LAKE PONTCHARTRAIN, LA.
AND VICINITY

LAKE PONTCHARTRAIN HIGH LEVEL PLAN

DESIGN MEMORANDUM NO. 17
GENERAL DESIGN

JEFFERSON PARISH LAKEFRONT LEVEE

IN TWO VOLUMES
VOLUME I

US Army Corps of Engineers
New Orleans District

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

NOVEMBER 1987

SERIAL NO.

EXECUTIVE CORRESPONDENCE

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DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
CELMN-ED-SP (1110-2-1150a)	Lake Pontchartrain, La & Vic/High Level Plan GDM No. 17A - Jefferson/St. Charles Return Levee- 2nd End.

TO
C/Ops Div (4 Read)
C/Real Est Div
C/Plng Div
C/Constr Div
C/New Orleans Area Off
C/CELMN-IM-SL
C/PMO
Value Engr

FROM
C/Engr Div

DATE
14 Dec 87
Stutts/saj/2614

CMT 1

1. Enclosed please find a copy of the subject 2nd Endorsement. The endorsement should be placed in the front of your copy of the subject DM to form part of the permanent record.

2. Should you require additional copies of the 2nd endorsement, please contact Mr. Stutts ext. 2614.

Encl
as

for FREDERIC M. CHATRY
Chief, Engineering Division

DA FORM AUG 80 2496

PREVIOUS EDITIONS WILL BE USED

GPO : 1987 O - 172-428

CELMN-ED-SP (CELMN-ED-SP/14 Jul 87) 2d End Mr. Stutts/ds/2614
SUBJECT: Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 17A -- General Design, Jefferson Parish/St. Charles Parish Return Levee

DA, New Orleans District, Corps of Engineers, P.O. Box 60267, New Orleans, LA 70160-0267 24 Nov 87

TO: Commander, Lower Mississippi Valley Division,
ATTN: CELMV-ED-TD

1. The proposed disposition of comments presented in the 1st endorsement of this chain of correspondence is presented in the subsequent paragraphs (paragraph numbers are referenced by like paragraph of the 1st end).

a. Para 40b(7) and Plate 12. Concur. The recommended foreshore protection between stations 173+04.7 and 178+74.7 W/L will be changed during plans & specifications to reflect either grouted riprap, larger riprap, or a concrete blanket. The least costly of these options will be recommended.

b. Para 44 and Plate 15 and Table 6.

(1) Do not concur. The existing access road will not be affected by the floodwall construction within the reach shown on plate 15. The access road falls outside the limits shown on the plate.

(2) A revised Table 6 is enclosed as enclosure 2.

c. Para 70. Concur. The price levels contained in the reevaluation study were October 1981 price levels rather than October 1983 price levels.

d. Plates 18 and 19. Concur. We have reexamined the I-wall in levee alternative to determine the most cost effective I-wall plan. The minimum degraded levee elevation that could be made to satisfy both foundation and structural stability requirements was determined for the levee reach addressed in this GDM. For the purpose of developing a cost estimate, where existing structures preclude construction of a protected side stability berm, the proposed method of protection would be T-wall construction. In these areas, the costs for acquisition of lands and relocations would obviously be cost prohibitive. In addition to the I-wall alternative with minimum levee height, several other I-wall in levee plans having higher crest elevations were checked to determine if the cost for landside berm and real estate would outweigh any reduction in sheet pile cost. The following tabulation gives a comparison of estimated costs for the most cost-effective I-wall in levee plan along with the corresponding estimated cost for the optimum T-wall, GDM plan.

COMPARISON OF COST I-WALL VS. T-WALL
REACH STA. 74+00 B/L to Sta. 121+00 B/L

Alt.	Flood Wall Cost	Real Estate Cost	Relocation Cost	Total
T-Wall/Levee @ El.+3 NGVD	$ 5,915,000	-	-	$ 5,915,000
I-Wall/Levee @ El.+3 NGVD	$10,720,000*	No Est.	No Est.	$10,720,000
I-Wall/Levee @ El. +5 NGVD	$ 4,383,000	$1,774,000	$2,340,000**	$ 8,497,000

* Includes $7,960,000 for PZ-40 sheet piling
**Relocation Cost includes 3-forced sewer mains (16", 24", and 48" dia.), Main underground trunk line telephone, shell concrete asphalt Rds 1-6", water lines

REACH STA. 198+00 B/L to Sta. 247+20 B/L

Alt.	Flood Wall Cost	Real Estate Cost	Relocation Cost	Total
T-Wall/Levee @ El. +3 NGVD	$7,735,000	-	-	$ 7,735,000
I-Wall/Levee @ El. +5 NGVD	$5,180,000	$2,602,000	-	$ 7,782,000
I-Wall/Levee @ El. +6	$4,297,000	$3,291,000	-	$ 7,588,000

SUBREACH STA. 198+00 B/L to Sta. 213+50 B/L

Alt.	Flood Wall Cost	Real Estate Cost	Relocation Cost	Total
T-Wall/Levee @ El. +3 NGVD	$2,224,000	-	-	$ 2,224,000
I-Wall/Levee @ El. +5 NGVD	$1,432,000	$ 26,000	-	$ 1,458,000
I-Wall/Levee @ El. +6 NGVD	$1,233,000	$ 36,000	-	$ 1,269,000

Based on the foregoing, it is recommended that only the subreach from station 198+00 B/L to station 213+50 B/L be protected by I-wall construction. The comparison of cost for the two types of walls between station 198+00 B/L and station 247+20 B/L shows that both plans would cost approximately the same, with the T-wall being about 2 percent greater in cost than the I-wall in levee with crown elevation of +6 NGVD. We feel that the difference in costs falls well within the allowable error of estimate. The adjacent protected side lands with this reach constitute prime real estate which is slated for medium to high-cost residential development. Many of the properties impacted by the I-wall plan would preclude any construction on the remaining part of the property not taken by the project. Not only would this be an extremely unpopular plan with the land owners but also would adversely affect the future tax base for the Parish and City of Kenner, LA.

e. Plate 44. Do not concur. See response d. above. Cost for the I-wall in levee for this reach is greater than the GDM, T-wall plan. Enclosure 3 shows the sectionsfor an I-wall between B/L sta. 74+00 and sta. 140+00 constructed along the same alignment of the T-Wall with the levee degraded to elevation +3 NGVD.

f. Plates 44-53. We have checked the stability of the existing levee/I-wall with GDM shear strength and the maximum past flood elevation of 6.5 feet NGVD and determined that the minimum F.S. was approximately 1.15.

g. Plate 46. Do not concur. Field observations indicate that the existing levee toe is currently susceptible to erosion. With the anticipated increase in deforestation, sea level rise, subsidence, and boat traffic in the canal, this situation can be expected to worsen. Therefore, we recommend that the riprap blanket be placed as shown in the GDM to insure the integrity of the fill adjacent to the floodwall base slab.

2. Also enclosed (Encl 4) please find revised pages 38 through 41. The revisions to these pages are necessary because of changes to the cost estimate arising from adoption of an I-Wall for the levee reach between sta. 198+00 B/L and sta. 213+50

CELMN-ED-SP (CELMN-ED-SP/14 Jul 87) 2d End
SUBJECT: Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 17A -- General Design, Jefferson Parish/St. Charles Parish Return Levee

B/L. Tables 6, 7, 8, 9, and 10 have been revised accordingly. Please note that the contract for the pile test - Airport to Lakefront previously shown on Table 8, has been deleted and added to the construction contracts. In order to maintain the award date shown in revised Table 8, we are recommending that a local and Division review of plans and specifications for the first contract be accomplished concurrently and that review time be limited to 30 days. We expect to submit plans and specifications for the Airport to West Esplanade Avenue Floodwall contract in early February 1988. Your approval of this procedure is requested.

FOR THE COMMANDER:

FREDERIC M. CHATRY
Chief, Engineering Division

4 Encls
Added 3 encls
2-3-4
as

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:
CELMN-ED-SP

14 July 1987

MEMORANDUM FOR: Commander, Lower Mississippi Valley Division, ATTN: CELMVED-TD

SUBJECT: Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 17A - General Design, Jefferson Parish/St. Charles Parish Return Levee

1. The subject design memorandum is submitted for review and approval, and has been prepared generally in accordance with the provisions of ER 1110-2-1150, dated 15 November 1984.

2. A summary of the current status of the Clean Water Act, endangered species, EIS, and cultural resources investigations is as follows:

a. Since there is no deposition of dredged or fill material into water of the U.S. with the subject work, no Section 404(b)(1) Evaluation or Water Quality Certificate is necessary.

b. Based on studies and investigations at this stage of design, the proposed action is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species.

c. A final EIS for the barrier plan for the subject project was filed with CEQ on 17 January 1975. A final supplement to this EIS was filed with EPA on 7 December 1984. This supplement addressed the impacts associated with raising the height of the subject levee with hydraulic fill on the existing levee. The proposed floodwall work detailed in this GDM has fewer environmental damages than those described in the EIS Supplement, thus, no new environmental document will be prepared.

d. A cultural resources survey of the subject levee item was conducted in 1982, by New World Research, Inc., under contract to the New Orleans District, U.S. Army Corps of Engineers. No significant cultural resources were located in the project impact zone. The survey report was coordinated with the Louisiana SHPO and he concurred with the survey findings. No further cultural resources investigation is necessary.

3. In accordance with LMVED-TS letter dated 5 February 1981, this report has been reviewed by the District Security Officer. There were no review comments to be incorporated in the report.

CELMN-ED-SP
SUBJECT: Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 17A - General Design, Jefferson Parish/St. Charles Parish Return Levee

4. This report is being submitted as scheduled. The current program calls for construction award in October 1987; therefore, a prompt review and approval of this General Design Memorandum is required.

5. Approval of the report as a basis for preparation of plans and specifications is recommended.

LLOYD K. BROWN
Colonel, CE
Commanding

Encl (16 cys) fwd sep

CELMV-ED-TD (CELMN-ED-SP/14 Jul 87) 1st End Mr. Bardwell/bj/5925
SUBJECT: Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 17A - General Design, Jefferson Parish/St. Charles Parish Return Levee

DA, Lower Mississippi Valley Division, CE, Vicksburg, MS 39180-0080

26 AUG 87

FOR: Commander, New Orleans District, ATTN: CELMN-ED-SP

The subject design memorandum is approved subject to the resolution of the following comments:

a. Para 40b(7) and Plate 12. It is noted that a 24-in. gabion blanket is recommended for foreshore protection between Stas 173+04.7 to 178+74.7 W/L. We question the use of this type of protection in a saltwater environment and also in an area of frequent waves. A wave attack on a gabion field will move the small stones that are within the baskets which will result in the wearing away of any type of corrosion protection on the wire. The Old River gabion field has experienced blanket wire deterioration due to stone wear during overbank structure operation. Once the corrosion protection is removed, rapid basket deterioration will occur. Therefore, an alternative (grouted riprap, larger riprap, or a concrete blanket) should be used in lieu of the gabions.

b. Para 44 and Plate 15 and Table 6.

(1) The existing and restored shell access road should be shown on the typical cross section, Plate 15.

(2) The cost for the restoration of the access road should be shown on Table 6.

c. Para 70. The reevaluation study referenced in this paragraph was dated Jul 84 and the price levels used in this reevaluation study were 1981 rather than 1983.

d. Plates 18 and 19. The proposed I-wall alternative design shown on these plates consists of degrading the existing levee, filling the adjacent canal with uncompacted fill, relocating the canal, and constructing a levee/I-wall on the uncompacted fill. This alternative is obviously prohibitively expensive, and in addition, construction would be difficult. The most desirable and economical I-wall design would be to degrade the existing levee to the maximum extent possible, construct an I-wall near the existing sheetpile alignment, and add protected side stability berms as necessary. We understand that this design alternative was not pursued since protected side rights-of-way constraints precluded berm construction. In order to determine the least costly alternative you should perform the structural and stability analyses for the I-wall constructed on the existing levee crown with a protected side berm. The cost for this alternative, including rights-of-way, should be compared with the proposed T-wall design on a reach by reach basis.

e. Plate 44. Based on this analysis, it appears that an I-wall, constructed along the same alignment or slightly to the floodside of the T-wall with the levee degraded to el +3, could be constructed without a protected side stability berm. If this is the case, an I-wall should be constructed between base line Stas 74+00 and 140+00.

f. Plates 44-53. If not previously accomplished, the shear strengths shown on these plates should be examined to ensure that the use of these strengths does not result in factors of safety less than one using existing ground profiles and maximum past flood levels.

g. Para 46. Considering the relatively short fetch across the parish line canal and the heavily wooded swamp west of the canal, the need for the 5-ft band of 24-in. thick riprap should be reconsidered. In our opinion a 5-ft strip of solid turf in place of the riprap and the returfed floodside work area will adequately protect the structure from Stas 0+00 W/L to 156+72.90 W/L.

FOR THE COMMANDER:

for William K. Hill
FRED H. BAYLEY III
Chief, Engineering Division

Encl wd

CF w encl: 2
CEEC-EB (1 cys)

ESTIMATE OF COST

65. General. Based on October 1987 price levels, the estimated first cost for construction of the Jefferson/St. Charles return levee high level plan is $26,900,000. Of this cost, $22,000,000 is required for the Levees and Floodwall feature, $2,600,000 for Engineering and Design, and 2,200,000 for Supervision and Administration and $36,000 for lands and damages. The detailed estimate of first cost is shown in Table 6.

TABLE 6
LAKE PONTCHARTRAIN HIGH LEVEL PLAN
JEFFERSON/ST. CHARLES RETURN LEVEE, DM 17A

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	LANDS AND DAMAGES				
A.	FLOODWALL - WEST ESPLANADE TO LAKEFRONT (STA. 95+00 W/L to STA. 181+35.5 W/L)				
01	Lands and Damages				
	Perpetual Levee Rights-of-Way Potential Residential	.25	ACRE	$100,000	25,000
	Improvements				0
	Severance Damage				0
	SUBTOTAL				$25,000
	Contingencies, 25% (R)				6,000
	Acquisition Cost (Estimated 2 tracts)				
	Non-Federal 2 @ $1,400 per tract				3,000
	Federal				2,000
	PL-91-646				0
	TOTAL, LANDS AND DAMAGES				$36,000

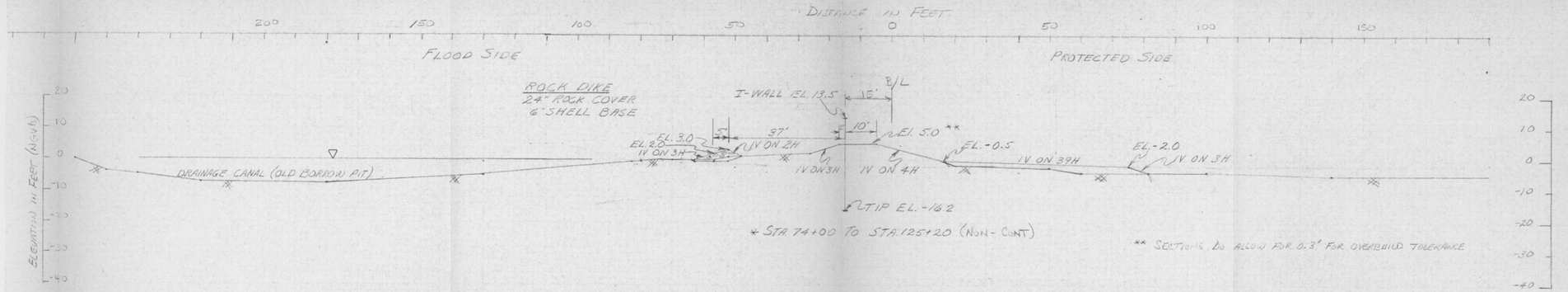
Encl. 2

TABLE 6 (Continued)
LAKE PONTCHARTRAIN HIGH LEVEL PLAN
JEFFERSON/ST. CHARLES RETURN LEVEE, DM 17A
ESTIMATE OF FIRST COST
October 1987 Price Levels

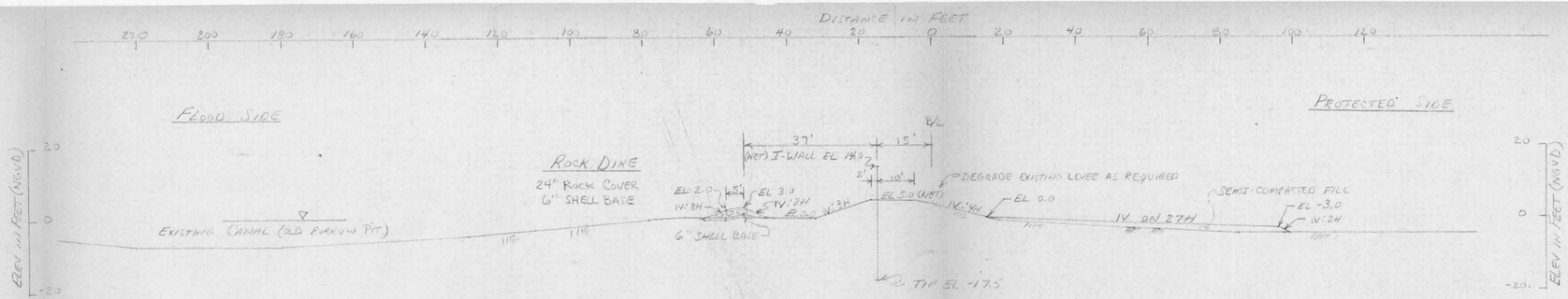
Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION				
B.	FLOODWALL - AIRPORT TO WEST ESPLANADE (STA. 0+00 W/L TO STA. 95+00 W/L)				
11	Levees and Floodwalls				
	Mobilization & Demobilization	1	JOB	50,000.00	50,000
	Clearing & Grubbing	19	ACRE	1,000.00	19,000
	Fertilizing & Seeding	17	ACRE	400.00	6,800
	Temporary Earth Dike	1,800	C.Y.	2.00	3,600
	Levee Fill (Semi-Compacted)	3,000	C.Y.	1.60	4,800
	Levee Excavation (Haul to Lakefront Levee-Reach A)	49,200	C.Y.	4.00	196,800
	Filter Fabric	6,160	S.Y.	2.00	12,320
	Shell (Uncompacted)	1,510	C.Y.	25.00	37,750
	Riprap	4,100	TONS	20.00	82,000
	Shell Access Road	10,500	C.Y.	20.00	210,000
	Structural Excavation	10,830	C.Y.	6.00	64,980
	Structural Backfill	4,100	C.Y.	8.50	34,850
	Frodingham B1 Sections -Driving Existing Sht Pile	63,300	S.F.	2.25	142,425
	Frodingham B1 Sections -Pulling & Redriving Existing	47,700	S.F.	4.25	202,725
	Frodingham B1 Sections -Driving Existing @ I-10	1,800	S.F.	7.00	12,600
	-Splicing @ I-10, 2 Per Pile	113	EA	500.00	56,500
	Frodingham B1 Fabricated Corners	80	S.F.	50.00	4,000
	PZ-22 Steel Sheet Piling	24,500	S.F.	11.50	281,750
	Compression Pile Test	2	EA	18,000.00	36,000
	Additional Compression Pile Test	2	EA	14,000.00	28,000
	Tension Pile Test	2	EA	19,000.00	38,000
	Additional Tension Pile Test	2	EA	14,000.00	28,000
	12" X 12" Prestrsd Conc Piling	132,270	L.F.	18.00	2,380,860
	14" X 14" Prestrsd Conc Piling	74,000	L.F.	22.00	1,628,000
	Conc in Stab Slab	240	C.Y.	70.00	16,800
	Conc in T-Wall Base	6,850	C.Y.	200.00	1,370,000
	Conc in T-Wall Stem	4,700	C.Y.	350.00	1,645,000
	Conc in I-Walls	145	C.Y.	350.00	50,750
	Waterstops, 3-Bulb Type	4,900	L.F.	10.00	49,000
	Waterproof Finish (Prot side)	103,100	S.F.	1.00	103,100
	Planting of Shrubbery	1,585	Plant	15.00	23,775
	SUBTOTAL				$ 8,820,185
	CONTINGENCIES (20%±)				$ 1,763,815
	TOTAL, CONSTRUCTION (R)				$10,584,000
30	Engineering and Design (12%±)				$ 1,270,000
31	Supervision and Administration (10%±)				$ 1,058,000
	TOTAL COST				$12,912,000

TABLE 6 (CONTINUED)
LAKE PONTCHARTRAIN HIGH LEVEL PLAN
JEFFERSON/ST. CHARLES RETURN LEVEE, DM 17A
ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION				
C.	FLOODWALL - WEST ESPLANADE TO LAKEFRONT (STA. 95+00 W/L TO STA. 181+35.5 W/L)				
11	Levees and Floodwalls				
	Mobilization & Demobilization	1	JOB	50,000.00	50,000
	Clearing & Grubbing	21	ACRE	1,000.00	21,000
	Fertilizing & Seeding	19	ACRE	400.00	7,600
	Temporary Earth Dike	5,300	C.Y.	2.00	10,600
	Levee Fill (Semi-Compacted)	16,000	C.Y.	1.60	25,600
	Levee Excavation (Haul to Lakefront Levee-Reach A)	36,500	C.Y.	4.00	146,000
	Filter Fabric	9,245	S.Y.	2.00	18,490
	Shell (Uncompacted)	965	C.Y.	25.00	24,125
	Riprap	6,600	TONS	20.00	132,000
	Shell Access Road	9,600	C.Y.	20.00	192,000
	Structural Excavation	5,010	C.Y.	6.00	30,060
	Structural Backfill	2,440	C.Y.	8.50	20,740
	Frodingham B1 Sections				
	-Pulling Existing Piling	22,400	S.F.	2.00	44,800
	-Pulling & Redriving Existing	113,300	S.F.	4.25	481,525
	Frodingham B1 Fabricated Corners	110	S.F.	50.00	5,500
	PZ-22 Steel Sheet Piling	41,430	S.F.	11.50	476,445
	Steel Sheet Piling PZ-27	17,580	L.F.	12.50	219,750
	Compression Pile Test	1	EA	18,000.00	18,000
	Additional Compression Pile Test	1	EA	14,000.00	14,000
	Tension Pile Test	1	EA	19,000.00	19,000
	Additional Tension Pile Test	1	EA	14,000.00	14,000
	14" X 14" Prestrsd Conc Piling	200,420	L.F.	22.00	4,409,240
	Conc in Stab Slab	1,365	C.Y.	70.00	95,550
	Conc in T-Wall Base	5,535	C.Y.	200.00	1,107,000
	Conc in T-Wall Stem	4,135	C.Y.	350.00	1,447,250
	Conc in I-Walls	946	C.Y.	350.00	331,100
	Waterstops, 3-Bulb Type	4,695	L.F.	10.00	46,950
	Waterproof Finish (Prot side)	107,950	S.F.	1.00	107,950
	Planting of Shrubbery	1,415	Plant	15.00	21,225
	SUBTOTAL				$ 9,537,500
	CONTINGENCIES (20%±)				$ 1,907,500
	TOTAL, CONSTRUCTION (R)				$11,445,000
30	Engineering and Design (12%±)				$ 1,373,000
31	Supervision and Administration (10%±)				$ 1,145,000
	TOTAL COST				$13,963,000

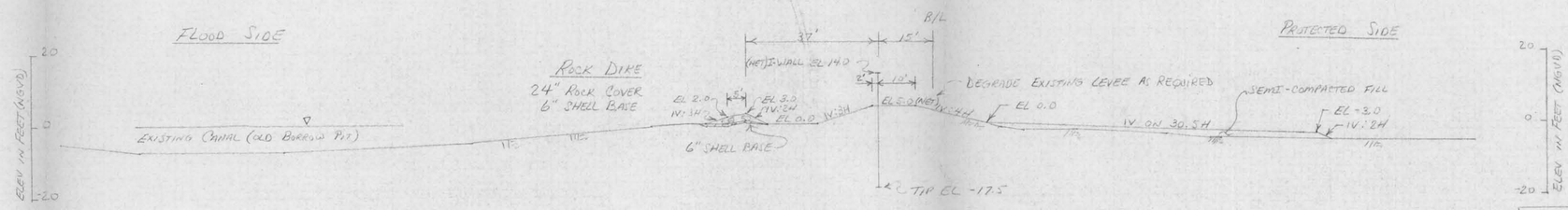

DISTANCE IN FEET
200
150
100
50
0
50
100
150
FLOOD SIDE
PROTECTED SIDE
ROCK DIKE
24" ROCK COVER
6" SHELL BASE
I-WALL EL. 13.5
B/L
15'
10'
EL. 5.0 **
EL. 3.0
EL. 2.0
5'
37'
1V ON 2H
1V ON 3H
1V ON 4H
EL. -0.5
1V ON 39H
EL. -2.0
1V ON 3H
TIP EL. -16.2
DRAINAGE CANAL (OLD BORROW PIT)
ELEVATION IN FEET (NGVD)
20
10
0
-10
-20
-30
-40
* STA 74+00 TO STA 125+20 (NON-CONT)
** SECTIONS DO ALLOW FOR 0.3' FOR OVERBUILD TOLERANCE
FLOOD SIDE
PROTECTED SIDE
ROCK DIKE
24" ROCK COVER
6" SHELL BASE
I-WALL EL. 13.5
B/L
15'
10'
EL. 5.0 **
EL. 3.0
EL. 2.0
5'
37'
1V ON 2H
1V ON 3H
1V ON 4H
EL. -0.5
1V ON 30.5H
EL. -3.0
1V ON 3H
TIP EL. -16.2
DRAINAGE CANAL (OLD BORROW PIT)
ELEVATION IN FEET (NGVD)
STA 125+20 TO STA 140+00 (NORTH OF PUMPING STATION)
* PUMPING STATION APPROX. @ B/L STA 121+00
JEFFERSON/ST. CHARLES PARISH
RETURN LEVEE
REACH I - NET LEVEE EL 5.0
B/L STA 74+00 TO STA 140+00
(NON-CONT)

ENCL 3



B/L STATION 140+50 to B/L STATION 196+78*

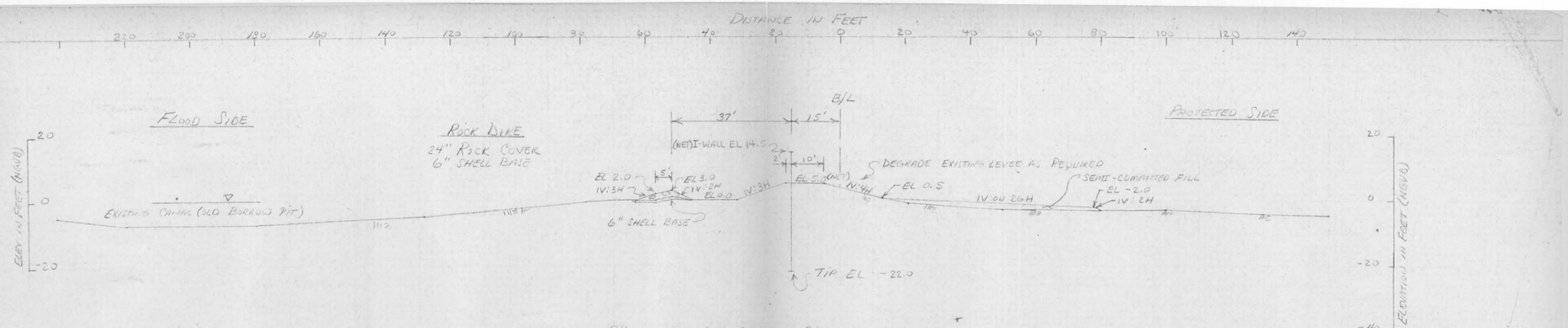
*SECTIONS DO ALLOW FOR 0.3' FOR OVERBUILD TOLERANCE



B/L STATION 197+38 TO B/L STATION 205+10*

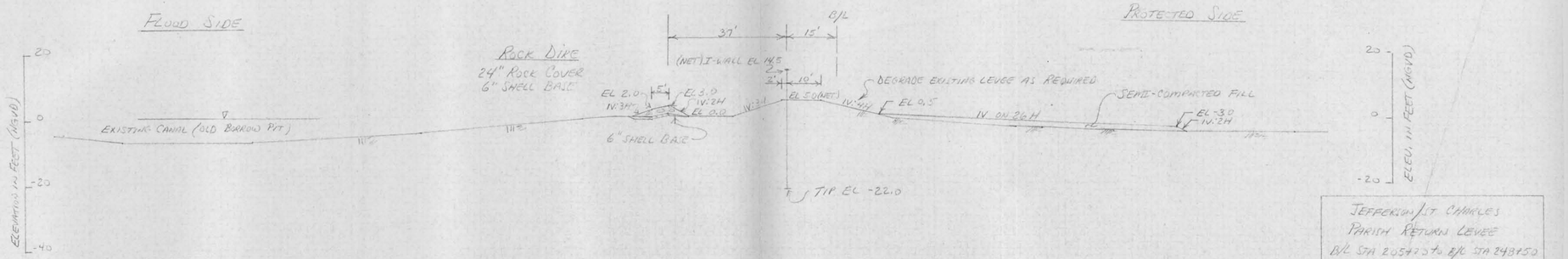
JEFFERSON/ST. CHARLES
PARISH RETURN LEVEE
B/L STA. 140+50 to B/L STA. 205+10
NET LEVEE EL 5.0 30 SEPT 87

Encl 3a



B/L STATION 205+20 TO B/L STATION 231+20*

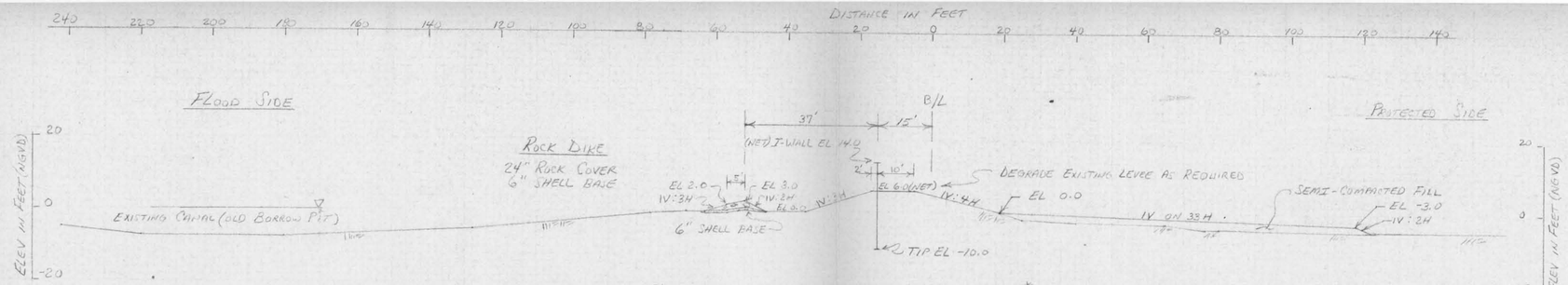
* SECTIONS DO NOT ACCOUNT FOR 0.3' FOR OVERBUILD TOLERANCE



B/L STATION 231+30 TO B/L STATION 248+50*

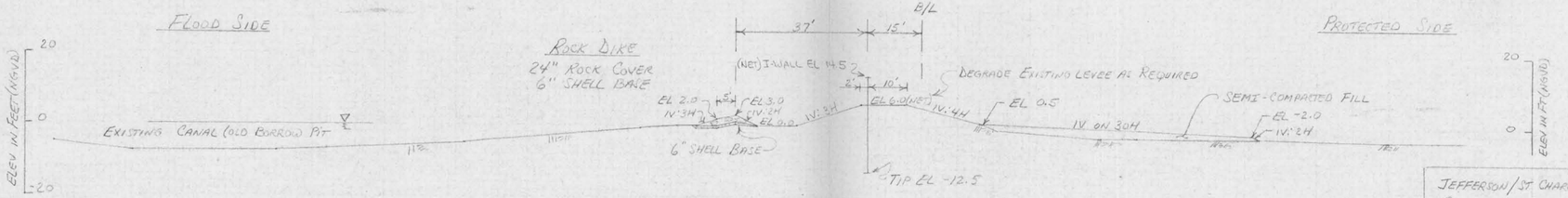
JEFFERSON/ST. CHARLES
PARISH RETURN LEVEE
B/L STA 205+20 TO B/L STA 248+50
NET LEVEE EL 5.0

ENCL 3



B/L STATION 197+38 TO B/L STATION 205+10*

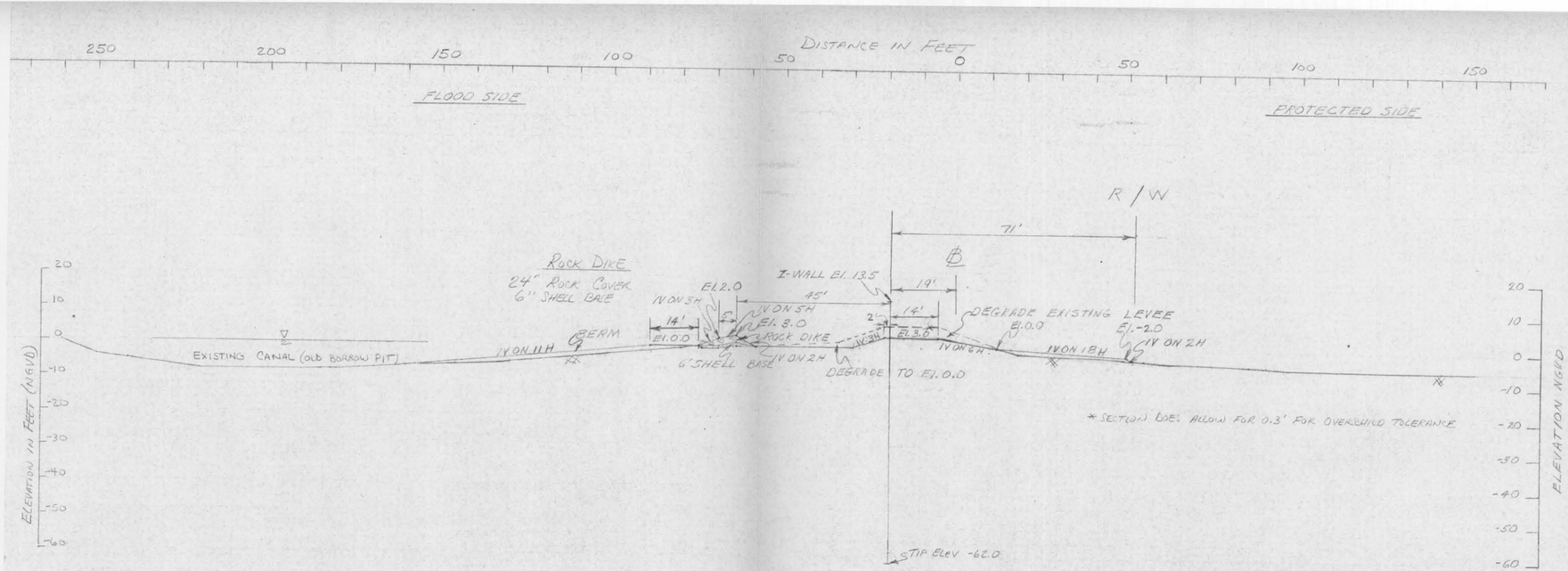
* SECTIONS DO ALLOW FOR 0.3' FOR OVERBUILD TOLERANCE



B/L STATION 205+20 TO B/L STATION 231+20*

JEFFERSON/ST. CHARLES PARISH
RETURN LEVEE - I WALL
NET LEVEE EL 6.0
B/L STA 197+38 TO STA 231+20

Encl 3 4



JEFFERSON / ST. CHARLES
PARISH - RETURN LEVEE
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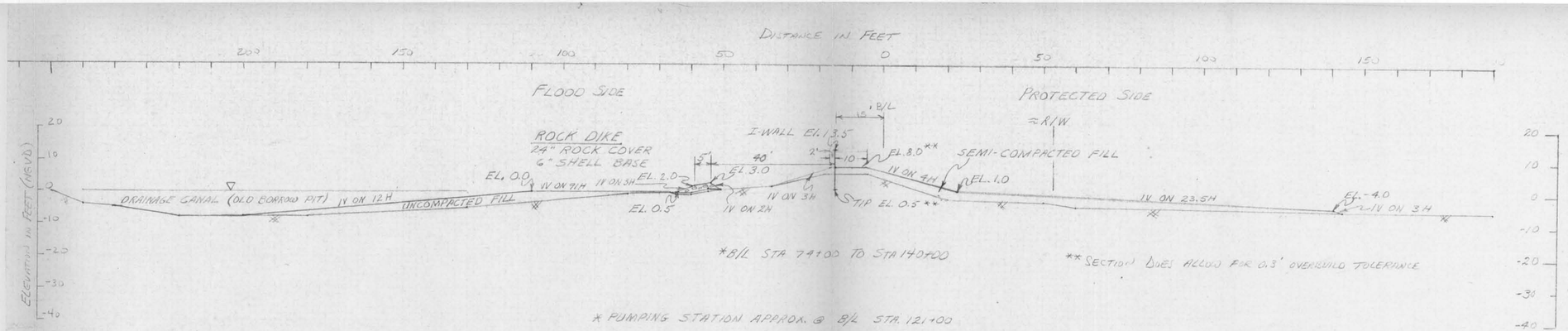
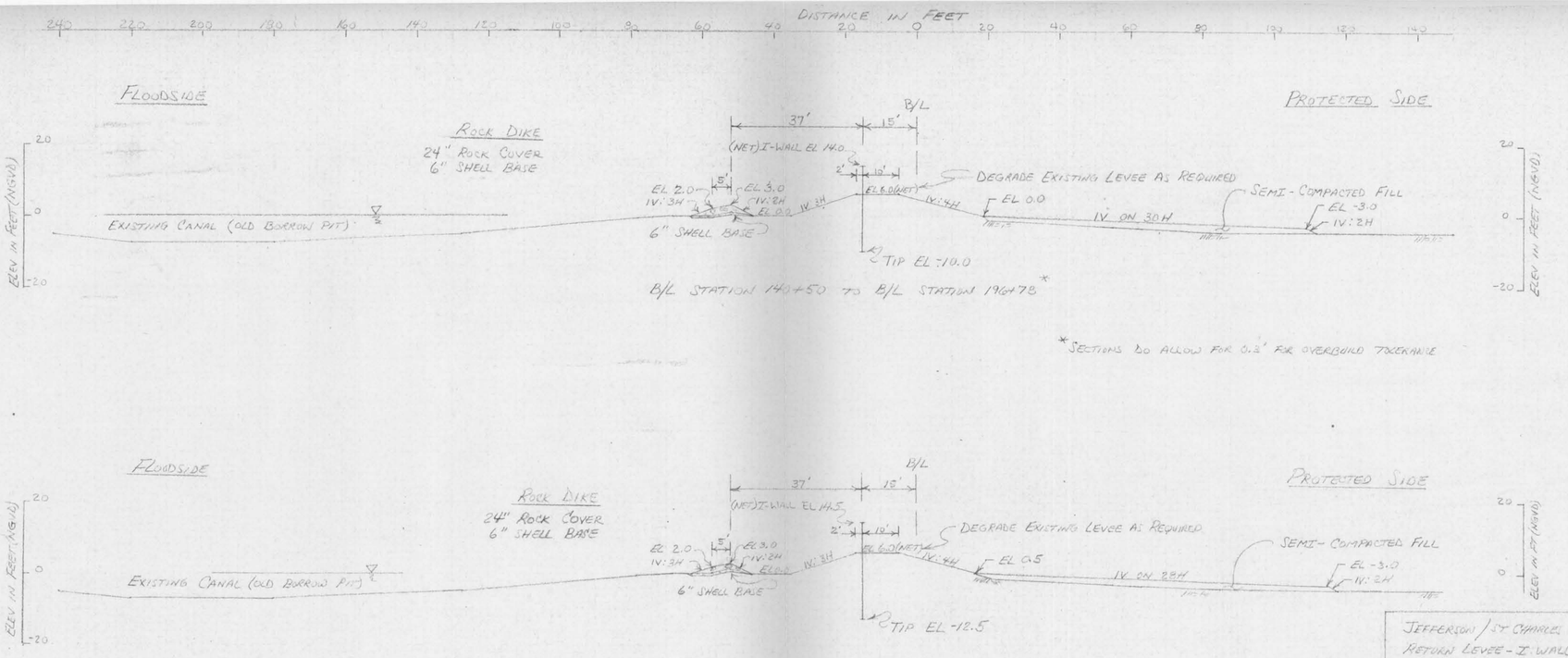
B/L STA. 774+00 to STA 140+00
(NON-CONT) SEPT 87

ENCL 3$_5$



JEFFERSON/ST CHARLES PARISH
RETURN LEVEE
REACH I - NET LEVEE EL 9.0
B/L STA. 74+00 TO STA 140+00

ENCL 36



JEFFERSON / ST CHARLES PARISH
RETURN LEVEE - I WALL
NET LEVEE EL 6.0
B/L STA 140+50 TO STA 196+78
& B/L STA 231+30 TO STA 248+50
9 OCT 87

ENCL 3

66. Comparison of Estimates. The current estimate of $26,836,000 for the high level plan Jefferson/St. Charles Return Levee represents a decrease of $713,000 when compared to the cost contained in the current PB-3 effective 1 October 1987. The PB-3 estimate is based on survey scope estimates contained in the "Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project, Reevaluation Study", dated July 1984. Estimates contained in the reevaluation report were published at October 1983 levels. These estimates were indexed to October 1987 levels for the current PB-3. The decrease in cost shown in Table 7 is explained in the following subparagraphs:

Table 7
COMPARISON OF ESTIMATES
(Remaining Costs)
High Level Reevaluation Study
New Orleans, La.

	Feature	PB-3 (eff Oct 87)	GDM (Oct 87 Prices)	Difference GDM and PB-3
11	LEVEES & FLOODWALLS	$22,549,000	$22,000,000	-$549,000
30	ENGINEERING & DESIGN	2,700,000	2,600,000	-$100,000
31	SUPERVISION & ADMINISTRATION	2,300,000	2,200,000	-$100,000
	SUBTOTAL	$27,549,000	$26,800,000	-$749,000
01	LANDS & DAMAGES	-	36,000	+$ 36,000
02	RELOCATIONS	-	-	-
	TOTAL PROJECT COST	$27,549,000	$ 26,836,000	-$713,000

a. Levee and Floodwall. The net decrease in the levee and floodwall account of $549,000 is due to several factors. As stated above, the PB-3 estimate is based on a survey scope estimate contained in the "Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project, Reevaluation Study". This report recommends an I-wall in the levee alternative as the "tentatively selected" plan. The length of floodwall covered by the Reevaluation Study is approximately 4,100 feet longer than the floodwall reach covered in this memorandum. Therefore, it is not possible at this time to make a detailed comparison between the PB-3 estimate and the plan contained herein; however, an approximate estimate can be obtained by prorating the levee cost on a cost/ft basis. Using this procedure, a more realistic comparison in cost is obtained. The prorated increase in cost is approximately $4.1 million. The plan detailed in this memorandum is a T-Wall in levee plan which is the most cost effective plan that provides Standard Project Hurricane protection. A discussion of alternative plans investigated during the preparation of this Design Memorandum is contained in paragraph 47.

Encl 4

b. Engineering and Design. Table 7 shows a difference of $100,000 in E&D cost between the PB-3 estimate and the cost for Engineering and Design for work detailed in this memorandum. As explained in subparagraph a. above, since the two estimates are not based on the same physical coverage, the decrease in cost for the E&D account is also misleading. An approximate estimate for the real increase in E&D cost can also be made using the same prorating procedure as used for the Levees & Floodwalls account. The prorated increase in E&D is estimated to be approximately $500,000. The $2.6 million cost for E&D results from recomputing the E&D cost based on analysis of work required rather than by using a fixed percentage of construction cost.

c. Supervision and Administration. As with the E&D comparison made in subparagraph b. above, an approximate comparison of cost can only be made by comparing the cost on the same physical work basis. The prorated increase in S&A, obtained in a similar manner as in subparagraphs a. and b. above, is estimated to be approximately $400,000. An increase in S&A should be expected with a change from a relatively simple I-wall construction plan to more complex T-Wall type construction.

d. Lands and Damages. An increase of $36,000 for lands and damages estimated cost is due to the recommendation that an I-wall in levee be built between sta. 199+20 B/L and sta. 203+01.1 B/L. Additional rights-of-way are required to construct a required protected side stability berm. The PB-3 (Reevaluation Study) plan of protection calls for a flood side shift in the alignment of the proposed floodwall in levee. No additional protected side rights-of-way were anticipated under the PB-3 plan.

67. Schedule for Design and Construction. The sequence of contracts and schedules are as follows:

TABLE 8
SCHEDULE FOR DESIGN AND CONSTRUCTION

Contracts	Plans & Specs		Construction			Estimated Construction Cost 1/
	Start	Complete	Adver.	Award	Complete	$
Airport to West Esplanade Ave Floodwall	Oct 87	Mar 88	Apr 88	May 88	Jul 90	11,536,000
West Esplanade Ave to Lakefront Floodwall	Jun 88	Oct 88	Apr 89	May 89	Nov 91	12,476,000

1/ This cost includes contingencies, Federal and Non-Federal construction costs, and Federal and Non-Federal supervision and inspection (S & I) costs (S & I costs constitute 90% of the supervision and administration costs).

68. Funds Required by Fiscal Year. To maintain the schedule for design and construction of the levees and floodwalls for the Jefferson Parish Return Levee, Federal funds will be required by fiscal years as follows:

TABLE 9
FEDERAL FUNDING BY FISCAL YEAR[1/]

Funds Required	FY 87	$ 600,000
Funds Required	FY 88	2,300,000
Funds Required	FY 89	8,700,000
Funds Required	FY 90	9,300,000
Funds Required	FY 91	3,600,000
Funds Required	FY 92	600,000
TOTAL		25,100,000

1/ Federal funding schedule takes into account surplus credits that local interest has accrued for work at the four lakefront pumping stations.

OPERATION AND MAINTENANCE

69. General. The Jefferson/St. Charles return levee will be maintained and operated at the expense of local interests as a feature of local cooperation for the project. The estimate of the annual operation and maintenance costs for the levee and floodwall features which are detailed in this GDM are as follows:

a.	Levee Maintenance (46 acres)	$ 5,000 per year
b.	Floodwall Maintenance (3.43 miles)	10,000 per year
	Total	$15,000 per year

ECONOMICS

70. Economic Justification. The current economic analysis for the entire Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project is contained in the Reevaluation Study entitled "Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project", dated December 1983. Based on October 1983 price levels, and at the project interest rate of 3 1/8 percent, the benefit-cost ratio for the project as a whole is 4.2 to 1. The Reevaluation Study also breaks out separable project areas (SPA) for incremental justification. The New Orleans Lakefront reach is a part of the New Orleans-Jefferson SPA. The computed benefit-cost ratio for the New Orleans-Jefferson area is 5.0 to 1.

FEDERAL AND NON-FEDERAL COST BREAKDOWN

71. Federal and Non-Federal Cost Breakdown. The breakdown of Federal and non-Federal costs for the high level plan construction work described in this GDM are shown in Table 10 below:

Table 10
FEDERAL AND NON-FEDERAL COST BREAKDOWN
OCT 87 PRICE LEVELS

Item	Federal	Non-Federal	Total
Levees & Floodwalls	$18,813,000	$8,062,000 1/	$26,875,000
Lands & Damages	$ 2,000	34,000 2/	$ 36,000
Relocations	———	2/	———
TOTAL	$18,815,000	$8,096,000	$26,911,000

1/ Includes Sunk cost estimated to be $343,000 for constructing the fronting protection for the Parish Line Canal Pumping Station, a creditable item of work accomplished by local interests.

2/ The additional rights-of-way required are limited to .25 Acres between sta. 199+20 B/L and sta. 203+01.1 B/L. All other rights-of-way were in existence at the time of the authorization for the Lake Pontchartrain project. No relocations are required to construct the floodwall reach detailed in this GDM.

RECOMMENDATIONS

72. Recommendations. The plan of improvement for the high level plan presented herein consists of 3.43 miles of floodwall construction along the Jefferson/St. Charles Parish return levee. This plan is considered to be the most economical means of providing high vel plan, SPH - project protection and is recommended for approval as a basis for preparing plans and specifications for this project reach.

EXECUTIVE CORRESPONDENCE

DO NOT WRITE ON THIS COVER AS IT IS INTENDED FOR RE-USE
RETURN IT WITH THE FILE COPIES TO ORIGINATING OFFICE

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

CELMN-ED-SP

20 Nov 87

MEMORANDUM FOR: Commander, Lower Mississippi Valley Division, ATTN: CELMV-ED-TD

SUBJECT: Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 17 - General Design, Jefferson Parish Lakefront Levee

1. The subject design memorandum is submitted for review and approval, and has been prepared generally in accordance with the provisions of ER 1110-2-1150, dated 15 November 1984.

2. A summary of the current status of the Clean Water Act, endangered species, EIS, and cultural resources investigations is as follows:

a. There is no deposition of dredged or fill material into waters of the U.S. associated with the subject work. However, a Section 404(b)(1) Evaluation has been prepared and an application for a Water Quality Certificate has been made.

b. Based on studies and investigations at this stage of design, the proposed action is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species.

c. A final EIS for the barrier plan for the subject project was filed with CEQ on 17 January 1975. A final supplement to this EIS was filed with EPA on 7 December 1984. This supplement addressed the impacts associated with raising the height of the subject levee. The proposed levee work described in this GDM resulted in a decrease in acreage over that covered in the EIS Supplement. A Supplemental Information Report (SIR) has been prepared to address the change in impacts associated with this decreased acreage.

d. A cultural resources survey of the subject levee item was conducted by New World Research, Inc., under contract to the New Orleans District, U.S. Army Corps of Engineers. No significant cultural resources were located in the land-based portion of the rights-of-way. The survey report was coordinated with the Louisiana SHPO and he concurred with the survey findings. Numerous magnetic anomalies that could represent significant historic shipwrecks were noted in the offshore borrow sites. However, under the present construction method, no offshore borrow pits will be required.

CELMN-ED-SP
SUBJECT: Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 17 - General Design, Jefferson Parish Lakefront Levee

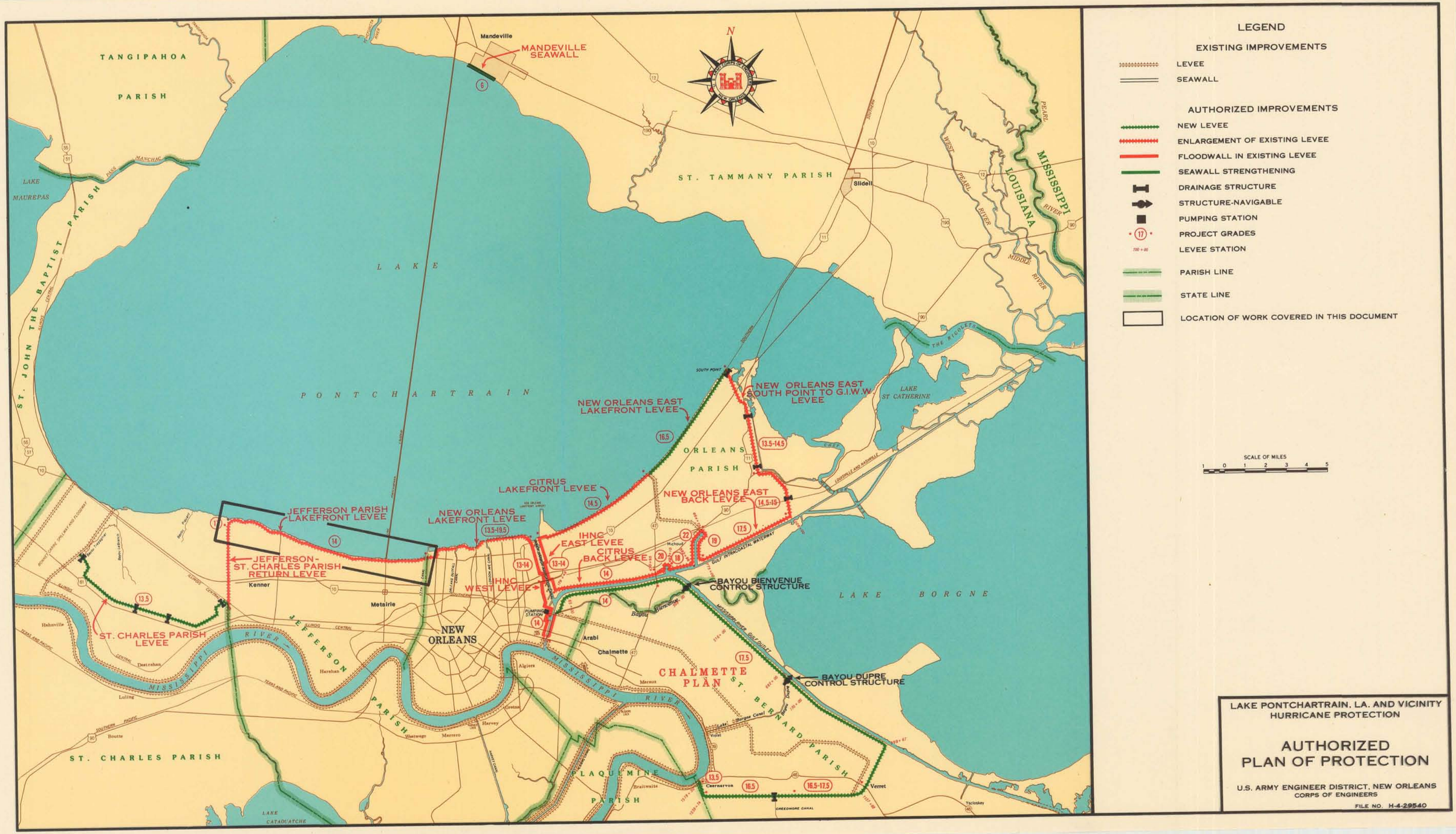
3. In accordance with LMVED-TS letter dated 5 February 1981, this report has been reviewed by the District Security Officer. There were no comments to be incorporated in the report.

4. This report was scheduled to be submitted to LMVD by 31 October 1987. This delay will not cause a delay in the start of construction (as shown on the current PB-2a and in this report) provided an expeditious approval of this report is obtained.

5. Approval of the report as a basis for preparation of plans and specifications is recommended.

Encl (16 cys, fwd sep)

LLOYD K. BROWN
Colonel, CE
Commanding



LEGEND

EXISTING IMPROVEMENTS

- LEVEE
- SEAWALL

AUTHORIZED IMPROVEMENTS

- NEW LEVEE
- ENLARGEMENT OF EXISTING LEVEE
- FLOODWALL IN EXISTING LEVEE
- SEAWALL STRENGTHENING
- DRAINAGE STRUCTURE
- STRUCTURE-NAVIGABLE
- PUMPING STATION
- PROJECT GRADES
- LEVEE STATION
- PARISH LINE
- STATE LINE
- LOCATION OF WORK COVERED IN THIS DOCUMENT

LAKE PONTCHARTRAIN, LA. AND VICINITY
HURRICANE PROTECTION

AUTHORIZED PLAN OF PROTECTION

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FILE NO. H-4-29540

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17, GENERAL DESIGN
JEFFERSON PARISH, LAKEFRONT LEVEE

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PLATES (cont'd)

VOLUME II PLATES

PLATES (cont'd)

VOLUME II PLATES

PLATES (cont'd)

VOLUME II PLATES

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH
LAKEFRONT LEVEE

PROJECT AUTHORIZATION

1. Authority.

a. Public Law. Public Law 298, 89th Congress, 1st Session, approved 27 October 1965, authorized the "Lake Pontchartrain, Louisiana, and Vicinity, Hurricane Protection Project," substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 231, 89th Congress, 1st Session, except that the recommendations of the Secretary of the Army in that document shall apply with respect to the Seabrook Lock feature of the project.

b. House Document. The report of the Chief of Engineers dated 4 March 1964 printed in House Document No. 231, 89th Congress, 1st Session, submitted for transmission to Congress the report of the Board of Engineers for Rivers and Harbors, accompanied by the reports of the District and Division Engineers and the concurring report of the Mississippi River Commission for those areas under its jurisdiction. The report of the Board of Engineers for Rivers and Harbors stated: "For protection from hurricane flood levels, the reporting officers find that the most suitable plan would consist of a barrier extending generally along U.S. Highway 90 from the easternmost levee to high ground east of the Rigolets, together with floodgates and a navigation lock in the Rigolets, and flood and navigation gates in Chef Menteur Pass; construction of a new lakeside levee in St. Charles Parish extending from the Bonnet Carre Spillway guide levee to and along the Jefferson Parish line; extension upward of the existing riprap slope protection along the Jefferson Parish levee; enlargement of the levee landward of the seawall along the 4.1 mile lakefront, and construction of a concrete-capped sheetpile wall along the levee west of the Inner Harbor Canal in New Orleans."

c. BERH Recommendation. The report of the Chief of Engineers stated: "The Board (of Engineers of Rivers and Harbors) recommends authorization for construction essentially as planned by the reporting officers ....I concur in the recommendation of the Board of Engineers for Rivers and Harbors."

2. Purpose and Scope. This memorandum presents the essential data, assumptions, criteria, and computations for developing the plan, design, and cost estimate for constructing the Jefferson

Parish Lakefront Levee segment of the Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection project to high level standards (i.e., no barriers in the Chef Menteur and Rigolets Passes). The recommended design contained in this DM reflects the least costly method of modifying the existing levee so that a high level of protection can be achieved. The lakefront levee reach begins at the northwest edge of Jefferson Parish on the east bank of the Mississippi River where the Jefferson/St. Charles Parish line intersects Lake Pontchartrain. From this point, the levee runs eastward along the lakefront for approximately 10 miles where it ties into the west bank return levee on the 17th Street Outfall Canal (Metairie Relief Canal) in the vicinity of Bucktown, Louisiana. The lakefront levee contains within the main line of protection, five pumping stations which provide the bulk of the interior drainage for the east bank of Jefferson Parish. Four of these lakefront pumping stations have been built since the mid-1970's. The fifth station is really an old station (1926) that was, in effect, replaced by a new pumping station located just to the east on the Duncan Canal. The pumping stations are numbered in order from east to west, with pumping station No. 1 located on the Bonnabel Canal near the eastern limits of the study reach (B/L Station 472+00) and pumping station No. 4 located on the Duncan Canal near the western limits of the study reach (B/L Station 124+34). Pumping stations 1 and 4 were built to the high level plan design criteria and can be incorporated without modification into the Hurricane Protection Project. This GDM presents the work required to incorporate these two pumping stations into the project. Stations 2 and 3 will require remedial measures before they will satisfy high level plan SPH design criteria. The specifics of these remedial measures will be the subject of the supplement to this GDM.

3. Local Cooperation.

a. Flood Control Act of 1965 (Public Law 89-298). The conditions of local cooperation pertinent to this Design Memorandum and as specified in the report of the Board of Engineers for Rivers and Harbors and concurred by the report of the Chief of Engineers are as follows: "....That the barrier plan for protection from hurricane floods of the shores of Lake Pontchartrain ... be authorized for construction, ... provided that prior to construction of each separable independent feature local interest furnish assurances satisfactory to the Secretary of the Army that they will, without cost to the United States:

"(1) Provide all lands, easements, and rights-of-way, including borrow and spoil disposal areas, necessary for construction of the project;

"(2) Accomplish all necessary alterations and relocations to roads, railroads, pipelines, cables, wharves, drainage structures, and other facilities made necessary by the construction works;

"(3) Hold and save the United States free from damages due to the construction works;

"(4) Bear 30 percent of the first cost, to consist of the fair market value of the items listed in subparagraphs (1) and (2) above and a cash contribution presently estimated at $14,384,000 for the barrier plan... to be paid either in a lump sum prior to initiation of construction or in installments at least annually in proportion to the Federal appropriation prior to start of pertinent work items, in accordance with construction schedules as required by the Chief of Engineers, or, as a substitute for any part of the cash contribution, accomplish in accordance with approved construction schedules items of work of equivalent value as determined by the Chief of Engineers, the final apportionment of costs to be made after actual costs and values have been determined;

"(5) For the barrier plan, provide an additional cash contribution equivalent to the estimated capitalized value of operation and maintenance of the Rigolets navigation lock and channel to be undertaken by the United States, presently estimated at $4,092,000, said amount to be paid either in a lump sum prior to initiation of construction of the barrier or in installments at least annually in proportion to the Federal appropriation for construction of the barrier;

"(6) Provide all interior drainage and pumping plants required for reclamation and development of the protected areas;

"(7) Maintain and operate all features of the works in accordance with regulations prescribed by the Secretary of the Army, including levees, floodgates, approach channels, drainage structures, drainage ditches or canals, floodwalls, seawalls, and stoplog structures, but excluding the Rigolets navigation lock and channel and the modified dual purpose Seabrook lock; and

"(8) Acquire adequate easements or other interest in land to prevent encroachment on existing ponding areas unless substitute storage capacity or equivalent pumping capacity is provided promptly, provided that construction of any of the separable independent features of the plan may be undertaken independently of the others, whenever funds for that purpose are available and the prescribed local cooperation has been provided..."

b. Water Resources Development Act of 1974 (Public Law 93-251). The local interest payment procedures outlined in the original conditions of local cooperation were modified in 1974 as follows: "The hurricane-flood protection project on Lake Pontchartrain, Louisiana, authorized by Section 204 of the Flood Control Act of 1965 (Public Law 89-298) is hereby modified to provide that non-Federal public bodies may agree to pay the unpaid balance of the cash payment due, with interest, in yearly installments. The yearly installments will be initiated when the Secretary determines that the project is complete, but in no case shall the initial installment be delayed more than ten years after the initiation of project construction. Each installment shall not be less than one twenty-fifth of the remaining unpaid balance plus interest on such balance, and the total of such installments shall be sufficient to achieve full payment, including interest, within twenty-five years of initiation of project construction."

INVESTIGATIONS

4. Project Document Investigations. Studies and investigations made in connection with the report on which authorization is based (House Document No. 231, 89th Congress, 1st Session) consisted of: research of information which was available from previous reports and existing projects in the area; extensive research in the history and records of hurricanes; damage and characteristics of hurricanes; extensive tidal hydraulics investigations involving both office and model studies relating to the ecological impact of the project on Lakes Pontchartrain and Borgne; an economic survey; and survey scope design and cost studies. A public hearing was held in New Orleans on 13 March 1956 to determine the views of local interests.

5. Investigations Made Subsequent to Project Authorization. In December 1977, a Federal court injunction was issued stopping construction of portions of the authorized project. The injunction was issued on the basis that the 1975 final Environmental Impact Statement (EIS) for the Lake Pontchartrain project was inadequate. The court directed, among other things, that the EIS be rectified to include adequate development and analysis of alternatives to the then ongoing proposed action. The results of these studies are contained in a three volume report entitled "Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project, Reevaluation Study," dated July 1984. The reevaluation report recommended a "tentatively selected" high level plan of protection. This recommendation necessitated the preparation of this report and the engineering and environmental studies discussed herein. Surveys and studies accomplished in preparing this GDM include the following:

a. Alternative plan studies to develop alternative methods of construction required to optimize the proposed plan of protection;

b. Aerial and hydrographic surveys;

c. Soils investigations including general and undisturbed type borings and associated laboratory investigations;

d. Detailed design studies for alternative plans (including stability analyses);

e. Tidal hydraulic studies required for establishing design grades for protective works based on the latest revised hurricane parameters furnished subsequent to project authorization by the National Weather Service;

f. Real Estate requirements;

g. Detailed cost estimates for the proposed plan of protection as well as alternative plans and necessary utility relocations;

h. Environmental effects and evaluations;

i. A comprehensive public meeting for the "tentatively selected" high level plan held on 12 April 1984.

6. Planned Future Investigations. Upon satisfactory approval of this GDM, additional detailed Engineering Designs and Specifications will be prepared to support construction of this project feature. Some additional soils investigations or field surveys are anticipated at this time to support these designs. Planned future investigations for features not covered in this Design Memorandum will include the necessary field surveys and soil borings required to develop remedial measures for procedure SPH protection to pumping station numbers 2 and 3. As previously mentioned, the modifications to these pumping stations will be the subject of a supplement to this GDM.

LOCAL COOPERATION

7. Local Cooperation Requirements. The conditions of local cooperation as specified in the authorizing laws are quoted in paragraph 3. These conditions are applicable to the "Barrier Plan." A post authorization report for a "High Level Plan" recommended that assurances be amended. A complete list of local assurance items (as amended) are set forth as follows:

a. Provide all lands, easements, and rights-of-way, including borrow and spoil-disposal areas necessary for construction, operation, and maintenance of the project; and

b. Accomplish all necessary alterations and relocations to roads, railroads, pipelines, cables, wharves, drainage structures, and other facilities required by the construction of the project; and

c. Hold and save the United States free from damages due to the construction works; and

d. Bear 30 percent of the first cost, to consist of the fair market value of the items listed in subparagraphs (a) and (b) above and a cash contribution as presently estimated below, to be paid either in a lump sum prior to initiation of construction or in installments at least annually in proportion to the Federal appropriation prior to start of pertinent work items, in accordance with construction schedules as required by the Chief of Engineers, or, as a substitute for any part of the cash contribution, accomplish in accordance with approved construction schedules items of work of equivalent value as determined by the Chief of Engineers, the final apportionment of costs to be made after actual costs and values have been determined:

COST TO JEFFERSON LEVEE DISTRICT
($1,000,000's)

	FIRST COST 1/	LOCAL SHARE
Jefferson	142.1	42.6

1/ Cost to complete after October 1979; October 1981 price levels.

e. Delete the following item in full because it pertains only to the barrier plan:

Provide an additional cash contribution equivalent to 30.4% of the estimated capitalized value of maintenance and operation of the Rigolets navigation lock and channel to be undertaken by the United States, the cash consideration is estimated at $2,805,900, the final determination to be made after construction is complete, said amount to be paid either in a lump sum prior to initiation of construction of the barrier or in installments at least annually in proportion to the Federal appropriation for construction of the barrier; and

f. Provide all interior drainage and pumping plants required for reclamation and development of the protected areas; and

g. Maintain and operate all features of the project in accordance with regulations prescribed by the Secretary of the Army, including levees, floodgates and approach channels, drainage structures, drainage ditches or canals, floodwalls, and stoplog structures (the remainder of this item is deleted); and

h. Acquire adequate easements or other interest in land to prevent encroachment on existing ponding areas unless substitute storage capacity or equivalent pumping capacity is provided promptly; and

i. Comply with the applicable provisions of the "Uniform Relocation Assistance and Real Property Acquistion Policies Act of 1970," Public Law 91-646; and

j. Assume the responsibility to pay its share of the non-Federal project costs (the remainder of this item is deleted); and

k. As a minimum, adhere to the payment schedule of the deferred payment plan, the apportionment of costs to be made as actual costs values and schedules are determined. The first payment under the deferred payment plan was due on 1 October 1976, with subsequent payments being due on 1 October of each succeeding year, up to and including 1 October 1990. Interest is charged on the unpaid balance during this period at the rate of 3.225 percent per annum. Cash contributions required subsequent to 30 September 1991 shall be computed in accordance with the basic 30 percent requirement stipulated in Section 204 of the Flood Control Act of 1965, Public Law 89-298 and House Document 231, 89th Congress; and

l. Recognizes that subsections (b), (c), and (e) of Section 221 of the "Flood Control Act of 1970," Public Law 91-611 shall apply to paragraph (k) above; and

m. Comply with Section 601 of Title VI of the Civil Rights Act of 1964, Public Law 88-352, that no person shall be excluded from participation in, denied the benefits of, or subjected to discrimination in connection with the project on the grounds of race, creed, or national origin.

8. Status of Local Cooperation. The following subparagraphs capsulize the history of assurances for local cooperation on the Lake Pontchartrain project.

a. Assurances from the Board of Levee Commissioners of the Orleans Levee District for the Barrier Plan portion of the project were originally accepted on 30 September 1966. Because of the rising non-Federal cost of participation and the widespread benefits to be derived by surrounding parishes, the Orleans Levee District requested assistance in carrying out the assurances. Accordingly, the Governor of the State of Louisiana by Executive Order Number 80, dated 5 March 1971, designated the Louisiana Department of Public Works as the local coordinating agency. Through this procedure the Orleans Levee District, the Pontchartrain Levee District, and the St. Tammany Parish Police

Jury were designated the assurers of local cooperation for the portions of the subject project within their respective jurisdictions. The designation was under the authority of Section 81, Title 38, Louisiana Revised Statutes of 1950.

b. Assurances from the Pontchartrain Levee District were accepted on 7 October 1971. Due to the reluctance of the St. Tammany Parish Police Jury to furnish required assurances of local cooperation for that portion of the project within St. Tammany Parish, the Governor of the State of Louisiana executed assurances on behalf of the St. Tammany Parish Police Jury on 8 May 1972 under authority of Section 81, Title 38, Louisiana Revised Statutes of 1950.

c. Recognizing the increasing burden of providing required matching local funds, Representative F. Edward Hebert sponsored Congressional legislation to defer required local payments over an extended period of time. This legislation was enacted in March 1974 as Section 92 of the Water Resources Development Act of 1974. This Act modified the authorizing law by providing that non-Federal public bodies may agree to pay the unpaid balance of their required cash payment due, with interest, in annual installments in accordance with a specified formula.

d. For the "Barrier Plan" we have received the necessary agreements, legal opinions, and resolutions from the Orleans Levee District, jointly from the Lake Borgne Basin Levee District and the St. Bernard Parish Police Jury, and from the Pontchartrain Levee District approving the deferred payment plan and incorporating the requirements of Public Law 91-646 ("Uniform Relocation and Real Property Acquisition Policies Act of 1970") and items (b) (c) and (e) of Section 221 of the "Flood Control Act of 1970," Public Law 91-611. We have also received the required agreements, legal opinions, and assurances from the Louisiana Department of Transportation, Office of Public Works and the Governor of Louisiana stating that the Office of Public Works is now the local sponsor on behalf of the St. Tammany Parish Police Jury and that the Office of Public Works will lend financial assistance, when required, to the Pontchartrain Levee District.

e. On 13 July 1978 the Louisiana Legislature, in Act 716 of 1978, La. R.S. 38:1471, effectuated a conveyance to the Jefferson Levee District of all lands presently held by the Pontchartrain Levee District that lie on the east side of the Mississippi River in the parish of Jefferson. This transfer became effective 1 January 1979. On 9 January 1979, the Pontchartrain and Jefferson Levee District agreed between themselves, upon the specifics of the division between them, including but not limited to, division of indebtedness for obligations for the Pontchartrain Levee District for which the Jefferson Levee District assumed a pro rata share.

f. With the change to a high level plan of protection and approval of the revised EIS (Feb 1985), a supplemental agreement was requested from the Board of Levee Commissioners of the East Jefferson Levee District (formally Jefferson Levee District). The supplemental agreement was signed on 16 January 1987. By letter dated 6 February 1987, the Chief of Real Estate Division, New Orleans District requested a copy of the Levee District's latest financial statement and a letter indicating that the East Jefferson Levee District intends to meet its financial obligation for the project by asking the voters of Jefferson Parish to support a millage increase to finance the hurricane protection work. The millage issue is currently scheduled to go to the voters in November 1987.

9. Views of Local Interests. The East Jefferson Levee District is the agency responsible for providing local interest assurances for this feature of the project. The plan presented herein was coordinated in detail with the East Jefferson Levee District engineering staff and bears the approval of that agency.

LOCATION OF PROJECT AND TRIBUTARY AREA

10. Project Location. The Jefferson Parish Lakefront levee, a segment of the Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection project, as shown on Plate 1, is located in southeastern Louisiana in Jefferson Parish. The levee is oriented in an east-west direction and provides protection to the highly developed areas on the east bank of Jefferson Parish from Lake Pontchartrain on the north. The western limits of the proposed levee works joins the Jefferson/St. Charles Parish levee-floodwall which is detailed in Design Memorandum No. 17A, General Design dated July 1987. The eastern limit ties into the west guide levee of the 17th Street Outfall Canal, which will be the subject matter for designs presented in GDM No. 20.

11. Tributary Area. The tributary area of Lake Pontchartrain varies in character from flat tidal marsh at or near sea level to upland areas of significant relief with natural ground elevations as high as 250 feet above National Geodetic Vertical Datum (NGVD)1/. Runoff from within the project area drains into either Lake Borgne or Lake Pontchartrain, generally by pumping from within the protected areas on the south shore of Lake Pontchartrain, although some developed areas located on alluvial ridges in St. Charles and St. Bernard Parish are drained by gravity. In addition to runoff from the project area, Lake Pontchartrain receives the runoff of 4,700 square miles located to the north and west of the lake. During major floods on the Mississippi River and its tributaries, flood flows may be diverted

1/ Elevations throughout this GDM are in feet referred to National Geodetic Vertical Datum unless otherwise noted.

from the Mississippi River to Lake Pontchartrain through the Bonnet Carre Spillway, a controlled overbank floodway constructed under the Flood Control, Mississippi River and Tributaries project.

PROJECT PLAN

12. General. The project, as shown on the flyleaf map, consists of two separate and distinct major features - the Chalmette Area Plan and the Lake Pontchartrain High Level Plan. This memorandum is concerned only with a segment of the latter, the Jefferson Parish Lakefront levee. The overall Lake Pontchartrain High Level Plan is described in "Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project" Reevaluation Study dated July 1984.

13. Jefferson Parish Lakefront Levee. The lakefront levee and floodwall work described in this memorandum is located in Jefferson Parish on the east bank of the Mississippi River. The existing levee is approximately 10.4 miles in length; its western end ties-in to the Jefferson/St. Charles Parish return levee and on the east to the west guide levee of the 17th Street Outfall Canal. The levee is bounded on the north by Lake Pontchartrain.

The area located on the south side of the lakefront levee is a highly developed residential and commercial area of about 30,820 acres in which reside approximately one-half million people.

The existing lakefront levee was constructed under the Flood Control Act of 24 July 1946, House Document 691, 79th Congress, 1st Session, Public Law 526, 79th Congress and modified by the Flood Control Act of 17 May 1950, Senate Document 139, 81st Congress, 2nd Session which incorporated the project into the "Flood Control, Mississippi River and Tributary Project." The levee work under this 1950 authority was completed in May 1965. Levee grades were constructed to elevation 10.0 feet n.g.v.d.

In the late 1960's, in order to provide a higher degree of interim protection in Jefferson Parish prior to construction of the proposed barriers, local interest raised the existing levee by driving steel sheetpiling into the crown of the levee and placing additional clay fill atop the embankment of the 1950 authorized levee. Typical ground lines of the existing levee are shown on Plates 17 through 20. This work provided an additional 3 to 4 feet of height to the levee.

The plan detailed in this report consists of 49,622 feet of earthen levee and the levee will be constructed using geotextile and from hauled clay fill, obtained from the Bonnet Carre' Spillway. The plan recommended herein calls for use of a high

strength geotextile to reinforce the soil foundation so that the levee can be brought to grade and section using the minimum amount of fill and no additional rights-of-way. The proposed plan for this levee reach can be accomplished within existing rights-of-way and will not require removal of the existing "Linear Park" which is immediately contiguous to the shoreline of Lake Pontchartrain. The linear park in Jefferson Parish is an asphalt paved strip which extends the entire 10.4 mile length of the lakefront levee and provides for a highly utilized outdoor recreation area. Activites included among these are bicycling, walking, and fishing. The "park" also has several areas where park-type benches have been placed and facilities for picnicking are available. Other recreational facilities which exist at the lakefront include boat ramp facilities at both Bonnabel Boulevard and Williams Boulevard at approximate stations 485+00 and 145+00, respectively. Floodwall work addressed in this GDM are the walls that tie-in to Pumping Station Numbers 1 and 4 (approximate B/L Stations 472+00 and 124+00, respectively); the T-wall closure at Old Pumping Station Number 4 (B/L Station 117+00); and the floodwalls and roadgates that are required at Causeway Boulevard (B/L Station 436+00).

14. Departures From Project Document Plan. The project document plan (Barrier Plan) called for placing riprap slope protection on the 1950 authorized levee. The purpose of the riprap was to protect the levee slope from erosion and to reduce the height of wave run-up due to the added functional effects of the riprap. The Reevaluation Study, Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project, July 1984, recommended that the existing 1950 authorized levee be raised and enlarged by using hydraulically dredged clay material taken from the bottom of Lake Pontchartrain. The Reevaluation Report plan also requires riprap toe protection to guard against erosion of the new fill berm materials that would project out into Lake Pontchartrain approximately 390 feet from the current shoreline. The plan recommended herein constitutes a significant departure from the Reevaluation Report plan since all work will be accomplished within existing rights-of-way and no lake bottom will be disturbed. Borrow material to construct the geotextile plan recommended herein will be obtained from the Bonnet Carre' Spillway and hauled to the site.

HYDROLOGY AND HYDRAULICS

15. Hydrology and Hydraulics.

a. General. The Hydrology and Hydraulics Analysis Design Memorandum for the Lake Pontchartrain Barrier Plan was presented in a series of three separate reports entitled "Design Memorandum No. 1" and subtitled "Part 1 - Chalmette, Part II - Barrier, and

Part III - Lakeshore." Part 1 - Chalmette was approved on 27 October 1966; Part II - Barrier was approved on 18 October 1967; and Part III - Lakeshore was approved on 6 March 1969. These documents present detailed descriptions and analyses of the tidal hydraulic methods and procedures used in the tidal hydraulic design of the features of the Plan and include the essential data, assumptions, and criteria used and results of studies which provide the bases for determining surges, routing, wind tides, runup, overtopping, and frequencies. The criteria applicable to this levee feature and the hydraulic designs are presented in Appendix A of this memorandum.

b. Surface Drainage. The proposed floodwall and levee construction recommended herein will not significantly affect existing surface drainage patterns. No modifications to existing area storm and sanitary sewer utilities are required.

GENERAL GEOLOGY

16. Scope. The geology presented herein is based on regional and local surface and subsurface information. It is intended to present a general project overview of the pertinent geologic data and interpretation.

17. Physiography and Topography. The project site is located within the Central Gulf Coastal Plain region on the flanks of the Mississippi River Deltaic Plain. Pronounced physiographic features of the area are lakes, shorelines, canals, an abandoned Mississippi River delta, the Mississippi River, beach ridges, marshes, and swamps. Elevations in the vicinity vary from -15.0 feet NGVD in Lake Pontchartrain to +20.0 feet NGVD along the crown of the mainline Mississippi River levees.

18. Surface Investigation. Aerial photographs, topographic maps, and geologic maps were used in conjunction with published literature to define the geologic setting of the project area.

19. Subsurface Investigation. Fifty general type borings (1 - 7/8 inch I.D.) and thirty-eight 5-inch undisturbed borings were made for this project. Boring depths varied from 39 to 117 feet and generally encountered artificial fill, Holocene soils, and the Pleistocene horizon. The boring data, used in conjunction with other available data, was the primary source for site specific geologic foundation interpretations. Refer to Table 1 for boring summary.

20. Geophysical Investigation. No geophysical methods were used at the project site. Present refractive methods would not have delineated the various Holocene environments.

TABLE 1
BORING SUMMARY
JEFFERSON PARISH HURRICANE PROTECTION (1986)

UNDISTURBED BORINGS

Boring No.	Date Completed	Station	Offset* (Footage From B/L)	Ground Surface Elevation (NGVD)	Depth Drilled (Footage)	Overburden Thickness (Holocene)	Top of Pleistocene (Elevation)	Pleistocene Penetration (Footage)	Boring No.
15-U	5-22-85	22+96	800 F.S.	-3.9	47.5	46.5	-50.4	1.0	15-U
16-U	1-25-85	22+96	125 F.S.	4.6	98.2	53.0	-48.4	45.2	16-U
17-U	8-28-84	53+42	82 P.S.	3.4	86.5	49.6	-46.2	36.9	17-U
18-U	8-30-84	53+23	9 F.S.	9.0	110.5	55.8	-46.8	54.7	18-U
19-U	1-18-85	53+42	145 F.S.	4.0	101.6	51.5	-47.5	50.1	19-U
20-U	12-10-84	82+50	135 F.S.	4.4	100.7	56.2	-51.8	44.5	20-U
21-U	5-21-85	82+50	655 F.S.	-4.3	47.8	>47.8	<-52.1	N.A.	21-U
22-U	9-20-84	112+97	98 P.S.	1.9	82.5	50.8	-48.9	31.7	22-U
23-U	9-27-84	112+97	0	10.1	94.2	58.7	-48.6	35.5	23-U
24-U	10-03-84	145+30	115 P.S.	4.4	85.6	51.7	-47.3	33.9	24-U
25-U	10-11-84	145+19	150 F.S.	4.4	103.0	57.5	-53.0	45.5	25-U
26-U	5-17-85	145+30	755 F.S.	-10.0	39.5	34.4	-44.4	5.1	26-U
26-GU	10-12-84	266+10	0	6.3	79.3	59.8	-53.5	19.5	26-GU
27-U	11-30-84	180+05	88 F.S.	4.4	102.5	53.5	-49.1	49.0	27-U
28-U	10-05-84	180+05	2 F.S.	10.3	90.2	59.0	-48.7	31.2	28-U
29-U	10-11-84	223+85	100 P.S.	0.1	82.5	53.4	-53.3	29.1	29-U

* F.S. - FLOOD SIDE
* P.S. - PARISH SIDE

TABLE 1 - (Cont'd)
BORING SUMMARY
JEFFERSON PARISH HURRICANE PROTECTION (1986)

UNDISTURBED BORINGS

Boring No.	Date Completed	Station	Offset (Footage From B/L)	Ground Surface Elevation (NGVD)	Depth Drilled (Footage)	Overburden Thickness (Holocene)	Top of Pleistocene (Elevation)	Pleistocene Penetration (Footage)	Boring No.
30-U	03-13-85	223+85	70 P.S.	-5.3	47.5	43.7	-49.0	3.8	30-U
31-U	11-19-84	254+10	120 F.S.	2.6	98.5	52.9	-50.3	45.6	31-U
32-U	10-18-84	254+10	0	9.0	86.3	54.8	-50.8	26.5	32-U
33-U	10-17-84	284+10	85 P.S.	1.2	82.5	55.8	-54.6	26.7	33-U
34-U	11-16-84	284+10	135 F.S.	1.6	102.3	64.7	-63.1	37.6	34-U
35-U	03-08-85	284+10	580 F.S.	-6.0	43.3	>43.3	<-49.3	N.A.	35-U
36-U	11-07-84	317+75	110 F.S.	1.5	102.4	54.8	-53.3	47.6	36-U
37-U	03-07-85	314+75	755 F.S.	-6.3	43.5	42.5	-48.8	N.A.	37-U
38-U	10-24-84	356+35	100 P.S.	-0.1	80.2	72.7	-72.8	7.5	38-U
39-U	10-25-84	383+50	5 F.S.	7.0	86.5	65.7	-58.7	21.0	39-U
40-U	06-13-85	383+50	120 F.S.	2.6	82.5	60.5	-57.9	22.0	40-U
41-U	03-05-85	383+50	763 F.S.	-5.7	42.6	>42.6	<-48.3	N.A.	41-U
42-U	06-20-85	413+69	120 F.S.	4.0	88.7	60.7	-56.7	28.0	42-U
43-U	02-26-85	413+69	805 F.S.	-4.7	47.5	>47.5	<-52.2	N.A.	43-U
44-U	10-29-84	438+65	120 P.S.	0.4	81.6	52.4	-52.0	29.2	44-U
45-U	10-31-84	438+65	110 F.S.	3.3	96.7	58.7	-55.4	38.0	45-U

TABLE 1 - (Cont'd)
BORING SUMMARY
JEFFERSON PARISH HURRICANE PROTECTION (1986)

UNDISTURBED BORINGS

Boring No.	Date Completed	Station	Offset (Footage From B/L)	Ground Surface Elevation (NGVD)	Depth Drilled (Footage)	Overburden Thickness (Holocene)	Top of Pleistocene (Elevation)	Pleistocene Penetration (Footage)	Boring No.
46-U	02-22-85	448+58	1080 F.S.	-7.5	43.5	>43.5	< 51.0	N.A.	46-U
47-U	12-07-84	492+00	100 P.S.	-1.3	86.5	49.2	-50.5	37.3	47-U
48-U	11-08-84	492+00	0	9.1	89.6	59.6	-50.5	30.0	48-U
49-U	11-19-84	492+00	85 F.S.	5.1	101.3	54.7	49.6	46.6	49-U
50-U	11-29-84	521+20	130 F.S.	5.2	97.6	59.6	-54.4	38.0	50-U
51-U	02-20-85	521+20	960 F.S.	-6.4	44.1	>44.1	<-50.5	N.A	51-U
GENERAL TYPE BORINGS									
12-G	01-31-85	4+87	160 F.S.	5.1	101.5	57.5	-52.4	44.0	1-G
13-G	02-01-85	12+73	145 F.S.	4.9	102.0	59.8	-42.2	54.9	2-G
14-G	02-06-85	43+92	135 F.S.	4.2	102.0	51.5	-47.3	50.5	3-G
15-G	06-10-85	63+60	138 F.S.	4.4	110.5	49.0	-44.6	61.5	15-G
16-G	01-14-86	72+95	110 F.S.	4.3	103.0	59.0	-54.7	44.0	16-G
17-GA	12-13-85	92+95	135 F.S.	1.2	103.0	52.0	-50.8	51.0	17-GA
18-G	10-12-85	102+95	133 F.S.	1.1	103.0	49.0	-47.9	54.0	18-G
19-G	10-15-85	135+25	141 F.S.	3.0	103.0	51.5	-48.5	51.5	19-G
20-G	10-10-85	158+10	130 F.S.	2.9	103.0	49.0	-46.1	54.0	20-G

TABLE 1 - (Cont'd)
BORING SUMMARY
JEFFERSON PARISH HURRICANE PROTECTION (1986)

GENERAL TYPE BORINGS

Boring No.	Date Completed	Station	Offset (Footage From B/L)	Ground Surface Elevation (NGVD)	Depth Drilled (Footage)	Overburden Thickness (Holocene)	Top of Pleistocene (Elevation)	Pleistocene Penetration (Footage)	Boring No.
21-G	10-09-85	170+05	138 F.S.	2.9	103.0	49.5	-46.6	53.5	21-G
22-G	10-03-85	190+05	128 F.S.	1.5	103.0	51.5	-50.0	51.5	22-G
23-G	10-02-85	200+05	127 F.S.	1.5	103.0	51.5	-50.0	51.5	23-G
24-G	09-26-85	234+10	117 F.S.	3.2	105.5	54.0	-50.8	51.5	24-G
25-G	05-17-85	244+16	118 F.S.	1.3	102.0	50.5	-49.2	51.5	25-G
26-G	05-16-85	264+10	120 F.S.	3.1	104.5	60.5	-57.4	44.0	26-G
27-G	09-24-85	274+10	100 F.S.	3.4	105.5	66.5	-63.1	39.0	27-G
28-G	09-19-85	294+10	98 F.S.	3.9	105.5	56.5	-52.6	49.0	28-G
29-G	05-15-85	303+65	132 F.S.	2.3	104.5	50.5	-48.2	54.0	29-G
30-G	05-10-85	324+15	132 F.S.	4.1	107.0	58.0	-53.9	44.0	30-G
31-G	05-14-85	334+15	131 F.S.	2.3	104.5	60.5	-58.2	44.0	31-G
32-G	05-08-85	344+20	110 F.S.	2.5	104.5	78.0	-75.5	26.5	32-G
33-G	05-07-85	368+52	130 F.S.	3.0	104.5	83.0	-80.0	21.5	33-G
34-G	11-06-84	373+50	130 F.S.	1.6	101.5	>101.5	<-99.5	N.A.	34-G
35-G	10-29-84	393+56	125 F.S.	1.6	103.5	65.0	-63.4	38.5	35-G
36-G	04-30-85	403+52	120 F.S.	2.0	102.0	75.5	-73.5	26.5	36-G

TABLE 1 - (Cont'd)
BORING SUMMARY
JEFFERSON PARISH HURRICANE PROTECTION (1986)

GENERAL TYPE BORINGS

Boring No.	Date Completed	Station	Offset (Footage From B/L)	Ground Surface Elevation (NGVD)	Depth Drilled (Footage)	Overburden Thickness (Holocene)	Top of Pleistocene (Elevation)	Pleistocene Penetration (Footage)	Boring No.
37-G	04-25-85	423+52	115 F.S.	1.8	102.0	58.0	-56.2	44.0	37-G
38-G	04-22-85	433+17	117 F.S.	2.6	104.5	53.0	-50.4	51.5	38-G
39-G	04-11-85	448+58	123 F.S.	3.8	104.5	53.0	-49.2	51.5	39-G
40-G	04-09-85	458+58	109 F.S.	3.9	104.5	53.0	-49.1	51.5	40-G
41-G	04-02-85	480+45	73 F.S.	8.0	109.5	58.0	-50.0	51.5	41-G
42-G	03-26-85	500+45	130 F.S.	4.5	104.5	65.5	-61.0	39.0	42-G
43-G	03-27-85	510+45	93 F.S.	3.8	104.5	55.5	-51.7	49.0	43-G
44-G	04-11-85	531+15	105 F.S.	5.1	104.5	58.0	-52.9	46.5	44-G
45-G	03-15-85	541+15	130 F.S.	6.8	107.0	68.0	-61.2	39.0	45-G
Borrow Borings - General Type									
1-BG	04-03-85	22+86	3070 F.S.	-12.7	69.0	52.0	-64.7	17.0	1-BG
2-BG	03-29-85	53+62	3070 F.S.	-6.3	73.0	65.5	-52.8	26.5	2-BG
3-BG	03-27-85	82+50	3065 F.S.	-10.7	70.5	29.0	-39.7	41.5	3-BG
4-BG	03-25-85	112+85	3060 F.S.	-10.2	71.0	49.5	-59.7	21.5	4-BG
5-BG	03-21-85	145+30	3050 F.S.	-12.0	68.5	29.5	-41.5	39.0	5-BG

TABLE 1 - (Cont'd)
BORING SUMMARY
JEFFERSON PARISH HURRICANE PROTECTION (1986)

BORROW BORINGS - GENERAL TYPE

Boring No.	Date Completed	Station	Offset (Footage From B/L)	Ground Surface Elevation (NGVD)	Depth Drilled (Footage)	Overburden Thickness (Holocene)	Top of Pleistocene (Elevation)	Pleistocene Penetration (Footage)	Boring No.
6-BG	03-19-85	179+12	3067 F.S.	-16.7	63.5	32.0	-48.7	31.5	6-BG
7-BG	04-14-85	223+58	3065 F.S.	-11.6	68.5	35.0	-46.6	33.5	7-BG
8-BG	04-05-85	253+91	3065 F.S.	-10.8	71.0	39.0	-49.8	32.0	8-BG
9-BG	04-16-85	284+22	3065 F.S.	-11.5	67.8	36.9	-48.4	30.9	9-BG
10-BG	04-17-85	314+15	3050 F.S.	-10.0	68.0	39.5	-49.5	28.5	10-BG
11-BG	04-18-85	343+95	3060 F.S.	-11.5	69.0	42.0	-53.5	27.0	11-BG
12-BG	04-19-85	383+86	3060 F.S.	-10.6	70.8	54.8	-65.4	16.0	12-BG
13-BG	04-23-85	413+69	3050 F.S.	-11.7	70.6	41.5	-53.2	29.1	13-BG
14-BG	04-24-85	458+65	3060 F.S.	-10.8	68.5	34.3	-45.1	34.2	14-BG
15-BG	04-25-85	501+11	3075 F.S.	-11.7	66.0	36.8	-48.5	29.2	15-BG
16-BG	04-26-85	531+16	3050 F.S.	-12.3	68.3	39.5	-51.8	28.8	16-BG

REGIONAL GEOLOGY

21. Geologic Structure. The project site is located within the Gulf Coastal Plain Province. The province extends east to west from Georgia to Texas and north to south from southern Illinois to the Gulf of Mexico continental shelf. The central portion of the province and area of project location is the Mississippi Embayment. The embayment is structurally oriented in a north-south direction with its axis passing locally through a point east of Houma, Louisiana.

The embayment is in excess of 60 million years old and with the addition of new sediment is continuously developing. Tertiary and quaternary sediment thicknesses presently exceed 40,000 feet near the gulf coastline. This tremendous accumulation of sediments has caused a downwarping of the underlying basement rock resulting in the deformation and faulting of that sediment. Such massive accumulations are also associated with higher than normal Quaternary sediment consolidations and stresses that also produces both regional and local faults and structural deformations such as folds. Salt domes, diapiric formations of deeply seated Triassic-Jurassic evaporitic deposits, have also produced a locally faulted and massively deformed subsurface. These surficial extrusions or near surficial intrusions usually result in large, easily mined halite and gypsum deposits. Diapiric movement appears to be pre-Quaternary in age.

22. Faulting. A series of subsurface normal faults trending NE to SW and NW to SE are common in the area, but lack surface expression in the immediate project area. Most of these faults, classic down to the basin normal faults, are associated with the structural deformation of the sedimentary deposits, resulting from differential settlement of the subsiding sediments. Local faulting is somewhat responsible for the north shoreline orientation of Lake Pontchartrain. As previously stated, diapiric salt movement has caused local, generally radial type normal faulting.

23. General Historical Geology and Geomorphology. The Holocene/Recent geologic history of the project area is directly related to the developing Mississippi River. The Mississippi River was formed during the Nebraskan stage, the first glacial advance of the Pleistocene Epoch. Sea level at that time was approximately 450 feet below present level due to the massive continental accumulations of ice. Subsequent to this first glacial period, three other major cycles of continental glacial advancement and recession occurred. These advances (waxing glaciation) and retreats (waning glaciation) have respectively resulted in periods of Mississippi River degradation (erosion or stream entrenchment) and aggradation (sediment deposition or channel filling).

During the last glacial cycle (Wisconsin), the lower Mississippi Embayment experienced a major Mississippi River entrenchment and stratigraphic incision of older Pleistocene and Tertiary deposits. The axis of this ancestral trench runs southeast to northwest between Baton Rouge and Lafayette and southward through a point near Houma, Louisiana. This orientation and location approximates the present central portion of the alluvial valley. During this period, the various tributaries of the Mississippi River also experienced entrenchment.

As glacial meltwaters returned to the oceanic basins, sea level rose and eventually stream gradients decreased. Decreased Mississippi River gradients and associated energy losses resulted in a massive coarse-grained alluviation of the entrenched valley. A braided river system resulted from these factors. Continued deposition of coarse-grained material within the valley directly above the incised and formerly exposed Pleistocene surface resulted in a massive coarse-grain blanket that is now referred to as the Holocene substratum.

As stream gradients stabilized, grain size and sediment load decreased to such an extent that a single meandering channel, forerunner of the modern Mississippi, formed and the braiding characteristic ceased. A top stratum comprised of the finer grain size sediment and representing the various deltaic and fluvial environments developed within the Mississippi River floodplain.

Lateral and southern deltaic progradation resulted from a meandering Mississippi River. As a result of continued meandering, channel shifts, and massive deposition, a series of seven delta lobes were built gulfward. The seven major courses and associated delta lobes are presently identifiable in the region. The oldest course that can be detected is the Sale' - Cypremort (Maringouin), which is located along the present western boundary of the Mississippi River Deltaic Plain. The Sale' - Cypremort was active approximately 5,500 to 4,400 years before present. Concurrent with the abandonment of that course, the Mississippi River shifted eastward and occupied the Cocodrie course. It was during this period, approximately 4,600-3,500 years before present, that the first Holocene sediments of any significance were introduced into the study area. However, when the Mississippi River again shifted, this time to the west to occupy the Teche course (3,800 to 2,700 years before present), most of the residual Cocodrie Delta began to subside and was eventually destroyed by advancing gulf waters. Continuing to seek a shorter route to the gulf because of decreased channel gradient, the Mississippi River again shifted eastward to occupy the St. Bernard course. It was during this period, 2,800 to 1,700 years before present, that maximum Holocene deposition occurred in the study area; Lake Pontchartrain was encapsulated in its present

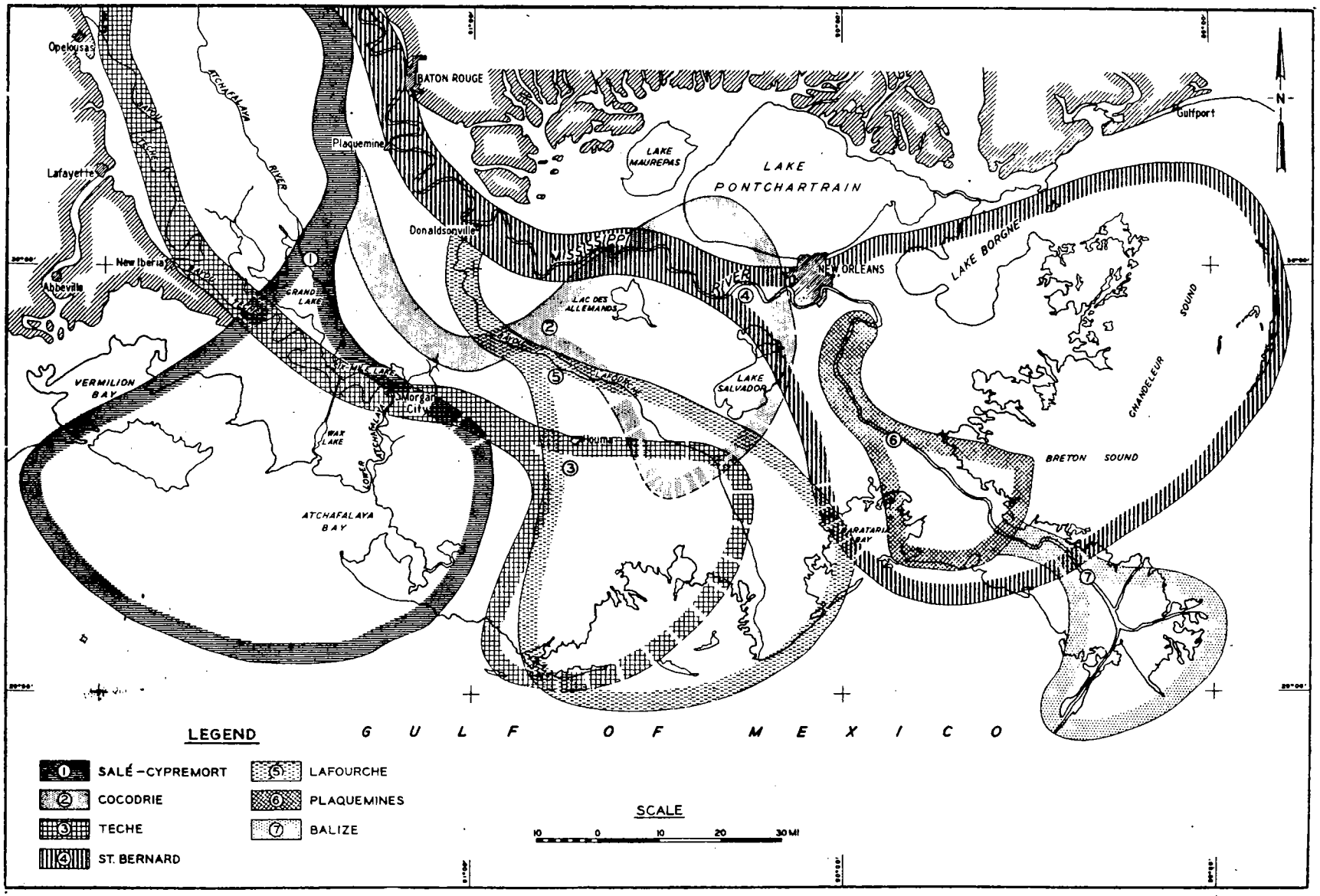


Fig. 1. Mississippi River deltas

form, and major physiographic features of the New Orleans area were developed. The Mississippi River, shifting briefly to the west once again, occupied the Lafourche Course from 1,900 to 1,300 years before present, and then finally shifted eastward to occupy the Plaquemine course (1,200 to 450 years before present) and the Balize or Modern course (450 years to the present); refer to Figure 1, Deltaic Plain of the Mississippi River.

At present, the Mississippi River is discharging most sediments near or at the edge of the continental shelf and into deep gulfwaters where dissipation occurs over a relatively large geographical area. Construction of flood protection levees and major flood control projects restrains the river from migrating laterally (thus, preventing the replenishment of much needed sediment in southeastern Louisiana).

When course abandonment occurs, deltaic accretion and sedimentation ceases. These processes are then replaced by the effects of subsidence and coastal erosion. This destructive phase is characterized by a series of environmental changes that includes landform deformation and shoreline retreat.

24. Regional Subsidence and Land Loss. The project area lies in a region of active subsidence. Regional subsidence rates vary from less than 0.5 feet to greater than 5.0 feet per century. Estimate project site rates vary from 0.33 to 0.49 feet per century (McFarlan, 1961 and Frazier, 1967). Rates of 5.00 or more feet per century are found in the active delta to the south. The high subsidence and land loss rates result from five major processes. They are:

a. Tectonic

   (1) Sea level rise

   (2) Basement sinking

   (3) Faulting

b. Consolidation or sediment compaction

c. Human influences

   (1) Water and hydrocarbon withdrawal

   (2) Commercial activities

   (3) Construction

d. Vegetative modifications

e. Erosion

Subsidence within the deltaic plain is a natural process and can be expected to continue. The effects may be mitigated by controlled sediment replenishment within marsh environments and areas of prior marsh existence by such methods as breached levees, strategically placed drainage structures, and pumping stations.

Local conditions indicate serious shoreline retreat and land loss within the Pontchartrain Basin. Saucier (1963) estimated shoreline retreat at 2 feet per year along Lake Maurepas and 5.4 feet per year along Lake Pontchartrain. Gagliano's basin calculations (1981) indicate land losses of 50 to 100 acres per year.

25. Earthquake History. The region is located in a stable area of low seismicity. The Mississippi River Deltaic Plain is encompassed by "Zone 1" on the Seismic Zone Map of the United States (Figure 2). This indicates that earthquake activity is a relatively rare event and usually less severe than average. Resulting damage to structures or levees in the immediate area should be minimal.

The only events that are known to have produced motion in the region were a series of New Madrid, Missouri, earthquakes dated 1811 to 1812. These earthquakes were felt in the New Orleans area. However, no direct report or geologic evidence suggests that the zone of damage extended to the study site. A few minor quakes have occurred in south Louisiana and southwest Texas which may have transmitted vibrations to the area. Calculated ground accelerations show that the greatest ground motions would likely occur from a major earthquake in the New Madrid Zone of the northern Mississippi Embayment. However, none of the calculated motions would exceed 0.05 g.

26. Groundwater. The shallow aquifers of the New Orleans area consist of discontinuous near-surface sands, such as former and present Mississippi River accretionary and distributary-channel deposits. These sands, because of quality and quantity constraints, are of little importance as aquifers. Where present, they are capable of supplying only small quantities of water (less than 50 gal/min).

Four deep freshwater aquifers in close proximity to the project area are: the Gramercy (historically referred to as the 200-foot sand), Norco (400-foot sand), Gonzales-New Orleans (700-foot sand), and the "1,200-foot" sand. The Gonzales-New Orleans aquifer, as determined by the Louisiana Geological Survey, is a good source of potable water within the New Orleans area and is presently being used in various cooling systems within the New

Orleans metropolitan area. Stratigraphically equivalent sands upriver from New Orleans are without similar nomenclature and are historically referred to simply as older deltaic or pre-Holocene deposits. The project effect on the water quality or volume per local aquifer will be minimal at worst.

27. Mineral Resources. Oil and gas production is absent in the immediate vicinity of the site, however, production is evident in Lake Pontchartrain adjacent to the project area and elsewhere in St. Charles Parish. Any future construction will not affect future oil and gas production or exploration, since directional drilling methods could be utilized.

Shell dredging within the confines of Lake Pontchartrain will not be affected by the work.

SITE GEOLOGY

28. Site Location and Description. The project is confined to that portion of the Jefferson Parish levee that runs parallel to the Lake Pontchartrain shoreline from Orleans Parish to St. Charles Parish. This represents approximately 10 miles of levee. The project alignment is nearly parallel to the regional geologic strike and traverses Holocene surficial deltaic and subsurface lacustrine and marine deposits. A review of geologic cross-sections B-B' through E-E' (Plates 50 through 63) further details regional geologic strike. Subsurface elevations at top of Pleistocene average -50 feet, but vary from -45 to -100 feet.

Historically, the site stratigraphic sequence indicates a period of aerially exposed Pleistocene prior to an early Holocene marine transgression. Gulf water transgression and the ensuing Pontchartrain Embayment are evidenced by the development of a locally extensive basal Holocene bay-sound deposit. The clayey bay-sound deposit averages 25 feet in thickness and provides parenting material for an overlying veneer of sandy beach referred to as the Pine Island trend. The beach (a large barrier spit) underlies the eastern quarter of the project and much of northern Orleans Parish. It formed the southeastern shoreline of the later developing Lake Pontchartrain. Structurally, the beach is relatively steep, fairly uniform in plan, and averages 5 feet in thickness at the site. Estimated ages of the beach and bay-sound deposits are 5,000 and 7,000 years, respectively.

Isolation of the embayment by the eastward prograding Cocodrie Delta (4,600 to 3,500 years before present) and subsequent sedimentation within the basin resulted in a 25 to 30

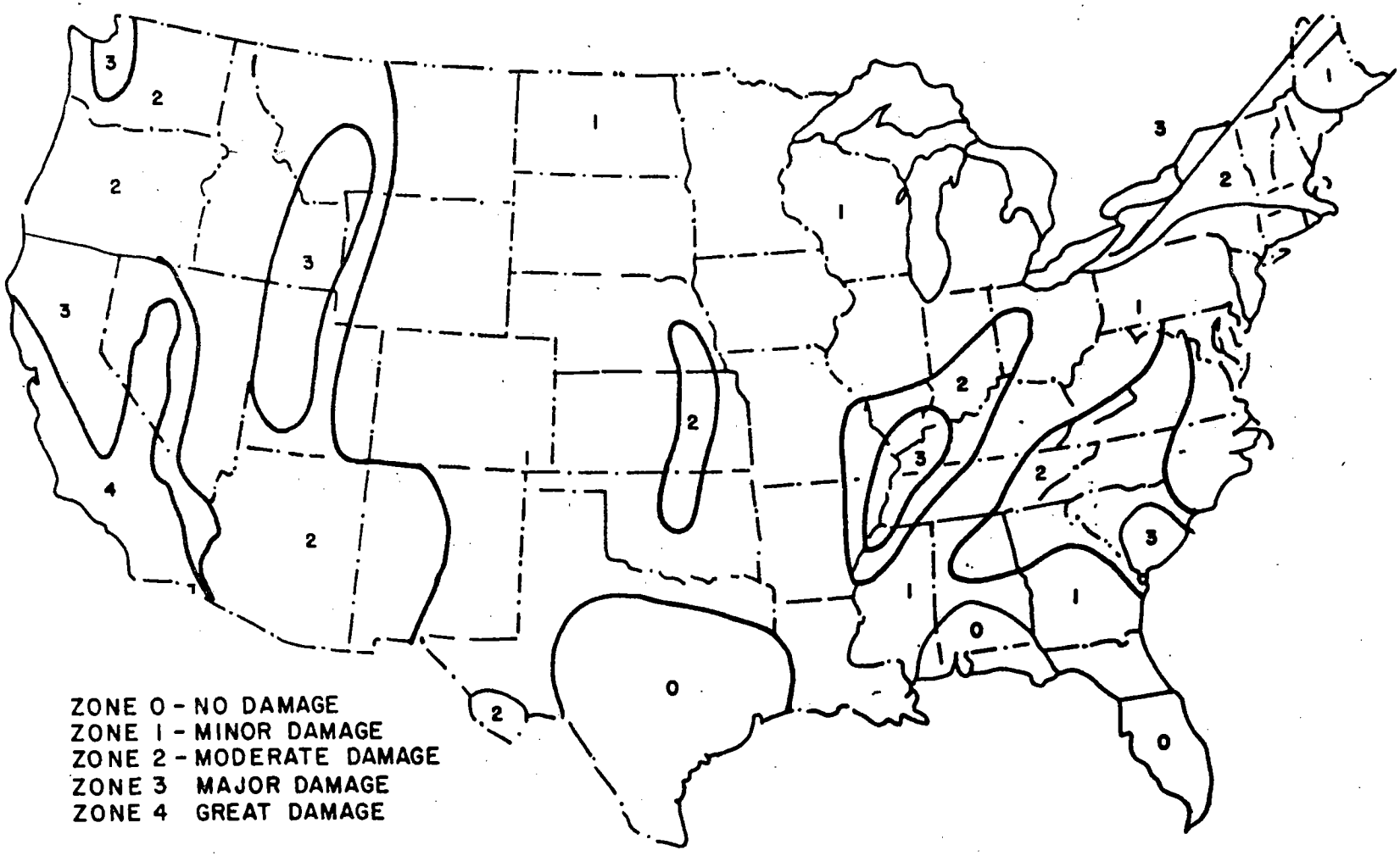


FIG. 2 Seismic Zone Map of the United States

FIGURE 2

feet thick sequence of thinly laminated silty clays. The basal portion of this sequence represents the end of marine conditions and the onset of a lacustrine (lake) environment that exists today.

The later prograding St. Bernard delta, 2,800-1,700 years ago, represented the last major period of active deltaic sedimentation within the basin. However, the project site is predominately void of intradeltaic type sediments.

The Lake Pontchartrain shoreline retreat, resulting from the St. Bernard course abandonment and associated decreased sedimentation, is evident throughout the area and may explain the presence of marsh-type deposits 3,000 feet offshore in the western portion of the proposed borrow site (refer to boring 1-BG).

A surficial marsh veneer, 5 to 15 feet thick throughout the project, represents the last stage of sedimentation in the area. Marsh-type sediments are a result of annual Mississippi River overbank flooding and subsequent deposition of clay and silt size particles landward of the natural levees. A review of borings in the vicinity of the artificial levee, indicates that the additional overburden acts as a surcharge, consolidating the underlying marsh deposits as much or more than 50 percent its original thickness. Along the centerline of the artificial levee, the additional loading of soil has, to a lesser extent, similarly affected the underlying lacustrine and bay-sound deposits.

Lake Pontchartrain offshore borings reveal a slightly elevated Pleistocene surface. This is indicative of one or a combination of the following: a southern stratigraphic dip, deltaic loading, lower subsidence rates, and/or possible normal faulting. Lake Pontchartrain bay-sound deposits are thinner (15 to 20 feet thick) than the onshore equivalent and beach development is minimal to non-existent (refer to Geologic Cross-sections 1A-1A' through 16A-16A', Plates 60 through 67 for further detail).

29. Detailed Holocene Environmental Descriptions.

a. Bay-sound deposits are fine to coarse grain sediments bottoming bays and sounds. Average thicknesses are 25 feet in the project area. Reworking of the bottom portion by burrowing marine organisms produces a mottled appearance and inclusions of materials that are distinct from the surrounding sediment. Colors are typically light grey to grey.

b. Beach deposits, a function of wave energy and direction within the Pontchartrain Embayment, are composed of fine quartz sand and large quantities of shells and shell fragments. The

beach sand is usually well sorted and contains few lenses of clay or silt. The sand is light gray to tan, but bleaches to a brilliant white upon exposure. The beach grades both laterally and vertically downward into a bay-sound deposit.

c. Lacustrine deposits are generally fine grained, thinly stratified, and average 25 feet in thickness. These characteristics are indicative of periodic deposition within a quiescent environment. Organic remains are more prominant in the upper 5 to 10 feet. The bottom one-third is characterized by an absence of organics and relatively massive clays; this may actually be a remnant of the Cocodrie prodelta.

d. A north-south trending abandoned distributary, located approximately 6,000 feet west of the Causeway Boulevard, is an entrenched channel of late Pleistocene or early Holocene age. Depth and width are 100 feet and 2,000 feet, respectively. The channel grades upward from sand to clay.

e. The marsh deposits are highly compressible organic soils that typically cover 95 percent of the area. They grade vertically downward from peat to organic clays and silts. Soil moistures generally exceed 100 percent, color varies from light grey to black, and consistencies vary from very soft to medium.

30. Detailed Pleistocene Soil Descriptions. The Pleistocene soils are a result of both deltaic and marine deposition. They represent both the regressive and transgressive phases and associated environments of an earlier Mississippi River deltaic system. The soils are, therefore, similar to the overlying Holocene. However, due to dessication, Pleistocene deposits are distinguished by a decrease in moisture contents, a stiffening of consistencies, a decrease in sampling penetration rates, an increase in oxidized sediments, and calcareous concretions.

31. Foundation Conditions. Representative geologic site conditions are displayed on cross-sections B-B' through E-E', AA-A'A' through CC-C'C', and 1A-1A' through 16A-16A' (respectively, Plates 50 through 53, 54 through 56, and 60 through 67). The three fence diagrams (Plates 47 through 49) exhibit regional strike, dip, and site conditions. The stratigraphy is basically tabular throughout except for minor undulations created by artificial sediment loads and differential settling. Potential for additional differential settlement, structural uplift, or need of construction dewatering and its effect on foundation conditions must be addressed.

A review of cross-section B-B' (Plate 50) details the geologic interpretations at the intersection of the return levee of northwest Jefferson Parish and the lakefront levee.

32. Future Investigations. Subsurface field investigations have been completed, and only occasional future investigations are anticipated if it becomes necessary to verify anomalous subsurface conditions.

33. Conclusion. Current geologic information indicates sensitive foundation conditions for future construction. However, settlement can be expected throughout the project as a result of lacustrine and marsh compaction by artificial sediment loads. Should future construction in the immediate project vicinity require dewatering or a lowering of the water table, settlement could occur.

SOILS AND FOUNDATIONS INVESTIGATION AND DESIGN

34. General. This section includes the soils and foundations investigation and design of the hurricane protection works for Jefferson Parish Lakefront area.

a. The project extends from the Jefferson and St. Charles Parishes boundary line at the lakefront to the Jefferson and Orleans Parishes boundary line at 17th St. Outfall Canal (a distance of approximately 10.4 miles). The proposed levee generally follows the alignment of the 1950's project.

The Jefferson Lakefront levee was divided into three soils reaches:

(1) Station 0+00 to 185+00 (Reach "A")

(2) Station 185+00 to 343+95 (Reach "B")

(3) Station 343+95 to 549+42.9 (Reach "C")

b. The recommended design presented is a full earthen levee section with geotextile reinforcement, crown El. 18.0 (net 16.0) for Reach A and, El. 16.0 (net 16.0) for Reaches B and C, respectively.

c. There are five pumping stations along the lakefront. I-Walls and T-Walls were designed adjacent to Pumping Stations Nos. 1 and 4. A floodgate was also designed at Pumping Station No. 4 for access to the "bike path". Design for hurricane protection at Pumping Stations Nos. 2 and 3 will be accomplished as a supplement to this DM. Two floodgates and the associated floodwalls were designed at Causeway Boulevard.

35. Field Exploration.

a. A total of thirty-eight (38) 5-in diameter undisturbed and fifty (50) general type soil borings were made for design and borrow in association with the Jefferson Lakefront project. The approximate locations of these borings are shown on plates 2 through 9. The Reevaluation Report recommended that the levee centerline be located approximately 130 feet to the floodside of the existing levee centerline. Therefore, the borings were concentrated along the expected centerline. Due to the utilization of the geotextile reinforcement, the proposed centerline as presented herein was shifted landward to optimize the design section. Plates 68 through 105 show the plots of the undisturbed borings with the applicable soils data. Plates 106 through 116 show logs of all borings taken.

b. Borrow borings for hydraulic fill (Plates 115 and 116) were taken in the area as stated in the feasibility study report. However, alternatives using hydraulic fill were eliminated during the design phase. Prior to preparation of plans and specifications, additional general type borrow borings will be taken in Bonnet Carre' Spillway for hauled clay.

36. Laboratory Tests. All samples obtained from the borings were visually classified and water content determinations were made on all cohesive samples. Unconfined compression tests were made on selected samples. Unconsolidated undrained (Q), consolidated undrained (R), consolidated drained (S), and consolidation (C) tests were performed on selected samples from the undisturbed borings. Liquid and plastic limit determinations were made on all samples tested for shear and/or consolidation. Results of laboratory tests are shown on soil borings plates 68 through 105, and on the detailed laboratory test data sheet appendix B1. Plates 75, 76, 83, 98, 101 through 103, and 117 through 121 show the design shear strengths.

37. Foundation Conditions. A generalized soil profile delineating the subsurface conditions both along and across the project alignment are shown on plates 47 through 67. The upper 20 feet of materials adjacent to the shoreline generally consist of artificial fills on the south and marsh deposits on the north. Further north into the lake, the upper 20-30 feet consist of natural lake deposits. The marsh deposits generally consist of very soft organic clays, clays and peat. Subsurface elevations of the top of the Pleistocene formation are approximately EL -50. These are the dominant features in the design of the foundation works. The foundation conditions are essentially the same throughout the Jefferson Lakefront project. Reach A posses a better shear strength with C and B progressively worse.

38. Design Problems. The principal problems to be resolved in the foundation design were as follows:

a. Type of protection

b. Stability

c. Geotextile reinforcement

d. Settlement

e. Foundation for structures

39. Types of Protective Works.

a. Twelve design alternatives had been investigated in detail for cost comparison. Two were adopted for more detailed analyses and are presented in this design memorandum.

(1) Alternative 1. Full levee section constructed with hauled clay would be built in stages. Levee centerlines were relocated landward due to hydraulic requirements. Geotextile reinforcement was designed to keep the stability at the required factor-of-safety. Detailed foundation design analyses are presented for the recommended plan.

(2) Alternative 2. A reentrant curve floodwall section (same as I-Wall for foundation analysis) on the levee was designed for this alternative. Typical design sections are shown on plates 44 and 45 without the presentation of the foundation analyses.

b. I-Wall and T-Wall will be constructed for tie-ins to Pumping Stations 1 and 4. Wall heights vary due to various dynamic wave loads. T-Walls were designed in lieu of I-Walls in some areas where I-Walls could not accommodate the structural requirement.

40. Design Analyses.

a. Bearing Capacity of the Geotextile Reinforced Levee. Since the reinforced embankment acts as a unit, bearing capacity has to be checked to insure that the embankment will not punch into the foundation soil. All geotextile reinforced sections have been analyzed, based on ASTM Special Technical Publication 952, Geotextile Testing and the Design Engineer, Joseph E. Fluet, Jr., editor, 1987, and were found to be adequate.

b. Shear Stabilities of the Earthen Levee with Geotextile Reinforcement. The stability of the levee was determined by the method of planes using the design "Q" shear strengths with appropriate hydraulic loading. The basic sections were set to fulfill hydraulic requirements during hurricane conditions. Thus levee centerlines had to be relocated landward and constricted because of limited right-of-way. Geotextile was introduced to stabilize the levee section. The levee section at Williams

Boulevard boat launch provides adequate berm for wve runup hence the centerline was not moved and geotextile was not required.

(1) To overcome weak foundation soil strengths geotextile reinforcement was designed to obtain the required factor-of-safety of 1.3. The following equation was used to determine the critical wedges which required the maximum tensile strength needed in the geotextile:

$$T = \frac{(D_a - D_p)1.3 - R_a - R_b - R_p}{12}$$

Where T = tensile strength in lbs./in. at 5% strain and less than 40% of ultimate.

(2) Once the critical wedges were determined by the LMVD method of planes analysis, this failure surface was checked by the Spencer Method in the PC-SLOPE micro computer program. The result of this analysis was used to determine the location of the geotextile and the corresponding tensile strength according to "Design with Geosynthetic" by Robert M. Koerner 1986. The embedment length "L" for pull-out was calculated by the following equation:

$$L = \frac{T}{[\gamma_1 h_1 \tan \phi_1 + C_1] + [\gamma_2 h_2 \tan \phi_2 + C_2]}$$

Subscript 1 denotes soil parameter above geotextile
Subscript 2 denotes soil parameter below geotextile

"L" was measured from the critical active wedge into the anchorage zone and an equal length also placed in the active wedge zone. Plates 122 through 127 show the stability analyses and the placement of the geotextile with representative calculations shown in Appendix B2. We intend to perform further refinement of the geotextile design during the preparation of the plans and specifications.

c. Shear Stability. The stability of the levees at Williams Boulevard and the I-Wall and T-Wall levees at the pumping stations, were determined by the method of planes analysis using the design "Q" strengths with propriate hydraulic loading and were based on a minimum factor-of-safety of 1.3. Results are shown on plates 128 through plate 143.

d. Cantilever I-Wall.

(1) I-Wall Stability. The required penetration of the steel sheet piling ground surface was determined by the method of planes for both "S" and "Q" cases. Factors-of-safety of 1.5 for static water and 1.25 for static water plus dynamic wave force were applied to design shear strengths as follows: ϕ developed =

arctan (tan ϕ available/factor-of-safety) and cohesion/factor-of-safety. Using the resulting shear strengths, net lateral soil and water pressure diagrams were developed for movement toward each side of the sheet pile. With these pressure distributions, the summation of horizontal forces was equated to zero for various tip penetrations, and the overturning moments about the tip of the sheets were determined. The required depth of penetration to satisfy the stability criteria was determined where the summation of the moments were equal to zero. Both "Q" and "S" cases were analyzed and the governing cases are presented on plates 144 through 162.

(2) Seepage Cutoff. The analyses for required penetration for seepage cut-off were performed by utilizing Lane's weighted creep ratio. The weighted creep distance was calculated as the sum of the vertical creep path distance plus one-third the horizontal creep path distance. Lane's weighted creep ratio is the ratio of the weighted creep distance to the maximum differential head and varies depending on soil type. The deeper pentration of the two analyses (stability and creep ratio) was selected as the recommended tip elevation of the sheet pile. All analyses showed that the stability analyses governed the penetration.

e. T-Wall.

(1) Bearing Pile Foundation. Ultimate compression and tension pile capacities versus tip elevations were developed for 12, 14 and 16 inch square prestressed concrete and 12 inch timber piles. Overburden stress in the soft clay material was limited to D/B = 15 in the "S" case. The design parameters used are shown in Tables 2 and 3. The estimated tip elevations are based on the factors-of-safety presented in Table 4.

TABLE 2
CONCRETE PILES

	Q-Case						S-Case					
	ϕ	Kc	Kt	Nc	Nq	δ	ϕ	Kc	Kt	Nc	Nq	δ
CH	0°	1.0	0.7	9.0	1.0	0°	23°	1.0	0.7	0	10	23°
SM	30°	1.5	0.75	0	22	30°	30°	1.5	.75	0	22	30°

TABLE 3
TIMBER PILES

	Q-Case						S-Case					
	ϕ	Kc	Kt	Nc	Nq	δ	ϕ	Kc	Kt	Nc	Nq	
CH	0°	1.0	0.7	9.0	1.0	0°	23°	1.0	0.7	0	10	23°
SM	30°	1.25	0.5	0	22	28°	30°	1.25	0.5	0	22	28°

TABLE 4
RECOMMENDED FACTOR-OF-SAFETY

	With Pile Load Test	W/O Pile Load Test
Q-Case	2.0	3.0
S-Case	2.0 (Dead load only)	3.0 (Dead load only)
	1.0 (Total load)	1.5 (Total load)

It is anticipated that during construction, test piles will be driven and load tested in the project area. The results of the pile load tests will be used to determine the length of the service piles. The results of the pile design load versus tip elevations analyses and subgrade moduli curves are shown on plates 163 through 169.

(2) Deep Seated Stability Analysis. A conventional stability analysis utilizing a 1.30 factor-of-safety incorporated into the soil parameters was performed for various potential failure surfaces beneath the T-wall sections. Analyses were performed for all T-wall sections and a representative of these analysis is shown on plate 170. The summation of horizontal driving and resisting forces results in a value that is negative for all failure surfaces, indicating that no additional load need be carried by the structure.

(3) Seepage Cut-Off. Steel sheet pile cutoff will be used beneath the T-Wall to provide protection against seepage. The analyses performed are the same as described in para 40.d. and the calculations are shown in Appendix B.

(4) Cofferdam. The cofferdam in front of Old Pumping Station No. 4 is utilized as part of the protection though the height is not adequate. A T-wall will be built behind the existing cofferdam to fulfill the height requirement. The cofferdam was analyzed with added dynamic wave with the results are shown in Appendix B.

(5) Settlement. Estimates of settlements beneath the all earthern levee with geotextile were made based on consolidation test data from the undisturbed borings. Settlement analyses consisted of developing curves of load (P) versus void ratio (e); load (P) versus depth; load (P) versus Cv and percent consolidation (U_Z%) versus time (t) for the strata in which consolidation will occur. One-way drainage was assumed in the settlement vs time calculation due to the nature of the clay soils. The computed settlement was increased by 25 percent to include the effects of possible lateral displacement of the foundation. Also, 10 percent shrinkage of the fill materials was included. Estimates of ultimate settlement versus time, including settlement between lift construction of the earthen levees are shown on plate 171. Settlements of the levees with Tie-in Walls were considered insignificant since there will be minimum load changes; thus, no detail analyses were performed.

(6) Erosion Protection. Due to the short duration of flood stage and the resistant nature of the clayey soils, no erosion protection other than sodding is considered necessary on the levee slopes along most of the levee alignment. The existing foreshore protection is adequate to protect the shoreline during "normal" wave wash conditions. The foreshore riprap has been in place for more than 25 years and currently is in good condition. Therefore, no additional foreshore work to provide erosion control is necessary.

DESCRIPTION OF PROPOSED STRUCTURES AND IMPROVEMENTS

41. Levees. The project levee will consist of an enlargement of the existing levee, originally constructed under Flood Control Act of 24 July 1946, Public Law 526, 79th Congress, House Document 691 and modified by Flood Control Act of 17 May 1950, Senate Document 139, 81st Congress, by which the work was incorporated into the project, "Flood Control, Mississippi River and Tributaries". The levee enlargement will, in general, extend from the Jefferson/St. Charles Parish Return Levee to the 17th Street Canal Levee Orleans Parish. The general location and alignment of the proposed levee will be along the existing alignment. The detailed alignment and profile of the levee are shown on plates 2 through 9. Typical levee design sections are shown on plates 17 through 20.

42. Floodwalls, Drainage Facilities, and Gates. I-type, T-type floodwalls, one swing gate, and two bottom roller gates will be constructed as follows:

a. Floodwalls.

(1) Vicinity of Drainage Pumping Station No. 4. I-type floodwalls will be provided at the following locations:

Sta. 100+00 W/L (= Sta. 114+95 B/L) to Sta. 101+04.45 W/L
Sta. 103+15.70 W/L to Sta. 104+07.00 W/L
Sta. 104+37.00 W/L to Sta. 104+70.98 W/L
Sta. 121+03.66 W/L to Sta. 122+83.60 W/L (= Sta. 128+05.00 B/L)

T-type, pile supported floodwalls will be provided at the following locations:

Sta. 101+04.45 W/L to Sta. 103+15.70 W/L
Sta. 104+70.98 W/L to Sta. 108+63.66 W/L
Sta. 110+53.66 W/L to Sta. 121+03.66 W/L

A 22 feet clear opening swing gate will be provided between stations 104+11.00 W/L and 104+33.00 W/L as described in paragraph 42.c.(1) below. These floodwalls, constructed on an earthen levee, will replace the existing deficient levee and steel sheet piling flood protection constructed by local authorities. The existing steel sheet piling will be pulled, cut, and re-driven to provide seepage cut-off under the T-type floodwalls. New steel sheet piling will be provided for the I-type floodwalls. The floodwalls will provide a transition between the all-earthen levee along the lakefront and the two drainage pumping stations in this area. Between stations 108+63.66 W/L and 110+53.66 W/L, local authorities constructed a new drainage pumping station providing front end protection to project grade. This flood protection work will be incorporated into the project. No additional work is required in this area. The detailed alignment and profile of the floodwalls and features contiguous thereto are shown on Plates 10 through 12. The typical design sections are shown on Plates 21 and 22. Details of the existing front end protection work at the drainage pumping station are shown on Plates 40, 42, and 43.

(2) Vicinity of Causeway Boulevard. I-type floodwalls will be provided between stations 400+00 W/L (= Sta. 434+75 B/L) and 401+89.08 W/L, and from station 402+67.83 W/L to station 404+58.87 W/L (= sta. 438+45 B/L). Two bottom roller gates will be provided at the Causeway Boulevard roadway crossing as described in paragraph 42.c(2) below. The detailed alignment and profile of the floodwall and features contiguous thereto are shown on Plates 13 and 14. The typical design sections are shown on Plate 23.

(3) Vicinity of Drainage Pumping Station No. 1. I-type floodwalls will be provided between stations 500+00 W/L (= Sta. 464+45.00 B/L) and 500+73.44 W/L, and from station 508+59.55 W/L to station 510+40.91 W/L (= Sta. 480+00 B/L). T-type, pile supported floodwalls will be provided from station 500+73.44 W/L to station 503+61.81 W/L, and from station 505+21.80 W/L to station 508+59.55 W/L. These floodwalls, constructed on an earthen levee, will replace the existing deficient levee and steel

sheet piling flood protection constructed by local authorities. The existing steel sheet piling will be pulled, cut, and re-driven to provide seepage cut-off under the T-type floodwalls. New steel sheet piling will be provided for the I-type floodwalls. The floodwalls will provide a transition between the all-earthen levee along the lakefront and the drainage pumping station facilities. Local authorities constructed a new drainage pumping station providing front end protection to project grades between stations 503+61.81 W/L and 505+21.80 W/L. This flood protection work will be incorporated into the project. No additional work is required in this area. The detailed alignment and profile of the floodwall and features contiguous thereto are shown on Plates 15 and 16. The typical design sections are shown on Plates 24 and 25. Details of the existing front end protection works at the drainage pumping station are shown on Plates 41 through 43.

b. Drainage Facilities.

(1) The floodwall alignment from station 101+04.45 W/L to 103+15.70 W/L crosses the discharge pipes of the old Jefferson Parish Drainage Pumping Station No. 4. The discharge pipes will be relocated through the floodwall as shown on Plates 22 and 36.

(2) The floodwall alignment from station 108+63.66 W/L to station 110+53.66 W/L crosses the discharge culverts and discharge pipes of the new Jefferson Parish Drainage Pumping Station No. 4. This reach of floodwall was constructed to project grades and project design parameters by local authorities. No additional work is required in this area. Details of this floodwall are shown on Plates 40, 42, and 43.

(3) The floodwall alignment from station 503+61.81 W/L to station 505+21.80 W/L crosses the discharge culverts and discharge pipes of the new Jefferson Parish Drainage Pumping Station No. 1. This reach of floodwall was constructed to project grades and project design parameters by local authorities. No additional work is required in this area. Details of this floodwall are shown on Plates 41 through 43.

(4) Local authorities constructed front end protection floodwalls on the lake side of the new Jefferson Parish Drainage Pumping Stations 2 and 3, located between stations 350+00 and 354+00 and between stations 210+00 and 221+45, respectively. These floodwalls were designed and constructed to the previous "Barrier Plan" design parameters and are, therefore, deficient for providing flood protection to the presently authorized "High Level Plan" project grades and design parameters. Preliminary analysis of these floodwalls indicates that substantial modifications to the existing pile foundations will be required to upgrade the

walls to support the higher loads imposed by the High Level Plan project storm. Since these walls provide interim protection and the required foundation upgrading will cause significant interruptions to the pumping stations facilities, it was recommended not to include the redesign of these walls in this document. These designs will be presented in a supplement to this design memorandum.

c. Gates.

(1) Swing Gate. One steel swing gate, on a pilesupported monolith, providing a 22 feet clear opening will be constructed in the vicinity of Drainage Pumping Station No. 4. The gate centerline will be at station 104+22.00 W/L. The gate is required for providing access to the existing bike path on the floodside of the levee. Details of this gate are shown on Plates 28 through 30.

(2) Bottom Roller Gates. One 31.5 feet clear opening and one 36.0 feet clear opening bottom roller gate will be provided across Causeway Boulevard (gate centerlines at stations 402+20.58 W/L and 402+45.08 W/L, respectively). The gate monoliths will be designed to be constructed in segments for allowing traffic flow during construction. Details of the gates are shown on Plates 31 through 34.

METHOD OF CONSTRUCTION

43. Recommended Levee Construction. The recommended plan employs high strength geotextile to reinforce the proposed haul fill semicompacted levee. Since there are three separate soils reaches along the Jefferson Parish lakefront, each reach will require a slightly different approach for construction because of the number of geotextile layers and the elevation of geotextile placement. Plates 17, 18, and 19 show geotextile placement requirements for Reaches A, B, and C, respectively. The existing levee will be degraded to the elevation required for installation of the initial or, in the case of Reach A (B/L sta. 1+00 to Sta. 185+00), the only geotextile.

Where sheet piling exists, it will be pulled or driven to a depth which will not interfere with construction. Since degrading of the levee and removal or driving of the sheet piling will temporarily lower the level of protection, the degraded gap will be limited to between 1,000 and 1,500 foot increments. Also, the contractor will be required to provide interim hurricane protection by having, on hand, sufficient sheeting to close the gap, if necessary, due to an impending hurricane or other storm.

The degraded material will be temporarily stockpiled on the existing levee for later use in the new levee design section or

placed directly therein. The limit of stockpiling will be determined during preparation of plans and specifications. After construction has progressed a few thousand feet, the excavated material, rather than stockpiling, will most likely be hauled to cover the geotextile and proceed with construction of the levee design section. Additional clay material required to complete the levee design section will be hauled from a borrow area in Bonnet Carre' Spillway (see plate 46 for location of proposed borrow). In the case of Soils Reaches B and C, the second geotextile layer will be placed at the prescribed elevation in the levee embankment during its construction. After time has elapsed for required settlement and consolidation, subsequent semicompacted lifts will be constructed by hauling material from the borrow area in Bonnet Carre' Spillway.

OTHER PLANS CONSIDERED

44. Alternative plans Considered.

a. A total of 12 different alternative plans were investigated during the preparation of this GDM. Ten of the alternatives, along with their estimated first costs, are listed below. Each plan that employs hydraulic fill is based on using borrow sites located approximately 3,000 feet offshore and parallel to the proposed levee. Plan 1 is the plan which was recommended in the 1984 Reevaluation Report. All of the plans were examined to a survey scope or better. Because of their first costs, they were eliminated from further study. Also, plans which called for hydraulic fill from the lake carry with them the potential for causing greater environmental damages.

PLAN	DESCRIPTION	COST
Plan No. 1	All Hydraulic Clay Fill - Gross El 16.5, Shell & Rock Protection Dike	$191 Million
Plan No. 2	Combination Haul/Hydraulic Clay Fill - Gross El 16.5, Shell & Rock Protection Dike	$179 Million
Plan No. 3	Combination Haul/Hydraulic Clay Fill - Gross El 15.5, Shell & Rock Protection Dike	N/A
Plan No. 4	I-Wall W/Combination Haul/Hydraulic Clay Fill Barge Berm, Shell & Rock Protection Dike	$145 Million
Plan No. 5	I-Wall W/Haul Clay Fill, W/O Barge Berm, Shell & Rock Shore Protection	$110 Million

PLAN	DESCRIPTION	COST
Plan No. 6	I-Wall W/Haul Clay Fill, W/O Barge Berm, W/GeoFabric, Shell & Rock Shore Protection	$102 Million
Plan No. 7	Combination Haul/Hydraulic Clay Fill - Gross El 16.5, W/GeoFabric, for Levee Only, Shell & Rock Protection Dike	$117 Million
Plan No. 8	Combination Haul/Hydraulic Clay Fill - Gross El 16.5, W/GeoFabric, for Levee & Dike, Shell & Rock Protection Dike	$122 Million
Plan No. 9	I-Wall W/Haul Clay Fill, W/Small Barge Berm (20' Crown), Shell & Rock Shore Protection	$132 Million
Plan No. 10	I-Wall W/Haul Clay Fill, W/Small Barge Berm (20' Crown), W/GeoFabric, Shell & Rock Shore Protection	$117 Million

b. Recurved I-Wall Plan. During the design of the recommended plan, the alternate plan presented on Plates 44 and 45, providing an I-wall with a re-entrant curve on the floodside face was considered. The re-entrant curve would reflect waves impacting on the walls, effectively lowering the required height of protection. The cost of this alternative is estimated to be $63,700,000. Because of the higher cost, the recurved I-wall plan was not recommended.

ACCESS ROADS

45. Access Roads. Vehicular access to the project site is available via many roads. Access to the levee is via Williams Boulevard, Clearview Parkway, Causeway Boulevard, Bonnabel Boulevard, and Hammond Highway. Water access is available via Lake Pontchartrain. The locations of the access roads are shown on Plate 1. The Contractor will be required to comply with all local ordinances regarding hauling over public roads and streets.

STRUCTURAL DESIGN

46. Criteria for Structural Design. The structural designs presented herein comply with standard engineering practice and criteria set forth in Engineering Manuals and Engineering Technical Letters for civil works construction published by the Office, Chief of Engineers, subject to modifications indicated by

engineering judgment and experience to meet local conditions.[1]/

47. Basic Data. Basic data relevant to the design of the protective works are shown on Table 5:

[1]/ The floodwall design is similar to the design presented in the Lake Pontchartrain, La. & Vicinity, High Level Plan, Orleans Parish Lakefront Levee West of IHNC, Design Memorandum No. 13, General Design, approved February 1985.

TABLE 5

RELEVANT STRUCTURAL DESIGN DATA

a. Water Elevations	Elevation (Feet N.G.V.D.)
Wind Tide Level (Lake Pontchartrain)	11.5
Landside of Floodwall	0.0

b. Floodwall Gross Grade (Stationing Refers to W/L)	Elevation (Feet N.G.V.D.)
I-wall (Sta. 100+00 to Sta. 101+04.45)	16.5 - 17.5
T-wall (Sta. 101+04.45 to Sta. 103+15.70)	17.0
I-wall (Sta. 103+15.70 to Sta. 104+07.00)	17.5
T-wall and Gate 1 (Sta. 104+07.00 to Sta. 104+37.00)	17.0
I-wall (Sta. 104+37.00 to Sta. 104+70.98)	17.5 - 20.0
T-wall (Sta. 104+70.98 to Sta. 108+63.66)	19.5 - 22.5
Front End Floodwall, Drainage Pumping Station No. 4 I-wall (Sta. 108+63.66 to Sta. 110+53.66)	22.57
T-wall (Sta. 110+53.66 to Sta. 121+03.66)	22.5 - 18.5
I-wall (Sta. 121+03.66 to Sta. 122+83.60)	19.0 - 16.5
I-wall (Sta. 400+00 to Sta. 401+84.83)	16.5
T-wall and Gates 2&3 (Sta. 401+84.83 to Sta. 402+67.83)	16.0
I-wall (Sta. 402+67.83 to Sta. 404+58.87)	16.5
I-wall (Sta. 500+00 to Sta. 500+73.44)	16.5 - 18.5
T-wall (Sta. 500+73.44 to Sta. 503+61.81)	18.0 - 22.5
Front End Floodwall, Drainage Pumping Station No. 1 (Sta. 503+61.81 to Sta. 505+21.80)	22.57
T-wall (Sta. 505+21.80 to Sta. 508+59.55)	22.5 - 17.0
I-wall (Sta. 508+59.55 to Sta. 510+40.91)	17.5 - 16.5

c. Unit Weights	Lb. Per Cu. Ft.
Water	64.0
Concrete	150
Steel	490
Earth	See Plates 132 thru 143

d. Design Loads	
Earth Pressures (Lateral)	See Plates 144 thru 162
Wind Loads	50 p.s.f.
Water Loads	See Plates 144 thru 162

48. Design Methods.

a. Structural Steel. The design of steel structures is in accordance with the requirements of the allowable working stresses recommended in "Working Stresses for Structural Design", EM 1110-1-2101 dated 1 November 1963 and amendment No. 2 dated 17 January 1972. The basic working stress for ASTM A-36 steel is 18,000 psi. Steel for steel sheet piling will meet the requirements of ASTM 328, "Standard Specification for Steel Sheet Piling".

b. Reinforced Concrete. The design of reinforced concrete structures is in accordance with the requirements of the strength design method of the current ACI Building Code, as modified by the guidelines of "Strength Design Criteria for Reinforced Concrete Hydraulic Structures", ETL 1110-2-265 dated 15 September 1981. The basic minimum 28-day compressive strength concrete will be 3,000 psi, except for prestressed concrete piling where the minimum will be 5,000 psi. For convenient reference, pertinent stresses are tabulated below:

TABLE 6
PERTINENT STRESSES FOR REINFORCED CONCRETE DESIGN

Reinforced Concrete

f'c	3,000 psi
fy (Grade 40 Steel)	40,000 psi
Maximum Flexural Reinforcement	0.25 x Balance Ratio
Minimum Flexural Reinforcement	200/fy
f'c (For Prestressed Concrete Piles)	5,000 psi
fu (Prestressing Strands, Gr. 250)	250,000 psi

49. Location and Alignment. The flood protection will consist of earthen levees and a road ramp except for reaches of I-wall, T-wall, and gate monoliths as described in paragraph 42. above. The general location of the proposed floodwalls are shown on Plates 3 and 8. The detailed alignment and profile of the floodwall and features contiguous thereto are shown on Plates 10 through 16.

50. I-Type Floodwall.

a. General. The I-wall will consist of steel sheet piling driven into the existing ground and, in some cases, into a new embankment. The upper portion of the sheet piling will be capped with concrete. The sheet piling will be driven to the required depth with 1 foot of the sheet piling extending above the finished ground elevation. The concrete portion of the floodwall will extend from 2 feet below the finished ground elevation to the required protection height. For details, see Plate 26.

b. Loading Cases. In the design of the I-wall, two loading cases were considered:

Case I. For unconfined areas along the lakefront with adjacent open water, FS used = 1.5 with static water at the SWL (and no dynamic wave force) and FS used = 1.25 with static water at the SWL and a dynamic wave force.

Case II. No water, lateral soil pressure (where applicable).

c. Joints. Expansion joints in the I-wall will be spaced approximately 30 feet apart, adjusted to fall at sheet pile interlocks. To compensate for expansion, contraction, or displacement, three-bulb waterstops and premolded expansion joint fillers will be provided. Where the I-wall joins the T-wall, the deflection of the I-wall will produce a lateral displacement. To compensate for this displacement, a special seal located in a notch in the I-wall has been designed to prevent water from flowing through this joint (see Plate 27 for details).

51. T-Type Floodwall.

a. General. The T-wall will consist of a reinforced concrete stem on a monolithic concrete base of varying width supported on precast, prestressed concrete piles. The base of the T-wall will be constructed on a four-inch concrete stabilization slab. A continuous steel sheet pile wall will be provided beneath the base for seepage cut-off purposes (see Plate 26 for details).

b. Loading Cases. These walls were designed for the following load conditions:

Case I. Static water pressure, no wind, impervious sheet pile cutoff, no dynamic wave force.

Case II. Static water pressure, no wind, pervious sheet pile cutoff, no dynamic wave force.

Case III. Stillwater pressure to elevation 11.5, dynamic wave force, impervious sheet pile cutoff (75% forces used).

Case IV. Stillwater pressure to elevation 11.5, dynamic wave force, pervious sheet pile cutoff (75% forces used).

Case V. No water, no wind.

Case VI. No water, wind from protected side (75% forces used).

Case VII. No water, wind from flood side (75% forces used).

c. Joints. Expansion joints in the T-wall will be spaced not more than sixty feet apart except at gate monoliths. The joints will be adjusted to fall at sheet pile interlocks. To compensate for expansion, contraction, or displacement, three-bulb waterstops and premolded expansion joint fillers will be provided (see Plate 27 for details).

52. Gates and Gate Monoliths.

a. General. Three gate monoliths will be constructed for access to the existing bike path and for street crossings in lieu of I-walls. Each gate monolith will include a steel gate which will be closed by local interests when a hurricane approaches. The locations and elevations for these gates are shown on Plates 10 through 14. Two types of gates will be used as described below.

b. Swing Gates. One swing gate will be constructed in the floodwall in the vicinity of Drainage Pumping Station No. 4. The location of this gate is described in paragraph 42.c. To assure a proper seal, the gate will be constructed so that it can be adjusted in either the horizontal or vertical direction. The side and bottom seals can also be adjusted as alternate or supplemental means to assure that a proper seal is obtained. Details of the swing gate are shown on Plates 28 through 30.

c. Bottom Roller Gates. Two bottom roller gates will be constructed. The locations of these gates are described in paragraph 42.c. These gates will be constructed so that they can be adjusted in the horizontal direction, perpendicular to the tracks. The side and bottom seals can be adjusted in either the horizontal or vertical direction to assure that a proper seal is obtained. Details of these bottom roller gates are shown on Plates 31 through 34.

d. Loading Cases. The gate structures were designed for the following load conditions:

(1) Swing Gate.

Case I. Gate closed, stillwater to elevation 11.5, dynamic wave force, impervious sheet pile cutoff (75% forces used).

Case II. Gate closed, stillwater to elevation 11.5, dynamic wave force, pervious sheet pile cutoff (75% forces used).

Case III. Gate open, no wind or truck on protected edge of base slab.

Case IV. Gate open, no wind or truck on flood side edge of base slab.

Case V. Gate open, wind from protected side or truck on flood side edge of base slab (75% forces used).

Case VI. Gate open, wind from flood side or truck on protected side edge of base slab (75% forces used).

(2) Bottom Roller Gates. Same load cases as swing gates.

53. Cathodic Protection and Corrosion Control.

a. Cathodic Protection for Steel Sheet Piling. All steel sheet piling will be bonded together to obtain electrical continuity and no corrosion protection measures will be provided. Cathodic protection can be installed in the future if the need arises. The sheet piles will be bonded together with a No. 6 reinforcing bar welded to the top of each pile. Flexible wire jumpers insulated with cross-linked polyethelene will be welded or brazed to adjacent sheet piles at the monolith joints 3 inches below the bottom of the concrete.

b. Corrosion Control. The steel gates, corner plates, and all ferrous metal components which are not galvanized or stainless steel will be coated with a 7-coat vinyl paint system as required for corrosion control.

REAL ESTATE REQUIREMENTS

54. General. All rights-of-way and construction easements required for construction of this levee/floodwall covered in this Design Memorandum were acquired by the Pontchartrain Levee District and right-of-entry for construction was furnished without cost to the United States under the 1950 authority (see Paragraph 8.b.). These rights-of-way are now under the jurisdiction of the East Jefferson Levee District. There will be no acquisition by the United States. The existing rights-of-way claimed by the East Jefferson Levee District are shown on Plates 2 through 9. No new rights-of-way are required to construct the works covered in this Design Memorandum. Local interests would be required to assume the cost of relocation assistance to persons and businesses displaced by such acquisition pursuant to the requirements of Public Law 91-646. However, Public Law 91-646 will not be a factor for the works covered in the DM.

SOURCES OF CONSTRUCTION MATERIALS

55. Sources of Construction Materials.

a. Floodwall. "Lake Pontchartrain Hurricane Protection, Sources of Construction Materials," DM #12, contains a listing of the sources of sand, gravel, shell, and rock available in the region to construct the floodwall works described in the memorandum.

b. Source of Fill for Levee. The levee fill material will be hauled clay which will be obtained from a borrow area in the Bonnet Carre' Spillway as shown on Plate No. 46. The material will be transported by dump trucks and/or barges. Soil borings of the borrow material are to be obtained during preparation of plans and specifications for construction.

RELOCATIONS

56. General. Under the authorizing law, local interests are responsible for the accomplishment of "...all necessary alterations and relocations to roads, railroads, pipelines, cables, wharves, drainage structures and other facilities made necessary by the construction work,...". For the Jefferson Parish Lakefront levee covered in this memorandum, the only relocation required is the road ramp work required at Williams Boulevard and discussed in paragraph 57 below.

RAMPS

57. Ramps. In lieu of a gate, the existing Williams Boulevard ramp will be closed with an earthen levee and an access ramp will be constructed over the levee with a crown to elevation 14.5 (net grade). See plate 20 for details of the Williams Blvd. access ramp. The existing ramp at the end of Bonnabel Boulevard is at an acceptable level of the protection. However, if significant settlement occurs, the ramp will need to be raised. The existing roadways (namely, Transcontinental Drive and Clearview Parkway) dead-end at the levee right-of-way. The Linear Park bike path ramps will be reconstructed over the levee after its completion.

COORDINATION WITH OTHER AGENCIES

58. General. As previously mentioned, the State of Louisiana, Department of Public Works, was appointed project coordinator for the State by the Governor of Louisiana. This agency has functioned to coordinate the needs, desires, and interests of state agencies and the Corps of Engineers. The East Jefferson Levee District will provide the local cooperation for this feature of the hurricane protection project. The project plan presented

herein is acceptable to both of the above agencies. The entire Lake Pontchartrain hurricane protection project, including this project feature, has been discussed at numerous public and private meetings since its authorization. Such meetings have been held before regional, state, local, community, social, and educational organizations and have served generally to inform the public of the proposed works, to explain project functions, and to solicit the public coordination required for input to the Draft Supplemental Environmental Impact Statement (DSEIS) of the Lake Pontchartrain project as a whole.

ENVIRONMENTAL ASSESSMENT

59. Affected Environment. The Jefferson Parish Lakefront Levee consists of approximately 10.4 miles of earthern levee and floodwall. The present levee parallels the lakeshore and, depending on the particular reach, is located approximately 120 - 130 feet from the shoreline.

The north side (floodside) of the levee is sparsely vegetated with scrub/shrub habitat intermixed with various wild grasses and small pockets (1 - 2 acres total) of oyster grass near the water's edge. The levee itself is grassed and regularly mowed. The area located on the south side (protected) of the lakefront levee is a highly developed residential and commercial area. The existing vegetation is comprised of various lawn grasses and indigenous and exotic ornamental plants with an occasional sparse stand of pine This park utilizes the levee system along the lake's shoreline for a multi-purpose bicycle and pedestrian trail beginning at the Orleans Parish line to its termination at the St. Charles Parish line, a distance of approximately 10 miles. This trail system has been designated as a National Recreation Trail by the U.S. Department of the Interior. The linear park is also a bird sanctuary. Cluster of grasses 10 feet high along the lake side of the trail are usually untouched by Levee District workers because they provide shelter and a stable but marginal habitat for wildlife.

In addition to the linear park system, there are two boat launch areas permitting access to the lake. These launch areas at Bonnabel and Williams Boulevards each contain eight lanes and ancillary facilities. It is estimated that 260,000 annual man-days of use currently exist within the Jefferson Linear Park. The man-days include recreational activities such as boating, skiing, fishing, shrimping, crabbing, jogging, biking, and observation of wildlife.

A cultural resource survey of the levee rights-of-way required to provide high level hurricane protection was completed by New World Research, Inc. The results of the survey indicated no significant cultural resources in the land base levee/floodwall

rights-of-way. However, numerous magnetic anomalies were noted in the offshore borrow sites which could represent significant historic shipwrecks. However, under the present construction method, no offshore borrow pits will be needed.

60. Environmental Effects.

a. Biological. Utilizing the new construction method, the amount of right-of-way required is significantly reduced and therefore a corresponding reduction in lake bottoms that would be impacted would occur. The new modified levee design, unlike the existing alignment, will not require lake bottom either for borrow or levee placement but will be totally confined to a land-based right-of-way. This modification results in avoiding impacts to approximately 981 acres of lake bottom and the benthic organisms that inhabit them. Additionally, the need for water-based construction will be eliminated with this plan; therefore, reductions in localized turbidity are expected. Since the need for flotation channels and deep, offshore, borrow sites has been eliminated, the water quality problem (nutrient entrapment, poor circulation, and localized poor water quality) and concerns for interruption of sediment transport initially anticipated to result from these features is no longer valid.

Minimal, localized turbidity would be experienced in the nearshore waters as a result of increased potential for soil erosion while the present levee is being degraded and reshaped. Some trees will be impacted and some actually removed due to levee placement. The levee will be revegetated and the regrowth of scrub/shrub and thickets along the north side of the levee toe are expected to return naturally. Therefore, only temporary displacement of small animals which may utilize the habitat are affected. Ambient levels of airborne dust and noise will increase during construction. The significance of the increase in noise levels is further discussed in the impact section under "Noise." Overall, the impacts associated with the modified construction method reduces impacts to benthos, fish, and plankton while minimizing effects to the land-based flora and fauna.

b. Noise. An analysis of noise levels was prepared based on types of equipment used, duration of construction, and the distances of various inhabited locations from the construction site. The source of noise being evaluated results from two distinct activities; those being produced in association with levee construction and those resulting from the transport of the fill material to the construction site.

The areas adjacent to the levee construction site are primarily residential and as such are estimated to have a day-

night average noise level of approximately 50 dBA (L.W. Canter, 1977) 1/. The expected noise forecast, with the levee construction, for this residential area is shown in Table 7. The decibel levels shown in Table 7 assume that the sound is received by an observer in an unprotected area at the distance from the sound same as noted. Therefore, the levels shown in the table would be greatly reduced when the observer is inside a residence or other protected area. While the noise levels adjacent to the area of levee construction are somewhat above expected levels for residential areas (50 decibels), they are of relatively short duration, ranging from approximately 4 days (102 - 107 decibels) for the peak noise to 23 days (84 - 90 decibels). Both ranges would be somewhat lower inside the residence.

Houses, businesses, and industrial complexes located along Bonnabel, Causeway, and Williams Boulevards and Clearview Parkway will be located on the main access routes to the various levee reaches under construction. The transport of fill material using these various routes is expected to produce an estimated 88 - 108 decibels of noise within 0 - 50 feet of the highway. However, most of these roads are already utilized heavily during peak traffic periods and therefore have an ambient noise level well above the 70 decibel level normally rated for urban residential areas. It is assumed that the noise exposure of any particular building or observer is very brief, because of an assumed speed of between 30 to 40 m.p.h. However, because of the large number of vehicles required per day to provide material to the construction site, the exposure at a particular distance may be considered continuous.

Only those areas within 50 feet of the noise source would incur noise levels above the 88 decibel level. This decibel level would be greatly reduced inside of a residence and may therefore be within the acceptable 70 decibel standard accepted for urban residential areas (L.A. Carter 1977). The duration of the noise exposure would range from 5 to 9 months for approximately 10 hours per day.

Some noise-related complaints may be generated from residences up to 50 feet from the source of the noise. The nature of the complaints are anticipated to be concerns over disruption of rest, outside social activities (barbecues, outdoor relaxation), recreational activities, and traffic problems. There could be an increase in traffic congestion, particularly during morning and evening "rush" hours. The incidence of minor auto accidents related to traffic congestion also has a potential for increase.

1/ L. W. Canter, 1977. Environmental Impact Assessment. McGraw Hill. 329 pp.

However, it is not foreseen that health-related affects such as hearing changes or losses would result from the predicted noise levels. Sporadic and momentary interference with oral communication as well as simple annoyance may occur within 50 feet of the construction site or haul sites.

Generally, animals adapt to a regular, predictable noise, that are of a continuous nature more readily than to sporadic noise bursts. The construction activity here is more of a continuous type of noise with mostly low frequency levels with only occasional sudden increases in noise level.

In summary, the overall effect of noise levels predicted will be temporarily disruptive and will possibly generate some short-term complaints but should not result in any health-related noise problems. When construction is complete, no long-term effects could result as a result of the noise levels expected.

Table 7
Noise Exposure Levels (days) for
Levee Construction - Jefferson Parish Lakefront

Distance (feet)	Buildings 1/ (number)			Decibels 102-107	96-102	90-96	84-90
	Domestic Housing	Non-Residential	Industrial				
0-50	371		1	3.6	3.8	7.0	15.6
50-100	265	6	1	-	5.7	9.0	15.3
100-200	343	2	17	-	-	11.7	16.4
200-400	716	53	33	-	-	-	23.4

1/ Types of buildings are classified as follows: domestic housing, includes residences for one to several families; non-residential, includes offices, public buildings, hotels, hospitals, and schools; industrial, includes industrial buildings, religious and recreation centers, stores, and repair facilities (Canter, L.W. 1977).

61. Status of Culture Resource Investigation. A comprehensive survey of the Lake Pontchartrain and Vicinity Hurricane Protection project was conducted in 1982 by New World Research, Inc., under contract to this office. No significant cultural resources are located in the terrestrial area. The magnetic anomalies in the offshore area will be avoided because of the modification in project design.

62. Recreation.

Levee construction on the Jefferson Parish lakefront will temporarily disrupt recreational activities which take place on the grass slopes and crown of the existing levee. However, construction will not affect the National Recreation Trail (biking and jogging path) or the lake's edge that provides shelter and breeding grounds for wildlife.

The Williams and Bonnabel Boulevards boat launches and recreation areas will not be affected per se by the levee work, however levee design modifications in the vicinity of these features are necessary. Temporary disruption of public use will occur during construction, but this impact will be short-lived.

The potential exists to further develop the linear parkway and encompass more of the levee area which already constitutes a continous greenbelt the entire length of the Jefferson Parish lakefront. The Jefferson Parish Department of Recreation has developed a master plan that identifies three areas for future development. These areas may be impacted by levee construction. Development of the Bucktown Marina, waterfront area at Causeway Boulevard, and additional expansion of the Williams Boulevard boat launch complex contained in the master plan are conceptual in design at this time, and may involve modification upon detail design.

Upon completion of the new levee, a higher overall levee profile will be created along the linear park. However, the new levee design incorporates less steep side slopes than were evident in the interim protection levee. Development of the new levee will involve 1 vertical to 9 horizontal side slopes on the lake-side, and 1 vertical to 3 horizontal side slopes on the protected side of the crown. The lakeside of the levee will have a gradual slope that would be minimal and would not greatly affect field sports and ballgames. As with construction of this type, the once grassed area south of the trail system would be unusable for short periods of time following each levee lift until the final levee grade is acquired. Between the placement of 3 to 4 additional lifts the landside, crown, and protected side slopes would be seeded with a quick-growing grass and hydromulch. Following a short establishment period, the area would return to its pre-project grassed condition. Approximately 2 or 3 years

later, another lift would be put in place and the seeding for revegetation of grass would be repeated. This cycle of providing an additional lift, grass re-seeding and waiting for compaction of earth fill would occur until final grade is reached. Upon completion and revegetation, the area would return to its pre-project condition and highly used recreational status.

ESTIMATE OF COST

63. General. Based on October 1987 price levels, the estimated first cost for construction of the Jefferson Parish Lakefront levee high level plan is $50,000,000. Of this cost, $40,552,000 is required for the Levees and Floodwall feature, $4,872,000 for Engineering and Design, and $4,548,000 for Supervision and Administration. The detailed estimate of first cost is shown in Table 8. These costs do not include sunk local interest costs attributable to improvements at the four lakefront pumping stations or any in-house sunk cost used to prepare this or prior reports.

TABLE 8

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach I (Sta. 0+00 to Sta. 115+00) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 1st Enlargement				
A.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	100,000.00	100,000
	Clearing & Grubbing	Lump Sum	L.S.	36,000.00	36,000
	Pull Existing Sheet Pile	40,000	S.F.	2.00	80,000
	Excavation For Geotextile	9,850	C.Y.	1.00	9,850
	Geotextile 1,000#/inch at 5% strain	59,000	S.Y.	9.00	531,000
	Clay Fill Semicompacted				
	A. Hauled	330,500	C.Y.	10.50	3,470,250
	B. Backfill from Excavation	7,900	C.Y	2.50	19,750
	Turf	Lump Sum	L.S.		132,250
	Interim Hurr Prot Closure	Lump Sum	L.S.	120,000.00	120,000
	Subtotal				$4,498,100
	Contingencies (20%±)				901,620
	TOTAL, CONSTRUCTION				$5,400,000
30	Engineering and Design (12%±)				649,000
31	Supervision and Administration (10%±)				606,000
	TOTAL				$6,655,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach I (Sta. 0+00 to Sta. 115+00) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 2nd Enlargement				
B	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	12,500.00	12,500
	Clay Fill Semicomp. Hauled	39,000	C.Y.	10.50	409,500
	Turf	Lump Sum	L.S.		123,500
	Subtotal				$ 570,500
	Contingencies (20%+)				114,500
	TOTAL, CONSTRUCTION				$ 685,000
30	Engineering and Design (12%+)				82,000
31	Supervision and Administration (10%+)				77,000
	TOTAL COST				$ 844,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach I (Sta. 0+00 to Sta. 115+00) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 3rd Enlargement				
C.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	12,500.00	12,500
	Clay Fill Semicomp. Hauled	39,000	C.Y.	10.50	409,500
	Turf	Lump Sum	L.S.		123,500
	Subtotal				$ 570,500
	Contingencies (20%+)				114,500
	TOTAL, CONSTRUCTION				$ 685,000
30	Engineering and Design (12%+)				82,000
31	Supervision and Administration (10%+)				77,000
	TOTAL COST				$ 844,000
	TOTAL COST FOR REACH I				$8,343,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach II (Sta. 145+11) Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	RELOCATION				
A.	JEFFERSON PARISH LEVEE				
02	Relocation: Williams Boulevard Ramp	1	JOB	L.S.	18,000
	Subtotal				$ 18,000
	Contingencies (20%±)				4,000
	TOTAL, CONSTRUCTION COST				$ 22,000
30	Engineering and Design (12%±)				3,000
31	Supervision and Administration (10%±)				3,000
	TOTAL PROJECT COST				$ 28,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach II (Sta. 128+00 to Sta. 210+00) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 1st Enlargement				
B.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	100,000.00	100,000
	Clearing & Grubbing	Lump Sum	L.S.	27,000.00	27,000
	Excavation for Geotextile	36,100	C.Y.	1.00	36,100
	Geotextile - 1,000#/inch	40,000	S.Y.	9.00	360,000
	2,080#/inch	25,000	S.Y.	11.75	293,750
	Clay Fill Semicompacted				
	A. Hauled	130,500	C.Y.	10.50	1,370,250
	B. Backfill from Excavation	29,000	C.Y.	2.50	72,500
	Turf	Lump Sum	L.S.		117,000
	Interim Hurr Prot Closure	Lump Sum	L.S.	180,000.00	180,000
	Subtotal				$2,556,600
	Contingencies (20%±)				513,400
	TOTAL, CONSTRUCTION				$3,070,000
30	Engineering and Design (12%±)				368,000
31	Supervision and Administration (10%±)				344,000
	TOTAL PROJECT COST				$3,782,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach II (Sta. 128+00 to Sta. 210+00) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 2nd Enlargement				
C.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	10,000.00	10,000
	Clay Fill Semicomp. Hauled	30,200	C.Y.	10.50	317,100
	Turf	Lump Sum	L.S.		97,750
	Subtotal				$ 449,850
	Contingencies (20%+)				90,150
	TOTAL, CONSTRUCTION				$ 540,000
30	Engineering and Design (12%+)				65,000
31	Supervision and Administration (10%+)				60,000
	TOTAL COST				$ 665,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach II (Sta. 128+00 to Sta. 210+00) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 3rd Enlargement				
D.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	10,000.00	10,000
	Clay Fill Semicomp. Hauled	31,900	C.Y.	10.50	334,950
	Turf	Lump Sum	L.S.		97,750
	Subtotal				$ 467,700
	Contingencies (20%+)				93,300
	TOTAL, CONSTRUCTION				$ 561,000
30	Engineering and Design (12%+)				67,000
31	Supervision and Administration (10%+)				63,000
	TOTAL COST				$ 691,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Level

Cost Acct. No.	Item	Reach II (Sta. 185+00 to Sta. 210+00) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 4th Enlargement				
	E. JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	2,500.00	2,500
	Clay Fill Semicomp. Hauled	7,000	C.Y.	10.50	73,500
	Turf	Lump Sum	L.S.		21,500
	Subtotal				$ 122,500
	Contingencies (20%+)				24,500
	TOTAL, CONSTRUCTION				$ 147,000
30	Engineering and Design (12%+)				18,000
31	Supervision and Administration (10%+)				16,000
	TOTAL COST				$ 181,000
	TOTAL COST FOR REACH II				$5,319,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach III (Sta. 221+45 to Sta. 343+50) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 1st Enlargement				
A.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	100,000.00	100,000
	Clearing & Grubbing	Lump Sum	L.S.	45,000.00	45,000
	Pull Existing Sheet Pile	172,000	S.F.	2.00	344,000
	Geotextile - 1,000#/inch	52,000	S.Y.	9.00	468,000
	- 2,080#/inch	127,000	S.Y.	11.75	1,492,250
	Excavation for Geotextile	164,100	C.Y.	1.00	164,100
	Clay Fill Semicompacted				
	A. Hauled	336,750	C.Y.	10.50	3,535,875
	B. Backfill from Excavation	131,000	C.Y.	2.50	327,500
	Turf	Lump Sum	L.S.		197,525
	Interim Hurr Prot Closure	Lump Sum	L.S.	180,000.00	180,000
	Subtotal				$6,854,250
	Contingencies (20%+)				1,375,750
	TOTAL, CONSTRUCTION				$8,250,000
30	Engineering and Design (12%+)				990,000
31	Supervision and Administration (10%+)				924,000
	TOTAL COST				$10,144,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach III (Sta. 221+45 to Sta. 343+50) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 2nd Enlargement				
B.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	11,500.00	11,500
	Clay Fill Semicomp. Hauled	38,500	C.Y.	10.50	404,250
	Turf	Lump Sum	L.S.		113,975
	Subtotal				$ 554,725
	Contingencies (20%+)				111,275
	TOTAL, CONSTRUCTION				$ 666,000
30	Engineering and Design (12%+)				80,000
31	Supervision and Administration (10%+)				75,000
	TOTAL COST				$ 821,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Reach III (Sta. 221+45 to Sta. 343+50)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 3rd Enlargement				
C.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	11,500.00	11,500
	Clay Fill Semicomp. Hauled	48,000	C.Y.	10.50	504,000
	Turf	Lump Sum	L.S.		114,950
	Subtotal				$ 655,450
	Contingencies (20%+)				131,550
	TOTAL, CONSTRUCTION				$ 787,000
30	Engineering and Design (12%+)				94,000
31	Supervision and Administration (10%+)				88,000
	TOTAL COST				$ 969,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach III (Sta. 221+45 to Sta. 343+50) Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	CONSTRUCTION 4th Enlargement				
D.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	11,500.00	11,500
	Clay Fill Semicomp. Hauled	38,500	C.Y.	10.50	404,250
	Turf	Lump Sum	L.S.		113,975
	Subtotal				$554,725
	Contingencies (20%±)				111,275
	TOTAL, CONSTRUCTION				$ 666,000
30	Engineering and Design (12%±)				80,000
31	Supervision and Administration (10%±)				75,000
	TOTAL COST				$ 821,000
	TOTAL COST FOR REACH III				$12,755,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach IV (Sta. 354+00 to Sta. 434+80) Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	CONSTRUCTION 1st Enlargement				
A.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	100,000.00	100,000
	Clearing & Grubbing	Lump Sum	L.S.	25,000.00	25,000
	Excavation & Backfill-Geotextile	138,600	C.Y.	1.00	138,600
	Geotextile - 1,500#/inch	39,000	S.Y.	10.50	409,500
	- 2,110#/inch	61,000	S.Y.	11.75	716,750
	Clay Fill Semicompacted				
	A. Hauled	201,000	C.Y.	10.50	2,110,500
	B. Backfill from Excavation	110,900	C.Y.	2.50	277,250
	Turf	Lump Sum	L.S.		94,900
	Interim Hurr Prot Closure	Lump Sum	L.S.	180,000.00	180,000
	Subtotal				$4,052,500
	Contingencies (20%+)				812,500
	TOTAL, CONSTRUCTION				$4,865,000
30	Engineering and Design (12%+)				585,000
31	Supervision and Administration (10%+)				546,000
	TOTAL COST				$5,996,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Reach IV (Sta. 354+00 to Sta. 434+80)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 2nd Enlargement				
B.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	9,000.00	9,000
	Clay Fill Semicomp. Hauled	23,200	C.Y.	10.50	243,600
	Turf	Lump Sum	L.S.		91,530
	Subtotal				$ 369,130
	Contingencies (20%+)				73,870
	TOTAL, CONSTRUCTION				$ 443,000
30	Engineering and Design (12%+)				53,000
31	Supervision and Administration (10%+)				50,000
	TOTAL COST				$ 546,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach IV (Sta. 354+00 to Sta. 434+80) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 3rd Enlargement				
C.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	9,000.00	9,000
	Clay Fill Semicompacted Hauled	34,200	C.Y.	10.50	359,100
	Turf	Lump Sum	L.S.		92,000
	Subtotal				$ 485,100
	Contingencies (20%+)				96,900
	TOTAL, CONSTRUCTION				$ 582,000
30	Engineering and Design (12%+)				70,000
31	Supervision and Administration (10%+)				65,000
	TOTAL COST				$ 717,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Cost Acct. No.	Item	Reach IV (Sta. 354+00 to Sta. 434+80) Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 4th Enlargement				
D.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	9,000.00	9,000
	Clay Fill Semicomp. Hauled	27,300	C.Y.	10.50	286,650
	Turf	Lump Sum	L.S.		92,250
	Subtotal				$ 412,900
	Contingencies (20%+)				82,100
	TOTAL, CONSTRUCTION				$ 495,000
30	Engineering and Design (12%+)				60,000
31	Supervision and Administration (10%+)				55,000
	TOTAL COST				$ .610,000
	TOTAL COST FOR REACH IV				$7,869,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

(Sta. 438+40 to Sta. 464+50)
Reach V (Sta. 479+95 to Sta. 550+22.11)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 1st Enlargement				
A.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	100,000.00	100,000
	Clearing & Grubbing	Lump Sum	L.S.	30,000.00	30,000
	Excavation & Backfill-Geotextile	201,200	C.Y.	1.00	201,200
	Geotextile - 1,500#/inch	50,000	S.Y.	10.50	525,000
	- 2,110#/inch	77,000	S.Y.	11.75	904,750
	Clay Fill Semicompacted				
	A. Hauled	215,500	C.Y.	10.50	2,262,750
	B. Backfill from Excavation	161,000	C.Y.	2.50	402,500
	Turf	Lump Sum	L.S.		102,725
	Interim Hurr Prot Closure	Lump Sum	L.S.	180,000.00	180,000
	Subtotal				$4,708,925
	Contingencies (20%±)				944,075
	TOTAL, CONSTRUCTION				$5,653,000
30	Engineering and Design (12%±)				680,000
31	Supervision and Administration (10%±)				634,000
	TOTAL COST				$6,967,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Reach V (Sta. 438+40 to Sta. 464+50)
(Sta. 479+95 to Sta. 550+22.1)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 2nd Enlargement				
B.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	12,500.00	12,500
	Clay Fill Semicomp. Hauled	32,000	C.Y.	10.50	336,000
	Turf	Lump Sum	L.S.		125,525
	Subtotal				$ 499,025
	Contingencies (20%+)				99,975
	TOTAL, CONSTRUCTION				$ 599,000
30	Engineering and Design (12%+)				72,000
31	Supervision and Administration (10%+)				67,000
	TOTAL COST				$ 738,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Reach V (Sta. 438+40 to Sta. 464+50)
(Sta. 479+95 to Sta. 550+22.1)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	CONSTRUCTION 3rd Enlargement				
C.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	12,500.00	12,500
	Clay Fill Semicomp. Hauled	46,800	C.Y.	10.50	491,400
	Turf	Lump Sum	L.S.		126,425
	Subtotal				$ 655,325
	Contingencies (20%±)				130,675
	TOTAL, CONSTRUCTION				$ 786,000
30	Engineering and Design (12%±)				94,000
31	Supervision and Administration (10%±)				88,000
	TOTAL COST				$ 968,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

Reach V (Sta. 438+40 to Sta. 464+50)
(Sta. 479+95 to Sta. 550+22.1)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	CONSTRUCTION 4th Enlargement				
D.	JEFFERSON PARISH LEVEE				
11	Mob & Demob	Lump Sum	L.S.	25,000.00	25,000
	Clearing	Lump Sum	L.S.	12,500.00	12,500
	Clay Fill Semicomp. Hauled	37,400	C.Y.	10.50	392,700
	Turf	Lump Sum	L.S.		126,425
	Subtotal				$ 556,625
	Contingencies (20%+)				111,375
	TOTAL, CONSTRUCTION				$ 668,000
30	Engineering and Design (12%+)				80,000
31	Supervision and Administration (10%+)				75,000
	TOTAL COST				$ 823,000
	TOTAL COST FOR REACH V				$ 9,496,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

JEFFERSON PARISH LAKEFRONT GDM COST ESTIMATE
PUMPING STATION NO. 4 (STA. 114+95 B/L TO STA. 128+05 B/L)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
11	Mob & Demob	1	JOB	50,000.00	50,000
	Clearing & Grubbing	3	ACRE	1,000.00	3,000
	Selective Demolition	Lump Sum	L.S.	4,000.00	4,000
	Fertilizing & Seeding	3	ACRE	400.00	1,200
	Levee Fill (Semi-Compacted)	2,700	C.Y.	1.50	4,050
	Levee Degrading (Haul to Reach "A")	300	C.Y.	4.00	1,200
	Structural Excavation	3,960	C.Y.	6.00	23,760
	Structural Backfill	2,320	C.Y.	8.50	19,720
	Frodingham BZO Sections - Pulling Existing Sheet Pile	28,800	S.F.	2.00	57,600
	Frodingham BZO Sections - Cutting Existing Sheet Pile	1,450	L.F.	6.00	8,700
	Frodingham BZO Sections - Redrive Existing Sheet Pile	7,220	S.F.	2.25	16,245
	Frodingham BZO Fabricated Corner	65	S.F.	50.00	3,250
	PSA-23 Steel Sheet Piling	340	S.F.	15.00	5,100
	PZ-22 Steel Sheet Piling	2,880	S.F.	11.50	33,120
	PZ-35 Steel Sheet Piling	5,700	S.F.	17.00	96,900
	PZ-40 Steel Sheet Piling	5,150	S.F.	18.00	92,700
	Swing Gate (7'x 22') 7,200 lbs	Lump Sum	L.S.	15,000.00	15,000
	5 Ea, 72" Dia Butterfly Valves & Dresser Couplings (Installation & Testing)	Lump Sum	L.S.	225,000.00	225,000
	12"x12" Prestressed Concrete Piling	780	L.F.	18.00	14,040
	14"x14" Prestressed Concrete Piling	52,350	L.F.	22.00	1,151,700
	Concrete in Stabilization Slab	182	C.Y.	70.00	12,740
	Concrete in T-Wall Base	1,365	C.Y.	200.00	273,000
	Concrete in T-Wall Stem	1,060	C.Y.	350.00	371,000
	Concrete in I-Walls	285	C.Y.	350.00	99,750
	Waterproof Finish (Prot Side)	19,640	S.F.	1.00	19,640
	Gate Seals	38	L.F.	30.00	1,140

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

JEFFERSON PARISH LAKEFRONT GDM COST ESTIMATE
PUMPING STATION NO. 4 (STA. 114+95 B/L TO STA. 128+05 B/L)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	3-Bulb Waterstop	1,100	L.F.	10.00	11,000
	L-Type Waterstop	123	L.F.	30.00	3,690
	SUBTOTAL				$2,618,245
	Contingencies (20%+)				523,755
	TOTAL, CONSTRUCTION				$3,142,000
30	Engineering and Design (12%+)				377,000
31	Supervision and Administration (10%+)				352,000
	TOTAL COST				$3,871,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

JEFFERSON PARISH LAKEFRONT GDM COST ESTIMATE
CAUSEWAY BOULEVARD (STA. 434+75 B/L TO STA. 438+45 B/L)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
11	Mob & Demob	1	JOB	50,000.00	50,000
	Site Clearing	Lump Sum	L.S.	600.00	600
	Fertilizing & Seeding	Lump Sum	L.S.	300.00	300
	Levee Fill (Semi-Compacted)(Adj.Cut)	1,100	C.Y.	1.50	1,650
	Structural Excavation	300	C.Y.	6.00	1,800
	Structural Backfill	113	C.Y.	8.50	961
	PSA-23 Steel Sheet Piling	200	S.F.	15.00	3,000
	PZ-22 Steel Sheet Piling	900	S.F.	11.50	10,350
	PZ-27 Steel Sheet Piling	12,600	S.F.	12.50	157,500
	Struc. Stl Roller Gates				
	1 ea. - (9'x31.5', 20,000 Lbs)	Lump Sum	L.S.	29,500.00	29,500
	1 ea. - (9'x36', 22,000 Lbs)	Lump Sum	L.S.	33,000.00	33,000
	12" Dia Treated Timber Piles	1,530	L.F.	12.00	18,360
	16"x16" Prestressed Concrete Piling	2,470	L.F.	26.00	64,220
	Concrete in Stab Slab	18	C.Y.	70.00	1,260
	Concrete in T-Wall Base	117	C.Y.	200.00	23,400
	Concrete in T-Wall Stem	13	C.Y.	350.00	4,550
	Concrete in I-Walls	215	C.Y.	350.00	75,250
	Waterproof Finish (Both Sides)	4,700	S.F.	1.00	4,700
	Gate Seals	125	L.F.	30.00	3,750
	3-Bulb Waterstop	1,100	L.F.	10.00	11,000
	L-Type Waterstop	125	L.F.	30.00	3,750
	Roadway Removal & Replacement	Lump Sum	L.S.	3,500.00	3,500
	18" Dia Drain Line Thru I-Wall	1	E.A.	2,800.00	2,800
	1" Dia Elec. Line Thru I-Wall	1	E.A.	2,000.00	2,000
	2" Dia Water Line Thru I-Wall	1	E.A.	2,000.00	2,000
	24" Dia Drain Line Thru I-Wall	1	E.A.	3,000.00	3,000
	8" Dia Sewer Line Thru I-Wall	1	E.A.	2,500.00	2,500
	12" RCP Drain Line 50 Ft.	Lump Sum	L.S.	1,750.00	1,750

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

JEFFERSON PARISH LAKEFRONT GDM COST ESTIMATE
CAUSEWAY BOULEVARD (STA. 434+75 B/L TO STA. 438+45 B/L)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	Catch Basins	2	E.A.	500.00	1,000
	Valve Manholes	3	E.A.	1,200.00	3,600
	Drain Manhole	1	E.A.	600.00	600
	SUBTOTAL				$ 521,651
	Contingencies (20%+)				104,349
	TOTAL, CONSTRUCTION				$ 626,000
30	Engineering and Design (12%+)				75,000
31	Supervision and Administration (10%+)				70,000
	TOTAL COST				$ 771,000

TABLE 8 (Cont'd)

ESTIMATE OF FIRST COST
October 1987 Price Levels

JEFFERSON PARISH LAKEFRONT GDM COST ESTIMATE
PUMPING STATION NO. 1 (STA. 464+45 B/L TO STA. 480+00 B/L)

Cost Acct. No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
11	Mob & Demob	1	JOB	50,000.00	50,000
	Clearing & Grubbing	4	ACRE	1,000.00	4,000
	Fertilizing & Seeding	4	ACRE	400.00	1,600
	Levee Fill (Semi-Compacted)	1,415	C.Y.	1.50	2,123
	Levee Degrading (Haul to Reach "A")	34,230	C.Y.	4.00	136,920
	Structural Excavation	780	C.Y.	6.00	4,680
	Structural Backfill	274	C.Y.	8.50	2,329
	Frodingham BZO Sections -Pulling Existing Sheet Pile	10,820	S.F.	2.00	21,640
	Frodingham BZO Sections -Cutting Existing Sheet Pile	630	L.F.	6.00	3,780
	Frodingham BZO Sections -Redrive Existing Sheet Pile	2,345	S.F.	2.25	5,276
	Frodingham BZO Fabricated Corner	52	S.F.	50.00	2,600
	PSA-23 Steel Sheet Piling	35	S.F.	15.00	525
	PZ-35 Steel Sheet Piling	4,575	S.F.	17.00	77,775
	PZ-40 Steel Sheet Piling	2,175	S.F.	18.00	39,150
	14"x14" Prestressed Concrete Piling	16,850	L.F.	22.00	370,700
	Concrete in Stab Slab	70	C.Y.	70.00	4,900
	Concrete in T-Wall Base	460	C.Y.	200.00	92,000
	Concrete in T-Wall Stem	430	C.Y.	350.00	150,500
	Concrete in I-Walls	170	C.Y.	350.00	59,500
	Waterproof Finish (Prot Side)	11,800	S.F.	1.00	11,800
	3-Bulb Waterstop	310	S.F.	10.00	3,100
	L-Type Waterstop	65	S.F.	30.00	1,950
	SUBTOTAL				$1,046,848
	Contingencies (20%+)				209,152
	TOTAL, CONSTRUCTION				$1,256,000
30	Engineering and Design (12%+)				151,000
31	Supervision and Administration (10%+)				141,000
	TOTAL COST				$1,548,000

64. Comparison of Estimates. The current estimate of $50,000,000 for the high level plan Jefferson Parish Lakefront Levee represents a decrease of $93,000,000 when compared to the cost contained in the current PB-3 effective 1 October 1987. The PB-3 estimate is based on survey scope estimates contained in the "Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project, Reevaluation Study", dated July 1984. Estimates contained in the reevaluation report were published at October 1981 levels. These estimates were indexed to October 1987 levels for the current PB-3. The decrease in cost shown in Table 9 is explained in the following subparagraphs:

TABLE 9
COMPARISON OF ESTIMATES
(Remaining Costs)
High Level Reevaluation Study

Feature	PB-3 (Eff. Oct 87)	GDM (Oct 87 Prices)	Difference GDM and PB-3
11 Levees & Floodwalls	$121,609,000	$ 40,552,000	-$81,057,000
30 Engineering & Design	10,450,000 1/	4,872,000	- 5,578,000
31 Supervision & Administration	11,000,000 2/	4,548,000	- 6,452,000
SUBTOTAL	$143,059,000	$ 49,972,000	-$93,087,000
01 Lands & Damages	0	0	0
02 Relocations	0	28,000	+28,000
TOTAL PROJECT COST	$143,059,000	$ 50,000,000	-$93,087,000
(Rounded)	$143,000,000	$ 50,000,000	-$93,000,000

a. Levees and Floodwalls. The net decrease in the levee and floodwall account of $81,057,000 is due to a total redesign of the levee and the method of construction to be used. The PB-3 estimate is based on The Reevaluation Report plan that called for

1/ Engineering and Design cost shown for PB-3 does not include sunk cost through FY-87 of $2,800,000.

2/ Supervision and Administration cost shown for PB-3 does not include sunk cost through FY-87 of $320,000.

taking borrow from the bottom of Lake Pontchartrain and hydraulically placing it in the levee section. The Reevaluation Report plan needed very large stability berms which can be eliminated by the geotextile plan.

b. Engineering and Design. Table 9 shows a decrease of $5,578,000 when compared to the PB-3 estimate. This reduction is due to a reanalysis of the E&D requirements needed to support the engineering and design work for the reinforced geotextile levee plan. The E&D estimate in the PB-3 was based on taking a percentage of the estimated construction cost as developed in the Reevaluation Report. As discussed in subparagraph a. above, that estimate was for a different method of construction.

c. Supervision and Administration. A decrease of $6,452,000 is based on an analysis of actual work required. The substantial decrease in construction cost detailed in subparagraph a. above directly relates to the reduced estimate for this work.

d. Relocations. The increase in the estimated relocation cost of $28,000 is due to more detailed study and reflects a change from using a roadgate at the Williams Boulevard boat ramp area to using a ramp. The cost of the ramp was found to be more cost effective in this area.

65. Schedule for Design and Construction. The sequence of contracts and schedules are as follows:

TABLE 10
SCHEDULE FOR DESIGN AND CONSTRUCTION

CONTRACTS	PLANS & SPECS		CONSTRUCTION			ESTIMATED CONSTRUCTION COST 1/
	START	COMP.	ADVER.	AWARD	COMP.	($)
Reach I (0+00-115+00)						
1st Lift	Sept 87	Mar 88	Apr 88	May 88	May 89	5,945,000
2nd Lift	Nov 92	Dec 93	Feb 94	Apr 94	Jul 94	754,000
3rd Lift	Sept 99	Oct 01	Dec 01	Feb 02	May 02	754,000
Reach II (128+00-210+00)						
1st Lift	May 88	Mar 90	May 90	Jul 90	Mar 91	3,380,000
2nd Lift	Aug 93	Jun 95	Aug 95	Oct 95	Jan 96	594,000
3rd Lift	Dec 97	Oct 99	Dec 99	Feb 00	May 00	618,000
(185+00 - 210+00)						
4th Lift	Apr 04	Feb 06	Apr 06	Jun 06	Jul 06	161,000
Reach III (221+45-343+50)						
1st Lift	Aug 87	Oct 88	Dec 88	Feb 89	Jun 90	9,062,600
2nd Lift	Sept 92	Mar 94	May 94	Jul 94	Oct 94	734,000
3rd Lift	Jan 97	Jun 98	Aug 98	Oct 98	Feb 99	866,000
4th Lift	Jun 03	Nov 04	Jan 05	Mar 05	Jun 05	734,000
Reach IV (354+00-434+80)						
1st Lift	Mar 89	Sept 90	Nov 90	Jan 91	Nov 92	5,356,000
2nd Lift	Feb 93	Aug 94	Oct 94	Dec 95	Mar 96	488,000
3rd Lift	May 98	Nov 99	Jan 00	Mar 00	Jun 00	640,000
4th Lift	Sept 05	Mar 06	May 06	Jul 06	Oct 06	544,000
Reach V (438+40-464+50) & (479+95-550+22.1)						
1st Lift	Jan 88	Jun 89	Aug 89	Oct 89	Sept 90	6,224,000
2nd Lift	Jan 93	Jun 94	Aug 94	Oct 94	Jan 95	659,000
3rd Lift	May 87	Oct 98	Dec 98	Feb 99	May 99	865,000
4th Lift	Aug 03	Feb 05	Apr 05	Jun 05	Sept 05	736,000
SUBTOTAL						$39,114,000
Floodwall, Vic. Pump Sta. # 4						
114+95-128+05	Jun 92	Feb 93	Mar 93	Apr 93	Jun 94	3,459,000
Floodwall, Vic. Causeway Blvd.						
434+75-438+45	Jul 94	Mar 95	Apr 95	May 95	Sept 95	689,000
Floodwall, Vic. Pump Sta. # 1						
464+45-480+00	Apr 93	Dec 93	Jan 94	Feb 94	Jul 94	1,383,000
TOTAL						$44,645,000

1/ Estimated Construction Cost includes Construction Cost, 20% contingencies, and S & I Cost (S & I Cost constitutes 90% of the supervision and administration cost).

66. Funds Required by Fiscal Year. To maintain the schedule for design and construction of the levees and floodwalls for the Jefferson Parish Lakefront Levee, funds will be required by fiscal years as shown in Table 11. The funding schedule does not account for sunk cost for work accomplished by local interests at Pumping Stations 1 and 4. The estimated credits for work at Pumping Stations 1 and 4 is $4.3 million. Verification of credits will be accomplished by an official audit of the contracts and actual payments made. The designs for fronting protection at Pumping Stations 1 and 4 were coordinated with the New Orleans District and Lower Mississippi Valley Division Offices by the Jefferson Parish Department of Public Utilities.

TABLE 11

FEDERAL AND NON-FEDERAL
FUNDING FOR LEVEE DESIGNS & CONSTRUCTION BY FISCAL YEAR

	TOTAL ($)	FEDERAL ($)	NON-FEDERAL ($)
FUNDS REQUIRED BY FY 88	3,686,000	2,580,200	1,108,800
FUNDS REQUIRED BY FY 89	7,887,000	5,520,900	2,369,100
FUNDS REQUIRED BY FY 90	13,425,000	9,397,500	4,033,500
FUNDS REQUIRED BY FY 91	7,314,000	5,119,800	2,197,200
FUNDS REQUIRED BY FY 92	1,282,000	862,400	440,000
FUNDS REQUIRED BY FY 93	1,871,000	1,309,700	675,000
FUNDS REQUIRED BY FY 94	4,966,000	3,476,200	1,334,000
FUNDS REQUIRED BY FY 95	1,755,000	1,228,500	503,000
FUNDS REQUIRED BY FY 96	1,211,000	847,700	363,300
FUNDS REQUIRED BY FY 97	0	0	0
FUNDS REQUIRED BY FY 98	0	0	0
FUNDS REQUIRED BY FY 99	1,938,000	1,356,600	581,400
FUNDS REQUIRED BY FY 2000	1,408,000	985,600	422,400
FUNDS REQUIRED BY FY 01	0	0	0
FUNDS REQUIRED BY FY 02	844,000	590,800	253,200
FUNDS REQUIRED BY FY 03	0	0	0
FUNDS REQUIRED BY FY 04	0	0	0
FUNDS REQUIRED BY FY 05	1,644,000	1,150,800	493,200
FUNDS REQUIRED BY FY 06	791,000	553,700	237,300
TOTAL	$49,972,000	$34,980,000	$14,992,000

OPERATION AND MAINTENANCE

67. General. The Jefferson Parish Lakefront levee will be maintained and operated at the expense of local interests as a feature of local cooperation for the project. The estimate of the annual operation and maintenance costs for the levee and floodwall features which are detailed in this GDM are as follows:

a.	Levee Maintenance (170 acres)	$41,000 per year
b.	Floodwall Maintenance (3,800 feet)	4,000 per year
	TOTAL	$45,000 per year

ECONOMICS

68. Economic Justification. The current economic analysis for the entire Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project is contained in the Reevaluation Study entitled "Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project", dated July 1984. Based on October 1981 price levels, and at the project interest rate of 3 1/8 percent, the benefit-cost ratio for the project as a whole is 4.2 to 1. The Reevaluation Study also breaks out separable project areas (SPA) for incremental justification. The New Orleans Lakefront reach is a part of the New Orleans-Jefferson SPA. The computed benefit-cost ratio for the New OrleansJefferson area is 5.0 to 1.

RECOMMENDATIONS

69. Recommendations. The plan of improvement for the high level plan presented herein consists of 10.4 miles of levee construction along the Jefferson Parish Lakefront levee. This plan is considered to be the most economical means of providing high level plan, SPH - project protection and is recommended for approval as a basis for preparing plans and specifications for this project reach.

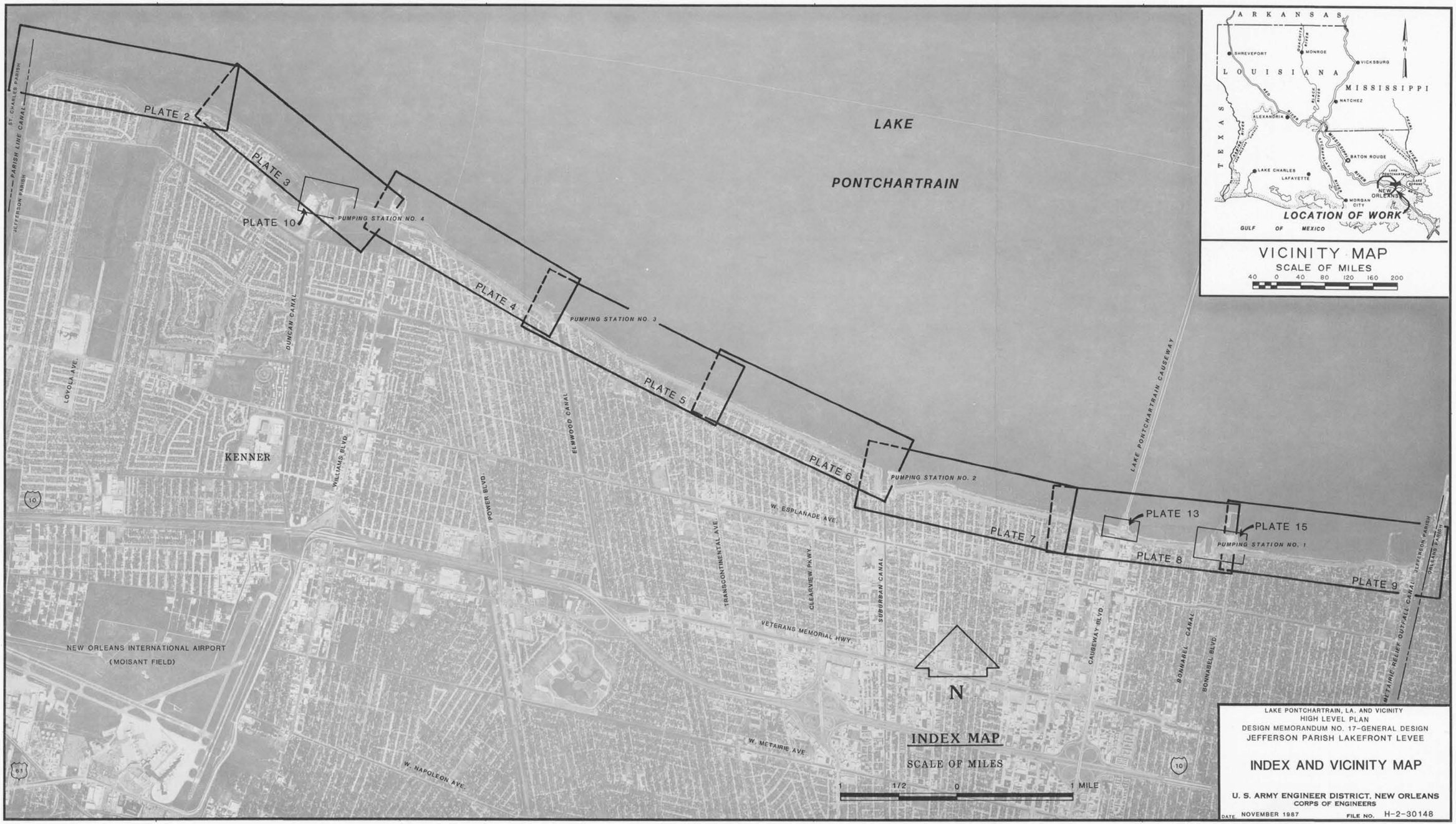
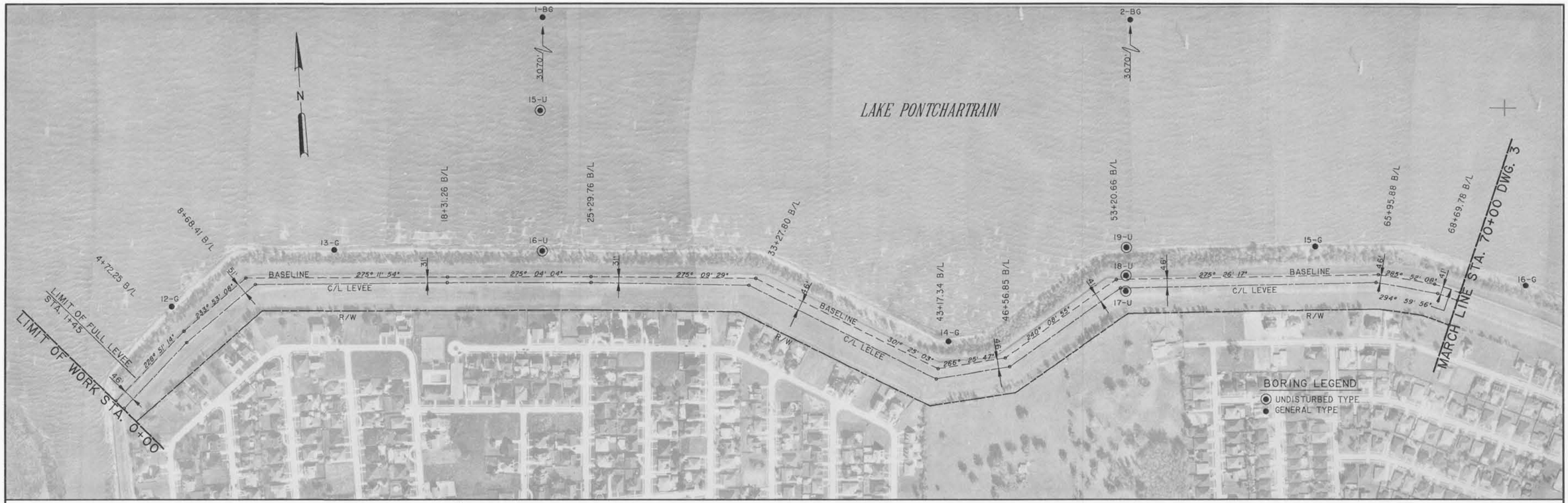
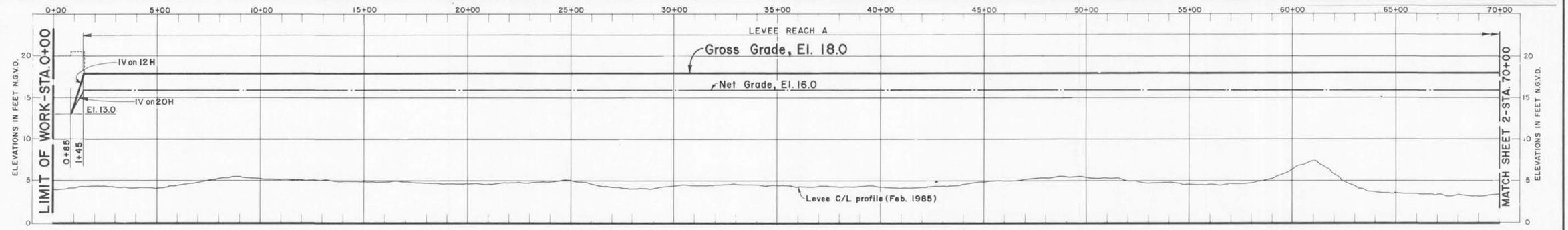

LAKE
PONTCHARTRAIN
PLATE 2
PLATE 3
PLATE 4
PLATE 5
PLATE 6
PLATE 7
PLATE 8
PLATE 9
PLATE 10
PLATE 13
PLATE 15
PUMPING STATION NO. 4
PUMPING STATION NO. 3
PUMPING STATION NO. 2
PUMPING STATION NO. 1
ST. CHARLES PARISH
FARISH LINE CANAL
JEFFERSON PARISH
DUNCAN CANAL
LOYOLA AVE
KENNER
WILLIAMS BLVD.
POWER BLVD.
EISENHOWER CANAL
LAKE PONTCHARTRAIN CAUSEWAY
W. ESPLANADE AVE.
TRANSCONTINENTAL AVE.
CLEARVIEW PKWY.
SUBURBAN CANAL
VETERANS MEMORIAL HWY.
CAUSEWAY BLVD.
BONNABEL CANAL
BONNABEL BLVD.
METAIRIE RELIEF OUTFALL CANAL
ORLEANS PARISH
W. METAIRIE AVE.
W. NAPOLEON AVE.
NEW ORLEANS INTERNATIONAL AIRPORT
(MOISANT FIELD)
10
61
N
INDEX MAP
SCALE OF MILES
1 1/2 0 1 MILE
ARKANSAS
SHREVEPORT
MONROE
VICKSBURG
LOUISIANA
MISSISSIPPI
NATCHEZ
ALEXANDRIA
BATON ROUGE
LAKE CHARLES
LAFAYETTE
NEW ORLEANS
MORGAN CITY
TEXAS
LOCATION OF WORK
GULF OF MEXICO
VICINITY MAP
SCALE OF MILES
40 0 40 80 120 160 200
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17-GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
INDEX AND VICINITY MAP
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE NOVEMBER 1987
FILE NO. H-2-30148

PLATE 1





SCALE IN FEET

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NOTES:

Uncontrolled mosaic prepared from aerial photos flown December 1985

PROFILE LEGEND

TOP OF LEVEE

NET GRADE

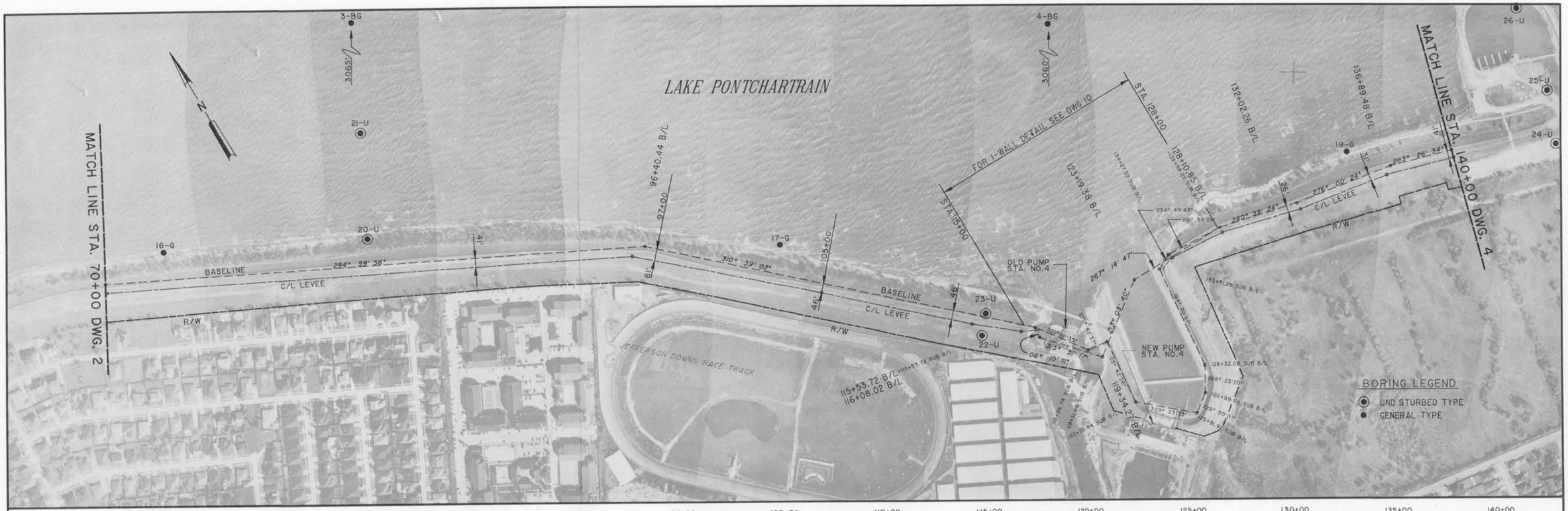
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

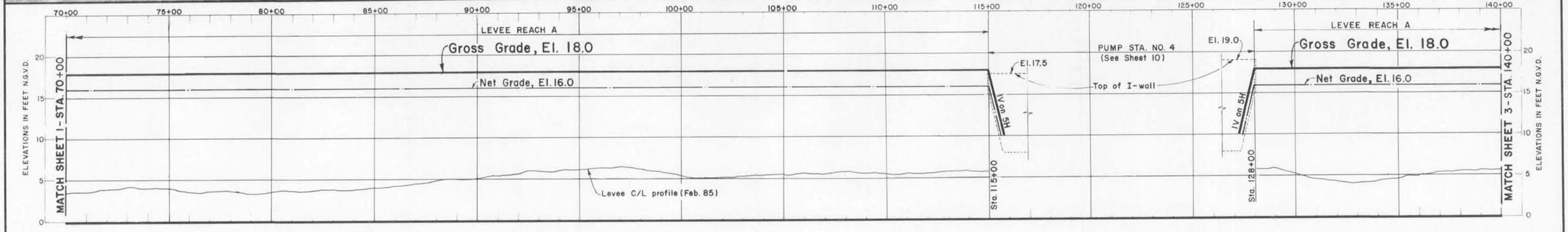
PLAN AND PROFILE
STA.0+00B/L TO STA.70+00B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 2





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PROFILE LEGEND
TOP OF LEVEE
NET GRADE

NOTES:
Uncontrolled mosaic prepared from aerial photos flown December 1985

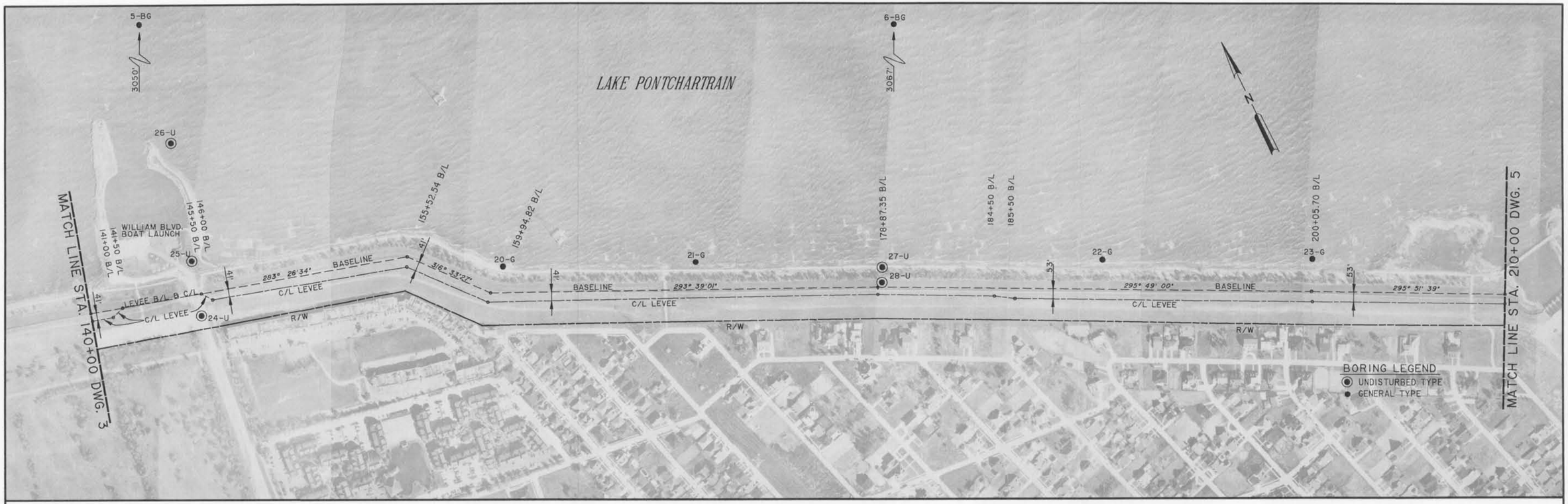
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

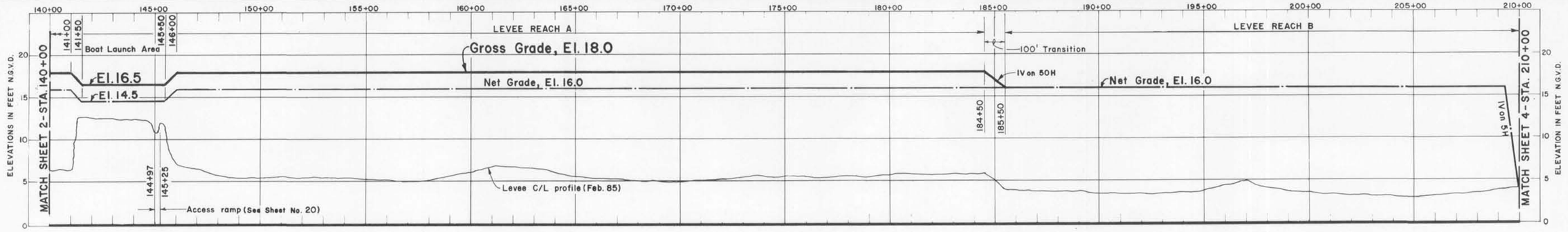
PLAN AND PROFILE

STA 70+00B/L TO STA. 140+00B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 1987 FILE NO. H-2-30148

PLATE 3





SCALE IN FEET

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NOTES:

Uncontrolled mosaic prepared from aerial photos flown December 1985

PROFILE LEGEND

TOP OF LEVEE

NET GRADE

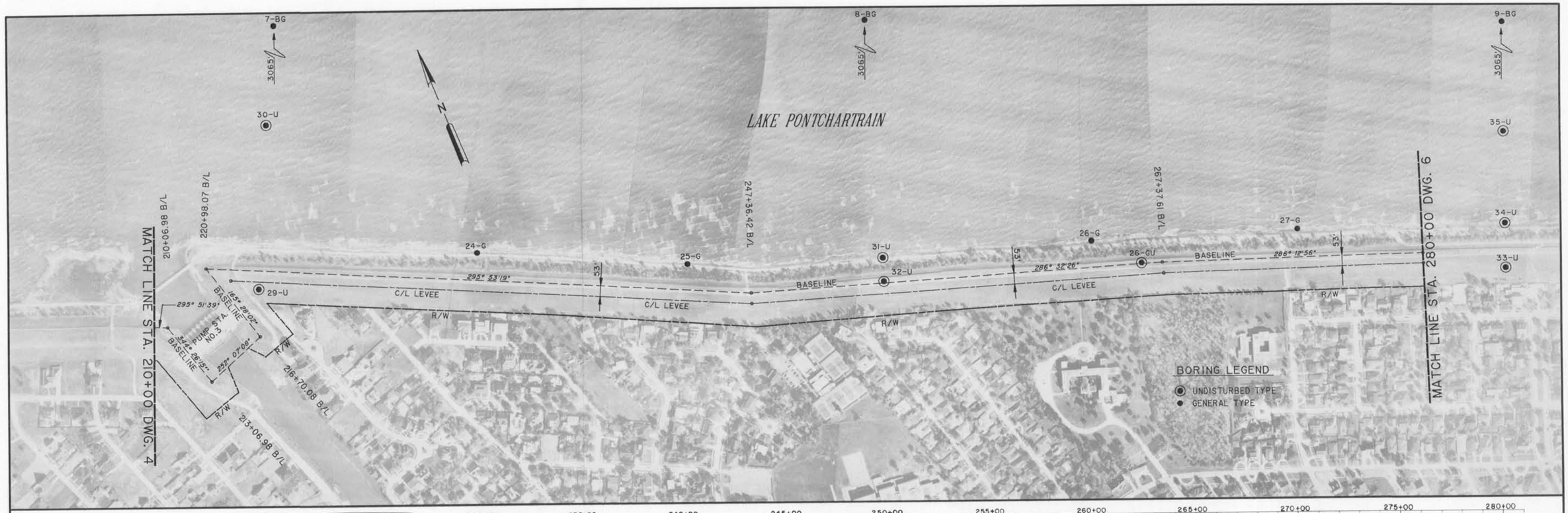
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

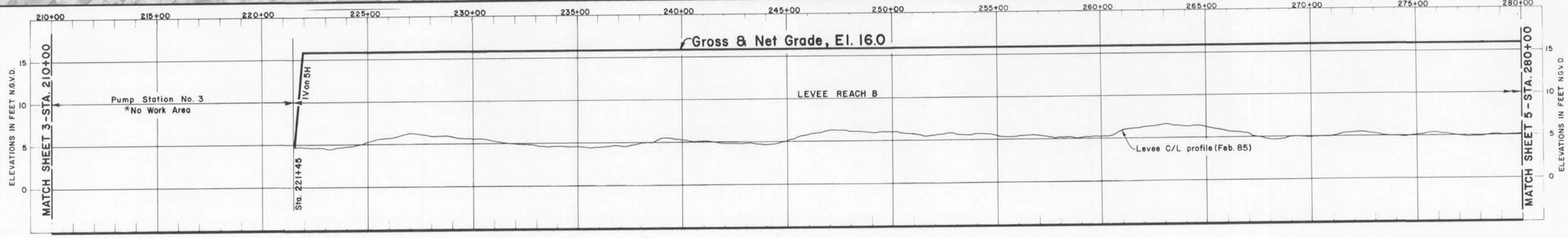
PLAN AND PROFILE
STA. 140+00B/L TO STA. 210+00B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 4





* To be covered by a supplement to this G.D.M.

SCALE IN FEET
200 0 200 400 600

NOTES:
Uncontrolled mosaic prepared from aerial photos flown December 1985

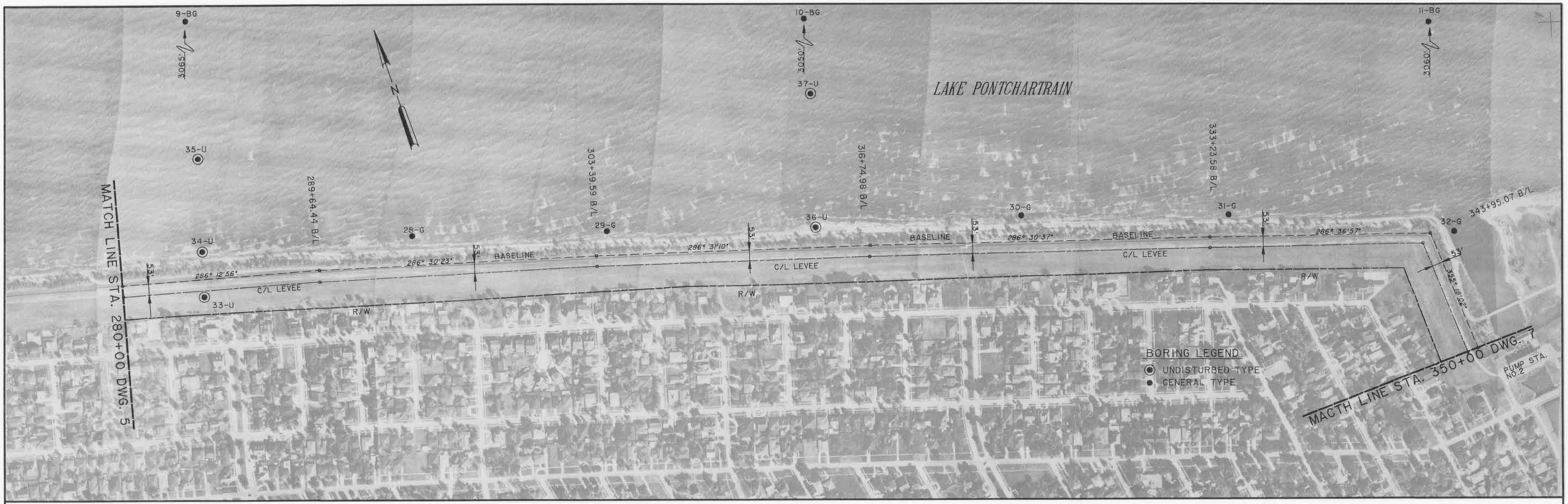
PROFILE LEGEND
TOP OF LEVEE
NET GRADE

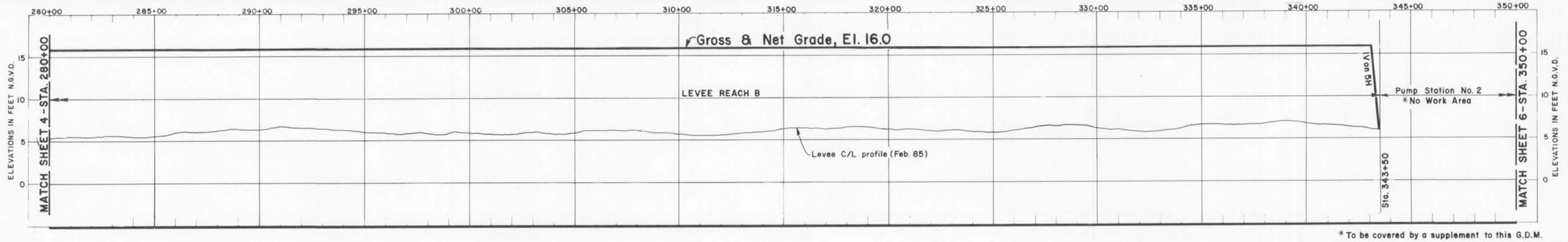
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

PLAN AND PROFILE
STA. 210+00B/L TO STA. 280+00B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 5





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SCALE IN FEET
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NOTES:
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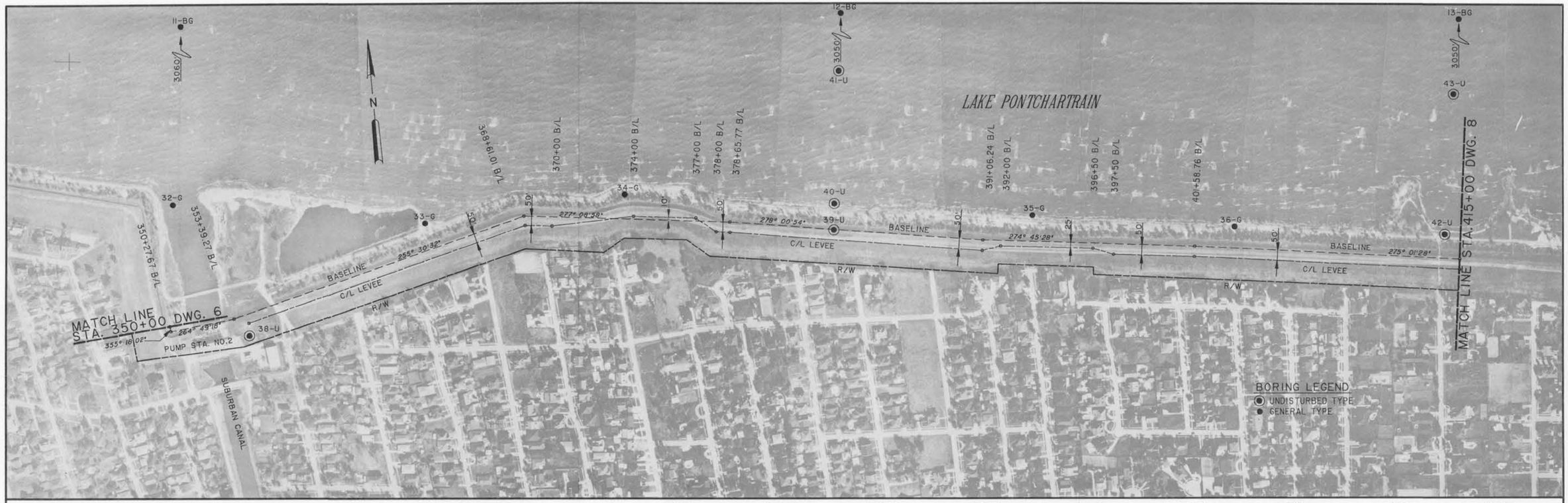
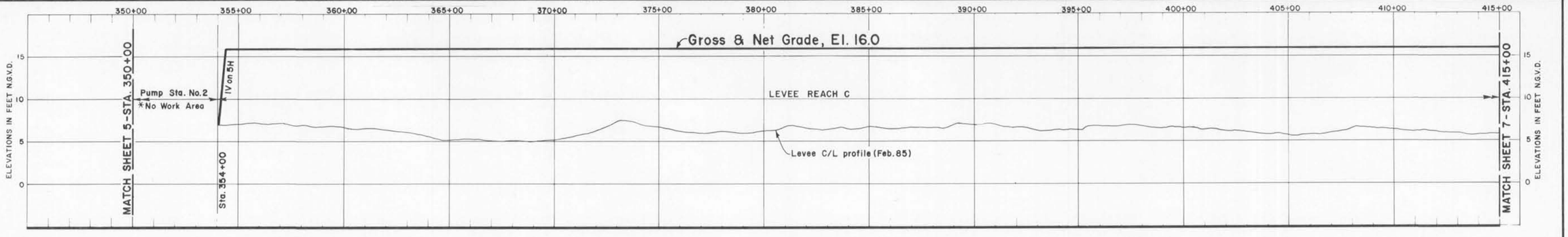
PROFILE LEGEND
TOP OF LEVEE
NET GRADE

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
PLAN AND PROFILE
STA. 280+00B/L TO STA. 350+00B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 6





*To be covered by a supplement to this G.D.M.

SCALE IN FEET
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NOTES:
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TOP OF LEVEE
NET GRADE

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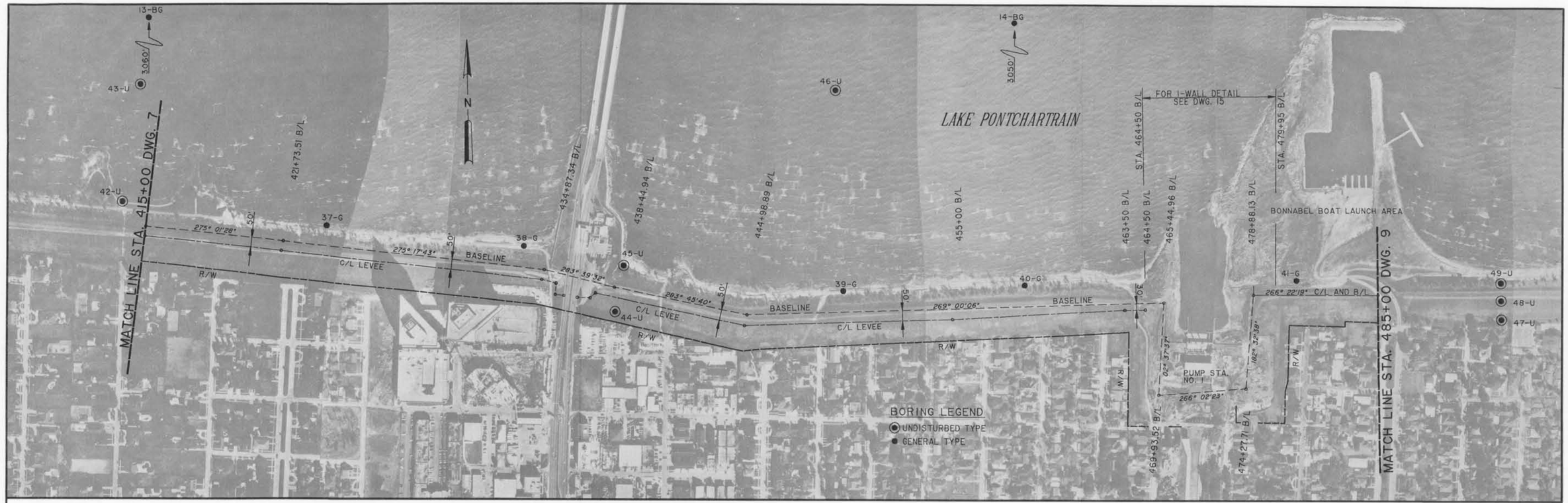
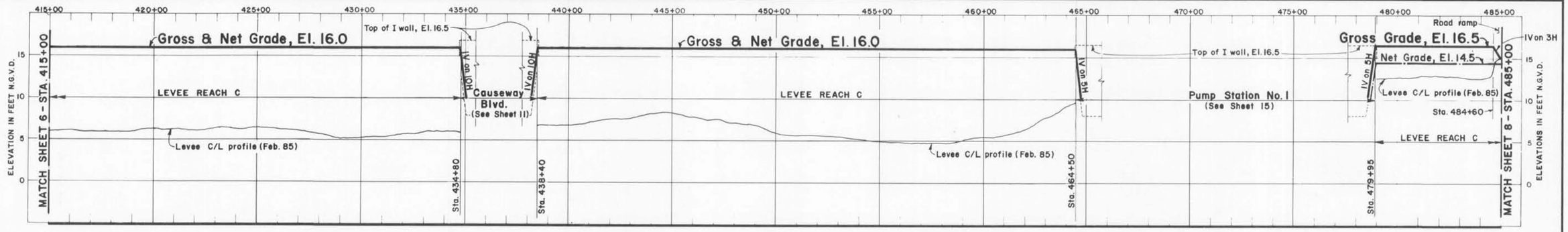
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
PLAN AND PROFILE
STA. 350+00B/L TO STA. 415+00B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 7





SCALE IN FEET
200 0 200 400 600

NOTES:
Uncontrolled mosaic prepared from aerial photo flown December 1985

PROFILE LEGEND
TOP OF LEVEE
NET GRADE

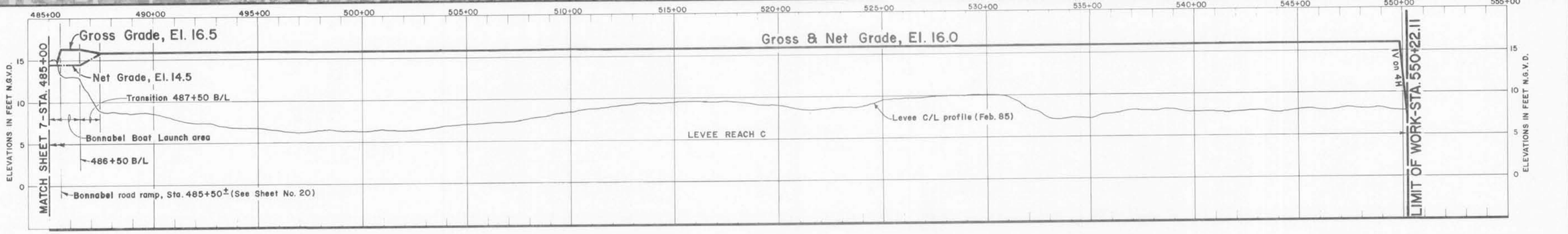
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

PLAN AND PROFILE

STA. 415+00B/L TO STA. 485+00B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 8



SCALE IN FEET
200 0 200 400 600

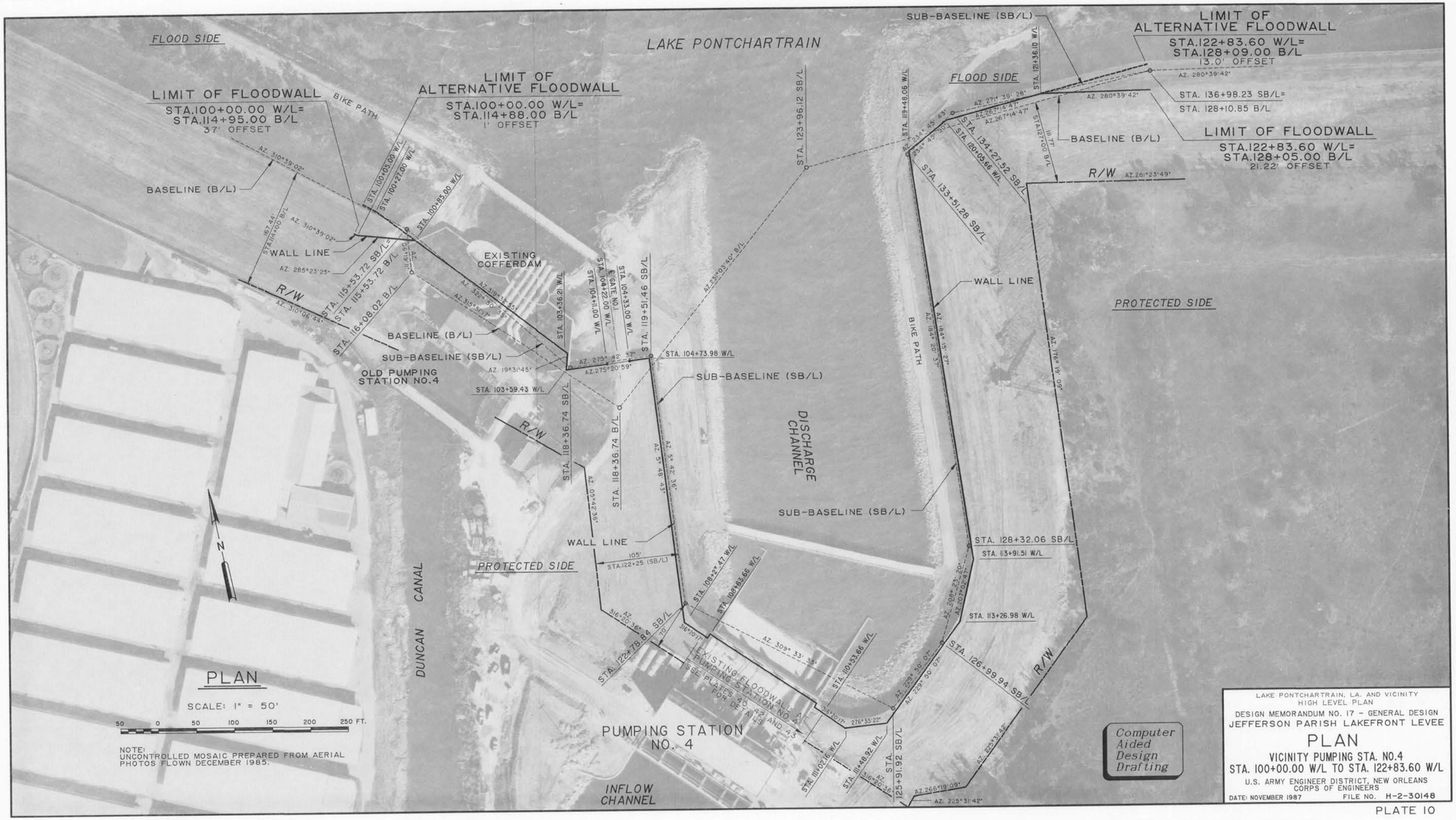
NOTES:
Uncontrolled mosaic prepared from aerial photos flown December 1985

PROFILE LEGEND
TOP OF LEVEE
NET GRADE

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
PLAN AND PROFILE
STA. 485+00B/L TO STA. 550+22.11B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 9



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

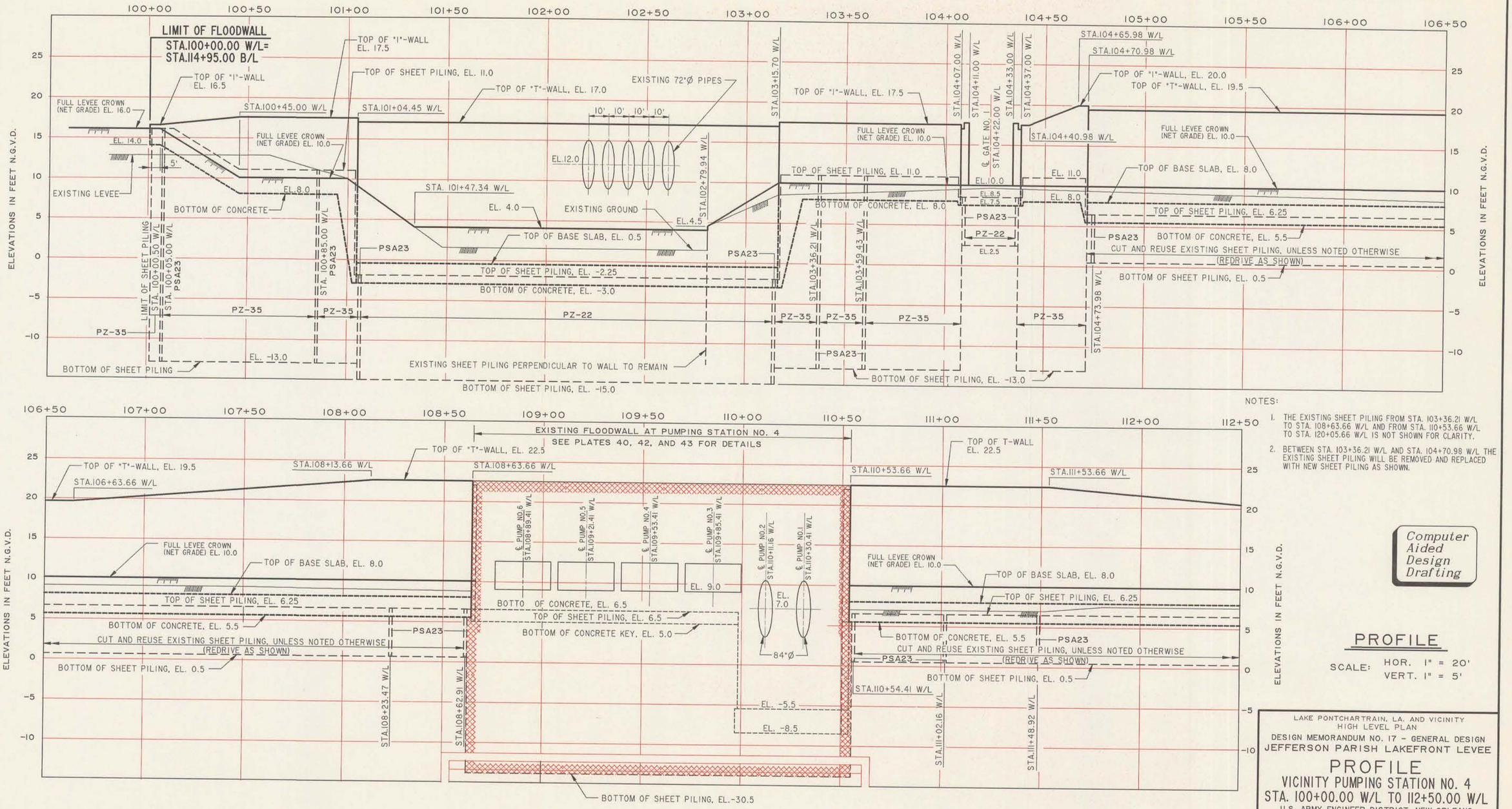
PLAN

VICINITY PUMPING STA. NO.4
STA. 100+00.00 W/L TO STA. 122+83.60 W/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 10



NOTES:

1. THE EXISTING SHEET PILING FROM STA. 103+36.21 W/L TO STA. 108+63.66 W/L AND FROM STA. 110+53.66 W/L TO STA. 120+05.66 W/L IS NOT SHOWN FOR CLARITY.
2. BETWEEN STA. 103+36.21 W/L AND STA. 104+70.98 W/L THE EXISTING SHEET PILING WILL BE REMOVED AND REPLACED WITH NEW SHEET PILING AS SHOWN.

Computer Aided Design Drafting

PROFILE

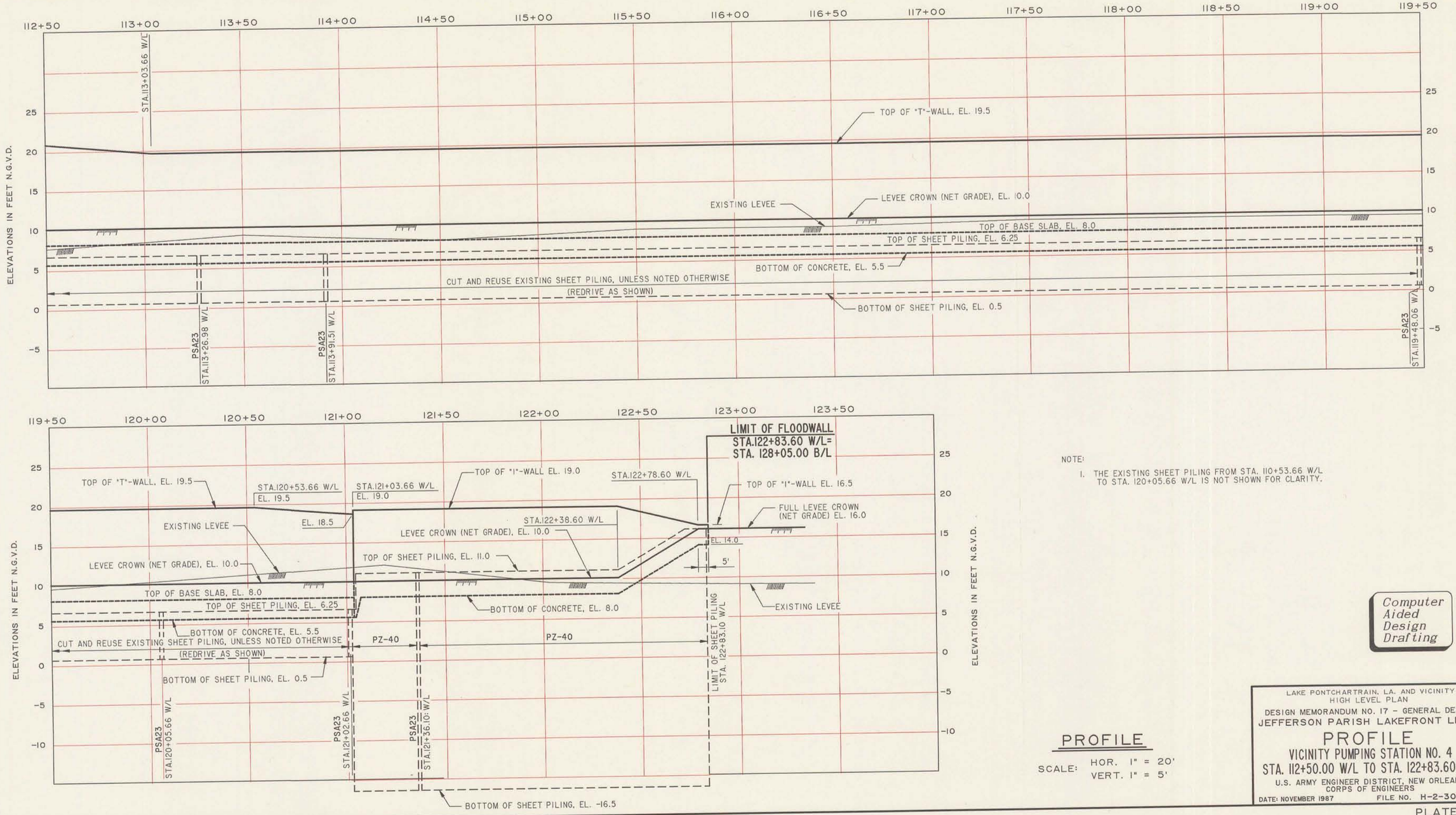
SCALE: HOR. 1" = 20'
VERT. 1" = 5'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

PROFILE
VICINITY PUMPING STATION NO. 4
STA. 100+00.00 W/L TO 112+50.00 W/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 11



NOTE:

1. THE EXISTING SHEET PILING FROM STA. 110+53.66 W/L TO STA. 120+05.66 W/L IS NOT SHOWN FOR CLARITY.

Computer Aided Design Drafting

PROFILE

SCALE: HOR. 1" = 20'
VERT. 1" = 5'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

PROFILE

VICINITY PUMPING STATION NO. 4
STA. 112+50.00 W/L TO STA. 122+83.60 W/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 12

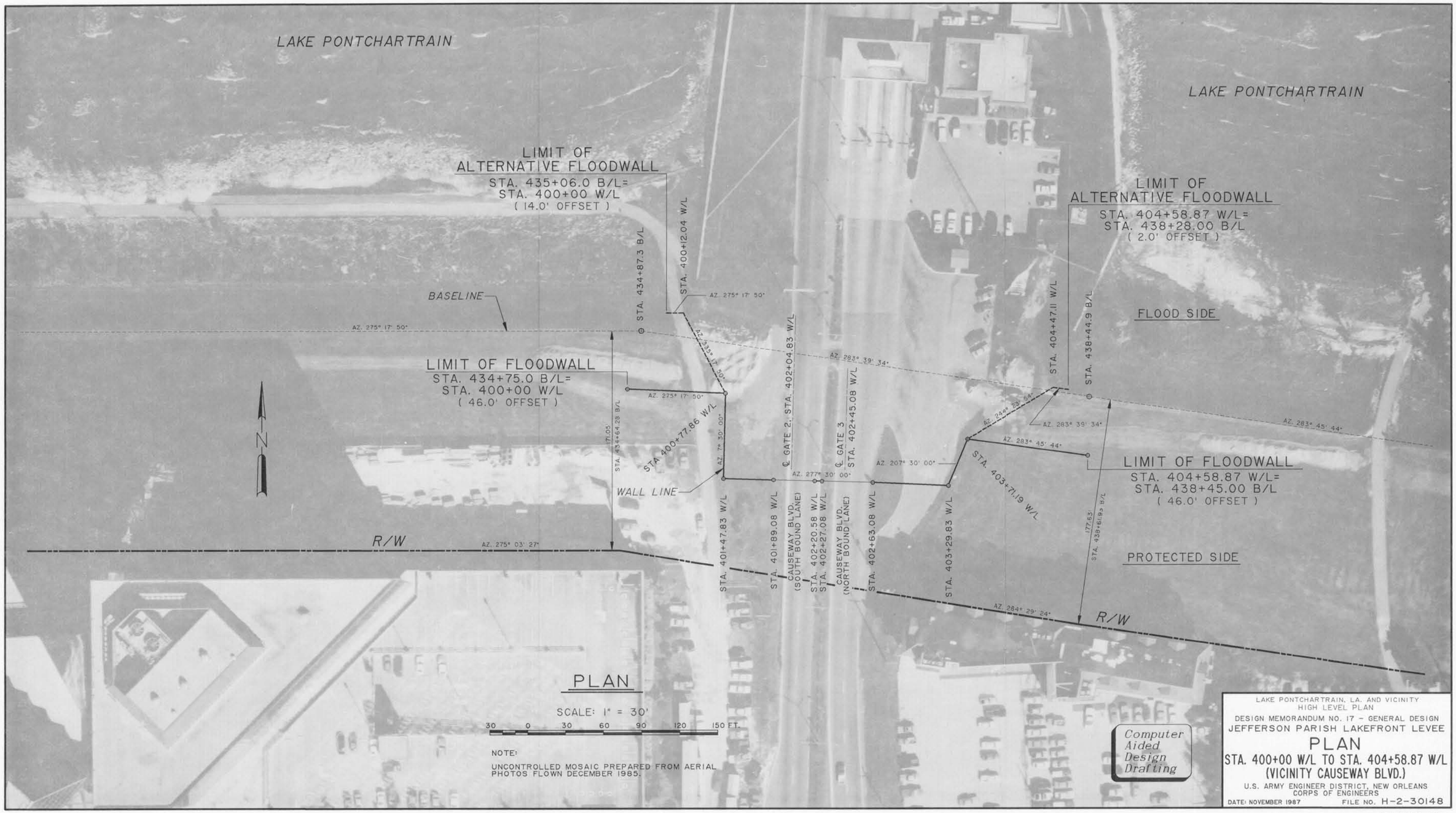
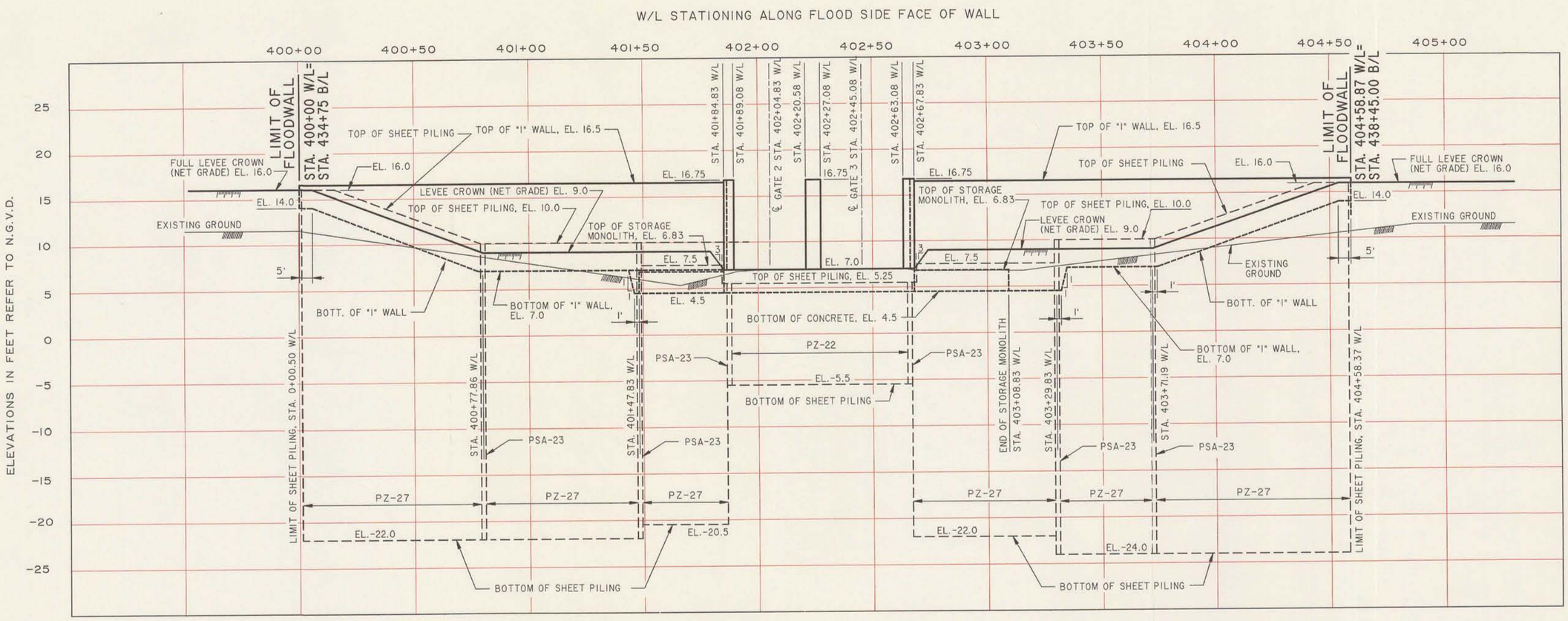

LAKE PONTCHARTRAIN
LAKE PONTCHARTRAIN
LIMIT OF ALTERNATIVE FLOODWALL
STA. 435+06.0 B/L=
STA. 400+00 W/L
(14.0' OFFSET)
LIMIT OF ALTERNATIVE FLOODWALL
STA. 404+58.87 W/L=
STA. 438+28.00 B/L
(2.0' OFFSET)
BASELINE
AZ. 275° 17' 50"
STA. 434+87.3 B/L
STA. 400+12.04 W/L
AZ. 283° 39' 34"
STA. 404+47.11 W/L
STA. 438+44.9 B/L
FLOOD SIDE
LIMIT OF FLOODWALL
STA. 434+75.0 B/L=
STA. 400+00 W/L
(46.0' OFFSET)
AZ. 7° 30' 00"
STA. 400+77.86 W/L
STA. 434+64.28 B/L
171.05
WALL LINE
℄ GATE 2, STA. 402+04.83 W/L
℄ GATE 3
STA. 402+45.08 W/L
AZ. 277° 30' 00"
AZ. 207° 30' 00"
AZ. 283° 45' 44"
AZ. 284° 29' 24"
STA. 403+71.19 W/L
LIMIT OF FLOODWALL
STA. 404+58.87 W/L=
STA. 438+45.00 B/L
(46.0' OFFSET)
R/W
AZ. 275° 03' 27"
STA. 401+47.83 W/L
STA. 401+89.08 W/L
CAUSEWAY BLVD. (SOUTH BOUND LANE)
STA. 402+20.58 W/L
STA. 402+27.08 W/L
CAUSEWAY BLVD. (NORTH BOUND LANE)
STA. 402+63.08 W/L
STA. 403+29.83 W/L
177.83'
STA. 438+61.92 B/L
PROTECTED SIDE
R/W
N
PLAN
SCALE: 1" = 30'
30 0 30 60 90 120 150 FT.
NOTE:
UNCONTROLLED MOSAIC PREPARED FROM AERIAL PHOTOS FLOWN DECEMBER 1985.
Computer Aided Design Drafting
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
PLAN
STA. 400+00 W/L TO STA. 404+58.87 W/L
(VICINITY CAUSEWAY BLVD.)
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987
FILE NO. H-2-30148

PLATE 13



PROFILE

SCALE: VERT. 1" = 5'
HORIZ. 1" = 20'

Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
PROFILE
VICINITY CAUSEWAY BLVD.
STA. 400+00.00 W/L TO STA. 404+58.87 W/L
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

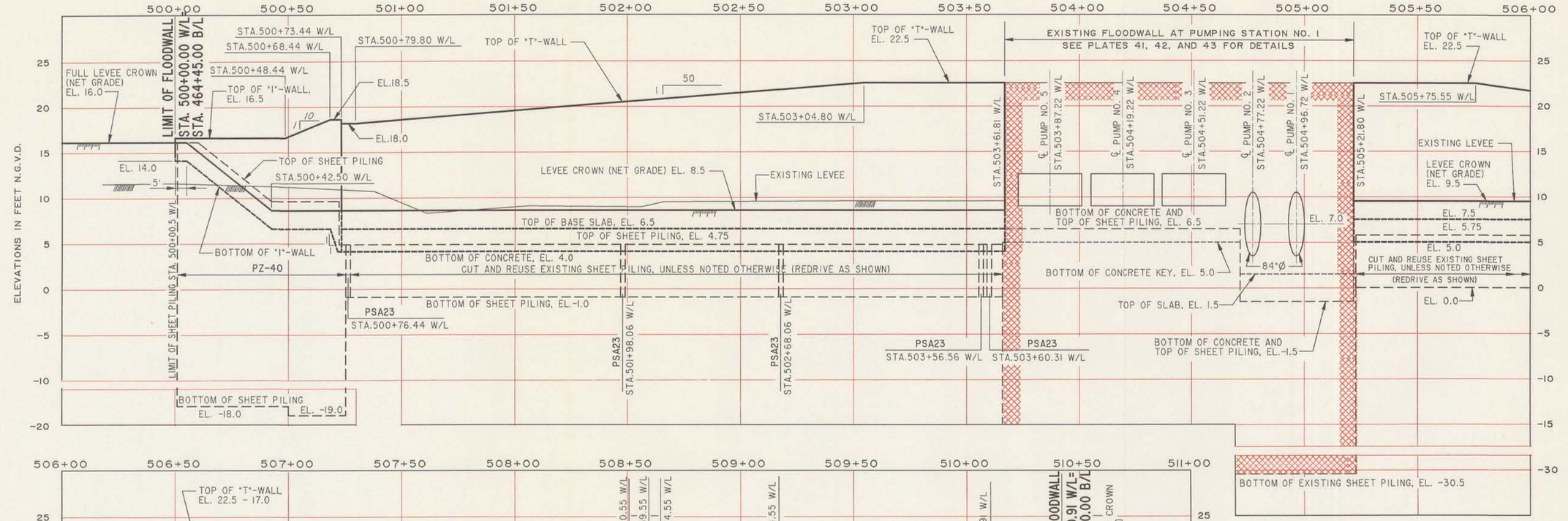
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

PLAN

VICINITY PUMPING STATION NO. 1
STA. 500+00.00 W/L TO STA. 510+40.91 W/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148



Computer Aided Design Drafting

PROFILE

SCALE: HOR. 1" = 20'
VERT. 1" = 5'

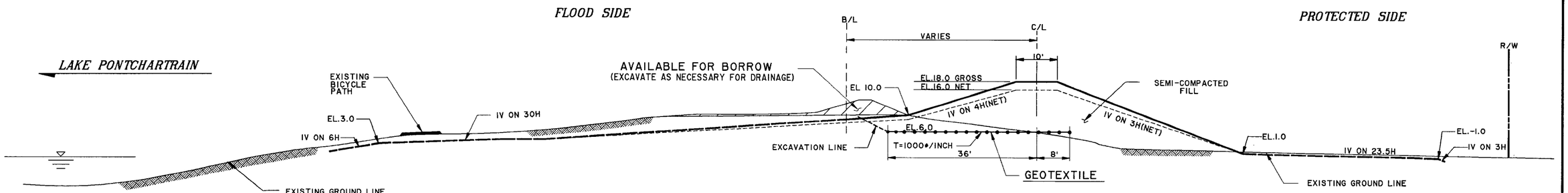
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

PROFILE

VICINITY PUMPING STA. NO. 1
STA. 500+00.00 W/L TO STA. 510+40.91 W/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

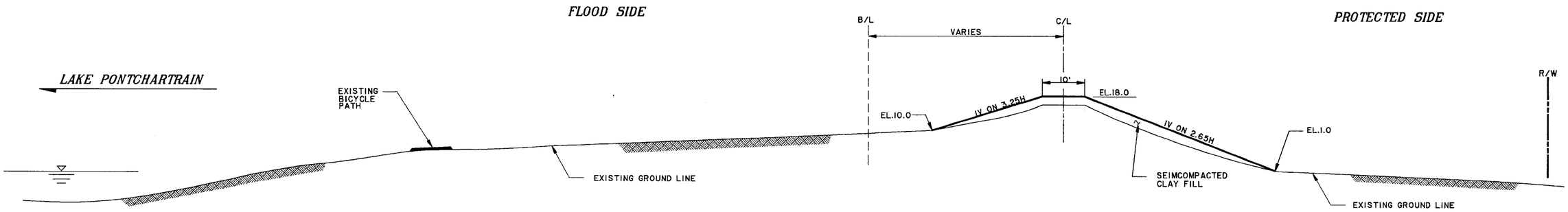
DATE: NOVEMBER 1987 FILE NO. H-2-30148



NOTE:
ENTIRE FLOODSIDE SECTION OF THE LEVEE IS FOR WAVE RUNUP.

SOILS REACH -A TYPICAL SECTION FIRST LIFT

NOT TO SCALE



SOILS REACH-A TYPICAL SECTION SECOND AND THIRD LIFTS

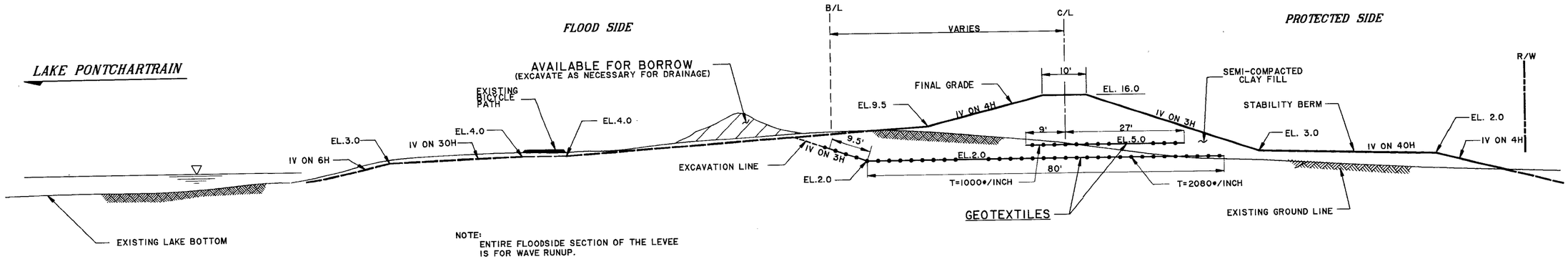
NOT TO SCALE

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORNADUM NO.17-GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
STA. 1+00 B/L TO STA. 185+00 B/L

SOILS REACH-A
TYPICAL DESIGN SECTIONS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

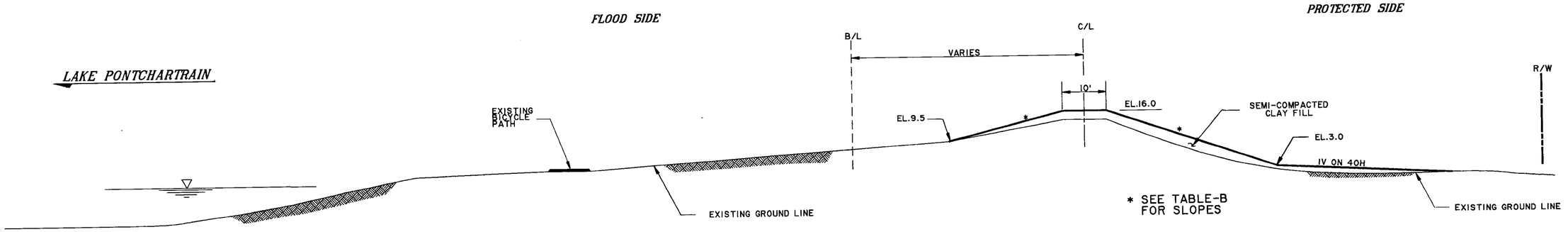
DATE: NOVEMBER 1987 FILE NO. H-2-30148



NOTE:
ENTIRE FLOODSIDE SECTION OF THE LEVEE IS FOR WAVE RUNUP.

SOILS REACH-B TYPICAL SECTION FIRST LIFT

NOT TO SCALE



SOILS REACH-B TYPICAL SECTION SECOND THIRD AND FORTH LIFTS

NOT TO SCALE

TABLE – B

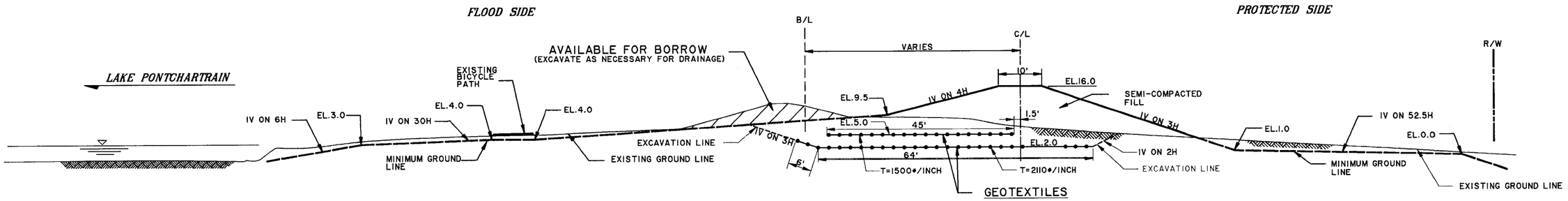
LIFT	CROWN EL. FROM & TO	P/S SLOPE	F/S SLOPE
2ND	14.0 TO 16.0	IV ON 3H	IV ON 4H
3RD	14.5 TO 17.0	IV ON 2.8H	IV ON 3.47H
4TH	15.5 TO 17.5	IV ON 2.7H	IV ON 3.25H

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17-GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
STA. 185+00 B/L TO STA. 343+00 B/L

SOILS REACH-B TYPICAL DESIGN SECTIONS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

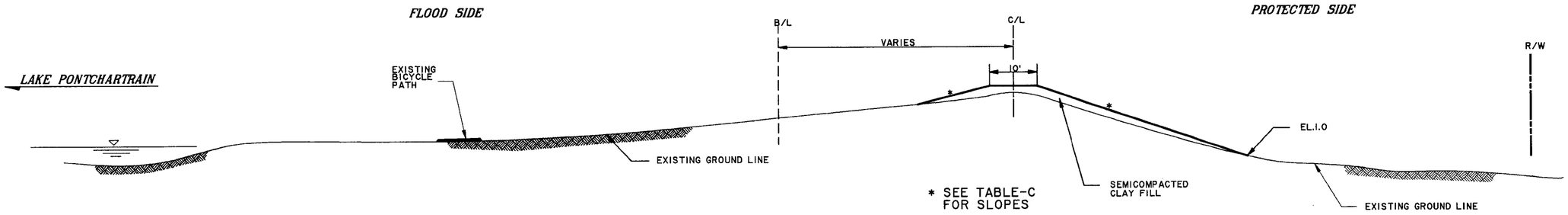


NOTE:

ENTIRE FLOODSIDE SECTION OF THE LEVEE IS FOR WAVE RUNUP

SOILS REACH-C TYPICAL SECTION FIRST LIFT

NOT TO SCALE



SOILS REACH-C TYPICAL SECTION SECOND, THIRD AND FORTH LIFTS

NOT TO SCALE

TABLE-C

LIFT	CROWN EL. FROM & TO	P/S SLOPE	F/S SLOPE
2ND	14.3 TO 16.0	1V ON 3H	1V ON 4H
3RD	14.5 TO 17.0	1V ON 2.8H	1V ON 3.47H
4TH	15.5 TO 17.5	1V ON 2.7H	1V ON 3.25H

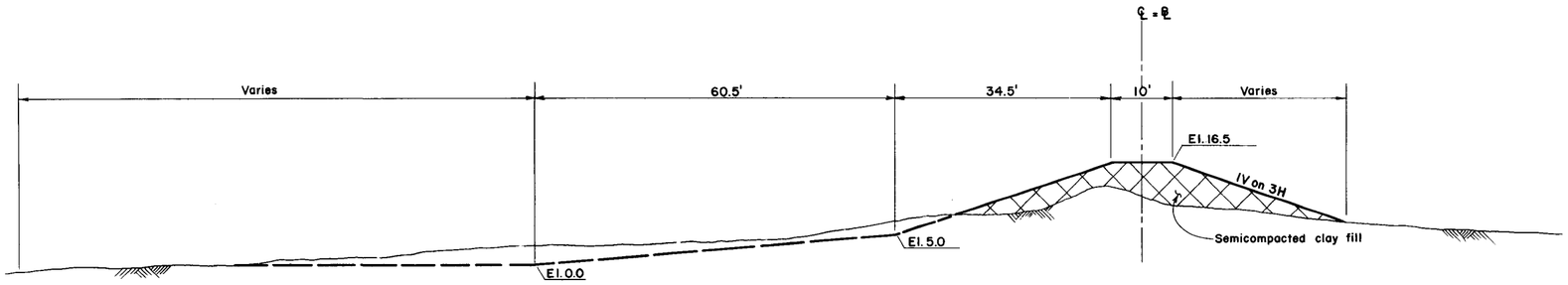
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17-GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
STA. 354+00 B/L TO STA. 549+00 B/L

SOILS REACH-C TYPICAL DESIGN SECTIONS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987

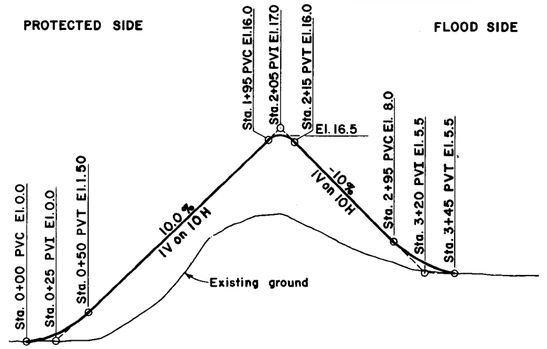
FILE NO. H-2-30148



DETAIL SECTION - LEVEE REACH A

WILLIAMS BLVD. BOAT LAUNCH

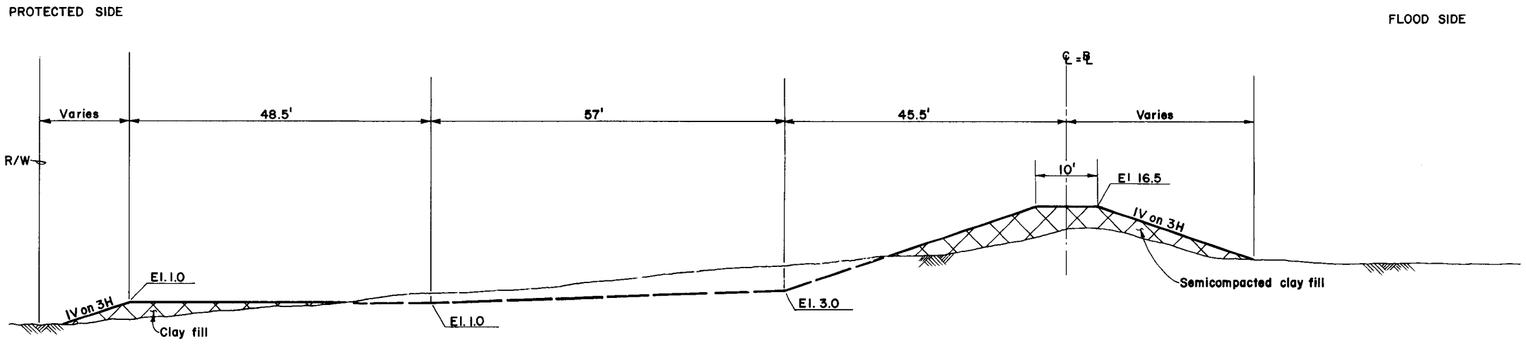
B/L STA. 141+50 TO STA. 145+50



PROFILE

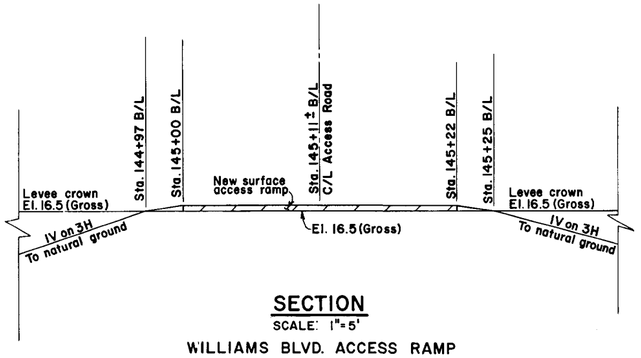
SCALE: HORZ. 1" = 50'
VERT. 1" = 5'

WILLIAMS BLVD. ACCESS RAMP



BONNABEL BOAT LAUNCH AREA

B/L STA. 479+00 TO STA. 486+50



SECTION

SCALE: 1" = 5'

WILLIAMS BLVD. ACCESS RAMP

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

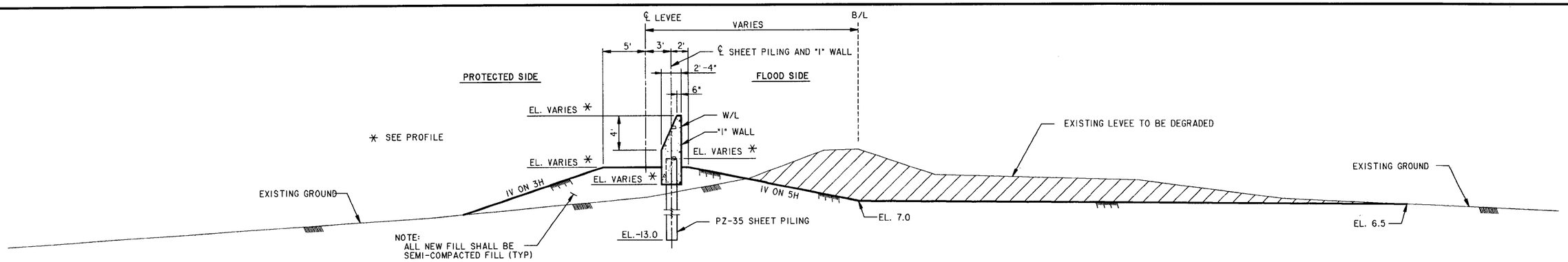
DESIGN SECTIONS

WILLIAMS BLVD. AND BONNABEL
BOAT LAUNCH AND ACCESS RAMPS

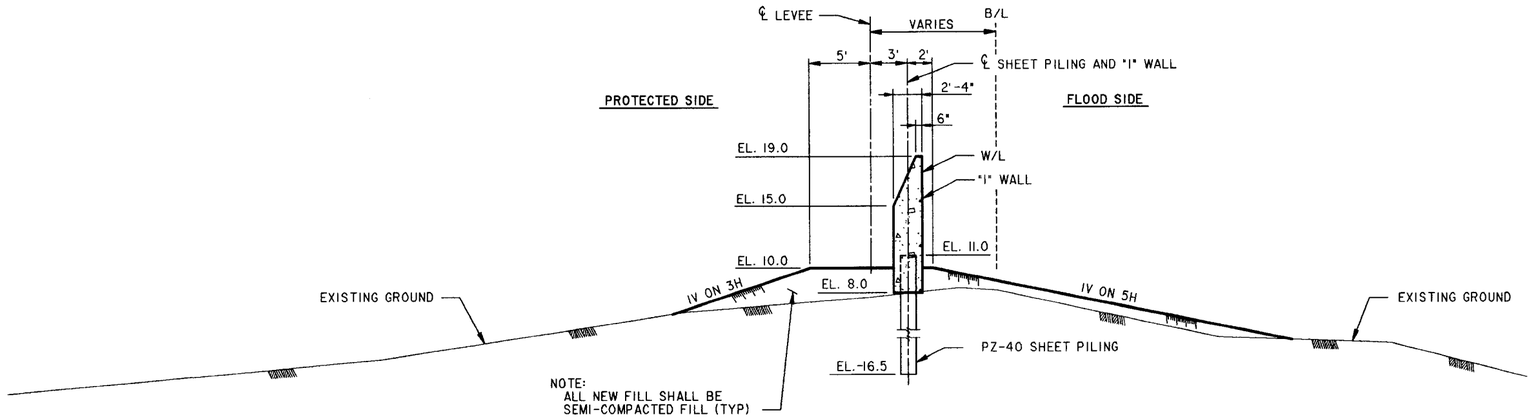
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 20



TYPICAL SECTION
VICINITY STA. 100+35.00 W/L
SCALE: 1" = 5'



TYPICAL SECTION
VICINITY STA. 121+75.00 W/L
SCALE: 1" = 5'

SCALE: 1" = 5'

5' 0 5' 10' 15'

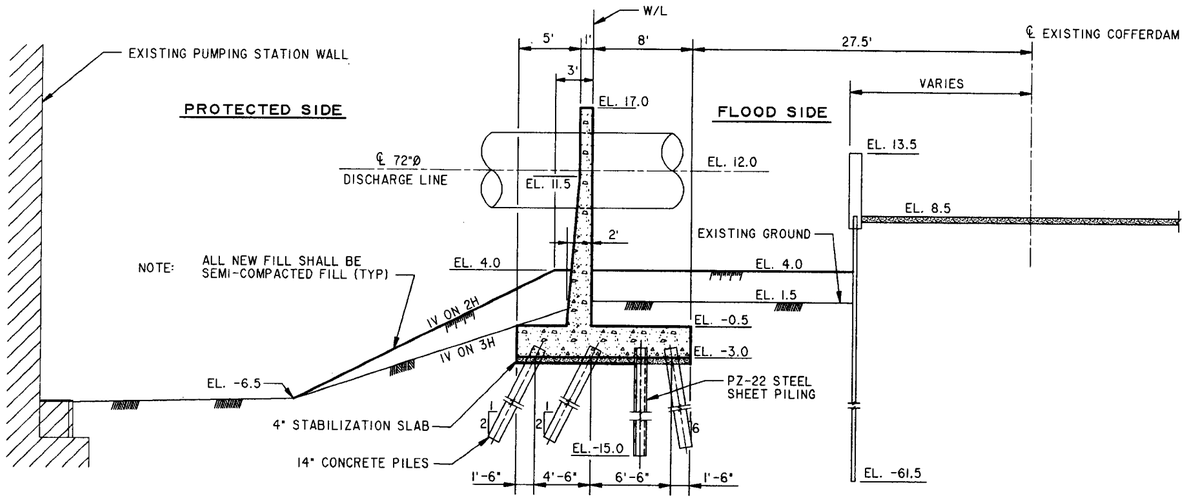
Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

FLOODWALL DESIGN SECTIONS
(VICINITY PUMPING STA. 4)

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

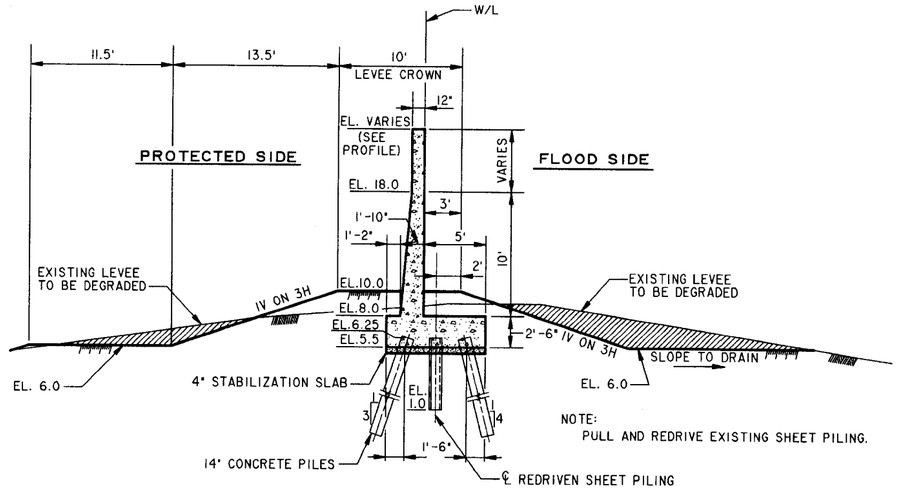
PLATE 21



TYPICAL SECTION

STA. 101+04.45 W/L - STA. 103+15.70 W/L

SCALE: 1" = 5'

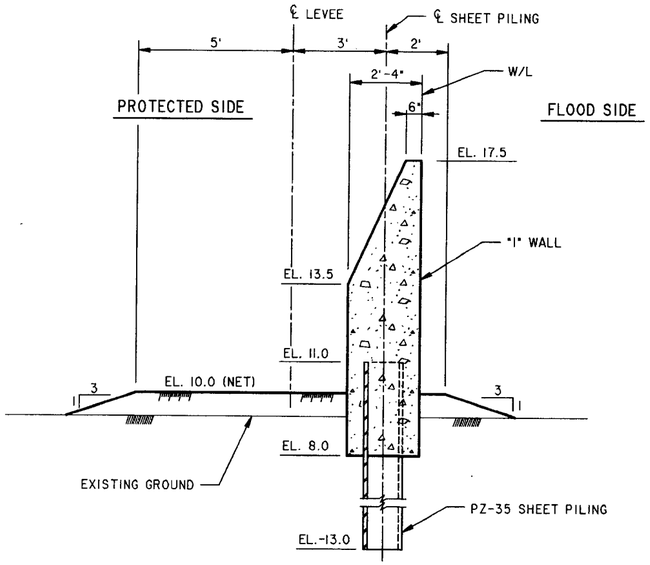


TYPICAL SECTION

STA. 104+70.98 W/L - STA. 108+63.66 W/L

STA. 110+53.66 W/L - STA. 121+03.66 W/L

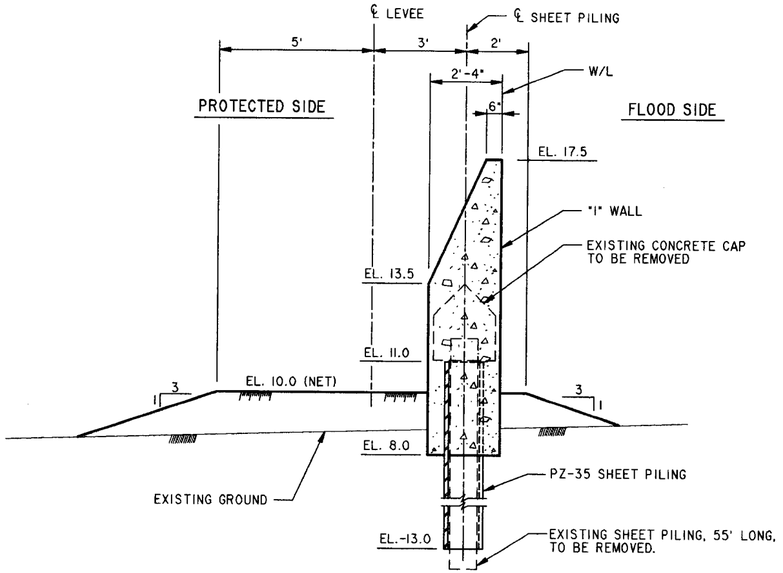
SCALE: 1" = 5'



TYPICAL SECTION

STA. 103+15.70 W/L - STA. 103+36.21 W/L

SCALE: 1/2" = 1'-0"



TYPICAL SECTION

VICINITY STA. 103+45.00 W/L

SCALE: 1/2" = 1'-0"

SCALE: 1/2" = 1'-0"

12" 0 1' 2' 3' 4' 5' 6'

SCALE: 1" = 5'

5' 0 5' 10' 15' 20'

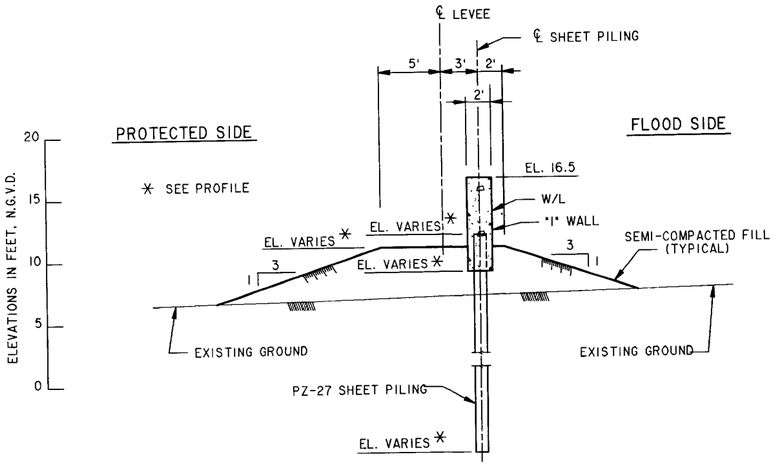
Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

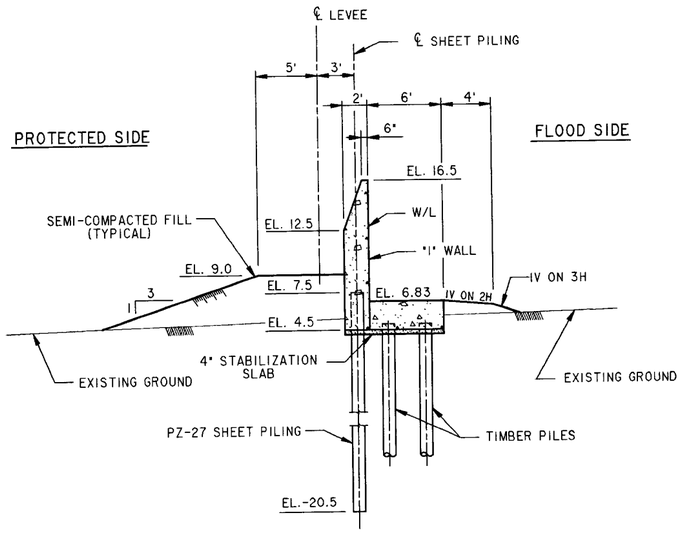
FLOODWALL DESIGN SECTIONS
(VICINITY PUMPING STA. 4)

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

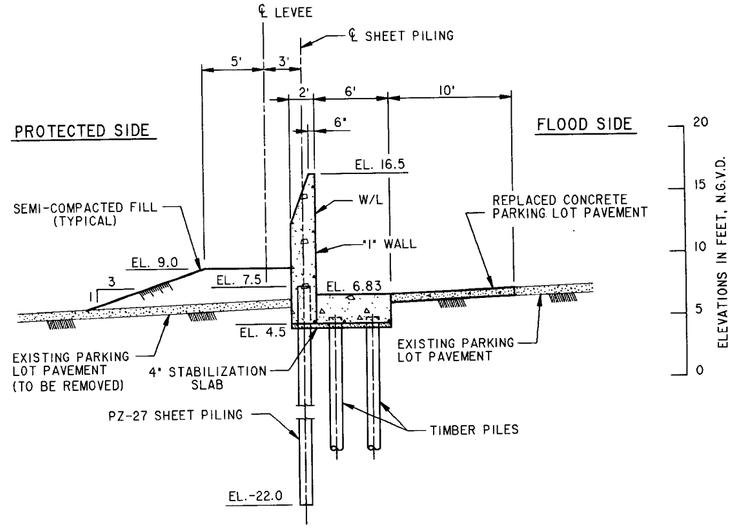
PLATE 22



VICINITY STA. 400+50 W/L AND STA. 404+25 W/L

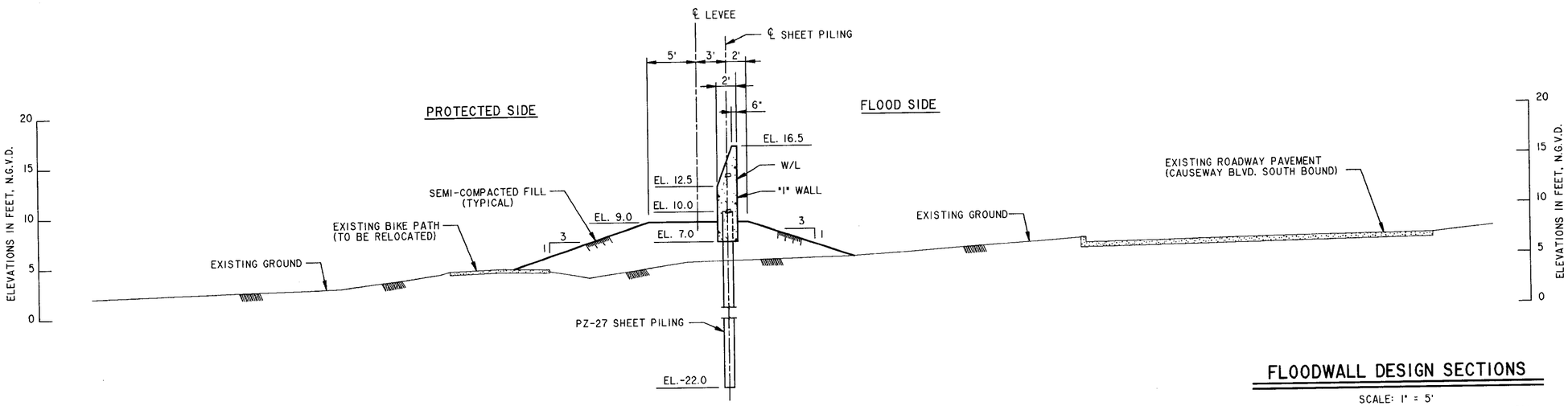


VICINITY STA. 401+80 W/L



VICINITY STA. 403+00 W/L

NOTE:
SEE PROFILE FOR TRANSITION DETAILS
BETWEEN THE TYPICAL SECTIONS SHOWN.



VICINITY STA. 400+80 W/L

FLOODWALL DESIGN SECTIONS

SCALE: 1" = 5'

5' 0 5' 10' 15' 20'

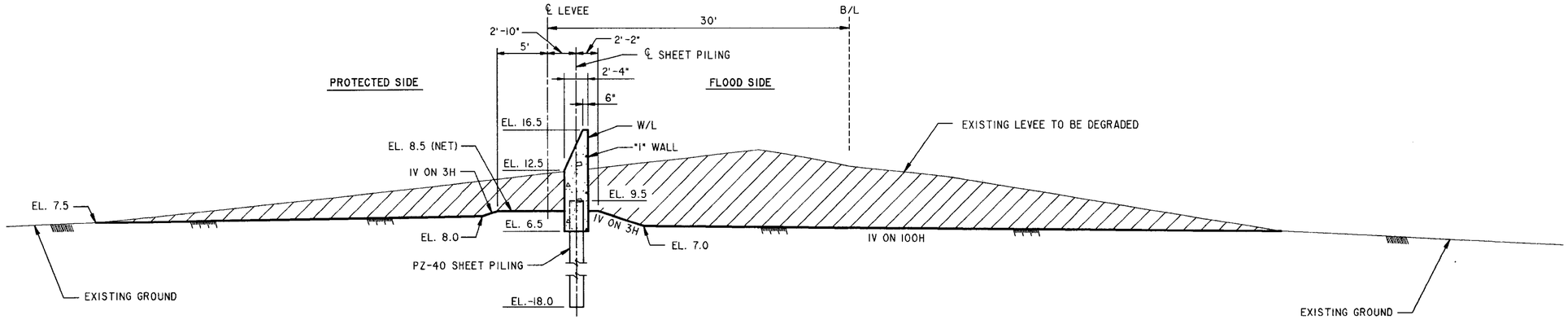
Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

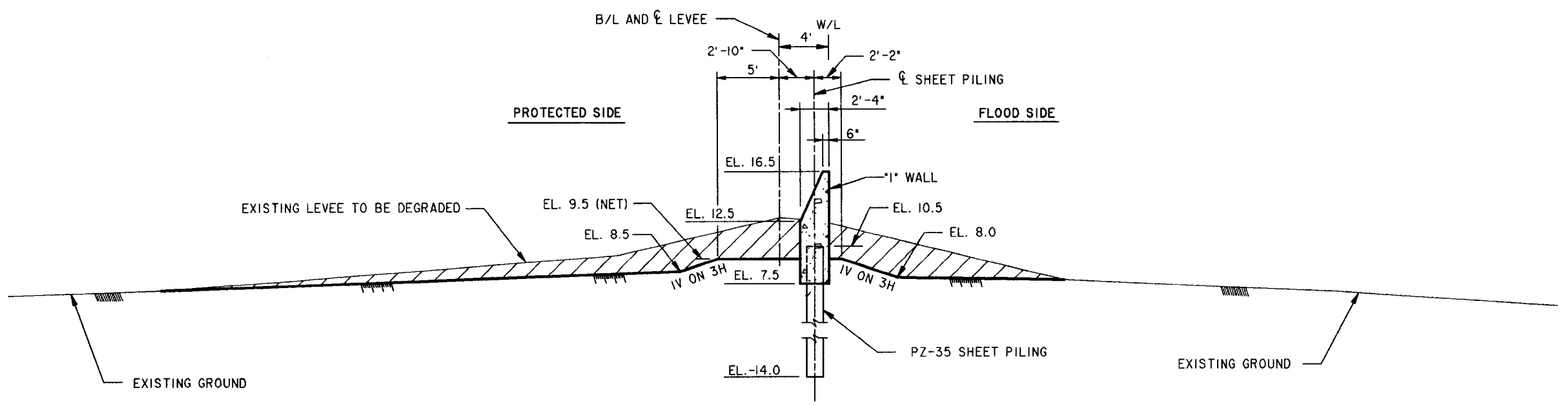
FLOODWALL DESIGN SECTIONS
(VICINITY CAUSEWAY BLVD.)

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 23



TYPICAL SECTION
VICINITY STA. 500+45.00 W/L
SCALE: 1" = 5'



TYPICAL SECTION
VICINITY STA. 510+00.00 W/L
SCALE: 1" = 5'

SCALE: 1" = 5'

5' 0 5' 10' 15'

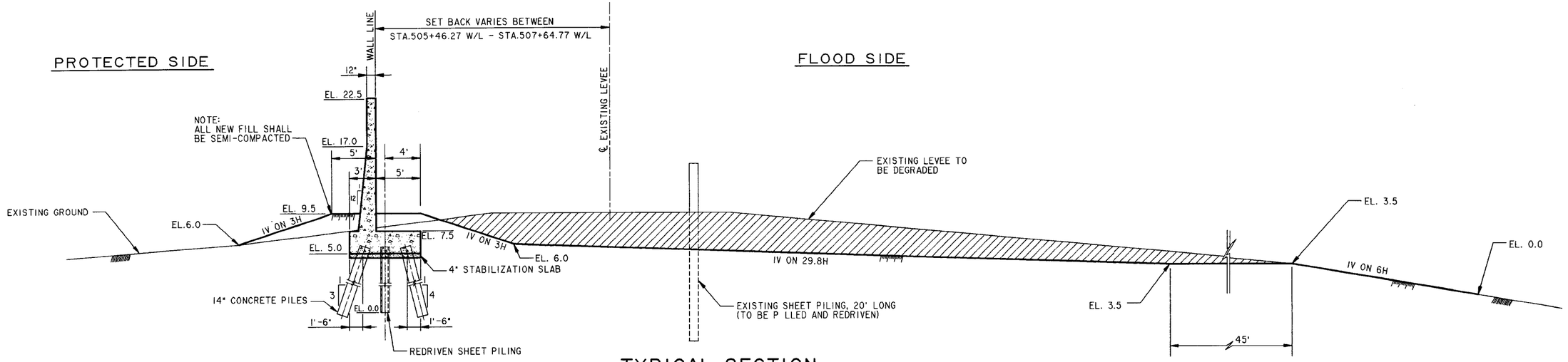
Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

FLOODWALL DESIGN SECTIONS
(VICINITY PUMPING STA. 1)

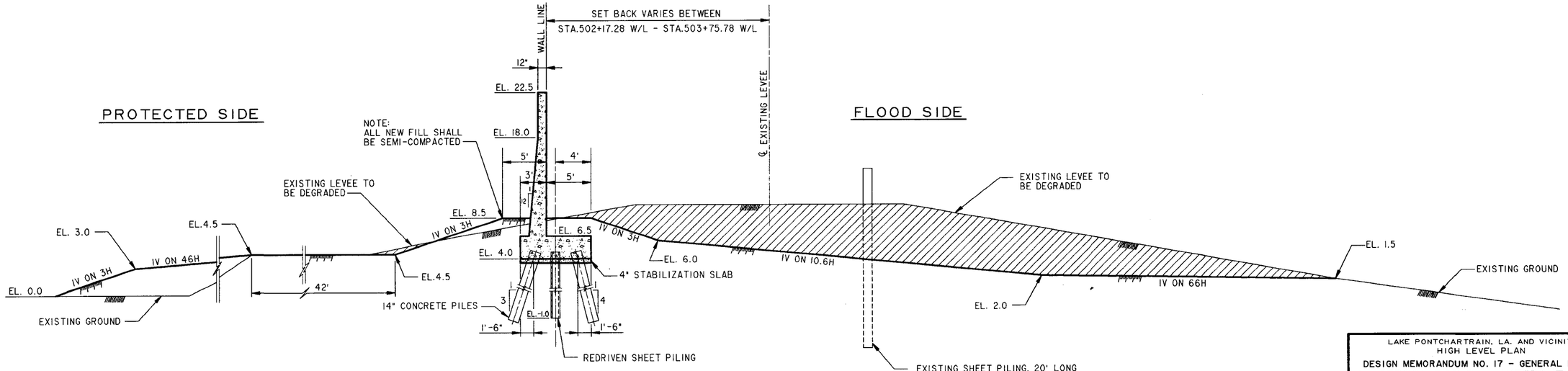
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 24



TYPICAL SECTION
STA. 505+21.80 W/L - STA. 508+59.55 W/L

SCALE: 1" = 5'



TYPICAL SECTION
STA. 500+73.44 W/L - STA. 503+61.81 W/L

SCALE: 1" = 5'

Computer Aided Design Drafting

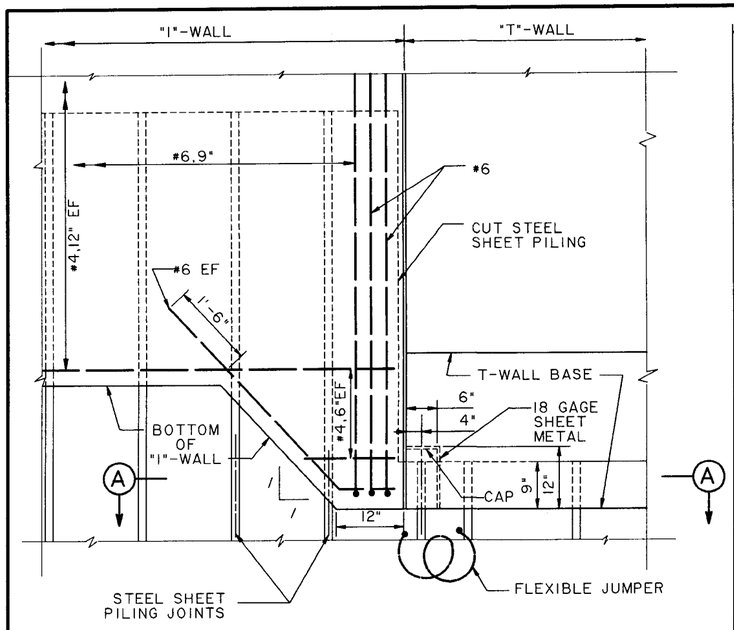
SCALE: 1" = 5'

5' 0 5' 10' 15' 20'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

FLOODWALL DESIGN SECTIONS
(VICINITY PUMPING STA. 1)

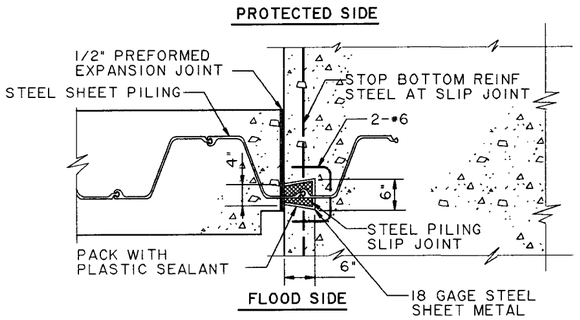
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148



ELEVATION

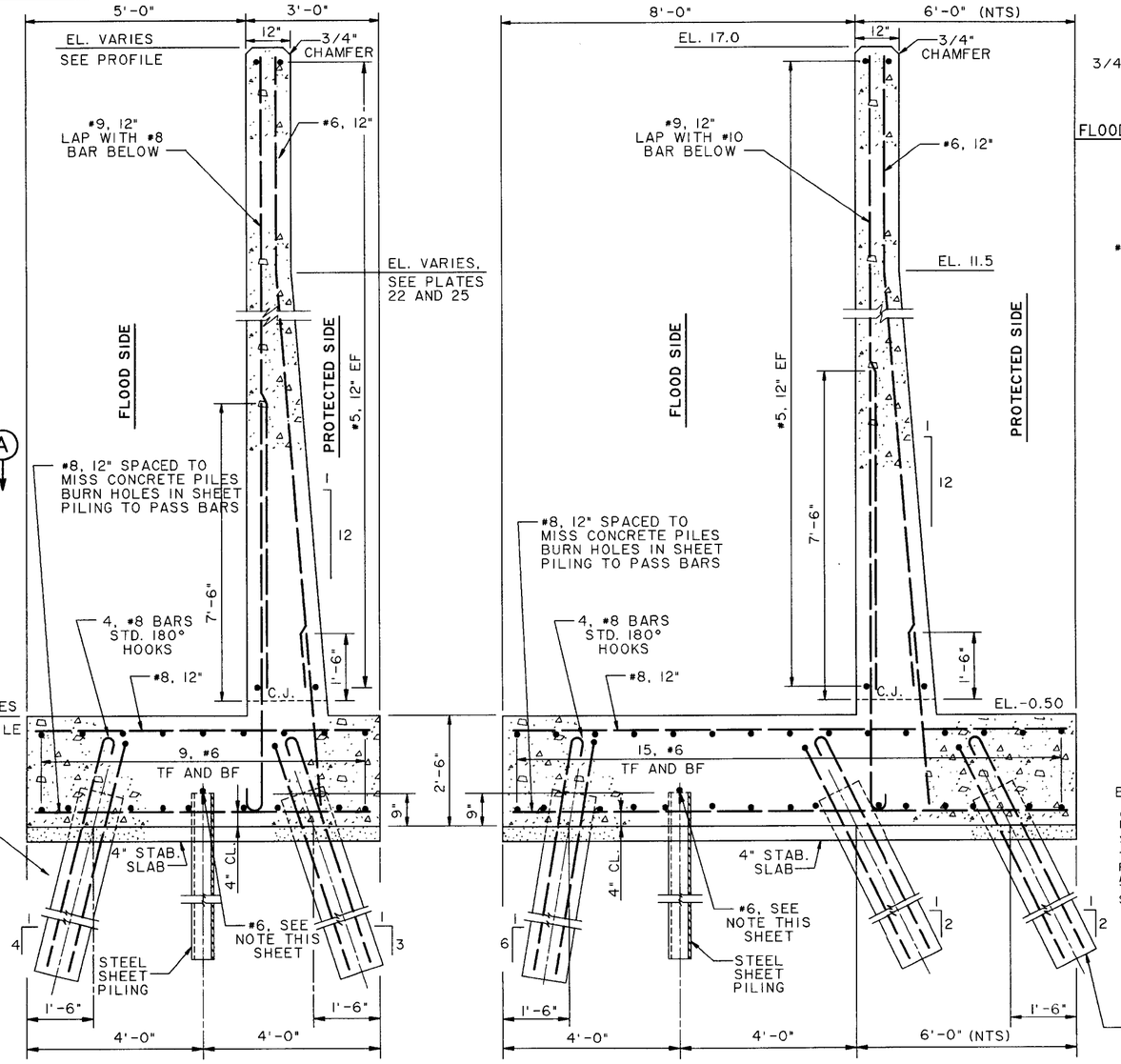
TYPICAL DETAIL FOR TRANSITION "I"-WALL TO "T"-WALL AT BASE

SCALE 1" = 1'-0"



SECTION (A)

SCALE: 1" = 1'-0"



STA. 104+70.98 W/L TO STA. 108+63.66 W/L
STA. 110+53.66 W/L TO STA. 121+03.66 W/L
STA. 500+73.44 W/L TO STA. 503+61.81 W/L
STA. 505+21.80 W/L TO STA. 508+59.55 W/L

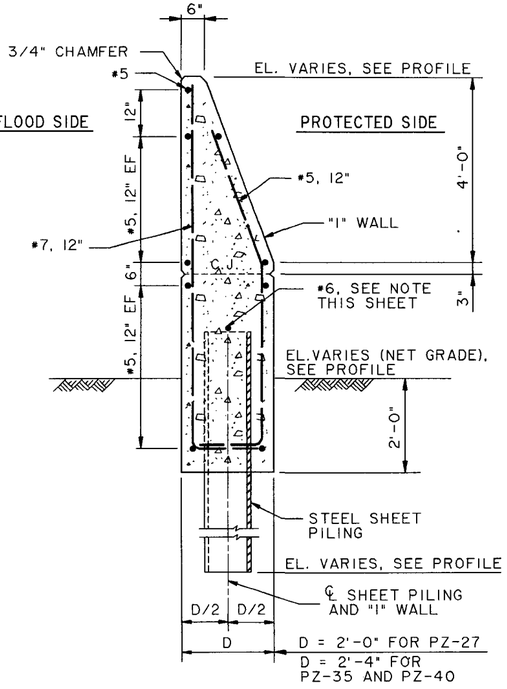
TYPICAL "T"-WALL SECTION

SCALE: 3/4" = 1'-0"

STA. 101+04.45 W/L TO STA. 103+15.70 W/L

TYPICAL "T"-WALL SECTION

SCALE: 3/4" = 1'-0"



TYPICAL "I"-WALL SECTION

SCALE: 3/4" = 1'-0"

BONDING NOTE:

#6 REINFORCING BAR TO BE WELDED TO THE TOP OF EACH STEEL SHEET PILE. #6 REINFORCING BAR SHALL NOT EXTEND ACROSS THE MONOLITH JOINT. INSTALL FLEXIBLE JUMPER AT ALL TRANSITIONS FROM T-WALL MONOLITH TO STEEL SHEET PILING. JUMPERS SHALL BE INSULATED NO. 1/0 AWG COPPER, TYPE USE, INSULATED WITH A MINIMUM OF 95 MILS OF CROSS LINKED POLYETHELENE IN AN 8"ø LOOP. JUMPER SHALL BE WELDED AS SPECIFIED TO ADJACENT STEEL PILES ONE FOOT BELOW THE BOTTOM OF THE BASE AT TRANSITIONS FROM T-WALL MONOLITH TO STEEL SHEET PILING. WELDED CONNECTIONS SHALL BE COATED WITH SPLICING EPOXY TO OBTAIN A MOISTURE PROOF JOINT

NOTE:

ALL HOLES CUT IN STEEL SHEET PILING FOR REINFORCING STEEL SHALL NOT EXCEED 2"ø. ALL HOLES CUT THROUGH STEEL SHEET PILING SHALL MISS INTERLOCKS.

SCALE: 3/4" = 1'-0"
12" 0 1' 2' 3' 4'

SCALE: 1" = 1'-0"
12" 0 1' 2' 3'

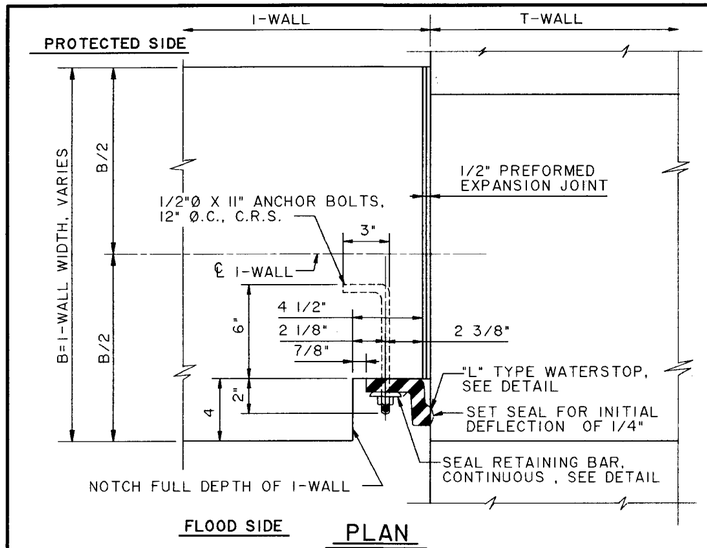
Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

TYPICAL WALL SECTIONS

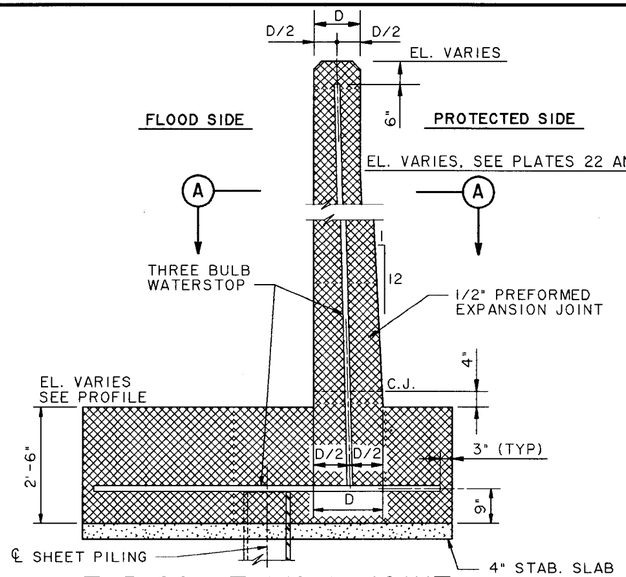
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 26



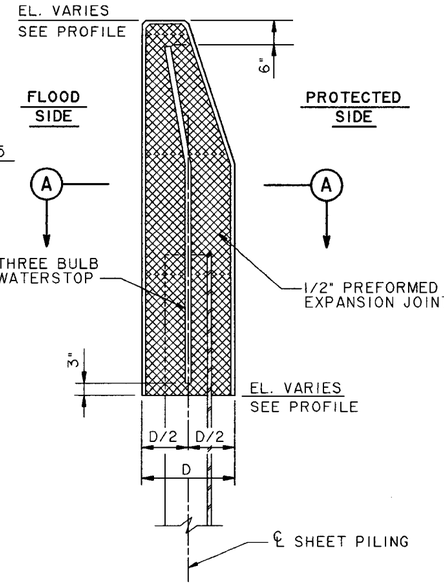
PLAN

SCALE: 3" = 1'-0"



TYPICAL T-WALL JOINT

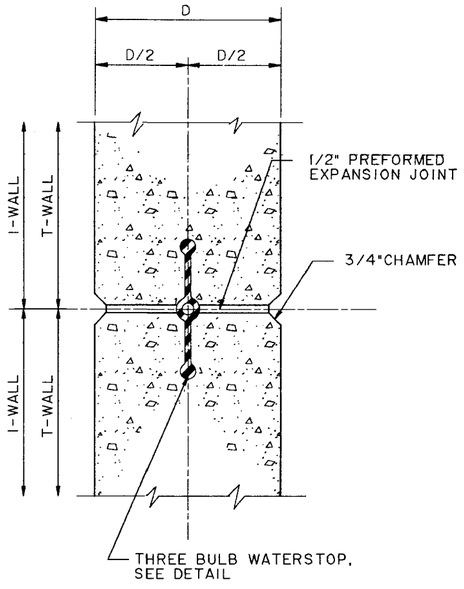
SCALE: 3/4" = 1'-0"



TYPICAL I-WALL JOINT

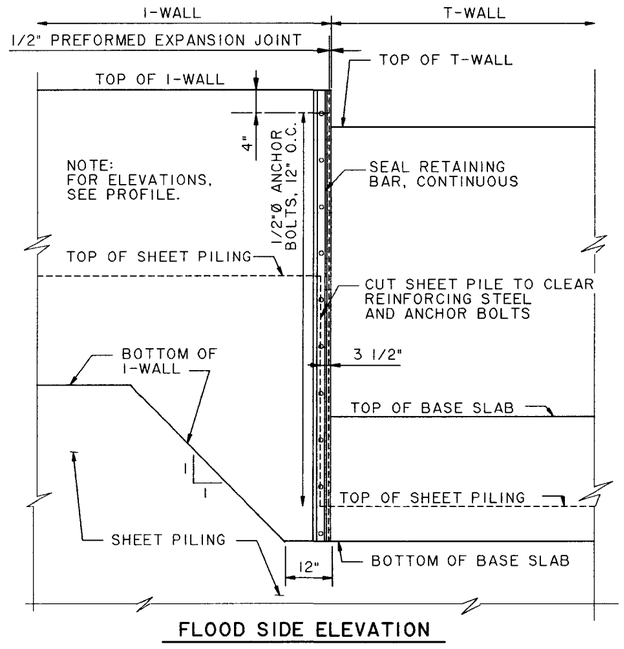
SCALE: 3/4" = 1'-0"

NOTE:
I-WALL MONOLITHS SHALL BE 30'± UNLESS OTHERWISE INDICATED ON THE PROFILE EACH MONOLITH SHALL END AT CENTER OF NEAREST SHEET PILE INTERLOCK.



SECTION Ⓐ

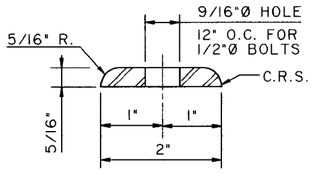
SCALE: 3" = 1'-0"



FLOOD SIDE ELEVATION

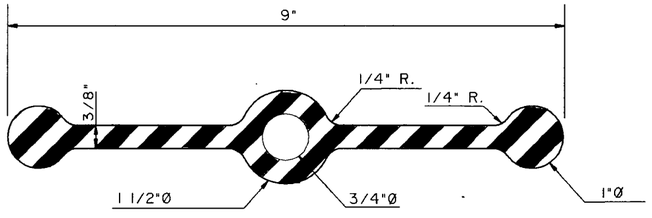
TYPICAL JOINT BETWEEN I-WALL AND T-WALL

SCALE: 3/4" = 1'-0"



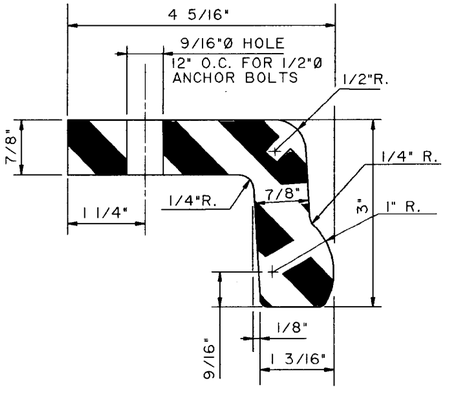
SEAL RETAINING BAR

SCALE: 12" = 1'-0"



THREE BULB WATERSTOP

SCALE: 12" = 1'-0"



"L"-TYPE WATERSTOP

SCALE: 12" = 1'-0"

SCALE: 3/4" = 1'-0"

12" 0 1' 2' 3' 4'

SCALE: 3" = 1'-0"

12" 0 1'

SCALE: 12" = 1'-0"

6" 3" 0

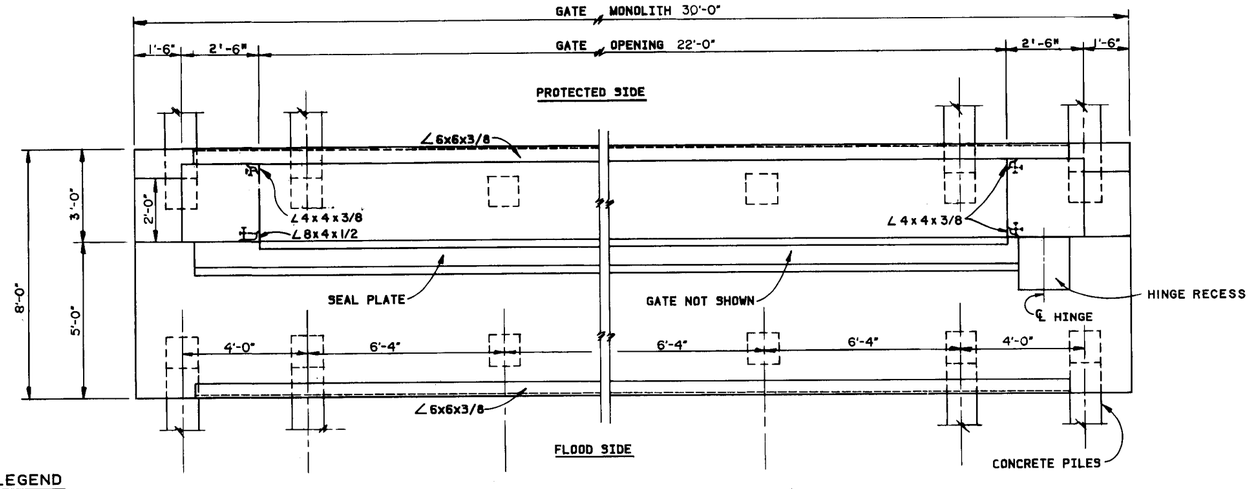
Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

TYPICAL WALL JOINTS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 27



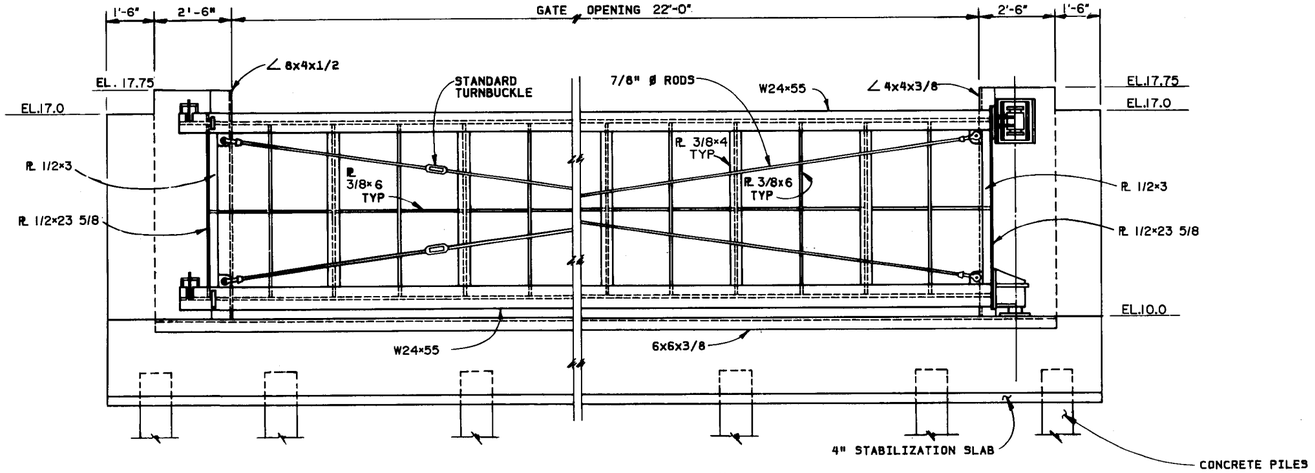
LEGEND

VERTICAL PILE

BATTER PILE

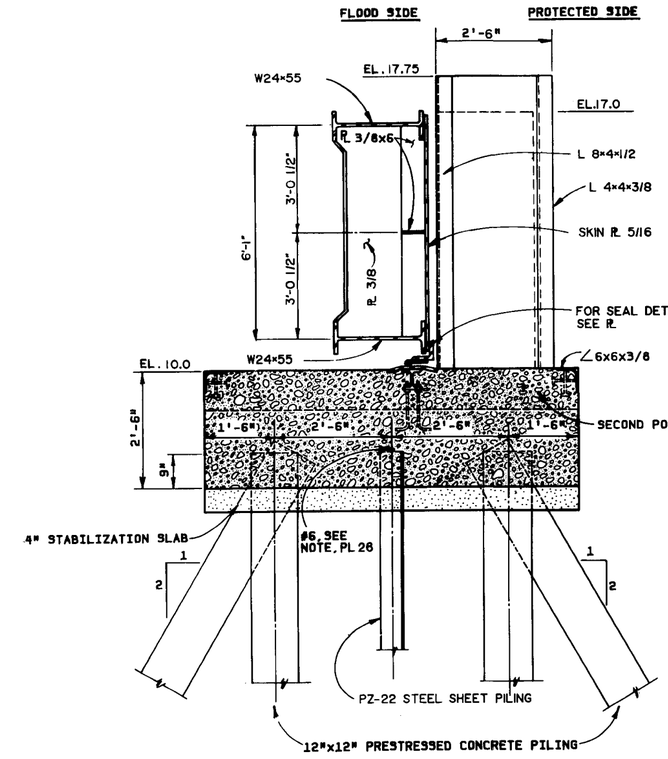
PLAN AT ELEVATION 17.75

SCALE: 1/2"= 1'-0"



FLOOD SIDE ELEVATION

SCALE: 1/2"= 1'-0"



TYPICAL SECTION

SCALE: 3/4"= 1'- 0"

SCALE: 1/2"=1'-0"

12" 0 1' 2' 3' 4' 5'

SCALE: 3/4"=1'-0"

12" 0 1' 2' 3'

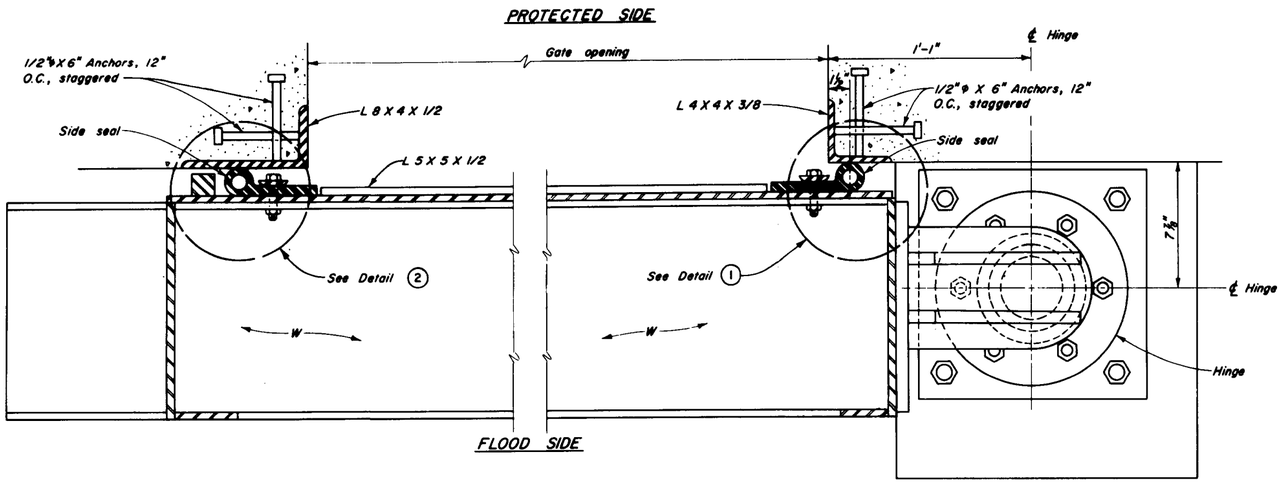
LAKE PONTCHARTRAIN LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

PUMPING STATION NO. 4

SWING GATE DETAILS

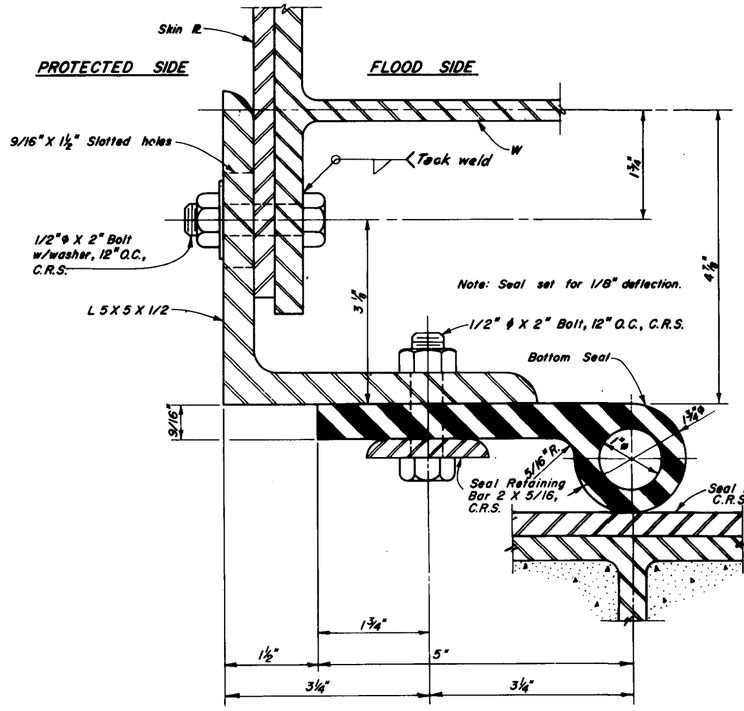
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148



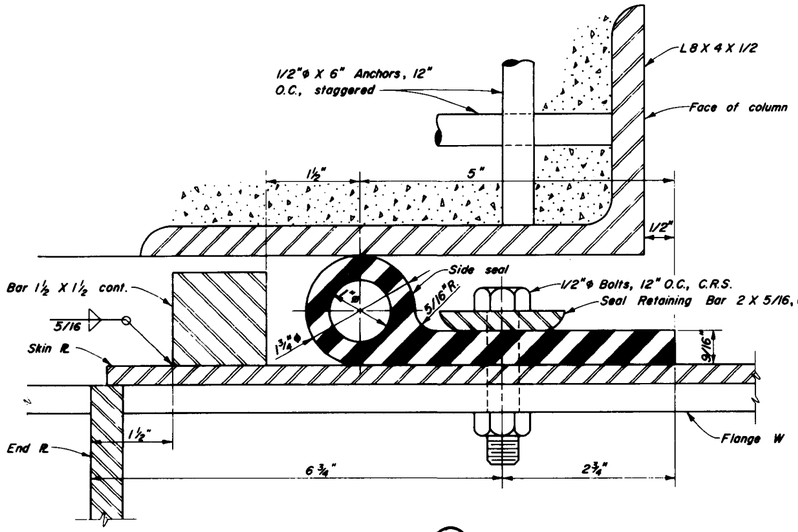
SECTION THRU SWING GATE

SCALE: 3"= 1'0"



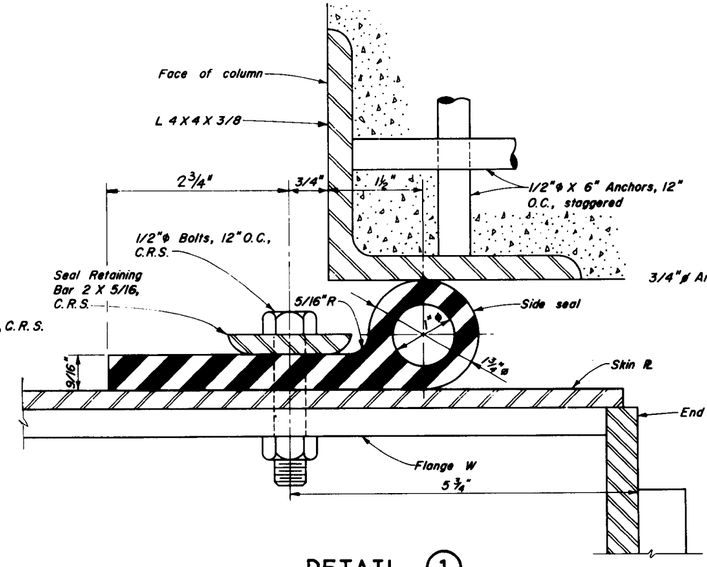
SECTION THRU BOTTOM SEAL

SCALE: FULL SIZE



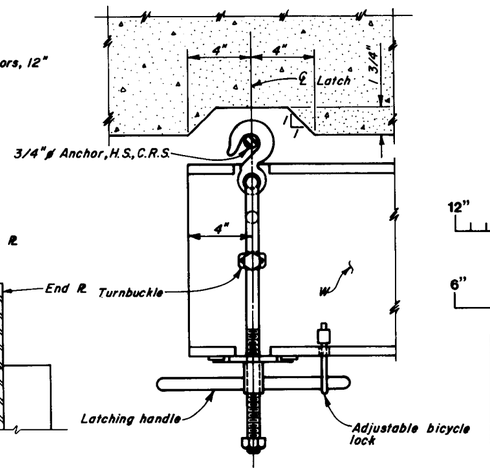
DETAIL (2)

SCALE: FULL SIZE



DETAIL (1)

SCALE: FULL SIZE



LATCHING ASSEMBLY

SCALE: 3"= 1'0"

SCALE: 3"= 1'-0"

12" 6" 0 1'

SCALE: 12"= 1'-0"

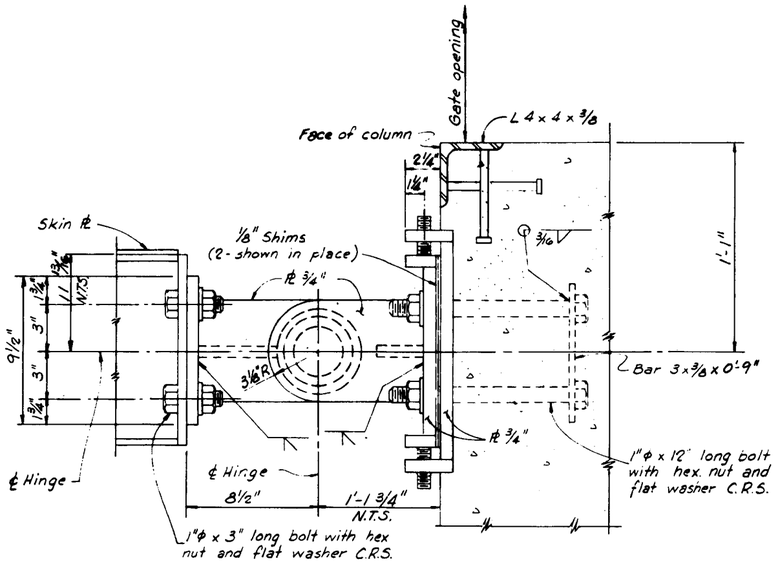
6" 3" 0

LAKE PONTCHARTRAIN LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

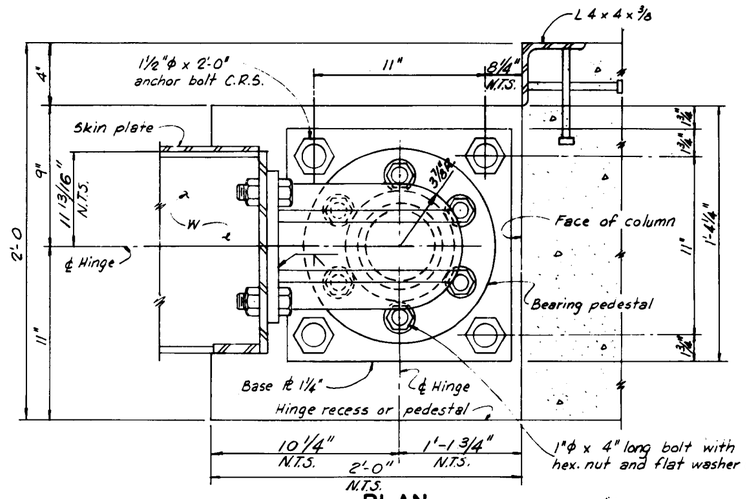
SWING GATE SEAL DETAILS AND LATCHING DEVICE

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

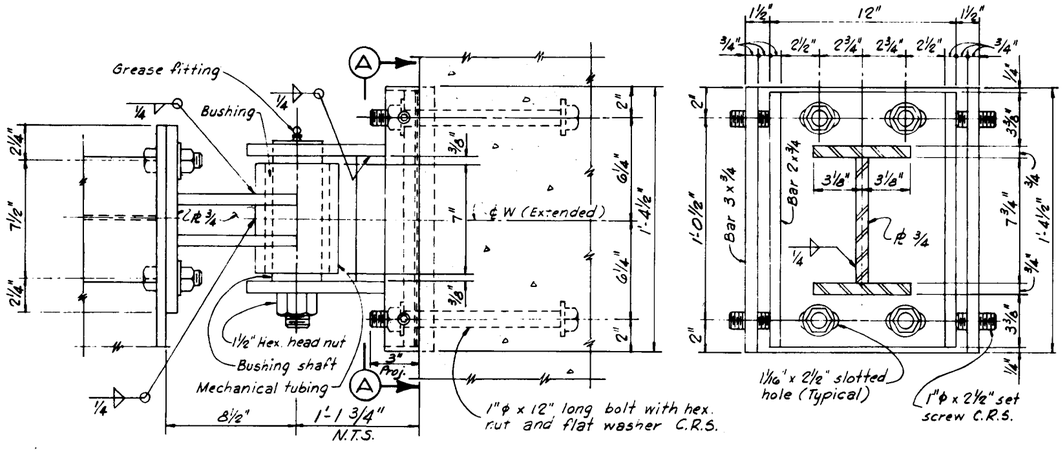
DATE: NOVEMBER 1987 FILE NO. H-2-30148



PLAN



PLAN

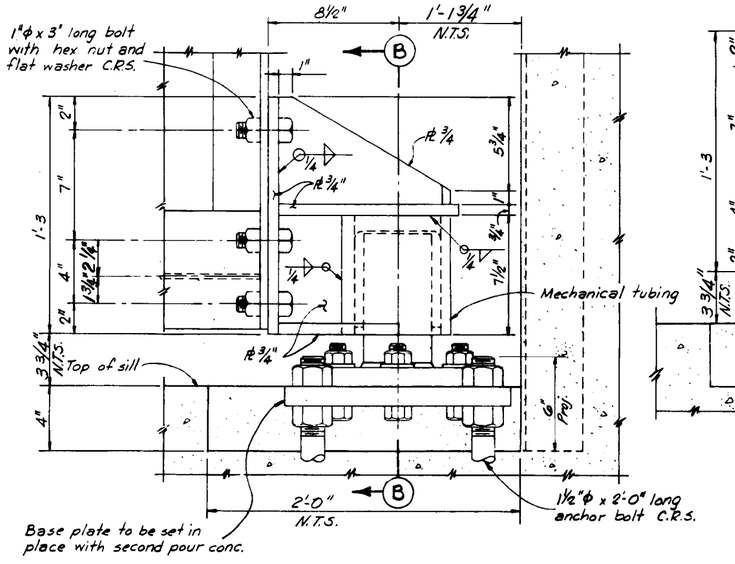


ELEVATION

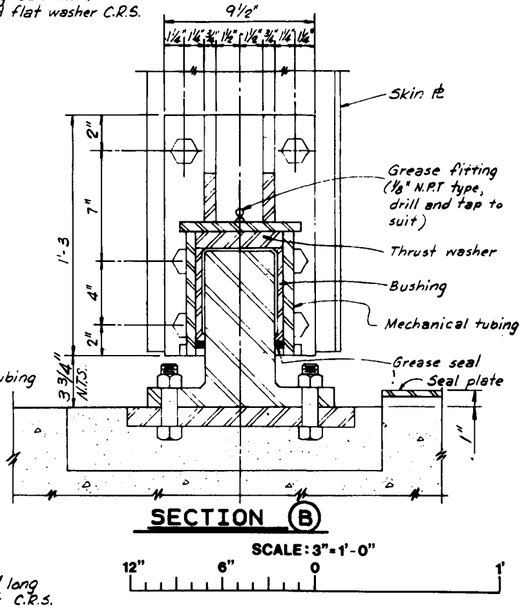
SECTION - Ⓐ

UPPER HINGE

SCALE: 3" = 1'-0"



ELEVATION



LOWER HINGE

SCALE: 3" = 1'-0"

LAKE PONTCHARTRAIN LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

SWING GATE HINGE DETAILS

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

BOTTOM ROLLER GATES
TABLE OF ELEVATIONS, DIMENSIONS AND MEMBER SIZES

		GATE NO. 2	GATE NO. 3
ELEVATIONS	A	16.00	16.00
	B	7.00	7.00
	C	16.50	16.50
	D	6.83	6.83
	E	16.75	16.75
	F	12.50	12.50
DIMENSIONS	G	7'- 2 7/8"	7'- 2 7/8"
	H	3'- 7 7/16"	3'- 7 7/16"
	J	2'- 6"	2'- 6"
	K	1'- 3 3/8"	1'- 3 3/8"
	L	39'- 0"	44'- 0"
	M	31'- 6"	36'- 0"
	N	2'- 5"	2'- 5"
	P	36'- 6"	41'- 0"
	R	1'- 0"	1'- 6"
	S	2'- 0"	1'- 9"
MEMBERS	T	W33 X 130	W33 X 130
	U	W33 X 130	W33 X 130

PILE SCHEDULE

GATE NO.	NUMBER OF PILES	PILE BATTER	TIP EL.	PAYMENT LENGTH		SPACING	
				FLOOD SIDE	PROTECTED SIDE	FLOOD SIDE	PROTECTED SIDE
2	6	IH ON 3V	-56.50	65'-0"		4'- 6"	
	3	VERTICAL	-60.00	65'-0"		4'- 6"	
	6	IH ON 2V	-53.00		65'-0"		4'- 6"
	3	VERTICAL	-60.00		65'-0"		4'- 6"
3	6	IH ON 3V	-56.50	65'-0"		4'- 6"	
	4	VERTICAL	-60.00	65'-0"		4'- 6"	
	6	IH ON 2V	-53.00		65'-0"		4'- 6"
	4	VERTICAL	-60.00		65'-0"		4'- 6"

Computer Aided Design Drafting

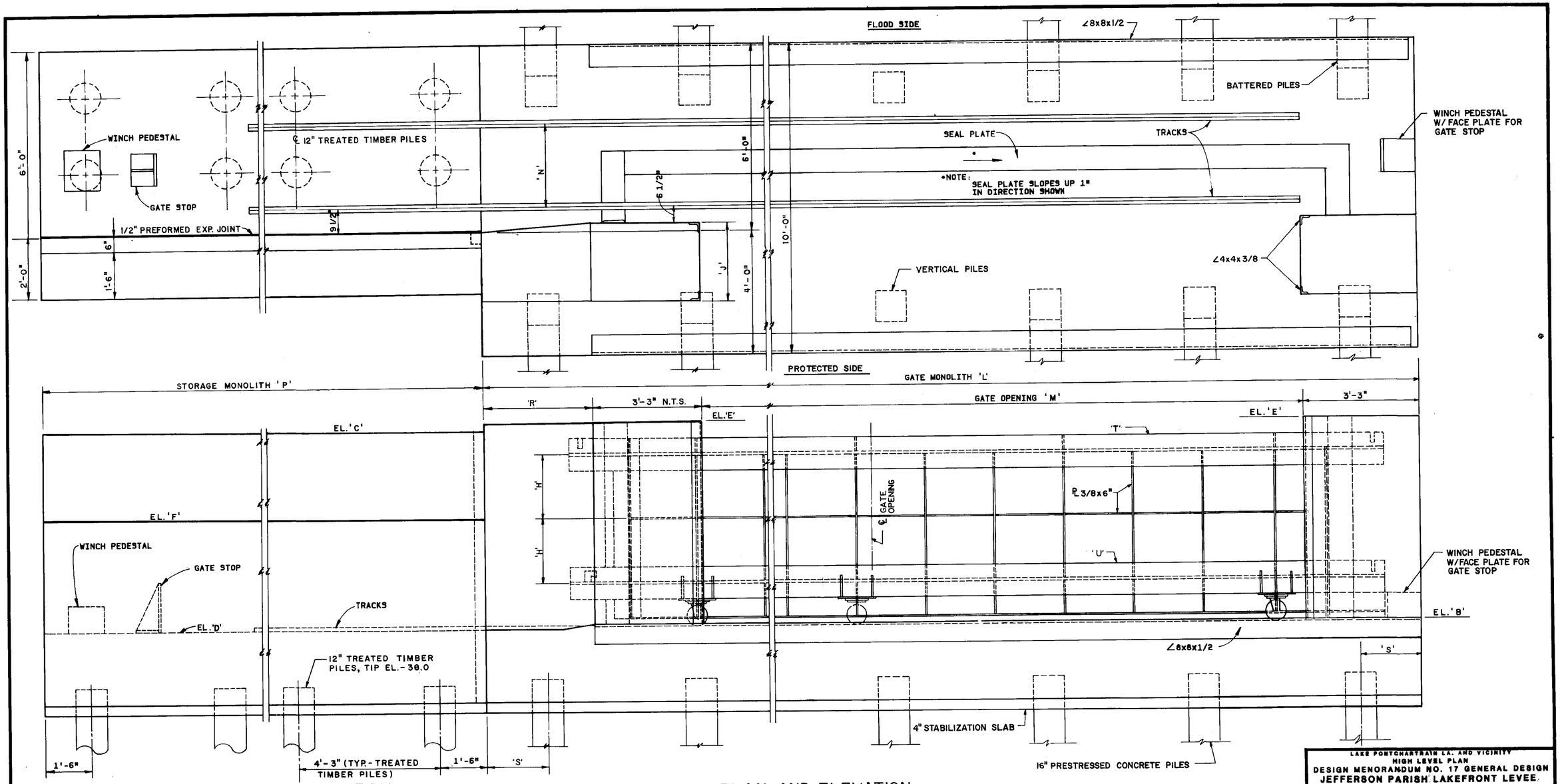
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

BOTTOM ROLLER GATES

TABLE AND PILE SCHEDULE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 31



PROTECTED SIDE ELEVATION

PLAN AND ELEVATION
(GATE #2 SHOWN #3 OPPO. HAND)

BOTTOM ROLLER GATE

SCALE: 3/4" = 1'-0"

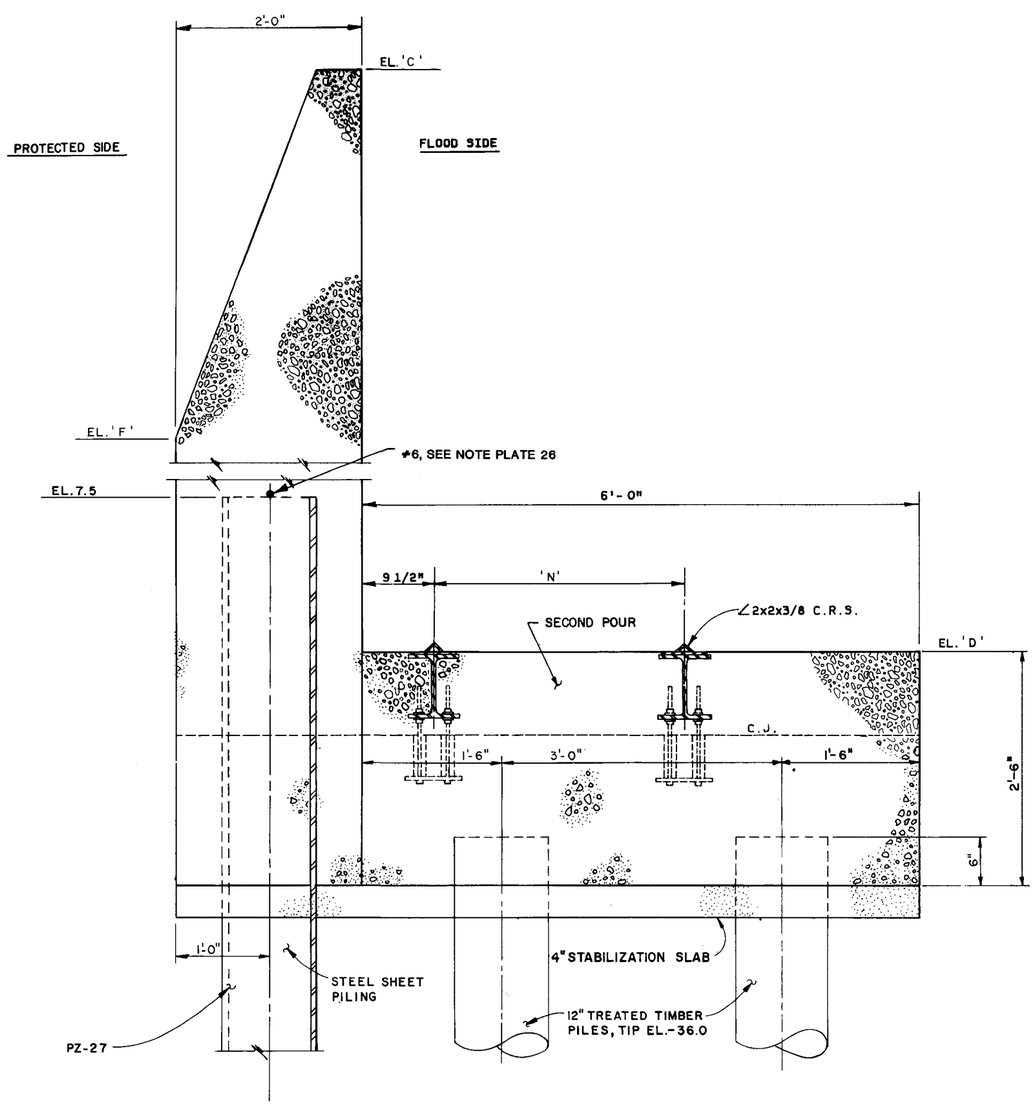
SCALE: 3/4"=1'-0"
12" 0 1' 2' 3'

LAKE PONTCHARTRAIN LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE.

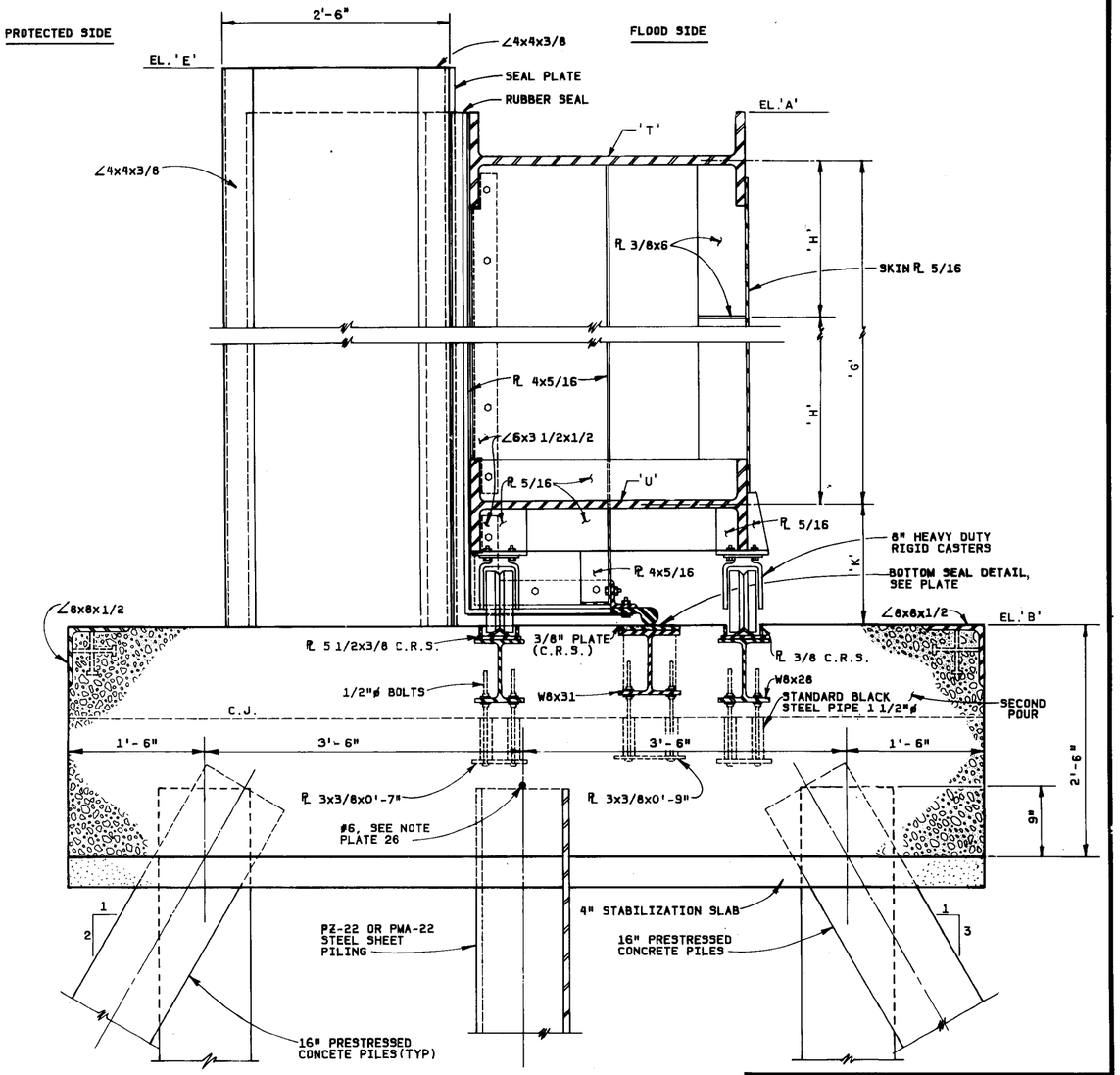
BOTTOM ROLLER GATE PLAN AND ELEVATION

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148



STORAGE MONOLITH



GATE MONOLITH

TYPICAL SECTIONS

BOTTOM ROLLER GATE

SCALE: 1 1/2"= 1'-0"

SCALE: 1 1/2" = 1'-0"

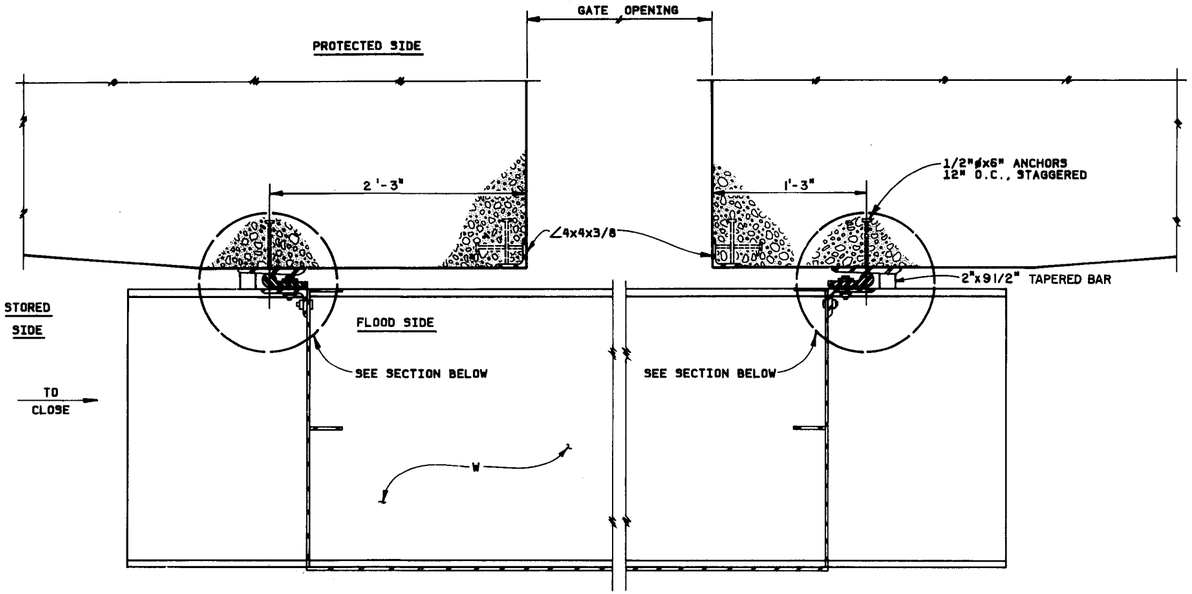
12" 0 1' 2' 3'

LAKE PONTCHARTRAIN LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MENORANDUM NO. 17 GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

BOTTOM ROLLER GATE
TYPICAL SECTIONS

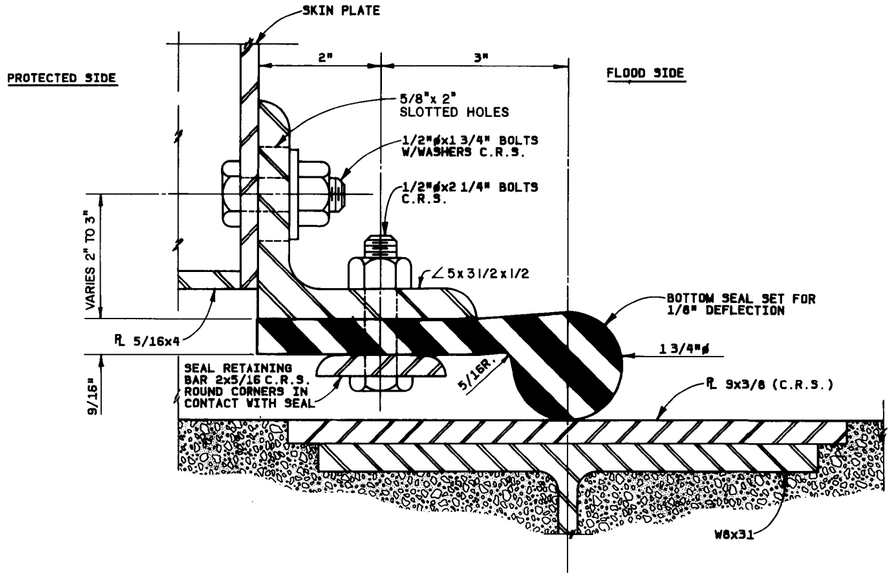
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148



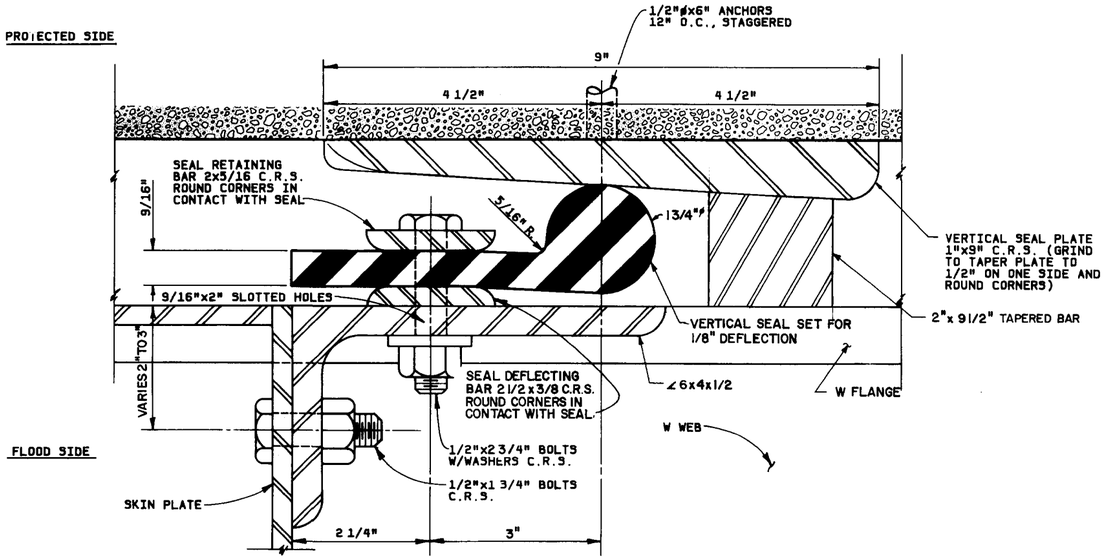
SECTION THRU BOTTOM ROLLER GATE

SCALE: 1 1/2"= 1'-0"



TYPICAL SECTION THRU BOTTOM SEAL

SCALE: FULL SIZE



TYPICAL SECTION THRU VERTICAL SEAL

SCALE: FULL SIZE

SCALE: 11/2" = 1'-0"

12" 0 1' 2' 3'

SCALE: 12" = 1'-0"

6" 3" 0

LAKE PONTCHARTRAIN LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MENORANDUM NO. 17 GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

BOTTOM ROLLER GATE SEAL DETAILS

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148

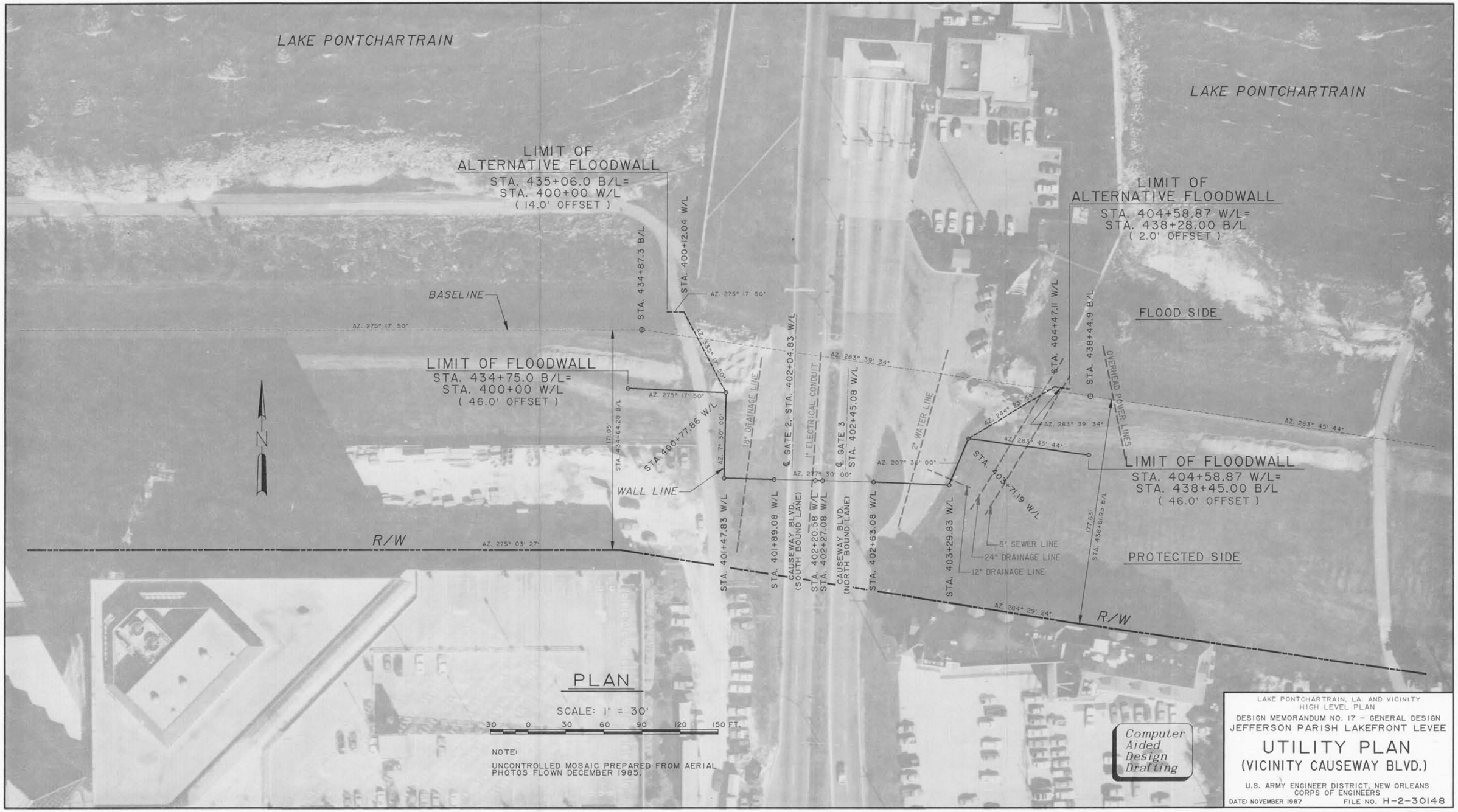
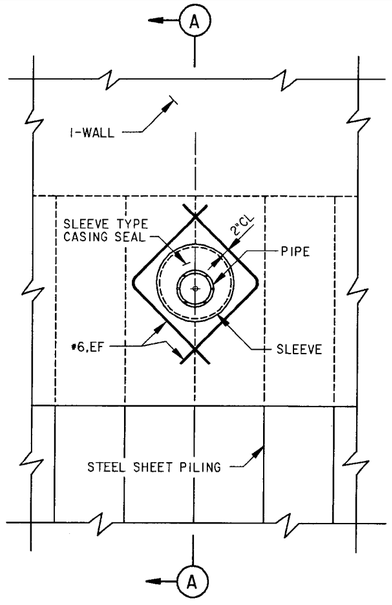
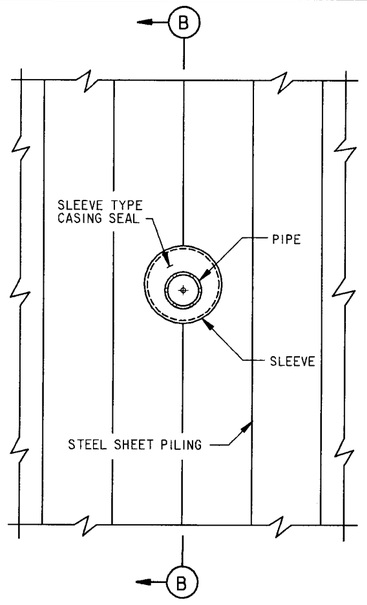

LAKE PONTCHARTRAIN
LAKE PONTCHARTRAIN
LIMIT OF
ALTERNATIVE FLOODWALL
STA. 435+06.0 B/L=
STA. 400+00 W/L
(14.0' OFFSET)
LIMIT OF
ALTERNATIVE FLOODWALL
STA. 404+58.87 W/L=
STA. 438+28.00 B/L
(2.0' OFFSET)
BASELINE
AZ. 275° 17' 50"
STA. 434+87.3 B/L
STA. 400+12.04 W/L
AZ. 275° 17' 50"
AZ. 335° 17' 50"
AZ. 283° 39' 34"
STA. 404+47.11 W/L
STA. 438+44.9 B/L
FLOOD SIDE
LIMIT OF FLOODWALL
STA. 434+75.0 B/L=
STA. 400+00 W/L
(46.0' OFFSET)
AZ. 275° 17' 50"
STA. 434+64.28 B/L
17.05
STA 400+77.86 W/L
AZ. 7° 30' 00"
18" DRAINAGE LINE
℄ GATE 2, STA. 402+04.83 W/L
1" ELECTRICAL CONDUIT
℄ GATE 3
STA. 402+45.08 W/L
2" WATER LINE
AZ. 244° 25' 54"
AZ. 283° 39' 34"
AZ. 283° 45' 44"
AZ. 283° 45' 44"
OVERHEAD POWER LINES
LIMIT OF FLOODWALL
STA. 404+58.87 W/L=
STA. 438+45.00 B/L
(46.0' OFFSET)
WALL LINE
AZ. 277° 30' 00"
AZ. 207° 39' 00"
STA. 403+71.19 W/L
R/W
AZ. 275° 03' 27"
STA. 401+47.83 W/L
STA. 401+89.08 W/L
CAUSEWAY BLVD.
(SOUTH BOUND LANE)
STA. 402+20.58 W/L
STA. 402+27.08 W/L
CAUSEWAY BLVD.
(NORTH BOUND LANE)
STA. 402+63.08 W/L
STA. 403+29.83 W/L
8" SEWER LINE
24" DRAINAGE LINE
12" DRAINAGE LINE
177.63'
STA. 438+61.95 B/L
PROTECTED SIDE
AZ. 284° 29' 24"
R/W
N
PLAN
SCALE: 1" = 30'
30 0 30 60 90 120 150 FT.
NOTE:
UNCONTROLLED MOSAIC PREPARED FROM AERIAL PHOTOS FLOWN DECEMBER 1985.
Computer Aided Design Drafting
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
UTILITY PLAN
(VICINITY CAUSEWAY BLVD.)
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987
FILE NO. H-2-30148

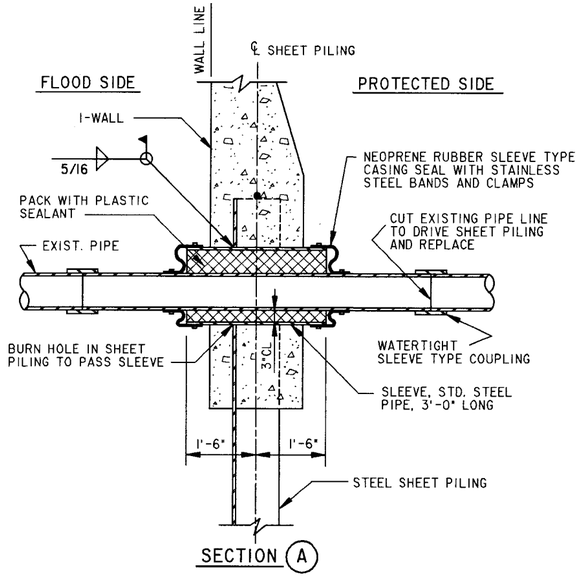
PLATE 35



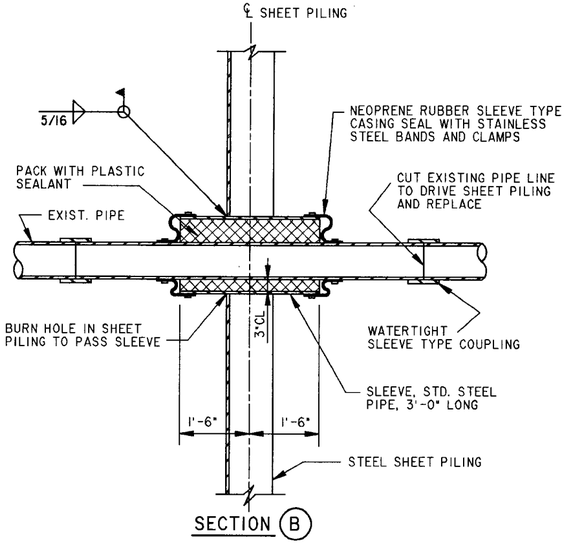
ELEVATION



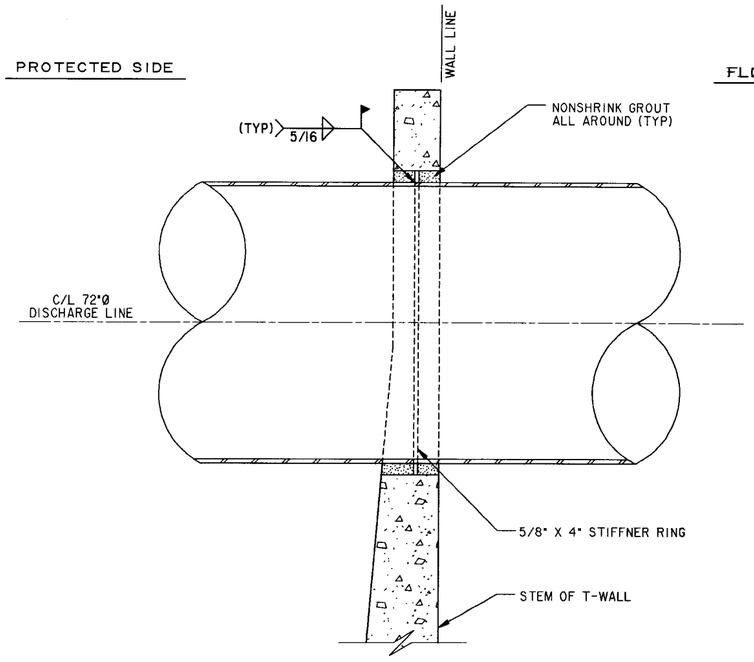
ELEVATION



TYPICAL PIPE THRU I-WALL



TYPICAL PIPE THRU STEEL SHEET PILING



SECTION THROUGH C/L DISCHARGE LINE AT OLD PUMPING STATION NO. 4

SCALE: 3/4" = 1'-0"

SCALE: 3/4" = 1'-0"

12" 0 1' 2' 3' 4'

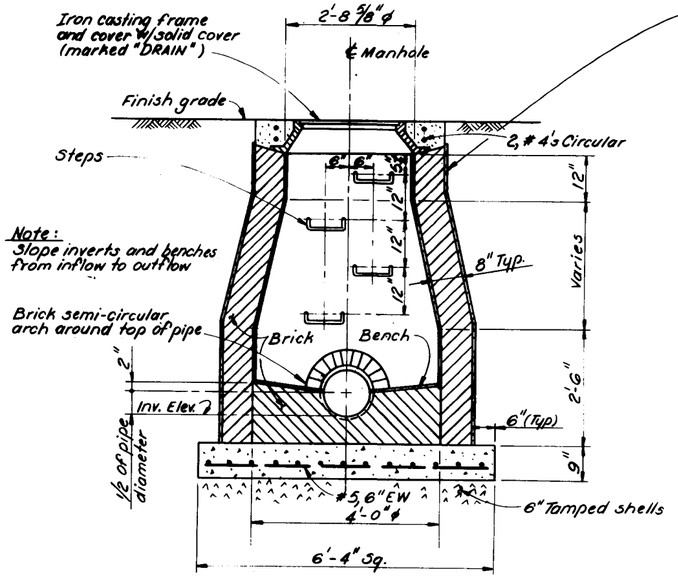
Computer Aided Design Drafting

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

UTILITY CROSSING DETAILS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

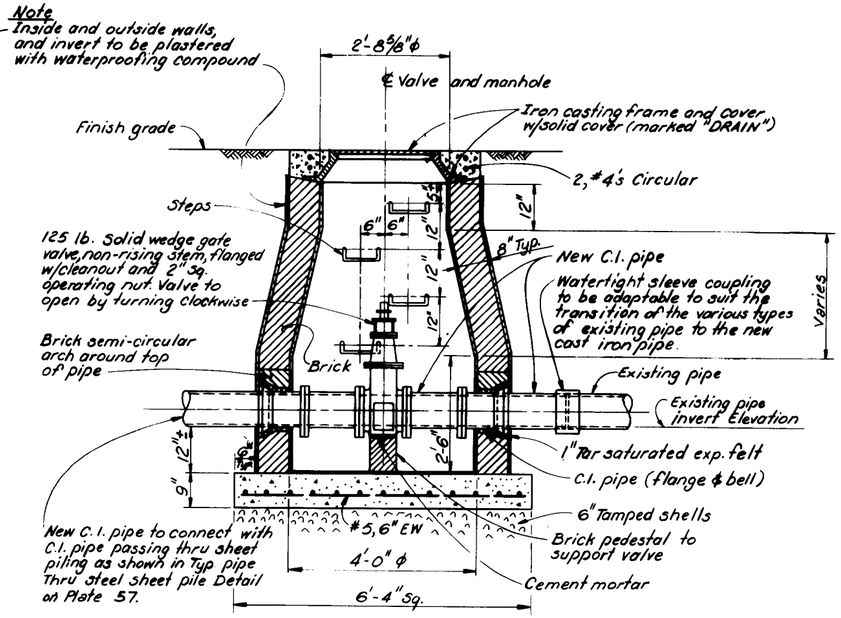
PLATE 36



SECTION

MANHOLE DETAIL

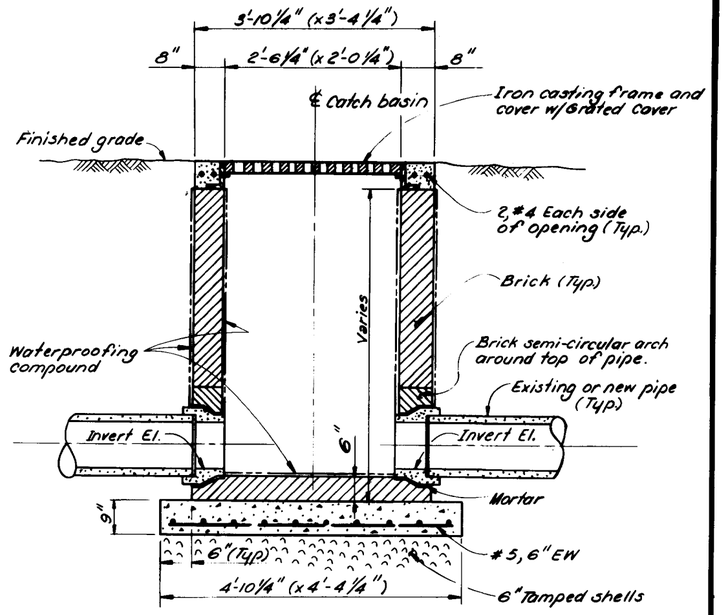
N.T.S.



SECTION

VALVE MANHOLE DETAIL

N.T.S.



SECTION

CATCH BASIN DETAIL

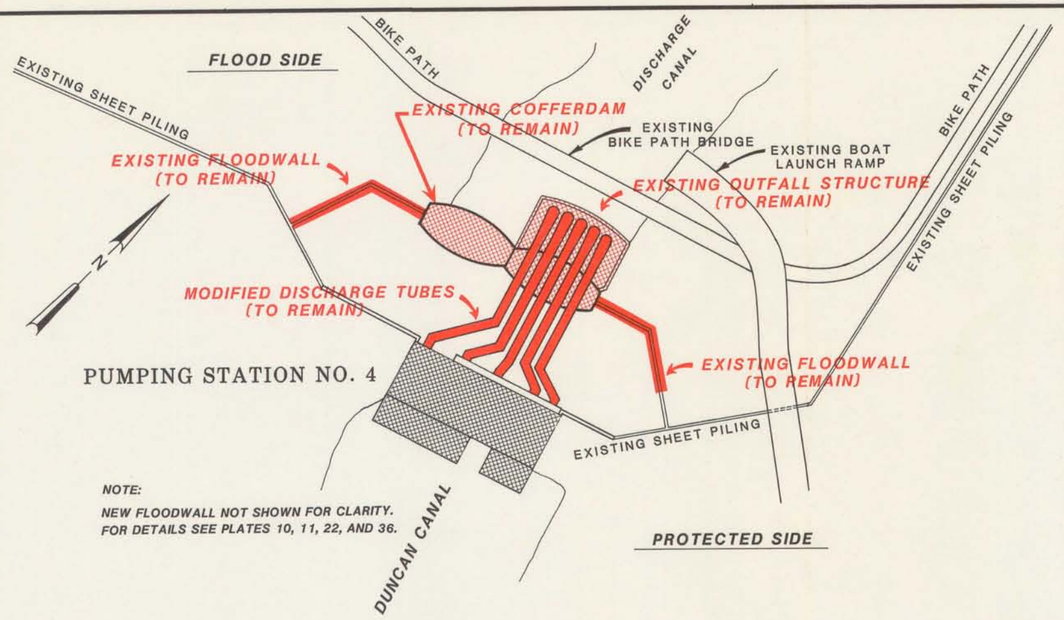
N.T.S.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

MANHOLE DETAILS

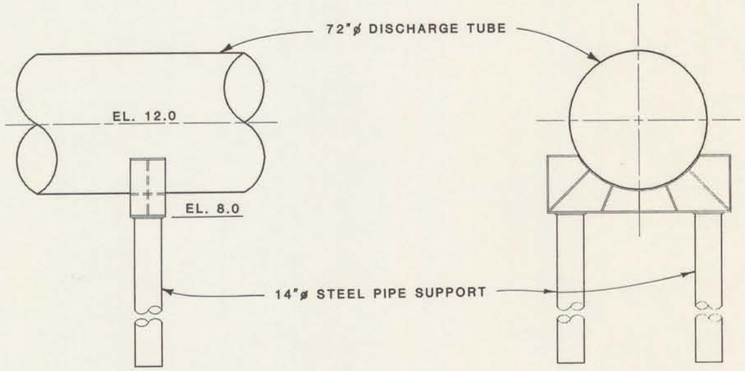
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148



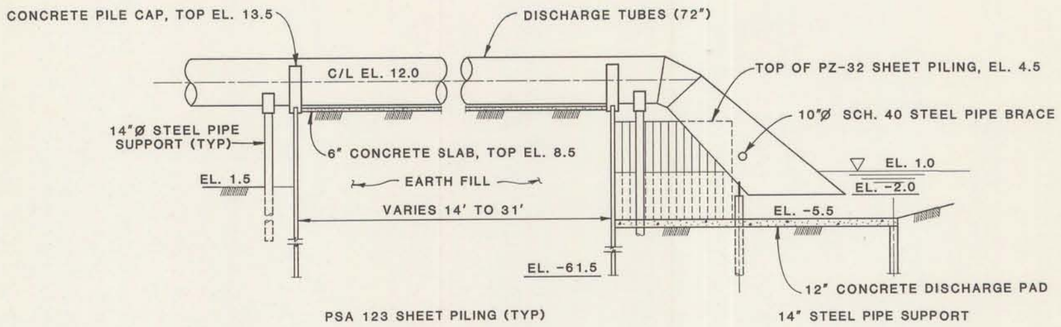
PLAN

SCALE: 1" = 40'



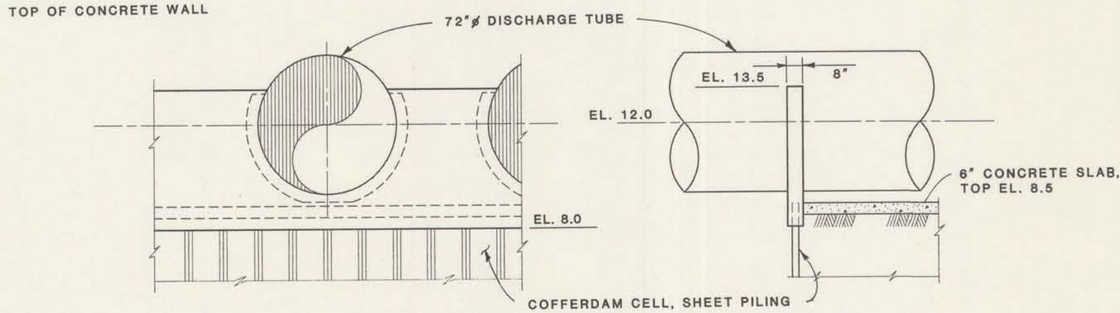
PIPE SUPPORT DETAIL

SCALE: 3/8" = 1'-0"



SECTION THROUGH COFFERDAM AND DISCHARGE TUBES

SCALE: 1/8" = 1'-0"



SECTION DETAIL OF 72"ø PIPE PENETRATION THROUGH COFFERDAM

SCALE: 3/8" = 1'-0"

SCALE: 1/8"=1'-0"

0 5' 10' 15' 20'

SCALE: 3/8"=1'-0"

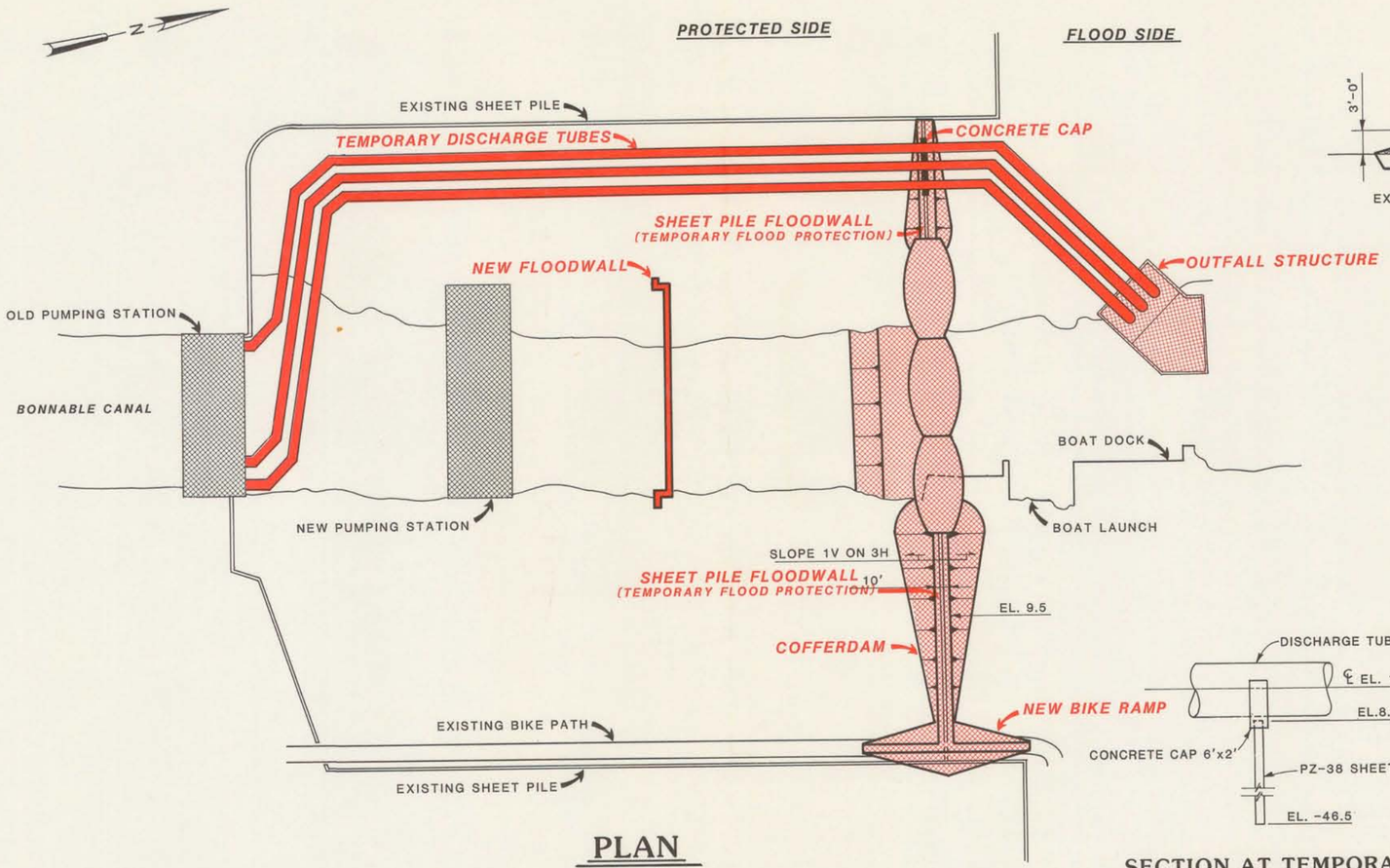
12"0 1' 2' 3' 4' 5' 6' 7' 8'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

COFFERDAM PUMPING STATION NO. 4

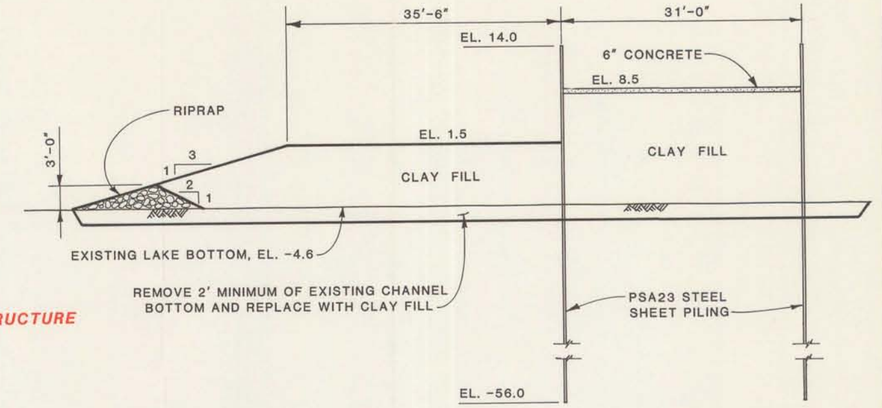
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: NOVEMBER 1987 FILE NO. H-2-30148



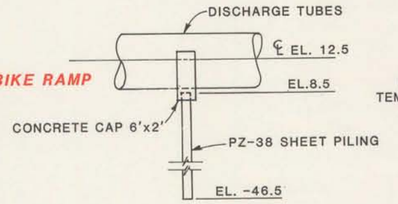
PLAN

SCALE: 1"= 40'



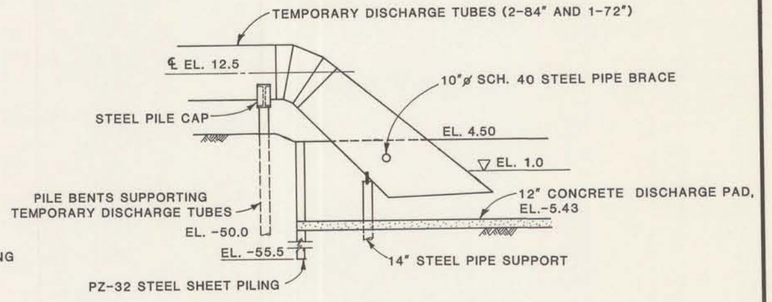
COFFERDAM SECTION

SCALE: 1/8"= 1'-0"



SECTION AT TEMPORARY FLOODWALL AND DISCHARGE TUBES

SCALE: 1/8" = 1'-0"



SECTION AT DISCHARGE TUBES

SCALE: 1/8"= 1'-0"

SCALE: 1/8"=1'-0"

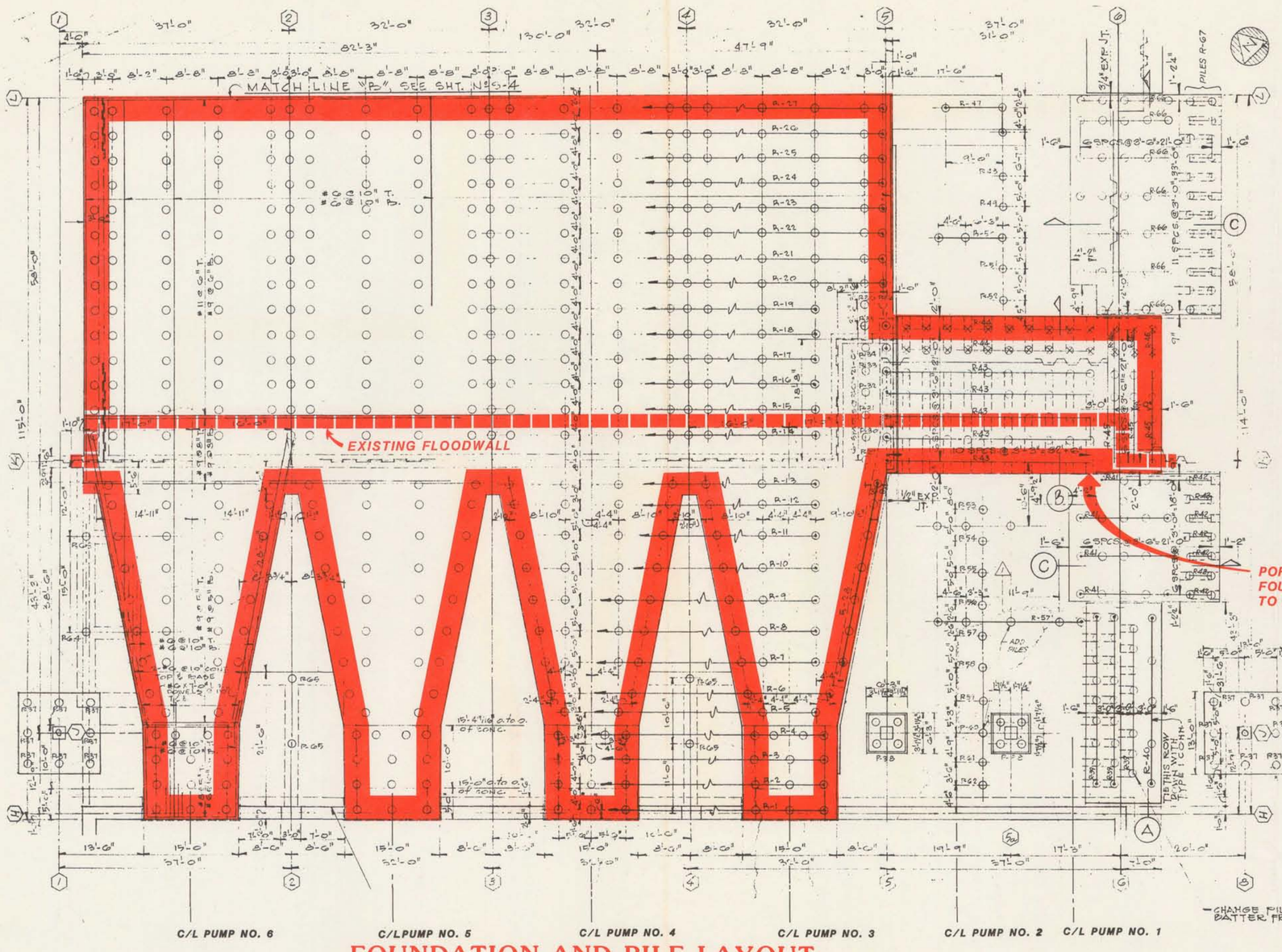
0 5' 10' 15' 20'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

COFFERDAM PUMPING STATION NO. 1

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE NOVEMBER 1987 FILE NO. H-2-30148



FOUNDATION AND PILE LAYOUT

SCALE: 1/8"=1'-0"

TABULATION OF PILES PRETAINING TO FLOOD PROTECTION

TYPE	NUMBER OF PILES	PILE BATTER	PILE LENGTH
UNTREATED	211	VERTICAL	65'
TREATED	60	VERTICAL	80'
TREATED	61	VERTICAL	75'
TREATED	6	VERTICAL	65'
TREATED W/TYPE 2 TENSION CONNECTOR	20	IH ON 2V	70'
TREATED W/TYPE 2 TENSION CONNECTOR	21	VERTICAL	70'
UNTREATED W/TYPE 1 TENSION CONNECTOR	44	VERTICAL	65'
TREATED	56	IH ON 2V	70'

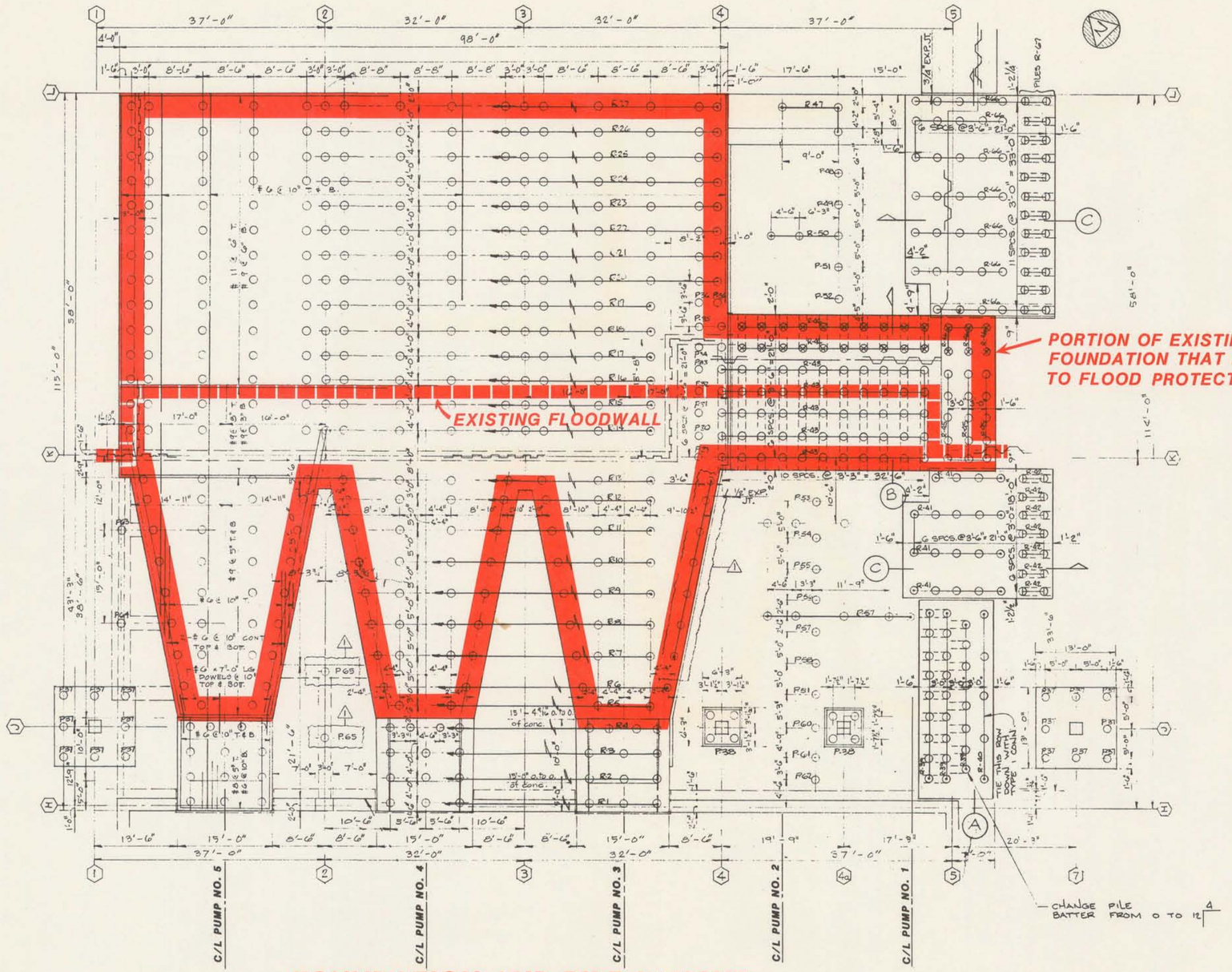
NOTE: FOUNDATION LAYOUT TAKEN FROM THE "AS BUILT" CONSTRUCTION DRAWING NO. S-3 OF 49, JOB NO. 8044 AS PREPARED BY BURK AND ASSOCIATES, INC. OF NEW ORLEANS, LA.

SCALE: 1/8"=1'-0"
0 5' 10' 15' 20'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

FOUNDATION AND PILE LAYOUT PUMPING STATION NO. 4

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148



FOUNDATION AND PILE LAYOUT

SCALE: 1/8" 1'-0"

TABULATION OF PILES PRETAINING TO FLOOD PROTECTION

TYPE	NUMBER OF PILES	PILE BATTER	PILE LENGTH
UNTREATED	338	VERTICAL	65'
UNTREATED	76	IH ON 2V	65'

NOTE: FOUNDATION LAYOUT TAKEN FROM THE "AS BUILT" CONSTRUCTION DRAWING NO. S-3 OF 45, JOB NO. 8049 AS PREPARED BY BURK AND ASSOCIATES, INC. OF NEW ORLEANS, LA.

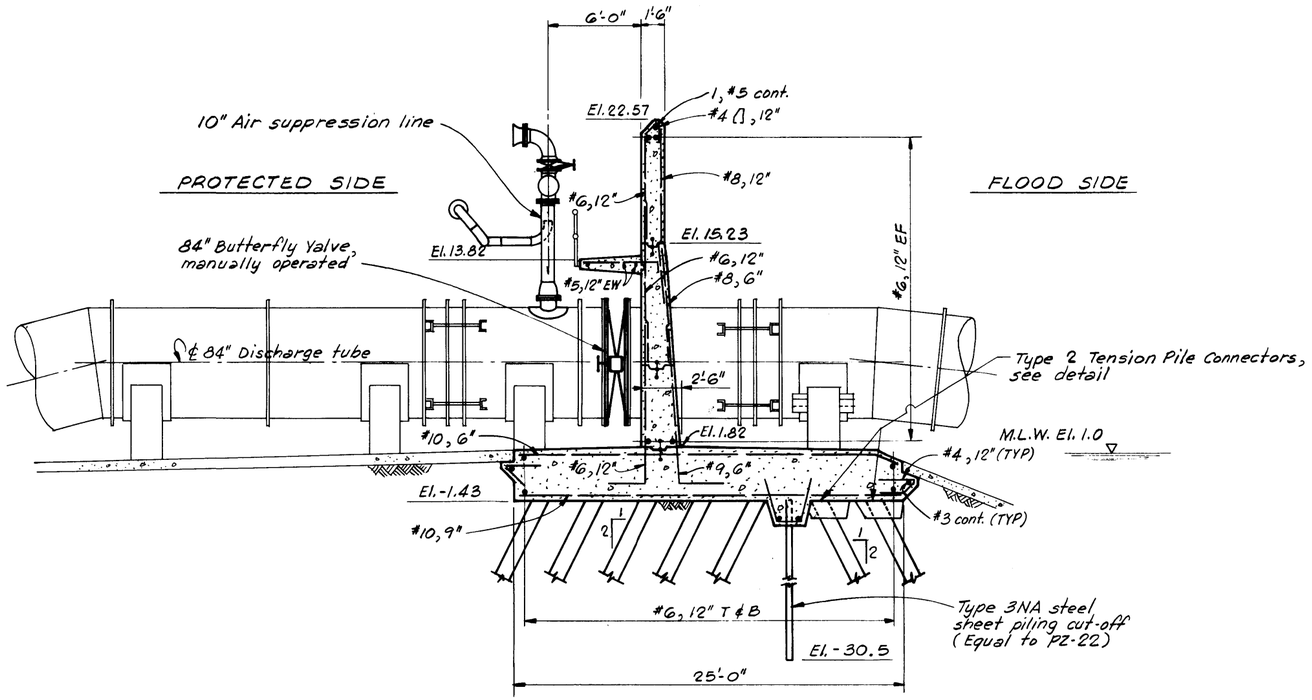
SCALE: 1/8"=1'-0"
0 5' 10' 15' 20'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

FOUNDATION AND PILE LAYOUT PUMPING STATION NO. 1

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

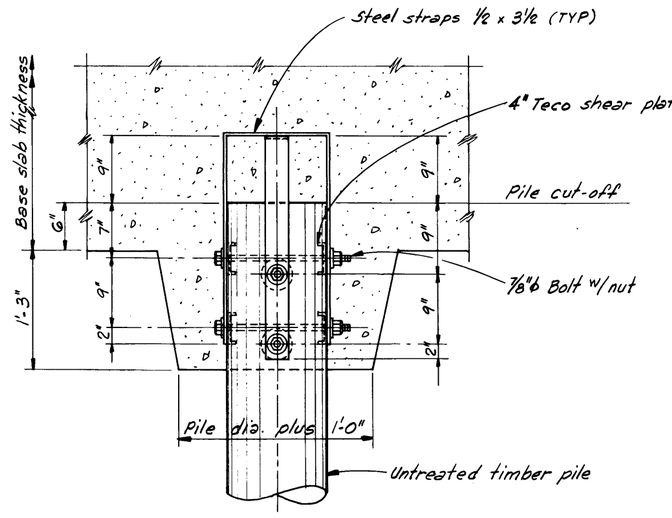
PLATE 41



CROSS SECTION OF DISCHARGE PIPE FOR PUMPING STATION NOS. 1 AND 4 – PUMPS NO. 1 AND 2

SCALE: 1/4" = 1'-0"

12"0 3' 6' 9'



TYPE 2 TENSION PILE CONNECTOR DETAIL

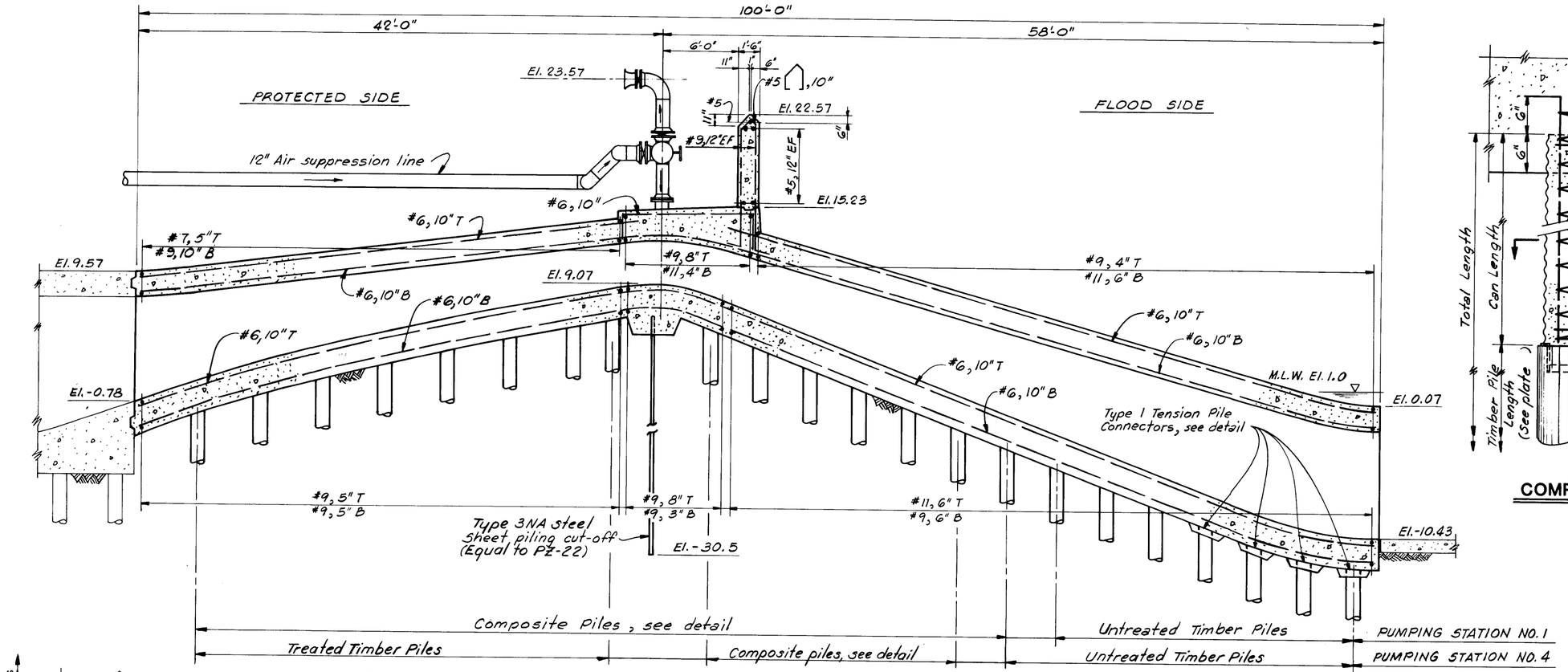
NOT TO SCALE

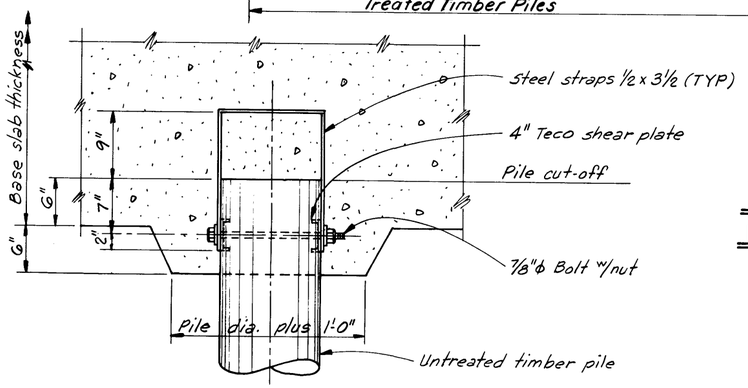
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

DISCHARGE PIPE PUMPING STATION NOS. 1 AND 4

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

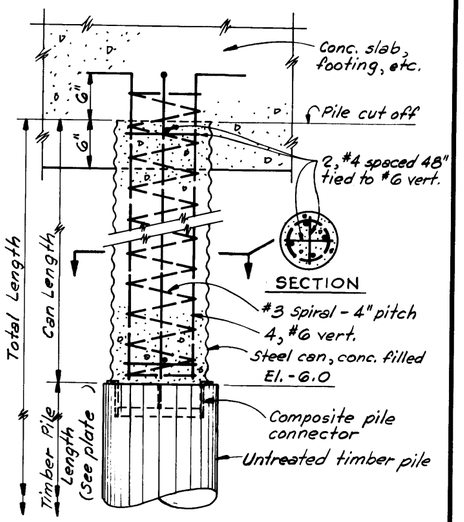
DATE NOVEMBER 1967 FILE NO. H-2-30148





TYPE 1 TENSION PILE CONNECTOR DETAIL

NOT TO SCALE



COMPOSITE PILE DETAIL

NOT TO SCALE

CROSS SECTION OF DISCHARGE CULVERT FOR
PUMPING STATION NO. 1 - PUMPS NO. 3, 4 AND 5
PUMPING STATION NO. 4 - PUMPS NO. 3, 4, 5 AND 6

SCALE: 1/4"=1'-0"

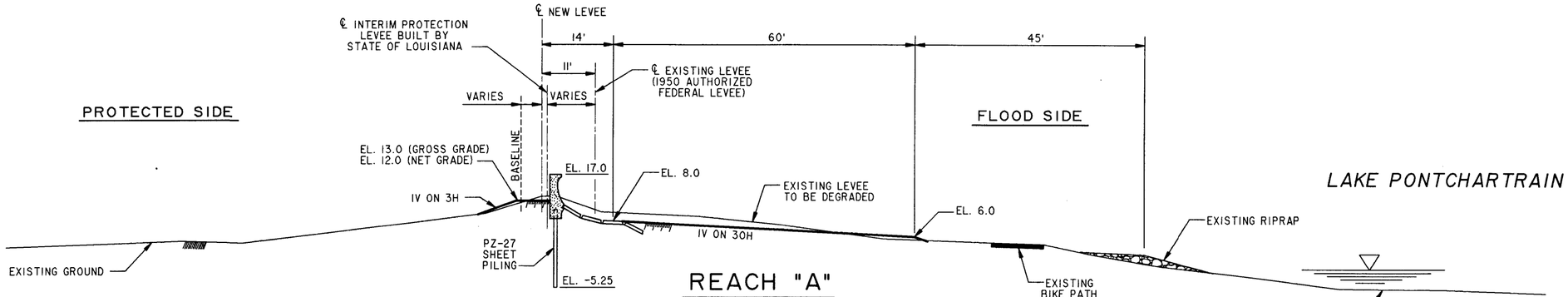
12"0 3' 6' 9'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

DISCHARGE CULVERT
PUMPING STATION
NOS. 1 AND 4

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

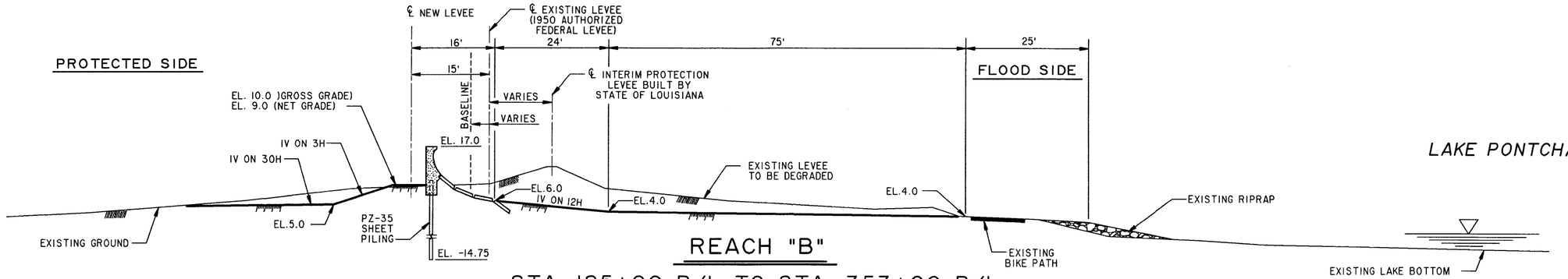
DATE: NOVEMBER 1987 FILE NO. H-2-30148



REACH "A"

STA. 1+50 B/L TO STA. 185+00 B/L

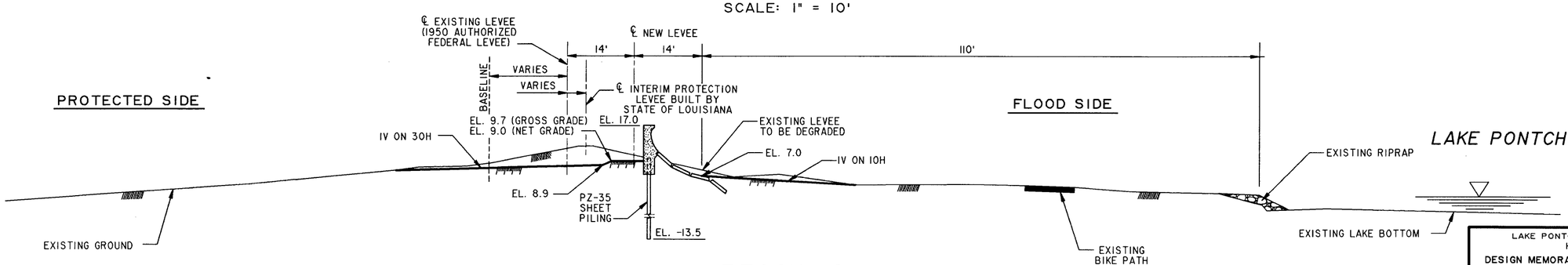
SCALE: 1" = 10'



REACH "B"

STA. 185+00 B/L TO STA. 353+00 B/L

SCALE: 1" = 10'



REACH "C"

STA. 353+00 B/L TO STA. 549+50 B/L

SCALE: 1" = 10'

Computer Aided Design Drafting

SCALE: 1" = 10'

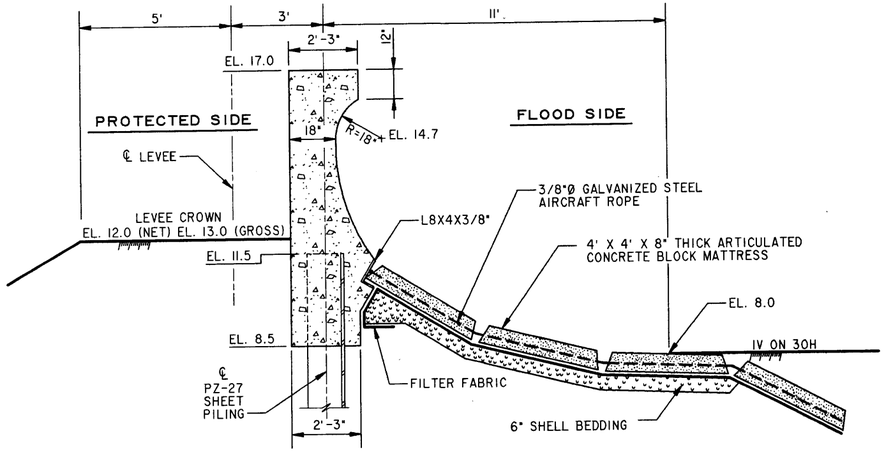
10' 0 10' 20' 30' 40'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

ALTERNATIVE PLAN
LEVEE AND FLOODWALL
TYPICAL SECTIONS

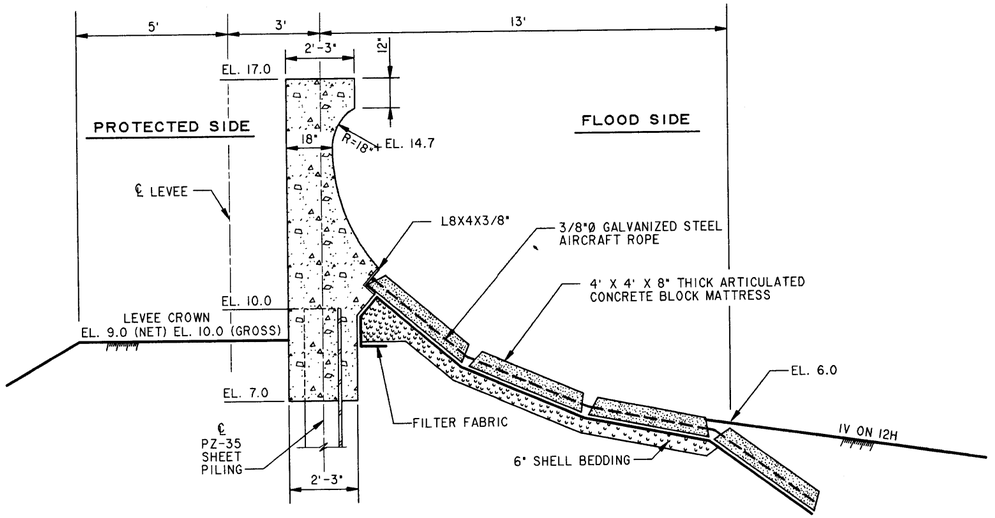
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

Computer Aided Design Drafting



REACH "A"

STA. 1+50 B/L TO STA. 185+00 B/L

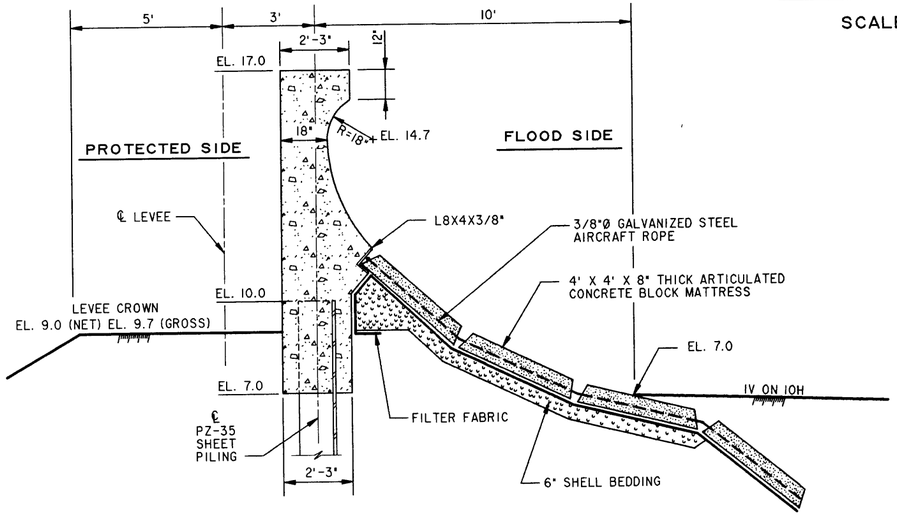


REACH "B"

STA. 185+00 B/L TO STA. 353+00 B/L

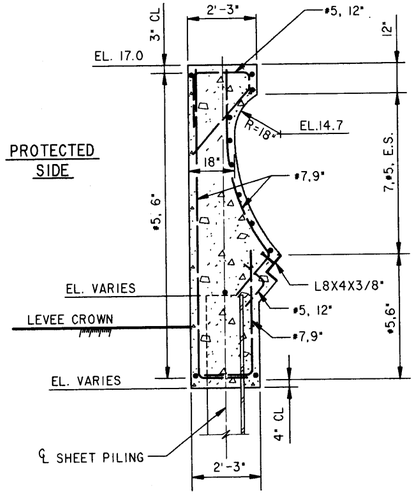
TYPICAL SECTIONS

SCALE: 1" = 2'-0"



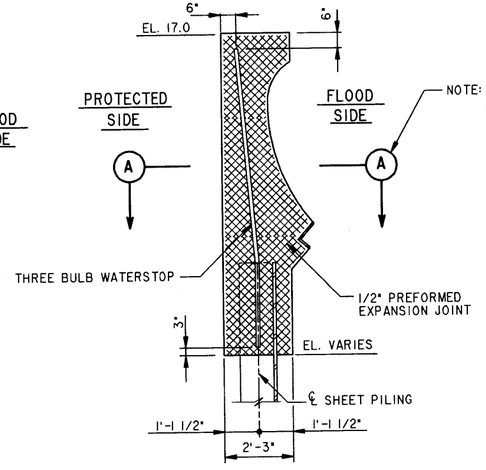
REACH "C"

STA. 353+00 B/L TO STA. 549+50 B/L



TYPICAL "I"-WALL SECTION

SCALE: 1/2" = 1'-0"



TYPICAL "I"-WALL JOINT

SCALE: 1/2" = 1'-0"

SCALE: 1/2" = 1'-0"

12" 0 1' 2' 3' 4' 5' 6'

SCALE: 1" = 2'-0"

2' 0 2' 4' 6' 8'

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

ALTERNATIVE PLAN
REENTRANT CURVE FLOODWALL
TYPICAL SECTIONS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: NOVEMBER 1987 FILE NO. H-2-30148

PLATE 45

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17-GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

BONNET CARRE' SPILLWAY BORROW SITE

SCALE: 1000'=1"

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE NOVEMBER 1987 FILE NO. H-2-30148

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17, GENERAL DESIGN
JEFFERSON PARISH, LAKEFRONT LEVEE

APPENDIX A
HYDROLOGY AND HYDRAULICS

Lake Pontchartrain, Louisiana and Vicinity
High Level Plan
Design Memorandum No. 17 - General Design
Jefferson Parish Lakefront Levee
Appexdix A

Hydrology and Hydraulics

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HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
APPENDIX A
HYDROLOGY AND HYDRAULICS

SECTION I - ANALYSIS

A-1. General. This appendix presents all hydrologic and hydraulic design criteria and analyses associated with the Jefferson/St. Charles return levee. The overall plan of improvement is described in detail in the main body of this memorandum and references to the main text are cited where appropriate.

A-2. Description. The project area is located in southeastern Louisiana in Jefferson Parish. The dominant topographic feature is Lake Pontchartrain, a shallow tidal basin approximately 640 square miles in area and 12 feet in depth. Lake Pontchartrain is connected to the Gulf of Mexico through the Rigolets and Chef Menteur Passes, Lake Borgne, and Mississippi and Chandeleur Sounds, and is connected with lesser Lake Maurepas to the west by Pass Manchac.

The project levee protects the metropolitan area of Jefferson Parish on the east bank of the Mississippi River from storm tides and hurricane surges generated in Lake Pontchartrain. The study area is bounded by Lake Pontchartrain to the north, the Mississippi River levee to the south, the Jefferson/St. Charles Return Levee to the west and the west bank levee of the Metairie-Orleans Outfall Canal to the east. The area protected by the project levee is totally urbanized with residences and businesses. The area is relatively flat, even though elevations vary from 13 feet n.g.v.d. (national geodetic vertical datum of 1929) near the Mississippi River to -6 feet n.g.v.d. near Lake Pontchartrain. Storm water drainage is accomplished through a network of subsurface drainage pipes and open canals which convey the water to six pumping stations which discharge the water into Lake Pontchartrain. Four of these stations are located along the shore of the lake within the alignment of the project levee. The other two stations discharge into canals which are connected to the lake on the east and west side of Jefferson Parish. In general, storm water that is pumped into the east and west canals are channeled to these pumping stations from distinct drainage areas. The area drained by the four lakefront pumping stations is traversed by canals which allows for exchange of flow among the stations, so that excess runoff in one local area can flow into the nearest available station for release.

The new hurricane protection levee will not interfere with the operation of these pumping stations and will protect the northern portion of Jefferson Parish from standard project and lesser intensity hurricane surges emanating from Lake Pontchartrain; the area will still be subject to periodic inundation caused by excessive rainfall. The study area is depicted on Plate A-1.

A-3. Climatology.

a. Climate. The project area is located in a subtropical latitude having mild winters and hot, humid summers. During the summer, prevailing southerly winds produce conditions favorable for convective thundershowers. In the colder seasons, the area experiences frontal passages which produce squalls and sudden temperature drops. River fogs are prevalent in the winter and spring when the temperature of the Mississippi River is somewhat colder than the air temperature. Climatological data for the area are contained in monthly and annual publications by the U.S. Department of Commerce, Weather Bureau, titled "Climatological Data for Louisiana, and "Local Climatological Data, New Orleans, La." Table A-1 lists active meteorological stations in and adjacent to the study area. These stations are also shown on the map in Plate A-2.

TABLE A-1
METEOROLOGIC STATIONS

MAP INDEX NO. (PLATE 2)	LENGTH OF RECORDS (YRS.) TO 1985 PRECIPITATION & TEMPERATURE STATIONS	Precipitation	Temperature
1	NEW ORLEANS - AUDUBON - PARK	97	97
2	NEW ORLEANS - MOISANT AIRPORT	33	33
3	RESERVE (NR)	85	85
4	SLIDELL	30	30
5	DONALDSONVILLE (NR)	97	98
6	LOUISIANA NATURE CENTER	7	7
7	PARADIS (NR)	72	32
OMS	HAMMOND (NR)	90	91
OMS	ST. BERNARD (NR)	21	21
OMS	COVINGTON	93	93
OMS	CARVILLE (NR)	48	47
OMS	BATON ROUGE AIRPORT	118	98
	RECORDING PRECIPITATION STATIONS		
8	NEW ORLEANS ALGIERS	87	-
9	NEW ORLEANS DPS 14 - CITRUS	32	-
10	NEW ORLEANS WATER PLANT - DUBLIN	93	-
11	NEW ORLEANS DPS 5 - JOURDAN	53	-
12	NEW ORLEANS DPS 3 - LONDON	93	-
13	NEW ORLEANS DPS 6 - METAIRIE	38	-
14	GONZALES	9	-
	NON-RECORDING PRECIPITATION STATIONS		
15	NEW ORLEANS CITY HALL	9	-
OMS	BATON ROUGE CENTRAL	8	-
OMS	ABITA SPRINGS FIRE TOWER	14	-

LEGEND: NR NON-RECORDING
OMS OFF MAP STATION

b. Temperature. New Orleans at Moisant Airport has temperature records from 1946. From temperature normals over the period 1951-1980, the mean annual temperature is 68.2° F. Extremes over the period of record are 14° and 102°F. The average temperature in summer is 81.4° F and in the winter is 53.9° F. Temperature normals (1951-1980) for the New Orleans gage at Moisant Airport are shown in Table A-2. Station locations are provided on the map in Plate A-2.

TABLE A-2
MONTHLY TEMPERATURE (°F)
NEW ORLEANS AT MOISANT AIRPORT
30-YEAR NORMALS (1951-1980)

MONTH	MEAN	MAXIMUM	MINIMUM
JAN	52.4	61.8	43.0
FEB	54.7	64.6	44.8
MAR	61.4	71.2	51.6
APR	68.7	78.6	58.8
MAY	74.9	84.5	65.3
JUN	80.3	89.5	70.9
JUL	82.1	90.7	73.5
AUG	81.7	90.2	73.1
SEP	78.5	86.8	70.1
OCT	69.2	79.4	59.0
NOV	60.0	70.1	49.9
DEC	54.6	64.4	44.8
ANNUAL	68.2		

EXTREME MINIMUM: 14°F, 24 January 1963 and 25 December 1983
EXTREME MAXIMUM: 102°F, 22 August 1980
(P.O.R. 1946-1985)

c. Rainfall. Precipitation is generally heavy in two fairly definite rainy periods. Summer showers occur from about mid-June to mid-September, and heavy winter rains generally occur from mid-December to mid-March. The drainage area tributary to Lake Pontchartrain is served by 34 precipitation stations of the U.S. Weather Bureau, with periods of record ranging from 7 to 118 years. Based on the 30-year normals for the period 1951-1980 and from the U.S. Weather Bureau station New Orleans at Moisant Airport, the annual normal precipitation is 59.7 inches, with variations of plus or minus 50 percent. Extreme monthly rainfalls exceeding 12 inches are not uncommon. Average monthly normal rainfalls range from a normal 6.73 inches in July to a normal of 2.66 inches in October. Several stations have experienced calendar months in which no rainfall was recorded. Snow occurs infrequently in the area. An 8.2-inch snowfall occurred in New Orleans on 14-15 February 1895. The last measurable snowfall occurred on 31 December 1963 when 4.5 inches fell in New Orleans. Table A-3 gives the 30 year normals for the New Orleans at Moisant Airport along with the monthly maximum and minimum totals during the normal period. Location of the precipitation stations are shown on Plate A-2.

TABLE A-3
MONTHLY RAINFALL (INCHES)
NEW ORLEANS AT MOISANT AIRPORT
30-YEAR NORMALS (1951-1980)

MONTH	NORMAL	MAXIMUM	MINIMUM
JAN	4.97	13.63	0.54
FEB	5.23	12.49	1.02
MAR	4.73	12.17	0.24
APR	4.50	16.12	0.28
MAY	5.07	14.33	0.99
JUN	4.63	12.28	0.23
JUL	6.73	11.46	2.91
AUG	6.02	16.12	1.68
SEP	5.87	16.74 a/	0.24
OCT	2.66	6.45	0.0 b/
NOV	4.06	11.35	0.45
DEC	5.27	10.77	1.46
ANNUAL	59.74	83.54 c/	39.0 d/

Legend: T - Trace
a/ - Sep 1971
b/ - Oct 1952, Oct 1963
c/ - 1961
d/ - 1962

d. Wind. The U.S. Weather Bureau anemomoter coverage at Moisant Airport in Kenner, Louisiana, was installed in 1949. This anemometer provides the longest record available adjacent to the lake. Table A-4 shows the average monthly wind speeds and its resultant direction for the years 1966-1984. The average wind velocity over this period is 7.8 mph, but winds over 100 mph are experienced occasionally in hurricanes. The predominant wind directions are north-northeast from September through February and south-southeast from March through June. Plate A-3 is a wind rose for New Orleans at Moisant based on the period of record of 1949-1978. The frequency of wind speeds and direction from this wind rose is summarized in Table A-5.

A-4. Hydrologic Regimen.

a. General. The water level in Lake Pontchartrain is subject to variations from direct rainfall, tributary inflow, wind-driven water movements, and flow through the Rigolets and Chef Menteur Passes and the Inner Harbor Navigation Canal caused by tidal variations originating in the Gulf of Mexico. Infrequently, lake level is influenced by diversion of Mississippi River floodflow through Bonnet Carre' Spillway. Combinations of these factors determine the salinity regimen in the lake. Locations and periods of record of hydrologic stations are shown in Table A-6.

b. Runoff and Streamflow. Runoff from the 4,700 square miles north and west of Lakes Pontchartrain and Maurepas, estimated to average five million acre-feet annually, drains into the lakes via the Amite, Tickfaw, Natalbany, Tangipahoa, and Tchefuncta Rivers, and Bayous Lacombe, Bonfouca, and Liberty. Streamflow records are available at six locations on these streams and four locations on Pearl River for the periods of record listed in Table A-7. New Orleans and adjacent parishes are drained by outfall canals that discharge directly into Lake Pontchartrain. Yearly fresh water inflow records show considerable variations, as shown in Table A-7.

TABLE A-4
WIND SUMMARIES, NEW ORLEANS AT MOISANT AIRPORT (1966-1984)
AVERAGE WIND SPEED

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1966	9.6	10.5	9.7	10.7	8.7	7.3	6.2	6.4	5.7	7.6	7.4	8.6	8.2
1967	8.3	9.5	9.0	9.3	9.1	6.8	6.2	5.9	7.0	7.4	8.0	9.8	8.0
1968	9.2	10.0	9.3	9.1	8.4	5.6	5.7	5.2	6.4	6.8	8.9	9.3	7.8
1969	9.7	9.8	10.0	8.6	7.3	7.2	6.5	6.8	6.8	9.7	8.0	9.1	8.3
1970	9.5	9.2	9.8	9.9	8.5	6.8	5.4	6.0	6.7	7.7	8.0	7.4	7.9
1971	8.4	9.8	9.8	8.5	7.9	5.3	5.7	5.0	6.5	4.8	8.0	8.7	7.4
1972	8.9	8.6	9.1	10.2	7.3	9.3	7.5	6.4	7.0	8.3	9.9	9.4	8.5
1973	9.6	10.2	12.0	11.5	10.0	6.7	6.7	6.3	7.9	7.0	9.6	11.4	9.1
1974	9.2	11.0	10.8	10.7	8.2	7.4	5.0	5.2	8.6	7.4	8.5	8.5	8.4
1975	9.4	8.6	11.0	10.0	7.4	6.5	6.5	4.9	6.3	6.4	8.0	7.8	7.7
1976	9.6	8.8	10.5	7.6	8.4	6.9	5.4	5.7	6.0	8.5	7.9	8.2	7.8
1977	9.8	8.5	8.5	7.3	5.7	5.3	4.4	5.5	5.4	6.6	8.1	8.8	7.0
1978	9.1	8.9	8.5	8.6	7.9	5.9	5.5	5.3	6.3	6.1	6.7	10.0	7.4
1979	10.5	9.0	9.3	8.0	7.2	6.5	6.7	4.4	8.0	6.7	8.1	6.3	7.6
1980	7.6	8.0	9.8	8.8	7.5	7.4	5.6	5.7	5.3	5.9	6.4	5.9	7.0
1981	7.6	8.3	7.7	7.3	7.8	6.9	5.7	4.8	5.7	7.0	7.3	8.6	7.1
1982	9.8	8.3	8.9	9.4	6.5	6.2	4.6	4.4	7.1	7.5	7.6	10.0	7.5
1983	8.0	10.0	8.8	10.4	7.8	6.3	5.8	5.3	6.0	6.8	8.3	10.0	7.8
1984	8.0	8.7	7.8	9.4	8.2	4.7	4.1	5.8	9.2	7.6	9.6	8.8	7.7
Average	9.1	9.2	9.5	9.2	7.9	6.6	5.7	5.5	6.7	7.1	8.1	8.8	7.8

TABLE A-4 (cont'd)
WIND SUMMARIES, NEW ORLEANS AT MOISANT AIRPORT (1966-1984)
RESULTANT DIRECTION*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1966	02	04	07	16	07	07	23	15	02	03	03	05	05
1967	03	02	13	15	16	11	21	02	05	06	05	08	09
1968	03	35	12	16	15	19	12	05	06	04	04	06	07
1969	07	02	02	13	09	18	24	09	04	05	36	01	05
1970	03	03	08	17	10	21	20	12	08	03	32	06	09
1971	02	12	13	15	13	23	20	01	07	04	04	12	09
1972	07	07	12	15	04	20	14	34	12	06	02	06	08
1973	02	36	16	16	20	18	24	04	10	07	13	20	12
1974	12	24	16	13	16	16	25	13	05	06	06	16	12
1975	09	21	14	11	15	18	25	17	03	05	08	04	10
1976	04	19	15	15	15	13	25	01	04	02	02	02	07
1977	01	09	13	14	13	21	20	12	15	03	10	13	11
1978	01	01	28	15	16	12	19	11	08	03	08	07	07
1979	01	04	15	14	13	15	17	13	04	11	03	03	08
1980	06	06	09	20	15	22	27	13	09	04	02	02	08
1981	02	02	21	15	13	16	22	11	05	06	10	04	09
1982	11	01	12	10	13	22	21	21	06	06	06	10	09
1983	04	05	29	18	15	12	10	11	07	05	10	03	08
1984	03	08	16	18	14	17	13	18	06	13	04	12	12

* Wind Direction - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm, 09 east, 18 south, 27 west, 36 north. Resultant wind is the vector sum of wind directions and speed divided by number of observations.

TABLE A-5
WINDSPEED
NEW ORLEANS AT MOISANT AIRPORT
PERCENTAGE FREQUENCY (1949-1978)

SPEED GROUPS (MPH)

DIRECTION	0-3	4-13	14-19	20-25	26-32	32+	TOTAL
N	0.0	4.9	2.1	0.3	0.1	0.0	7.4
NNE	0.0	4.0	1.5	0.2	0.0	0.0	5.7
NE	0.0	5.0	1.6	0.2	0.0	0.0	6.8
ENE	0.0	4.9	1.4	0.1	0.0	0.0	6.4
E	0.0	4.3	1.0	0.1	0.0	0.0	5.4
ESE	0.0	3.6	0.7	0.1	0.0	0.0	4.4
SE	0.0	4.0	0.9	0.1	0.0	0.0	5.0
SSE	0.0	4.5	1.6	0.2	0.0	0.0	6.3
S	0.0	6.2	2.1	0.3	0.1	0.0	8.7
SSW	0.0	4.0	0.8	0.2	0.0	0.0	5.0
SW	0.0	3.0	0.4	0.0	0.0	0.0	3.4
WSW	0.0	2.1	0.4	0.0	0.0	0.0	2.5
W	0.0	2.4	0.5	0.1	0.0	0.0	3.0
WNW	0.0	2.0	0.5	0.1	0.0	0.0	2.6
NW	0.0	2.0	0.8	0.2	0.1	0.0	3.1
NNW	0.0	2.7	1.4	0.3	0.1	0.0	4.5
CALM	20.0	-	-	-	-	-	20.00
TOTAL	20.0	59.6	17.7	2.5	0.4	0.0	100.00

TABLE A-6
HYDROLOGIC STATIONS

MAP INDEX NO. (PLATE A-2)	STATION	PERIODS OF RECORD: TYPES OF WATER LEVEL GAGE	PERIODS OF RECORD: RECORDS AVAILABLE THRU 1985	STAGE EXTREMES (NGVD): MAXIMUM	DATE	MINIMUM	DATE
16	Amite River at Port Vincent	Auto Recorder and Staff	Gate Heights, Dec 1954 to Jun 1974 and Jun 1975 to date. Discharge, last observation - Apr 1980	14.59	Apr 83	-1.16	Aug 83
17	Amite River at French Settlement	Auto Recorder and staff	Gage Heights, Intermittent 1947-1951 and daily. Dec 1954 to date. Discharge, last observation - 8 in 1977	7.4	Apr 78	-1.5	Dec 54
18	Petite Amite River NR St. Paul	Auto Recorder and Staff	Gage Heights, Intermittent Mar 1950 to May 1951 and daily Oct 1951 to date	4.72	Apr 73	-1.6	Dec 56
19	Reserve Canal near Lake Maurepas	Auto Recorder and Staff	Gage Heights, Jan 1979 to date	5.5*	Oct 85**	-1.14	Mar 81
20	Tickfaw River near Springfield	Auto Recorder and Staff	Gage Heights, May 1947 to date. Discharge, last observation - 7 in 1977	6.51*	Oct 85	-1.43	Dec 54
21	Pass Manchac near Pontchatoula	Staff	Gage Heights, July 1955 to date	5.4	Oct 85	-2.0	Jan 61
22	Bayou Bonfouca at Slidell	Staff	Gage Heights, Aug 1962 to date	6.8 (affected by Hurricane)	Aug 69	-0.6	Feb 63
23	Lake Pontchartrain at Frenier	Auto Recorder and Staff	Gage Heights, Sep 1931 to Sep 1965 and Jan 1969 to date	12.09* (watermark)	Sep 65	-2.1	Jan 38

* Caused by hurricane

** From Incomplete Record

TABLE A-6
HYDROLOGIC STATIONS
(CONT'D)

MAP INDEX NO. (PLATE A-2)	STATION	PERIODS OF RECORD: TYPES OF WATER LEVEL GAGE	PERIODS OF RECORD: RECORDS AVAILABLE THRU 1985	STAGE EXTREMES (NGVD): MAXIMUM	DATE	MINIMUM	DATE
24	Lake Pontchartrain at Mandeville	Auto Recorder and Wire Weights	Gage Heights, Sep 1931 to date	6.95*	Sep 47	-2.25	Jan 38
25	Lake Pontchartrain at Midlake near New Orleans	Auto Recorder and Wire Weights	Gage Heights, Aug 1957 to date	6.14*	Oct 85	-1.28	Mar 65
26	Lake Pontchartrain at West End	Auto Recorder and Staff	Gage Heights, Sep 1931 to Nov 1946 and Mar 1949 to date	6.11*	Oct 85	-2.2	Jan 38
27	Lake Pontchartrain (Irish Bayou) near South Shore	Auto Recorder and Staff	Gage Heights, May 1949 to date	7.16*	Aug 69	-1.30	Jul 54
28	Rigolets near Lake Pontchartrain	Auto Recorder and Staff	Gate Heights, Sep 1931 to date	9.0*	Aug 69	-1.90	Jan 38
29	Lake Borgne at Rigolets	Auto Recorder and Staff	Gage Heights, Dec 1957 to Sep 1965 and Jul 1967 to date	12.25* (watermark)	Aug 69	-2.04	Feb 78
30	Chef Menteur Pass near Lake Borgne	Auto Recorder and Staff	Gage Heights, Apr-Jun 1945, Feb & Mar 1950, Jul 57-Sep 65 and Oct 67 to date. Discharge, 1937 and 1945	9.07*	Sep 65	-1.69	Feb 78

* Caused by hurricane

TABLE A-6
HYDROLOGIC STATIONS
(CONT'D)

MAP INDEX NO. (PLATE A-2)	STATION	PERIODS OF RECORD: TYPES OF WATER LEVEL GAGE	PERIODS OF RECORD: RECORDS AVAILABLE THRU 1985	STAGE EXTREMES (NGVD): MAXIMUM	DATE	MINIMUM	DATE
31	Mississippi River - Gulf Outlet at Shell Beach	Auto Recorder and Staff	Gage Heights, Jun 1961 to date	11.06*	Aug 69	-2.7	Mar 65
32	Bayou Dupre at Floodgate (west)	Auto Recorder and staff	Gage Heights, Aug 1975 to date	3.53*	Oct 85	-1.94	Jan 79
33	Bayou Dupre at Floodgate (east)	Auto Recorder and Staff	Gage Heights, Aug 1975 to date	7.61*	Oct 85	-1.78	Feb 78
34	Bayou Bienvenue at Paris Road	Auto Recorder and wire height	Gage Heights, Dec 1974 to date	4.82	May 78	-1.78	Jan 77
35	Bayou Bienvenue at Floodgate (west)	Auto Recorder and Staff	Gage Heights, May 1975 to date	3.91	Apr 80	-2.03**	May 78
36	Bayou Bienvenue at Floodgate (east)	Auto Recorder and Staff	Gage Heights, Dec 1974 to date	7.98	Oct 85	-1.89	Jan 79
37	Intracoastal Waterway near Paris Road Bridge	Auto Recorder and Staff	Gage Heights, Apr 1948 to date	10.04*	Sep 65	-2.19	Mar 65
38	Inner Harbor Navigation Canal near Seabrook Bridge	Auto Recorder and Staff	Gage Heights, Daily, Aug 1962 to date	6.47*	Aug 69	-1.53	Mar 65

* Caused by hurricane
** From incomplete record

TABLE A-6
HYDROLOGIC STATIONS
(CONT'D)

MAP INDEX NO. (PLATE A-2)	STATION	PERIODS OF RECORD: TYPES OF WATER LEVEL GAGE	PERIODS OF RECORD: RECORDS AVAILABLE THRU 1985	STAGE EXTREMES (NGVD): MAXIMUM	DATE	MINIMUM	DATE
39	Inner Harbor Navigation Canal (IWW) at Florida Ave. Bridge	Auto Recorder and wire weight	Gage Heights, July 1944 to date	9.82*	Aug 69	-1.45	Jan 81
40	Inner Harbor Navigation Canal (IWW) at New Orleans	Staff	Gage heights, May 1922 to date	10.61* (High water mark)	Sep 65	-1.90	Feb 85
41	Intracoastal Waterway at Harvey Lock	Wire Weight	Gage Heights, Jan 1925 to date	4.74*	Oct 85	-1.28	Jan 40
42	Intracoastal Waterway at Algier's Lock	Auto Recorder and Wire Weight	Gage Heights, May 1956 to date	4.45*	Oct 85	-1.64*	Sep 65
OMS	Bayou Terre Aux Boeufs at Delacroix	Auto Recorder and Staff	Gage Heights, May 1975 to date	6.86*	Oct 85	-1.29	Feb 78
OMS	Bayou Barataria at Barataria	Auto Recorder and Staff	Gage Heights, Jan-Sep 1950, 1950, and Nov 1951 to date	4.25*	Oct 85	-0.58	Sep 65
OMS	Bayou Barataria at Lafitte	Auto Recorder and Staff	Gage Heights, Oct 1955 to Dec 1960 and May 1963 to date	5.05*	Oct 85	-0.60	Jan 56

* caused by hurricane
OMS - off map station

TABLE A-7
PERTINENT STREAMFLOW DATA (1938-1984)

INFLOW POINT	TOTAL DRAINAGE AREA MI^2	GAGED LOCATION*	GAGED DRAINAGE AREA MI^2	PERIOD OF RECORD	AVERAGE DISCHARGE (cfs)	MAXIMUM DISCHARGE RATE (cfs)	MAXIMUM DISCHARGE DATE	MINIMUM DISCHARGE RATE (cfs)	MINIMUM DISCHARGE DATE
Amite River	2,373	NR Denham Springs	1,280	9/38 to date	2,015	112,000	4/8/83 10/18/56	271	10/17/56
Tickfaw River	735	At Holden	247	10/40 to date	372	22,470	4/7/83	65	10/1-4/69
		Natalbany River At Baptist	79.5	8/43 to date	116	9,810	4/7/83	1.8	11/2-5/63
Tanglpahoa River	895	At Robert	646	10/38 to date	1,151	85,000	4/7/83	245	10/30/68 thru 11/3/68
Tchefunta River	459	NR Folsom	95.5	1/43 to date	161	29,800	4/5/83	26	9/4/68 and 9/15/68
		Bogue Falaya at Covington	88.2	1964 to date	-	12,700**	4/8/83	-	-
Pearl River	8,689	At Bogalusa	6,573	10/38 to date	9,904	129,000	4/24/79	1,020	10/29/63 thru 11/1/63
		Bogue Chitto NR Bush	1,213	10/37 to date	1,916	131,700	4/8/83	366	10/22, 23, 26, 29/68
		At Pearl River	3,494	10/63-9/70 10/75 to date	9,470 (1964-70)	230,000	4/9/83	1,580	10/24/63 and 11/10/63
		Bogue Lusa Creek At Bogalusa	72.7	10/63 to date	118	9,350	4/7/83	5	10/27-28/67

*U.S. Geological Survey Gage Stations
**Previous Flood Discharge - 8,610 CFS 4/27/64

c. Stages, Salinities, Waves and Tides.

(1) Lake stages.

(a) The Bonnet Carre Spillway is operated as required during major high water seasons on the Mississippi River to divert flows through Lake Pontchartrain in order to insure that a stage of 20 feet on the Carrollton gage is not exceeded at New Orleans. Studies indicate that the operations of the spillway produced maximum increases in lake level of about 0.8 foot in 1937, 1.5 feet in 1945, 1.0 foot in 1950, and 0.7 foot in 1973 and again in 1979. The effects of Bonnet Carre operation on stages in Lake Pontchartrain were evaluated as part of a physical model study made by the U.S. Army Engineer Waterways Experiment Station in Vicksburg, Mississippi, in 1963(1). The report indicates that for the passage of flows at or near the design discharge of 250,000 cfs, the operation of the spillway would increase stages in Lake Pontchartrain by about 0.7 foot for average high water stages in Lake Borgne. An analysis of the effects of Bonnet Carre on lake stages during the 1973 and 1979 operations indicates that these model results are generally valid.

(b) For the 1983 Flood, analysis of observed tidal data of a comparable period before and during the Bonnet Carre Spillway operation indicated the actual rise in lake level was approximately 0.5 foot.

(c) The maximum recorded stage in Lake Pontchartrain of 13.0 feet occurred at Frenier on 29 September 1915. The minimum of minus 2.25 feet occurred at Mandeville on 26 January 1938. The mean lake stage for the period from 1961 through 1985 was 1.5 feet.

(d) Maximum stages occur in Lake Pontchartrain during hurricane activity in the vicinity. A list of high stages recorded during hurricanes is presented in Table A-8.

TABLE A-8
MAXIMUM STAGES - LAKE PONTCHARTRAIN

LOCATION	DATE	STAGE- FT. NGVD	
Mandeville	20 Sep 1909	8.0	
West End	20 Sep 1909	6.2	
Frenier	29 Sep 1915	13.0	
West End	29 Sep 1915	6.0	
West End	19 Sep 1947	5.4	
Mandeville	19 Sep 1947	6.8	
New Orleans	4 Sep 1948	4.9	
Frenier	24 Sep 1956	6.8	"Flossy"
Little Woods	24 Sep 1956	7.0	
West End	24 Sep 1956	5.3	
Mandeville	27 Jun 1957	4.1*	"Audrey"
Frenier	9 Aug 1957	3.3	"Bertha"
Frenier	18 Sep 1957	4.5	"Esther"
Mandeville	10 Sep 1961	5.5	"Carla"
Frenier	17 Sep 1963	4.0	"Cindy"
Mandeville	4 Oct 1964	6.4	"Hilda"
Frenier	10 Sep 1965	12.1	"Betsy"
Frenier	Aug 1969 (Watermark)	4.6	"Camille"
Mandeville	18 Aug 1969	4.6	
West End	17 Aug 1969	5.2	
Irish Bayou	18 Aug 1969	7.2**	
Rigolets	18 Aug 1969	9.0**	
Shell Beach	17 Aug 1969	11.1**	
Mandeville	8 Sep 1974	5.0	"Carmen"
Frenier	8 Sep 1974	4.5	
West End	8 Sep 1974	5.2	
Frenier	5 Sep 1977	4.2	"Babe"
Little Woods	4 Sep 1977	4.5	
Frenier	28 Oct 1985	7.58	"Juan"
Mandeville	28 Oct 1985	6.5	
Midlake	29 Oct 1985	6.14**	
West End	28 Oct 1985	6.1**	
Irish Bayou	28 Oct 1985	6.0 (FIR)	

* Possibly higher, gauge failed during storm.
** New record established.

FIR - From Incomplete Record

(2) Salinities. Diluted saline gulf water enters Lake Pontchartrain from Lake Borgne via the Rigolets and the Chef Menteur Pass and the Mississippi River - Gulf Outlet and Inner Harbor Navigation Canal in large quantities and mixes with the fresh water inflow. The salinity in the eastern portion of Lake Pontchartrain averages about 4.5 parts per thousand with a low of 1.1 part per thousand, and a high of 16.5 parts per thousand. The salinity in the western portion of the lake averages about 1.5 parts per thousand with a low of 0.05 part per thousand, and a high of 8.0 parts per thousand. Salinity is subject to considerable variation with respect to location, seasonal trends, and short-term fluctuations. More intensive data on salinities, tides and currents in Lake Pontchartrain and vicinity are shown in U.S. Army Waterways Experiment Station Report of January 1982 entitled "Lake Pontchartrain and Vicinity Hurricane Protection Plan - Prototype Data Acquisition and Analysis."(2)

(3) Waves. In August 1957, two wave gages were installed on the east side of the Greater New Orleans Expressway Bridge, Station Ten at the north end, and Station Four on the south end. Both are approximately one-quarter mile from shore. In 1958, Station Nine was established at Frenier, with the gage on a tower approximately 1,200 feet from shore. Locations are shown on Plate A-2. Pertinent observed data are listed in Table A-9.

TABLE A-9
WAVE DATA

Station	Significant Waves		Maximum Waves	
	Range ft.	Wind m.p.h.	Height ft.	Date
4	0.1 to 4.9	30	8.3	9 October 1958
9	0.1 to 4.9	29	7.8	9 October 1958
10	0.1 to 5.3	40	9.0	10 May 1959

(4) Tides. The normal tide has a general range of one-half foot in Lake Pontchartrain and is diurnal in nature. However, wind effects usually mask the daily ebb and flood variations. Because of the annual volume of freshwater inflow (estimated to average 5 million acre-feet), tides and storm surges, enormous volumes of water pass in both directions through the Rigolets, Chef Menteur Pass, Lake Borgne, Mississippi Sound, Inner Harbor Navigation Canal, and Mississippi River-Gulf Outlet. With so many variables operating on the several elements of the system, the current patterns are continually changing.

A-5. Description and Verification of Procedures.

a. Hurricane Memorandums. The Hydrometeorological Section (HMS), U.S. Weather Bureau, cooperated in the development of hurricane criteria for experienced and potential hurricanes in the study area. The HMS memorandums

provided frequency data, isovel and rainfall patterns, pressure profiles, hurricane paths, and other parameters required for the hydraulic computations. Those relative to experienced hurricanes are based on reevaluation of historic meteorologic and hydrologic data. Those relative to potential hurricanes contain generalized estimates of hurricane parameters that are based on the latest research and concept of hurricane theory. Memorandums pertinent to the study are listed in Section III, Bibliography.

b. Historical Storms used for Verifications. Three observed storms, with known parameters and effects, were used to establish and verify procedures and relationships for determining surge heights, wind tide levels (WTL's), inflow into Lake Pontchartrain, overtopping flows, and ultimately, flood elevations that would result from synthetic hurricanes. Two storms occurred in September of 1915 (4) and September of 1947 (5) (as shown on Plates A-4 and A-5). The third storm occurred on 16 September 1957.

(1) The hurricane of 29 September 1915 had a central pressure index (CPI) of 27.87 inches, an average forward speed of 10 knots, and a maximum wind speed of 99 mph at a radius of 29 nautical miles. This hurricane approached the mainland from the south. At the Lake Borgne entrance to the Rigolets, a high water elevation of about 10 feet was experienced and the average elevation in Lake Pontchartrain rose to 6 feet. This storm was not used for verification of levee overtopping because the present lakefront levee system was not in existence in 1915.

(2) The 19 September 1947 hurricane had a CPI of 28.57 inches, an average forward speed of 16 knots, and a maximum windspeed of 72 mph at a radius of 33 nautical miles. The direction of approach of this hurricane was approximately from the east. In Lake Borgne, at the entrance to the Rigolets, the maximum water surface elevation was 10 feet NGVD, and in Lake Pontchartrain, the maximum elevation was 5 feet NGVD. However, because of the rapid forward speed of this storm, the average water elevation in Lake Pontchartrain did not reach its maximum at the time that the winds were critical to the south shore. The step-type seawall was in place along the New Orleans lakefront during this storm, and a fairly reliable flood line of overtopping flows was available for verification.

(3) Tropical storm Esther occurred on 16 September 1957, and the resultant elevations were accurately registered by stage recording gages at many locations within the study area. These records were available for verification of routing procedures. This storm was not severe enough to cause flooding.

c. Synthetic storms. Computed flood elevations, resulting from synthetic storms, are necessary for frequency and design computations. Parameters for certain synthetic storms and methods for derivation of others were furnished by the National Weather Service. The standard project hurricane (SPH) for the entire Louisiana coast was used for all locations in the study area with changes only in path and forward speed.

(1) SPH for the Louisiana coast was derived by the National Weather Service from a study of 42 hurricanes that occurred in the region over a period of 57 years (6). SPH paths critical to different locations in the study area and isovel patterns at critical hours are shown on Plates A-6 and A-7. Based on subsequent studies of more recent hurricanes, the National Weather Service has revised the SPH wind field patterns and other characteristics over the years. Wind field patterns were revised after Hurricane Betsy in 1965 to reflect the intensified wind speeds (7), (8), (9). After Hurricane Camille in 1969, the Weather Service completely revised hurricane characteristics for the SPH, including the wind speeds, central pressure and radii. (10) In their latest publication (11) NOAA has expanded and generalized the latest SPH characteristics. For design of the Lake Pontchartrain and Vicinity Hurricane Protection Project High Level Plan, the SPH, as defined after Hurricane Betsy, was used. To assure that all the segments of the project would be compatible, SPH parameters have not been changed since construction began. Modifications and adjustments of these parameters subsequent to Hurricane Betsy have not significantly changed the characteristics of the SPH.

(a) The SPH for the Louisiana coastal region has a frequency of once in 100 years. The CPI that corresponds to this frequency is 27.6 inches. CPI probabilities are based on the following relationship. (12):

$$P = \frac{100 \quad (M-0.5)}{Y}$$

Where P = percent change of occurrence per year
M = number of the event (rank)
Y = number of years of record

(b) Radius of maximum winds is an index of hurricane size. The average radius of 12 hurricanes occurring in the New Orleans area is 36 nautical miles. From relationships of CPI and radius of maximum winds of gulf coast hurricanes (12), a radius of 30 nautical miles is considered representative for an SPH having a CPI of 27.6 inches.

(c) Different forward speeds are necessary to produce SPH efects at various locations within the study area. In Lake Pontchartrain, the forward speed is a particularly critical factor and may be as important as the track itself. Sufficient time must elapse between the time of maximum elevation at the entrances to Chef Menteur Pass and the Rigolets and the time of maximum critical winds at the Lake Pontchartrain shore in question to allow for maximum inflow into the lake. The SPH for the south shore, patterned after the September 1915 hurricane, has an average forward speed of 6 knots. An average forward speed of 11 knots was used for the SPH along the west shore of Lake Borgne at the entrance to the passes into Lake Pontchartrain.

(d) Maximum theoretical gradient wind (12) is expressed as:

$$V = 73 \quad (P_n - P_o)^{0.5} - R \quad (0.575 \quad f)$$

where V_{gx} = maximum gradient wind speed in miles per hour
P_n = asymptotic pressure in inches
P_o = central pressure in inches
R = radius of maximum winds in nautical miles
f = coriolis parameter in units of hour $^{-1}$

The estimated wind speed (30 feet above ground level) (V_x) (13) in the region of highest speeds is obtained as follows:

$$V_x = 0.885\ V_{gx} + 0.5T$$

where T = forward speed in miles per hour.

From these relationships, a wind speed of approximately 100 mph was obtained.

(2) Other synthetic storms of different frequency and CPI are derived from SPH. Other CPI's for desired frequencies are obtained from the graph shown on Plate A-8. V_{gx}'s corresponding to any other CPI are determined similarly by use of the method described for the SPH. Variations in CPI's of historic storms were accomplished by the same procedure (12). Characteristics of synthetic storms and some historic storms are listed in Table A-10.

TABLE A-10
HURRICANE CHARACTERISTICS

Hurricane*	CPI inches	Radius of max. winds nautical miles	Forward speed knots	V_x m.p.h.
Sep 1915	27.87	29	10	99
Sep 1947	28.57	33	16	72
Sep 1956	28.76	30	10	80
Sep 1965	27.79	32	20	122
Track A PMH	26.90	30	6	114
Track A SPH	27.60	30	6	100
Track A Mod H	28.30	30	6	83
Track F PMH	26.90	30	11	114
Track F SPH	27.60	30	11	100
Track F Mod H	28.30	30	11	80

* Tracks are shown on Plate A-9.

d. Surges.

Maximum hurricane surge heights along the western shores of Lake Borgne at the entrances to Lake Pontchartrain were computed by use of a one dimensional steady-state wind tide formula. A detailed description of the formula and its verification is contained in Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part I - Chalmette (14).

e. Routing.

Since the major hurricane damage in the study area results from storm induced effects on Lake Pontchartrain, it was necessary to establish a method to determine the hydraulic regimen in the lake at any time during the hurricane occurrence. This procedure involves the construction of a stage hydrograph for Lake Borgne, and the simultaneous hourly calculations of flows through Lake Pontchartrain's natural inlet and outlet passes, tilt and stage-volume relationships in Lake Pontchartrain and Lake Maurepas, accumulated rainfall, and overflow from the lake to the land areas.

(1) Prerequisite to any routing is the choice of an actual or hypothetical hurricane of known or designated characteristics. It is then possible to develop surge heights for any point in Lake Borgne for selected storm. For routing purposes, Long Point, which is east of the mouth of the Rigolets, was selected as the critical point for a hydrograph. The hydrograph for Long Point reflects stages at the mouths of both the Rigolets and Chef Menteur Pass. Construction of such a hydrograph of hourly stages at the mouth of the two passes was based on a method developed by R.O. Reid (15) that was modified by using the maximum surge elevation computed by the incremental setup method as the peak of the hydrograph for the critical period. A comparison of the rising portion of the hydrograph thus derived, with one obtained by computing surge elevations at hourly intervals, indicated agreement between the two methods. Final stages for the recession portion of the hydrograph could not be computed by the incremental setup method because of the offshore wind directions prevailing after the peak stage. The recession produced by Reid's method (15), obtained by rotating the hydrograph about the peak ordinate, indicated stages considerably lower than corresponding stages for the 1947 hurricane surge. The observed stages of the 1957 storm surge also indicated that the recession was somewhat slower at intermediate stages in Lake Borgne. It was therefore necessary to estimate the recession portion of the hydrograph to verify routing procedures. Storm surge hydrographs for Long Point for each storm investigated were determined by identical procedures.

(2) Storms tides flow in and out of Lake Pontchartrain through three major natural passes and an artificial canal. Rating tables, derived by reverse routing of observed storms, were developed for use in routing through the passes and canal. The elevation of Lake Borgne at Long Point was determined from the average of records obtained from automatic tide gage recorders located at the mouths of the passes and at Shell Beach. Elevations of Lake Pontchartrain were determined from records of the automatic tide gages

located in Lake Pontchartrain at U.S. Highway 11 and at West End. Although there was a fairly consistent relationship between head and flow, there was no consistency when a parameter of stage was introduced.

The combined rating of the Rigolets, Chef Menteur Pass, flow over U.S. Highway 90 in vicinity of the passes, and Inner Harbor Navigation Canal was based on the period 25 July to 11 August 1957, during which time a minor storm accompanied by moderate stages was experienced. The empirical relationship, $Q = 560H^{0.935}$ was derived from plots of the data, and used to compute a rating table.

(3) Storage tables for the range of stages were made for Lake Pontchartrain. The storage amounts include the volumes contained in the adjacent marsh areas when the stages exceed the surface elevation of these marshes.

(4) Cumulative amount of rainfall that is coincident with the storm signififantly affects the lake elevations and hence the routing procedure. The amount of this rainfall was calculated by the methods described in U.S. Weather Bureau memorandums (16), (17), using a moderate rainfall that would be coincident with a tropical storm. For routing purposes, rainfall was considered as additional inflow into Lake Pontchartrain. The effect of cumulative rainfall is to raise the lake level.

(5) Stages, wind tide elevations, and waves induce flow over the shore protective structures. Adjustments were made in the routing procedure to account for the quantities that overtopped these structures.

(6) With the above-mentioned items resolved, the routing procedure was reduced to the successive approximation type problem in which the variable factors were manipulated until a condition of balance between flows and storages was obtained for the incremental time intervals. A typical routing computation is illustrated on Plate A-10. The 1947 and 1915 hurricanes were routed by this procedure. Routed average stages for Lake Pontchartrain were found to be in reasonable agreement with the observed average stages for the two hurricanes. The degree of agreement between the observed and computed stages that were obtained by use of the routing procedure verifies the methods and rating tables used. Observed and computed average stages for the 1947 and 1957 hurricanes are shown on Plates A-11 and A-12. All other hurricanes studied were routed using similar procedures. The resultant stage hydrograph for the SPH critical to the south shore of Lake Pontchartrain is shown on Plate A-13.

f. Wind Tides. The storms under consideration are accompanied by strong winds. The effect of strong winds blowing over a shallow inclosed body of water, such as Lake Pontchartrain, is to drive large quantities of water ahead of the winds. It was necessary for purposes of routing and overflow computations to determine the windtide levels (WTL) for Lake Pontchartrain. This was accomplished by dividing the lake into four or five segments that are roughly parallel to the wind directions, and by calculating setup and setdown

for each of the segments. The average windspeed and average depth in each segment were determined from isovel and hydrographic charts for each wind tide computation. The storm isovel patterns were furnished by the U.S. Weather Bureau (18), (19). The computation of wind along each zone was based on the segmental integration method (20) and was calculated by use of the step-method formulas (21) that were modified as follows:

$$\text{Setup} = d_t \left(\sqrt{\frac{0.00266\ u^2\ FN + 1}{d_t^2}} - 1 \right)$$

$$\text{Setdown} = d_t \left(1 - \sqrt{\frac{1 - 0.0026_u{}^2\ FN}{d_t^2}} \right)$$

Where: Setup or setdown in feet is measured above or below mean water level (m.w.l.) of the surge in the lake.

d_t = av. depth of fetch in feet below m.w.l.
u = windspeed in m.p.h. over fetch
F = fetch length in miles, node to shoreline
N = planform factor, equal generally to unity

(1) Graphs were constructed from the above formulas to determine setup and setdown quickly about any nodal elevation, Plate A-15. Volumes of water along the zones, represented by the setup and setdown with respect to a nodal elevation, were determined and the water surface profiles adjusted until the setup and setdown volumes balanced within 5 percent. Water surface contours were then drawn for several even-foot nodal elevations, and the tilt and WTL's were determined from the contour sketch. In the routing of surges, pertinent wind tides and tilts for other nodal elevations were interpolated from the contour sketches for the even-foot nodes. Typical wind tide computations are illustrated on Plate A-15.

(2) Maximum computed and observed setup elevations for the 1947 hurricane, were 4.9 feet and 5.4 feet at West End. Computed stages for the 1915 hurricane compared favorably with observed high water marks. Wind tide levels for all hurricanes studied were computed by applying the same methods and procedures described above. Maximum surge height contours in the Lake Borgne area and maximum WTL contours in the Lake Pontchartrain area were developed for the SPH. These contours are shown on Plate A-16. The contours represent the maximum elevations that would be experienced for the occurrence of a hurricane in the SPH category for the most critical storm path.

A-6. Frequency estimates.

a. Procedure.

(1) The area along the south shore of Lake Pontchartrain was used in developing a procedure for making frequency estimates since more historical hurricane data were available for this area than for any other location. The maximum WTL or stage for a specific area is a measure of the character of storm that produces it. In order to use data from early hurricanes which caused high wind tides along the south shore of Lake Pontchartrain, it was necesary to analyze meteorologic factors and to adjust the observed data to represent stages that would have occurred had presently existing protective works then been in place. It was found that adjustments were required for the 1983 and 1901 hurricanes. Along the south shore of Lake Pontchartrain, determinations of maximum WTL's were from the adjusted historical data from the locus of points through which a representative WTL-frequency curve would pass in the low-stage, high-frequency region. Probabilities for historical data on the curve shown on Plate A-17 were calculated by means of the formula:

$$P = \frac{100 \quad (M-0.5)}{Y}$$

The WTL for the PMH, which has an infinite return period, establishes another limit for the frequency curve in the high-stage, low frequency region. However, because of the lack of historical data for the region of the curve between these two extremes, the synthetic WTL-frequency relationships were developed to show the shape of the curve in this region. In the process of formulating such relationships, it was necessary to correlate the following hurricane parameters: central pressure index, paths of approach, wind velocities, radii to maximum winds, and forward speeds of translation.

(2) Prior to 1900, information of record dealt primarily with loss of life and damage in the more densely populated areas, with practically no reference to water surface elevations caused by hurricanes. Only since 1900 has detailed information been available on flooding in coastal Louisiana and in adjacent areas. Subsequent to the widely destructive September 1915 hurricane, Charles W. Oakey, Senior Drainage Engineer, Office of Public Roads and Rural Engineering, U.S. Department of Agriculture, made a thorough survey of the coastal areas between Biloxi, Mississippi, and Palacios, Texas. The 1915 investigation is the only known area-wide study containing reliable stages until the investigation of hurricane "Flossy", September 1956, was completed. The data indicate that there is no locality along the Louisiana coast which is more prone to hurricane attack than other localities.

(3) The first requirement in the development of synthetic frequency relationships for localities within the study area was to select representative critical hurricane paths of approach for the particular locale in question. For the passes into Lake Pontchartrain, track F is the critical path for the design hurricane. For the south shore of Lake Pontchartrain, track A was selected to represent the hurricane situation that would produce critical conditions. These tracks are shown on Plate A-9.

(4) After hurricane paths were selected, surge heights and wind tides were developed, as described previously, for at least three storms of different CPI values for each track. Each hurricane selected for the representative paths were assumed to have the same radius of maximum winds, the same forward speed of translation, and the same adjustment for any land effects. Only CPI's and wind velocities were adjusted to develop these three storms. Results of these computations for the New Orleans reach of Lake Pontchartrain are shown in Table A-11. Wind tide elevations for storms with other CPI values were obtained graphically by plotting the above data and reading from the resulting curves.

TABLE A-11

CENTRAL PRESSURE INDEX VS. WIND TIDE LEVEL
LAKE PONTCHARTRAIN REACH - NEW ORLEANS

PATH A		PATH F	
Central pressure index (CPI) inches	Max. wind tide level NGVD	Central pressure index (CPI) inches	Max. wind tide level NGVD
26.9	12.7	27.6	7.7
27.6	11.2	27.87	6.6
28.5	8.2	28.57	4.8

(5) Hurricane characteristics of area-representative storms were developed in cooperation with U.S. Weather Bureau. This agency has made a generalized study of hurricane frequencies for a 400-mile zone along the central gulf coast, Zone B, from Cameron, La., to Pensacola, Fla., and has presented the results in a memorandum. (12) Frequencies for hurricane central pressure indexes that were presented in the report, as shown on Plate A-8, reflect the probability of hurricane recurrence from any direction in the midgulf coastal area. In order to establish frequencies for the localities under study, it was assumed that a hurricane whose track is perpendicular to the coast will ordinarily cause high tides and inundation for a distance of about 50 miles along the coast. Thus, the number of occurrences in the 50-mile subzone would be 12.5 percent of the number of occurrences in the 400-mile zone, provided that all hurricanes traveled in a direction normal to the coast. However, the usual hurricane track is oblique to the shoreline as shown in table 2 of the HMS memorandum. (12) The average projection along the coast of this 50-mile swath for the azimuths of 42 Zone B hurricanes is 80 miles. Since this is 1.6 times the width of the normal 50-mile strip affected by a hurricane, the probability of occurrence of any hurricane in the 50-mile subzone would be 1.6 times the 12.5 percent, or 20 percent of the probability for the entire midgulf Zone B. Thus, 20 percent of the Zone B frequencies shown on Plate A-8 was used to represent the CPA-frequencies in the 50-mile subzone that is critical for each study locality.

(6) The azimuths of tracks observed in the vicinity of landfall were divided into quadrants corresponding to the four cardinal points. In Zone B, 24 tracks were from the south, 14 from the east, 3 from the west, and 1 from the north. Hurricanes with tracks having major components from the south or east are more critical relative to WTL's within the study area than hurricanes from other directions. Approximately two-thirds of all experienced hurricanes have come from a southerly direction, whereas about one-third have come from the east. The average azimuth of tracks from the south are 180°. Tracks from the east had an average azimuth of 115°. Approximately these azimuths were used in computing WTL's. Further adjustment of the probability of occurrence was made by using two-thirds of the probability for WTL's computed for hurricanes approaching from the south and one-third of the probability for WTL's computed for hurricanes approaching from the east. The probabilities of equal stages for both groups of tracks were then added arithmetically to develop a curve representing a synthetic probability of recurrence of maximum wind tide levels for hurricanes from all directions. Table A-12 presents these computations and those of the previous paragraph for the New Orleans reach.

TABLE A-12

STAGE-FREQUENCY
SOUTH-SHORE - LAKE PONTCHARTRAIN

		New Orleans Reach		PATH A Freq.*		PATH F Freq.*
CPI	ZONE B	80-mi. subzone	WTL	(67% Col. 3)	WTL	(33% Col. 3)
1	2	3	4	5	6	7
in.	occ/100 years		NGVD	occ/100 yrs.	ft. NGVD	occ/100 - yrs.
27.6	1	0.2	11.5	0.13	8.0	0.07
27.8	2	0.4	10.9	0.27	7.0	0.13
28.1	5	1.0	9.8	0.67	6.1	0.33
28.3	10	2.0	9.1	1.34	5.6	0.66
28.6	20	4.0	8.0	2.68	4.9	1.32
29.0	40	8.0	6.5	5.36	4.1	2.64

*Freq. = $\frac{100}{\text{Return period years}}$

(7) Using the shape of the synthetic stage-frequency curve as a guide, it was then possible to complete a final curve for the New Orleans reach between the predetermined limits mentioned previously.

(8) Lack of historical data prevented the similar development of WTL-frequency relationships for other localities within the study area. For the remaining reaches, wind tide levels were calculated for Zone B hurricanes of different frequencies by using different combinations of critical paths and distribution of azimuths of incidence. It followed that a Zone B hurricane of a particular frequency would have the same recurrence period for any locale in

the study area since all are within the same subzone. Therefore, the final stage - frequency curves for the remaining areas were developed by plotting the computed stages for several different Zone B hurricanes at the corresponding frequencies indicated for the south shore of Lake Pontchartrain. Only two-thirds of the hurricanes from the south or east are most critical relative to WTL's along the south shore of Lake Pontchartrain, while all of the hurricanes from the south or east are equally critical to the area affected by Lake Borgne. Therefore, the most critical WTL along the south shore of Lake Pontchartrain for a Zone B hurricane of given frequency occurs only two-thirds as often as the most critical WTL along the shores of Lake Borgne for the same hurricane.

b. Relationships. Based on the above described procedures, stage-frequency relationships were established for the south shore of Lake Pontchartrain and the passes into Lake Pontchartrain from Lake Borgne. Stage-frequency curves are shown on Plate A-18.

A-7. Design Hurricane.

a. Selection of the design hurricane. The standard project hurricane was selected as the design hurricane (Des H) due to the urban nature of the study area. A design hurricane of lesser intensity which would indicate a lower levee grade and an increased frequency would expose the protected areas to hazards to life and property that would be disastrous in event of the occurrence of a hurricane of the intensity and destructive capability of the standard project hurricane.

b. Characteristics. The characteristics of the Des H for the proposed plan of protection are identical to the standard project hurricane described in detail in paragraph A-5. However, due to transposition of the regional SPH to the smaller study area the design hurricane would have a probability of recurrence of only once in about 300 years in the study area. The path of the Des H's was located to produce maximum hurricane tides along the entire length of the proposed structure. The Des H is a theoretical hurricane but ones of similar intensity have been experienced in the area. Table A-13 is a summary of the Des H characteristics.

TABLE A-13
DESIGN HURRICANE CHARACTERISTICS

Location	CPI (inches)	Max. winds (m.p.h)	Radius of max. winds (miles)	Forward speed (knots)	Direction of approach	Track (plate A-6)
Lake Pontchartrain South Shore	27.6	100	38	6	South	A

c. Normal predicted tides. The average tidal range in Lake Pontchartrain is 0.5 foot. Lake Pontchartrain has an average elevation of about 1.0 foot. In determining the elevation of design surges and wind tide levels, the mean normal predicted tide was assumed to occur at the critical period.

d. Design tide. The hurricane tide is the maximum stillwater surface elevation experienced at a given location during the passage of a hurricane. It reflects the combined effects of the hurricane surge and wind tide. Design hurricane tides were computed for conditions reflecting the proposed protective works. The resulting elevations, which are identical to those for an SPH, are the same for existing or project conditions.

TABLE A-14
DATA USED TO DETERMINE WAVE CHARACTERISTICS
DESIGN HURRICANE

F	Length of fetch, miles	5
U	windspeed, mph	82
SWL	Stillwater elevation, feet	11.5
d	Average depth of fetch, feet	24.6

e. Wave characteristics. Using the design hurricane characteristics given above and the charts and nomographs published by CERC in Technical Report No. 4 (22), wave heights and periods and their associated characteristics were developed. To determine the wave characteristics for the design hurricane, Technical Report No. 4 (22) was selected, since it was the state-of-the-art technical aid at the time the hurricane parameters were developed. Wave characteristics thus determined are compatible with the SPH hurricane characteristics. Table A-15 lists some of the wave characteristics associated with the design hurricane.

TABLE A-15

WAVE CHARACTERISTICS - DESIGN HURRICANE

H_S	Significant wave height, feet	7.9
T	Wave Period, seconds	7.2
Lo	Deepwater wave length, feet	269
d/Lo	Relative depth	.0915
H_S/H_O'	Shoaling coefficient	.9405
H_O'	Deepwater wave height, feet	8.4
H_O'/T^2	Wave Steepness	.160

f. Maximum runup and overflow.

(1) Hurricanes approaching on paths critical to the south shore of Lake Pontchartrain create conditions whereby shore protective structures are overtopped. It was necessary to calculate the magnitude of the heights of wave runup and quantities of the overflow by use of established procedures in

order to develop improved protective structure designs and to determine damages. This determination was divided into two significant parts for convenience of calculation, namely maximum runup and wave overtopping. Common factors which must be resolved in all types of calculations are the WTL, and the geometry and crown elevation of the protective structure.

(2) Wave runup on a protective structure depends upon the physical characteristics (i.e., configuration and surface roughness), the depth of water at the structure, and the wave characteristics. Computation of maximum runup was necessary in order to determine the heights to which existing shore protective structures would have to be raised to prevent all overflow for the significant wave accompanying the SPH. Wave runup was considered to be the ultimate height to which water in a wave ascended on the proposed slope of a protective structure. This condition occurred when the WTL was at a maximum, and was calculated by the interpolation of model study data developed by Saville (23), (24), (25), which relates runup (R/H_o'), wave steepness (H_o'/T^2), relative depth (d/H_o'), and structure slope. The technique for computing wave runup is explained in detail in the Shore Protection Manual (SPM) (26).

(3) Protective structures exposed to wave runup will be constructed to an elevation and cross-section that is sufficient to prevent all overtopping from the significant wave and waves smaller than the significant wave accompanying the SPH. Waves larger than the significant wave will be allowed to overtop the protective structures; however, such overtopping will not endanger the security of the structure or cause material flooding. In the case of Jefferson Parish Lakefront levee, runup was computed for waves breaking on each berm to determine the required levee elevation. Wave data, runup elevation, and required elevation of the protective structure are shown in Table A-16.

TABLE A-16
WAVE RUNUP AND PROPOSED ELEVATION OF PROTECTIVE STRUCTURES
STANDARD PROJECT HURRICANE ALONG

JEFFERSON PARISH LAKEFRONT

Avg Depth (ft.)	H (ft.)	T (Sec)	WTL Elevation (ft. n.g.v.d.)	Elevation of Levee (ft. n.g.v.d.)
24.6	7.9	7.2	11.5	16.0

g. Residual flooding. The procedures described in the SPM (26) are used to determine wave runup and wave overtopping for the significant wave that would be experienced during hurricane occurrences. However, 14 percent of the waves in a spectrum are higher than the significant wave and the maximum wave heights to be expected are about 1.87 times the significant wave height. Thus, a structure designed to prevent all overtopping by a significant wave would be overtopped by that portion of the spectrum that is higher than the significant wave. It was, therefore, necessary to assure that this residual

overtopping would not produce flooding and subsequent damage to the extent that only partial protection was afforded to an area for the design hurricane. A determination of the residual overtopping was made for the area and it was concluded that no material flooding results if the design cross-section is overtopped by waves higher than the significant wave. It was, therefore, concluded that the use of the significant wave runup would result in design grades for protective structures that would permit residual flooding only to a negligible degree.

A-8. Embankment design.

a. General. The design cross-sections presented on Plate A-19 was selected as the best choice for the Jefferson Parish Lakefront levee. This design is an all-earthen levee with reinforcing geotechnical fabric. This design will not disturb the existing bike path and foreshore protection. Therefore, additional foreshore protection is not required for this plan of protection.

SECTION II - INTERIOR DRAINAGE

A-9. Intercepted Drainage. No runoff will be intercepted by this work. Currently, a levee already exists along the proposed alignment. Modifications to the existing drainage system, to accommodate the high level plan levee, are not required.

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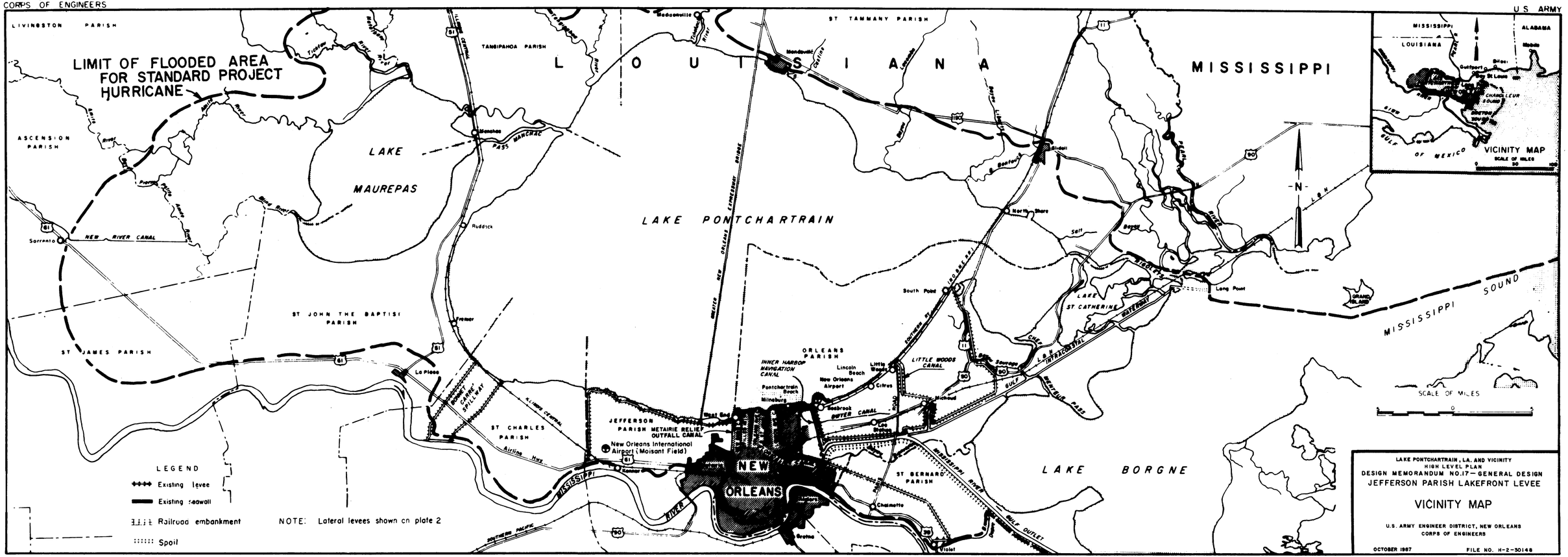


LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17—GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

VICINITY MAP

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1967 FILE NO. H-2-30148

PLATE A-1

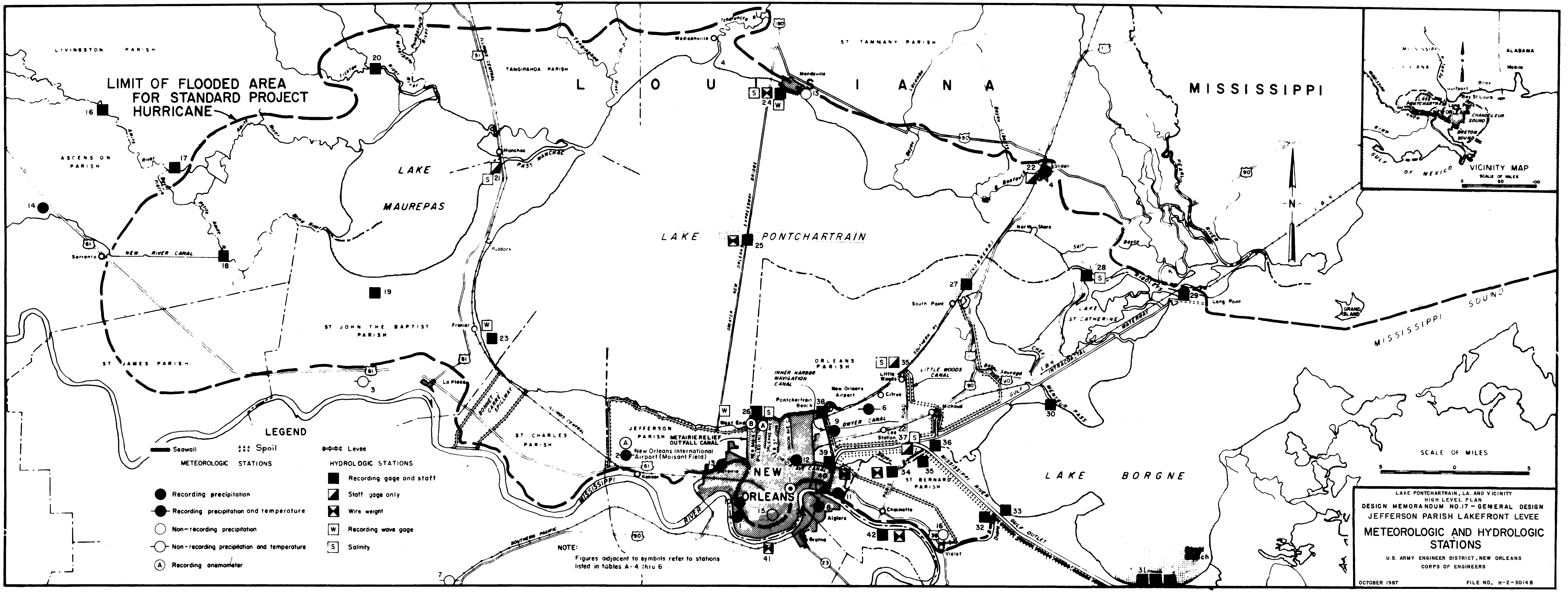
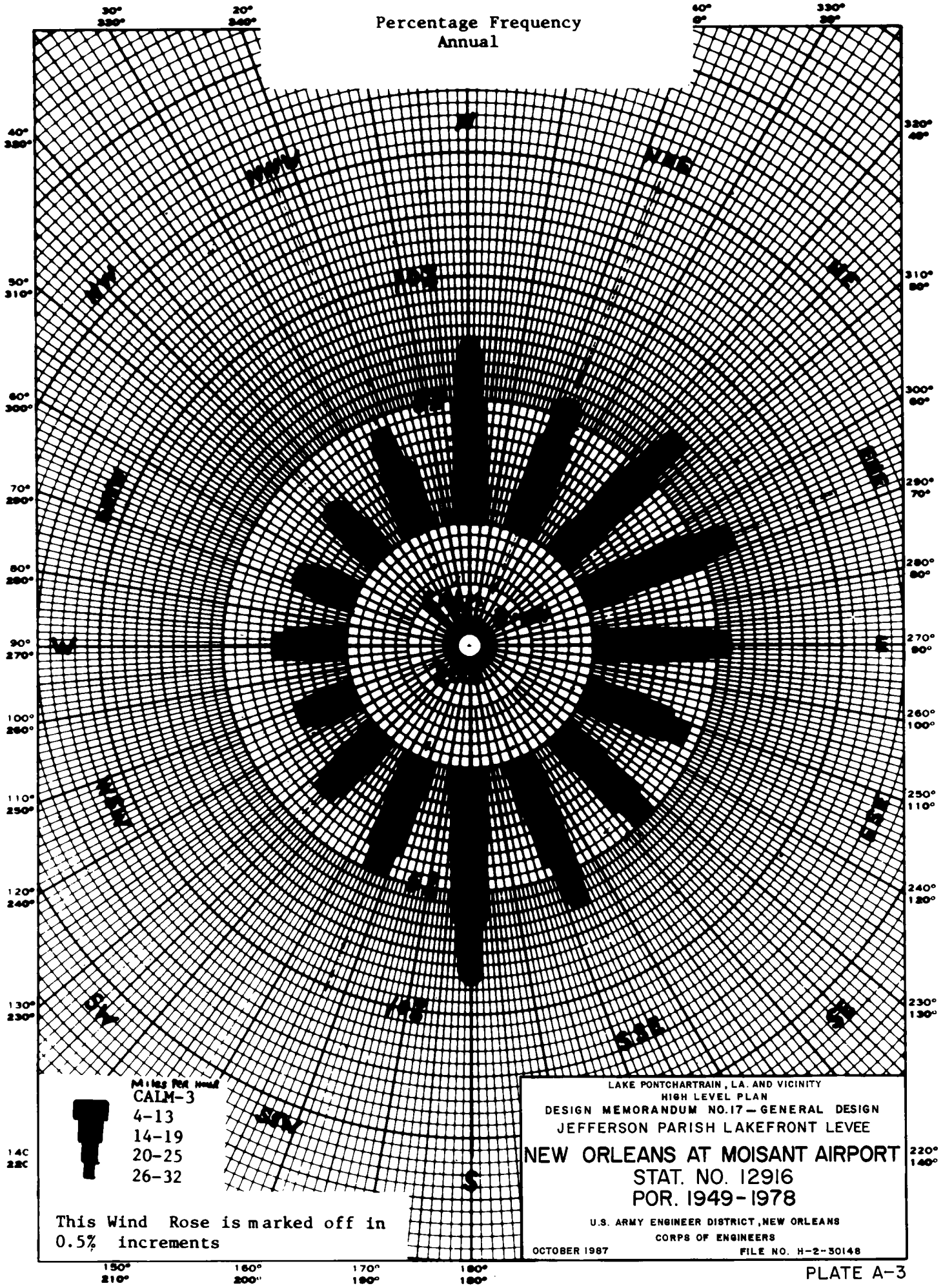

LIMIT OF FLOODED AREA FOR STANDARD PROJECT HURRICANE
LIVINGSTON PARISH
ASCENSION PARISH
TANGIPAHOA PARISH
ST TAMMANY PARISH
ST JOHN THE BAPTIST PARISH
ST JAMES PARISH
ST CHARLES PARISH
JEFFERSON PARISH
ORLEANS PARISH
ST BERNARD PARISH
LOUISIANA
MISSISSIPPI
LAKE MAUREPAS
LAKE PONTCHARTRAIN
LAKE BORGNE
LAKE ST CATHERINE
MISSISSIPPI SOUND
NEW ORLEANS
MISSISSIPPI RIVER
METAIRIE RELIEF OUTFALL CANAL
INNER HARBOR NAVIGATION CANAL
LITTLE WOODS CANAL
DWYER CANAL
New Orleans International Airport (Moisant Field)
LEGEND
Seawall
Spoil
Levee
METEOROLOGIC STATIONS
Recording precipitation
Recording precipitation and temperature
Non-recording precipitation
Non-recording precipitation and temperature
Recording anemometer
HYDROLOGIC STATIONS
Recording gage and staff
Staff gage only
Wire weight
Recording wave gage
Salinity
NOTE:
Figures adjacent to symbols refer to stations listed in tables A-4 thru 6
VICINITY MAP
SCALE OF MILES
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
METEOROLOGIC AND HYDROLOGIC STATIONS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
OCTOBER 1987
FILE NO. H-2-30148

PLATE A-2

WIND ROSE

Percentage Frequency
Annual



This Wind Rose is marked off in 0.5% increments

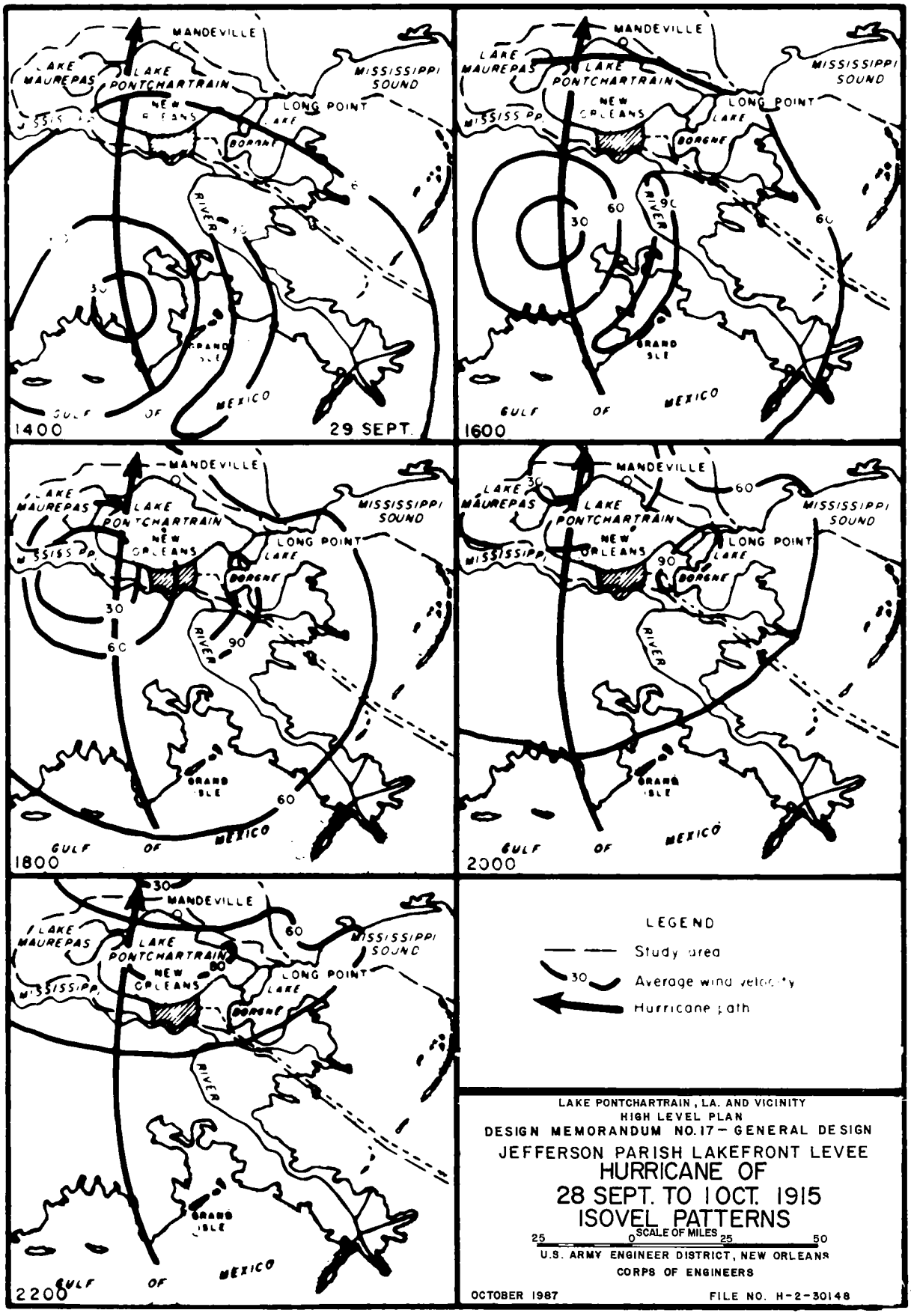
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 — GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

NEW ORLEANS AT MOISANT AIRPORT
STAT. NO. 12916
POR. 1949-1978

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-3



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

HURRICANE OF 28 SEPT. TO 1 OCT. 1915 ISOVEL PATTERNS

SCALE OF MILES 25 0 25 50

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-4

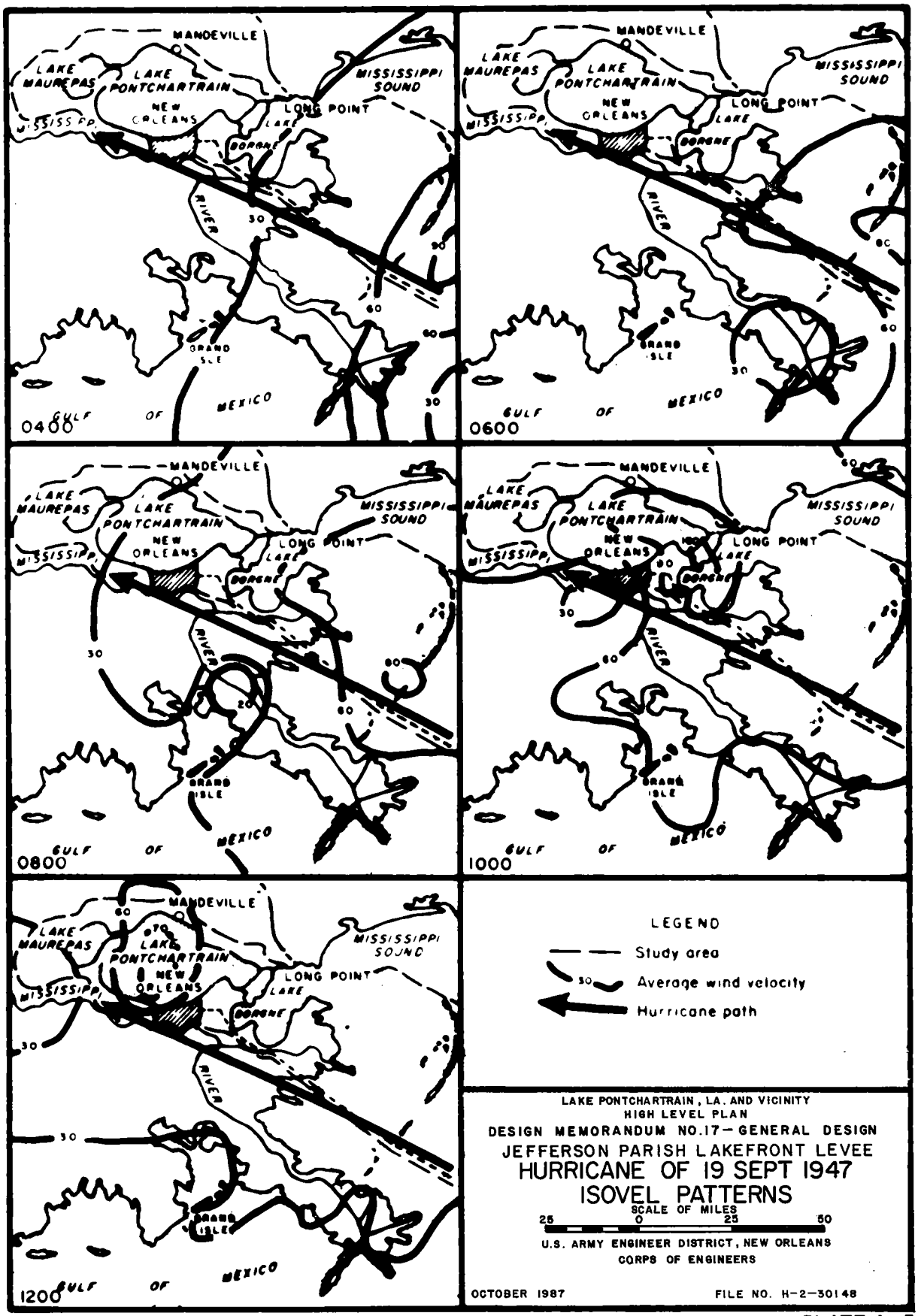
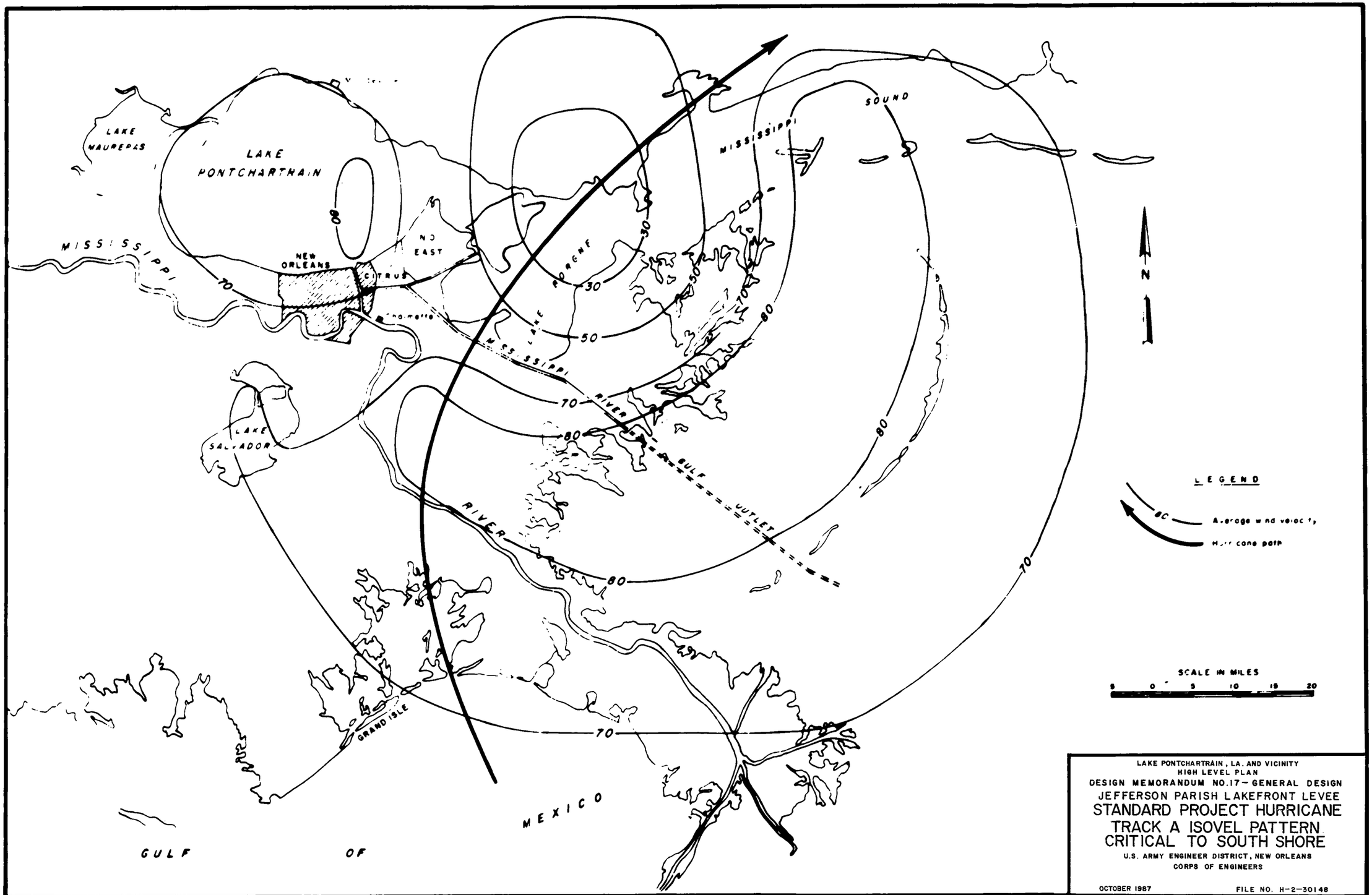

MANDEVILLE
LAKE MAUREPAS
LAKE PONTCHARTRAIN
MISSISSIPPI SOUND
NEW ORLEANS
LONG POINT
MISSISSIPPI
RIVER
GRAND ISLE
GULF OF MEXICO
0400
0600
0800
1000
1200
30
60
LEGEND
Study area
Average wind velocity
Hurricane path
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
HURRICANE OF 19 SEPT 1947
ISOVEL PATTERNS
SCALE OF MILES
25 0 25 50
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
OCTOBER 1987
FILE NO. H-2-30148

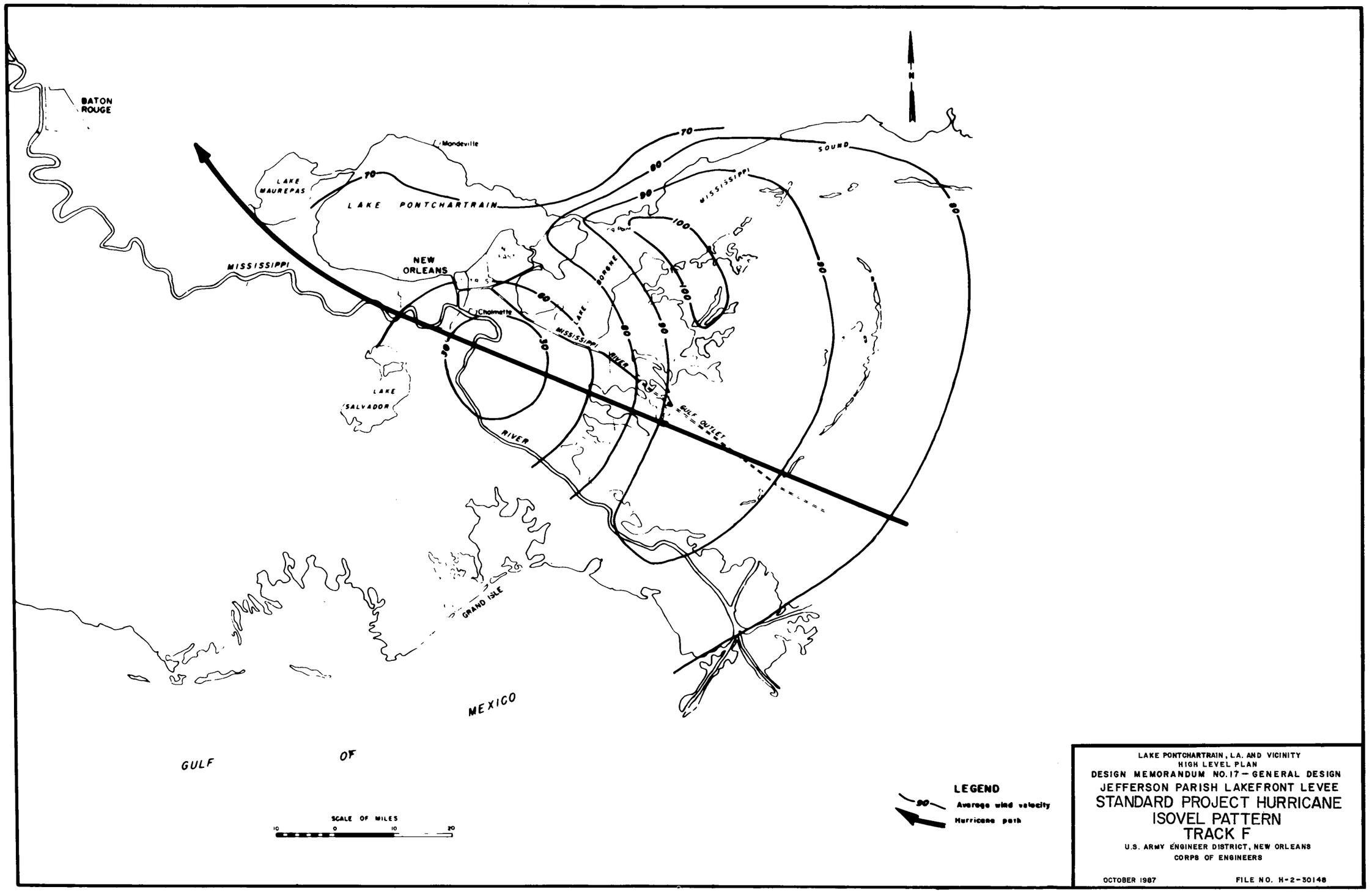
PLATE A-5



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
STANDARD PROJECT HURRICANE
TRACK A ISOVEL PATTERN
CRITICAL TO SOUTH SHORE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

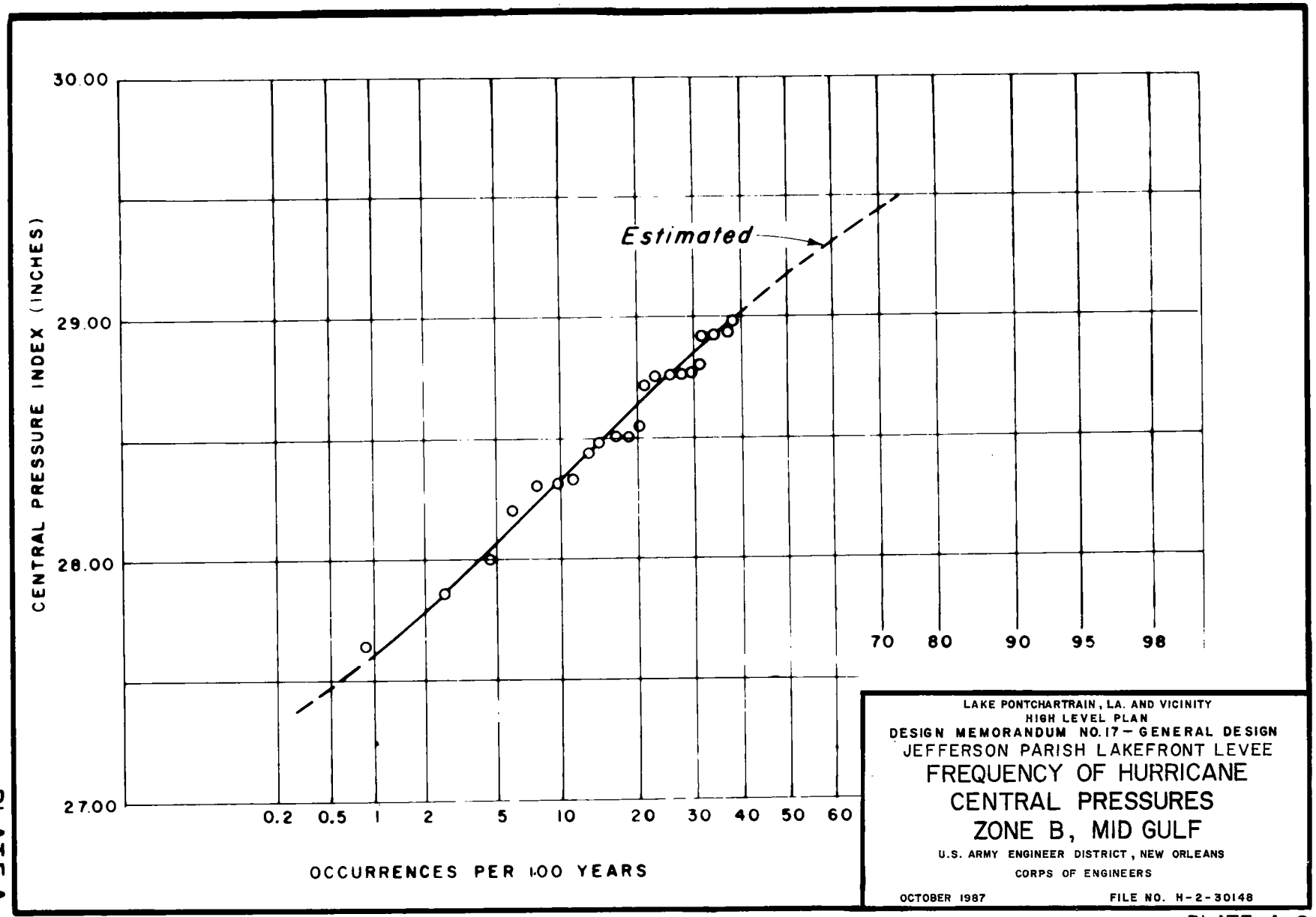
PLATE A-6



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
STANDARD PROJECT HURRICANE
ISOVEL PATTERN
TRACK F
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-7



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

FREQUENCY OF HURRICANE CENTRAL PRESSURES ZONE B, MID GULF

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-8

PLATE A-8

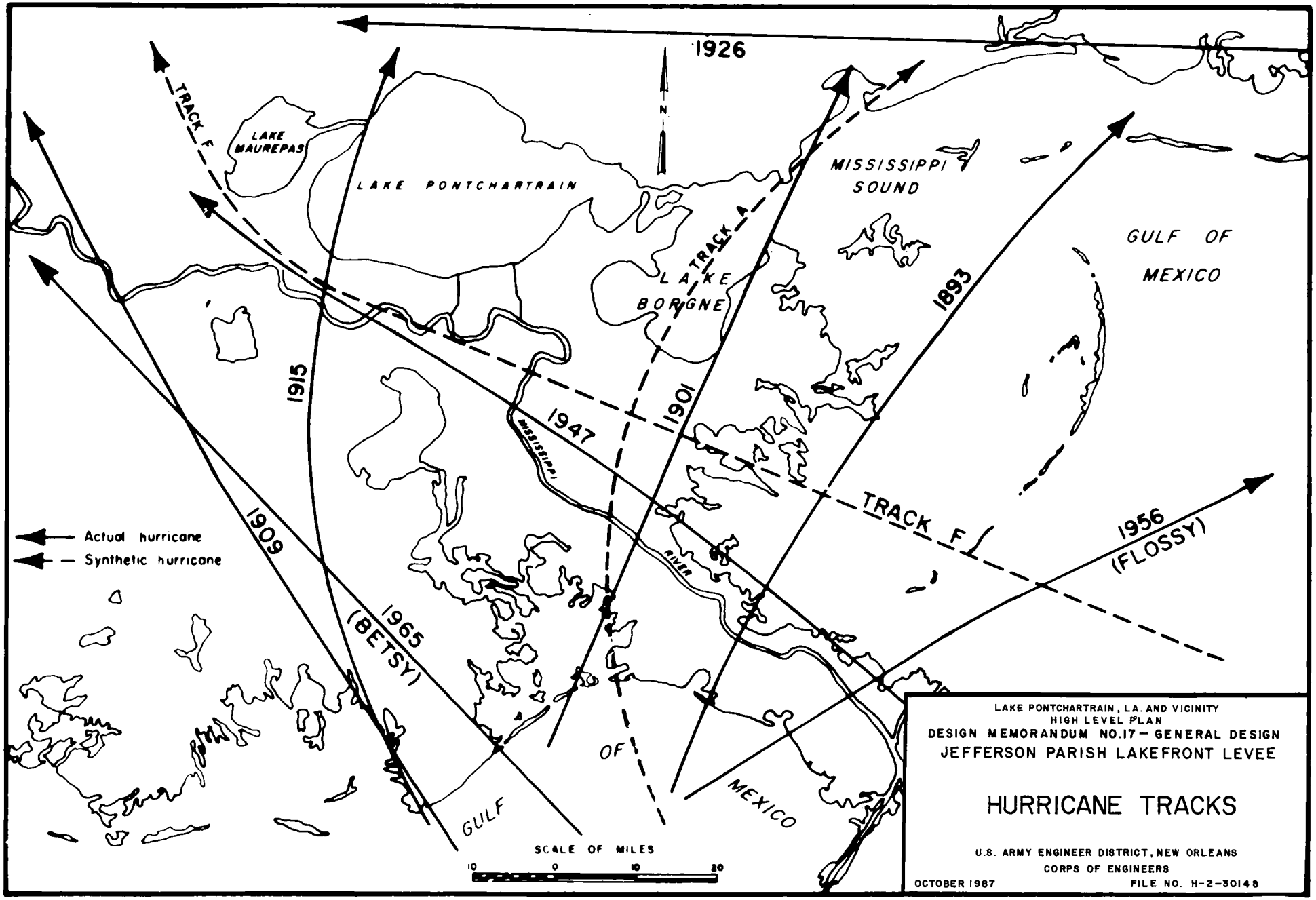

1926
TRACK F
LAKE MAUREPAS
LAKE PONTCHARTRAIN
N
MISSISSIPPI SOUND
GULF OF MEXICO
TRACK A
LAKE BORGNE
1893
1915
1901
1947
MISSISSIPPI RIVER
TRACK F
1956 (FLOSSY)
Actual hurricane
Synthetic hurricane
1909
1965 (BETSY)
GULF OF MEXICO
SCALE OF MILES
10 0 10 20
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
HURRICANE TRACKS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
OCTOBER 1987
FILE NO. H-2-30148

PLATE A-9

SAMPLE ROUTING

HOURS REFERRED TO LANDFALL	EL. IN LAKE BORGNE		EL. IN LAKE PONTCHARTRAIN			FLOW INTO LAKE PONTCHARTRAIN						L. PONT. STORAGE		OVERFLOW	FLOW INTO L. MAUREPAS	EL IN LAKE MAUREPAS		VERIFICATION: STAGES IN PASS MANCHAC						FLOW INTO LAKE MAUREPAS			STAGE IN LAKE MAUREPAS	
																		L. PONT. SIDE		LAKE MAUREPAS SIDE								
	EL. IN L. BORGNE	AV. OF (2)	AV. EL. IN L. PONT.	EL. AT HWY. 11	AV. OF (5)	HEAD BETWEEN L. BORGNE & L. PONT.	FLOW INTO L. PONT.	VOLUME OF FLOW FOR 2 HOURS	RAIN IN L. PONT.	VOLUME OF RAIN FOR 2 HOURS	TOTAL INFLOW INTO L. PONT.	STORAGE IN L. PONT. FOR EL IN (4)	Δ STORAGE IN L. PONT.	FLOW OVER L. PONT LEVEES FOR 2 HOUR	(12)+(14)-(15)	STORAGE IN L. MAUREPAS	AV. EL IN L. MAUREPAS	EL. IN PASS MANCHAC	AV. OF (19)	TILT IN L. PONT.	TILT IN L. MAUREPAS	EL. IN PASS MANCHAC	AV. OF (23)	HEAD BETWEEN L. PONT & L. MAUREPAS	FLOW INTO L. MAUREPAS	VOLUME OF FLOW FOR 2 HOURS	STORAGE IN L. MAUREPAS	EL. IN L. MAUREPAS
(1)	(2) FEET N.G.V.D.	(3) FEET N.G.V.D.	(4) FEET N.G.V.D.	(5) FEET N.G.V.D.	(6) FEET N.G.V.D.	(7) FEET	(8) 1000 C.F.S.	(9) 1000 D.S.F.	(10) FEET	(11) 1000 D.S.F.	(12) 1000 D.S.F.	(13) 1000 D.S.F.	(14) 1000 D.S.F.	(15) 1000 D.S.F.	(16) 1000 D.S.F.	(17) 1000 D.S.F.	(18) FEET N.G.V.D.	(19) FEET N.G.V.D.	(20) FEET N.G.V.D.	(21) FEET	(22) FEET	(23) FEET N.G.V.D.	(24) FEET N.G.V.D.	(25) FEET	(26) 1000 C.F.S.	(27) 1000 D.S.F.	(28) 1000 D.S.F.	(29) FEET N.G.V.D.
2	9.96	9.86	3.94	2.33	1.21	8.65	4814.0	351.2	0.115	13.7	364.9	1970.6	346.5	8.3	16.1	225.1	1.12	3.54	4.52	1.21	0.24	1.00	0.86	3.66	165.8	13.8	226.2	1.13
4	10.25		5.26	0.09					0.052			2317.1				241.2		5.50		5.91	1.08	0.73		5.18	184.6	15.4	240.0	1.24
6	9.56	9.91	6.85	3.14	1.62	8.29	4043.2	336.9	0.155	48.0	378.9	2660.8	351.7	11.6	15.6	256.8	1.41	6.55	6.02	3.41	0.68	1.07	0.90	5.18	184.6	15.4	255.4	1.40
8	8.66	9.11	7.28	5.96	4.55	4.56	2810.6	192.6	0.160	49.6	242.2	2871.8	202.5	25.8	13.9	270.7	1.53	5.61	6.08	-0.35	-0.07	1.57	1.32	4.76	160.8	18.0	270.4	1.53
10	6.19	7.43	7.11	8.90	7.93	0.00	0.0	0.0	0.075	21.0	21.0	2833.6	-47.7	54.9	13.8	284.5	1.65	4.61	5.11	-4.29	-0.86	8.08	1.82	3.89	160.2	13.4	283.8	1.64

EXPLANATION:

COLUMN (2) FROM LAKE BORGNE HYDROGRAPH DERIVED BY THE METHOD DESCRIBED IN PARAGRAPH I-5 (U) AND SHOWN ON PLATE A-18

(4) ASSUMED

(5) OBTAINED FROM WATER SURFACE CONTOURS DERIVED FROM WIND SETUP COMPUTATIONS FOR LAKE PONT., SAMPLE SHOWN ON PLATE A-18

(7) (3) - (4)

(8) FROM CHEF MENTEUR PASS AND RIGOLETS RATING CURVE SHOWN BELOW

(9) FROM RAINFALL ESTIMATES DESCRIBED IN PARAGRAPH I-5E(A)

(11) (7) + (10)

(12) FROM LAKE PONT. STORAGE CURVE SHOWN BELOW FOR THE ELEVATION IN (4)

COLUMN (14) (13) - (12)

(15) BY THE PROCEDURES DESCRIBED IN PARAGRAPH I-7E

(17) (16) + (12)

(18) CORRESPONDING ELEVATION FOR VOLUME IN (17) FROM LAKE MAUREPAS STORAGE CURVE SHOWN BELOW

(19) SAME AS EXPLANATION FOR (5)

(20) (18) - (19)

(21) 1/5 OF (20), ESTIMATED AS 1/5 OF THE TILT OF LAKE PONTCHARTRAIN SINCE LAKE MAUREPAS IS 1/5 AS WIDE.

(22) (3) - (1)

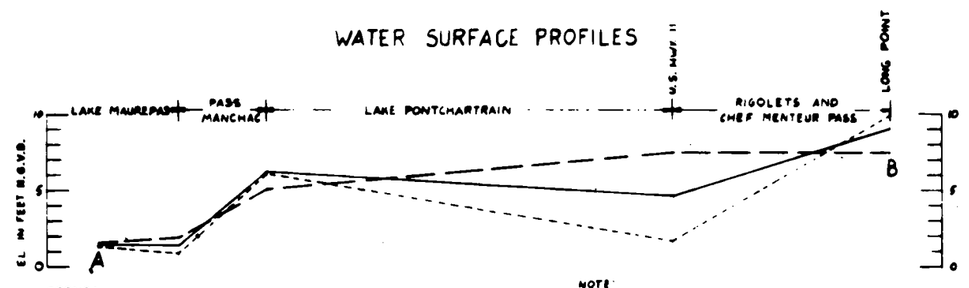
(23) (19) - (21)

(25) FROM PASS MANCHAC RATING CURVE SHOWN BELOW

(26) (23) + (25)

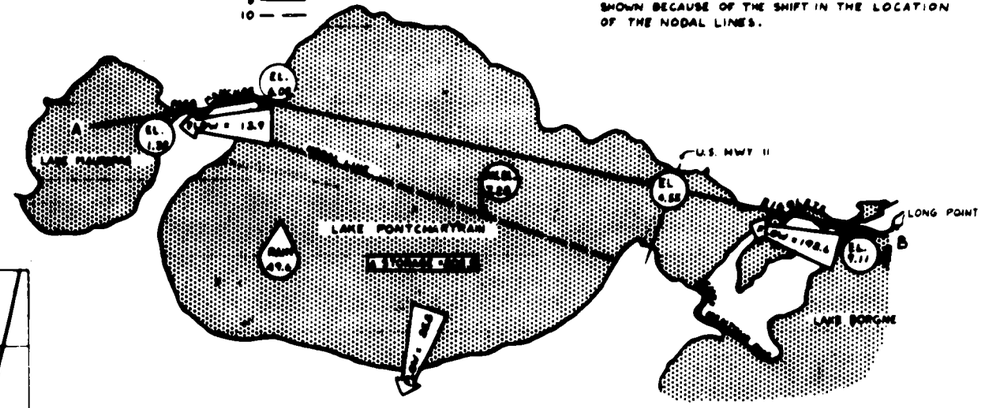
(28) CORRESPONDING ELEVATION FOR VOLUME IN (27) FROM LAKE MAUREPAS STORAGE CURVE SHOWN BELOW

WATER SURFACE PROFILES



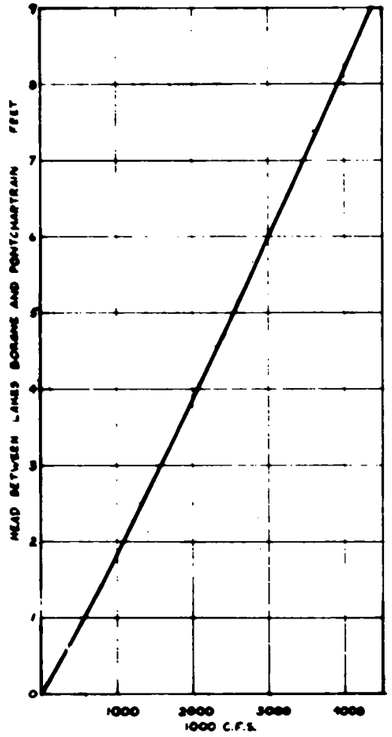
LEGEND:
HOURS AFTER LANDFALL
6 ------
8 ——
10 ——

NOTE:
THE LAKE PONTCHARTRAIN PROFILES DO NOT REFLECT THE AVERAGE LAKE ELEVATIONS FOR THE HOURS SHOWN BECAUSE OF THE SHIFT IN THE LOCATION OF THE NODAL LINES.

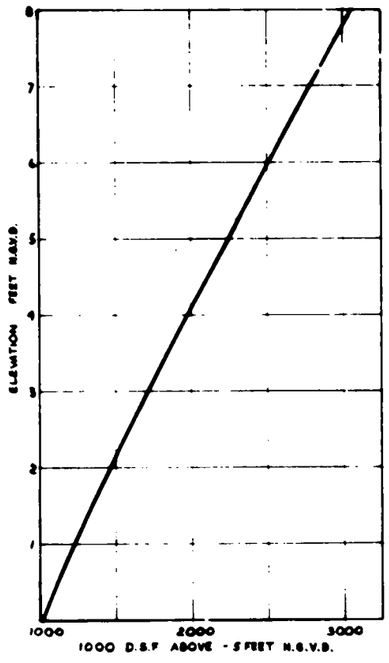


ROUTING DIAGRAM
6 TO 8 HOURS AFTER LANDFALL

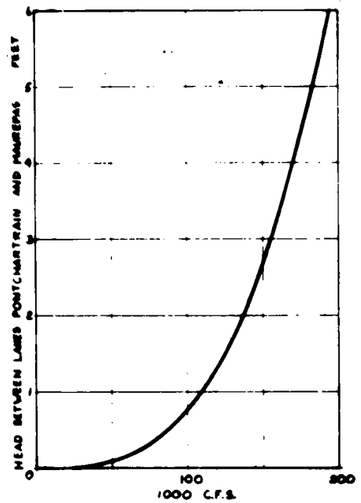
NOTE:
FLOW AND RAIN IN 1000 D.S.F.
ELEVATIONS IN FEET N.G.V.D



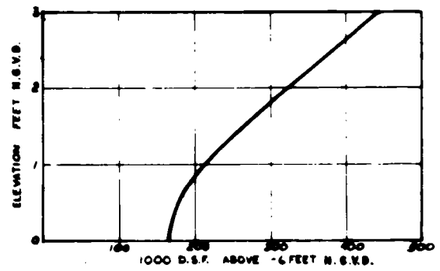
CHEF MENTEUR PASS & RIGOLETS FLOW



LAKE PONTCHARTRAIN STORAGE



PASS MANCHAC FLOW



LAKE MAUREPAS STORAGE

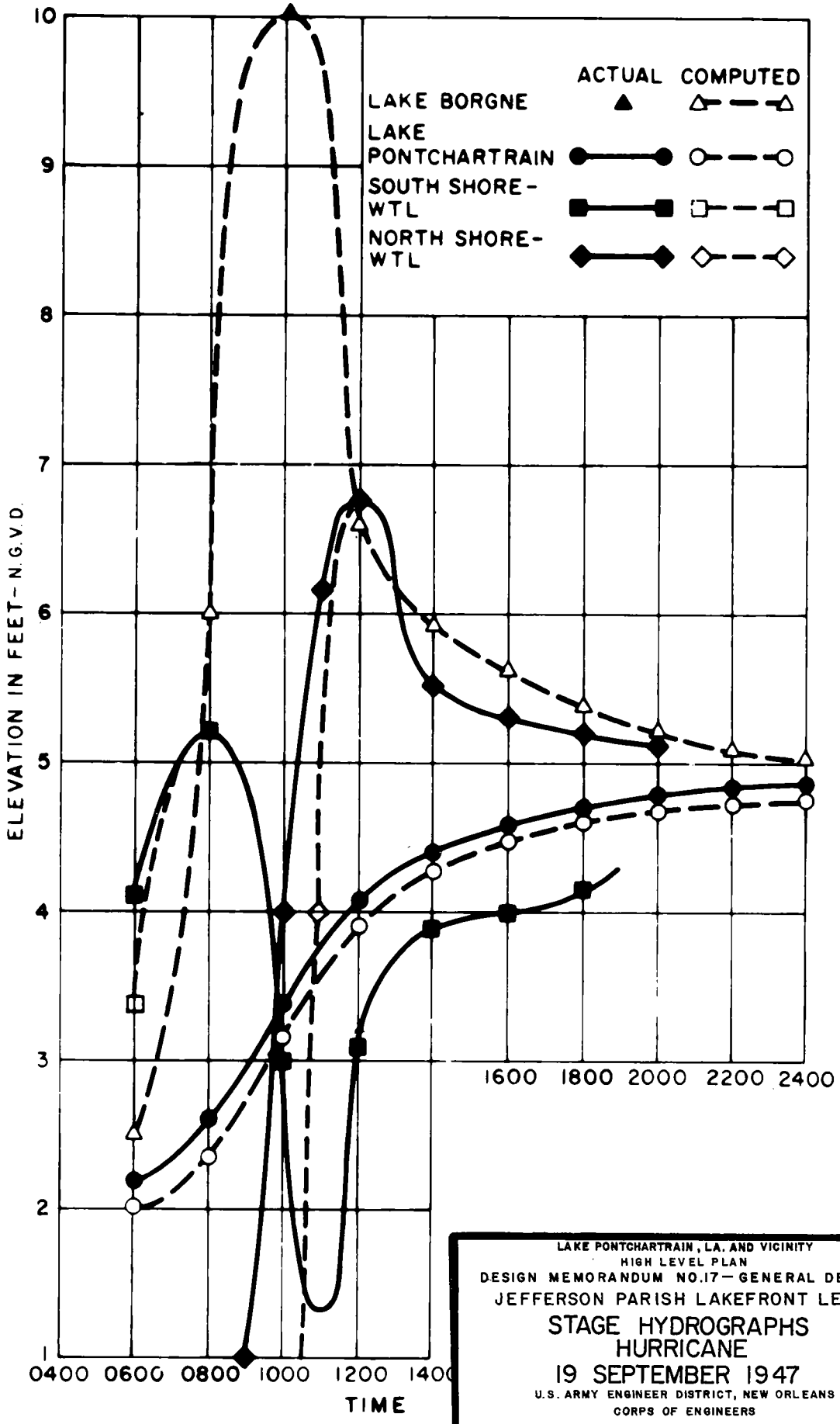
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 — GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

LAKE PONTCHARTRAIN ROUTING

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-10



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 — GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

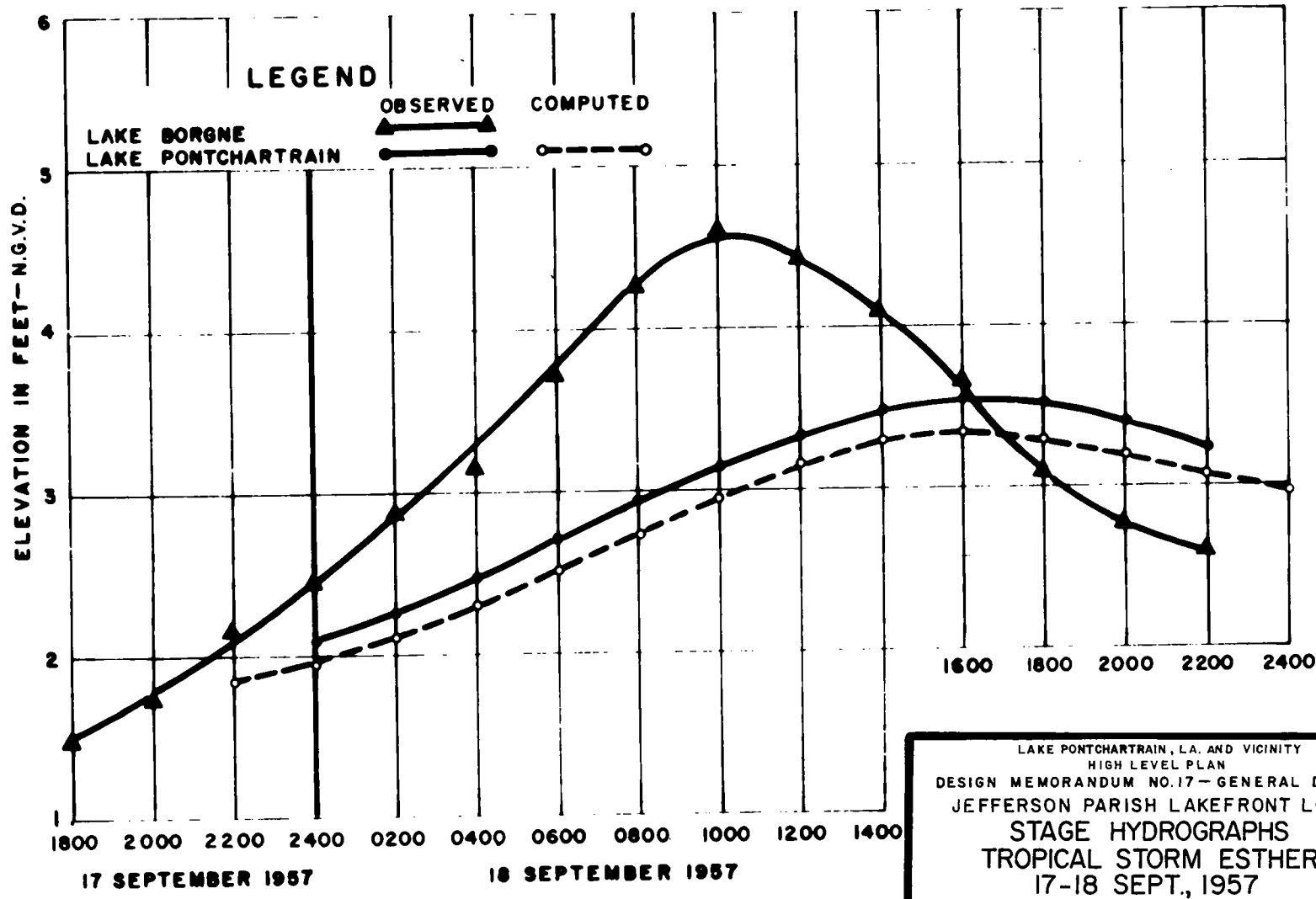
STAGE HYDROGRAPHS HURRICANE 19 SEPTEMBER 1947

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987

FILE NO. H-2-30148

PLATE A-11



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 — GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

STAGE HYDROGRAPHS
TROPICAL STORM ESTHER
17-18 SEPT., 1957

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-12

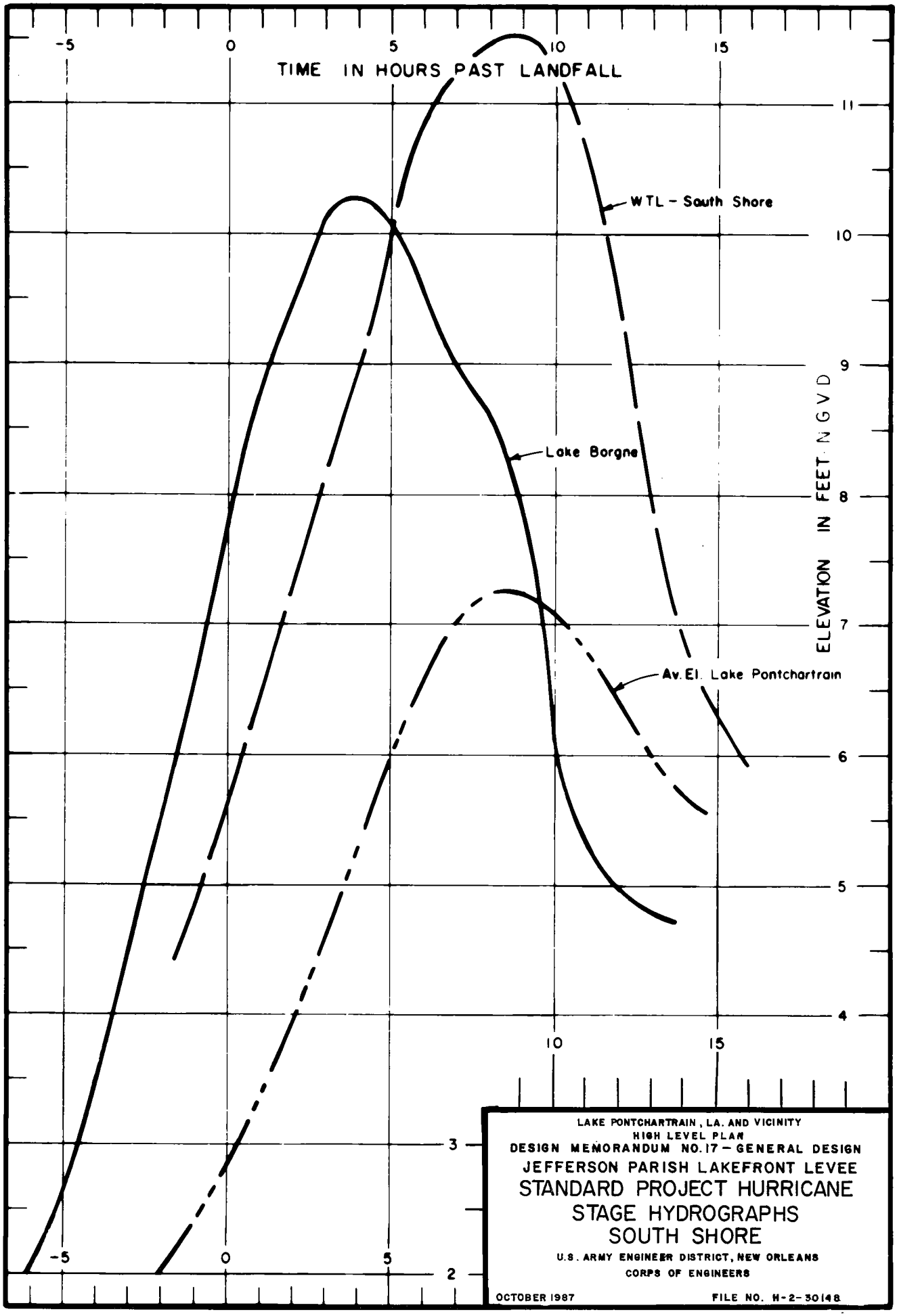
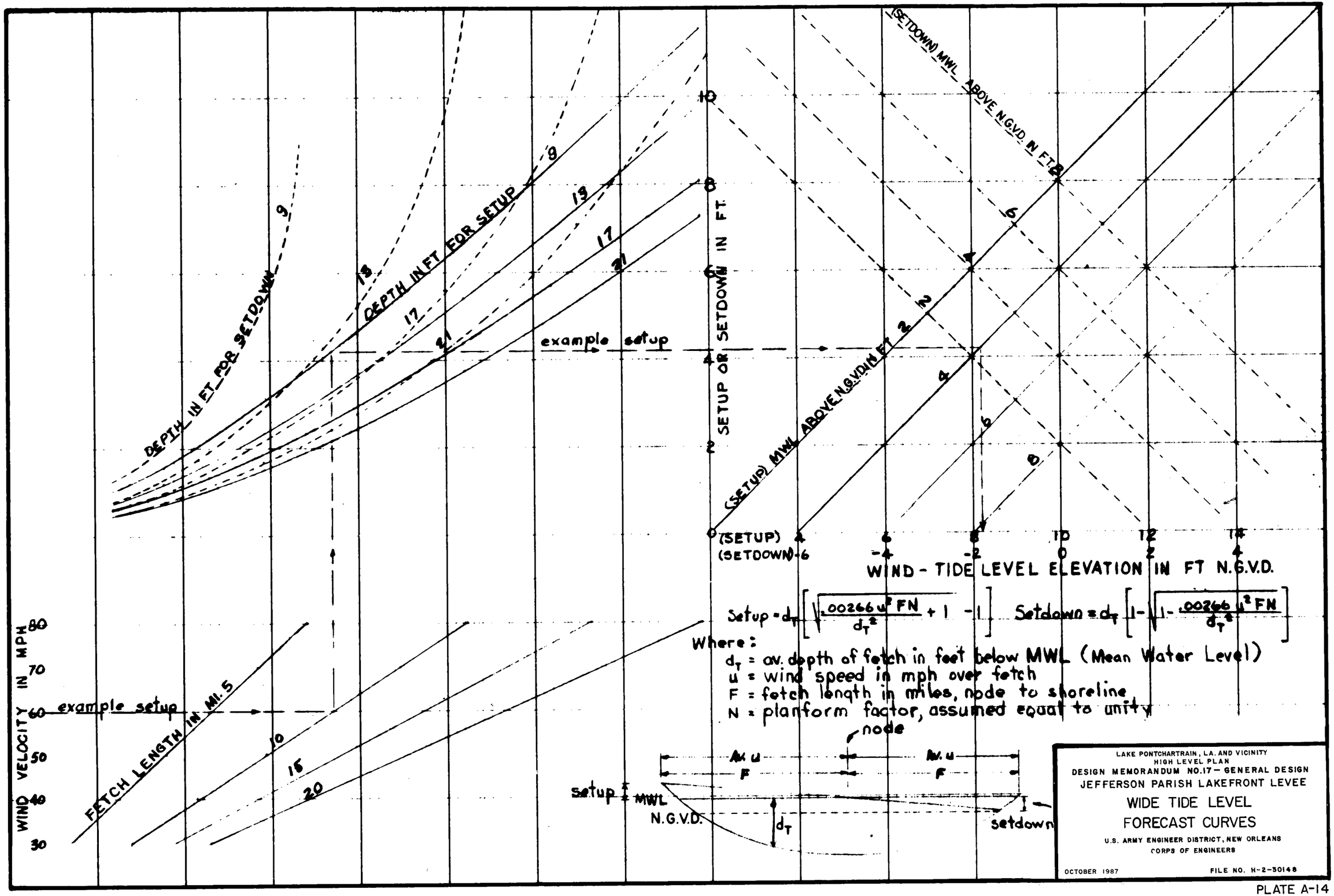

TIME IN HOURS PAST LANDFALL
-5
0
5
10
15
WTL - South Shore
Lake Borgne
Av. El. Lake Pontchartrain
ELEVATION IN FEET NGVD
11
10
9
8
7
6
5
4
3
2
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
STANDARD PROJECT HURRICANE
STAGE HYDROGRAPHS
SOUTH SHORE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
OCTOBER 1987
FILE NO. H-2-30148

PLATE A-13



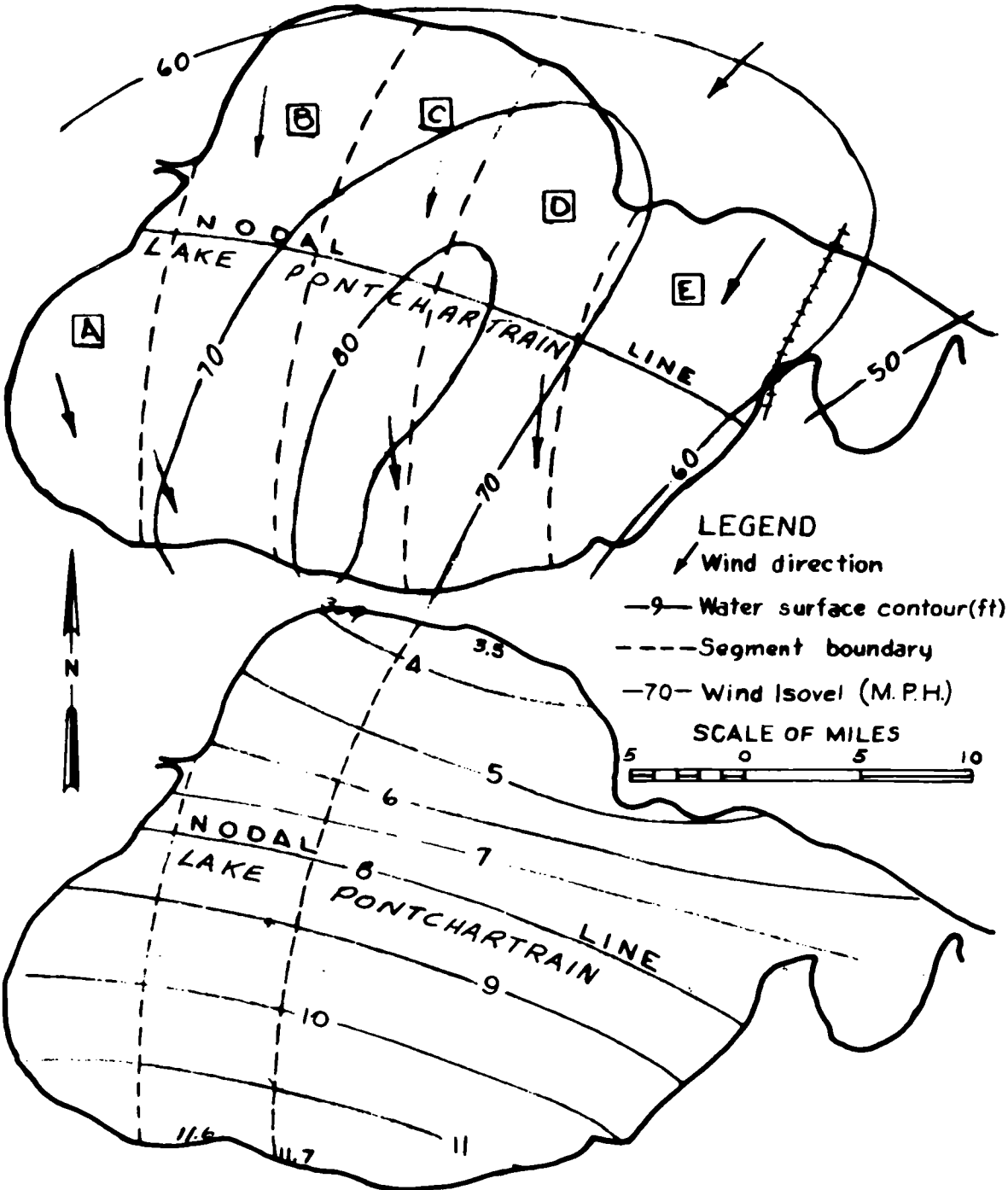
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

WIDE TIDE LEVEL FORECAST CURVES

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-14



Sample: 8 hours after landfall - Track A-SPH

Setdown:

$$S = 19.2\left[1 - \sqrt{1 - \frac{0.00266(66)^2(12.5)(1.0)}{(19.2)^2}}\right] = +8.0 - 4.1 = +3.9 = \text{WTL}$$

Setup:

$$S = 20.5\left[\left(\sqrt{\frac{0.00266(70)^2(12.5)(1.0)}{(20.5)^2}} + 1\right) - 1\right] = +3.6'$$

$$60 + 11.6 = \text{WTL}$$

Interpolate with data for MWL=6.0' to obtain WTL's for routed MWL=7.28'.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 — GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

LAKE PONTCHARTRAIN TYPICAL WIND TIDE CONTOURS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-15

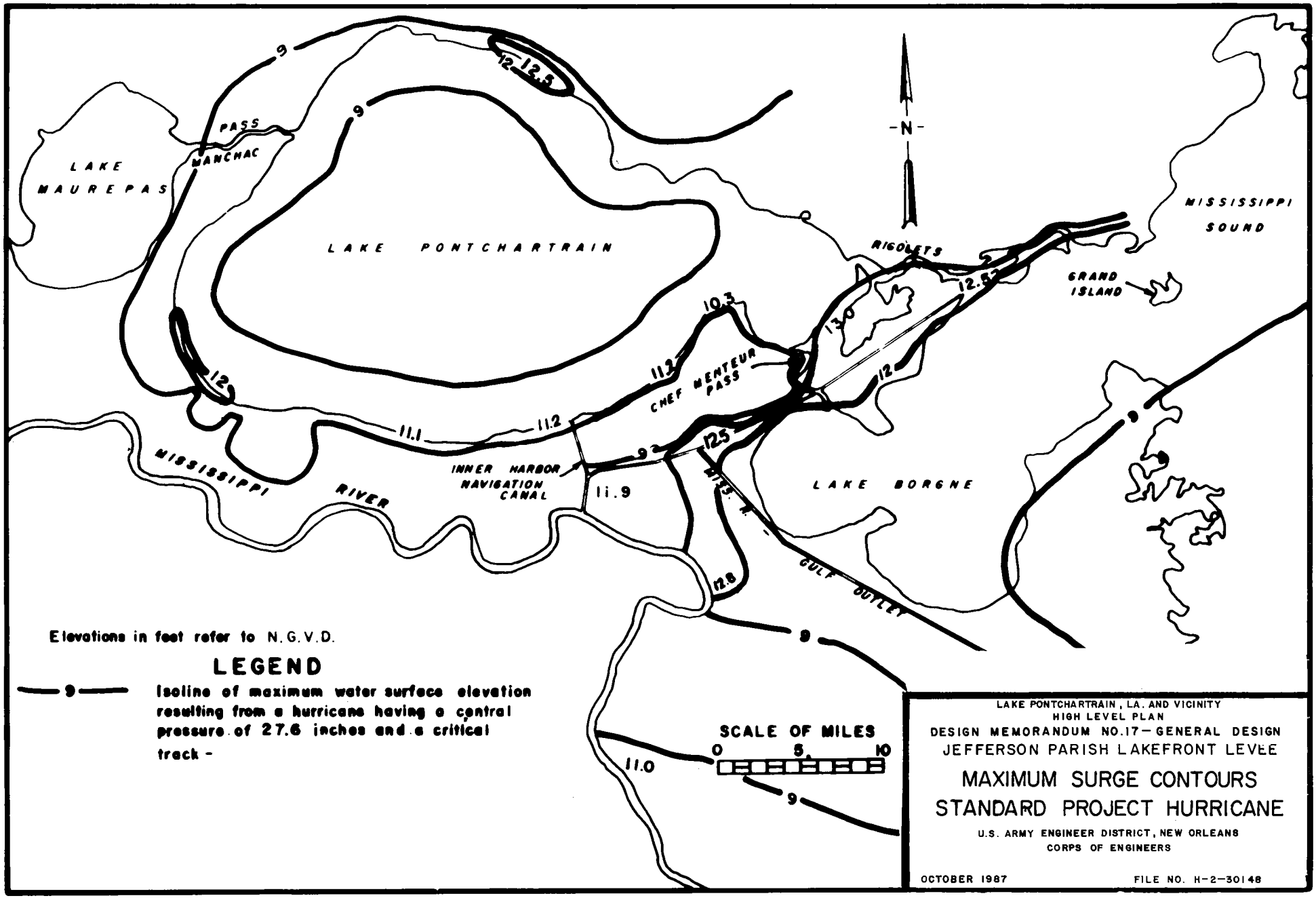

LAKE MAUREPAS
PASS MANCHAC
LAKE PONTCHARTRAIN
RIGOLETS
MISSISSIPPI SOUND
GRAND ISLAND
CHEF MENTEUR PASS
INNER HARBOR NAVIGATION CANAL
MISSISSIPPI RIVER
LAKE BORGNE
GULF OUTLET
N
9
12
12.5
10.3
11.3
11.1
11.2
11.9
13.0
12.5
12.8
11.0
SCALE OF MILES
0 5 10
Elevations in feet refer to N.G.V.D.
LEGEND
9 Isoline of maximum water surface elevation resulting from a hurricane having a central pressure of 27.6 inches and a critical track -
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 - GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE
MAXIMUM SURGE CONTOURS
STANDARD PROJECT HURRICANE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
OCTOBER 1987
FILE NO. H-2-30148

PLATE A-16

LEGEND

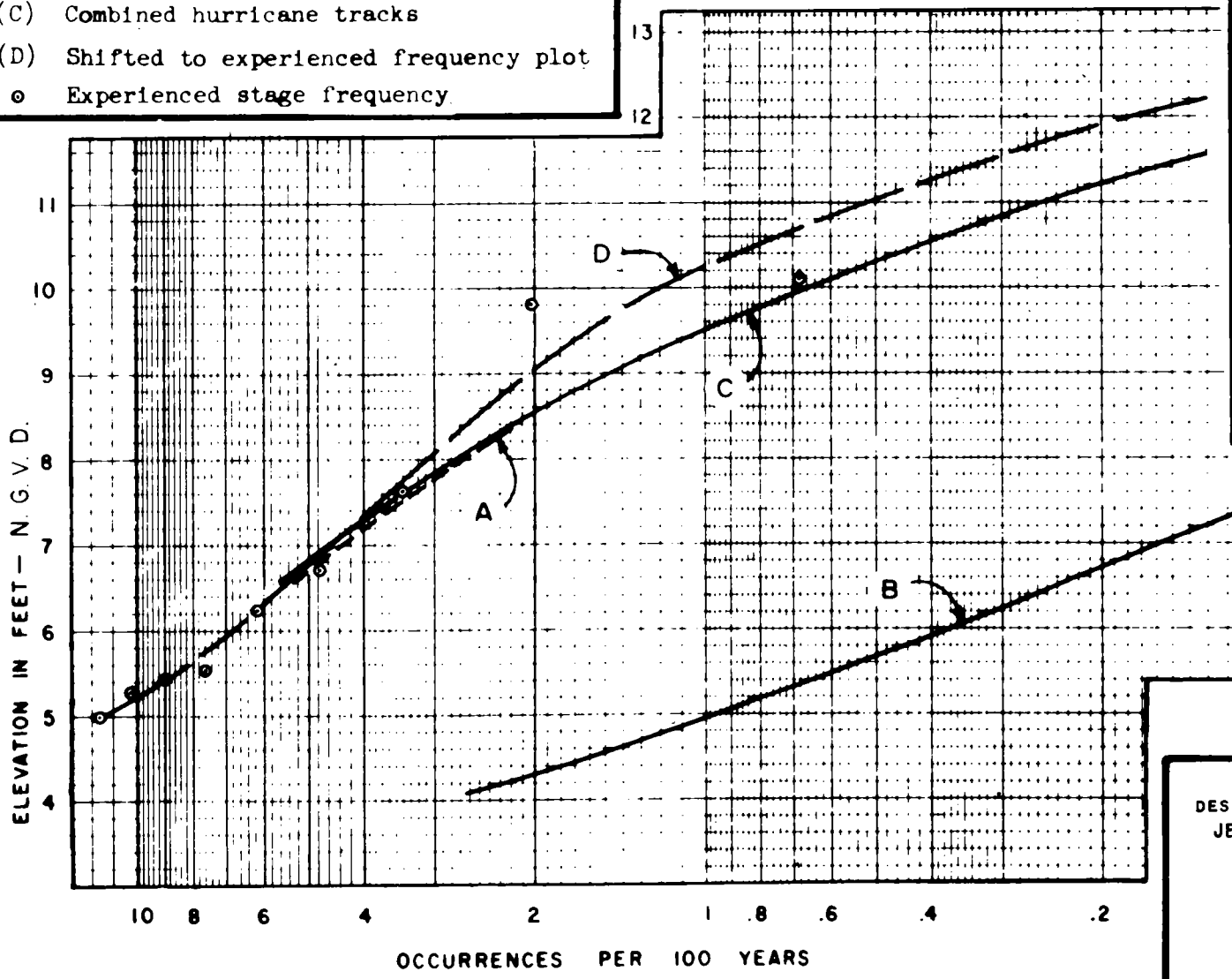
(A) Hurricane tracks from the south

(B) Hurricane tracks from the east

(C) Combined hurricane tracks

(D) Shifted to experienced frequency plot

⊙ Experienced stage frequency



FREQUENCY ANALYSIS

M	Years	Wind tide level (ft.)	(1) Probability
1	1901	10.1	.685
2	1893	9.8	2.05
3	1965	7.6	3.42
4	1915	6.7	4.79
5	1909	6.2	6.16
6	1947	5.5	7.53
7	1956	5.4	8.90
8	1964	5.3	10.27
9	1926	5.0	11.64

(1) Probability

$$P = \frac{100\,(M-0.5)}{Y}$$ where

M = Number of the event (rank)

Y = Number of years of record (73)

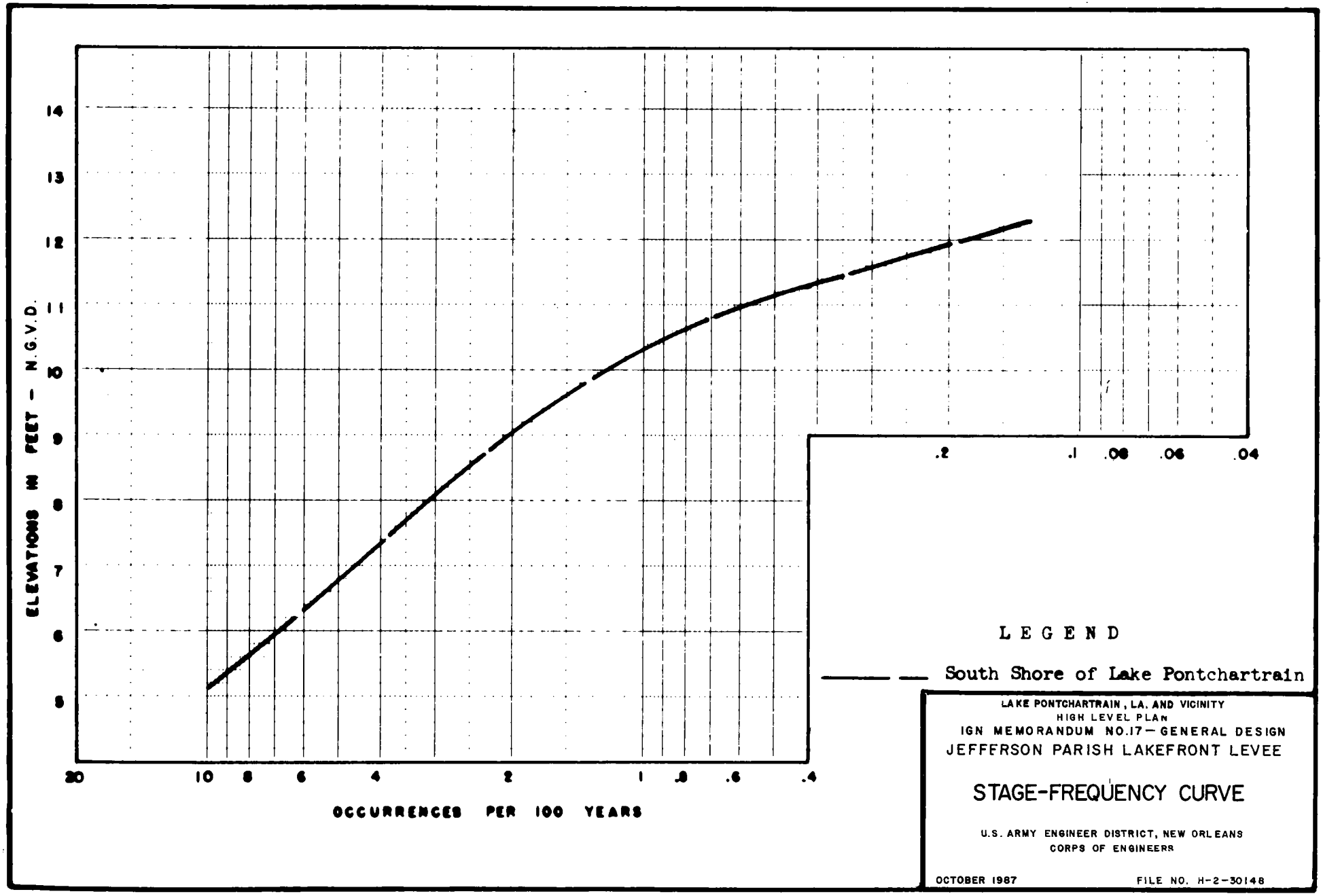
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17 — GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

STAGE — FREQUENCY
SOUTH SHORE OF
LAKE PONTCHARTRAIN

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1967 FILE NO. H-2-30148

PLATE A-17



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
IGN MEMORANDUM NO.17 — GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

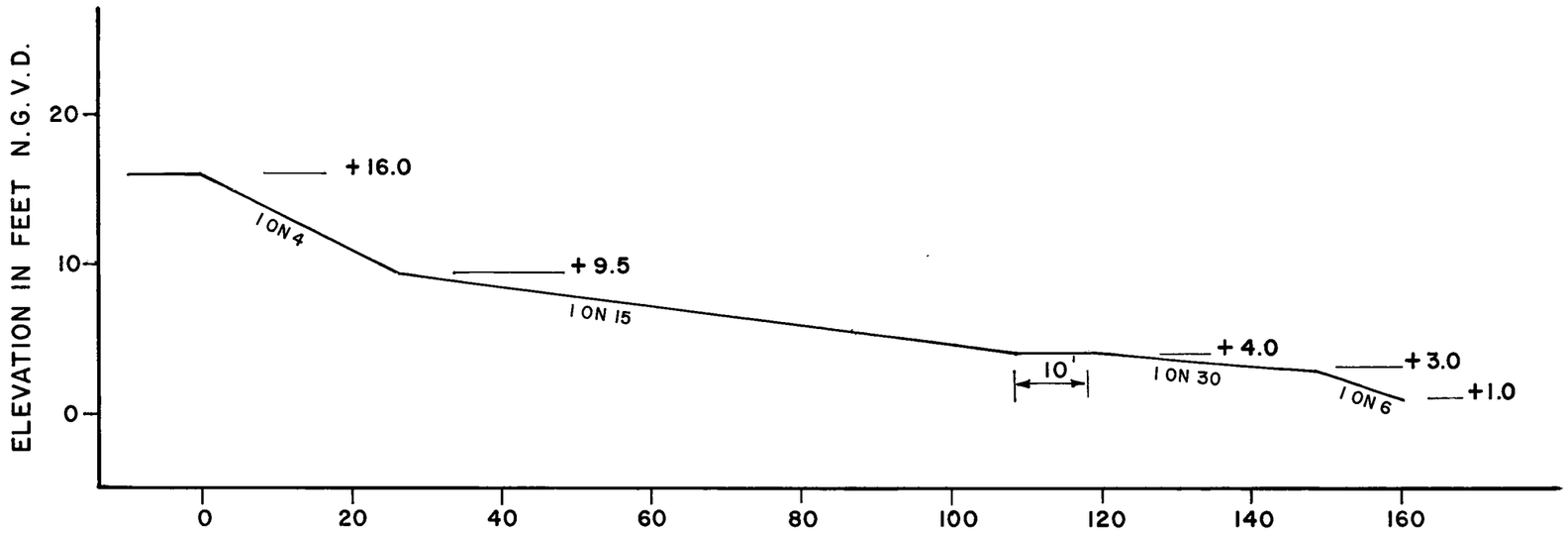
STAGE-FREQUENCY CURVE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

PLATE A-18

FLOODSIDE



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.17 – GENERAL DESIGN
JEFFERSON PARISH LAKEFRONT LEVEE

TYPICAL CROSS SECTION

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

OCTOBER 1987 FILE NO. H-2-30148

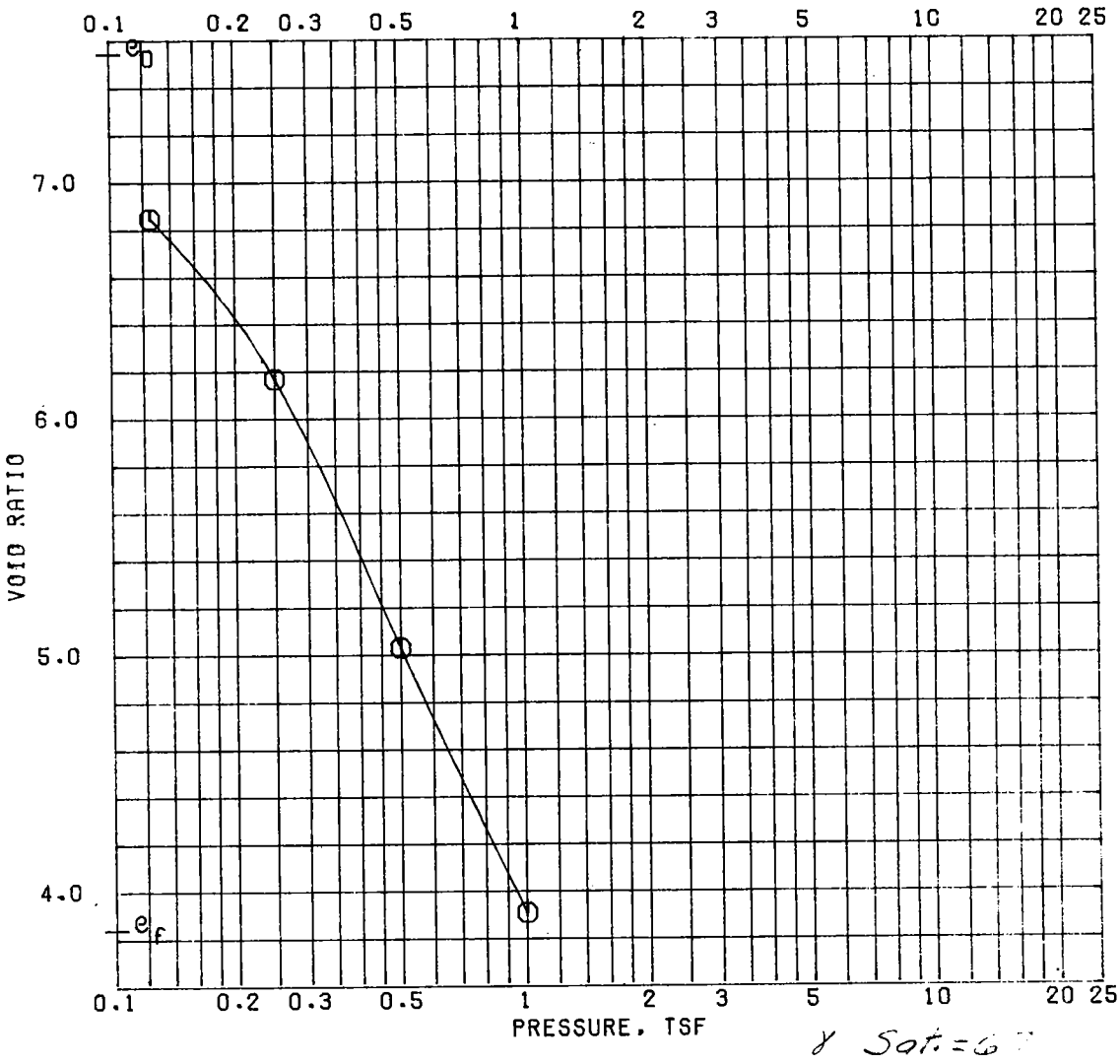
PLATE A-19

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17, GENERAL DESIGN
JEFFERSON PARISH, LAKEFRONT LEVEE

APPENDIX B
SOIL TEST DATA SHEETS

TESTING DATA

APPENDIX B-1



γ Soil = G ?

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.24	WATER CONTENT, %	412.9	230.2
COMPRESSION INDEX 3.80	DRY DENSITY, PCF	12.4	22.0
TYPE SPECIMEN UNDISTURBED	SATURATION, %	93.1	100 +
DIA. IN 4.44 HT. IN 1.117	VOID RATIO	7.536	3.833
	BACK PRESSURE, TSF		

CLASSIFICATION PEAT (PT), DARK BROWN

LL 397 PL 218 PI 179

GS 1.70 (EST) D_{10}

PROJECT LAKE PONT LA & VIC HURR. PROT

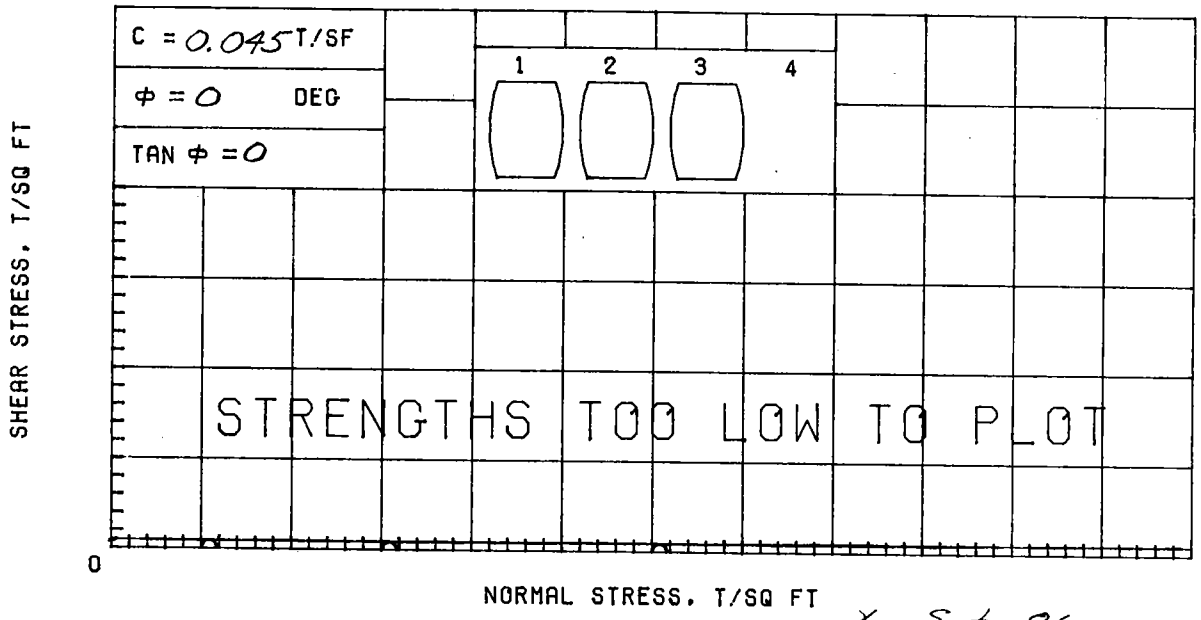
JEFFERSON & ST. CHARLES PARISHES

REMARKS

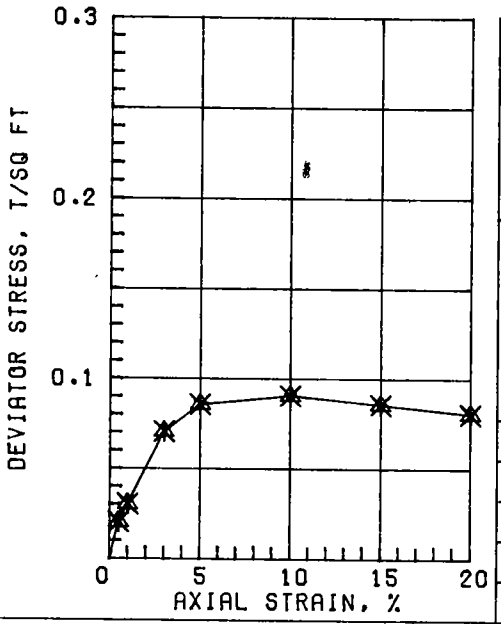
BORING NO. 15-U SAMPLE NO. 2-B

DEPTH/ELEV 5.0/-8.9 DATE 28 OCT 85

CONSOLIDATION TEST REPORT



γ Sat.= 86



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	115.6	117.8	119.4	
	DRY DENSITY, PCF	38.6	38.0	37.7	
	SATURATION, %	92.6	92.6	92.9	
	VOID RATIO	3.370	3.436	3.472	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.09	0.09	0.09	
TIME TO FAILURE, MIN.		20	20	20	
RATE OF STRAIN INCR,%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 117.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL

LL 126	PL 35	PI 91	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;

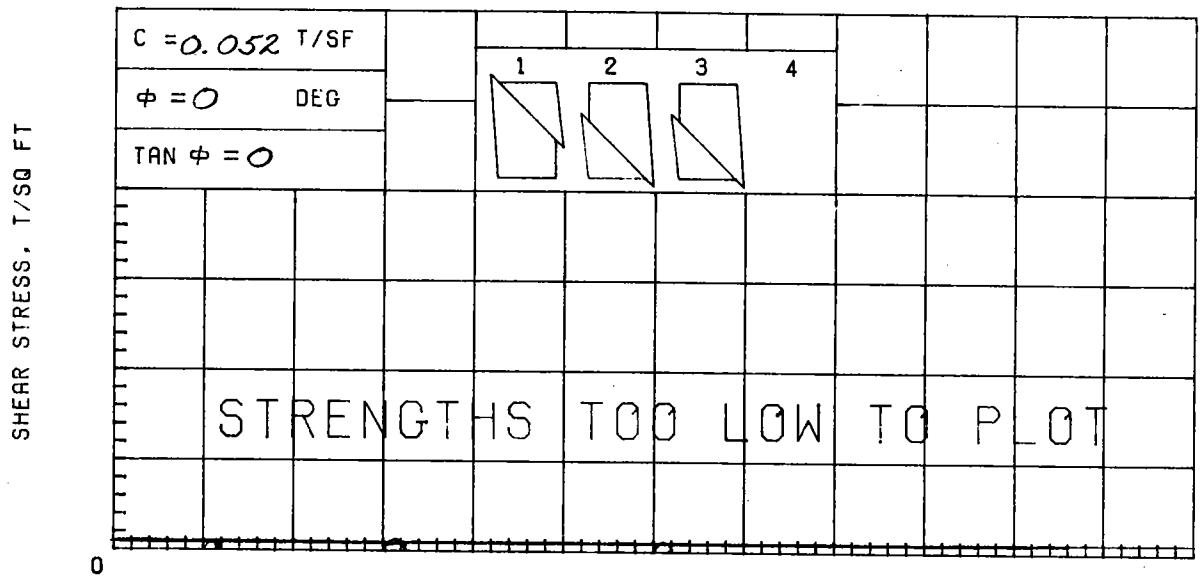
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 15-U | SAMPLE NO. 2-C

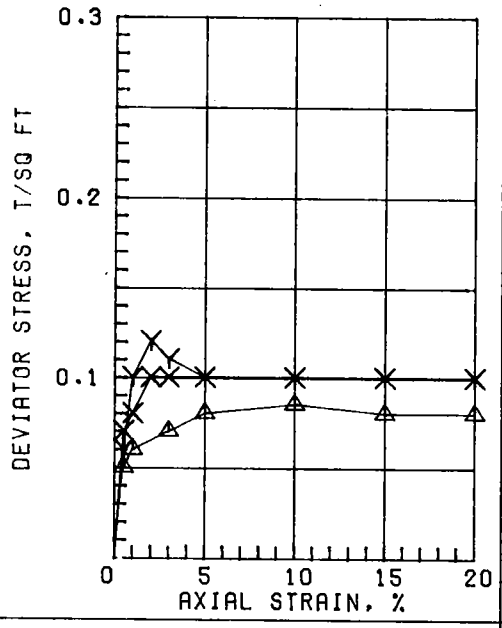
DEPTH/ELEV 6.4/-10.3 | TECH. KOC

LABORATORY USAE WES | DATE 23 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 90



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	103.5	103.8	103.4	
	DRY DENSITY, PCF	43.8	43.4	43.9	
	SATURATION, %	98.1	97.1	98.4	
	VOID RATIO	2.849	2.887	2.836	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.09	0.12	0.10	
TIME TO FAILURE, MIN.		20	4	12	
RATE OF STRAIN INCR.%				6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 103.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 91	PL 23	PI 68	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

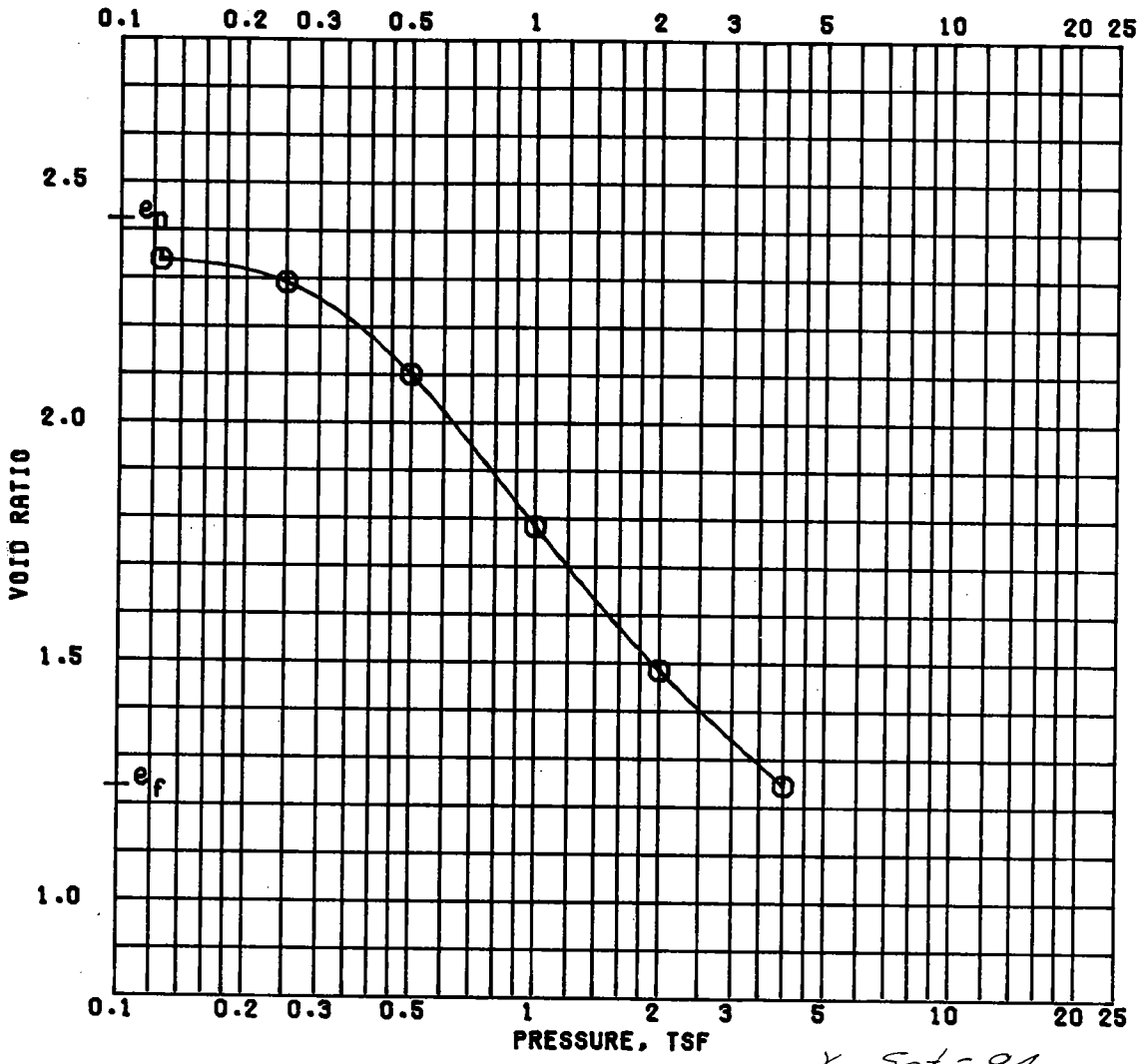
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 15-U | SAMPLE NO. 5-B

DEPTH/ELEV 17.0/-20.9 | TECH. KOC

LABORATORY USAE WES | DATE 23 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 94

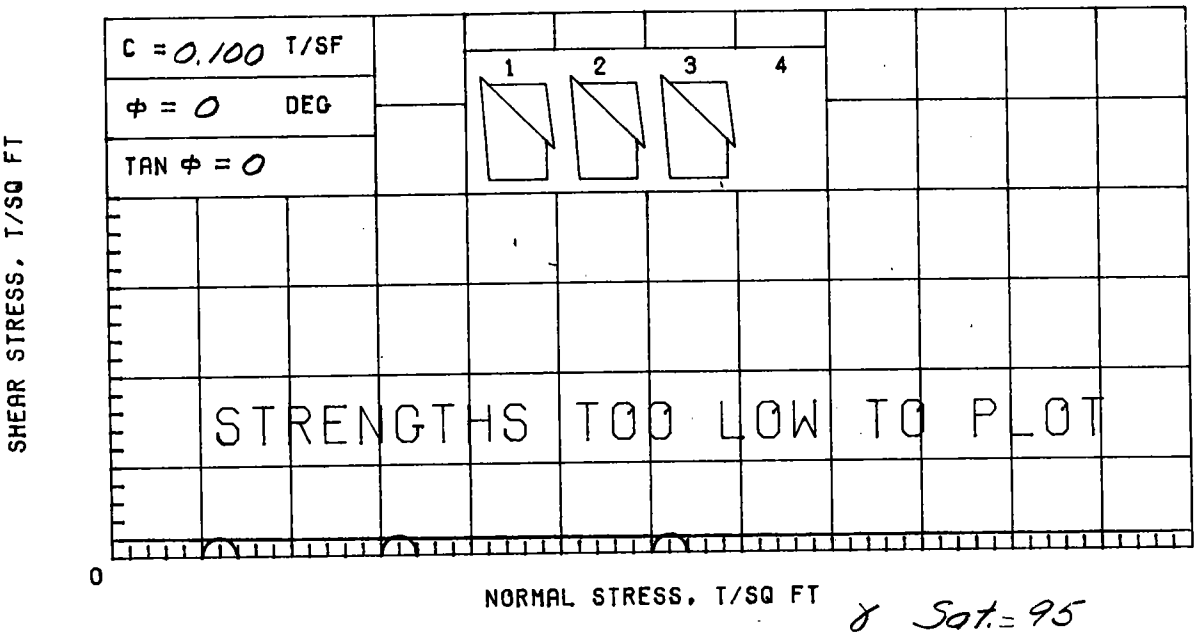
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	91.2	47.8
PRECONSOL. PRESSURE, TSF	0.36	DRY DENSITY, PCF	49.3	75.5
COMPRESSION INDEX	1.10	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.419	1.234
DIA. IN 4.44	HT. IN 1.122	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

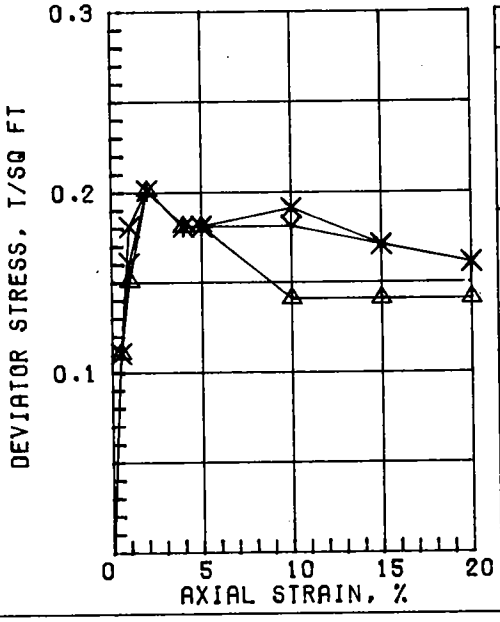
LL 85	PL 22	PI 63	PROJECT LAKE PONT LA & VIC HURR. PROT
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 15-U	SAMPLE NO. 6-B
		DEPTH/ELEV 21.0/-24.9	DATE 28 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat.= 95



SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	84.6	81.3	81.3		82.4
	DRY DENSITY, PCF	50.5	52.0	51.6		
	SATURATION, %	97.8	97.9	97.0		
	VOID RATIO	2.336	2.241	2.264		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.20	0.20	0.20		
TIME TO FAILURE, MIN.		4	12	12		
RATE OF STRAIN INCR.%			6	6		
INITIAL DIAMETER, IN.		1.40	1.40	1.40		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 86	PL 24	PI 62	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

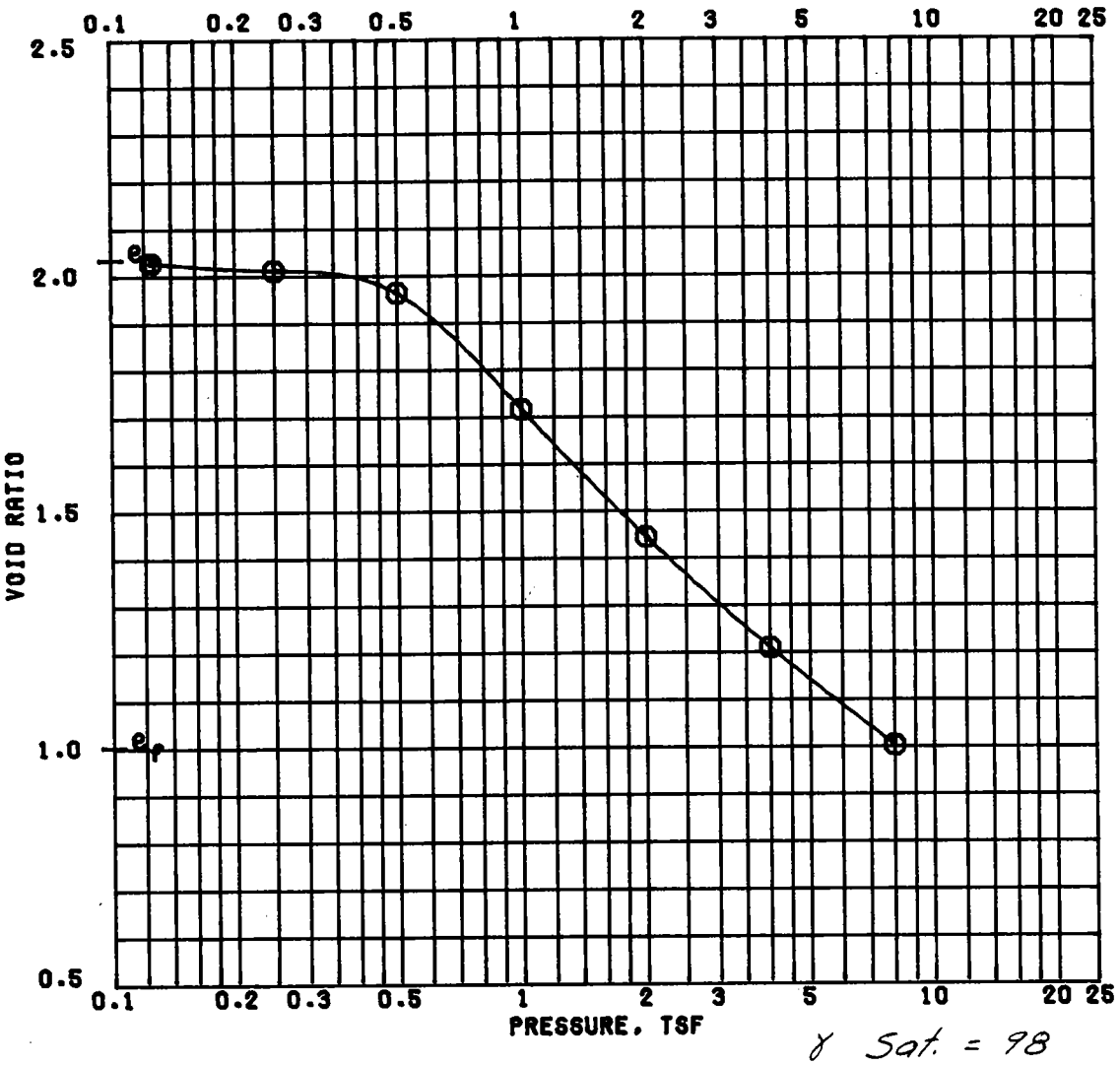
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 15-U | SAMPLE NO. 8-B

DEPTH/ELEV 29.0/-32.9 | TECH. KOC

LABORATORY USAE WES | DATE 24 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 98

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	72.7	39.6
PRECONSOL. PRESSURE, TSF	0.54	DRY DENSITY, PCF	55.6	84.3
COMPRESSION INDEX	0.92	SATURATION, %	96.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.032	1.000
DIA. IN 4.44	HT. IN 1.122	BACK PRESSURE, TSF		

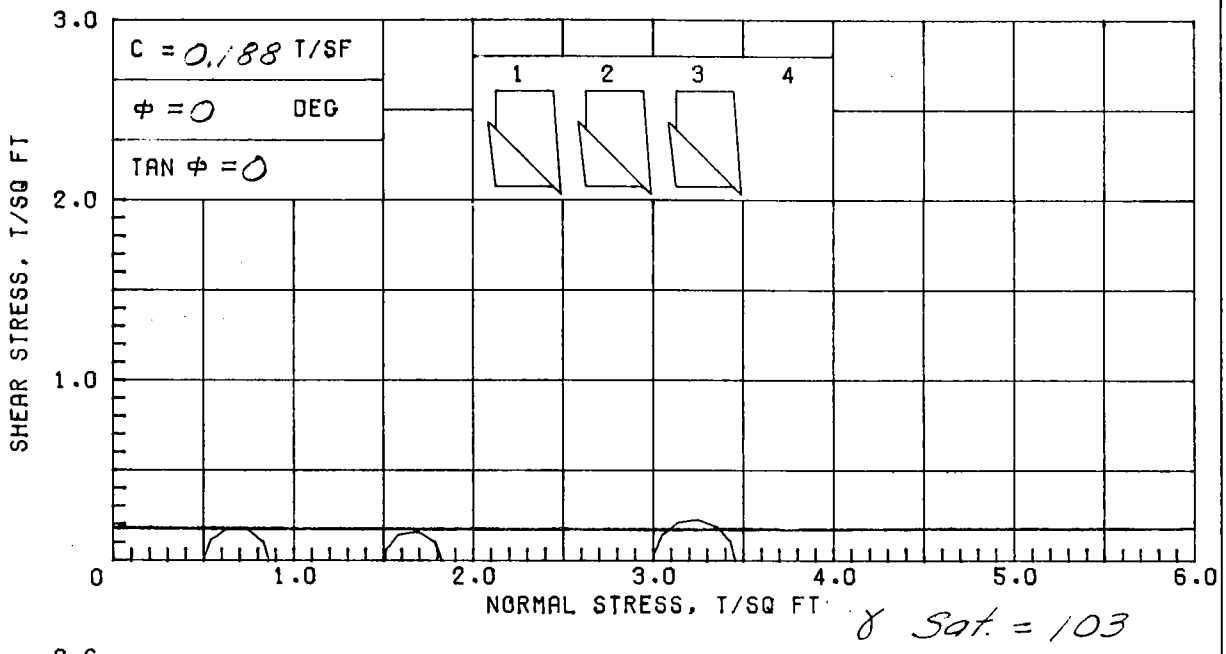
CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 81	PL 24	PI 57
GS 2.70 (EST)	D_{10}	
REMARKS		

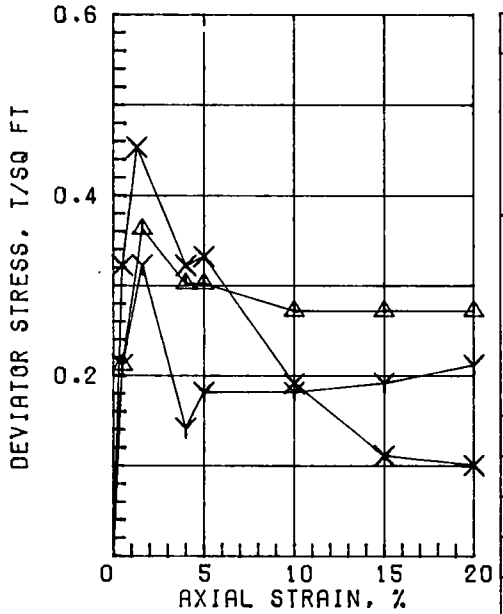
PROJECT LAKE PONT LA & VIC HURR. PROT
JEFFERSON & ST. CHARLES PARISHES
BORING NO. 15-U SAMPLE NO. 9-C
DEPTH/ELEV 34.0/-37.9 DATE 28 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 103



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	57.3	62.9	56.6	
	DRY DENSITY, PCF	65.2	62.1	66.3	
	SATURATION, %	97.7	99.2	99.1	
	VOID RATIO	1.584	1.713	1.542	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.36	0.32	0.45	
TIME TO FAILURE, MIN.		3	14	10	
RATE OF STRAIN INCR.%			4	4	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 59.?

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 66	PL 18	PI 48	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;

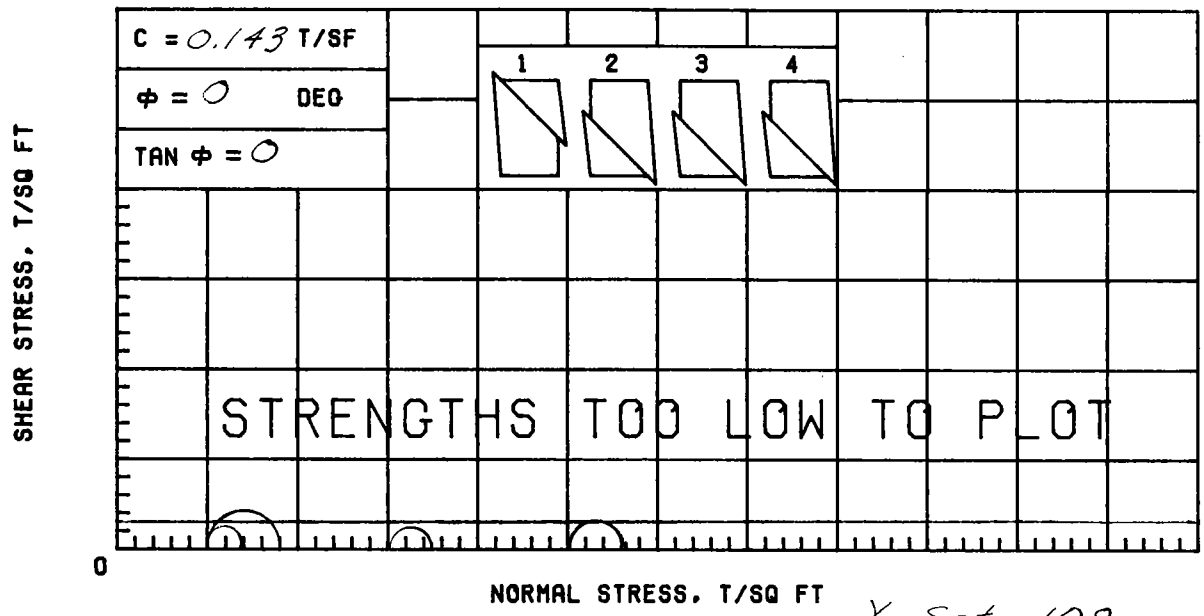
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 15-U | SAMPLE NO. 11-B

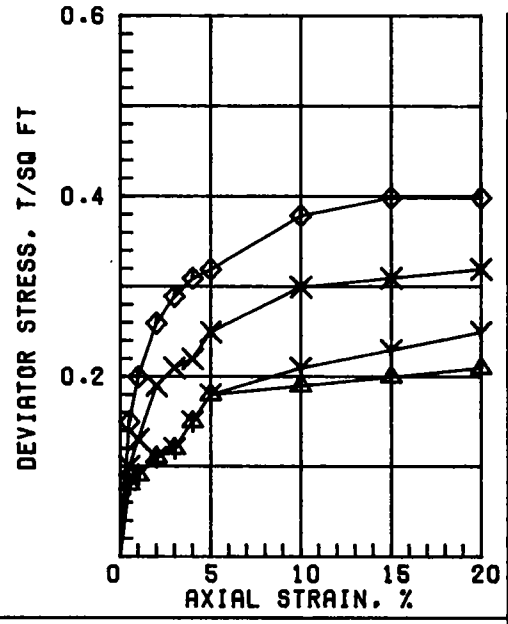
DEPTH/ELEV 41.0/-44.9 | TECH. KOC

LABORATORY USAE WES | DATE 24 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 108



SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	53.2	49.5	48.0	46.6
	DRY DENSITY, PCF	68.6	71.6	72.0	73.5
	SATURATION, %	98.6	98.8	96.5	97.3
	VOID RATIO	1.457	1.353	1.343	1.293
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.20	0.23	0.31	0.40
TIME TO FAILURE, MIN.		30	30	30	30
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 47.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 77	PL 22	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

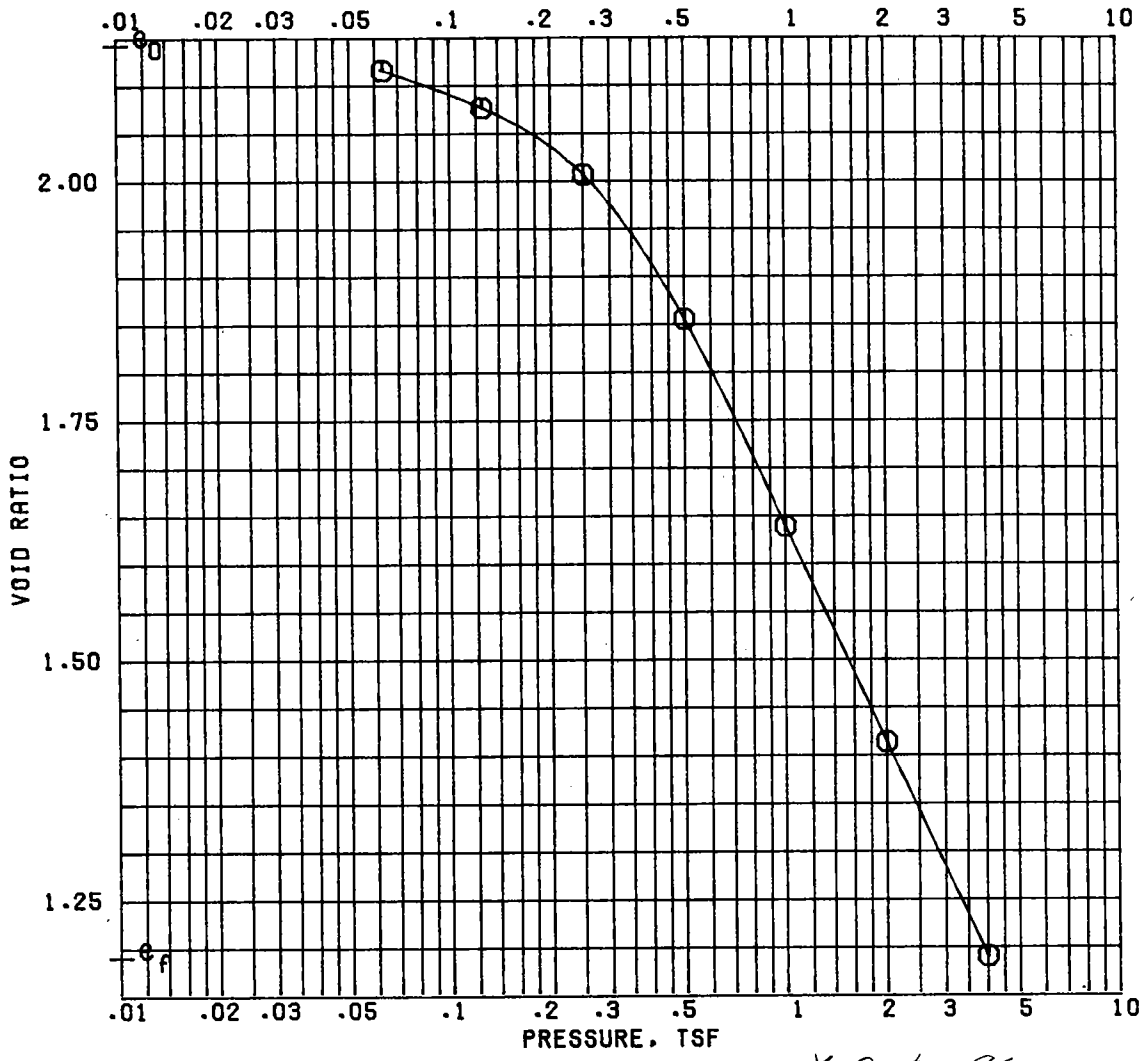
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 16-U | SAMPLE NO. 2B

DEPTH/ELEV 3.5/1.08 | TECH. KOC

LABORATORY USAE WES | DATE 23 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



% Sat. = 96

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.31	DRY DENSITY, PCF	53.7	77.0
COMPRESSION INDEX 0.72	SATURATION, %	99.6	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	2.141	1.189
DIA. IN 4.44 HT. IN 1.117	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 82 PL 21 PI 61

GS 2.70 (EST) D_{10}

REMARKS

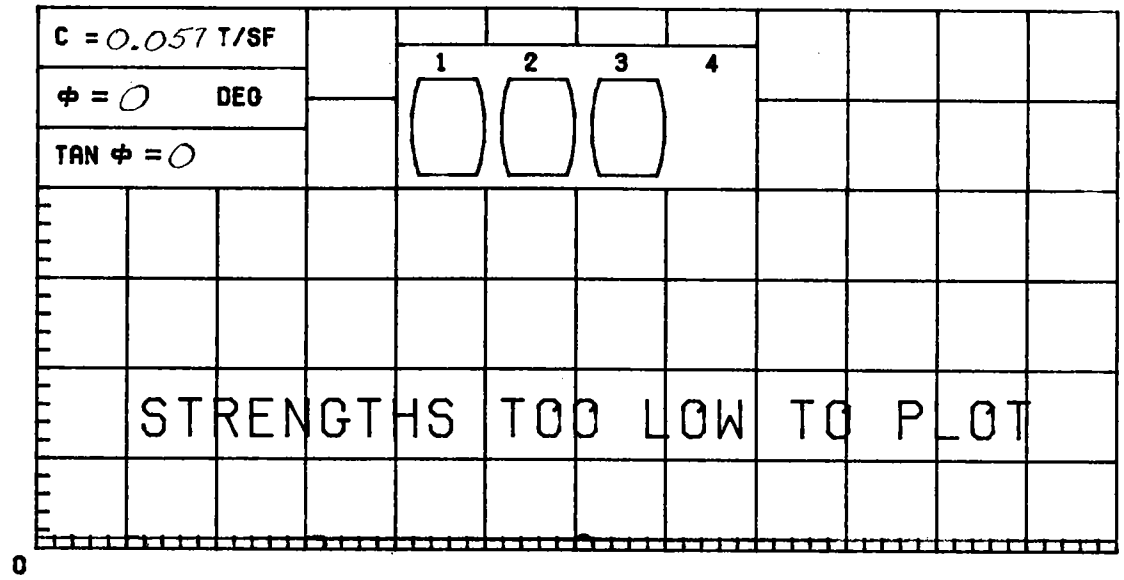
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 16-U SAMPLE NO. 5-B

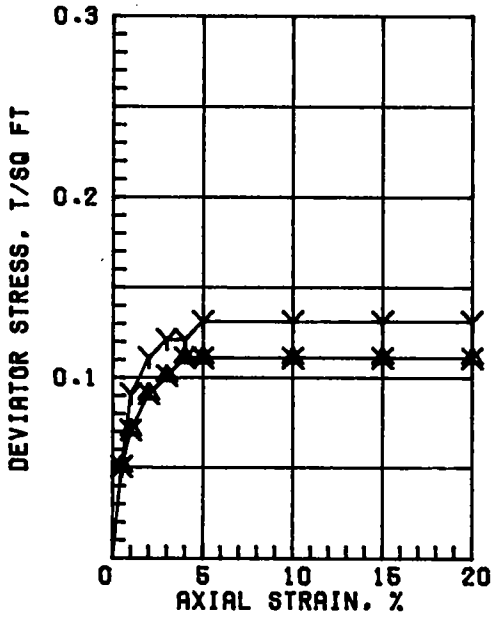
DEPTH/ELEV 12/-7.42 DATE 03 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



S Sat. = 98



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	73.9	72.3	74.0	
	DRY DENSITY, PCF	56.1	56.6	55.5	
	SATURATION, %	99.5	98.8	98.1	
	VOID RATIO	2.005	1.976	2.036	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.11	0.12	0.11	
TIME TO FAILURE, MIN.		8	6	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 73.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 76	PL 20	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

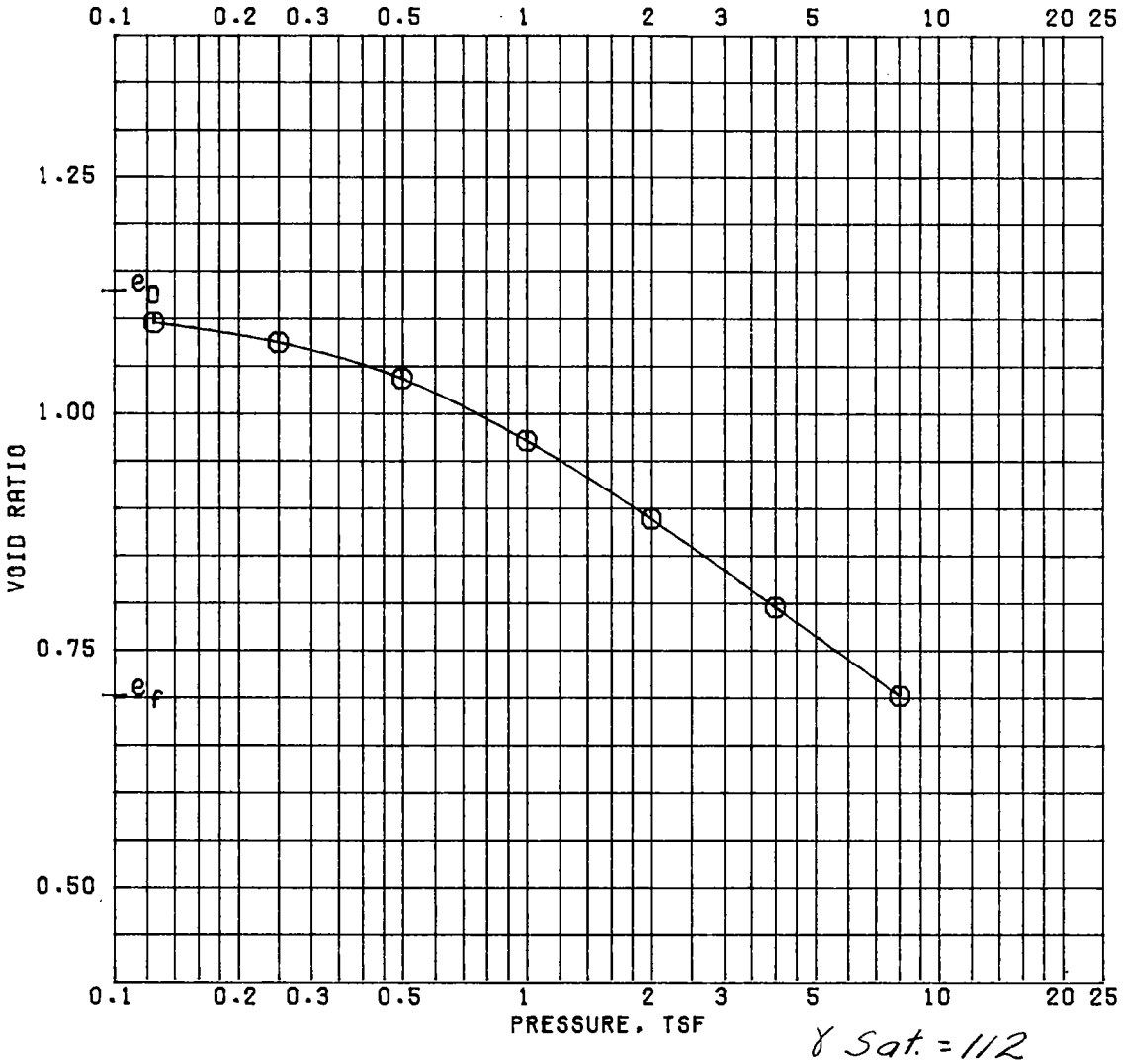
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 16-U | SAMPLE NO. 6C

DEPTH/ELEV 17.0/-12.42 | TECH. KOC

LABORATORY USAE WES | DATE 24 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 112

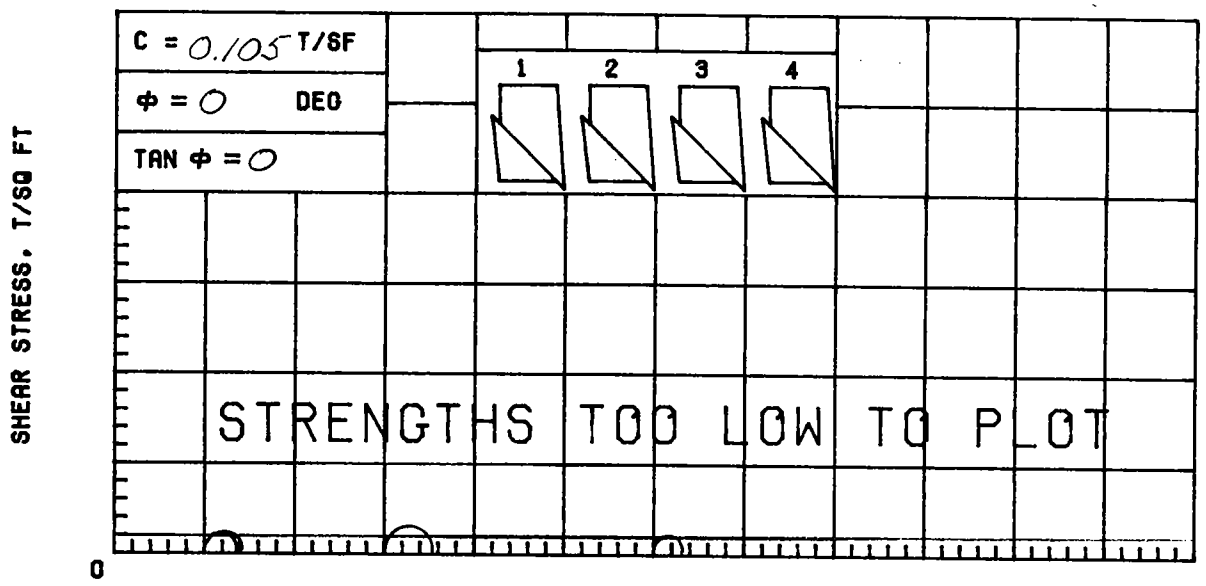
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	39.9	26.6
PRECONSOL. PRESSURE, TSF	0.64	DRY DENSITY, PCF	79.2	99.1
COMPRESSION INDEX	0.30	SATURATION, %	95.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.128	0.700
DIA. IN 4.44	HT. IN 1.130	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY; SILT LENSES

LL 46	PL 17	PI 29	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES
GS 2.70 (EST)	D_{10}		
REMARKS		BORING NO. 16-U	SAMPLE NO. 8-B
		DEPTH/ELEV 24/-19.42	DATE 06 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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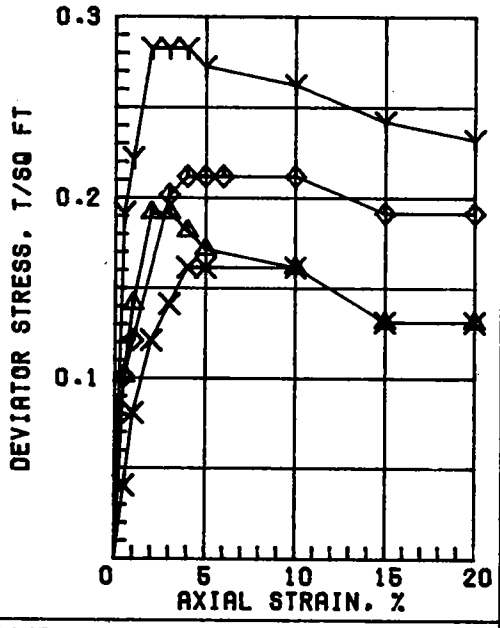


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	76.7	78.9	77.8	77.3
	DRY DENSITY, PCF	55.0	53.7	53.8	54.5
	SATURATION, %	100+	99.6	98.4	99.6
	VOID RATIO	2.065	2.139	2.134	2.095
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.19	0.28	0.16	0.21
TIME TO FAILURE, MIN.		4	12	24	24
RATE OF STRAIN INCR.%			6	6	7
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 77.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 79	PL 20	PI 59	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

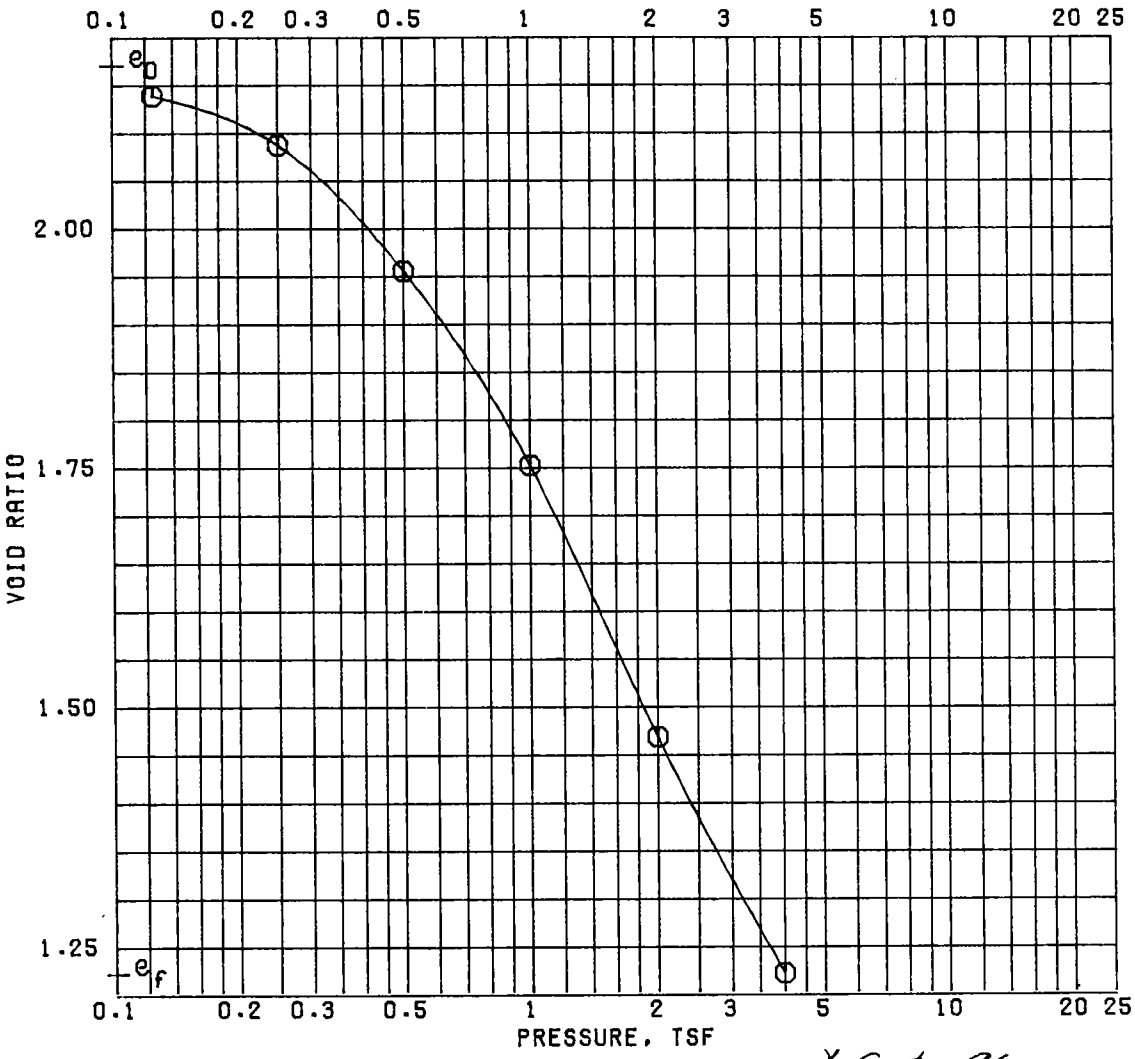
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 16-U | SAMPLE NO. 9B

DEPTH/ELEV 28.0/-23.42 | TECH. KOC

LABORATORY USAE WES | DATE 24 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 96

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.41	DRY DENSITY, PCF	53.2	75.9
COMPRESSION INDEX 0.77	SATURATION, %	98.6	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	2.169	1.221
DIA. IN 4.44 HT. IN 1.107	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 93 PL 24 PI 69

GS 2.70 (EST) D_{10}

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
JEFFERSON & ST. CHARLES PARISHES

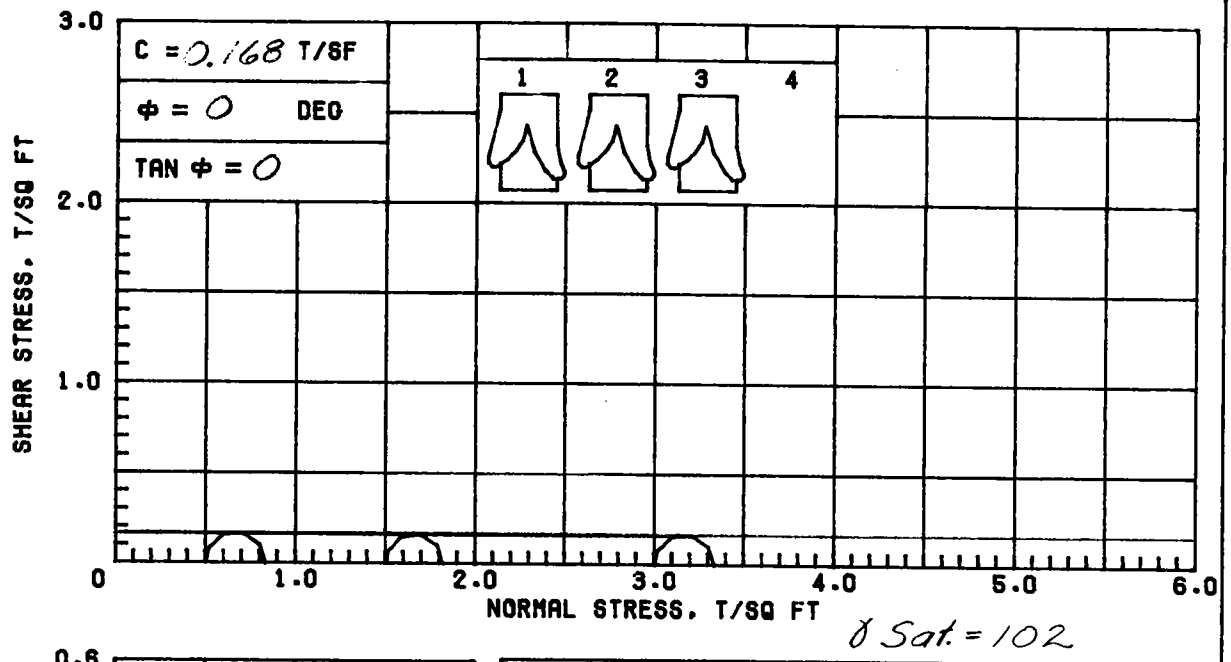
REMARKS

BORING NO. 16-U SAMPLE NO. 11-B

DEPTH/ELEV 35.6/-31.02 DATE 08 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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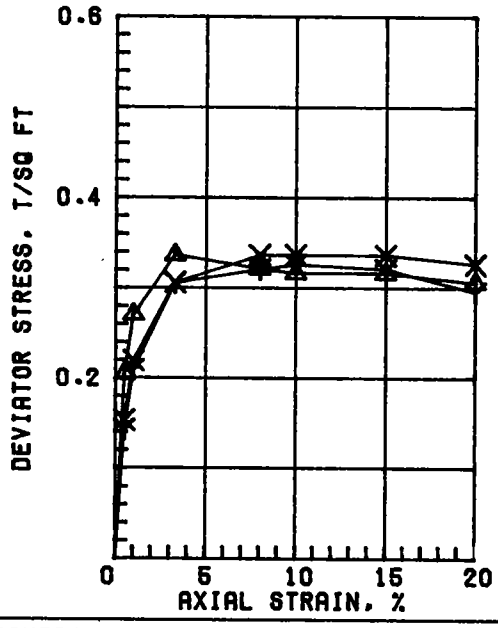


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	64.7	64.3	64.6	
	DRY DENSITY, PCF	62.0	62.2	62.0	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.719	1.711	1.718	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.34	0.33	0.34	
TIME TO FAILURE, MIN.		7	35	26	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 64.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 77	PL 21	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

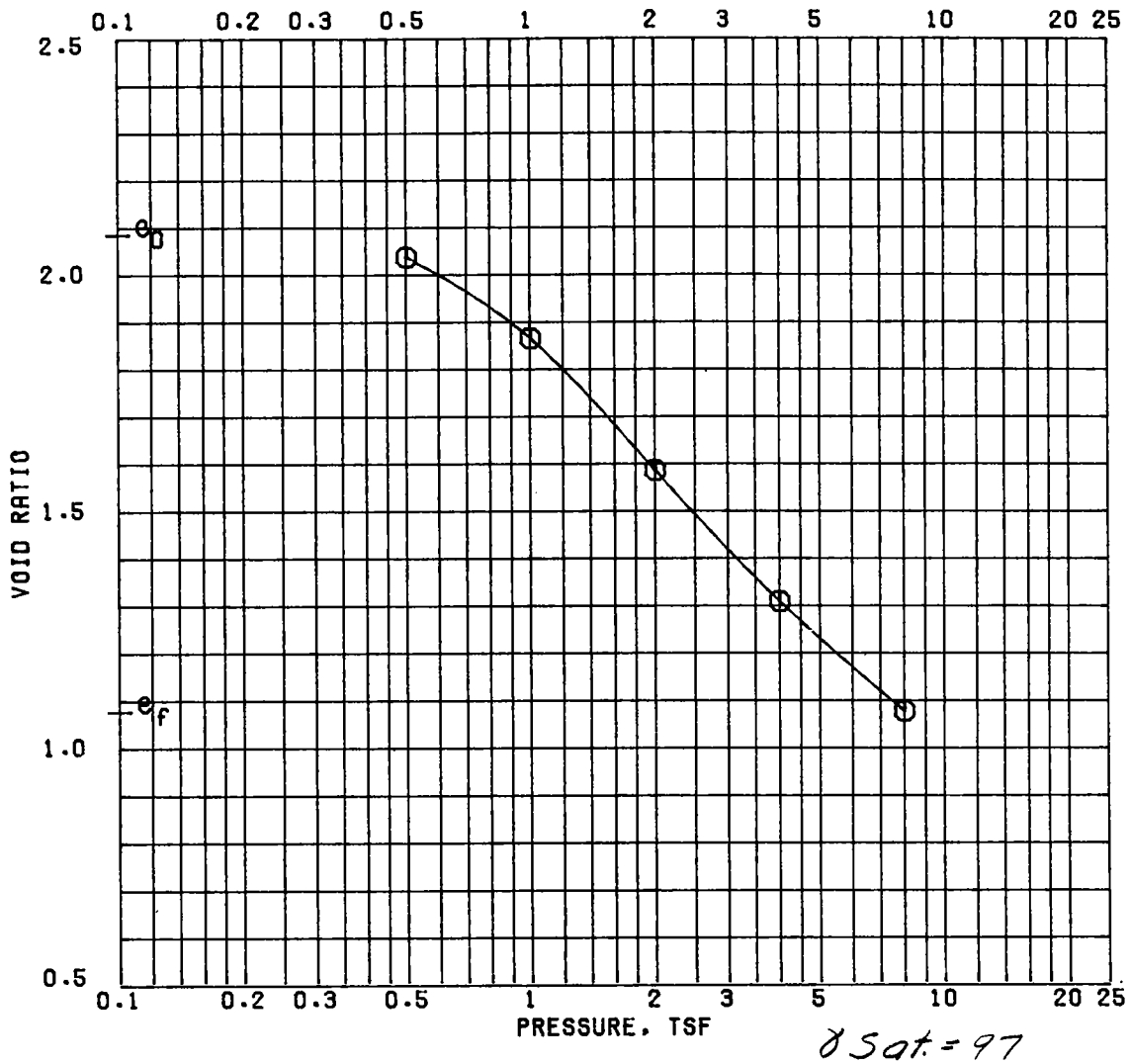
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 16-U | SAMPLE NO. 12B

DEPTH/ELEV 39.7/-35.12 | TECH. PJR

LABORATORY USAE WES | DATE 24 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



δSat.=97

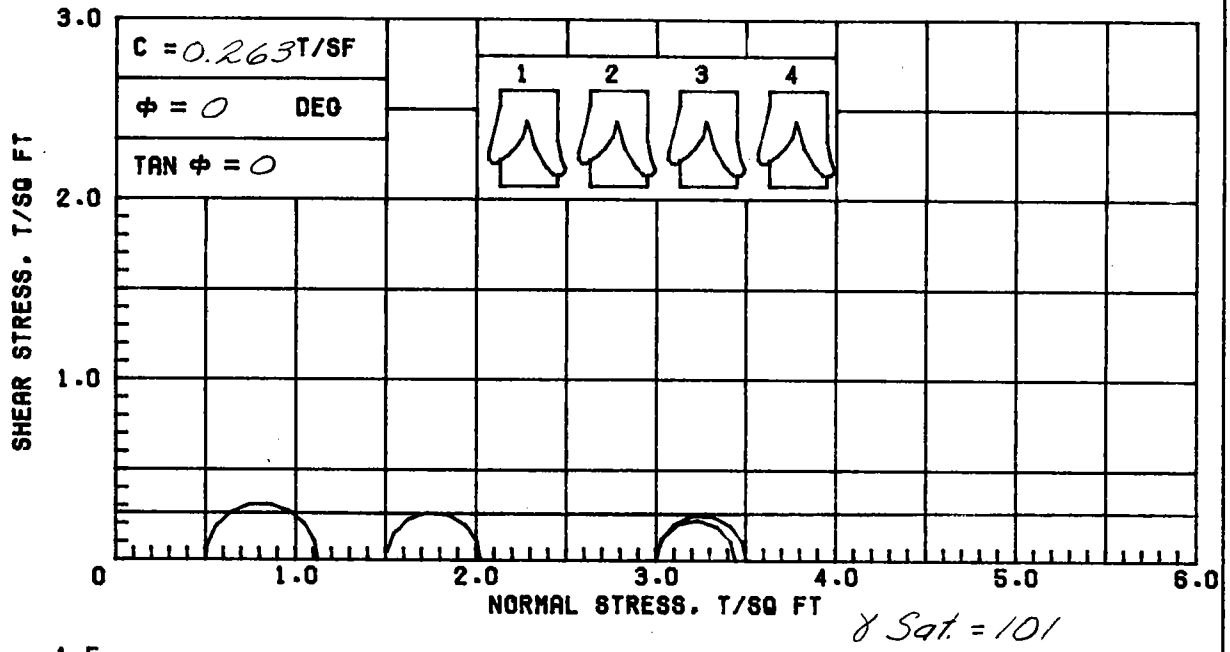
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 1.00	DRY DENSITY, PCF	54.7	81.3
COMPRESSION INDEX 1.00	SATURATION, %	95.7	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	2.081	1.073
DIA. IN 4.44 HT. IN 1.127	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 92 PL 24 PI 68	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISHES
REMARKS	BORING NO. 16-U SAMPLE NO. 13-B
	DEPTH/ELEV 43.7/-39.12 DATE 01 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



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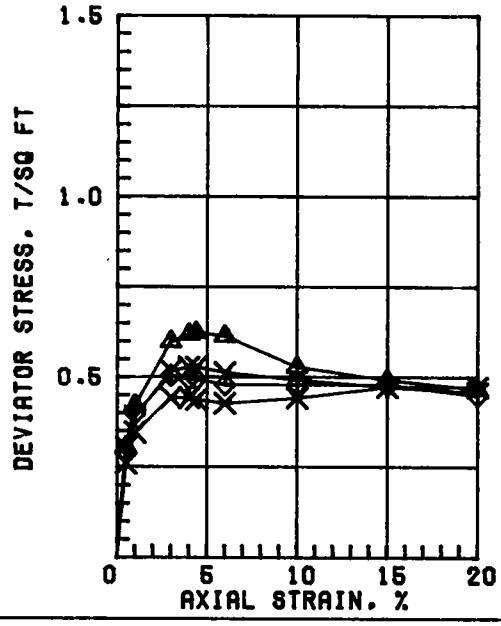


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	68.3	68.3	69.1	69.3	68.8
	DRY DENSITY, PCF	59.8	59.7	59.4	59.3	
	SATURATION, %	100+	100+	100+	100+	
	VOID RATIO	1.817	1.824	1.838	1.842	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0	
MAX. DEV. STRESS, TSF		0.62	0.53	0.44	0.50	
TIME TO FAILURE, MIN.		9	20	15	15	
RATE OF STRAIN INCR.%			6	7	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 86	PL 24	PI 62	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

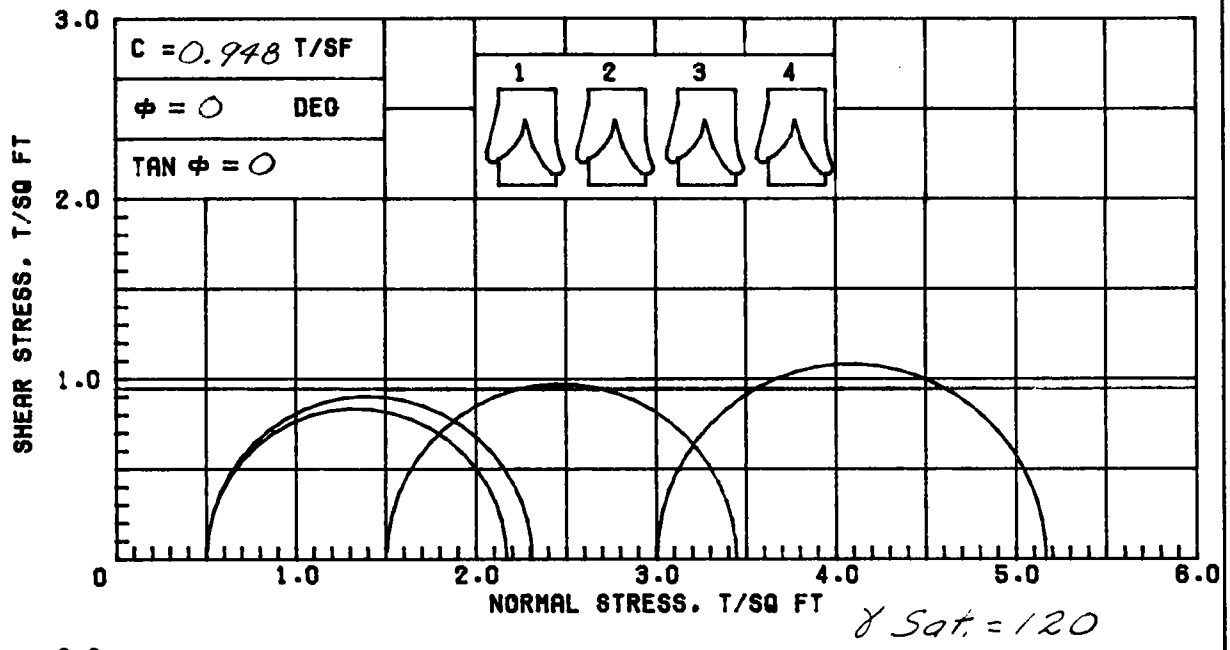
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 16-U | SAMPLE NO. 14B

DEPTH/ELEV 47.9/-43.3 2 | TECH. PJR

LABORATORY USAE WES | DATE 24 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



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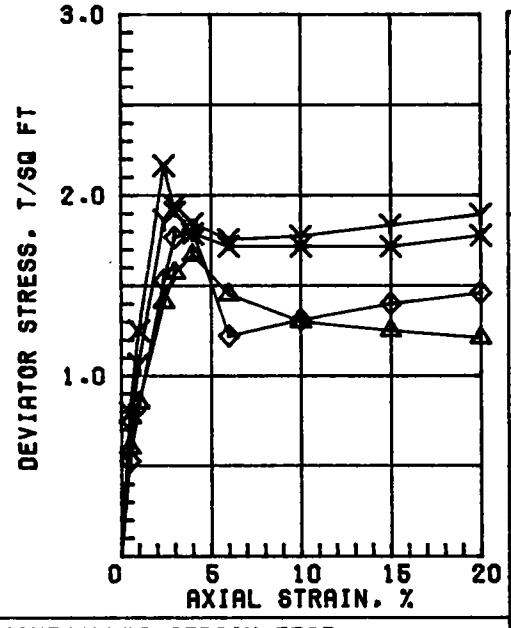


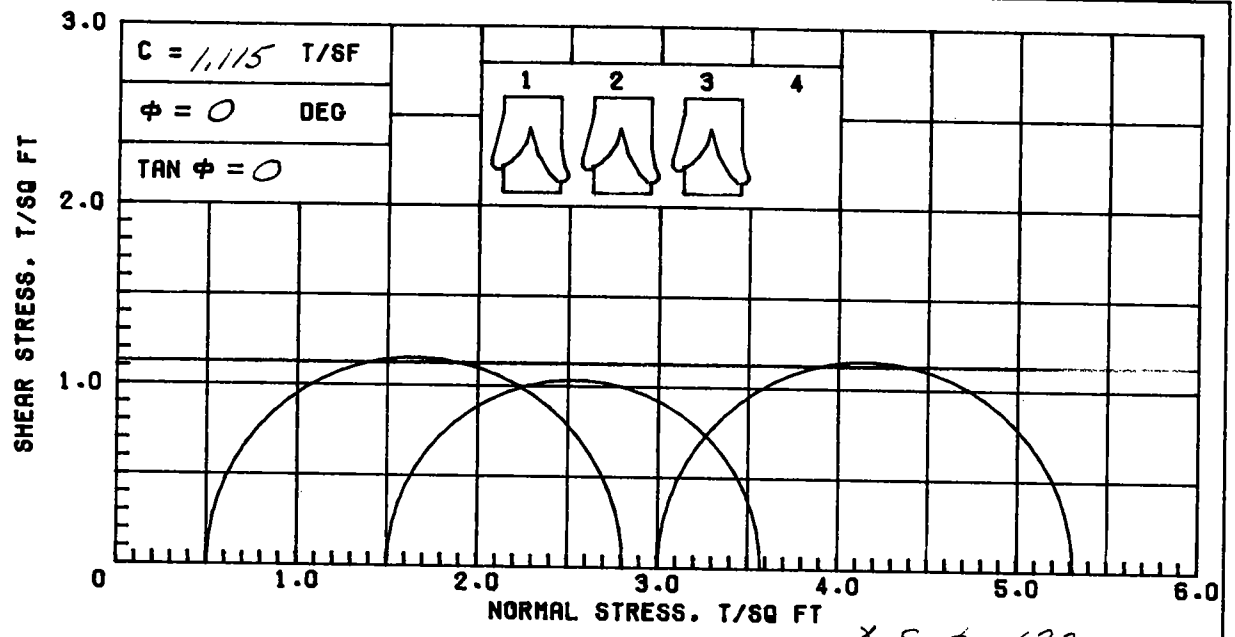
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	32.9	31.0	30.4	31.5	31.5
	DRY DENSITY, PCF	89.6	90.9	92.6	91.6	
	SATURATION, %	100+	98.0	100.0	100+	
	VOID RATIO	0.880	0.854	0.821	0.839	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		1.67	1.94	2.16	1.81	
TIME TO FAILURE, MIN.		8	15	12	20	
RATE OF STRAIN INCR.%			6	6	13	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT BROWN; SILT LENSES

LL 54	PL 17	PI 37	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 16-U	SAMPLE NO. 19C
	DEPTH/ELEV 69.2/-64.62	TECH. PJR
	LABORATORY USAE WES	DATE 28 MAY 85
	TRIAXIAL COMPRESSION TEST REPORT	



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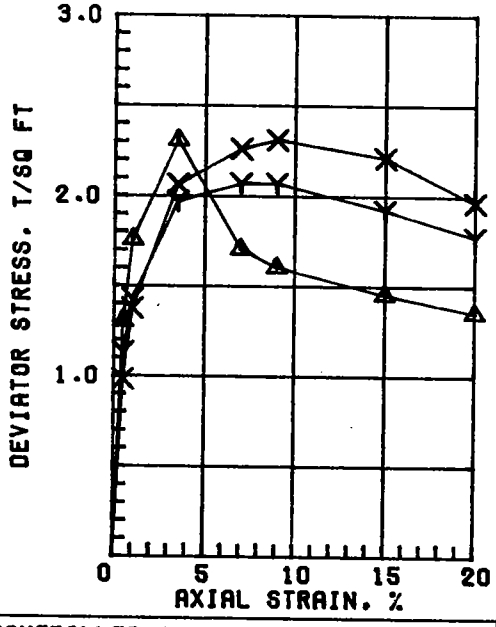


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	28.9	29.5	27.8	
	DRY DENSITY, PCF	93.6	93.3	94.7	
	SATURATION, %	97.5	98.7	96.2	
	VOID RATIO	0.800	0.807	0.780	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		2.31	2.07	2.31	
TIME TO FAILURE, MIN.		7	23	36	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.41	1.41	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 28.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 68	PL 19	PI 49	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

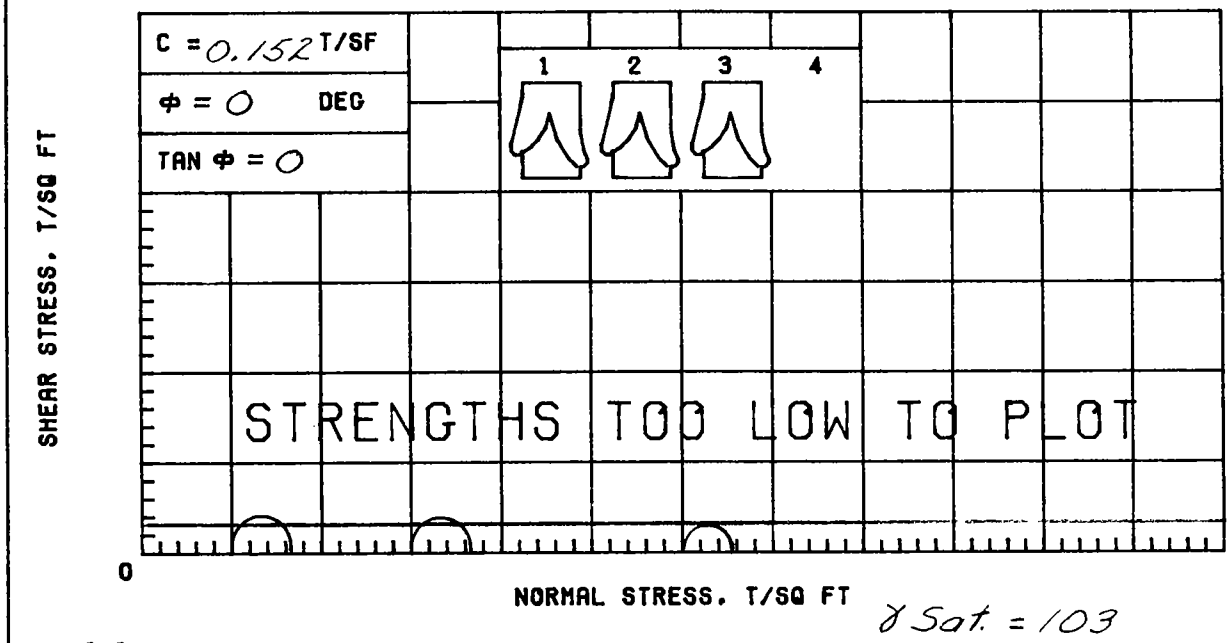
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 17-U | SAMPLE NO. 1-B

DEPTH/ELEV 1.0/2.4 | TECH. PJR

LABORATORY USAE WES | DATE 02 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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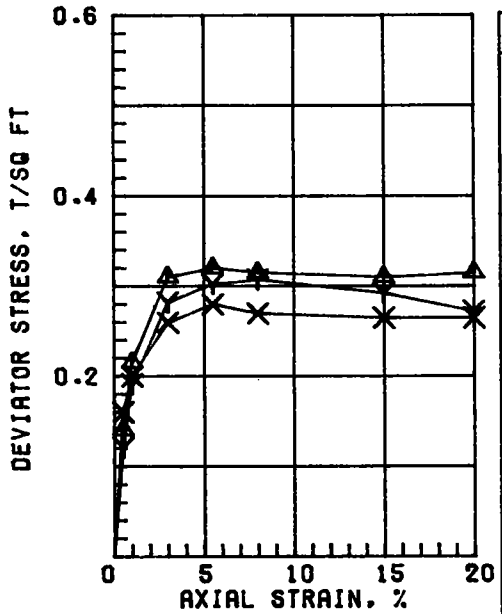


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	62.4	64.6	60.5	
	DRY DENSITY, PCF	63.3	62.3	64.1	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.663	1.704	1.630	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.32	0.31	0.28	
TIME TO FAILURE, MIN.		10	40	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

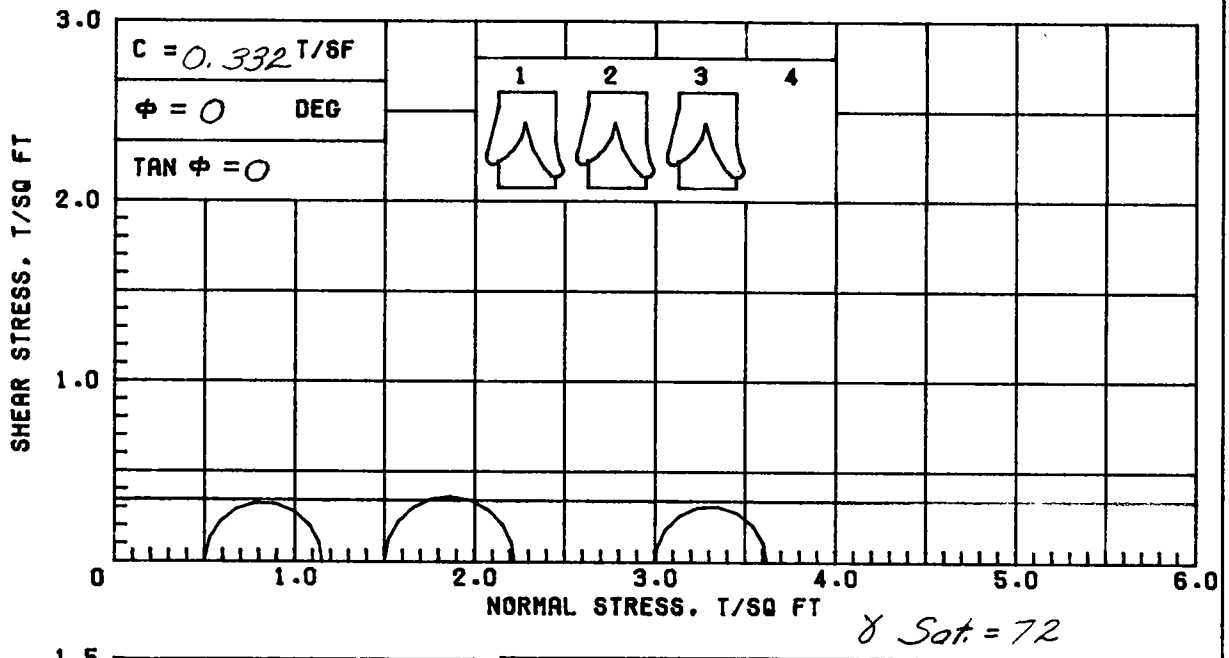
Avg. 62.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 82	PL 21	PI 61	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 17-U	SAMPLE NO. 3-B
	DEPTH/ELEV 8.0/-4.6	TECH. PJR
	LABORATORY USAE WES	DATE 03 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	



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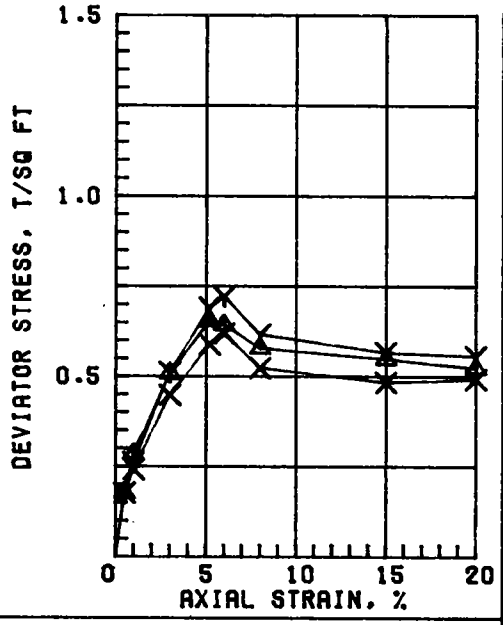


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	347.2	324.6	353.3	
	DRY DENSITY, PCF	15.6	16.5	15.3	
	SATURATION, %	96.6	96.5	96.7	
	VOID RATIO	8.624	8.077	8.766	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.65	0.72	0.62	
TIME TO FAILURE, MIN.		16	20	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 341.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), DARK BROWN

LL 461	PL 254	PI 207	GS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

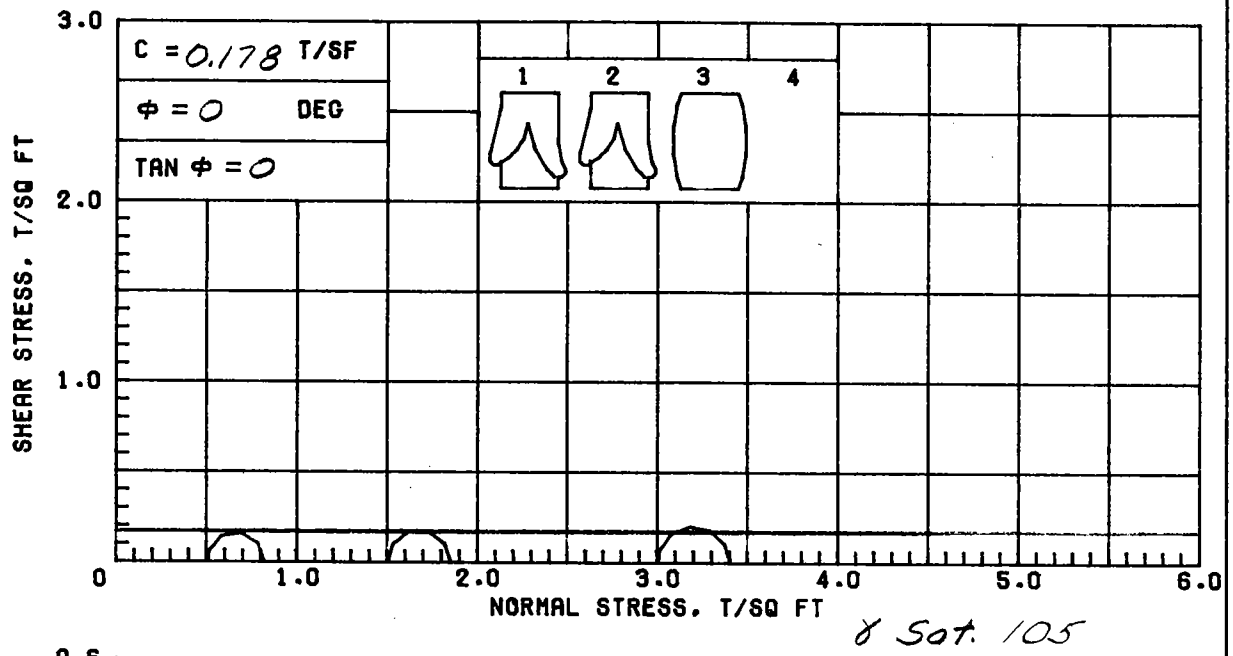
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 17-U | SAMPLE NO. 5-C

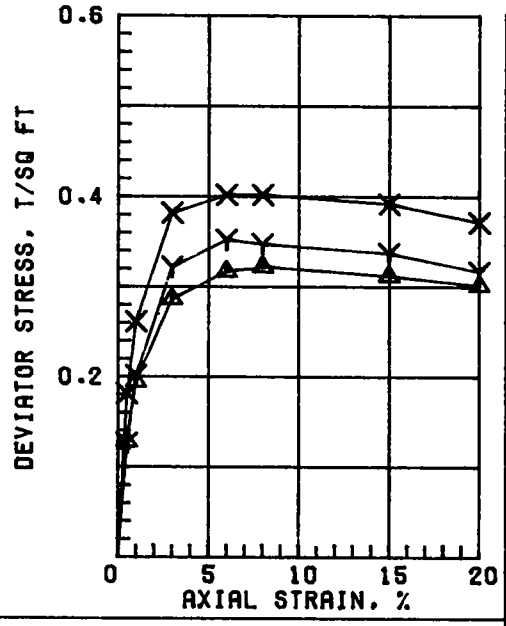
DEPTH/ELEV 17.3/-13.9 | TECH. PJR

LABORATORY USAE WES | DATE 04 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



& Sat. 105



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	58.7	58.0	53.5	
	DRY DENSITY, PCF	65.7	65.9	69.1	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.567	1.559	1.441	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.32	0.35	0.40	
TIME TO FAILURE, MIN.		16	14	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 56.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), DARK GRAY; SILT LENSES; SHELL PARTICLES

LL 60	PL 20	PI 40	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

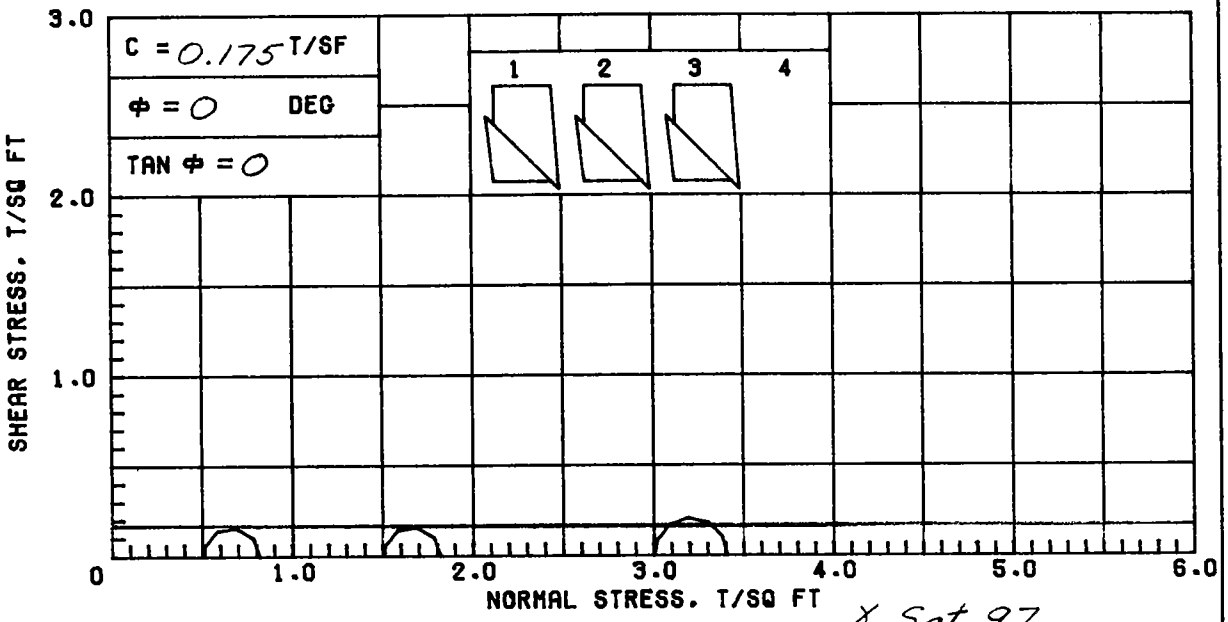
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 17-U | SAMPLE NO. 7-C

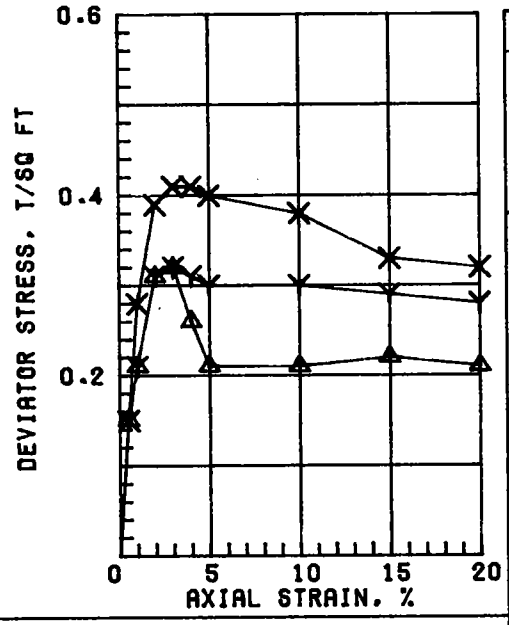
DEPTH/ELEV 25.1/-21.7 | TECH. PJR

LABORATORY USAE WES | DATE 04 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. 97



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	76.4	76.4	76.4	
	DRY DENSITY, PCF	55.2	55.2	55.4	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.053	2.055	2.043	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.32	0.32	0.41	
TIME TO FAILURE, MIN.		6	6	6	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 76.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 98	PL 26	PI 72	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

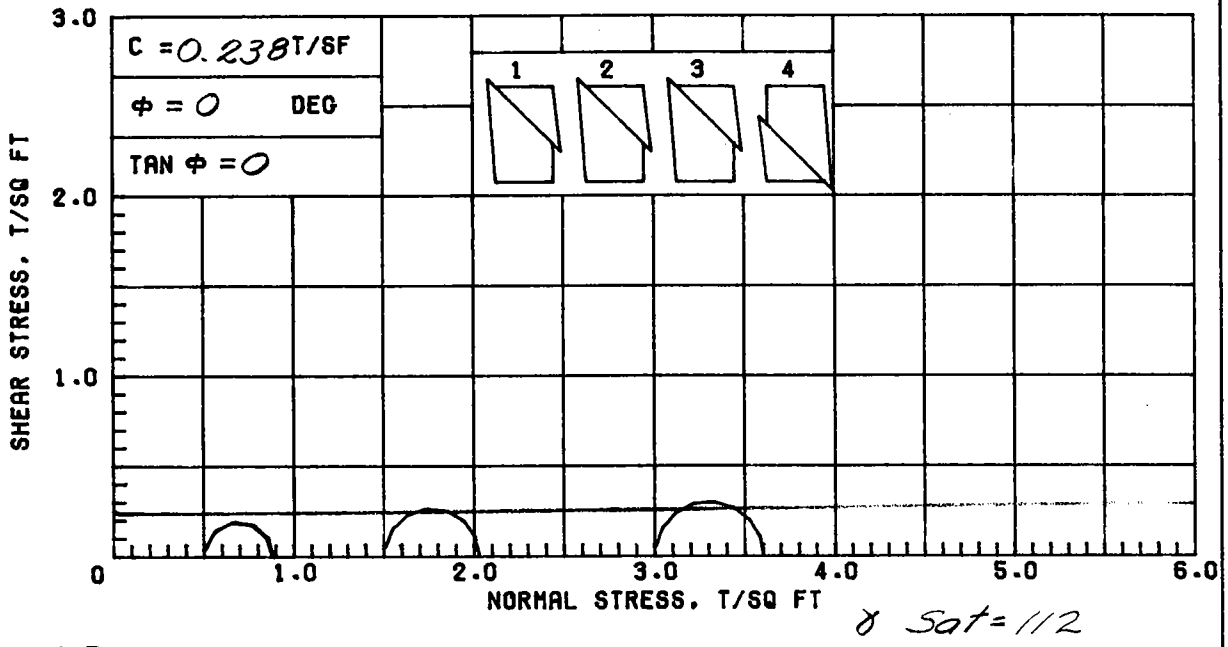
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 17-U | SAMPLE NO. 11-B

DEPTH/ELEV 40.3/-36.9 | TECH. KOC

LABORATORY USAE WES | DATE 04 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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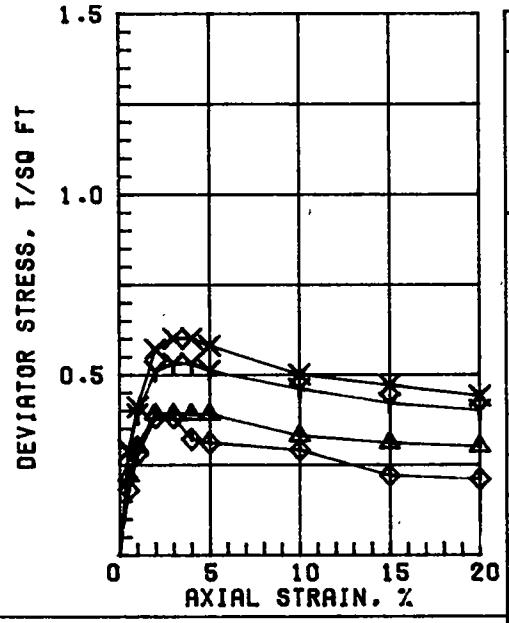


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	48.8	39.8	40.2	43.3	43.0
	DRY DENSITY, PCF	76.0	78.0	78.3	76.1	
	SATURATION, %	100+	92.5	94.2	96.1	
	VOID RATIO	1.219	1.161	1.153	1.216	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.39	0.53	0.60	0.38	
TIME TO FAILURE, MIN.		4	6	6	4	
RATE OF STRAIN INCR,%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS; SHELL PARTICLES

LL 46	PL 15	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

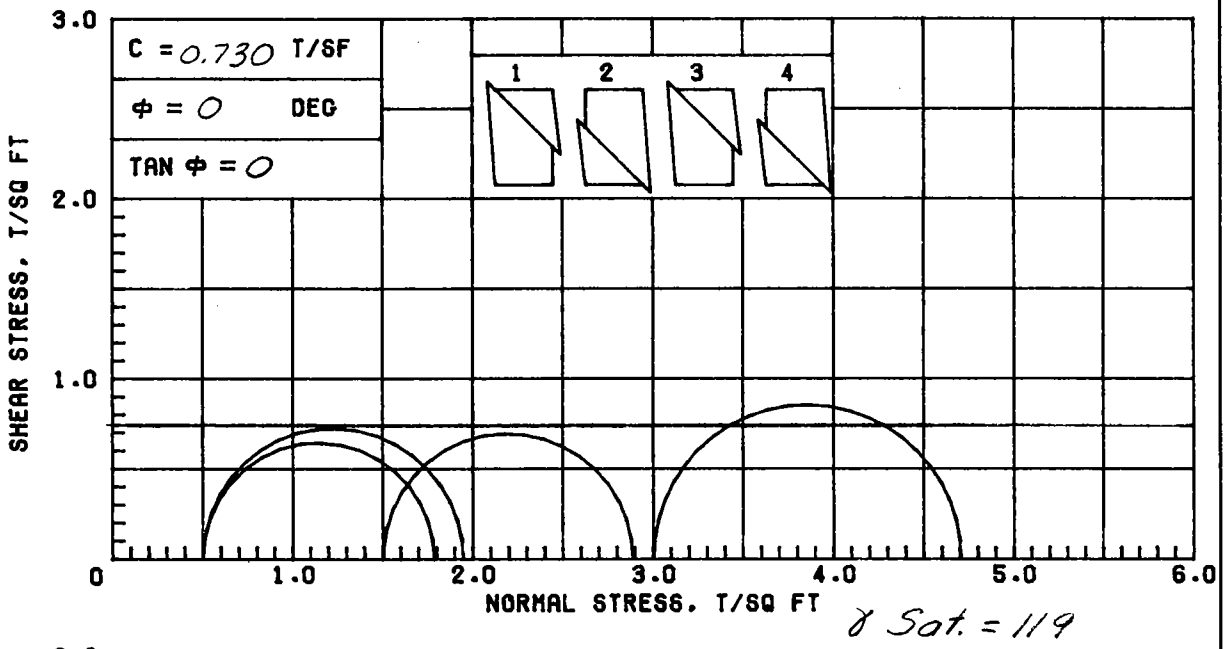
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 17-U | SAMPLE NO. 13-B

DEPTH/ELEV 48/-44.6 | TECH. KOC

LABORATORY USAE WES | DATE 04 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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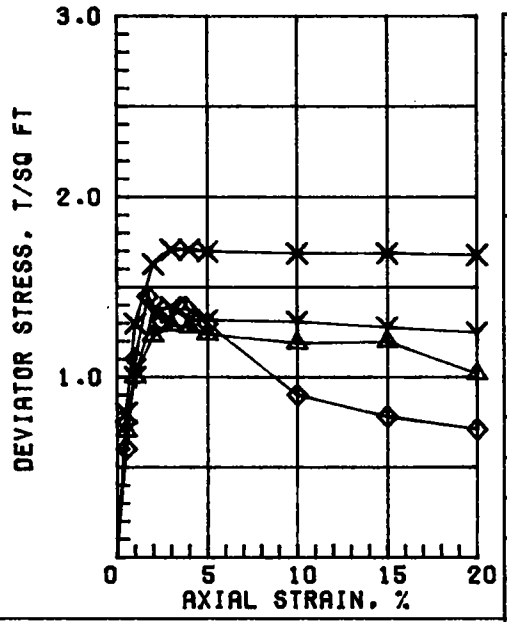


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	31.5	33.8	35.2	34.3	33.7
	DRY DENSITY, PCF	90.3	88.2	87.5	89.6	
	SATURATION, %	98.2	100+	100+	100+	
	VOID RATIO	0.867	0.911	0.926	0.881	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		1.29	1.39	1.71	1.45	
TIME TO FAILURE, MIN.		6	6	6	3	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; SILT POCKETS

LL 72	PL 19	PI 53	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

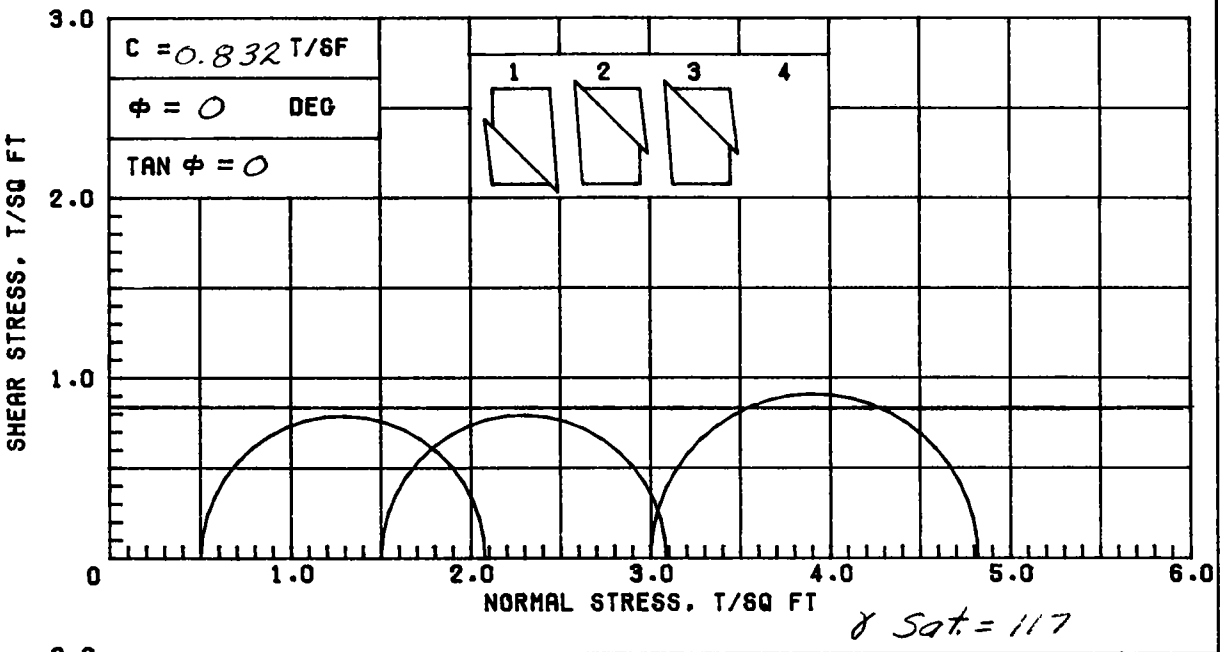
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 17-U | SAMPLE NO. 15-C

DEPTH/ELEV 57.1/-53.7 | TECH. KOC

LABORATORY USAE WES | DATE 07 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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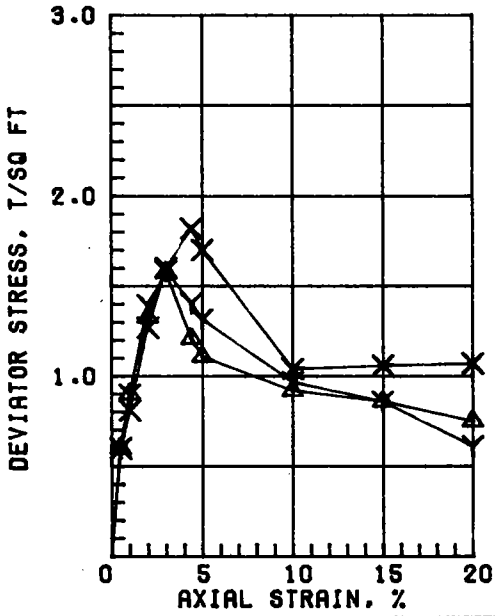


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	34.9	33.7	37.0	
	DRY DENSITY, PCF	86.3	87.9	83.8	
	SATURATION, %	98.9	99.2	98.7	
	VOID RATIO	0.953	0.917	1.012	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.58	1.59	1.82	
TIME TO FAILURE, MIN.		6	6	9	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 35.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; SILT LENSES

LL 72	PL 20	PI 52	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

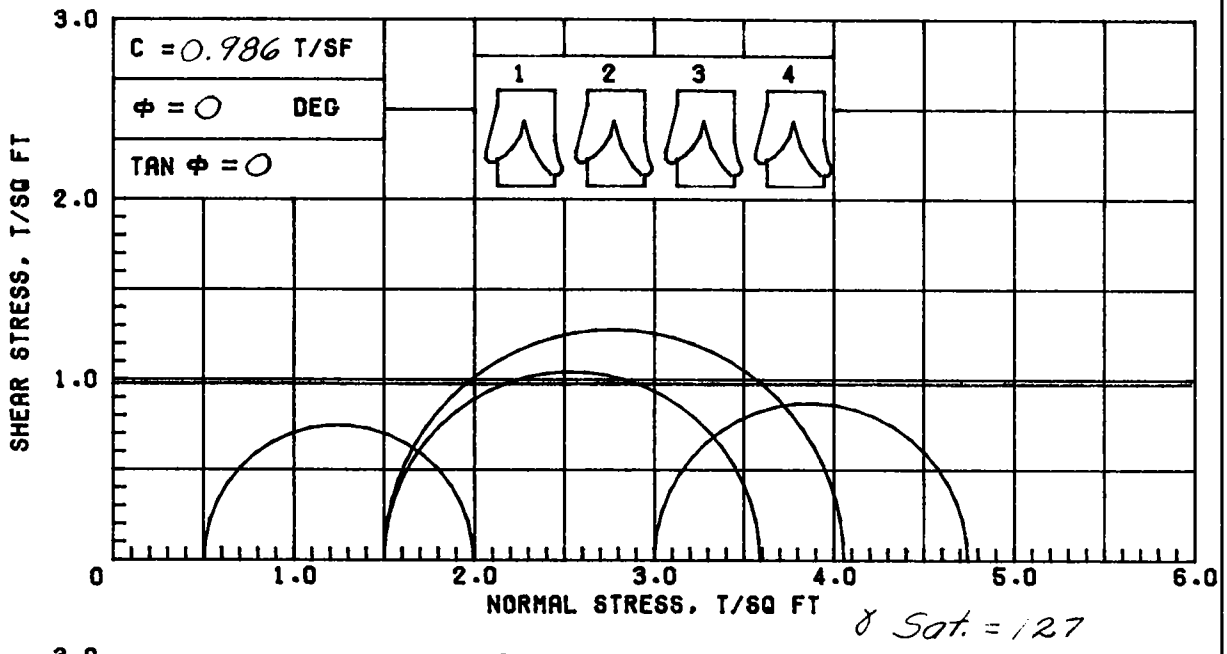
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 17-U | SAMPLE NO. 18-B

DEPTH/ELEV 68.0/-64.6 | TECH. KOC

LABORATORY USAE WES | DATE 07 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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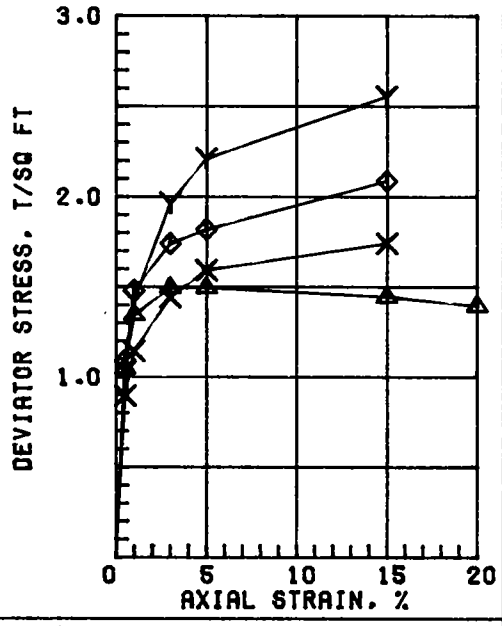


SPECIMEN NO.		△1	Y2	X3	◇4	AVG.
INITIAL	WATER CONTENT, %	24.7	21.2	24.1	23.4	23.4
	DRY DENSITY, PCF	100.9	105.2	101.5	102.1	
	SATURATION, %	99.5	95.0	98.6	97.2	
	VOID RATIO	0.670	0.602	0.660	0.650	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		1.50	2.56	1.74	2.09	
TIME TO FAILURE, MIN.		7	80	45	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.41	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), LIGHT GRAY; SILT POCKETS

LL 31	PL 14	PI 17	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

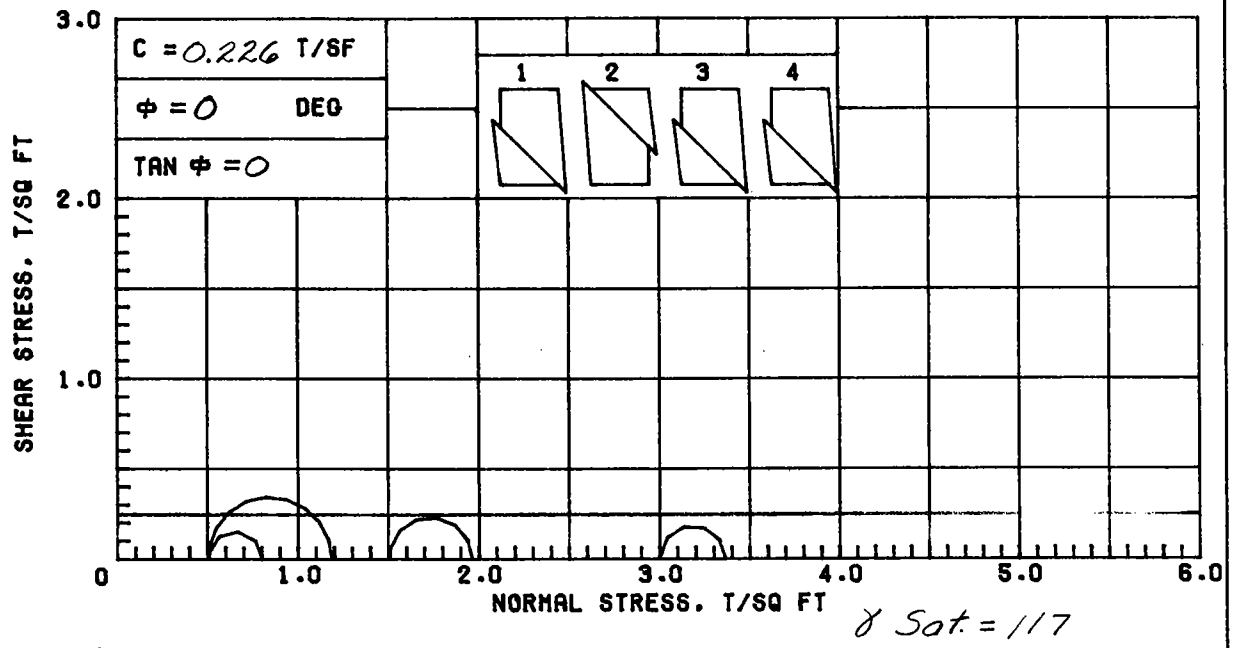
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 18-U | SAMPLE NO. 2-C

DEPTH/ELEV 5.4/3.6 | TECH. PJR

LABORATORY USAE WES | DATE 08 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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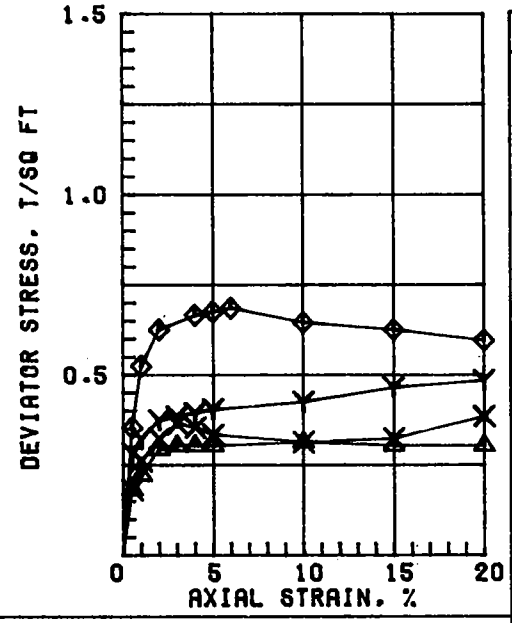


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	35.9	34.3	37.3	31.9	34.9
	DRY DENSITY, PCF	86.3	87.2	83.8	90.9	
	SATURATION, %	100+	99.3	99.6	100+	
	VOID RATIO	0.952	0.932	1.011	0.855	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.30	0.46	0.36	0.69	
TIME TO FAILURE, MIN.		6	30	6	12	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

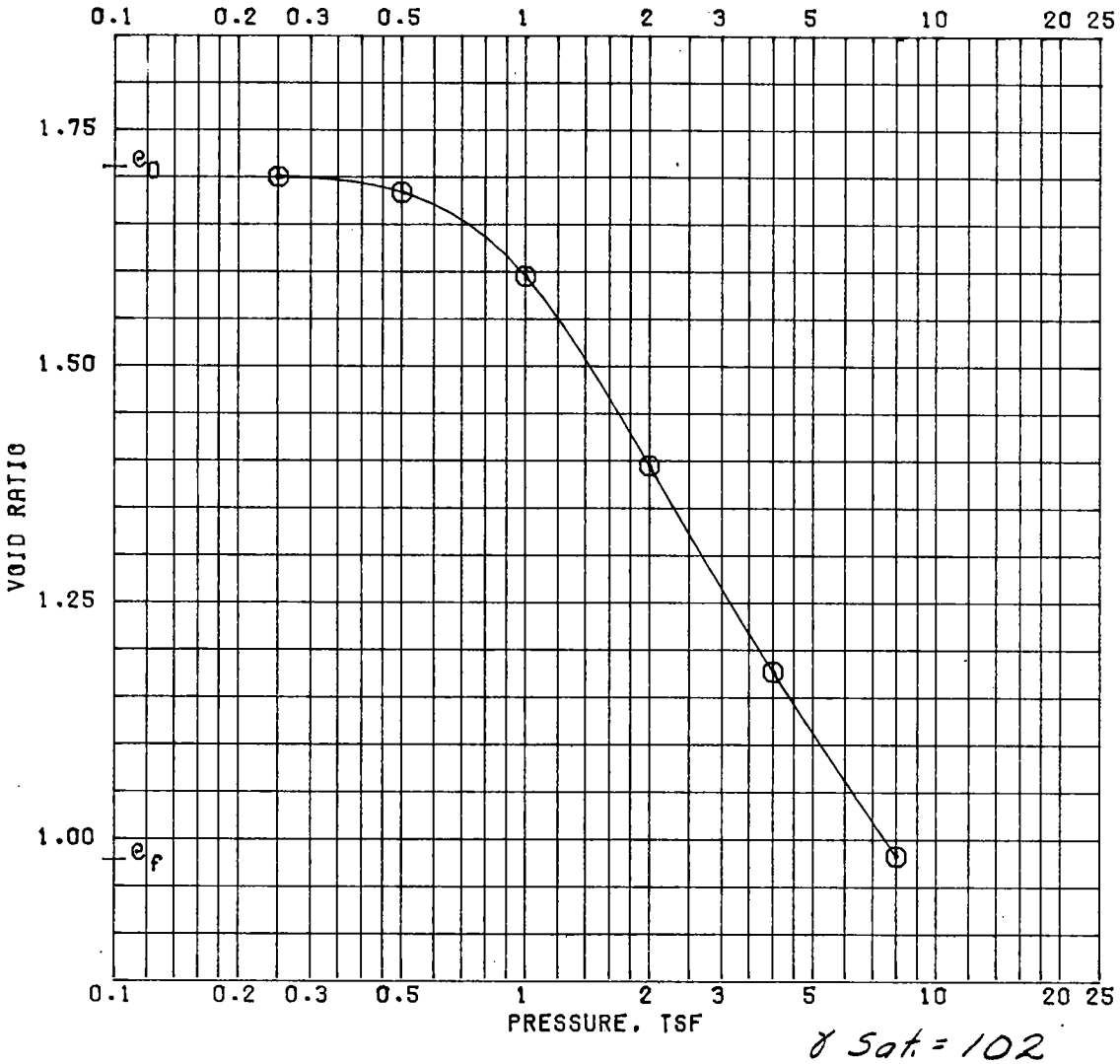
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; SILT LENSES

LL 61	PL 17	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT. LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 18-U	SAMPLE NO. 6-B
	DEPTH/ELEV 20/-11	TECH. KOC
	LABORATORY USAE WES	DATE 08 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 102

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.84	DRY DENSITY, PCF 62.2	85.3
COMPRESSION INDEX 0.63	SATURATION, % 98.3	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO 1.709	0.976
DIA. IN 4.44 HT. IN 1.115	BACK PRESSURE, TSF	

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 84 PL 22 PI 62

GS 2.70 (EST) D_{10}

PROJECT LK PONT LA & VIC JEFFERSON PARISH & ST CHARLES PARISH

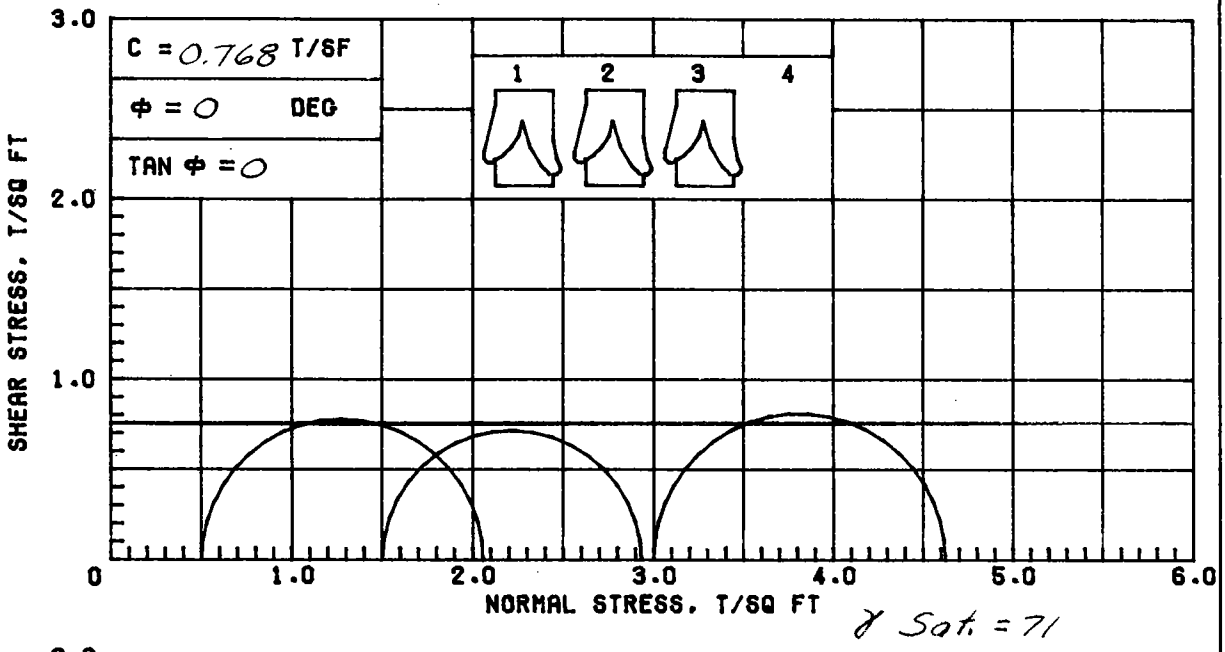
REMARKS

BORING NO. 18-U SAMPLE NO. 6-C

DEPTH/ELEV 21.4/-12.6 DATE 20 DEC 84

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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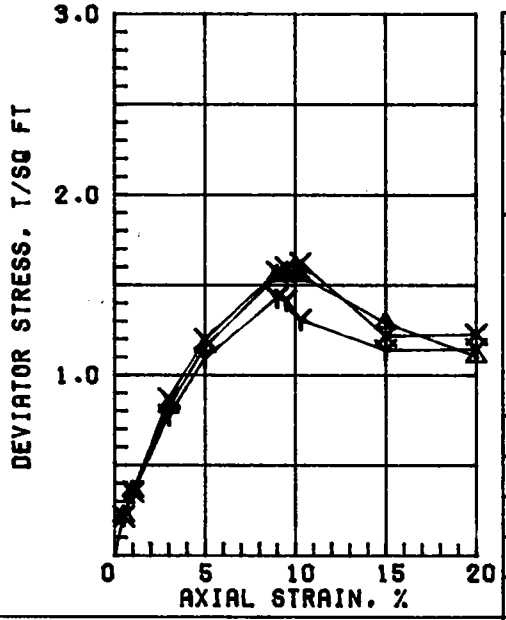


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	337.4	335.5	336.0	
	DRY DENSITY, PCF	15.4	15.5	15.5	
	SATURATION, %	93.0	92.7	92.8	
	VOID RATIO	8.706	8.687	8.692	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.56	1.43	1.62	
TIME TO FAILURE, MIN.		19	25	28	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.41	1.41	1.41	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

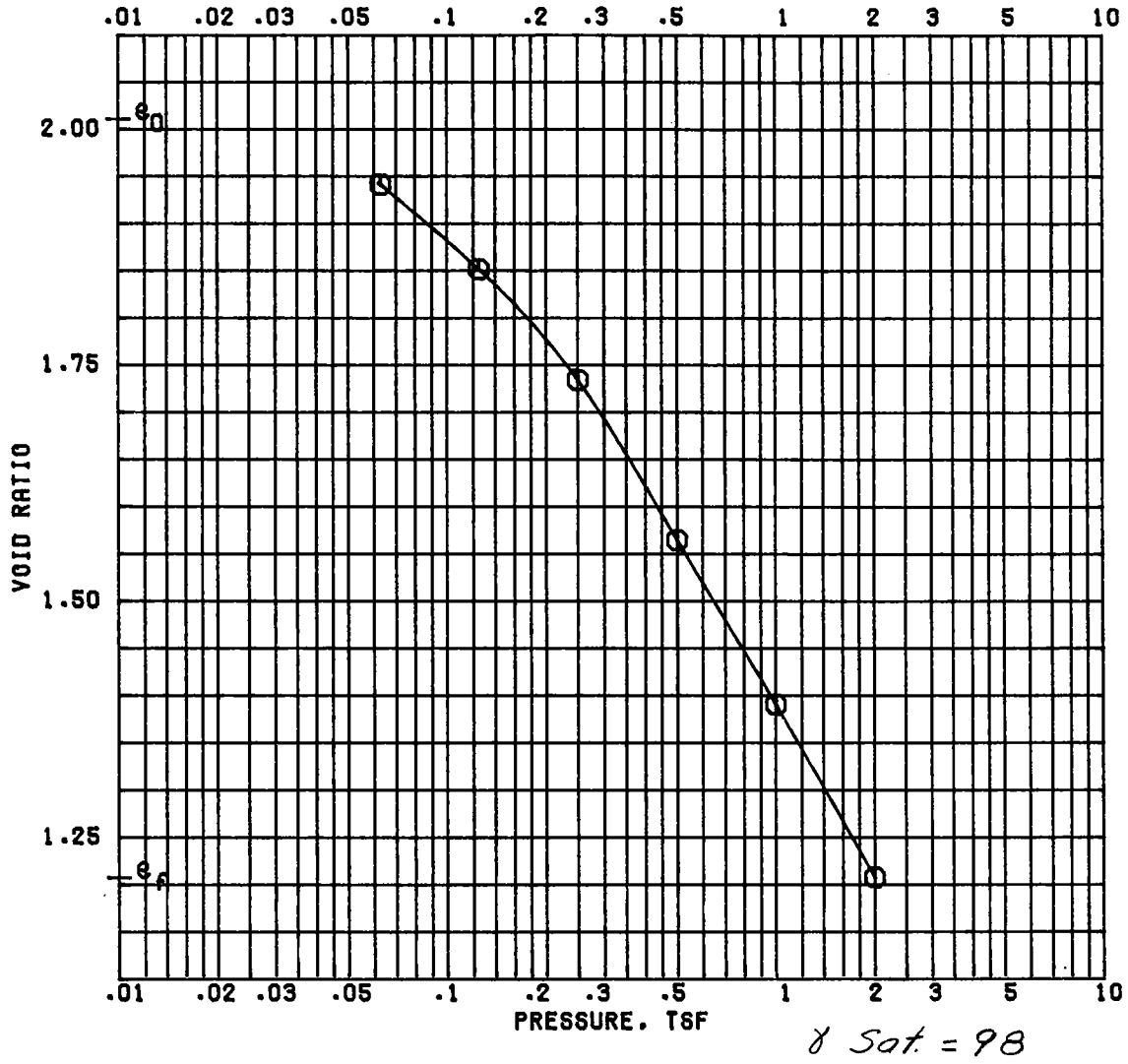
Avg. 336.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), DARK BROWN; ROOTLETS

LL 456	PL 356	PI 100	OS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 18-U	SAMPLE NO. 7-C
	DEPTH/ELEV 24.9/-15.9	TECH. PJR
	LABORATORY USAE WES	DATE 09 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 98

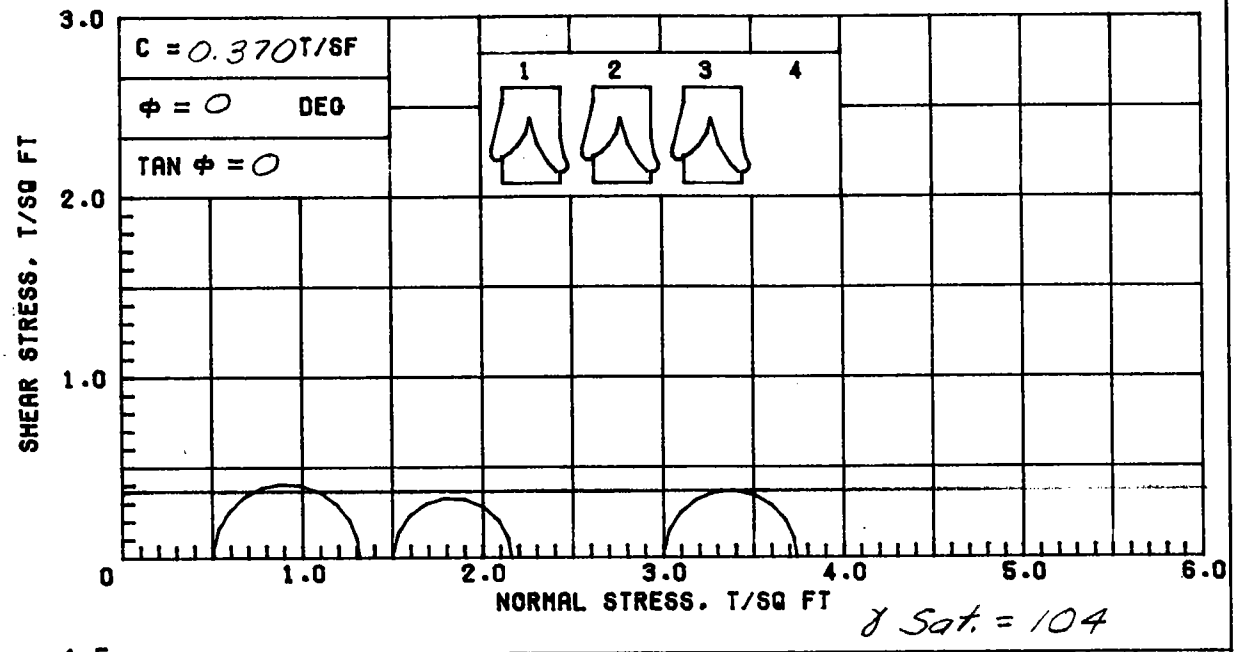
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	73.0	44.6
PRECONSOL. PRESSURE, TSF	0.248	DRY DENSITY, PCF	56.0	76.4
COMPRESSION INDEX	0.58	SATURATION, %	98.1	100.0
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	2.009	1.206
DIA. IN 4.44	HT. IN 1.121	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 77	PL 20	PI 57	PROJECT LK PONT LA & VIC JEFFERSON
GS 2.70 (EST)	D_{10}		PARISH & ST CHARLES PARISH
REMARKS		BORING NO. 18-U	SAMPLE NO. 9-B
		DEPTH/ELEV 32.0/-23.0	DATE 02 JAN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



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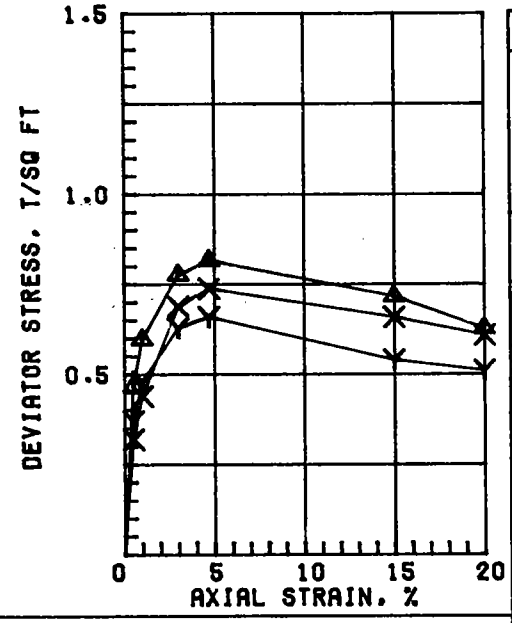


	SPECIMEN NO.	Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	57.8	58.7	56.7		57.7
	DRY DENSITY, PCF	66.0	65.7	66.6		
	SATURATION, %	100+	100+	100+		
	VOID RATIO	1.555	1.565	1.530		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.82	0.66	0.74		
TIME TO FAILURE, MIN.		11	20	17		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 79	PL 24	PI 55	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

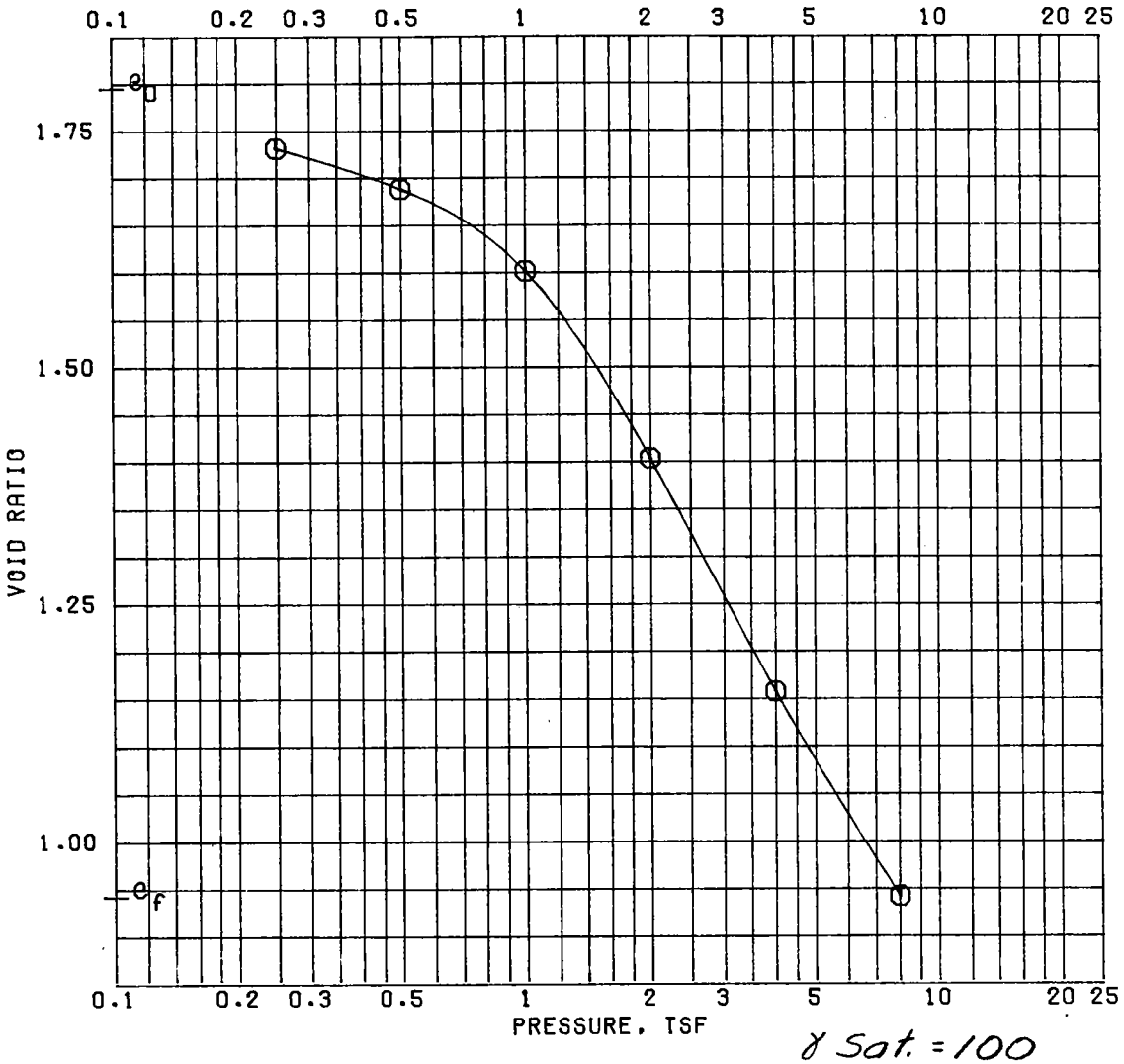
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 18-U | SAMPLE NO. 10-B

DEPTH/ELEV 36.5/-27.5 | TECH. PJR

LABORATORY USAE WES | DATE 09 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 100

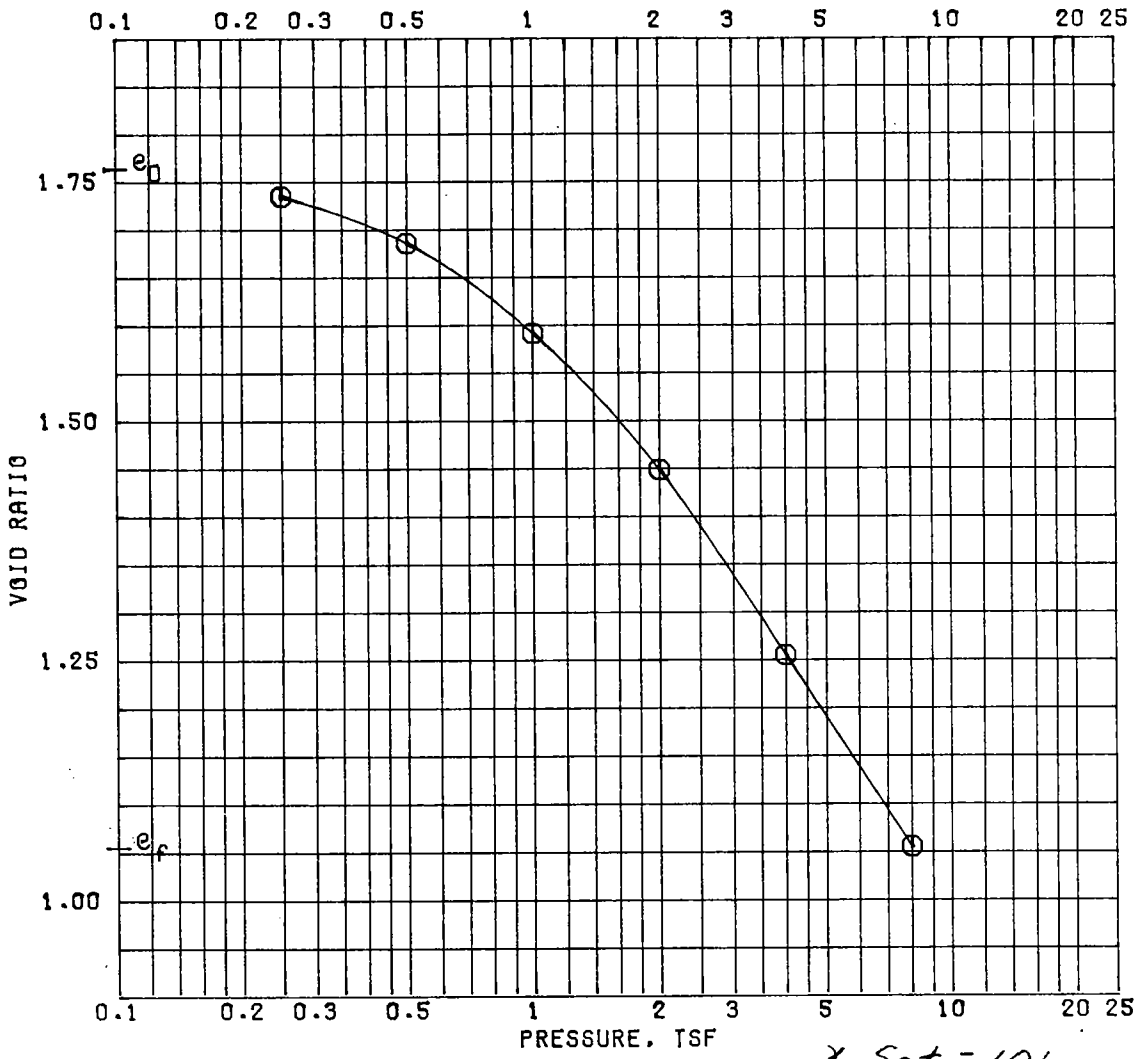
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	64.0	40.4
PRECONSOL. PRESSURE, TSF	0.96	DRY DENSITY, PCF	60.3	86.9
COMPRESSION INDEX	0.79	SATURATION, %	96.3	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.793	0.941
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 83	PL 22	PI 61	PROJECT LAKE PONT., LA. & VIC., JEFFERSON
GS 2.70 (EST)	D_{10}		PARISH & ST. CHARLES PARISH
REMARKS		BORING NO. 18-U	SAMPLE NO. 11-C
		DEPTH/ELEV 41.0/-32	DATE 20 DEC 84

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. = 101

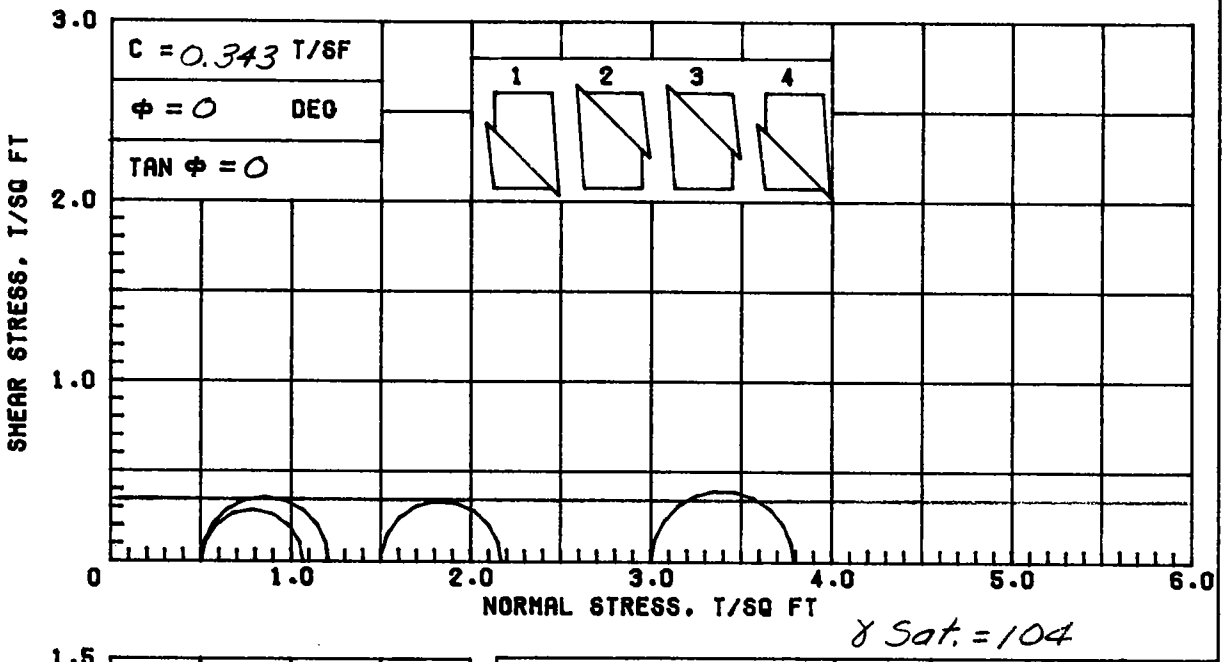
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	64.4	40.3
PRECONSOL. PRESSURE, TSF	0.78	DRY DENSITY, PCF	61.0	82.1
COMPRESSION INDEX	0.60	SATURATION, %	98.6	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.762	1.054
DIA. IN 4.44	HT. IN 1.126	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 86	PL 23	PI 63	PROJECT LK PONT LA & VIC JEFFERSON
GS 2.70 (EST)	D_{10}		PARISH & ST CHARLES PARISH
REMARKS		BORING NO. 18-U	SAMPLE NO. 13-C
		DEPTH/ELEV 48.7/-39.7	DATE 26 DEC 84

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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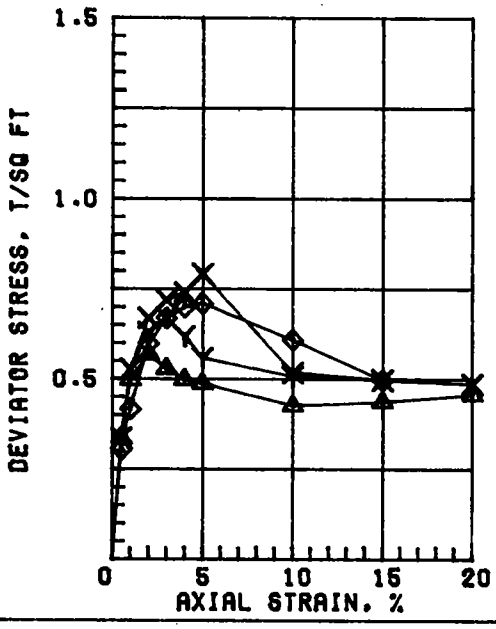


SPECIMEN NO.		▲1	Y2	X3	◆4	Avg.
INITIAL	WATER CONTENT, %	59.7	60.1	60.0	59.7	59.9
	DRY DENSITY, PCF	64.8	65.0	65.1	65.7	
	SATURATION, %	100+	100+	100+	100+	
	VOID RATIO	1.602	1.593	1.590	1.567	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.57	0.67	0.79	0.71	
TIME TO FAILURE, MIN.		4	6	10	10	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 88	PL 27	PI 61	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

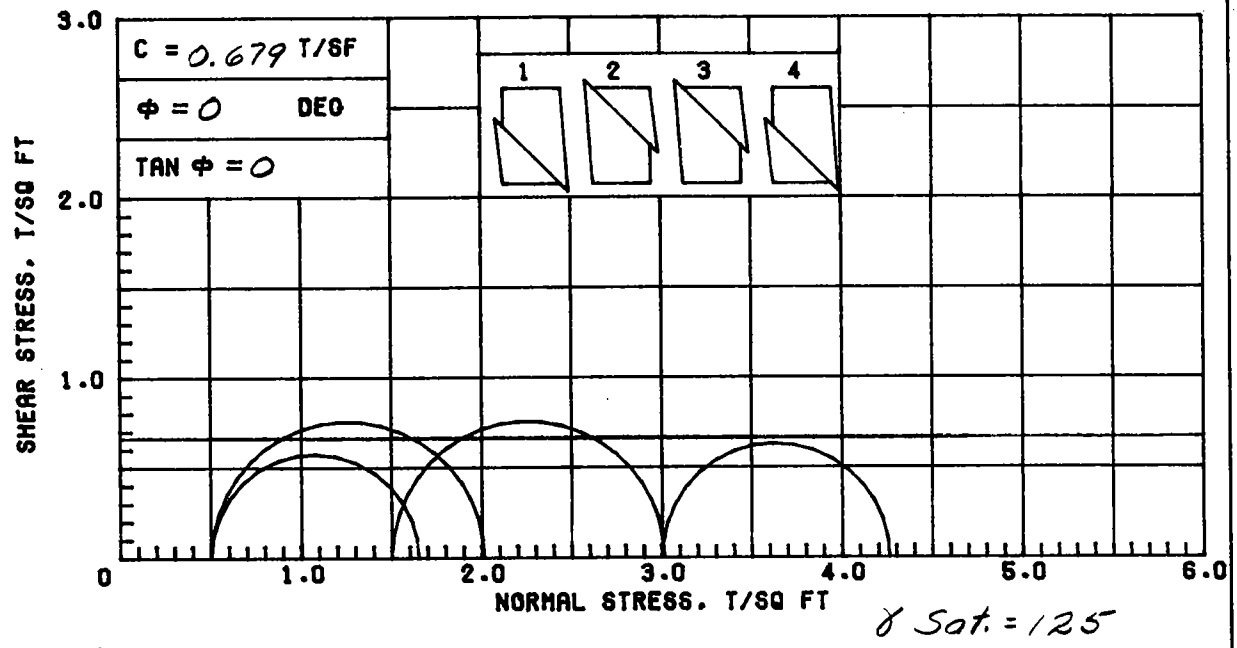
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 18-U | SAMPLE NO. 14-B

DEPTH/ELEV 52/-43 | TECH. KOC

LABORATORY USAE WES | DATE 09 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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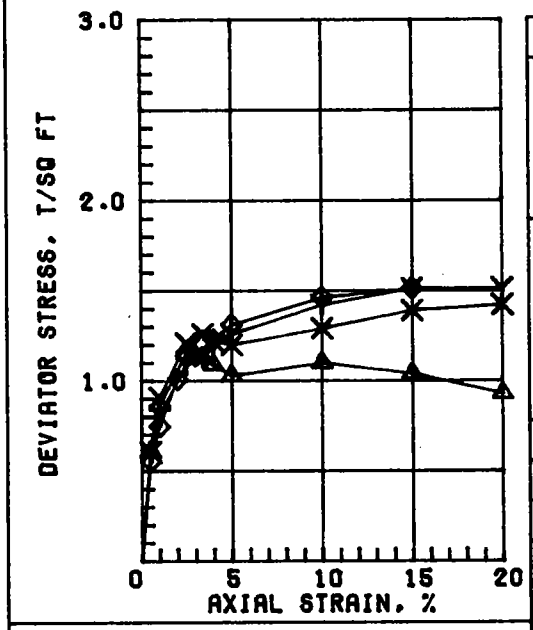


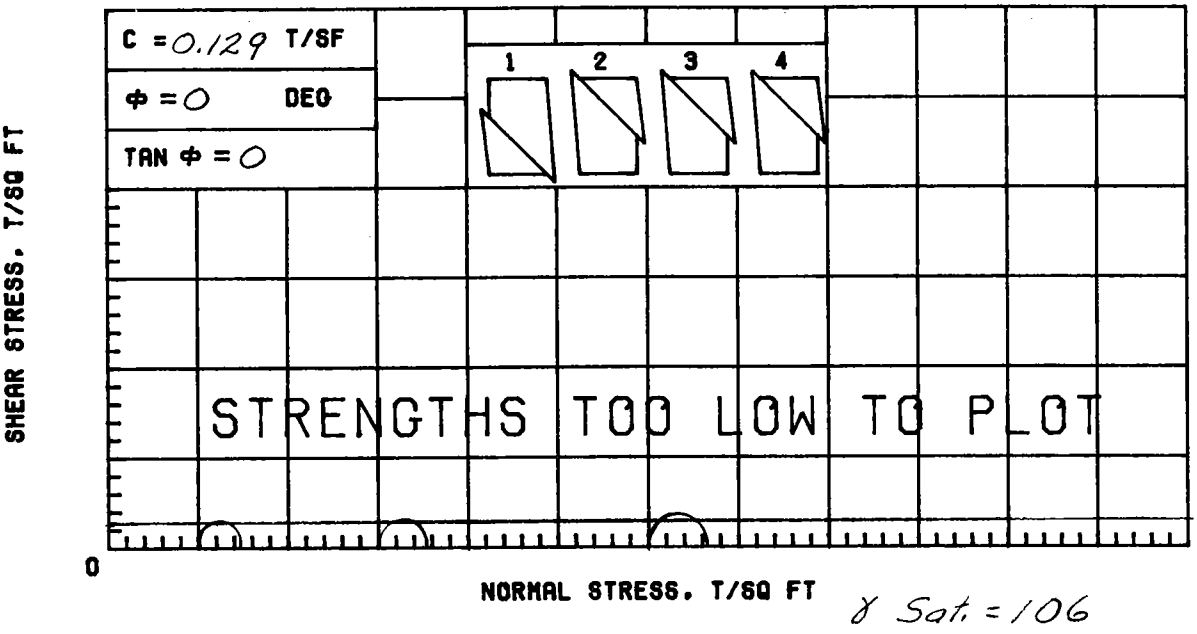
SPECIMEN NO.		▲1	Y2	X3	◆4	Avg.
INITIAL	WATER CONTENT, %	27.0	24.5	26.6	26.2	26.1
	DRY DENSITY, PCF	97.9	100.2	98.5	99.5	
	SATURATION, %	100+	96.9	100+	100+	
	VOID RATIO	0.721	0.683	0.711	0.694	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		1.15	1.51	1.26	1.51	
TIME TO FAILURE, MIN.		5	30	7	30	
RATE OF STRAIN INCR.%					15	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY & BROWN MOTTLED; SILT LENSES

LL 47	PL 15	PI 32	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 18-U	SAMPLE NO. 17-B
	DEPTH/ELEV 64/-55	TECH. KOC
	LABORATORY USAE WES	DATE 08 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	



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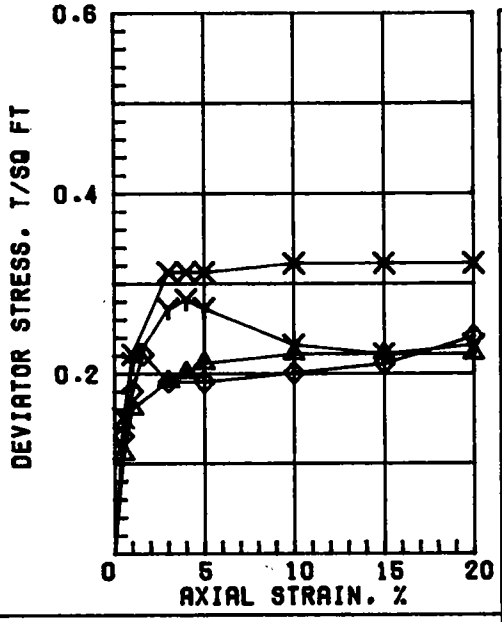


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	54.1	51.7	53.4	51.1	52.6
	DRY DENSITY, PCF	68.0	69.1	68.2	70.3	
	SATURATION, %	98.8	97.1	98.0	98.8	
	VOID RATIO	1.478	1.438	1.471	1.396	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.22	0.28	0.31	0.22	
TIME TO FAILURE, MIN.		20	8	18	10	
RATE OF STRAIN INCR.%				6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

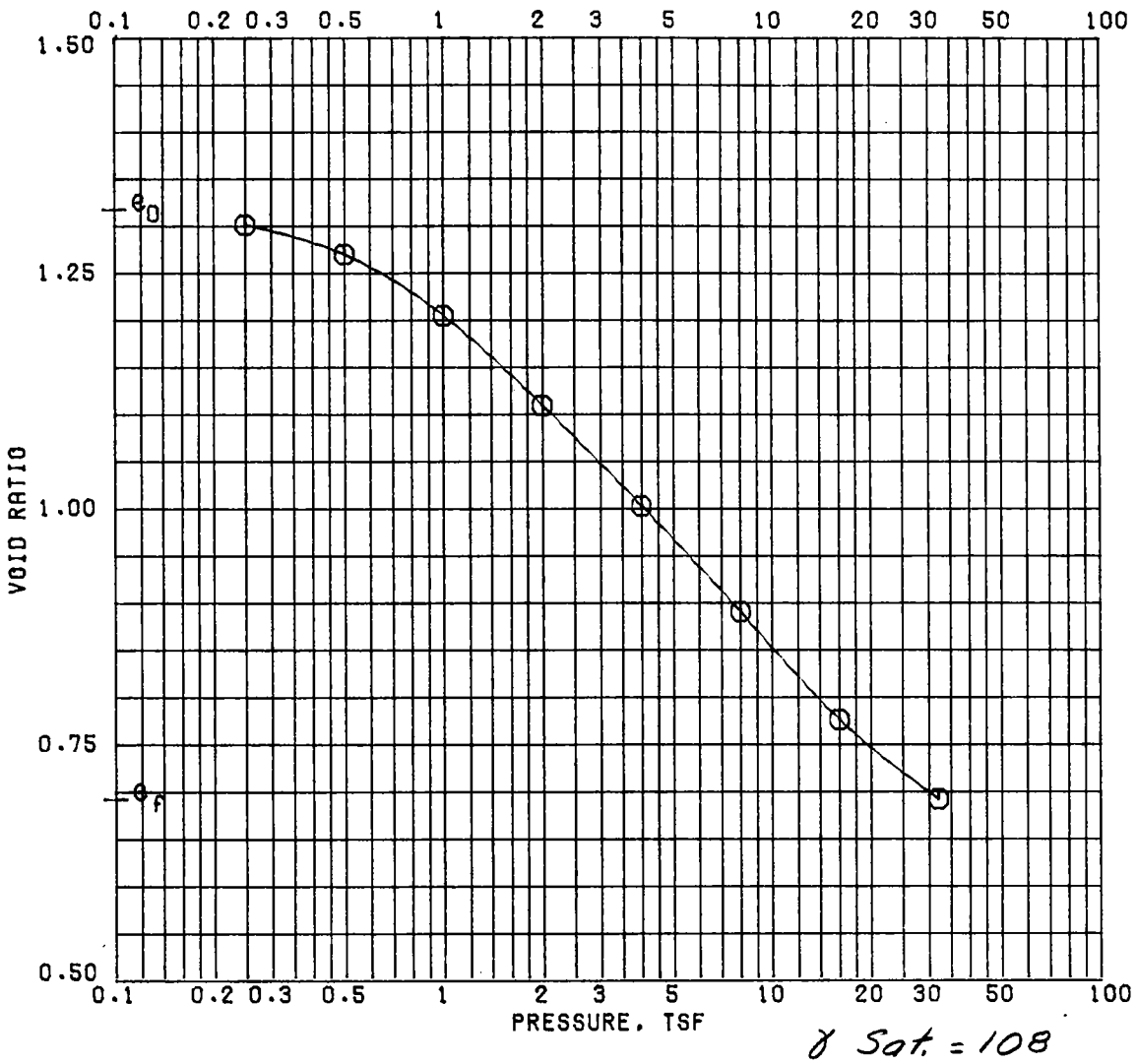
LL 88	PL 26	PI 62	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 19-U | SAMPLE NO. 2-B
DEPTH/ELEV 4.5/-0.5 | TECH. KOC
LABORATORY USAE WES | DATE 08 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 108

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.9	
COMPRESSION INDEX	0.35	
TYPE SPECIMEN	UNDISTURBED	
DIA. IN 4.44	HT. IN 1.135	
WATER CONTENT, %	43.5	26.7
DRY DENSITY, PCF	72.8	99.7
SATURATION, %	89.3	100 +
VOID RATIO	1.316	0.690
BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; DECAYED WOOD

LL 80	PL 22.	PI 58
GS 2.70 (EST)	D_{10}	

PROJECT LK. PONT. & VIC. HURR. PROT.

JEFFERSON & ST. CHARLES PARISH

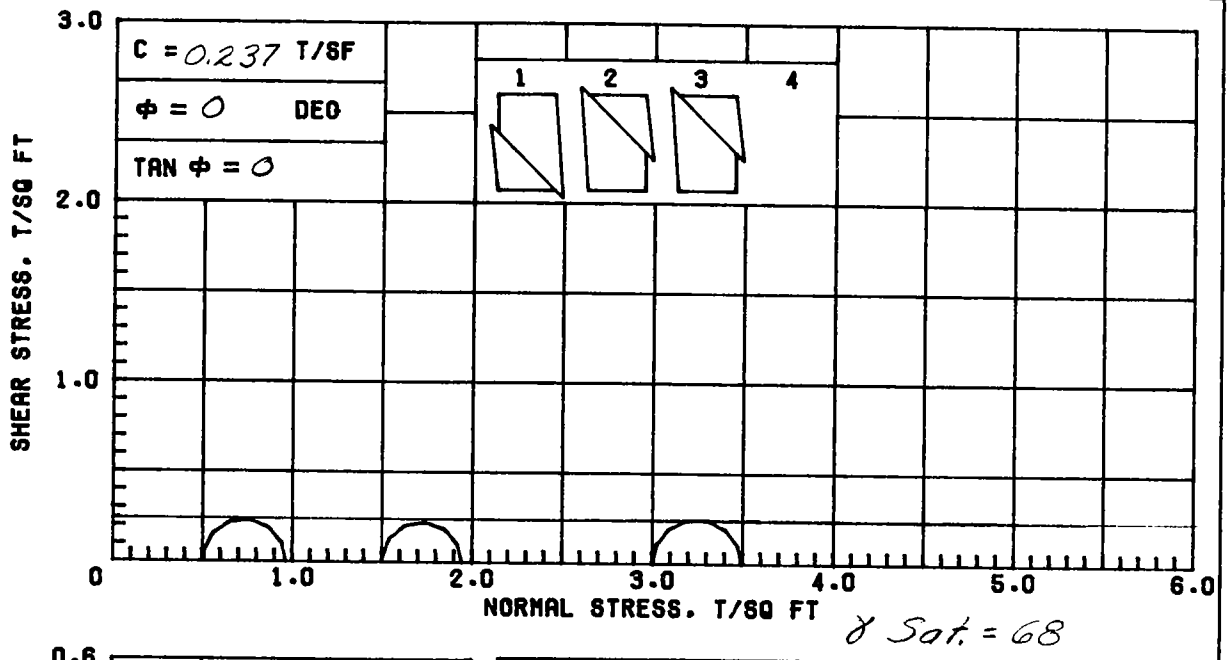
REMARKS

BORING NO. 19-U SAMPLE NO. 3-B

DEPTH/ELEV 8.1/-4.1 DATE 30 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 10



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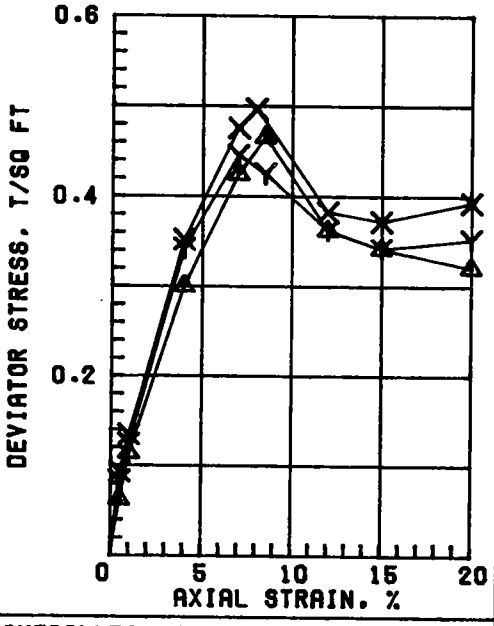


	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	422.3	428.3	412.7	
	DRY DENSITY, PCF	12.9	12.8	13.3	
	SATURATION, %	99.4	99.6	100+	
	VOID RATIO	7.219	7.311	6.961	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.47	0.45	0.50	
TIME TO FAILURE, MIN.		17	14	16	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 421.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), BLACK

LL 544	PL 311	PI 233	OS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.

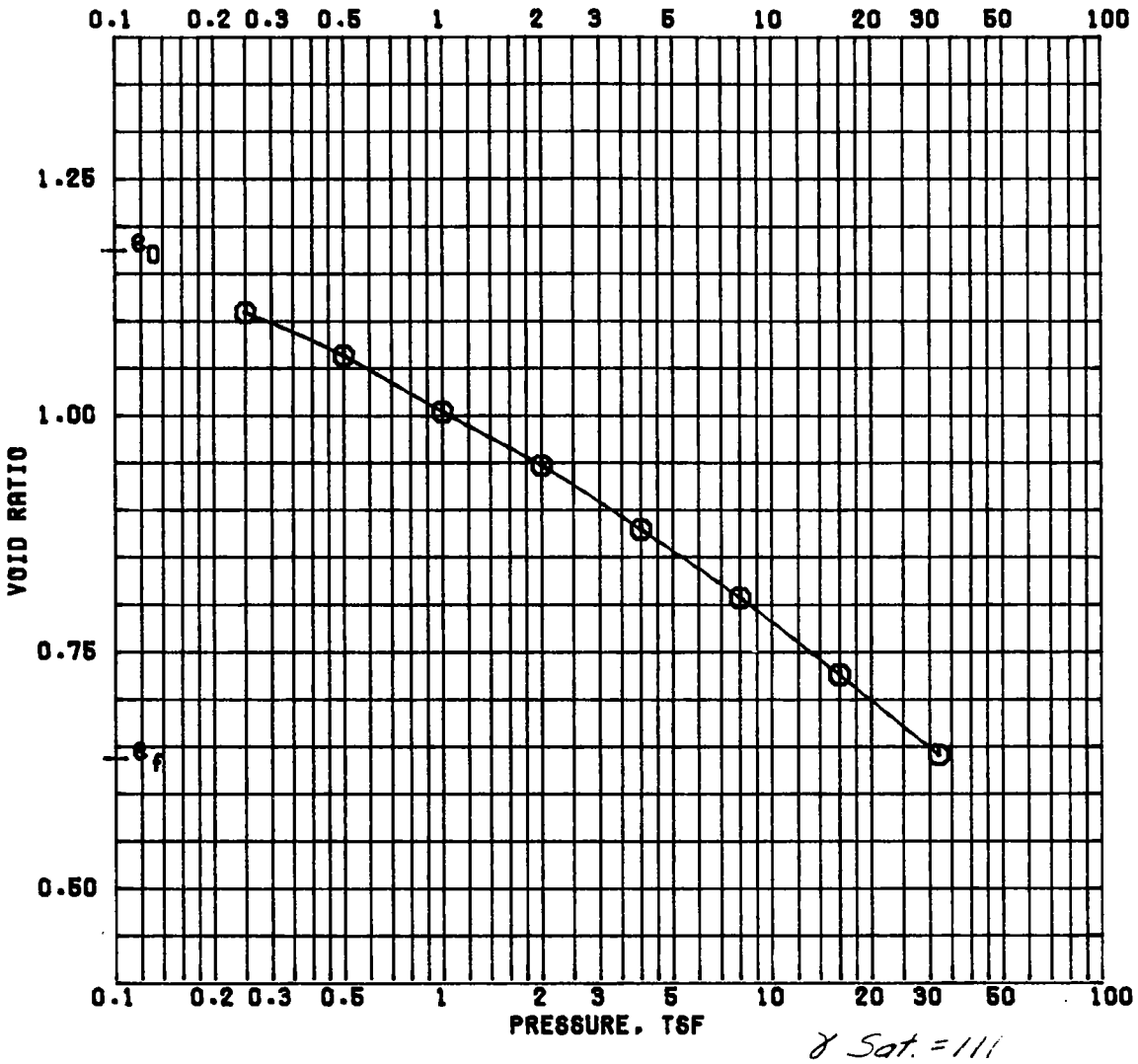
JEFFERSON & ST. CHARLES PARISH

BORING NO. 19-U | SAMPLE NO. 5-B

DEPTH/ELEV 16/-12 | TECH. LRC

LABORATORY USAE WES | DATE 08 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 111

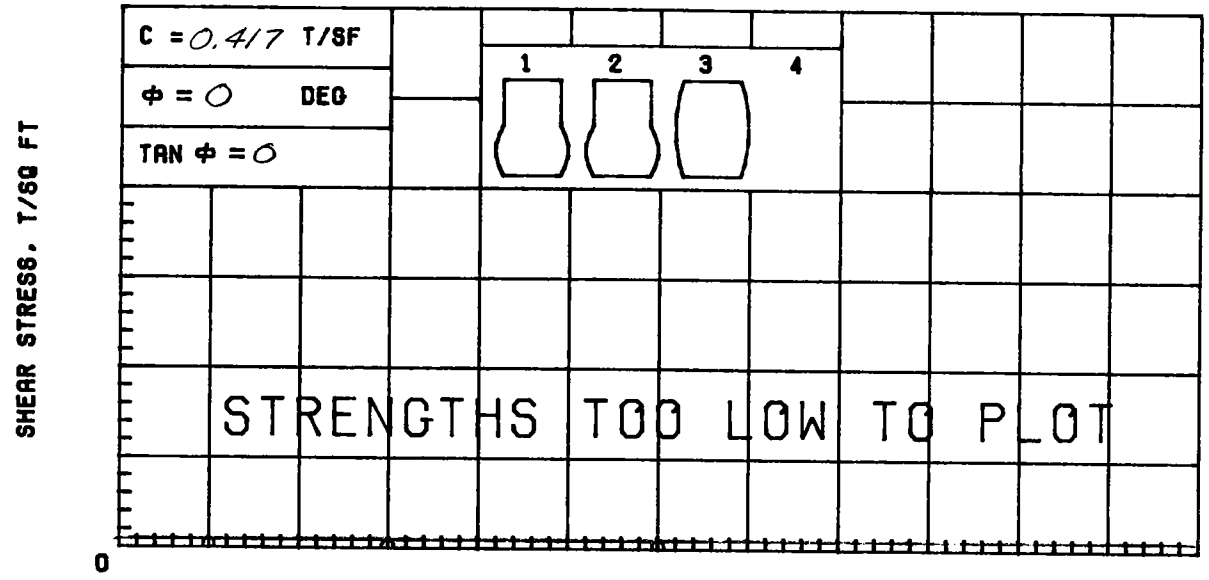
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.55		
COMPRESSION INDEX 0.19		
TYPE SPECIMEN UNDISTURBED		
DIA. IN 4.44 HT. IN 1.099		
CLASSIFICATION CLAY (CL), GRAY		
LL 44 PL 20 PI 24		
GS 2.70 (EST) D_{10}		
REMARKS		

	BEFORE TEST	AFTER TEST
WATER CONTENT, %	41.2	23.7
DRY DENSITY, PCF	77.6	103.0
SATURATION, %	94.9	100 +
VOID RATIO	1.173	0.636
BACK PRESSURE, TSF		

PROJECT LAKE PONT. LA. & VIC. HURR. PROT
JEFFERSON & ST. CHARLES PARISH
BORING NO. 19-U SAMPLE NO. 7-B
DEPTH/ELEV 23.7/-19.7 DATE 30 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 10



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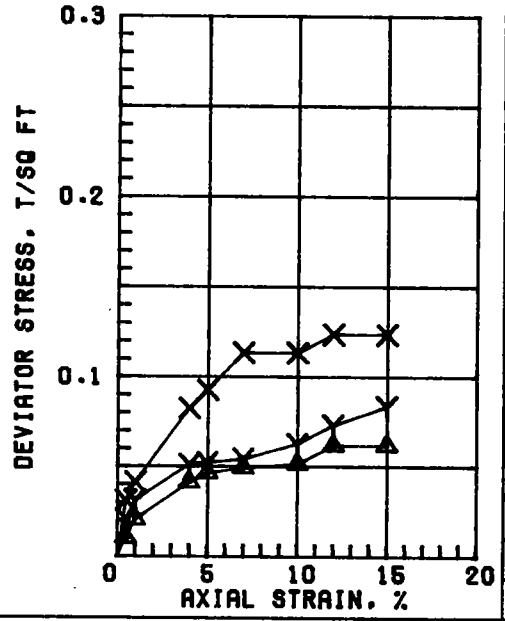


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	75.0	75.8	68.6	
	DRY DENSITY, PCF	56.2	56.0	58.9	
	SATURATION, %	100+	100+	99.6	
	VOID RATIO	1.997	2.011	1.860	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.06	0.08	0.11	
TIME TO FAILURE, MIN.		23	29	14	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 73.

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 77	PL 20	PI 57	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

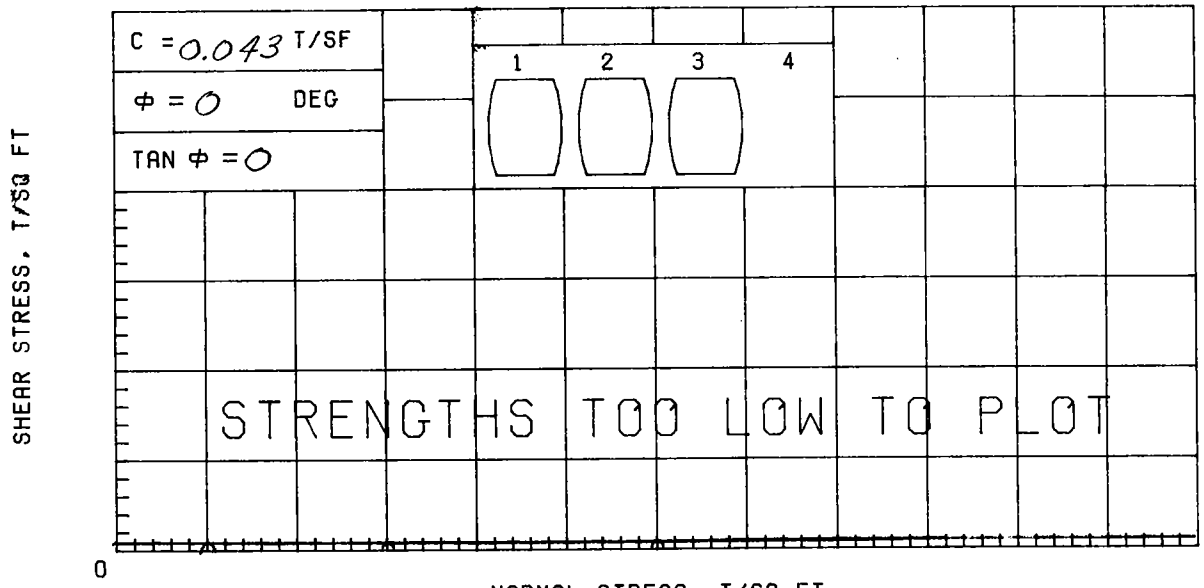
PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 19-U | SAMPLE NO. 7-C

DEPTH/ELEV 24.9/-20.9 | TECH. LRC

LABORATORY USAE WES | DATE 08 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



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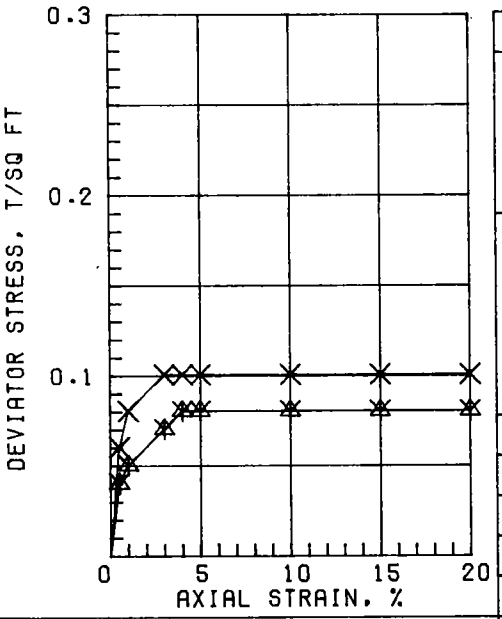


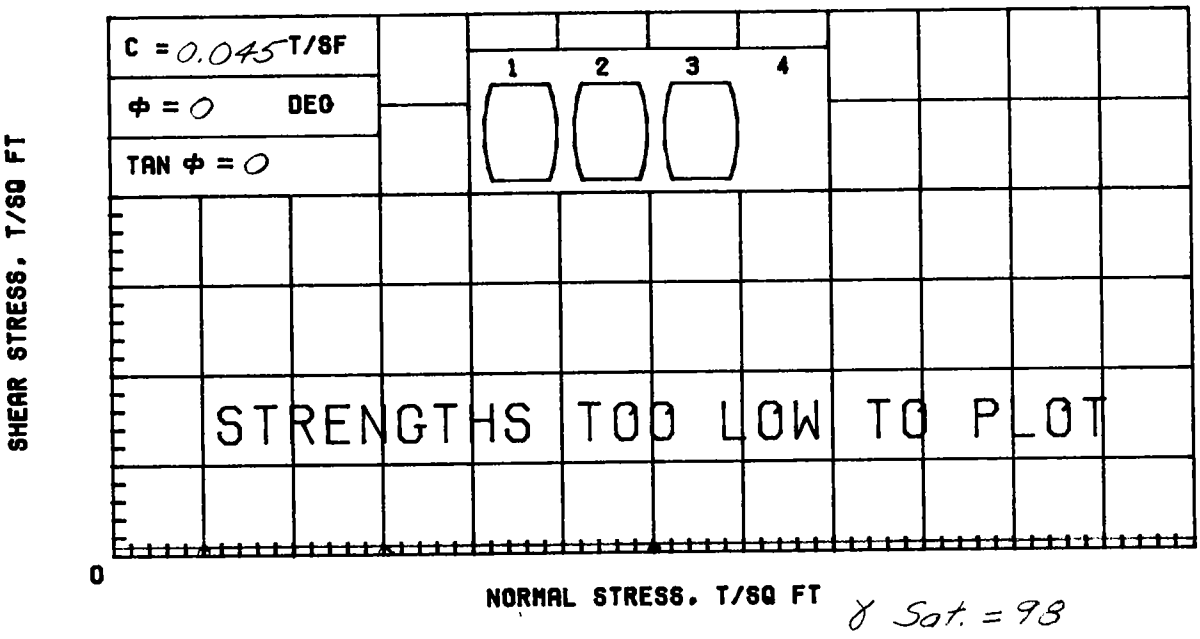
SPECIMEN NO.		△1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	71.3	69.5	70.3		70.4
	DRY DENSITY, PCF	57.0	58.5	57.2		
	SATURATION, %	98.3	99.7	97.4		
	VOID RATIO	1.958	1.882	1.948		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.08	0.08	0.10		
TIME TO FAILURE, MIN.		8	8	6		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.40	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

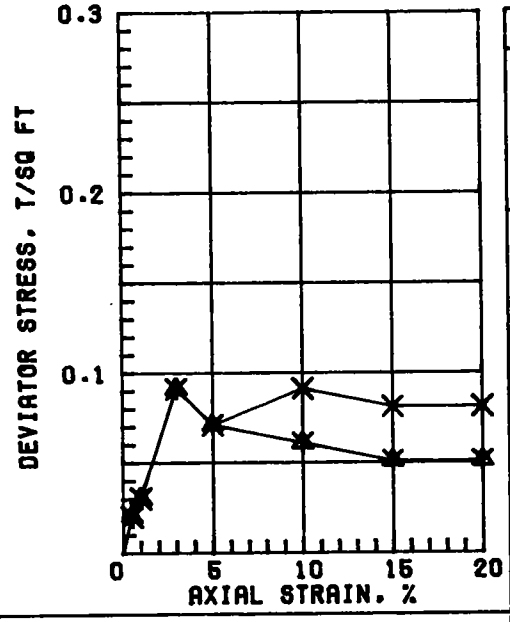
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 86	PL 25	PI 61	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 19-U	SAMPLE NO. 8-B
	DEPTH/ELEV 32/-28	TECH. KOC
	LABORATORY USAE WES	DATE 24 OCT 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 98



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	69.3	72.5	73.0	
	DRY DENSITY, PCF	57.7	56.8	55.9	
	SATURATION, %	97.3	99.4	97.9	
	VOID RATIO	1.923	1.970	2.013	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.09	0.09	0.09	
TIME TO FAILURE, MIN.		6	18	18	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 71.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

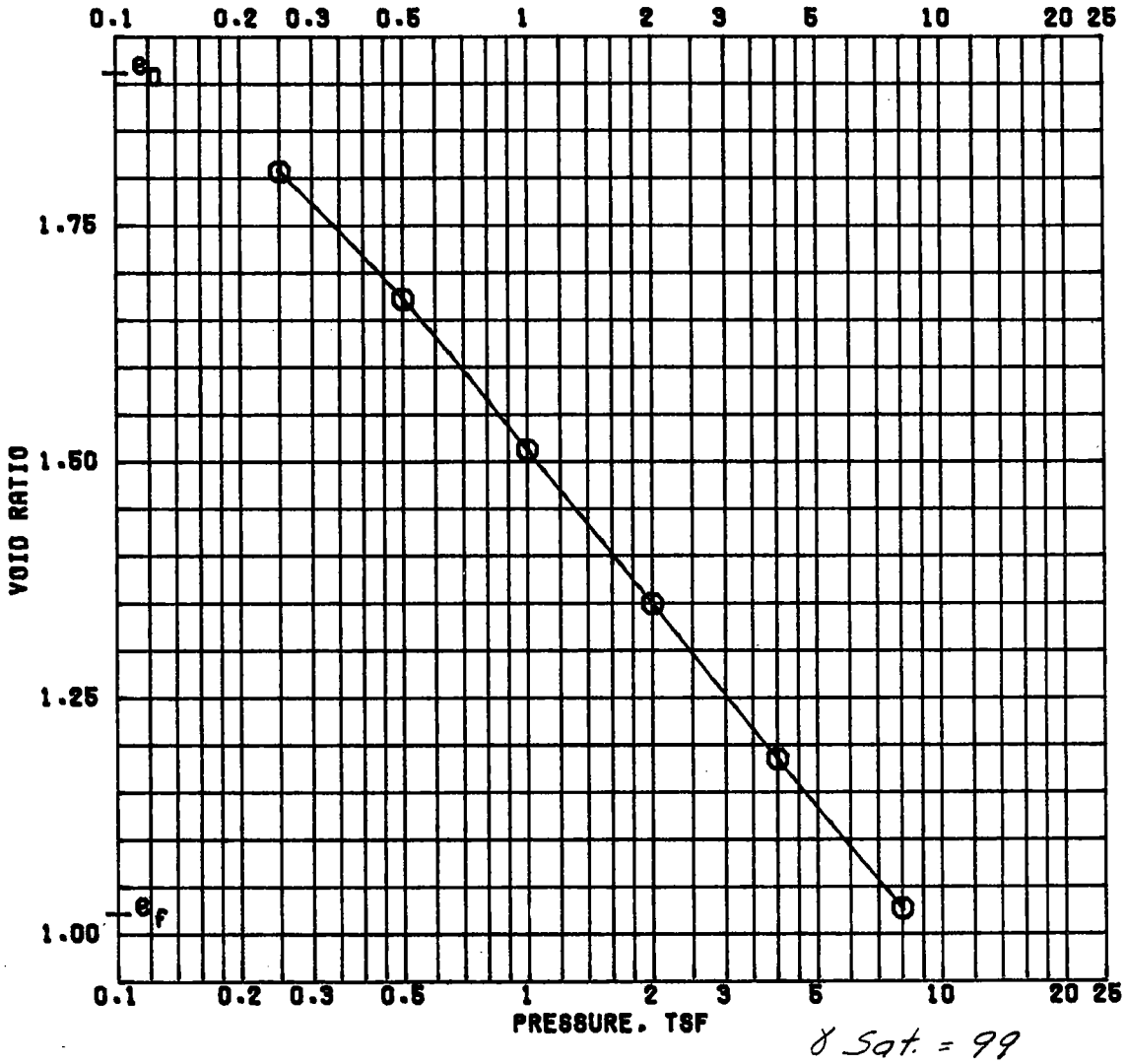
LL 89	PL 22	PI 67	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 19-U | SAMPLE NO. 9-B
DEPTH/ELEV 36.9/-31.9 | TECH. KOC
LABORATORY USAE WES | DATE 09 JUL 85

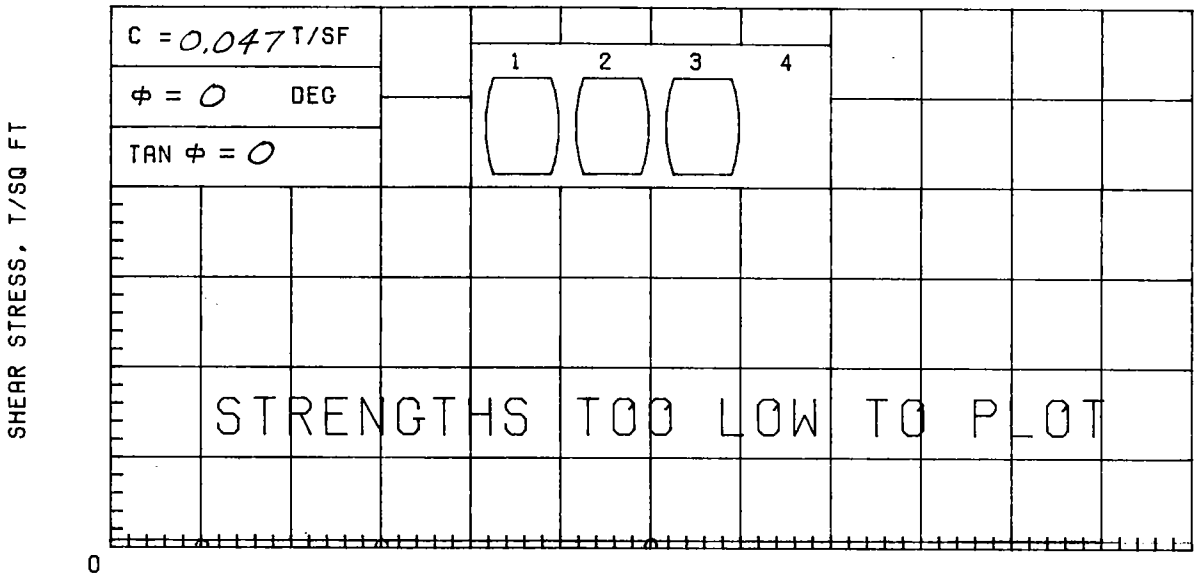
TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 99

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE. TSF		WATER CONTENT. %	67.1	39.0
PRECONSOL. PRESSURE. TSF	0.25	DRY DENSITY. PCF	57.9	83.5
COMPRESSION INDEX	0.55	SATURATION. %	94.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.910	1.020
DIA. IN 4.44	HT. IN 1.118	BACK PRESSURE. TSF		
CLASSIFICATION	PLASTIC CLAY (CH). GRAY			
LL 87 PL 25 PI 62		PROJECT	LAKE PONT. LA. & VIC. HURR. PROT	
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH	
REMARKS		BORING NO. 19-U	SAMPLE NO. 9-C	
		DEPTH/ELEV 36.8/-32.8	DATE 30 MAY 85	
		CONSOLIDATION TEST REPORT		

SHEET 1 OF 8



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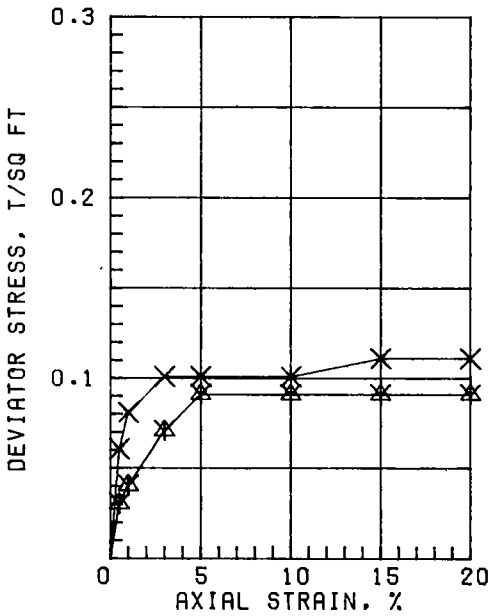


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	72.0	70.8	71.0	
	DRY DENSITY, PCF	56.3	55.4	56.2	
	SATURATION, %	97.5	93.6	95.9	
	VOID RATIO	1.994	2.042	2.000	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.09	0.09	0.10	
TIME TO FAILURE, MIN.		10	10	6	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 71.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 92	PL 23	PI 69	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;

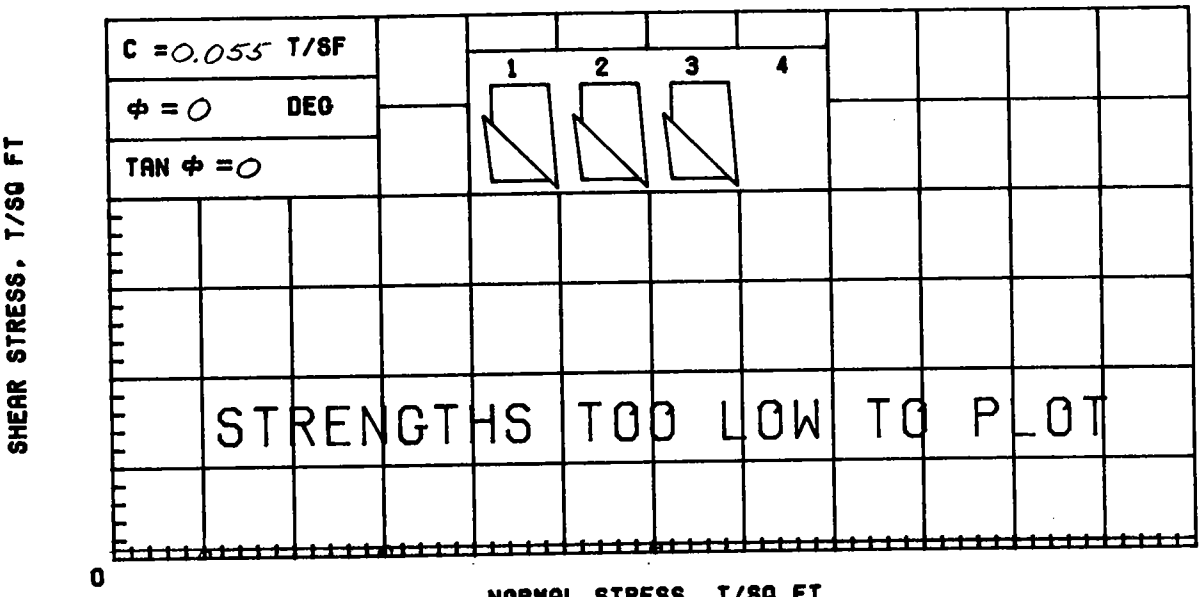
PROJECT LAKE PONT. LA. & VIC. HURR. PROT
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 19-U | SAMPLE NO. 10-B

DEPTH/ELEV 40/-36 | TECH. KOC

LABORATORY USAE WES | DATE 24 OCT 85

TRIAXIAL COMPRESSION TEST REPORT



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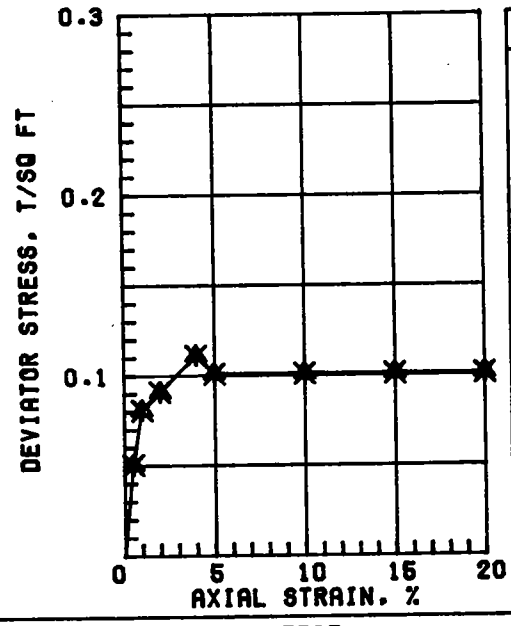


SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	62.7	66.6	62.9		64.1
	DRY DENSITY, PCF	61.4	59.5	63.1		
	SATURATION, %	97.0	98.1	100+		
	VOID RATIO	1.744	1.833	1.671		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.11	0.11	0.11		
TIME TO FAILURE, MIN.		8	24	24		
RATE OF STRAIN INCR.%			6	6		
INITIAL DIAMETER, IN.		1.39	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

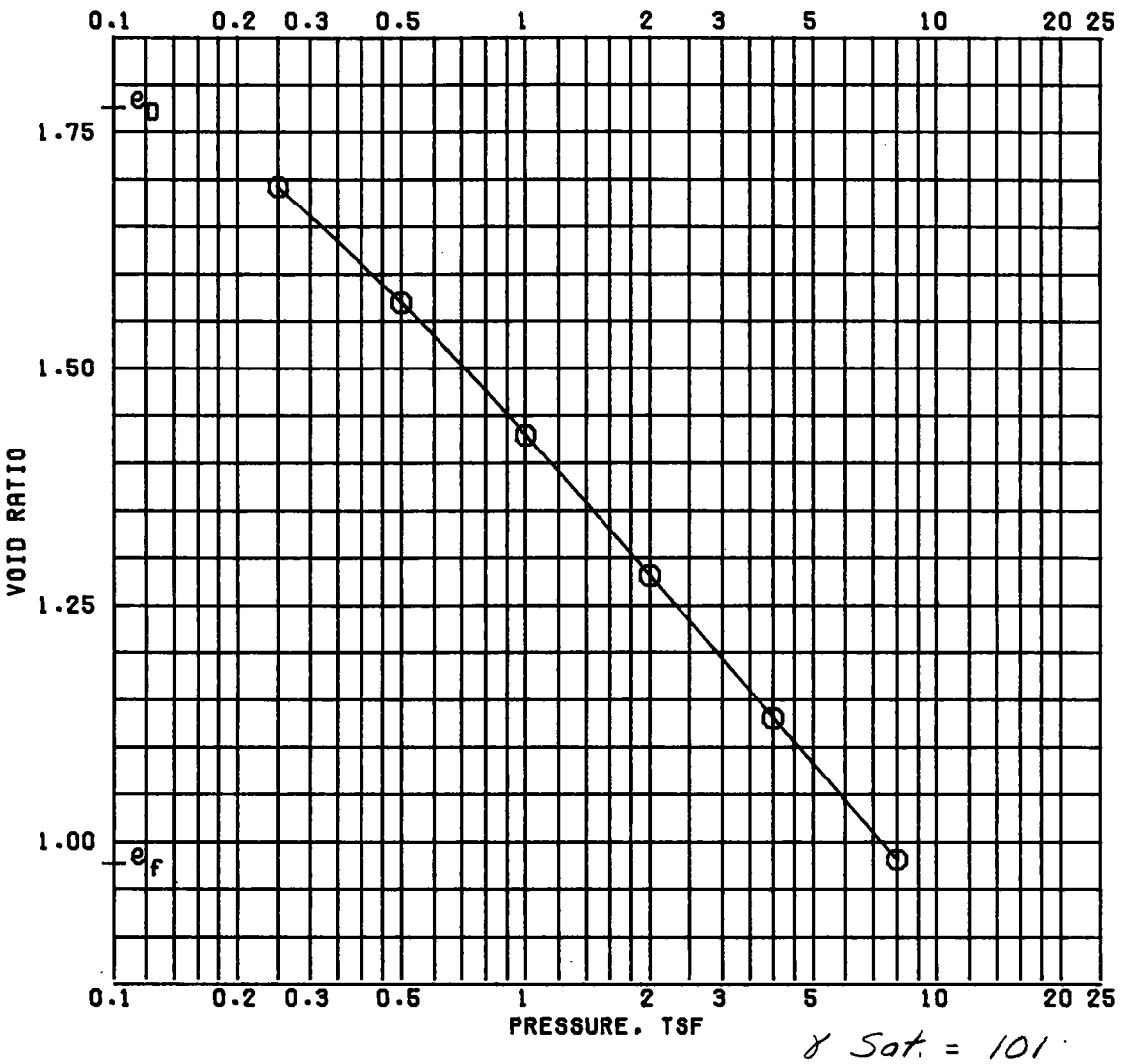
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 93	PL 25	PI 68	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 19-U | SAMPLE NO. 11-B
DEPTH/ELEV 44.0/40.0 | TECH. KOC
LABORATORY USAE WES | DATE 10 JUL 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 101

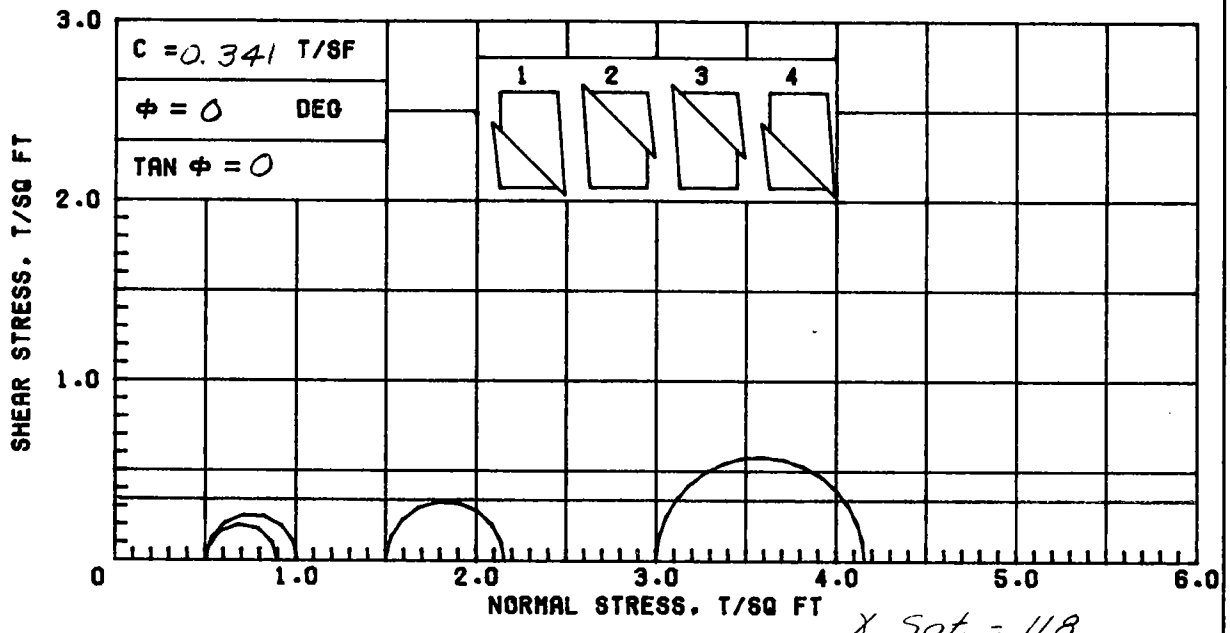
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	64.9	36.3
PRECONSOL. PRESSURE, TSF	0.22	DRY DENSITY, PCF	60.7	85.3
COMPRESSION INDEX	0.55	SATURATION, %	98.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.776	0.975
DIA. IN 4.44	HT. IN 1.127	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

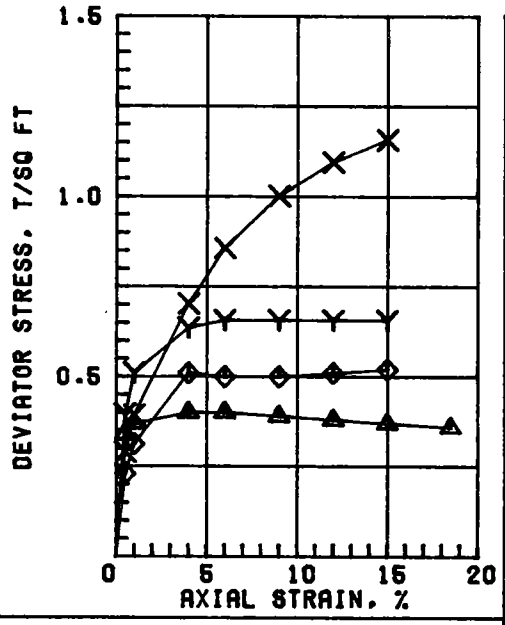
LL 89	PL 22	PI 67	PROJECT	LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH	
REMARKS			BORING NO. 19-U	SAMPLE NO. 11-C
			DEPTH/ELEV 45.4/-41.4	DATE 30 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. = 118



	SPECIMEN NO.	△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	41.1	36.1	28.3	29.4	33.7
	DRY DENSITY, PCF	80.4	85.4	95.0	92.1	
	SATURATION, %	100+	100+	98.7	95.7	
	VOID RATIO	1.098	0.973	0.774	0.830	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.40	0.66	1.16	0.51	
TIME TO FAILURE, MIN.		8	31	78	10	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.38	1.37	1.38	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

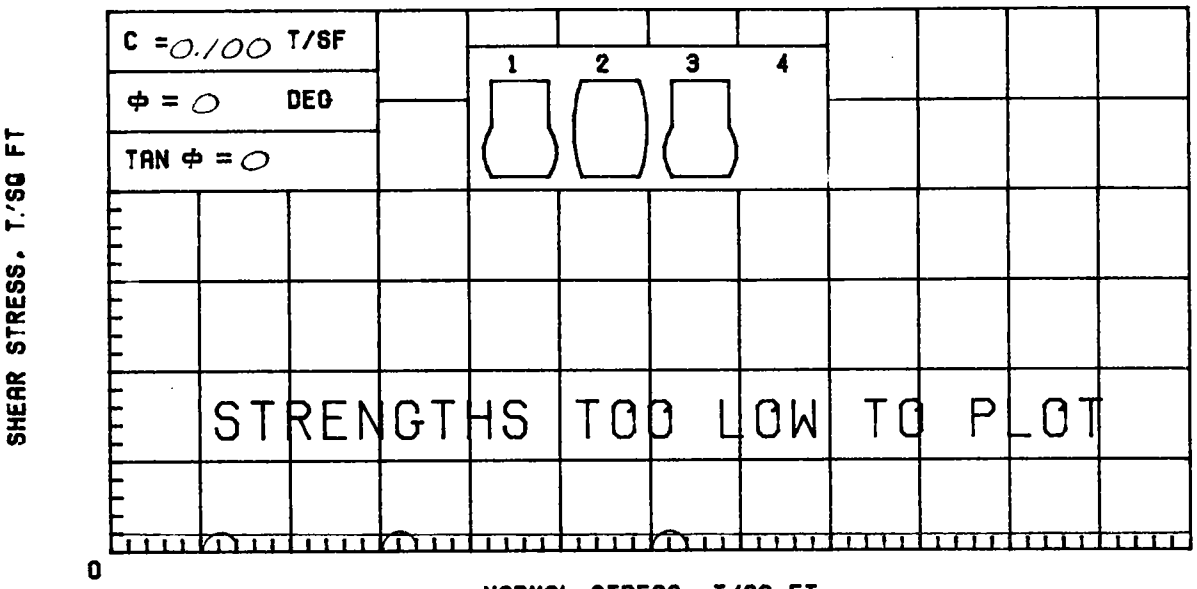
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; FINE SAND LENSES

LL 59	PL 19	PI 40	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

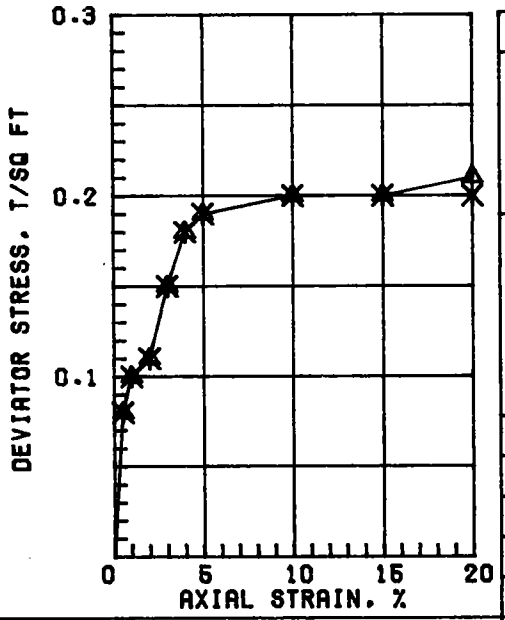
REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 19-U | SAMPLE NO. 14-B
DEPTH/ELEV 60/-56.0 | TECH. LRC
LABORATORY USAE WES | DATE 09 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 106



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	54.2	47.8	50.6	
	DRY DENSITY, PCF	67.5	71.2	70.2	
	SATURATION, %	97.6	94.4	97.5	
	VOID RATIO	1.499	1.367	1.401	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.20	0.20	0.20	
TIME TO FAILURE, MIN.		20	20	20	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 50.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL; SHELLS

LL 78	PL 21	PI 57	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

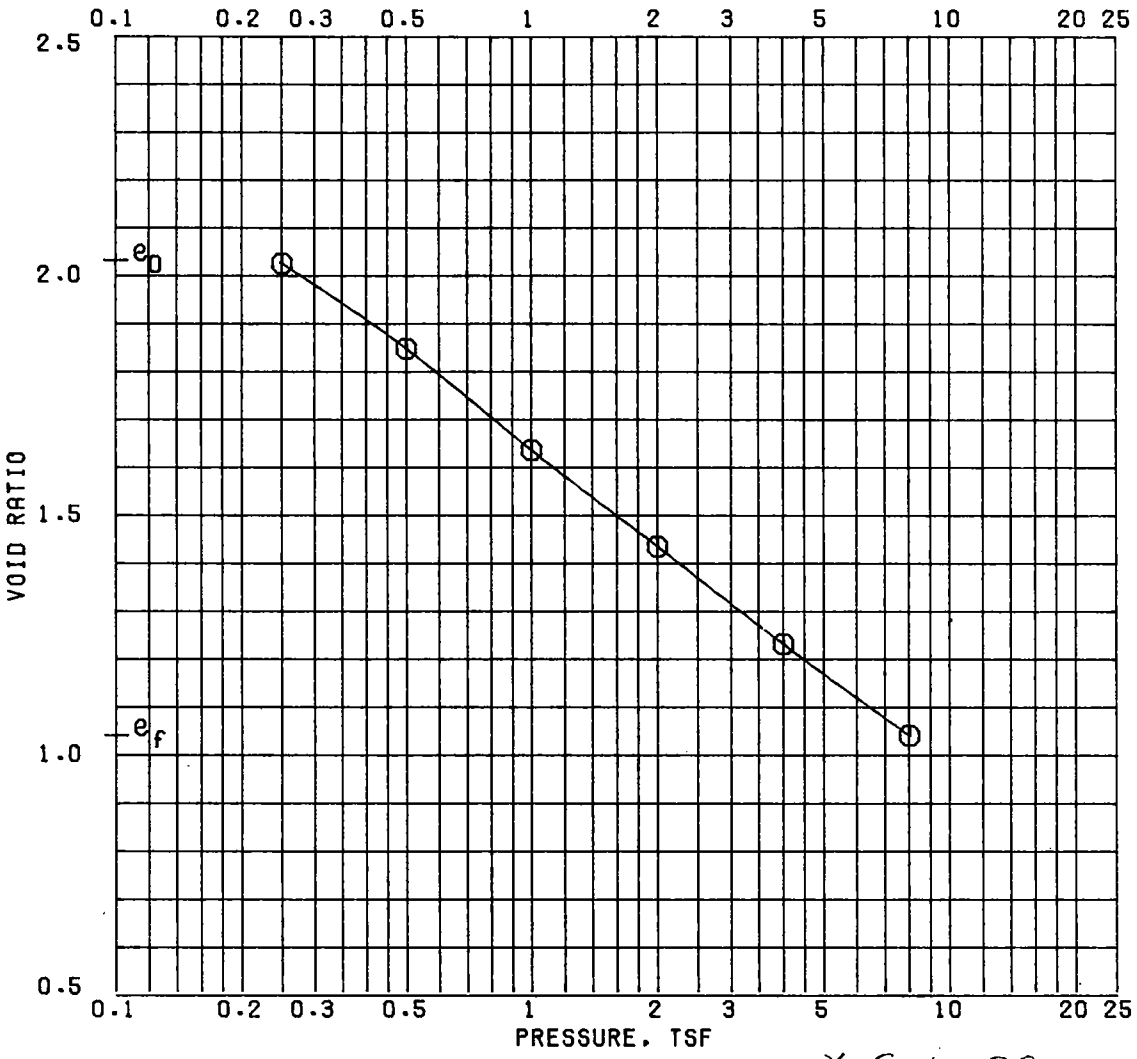
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 20-U | SAMPLE NO. 1C

DEPTH/ELEV 5.5/-1.13 | TECH. KOC

LABORATORY USAE WES | DATE 28 MAY 85

TRIAXIAL COMPRESSION TEST REPORT

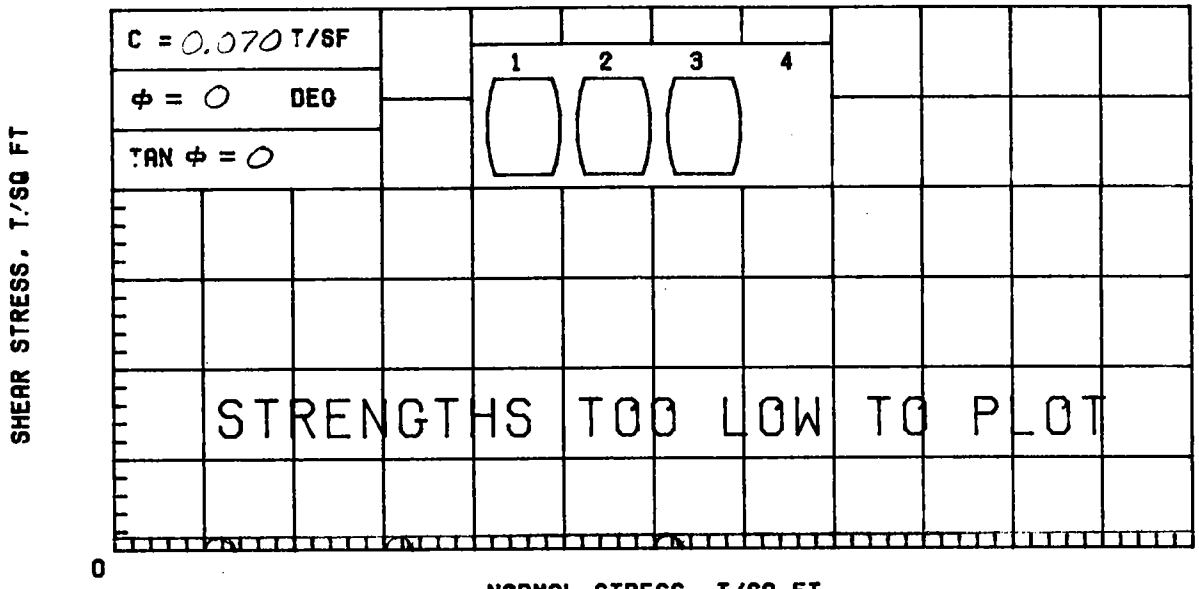


γ Sat = 98

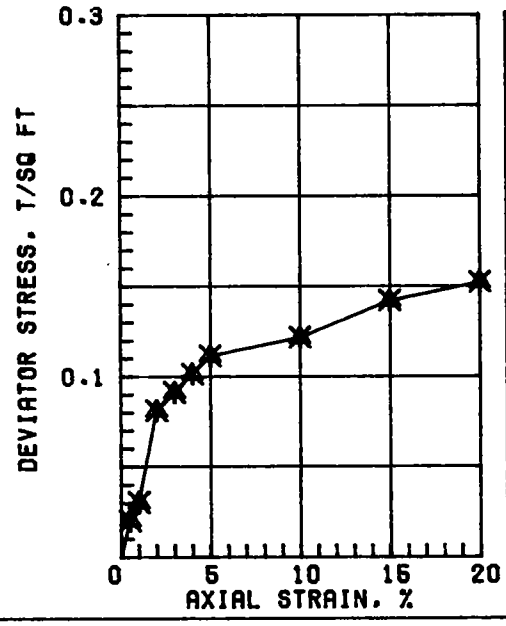
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	76.7	39.2
PRECONSOL. PRESSURE, TSF	0.28	DRY DENSITY, PCF	55.7	82.7
COMPRESSION INDEX	0.72	SATURATION, %	100 +	100 +
TYPE SPECIMEN UNDISTURBED		VOID RATIO	2.029	1.038
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		
CLASSIFICATION PLASTIC CLAY (CH), GRAY				
LL 90	PL 23 PI 67	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,		
GS 2.70 (EST)	D_{10}	JEFFERSON & ST. CHARLES PARISHES		
REMARKS		BORING NO. 20-U	SAMPLE NO. 3-C	
		DEPTH/ELEV 13.3/-8.93	DATE 01 JUL 85	

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat = 108



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	46.0	47.2	47.3	
	DRY DENSITY, PCF	73.5	72.6	72.0	
	SATURATION, %	96.0	96.5	95.2	
	VOID RATIO	1.294	1.321	1.342	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.14	0.14	0.14	
TIME TO FAILURE, MIN.		30	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

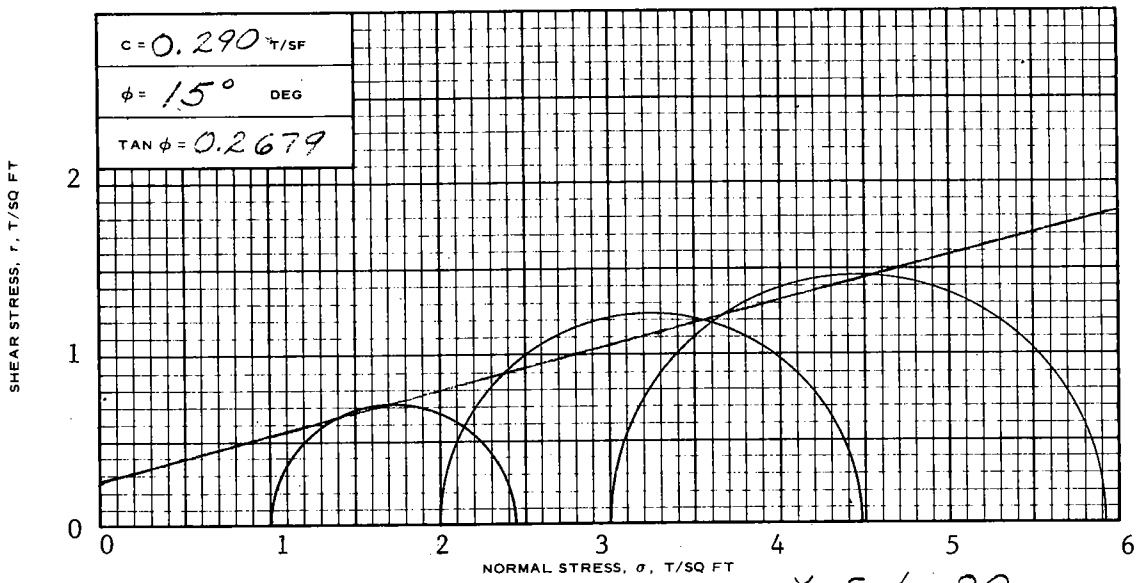
Avg. 46.8

CONTROLLED-STRAIN TEST

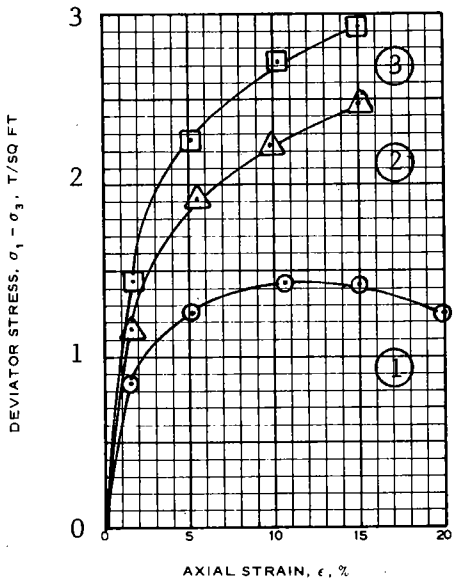
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL

LL 50	PL 18	PI 32	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 20-U	SAMPLE NO. 4B
	DEPTH/ELEV 16.3/-11.93	TECH. KOC
	LABORATORY USAE WES	DATE 30 MAY 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 80



SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	171.7	168.7	174.2
	DRY DENSITY LB/ CU FT	γ_{d_o}	27.3	28.9	27.7
	SATURATION, %	s_o	91.7	96.6	94.7
	VOID RATIO	e_o	4.493	4.192	4.416
BEFORE SHEAR	WATER CONTENT, %	w_c	156.5	122.8	116.2
	DRY DENSITY LB/CU FT	γ_{d_c}	32.5	39.4	42.0
	SATURATION, %	s_c	100+	100+	100+
	VOID RATIO	e_c	3.617	2.808	2.570
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.10	4.10	4.10
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.44	2.48	2.93
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	663	938	938
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.38	1.38	1.38
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

Avg. 171.5

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS ORGANIC SILT (OH), DARK BROWN

LL 265 | PL 104 | PI 161 | Gs 2.40 (EST)

REMARKS:

TYPE OF SPECIMEN UNDISTURBED | TYPE OF TEST R

PROJECT LAKE PONT. LA. & VIC. HURR. PROT
JEFFERSON & ST. CHARLES PARISH

BORING NO. 20-U | SAMPLE NO. 5-B

DEPTH/ELEV 20/-15.6

LABORATORY USAEWES | DATE 27 MAR 86

SHEET 1 OF 2

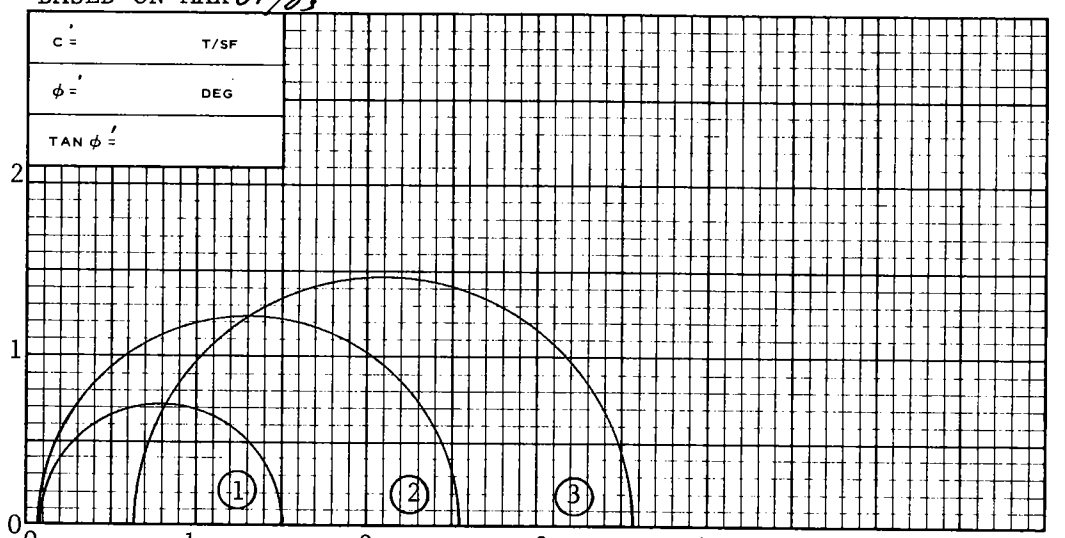
TES TRIAXIAL COMPRESSION TEST REPORT

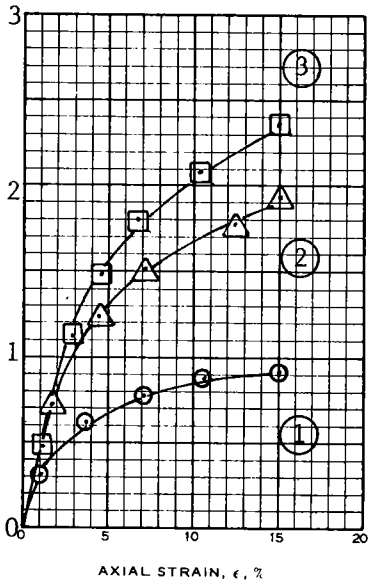
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'/σ_3'

C' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	s_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	s_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.08	0.07	0.64	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.42	2.48	2.93	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 20-U SAMPLE NO. 5-B

DEPTH/ELEV 20/-15.6

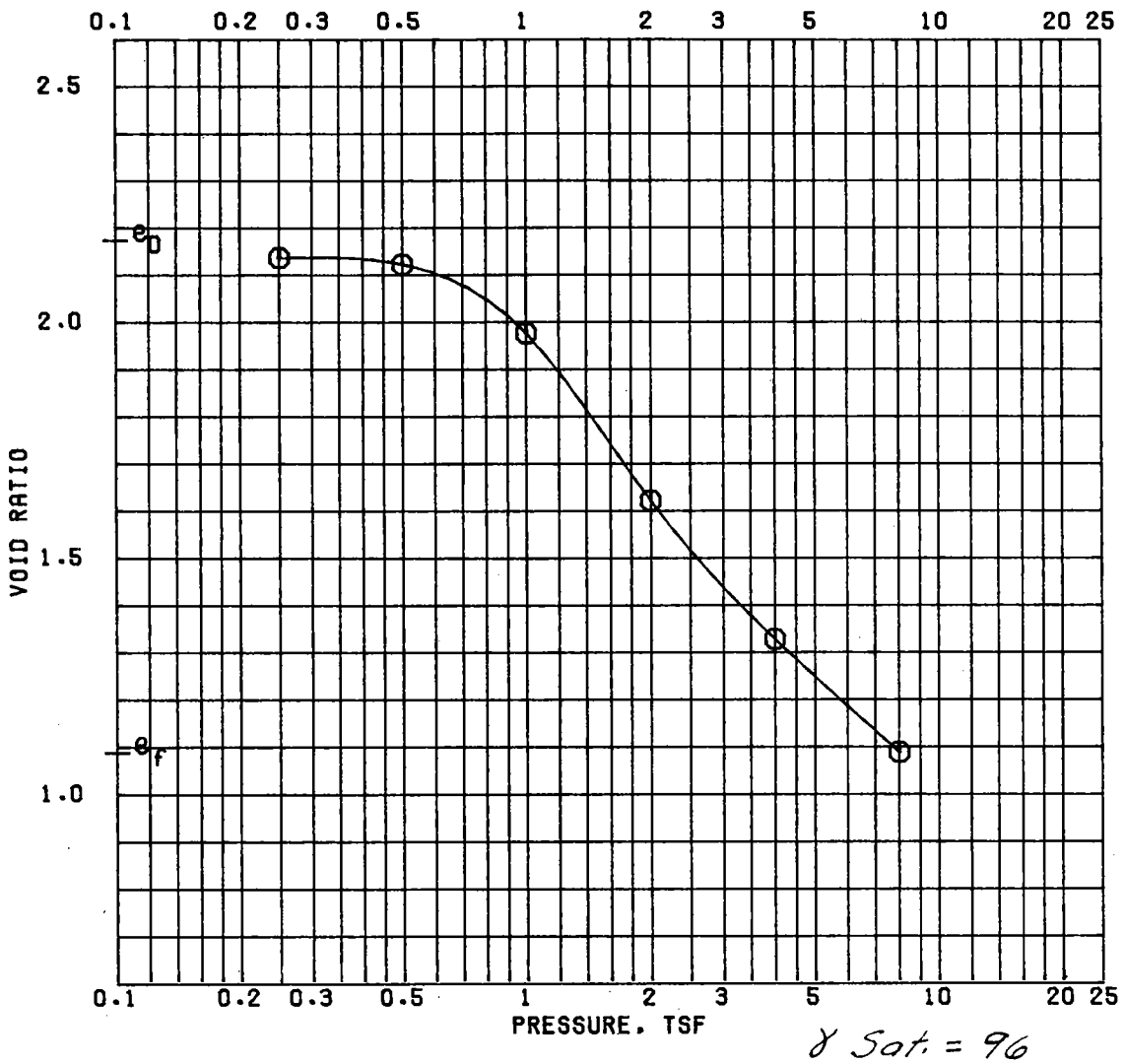
LABORATORY USAEWES DATE 27 MAR 86

SHEET 2 OF 2

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



γ Sat. = 96

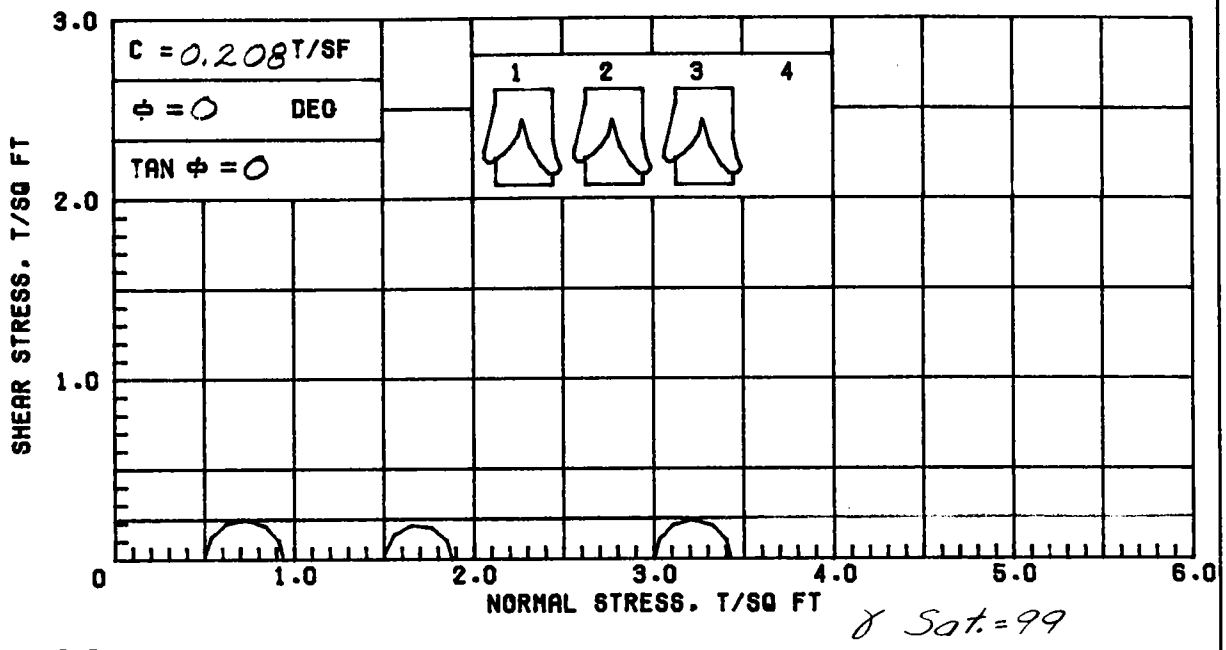
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	77.9	42.9
PRECONSOL. PRESSURE, TSF	0.88	DRY DENSITY, PCF	53.2	80.9
COMPRESSION INDEX	1.20	SATURATION, %	97.0	100 +
TYPE SPECIMEN UNDISTURBED		VOID RATIO	2.170	1.084
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; FISSURED

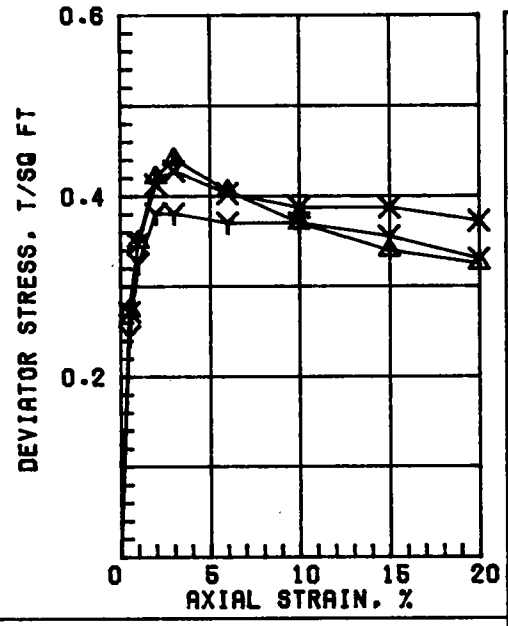
LL 75	PL 26	PI 49	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES
GS 2.70 (EST)	D_{10}		
REMARKS		BORING NO. 20-U	SAMPLE NO. G-C
		DEPTH/ELEV 24.9/-20.53	DATE 01 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. = 99



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	75.5	69.6	70.0	
	DRY DENSITY, PCF	56.4	58.5	58.3	
	SATURATION, %	100+	99.9	99.9	
	VOID RATIO	1.990	1.882	1.893	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.44	0.38	0.43	
TIME TO FAILURE, MIN.		7	10	15	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 71.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 79	PL 22	PI 57	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

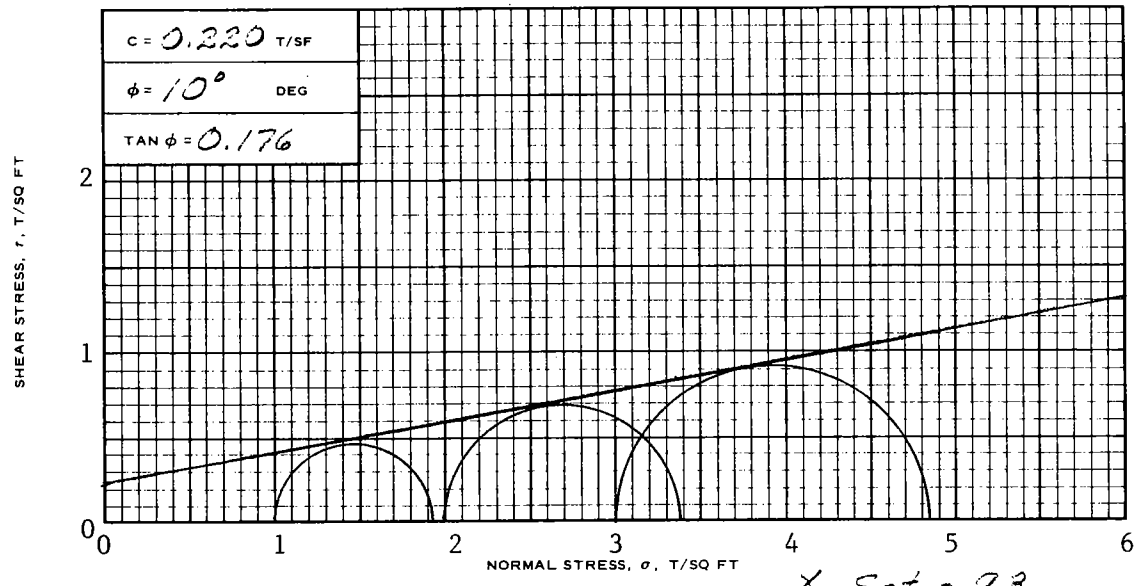
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 20-U | SAMPLE NO. 78

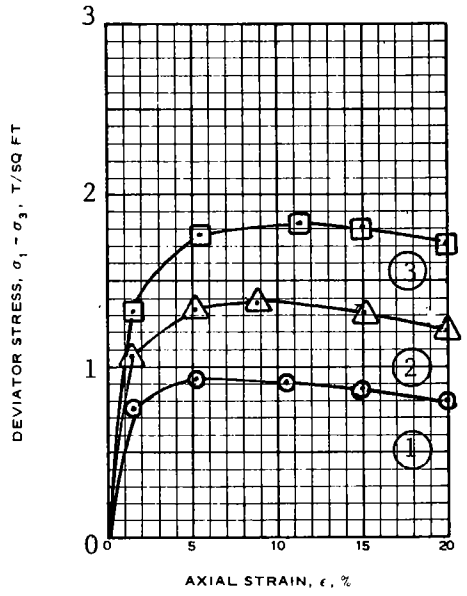
DEPTH/ELEV 28.5/-24.13 | TECH. PJR

LABORATORY USAE WES | DATE 29 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 93



SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	74.6	71.4	73.3	
	DRY DENSITY LB/ CU FT	γ_{d_o}	56.0	57.3	56.0	
	SATURATION, %	S_o	99.9	99.0	98.2	
	VOID RATIO	e_o	2.030	1.963	2.030	
BEFORE SHEAR	WATER CONTENT, %	w_c	70.0	58.6	53.8	
	DRY DENSITY LB/CU FT	γ_{d_c}	64.5	68.1	72.0	
	SATURATION, %	S_c	100+	100+	100+	
	VOID RATIO	e_c	1.635	1.492	1.358	
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.92	1.38	1.84	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	300	524	665	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.38	1.38	1.38	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

Avg. 73.1

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY

LL 91	PL 24	PI 67	Gs 2.72	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST R̄

REMARKS: (EST)

PROJECT LAKE PONT LA & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 20-U SAMPLE NO. 8-B

DEPTH/ELEV 32/-27.6

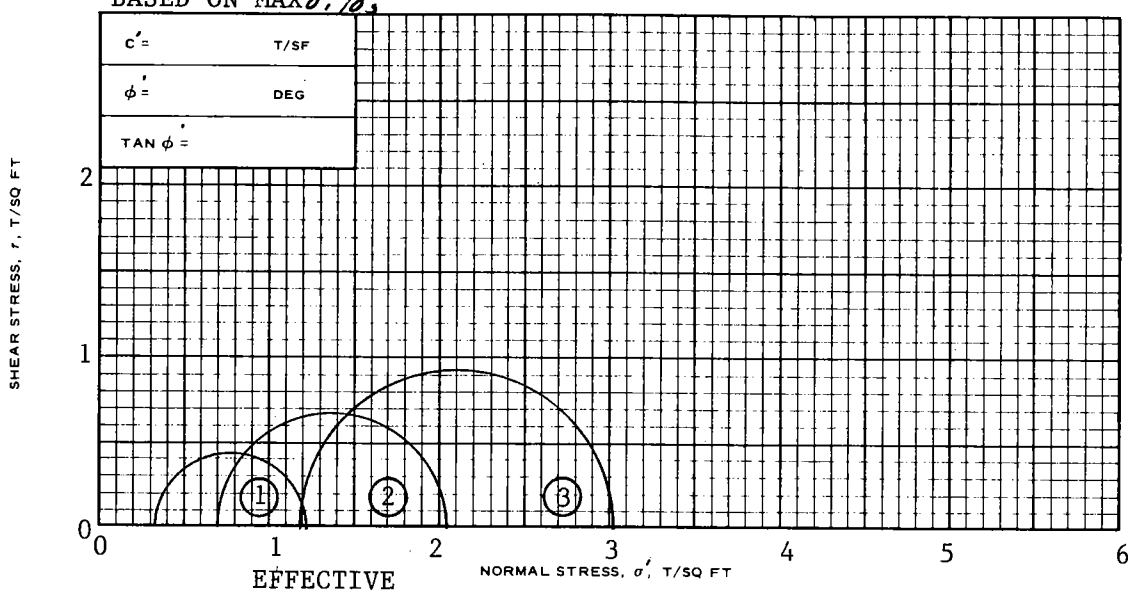
LABORATORY USAEWES DATE 28 MAR 86

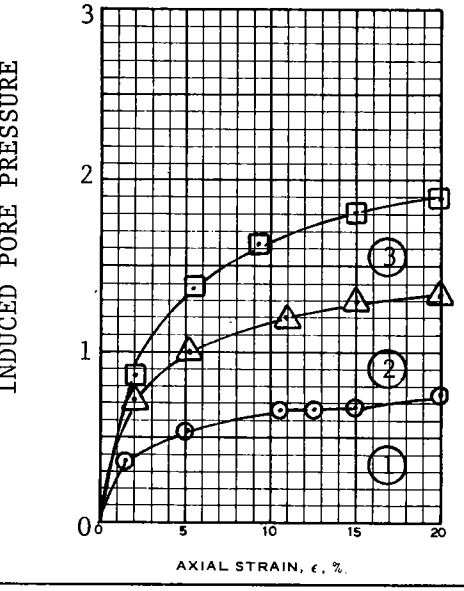
SHEET 1 OF 2 JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'/σ_3'





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.34	0.70	1.19	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.89	1.32	1.82	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT LA. & VIC HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 20-U SAMPLE NO. 8-B

DEPTH/ELEV 32/-27.6

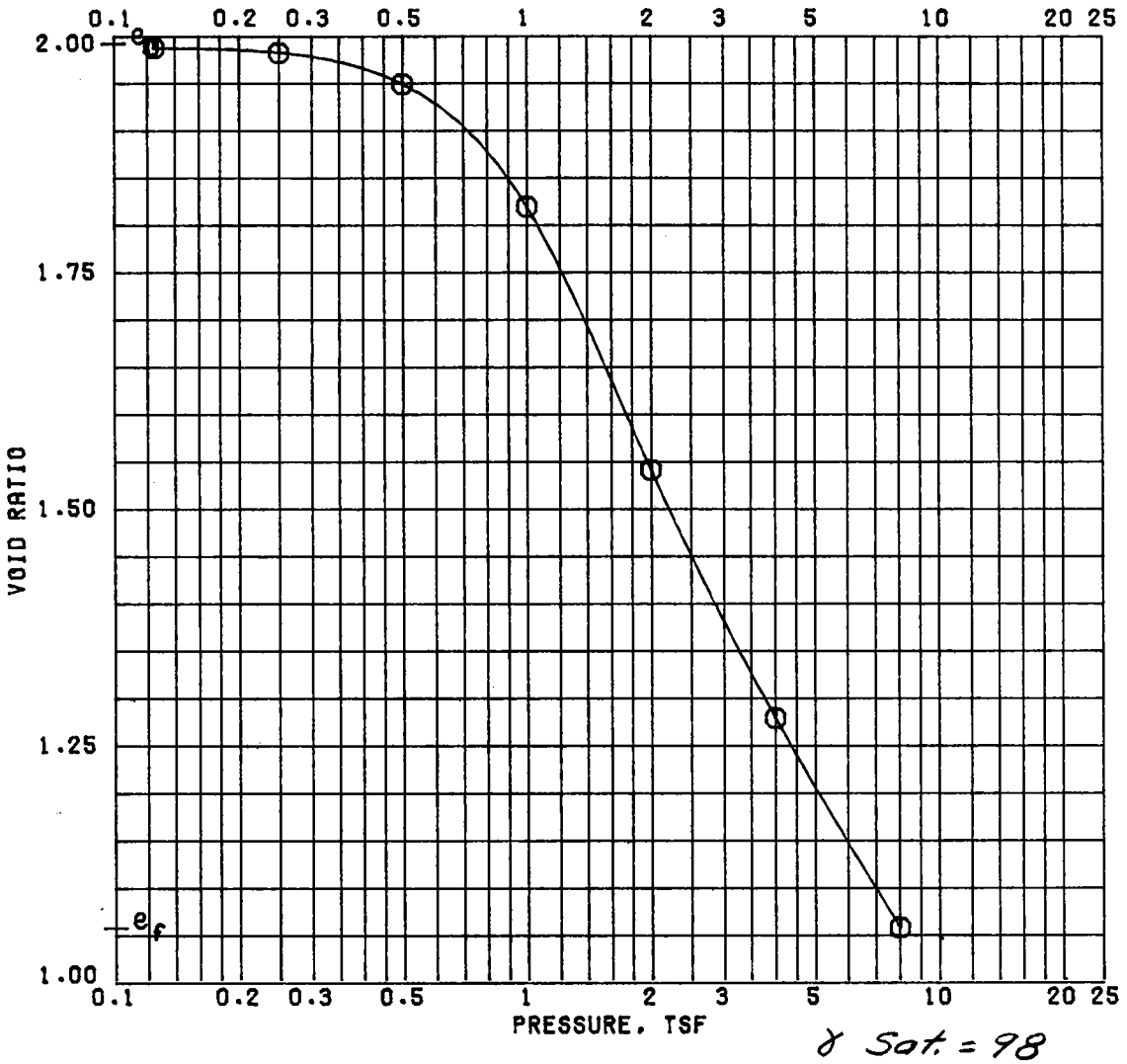
LABORATORY USAEWES DATE 28 MAR 86

SHEET 2 OF 2

JSM **TRIAXIAL COMPRESSION TEST REPORT**

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



γ Sat. = 98

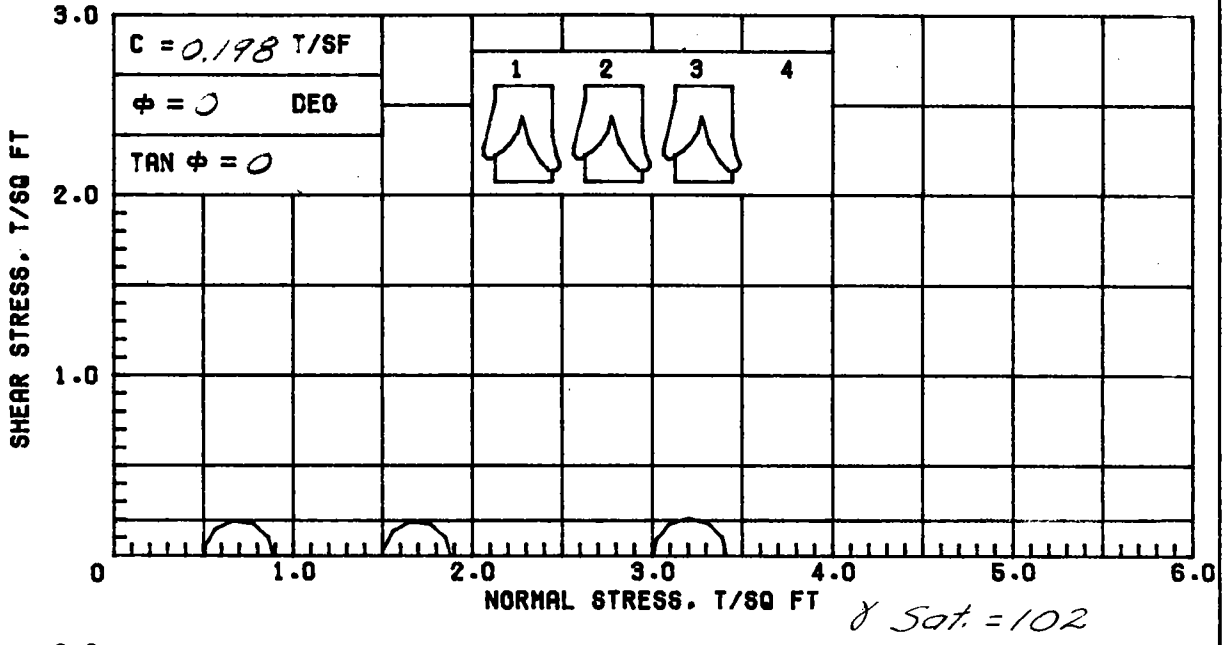
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	74.1	40.0
PRECONSOL. PRESSURE, TSF	0.71	DRY DENSITY, PCF	56.4	82.0
COMPRESSION INDEX	0.95	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.991	1.056
DIA. IN 4.44	HT. IN 1.122	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 80	PL 22	PI 58	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 20-U	SAMPLE NO. 10-B
		DEPTH/ELEV 39.9/-35.5	DATE 17 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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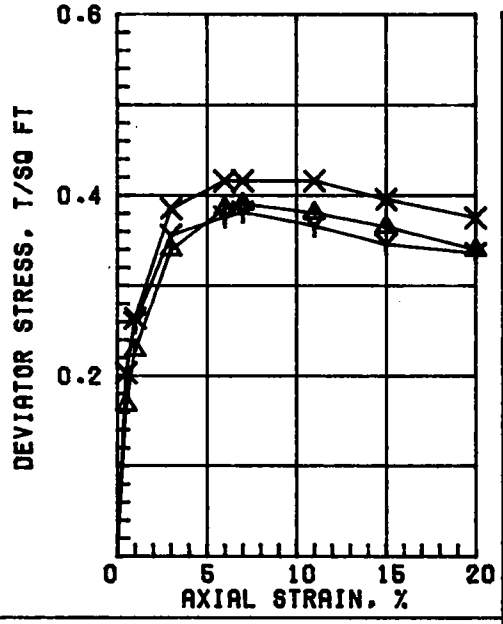


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	63.7	64.3	64.0	
	DRY DENSITY, PCF	62.4	62.1	62.2	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.702	1.714	1.710	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.39	0.38	0.42	
TIME TO FAILURE, MIN.		14	21	21	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 64.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 74	PL 21	PI 53	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

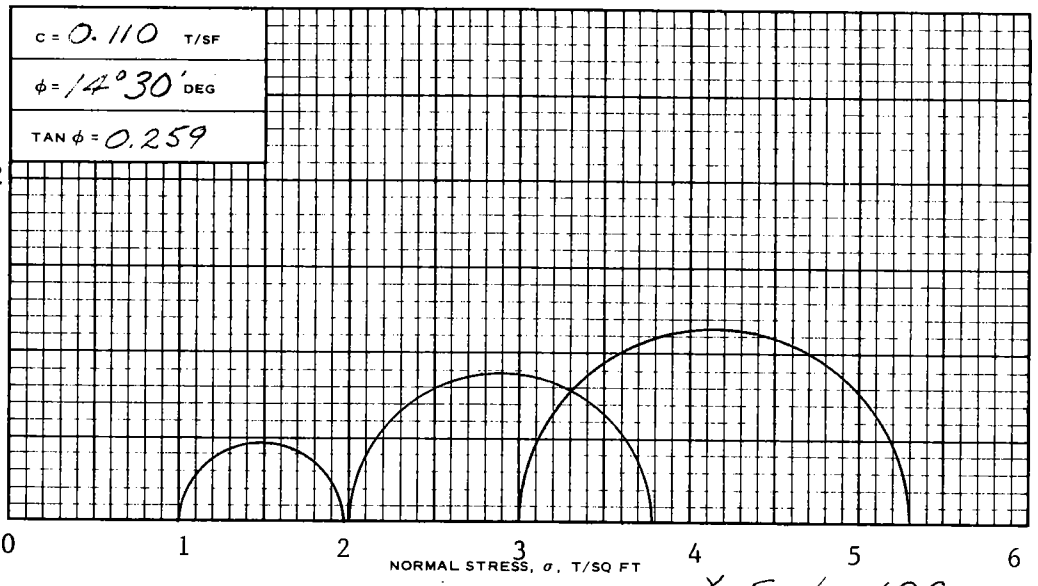
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 20-U | SAMPLE NO. 10C

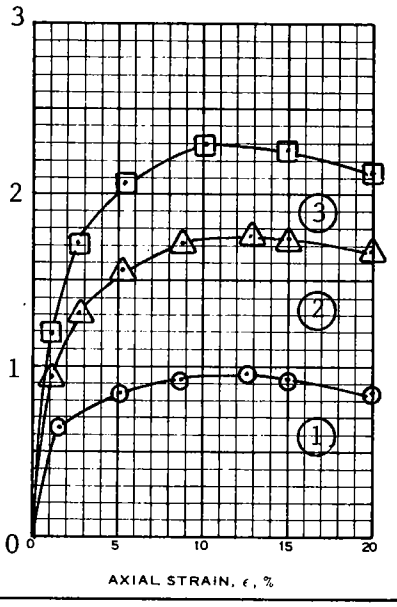
DEPTH/ELEV 40.8/-36.4 3 | TECH. PJR

LABORATORY USAE WES | DATE 29 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 102



SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	62.5	63.6	62.9	
	DRY DENSITY LB/ CU FT	γ_{d_o}	63.4	62.5	62.1	
	SATURATION, %	s_o	100+	100+	98.7	
	VOID RATIO	e_o	1.677	1.715	1.733	
BEFORE SHEAR	WATER CONTENT, %	w_c	53.7	51.2	46.2	
	DRY DENSITY LB/CU FT	γ_{d_c}	71.4	75.9	77.9	
	SATURATION, %	s_c	100+	100+	100+	
	VOID RATIO	e_c	1.379	1.238	1.180	
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.96	1.76	2.30	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	741	753	653	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.37	1.37	1.37	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

Avg. 63.0

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST
84	25	59	2.72	UNDISTURBED	$\bar{R}$

REMARKS: (EST)

PROJECT LAKE PONT LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 20-U SAMPLE NO. 11-B

DEPTH/ELEV 44/-39.6

LABORATORY USAEWES DATE 31 MAR 86

SHEET 1 OF 2 JMS

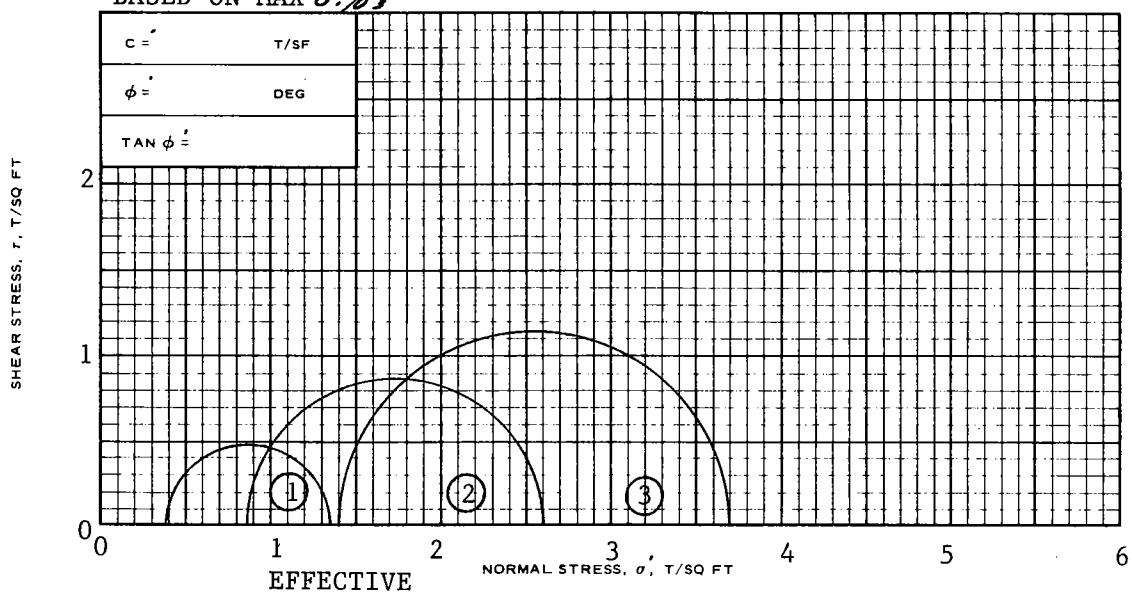
TRIAXIAL COMPRESSION TEST REPORT

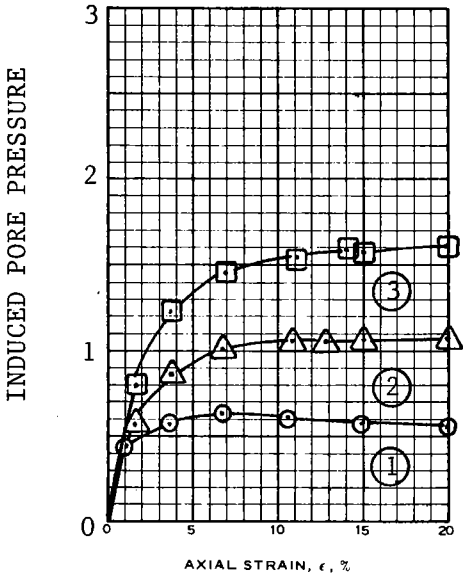
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX $\sigma_1 - \sigma_3$

C' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.39	0.86	1.41	
MAXIMUM DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{MAX}$		0.95	1.76	2.29	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{ULT}$					
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 20-U SAMPLE NO. 11-B

DEPTH/ELEV 44/-39.6

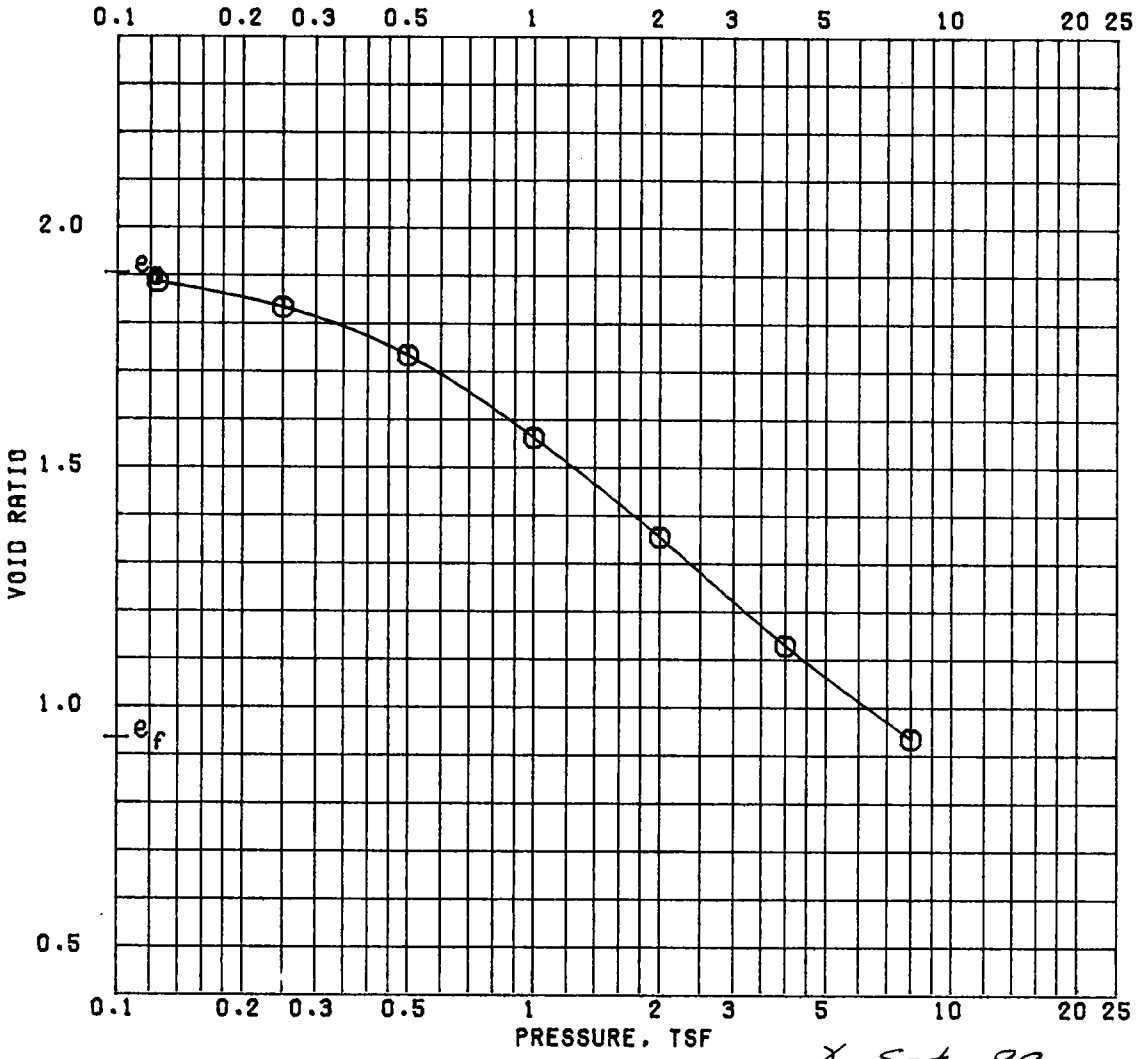
LABORATORY USAEWES DATE 31 MAR 86

SHEET 2 OF 2

JMS **TRIAXIAL COMPRESSION TEST REPORT**

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



γ Sat. = 99

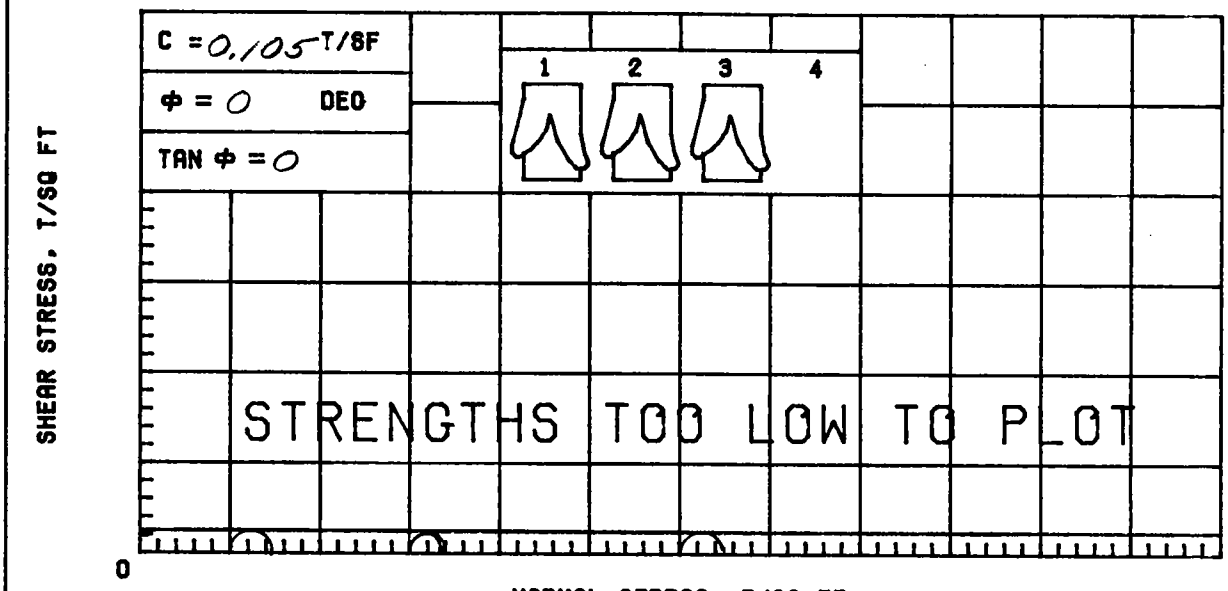
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF	0.68	WATER CONTENT, %	68.6	36.5
PRECONSOL. PRESSURE, TSF	0.71	DRY DENSITY, PCF	58.1	87.3
COMPRESSION INDEX		SATURATION, %	97.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.901	0.931
DIA. IN 4.44	HT. IN 1.111	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 74	PL 22	PI 56	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES
GS 2.70 (EST)	D_{10}		
REMARKS		BORING NO. 20-U	SAMPLE NO. 12-C
		DEPTH/ELEV 49.3/-44.93	DATE 18 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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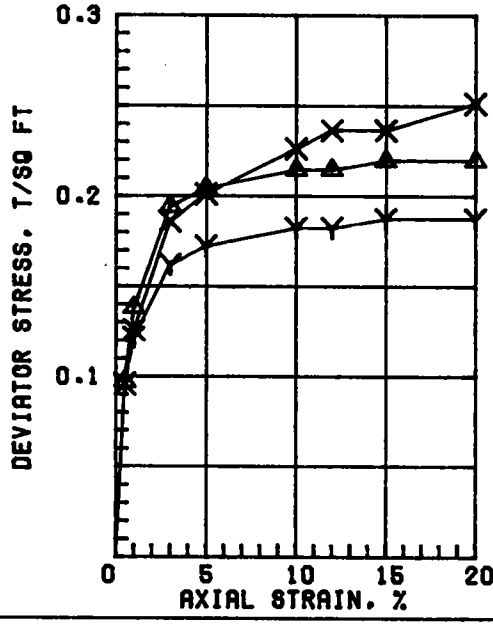


	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	55.2	56.4	50.9	
	DRY DENSITY, PCF	67.7	67.3	70.2	
	SATURATION, %	99.9	100+	98.0	
	VOID RATIO	1.491	1.506	1.403	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.21	0.18	0.24	
TIME TO FAILURE, MIN.		20	30	24	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 54.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 68	PL 17	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

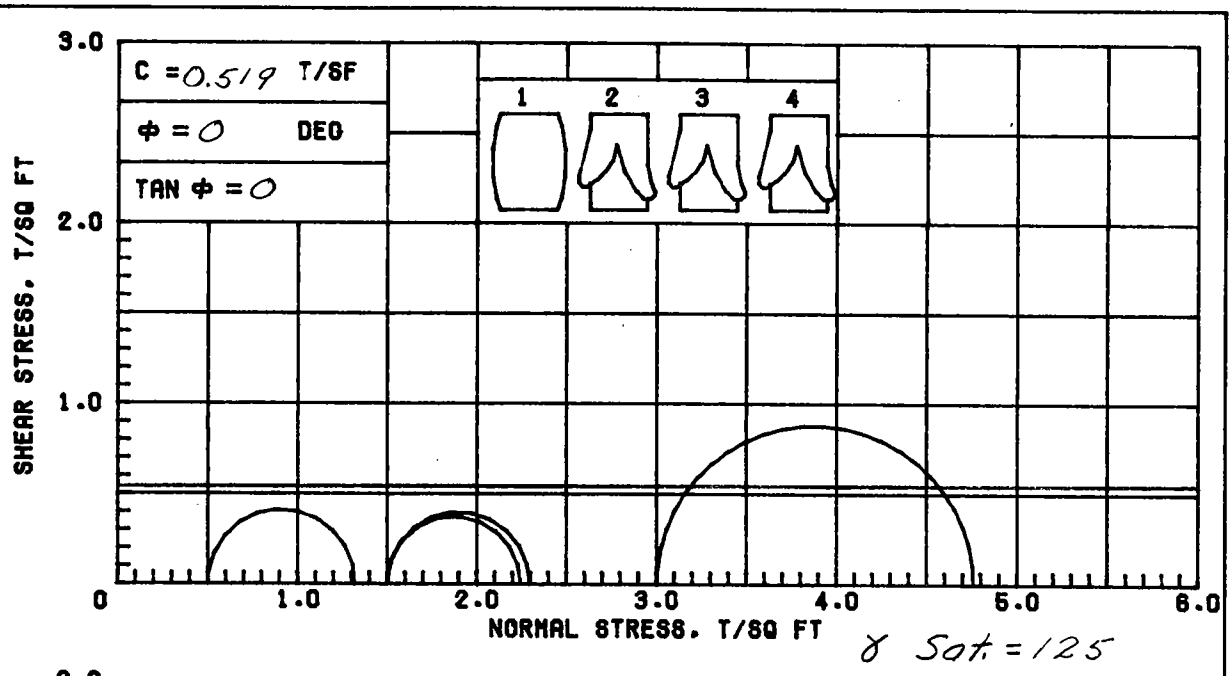
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 20-U | SAMPLE NO. 13B

DEPTH/ELEV 51.9/-47.63 | TECH. PJR

LABORATORY USAE WES | DATE 30 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



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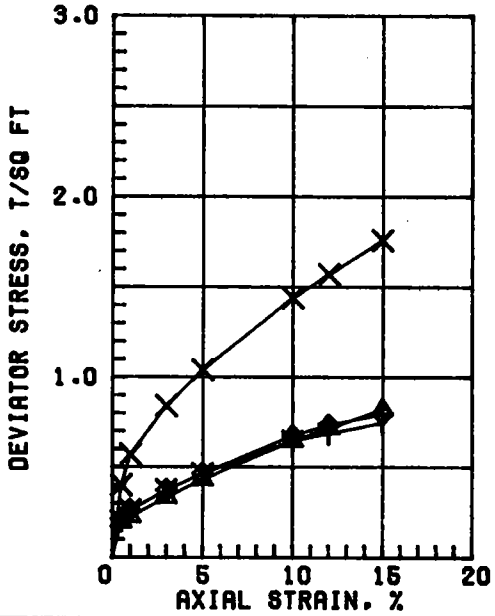


	SPECIMEN NO.	▲1	Y2	X3	◆4	Avg.
INITIAL	WATER CONTENT, %	21.2	30.0	20.0	29.1	25.1
	DRY DENSITY, PCF	103.3	94.4	103.2	94.8	
	SATURATION, %	90.7	100+	85.2	100+	
	VOID RATIO	0.631	0.786	0.634	0.777	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		0.82	0.75	1.76	0.80	
TIME TO FAILURE, MIN.		23	23	25	25	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.42	1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT BROWN; FINE SAND

POCKETS: FRIABLE

LL 46	PL 14	PI 32	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

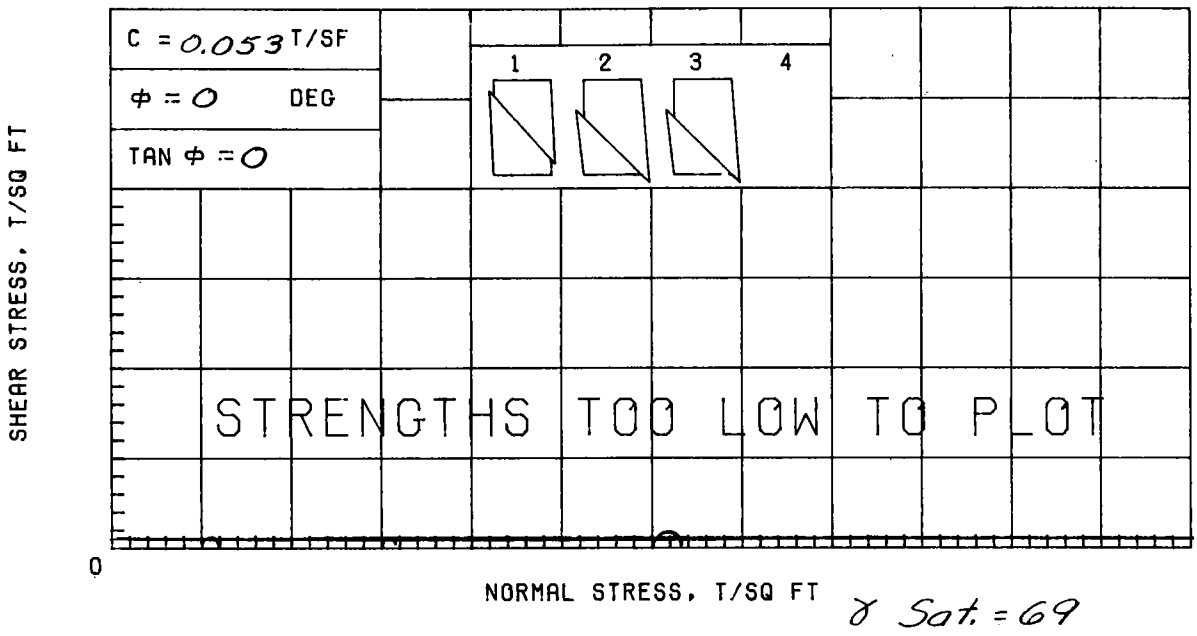
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 20-U | SAMPLE NO. 16B

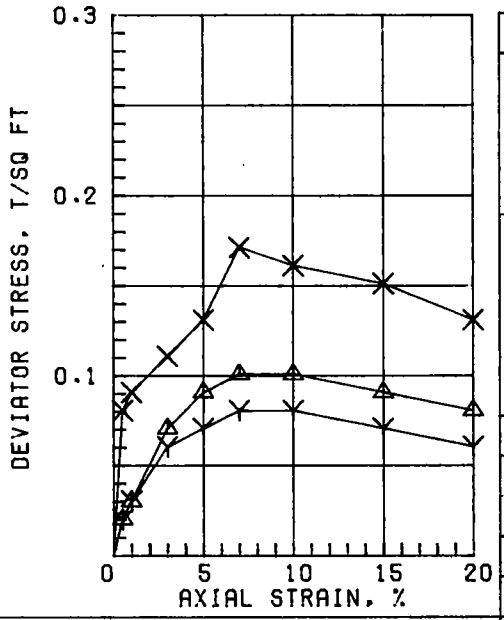
DEPTH/ELEV 63.7/-59.3 3 | TECH. PJR

LABORATORY USAE WES | DATE 30 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 69



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	320.5	314.4	307.1	
	DRY DENSITY, PCF	16.3	16.3	16.6	
	SATURATION, %	99.2	97.2	96.9	
	VOID RATIO	5.493	5.497	5.386	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.10	0.08	0.17	
TIME TO FAILURE, MIN.		14	14	14	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 314.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), DARK BROWN

LL 328	PL 107	PI 221	GS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

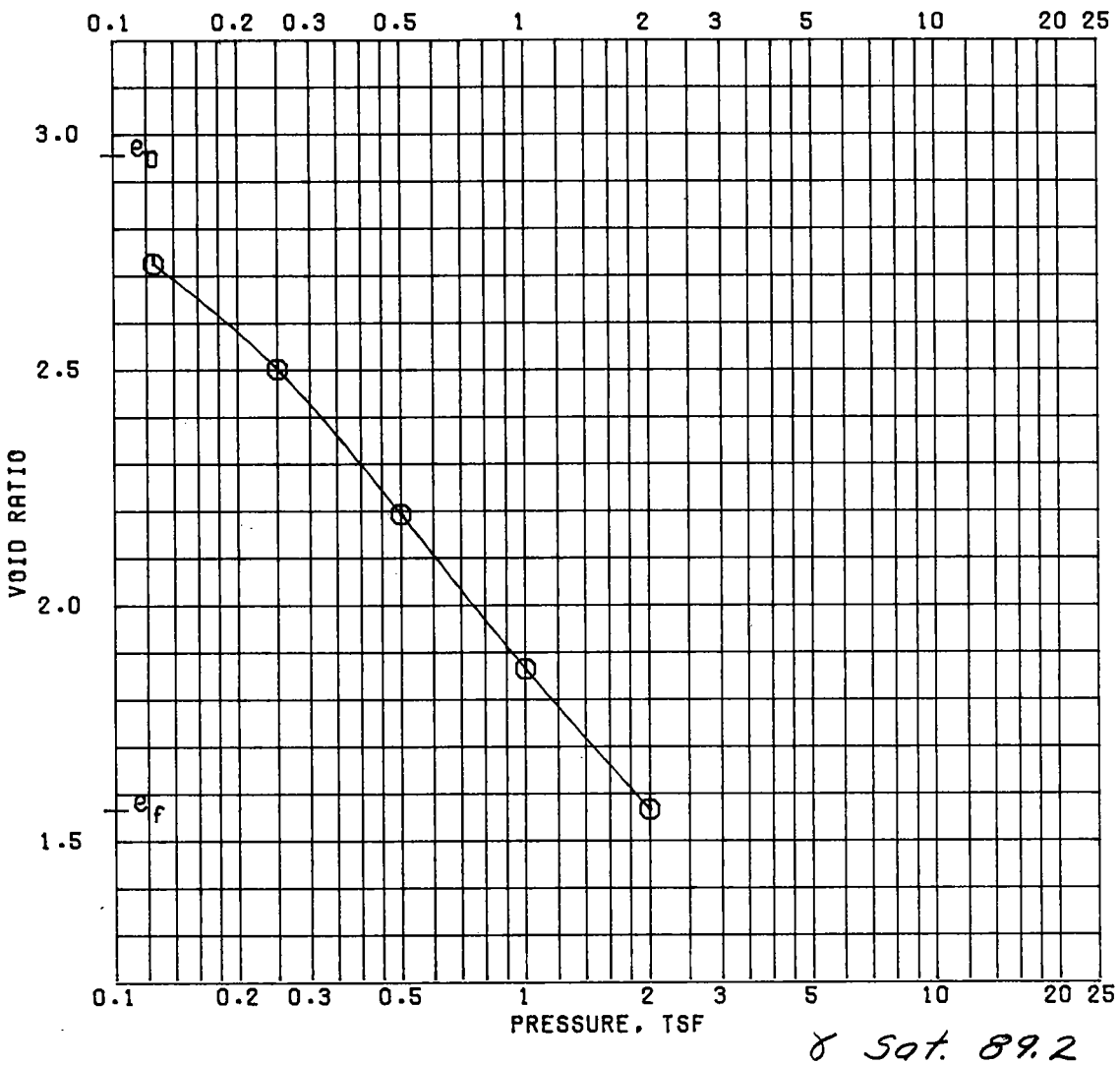
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 21-U | SAMPLE NO. 1-C

DEPTH/ELEV 1.7/-6.0 | TECH. KOC

LABORATORY USAE WES | DATE 24 AUG 85

TRIAXIAL COMPRESSION TEST REPORT

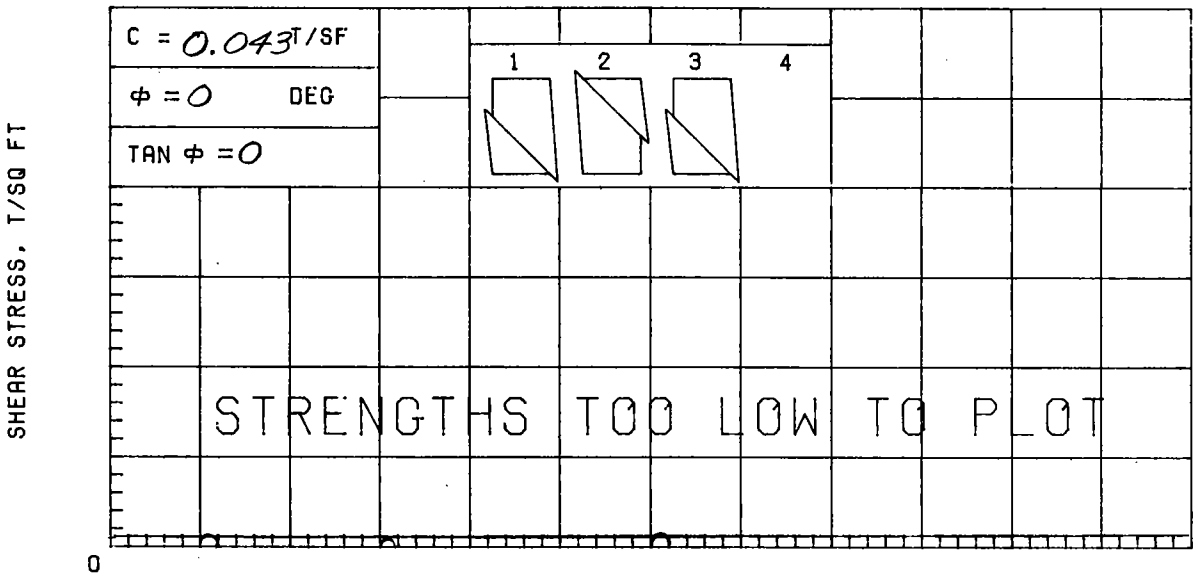


γ Sat. 89.2

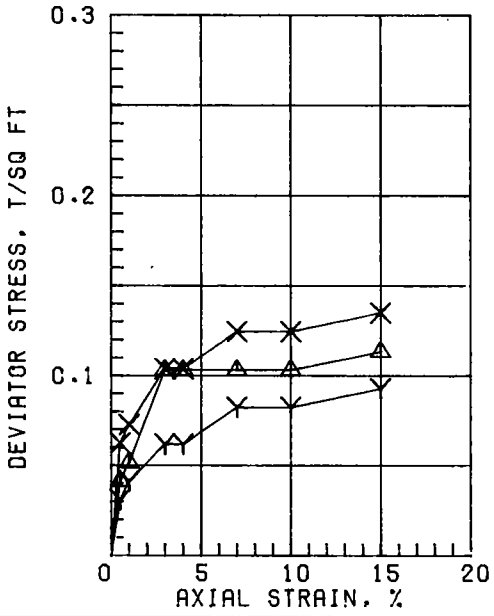
OVERBURDEN PRESSURE, TSF			WATER CONTENT, %	BEFORE TEST 106.1	AFTER TEST 57.8
PRECONSOL. PRESSURE, TSF	0.28		DRY DENSITY, PCF	42.6	65.8
COMPRESSION INDEX	1.06		SATURATION, %	97.0	99.9
TYPE SPECIMEN	UNDISTURBED		VOID RATIO	2.953	1.563
DIA. IN 4.44	HT. IN 1.113		BACK PRESSURE, TSF		
CLASSIFICATION	PLASTIC CLAY (CH), GRAY				
LL 91	PL 23	PI 68	PROJECT	LAKE PONT. LA & VIC. HURR. PROT.	
GS 2.70 (EST)	D_{10}			JEFFERSON & ST. CHARLES PARISHES	
REMARKS			BORING NO. 21-U		SAMPLE NO. 2-B
			DEPTH/ELEV 5.0/-9.3		DATE 28 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



γ Sat. = 105



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	57.2	57.0	55.1	
	DRY DENSITY, PCF	65.5	66.5	68.7	
	SATURATION, %	98.1	100+	100+	
	VOID RATIO	1.574	1.537	1.455	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.10	0.06	0.10	
TIME TO FAILURE, MIN.		6	19	18	
RATE OF STRAIN INCR.%			4	4	
INITIAL DIAMETER, IN.		1.38	1.38	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 56.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS; CLAY (CL), GRAY; SILT LENSES

LL 48	PL 17	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;

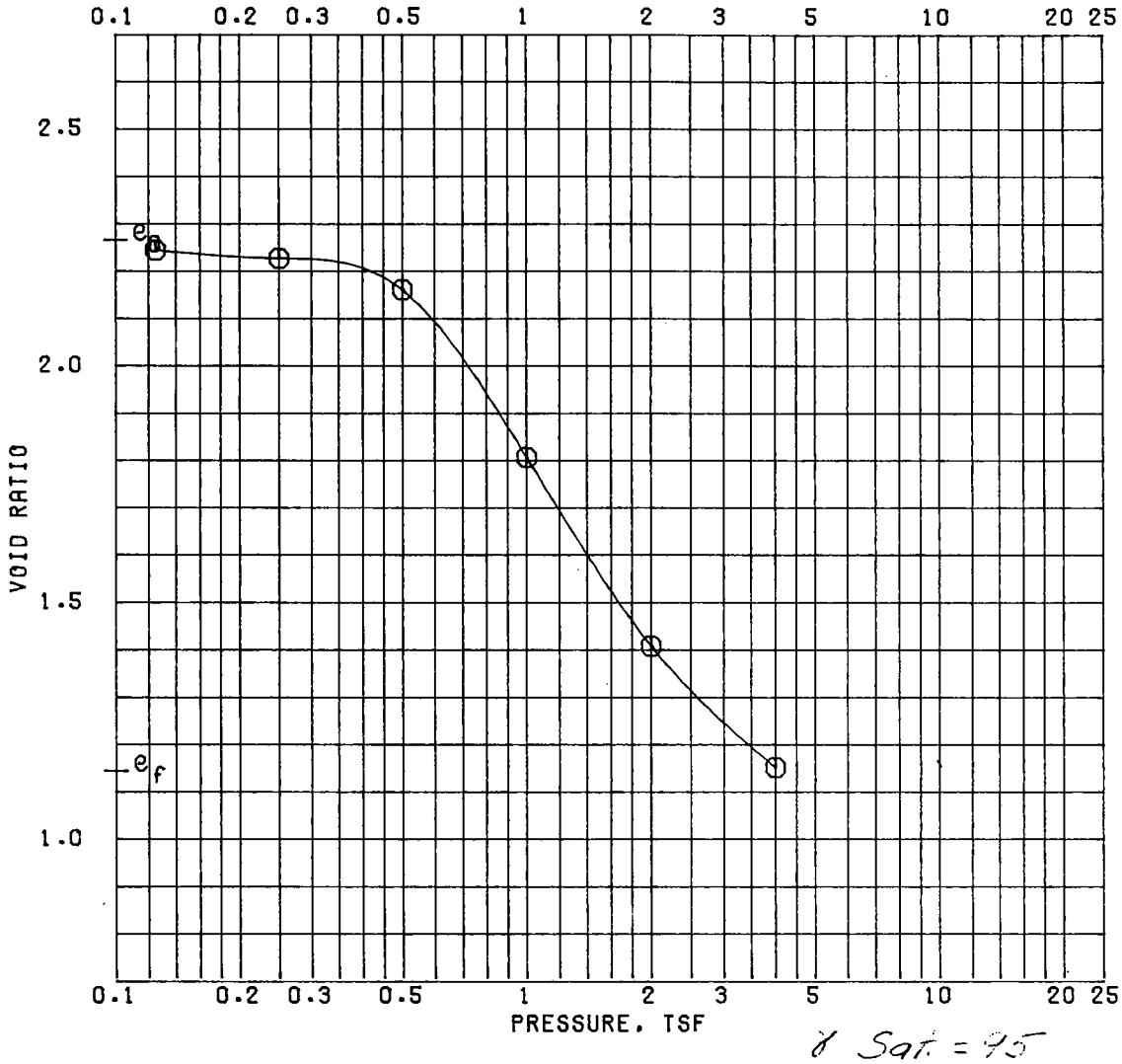
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 21-U | SAMPLE NO. 4-B

DEPTH/ELEV 13/-17.3 | TECH. LRC

LABORATORY USAE WES | DATE 22 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 95

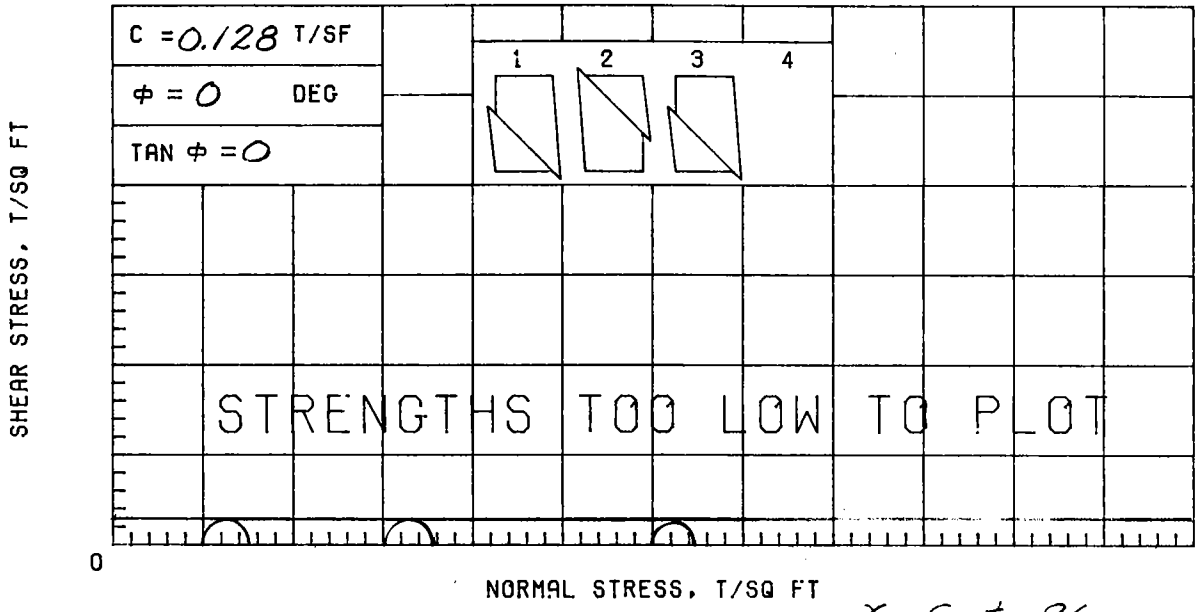
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.55	DRY DENSITY, PCF	51.7	78.7
COMPRESSION INDEX 1.34	SATURATION, %	98.1	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	2.263	1.141
DIA. IN 4.44 HT. IN 1.124	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

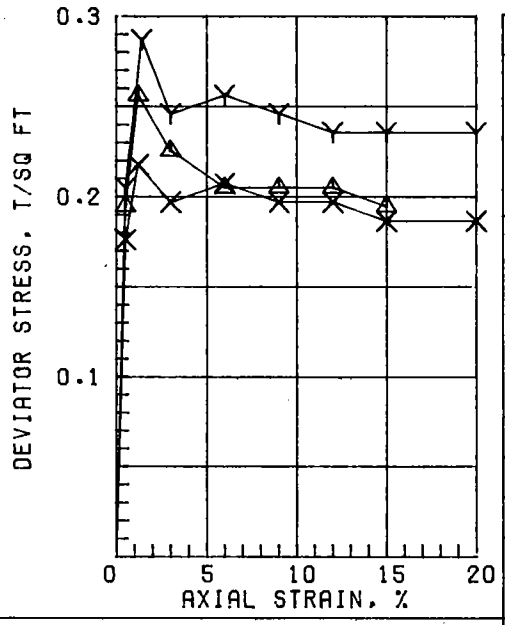
LL 78 PL 24 PI 54	PROJECT LAKE PONT. LA & VIC. HURR. PROT.	
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISHES	
REMARKS	BORING NO. 21-U	SAMPLE NO. 6-B
	DEPTH/ELEV 21.0/-25.3	DATE 28 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat = 96



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	77.6	81.5	80.4	
	DRY DENSITY, PCF	54.5	52.7	53.3	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.090	2.196	2.161	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.26	0.29	0.22	
TIME TO FAILURE, MIN.		2	18	15	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.38	1.38	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 79.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 76	PL 23	PI 53	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

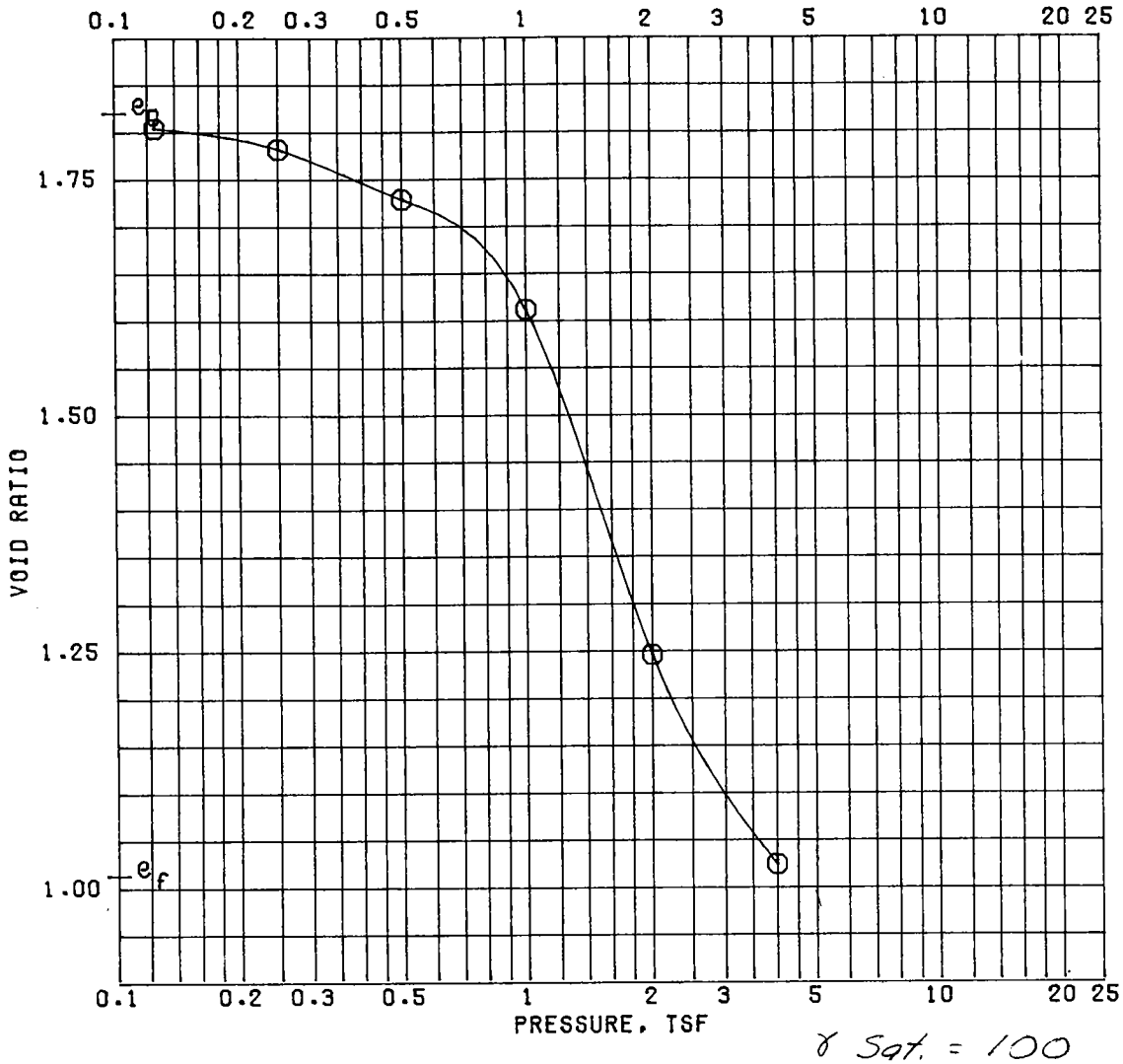
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 21-U | SAMPLE NO. 7-C

DEPTH/ELEV 26.0/-30.3 | TECH. LRC

LABORATORY USAE WES | DATE 22 AUG 85

TRIAXIAL COMPRESSION TEST REPORT

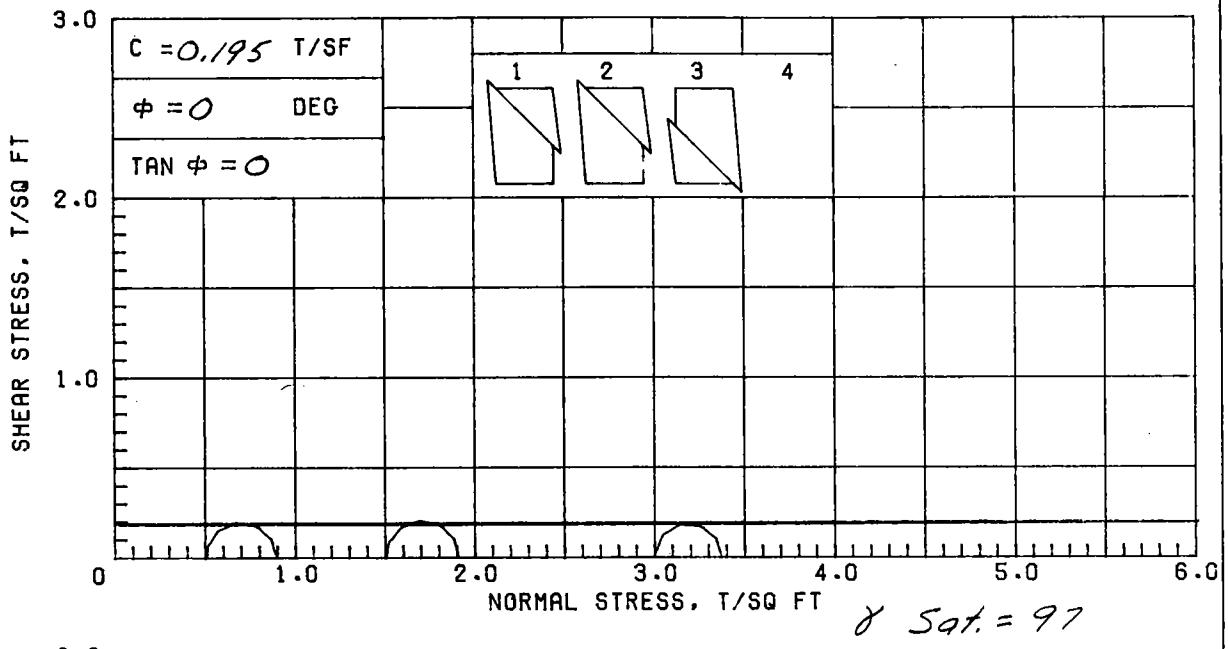


γ Sat. = 100

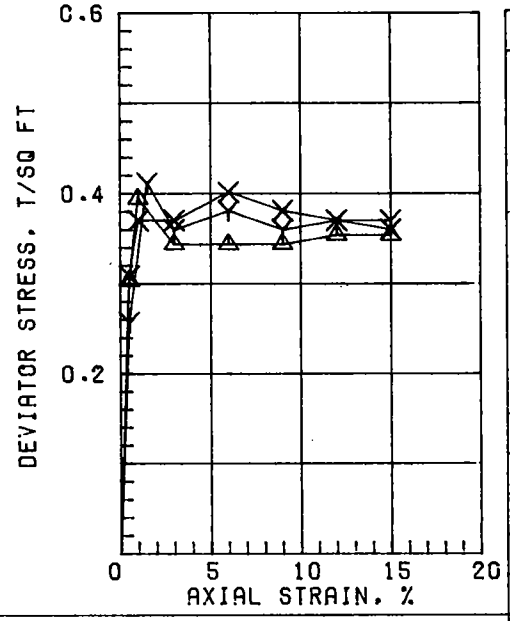
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	64.7	40.6
PRECONSOL. PRESSURE, TSF	0.9	DRY DENSITY, PCF	59.8	83.8
COMPRESSION INDEX	1.30	SATURATION, %	96.1	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.818	1.012
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		
CLASSIFICATION	PLASTIC CLAY (CH), GRAY; SHELLS			
LL 87 / PL 22 / PI 65		PROJECT LAKE PONT. LA & VIC. HURR. PROT.		
GS 2.70 (EST)	D_{10}	JEFFERSON & ST. CHARLES PARISHES		
REMARKS		BORING NO. 21-U	SAMPLE NO. 10-B	
		DEPTH/ELEV 37.0/-41.3	DATE 28 OCT 85	

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. = 97



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	76.0	76.2	76.8	
	DRY DENSITY, PCF	55.3	54.9	54.2	
	SATURATION, %	100+	99.5	98.4	
	VOID RATIO	2.048	2.068	2.108	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.39	0.41	0.37	
TIME TO FAILURE, MIN.		2	20	12	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.39	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

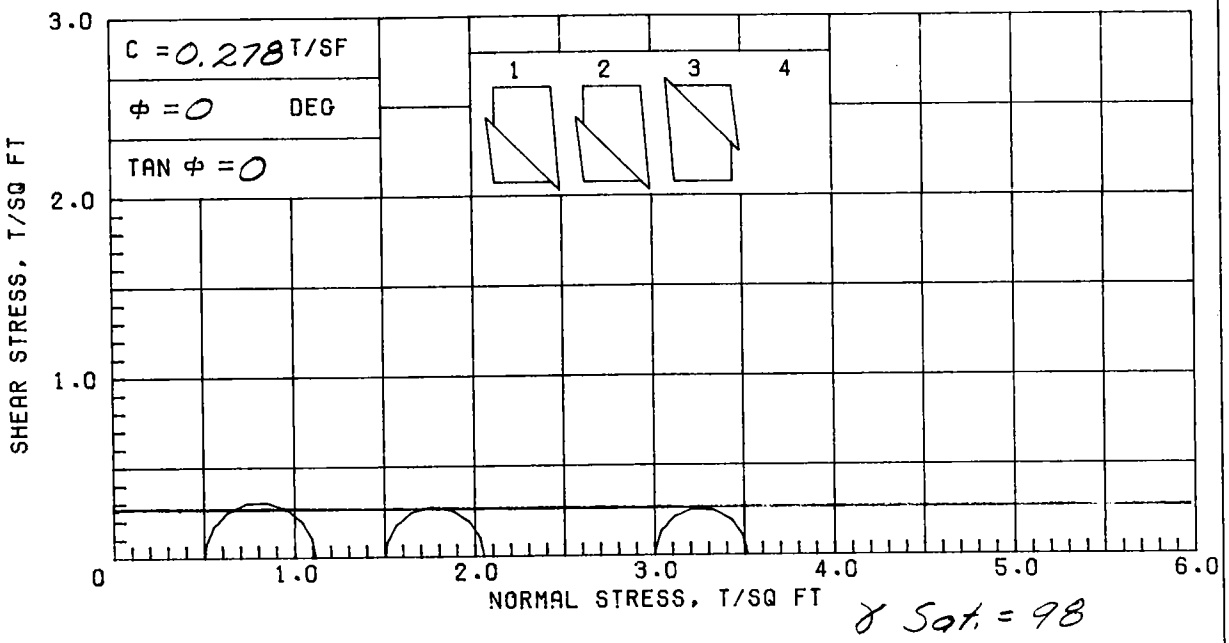
Avg. 76.3

CONTROLLED-STRAIN TEST

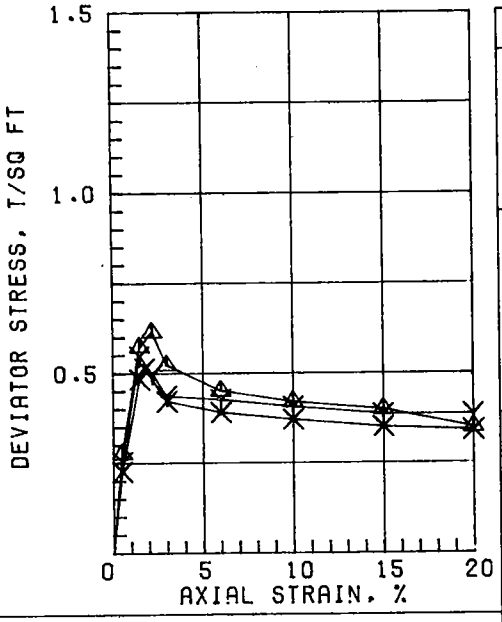
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 76	PL 21	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 21-U	SAMPLE NO. 10-C
	DEPTH/ELEV 37.9/-42.2	TECH. LRC
	LABORATORY USAE WES	DATE 22 AUG 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 98



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	71.6	71.1	73.2	
	DRY DENSITY, PCF	57.4	57.3	56.5	
	SATURATION, %	99.9	98.9	99.8	
	VOID RATIO	1.936	1.941	1.981	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.61	0.55	0.51	
TIME TO FAILURE, MIN.		4	10	26	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.38	1.39	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 72.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 97	PL 23	PI 74	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

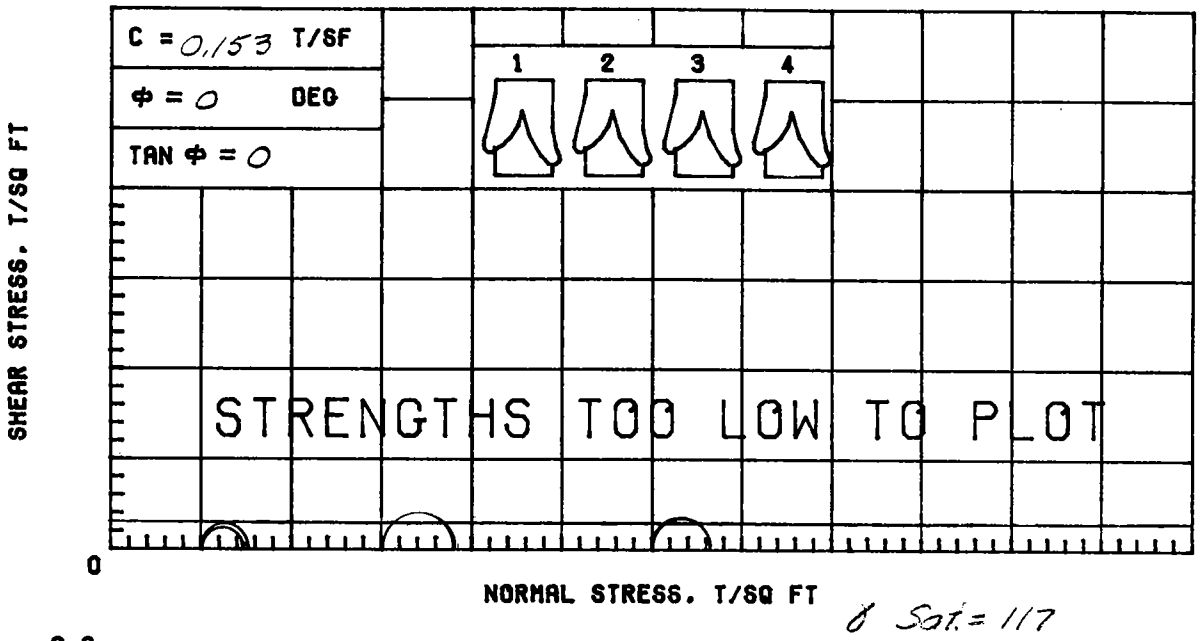
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 21-U | SAMPLE NO. 12-C

DEPTH/ELEV 46.4/-50.7 | TECH. LRC

LABORATORY USAE WES | DATE 23 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



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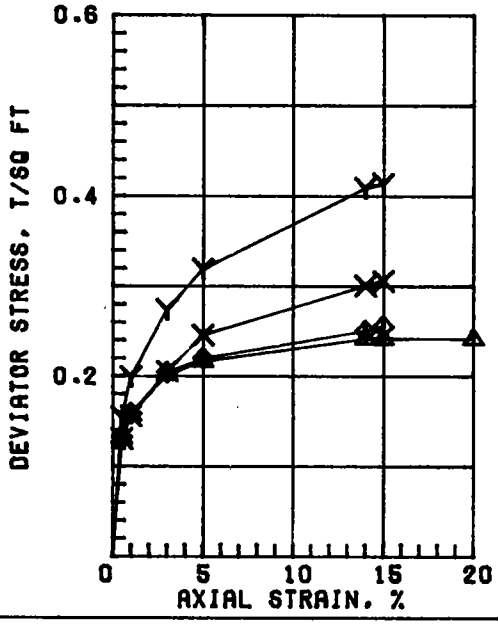


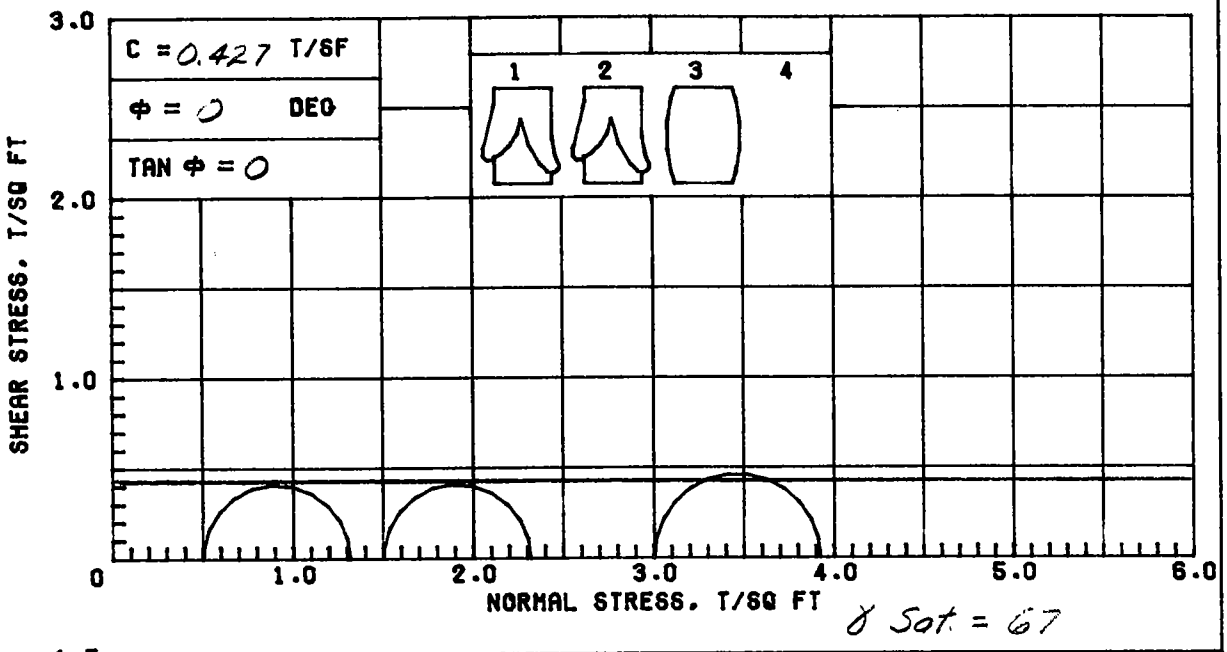
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	43.1	32.3	35.1	40.2	37.7
	DRY DENSITY, PCF	79.7	90.8	86.9	82.5	
	SATURATION, %	100+	100+	100+	100+	
	VOID RATIO	1.116	0.857	0.940	1.043	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.24	0.41	0.31	0.26	
TIME TO FAILURE, MIN.		30	30	32	40	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.40	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

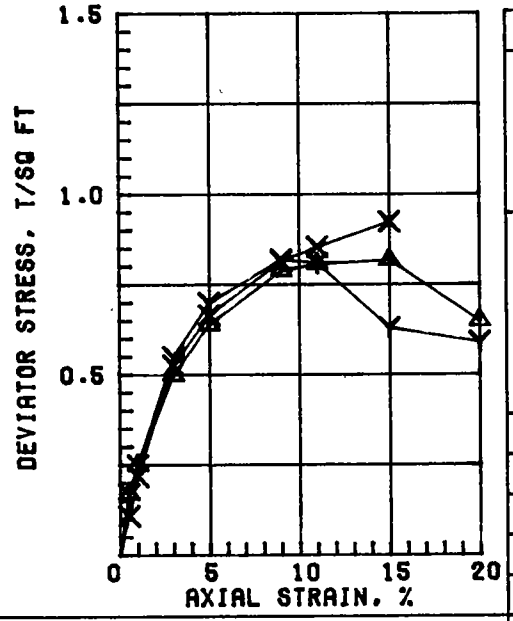
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT GRAY

LL 58	PL 16	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 22-U	SAMPLE NO. 2-B
	DEPTH/ELEV 4.4/-2.5	TECH. PJR
	LABORATORY USAE WES	DATE 10 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat = 67



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	492.2	484.9	486.2	
	DRY DENSITY, PCF	11.1	11.3	11.3	
	SATURATION, %	98.0	97.9	98.3	
	VOID RATIO	8.535	8.417	8.409	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.82	0.82	0.92	
TIME TO FAILURE, MIN.		30	16	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg 4878

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), DARK BROWN

LL 734	PL 258	PI 476	OS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

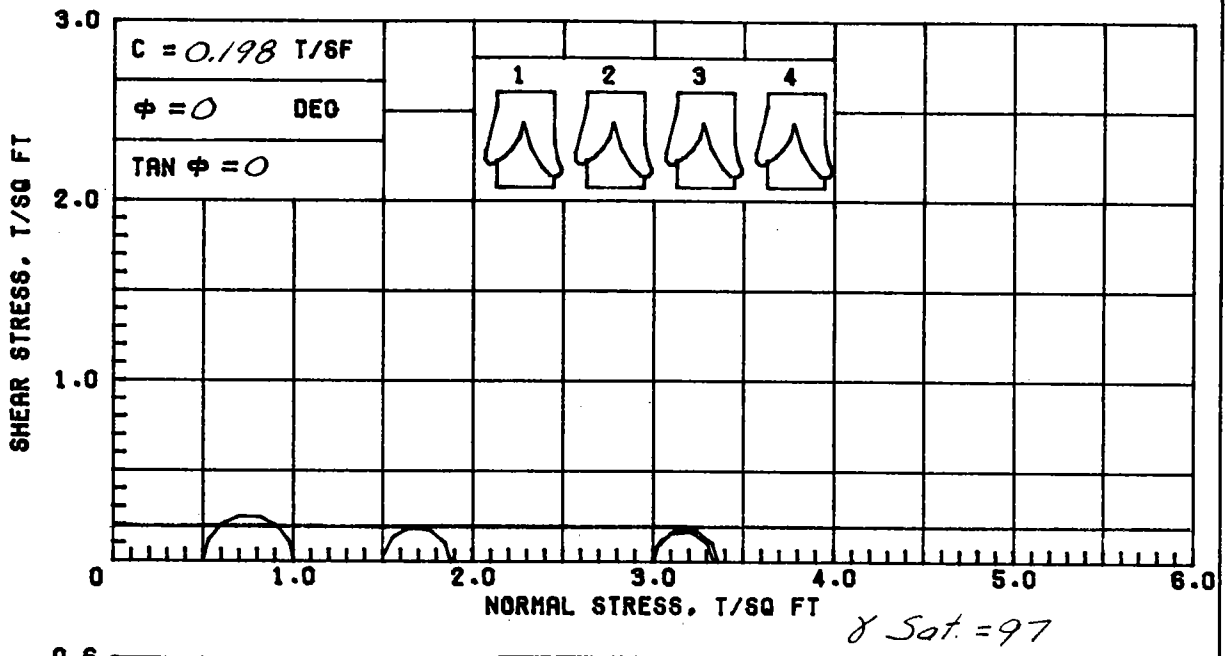
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 22-U | SAMPLE NO. 4-B

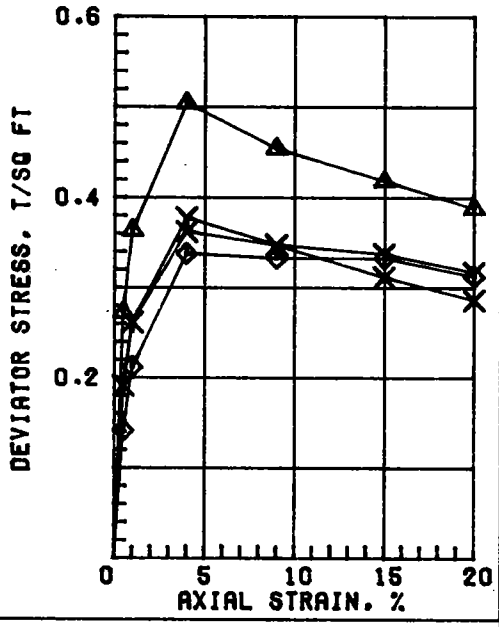
DEPTH/ELEV 12.2/-10.3 | TECH. PJR

LABORATORY USAE WES | DATE 11 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 97



SPECIMEN NO.		▲1	Y2	X3	◇4	AVG.
INITIAL	WATER CONTENT, %	75.9	77.8	76.4	80.0	77.5
	DRY DENSITY, PCF	55.8	54.8	55.3	53.5	
	SATURATION, %	100+	100+	100+	100+	
	VOID RATIO	2.022	2.075	2.048	2.150	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0	
MAX. DEV. STRESS, TSF		0.50	0.38	0.36	0.34	
TIME TO FAILURE, MIN.		8	16	12	17	
RATE OF STRAIN INCR,%			9		7	
INITIAL DIAMETER, IN.		1.39	1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 81	PL 21	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

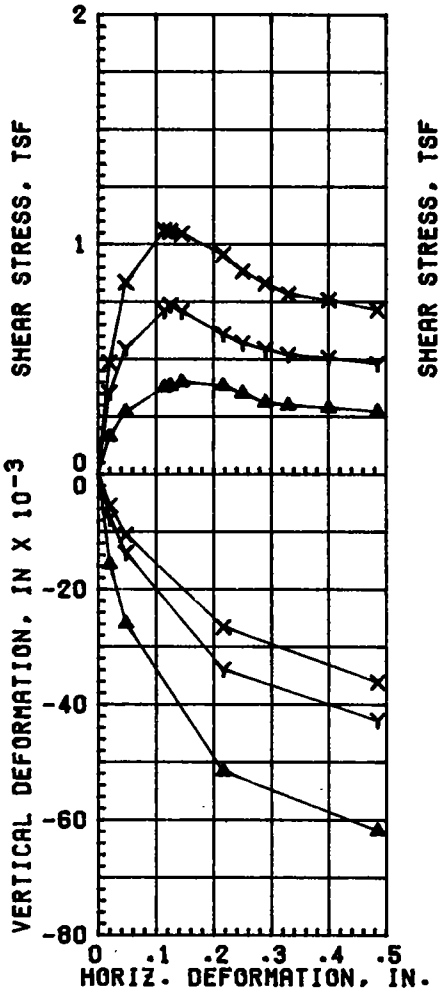
PROJECT LK PONT. LA. & VIC. JEFFERSON & ST. CHARLES PARISH

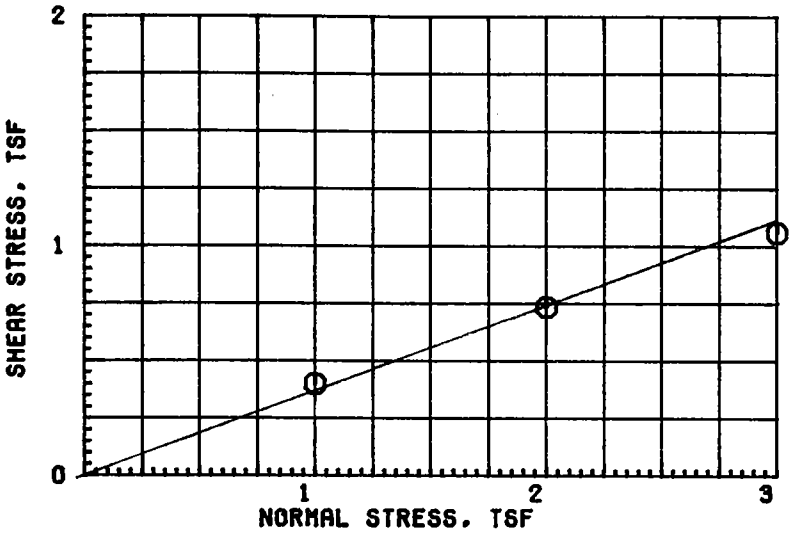
BORING NO. 22-U | SAMPLE NO. 5-B

DEPTH/ELEV 16/-14.1 | TECH. PJR

LABORATORY USAE WES | DATE 11 JAN 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 96

TEST NO.		1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	73.2	70.5	69.2	71.1
	VOID RATIO	2.171	2.117	2.058	
	SATURATION, %	91.0	89.9	90.8	
	DRY DENSITY, PCF	53.1	54.0	55.1	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		11	7	8	
FINAL	WATER CONTENT, %	56.7	46.8	40.4	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.40	0.73	1.06	
TIME TO FAILURE, MIN		825	711	654	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

$\Phi = 20°30'$

TAN $\Phi = 0.374$

$C = 0$

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.553 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 88 | PL 26 | PI 62 | | GS 2.70 (EST)

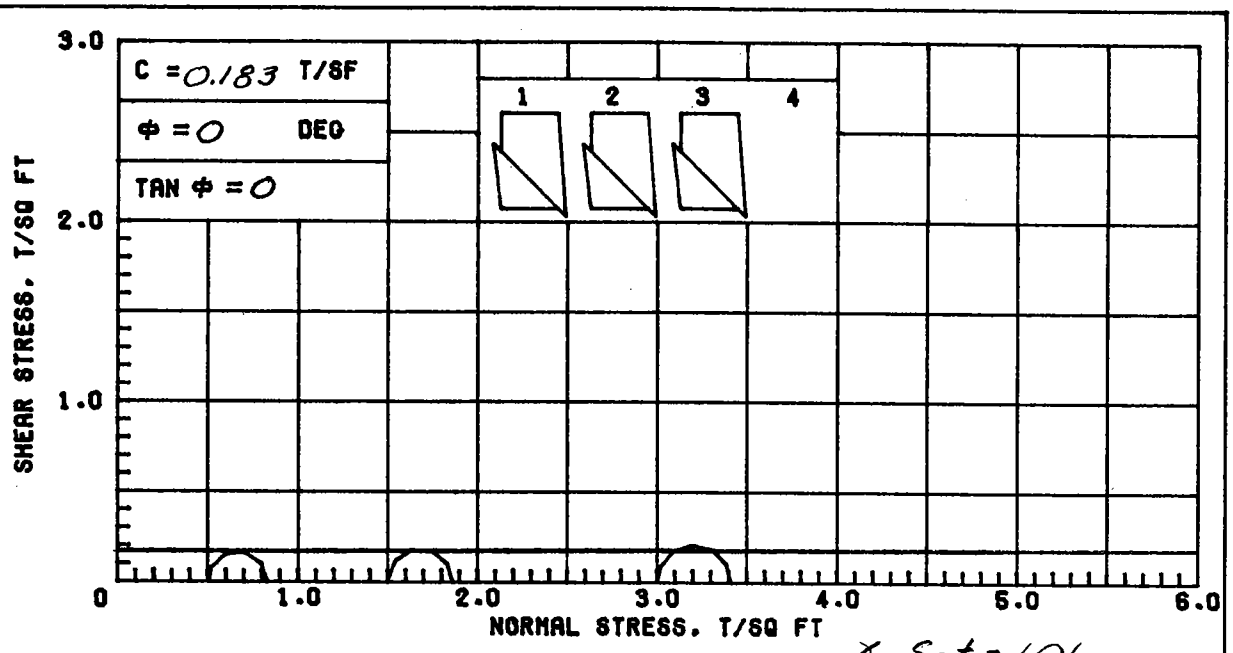
REMARKS:

PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 22U | SAMPLE 6C

DEPTH/ELEV 21.4/-19.7 | DATE 28 JAN 85

DIRECT SHEAR TEST REPORT



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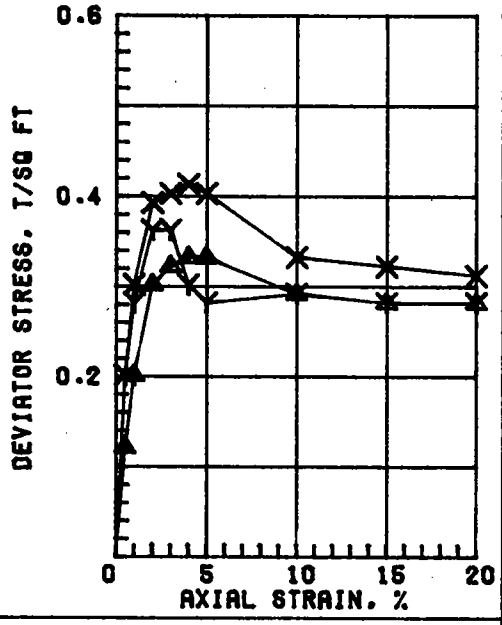


SPECIMEN NO.		▲1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	60.2	66.6	62.9		63.2
	DRY DENSITY, PCF	63.8	59.9	62.2		
	SATURATION, %	99.0	99.1	99.4		
	VOID RATIO	1.642	1.814	1.709		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.33	0.36	0.41		
TIME TO FAILURE, MIN.		8	4	8		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

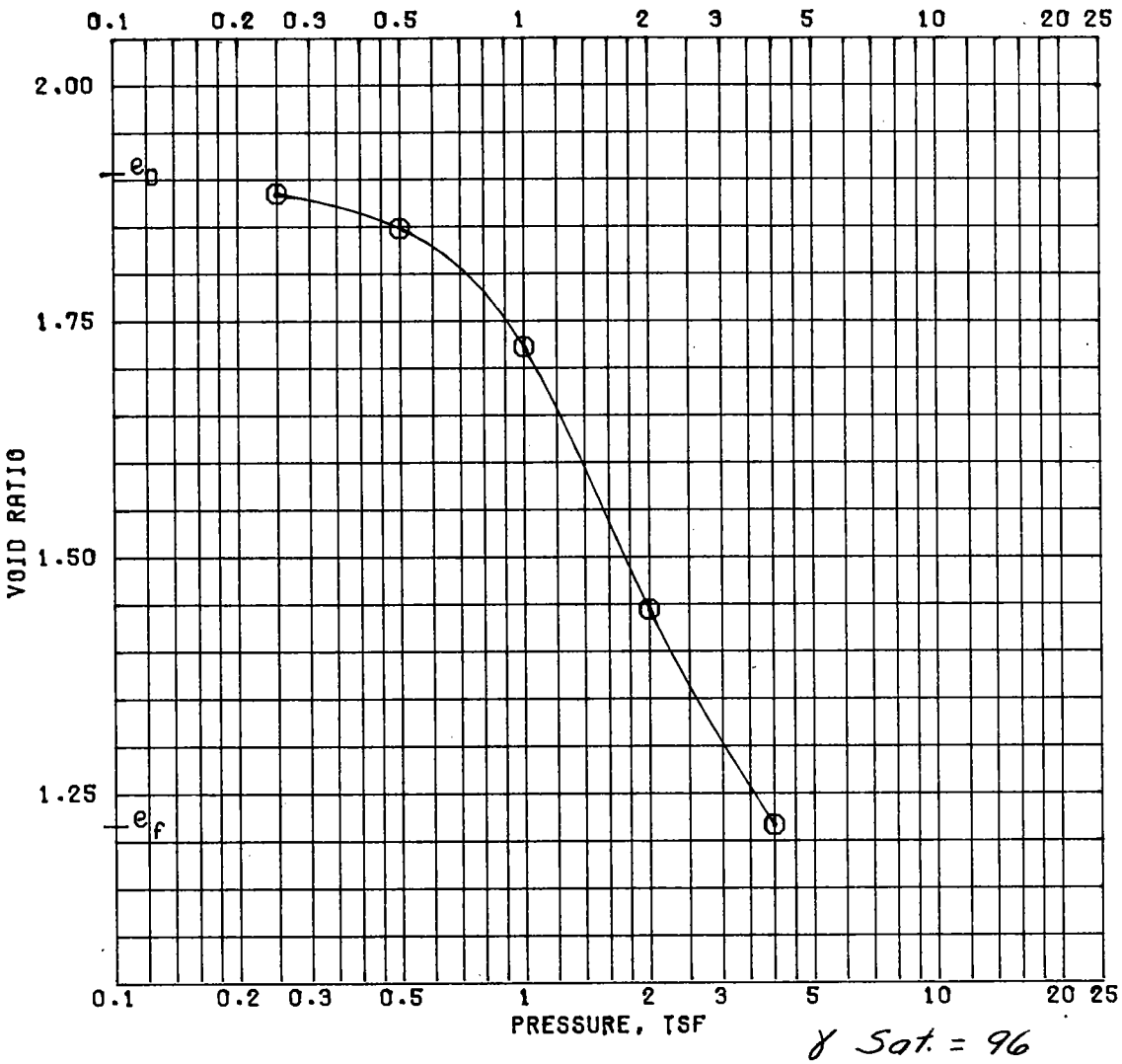
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 76	PL 21	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 22-U	SAMPLE NO. 7-C
	DEPTH/ELEV 24.8/-22.9	TECH. KOC
	LABORATORY USAE WES	DATE 11 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 96

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.76	WATER CONTENT, %	66.0	45.5
COMPRESSION INDEX 0.87	DRY DENSITY, PCF	58.0	76.1
TYPE SPECIMEN UNDISTURBED	SATURATION, %	99.9	100 +
DIA. IN 4.44 HT. IN 1.137	VOID RATIO	1.906	1.215
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 81 PL 22 PI 59

GS 2.70 (EST) D_{10}

PROJECT LK PONT LA & VIC JEFFERSON

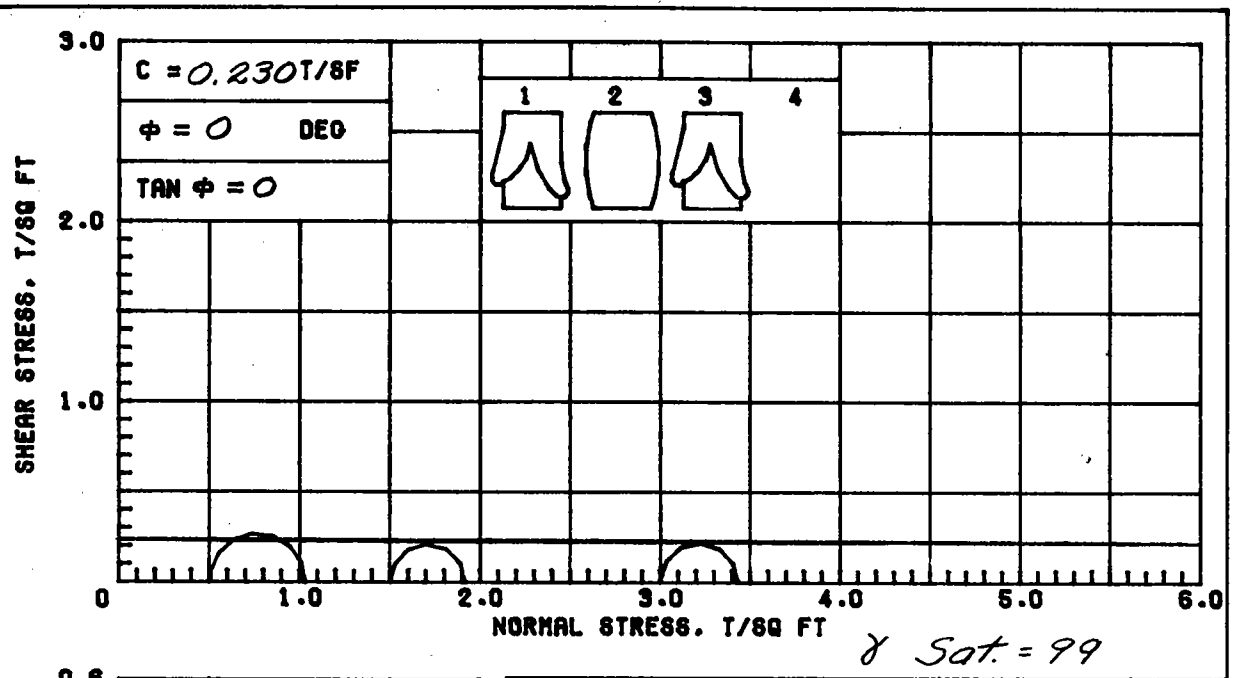
PARISH & ST CHARLES PARISH

REMARKS

BORING NO. 22-U SAMPLE NO. 8-C

DEPTH/ELEV 29.0/-27.1 DATE 26 DEC 84

CONSOLIDATION TEST REPORT



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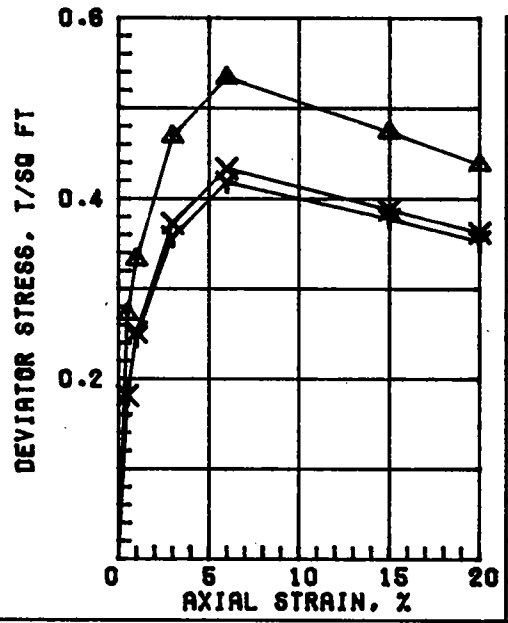


SPECIMEN NO.		▲1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	72.6	72.3	72.6		72.5
	DRY DENSITY, PCF	57.6	57.7	57.6		
	SATURATION, %	100+	100+	100+		
	VOID RATIO	1.926	1.920	1.926		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.53	0.42	0.43		
TIME TO FAILURE, MIN.		12	17	14		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SLICKENSIDED

LL 89	PL 23	PI 66	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

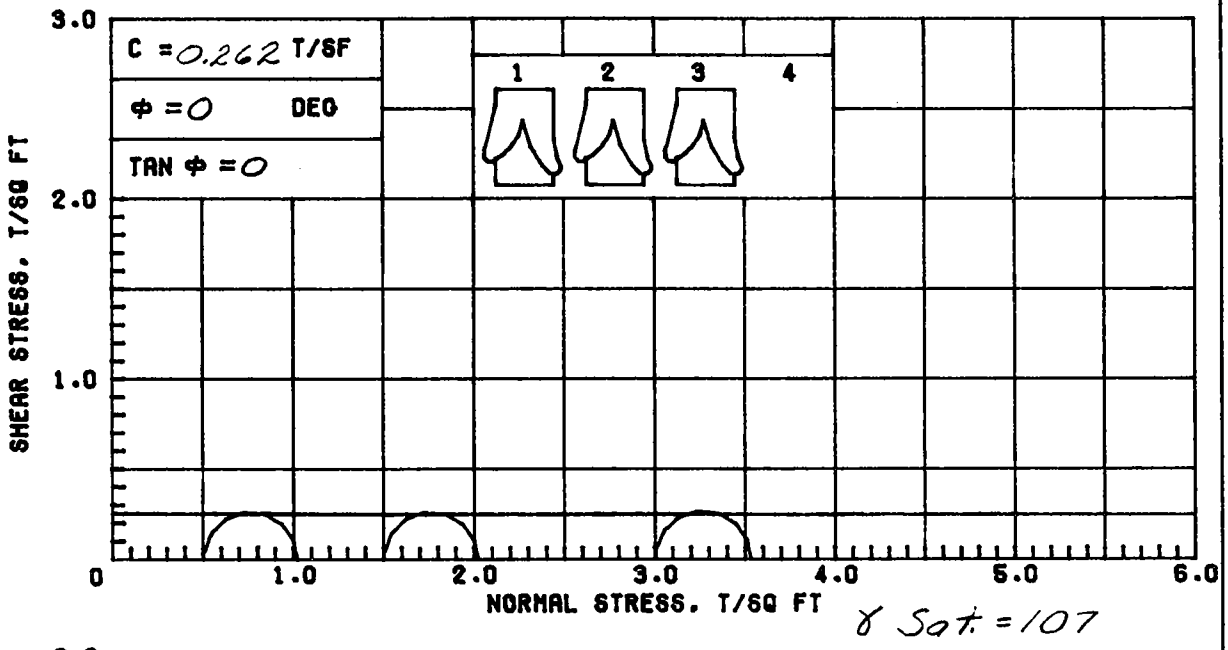
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 22-U | SAMPLE NO. 10-B

DEPTH/ELEV 36.4/-34.5 | TECH. PJR

LABORATORY USAE WES | DATE 14 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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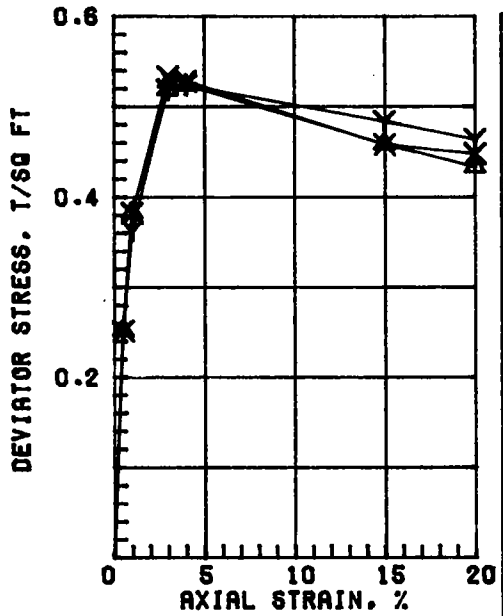


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	52.2	52.0	52.6	
	DRY DENSITY, PCF	70.4	70.4	70.1	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.394	1.393	1.406	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.52	0.52	0.53	
TIME TO FAILURE, MIN.		9	13	14	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 52.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 62	PL 18	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

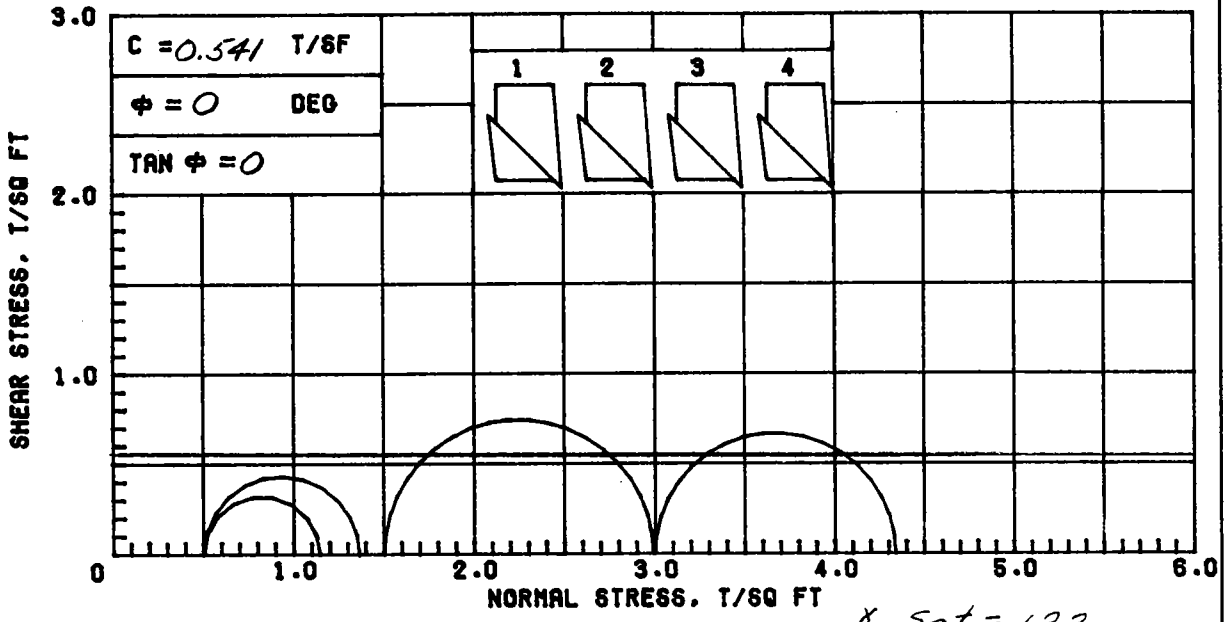
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 22-U | SAMPLE NO. 13-B

DEPTH/ELEV 48/-46.1 | TECH. PJR

LABORATORY USAE WES | DATE 14 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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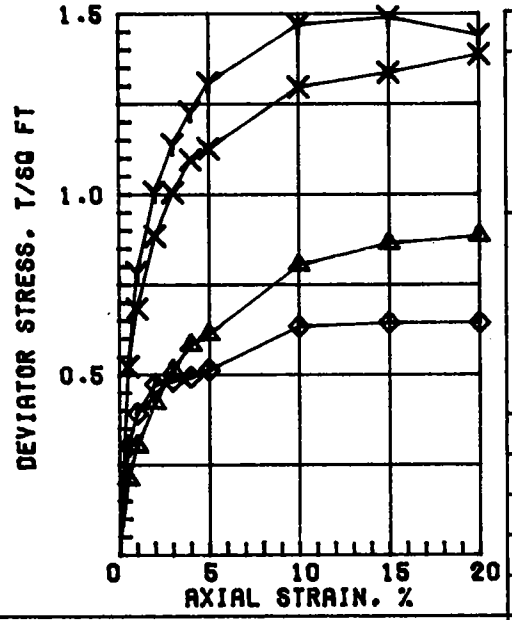


SPECIMEN NO.		▲1	Y2	X3	◆4	Avg.
INITIAL	WATER CONTENT, %	21.4	32.0	29.9	32.3	28.9
	DRY DENSITY, PCF	100.5	91.1	94.5	89.4	
	SATURATION, %	85.2	100+	100+	98.5	
	VOID RATIO	0.678	0.851	0.784	0.886	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.86	1.49	1.34	0.64	
TIME TO FAILURE, MIN.		30	30	30	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS & LENSES

LL 72	PL 19	PI 53	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

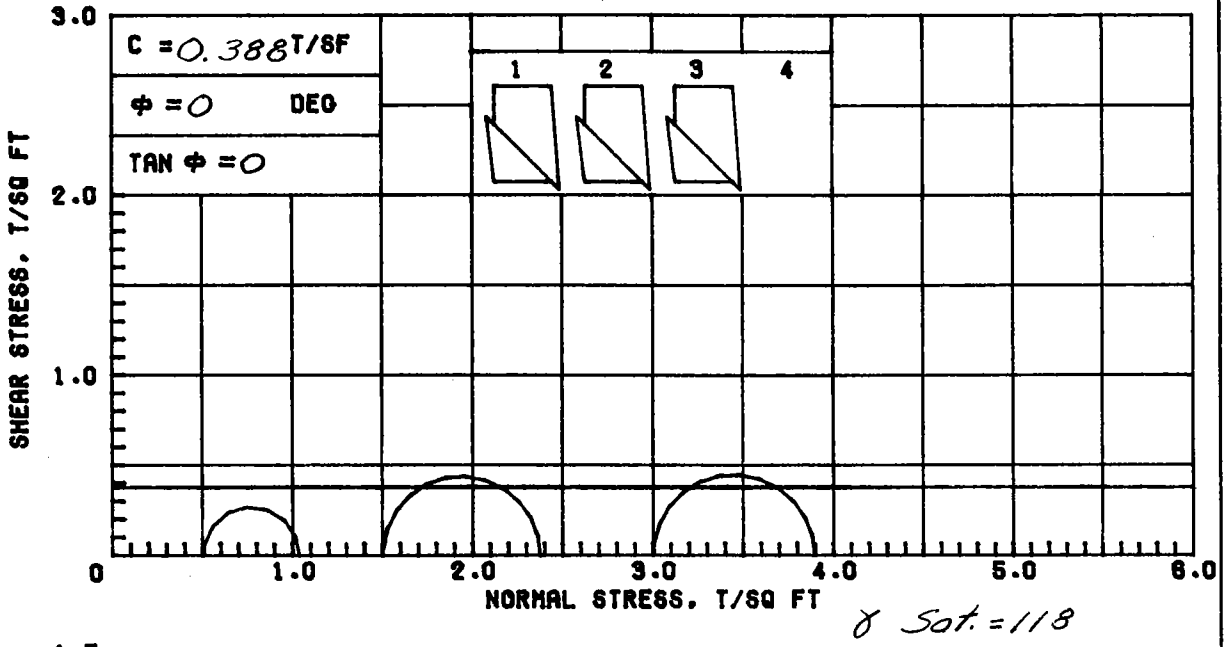
PROJECT LK PONT. LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 22-U | SAMPLE NO. 14-C

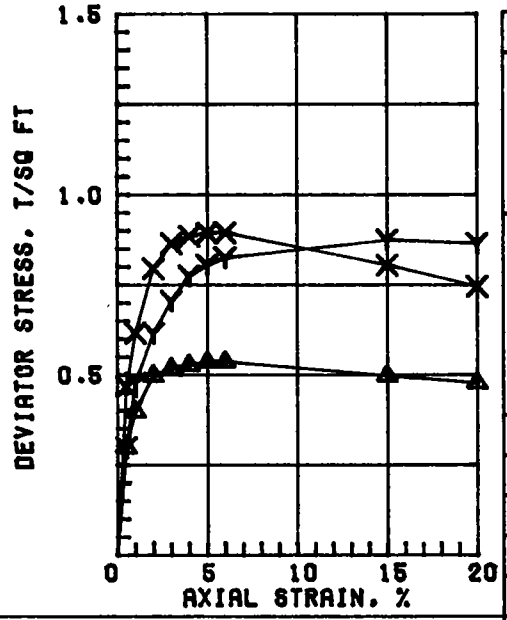
DEPTH/ELEV 53.2/-51.3 | TECH. KOC

LABORATORY USAE WES | DATE 14 JAN 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 118



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	28.3	29.0	31.4	
	DRY DENSITY, PCF	89.9	90.3	87.6	
	SATURATION, %	87.4	90.4	91.7	
	VOID RATIO	0.875	0.866	0.924	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.54	0.87	0.89	
TIME TO FAILURE, MIN.		10	30	10	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 29.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; SILT POCKETS

LL 51	PL 13	PI 38	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

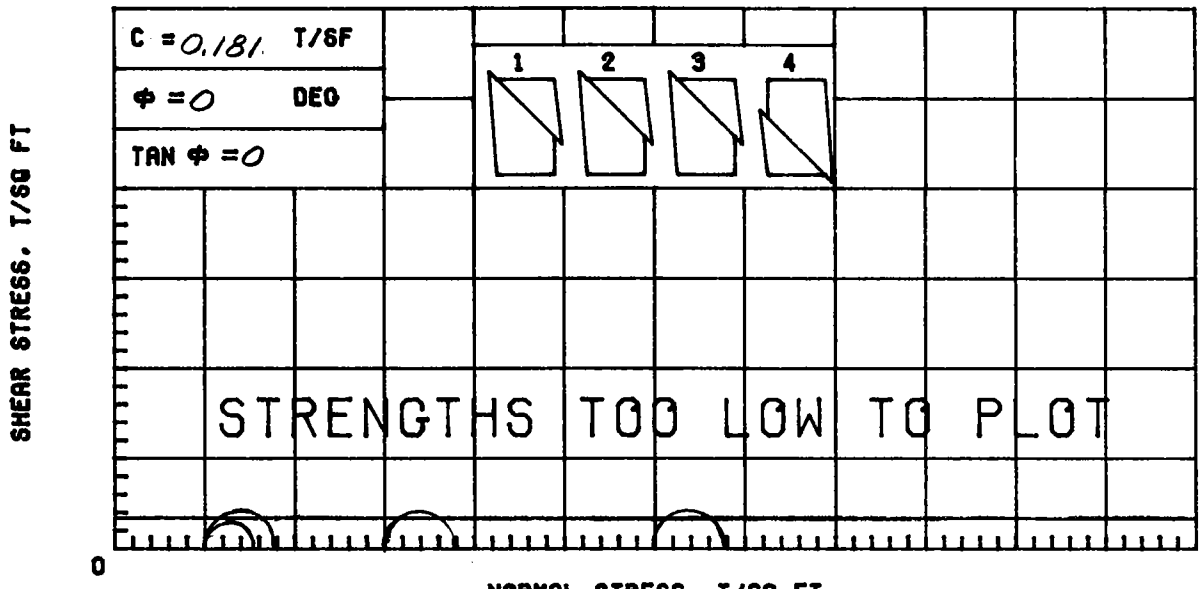
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 23-U | SAMPLE NO. 2-B

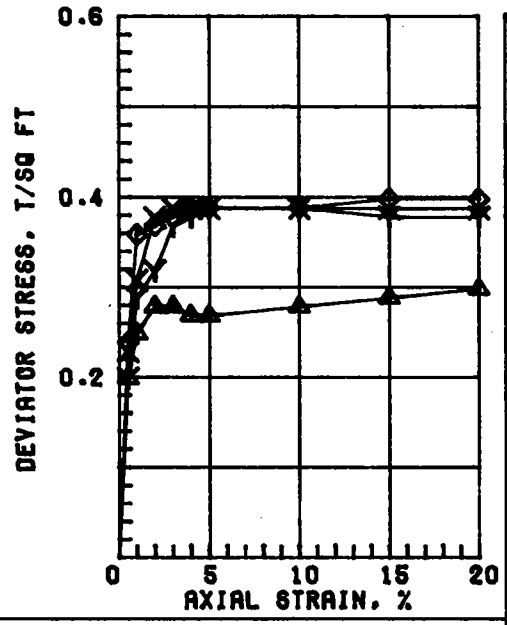
DEPTH/ELEV 4.5/5.6 | TECH. KOC

LABORATORY USAE WES | DATE 14 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 116



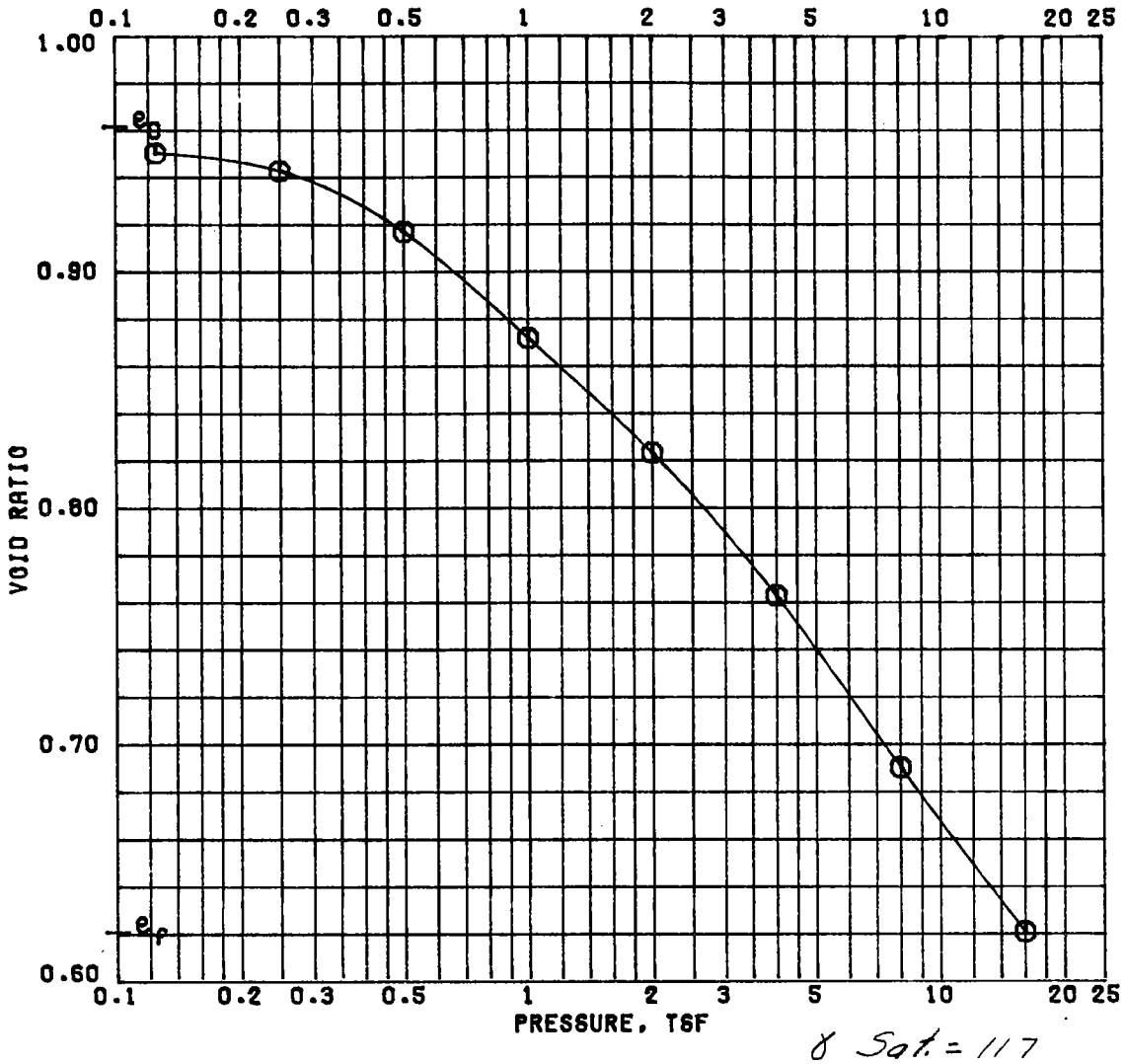
SPECIMEN NO.		▲1	Y2	X3	◆4	Avg.
INITIAL	WATER CONTENT, %	35.2	34.5	33.9	33.9	34.4
	DRY DENSITY, PCF	85.5	84.4	87.3	85.6	
	SATURATION, %	97.7	93.5	98.3	94.4	
	VOID RATIO	0.972	0.997	0.931	0.969	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.28	0.39	0.39	0.39	
TIME TO FAILURE, MIN.		4	10	6	8	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 51	PL 15	PI 36	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 23-U	SAMPLE NO. 4-C
	DEPTH/ELEV 13/-2.9	TECH. KOC
	LABORATORY USAE WES	DATE 15 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	



δ Sat. = 117

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.40	
COMPRESSION INDEX	0.16	
WATER CONTENT, %	30.0	22.2
DRY DENSITY, PCF	86.0	104.0
SATURATION, %	84.4	96.8
VOID RATIO	0.961	0.620
BACK PRESSURE, TSF		

TYPE SPECIMEN: UNDISTURBED

DIA. IN 4.44 | HT. IN 1.170

CLASSIFICATION PLASTIC CLAY (CH), GRAY; FINE SAND LENSES

LL 56 | PL 17 | PI 39

GS 2.70 (EST) | D_{10}

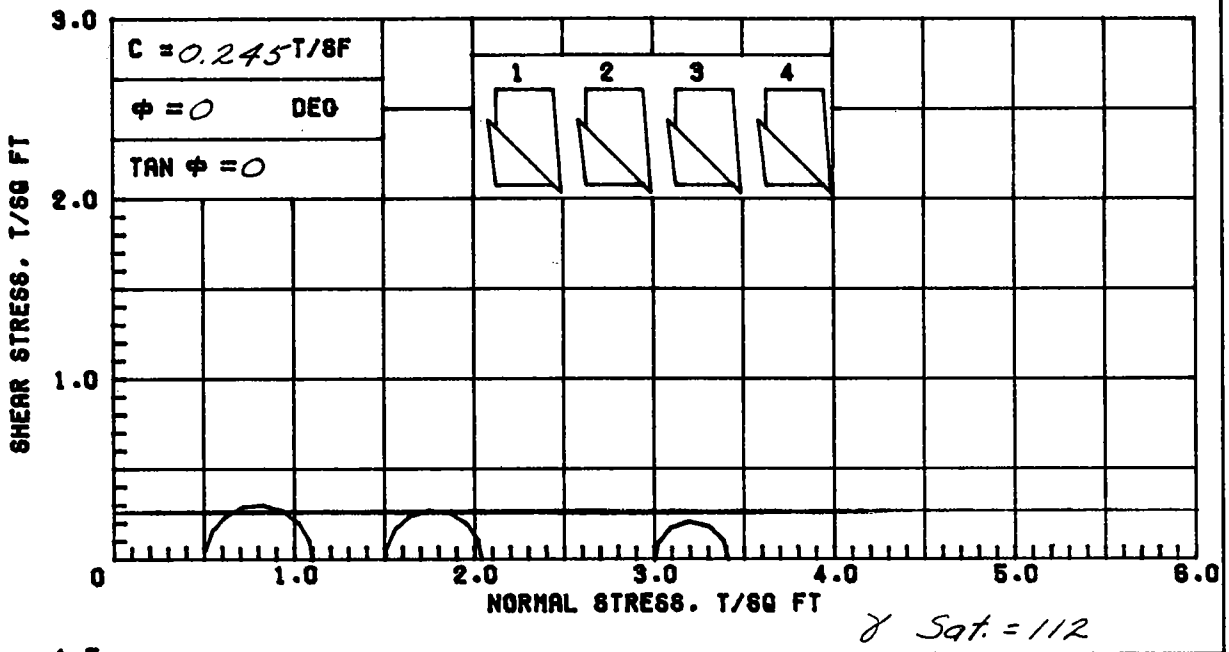
PROJECT LAKE PONT., LA. & VIC., JEFFERSON PARISH & ST. CHARLES PARISH

BORING NO. 23-U | SAMPLE NO. 5-C

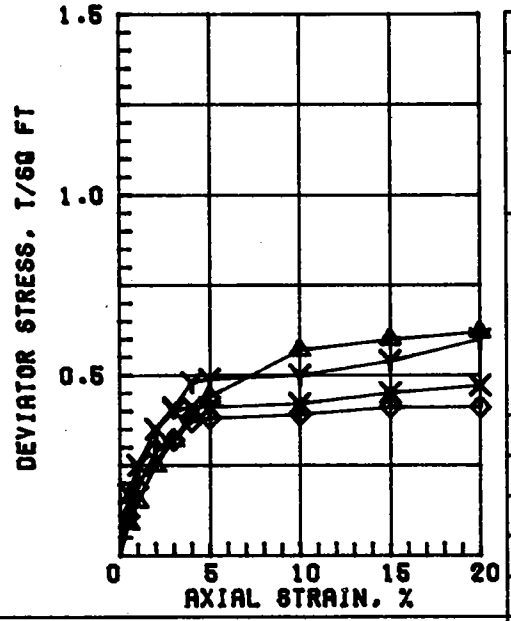
DEPTH/ELEV 17/-6.9 | DATE 07 JAN 85

REMARKS

CONSOLIDATION TEST REPORT



γ Sat. = 112



SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	33.5	34.4	56.9	41.2	41.5
	DRY DENSITY, PCF	87.3	85.6	65.2	78.3	
	SATURATION, %	97.1	95.8	97.0	96.4	
	VOID RATIO	0.931	0.969	1.584	1.154	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0	
MAX. DEV. STRESS, TSF		0.60	0.54	0.41	0.41	
TIME TO FAILURE, MIN.		30	30	8	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; SILT AND PLASTIC CLAY (CH) POCKETS

LL 39	PL 15	PI 24	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

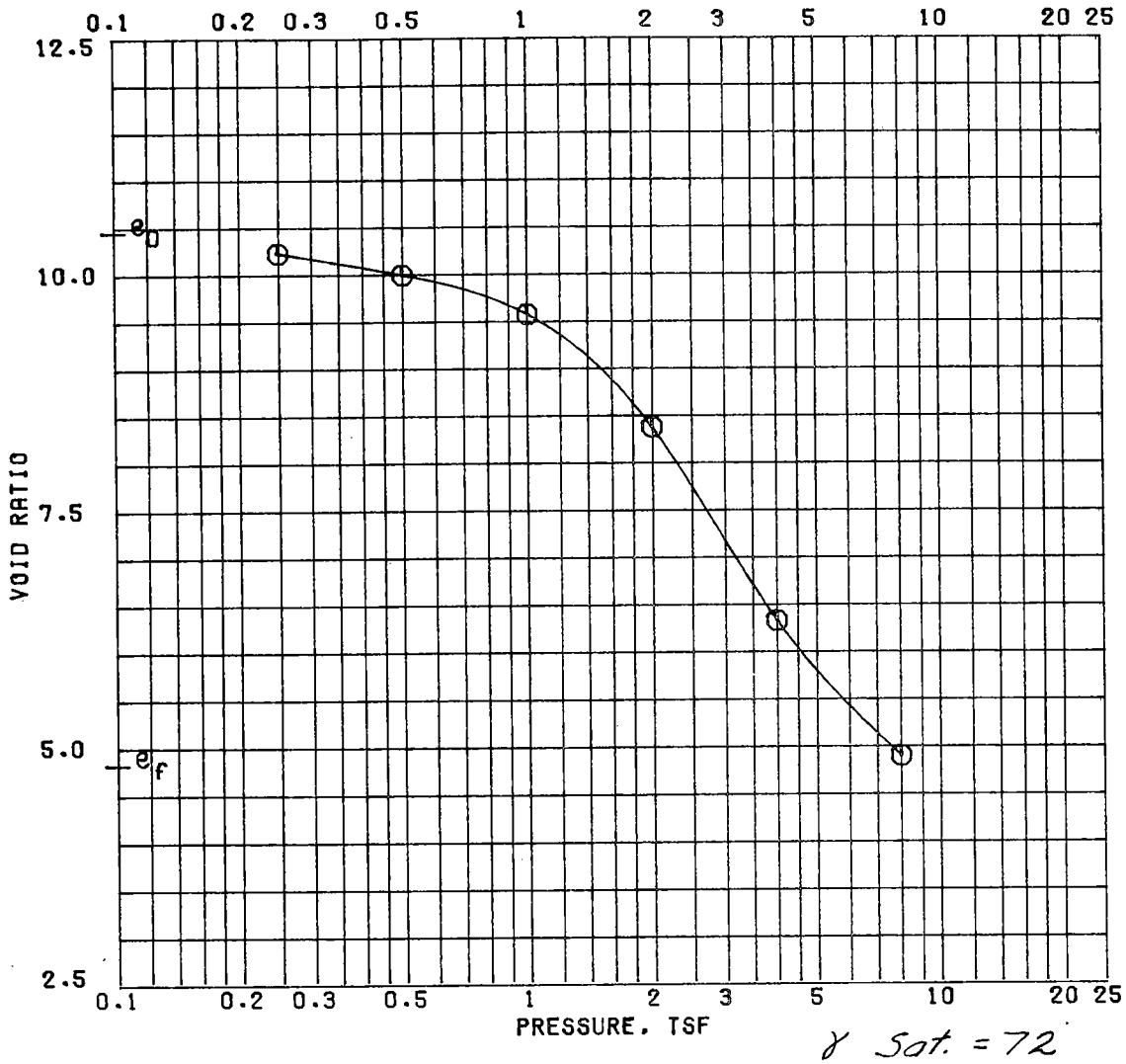
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 23-U | SAMPLE NO. 6-C

DEPTH/ELEV 20.6/-10.5 | TECH. KOC

LABORATORY USAE WES | DATE 15 JAN 65

TRIAXIAL COMPRESSION TEST REPORT

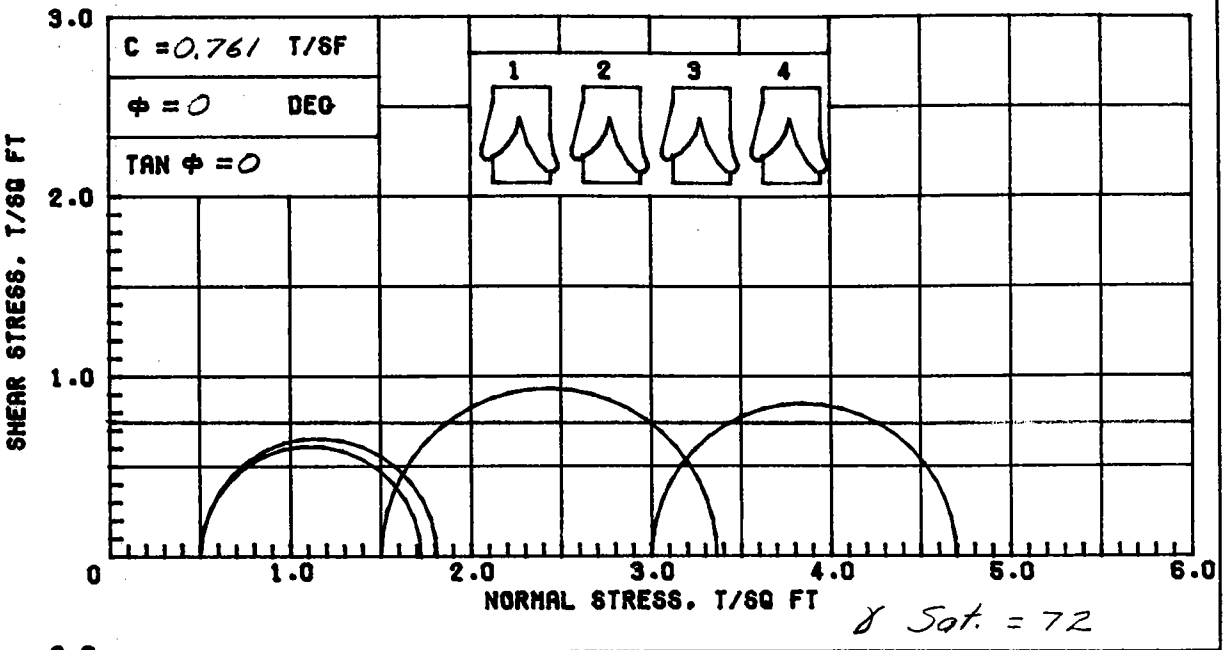


γ Sat. = 72

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF 1.32	WATER CONTENT, % 344.0	162.9
PRECONSOL. PRESSURE, TSF 6.55	DRY DENSITY, PCF 14.7	29.1
COMPRESSION INDEX	SATURATION, % 89.0	91.6
TYPE SPECIMEN UNDISTURBED	VOID RATIO 10.433	4.802
DIA. IN 4.44 HT. IN 1.135	BACK PRESSURE, TSF	
CLASSIFICATION ORGANIC SILT (OH), DARK BROWN		
LL 533 PL 354 PI 179	PROJECT LAKE PONT., LA. & VIC., JEFFERSON	
GS 2.70 (EST) D_{10}	PARISH & ST. CHARLES PARISH	
REMARKS	BORING NO. 23-U	SAMPLE NO. 7-B
	DEPTH/ELEV 24.5/-14.4	DATE 07 JAN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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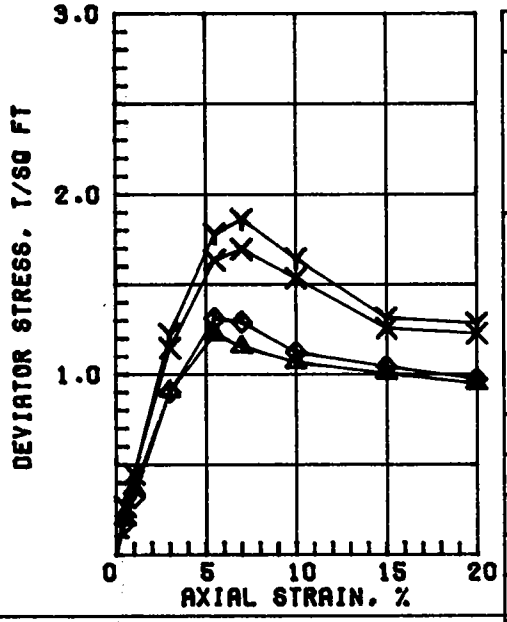


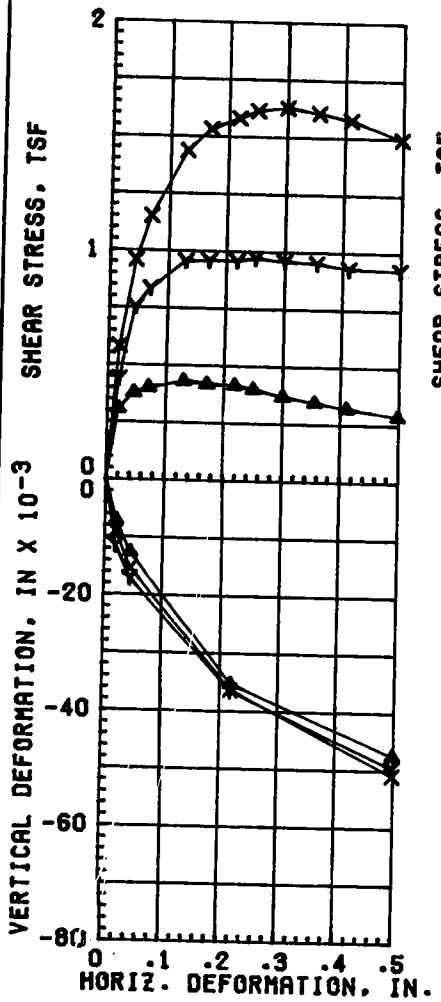
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	294.8	326.9	340.3	314.5	71.9
	DRY DENSITY, PCF	17.3	15.8	15.2	16.3	
	SATURATION, %	92.6	92.2	92.3	92.1	
	VOID RATIO	7.641	8.509	8.845	8.192	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		1.22	1.86	1.70	1.31	
TIME TO FAILURE, MIN.		11	21	21	33	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.41	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

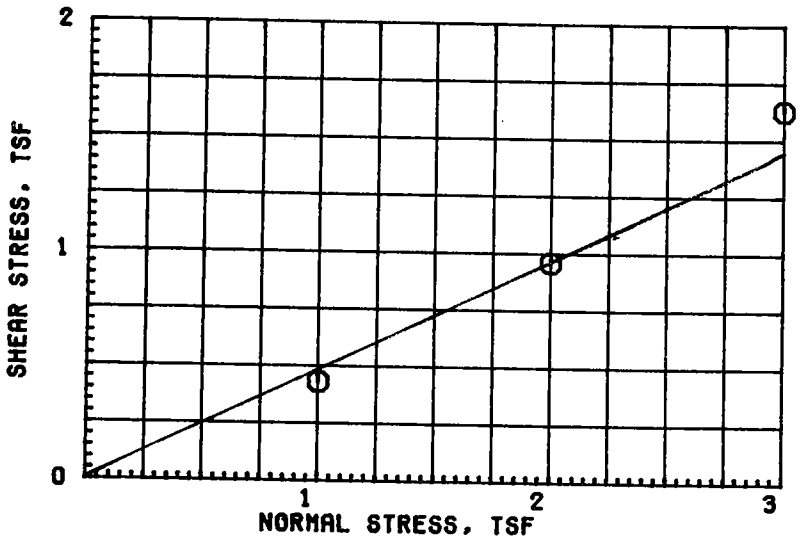
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), DARK BROWN

LL 414	PL 213	PI 201	OS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 23-U	SAMPLE NO. 7-C
	DEPTH/ELEV 25/-14.9	TECH. PJR
	LABORATORY USAE WES	DATE 15 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	





γ Sat. = 57

TEST NO.		1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	49.1	51.9	41.4	47.5
	VOID RATIO	1.372	1.403	1.230	
	SATURATION, %	96.7	99.9	90.9	
	DRY DENSITY, PCF	71.0	70.1	75.5	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		8	3	1	
FINAL	WATER CONTENT, %	50.8	33.2	29.3	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.43	0.96	1.63	
TIME TO FAILURE, MIN		720	941	1661	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

$\Phi = 25°$

TAN $\Phi = 0.466$

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.553 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 73 | PL 22 | PI 51 | | GS 2.70 (EST)

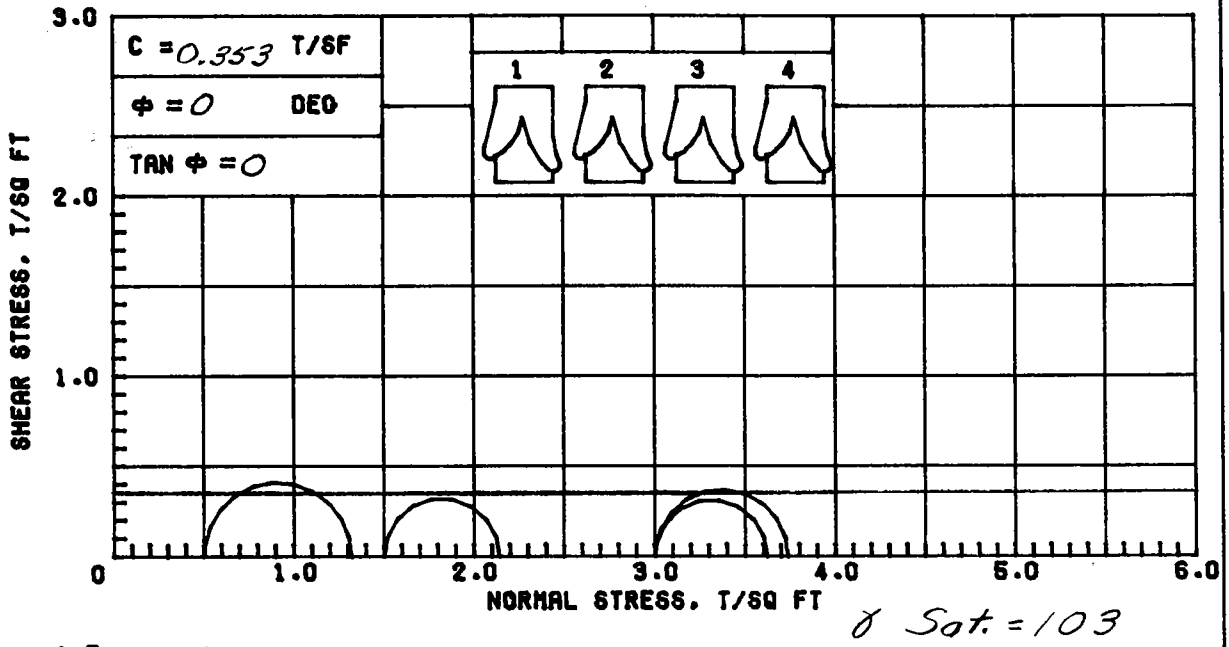
REMARKS:

PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

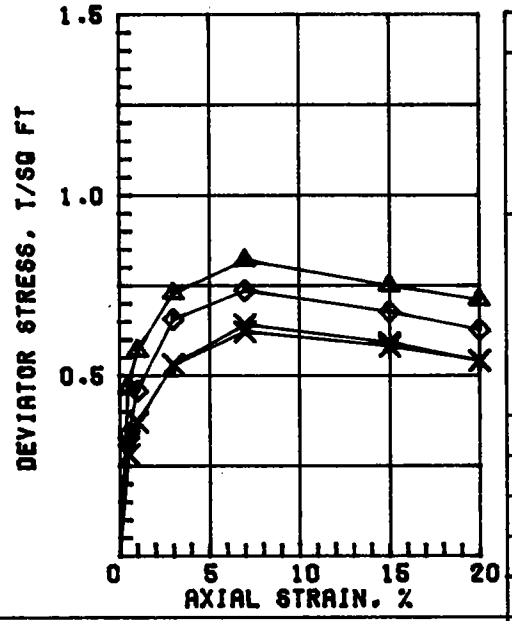
BORING NO. 23U | SAMPLE 8C

DEPTH/ELEV 28.9/-18.8 | DATE 29 JAN 85

DIRECT SHEAR TEST REPORT



γ Sat. = 103



SPECIMEN NO.		▲1	Y2	X3	◆4	Avg.
INITIAL	WATER CONTENT, %	62.8	62.6	62.3	61.9	62.4
	DRY DENSITY, PCF	63.5	63.4	63.6	63.8	
	SATURATION, %	100+	100+	100+	100+	
	VOID RATIO	1.653	1.658	1.650	1.640	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0	
MAX. DEV. STRESS, TSF		0.82	0.64	0.62	0.74	
TIME TO FAILURE, MIN.		13	17	35	14	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 88	PL 25	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

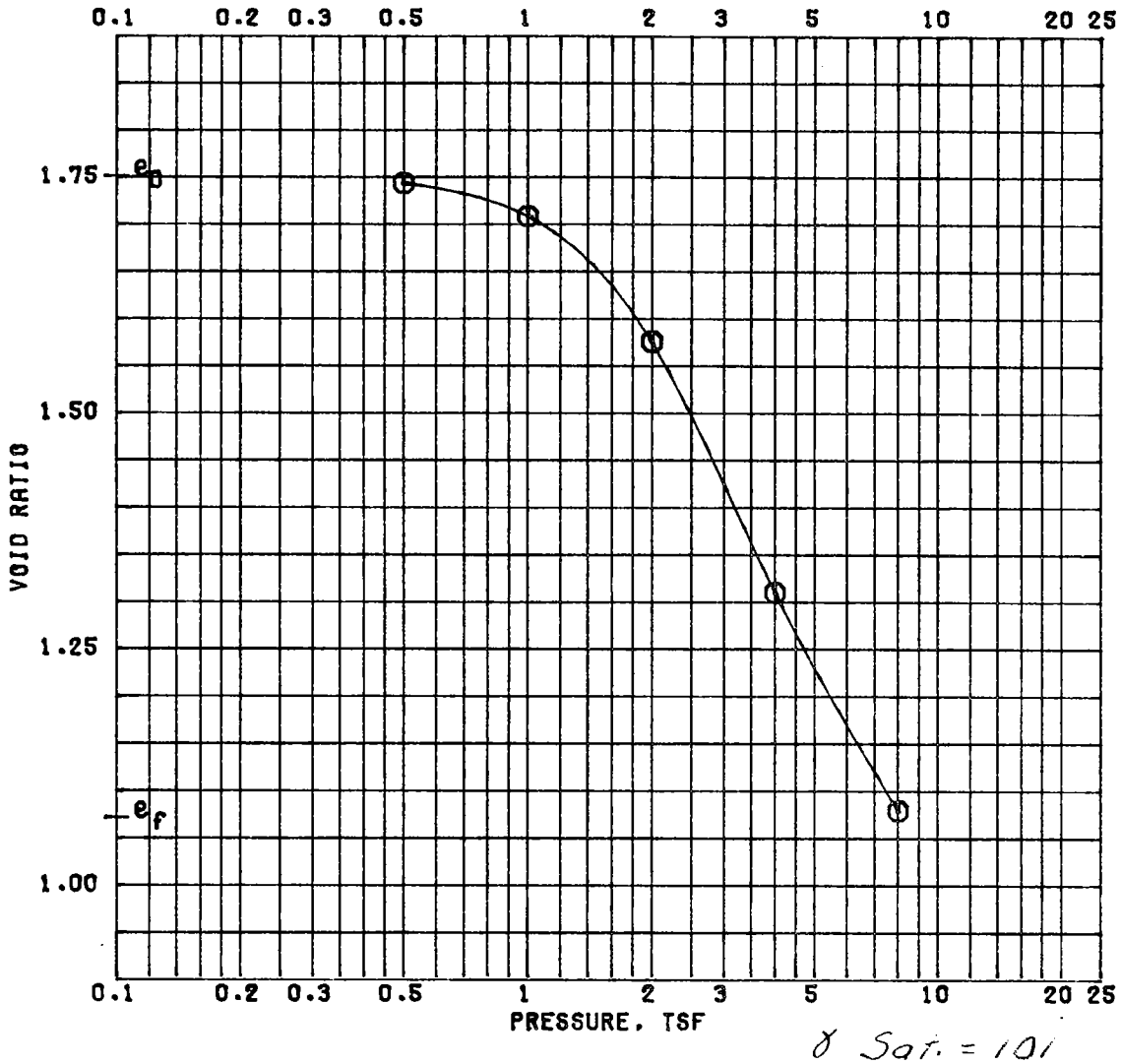
PROJECT LK PONT, LA. & VIC. JEFFERSON
& ST. CHARLES PARISH

BORING NO. 23-U | SAMPLE NO. 11-B

DEPTH/ELEV 40.4/-30.3 | TECH. PJR

LABORATORY USAE WES | DATE 15 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 101

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	1.43	
COMPRESSION INDEX		
TYPE SPECIMEN: UNDISTURBED		
DIA. IN 4.44 — HT. IN 1.121		
WATER CONTENT, %	64.1	40.8
DRY DENSITY, PCF	61.3	81.4
SATURATION, %	99.0	100 +
VOID RATIO	1.749	1.070
BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), DARK GRAY

LL 91 — PL 23 — PI 68

GS 2.70 (EST) — D_{10}

PROJECT LAKE PONT., LA. & VIC., JEFFERSON PARISH & ST. CHARLES PARISH

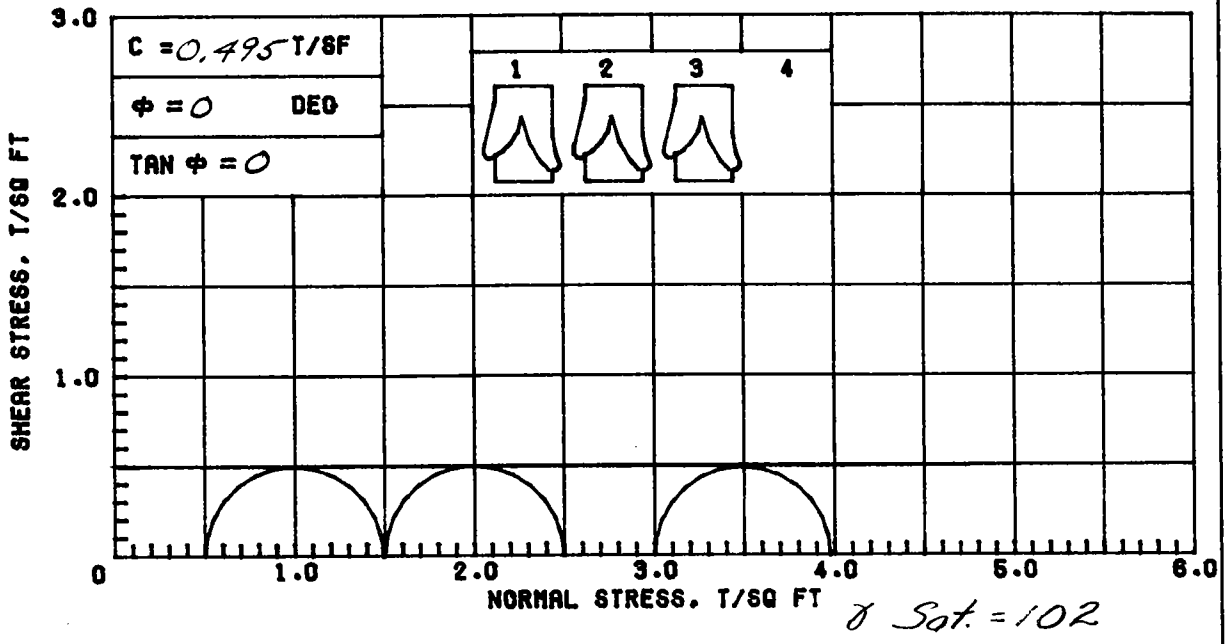
REMARKS

BORING NO. 23-U — SAMPLE NO. 13-B

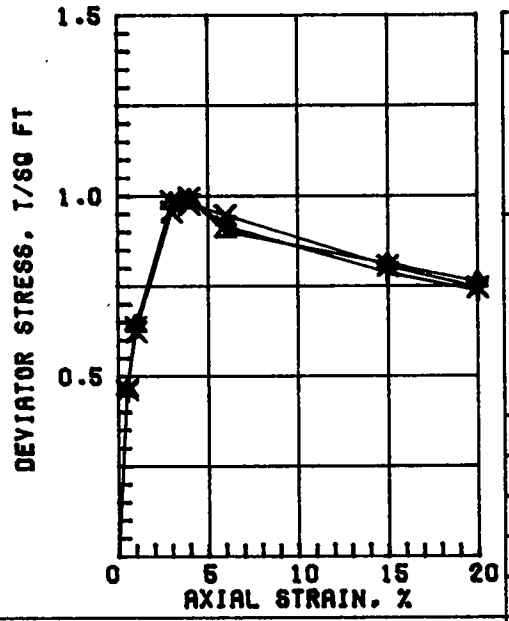
DEPTH/ELEV 48.5/-38.4 — DATE 07 JAN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



γ Sat. = 102



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	61.4	60.3	63.3	
	DRY DENSITY, PCF	63.2	63.8	62.6	
	SATURATION, %	99.6	99.1	100+	
	VOID RATIO	1.665	1.644	1.694	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.99	1.00	0.98	
TIME TO FAILURE, MIN.		8	20	23	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 61.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 74	PL 23	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

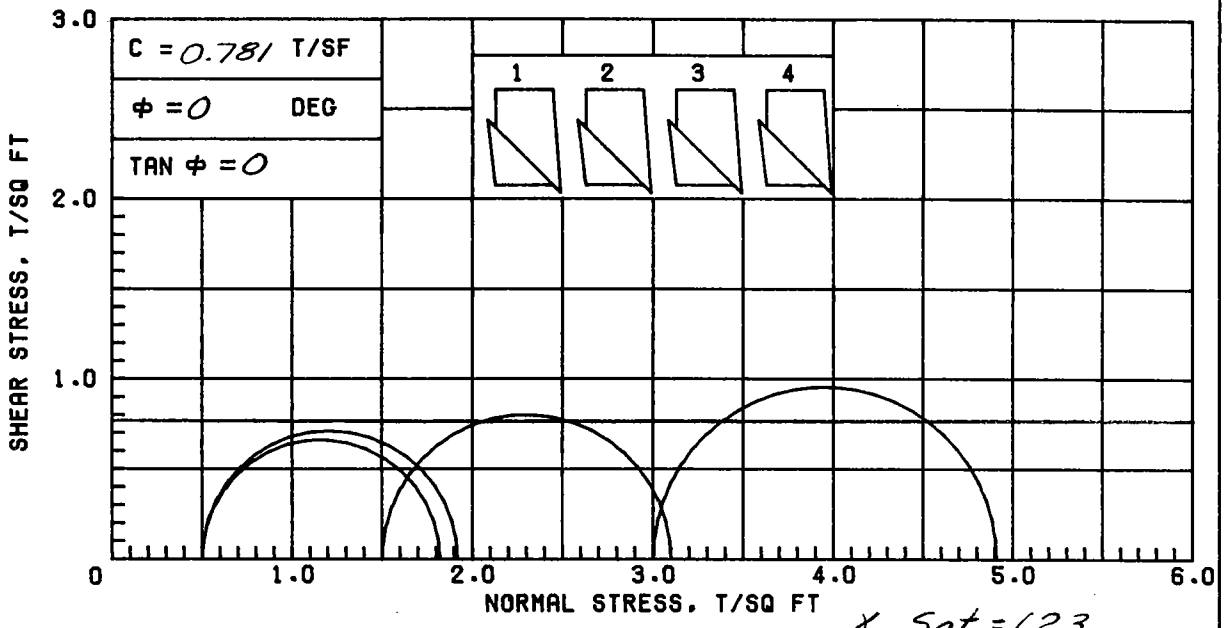
PROJECT LK PONT. LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 23-U | SAMPLE NO. 14-B

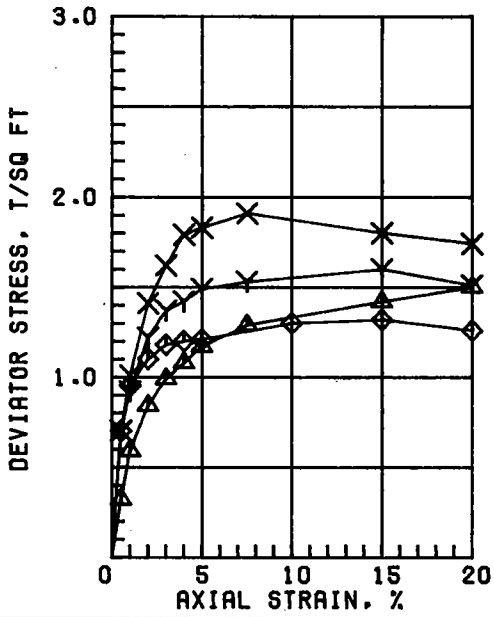
DEPTH/ELEV 52/-41.9 | TECH. PJR

LABORATORY USAE WES | DATE 16 JAN 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 123



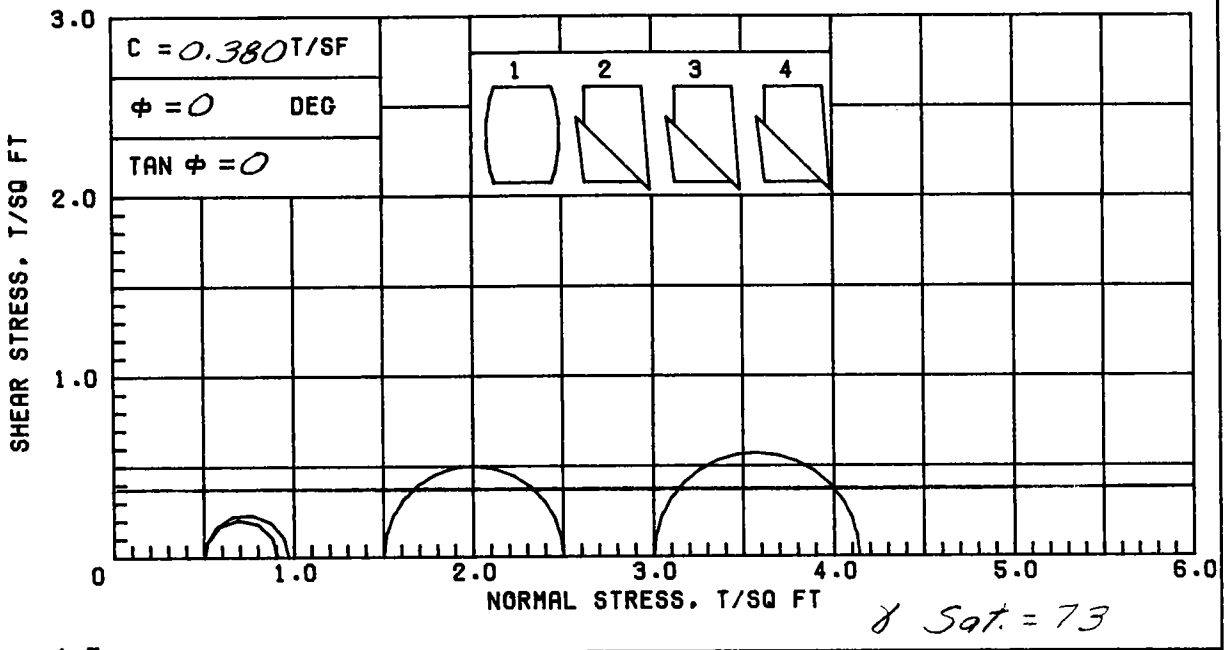
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	27.0	29.5	22.7	29.4	27.2
	DRY DENSITY, PCF	97.4	94.5	100.3	94.1	
	SATURATION, %	99.8	100+	90.1	100+	
	VOID RATIO	0.730	0.784	0.680	0.791	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		1.42	1.60	1.91	1.32	
TIME TO FAILURE, MIN.		30	30	15	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

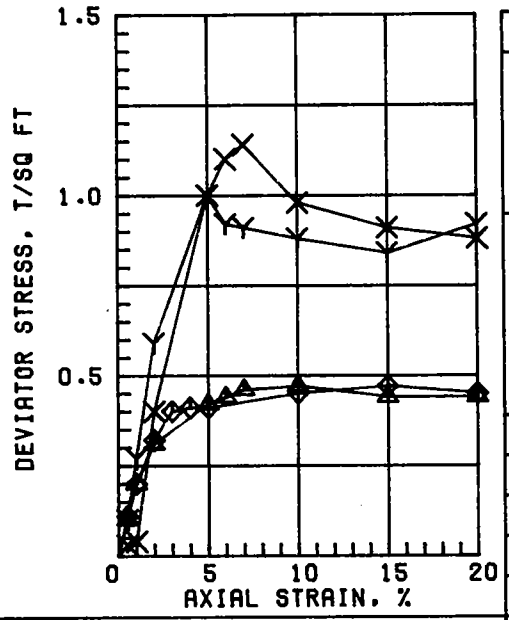
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 72	PL 20	PI 52	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 23-U	SAMPLE NO. 16-C
	DEPTH/ELEV 60.7/-50.6	TECH. KOC
	LABORATORY USAE WES	DATE 16 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 73



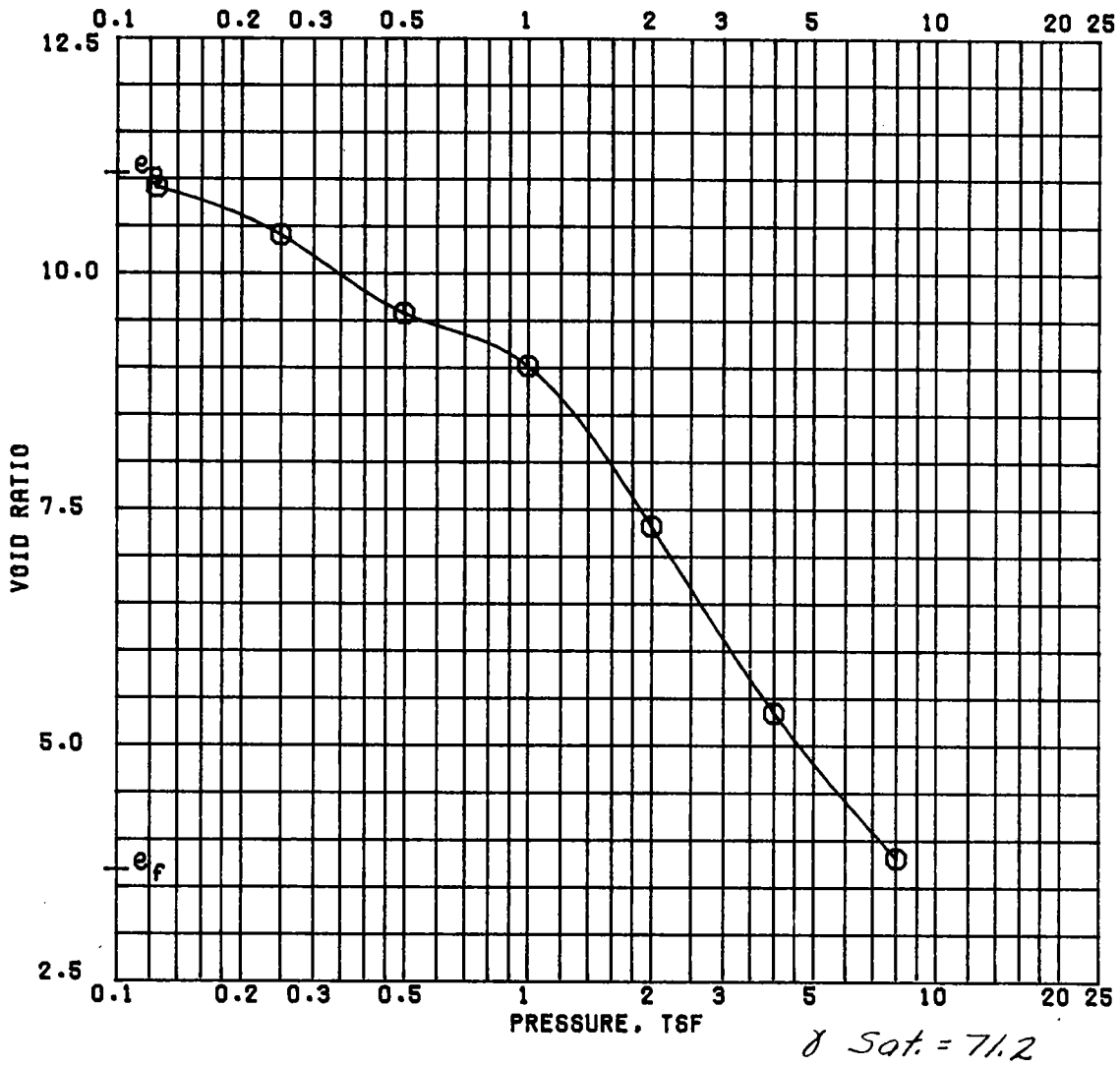
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	93.9	294.5	265.7	246.3	225.1
	DRY DENSITY, PCF	42.7	16.7	17.9	19.7	
	SATURATION, %	89.9	88.6	86.4	89.4	
	VOID RATIO	2.507	7.973	7.377	6.608	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.47	1.00	1.14	0.41	
TIME TO FAILURE, MIN.		20	10	14	8	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), DARK BROWN

LL 184	PL 75	PI 109	GS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

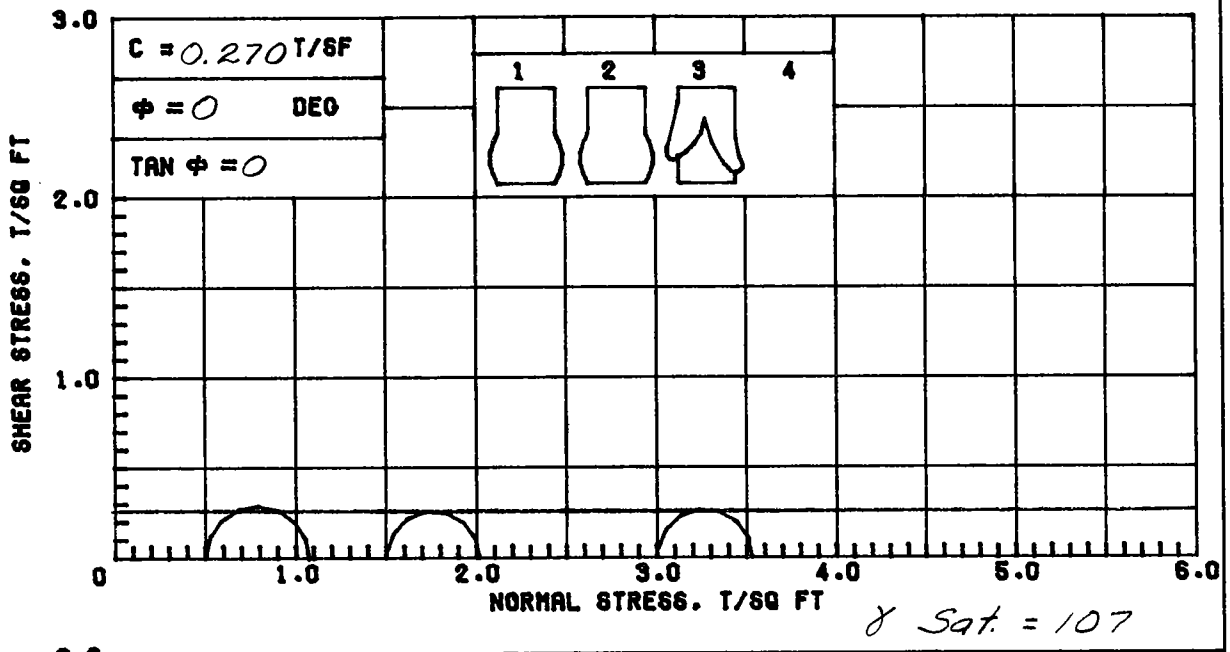
REMARKS:	PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 24-U	SAMPLE NO. 5-B
	DEPTH/ELEV 16.1/-11.7	TECH. KOC
	LABORATORY USAE WES	DATE 16 JAN 85
	TRIAXIAL COMPRESSION TEST REPORT	



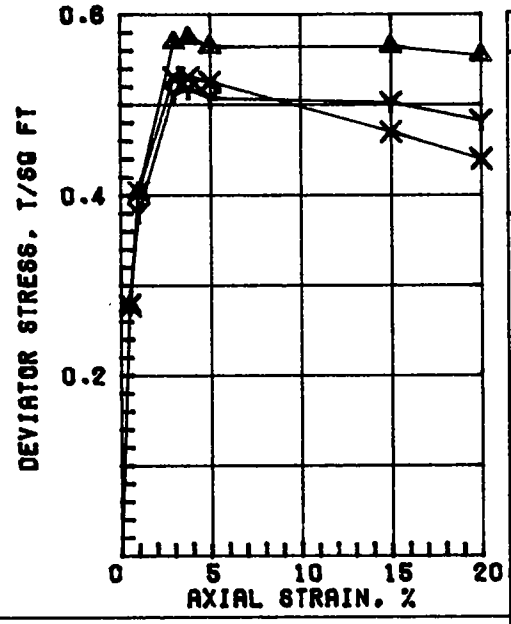
γ Sat. = 71.2

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	355.3	166.3
PRECONSOL. PRESSURE, TSF	1.08	DRY DENSITY, PCF	14.0	36.2
COMPRESSION INDEX	6.50	SATURATION, %	86.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	11.043	3.660
DIA. IN 4.44	HT. IN 1.129	BACK PRESSURE, TSF		
CLASSIFICATION	ORGANIC SILT (OH), DARK BROWN			
LL 529 / PL 336 / PI 193		PROJECT LAKE PONT., LA. & VIC., JEFFERSON		
GS 2.70 (EST)	D_{10}	PARISH & ST. CHARLES PARISH		
REMARKS		BORING NO. 24-U	SAMPLE NO. 5-C	
		DEPTH/ELEV 17.1/-12.7	DATE 07 JAN 85	

CONSOLIDATION TEST REPORT



γ Sat. = 107



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	50.6	57.2	53.8	
	DRY DENSITY, PCF	71.1	67.2	69.3	
	SATURATION, %	99.7	100+	100+	
	VOID RATIO	1.371	1.508	1.433	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.57	0.52	0.53	
TIME TO FAILURE, MIN.		10	23	21	
RATE OF STRAIN INCR.%			5	5	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 53.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 52	PL 18	PI 34	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

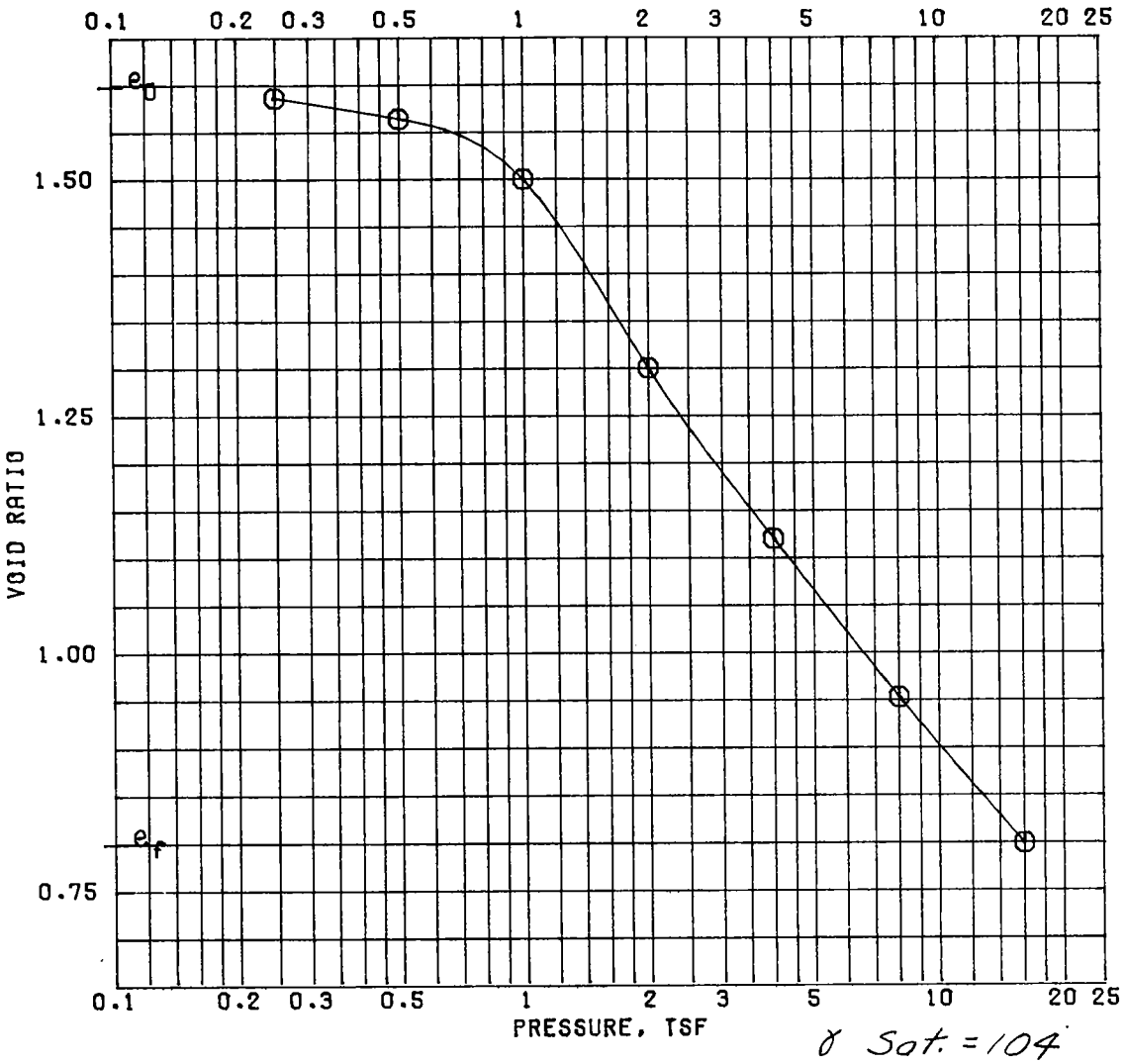
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 24-U | SAMPLE NO. 7-C

DEPTH/ELEV 25/-20.6 | TECH. PJR

LABORATORY USAE WES | DATE 17 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 104

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.90	WATER CONTENT, %	60.4	30.9
COMPRESSION INDEX 0.67	DRY DENSITY, PCF	64.9	93.8
TYPE SPECIMEN UNDISTURBED	SATURATION, %	100 +	100 +
DIA. IN 4.44 HT. IN 1.127	VOID RATIO	1.597	0.798
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 80 PL 23 PI 57

GS 2.70 (EST) D_{10}

REMARKS

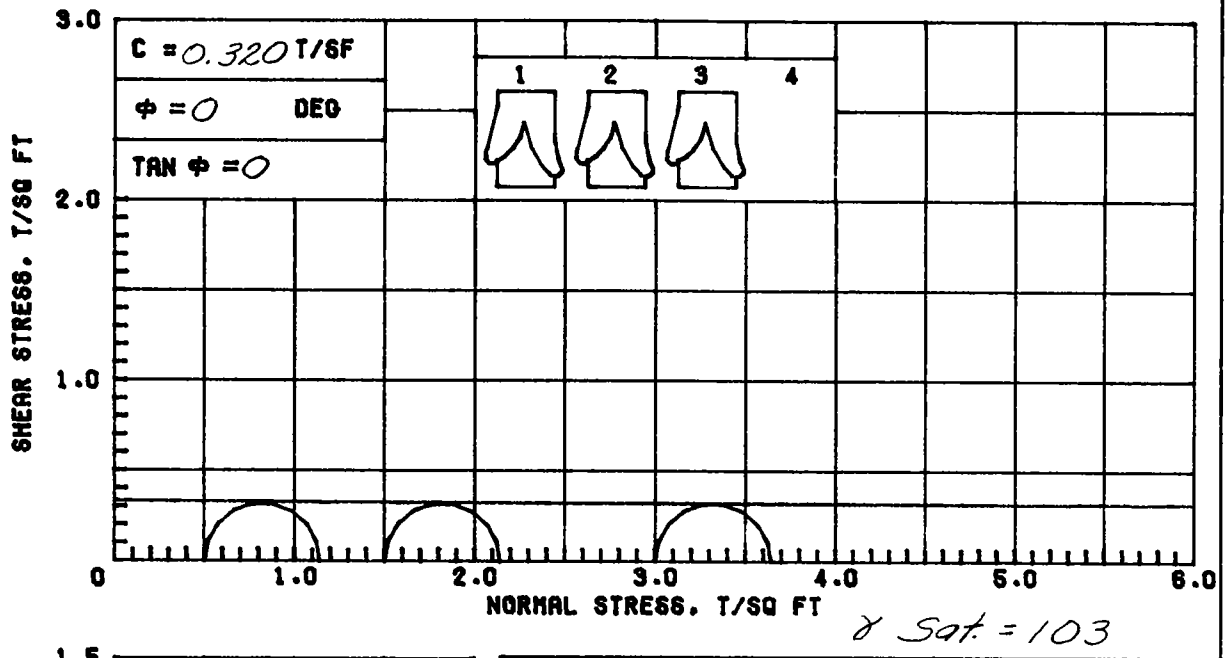
PROJECT LAKE PONT., LA. & VIC., JEFFERSON PARISH & ST. CHARLES PARISH

BORING NO. 24-U SAMPLE NO. 9-B

DEPTH/ELEV 32/-27.6 DATE 07 JAN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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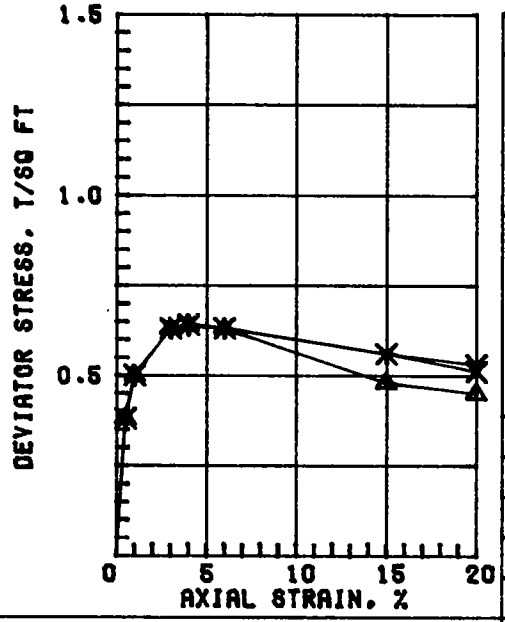


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	64.2	65.1	65.9	
	DRY DENSITY, PCF	62.7	62.3	61.9	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.688	1.706	1.721	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.64	0.64	0.64	
TIME TO FAILURE, MIN.		8	27	20	
RATE OF STRAIN INCR.%			6	7	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 65.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 64	PL 20	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

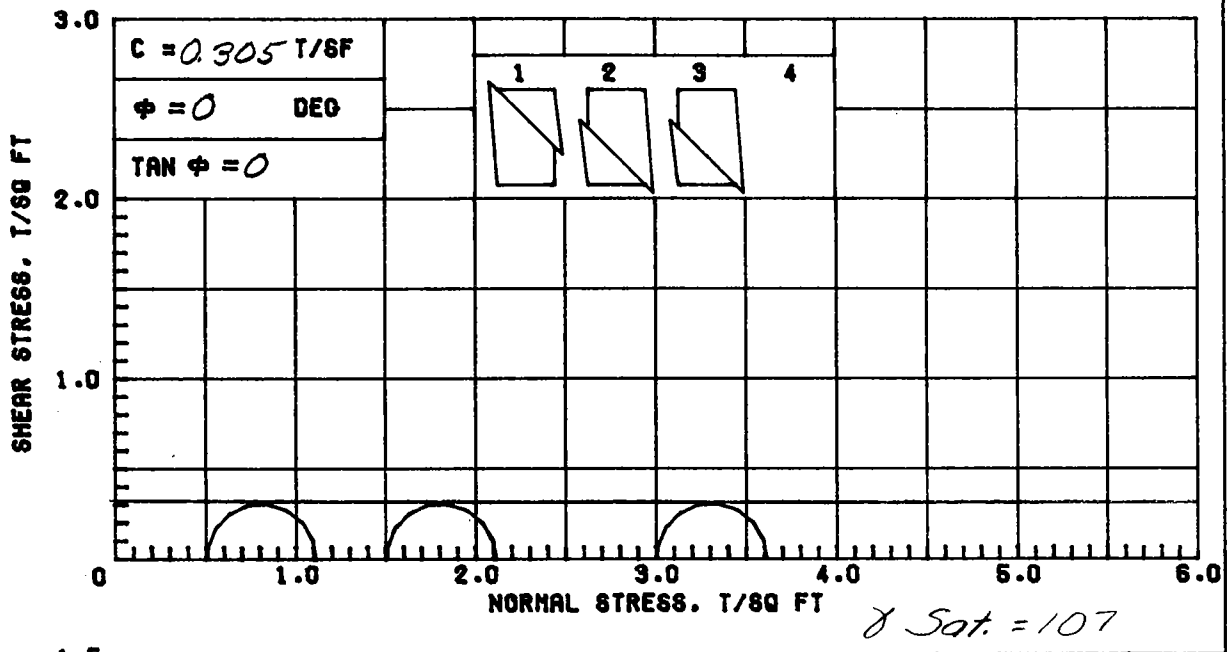
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 24-U | SAMPLE NO. 9-C

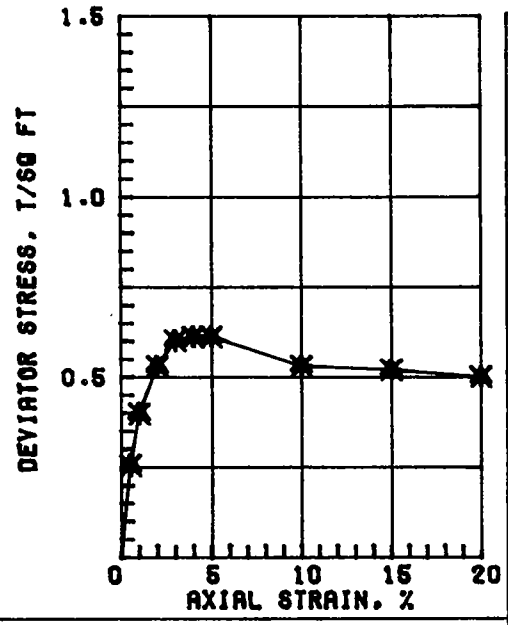
DEPTH/ELEV 93.2/-28.8 | TECH. PJR

LABORATORY USAE WES | DATE 17 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 107



	SPECIMEN NO.	Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	50.5	48.9	49.9		49.7
	DRY DENSITY, PCF	70.6	72.0	70.9		
	SATURATION, %	98.3	98.5	97.8		
	VOID RATIO	1.387	1.340	1.378		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.61	0.61	0.61		
TIME TO FAILURE, MIN.		8	8	8		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 59	PL 17	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

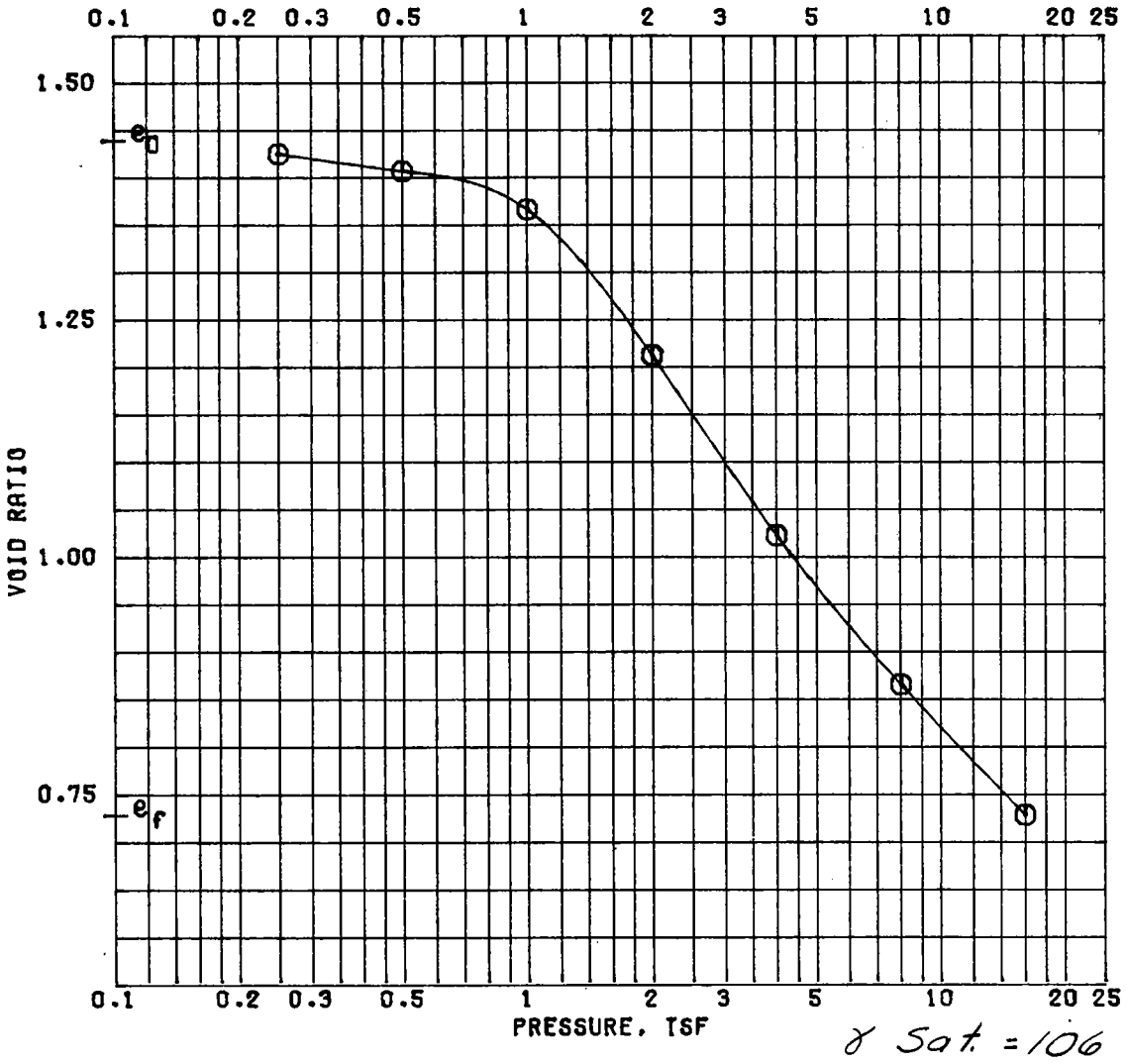
PROJECT LK PONT, LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 24-U | SAMPLE NO. 12-B

DEPTH/ELEV 44/-39.6 | TECH. KOC

LABORATORY USAE WES | DATE 17 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 106

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.90	
COMPRESSION INDEX	0.59	
TYPE SPECIMEN: UNDISTURBED		
DIA. IN 4.44 / HT. IN 1.130		
WATER CONTENT, %	50.2	28.2
DRY DENSITY, PCF	69.2	97.6
SATURATION, %	94.3	100 +
VOID RATIO	1.438	0.727
BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 64 / PL 20 / PI 44

GS 2.70 (EST) / D_{10}

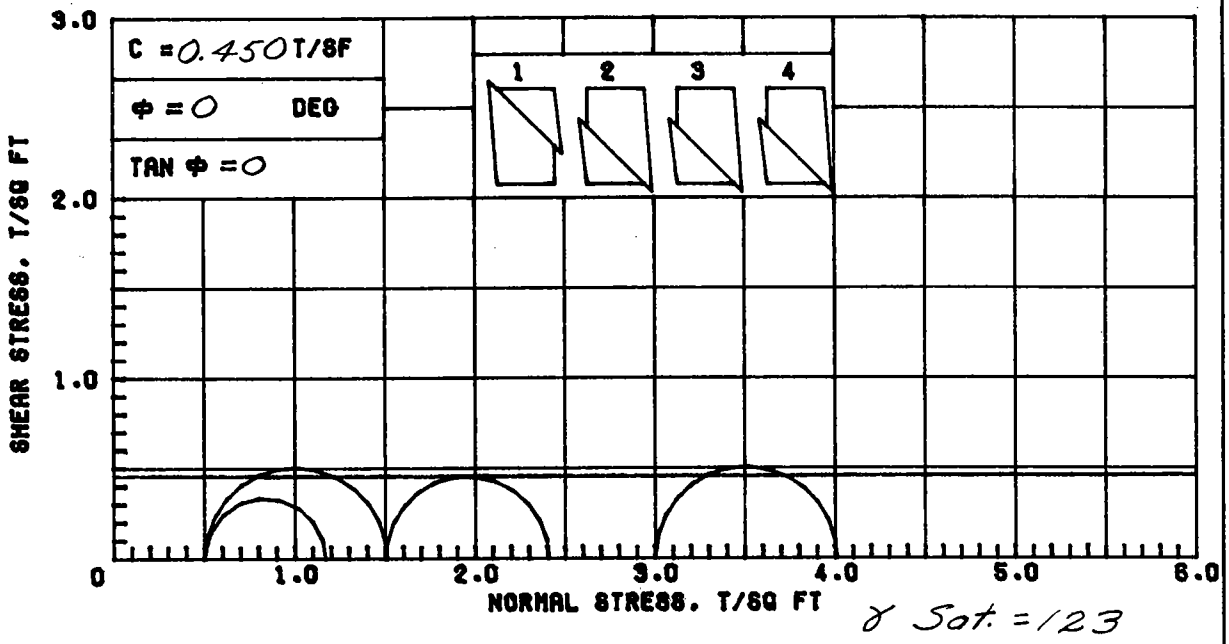
REMARKS

PROJECT LAKE PONT., LA. & VIC., JEFFERSON PARISH & ST. CHARLES PARISH

BORING NO. 24-U / SAMPLE NO. 12-C

DEPTH/ELEV 45.3/-40.9 / DATE 07 JAN 85

CONSOLIDATION TEST REPORT



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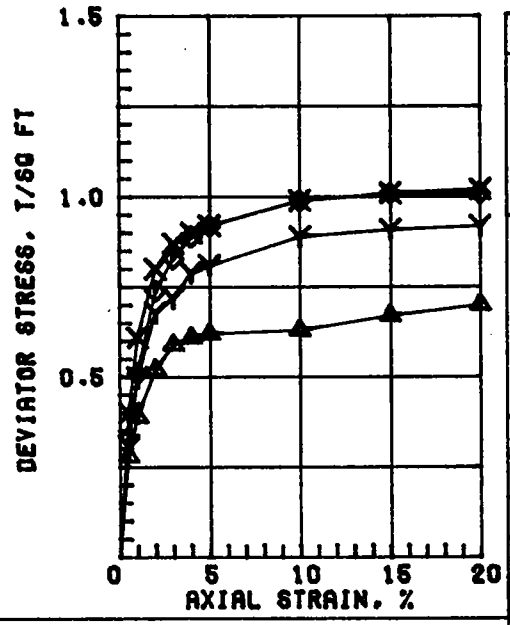


	SPECIMEN NO.	▲1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	26.4	26.4	26.6	25.5	26.2
	DRY DENSITY, PCF	96.2	97.2	95.9	97.7	
	SATURATION, %	94.8	97.1	94.8	96.0	
	VOID RATIO	0.752	0.734	0.758	0.724	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.67	0.91	1.01	1.01	
TIME TO FAILURE, MIN.		30	30	30	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; SILT POCKETS

LL 43	PL 13	PI 30	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

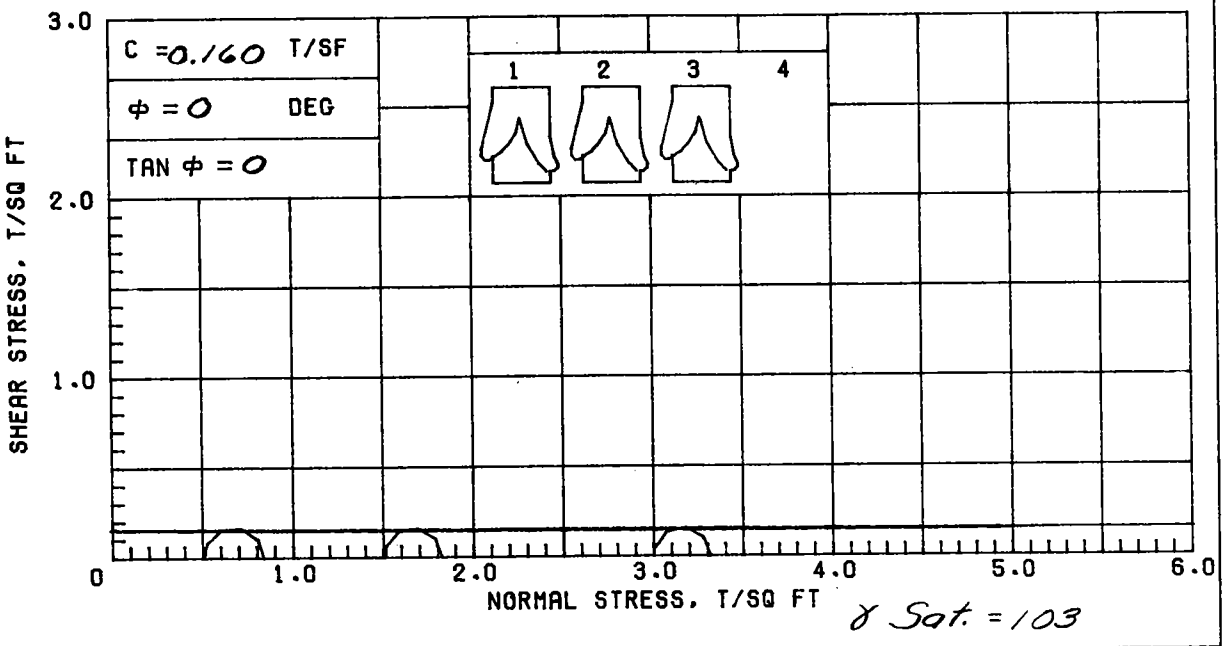
PROJECT LK PONT. LA. & VIC. JEFFERSON & ST. CHARLES PARISH

BORING NO. 24-U | SAMPLE NO. 14-B

DEPTH/ELEV 52/-47.6 | TECH. KOC

LABORATORY USAE WES | DATE 17 JAN 85

TRIAXIAL COMPRESSION TEST REPORT



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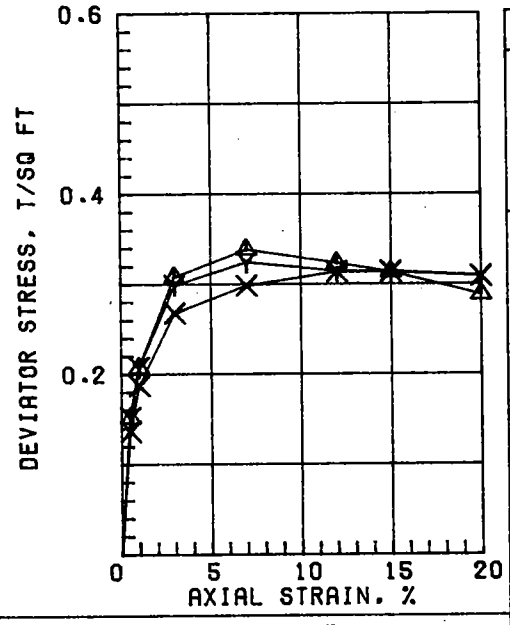


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	61.2	62.5	60.8	
	DRY DENSITY, PCF	63.7	63.2	63.9	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.644	1.666	1.640	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.34	0.32	0.31	
TIME TO FAILURE, MIN.		14	18	36	
RATE OF STRAIN INCR,%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 61.5

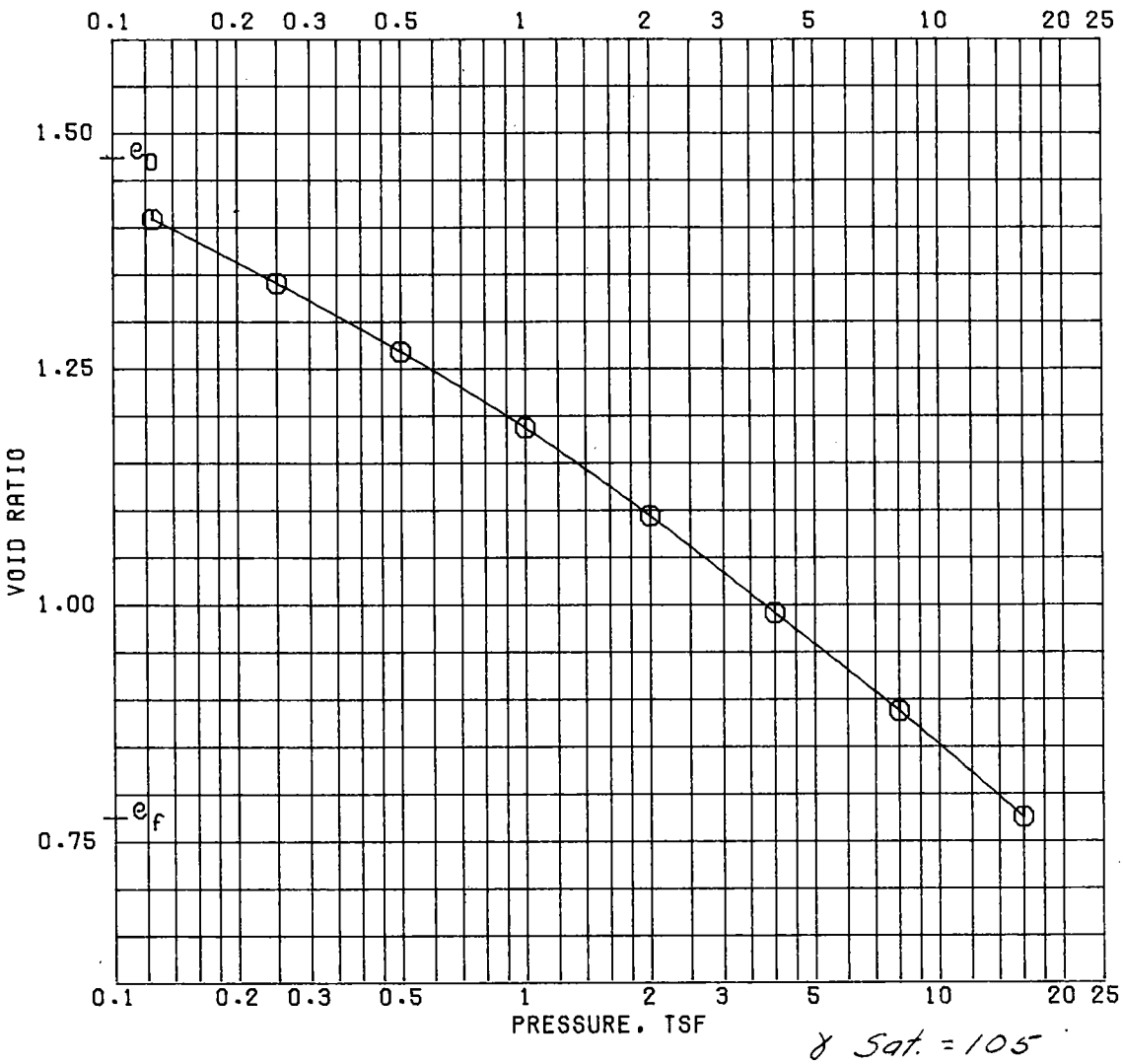
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 70	PL 19	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT. LA & VIC. HURR PROT.	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 25-U	SAMPLE NO. 2-C
	DEPTH/ELEV 24.9/-20.5	TECH. PJR
	LABORATORY USAE WES	DATE 17 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	

drdz



γ Sat. = 105

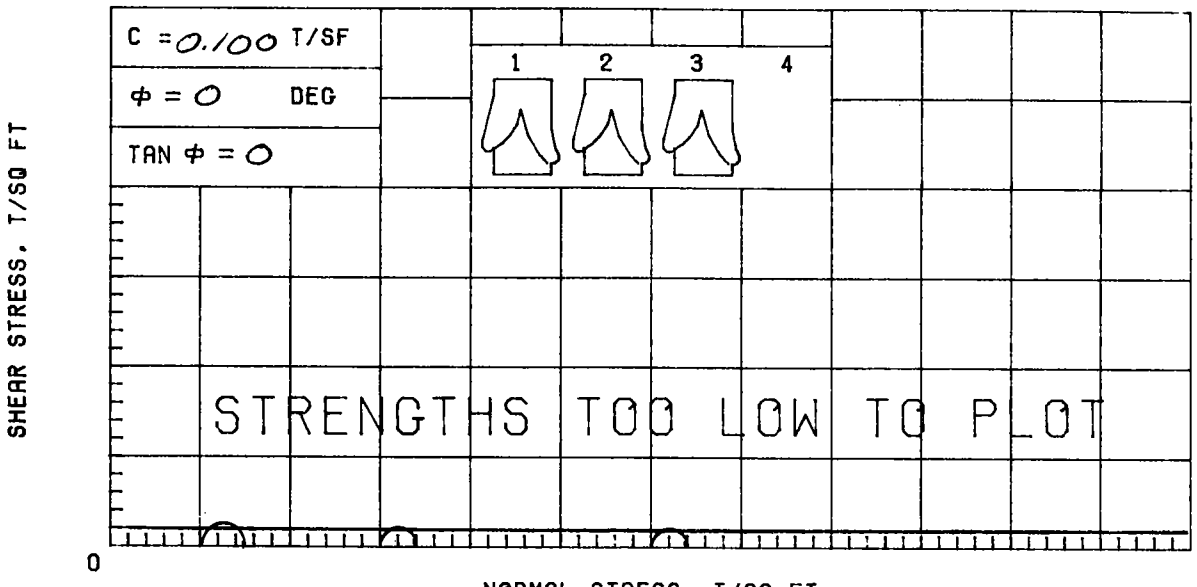
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 1.30	DRY DENSITY, PCF	68.2	95.0
COMPRESSION INDEX 0.37	SATURATION, %	93.6	99.0
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.472	0.773
DIA. IN 4.44 HT. IN 1.124	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL; SILT LENSES

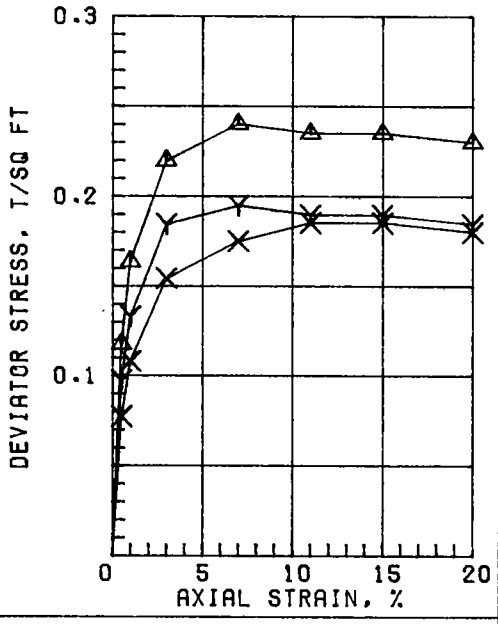
LL 51	PL 18	PI 33	PROJECT LK PONT. LA & VIC. HURR PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS			BORING NO. 25-U / SAMPLE NO. 3C
			DEPTH/ELEV 24.9/-25.0 / DATE 09 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 98



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	76.4	77.1	77.5	
	DRY DENSITY, PCF	55.7	55.4	55.3	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.027	2.040	2.049	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.24	0.19	0.19	
TIME TO FAILURE, MIN.		15	16	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 77.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

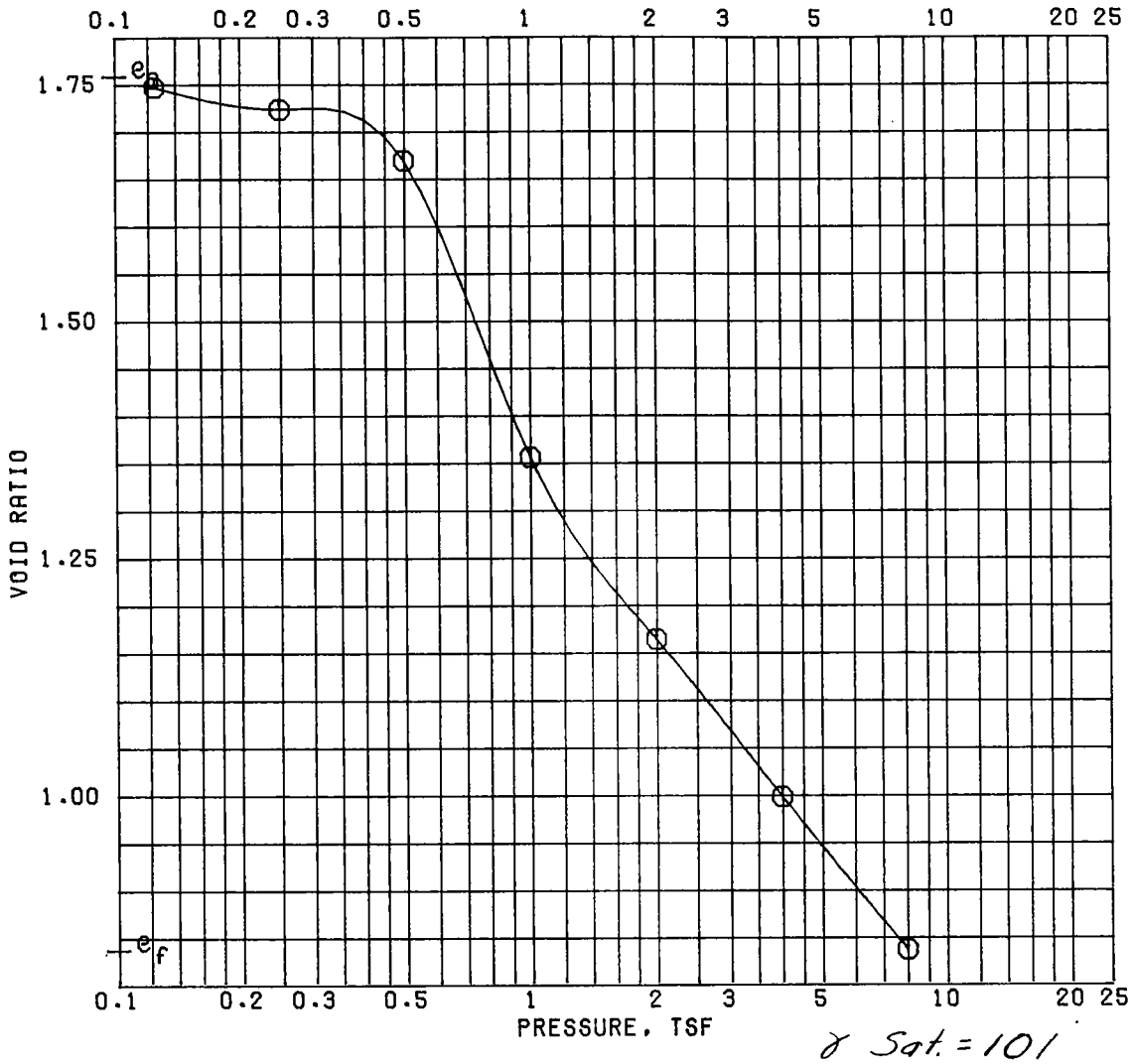
LL 78	PL 21	PI 57	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 25-U | SAMPLE NO. 5-B
DEPTH/ELEV 36.0/-31.6 | TECH. PJR
LABORATORY USAE WES | DATE 18 APR 85

TRIAXIAL COMPRESSION TEST REPORT

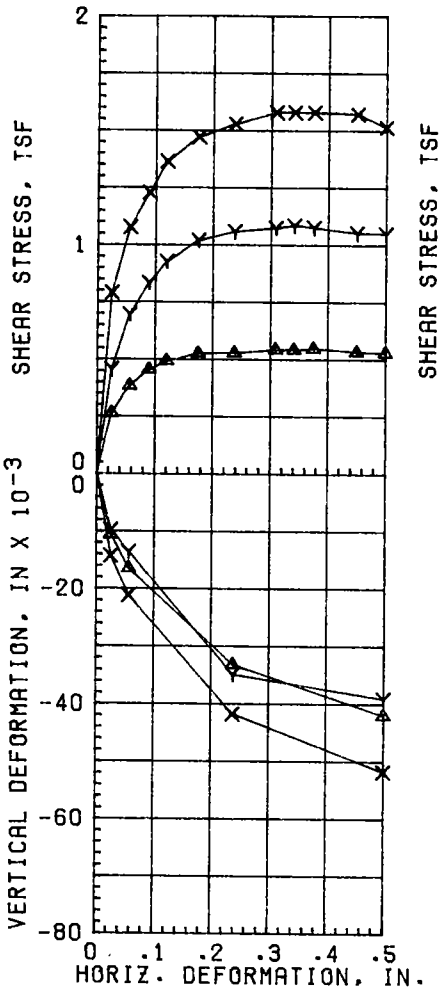


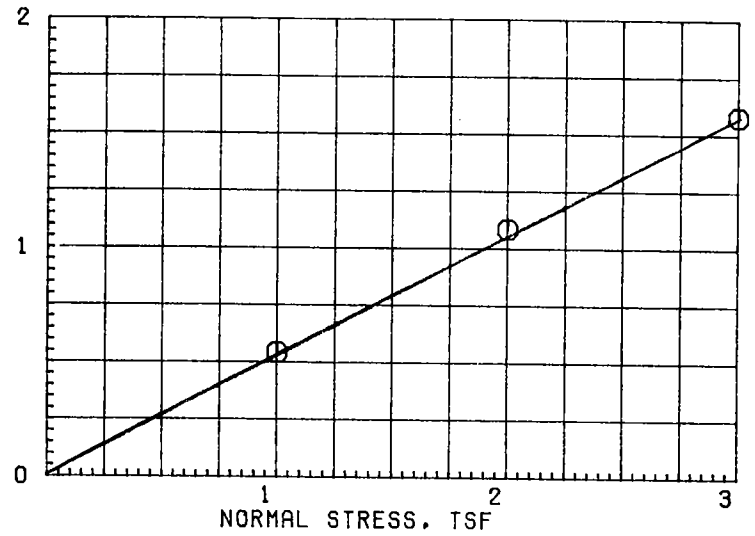
γ Sat. = 101

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.47	DRY DENSITY, PCF 61.1	91.8
COMPRESSION INDEX 1.08	SATURATION, % 94.5	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO 1.757	0.836
DIA. IN 4.44 HT. IN 1.158	BACK PRESSURE, TSF	
CLASSIFICATION PLASTIC CLAY (CH), GRAY; FINE SAND POCKETS; SHELLS		
LL 73 PL 21 PI 52	PROJECT LK PONT. LA & VIC. HURR PROT.	
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISHES	
REMARKS	BORING NO. 25-U	SAMPLE NO. 6C
	DEPTH/ELEV 41.4/-37.0	DATE 09 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8





γ Sat. = 104

TEST NO.		1 △	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	58.1	57.8	60.4	58.8
	VOID RATIO	1.721	1.581	1.625	
	SATURATION, %	91.1	98.8	100 +	
	DRY DENSITY, PCF	61.9	65.3	64.2	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		3	7	2	
FINAL	WATER CONTENT, %	35.7	34.9	32.5	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.54	1.09	1.58	
TIME TO FAILURE, MIN		1743	1923	1743	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

$\phi = 28°$

TAN $\phi = 0.532$

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.628 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 56 | PL 17 | PI 39 | | GS 2.70 (EST)

REMARKS:

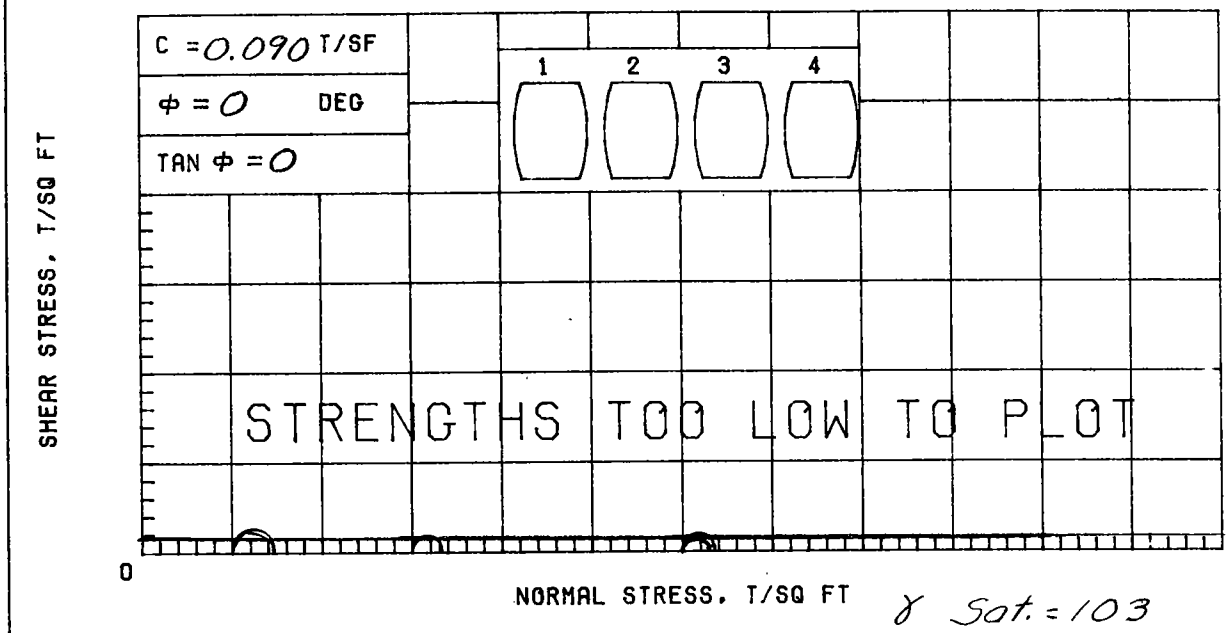
PROJECT LK PONT. LA & VIC. HURR. PROT

JEFFERSON & ST. CHARLES PARISHES

BORING NO. 25-U | SAMPLE 7B

DEPTH/ELEV 44.1/-39.7 | DATE 18 APR 85

DIRECT SHEAR TEST REPORT



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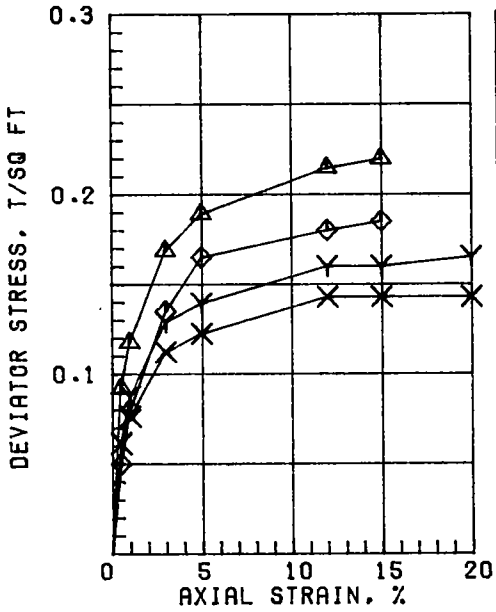


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	60.4	60.1	58.6	57.8	59.2
	DRY DENSITY, PCF	64.3	64.2	65.1	65.9	
	SATURATION, %	100+	99.8	99.6	100+	
	VOID RATIO	1.622	1.626	1.588	1.558	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0	
MAX. DEV. STRESS, TSF		0.22	0.16	0.14	0.18	
TIME TO FAILURE, MIN.		40	24	25	40	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.38	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 63	PL 19	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

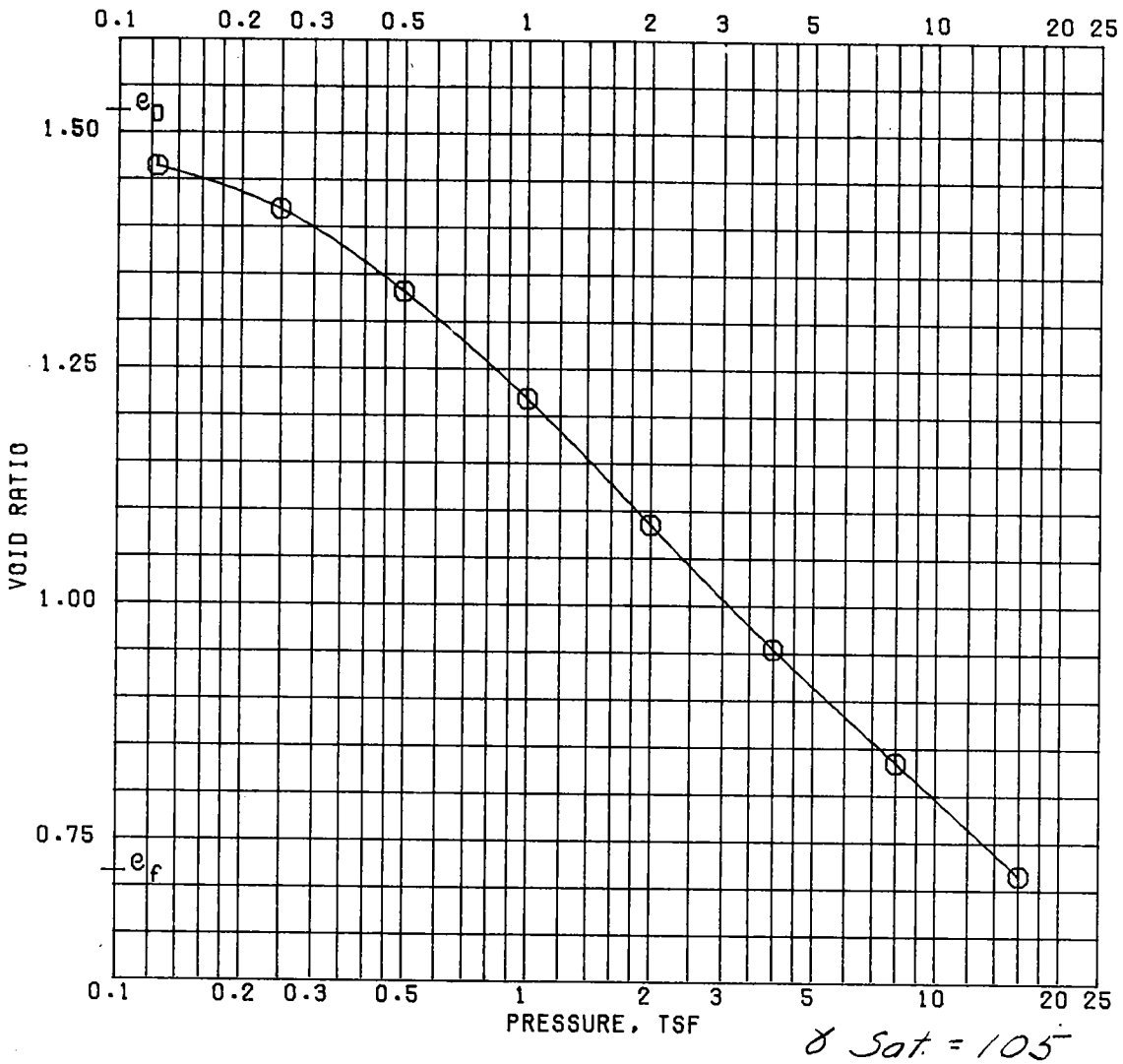
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 25-U | SAMPLE NO. 8-C

DEPTH/ELEV 49.4/-45.0 | TECH. PJR

LABORATORY USAE WES | DATE 18 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 105

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.33	WATER CONTENT, %	54.0	26.9
COMPRESSION INDEX 0.42	DRY DENSITY, PCF	66.9	98.4
TYPE SPECIMEN UNDISTURBED	SATURATION, %	95.8	100 +
DIA. IN 4.44 HT. IN 1.123	VOID RATIO	1.521	0.713
	BACK PRESSURE, TSF		

CLASSIFICATION SANDY CLAY (CL), GRAY; SILT LENSES

LL 45 PL 13 PI 32

GS 2.70 (EST) D_{10}

REMARKS

TRIMMINGS INDICATED A INITIAL WATER CONTENT OF 34.4 %

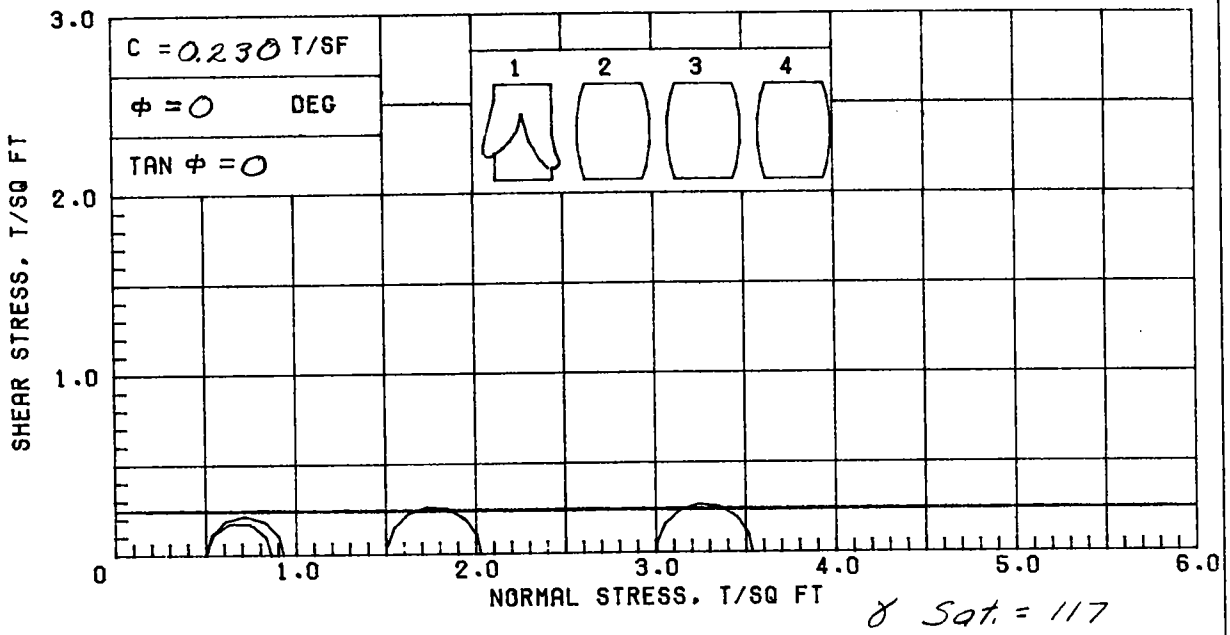
PROJECT LK PONT. LA & VIC. HURR PROT.

JEFFERSON & ST. CHARLES PARISHES

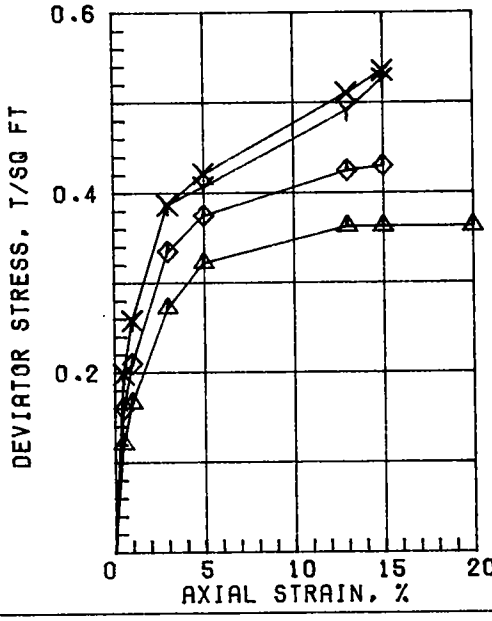
BORING NO. 25-U SAMPLE NO. 9B

DEPTH/ELEV 51.8/-47.4 DATE 09 MAY 85

CONSOLIDATION TEST REPORT



γ Sat. = 117



SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	37.7	32.1	31.8	31.5	33.3
	DRY DENSITY, PCF	82.6	87.0	87.4	88.5	
	SATURATION, %	98.1	92.8	92.9	94.3	
	VOID RATIO	1.034	0.930	0.921	0.899	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.36	0.53	0.54	0.43	
TIME TO FAILURE, MIN.		20	25	41	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.40	1.41	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: SANDY CLAY (CL), GRAY; PLASTIC CLAY (CH) POCKETS

LL 30	PL 12	PI 18	GS 2.69 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL

PROJECT LK PONT. LA & VIC. HURR PROT.

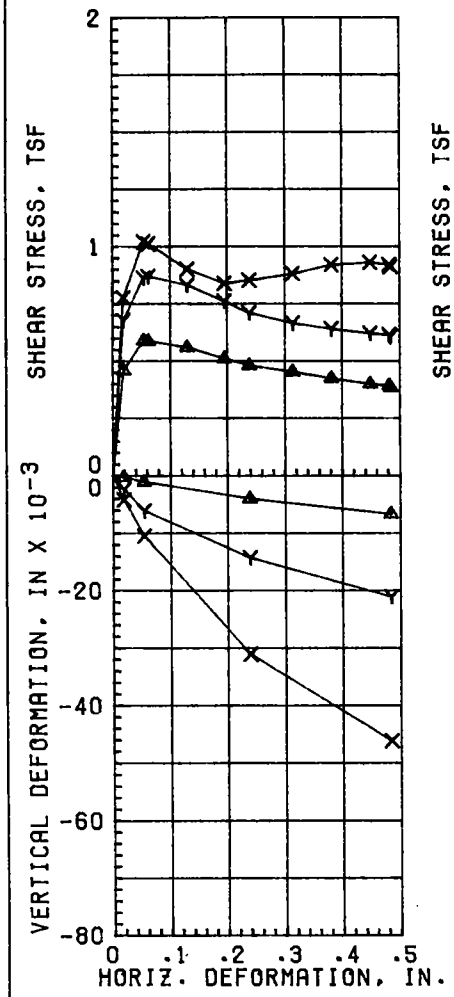
JEFFERSON & ST. CHARLES PARISHES

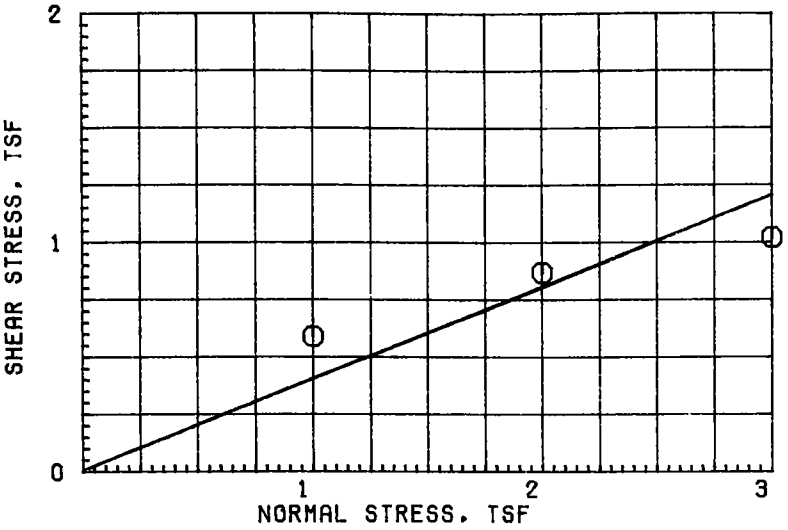
BORING NO. 25-U | SAMPLE NO. 10-C

DEPTH/ELEV 56.9/-52.5 | TECH. PJR

LABORATORY USAE WES | DATE 18 APR 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 119

TEST NO.		1 △	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	25.9	33.0	33.3	30.7
	VOID RATIO	0.780	0.899	0.931	
	SATURATION, %	89.8	99.1	96.6	
	DRY DENSITY, PCF	94.6	88.7	87.3	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	32.0	31.1	31.6	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.59	0.87	1.02	
TIME TO FAILURE, MIN		300	347	300	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

$\phi = 22°$

TAN $\phi = 0.404$

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.554 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 56 | PL 20 | PI 36 | | GS 2.70 (EST)

REMARKS:

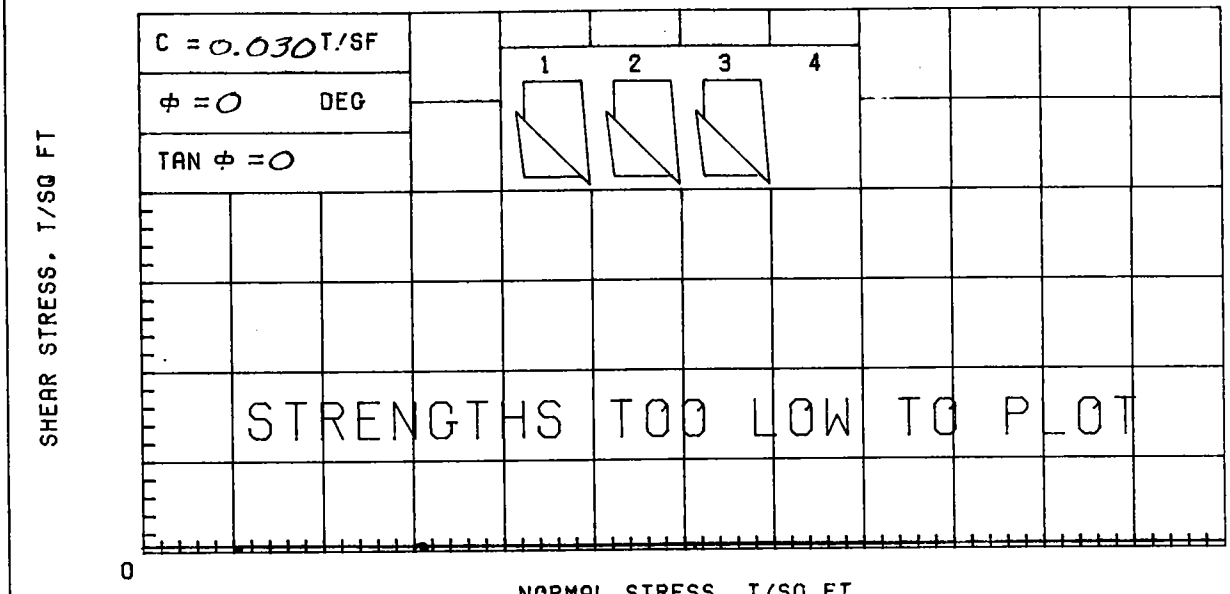
PROJECT LK PONT. LA & VIC. HURR. PROT

JEFFERSON & ST. CHARLES PARISHES

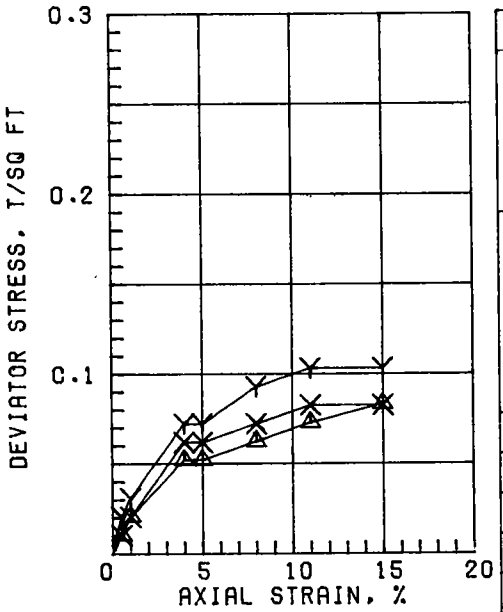
BORING NO. 25-U | SAMPLE 118

DEPTH/ELEV 59.5/-55.1 | DATE 16 APR 85

DIRECT SHEAR TEST REPORT



γ Sat. = 92



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	87.8	100.6	92.8	
	DRY DENSITY, PCF	49.3	45.2	47.3	
	SATURATION, %	98.1	99.5	97.9	
	VOID RATIO	2.417	2.729	2.560	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.05	0.07	0.06	
TIME TO FAILURE, MIN.		8	19	18	
RATE OF STRAIN INCR.%			5		
INITIAL DIAMETER, IN.		1.37	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 93.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS; SHELL PARTICLES

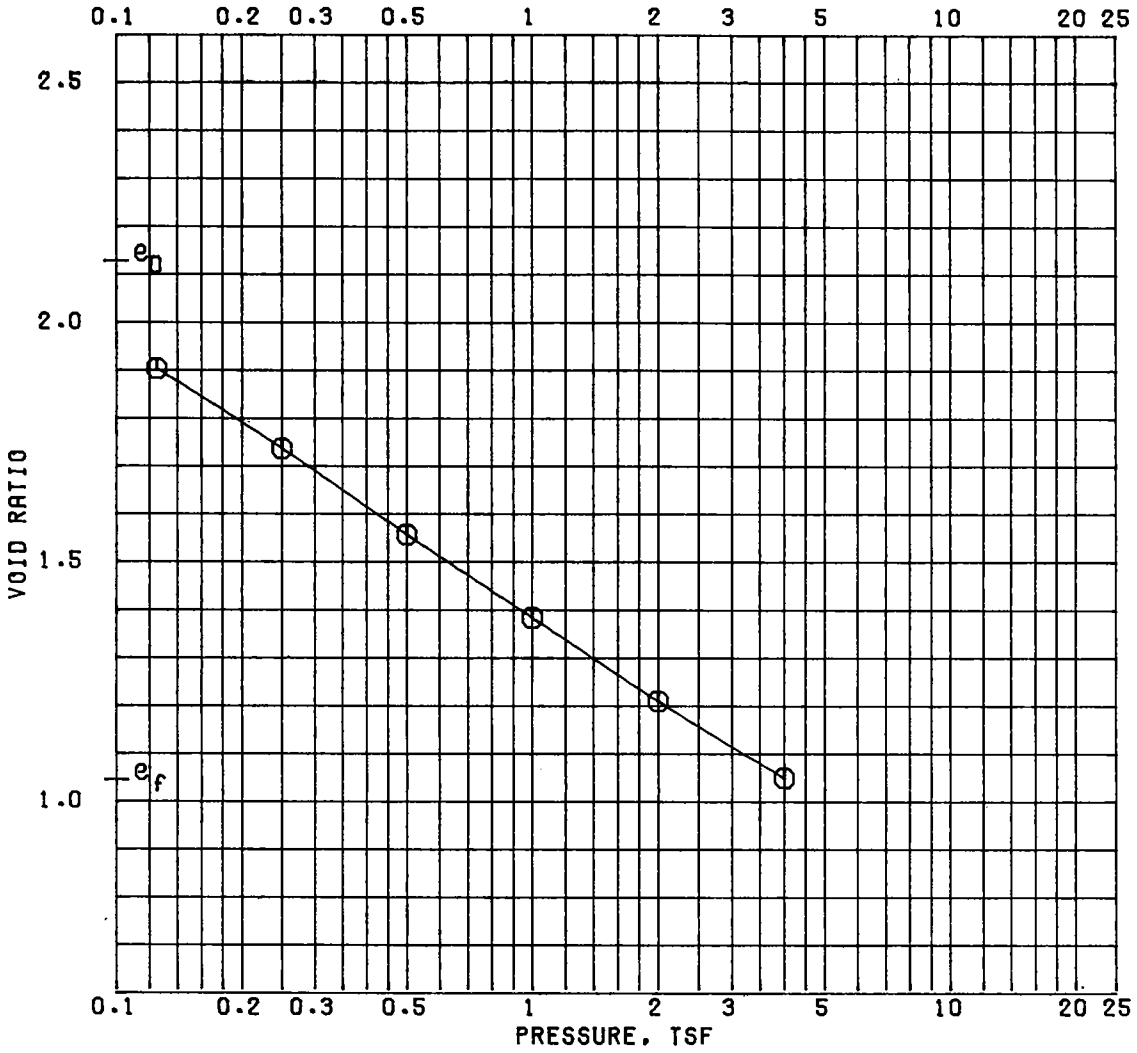
LL 66	PL 20	PI 46	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

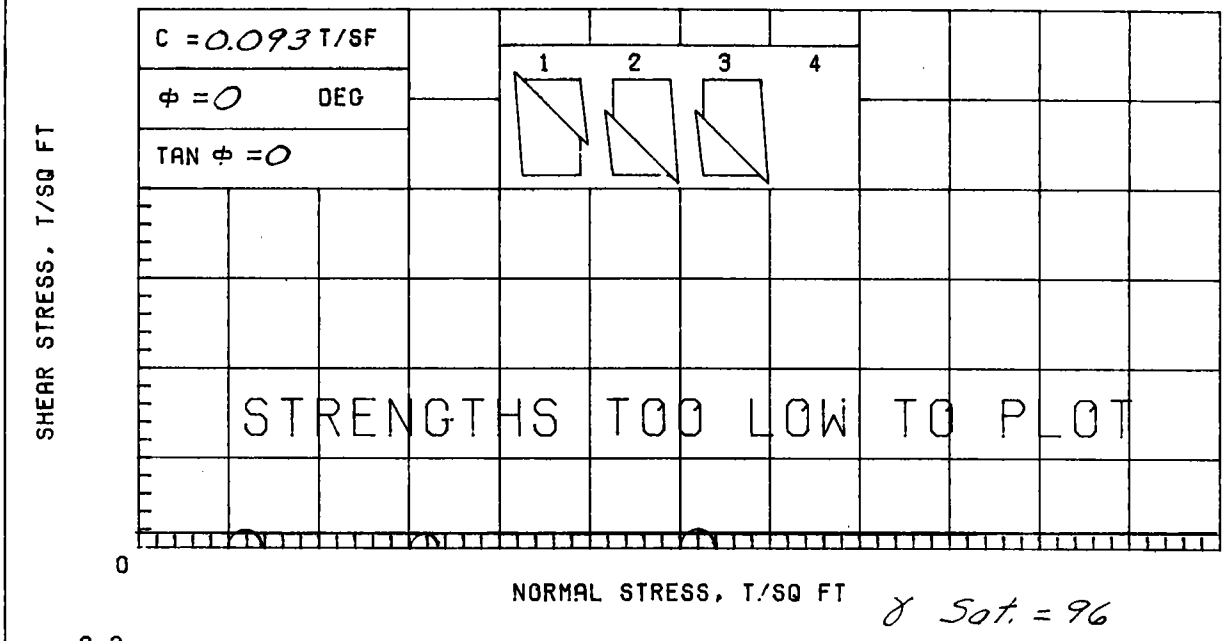
BORING NO. 26-U | SAMPLE NO. 2-C
DEPTH/ELEV 5.8/15.8 | TECH. LRC
LABORATORY USAE WES | DATE 23 AUG 85

TRIAXIAL COMPRESSION TEST REPORT

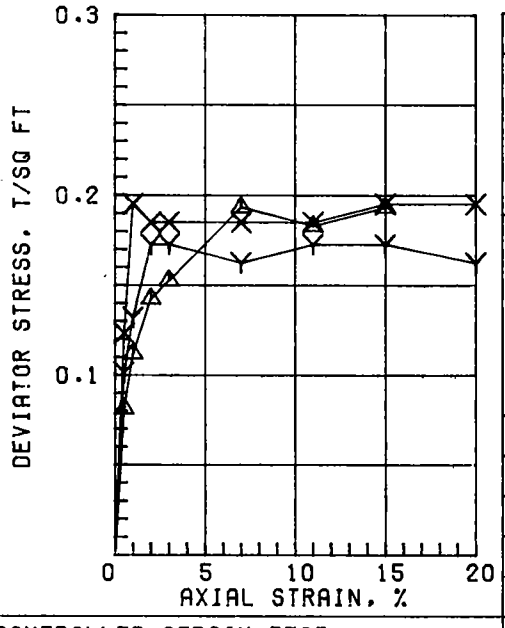


			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	74.4	38.2
PRECONSOL. PRESSURE, TSF		DRY DENSITY, PCF	53.9	82.5
COMPRESSION INDEX		SATURATION, %	94.4	99.0
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.126	1.042
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		
CLASSIFICATION	PLASTIC CLAY (CH), GRAY			
LL 76 PL 21 PI 55		PROJECT LAKE PONT. LA & VIC. HURR. PROT.		
GS 2.70 (EST)	D_{10}	JEFFERSON & ST. CHARLES PARISHES		
REMARKS		BORING NO. 26-U	SAMPLE NO. 3-B	
		DEPTH/ELEV 8.8/-18.8	DATE 28 OCT 85	
		CONSOLIDATION TEST REPORT		

SHEET 1 OF 8



γ Sat. = 96



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	80.0	82.4	82.2	
	DRY DENSITY, PCF	52.7	52.0	52.7	
	SATURATION, %	98.2	99.4	100+	
	VOID RATIO	2.200	2.239	2.197	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.19	0.17	0.20	
TIME TO FAILURE, MIN.		14	4	10	
RATE OF STRAIN INCR.%				3	
INITIAL DIAMETER, IN.		1.39	1.39	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 81.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 77	PL 21	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

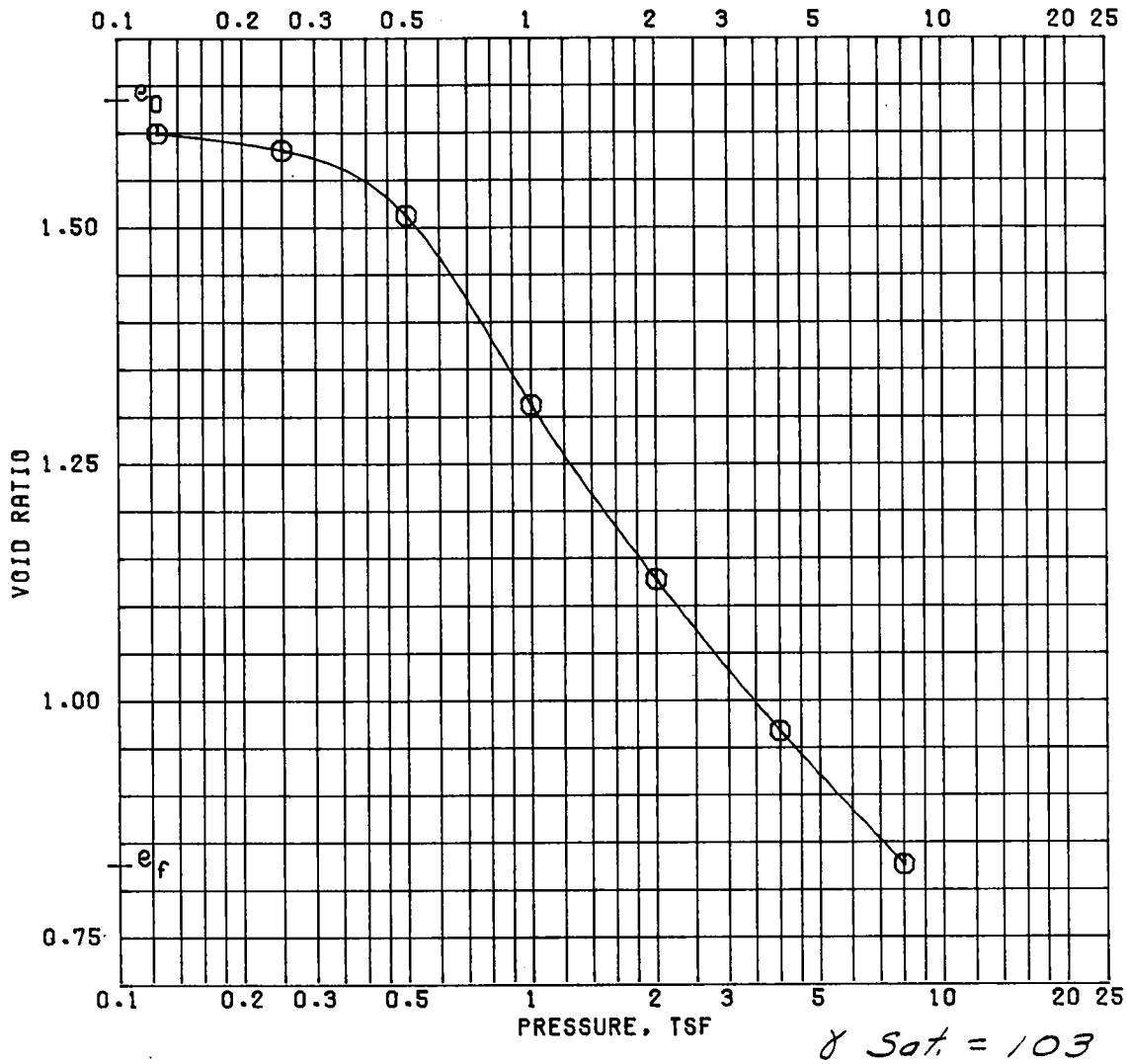
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 26-U | SAMPLE NO. 5-B

DEPTH/ELEV 17.0/-27.0 | TECH. LRC

LABORATORY USAE WES | DATE 23 AUG 85

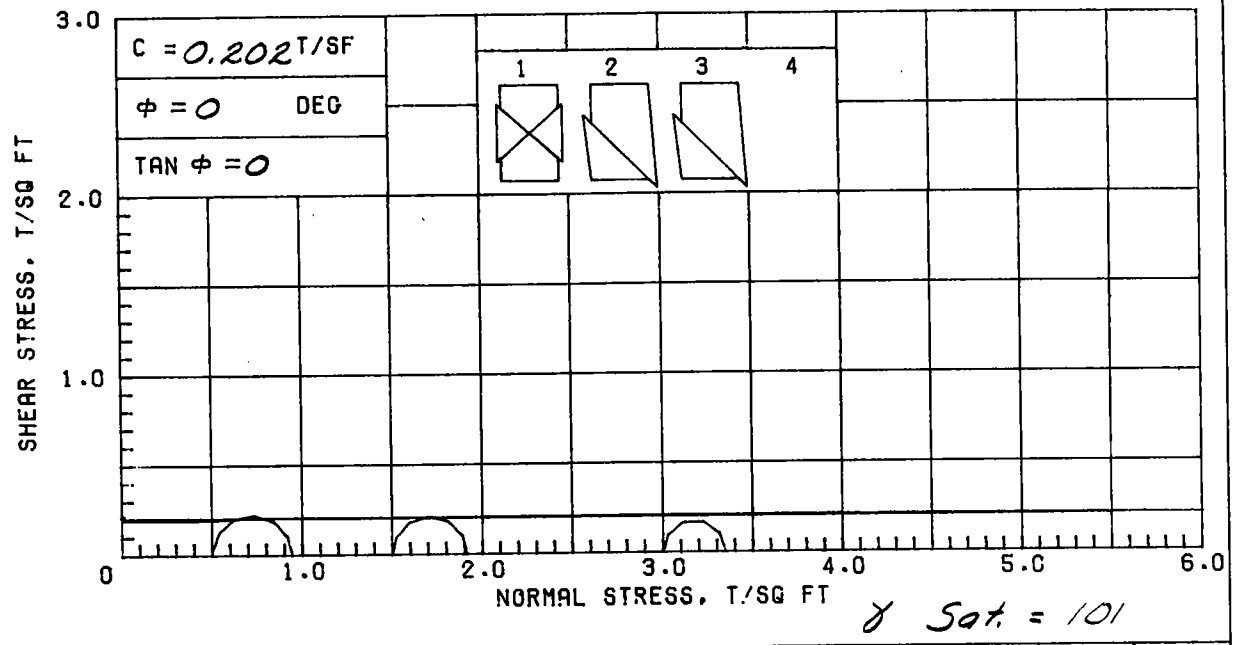
TRIAXIAL COMPRESSION TEST REPORT



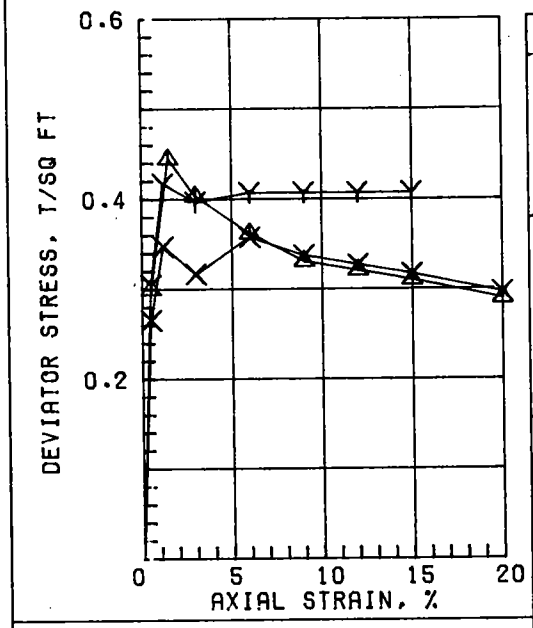
γ Sat. = 103

				BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF			WATER CONTENT, %	58.5	32.8
PRECONSOL. PRESSURE, TSF	0.48		DRY DENSITY, PCF	64.0	92.4
COMPRESSION INDEX	0.68		SATURATION, %	96.7	100 +
TYPE SPECIMEN	UNDISTURBED		VOID RATIO	1.633	0.825
DIA. IN 4.44	HT. IN 1.125		BACK PRESSURE, TSF		
CLASSIFICATION	PLASTIC CLAY (CH), GRAY; SILT SEAMS				
LL 79	PL 22	PI 57	PROJECT LAKE PONT. LA & VIC. HURR. PROT.		
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES		
REMARKS			BORING NO. 26-U	SAMPLE NO. 5-C	
			DEPTH/ELEV 18.4/-28.4	DATE 28 OCT 85	
			CONSOLIDATION TEST REPORT		

SHEET 1 OF 9



γ Sat. = 101



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	65.2	59.2	64.8	
	DRY DENSITY, PCF	60.8	64.0	60.7	
	SATURATION, %	99.2	97.8	98.4	
	VOID RATIO	1.774	1.634	1.778	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.44	0.42	0.35	
TIME TO FAILURE, MIN.		3	11	15	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.38	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 63.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; FINE SAND & SILT LENSES

LL 71	PL 18	PI 53	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

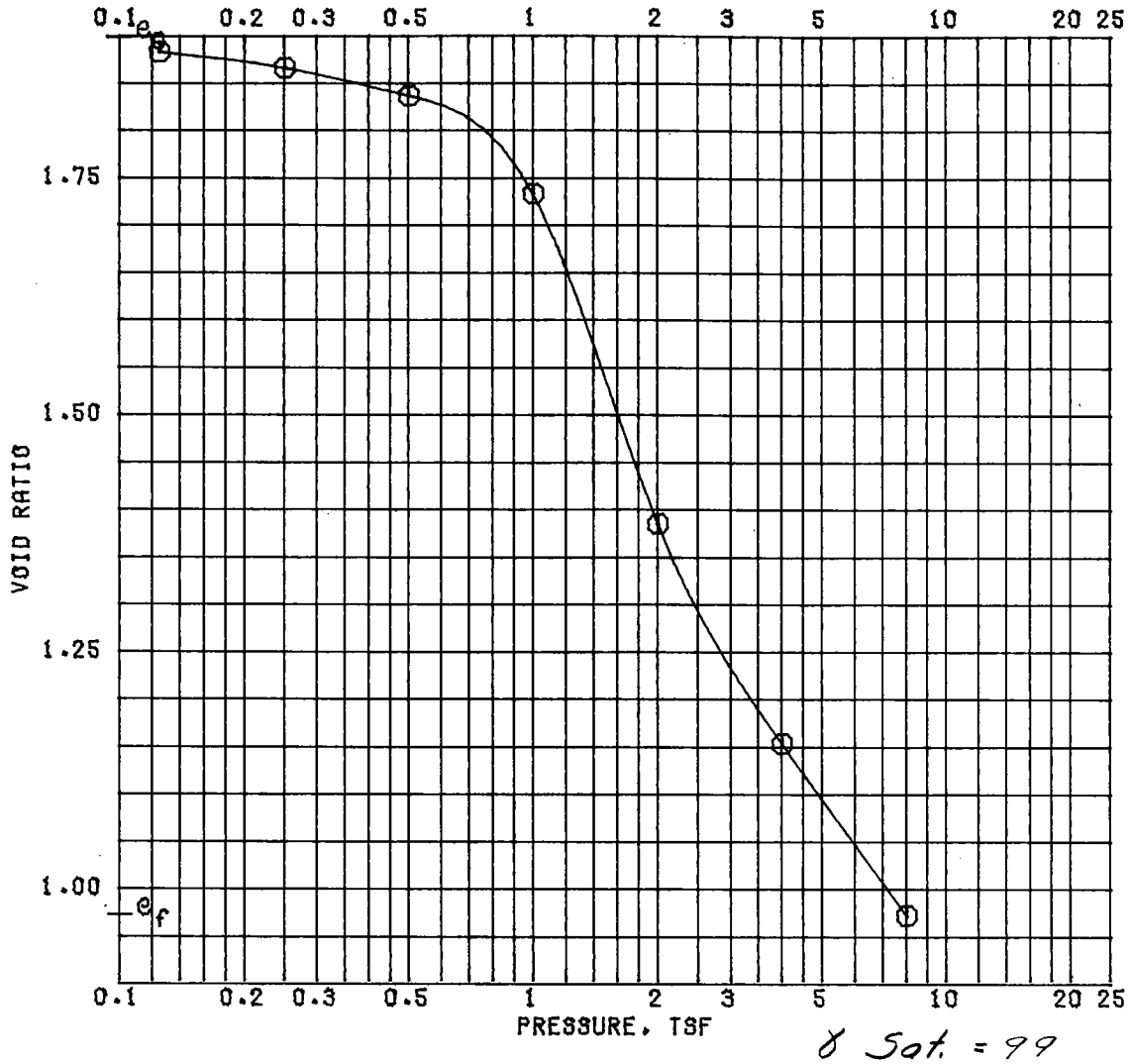
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 26-U | SAMPLE NO. 7-C

DEPTH/ELEV 26.0'-36.0 | TECH. LRC

LABORATORY USAE WES | DATE 24 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



S Sat. = 99

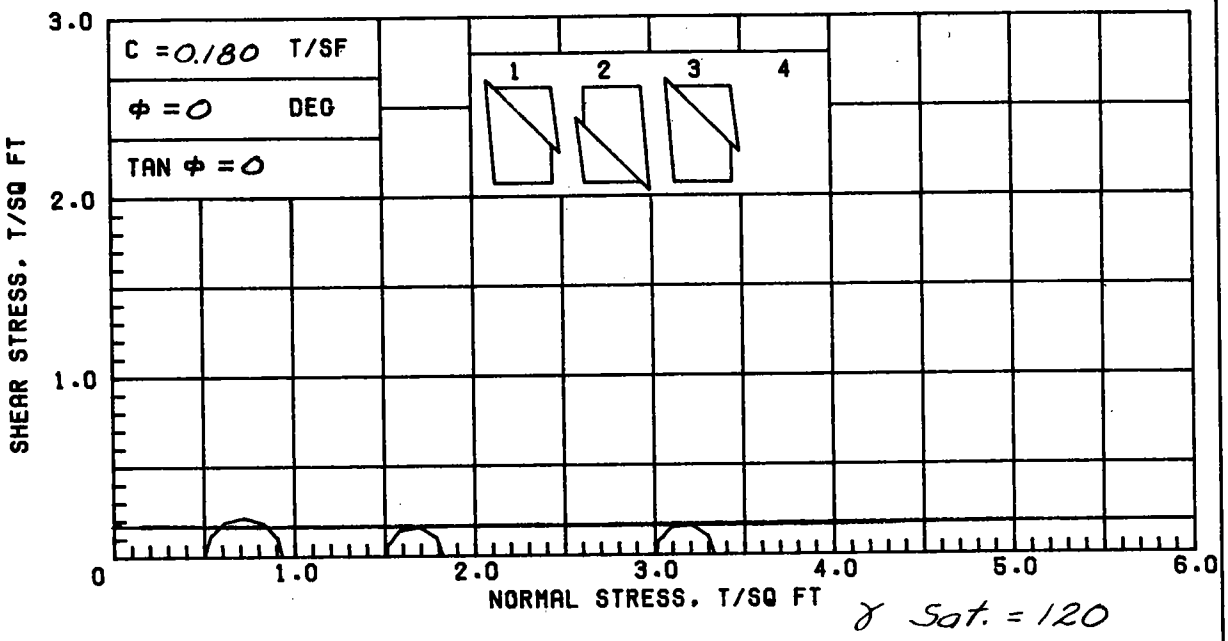
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	69.4	38.0
PRECONSOL. PRESSURE, TSF	0.91	DRY DENSITY, PCF	58.2	85.5
COMPRESSION INDEX	1.18	SATURATION, %	98.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.897	0.971
DIA. IN 4.44	HT. IN 1.122	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

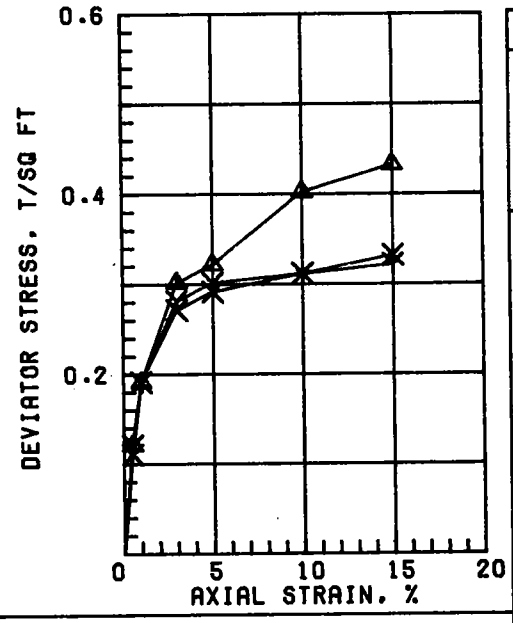
LL 65	PL 19	PI 46	PROJECT LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 26-U	SAMPLE NO. 8-B
		DEPTH/ELEV 29.0/-39.0	DATE 05 NOV 65

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 120



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	30.1	30.4	32.7	
	DRY DENSITY, PCF	93.4	93.2	89.0	
	SATURATION, %	100+	100+	98.7	
	VOID RATIO	0.805	0.808	0.894	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.43	0.32	0.33	
TIME TO FAILURE, MIN.		30	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 31.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; SILT POCKETS

LL 47	PL 16	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.

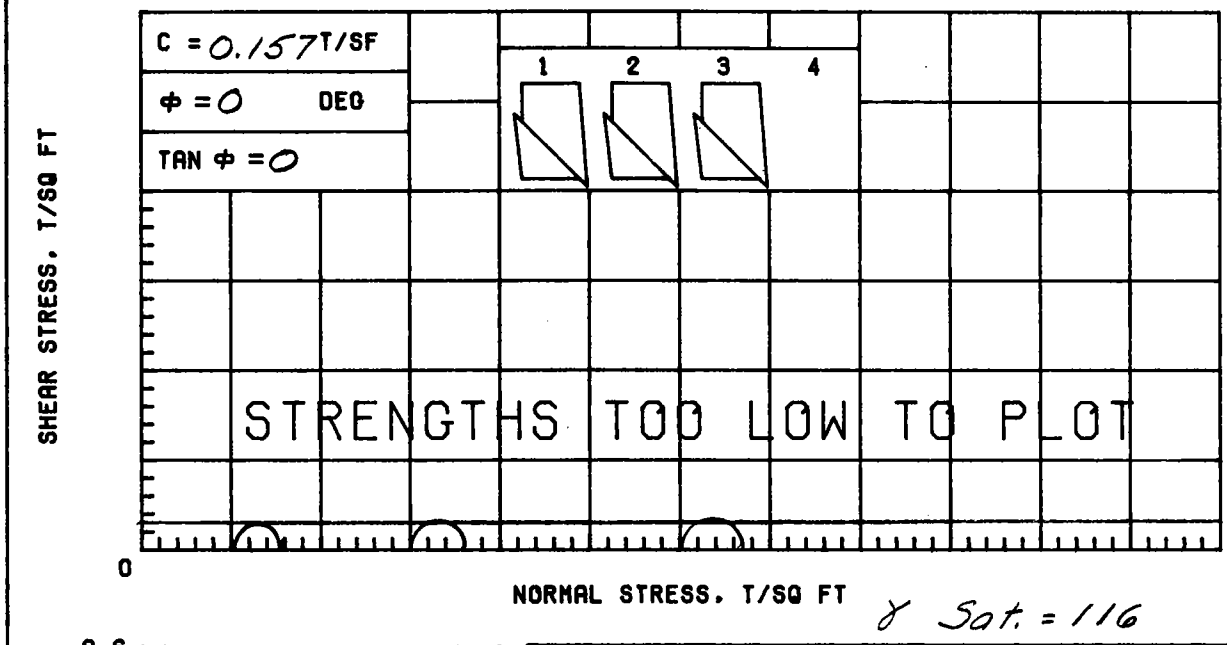
JEFFERSON & ST. CHARLES PARISH

BORING NO. 26-GU | SAMPLE NO. 1-C

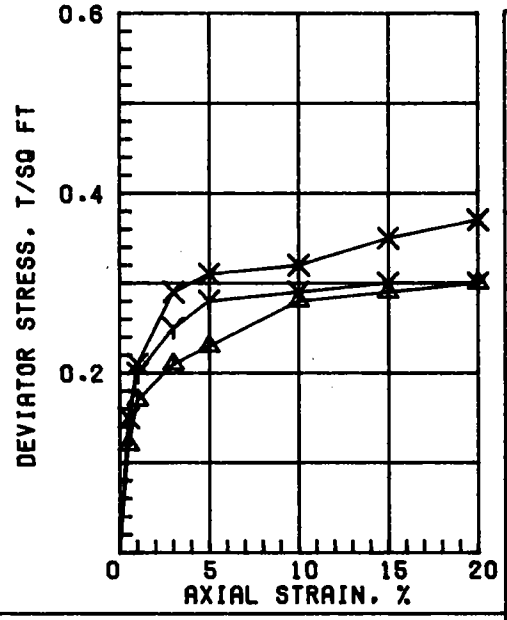
DEPTH/ELEV 2.0/-4.3 | TECH. KOC

LABORATORY USAE WES | DATE 01 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 116



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	34.4	37.1	34.7	
	DRY DENSITY, PCF	84.9	83.4	86.0	
	SATURATION, %	94.4	98.2	97.5	
	VOID RATIO	0.984	1.020	0.961	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.29	0.30	0.35	
TIME TO FAILURE, MIN.		30	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 35.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; SILT POCKETS

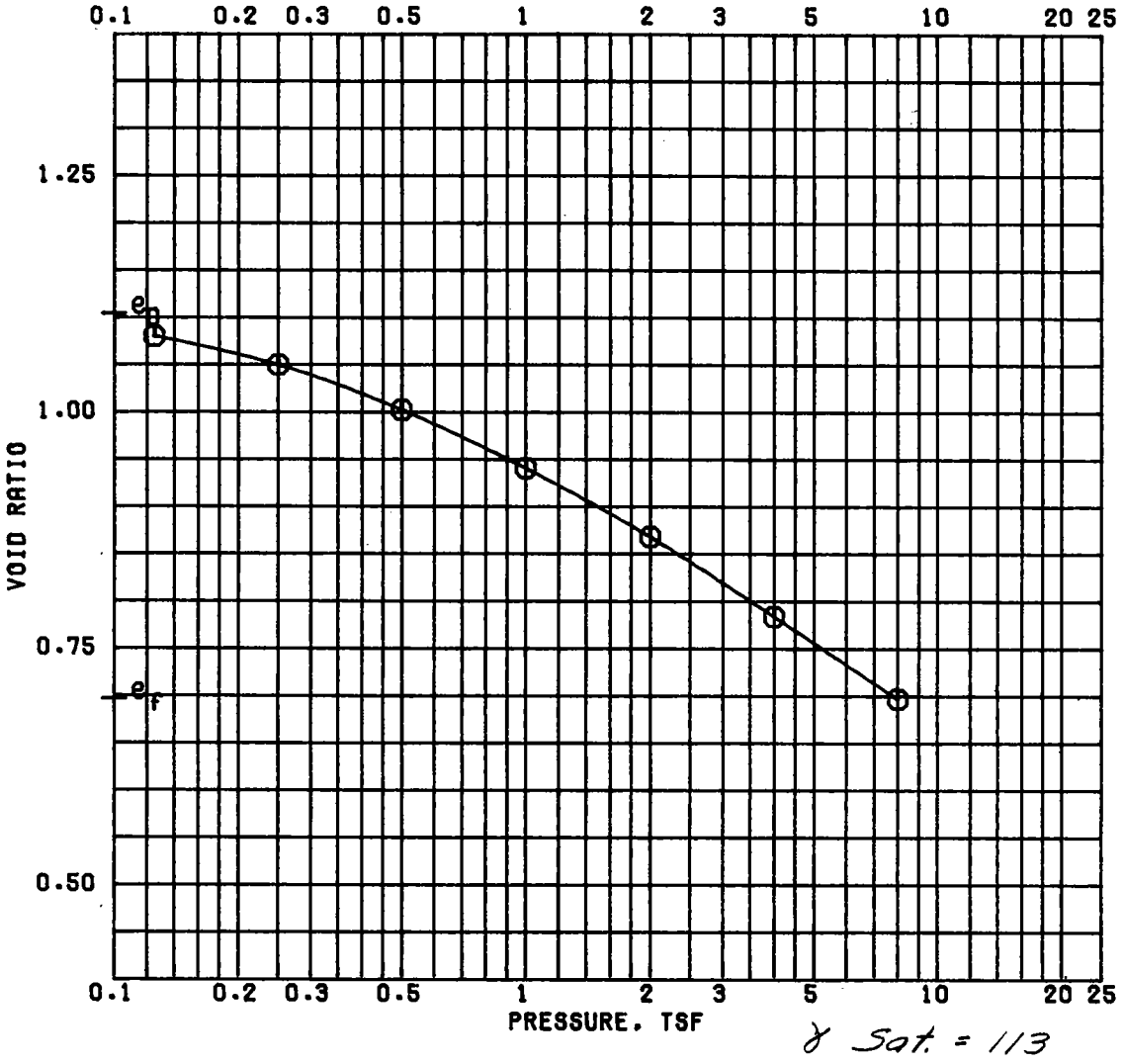
LL 68	PL 16	PI 52	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 26-OU | SAMPLE NO. 5-B
DEPTH/ELEV 17.0/-10.7 | TECH. KOC
LABORATORY USAE WES | DATE 02 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 113

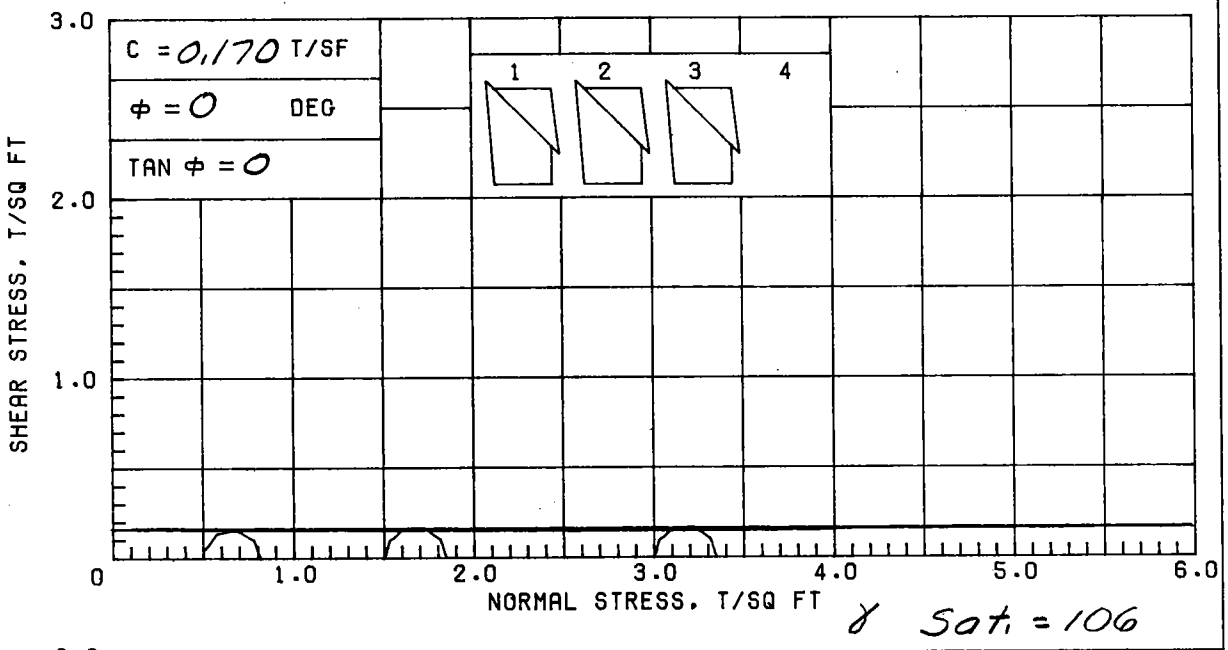
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	38.8	26.2
PRECONSOL. PRESSURE, TSF	0.33	DRY DENSITY, PCF	80.2	99.4
COMPRESSION INDEX	0.21	SATURATION, %	94.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.103	0.695
DIA. IN 4.44	HT. IN 1.130	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

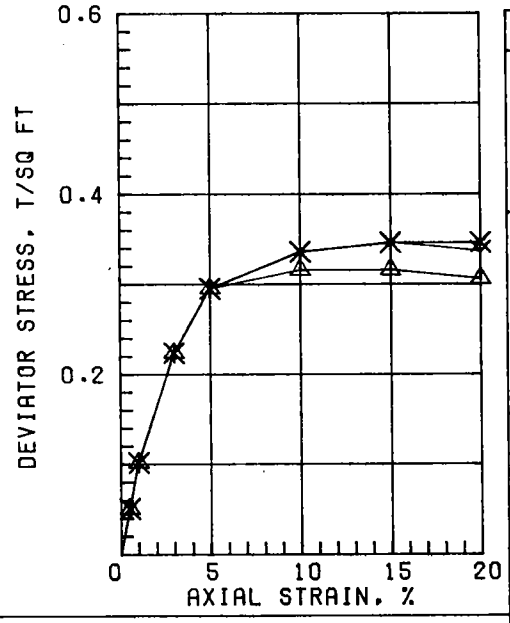
LL 72	PL 19	PI 53	PROJECT LAKE PONT. LA.& VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH
REMARKS		BORING NO. 26-OU	SAMPLE NO. 6-B
		DEPTH/ELEV 20.9/-14.6	DATE 23 SEP 95

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 106



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	52.3	52.1	51.5	
	DRY DENSITY, PCF	69.6	68.8	70.7	
	SATURATION, %	99.2	97.0	100+	
	VOID RATIO	1.423	1.450	1.385	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.32	0.35	0.35	
TIME TO FAILURE, MIN.		20	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 52.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

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

REMARKS;

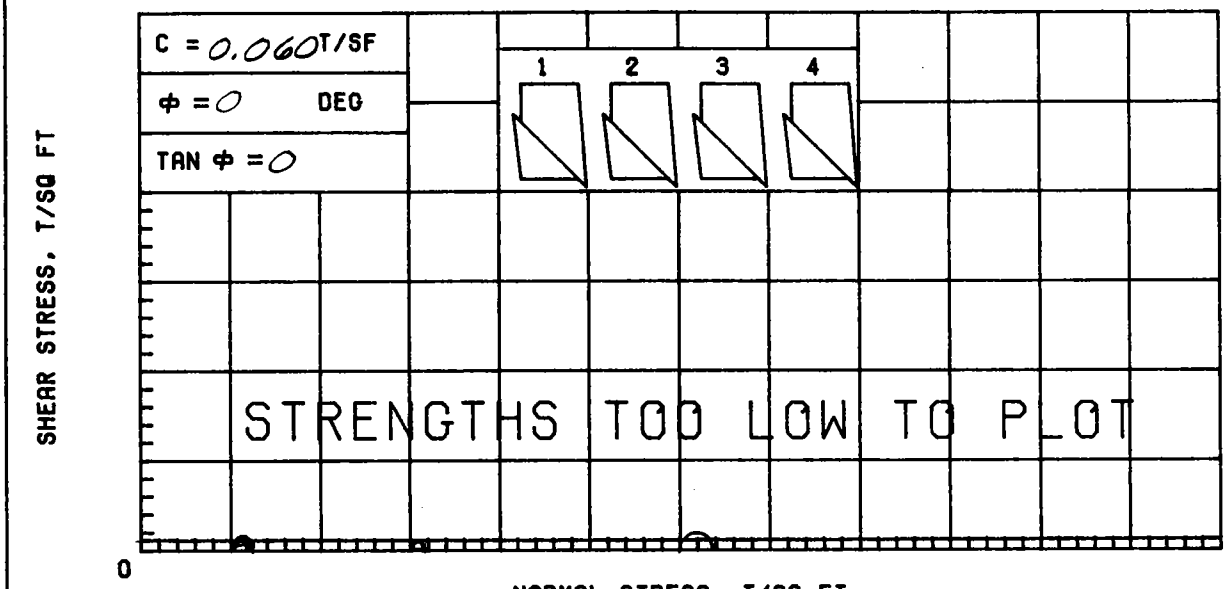
PROJECT LAKE PONT. LA. & VIC. HURR. PROT
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 26-GU | SAMPLE NO. 6-C2

DEPTH/ELEV 22/-15.7 | TECH. KOC

LABORATORY USAE WES | DATE 25 OCT 85

TRIAXIAL COMPRESSION TEST REPORT



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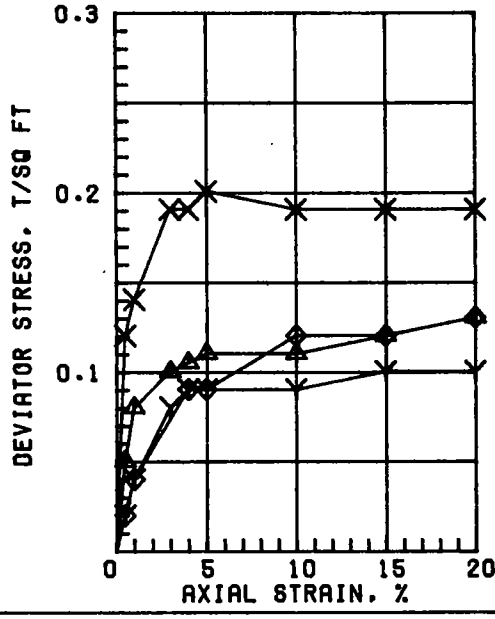


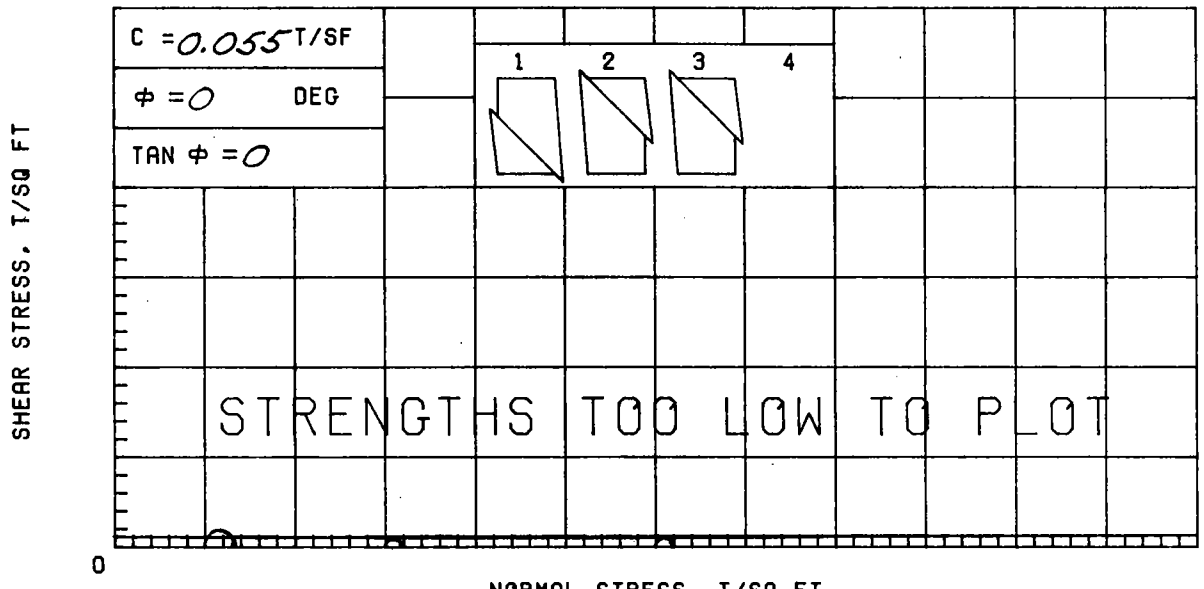
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	63.1	66.3	67.0	65.4	65.5
	DRY DENSITY, PCF	60.7	60.2	60.3	60.1	
	SATURATION, %	95.8	99.3	100+	97.9	
	VOID RATIO	1.779	1.802	1.795	1.803	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.11	0.09	0.19	0.09	
TIME TO FAILURE, MIN.		10	8	6	24	
RATE OF STRAIN INCR.%					6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

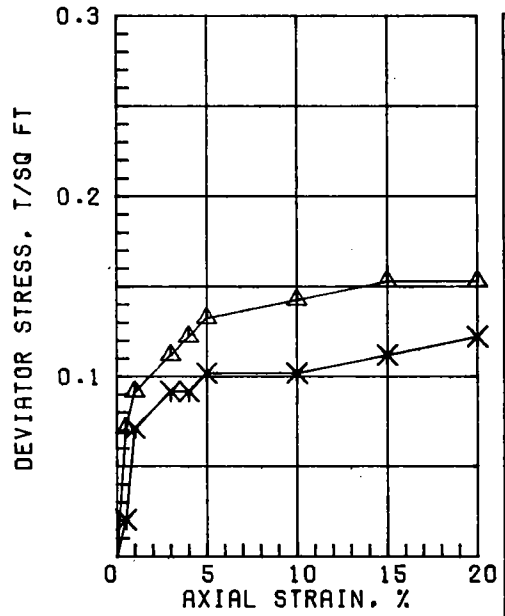
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 94	PL 24	PI 70	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 26-OU	SAMPLE NO. 7-C
	DEPTH/ELEV 26.1/-19.8	TECH. KOC
	LABORATORY USAE WES	DATE 02 AUG 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 107



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	46.4	50.6	51.2	
	DRY DENSITY, PCF	73.5	70.1	69.9	
	SATURATION, %	96.8	97.2	98.0	
	VOID RATIO	1.294	1.405	1.411	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.15	0.09	0.09	
TIME TO FAILURE, MIN.		30	6	6	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

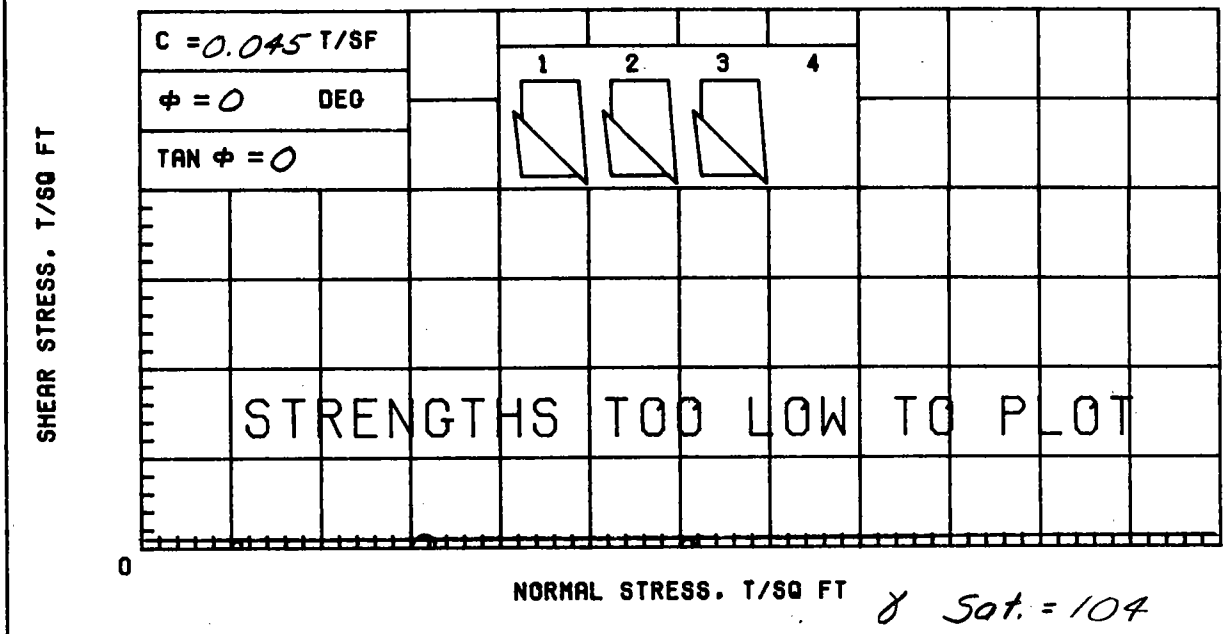
Avg. 49.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 61	PL 18	PI 43	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 26-GU	SAMPLE NO. 10-B
	DEPTH/ELEV 37/-30.7	TECH. KOC
	LABORATORY USAE WES	DATE 25 OCT 85
	TRIAXIAL COMPRESSION TEST REPORT	



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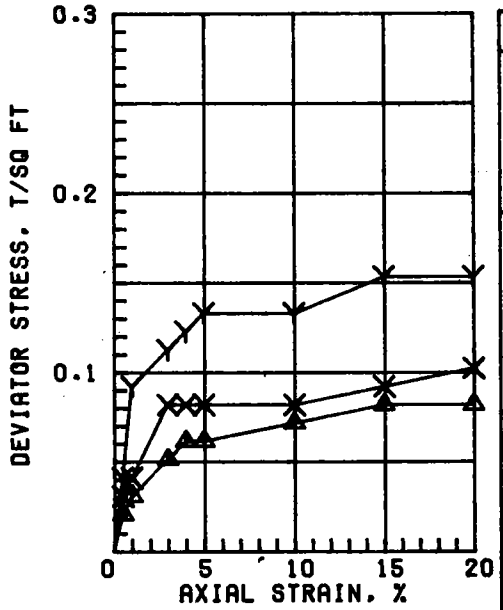


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	57.0	53.5	62.5	
	DRY DENSITY, PCF	66.4	68.5	63.0	
	SATURATION, %	100.0	99.0	100+	
	VOID RATIO	1.539	1.460	1.674	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.06	0.13	0.08	
TIME TO FAILURE, MIN.		8	10	6	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 57.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 76	PL 21	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

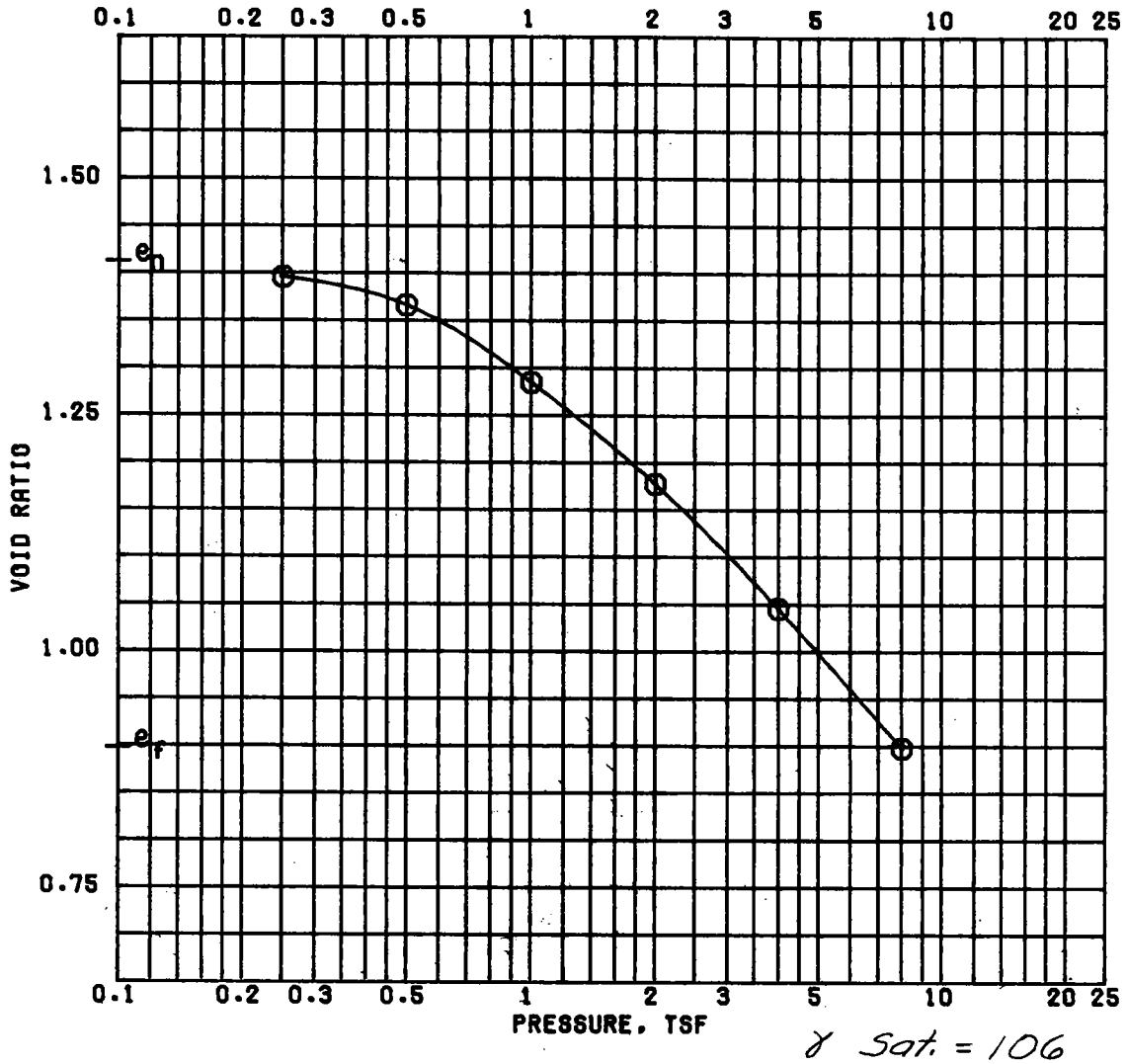
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 26-OU — SAMPLE NO. 10-C

DEPTH/ELEV 38.0/-31.7 — TECH. KOC

LABORATORY USAE WES — DATE 02 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 106

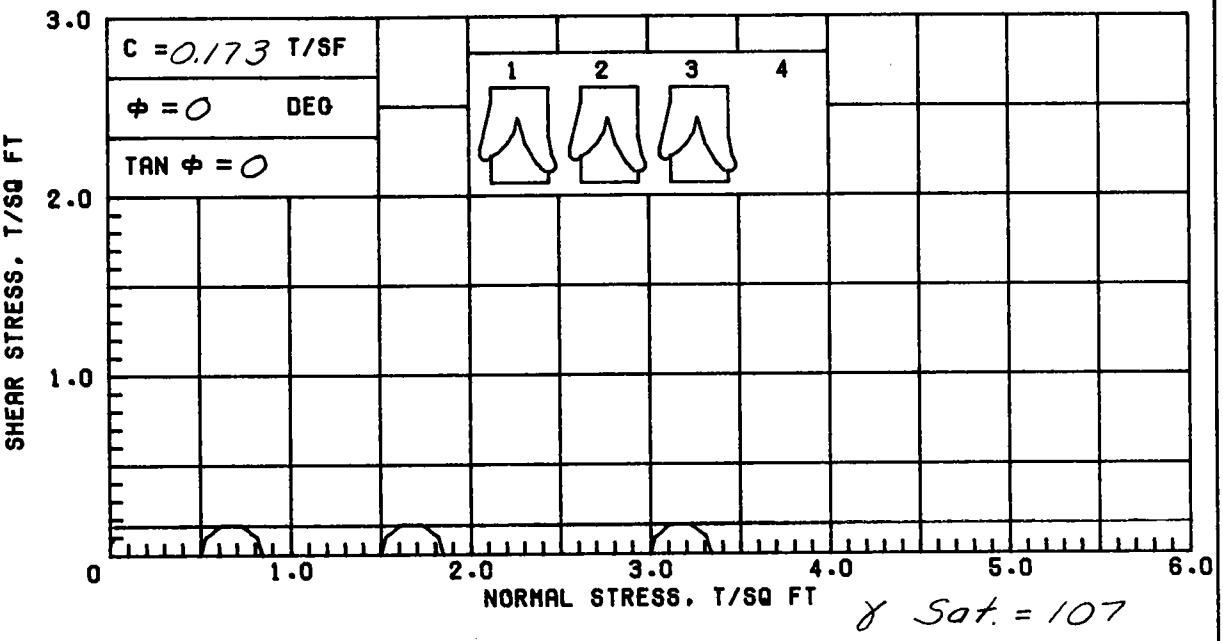
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF	0.60	WATER CONTENT, %	50.1	34.9
PRECONSOL. PRESSURE, TSF	0.30	DRY DENSITY, PCF	69.9	88.9
COMPRESSION INDEX		SATURATION, %	95.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.410	0.896
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; FISSURED

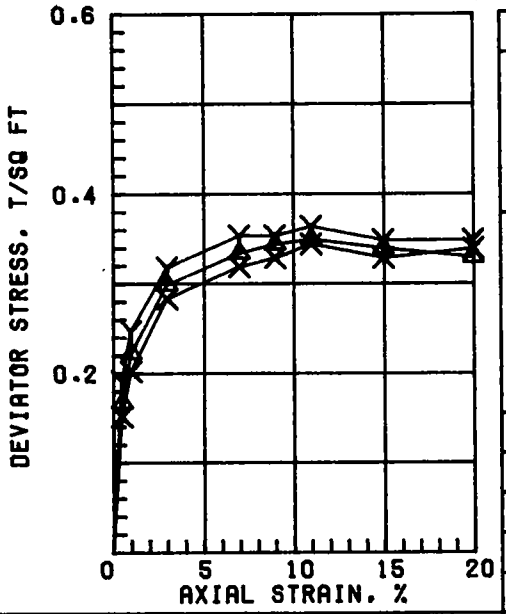
LL 79	PL 22	PI 57	PROJECT LAKE PONT. LA.& VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH
REMARKS		BORING NO. 26-OU	SAMPLE NO. 12-C
		DEPTH/ELEV 45.9/-39.6	DATE 23 SEP 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. = 107



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	52.4	50.6	52.1	
	DRY DENSITY, PCF	70.5	71.4	70.6	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.392	1.361	1.387	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.35	0.35	0.34	
TIME TO FAILURE, MIN.		22	16	25	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 51.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; FINE SAND LENSES; SHELL PARTICLES

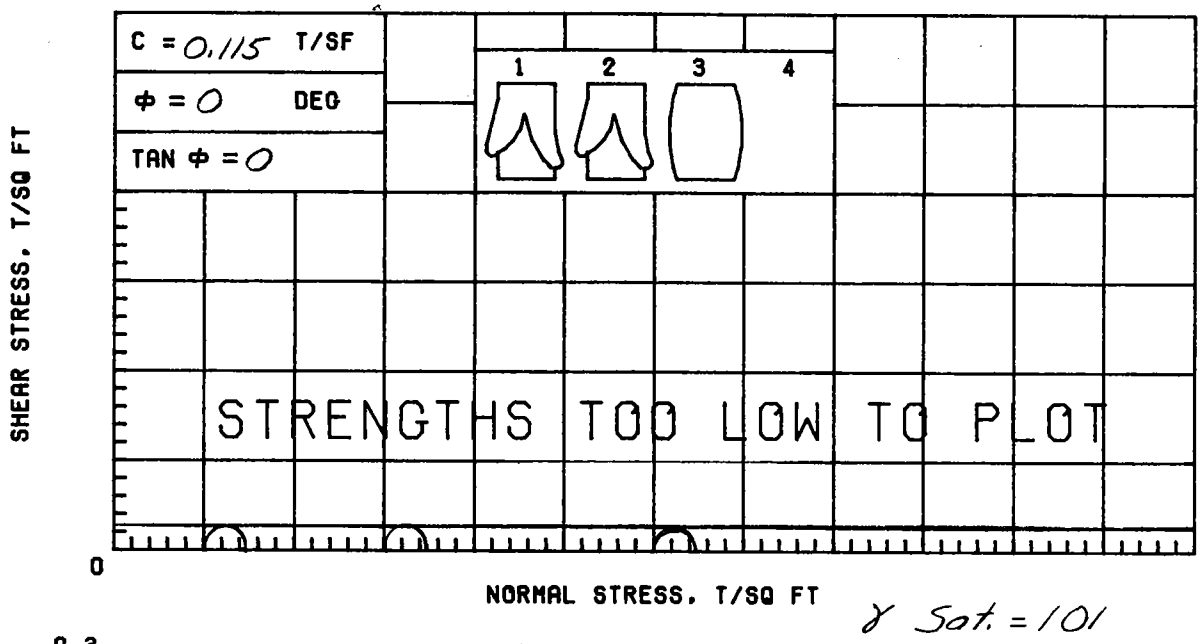
LL 61	PL 17	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

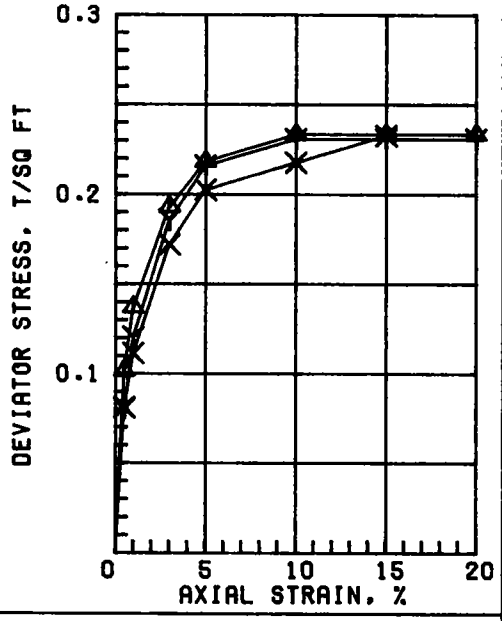
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 26-GU | SAMPLE NO. 13-C
DEPTH/ELEV 49.6/-43.3 | TECH. PJR
LABORATORY USAE WES | DATE 02 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 101



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	66.6	63.2	62.7	
	DRY DENSITY, PCF	60.7	62.3	62.4	
	SATURATION, %	100+	100+	99.6	
	VOID RATIO	1.777	1.705	1.700	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.23	0.23	0.23	
TIME TO FAILURE, MIN.		20	17	33	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 64.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 86	PL 23	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

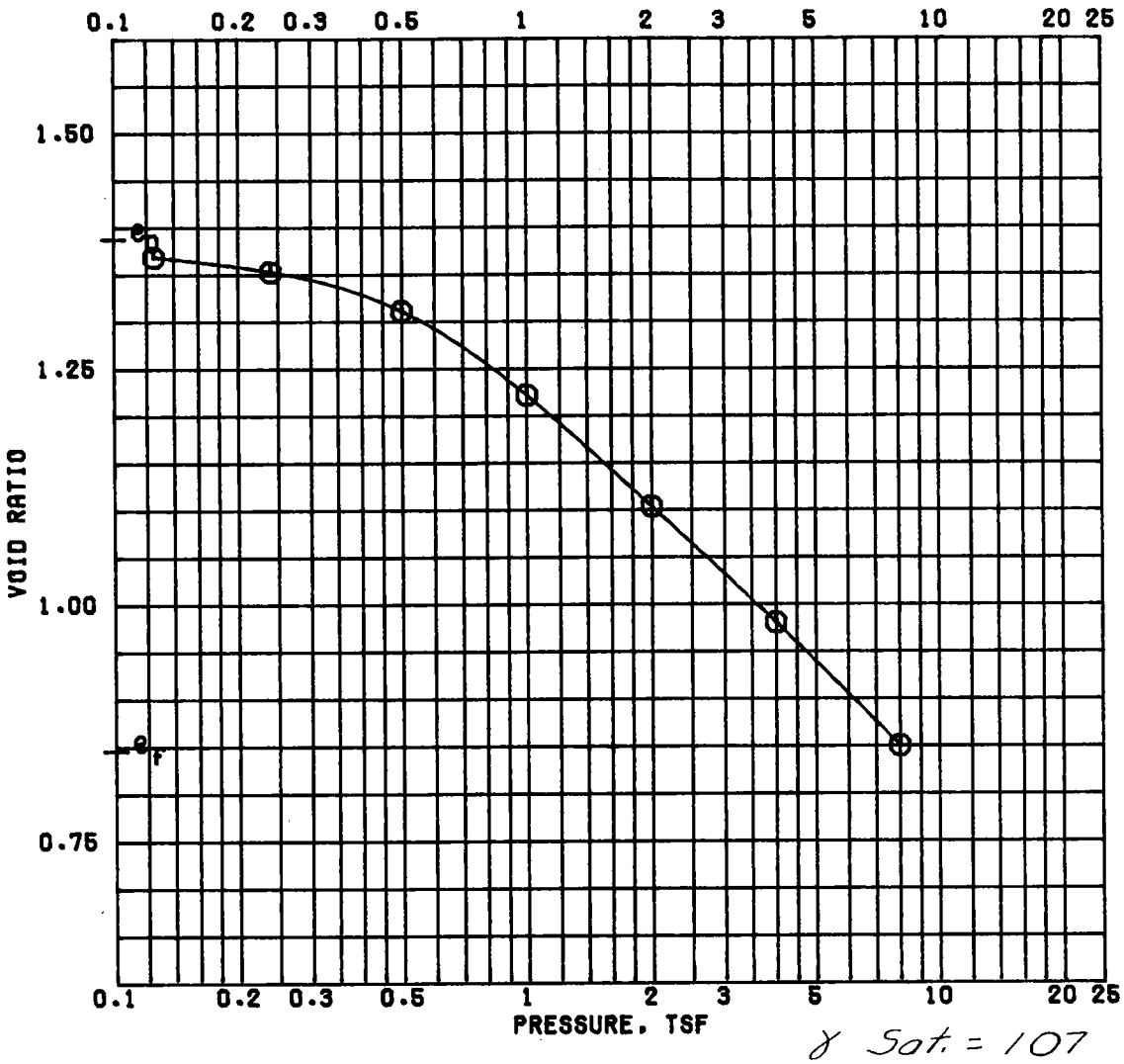
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 26-OU | SAMPLE NO. 15-B

DEPTH/ELEV 57.0/-50.7 | TECH. PJR

LABORATORY USAE WES | DATE 02 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 107

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.61	
COMPRESSION INDEX	0.45	
TYPE SPECIMEN: UNDISTURBED		
DIA. IN 4.44 / HT. IN 1.114		
WATER CONTENT, %	48.7	31.8
DRY DENSITY, PCF	70.6	91.4
SATURATION, %	94.8	100 +
VOID RATIO	1.386	0.844
BACK PRESSURE, TSF		

CLASSIFICATION: CLAY (CL), GRAY

LL 46 | PL 20 | PI 26

GS 2.70 (EST) | D_{10}

REMARKS

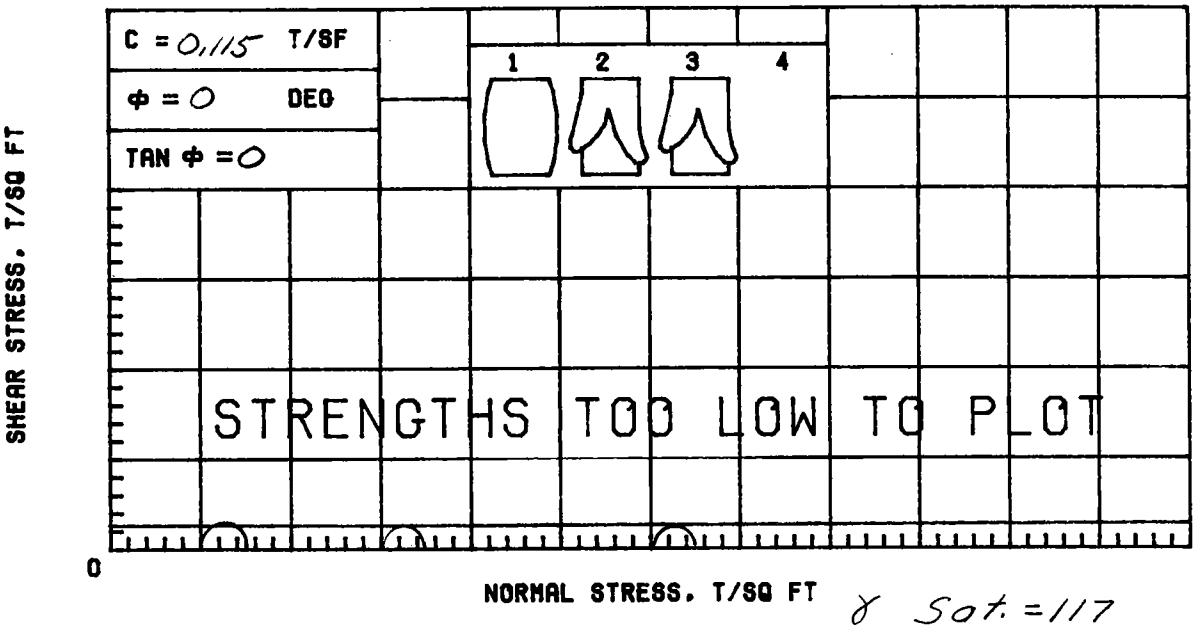
PROJECT: LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHALRES PARISHES

BORING NO. 27-U | SAMPLE NO. 2-C

DEPTH/ELEV 5.2/-0.85 | DATE 07 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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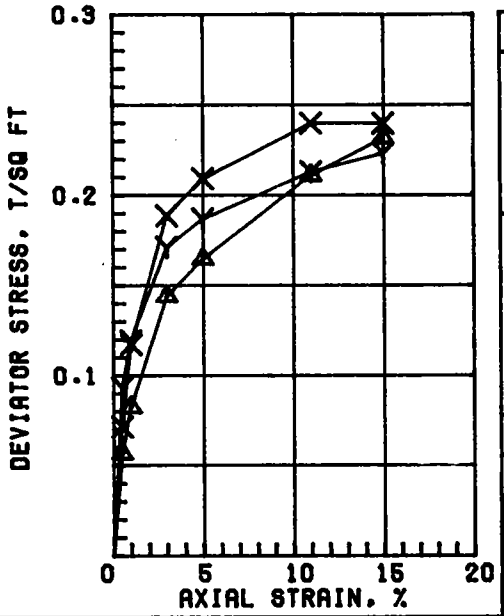


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	34.1	36.5	33.5	
	DRY DENSITY, PCF	87.2	85.5	87.6	
	SATURATION, %	98.6	100+	97.9	
	VOID RATIO	0.934	0.972	0.924	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.23	0.22	0.24	
TIME TO FAILURE, MIN.		40	38	22	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.37	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 34.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY

LL 47	PL 17	PI 30	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

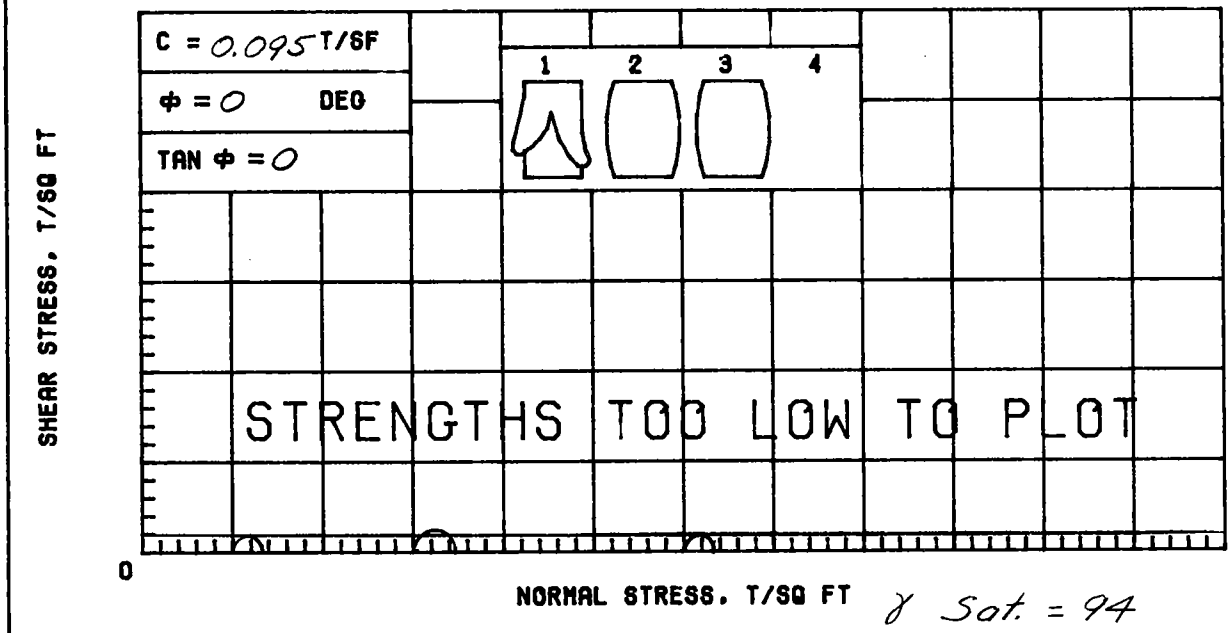
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 27-U | SAMPLE NO. 3-B

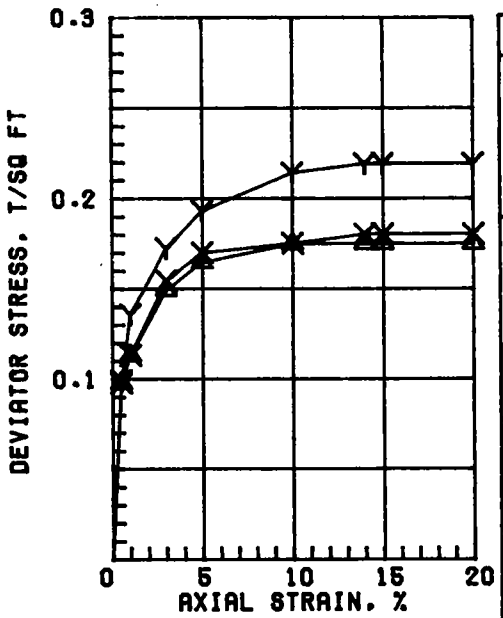
DEPTH/ELEV 8.0/-3.65 | TECH. PJR

LABORATORY USAE WES | DATE 31 MAY 1985

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 94



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	90.5	96.9	89.9	
	DRY DENSITY, PCF	49.3	47.4	49.3	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.417	2.553	2.418	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.17	0.22	0.18	
TIME TO FAILURE, MIN.		15	22	21	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 92.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), DARK GRAY

LL 115	PL 28	PI 87	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

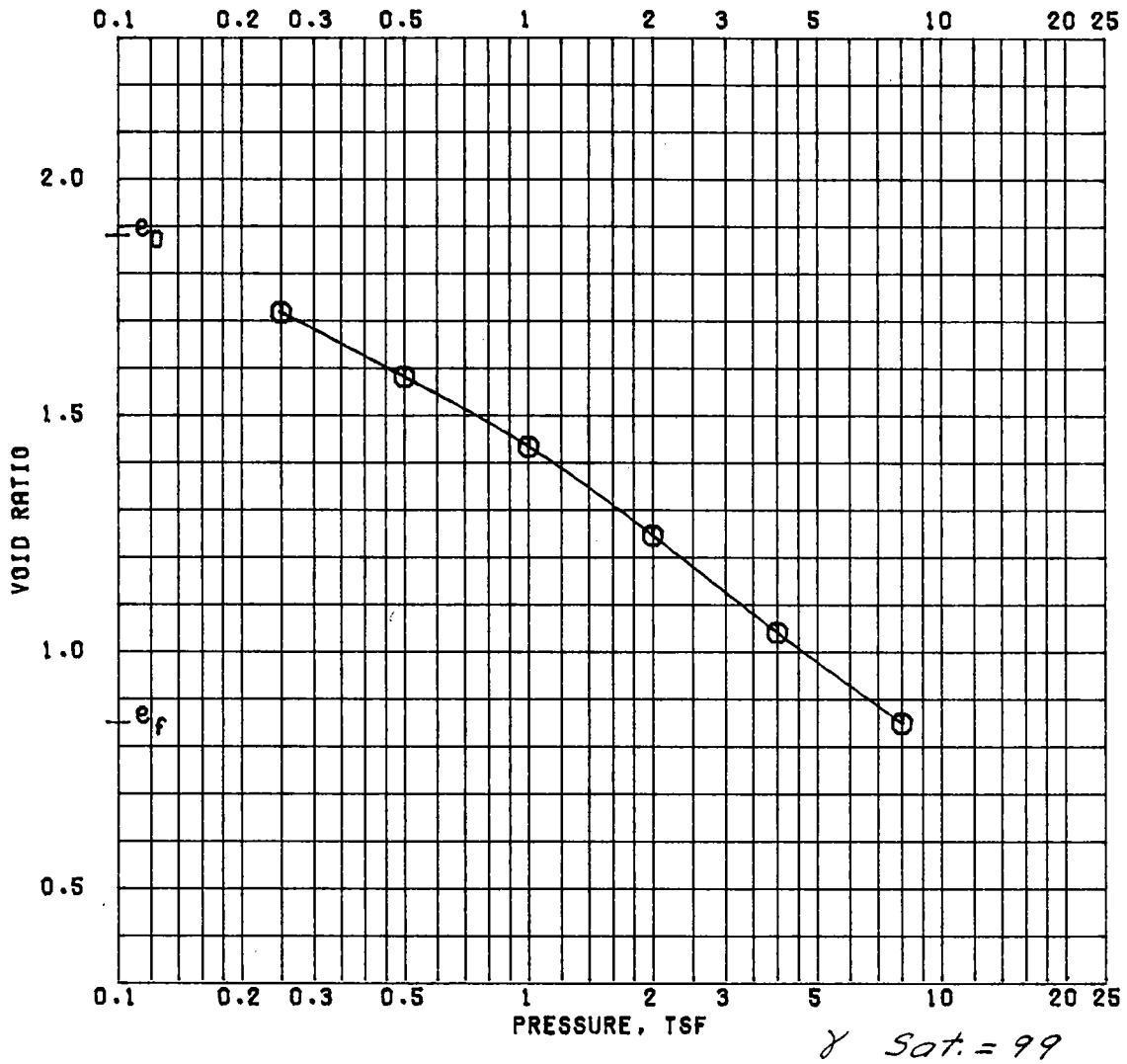
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 27-U | SAMPLE NO. 5-C

DEPTH/ELEV 16.8/-12.45 | TECH. PJR

LABORATORY USAE WES | DATE 31 MAY 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 99

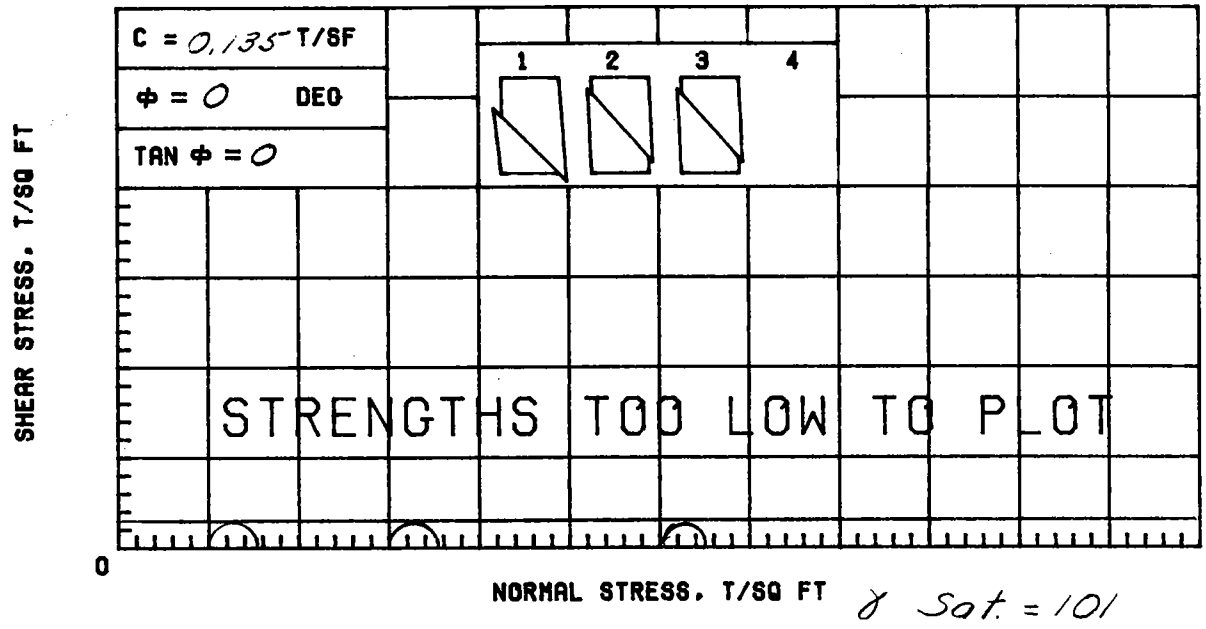
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	69.1	38.9
PRECONSOL. PRESSURE, TSF	1.19	DRY DENSITY, PCF	58.6	91.3
COMPRESSION INDEX	0.77	SATURATION, %	99.4	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.877	0.846
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		

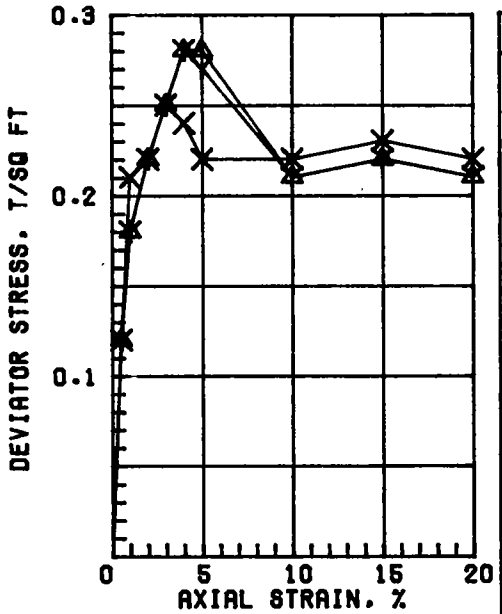
CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 75	PL 20	PI 55	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 27-U	SAMPLE NO. 7-C
		DEPTH/ELEV 25.1/-20.75	DATE 07 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8





SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	63.3	62.0	64.2	
	DRY DENSITY, PCF	62.1	62.2	60.9	
	SATURATION, %	99.8	97.9	98.1	
	VOID RATIO	1.713	1.709	1.767	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.28	0.28	0.25	
TIME TO FAILURE, MIN.		8	8	18	
RATE OF STRAIN INCR.%				6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

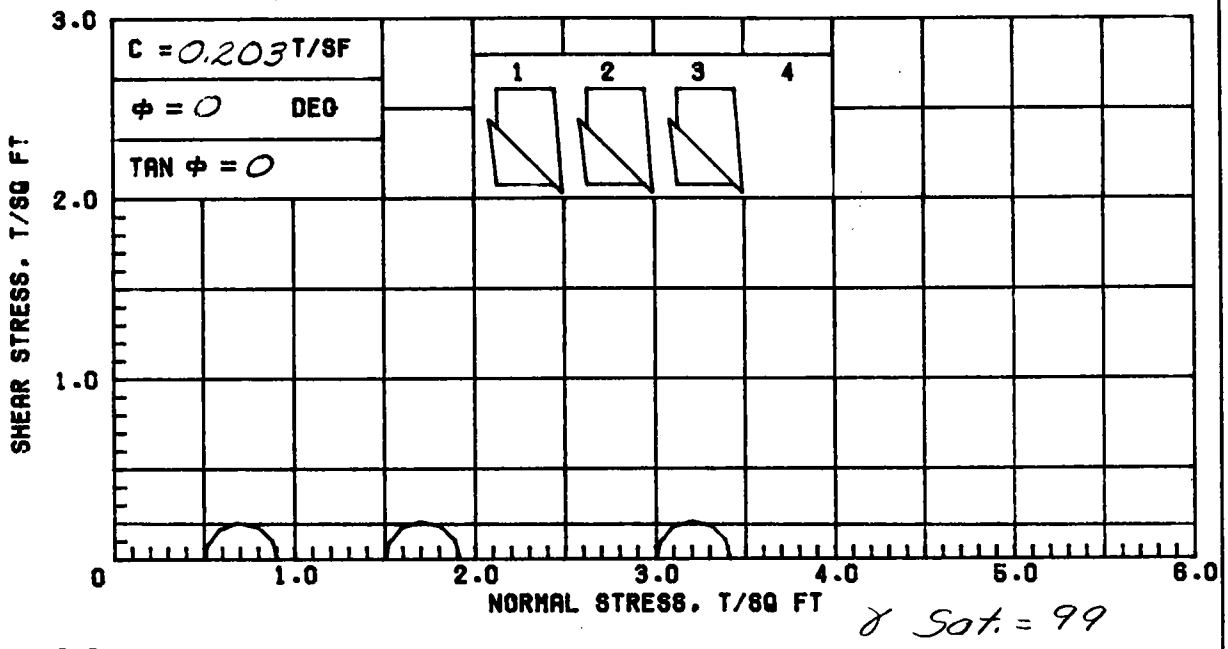
Avg. 63.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS & POCKETS

LL 64	PL 20	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 27-U	SAMPLE NO. 8C
	DEPTH/ELEV 28.7/-24.35	TECH. KOC
	LABORATORY USAE WES	DATE 30 MAY 85
	TRIAXIAL COMPRESSION TEST REPORT	



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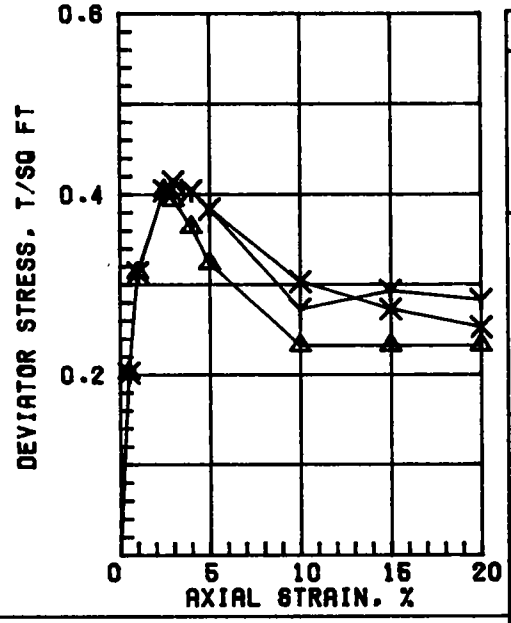


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	71.5	70.3	71.3	
	DRY DENSITY, PCF	57.5	58.4	58.1	
	SATURATION, %	99.8	100+	100+	
	VOID RATIO	1.934	1.886	1.901	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.40	0.41	0.41	
TIME TO FAILURE, MIN.		5	18	18	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

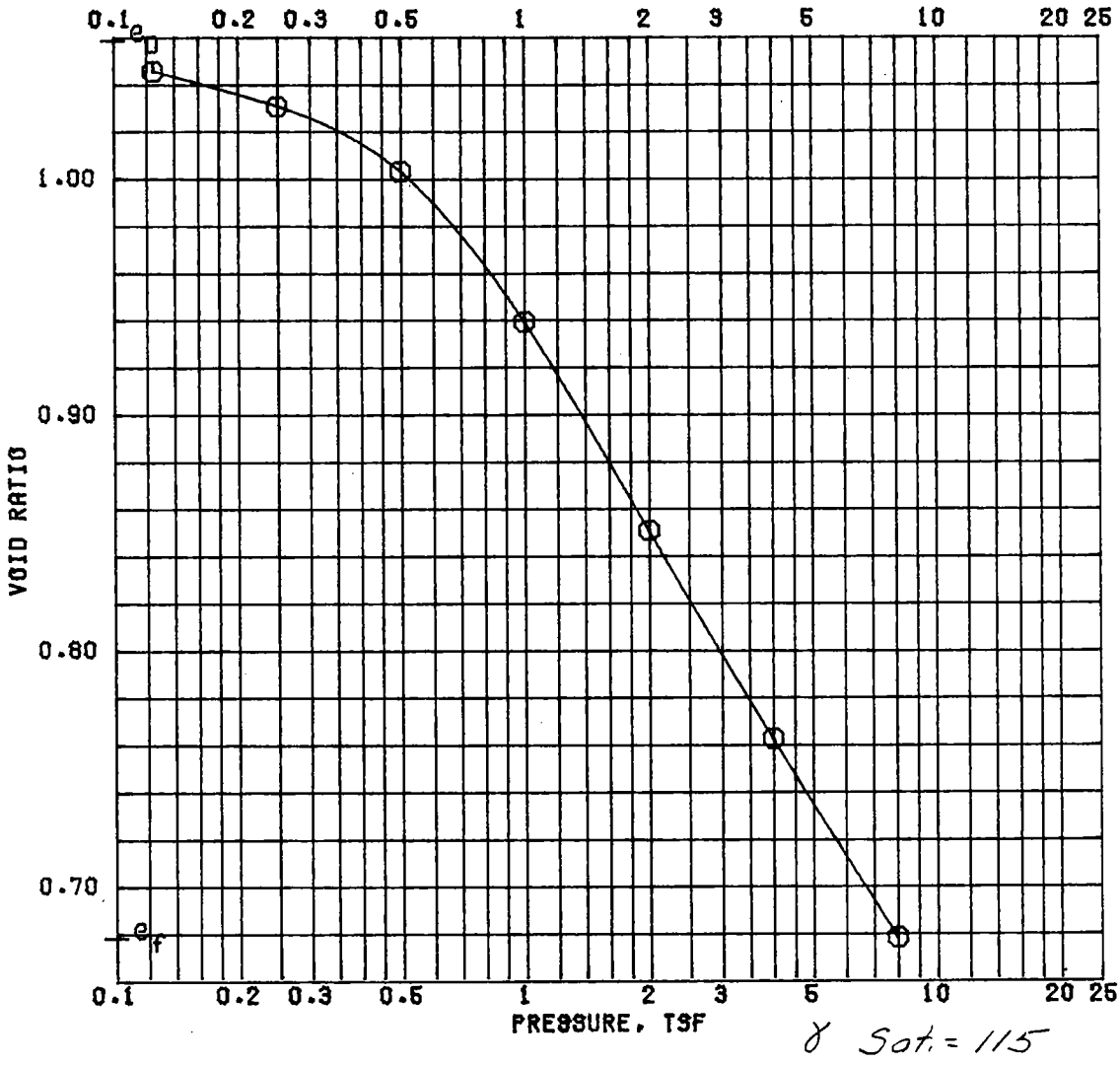
Avg. 71.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 90	PL 25	PI 65	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 27-U	SAMPLE NO. 118
	DEPTH/ELEV 40.0/-35.65	TECH. KOC
	LABORATORY USAE WES	DATE 31 MAY 85
	TRIAXIAL COMPRESSION TEST REPORT	



e_o

e_f

γ Sat. = 115

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.61	DRY DENSITY, PCF	81.9	100.5
COMPRESSION INDEX 0.29	SATURATION, %	86.4	95.2
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.058	0.678
DIA. IN 4.44 HT. IN 1.129	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; FINE SAND & SILT LENSES

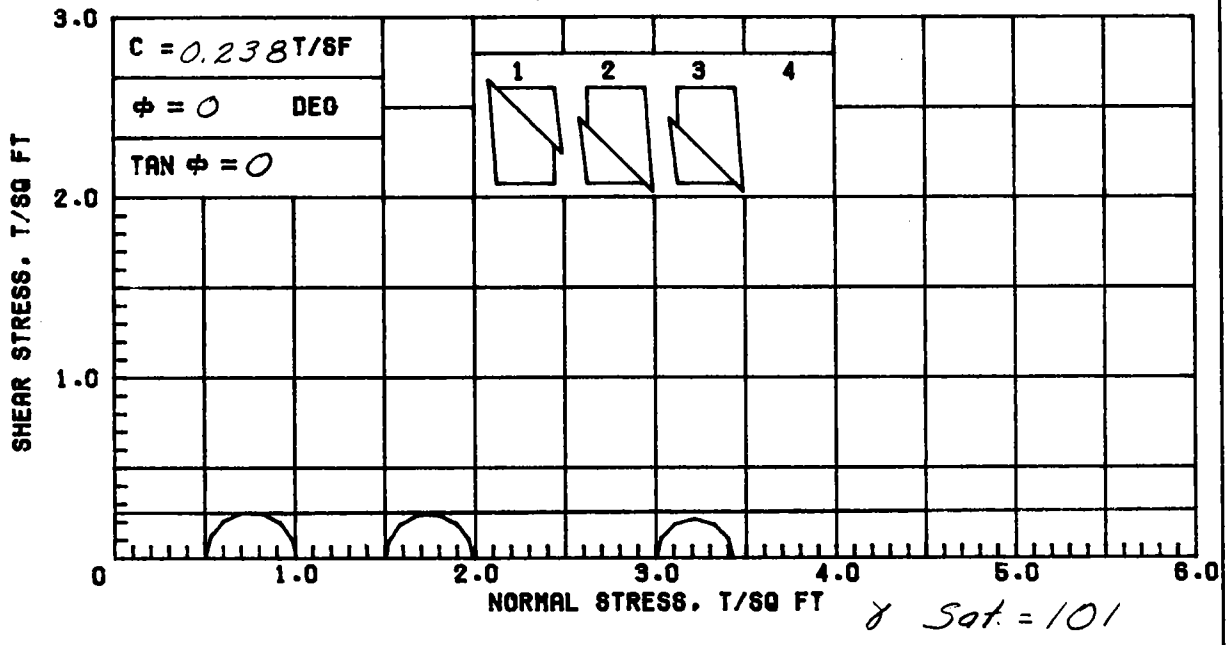
LL	PL	PI
GS 2.70 (EST)	D_{10}	
REMARKS		

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHALRES PARISHES

BORING NO. 27-U SAMPLE NO. 11-C

DEPTH/ELEV 40.9/-36.55 DATE 24 JUL 85

CONSOLIDATION TEST REPORT



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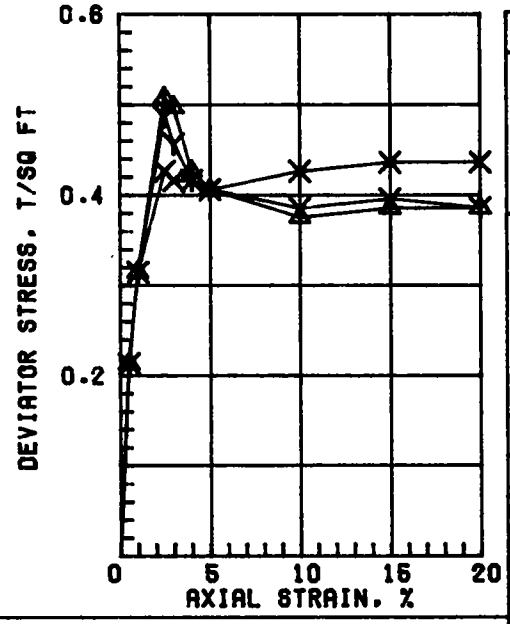


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	65.0	67.7	67.8	
	DRY DENSITY, PCF	61.3	60.2	59.6	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.748	1.798	1.827	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.51	0.49	0.43	
TIME TO FAILURE, MIN.		5	15	15	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

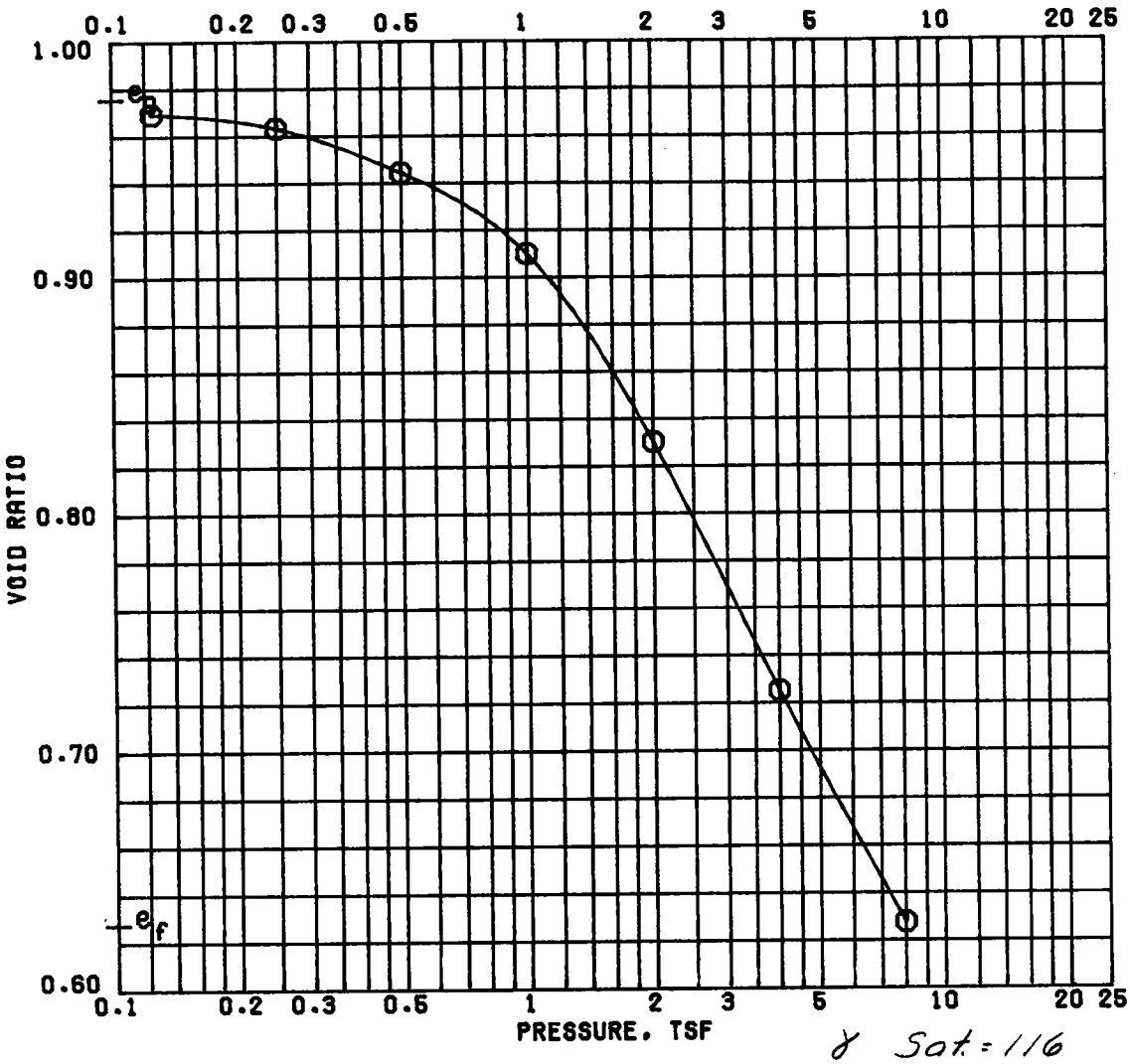
Avg. 66.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 86	PL 23	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 27-U	SAMPLE NO. 138
	DEPTH/ELEV 48.0/-43.65	TECH. KOC
	LABORATORY USAE WES	DATE 31 MAY 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 116

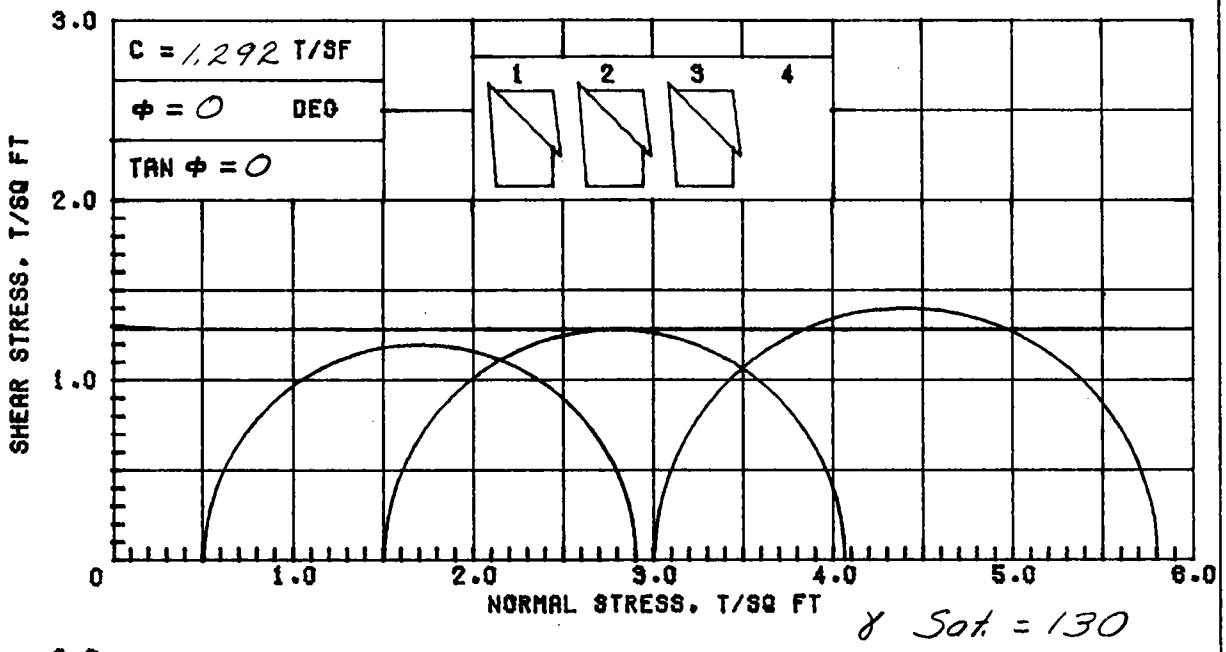
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	34.5	23.3
PRECONSOL. PRESSURE, TSF	1.18	DRY DENSITY, PCF	85.4	103.6
COMPRESSION INDEX	0.35	SATURATION, %	95.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	0.975	0.627
DIA. IN 4.44	HT. IN 1.128	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY; FINE SAND & SILT LENSES

LL 40	PL 12	PI 28	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
OS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHALRES PARISHES
REMARKS		BORING NO. 27-U	SAMPLE NO. 14-B
		DEPTH/ELEV 52.0/-47.65	DATE 25 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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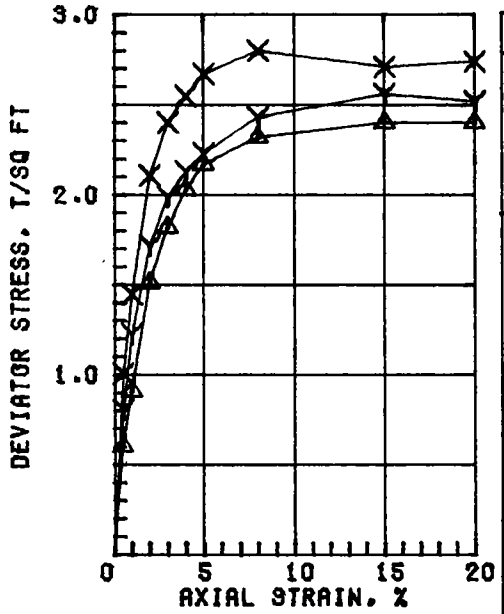


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	19.6	22.6	22.0	
	DRY DENSITY, PCF	110.2	105.1	106.4	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	0.529	0.604	0.584	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		2.40	2.56	2.80	
TIME TO FAILURE, MIN.		30	30	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

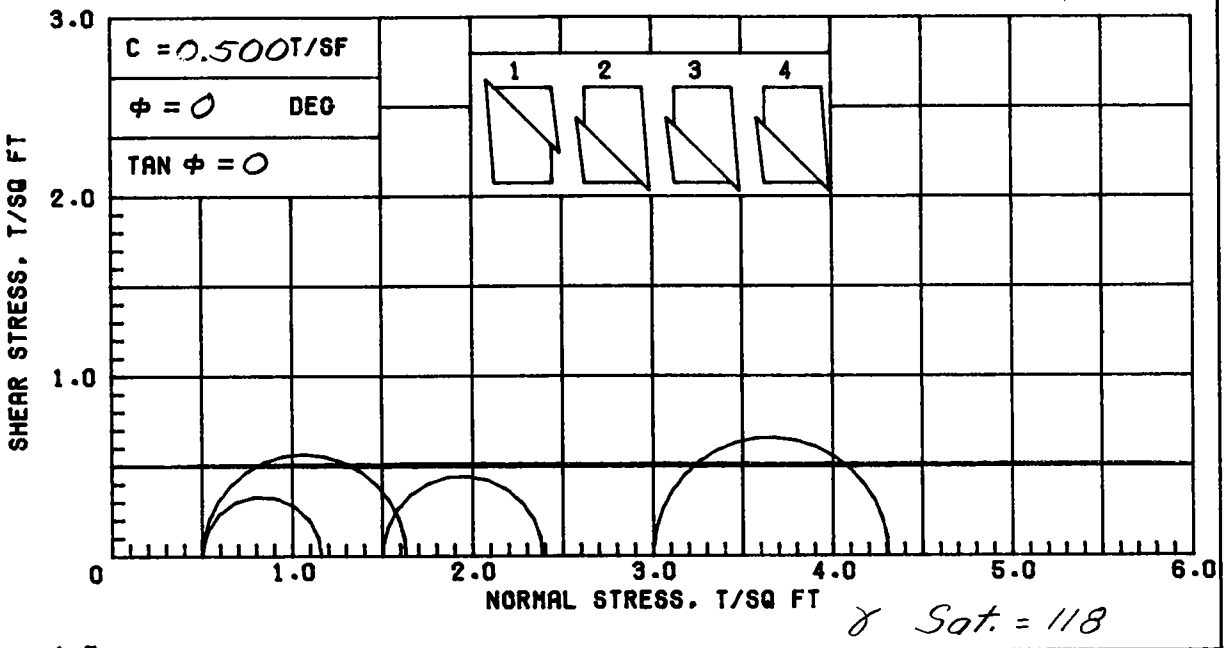
Avg. 21.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 53	PL 14	PI 39	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 27-U	SAMPLE NO. 15C
	DEPTH/ELEV 57.4/-53.05	TECH. KOC
	LABORATORY USAE WES	DATE 03 JUN 85
	TRIAXIAL COMPRESSION TEST REPORT	



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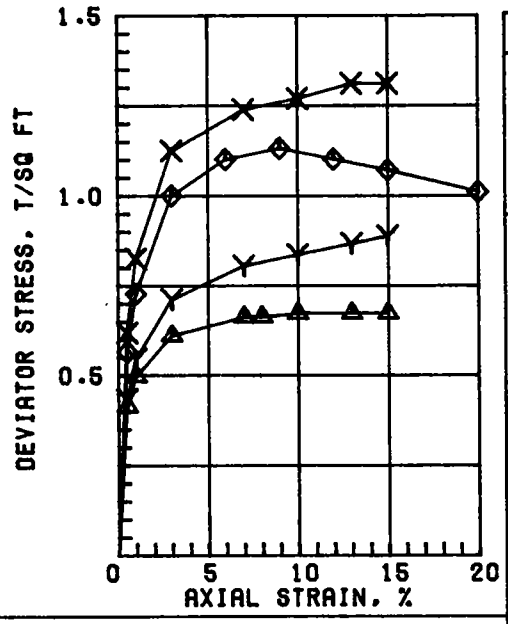


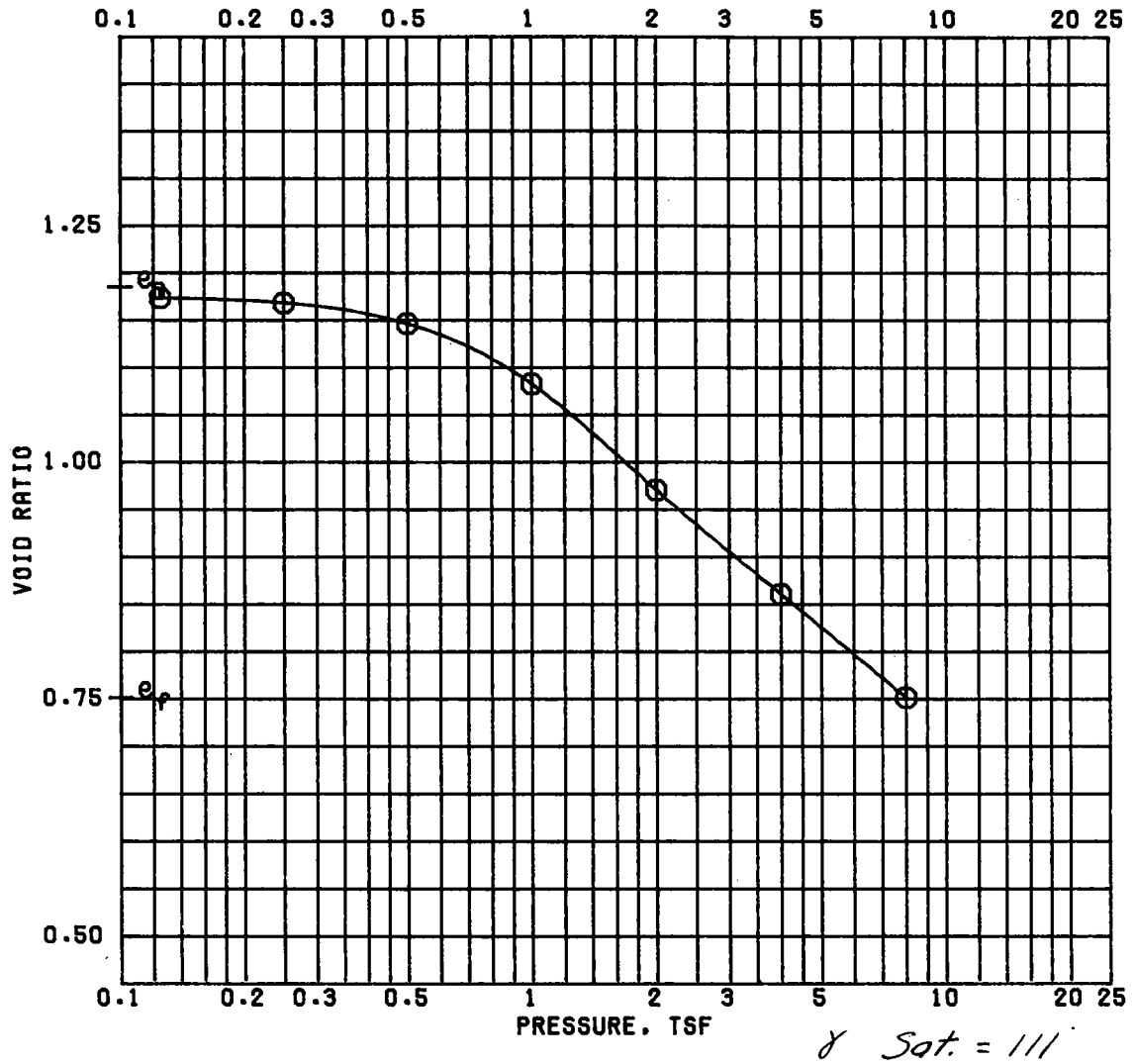
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	31.6	32.9	30.7	33.1	32.1
	DRY DENSITY, PCF	89.4	88.5	88.4	88.1	
	SATURATION, %	96.3	98.2	91.3	97.8	
	VOID RATIO	0.886	0.905	0.908	0.914	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.66	0.89	1.31	1.13	
TIME TO FAILURE, MIN.		63	32	28	20	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.38	1.38	1.38	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT GRAY

LL 56	PL 17	PI 39	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF. & ST. CHARLES PARISHES	
	BORING NO. 28-U	SAMPLE NO. 2-B
	DEPTH/ELEV 4.2/6.06	TECH. LRC
	LABORATORY USAE WES	DATE 10 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 111

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.84		
COMPRESSION INDEX 0.43		
TYPE SPECIMEN UNDISTURBED		
DIA. IN 4.44 HT. IN 1.120		
WATER CONTENT, %	40.7	27.7
DRY DENSITY, PCF	77.2	96.3
SATURATION, %	92.9	99.9
VOID RATIO	1.183	0.750
BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY & BROWN; SHELL PARTICLES

LL 73 PL 24 PI 49

GS 2.70 (EST) D_{10}

REMARKS

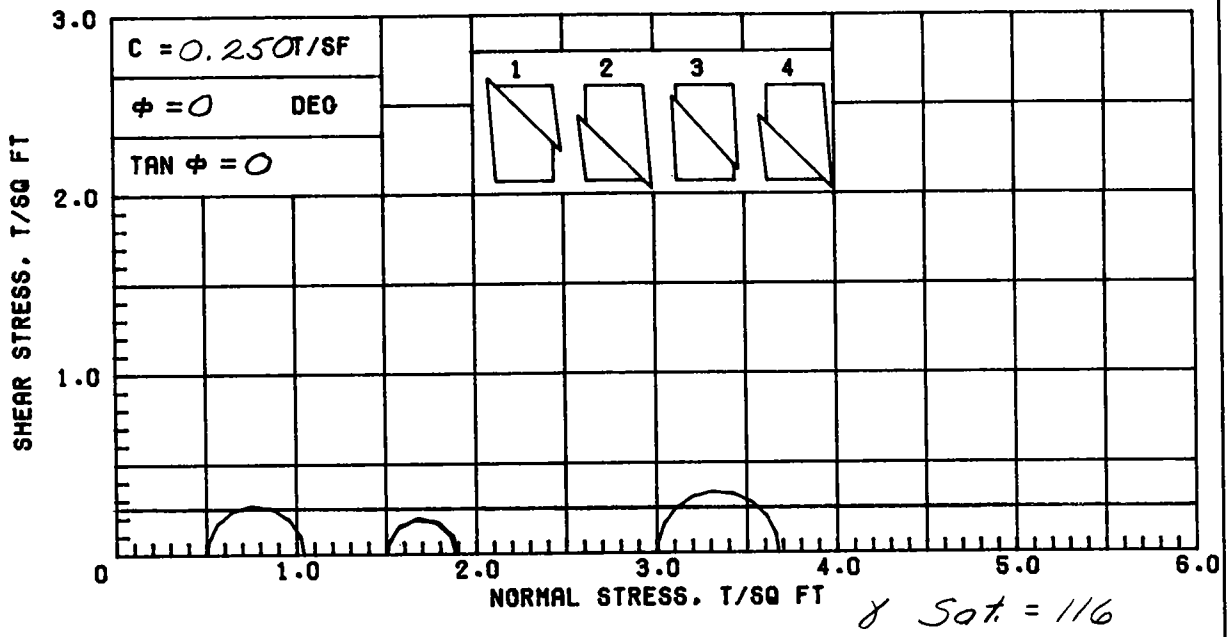
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.

JEFF. & ST. CHARLES PARISHES

BORING NO. 28-U SAMPLE NO. 4-C

DEPTH/ELEV 13.0/-2.74 DATE 25 APR 85

CONSOLIDATION TEST REPORT



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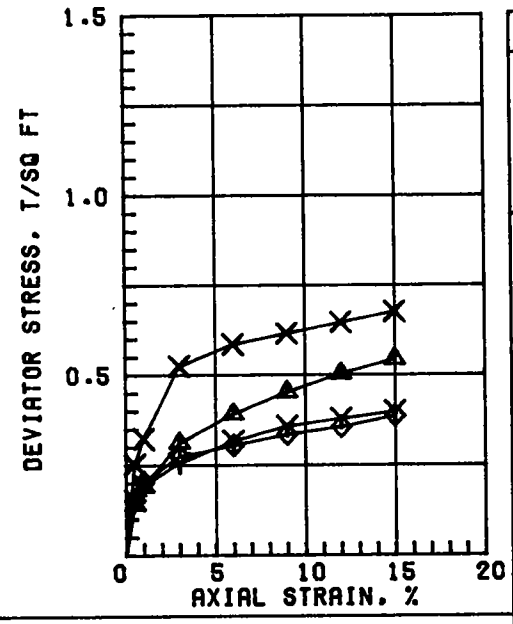


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	32.2	36.7	31.1	39.4	34.9
	DRY DENSITY, PCF	88.1	81.9	89.9	80.7	
	SATURATION, %	95.3	93.5	96.1	97.7	
	VOID RATIO	0.912	1.059	0.874	1.089	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		0.54	0.40	0.68	0.39	
TIME TO FAILURE, MIN.		68	32	32	32	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/4" FINE SAND

LAYERS: SHELLS

LL 57	PL 17	PI 40	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

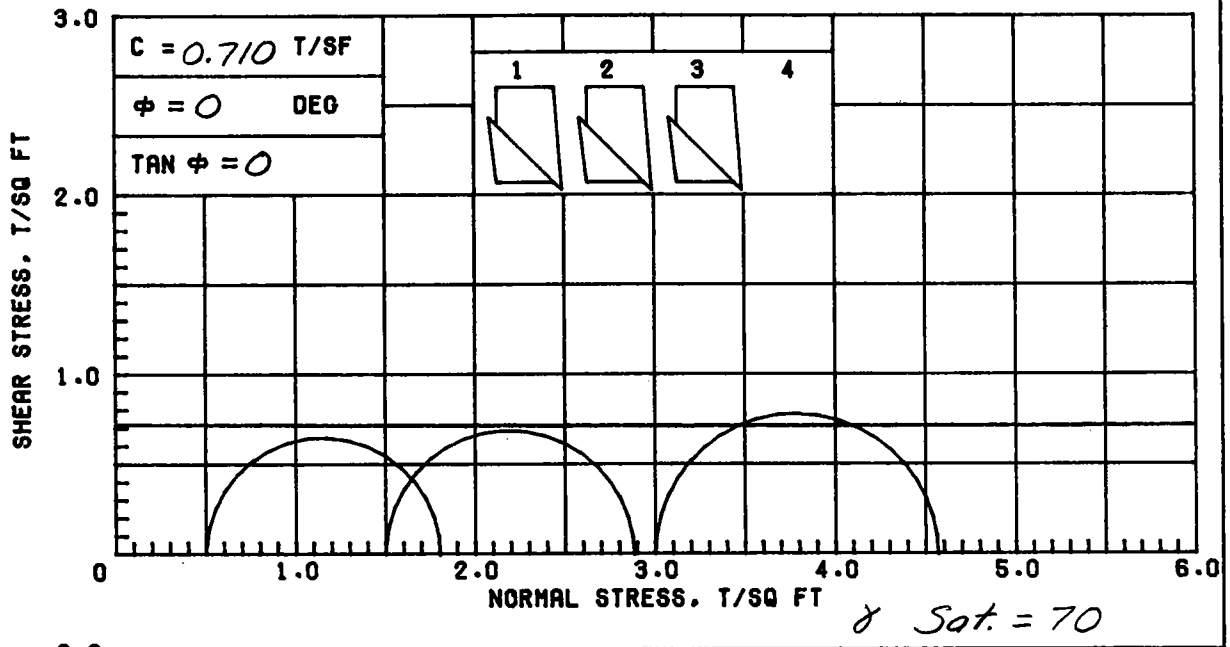
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 28-U | SAMPLE NO. 5-B

DEPTH/ELEV 16.0/-2.74 | TECH. LRC

LABORATORY USAE WES | DATE 10 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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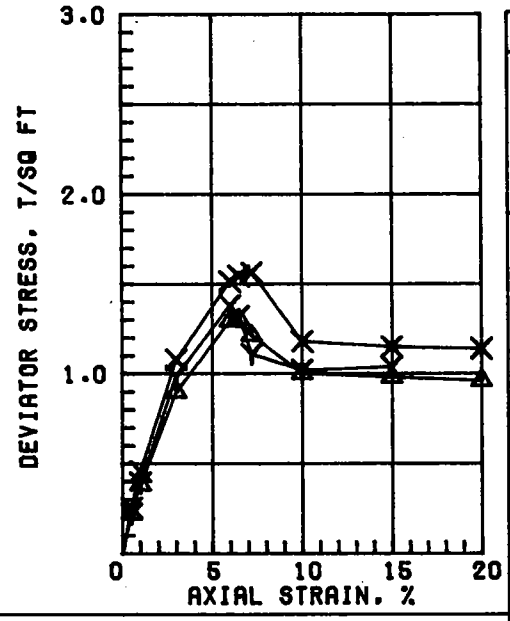


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	245.5	248.0	294.5	
	DRY DENSITY, PCF	20.6	20.2	17.2	
	SATURATION, %	100+	99.2	96.8	
	VOID RATIO	4.153	4.251	5.174	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.30	1.38	1.57	
TIME TO FAILURE, MIN.		36	16	20	
RATE OF STRAIN INCR.%			7	8	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 262.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), BLACK

LL 386	PL 215	PI 171	OS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

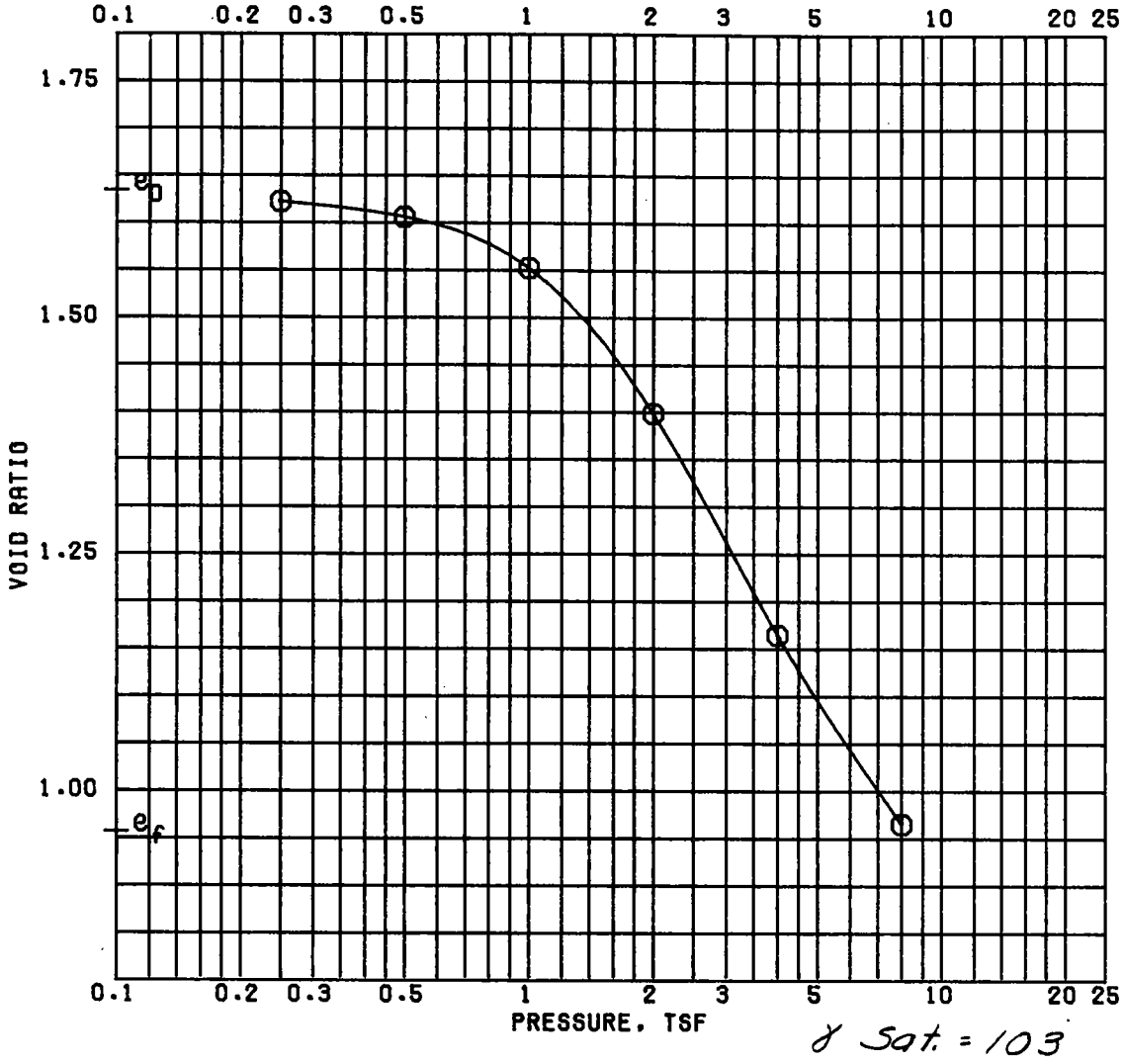
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 28-U | SAMPLE NO. 7-C

DEPTH/ELEV 24.6/-14.34 | TECH. LRC

LABORATORY USAE WES | DATE 10 APR 85

TRIAXIAL COMPRESSION TEST REPORT



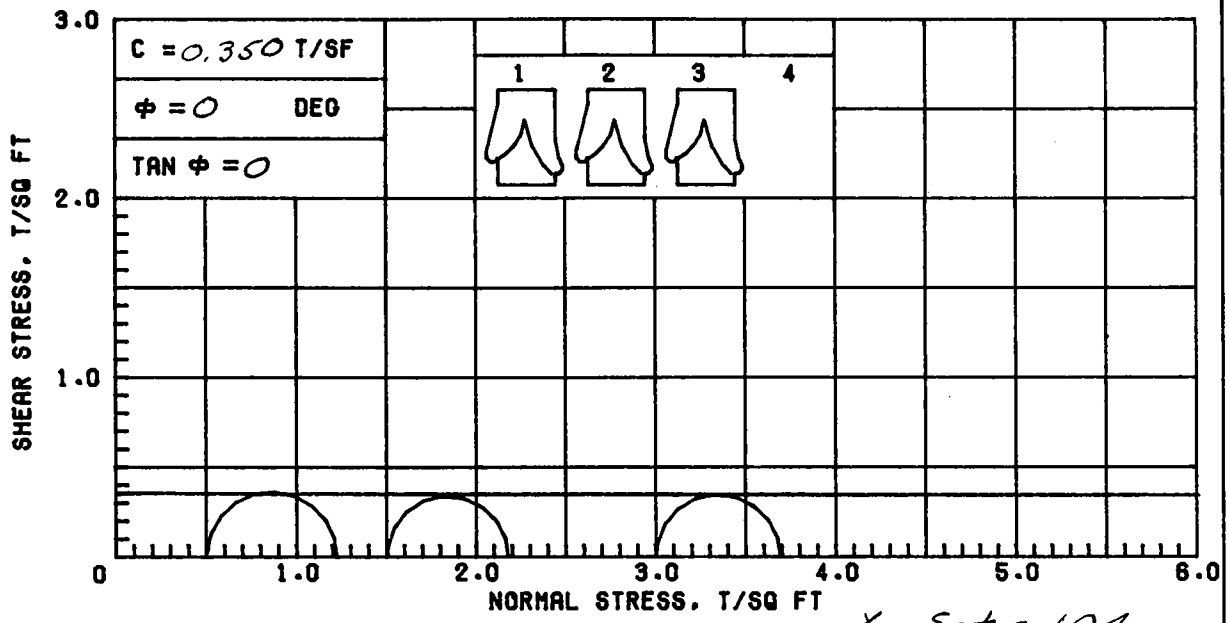
γ Sat. = 103

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	58.4	36.8
PRECONSOL. PRESSURE, TSF	0.95	DRY DENSITY, PCF	64.0	86.2
COMPRESSION INDEX	0.63	SATURATION, %	96.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.632	0.955
DIA. IN 4.44	HT. IN 1.130	BACK PRESSURE, TSF		

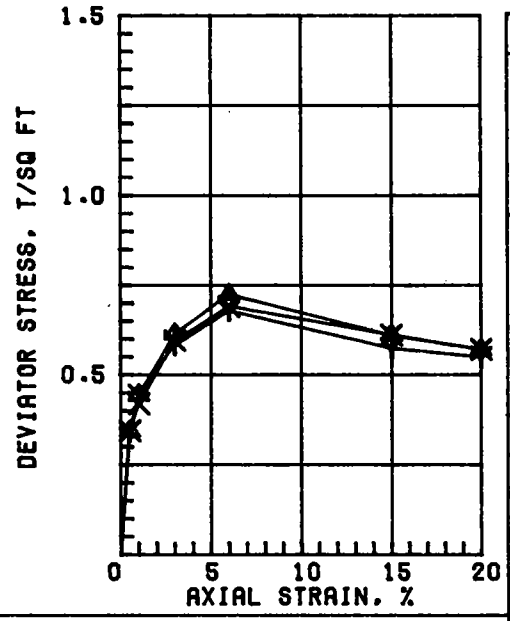
CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 63	PL 20	PI 43	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFF. & ST. CHARLES PARISHES
REMARKS		BORING NO. 28-U	SAMPLE NO. 10-B
		DEPTH/ELEV 36.0/-25.7	DATE 26 APR 85

CONSOLIDATION TEST REPORT



γ Sat. = 104



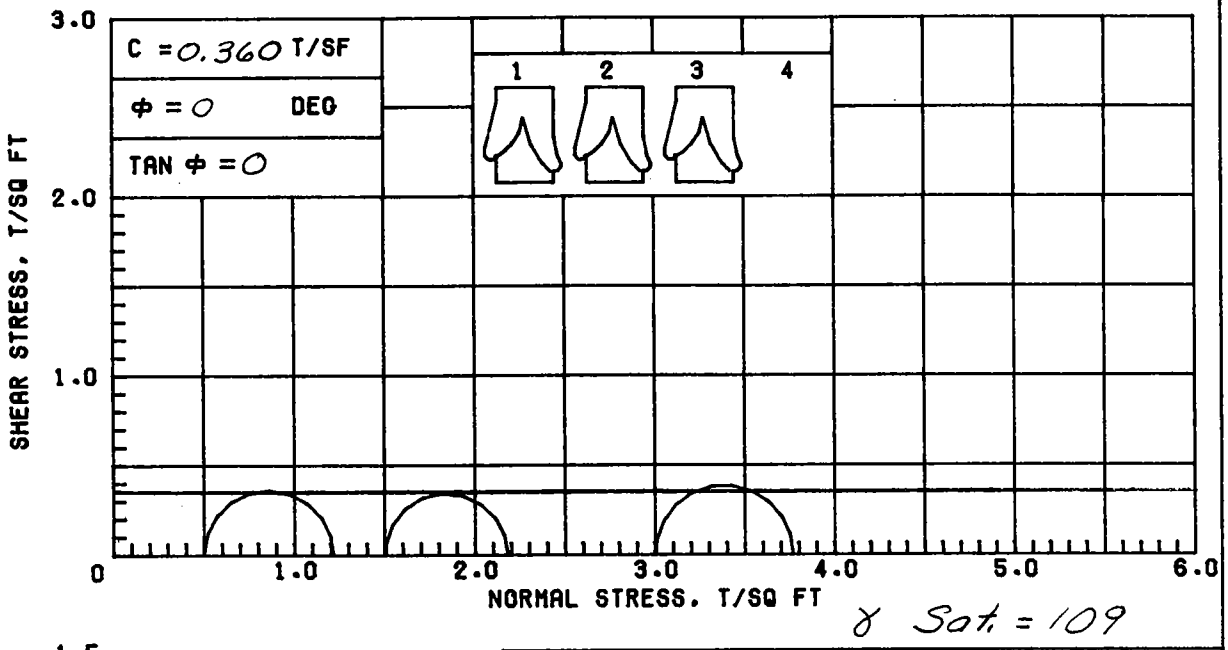
SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	59.1	58.7	58.6		58.8
	DRY DENSITY, PCF	65.3	65.5	65.6		
	SATURATION, %	100+	100+	100+		
	VOID RATIO	1.580	1.574	1.571		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.72	0.68	0.69		
TIME TO FAILURE, MIN.		12	15	15		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 75	PL 22	PI 53	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF. & ST. CHARLES PARISHES	
	BORING NO. 28-U	SAMPLE NO. 11-B
	DEPTH/ELEV 39.6/-29.34	TECH. PJR
	LABORATORY USAE WES	DATE 10 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



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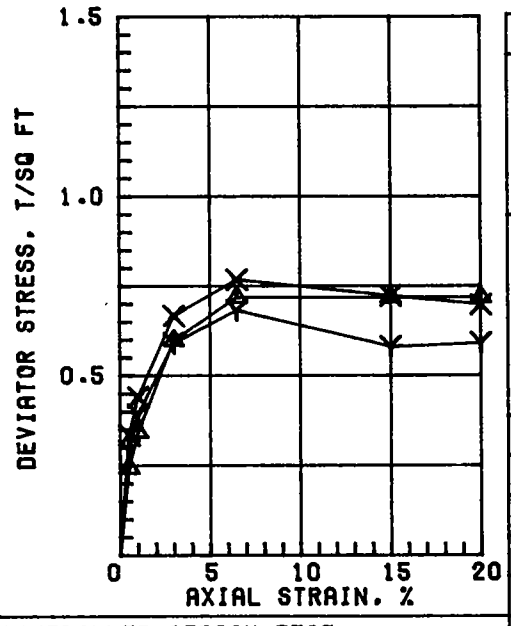


SPECIMEN NO.		△1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	39.6	48.9	44.4		44.3
	DRY DENSITY, PCF	79.0	72.2	74.9		
	SATURATION, %	94.3	99.0	95.8		
	VOID RATIO	1.134	1.334	1.252		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.72	0.68	0.77		
TIME TO FAILURE, MIN.		23	16	16		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; FINE SAND LENSES

LL 38	PL 15	PI 23	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

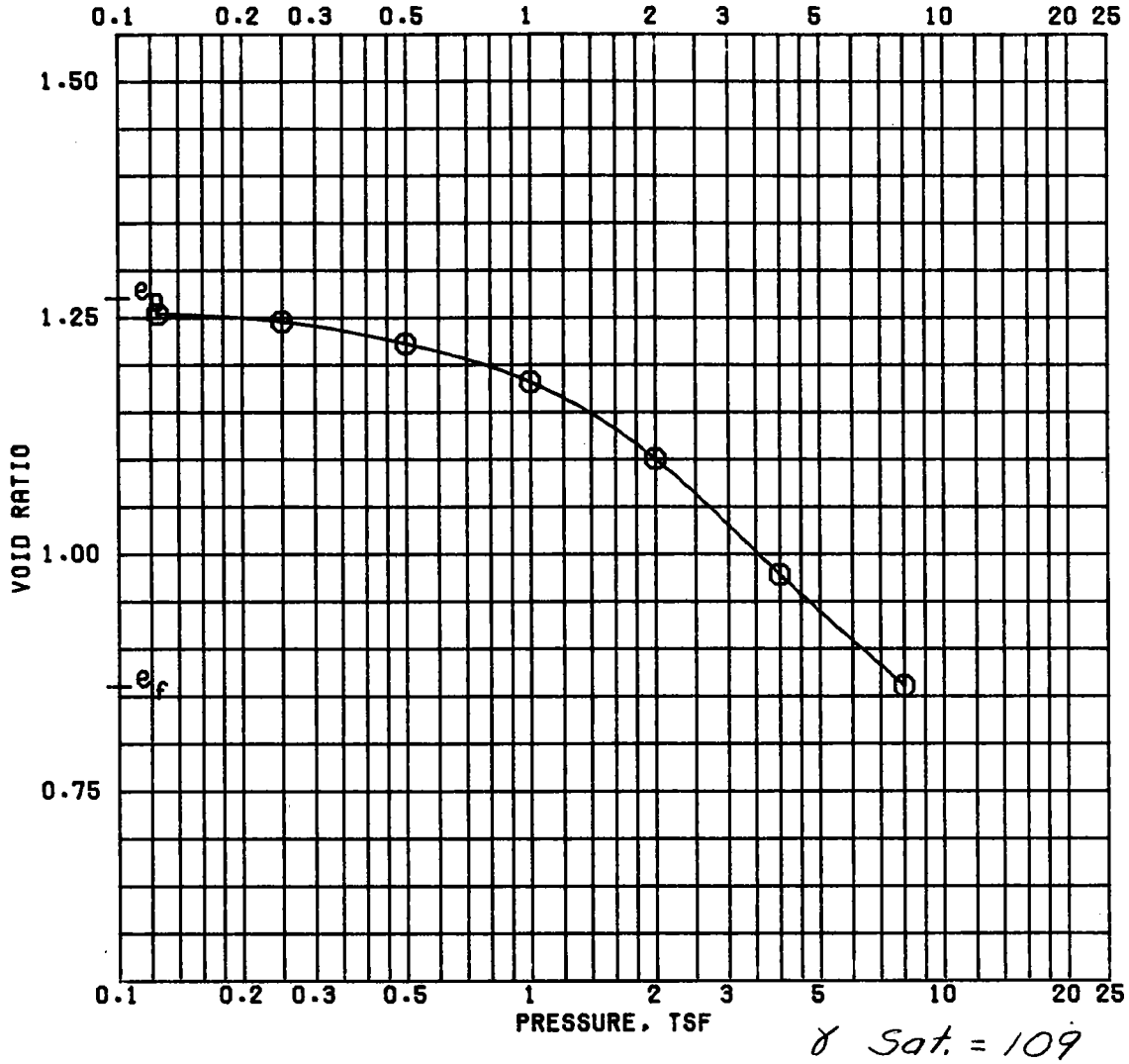
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 28-U | SAMPLE NO. 13-B

DEPTH/ELEV 48.0/-37.74 | TECH. PJR

LABORATORY USAE WES | DATE 10 APR 85

TRIAXIAL COMPRESSION TEST REPORT



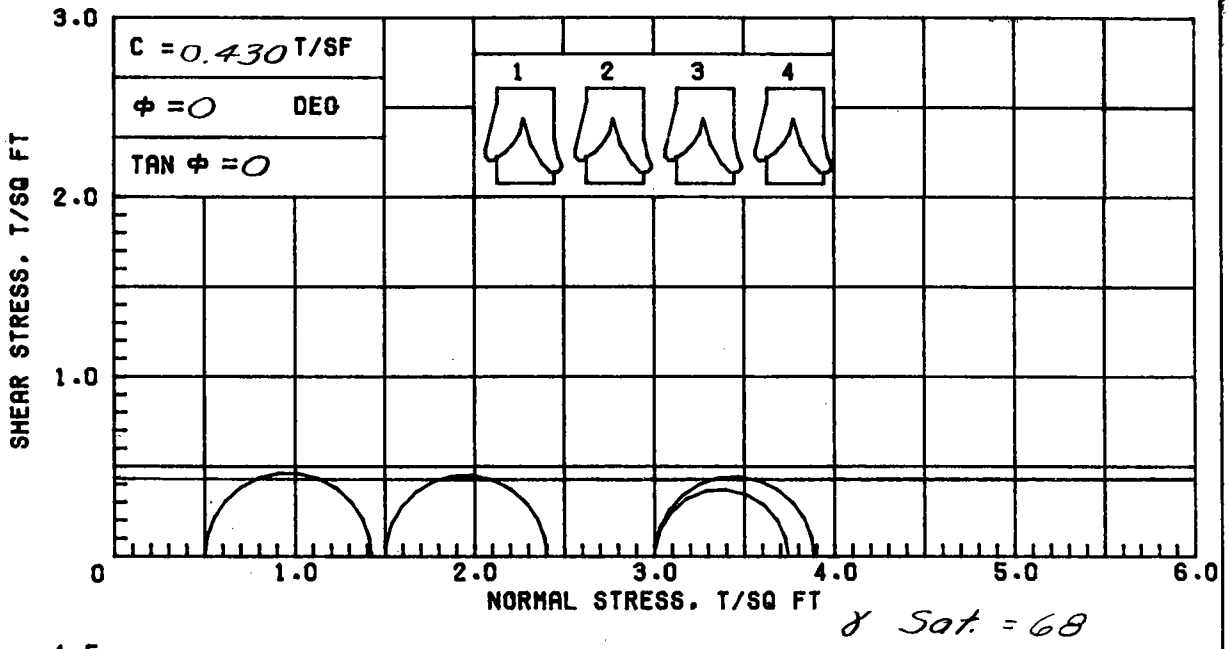
γ Sat. = 109

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 1.40	DRY DENSITY, PCF 74.3	90.7
COMPRESSION INDEX 0.42	SATURATION, % 91.4	98.2
TYPE SPECIMEN UNDISTURBED	VOID RATIO 1.269	0.859
DIA. IN 4.44 HT. IN 1.140	BACK PRESSURE, TSF	

CLASSIFICATION SANDY CLAY (CL), GRAY

LL PL PI	PROJECT LK. PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST) D_{10}	JEFF. & ST. CHARLES PARISHES
REMARKS	BORING NO. 28-U SAMPLE NO. 13-C
	DEPTH/ELEV 49.0/-38.74 DATE 29 APR 85

CONSOLIDATION TEST REPORT



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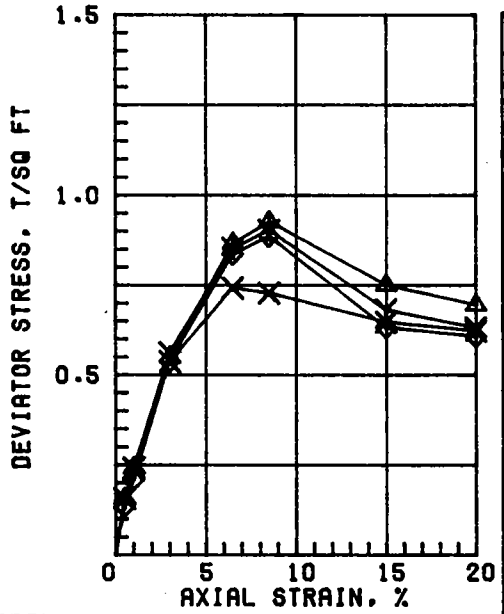


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	424.0	422.6	418.1	416.4	420.8
	DRY DENSITY, PCF	12.7	12.8	12.9	13.0	
	SATURATION, %	98.2	98.5	98.4	98.8	
	VOID RATIO	7.343	7.297	7.227	7.167	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0	
MAX. DEV. STRESS, TSF		0.93	0.90	0.74	0.89	
TIME TO FAILURE, MIN.		17	15	24	19	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), DARK BROWN

LL 583	PL 306	PI 277	OS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

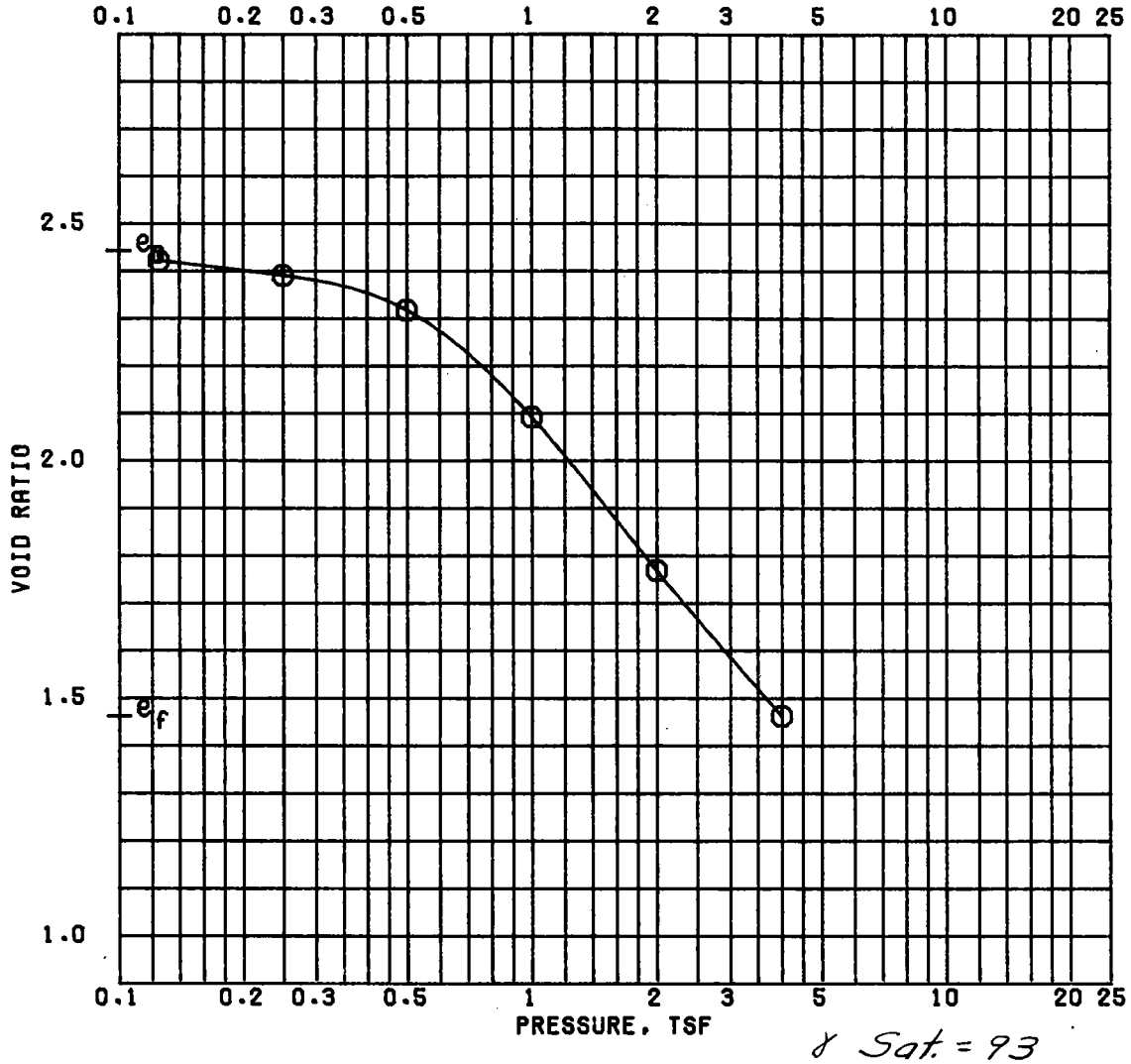
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 29-U | SAMPLE NO. 4-B

DEPTH/ELEV 0 | TECH. PJR

LABORATORY USAE WES | DATE 10 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 93

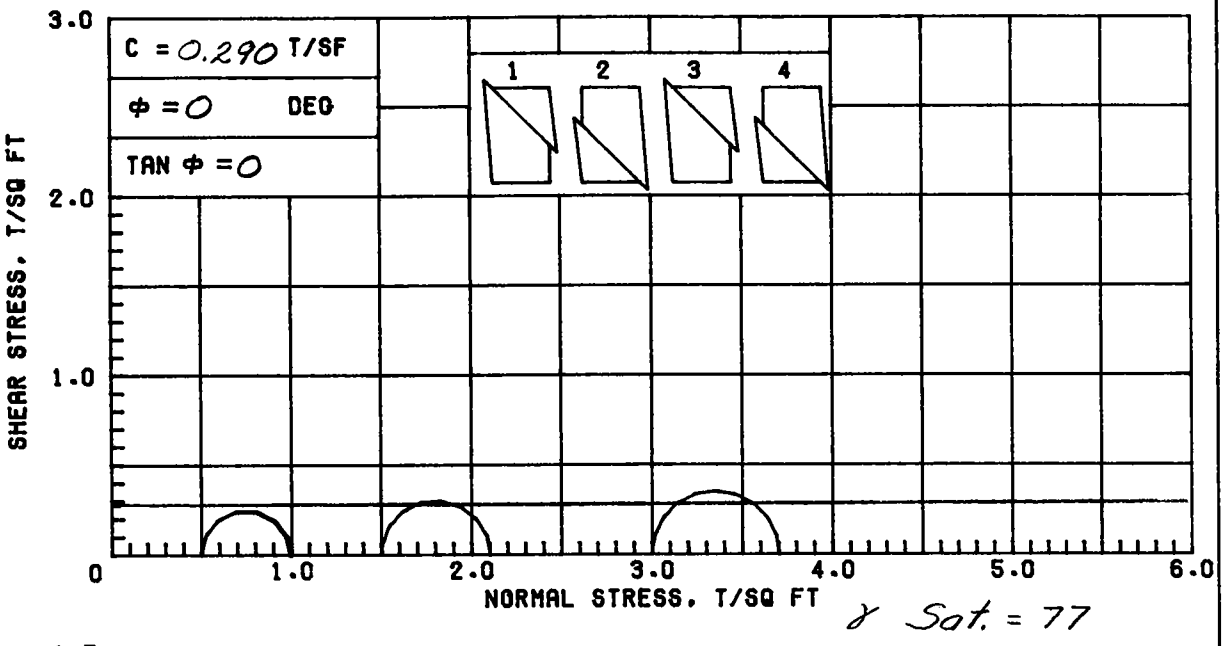
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	85.9	52.4
PRECONSOL. PRESSURE, TSF	0.56	DRY DENSITY, PCF	49.0	68.6
COMPRESSION INDEX	0.78	SATURATION, %	95.1	97.0
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	2.439	1.459
DIA. IN 4.44	HT. IN 1.127	BACK PRESSURE, TSF		

CLASSIFICATION: PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL

LL 95	PL 29	PI 66	PROJECT: LAKE PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFF. & ST. CHARLES PARISHES
REMARKS		BORING NO. 29-U	SAMPLE NO. 4-C
		DEPTH/ELEV -	DATE 30 APR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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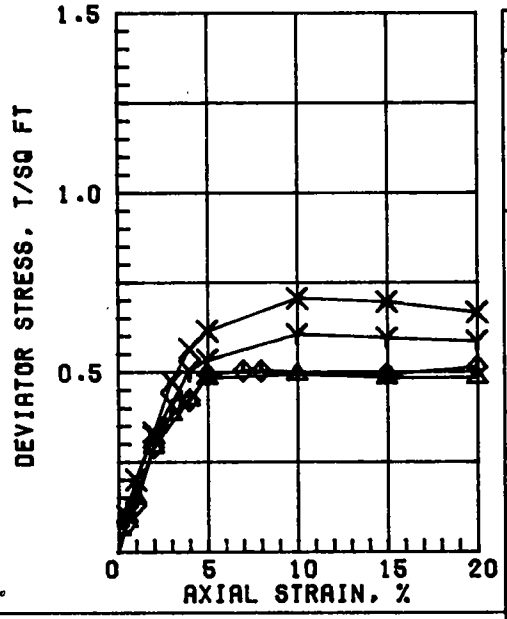


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	194.8	192.9	200.9	191.2	195.0
	DRY DENSITY, PCF	23.9	24.5	23.5	25.1	
	SATURATION, %	88.9	90.5	89.6	92.4	
	VOID RATIO	5.260	5.116	5.383	4.968	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.49	0.61	0.71	0.50	
TIME TO FAILURE, MIN.		20	20	20	14	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), BLACK

LL 260	PL 156	PI 104	GS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

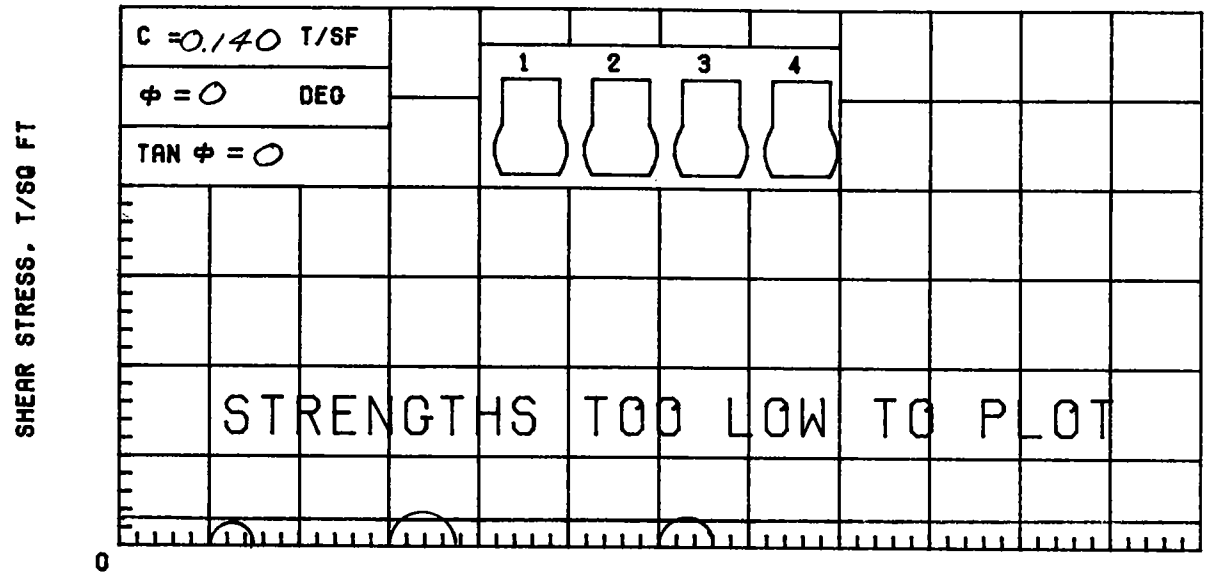
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 29-U | SAMPLE NO. 3-B

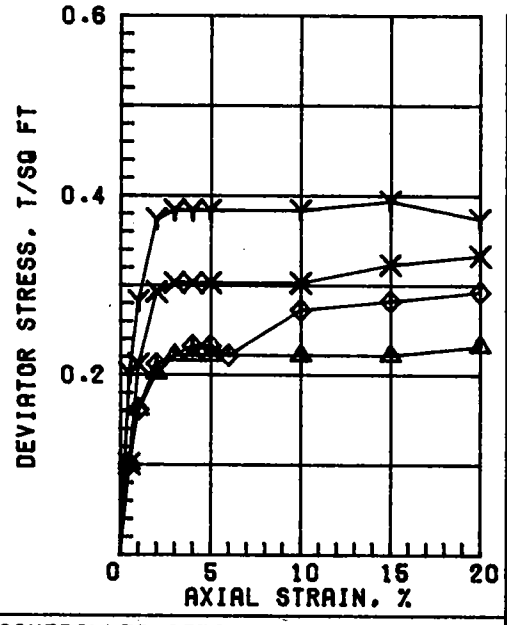
DEPTH/ELEV 0 | TECH. KOC

LABORATORY USAE WES | DATE 10 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 109



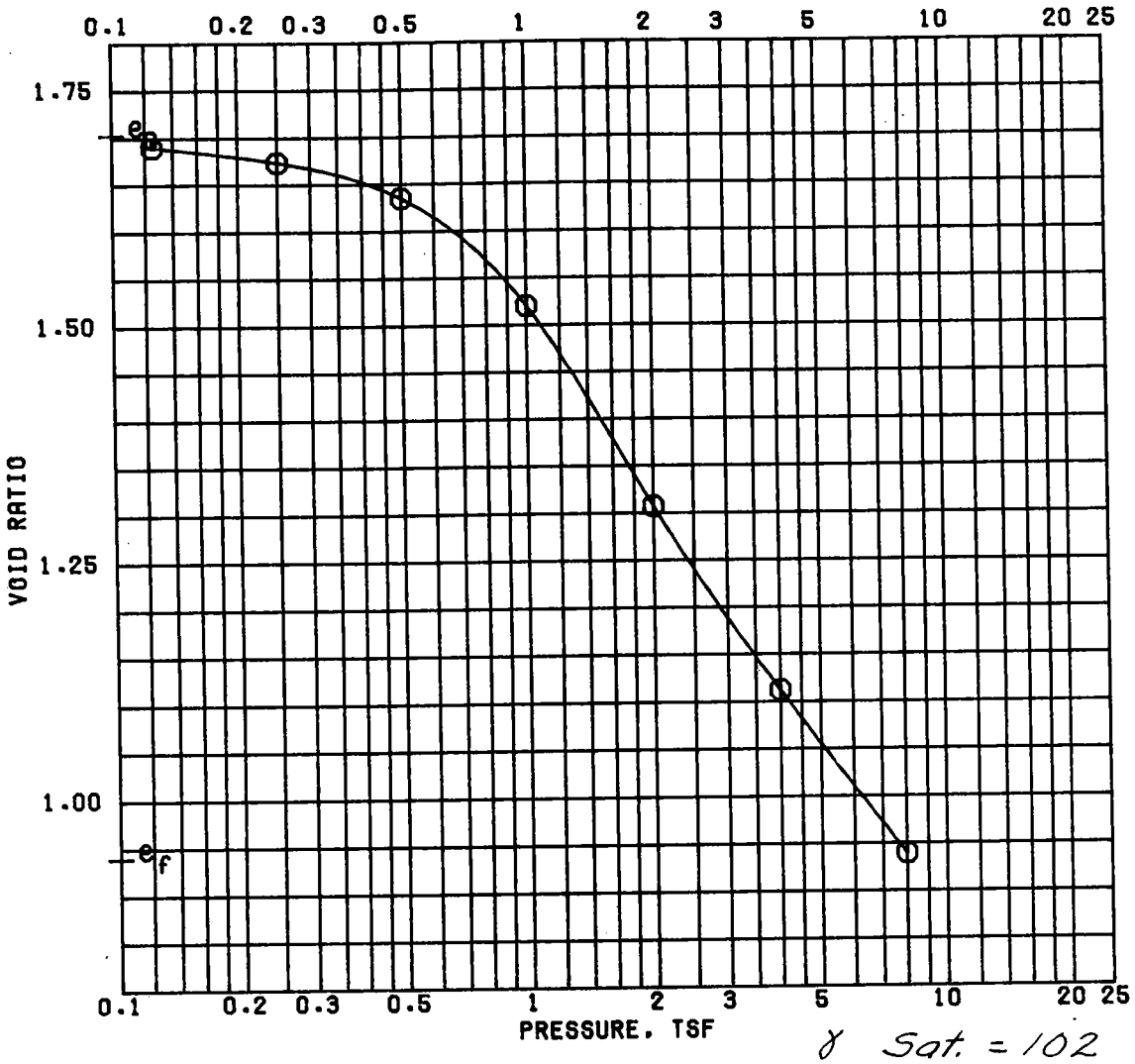
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	46.5	47.1	44.8	46.3	46.2
	DRY DENSITY, PCF	72.2	72.6	74.1	73.8	
	SATURATION, %	94.1	96.2	94.8	97.3	
	VOID RATIO	1.334	1.322	1.276	1.285	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.22	0.38	0.30	0.23	
TIME TO FAILURE, MIN.		6	6	6	24	
RATE OF STRAIN INCR.%					6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/4" SILT LAYERS

LL 44	PL 15	PI 29	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
LIMITS ON MIXTURE OF MATERIAL	JEFF. & ST. CHARLES PARISHES	
	BORING NO. 29-U	SAMPLE NO. 6-C
	DEPTH/ELEV 0	TECH. KOC
	LABORATORY USAE WES	DATE 10 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 102

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	60.9	35.8
PRECONSOL. PRESSURE, TSF	0.55	DRY DENSITY, PCF	62.4	87.0
COMPRESSION INDEX	0.64	SATURATION, %	96.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.701	0.938
DIA. IN 4.44	HT. IN 1.119	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 82	PL 24.	PI 58
GS 2.70 (EST)	D_{10}	

PROJECT LK. PONT. LA. & VIC. HURR. PROT.

JEFF. & ST. CHARLES PARISHES

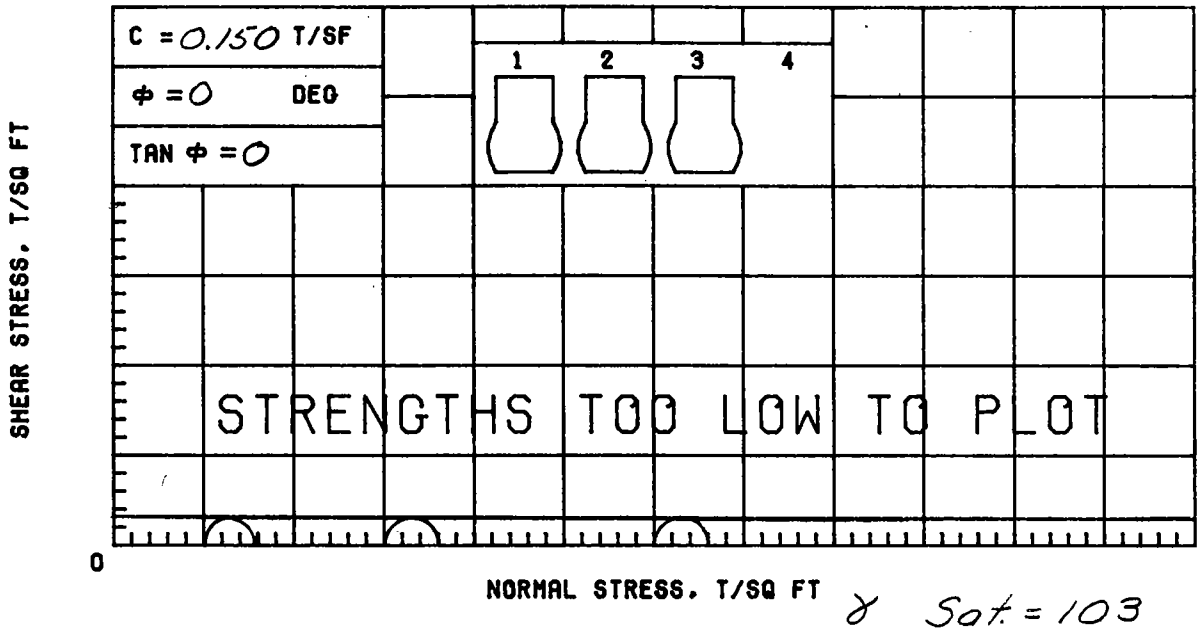
REMARKS

BORING NO. 29-U SAMPLE NO. 7-C

DEPTH/ELEV - DATE 30 APR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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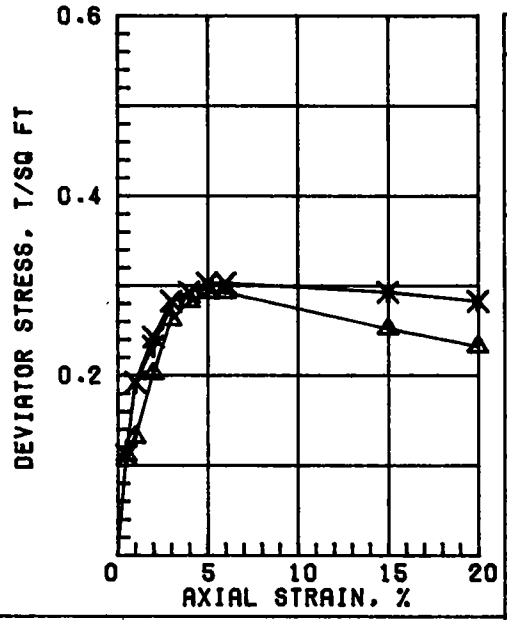


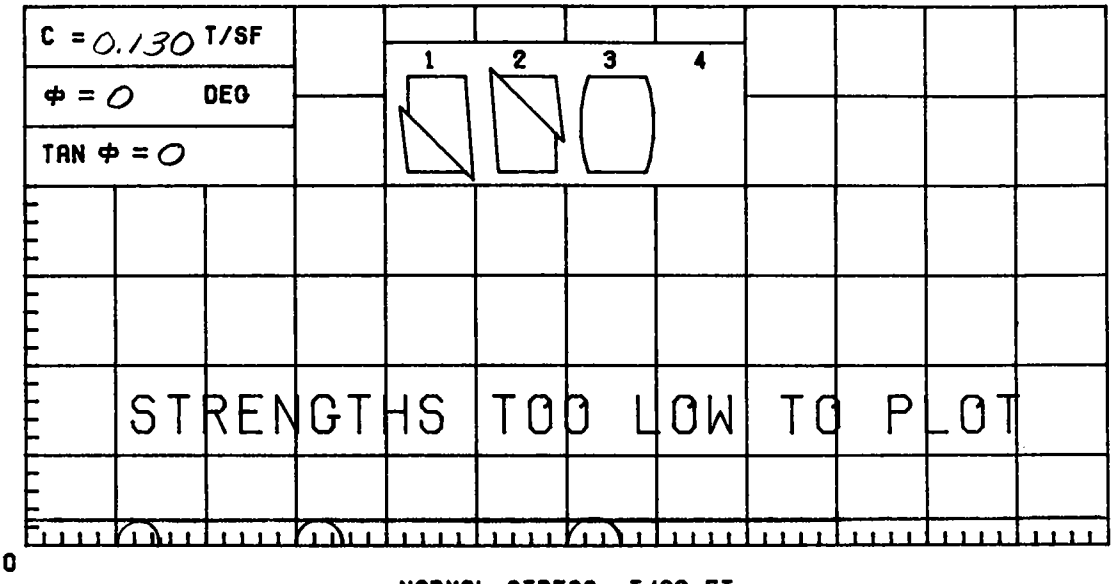
SPECIMEN NO.		▲1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	58.8	60.0	56.8		58.6
	DRY DENSITY, PCF	65.0	63.8	65.9		
	SATURATION, %	99.6	98.6	98.5		
	VOID RATIO	1.595	1.644	1.558		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.29	0.30	0.30		
TIME TO FAILURE, MIN.		10	30	30		
RATE OF STRAIN INCR.%			6	6		
INITIAL DIAMETER, IN.		1.39	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

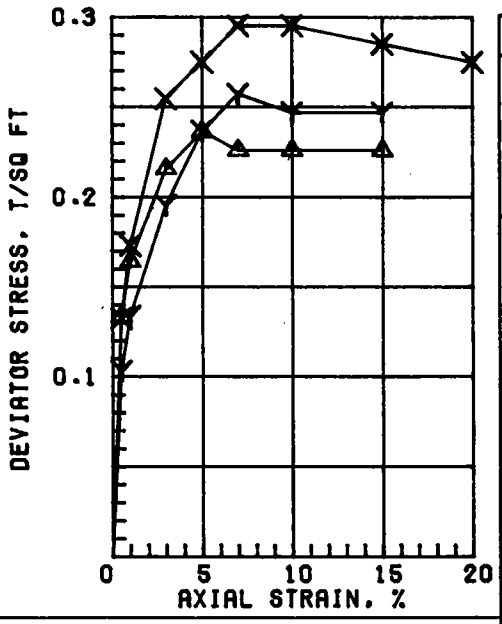
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 63	PL 19	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF. & ST. CHARLES PARISHES	
	BORING NO. 29-U	SAMPLE NO. 8-B
	DEPTH/ELEV 0	TECH. KOC
	LABORATORY USAE WES	DATE 10 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 104



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	58.1	58.6	59.1	
	DRY DENSITY, PCF	65.8	65.0	64.4	
	SATURATION, %	100+	99.2	98.7	
	VOID RATIO	1.563	1.595	1.617	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.24	0.26	0.30	
TIME TO FAILURE, MIN.		19	25	25	
RATE OF STRAIN INCR.%		7			
INITIAL DIAMETER, IN.		1.38	1.38	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

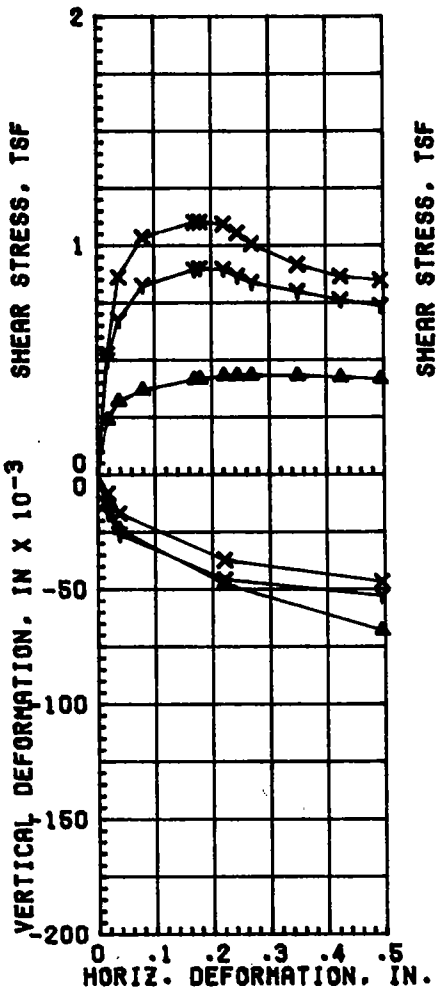
Avg. 58.6

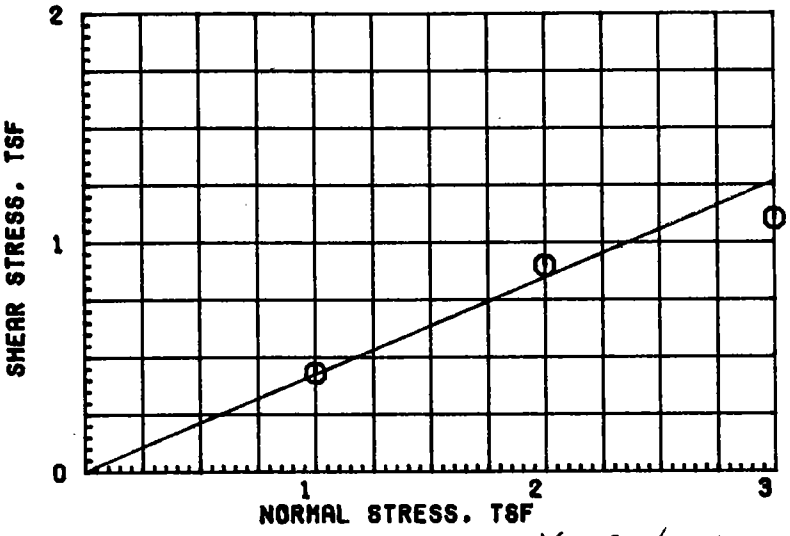
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 65	PL 19	PI 46	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF. & ST. CHARLES PARISHES	
	BORING NO. 29-U	SAMPLE NO. 10-C
	DEPTH/ELEV 0	TECH. LRC
	LABORATORY USAE WES	DATE 11 APR 86
	TRIAXIAL COMPRESSION TEST REPORT	





γ Sat.= 101

TEST NO.		1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	60.3	62.2	61.6	61.4
	VOID RATIO	1.763	1.777	1.779	
	SATURATION, %	92.2	94.5	93.5	
	DRY DENSITY, PCF	61.0	60.7	60.6	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		4	16	12	
FINAL	WATER CONTENT, %	49.4	43.1	38.5	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.43	0.90	1.10	
TIME TO FAILURE, MIN		1232	1004	948	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

$\Phi = 23°$

TAN $\Phi = 0.424$

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.553 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 78 | PL 21 | PI 57 | | GS 2.70 (EST)

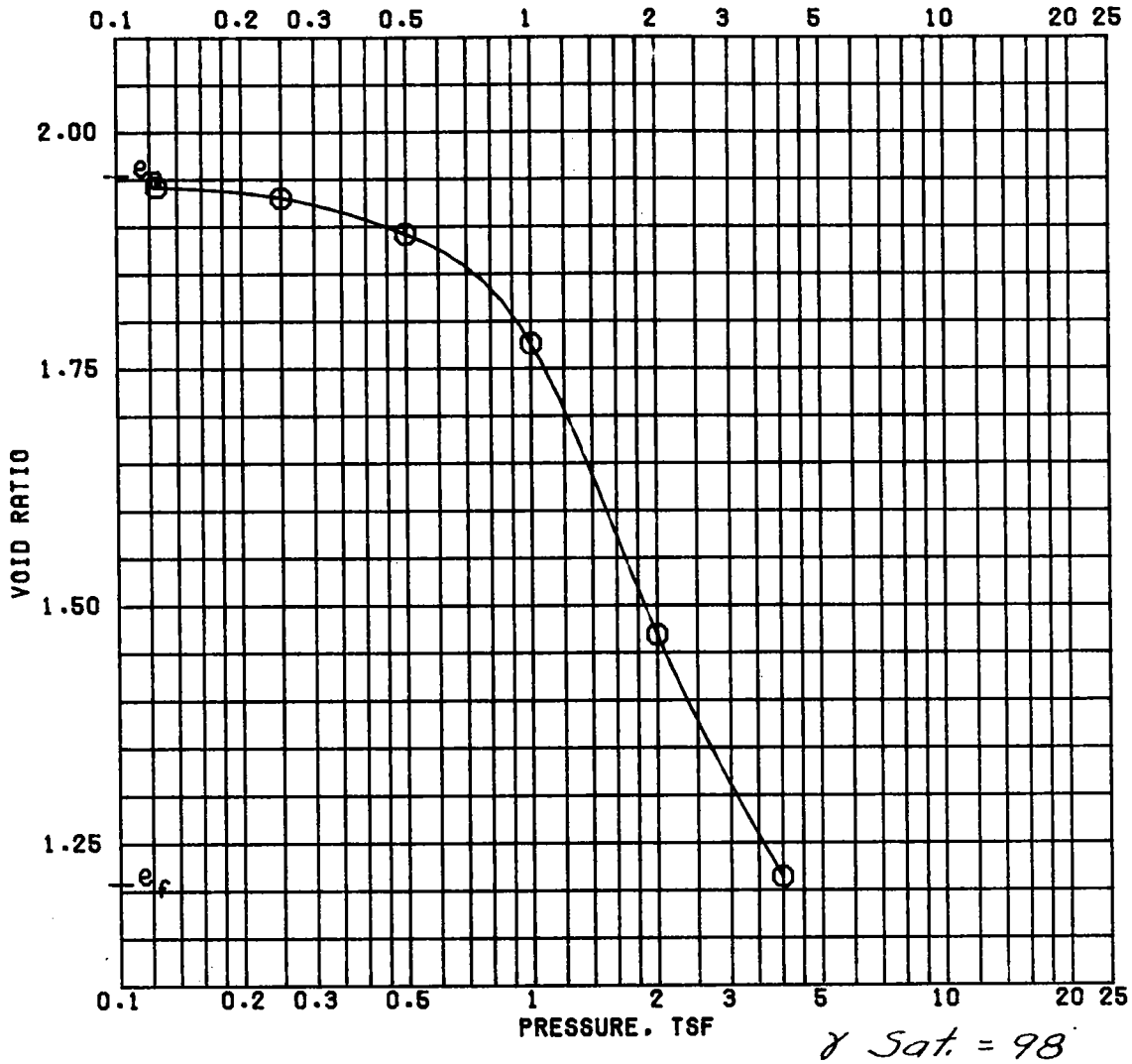
REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 29-U | SAMPLE 11-C

DEPTH/ELEV 0 | DATE 02 APR 85

DIRECT SHEAR TEST REPORT



γ Sat. = 98

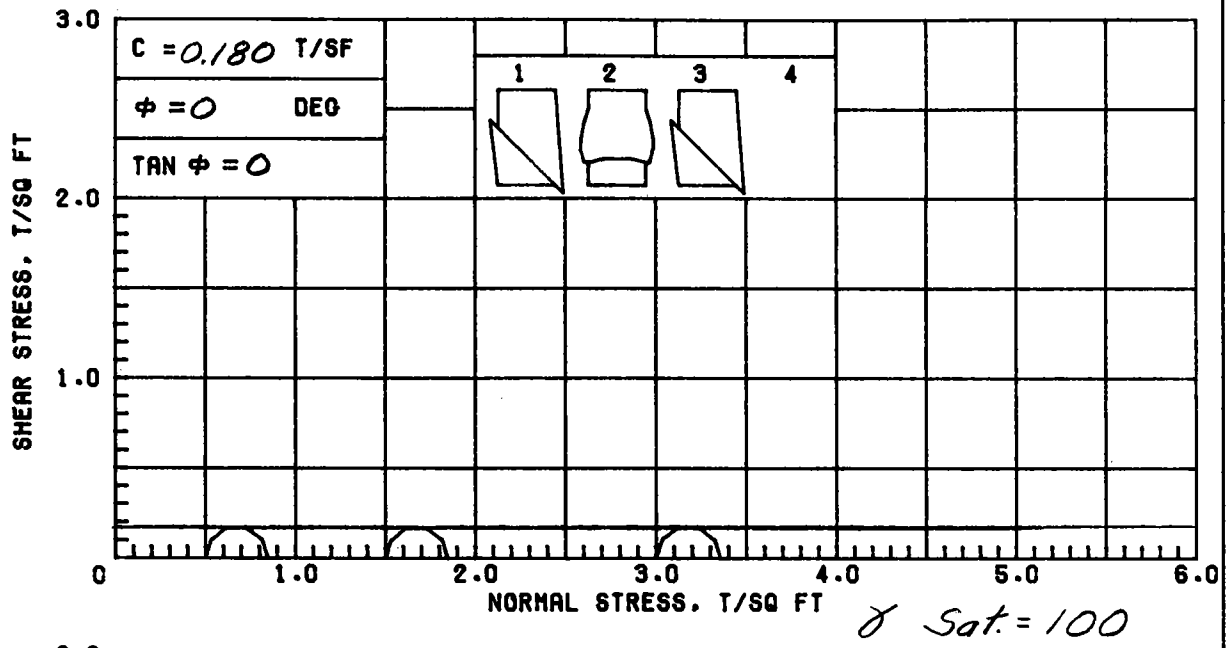
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE. TSF		
PRECONSOL. PRESSURE. TSF 0.65	DRY DENSITY. PCF	57.1	76.4
COMPRESSION INDEX 0.78	SATURATION. %	97.0	99.3
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.952	1.206
DIA. IN 4.44 HT. IN 1.131	BACK PRESSURE. TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

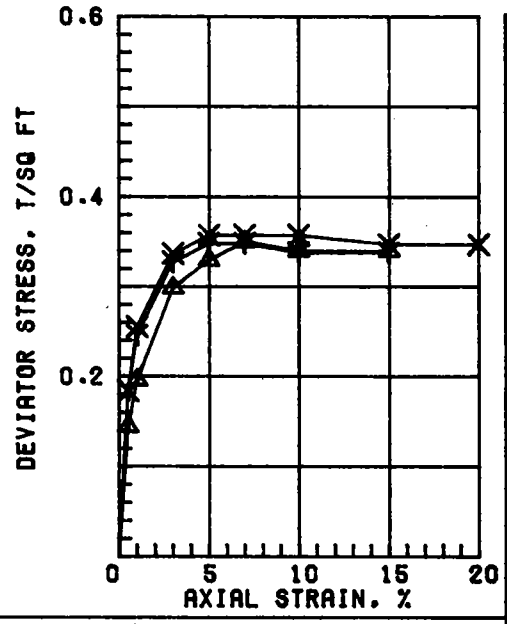
LL 78 PL 21 PI 57	PROJECT LK. PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST) D_{10}	JEFF. & ST. CHARLES PARISHES
REMARKS	BORING NO. 29-U / SAMPLE NO. 12-C
	DEPTH/ELEV - / DATE 06 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. = 100



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	68.0	70.4	64.9	
	DRY DENSITY, PCF	59.1	57.8	60.3	
	SATURATION, %	99.2	99.1	97.7	
	VOID RATIO	1.851	1.917	1.793	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.35	0.36	0.36	
TIME TO FAILURE, MIN.		26	11	12	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 67.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELLS

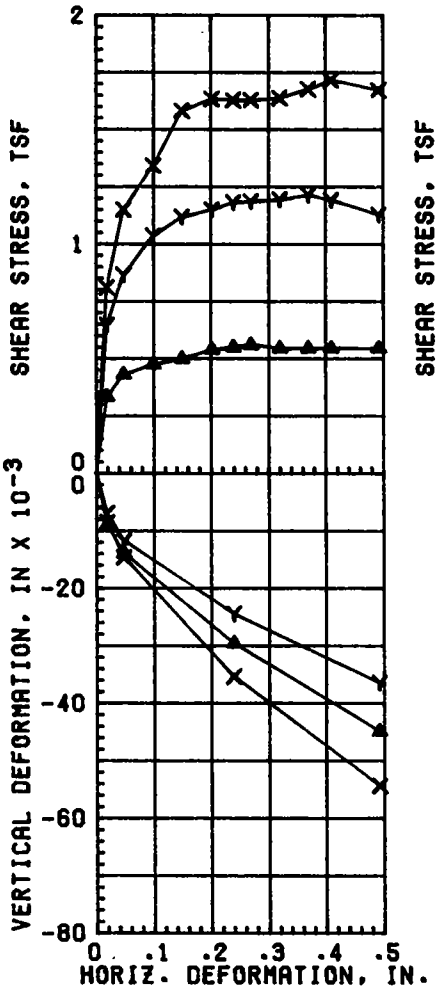
LL 77	PL 21	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

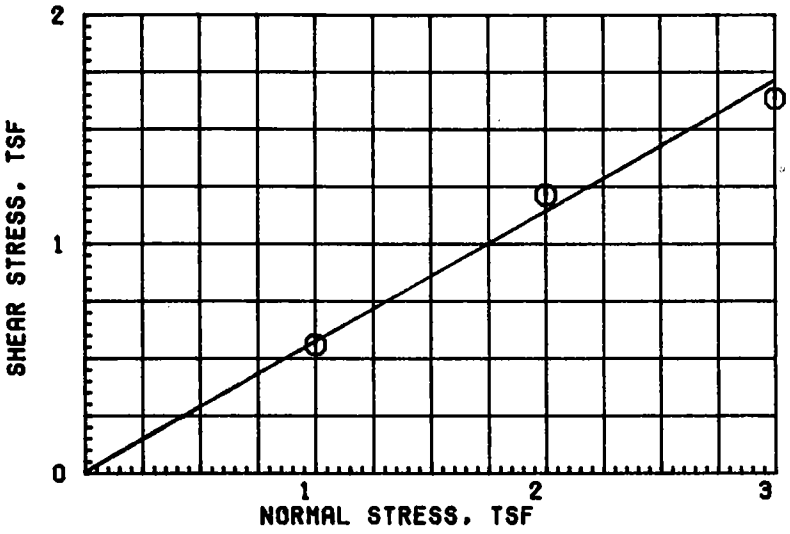
REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 29-U | SAMPLE NO. 13-B
DEPTH/ELEV 0 | TECH. LRC
LABORATORY USAE WES | DATE 11 APR 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 121

TEST NO.		1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	25.1	25.3	26.0	25.5
	VOID RATIO	0.794	0.787	0.811	
	SATURATION, %	84.7	86.0	85.8	
	DRY DENSITY, PCF	93.2	93.6	92.3	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	28.0	26.1	25.1	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.56	1.21	1.63	
TIME TO FAILURE, MIN		1578	2162	1181	
RATE OF STRAIN, IN/MIN		.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, TSF					

$\phi = 30°$

TAN $\phi = 0.577$

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.553 IN. THICK

CLASSIFICATION SILT (ML), GRAY

LL	PL	PI		GS 2.68 (EST)

REMARKS:

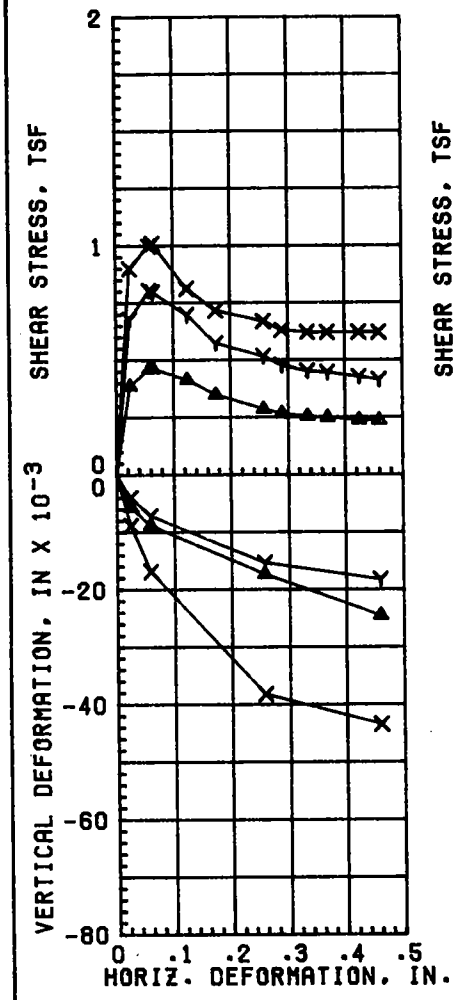
PROJECT LK. PONT. LA. & VIC. HURR. PROT.

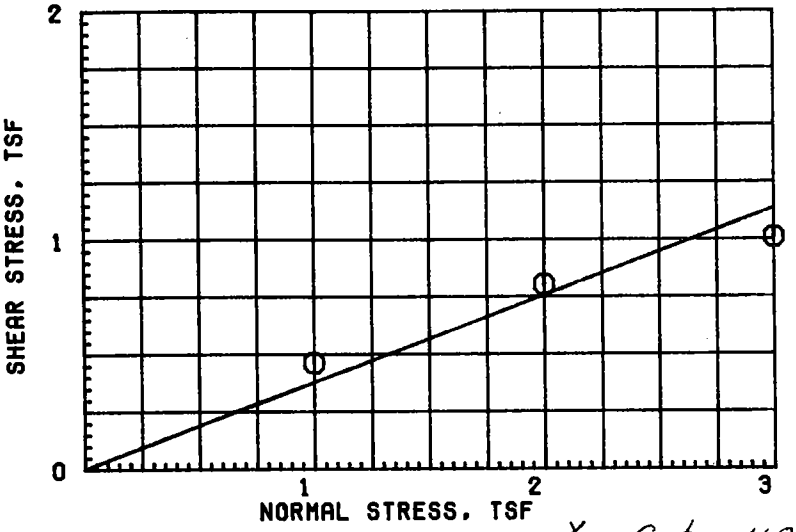
JEFF. & ST. CHARLES PARISHES

BORING NO. 29-U | SAMPLE 16-C

DEPTH/ELEV - | DATE 13 APR 85

DIRECT SHEAR TEST REPORT





γ Sat. = 118

$\phi = 21°$

TAN $\phi = 0.384$

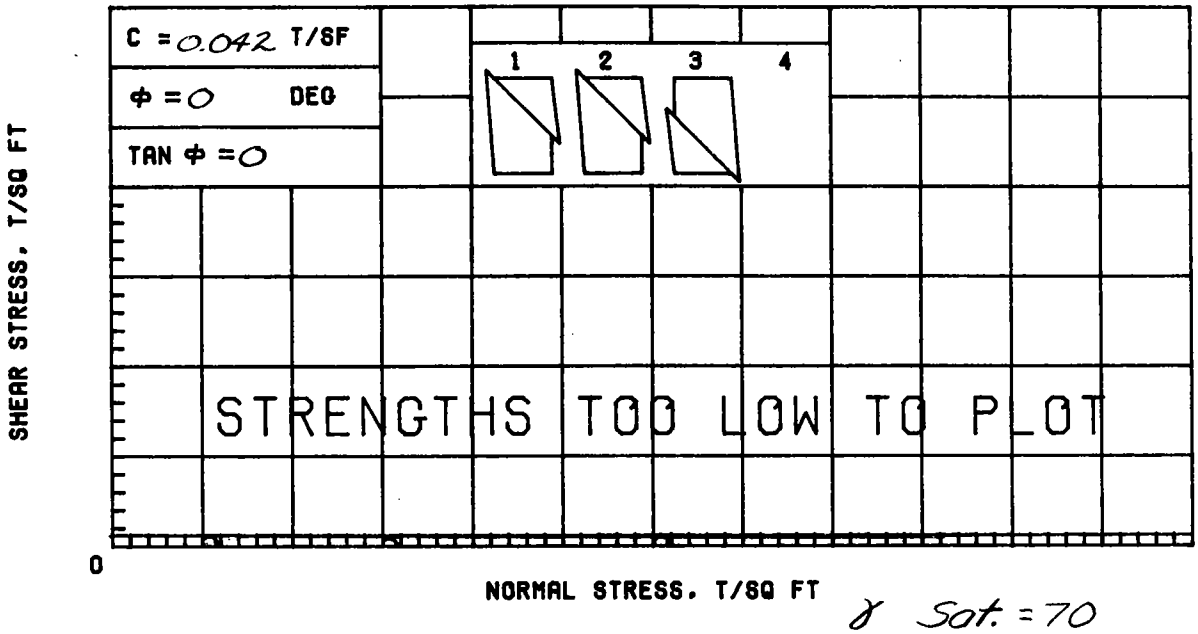
C = 0

TEST NO.		1 ▲	2 Y	3 X	
INITAL	WATER CONTENT, %	33.1	35.8	34.6	
	VOID RATIO	0.913	0.958	0.911	
	SATURATION, %	97.8	100 +	100 +	
	DRY DENSITY, PCF	88.1	86.1	88.2	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	2	3	
FINAL	WATER CONTENT, %	33.8	44.6	31.4	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.46	0.80	1.01	
TIME TO FAILURE, MIN		329	329	363	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

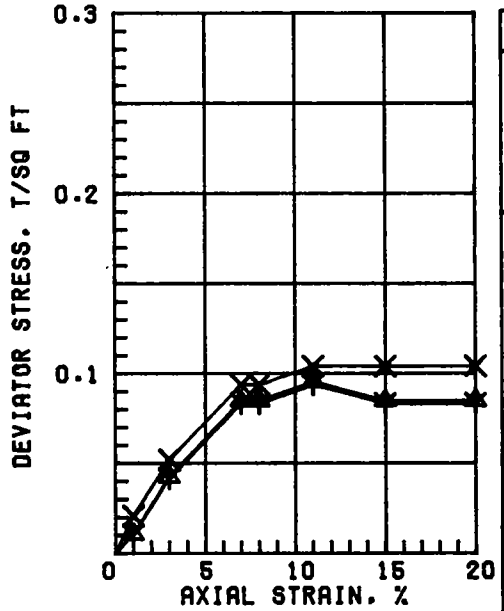
TYPE SPECIMEN UNDISTURBED	3.00 IN. SQUARE	0.553 IN. THICK
CLASSIFICATION PLASTIC CLAY (CH), BROWN		

LL 77	PL 21	PI 56		GS 2.70 (EST)

REMARKS:	PROJECT LK. PONT. LA. & VIC. HURR. PROT.
	JEFF. & ST. CHARLES PARISHES
	BORING NO. 29-U / SAMPLE 18-C
	DEPTH/ELEV - / DATE 16 APR 85
	DIRECT SHEAR TEST REPORT



γ Sat. = 70



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	396.7	529.0	437.4	
	DRY DENSITY, PCF	13.5	10.3	12.3	
	SATURATION, %	93.3	92.6	93.0	
	VOID RATIO	11.485	15.417	12.703	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.08	0.08	0.09	
TIME TO FAILURE, MIN.		14	15	15	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.36	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 340.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), BLACK

LL 359	PL 157	PI 202	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

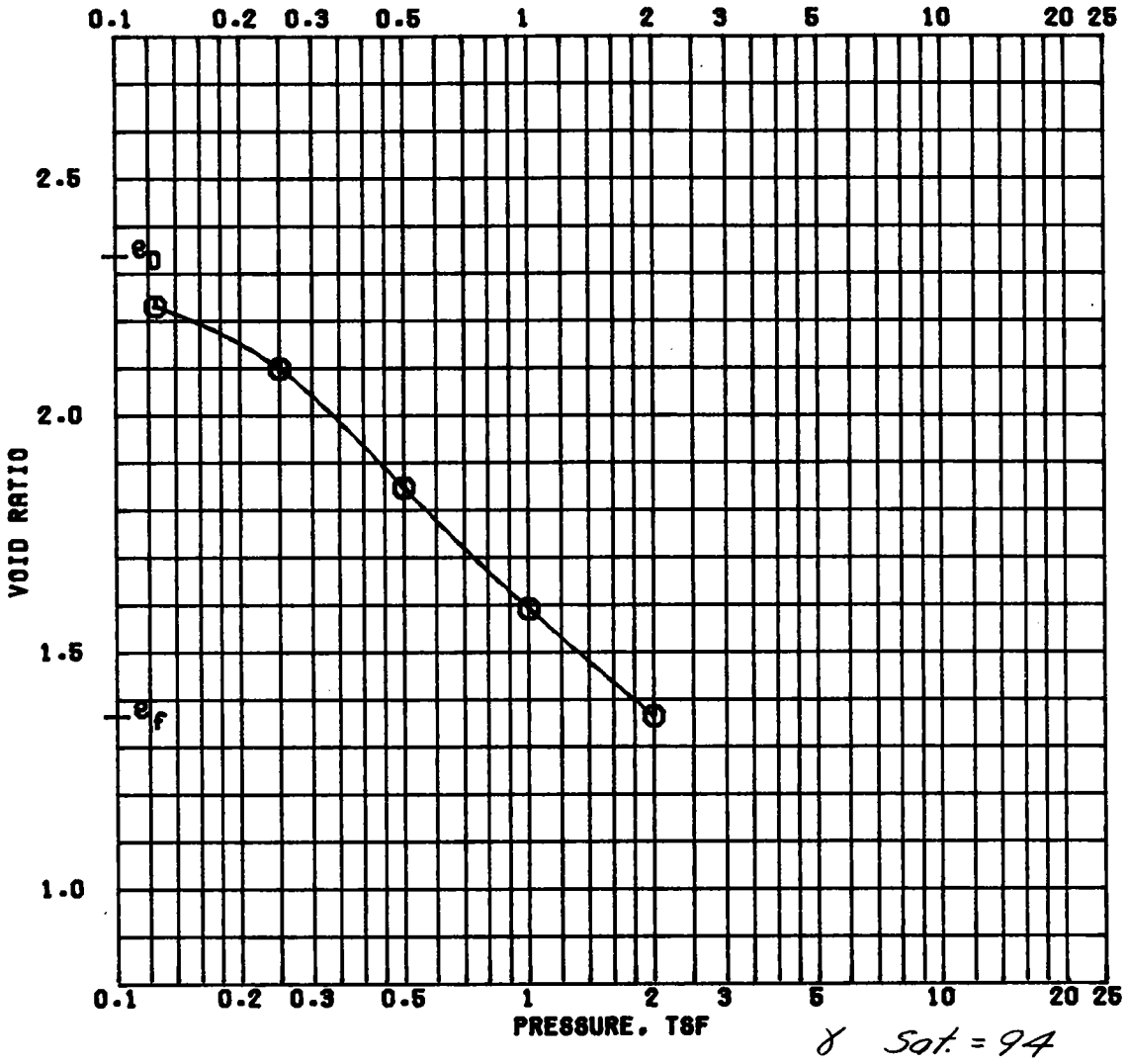
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 30-U | SAMPLE NO. 1-C

DEPTH/ELEV 1.9/-7.2 | TECH. LRC

LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 94

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.28	
COMPRESSION INDEX	0.83	
TYPE SPECIMEN: UNDISTURBED		
DIA. IN 4.44 / HT. IN 1.134		
WATER CONTENT, %	84.0	49.3
DRY DENSITY, PCF	50.6	71.4
SATURATION, %	97.2	97.7
VOID RATIO	2.334	1.362
BACK PRESSURE, TSF		

CLASSIFICATION: PLASTIC CLAY (CH), GRAY

LL 66 / PL 19 / PI 47

GS 2.70 (EST) / D_{10}

REMARKS

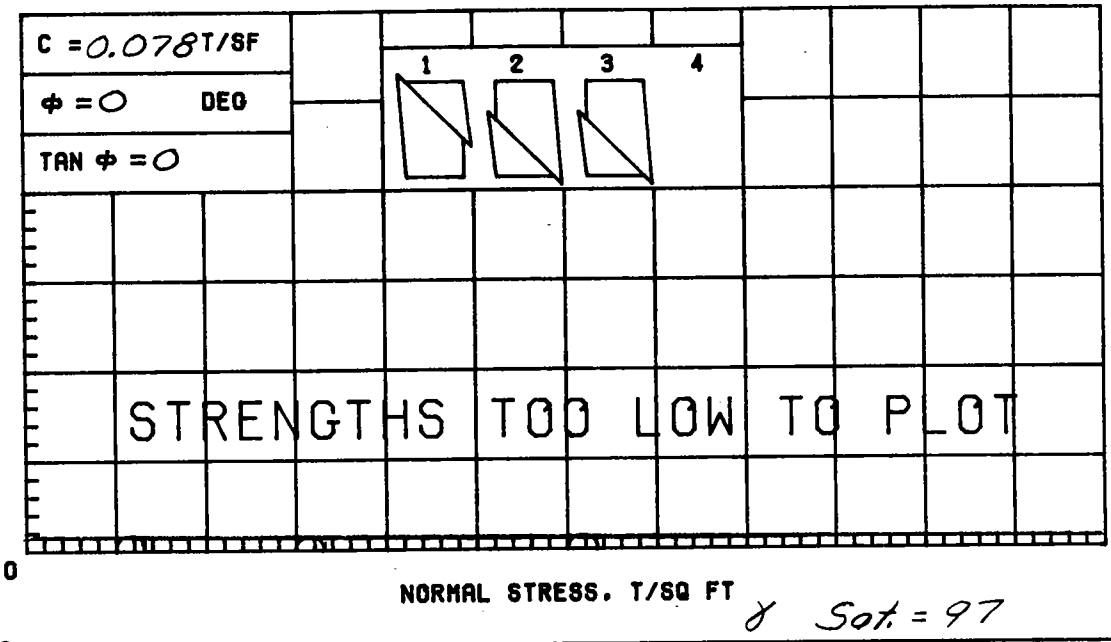
PROJECT: LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 30-U / SAMPLE NO. 3-8

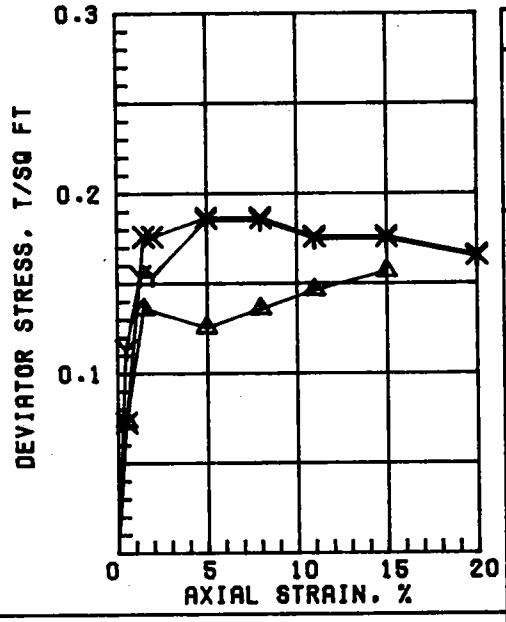
DEPTH/ELEV 9.4/-14.7 / DATE 08 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



γ Sat. = 97



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	76.0	77.3	74.7	
	DRY DENSITY, PCF	55.4	54.6	56.1	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.045	2.086	2.007	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.14	0.15	0.18	
TIME TO FAILURE, MIN.		3	10	15	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.37	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 76.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

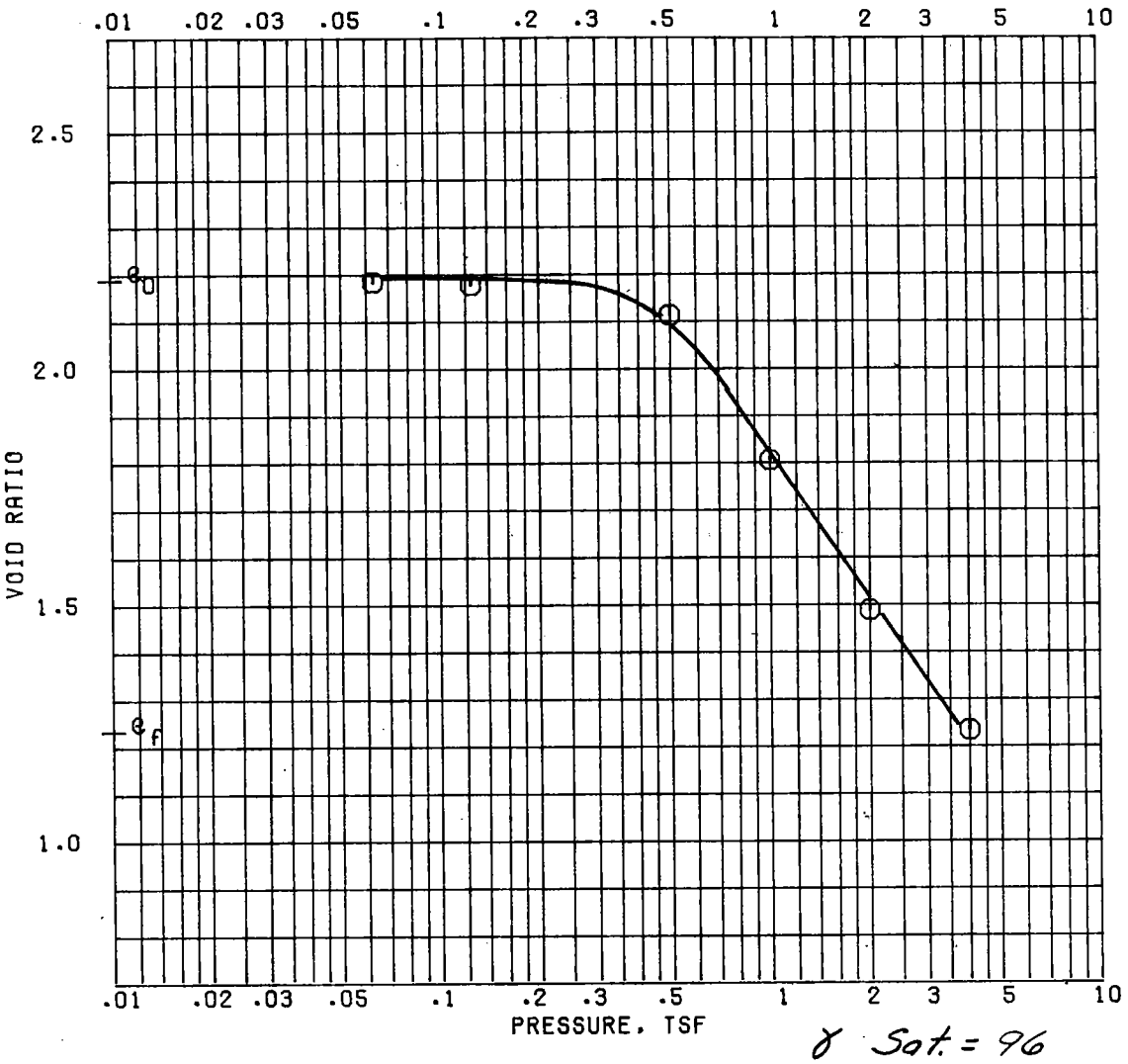
LL 64	PL 19	PI 45	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 30-U | SAMPLE NO. 4-B
DEPTH/ELEV 13.0/-18.3 | TECH. LRC
LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 96

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	80.1	47.2
PRECONSOL. PRESSURE, TSF	0.58	DRY DENSITY, PCF	52.9	75.6
COMPRESSION INDEX	0.93	SATURATION, %	98.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.186	1.231
DIA. IN 4.44	HT. IN 1.112	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 72	PL 21	PI 51
GS 2.70 (EST)	D_{10}	

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

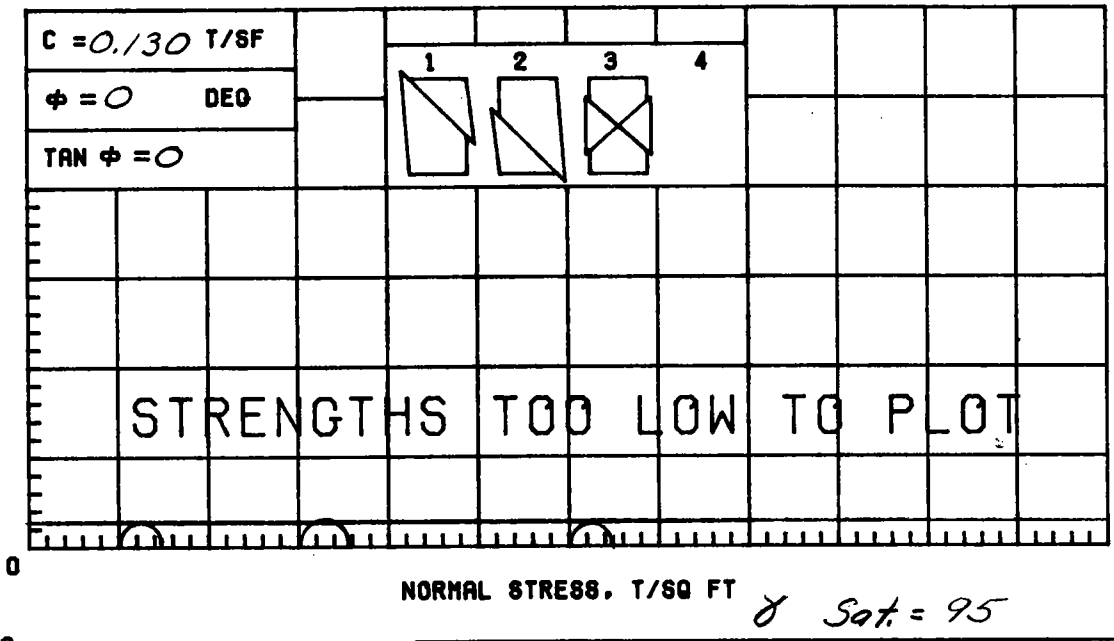
REMARKS

BORING NO. 30-U SAMPLE NO. 6-B

DEPTH/ELEV 21.5/-26.8 DATE 07 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



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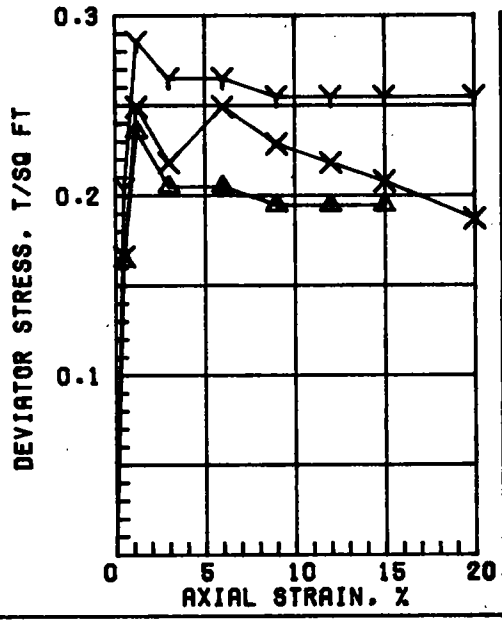


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	87.0	85.1	85.8	
	DRY DENSITY, PCF	50.4	51.1	51.2	
	SATURATION, %	100+	100.0	100+	
	VOID RATIO	2.343	2.298	2.295	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.24	0.29	0.25	
TIME TO FAILURE, MIN.		2	12	16	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.38	1.38	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 86.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 98	PL 25	PI 73	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

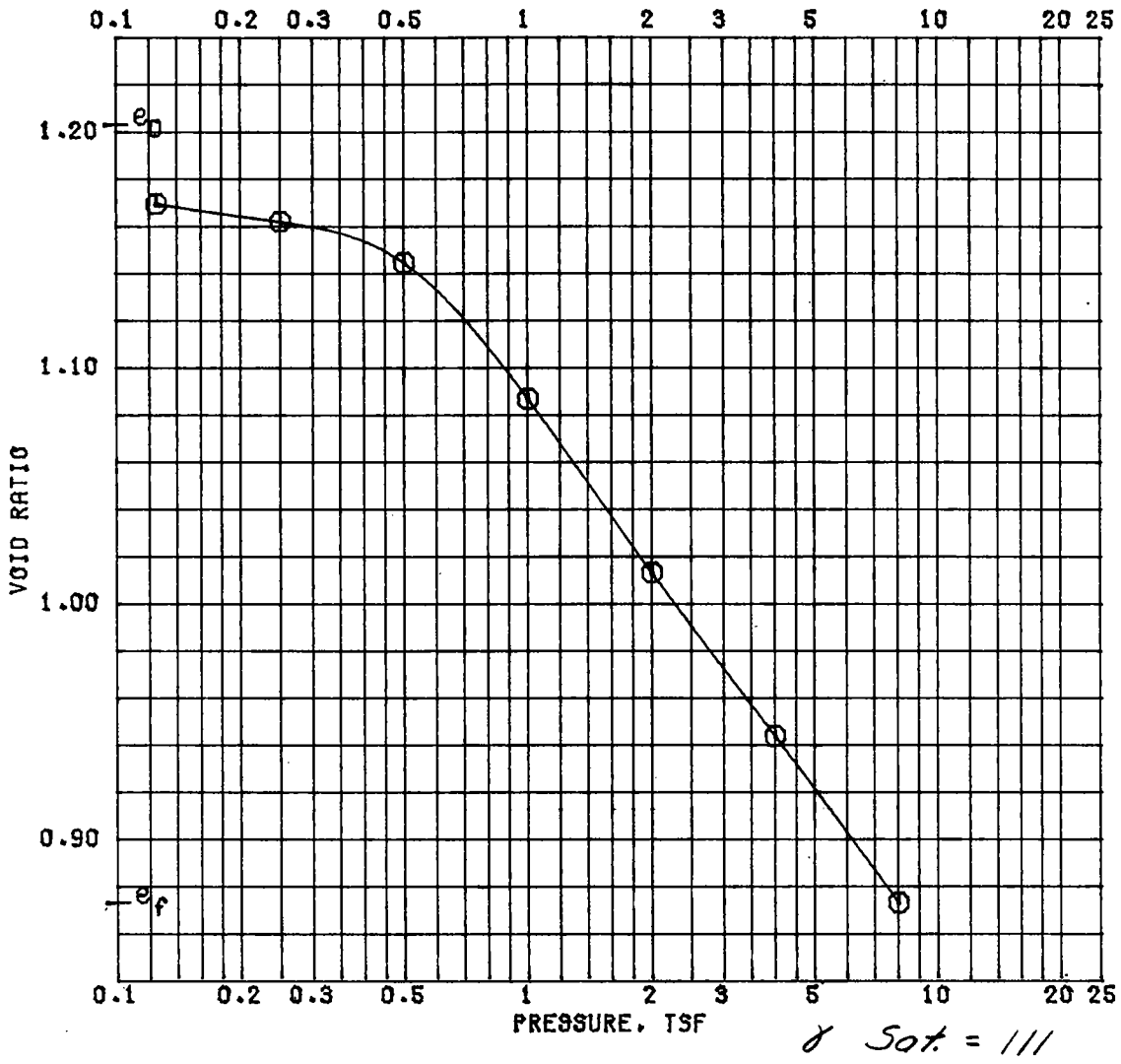
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 30-U | SAMPLE NO. 7-B

DEPTH/ELEV 25.0/-30.3 | TECH. LRC

LABORATORY USAE WES | DATE 13 AUG 65

TRIAXIAL COMPRESSION TEST REPORT

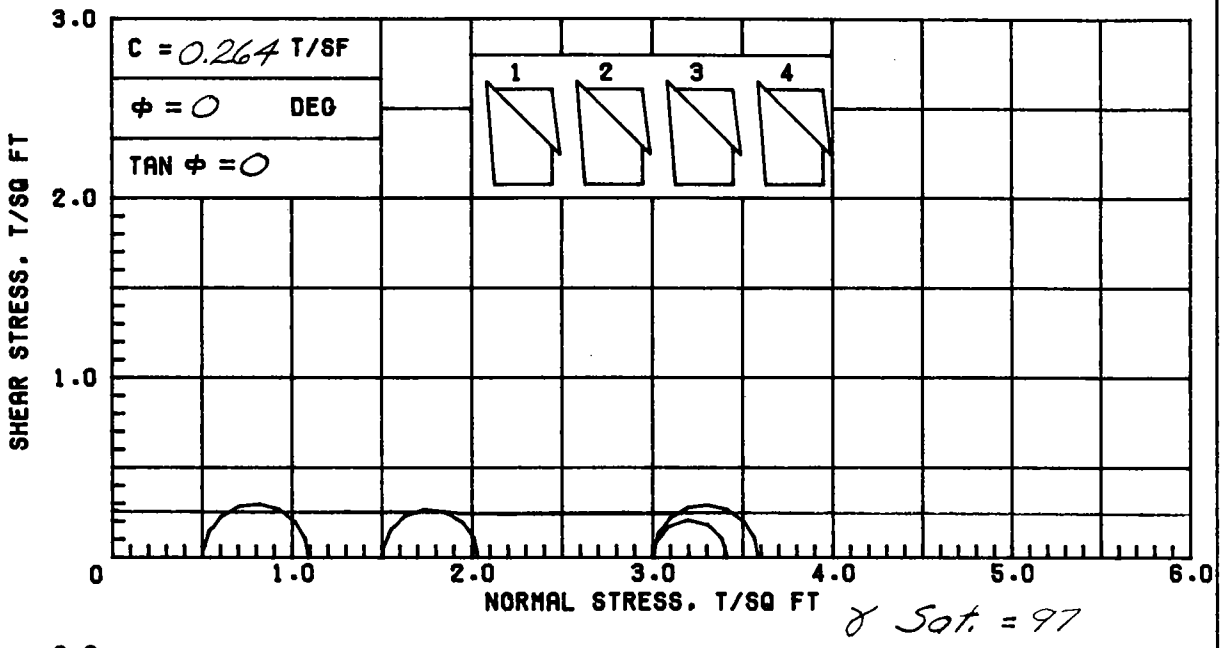


γ Sat. = 111

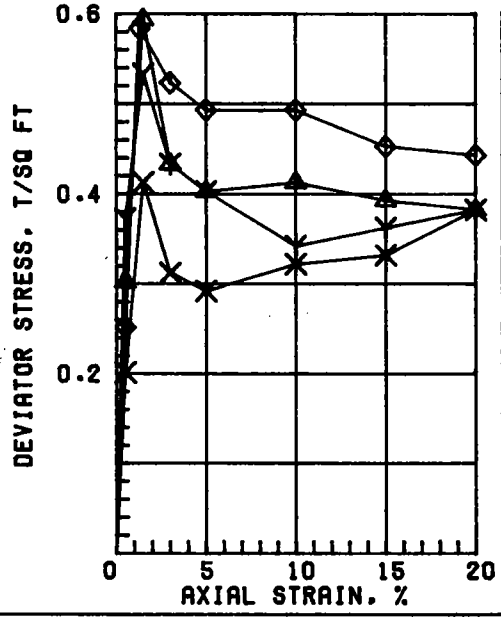
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.59	DRY DENSITY, PCF 76.5	90.0
COMPRESSION INDEX 0.24	SATURATION, % 90.3	93.0
TYPE SPECIMEN UNDISTURBED	VOID RATIO 1.202	0.872
DIA. IN 4.44 HT. IN 1.140	BACK PRESSURE, TSF	
CLASSIFICATION PLASTIC CLAY (CH), GRAY; SAND POCKETS		
LL 50 PL 15 PI 35	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISHES	
REMARKS	BORING NO. 30-U	SAMPLE NO. 8-C
	DEPTH/ELEV 31.5/-36.8	DATE 07 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 97



SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	73.3	76.7	74.5	76.0
	DRY DENSITY, PCF	56.0	54.1	54.7	54.5
	SATURATION, %	98.5	97.8	96.5	98.1
	VOID RATIO	2.008	2.118	2.084	2.092
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.59	0.53	0.41	0.58
TIME TO FAILURE, MIN.		3	12	12	8
RATE OF STRAIN INCR,%			4	5	6
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 75.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 83	PL 23	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

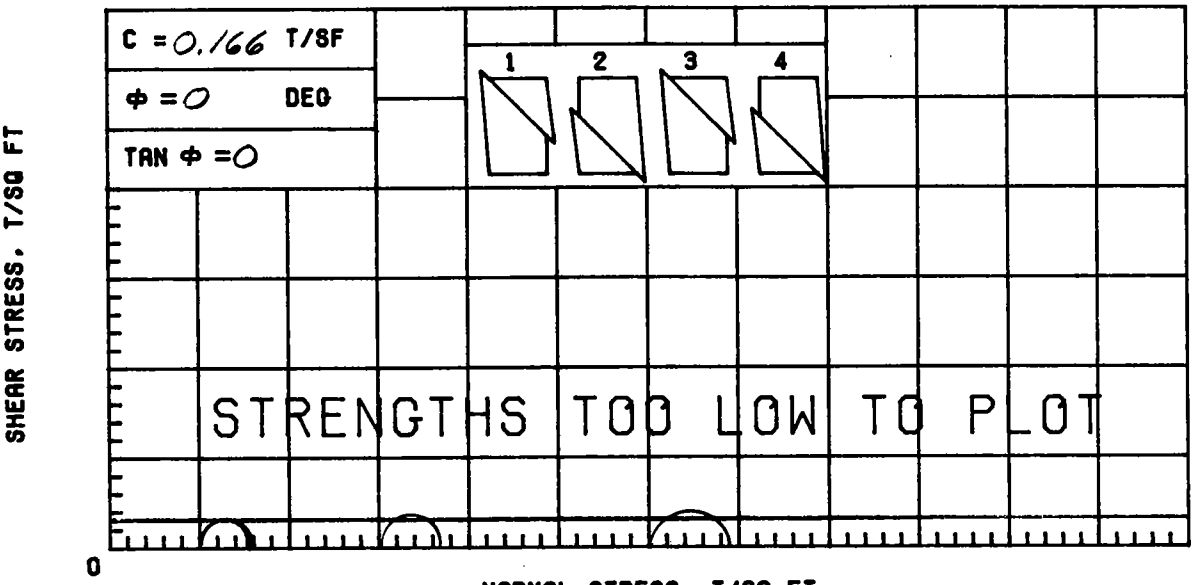
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 30-U | SAMPLE NO. 10-B

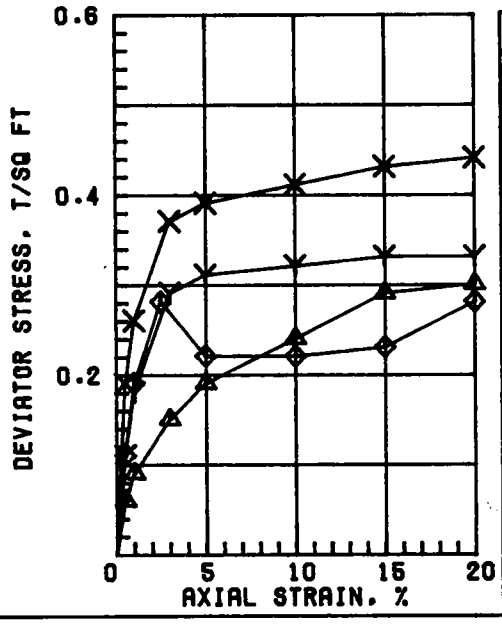
DEPTH/ELEV 37.0/-42.3 | TECH. KOC

LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 121



SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	29.5	29.4	28.2	25.7	28.2
	DRY DENSITY, PCF	91.4	90.2	92.9	98.7	
	SATURATION, %	94.4	91.4	93.6	98.0	
	VOID RATIO	0.843	0.869	0.814	0.708	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.29	0.33	0.43	0.28	
TIME TO FAILURE, MIN.		30	30	30	5	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY

LL 44	PL 13	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

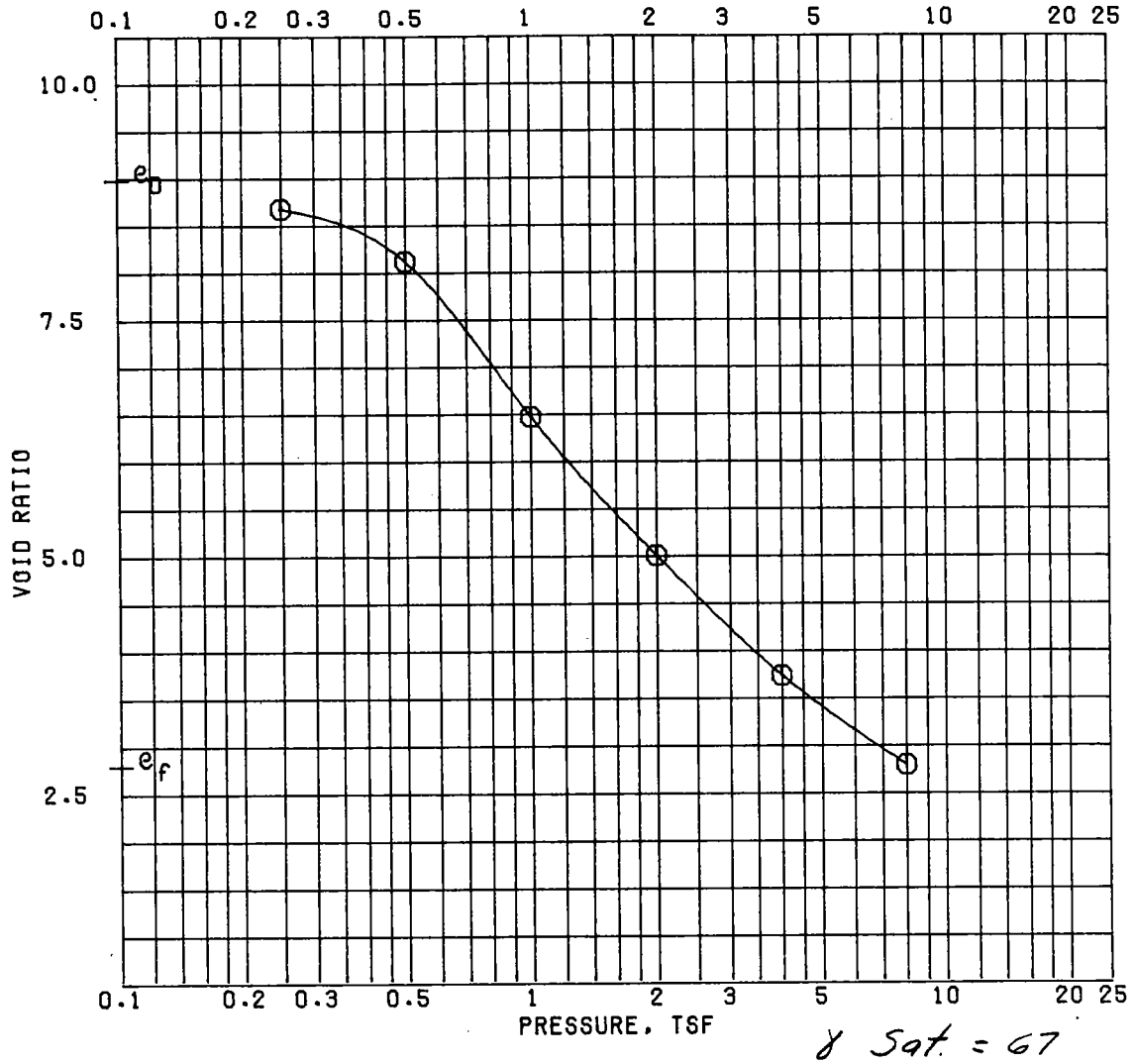
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 30-U | SAMPLE NO. 12-B

DEPTH/ELEV 45.0/-50.3 | TECH. KOC

LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 67

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.45	WATER CONTENT, %	498.1	174.8
COMPRESSION INDEX 5.55	DRY DENSITY, PCF	10.7	28.1
TYPE SPECIMEN UNDISTURBED	SATURATION, %	94.5	100 +
DIA. IN 4.44 HT. IN 1.124	VOID RATIO	8.965	2.780
	BACK PRESSURE, TSF		

CLASSIFICATION PEAT (PT), BLACK

LL PL PI

GS 1.70 (EST) D_{10}

REMARKS

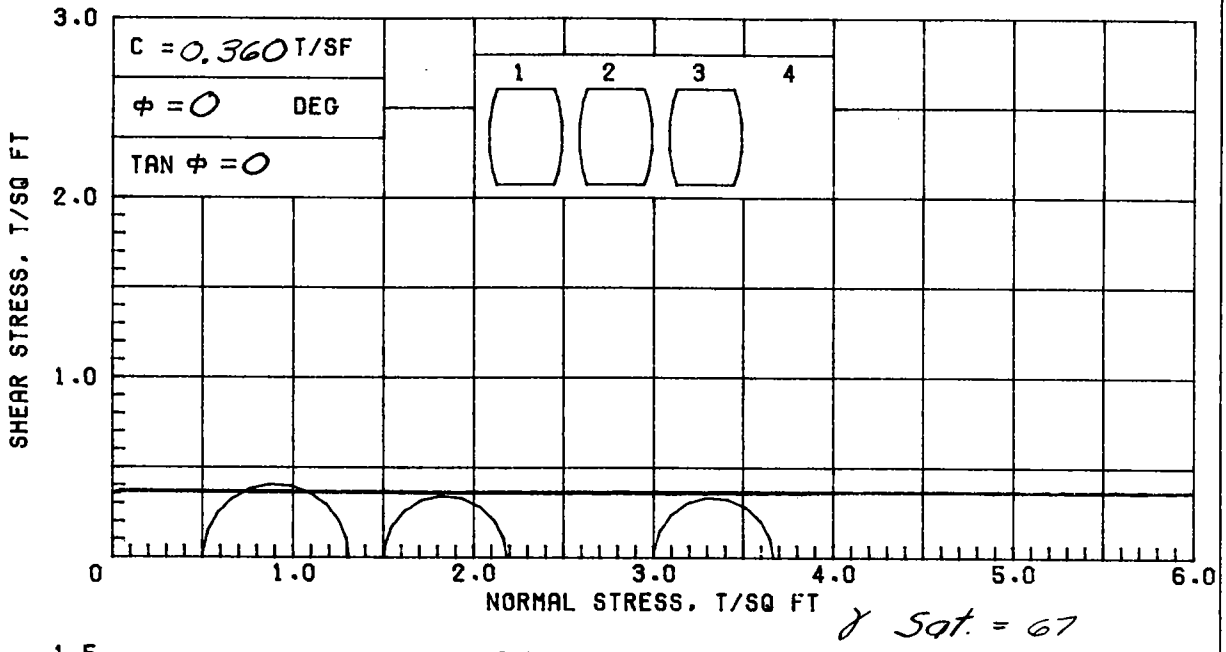
PROJECT LK PONT. LA & VIC. HURR PROT.

JEFFERSON & ST. CHARLES PARISHES

BORING NO. 31-U SAMPLE NO. 3B

DEPTH/ELEV 11.6/-9.0 DATE 09 MAY 85

CONSOLIDATION TEST REPORT



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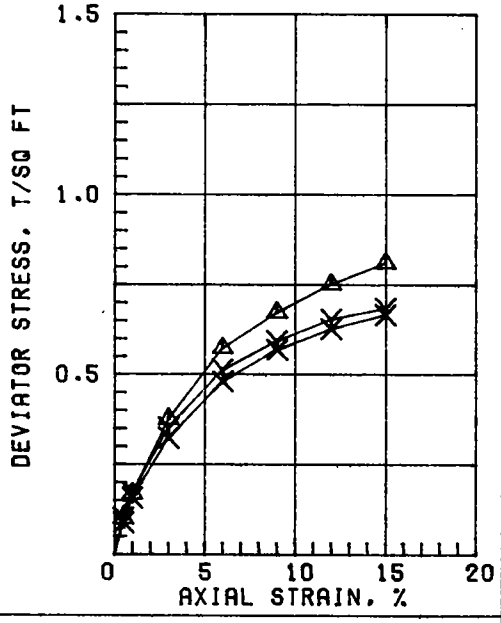


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	389.3	462.6	580.0	
	DRY DENSITY, PCF	13.9	11.7	9.3	
	SATURATION, %	99.6	97.1	94.3	
	VOID RATIO	6.645	8.097	10.461	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.81	0.68	0.67	
TIME TO FAILURE, MIN.		32	31	32	
RATE OF STRAIN INCR,%					
INITIAL DIAMETER, IN.		1.41	1.40	1.41	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 477.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), BLACK

LL 599	PL 268	PI 331	GS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

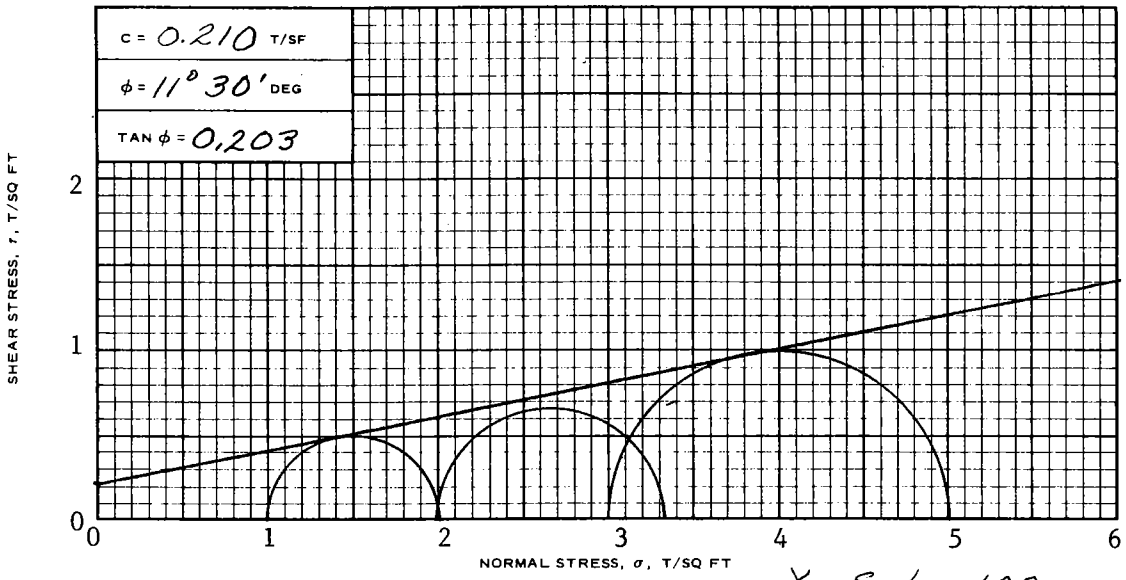
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 31-U | SAMPLE NO. 3-C

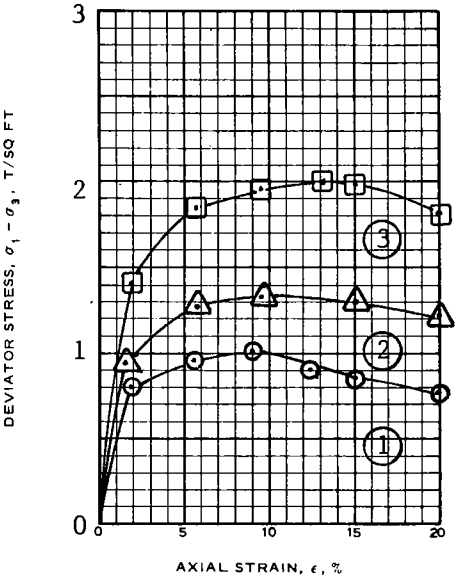
DEPTH/ELEV 13.0/-10.4 | TECH. LRC

LABORATORY USAE WES | DATE 18 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 102



SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	60.6	66.1	67.3
	DRY DENSITY LB/ CU FT	γ_{d_o}	64.1	61.0	60.6
	SATURATION, %	s_o	100	100+	100+
	VOID RATIO	e_o	1.649	1.783	1.802
BEFORE SHEAR	WATER CONTENT, %	w_c	49.5	47.7	44.2
	DRY DENSITY LB/CU FT	γ_{d_c}	73.7	76.7	76.2
	SATURATION, %	s_c	100+	100+	97.9*
	VOID RATIO	e_c	1.303	1.214	1.228
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.02	1.33	2.00
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	529	559	771
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.37	1.38	1.36
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

Avg. 64.7

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL	PL	PI	Gs
79	21	58	2.72

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST R

REMARKS: (EST)

* PORE PRESSURE RESPONSE

INDICATED 100% SATURATION

PROJECT LAKE PONT LA. & VIC. HURR. PROT.

JEFFERSON & ST. CHARLES PARISH

BORING NO. 31-U SAMPLE NO. 5-B

DEPTH/ELEV 20.4/-17.8

LABORATORY USAEWES DATE 1 APRIL 1986

SHEET 1 OF 2

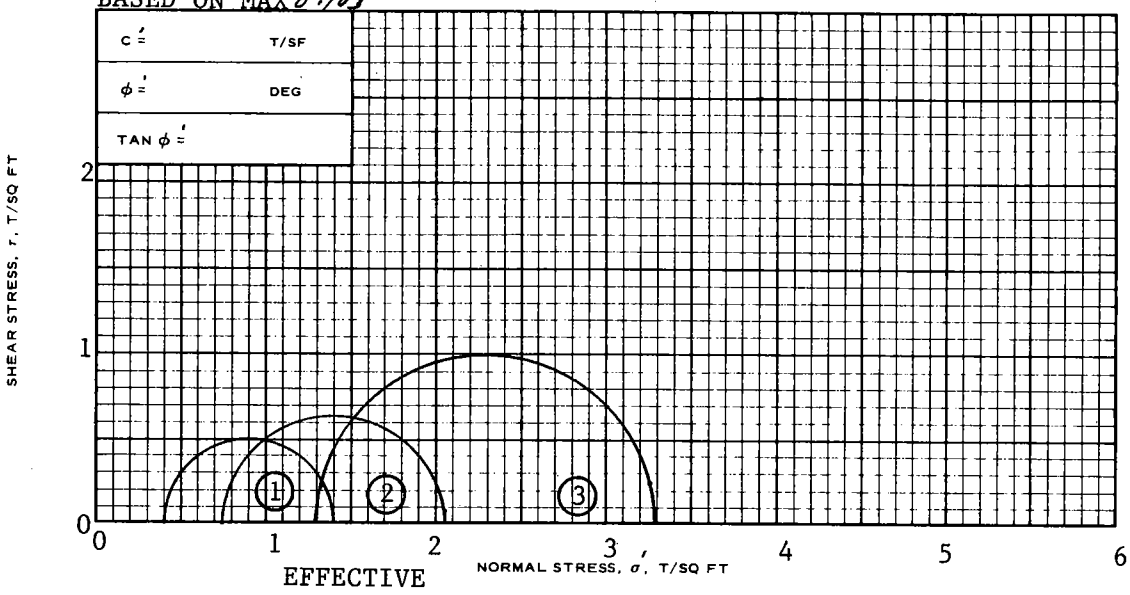
JMS **TRIAXIAL COMPRESSION TEST REPORT**

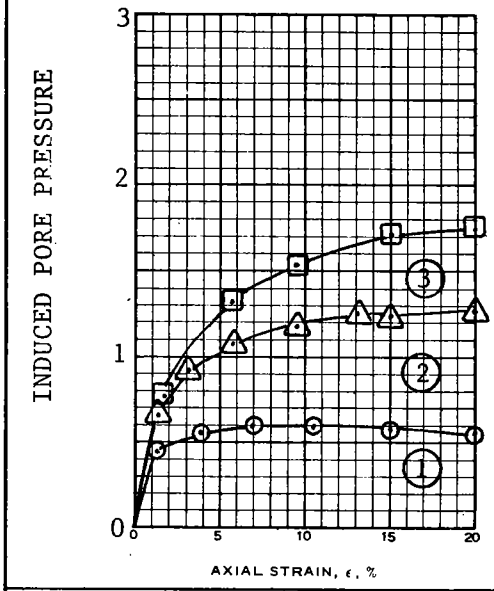
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1/σ_3

$C' =$	T/SF
$\phi' =$	DEG
TAN $\phi' =$	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.40	0.75	1.29	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.00	1.31	1.99	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 31-U SAMPLE NO. 5-B

DEPTH/ELEV 20.4/-17.8

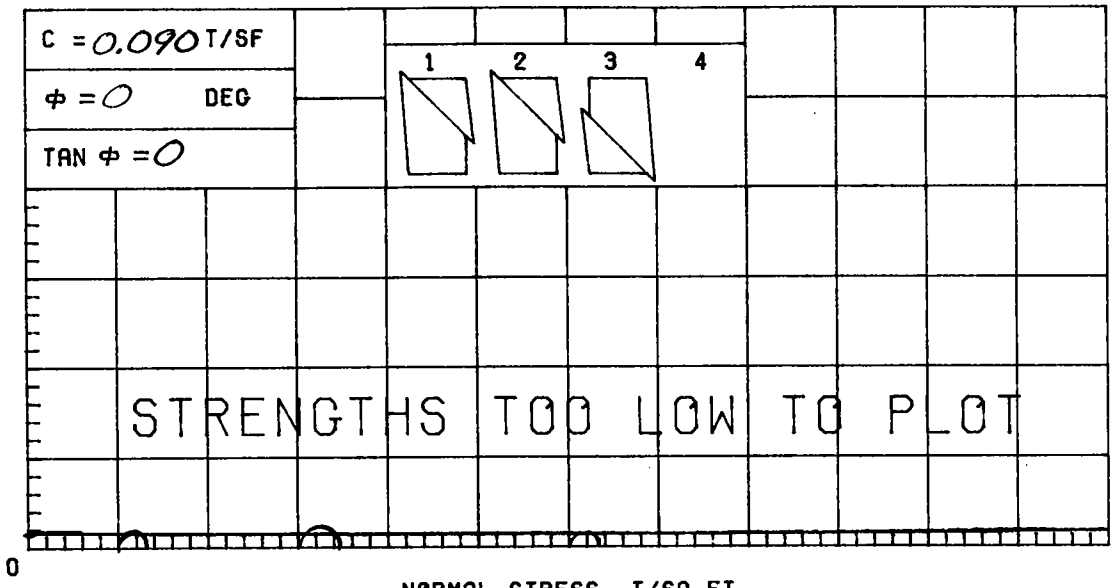
LABORATORY USAEWES DATE 1 APRIL 1986

SHEET 2 OF 2

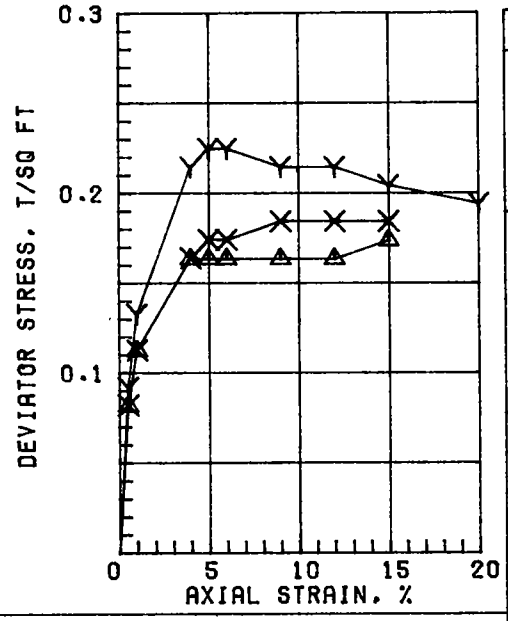
JSM **TRIAXIAL COMPRESSION TEST REPORT**

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



γ Sat. = 99



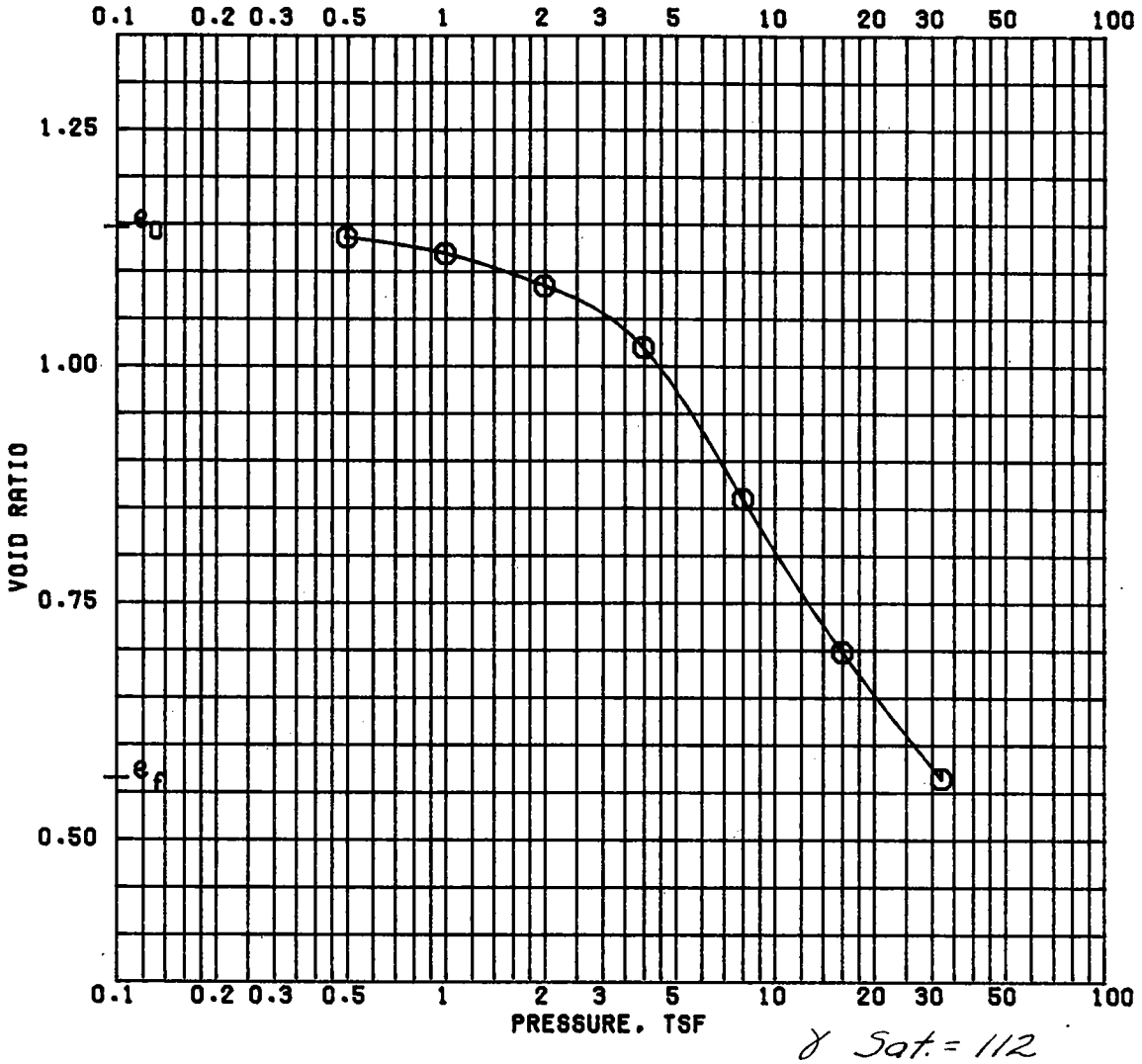
SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	71.7	72.9	69.4		71.3
	DRY DENSITY, PCF	57.3	56.9	58.2		
	SATURATION, %	99.8	100+	98.9		
	VOID RATIO	1.940	1.963	1.894		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.16	0.22	0.17		
TIME TO FAILURE, MIN.		9	14	25		
RATE OF STRAIN INCR.%			6	6		
INITIAL DIAMETER, IN.		1.39	1.39	1.38		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS & LENSES

LL 76	PL 20	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT. LA & VIC. HURR PROT.	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 31-U	SAMPLE NO. 5-C
	DEPTH/ELEV 21.4/-18.8	TECH. LRC
	LABORATORY USAE WES	DATE 19 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



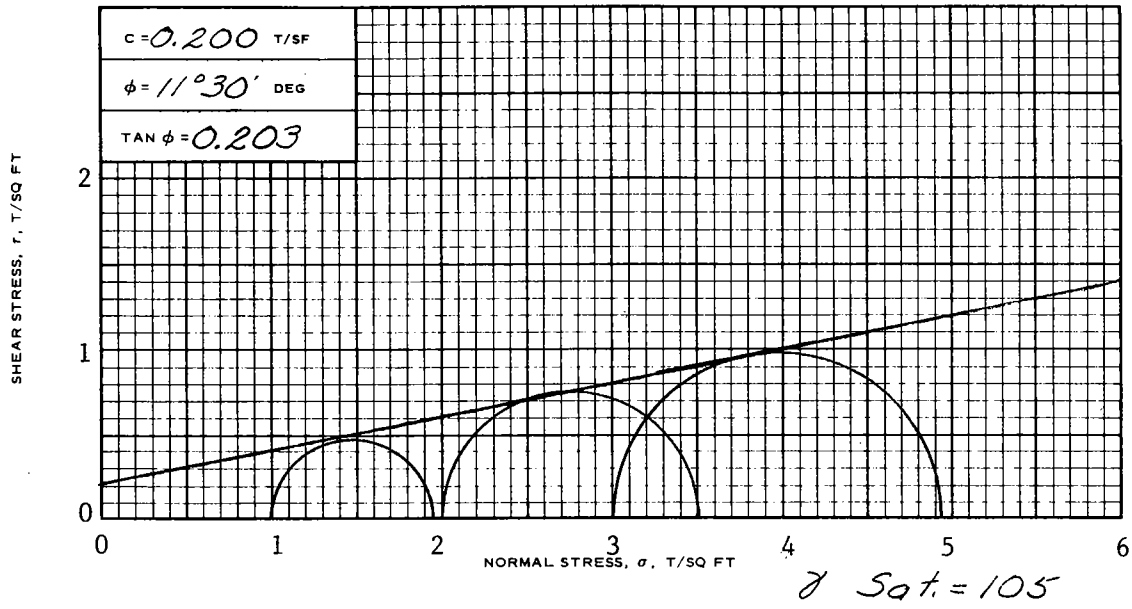
γ Sat. = 112

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	42.6	25.3
PRECONSOL. PRESSURE, TSF	3.30	DRY DENSITY, PCF	78.6	107.9
COMPRESSION INDEX	0.55	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.145	0.563
DIA. IN 4.44	HT. IN 1.129	BACK PRESSURE, TSF		

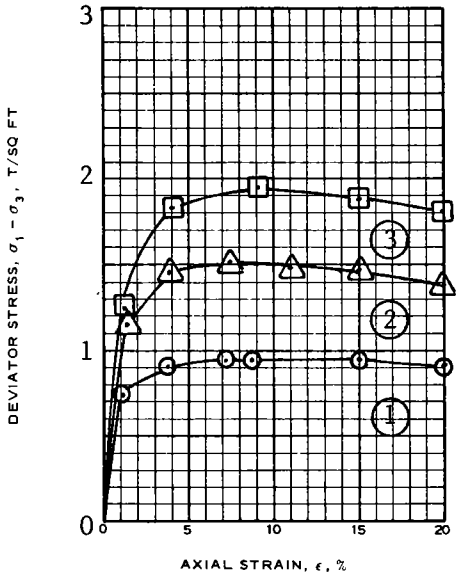
CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 76	PL 22	PI 54	PROJECT LK PONT. LA & VIC. HURR PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 31-U	SAMPLE NO. 6B
		DEPTH/ELEV 24.5/-21.9	DATE 09 MAY 85

CONSOLIDATION TEST REPORT



γ Sat. = 105



SPECIMEN NO.			1	2	3	Avg.
INITIAL	WATER CONTENT, %	w_o	53.7	55.1	52.8	53.9
	DRY DENSITY LB/ CU FT	γd_o	68.4	65.9	66.8	
	SATURATION, %	s_o	98.5	95.0	93.1	
	VOID RATIO	e_o	1.483	1.577	1.543	
BEFORE SHEAR	WATER CONTENT, %	w_c	49.6	46.5	41.8	
	DRY DENSITY LB/CU FT	γd_c	68.4	65.9	66.8	
	SATURATION, %	s_c	100+	100+	99.5	
	VOID RATIO	e_c	1.264	1.231	1.143	
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.95	1.51	1.95	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	450	469	569	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.37	1.39	1.39	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 70	PL 19	PI 51	Gs 2.72

REMARKS: (EST)

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST $\bar{R}$

PROJECT LAKE PONT. LA. & VIC, HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 31-U SAMPLE NO. 7-C

DEPTH/ELEV 29.4/-26.8

LABORATORY USAEWES DATE 8 APR 86

SHEET 1 OF 2 JMS

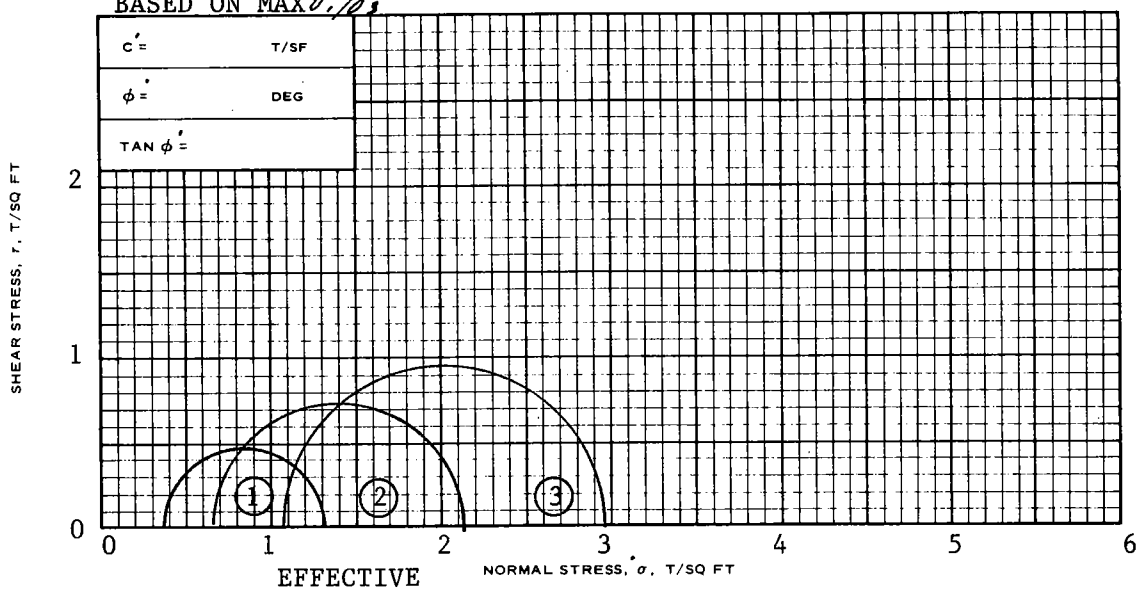
TRIAXIAL COMPRESSION TEST REPORT

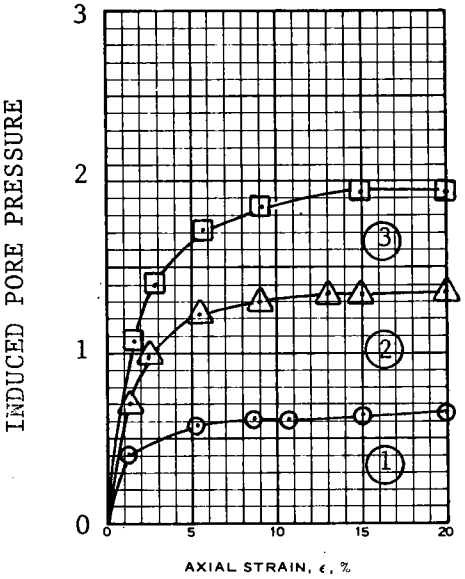
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'/σ_3'

C' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.37	0.65	1.06	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.95	1.49	1.89	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 31-U SAMPLE NO. 7-C

DEPTH/ELEV 29.4/-26.8

LABORATORY USAEWES DATE 8 APR 86

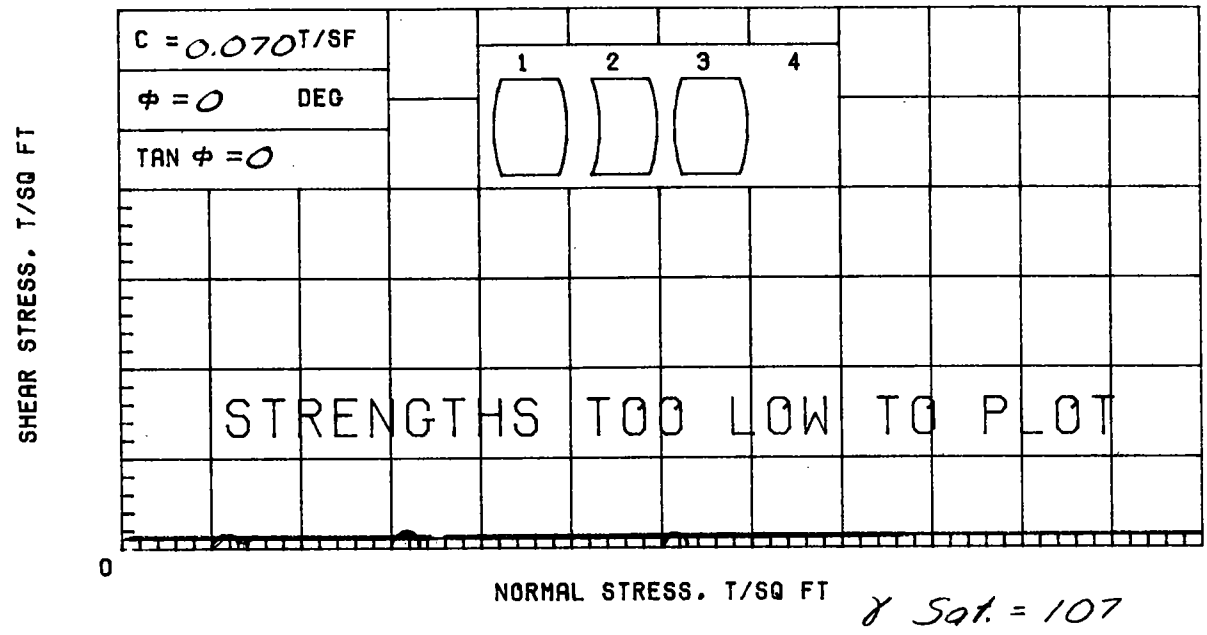
SHEET 2 OF 2

JMS

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



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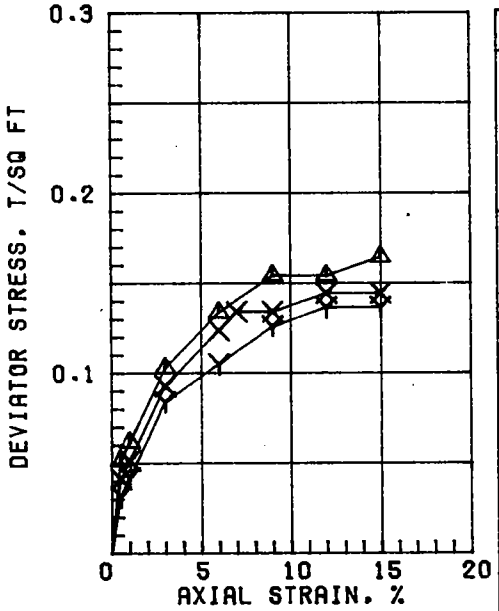


SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	50.4	53.2	52.2		51.9
	DRY DENSITY, PCF	70.6	69.7	69.9		
	SATURATION, %	98.2	100+	99.9		
	VOID RATIO	1.386	1.417	1.411		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.15	0.14	0.13		
TIME TO FAILURE, MIN.		19	25	15		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.38	1.37	1.38		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS & LENSES

LL 51	PL 17	PI 34	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL

PROJECT LK PONT. LA & VIC. HURR PROT.

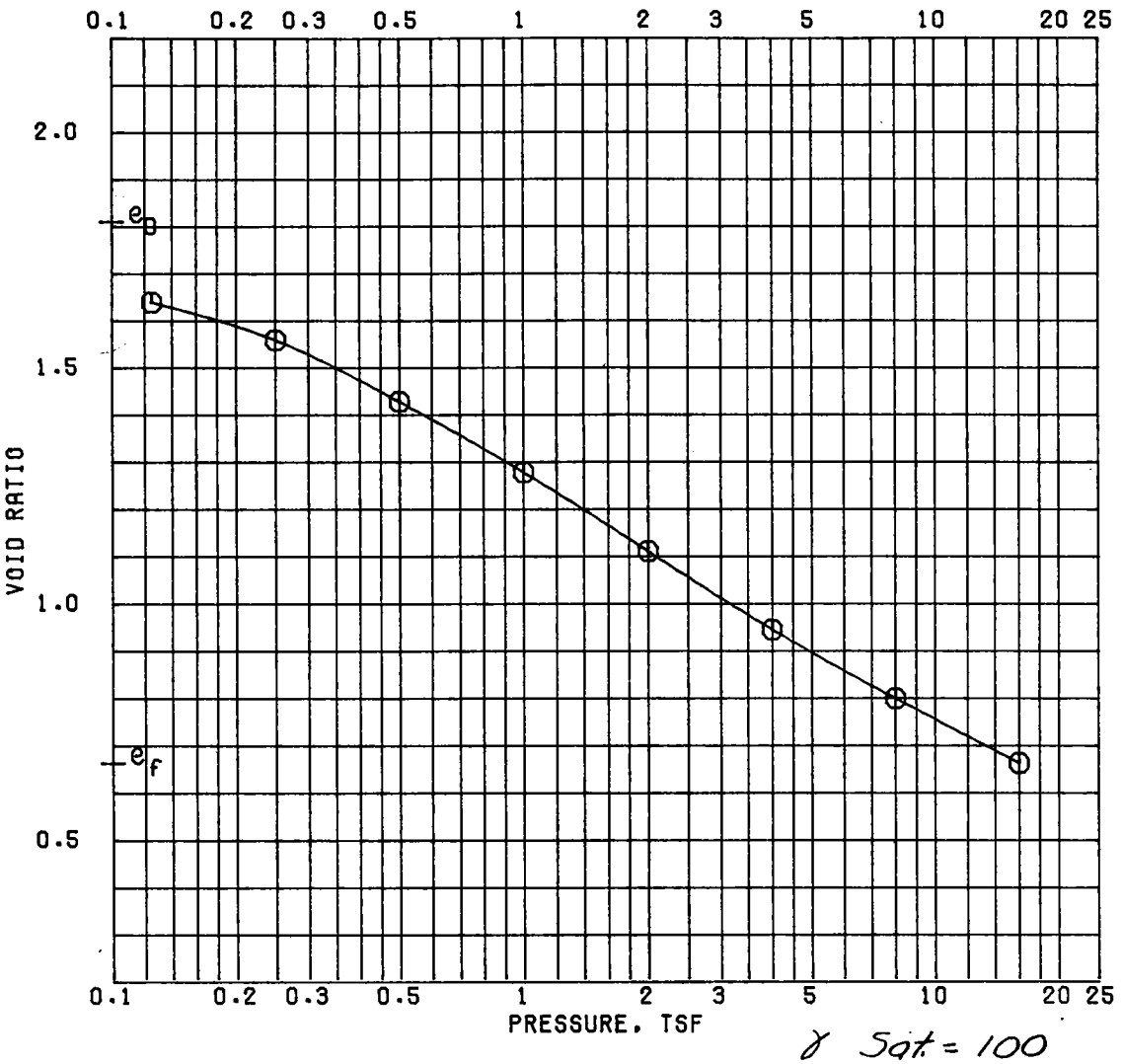
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 31-U | SAMPLE NO. 8-B

DEPTH/ELEV 32.5/-29.9 | TECH. LRC

LABORATORY USAE WES | DATE 19 APR 85

TRIAXIAL COMPRESSION TEST REPORT

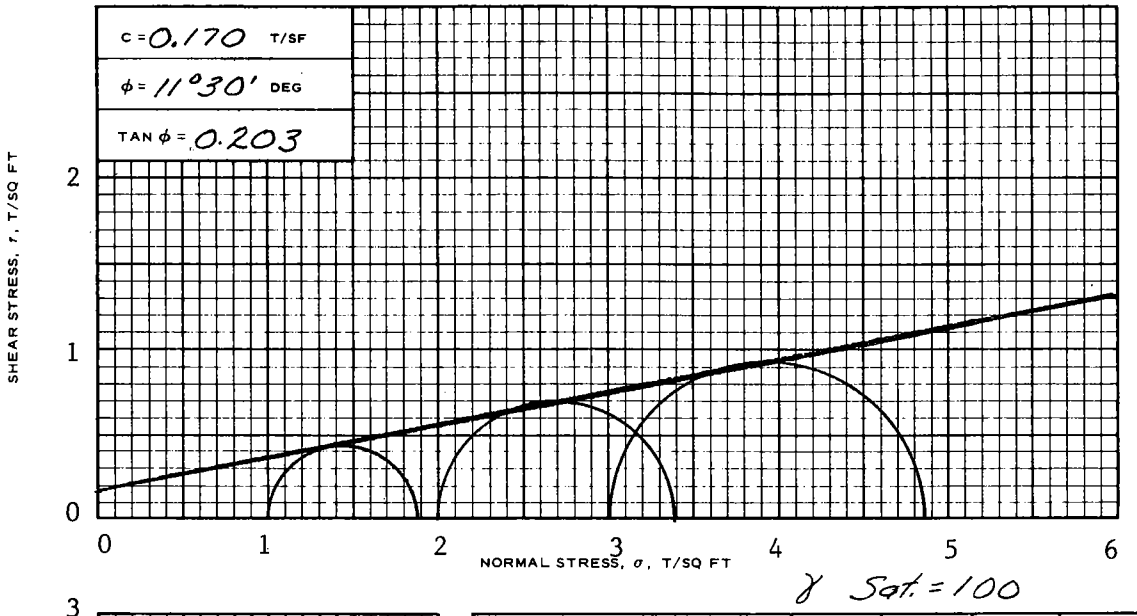


γ Sat = 100

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.30	DRY DENSITY, PCF	60.1	101.6
COMPRESSION INDEX 0.40	SATURATION, %	96.7	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.807	0.660
DIA. IN 4.44 HT. IN 1.129	BACK PRESSURE, TSF		
CLASSIFICATION PLASTIC CLAY (CH), GRAY			
LL 74 PL 20 PI 54	PROJECT LK PONT. LA & VIC. HURR PROT.		
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISHES		
REMARKS	BORING NO. 31-U	SAMPLE NO. 8C	
	DEPTH/ELEV 33.4/-30.8	DATE 13 MAY 85	

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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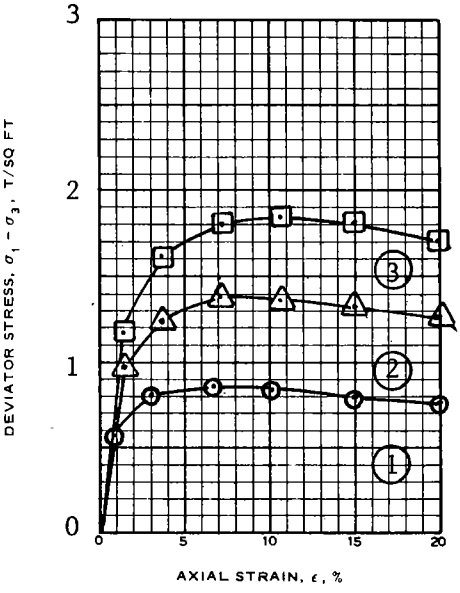


SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	68.8	69.2	66.0	
	DRY DENSITY LB/ CU FT	γ_{d_o}	58.8	58.6	59.9	
	SATURATION, %	s_o	99.0	99.1	97.8	
	VOID RATIO	e_o	1.890	1.900	1.835	
BEFORE SHEAR	WATER CONTENT, %	w_c	64.4	56.2	50.3	
	DRY DENSITY LB/CU FT	γ_{d_c}	64.3	72.0	73.5	
	SATURATION, %	s_c	100+	100+	100+	
	VOID RATIO	e_c	1.640	1.359	1.310	
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.87	1.39	1.85	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	425	444	663	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.38	1.38	1.38	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

Avg. 68.0

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY

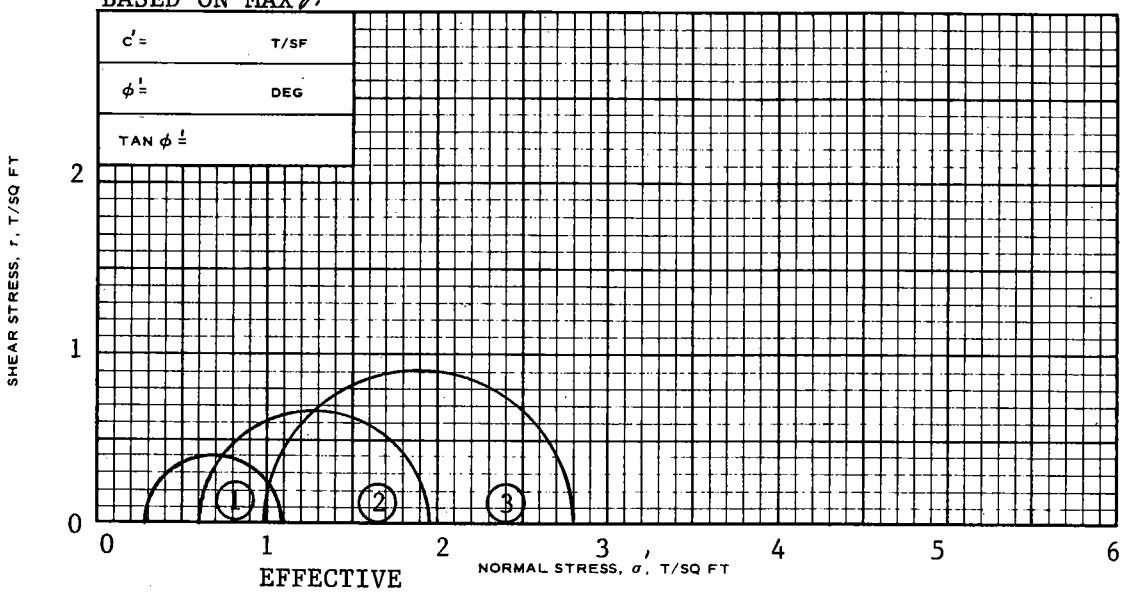
LL 84	PL 23	PI 61	Gs 2.72	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST R̄
REMARKS: (EST)				PROJECT LAKE PONT. LA., & VIC. HURR. PROT JEFFERSON & ST. CHARLES PARISH	
				BORING NO. 31-U	SAMPLE NO. 9-C
				DEPTH/ELEV 37/-34.4	
				LABORATORY USAEWES	DATE 9 APR 86
SHEET 1 OF 2				JMS	TRIAXIAL COMPRESSION TEST REPORT

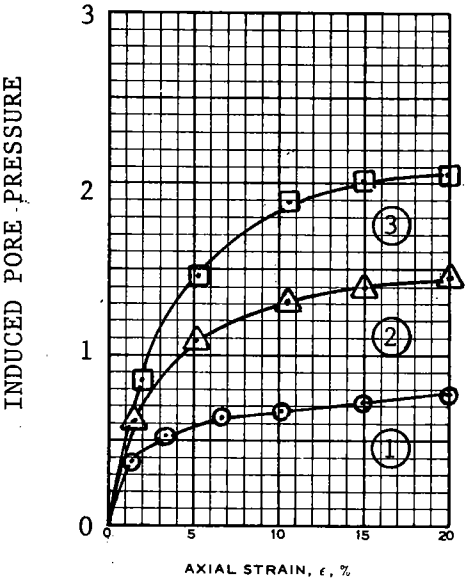
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'

c' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.27	0.60	0.99	
MAXIMUM DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{MAX}$		0.81	1.34	1.81	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{ULT}$					
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 31-U SAMPLE NO. 9-C

DEPTH/ELEV 37/-34.4

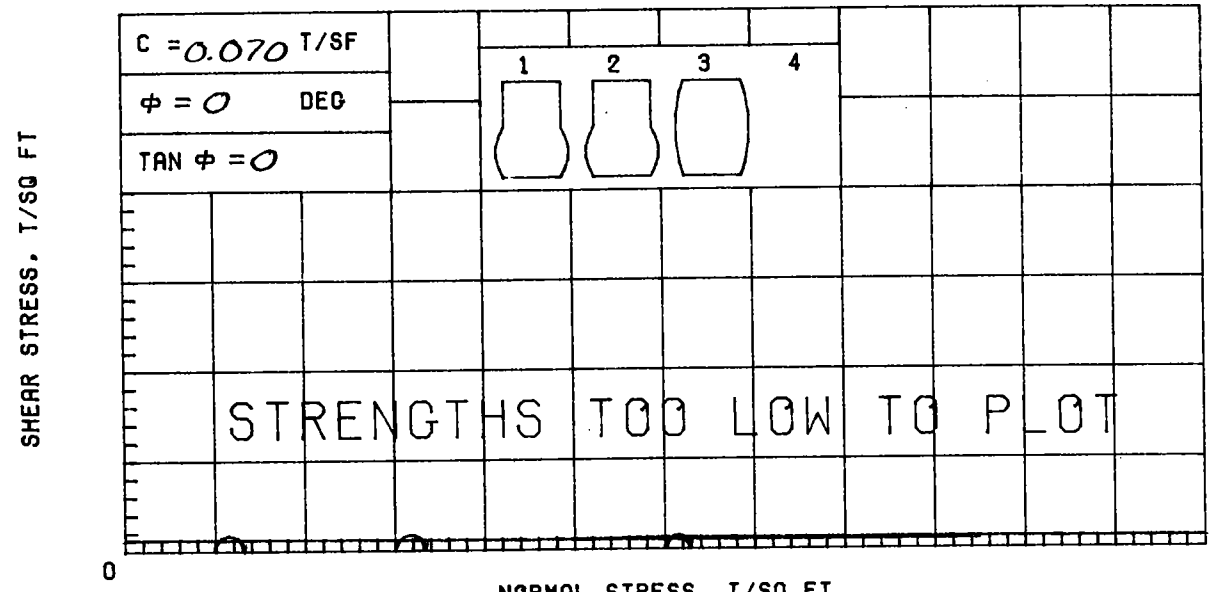
LABORATORY USAEWES DATE 9 APR 86

SHEET 2 OF 2

JMS **TRIAXIAL COMPRESSION TEST REPORT**

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



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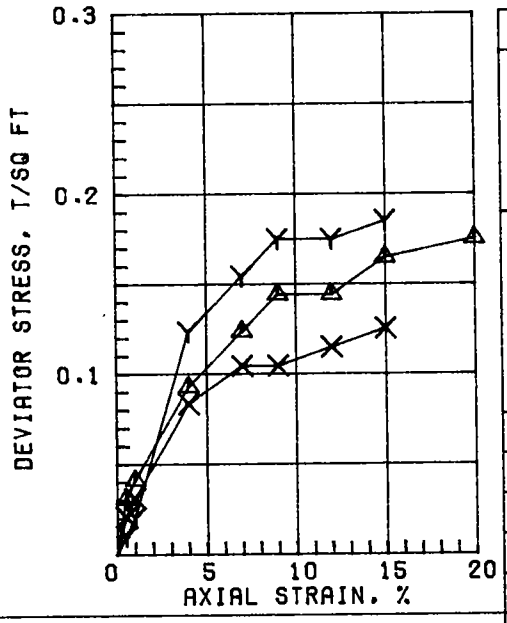


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	47.6	48.2	57.6	
	DRY DENSITY, PCF	72.4	72.1	65.8	
	SATURATION, %	96.8	97.2	99.7	
	VOID RATIO	1.328	1.338	1.561	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.14	0.17	0.10	
TIME TO FAILURE, MIN.		18	19	15	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 51.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/4" SAND LAYERS

LL 46	PL 16	PI 30	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL

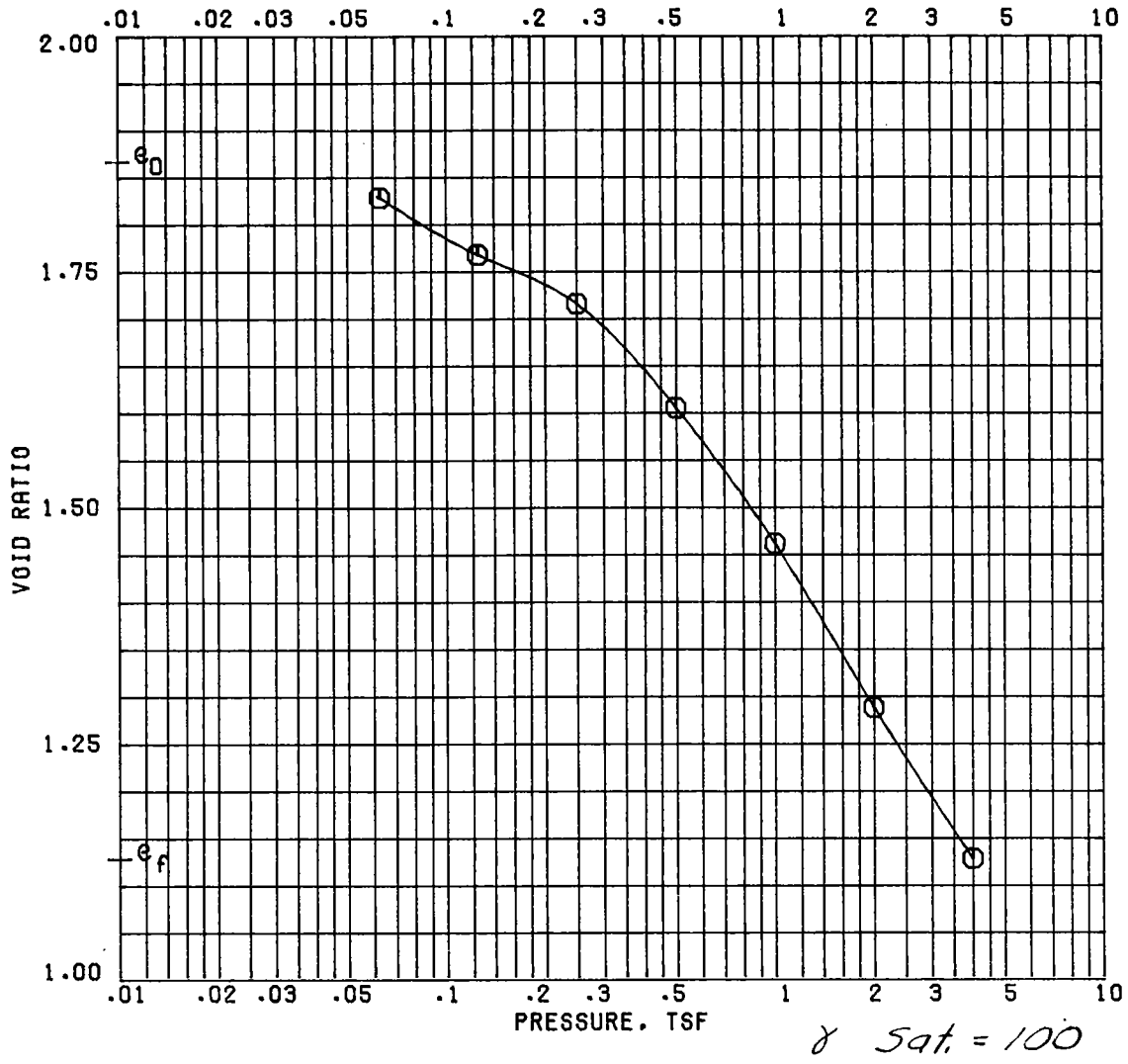
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 31-U | SAMPLE NO. 10-C

DEPTH/ELEV 41.4/-38.8 | TECH. LRC

LABORATORY USAE WES | DATE 19 APR 85

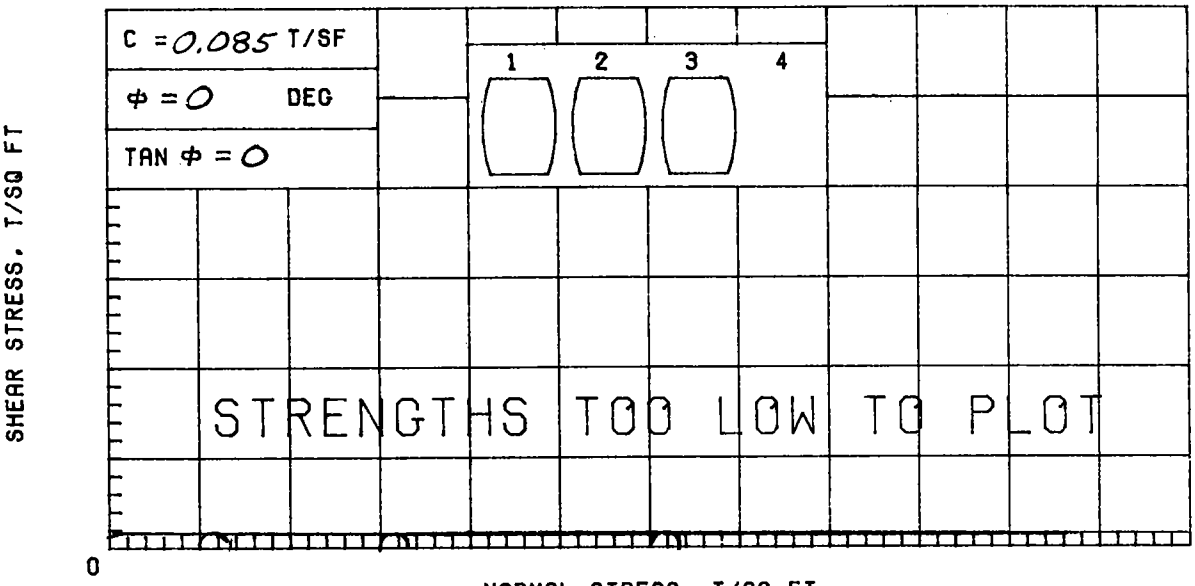
TRIAXIAL COMPRESSION TEST REPORT



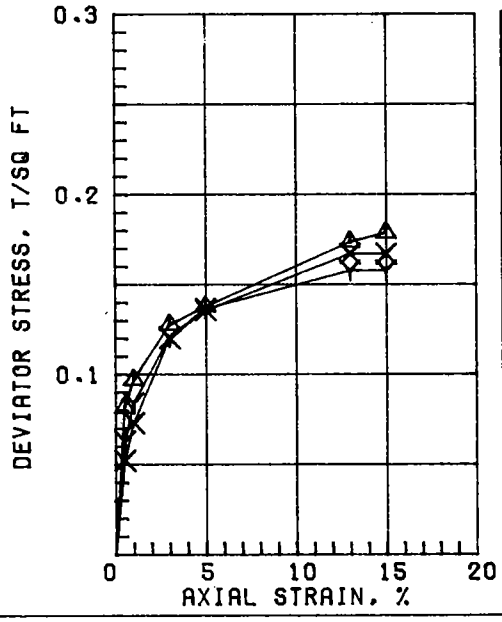
γ Sat. = 100

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0,35	DRY DENSITY, PCF	58.8	79.3
COMPRESSION INDEX 0,57	SATURATION, %	94.0	96.8
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.865	1.127
DIA. IN 4.44 HT. IN 1.127	BACK PRESSURE, TSF		
CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT LENSES			
LL 75 PL 20 PI 55	PROJECT LK PONT. LA & VIC. HURR PROT.		
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISHES		
REMARKS	BORING NO. 31-U	SAMPLE NO. 11B	
	DEPTH/ELEV 44.5/-41.9	DATE 15 MAY 85	

CONSOLIDATION TEST REPORT



γ Sat. = 104



SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	55.5	73.4	72.1		67.0
	DRY DENSITY, PCF	68.5	59.1	59.9		
	SATURATION, %	100+	100+	100+		
	VOID RATIO	1.462	1.854	1.813		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.18	0.16	0.17		
TIME TO FAILURE, MIN.		26	26	22		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.36	1.37		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 86	PL 23	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

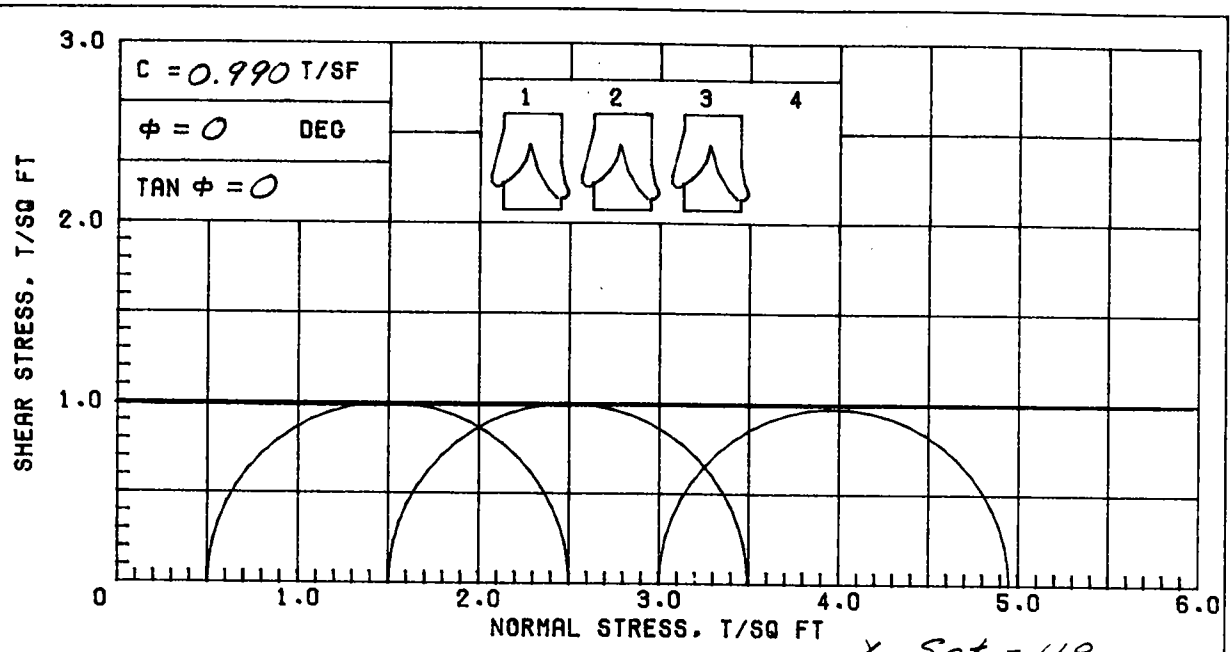
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 31-U | SAMPLE NO. 12-C

DEPTH/ELEV 49.4/-46.8 | TECH. PJR

LABORATORY USAE WES | DATE 19 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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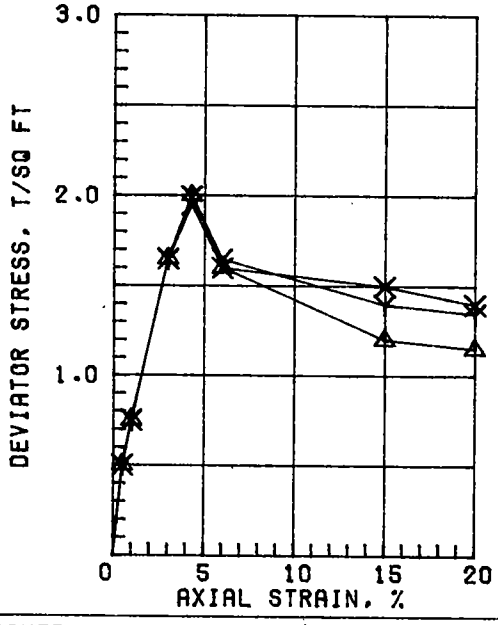


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	35.8	35.6	35.1	
	DRY DENSITY, PCF	86.6	86.6	86.9	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	0.945	0.946	0.939	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		2.00	1.99	1.95	
TIME TO FAILURE, MIN.		10	22	22	
RATE OF STRAIN INCR,%			6	7	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 35.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT BROWN; SILT LENSES

LL 58	PL 16	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;

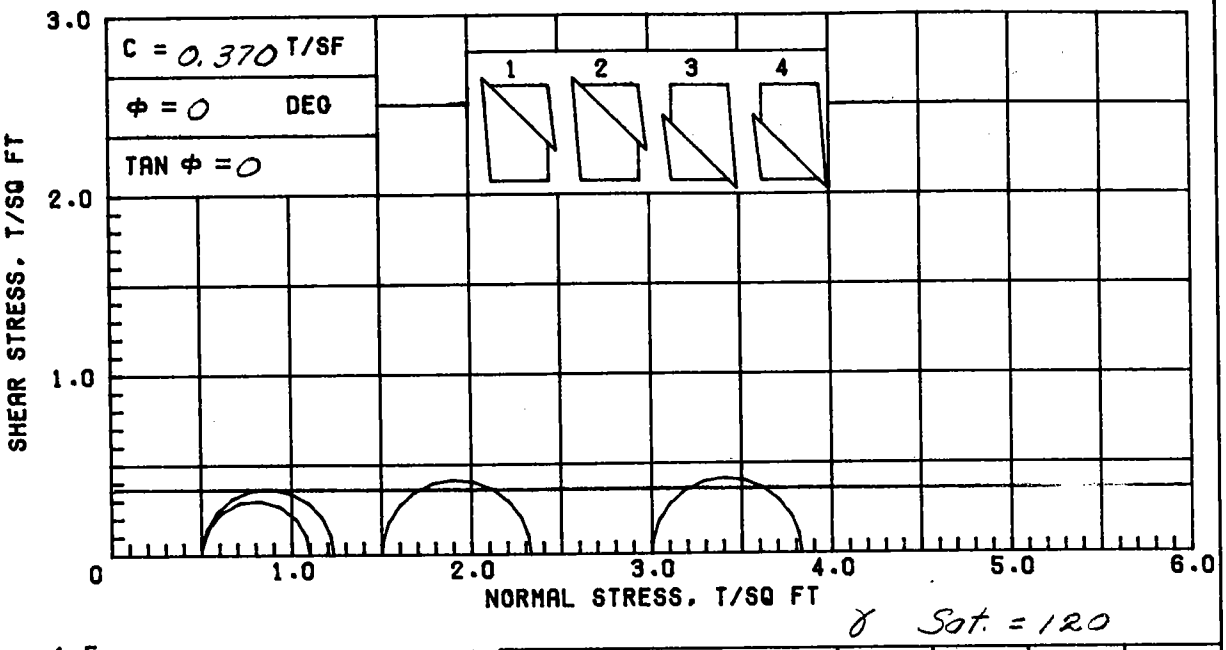
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 31-U | SAMPLE NO. 19-B

DEPTH/ELEV 76.0/-73.4 | TECH. PJR

LABORATORY USAE WES | DATE 19 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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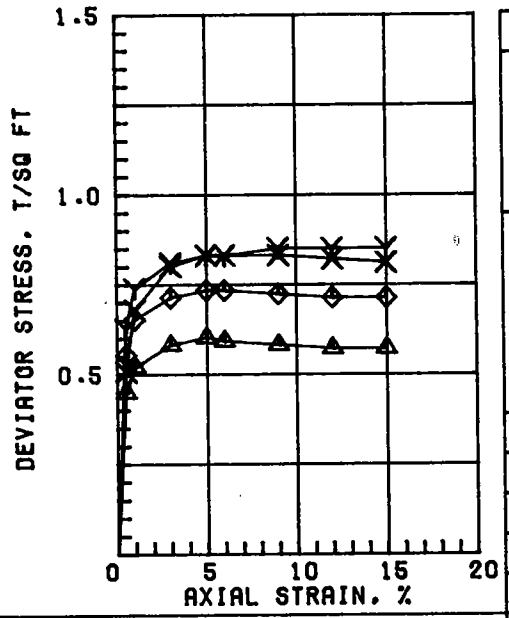


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	28.7	28.6	30.0	32.9
	DRY DENSITY, PCF	92.5	92.6	91.9	87.8
	SATURATION, %	94.2	94.2	97.1	96.5
	VOID RATIO	0.822	0.820	0.834	0.921
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.60	0.83	0.83	0.73
TIME TO FAILURE, MIN.		16	16	16	13
RATE OF STRAIN INCR,%		7	6	6	6
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 30.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT GRAY; 1/4" FINE SAND LAYERS

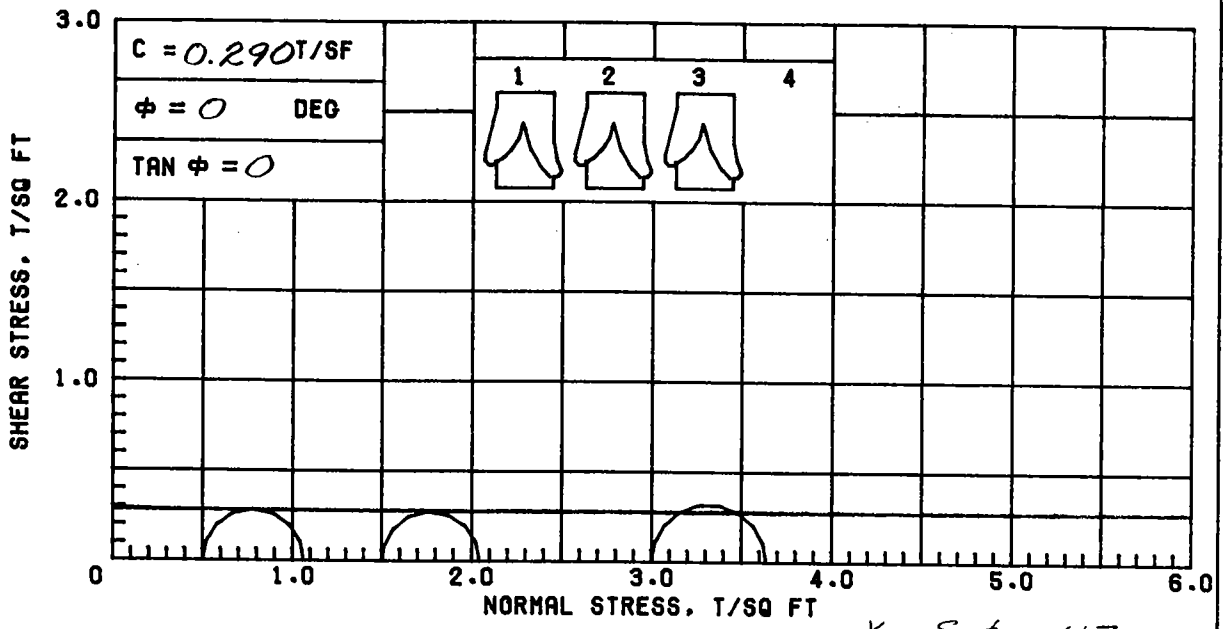
LL 60	PL 15	PI 45	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

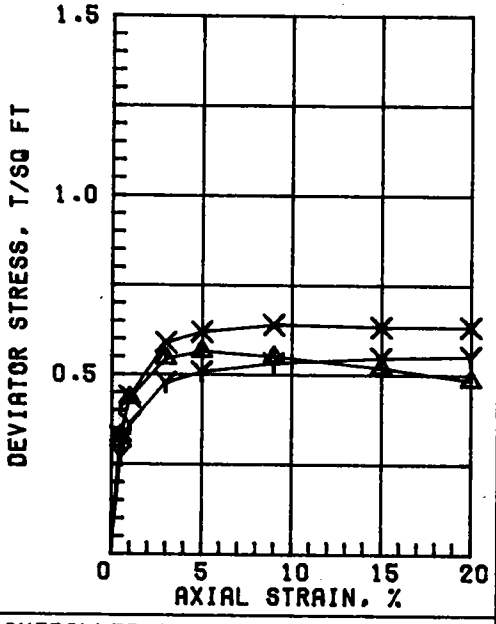
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 32-U	SAMPLE NO. 1-C
DEPTH/ELEV 2.0/6.96	TECH. LRC
LABORATORY USAE WES	DATE 11 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 117



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	36.1	34.9	35.1	
	DRY DENSITY, PCF	85.8	86.3	86.2	
	SATURATION, %	100+	98.8	99.3	
	VOID RATIO	0.965	0.953	0.955	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.56	0.55	0.64	
TIME TO FAILURE, MIN.		10	49	25	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

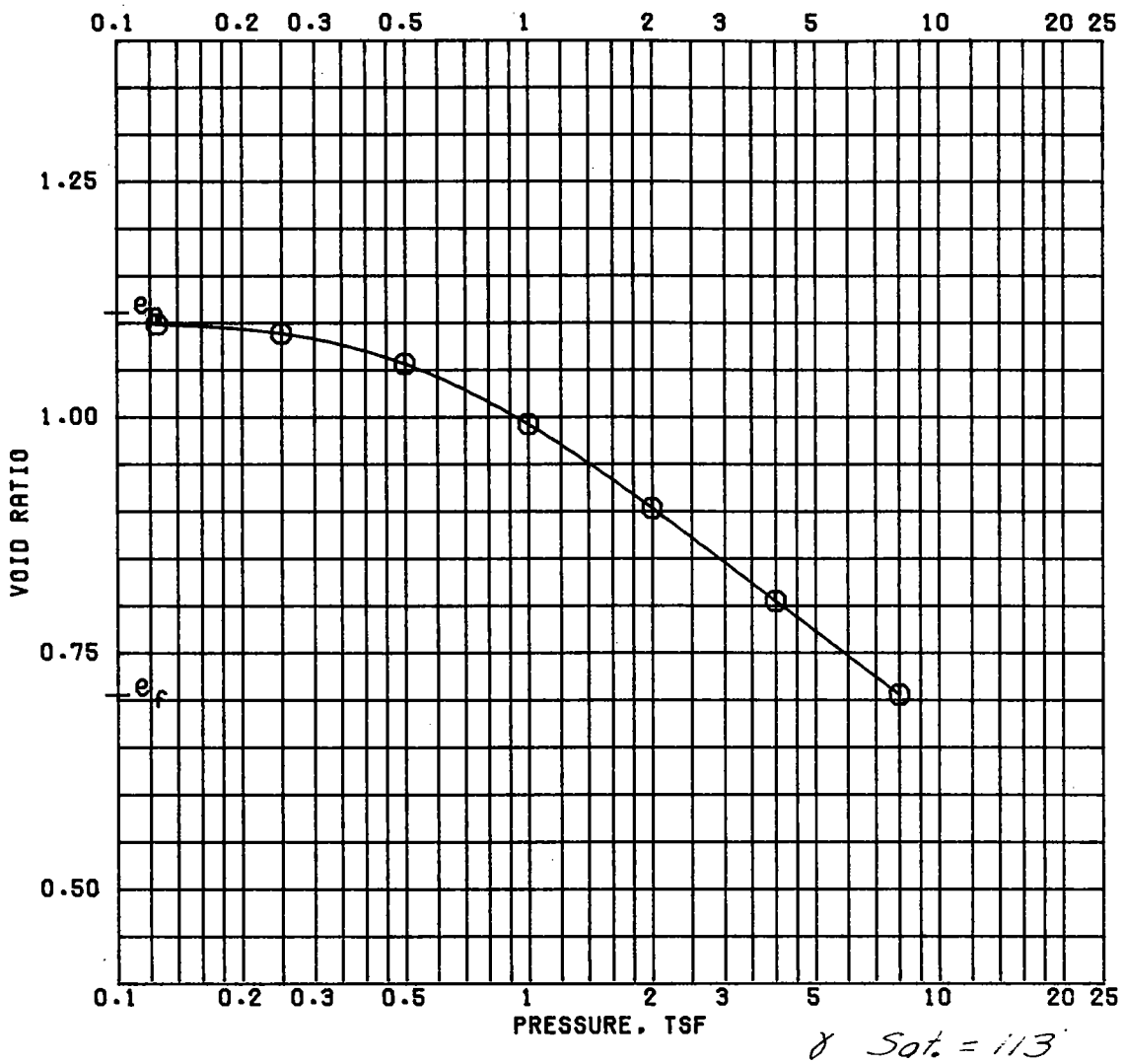
AVG. 35.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 65	PL 17	PI 48	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF. & ST. CHARLES PARISHES	
	BORING NO. 32-U	SAMPLE NO. 4-C
	DEPTH/ELEV 12.7/-3.74	TECH. PJR
	LABORATORY USAE WES	DATE 11 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 113

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.65	WATER CONTENT, %	39.7	26.9
COMPRESSION INDEX 0.35	DRY DENSITY, PCF	79.9	98.9
TYPE SPECIMEN UNDISTURBED	SATURATION, %	96.5	100 +
DIA. IN 4.44 HT. IN 1.120	VOID RATIO	1.109	0.704
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY & BROWN; SHELL PARTICLES

LL 76 PL 23 PI 53

GS 2.70 (EST) D_{10}

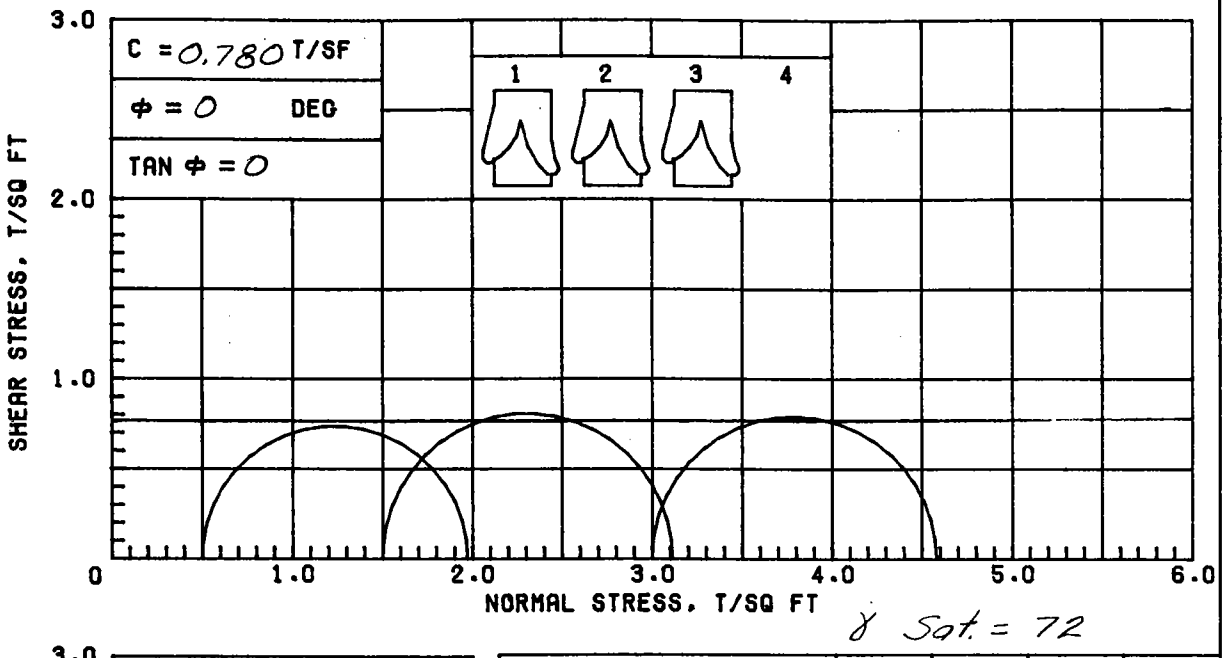
PROJECT LK. PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

REMARKS

BORING NO. 32-U SAMPLE NO. 5-B

DEPTH/ELEV 16.0/-7.04 DATE 07 MAY 85

CONSOLIDATION TEST REPORT



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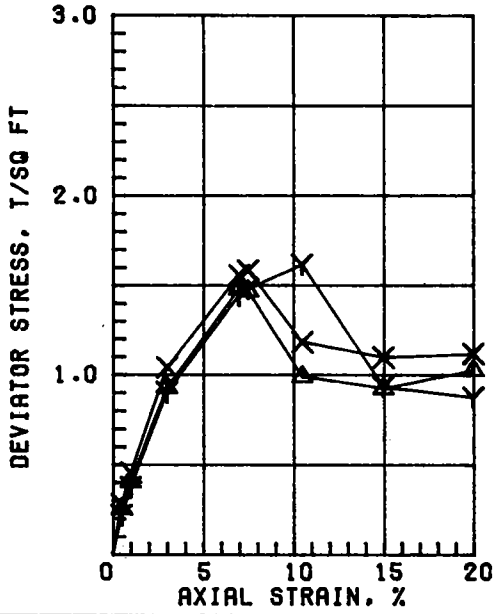


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	338.7	315.8	322.6	
	DRY DENSITY, PCF	16.4	16.5	16.2	
	SATURATION, %	99.6	93.7	93.6	
	VOID RATIO	8.158	8.089	8.273	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.47	1.61	1.58	
TIME TO FAILURE, MIN.		12	32	19	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 325.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), DARK BROWN

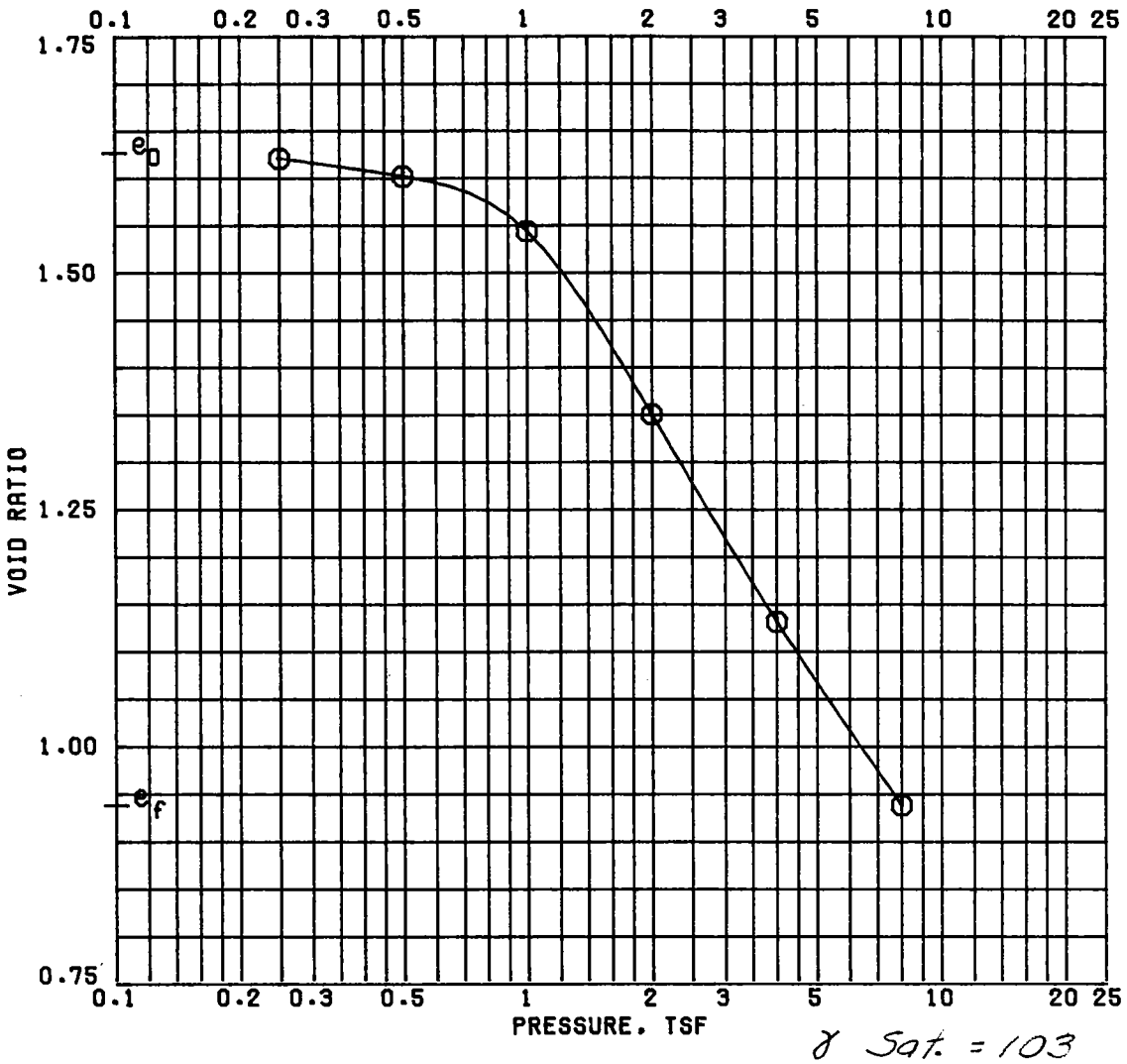
LL 449	PL 288	PI 161	GS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 32-U | SAMPLE NO. 7-B
DEPTH/ELEV 24.0/-15.04 | TECH. PJR
LABORATORY USAE WES | DATE 11 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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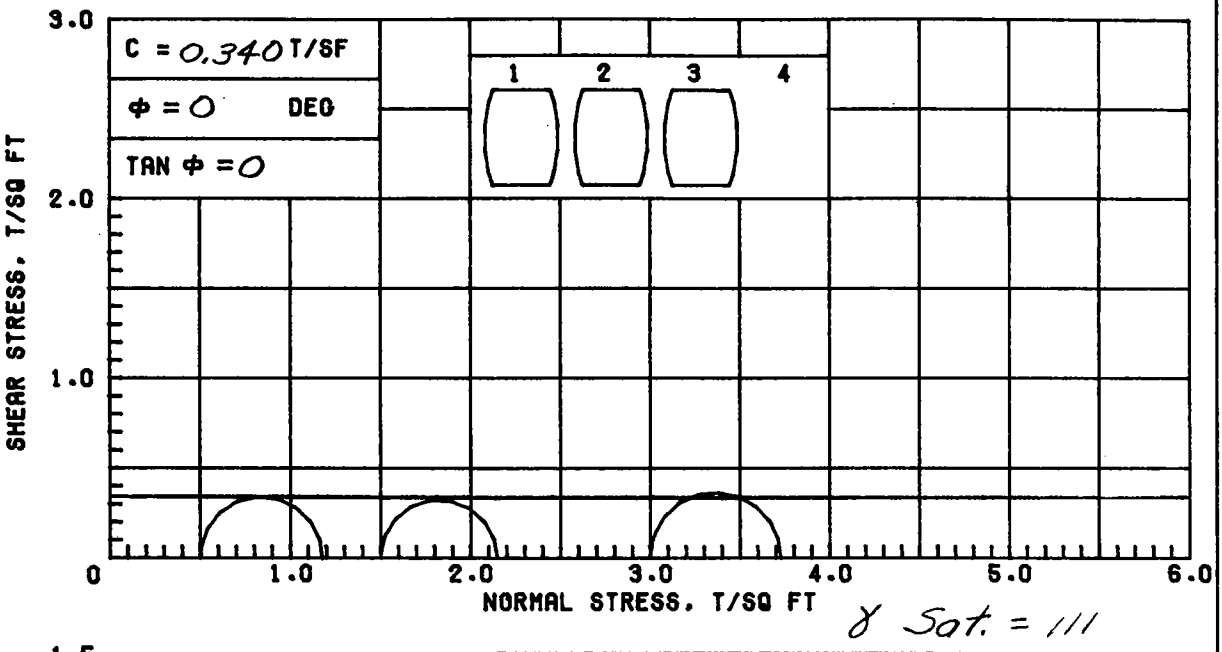
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	59.5	36.7
PRECONSOL. PRESSURE, TSF	0.78	DRY DENSITY, PCF	64.2	87.0
COMPRESSION INDEX	0.65	SATURATION, %	98.8	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.626	0.937
DIA. IN 4.44	HT. IN 1.119	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; FINE SAND LENSES

LL 66 PL 18 PI 48	PROJECT	LK. PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST) D_{10}		JEFF. & ST. CHARLES PARISHES
REMARKS	BORING NO. 32-U	SAMPLE NO. 9-B
	DEPTH/ELEV 32.0/-23.04	DATE 08 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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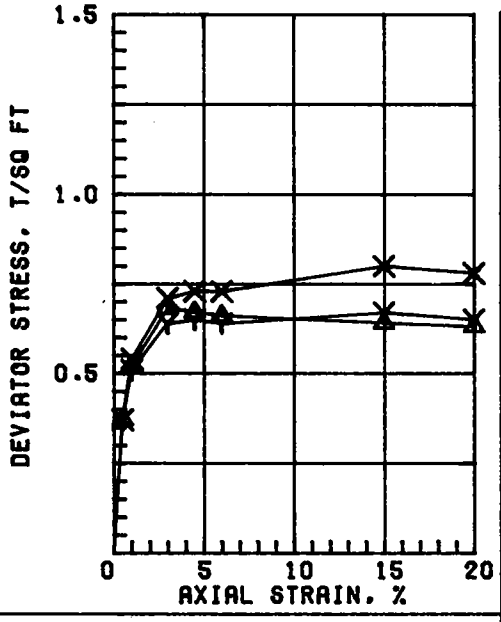


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	43.1	44.0	42.3	
	DRY DENSITY, PCF	76.7	76.3	77.2	
	SATURATION, %	97.1	98.3	96.4	
	VOID RATIO	1.198	1.209	1.184	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.68	0.65	0.73	
TIME TO FAILURE, MIN.		6	23	23	
RATE OF STRAIN INCR.%			9	9	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 43.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT GRAY; SILT LENSES

LL 58	PL 17	PI 41	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

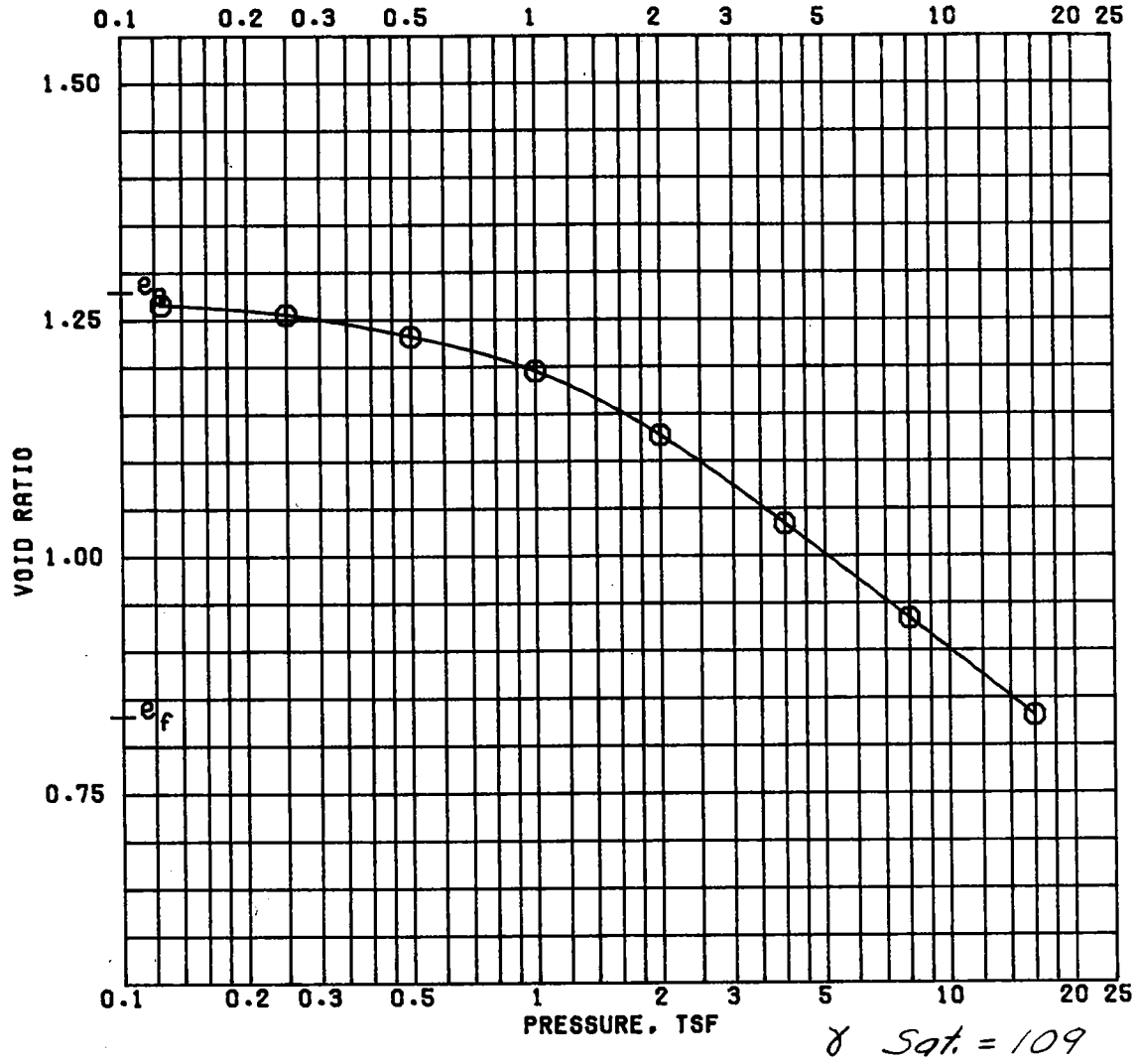
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 32-U | SAMPLE NO. 10-B

DEPTH/ELEV 36.0/-27.04 | TECH. PJR

LABORATORY USAE WES | DATE 11 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 109

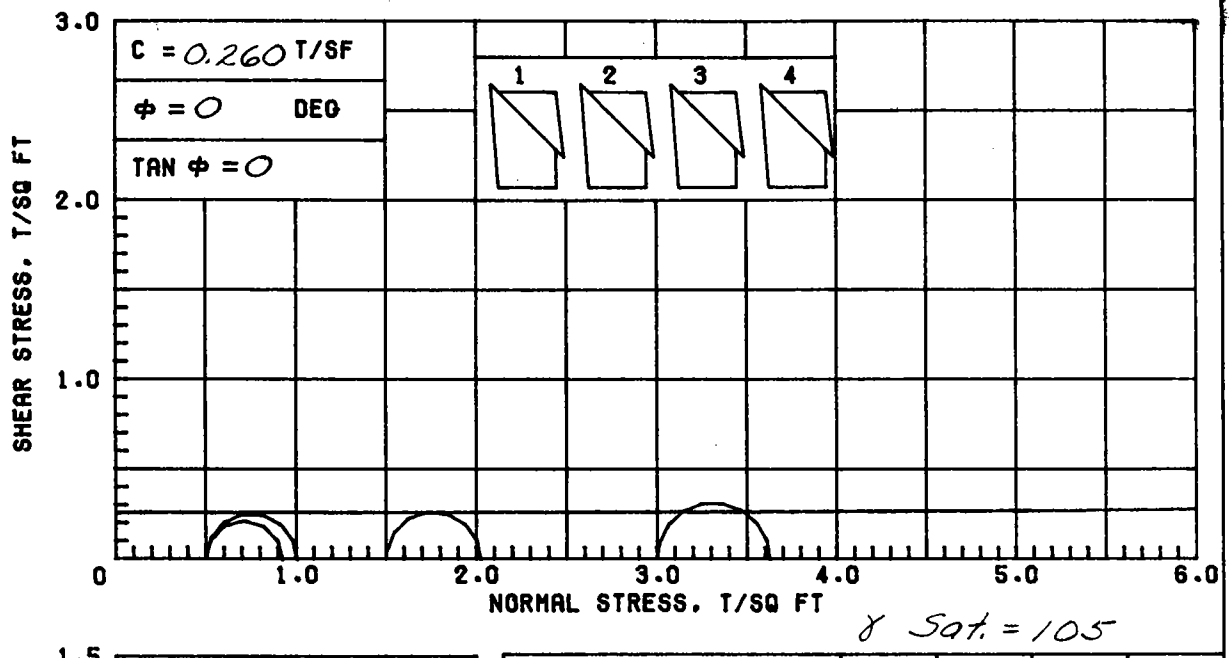
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	45.0	29.7
PRECONSOL. PRESSURE, TSF	1.7	DRY DENSITY, PCF	74.0	92.1
COMPRESSION INDEX	0.35	SATURATION, %	95.2	96.8
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	1.277	0.829
DIA. IN 4.44	HT. IN 1.138	BACK PRESSURE, TSF		

CLASSIFICATION: PLASTIC CLAY (CH), GRAY; FINE SAND LENSES

LL 50	PL 16	PI 34	PROJECT: LK. PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFF. & ST. CHARLES PARISHES
REMARKS		BORING NO. 32-U	SAMPLE NO. 13-B
		DEPTH/ELEV 48.4/-39.44	DATE 09 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 10



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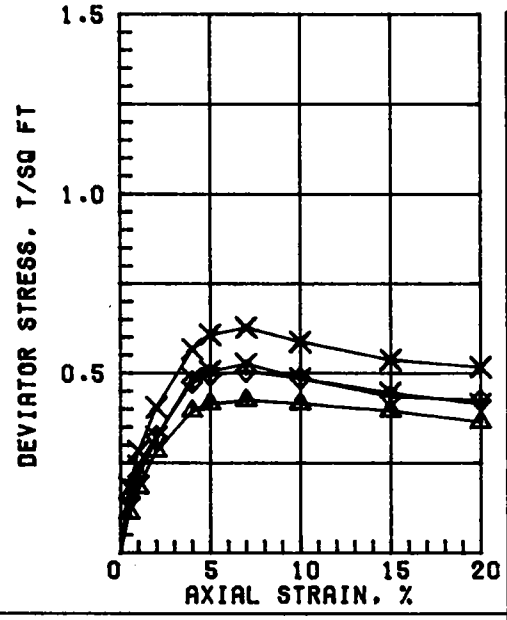


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	58.4	54.5	52.4	49.5	53.7
	DRY DENSITY, PCF	64.6	67.3	68.5	70.2	
	SATURATION, %	98.0	97.7	96.8	95.3	
	VOID RATIO	1.608	1.506	1.461	1.403	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.43	0.53	0.63	0.51	
TIME TO FAILURE, MIN.		14	14	14	14	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/4" SILT LAYERS

LL 56	PL 17	PI 39	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

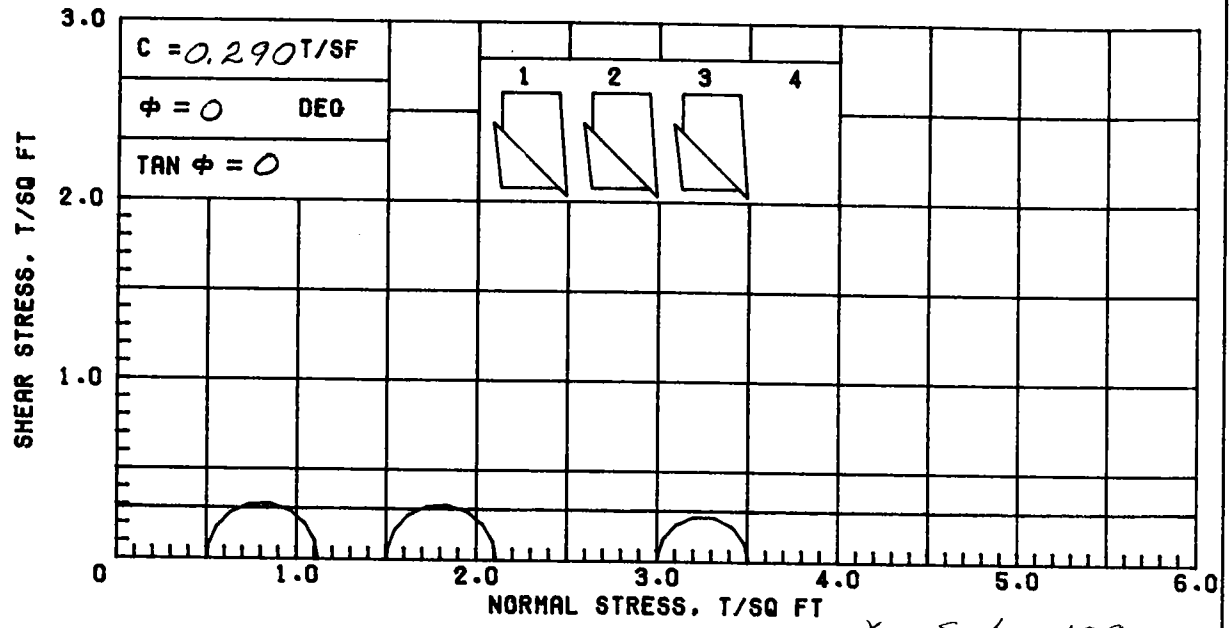
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 32-U | SAMPLE NO. 13-C

DEPTH/ELEV 49.3/-40.34 | TECH. KOC

LABORATORY USAE WES | DATE 11 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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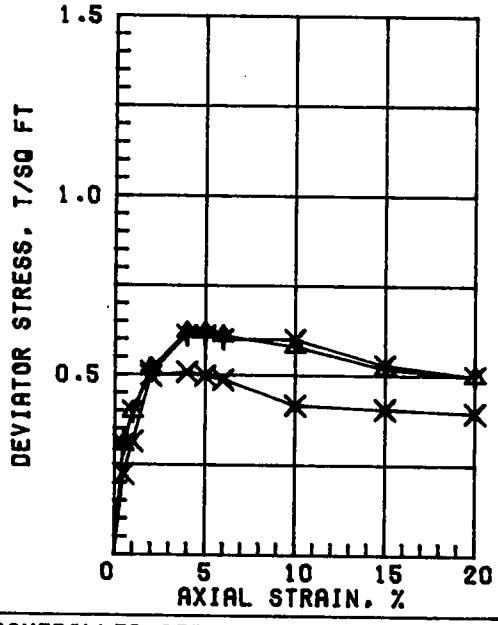


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	48.4	47.2	47.1	
	DRY DENSITY, PCF	73.1	73.2	73.6	
	SATURATION, %	100+	97.9	98.6	
	VOID RATIO	1.305	1.302	1.289	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.62	0.61	0.51	
TIME TO FAILURE, MIN.		8	24	24	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 47.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS; SHELL PARITCLES

LL 60	PL 17	PI 43	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

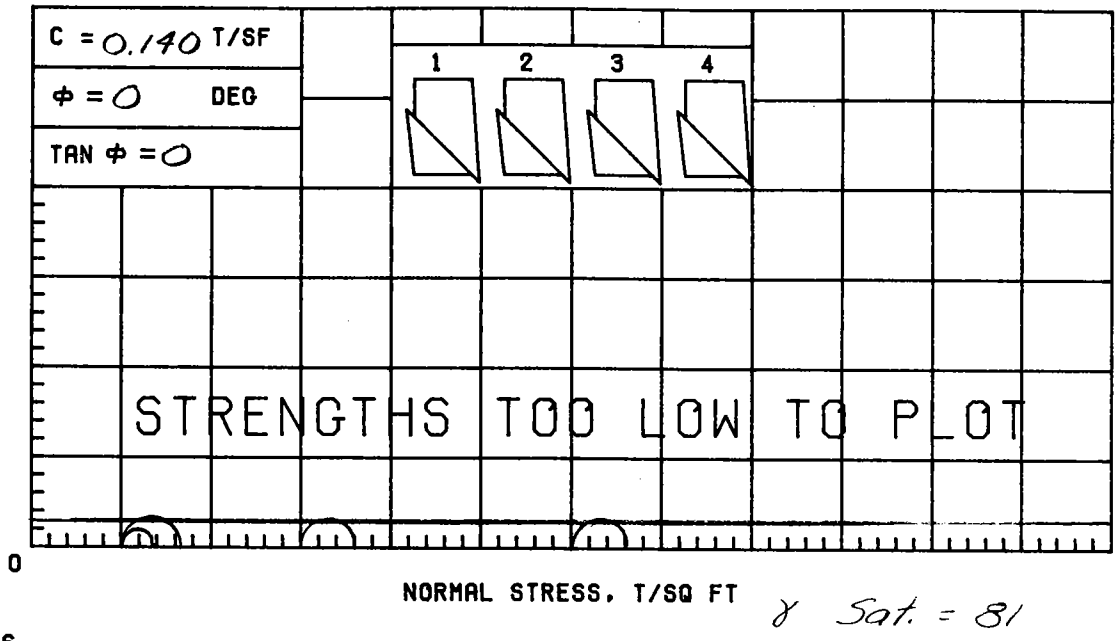
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 32-U | SAMPLE NO. 15-B

DEPTH/ELEV 56.4/-47.44 | TECH. KOC

LABORATORY USAE WES | DATE 10 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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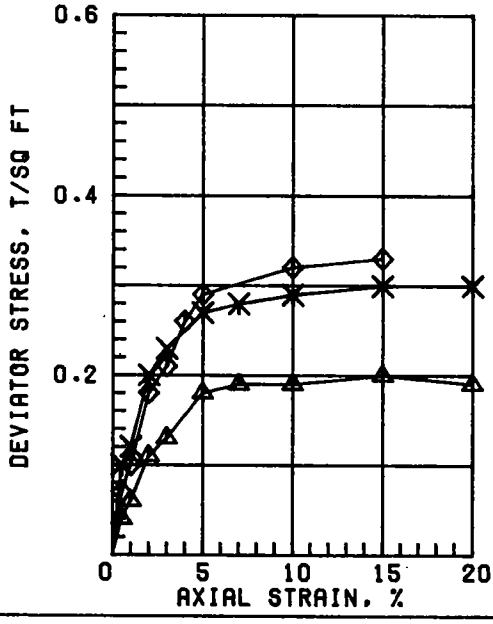


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	134.4	148.7	53.3	173.7	152.3
	DRY DENSITY, PCF	33.3	30.7	66.2	26.5	
	SATURATION, %	89.4	89.3	93.1	87.6	
	VOID RATIO	4.057	4.497	1.546	5.355	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.19	0.30	0.30	0.33	
TIME TO FAILURE, MIN.		14	30	30	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL

LL 86	PL 32	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

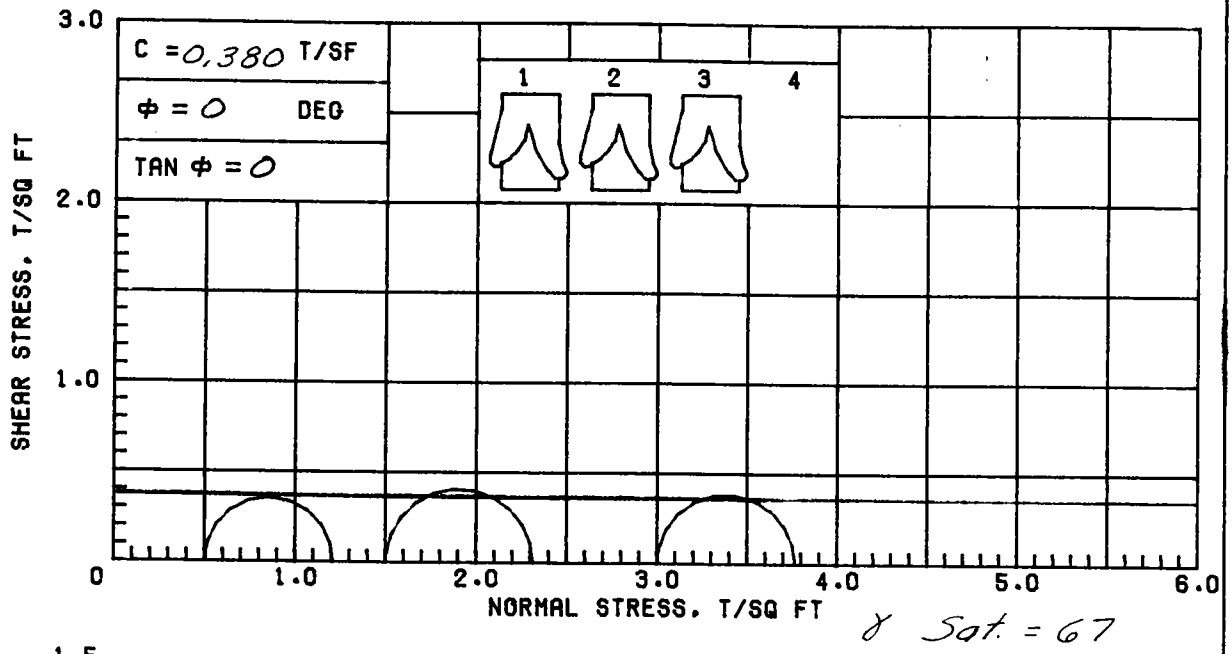
REMARKS:

SPECIMEN 3 PRIMARILY CLAY (CH)
SPECIMEN 4 FROM DIFFERENT LIFT

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 33-U | SAMPLE NO. 2-B
DEPTH/ELEV 4.1/-2.9 | TECH. KOC
LABORATORY USAE WES | DATE 03 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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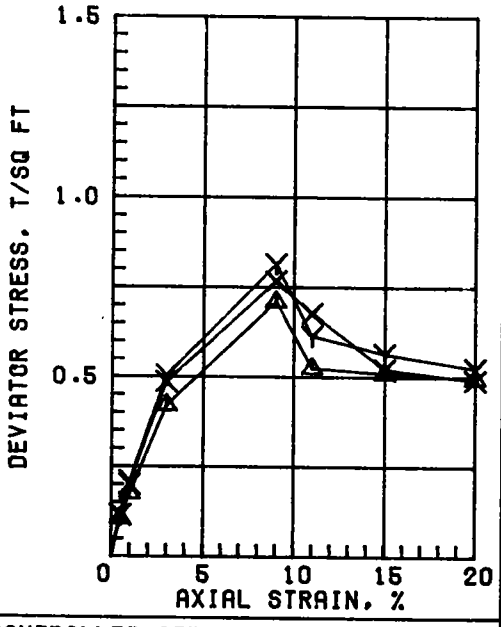


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	476.3	467.8	492.9	
	DRY DENSITY, PCF	11.6	11.8	11.2	
	SATURATION, %	99.4	99.4	99.0	
	VOID RATIO	8.143	8.003	8.460	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.71	0.81	0.77	
TIME TO FAILURE, MIN.		23	16	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 479.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), DARK BROWN

LL 668	PL 377	PI 291	OS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

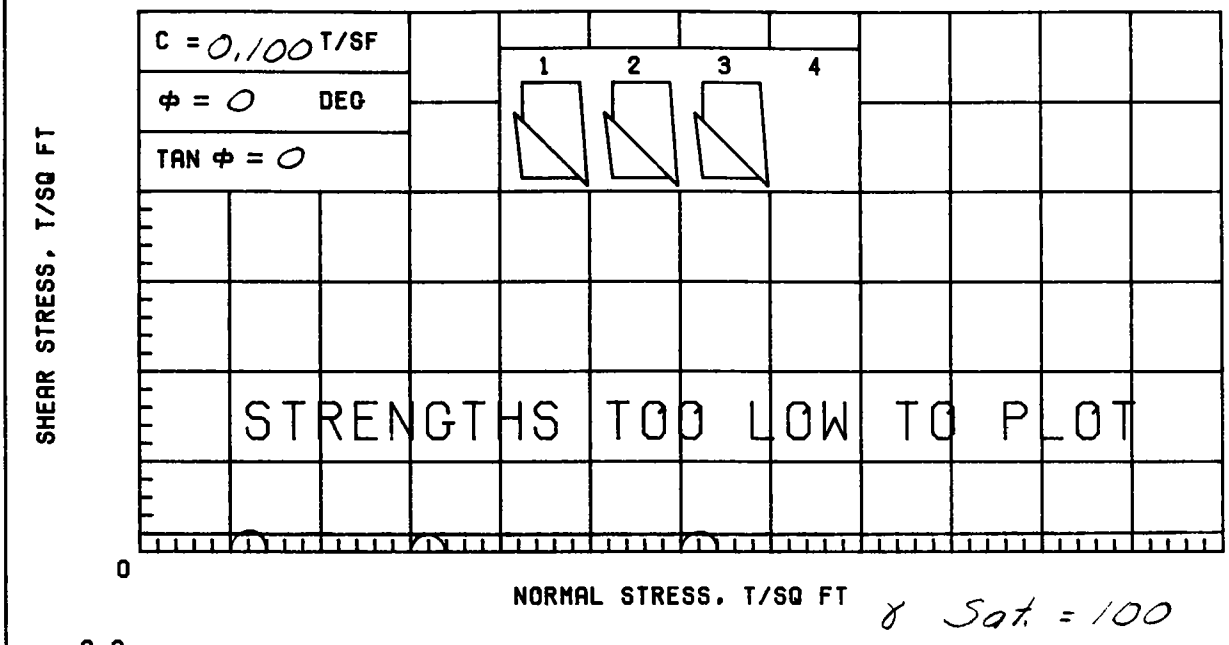
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 33-U | SAMPLE NO. 4-C

DEPTH/ELEV 12.9/-11.7 | TECH. PJR

LABORATORY USAE WES | DATE 05 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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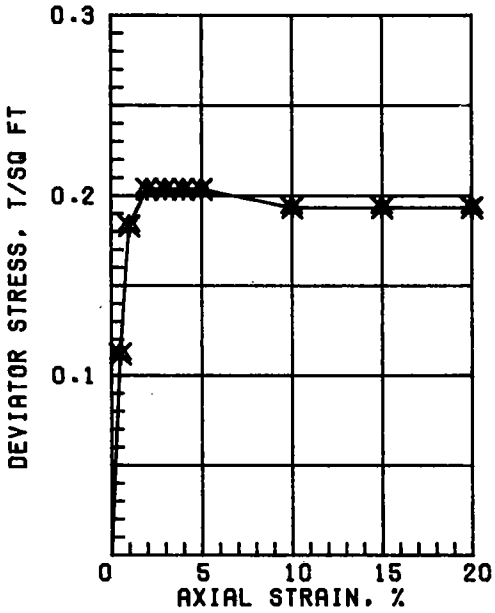


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	68.9	69.9	64.8	
	DRY DENSITY, PCF	59.1	58.2	61.0	
	SATURATION, %	100+	99.5	99.3	
	VOID RATIO	1.851	1.897	1.763	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.20	0.20	0.20	
TIME TO FAILURE, MIN.		4	12	12	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 67.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 83	PL 22	PI 61	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

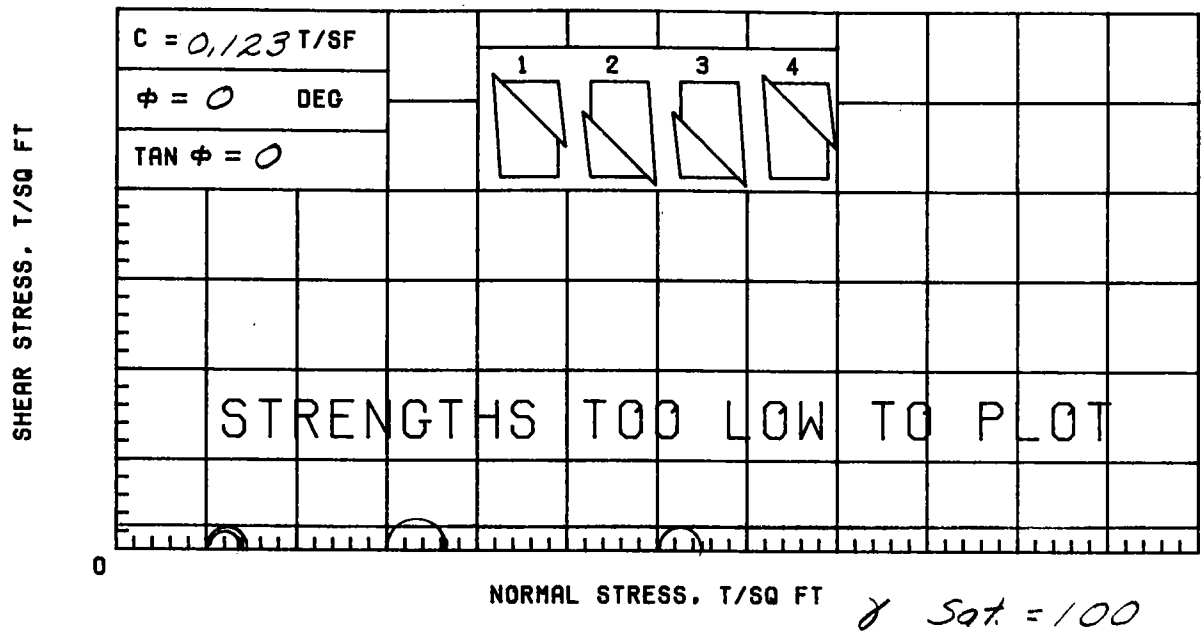
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 33-U | SAMPLE NO. 6-C

DEPTH/ELEV 20.8/-19.6 | TECH. KOC

LABORATORY USAE WES | DATE 04 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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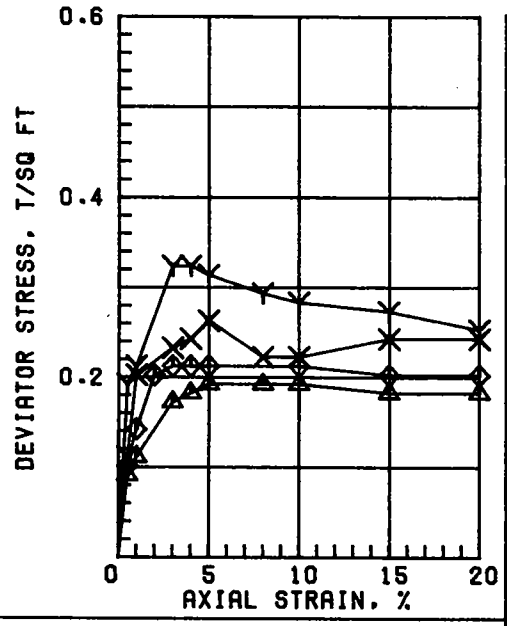


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	66.7	66.9	64.5	69.9
	DRY DENSITY, PCF	60.1	60.2	60.8	58.2
	SATURATION, %	99.8	100+	98.4	99.6
	VOID RATIO	1.805	1.801	1.770	1.895
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.19	0.32	0.26	0.21
TIME TO FAILURE, MIN.		10	6	31	18
RATE OF STRAIN INCR.%				6	6
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 67.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 74	PL 23	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

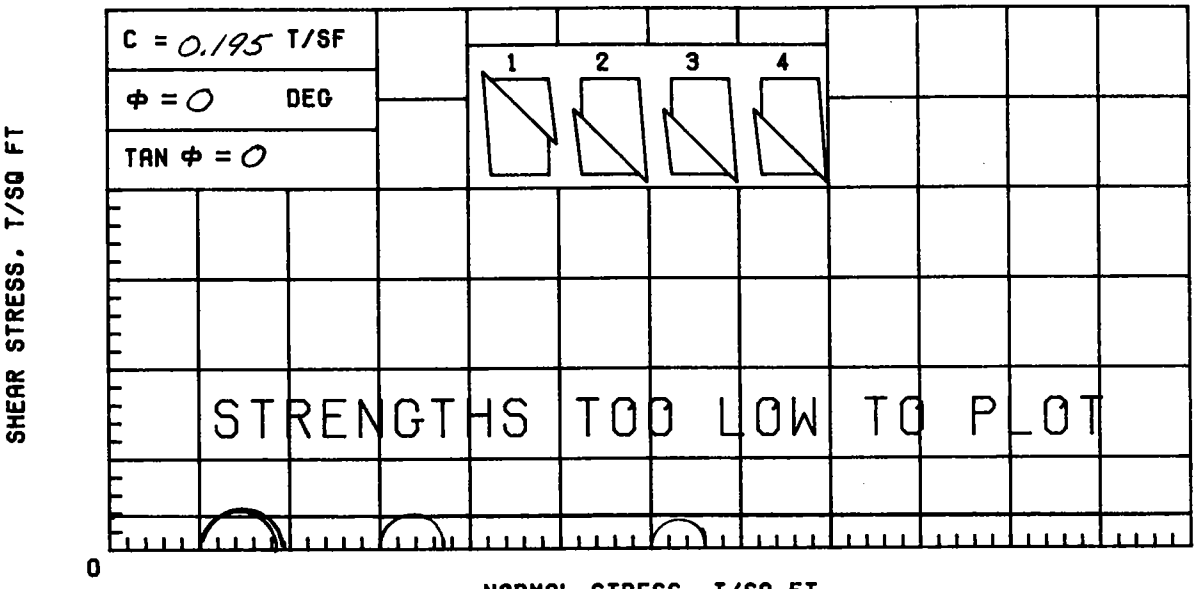
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 33-U | SAMPLE NO. 9-C

DEPTH/ELEV 32.7/-31.5 | TECH. KOC

LABORATORY USAE WES | DATE 04 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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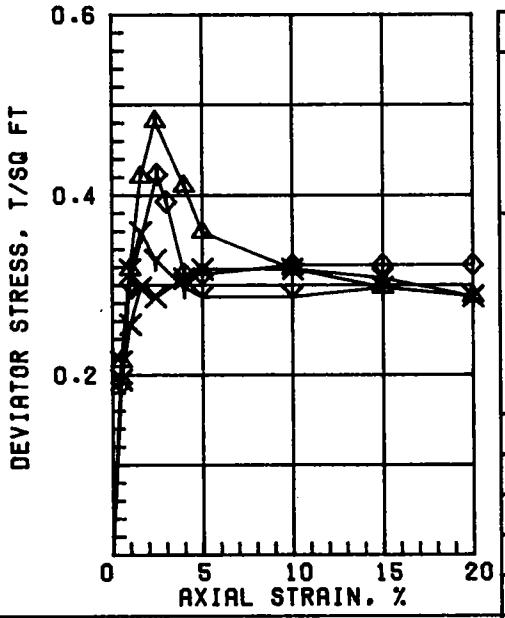


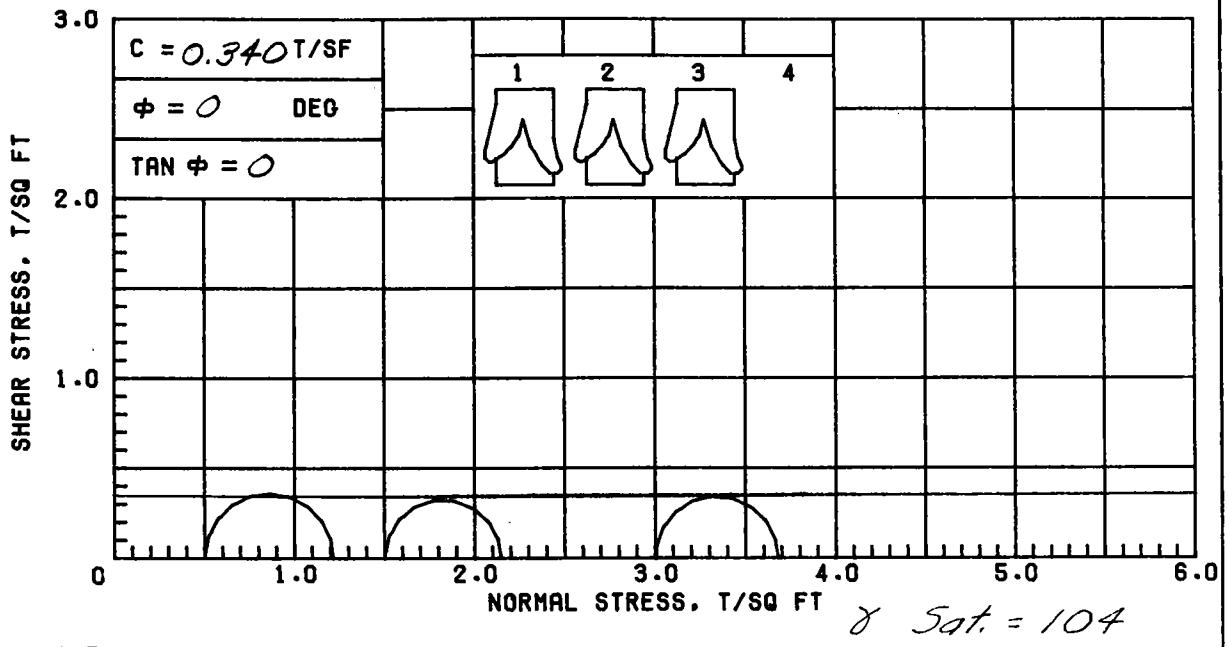
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	87.8	87.7	86.0	83.1	86.2
	DRY DENSITY, PCF	49.8	50.6	50.0	51.6	
	SATURATION, %	99.3	100+	98.0	99.0	
	VOID RATIO	2.386	2.333	2.370	2.267	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.48	0.36	0.30	0.42	
TIME TO FAILURE, MIN.		5	10	10	15	
RATE OF STRAIN INCR.%			6	6	6	
INITIAL DIAMETER, IN.		1.38	1.38	1.38	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 96	PL 24	PI 72	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF PARISH & ST. CHARLES PARISH	
	BORING NO. 33-U	SAMPLE NO. 12-C
	DEPTH/ELEV 44.8/-43.6	TECH. KOC
	LABORATORY USAE WES	DATE 04 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



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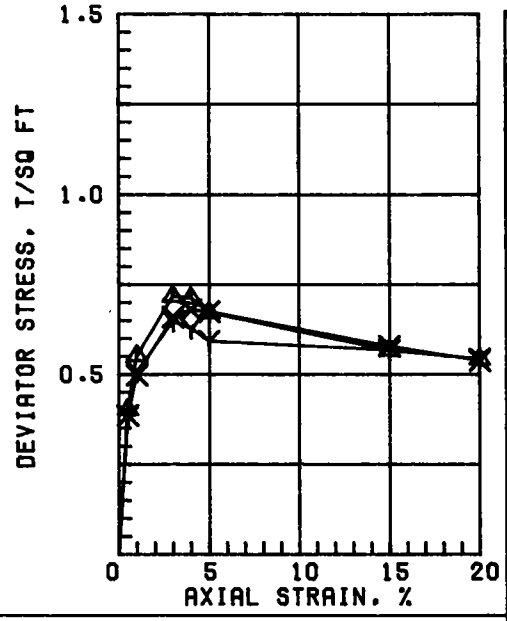


	SPECIMEN NO.	▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	58.7	57.7	60.1	
	DRY DENSITY, PCF	65.9	66.3	65.0	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.557	1.541	1.592	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.72	0.65	0.68	
TIME TO FAILURE, MIN.		6	18	24	
RATE OF STRAIN INCR.%			5	5	
INITIAL DIAMETER, IN.		1.40	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

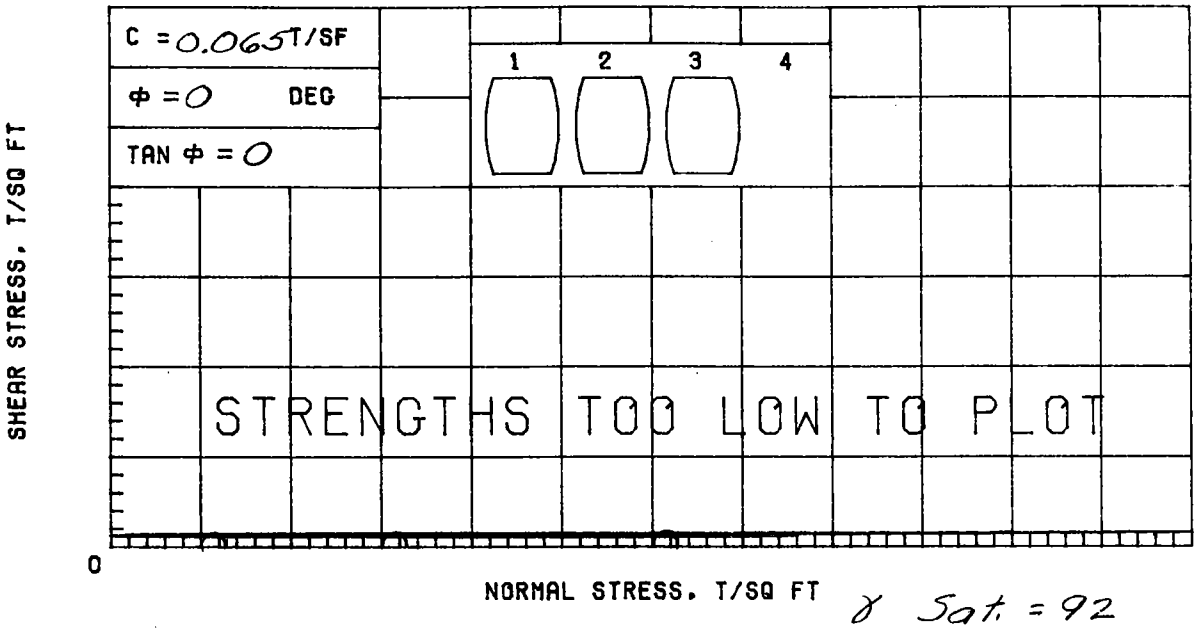
Avg. 58.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 80	PL 20	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF PARISH & ST. CHARLES PARISH	
	BORING NO. 33-U	SAMPLE NO. 14-C
	DEPTH/ELEV 53.0/-51.8	TECH. PJR
	LABORATORY USAE WES	DATE 04 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



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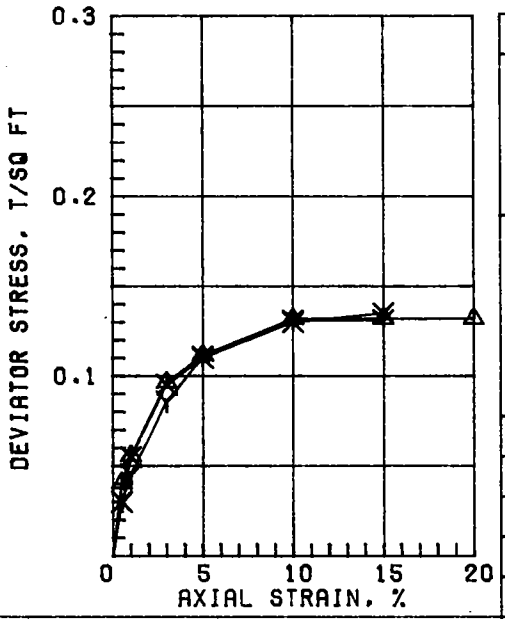


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	111.7	95.2	66.8	
	DRY DENSITY, PCF	40.4	44.9	55.2	
	SATURATION, %	95.2	93.3	87.9	
	VOID RATIO	3.168	2.755	2.051	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.13	0.13	0.13	
TIME TO FAILURE, MIN.		20	20	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 91.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN;
ORGANIC MATERIAL

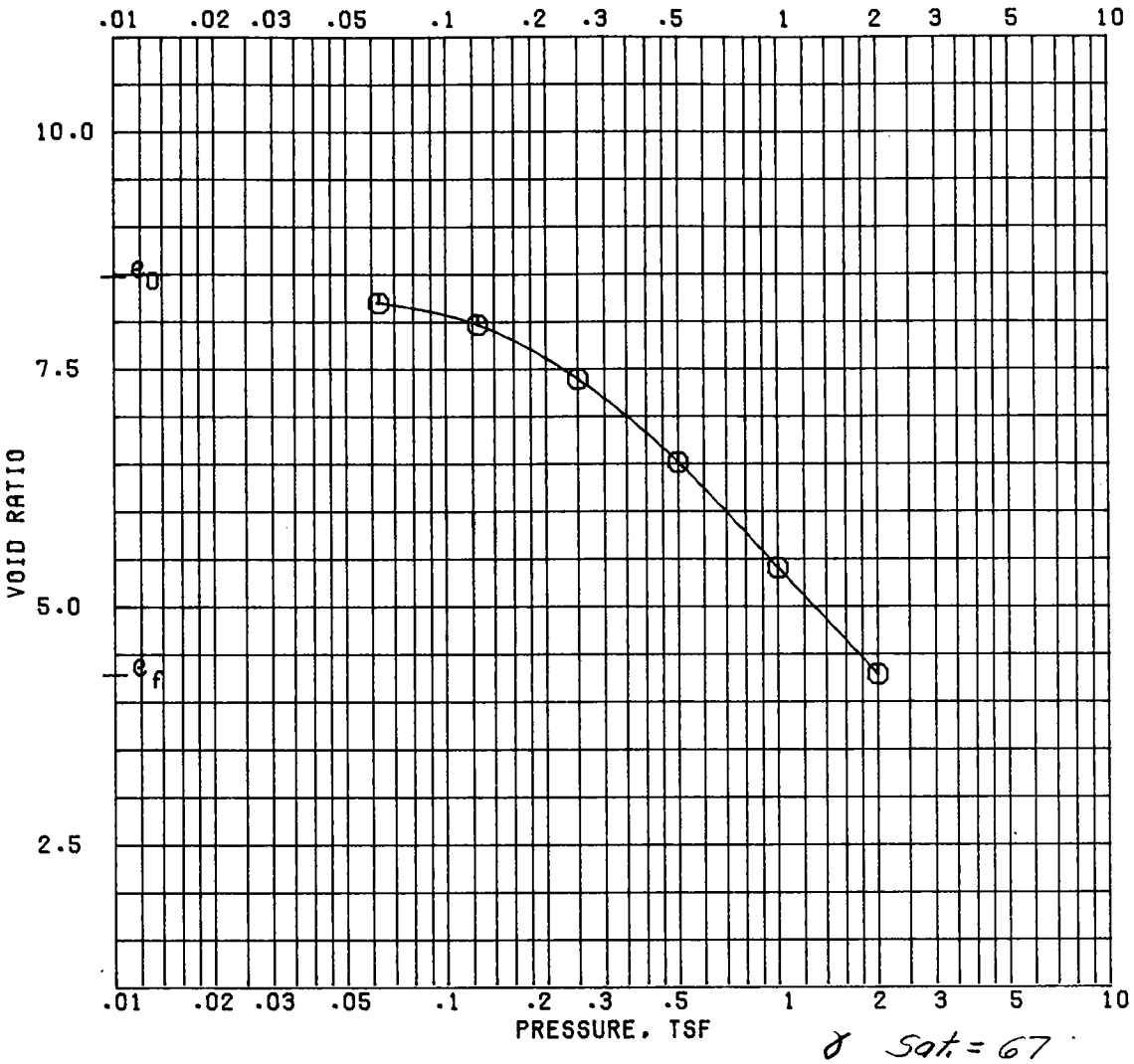
LL 109	PL 35	PI 74	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 34-U	SAMPLE NO. 2-B
DEPTH/ELEV 8.5/-7.1	TECH. PJR
LABORATORY USAE WES	DATE 19 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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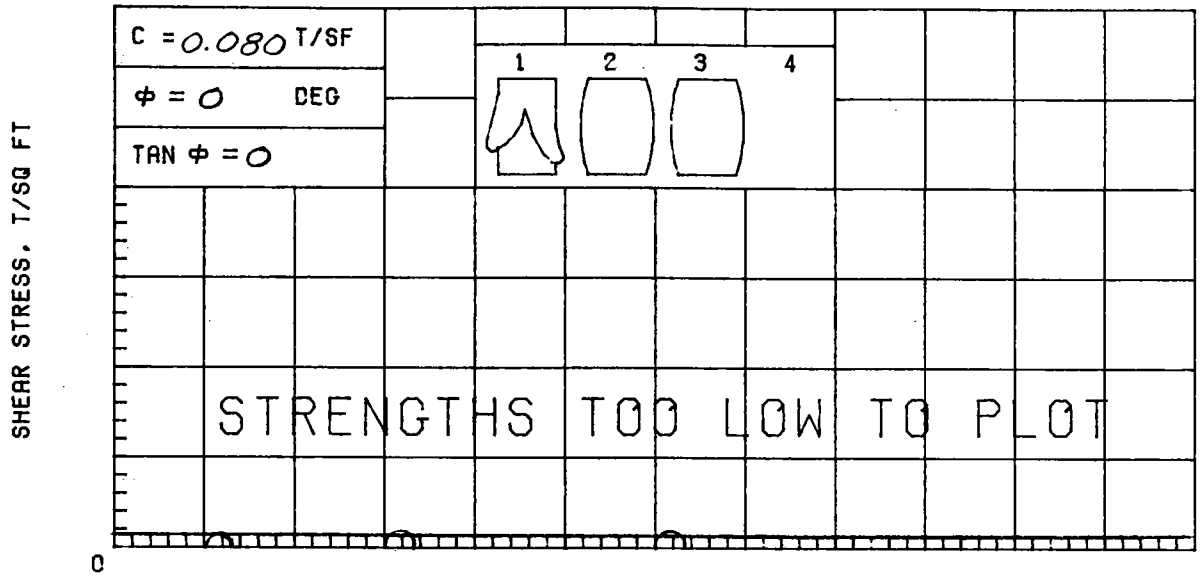
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	459.9	243.9
PRECONSOL. PRESSURE, TSF	0.21	DRY DENSITY, PCF	11.2	20.1
COMPRESSION INDEX	3.80	SATURATION, %	92.4	97.1
TYPE SPECIMEN UNDISTURBED		VOID RATIO	8.462	4.271
DIA. IN 4.44	HT. IN 1.144	BACK PRESSURE, TSF		
CLASSIFICATION PEAT (PT), DARK BROWN				
LL PL PI		PROJECT LK PONT. LA & VIC. HURR PROT.		
GS 1.70 (EST)	D_{10}	JEFFERSON & ST. CHARLES PARISHES		
REMARKS		BORING NO. 34-U	SAMPLE NO. 4B	
		DEPTH/ELEV 16.4/-14.8	DATE 16 MAY 85	

CONSOLIDATION TEST REPORT



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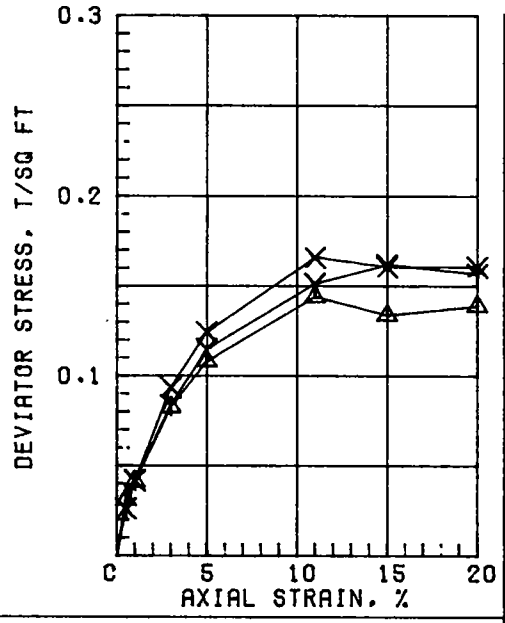


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	504.7	439.7	445.9	
	DRY DENSITY, PCF	10.8	11.7	11.8	
	SATURATION, %	97.2	92.8	94.7	
	VOID RATIO	8.827	8.051	8.005	-
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.14	0.16	0.17	
TIME TO FAILURE, MIN.		22	30	22	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 463.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), DARK BROWN

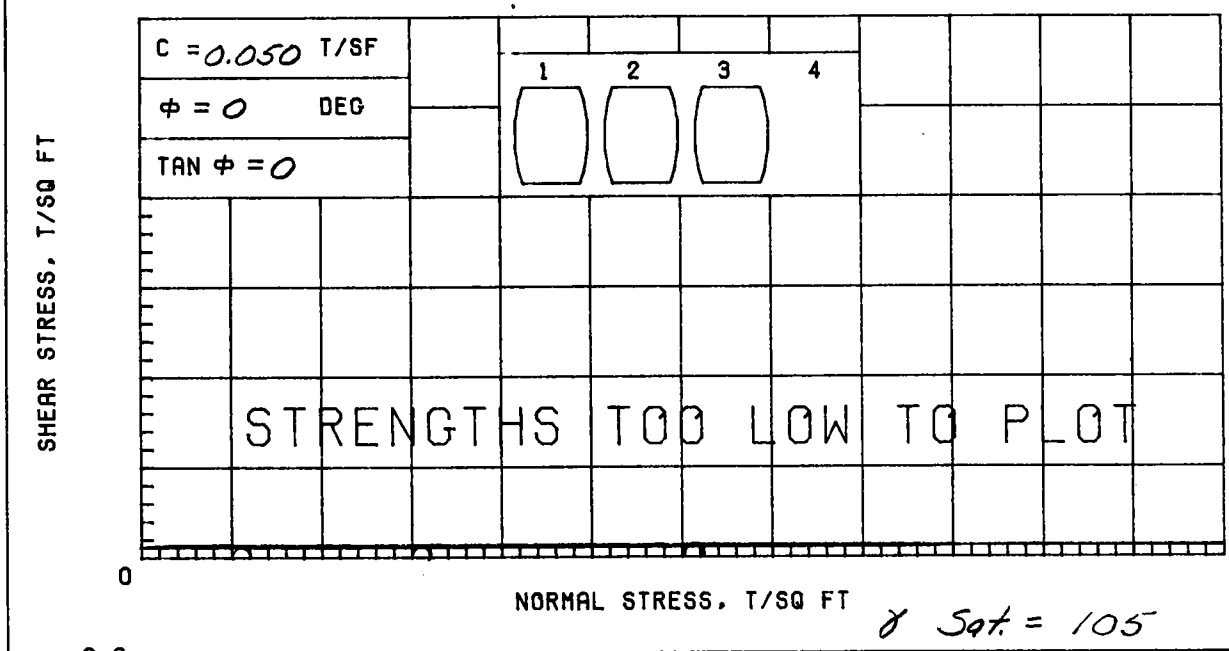
LL 493	PL 325	PI 168	GS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 34-U | SAMPLE NO. 4-C
DEPTH/ELEV 17.3/-15.7 | TECH. PJR
LABORATORY USAE WES | DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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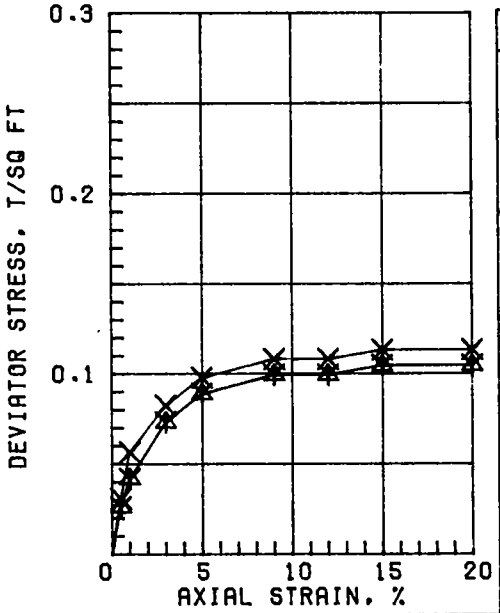


SPECIMEN NO.		△1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	62.6	63.5	63.5		63.2
	DRY DENSITY, PCF	64.5	63.9	64.0		
	SATURATION, %	100+	100+	100+		
	VOID RATIO	1.615	1.636	1.632		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.10	0.10	0.11		
TIME TO FAILURE, MIN.		18	18	18		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.37	1.37	1.38		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 72	PL 22	PI 50	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

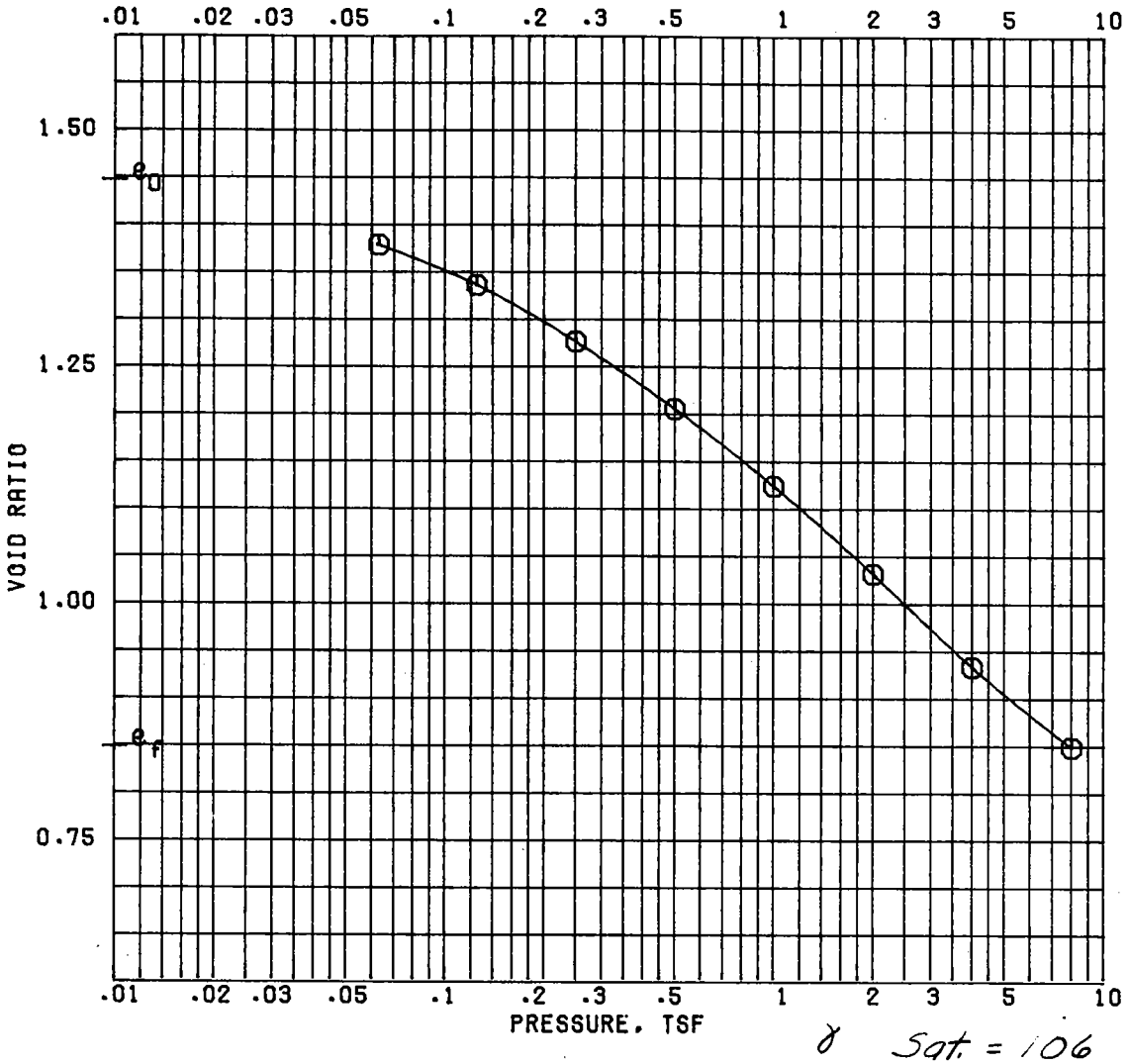
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 34-U | SAMPLE NO. 6-C

DEPTH/ELEV 25.4/-23.8 | TECH. PJR

LABORATORY USAE WES | DATE 20 APR 85

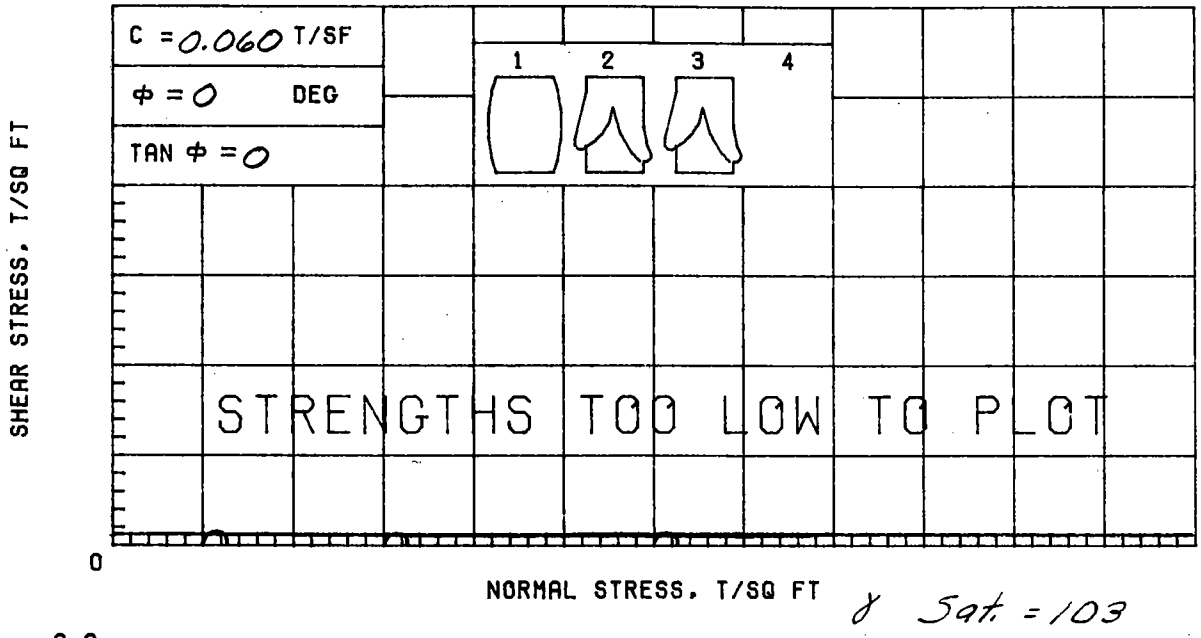
TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 106

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	50.9	30.4
PRECONSOL. PRESSURE, TSF	2.70	DRY DENSITY, PCF	68.9	91.3
COMPRESSION INDEX	0.32	SATURATION, %	95.1	97.0
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	1.446	0.847
DIA. IN 4.44	HT. IN 1.139	BACK PRESSURE, TSF		
CLASSIFICATION: PLASTIC CLAY (CH), GRAY; FINE SAND LENSES				
LL 64	PL 21 PI 43	PROJECT: LK PONT. LA & VIC. HURR PROT.		
GS 2.70 (EST)	D_{10}	JEFFERSON & ST. CHARLES PARISHES		
REMARKS		BORING NO. 34-U	SAMPLE NO. 8B	
		DEPTH/ELEV 31.7/-30.1	DATE 18 MAY 85	
		CONSOLIDATION TEST REPORT		

SHEET 1 OF 9



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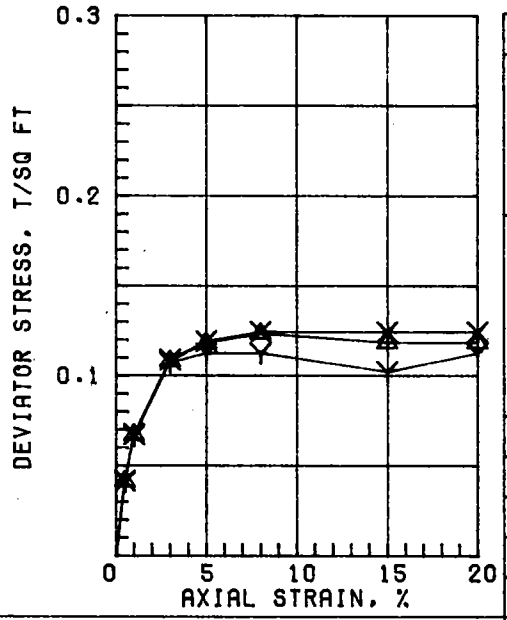


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	64.3	65.7	67.3	
	DRY DENSITY, PCF	62.7	62.2	61.4	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.690	1.712	1.746	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.12	0.11	0.12	
TIME TO FAILURE, MIN.		16	15	24	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.39	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 65.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

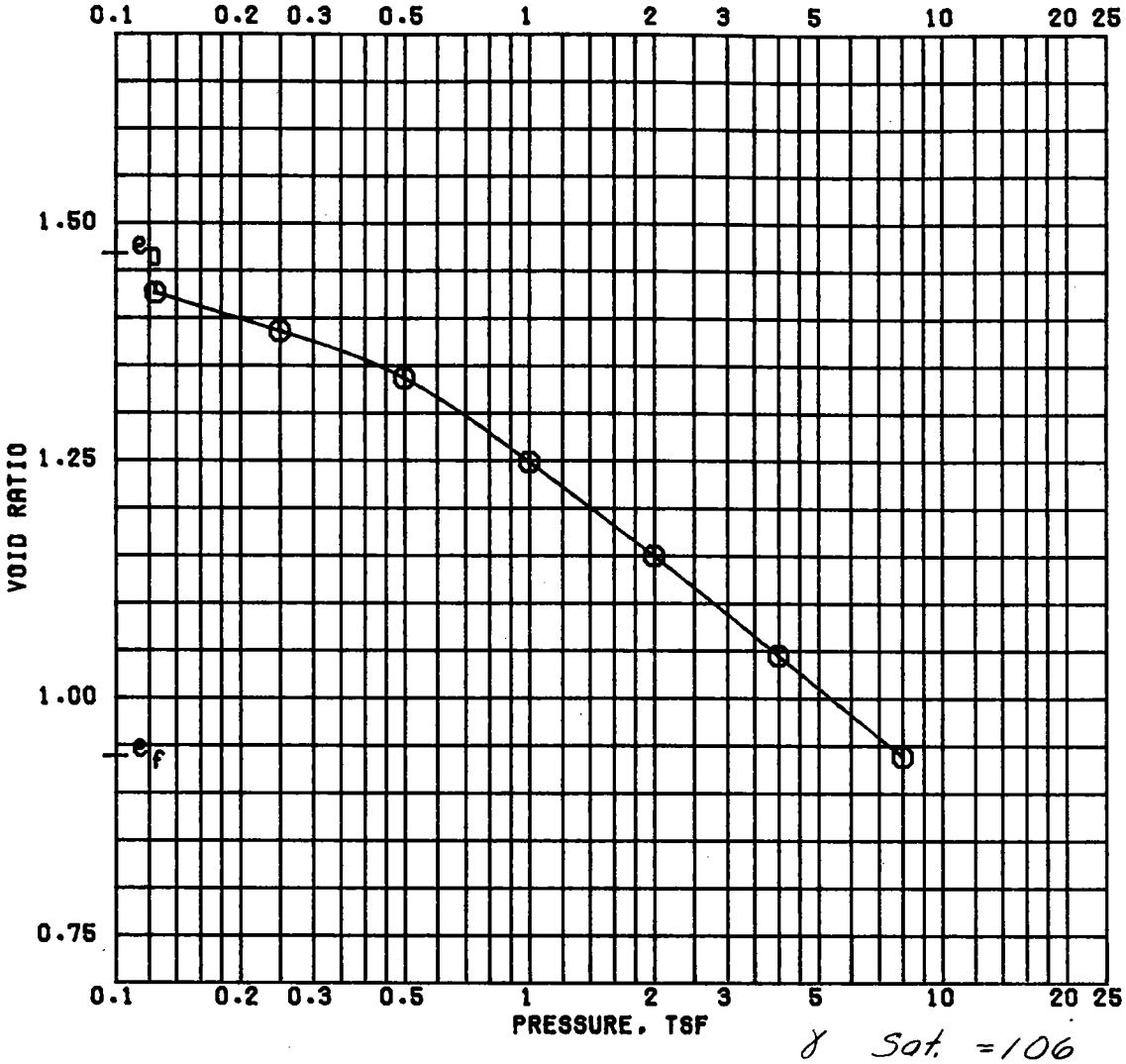
LL 76	PL 22	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 34-U | SAMPLE NO. 9-B
DEPTH/ELEV 36.0/-34.4 | TECH. PJR
LABORATORY USAE WES | DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 106

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.45	
COMPRESSION INDEX	0.34	
TYPE SPECIMEN: UNDISTURBED		
DIA. IN 4.44 / HT. IN 1.193		
WATER CONTENT, %	50.9	31.5
DRY DENSITY, PCF	68.4	87.0
SATURATION, %	93.8	90.6
VOID RATIO	1.466	0.937
BACK PRESSURE, TSF		

CLASSIFICATION: SANDY CLAY (CL), GRAY

LL 49 / PL 17 / PI 32

GS 2.70 (EST) / D_{10}

PROJECT: LK PONT. LA & VIC. HURR PROT.

JEFFERSON & ST. CHARLES PARISHES

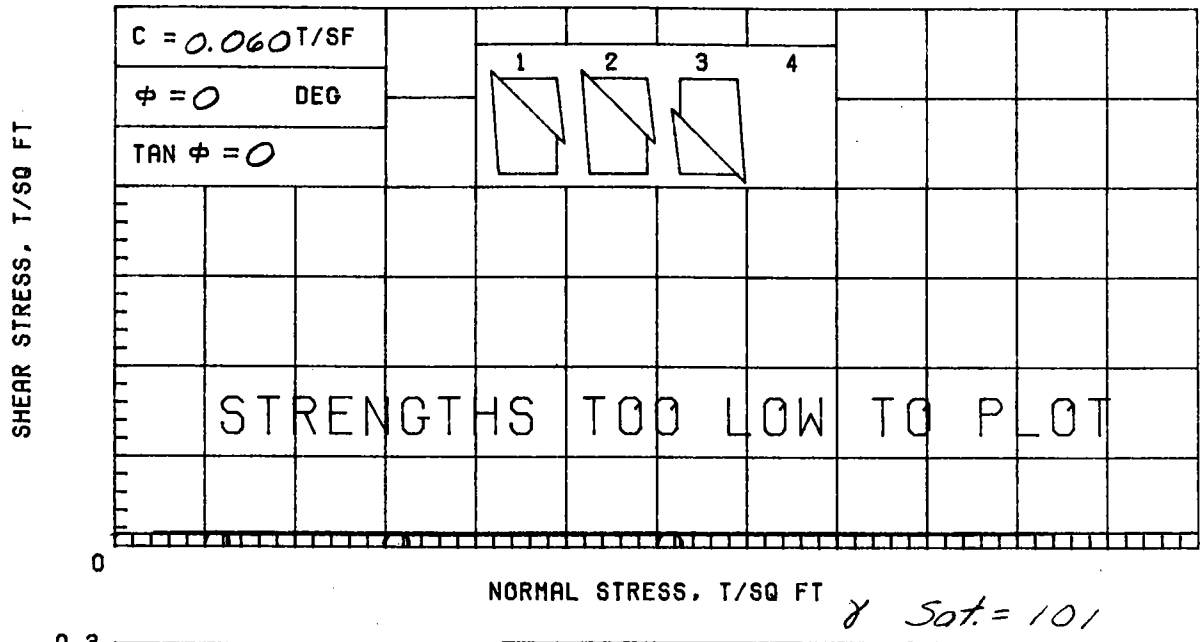
BORING NO. 34-U / SAMPLE NO. 118

DEPTH/ELEV 43.8/-42.2 / DATE 20 MAY 85

REMARKS

TRIMMINGS INDICATED A INITIAL WATER CONTENT OF 48.4 %

CONSOLIDATION TEST REPORT



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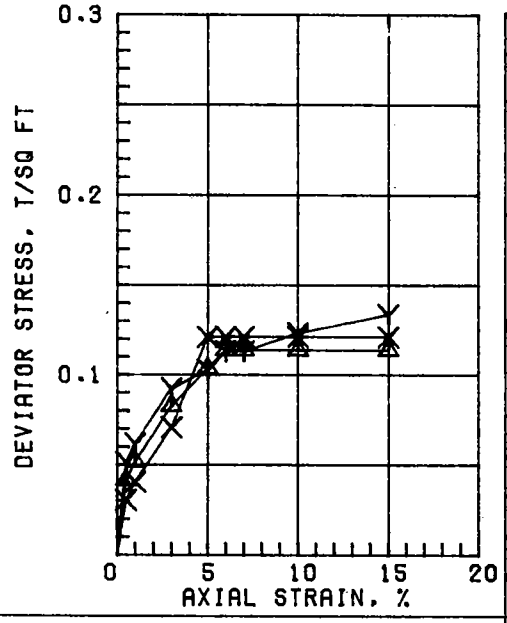


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	67.8	68.5	70.7	
	DRY DENSITY, PCF	59.9	60.0	58.7	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.814	1.810	1.870	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.11	0.11	0.12	
TIME TO FAILURE, MIN.		13	14	14	
RATE OF STRAIN INCR.%				7	
INITIAL DIAMETER, IN.		1.38	1.38	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 69.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS & LENSES; SHELLS

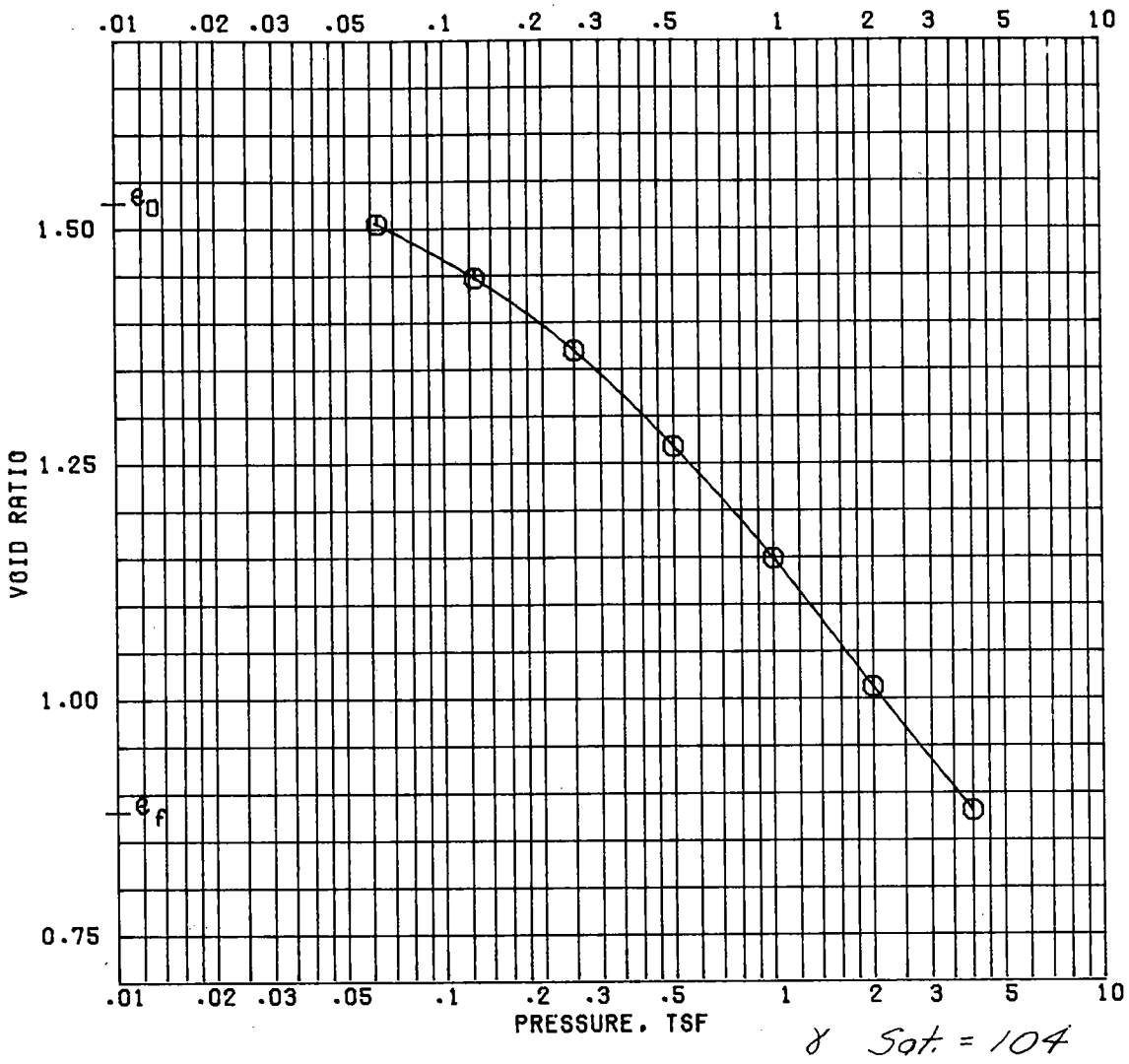
LL 73	PL 20	PI 53	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 34-U | SAMPLE NO. 12-C
DEPTH/ELEV 49.4/-47.8 | TECH. LRC
LABORATORY USAE WES | DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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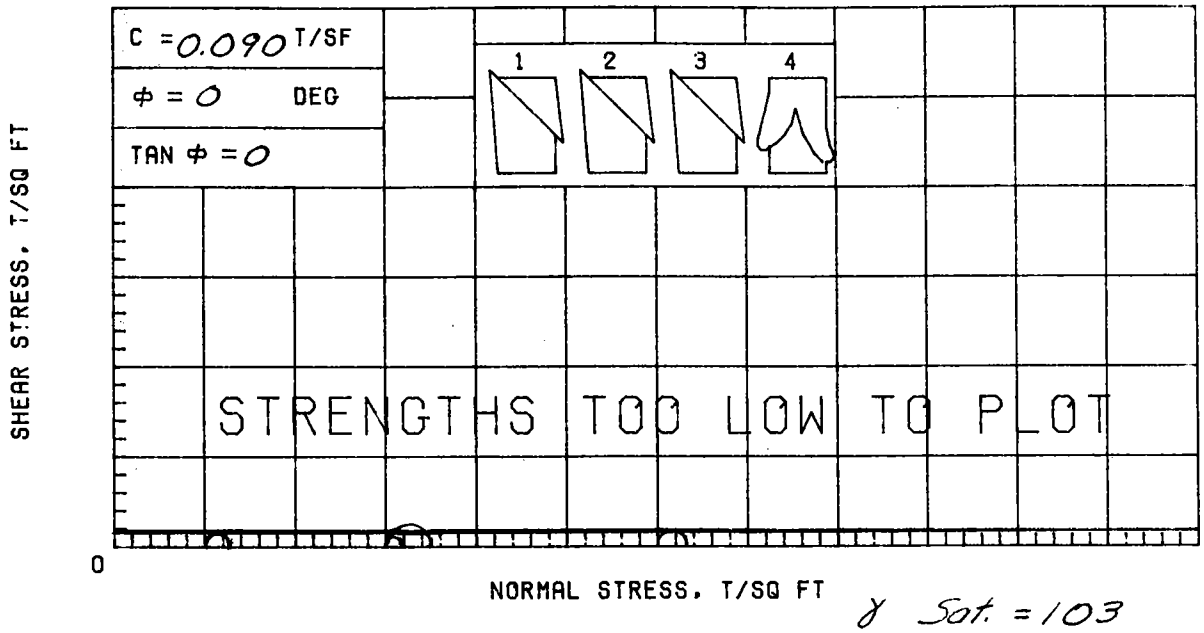
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.24	DRY DENSITY, PCF 66.7	89.7
COMPRESSION INDEX 0.45	SATURATION, % 98.4	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO 1.526	0.879
DIA. IN 4.44 HT. IN 1.129	BACK PRESSURE, TSF	
CLASSIFICATION PLASTIC CLAY (CH), GRAY		
LL 69 PL 19 PI 50	PROJECT LK PONT. LA & VIC. HURR PROT.	
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISHES	
REMARKS	BORING NO. 34-U	SAMPLE NO. 14B
	DEPTH/ELEV 56.0/-54.4	DATE 20 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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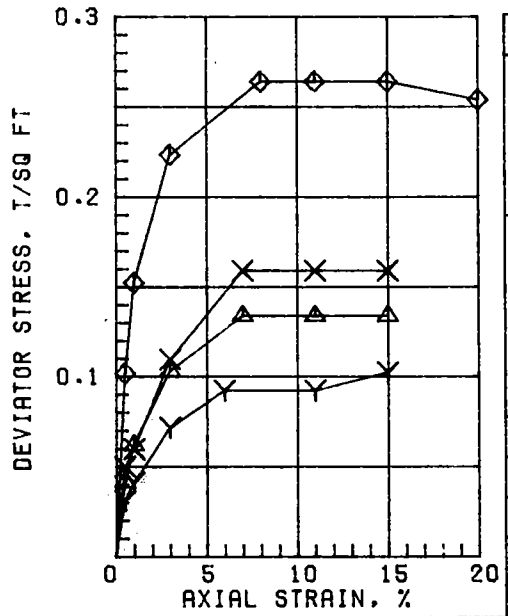


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	62.9	62.9	62.1	57.6	61.4
	DRY DENSITY, PCF	63.0	62.8	62.4	65.9	
	SATURATION, %	100+	100+	98.5	99.7	
	VOID RATIO	1.674	1.682	1.703	1.559	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		0.13	0.09	0.16	0.26	
TIME TO FAILURE, MIN.		14	14	18	16	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.38	1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

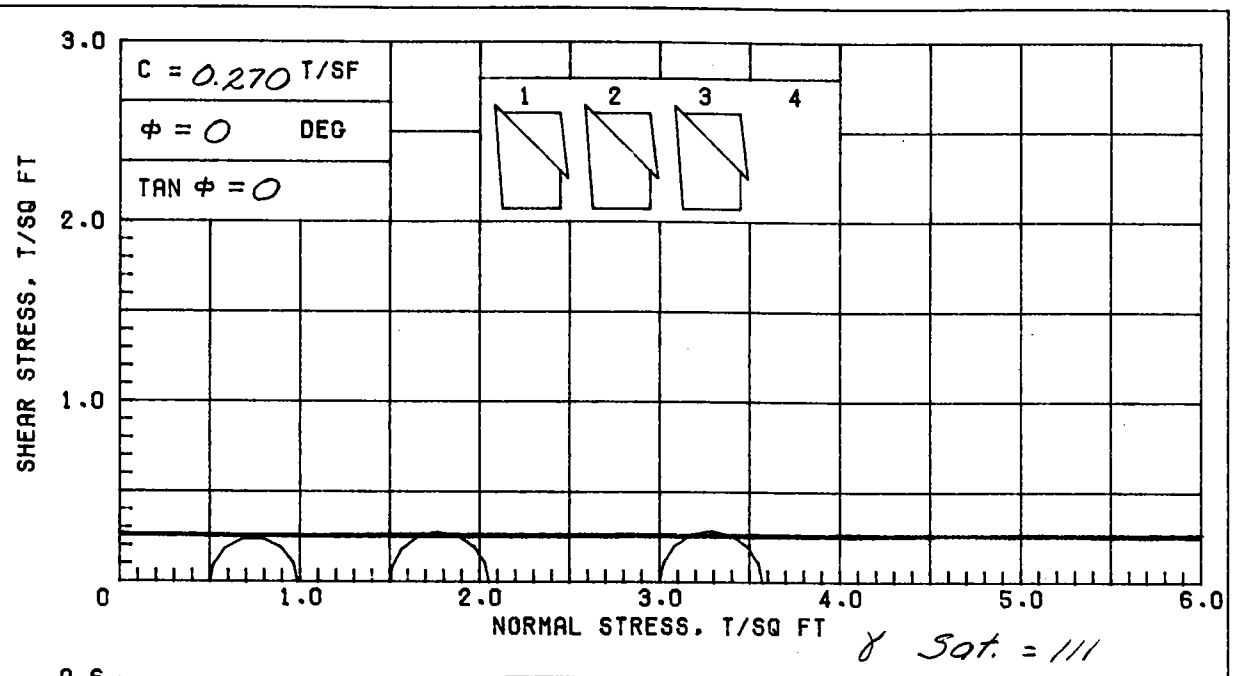
LL 82	PL 20	PI 62	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 34-U | SAMPLE NO. 15-B
DEPTH/ELEV 60.0/-58.4 | TECH. LRC
LABORATORY USAE WES | DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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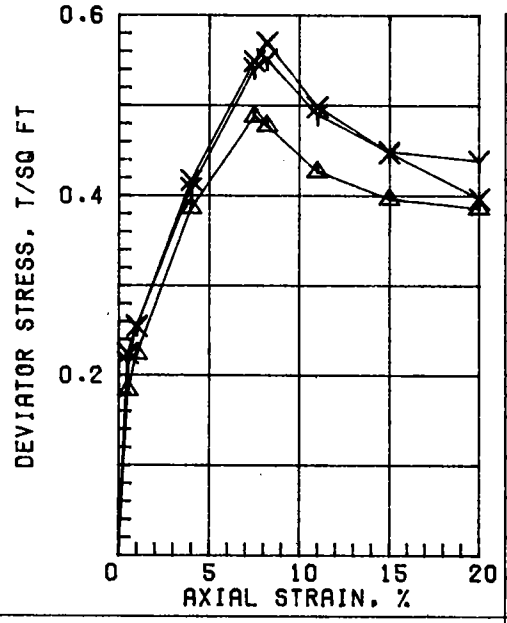


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	45.5	47.0	47.8	
	DRY DENSITY, PCF	77.2	75.2	73.3	
	SATURATION, %	100+	100+	99.2	
	VOID RATIO	1.184	1.241	1.301	-
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.49	0.55	0.57	
TIME TO FAILURE, MIN.		16	18	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 46.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN

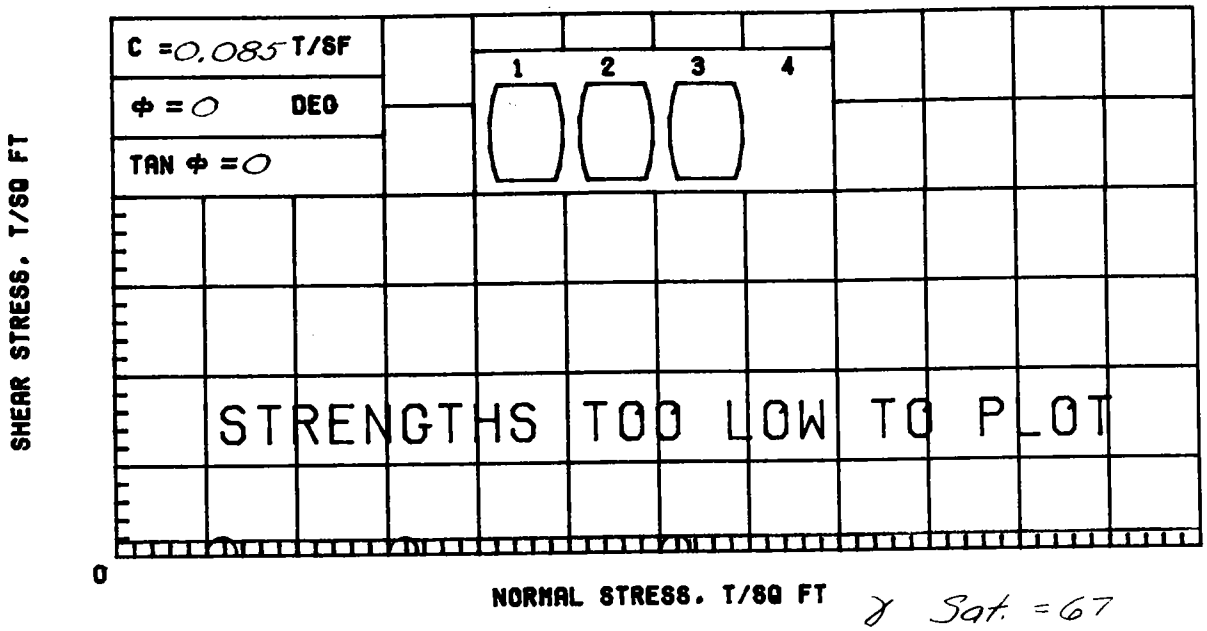
LL 75	PL 22	PI 53	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 34-U | SAMPLE NO. 20-B
DEPTH/ELEV 80.5/-78.9 | TECH. LRC
LABORATORY USAE WES | DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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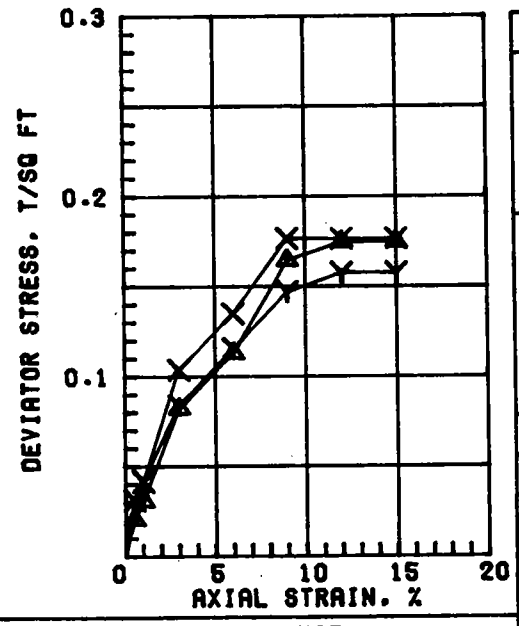


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	468.4	465.0	508.8	
	DRY DENSITY, PCF	11.4	11.5	10.6	
	SATURATION, %	95.5	96.3	95.8	
	VOID RATIO	8.341	8.208	9.033	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.17	0.16	0.18	
TIME TO FAILURE, MIN.		23	24	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 480.7

CONTROLLED-STRAIN TEST

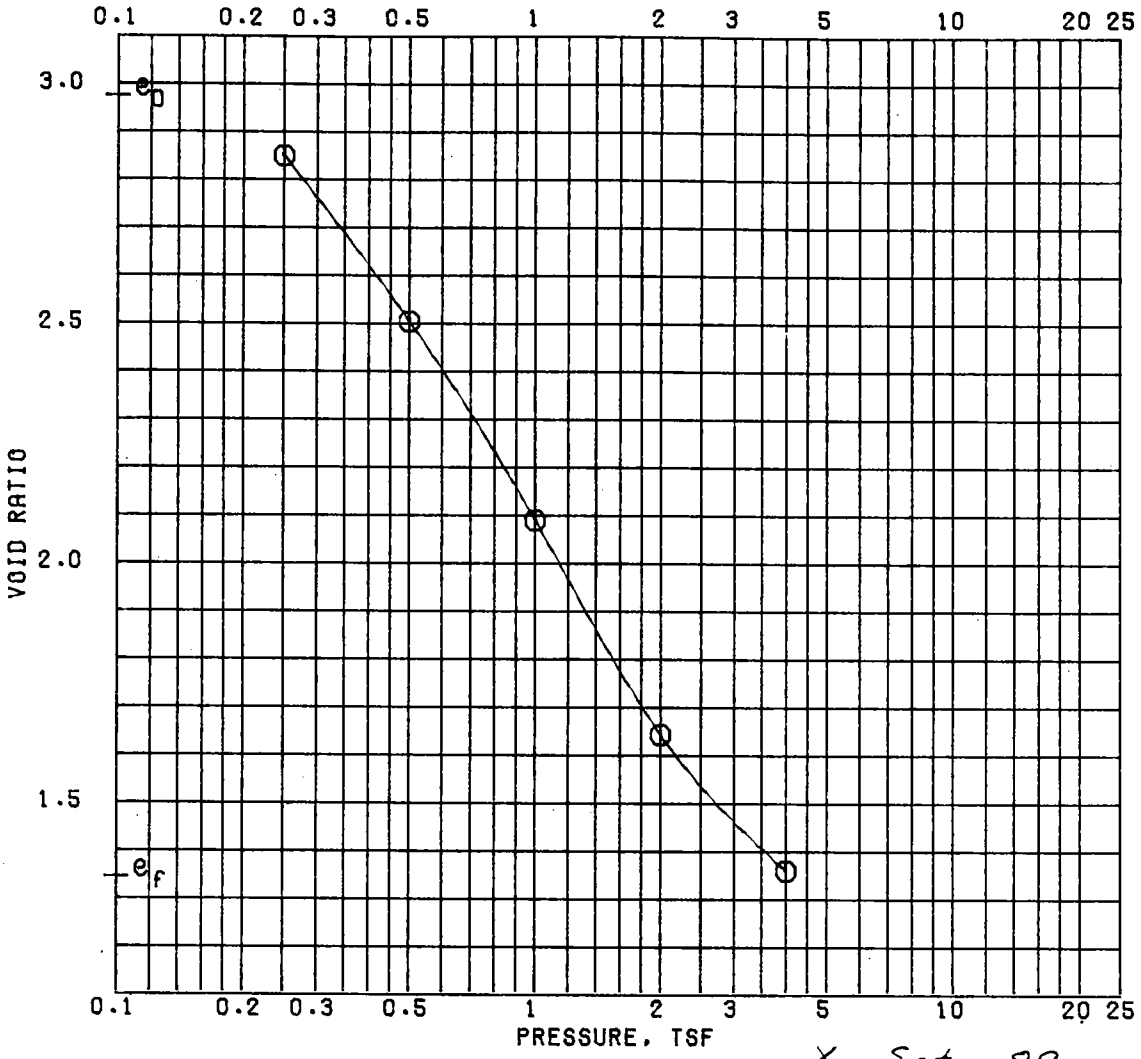
DESCRIPTION OF SPECIMENS: PEAT (PT), BLACK

LL 463	PL 200	PI 263	OS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 35-U | SAMPLE NO. 1-C
DEPTH/ELEV 2.0/-8.0 | TECH. LRC
LABORATORY USAE WES | DATE 09 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 89

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.25	
COMPRESSION INDEX	1.17	
WATER CONTENT, %	107.1	50.3
DRY DENSITY, PCF	42.4	72.0
SATURATION, %	97.3	100 +
VOID RATIO	2.972	1.342
BACK PRESSURE, TSF		

TYPE SPECIMEN: UNDISTURBED

DIA. IN 4.44 | HT. IN 1.126

CLASSIFICATION: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 78 | PL 24 | PI 54

GS 2.70 (EST) | D_{10}

PROJECT: LK. PONT. & VIC. HURR. PROT.

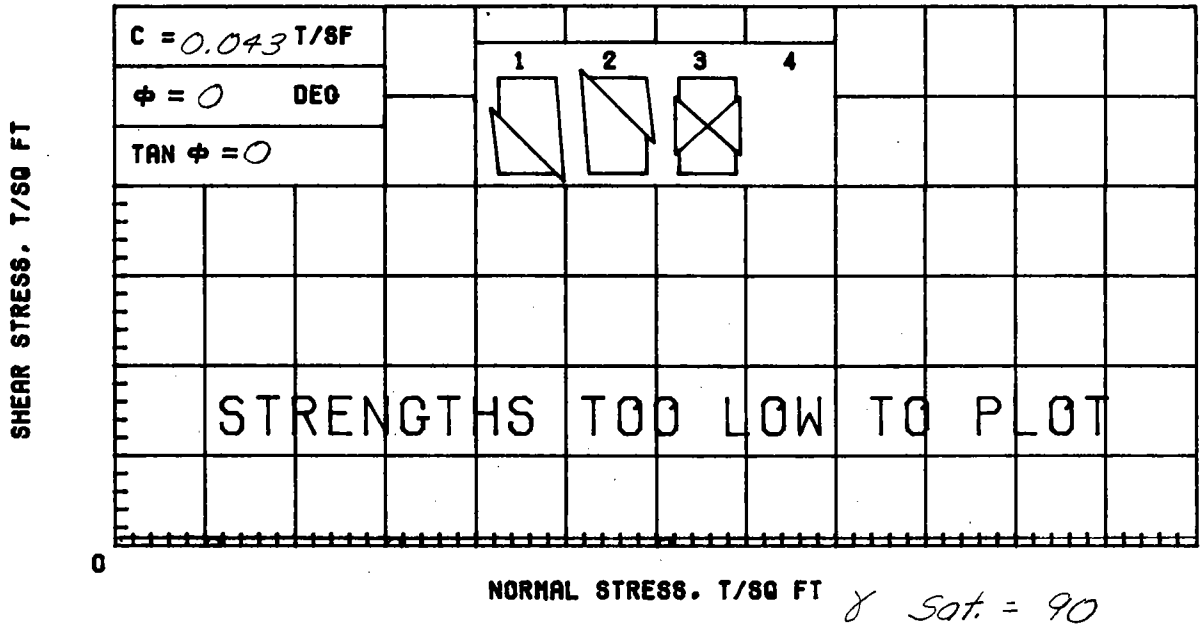
JEFFERSON & ST. CHARLES PARISH

REMARKS

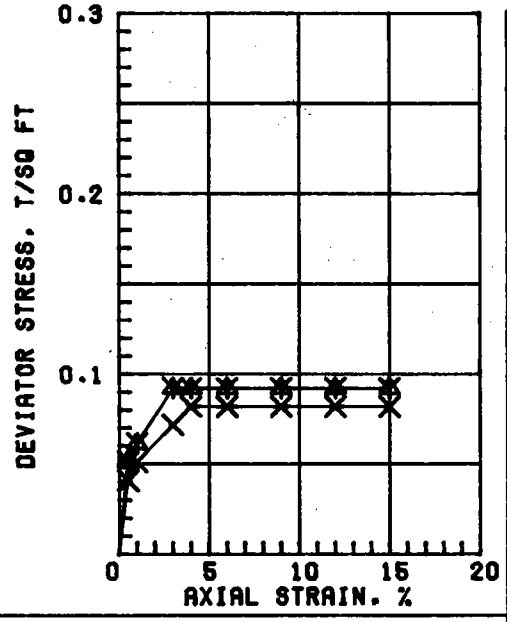
BORING NO. 35-U | SAMPLE NO. 3-B

DEPTH/ELEV 9.0/-15.0 | DATE 30 MAY 85

CONSOLIDATION TEST REPORT



γ Sat. = 90



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	103.9	103.8	104.2	
	DRY DENSITY, PCF	44.4	44.3	44.3	
	SATURATION, %	100+	99.8	100+	
	VOID RATIO	2.794	2.808	2.803	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.09	0.09	0.08	
TIME TO FAILURE, MIN.		6	6	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 104.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 86	PL 21	PI 65	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

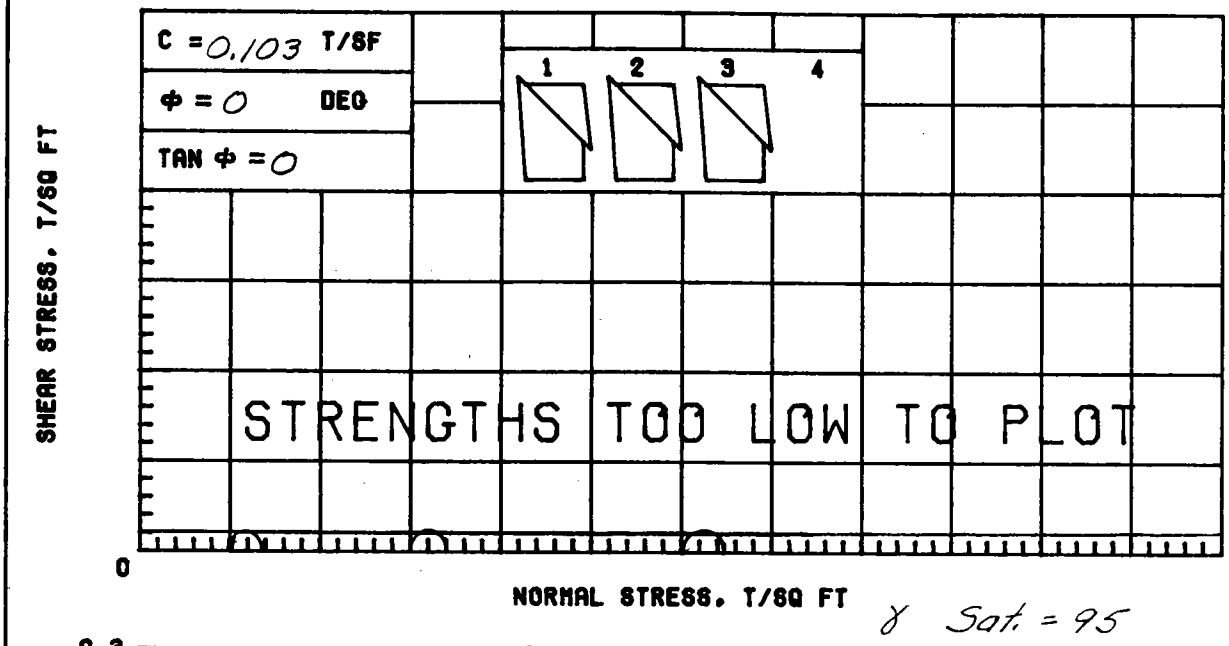
PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 35-U | SAMPLE NO. 3-C

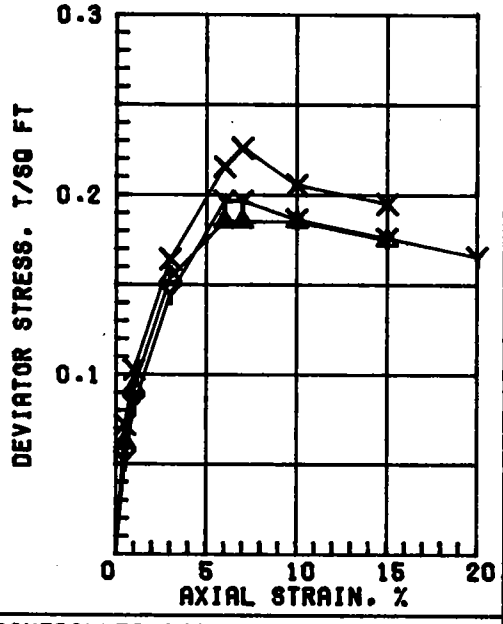
DEPTH/ELEV 10.3/-16.3 | TECH. LRC

LABORATORY USAE WES | DATE 10 JUL 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 95



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	88.4	87.3	86.4	
	DRY DENSITY, PCF	49.8	50.7	51.1	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.385	2.322	2.300	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.19	0.20	0.23	
TIME TO FAILURE, MIN.		12	25	18	
RATE OF STRAIN INCR.%			7		
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 87.4

CONTROLLED-STRAIN TEST

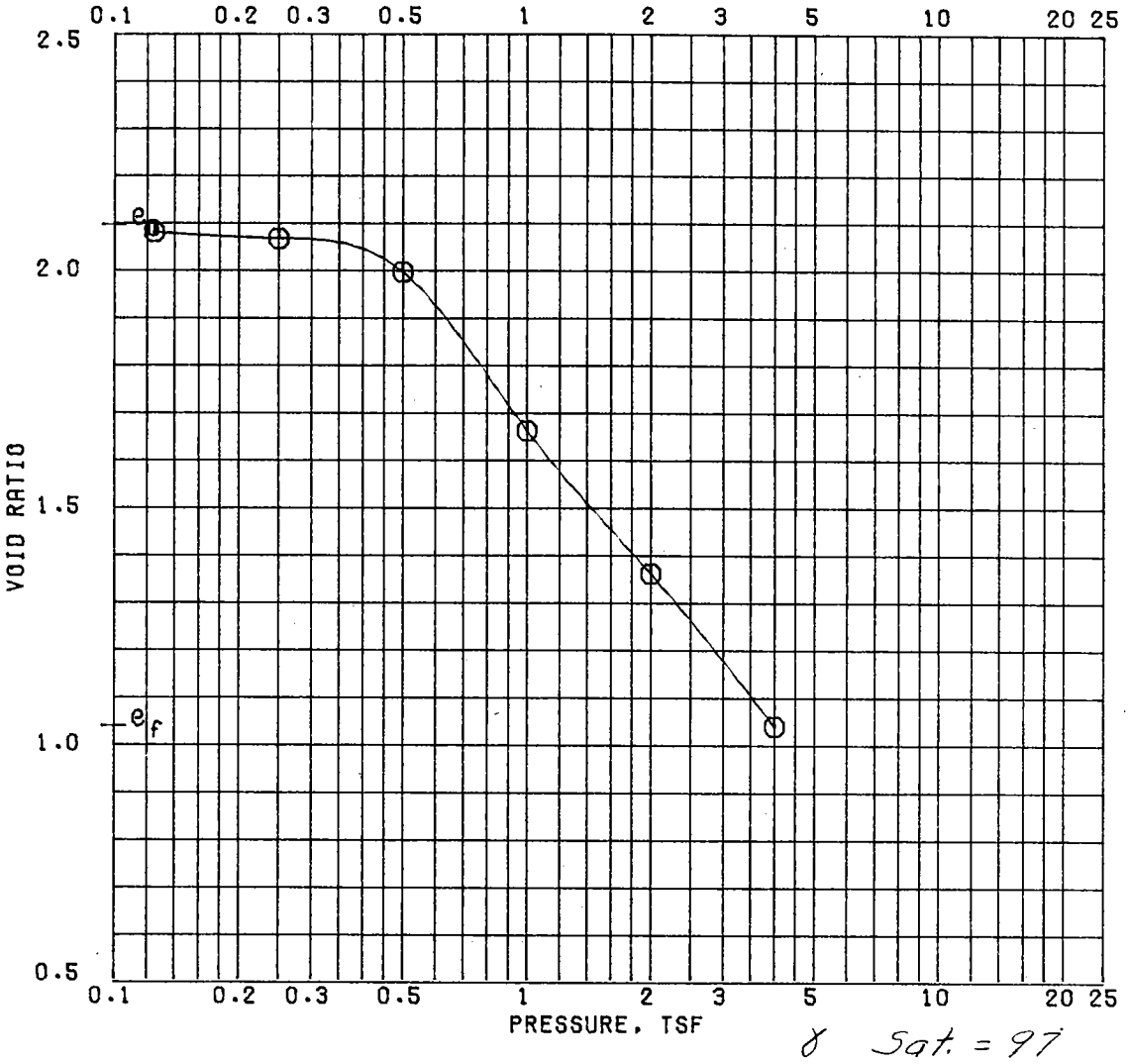
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 86	PL 23	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 35-U | SAMPLE NO. 6-B
DEPTH/ELEV 20.9/-26.9 | TECH. LRC
LABORATORY USAE WES | DATE 10 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



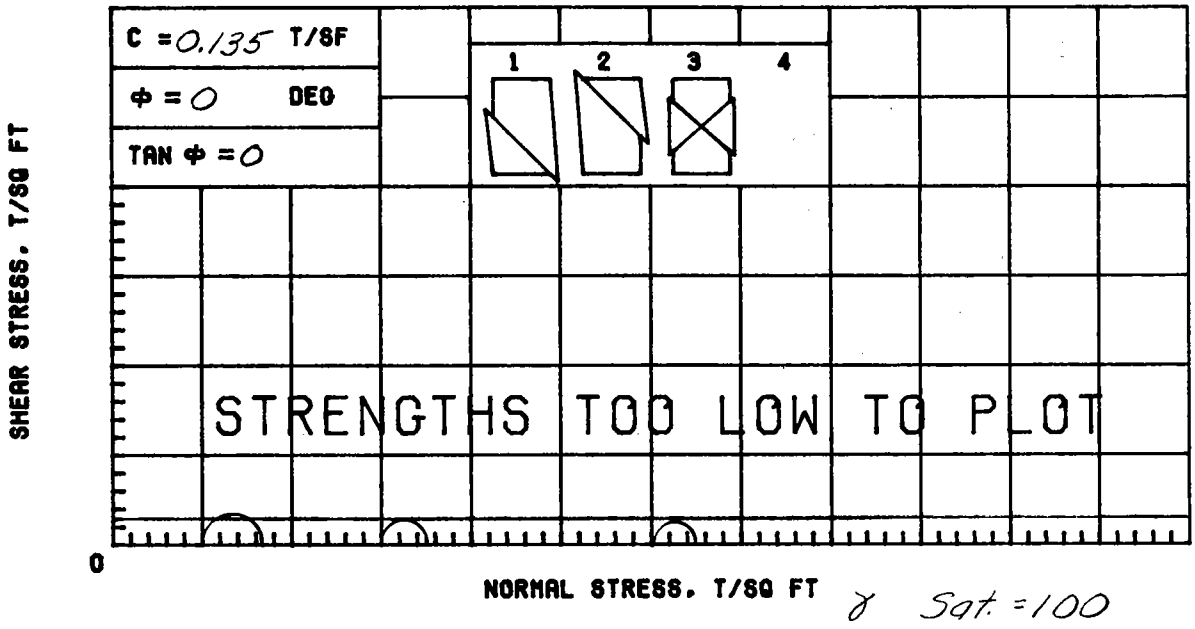
γ Sat. = 97

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	74.8	39.4
PRECONSOL. PRESSURE, TSF	0.54	DRY DENSITY, PCF	54.5	82.8
COMPRESSION INDEX	1.28	SATURATION, %	96.5	100 +
TYPE SPECIMEN UNDISTURBED		VOID RATIO	2.093	1.036
DIA. IN 4.44	HT. IN 1.112	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 78	PL 22	PI 56	PROJECT LK. PONT. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH
REMARKS		BORING NO. 35-U	SAMPLE NO. 6-C
		DEPTH/ELEV 21.9/-27.9	DATE 03 JUN 85

CONSOLIDATION TEST REPORT



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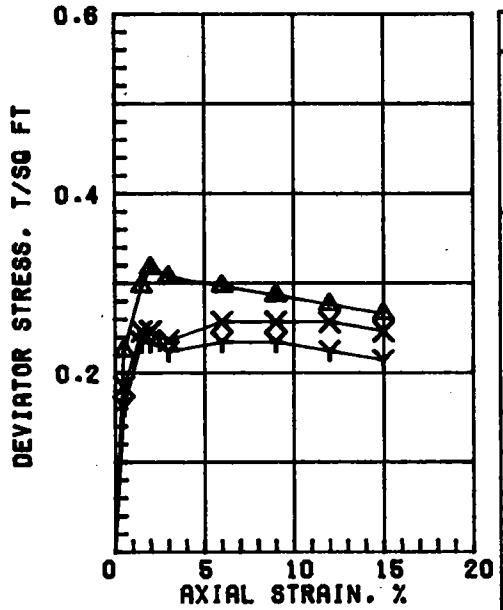


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	58.1	74.7	75.2	
	DRY DENSITY, PCF	65.9	55.4	55.3	
	SATURATION, %	100+	98.8	99.2	
	VOID RATIO	1.556	2.041	2.046	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.32	0.24	0.25	
TIME TO FAILURE, MIN.		4	8	14	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 69.3

CONTROLLED-STRAIN TEST

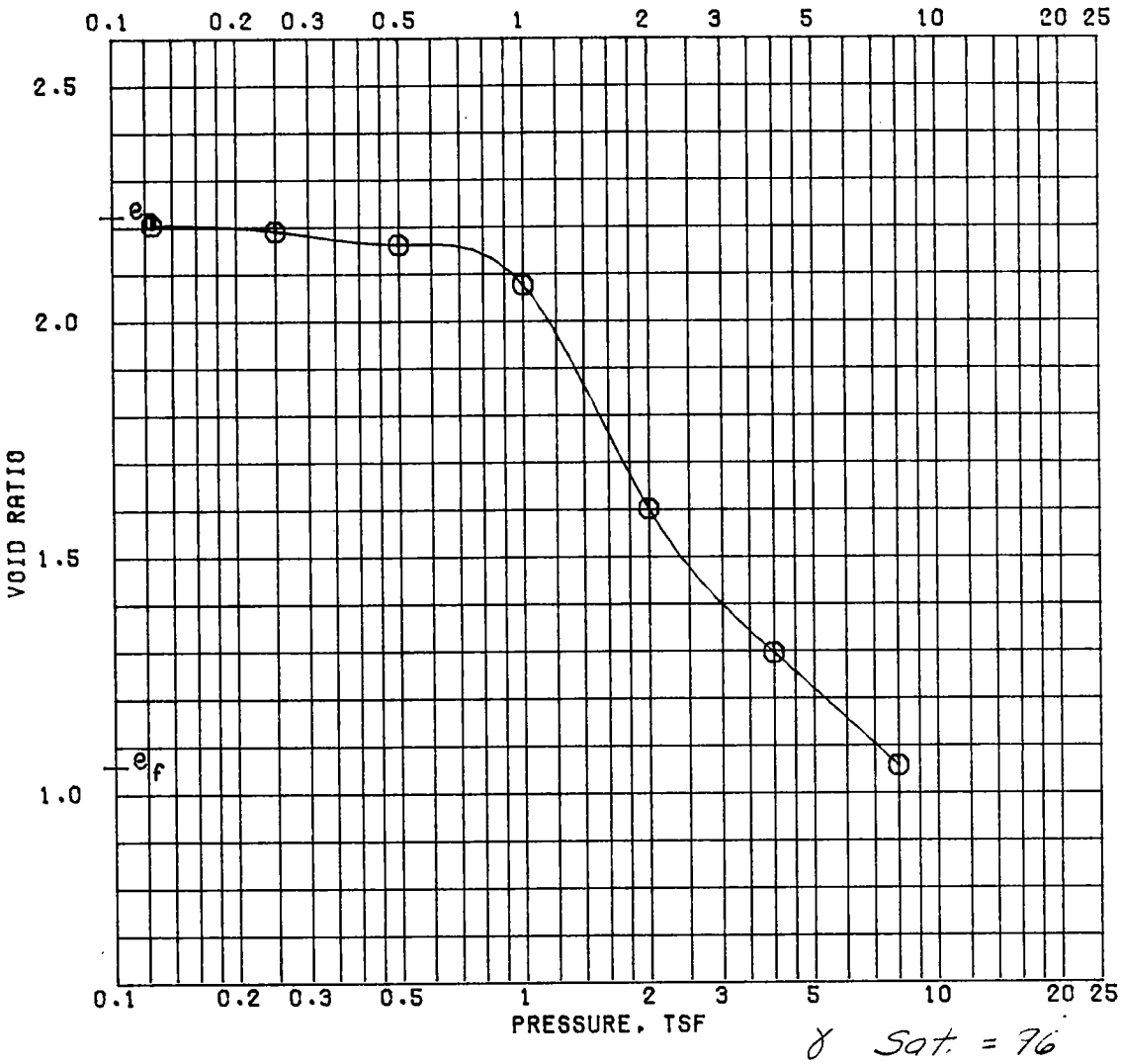
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES; FINE SAND LENSES

LL 70	PL 20	PI 50	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 35-U | SAMPLE NO. 8-C
DEPTH/ELEV 29.9/-35.9 | TECH. LRC
LABORATORY USAE WES | DATE 10 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 76

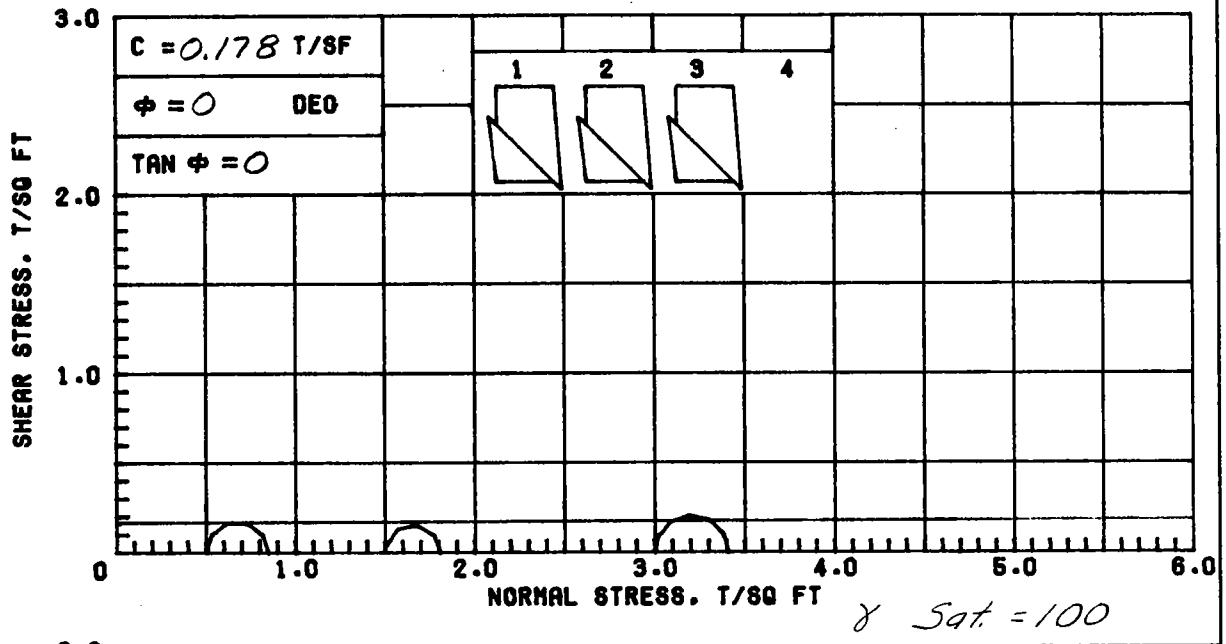
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	79.2	40.4
PRECONSOL. PRESSURE, TSF	0.96	DRY DENSITY, PCF	52.4	82.1
COMPRESSION INDEX	1.55	SATURATION, %	96.3	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.219	1.054
DIA. IN 4.44	HT. IN 1.114	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 84	PL 22	PI 62	PROJECT LK. PONT. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH
REMARKS		BORING NO. 35-U	SAMPLE NO. 10-B
		DEPTH/ELEV 37.5/-43.5	DATE 04 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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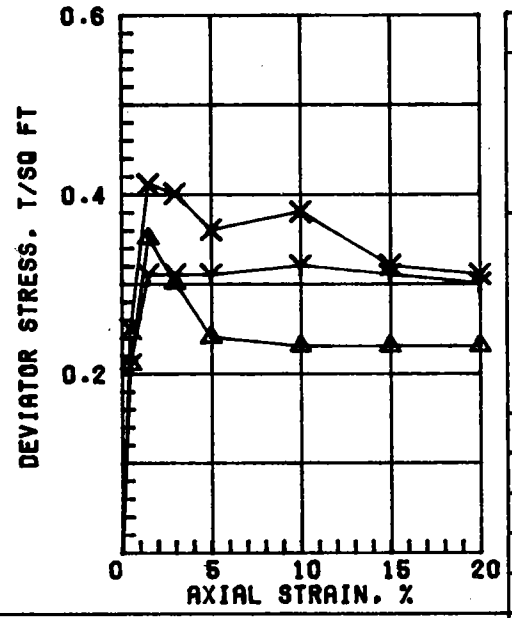


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	71.1	62.0	62.7	
	DRY DENSITY, PCF	56.9	61.4	61.3	
	SATURATION, %	97.8	96.0	96.8	
	VOID RATIO	1.963	1.744	1.748	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.36	0.31	0.41	
TIME TO FAILURE, MIN.		3	9	9	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 65.3

CONTROLLED-STRAIN TEST

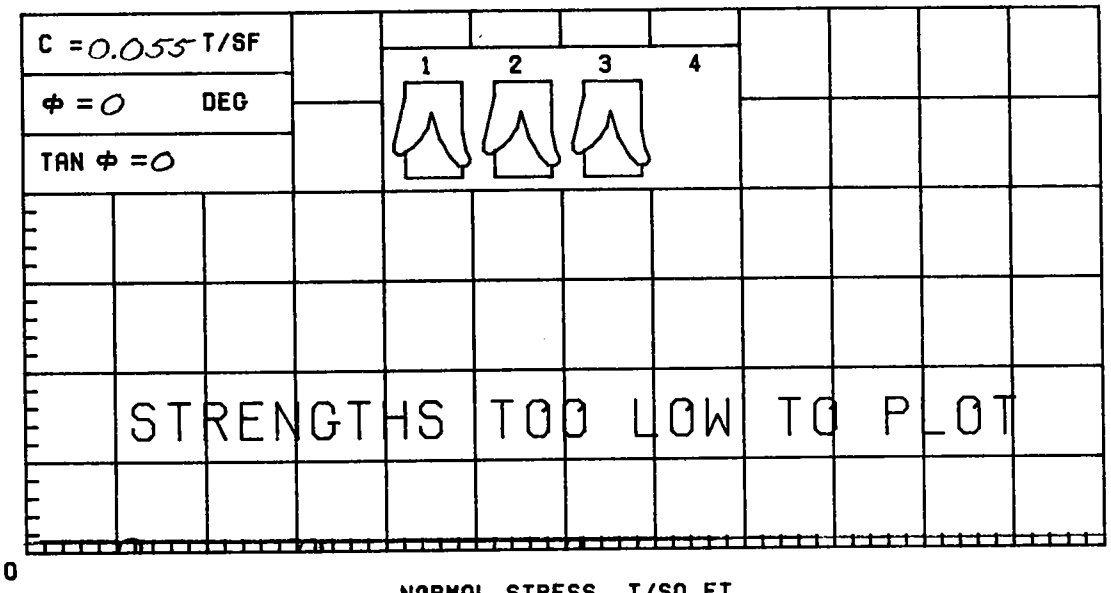
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 75	PL 21	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 35-U | SAMPLE NO. 11-C
DEPTH/ELEV 41.7/-47.7 | TECH. KOC
LABORATORY USAE WES | DATE 10 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



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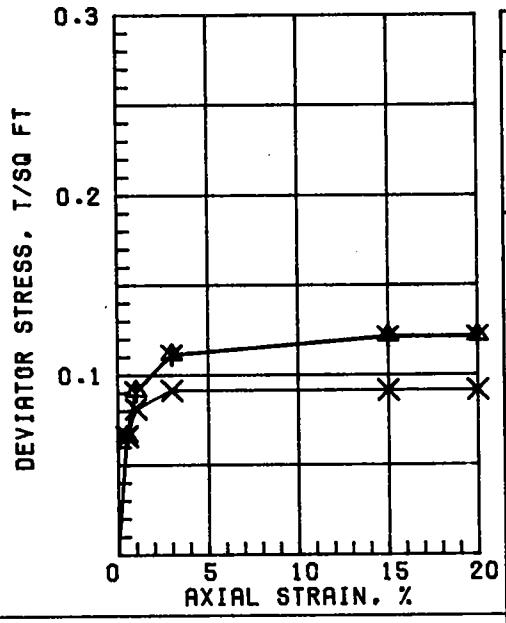


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	72.3	69.1	69.8	
	DRY DENSITY, PCF	57.9	59.1	58.7	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.913	1.853	1.872	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.12	0.12	0.09	
TIME TO FAILURE, MIN.		30	26	5	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 70.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 74	PL 23	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

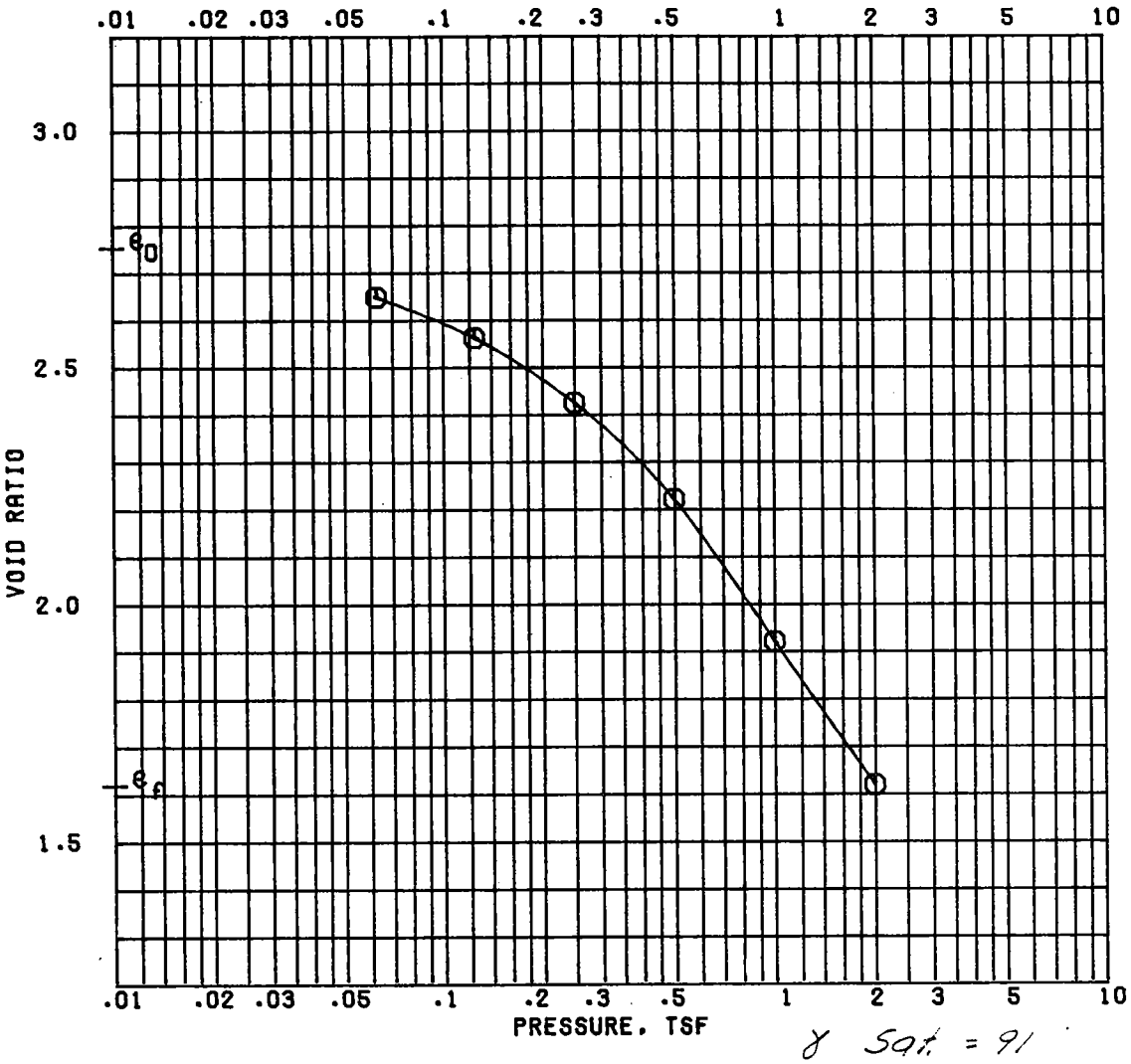
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 36-U | SAMPLE NO. 1-C

DEPTH/ELEV 5.4/-3.9 | TECH. PJR

LABORATORY USAE WES | DATE 05 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 91

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.30	DRY DENSITY, PCF	44.9	64.4
COMPRESSION INDEX 1.11	SATURATION, %	94.3	93.3
TYPE SPECIMEN UNDISTURBED	VOID RATIO	2.751	1.616
DIA. IN 4.44 HT. IN 1.121	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY,

LL 95 PL 25 PI 70

GS 2.70 (EST) D_{10}

REMARKS

PROJECT LAKE PONT. LA. & VIC. HURR. PROT. JE

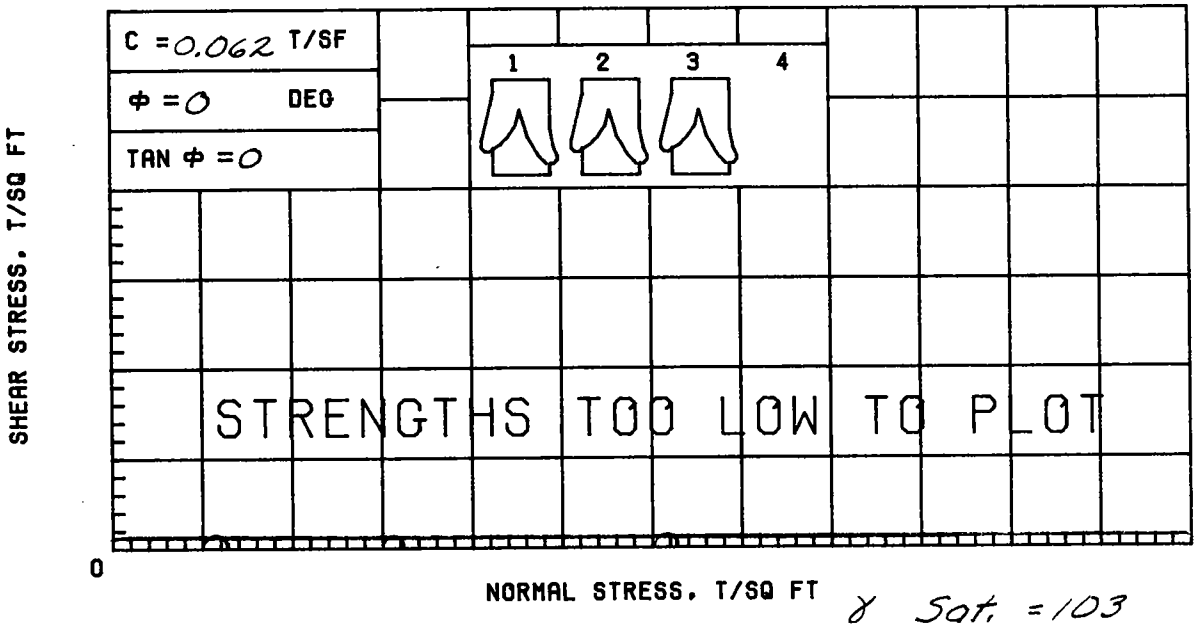
ST. CHARLES PARISH

BORING NO. 36-U SAMPLE NO. 3-B

DEPTH/ELEV 11.7/-10.2 DATE 19 MAR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



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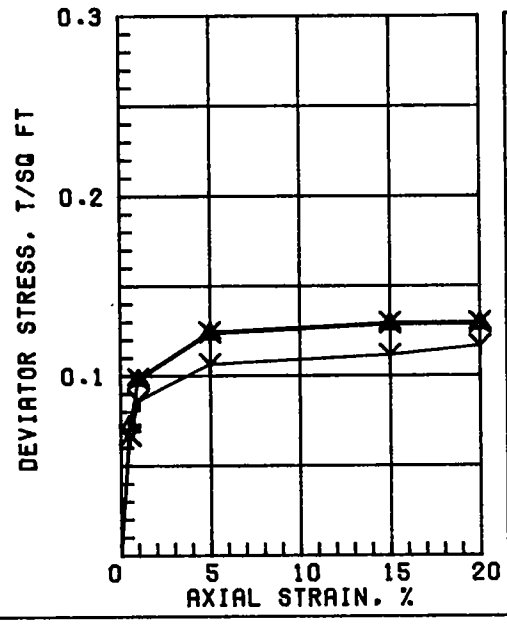


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	64.6	60.2	70.6	
	DRY DENSITY, PCF	62.5	65.0	59.7	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.696	1.594	1.824	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.13	0.11	0.13	
TIME TO FAILURE, MIN.		26	34	41	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.39	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 65.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 71	PL 23	PI 48	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

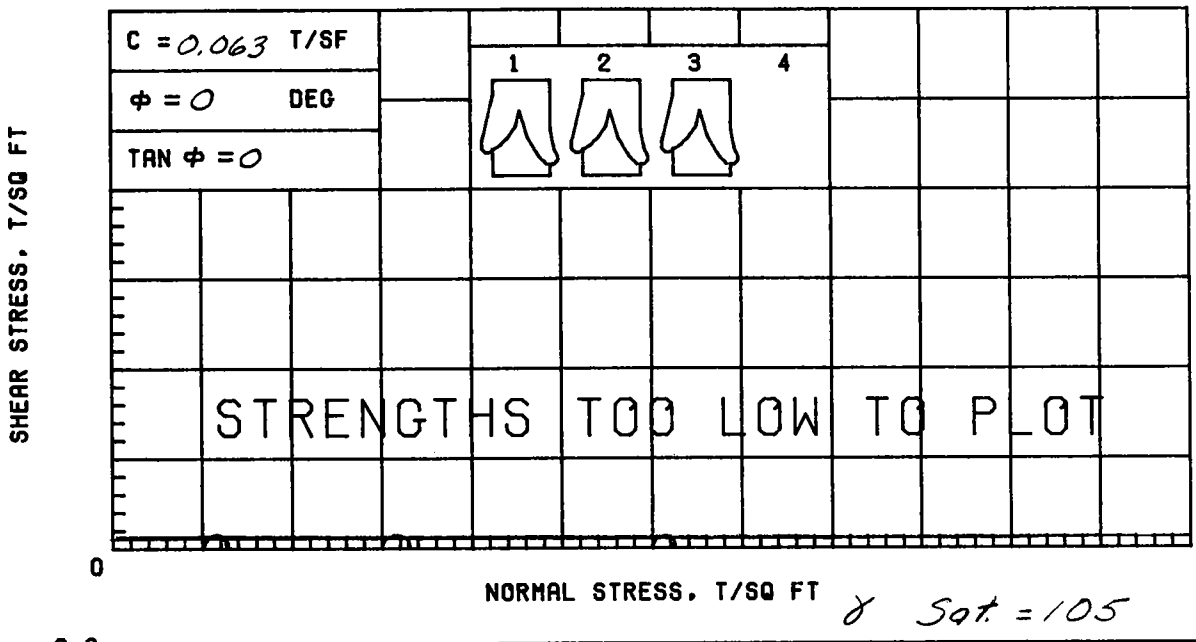
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 36-U | SAMPLE NO. 3-C

DEPTH/ELEV 13.1/-11.6 | TECH. PJR

LABORATORY USAE WES | DATE 05 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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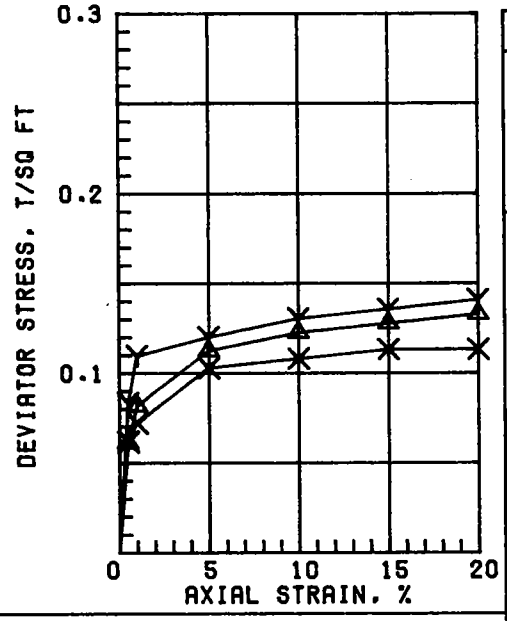


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	55.3	67.7	58.5	
	DRY DENSITY, PCF	68.1	61.5	66.3	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.474	1.741	1.544	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.13	0.14	0.11	
TIME TO FAILURE, MIN.		30	23	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 60.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 62	PL 18	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

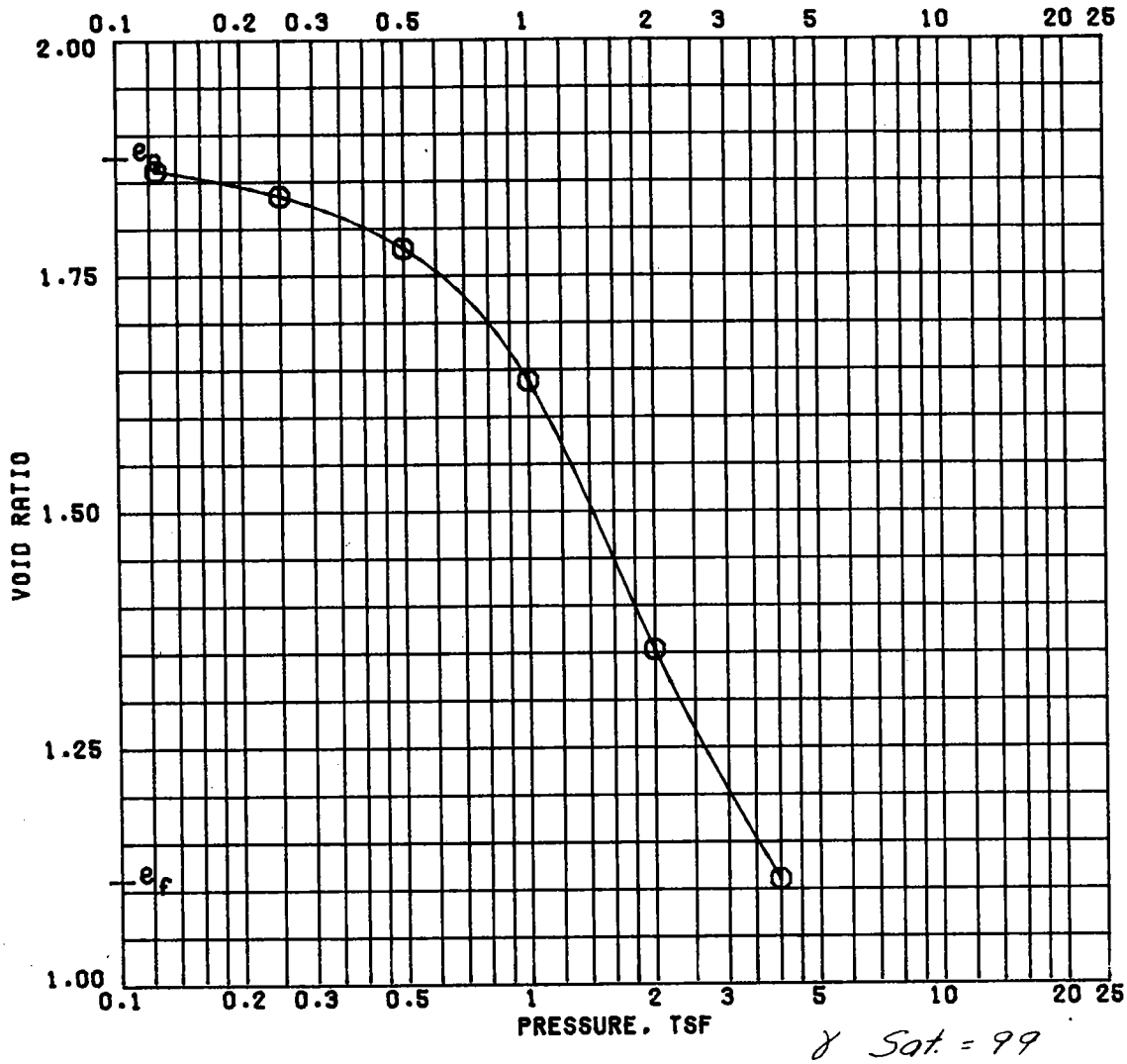
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 36-U | SAMPLE NO. 6-B

DEPTH/ELEV 24.0/-22.5 | TECH. PJR

LABORATORY USAE WES | DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 99

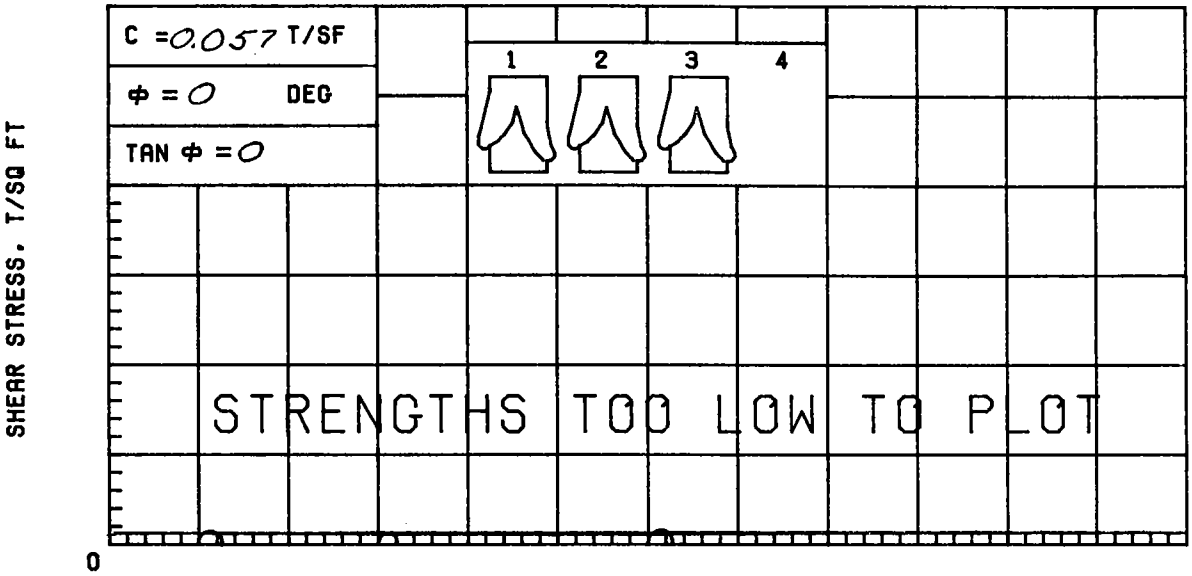
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	67.1	44.0
PRECONSOL. PRESSURE, TSF	0.71	DRY DENSITY, PCF	58.7	79.9
COMPRESSION INDEX	0.90	SATURATION, %	96.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.874	1.109
DIA. IN 4.44	HT. IN 1.127	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 82	PL 22	PI 60	PROJECT LAKE PONT. LA. & VIC. HURR. PROT. JE
GS 2.70 (EST)	D_{10}		ST. CHARLES PARISH
REMARKS		BORING NO. 36-U	SAMPLE NO. 7-B
		DEPTH/ELEV 27.9/-26.4	DATE 19 MAR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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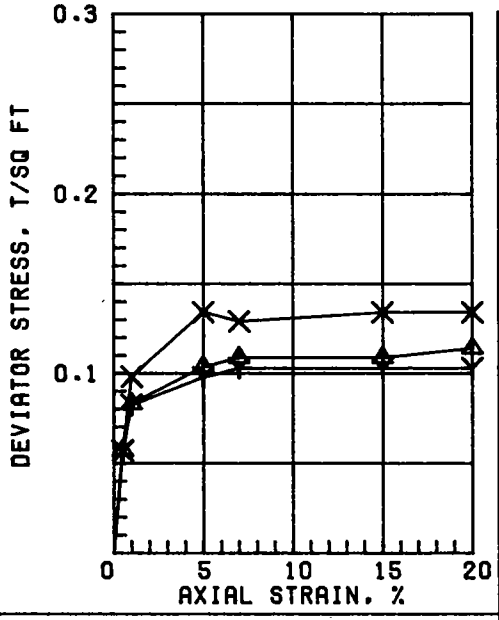


SPECIMEN NO.		△1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	73.9	73.2	71.9		73.0
	DRY DENSITY, PCF	55.7	57.1	57.3		
	SATURATION, %	98.6	100+	100+		
	VOID RATIO	2.024	1.952	1.941		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.11	0.10	0.13		
TIME TO FAILURE, MIN.		16	16	11		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.37	1.38	1.38		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

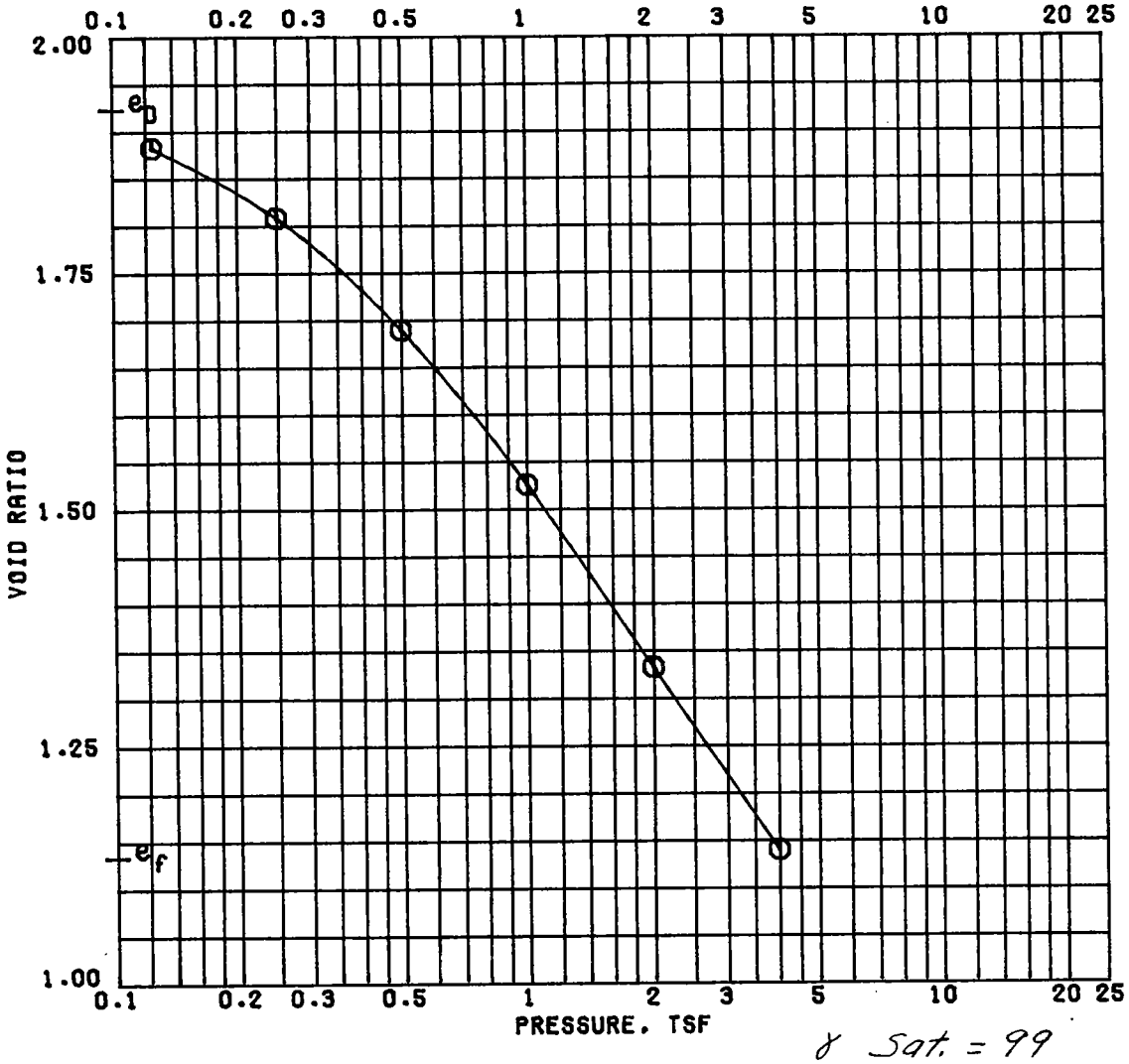
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 87	PL 24	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH
BORING NO. 36-U | SAMPLE NO. 9-B
DEPTH/ELEV 36.0/-34.5 | TECH. PJR
LABORATORY USAE WES | DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 99

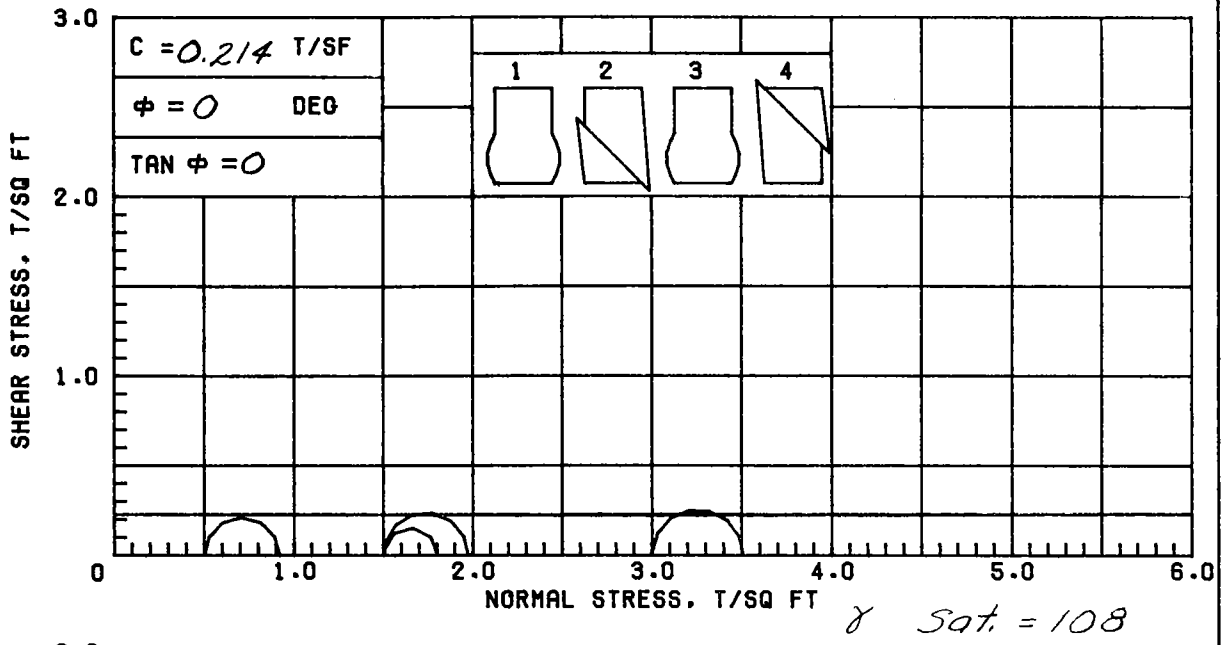
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF	0.42	WATER CONTENT, %	68.6	42.5
PRECONSOL. PRESSURE, TSF	0.66	DRY DENSITY, PCF	57.7	79.1
COMPRESSION INDEX		SATURATION, %	96.4	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.922	1.132
DIA. IN 4.44	HT. IN 1.132	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL	PL	PI	PROJECT LAKE PONT. LA. & VIC. HURR. PROT. JE	
OS 2.70 (EST)	D_{10}		ST. CHARLES PARISH	
REMARKS			BORING NO. 36-U	SAMPLE NO. 9-C
			DEPTH/ELEV 36.9/-35.4	DATE 27 MAR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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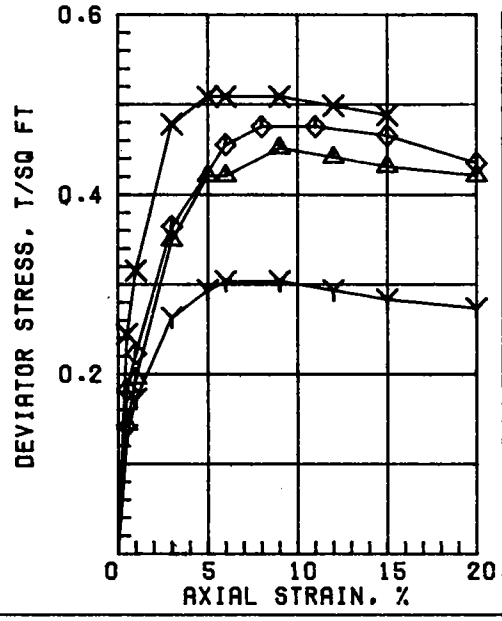


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	45.3	54.2	45.5	46.5	47.9
	DRY DENSITY, PCF	74.2	66.9	73.9	71.8	
	SATURATION, %	96.2	96.4	96.0	93.2	
	VOID RATIO	1.271	1.518	1.280	1.347	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		0.42	0.30	0.51	0.48	
TIME TO FAILURE, MIN.		28	21	19	26	
RATE OF STRAIN INCR.%		6	7	7		
INITIAL DIAMETER, IN.		1.38	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; FINE SAND SEAMS

LL 47	PL 16	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.

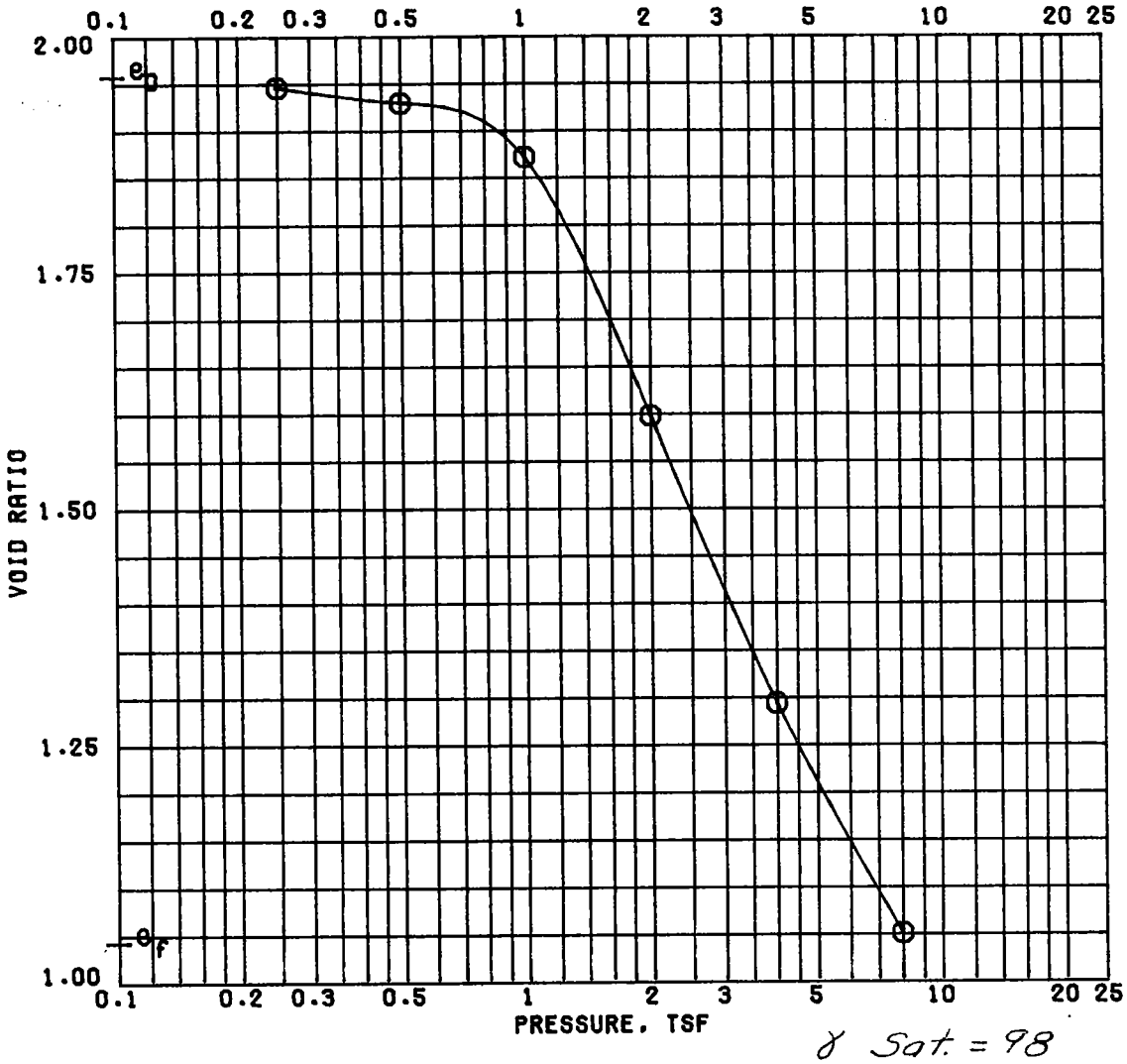
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 36-U | SAMPLE NO. 11-C

DEPTH/ELEV 44.9/-43.4 | TECH. LRC

LABORATORY USAE WES | DATE 05 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 98

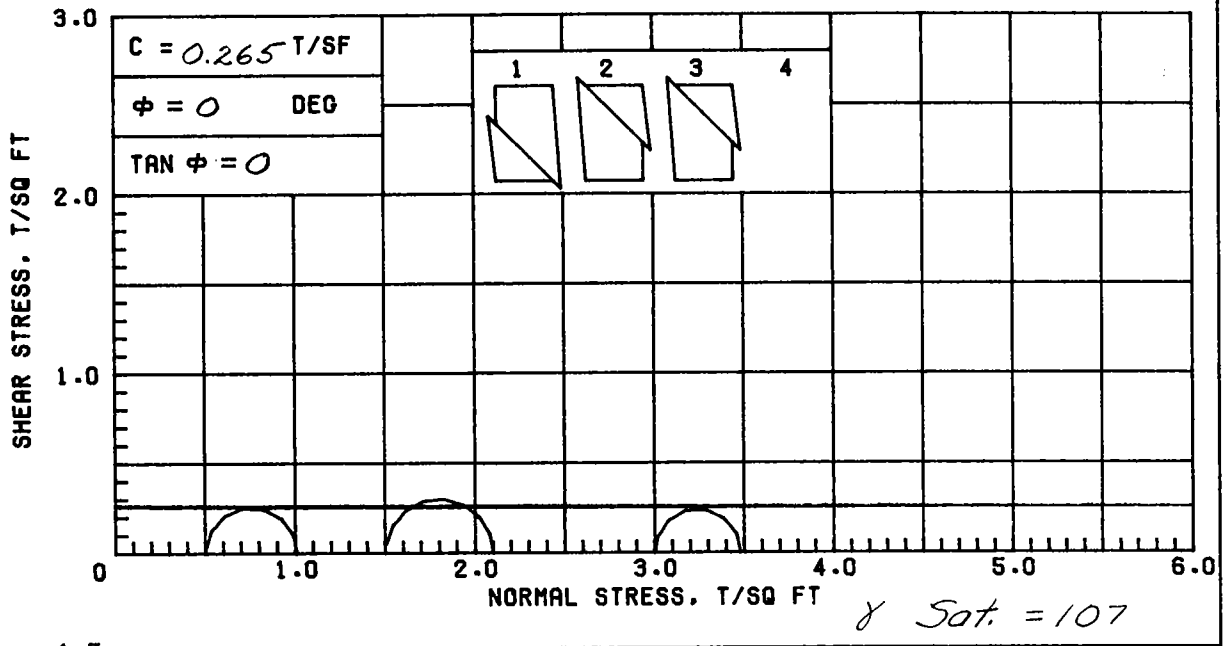
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	69.9	39.3
PRECONSOL. PRESSURE, TSF	1.10	DRY DENSITY, PCF	57.0	82.6
COMPRESSION INDEX	1.02	SATURATION, %	96.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.956	1.041
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 88	PL 23	PI 65	PROJECT LAKE PONT. LA. & VIC. HURR. PROT. JE
GS 2.70 (EST)	D_{10}		ST. CHARLES PARISH
REMARKS		BORING NO. 36-U	SAMPLE NO. 12-B
		DEPTH/ELEV 48.0/-46.5	DATE 22 MAR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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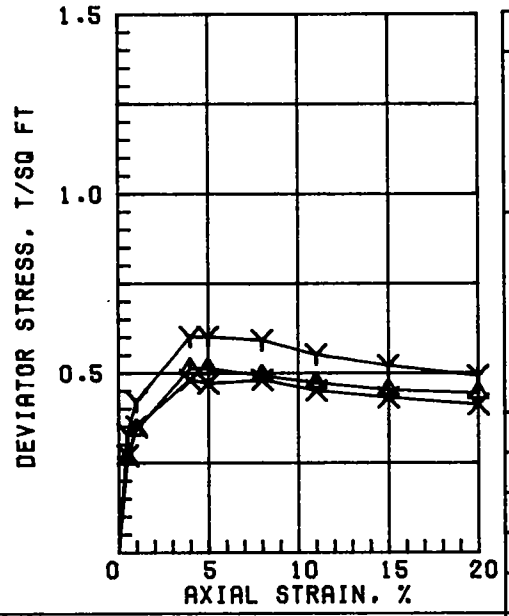


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	47.6	52.2	57.3	
	DRY DENSITY, PCF	73.6	70.4	66.7	
	SATURATION, %	99.7	100+	100+	
	VOID RATIO	1.290	1.395	1.529	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.51	0.60	0.48	
TIME TO FAILURE, MIN.		24	17	18	
RATE OF STRAIN INCR.%		5	5	5	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 52.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELLS

LL 68	PL 19	PI 49	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

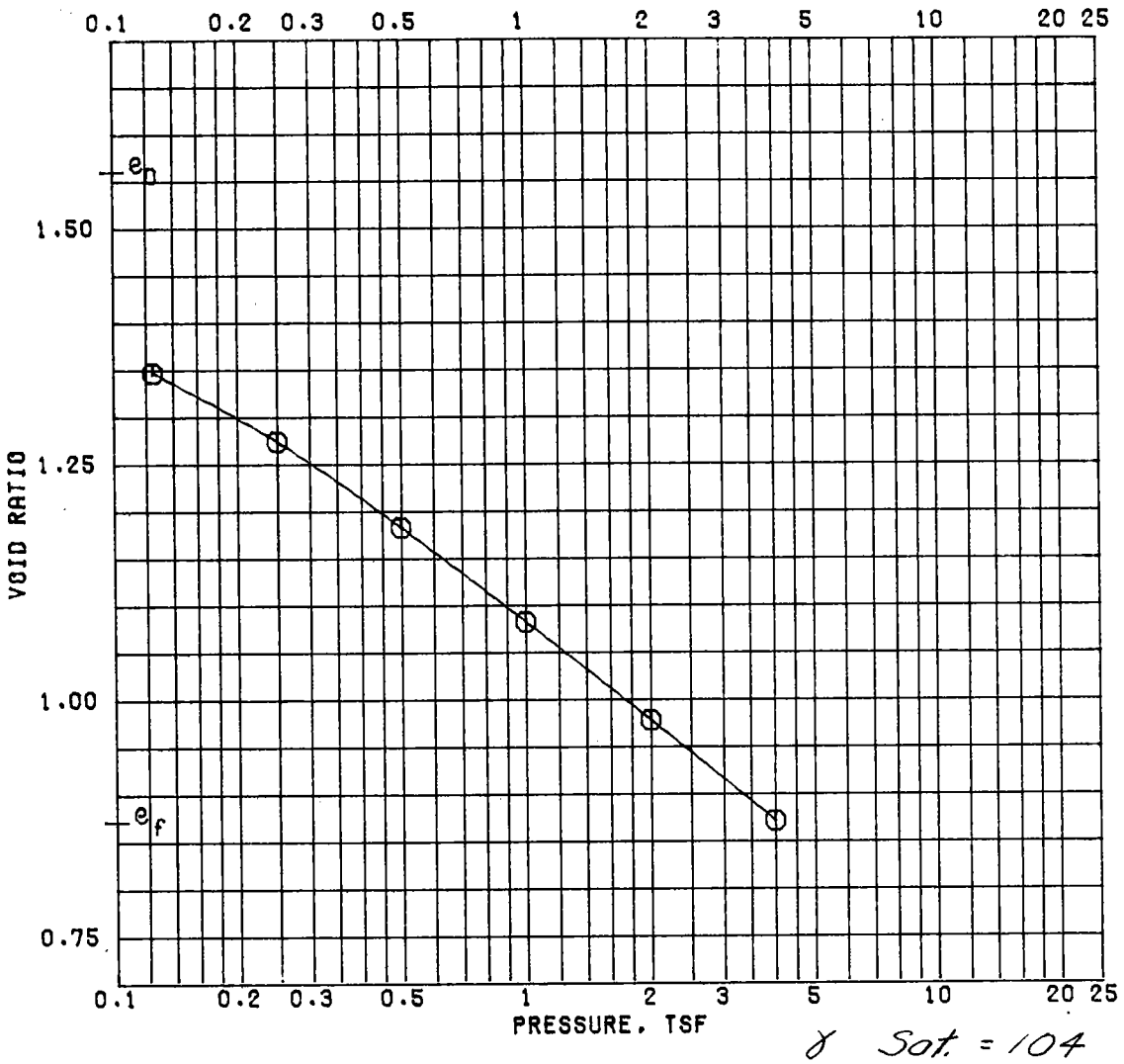
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 36-U | SAMPLE NO. 13-C

DEPTH/ELEV 52.9/-51.4 | TECH. LRC

LABORATORY USAE WES | DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT

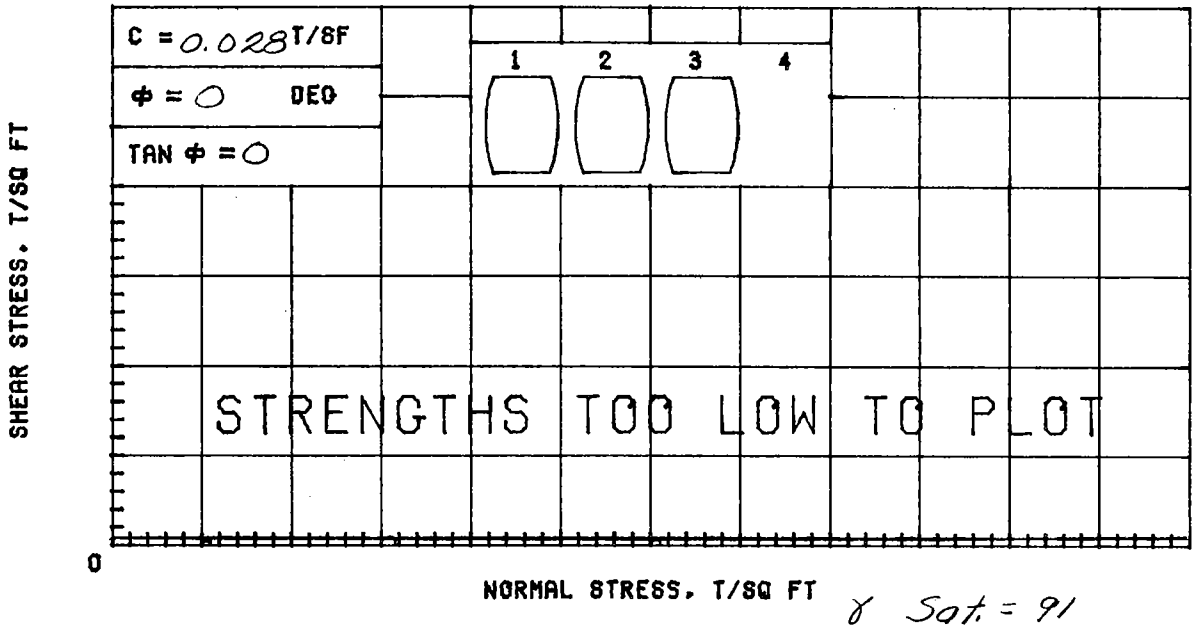


γ Sat. = 104

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.30	DRY DENSITY, PCF	65.9	90.1
COMPRESSION INDEX 0.38	SATURATION, %	98.0	95.9
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.558	0.870
DIA. IN 4.44 HT. IN 1.115	BACK PRESSURE, TSF		
CLASSIFICATION PLASTIC CLAY (CH), GRAY			
LL PL PI	PROJECT LK. PONT. & VIC. HURR. PROT.		
OS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISH		
REMARKS	BORING NO. 37-U	SAMPLE NO. 2-B	
	DEPTH/ELEV 9.0/-15.3	DATE 05 JUN 85	

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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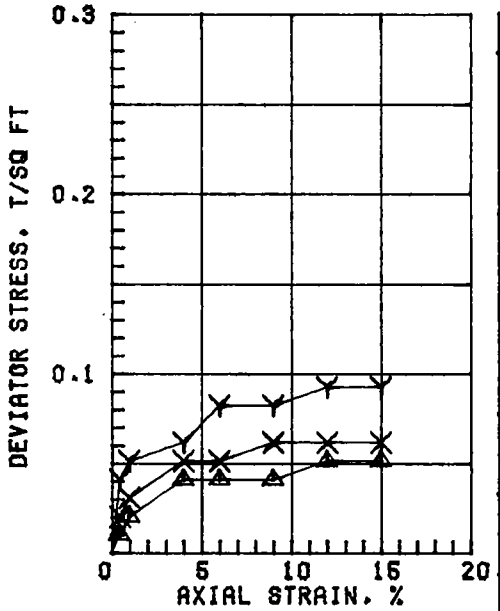


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	102.2	104.2	105.2	
	DRY DENSITY, PCF	45.5	44.2	43.7	
	SATURATION, %	100+	100+	99.6	
	VOID RATIO	2.704	2.812	2.854	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.04	0.08	0.05	
TIME TO FAILURE, MIN.		8	12	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVG. 103.8

CONTROLLED-STRAIN TEST

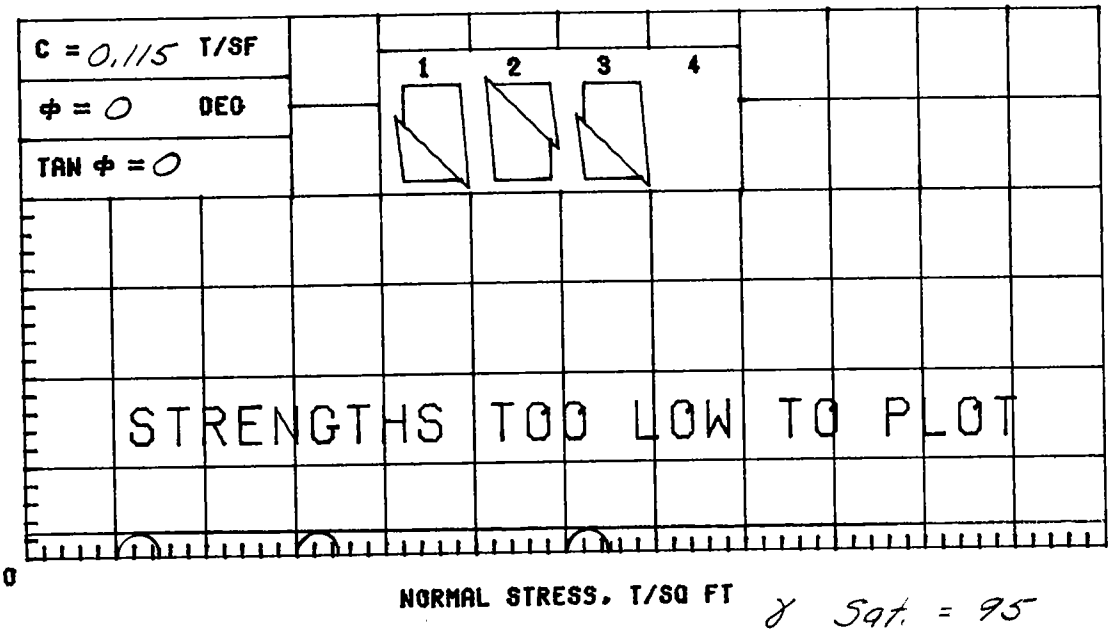
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY ; SILT POCKETS

LL 88	PL 24	PI 64	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

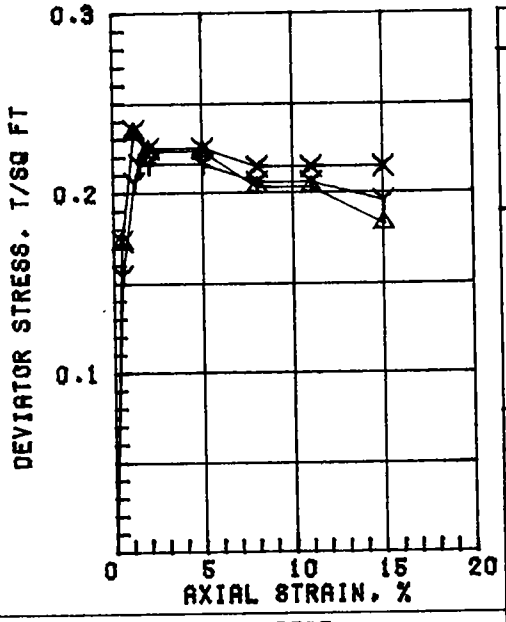
REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 37-U | SAMPLE NO. 2-C
DEPTH/ELEV 10.0/-16.3 | TECH. LRC
LABORATORY USAE WES | DATE 11 JUL 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 95



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	84.7	86.7	85.8	
	DRY DENSITY, PCF	51.8	50.9	51.3	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.256	2.312	2.285	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.23	0.22	0.24	
TIME TO FAILURE, MIN.		2	16	12	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.39	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVG. 85.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

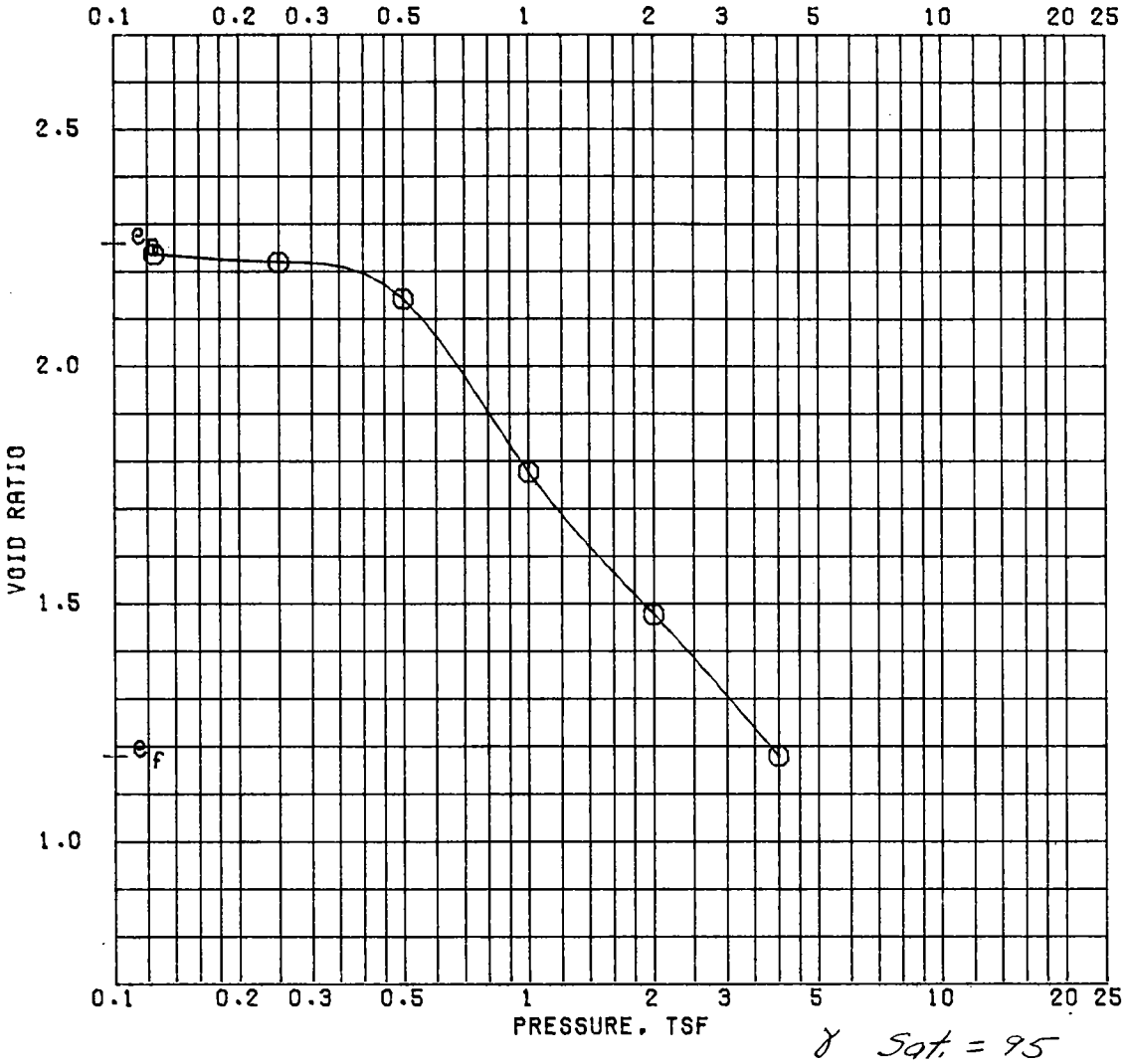
LL 89	PL 26	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 37-U | SAMPLE NO. 6-B
DEPTH/ELEV 21.0/-27.3 | TECH. LRC
LABORATORY USAE WES | DATE 11 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 95

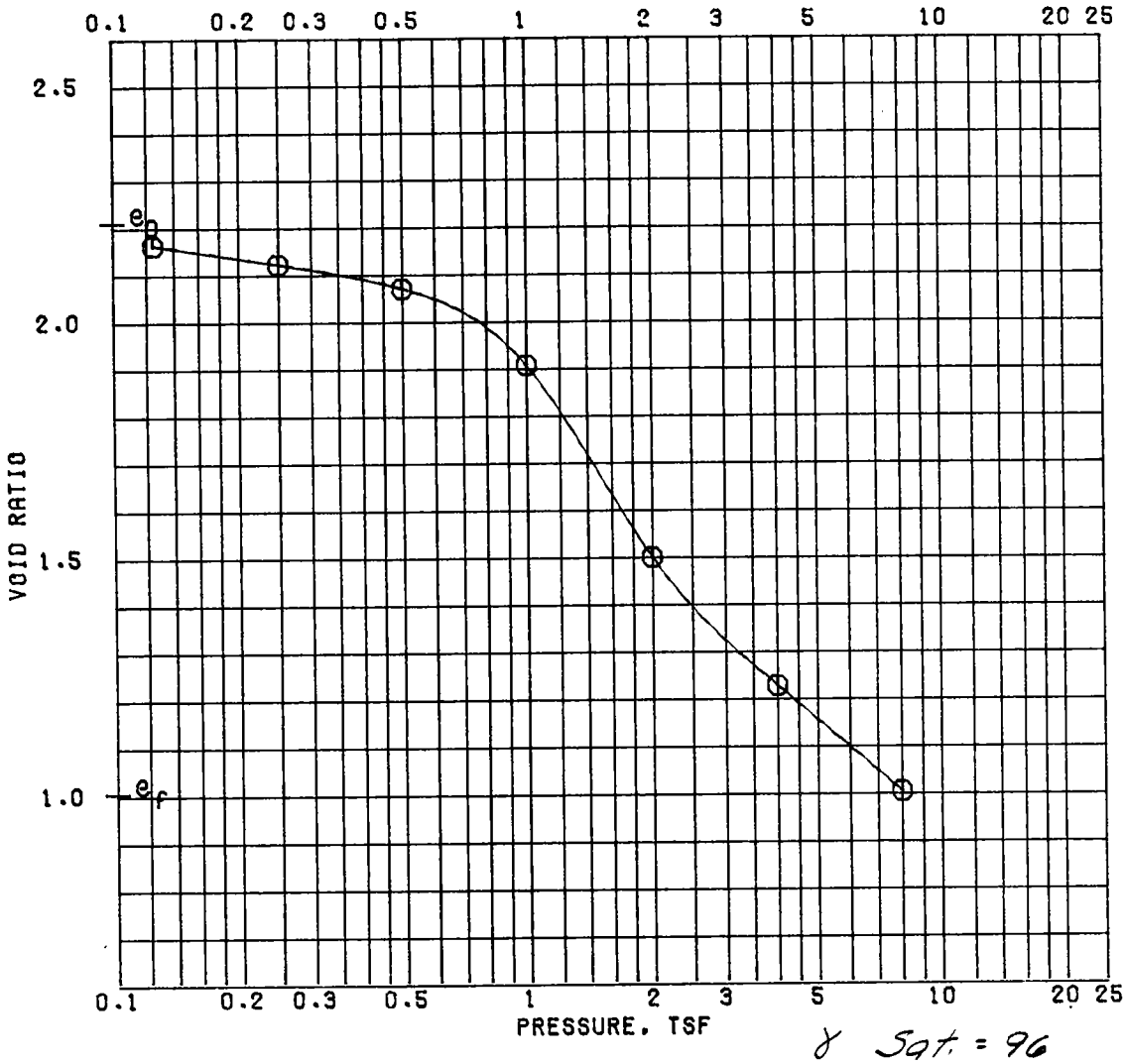
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.50	DRY DENSITY, PCF	51.8	77.5
COMPRESSION INDEX 1.28	SATURATION, %	98.5	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	2.255	1.176
DIA. IN 4.44 HT. IN 1.121	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 82 PL 21 PI 61	PROJECT LK. PONT. & VIC. HURR. PROT.
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISH
REMARKS	BORING NO. 37-U / SAMPLE NO. 6-C
	DEPTH/ELEV 22.4/-28.7 / DATE 06 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. = 96

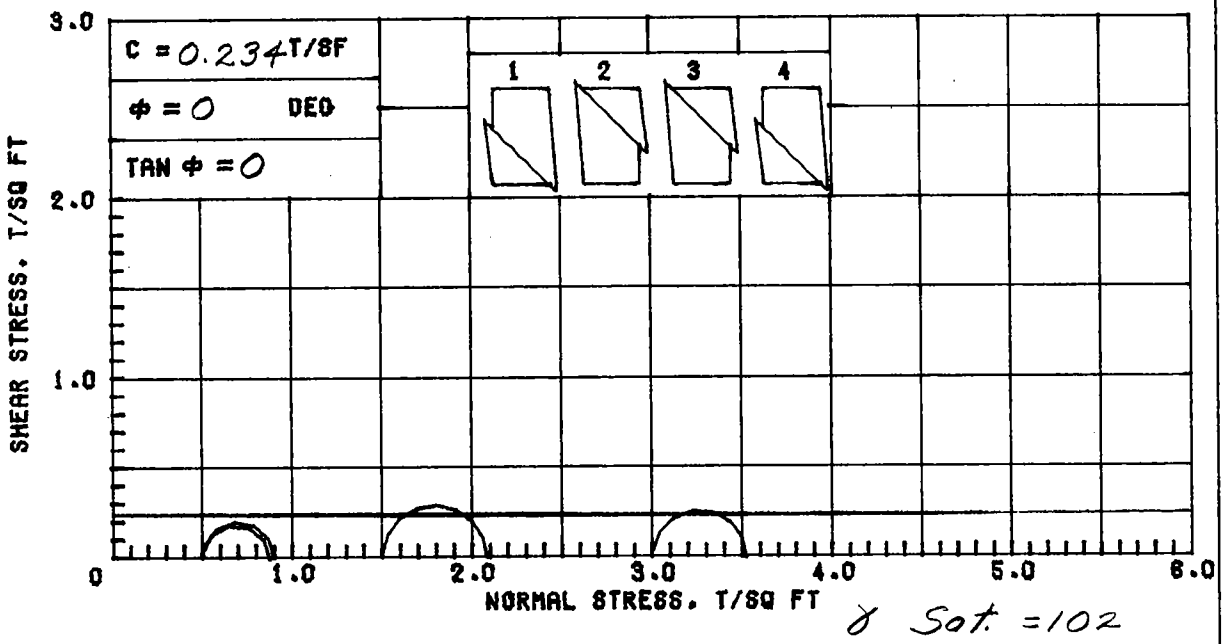
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF 0.84	WATER CONTENT, % 80.9	38.6
PRECONSOL. PRESSURE, TSF 1.38	DRY DENSITY, PCF 52.6	84.2
COMPRESSION INDEX	SATURATION, % 98.9	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO 2.207	1.002
DIA. IN 4.44 HT. IN 1.126	BACK PRESSURE, TSF	

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 93 PL 23 PI 70	PROJECT LK. PONT. & VIC. HURR. PROT.
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISH
REMARKS	BORING NO. 37-U SAMPLE NO. 9-B
	DEPTH/ELEV 32.9/-39.2 DATE 07 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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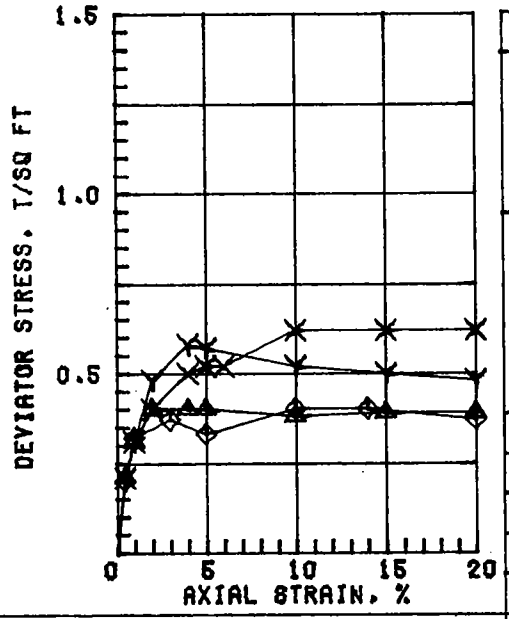


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	66.1	55.1	48.6	74.6
	DRY DENSITY, PCF	59.6	65.5	69.8	55.1
	SATURATION, %	97.6	94.6	92.8	97.9
	VOID RATIO	1.828	1.572	1.414	2.058
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.40	0.58	0.52	0.37
TIME TO FAILURE, MIN.		4	24	30	18
RATE OF STRAIN INCR.%			6	6	6
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 61.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 3/4" SILT LAYER

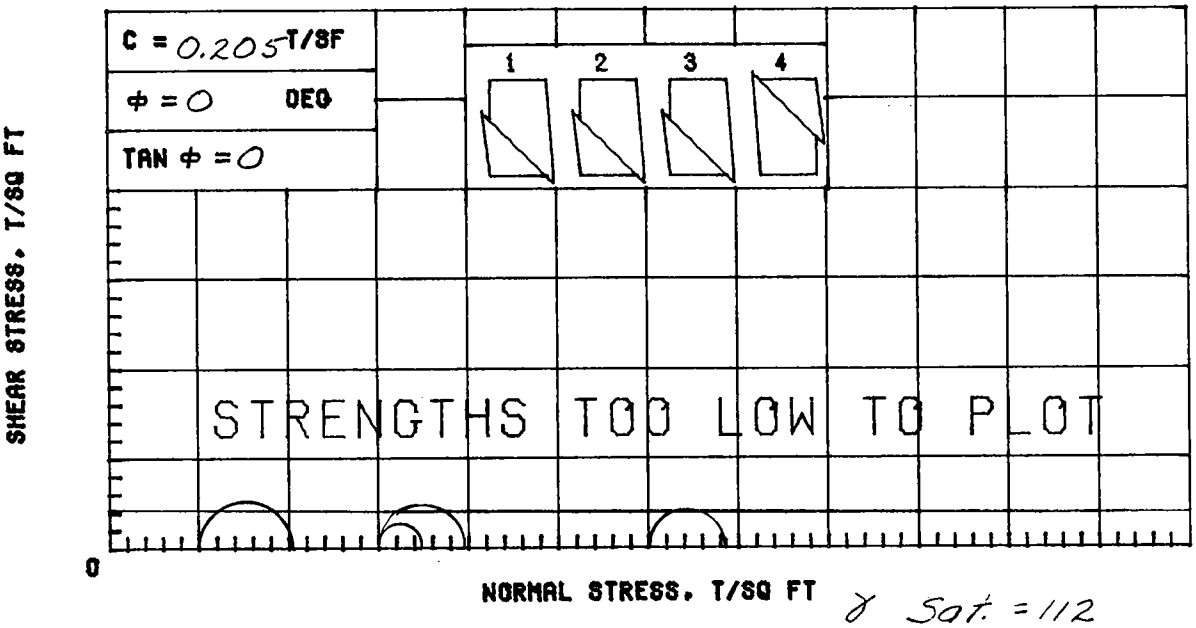
LL 66	PL 19	PI 47	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 37-U | SAMPLE NO. 9-C
DEPTH/ELEV 34.0/-40.3 | TECH. KGC
LABORATORY USAE WES | DATE 11 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



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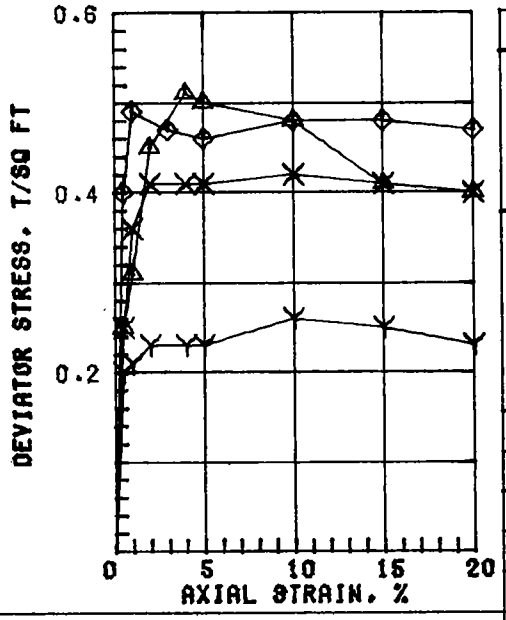


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	35.7	42.6	37.2	45.3	40.2
	DRY DENSITY, PCF	82.2	75.6	81.1	76.2	
	SATURATION, %	91.7	93.6	93.2	100+	
	VOID RATIO	1.051	1.229	1.078	1.213	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		0.51	0.23	0.41	0.49	
TIME TO FAILURE, MIN.		8	12	12	6	
RATE OF STRAIN INCR.%			6	6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS; SHELL PARTICLES

LL 46	PL 14	PI 32	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LK. PONT. & VIC. HURR. PROT.

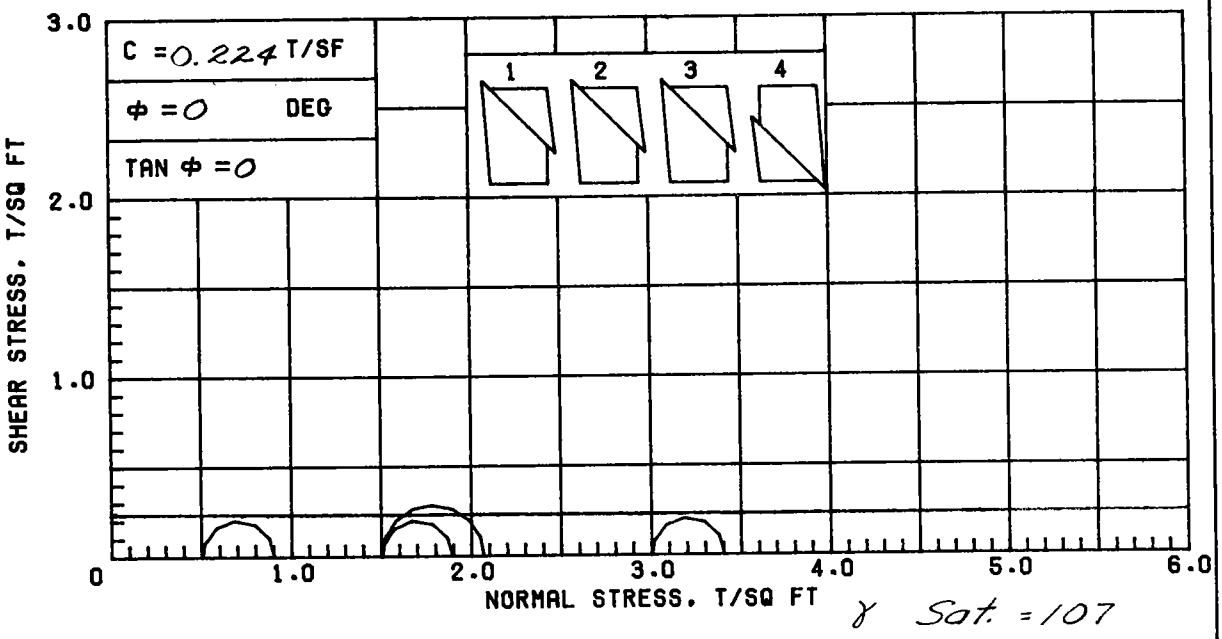
JEFFERSON & ST. CHARLES PARISH

BORING NO. 37-U | SAMPLE NO. 11-C

DEPTH/ELEV 42.3/-48.6 | TECH. KOC

LABORATORY USAE WES | DATE 11 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



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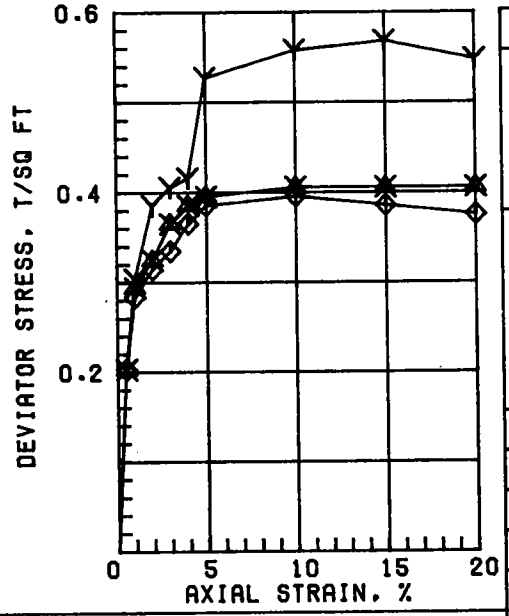


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	50.7	50.4	47.7	51.2
	DRY DENSITY, PCF	71.3	71.1	72.9	69.4
	SATURATION, %	100+	99.2	98.1	96.7
	VOID RATIO	1.364	1.372	1.313	1.436
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5
MAX. DEV. STRESS, TSF		0.41	0.57	0.41	0.40
TIME TO FAILURE, MIN.		20	30	20	20
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 50.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

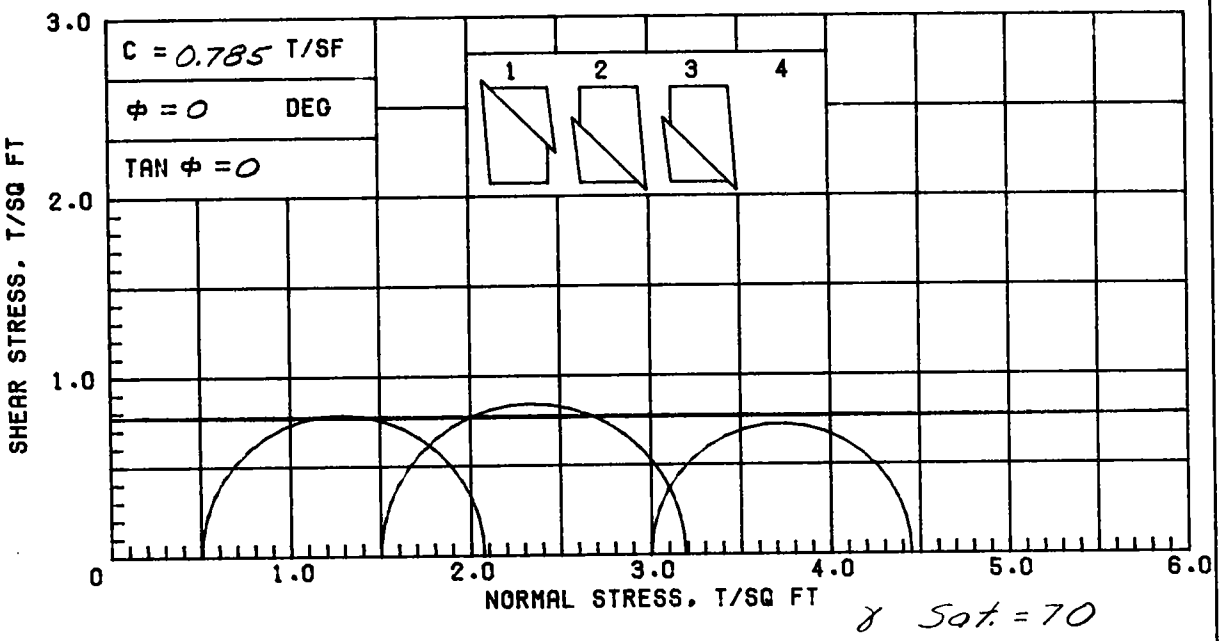
LL 76	PL 22	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 38-U | SAMPLE NO. 1-C
DEPTH/ELEV 1.7/-1.8 | TECH. KOC
LABORATORY USAE WES | DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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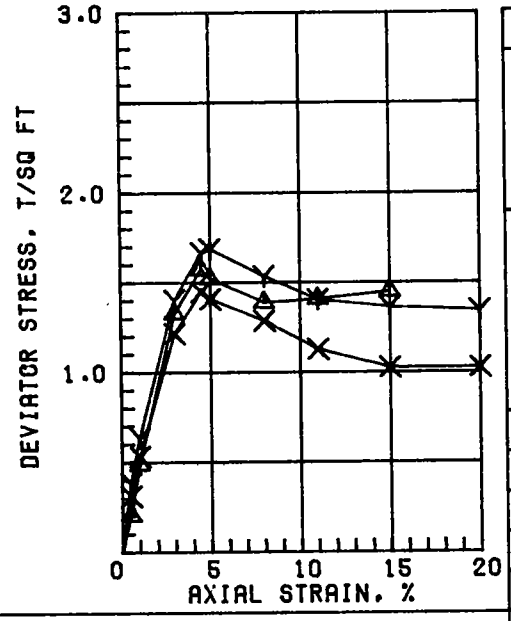


	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	263.4	270.9	259.9	
	DRY DENSITY, PCF	18.4	18.1	18.1	
	SATURATION, %	93.8	94.8	91.0	
	VOID RATIO	4.772	4.858	4.854	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.57	1.69	1.45	
TIME TO FAILURE, MIN.		45	23	17	
RATE OF STRAIN INCR.%		5	6	5	
INITIAL DIAMETER, IN.		1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 2647

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), BLACK

LL 366	PL 227	PI 139	OS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

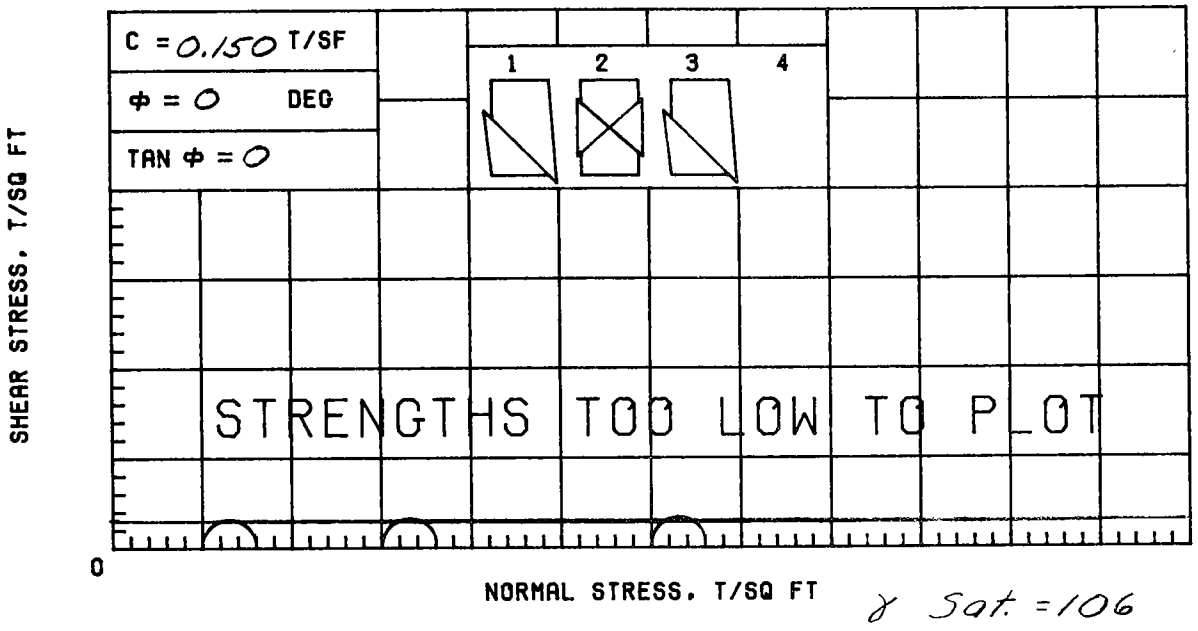
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 38-U | SAMPLE NO. 3-C

DEPTH/ELEV 9.0/-9.1 | TECH. LRC

LABORATORY USAE WES | DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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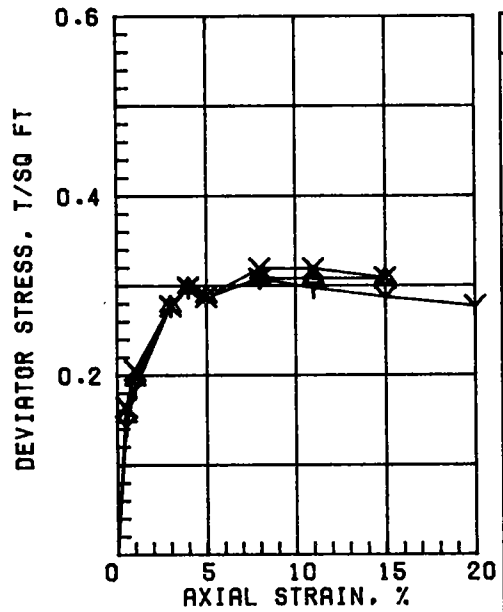


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	53.1	54.7	55.1	
	DRY DENSITY, PCF	70.0	68.5	68.1	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.407	1.462	1.475	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.30	0.30	0.30	
TIME TO FAILURE, MIN.		44	15	19	
RATE OF STRAIN INCR.%		5	6	5	
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 54.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/2" SILT LAYERS

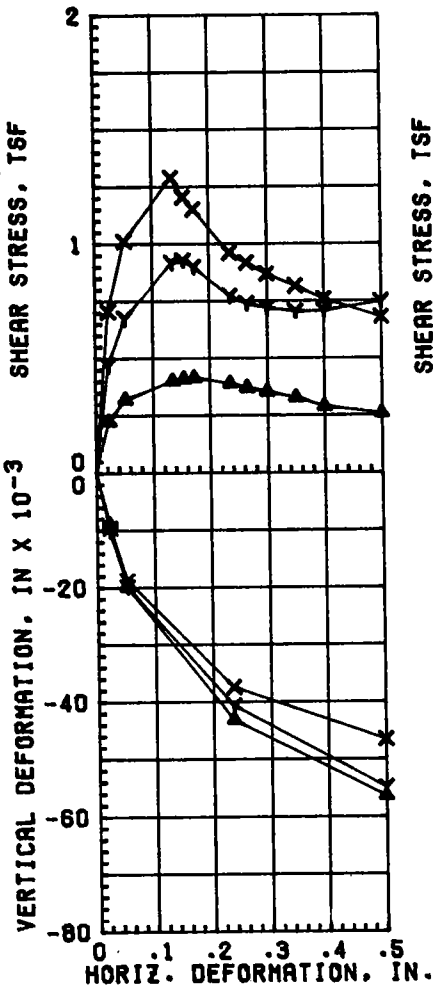
LL 61	PL 19	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

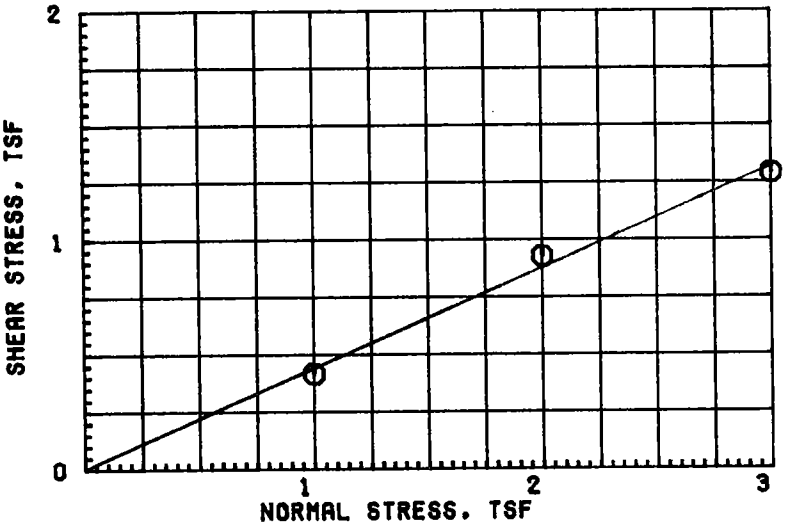
REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 38-U | SAMPLE NO. 6-C
DEPTH/ELEV 20.9/-21.0 | TECH. LRC
LABORATORY USAE WES | DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 107

Φ = 24°

TAN Φ = 0.445

C = 0

TEST NO.		1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	45.1	49.5	43.1	45.9
	VOID RATIO	1.395	1.464	1.334	
	SATURATION, %	87.3	91.3	87.3	
	DRY DENSITY, PCF	70.3	68.4	72.2	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		2	2	2	
FINAL	WATER CONTENT, %	43.6	39.8	34.6	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.42	0.93	1.29	
TIME TO FAILURE, MIN		949	851	741	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.553 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 55 | PL 19 | PI 36 | | GS 2.70 (EST)

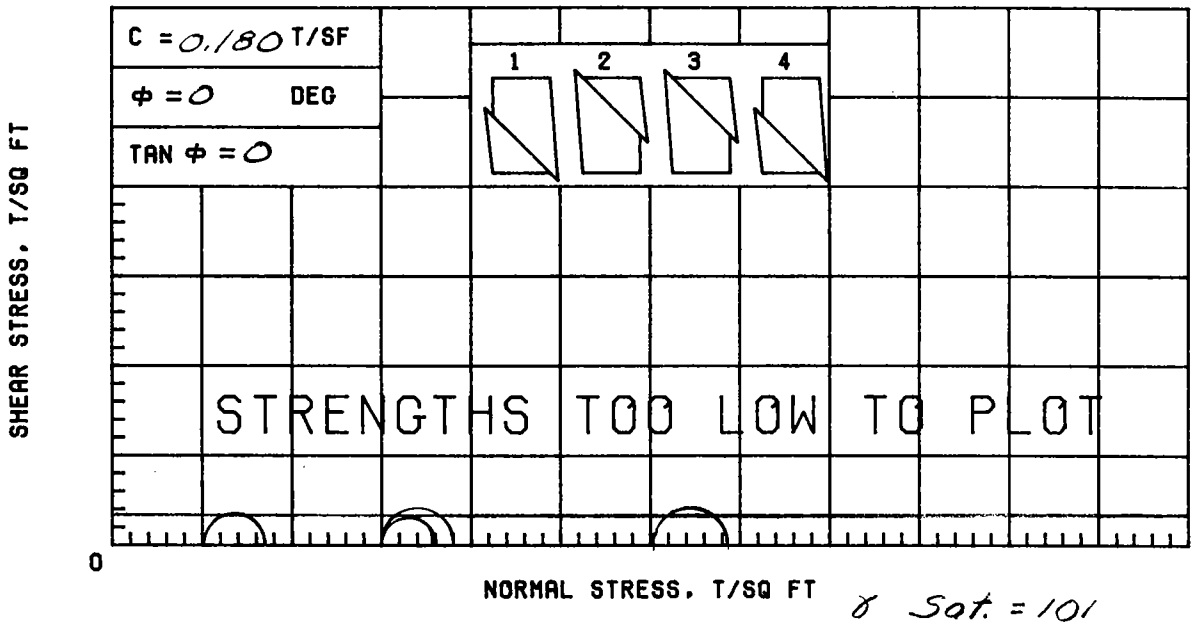
REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

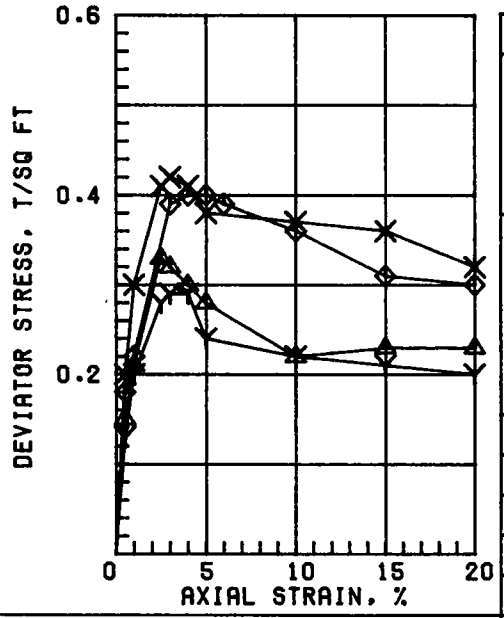
BORING NO. 38-U | SAMPLE 8-B

DEPTH/ELEV 27.9/-28.0 | DATE 27 MAR 85

DIRECT SHEAR TEST REPORT



γ Sat. = 101



SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	65.2	66.0	65.1	65.3	65.4
	DRY DENSITY, PCF	62.1	59.9	60.7	59.9	
	SATURATION, %	100+	98.1	99.0	97.3	
	VOID RATIO	1.714	1.816	1.776	1.812	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		0.33	0.29	0.42	0.40	
TIME TO FAILURE, MIN.		5	18	18	24	
RATE OF STRAIN INCR.%			6	6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 83	PL 24	PI 59	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

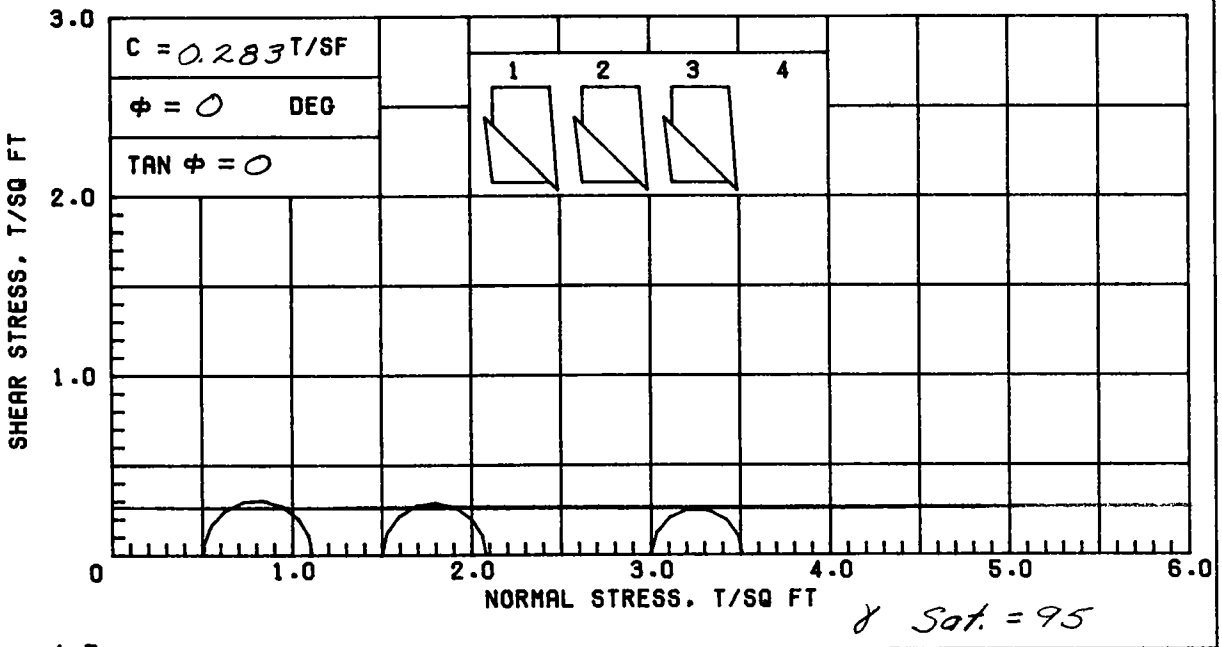
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 38-U | SAMPLE NO. 9-C

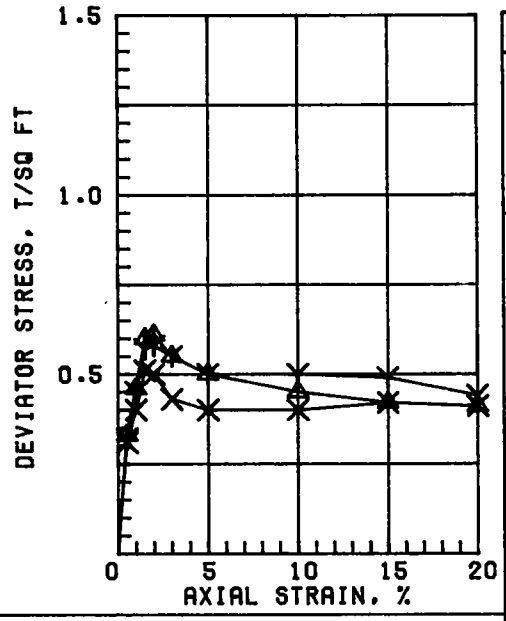
DEPTH/ELEV 32.9/-33.0 | TECH. KOC

LABORATORY USAE WES | DATE 05 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 95



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	83.0	84.0	77.6	
	DRY DENSITY, PCF	51.4	51.1	53.0	
	SATURATION, %	98.3	98.6	96.2	
	VOID RATIO	2.280	2.300	2.179	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.61	0.58	0.51	
TIME TO FAILURE, MIN.		4	12	9	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 81.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 94	PL 26	PI 68	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

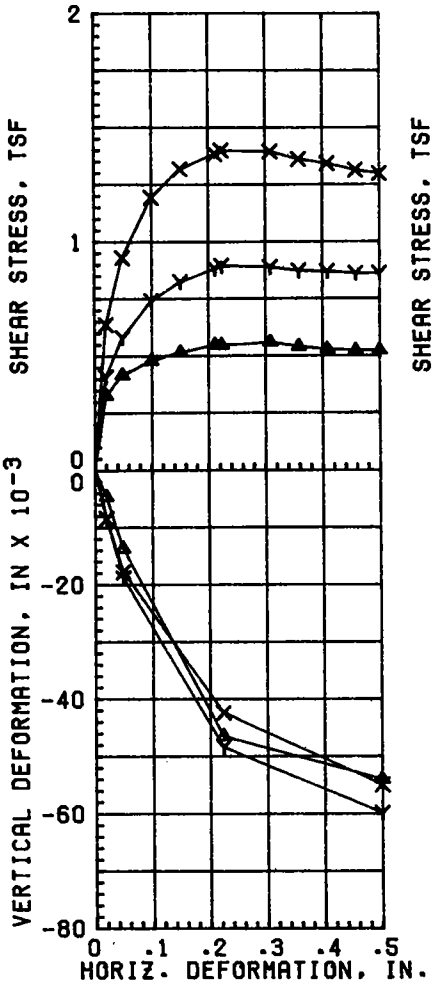
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

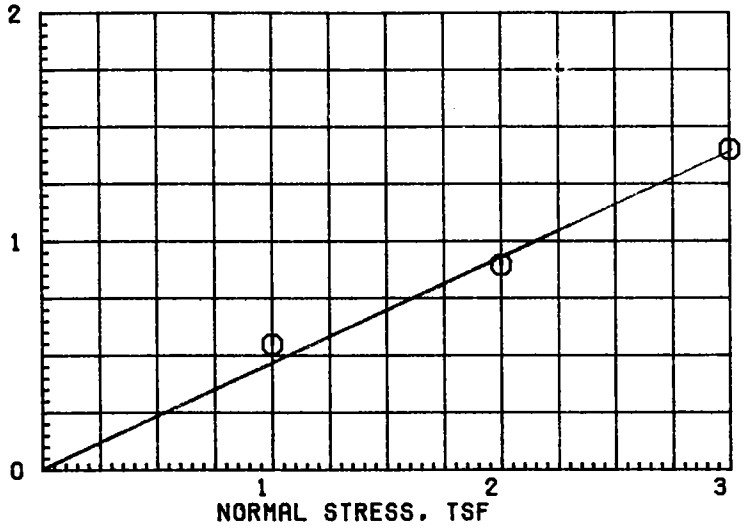
BORING NO. 38-U — SAMPLE NO. 12-C

DEPTH/ELEV 44.9/-45.0 — TECH. KOC

LABORATORY USAE WES — DATE 05 APR 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 98

	TEST NO.	1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	69.3	69.7	69.7	69.6
	VOID RATIO	1.952	1.964	1.965	
	SATURATION, %	95.8	95.8	95.7	
	DRY DENSITY, PCF	57.1	56.8	56.8	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	13	14	
FINAL	WATER CONTENT, %	60.8	51.7	43.6	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.55	0.89	1.40	
TIME TO FAILURE, MIN		1150	1214	1214	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

$\phi = 25°$

TAN $\phi = 0.466$

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.554 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL | PL | PI | | GS 2.70 (EST)

REMARKS:

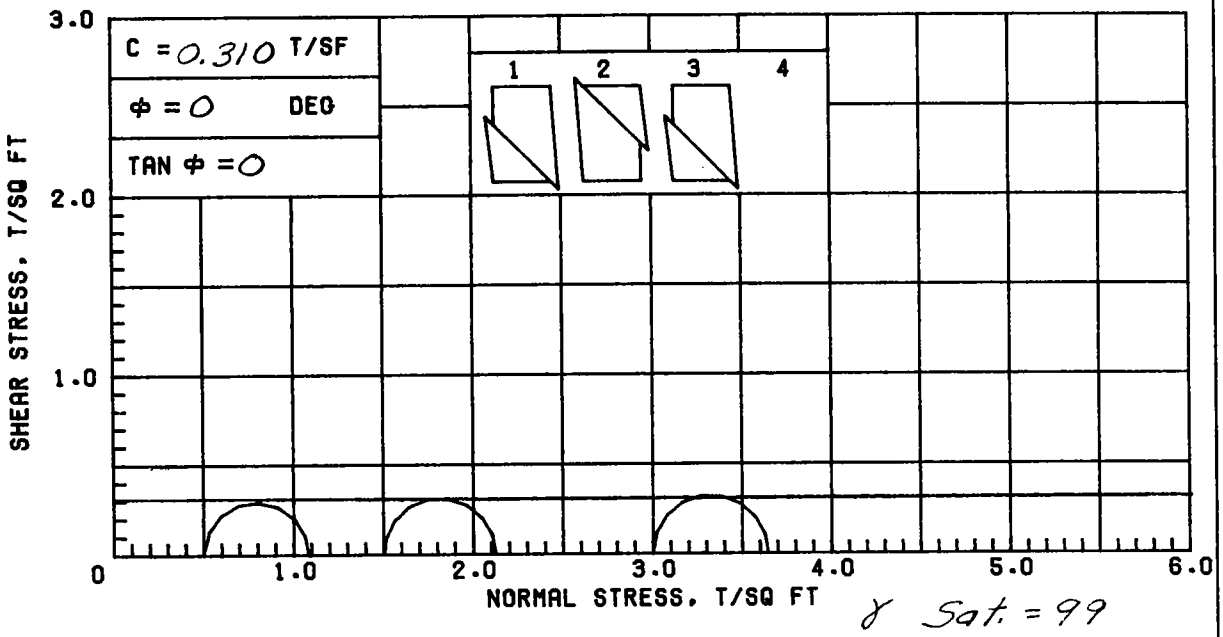
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.

JEFF PARISH & ST. CHARLES PARISH

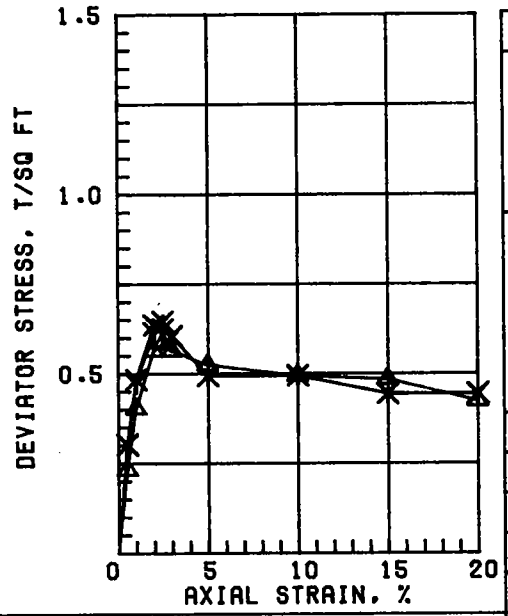
BORING NO. 38-U | SAMPLE 14-B

DEPTH/ELEV 52.0/-52.1 | DATE 26 MAR 85

DIRECT SHEAR TEST REPORT



γ Sat. = 99



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	69.2	65.8	73.0	
	DRY DENSITY, PCF	57.8	59.3	56.4	
	SATURATION, %	97.6	96.5	99.1	
	VOID RATIO	1.915	1.842	1.989	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.58	0.62	0.65	
TIME TO FAILURE, MIN.		5	15	15	
RATE OF STRAIN INCR,%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 69.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; FINE SAND SEAMS; SHELLS

LL 80	PL 22	PI 58	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

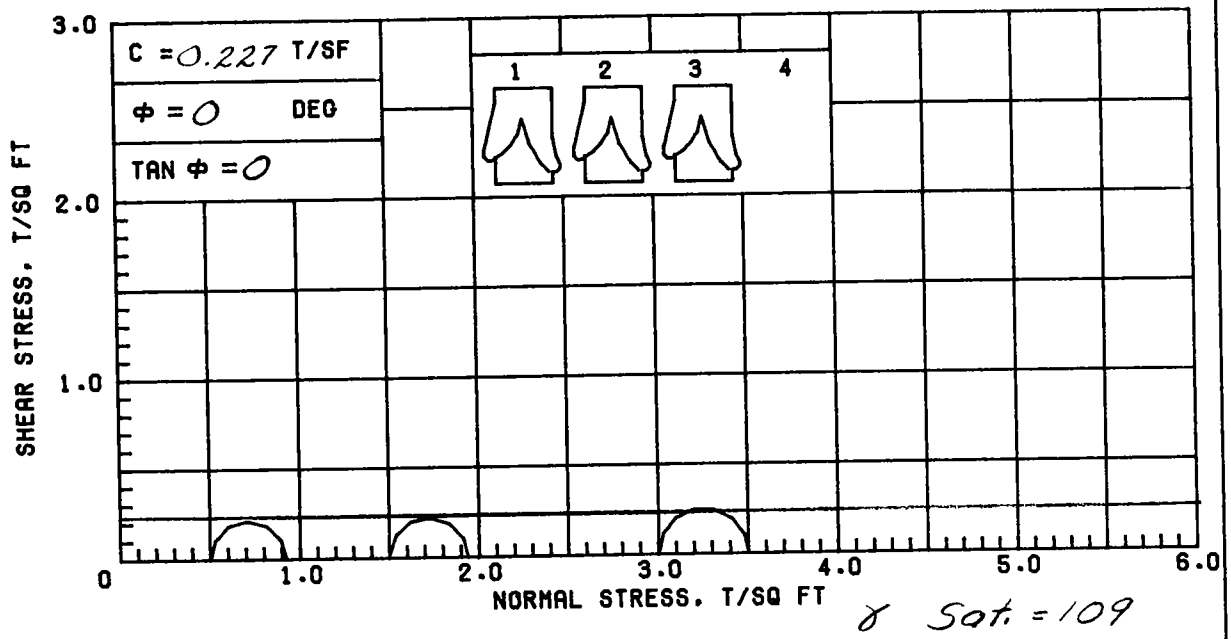
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 38-U — SAMPLE NO. 14-C

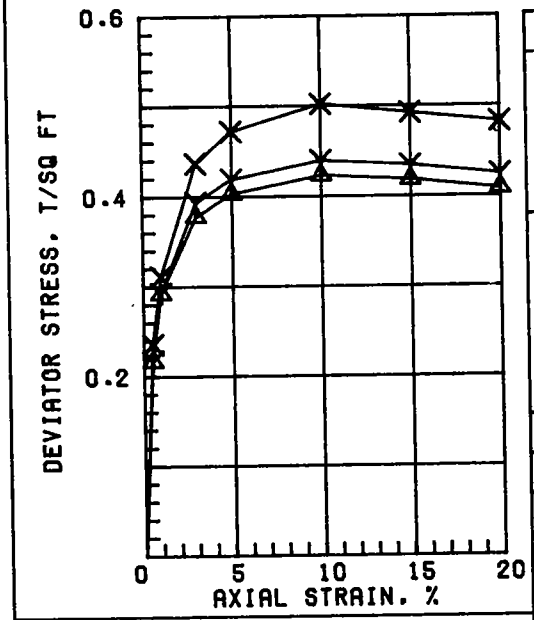
DEPTH/ELEV 52.9/-53.0 — TECH. KOC

LABORATORY USAE WES — DATE 05 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 109



SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	48.1	48.8	46.5		47.8
	DRY DENSITY, PCF	73.4	73.0	74.7		
	SATURATION, %	100+	100+	100.0		
	VOID RATIO	1.297	1.310	1.256		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.42	0.44	0.50		
TIME TO FAILURE, MIN.		18	20	20		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.40		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

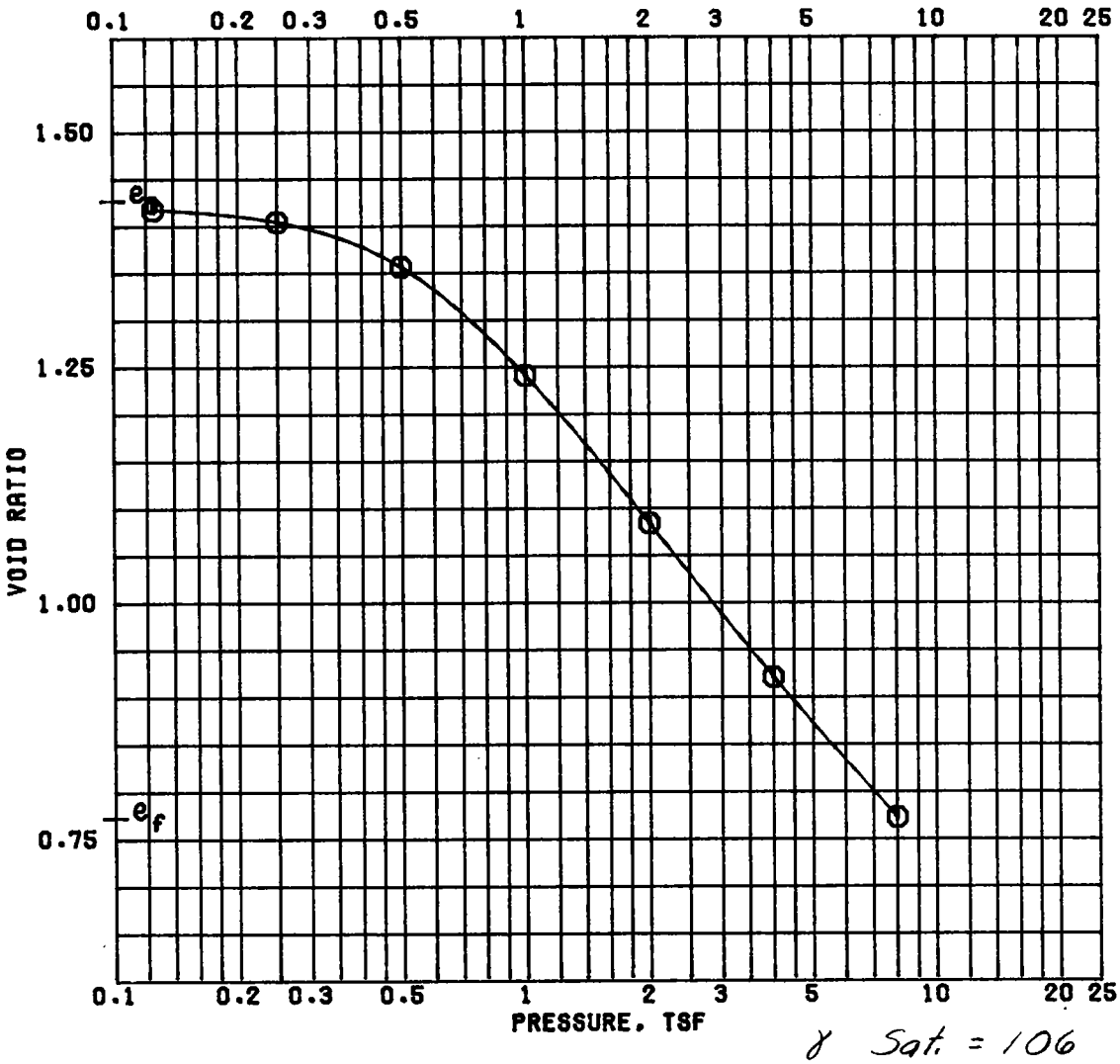
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 67	PL 18	PI 49	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF PARISH & ST. CHARLES PARISH	
	BORING NO. 39-U	SAMPLE NO. 2-C
	DEPTH/ELEV 5.4/1.6	TECH. PJR
	LABORATORY USAE WES	DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 106

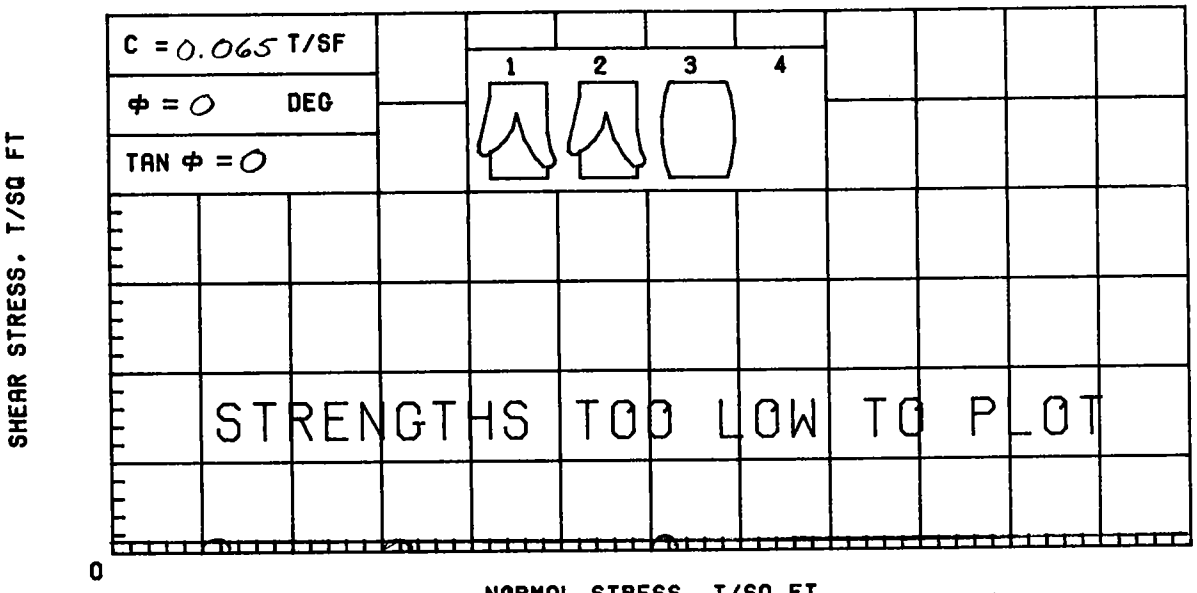
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.59	DRY DENSITY, PCF	69.5	95.2
COMPRESSION INDEX 0.52	SATURATION, %	96.7	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.425	0.771
DIA. IN 4.44 HT. IN 1.125	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; CONCRETIONS

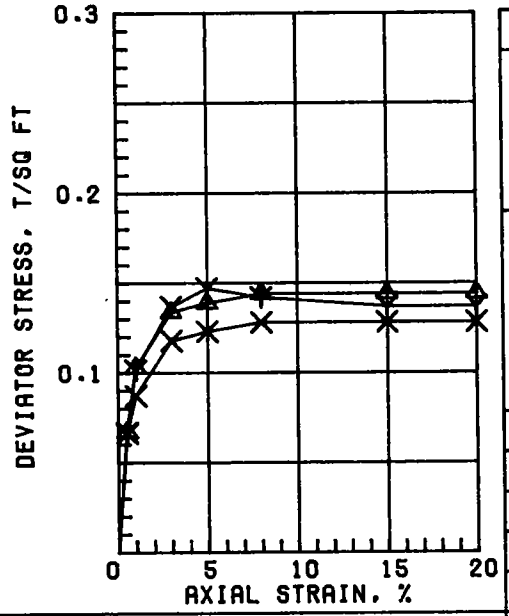
LL 70 PL 20 PI 50	PROJECT LAKE PONT. LA & VIC. HURR. PROT.
GS 2.70 (EST) D_{10}	JEFF PARISH & ST. CHARLES PARISH
REMARKS	BORING NO. 39-U SAMPLE NO. 3-C
	DEPTH/ELEV 8.9/-1.9 DATE 15 APR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



& Sat. = 103



SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	65.5	58.9	60.6		61.7
	DRY DENSITY, PCF	61.5	65.0	63.5		
	SATURATION, %	100+	99.8	99.0		
	VOID RATIO	1.742	1.593	1.653		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.14	0.15	0.13		
TIME TO FAILURE, MIN.		16	11	18		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.38	1.39	1.38		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 70	PL 21	PI 49	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

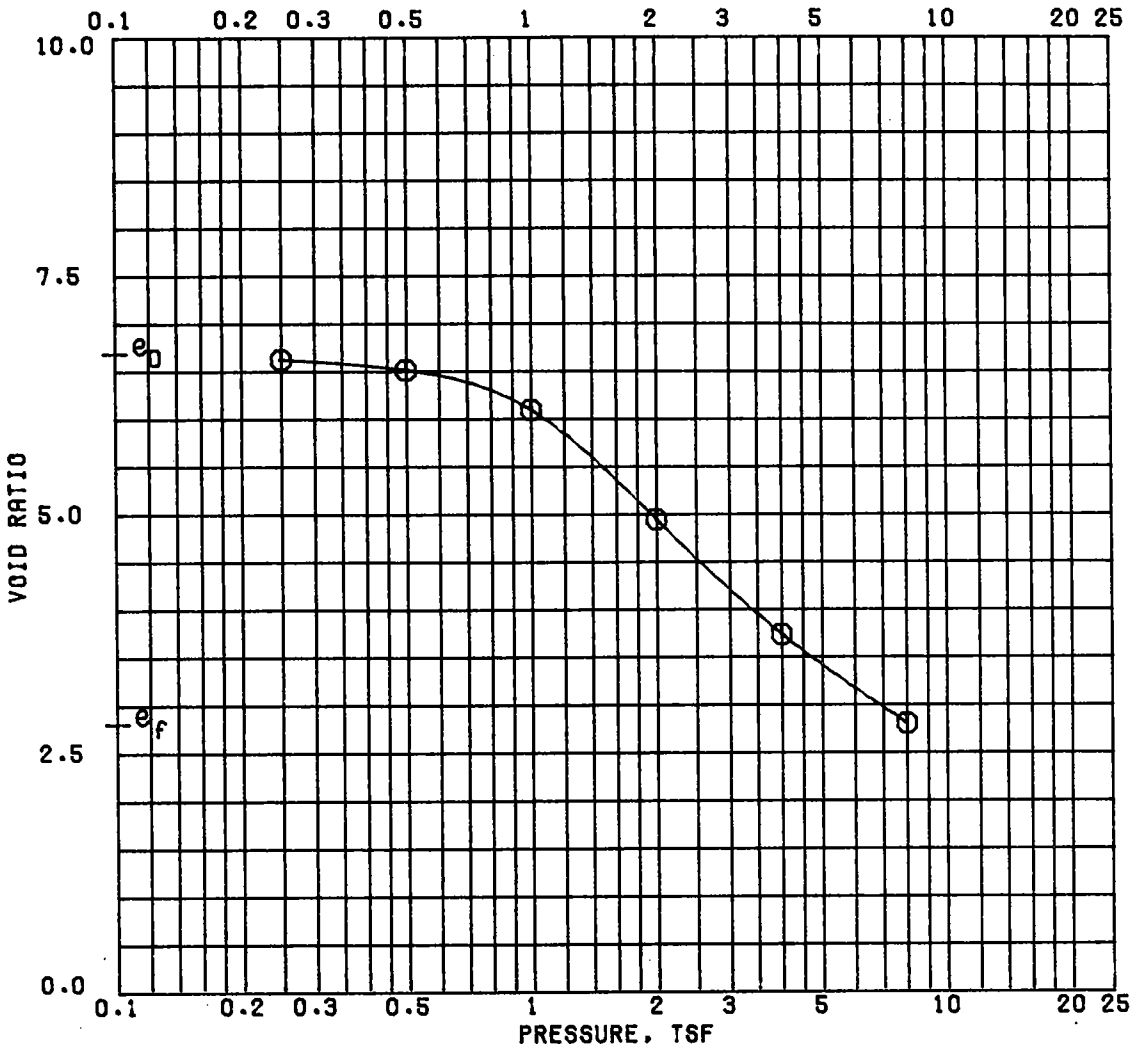
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 39-U | SAMPLE NO. 5-B

DEPTH/ELEV 16.0/-9.0 | TECH. PJR

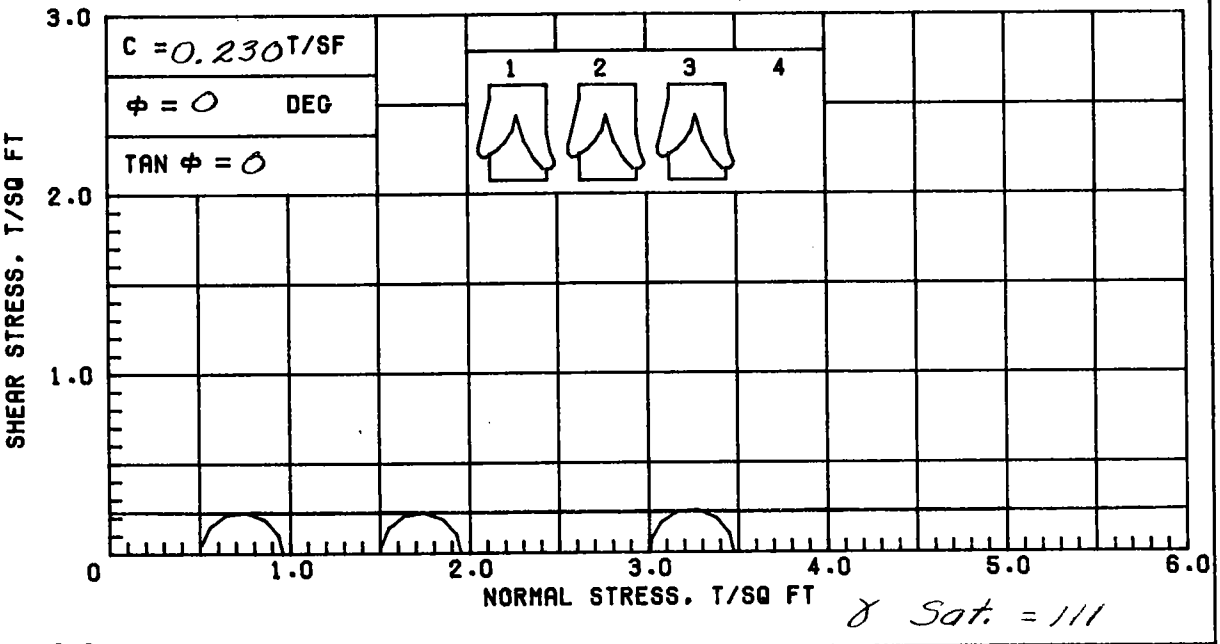
LABORATORY USAE WES | DATE 08 APR 85

TRIAXIAL COMPRESSION TEST REPORT



			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	361.6	165.6
PRECONSOL. PRESSURE, TSF	1.00	DRY DENSITY, PCF	13.8	28.0
COMPRESSION INDEX	4.20	SATURATION, %	92.2	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	6.671	2.789
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		
CLASSIFICATION	PEAT (PT), DARK BROWN			
LL 357	PL 219 PI 138	PROJECT	LAKE PONT. LA & VIC. HURR. PROT.	
GS 1.70 (EST)	D_{10}		JEFF PARISH & ST. CHARLES PARISH	
REMARKS		BORING NO. 39-U		SAMPLE NO. 6-B
		DEPTH/ELEV 20.0/-13.0		DATE 16 APR 85
		CONSOLIDATION TEST REPORT		

SHEET 1 OF 8



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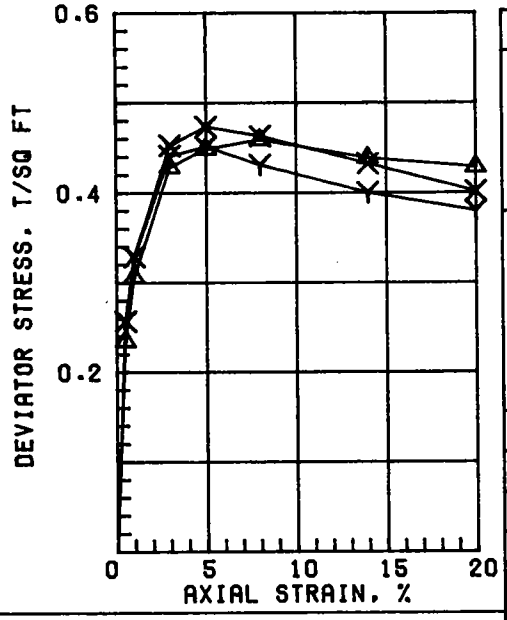


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	45.1	46.9	48.1	
	DRY DENSITY, PCF	76.9	75.8	74.6	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.191	1.223	1.258	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.46	0.45	0.47	
TIME TO FAILURE, MIN.		16	15	11	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 46.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; SILT LENSES

LL 42	PL 18	PI 24	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

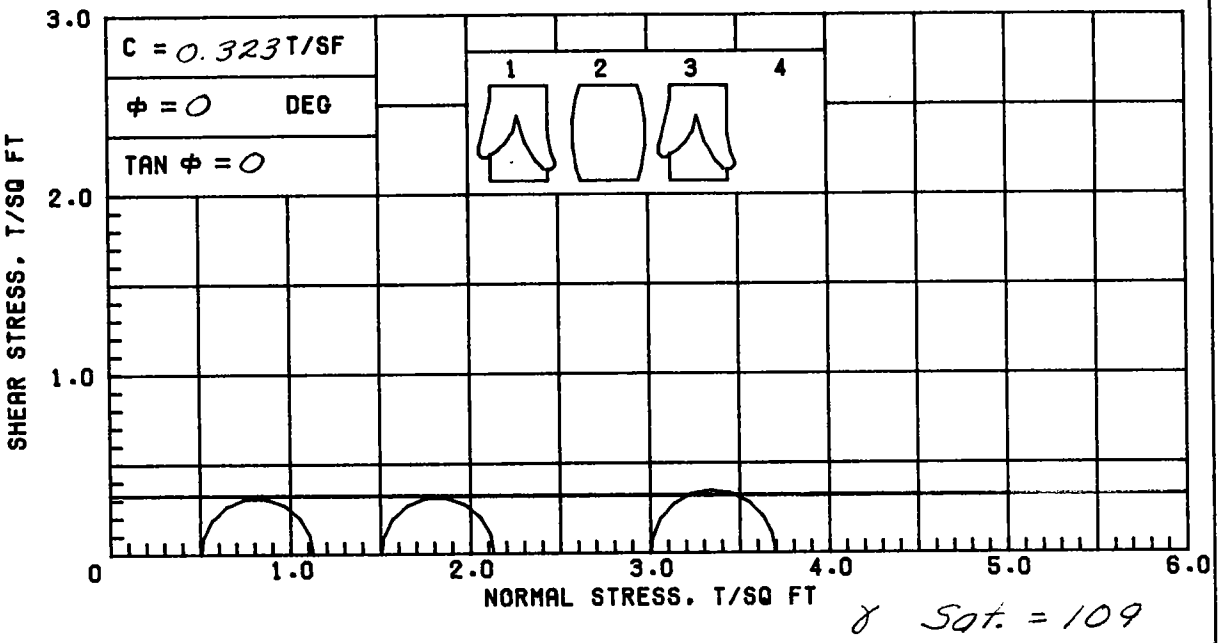
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 39-U | SAMPLE NO. 8-B

DEPTH/ELEV 28.0/-21.0 | TECH. PJR

LABORATORY USAE WES | DATE 08 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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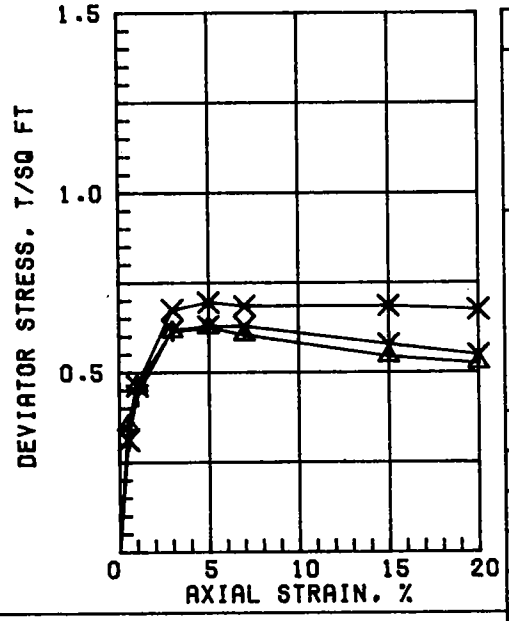


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	49.1	47.6	43.2	
	DRY DENSITY, PCF	71.9	72.8	75.0	
	SATURATION, %	98.7	97.8	93.5	
	VOID RATIO	1.344	1.314	1.248	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.62	0.63	0.69	
TIME TO FAILURE, MIN.		10	16	25	
RATE OF STRAIN INCR.%				7	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 46.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 52	PL 17	PI 35	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

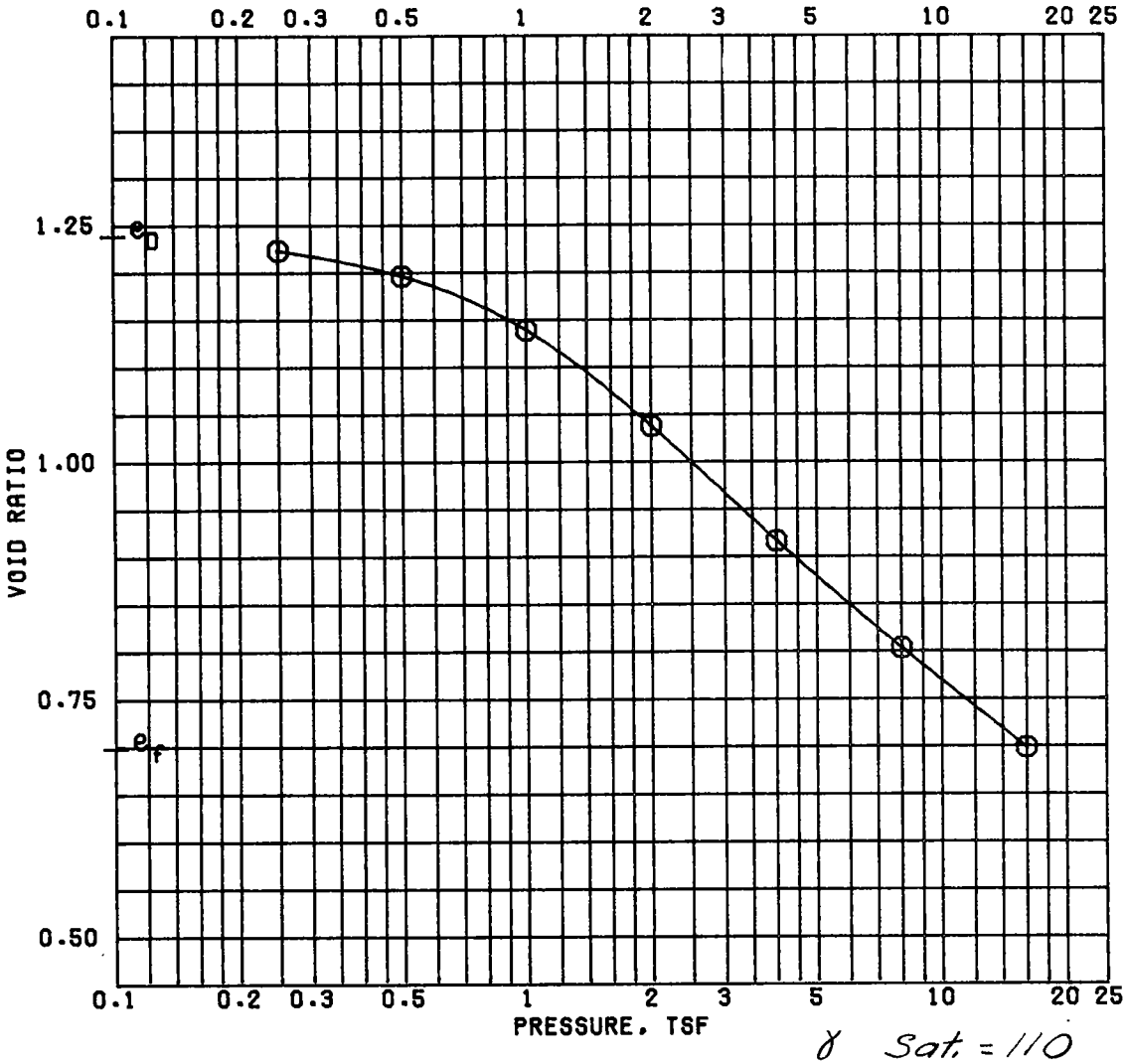
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 39-U | SAMPLE NO. 10-C

DEPTH/ELEV 36.9/-29.9 | TECH. PJR

LABORATORY USAE WES | DATE 08 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 110

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 1.00		
COMPRESSION INDEX 0.40		
TYPE SPECIMEN UNDISTURBED		
DIA. IN 4.44 HT. IN 1.134		
WATER CONTENT, %	40.5	26.1
DRY DENSITY, PCF	75.4	99.3
SATURATION, %	88.4	100 +
VOID RATIO	1.237	0.697
BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 56 PL 17 PI 39

GS 2.70 (EST) D_{10}

REMARKS

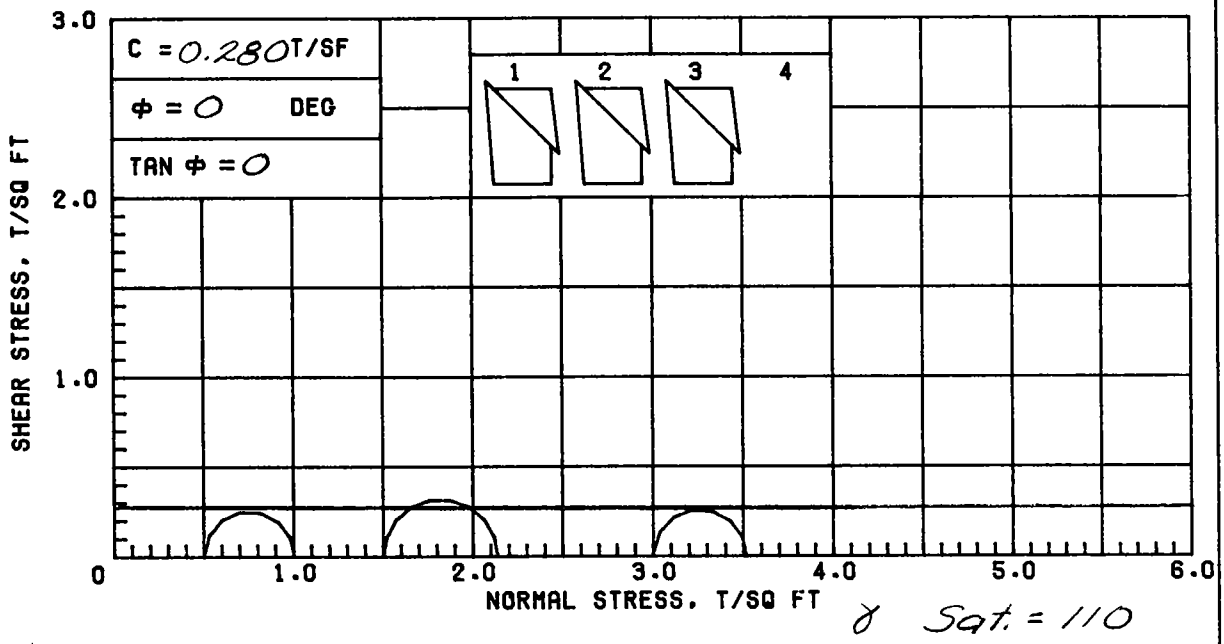
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.

JEFF PARISH & ST. CHARLES PARISH

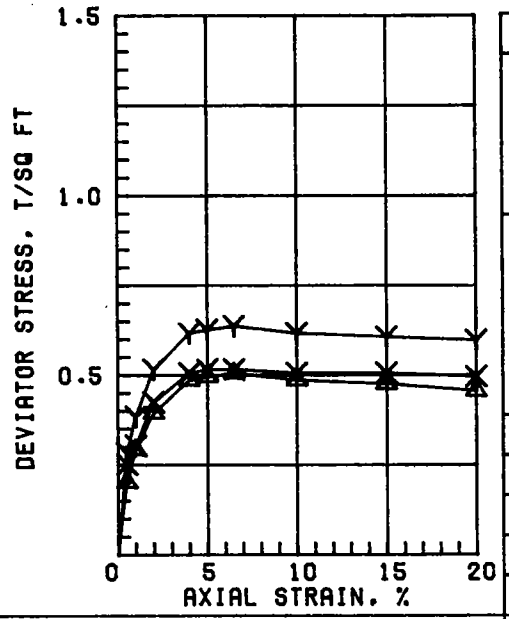
BORING NO. 39-U SAMPLE NO. 11-B

DEPTH/ELEV 40.0/-33.0 DATE 25 MAR 85

CONSOLIDATION TEST REPORT



γ Sat. = 110



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	41.7	40.1	45.9	
	DRY DENSITY, PCF	76.7	76.7	73.6	
	SATURATION, %	93.9	90.5	96.0	
	VOID RATIO	1.199	1.196	1.290	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.51	0.64	0.52	
TIME TO FAILURE, MIN.		13	13	10	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 42.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 47	PL 14	PI 33	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

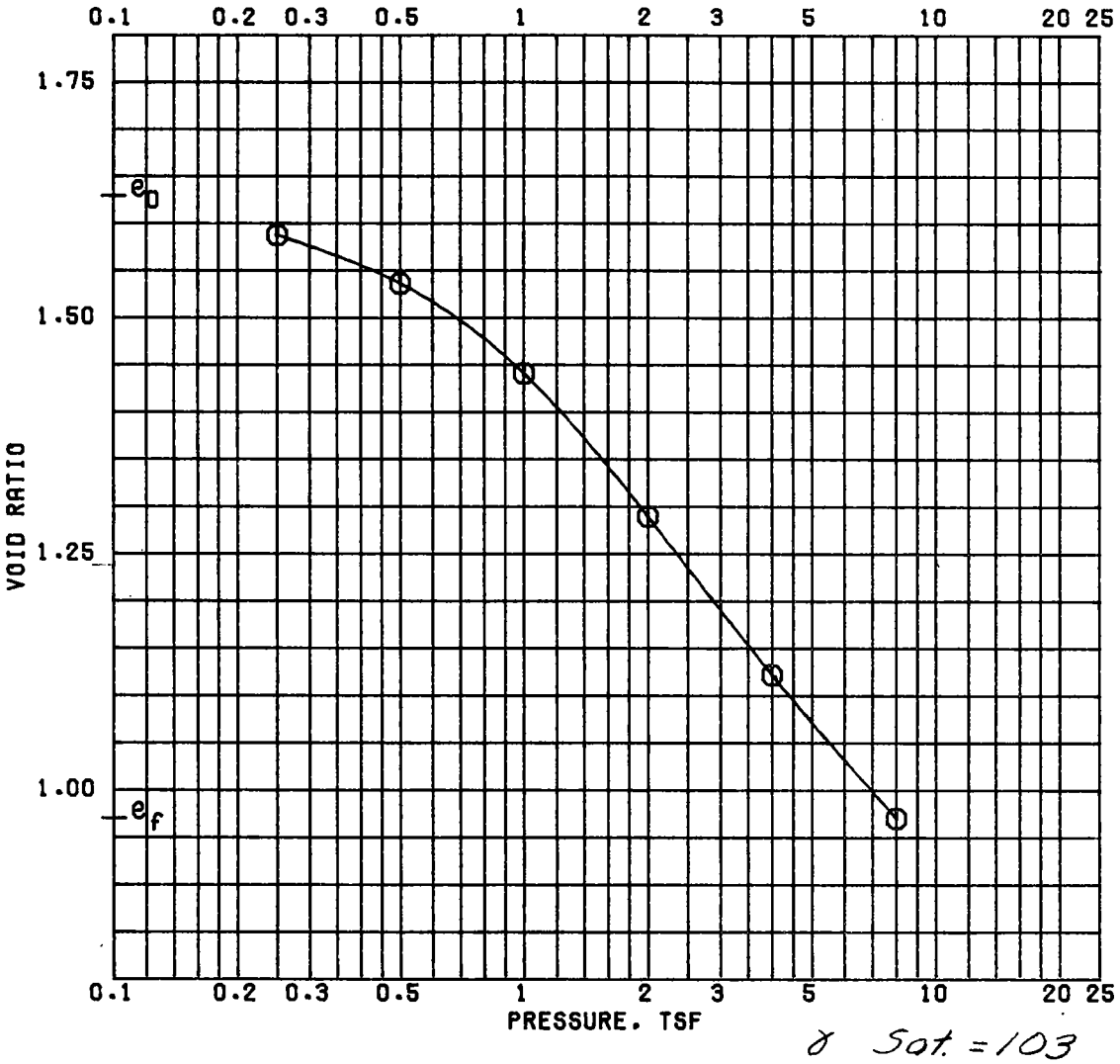
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 39-U — SAMPLE NO. 13-B

DEPTH/ELEV 48.0/-41.0 — TECH. KOC

LABORATORY USAE WES — DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT

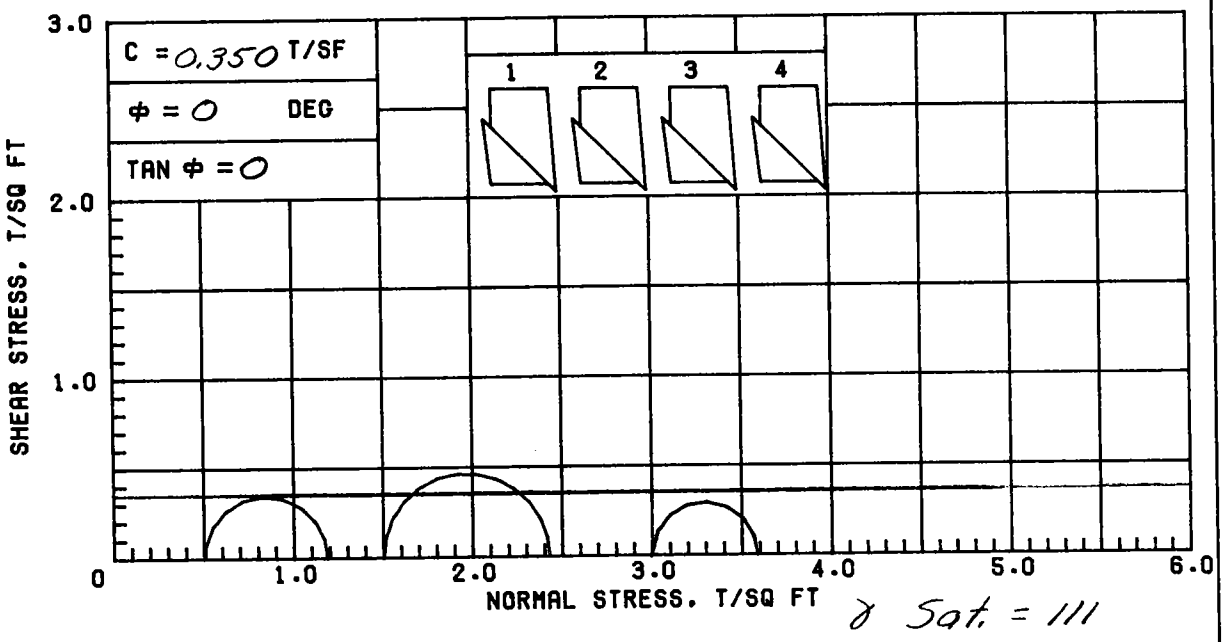


δ Sat. = 103

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE. TSF		
PRECONSOL. PRESSURE. TSF 0.80	DRY DENSITY. PCF	64.2	85.6
COMPRESSION INDEX 0.56	SATURATION. %	92.9	98.9
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.627	0.968
DIA. IN 4.44 HT. IN 1.130	BACK PRESSURE. TSF		
CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT SEAMS			
LL PL PI	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.		
GS 2.70 (EST) D_{10}	JEFF PARISH & ST. CHARLES PARISH		
REMARKS	BORING NO. 39-U	SAMPLE NO. 13-C	
	DEPTH/ELEV 49.2/-42.2	DATE 25 MAR 85	

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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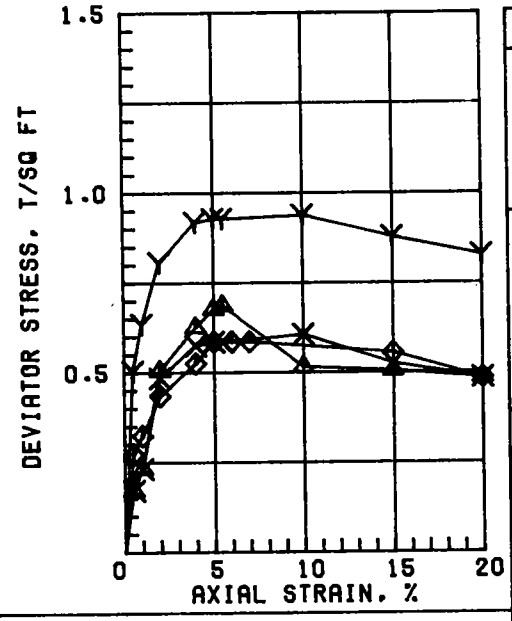


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	41.2	37.7	44.4	44.6
	DRY DENSITY, PCF	78.2	81.0	75.2	75.5
	SATURATION, %	96.4	94.2	96.5	97.8
	VOID RATIO	1.154	1.080	1.243	1.232
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.69	0.93	0.59	0.59
TIME TO FAILURE, MIN.		11	31	30	30
RATE OF STRAIN INCR.%			7	6	7
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 42.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS; SHELL PARTICLES

LL 56	PL 14	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

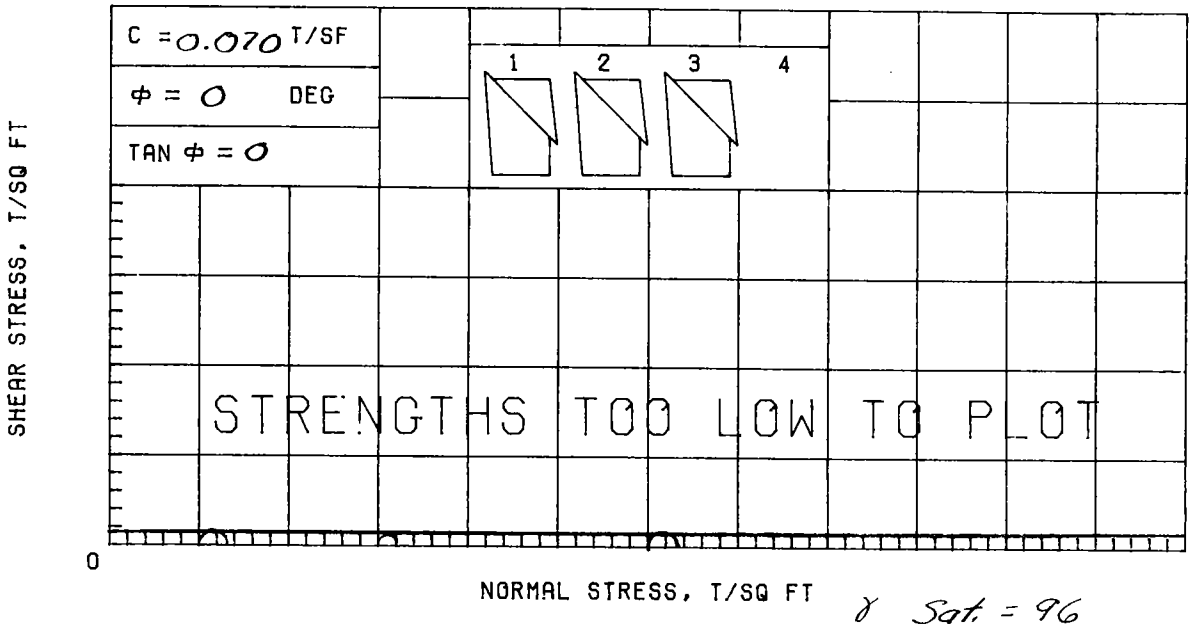
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 39-U | SAMPLE NO. 17-C

DEPTH/ELEV 64.9/-57.9 | TECH. KOC

LABORATORY USAE WES | DATE 06 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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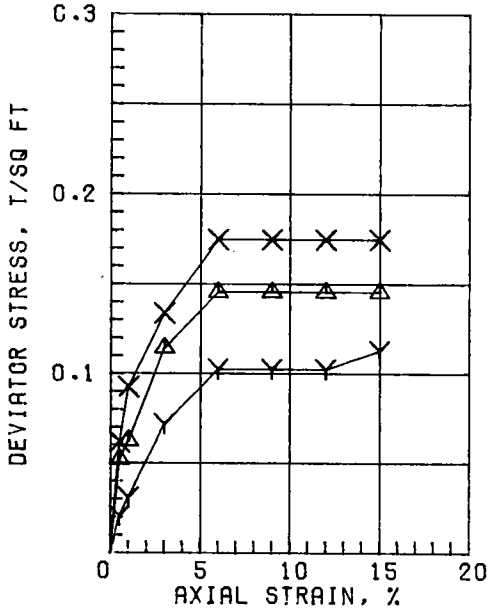


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	79.0	89.5	74.2	
	DRY DENSITY, PCF	53.5	49.4	55.8	
	SATURATION, %	99.1	100+	99.2	
	VOID RATIO	2.153	2.412	2.020	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.15	0.10	0.17	
TIME TO FAILURE, MIN.		12	15	15	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.37	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 80.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL

LL 81	PL 22	PI 59	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

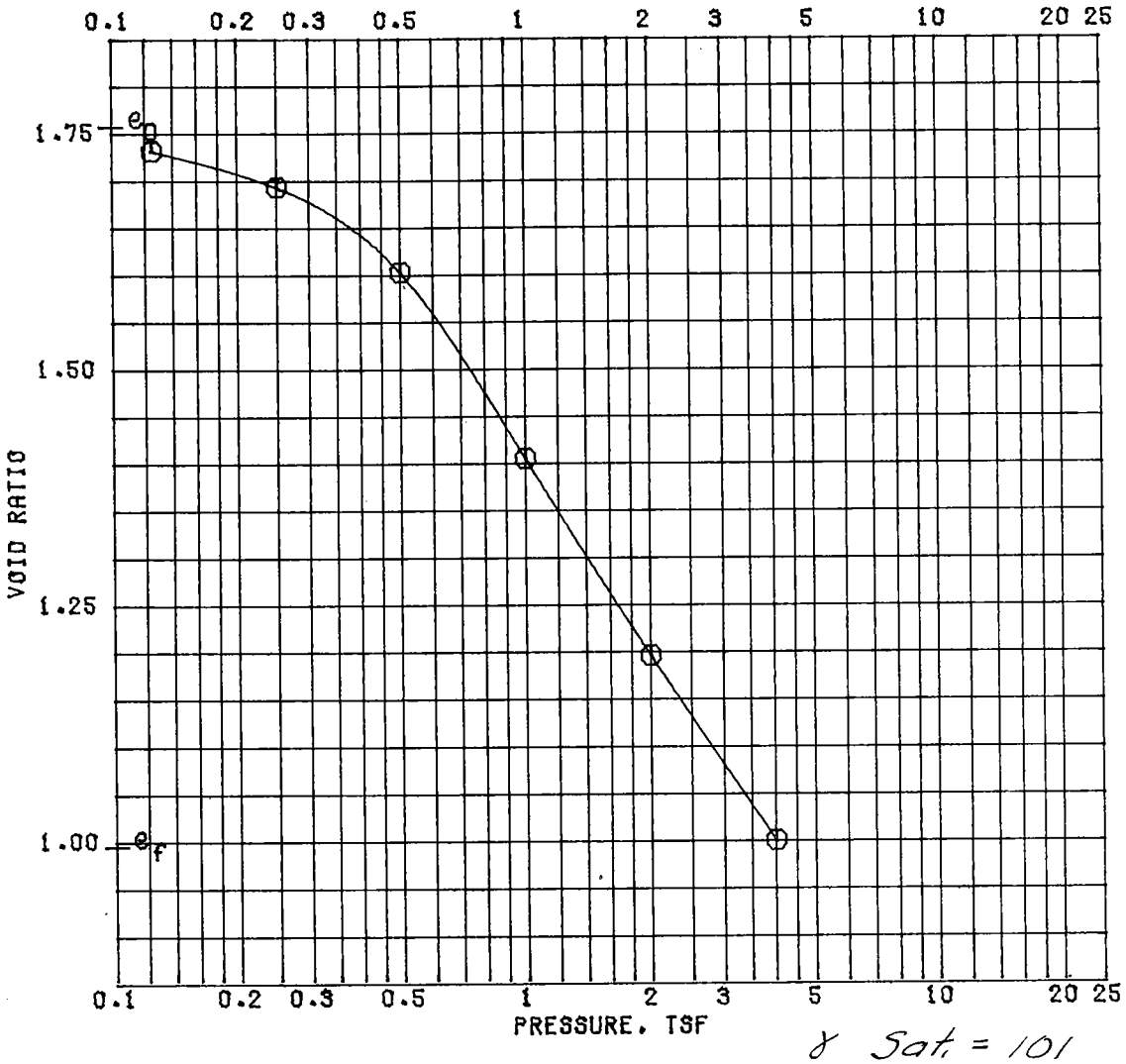
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 2-B

DEPTH/ELEV 7.8'-5.2 | TECH. LRC

LABORATORY USAE WES | DATE 24 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 101

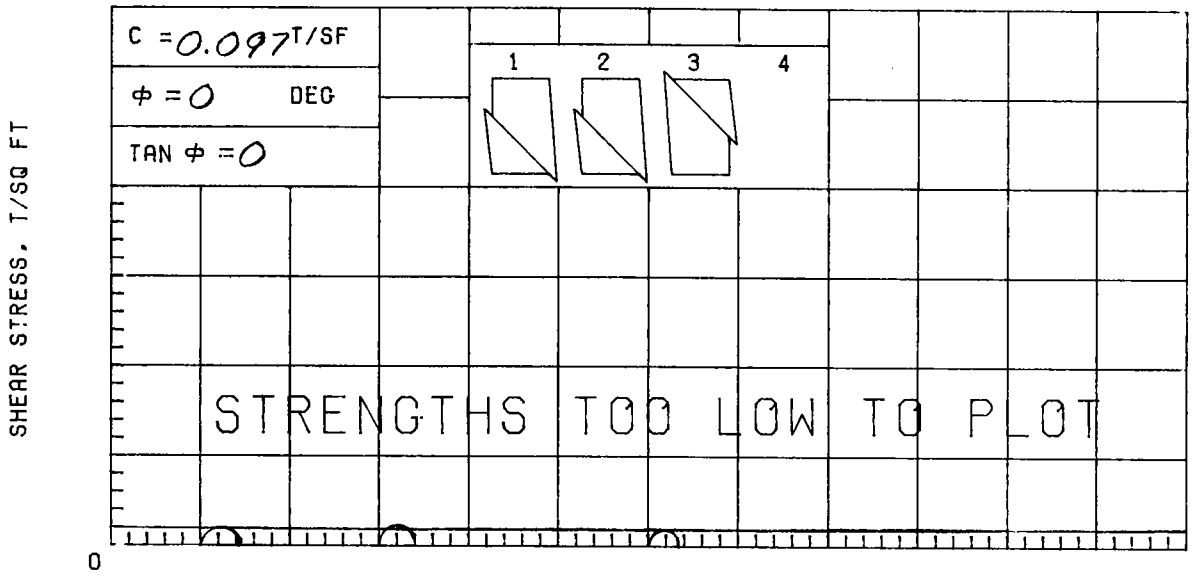
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	64.0	39.5
PRECONSOL. PRESSURE, TSF	0.52	DRY DENSITY, PCF	61.2	84.6
COMPRESSION INDEX	0.70	SATURATION, %	98.4	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.755	0.993
DIA. IN 4.44	HT. IN 1.104	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL

LL 69	PL 20	PI 49	PROJECT LAKE PONT. LA. & VIC. HURR. PROT	
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES	
REMARKS			BORING NO. 40-U	SAMPLE NO. 2-C
			DEPTH/ELEV 8.8/-6.2	DATE 05 NOV 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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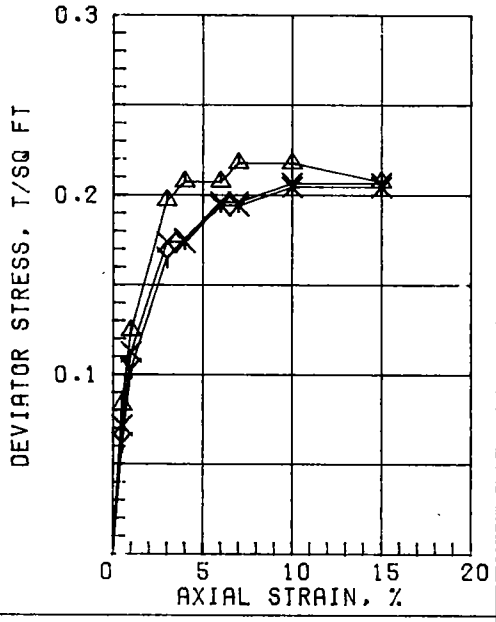


SPECIMEN NO.		△1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	47.0	43.5	47.5		46.0
	DRY DENSITY, PCF	74.2	77.3	73.1		
	SATURATION, %	99.8	99.4	98.2		
	VOID RATIO	1.271	1.182	1.306		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.21	0.20	0.17		
TIME TO FAILURE, MIN.		8	32	10		
RATE OF STRAIN INCR.%			7			
INITIAL DIAMETER, IN.		1.37	1.38	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; ORGANIC MATERIAL

LL 47	PL 18	PI 29	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 4-B

DEPTH/ELEV 16.0/-13.4 | TECH. LRC

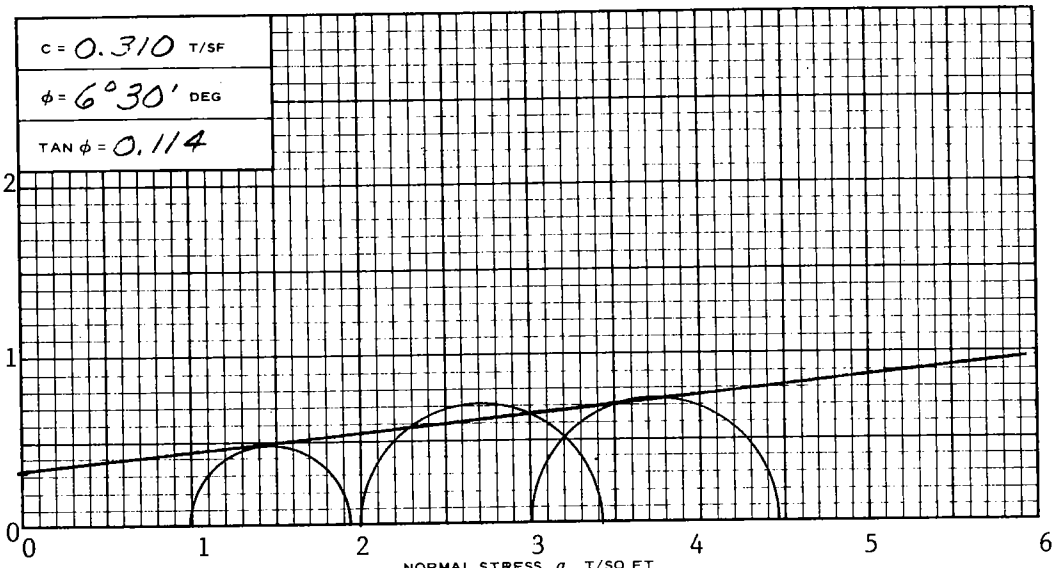
LABORATORY USAE WES | DATE 24 AUG 85

TRIAXIAL COMPRESSION TEST REPORT

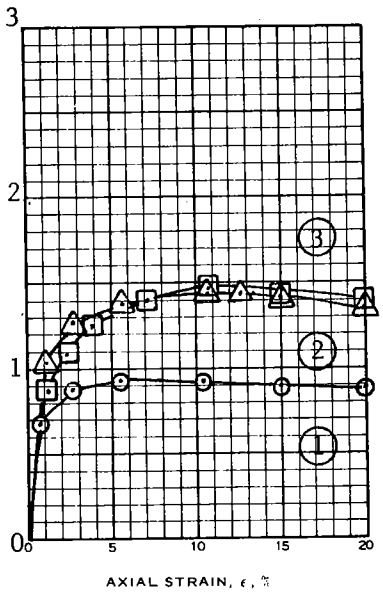
c = 0.310 T/SF

ϕ = 6°30' DEG

TAN ϕ = 0.114



γ Sat. = 100



SPECIMEN NO.			1	2	3	Avg.
INITIAL	WATER CONTENT, %	w_o	65.9	66.1	67.2	65.7
	DRY DENSITY LB/ CU FT	γ_{d_o}	59.8	59.7	59.4	
	SATURATION, %	S_o	97.5	97.4	98.4	
	VOID RATIO	e_o	1.839	1.845	1.858	
BEFORE SHEAR	WATER CONTENT, %	w_c	59.1	51.2	49.3	
	DRY DENSITY LB/CU FT	γ_{d_c}	70.0	76.4	72.4	
	SATURATION, %	S_c	100+	100+	99.8	
	VOID RATIO	e_c	1.425	1.222	1.344	
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.93	1.43	1.46	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	338	650	669	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.38	1.38	1.37	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY

LL 87 | PL 23 | PI 64 | Gs 2.72 (EST)

REMARKS:

TYPE OF SPECIMEN UNDISTURBED | TYPE OF TEST R

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 40-U | SAMPLE NO. 5-B

DEPTH/ELEV 20/-17.4

LABORATORY USAEWES | DATE 14 APRIL 1986

SHEET 1 OF 2

JMS

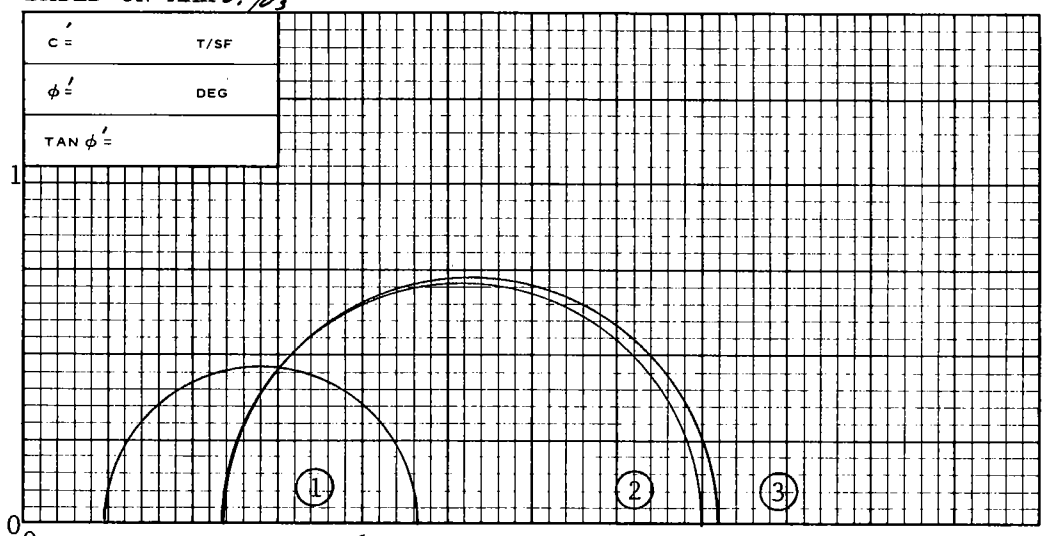
TRIAXIAL COMPRESSION TEST REPORT

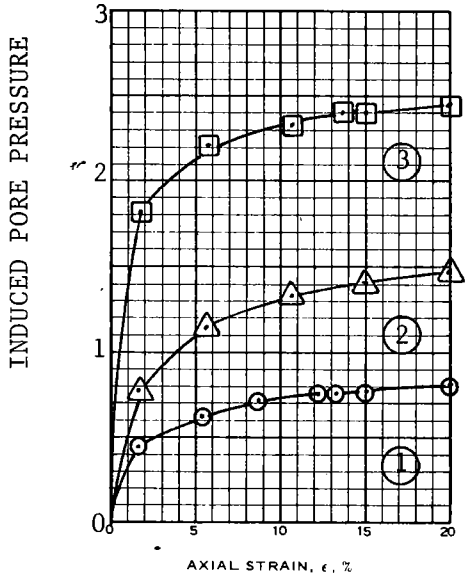
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'/σ_3'

C' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.24	0.58	0.60	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.91	1.42	1.45	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 40-U SAMPLE NO. 5-B

DEPTH/ELEV 20/-17.4

LABORATORY USAEWES DATE 14 APR 86

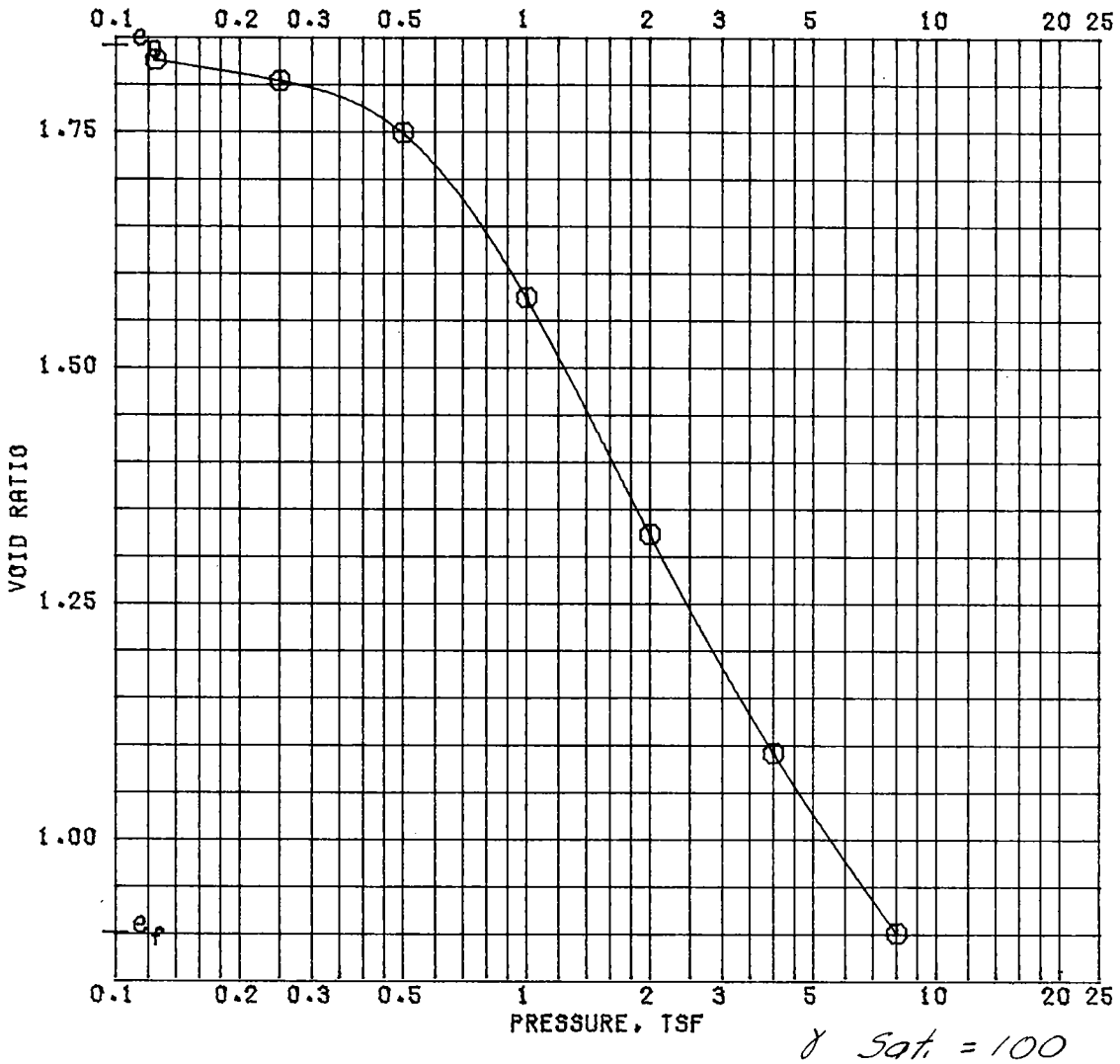
SHEET 2 OF 2

JMS

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



γ Sat. = 100

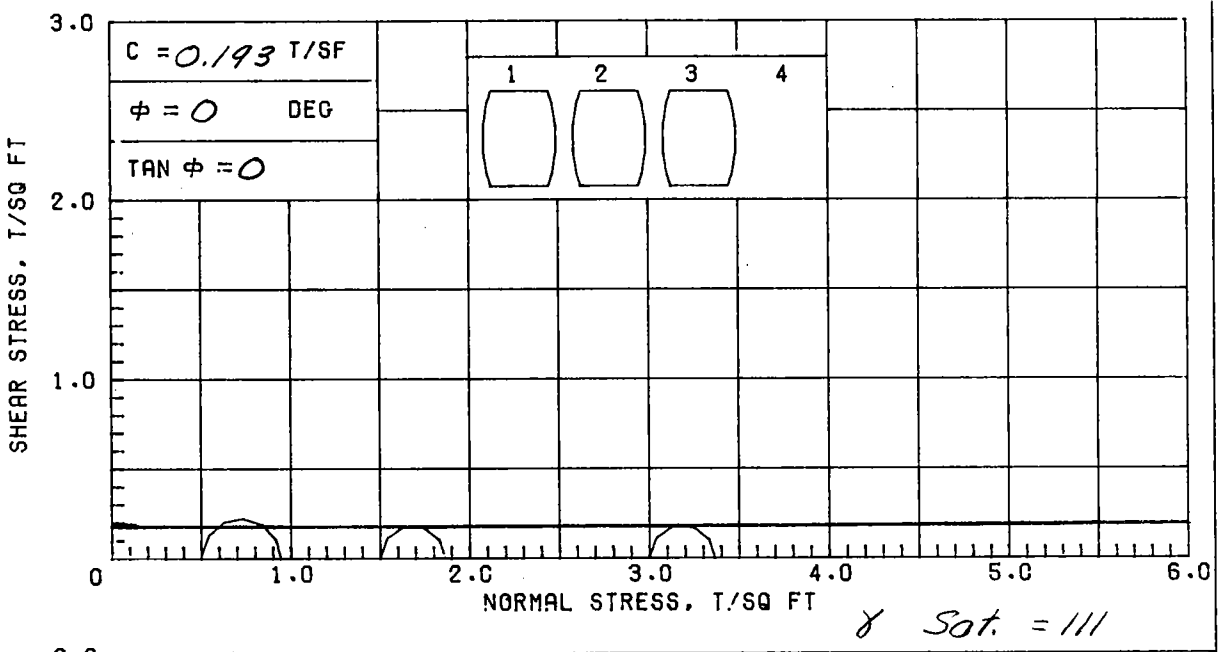
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	67.3	36.6
PRECONSOL. PRESSURE, TSF	0.68	DRY DENSITY, PCF	59.4	88.8
COMPRESSION INDEX	0.80	SATURATION, %	98.8	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.839	0.899
DIA. IN 4.44	HT. IN 1.119	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 77	PL 19	PI 58	PROJECT LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 40-U	SAMPLE NO. 6-B
		DEPTH/ELEV 24.0/-21.4	DATE 06 NOV 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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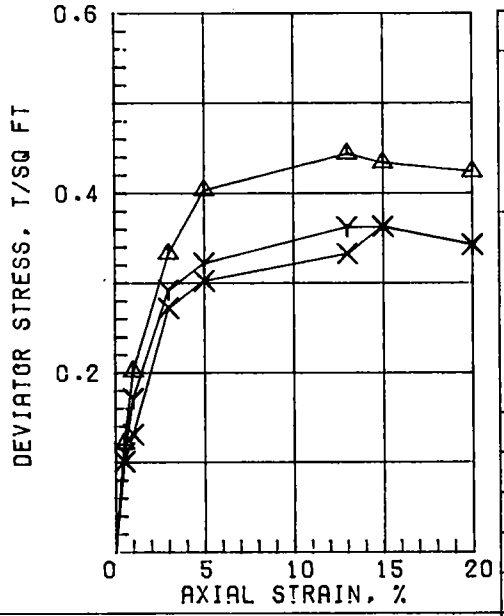


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	41.5	40.2	40.5	
	DRY DENSITY, PCF	77.2	78.3	77.9	
	SATURATION, %	94.7	94.2	93.9	
	VOID RATIO	1.183	1.152	1.165	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.44	0.36	0.36	
TIME TO FAILURE, MIN.		26	26	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVG 40.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; PLASTIC CLAY SEAMS

LL 37	PL 16	PI 21	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

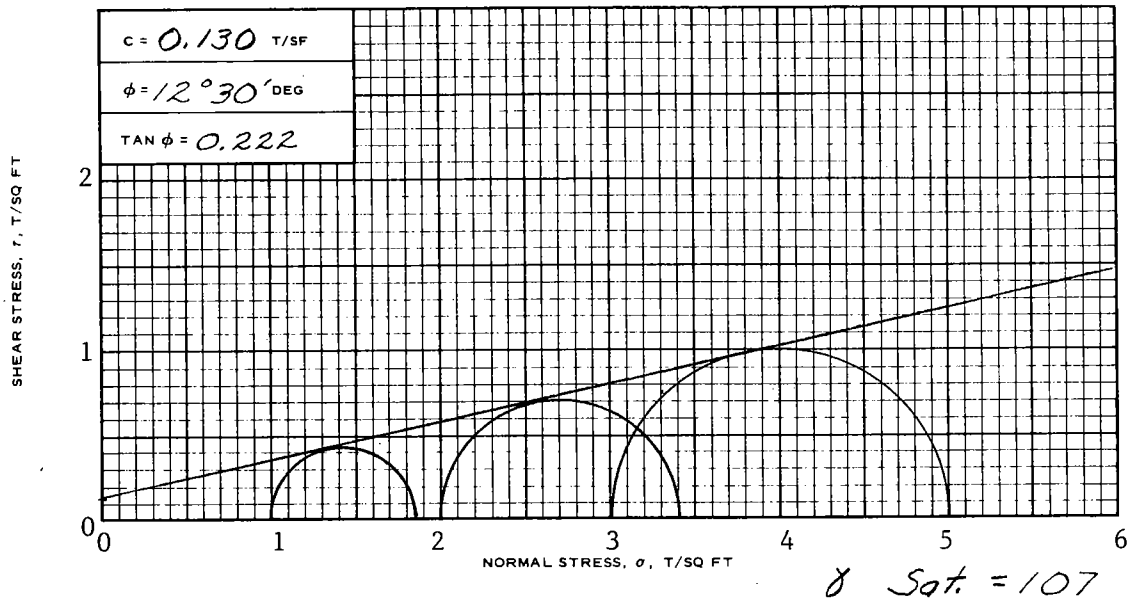
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 7-B

DEPTH/ELEV 27.9/-25.3 | TECH. KOC

LABORATORY USAE WES | DATE 28 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



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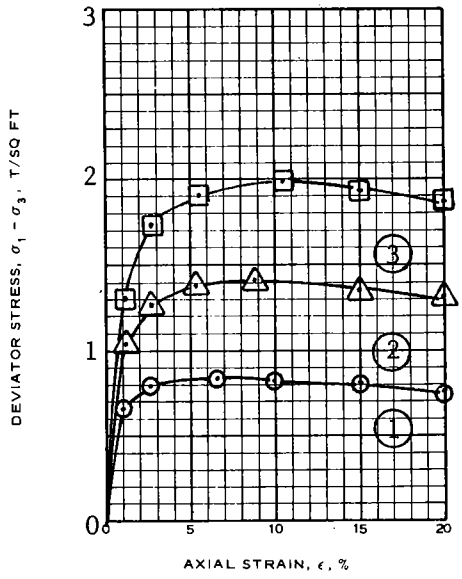


SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	49.9	50.2	51.1
	DRY DENSITY LB/ CU FT	γ_{d_o}	71.7	71.3	70.8
	SATURATION, %	S_o	99.1	98.9	99.3
	VOID RATIO	e_o	1.370	1.381	1.400
BEFORE SHEAR	WATER CONTENT, %	w_c	49.2	43.6	39.0
	DRY DENSITY LB/CU FT	γ_{d_c}	76.5	82.1	85.1
	SATURATION, %	S_c	100+	100+	100+
	VOID RATIO	e_c	1.220	1.068	0.995
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.85	1.41	1.99
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	413	550	656
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.37	1.37	1.37
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 58	PL 17	PI 41	Gs 2.72

REMARKS: (EST)

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST $\bar{R}$

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 40-U SAMPLE NO. 8-B

DEPTH/ELEV 32/-29.4

LABORATORY USAEWES DATE 15 APR 86

SHEET 1 OF 2 JMS

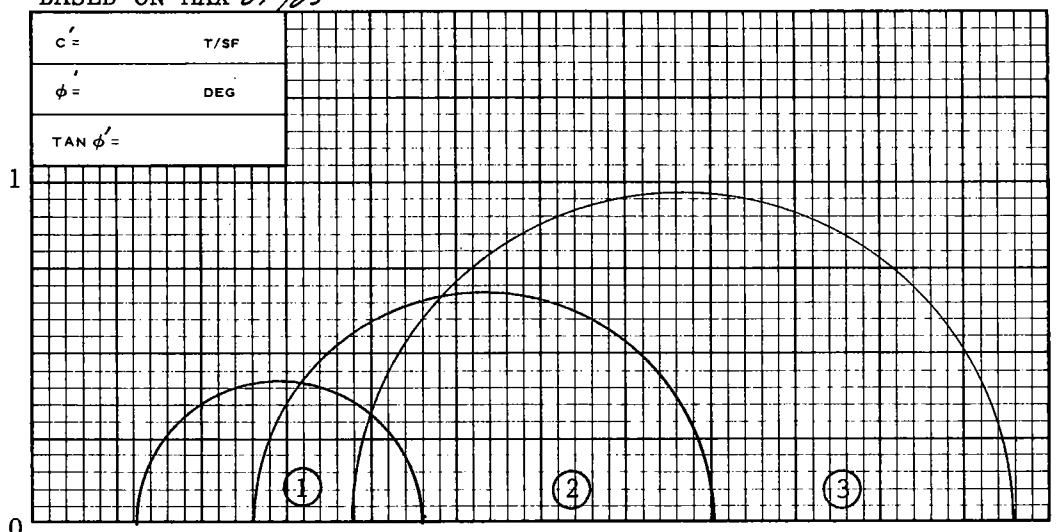
TRIAXIAL COMPRESSION TEST REPORT

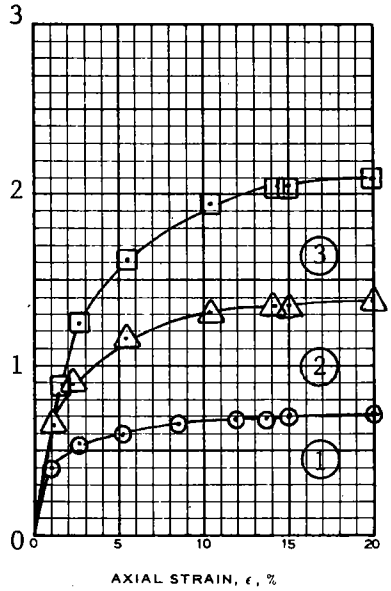
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'/σ_3'

c' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.31	0.65	0.94	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.84	1.37	1.95	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 40-U SAMPLE NO. 8-B

DEPTH/ELEV 32/-29.4

LABORATORY USAEWES DATE

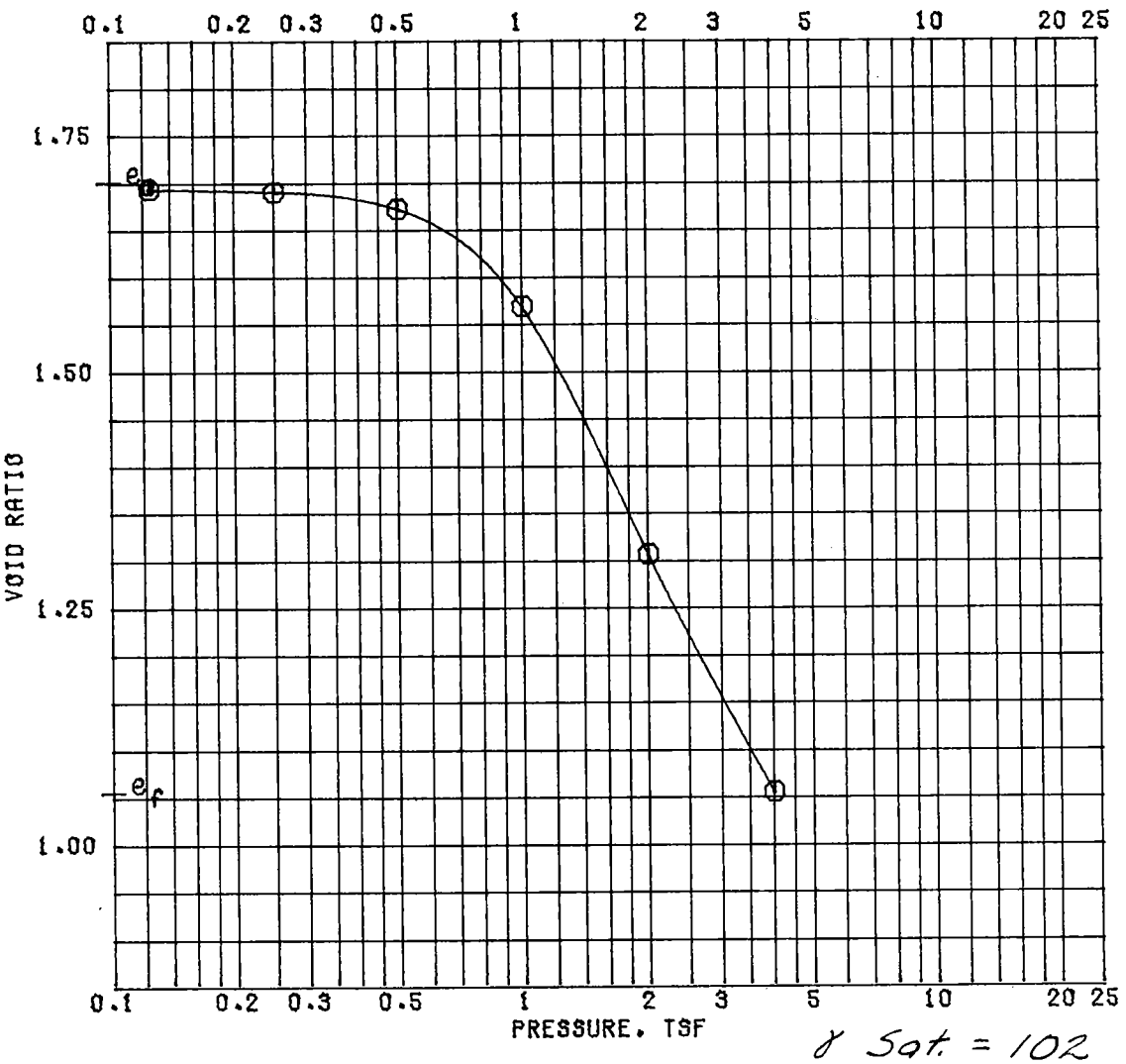
SHEET 2 OF 2

JMS

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 O - 375-356



γ Sat. = 102

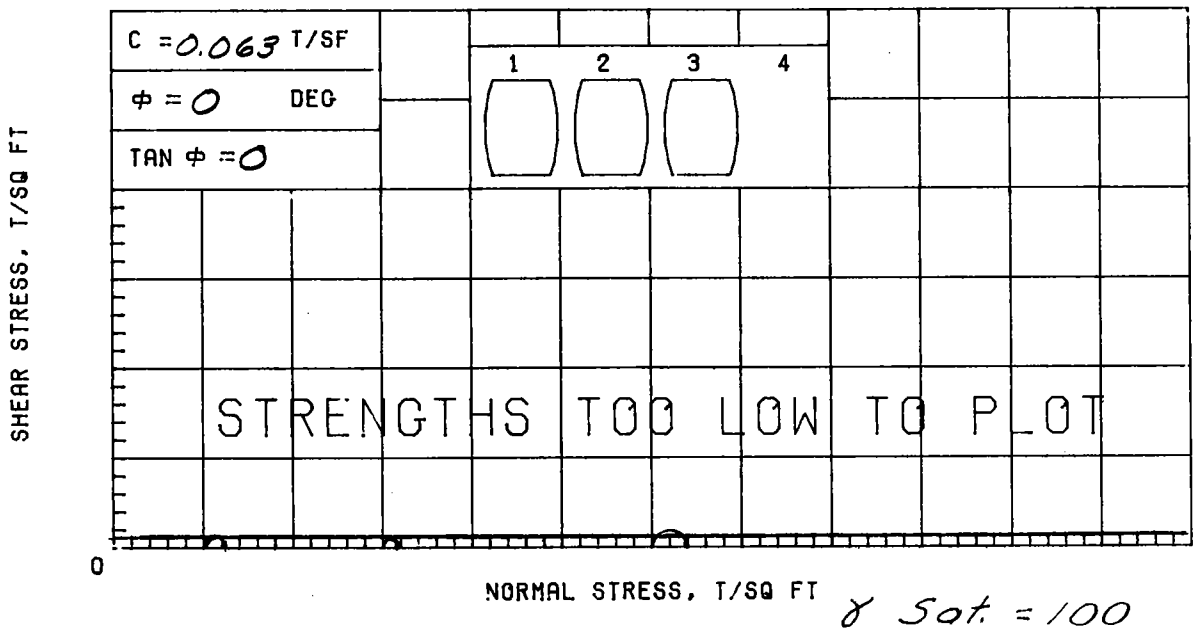
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	61.9	43.8
PRECONSOL. PRESSURE, TSF	0.88	DRY DENSITY, PCF	62.5	82.1
COMPRESSION INDEX	0.88	SATURATION, %	98.4	100 +
TYPE SPECIMEN UNDISTURBED		VOID RATIO	1.699	1.054
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 79	PL 19	PI 60	PROJECT LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 40-U	SAMPLE NO. 9-B
		DEPTH/ELEV 36.0/-33.4	DATE 13 NOV 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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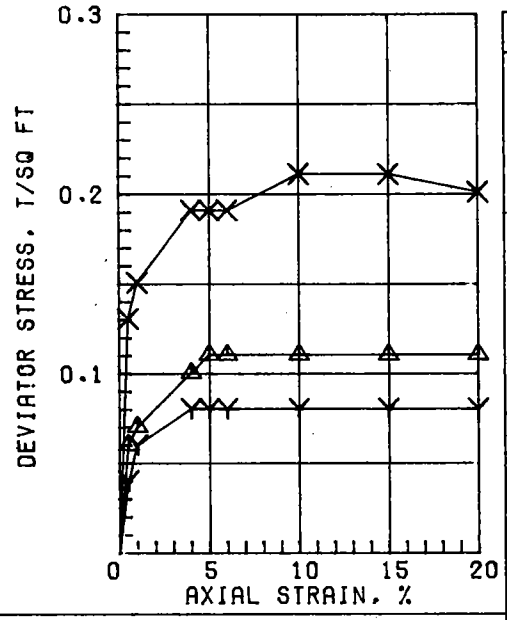


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	68.8	70.8	57.9	
	DRY DENSITY, PCF	57.3	56.5	63.8	
	SATURATION, %	95.6	96.3	95.3	
	VOID RATIO	1.943	1.984	1.641	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.11	0.08	0.19	
TIME TO FAILURE, MIN.		10	24	24	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 65.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 77	PL 21	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

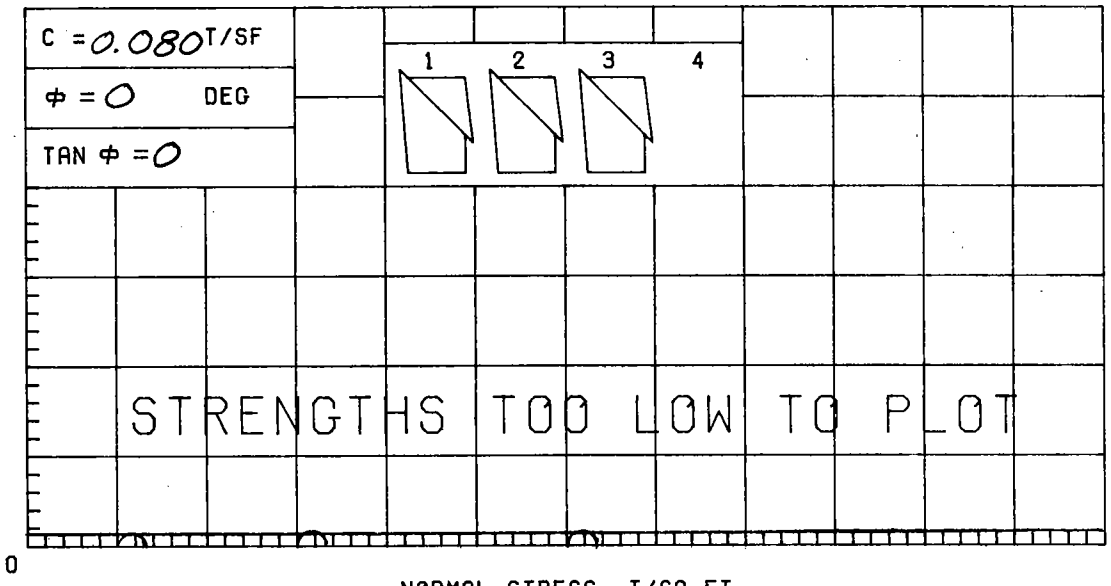
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 10-B

DEPTH/ELEV 40.0/-37.4 | TECH. KOC

LABORATORY USAE WES | DATE 28 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



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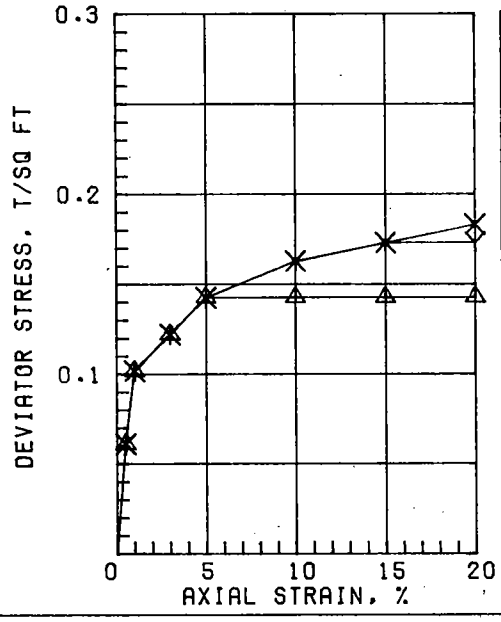


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	48.5	48.7	47.1	
	DRY DENSITY, PCF	71.5	71.6	73.4	
	SATURATION, %	96.6	97.0	98.2	
	VOID RATIO	1.356	1.356	1.295	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.14	0.17	0.17	
TIME TO FAILURE, MIN.		10	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 48.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL FRAGMENTS; SILT POCKETS

LL 57	PL 15	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

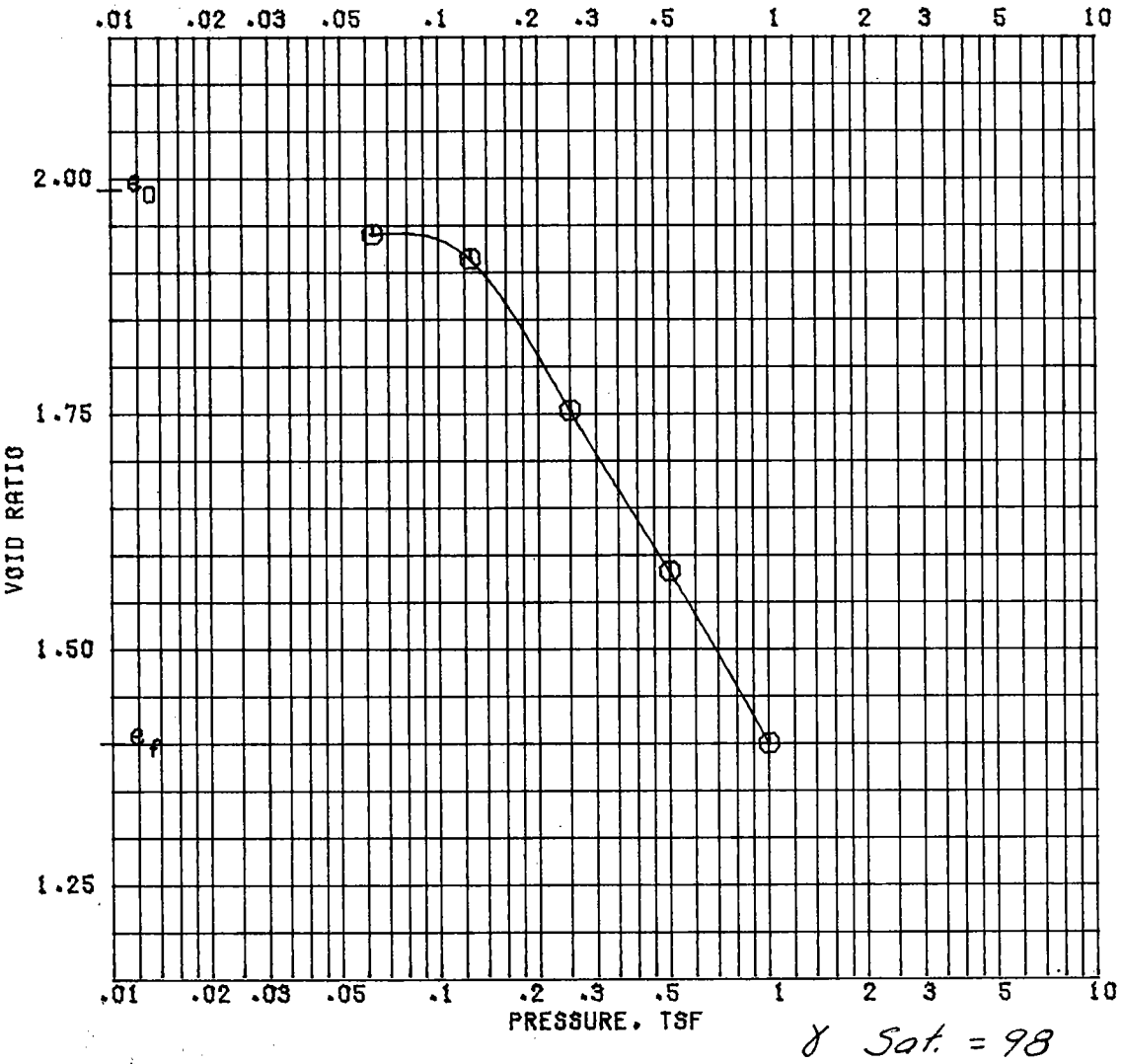
PROJECT LAKE PONT. LA. & VIC. HURR. PROT
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 10-C

DEPTH/ELEV 41/-38.4 | TECH. KOC

LABORATORY USAE WES | DATE 28 OCT 85

TRIAXIAL COMPRESSION TEST REPORT



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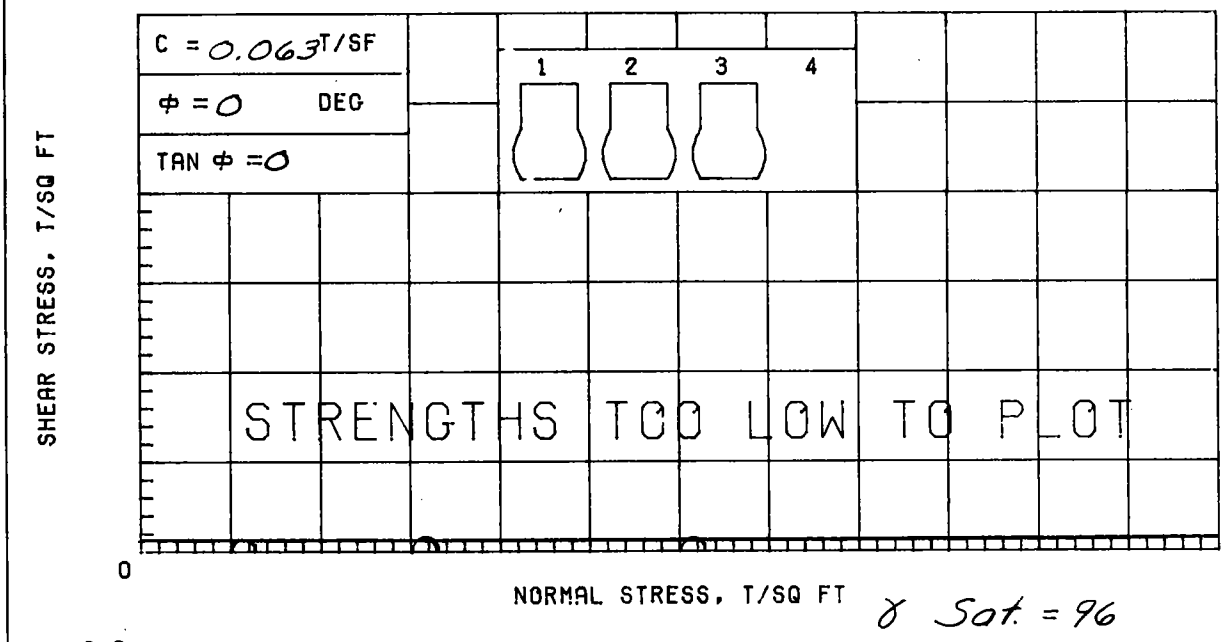
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	72.8	54.5
PRECONSOL. PRESSURE, TSF	0.14	DRY DENSITY, PCF	56.5	70.3
COMPRESSION INDEX	0.58	SATURATION, %	99.0	100 +
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	1.986	1.398
DIA. IN 4.44	HT. IN 1.115	BACK PRESSURE, TSF		

CLASSIFICATION: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 80	PL 22	PI 58	PROJECT: LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 40-U	SAMPLE NO. 12-B
		DEPTH/ELEV 48.0/-45.4	DATE 13 NOV 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 6



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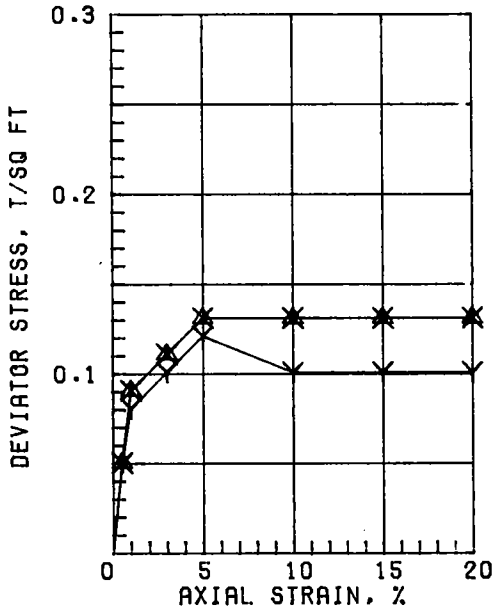


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	76.7	73.8	79.3	
	DRY DENSITY, PCF	53.5	53.0	51.5	
	SATURATION, %	96.3	91.3	94.3	
	VOID RATIO	2.150	2.183	2.271	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.13	0.12	0.13	
TIME TO FAILURE, MIN.		10	10	10	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 76.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT & FINE SAND POCKETS; SHELLS

LL 76	PL 20	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

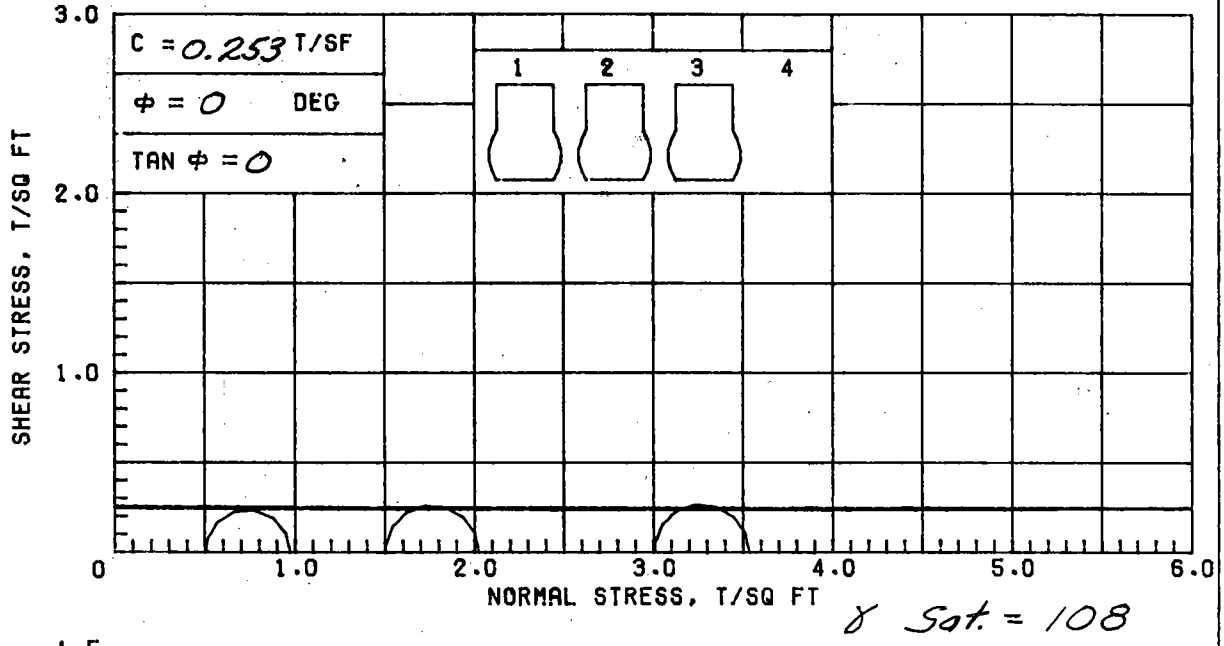
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 12-C

DEPTH/ELEV 49.0/-46.4 | TECH. KOC

LABORATORY USAE WES | DATE 29 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



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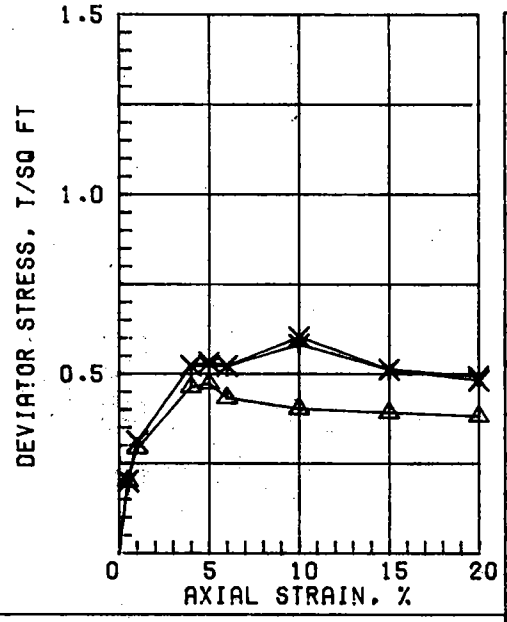


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	50.8	45.6	45.2	
	DRY DENSITY, PCF	69.2	73.8	74.2	
	SATURATION, %	95.5	95.9	95.9	
	VOID RATIO	1.436	1.284	1.273	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.47	0.52	0.53	
TIME TO FAILURE, MIN.		10	24	30	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 47.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT & FINE SAND POCKETS; SHELL PARTICLES

LL 65	PL 17	PI 48	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

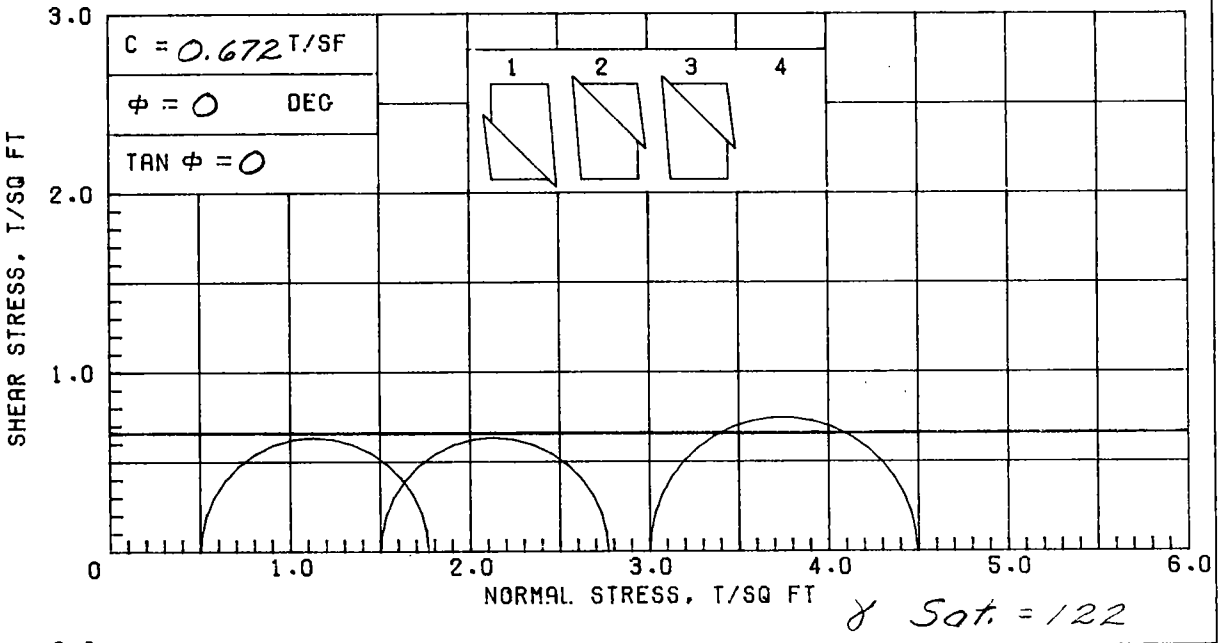
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 15-B

DEPTH/ELEV 60.0/-57.4 | TECH. KOC

LABORATORY USAE WES | DATE 30 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



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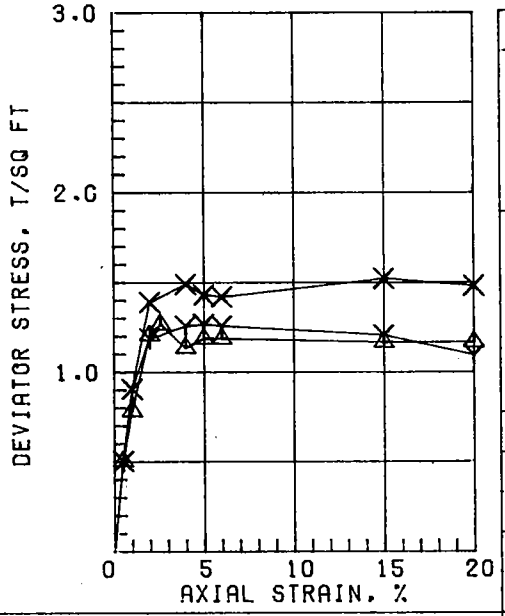


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	26.0	26.8	26.6	
	DRY DENSITY, PCF	94.9	94.9	92.8	
	SATURATION, %	90.5	93.3	87.9	
	VOID RATIO	0.776	0.775	0.817	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.27	1.27	1.49	
TIME TO FAILURE, MIN.		5	30	24	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 26.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; SILT POCKETS

LL 56	PL 15	PI 41	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;

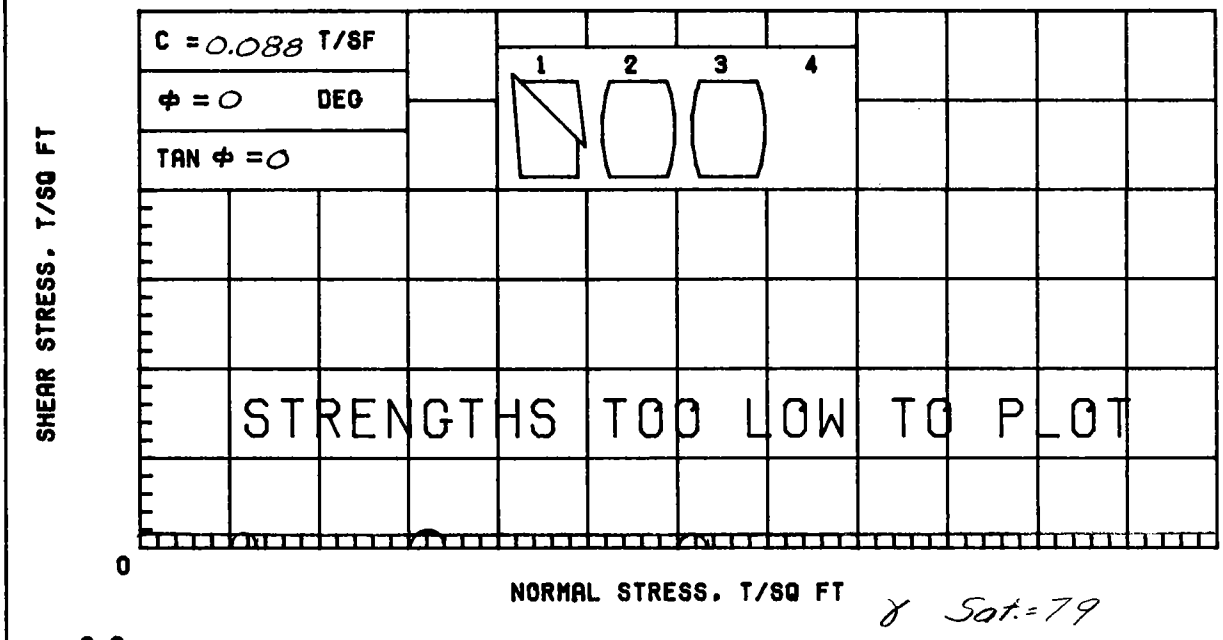
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 40-U | SAMPLE NO. 18-B

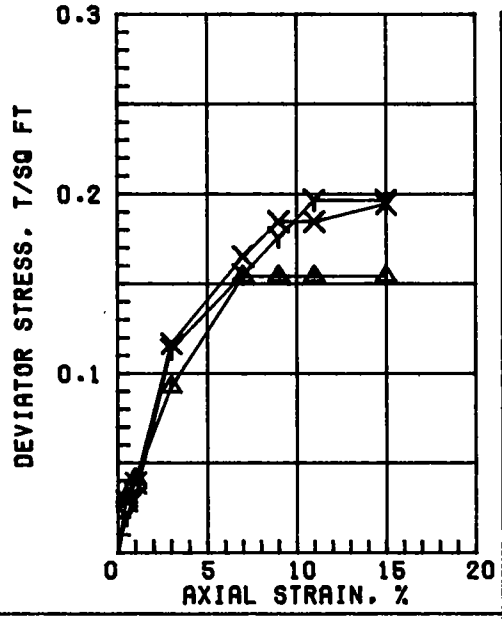
DEPTH/ELEV 72.0/-69.4 | TECH. KOC

LABORATORY USAE WES | DATE 30 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 79



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	123.3	466.9	109.9	
	DRY DENSITY, PCF	37.3	11.6	38.0	
	SATURATION, %	98.1	93.6	89.6	
	VOID RATIO	3.015	11.967	2.943	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.15	0.20	0.18	
TIME TO FAILURE, MIN.		14	23	20	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.42	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 233.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), GRAY, POCKETS OF PEAT (PT)

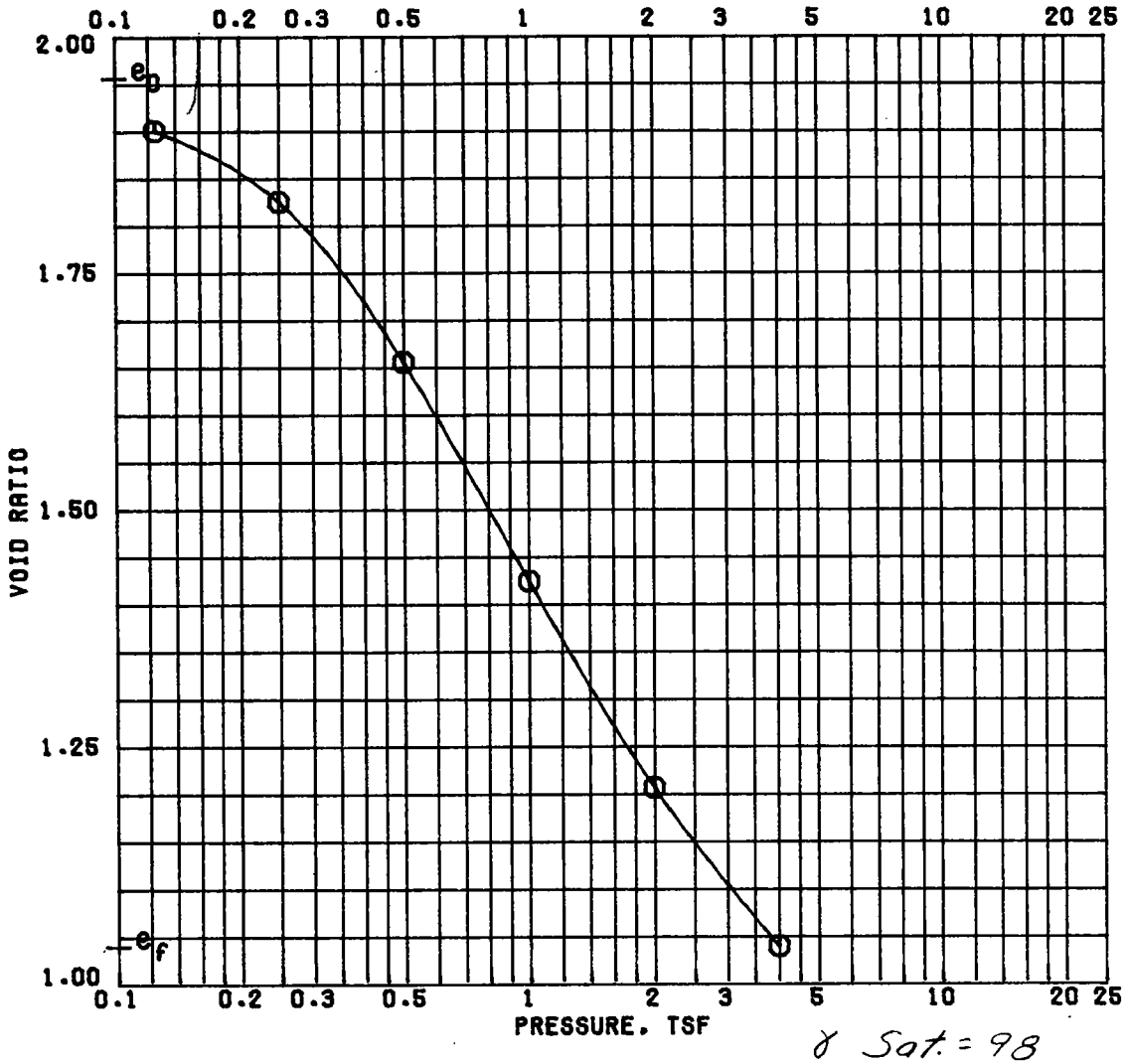
LL 142	PL 84	PI 58	OS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 41-U	SAMPLE NO. 1-C
DEPTH/ELEV 2.0/-7.7	TECH. LRC
LABORATORY USAE WES	DATE 12 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 98

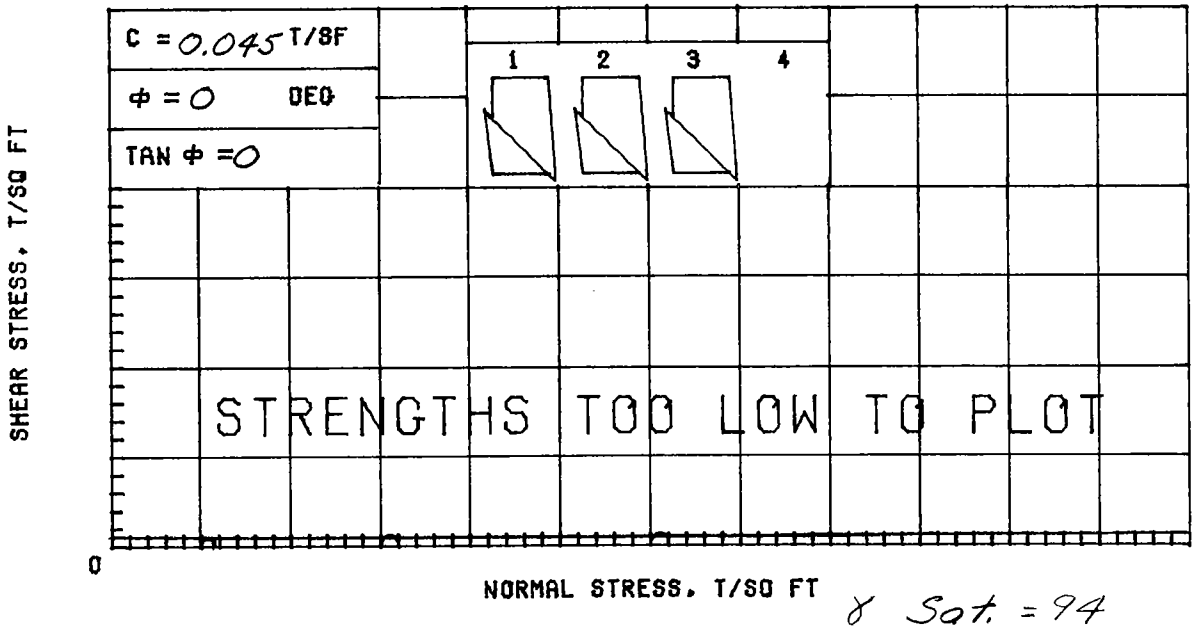
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.38	DRY DENSITY, PCF	57.1	82.7
COMPRESSION INDEX 0.77	SATURATION, %	97.8	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.954	1.038
DIA. IN 4.44 HT. IN 1.120	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL PL PI	PROJECT LK. PONT. & VIC. HURR. PROT.	
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISH	
REMARKS	BORING NO. 41-U	SAMPLE NO. 3-B
	DEPTH/ELEV 9.0/-14.7	DATE 10 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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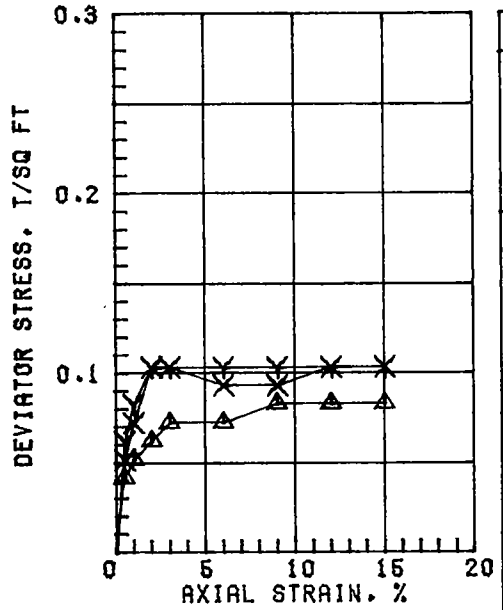


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	96.4	93.0	90.8	
	DRY DENSITY, PCF	47.8	48.4	49.3	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.524	2.479	2.418	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.07	0.10	0.10	
TIME TO FAILURE, MIN.		6	4	4	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.37	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

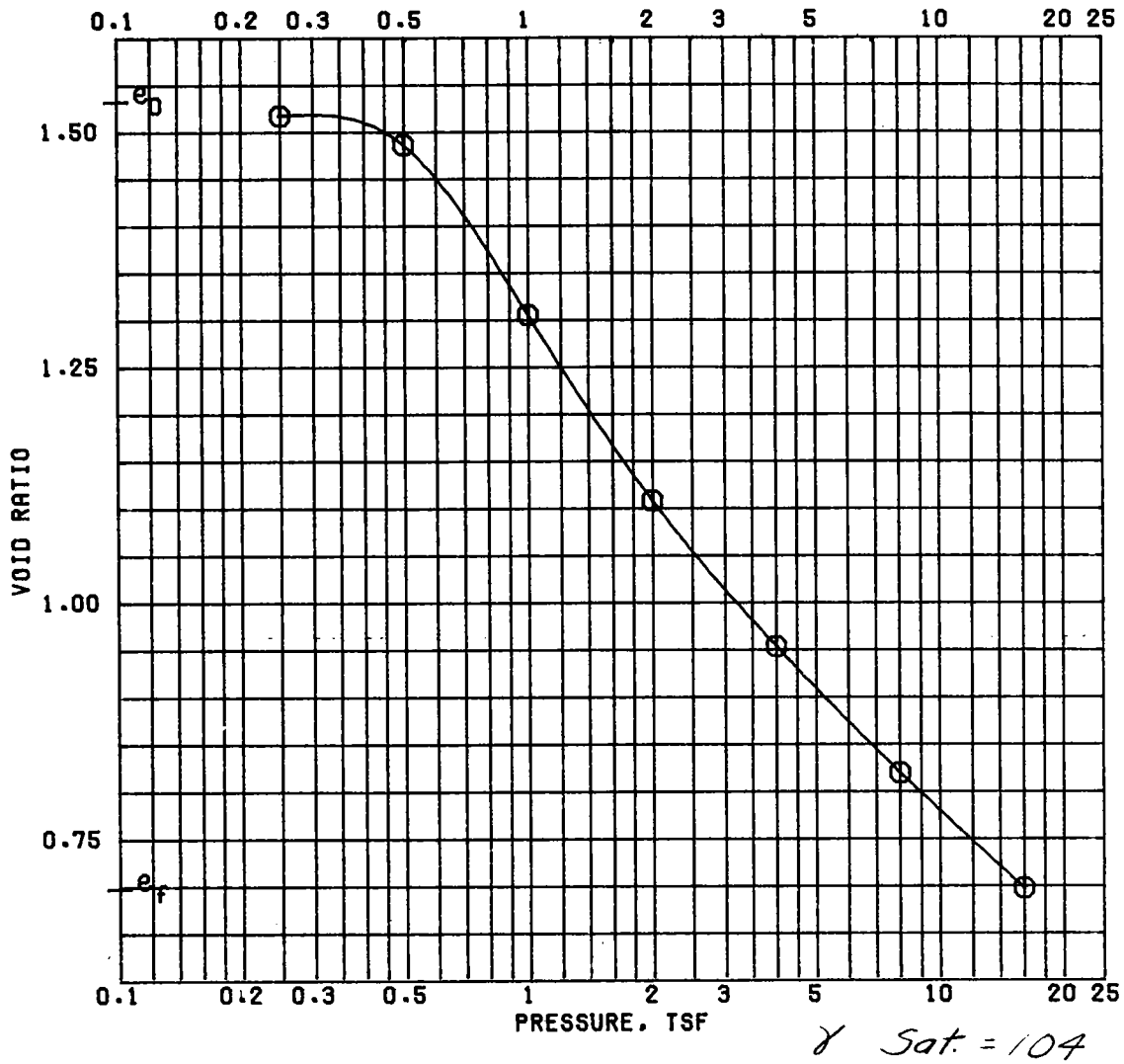
Avg. 93.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 85	PL 24	PI 61	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK. PONT. & VIC. HURR. PROT.	
	JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 41-U	SAMPLE NO. 3-C
	DEPTH/ELEV 10.0/-15.7	TECH. LRC
	LABORATORY USAE WES	DATE 12 JUL 85
	TRIAXIAL COMPRESSION TEST REPORT	

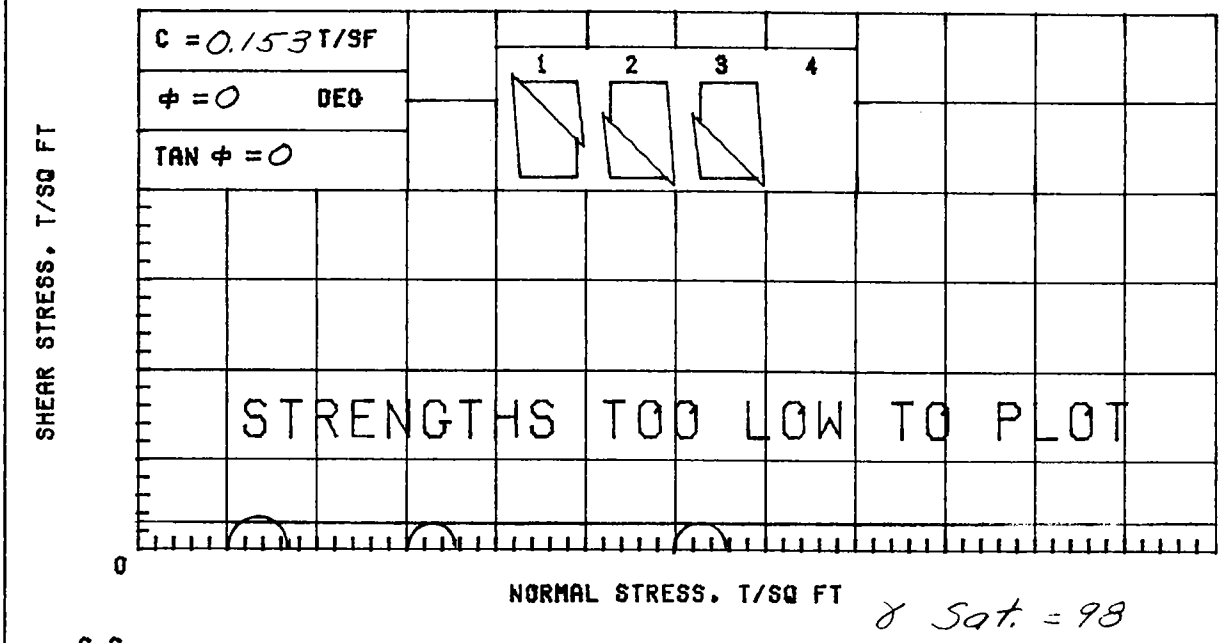


γ Sat. = 104

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	54.3	27.2
PRECONSOL. PRESSURE, TSF	0.53	DRY DENSITY, PCF	66.6	99.4
COMPRESSION INDEX	0.67	SATURATION, %	95.8	100 +
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	1.531	0.696
DIA. IN 4.44 / HT. IN 1.125		BACK PRESSURE, TSF		
CLASSIFICATION: PLASTIC CLAY (CH), GRAY; SILT LENSES				
LL 70 / PL 21 / PI 49		PROJECT: LAKE PONT. LA. & VIC. HURR. PROT		
GS 2.70 (EST) / D_{10}				
REMARKS		BORING NO. 41-U	SAMPLE NO. 6-B	
		DEPTH/ELEV 21.0/-26.7	DATE 10 JUN 85	

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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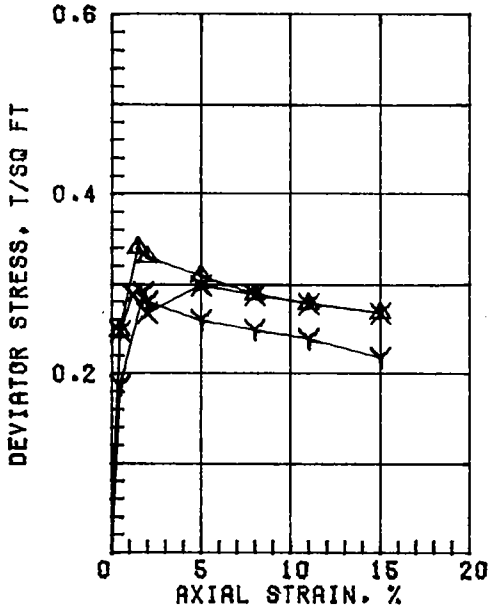


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	71.5	76.3	78.6	
	DRY DENSITY, PCF	58.8	55.7	53.6	
	SATURATION, %	100+	100+	98.9	
	VOID RATIO	1.865	2.027	2.146	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.34	0.29	0.29	
TIME TO FAILURE, MIN.		3	18	12	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.38	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 75.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 78	PL 23	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

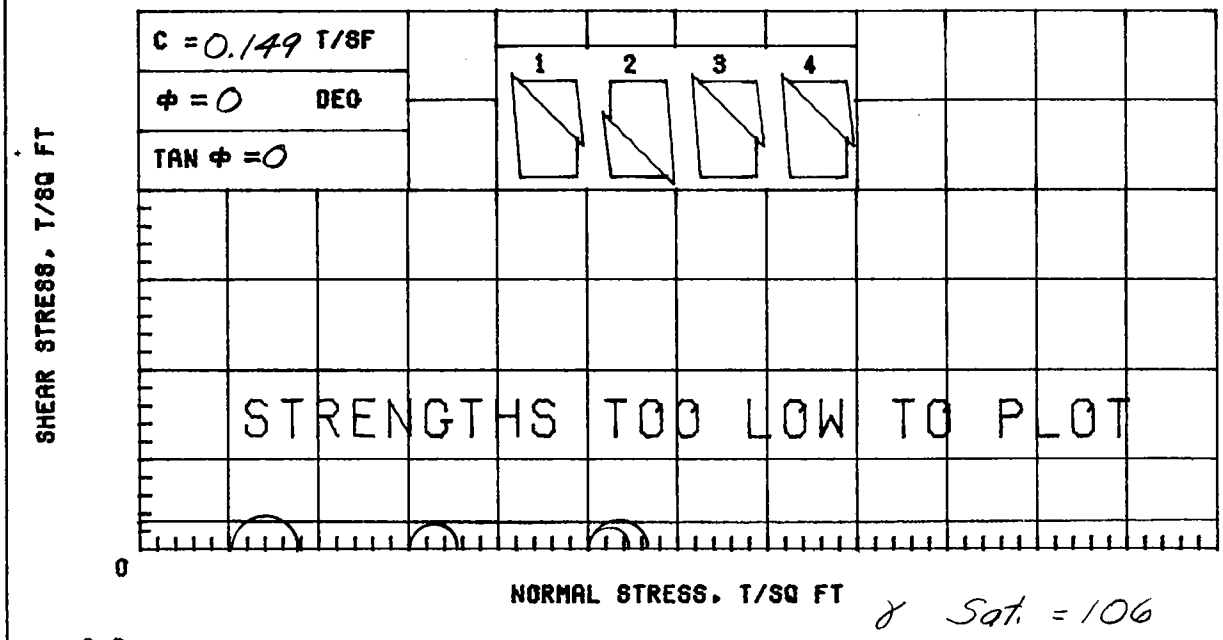
PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 41-U | SAMPLE NO. 6-C

DEPTH/ELEV 22.0/-27.7 | TECH. LRC

LABORATORY USAE WES | DATE 12 JUL 65

TRIAXIAL COMPRESSION TEST REPORT



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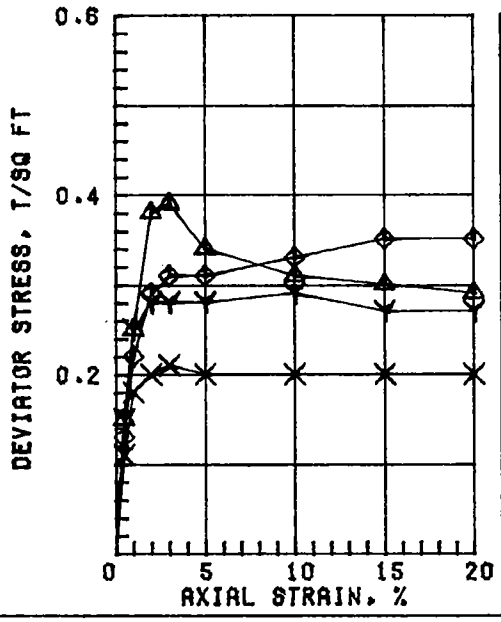


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	52.0	50.4	53.8	50.3
	DRY DENSITY, PCF	88.6	89.5	87.9	89.6
	SATURATION, %	98.5	95.5	97.9	95.8
	VOID RATIO	1.455	1.425	1.484	1.420
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.39	0.28	0.21	0.31
TIME TO FAILURE, MIN.		6	12	18	18
RATE OF STRAIN INCR.%			6	6	6
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 51.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY: SILT POCKETS: SHELLS

LL 46	PL 15	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LK. PONT. & VIC. HURR. PROT.

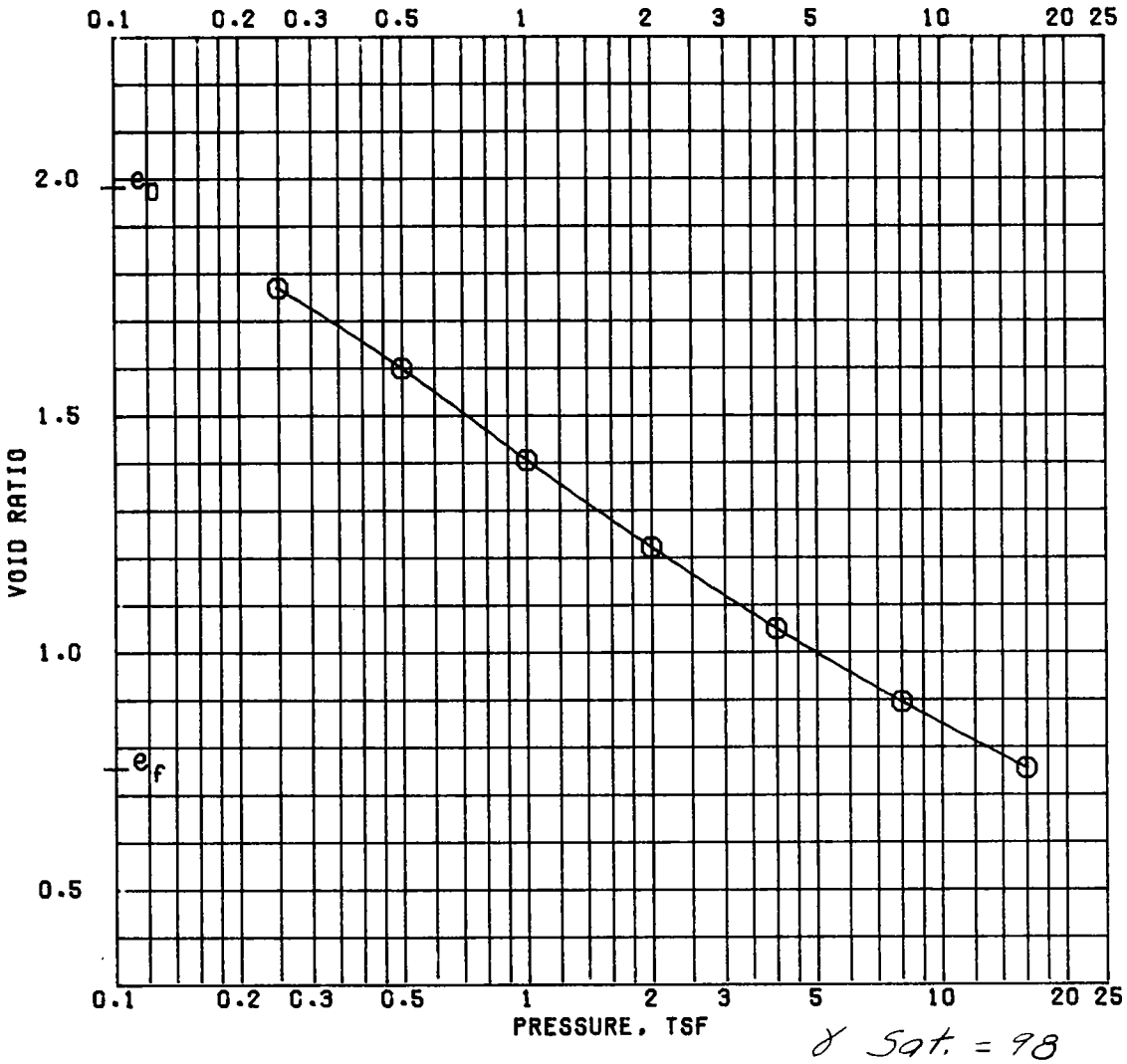
JEFFERSON & ST. CHARLES PARISH

BORING NO. 41-U | SAMPLE NO. 8-C

DEPTH/ELEV 90.0/-35.7 | TECH. KOC

LABORATORY USAE WES | DATE 12 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 98

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	67.5	27.5
PRECONSOL. PRESSURE, TSF	0.51	DRY DENSITY, PCF	56.6	96.2
COMPRESSION INDEX	0.58	SATURATION, %	92.1	98.7
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.979	0.751
CIA. IN 4.44	HT. IN 1.145	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELLS

LL 77	PL 22	PI 55
GS 2.70 (EST)	D_{10}	

PROJECT LK. PONT. & VIC. HURR. PROT.

JEFFERSON & ST. CHARLES PARISH

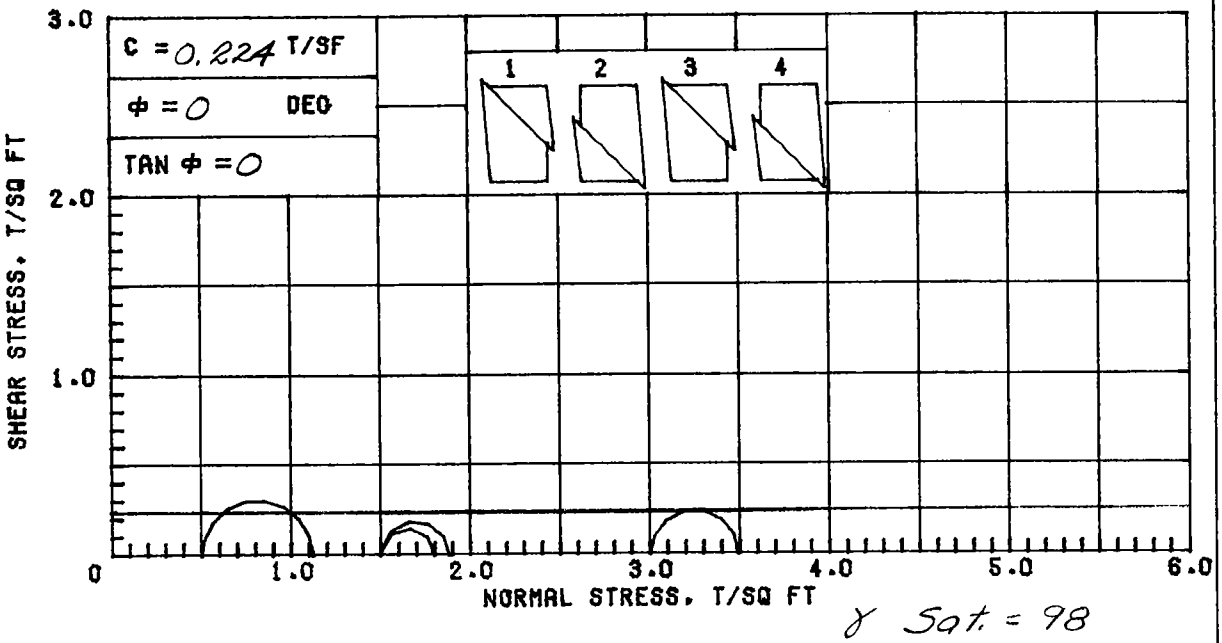
REMARKS

BORING NO. 41-U SAMPLE NO. 10-C

DEPTH/ELEV 37.7/-43.4 DATE 10 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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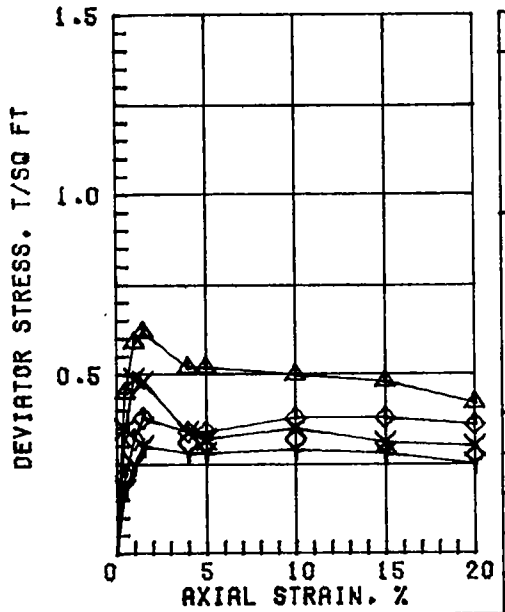


SPECIMEN NO.		Δ1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	69.3	78.3	69.8	72.8
	DRY DENSITY, PCF	58.3	53.4	57.4	56.9
	SATURATION, %	99.0	98.1	97.3	100+
	VOID RATIO	1.889	2.155	1.937	1.962
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5
MAX. DEV. STRESS, TSF		0.62	0.30	0.49	0.38
TIME TO FAILURE, MIN.		3	9	6	9
RATE OF STRAIN INCR.%			6	6	6
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 72.6

CONTROLLED-STRAIN TEST

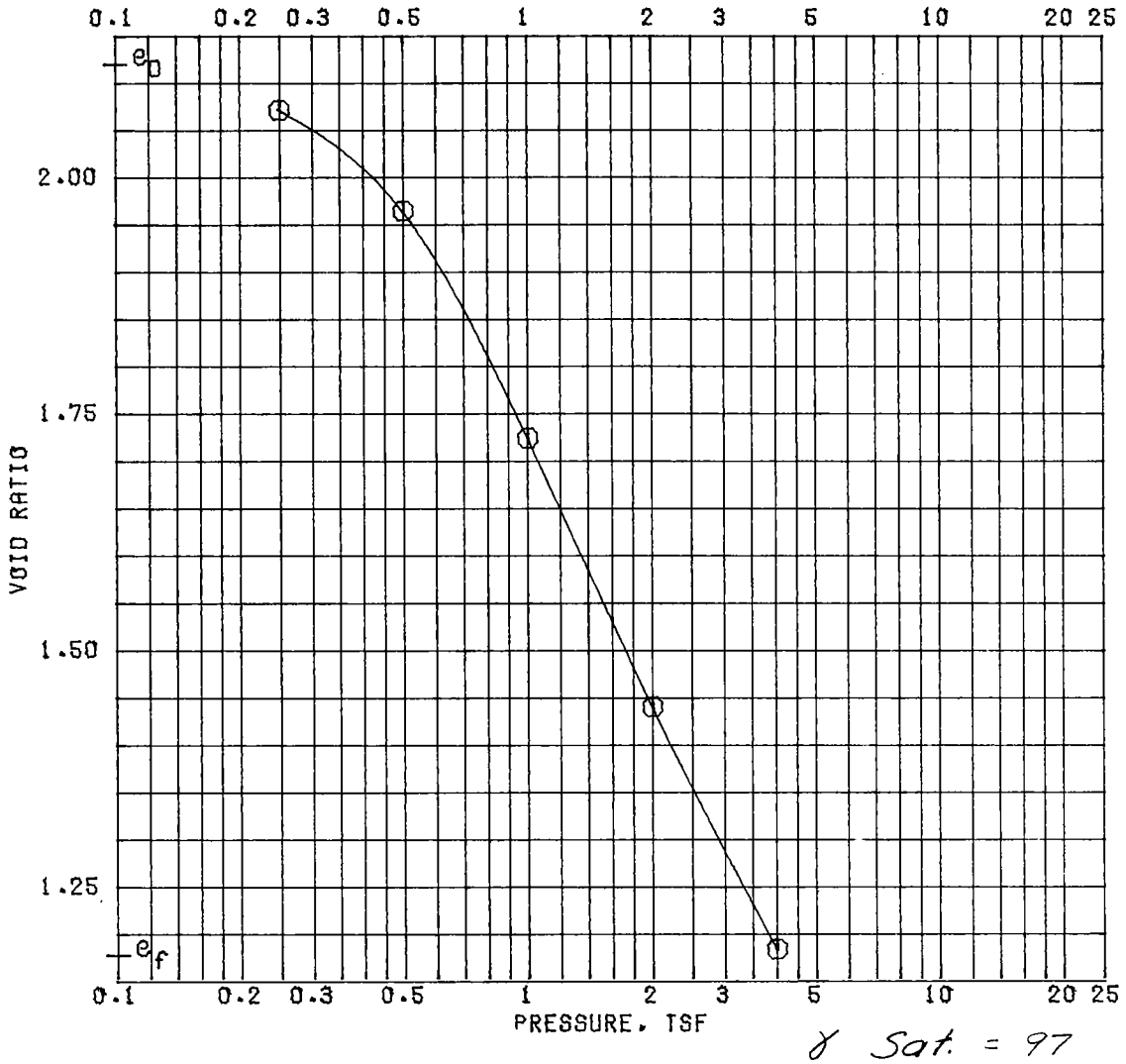
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELLS

LL 80	PL 24	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 41-U | SAMPLE NO. 11-C
DEPTH/ELEV 41.9/-47.6 | TECH. KOC
LABORATORY USAE WES | DATE 12 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 97

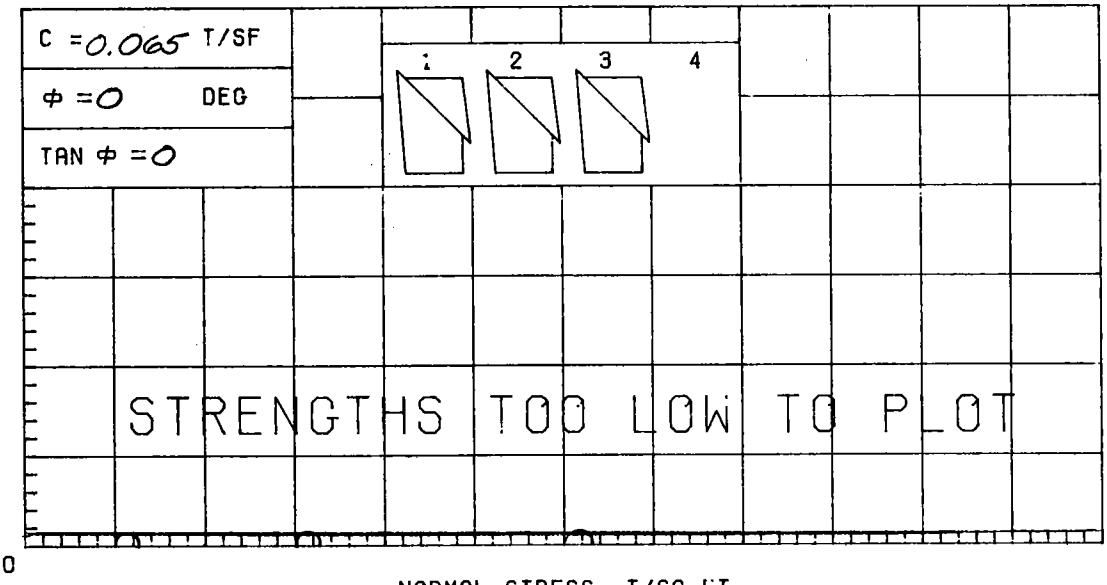
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	77.6	45.1
PRECONSOL. PRESSURE, TSF	0.52	DRY DENSITY, PCF	54.1	77.5
COMPRESSION INDEX	0.92	SATURATION, %	98.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.118	1.175
DIA. IN 4.44	HT. IN 1.122	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; ORGANIC MATERIAL

LL 109	PL 29	PI 80	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & T. CHARELS PARISHES
REMARKS		BORING NO. 42-U	SAMPLE NO. 3-C
		DEPTH/ELEV 16.0/-12	DATE 21 NOV 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



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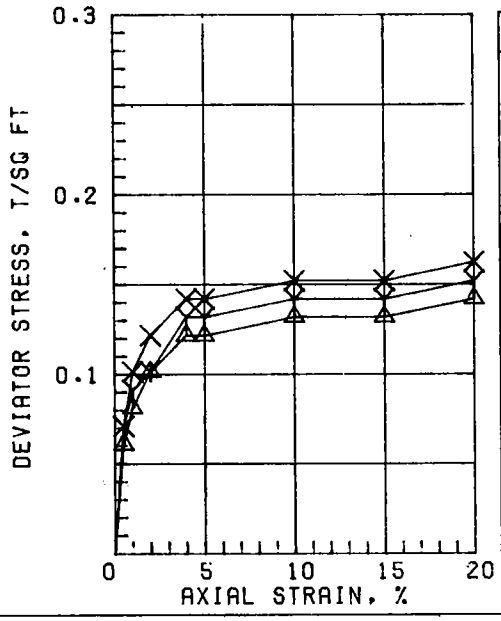


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	60.2	55.8	61.1	
	DRY DENSITY, PCF	63.3	65.8	63.4	
	SATURATION, %	97.7	96.4	99.4	
	VOID RATIO	1.664	1.563	1.660	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.12	0.13	0.14	
TIME TO FAILURE, MIN.		8	8	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

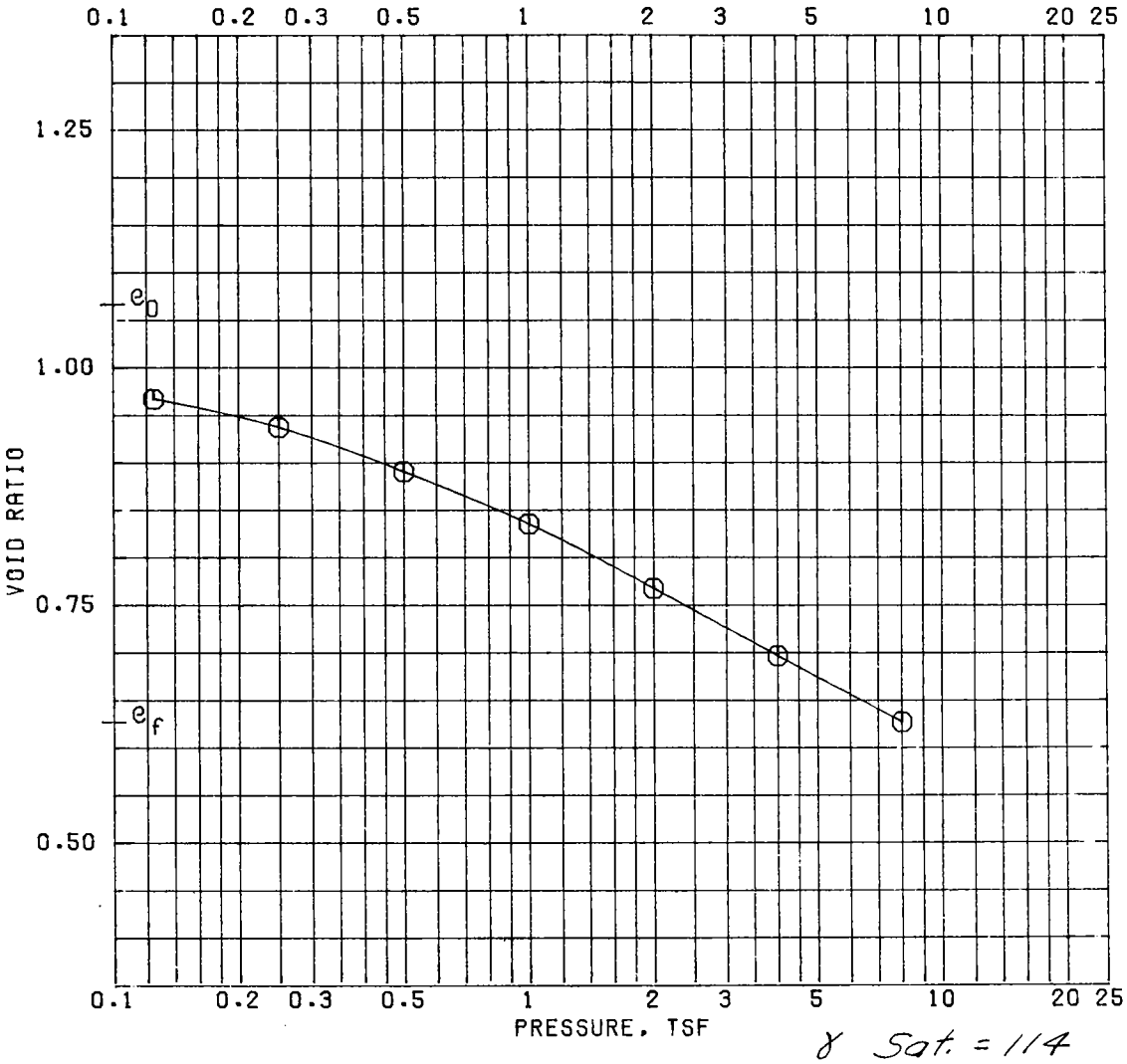
Avg. 59.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/4" SILT LAYERS

L.L. 50	PL 19	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS;	PROJECT LAKE PONT. LA. & VIC. HURR PROT
	JEFFERSON & ST. CHARLES PARISHES
	BORING NO. 42-U / SAMPLE NO. 4-C
	DEPTH/ELEV 21.4/-17.4 / TECH. KOC
	LABORATORY USAE WES / DATE 26 SEP 85
	TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 114

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.32		
COMPRESSION INDEX 0.20		
TYPE SPECIMEN UNDISTURBED		
DIA. IN 4.44 HT. IN 1.135		
WATER CONTENT, %	38.1	24.7
DRY DENSITY, PCF	81.6	103.7
SATURATION, %	96.7	100 +
VOID RATIO	1.065	0.625
BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY; SILT LENSES

LL 40 PL 16 PI 24

GS 2.70 (EST) D_{10}

PROJECT LAKE PONT LA & VIC HURR PROT

JEFFERSON & ST. CHARLES PARISHES

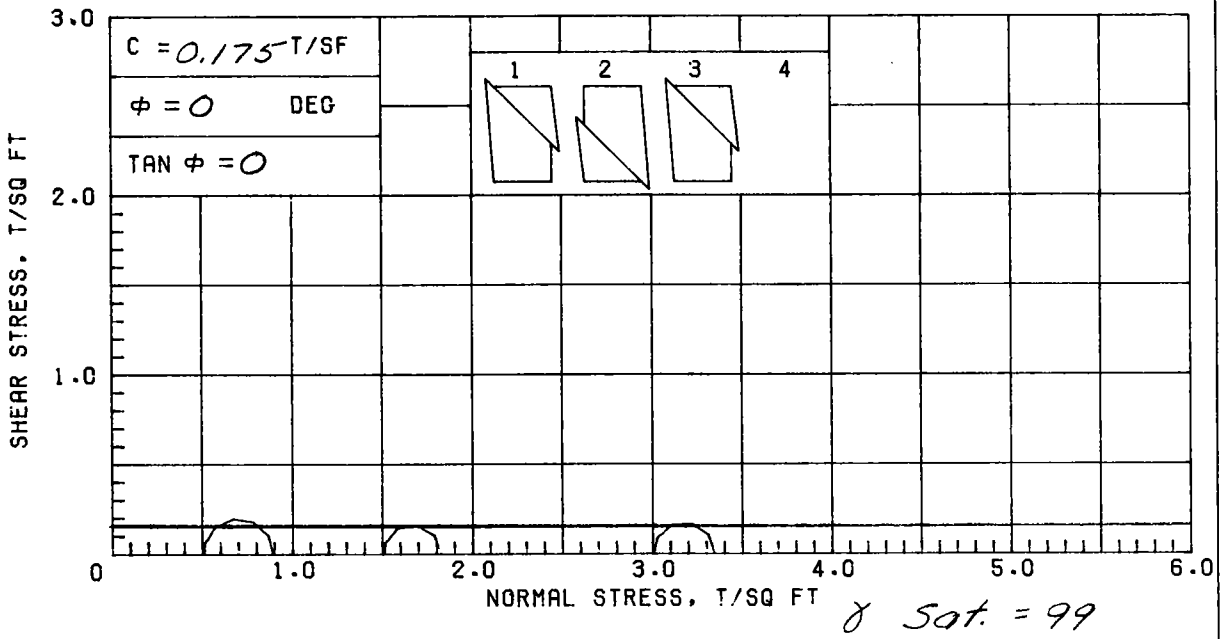
REMARKS

BORING NO. 42-U SAMPLE NO. 6-B

DEPTH/ELEV 28/-24 DATE 10 DEC 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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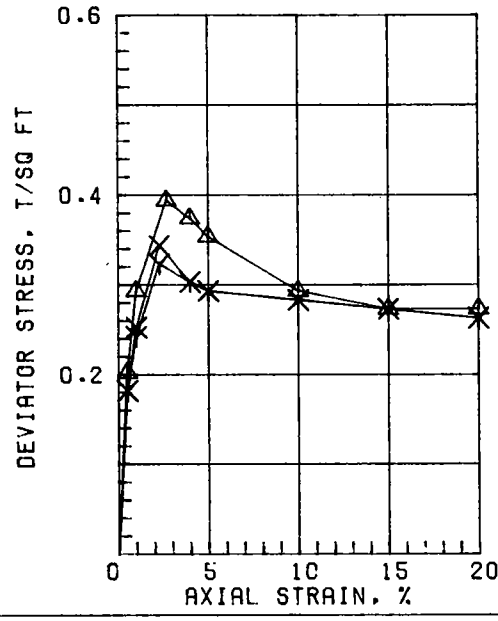


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	70.8	70.9	70.5	
	DRY DENSITY, PCF	57.7	58.6	58.4	
	SATURATION, %	99.4	100+	100+	
	VOID RATIO	1.923	1.879	1.886	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.39	0.32	0.34	
TIME TO FAILURE, MIN.		5	13	12	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 70.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 85	PL 22	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

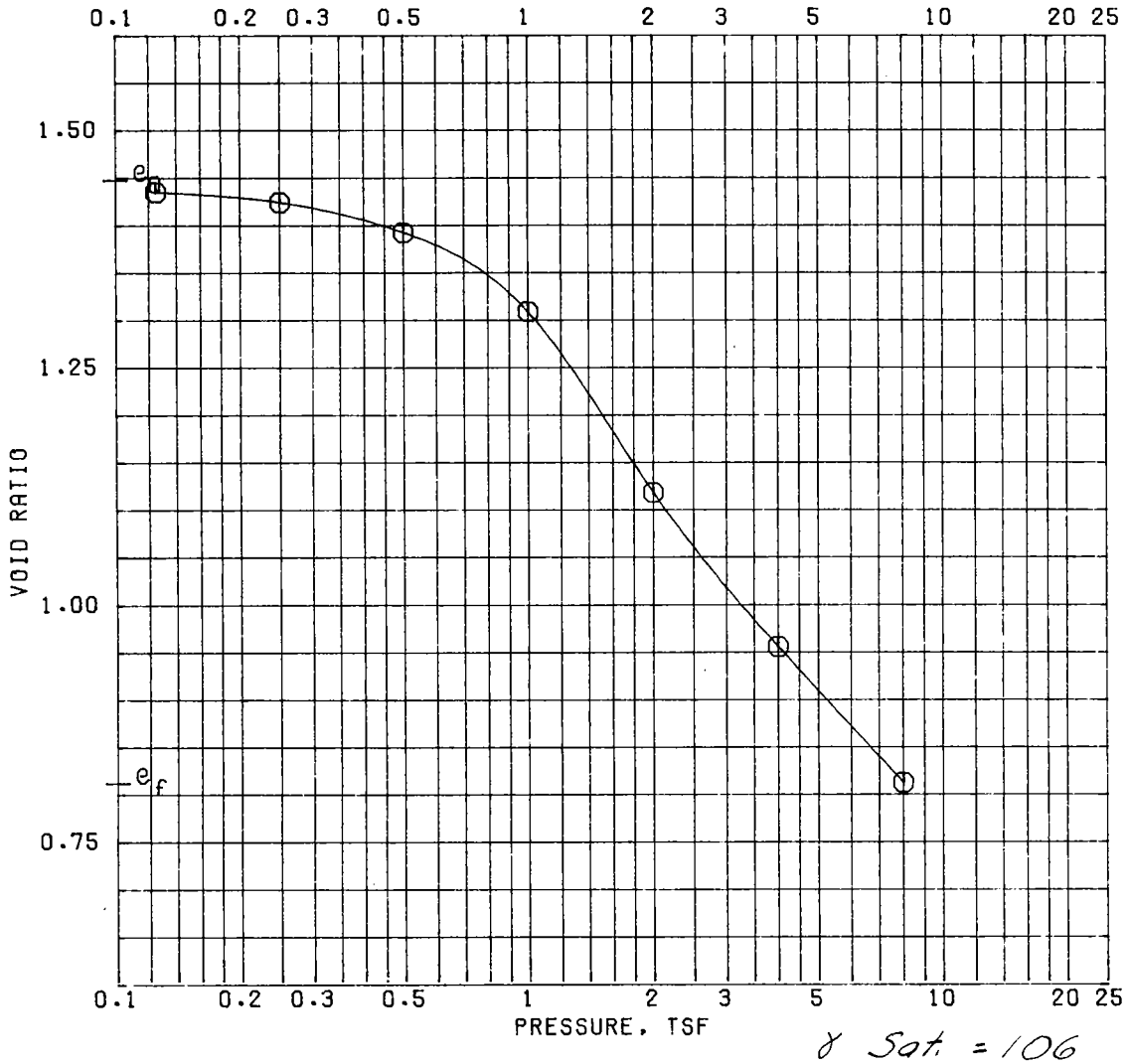
PROJECT LAKE PONT. LA. & VIC. HURR PROT
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 42-U — SAMPLE NO. 7-C

DEPTH/ELEV 33.3/-39.3 — TECH. KOC

LABORATORY USAE WES — DATE 27 SEP 85

TRIAXIAL COMPRESSION TEST REPORT

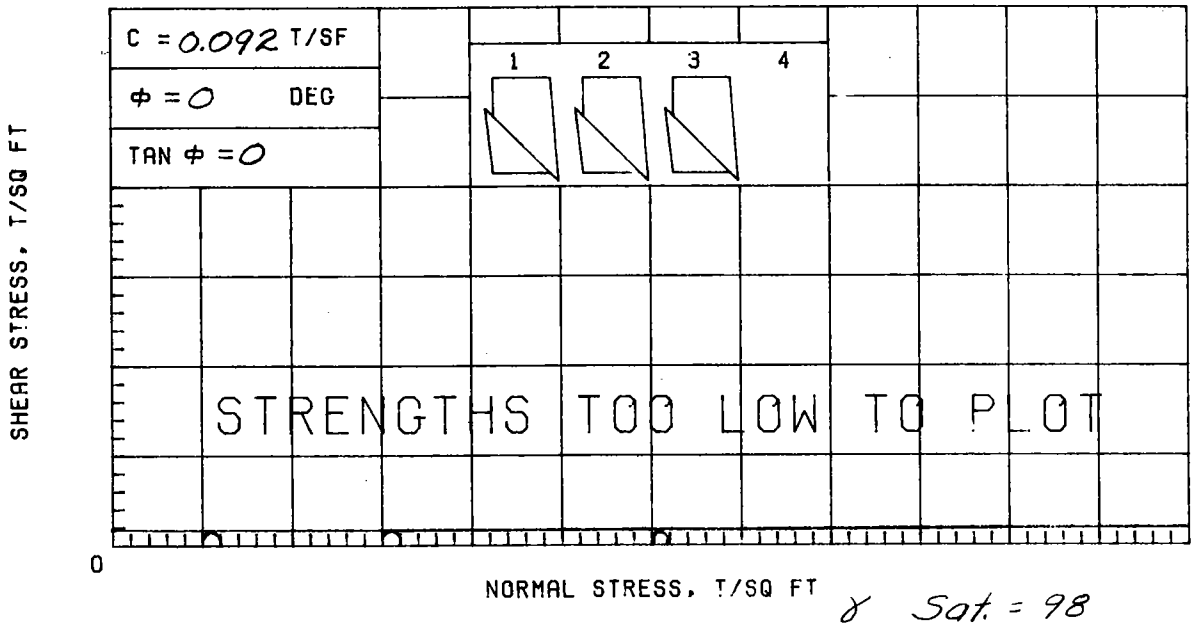


γ Sat. = 106

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	51.7	30.4
PRECONSOL. PRESSURE, TSF	0.96	DRY DENSITY, PCF	68.9	93.1
COMPRESSION INDEX	0.37	SATURATION, %	96.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.446	0.811
DIA. IN 4.44	HT. IN 1.131	BACK PRESSURE, TSF		

CLASSIFICATION	PLASTIC CLAY (CH), GRAY; SILT LENSES; SHELL PARTICLES		
LL 64	PL 18	PI 46	PROJECT LAKE PONT LA & VIC HURR PROT
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 42-U	SAMPLE NO. 9-C
		DEPTH/ELEV 40.8/-36.9	DATE 11 DEC 85
		CONSOLIDATION TEST REPORT	

SHEET 1 OF 9



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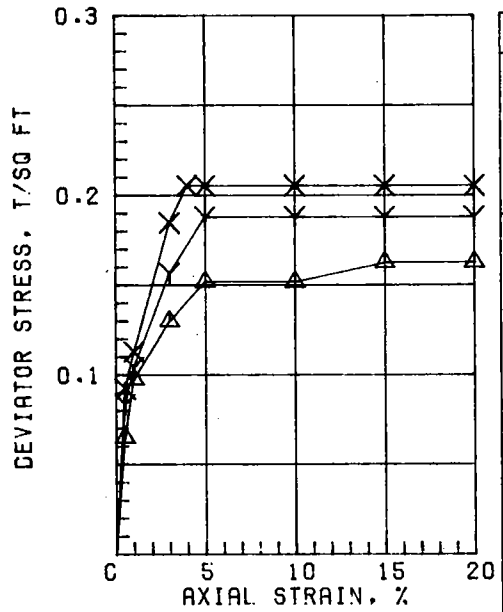


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	78.7	73.2	76.8	
	DRY DENSITY, PCF	54.3	56.4	55.3	
	SATURATION, %	100+	99.4	100+	
	VOID RATIO	2.107	1.988	2.049	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.15	0.19	0.21	
TIME TO FAILURE, MIN.		10	10	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.34	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVG. 76.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 85	PL 22	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

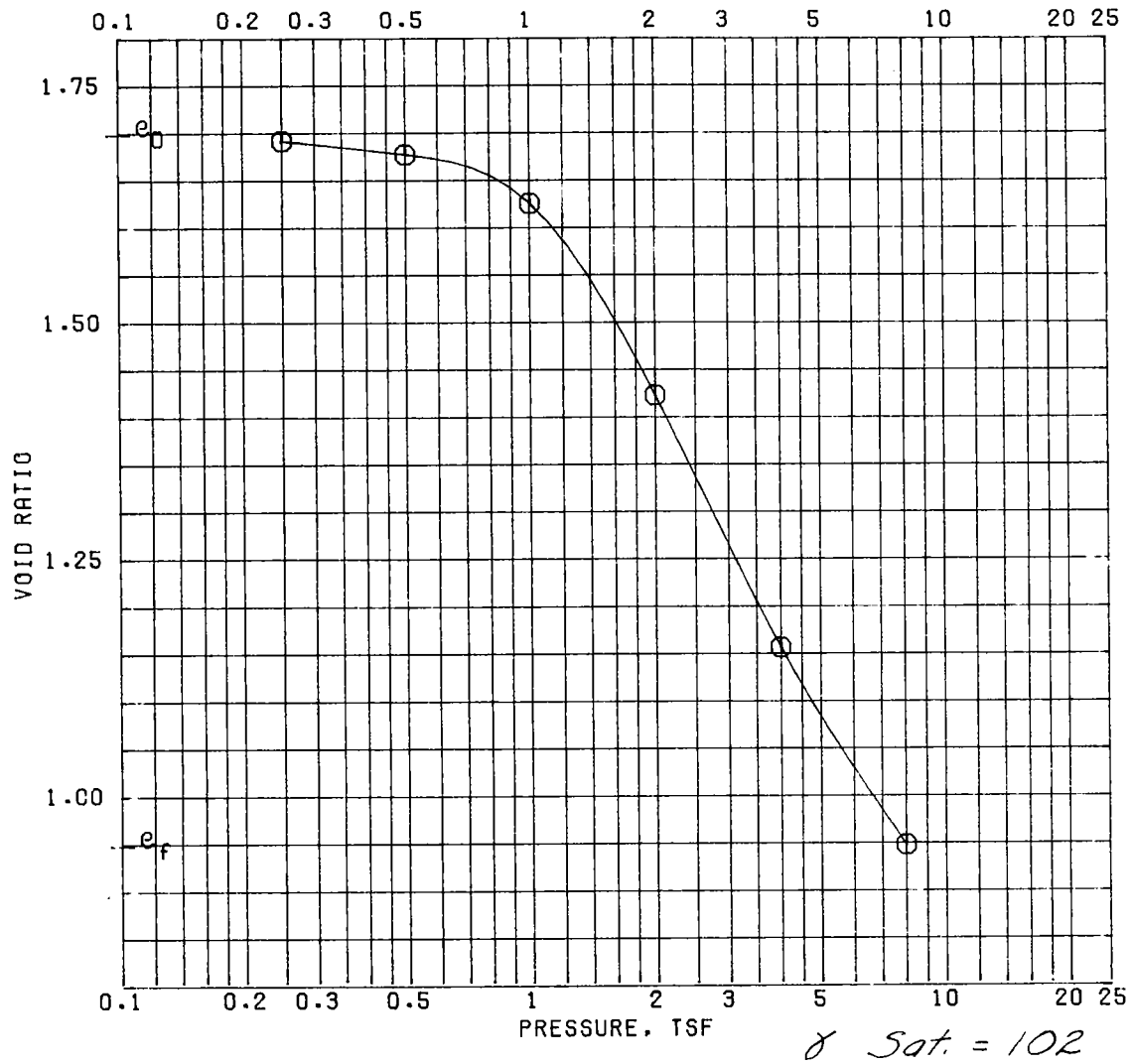
PROJECT LAKE PONT. LA. & VIC. HURR PROT
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 42-U | SAMPLE NO. 11-B

DEPTH/ELEV 48.0/-44.0 | TECH. KCC

LABORATORY USAE WES | DATE 27 SEP 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 102

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 1.18	WATER CONTENT, %	60.6	35.7
COMPRESSION INDEX 0.90	DRY DENSITY, PCF	62.5	86.6
TYPE SPECIMEN UNDISTURBED	SATURATION, %	96.4	100 +
DIA. IN 4.44 HT. IN 1.125	VOID RATIO	1.696	0.946
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY: SHELL PARTICLES

LL 72 PL 20 PI 52

GS 2.70 (EST) D_{10}

PROJECT LAKE PONT LA & VIC HURR PROT

JEFFERSON & ST. CHARLES PARISHES

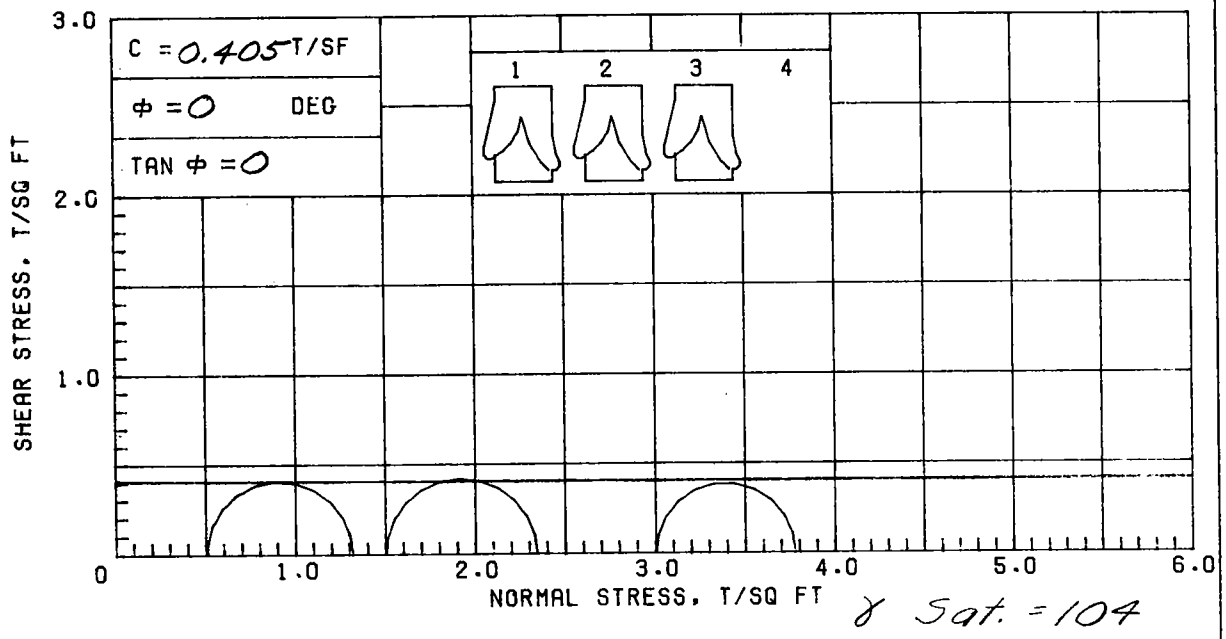
REMARKS

BORING NO. 42-U SAMPLE NO. 12-B

DEPTH/ELEV 52.0/-48.0 DATE 17 DEC 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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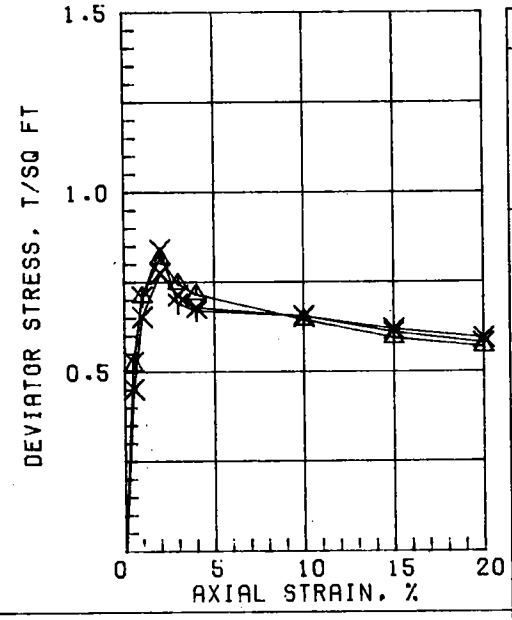


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	59.0	57.3	57.3	
	DRY DENSITY, PCF	65.5	66.4	66.4	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.575	1.538	1.537	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.82	0.84	0.77	
TIME TO FAILURE, MIN.		4	15	15	
RATE OF STRAIN INCR.%			4	5	
INITIAL DIAMETER, IN.		1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 57.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 71	PL 20	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

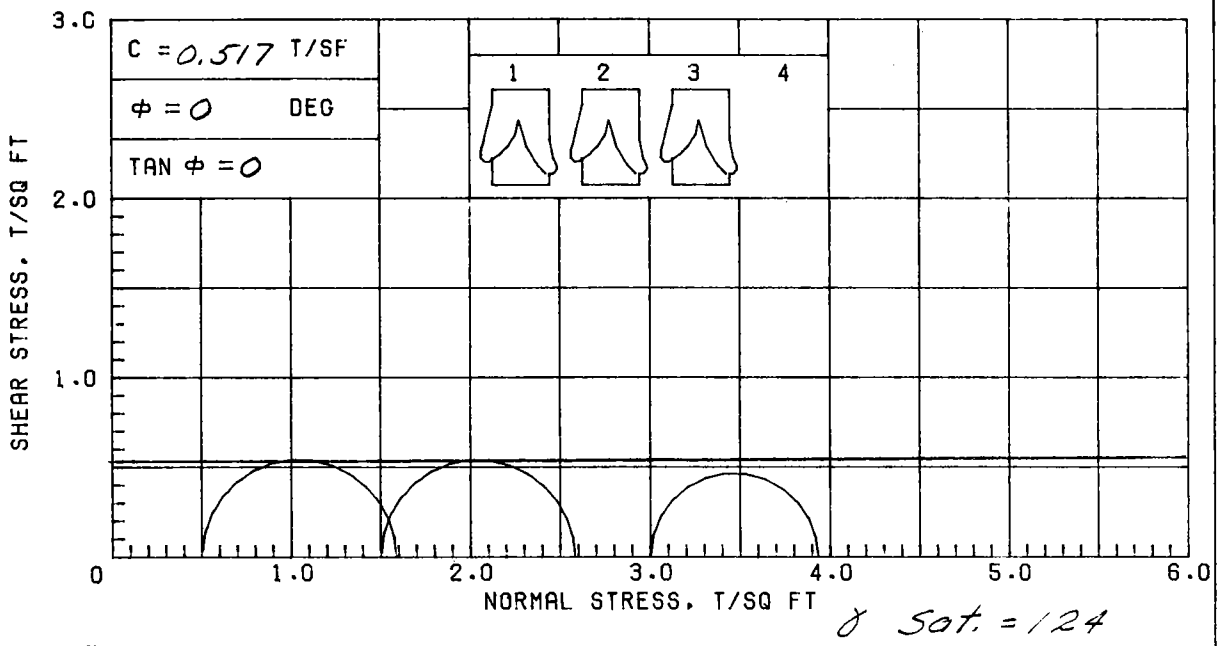
PROJECT LAKE PONT. LA. & VIC. HURR PROT
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 42-U | SAMPLE NO. 13-B

DEPTH/ELEV 56.2/-52.2 | TECH. PJR

LABORATORY USAE WES | DATE 27 SEP 85

TRIAXIAL COMPRESSION TEST REPORT



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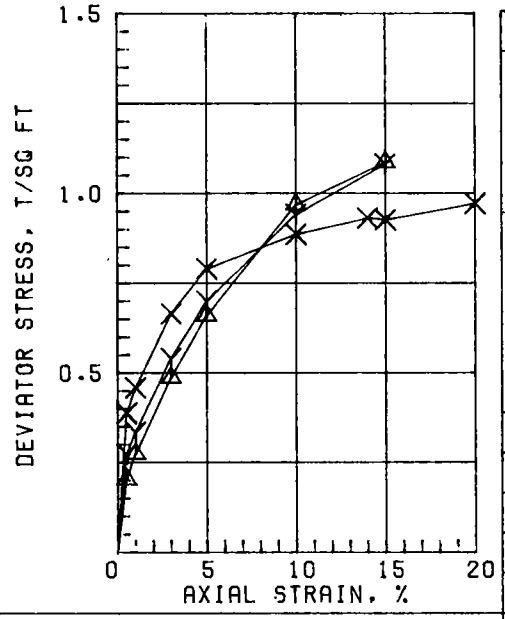


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	22.8	24.6	31.9	
	DRY DENSITY, PCF	103.2	100.8	90.5	
	SATURATION, %	97.1	98.8	99.8	
	VOID RATIO	0.634	0.672	0.863	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.09	1.08	0.93	
TIME TO FAILURE, MIN.		30	30	28	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.38	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

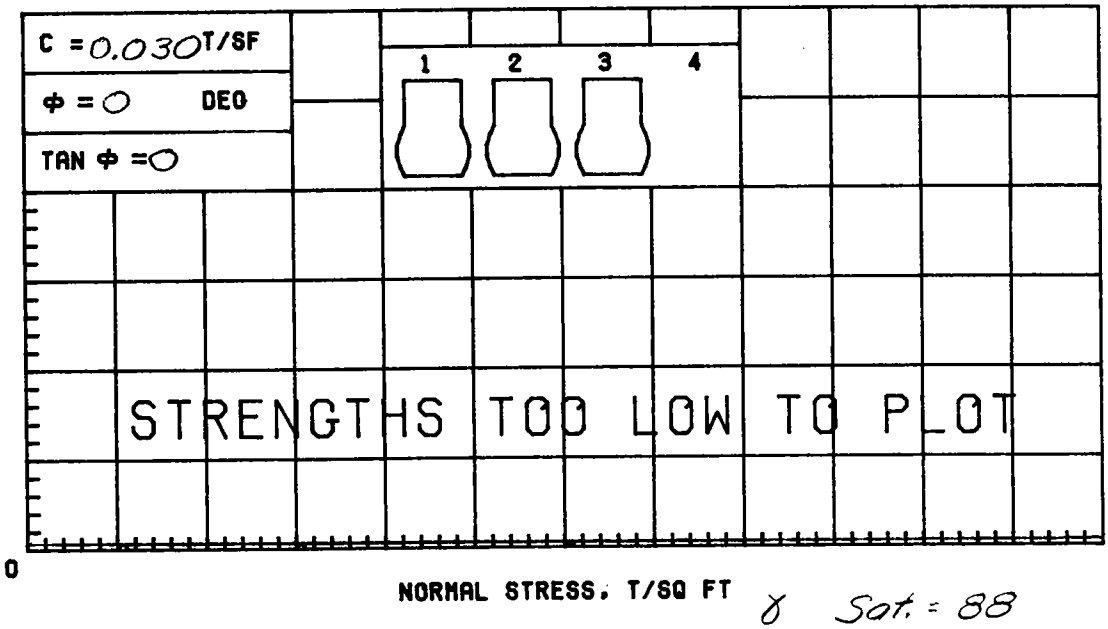
Avg. 26.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), LIGHT GRAY; FINE SAND POCKETS

LL 40	PL 13	PI 27	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	C TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR PROT	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 42-U	SAMPLE NO. 15-B
	DEPTH/ELEV 64.1/-60.1	TECH. PJR
	LABORATORY USAE WES	DATE 28 SEP 85
	TRIAXIAL COMPRESSION TEST REPORT	



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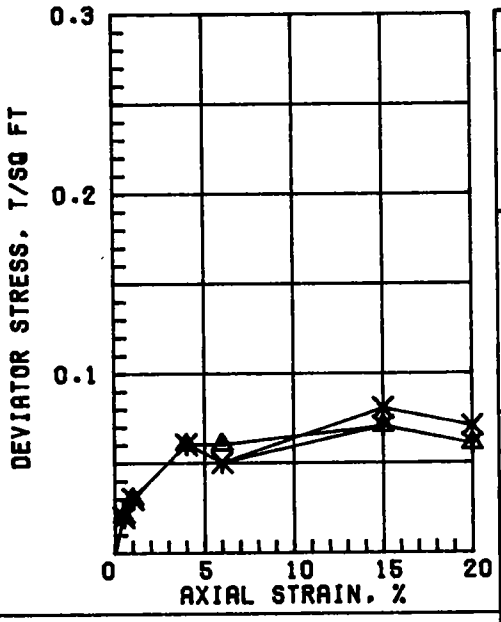


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	106.3	109.1	133.1	
	DRY DENSITY, PCF	42.0	41.5	35.8	
	SATURATION, %	95.2	96.2	96.8	
	VOID RATIO	3.015	3.061	3.713	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.06	0.06	0.06	
TIME TO FAILURE, MIN.		8	24	24	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 116.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; ORGANIC MATTER; SILT POCKETS

LL 97	PL 24	PI 73	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

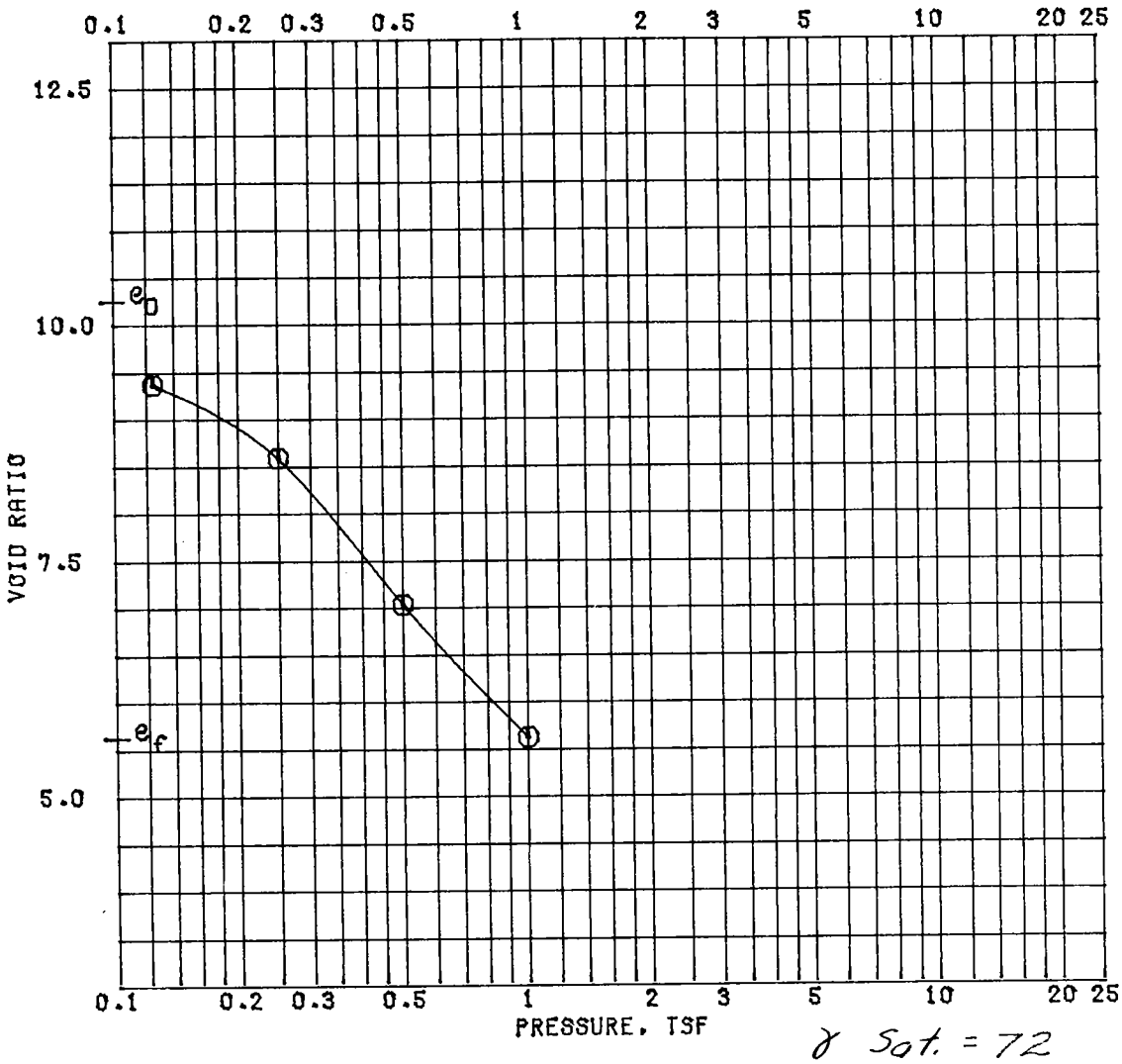
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 43-U | SAMPLE NO. 2-B

DEPTH/ELEV 5.0/-9.7 | TECH. KOC

LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 72

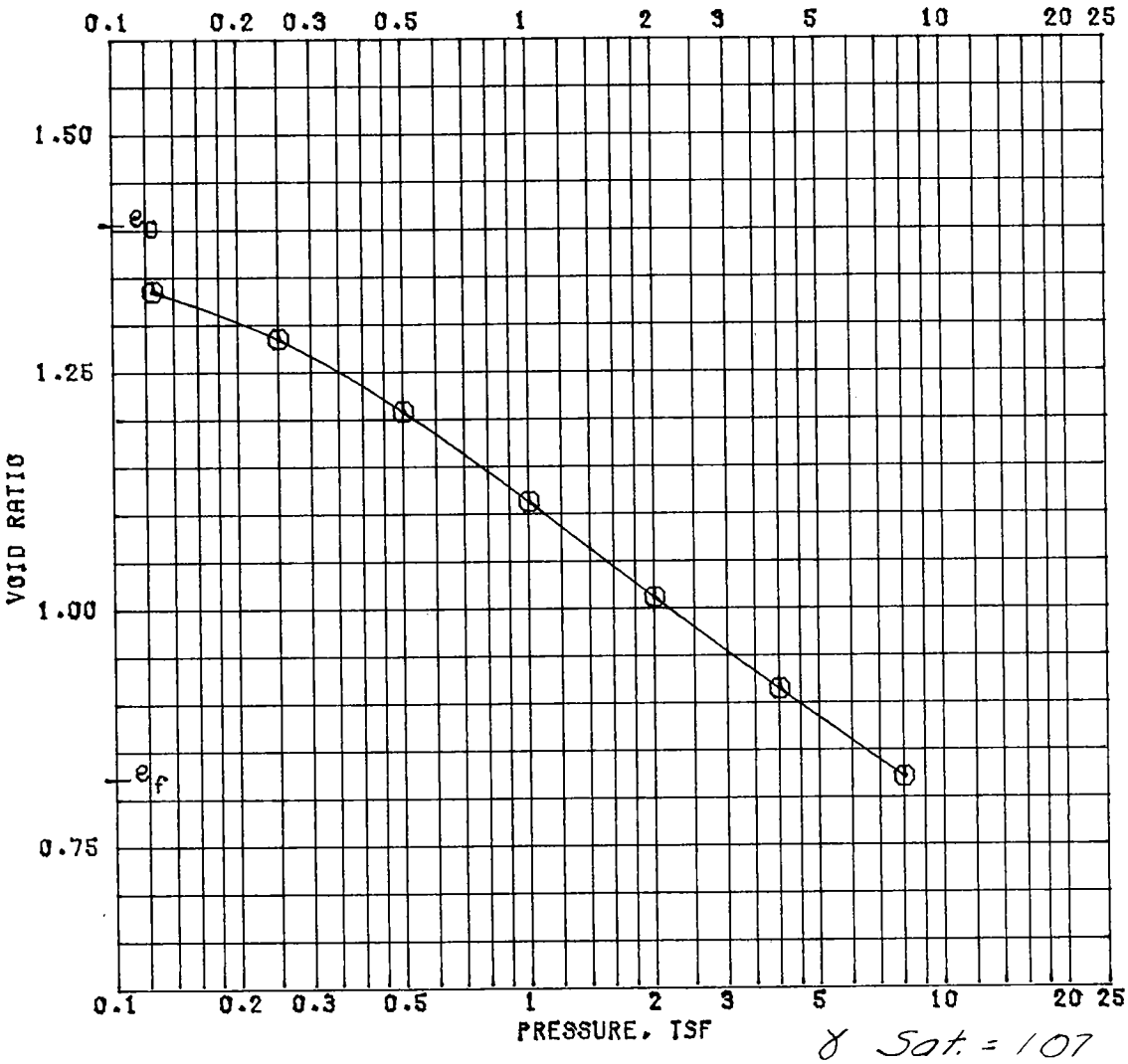
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	344.6	178.0
PRECONSOL. PRESSURE, TSF	0.25	DRY DENSITY, PCF	15.0	25.5
COMPRESSION INDEX	5.4	SATURATION, %	90.9	85.7
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	10.231	5.606
DIA. IN 4.44	HT. IN 1.117	BACK PRESSURE, TSF		

CLASSIFICATION PEAT (PT), BLACK

LL 306	PL 99	PI 207	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 43-U	SAMPLE NO. 1-C
		DEPTH/ELEV 1.9/-6.6	DATE 07 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 6



γ Sat. = 107

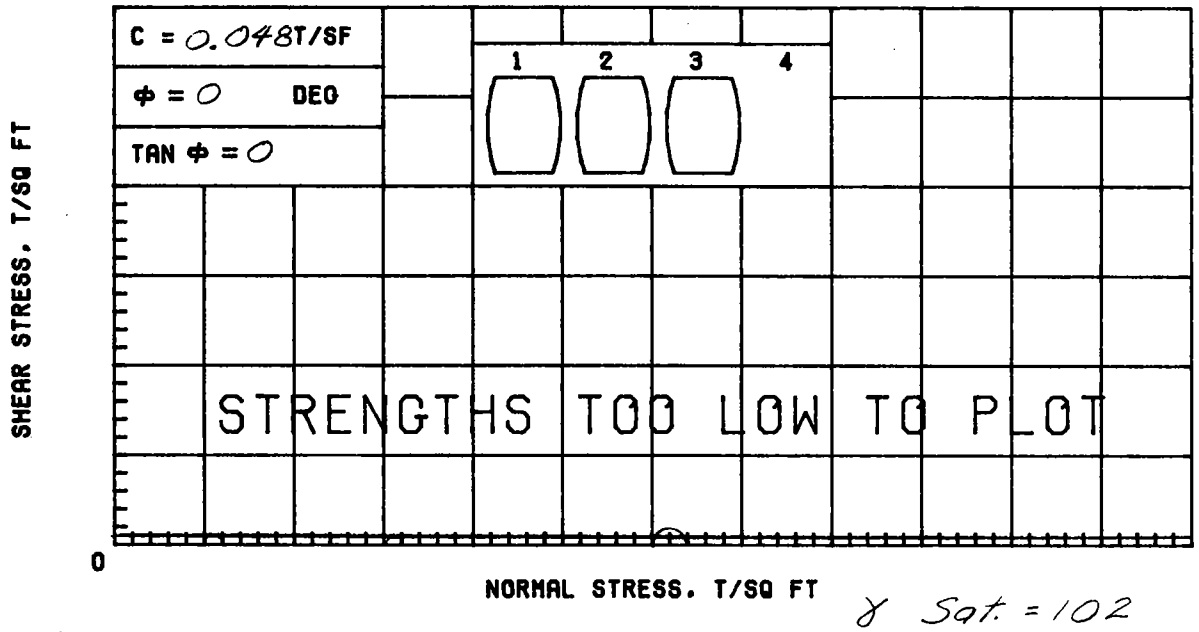
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	50.6	30.5
PRECONSOL. PRESSURE, TSF	0.36	DRY DENSITY, PCF	70.1	92.0
COMPRESSION INDEX	0.32	SATURATION, %	97.4	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.403	0.820
DIA. IN 4.44	HT. IN 1.105	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY; SILT LENSES

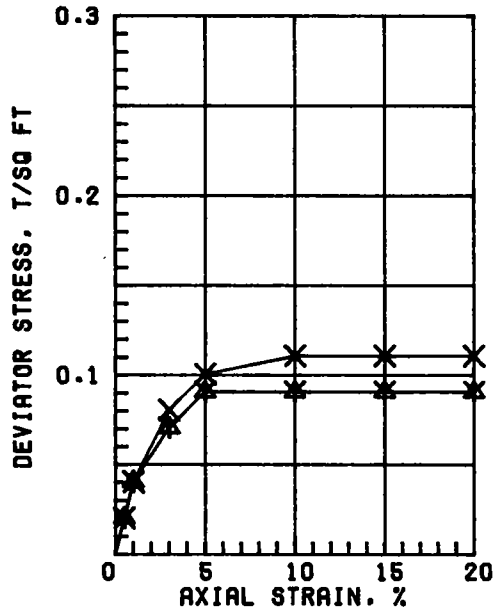
LL 45	PL 17	PI 28	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISHES
REMARKS		BORING NO. 43-U	SAMPLE NO. 4-B
		DEPTH/ELEV 13.0/-17.7	DATE 07 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 102



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	60.5	64.6	58.1	
	DRY DENSITY, PCF	63.2	59.5	64.6	
	SATURATION, %	98.1	95.2	97.5	
	VOID RATIO	1.665	1.832	1.608	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.09	0.09	0.11	
TIME TO FAILURE, MIN.		10	10	20	
RATE OF STRAIN INCR,%					
INITIAL DIAMETER, IN.		1.40	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 61.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 58	PL 19	PI 39	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

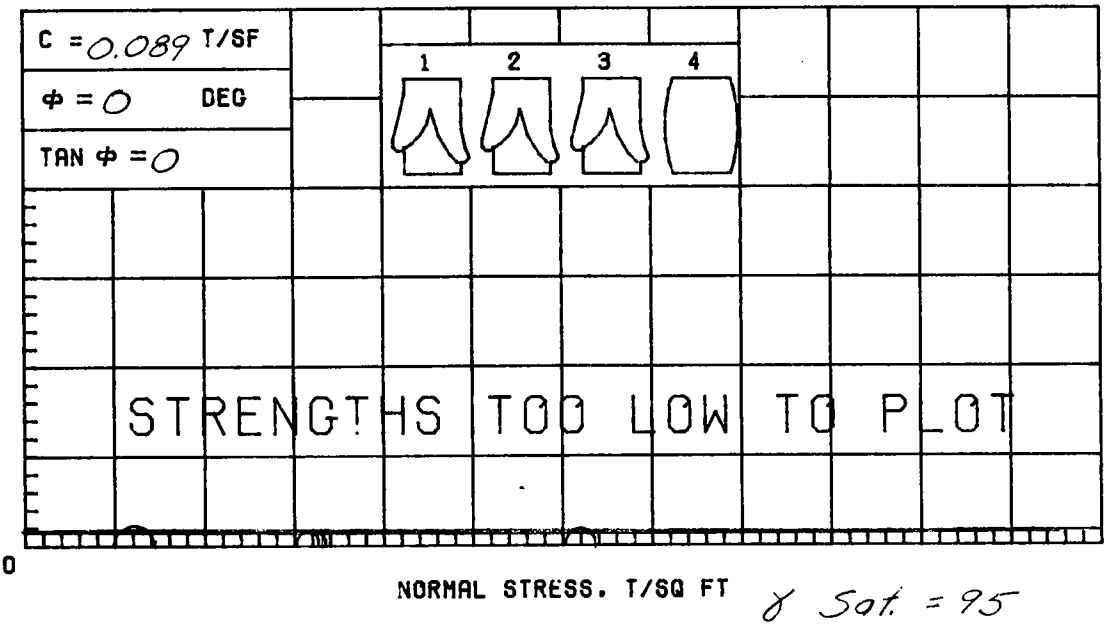
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 43-U | SAMPLE NO. 4-C

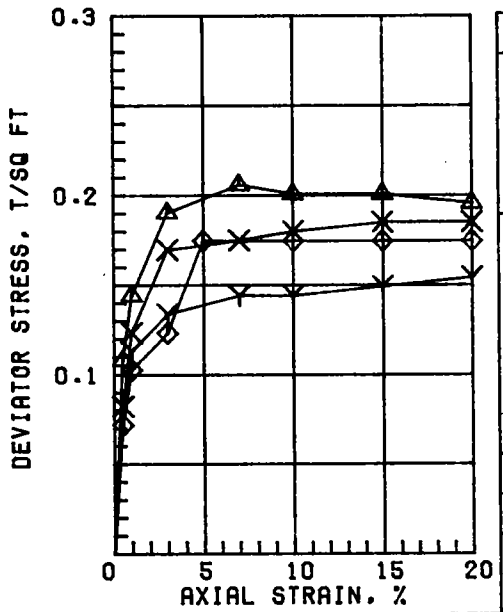
DEPTH/ELEV 14.3/-19.0 | TECH. KOC

LABORATORY USAE WES | DATE 14 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 95



SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	85.6	84.8	84.5	89.1
	DRY DENSITY, PCF	50.8	51.4	51.4	49.8
	SATURATION, %	99.7	100+	100+	100+
	VOID RATIO	2.319	2.282	2.278	2.384
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5
MAX. DEV. STRESS, TSF		0.21	0.14	0.19	0.17
TIME TO FAILURE, MIN.		14	16	34	10
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.38	1.38
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

AVG. 86.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 83	PL 21	PI 62	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

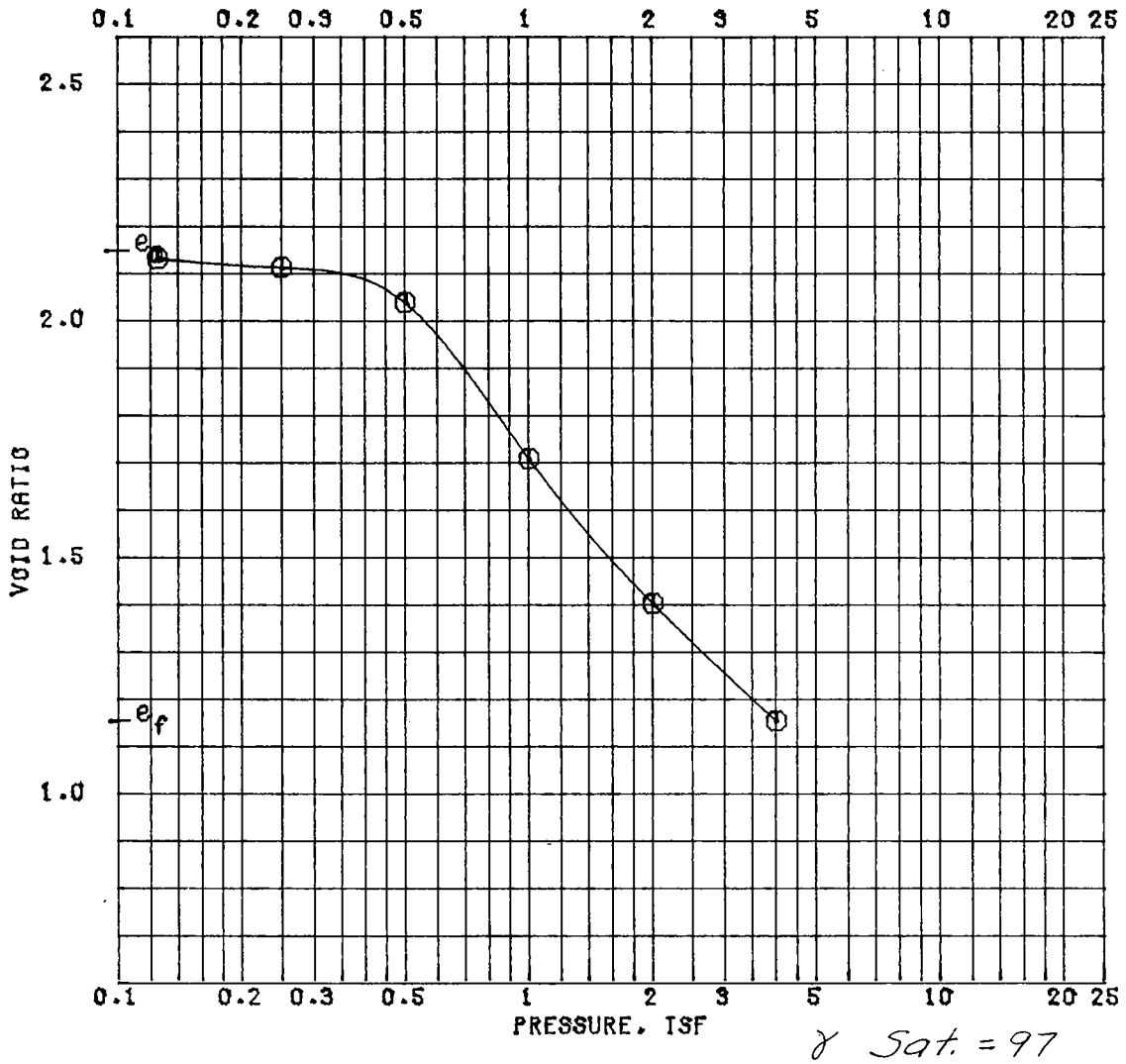
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 43-U | SAMPLE NO. 7-B

DEPTH/ELEV 25.0/-29.7 | TECH. PJR

LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 97

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	79.0	45.8
PRECONSOL. PRESSURE, TSF	0.51	DRY DENSITY, PCF	53.6	78.4
COMPRESSION INDEX	1.18	SATURATION, %	98.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.145	1.151
DIA. IN 4.44	HT. IN 1.112	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL	PL	PI
GS 2.70 (EST)	D_{10}	

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

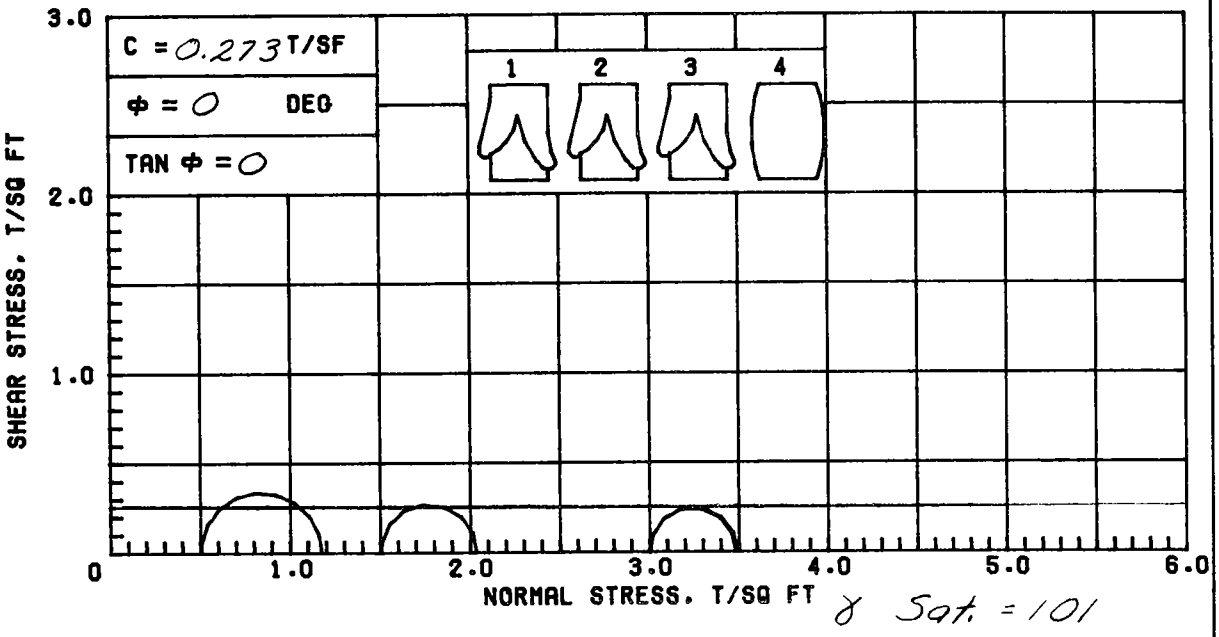
REMARKS

BORING NO. 43-U SAMPLE NO. T-C

DEPTH/ELEV 25.9/-30.6 DATE 07 OCT 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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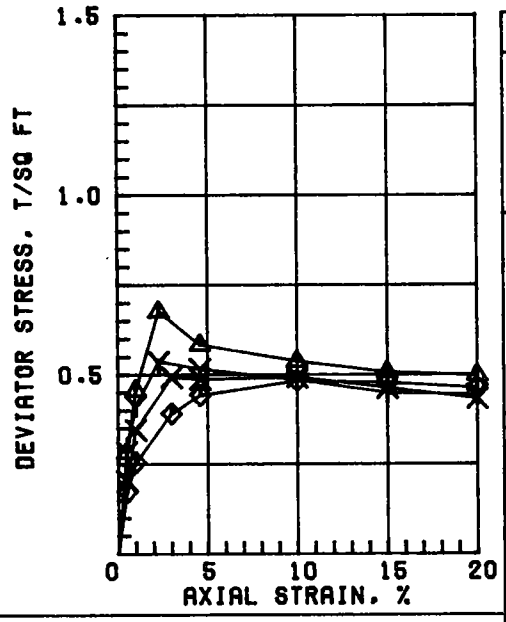


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	77.0	77.4	71.8	40.7
	DRY DENSITY, PCF	54.8	54.5	57.3	79.0
	SATURATION, %	100+	99.8	99.7	96.9
	VOID RATIO	2.078	2.095	1.944	1.134
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.67	0.54	0.49	0.48
TIME TO FAILURE, MIN.		5	15	20	64
RATE OF STRAIN INCR.%			5	5	
INITIAL DIAMETER, IN.		1.39	1.38	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 66.7

CONTROLLED-STRAIN TEST

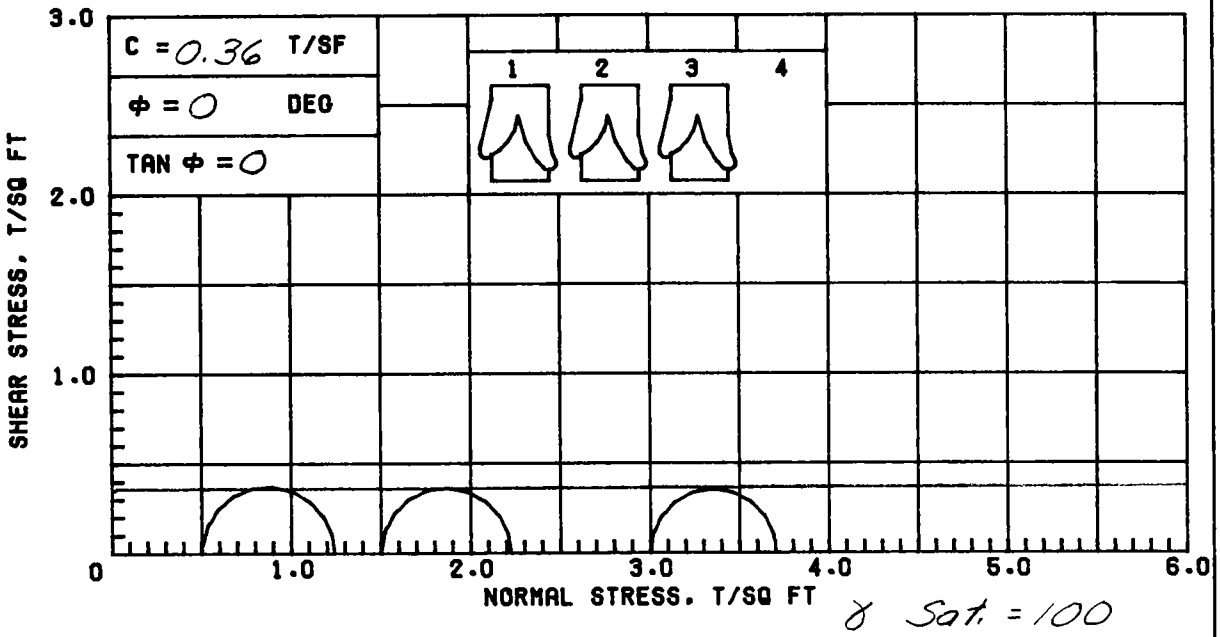
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/16" HORIZONTAL SILT LENSES; SHELL FRAGMENTS

LL 50	PL 15	PI 35	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:
CHECK TEST SPECIMEN TAKEN FROM DIFFERENT LIFT.

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES
BORING NO. 43-U | SAMPLE NO. 9-B
DEPTH/ELEV 36.8/-41.5 | TECH. PJR
LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



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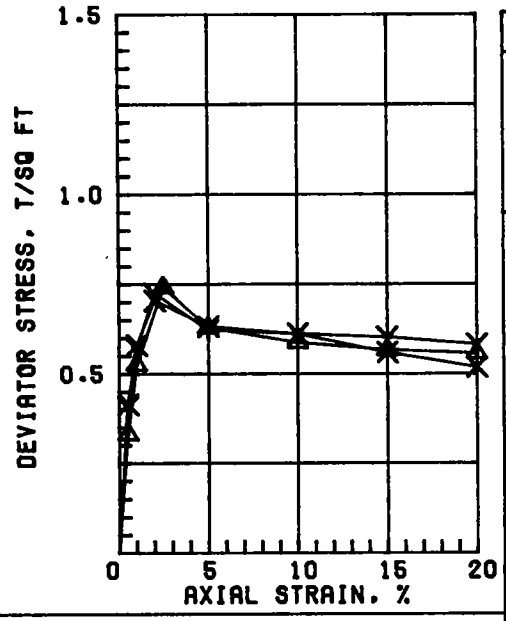


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	68.3	68.5	69.6	
	DRY DENSITY, PCF	59.2	59.3	58.7	
	SATURATION, %	99.8	100+	100+	
	VOID RATIO	1.848	1.845	1.870	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.74	0.72	0.70	
TIME TO FAILURE, MIN.		6	12	12	
RATE OF STRAIN INCR.%			5	5	
INITIAL DIAMETER, IN.		1.38	1.39	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 68.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SMALL SHELLS

LL 81	PL 21	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

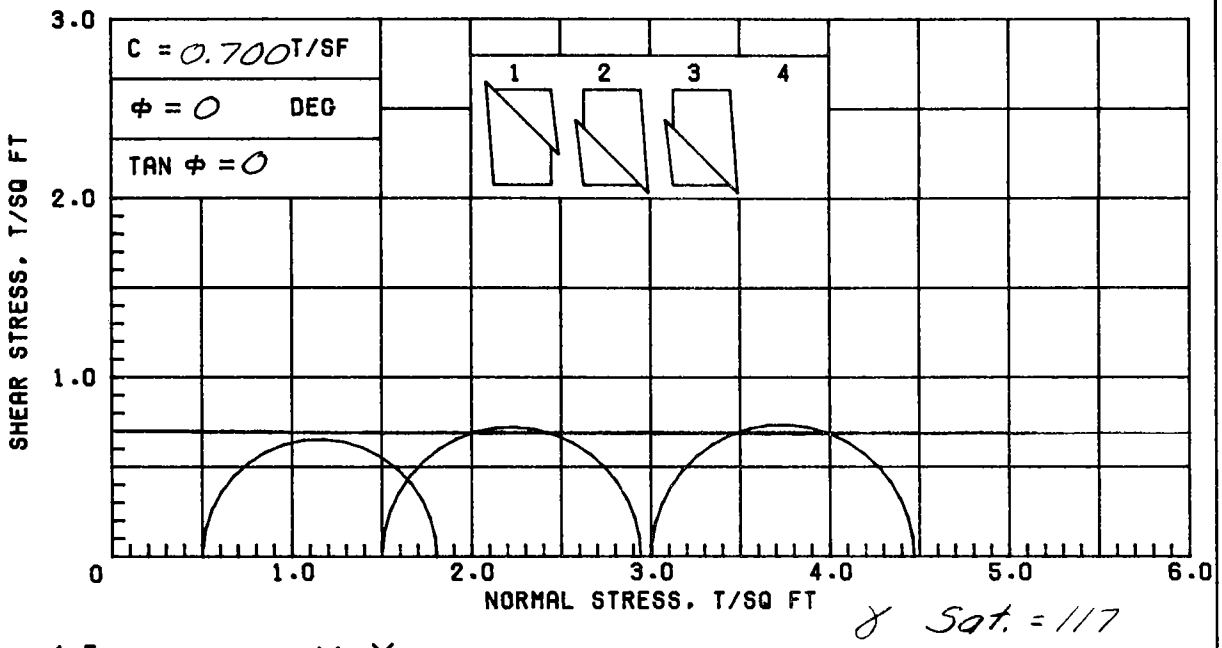
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 43-U | SAMPLE NO. 11-C

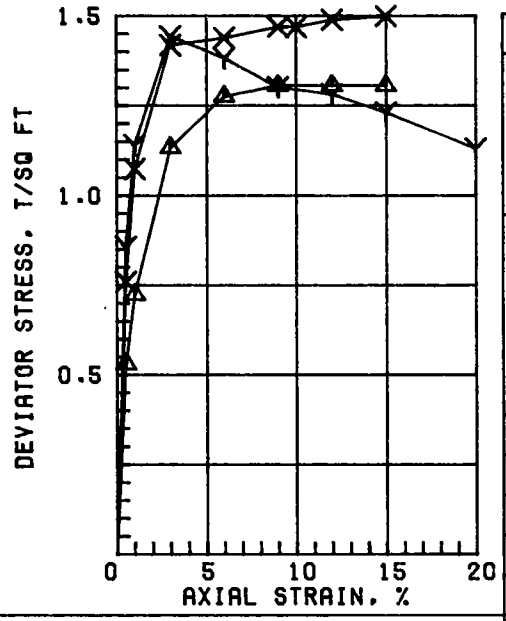
DEPTH/ELEV 46.4/-51.1 | TECH. PJR

LABORATORY USAE WES | DATE 13 AUG 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 117



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	28.8	30.1	33.5	
	DRY DENSITY, PCF	89.1	87.3	84.9	
	SATURATION, %	87.2	87.4	91.7	
	VOID RATIO	0.891	0.930	0.986	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.31	1.44	1.47	
TIME TO FAILURE, MIN.		88	6	43	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

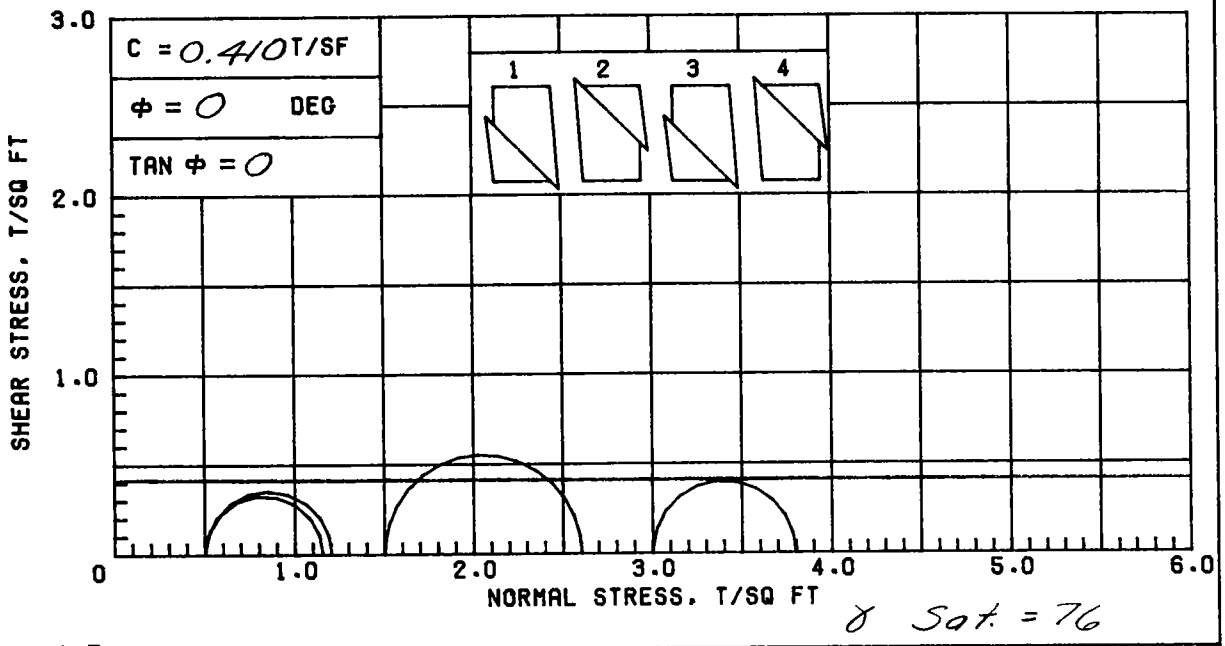
Avg. 30.8

CONTROLLED-STRAIN TEST

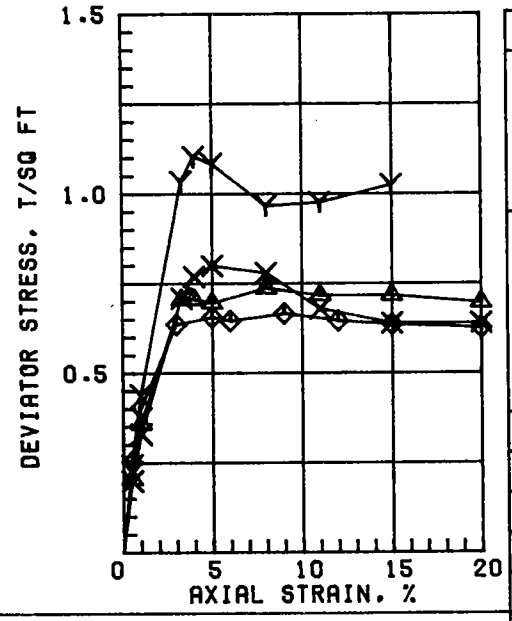
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; FINE SAND LENSES

LL 55	PL 16	PI 39	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF PARISH & ST. CHARLES PARISH	
	BORING NO. 44-U	SAMPLE NO. 1-C
	DEPTH/ELEV 2.0/-1.6	TECH. LRC
	LABORATORY USAE WES	DATE 09 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 76



SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	203.7	185.4	201.3	93.2
	DRY DENSITY, PCF	23.6	25.4	23.3	44.3
	SATURATION, %	98.8	99.2	96.3	100+
	VOID RATIO	3.504	3.176	3.555	1.398
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.71	1.10	0.80	0.66
TIME TO FAILURE, MIN.		26	19	23	19
RATE OF STRAIN INCR.%		5	5	6	7
INITIAL DIAMETER, IN.		1.38	1.42	1.40	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 170.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PEAT (PT), BLACK; ROOTLETS; DECAYED WOOD

LL 278	PL 133	PI 145	GS 1.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

CHECK TEST SPECIMEN TAKEN FROM DIFFERENT LIFT.

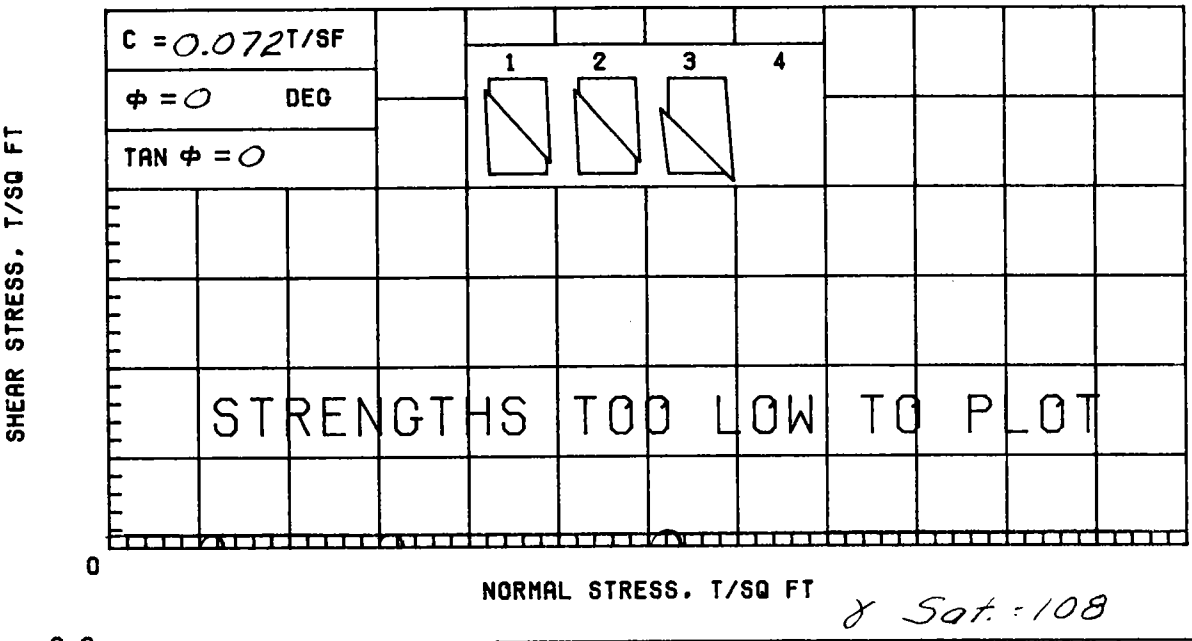
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 44-U | SAMPLE NO. 3-C

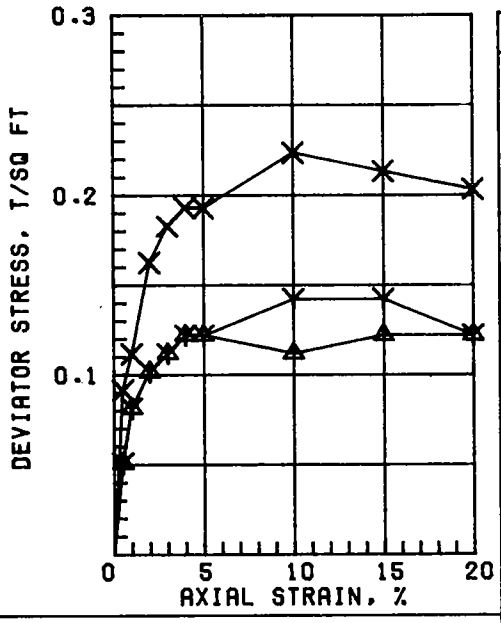
DEPTH/ELEV 8.9/-8.5 | TECH. LRC

LABORATORY USAE WES | DATE 08 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 108



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	48.6	50.2	47.8	
	DRY DENSITY, PCF	72.1	71.0	72.4	
	SATURATION, %	98.1	98.6	97.1	
	VOID RATIO	1.338	1.375	1.330	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.12	0.12	0.19	
TIME TO FAILURE, MIN.		8	24	24	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 48.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 51	PL 17	PI 34	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

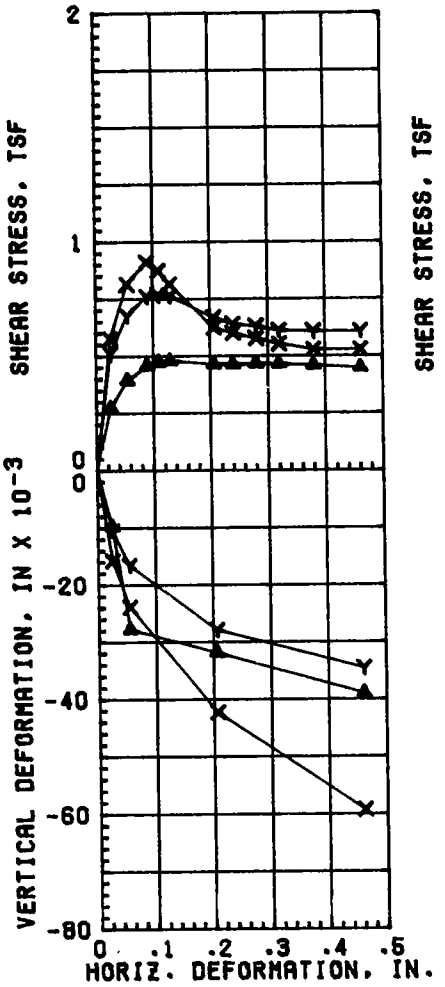
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

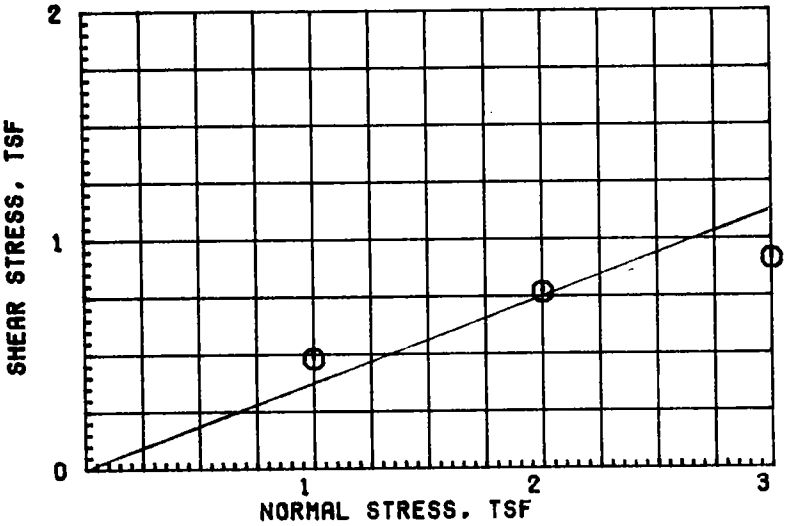
BORING NO. 44-U | SAMPLE NO. 5-C

DEPTH/ELEV 16.9/-16.5 | TECH. KOC

LABORATORY USAE WES | DATE 08 APR 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 104

TEST NO.		1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	50.5	51.3	50.9	50.9
	VOID RATIO	1.518	1.545	1.528	
	SATURATION, %	89.9	89.7	90.0	
	DRY DENSITY, PCF	66.9	66.2	66.6	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	2	< 1	
FINAL	WATER CONTENT, %	44.1	42.6	39.4	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.48	0.77	0.91	
TIME TO FAILURE, MIN		777	658	538	
RATE OF STRAIN, IN/MIN		.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, TSF					

Φ = 20°

TAN Φ = 0.364

C = 0.

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.553 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 54 | PL 18 | PI 36 | | GS 2.70 (EST)

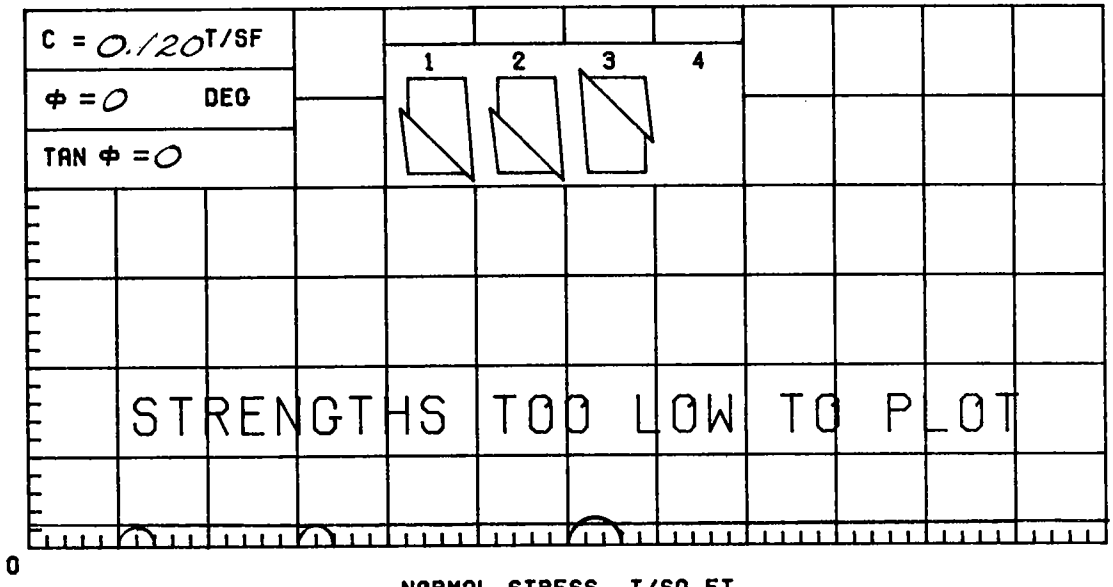
REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

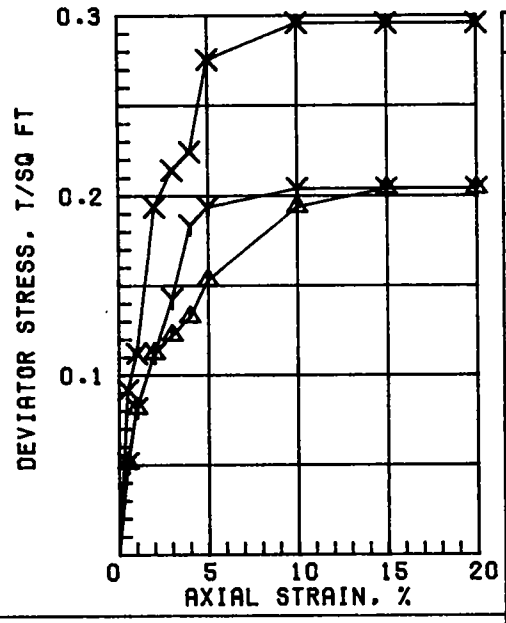
BORING NO. 44-U | SAMPLE 6-B

DEPTH/ELEV 20.0/-19.6 | DATE 28 MAR 85

DIRECT SHEAR TEST REPORT



γ Sat. = 108



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	48.7	54.0	44.0	
	DRY DENSITY, PCF	71.6	67.3	75.9	
	SATURATION, %	97.2	96.9	97.3	
	VOID RATIO	1.353	1.504	1.222	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.20	0.20	0.30	
TIME TO FAILURE, MIN.		30	20	20	
RATE OF STRAIN INCR,%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

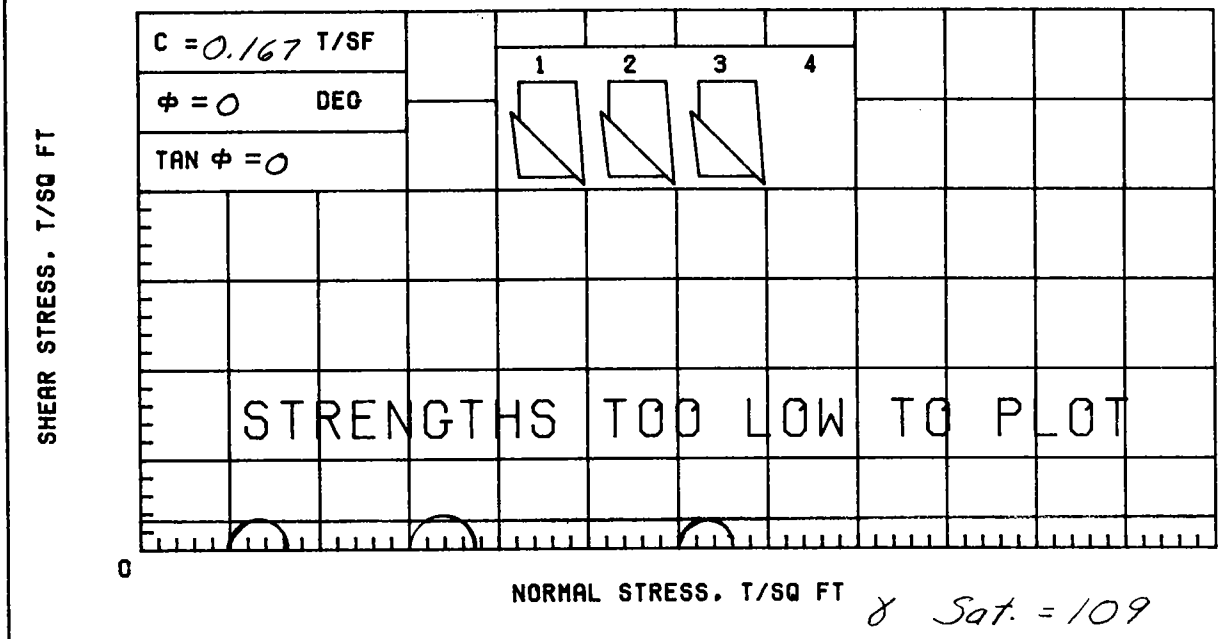
Avg. 48.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/2" SILT LAYERS

LL 53	PL 19	PI 34	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF PARISH & ST. CHARLES PARISH	
	BORING NO. 44-U	SAMPLE NO. 8-B
	DEPTH/ELEV 27.6/-27.2	TECH. KOC
	LABORATORY USAE WES	DATE 08 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



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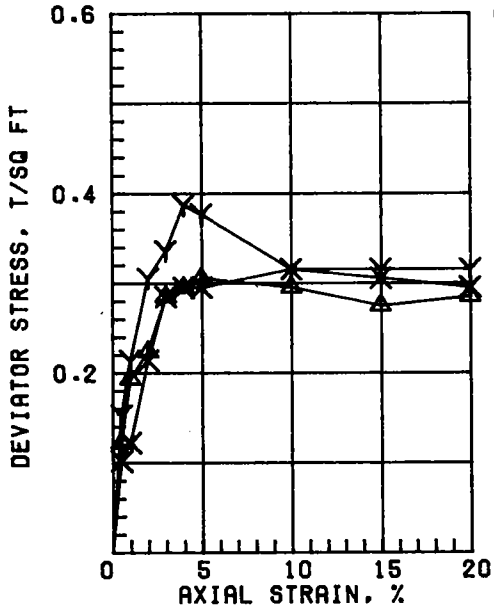


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	43.4	46.0	50.8	
	DRY DENSITY, PCF	76.0	74.9	71.5	
	SATURATION, %	96.2	99.3	100+	
	VOID RATIO	1.218	1.251	1.358	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.31	0.39	0.30	
TIME TO FAILURE, MIN.		10	8	24	
RATE OF STRAIN INCR.%				6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 46.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS; SHELL PARTICLES

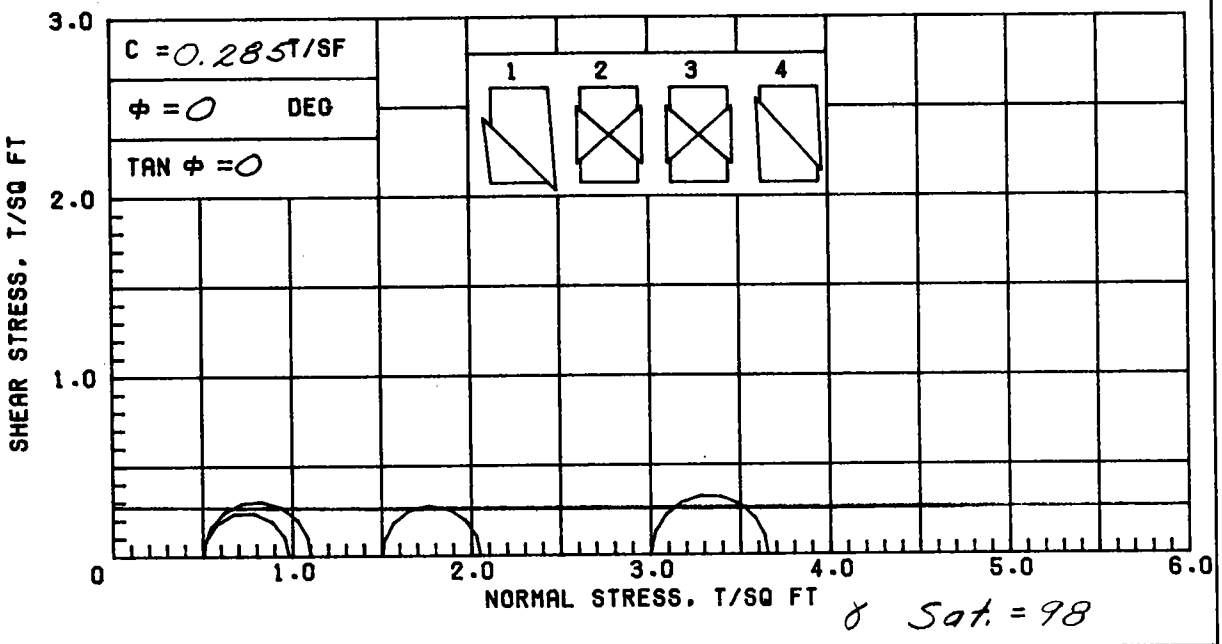
LL 49	PL 15	PI 34	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH
BORING NO. 44-U
SAMPLE NO. 10-B
DEPTH/ELEV 36.0/-35.6
TECH. KOC
LABORATORY USAE WES
DATE 08 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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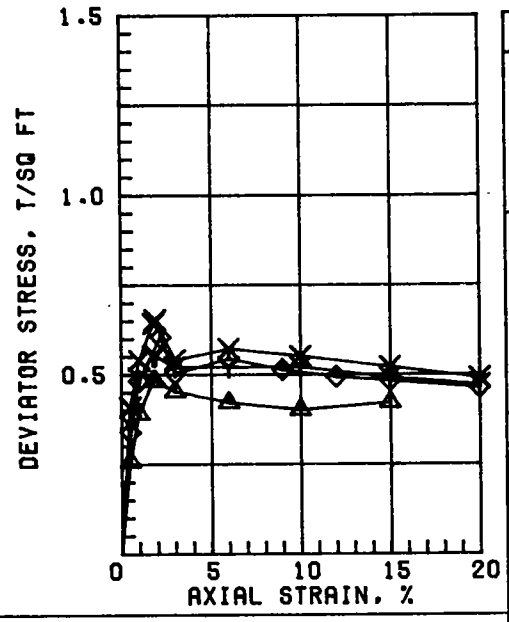


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	74.1	73.1	70.7	72.0
	DRY DENSITY, PCF	56.0	56.0	57.5	57.2
	SATURATION, %	99.6	98.1	98.8	99.9
	VOID RATIO	2.009	2.013	1.931	1.947
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.48	0.55	0.65	0.60
TIME TO FAILURE, MIN.		11	18	19	21
RATE OF STRAIN INCR.%		3	3	3	3
INITIAL DIAMETER, IN.		1.38	1.39	1.39	1.38
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 72.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELLS

LL 88	PL 25	PI 63	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

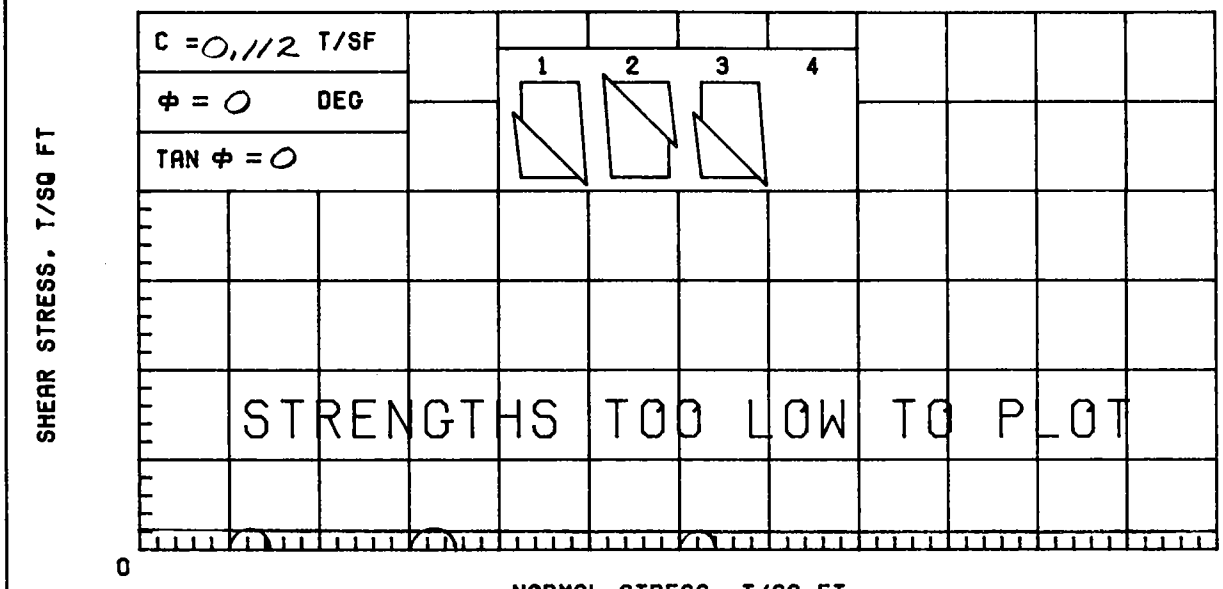
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 44-U | SAMPLE NO. 13-B

DEPTH/ELEV 48.0/-47.6 | TECH. LRC

LABORATORY USAE WES | DATE 08 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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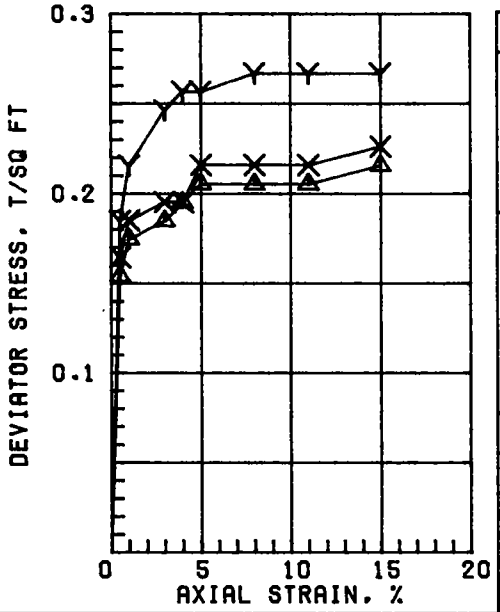


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	63.1	62.2	65.0	
	DRY DENSITY, PCF	63.0	63.5	62.0	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.676	1.656	1.719	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.21	0.26	0.20	
TIME TO FAILURE, MIN.		23	14	14	
RATE OF STRAIN INCR.%		7	7	4	
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 63.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 72	PL 20	PI 52	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

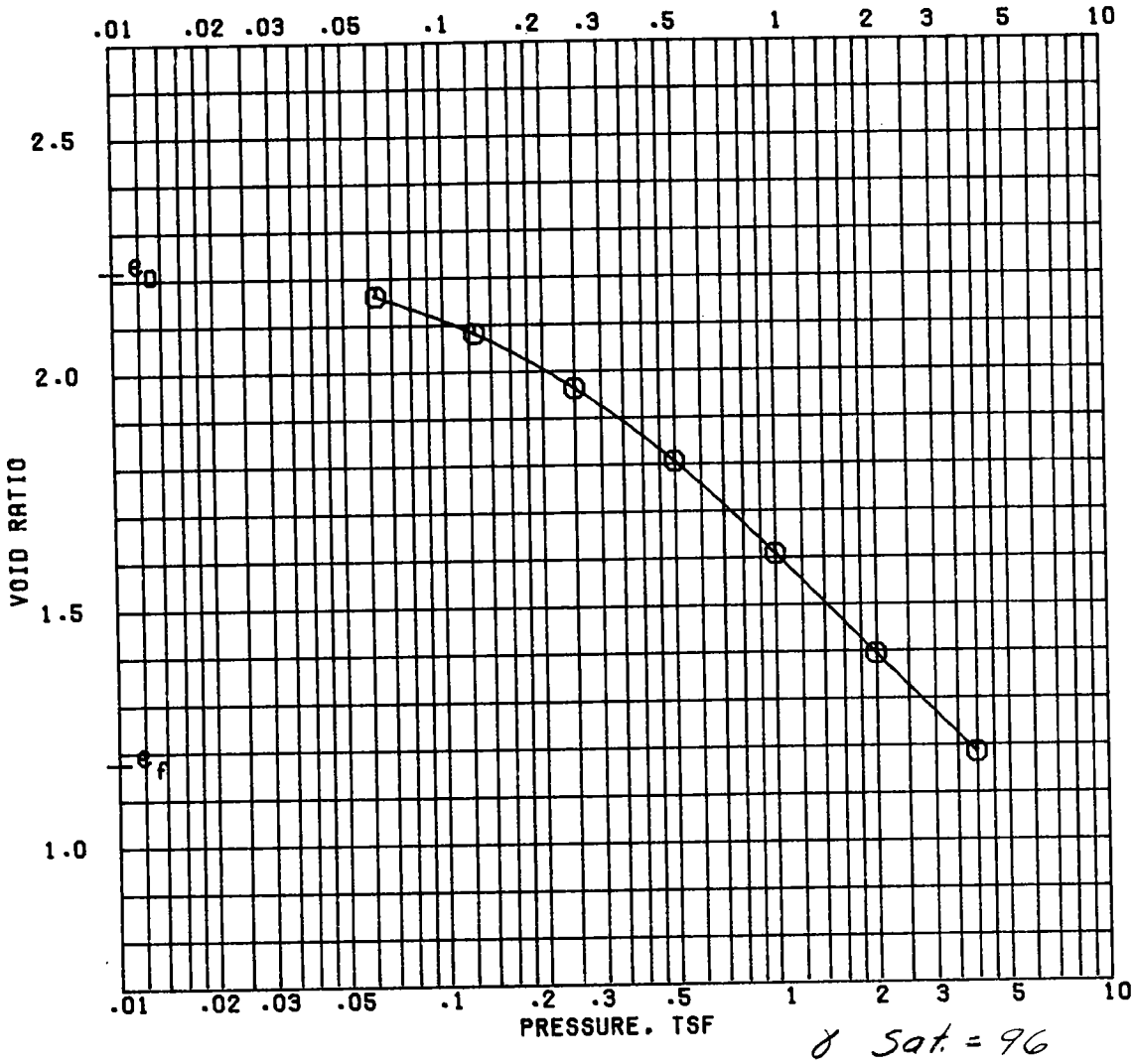
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 45-U | SAMPLE NO. 2-B

DEPTH/ELEV 12.0/-8.7 | TECH. LRC

LABORATORY USAE WES | DATE 09 APR 85

TRIAXIAL COMPRESSION TEST REPORT



S Sat. = 96

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE. TSF		WATER CONTENT. %	77.0	42.4
PRECONSOL. PRESSURE. TSF	0.23	DRY DENSITY. PCF	52.5	77.6
COMPRESSION INDEX	0.71	SATURATION. %	94.0	97.8
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.213	1.172
DIA. IN 4.44	HT. IN 1.143	BACK PRESSURE. TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 83	PL 22	PI 61
GS 2.70 (EST)	D_{10}	

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

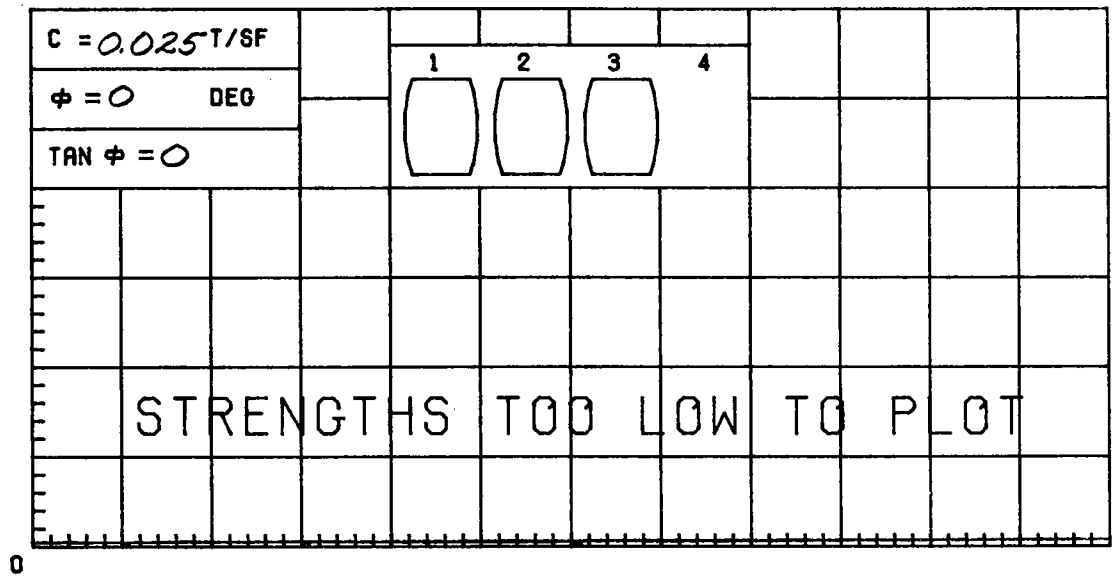
REMARKS

BORING NO. 45-U SAMPLE NO. 3-B

DEPTH/ELEV 16.0/-12.7 DATE 17 APR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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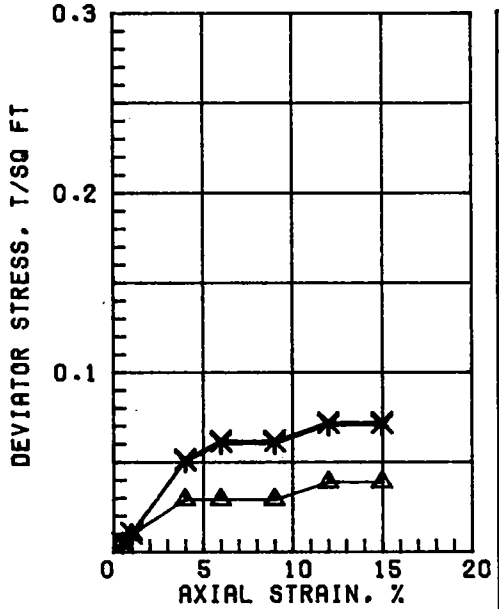


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	89.7	90.0	91.2	
	DRY DENSITY, PCF	46.7	47.8	48.6	
	SATURATION, %	92.8	96.1	99.7	
	VOID RATIO	2.609	2.528	2.469	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.03	0.06	0.06	
TIME TO FAILURE, MIN.		8	12	12	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.42	1.39	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 90.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELLS

LL 90	PL 21	PI 69	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

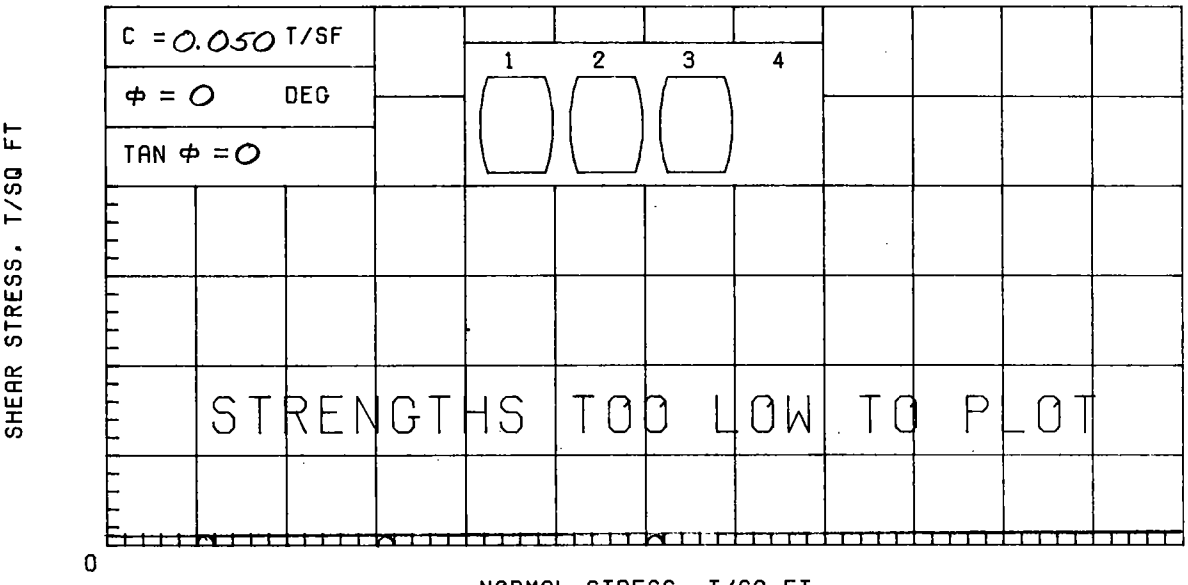
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 45-U | SAMPLE NO. 4-B

DEPTH/ELEV 20.5/-17.2 | TECH. LRC

LABORATORY USAE WES | DATE 09 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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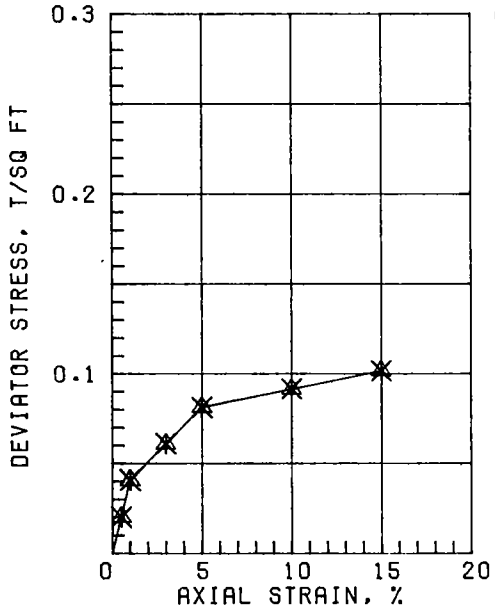


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	60.7	58.4	58.5	
	DRY DENSITY, PCF	64.6	65.5	64.9	
	SATURATION, %	100+	100+	99.0	
	VOID RATIO	1.611	1.573	1.595	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.10	0.10	0.10	
TIME TO FAILURE, MIN.		30	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

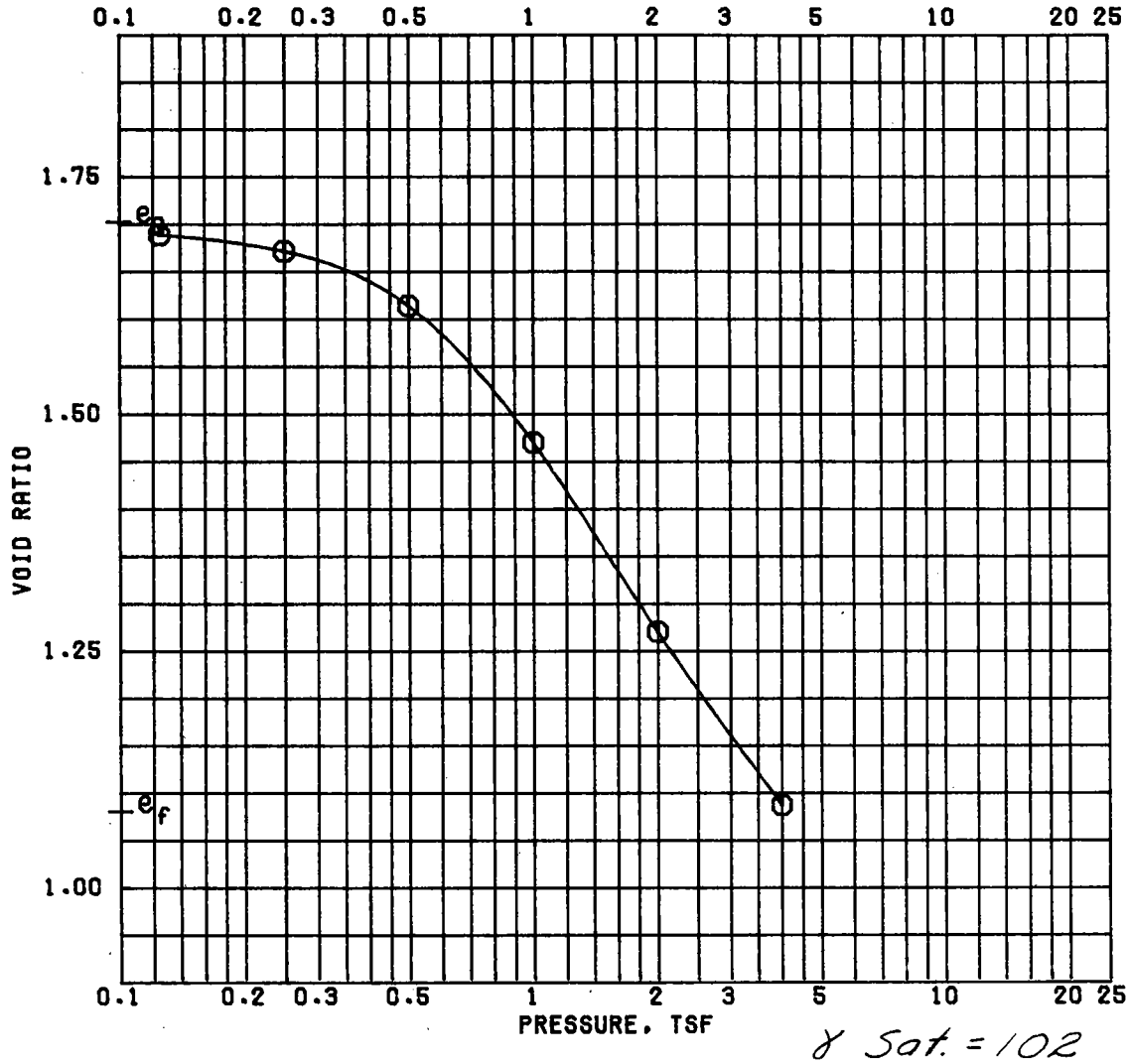
AVG. 59.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 63	PL 18	PI 45	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 45-U	SAMPLE NO. 5-B
	DEPTH/ELEV 24/-20.7	TECH. KOC
	LABORATORY USAE WES	DATE 28 OCT 85
	TRIAXIAL COMPRESSION TEST REPORT	



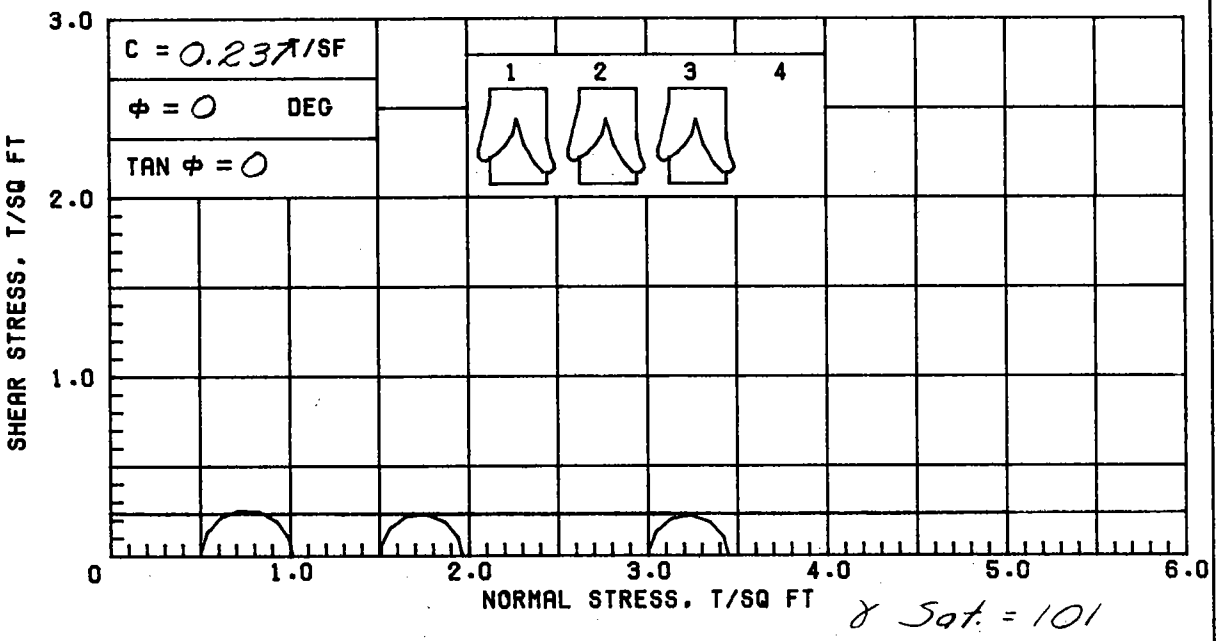
γ Sat. = 102

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	61.6	40.0
PRECONSOL. PRESSURE, TSF	0.55	DRY DENSITY, PCF	62.4	81.1
COMPRESSION INDEX	0.67	SATURATION, %	97.8	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.701	1.079
DIA. IN 4.44	HT. IN 1.140	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 63	PL 21	PI 42	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFF PARISH & ST. CHARLES PARISH
REMARKS		BORING NO. 45-U	SAMPLE NO. 5-C
		DEPTH/ELEV 24.9/-21.6	DATE 19 APR 85

CONSOLIDATION TEST REPORT



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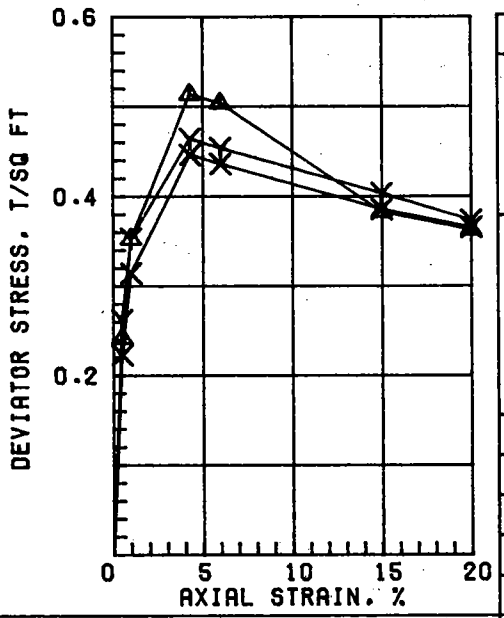


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	67.0	66.7	66.4	
	DRY DENSITY, PCF	60.7	60.6	60.8	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.777	1.779	1.773	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.51	0.46	0.45	
TIME TO FAILURE, MIN.		9	18	18	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVG. 66.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 77	PL 20	PI 57	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

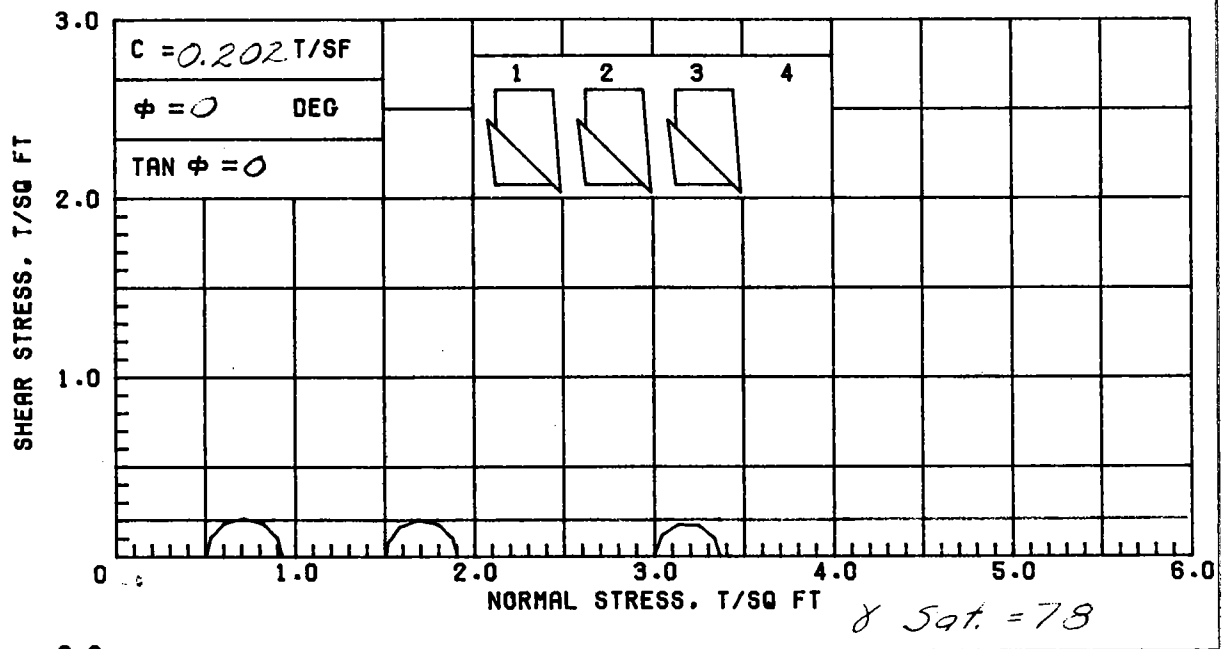
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 45-U | SAMPLE NO. 6-C

DEPTH/ELEV 29.4/-26.1 | TECH. PJR

LABORATORY USAE WES | DATE 09 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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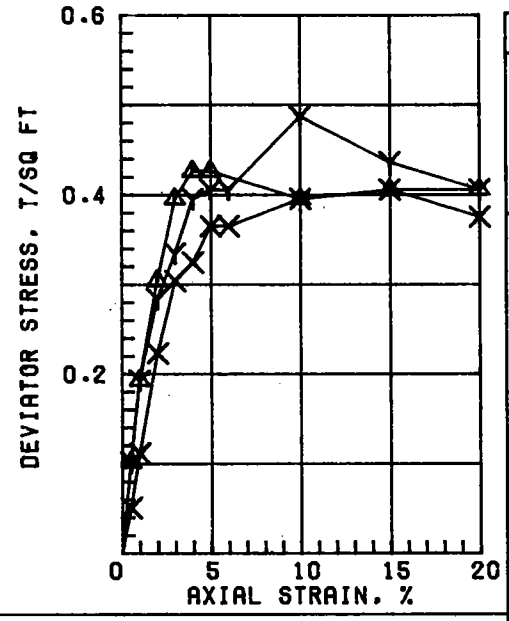


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	199.6	186.9	176.4	
	DRY DENSITY, PCF	25.3	26.7	27.8	
	SATURATION, %	97.2	97.1	96.5	
	VOID RATIO	4.928	4.617	4.389	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.43	0.41	0.37	
TIME TO FAILURE, MIN.		8	30	30	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 187.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC CLAY (OH), BLACK

LL 246	PL 84	PI 162	GS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

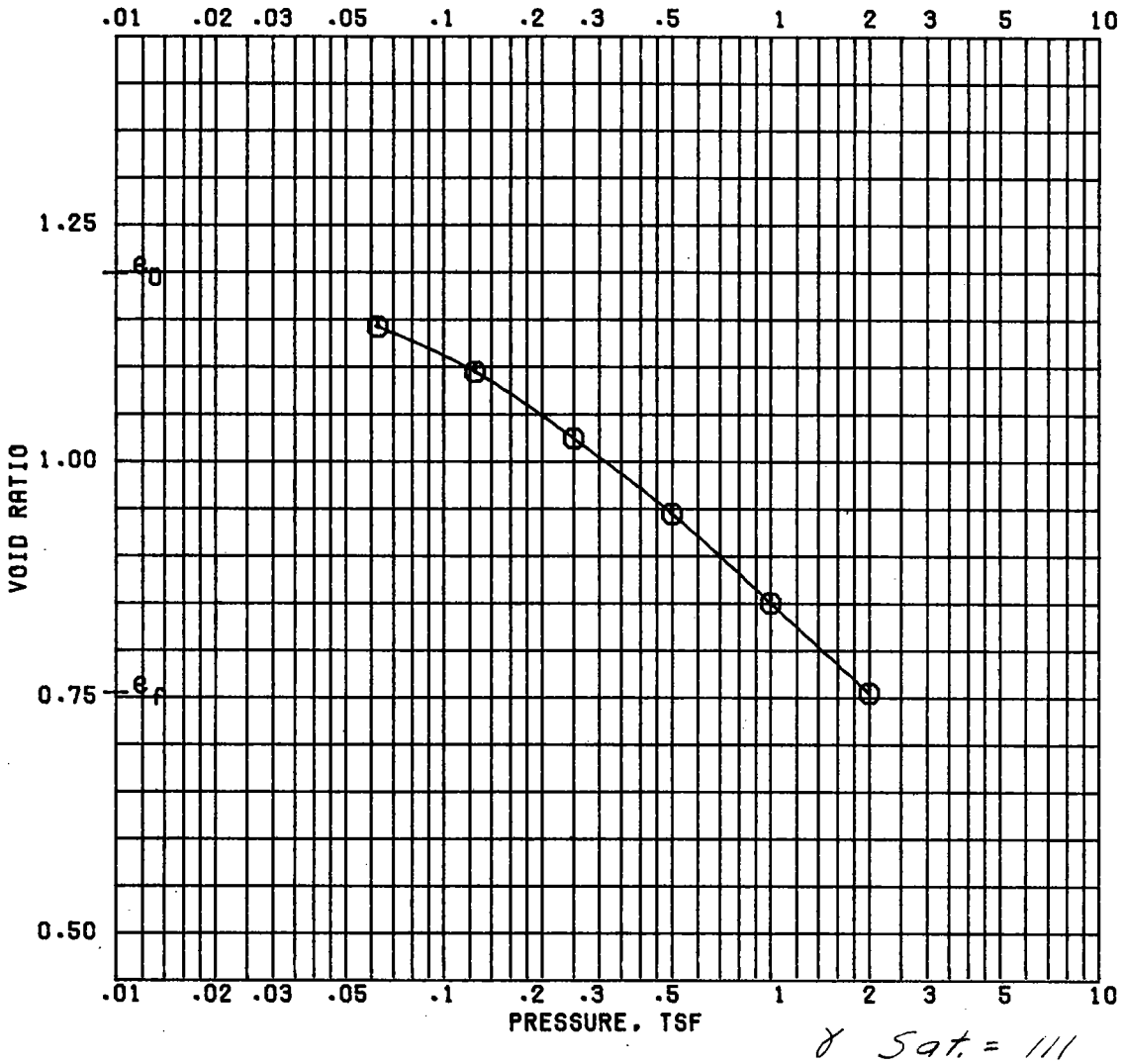
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 45-U | SAMPLE NO. 7-C

DEPTH/ELEV 33.4/-30.1 | TECH. KOC

LABORATORY USAE WES | DATE 09 APR 85

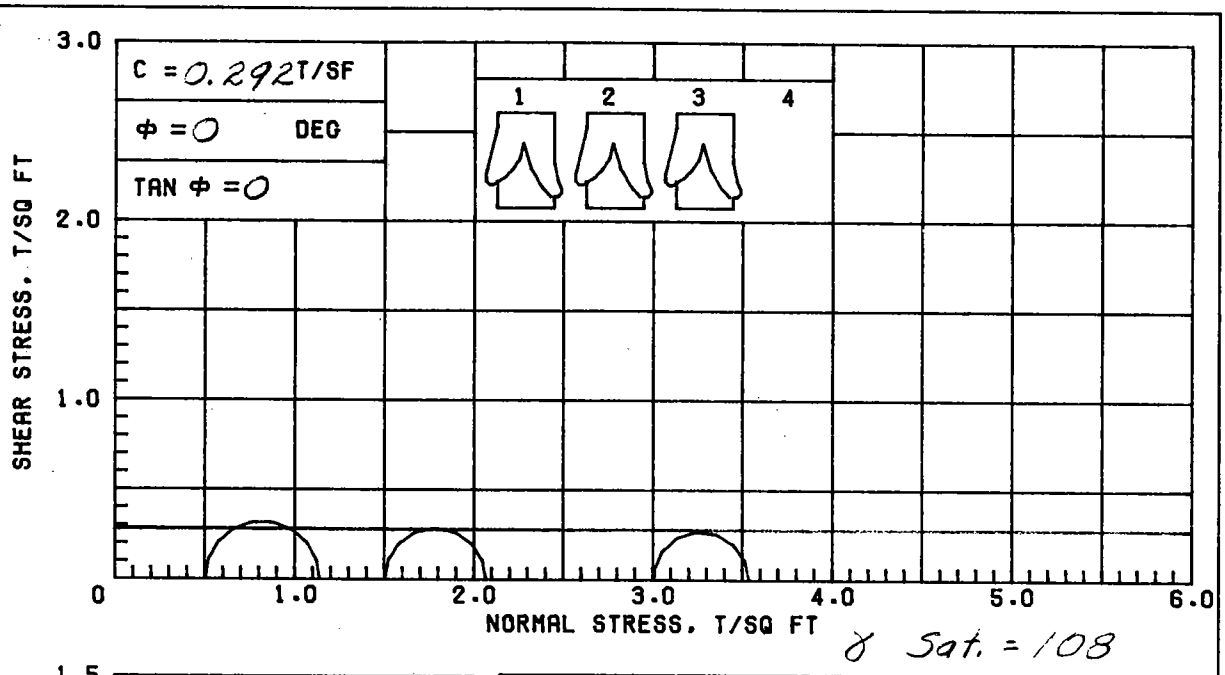
TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 111

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	40.8	26.2
PRECONSOL. PRESSURE, TSF	0.18	DRY DENSITY, PCF	76.7	96.2
COMPRESSION INDEX	0.32	SATURATION, %	92.0	93.8
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	1.197	0.753
DIA. IN 4.44	HT. IN 1.135	BACK PRESSURE, TSF		
CLASSIFICATION: CLAY (CL), GRAY				
LL 48	PL 14 PI 34	PROJECT: LAKE PONT. LA. & VIC. HURR. PROT.		
GS 2.70 (EST)	D_{10}	JEFF PARISH & ST. CHARLES PARISH		
REMARKS		BORING NO. 45-U	SAMPLE NO. 9-B	
		DEPTH/ELEV 39.7/-36.4	DATE 22 APR 85	

CONSOLIDATION TEST REPORT



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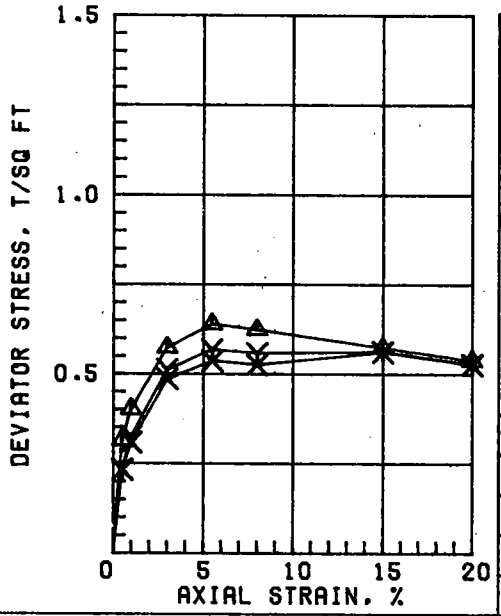


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	50.5	49.4	47.0	
	DRY DENSITY, PCF	70.9	71.7	73.0	
	SATURATION, %	99.0	98.7	96.9	
	VOID RATIO	1.378	1.351	1.310	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.64	0.57	0.54	
TIME TO FAILURE, MIN.		10	21	31	
RATE OF STRAIN INCR.%			8	8	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 49.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT LENSES

LL 50	PL 16	PI 34	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

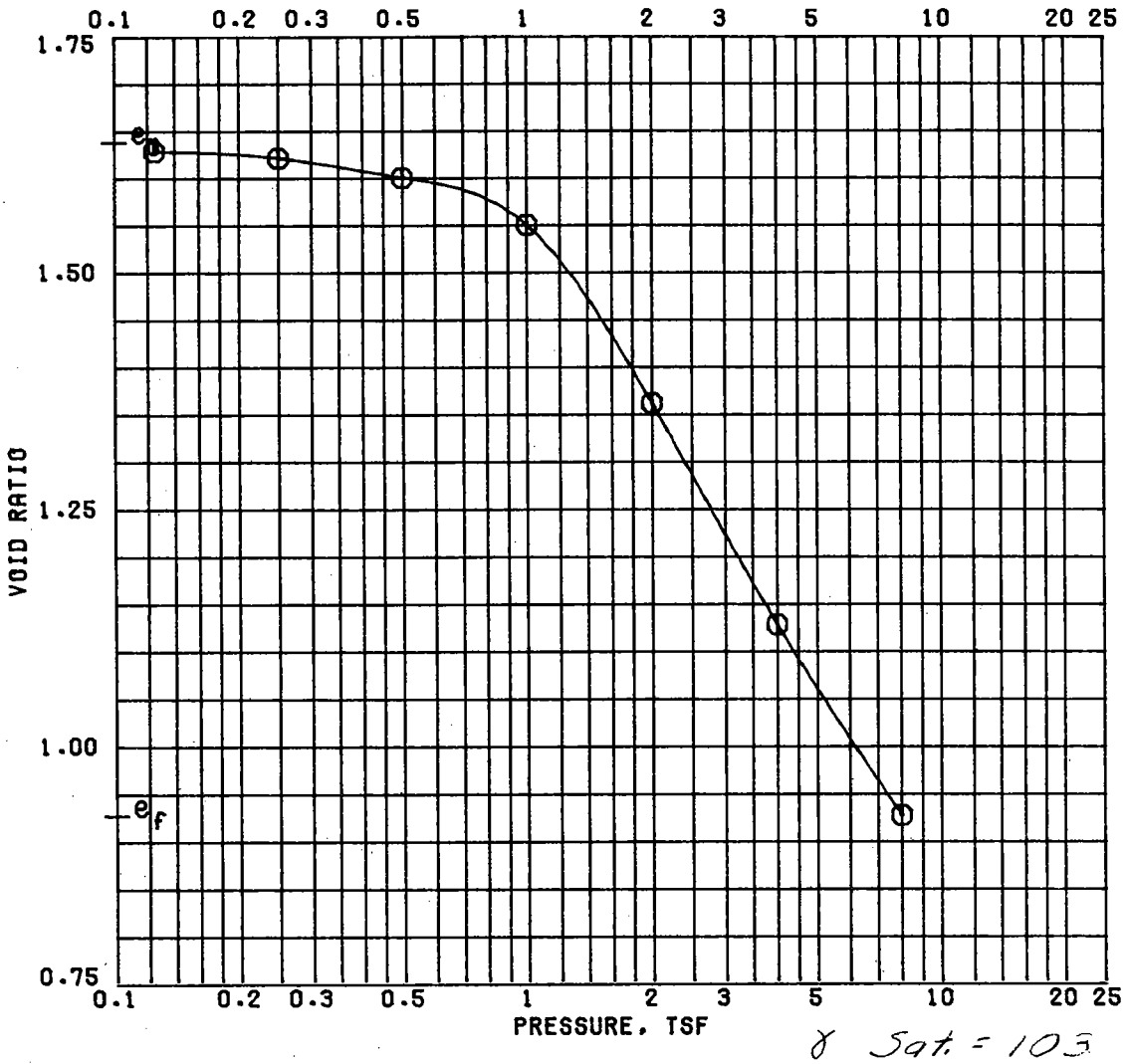
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 45-U | SAMPLE NO. 10-C

DEPTH/ELEV 44.6/-41.3 | TECH. PJR

LABORATORY USAE WES | DATE 09 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 103

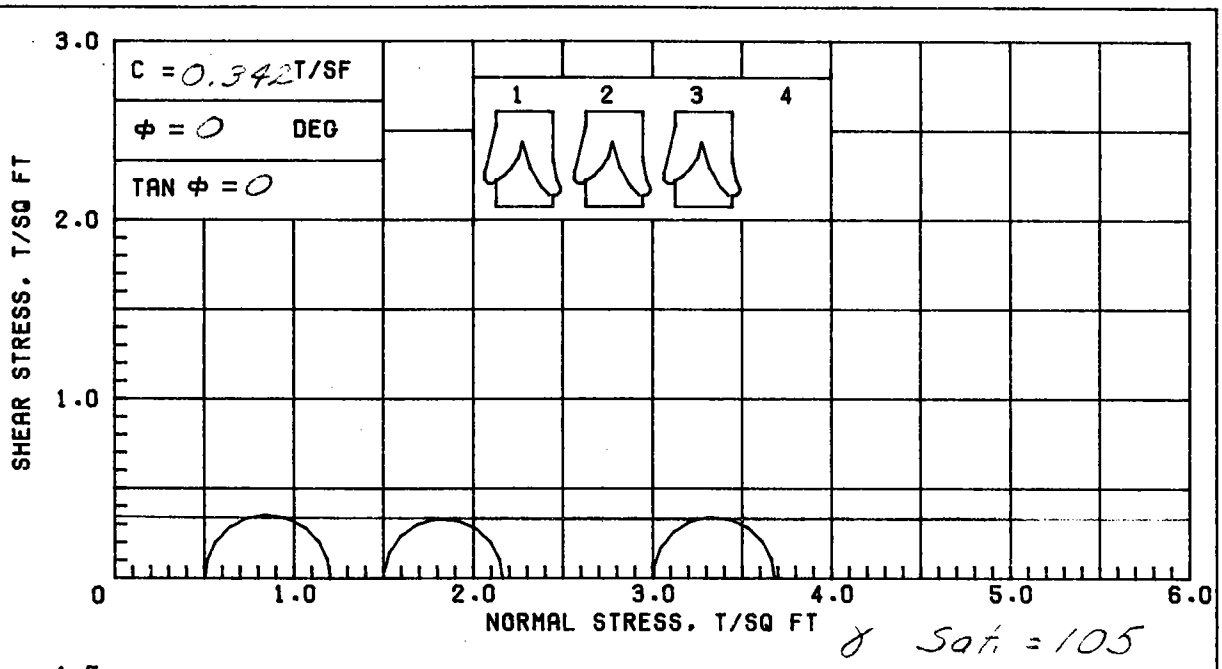
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	58.3	34.7
PRECONSOL. PRESSURE, TSF	1.05	DRY DENSITY, PCF	63.9	87.5
COMPRESSION INDEX	0.77	SATURATION, %	96.1	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.637	0.926
DIA. IN 4.44	HT. IN 1.126	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

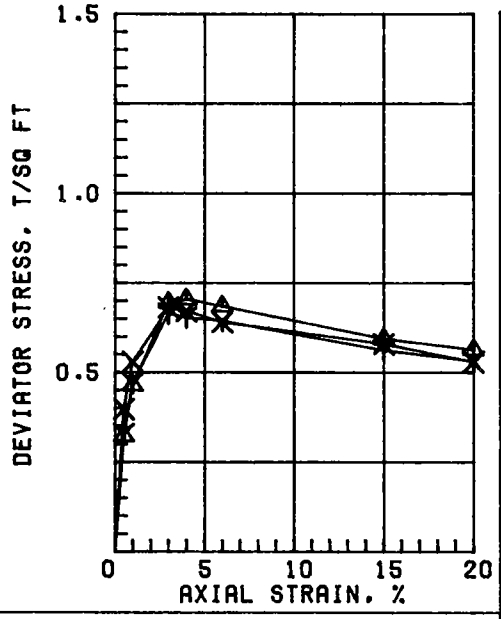
LL	PL	PI	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFF PARISH & ST. CHARLES PARISH
REMARKS		BORING NO. 45-U	SAMPLE NO. 12-B
		DEPTH/ELEV 52.0/-48.7	DATE 24 APR 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 105



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	55.9	58.4	58.3	
	DRY DENSITY, PCF	67.2	65.9	66.0	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.509	1.556	1.555	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.71	0.66	0.68	
TIME TO FAILURE, MIN.		8	13	15	
RATE OF STRAIN INCR.%				11	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. ~ 57.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 69	PL 20	PI 49	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

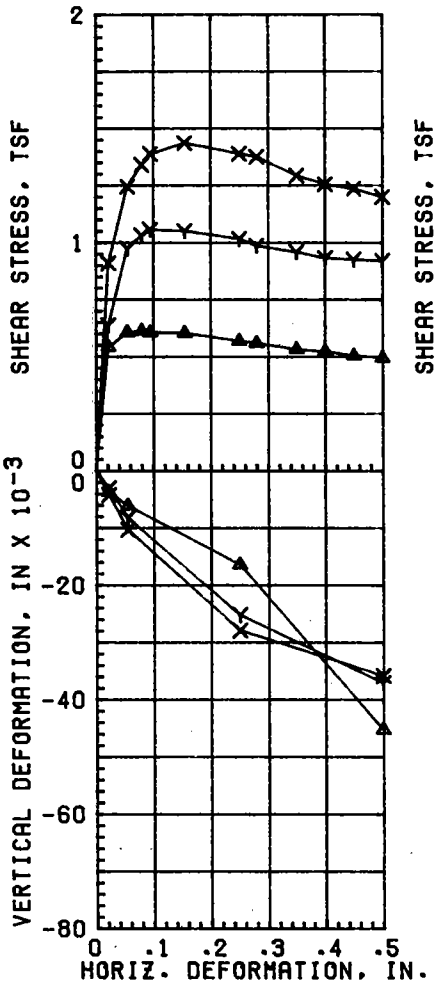
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

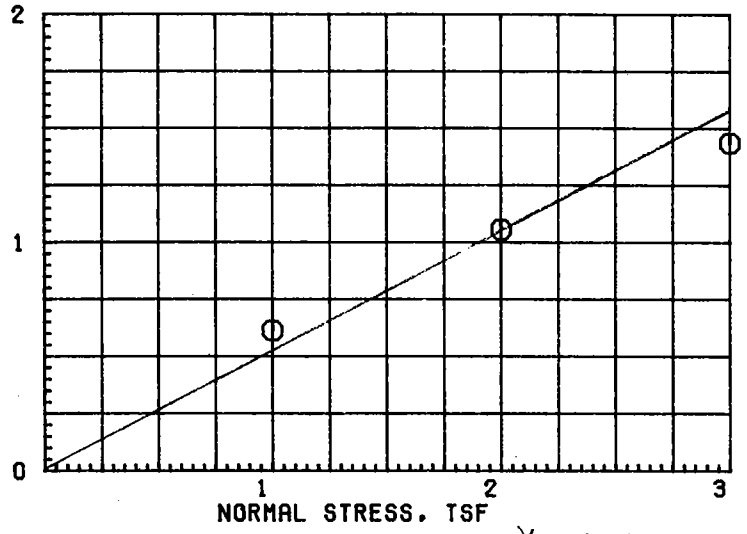
BORING NO. 45-U | SAMPLE NO. 12-C

DEPTH/ELEV 53.4/-50.1 | TECH. PJR

LABORATORY USAE WES | DATE 09 APR 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 122

	TEST NO.	1 ▲	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	24.8	23.7	24.3	24.3
	VOID RATIO	0.803	0.777	0.799	
	SATURATION, %	83.3	82.3	82.0	
	DRY DENSITY, PCF	93.4	94.8	93.7	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	30.4	24.7	18.2	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.61	1.06	1.44	
TIME TO FAILURE, MIN		439	521	850	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

$\Phi = 28°$

TAN $\Phi = 0.532$

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.553 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 79 | PL 20 | PI 59 | | GS 2.70 (EST)

REMARKS:

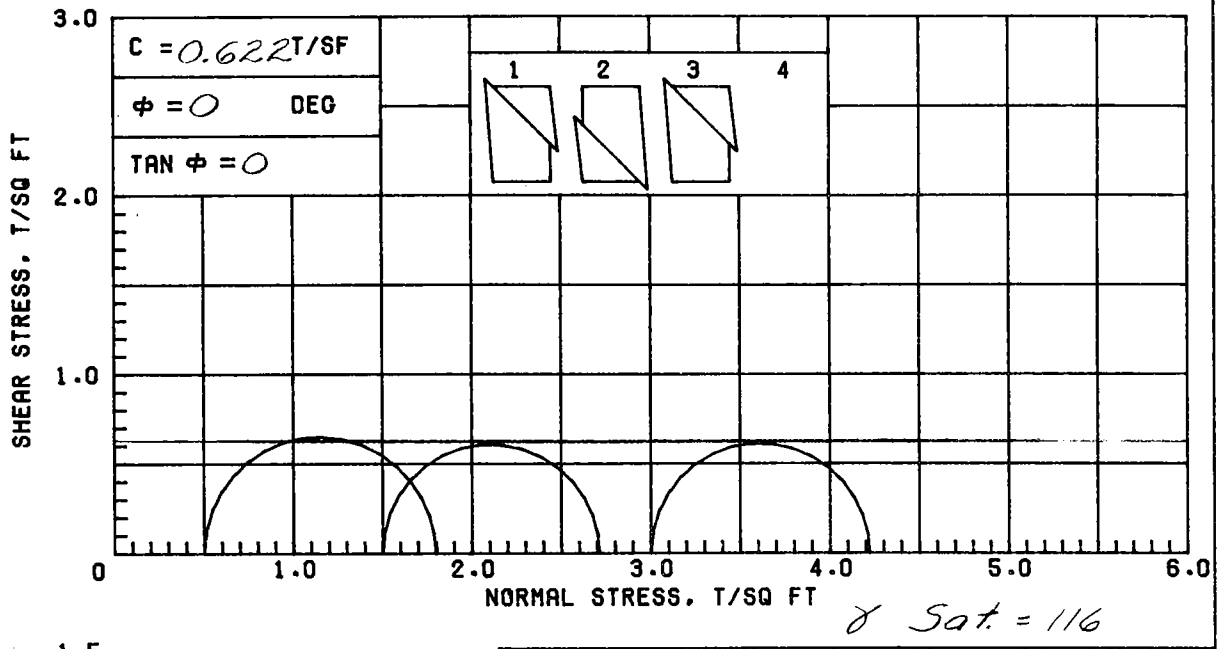
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF PARISH & ST. CHARLES PARISH

BORING NO. 45-U | SAMPLE 14-B

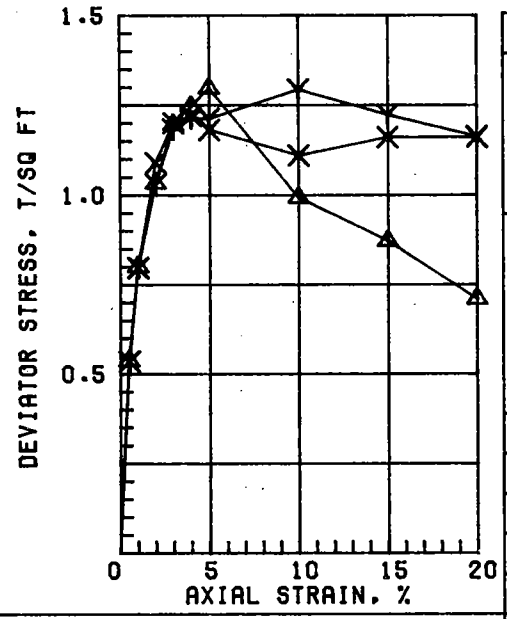
DEPTH/ELEV 60.0/-56.7 | DATE 23 MAY 85

DIRECT SHEAR TEST REPORT

Encl.



γ Sat. = 116



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	40.0	38.5	37.7	
	DRY DENSITY, PCF	81.5	83.3	85.4	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.068	1.024	0.974	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		1.30	1.21	1.22	
TIME TO FAILURE, MIN.		10	25	20	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

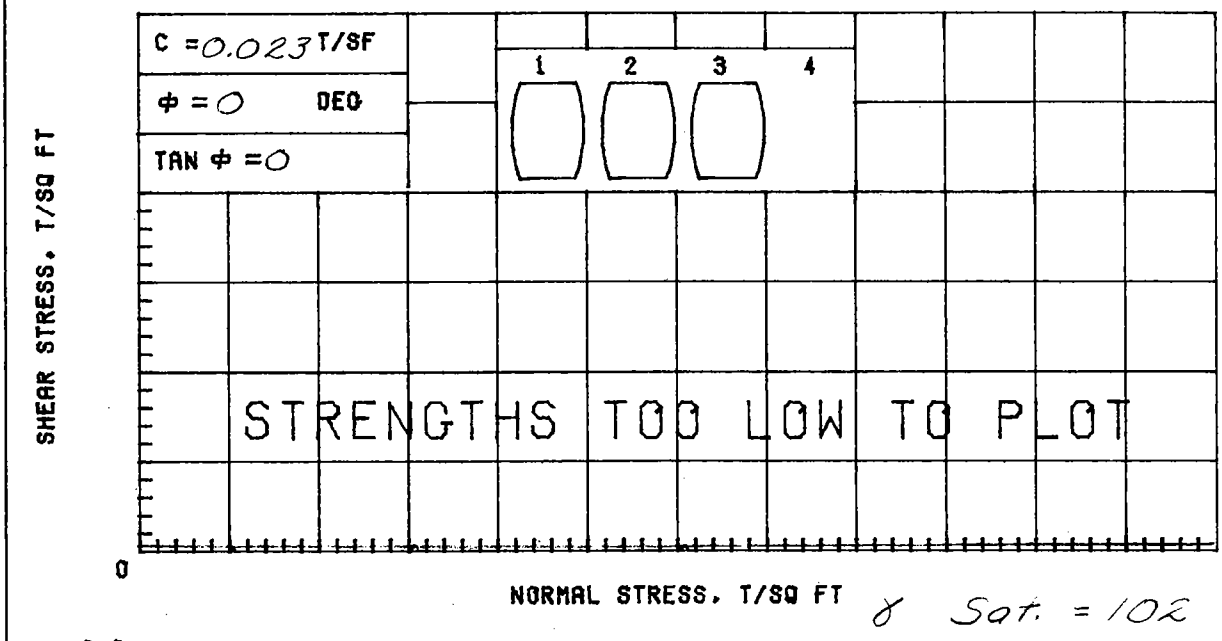
Avg. 38.7

CONTROLLED-STRAIN TEST

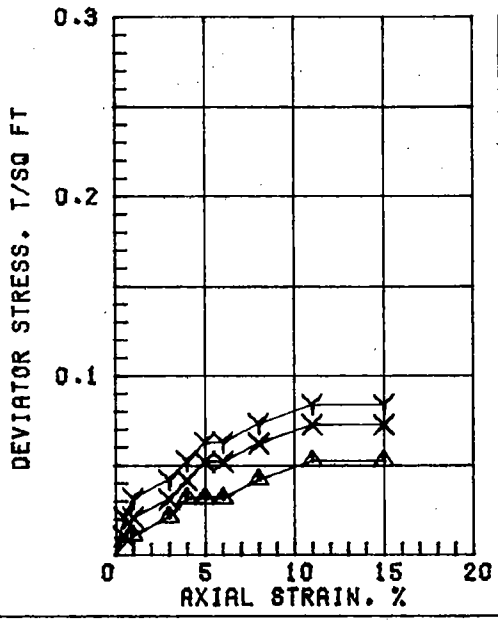
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY AND BROWN MOTTLED

LL 80	PL 21	PI 59	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT.	
	JEFF PARISH & ST. CHARLES PARISH	
	BORING NO. 45-U	SAMPLE NO. 15-B
	DEPTH/ELEV 64.0/-60.7	TECH. KOC
	LABORATORY USAE WES	DATE 09 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 102



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	63.7	60.5	63.5	
	DRY DENSITY, PCF	62.7	64.1	61.4	
	SATURATION, %	100+	100+	98.2	
	VOID RATIO	1.687	1.630	1.746	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.03	0.06	0.05	
TIME TO FAILURE, MIN.		8	10	10	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.37	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg 62.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

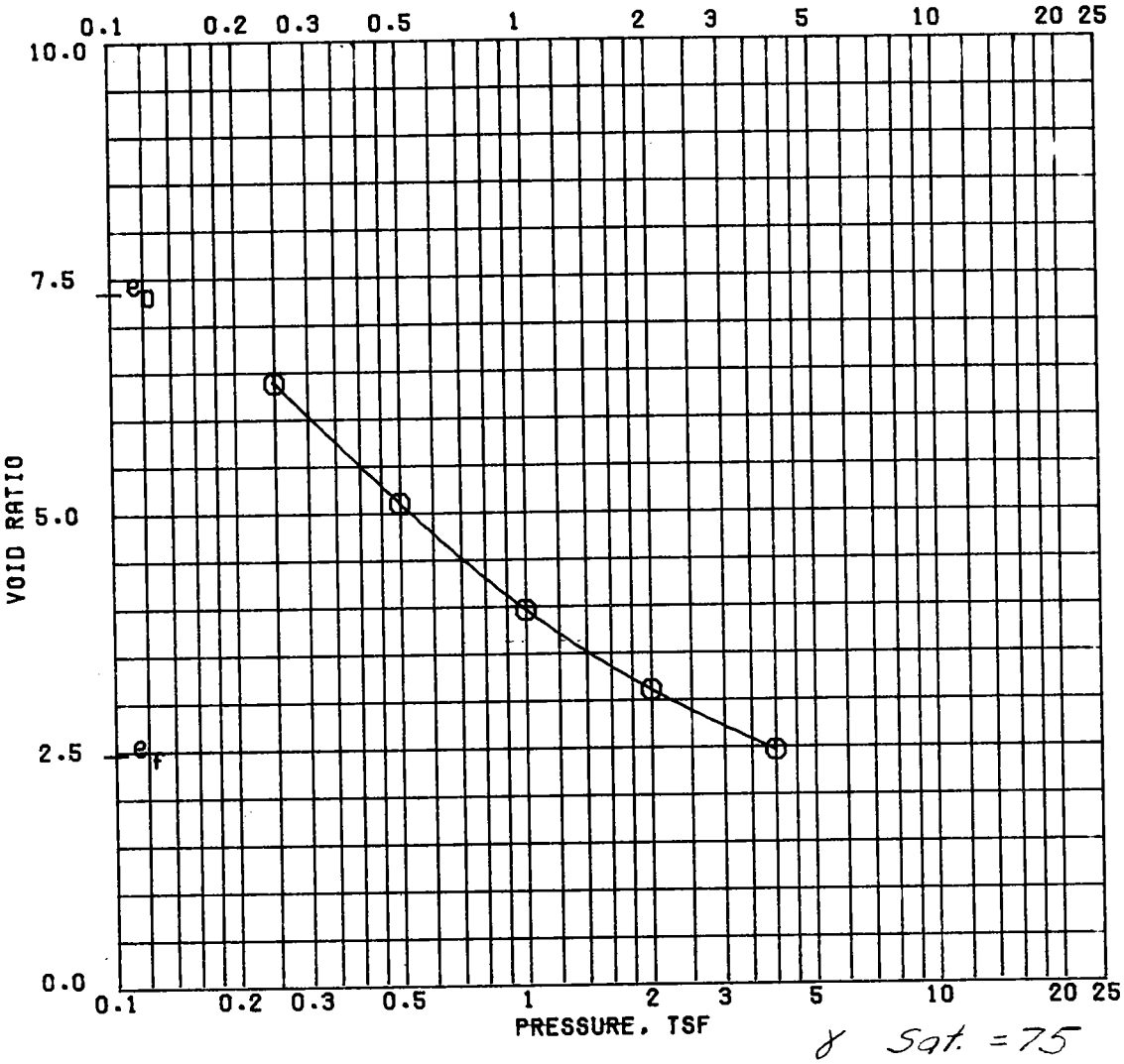
LL 50	PL 16	PI 34	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 46-U | SAMPLE NO. 1-C
DEPTH/ELEV 1.6/-9.1 | TECH. LRC
LABORATORY USAE WES | DATE 13 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 75

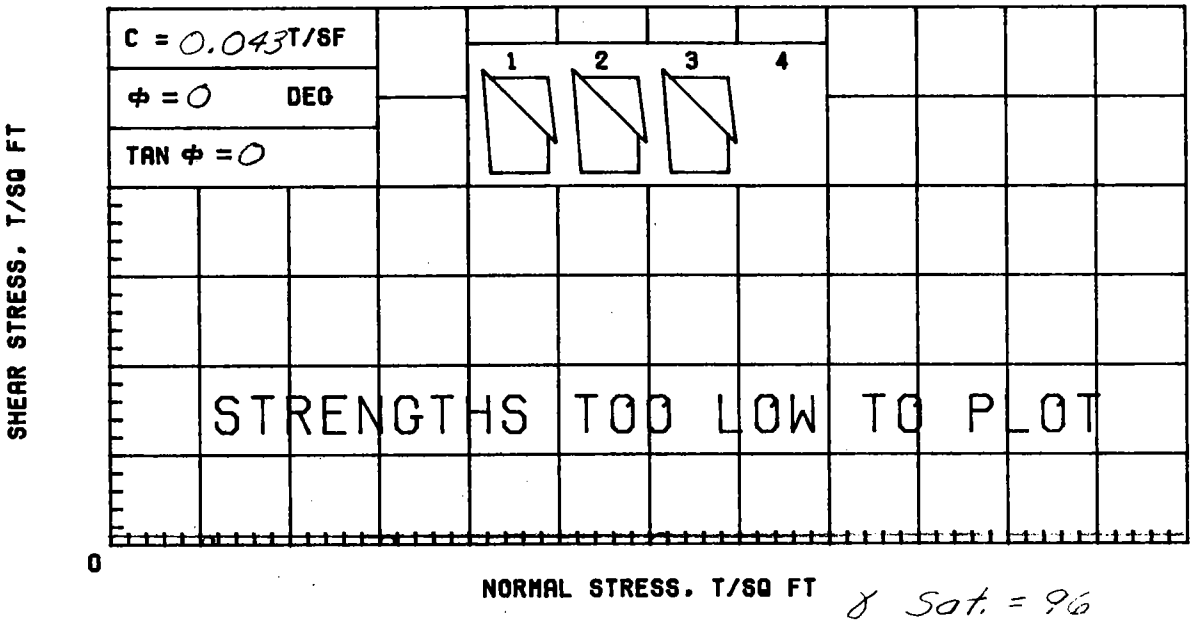
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	252.7	84.8
PRECONSOL. PRESSURE, TSF	0.20	DRY DENSITY, PCF	20.2	48.9
COMPRESSION INDEX	4.30	SATURATION, %	93.1	93.5
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	7.329	2.448
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), DARK GRAY; ORGANIC MATERIAL

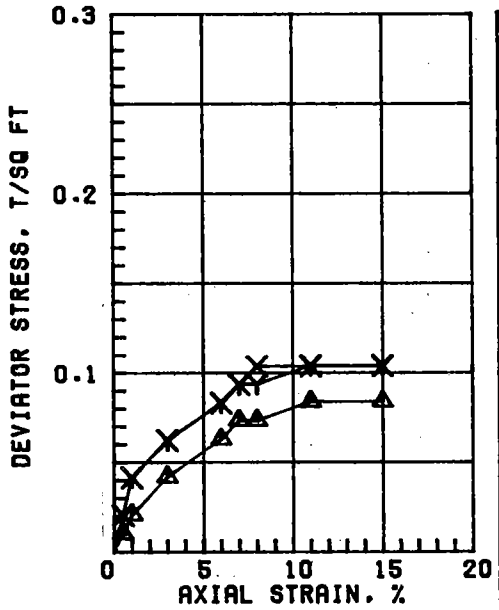
LL 269	PL 73	PI 196	PROJECT LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST)	D_{10}		
REMARKS		BORING NO. 46-U	SAMPLE NO. 2-C
		DEPTH/ELEV 5.9/-13.4	DATE 10 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



γ Sat. = 96



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	84.3	85.2	82.6	
	DRY DENSITY, PCF	52.2	52.1	52.7	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.226	2.237	2.200	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.07	0.09	0.10	
TIME TO FAILURE, MIN.		14	14	15	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.36	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

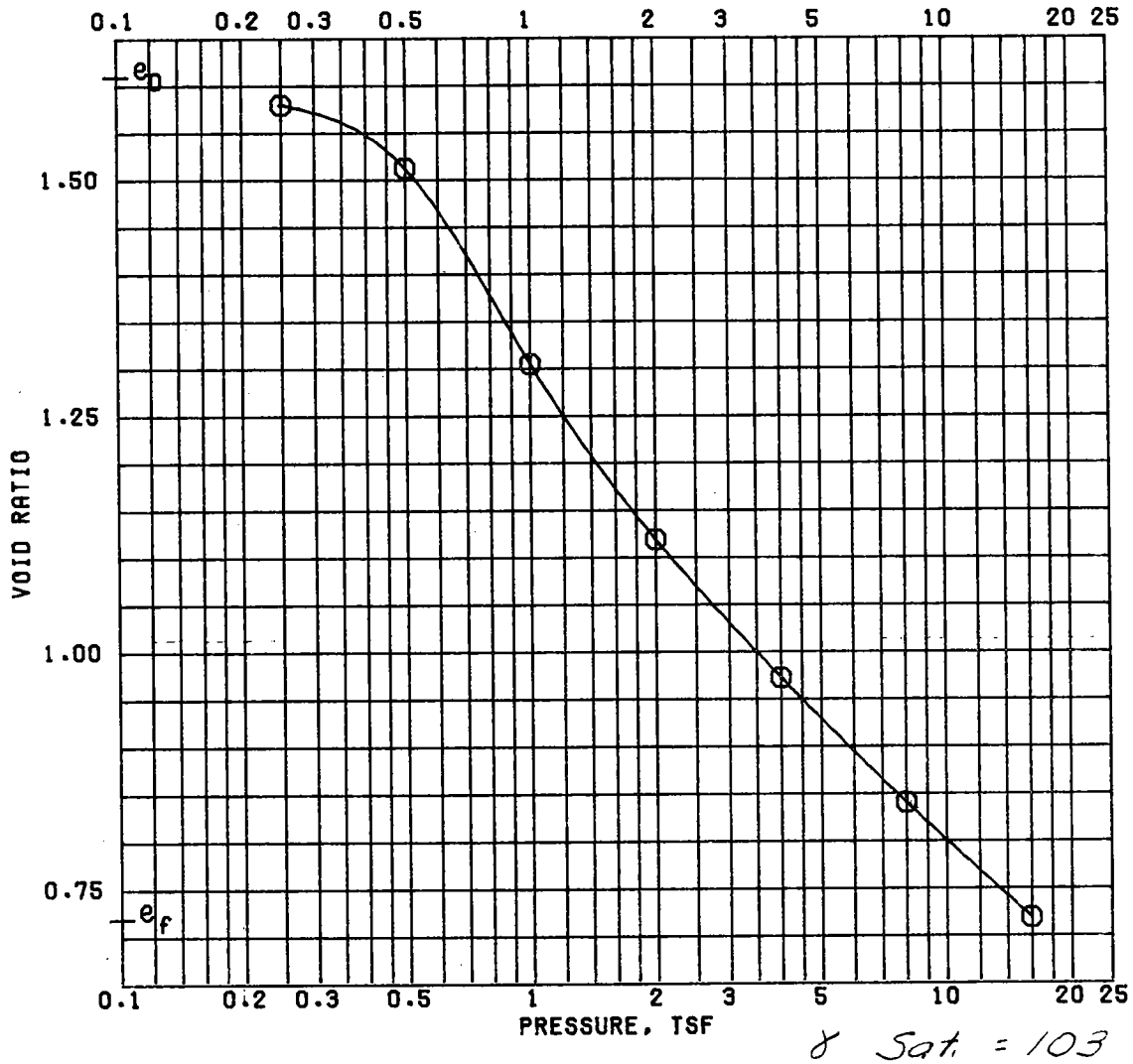
AVG. 84.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; FINE SAND SEAMS

LL 74	PL 22	PI 52	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK. PONT. & VIC. HURR. PROT.	
	JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 46-U	SAMPLE NO. 4-B
	DEPTH/ELEV 13.0/-20.5	TECH. LRC
	LABORATORY USAE WES	DATE 13 JUL 85
	TRIAXIAL COMPRESSION TEST REPORT	



δ Sat. = 103

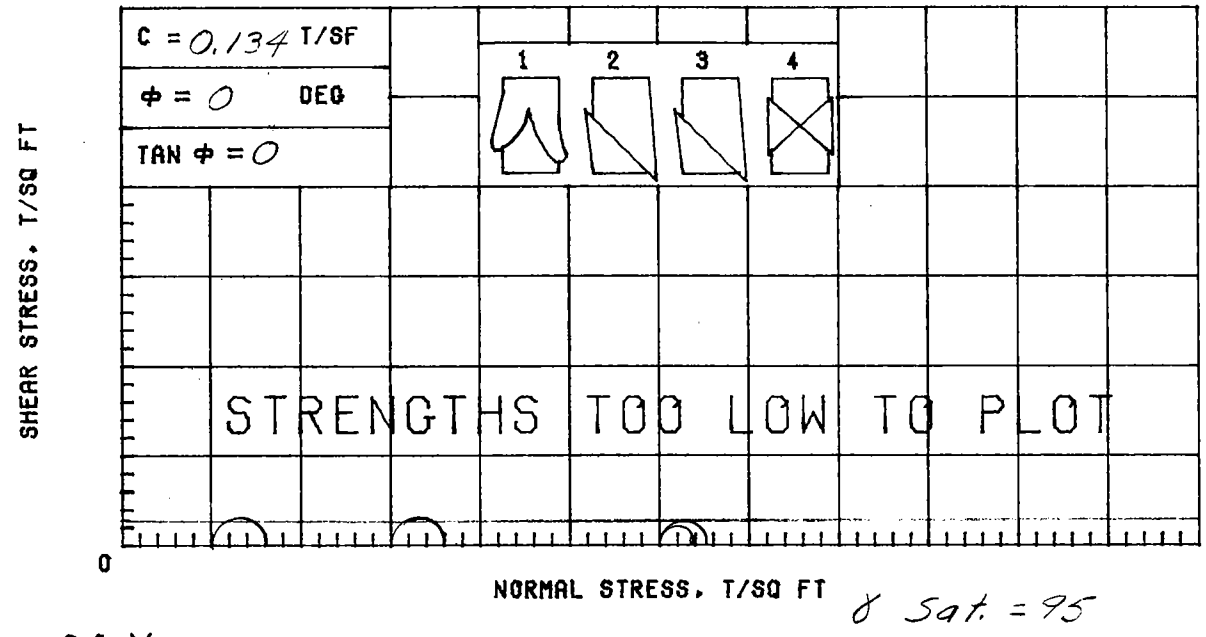
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	57.4	28.8
PRECONSOL. PRESSURE, TSF	0.48	DRY DENSITY, PCF	64.7	98.2
COMPRESSION INDEX	0.73	SATURATION, %	96.4	100 +
TYPE SPECIMEN: UNDISTURBED		VOID RATIO	1.607	0.717
DIA. IN 4.44	HT. IN 1.124	BACK PRESSURE, TSF		

CLASSIFICATION: PLASTIC CLAY (CH), GRAY; SILT LENSES

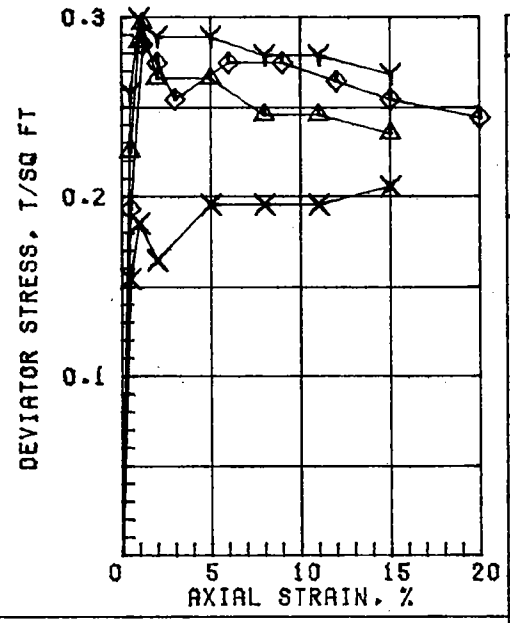
LL 72	PL 21	PI 51	PROJECT LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST)	D_{10}		
REMARKS		BORING NO. 46-U	SAMPLE NO. 5-C
		DEPTH/ELEV 17.7/-25.2	DATE 10 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 95



SPECIMEN NO.		Δ1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	83.2	82.4	85.7	82.8
	DRY DENSITY, PCF	52.1	52.7	51.2	52.0
	SATURATION, %	100+	100+	100+	99.8
	VOID RATIO	2.238	2.198	2.293	2.239
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.30	0.30	0.19	0.26
TIME TO FAILURE, MIN.		2	12	14	17
RATE OF STRAIN INCR.%			3	3	3
INITIAL DIAMETER, IN.		1.38	1.38	1.38	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

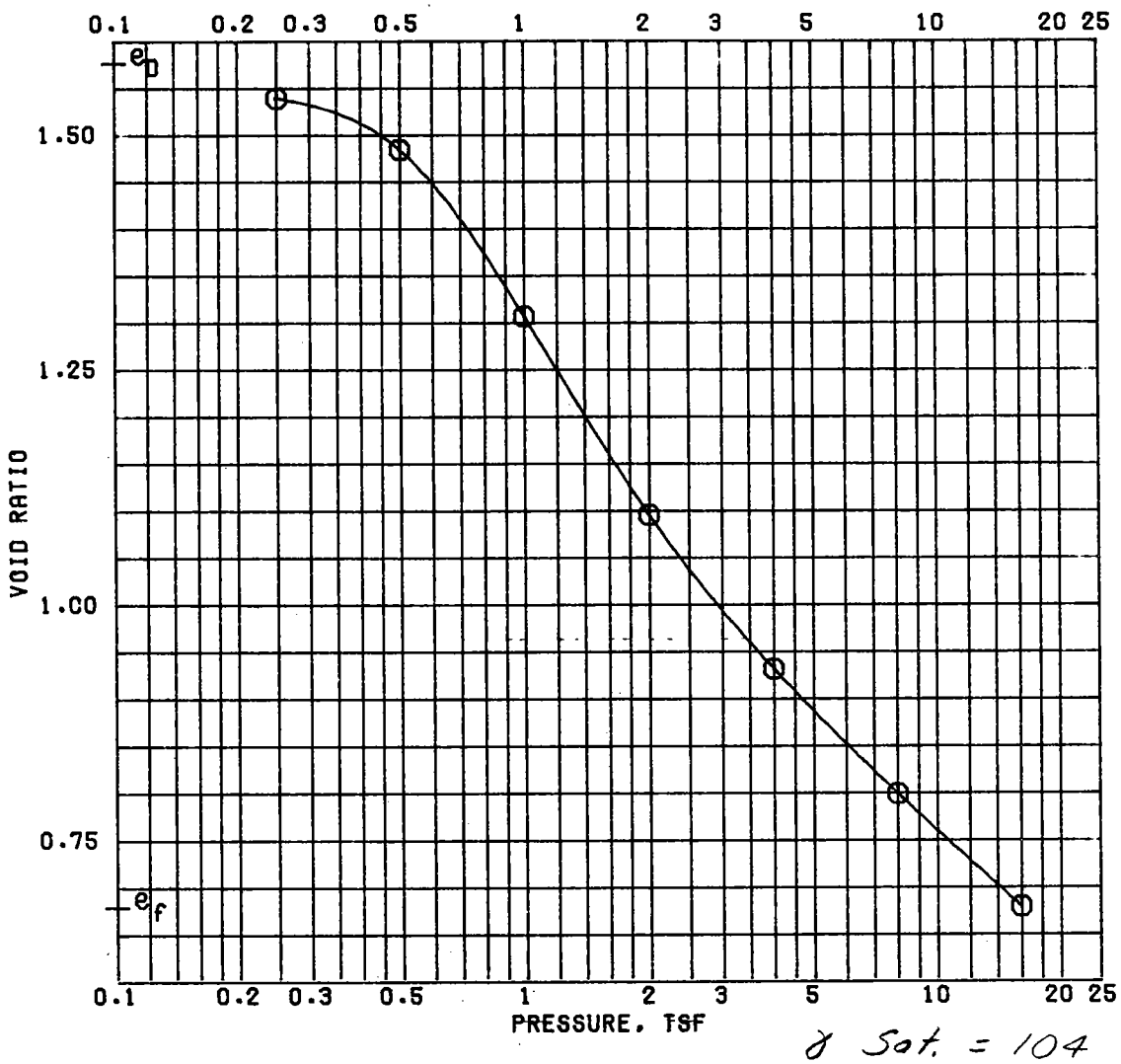
Avg. 33.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 92	PL 24	PI 68	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK. PONT. & VIC. HURR. PROT.	
	JEFFERSON & ST. CHARLES PARISH	
	BORING NO. 46-U	SAMPLE NO. 7-B
	DEPTH/ELEV 24.9/-32.4	TECH. LRC
	LABORATORY USAE WES	DATE 13 JUL 65
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 104

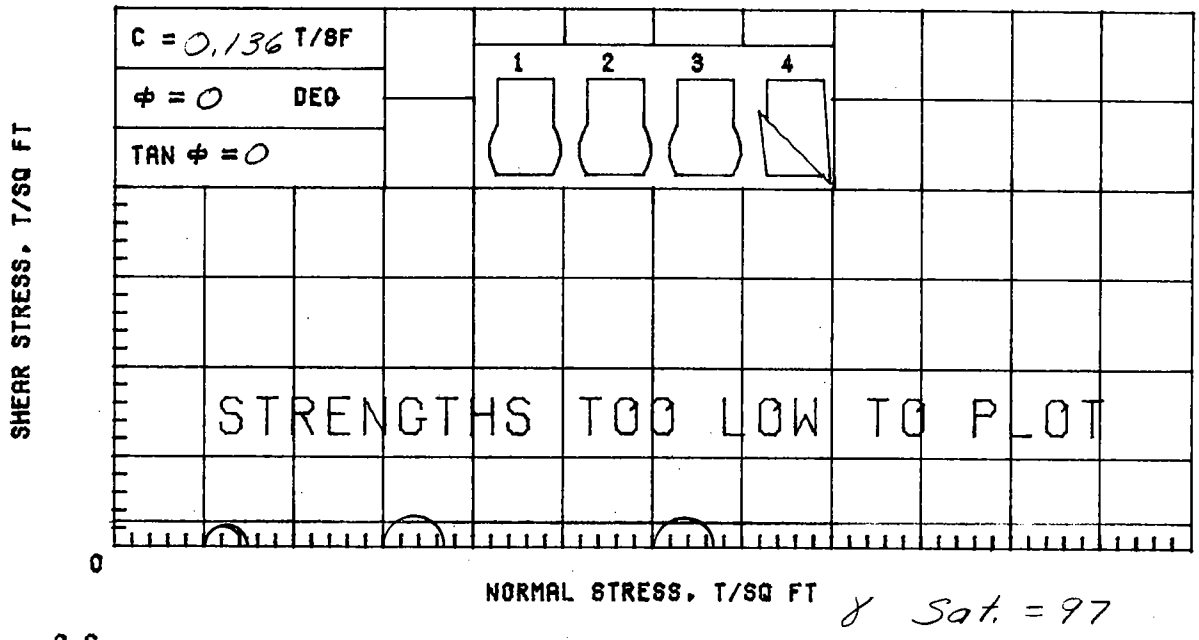
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.51	DRY DENSITY, PCF	65.5	100.5
COMPRESSION INDEX 0.68	SATURATION, %	99.4	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.575	0.678
DIA. IN 4.44 HT. IN 1.158	BACK PRESSURE, TSF		

CLASSIFICATION SANDY CLAY (CH), GRAY; SHELLS

LL 49 PL 15 PI 34	PROJECT LAKE PONT. LA. & VIC. HURR. PROT
GS 2.70 (EST) D_{10}	
REMARKS	BORING NO. 46-U / SAMPLE NO. 8-B
LIMITS ON MIXTURE OF MATERIAL	DEPTH/ELEV 28.9/-36.4 / DATE 10 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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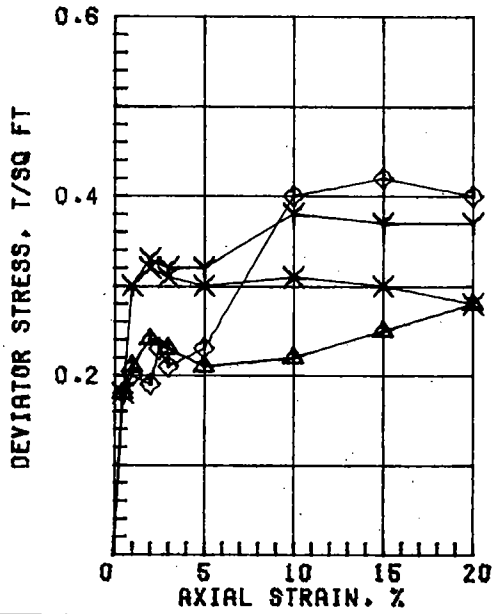


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	76.2	72.7	75.1	73.8
	DRY DENSITY, PCF	52.8	55.2	55.2	55.6
	SATURATION, %	96.2	95.6	98.8	98.1
	VOID RATIO	2.195	2.053	2.053	2.031
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.24	0.33	0.32	0.20
TIME TO FAILURE, MIN.		4	12	12	6
RATE OF STRAIN INCR.%			7	8	6
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 75.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS; SHELL PARTICLES

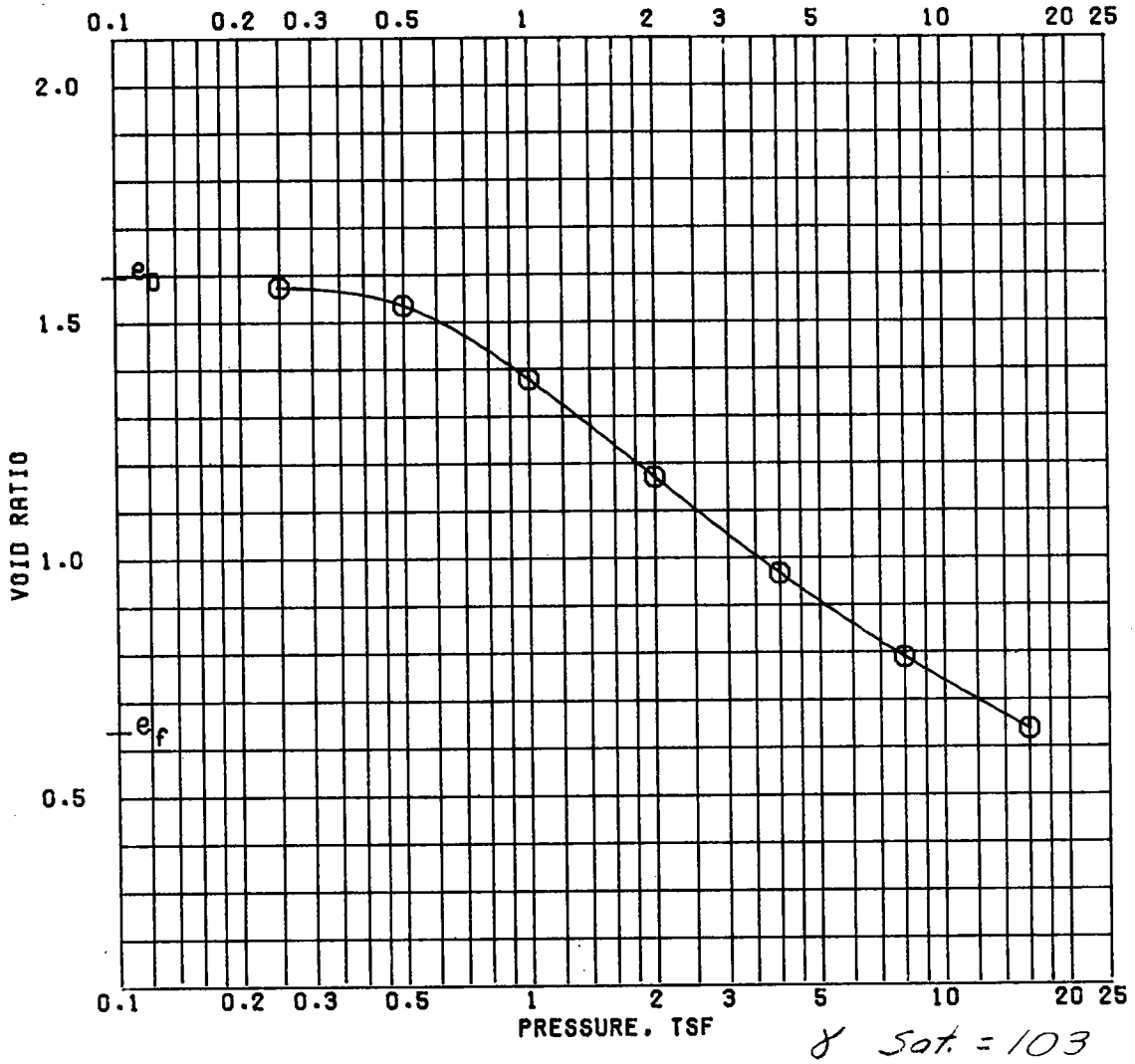
LL 84	PL 22	PI 62	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 46-U | SAMPLE NO. 10-B
DEPTH/ELEV 36.9/-44.4 | TECH. KOC
LABORATORY USAE WES | DATE 15 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 103

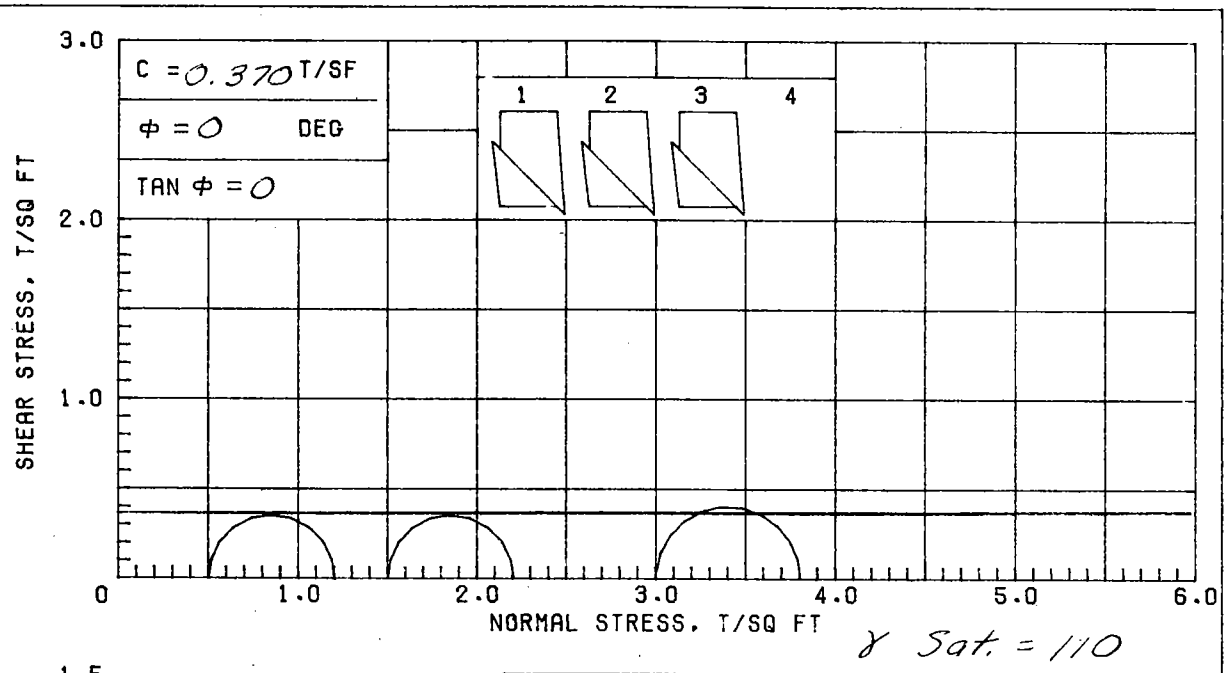
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	56.3	25.6
PRECONSOL. PRESSURE, TSF	0.56	DRY DENSITY, PCF	65.0	103.1
COMPRESSION INDEX	0.60	SATURATION, %	95.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.593	0.634
DIA. IN 4.44	HT. IN 1.133	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELLS

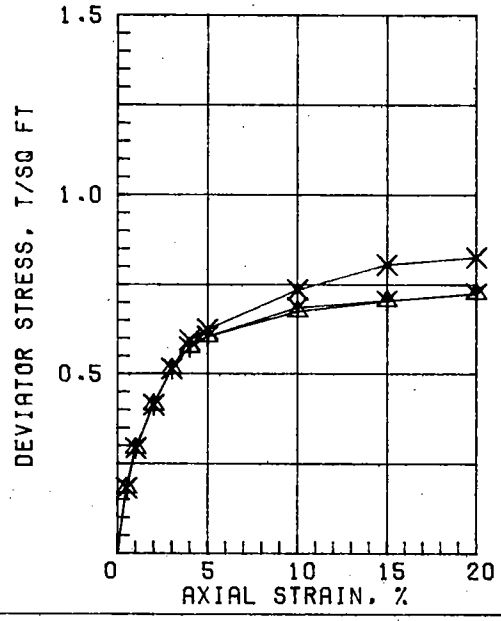
LL 64	PL 16.	PI 48	PROJECT LK. PONT. & VIC. HURR. PROT.	
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH	
REMARKS			BORING NO. 46-U	SAMPLE NO. 11-C
			DEPTH/ELEV 42.3/-49.8	DATE 10 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 110



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	41.8	41.7	40.7	
	DRY DENSITY, PCF	75.8	75.0	76.7	
	SATURATION, %	92.1	90.3	91.8	
	VOID RATIO	1.225	1.247	1.197	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.71	0.71	0.81	
TIME TO FAILURE, MIN.		30	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 41.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS; IRON OXIDE STAINS

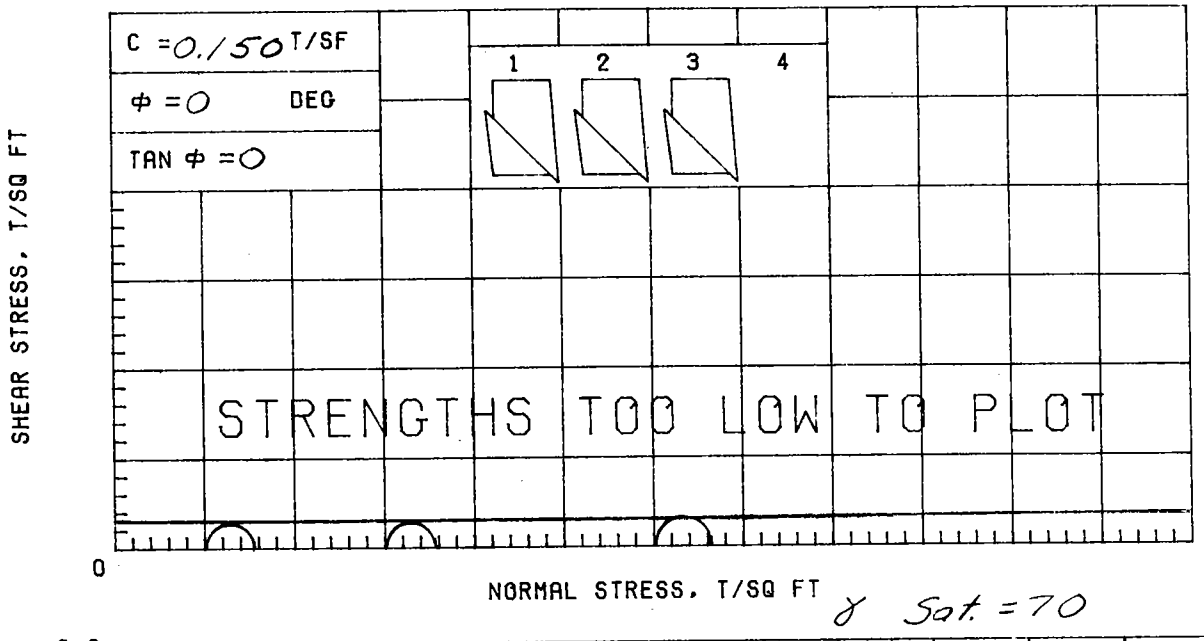
LL 68	PL 24	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

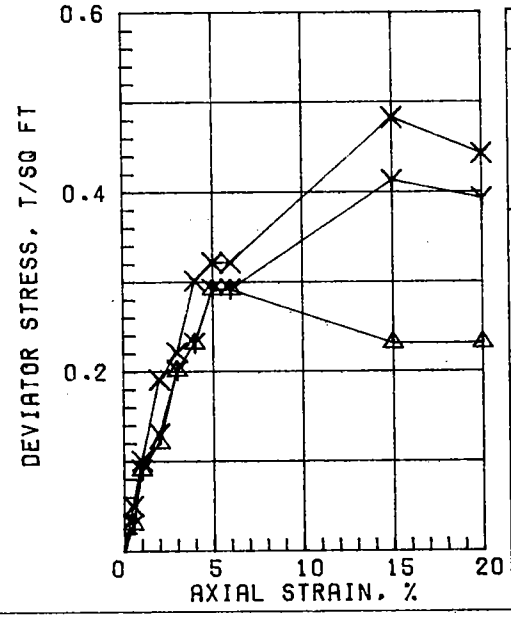
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 47-U | SAMPLE NO. 2-C
DEPTH/ELEV 5.2/-6.5 | TECH. KOC
LABORATORY USAE WES | DATE 19 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 70



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	444.0	456.2	436.8	
	DRY DENSITY, PCF	12.1	11.5	12.2	
	SATURATION, %	93.2	90.9	93.0	
	VOID RATIO	11.428	12.048	11.267	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.29	0.29	0.32	
TIME TO FAILURE, MIN.		10	30	30	
RATE OF STRAIN INCR,%			6	6	
INITIAL DIAMETER, IN.		1.40	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 445.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC CLAY (OH), BLACK

LL 539	PL 312	PI 227	GS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

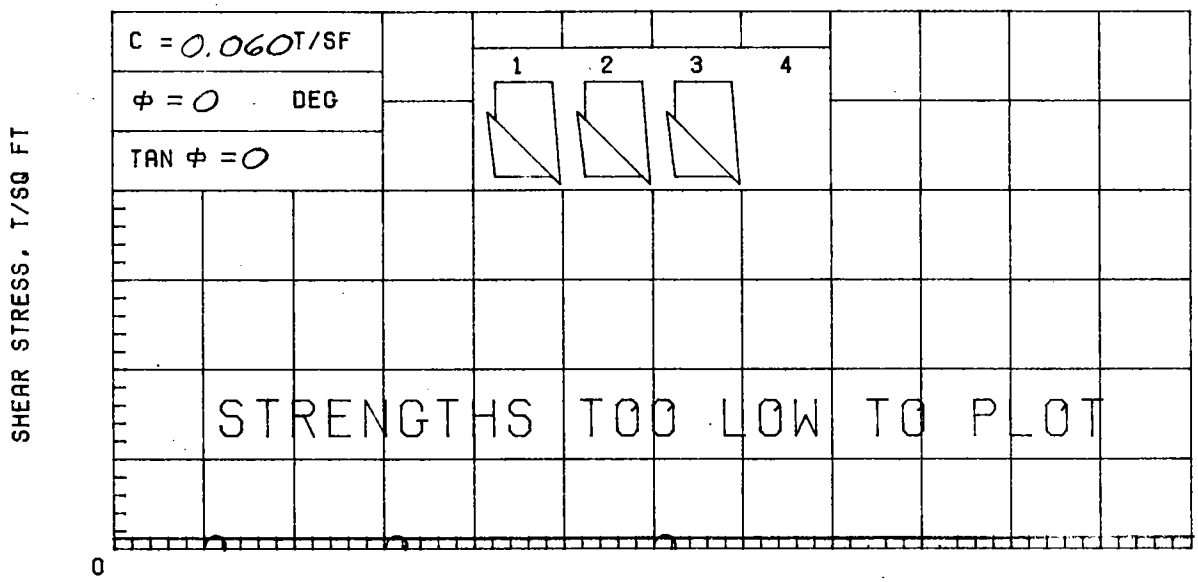
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 47-U — SAMPLE NO. 3-C

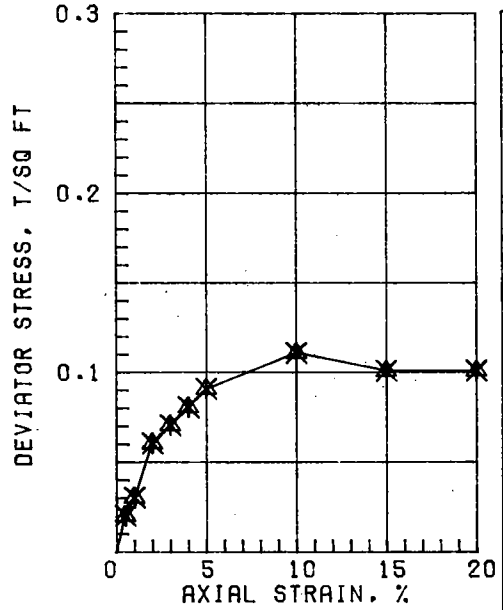
DEPTH/ELEV 8.6/-9.9 — TECH. KOC

LABORATORY USAE WES — DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 98



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	73.4	71.0	70.4	
	DRY DENSITY, PCF	56.2	56.9	57.5	
	SATURATION, %	99.0	97.6	98.5	
	VOID RATIO	2.001	1.965	1.931	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.11	0.11	0.11	
TIME TO FAILURE, MIN.		20	20	20	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

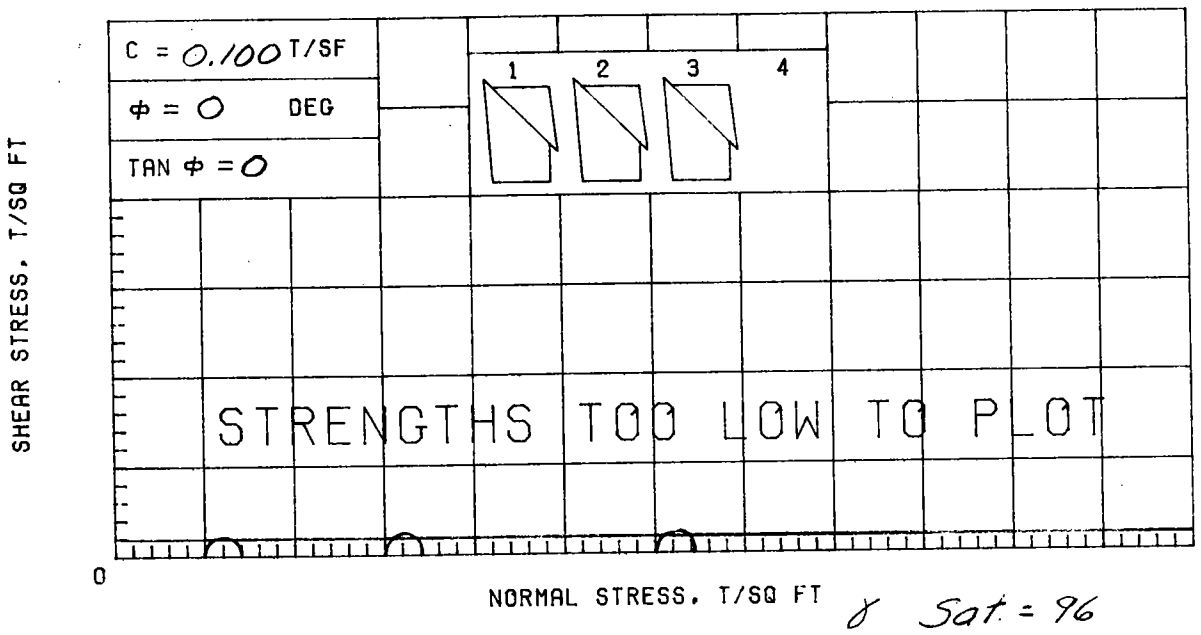
Avg. 71.6

CONTROLLED-STRAIN TEST

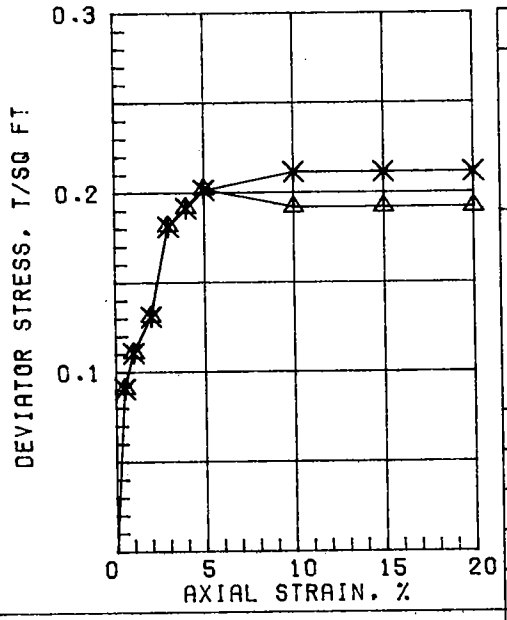
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/4" SILT LAYERS

LL 77	PL 21	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT. LA & VIC. HURR PROT.	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 47-U	SAMPLE NO. 5-C
	DEPTH/ELEV 17.2/-18.5	TECH. KOC
	LABORATORY USAE WES	DATE 19 APR 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat = 96



SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	78.9	79.4	79.9		79.4
	DRY DENSITY, PCF	52.9	53.2	53.3		
	SATURATION, %	97.4	99.0	99.7		
	VOID RATIO	2.187	2.166	2.165		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.20	0.21	0.21		
TIME TO FAILURE, MIN.		10	20	20		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 93	PL 21	PI 72	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

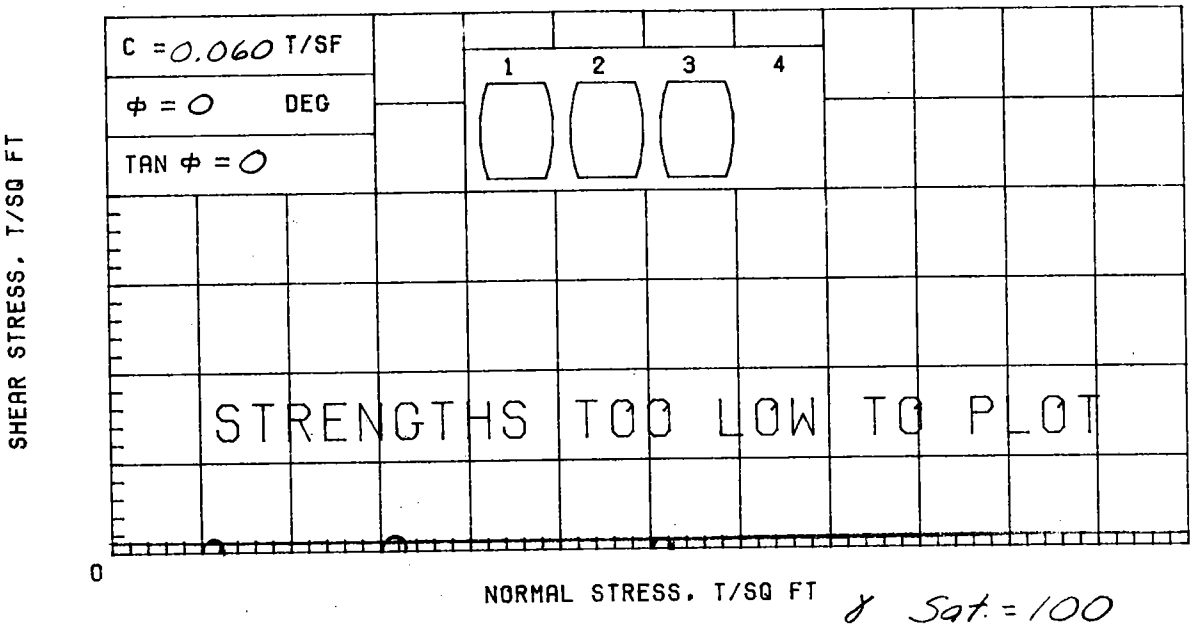
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 47-U | SAMPLE NO. 8-B

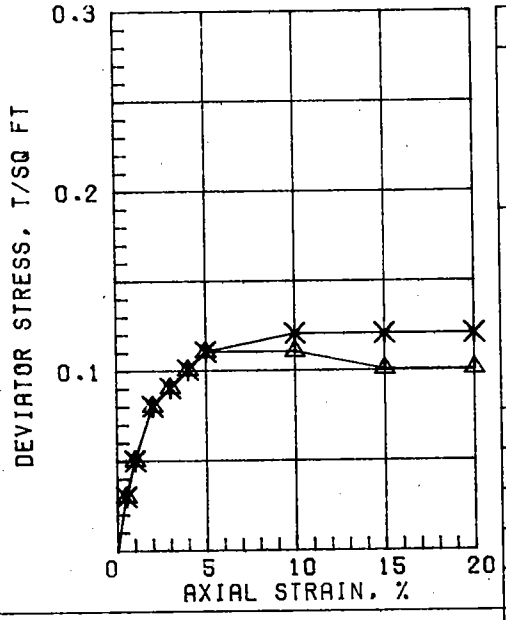
DEPTH/ELEV 28.0/-29.3 | TECH. KOC

LABORATORY USAE WES | DATE 19 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 100



SPECIMEN NO.		Δ1	Y2	X3	4	Avg.
INITIAL	WATER CONTENT, %	66.9	68.1	64.1		66.4
	DRY DENSITY, PCF	58.5	58.2	60.4		
	SATURATION, %	96.1	96.9	96.6		
	VOID RATIO	1.879	1.898	1.791		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.11	0.12	0.12		
TIME TO FAILURE, MIN.		10	20	20		
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELL PARTICLES; SILT POCKETS

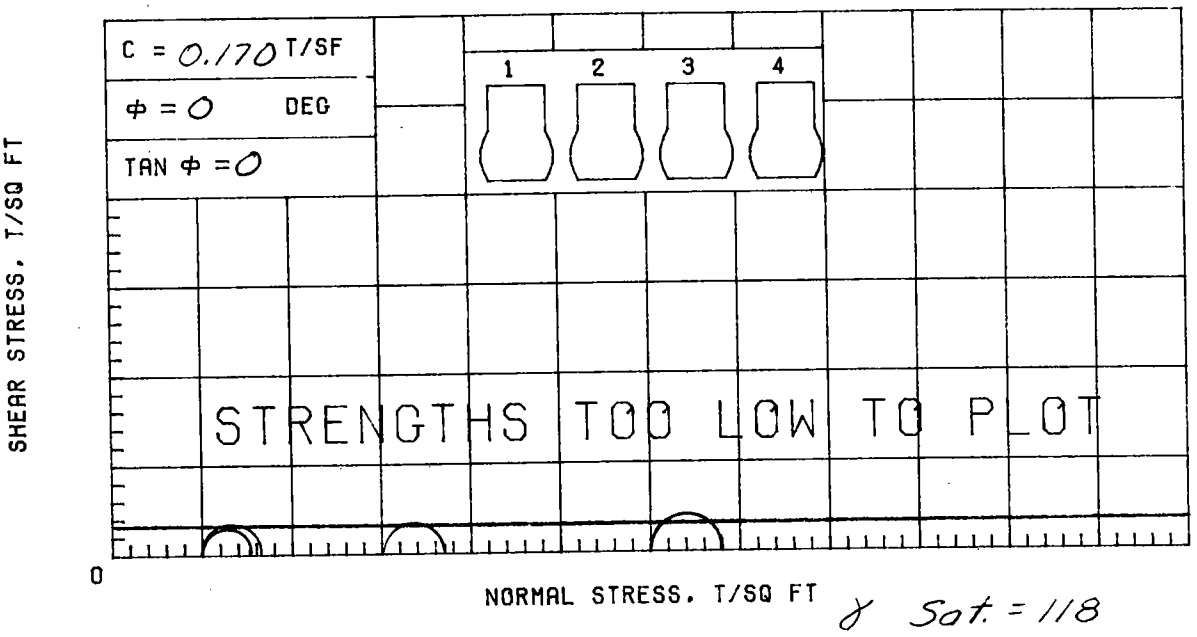
LL 77	PL 20	PI 57	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

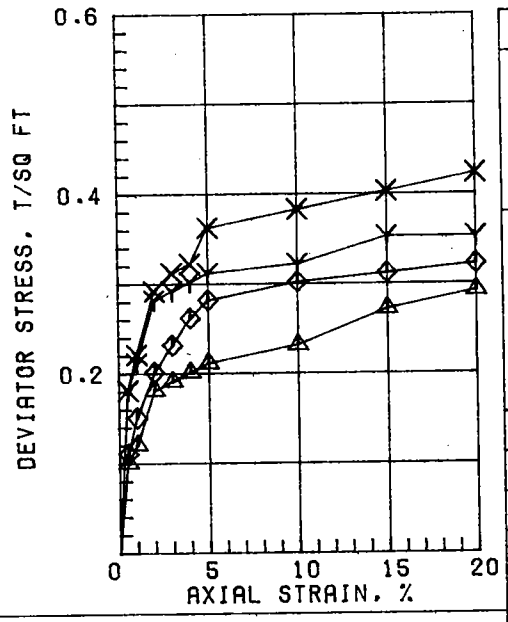
PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 47-U	SAMPLE NO. 11-B
DEPTH/ELEV 39.8/-41.1	TECH. KOC
LABORATORY USAE WES	DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 118



SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	34.0	34.3	30.9	32.2	32.9
	DRY DENSITY, PCF	87.1	85.9	89.8	87.3	
	SATURATION, %	98.2	96.2	95.1	93.5	
	VOID RATIO	0.934	0.963	0.878	0.930	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.27	0.35	0.40	0.31	
TIME TO FAILURE, MIN.		30	30	30	30	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; SILT POCKETS

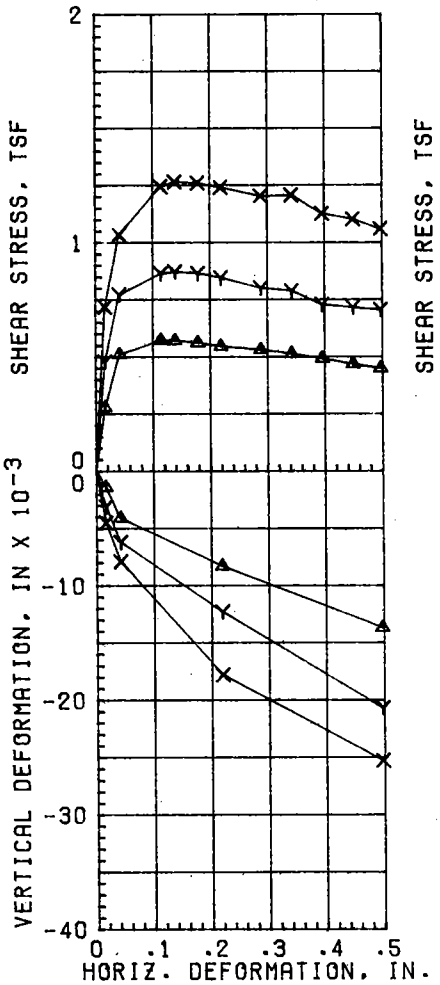
LL 43	PL 12	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

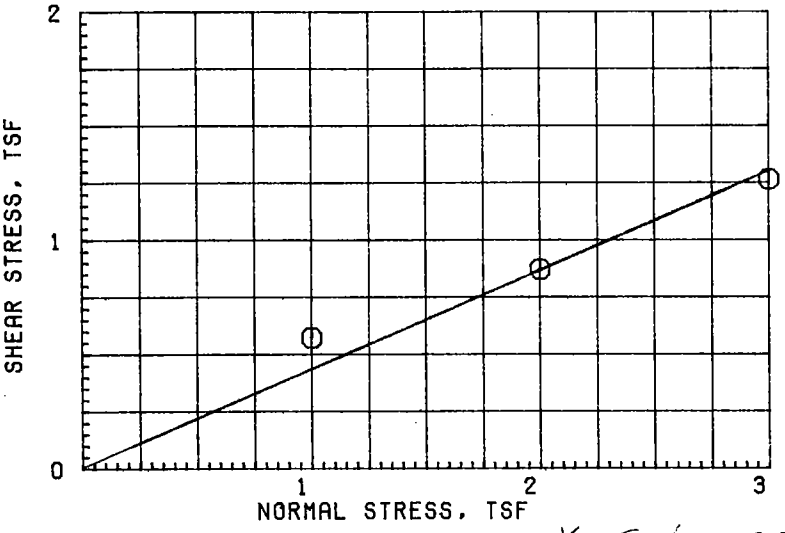
REMARKS:

PROJECT LK PONT. LA & VIC. HURR PROT.
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 47-U | SAMPLE NO. 13-C
DEPTH/ELEV 48.7/-50.0 | TECH. KOC
LABORATORY USAE WES | DATE 20 APR 85

TRIAXIAL COMPRESSION TEST REPORT





γ Sat. = 125

	TEST NO.	1 △	2 Y	3 X	Avg.
INITAL	WATER CONTENT, %	24.1	24.1	24.6	24.3
	VOID RATIO	0.676	0.685	0.711	
	SATURATION, %	96.3	95.2	93.3	
	DRY DENSITY, PCF	100.5	100.0	98.4	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	23.6	22.8	21.4	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.57	0.87	1.27	
TIME TO FAILURE, MIN		648	788	788	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

ϕ = 24°

TAN ϕ = 0.445

C = 0

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.554 IN. THICK

CLASSIFICATION PLASTIC CLAY (CH), GRAY & BROWN MOTTLED

LL 55 | PL 13 | PI 42 | | GS 2.70 (EST)

REMARKS:

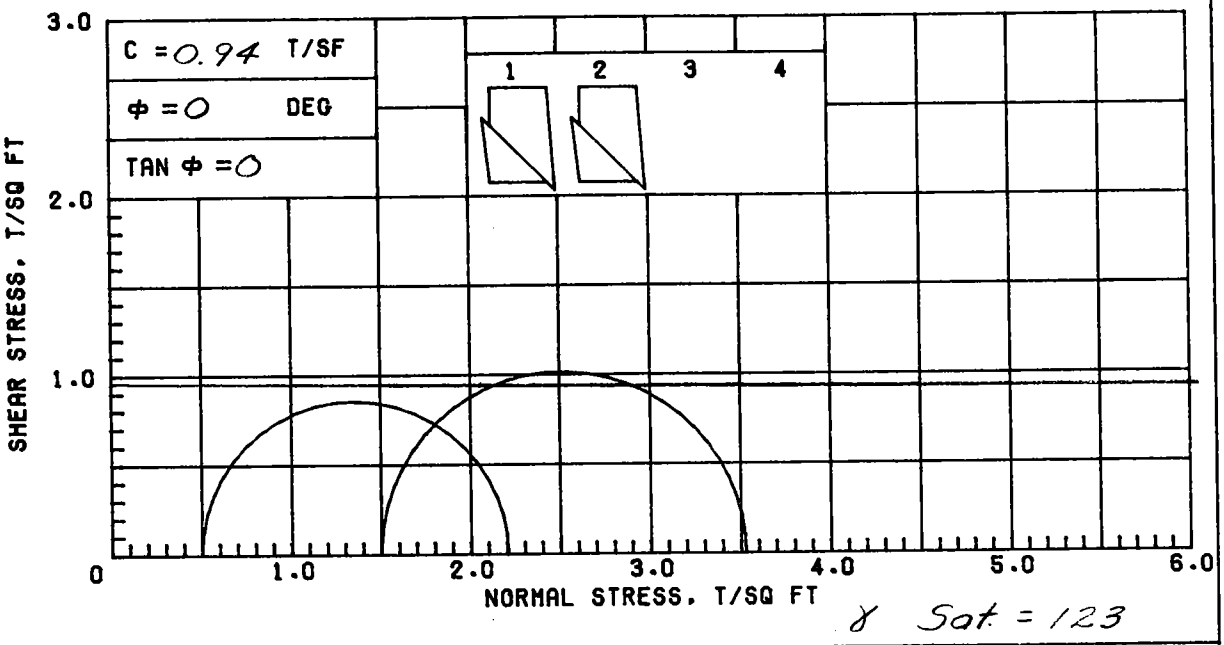
PROJECT LK PONT. LA & VIC. HURR. PROT

JEFFERSON & ST. CHARLES PARISHES

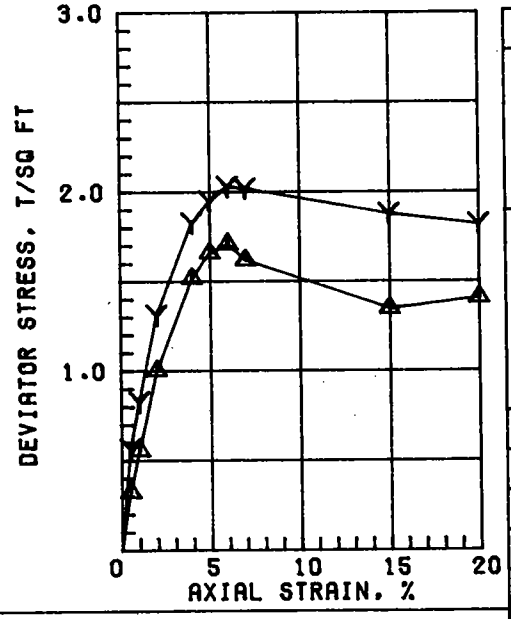
BORING NO. 47U | SAMPLE 14C

DEPTH/ELEV 52.7/-54.0 | DATE 17 APR 85

DIRECT SHEAR TEST REPORT



γ Sat. = 123



SPECIMEN NO.		Δ1	Y2	3	4	Avg.
INITIAL	WATER CONTENT, %	24.0	23.2			23.6
	DRY DENSITY, PCF	94.7	98.4			
	SATURATION, %	83.1	87.9			
	VOID RATIO	0.780	0.712			
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5			
MAX. DEV. STRESS, TSF		1.71	2.03			
TIME TO FAILURE, MIN.		12	36			
RATE OF STRAIN INCR.%			7			
INITIAL DIAMETER, IN.		1.39	1.39			
INITIAL HEIGHT, IN.		3.00	3.00			

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS;
FRIABLE; SHELL PARTICLES

LL 50	PL 17	PI 33	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

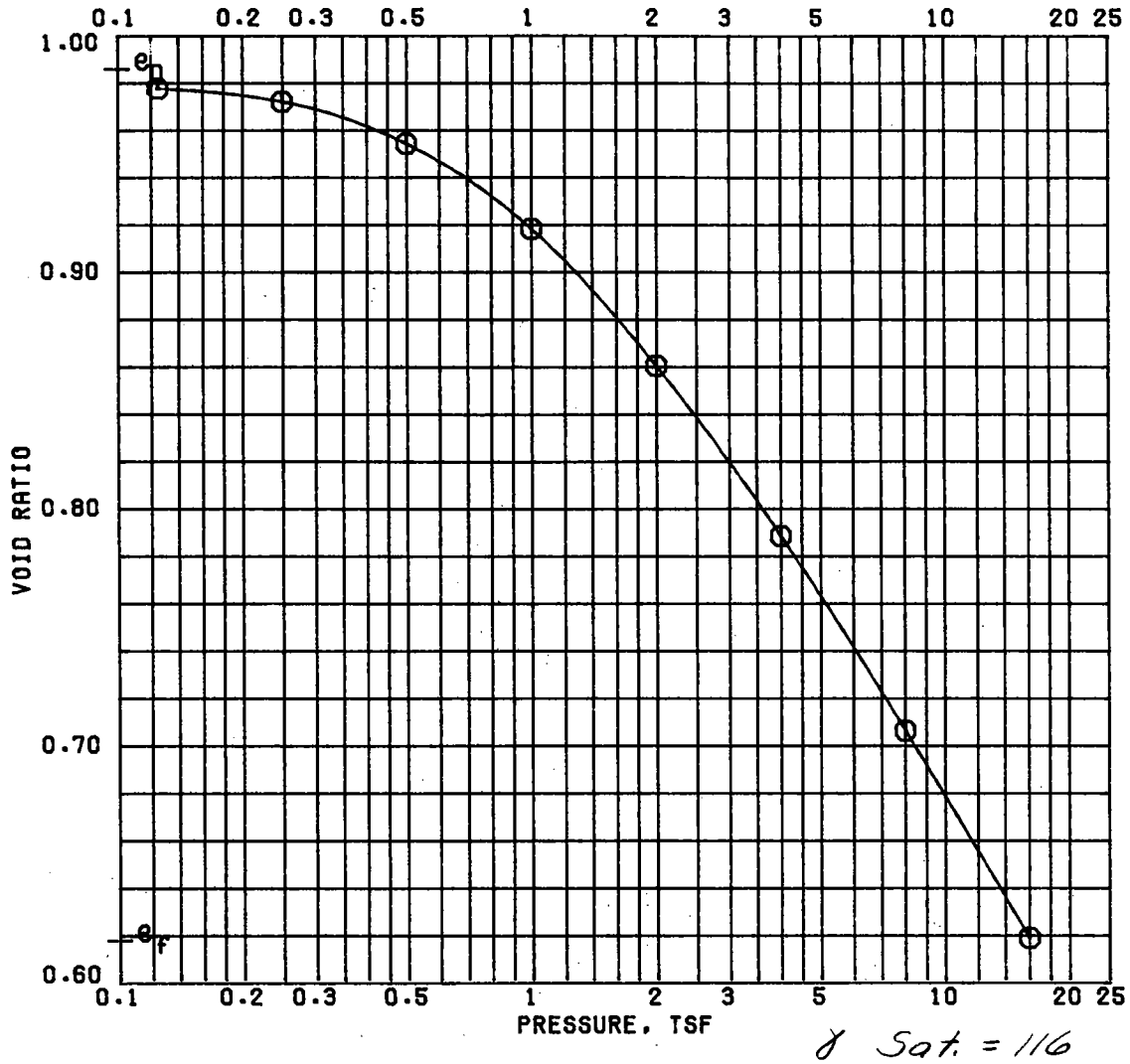
REMARKS:

INSUFFICIENT MATERIAL FOR THIRD SPECIMEN

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 48-U | SAMPLE NO. 1-C
DEPTH/ELEV 2.2/6.9 | TECH. KOC
LABORATORY USAE WES | DATE 11 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 116

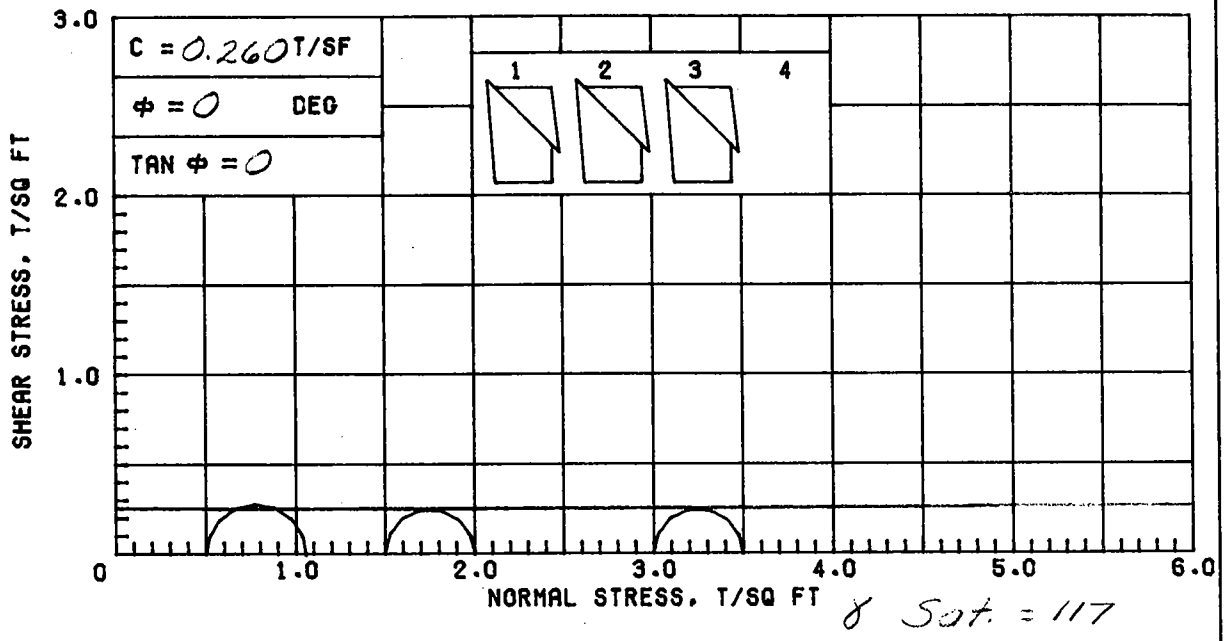
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	35.2	24.3
PRECONSOL. PRESSURE, TSF	1.28	DRY DENSITY, PCF	84.9	104.2
COMPRESSION INDEX	0.28	SATURATION, %	96.4	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	0.985	0.617
DIA. IN 4.44	HT. IN 1.129	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), LIGHT BROWN; FINE SAND LENSES

LL 65	PL 19	PI 46	PROJECT LK. PONT. LA. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFF. & ST. CHARLES PARISHES
REMARKS		BORING NO. 48-U	SAMPLE NO. 3-B
		DEPTH/ELEV 8.0/ 1.1	DATE 10 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 10



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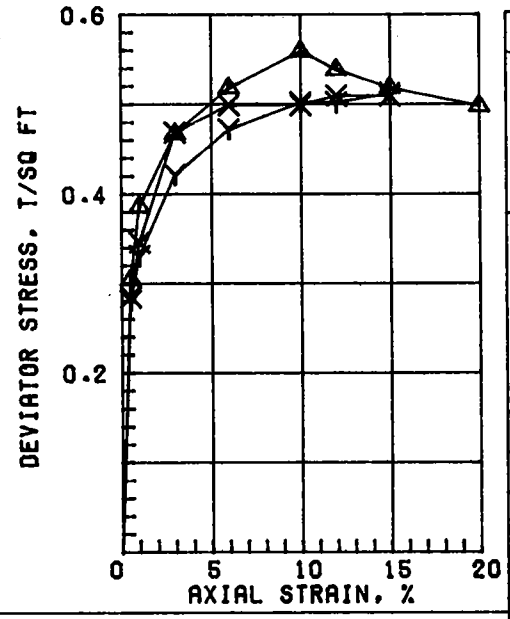


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	36.0	34.0	34.2	
	DRY DENSITY, PCF	85.5	87.7	86.7	
	SATURATION, %	100+	99.7	97.7	
	VOID RATIO	0.971	0.921	0.945	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.56	0.50	0.50	
TIME TO FAILURE, MIN.		43	21	13	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 34.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED; FINE SAND LENSES

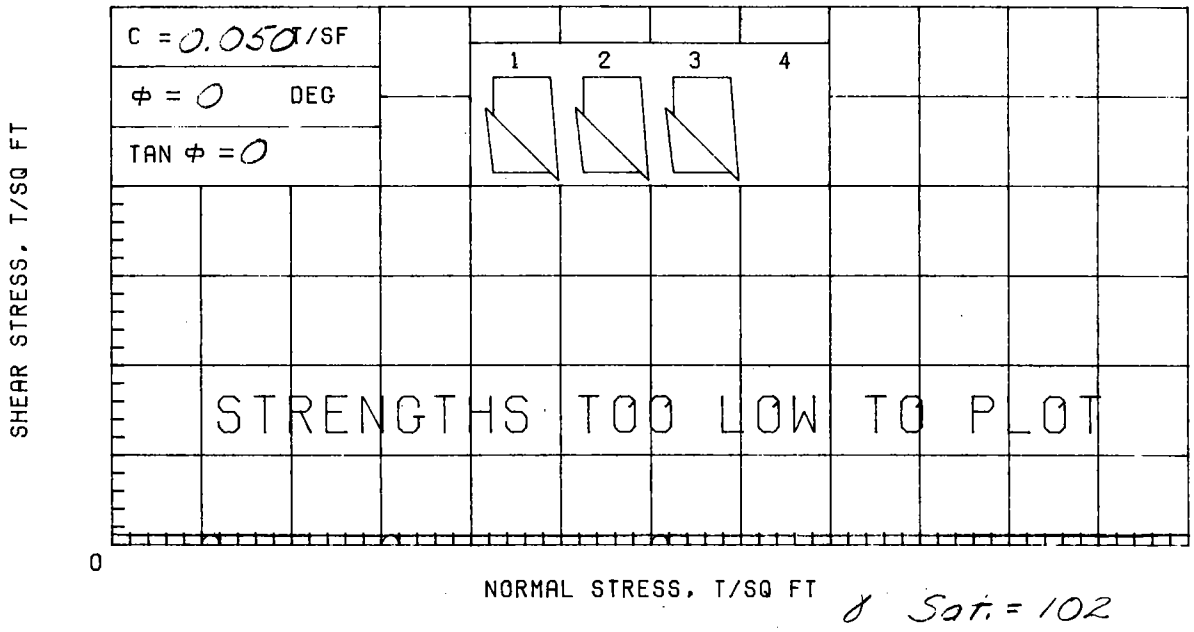
LL 58	PL 19	PI 39	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

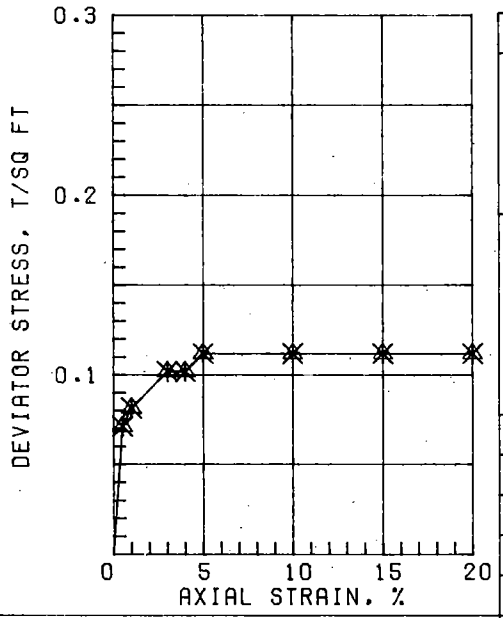
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 48-U | SAMPLE NO. 3-C
DEPTH/ELEV 9.4/-0.3 | TECH. LRC
LABORATORY USAE WES | DATE 12 APR 85

TRIAXIAL COMPRESSION TEST REPORT



δ Sat. = 102



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	64.6	66.8	61.9	
	DRY DENSITY, PCF	62.2	60.9	63.5	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.712	1.767	1.655	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.10	0.10	0.10	
TIME TO FAILURE, MIN.		6	6	6	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

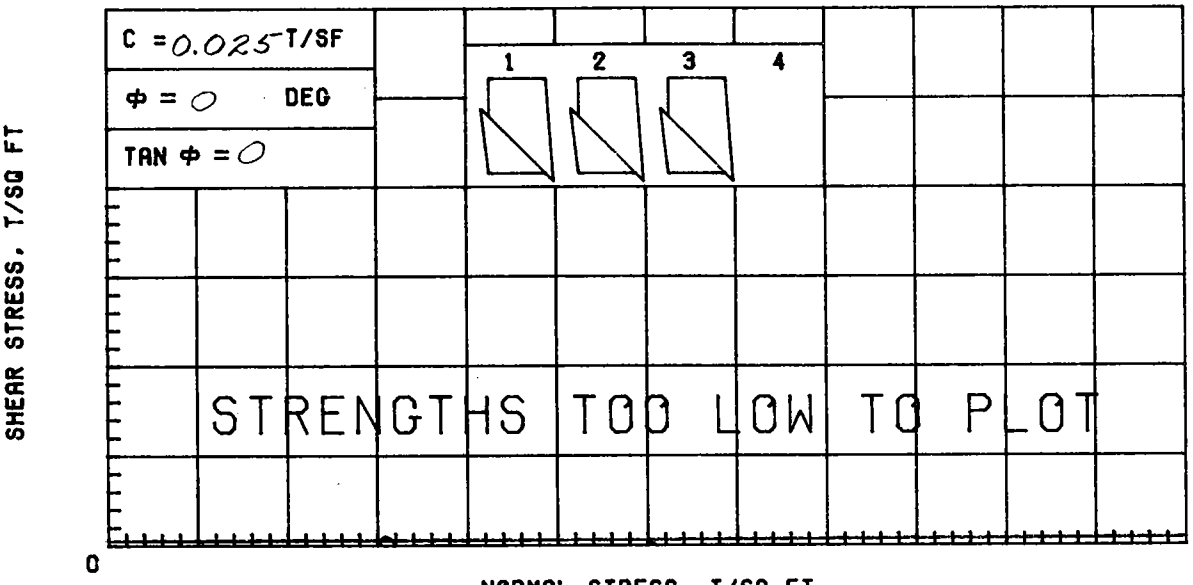
Avg. 64.4

CONTROLLED-STRAIN TEST

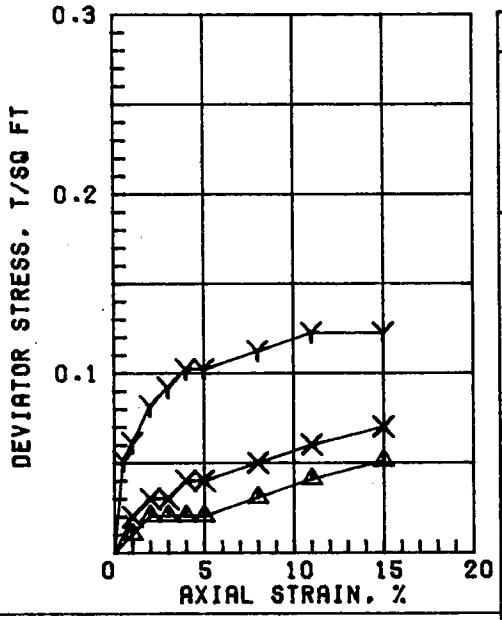
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 83	PL 21	PI 62	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT	
	JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 48-U	SAMPLE NO. 6-B
	DEPTH/ELEV 20/-10.9	TECH. KOC
	LABORATORY USAE WES	DATE 29 OCT 85
	TRIAXIAL COMPRESSION TEST REPORT	



γ Sat. = 109



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	47.6	49.1	42.3	
	DRY DENSITY, PCF	73.5	72.4	77.6	
	SATURATION, %	99.4	99.9	97.5	
	VOID RATIO	1.293	1.327	1.171	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.02	0.10	0.03	
TIME TO FAILURE, MIN.		5	30	11	
RATE OF STRAIN INCR.%		6	5	3	
INITIAL DIAMETER, IN.		1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 46.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY & BROWN MOTTLED

LL 57	PL 17	PI 40	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

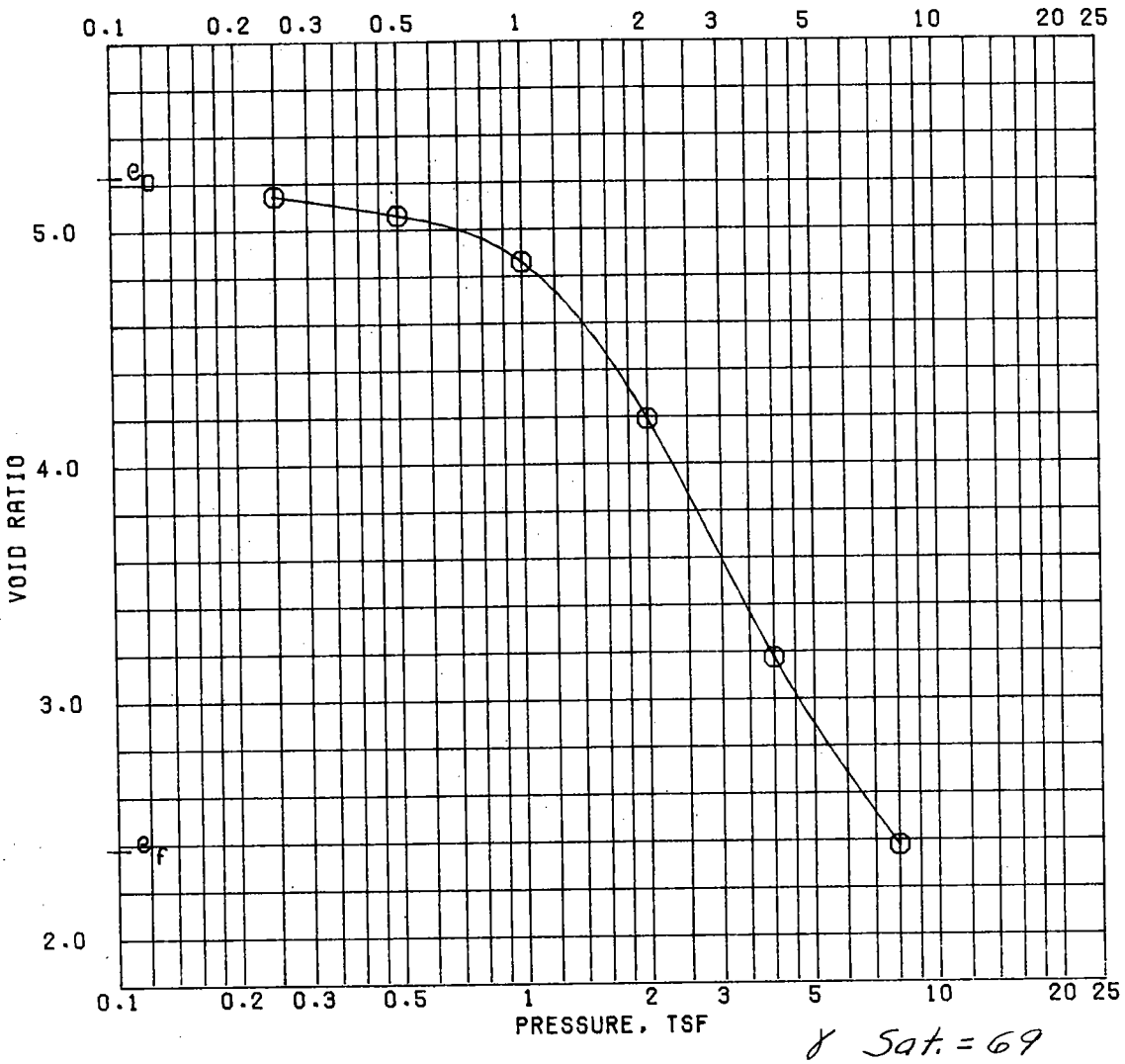
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 48-U | SAMPLE NO. 6-C

DEPTH/ELEV 21.4/-12.3 | TECH. LRC

LABORATORY USAE WES | DATE 12 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 69

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.88	
COMPRESSION INDEX	2.70	
WATER CONTENT, %	286.5	144.6
DRY DENSITY, PCF	17.1	31.5
SATURATION, %	93.2	100 +
VOID RATIO	5.224	2.371
BACK PRESSURE, TSF		

TYPE SPECIMEN: UNDISTURBED

DIA. IN 4.44 | HT. IN 1.123

CLASSIFICATION: ORGANIC CLAY (OH), BROWN; POCKETS OF PEAT (PT)

LL 251 | PL 83 | PI 168

GS 1.70 (EST) | D_{10}

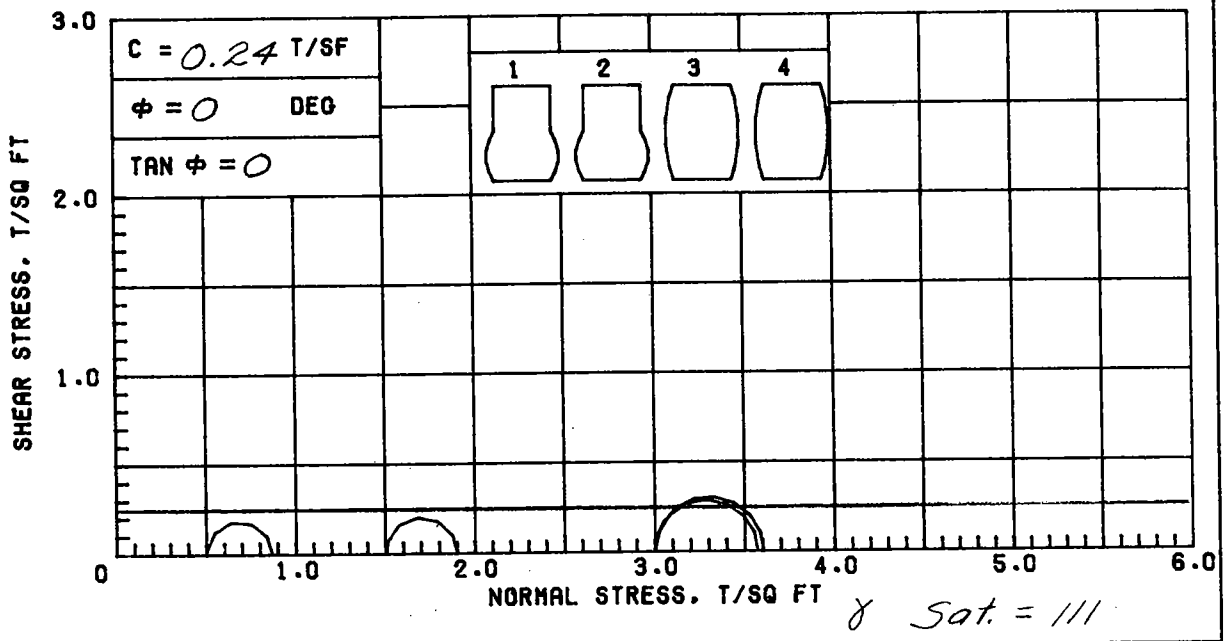
REMARKS

PROJECT: LK. PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

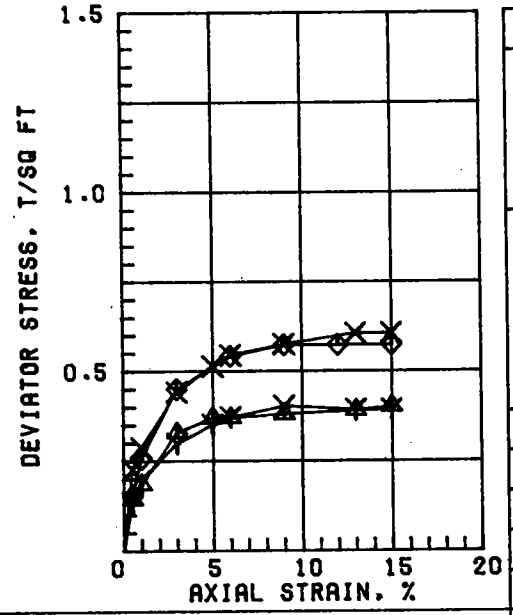
BORING NO. 48-U | SAMPLE NO. 7-C

DEPTH/ELEV 24.7/-15.6 | DATE 11 MAY 85

CONSOLIDATION TEST REPORT



γ Sat. = 111



SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	47.3	45.9	40.0	42.9
	DRY DENSITY, PCF	74.7	74.8	80.3	77.3
	SATURATION, %	100+	99.0	98.2	98.1
	VOID RATIO	1.256	1.252	1.100	1.181
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.37	0.40	0.61	0.57
TIME TO FAILURE, MIN.		14	36	47	18
RATE OF STRAIN INCR.%		6			
INITIAL DIAMETER, IN.		1.38	1.38	1.38	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 44.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 53	PL 18	PI 35	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

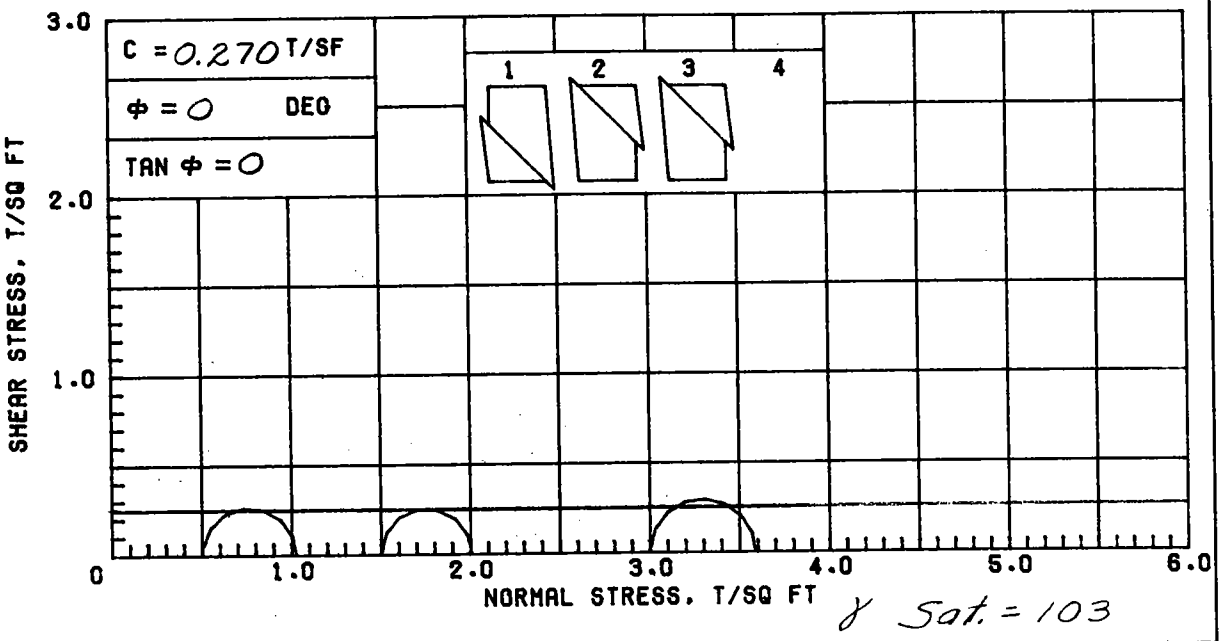
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 48-U | SAMPLE NO. 8-C

DEPTH/ELEV 29.3/-20.2 | TECH. LRC

LABORATORY USAE WES | DATE 12 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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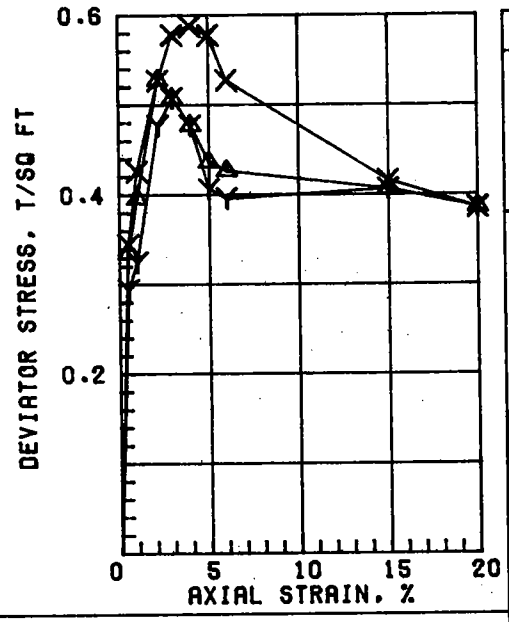


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	61.6	62.9	61.9	
	DRY DENSITY, PCF	63.4	62.8	63.7	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.657	1.683	1.647	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.53	0.51	0.59	
TIME TO FAILURE, MIN.		4	18	24	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 62.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 88	PL 22	PI 66	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

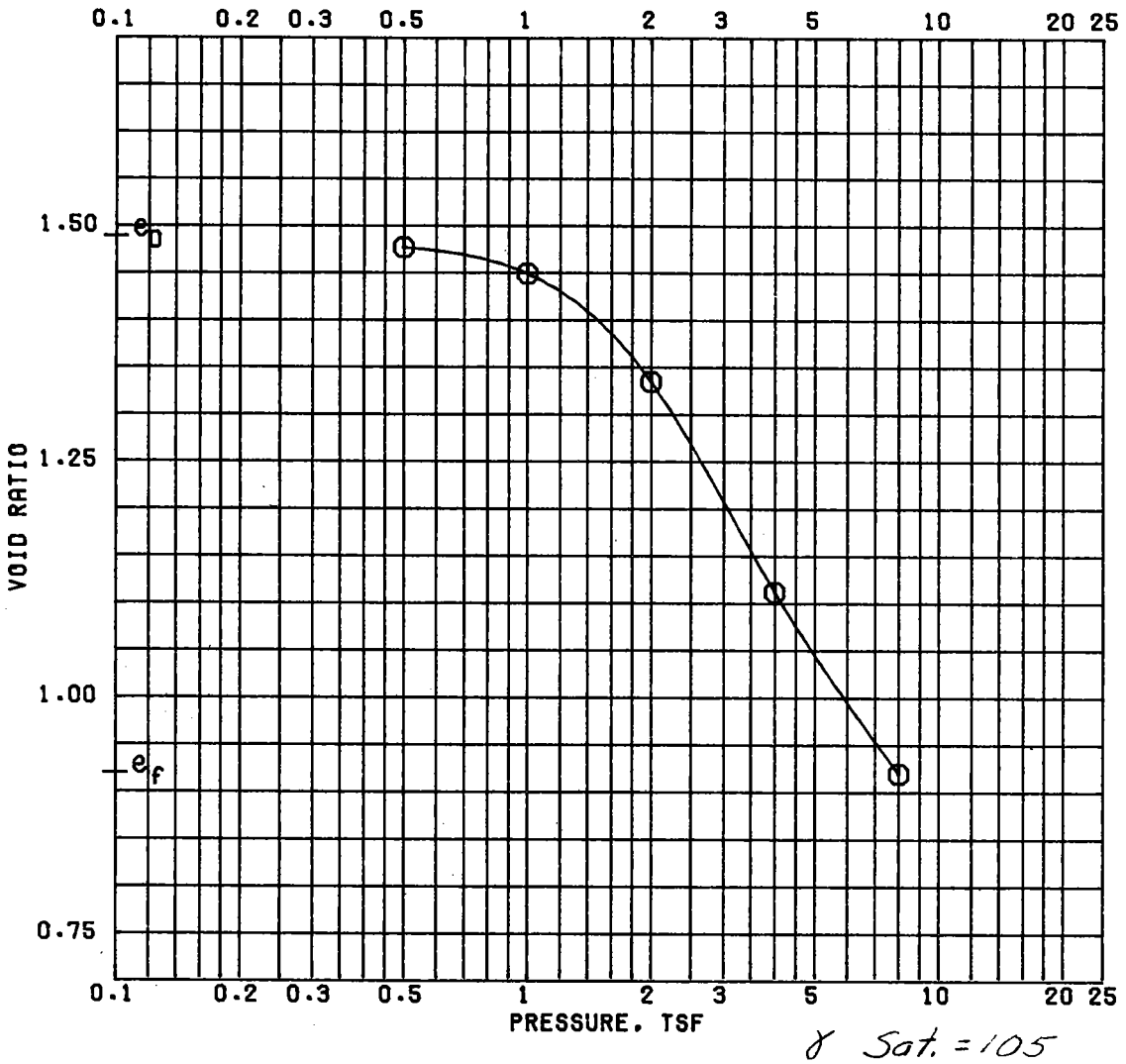
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 48-U | SAMPLE NO. 11-C

DEPTH/ELEV 40.7/-31.6 | TECH. KOC

LABORATORY USAE WES | DATE 12 APR 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 105

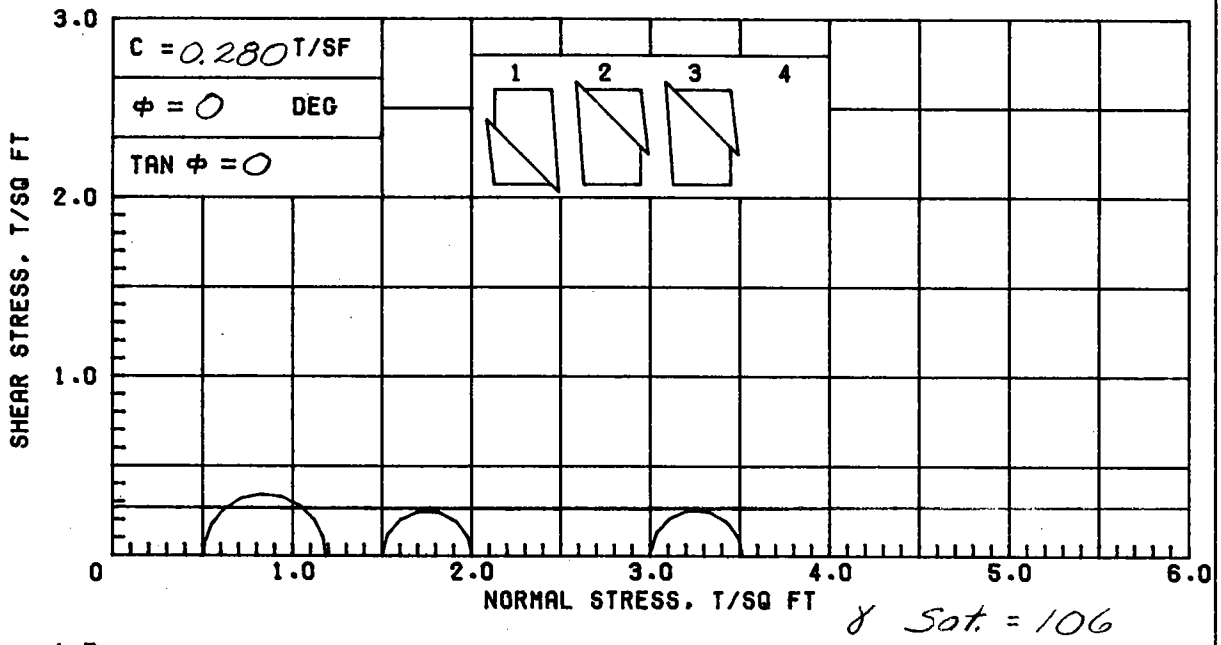
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	53.8	34.6
PRECONSOL. PRESSURE, TSF	1.50	DRY DENSITY, PCF	67.8	87.9
COMPRESSION INDEX	0.65	SATURATION, %	97.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.487	0.918
DIA. IN 4.44	HT. IN 1.133	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; FINE SAND LENSES

LL 80	PL 23	PI 57	PROJECT LK. PONT. LA. & VIC. HURR. PROT.	
GS 2.70 (EST)	D_{10}		JEFF. & ST. CHARLES PARISHES	
REMARKS			BORING NO. 48-U	SAMPLE NO. 12-B
			DEPTH/ELEV 44.0/-34.9	DATE 13 MAY 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



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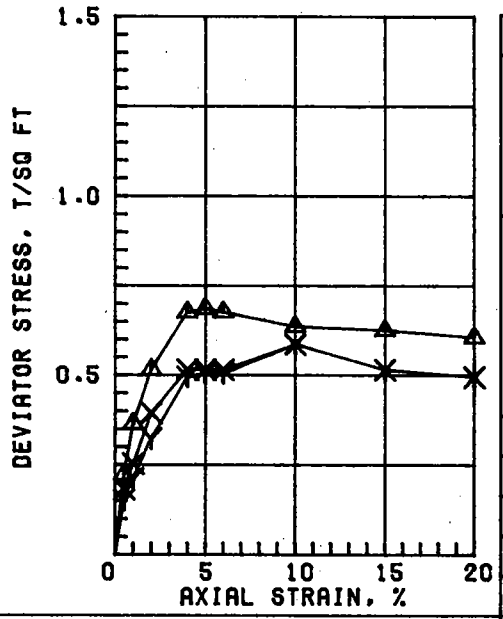


	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	50.5	51.5	53.1	
	DRY DENSITY, PCF	68.7	68.2	68.1	
	SATURATION, %	93.8	94.4	97.3	
	VOID RATIO	1.453	1.473	1.474	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.69	0.50	0.51	
TIME TO FAILURE, MIN.		10	30	24	
RATE OF STRAIN INCR.%			7	7	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 51.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; 1/4" SILT LAYERS

LL 53	PL 18	PI 35	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

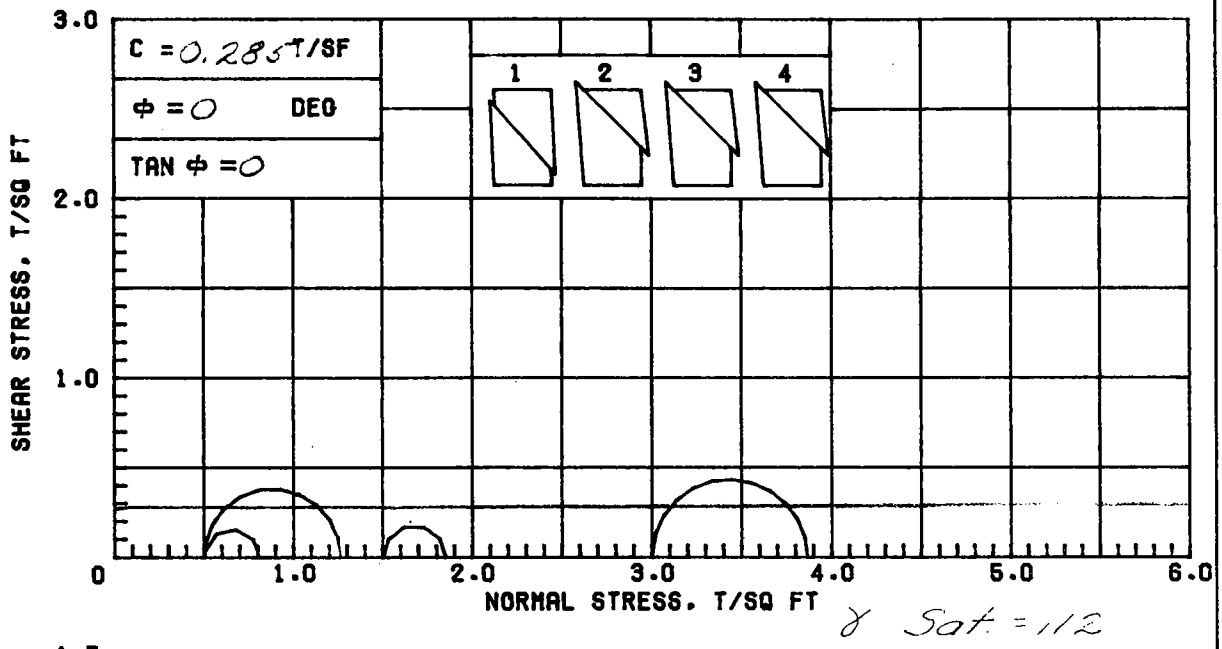
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFF. & ST. CHARLES PARISHES

BORING NO. 48-U | SAMPLE NO. 14-B

DEPTH/ELEV 51.8/-42.7 | TECH. KOC

LABORATORY USAE WES | DATE 12 APR 85

TRIAXIAL COMPRESSION TEST REPORT



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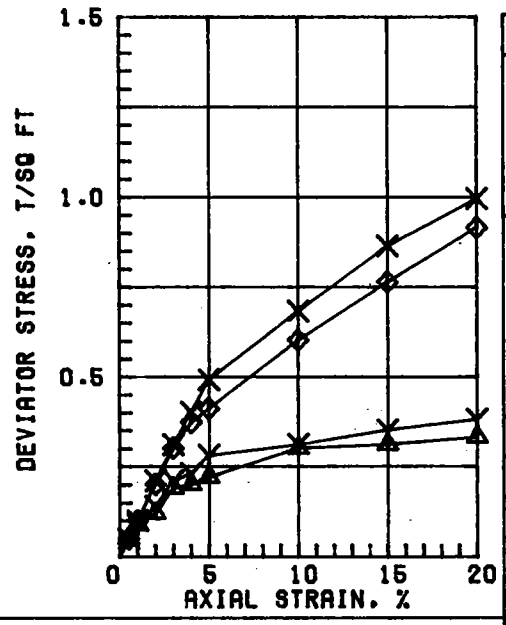


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	42.8	37.2	44.7	36.5
	DRY DENSITY, PCF	74.9	81.8	73.3	82.6
	SATURATION, %	92.3	94.7	92.8	94.8
	VOID RATIO	1.252	1.060	1.300	1.040
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		0.31	0.35	0.86	0.76
TIME TO FAILURE, MIN.		30	30	30	30
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 40.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; ORGANIC MATERIAL

LL 42	PL 21	PI 21	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

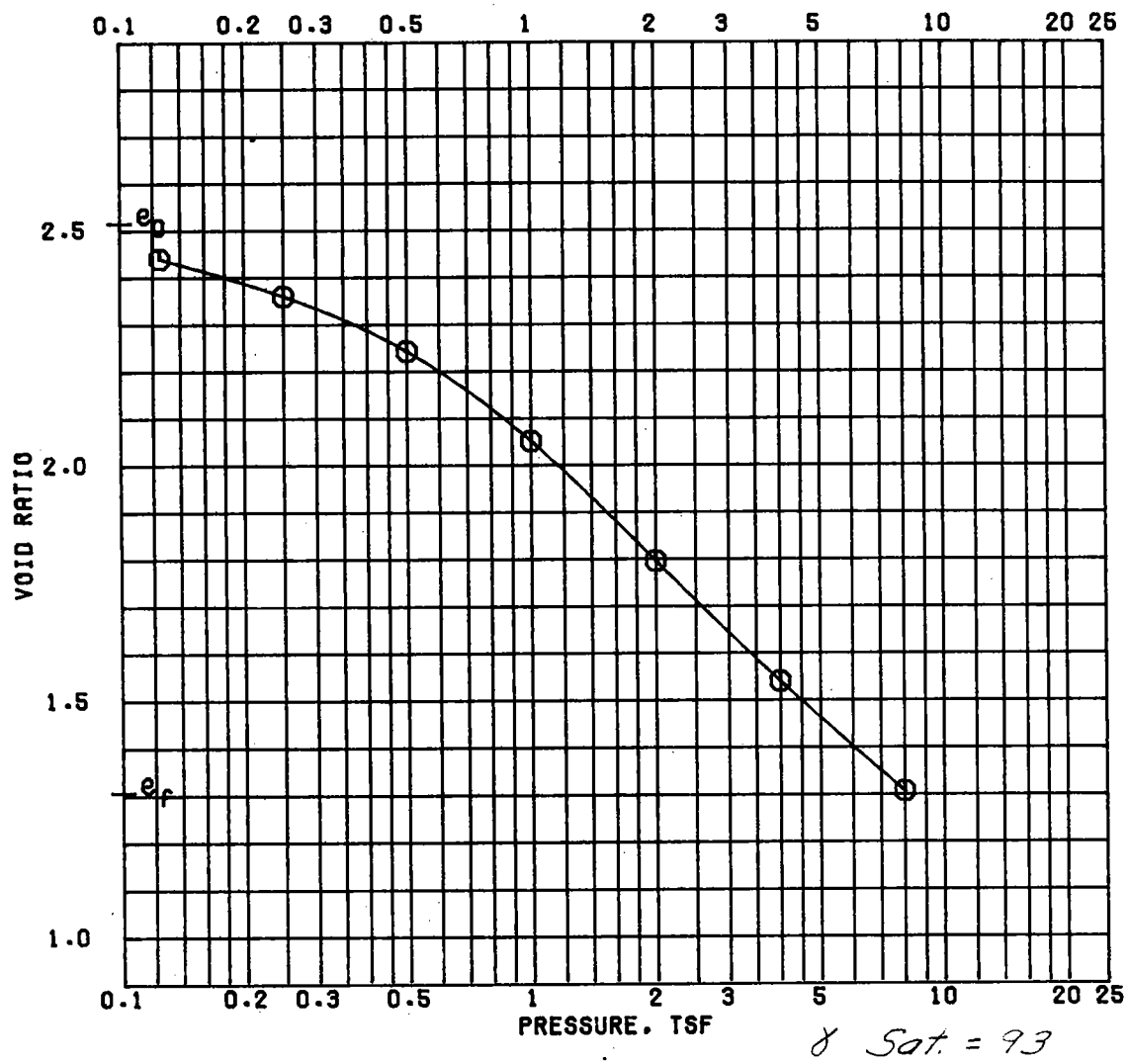
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 49-U | SAMPLE NO. 1-C

DEPTH/ELEV 8.7/-3.6 | TECH. KOC

LABORATORY USAE WES | DATE 03 JUN 86

TRIAXIAL COMPRESSION TEST REPORT



δ Sat. = 93

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.63	WATER CONTENT, %	83.0	43.8
COMPRESSION INDEX 0.66	DRY DENSITY, PCF	48.0	73.2
TYPE SPECIMEN UNDISTURBED	SATURATION, %	89.2	90.6
DIA. IN 4.44 HT. IN 1.124	VOID RATIO	2.512	1.303
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), BROWN

LL 101 PL 39 PI 62

GS 2.70 (EST) D_{10}

REMARKS

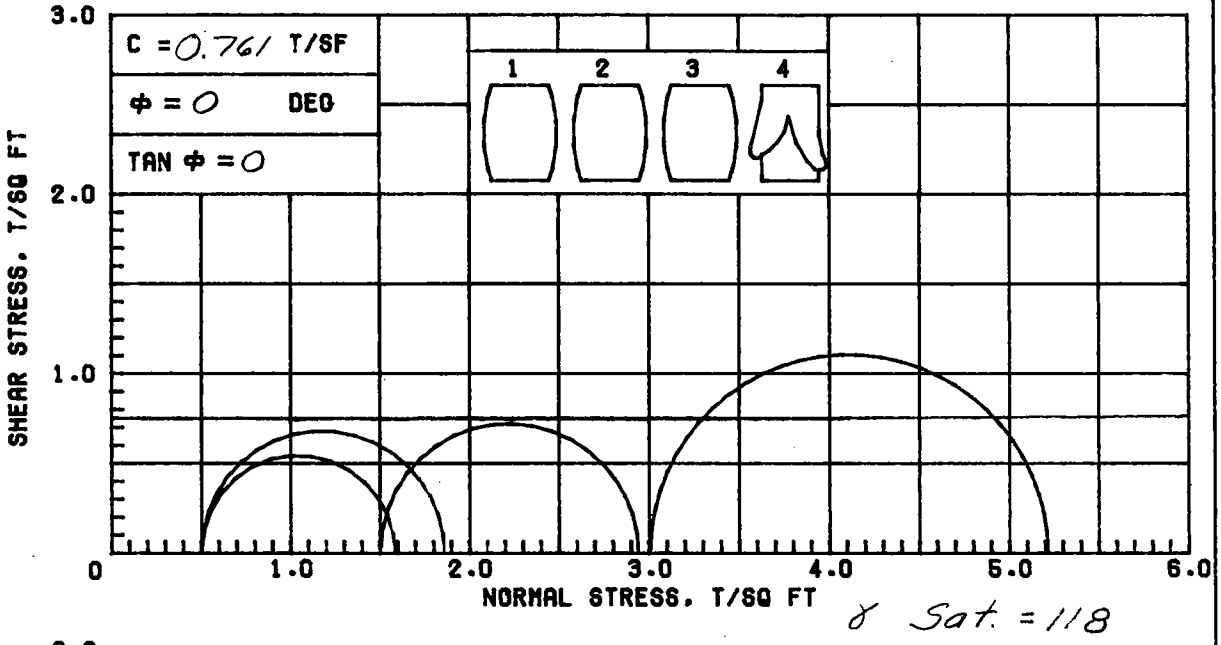
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHALRES PARISHES

BORING NO. 49-U SAMPLE NO. 2-C

DEPTH/ELEV 12.8/-7.7 DATE 26 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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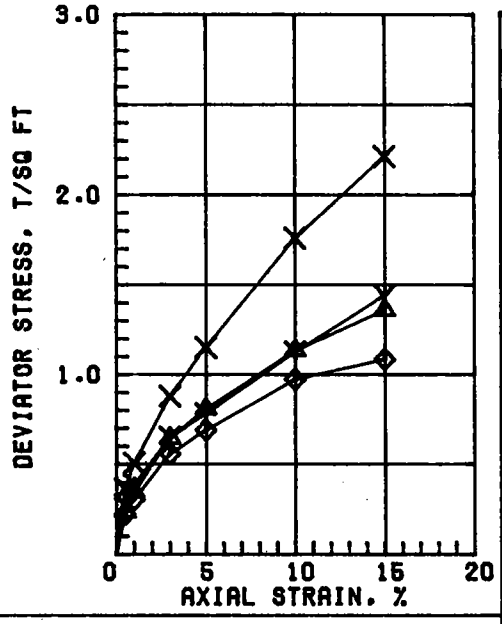


SPECIMEN NO.		▲1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	32.7	33.8	32.0	33.2
	DRY DENSITY, PCF	88.1	87.5	89.0	88.1
	SATURATION, %	96.6	98.4	96.6	98.1
	VOID RATIO	0.914	0.927	0.894	0.914
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5
MAX. DEV. STRESS, TSF		1.36	1.44	2.21	1.08
TIME TO FAILURE, MIN.		25	25	25	30
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

Avg. 32.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; FINE SAND POCKETS; DECAYED WOOD

LL 32	PL 20	PI 12	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

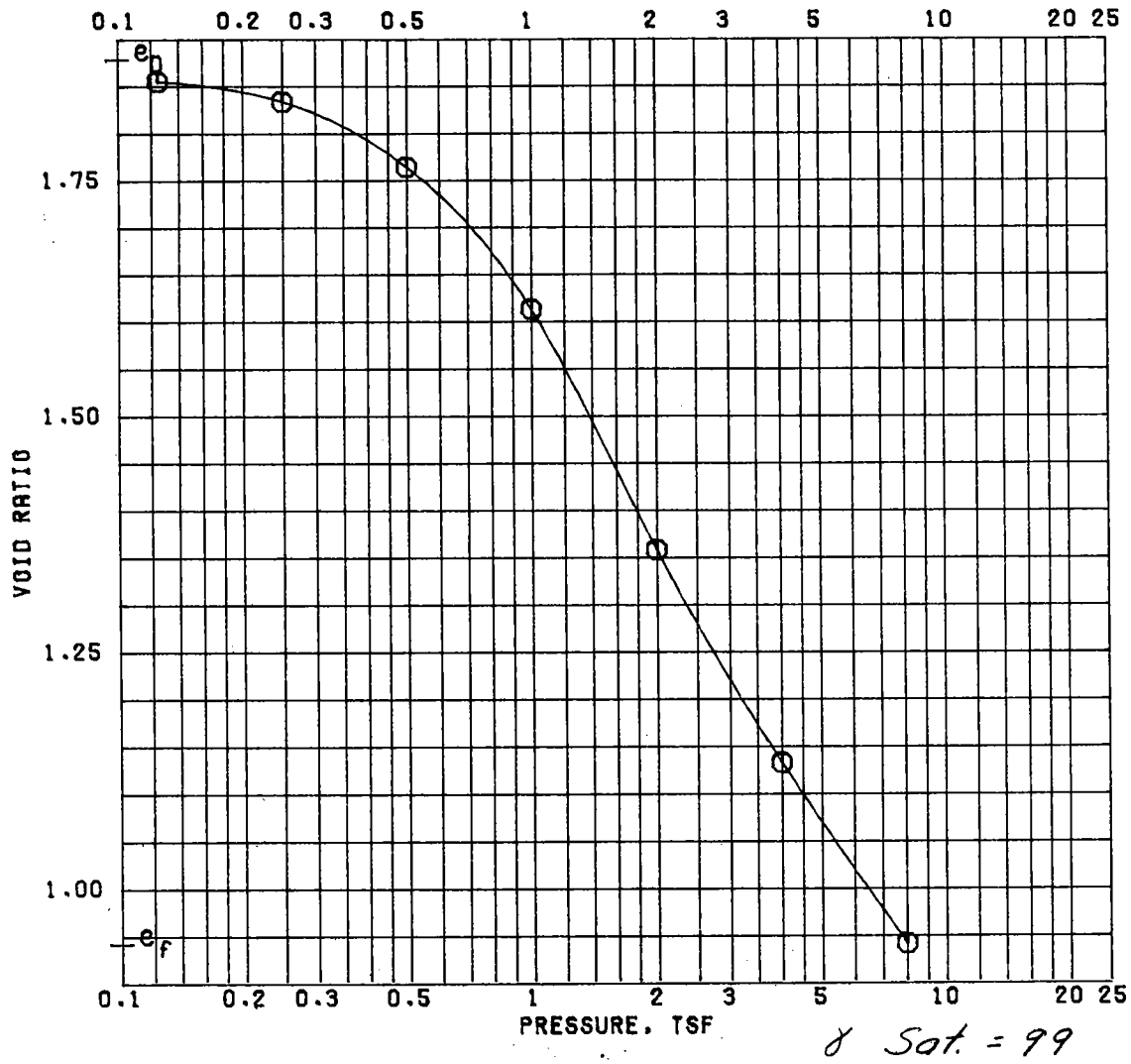
PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 49-U | SAMPLE NO. 5C

DEPTH/ELEV 24.7/-19.6 | TECH. PJR

LABORATORY USAE WES | DATE 03 JUN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 99

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.60	WATER CONTENT, %	68.4	36.2
COMPRESSION INDEX 0.89	DRY DENSITY, PCF	58.6	86.9
TYPE SPECIMEN UNDISTURBED	SATURATION, %	98.5	100 +
DIA. IN 4.44 HT. IN 1.118	VOID RATIO	1.876	0.940
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

LL 72 PL 20 PI 52

GS 2.70 (EST) D_{10}

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.,
JEFFERSON & ST. CHARLES PARISHES

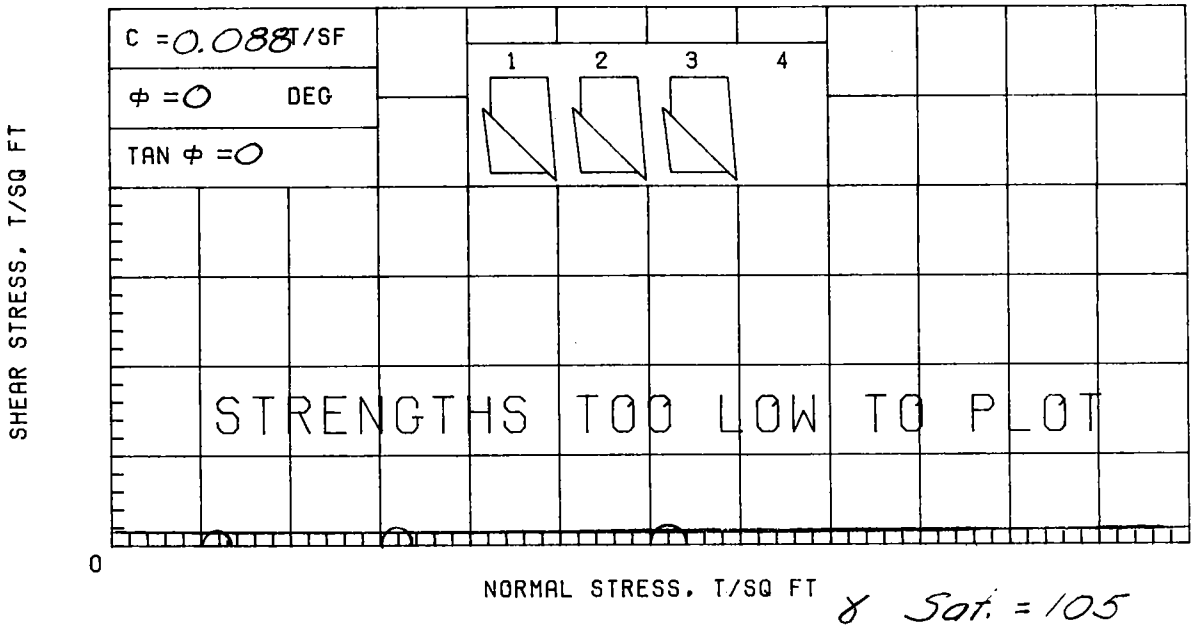
REMARKS

BORING NO. 49-U SAMPLE NO. 6-B

DEPTH/ELEV 28.7/-23.6 DATE 10 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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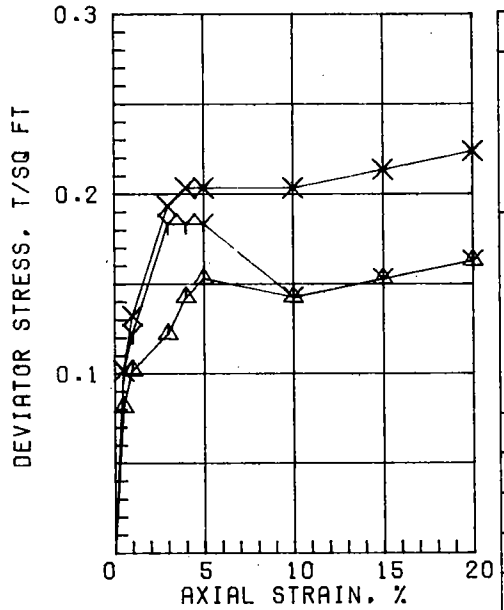


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	58.7	56.8	49.4	
	DRY DENSITY, PCF	65.1	65.7	70.3	
	SATURATION, %	99.7	97.9	95.4	
	VOID RATIO	1.589	1.566	1.399	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.15	0.18	0.20	
TIME TO FAILURE, MIN.		10	6	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 55.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 74	PL 19	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

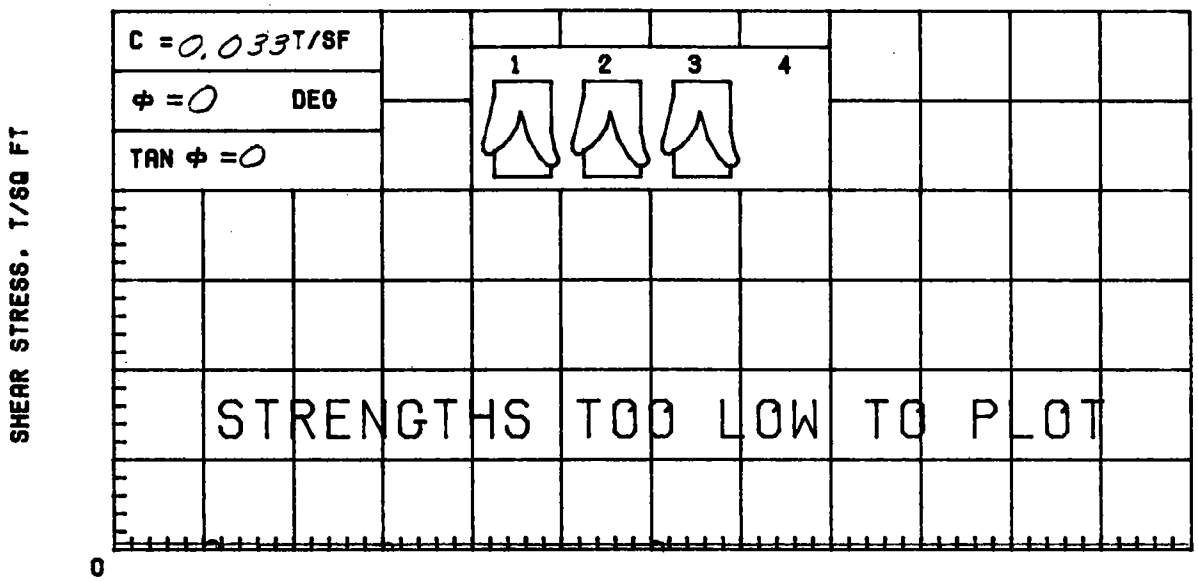
PROJECT LAKE PONT. LA. & VIC. HURR. PROT
JEFFERSON & ST. CHARLES PARISHES

BORING NO. 49-U | SAMPLE NO. 7-B

DEPTH/ELEV 32.0/-26.9 | TECH. KOC

LABORATORY USAE WES | DATE 29 OCT 85

TRIAXIAL COMPRESSION TEST REPORT



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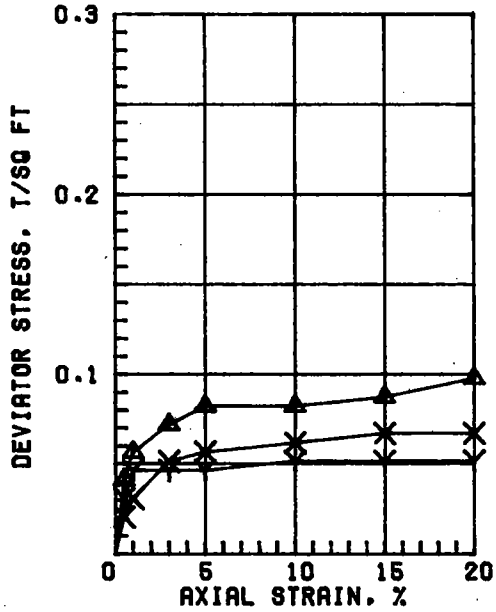


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	76.0	75.8	77.2	
	DRY DENSITY, PCF	55.7	55.8	55.3	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	2.024	2.023	2.045	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.08	0.05	0.07	
TIME TO FAILURE, MIN.		10	3	45	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 76.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 85	PL 21	PI 64	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

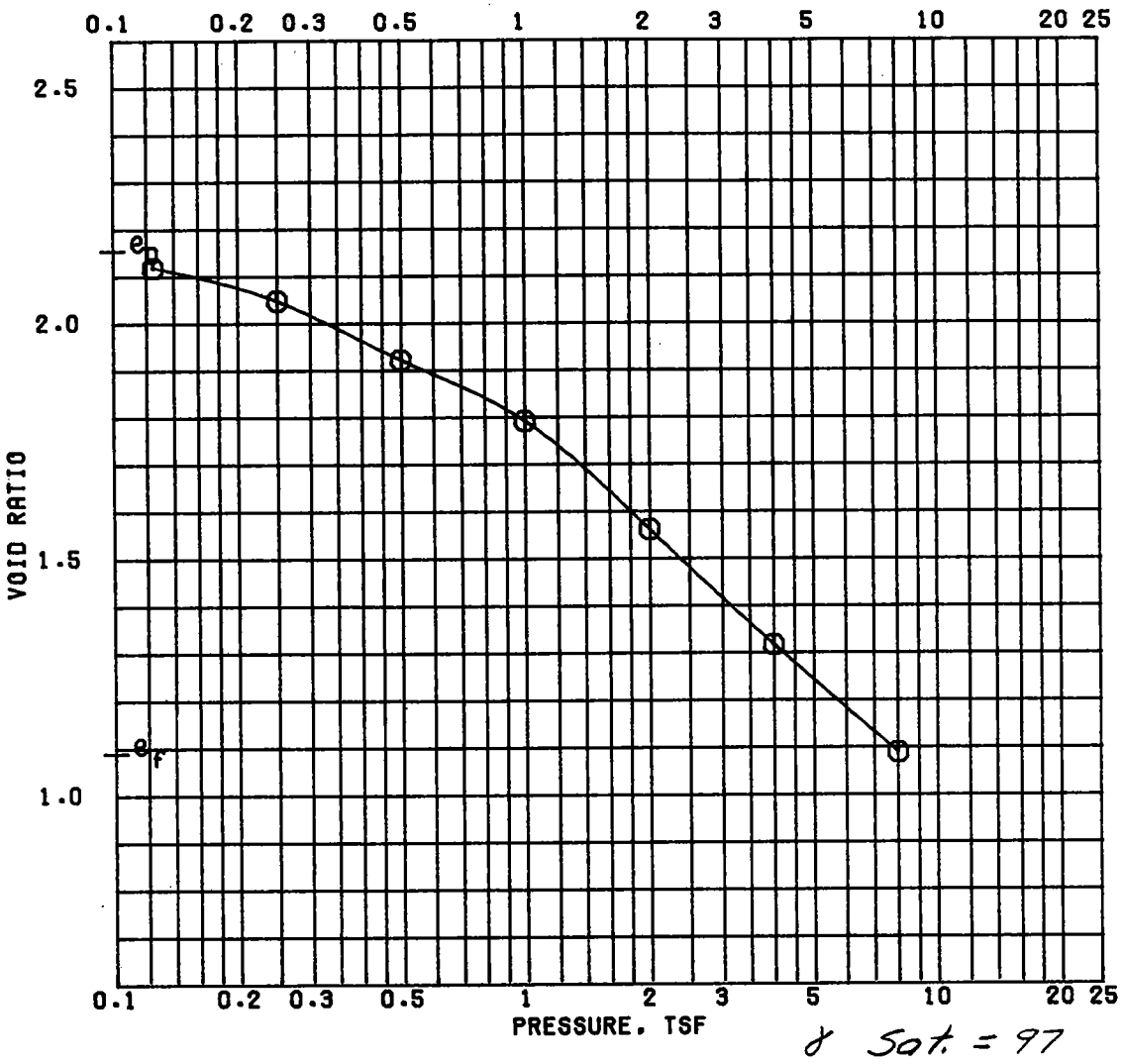
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 49-U | SAMPLE NO. 88

DEPTH/ELEV 35.5/-30.4 | TECH. PJR

LABORATORY USAE WES | DATE 03 JUN 85

TRIAXIAL COMPRESSION TEST REPORT



δ Sat. = 97

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF	0.33	
COMPRESSION INDEX	0.32	
TYPE SPECIMEN: UNDISTURBED		
DIA. IN 4.44 / HT. IN 1.101		
WATER CONTENT, %	80.6	42.0
DRY DENSITY, PCF	53.5	80.8
SATURATION, %	100 +	100 +
VOID RATIO	2.151	1.086
BACK PRESSURE, TSF		

CLASSIFICATION: PLASTIC CLAY (CH), GRAY

LL 96 / PL 25 / PI 71

GS 2.70 (EST) / D_{10}

REMARKS

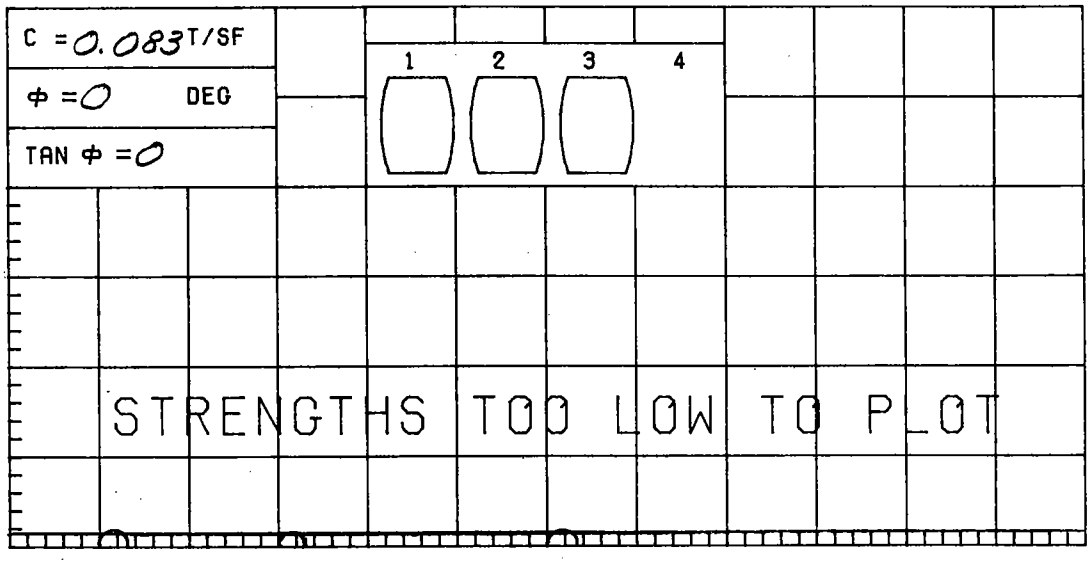
PROJECT: LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 49-U / SAMPLE NO. 8-C

DEPTH/ELEV 36.4/-31.3 / DATE 15 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



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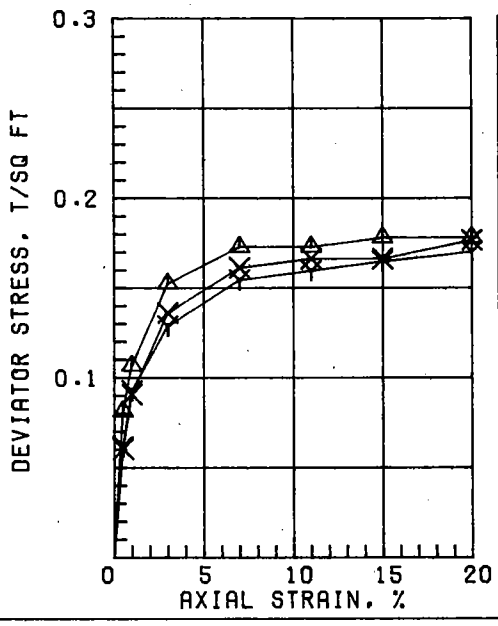


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	59.8	60.7	57.1	
	DRY DENSITY, PCF	64.3	63.6	65.5	
	SATURATION, %	99.6	99.4	98.1	
	VOID RATIO	1.622	1.649	1.572	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.17	0.16	0.17	
TIME TO FAILURE, MIN.		12	45	33	
RATE OF STRAIN INCR,%					
INITIAL DIAMETER, IN.		1.39	1.38	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 59.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SHELLS

LL 66	PL 19	PI 47	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

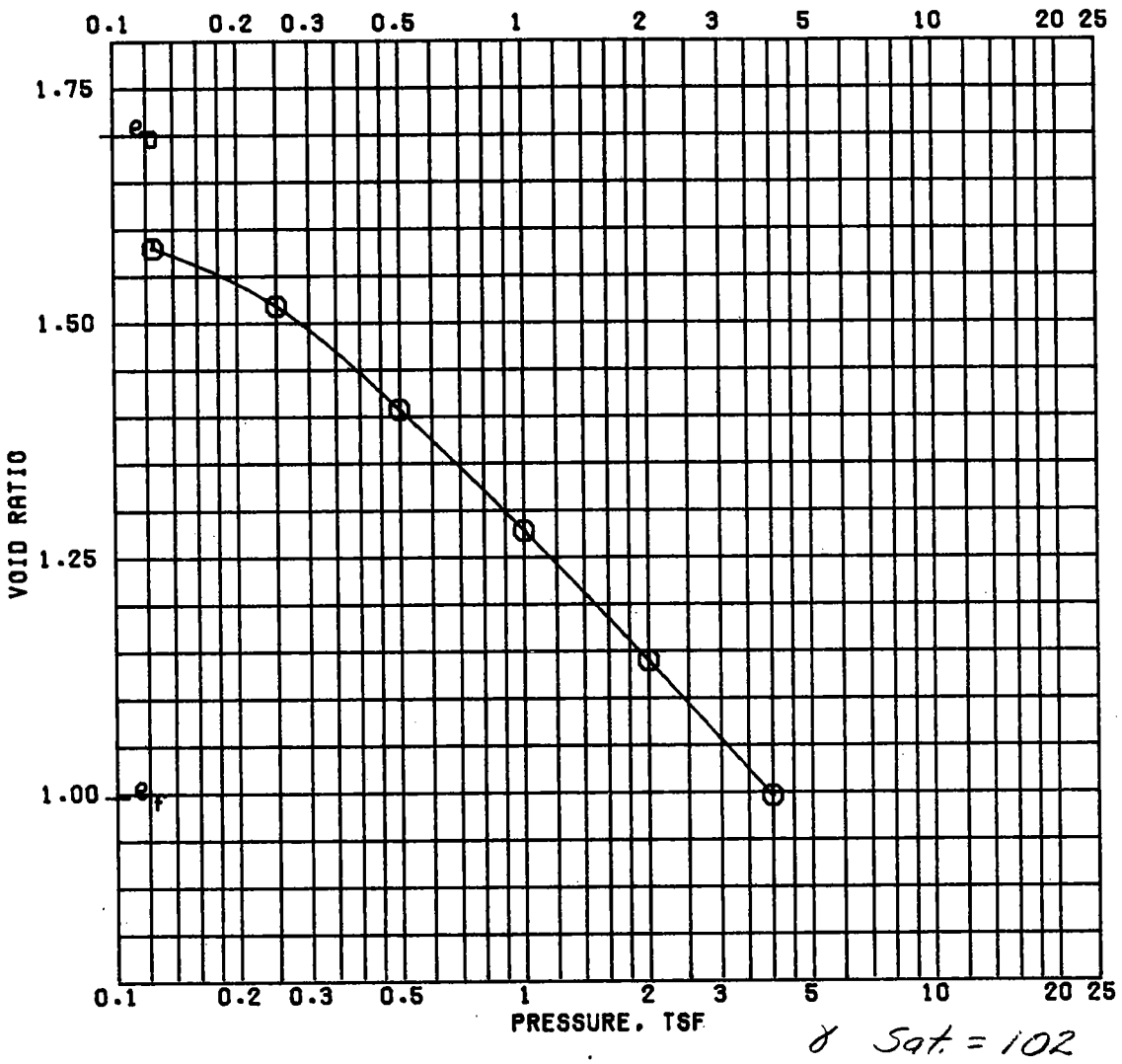
PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES

BORING NO. 49-U | SAMPLE NO. 11C

DEPTH/ELEV 48.7/-43.6 | TECH. PJR

LABORATORY USAE WES | DATE 04 JUN 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 102

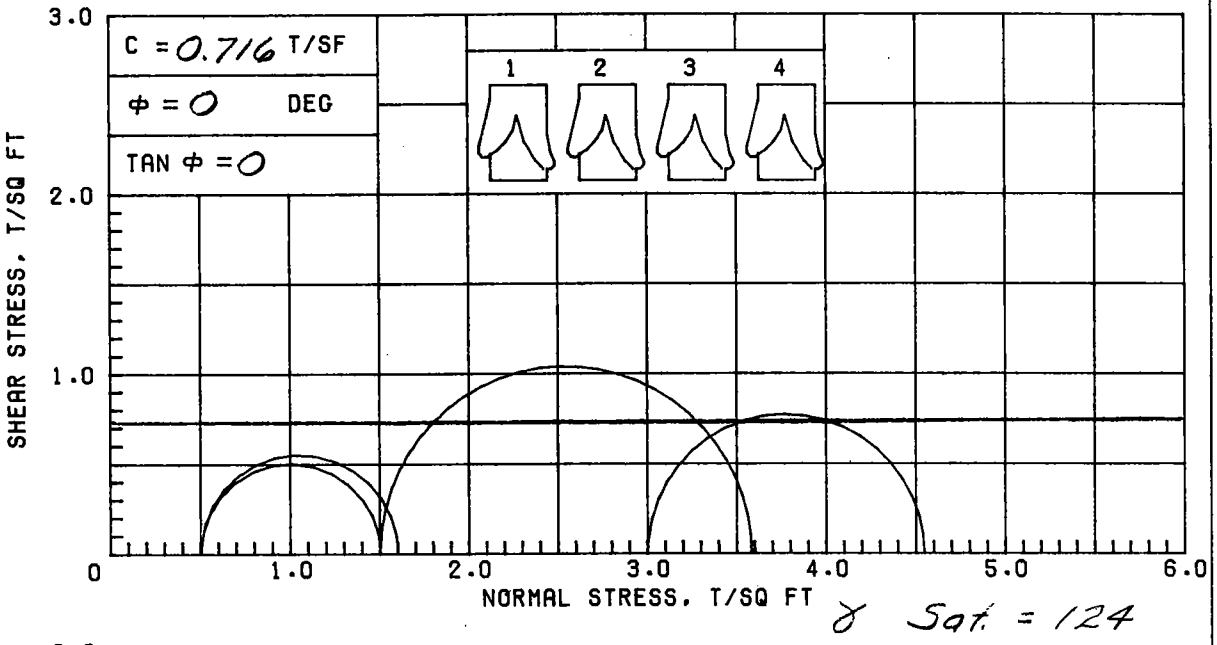
	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.32	DRY DENSITY, PCF	62.5	84.5
COMPRESSION INDEX 0.46	SATURATION, %	97.5	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	1.699	0.995
DIA. IN 4.44 HT. IN 1.125	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 72 PL 22 PI 50	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES
GS 2.70 (EST) D_{10}	
REMARKS	BORING NO. 49-U SAMPLE NO. 12-B
	DEPTH/ELEV 52.4/-47.3 DATE 16 JUL 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



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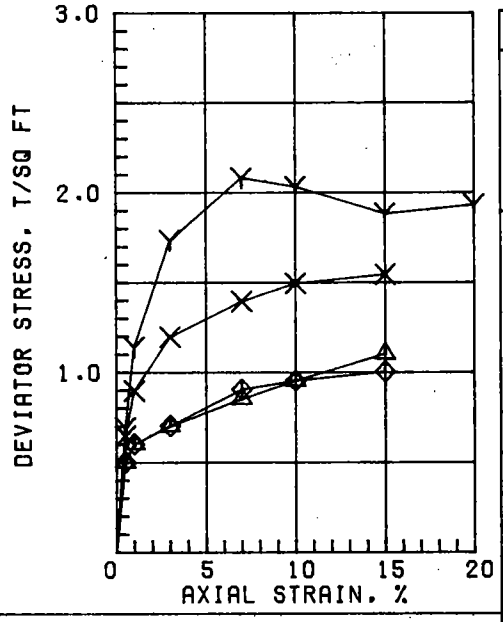


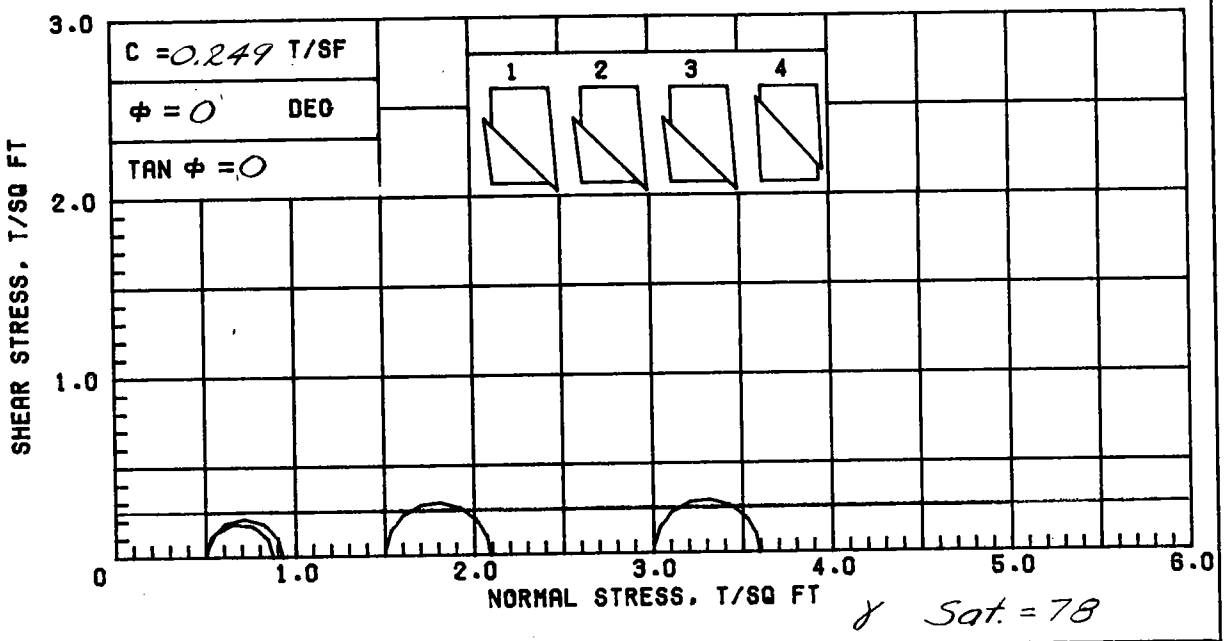
SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	28.0	22.3	26.2	31.5	27.0
	DRY DENSITY, PCF	95.9	102.8	98.0	93.0	
	SATURATION, %	99.7	94.0	98.3	100+	
	VOID RATIO	0.758	0.640	0.719	0.812	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		1.10	2.08	1.55	1.00	
TIME TO FAILURE, MIN.		35	11	38	26	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.40	1.41	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), LIGHT GRAY; SILT LENSES

LL 67	PL 16	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LAKE PONT. LA. & VIC. HURR. PROT., JEFFERSON & ST. CHARLES PARISHES	
	BORING NO. 49-U	SAMPLE NO. 14B
	DEPTH/ELEV 60.5/-55.4	TECH. PJR
	LABORATORY USAE WES	DATE 04 JUN 85
	TRIAXIAL COMPRESSION TEST REPORT	



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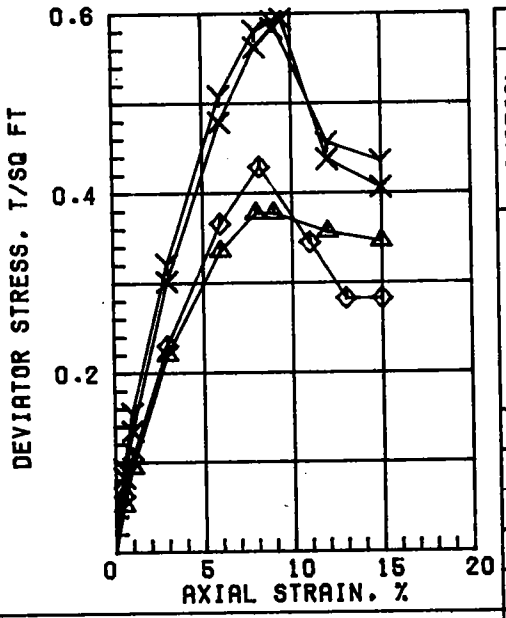


SPECIMEN NO.		△1	Y2	X3	◇4	Avg.
INITIAL	WATER CONTENT, %	189.5	164.3	182.3	228.1	191.1
	DRY DENSITY, PCF	26.3	29.9	27.2	22.5	
	SATURATION, %	97.0	98.3	97.1	96.6	
	VOID RATIO	4.687	4.009	4.506	5.667	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.38	0.59	0.59	0.43	
TIME TO FAILURE, MIN.		16	18	19	14	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.37	1.37	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: ORGANIC SILT (OH), BLACK

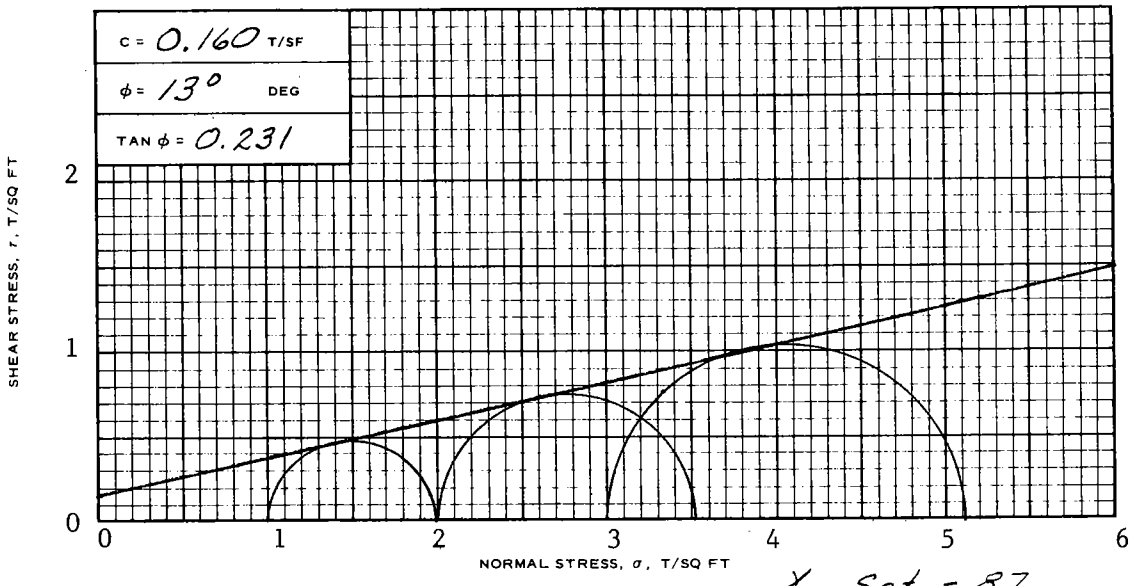
LL 177	PL 63	PI 114	GS 2.40 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U | SAMPLE NO. 3-C
DEPTH/ELEV 13.4/-8.3 | TECH. LRC
LABORATORY USAE WES | DATE 15 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



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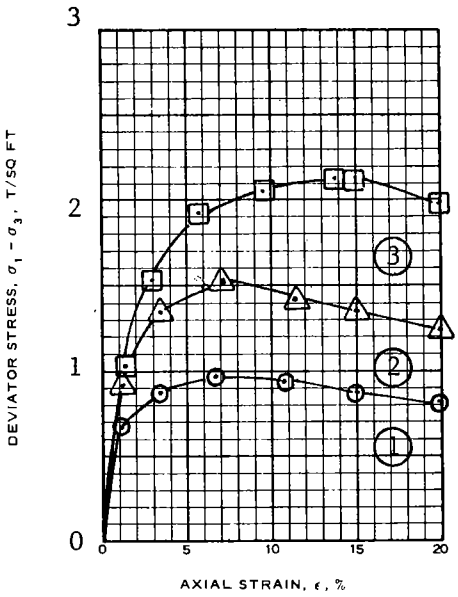


SPECIMEN NO.			1	2	3	Avg.
INITIAL	WATER CONTENT, %	w_o	123.8	115.8	117.8	119.1
	DRY DENSITY LB/CU FT	γ_{d_o}	38.7	40.1	39.7	
	SATURATION, %	s_o	100+	98.5	98.8	
	VOID RATIO	e_o	3.233	3.081	3.122	
BEFORE SHEAR	WATER CONTENT, %	w_c	98.3	80.5	72.5	
	DRY DENSITY LB/CU FT	γ_{d_c}	48.0	53.0	58.2	
	SATURATION, %	s_c	100+	100+	100+	
	VOID RATIO	e_c	2.410	2.085	1.812	
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.98	1.52	2.12	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	400	418	818	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.37	1.37	1.38	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), DARK GRAY; ORGANIC MATERIAL

LL 140	PL 34	PI 106	Gs 2.62	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST $\bar{R}$

REMARKS: (EST)

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U SAMPLE NO. 5-B

DEPTH/ELEV 20/-14.8

LABORATORY USAEWES DATE 24 APR 86

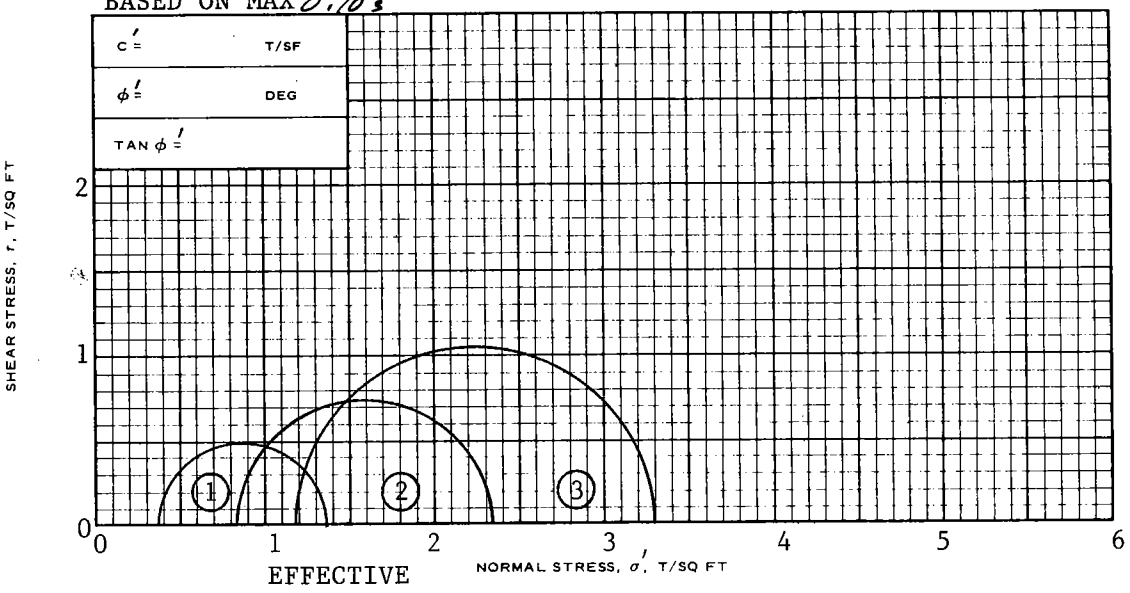
SHEET 1 OF 2 JMS **TRIAXIAL COMPRESSION TEST REPORT**

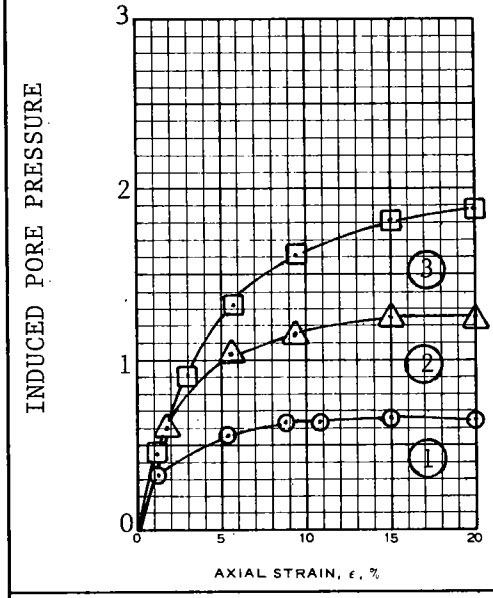
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'/σ_3'

c' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.37	0.83	1.19	
MAXIMUM DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{MAX}$		0.98	1.50	2.12	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{ULT}$					
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U SAMPLE NO. 5-B

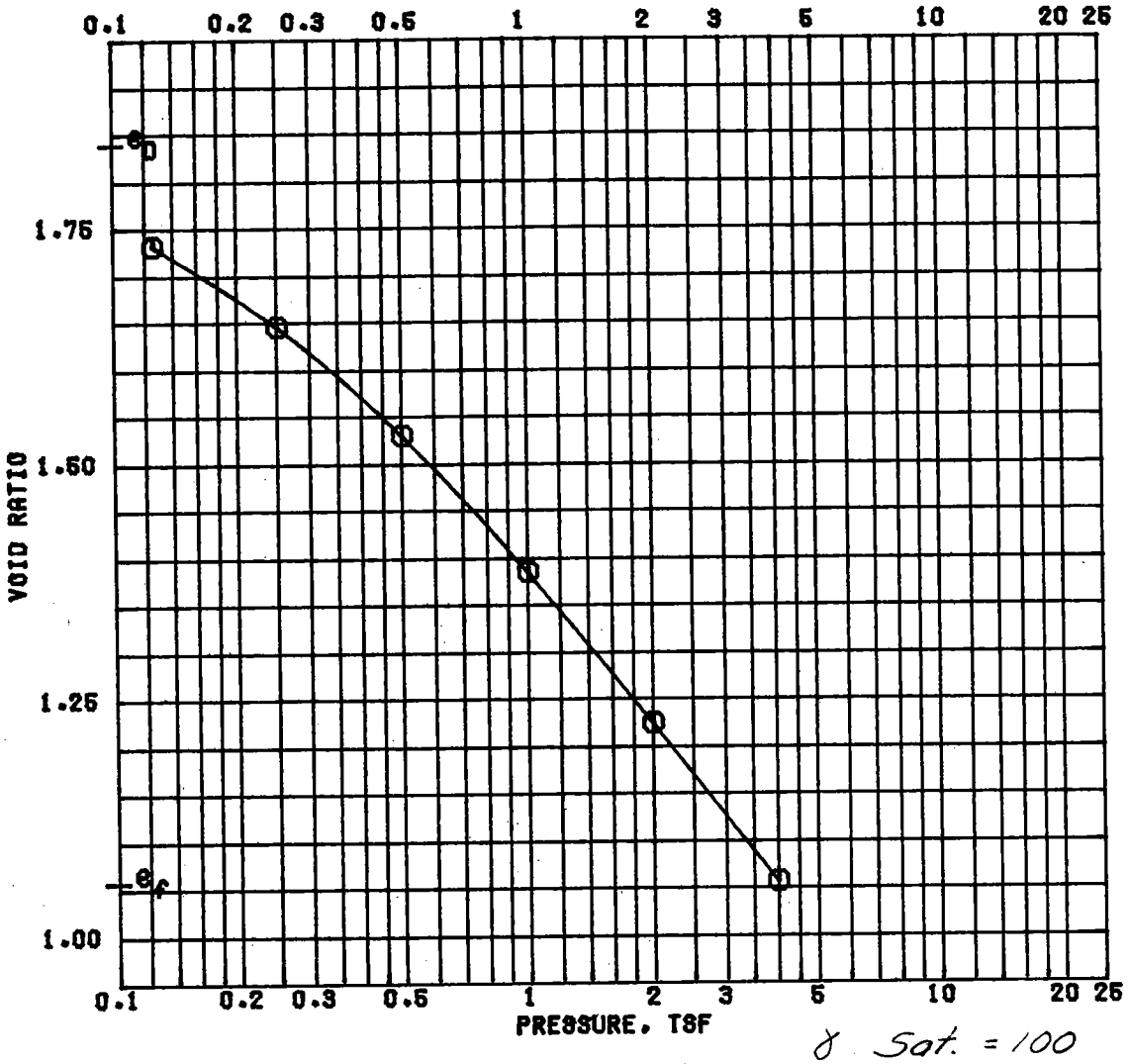
DEPTH/ELEV 20/-14.8

LABORATORY USAEWES DATE 24 APR 86

SHEET 2 OF 2 JMS **TRIAXIAL COMPRESSION TEST REPORT**

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



δ Sat. = 100

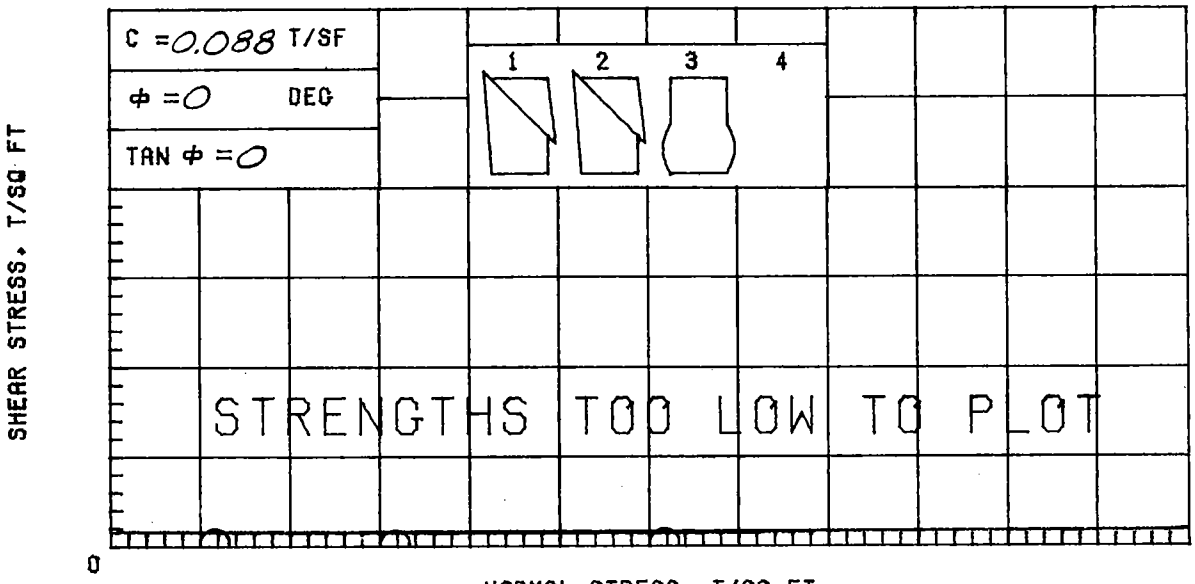
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	52.3	39.6
PRECONSOL. PRESSURE, TSF	0.46	DRY DENSITY, PCF	59.4	82.0
COMPRESSION INDEX	0.58	SATURATION, %	78.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.837	1.055
DIA. IN 4.44	HT. IN 1.128	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

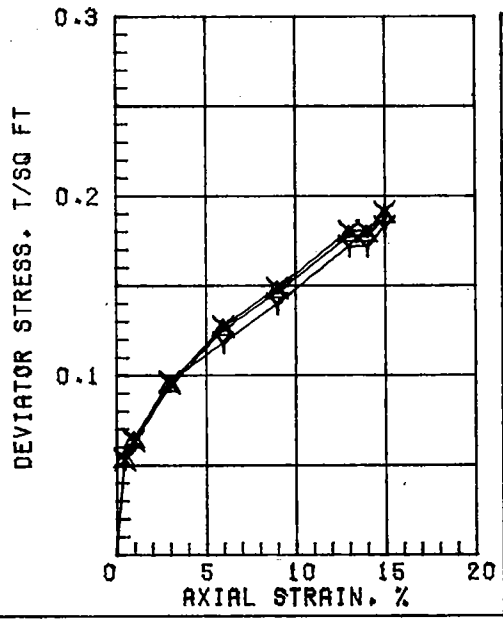
LL 66	PL 18	PI 48	PROJECT LK. PONT. & VIC. HURR. PROT.
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH
REMARKS		BORING NO. 50-U	SAMPLE NO. 5-C
		DEPTH/ELEV 20.9/-15.8	DATE 11 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ Sat. =110



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	46.4	48.0	48.9	
	DRY DENSITY, PCF	76.2	74.6	72.1	
	SATURATION, %	100+	100+	98.7	
	VOID RATIO	1.212	1.258	1.337	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.18	0.17	0.18	
TIME TO FAILURE, MIN.		26	26	26	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.37	1.35	1.36	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 47.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 49	PL 17	PI 32	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LK. PONT. & VIC. HURR. PROT.

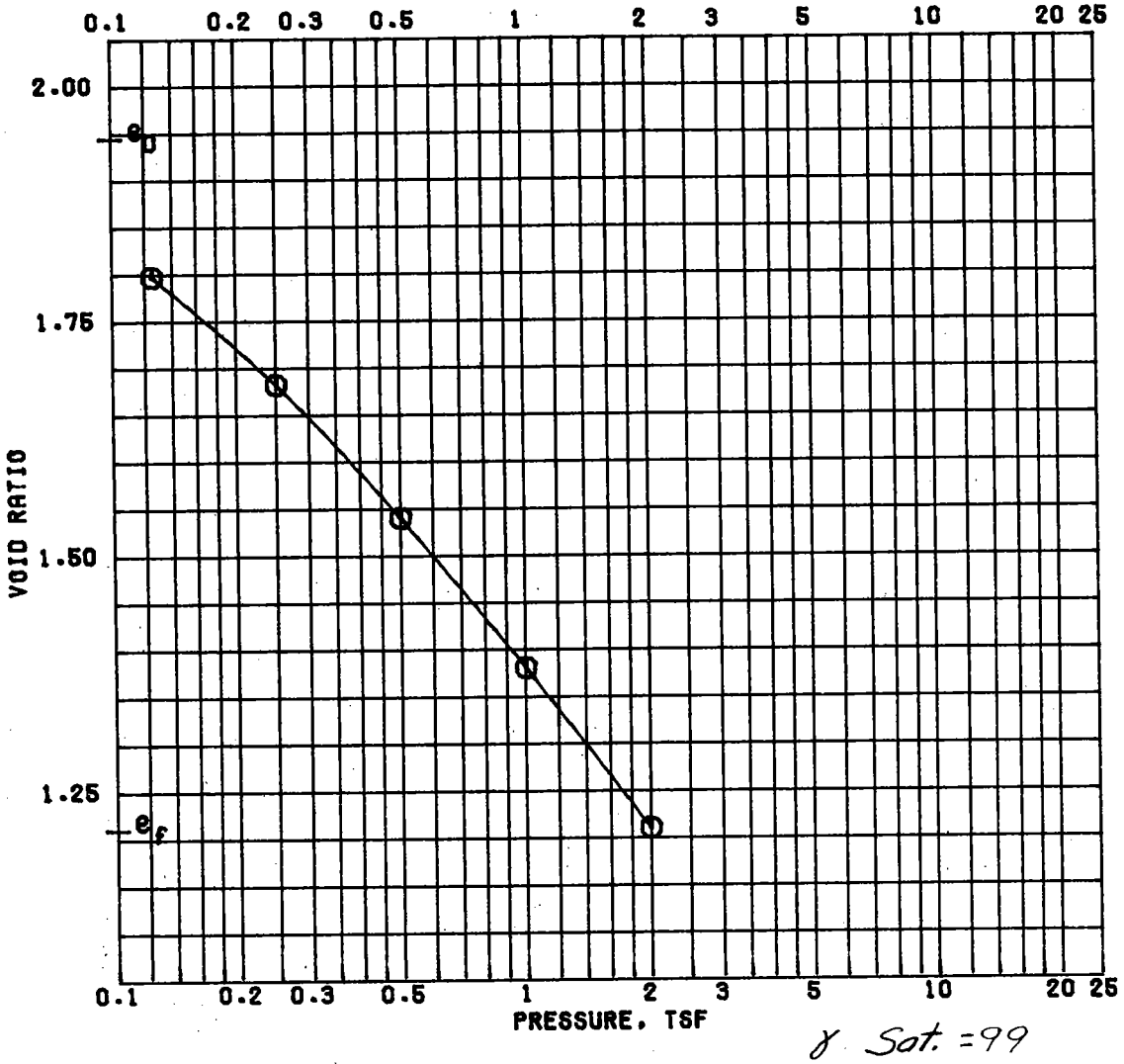
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U | SAMPLE NO. 6-B

DEPTH/ELEV 24.0/-18.9 | TECH. LRC

LABORATORY USAE WES | DATE 15 JUL 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 99

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.26	WATER CONTENT, %	70.8	46.1
COMPRESSION INDEX 0.52	DRY DENSITY, PCF	57.3	76.3
TYPE SPECIMEN UNDISTURBED	SATURATION, %	98.5	100 +
DIA. IN 4.44 HT. IN 1.118	VOID RATIO	1.943	1.208
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY

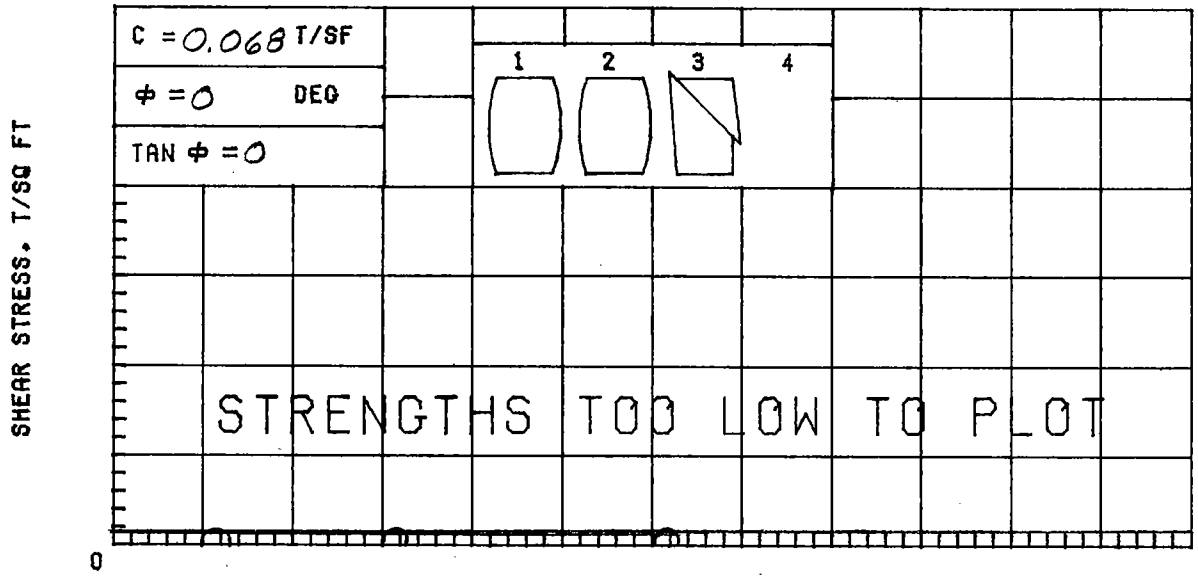
LL	PL	PI

GS 2.70 (EST) D_{10}

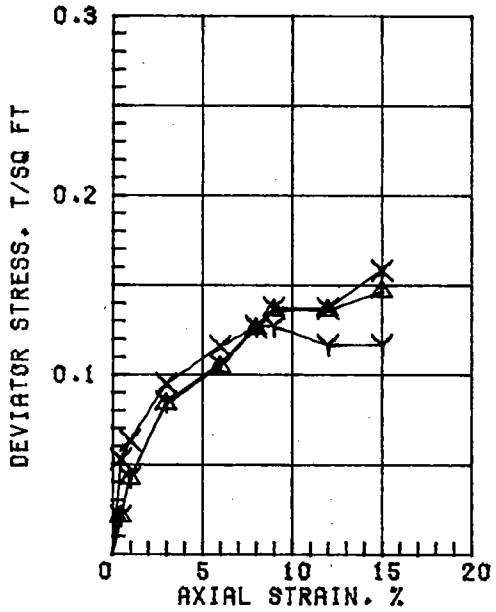
REMARKS

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 50-U SAMPLE NO. 8-B
DEPTH/ELEV 31.8/-26.7 DATE 12 JUN 85

CONSOLIDATION TEST REPORT



γ Sat. = 106



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	60.2	60.5	59.8	
	DRY DENSITY, PCF	65.7	66.0	65.9	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.567	1.555	1.556	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.14	0.13	0.14	
TIME TO FAILURE, MIN.		18	16	18	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.37	1.36	1.36	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 60.2

CONTROLLED-STRAIN TEST

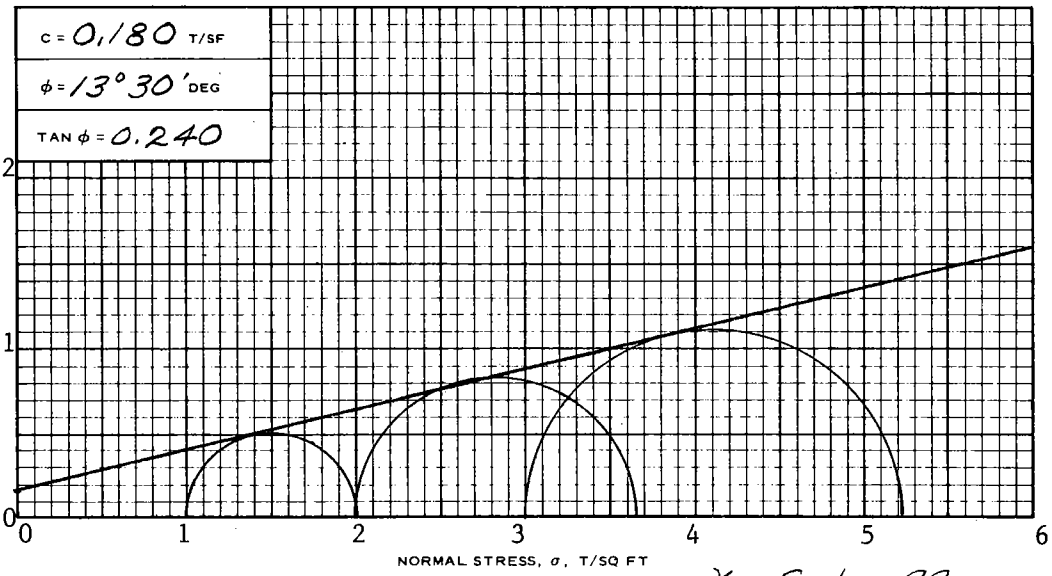
DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 75	PL 20	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

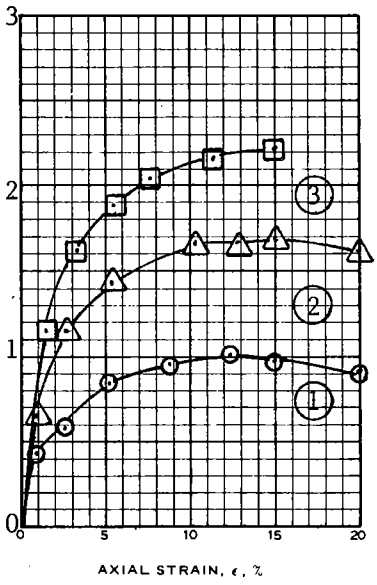
REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 50-U | SAMPLE NO. 8-C
DEPTH/ELEV 32.8/-27.7 | TECH. LRC
LABORATORY USAE WES | DATE 15 JUL 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 99



SPECIMEN NO.			1	2	3	Avg.
INITIAL	WATER CONTENT, %	w_o	72.2	69.8	71.2	71.1
	DRY DENSITY LB/ CU FT	γ_{d_o}	56.5	58.2	57.4	
	SATURATION, %	s_o	97.9	98.9	98.8	
	VOID RATIO	e_o	2.007	1.920	1.961	
BEFORE SHEAR	WATER CONTENT, %	w_c	59.5	51.8	48.0	
	DRY DENSITY LB/CU FT	γ_{d_c}	66.1	73.4	73.9	
	SATURATION, %	s_c	100+	100+	100+	
	VOID RATIO	e_c	1.570	1.314	1.296	
	FINAL BACK PRESSURE, T/SQ FT	u_o	5.76	5.76	5.76	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.01	1.66	2.22	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	724	659	882	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.39	1.38	1.38	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), GRAY

LL	PL	PI	Gs
96	27	69	2.72

REMARKS: (EST)

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST R

PROJECT LAKE PONT. L.A & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U SAMPLE NO. 9-C

DEPTH/ELEV 37/-31.8

LABORATORY USAEWES DATE 23 APR 86

SHEET 1 OF 2

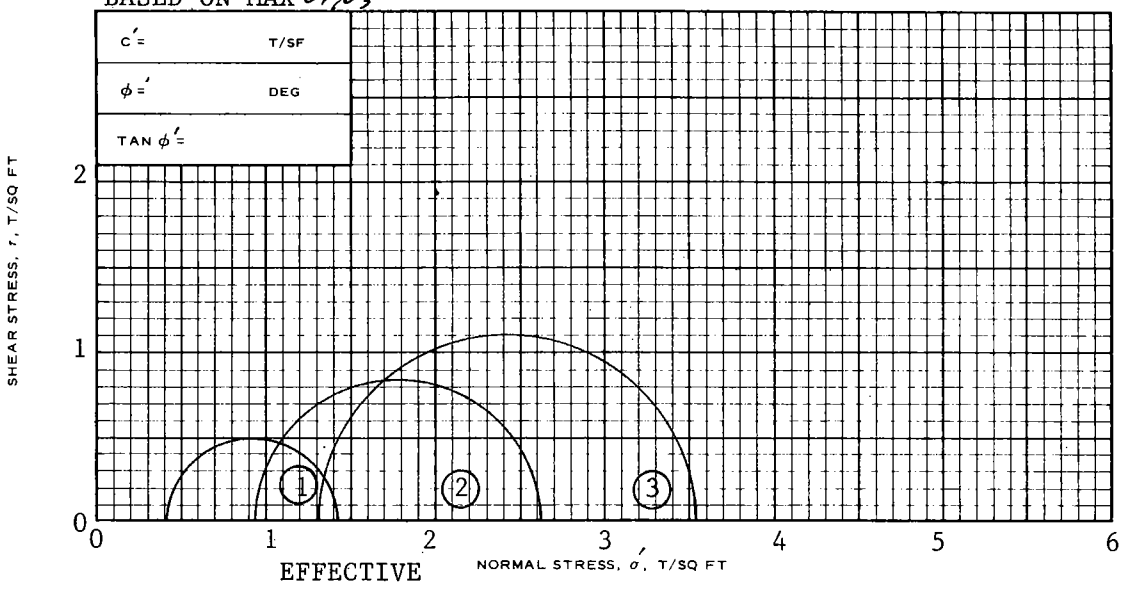
JMS **TRIAXIAL COMPRESSION TEST REPORT**

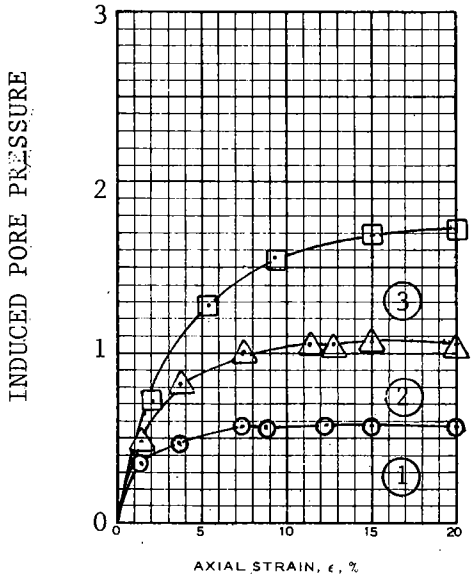
ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356

BASED ON MAX σ_1'/σ_3'

c' =	T/SF
ϕ' =	DEG
TAN ϕ' =	





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o				
	DRY DENSITY LB/ CU FT	γ_{d_o}				
	SATURATION, %	S_o				
	VOID RATIO	e_o				
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.42	0.94	1.31	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.00	1.68	2.22	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f				
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o				
INITIAL HEIGHT, IN.		H_o				

CONTROLLED- TEST

DESCRIPTION OF SPECIMENS

LL	PL	PI	Gs	TYPE OF SPECIMEN	TYPE OF TEST

REMARKS:

PROJECT LAKE PONT. LA. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U SAMPLE NO. 9-C

DEPTH/ELEV 37/-31.8

LABORATORY USAEWES DATE 23 APR 86

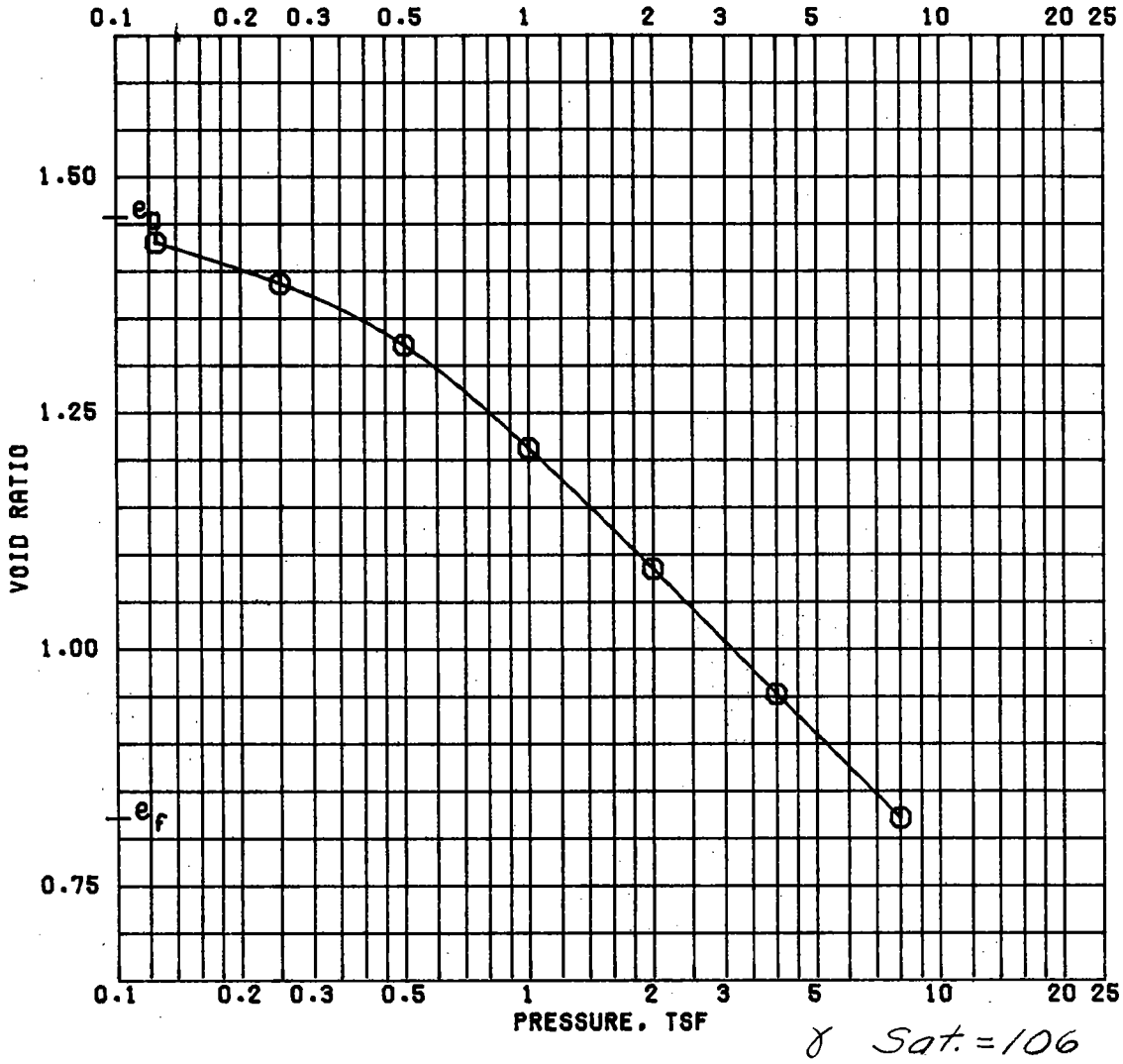
SHEET 2 OF 2

JMS

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089
REV JUNE 1970

GPO : 1982 0 - 375-356



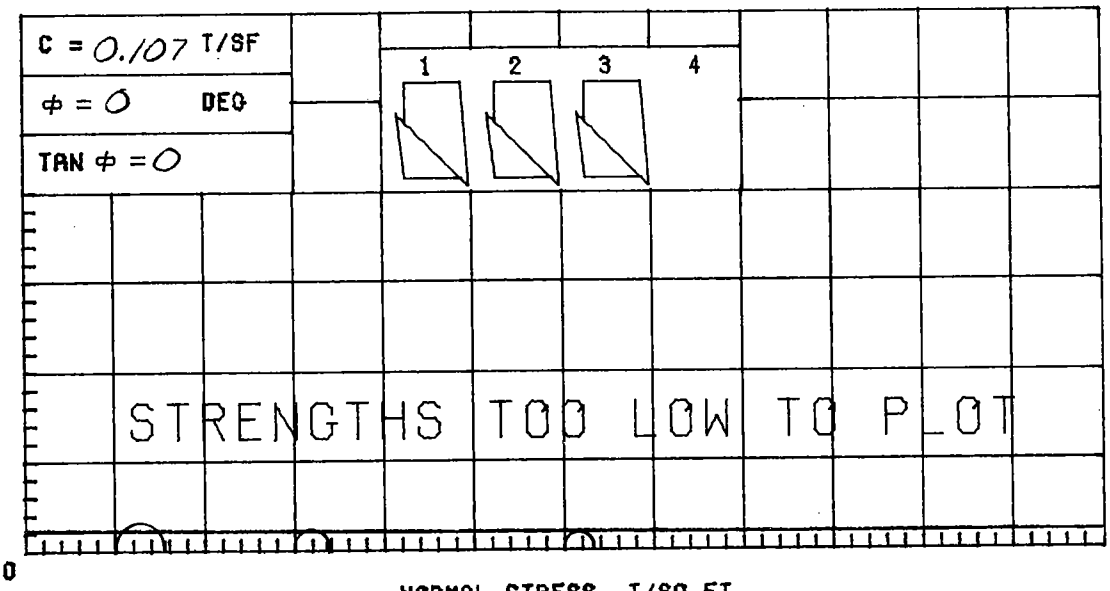
γ Sat. = 106

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	51.3	31.0
PRECONSOL. PRESSURE, TSF	0.47	DRY DENSITY, PCF	68.7	92.6
COMPRESSION INDEX	0.43	SATURATION, %	95.1	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.455	0.820
DIA. IN 4.44	HT. IN 1.118	BACK PRESSURE, TSF		

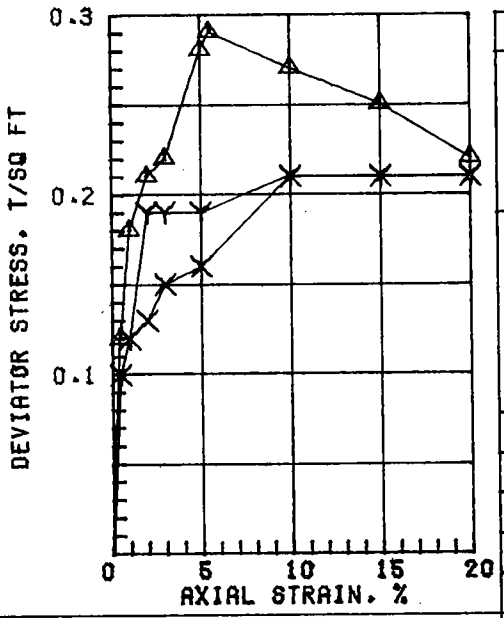
CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 68	PL 18	PI 50	PROJECT LK. PONT. & VIC. HURR. PROT.	
GS 2.70 (EST)	D_{10}		JEFFERSON & ST. CHARLES PARISH	
REMARKS			BORING NO. 50-U	SAMPLE NO. 10-B
			DEPTH/ELEV 39.9/-34.8	DATE 13 JUN 85

CONSOLIDATION TEST REPORT



γ Sat. = 108



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	49.4	49.5	41.8	
	DRY DENSITY, PCF	70.6	69.6	77.1	
	SATURATION, %	96.2	93.9	95.2	
	VOID RATIO	1.387	1.423	1.186	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.29	0.19	0.16	
TIME TO FAILURE, MIN.		11	12	33	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 46.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 58	PL 17	PI 41	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

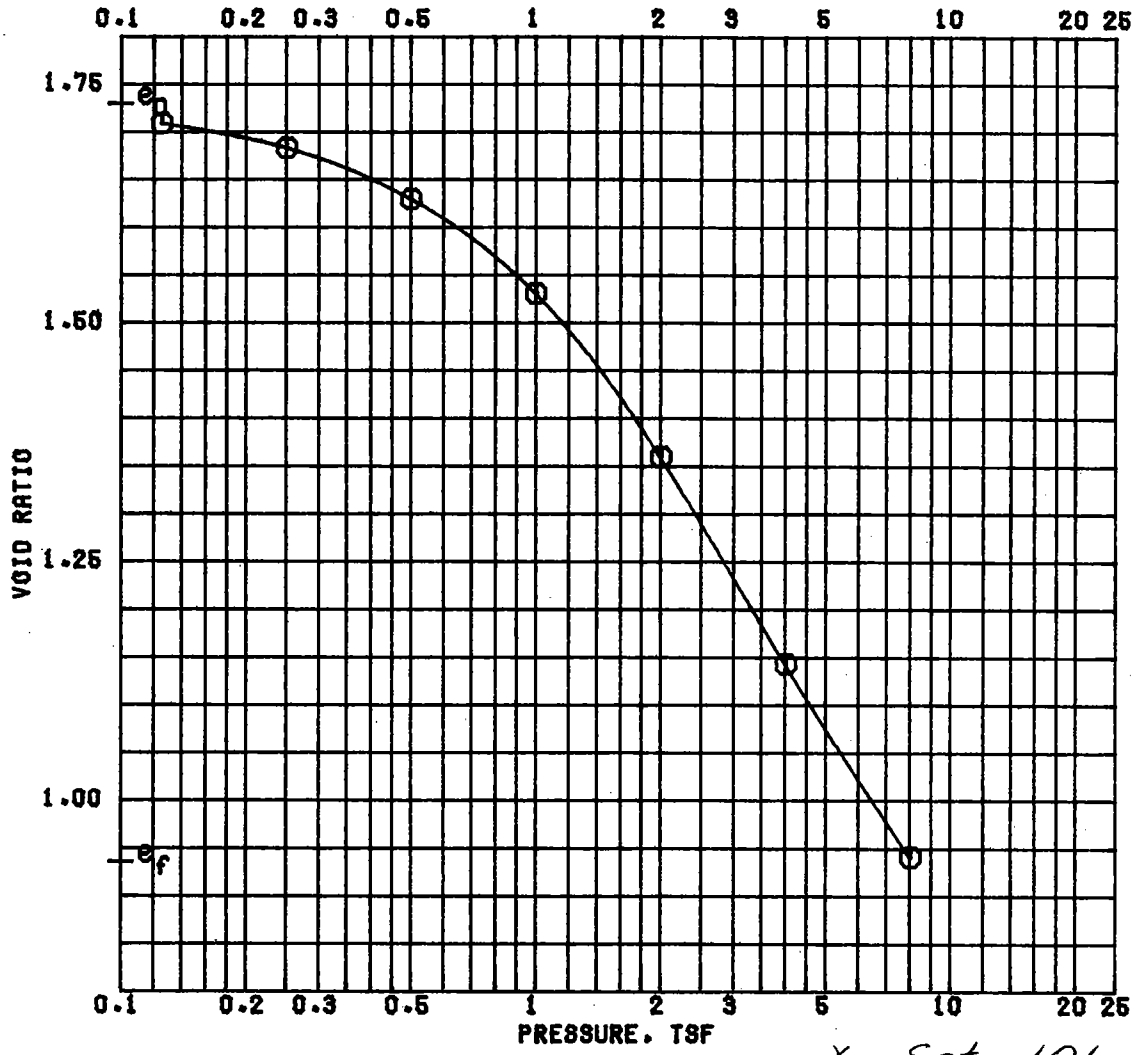
PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U | SAMPLE NO. 10-C

DEPTH/ELEV 41.1/-36.0 | TECH. KOC

LABORATORY USAE WES | DATE 15 JUL 85

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 101

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.70	WATER CONTENT, %	61.9	35.7
COMPRESSION INDEX 0.72	DRY DENSITY, PCF	61.6	67.2
TYPE SPECIMEN UNDISTURBED	SATURATION, %	96.7	100 +
DIA. IN 4.44 HT. IN 1.118	VOID RATIO	1.726	0.934
	BACK PRESSURE, TSF		

CLASSIFICATION PLASTIC CLAY (CH), GRAY; SHELL PARTICLES

LL 78 PL 22 PI 56

GS 2.70 (EST) D_{10}

PROJECT LAKE PONT. LA. & VIC. HURR. PROT
JEFFERSON & ST. CHARLES PARISH

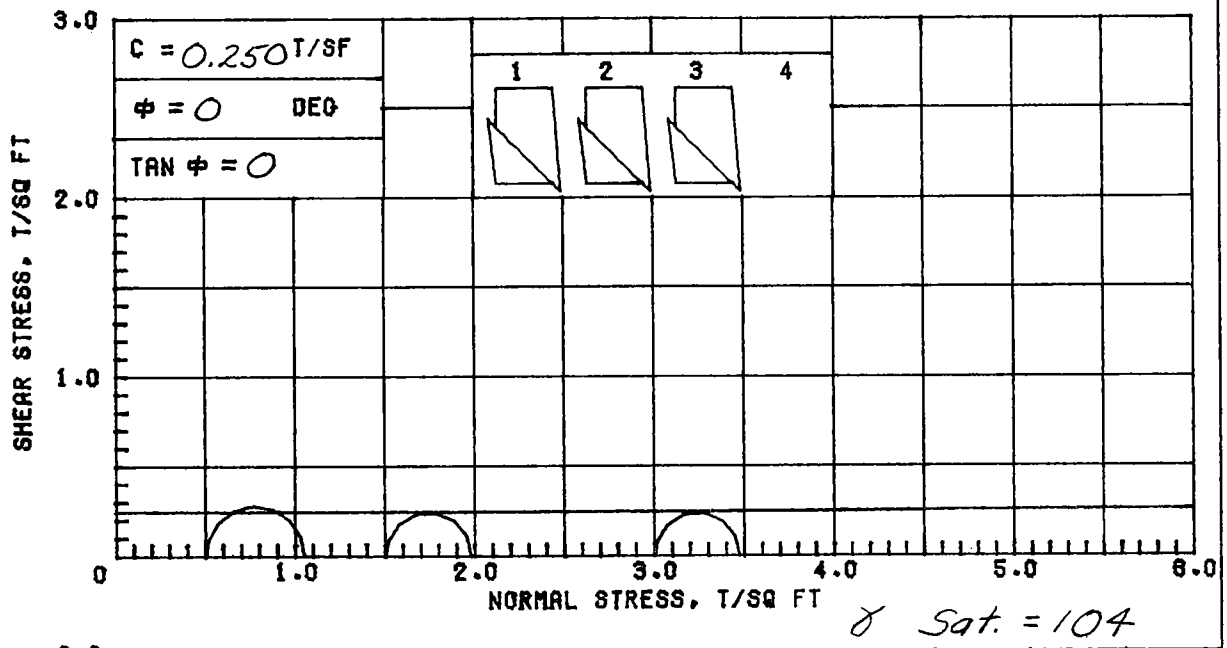
REMARKS

BORING NO. 50-U SAMPLE NO. 12-C

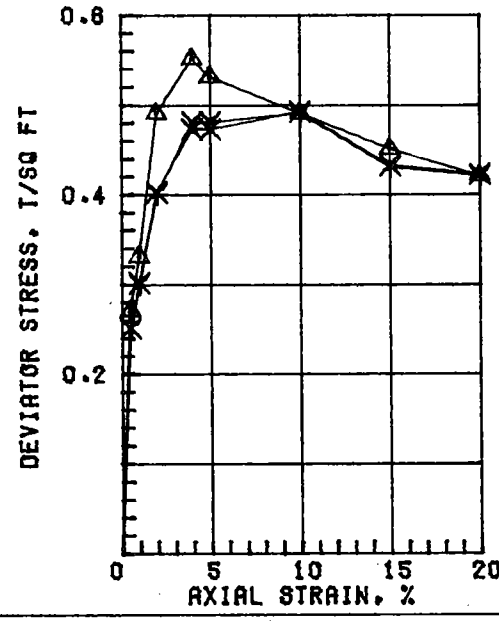
DEPTH/ELEV 53.3/-48.2 DATE 14 JUN 85

CONSOLIDATION TEST REPORT

SHEET 1 OF 9



γ Sat. = 104



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	55.1	56.6	56.6	
	DRY DENSITY, PCF	66.9	65.1	65.1	
	SATURATION, %	97.6	96.2	96.2	
	VOID RATIO	1.521	1.586	1.586	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.55	0.48	0.47	
TIME TO FAILURE, MIN.		8	24	24	
RATE OF STRAIN INCR.%			8	6	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT POCKETS

LL 70	PL 20	PI 50	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.

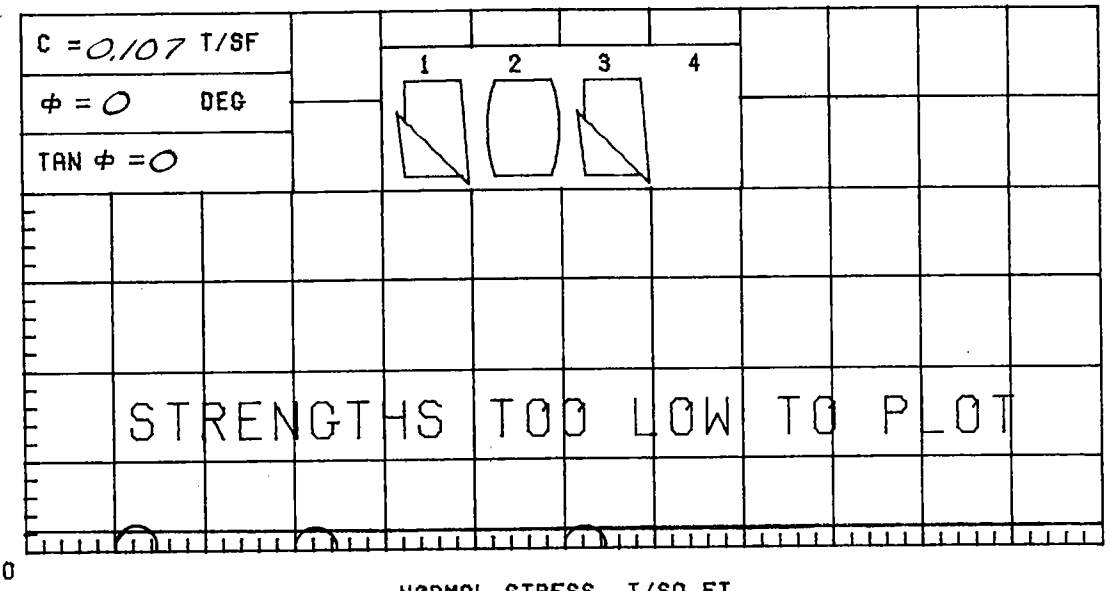
JEFFERSON & ST. CHARLES PARISH

BORING NO. 50-U | SAMPLE NO. 13-B

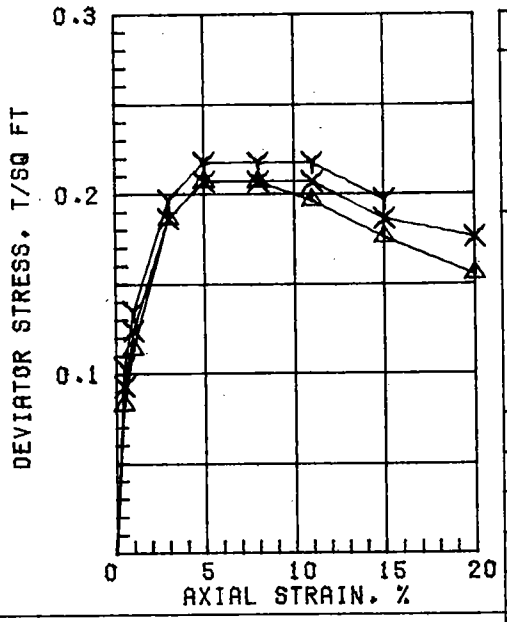
DEPTH/ELEV 55.9/-50.8 | TECH. KOC

LABORATORY USAE WES | DATE 15 JUL 65

TRIAXIAL COMPRESSION TEST REPORT



γ Sat. = 103



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	60.1	62.6	63.3	
	DRY DENSITY, PCF	64.7	63.0	62.5	
	SATURATION, %	100+	100+	100+	
	VOID RATIO	1.605	1.675	1.698	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.21	0.22	0.21	
TIME TO FAILURE, MIN.		10	12	13	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 62.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; SILT SEAMS

LL 65	PL 19	PI 46	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

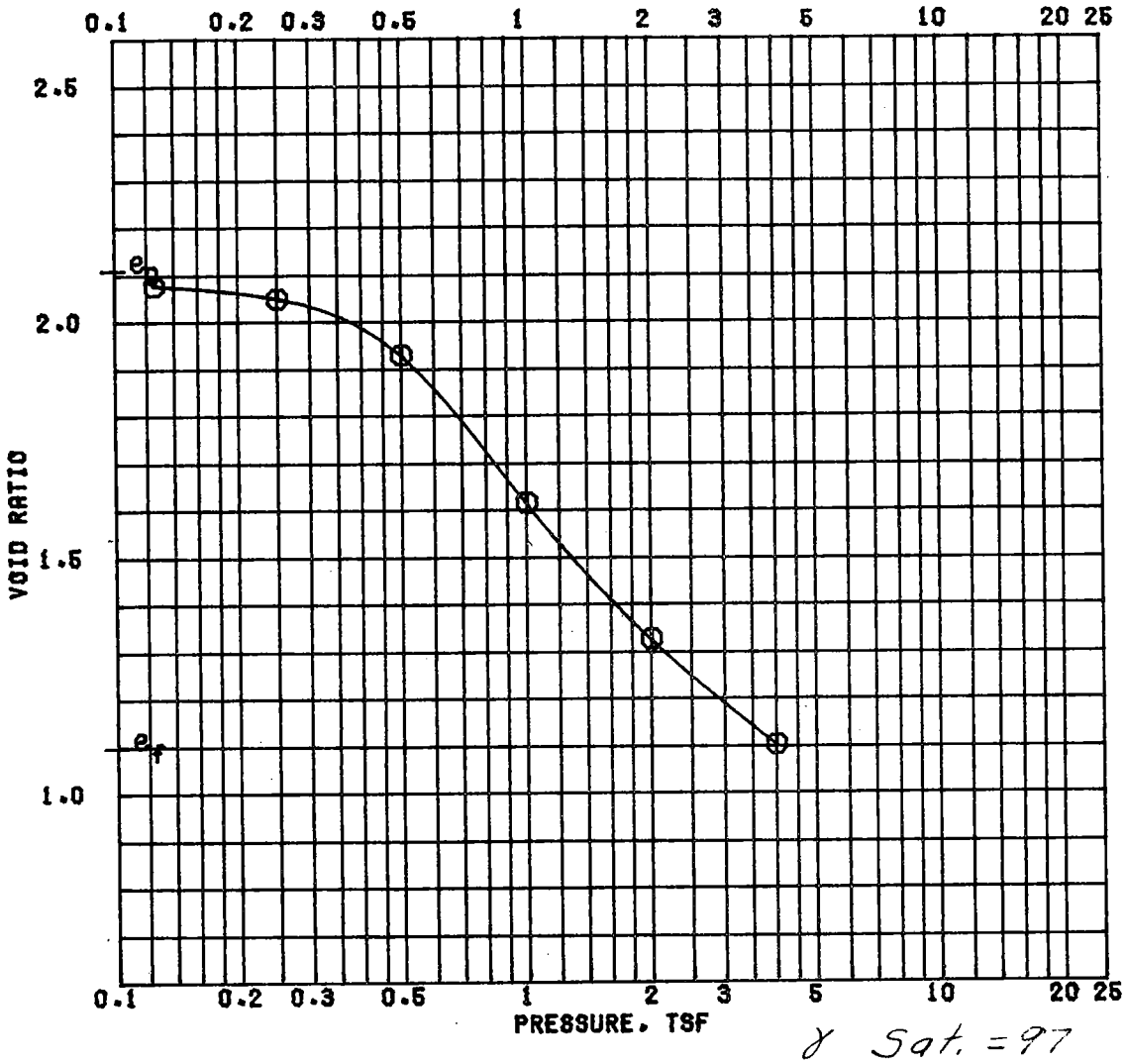
PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 51-U | SAMPLE NO. 5-B

DEPTH/ELEV 14.2/-20.6 | TECH. LRC

LABORATORY USAE WES | DATE 16 JUL 85

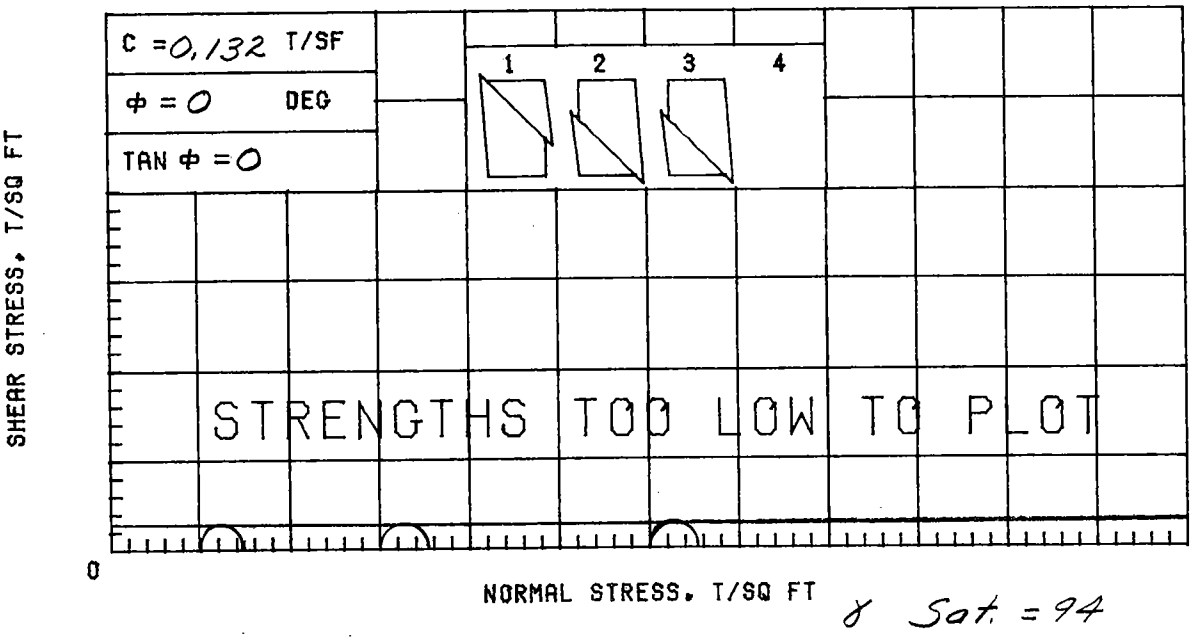
TRIAXIAL COMPRESSION TEST REPORT



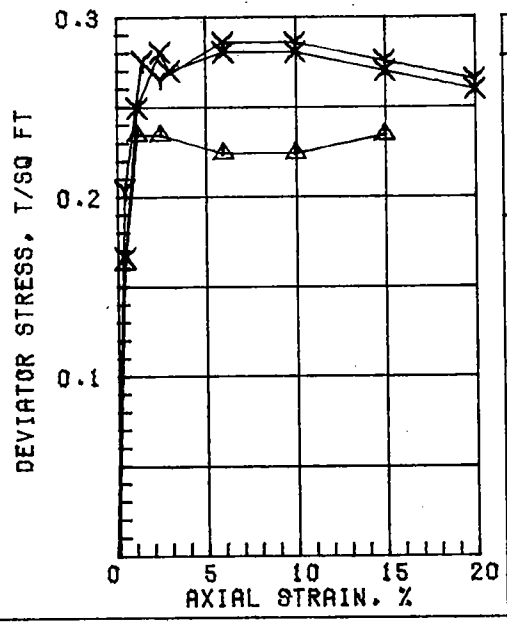
γ Sat. = 97

	BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		
PRECONSOL. PRESSURE, TSF 0.45	DRY DENSITY, PCF	54.3	80.5
COMPRESSION INDEX 1.03	SATURATION, %	99.8	100 +
TYPE SPECIMEN UNDISTURBED	VOID RATIO	2.106	1.094
DIA. IN 4.44 HT. IN 1.123	BACK PRESSURE, TSF		
CLASSIFICATION PLASTIC CLAY (CH), SILT POCKETS			
LL 63 PL 18 PI 45	PROJECT LAKE PONT. LA. & VIC. HURR. PROT		
GS 2.70 (EST) D_{10}	JEFFERSON & ST. CHARLES PARISH		
REMARKS	BORING NO. 51-U	SAMPLE NO. 5-C	
	DEPTH/ELEV 15.5/-21.9	DATE 17 JUN 85	

CONSOLIDATION TEST REPORT



γ Sat. = 94



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	87.5	84.7	91.0	
	DRY DENSITY, PCF	49.9	50.9	49.2	
	SATURATION, %	99.5	98.9	100+	
	VOID RATIO	2.375	2.312	2.424	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.23	0.28	0.28	
TIME TO FAILURE, MIN.		2	22	32	
RATE OF STRAIN INCR.%			3	4	
INITIAL DIAMETER, IN.		1.39	1.39	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 87.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY

LL 93	PL 25	PI 68	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

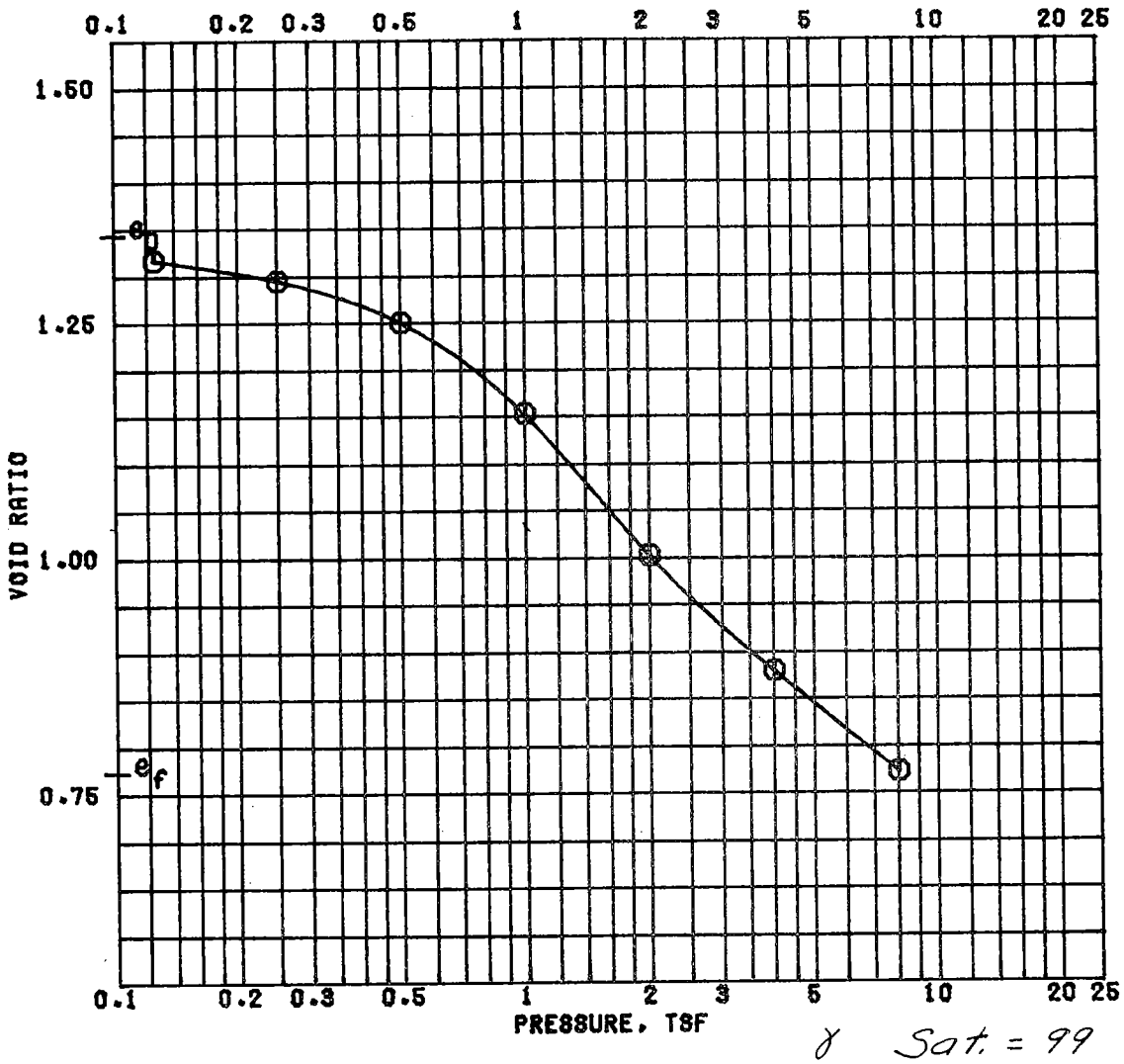
PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH

BORING NO. 51-U | SAMPLE NO. 8-B

DEPTH/ELEV 25.9/-32.3 | TECH. LRC

LABORATORY USAE WES | DATE 16 JUL 85

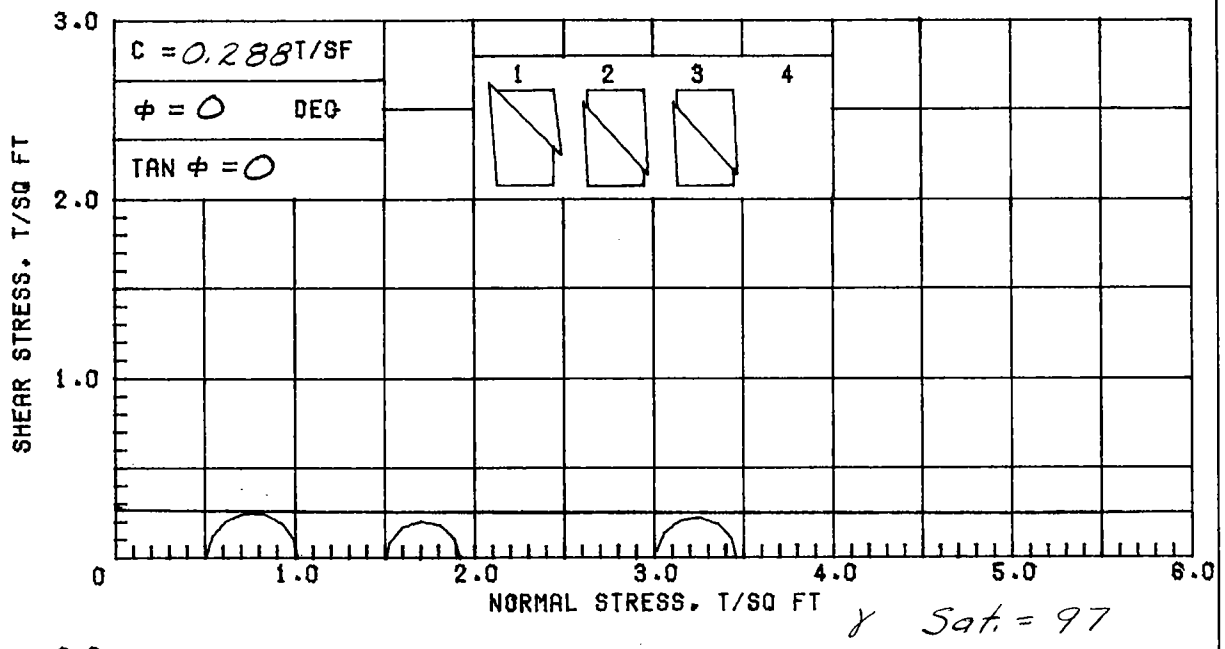
TRIAXIAL COMPRESSION TEST REPORT



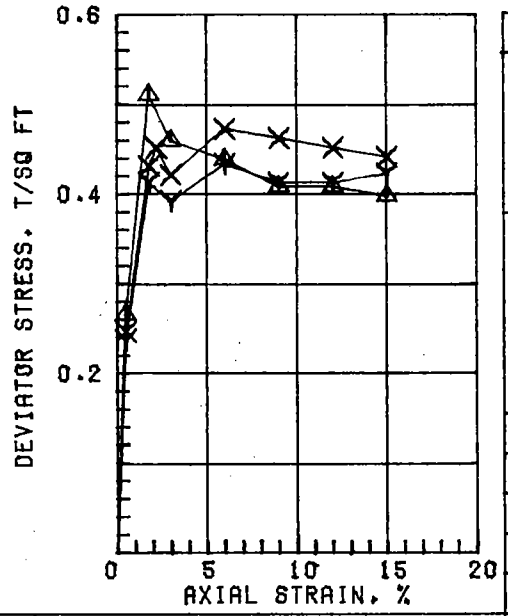
γ Sat. = 99

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	33.8	27.5
PRECONSOL. PRESSURE, TSF	0.70	DRY DENSITY, PCF	71.7	94.8
COMPRESSION INDEX	0.52	SATURATION, %	87.8	95.8
TYPE SPECIMEN UNDISTURBED		VOID RATIO	1.341	0.771
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		
CLASSIFICATION SANDY CLAY (CL), GRAY				
LL 38	PL 14 PI 24	PROJECT LAKE PONT. LA. & VIC. HURR. PROT		
OS 2.89 (EST)	D_{10}	JEFFERSON & ST. CHARLES PARISH		
REMARKS		BORING NO. 51-U	SAMPLE NO. 9-C	
		DEPTH/ELEV 30.8/-37.2	DATE 18 JUN 65	
		CONSOLIDATION TEST REPORT		

SHEET 1 OF 9



γ Sat. = 97



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	77.4	74.0	73.4	
	DRY DENSITY, PCF	54.2	56.4	56.0	
	SATURATION, %	99.0	100+	98.6	
	VOID RATIO	2.111	1.989	2.010	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.51	0.41	0.45	
TIME TO FAILURE, MIN.		4	17	20	
RATE OF STRAIN INCR.%			3	3	
INITIAL DIAMETER, IN.		1.39	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Avg. 74.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: PLASTIC CLAY (CH), GRAY; FINE SAND LENSES; SHELL PARTICLES

LL 75	PL 20	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK. PONT. & VIC. HURR. PROT.
JEFFERSON & ST. CHARLES PARISH
BORING NO. 51-U | SAMPLE NO. 11-C
DEPTH/ELEV 39.2/-45.6 | TECH. LRC
LABORATORY USAE WES | DATE 16 JUL 65

TRIAXIAL COMPRESSION TEST REPORT

SEEPAGE ANALYSIS

APPENDIX B-2

APP. B2

COMPUTATION SHEET

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 1 OF 5	COMPUTED BY SKC	DATE 8/87
SUBJECT GEOTEXTILE DESIGN COMPUTATION		CHECKED BY	DATE

REACH A, PROTECTED SIDE

CRITICAL WEDGES FROM LMVD METHOD OF PLANES (MOP) WERE CHECKED BY SPENCER'S METHOD (SM). THE SM IS A CIRCULAR ARC ANALYSIS WHICH WILL PROVIDE A MOMENT ARM THAT WOULD ENABLE US TO TAKE INTO ACCOUNT THE ELEVATION WHERE THE GEOTEXTILE WOULD BE PLACED WITH THE CORRESPONDING TENSILE STRENGTH.

THE RESULTS FROM SM INDICATED THAT THE FS > 1.3. THUS, THE REQUIRED TENSILE STRENGTH (T) OBTAINED FROM THE MOP IS CHOSEN.

EL-25

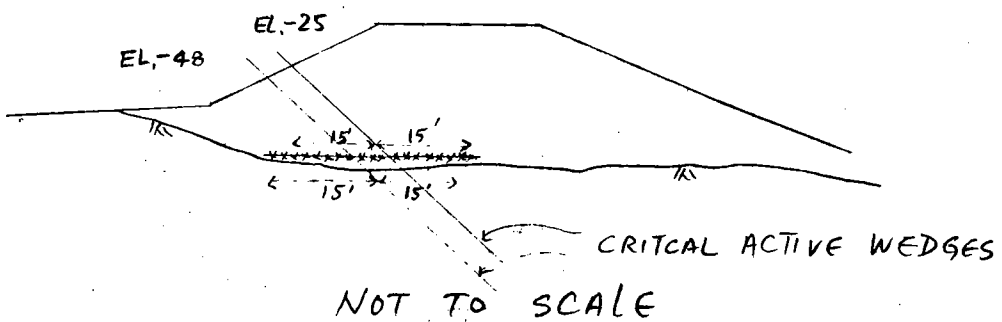
$$T = \frac{(88915 - 32396)\,1.3 - 32543 - 9640 - 19495}{12} = 983\ \#/IN$$

EL.-48

$$T = \frac{(197711 - 96150)\,1.3 - 55297 - 25510 - 38360}{12} = 989\ \#/IN$$

USE $T = 1000\ \#/IN$

$$L = \frac{T}{C_1 + C_2} = \frac{1000 \times 12}{400 + 400} = 15'$$



NOT TO SCALE

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 2 OF 5	COMPUTED BY SLC	DATE 8/87
SUBJECT GEOTEXTILE DESIGN COMPUTATION		CHECKED BY	DATE

REACH B, PROTECTED SIDE

TENSILE STRENGTH REQUIRED BY MOP

EL. -35, T = 2056 #/IN ✓

EL. -46, T = 1849 #/IN

EL. -54, T = 1441 #/IN

EL. -60, T = 977 #/IN

SPENCER'S METHOD

EL. -35, ASSUME GEOTEXTILE TO BE PLACED AT EL. 2.0

⇒ MOMENT ARM FOR GEOTEXTILE Y = 39

$$T = \frac{1.3 \sum \text{DRIVING MOMENT} - \sum \text{RESISTING MOMENT}}{Y \times 12}$$

$$= \frac{(1.3)(3091594 + 987945) - 4525432}{39 \times 12} = 1662 \#/\text{IN}$$

COMPARE RESULTS OF MOP AND SM

⇒ T = 2056 #/IN, GOVERNS.

SEE FLOODSIDE COMPUTATION FOR CONCLUSION OF REACH B

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 3 OF 5	COMPUTED BY SKC	DATE 2/87
SUBJECT GEOTEXTILE DESIGN COMPUTATION		CHECKED BY	DATE

REACH B, FLOODSIDE

GOVERNING CASE ON MOP ANALYSIS

EL. -54

$$T = \frac{(1.3 \times 107876) - 103310}{12} = 3077\ \#/IN$$

GOVERNING CASE ON SM ANALYSIS

EL. -35

ASSUME GEOTEXTILE TO BE PLACED at EL. 5.0

$$\Rightarrow \frac{2287522}{82.5 \times 12} = 2311\ \#/IN$$

IF T = 1000# USED at EL 5.0

$$\Rightarrow 2311 - 1000 = 1311\ \#/IN$$

THUS, THE REQUIRED T FOR EL. 2.0 WOULD BE

$$T = \frac{1311 \times 82.5}{85.5} = 1265\ \#/IN$$

COMPARE RESULTS OF MOP & SM

$\Rightarrow$ T = 3077 #/IN, GOVERNS

CONL: T = 1000 #/IN, L = 36', EL 5.0

T = 2080 #/IN, L = 89.5', EL. 2.0

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 4 OF 5	COMPUTED BY SKC	DATE 8/87
SUBJECT GEOTEXTILE DESIGN COMPUTATION		CHECKED BY	DATE

REACH C, PROTECTED SIDE

GOVERNING CASE ON MOP ANALYSIS

EL. -44

$$T = \frac{(89761 \times 1.3) - 79920}{12} = 3064\ \#/IN$$

GOVERNING CASE ON SM ANALYSIS

EL. -44

ASSUME GEOTEXTILE TO BE PLACED AT EL. 5.0

$$\Rightarrow \frac{1744054}{38.5 \times 12} = 3775\ \#/IN$$

IF T = 1500 # USED at EL. 5.0

$$\Rightarrow 3775 - 1500 = 2275\ \#/IN$$

THUS, THE REQUIRED T FOR EL. 2.0 WOULD BE

$$T = \frac{2275 \times 38.5}{41.5} = 2110\ \#/IN$$

CONL: T = 1500 #/IN, L = 45', EL. 5.0

T = 2110 #/IN, L = 70', EL. 2.0

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 5 OF 5	COMPUTED BY SKC	DATE 8/87
SUBJECT GEOTEXTILE DESIGN COMPUTATION		CHECKED BY	DATE

REACH C, FLOODSIDE

FROM THE RESULTS OF BOTH THE MOP AND SM ANALYSES, IT SHOWED THAT THE MOP GOVERNED WITH T = 532 #/IN. EL. -15

AND T = 402 #/IN. EL. -44

SEE REACH C PROTECTED SIDE COMPUTATION FOR CONCLUSION OF REACH C

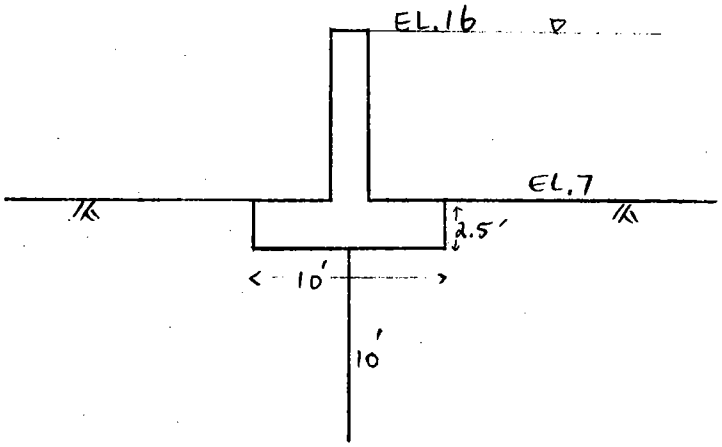
COFFERDAM ANALYSIS

APPENDIX B-3

COMPUTATION SHEET

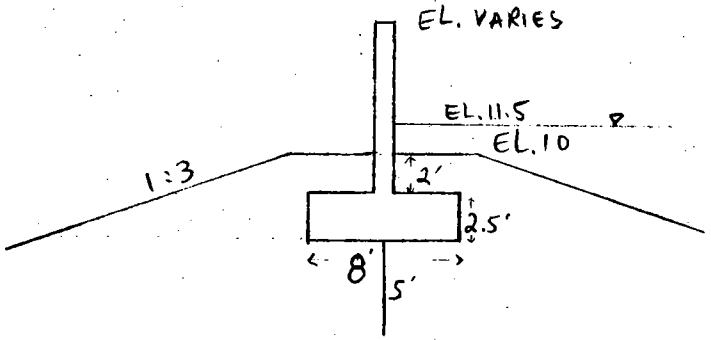
PROJECT JEFFERSON LAKE FRMT	PAGE 1 OF 4	COMPUTED BY SKC	DATE 5/87
SUBJECT SEEPAGE ANALYSIS		CHECKED BY	DATE

CAUSEWAY FLOODGATES



$$\frac{2.5 + 5/3 + 10 + 10 + 5/3 + 2.5}{9} = 3.1 \text{ ok}$$

PUMPING STATION NO. 4



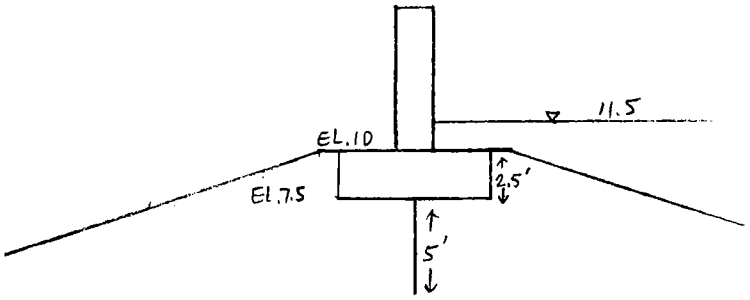
$\Delta H = 1.5 \Rightarrow$ $\dfrac{4.5 + 4/3 + 5 + 5 + 4/3 + 4.5}{1.5} = 14.4$ ok

$\Delta H = 3.5 \Rightarrow$ $\dfrac{4.5 + 4/3 + 5 + 5 + 4/3 + 7.0/3}{3.5} = 5.6$ ok

$\Delta H = 6.0 \Rightarrow$ $\dfrac{4.5 + 4/3 + 5 + 5 + 4/3 + 14/3}{6} = 3.6$ ok

PROJECT JEFFERSON LAKEFRONT	PAGE 2 OF 4	COMPUTED BY SKE	DATE 5/87
SUBJECT SEEPAGE ANALYSIS		CHECKED BY	DATE

PUMPING STATION NO. 4 FLOOD GATE



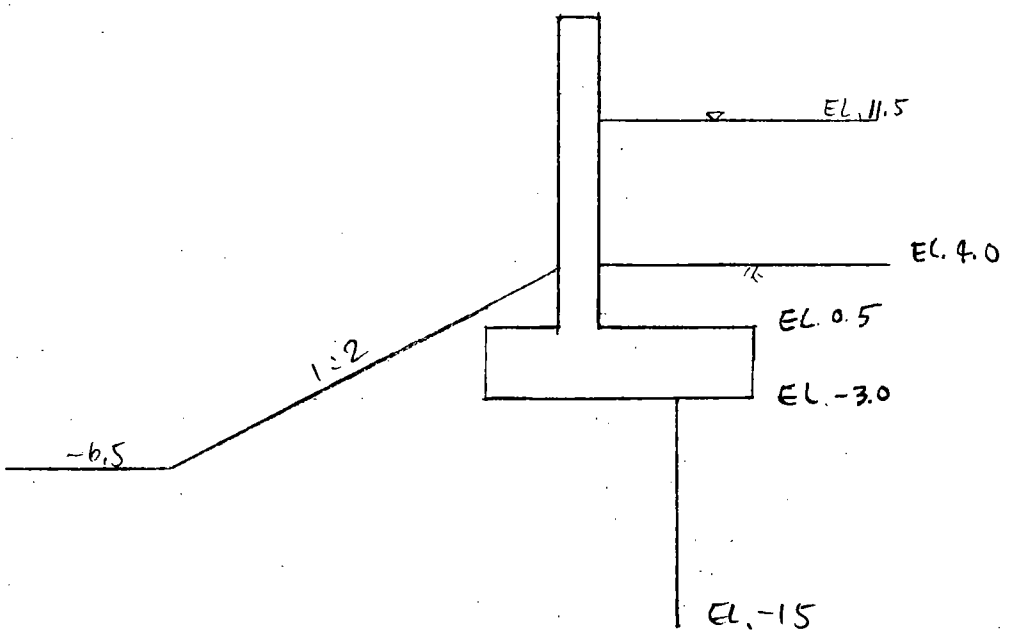
$$\Delta H = 1.5 \Rightarrow \frac{2.5 + 4/3 + 5 + 5 + 4/3 + 2.5}{1.5} = 11.8 \quad \text{OK}$$

$$\Delta H = 3.5 \Rightarrow \frac{2.5 + 4/3 + 5 + 5 + 4/3 + 4/3}{3.5} = 4.7 \quad \text{OK}$$

$$\Delta H = 4 \Rightarrow \frac{2.5 + 4/3 + 5 + 5 + 4/3 + 7.5/3}{4} = 4.4 \quad \text{OK}$$

PROJECT	JEFFERSON LAKEFRONT	PAGE 3 OF 4	COMPUTED BY GLC	DATE 6/87
SUBJECT	SEEPAGE ANALYSIS		CHECKED BY	DATE

T-WALL BEHIND OLD P.S. #4



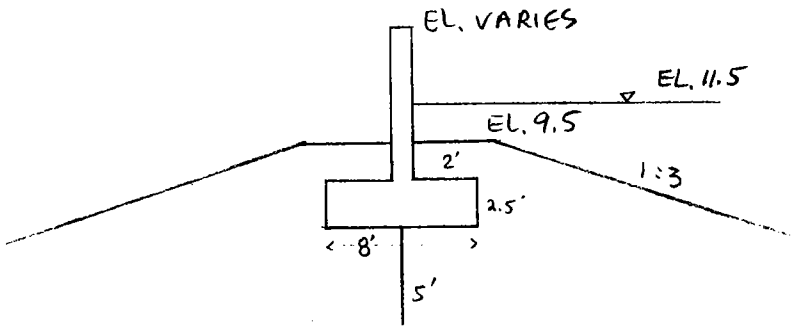
$$\Delta H = 9.5 \Rightarrow \frac{7 + 4/3 + 12 + 12 + 8/3 + 5}{9.5} = 4.2 \text{ OK}$$

$$\Delta H = 12.5 \Rightarrow \frac{7 + 4/3 + 12 + 12 + 13/3}{12.5} = 2.9 \text{ OK}$$

$$\Delta H = 14.5 \Rightarrow \frac{7 + 4/3 + 12 + 12 + 17/3}{14.5} = 2.6 \text{ OK}$$

PROJECT JEFFERSON LAKEFRONT	PAGE 4 OF 4	COMPUTED BY SLC	DATE 5/87
SUBJECT SEEPAGE ANALYSIS		CHECKED BY	DATE

PUMPING STATION NO. 1 EAST SIDE



$\Delta H = 2 \Rightarrow \dfrac{4.5 + 4/3 + 5 + 5 + 4/3 + 4.5}{2} = 21.7/2 = 10.8$ OK

$\Delta H = 4 \Rightarrow \dfrac{4.5 + 4/3 + 5 + 5 + 4/3 + 7/3}{4} = 19.5/4 = 4.8$ OK

$\Delta H = 6.5 \Rightarrow \dfrac{4.5 + 4/3 + 5 + 5 + 4/3 + 14/3}{6.5} = 21.8/6.5 = 3.4$ OK

PUMPING STATION NO. 1 WESTSIDE

LEVEE CROWN EL. IS EL. 8.5

$\Rightarrow \Delta H$ increased by one foot

$\therefore \Delta H = 3 \Rightarrow 21.7/3 = 7.23$ OK

$\Delta H = 5 \Rightarrow 19.5/5 = 3.9$ OK

$\Delta H = 7.5 \Rightarrow 21.8/7.5 = 2.9$ OK

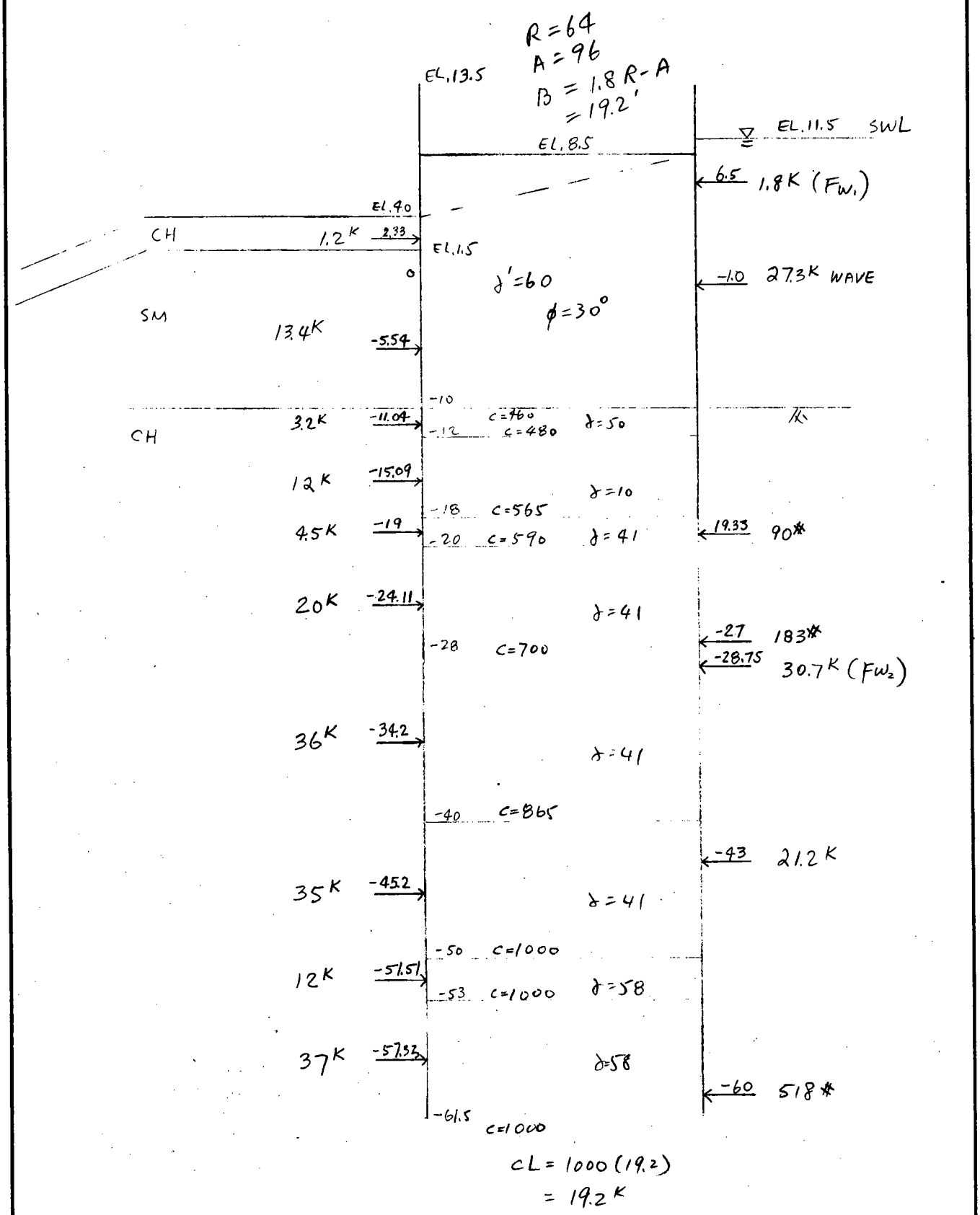
GEOTEXTILE DESIGN COMPUTATION

APPENDIX B-4

AIP B4

COMPUTATION SHEET

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 1 OF 6	COMPUTED BY 4/K	DATE 6/87
SUBJECT OCD P.S. #4 EXISTING COFFERDAM HIGHWATER		CHECKED BY	DATE



PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 2 OF 6	COMPUTED BY	DATE 6/87
SUBJECT OCD P.S. #4 EXISTING COFFERDAM, HIGH WATER		CHECKED BY	DATE

WEIGHT

$\frac{1}{2}$ 4.5 (19.2) (122) = 5.3 K

$\frac{1}{2}$ 4.5 (19.2) (60) = 2.6 K

60 x 14 (19.2) = 16.1 K

50 x 2 (19.2) = 1.9 K

10 x 6 (19.2) = 1.2 K

41 x 32 (19.2) = 25.2 K

58 x 11.5 (19.2) = 12.8 K

W_T = 65.1 K

SLIDING

$$FS = \frac{W_T \tan\phi + S_b + P_p}{P_w + P_a + P_{WAVE}} = \frac{0 + 19.2^K + 174^K}{31.8^K + 54^K + 273^K} = 1.7 \text{ ok}$$

BEARING

MAX PRESSURE = 18.5 (122) = 2257

$q_{ult-61.5}$ = (5.7) (1000) = 5700

$$FS = \frac{5700}{2257} = 2.5 \text{ ok}$$

INTER LOCK TENSION

H = 8.5 + 10 = 18.5

18.5 x 3/4 = 14

60 x 14 x .47 = 395

62.5 x 7.5 = 469

P_T = 864

T = $\frac{1}{2}$ (864) (64)

= 4608

PSA 23 ULT T = 12000

FS = 2.6 ok

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 3 OF 6	COMPUTED BY JKC	DATE 6/87
SUBJECT OLD P.S. #4 EXISTING COFFERDAM, HIGH WATER		CHECKED BY	DATE

OVERTURNING

M_o

$1.8 \times 68 = 122.4^{K'}$
$27.3 \times 60.5 = 1651^{K'}$
$90 \times 42.2 = 3.8^{K'}$
$183 \times 34.5 = 6.3^{K'}$
$30.7 \times 32.8 = 1007^{K'}$
$21.2 \times 18.5 = 392.2^{K'}$
$230 \times 1.5 = .3^{K'}$
Total $M_{o\,toe} = 3183^{K}$

M_R

$65.1 \times \frac{19.2}{2} = 625^{K'}$
$1.2 \times 63.83 = 76.6^{K'}$
$13.4 \times 56.05 = 751^{K'}$
$3.2 \times 50.46 = 161^{K'}$
$12 \times 46.41 = 557^{K'}$
$4.5 \times 42.5 = 191^{K'}$
$20 \times 37.39 = 748^{K'}$
$36 \times 27.3 = 983^{K'}$
$35 \times 16.3 = 571^{K'}$
$12 \times 10 = 120^{K'}$
$37 \times 4.17 = 154^{K'}$

Total $M_{R\,Toe} = 4938$

$$FS = \frac{4939}{3183} = 1.55 \text{ ok}$$

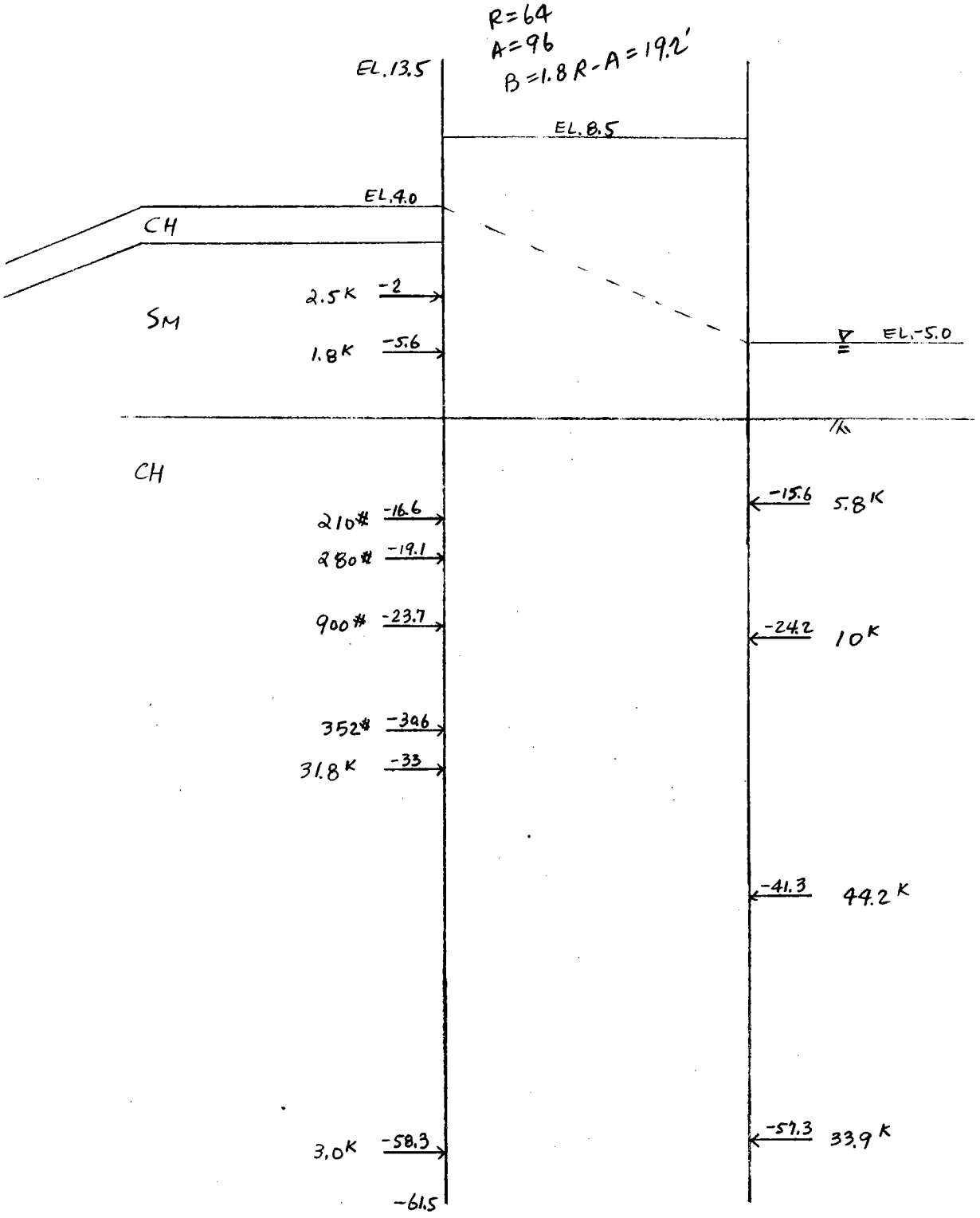
SHEAR ALONG ℄

$M_{o\,℄} = 3183$

$M_{R\,℄} = 4313$

$M_{R℄} > M_{o℄}$ ok

PROJECT JEFFERSON PARISH LAKEFRONT	PAGE 4 OF 6	COMPUTED BY SK	DATE 6/87
SUBJECT OLD P.S. #4 EXISTING COFFERDAM, LOW WATER		CHECKED BY	DATE



PROJECT JEFFERSON LAKEFRONT	PAGE 5 OF 6	COMPUTED BY SKC	DATE 6/87
SUBJECT OLD P.S #4 EXISTING COFFERDAM, LOW WATER		CHECKED BY	DATE

WEIGHT

$122 \times 4.5 (19.2) = 10.5^K$

$60 \times 14 (19.2) = 16.1^K$

41.1^K

$W = 67.7^K$

SLIDING

$$FS = \frac{93.9 + 19.2}{41} = 2.75 \quad OK$$

BEARING

SAME AS HIGH WATER CONDITION

INTERLOCK TENSION

ASSUME LANDSIDE WATER ELEVATION at EL. 6.0

$H = 8.5 + 10 = 18.5$

$18.5 \times 3/4 = 14$

$P_F = \left[122(2.5) + 11.5(60)\right](.47) = 468$

$P_W = 11 \times 62.5 = 688$

$P_T = P_F + P_W = 1156$

$T = 1/12 \ (P) r = 1/2 \ (1156)(64)$

$= 6165$

PSA 23 Ult T = 12000

$$FS = \frac{12000}{6165} = 1.95$$

PROJECT JEFFERSON LAKEFRONT	PAGE 6 OF 6	COMPUTED BY SFC	DATE 6/87
SUBJECT OLD P.S. #4 EXISTING COFFERDAM, LOW WATER		CHECKED BY	DATE

OVERTURNING

M_o

$2.5 \times 59.5 = 148 K'$
$1.8 \times 55.9 = 101 K'$
$.21 \times 44.9 = 9 K'$
$.28 \times 42.2 = 12 K'$
$.9 \times 37.8 = 34 K'$
$.35 \times 30.9 = 11 K'$
$31.8 \times 28.5 = 906 K'$
$3.0 \times 3.2 = 9.6$

$M_o = 1230 K'$

M_R

$5.8 \times 45.9 = 266 K'$
$10 \times 37.3 = 373 K'$
$44.2 \times 20.2 = 893 K'$
$33.9 \times 4.2 = 142 K'$
$67.7 \times 19.2/2 = 650 K'$

$M_R = 2324$

$$FS = \frac{2324}{1230} = 1.89 \quad OK$$

SHEAR ALONG ℄

$M_{o℄} = 1230$

$M_{R℄} = 1674$

$M_{R℄} > M_{o℄}$ OK

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 17, GENERAL DESIGN
JEFFERSON PARISH, LAKEFRONT LEVEE

APPENDIX C
SUPPLEMENTAL INFORMATION REPORT

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

October 7, 1987

Planning Division
Environmental Analysis Branch

TO INTERESTED PARTIES

Enclosed for your information is a Supplemental Information Report (SIR) addressing the modification of the Jefferson Parish Lakefront levee to accommodate the high-level design for the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project.

This SIR addresses the environmental effects of the placement of hauled fill to provide high-level hurricane protection in this levee reach.

Cletis R. Wagahoff
Chief, Planning Division

Enclosure

Supplemental Information Report
Lake Pontchartrain, Louisiana, and Vicinity
Hurricane Protection Project, Jefferson Parish Lakefront Levee

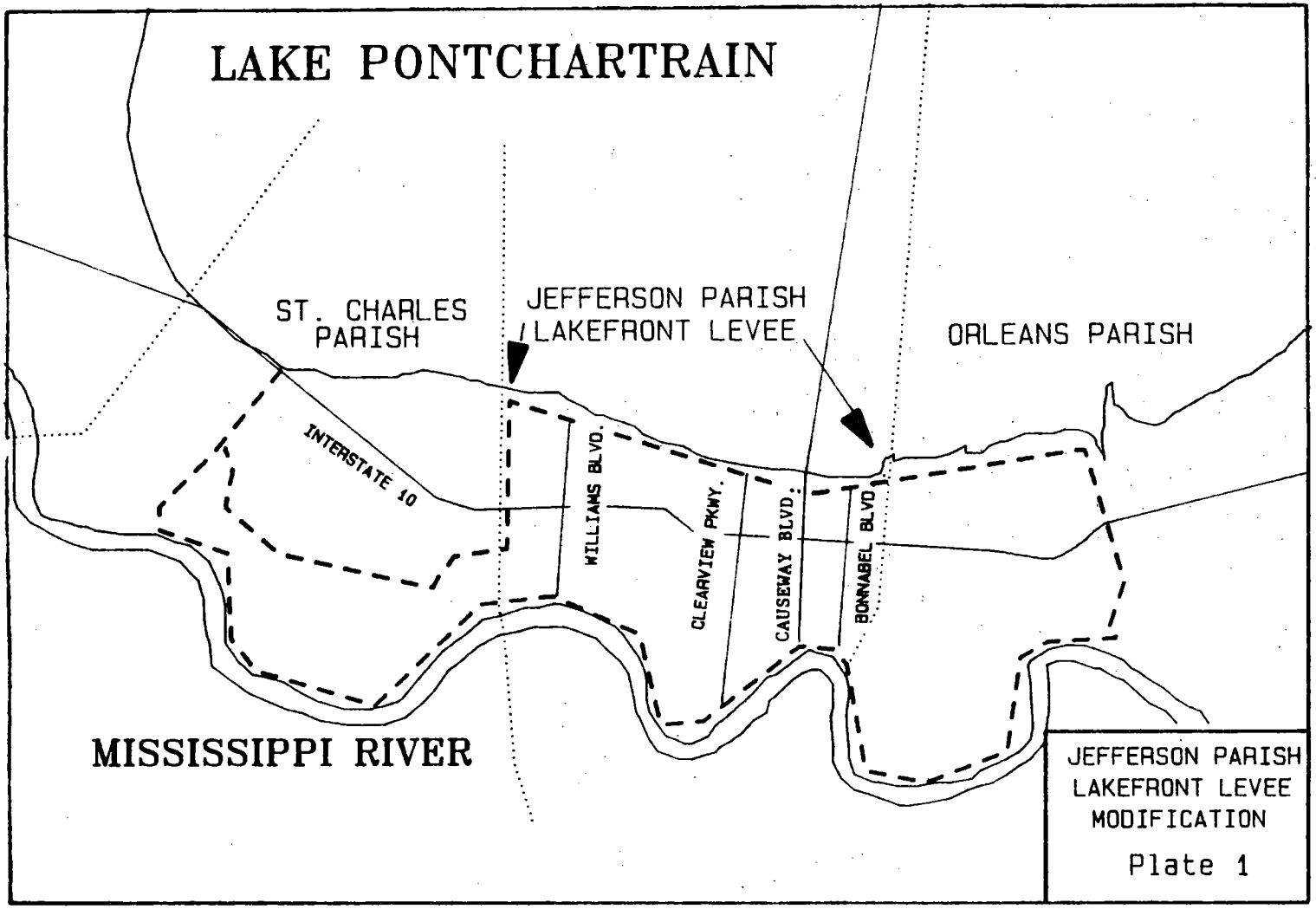
INTRODUCTION

This Supplemental Information Report (SIR) has been prepared to complement the Lake Pontchartrain, Louisiana, and Vicinity, Hurricane Protection Project, Final Supplement I to the Environmental Impact Statement (FSEIS) filed with the Environmental Protection Agency on 7 December 1984. The SIR addresses the impacts associated with the modified levee design for the Jefferson Parish Lakefront levee. Because of design technology unavailable at the time of initial levee design, it is now possible to achieve the prescribed high-level design with a much reduced levee base.

PROJECT DESCRIPTION

The Jefferson Parish Lakefront levee is located in the New Orleans metropolitan area (Plate 1).

The Jefferson Parish Lakefront levee reach begins where the Jefferson/St. Charles Parish line intersects Lake Pontchartrain. From this point the levee runs eastward along the lakefront for approximately 10.4 miles, where it ties into the return levee on the 17th Street Outfall Canal (Metairie Relief Canal) in the vicinity of Bucktown.


LAKE PONTCHARTRAIN
ST. CHARLES PARISH
JEFFERSON PARISH
LAKEFRONT LEVEE
ORLEANS PARISH
INTERSTATE 10
WILLIAMS BLVD.
CLEARVIEW PKWY.
CAUSEWAY BLVD.
BONNABEL BLVD.
MISSISSIPPI RIVER
JEFFERSON PARISH
LAKEFRONT LEVEE
MODIFICATION
Plate 1

The levee will be constructed with clay fill hauled from the Bonnet Carre' Spillway. High strength "geo-fabric" will be used to reinforce the soil foundation so that the high-level elevation can be accomplished using a minimum amount of fill and the least taking of rights-of-way. This plan can be built totally within the existing right-of-way. The offshore borrow sites described in the 1984 EIS will not be necessary.

ENVIRONMENTAL SETTING

The existing levee parallels the lakeshore and is approximately 120 - 130 feet from the shoreline.

The north side (floodside) of the levee is sparsely vegetated with scrub/shrub habitat intermixed with various wild grasses and small pockets (1 - 2 acres total) of oystergrass near the water's edge. The levee itself is grassed and regularly mowed. The area located on the south side (protected) of the lakefront levee is a highly developed residential and commercial area. The existing vegetation is comprised of various lawn grasses and indigenous and exotic ornamental plants with an occasional sparse stand of pine and, in some cases, oak. These larger trees are primarily limited to the recreational parks adjacent to the levee.

Neither the vegetation on the floodside nor that on the protected side of the levee can be considered as extremely valuable wildlife habitat. The trees and scrub/shrub habitat receive marginal use from songbirds and squirrels. Some small mammals, such as field mice and rabbits, may intermittently utilize the grassy areas adjacent to the low-lying shrub thickets. Raccoons utilize the lakeshore and the adjacent scrub/shrub habitat. Shallow ponded areas on the floodside are sometimes vegetated with sparse stands of oystergrass and other aquatic plants, and are used by some waterfowl and wading birds.

The rock portion of the batture between the levee toe and the lake receives limited use by lizards, snakes, geckos, and shore birds as resting or feeding platforms. However, the overall value to wildlife of these areas along the levee is minimal due to the lack of food and cover, human disturbance, and the limited quantity of habitat available.

All of the levee reach, with the exception of the areas near the pumping stations, race track, and parks, can be considered residential and, as such, it is estimated that an average noise level of 50 dBA presently exists (Canter, L.W. 1977). Existing noise levels around the pumping stations and race track are estimated to be approximately 70 dBA (Canter, L.W. 1977).

A linear park utilizes the levee system along the lake's shoreline for a multi-purpose bicycle and pedestrian trail, from the Orleans Parish line to the St. Charles Parish line, a distance of approximately 10 miles. This trail system has been designated as a National Recreation Trail by the U.S. Department of the Interior. The linear park is also a bird sanctuary.

There are eight-lane boat launches and ancillary facilities at Bonnabel and William Boulevards. It is estimated that 260,000 annual man-days of use currently exist within the park. The man-days include recreational activities, such as boating, skiing, fishing, shrimping, crabbing, jogging, biking, and observation of wildlife.

A cultural resource survey of the levee rights-of-way was completed by New World Research, Inc. The results of the survey indicated no significant cultural resources in the land-based levee/floodwall rights-of-way. Numerous magnetic anomalies that could represent significant historic shipwrecks were noted in the offshore borrow sites. However, under the present construction method, no offshore borrow pits will be required.

IMPACTS

Biological

Utilizing the new construction method, the amount of right-of-way required is significantly reduced and therefore a corresponding reduction in lake bottoms that would be impacted would occur. The new modified levee design will not require lake bottom either for borrow or levee placement but will be totally confined to a land-based right-of-way. This modification results in avoiding impacts to approximately 981 acres of lake bottom and the benthic organisms that inhabit them. Since the need for flotation channels and offshore borrow sites has been eliminated, the water quality problems (nutrient entrapment, poor circulation, and localized poor water quality) and interruption of sediment transport initially anticipated to result from these features is no longer a concern.

Minimal, localized turbidity would be experienced in the nearshore waters as a result of increased potential for soil erosion while the present levee is being degraded and reshaped. Some trees would be damaged and some actually removed due to levee placement. The levee would be revegetated and the regrowth of scrub/shrub and thickets along the north side of the levee toe is expected to occur naturally. Therefore, only temporary displacement of the small animals that utilize these areas would occur. Ambient levels of airborne dust and noise would increase during construction. Overall, the modified construction method nearly eliminates impacts to benthos, fish, and plankton while minimizing effects to the land-based flora and fauna.

Noise

An analysis of noise levels was prepared, based on types of equipment used, duration of construction, and the distances of various inhabited locations from the construction site. The source of noise being evaluated results from two distinct activities: those produced in association with levee construction and those that result from the transport of the fill material to the construction site.

The areas adjacent to the levee construction site are used primarily for domestic housing and are estimated to have a day-night average noise level of approximately 50 dBA (Canter,L.W. 1977). The expected noise forecast, with the levee construction, for this residential area is shown in Table 1. The decibel levels shown in Table 1 assume that the sound is received by an observer in an unprotected area at the distance from the sound source noted. Therefore, the levels shown in the table would be greatly reduced when the observer is inside a residence or other protected area. While the noise levels adjacent to the area of levee construction are above expected levels for residential areas (50 decibels), they are of relatively short duration, ranging from approximately 4 days (102 - 107 decibels) for the peak noise to 23 days (84 - 90 decibels) for the lower level noise. Both ranges would be somewhat lower inside the residence.

TABLE 1
NOISE EXPOSURE LEVELS (DAYS) FOR
LEVEE CONSTRUCTION - JEFFERSON PARISH LAKEFRONT LEVEE

Distance from source (feet)	Buildings 1/ (number)			Decibels			
				102-107	96-102	90-96	84-90
	Domestic Housing	Non-Residential	Industrial				
0-50	371		1	3.6	3.8	7.0	15.6
50-100	265	6	1	-	5.7	9.0	15.3
100-200	343	2	17	-	-	11.7	16.4
200-400	716	53	33	-	-	-	23.4

1/ Types of buildings are classified as follows: domestic housing, which includes residences for families; non-residential, which includes offices, public buildings, hotels, hospitals, and schools; and industrial, which includes industrial buildings, religious and recreation centers, stores, and repair facilities (Canter, L.W. 1977).

Houses, businesses, and industrial complexes immediately adjacent to Clearview Parkway, and Bonnabel, Causeway, and Williams Boulevards will be located on the main access routes to the various levee reaches under construction. The transport of fill material using these various routes is expected to produce an estimated 88 - 108 decibels of noise within 0 - 50 feet of the highway (Table 2). However, most of these roads are already utilized heavily during peak traffic periods and therefore have an ambient noise level well above the 70-decibel level normally noted for urban residential areas. It is assumed that the noise exposure of any particular building or observer would be very brief, because of an assumed speed of between 30 to 40 m.p.h. However, because of the large number of vehicles required per day to provide material to the construction site, the exposure at a particular distance may be considered continuous.

Table 2 notes the noise level forecasts for Bonnabel Boulevard, Causeway Boulevard, Clearview Parkway, and Williams Boulevard. Only those areas within 50 feet of the noise source would incur noise levels above the 88-decibel level. This decibel level would be greatly reduced inside a residence and may therefore be within the acceptable 70-decibel standard for urban residential areas (Canter, L.W. 1977). The duration of the noise exposure would range from 5 to 9 months for approximately 10 hours per day.

Some noise-related complaints may be generated from residences up to 50 feet from the source of the noise. The nature of the complaints are anticipated to be concerns over disruption of rest, outdoor social activities (barbecues, etc.), recreational activities, and traffic problems. There could be an increase in traffic congestion, particularly during morning and evening "rush" hours. The incidence of minor auto accidents related to traffic congestion has the potential for increase.

TABLE 2
NOISE EXPOSURE LEVELS
ALONG HAUL ROUTES

Distance (feet)	Buildings 1/ (numbers)					Decibels
	Causeway Blvd		Bonnabel Blvd.	Clearview Pkwy.	Williams Blvd.	
	Domestic Housing	Non-Residential	Domestic Housing	Domestic Housing	Domestic Housing	
0-50	30	12	11	50	43	108-88
50-100	15	20	38	89	59	88-82
100-200	-	20	35	121	22	82-76
200-400	10	13	45	146	83	76-70

1/ Types of buildings are classified as follows: domestic housing, which includes residences for one to several families; non-residential, which includes offices, public buildings, hotels, hospitals, and schools; and industrial, which includes industrial buildings, religious and recreation centers, stores, and repair facilities (Canter, L.W. 1977).

However, it is not foreseen that health-related effects, such as hearing changes or losses, would result from the predicted noise levels. Sporadic and momentary interference with oral communication, as well as simple annoyance, may occur within 50 feet of the construction site or haul sites.

Generally, animals adapt to a regular, predictable noise that is of a continuous nature more readily than they do to sporadic noise bursts. The construction activity here is more a continuous type of noise, mostly of low-frequency with occasional increases.

In summary, the overall effect of noise levels predicted will be temporarily disruptive and will possibly generate some complaints, but this should not result in any health-related noise problems. When construction is complete, no long-term effects should result as a result of the noise levels expected.

Cultural Resources

No significant cultural resources are located in the terrestrial portion of the rights-of-way. The magnetic anomalies in the offshore area will be avoided because of the modification in project design.

Recreation

Levee construction on the Jefferson Parish Lakefront levee would temporarily disrupt recreational activities that take place on the grass slopes and crown of the existing levee. However, construction would not affect the National Recreational Trail (biking and jogging path).

The Williams and Bonnabel Boulevards boat launches and recreation areas would not be affected directly by the levee

work. However, levee construction in the vicinity of these features is necessary. Temporary disruption of public use would occur during construction, but this impact would be short-lived.

The potential exists to further develop the linear parkway. The Jefferson Parish Department of Recreation has developed a master plan that identifies three areas for future development: Bucktown Marina, the waterfront area at Causeway Boulevard, and additional expansion of the Williams Boulevard boat-launch complex. The master plan is conceptual at this time. Levee work may involve modification of these plans upon detailed design.

Upon completion of the new levee, a higher overall levee profile will be created along the linear park. However, the new levee design incorporates less steep side slopes than in the interim protection levee. Development of the new levee will involve 1 vertical to 9 horizontal side slopes on the lake-side, and 1 vertical to 3 horizontal side slopes on the protected side of the crown. The lakeside slope would have a gradual slope with an extensive horizontal dimension that would be conducive to field sports and ballgames requiring an ample horizontal dimension. The once grassed area south of the trail system would be unusable for short periods of time following each levee lift, until the final levee grade is acquired. Between the placement of 3 to 4 additional lifts, the landside, crown, and protected side slopes would be seeded with a quick-growing grass and hydromulch. Following a short establishment period, the area would return to its pre-project grassed condition. Approximately 2 or 3 years later, another lift would be put in place and the seeding for revegetation of grass would be repeated. This cycle of providing an additional lift, grass re-seeding, and waiting for compaction of earth fill would occur until final grade is reached. Upon completion and revegetation, the area would return to its pre-project condition and highly used recreational status.

Literature Cited

Canter, Larry W. 1977. Environmental Impact Assessment. McGraw Hill. 329 pp.

Coordination

Copies of this SIR will be distributed to the agencies listed below:

Federal

Honorable J. Bennett Johnston

Honorable John B. Breaux

Honorable Robert L. Livingston

Department of the Interior
Assisstant Secretary for Program, Development and Budget
Office of Environmental Project Review

U.S. Fish and Wildlife Service,
Field Supervisor, Lafayette

Regional EIS Coordinator
Region VI
U.S. Environmental Protection Agency

The Administrator
U.S. Environmental Protection Agency

Director
Office of Federal Activities
U.S. Environmental Protection Agency

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Marine Fisheries Service

Mr. Dennis Jordan
U.S. Fish and Wildlife Service

National Marine Fisheries Service
Habitat Conservation Division

Regional Administrator, Region VI
U.S. Department of Housing and Urban Development

Advisory Council on Historic Preservation

Bayou Sauvage National Wildlife Refuge
Attn: Tom Barnes

U.S. Department of Transportation
Federal Highway Administration

Gulf of Mexico Fishery Management Council

State

Assistant Secretary
Department of Transportation and Development
Office of Public Works

Maurice B. Watson
Louisiana Department of Wildlife and Fisheries
Ecological Studies Section

Secretary
Louisiana Department of Wildlife and Fisheries

Department of Natural Resources
Coastal Resource Analyst
Division of State Lands

Department of Natural Resources
Office of Environmental Affairs

Department of Natural Resources
Coastal Resources Program
Consistency Coordinator

State Historic Preservation Officer
Department of Culture, Recreation and Tourism

Local

The Board of Levee Commissioners of the Orleans Levee District

St. Charles Parish Council

Regional Planning Commission
Jefferson-Orleans, St. Bernard-St. Tammany Parishes

City of New Orleans
City Planning Commission

Board of Commissioners for the Pontchartrain Levee District

Board of Commissioners of the Lake Borgne Levee District

St. Bernard Parish Police Jury

Environmental

J. Vincent, President
Ecology Center of Louisiana, Inc.

Mr. Barry Kohl
Orleans Audubon Society

Environmental Defense Fund

Mr. Oliver Houck

M. L. Cambre
St. Charles Environmental Council

Delta Chapter, Sierra Club

Randy P. Lanctot
Executive Director
Louisiana Wildlife Federation

League of Women Voters of Louisiana

Geodata Inc.

Compliance with Regulations

Distribution of this SIR will bring this feature into full compliance with applicable Department of the Army, Federal, and state regulations.

Prepared by:
Larry M. Hartzog
Biologist

10/7/87
Date

SGH
Cletis R. Wagahoff
Chief, Planning Division