22			
Unconfined compressive strength, T/sq ft		q_u	.81			
Undrained shear strength, T/sq ft		S_u	.41			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.810			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Stiff

LL	67	PL	25	PI	42	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-42 | Sample No. 9

Depth El 16-18 ft | Date 6/28/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

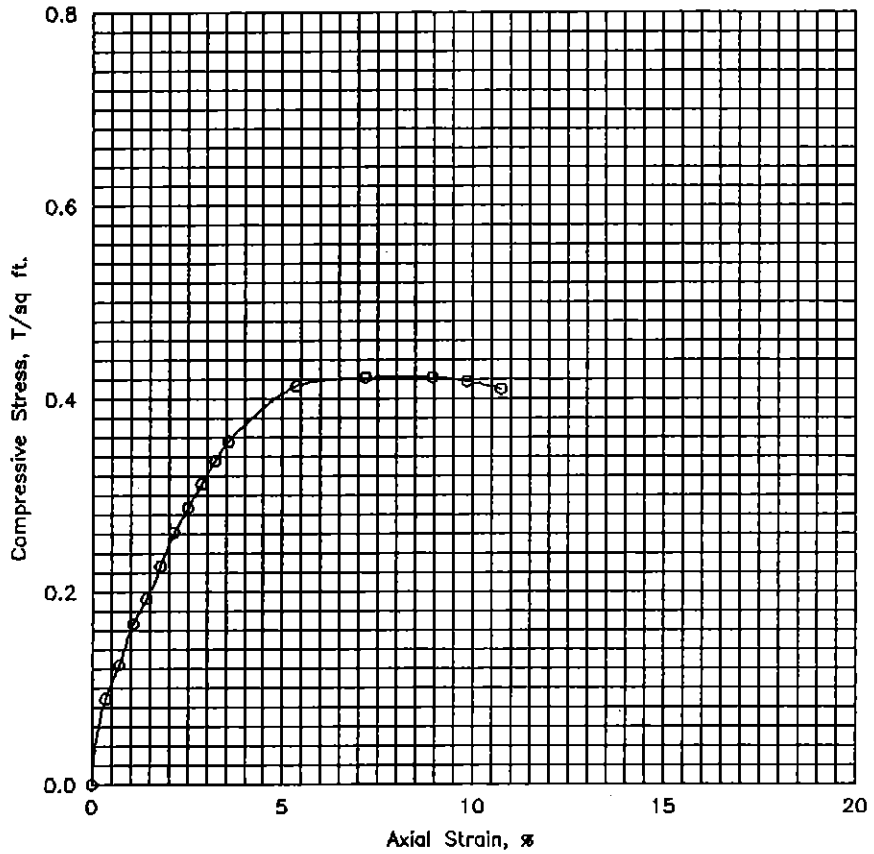
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	33.5 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	79.7			
Time to failure, min		t_f	6.53			
Unconfined compressive strength, T/sq ft		q_u	.42			
Undrained shear strength, T/sq ft		S_u	.21			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.815			
Initial specimen height, in.		H_o	5.590			

Classification Gray, CLAY, Firm

LL	48	PL	20	PI	28	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-42 | Sample No. 15

Depth El 28-30 ft | Date 6/28/90

UNCONFINED COMPRESSION TEST REPORT

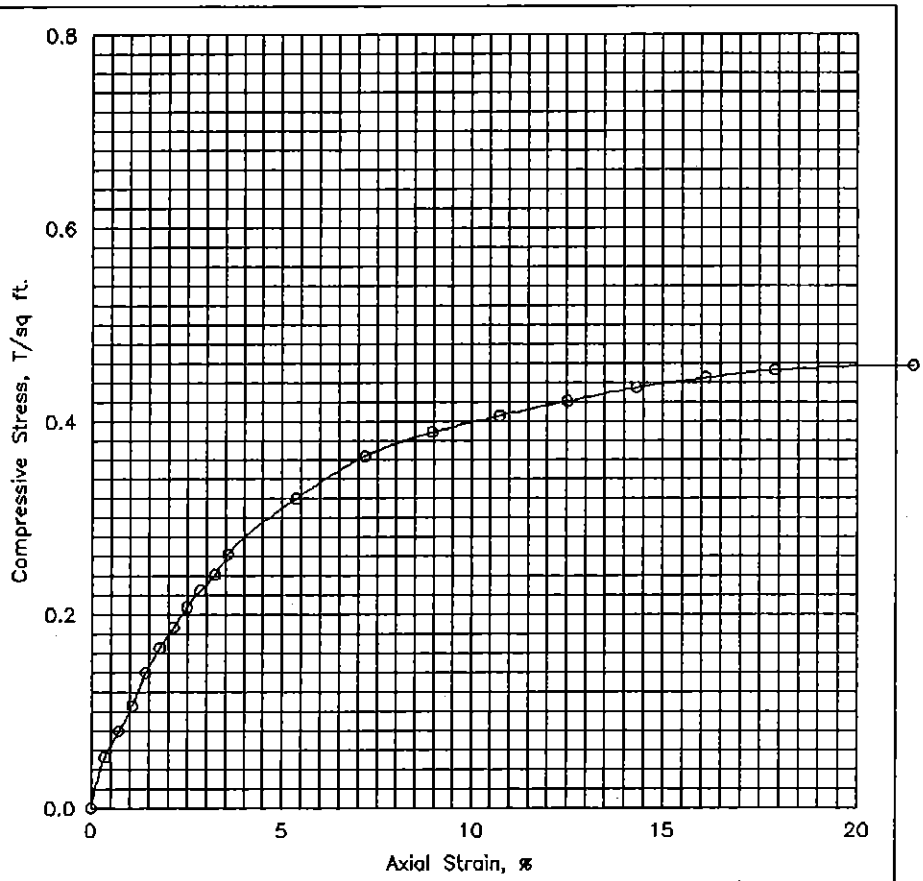
ENG FORM 1 JUN 65 3659

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	28.7 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	94.4			
Time to failure, min		t_f	13.00			
Unconfined compressive strength, T/sq ft		q_u	.44			
Undrained shear strength, T/sq ft		S_u	.22			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.815			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Firm, w/Shell fragments

LL	34	PL	15	PI	19	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-42 | Sample No. 18

Depth El 34-36 ft | Date 6/28/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

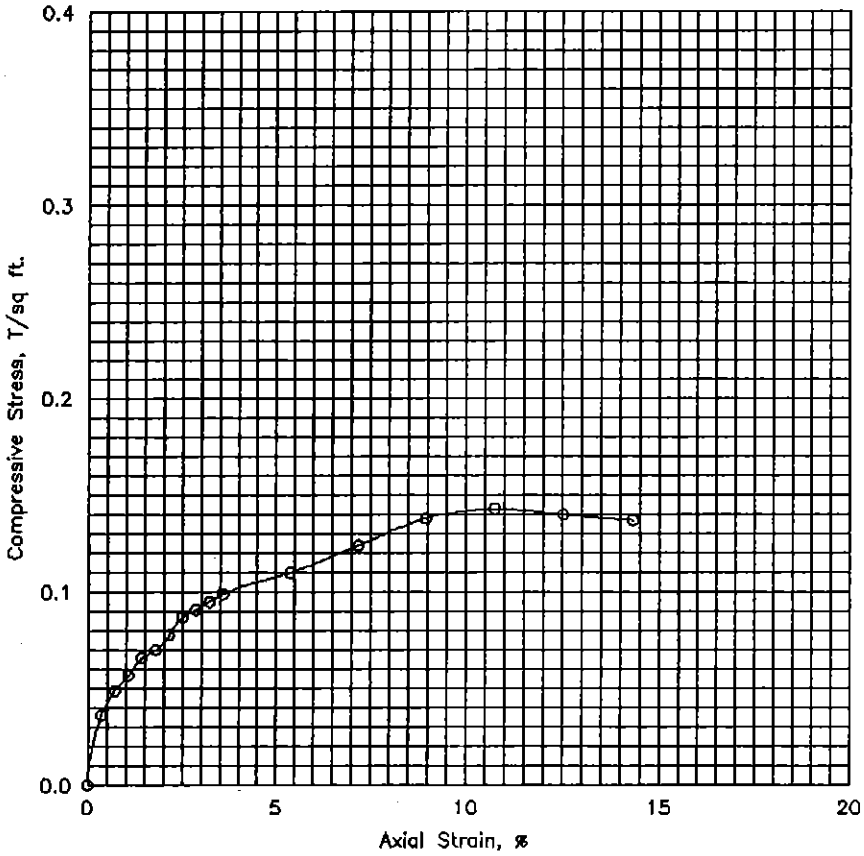
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	32.4 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	83.5			
Time to failure, min		t_f	9.70			
Unconfined compressive strength, T/sq ft		q_u	.14			
Undrained shear strength, T/sq ft		S_u	.07			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.815			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Firm

LL	58	PL	22	PI	36	G_s

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-42 | Sample No. 21

Depth El 40-42 ft | Date 6/28/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

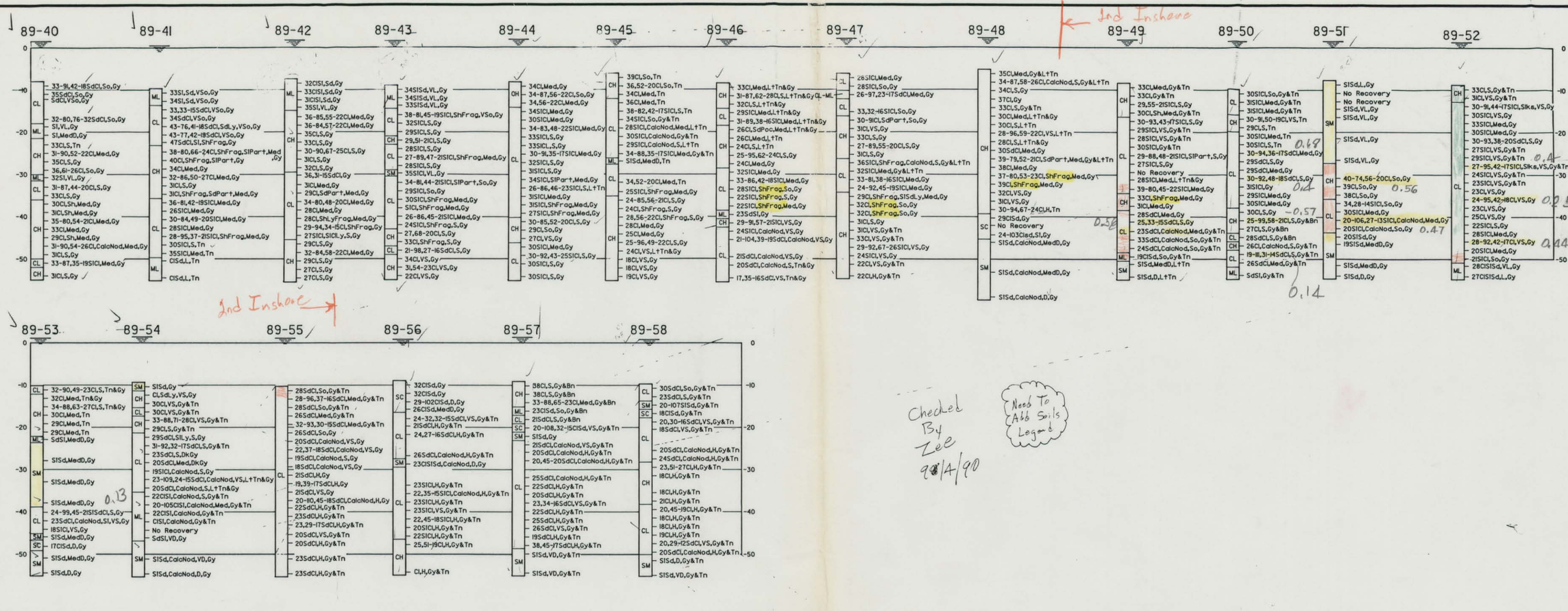
Geotest Engineering, Inc.

PLATE

DATE 8/14/90
INITIALS JFP

SUMMARY OF QUESTIONABLE
ERRONEOUS OR MISSING DATA
FOR
CONTRACT NO. DACW64-90-C-0024
PROJECT: LABORATORY TESTING OF SOIL SAMPLES, BROWNSVILLE SHIP CHANNEL, TEXAS

BORING NO.	SAMPLE NO.	COMMENTS ON TEST RESULTS
89-40	4	According to liquid limit, classification should be CH instead of CL. Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	5	Mechanical analysis was not performed.
	12, 16	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-41	3	Unit dry weight and unconfined compression tests requested but not performed.
	8, 11, 14, 16	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-42	4	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	6	Unconfined compression test result appears low.
	15 ✓	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	21	Unconfined compression tests result appear low. Moisture-density relationship as derived from moisture content and unit dry weight tests, appears unreasonable.
89-43	2	Unit dry weight test requested, not performed.
	9	Unconfined compression tests result on summary sheet does not agree with stress-strain plot. Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	12	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.



REVISION	DATE	DESCRIPTION	BY

OFFICE OF THE DISTRICT ENGINEER
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

CADD

DRAWN BY: X
TRACED BY: X
CHECKED BY: X
SUBMITTED BY:
CHIEF, SOILS DESIGN SECTION
APPROVED:
CHIEF, GEOTECH. & SURVEY BRANCH

BIH
Brownsville Channel Borings

APPROVED:
CHIEF ENGINEERING DIVISION
DATE:

Prepared under the direction of
Brink P. Miller, Col., C.E.,
District Engineer

SCALE: AS SHOWN
SPEC. DATE:
DRAWING NUMBER X
SHEET X OF X
FILE NO. X

DESIGN FILE: ZF1:(28,2573)RONALDON1
CREATED BY: GRANDPA
ON: 30-AUG-1990
AT: 08:41