Project : BROWNSVILLE SHIP CHANNEL, TEXAS

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 89-48

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	0.75		Gray and light tan, CLAY, firm	CH	35.4											
2	2 - 4	1.00		Gray and light tan, CLAY, stiff, with calcareous nodules and mica	CH	34.1	87.1	116.8	58	26	98.5	98.0	97.5	96.5	92.9	0.40	0.63
3	4 - 6	1.00		Gray, CLAY, stiff, slightly sandy	CH	33.7										0.50	
4	6 - 8			Gray, CLAY	CH	36.7											
5	8 - 10	1.00		Gray and tan, CLAY, stiff	CH	33.1											
6	10 - 12	0.75		Light tan and gray, CLAY, firm	CH	30.3											
7	12 - 14	1.50		Light tan, CLAY, stiff, with mica	CH	30.1											
8	14 - 16	2.00		Light tan, CLAY, very stiff	CH	28.2	96.2	123.3	59	22	100.0	100.0	100.0	100.0	100.0	0.80	1.10
9	16 - 18	1.50		Light tan and gray, CLAY, stiff	CH	28.1											
10	18 - 20	0.75		Gray, SANDY CLAY, firm	CH	29.8											
11	20 - 22	0.75		Gray and light tan, CLAY, firm, with sand parting	CH	38.8	79.2	109.9	52	21	100.0	100.0	100.0	99.7	99.4	0.35	0.66
12	22 - 24	0.75		Gray, CLAY, firm	CH	37.5											
13	24 - 26	0.75		Gray, CLAY, firm, with shell fragments	CH	36.8	80.0	109.4	53	23	100.0	100.0	100.0	100.0	99.5	0.20	0.51
14	26 - 28	0.75		Gray, CLAY, firm, with shell fragments	CH	38.5											
15	28 - 30	2.00		Gray, CLAY, very stiff	CH	32.2											
16	30 - 32	2.75		Gray, CLAY, very stiff, with mica	CH	31.1											
17	32 - 34	4.50		Tan, CLAY, hard	CH	30.0	93.6	121.7	67	24	100.0	100.0	100.0	99.9	99.4	1.00	1.28
18	34 - 36			Gray, SAND, clayey	SC	29.2					100.0	100.0	100.0	74.2	39.6		

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

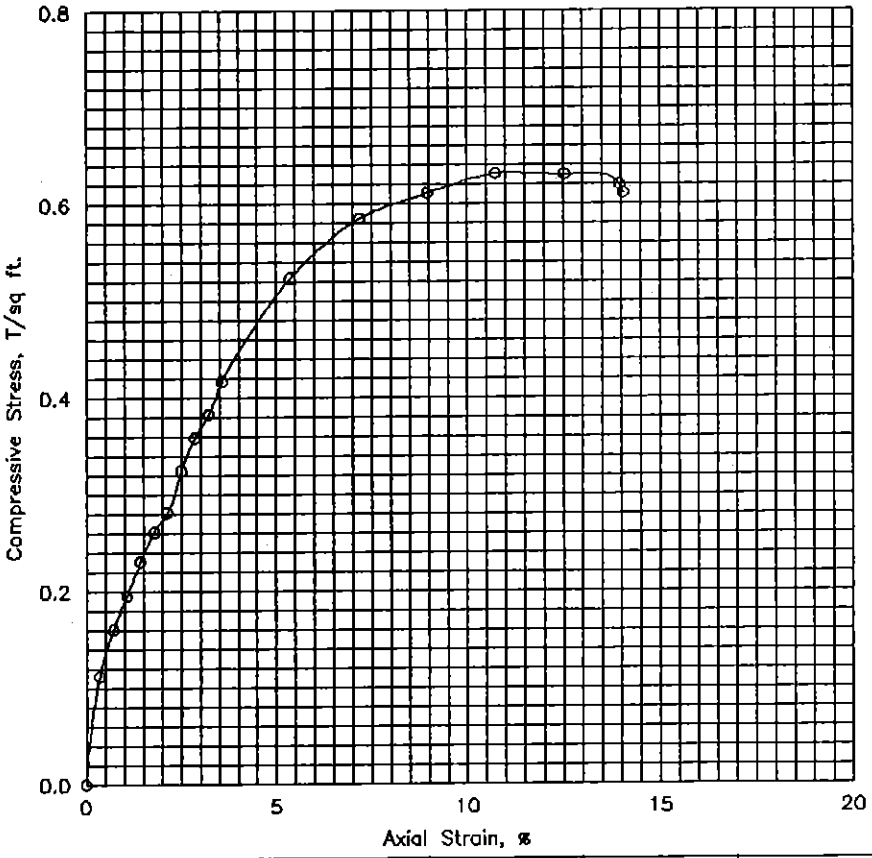
Boring No. 89-48

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 (%)	P L (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
19	36 - 37.5		18	No recovery													
20	38 - 40	0.75		Gray, SAND, clayey, with some silt	S C	23.9	102.7	127.2			100.0	99.9	99.7	80.2	48.4		
21	40 - 41. 5		11	Gray, SILTY SAND, medium dense, with calcareous nodules	S M												
22	47 - 48.5		19	Gray, SILTY SAND, medium dense, with calcareou nodules	S M												
23	53 - 54.5		38	Gray, SILTY SAND, dense, with calcareous nodules	S M												

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	34.1 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	87.1			
Time to failure, min		t_f	9.88			
Unconfined compressive strength, T/sq ft		q_u	.63			
Undrained shear strength, T/sq ft		S_u	.32			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.800			
Initial specimen height, in.		H_0	5.590			

Classification Gray and Tan, CLAY, Stiff, with calcareous nodules

LL	58	PL	26	PI	32	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-48 | Sample No. 2

Depth El 2-4 ft | Date 7/7/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

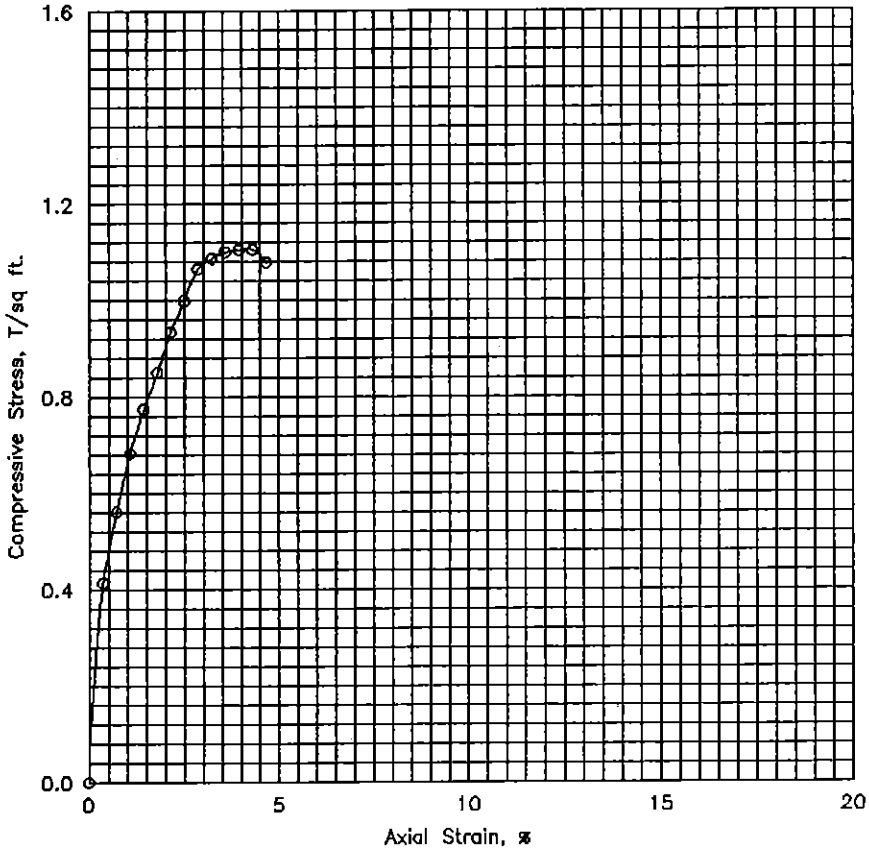
PLATE XI-2

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	28.1 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	96.2			
Time to failure, min		t_f	4.13			
Unconfined compressive strength, T/sq ft		q_u	1.10			
Undrained shear strength, T/sq ft		S_u	.55			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.825			
Initial specimen height, in.		H_0	5.590			

Classification Light Tan, CLAY, Very stiff

LL	59	PL	22	PI	37	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-48 | Sample No. 8

Depth El 14-16 ft | Date 7/7/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

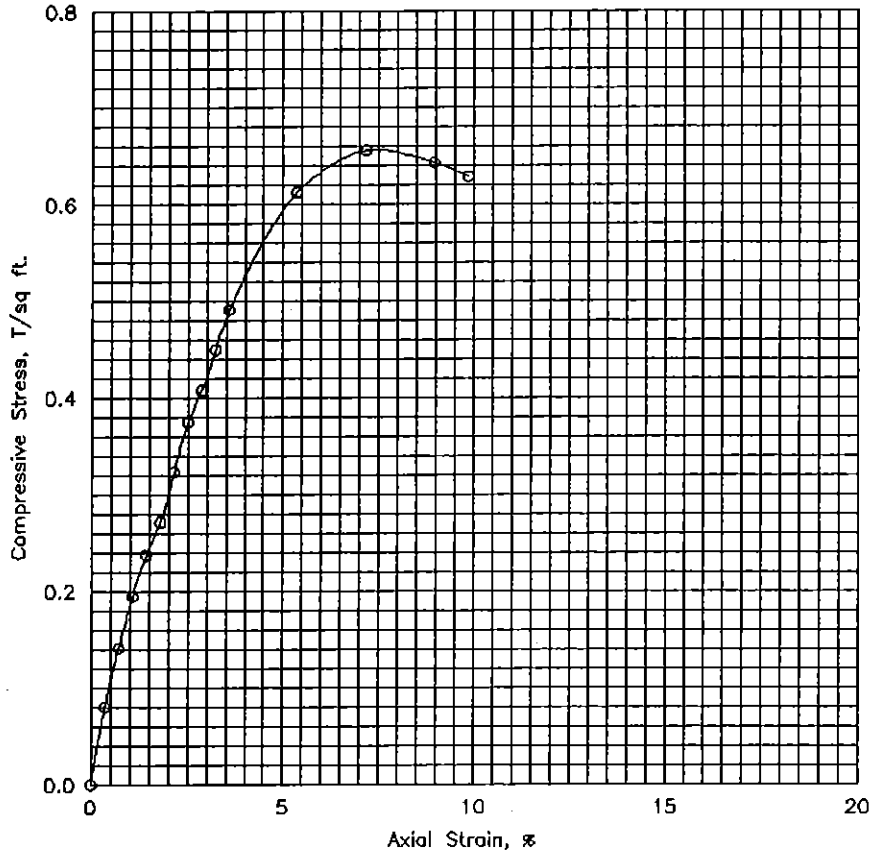
PLATE XI-2

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	38.8 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	79.2			
Time to failure, min		t_f	6.62			
Unconfined compressive strength, T/sq ft		q_u	.66			
Undrained shear strength, T/sq ft		S_u	.33			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.810			
Initial specimen height, in.		H_0	5.590			

Classification Light Tan and Gray, CLAY, Firm, with Sand Seams

LL	52	PL	21	PI	31	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-48 | Sample No. 11

Depth El 20-22 ft | Date 7/7/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

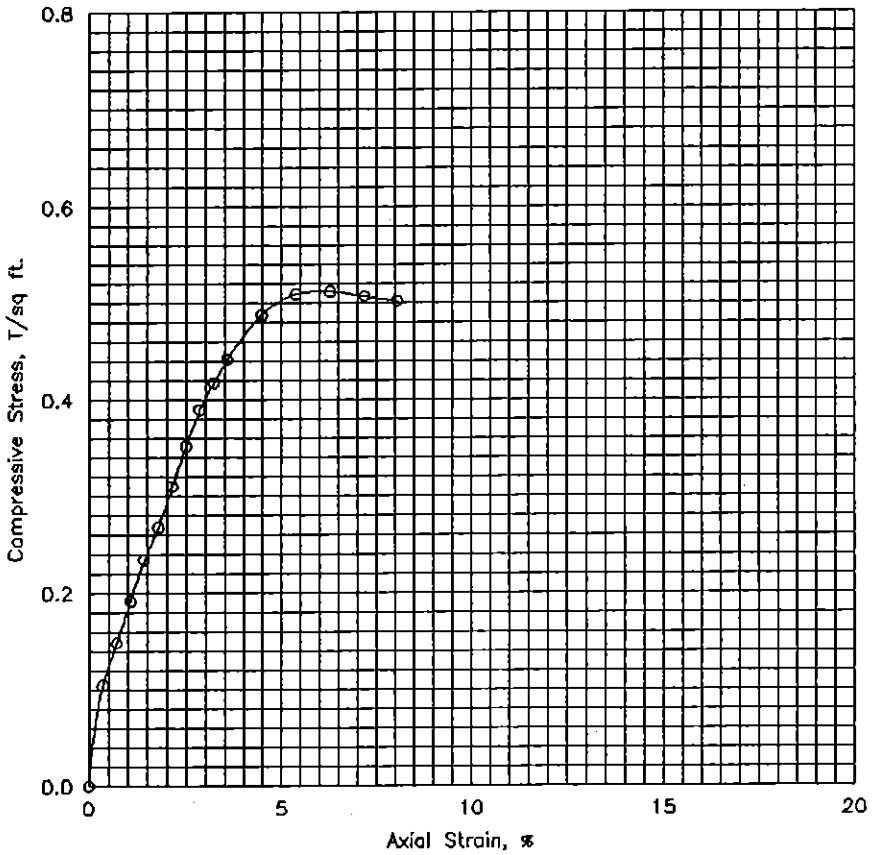
PLATE XI-2

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	36.8 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	80.0			
Time to failure, min		t_f	5.73			
Unconfined compressive strength, T/sq ft		q_u	.51			
Undrained shear strength, T/sq ft		S_u	.26			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.830			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Firm

LL	53	PL	23	PI	30	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-48 | Sample No. 13

Depth El 24-26 ft | Date 7/7/90

UNCONFINED COMPRESSION TEST REPORT

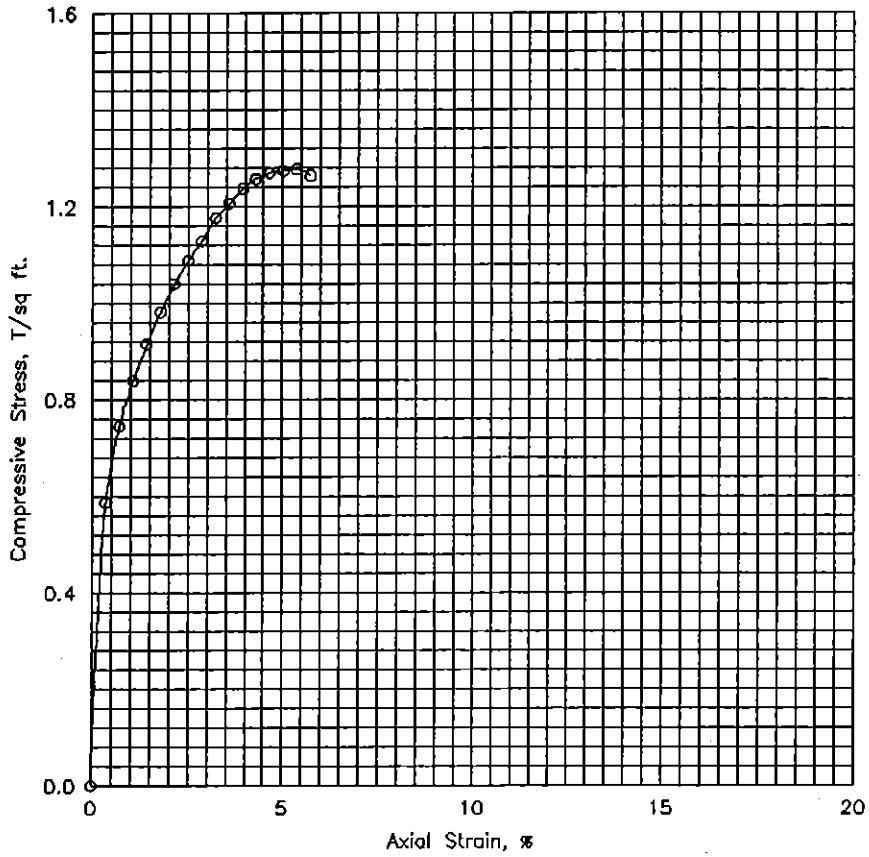
ENG FORM 1 JUN 65 3659

PLATE XI-2

Geotest Engineering, Inc.

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	30.0 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	93.6			
Time to failure, min		t_f	5.13			
Unconfined compressive strength, T/sq ft		q_u	1.28			
Undrained shear strength, T/sq ft		S_u	.64			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.810			
Initial specimen height, in.		H_o	5.590			

Classification Tan, CLAY, Hard

LL	67	PL	24	PI	43	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-48 | Sample No. 17

Depth El 32-34 ft | Date 7/7/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

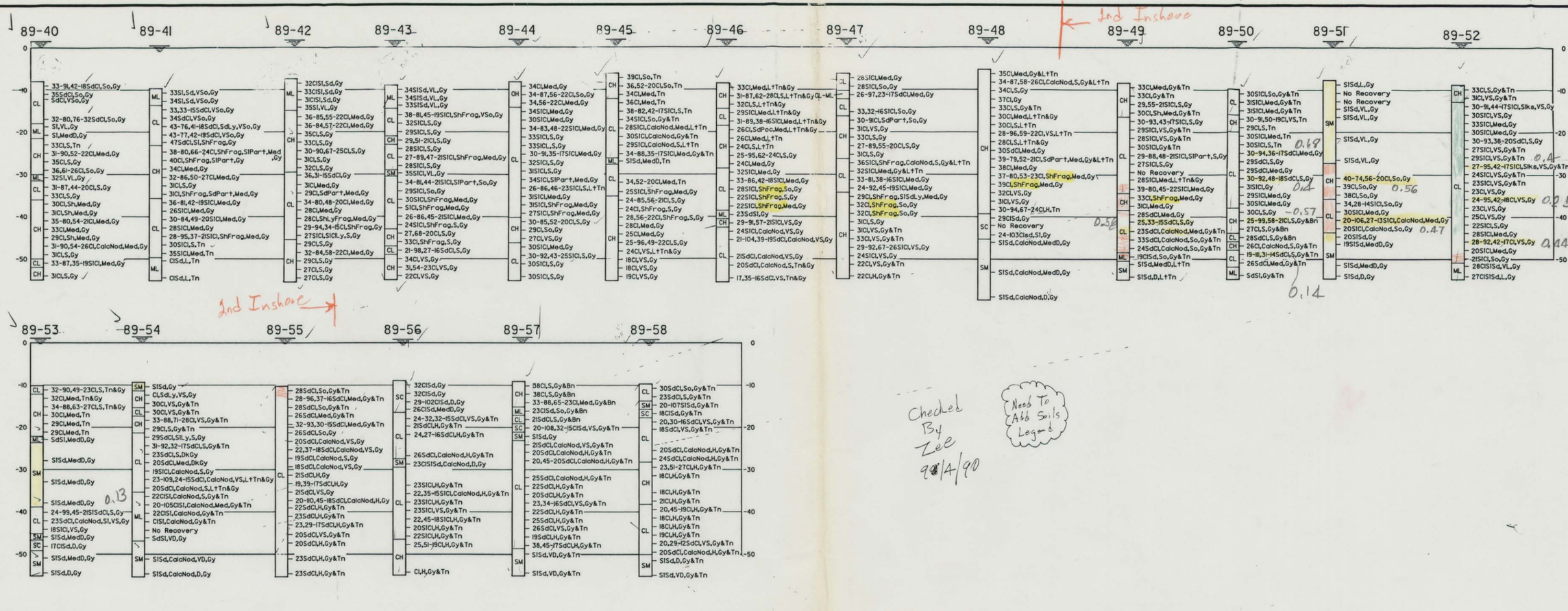
PLATE XI-2

Geotest Engineering, Inc.

PLATE

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
89-43	15	Moisture content test requested, not performed.
	16	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	20	Unconfined compression test results appears low. Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-44	6, 9, 13, 17	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-45	5	Unconfined compression test results appears low.
	12	According to liquid limit, U.S.C. should be CH instead of CL.
	14	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	19	Liquid limit test indicates USC should be CL instead of CH.
89-46	9	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-47	3	Moisture content appears high for a firm material when compared to the liquid limit. Plotted liquid limit, plasticity index point lies in the "hatched" area. The percent sand is less than 30%. Visual classification should be silty clay with sand.
	9, 13	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-48	13	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	21	Abbreviated mechanical analysis not performed.



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