

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 (%)	P L (%)	Mechanical Analysis % Passing					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
1	0 - 2	2.25		Clay,w/roots,Very stiff,Brown	C H	30.4											
2	2 - 4	2.00		Clay,w/roots & organic material,Very stiff, Yellowish brown	C H	28.4											
3	4 - 6	1.25		Clay,w/organic material,Stiff, Yellowish brown	C H	35.2											
4	6 - 8	1.25		Clay,w/organic material,Stiff, Yellowish brown	C H	32.1	88.8	117.3	73.0	26.0	100.0	99.8	99.2	98.2	97.7		1.21
5	8 - 10	1.25		Clay,w/organic material,Stiff, Yellowish brown	C H	30.2											
6	10 - 12	1.25		Clay,w/ferrous nodules,Stiff, Yellowish brown	C H	23.6											
7	12 - 14	0.75		Clay,w/organic material,Medium stiff,Gray	C H	34.4	87.7	117.9	62.0	24.0	100.0	100.0	99.5	99.0	98.9		0.62
8	14 - 16	0.75		Clay,w/ferrous nodules,Medium stiff,Gray & Yellowish gray	C H	32.1											
9	16 - 18	0.50		Sandy Clay,w/sand layer,Medium stiff,Gray	C L	24.4											
10	18-19.5		73	Sand,w/silt,Very dense,Gray	S P						100.0	100.0	98.0	12.9	4.9		
11	23-24.5	2.25	17	Silty Clay,w/sand layer,Very stiff,Gray & Yellowish gray	C L												
12	24.5-26	2.75		Silty Clay,w/ferrous stains,Very stiff,Gray & Yellowish gray	C L	17.6											
13	26-27	2.50		Silty Clay,w/ferrous stains,Very stiff,Gray & Yellowish gray	C L	19.4											
14	27-29	3.75		Silty Clay,w/ferrous stains sand seams & sand pockets,Very stiff,Gray & Yellowish gray	C L	18.4	112.8	133.6	43.0	20.0	100.0	100.0	99.9	98.7	87.0		2.14
15	29-31	3.75		Silty Clay,w/ferrous stains & silt seams,Very stiff, Yellowish brown (SWD)	C L	19.4	107		42	14							
16	31-33	2.75		Silty Clay,w/ferrous stains & silt pockets,Very stiff, Yellowish brown	C L	20.6											
17	33-35	2.75		Clay,w/calc nod & fer stains, slickensided, Very stiff, Reddish brown & gray (SWD)	C H	23.3	99		61	19						Q =	1,880
18	35-37	3.50		Clay,w/calc nod & fer stains, slickensided, Very stiff, Reddish brown & gray (SWD)	C H	19.9	101		50	14							φ = 15.7 c = .51 tsf
19	37-39	4.50+		Clay,w/ferrous stains & sand seams,Hard, Yellowish brown & gray (SWD)	C H CL	19.7	107		47	15							
20	39-41	4.50+		Clay,w/ferrous stains & sand seams,Hard, Yellowish brown & gray	C H	16.7											

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content

q u : Uncogined Compressive Strength, W O H : Weight of hammer, W O P : Weight of Pipe

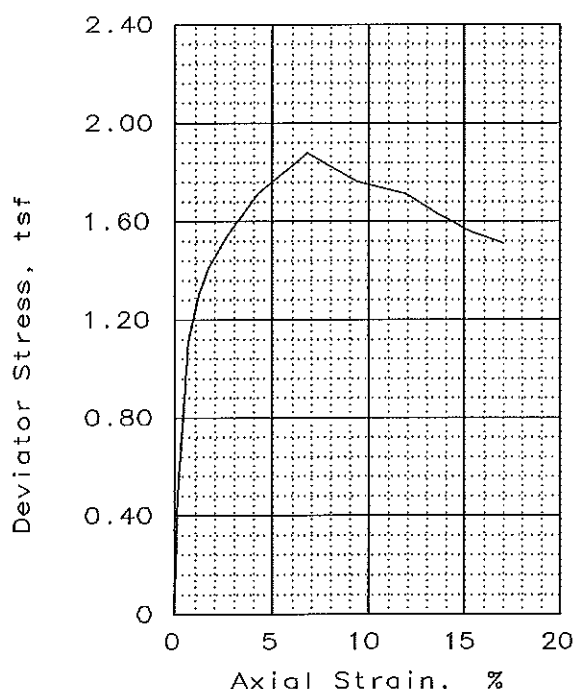
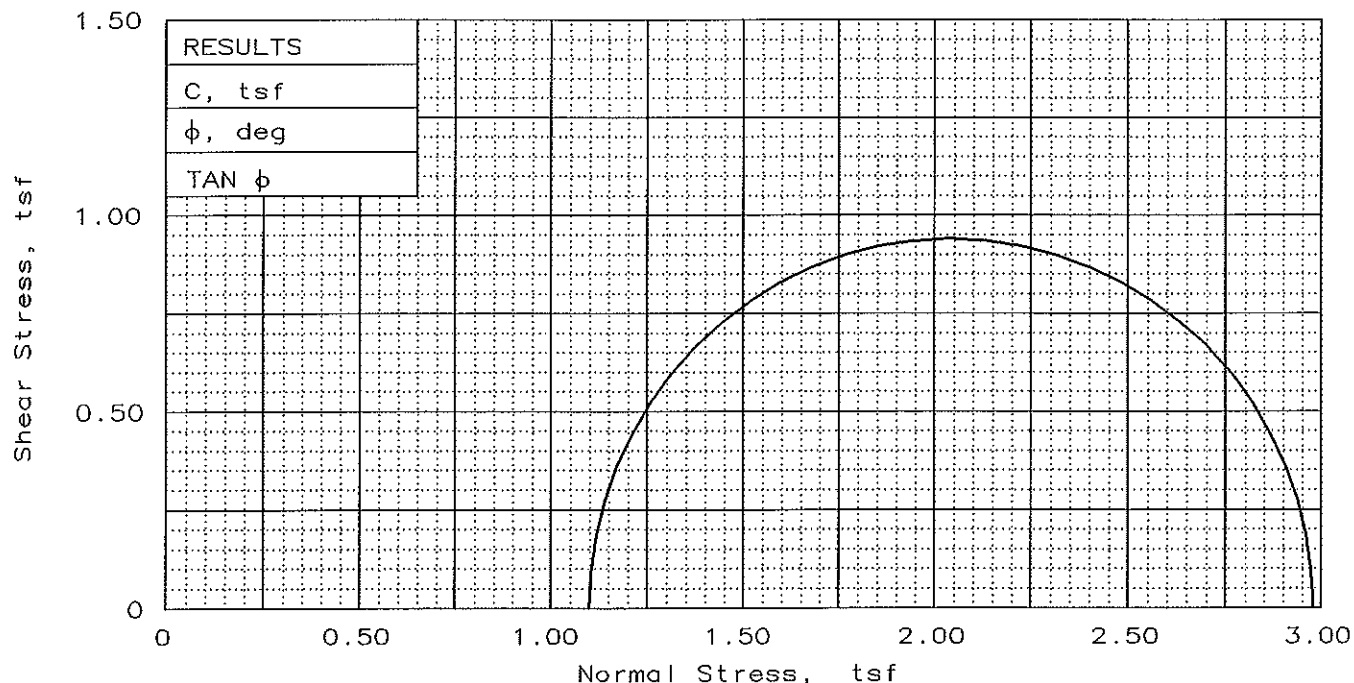
Proje. Neches River Saltwater Barrier
Neches River and Tributaries, Texas
Contract No. DACW64-95-D-0007 Delivery Order No. 0038

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 97-34

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 (%)	P L (%)	Mechanical Analysis % Passing					Torvane Shear Strength (tsf)	q u (tsf)
											#4	#10	#40	#100	#200		
21	41-43	4.00		Silty Clay, w/sand seams, Very stiff, Gray & yellowish gray	C L	18.1	113.1	133.5	33.0	17.0	100.0	100.0	99.5	91.2	85.1		3.08
22	43-45	4.50 +		Clay, w/silt seams & silt layer, Hard, Reddish brown	C H	20.4											
23	45-47	4.50 +		Clay, w/shell & shell fragments, Hard, Red	C H	22.8											
24	47-49	3.75		Clay, w/ferrous stains, slickensided, Very stiff, Reddish brown [SWD]	C H	31	90		87	24							
25	49-51	3.75		Clay, w/calc nod & fer stains, slickensided, Very stiff, Reddish brown	C H	33.3											
26	51-53	4.25		Clay, w/ferrous stains, slickensided, Hard, Reddish brown	C H	27.5											
27	53-55	4.50 +		Clay, w/calc nod & fer stains, slickensided, Hard, Reddish brown	C H	29.4											
28	55-57	3.75		Clay, w/ferrous stains & silty clay layer, Very stiff, Reddish brown [SWD]	C H	20.8	100		44	17							q = 1.6 c = .51
29	57-59	3.75		Clay, w/calc nod & fer stains, slickensided, Very stiff, Reddish brown [SWD]	C H	31.4	91		76	25							
30	59-61	3.75		Clay, w/calc nod & fer stains, slickensided, Very stiff, Reddish brown	C H	26.0											
31	61-63	3.25		Clay, w/fer stains & silt layer, slickensided, Very stiff, Reddish brown	C H	26.3											
32	63-65	3.25		Clay, w/fer stains, slickensided, Very stiff, Reddish brown	C H	23.7	101.7	125.8	67.0	24.0							
33	65-67	3.25		Clay, w/fer stains & silt seams, slickensided, Very stiff, Reddish brown	C H	30.3											
34	67-69	2.75		Clay, w/fer stains & silt seams, slickensided, Very stiff, Reddish brown	C H	24.0											
35	69-71	2.50		Clay, w/fer stains & silt seams, slickensided, Very stiff, Reddish brown	C H	25.1	102.1	127.7	54.0	23.0	100.0	100.0	99.9	99.4	99.2		2.53
36	71-73	3.50		Clay, w/ferrous stains, slickensided, Very stiff, Reddish brown [SWD]	C H	30	95		69	26							
37	73-75	3.50		Clay, w/ferrous stains, slickensided, Very stiff, Reddish brown	C H	29.6											
38	75-77	3.50		Clay, w/ferrous stains, slickensided, Very stiff, Reddish brown	C H	27.5											
39	77-79	3.50		Clay, w/ferrous stains, slickensided, Very stiff, Reddish brown	C H	27.6											
40	79-80	3.50		Clay, w/ferrous stains, slickensided, Very stiff, Reddish brown	C H	28.9											

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



SAMPLE NO.		1
INITIAL	WATER CONTENT, %	25.4
	DRY DENSITY, pcf	97.6
	SATURATION, %	94.5
	VOID RATIO	0.726
	DIAMETER, in	2.79
	HEIGHT, in	5.88
AT TEST	WATER CONTENT, %	25.4
	DRY DENSITY, pcf	97.6
	SATURATION, %	94.5
	VOID RATIO	0.726
	DIAMETER, in	2.79
	HEIGHT, in	5.88
BACK PRESSURE, tsf		0.00
CELL PRESSURE, tsf		1.10
FAILURE STRESS, tsf		1.88
PORE PRESSURE, tsf		
STRAIN RATE, %/min.		0.366
ULTIMATE STRESS, tsf		
PORE PRESSURE, tsf		
σ_1 FAILURE, tsf		2.98
σ_3 FAILURE, tsf		1.1

TYPE OF TEST:

Unconsolidated undrained

SAMPLE TYPE: Undisturbed

DESCRIPTION: Fat Clay (CH)

LL= 61 PL= 19 PI= 42.0

SPECIFIC GRAVITY= 2.70

REMARKS: Specific Gravity Est.

CLIENT: US Army Corps of Engineers

Galveston District

PROJECT: Neches River Saltwater Barrier

SAMPLE LOCATION: Boring: 97-34, Fld No. 17

33.0-35.0, Lab No. 97/1093

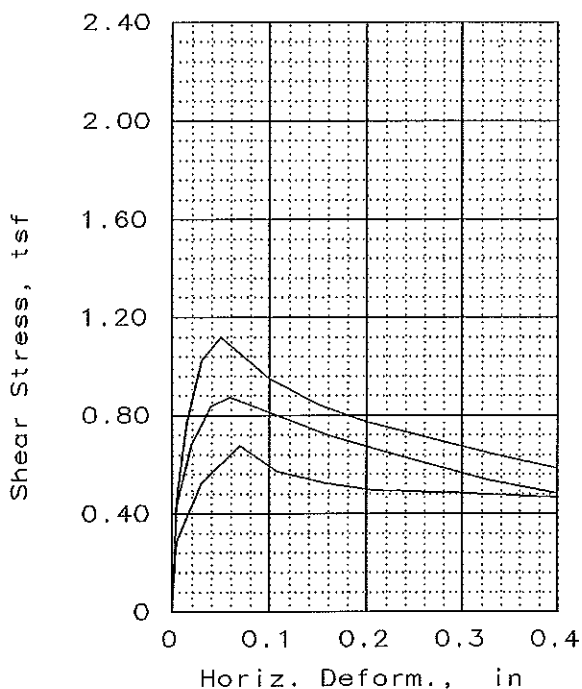
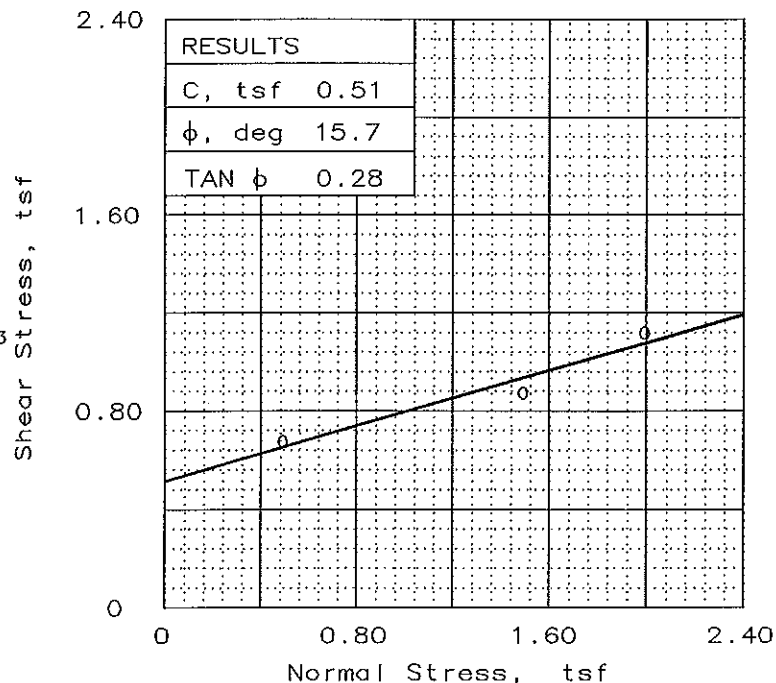
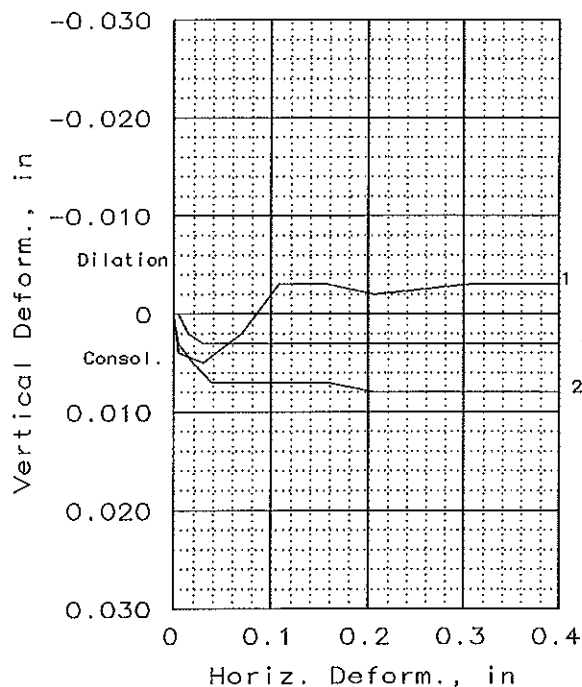
PROJ. NO.: 16858

DATE: October 1997

TRIAxIAL COMPRESSION TEST

CORPS OF ENGINEERS - SOUTHWESTERN

FIG. NO.



SAMPLE NO.		1	2	3
INITIAL	WATER CONTENT, %	26.3	25.9	26.2
	DRY DENSITY, pcf	95.1	94.0	94.6
	SATURATION, %	91.8	88.1	90.5
	VOID RATIO	0.773	0.793	0.783
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	28.0	27.9	27.8
	DRY DENSITY, pcf	96.0	95.9	96.5
	SATURATION, %	100.0	99.6	100.5
	VOID RATIO	0.755	0.757	0.747
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	0.99	0.98	0.98
NORMAL STRESS, tsf		0.50	1.50	2.00
MAX. SHEAR, tsf		0.67	0.87	1.12
STRAIN RATE, %/min.		0.004	0.004	0.004
ULT. SHEAR, tsf		0.47	0.48	0.58

SAMPLE DATA

SAMPLE TYPE: Undisturbed

DESCRIPTION: Sandy Fat Clay
(CH)

LL= 50 PL= 14 PI= 36.0

SPECIFIC GRAVITY= 2.70

REMARKS: Specific Gravity Est.

CLIENT: US Army Corps of Engineers

Galveston District

PROJECT: Neches River Saltwater Barriers

SAMPLE LOCATION: Boring: 97-34, Fld No. 18
35.0-37.0, Lab No. 97/1094

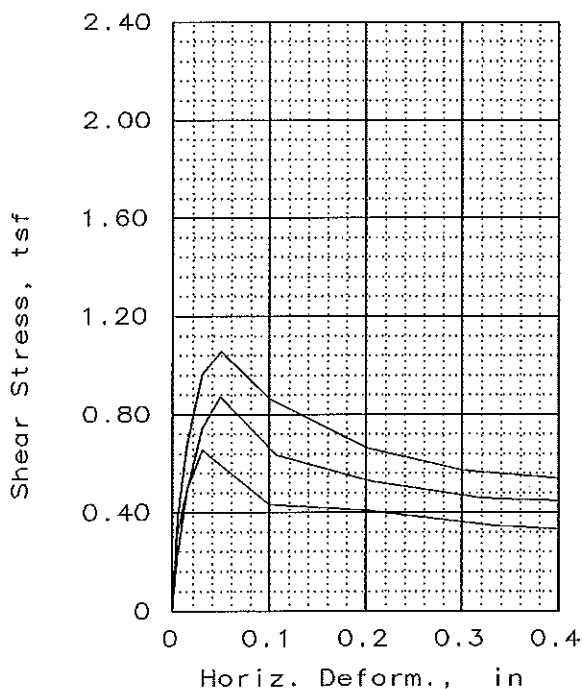
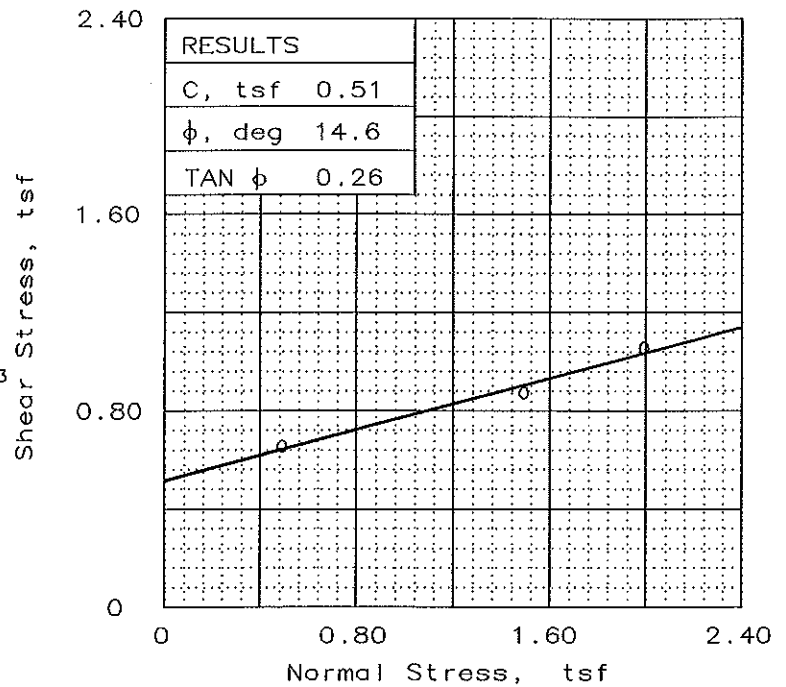
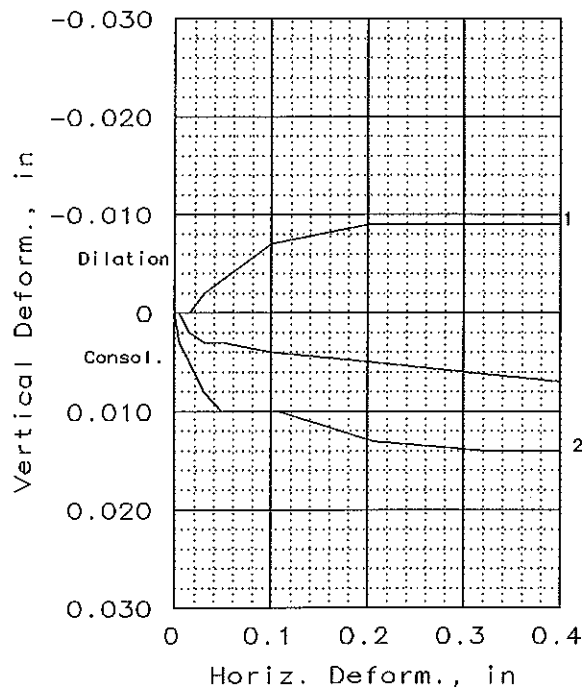
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DATE: October 1997

DIRECT SHEAR TEST

CORPS OF ENGINEERS - SOUTHWESTERN

FIG. NO.



SAMPLE NO.		1	2	3
INITIAL	WATER CONTENT, %	22.5	28.9	29.7
	DRY DENSITY, pcf	103.4	93.2	91.6
	SATURATION, %	96.2	96.4	95.6
	VOID RATIO	0.630	0.808	0.839
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	23.0	28.5	29.2
	DRY DENSITY, pcf	104.2	95.1	94.3
	SATURATION, %	100.6	99.6	100.0
	VOID RATIO	0.617	0.772	0.788
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	0.99	0.98	0.97
NORMAL STRESS, tsf		0.50	1.50	2.00
MAX. SHEAR, tsf		0.66	0.87	1.06
STRAIN RATE, %/min.		0.004	0.004	0.004
ULT. SHEAR, tsf		0.33	0.45	0.54

SAMPLE DATA

SAMPLE TYPE: Undisturbed
DESCRIPTION: Lean Clay (CL)

LL= 44 PL= 17 PI= 27.0

SPECIFIC GRAVITY= 2.70

REMARKS: Specific Gravity Est.

CLIENT: US Army Corps of Engineers

Galveston District

PROJECT: Neches River Saltwater Barrier

SAMPLE LOCATION: Boring: 97-34, Fld No. 28

55.0-57.0, Lab No. 97/1097

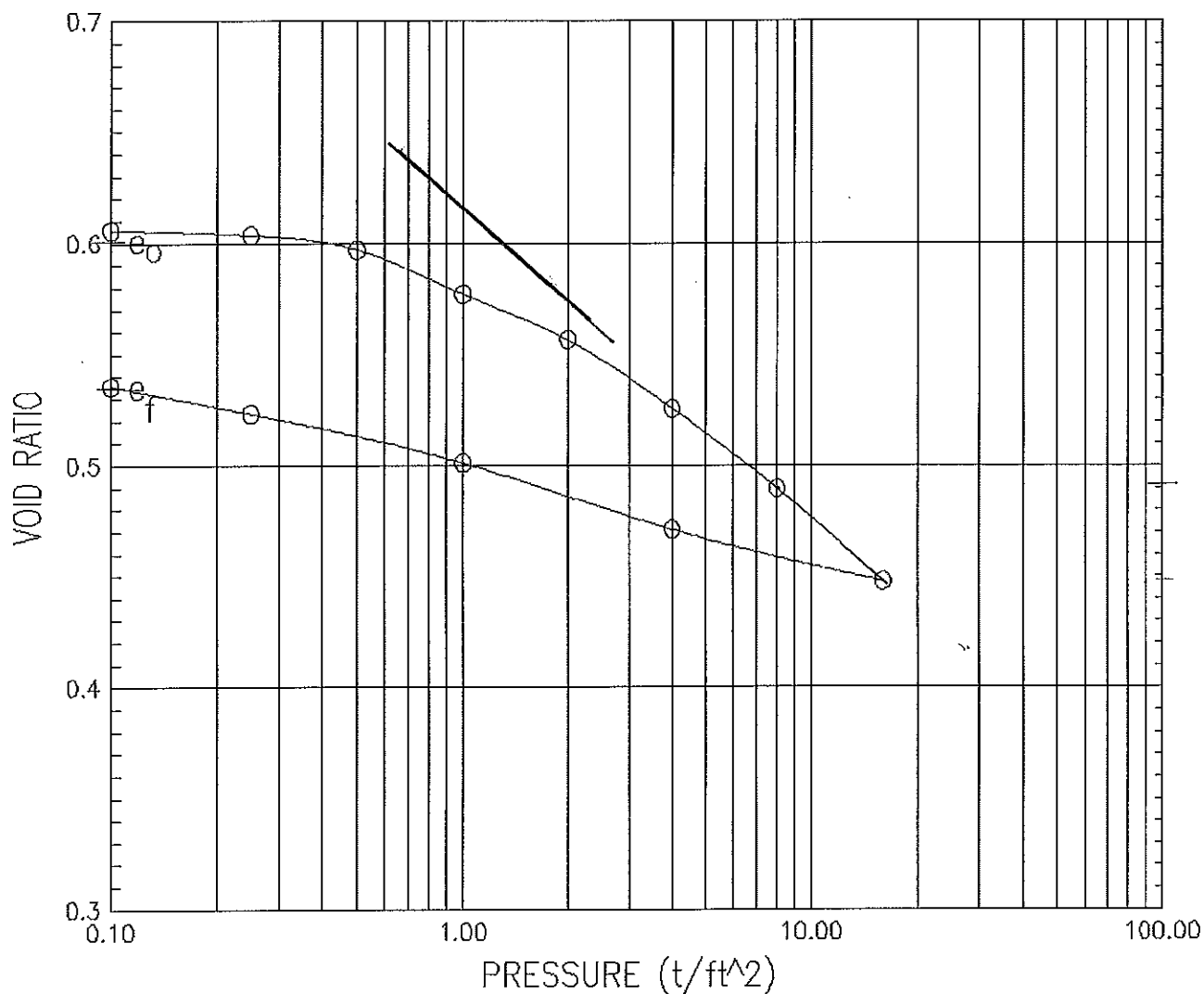
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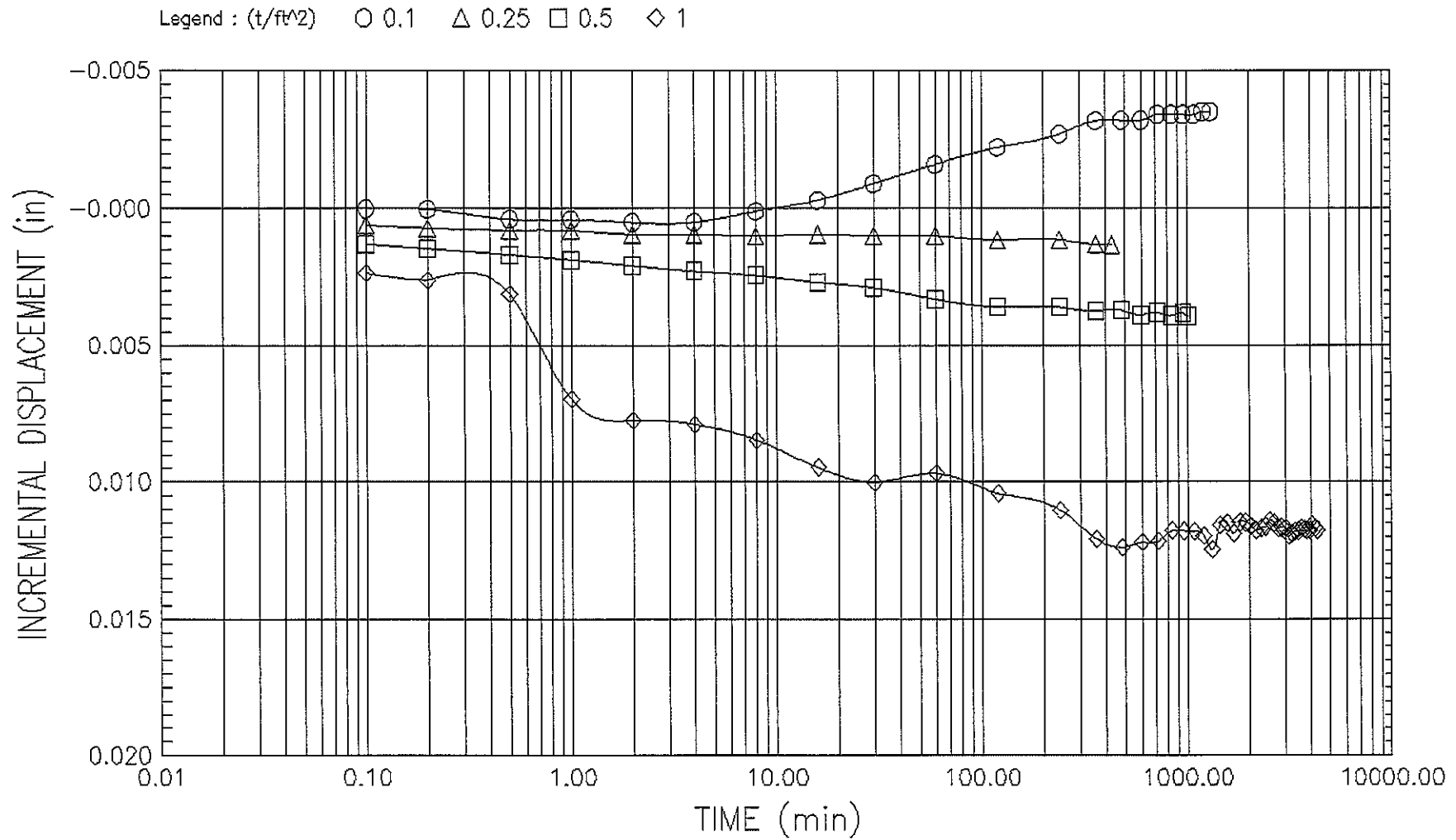
DIRECT SHEAR TEST

CORPS OF ENGINEERS - SOUTHWESTERN

FIG. NO.

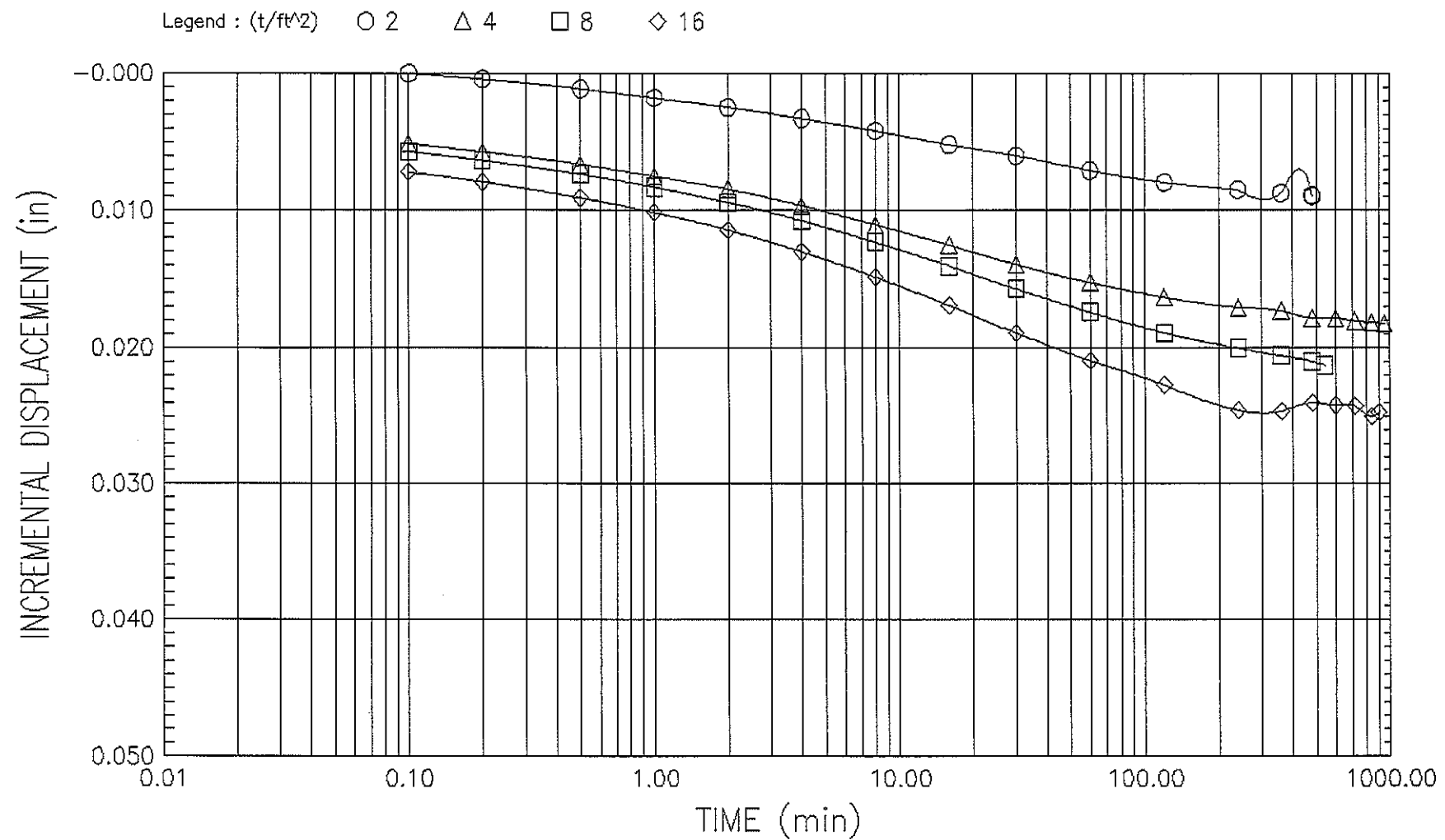


			BEFORE TEST	AFTER TEST		
OVERBURDEN PRESSURE (t/ft ²)			WATER CONTENT (%)	19.984	19.829	
PRECONSOL. PRESSURE (t/ft ²)			DRY DENSITY (lb/ft ³)	105.260	109.762	
COMPRESSION INDEX		0.15	.15	SATURATION (%)	89.731	99.951
TYPE SPECIMEN				VOID RATIO	0.601	0.536
DIA. (in)		2.505	HT. (in)	0.945	BACK PRESSURE (t/ft ²)	
CLASSIFICATION LEAN CLAY WITH SAND (CL)						
LL 42.0		PL 14.0		PI 28.0		PROJECT NECHES RIVER SALTWATER
GS 2.700		D ₁₀		Data File: A:1092.GNV		
REMARKS				BORING NO. 97-34		SAMPLE NO. 97/1092
				DEPTH 29.0-31.0		DATE 17SEPT97
				Army Corp of Engineers CONSOLIDATION TEST REPORT		



PROJECT	NECHES RIVER SALTWATER		
	Data File: A:1092.CNV		
BORING	97-34	SAMPLE NO.	97/1092
DEPTH	29.0-31.0	DATE	17SEPT97

Army Corp of Engineers
CONSOLIDATION TEST
TIME CURVES



PROJECT NECHES RIVER SALTWATER

Data File: A:1092.CNV

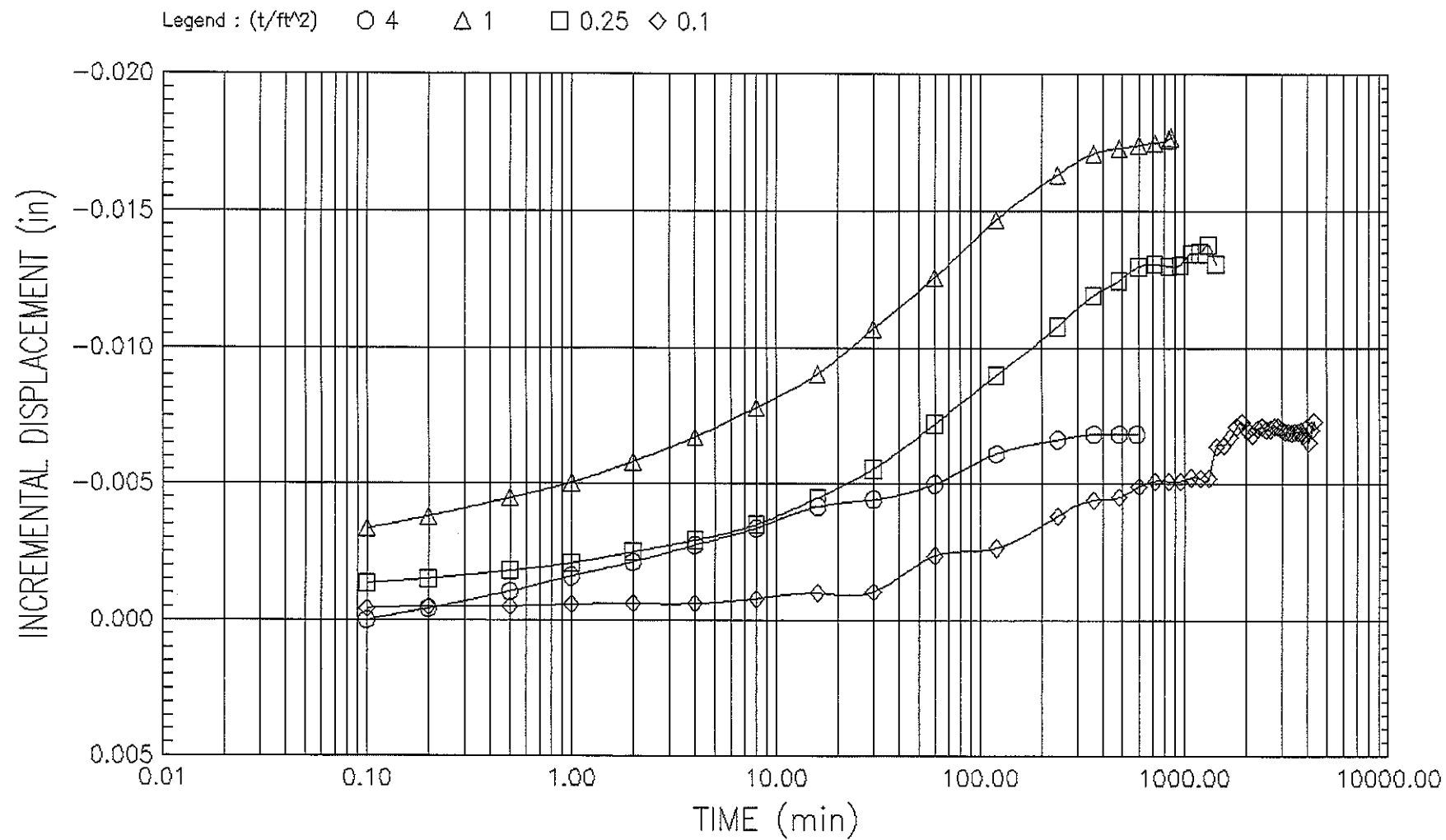
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SAMPLE NO. 97/1092

DEPTH 29.0-31.0

DATE 17SEPT97

Army Corp of Engineers
CONSOLIDATION TEST
TIME CURVES



PROJECT NECHES RIVER SALTWATER

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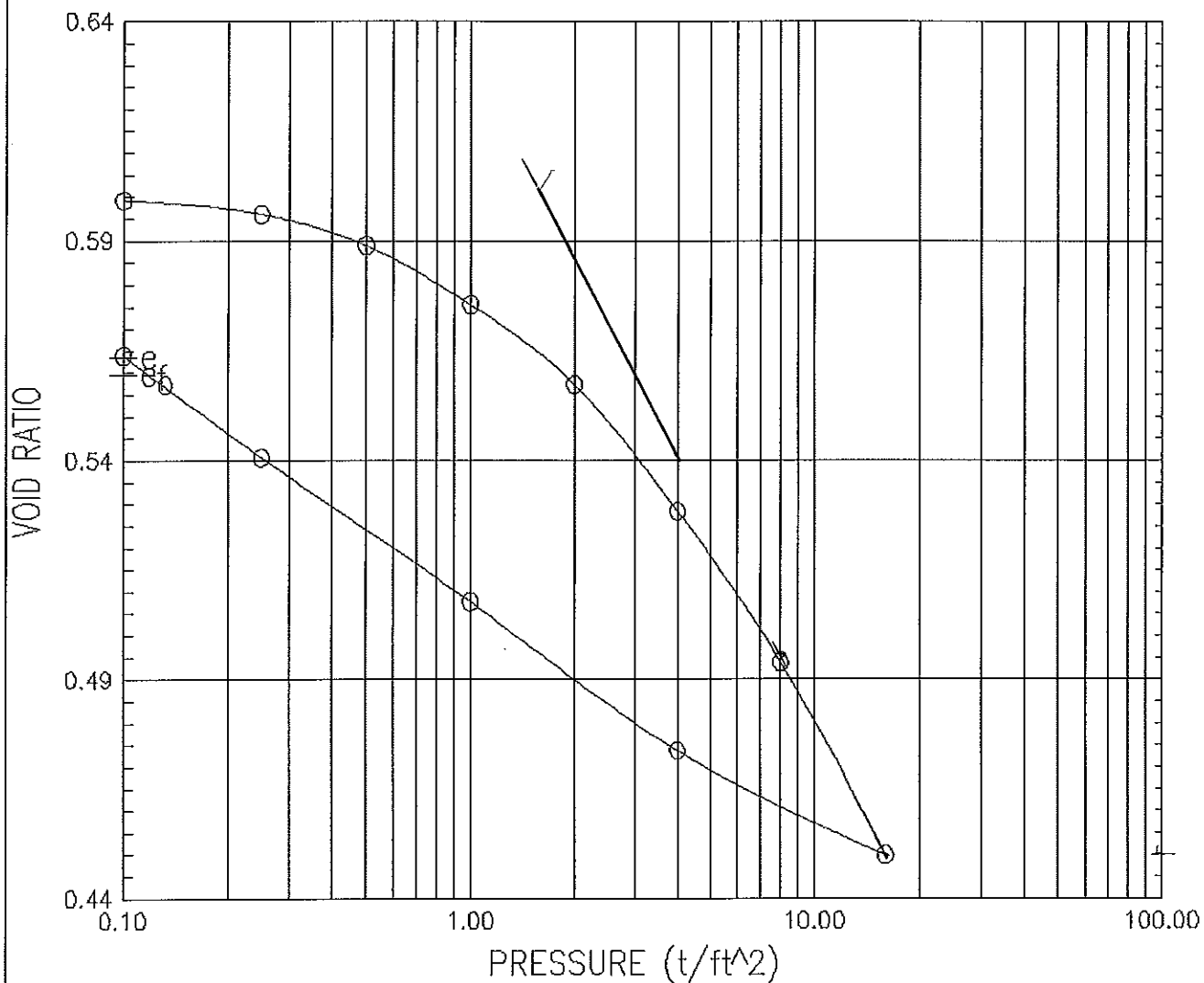
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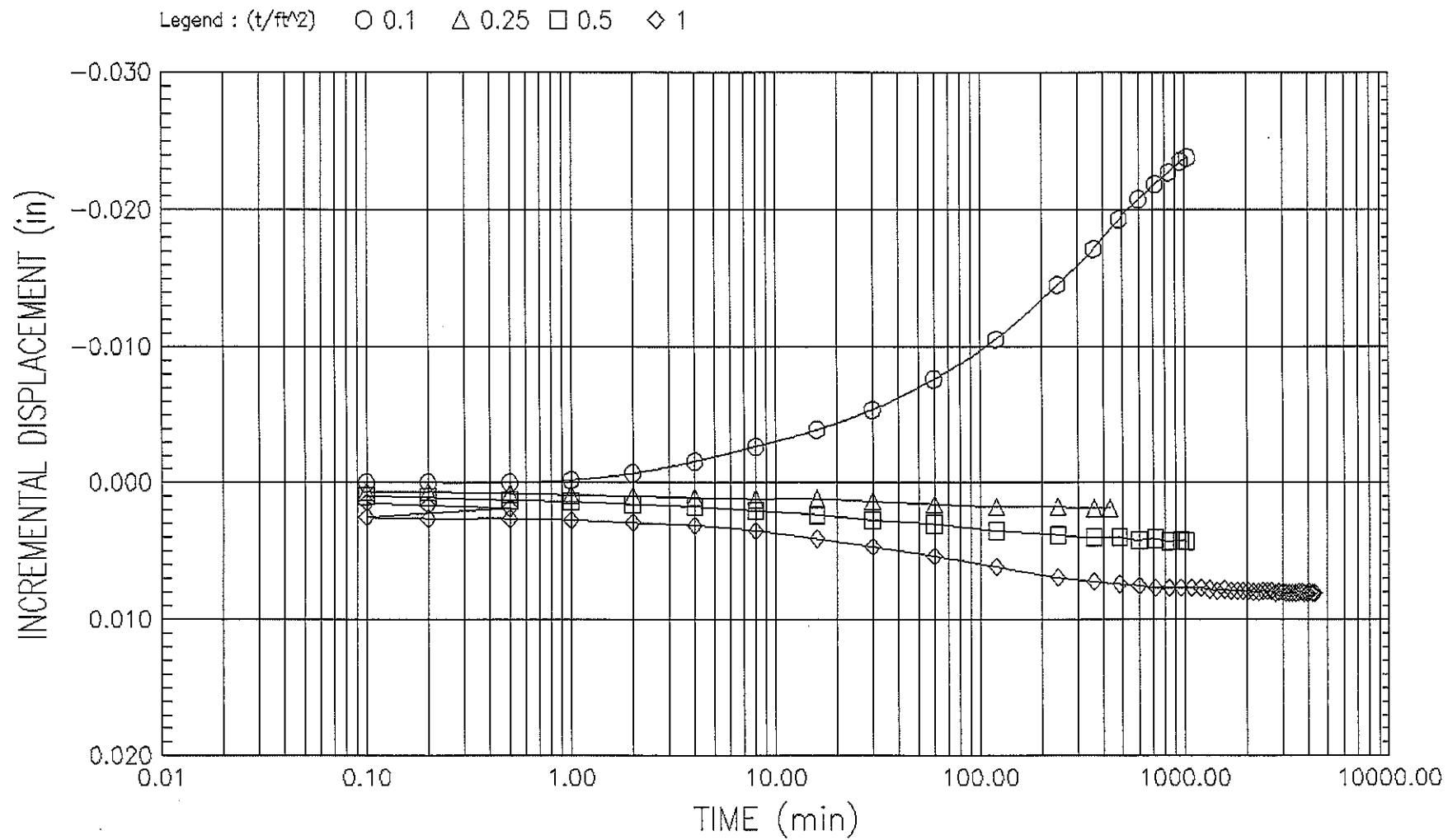
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DATE 17SEPT97

Army Corp of Engineers
CONSOLIDATION TEST
TIME CURVES



			BEFORE TEST	AFTER TEST		
OVERBURDEN PRESSURE (t/ft^2)			WATER CONTENT (%)	20.146	20.981	
PRECONSOL. PRESSURE (t/ft^2)			DRY DENSITY (lb/ft^3)	108.049	107.781	
COMPRESSION INDEX		.15	.15	SATURATION (%)	97.132	100.464
TYPE SPECIMEN				VOID RATIO	0.560	0.564
DIA. (in) 2.505		HT. (in) 0.942		BACK PRESSURE (t/ft^2)		
CLASSIFICATION LEAN CLAY WITH SAND (CL)						
LL 47.0		PL 15.0		PI 32.0		PROJECT NECHES RIVER SALTWATER
GS 2.700		D ₁₀		Data File: LPT1		
REMARKS				BORING NO. 97-34		SAMPLE NO. 97/1095
				DEPTH 37.0-39.0		DATE 17SEPT97
				Army Corp of Engineers CONSOLIDATION TEST REPORT		



PROJECT NECHES RIVER SALTWATER

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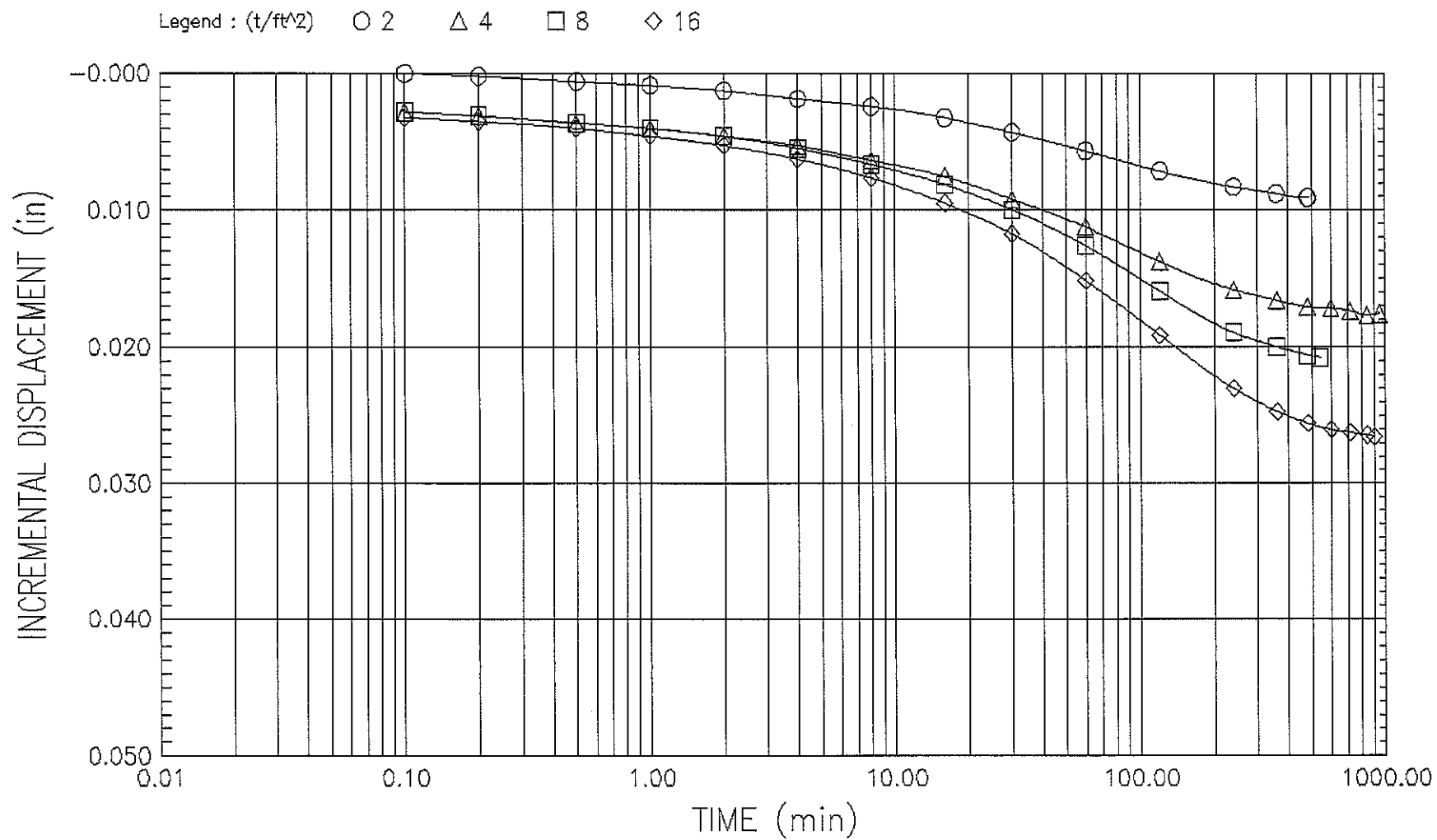
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SAMPLE NO. 97/1095

DEPTH 37.0-39.0

DATE 17SEPT97

Army Corp of Engineers
CONSOLIDATION TEST
TIME CURVES



PROJECT NECHES RIVER SALTWATER

Data File: LPT1

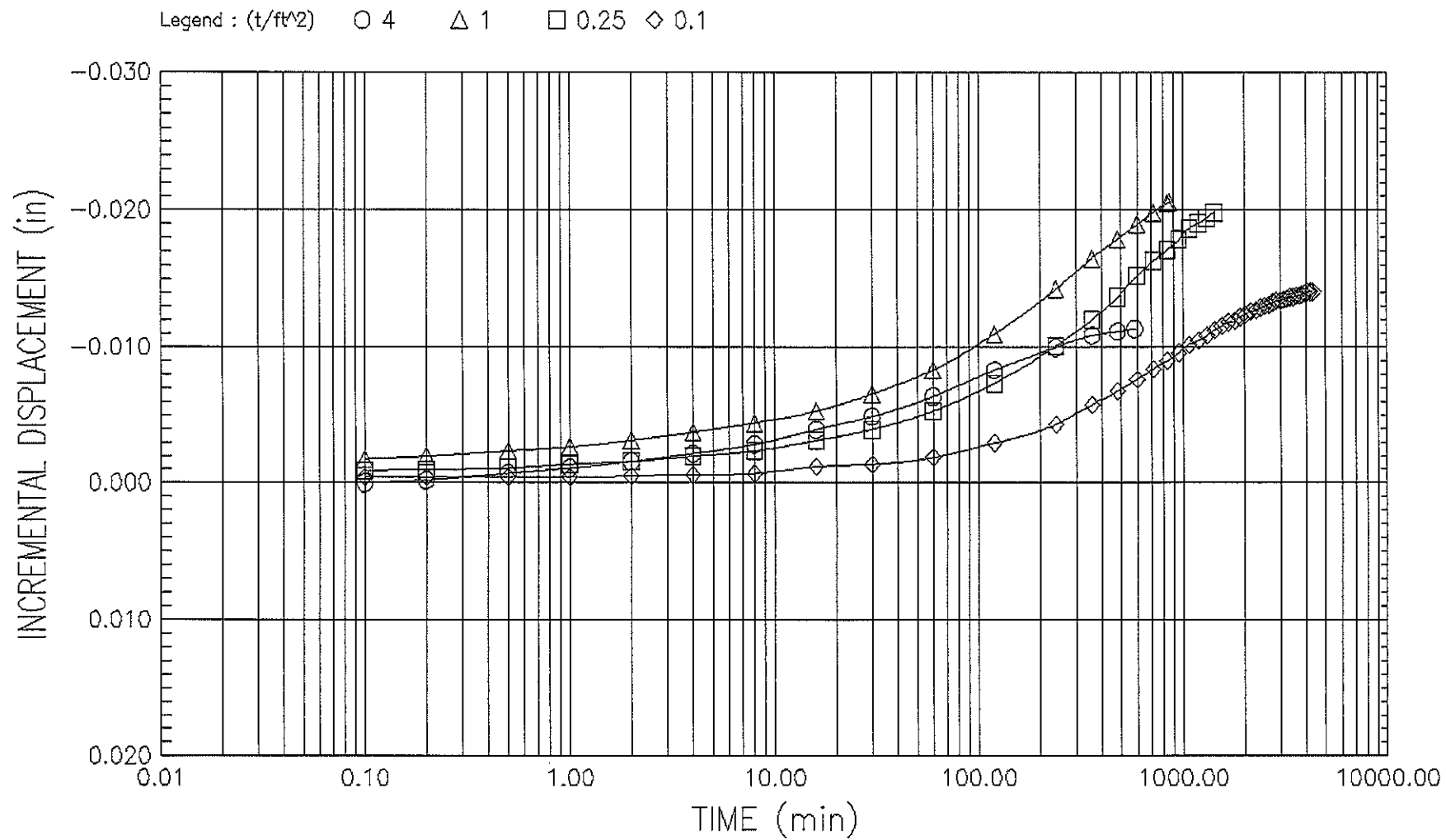
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DEPTH 37.0-39.0

DATE 17SEPT97

Army Corp of Engineers
CONSOLIDATION TEST
TIME CURVES



PROJECT NECHES RIVER SALTWATER

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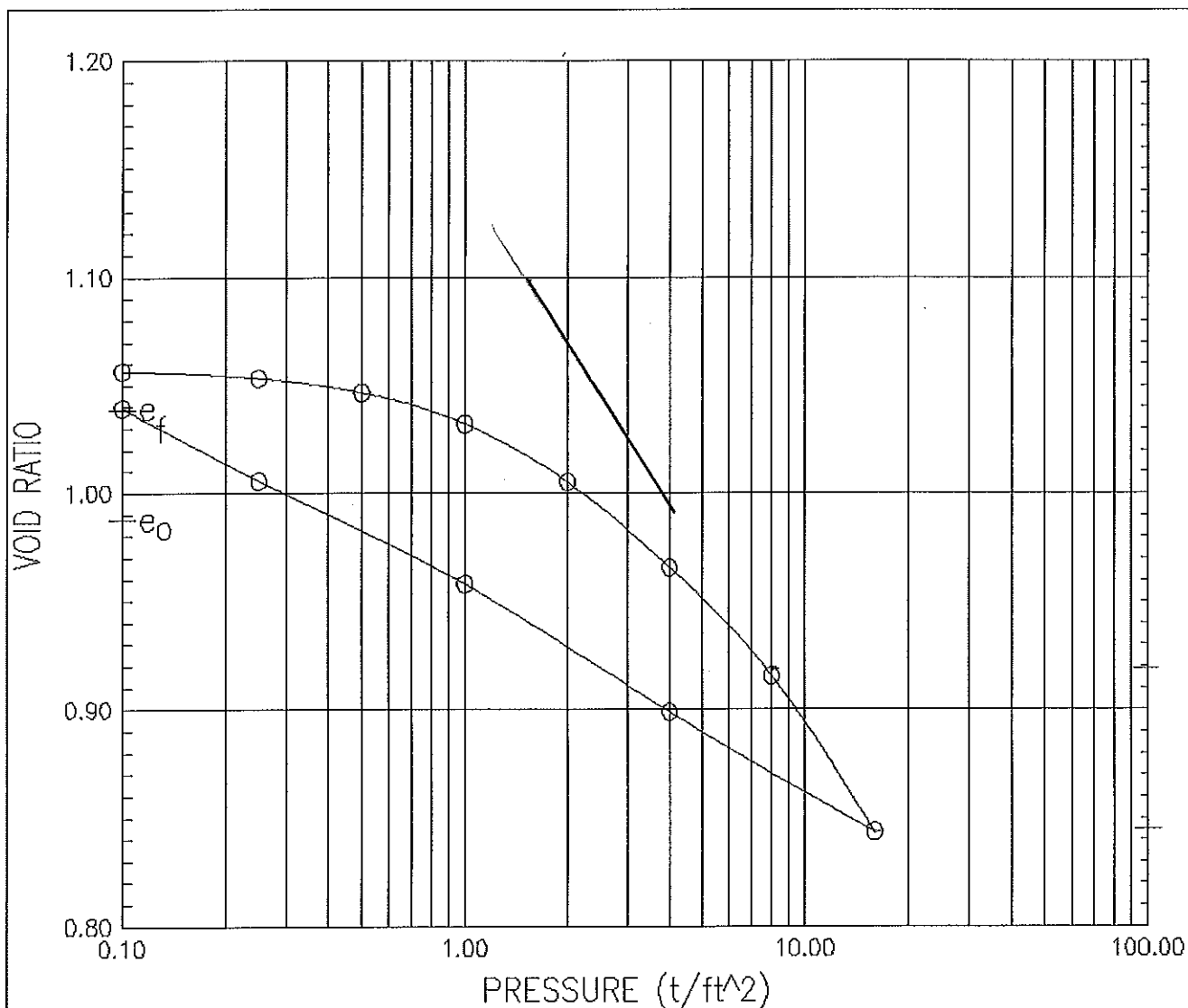
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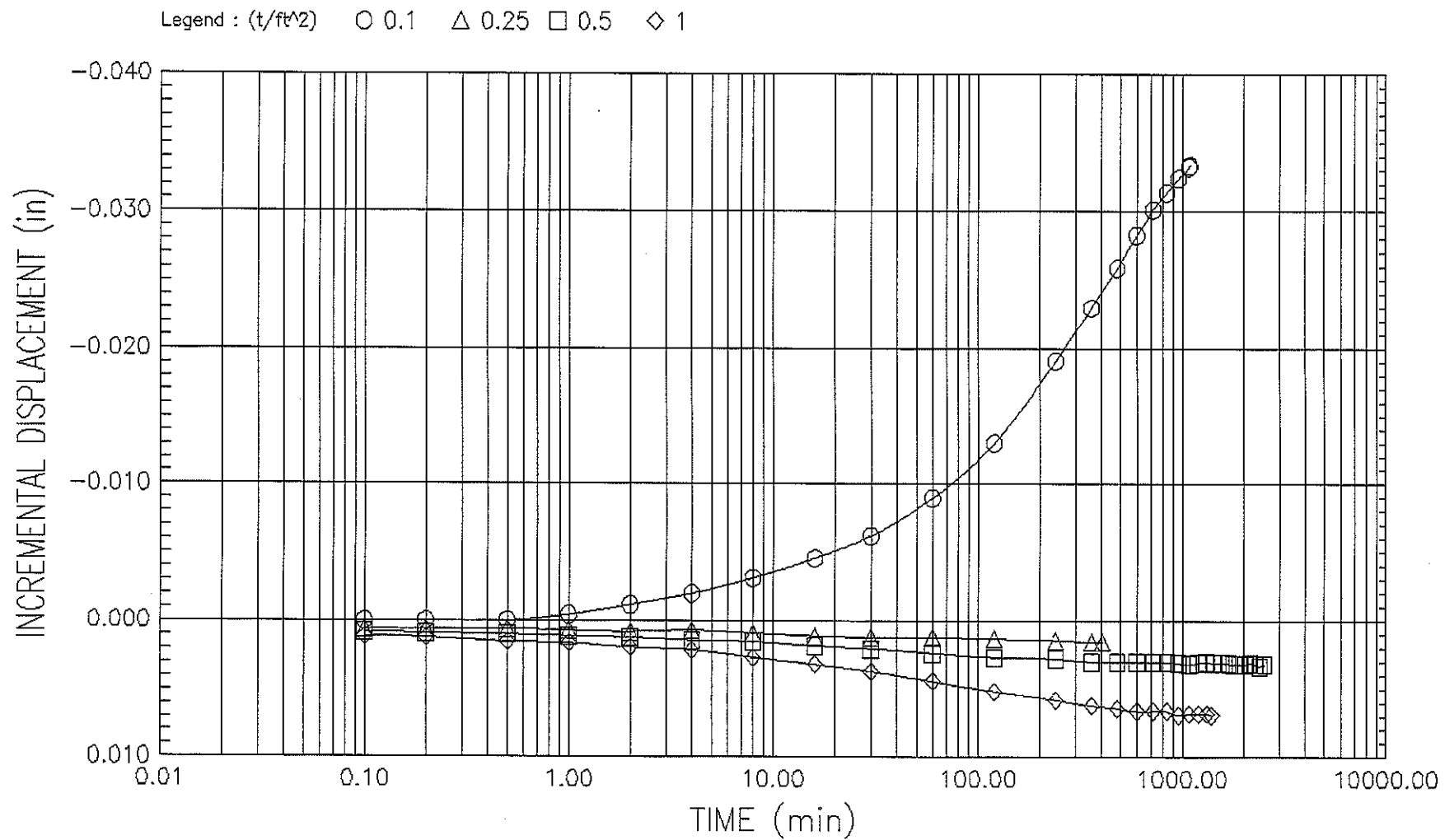
DEPTH 37.0-39.0

DATE 17SEPT97

Army Corp of Engineers
CONSOLIDATION TEST
TIME CURVES



			BEFORE TEST	AFTER TEST					
OVERBURDEN PRESSURE (t/ft^2)			WATER CONTENT (%)	36.332	39.208				
PRECONSOL. PRESSURE (t/ft^2)			DRY DENSITY (lb/ft^3)	84.780	82.645				
COMPRESSION INDEX		0.21	.21	SATURATION (%)	99.273	101.838			
TYPE SPECIMEN				VOID RATIO	0.988	1.040			
DIA. (in)		2.505	HT. (in)	0.951	BACK PRESSURE (t/ft^2)				
CLASSIFICATION FAT CLAY {CH}									
LL		87.0	PL	24.0	PI	63.0	PROJECT	NECHES RIVER SALTWATER	
GS		2.700	D ₁₀		Data File: LPT1				
REMARKS					BORING NO.		97-34	SAMPLE NO.	97/1096
					DEPTH		47.0-49.0	DATE	18SEPT97
					Army Corp of Engineers CONSOLIDATION TEST REPORT				



PROJECT NECHES RIVER SALTWATER

Data File: LPT1

BORING 97-34

SAMPLE NO. 97/1096

DEPTH 47.0-49.0

DATE 18SEPT97

Army Corp of Engineers
CONSOLIDATION TEST
TIME CURVES