Project : BROWNSVILLE SHIP CHANNEL, TEXAS

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 89-44

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)
1	0 - 2	0.75		Gray, CLAY, firm, slightly sandy	CH	34.4											
2	2 - 4	0.25		Gray, CLAY, soft, slightly sandy	CH	33.6	87.0	116.2	56	22	100.0	100.0	100.0	99.9	94.7		0.34
3	4 - 6	0.50		Gray, CLAY, firm	CH	34.2			56	22							
4	6 - 8	0.50		Gray, SILTY CLAY, firm	CL	33.5											
5	8 - 10	0.75		Gray, SILTY CLAY, firm, with mica flakes	CL	30.0											
6	10 - 12	0.75		Gray, SILTY CLAY, firm	CL	34.4	83.2	111.9	48	22	100.0	100.0	99.4	99.0	98.1		0.33
7	12 - 14	1.00		Gray, SILTY CLAY, stiff	CL	33.0											
8	14 - 16	1.00		Gray, SILTY CLAY, stiff	CL	33.4											
9	16 - 18	0.75		Gray, SILTY CLAY, firm	CL	30.1	91.4	118.8	35	17	100.0	100.0	100.0	99.4	97.0		0.40
10	18 - 20	1.00		Gray, SILTY CLAY, stiff	CL	32.0											
11	20 - 22	1.50		Gray, SILTY CLAY, stiff	CL	30.6											
12	22 - 24	0.75		Gray, SILTY CLAY, firm, with silt partings	CL	33.9											
13	24 - 26	1.00		Light tan, SILTY CLAY, stiff	CL	25.6	86.1	108.2	46	23	100.0	100.0	100.0	100.0	100.0		0.91
14	26 - 28	0.50		Gray, SILTY CLAY, firm	CL	31.1											
15	28 - 30	0.75		Gray, SILTY CLAY, firm, with shell fragments	CL	31.3											
16	30 - 32	0.75		Gray, SILTY CLAY, firm, with shell fragments	CL	27.1											
17	32 - 34	1.50		Gray, CLAY, stiff	CH	29.5	85.2	110.4	52	20	100.0	100.0	100.0	100.0	100.0	0.50	0.80
18	34 - 36	0.25		Gray, CLAY, soft, may be disturbed	CH	28.6											

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

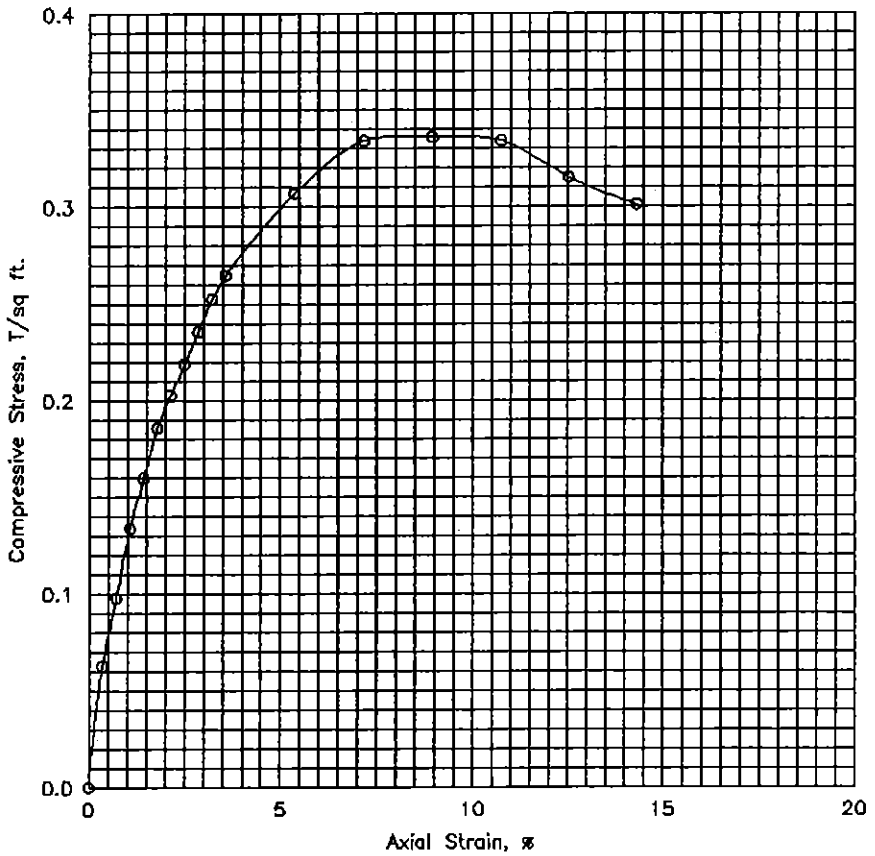
Boring No. 89-44

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 - 38	2.25		Gray, CLAY, very stiff	CH	27.4											
20	38 - 40	0.50		Gray, SILTY CLAY, firm	CL	29.5											
21	40 - 42	1.50		Gray, SILTY CLAY, stiff	CL	29.7	92.0	119.4	43	25							
22	42 - 44	1.50		Gray, SILTY CLAY, stiff	CL	29.7											
23	45 - 47	1.25		Gray, SILTY CLAY, stiff	CL	29.9											

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	33.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	87.0			
Time to failure, min		t_f	8.53			
Unconfined compressive strength, T/sq ft		q_u	.34			
Undrained shear strength, T/sq ft		S_u	.17			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.800			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Soft, Sandy

LL	56	PL	22	PI	34	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-44 | Sample No. 2

Depth El 2-4 ft | Date 7/9/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

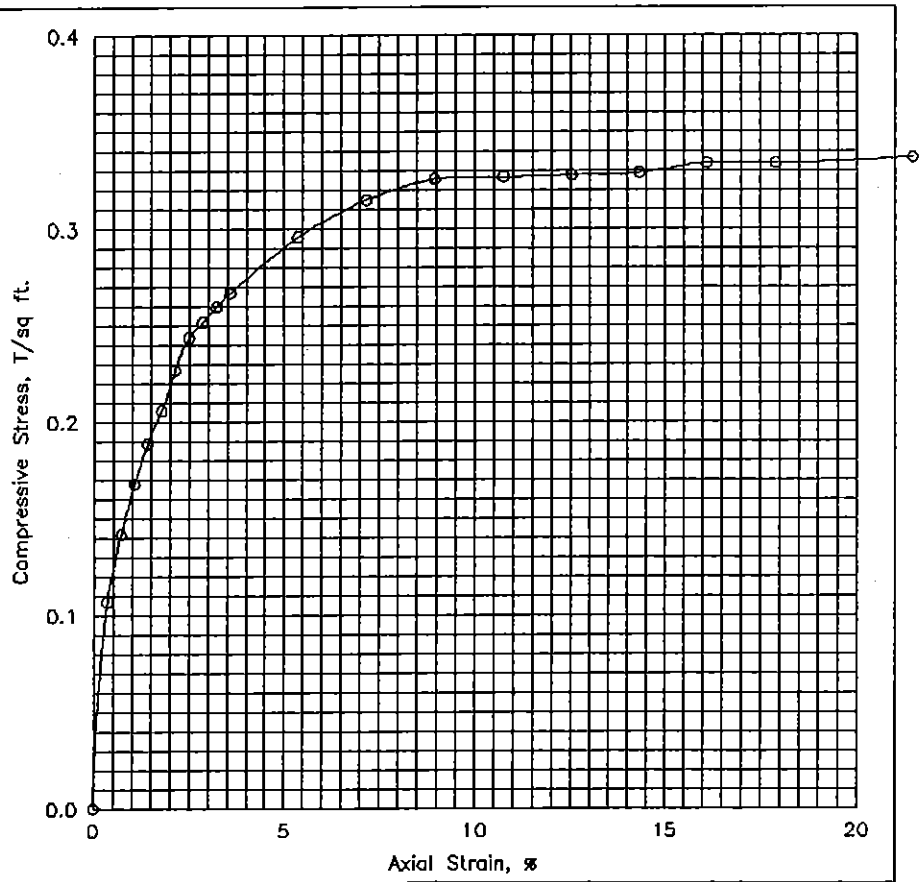
PLATE XI-2

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	34.4 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	83.2			
Time to failure, min		t_f	13.00			
Unconfined compressive strength, T/sq ft		q_u	.33			
Undrained shear strength, T/sq ft		S_u	.16			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.810			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Firm,Silty

LL	48	PL	22	PI	26	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-44 | Sample No. 6

Depth El 10-12 ft | Date 7/9/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

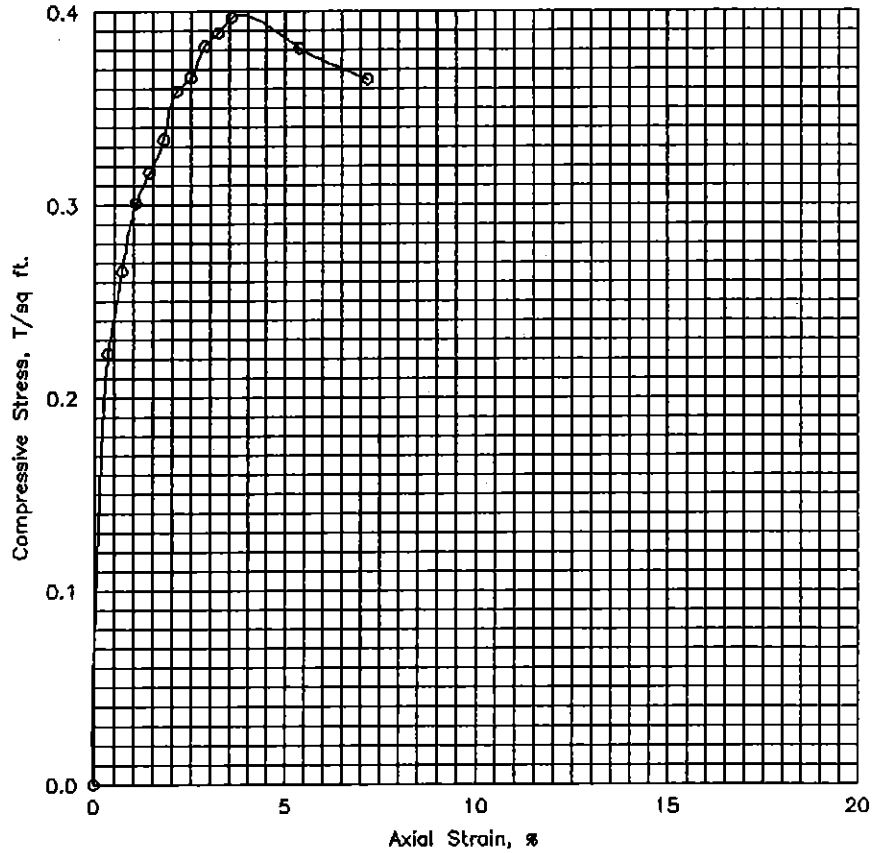
PLATE XI-2

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	30.1 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	91.3			
Time to failure, min		t_f	3.28			
Unconfined compressive strength, T/sq ft		q_u	.40			
Undrained shear strength, T/sq ft		S_u	.20			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.810			
Initial specimen height, in.		H_0	5.590			

Classification Gray, CLAY, Firm, Silty

LL	35	PL	17	PI	18	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-44 | Sample No. 9

Depth El 16-18 ft | Date 7/9/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

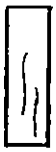
PLATE XI-2

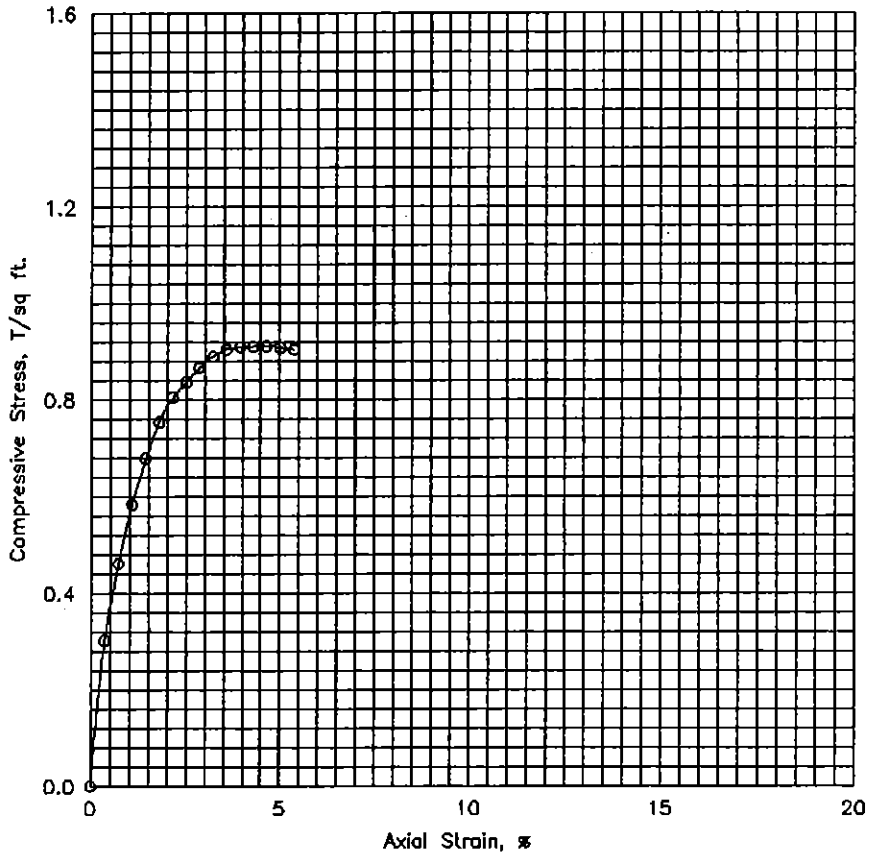
Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches





☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	25.6 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	86.1			
Time to failure, min		t_f	4.37			
Unconfined compressive strength, T/sq ft		q_u	.91			
Undrained shear strength, T/sq ft		S_u	.46			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.810			
Initial specimen height, in.		H_0	5.590			

Classification Light tan, CLAY, Firm

LL	46	PL	23	PI	23	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-44 | Sample No. 13

Depth El 24-26 ft | Date 7/9/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

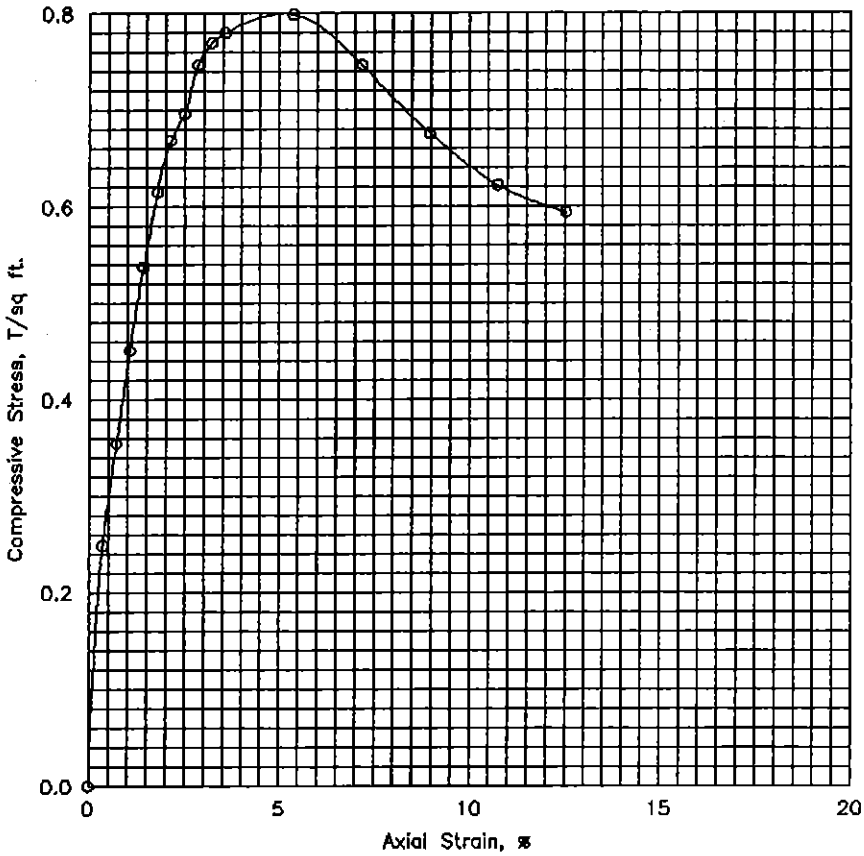
PLATE XI-2

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	29.5 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	85.2			
Time to failure, min		t_f	5.03			
Unconfined compressive strength, T/sq ft		q_u	.80			
Undrained shear strength, T/sq ft		S_u	.40			
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	52	PL	20	PI	32	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-44 | Sample No. 17

Depth El 32-34 ft | Date 7/9/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

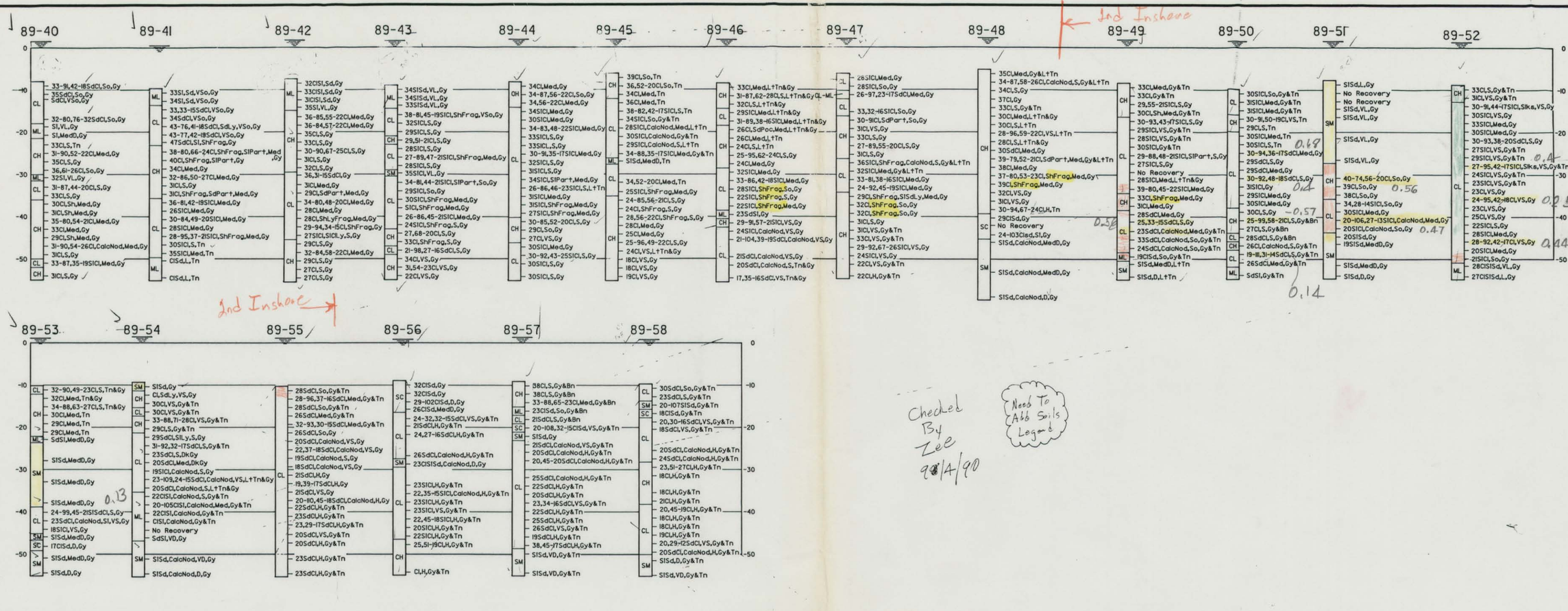
PLATE XI-2

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