US Army Corps
of Engineers
New Orleans District

LAKE PONTCHARTRAIN, LA.
AND VICINITY
LAKE PONTCHARTRAIN
HIGH LEVEL PLAN

DESIGN MEMORANDUM NO. 18
GENERAL DESIGN

ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

IN TWO VOLUMES
VOLUME II

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LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18 - GENERAL DESIGN
ST. CHARLES, PARISH NORTH OF AIRLINE HIGHWAY

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HIGH LEVEL PLAN
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ST. CHARLES PARISH NORTH OF AIRLINE HIGHWAY

APPENDIX D, VOLUME II

GEOTECHNICAL DESIGN CALCULATIONS

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Bearing Capacity. FOR LEVEES WITH GEOTEXTILE

Overall bearing capacity of the embankment must be satisfied. If the embankment bearing capacity factor of safety (FS) is less than 1.0, the embankment cannot be constructed without large foundation displacements. To improve overall bearing, berms could be added or the base of the embankment could be extended to provide a wider mat. Analysis for bearing follows along classical geotechnical engineering methods for infinitely long strip foundations and for undrained ($\phi=0$) conditions; i.e.:

$$q_u = cN_c + q_s$$

where q_s = surcharge outside the effective base.

Presently at COE New Orleans District, we are using bearing capacity factors for rigid footings developed by Davis and Booker, 1973, and Matar and Salencon, 1977, which is presented in a report by R.K. Rowe and K.L. Soderman. These factors have considered the effect of increasing undrained strength with depth as well as the effect of the relative thickness of the soil deposit. A synopsis of the figures and equations as presented in the Rowe and Soderman report are included to analyze overall bearing capacity. Figure 1 includes the bearing capacity factor N_c based on Davis and Booker and Matar and Salencon studies plotted in terms of the dimensionless quantity $\rho_c b/C_{uD}$. These terms and the terms below are defined in figures 1 through 3. The equations for overall bearings are;

1) effective width of the footing b

$$b = B + 2n\,(H-h)$$

where B is the crest width, H is the embankment height and n is the cotangent of the slope angle.

2) The bearing capacity qu of the rigid footing

$$q_u = N_c \; C_{uo} + q_s$$

where C_{uo} is the undrained strength directly beneath the embankment and q_s is a uniform surcharge pressure applied to the soil surface outside of the effective width (b). As shown in Figures 1 and 2, the berm outside the effective width provides a surcharge that would increase stability. This surcharge load must be applied as a pressure q_s over the expected failure zone. Based on the Matar and Salencon (1977) studies, Figures 2 and 3 show the depth d to which the failure mechanisms is expected to extend. It has been found that the lateral

extent of the plastic region involved in the collapse of a rigid footing extends a distance x from the footing. Where x is approximately equal to the minimum of d as determined from Figure 3 or the actual thickness of the deposit (D), i.e. x = min (d,D). Where,

$$q_s = \text{surcharge}/x.$$

3) Average applied pressure q_a due to the embankment over the effective width b

$$q_a = \text{load}/b$$

4) F.S. = q_u/q_a

The COE New Orleans District recommends a Factor-of-Safety of 1.2 to 1.3 for overall bearing capacity.

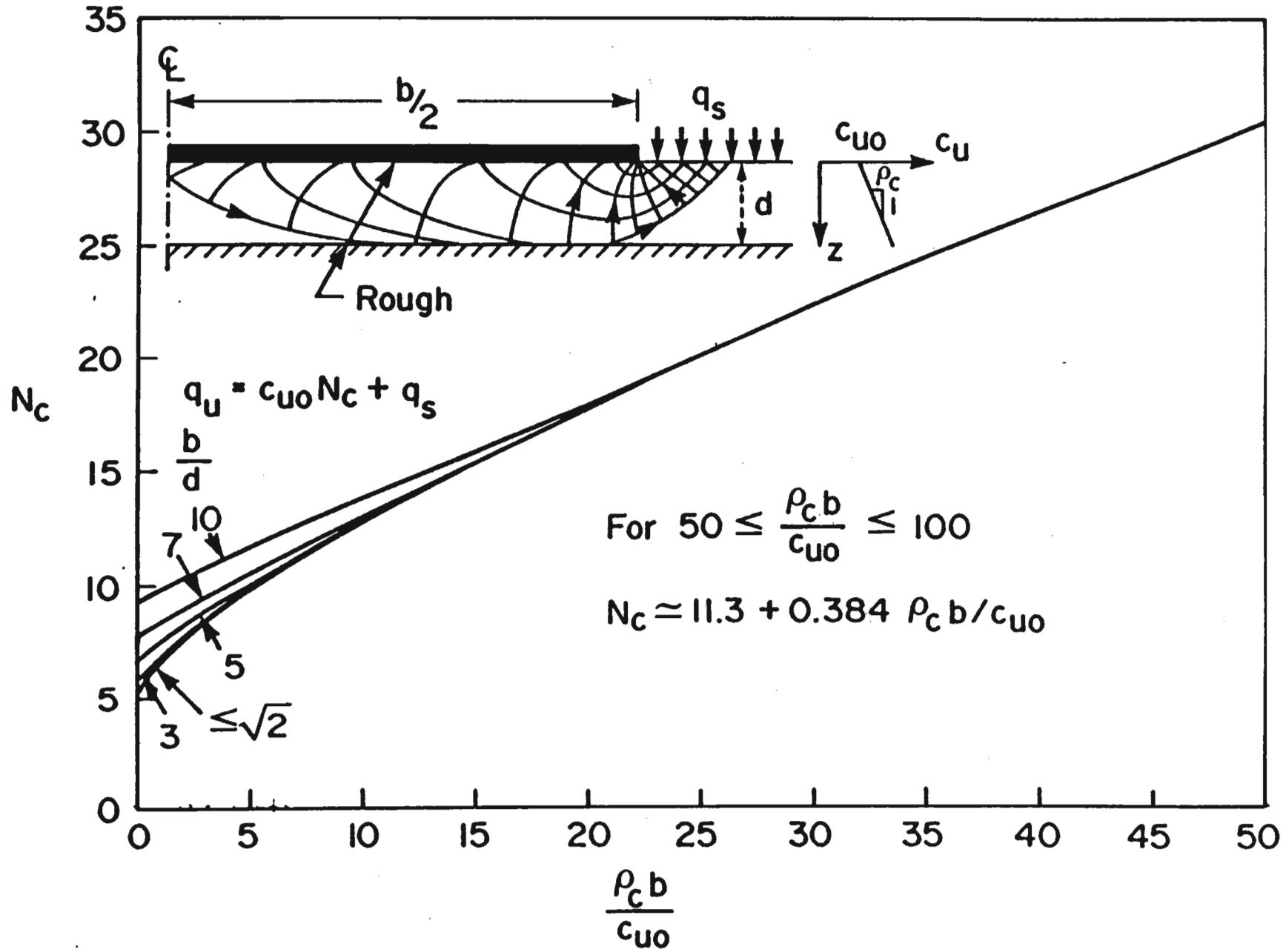

FIGURE 1 BEARING CAPACITY FACTOR FOR NON-HOMOGENEOUS SOIL (SYNTHESIZED FROM RESULTS BY DAVIS AND BOOKER, 1973; MATAR AND SALENCON, 1977)

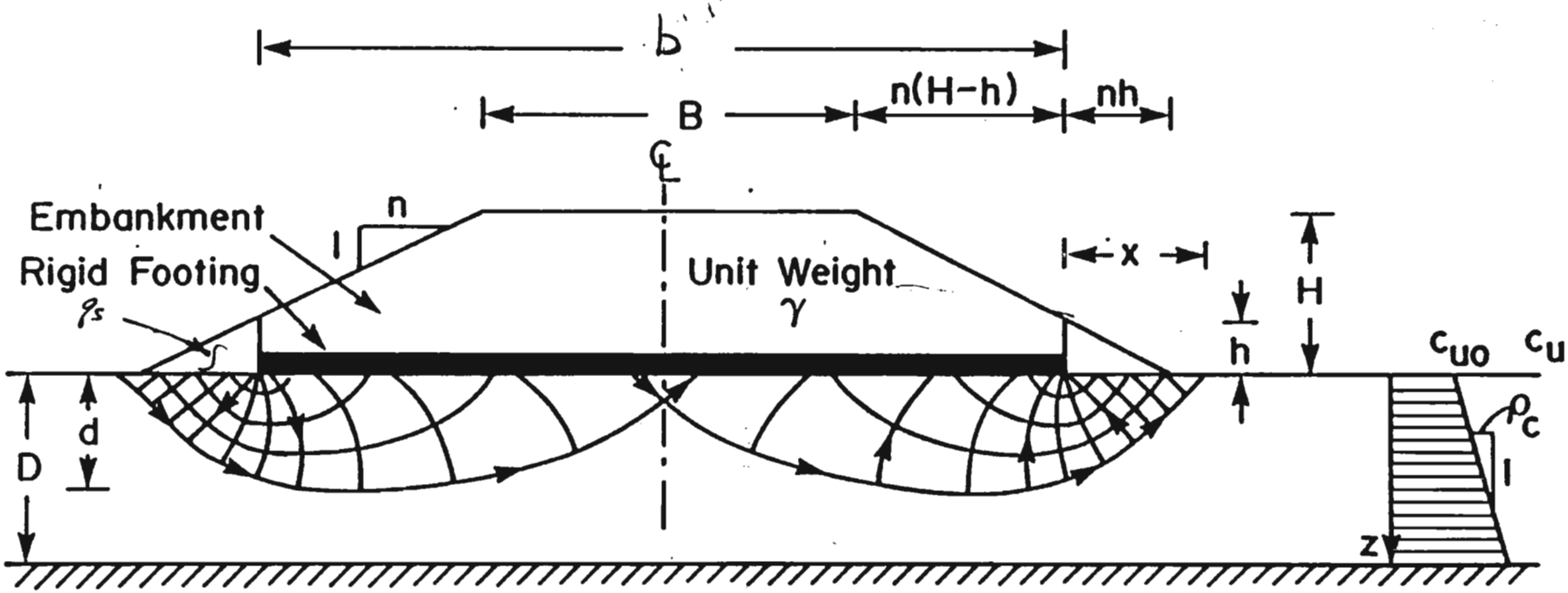

FIGURE 2 DEFINITION OF VARIABLES USED TO ESTIMATE COLLAPSE HEIGHT FOR A PERFECTLY REINFORCED EMBANKMENT

$$q_u = c_{uo} N_c + q_s$$

D-4

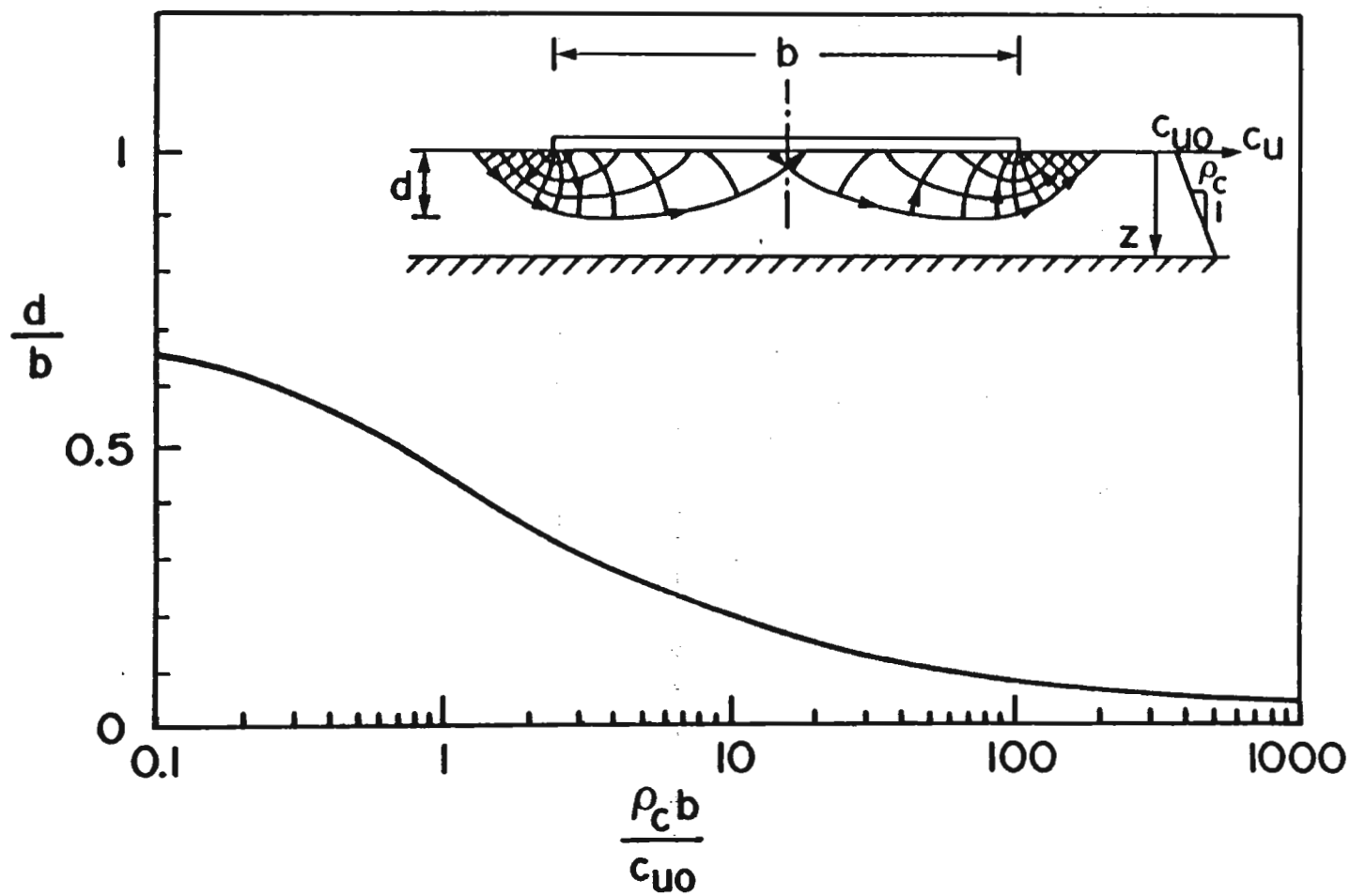

FIGURE 3 EFFECT OF NON-HOMOGENEITY ON DEPTH OF THE FAILURE ZONE BENEATH A ROUGH RIGID FOOTING (MODIFIED FROM MATAR AND SALENCON, 1977)

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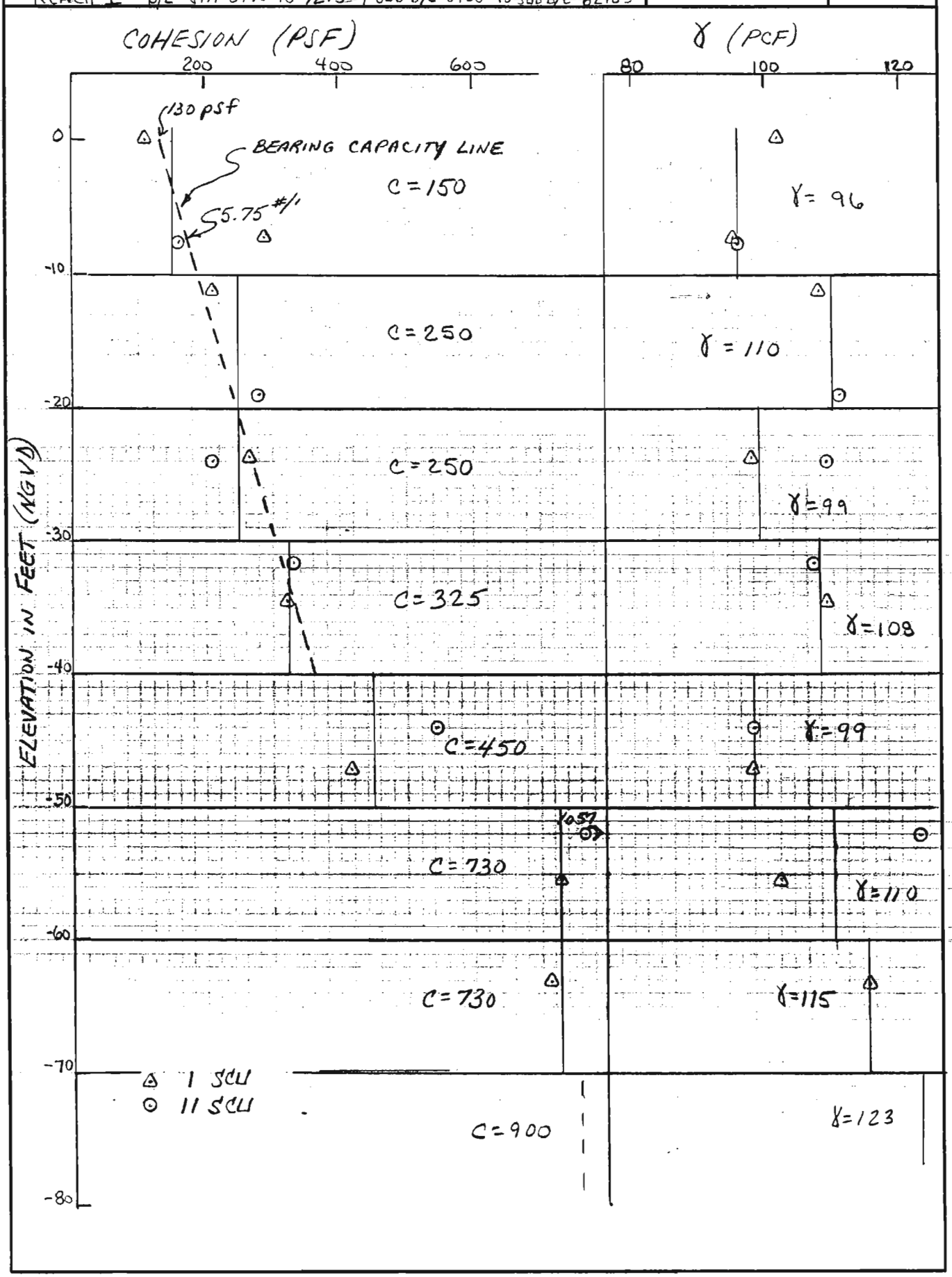

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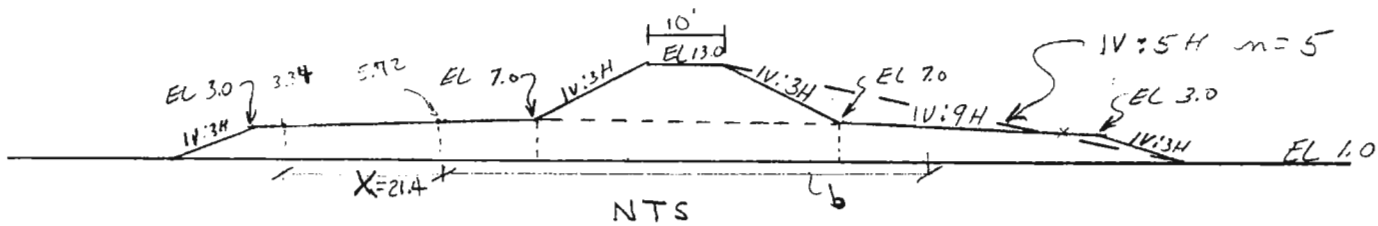

$C_{uo} = 130$ psf $\quad \rho_3 = 5.75$ #/. $\quad H = 12.0 \quad n = 5$

$h = (2+\pi)\, C_{uo} / \gamma = (2+\pi)\, 130/110 = 6.08$

$b = B + 2n(H-h) = 10 + 2(5)(12 - 6.08) = 69'$

USING FIG 7 with $\frac{\rho_c b}{C_{uo}} = \frac{5.75(69)}{130} = 3.1$; $d/b = .31$

USING FIG 5 with $\frac{\rho_c b}{C_{uo}} = 3.1$ & $b/d = 3.2$; $N_c = 8.6$

$X = (\min D, d)$; $d = .31(69) = 21.4$ & $D = 50$; $X = 21.4$

$q_s = 100\left(\frac{3.34+5.72}{2}\right)(21.4) / 21.4 = 453$ psf

$q_u = C_{uo} N_c + q_s = 130(8.6) + 453 = 1571$

$q_a = 110\left[\frac{10+46}{2}(6) + 46(7) + 2(11.5)\left(7+\frac{5.72}{2}\right)\right] / 69$

$q_a = 1014$

$F.S. = \frac{q_u}{q_a} = \frac{1571}{1014} = 1.55$ O.K.

NOTE: COULD DECREASE BERM SLOPE FROM 1V:9H TO 1V:8H WITH VERY LITTLE EFFECT ON THE BEARING CAPACITY F.S.

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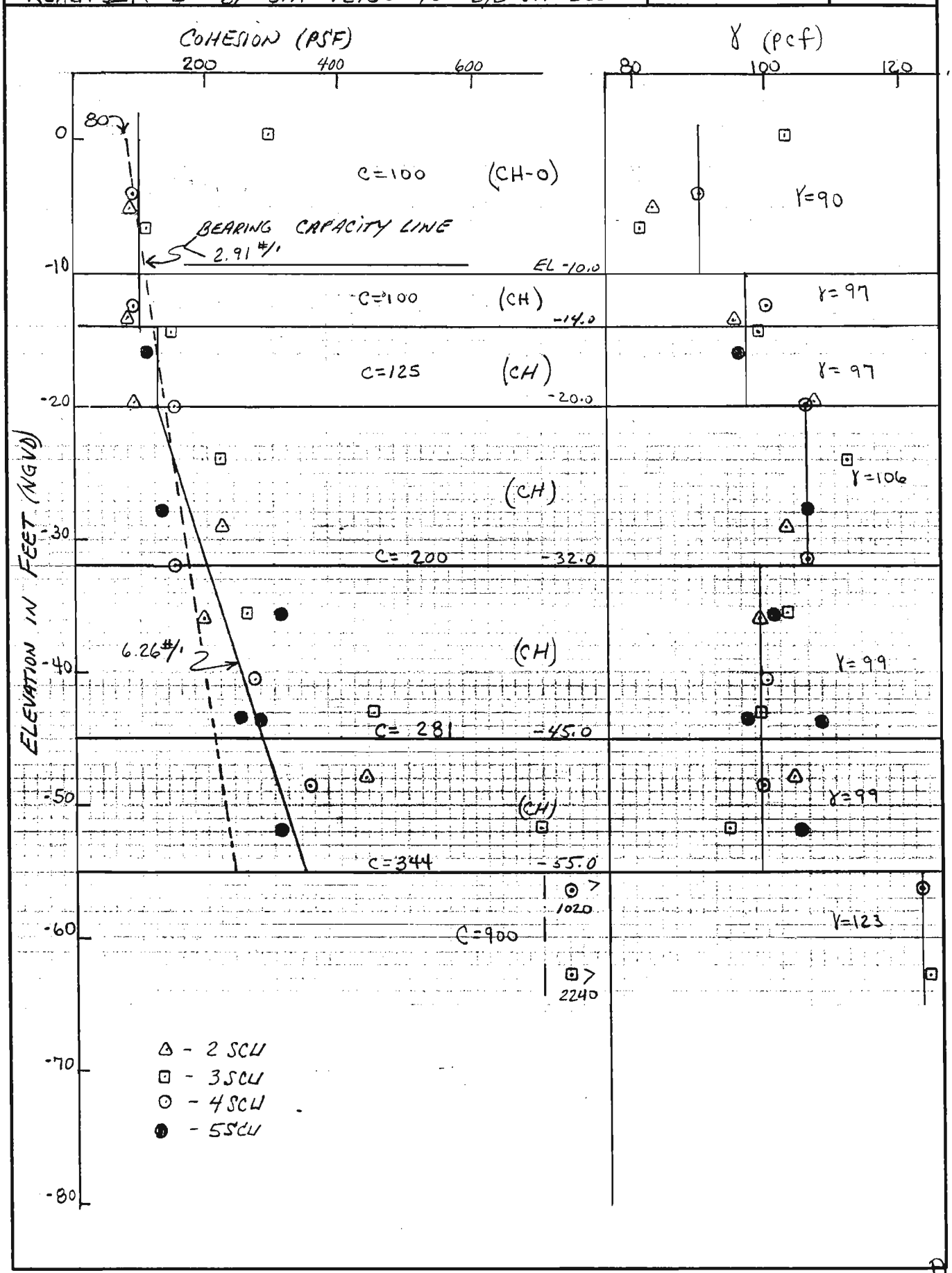

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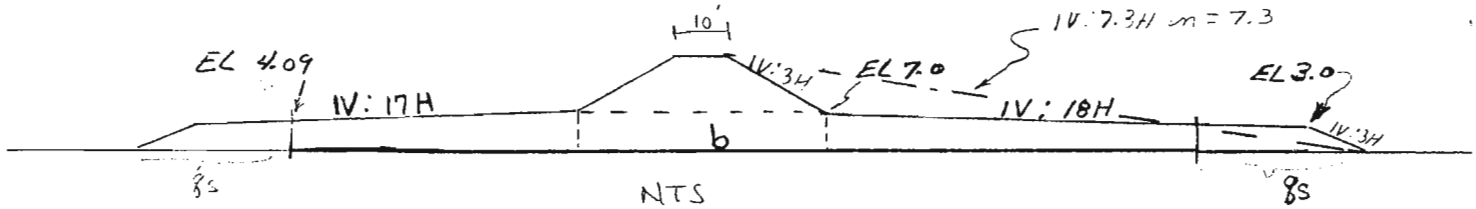

$C_{uo} = 80\,psf \quad \rho_c = 2.91\,\#/' \quad H = 13 \quad m = 7.3 \quad (1V:17H)$

$h = (2+\pi)\,C_{uo}/\gamma = (2+\pi)\,80/110 = 3.74$

$b = B + 2m(H-h)$

$= 10 + 2(7.3)(13-3.74) = 145$

USING FIG 7 with $\frac{\rho_c b}{C_{uo}} = \frac{2.91(145)}{80} = 5.27$; $d/b = .26$

USING FIG 5 with $\frac{\rho_c b}{C_{uo}} = 5.27$ & $b/d = 3.85$; $N_c = 10$

$X = \min$ of (d, D) ; $d = .26(145) = 38'$ $\quad D = 55$; $X = 38'$

$q_s = \left[\frac{4.09+3}{2}(18.5)(100) + \frac{1}{2}(9)(3)(100)\right]/38 \cong 208\ psf$

$q_u = N_c C_{uo} + q_s = 10(80) + 208 = 1008\ psf$

$q_a = \left[\left(\frac{10+46}{2}\right)(6)(110) + 46(7)(110) + 2\left(\frac{7+4.09}{2}\right)(49.5)(110)\right]/145$

$q_a = 788\ psf$

$F.S. = \frac{1008}{788} = 1.28$ BETWEEN (1.2 to 1.3) O.K.

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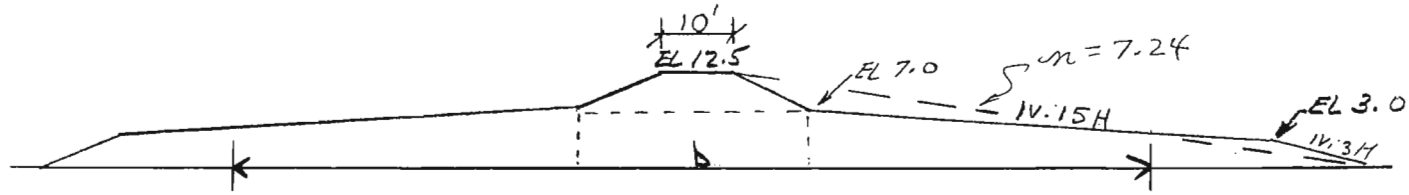
SUBJECT BEARING CAPICITY		CHECKED BY	DATE



$C_{uo} = 80 \quad \rho_c = 2.91\ \#/' \quad H = 12.5 \quad m = 7.24$

$h = (2+N)C_{uo}/\gamma = (2+N)\,80/110 = 3.74$

$b = B + 2m(H-h)$

$10 + 2(7.24)(12.5-3.74) \cong 137$

USING FIG 7 WITH $\frac{\rho_c b}{C_{uo}} = \frac{2.91(137)}{80} = 4.98$; $d/b = .26$

USING FIG 5 WITH $\frac{\rho_c b}{C_{uo}} = 4.98$ & $b/d = 3.85$; $N_c \cong 10$

$X = \min$ of (d, Δ); $d = .26(137) = 35.62 \quad \Delta = 55' \quad \therefore \quad X = 35.62'$

$q_s = \left[\frac{3.87+3}{2}(13.05)(100) + \frac{1}{2}(9)(3)(100)\right] / 35.62 = 164\ psf$

$q_u = N_c C_{uo} + q_s = 10(80) + 164 = 964\ psf$

$q_a = \left[\frac{10+43}{2}(5.5)(110) + 43(7)(110) + 2\left(\frac{7+3.87}{2}\right)(46.95)(110)\right] / 137$

$q_a = 768\ psf$

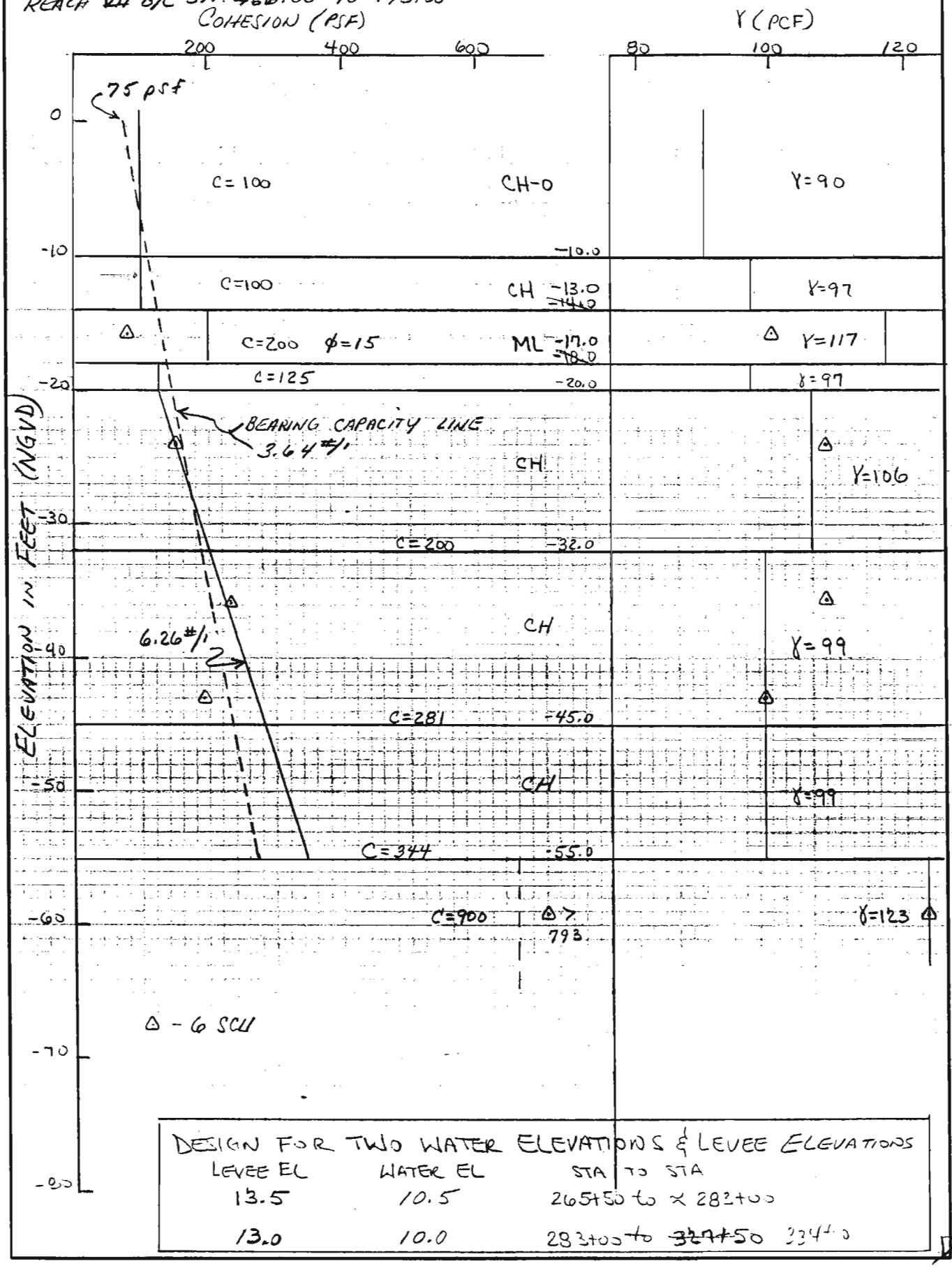
$F.S. = \frac{q_u}{q_a} = \frac{964}{768} = \underline{\underline{1.26}}$ $\underline{\underline{O.K.}}$ (SLOPE 1V:15H)

PREVIOUS EDITIONS MAY BE USED (FOR USE WITH EO 1110-1-1)

COMPUTATION SHEET

PROJECT ST CHARLES PARISH - GDM	PAGE 3 OF	COMPUTED BY REP	DATE 27 Oct 97
SUBJECT REACH III B/L STA 265+50 to 334+00		CHECKED BY	DATE

REACH III B/L STA 466+00 to 495+00

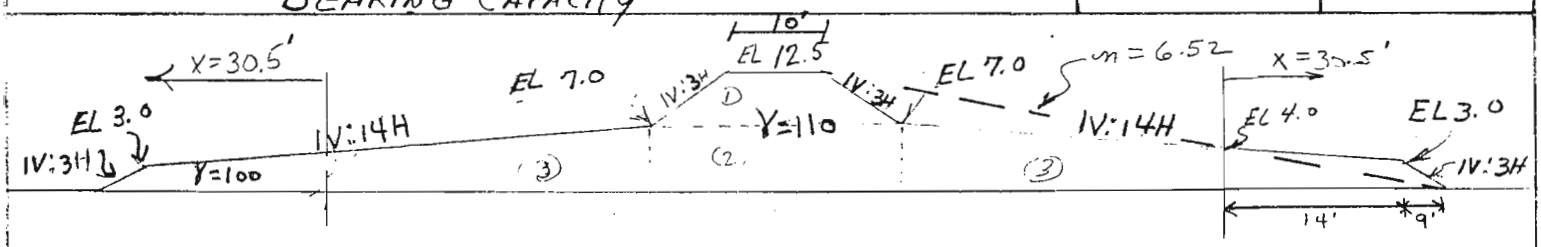


DESIGN FOR TWO WATER ELEVATIONS & LEVEE ELEVATIONS

LEVEE EL	WATER EL	STA TO STA
13.5	10.5	265+50 to ~~282+00~~
13.0	10.0	283+00 to ~~327+50~~ 334+00

D-11

PROJECT ST CHARLES PARISH – REACH 3A	PAGE 1 OF 2	COMPUTED BY RRP	DATE 4/29/87
SUBJECT BEARING CAPACITY		CHECKED BY	DATE



$C_{u0} = 75$ psf $\quad H = 12.5 \quad \rho_c = 3.64$ #/' $\quad m = 6.52$

$h = (2+\pi)C_{u0}/\gamma = (2+\pi)(75)/110 = 3.51$

$b = B + 2m(H-h)$
$= 10 + 2(6.52)(12.5 - 3.51) = 127$

<u>USING FIG 7</u> with $\frac{\rho_c b}{C_{u0}} = \frac{(3.64)(127)}{75} = 6.16$; $d/b = .24$

<u>USING FIG 5</u> with $\frac{\rho_c b}{C_{u0}} = 6.16$ & $b/d = 4.2$; $N_c = 10.5$

$X = \min$ of (d, D); $d = .24(127) = 30.5$; $D = 55$; $\therefore X = 30.5$

$q_s = 100\left[\left(\frac{4+3}{2}\right)(14) + \frac{1}{2}(9)(3)\right] / 30.5 = 205$ psf

$q_u = N_c C_{u0} + q_s = 10.5(75) + 205 = 992.5$ psf

$q_a = 110\left[\left(\frac{10+43}{2}\right)(5.5) + (43)(7) + 2\left(\frac{7+4}{2}\right)(42)\right] / 127 = 787.1$ psf

$\underline{\underline{F.S.}} = \frac{q_u}{q_a} = \frac{992.5}{787.1} = \underline{\underline{1.26}}$ (SLOPE 1V:14H) O.K.

ENG FORM 1076
OCT 86
PREVIOUS EDITIONS MAY BE USED
(FOR USE WITH 10 x 10 GRID

CHANGED 1V ON 14H TO 1V ON 13H

$C_{u0} = 75 psf \quad H = 12.5 \quad \rho = 3.64 \#/'' \quad m = 6.2$

$h = (2+M)\, C_{u0}/\gamma = (2+M)(75)/110 = 3.51$

$b = B + 2m\,(H-h)$

$= 10 + 2(6.2)(12.5 - 3.51) = 121.5$

USING FIG 7 with $\frac{\rho c b}{C_{u0}} = \frac{(3.64)(121.5)}{75} = 5.9$; $d/b = .25$

USING FIG 5 with $\frac{\rho c b}{C_{u0}} = 5.9$ & $b/d = 4$; $N_c = 10.4$

$X = \min$ of (d, D); $d = .25(121.5) = 30.4$; $D = 55$; $\therefore X = 30.4$

$q_s = 100\left[\left(\frac{3.98+3}{2}\right)(12.75) + \frac{1}{2}(9)(3)\right] / 30.4 = 191$

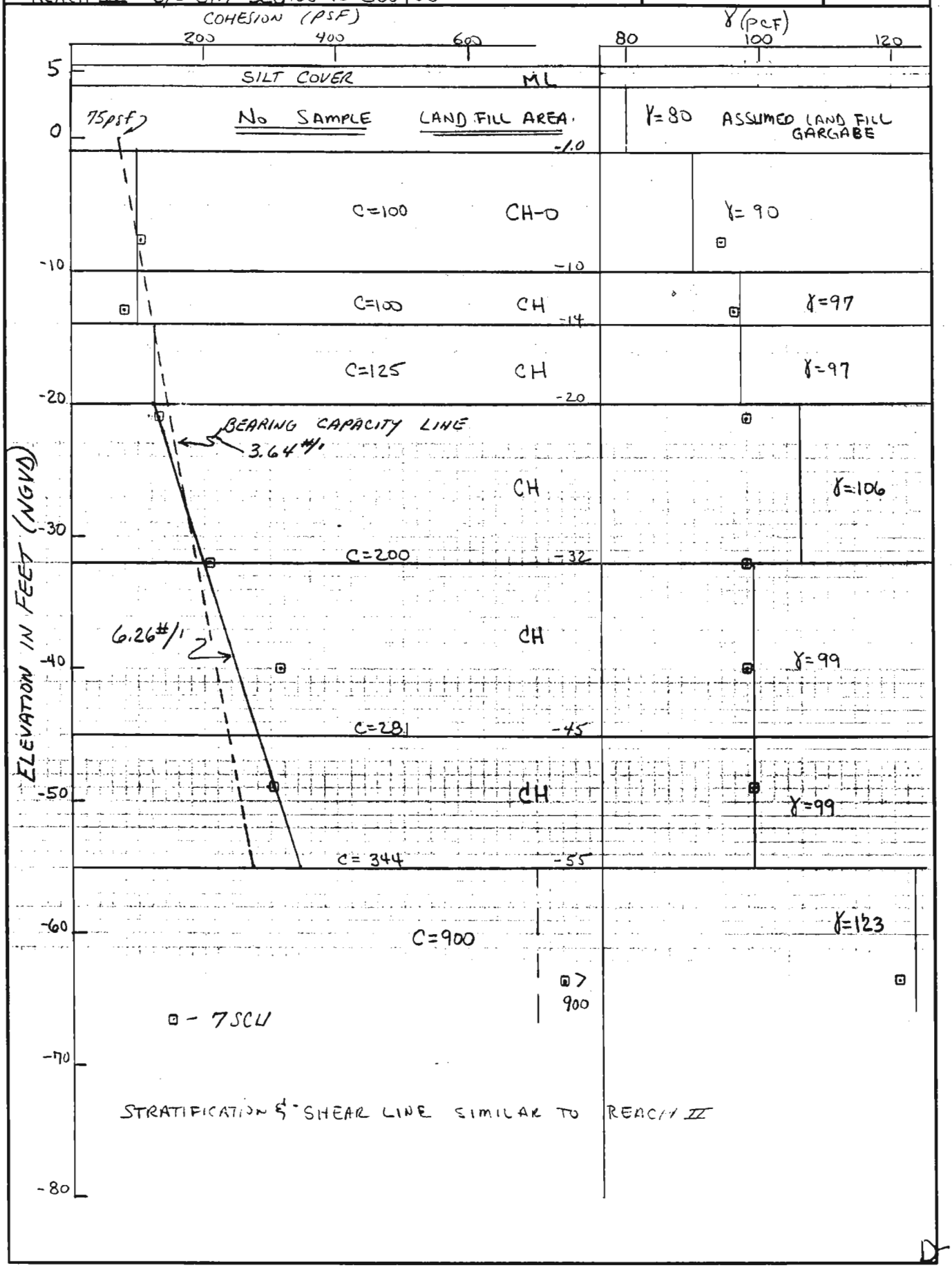
$q_u = N_c C_{u0} + q_s = 10.4(75) + 191 = 971 \text{ psf}$

$q_a = 110\left[\left(\frac{10+43}{2}\right)(5.5) + 43(7) + 2\left(\frac{7+3.98}{2}\right)(39.26)\right] / 121.5 = 794.7$

$F.S. = \frac{q_u}{q_a} = \frac{971}{795} = 1.22$ (SLOPE 1V:13H) – MIN

PREVIOUS EDITIONS MAY BE USED (FOR USE WITH 10 x 10 GRID)

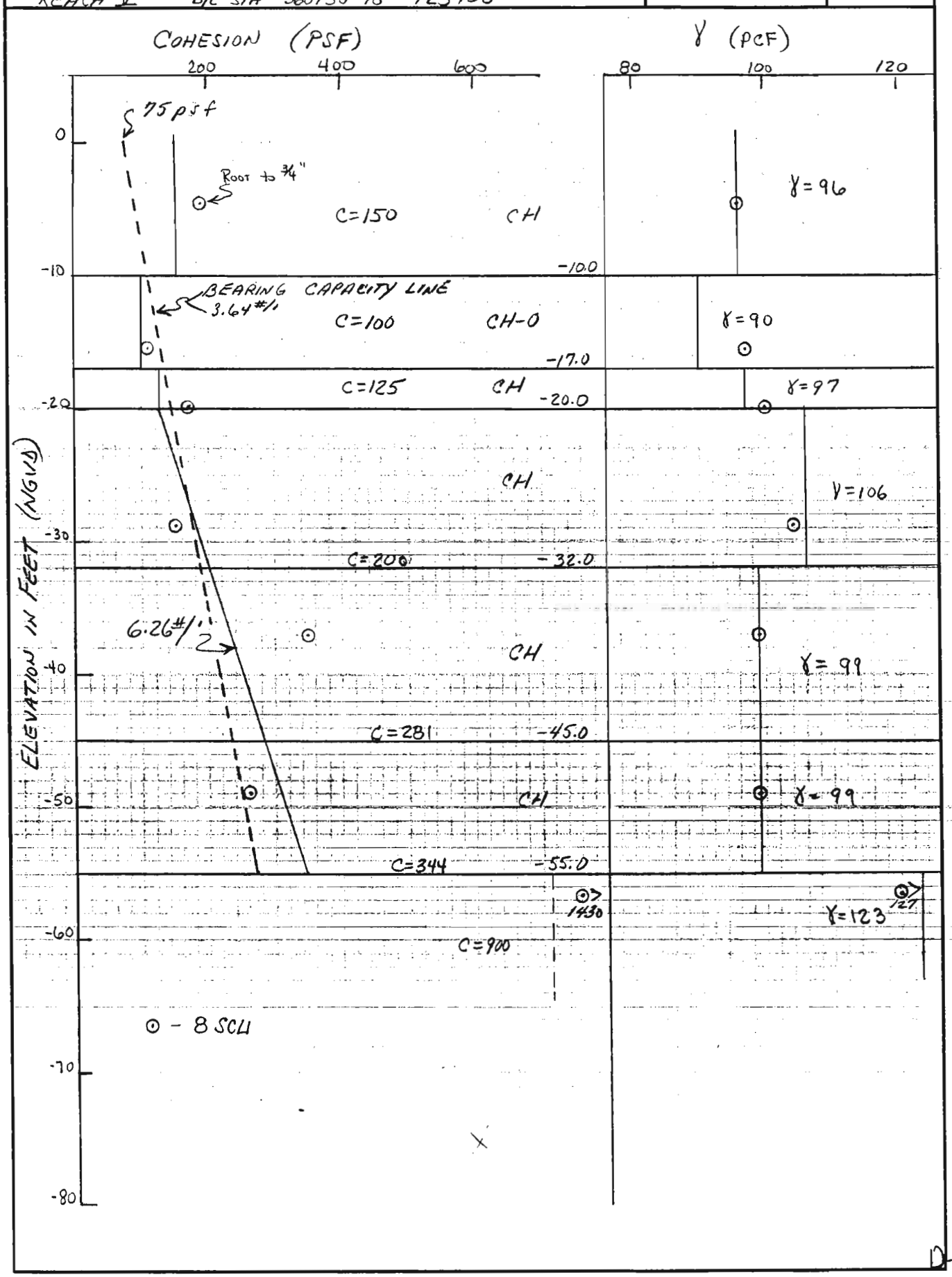
PROJECT ST CHARLES PARISH - GDM	PAGE 4 OF	COMPUTED BY RBP	DATE 27 Oct 97
SUBJECT REACH IV B/L STA 328+00 to 360+00		CHECKED BY	DATE



D-14

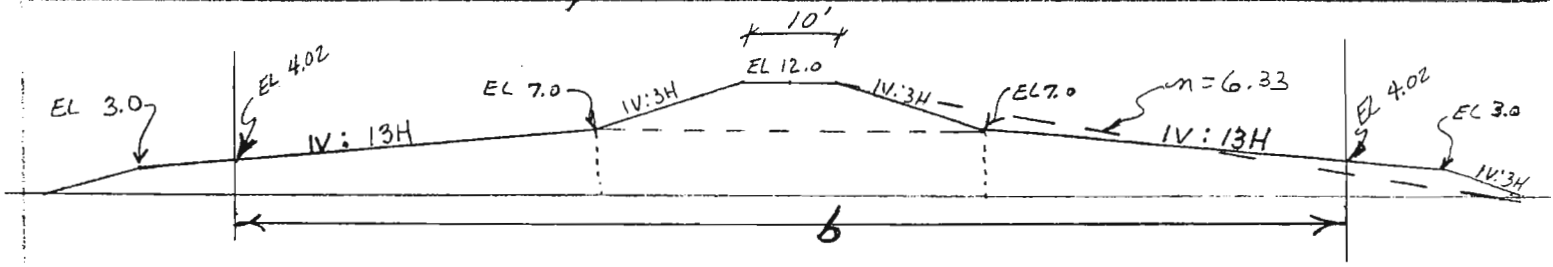
COMPUTATION SHEET

PROJECT ST CHARLES PARISH - GDM	PAGE 5 OF	COMPUTED BY RPP	DATE 22 Oct 97
SUBJECT REACH V B/L STA 360+50 to 425+00		CHECKED BY	DATE



D-15

PROJECT ST CHARLES PARISH – REACH 3B, 4, 5, & 7	PAGE 1 OF 1	COMPUTED BY ROP	DATE 5/88
SUBJECT BEARING CAPACITY		CHECKED BY	DATE



$C_{u0} = 75$ psf $\quad H = 12 \quad \rho_c = 3.64 \quad m = 6.33$

$$h = (2+\pi)C_{u0}/\gamma = (2+\pi)(75)/110 = 3.51$$

$$b = B + 2m(H-h) = 10 + 2(6.33)(12-3.51) = 117.5$$

<u>USING FIG 7</u> with $\frac{\rho_c b}{C_{u0}} = \frac{3.64(117.5)}{75} = 5.7$; $d/b = .25$

$$\therefore d = .25(117.5) = 29.4'$$

<u>USING FIG 5</u> WITH $\frac{\rho_c b}{C_{u0}} = 5.7$ & $b/d = 4$; $N_c = 10.2$

$X = \min$ of (d, D) ; $d = 29.4$; $D = 55 \quad \therefore X = 29.4$

$$q_s = 100\left[\left(\frac{4.02+3}{2}\right)(13.25) + \tfrac{1}{2}(9)(3)\right]/29.4 = 204 \text{ psf}$$

$$q_u = N_c C_{u0} + q_s = 10.2(75) + 204 = 969 \text{ psf}$$

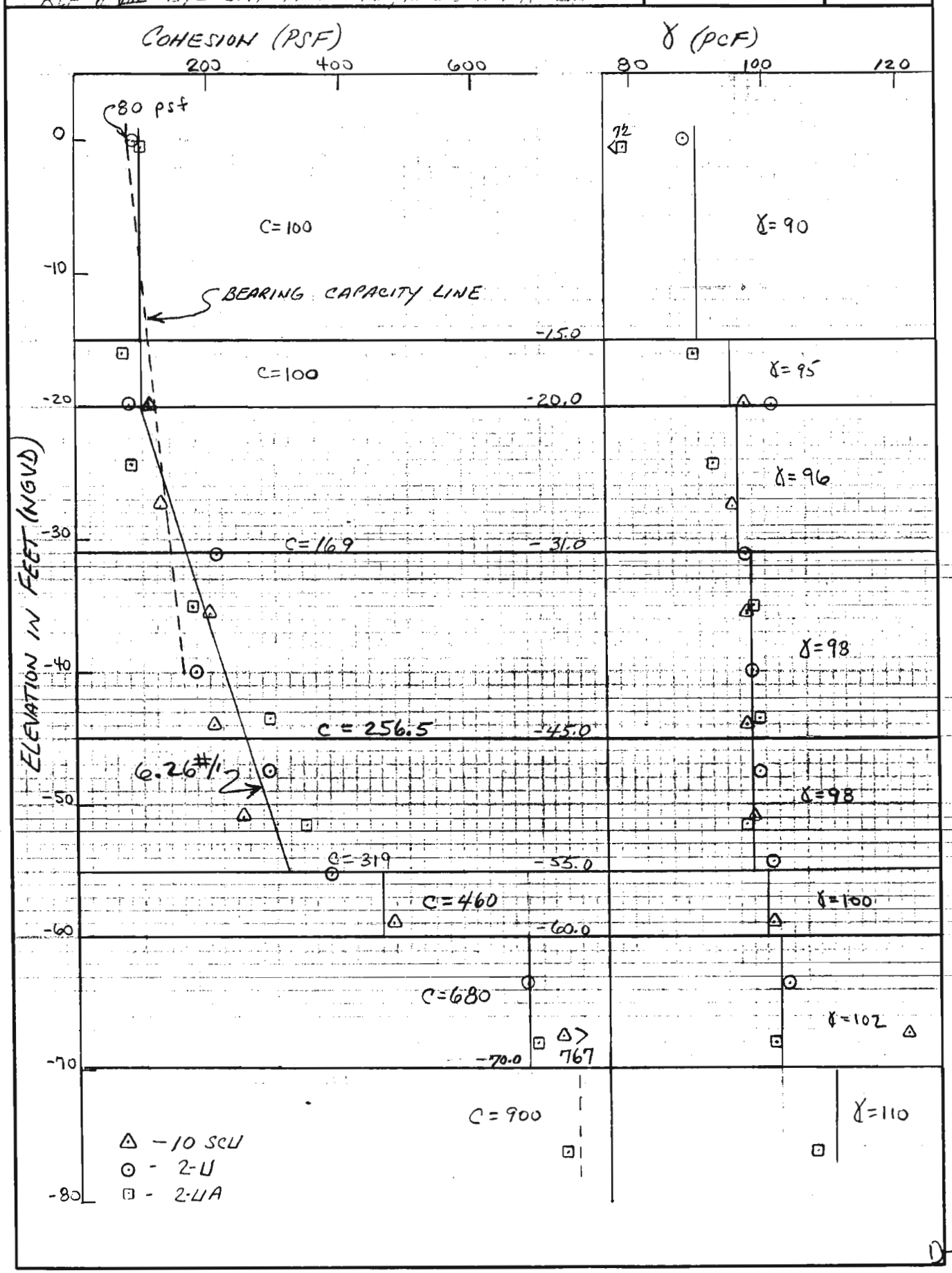
$$q_a = 110\left[\left(\frac{10+40}{2}\right)(5) + (40)(7) + 2\left(\frac{7+4.02}{2}\right)(38.75)\right]/117.5 = 779 \text{ psf}$$

$$\underline{\underline{F.S.}} = \frac{q_u}{q_a} = \frac{969}{779} = \underline{\underline{1.24}}$$ (BERM SLOPE 1V:13H) o.k.

PREVIOUS EDITIONS MAY BE USED (FOR USE WITH 10 x 10 GRID)

COMPUTATION SHEET

PROJECT ST CHARLES PARISH L&F AIRPORT EXT.	PAGE 7 OF	COMPUTED BY RBP	DATE 29 OCT 87
SUBJECT REACH VIII R/L STA 47+ TO L&F AIRPORT EXT		CHECKED BY	DATE



D-17

BEARING CALCULATIONS

1) $C_{u_0} = 80$ $\rho = 2$ $H = (12+2) = 14$ $m = 7.0$

$h = (2+\pi) C_{u_0} / \gamma = (2+\pi)\, 80/110 = 3.74$

$b = B + 2m(H-h) = 10 + 2(7)(14-3.74) = 154$

FIG 7

with $\dfrac{\rho_c b}{C_{u_0}} = \dfrac{2 \times 154}{80} = 3.85$ $d/b = 0.29$

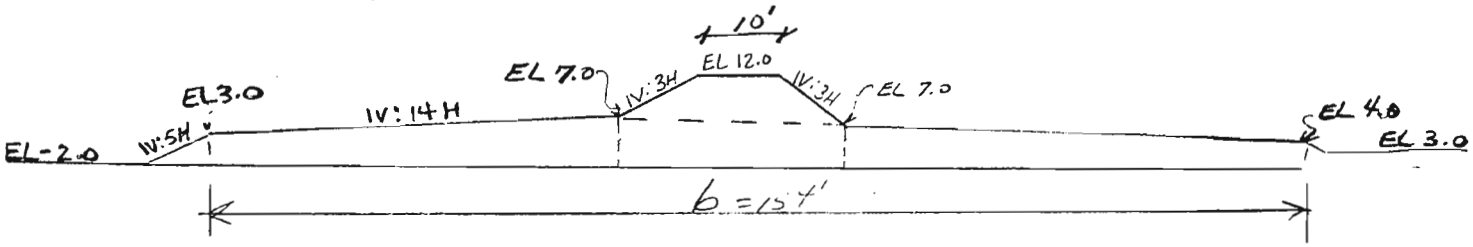
$\therefore\ d = 0.29 \times 154 \cong 45'$

FIG. 5

with $b/d = \frac{154}{45} \cong 3.45$ & $\dfrac{\rho_c b}{C_{u_0}} = 3.85$

$N_c = 9.2$

$X = \min$ of $(d, D) = 45'$



$q_s = \frac{1}{2}(5)(25)110/45 = 153$ psf

$q_u = N_c C_{u_0} \ldots = 9.2(80) - 153 = 889$ psf

$q_a = \ldots \left[\left(\frac{\ldots}{\ldots}\right)5 + 100 \right] + 2\left(\frac{\ldots}{\ldots}\right)(57) \ldots 154 = 753$ psf

$F_s = \frac{\ldots}{\ldots} = \frac{\ldots}{\ldots} = 1.18$ [illegible]

PREVIOUS EDITIONS MAY BE USED

and a 40' WIDE BERM AT ELEV. 0.0

$\therefore q_s = [\frac{1}{2}(3)(15) + 45(2)]\,100/45 = 250$

$q_u = 9.2(80) + 250 = 986$

$q_a = 753$ [illegible] ABOVE

$F.S. = \frac{q_u}{q_a} = \frac{986}{753} = \underline{\underline{1.31}}$

(2) RECHECK BEARING INCLUDING THE BERM IN N

$C_{uo} = 80 \qquad \rho = 2 \qquad H = (12+2) = 14' \qquad m = 9.36$

$h = (2+\pi)\,C_{uo}/\gamma = (2+\pi)\,80/110 = 3.74$

$b = B + 2m\,(H-h) = 10 + 2(9.36)(14-3.74) = 202$

FIG 7

with $\frac{\rho c b}{C_{uo}} = \frac{2 \times 202}{80} = 5.05 \qquad d/b = 0.26 \;;\; d = 52.5$

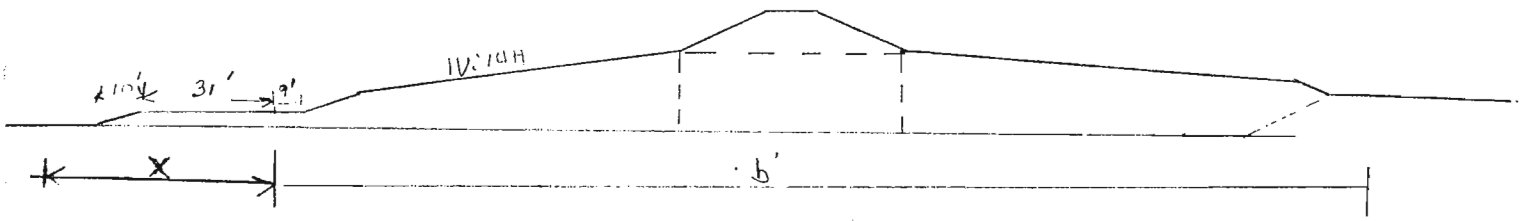
Fig 5

with $b/d = 3.35$ & $\frac{\rho c b}{C_{uo}} = 5.05$

$\underline{N_c} = 9.9$

$X = \min$ of $(d, D) = 52.5$

PREVIOUS EDITIONS MAY BE USED FOR LIFE [illegible]



$q_s = [31(2) + \frac{1}{2}(10)(2)]/52.5 = 137$

$q_u = 9.9(80) + 137 \cong 930$

$q_a = 110\left[\frac{10+40}{2}(5) + 40(9) + 2\left(\frac{9+5}{2}\right)(56) + 2\left(\frac{5+2}{2}\right)(15) + 2(9)(2)\right]/202$

$q_a = 768$ psf

$F.S. = \frac{q_u}{q_a} = \frac{930}{768} = 1.21$

---

(3) CHECK IF NATURAL GRND IS ELEV 0.0

$C_{u0} = 80$ psf $\quad \gamma = 2 \quad H = 12' \quad m = 7.6$

$h = (2+H)C_{u0}/\gamma = 3.74$

$b = B + 2m(H-h) = 10 + 2(7.6)(12-3.74) = 136'$

FIG 7

with $\frac{\gamma_c b}{C_{u0}} = \frac{2 \times 136}{80} = 3.4 \qquad d/b = 0.3 \quad ; \quad d \cong 41'$

FIG 5

with $\frac{\gamma_c b}{C_{u0}} = 3.4$ & $d/a = 2.33$

$N_c = 8.8$

PREVIOUS EDITIONS MAY BE USED

$$N_c = 9.2$$

$$q_s = 100\left[\left(\frac{3+3.69}{2}\right)(11) + \tfrac{1}{2}(3)(15)\right] / 42 = 142 \text{ psf}$$

$$q_u = 9.2(80) + 142 = 878 \text{ psf}$$

$$q_s = 110\left[\frac{10+40}{2}(5) + (40)(7) + 2\left(\frac{7+3.69}{2}\right)(53)\right] / 146 = 732$$

$$F.S. = \frac{q_u}{q_a} = \frac{878}{732} \cong 1.20 \quad \text{O.K.}$$

NOTE: BERMS SHOULD BE NO STEEPER THAN 1V:16 & TOE 1V:5H.

(FOR NATURAL GROUND @ EL 0.0)

PREVIOUS EDITIONS MAY BE USED

Stability.

(1) Shear Stabilities of the Earthen Levee with Geotextile Reinforcement. The stability of the levee was determined by the LMVD Method of Planes using the design "Q" shear strengths with hydraulic loading. To overcome the weak foundation soil strengths, geotextile reinforcement was introduced to stabilize the levee section. The required geotextile tensile strength for factor-of-safety of 1.3 was based on the larger value of the following two analyses:

(a) From the LMVD Method of Planès analyses, the following equation was used to determine the critical wedges which required the maximum tensile strength for the geotextile

$$T = \frac{(D_a - D_p)\ F.S. - (R_a + R_b + R_p)}{12}$$

Where

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

F.S. = factor-of-safety.

(b) Once the critical wedges were determined by the LMVD Methods of Planes, these failure surfaces were checked by the Spencer method with the PC-SLOPE micro computer program. The Spencer method considered the location of the Geotextile in determining the required Geotextile tensile strength. For Geotextile tensile strength requirements larger than 1600 lb/in, a two layer system was used with two-thirds (2/3) of the required tensile strength in the bottom layer and one-third (1/3) in the upper layer with a minimum 3 feet of fill between and over the fabric layers.

The embedment length (L) of the fabric for pull-out was calculated by the following equation:

$$L = \frac{T}{(\gamma_1' h_1 \tan O_1 + C_1) + (\gamma_2' h_2 \tan O_2 + C_2)}$$

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

"L" was measured from the critical active wedge into the anchorage zone and an equal length was placed in the active wedge zone. Also, the bottom layer of fabric was extended past the anchorage embedment requirement to attain a factor-of-safety of 1.3 of the levee berm in certain cases. Plates ___ through ____ show the stability analyses and the placement of the geotextile.

REACH I - PROTECTED SIDE

1.) FACTOR-OF-SAFETY OF EMBEDMENT WITHOUT FABRIC BY METHOD OF PLANES & SPENCER METHOD (P.C. SLOPE PROGRAM)

ELEV.	(SEE STABILITY PLATE) METHOD OF PLANES	SPENCER METHOD
-10.0	1.07	1.08
-20.0	1.06	1.18
-30.0	0.97	1.10
-40.0	1.03	1.26
-50.0	1.21	1.60

2.) REQUIRED FABRIC STRENGTH BASED ON THE FOLLOWING EQUATIONS

METHOD OF PLANES: $T = \frac{(D_A - D_P)\,F.S. - (R_A + R_B + R_P)}{12}$

SPENCER METHOD $T = \frac{F.S.(\Sigma \text{ DRIVING MOMENT}) - (\Sigma \text{ RESISTING MOMENT})}{Y(\text{COORD OF ORIGIN}) \times 12}$

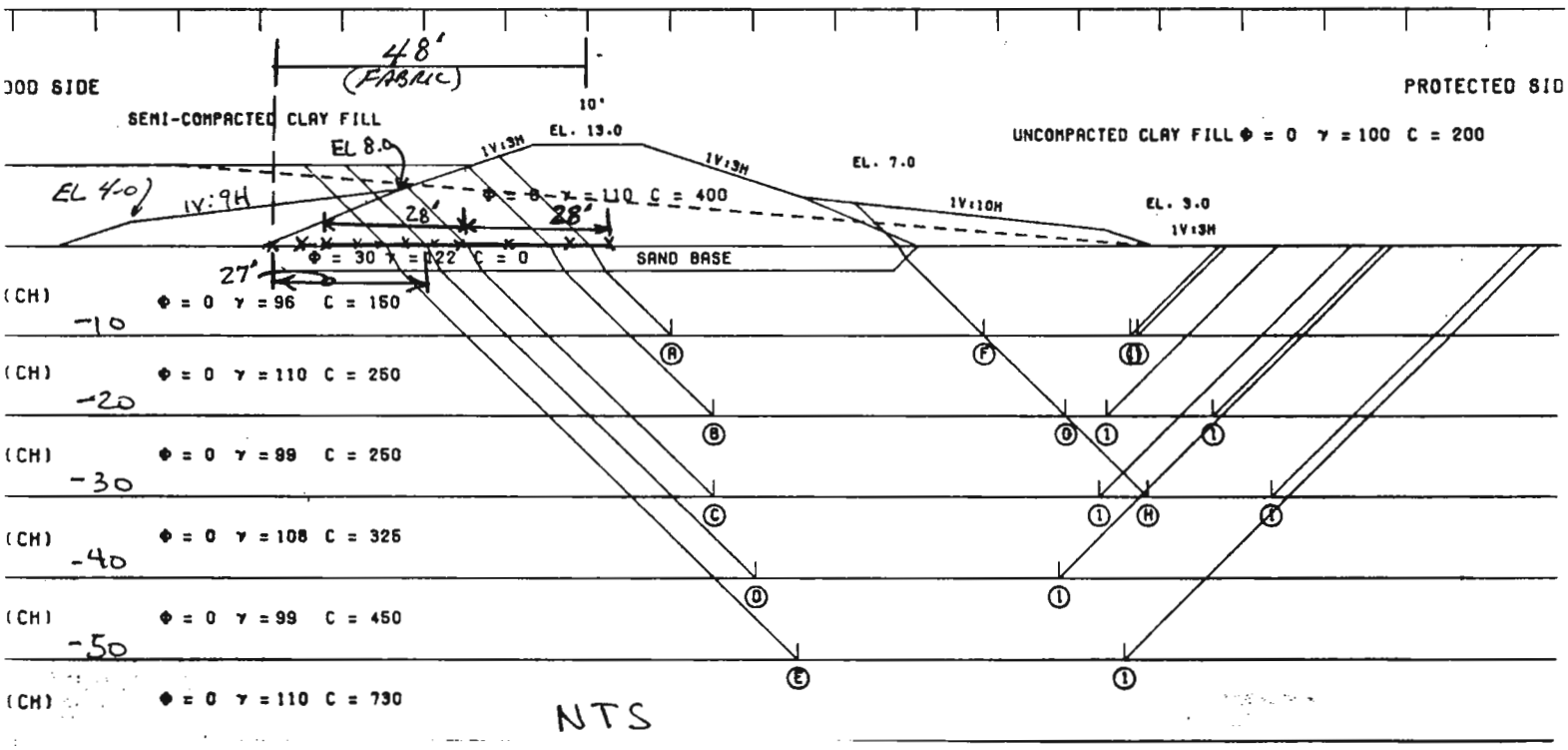
ELEV.	METHOD OF PLANES	(FABRIC @ EL 1.0) SPENCER METHOD
-10.0	462 #/"	485 #/"
-20.0	700 #/"	458 #/"
-30.0	1252 #/"	1210 #/"
-40.0	1220 #/"	292 #/"
-50.0	489 #/"	NO FABRIC

COMPARING RESULTS OF THE ABOVE ANALYSES, THE METHOD OF PLANES CONTROLS THE FABRIC STRENGTH

$T = 1250^{\#}/''$ AT EL 1.0

3.) EMBEDMENT LENGTH

$$L = \frac{T}{(\gamma_1' h_1 \tan\phi_1 + c_1) + (\gamma_2' h_2 \tan\phi_2 + c_2)}$$



NTS

CHECK EMBEDMENT LENGTH OF FABRIC AT ELEV. 1.0 FOR

EL -30.0 $T = 1250^{\#}/''$

EL -40.0 $T = 1220^{\#}/''$

AVE HGT OF FILL ABOVE FABRIC IS 5.3' BASED ON PRELIMINARY EMBEDMENT COMPUTATIONS.

EL -30.0

$$L = \frac{1250 \times 12}{\underbrace{5.3(110-62.5)\tan 30}_{\text{SAND BASE}} + \underbrace{400}_{\text{TOP}}} \cong \underline{28'} \quad \text{OR} \quad \underline{44} \text{ FROM LEVEE C/L}$$

EL -40.0

$$L = \frac{1220 \times 12}{5.3(110-62.5)\tan 30 + 400} \cong \underline{27'} \quad \text{OR} \quad 48' \text{ FROM LEVEE C/L}$$

CONTROLS

NOW CHECK FLOODSIDE REQUIRED FABRIC STRENGTH AND LENGTH.

THIS WORK CONTAINS MAY BE ... FOR USE WITH ...

REACH I - FLOOD SIDE

1.) FACTOR-OF-SAFETY OF EMBEDMENT WITHOUT FABRIC BY METHOD OF PLANES & SPENCER METHOD (P.C. SLOPE PROGRAM)

ELEV	METHOD OF PLANES (SEE STABILITY PLATE)	SPENCER METHOD
-10.0	1.16	—
-20.0	1.06	1.20
-30.0	0.98	1.14
-40.0	1.06	1.32
-50.0	1.32	1.87

2.) REQUIRED FABRIC STRENGTH BASED ON THE FOLLOWING EQUATIONS

METHOD OF PLANES: $T = \dfrac{(D_A - D_P)F.S. - (R_A + R_B + R_P)}{12}$

SPENCER METHOD $T = \dfrac{F.S.(\Sigma \text{ DRIVING MOMENT}) - (\Sigma \text{ RESISTING MOMENT})}{Y \text{ COORD OF ORIGIN} \times 12}$

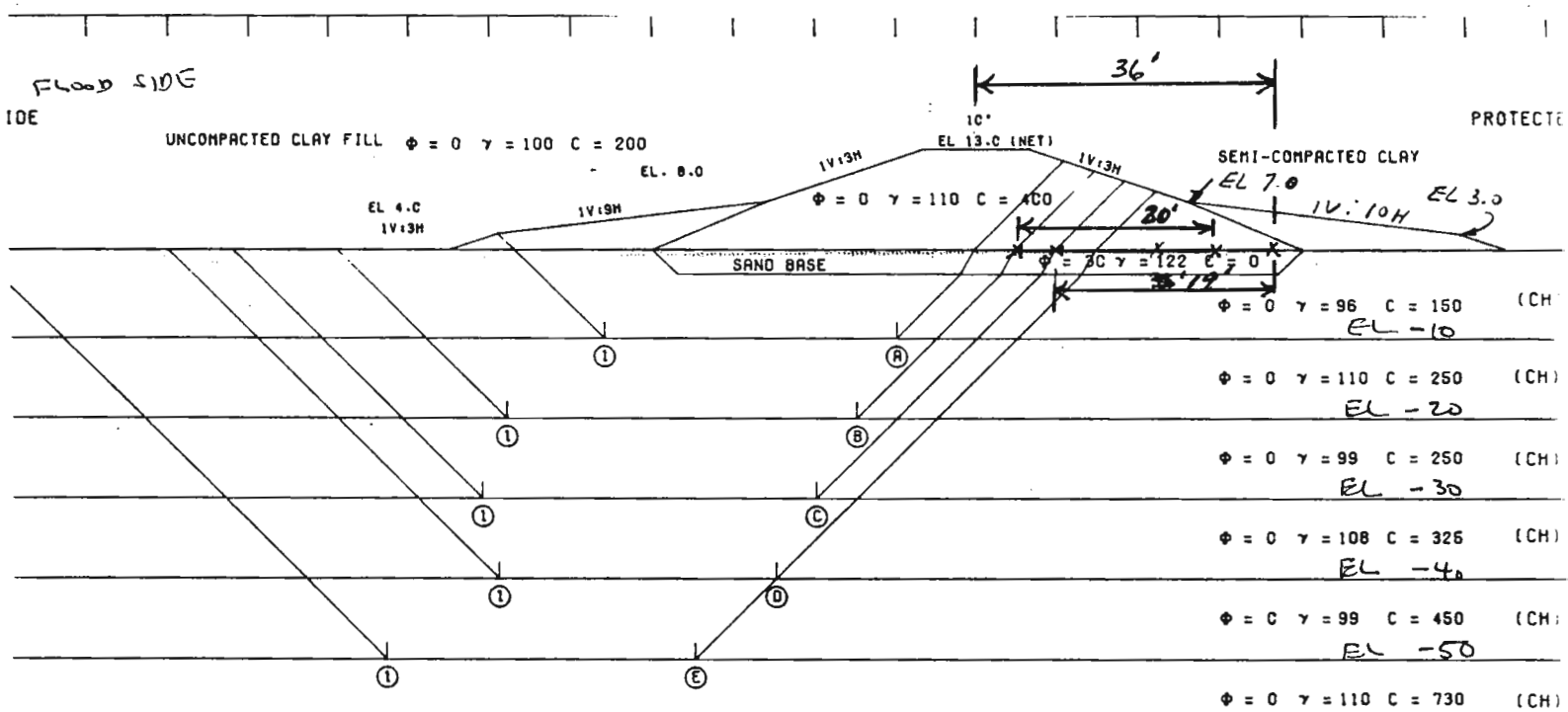
ELEV	METHOD OF PLANES	SPENCER METHOD
-10.0	232 #/"	—
-20.0	719 #/"	380 #/"
-30.0	1230 #/"	975 #/"
-40.0	1117 #/"	NONE
-50.0	NONE	NONE

COMPARING RESULTS OF THE ABOVE ANALYSES THE METHOD OF PLANES CONTROLS THE FABRIC STRENGTH

$T \cong 1250^{\#}/''$ AT EL 1.0

3.) EMBEDMENT LENGTH

$$L = \frac{T}{(\gamma_1' h_1 \tan\phi_1 + c_1) + (\gamma_2' h_2 \tan\phi_2 + c_2)}$$



CHECK EMBEDMENT LENGTH OF FABRIC AT ELEV. 1.0 FOR

EL -30.0 $T \cong 1250^{\#}/''$

EL -40.0 $T = 1150^{\#}/''$

AVE HGT OF FILL ABOVE FABRIC IS 5.6' BASED ON PRELIMINARY EMBEDMENT COMPUTATIONS:

EL -30

$$L = \frac{1250 \times 12}{5.6(110)\tan 30 + 400} \cong 20' \quad \text{OR} \quad 31' \text{ FROM LEVEE C/L}$$

EL -40

$$L = \frac{1150 \times 12}{5.6(110)\tan 30 + 400} \cong 19' \quad \text{OR} \quad 36' \text{ FROM LEVEE C/L}$$

THEREFORE: FABRIC LENGTH PERPENDICULAR TO THE LEVEE CENTERLINE FOR 1250#/" FABRIC IS (48+36) = 84 FEET.

REACH 2A - PROTECTED SIDE (2 LAYER SYSTEM)

1.) FACTOR-OF-SAFETY OF EMBEDMENT WITHOUT FABRIC BY METHOD OF PLANES & SPENCER METHOD (P.C. SLOPE PROGRAM)

ELEV.	METHOD OF PLANES	SPENCER METHOD
-20	0.78	0.81
-32	0.78	0.87
-45	0.85	1.04
-55	0.93	1.27

2.) REQUIRED FABRIC STRENGTH BASED ON THE FOLLOWING EQUATIONS

METHOD OF PLANES: $T = \dfrac{(D_A - D_P)\,F.S. - (R_A + R_B + R_P)}{12}$

SPENCER METHOD: $T = \dfrac{F.S.(\Sigma \text{ DRIVING MOMENT}) - (\Sigma \text{ RESISTING MOMENT})}{Y \text{ COORD. OF ORIGIN} \times 12}$

ELEV.	METH. OF PLANES SINGLE	METH. OF PLANES 2 LAYERS*	SPENCER SINGLE LAYER @ EL 0.0	METHOD 2 LAYER SYSTEM @ EL 3.0 & 0.0
-20	1648 #/"	548 & 1100 #/"	1875 #/"	
-32	2279 #/"	760 & 1519 #/"	2476 #/"	950 #/" & 1600 #/"
-45	2500 #/"	900 & 1600 #/"	2048 #/"	700 #/" & 1400 #/"
-55	2310 #/"	770 & 1540 #/"	276 #/"	

* MAX. FABRIC STRENGTH USED IS 1600 #/". APPROX. 1/3 OF THE REQUIRED T IS IN THE UPPER FABRIC & APPROX. 2/3 IN THE BOTTOM FABRIC

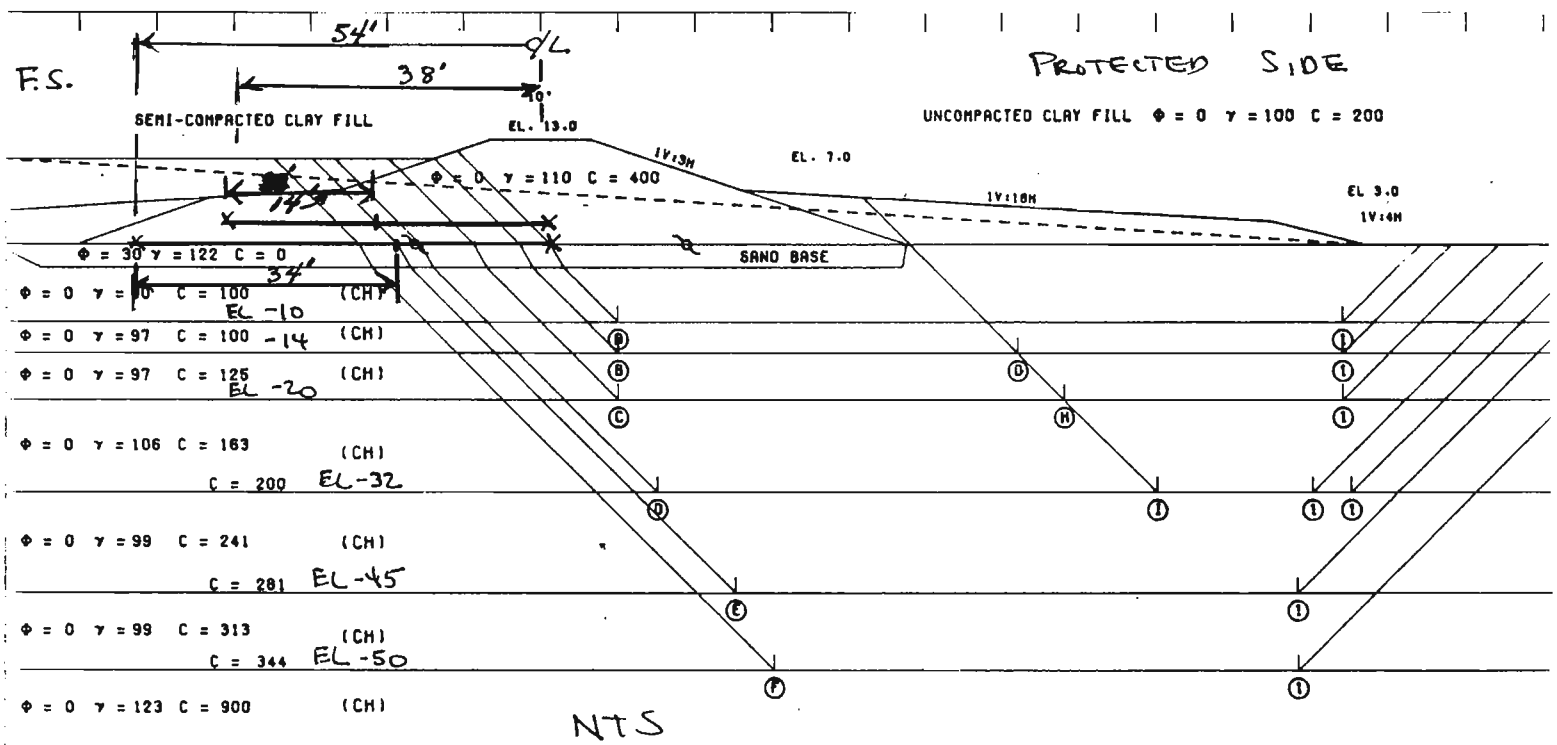
ST CHARLES PARISH
GEOTEXTILE DESIGN COMPUTATIONS

COMPARING RESULTS OF THE ABOVE ANALYSES, SPENCER METHOD CONTROLS THE REQUIRED FABRIC STRENGTHS (SLIP SURFACE EL -32)

"2 FABRIC LAYER SYSTEM"

T = 950 #/" @ EL 3.0
1600 #/" @ EL 0.0

3.) EMBEDMENT LENGTH



CHECK EMBEDMENT OF FABRIC FOR:

a) SPENCER METHOD FOR EL -32.0 T = 950 #/" @ EL 3.0 & 1600 #/" @ EL 0.0

b) METHOD OF [illegible] FOR EL -45.0 T = 900 #/" @ EL 3.0 & 1600 #/" @ EL 0.0

PROJECT ST CHARLES PARISH	PAGE OF	COMPUTED BY KLI	DATE
SUBJECT GEOTEXTILE DESIGN COMPUTATIONS		CHECKED BY	DATE

a) SPENCER METHOD: SLIP SURFACE @ EL -32.0

EL 3.0

$$L = \frac{950 \times 12}{400 + 400} = 14.3' \times \underline{15'}$$ DIST FROM C/L = $\underline{35'}$

EL 0.0 (AVE HGT OF FILL 6.25')

$$L = \frac{1600 \times 12}{6.25(110-62.5)\tan 30 + 400} \cong \underline{34'}$$ DIST FROM C/L = $\underline{51'}$

b) METHOD OF PLANES: SLIP SURFACE @ EL -45.0

EL 3.0

$$L = \frac{900 \times 12}{400 + 400} \cong \underline{14'}$$ $\boxed{\text{DIST FROM C/L} = 38'}$

CONTROLS

EL 0.0

$$L = \frac{1600 \times 12}{6.25(110-62.5)\tan 30 + 400} \cong \underline{34'}$$ $\boxed{\text{DIST FROM C/L} = 54'}$

*** THEREFORE: SPENCER METHOD, SLIP SURFACE EL-32, CONTROLLED THE FABRIC TENSILE STRENGTH. AND METHOD OF PLANES, SLIP SURFACE EL -45.0, CONTROLLED THE FABRIC EMBEDMENT LENGTH.

NOW CHECK FLOOD SIDE

PREVIOUS EDITIONS MAY BE USED (FOR USE WITH 10 x 10 GRID)

PROJECT ST CHARLES PARISH	PAGE OF	COMPUTED BY RRP	DATE
SUBJECT GEOTEXTILE DESIGN COMPUTATIONS		CHECKED BY	DATE

REACH 2A – FLOOD SIDE

1.) FACTOR-OF-SAFETY OF EMBEDMENT WITHOUT FABRIC BY METHOD OF PLANES & SPENCER METHOD (P.C. SLOPE PROGRAM)

ELEV.	METHOD OF PLANES	SPENCER METHOD
-20	0.78	0.82
-32	0.78	0.88
-45	0.86	1.05
-55	0.94	1.28

2.) REQUIRED FABRIC STRENGTH BASED ON THE FOLLOWING EQUATIONS

METHOD OF PLANES: $T = \dfrac{(D_A - D_P)\,F.S. - (R_A + R_B + R_P)}{12}$

SPENCER METHOD: $T = \dfrac{F.S.\,(\Sigma \text{DRIVING MOMENT}) - (\Sigma \text{RESISTING MOMENT})}{Y_{\text{COORD. OF ORIGIN}} \times 12}$

ELEV.	METHOD OF PLANES SINGLE	METHOD OF PLANES 2 LAYERS	SPENCER METHOD SINGLE LAYER @ EL 0.0	SPENCER METHOD 2 LAYER SYSTEM @ EL 3.0 & 0.0
-20	1657 #/"		1890 #/"	
-32	2245 #/"	745 #/" & 1500 #/"	2460 #/"	950 #/" & 1600 #/" @ EL 0.0
-45	2347 #/"	780 #/" & 1570 #/"	2006 #/"	714 #/" & 1350 #/"
-55	2144 #/"		210 #/"	

COMPARING RESULTS OF THE ABOVE ANALYSIS, SPENCER METHODS CONTROLS THE REQUIRED FABRIC STRENGTHS (SLIP SURFACE EL -32.0)

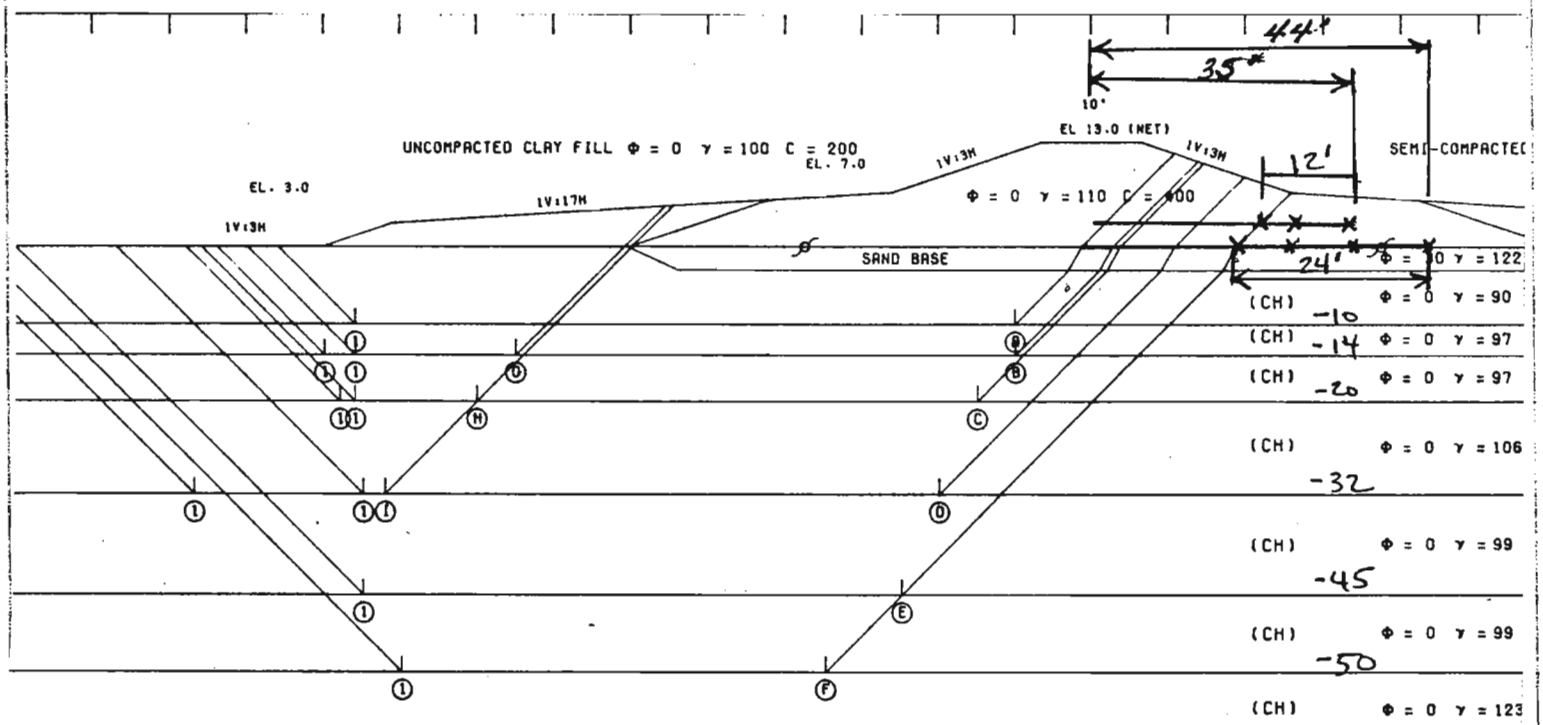
"2 LAYER SYSTEM"

T = 950 #/" @ EL 3.0 & 1600 #/" @ EL 0.0

LMV Form 1076 OCT 86 PREVIOUS EDITIONS MAY BE USED (FOR USE WITH 10 x 10 GRID

PROJECT ST CHARLES PARISH	PAGE OF	COMPUTED BY	DATE
SUBJECT GEOTEXTILE DESIGN COMPUTATIONS		CHECKED BY	DATE

3. EMBEDMENT LENGTH



CHECK EMBEDMENT OF FABRIC FOR:

a) SPENCER METHOD FOR EL -32.0 T = 950 #/" @ EL 3.0 & 1600 #/" @ EL 0.0

b) METHOD OF PLANES FOR EL -45.0 T = 780 #/" @ EL 3.0 & 1570 #/" @ EL 0.0

a) SPENCER METHOD: SLIP SURFACE EL -32.0

EL 3.0

$$L = \frac{950 \times 12}{400+400} \cong \underline{15'}$$ DIST FROM C/L = $\underline{30'}$

EL 0.0

$$L = \frac{1600 \times 12}{6.5(110)\tan 30 + 400} = \underline{24'}$$ DIST FROM C/L = $\underline{36'}$

PREVIOUS EDITIONS MAY BE USED (FOR USE WITH 10 x 10 GR

PROJECT ST CHARLES PARISH	PAGE OF	COMPUTED BY RCJ	DATE
SUBJECT GEOTEXTILE DESIGN COMPUTATIONS		CHECKED BY	DATE

b) METHOD OF PLANES: SLIP SURFACE @ EL -45.0

EL 3.0

$$L = \frac{780 \times 12}{400 + 400} = 12'$$

$\boxed{\text{DIST FROM C/L} = 35'}$

CONTROLS

EL 0.0

$$L = \frac{1570 \times 12}{6.5(110)\tan 30 + 400} \cong 24'$$

$\boxed{\text{DIST FROM C/L} = 44'}$

THEREFORE: FABRIC LENGTH PERPENDICULAR TO THE LEVEE CENTERLINE FOR 950#/" FABRIC IS (38+35) = 73 feet

1600#/" FABRIC IS (54+44) = 98 feet MIN

NOTE: BOTTOM FABRIC WAS EXTENDED TO ATTAIN A F.S. = 1.3 IN THE LEVEE BERM.

THE ABOVE EMBEDMENT CALCULATIONS ARE FOR REACH 1 & 2A. THE EMBEDMENT CALCULATIONS FOR REACH 2B THRU 8 ARE CALCULATED THE SAME BUT ARE NOT SHOWN.

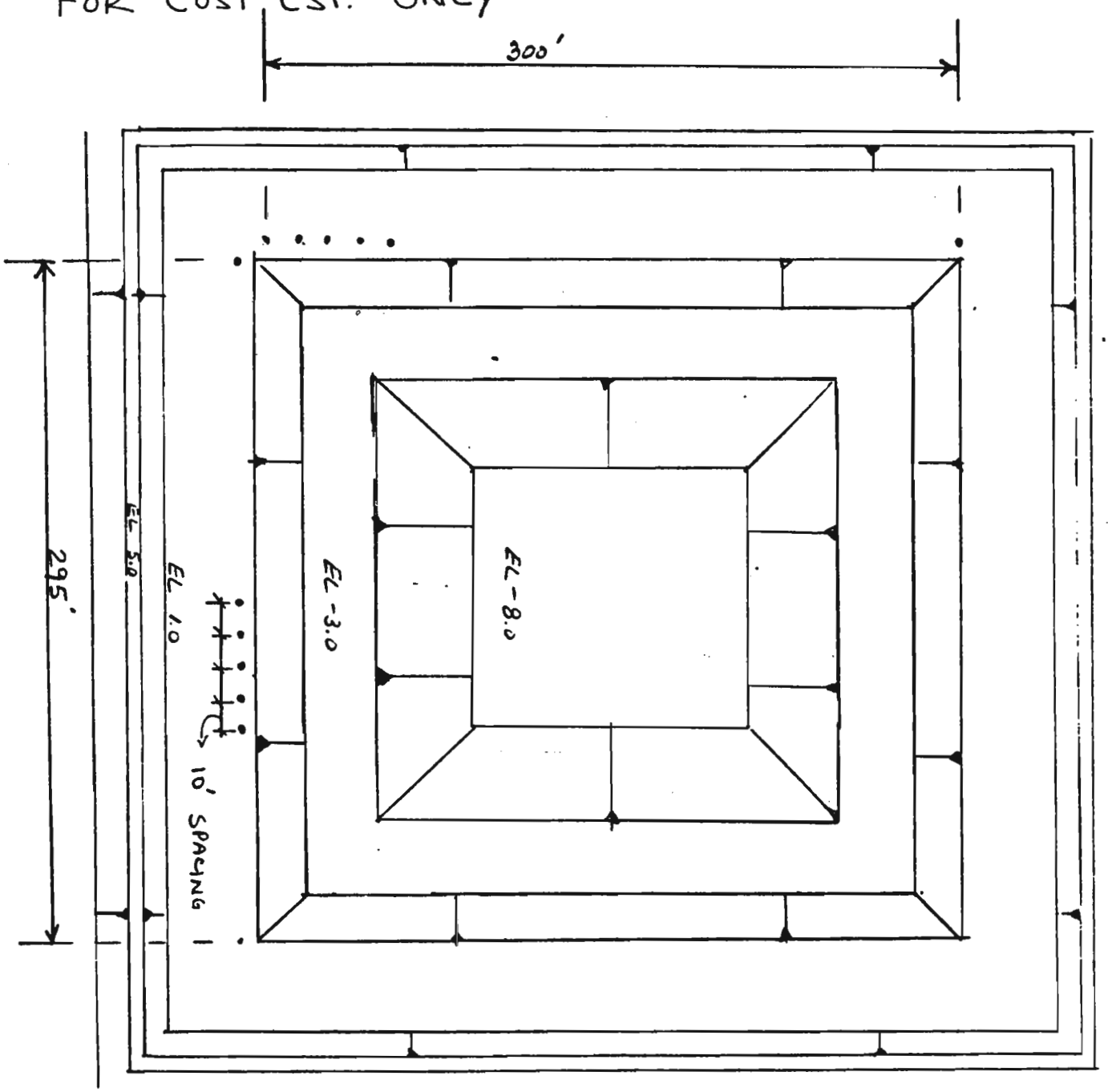
USAE Form 1072
ADT 86

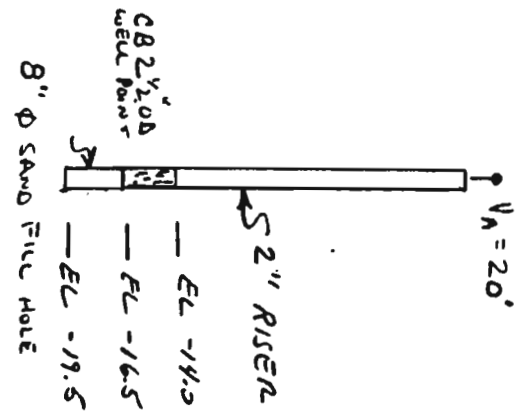
PREVIOUS EDITIONS MAY BE USED

(FOR USE WITH TO - TO GRE

PROJECT ST CHARLES PARISH - DEWATERING	PAGE OF	COMPUTED BY	DATE
SUBJECT CROSS BAYOU - WELL POINT LAY-OUT		CHECKED BY	DATE

FOR COST EST. ONLY





APPROX. 120' WELLS

D-35

PROJECT	ST. CHARLES PARISH	PAGE OF	COMPUTED BY	DATE
SUBJECT	DEWATERING - CROSS BAYOU		CHECKED BY	DATE

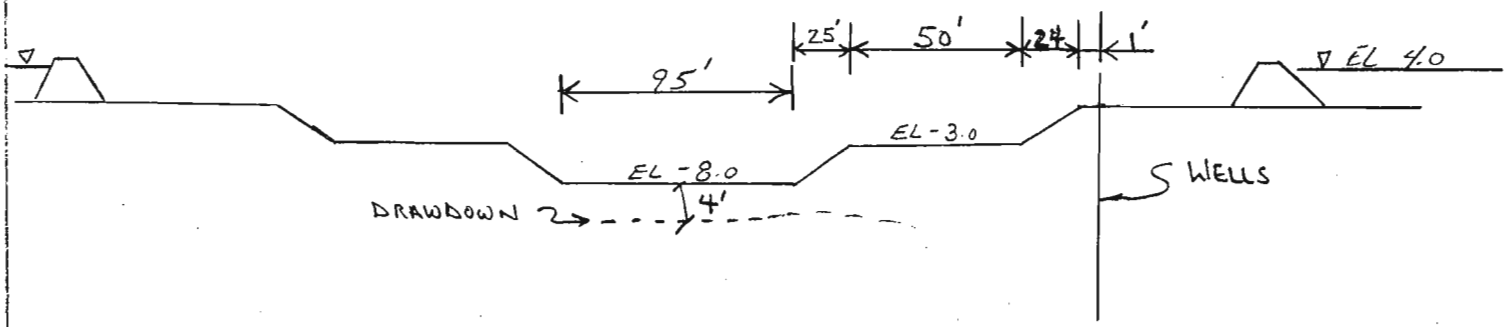
COMPILATION FOR COST ESTIMATING PURPOSES

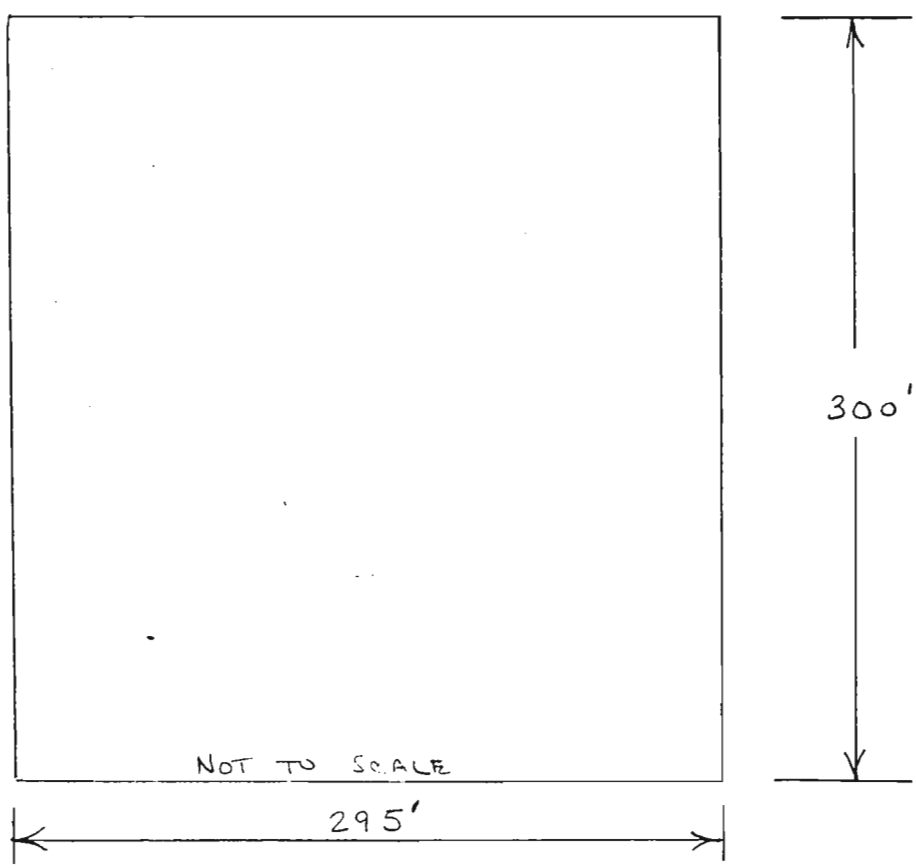
INSTALL 120 POINTS; 2340' OF 8-IN ϕ DRILLED HOLE BACKFILLED WITH CONCRETE SAND, 1800' OF 2-IN RISER PIPE, 120 EACH CB 2.5-IN OD WELL POINTS, 1190' OF COLLECTOR PIPE, INSTALL AND READ 4 EA OPEN TYPE PIEZOMETER WITH TOP AT EL 1.0 AND TIP AT EL -12.5

LEAV 1 OCT 1979
PREVIOUS EDITIONS MAY BE USED
(FOR USE WITH 10 x 10 GR

PROJECT ST CHARLES PARISH	PAGE OF	COMPUTED BY	DATE
SUBJECT DEWATERING		CHECKED BY	DATE

FOR COST ESTIMATING ONLY





ENG FORM 1079
OCT 80
PREVIOUS EDITIONS MAY BE USED
(FOR USE WITH 10 x 10 GRID

PROJECT ST CHARLES PARISH	PAGE OF	COMPUTED BY	DATE
SUBJECT DEWATERING		CHECKED BY	DATE

EQUIVALENT RADIUS — WELL

$$R_e = \sqrt{\frac{a \cdot b}{\pi}} = \sqrt{\frac{300 \times 295}{\pi}} \cong 168'$$

REQUIRED DRAWDOWN: 16' (SWL EL 4.0, DRAWDOWN BELOW EXCAVATION EL-12)

ASSUMED: $K = 500 \times 10^{-4}$ cm per sec = 0.1 ft per min for PEAT OR VERY ORG. CLAYS

THICKNESS OF DRAINED STRATUM: D = 12'

$$Q = \frac{2\pi K D (H-h)}{\ln (R/R_e)}$$

FROM CHARTS R = 700' FOR H-h = 10'

for H-h = 16' then $R = 700 \times \frac{16}{10} = 1120'$

$$Q = \frac{2\pi(.1)(12)(16)}{\ln(1120/168)} = \frac{120.637}{1.8971} = 63.6 \text{ cfm} \cong 477 \text{ gpm}$$

ASSUMED flow PER WELL POINT = 5 gpm

$$\text{NUMBER OF WELLS} = \frac{Q}{\text{flow per well}} = \frac{477}{5} = 95.4 \text{ WELLS}$$

PREVIOUS EDITIONS MAY BE USED (FOR USE WITH 10 x 10 GRID)

PROJECT ST CHARLES PARISH	PAGE OF	COMPUTED BY	DATE
SUBJECT DEWATERING		CHECKED BY	DATE

CHECK HEAD LOSS:

CB = 2.5" OD WITH 2" RISER PIPE

WELL SPACING 10' APART = a (APPROX 118 WELLS)

$r_w = 0.33'$

$K = 500 \times 10^{-4}$ cm/sec

$Q \cong 4$ gpm $= 0.533$ cfm

$$\Delta h = \sqrt{\frac{Q}{2\pi K} \ln \frac{a}{2\pi r_w}}$$

$$= \sqrt{\frac{.533}{.314} \ln \frac{10}{2.07}} = 1.64'$$

$H_w = H_e + H_s + H_r + H_v = 0.5'$ assumed

REQUIRED VACUUM AT TOP OF RISER $= 1 + 12 + 1.64 + 0.5 = 15.14'$

$< 20'$

O.K.

PREVIOUS EDITIONS MAY BE USED (FOR USE WITH ...)

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM No. 18 - GENERAL DESIGN
ST. CHARLES PARISH NORTH OF AIRLINE HIGHWAY

APPENDIX E, VOLUME II

SOIL TEST DATA SHEETS

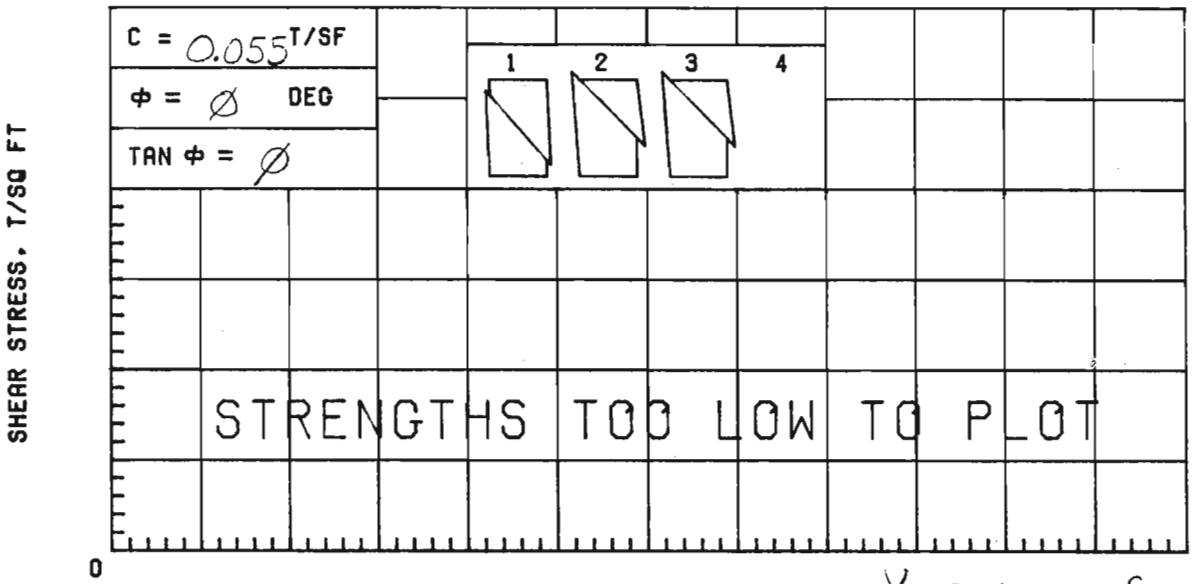
TABLE OF CONTENT

BORING	PAGE
1-SCU	1
2-SCU	15
3-SCU	29
4-SCU	44
5-SCU	58
6-SCU	69
7-SCU	80
8-SCU	94
9-SCU	108
10-SCU	121
11-SCU	137

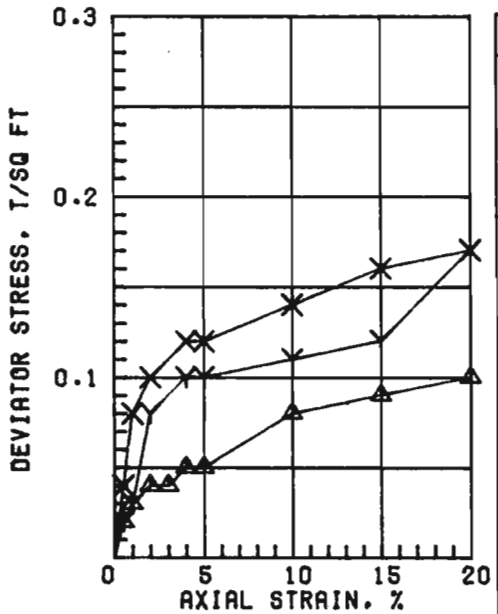
C = 0.055 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 101 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	68.8	70.5	52.9	
	DRY DENSITY, PCF	58.1	57.8	68.6	
	SATURATION, %	97.6	99.2	98.1	
	VOID RATIO	1.903	1.918	1.456	
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	0.10	0.12	
TIME TO FAILURE, MIN.		4	8	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 64.1

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 110	PL 28	PI 82	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT & VIC HURR PROT

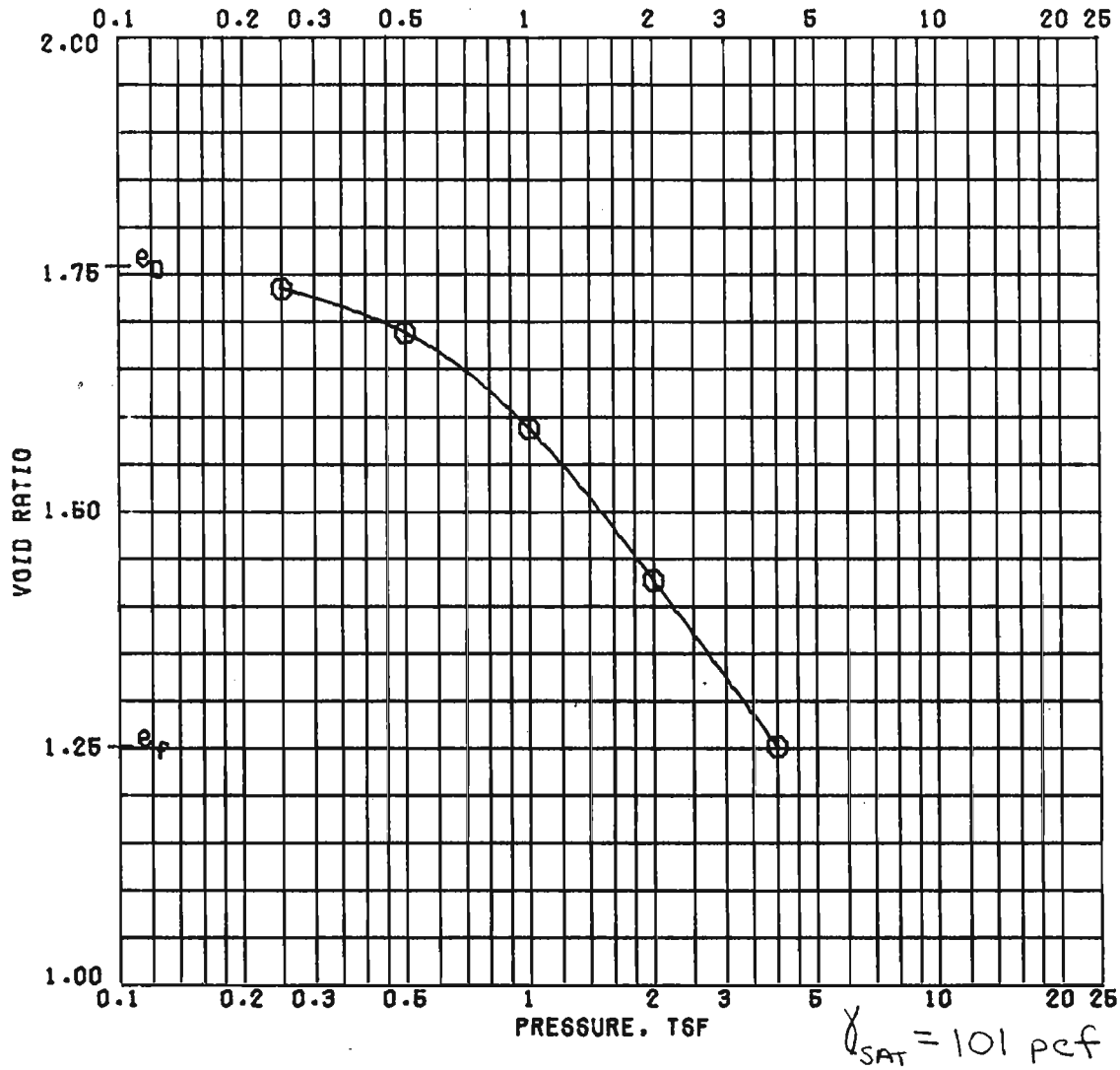
ST CHARLES PARISH

BORING NO. 1-SCU | SAMPLE NO. 1-C

DEPTH/ELEV 1.5/+0.2 | TECH. KOC

LABORATORY USAE WES | DATE 01 MAY 87

TRIAXIAL COMPRESSION TEST REPORT



			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	62.4	49.4
PRECONSOL. PRESSURE, TSF	0.74	DRY DENSITY, PCF	61.1	74.9
COMPRESSION INDEX	0.55	SATURATION, %	95.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.757	1.250
DIA. IN 4.44	HT. IN 1.125	BACK PRESSURE, TSF		

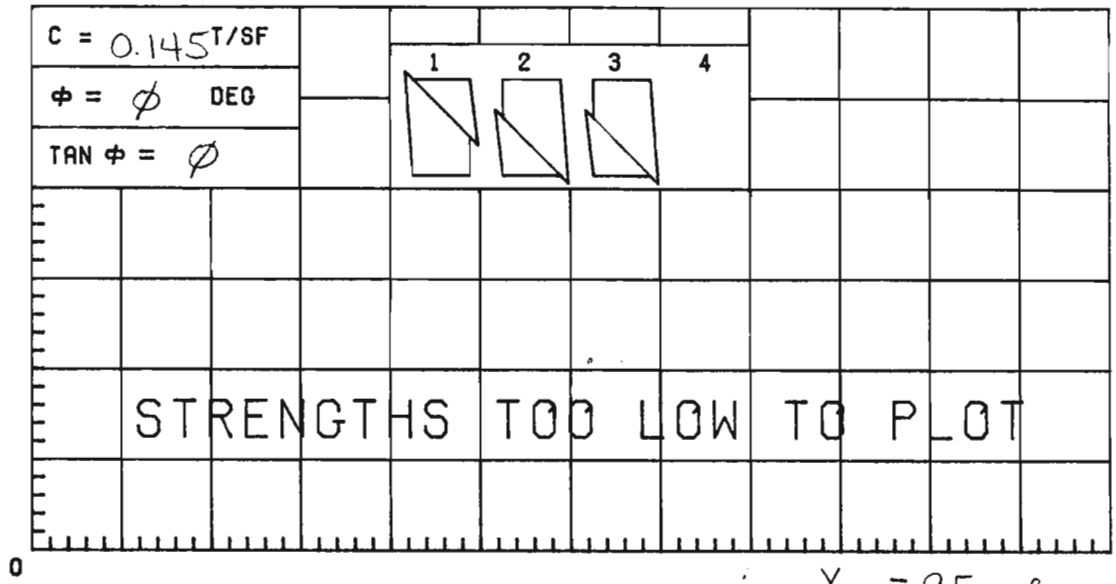
CLASSIFICATION	CLAY (CH), GRAY; ROOTLETS		
LL	PL	PI	PROJECT LK PCNT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 1-SCU	SAMPLE NO. 3-B
		DEPTH/ELEV 8.5/-6.8	DATE 24 JUN 87

CONSOLIDATION TEST REPORT

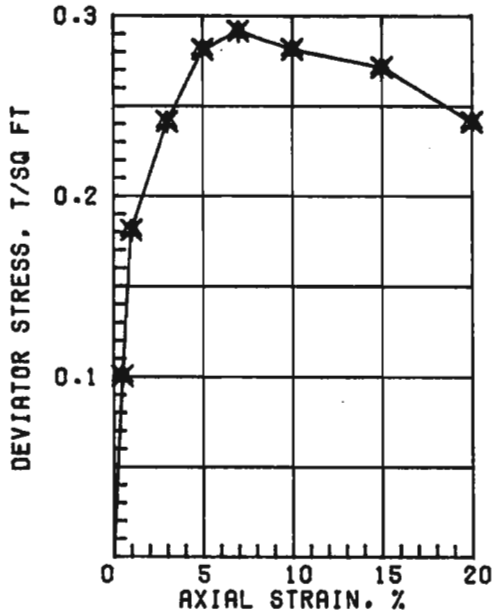
C = 0.145 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 95 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	81.4	83.8	89.1	
	DRY DENSITY, PCF	52.9	51.3	48.5	
	SATURATION, %	100+	99.1	97.2	
	VOID RATIO	2.186	2.283	2.476	
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	0.29	
	TIME TO FAILURE, MIN.	14	14	14	
	RATE OF STRAIN INCR.%				
	INITIAL DIAMETER, IN.	1.40	1.40	1.40	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

AVE 84.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 125	PL 32	PI 93	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT & VIC HURR PROT

ST CHARLES PARISH

BORING NO. 1-SCU | SAMPLE NO. 3-C

DEPTH/ELEV 9.0/-7.3 | TECH. KOC

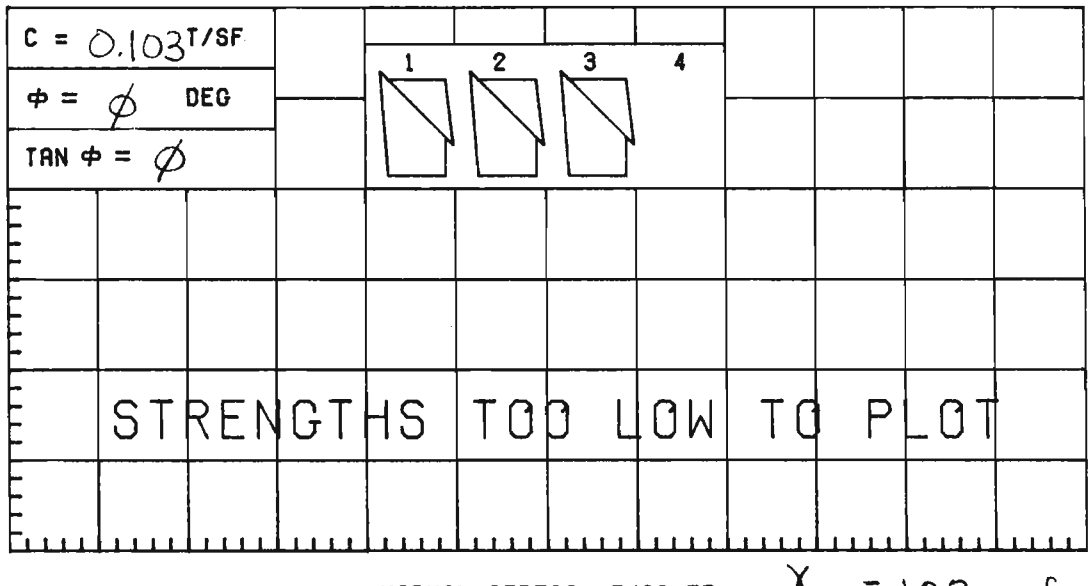
LABORATORY USAE WES | DATE 01 MAY 87

TRIAXIAL COMPRESSION TEST REPORT

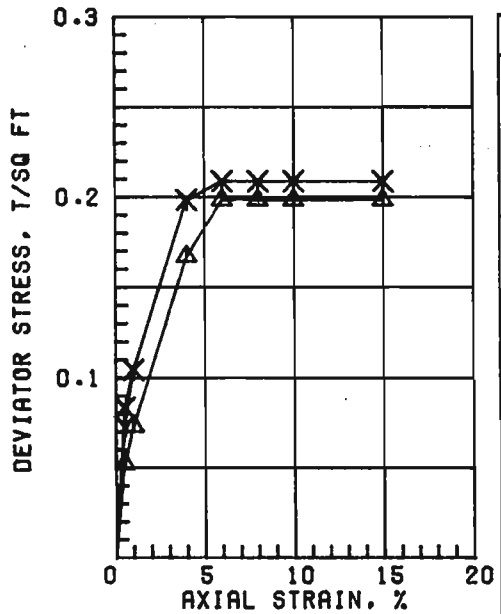
C = 0.103 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 108 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	46.9	48.0	48.9	
	DRY DENSITY, PCF	73.1	72.3	71.3	
	SATURATION, %	96.8	97.2	96.8	
	VOID RATIO	1.307	1.333	1.365	
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.		12	13	13	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.37	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 47.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), DARK BROWN; ORGANIC MATERIAL

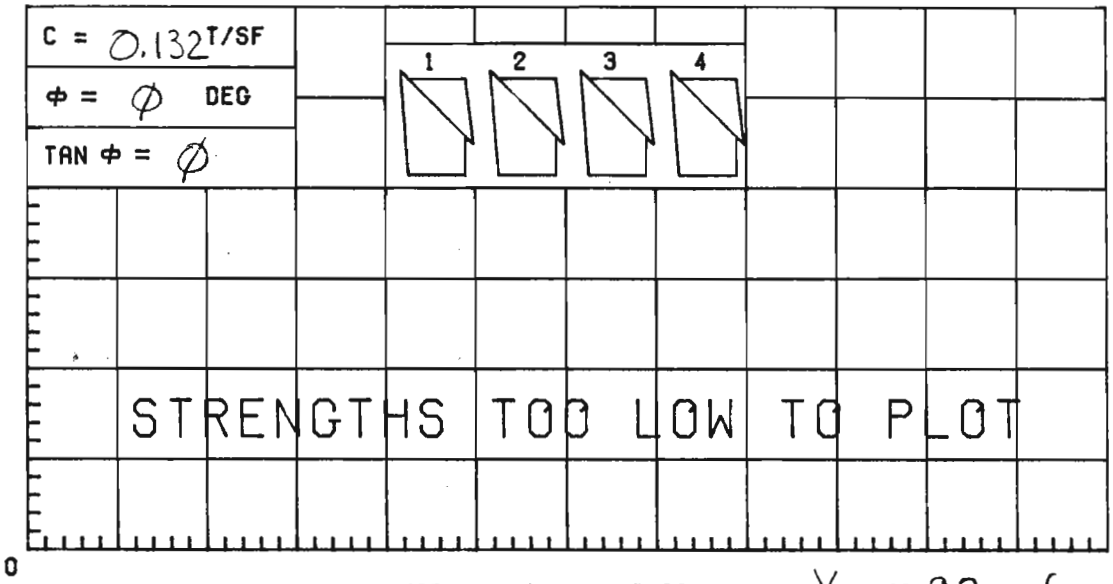
LL 50	PL 17	PI 33	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 1-SCU	SAMPLE NO. 4-C
	DEPTH/ELEV 13.0/-11.3	TECH. BD
	LABORATORY USAE WES	DATE 01 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	

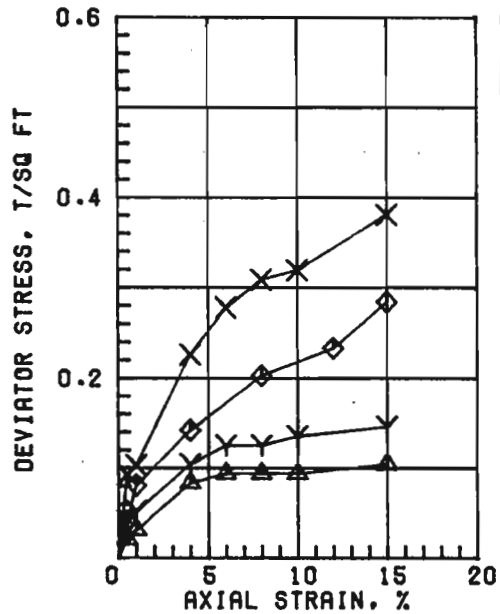
C = 0.132 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 98pcf



SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	61.0	74.8	76.1	65.6
	DRY DENSITY, PCF	62.7	55.7	53.2	54.1
	SATURATION, %	97.6	99.6	94.6	83.6
	VOID RATIO	1.688	2.027	2.171	2.117
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		0.09	0.13	0.38	0.28
TIME TO FAILURE, MIN.		12	13	32	31
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.37	1.37	1.38	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

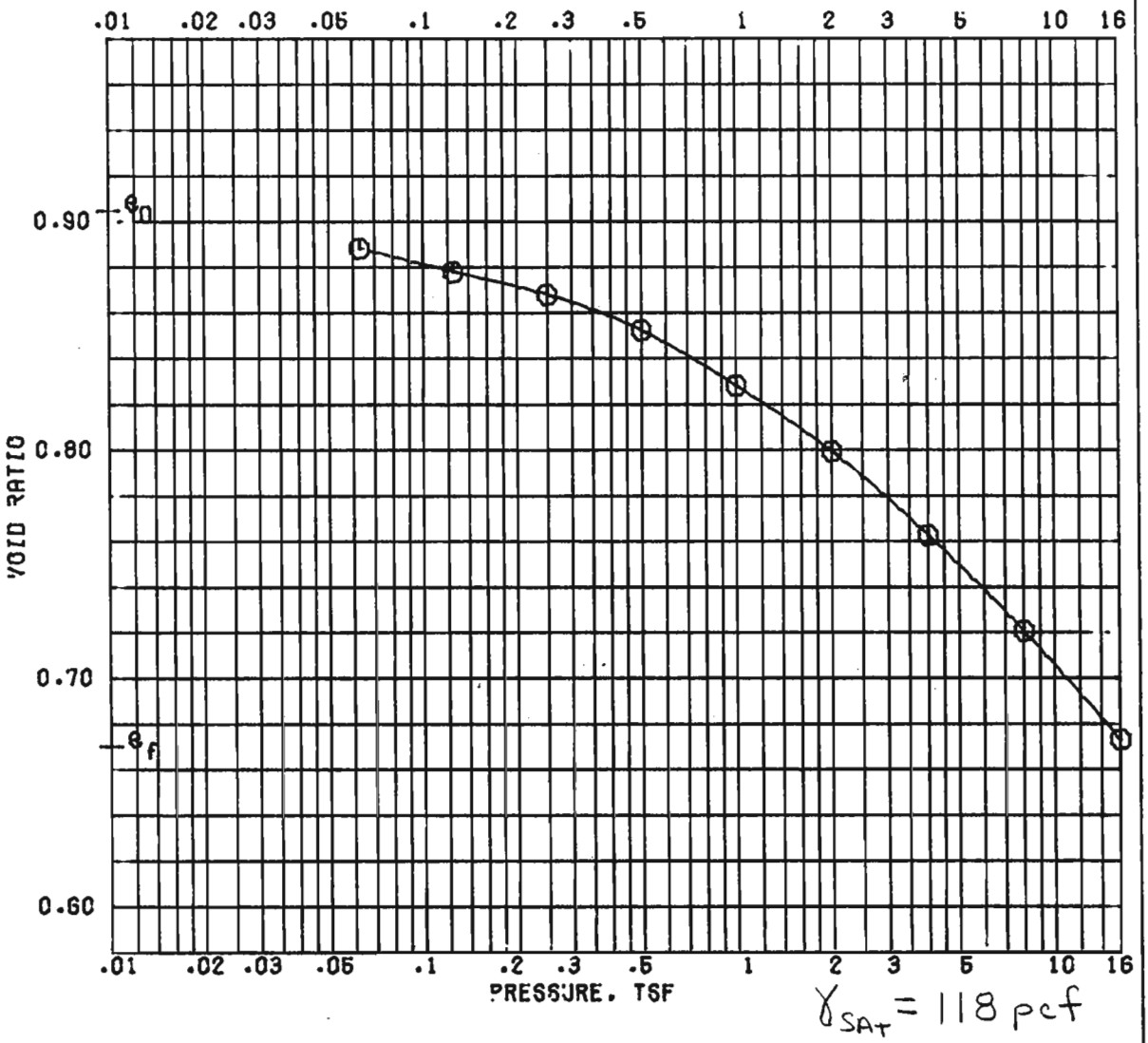
AVE 69.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT & FINE SAND SEAMS

LL 62	PL 18	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: THIRD & FOURTH SPECIMENS TAKEN FROM DIFFERENT LIFT	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 1-SCU / SAMPLE NO. 7-C
	DEPTH/ELEV 25.4/-23.7 / TECH. BD
	LABORATORY USAE WES / DATE 01 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT



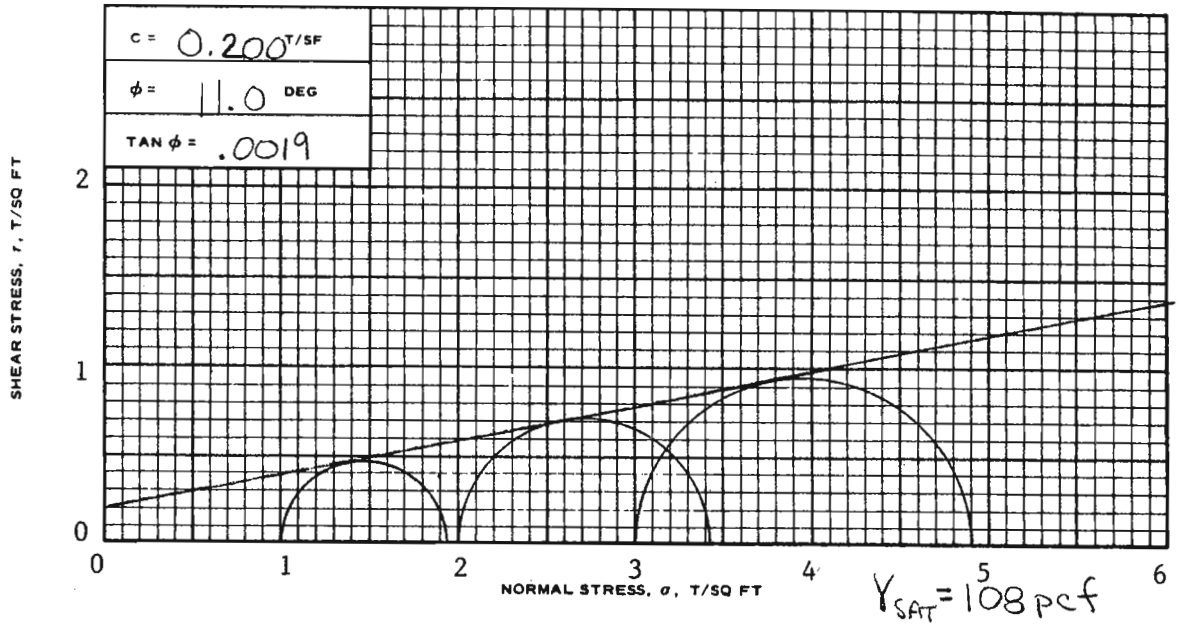
γ_{SAT} = 118 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	33.3	24.7
PRECONSOL. PRESSURE, TSF	1.19	DRY DENSITY, PCF	88.5	101.0
COMPRESSION INDEX	0.15	SATURATION, %	99.4	99.6
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	0.904	0.669
DIA. IN 4.44	HT. IN 1.132	BACK PRESSURE, TSF		

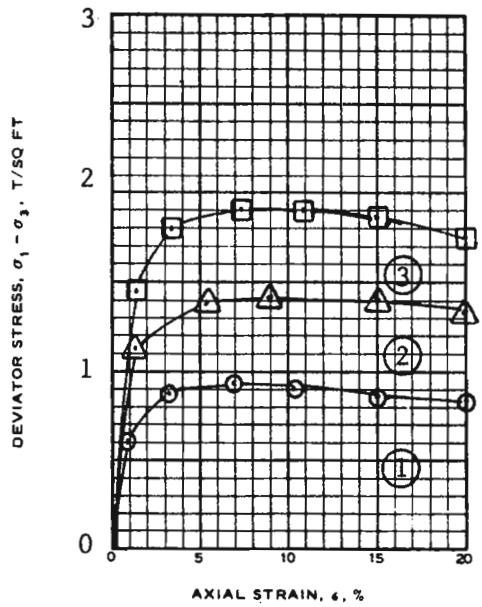
CLASSIFICATION CLAY (CL), GRAY

LL 31	PL 20	PI 11	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D:0		ST CHARLES PARISH
REMARKS		BORING NO. 1-SCU	SAMPLE NO. 8-B
		DEPTH/ELEV 28.5/-26.8	DATE 06 JUL 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 108 pcf



SPECIMEN NO.			1	2	3	AVE
INITIAL	WATER CONTENT, %	w_o	48.6	52.6	50.3	50.5
	DRY DENSITY LB/ CU FT	γ_{d_o}	73.3	70.1	71.2	
	SATURATION, %	S_o	100+	100+	99.3	
	VOID RATIO	e_o	1.300	1.403	1.368	
BEFORE SHEAR	WATER CONTENT, %	w_c	44.8	39.9	37.7	
	DRY DENSITY LB/CU FT	γ_{d_c}	78.7	81.0	85.6	
	SATURATION, %	S_c	100+	99.7*	100+	
	VOID RATIO	e_c	1.141	1.080	0.970	
	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	1.42	1.90	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	460	600	486	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.38	1.37	1.38	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS CLAY (CH), GRAY: SILT POCKETS

LL 51 | PL 17 | PI 34 | Gs 2.70 (EST)

TYPE OF SPECIMEN UNDISTURBED | TYPE OF TEST $\overline{R}$

REMARKS:

* PORE PRESSURE RESPONSE

INDICATED 100% SATURATION

PROJECT LK PONT & VIC HURR PROT

ST CHARLES PARISH

BORING NO. 1-SCU | SAMPLE NO. 8-C

DEPTH/ELEV 29.0/-27.3

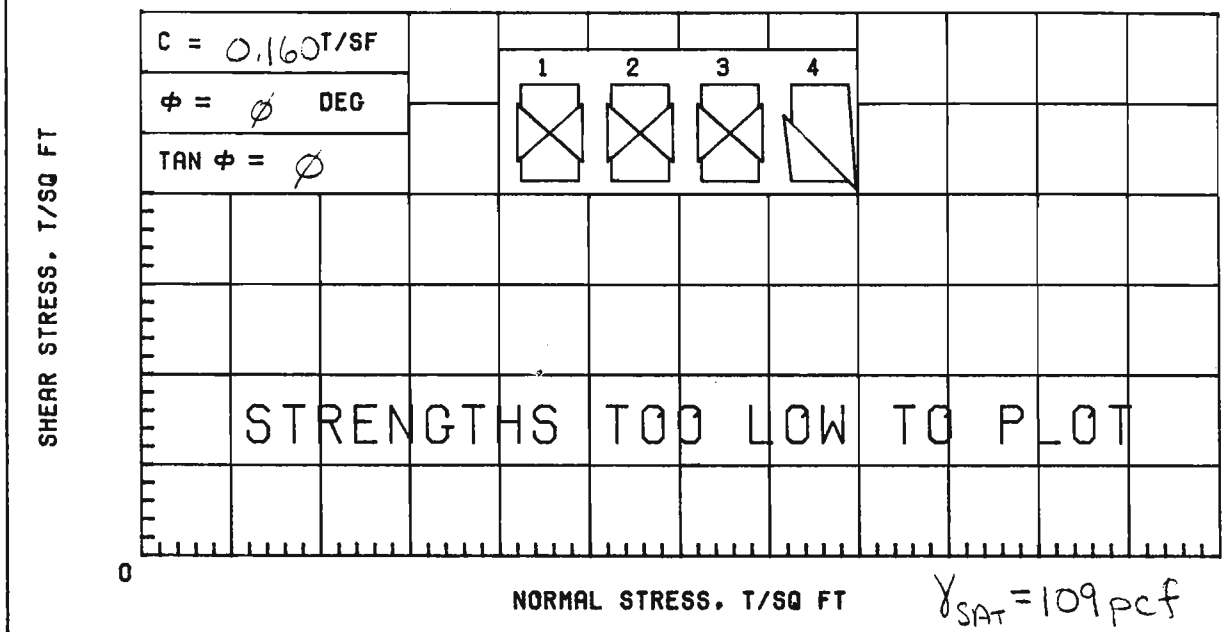
LABORATORY USAEWES | DATE 19 MAY 87

SHEET 1 OF 2

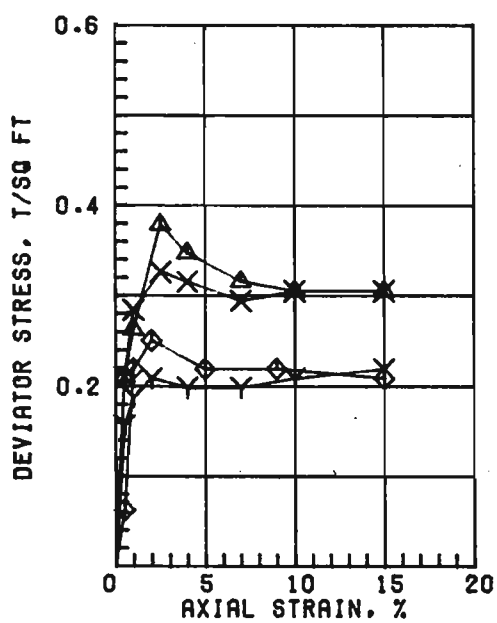
JMS

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)



γ_{SAT} = 109 pcf



SPECIMEN NO.		▲1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	49.1	46.7	46.4	48.4
	DRY DENSITY, PCF	72.7	74.2	74.5	74.0
	SATURATION, %	100+	99.1	99.4	100+
	VOID RATIO	1.319	1.272	1.261	1.279
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		0.38	0.21	0.33	0.25
TIME TO FAILURE, MIN.		5	9	13	6
RATE OF STRAIN INCR.%			7	7	
INITIAL DIAMETER, IN.		1.36	1.37	1.36	1.37
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

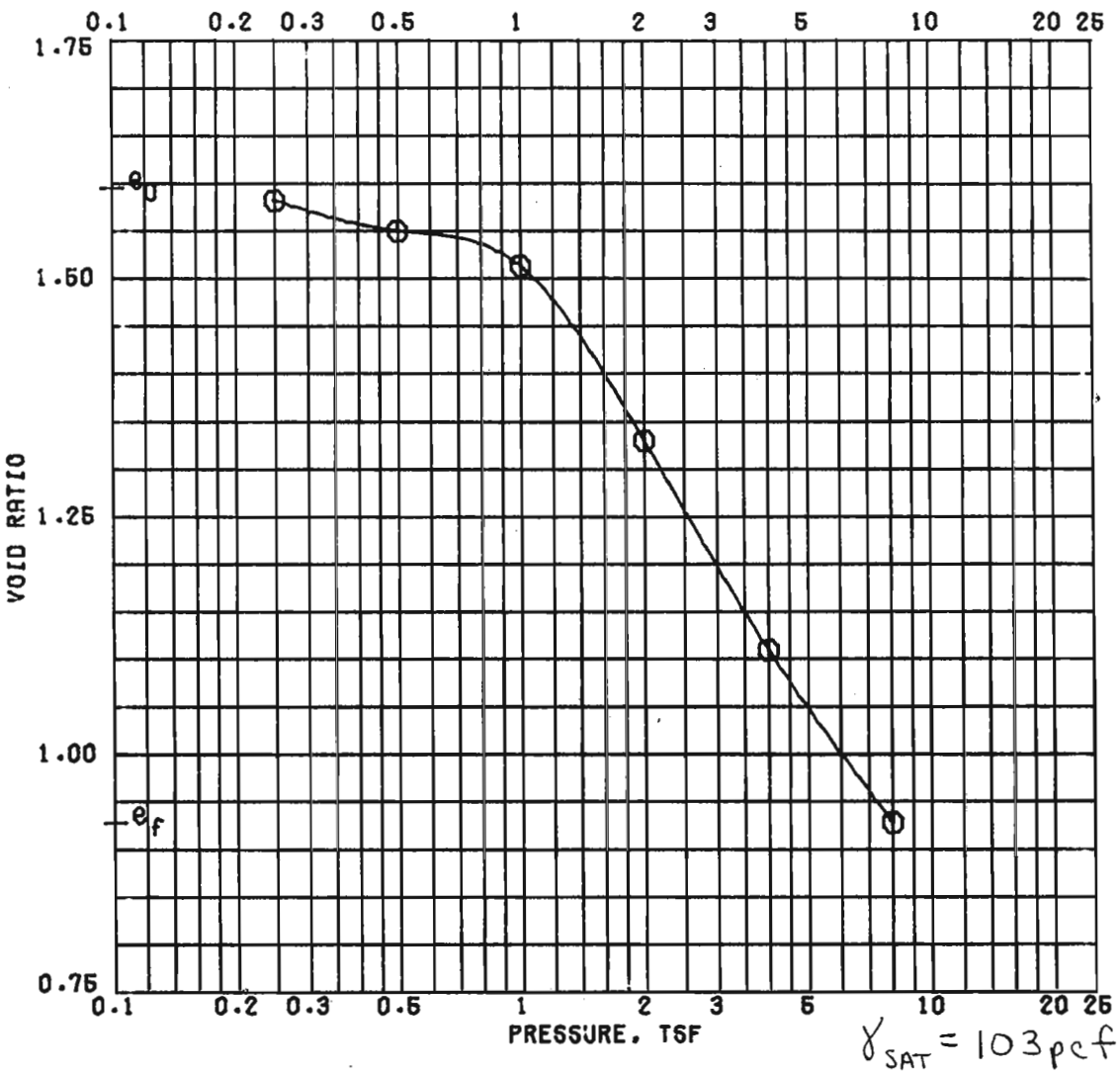
AVE 47.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY ; CONCRETIONS

LL 55	PL 17	PI 38	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 1-SCU / SAMPLE NO. 10-B
	DEPTH/ELEV 36.2/-34.5 / TECH. BD
	LABORATORY USAE WES / DATE 04 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT



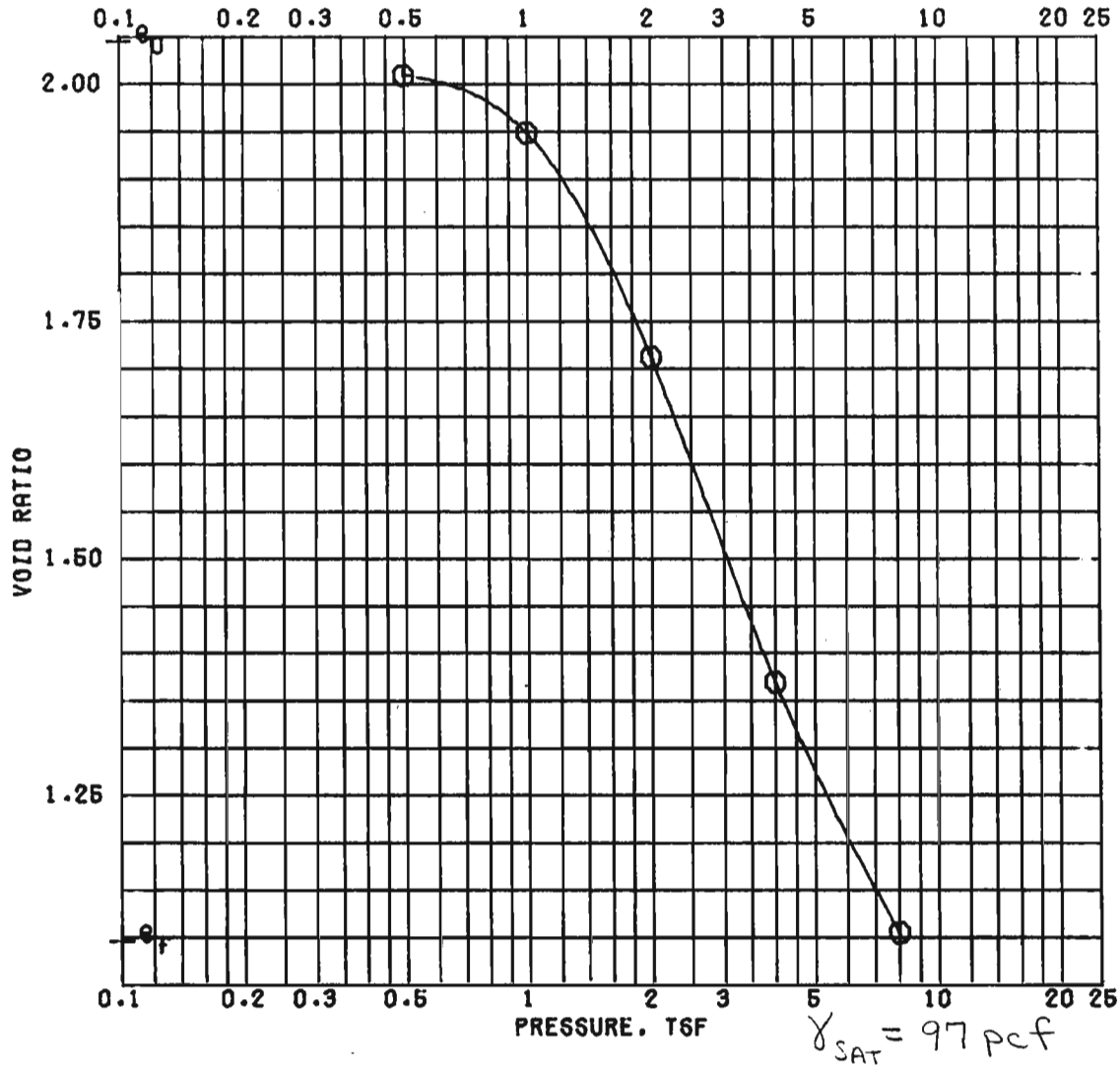
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	58.4	38.1
PRECONSOL. PRESSURE, TSF	1.17	DRY DENSITY, PCF	65.0	87.5
COMPRESSION INDEX	0.74	SATURATION, %	99.0	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.593	0.926
DIA. IN 4.44	HT. IN 1.128	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; SILT SEAMS & POCKETS

LL	PL	PI	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 1-SCU	SAMPLE NO. 10-C
			DEPTH/ELEV 36.9/-35.2	DATE 02 JUL 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE. TSF		WATER CONTENT. %	74.4	41.4
PRECONSOL. PRESSURE. TSF	1.20	DRY DENSITY. PCF	55.4	80.5
COMPRESSION INDEX	1.13	SATURATION. %	98.4	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.043	1.095
DIA. IN 4.44	HT. IN 1.135	BACK PRESSURE. TSF		

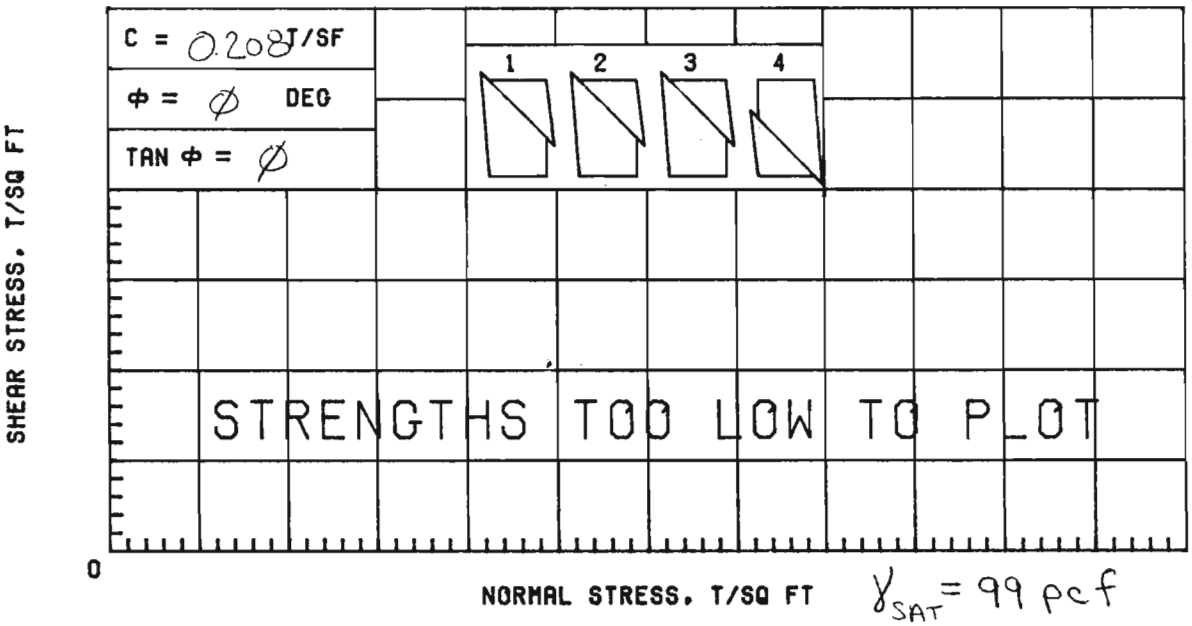
CLASSIFICATION CLAY (CH), GRAY			
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 1-SCU	SAMPLE NO. 13-B
		DEPTH/ELEV 48.5/-46.8	DATE 06 JUL 87

CONSOLIDATION TEST REPORT

C = 0.208 T/SF

Φ = Ø DEG

TAN Φ = Ø



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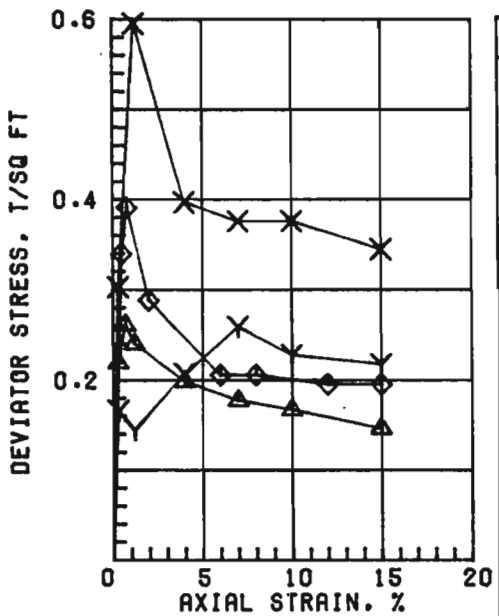


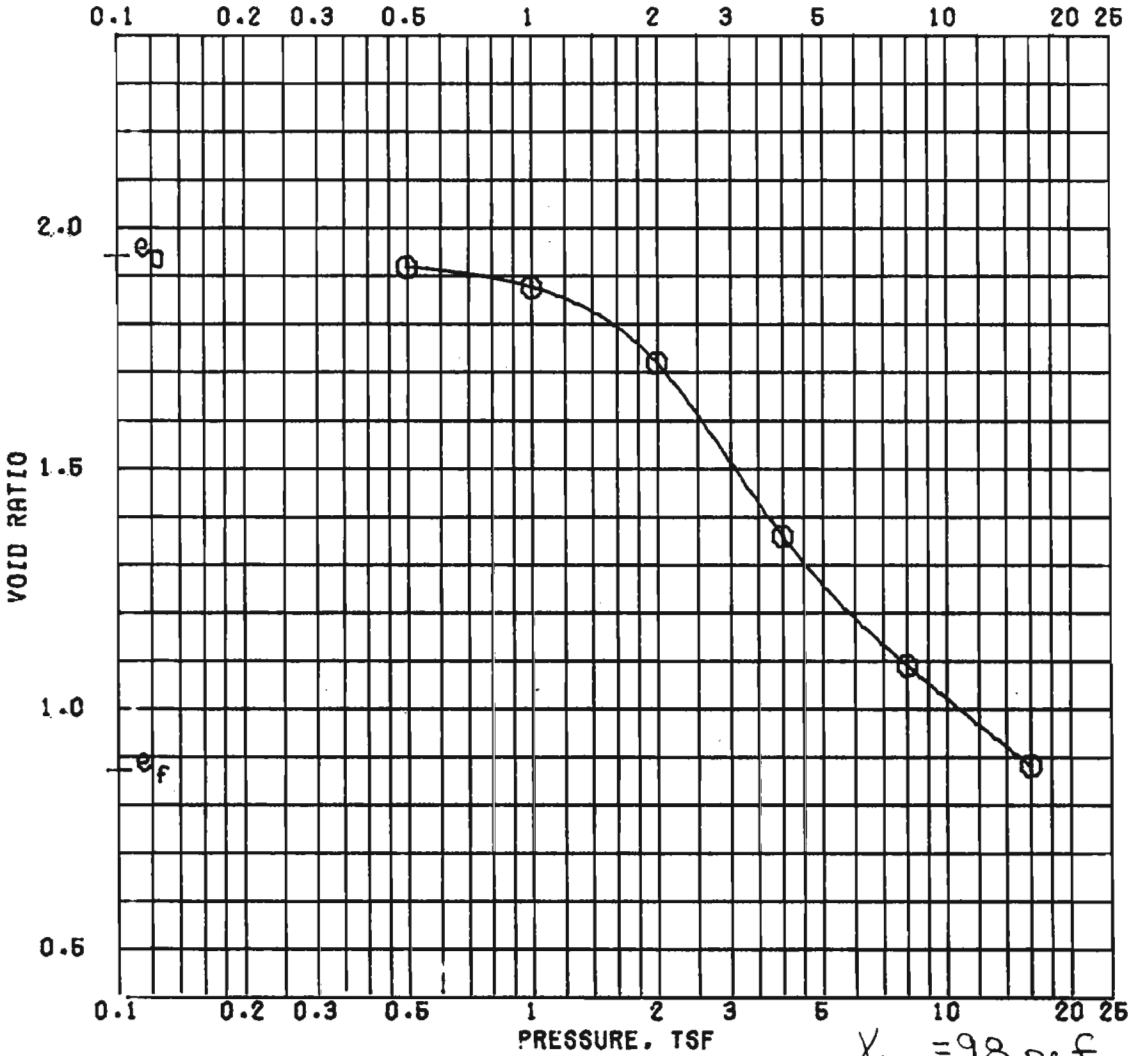
SPECIMEN NO.		△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	76.0	77.8	75.3	70.8	75.0
	DRY DENSITY, PCF	56.2	54.9	56.8	57.8	
	SATURATION, %	100+	100+	100+	99.8	
	VOID RATIO	2.002	2.070	1.969	1.915	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.26	0.17	0.60	0.39	
TIME TO FAILURE, MIN.		1	3	9	6	
RATE OF STRAIN INCR.%			4	7	5	
INITIAL DIAMETER, IN.		1.37	1.37	1.37	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SHELL PARTICLES

LL 101	PL 24	PI 77	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 1-SCU / SAMPLE NO. 13-C
	DEPTH/ELEV 49.0/-47.3 / TECH. BD
	LABORATORY USAE WES / DATE 04 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT

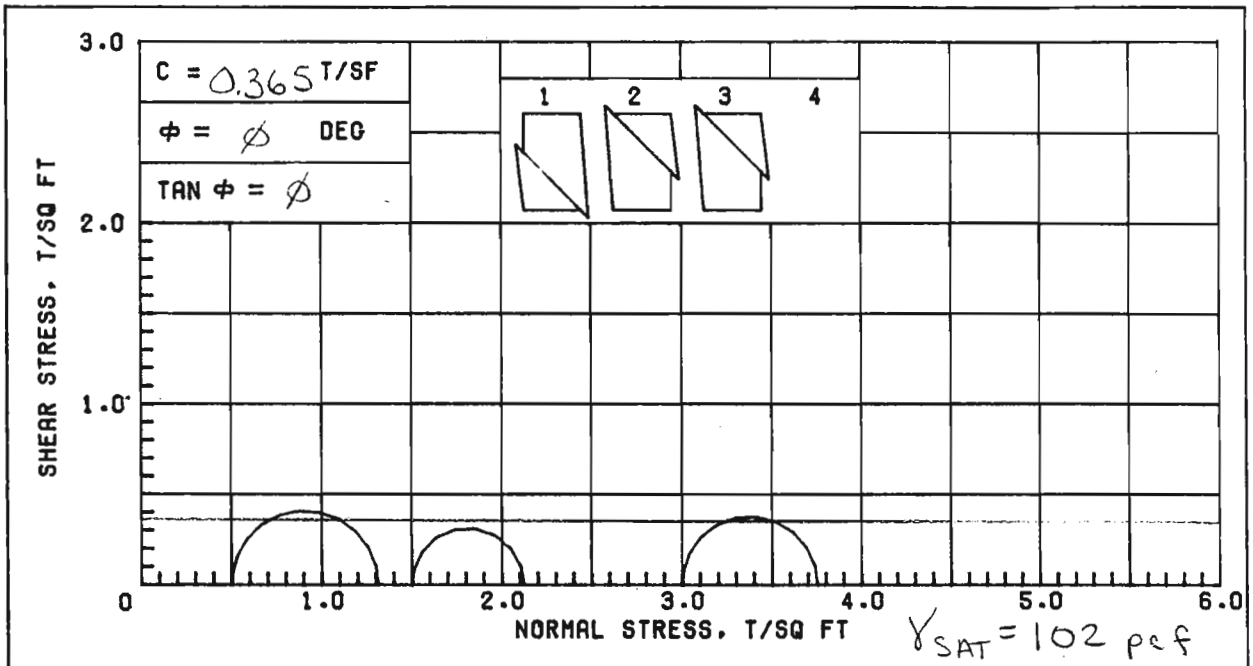


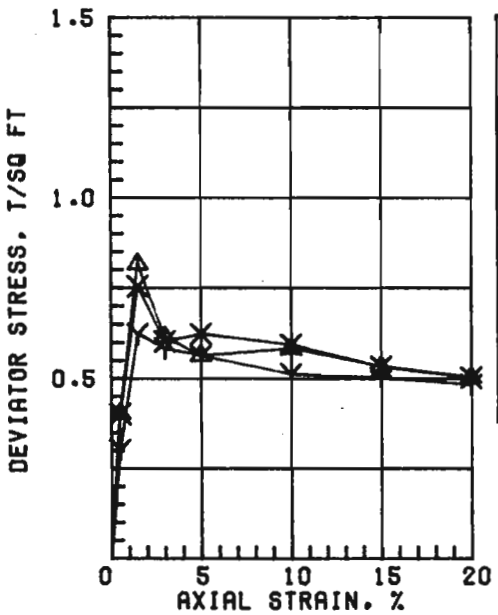
γ_{SAT} = 98 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	71.5	35.1
PRECONSOL. PRESSURE, TSF	1.80	DRY DENSITY, PCF	57.3	90.2
COMPRESSION INDEX	1.23	SATURATION, %	99.6	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.939	0.869
DIA. IN 4.44	HT. IN 1.111	BACK PRESSURE, TSF		
CLASSIFICATION CLAY (CH), GRAY				
LL	PL	PI	PROJECT LK PONT & VIC HURR PRCT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS		BORING NO. 1-SCU	SAMPLE NO. 15-B	
		DEPTH/ELEV 56.2/-54.5	DATE 09 JUL 87	

CONSOLIDATION TEST REPORT

SHEET 1 OF 8





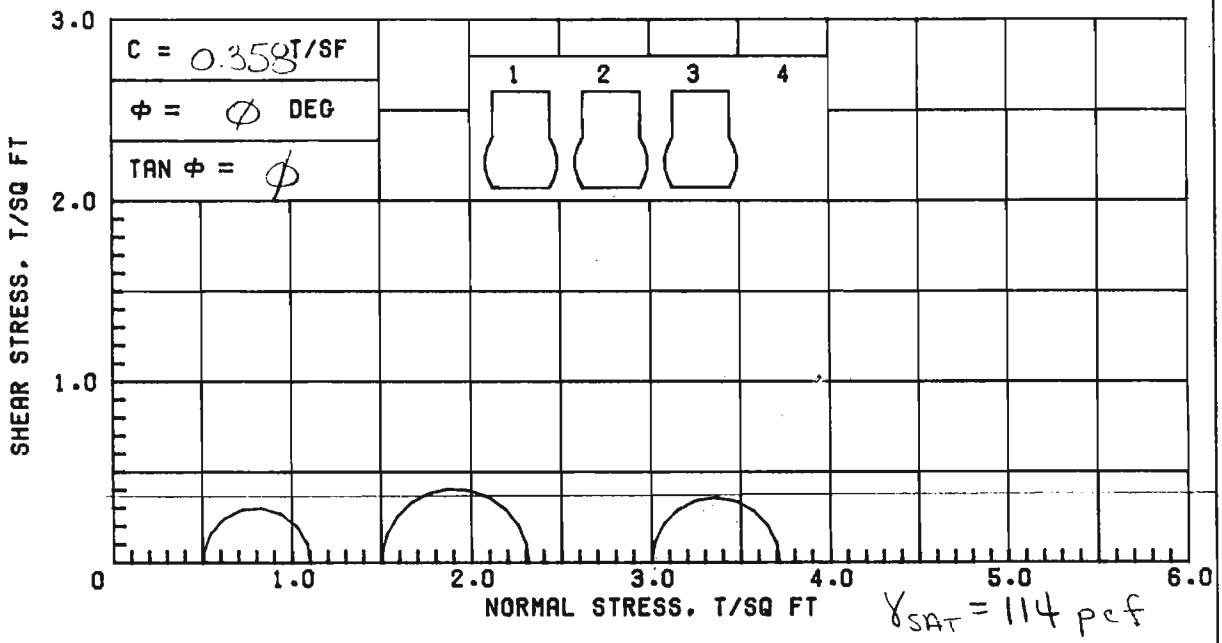
	SPECIMEN NO.	▲1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	61.1	61.6	60.4		61.0
	DRY DENSITY, PCF	62.3	63.4	63.8		
	SATURATION, %	96.7	100+	99.2		
	VOID RATIO	1.707	1.660	1.643		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.82	0.62	0.75		
	TIME TO FAILURE, MIN.	3	16	16		
	RATE OF STRAIN INCR.%		3	3		
	INITIAL DIAMETER, IN.	1.39	1.40	1.40		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

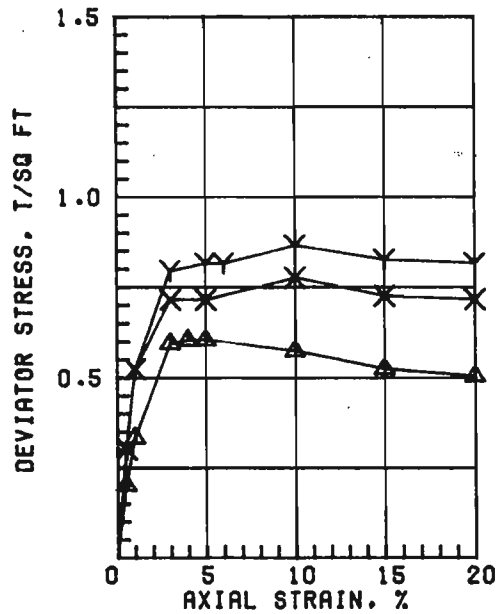
DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SHELL PARTICLES

LL 81	PL 23	PI 58	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 1-SCU	SAMPLE NO. 15-C
	DEPTH/ELEV 57.1/-55.4	TECH. KOC
	LABORATORY USAE WES	DATE 04 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 114 pcf



SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	35.7	31.4	36.5	
	DRY DENSITY, PCF	81.3	85.6	80.5	
	SATURATION, %	89.9	87.5	90.0	
	VOID RATIO	1.073	0.969	1.095	
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	0.82	0.72	
TIME TO FAILURE, MIN.		8	21	13	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

Ave 34.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; 3/4" SILT LAYER

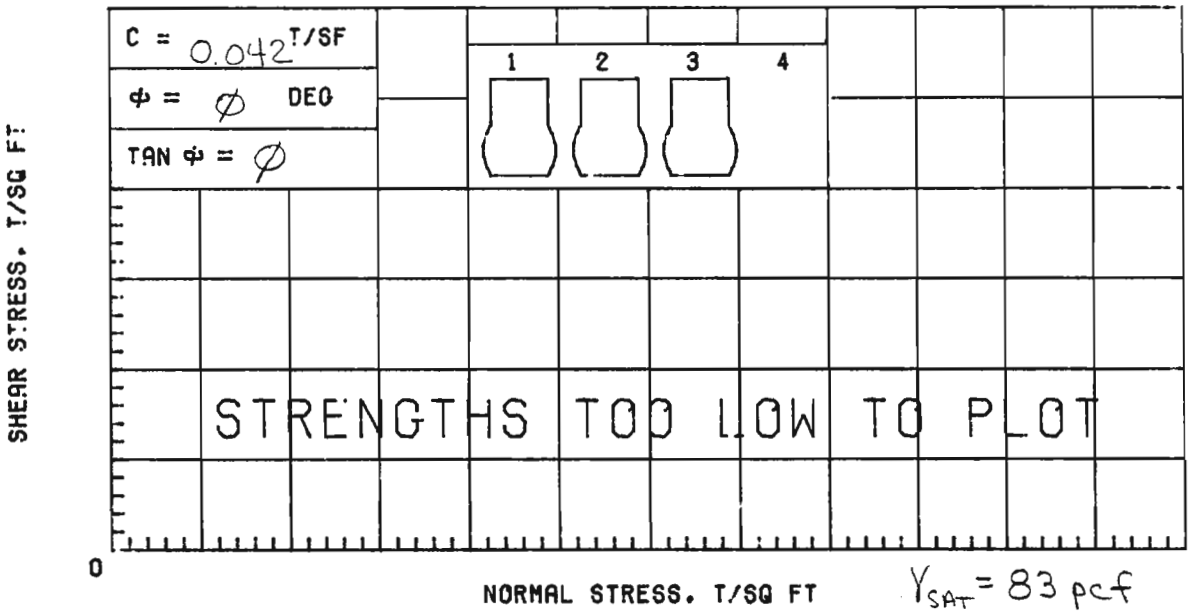
LL 41	PL 14	PI 27	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 1-SCU	SAMPLE NO. 17-C
	DEPTH/ELEV 64.9/-63.2	TECH. KOC
	LABORATORY USAE WES	DATE 05 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	

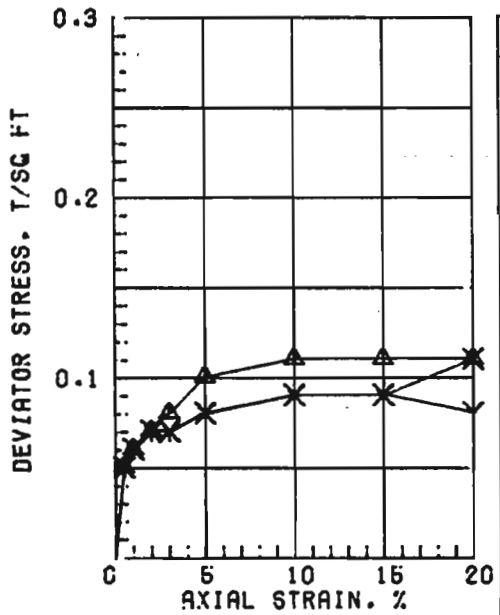
C = 0.042 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 83 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	146.1	176.1	128.6	
	DRY DENSITY, PCF	33.7	28.5	37.4	
	SATURATION, %	98.6	96.7	99.2	
	VOID RATIO	3.999	4.915	3.502	
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	0.07	0.07	
	TIME TO FAILURE, MIN.	20	4	4	
	RATE OF STRAIN INCR.%				
	INITIAL DIAMETER, IN.	1.39	1.39	1.39	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

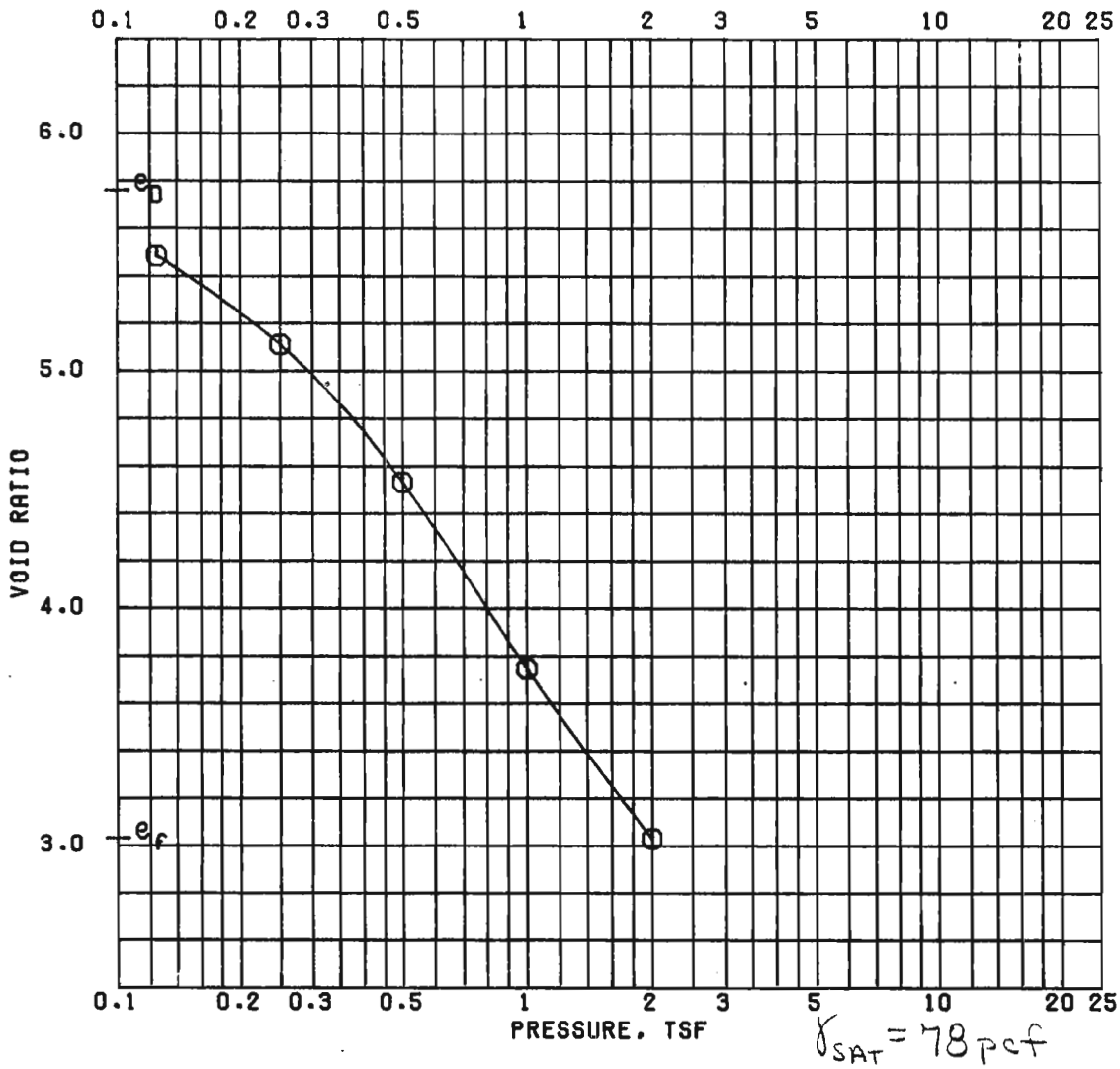
AVE 150.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 167	PL 36	PI 131	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 2-SCU / SAMPLE NO. 2-C
	DEPTH/ELEV 5.5/-5.3 / TECH. KOC
	LABORATORY USAE WES / DATE 20 FEB 87
	TRIAXIAL COMPRESSION TEST REPORT

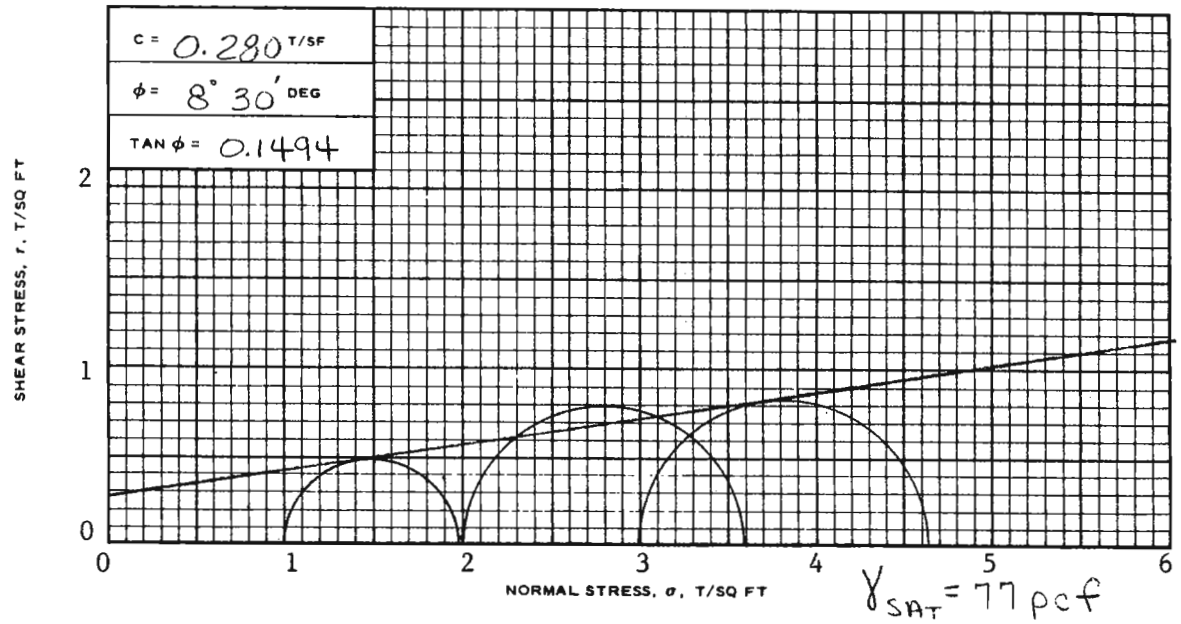


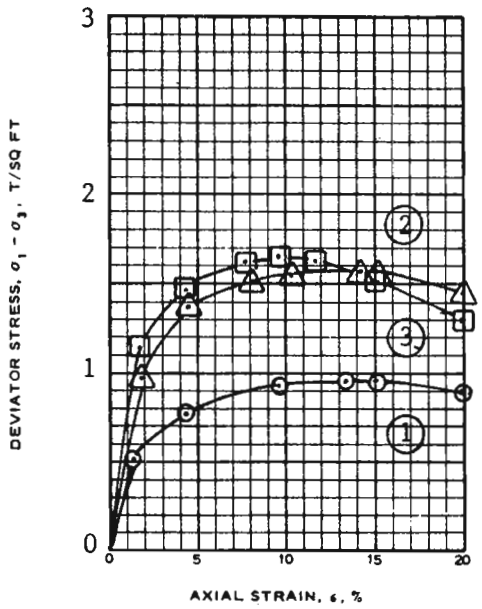
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	204.2	110.0
PRECONSOL. PRESSURE, TSF	0.34	DRY DENSITY, PCF	25.0	41.9
COMPRESSION INDEX	2.70	SATURATION, %	95.9	98.2
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	5.752	3.023
DIA. IN 4.44	HT. IN 1.117	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CH), GRAY; ORGANIC MATERIAL			
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 2-SCU	SAMPLE NO. 2-D
			DEPTH/ELEV 6.2/-6.0	DATE 28 FEB 87

CONSOLIDATION TEST REPORT

16





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	210.3	195.5	198.3	
	DRY DENSITY LB/CU FT	γ_{d_o}	23.5	25.1	25.1	
	SATURATION, %	S_o	92.7	93.2	94.6	
	VOID RATIO	e_o	5.788	5.350	5.348	
BEFORE SHEAR	WATER CONTENT, %	w_c	161.9	131.1	112.2	
	DRY DENSITY LB/CU FT	γ_{d_c}	32.5	37.2	30.3	
	SATURATION, %	S_c	100+	100+	90.6*	
	VOID RATIO	e_c	3.896	3.278	3.158	
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.32	4.32	4.32	
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	1.57	1.64	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	837	788	570	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.39	1.38	1.35	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS CLAY (CH), GRAY; ORGANIC MATERIAL

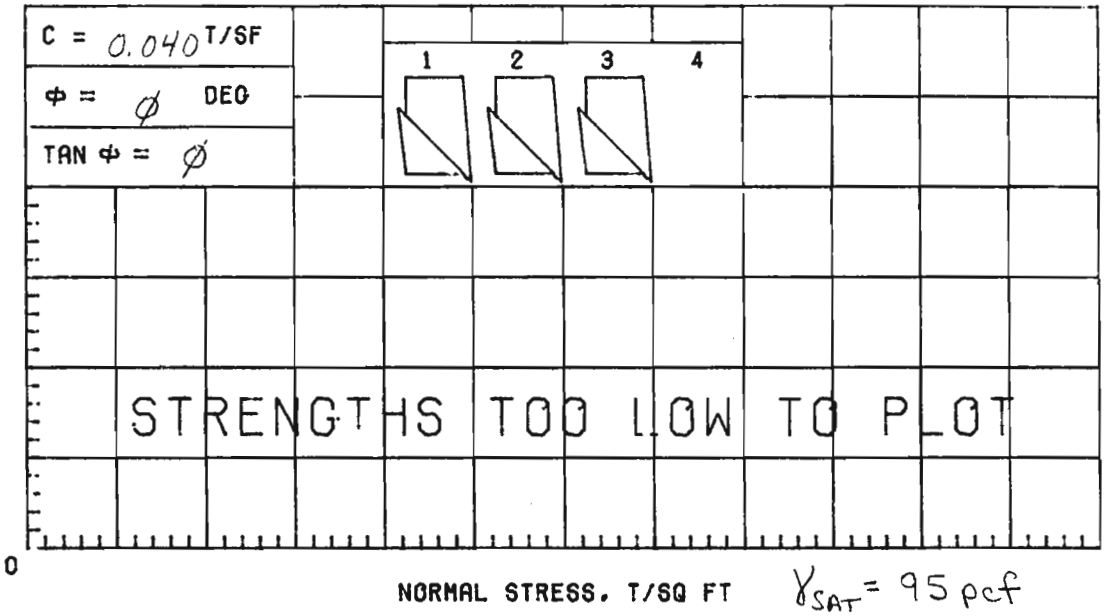
LL 244	PL 33	PI 211	Gs 2.55	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST $\bar{R}$
REMARKS:			(EST)	PROJECT LK PONT & VIC HURR PROT	
*PORE PRESSURE RESPONSE INDICATED				ST CHARLES PARISH	
100% SATURATION.				BORING NO. 2-SCU	SAMPLE NO. 3-C
				DEPTH/ELEV 9.4/-9.2	
				LABORATORY USAEWES	DATE 1 APR 1987
SHEET 1 OF 2				JMS	TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

C = 0.040 T/SF

Φ = Ø DEG

TAN Φ = Ø



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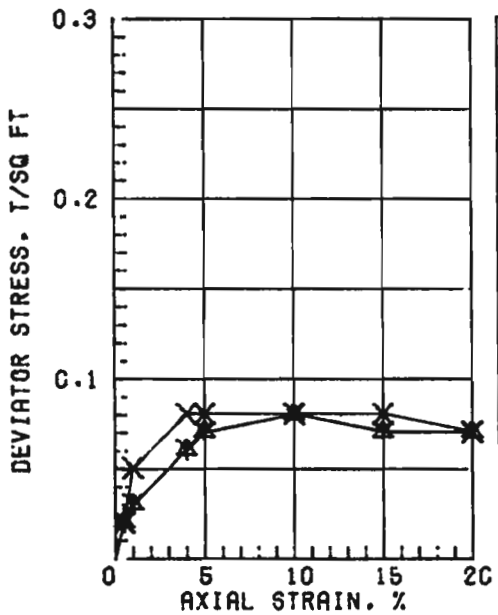


SPECIMEN NO.		▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	79.6	86.8	83.1	
	DRY DENSITY, PCF	52.8	50.7	51.8	
	SATURATION, %	98.0	100+	99.5	
	VOID RATIO	2.193	2.326	2.256	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.08	0.08	0.08	
TIME TO FAILURE, MIN.		20	20	8	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 83.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT SEAMS

LL 71	PL 20	PI 51	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	G TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LK PONT & VIC HURR PROT

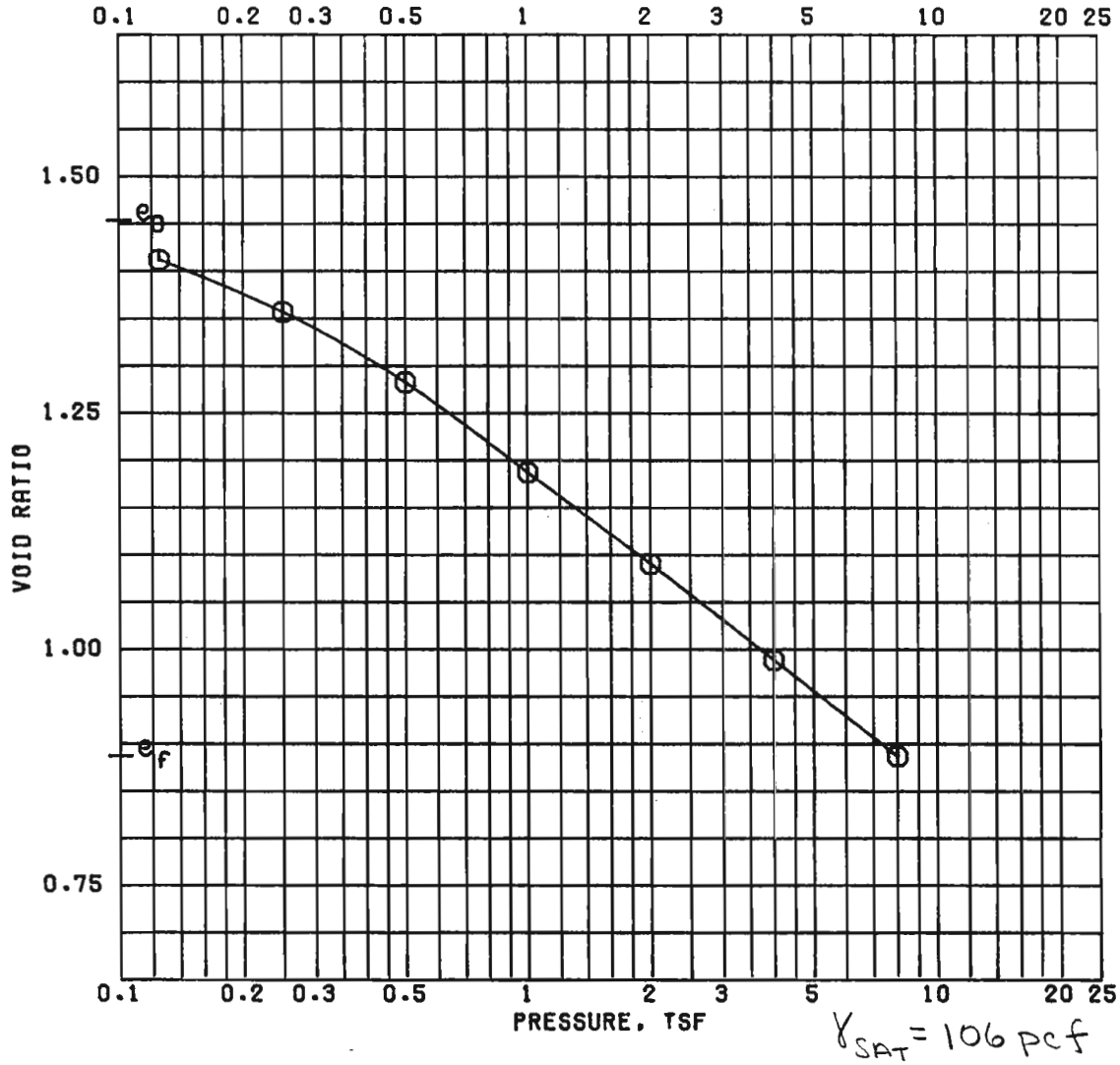
ST CHARLES PARISH

BORING NO. 2-SCU | SAMPLE NO. 4-D

DEPTH/ELEV 13.8/-13.6 | TECH. KOC

LABORATORY USAE WES | DATE 23 FEB 87

TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 106 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	52.7	33.9
PRECONSOL. PRESSURE, TSF	0.420	DRY DENSITY, PCF	68.7	89.4
COMPRESSION INDEX	0.260	SATURATION, %	98.0	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.452	0.885
DIA. IN 4.44	HT. IN 1.113	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CH), GRAY; SILT POCKETS		
LL 69	PL 19	PI 50	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 2-SCU / SAMPLE NO. 5-B
			DEPTH/ELEV 16.6/-16.4 / DATE 03 MAR 87

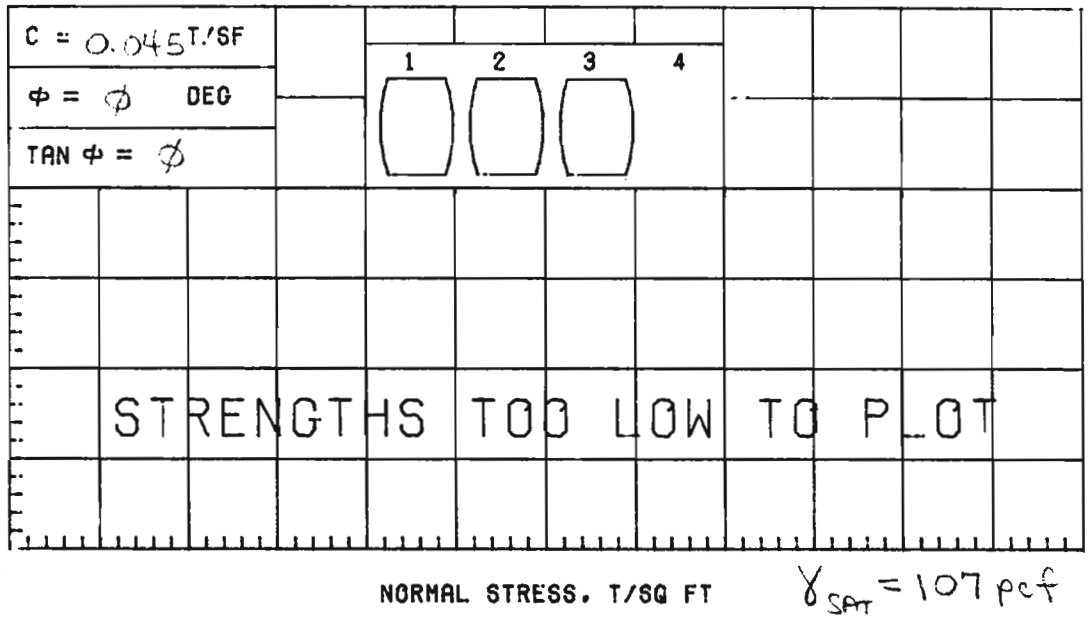
CONSOLIDATION TEST REPORT

SHEET 1 OF 9

C = 0.045 T/SF

Φ = Ø DEG

TAN Φ = Ø



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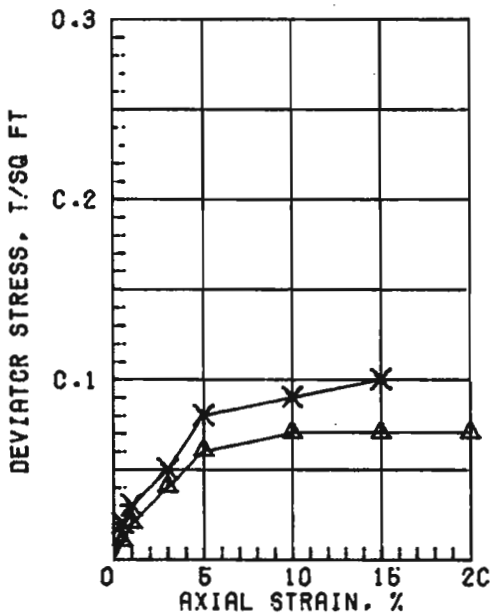


	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	55.5	47.3	44.7	
	DRY DENSITY, PCF	65.8	71.8	72.9	
	SATURATION, %	96.0	94.8	92.0	
	VOID RATIO	1.561	1.348	1.312	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0	
	MAX. DEV. STRESS, TSF	0.07	0.10	0.10	
	TIME TO FAILURE, MIN.	20	30	30	
	RATE OF STRAIN INCR.%				
	INITIAL DIAMETER, IN.	1.39	1.40	1.40	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

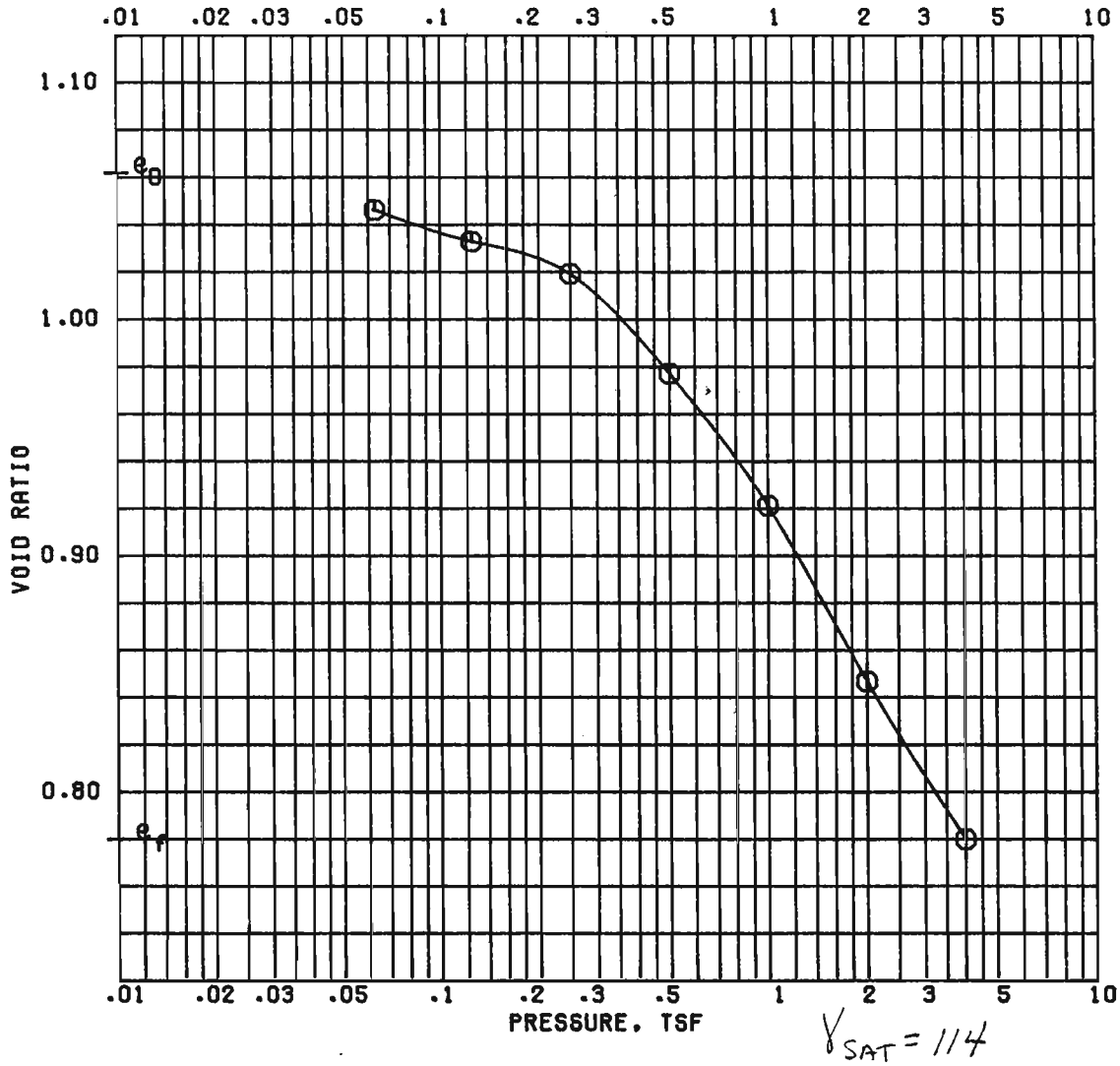
AVE 49.2

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; 1/4" SILT LAYERS

LL 41	PL 18	PI 23	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PCNT & VIC HURR PROT
LIMITS ON MIXTURE OF MATERIALS.	ST CHARLES PARISH
	BORING NO. 2-SCU / SAMPLE NO. G-B
	DEPTH/ELEV 20.0/-19.8 / TECH. KOC
	LABORATORY USAE WES / DATE 23 FEB 87
	TRIAXIAL COMPRESSION TEST REPORT



			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	39.4	28.8
PRECONSOL. PRESSURE, TSF	0.452	DRY DENSITY, PCF	81.8	94.7
COMPRESSION INDEX	0.260	SATURATION, %	100 +	99.8
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.061	0.779
DIA. IN 4.44	HT. IN 1.107	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CL), GRAY; SILT POCKETS		
LL 35	PL 17	PI 18	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 2-SCU / SAMPLE NO. 7-C
			DEPTH/ELEV 24.9/-24.7 / DATE 04 MAR 87

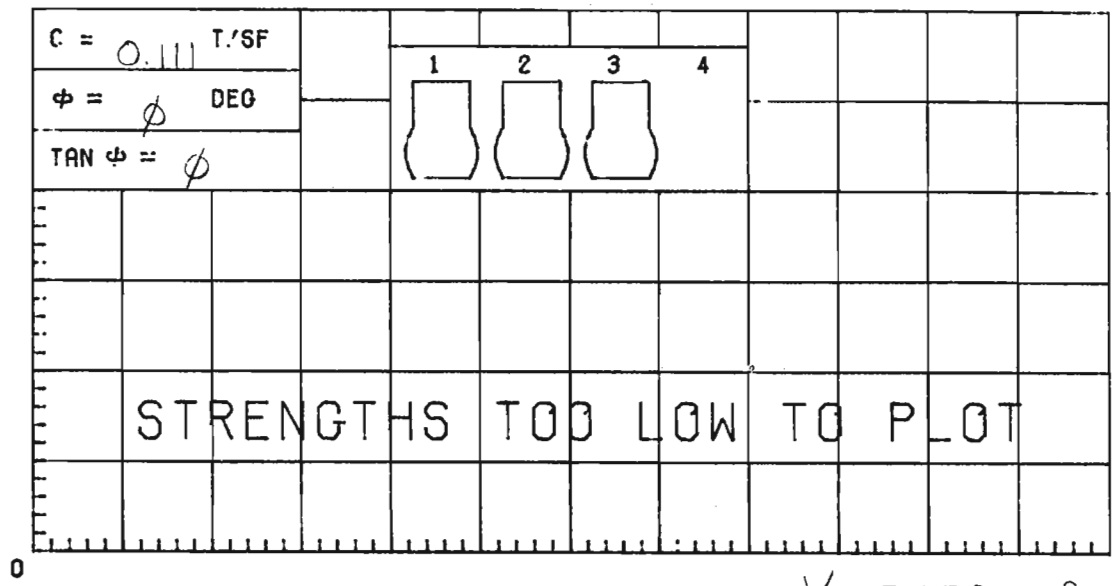
CONSOLIDATION TEST REPORT

SHEET 1 OF 8

C = 0.111 T/SF

Φ = ∅ DEG

TAN Φ = ∅



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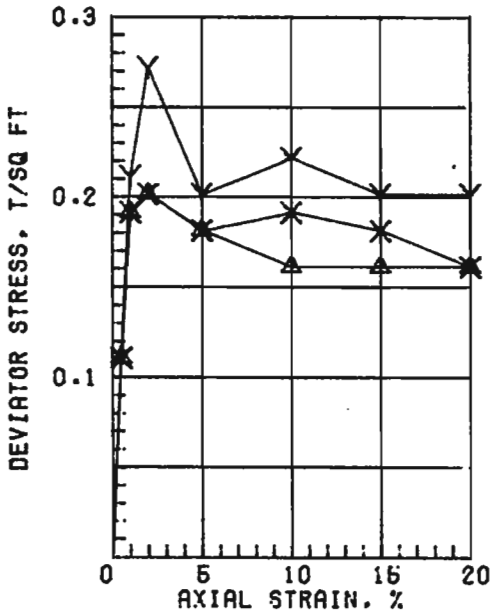


	SPECIMEN NO.	▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	60.3	61.7	56.9	
	DRY DENSITY, PCF	63.7	63.1	65.1	
	SATURATION, %	99.0	99.6	96.7	
	VOID RATIO	1.645	1.673	1.588	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0	
	MAX. DEV. STRESS, TSF	0.20	0.27	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	

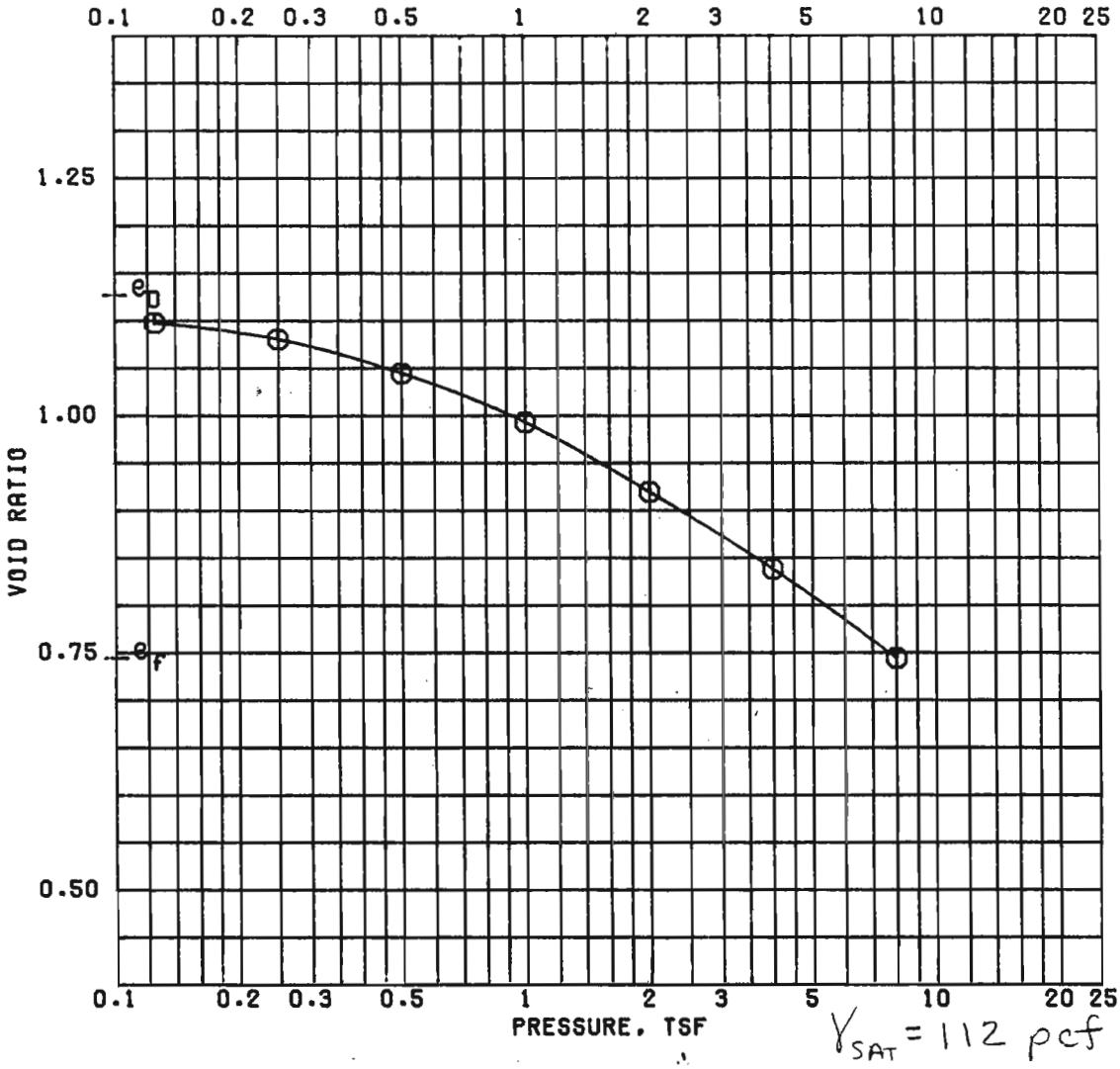
AVE 59.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES & POCKETS

LL 63	PL 20	PI 43	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 2-SCU	SAMPLE NO. 8-C
	DEPTH/ELEV 29.3/-29.1	TECH. KOC
	LABORATORY USAE WES	DATE 24 FEB 87
	TRIAXIAL COMPRESSION TEST REPORT	



			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	41.5	28.8
PRECONSOL. PRESSURE, TSF	0.90	DRY DENSITY, PCF	79.3	96.7
COMPRESSION INDEX	0.31	SATURATION, %	99.5	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.125	0.743
DIA. IN 4.44	HT. IN 1.112	BACK PRESSURE, TSF		
CLASSIFICATION	SILTY CLAY (CL), GRAY			
LL 35	PL 22	PI 13	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 2-SCU	SAMPLE NO. 9-C
			DEPTH/ELEV 32.9/-32.7	DATE 05 MAR 87

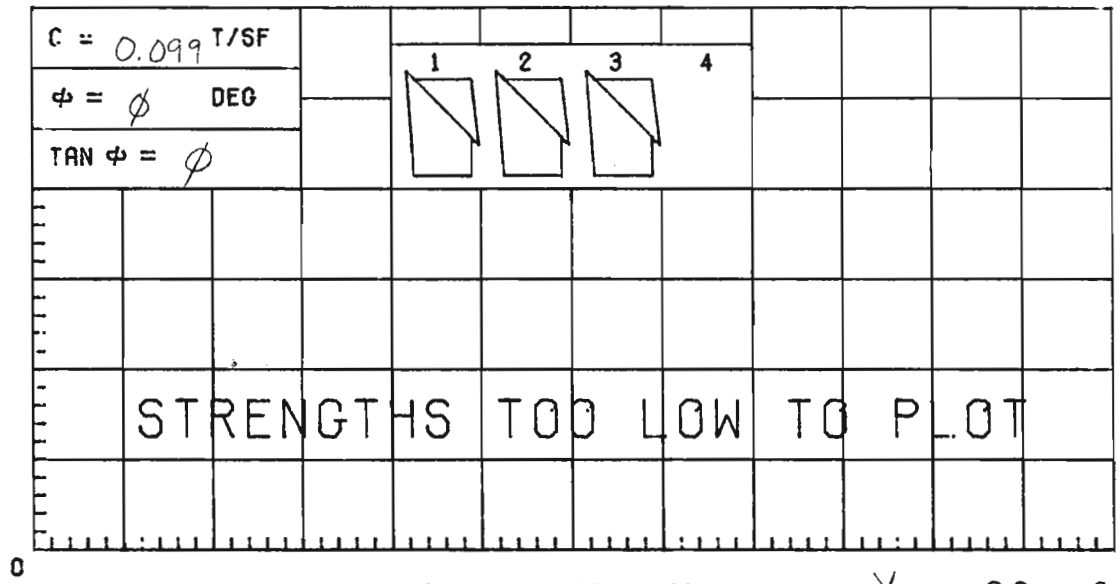
CONSOLIDATION TEST REPORT

SHEET 1 OF 9

C = 0.099 T/SF

Φ = Ø DEG

TAN Φ = Ø



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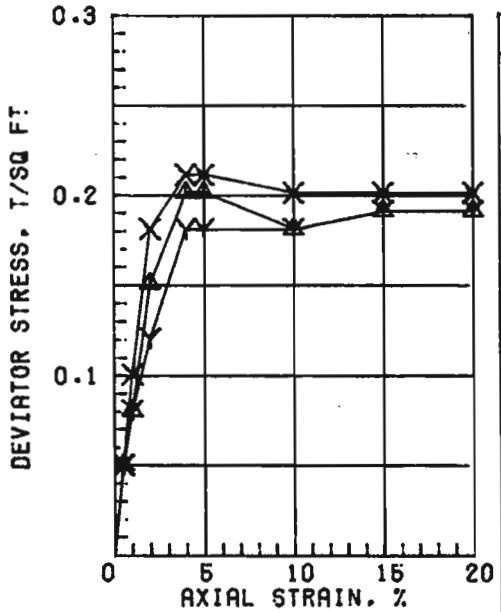


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	69.1	69.4	67.5	
	DRY DENSITY, PCF	58.8	58.2	59.1	
	SATURATION, %	99.8	98.9	98.4	
	VOID RATIO	1.869	1.895	1.852	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.20	0.18	0.21	
TIME TO FAILURE, MIN.		8	26	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	

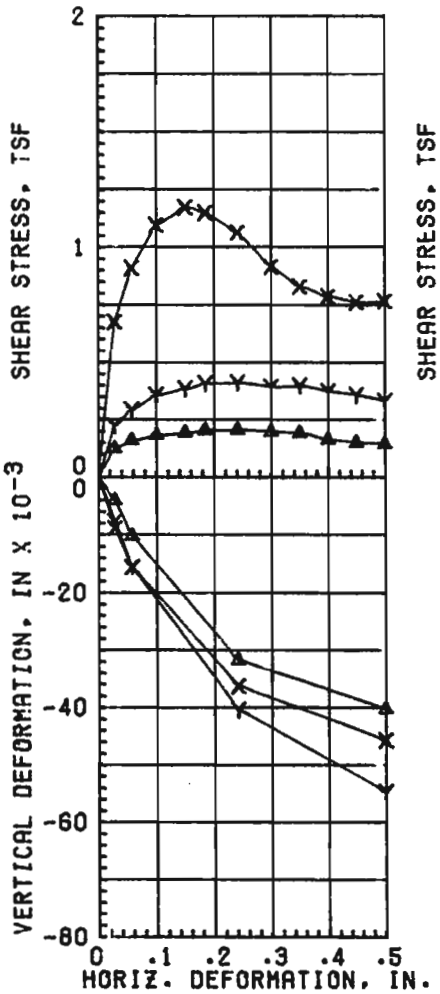
AVE 68.7

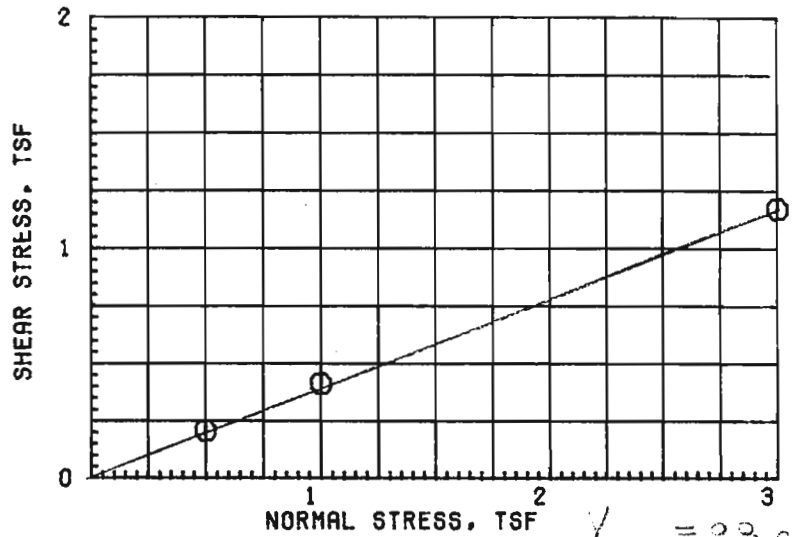
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT POCKETS

LL 77	PL 22	PI 55	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 2-SCU	SAMPLE NO. 10-B
	DEPTH/ELEV 36.5/-36.3	TECH. KOC
	LABORATORY USAE WES	DATE 24 FEB 87
	TRIAXIAL COMPRESSION TEST REPORT	





γ_{SAT} = 93 pcf

ϕ = 21°

TAN ϕ = 0.384

C = ϕ

	TEST NO.	1 ▲	2 Y	3 X	
INITIAL	WATER CONTENT, %	71.1	69.1	68.5	
	VOID RATIO	2.088	1.920	1.937	
	SATURATION, %	91.9	97.2	95.4	
	DRY DENSITY, PCF	54.6	57.7	57.4	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	69.5	48.0	40.4	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		0.5	1.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.21	0.41	1.17	
TIME TO FAILURE, MIN		1315	1315	817	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

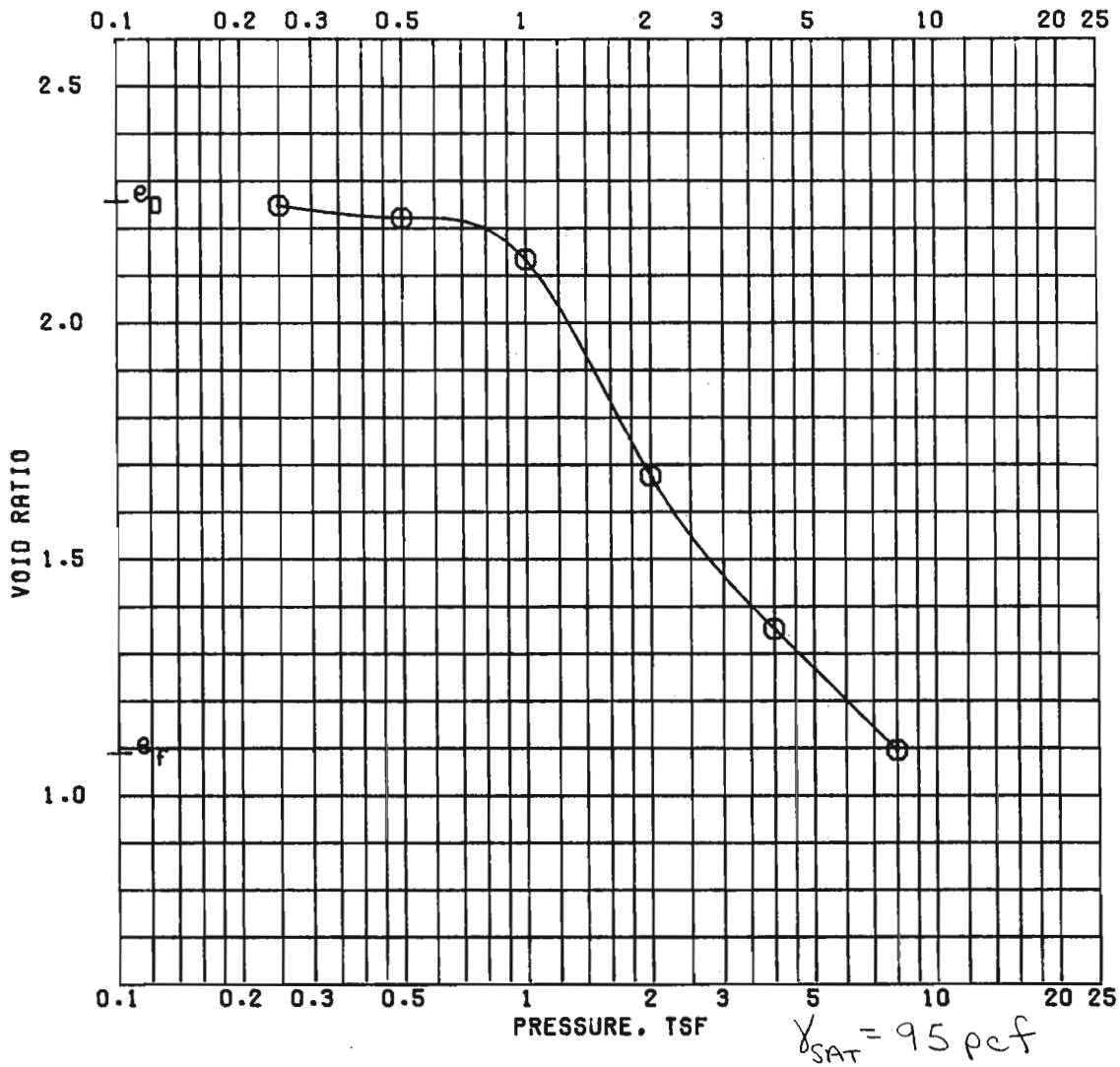
Ave 69.

TYPE SPECIMEN UNDISTURBED	3.00 IN. SQUARE	0.628 IN. THICK
CLASSIFICATION CLAY (CH), GRAY		

LL 79	PL 21	PI 58		GS 2.70 (EST)

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 2-SCU / SAMPLE 10-D
	DEPTH/ELEV 37.8/-37.6 / DATE 14 APR 87

DIRECT SHEAR TEST REPORT



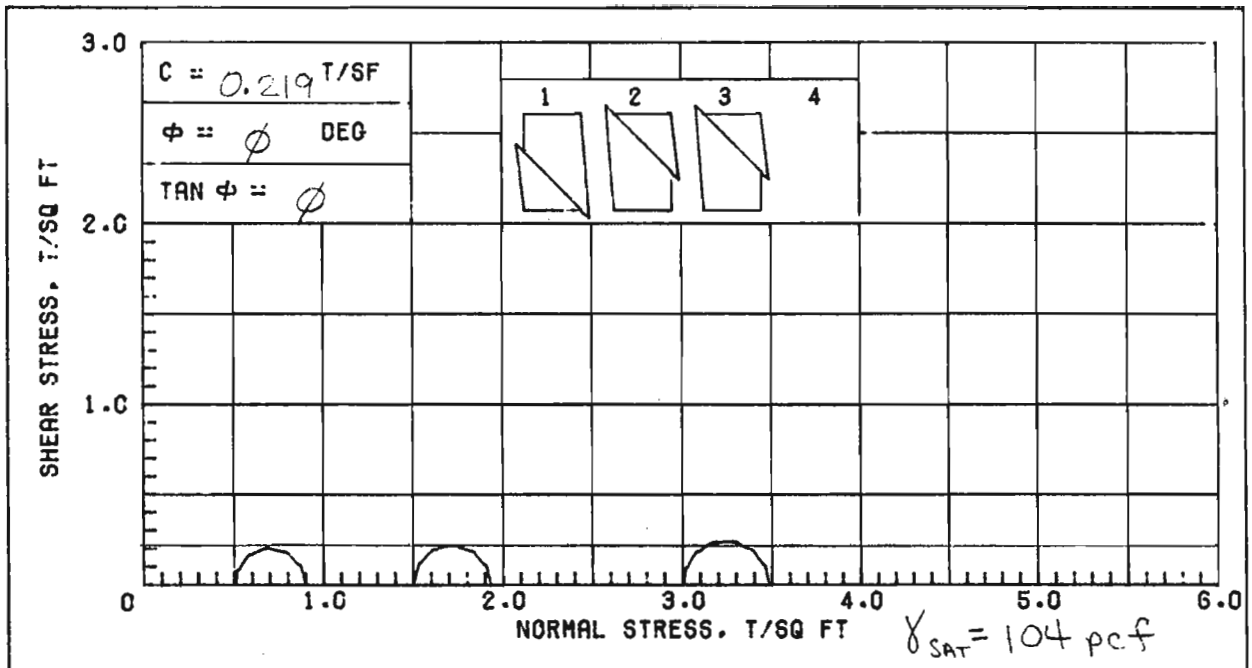
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	83.9	42.4
PRECONSOL. PRESSURE, TSF	1.00	DRY DENSITY, PCF	51.8	80.8
COMPRESSION INDEX	1.56	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.254	1.087
DIA. IN 4.44	HT. IN 1.121	BACK PRESSURE, TSF		

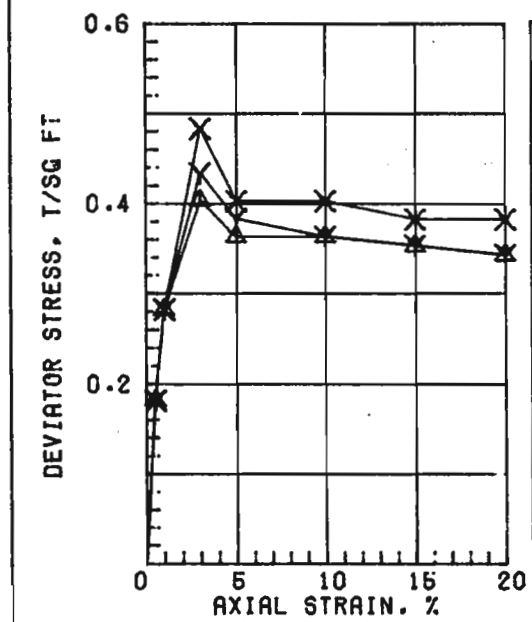
CLASSIFICATION	CLAY (CH), GRAY			
LL 85	PL 24	PI 61	PROJECT	LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 2-SCU	SAMPLE NO. 11-B
			DEPTH/ELEV 40.5/-40.3	DATE 07 MAR 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 8

2





SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	58.3	58.3	56.2	
	DRY DENSITY, PCF	65.0	65.2	66.5	
	SATURATION, %	98.7	99.2	98.8	
	VOID RATIO	1.595	1.586	1.536	
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	0.43	0.48	
TIME TO FAILURE, MIN.		6	18	18	
RATE OF STRAIN INCR.%			6	6	
INITIAL DIAMETER, IN.		1.39	1.39	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

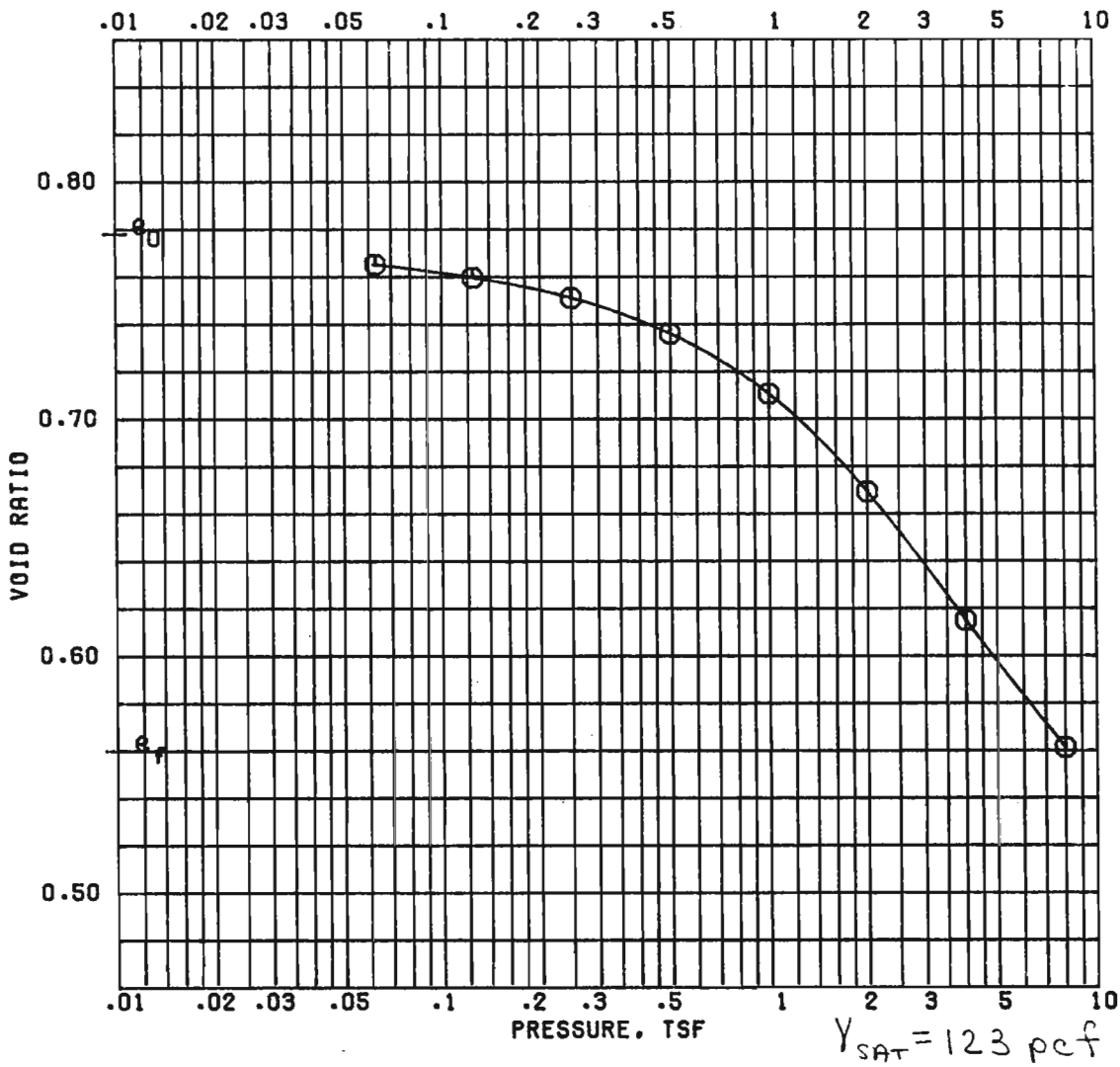
AVE 57.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SHELL PARTICLES

LL 72	PL 18	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 2-SCU	SAMPLE NO. 13-B
	DEPTH/ELEV 48.1/-47.9	TECH. KOC
	LABORATORY USAE WES	DATE 25 FEB 87
	TRIAXIAL COMPRESSION TEST REPORT	



			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	29.3	21.1
PRECONSOL. PRESSURE, TSF	1.05	DRY DENSITY, PCF	94.8	108.1
COMPRESSION INDEX	0.18	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	0.777	0.559
DIA. IN 4.44	HT. IN 1.113	BACK PRESSURE, TSF		
CLASSIFICATION	CLAY (CL), GRAY; CONCRETIONS			
LL 30	PL 14	PI 16	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS		BORING NO. 2-SCU	SAMPLE NO. 13-C	
		DEPTH/ELEV 49.4/-49.2	DATE 06 FEB 87	

CONSOLIDATION TEST REPORT

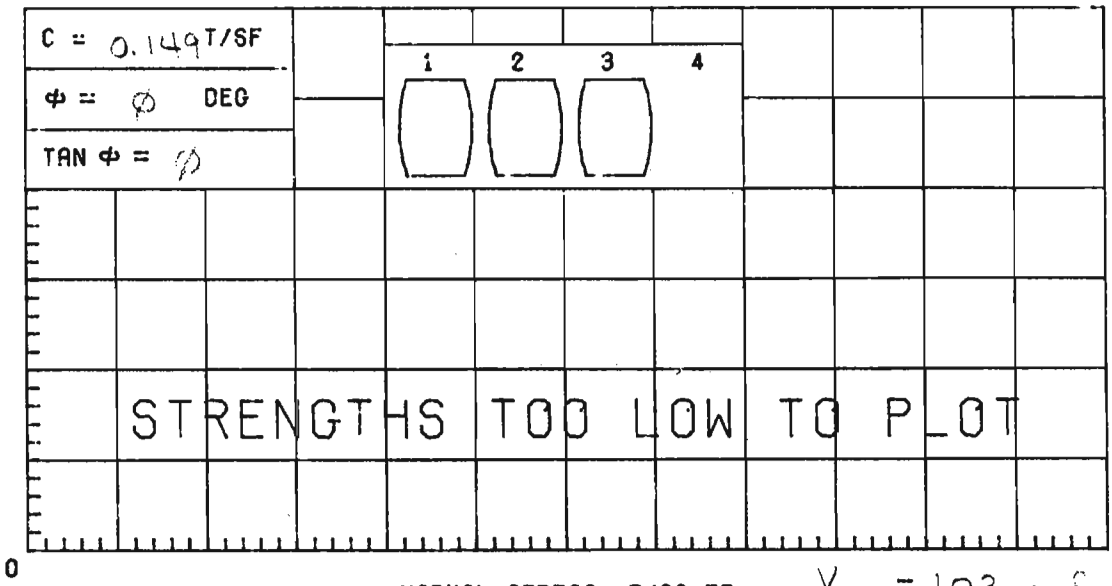
SHEET 1 OF 9

2

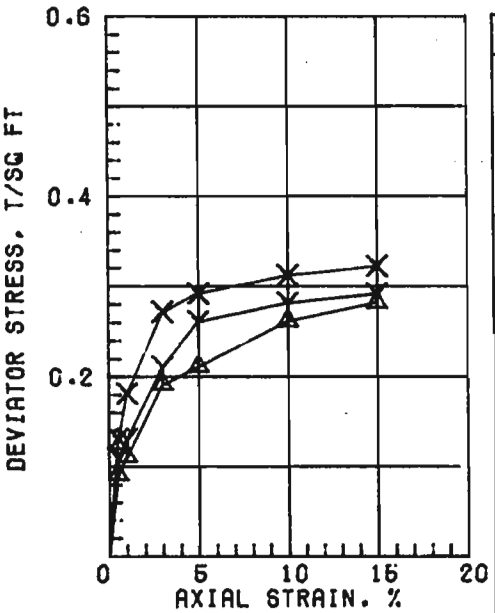
C = 0.149 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 103 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	60.8	53.4	58.0	
	DRY DENSITY, PCF	62.3	67.5	64.0	
	SATURATION, %	96.3	96.4	95.8	
	VOID RATIO	1.704	1.495	1.634	
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	0.29	0.32	
TIME TO FAILURE, MIN.		30	30	30	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.40	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 57.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ROOTLETS

LL 91	PL 25	PI 66	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT & VIC HURR PROT

ST CHARLES PARISH

BORING NO. 3-SCU | SAMPLE NO. 1-B

DEPTH/ELEV 1.0/+0.4 | TECH. KOC

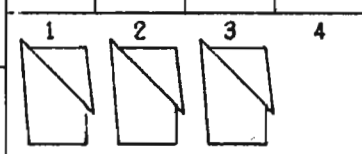
LABORATORY USAE WES | DATE 26 FEB 87

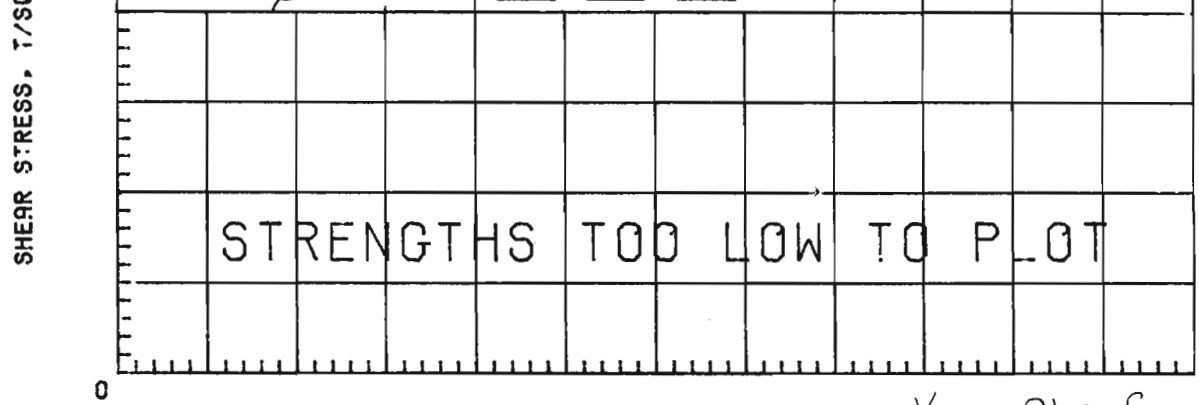
TRIAXIAL COMPRESSION TEST REPORT

C = 0.056 T/SF

Φ = Ø DEG

TAN Φ = Ø





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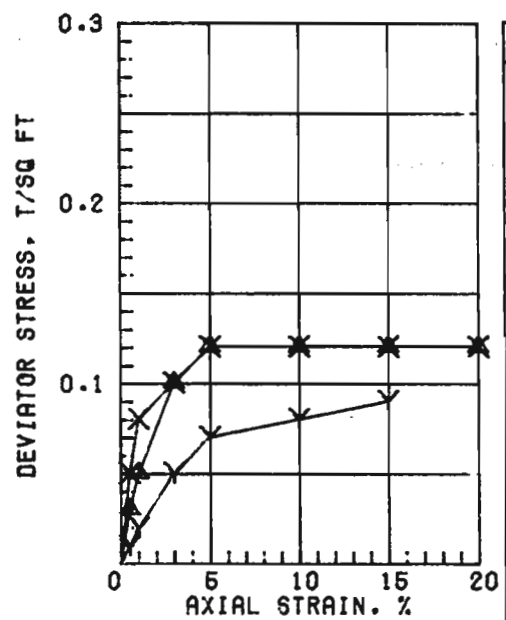


	SPECIMEN NO.	▲1	Y2	X3	4
INITIAL	WATER CONTENT, %	165.6	177.8	163.4	
	DRY DENSITY, PCF	29.5	28.2	30.3	
	SATURATION, %	94.7	96.5	96.5	
	VOID RATIO	4.722	4.977	4.570	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0	
	MAX. DEV. STRESS, TSF	0.12	0.09	0.12	
	TIME TO FAILURE, MIN.	10	30	10	
	RATE OF STRAIN INCR.%				
	INITIAL DIAMETER, IN.	1.39	1.39	1.39	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

AVG 168.9

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 190	PL 50	PI 140	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT & VIC HURR PROT

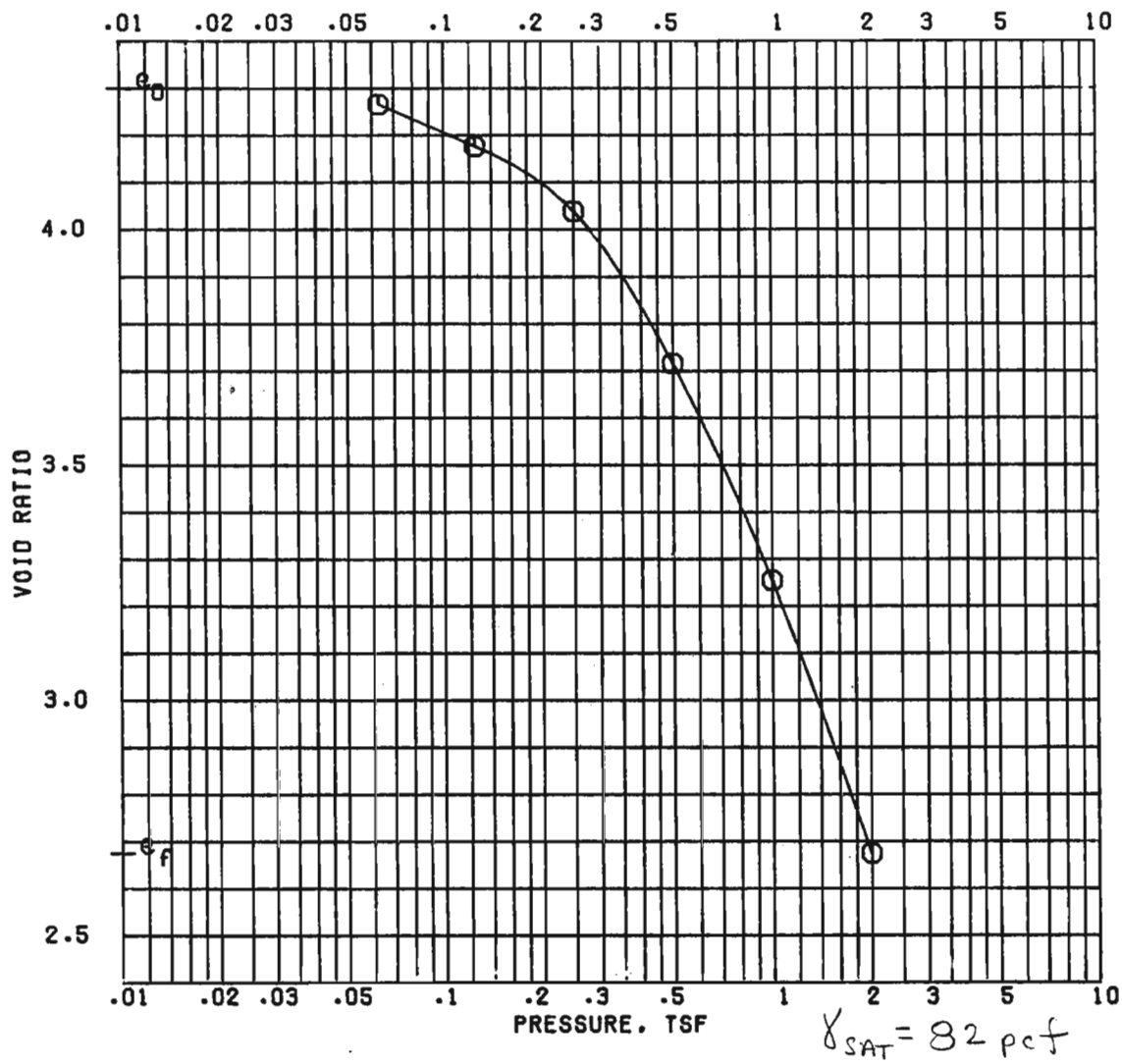
ST CHARLES PARISH

BORING NO. 3-SCU | SAMPLE NO. 3-B

DEPTH/ELEV 8.2/-6.8 | TECH. KOC

LABORATORY USAE WES | DATE 26 FEB 87

TRIAXIAL COMPRESSION TEST REPORT



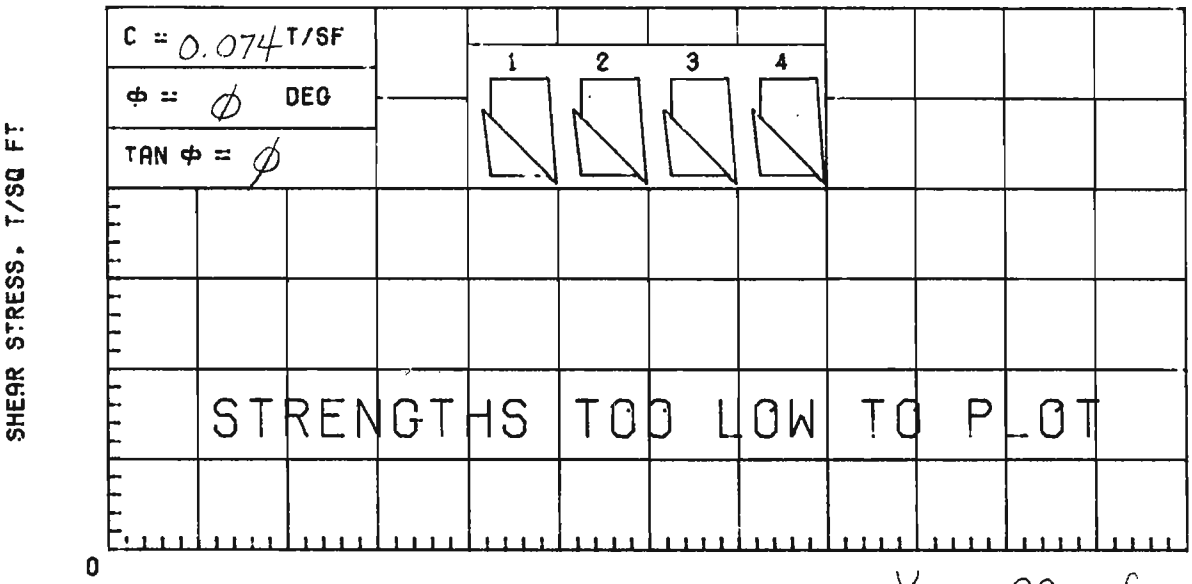
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	154.3	97.2
PRECONSOL. PRESSURE, TSF	0.375	DRY DENSITY, PCF	31.8	45.9
COMPRESSION INDEX	1.750	SATURATION, %	97.0	98.2
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	4.296	2.671
DIA. IN 4.44	HT. IN 1.114	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), BROWN; ORGANIC MATERIAL

LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 3-SCU	SAMPLE NO. 3-C
		DEPTH/ELEV 9.1/-7.7	DATE 09 MAR 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 7



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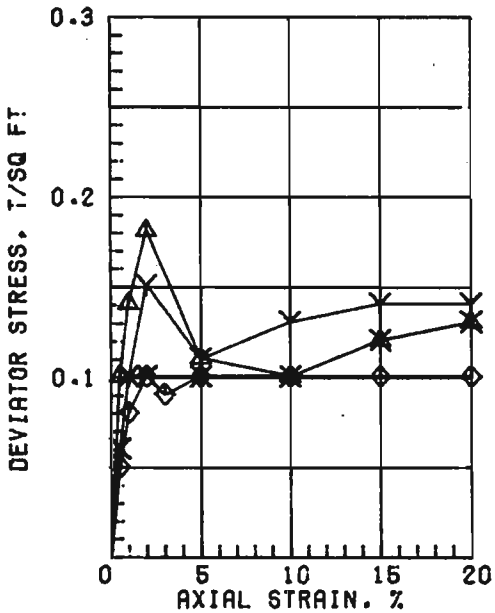


SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	67.6	72.1	69.3	72.9
	DRY DENSITY, PCF	59.2	56.9	58.2	57.3
	SATURATION, %	98.9	99.3	98.6	100+
	VOID RATIO	1.845	1.961	1.897	1.943
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	3.0
MAX. DEV. STRESS, TSF		0.18	0.15	0.10	0.10
TIME TO FAILURE, MIN.		4	12	6	15
RATE OF STRAIN INCR.%			6	6	4
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

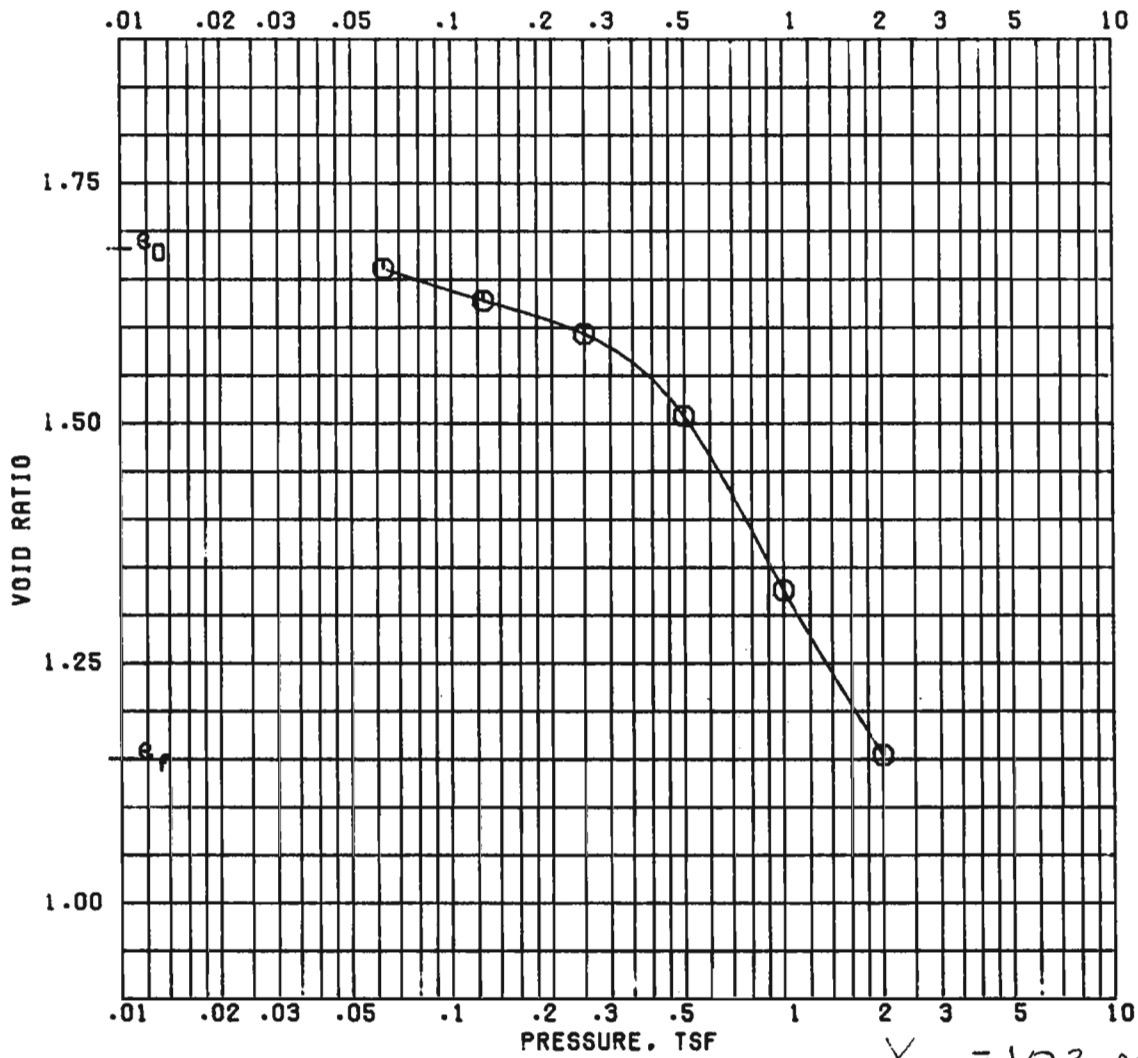
AVE 70.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; 1/4" SILT LAYERS

LL 65	PL 19	PI 46	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	G TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
LIMITS ON MIXTURE OF MATERIALS.	ST CHARLES PARISH	
	BORING NO. 3-SCU	SAMPLE NO. 5-B
	DEPTH/ELEV 16.0/-14.6	TECH. KOC
	LABORATORY USAE WES	DATE 26 FEB 87
	TRIAXIAL COMPRESSION TEST REPORT	



$\gamma_{SAT} = 102$ pcf

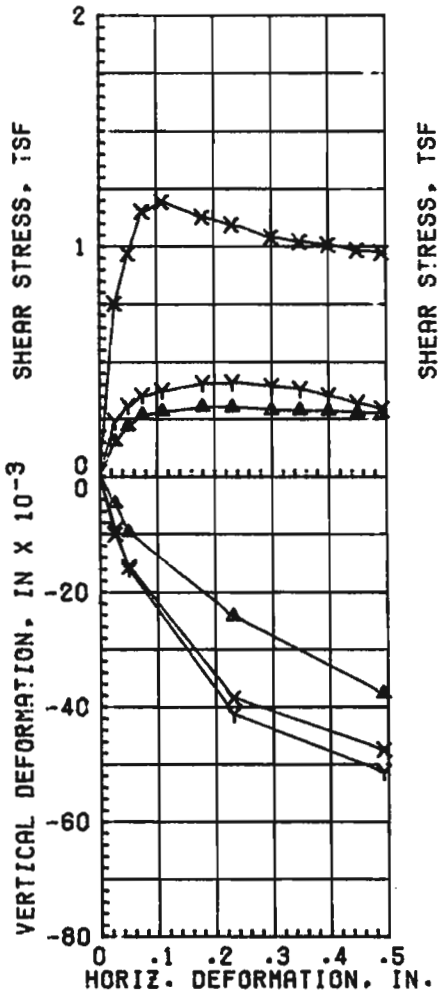
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	62.1	42.6
PRECONSOL. PRESSURE, TSF	0.460	DRY DENSITY, PCF	62.9	78.4
COMPRESSION INDEX	0.650	SATURATION, %	99.8	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.680	1.149
DIA. IN 4.44	HT. IN 1.118	BACK PRESSURE, TSF		

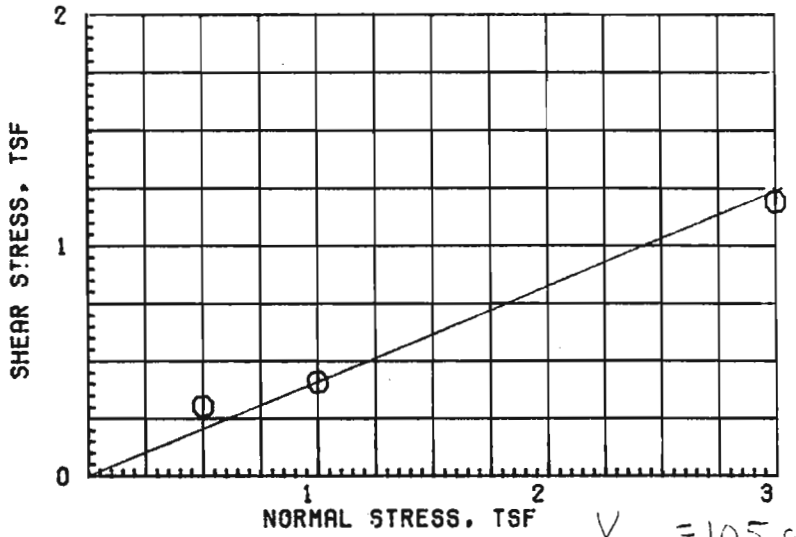
CLASSIFICATION CLAY (CH), GRAY

LL 76	PL 22	PI 54	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 3-SCU	SAMPLE NO. 5-C
		DEPTH/ELEV 16.8/-15.4	DATE 09 MAR 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 7





$\gamma_{SAT} = 105$ pcf

	TEST NO.	1 ▲	2 Y	3 X		AVE
INITIAL	WATER CONTENT, %	61.5	46.0	58.4		55.
	VOID RATIO	1.558	1.432	1.615		
	SATURATION, %	100 +	86.6	97.5		
	DRY DENSITY, PCF	65.9	69.3	64.4		
VOID RATIO AFTER CONSOL						
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1		
FINAL	WATER CONTENT, %	42.7	46.2	36.5		
	VOID RATIO					
	SATURATION, %					
NORMAL STRESS, TSF		0.5	1.0	3.0		
MAXIMUM SHEAR STRESS, TSF		0.30	0.41	1.19		
TIME TO FAILURE, MIN		1008	1295	616		
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018		
ULTIMATE SHEAR STRESS, TSF						

ϕ = 22.5°

TAN ϕ = 0.4142

C = ϕ

TYPE SPECIMEN UNDISTURBED	3.00 IN. SQUARE	0.744 IN. THICK
CLASSIFICATION CLAY (CL), GRAY; FINE SAND SEAMS		

LL 44	PL 16	PI 28		OS 2.70 (EST)

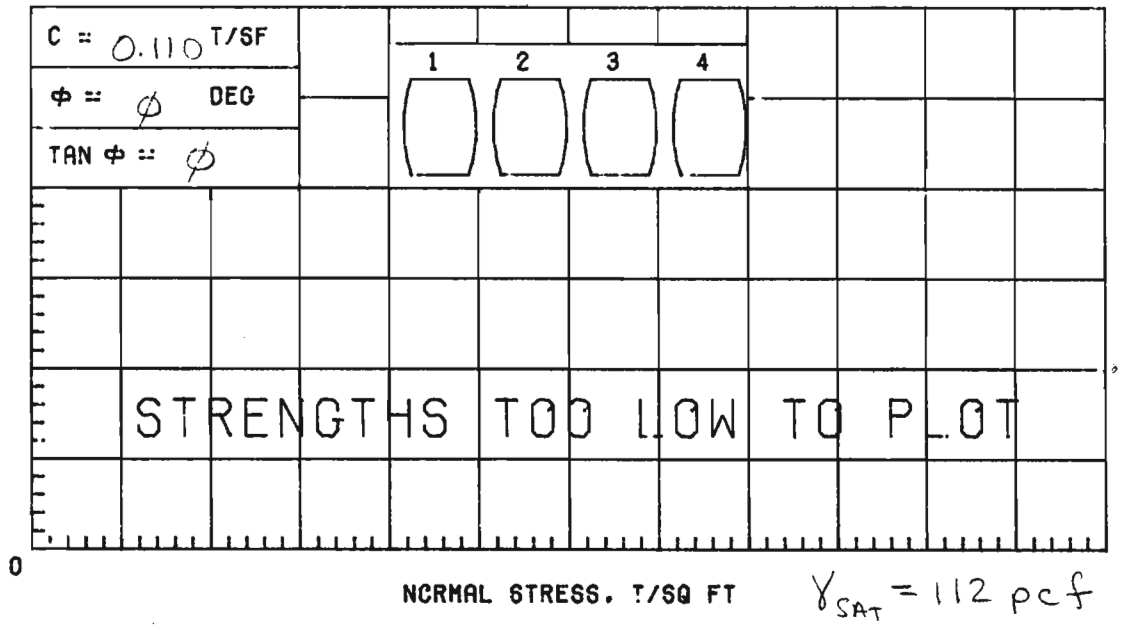
REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 3-SCU	SAMPLE 6-C
	DEPTH/ELEV 21.4/-20.0	DATE 22 APR 87

DIRECT SHEAR TEST REPORT

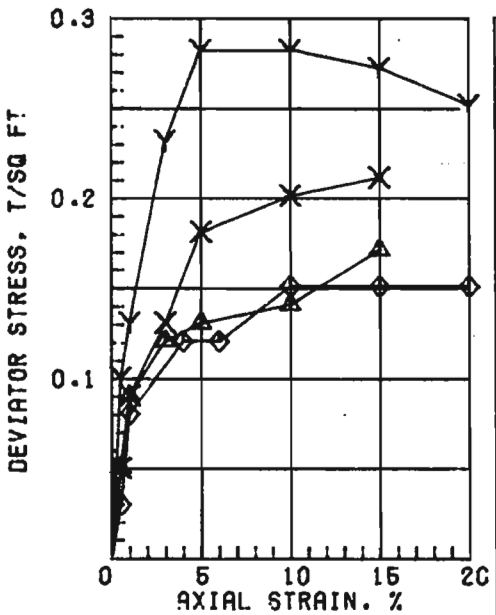
C = 0.110 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 112 pcf



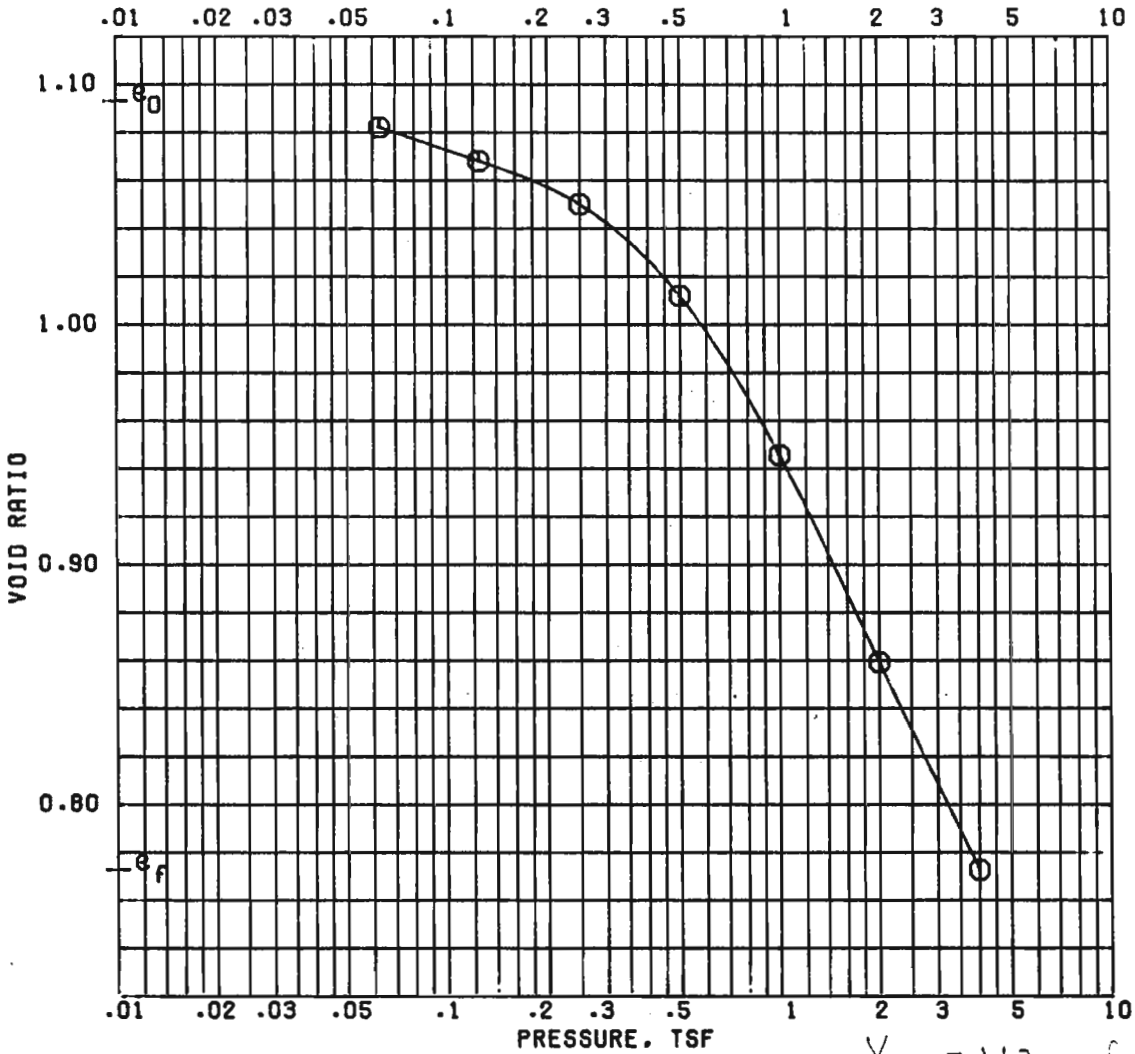
SPECIMEN NO.		△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	37.9	44.1	42.2	41.3	41.4
	DRY DENSITY, PCF	82.2	75.2	77.4	77.6	
	SATURATION, %	97.5	96.0	96.7	95.1	
	VOID RATIO	1.049	1.241	1.178	1.172	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.17	0.28	0.21	0.12	
TIME TO FAILURE, MIN.		30	10	30	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: CLAY (CL), GRAY

LL 38	PL 16	PI 22	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 3-SCU / SAMPLE NO. 7-C
	DEPTH/ELEV 26.4/-24.0 / TECH. KOC
	LABORATORY USAE WES / DATE 27 FEB 87
	TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 113 pcf

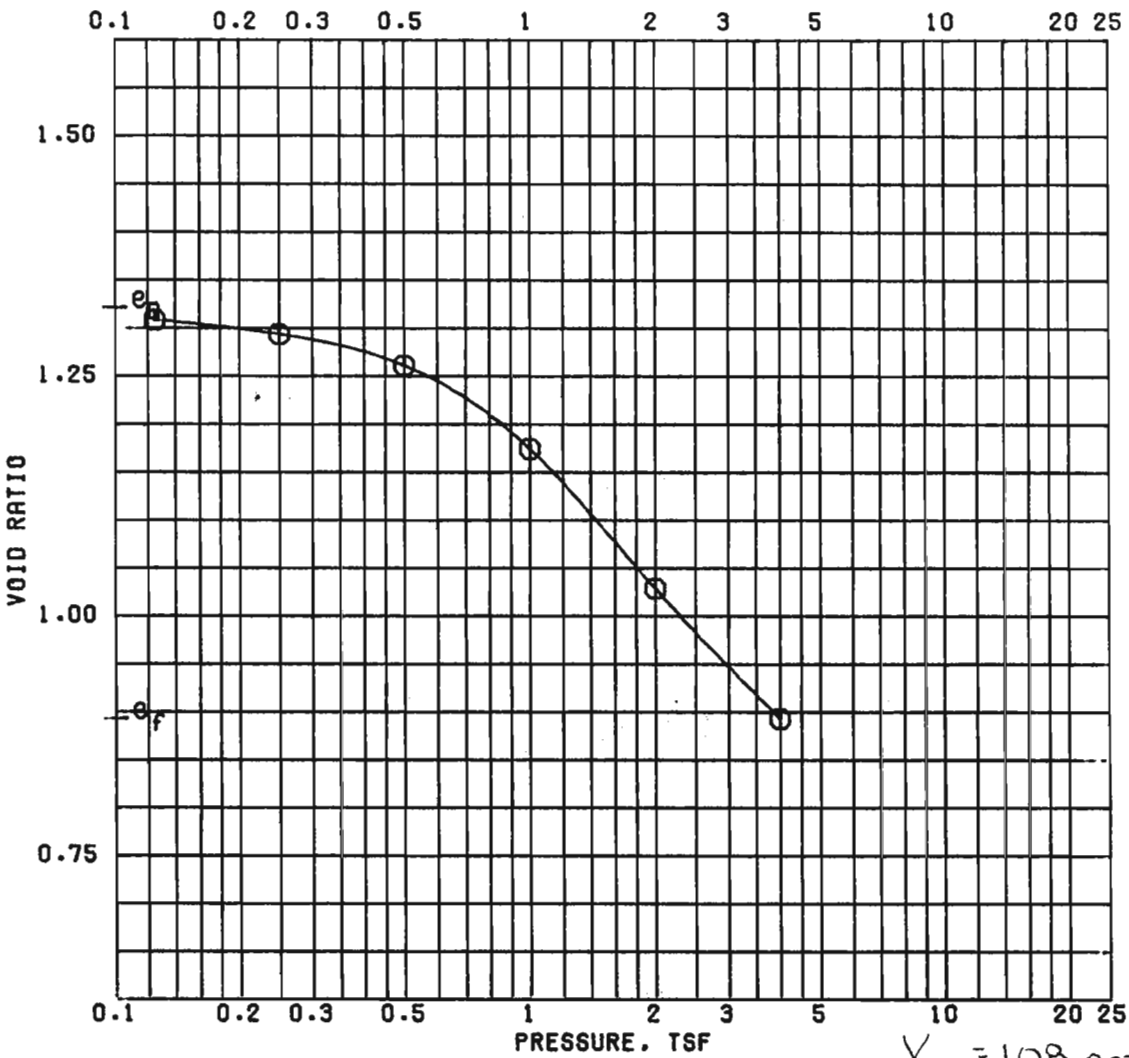
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	39.9	28.4
PRECONSOL. PRESSURE, TSF	0.58	DRY DENSITY, PCF	80.6	95.1
COMPRESSION INDEX	0.29	SATURATION, %	98.6	99.5
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.092	0.772
DIA. IN 4.44	HT. IN 1.126	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY

LL 40	PL 18	PI 22	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 3-SCU	SAMPLE NO. 8-B
		DEPTH/ELEV 28.5/-27.1	DATE 10 MAR 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ_{SAT} = 108 pcf

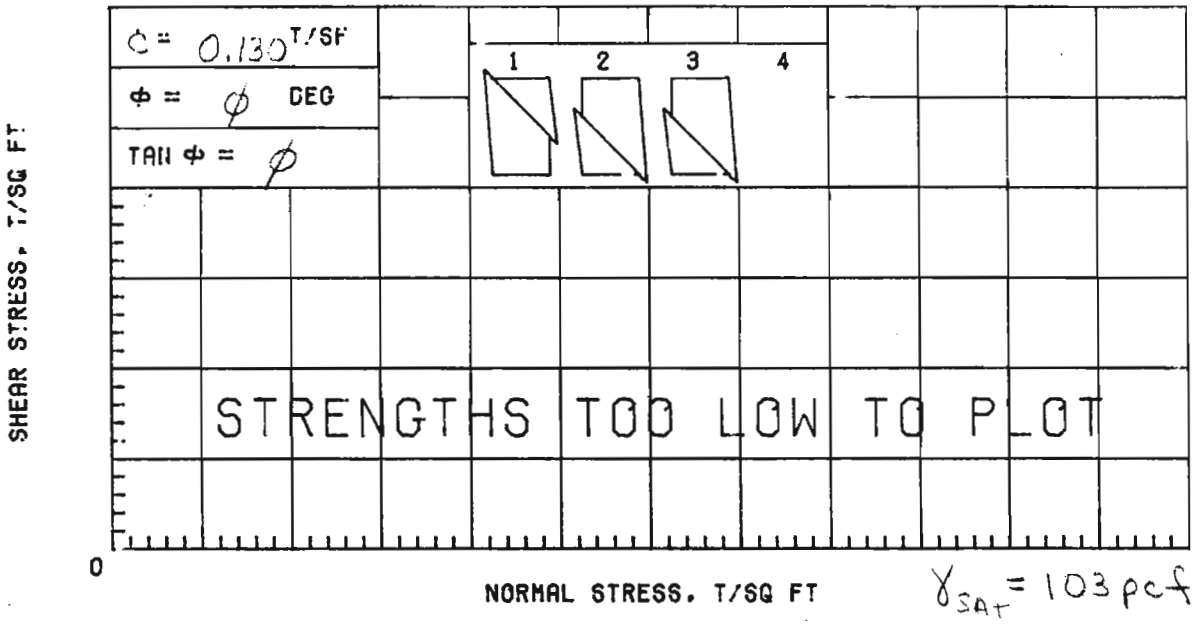
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	47.4	35.8
PRECONSOL. PRESSURE, TSF	0.79	DRY DENSITY, PCF	72.7	89.1
COMPRESSION INDEX	0.52	SATURATION, %	97.0	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.320	0.891
DIA. IN 4.44	HT. IN 1.153	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY; SILT POCKETS

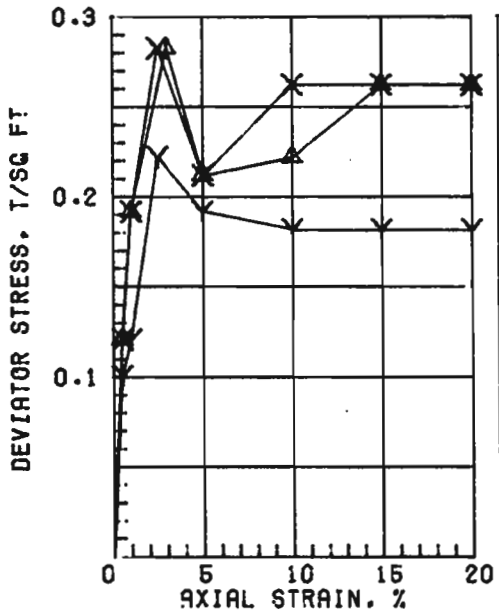
LL 43	PL 18	PI 25	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 3-SCU / SAMPLE NO. 9-C
			DEPTH/ELEV 33.4/-32.0 / DATE 04 MAR 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 8



γ_{SAT} = 103 pcf



SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	57.5	60.7	60.7	
	DRY DENSITY, PCF	65.7	63.5	63.9	
	SATURATION, %	99.3	99.2	100+	
	VOID RATIO	1.564	1.653	1.637	
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	0.22	0.28	
TIME TO FAILURE, MIN.		6	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	

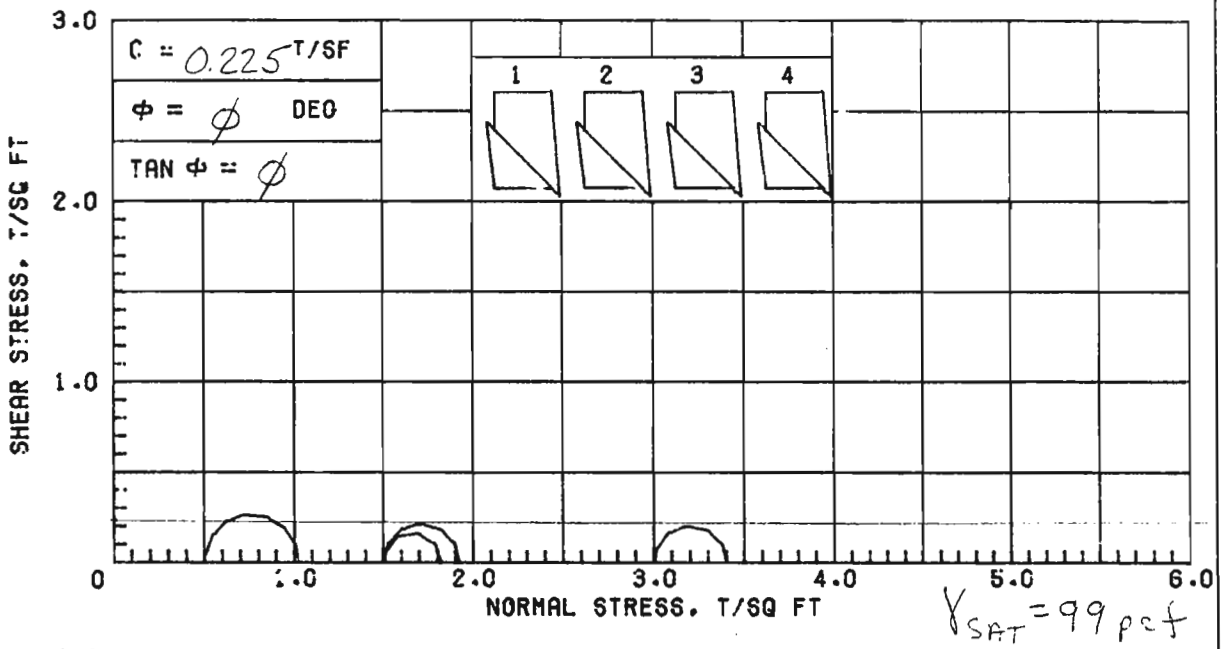
AVE 59.6

CONTROLLED-STRAIN TEST

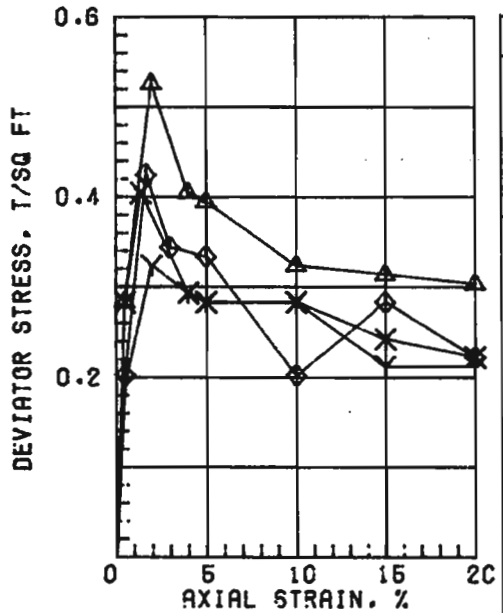
DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES & POCKETS

LL 65	PL 22	PI 43	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 3-SCU / SAMPLE NO. 10-D
	DEPTH/ELEV 37.8/-36.4 / TECH. KOC
	LABORATORY USAE WES / DATE 27 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 99 pcf



SPECIMEN NO.		△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	68.5	70.9	70.3	68.5
	DRY DENSITY, PCF	59.2	57.6	58.2	58.9
	SATURATION, %	100+	99.4	100+	99.5
	VOID RATIO	1.849	1.926	1.897	1.859
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		0.53	0.32	0.40	0.42
TIME TO FAILURE, MIN.		4	13	9	15
RATE OF STRAIN INCR.%			6	6	3
INITIAL DIAMETER, IN.		1.39	1.39	1.39	1.39
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00

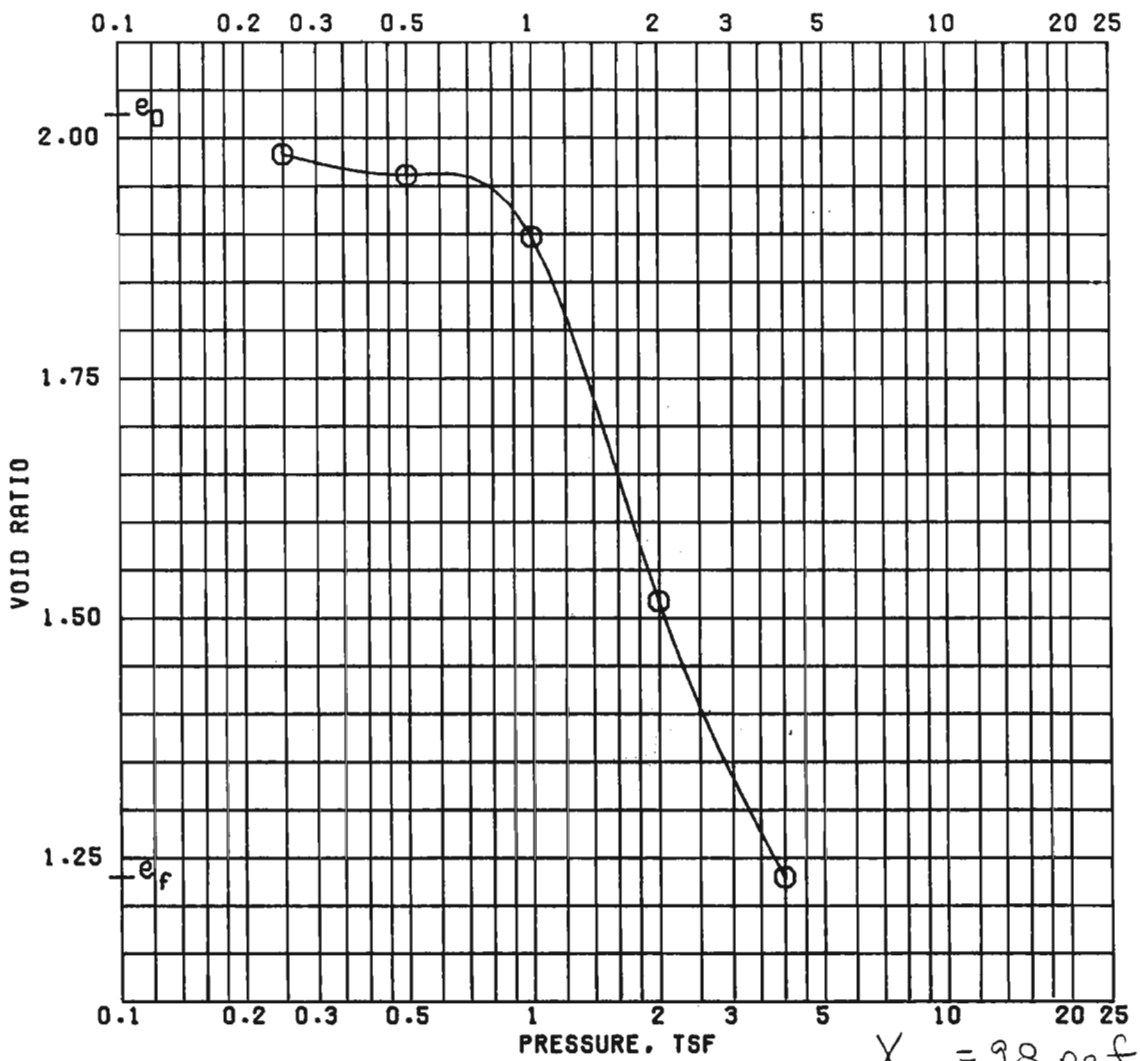
AVE 69.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES

LL 82	PL 23	PI 59	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	G TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 3-SCU / SAMPLE NO. 12-B
	DEPTH/ELEV 44.6/-43.1 / TECH. KCC
	LABORATORY USAE WES / DATE 02 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 98 pcf

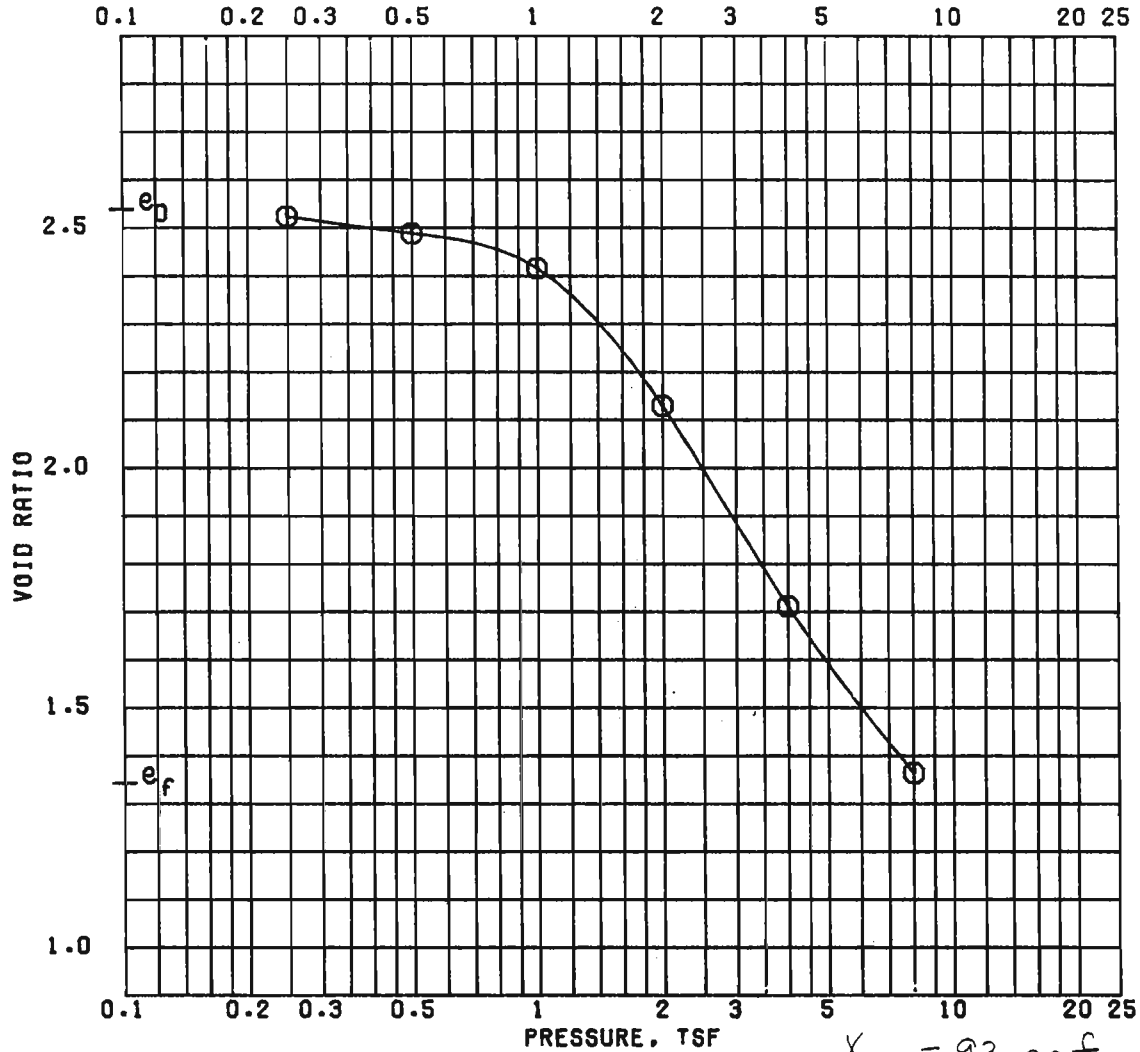
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	75.0	49.3
PRECONSOL. PRESSURE, TSF	0.98	DRY DENSITY, PCF	55.8	75.7
COMPRESSION INDEX	1.37	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.023	1.228
DIA. IN 4.44	HT. IN 1.120	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CH), GRAY		
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 3-SCU	SAMPLE NO. 12-C
		DEPTH/ELEV 44.9/-43.5	DATE 05 MAR 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 7

41

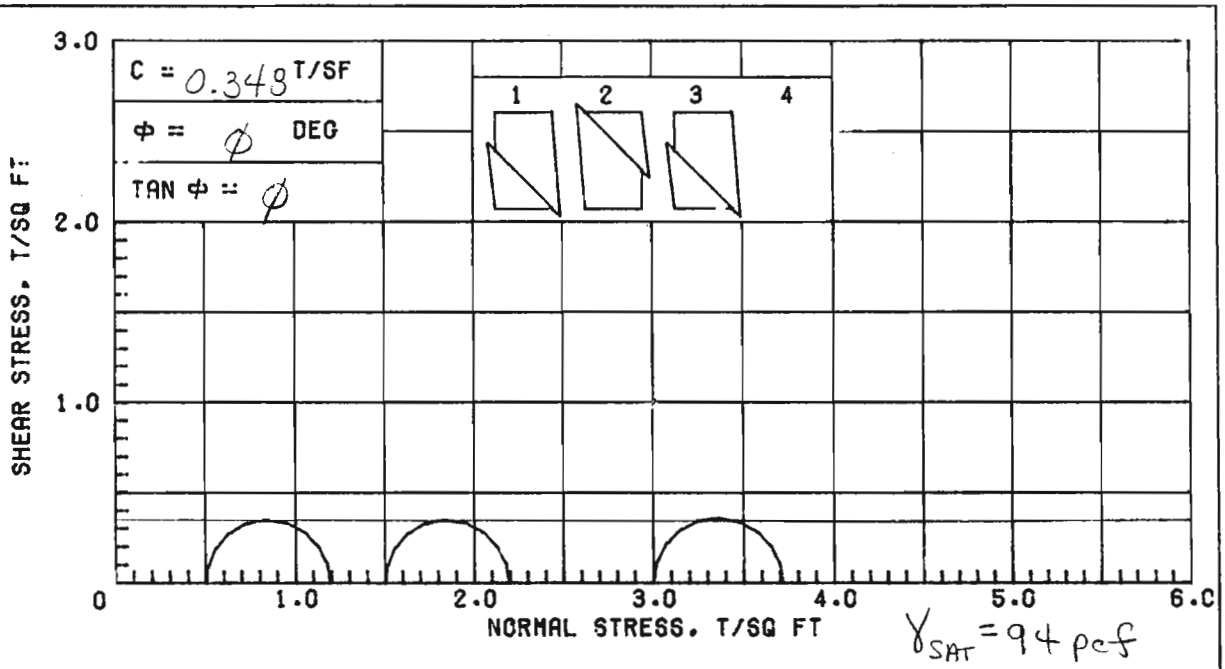


$\gamma_{SAT} = 93$ pcf

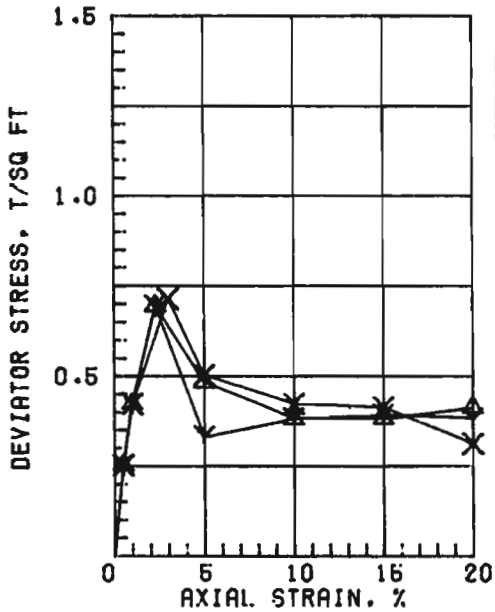
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	53.9	51.3
PRECONSOL. PRESSURE, TSF	1.31	DRY DENSITY, PCF	47.7	72.1
COMPRESSION INDEX	1.42	SATURATION, %	57.4	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.534	1.339
DIA. IN 4.44	HT. IN 1.139	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CH), GRAY; SILT POCKETS; SHELL PARTICLES		
LL 85	PL 21	PI 64	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 3-SCU	SAMPLE NO. 14-B
		DEPTH/ELEV 52.1/-50.7	DATE 09 MAR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 94 pcf



	SPECIMEN NO.	△1	Y2	X3	4
INITIAL	WATER CONTENT, %	88.2	82.6	85.5	
	DRY DENSITY, PCF	48.9	51.5	50.0	
	SATURATION, %	97.3	98.1	97.3	
	VOID RATIO	2.448	2.274	2.372	
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	0.69	0.71	
	TIME TO FAILURE, MIN.	5	14	18	
	RATE OF STRAIN INCR.%		6	6	
	INITIAL DIAMETER, IN.	1.40	1.40	1.40	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

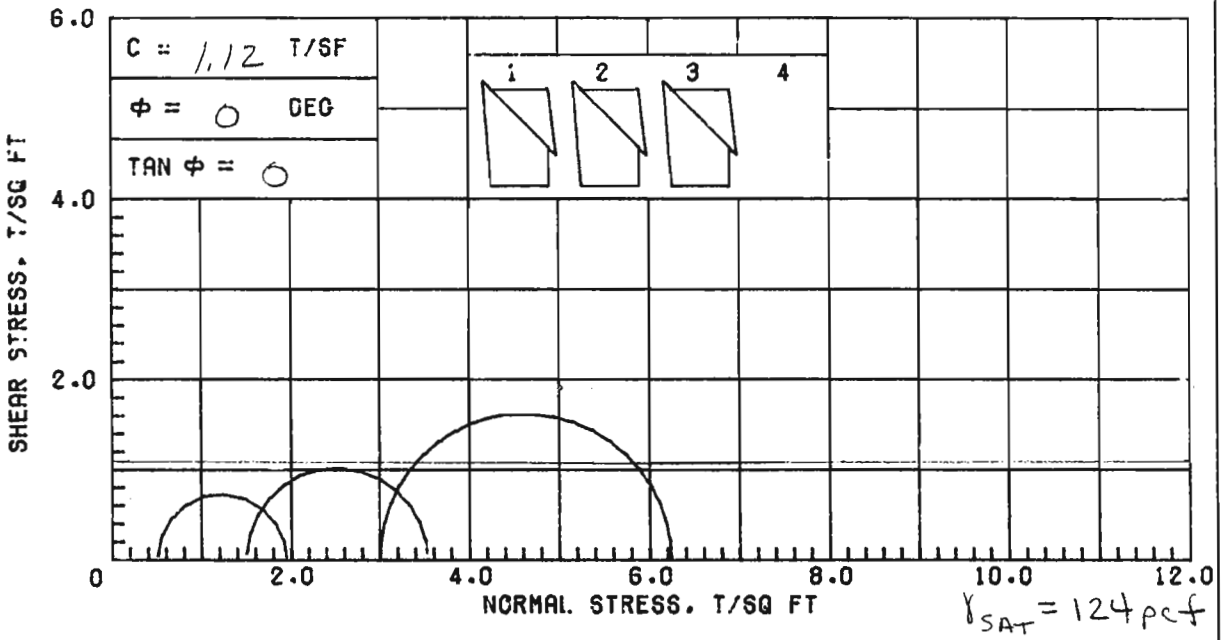
AVE 85.4

CONTROLLED-STRAIN TEST

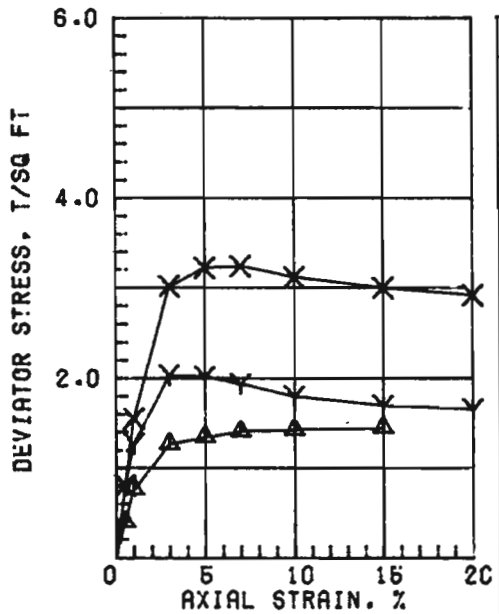
DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 120	PL 31	PI 89	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	G TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 3-SCU	SAMPLE NO. 14-C
	DEPTH/ELEV 53.3/-51.9	TECH. KOC
	LABORATORY USAE WES	DATE 02 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 124 pcf



	SPECIMEN NO.	△1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	23.8	25.3	22.6		23.9
	DRY DENSITY, PCF	99.1	95.7	97.1		
	SATURATION, %	91.7	89.8	82.9		
	VOID RATIO	0.701	0.761	0.736		
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	1.45	2.03	3.24		
	TIME TO FAILURE, MIN.	30	6	14		
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.40	1.39	1.40		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; CONCRETIONS; SILT POCKETS

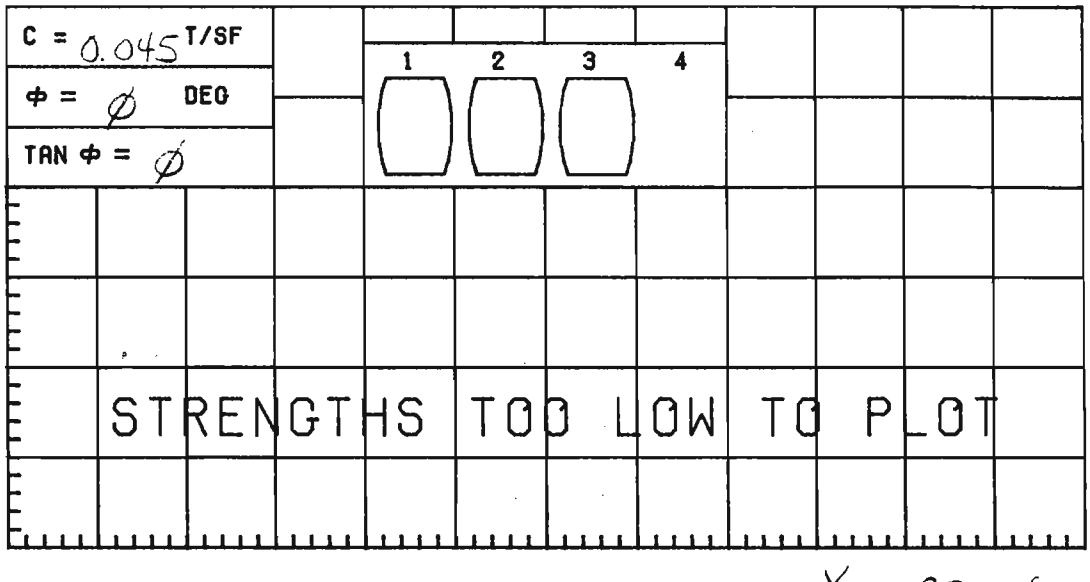
LL 52	PL 15	PI 37	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 3-SCU / SAMPLE NO. 17-B
	DEPTH/ELEV 64.1/-62.7 / TECH. KOC
	LABORATORY USAE WES / DATE 03 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT

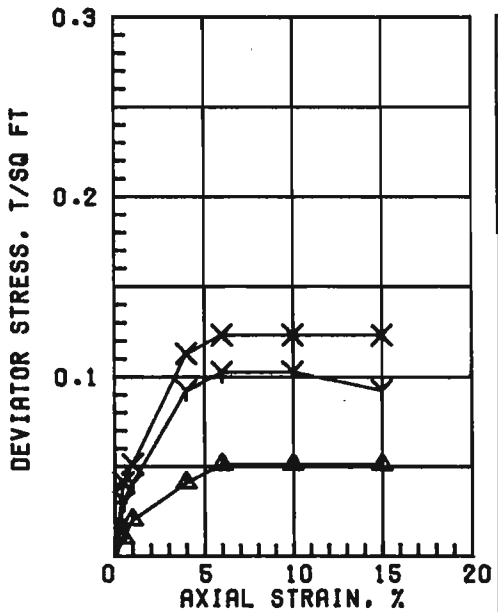
C = 0.045 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 90 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	114.6	104.3	95.6	
	DRY DENSITY, PCF	40.4	43.1	47.5	
	SATURATION, %	97.5	96.7	100+	
	VOID RATIO	3.175	2.914	2.548	
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	0.10	0.12	
TIME TO FAILURE, MIN.		13	13	13	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.38	1.38	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

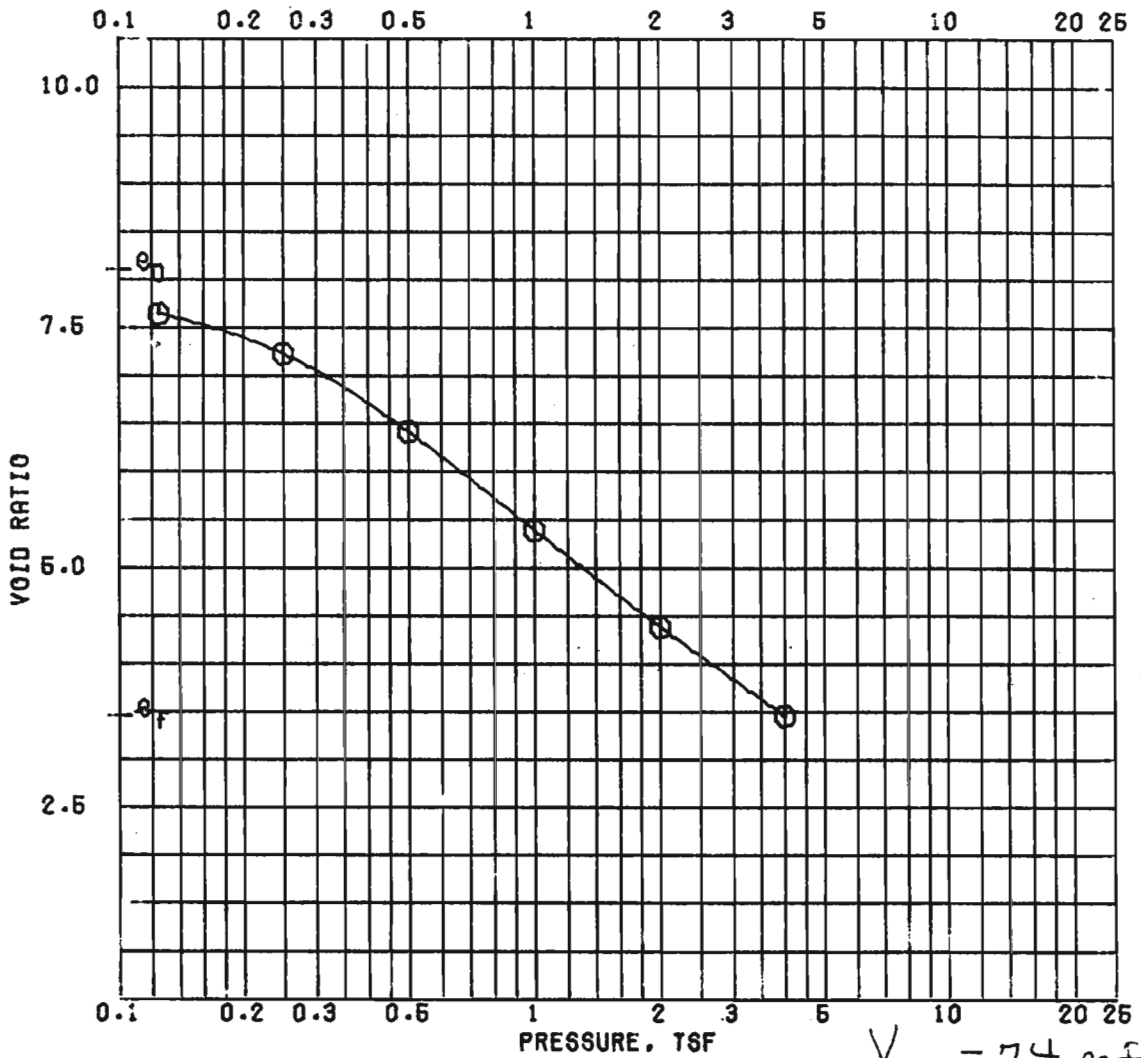
AVE 104.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 129	PL 31	PI 98	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 4-SCU / SAMPLE NO. 2-B
	DEPTH/ELEV 4.9/-4.0 / TECH. BD
	LABORATORY USAE WES / DATE 06 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT



$\gamma_{SAT} = 74$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	281.3	121.3
PRECONSOL. PRESSURE, TSF	0.33	DRY DENSITY, PCF	18.5	38.0
COMPRESSION INDEX	3.30	SATURATION, %	93.9	95.3
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	8.089	3.436
DIA. IN 4.44	HT. IN 1.120	BACK PRESSURE, TSF		

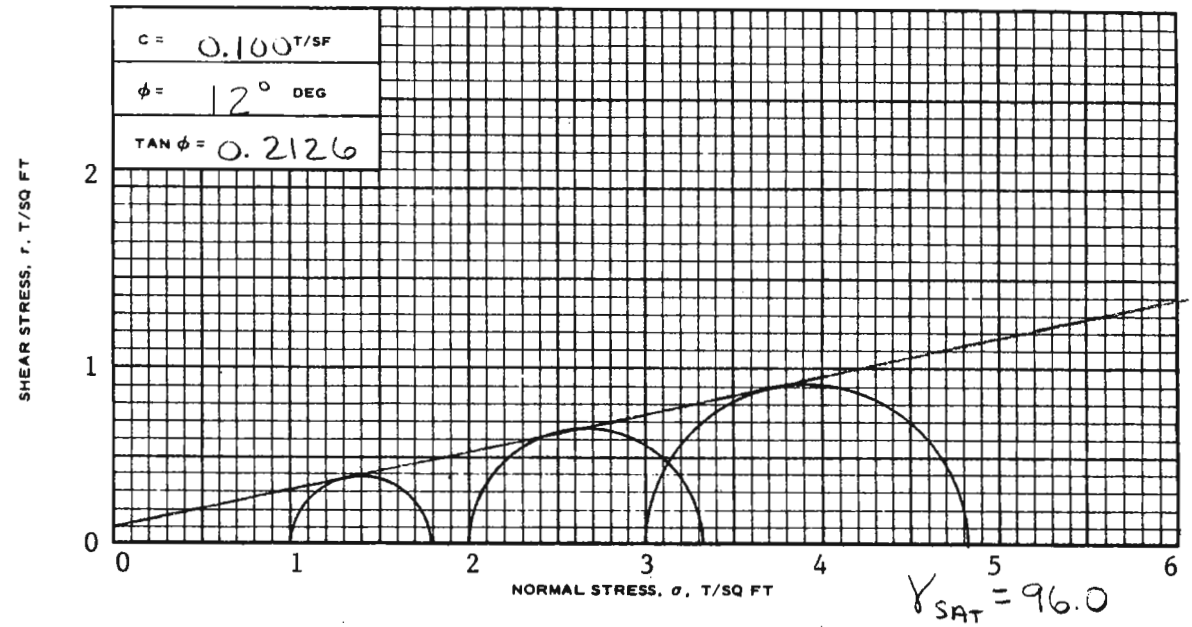
CLASSIFICATION CLAY (CH), BROWN & GRAY; HIGHLY ORGANIC

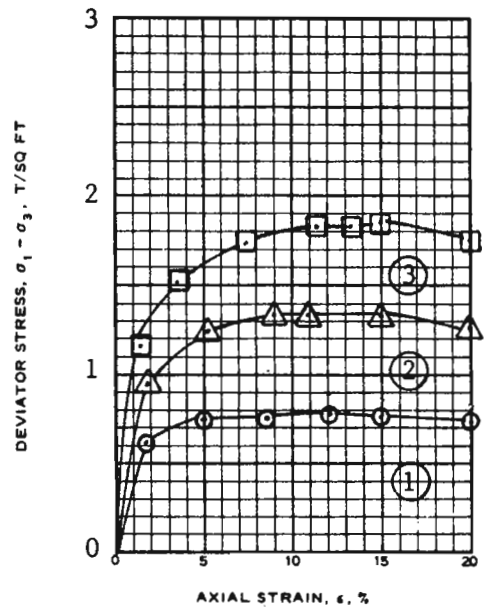
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 4-SCU	SAMPLE NO. 2-C
			DEPTH/ELEV 5.4/-4.5	DATE 13 JUL 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 8

4





SPECIMEN NO.			1	2	3	AVE
INITIAL	WATER CONTENT, %	w_o	81.3	80.7	81.6	81.2
	DRY DENSITY LB/CU FT	γ_{d_o}	53.0	53.4	52.0	
	SATURATION, %	S_o	100+	100+	97.8	
	VOID RATIO	e_o	2.206	2.179	2.268	
BEFORE SHEAR	WATER CONTENT, %	w_c	66.8	54.5	50.4	
	DRY DENSITY LB/CU FT	γ_{d_c}	63.0	71.3	74.0	
	SATURATION, %	S_c	100+	100+	100+	
	VOID RATIO	e_c	1.696	1.381	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		$(\sigma_1 - \sigma_3)_{MAX}$	0.79	1.33	1.82	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	806	562	706	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.37	1.37	1.39	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS CLAY (CH), GRAY; ORGANIC MATERIAL

LL 93	PL 24	PI 69	Gs 2.72	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST $\bar{R}$

REMARKS: (EST)

PROJECT LK PONT & VIC HURR PROT
ST CHARLES PARISH

BORING NO. 4-SCU SAMPLE NO. 4-B

DEPTH/ELEV 12.5/-11.6

LABORATORY USAEWES DATE 22 MAY 87

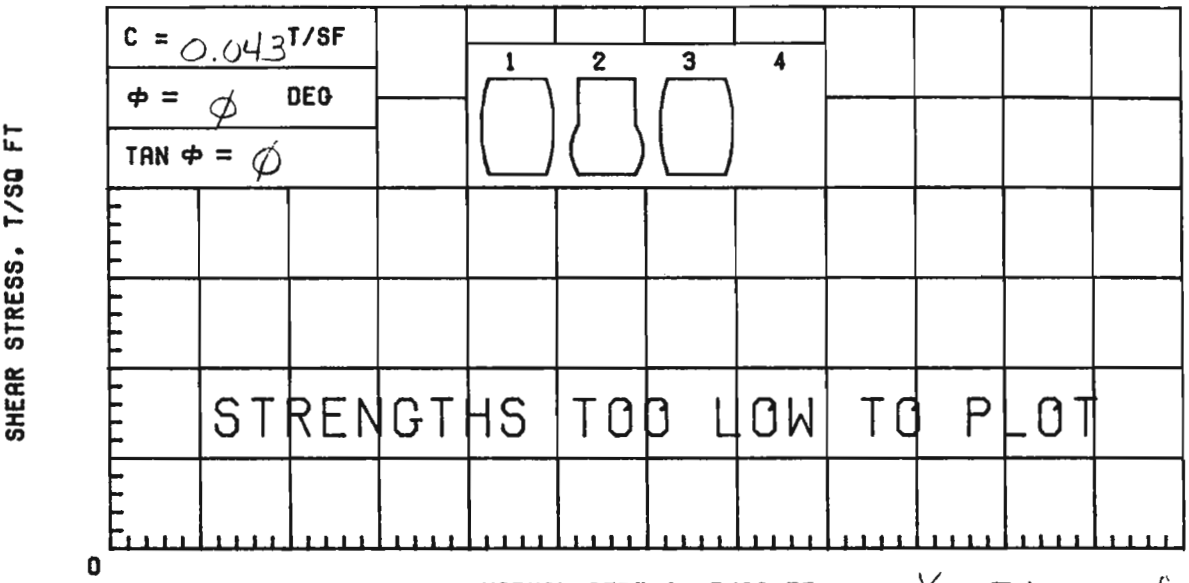
SHEET 1 OF 2 JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

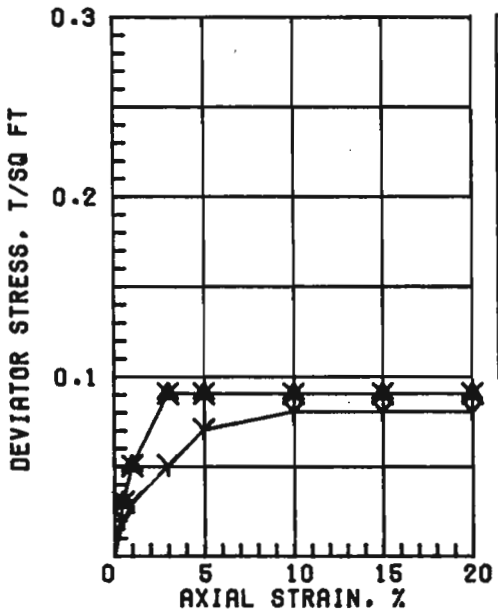
C = 0.043 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 100 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	63.8	69.4	67.7	
	DRY DENSITY, PCF	61.2	57.5	58.3	
	SATURATION, %	98.3	97.1	96.6	
	VOID RATIO	1.753	1.930	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	0.09	0.08	0.09	
	TIME TO FAILURE, MIN.	6	20	6	
	RATE OF STRAIN INCR.%				
	INITIAL DIAMETER, IN.	1.39	1.39	1.39	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

AVE 67.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 67	PL 21	PI 46	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT & VIC HURR PROT

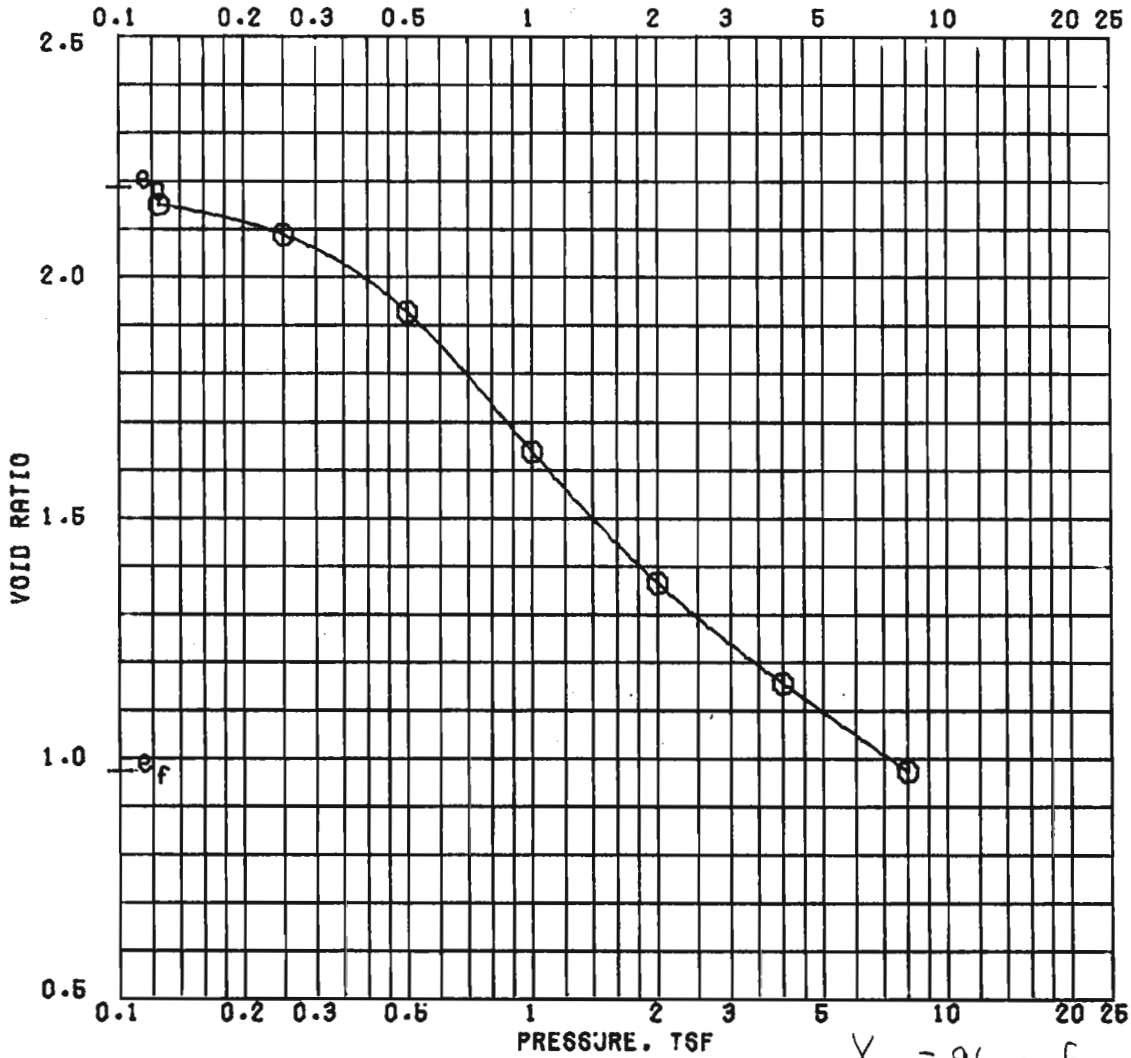
ST CHARLES PARISH

BORING NO. 4-SCU — SAMPLE NO. 4-C

DEPTH/ELEV 13.3/-12.4 — TECH. KOC

LABORATORY USAE WES — DATE 07 MAY 87

TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 96 pcf

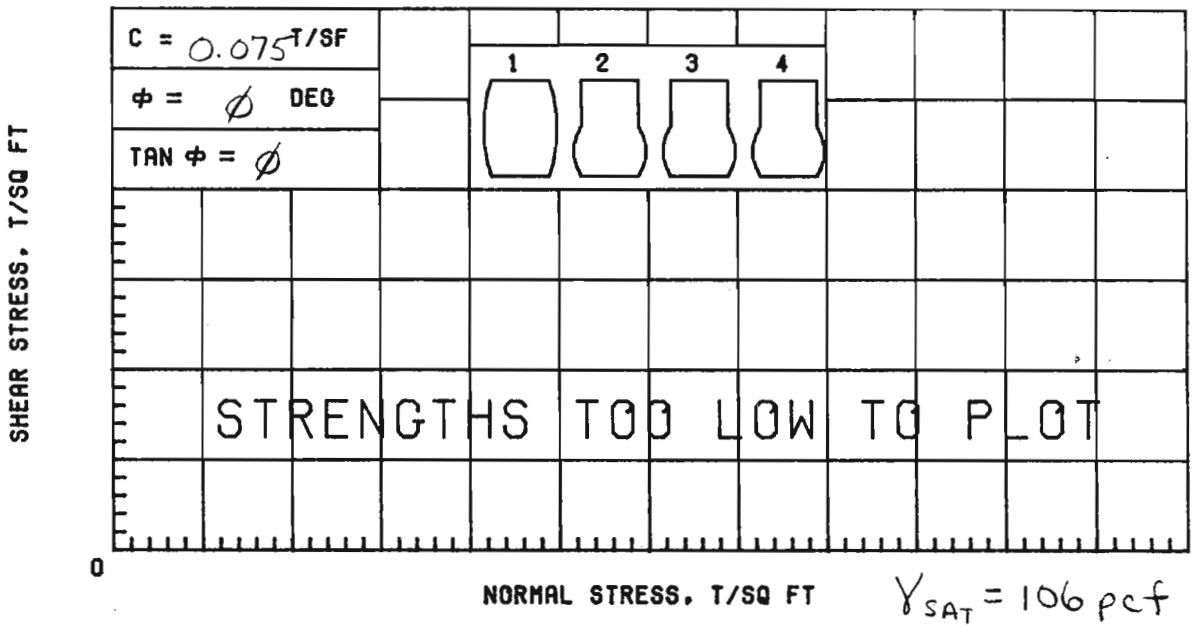
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	80.9	37.9
PRECONSOL. PRESSURE, TSF	0.35	DRY DENSITY, PCF	52.9	85.6
COMPRESSION INDEX	1.01	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.184	0.970
DIA. IN 4.44	HT. IN 1.148	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; SILT POCKETS

LL 71	PL 18	PI 53	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D:0		ST CHARLES PARISH
REMARKS			BORING NO. 4-SCU / SAMPLE NO. 5-B
			DEPTH/ELEV 16.5/-15.6 / DATE 14 JUL 87

CONSOLIDATION TEST REPORT

4-



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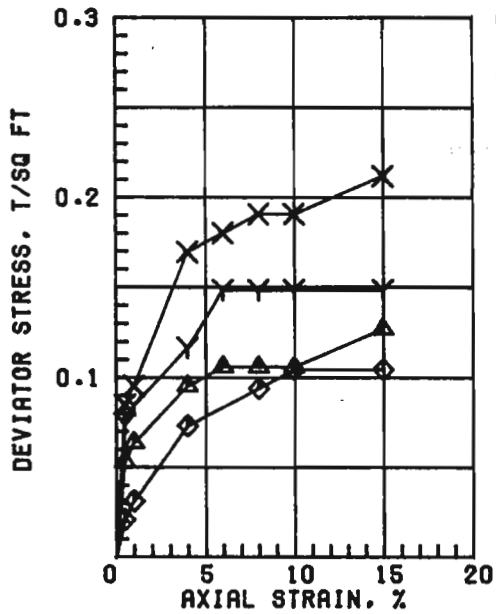


	SPECIMEN NO.	△1	Y2	X3	◇4
INITIAL	WATER CONTENT, %	49.0	52.7	45.7	46.9
	DRY DENSITY, PCF	68.9	66.5	73.2	69.0
	SATURATION, %	91.6	92.8	94.7	87.7
	VOID RATIO	1.445	1.533	1.302	1.443
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0	0.5
	MAX. DEV. STRESS, TSF	0.11	0.15	0.19	0.10
	TIME TO FAILURE, MIN.	12	12	16	19
	RATE OF STRAIN INCR.%				
	INITIAL DIAMETER, IN.	1.36	1.36	1.36	1.37
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	3.00

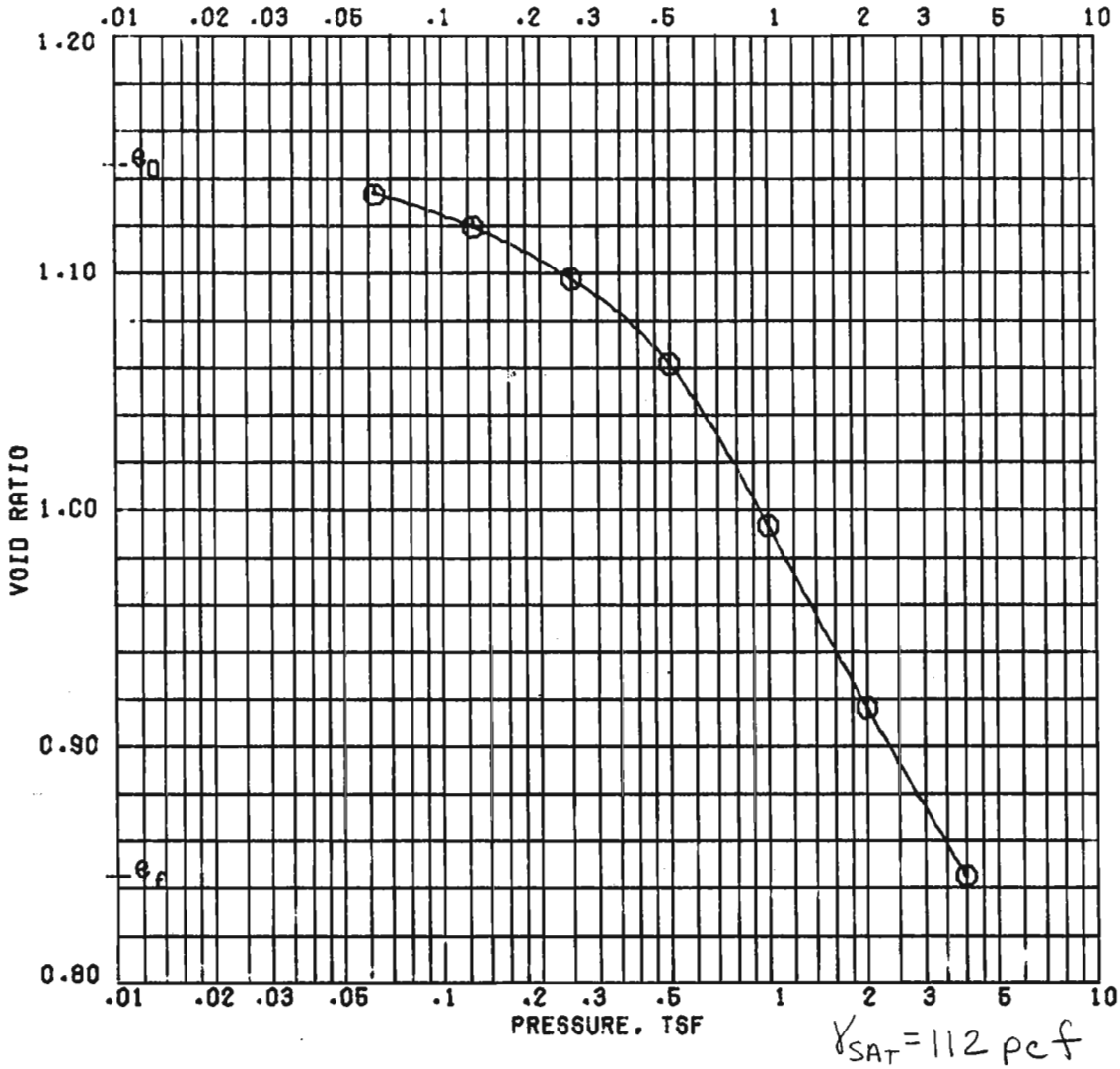
AVE 48.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; SILT LENSES

LL 41	PL 17	PI 24	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 4-SCU	SAMPLE NO. 6-C
	DEPTH/ELEV 20.9/-20.0	TECH. BD
	LABORATORY USAE WES	DATE 07 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 112 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	41.8	30.6
PRECONSOL. PRESSURE, TSF	0.48	DRY DENSITY, PCF	78.6	91.4
COMPRESSION INDEX	0.26	SATURATION, %	98.7	98.0
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.145	0.844
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY

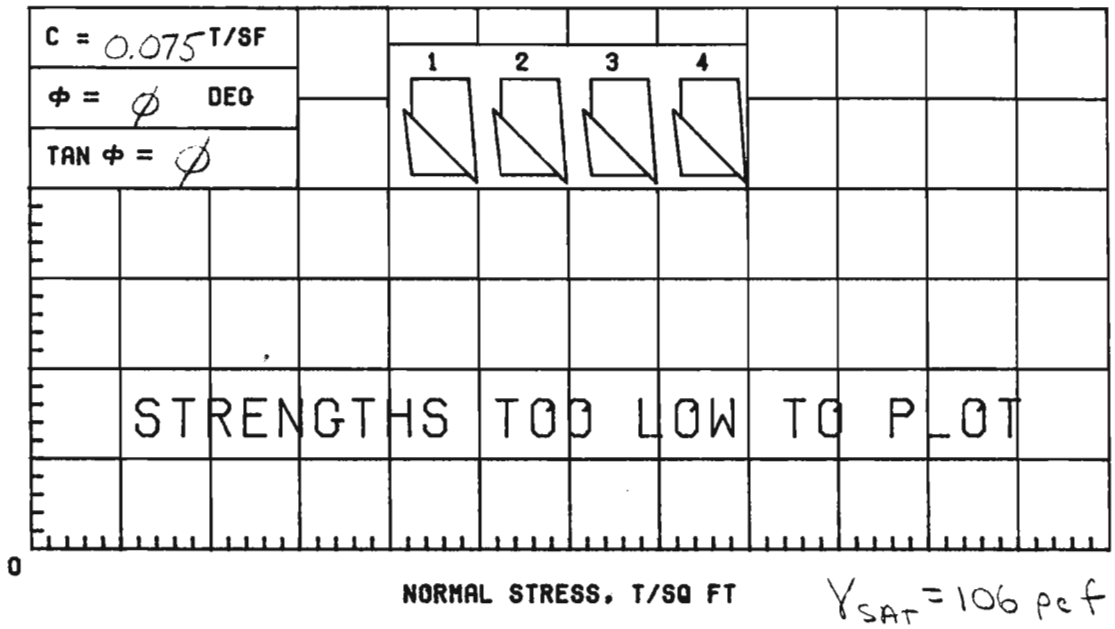
LL 43	PL 17	PI 26	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 4-SCU / SAMPLE NO. 7-C
			DEPTH/ELEV 26.4/-24.5 / DATE 20 JUL 87

CONSOLIDATION TEST REPORT

C = 0.075 T/SF

Φ = Ø DEG

TAN Φ = Ø



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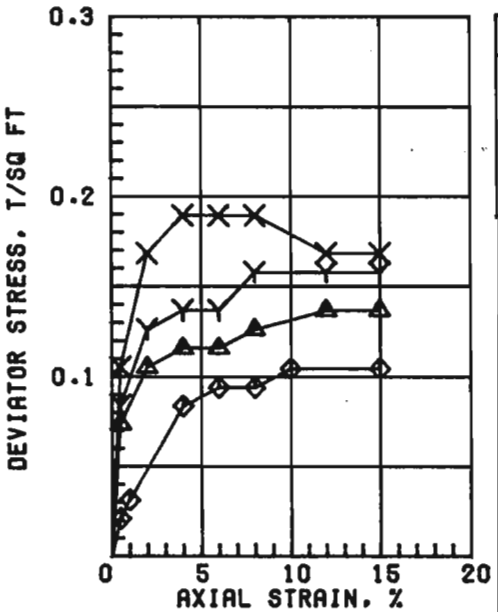


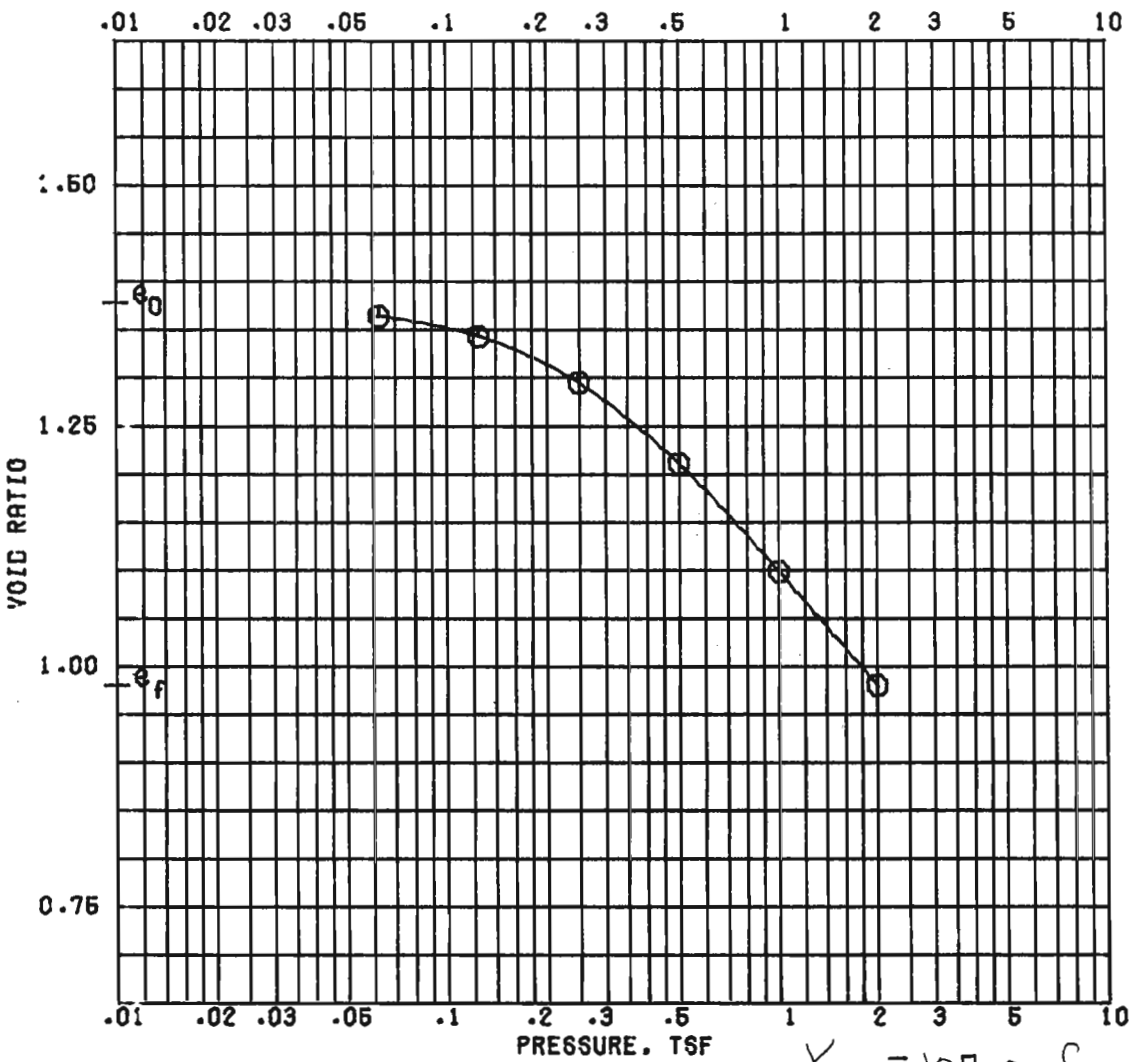
SPECIMEN NO.		▲1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	54.4	50.6	50.6	52.7	52.1
	DRY DENSITY, PCF	69.0	70.2	71.2	68.5	
	SATURATION, %	100+	97.5	100+	97.3	
	VOID RATIO	1.443	1.401	1.366	1.461	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.12	0.14	0.19	0.09	
TIME TO FAILURE, MIN.		9	22	22	32	
RATE OF STRAIN INCR.%			7		8	
INITIAL DIAMETER, IN.		1.36	1.36	1.36	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 56	PL 19	PI 37	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 4-SCU	SAMPLE NO. 9-B
	DEPTH/ELEV 32.4/-31.5	TECH. BD
	LABORATORY USAE WES	DATE 07 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



$\gamma_{SAT} = 107$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	49.8	36.1
PRECONSOL. PRESSURE, TSF	0.28	DRY DENSITY, PCF	70.9	85.2
COMPRESSION INDEX	0.40	SATURATION, %	97.6	99.5
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.377	0.979
DIA. IN 4.44	HT. IN 1.118	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

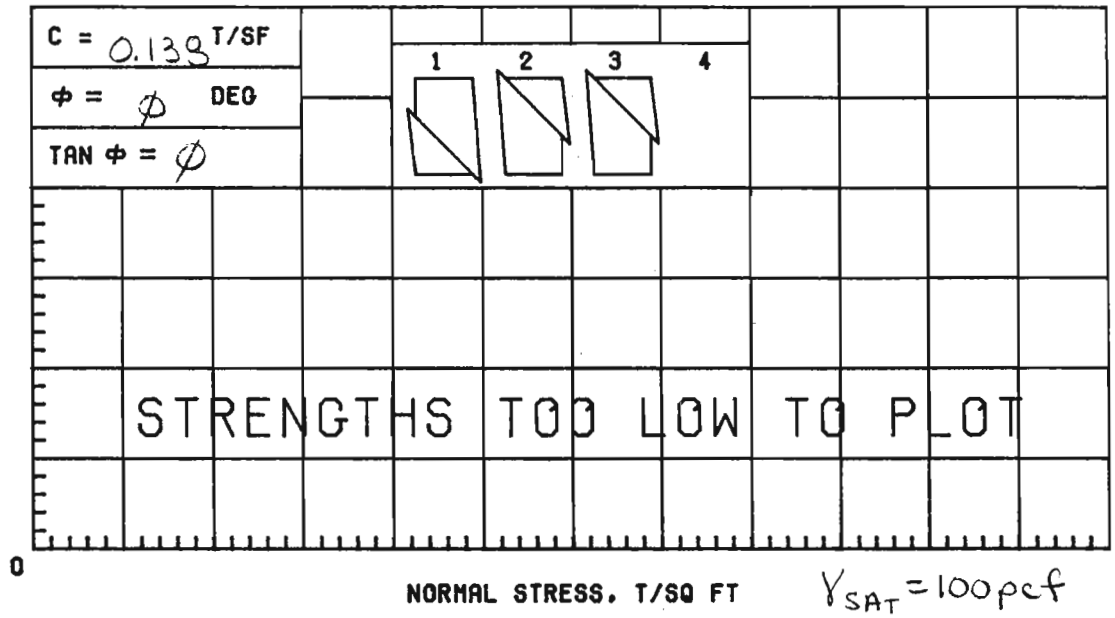
LL	PL	PI	PROJECT LK PONT & VIC HURR PRCT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 4-SCU / SAMPLE NO. 9-C
			DEPTH/ELEV 32.9/-32.0 / DATE 20 JUL 87

CONSOLIDATION TEST REPORT

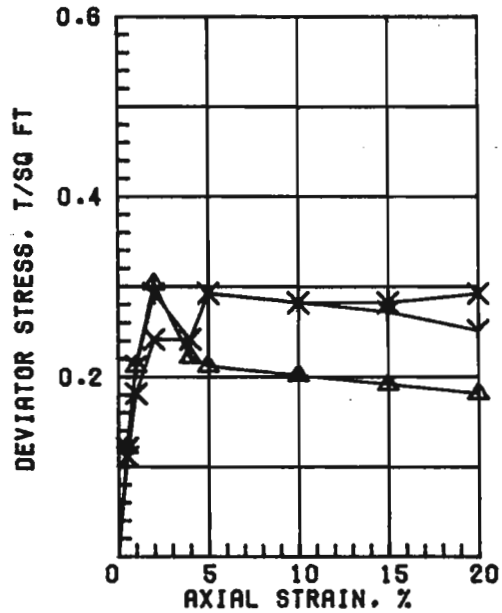
C = 0.138 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 100 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	68.0	65.6	66.5	
	DRY DENSITY, PCF	59.1	60.7	60.0	
	SATURATION, %	99.0	99.8	99.2	
	VOID RATIO	1.854	1.775	1.810	
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	0.29	0.24	
TIME TO FAILURE, MIN.		4	15	15	
RATE OF STRAIN INCR.%			4	4	
INITIAL DIAMETER, IN.		1.39	1.39	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 66.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 82	PL 24	PI 58	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT & VIC HURR PROT

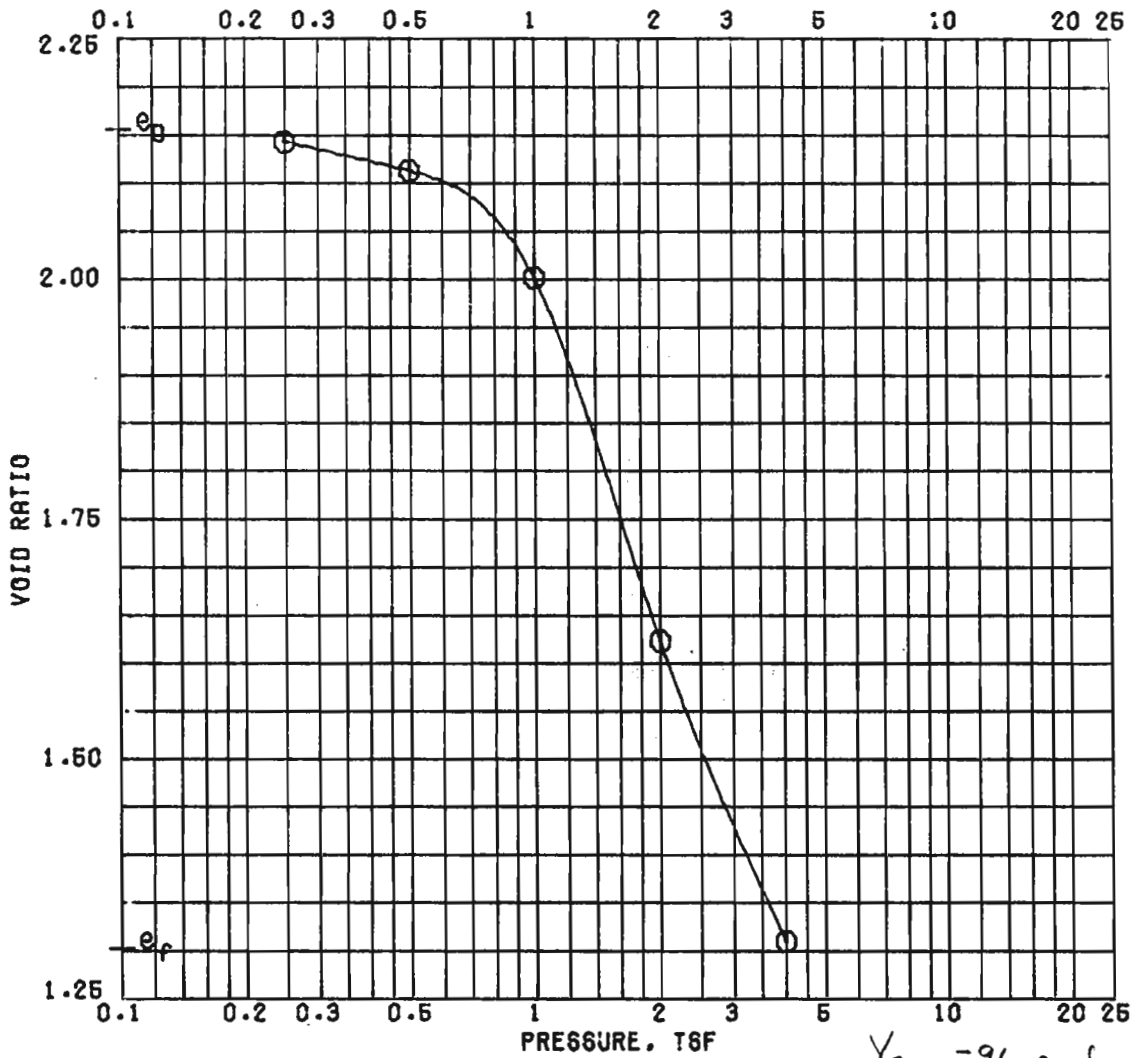
ST CHARLES PARISH

BORING NO. 4-SCU | SAMPLE NO. 11-C

DEPTH/ELEV 41.4/-40.5 | TECH. KOC

LABORATORY USAE WES | DATE 07 MAY 87

TRIAXIAL COMPRESSION TEST REPORT



$\gamma_{SAT} = 96$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	79.9	50.4
PRECONSOL. PRESSURE, TSF	0.93	DRY DENSITY, PCF	53.4	73.3
COMPRESSION INDEX	1.27	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.154	1.301
DIA. IN 4.44	HT. IN 1.110	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

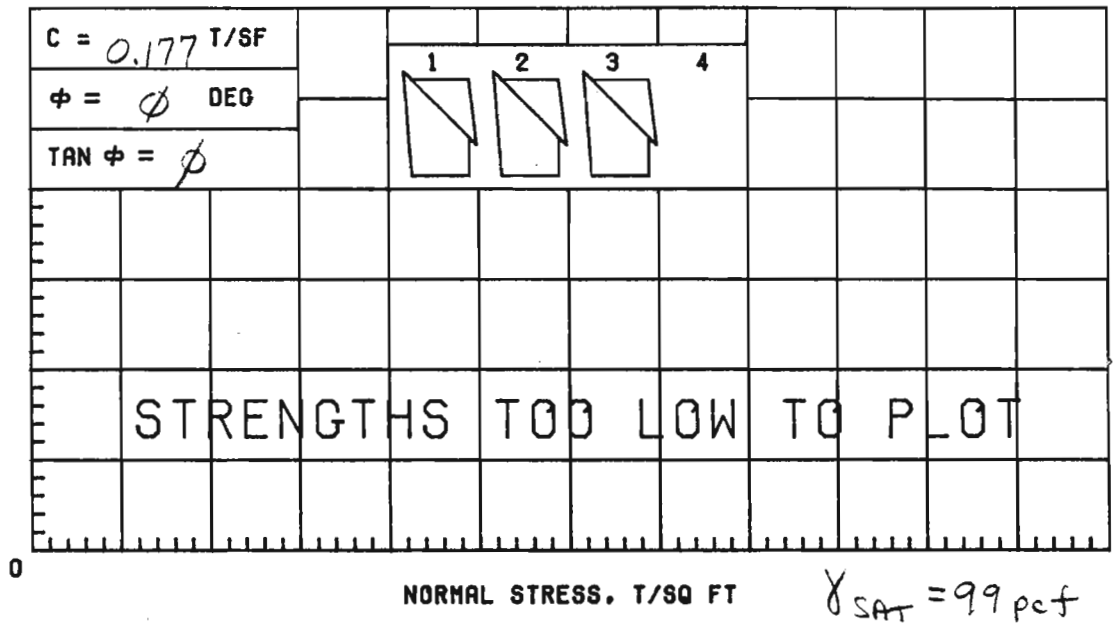
LL 94	PL 25	PI 69	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 4-SCU	SAMPLE NO. 12-B
		DEPTH/ELEV 44.5/-43.6	DATE 21 JUL 87

CONSOLIDATION TEST REPORT

C = 0.177 T/SF

Φ = Ø DEG

TAN Φ = Ø



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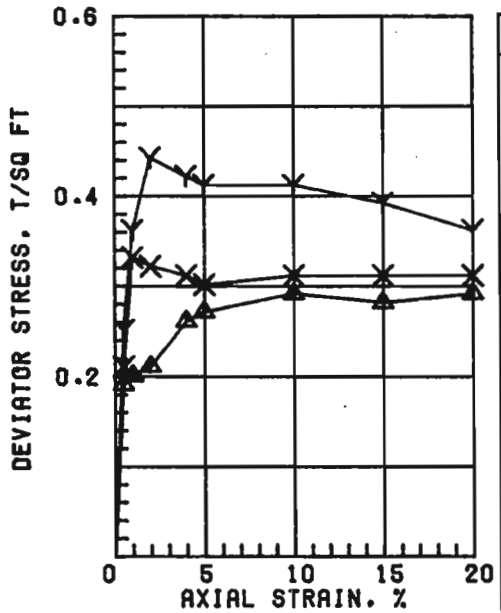


SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	67.3	67.9	68.7	
	DRY DENSITY, PCF	59.2	59.0	58.2	
	SATURATION, %	98.3	98.6	97.9	
	VOID RATIO	1.848	1.859	1.895	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.29	0.44	0.33	
TIME TO FAILURE, MIN.		20	4	7	
RATE OF STRAIN INCR.%				5	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

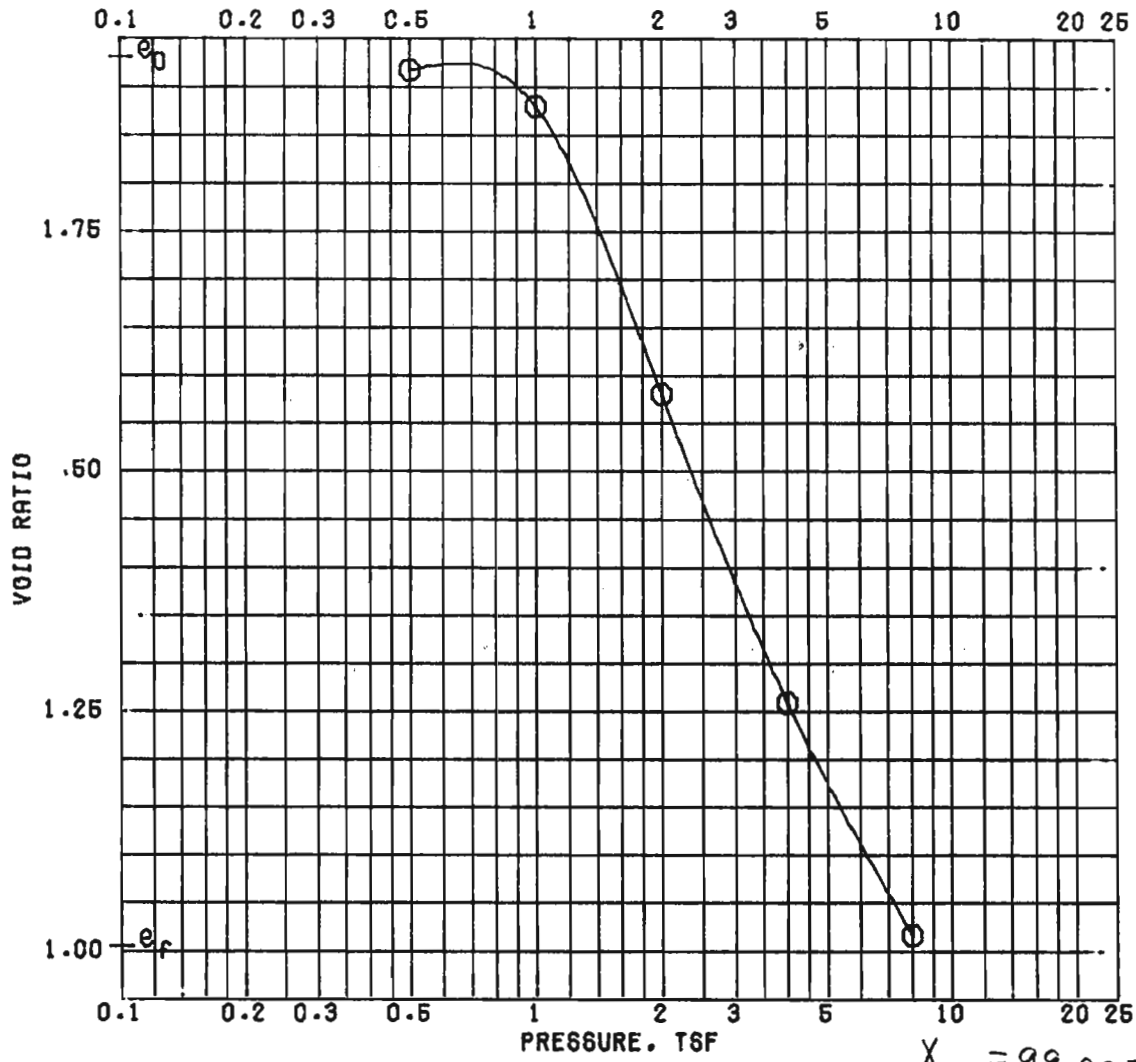
AVE 68.0

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SHELL PARTICLES

LL 83	PL 23	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 4-SCU / SAMPLE NO. 13-C
	DEPTH/ELEV 49.4/-48.5 / TECH. KOC
	LABORATORY USAE WES / DATE 14 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT



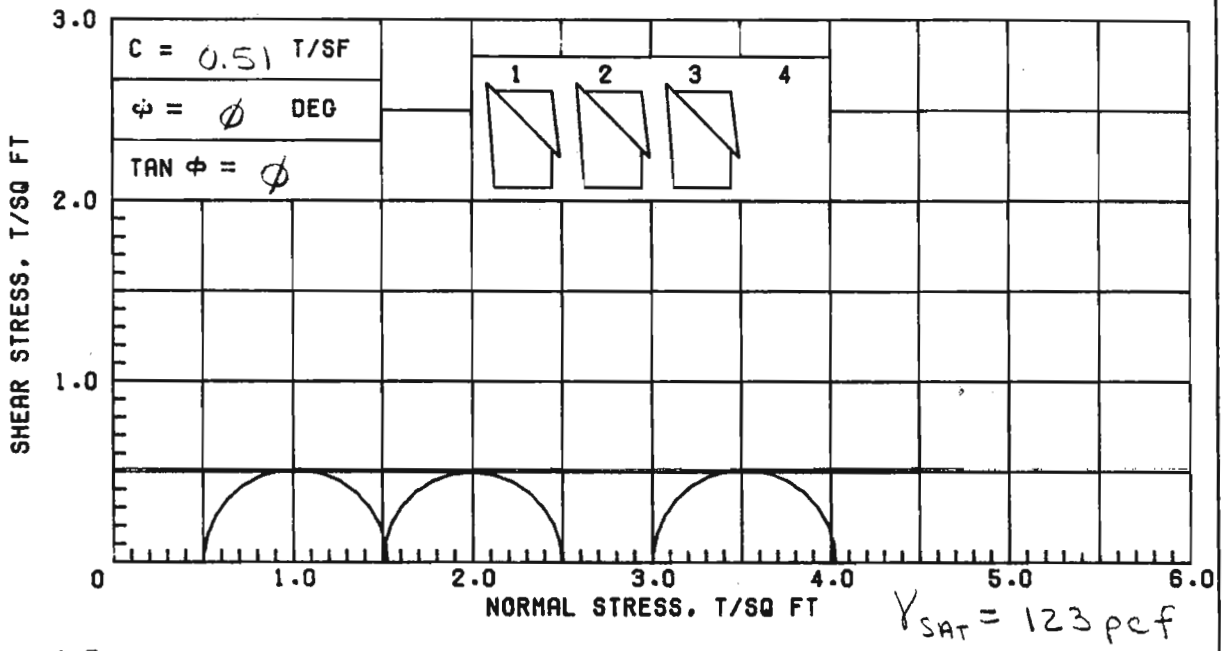
$\gamma_{SAT} = 99$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	70.7	38.7
PRECONSOL. PRESSURE, TSF	1.00	DRY DENSITY, PCF	57.6	84.1
COMPRESSION INDEX	1.11	SATURATION, %	98.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.929	1.004
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		

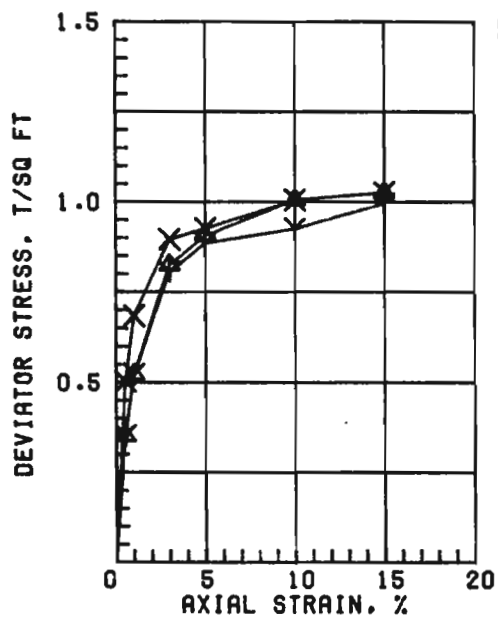
CLASSIFICATION CLAY (CH), GRAY; SHELL PARTICLES

LL 86	PL 21	PI 65	PROJECT LK PCNT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 4-SCU / SAMPLE NO. 14-B
			DEPTH/ELEV 52.5/-51.6 / DATE 17 JUL 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 123 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	26.1	26.3	26.7	
	DRY DENSITY, PCF	97.1	96.9	96.0	
	SATURATION, %	95.7	96.1	95.3	
	VOID RATIO	0.736	0.739	0.756	
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	1.03	1.00	1.03	
	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	

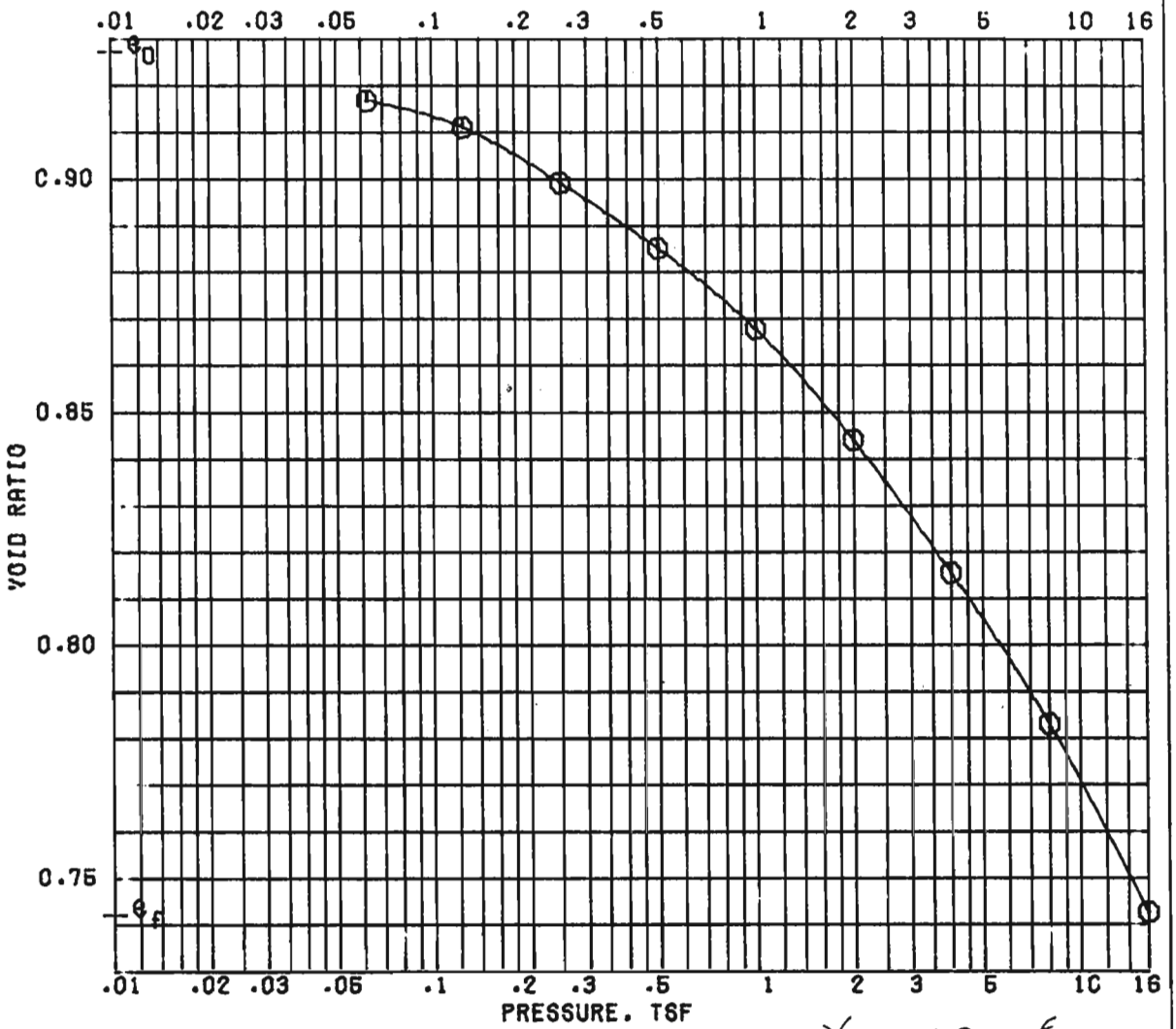
AVE 26.4

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY

LL 48	PL 13	PI 35	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 4-SCU	SAMPLE NO. 15-C
	DEPTH/ELEV 57.2/-56.3	TECH. KOC
	LABORATORY USAE WES	DATE 14 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 118 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	34.2	26.8
PRECONSOL. PRESSURE, TSF	0.60	DRY DENSITY, PCF	87.5	96.8
COMPRESSION INDEX	0.10	SATURATION, %	99.6	97.7
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	0.927	0.742
DIA. IN 4.44	HT. IN 1.110	BACK PRESSURE, TSF		

CLASSIFICATION CLAYEY SILT (ML), GRAY

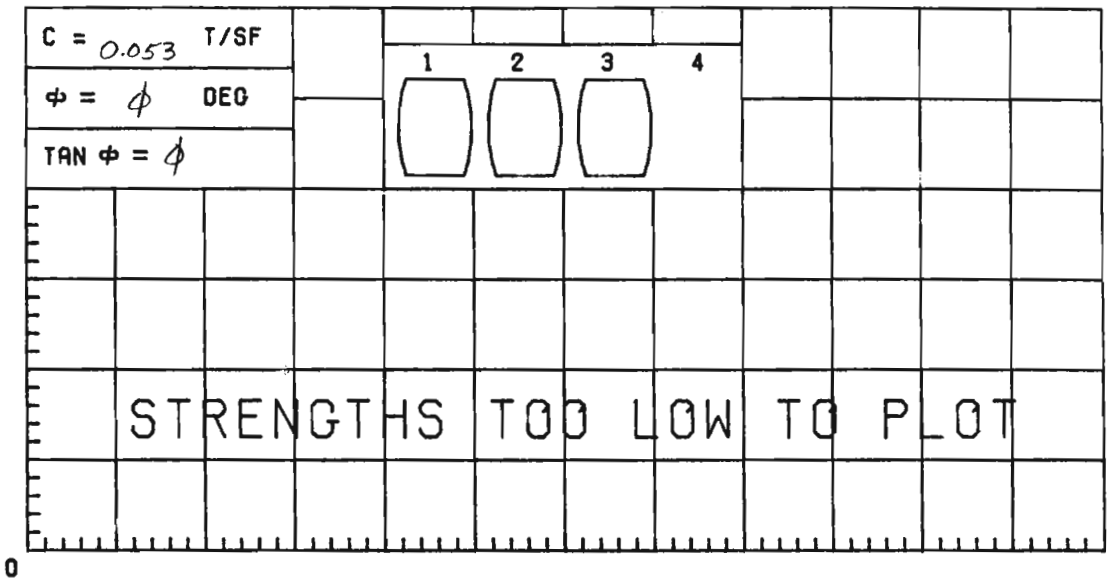
LL.	PL.	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 5-SCU / SAMPLE NO. 4-B
			DEPTH/ELEV 12.5/-11.3 / DATE 21 JUL 87

CONSOLIDATION TEST REPORT

C = 0.053 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



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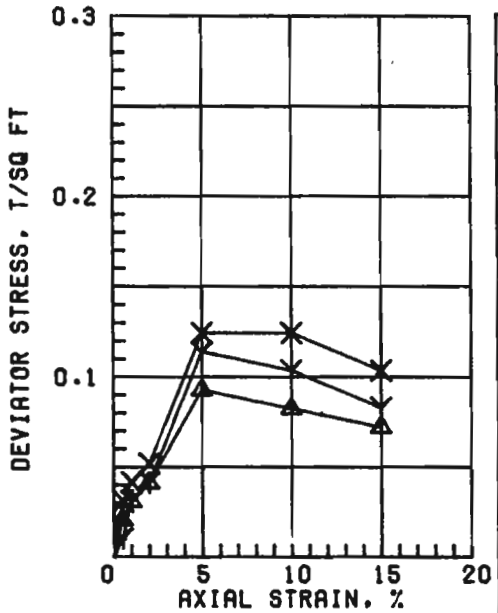


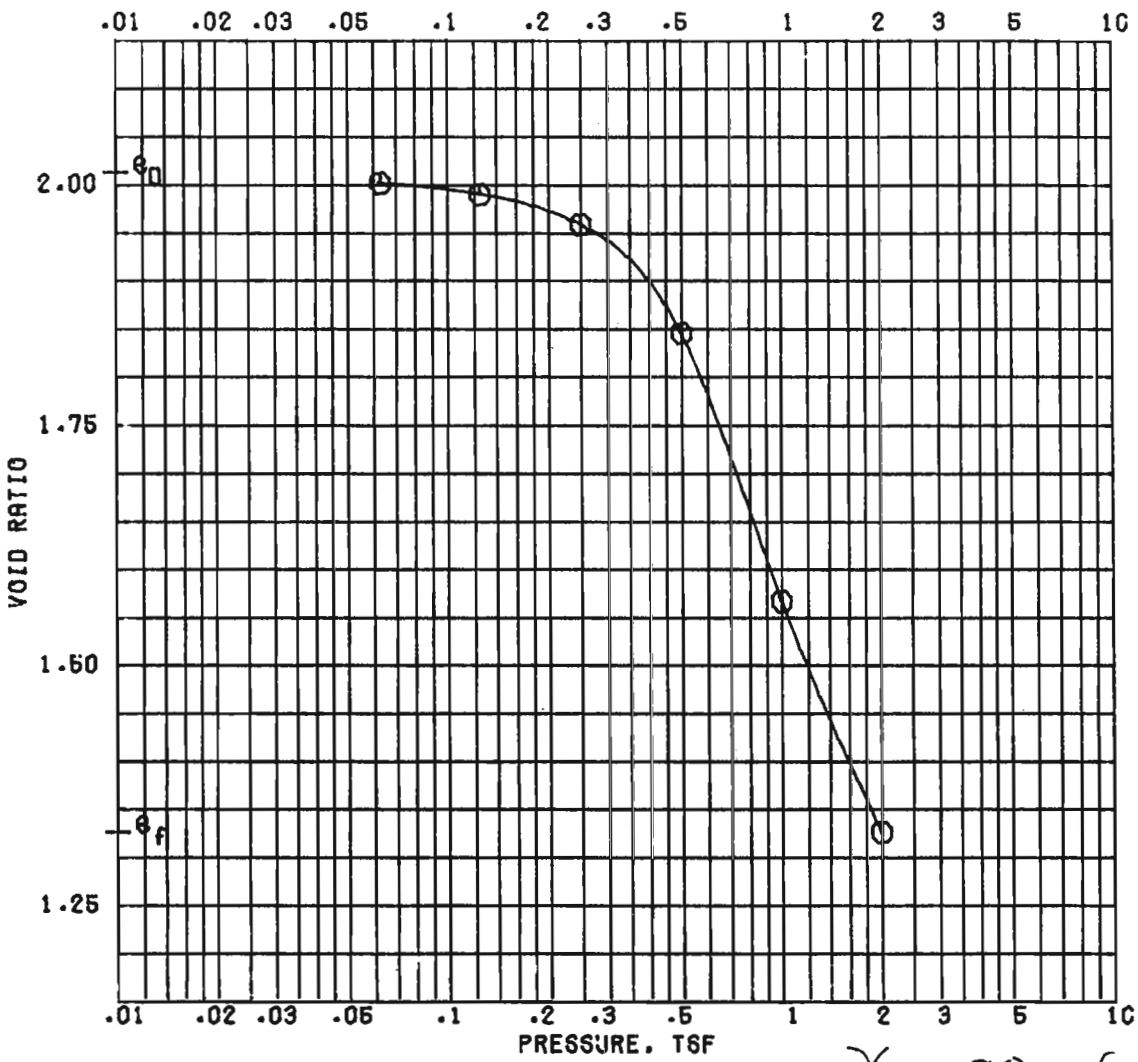
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	71.3	91.3	80.8		81.1
	DRY DENSITY, PCF	56.6	50.2	53.0		
	SATURATION, %	97.2	100+	100.0		
	VOID RATIO	1.979	2.360	2.182		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.09	0.11	0.12		
	TIME TO FAILURE, MIN.	10	13	13		
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.38	1.37	1.37		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 51	PL 19	PI 32	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 5-SCU	SAMPLE NO. 5-C
	DEPTH/ELEV 17.3/-16.1	TECH. BD
	LABORATORY USAE WES	DATE 13 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



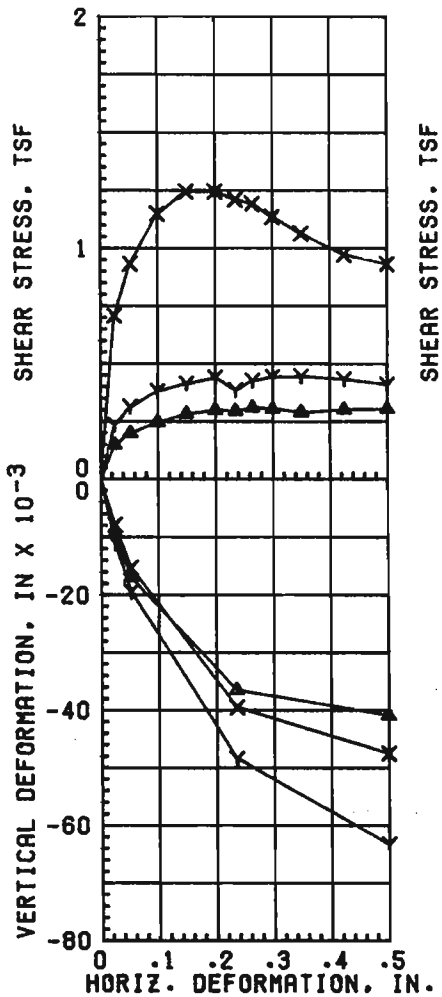
γ_{SAT} = 98 pcf

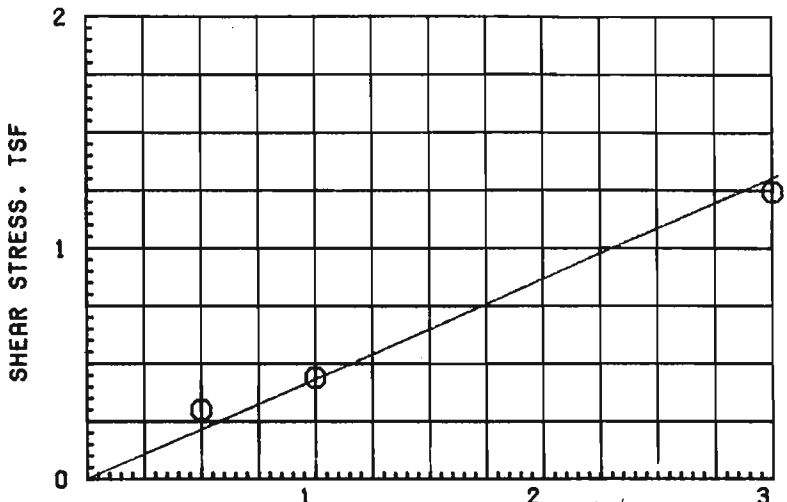
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	74.7	50.1
PRECONSOL. PRESSURE, TSF	0.42	DRY DENSITY, PCF	56.0	72.5
COMPRESSION INDEX	0.93	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.011	1.324
DIA. IN 4.44	HT. IN 1.109	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; SILT LENSES

LL 61	PL 18	PI 43	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 5-SCU / SAMPLE NO. 7-B
			DEPTH/ELEV 24.4/-23.2 / DATE 22 JUL 87

CONSOLIDATION TEST REPORT





γ_{SAT} = 98pcf

	TEST NO.	1 ▲	2 Y	3 X	
INITAL	WATER CONTENT, %	55.8	77.5	79.0	
	VOID RATIO	1.618	2.146	2.192	
	SATURATION, %	93.2	97.4	97.3	
	DRY DENSITY, PCF	64.4	53.5	52.8	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	51.5	50.3	41.5	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		0.5	1.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.30	0.44	1.25	
TIME TO FAILURE, MIN		1091	1091	819	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

Ave 70.8

ϕ = 24°

TAN ϕ = 0.4452

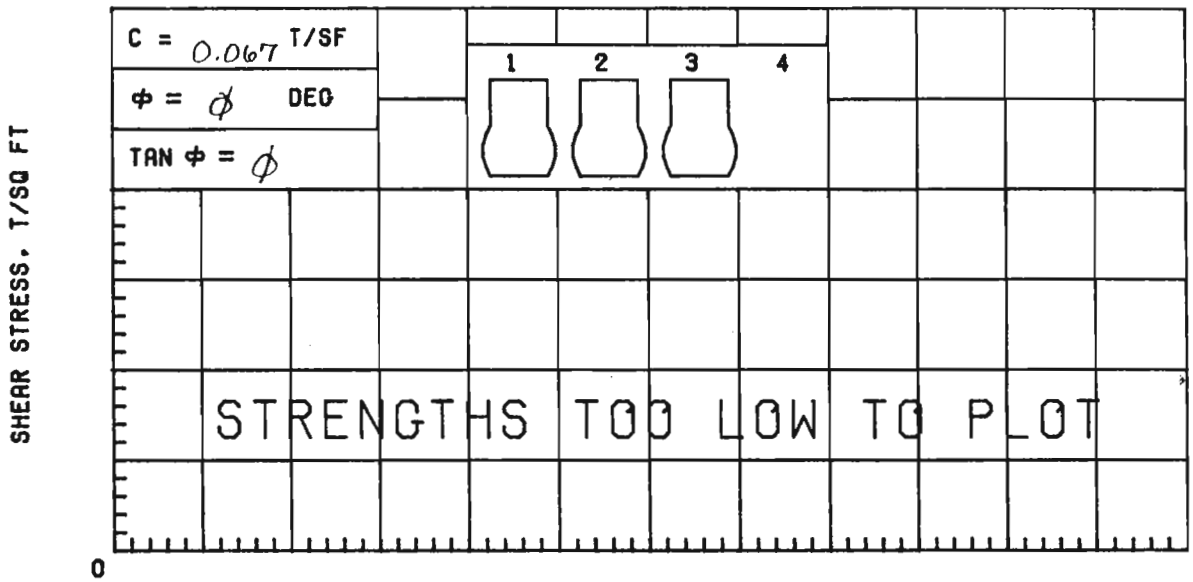
C = Ø

TYPE SPECIMEN UNDISTURBED	3.00 IN. SQUARE	0.744 IN. THICK
CLASSIFICATION CLAY (CH), GRAY; FINE SAND POCKETS		

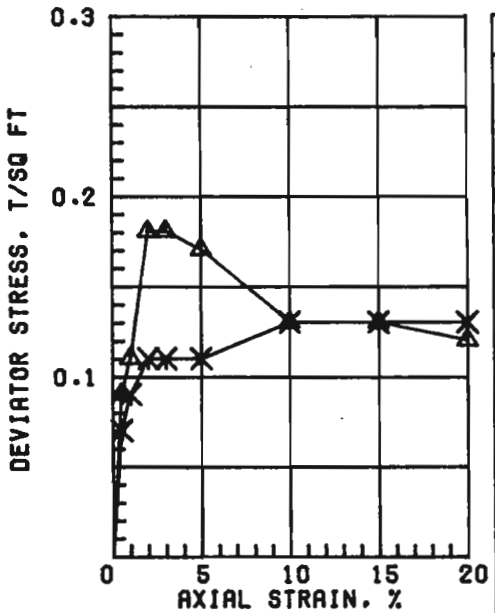
LL 70	PL 19	PI 51		GS 2.70 (EST)

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 5-SCU	SAMPLE 8-B
	DEPTH/ELEV 28.5/-27.3	DATE 05 MAY 87

DIRECT SHEAR TEST REPORT



γ_{SAT} = 105 pcf



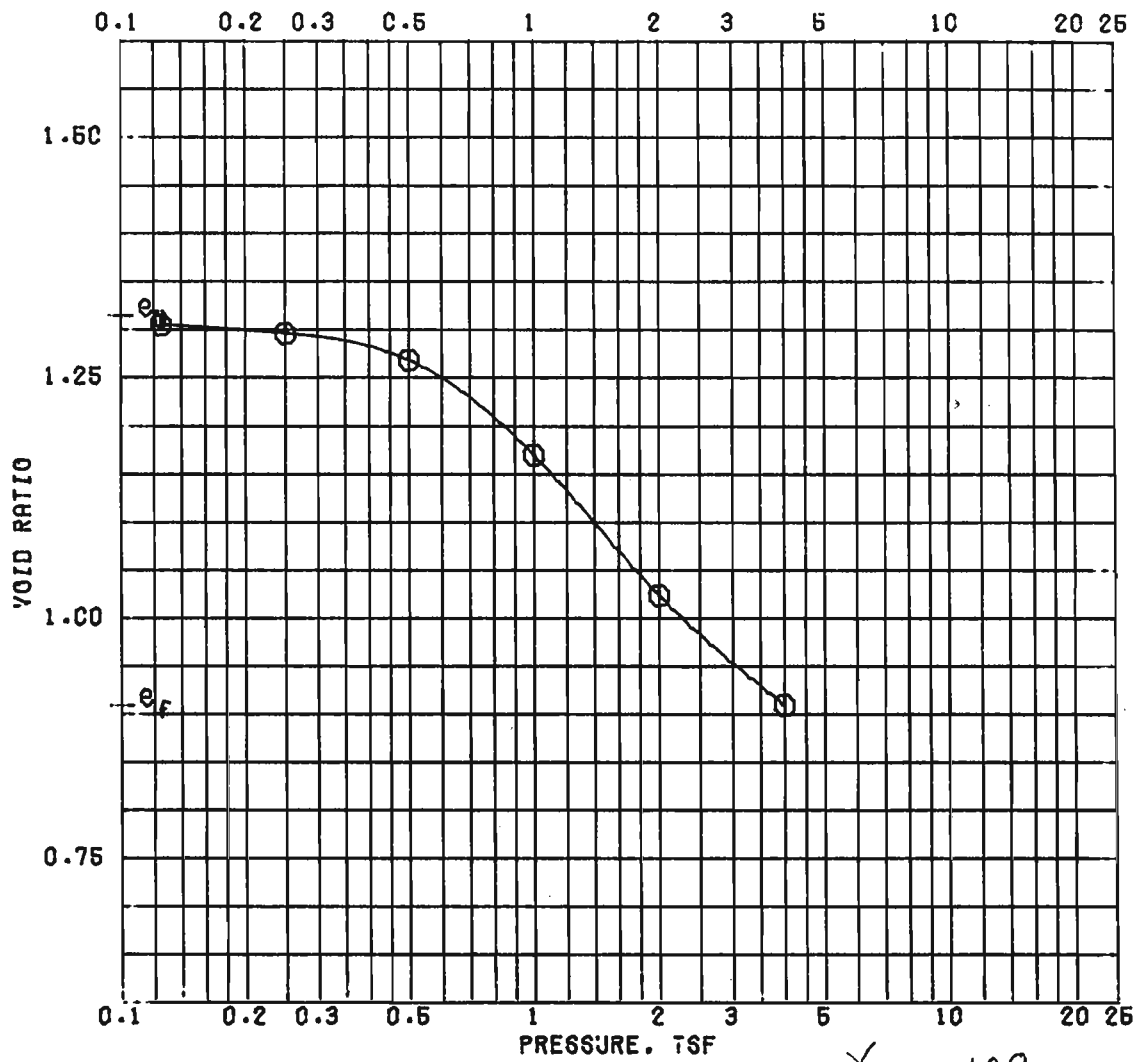
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	50.4	50.7	55.0		52.0
	DRY DENSITY, PCF	69.4	68.8	66.5		
	SATURATION, %	95.2	94.4	96.8		
	VOID RATIO	1.430	1.450	1.533		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.18	0.11	0.11		
	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: CLAY (CH), GRAY; SILT LENSES

LL 49	PL 19	PI 30	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: Limits on mixtures of material	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 5-SCU	SAMPLE NO. 8-C
	DEPTH/ELEV 29.3/-28.1	TECH. KOC
	LABORATORY USAE WES	DATE 13 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	

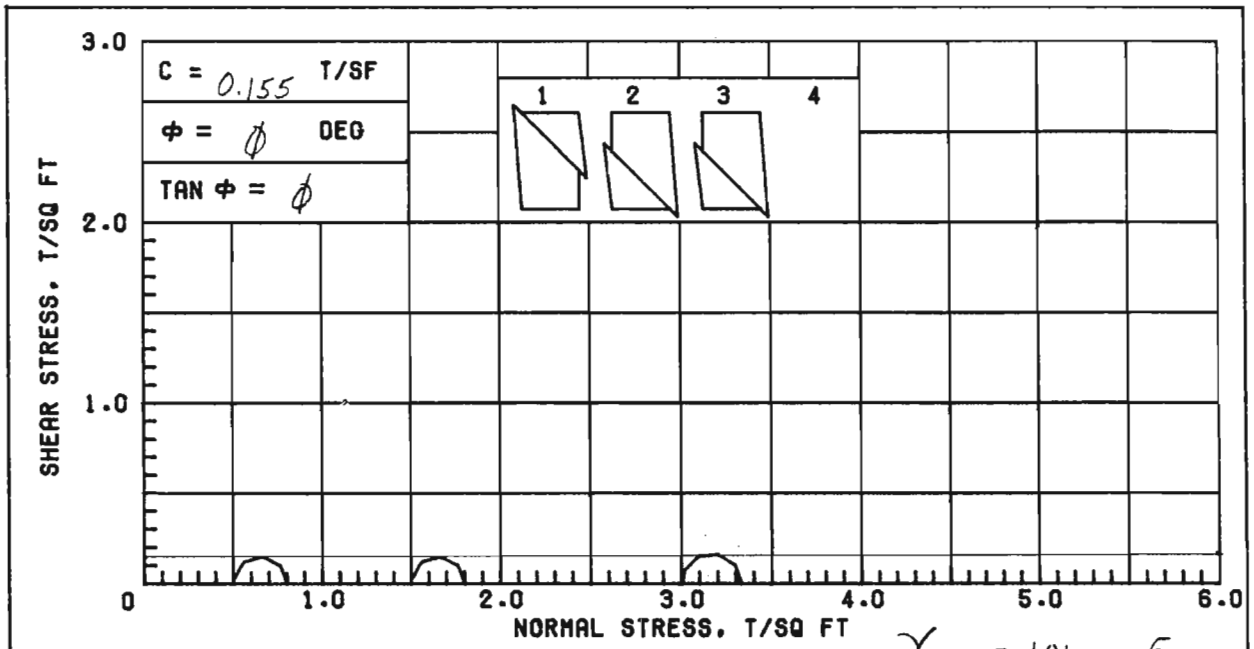


γ_{SAT} = 108

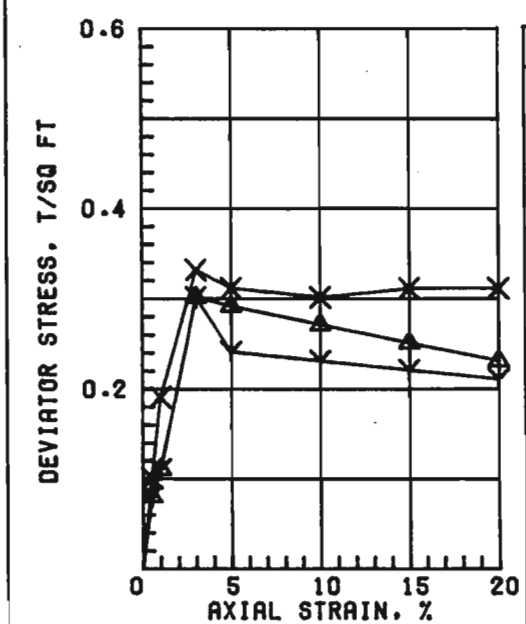
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	48.0	33.8
PRECONSOL. PRESSURE, TSF	0.73	DRY DENSITY, PCF	72.9	88.4
COMPRESSION INDEX	0.50	SATURATION, %	98.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.313	0.907
DIA. IN 4.44	HT. IN 1.122	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CL), GRAY		
LL 39	PL 17	PI 22	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 5-SCU	SAMPLE NO. 9-B
		DEPTH/ELEV 32.5/-31.3	DATE 22 JUL 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 101 pcf



	SPECIMEN NO.	△1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	65.3	65.5	64.0		64.9
	DRY DENSITY, PCF	60.6	60.4	61.0		
	SATURATION, %	99.0	98.8	98.1		
	VOID RATIO	1.782	1.790	1.762		
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	0.33		
	TIME TO FAILURE, MIN.	6	16	18		
	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: CLAY (CH), GRAY; SILT LENSES

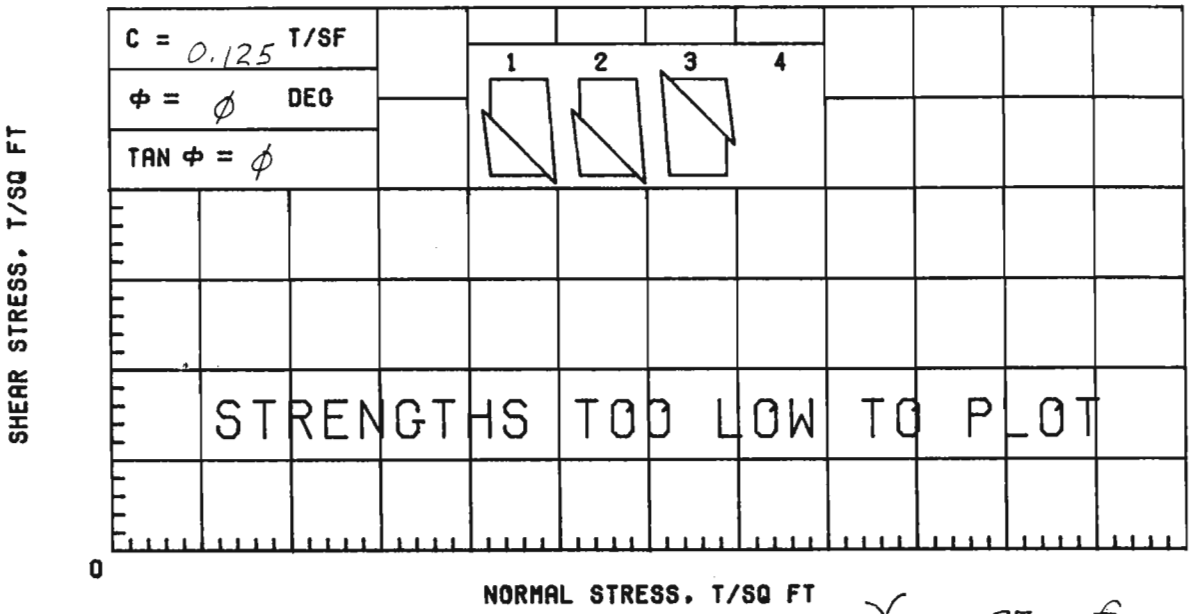
LL 72	PL 22	PI 50	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 5-SCU	SAMPLE NO. 10-C
	DEPTH/ELEV 37.0/-35.8	TECH. KOC
	LABORATORY USAE WES	DATE 13 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	

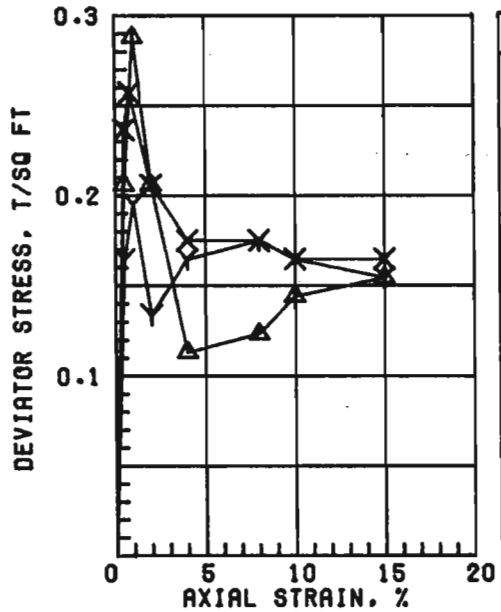
C = 0.125 T/SF

Φ = ∅ DEG

TAN Φ = ∅



γ_{SAT} = 97 pcf



	SPECIMEN NO.	△1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	76.6	77.1	77.6		77.1
	DRY DENSITY, PCF	53.8	55.5	54.8		
	SATURATION, %	96.8	100+	100+		
	VOID RATIO	2.134	2.037	2.078		
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	0.20	0.26		
	TIME TO FAILURE, MIN.	2	6	5		
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.38	1.38	1.38		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

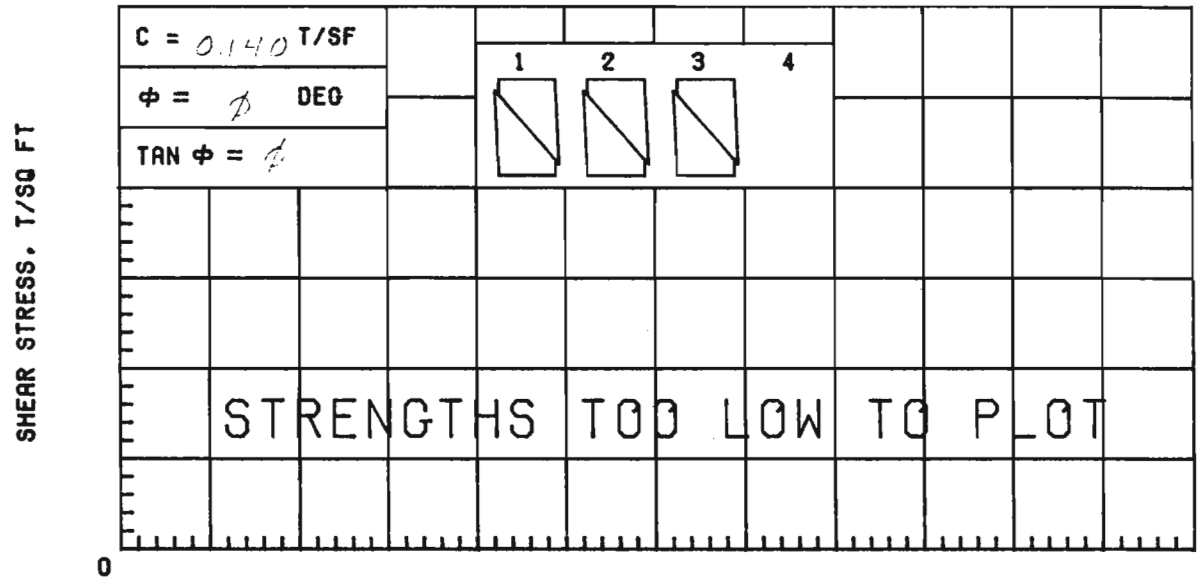
LL 92	PL 24	PI 68	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 5-SCU	SAMPLE NO. 12-B
	DEPTH/ELEV 44.5/-43.3	TECH. BD
	LABORATORY USAE WES	DATE 15 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	

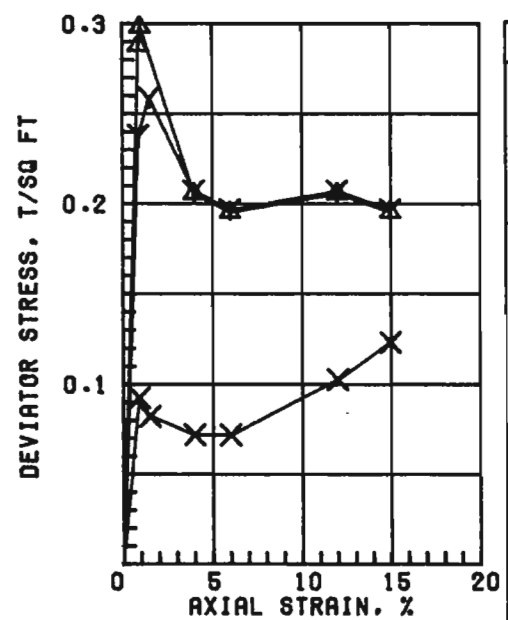
C = 0.140 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 101 pcf



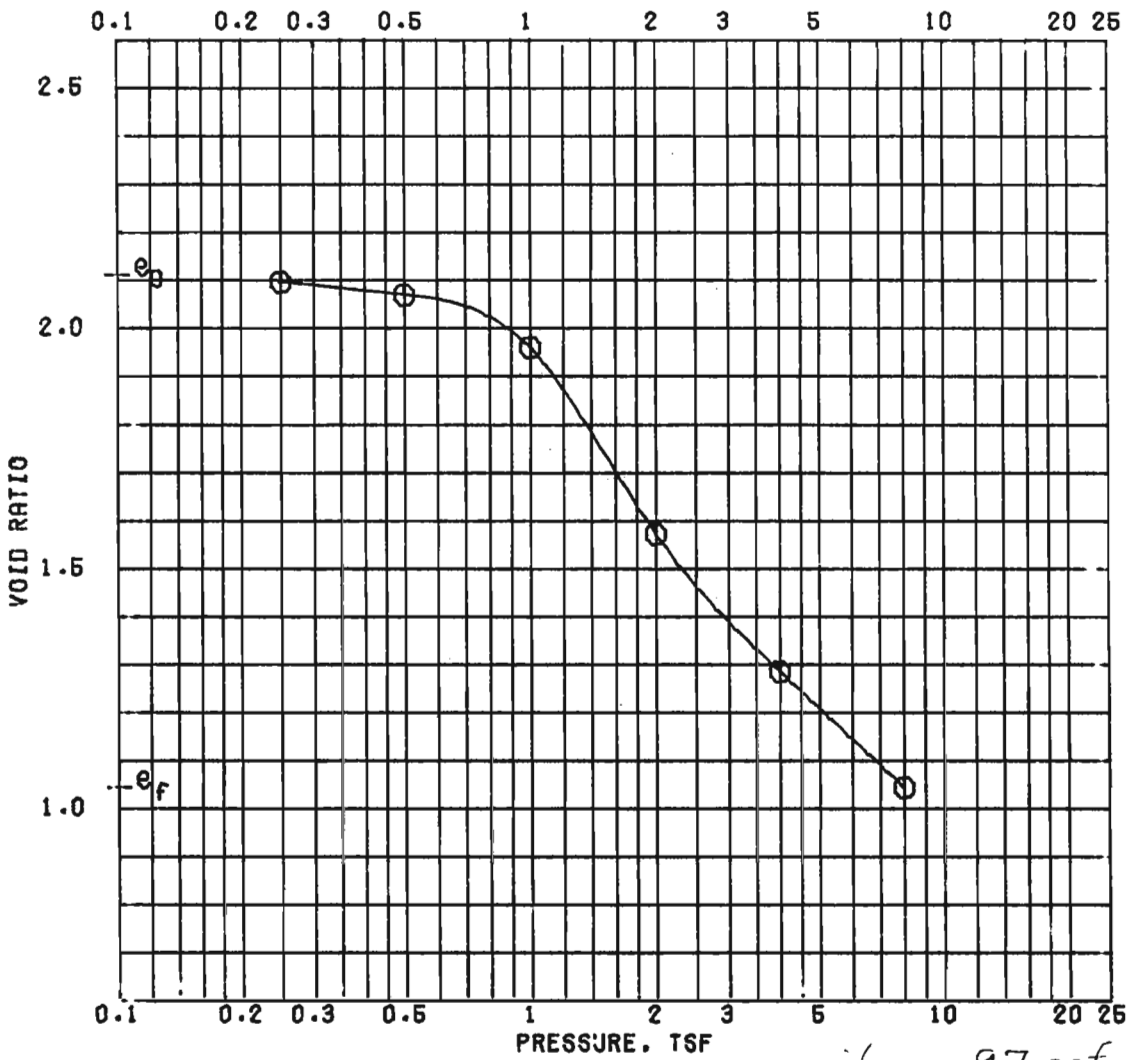
SPECIMEN NO.		△1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	65.6	56.0	61.6		61.1
	DRY DENSITY, PCF	60.6	59.8	62.3		
	SATURATION, %	99.4	83.0	97.4		
	VOID RATIO	1.783	1.821	1.707		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.30	0.26	0.09		
TIME TO FAILURE, MIN.		2	14	8		
RATE OF STRAIN INCR.%			5	12		
INITIAL DIAMETER, IN.		1.38	1.37	1.38		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL	PL	PI	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 5-SCU	SAMPLE NO. 12-C
	DEPTH/ELEV 44.9/-43.7	TECH. BD
	LABORATORY USAE WES	DATE 13 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



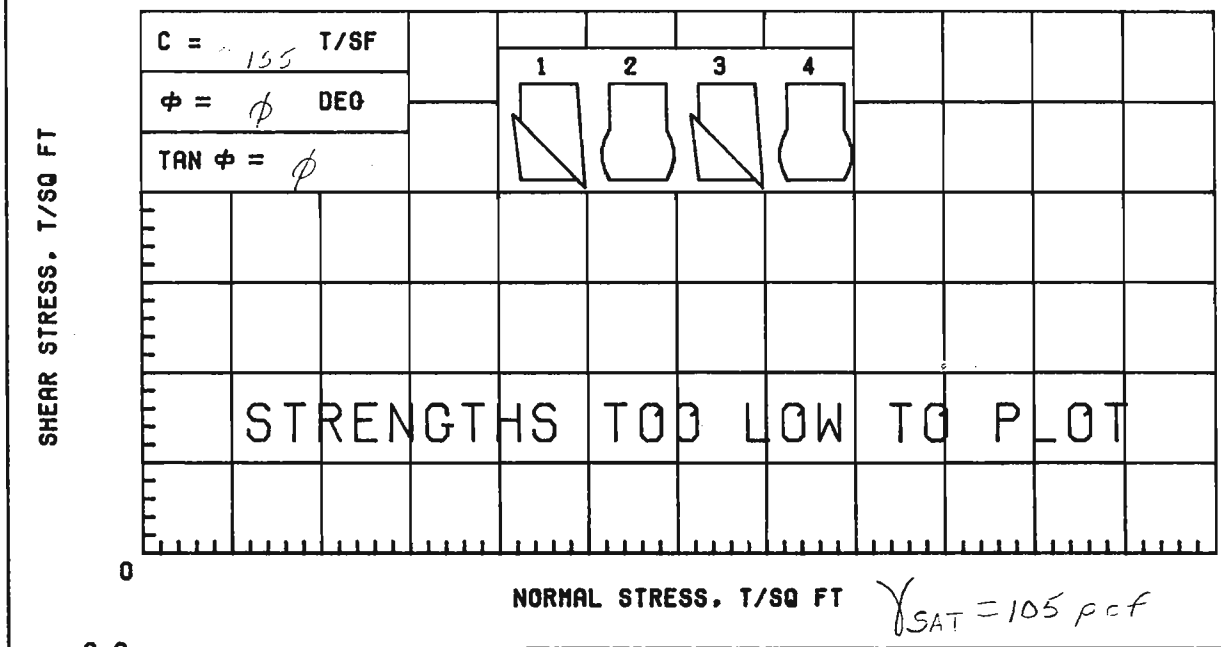
γ_{SAT} = 97 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	78.8	41.3
PRECONSOL. PRESSURE, TSF	0.95	DRY DENSITY, PCF	54.2	82.6
COMPRESSION INDEX	1.31	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.108	1.040
DIA. IN 4.44	HT. IN 1.121	BACK PRESSURE, TSF		

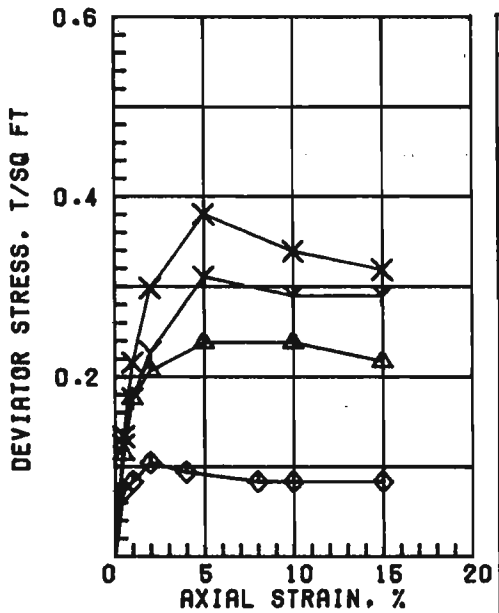
CLASSIFICATION CLAY (CH), GRAY

LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 5-SCU	SAMPLE NO. 12-C
		DEPTH/ELEV 44.9/-43.7	DATE 20 JUL 87

CONSOLIDATION TEST REPORT



$\gamma_{SAT} = 105$ pcf



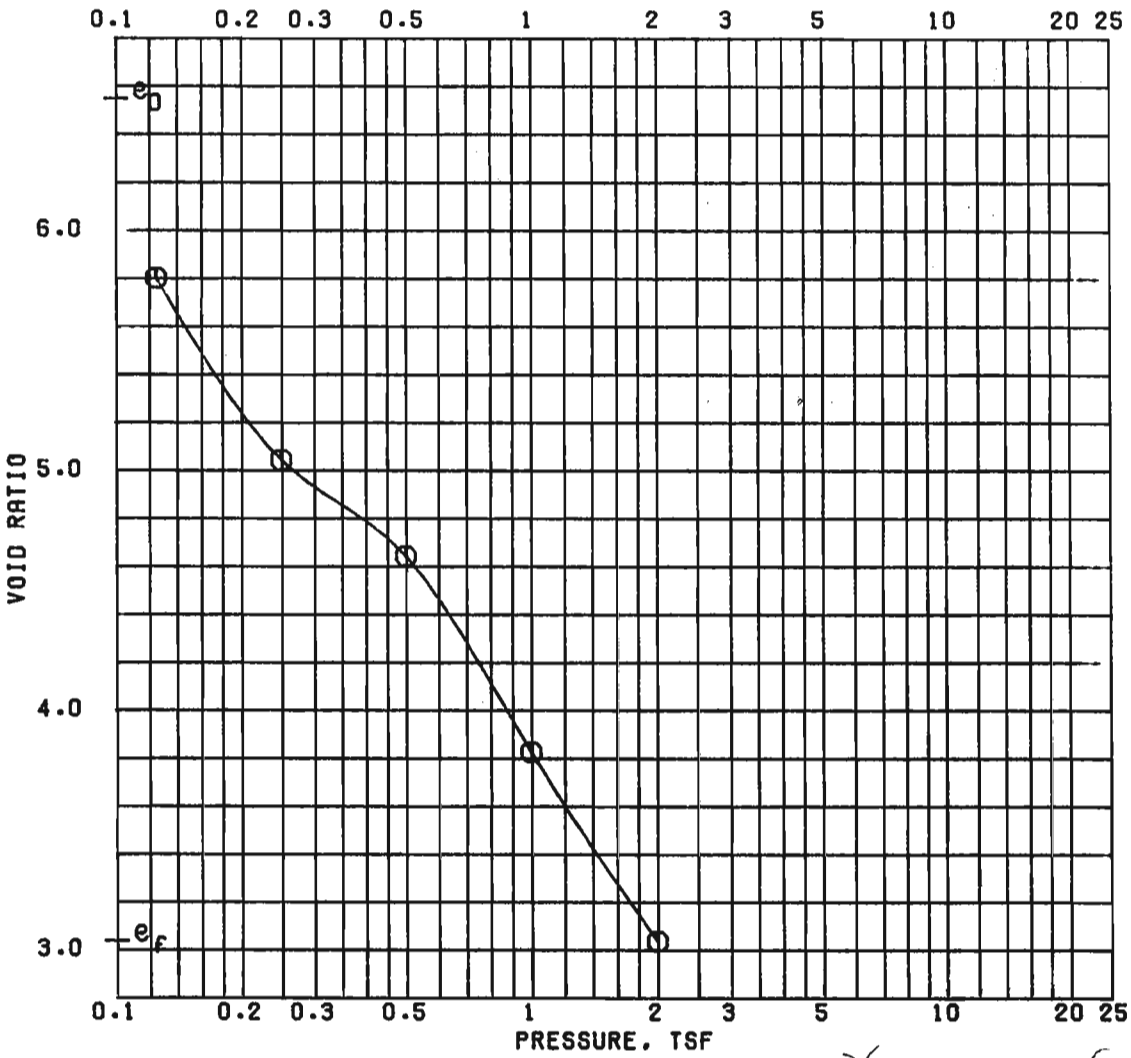
SPECIMEN NO.		△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	57.3	50.8	52.9	50.2	52.8
	DRY DENSITY, PCF	65.8	68.8	67.6	70.4	
	SATURATION, %	99.1	94.5	95.7	97.3	
	VOID RATIO	1.562	1.452	1.494	1.393	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.24	0.31	0.38	0.10	
TIME TO FAILURE, MIN.		10	10	10	4	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.37	1.37	1.38	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SHELL PARTICLES

LL 59	PL 17	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 5-SCU	SAMPLE NO. 14-C
	DEPTH/ELEV 53.3/-52.1	TECH. BD
	LABORATORY USAE WES	DATE 14 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 77 pcf

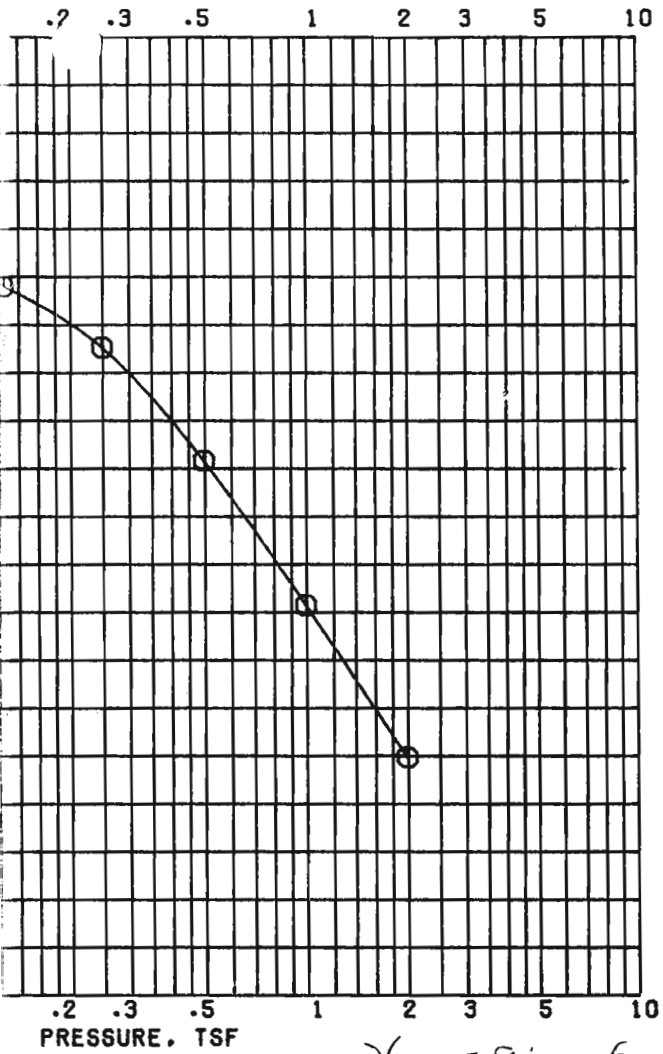
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	23:.8	114.3
PRECONSOL. PRESSURE, TSF	—	DRY DENSITY, PCF	22.4	41.8
COMPRESSION INDEX	2.90	SATURATION, %	95.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	6.541	3.029
DIA. IN 4.44	HT. IN 1.147	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; ORGANIC MATERIAL

LL 233	PL 47	PI 186	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 6-SCU / SAMPLE NO. 2-C
			DEPTH/ELEV 5.9/-4.7 / DATE 10 MAR 87

CONSOLIDATION TEST REPORT

6



γ_{SAT} = 91 pcf

	BEFORE TEST	AFTER TEST
WATER CONTENT, %	99.9	59.1
DRY DENSITY, PCF	45.5	65.0
SATURATION, %	99.6	100 +
VOID RATIO	2.706	1.593
BACK PRESSURE, TSF		

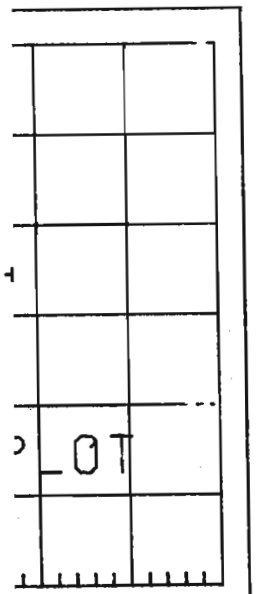
/; ORGANIC MATERIAL

PROJECT LK PONT & VIC HURR PROT

ST CHARLES PARISH

BORING NO. 6-SCU	SAMPLE NO. 3-D
DEPTH/ELEV 9.8/-8.6	DATE 11 MAR 87

ONSOLIDATION TEST REPORT



= 100 pcf

	X3	4
.4	64.8	
.5	59.2	
.9	94.6	
184	1.849	
5	3.0	
08	0.08	
0	20	
40	1.40	
00	3.00	

AVE 66.5

IMEN | Q TEST

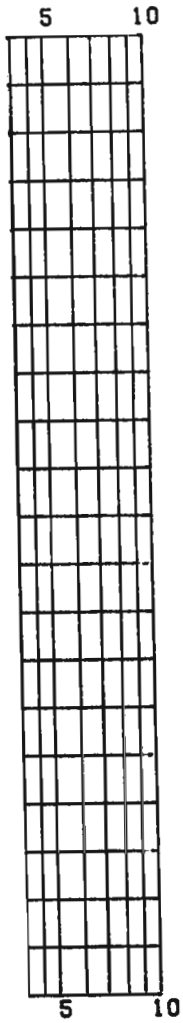
'ROT

PLE NO. 5-C

H. KOC

E 04 MAR 87

TEST REPORT



79 pcf

AFTER TEST
45.9
75.9
100 +
1.220

T

E NO. 6-C

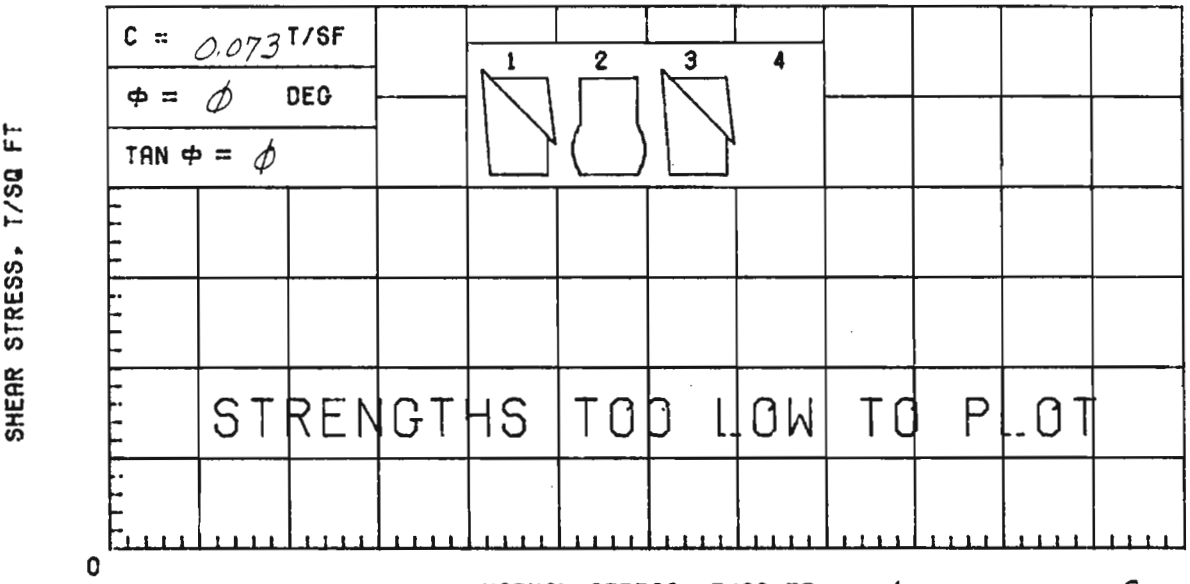
12 MAR 87

REPORT

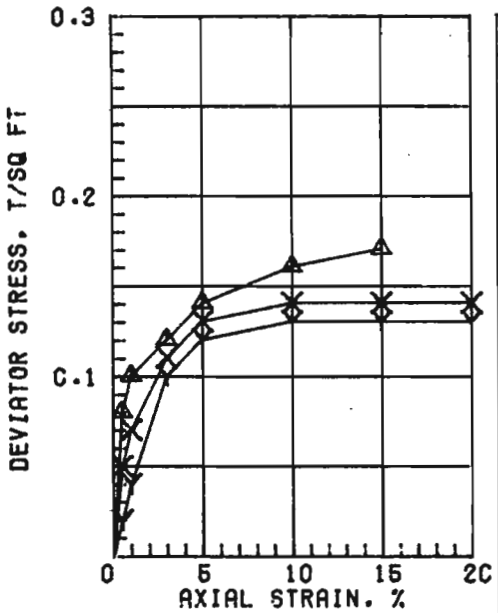
C = 0.073 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 108 pcf



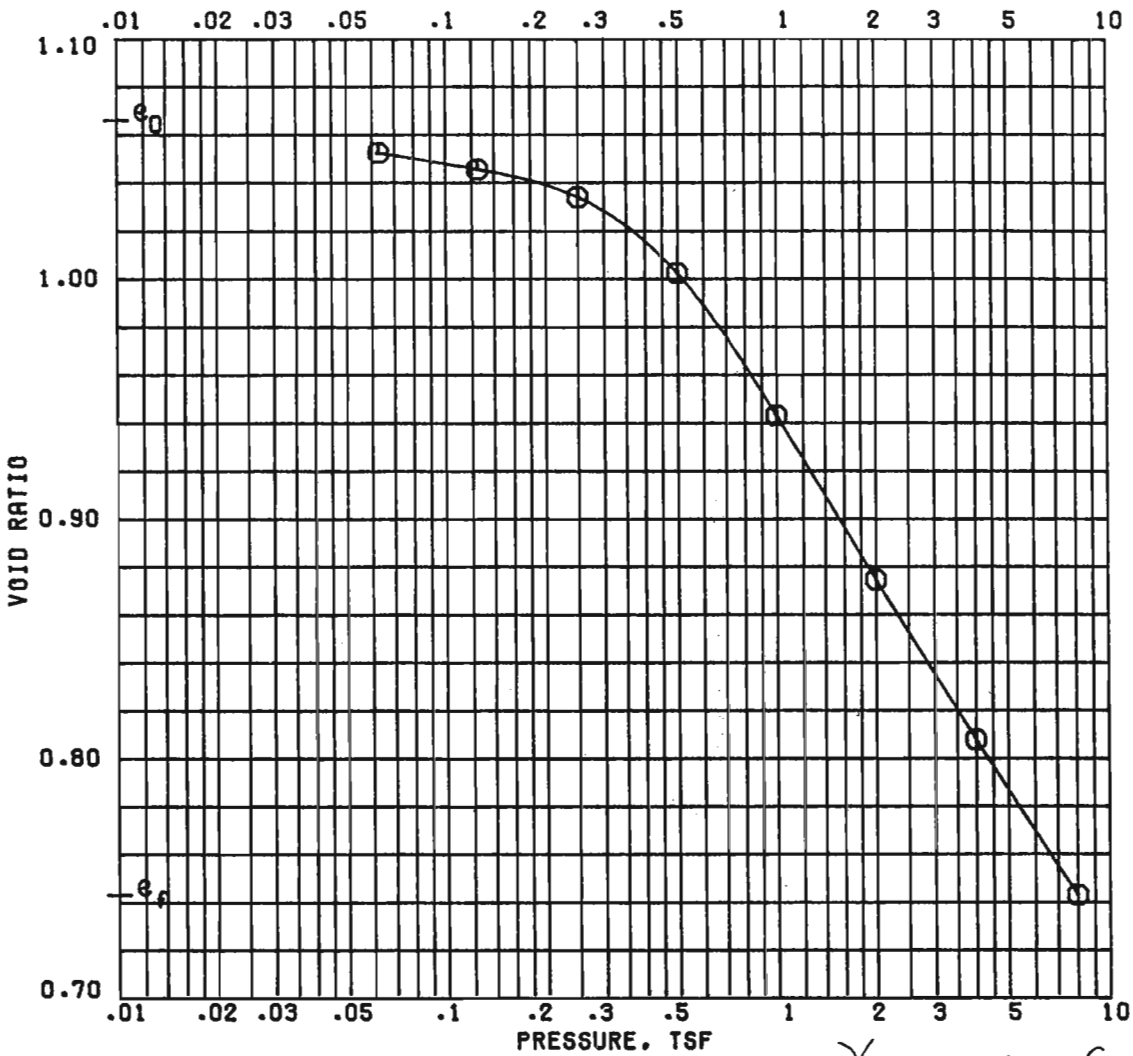
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	43.3	48.4	46.2		46.0
	DRY DENSITY, PCF	75.4	71.2	72.7		
	SATURATION, %	94.7	95.6	94.7		
	VOID RATIO	1.235	1.367	1.317		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.17	0.13	0.14		
	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		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; 1/2" SILT LAYERS

LL 39	PL 18	PI 21	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: LIMITS ON MIXTURE OF MATERIALS.	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 6-SCU / SAMPLE NO. 7-C
	DEPTH/ELEV 25.4/-24.2 / TECH. KOC
	LABORATORY USAE WES / DATE 06 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT

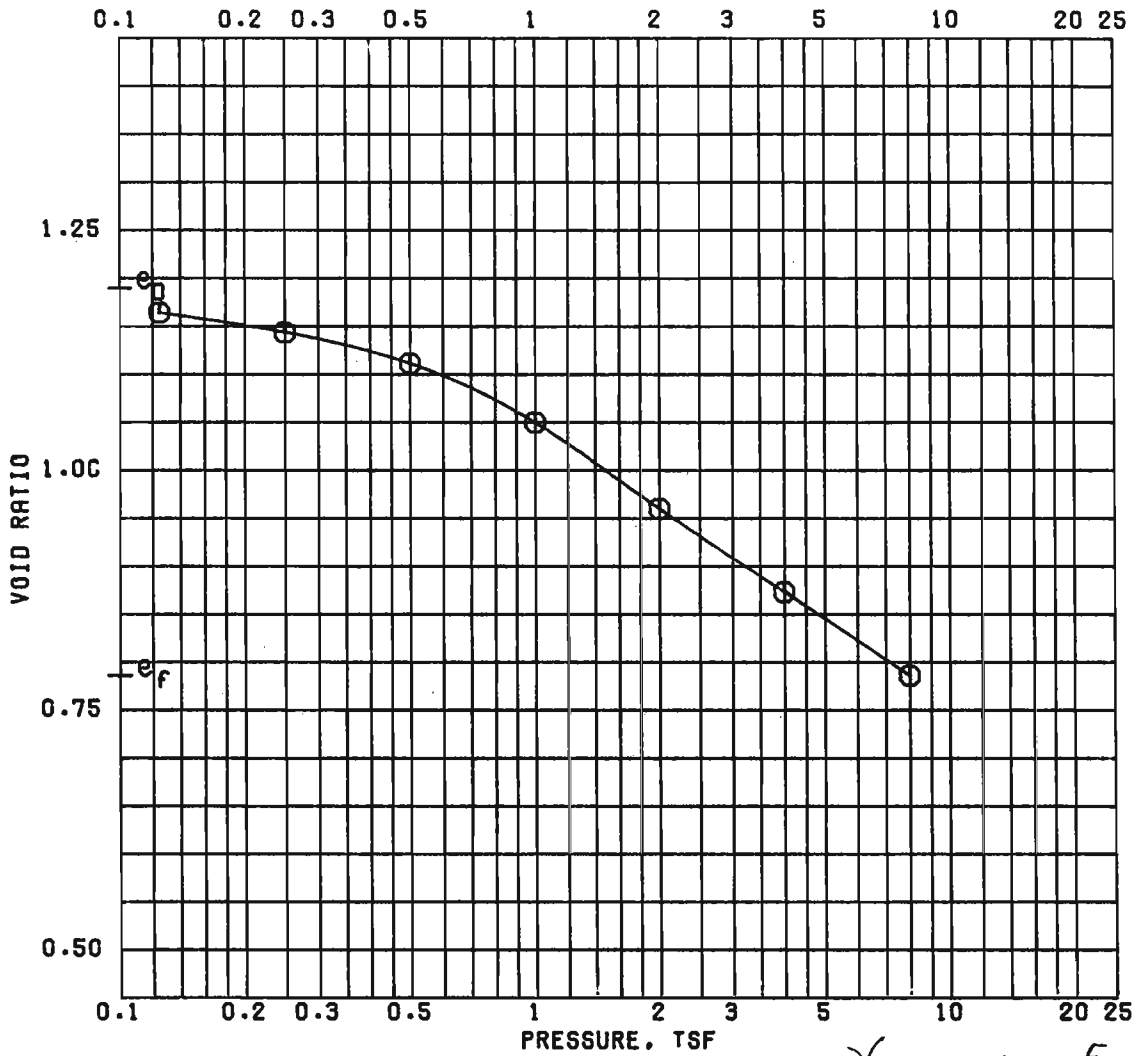


$\gamma_{SAT} = 114$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	38.1	27.1
PRECONSOL. PRESSURE, TSF	0.475	DRY DENSITY, PCF	81.6	96.7
COMPRESSION INDEX	0.23	SATURATION, %	96.5	98.5
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.066	0.742
DIA. IN 4.44	HT. IN 1.131	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CL), GRAY		
LL 45	PL 15	PI 30	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 6-SCU / SAMPLE NO. 8-C
			DEPTH/ELEV 29.0/-27.8 / DATE 14 MAR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 111 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	42.8	28.9
PRECONSOL. PRESSURE, TSF	0.70	DRY DENSITY, PCF	77.0	94.5
COMPRESSION INDEX	0.31	SATURATION, %	97.4	99.3
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.188	0.784
DIA. IN 4.44	HT. IN 1.139	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; SILT POCKETS; SHELL PARTICLES

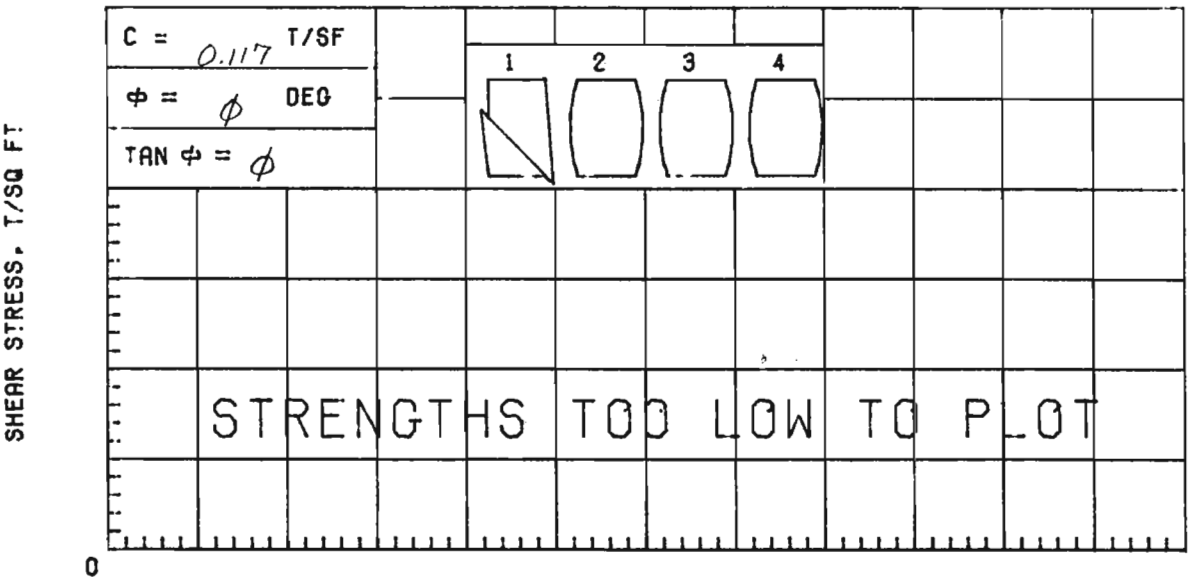
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 6-SCU	SAMPLE NO. 10-B
		DEPTH/ELEV 36.5/-35.3	DATE 11 MAR 87

CONSOLIDATION TEST REPORT

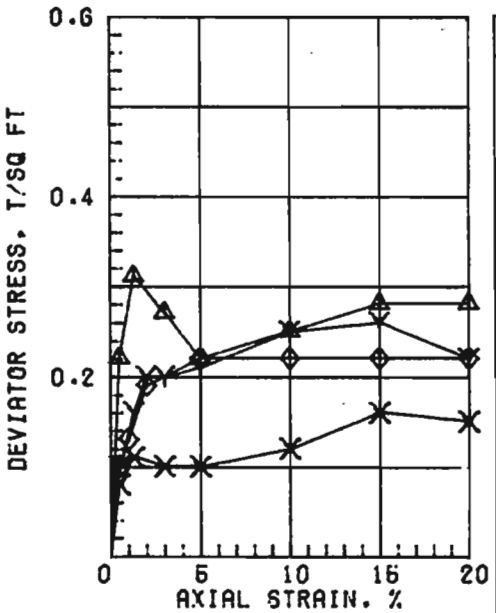
C = 0.117 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 108 pcf



	SPECIMEN NO.	△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	48.8	42.5	48.7	49.0	47.3
	DRY DENSITY, PCF	71.6	76.6	71.4	71.2	
	SATURATION, %	97.2	95.5	96.5	96.6	
	VOID RATIO	1.355	1.201	1.362	1.369	
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	0.31	0.20	0.11	0.19	
	TIME TO FAILURE, MIN.	3	12	8	20	
	RATE OF STRAIN INCR.%		6	5	4	
	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 (CH), GRAY; SILT POCKETS; SHELL PARTICLES

LL 46	PL 17	PI 29	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

LIMITS ON MIXTURE OF MATERIAL.

PROJECT LK PONT & VIC HURR PROT

ST CHARLES PARISH

BORING NO. 6-SCU | SAMPLE NO. 10-C

DEPTH/ELEV 36.9/-35.7 | TECH. KOC

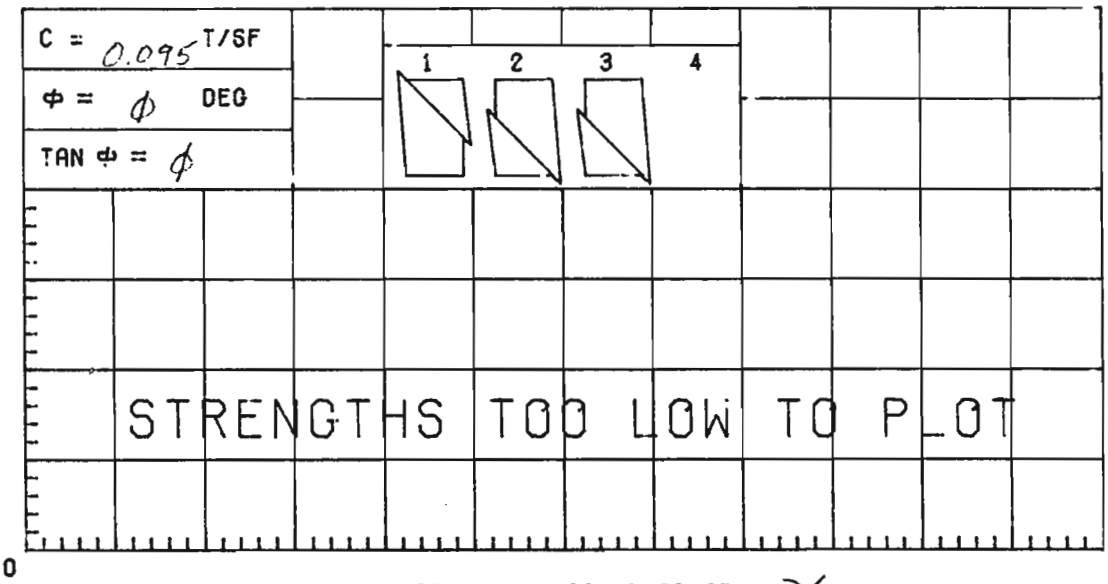
LABORATORY USAE WES | DATE 09 MAR 87

TRIAXIAL COMPRESSION TEST REPORT

C = 0.095 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



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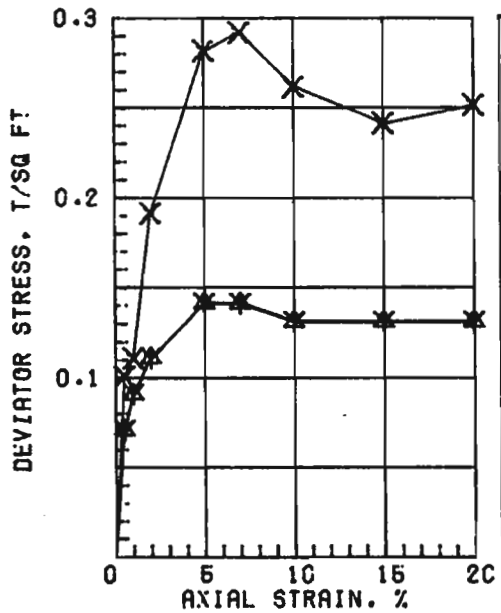


	SPECIMEN NO.	▲1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	70.9	70.6	62.1		67.9
	DRY DENSITY, PCF	56.9	57.3	61.2		
	SATURATION, %	97.6	98.3	95.5		
	VOID RATIO	1.961	1.940	1.755		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.14	0.14	0.29		
	TIME TO FAILURE, MIN.	10	10	14		
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.39	1.40	1.40		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT POCKETS

LL 67	PL 19	PI 48	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: LIMITS ON MIXTURE OF MATERIALS.

PROJECT LK PONT & VIC HURR PROT

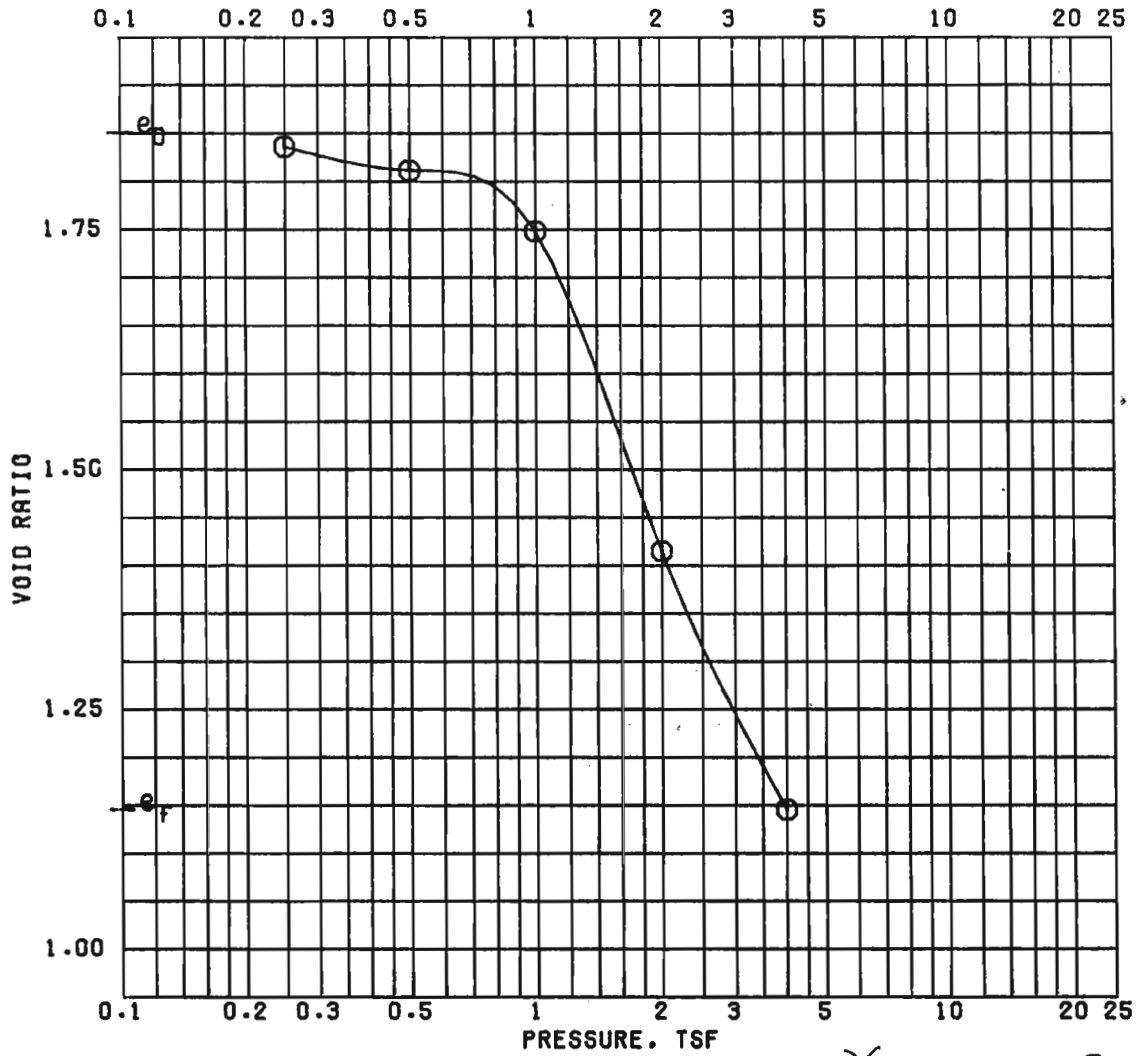
ST CHARLES PARISH

BORING NO. 6-SCU — SAMPLE NO. 12-B

DEPTH/ELEV 44.2/-43.0 — TECH. KOC

LABORATORY USAE WES — DATE 09 MAR 87

TRIAXIAL COMPRESSION TEST REPORT



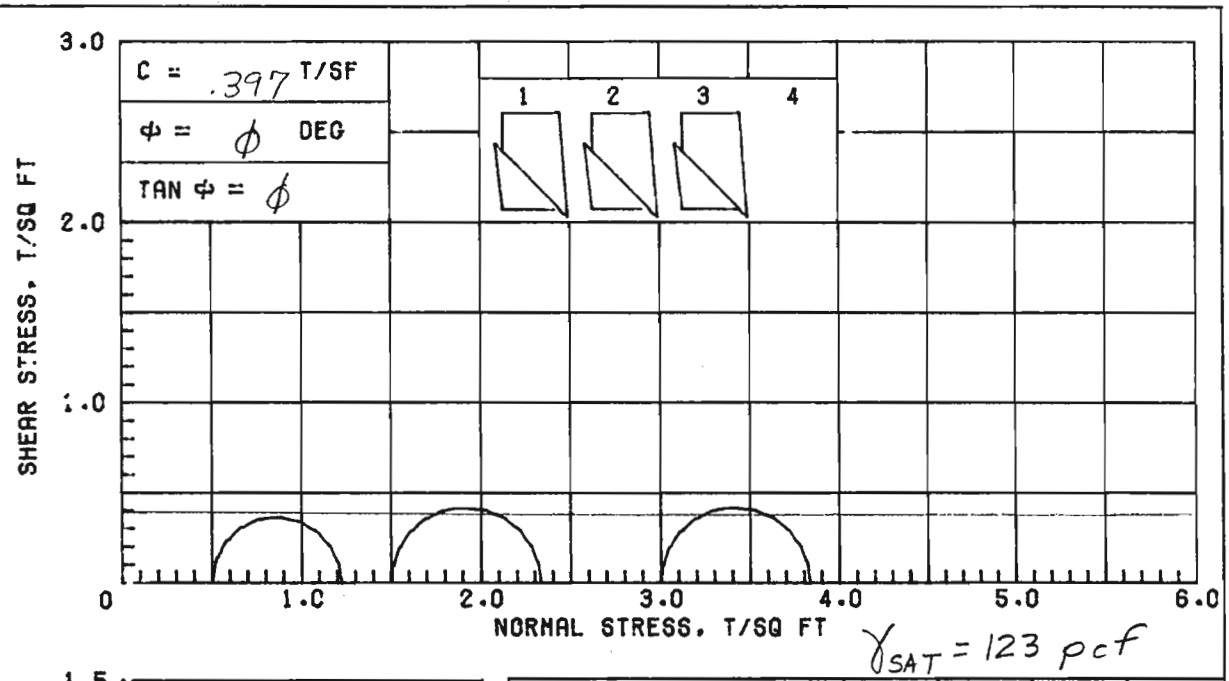
$\gamma_{SAT} = 100$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	68.6	44.6
PRECONSOL. PRESSURE, TSF	0.99	DRY DENSITY, PCF	59.2	78.6
COMPRESSION INDEX	1.18	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.849	1.144
DIA. IN 4.44	HT. IN 1.107	BACK PRESSURE, TSF		

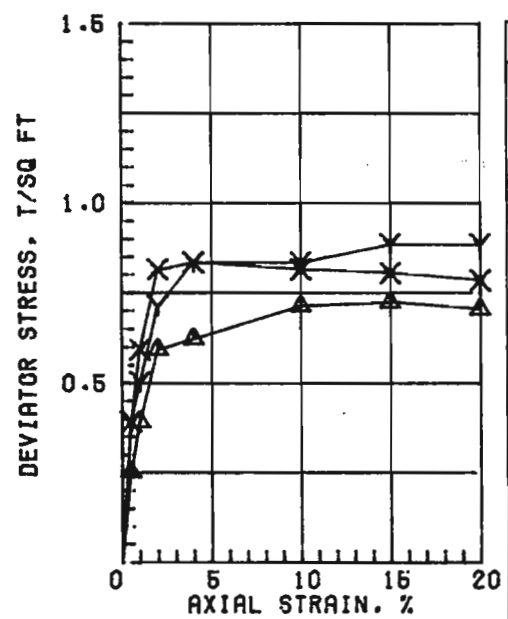
CLASSIFICATION CLAY (CH), GRAY; SILT SEAMS; SHELL PARTICLES

LL 80	PL 19	PI 61	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 6-SCU / SAMPLE NO. 13-C
			DEPTH/ELEV 48.9/-47.7 / DATE 12 MAR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 123 pcf



	SPECIMEN NO.	△1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	28.2	26.7	27.6		27.5
	DRY DENSITY, PCF	94.4	96.6	95.4		
	SATURATION, %	97.0	96.7	97.2		
	VOID RATIO	0.785	0.746	0.767		
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		0.72	0.83	0.83		
TIME TO FAILURE, MIN.		30	8	8		
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: CLAY (CL), GRAY; SILT POCKETS

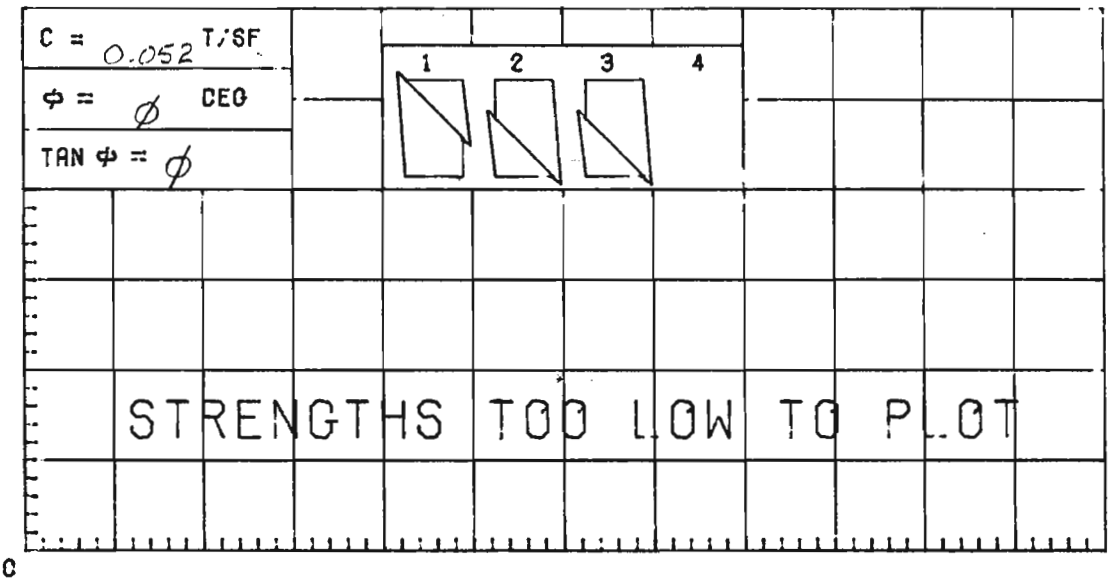
LL 38	PL 12	PI 26	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 6-SCU / SAMPLE NO. 16-B
	DEPTH/ELEV 60.4/-59.2 / TECH. KOC
	LABORATORY USAE WES / DATE 10 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT

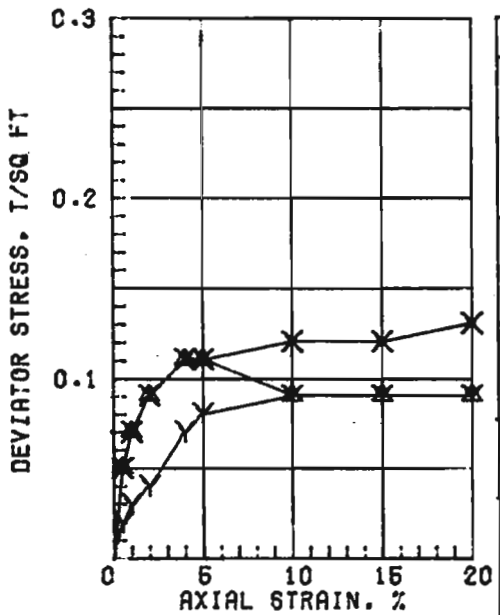
C = 0.052 T/SF

φ = ∅ DEG

TAN φ = ∅



γ_{SAT} = 94 pcf



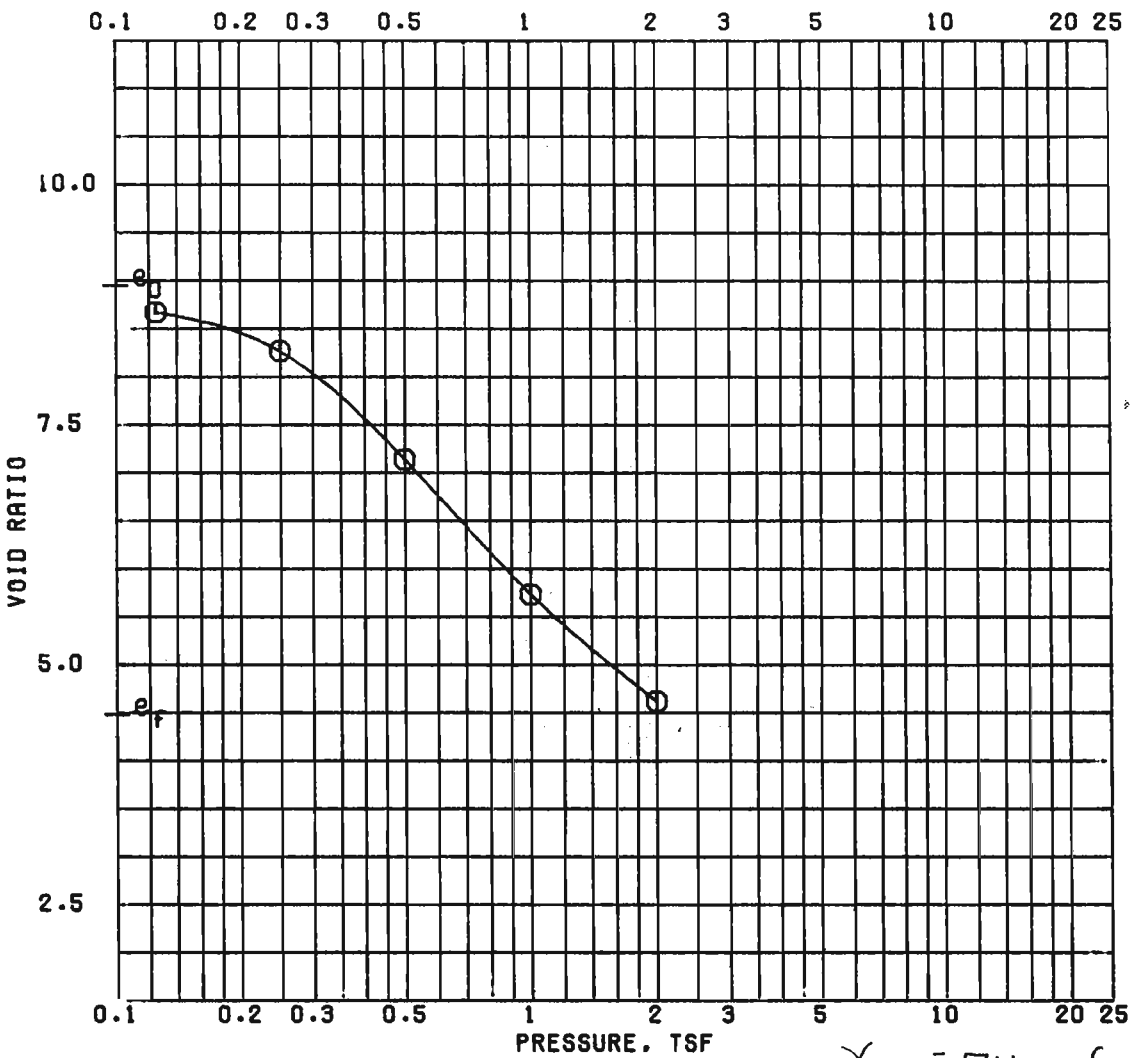
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	88.3	86.5	87.3		87.4
	DRY DENSITY, PCF	49.9	50.0	49.3		
	SATURATION, %	100+	98.4	97.5		
	VOID RATIO	2.379	2.373	2.417		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.11	0.09	0.11		
	TIME TO FAILURE, MIN.	8	20	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: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 99	PL 28	PI 71	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 7-SCU	SAMPLE NO. 2-B
	DEPTH/ELEV 12.1/-7.7	TECH. KOC
	LABORATORY USAE WES	DATE 10 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	



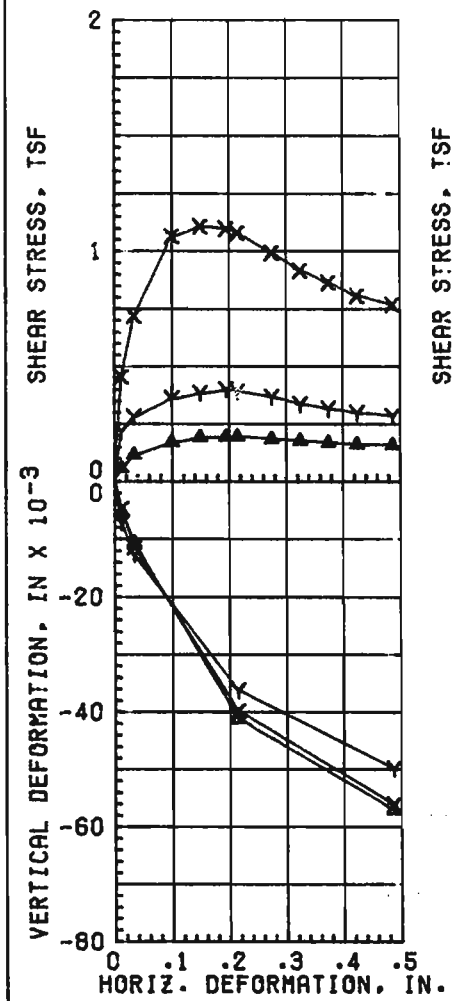
$\gamma_{SAT} = 74$ pcf

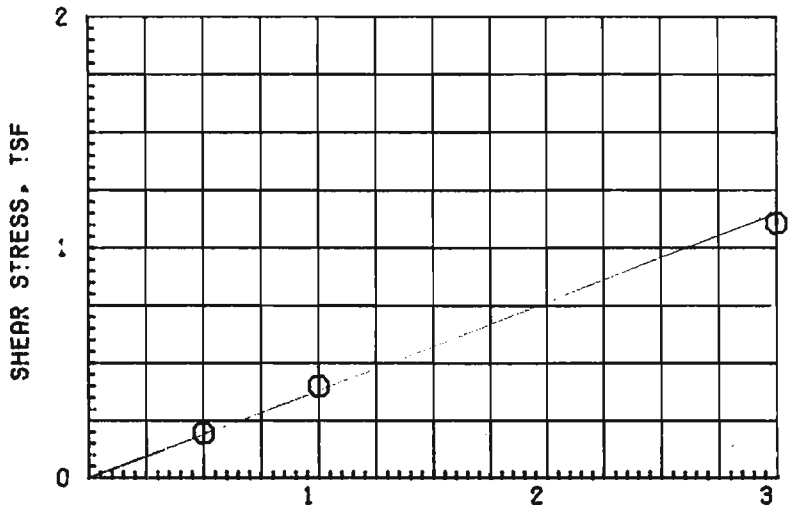
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	309.3	161.9
PRECONSOL. PRESSURE, TSF	0.30	DRY DENSITY, PCF	17.0	30.9
COMPRESSION INDEX	4.70	SATURATION, %	93.5	98.0
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	8.930	4.460
DIA. IN 4.44	HT. IN 1.119	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; ORGANIC MATERIAL

LL 252	PL 63	PI 189	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 7-SCU / SAMPLE NO. 2-C
			DEPTH/ELEV 13.0/-8.6 / DATE 13 MAR 87

CONSOLIDATION TEST REPORT





$\gamma_{SAT} = 93$ pcf

ϕ = 21°

TAN ϕ = 0.384

C = ϕ

	TEST NO.	1 ▲	2 Y	3 X	
INITAL	WATER CONTENT, %	88.3	92.8	84.2	
	VOID RATIO	2.457	2.575	2.364	
	SATURATION, %	97.0	97.4	96.1	
	DRY DENSITY, PCF	48.7	47.1	50.1	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	66.2	57.8	41.7	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		0.5	1.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.19	0.40	1.11	
TIME TO FAILURE, MIN		1218	1105	850	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

Ave 88.

TYPE SPECIMEN UNDISTURBED | 3.00 IN. SQUARE | 0.744 IN. THICK

CLASSIFICATION CLAY (CH), GRAY; ORGANIC MATERIAL

LL 83 | PL 22 | PI 61 | GS 2.70 (EST)

REMARKS:

PROJECT LK PONT & VIC HURR PROT

ST CHARLES PARISH

BORING NO. 7-SCU | SAMPLE 3-B

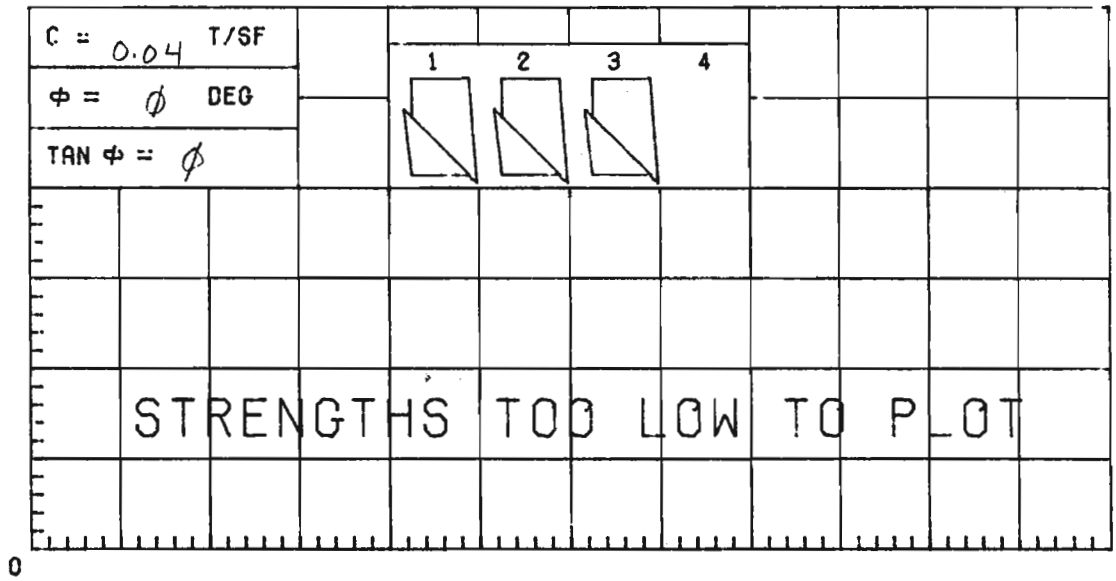
DEPTH/ELEV 16.5/-12.1 | DATE 20 APR 87

DIRECT SHEAR TEST REPORT

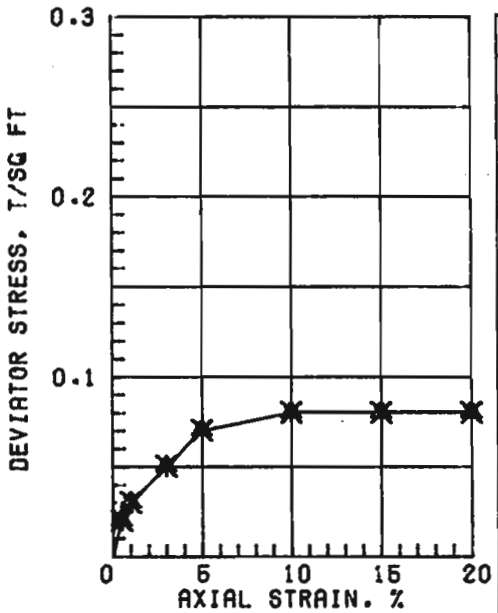
C = 0.04 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 96 pcf



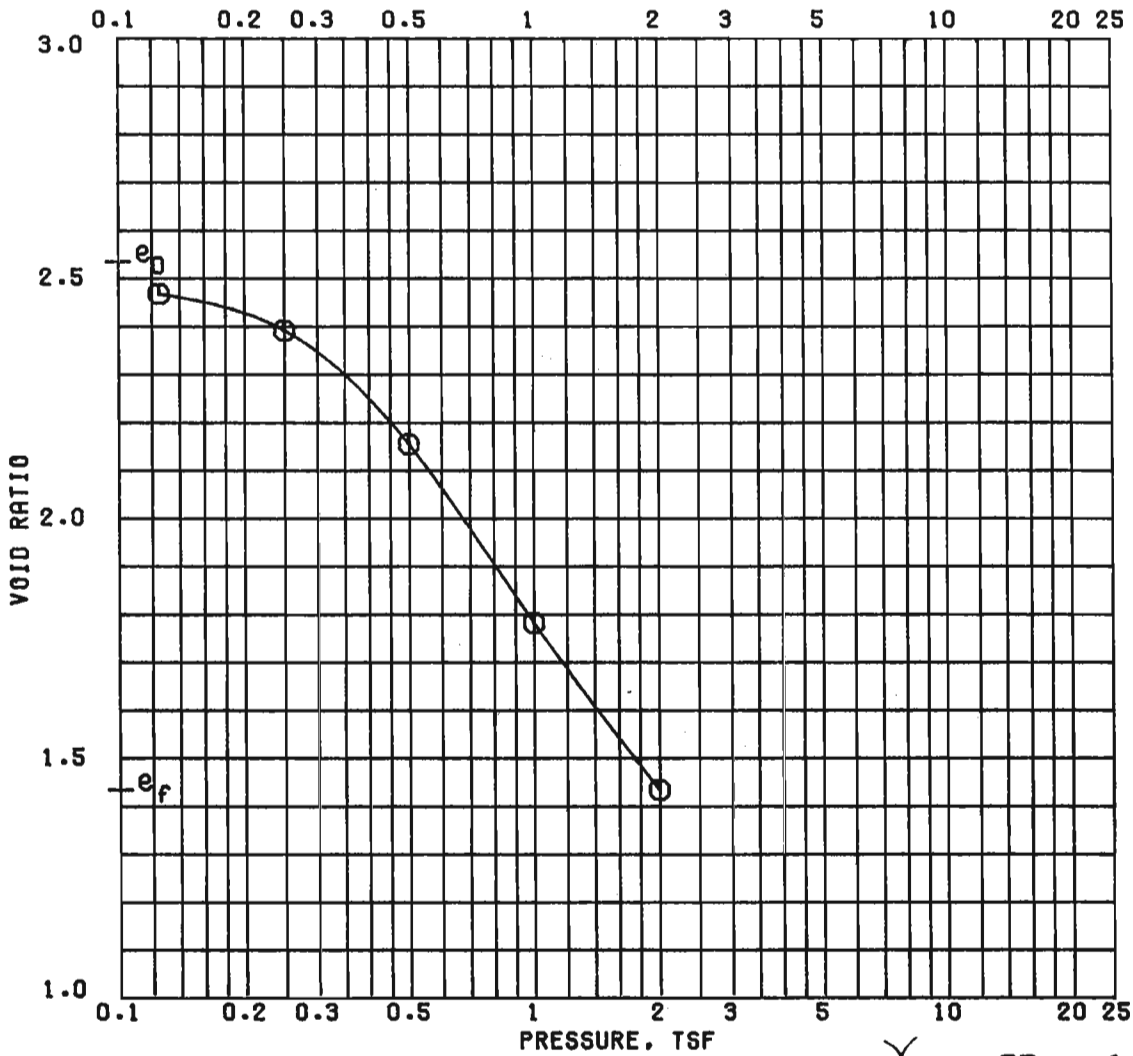
	SPECIMEN NO.	▲1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	78.5	79.8	76.3		78.2
	DRY DENSITY, PCF	52.8	52.2	53.9		
	SATURATION, %	96.6	96.6	97.0		
	VOID RATIO	2.195	2.230	2.125		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.08	0.08	0.08		
	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		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; 3/8" ROOTS

LL 69	PL 20	PI 49	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: SPECIMENS SLUMPED SLIGHTLY DURING TRIMMING.	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 7-SCU / SAMPLE NO. 3-C
	DEPTH/ELEV 17.4/-13.0 / TECH. KOC
	LABORATORY USAE WES / DATE 11 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



$\gamma_{SAT} = 93$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	93.9	55.9
PRECONSOL. PRESSURE, TSF	0.35	DRY DENSITY, PCF	47.7	69.3
COMPRESSION INDEX	1.25	SATURATION, %	99.8	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.532	1.431
DIA. IN 4.44	HT. IN 1.108	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; DECAYED ROOTS

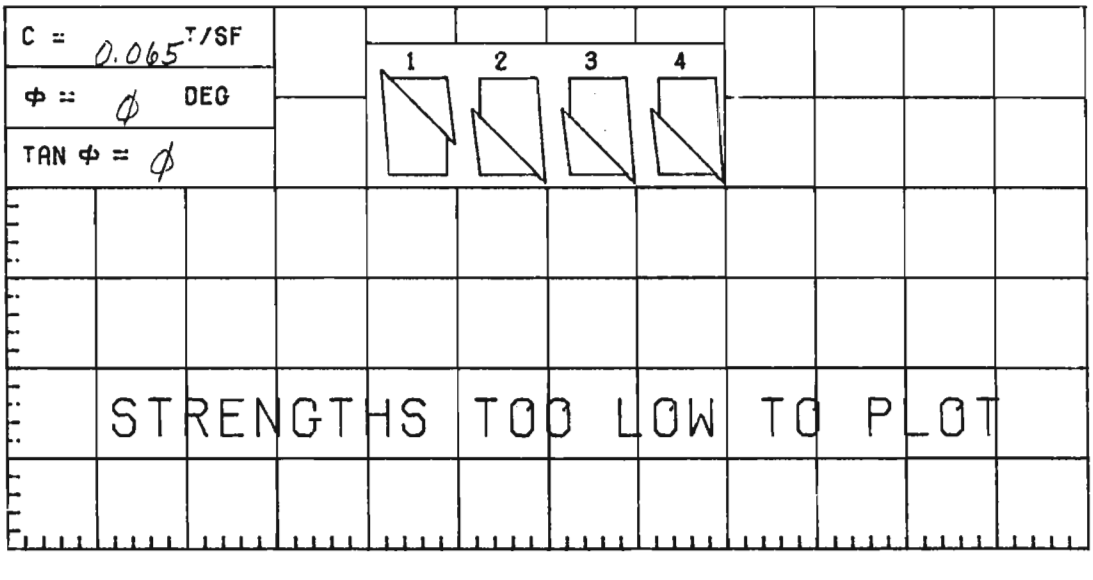
LL 85	PL 22	PI 63	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 7-SCU / SAMPLE NO. 4-B
			DEPTH/ELEV 20.0/-15.6 / DATE 14 MAR 87

CONSOLIDATION TEST REPORT

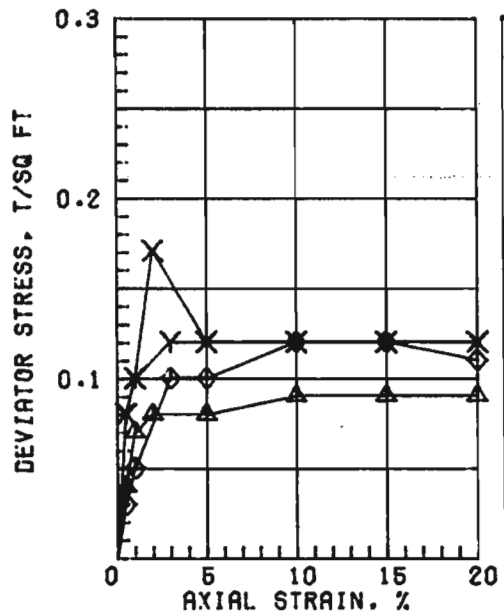
C = 0.065 T/SF

Φ = ∅ DEG

TAN Φ = ∅



γ_{SAT} = 98 pcf



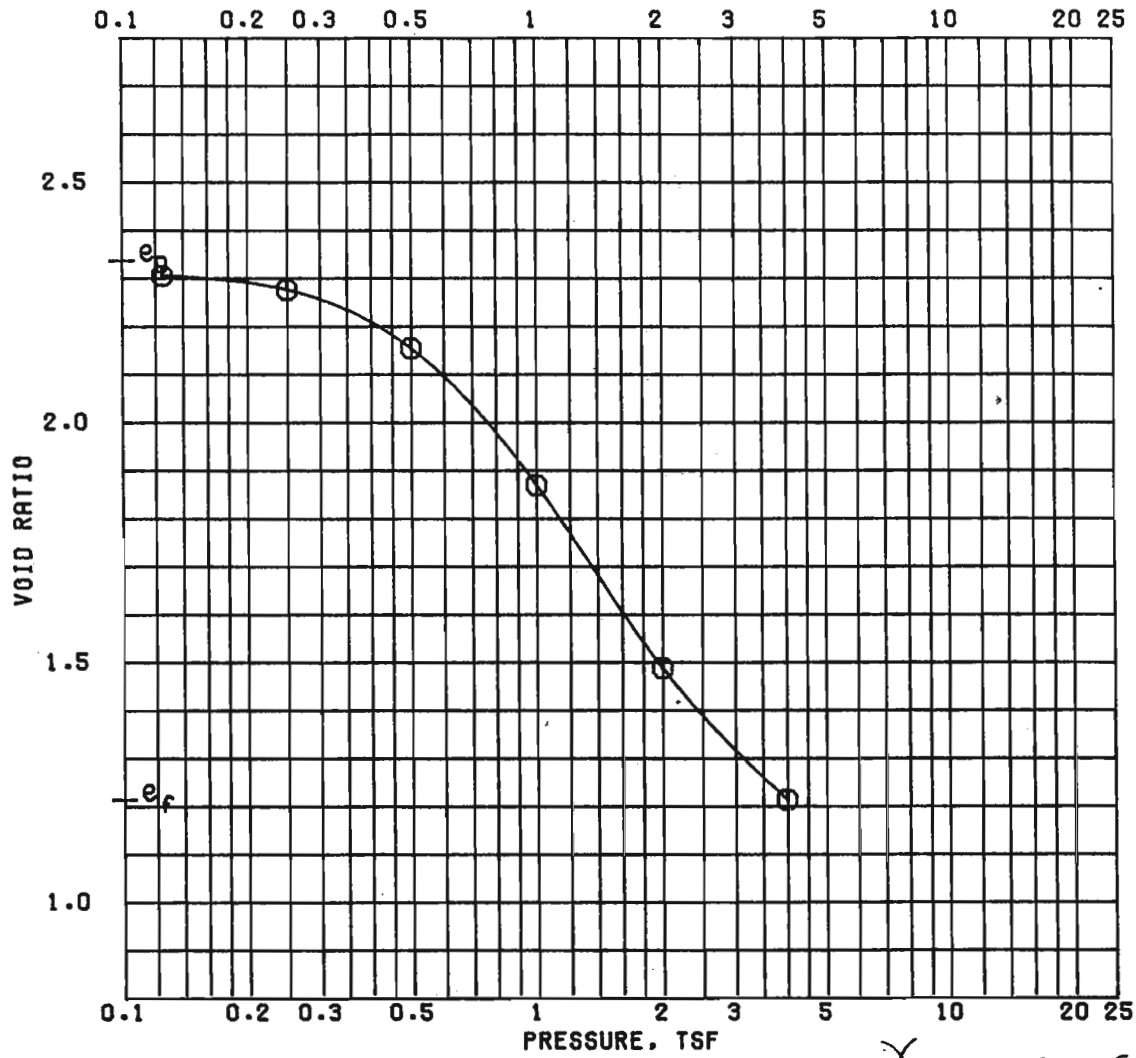
	SPECIMEN NO.	△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	71.1	73.5	72.5	71.1	72.4
	DRY DENSITY, PCF	57.0	55.9	56.0	56.8	
	SATURATION, %	98.0	98.4	97.5	97.6	
	VOID RATIO	1.959	2.018	2.007	1.966	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0	0.5	
	MAX. DEV. STRESS, TSF	0.08	0.12	0.17	0.10	
	TIME TO FAILURE, MIN.	4	6	4	18	
	RATE OF STRAIN INCR.%				5	
	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 (CH), GRAY; SILT LENSES

LL 75	PL 21	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 7-SCU	SAMPLE NO. 5-C
	DEPTH/ELEV 25.4/-21.0	TECH. KOC
	LABORATORY USAE WES	DATE 11 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	



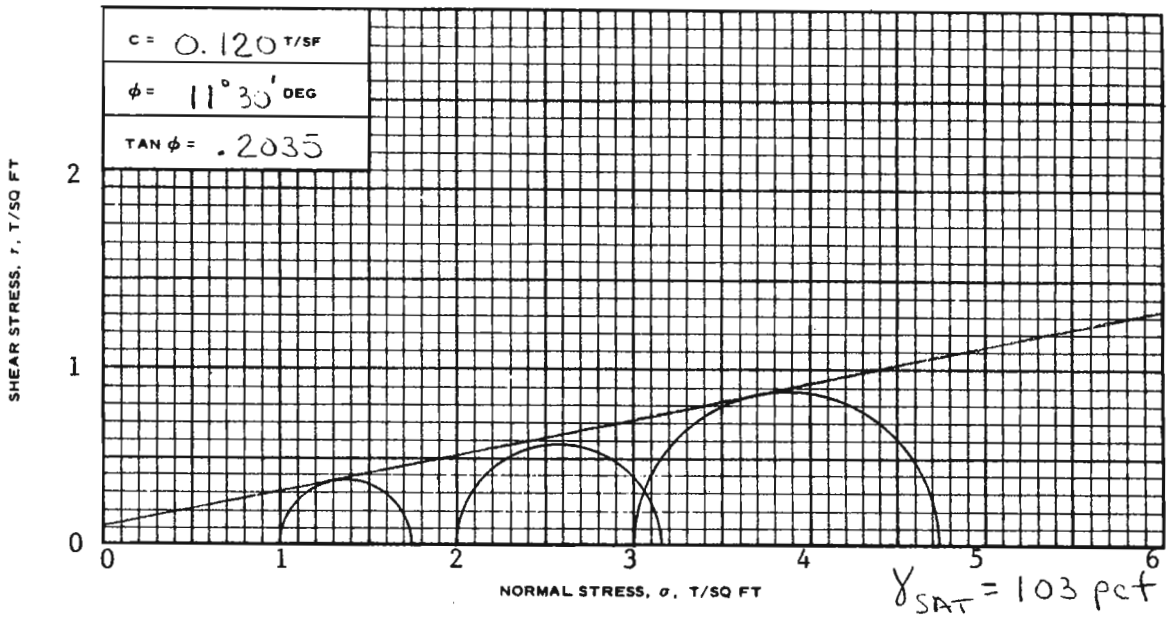
$\gamma_{SAT} = 95$ pcf

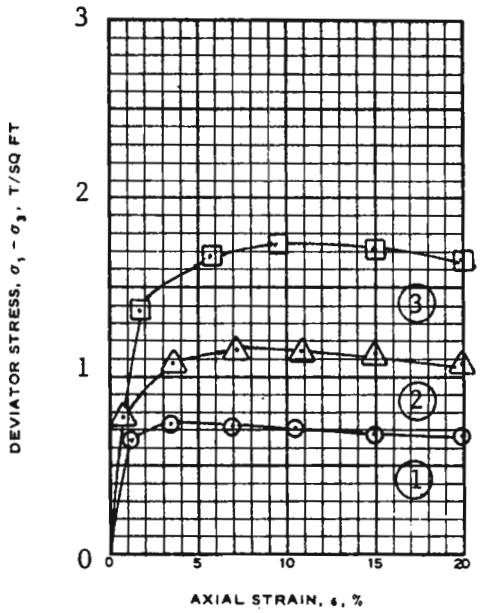
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	88.1	48.2
PRECONSOL. PRESSURE, TSF	0.61	DRY DENSITY, PCF	50.6	76.3
COMPRESSION INDEX	1.30	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.334	1.210
DIA. IN 4.44	HT. IN 1.117	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

LL 70	PL 27	PI 43	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 7-SCU / SAMPLE NO. 6-B
			DEPTH/ELEV 28.1/-23.7 / DATE 16 MAR 87

CONSOLIDATION TEST REPORT





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	61.8	59.9	59.0	
	DRY DENSITY LB/ CU FT	γd_o	62.8	65.0	65.1	
	SATURATION, %	S_o	98.6	100+	99.7	
	VOID RATIO	e_o	1.706	1.613	1.610	
BEFORE SHEAR	WATER CONTENT, %	w_c	52.3	46.1	43.4	
	DRY DENSITY LB/CU FT	γd_c	70.3	77.6	83.5	
	SATURATION, %	S_c	100+	100+	100+	
	VOID RATIO	e_c	1.417	1.187	1.034	
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.32	4.32	4.32	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.73	1.15	1.74	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	233	480	626	
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	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS CLAY (CH), GRAY

LL 56 | PL 20 | PI 36 | Gs 2.72 | TYPE OF SPECIMEN UNDISTURBED | TYPE OF TEST $\bar{R}$

REMARKS: (EST)

PROJECT LK PONT & VIC HURR PROT
ST CHARLES PARISH

BORING NO. 7-SCU | SAMPLE NO. 6-C

DEPTH/ELEV 29.0/-24.6

LABORATORY USAEWES | DATE 13 APR 87

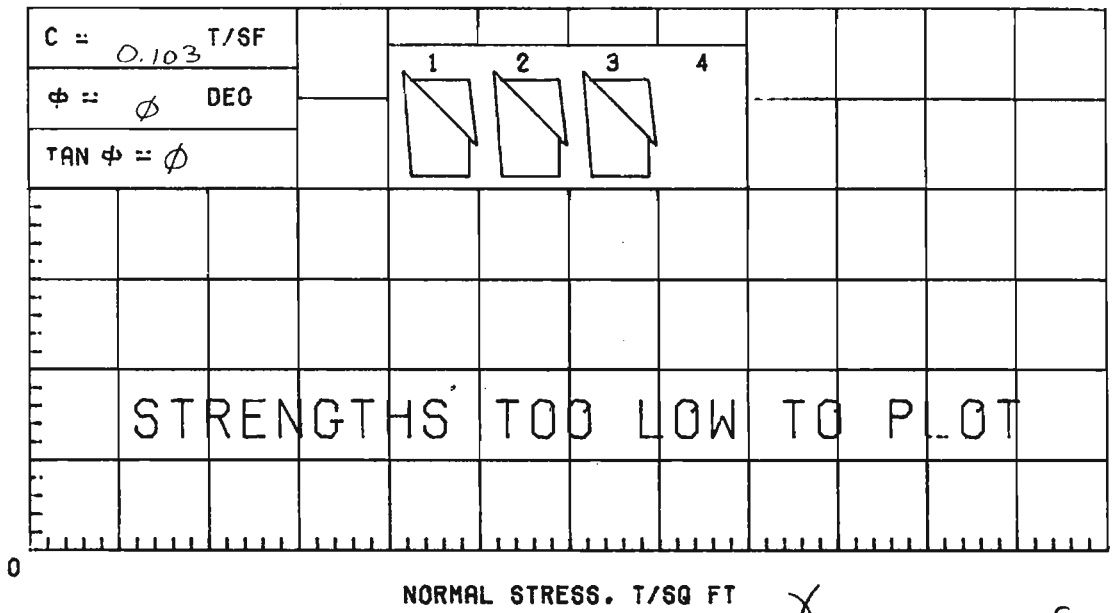
SHEET 1 OF 2 | JMS | TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

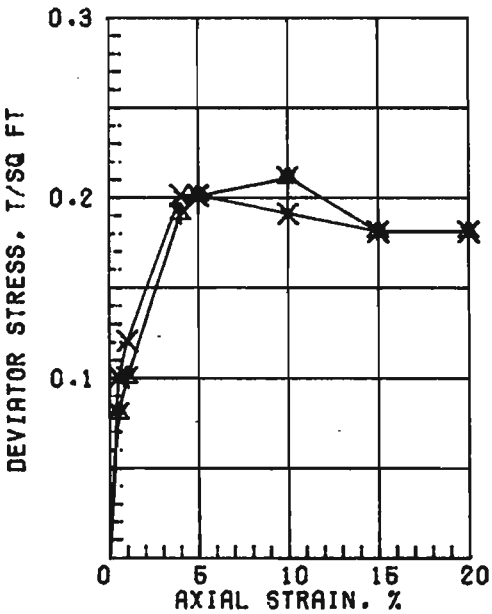
C = 0.103 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 98 pcf



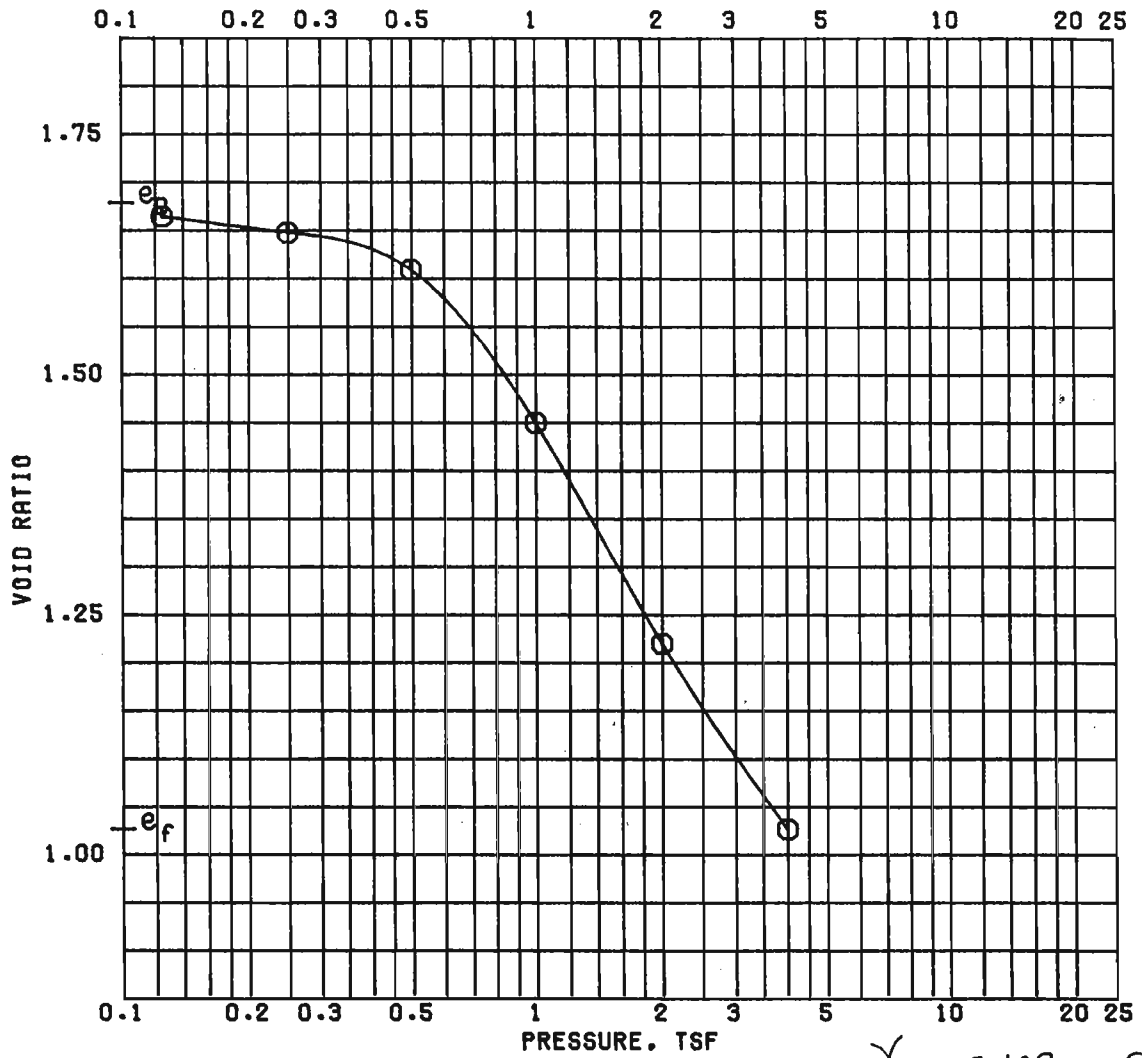
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	72.9	73.1	72.8		72.9
	DRY DENSITY, PCF	56.5	56.0	56.2		
	SATURATION, %	99.1	98.1	98.4		
	VOID RATIO	1.986	2.012	1.998		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.21	0.21	0.20		
	TIME TO FAILURE, MIN.	20	20	8		
	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: CLAY (CH), GRAY

LL 78	PL 22	PI 56	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 7-SCU / SAMPLE NO. 8-B
	DEPTH/ELEV 36.5/-32.1 / TECH. KOC
	LABORATORY USAE WES / DATE 12 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



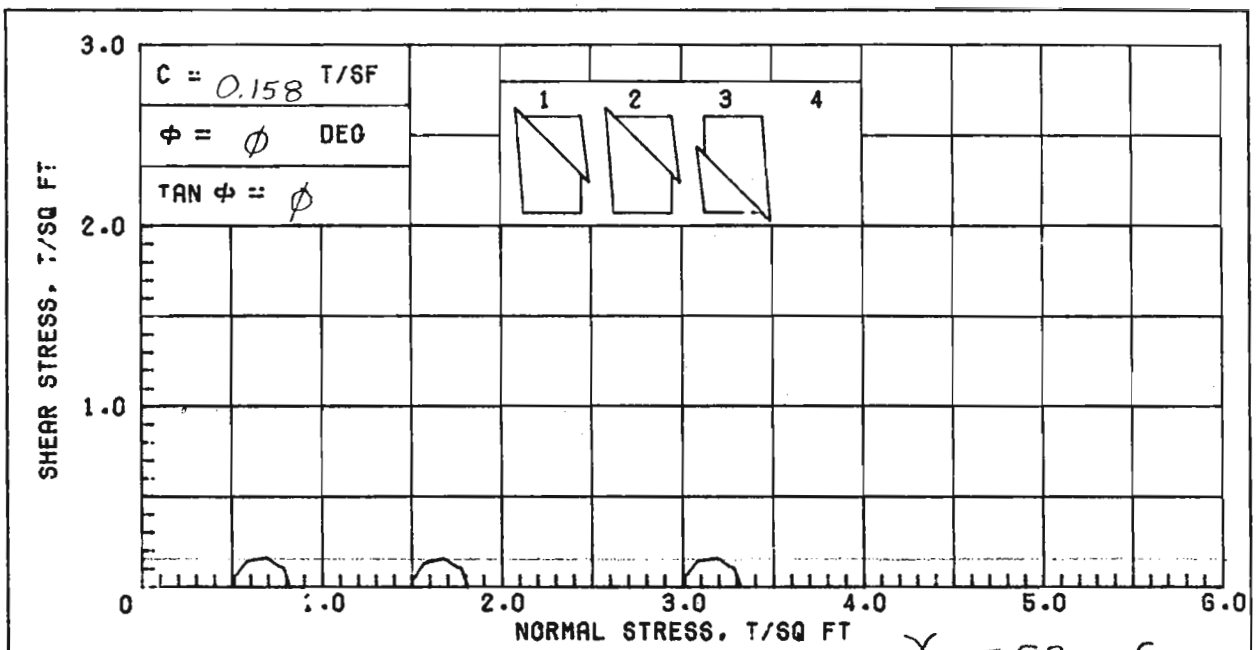
γ_{SAT} = 102 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	62.2	39.2
PRECONSOL. PRESSURE, TSF	0.64	DRY DENSITY, PCF	63.0	83.2
COMPRESSION INDEX	0.76	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.677	1.025
DIA. IN 4.44	HT. IN 1.111	BACK PRESSURE, TSF		

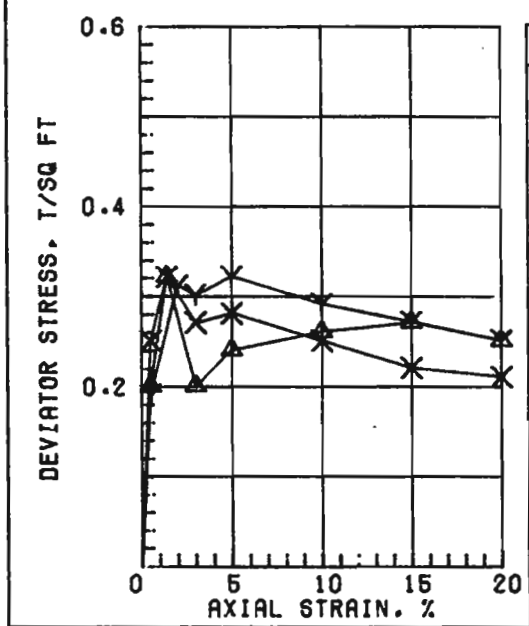
CLASSIFICATION CLAY (CH), GRAY

LL 54	PL 16	PI 38	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 7-SCU / SAMPLE NO. 9-B
			DEPTH/ELEV 40.4/-36.0 / DATE 17 MAR 87

CONSOLIDATION TEST REPORT



$\gamma_{SAT} = 98$ pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	73.4	74.1	72.3	
	DRY DENSITY, PCF	56.2	55.4	57.0	
	SATURATION, %	99.1	98.0	99.8	
	VOID RATIO	2.000	2.042	1.957	
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	0.32	
	TIME TO FAILURE, MIN.	3	18	13	
	RATE OF STRAIN INCR.%		3	3	
	INITIAL DIAMETER, IN.	1.40	1.40	1.40	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

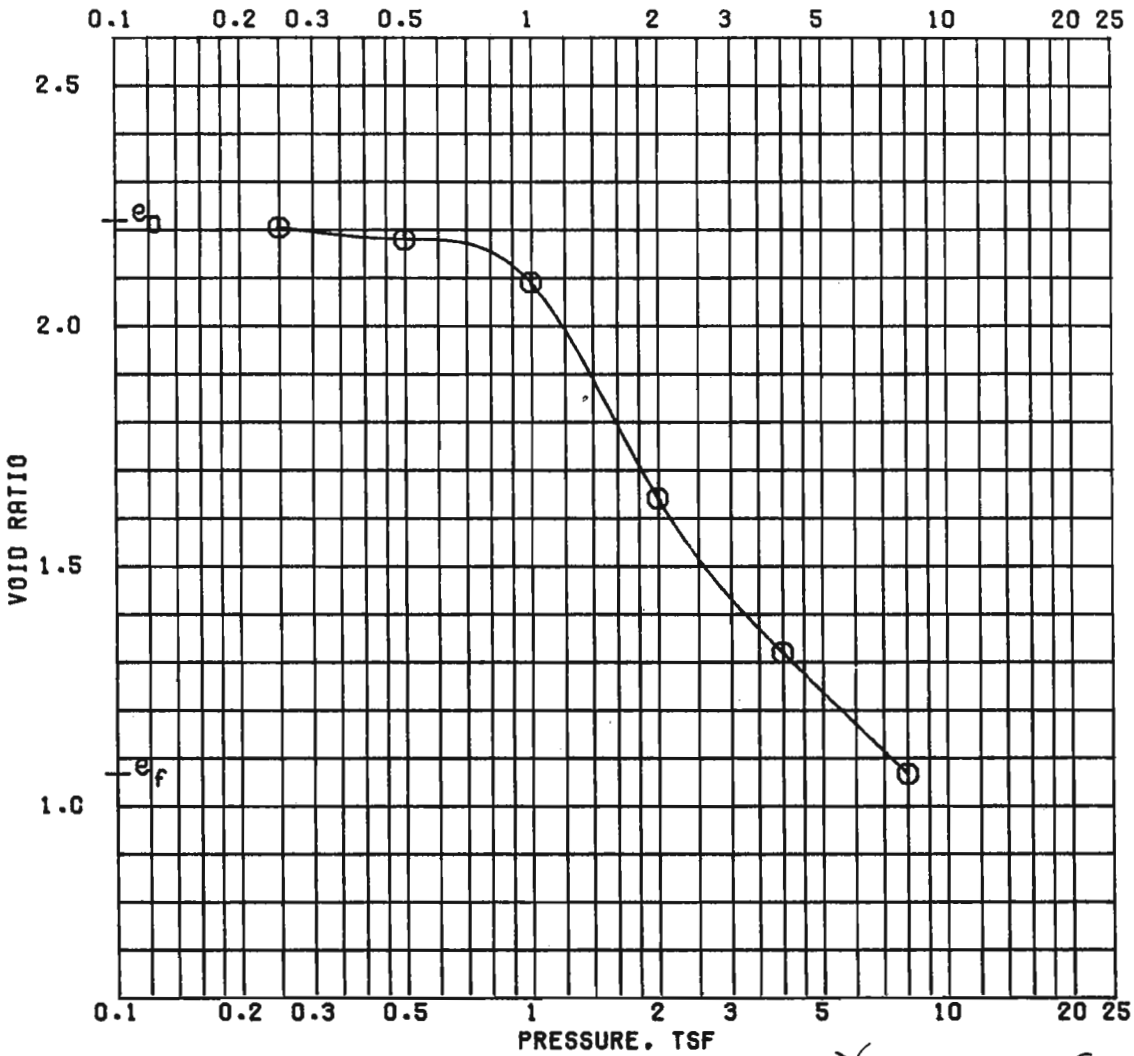
AVE 73.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SHELL PARTICLES

LL 83	PL 23	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 7-SCU / SAMPLE NO. 10-B
	DEPTH/ELEV 44.5/-40.1 / TECH. KOC
	LABORATORY USAE WES / DATE 12 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 96 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	82.6	42.2
PRECONSOL. PRESSURE, TSF	1.0	DRY DENSITY, PCF	52.4	81.7
COMPRESSION INDEX	1.56	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.216	1.064
DIA. IN 4.44	HT. IN 1.126	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

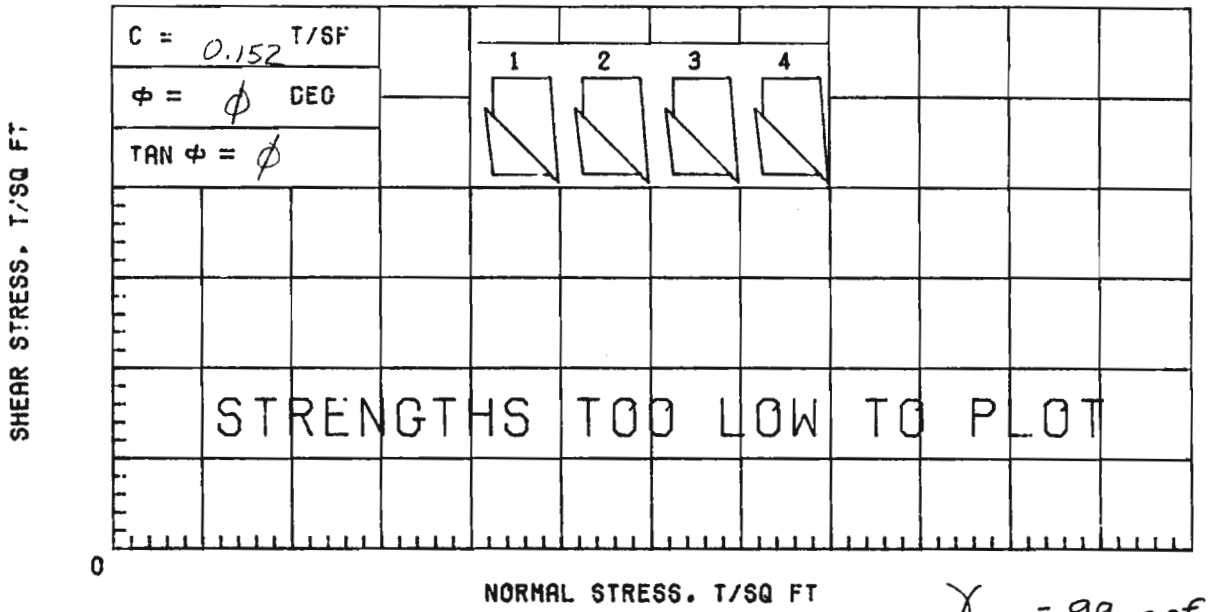
LL 86	PL 25	PI 61	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 7-SCU / SAMPLE NO. 11-B
			DEPTH/ELEV 48.5/-44.1 / DATE 19 MAR 87

CONSOLIDATION TEST REPORT

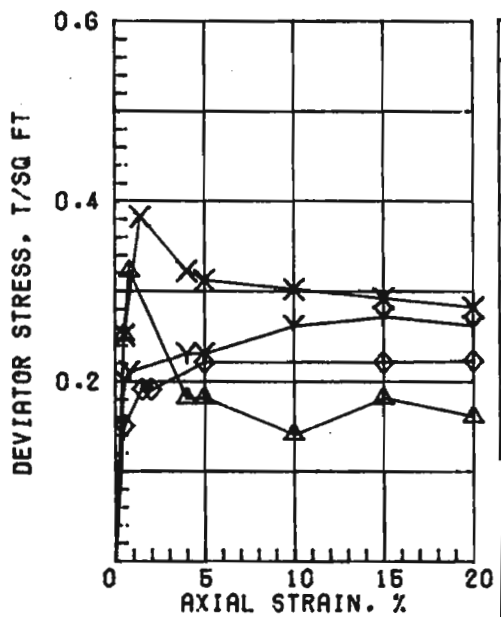
C = 0.152 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 99 pcf



SPECIMEN NO.		△1	Y2	X3	◇4	AVG
INITIAL	WATER CONTENT, %	73.8	71.3	70.9	67.5	70.9
	DRY DENSITY, PCF	57.0	57.4	57.8	59.4	
	SATURATION, %	100+	99.4	99.8	99.2	
	VOID RATIO	1.956	1.937	1.919	1.838	
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		0.32	0.21	0.38	0.19	
TIME TO FAILURE, MIN.		2	21	21	18	
RATE OF STRAIN INCR.%			2	2	2	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

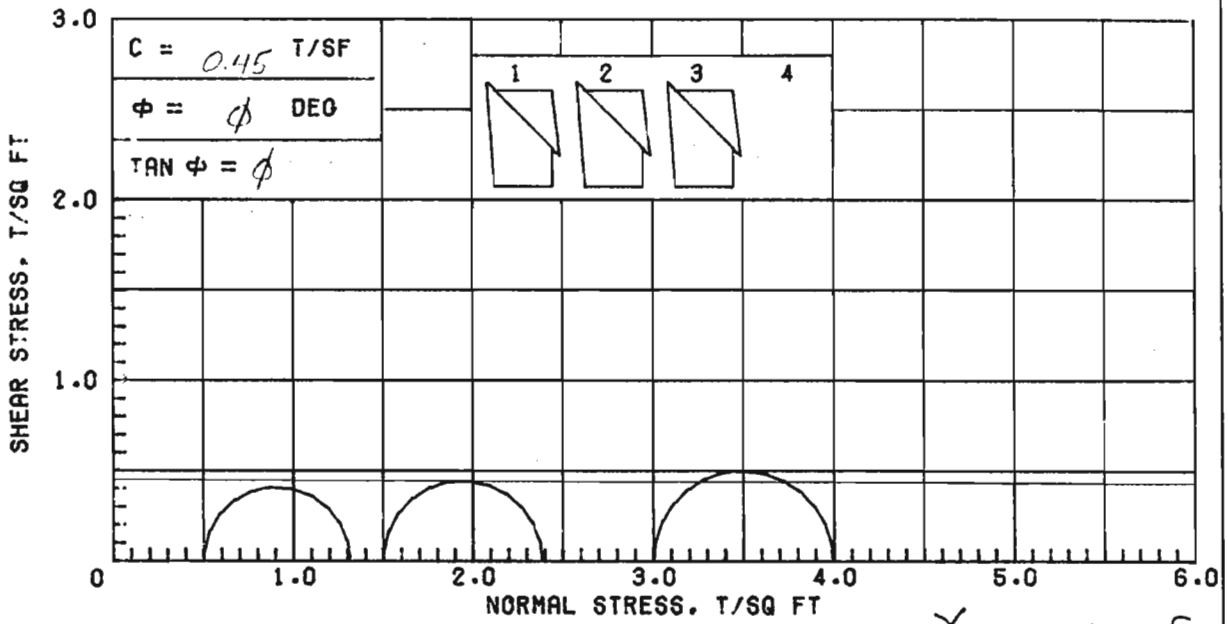
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT POCKETS

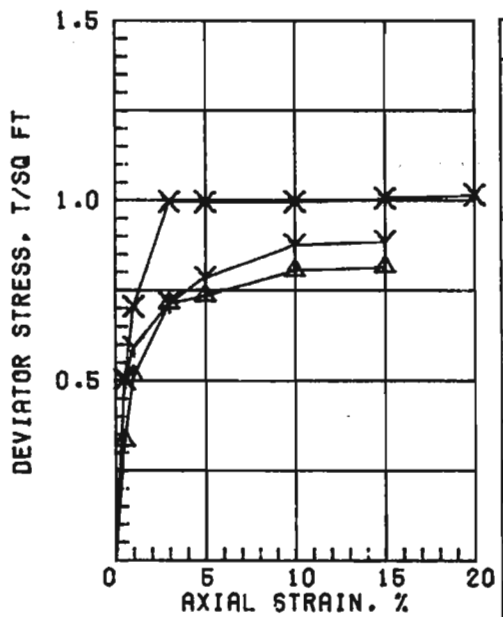
LL 80	PL 20	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 7-SCU / SAMPLE NO. 12-C
	DEPTH/ELEV 53.4/-49.0 / TECH. KOC
	LABORATORY USAE WES / DATE 16 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT

9.



γ_{SAT} = 121 pcf



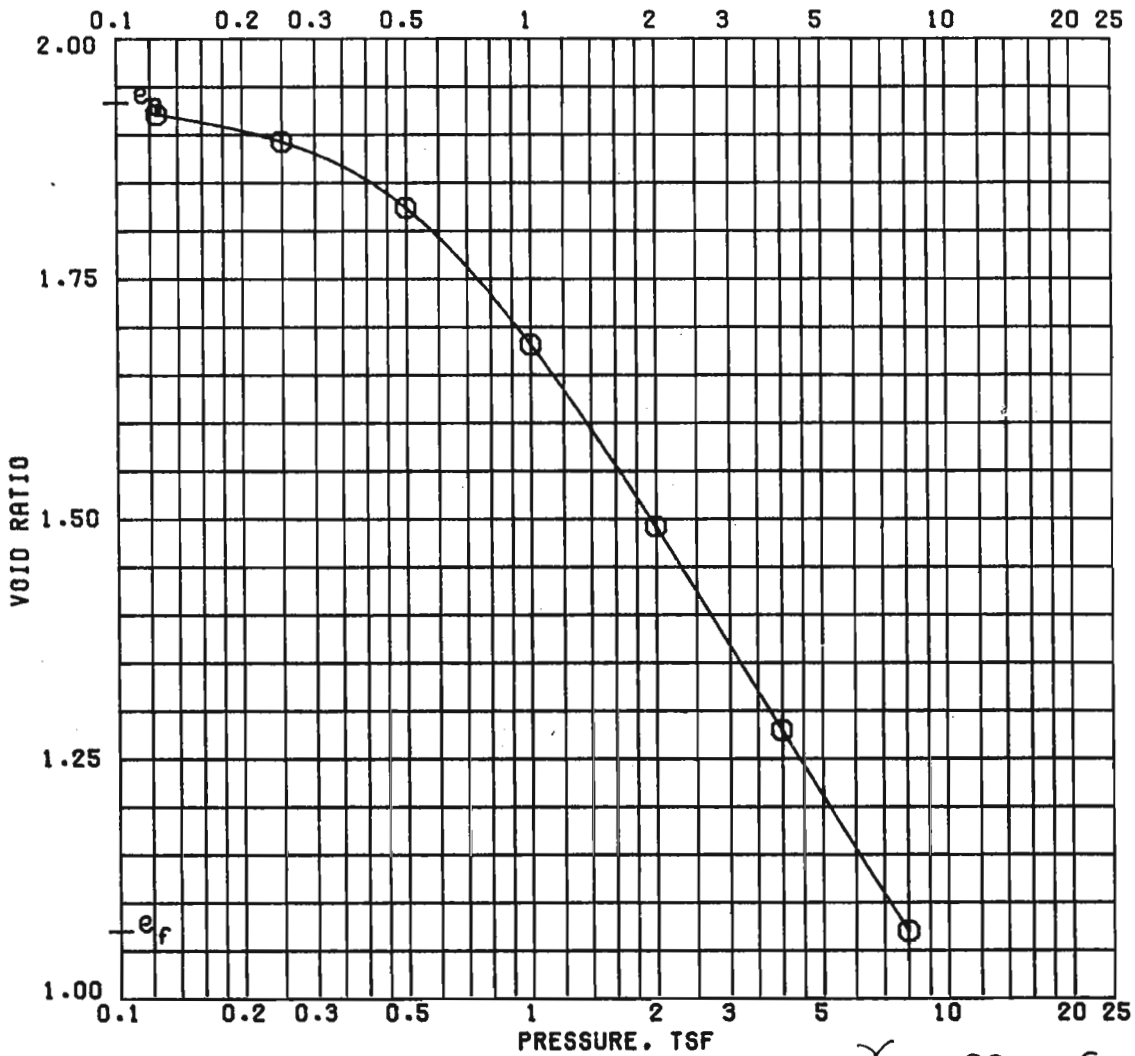
	SPECIMEN NO.	△1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	28.5	29.6	28.9		29.0
	DRY DENSITY, PCF	93.9	91.4	93.9		
	SATURATION, %	96.9	94.7	98.2		
	VOID RATIO	0.794	0.844	0.795		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.81	0.89	1.00		
	TIME TO FAILURE, MIN.	30	30	6		
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.40	1.39	1.40		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), BROWN

LL 38	PL 16	PI 22	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 7-SCU	SAMPLE NO. 16-B
	DEPTH/ELEV 68.1/-63.7	TECH. KOC
	LABORATORY USAE WES	DATE 16 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	



$\gamma_{SAT} = 99$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	71.0	42.1
PRECONSOL. PRESSURE, TSF	0.66	DRY DENSITY, PCF	57.5	81.5
COMPRESSION INDEX	0.72	SATURATION, %	99.2	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.931	1.069
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; SHELL PARTICLES

LL	PL	PI	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 8-SCU	SAMPLE NO. 3-B
			DEPTH/ELEV 8.3/-4.1	DATE 17 MAR 87

CONSOLIDATION TEST REPORT

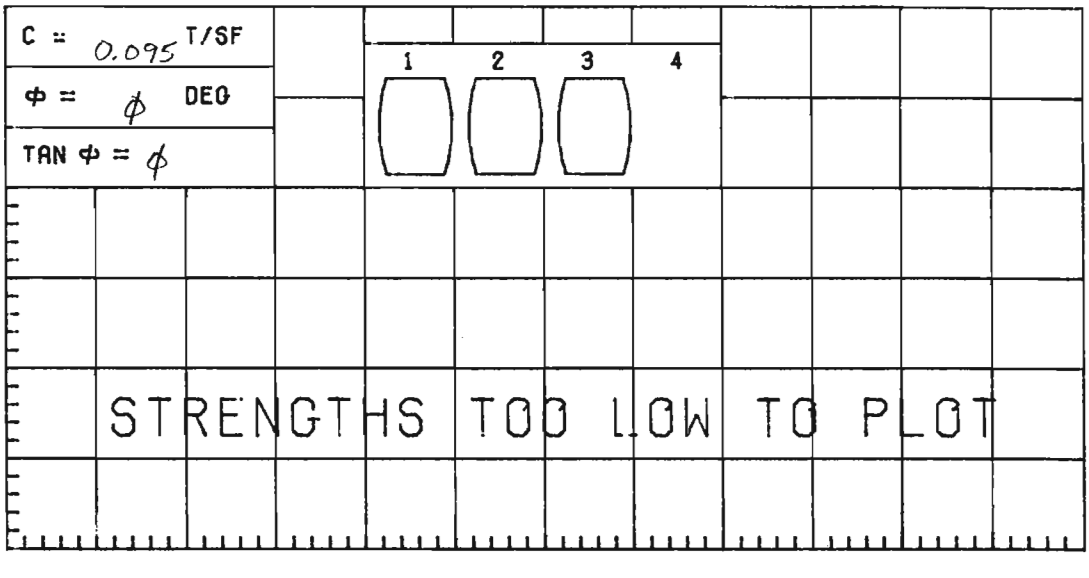
SHEET 1 OF 9

91

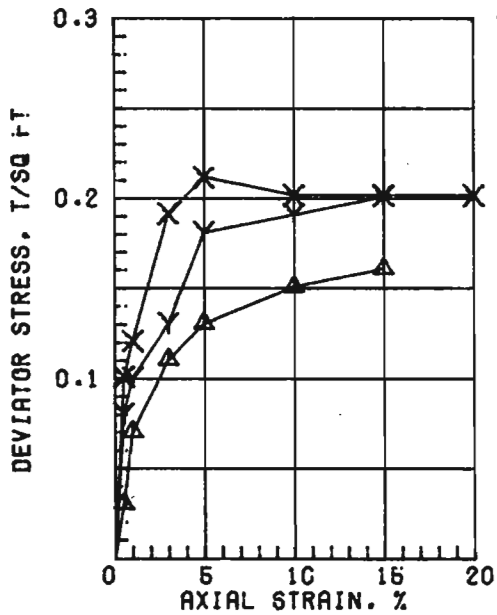
C = 0.095 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 96 pcf



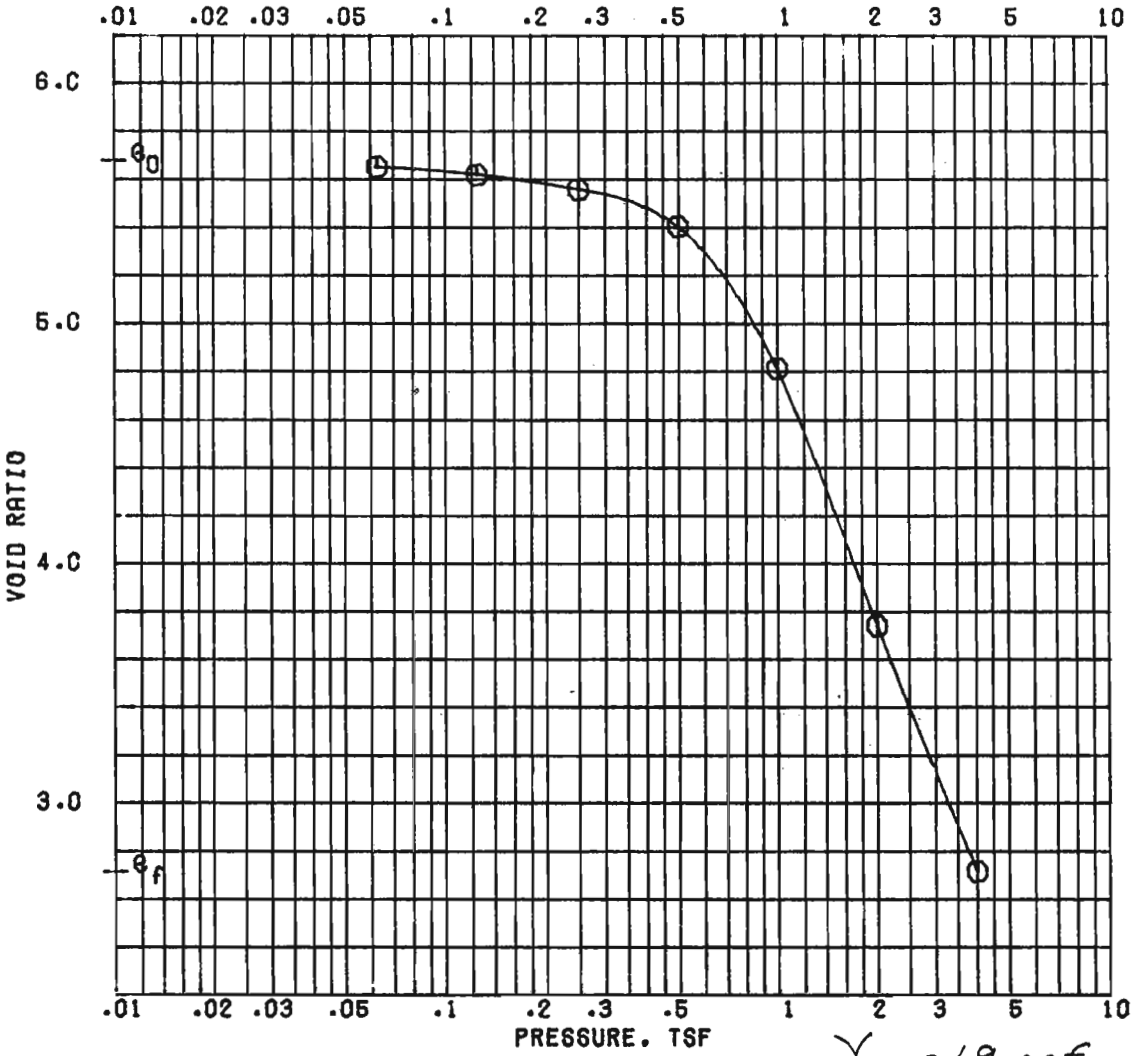
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	78.8	78.4	80.4		79.2
	DRY DENSITY, PCF	53.4	53.3	51.0		
	SATURATION, %	98.7	97.9	94.2		
	VOID RATIO	2.156	2.161	2.305		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.16	0.20	0.21		
	TIME TO FAILURE, MIN.	30	30	10		
	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: CLAY (CH), GRAY; ROOTS TO 3/4"

LL 111	PL 24	PI 87	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 8-SCU	SAMPLE NO. 3-C
	DEPTH/ELEV 8.7/-4.5	TECH. KOC
	LABORATORY USAE WES	DATE 17 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	



$\gamma_{SAT} = 69$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	333.2	172.7
PRECONSOL. PRESSURE, TSF	0.70	DRY DENSITY, PCF	15.9	28.6
COMPRESSION INDEX	3.46	SATURATION, %	99.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	5.672	2.709
DIA. IN 4.44	HT. IN 1.126	BACK PRESSURE, TSF		

CLASSIFICATION PEAT (PT), BROWN

LL 341	PL 143	PI 198	PROJECT LK PONT & VIC HURR PROT
GS 1.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 8-SCU	SAMPLE NO. 5-C
		DEPTH/ELEV 17.1/-12.9	DATE 18 MAR 87

CONSOLIDATION TEST REPORT

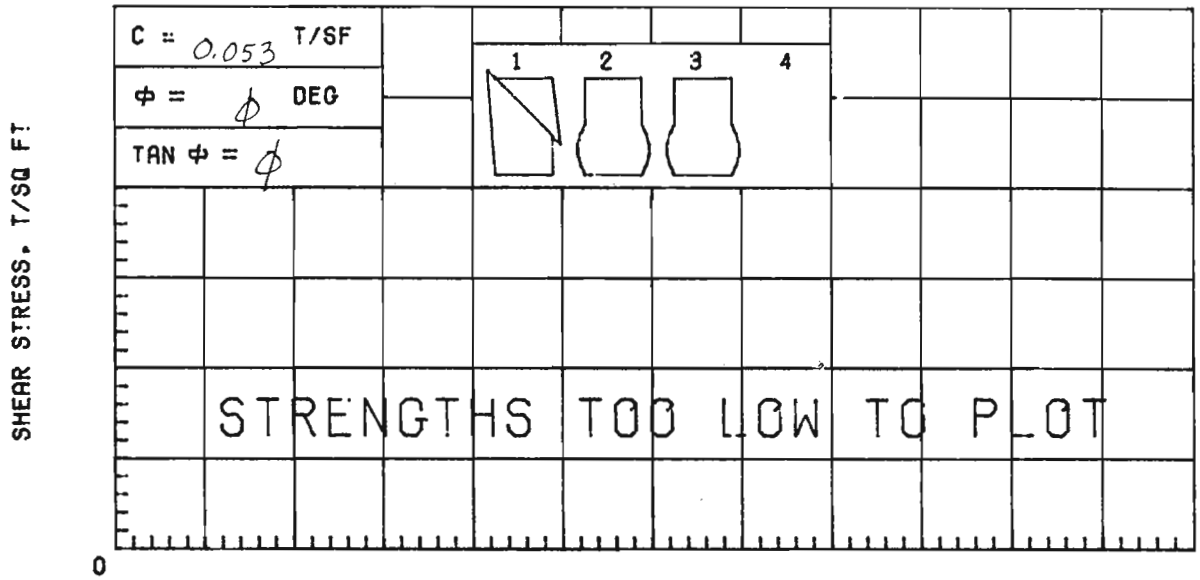
SHEET 1 OF 8

9

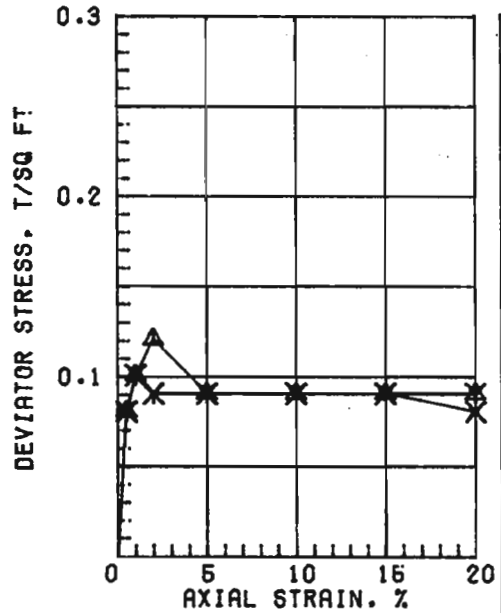
C = 0.053 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 97 pcf



	SPECIMEN NO.	▲1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	73.9	76.1	74.2		74.7
	DRY DENSITY, PCF	55.8	55.0	55.4		
	SATURATION, %	98.8	99.5	98.2		
	VOID RATIO	2.021	2.065	2.041		
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	0.10	0.10		
	TIME TO FAILURE, MIN.	4	7	9		
	RATE OF STRAIN INCR.%		3	3		
	INITIAL DIAMETER, IN.	1.39	1.39	1.39		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SHELL PARTICLES

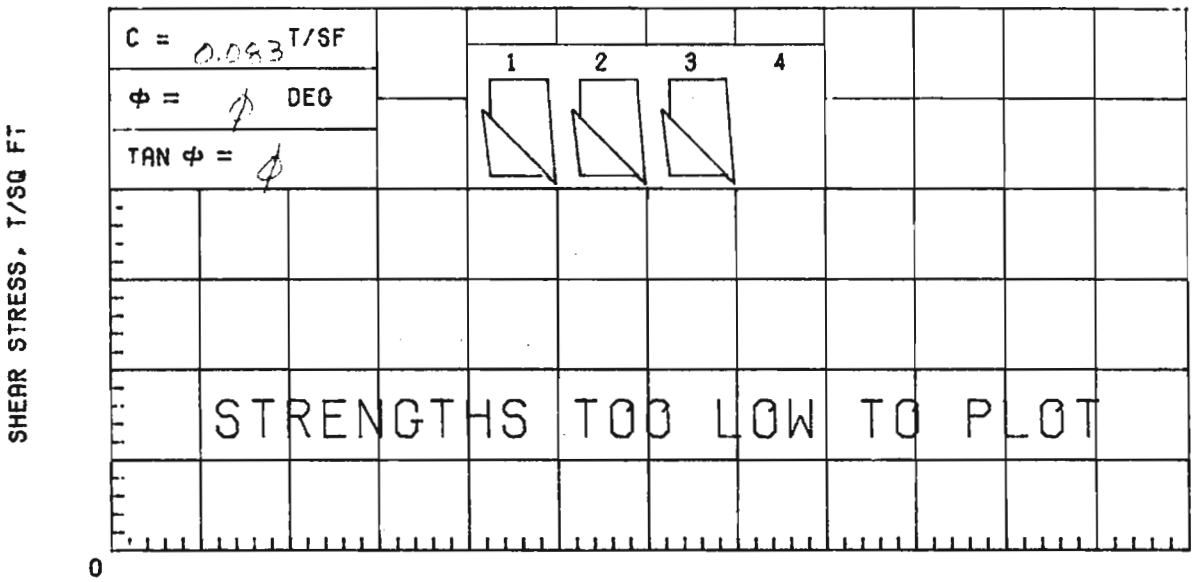
LL 68	PL 20	PI 48	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 8-SCU / SAMPLE NO. 6-B
	DEPTH/ELEV 19.8/-15.6 / TECH. KOC
	LABORATORY USAE WES / DATE 17 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT

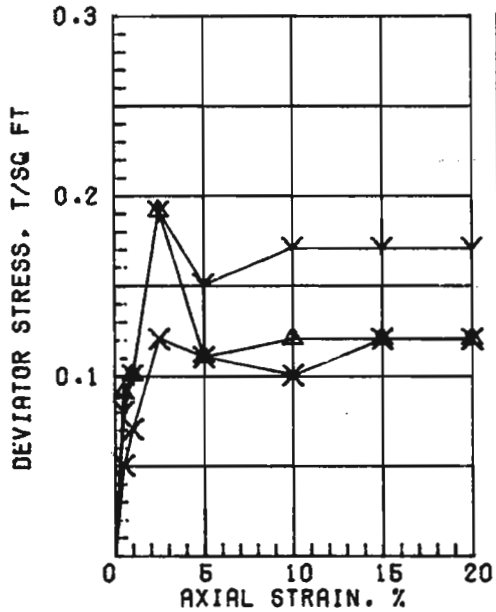
C = 0.083 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 100 pcf



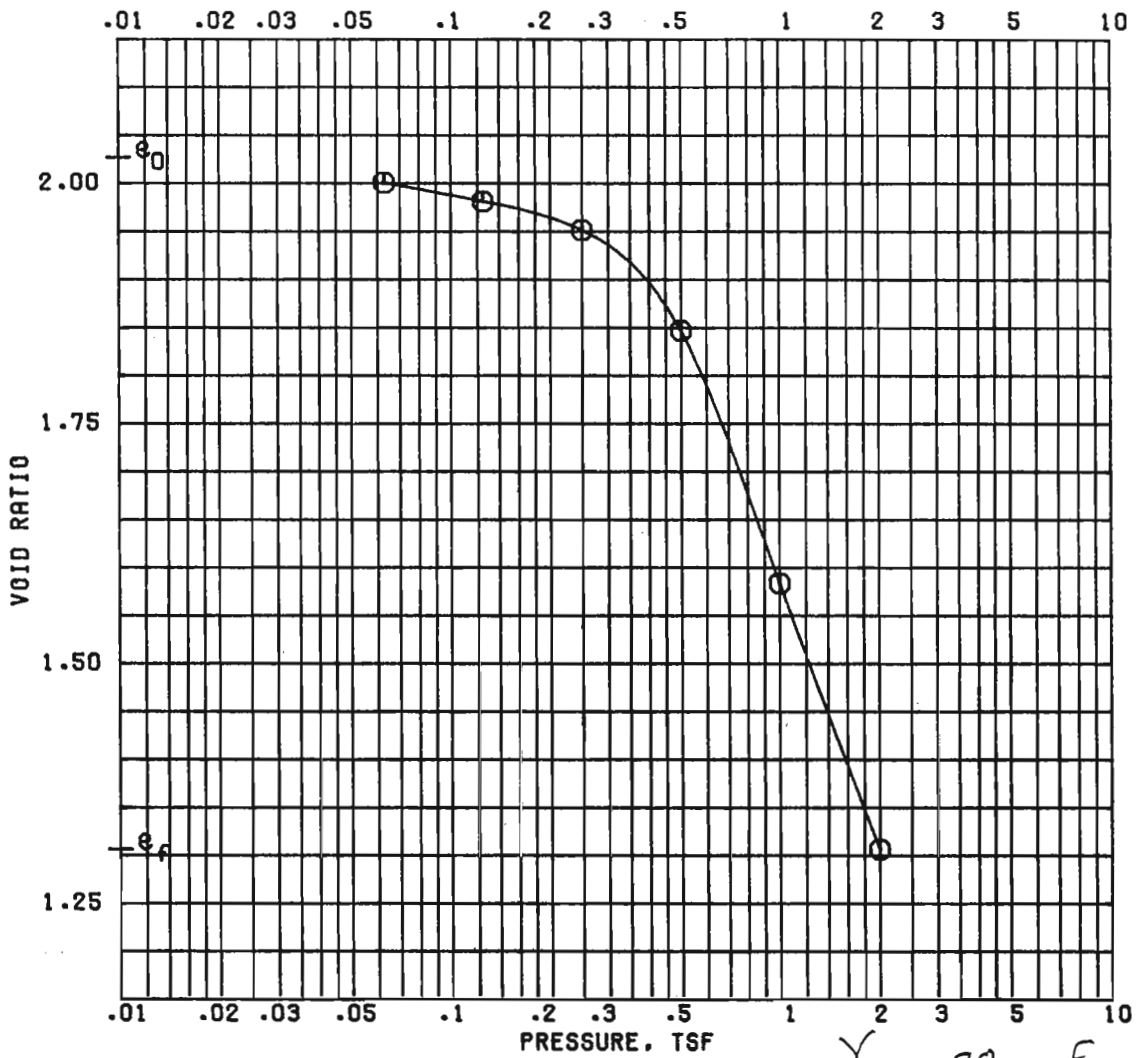
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	71.3	61.5	65.0		65.9
	DRY DENSITY, PCF	56.4	62.3	59.8		
	SATURATION, %	96.9	97.3	96.5		
	VOID RATIO	1.987	1.707	1.818		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.19	0.19	0.12		
	TIME TO FAILURE, MIN.	5	15	15		
	RATE OF STRAIN INCR.%		6	6		
	INITIAL DIAMETER, IN.	1.39	1.40	1.40		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; 1/4" SILT LAYERS

LL 61	PL 19	PI 42	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: LIMITS ON MIXTURE OF MATERIALS.	PROJECT LK PCNT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 8-SCU / SAMPLE NO. 7-B
	DEPTH/ELEV 24.4/-20.2 / TECH. KOC
	LABORATORY USAE WES / DATE 18 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 98 pcf

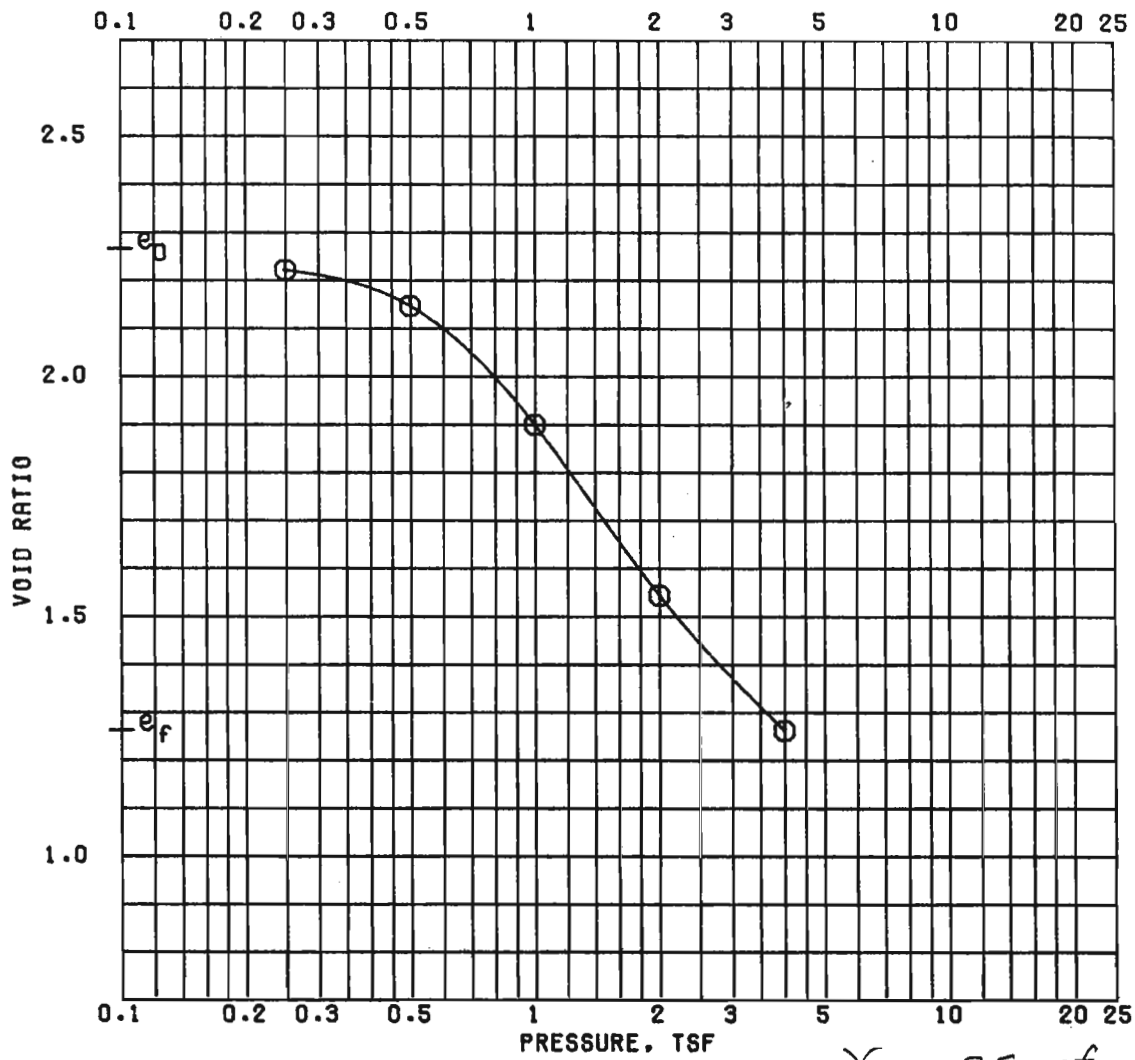
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	75.0	49.3
PRECONSOL. PRESSURE, TSF	0.43	DRY DENSITY, PCF	55.7	73.1
COMPRESSION INDEX	0.92	SATURATION, %	99.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.025	1.305
DIA. IN 4.44	HT. IN 1.126	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CH), GRAY; SILT LENSES		
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 8-SCU	SAMPLE NO. 7-C
		DEPTH/ELEV 24.9/-20.7	DATE 20 MAR 87

CONSOLIDATION TEST REPORT

SHEET 1 OF 7

9



$\gamma_{SAT} = 95$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	84.3	48.6
PRECONSOL. PRESSURE, TSF	0.72	DRY DENSITY, PCF	51.7	74.6
COMPRESSION INDEX	1.28	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.263	1.259
DIA. IN 4.44	HT. IN 1.120	BACK PRESSURE, TSF		

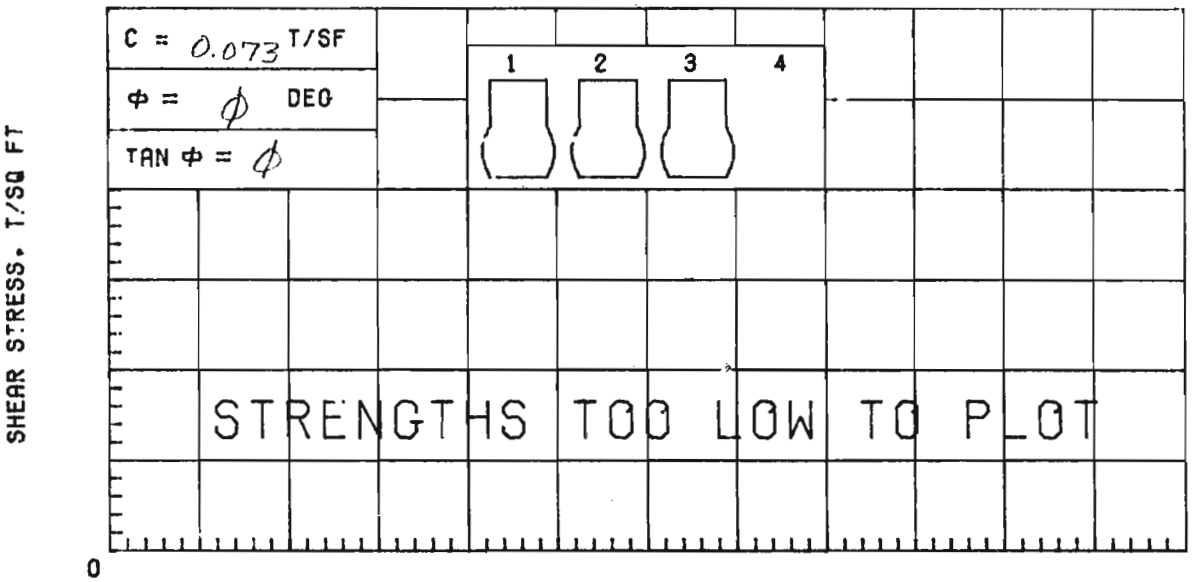
CLASSIFICATION	CLAY (CH), GRAY		
LL 69	PL 21	PI 48	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 8-SCU / SAMPLE NO. 9-B
			DEPTH/ELEV 31.6/-27.4 / DATE 21 MAR 87

CONSOLIDATION TEST REPORT

C = 0.073 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



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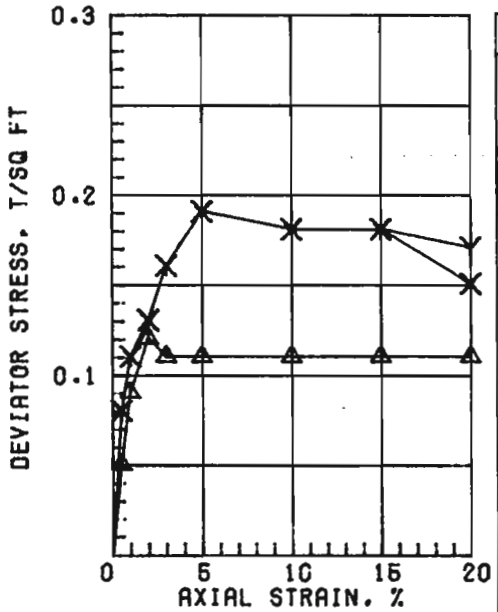


SPECIMEN NO.		△1	Y2	X3	4
INITIAL	WATER CONTENT, %	57.8	53.6	55.0	
	DRY DENSITY, PCF	64.9	67.3	66.6	
	SATURATION, %	97.8	96.2	97.0	
	VOID RATIO	1.595	1.505	1.531	
BEFORE SHEAR	WATER CONTENT, %				
	DRY DENSITY, PCF				
	SATURATION, %				
	VOID RATIO				
	BACK PRESS., TSF				
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	
MAX. DEV. STRESS, TSF		0.12	0.16	0.16	
TIME TO FAILURE, MIN.		4	23	18	
RATE OF STRAIN INCR.%			4	4	
INITIAL DIAMETER, IN.		1.40	1.40	1.40	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

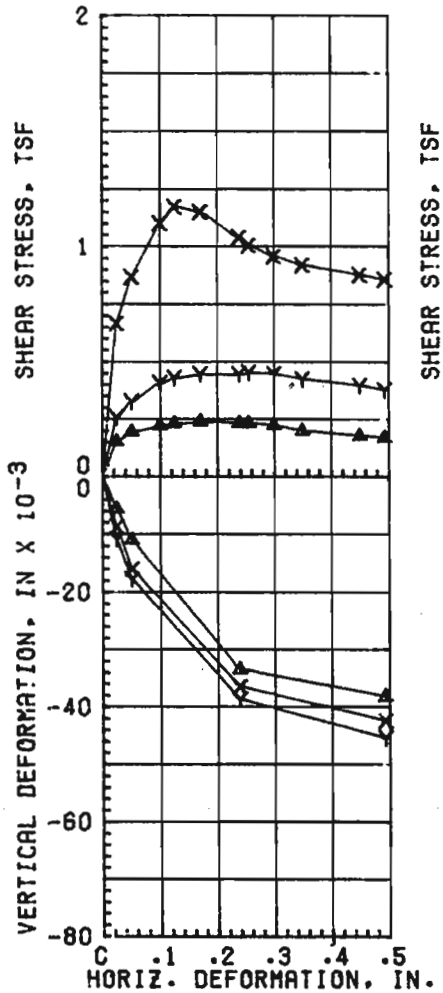
AVE 55.5

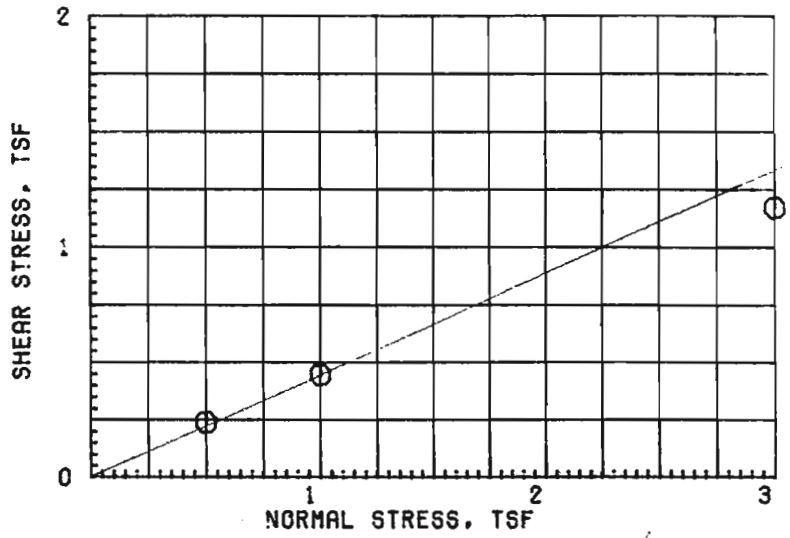
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES

LL 57	PL 19	PI 38	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 8-SCU	SAMPLE NO. 9-C
	DEPTH/ELEV 33.0/-28.8	TECH. KOC
	LABORATORY USAE WES	DATE 19 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	





γ_{SAT} = 102

	TEST NO.	1 ▲	2 Y	3 X	
INITIAL	WATER CONTENT, %	52.4	66.6	61.9	
	VOID RATIO	1.580	1.837	1.755	
	SATURATION, %	89.4	97.9	95.2	
	DRY CENSITY, PCF	65.3	59.4	61.1	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	53.1	49.6	39.3	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		0.5	1.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.24	0.45	1.17	
TIME TO FAILURE, MIN		951	951	700	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

AVE 6

ϕ = 24°

TAN ϕ = 0.4452

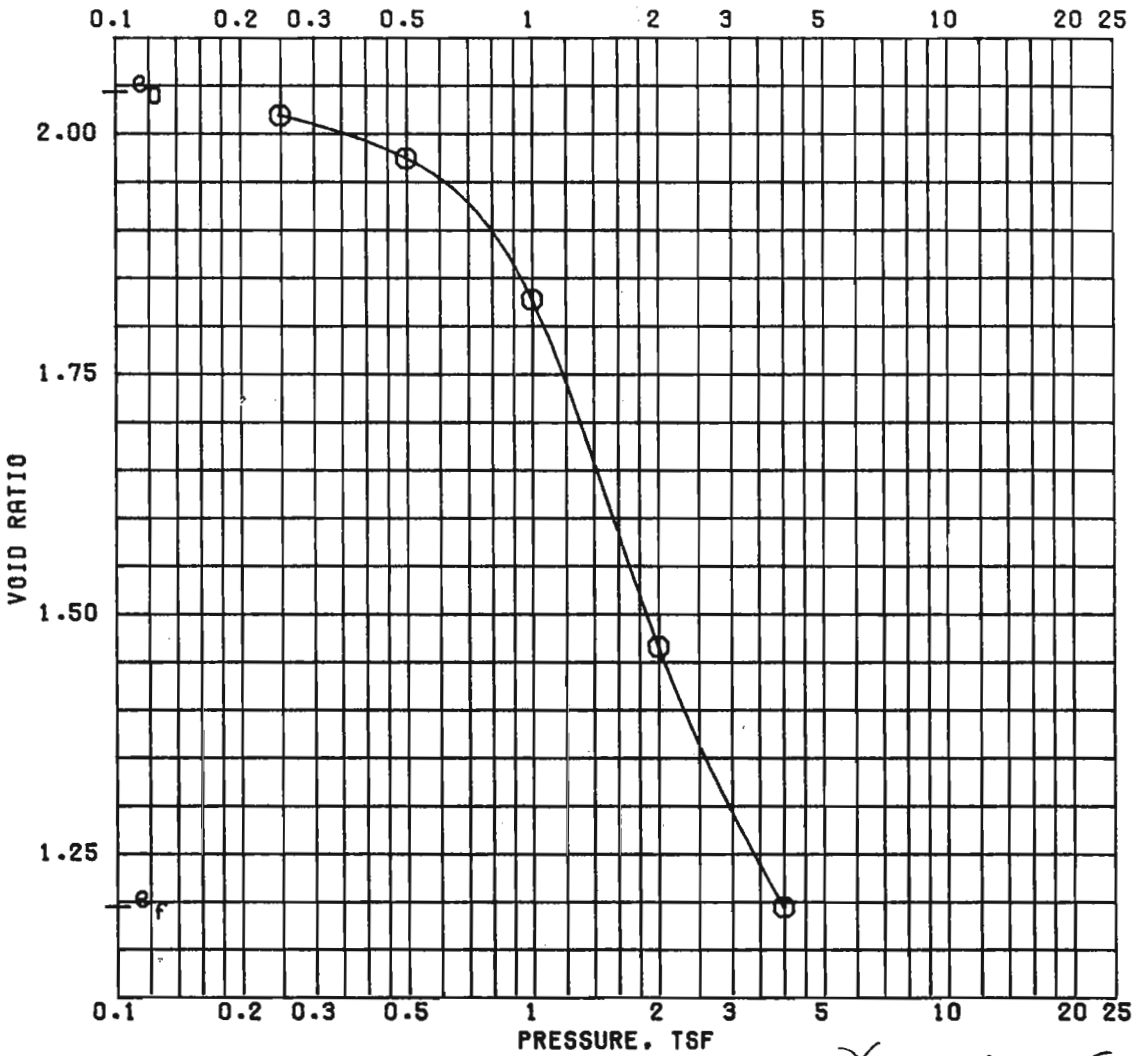
C = ϕ

TYPE SPECIMEN UNDISTURBED	3.00 IN. SQUARE	0.628 IN. THICK
CLASSIFICATION CLAY (CH), GRAY; FINE SAND POCKETS		

LL 61	PL 18	PI 43		GS 2.70 (EST)

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 8-SCU	SAMPLE 10-B
	DEPTH/ELEV 36.5/-32.3	DATE 22 APR 87

DIRECT SHEAR TEST REPORT



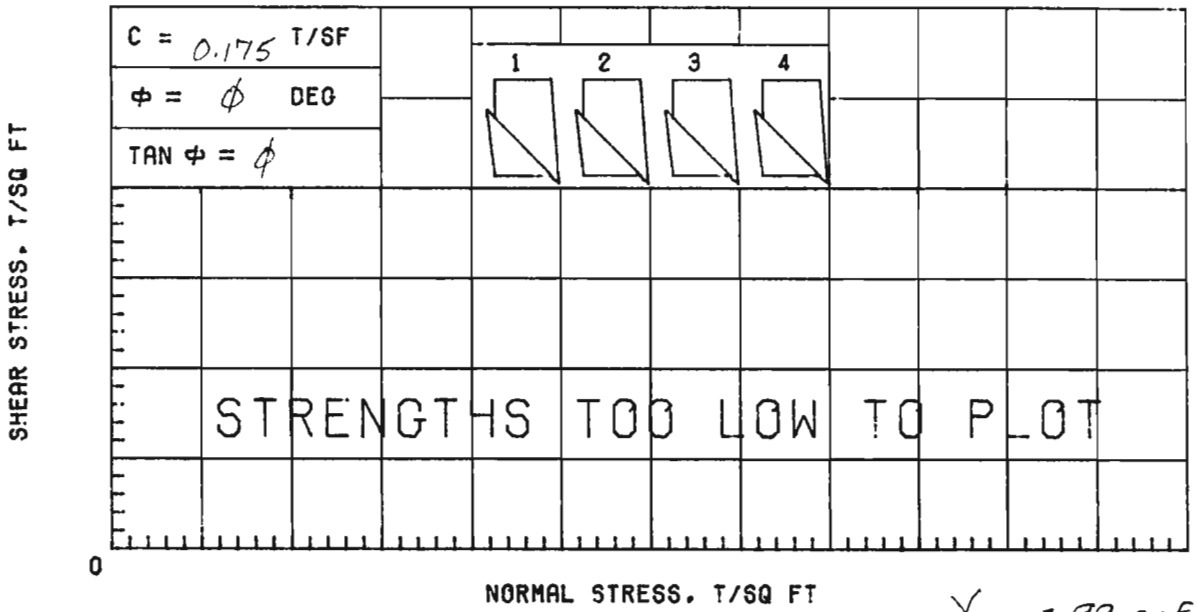
$\gamma_{SAT} = 97$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	75.1	47.4
PRECONSOL. PRESSURE, TSF	0.83	DRY DENSITY, PCF	55.4	76.9
COMPRESSION INDEX	1.12	SATURATION, %	99.3	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.042	1.193
DIA. IN 4.44	HT. IN 1.123	BACK PRESSURE, TSF		

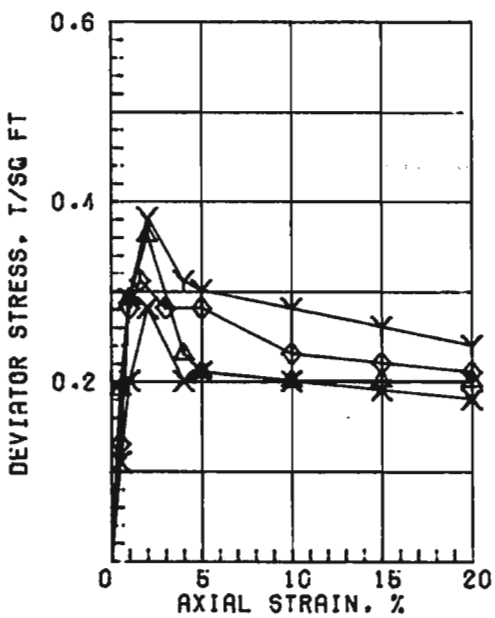
CLASSIFICATION CLAY (CH), GRAY

LL 88	PL 24	PI 64	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 8-SCU / SAMPLE NO. 11-B
			DEPTH/ELEV 40.5/-36.3 / DATE 18 MAR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 99 pcf



	SPECIMEN NO.	△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	68.0	70.9	68.2	70.7	69.5
	DRY DENSITY, PCF	59.2	57.6	58.4	57.3	
	SATURATION, %	99.5	99.4	97.7	98.4	
	VOID RATIO	1.846	1.926	1.885	1.940	
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	0.36	0.38	0.28	0.31	
	TIME TO FAILURE, MIN.	4	13	13	16	
	RATE OF STRAIN INCR.%		3	4	3	
	INITIAL DIAMETER, IN.	1.40	1.40	1.40	1.39	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 77	PL 23	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

PROJECT LK PONT & VIC HURR PROT

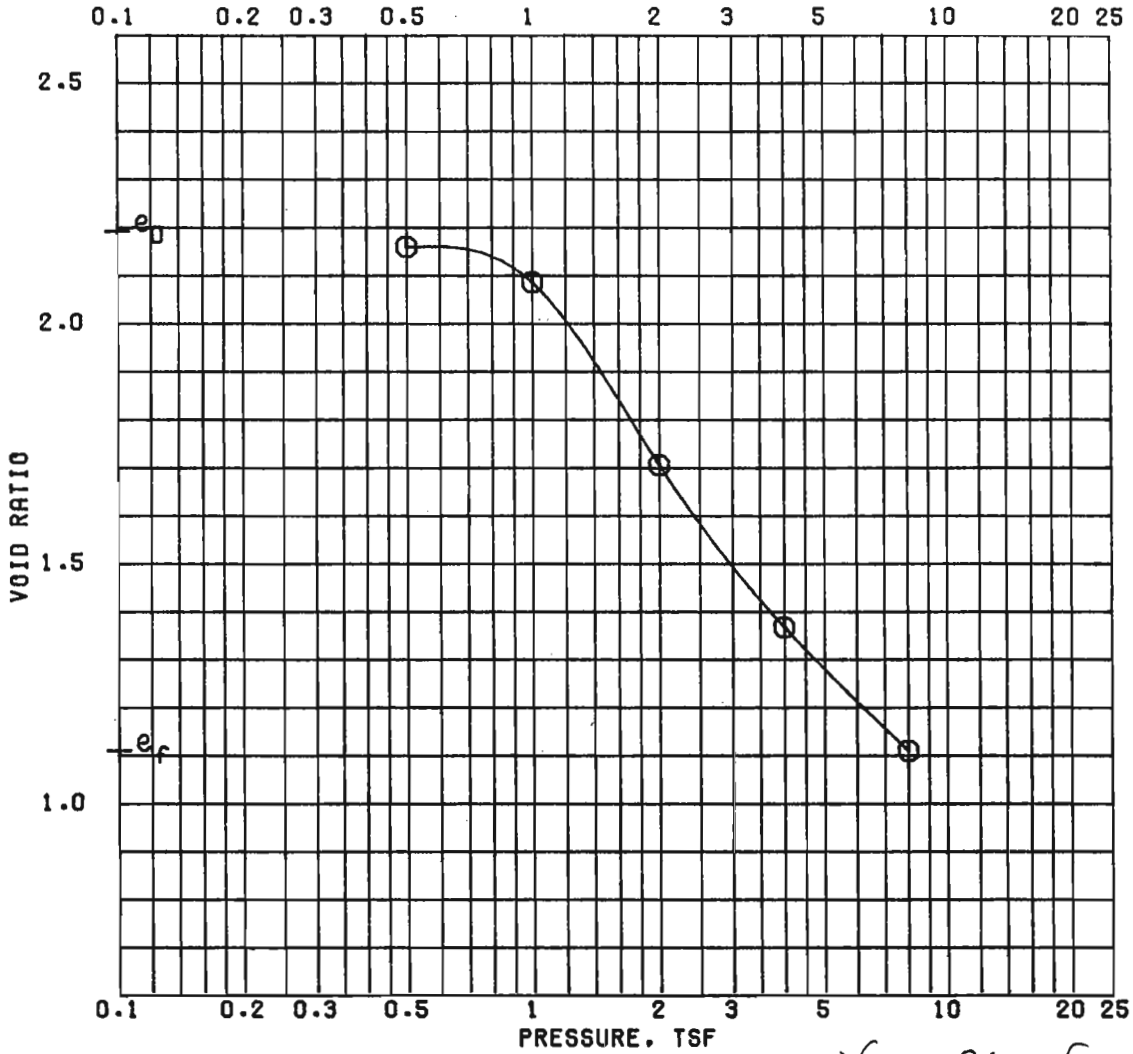
ST CHARLES PARISH

BORING NO. 8-SCU | SAMPLE NO. 11-C

DEPTH/ELEV 41.4/-37.2 | TECH. KOC

LABORATORY USAE WES | DATE 19 MAR 87

TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 96 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	80.9	44.1
PRECONSOL. PRESSURE, TSF	1.10	DRY DENSITY, PCF	52.9	80.0
COMPRESSION INDEX	0.98	SATURATION, %	99.8	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.189	1.107
DIA. IN 4.44	HT. IN 1.121	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

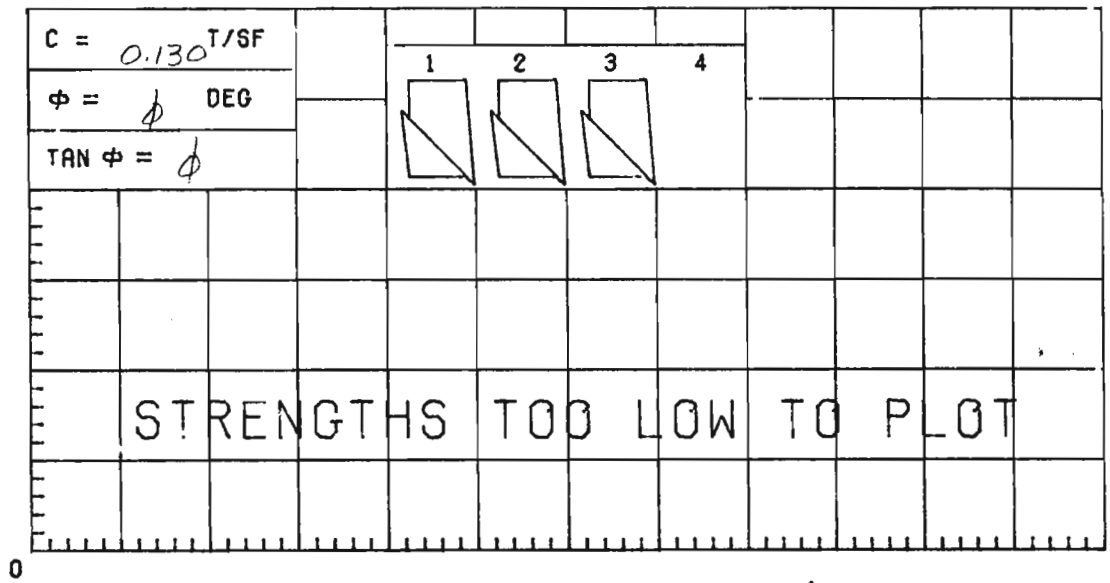
LL 100	PL 18	PI 82	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 8-SCU	SAMPLE NO. 14-B
		DEPTH/ELEV 52.5/-48.3	DATE 19 MAR 87

CONSOLIDATION TEST REPORT

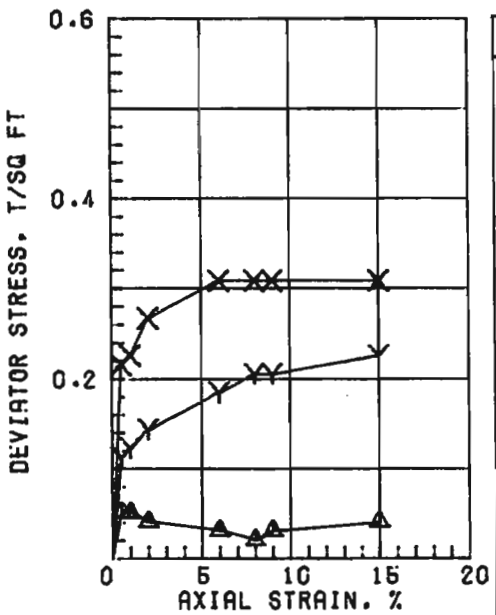
C = 0.130 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 99 pcf



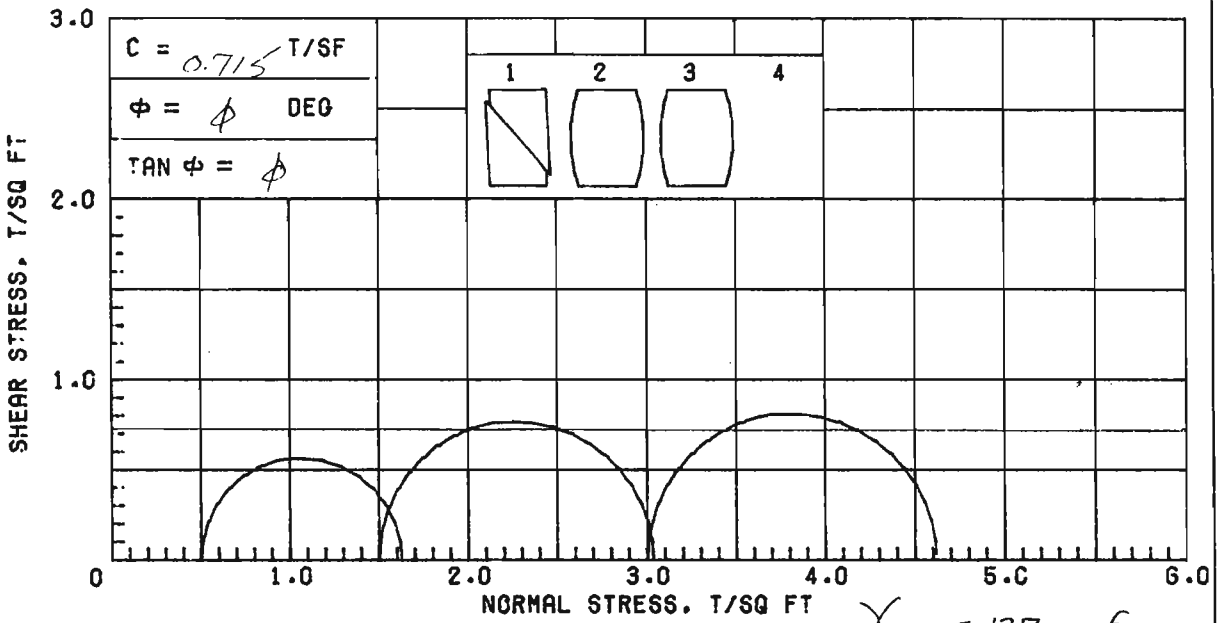
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	82.8	65.9	69.6		72.8
	DRY DENSITY, PCF	53.6	59.5	58.4		
	SATURATION, %	100+	97.0	99.7		
	VOID RATIO	2.144	1.834	1.885		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.05	0.21	0.31		
	TIME TO FAILURE, MIN.	1	45	24		
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.39	1.38	1.38		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

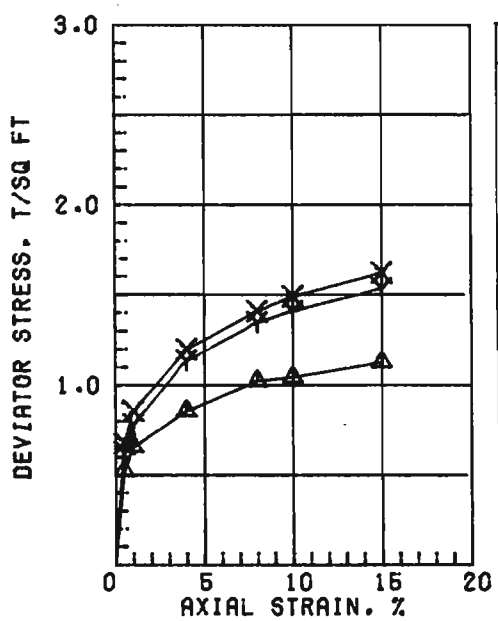
DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 79	PL 21	PI 58	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: SPECIMEN # 1 FROM	PROJECT LK PONT & VIC HURR PROT	
DIFFERENT LIFT.	ST CHARLES PARISH	
	BORING NO. 8-SCU	SAMPLE NO. 14-C
	DEPTH/ELEV 53.3/-49.1	TECH. BD
	LABORATORY USAE WES	DATE 27 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 127 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	19.5	21.4	20.6		20.5
	DRY DENSITY, PCF	102.2	100.6	105.6		
	SATURATION, %	81.2	85.5	93.2		
	VOID RATIO	0.649	0.675	0.596		
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	1.13	1.54	1.62		
	TIME TO FAILURE, MIN.	28	30	30		
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.37	1.37	1.39		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; FINE SAND POCKETS

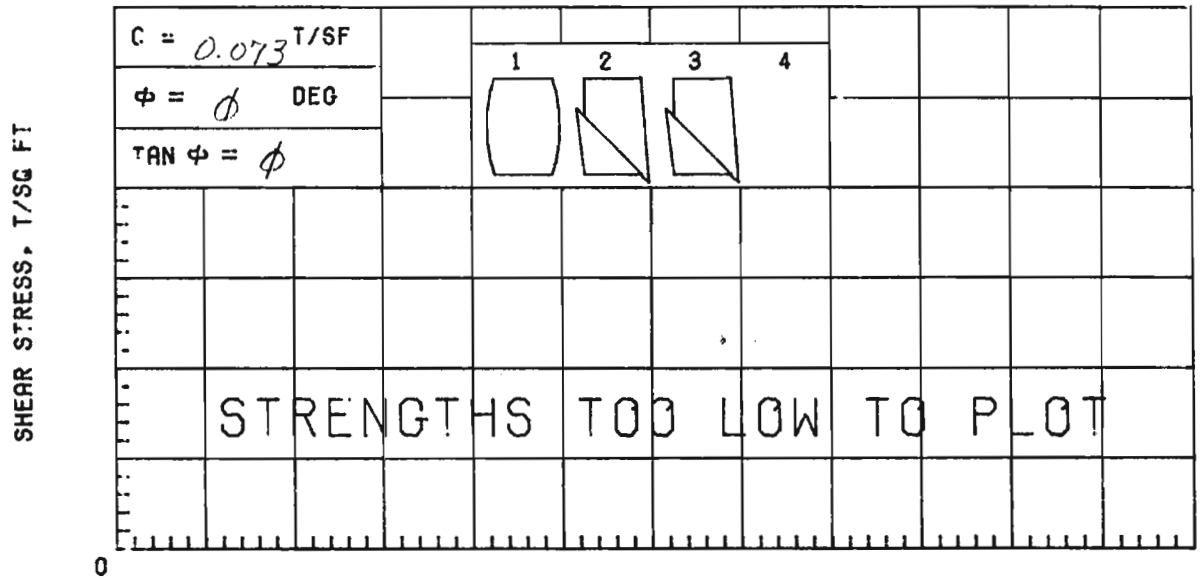
LL 38	PL 21	PI 17	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 8-SCU	SAMPLE NO. 16-C
	DEPTH/ELEV 61.1/-56.9	TECH. BD
	LABORATORY USAE WES	DATE 27 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	

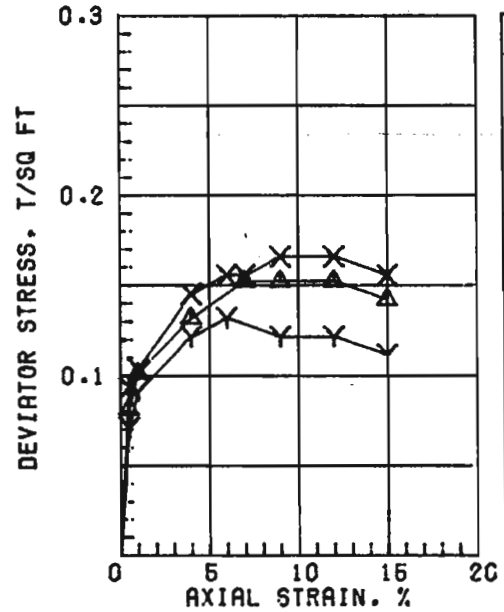
C = 0.073 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 89 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	100.5	107.7	112.0	
	DRY DENSITY, PCF	43.5	41.8	39.5	
	SATURATION, %	94.5	96.0	92.6	
	VOID RATIO	2.872	3.029	3.265	
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	0.13	0.16	
TIME TO FAILURE, MIN.		14	12	12	
RATE OF STRAIN INCR.%					
INITIAL DIAMETER, IN.		1.39	1.39	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

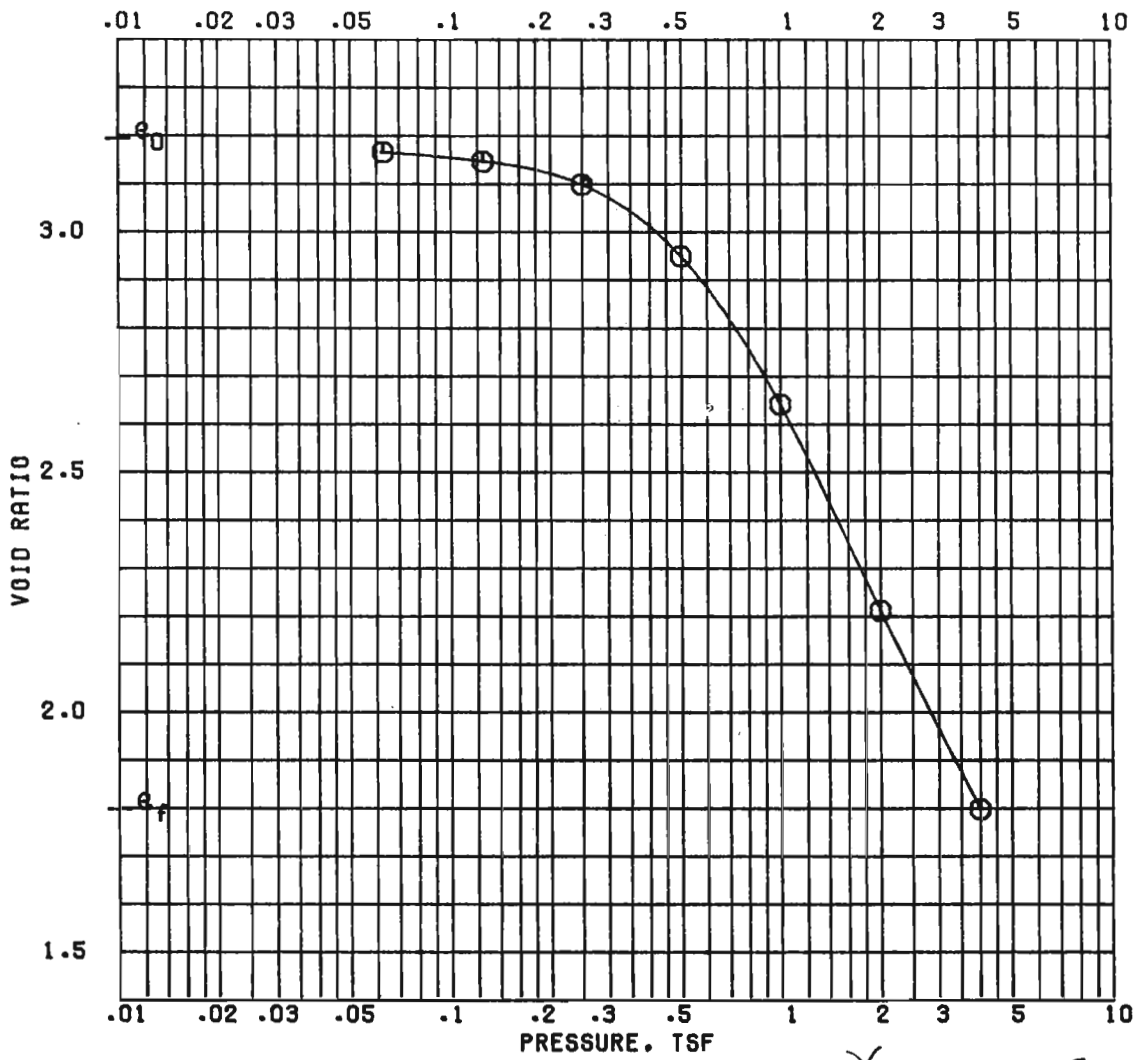
AVE 106.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

LL 140	PL 30	PI 110	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 9-SCU	SAMPLE NO. 3-B
	DEPTH/ELEV 8.4/~~[illegible]~~ -6.0	TECH. BD
	LABORATORY USAE WES	DATE 30 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	

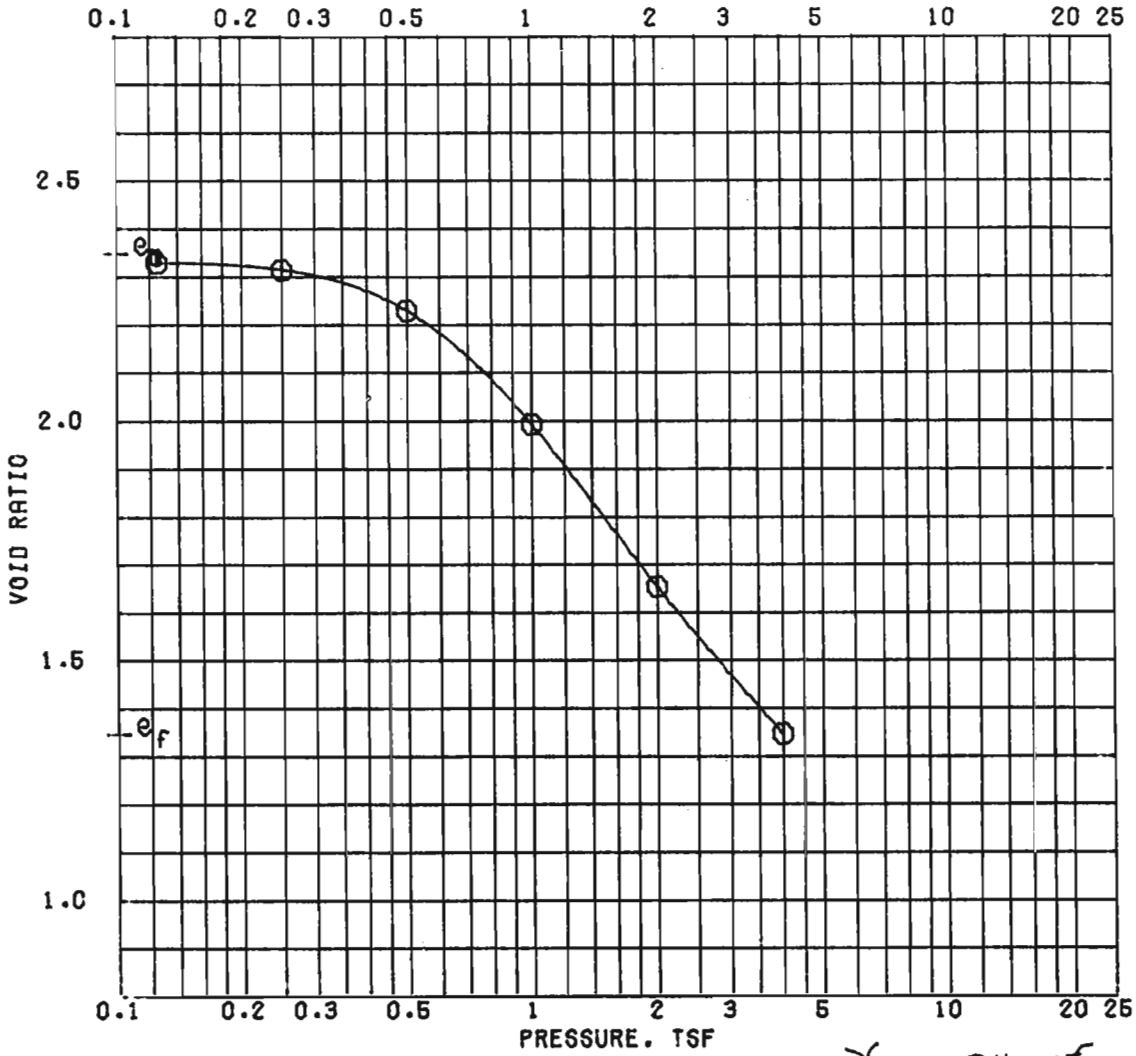


γ_{SAT} = 88 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	115.0	67.4
PRECONSOL. PRESSURE, TSF	0.55	DRY DENSITY, PCF	40.2	60.3
COMPRESSION INDEX	2.30	SATURATION, %	97.3	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	3.191	1.795
DIA. IN 4.44	HT. IN 1.121	BACK PRESSURE, TSF		

CLASSIFICATION	CLAY (CH), GRAY; ORGANIC MATERIAL			
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 9-SCU	SAMPLE NO. 3-C
			DEPTH/ELEV 8.8/~~+1.7~~ -6.4	DATE 24 MAR 87

CONSOLIDATION TEST REPORT



$\gamma_{SAT} = 94$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	86.6	51.4
PRECONSOL. PRESSURE, TSF	0.6	DRY DENSITY, PCF	50.4	71.9
COMPRESSION INDEX	1.15	SATURATION, %	99.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.345	1.343
DIA. IN 4.44	HT. IN 1.122	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

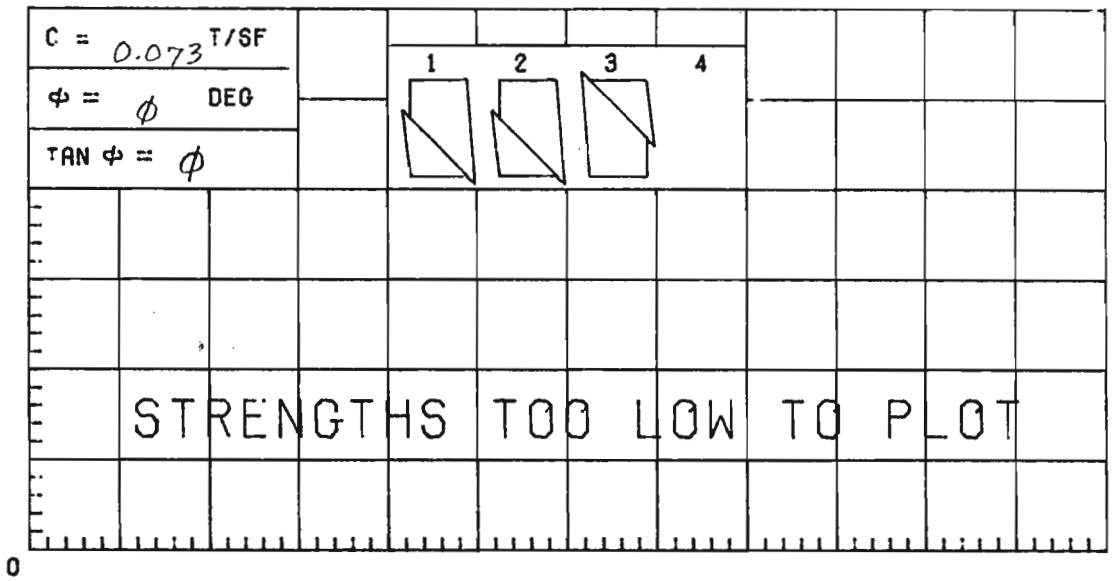
LL 99	PL 25	PI 74	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 9-SCU	SAMPLE NO. 5-B
		DEPTH/ELEV 16.5/~~-6.0~~ -14.1	DATE 24 MAR 87

CONSOLIDATION TEST REPORT

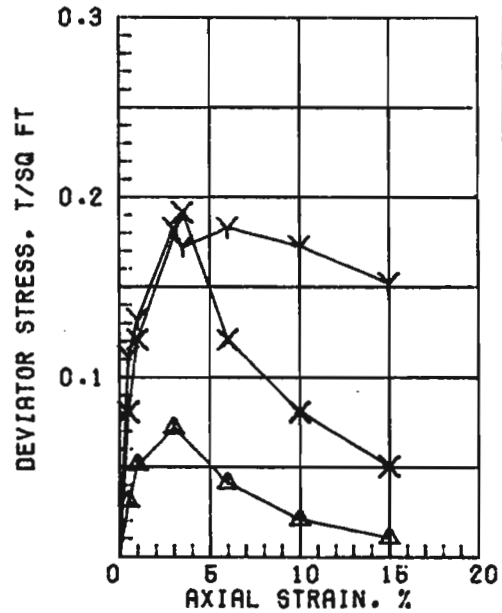
C = 0.073 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



$\gamma_{SAT} = 81$ pcf



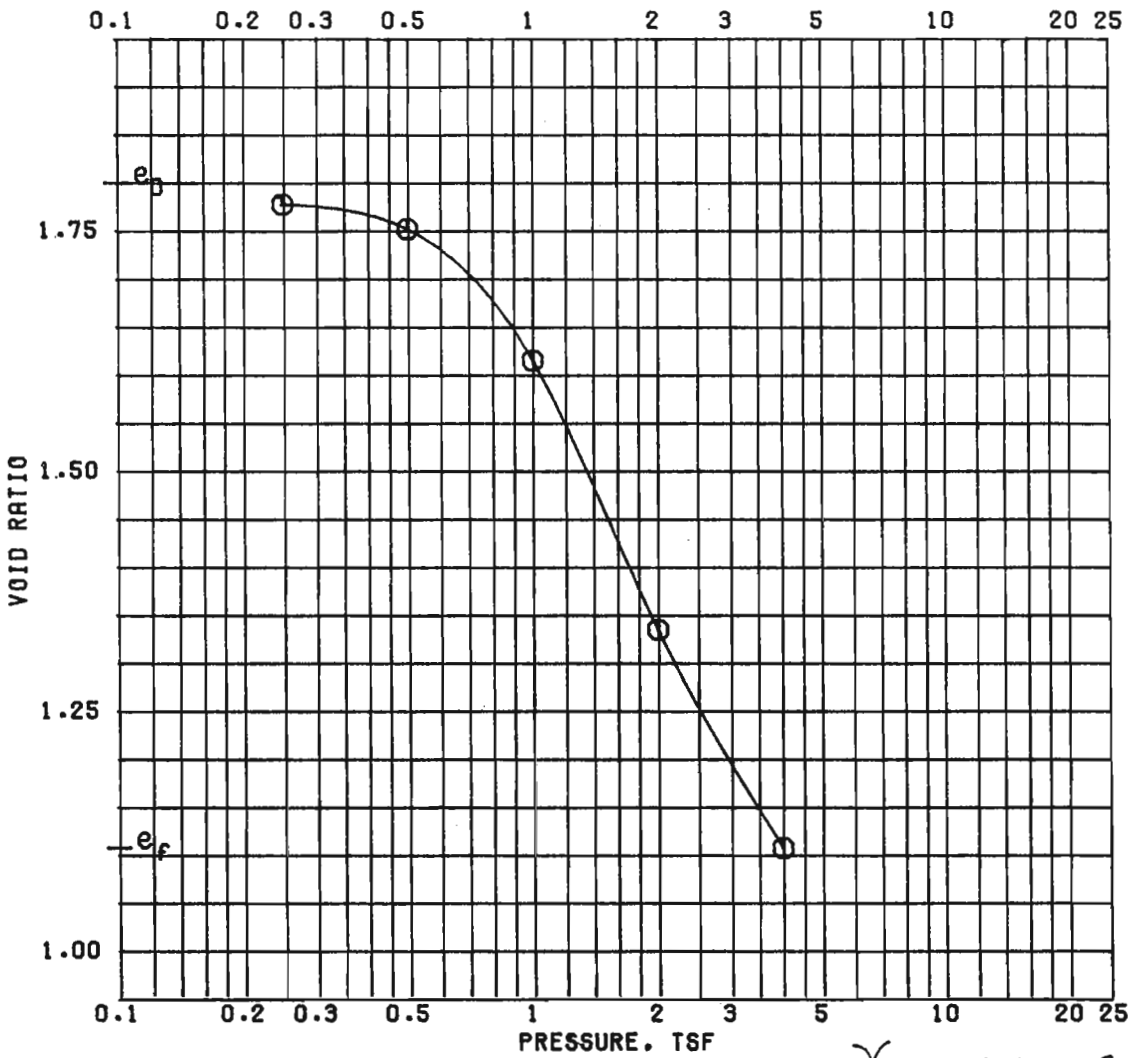
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	172.0	173.3	155.2		166.8
	DRY DENSITY, PCF	29.4	28.7	30.9		
	SATURATION, %	98.1	96.0	94.0		
	VOID RATIO	4.736	4.874	4.461		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.07	0.18	0.19		
	TIME TO FAILURE, MIN.	6	12	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: CLAY (CH), DARK GRAY; ORGANIC MATERIAL

L.L. 213	PL. 35	PI 178	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 9-SCU	SAMPLE NO. 5-C
	DEPTH/ELEV 17.4/~~-8.9~~ -15.0	TECH. BD
	LABORATORY USAE WES	DATE 30 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 101 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	67.0	42.5
PRECONSOL. PRESSURE, TSF	0.80	DRY DENSITY, PCF	60.2	80.0
COMPRESSION INDEX	0.95	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.798	1.106
DIA. IN 4.44	HT. IN 1.113	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

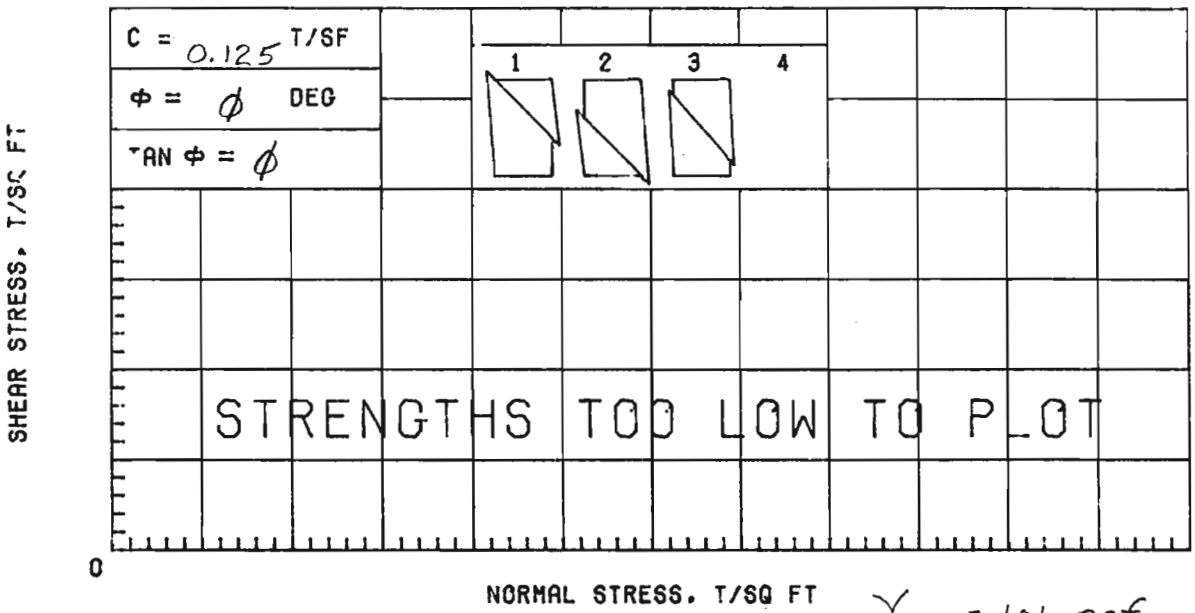
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 9-SCU / SAMPLE NO. 7-B
			DEPTH/ELEV 24.4/-~~13.9~~ -22.0 / DATE 25 MAR 87

CONSOLIDATION TEST REPORT

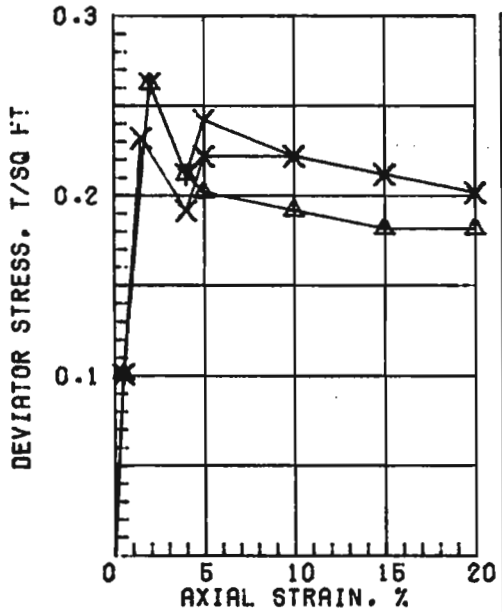
C = 0.125 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 101 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	64.4	64.8	63.0		64.1
	DRY DENSITY, PCF	61.5	60.9	62.5		
	SATURATION, %	100.0	99.1	100+		
	VOID RATIO	1.739	1.766	1.696		
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	0.26	0.23		
	TIME TO FAILURE, MIN.	4	14	11		
	RATE OF STRAIN INCR.%		4	4		
	INITIAL DIAMETER, IN.	1.39	1.39	1.39		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES

LL 63	PL 22	PI 41	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: LIMITS ON MIXTURE OF MATERIALS.

PROJECT LK PONT & VIC HURR PROT

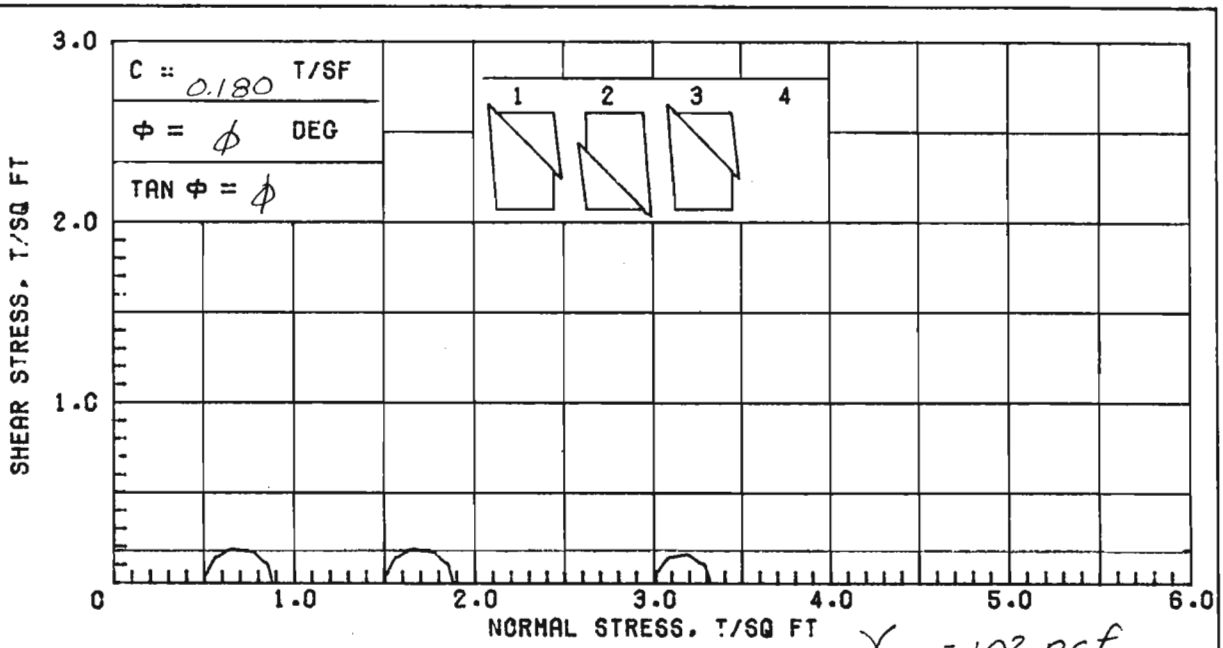
ST CHARLES PARISH

BORING NO. 9-SCU — SAMPLE NO. 7-C

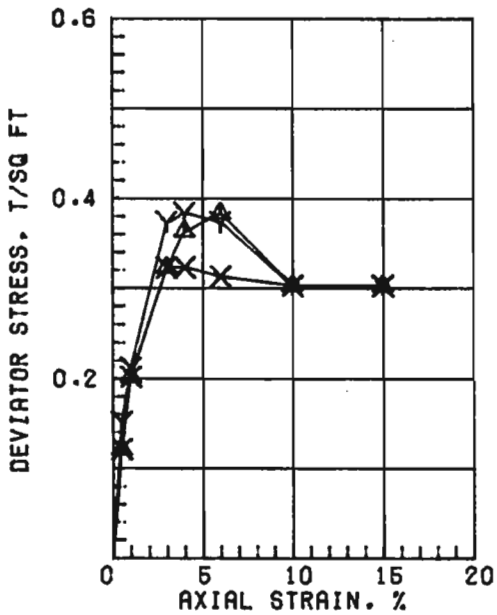
DEPTH/ELEV 25.3/-~~14.8~~ 22.9 — TECH. KOC

LABORATORY USAE WES — DATE 30 MAR 87

TRIAXIAL COMPRESSION TEST REPORT



γ_{SAT} = 102 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	59.1	61.6	60.1	
	DRY DENSITY, PCF	63.9	62.5	63.9	
	SATURATION, %	97.5	98.0	99.0	
	VOID RATIO	1.637	1.697	1.639	
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	0.38	0.38	0.32	
	TIME TO FAILURE, MIN.	12	8	17	
	RATE OF STRAIN INCR.%			5	
	INITIAL DIAMETER, IN.	1.39	1.39	1.39	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

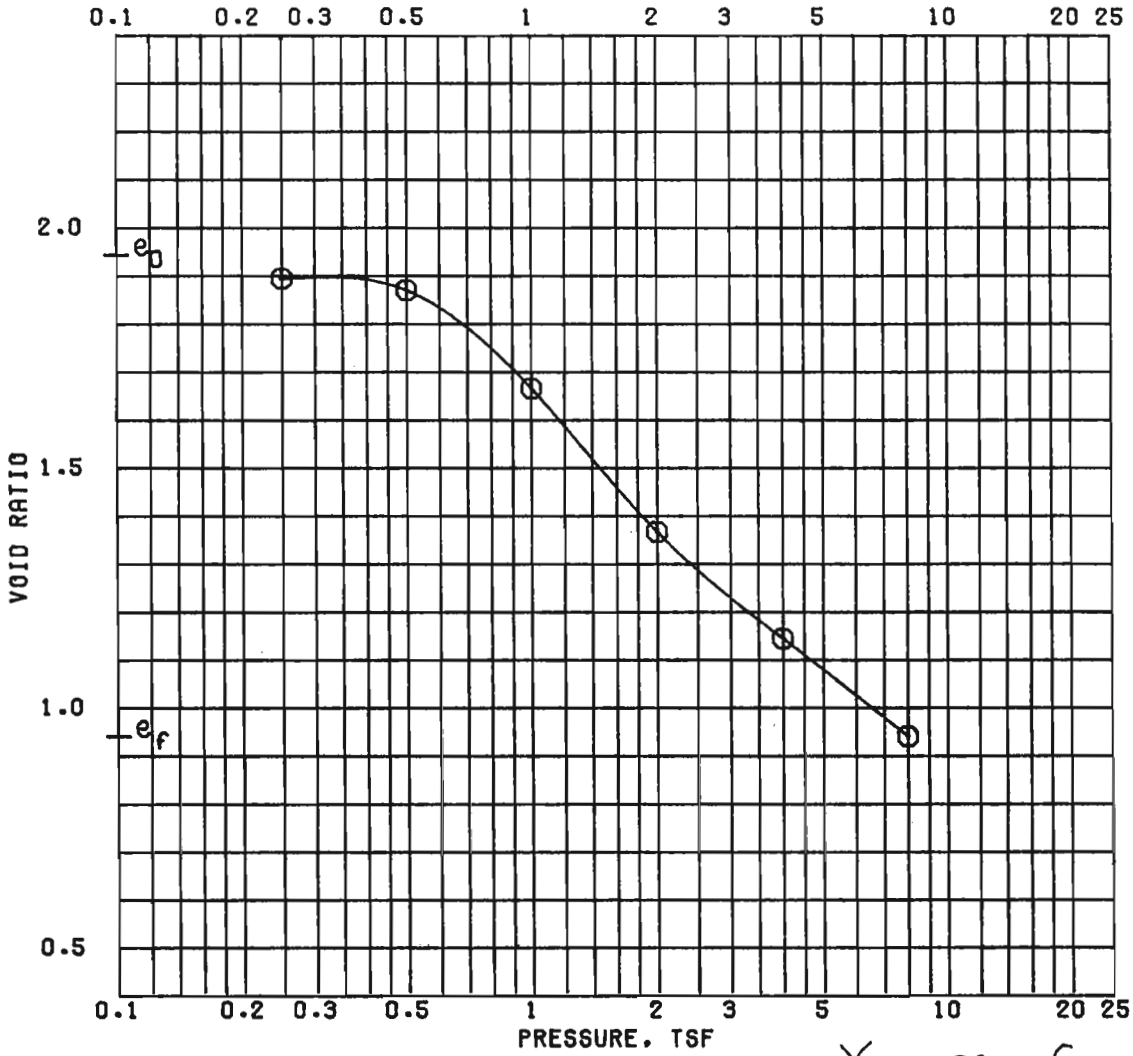
AVE 60.3

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES

LL 66	PL 22	PI 44	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 9-SCU / SAMPLE NO. 10-B
	DEPTH/ELEV 36.1/~~-25.6~~ -33.7 / TECH. KCC
	LABORATORY USAE WES / DATE 30 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT

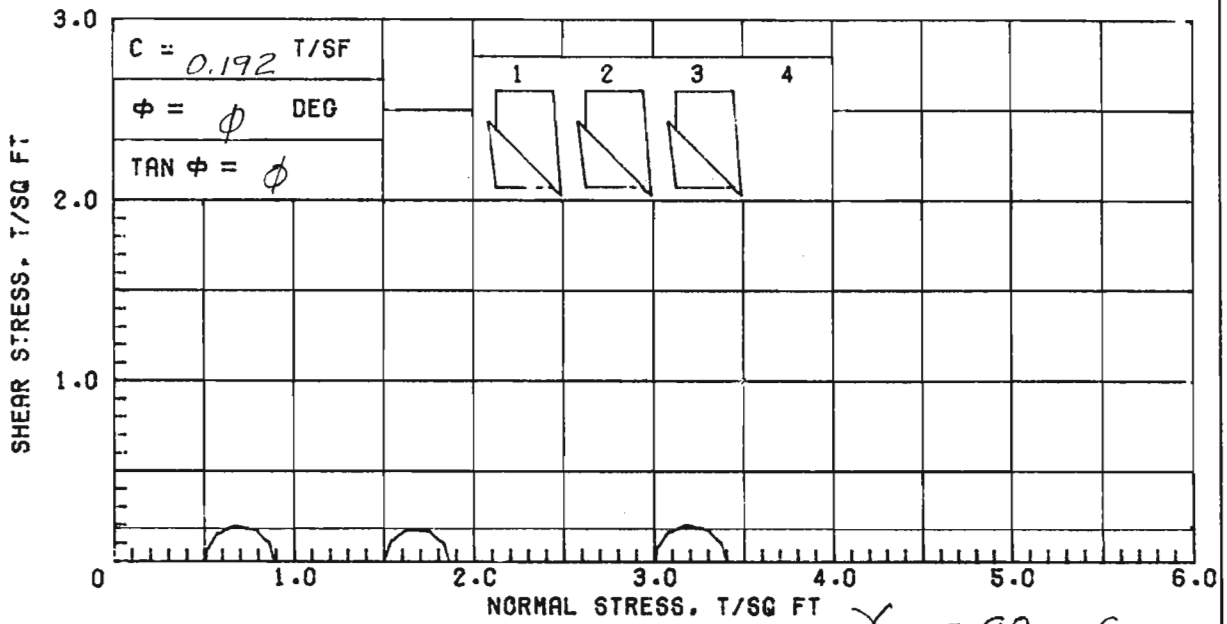


γ_{SAT} = 98 pcf

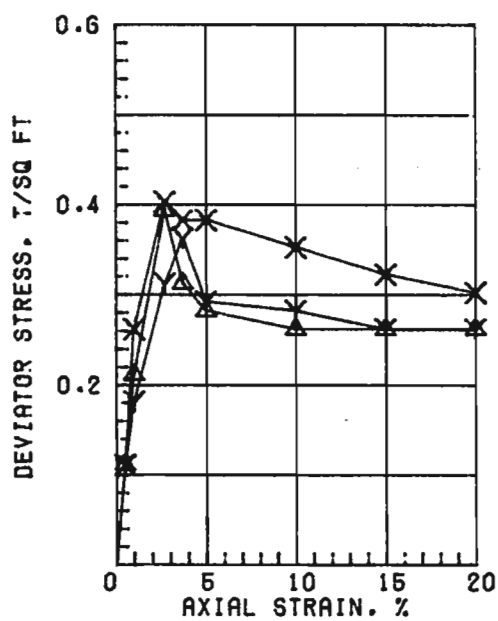
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	70.2	37.6
PRECONSOL. PRESSURE, TSF	0.67	DRY DENSITY, PCF	57.3	87.0
COMPRESSION INDEX	0.97	SATURATION, %	97.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.940	0.938
DIA. IN 4.44	HT. IN 1.116	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY			
LL 80	PL 23	PI 57	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 9-SCU / SAMPLE NO. 10-C
			DEPTH/ELEV 37.3/~~-26.8~~ -34.9 / DATE 24 MAR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 98 pcf



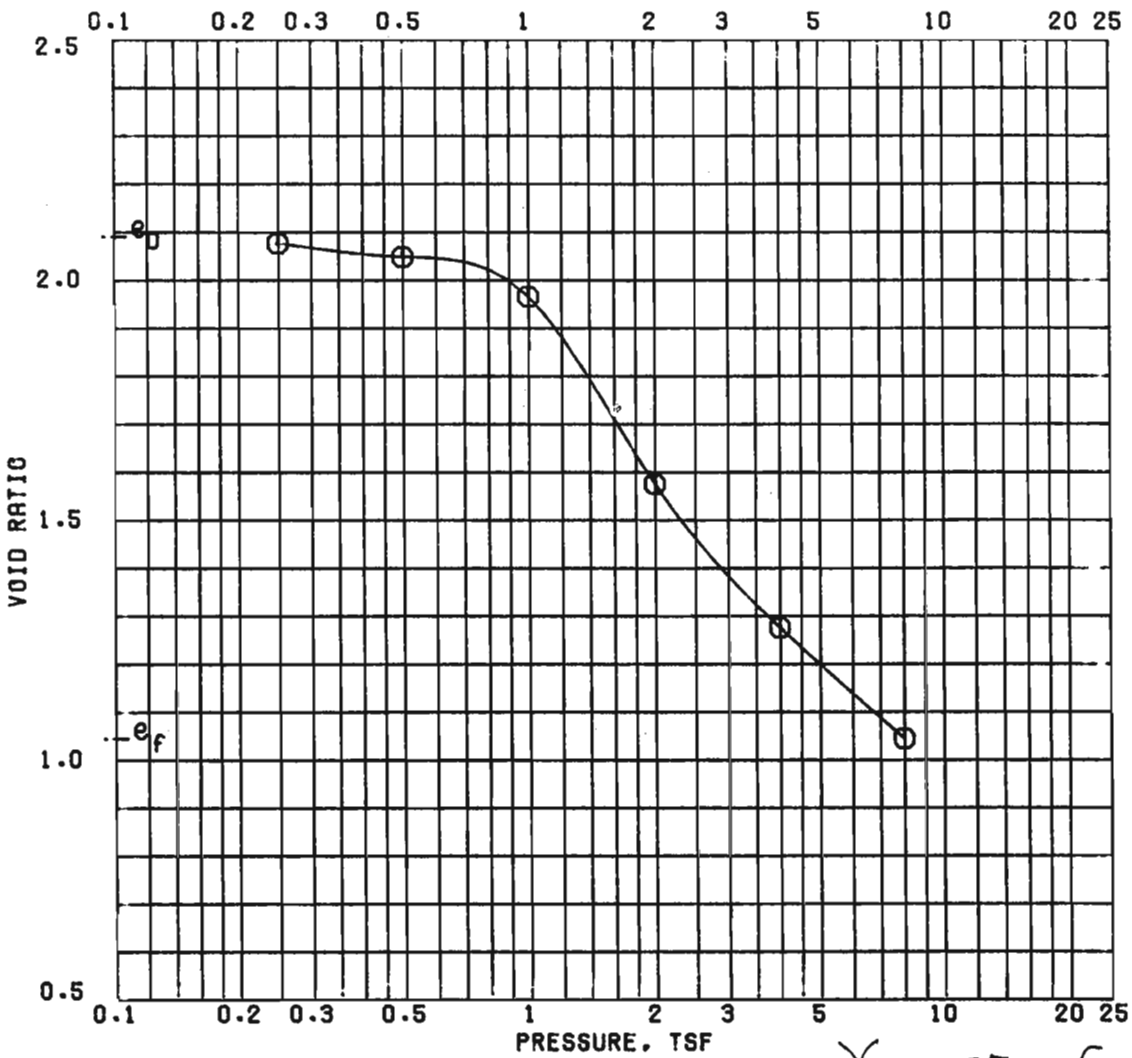
	SPECIMEN NO.	Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	71.0	74.1	73.1		72.7
	DRY DENSITY, PCF	57.3	55.6	56.6		
	SATURATION, %	98.8	98.5	99.7		
	VOID RATIO	1.941	2.031	1.980		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0		
	MAX. DEV. STRESS, TSF	0.39	0.36	0.40		
	TIME TO FAILURE, MIN.	5	22	16		
	RATE OF STRAIN INCR.%		5	5		
	INITIAL DIAMETER, IN.	1.39	1.39	1.39		
	INITIAL HEIGHT, IN.	3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES

LL 83	PL 23	PI 60	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 9-SCU / SAMPLE NO. 12-B
	DEPTH/ELEV 44.4/~~-33.9~~ -42.0 / TECH. KCC
	LABORATORY USAE WES / DATE 31 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



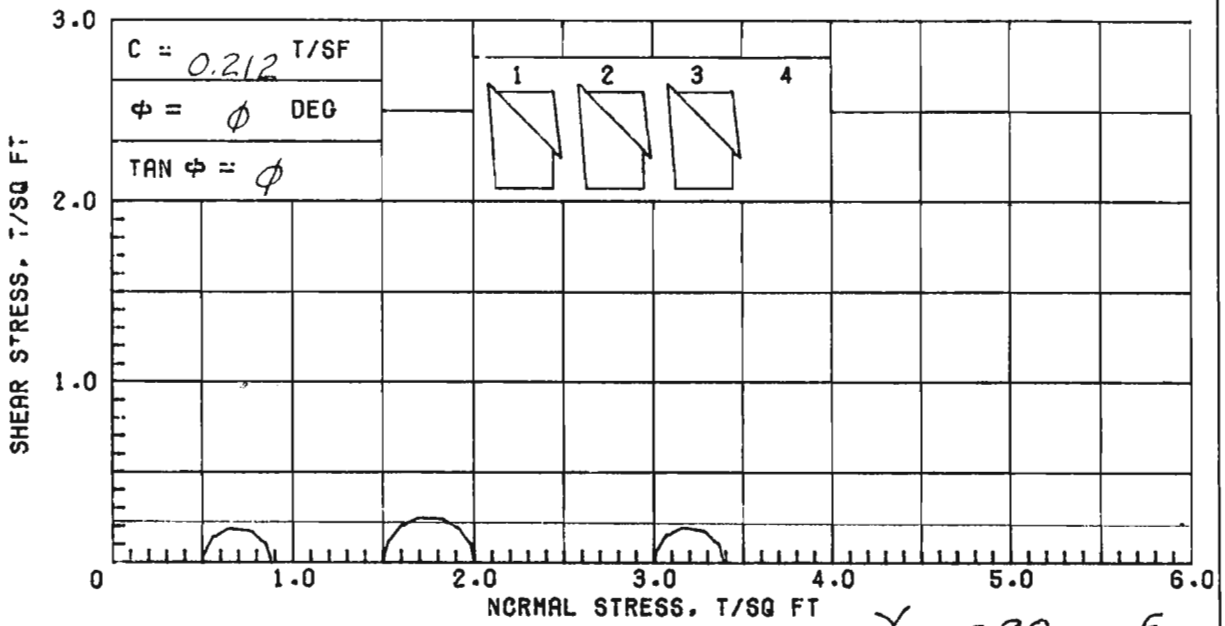
γ_{SAT} = 97 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	76.3	41.1
PRECONSOL. PRESSURE, TSF	1.0	DRY DENSITY, PCF	54.6	82.6
COMPRESSION INDEX	1.4	SATURATION, %	98.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.087	1.041
DIA. IN 4.44	HT. IN 1.118	BACK PRESSURE, TSF		

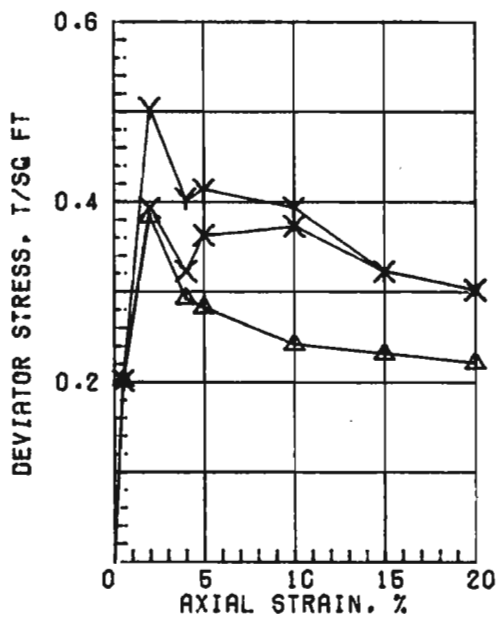
CLASSIFICATION CLAY (CH), GRAY

LL	PL	PI	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 9-SCU / SAMPLE NO. 12-C
			DEPTH/ELEV 44.8/~~-34.3~~ / DATE 27 MAR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 98 pcf



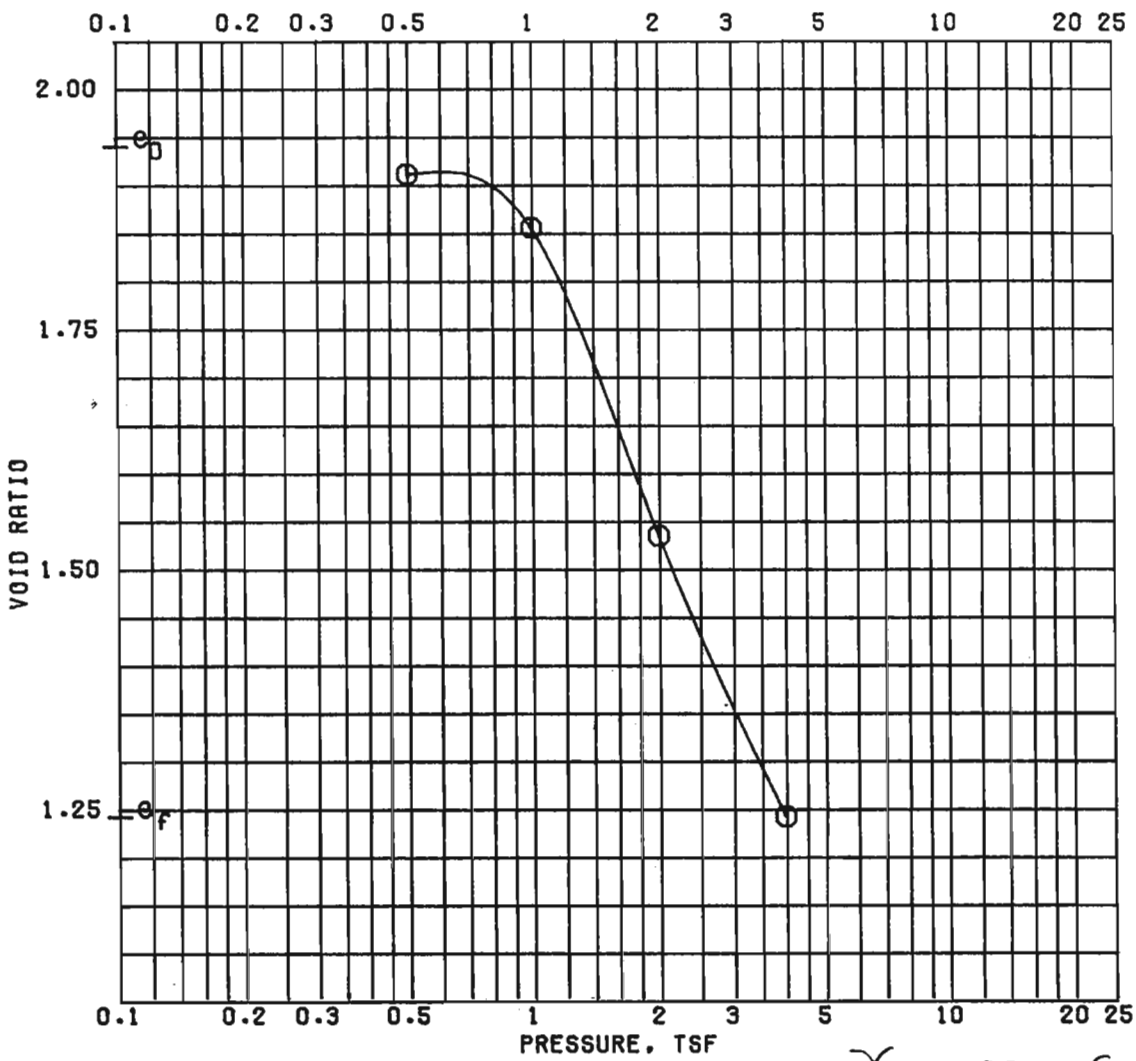
SPECIMEN NO.		Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	74.0	72.0	73.5		73.2
	DRY DENSITY, PCF	55.5	57.0	56.2		
	SATURATION, %	98.2	99.4	99.3		
	VOID RATIO	2.035	1.955	1.998		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.38	0.50	0.39		
TIME TO FAILURE, MIN.		4	14	15		
RATE OF STRAIN INCR.%			4	4		
INITIAL DIAMETER, IN.		1.39	1.39	1.39		
INITIAL HEIGHT, IN.		3.00	3.00	3.00		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; SILT LENSES; SHELL PARTICLES

LL 89	PL 24	PI 65	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 9-SCU / SAMPLE NO. 14-B
	DEPTH/ELEV 52.4/~~-41.9~~ -50.0 / TECH. KOC
	LABORATORY USAE WES / DATE 31 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



$\gamma_{SAT} = 99$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	70.9	47.6
PRECONSOL. PRESSURE, TSF	0.98	DRY DENSITY, PCF	57.4	75.2
COMPRESSION INDEX	1.23	SATURATION, %	98.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.939	1.241
DIA. IN 4.44	HT. IN 1.109	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; SHELL PARTICLES

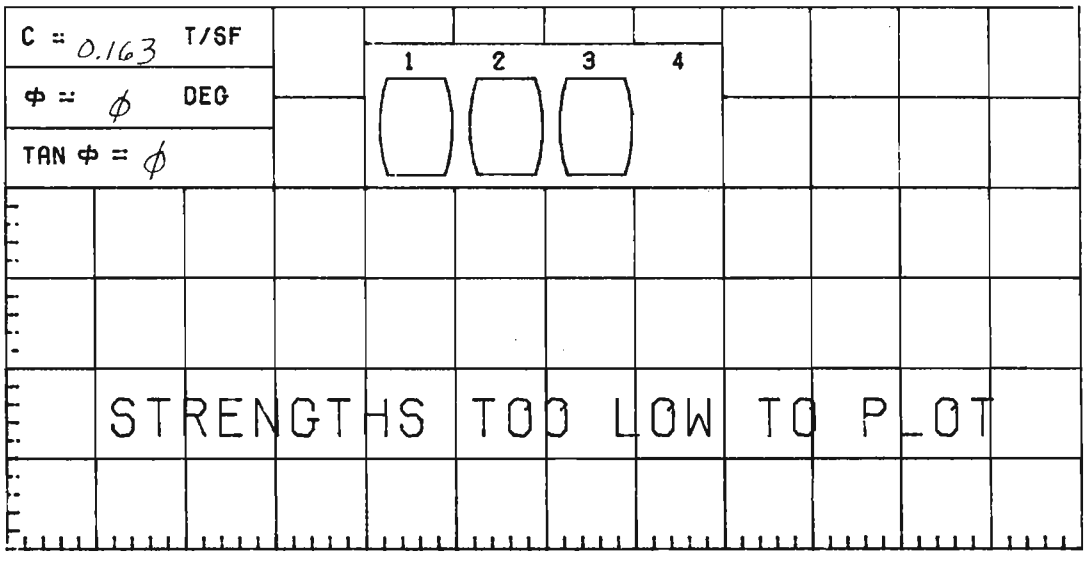
LL 83	PL 24	PI 59	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 9-SCU / SAMPLE NO. 14-C
			DEPTH/ELEV 53.3/-42.8 / DATE 28 MAR 87

CONSOLIDATION TEST REPORT

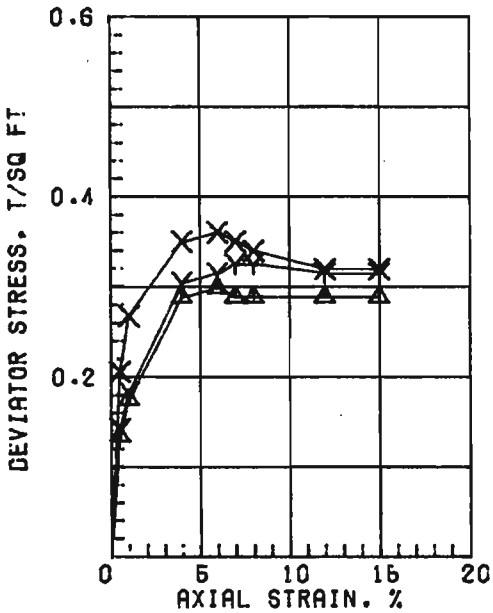
C = 0.163 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 123 pcf



	SPECIMEN NO.	Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	25.8	25.1	25.9	
	DRY DENSITY, PCF	95.8	98.2	95.4	
	SATURATION, %	91.8	94.7	91.2	
	VOID RATIO	0.760	0.717	0.767	
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	0.30	0.32	0.36	
	TIME TO FAILURE, MIN.	13	14	12	
	RATE OF STRAIN INCR.%				
	INITIAL DIAMETER, IN.	1.38	1.39	1.38	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

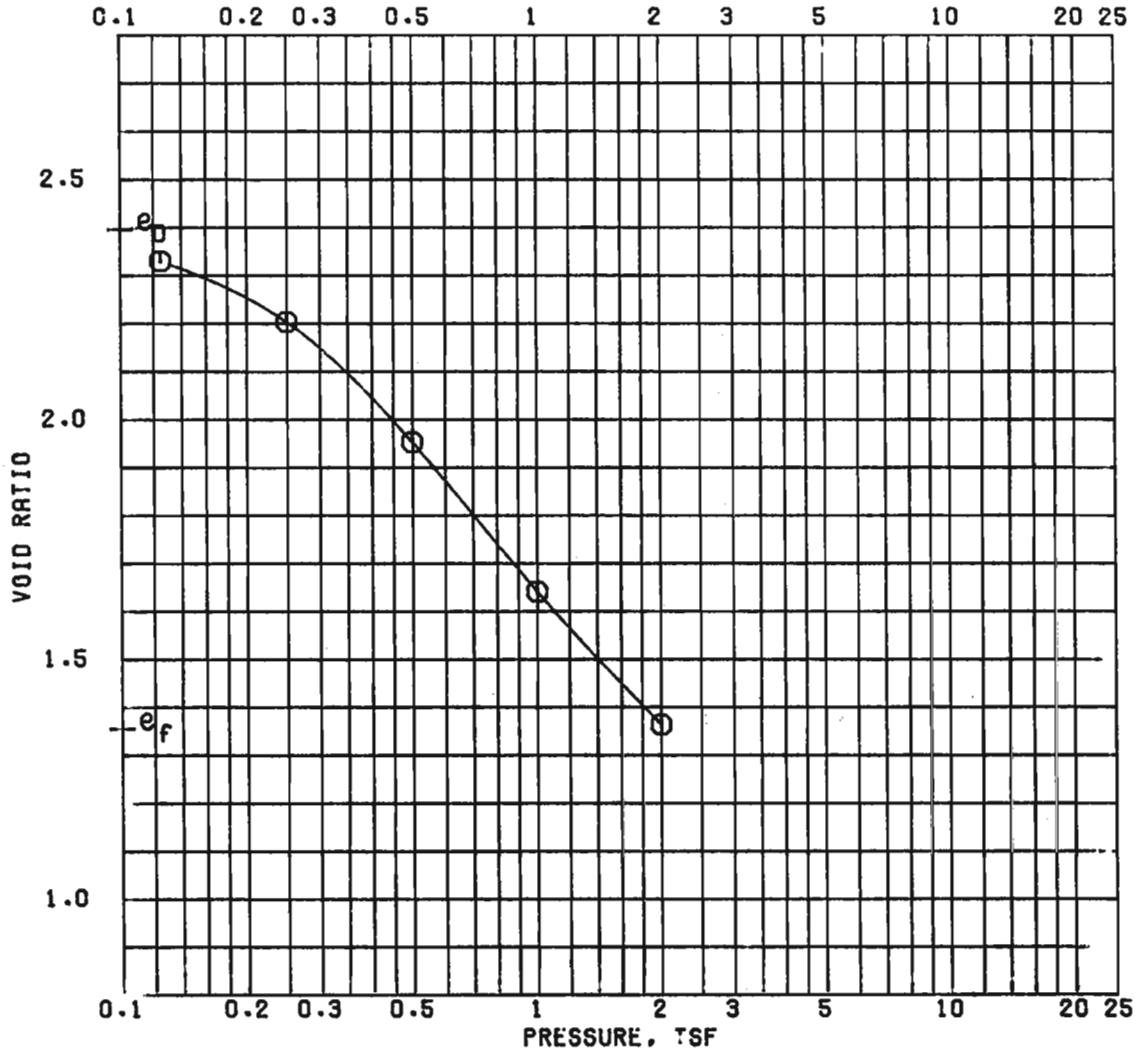
AVE 25.6

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY

LL 26	PL 16	PI 10	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 9-SCU / SAMPLE NO. 17-C
	DEPTH/ELEV 64.9/-54.4 / TECH. BD
	LABORATORY USAE WES / DATE 31 MAR 87
	TRIAXIAL COMPRESSION TEST REPORT



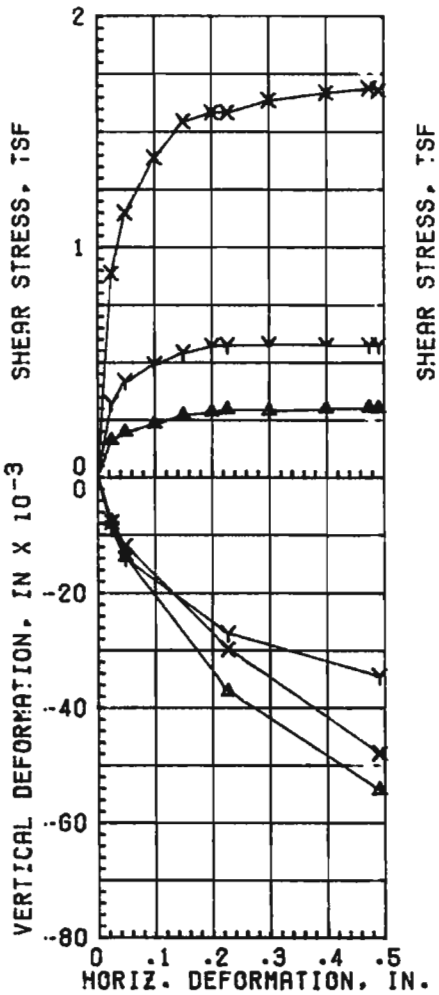
γ_{SAT} = 94 pcf

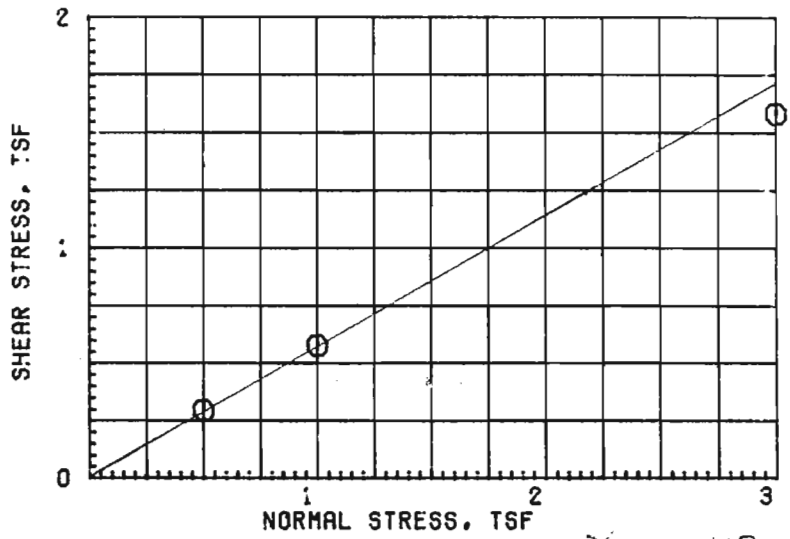
			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	86.6	49.8
PRECONSOL. PRESSURE, TSF	0.28	DRY DENSITY, PCF	49.7	71.7
COMPRESSION INDEX	1.01	SATURATION, %	97.8	99.5
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.393	1.352
DIA. IN 4.44	HT. IN 1.128	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

LL 95	PL 23	PI 72	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 10-SCU / SAMPLE NO. 6-C
			DEPTH/ELEV 17.5/-15.1 / DATE 01 APR 87

CONSOLIDATION TEST REPORT





γ_{SAT} = 113 pcf

ϕ = 29.5°

TAN ϕ = 0.566

C = ϕ

	TEST NO.	1 ▲	2 Y	3 X	
INITAL	WATER CONTENT, %	38.5	37.3	35.7	
	VOID RATIO	1.153	1.128	1.068	
	SATURATION, %	90.2	89.2	90.1	
	DRY DENSITY, PCF	78.3	79.2	81.5	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	35.4	31.4	31.8	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		0.5	1.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.30	0.58	1.58	
TIME TO FAILURE, MIN		1278	1686	1124	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

AVE 37.2

TYPE SPECIMEN UNDISTURBED	3.00 IN. SQUARE	0.628 IN. THICK
CLASSIFICATION CLAY (CL), GRAY; SILT SEAMS		

LL 35	PL 21	PI 14		GS 2.70 (EST)

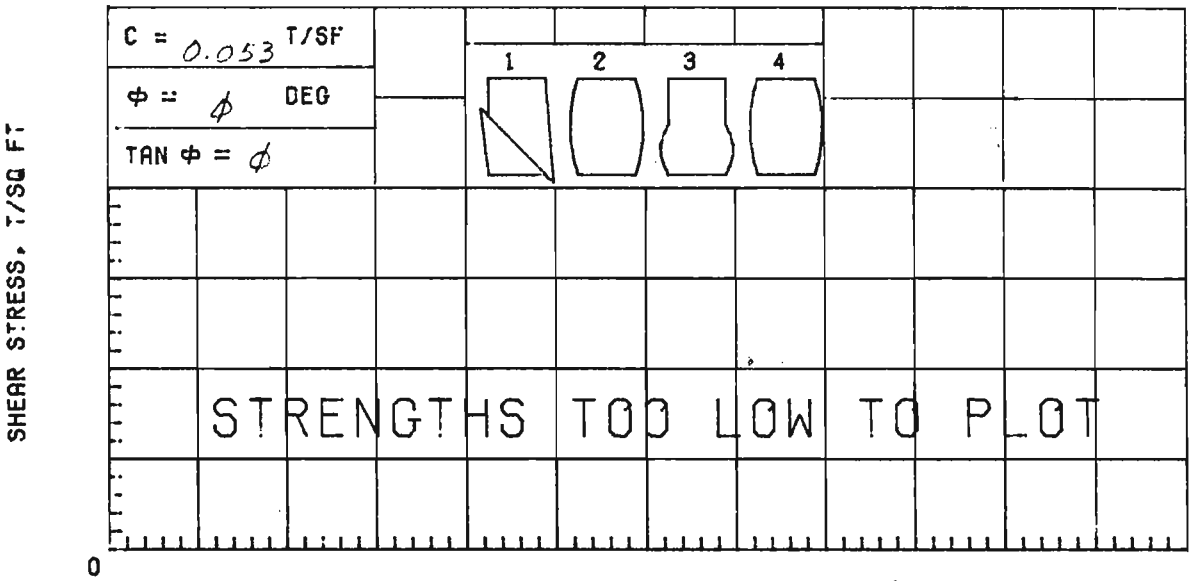
REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 10-SCU	SAMPLE 7-B
	DEPTH/ELEV 21.3/-18.9	DATE 27 APR 87

DIRECT SHEAR TEST REPORT

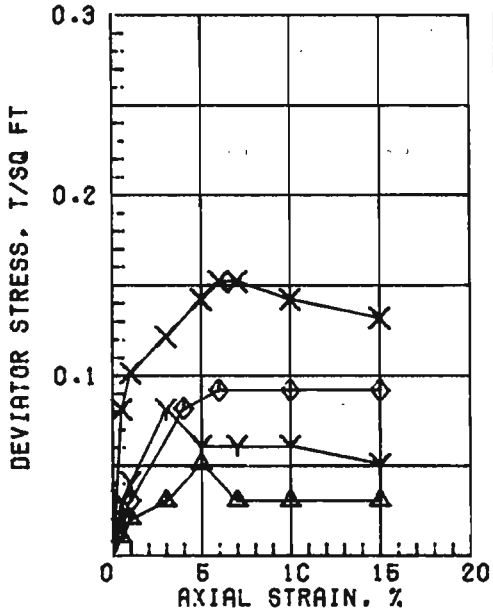
C = 0.053 T/SF

Φ = ∅ DEG

TAN Φ = ∅



γ_{SAT} = 97 pcf



SPECIMEN NO.		△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	77.6	70.9	68.9	88.8	76.6
	DRY DENSITY, PCF	54.0	57.5	57.1	50.0	
	SATURATION, %	98.7	99.0	95.3	100+	
	VOID RATIO	2.123	1.933	1.951	2.372	
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		0.05	0.08	0.15	0.09	
TIME TO FAILURE, MIN.		11	6	12	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: CLAY (CH), GRAY; SILT POCKETS

LL 55	PL 17	PI 38	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: LIMITS ON MIXTURE OF MATERIALS.

PROJECT LK PONT & VIC HURR PROT

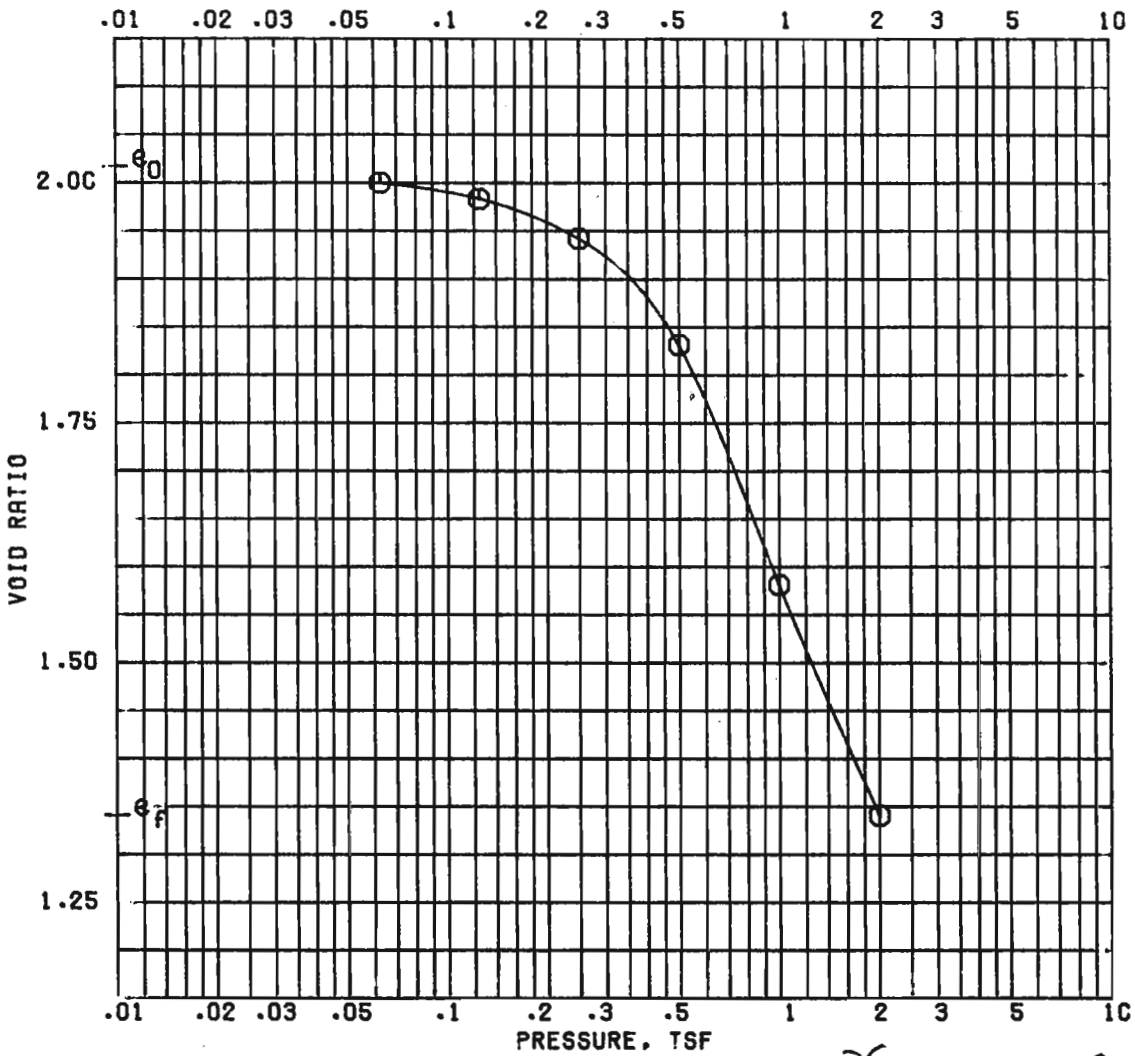
ST CHARLES PARISH

BORING NO. 10-SCU — SAMPLE NO. 7-C

DEPTH/ELEV 22.2/-19.8 — TECH. BD

LABORATORY USAE WES — DATE 31 MAR 87

TRIAXIAL COMPRESSION TEST REPORT



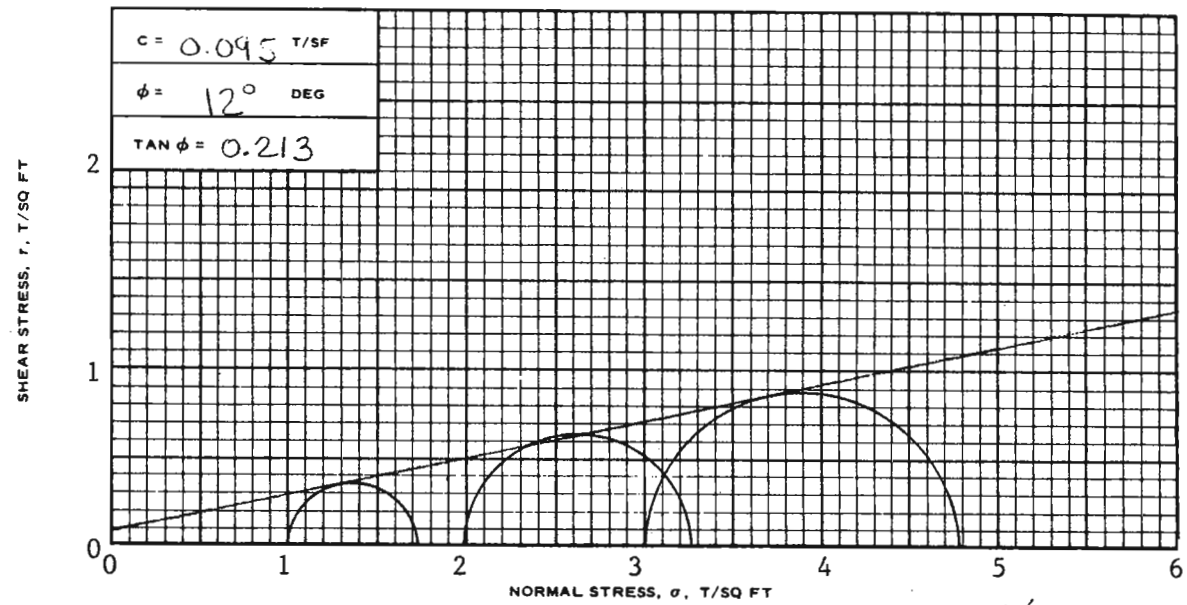
γ_{SAT} = 98 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	74.9	50.7
PRECONSOL. PRESSURE, TSF	0.42	DRY DENSITY, PCF	55.9	72.1
COMPRESSION INDEX	0.86	SATURATION, %	100 +	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.015	1.339
DIA. IN 4.44	T. IN 1.120	BACK PRESSURE, TSF		

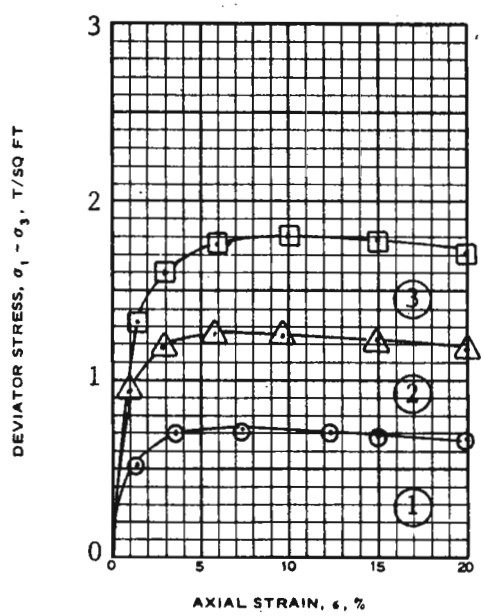
CLASSIFICATION CLAY (CH), GRAY; SILT LENSES

LL 72	PL 20	PI 52	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 10-SCU / SAMPLE NO. 8-B
			DEPTH/ELEV 25.1/-22.7 / DATE 31 MAR 87

CONSOLIDATION TEST EPORT



$\gamma_{SAT} = 98$ pcf



SPECIMEN NO.			1	2	3	AVG
INITIAL	WATER CONTENT, %	w_o	74.3	78.3	73.4	75
	DRY DENSITY LB/ CU FT	γ_{d_o}	56.2	54.6	56.7	
	SATURATION, %	S_o	99.8	100+	100+	
	VOID RATIO	e_o	2.025	2.111	1.993	
BEFORE SHEAR	WATER CONTENT, %	w_c	58.7	53.8	47.6	
	DRY DENSITY LB/CU FT	γ_{d_c}	67.4	70.1	75.5	
	SATURATION, %	S_c	100+	100+	100+	
	VOID RATIO	e_c	1.521	1.422	1.249	
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.32	4.32	4.32	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.72	1.26	1.80	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	493	393	666	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.38	1.37	1.38	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- STRAIN TEST

DESCRIPTION OF SPECIMENS CLAY (CH), GRAY; 1/4" SILT LAYERS

LL 59	PL 18	PI 41	G_s 2.72	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST $\bar{R}$

REMARKS: (EST)

PROJECT LK PONT & VIC HURR PROT
ST CHARLES PARISH

BORING NO. 10-SCU SAMPLE NO. 8-C

DEPTH/ELEV 26.0/-23.6

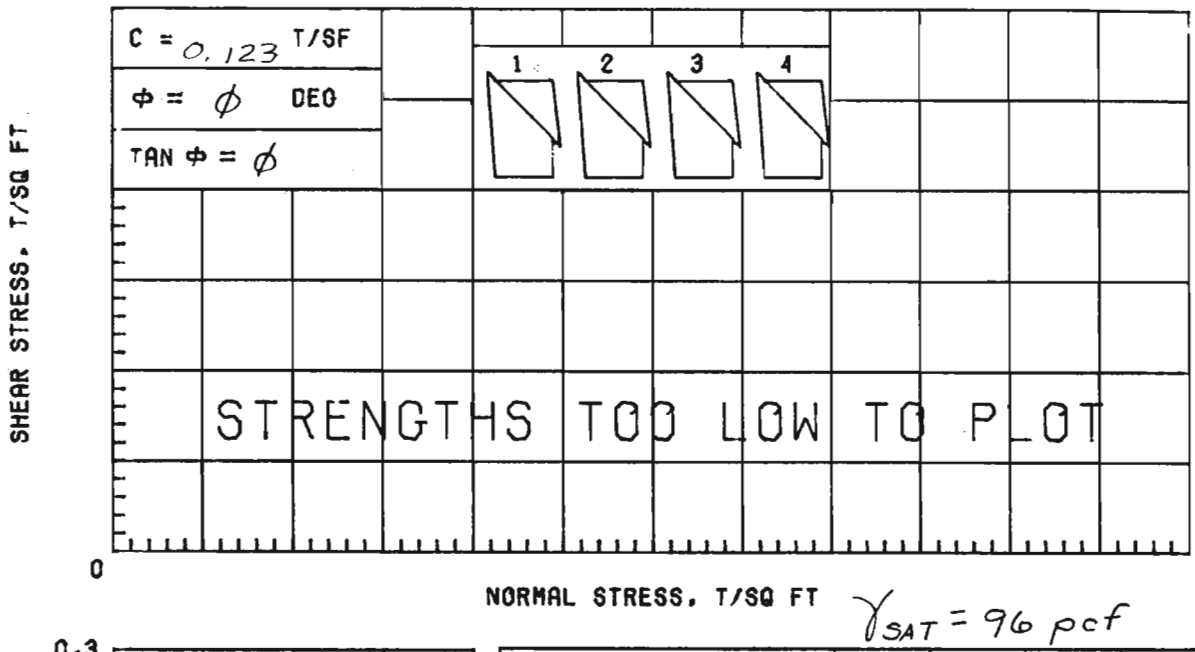
LABORATORY USAEWES DATE 14 APR 87

SHEET 1 OF 2

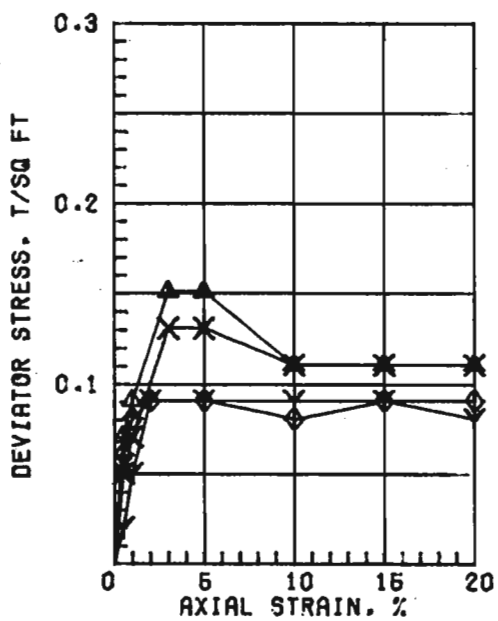
JMS

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)



γ_{SAT} = 96 pcf



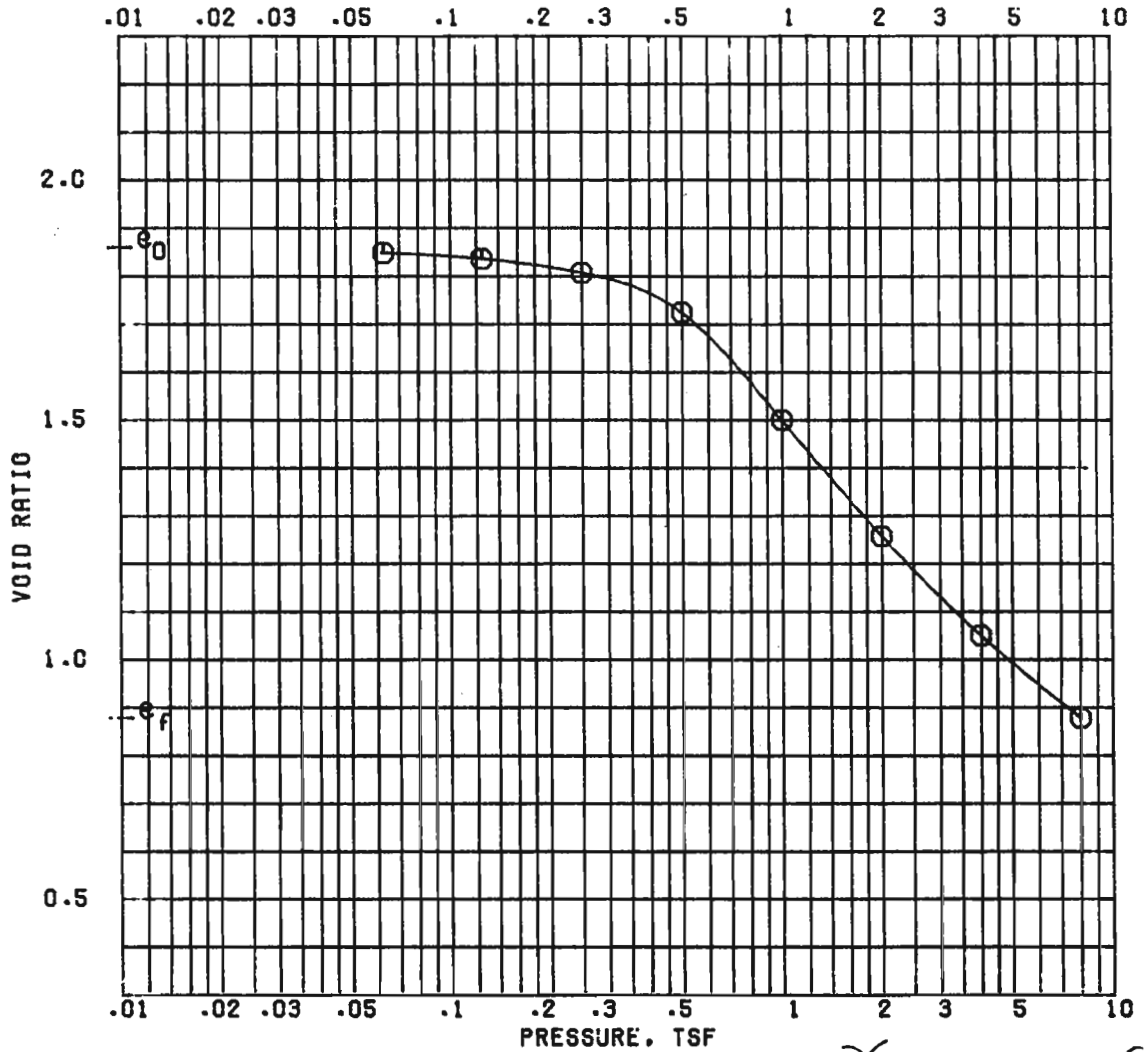
SPECIMEN NO.		▲1	Y2	X3	◊4	AVE
INITIAL	WATER CONTENT, %	80.1	81.0	82.2	82.9	81.6
	DRY DENSITY, PCF	53.2	52.0	51.8	54.1	
	SATURATION, %	99.7	97.6	98.4	100+	
	VOID RATIO	2.169	2.242	2.256	2.116	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	1.5	
MAX. DEV. STRESS, TSF		0.15	0.09	0.13	0.09	
TIME TO FAILURE, MIN.		6	12	18	12	
RATE OF STRAIN INCR.%			6	6	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: CLAY (CH), GRAY

LL 78	PL 24	PI 54	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 10-SCU	SAMPLE NO. 9-C
	DEPTH/ELEV 30.0/-27.6	TECH. KOC
	LABORATORY USAE WES	DATE 01 APR 87
	TRIAXIAL COMPRESSION TEST REPORT	



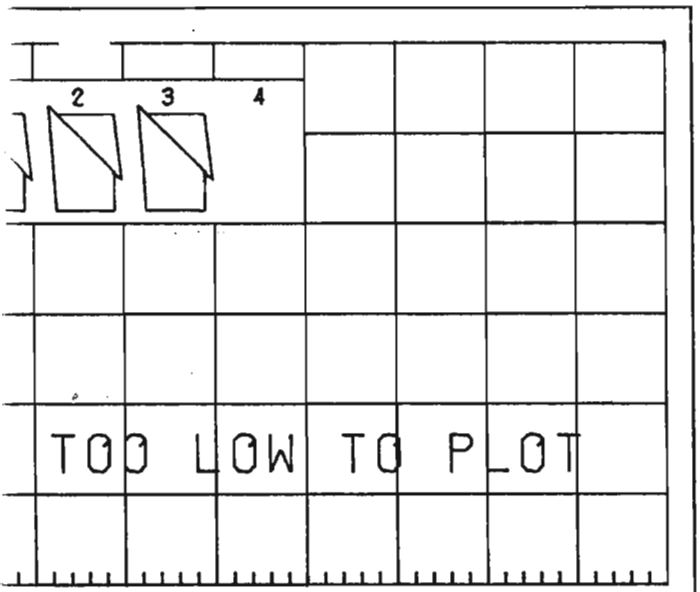
$\gamma_{SAT} = 100$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	67.5	34.4
PRECONSOL. PRESSURE, TSF	0.55	DRY DENSITY, PCF	59.0	89.9
COMPRESSION INDEX	0.91	SATURATION, %	98.2	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.857	0.875
DIA. IN 4.44	HT. IN 1.137	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY

LL 72	PL 21	PI 51	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHALRES PARISH
REMARKS		BORING NO. 10-SCU	SAMPLE NO. 10-C
		DEPTH/ELEV 34.0/-31.6	DATE 28 MAR 87

CONSOLIDATION TEST REPORT



MAL STRESS, T/SQ FT

$\gamma_{SAT} = 97$ pcf

PECIMEN NO.	Δ1	Y2	X3	4	AVE
WATER CONTENT, %	77.9	73.4	74.7		75.3
DRY DENSITY, PCF	54.0	56.2	55.5		
SATURATION, %	99.2	99.1	99.1		
VOID RATIO	2.120	2.000	2.035		
WATER CONTENT, %					
DRY DENSITY, PCF					
SATURATION, %					
VOID RATIO					
BACK PRESS., TSF					
IN PRIN. STRESS, TSF	0.5	1.5	3.0		
AX. DEV. STRESS, TSF	0.21	0.19	0.20		
IME TO FAILURE, MIN.	3	12	15		
ATE OF STRAIN INCR,%		6	3		
NITIAL DIAMETER, IN.	1.39	1.39	1.39		
NITIAL HEIGHT, IN.	3.00	3.00	3.00		

), GRAY

(ESTIMATED) | UNDISTURBED SPECIMEN | Q TEST

PROJECT LK PONT & VIC HURR PROT

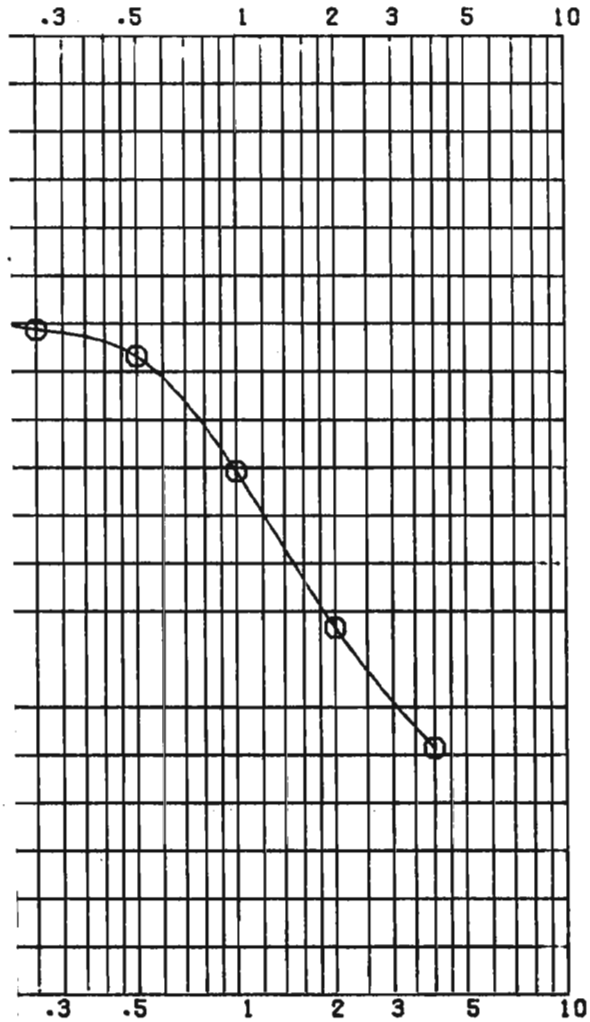
ST CHARLES PARISH

BORING NO. 10-SCU | SAMPLE NO. 11-C

DEPTH/ELEV 38.1/-35.7 | TECH. KOC

LABORATORY USAE WES | DATE 01 APR 87

T AXIAL COMPRESSION TEST REPORT



SSURE, TSF

$\gamma_{SAT} = 97$ pcf

	BEFORE TEST	AFTER TEST
ER CONTENT, %	77.0	46.0
DENSITY, PCF	54.7	79.9
URATION, %	99.9	100 +
D RATIO	2.081	1.111
K PRESSURE, TSF		

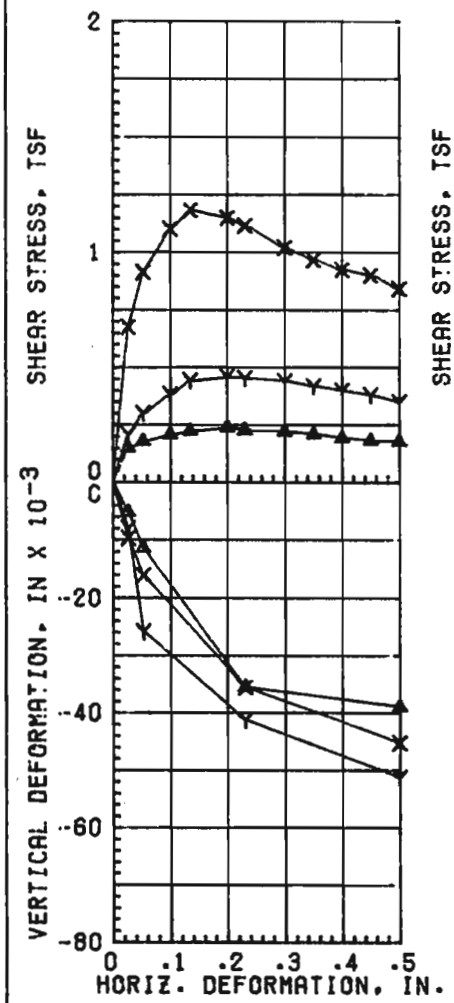
JECT LK PONT & VIC HURR PROT

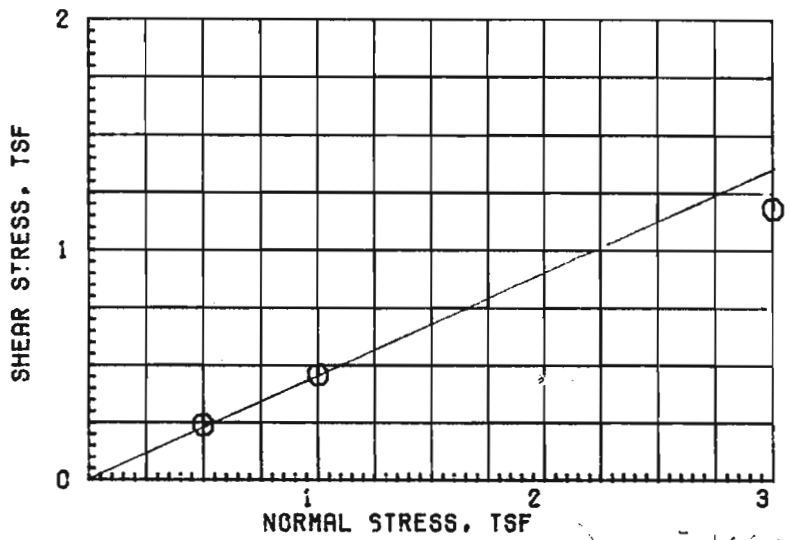
ST CHALRES PARISH

ING NO. 10-SCU | SAMPLE NO. 12-B

TH/ELEV 41.5/-39.1 | DATE 30 MAR 87

CONSOLIDATION TEST REPORT





ϕ = 24°

TAN ϕ = 0.4452

C = ϕ

	TEST NO.	1 ▲	2 Y	3 X	
INITIAL	WATER CONTENT, %	66.8	69.0	62.6	
	VOID RATIO	1.801	1.856	1.803	
	SATURATION, %	100 +	100 +	93.7	
	DRY DENSITY, PCF	60.1	59.0	60.1	
VOID RATIO AFTER CONSOL					
FIFTY PERCENT CONSOL, MIN		< 1	< 1	< 1	
FINAL	WATER CONTENT, %	52.6	46.1	37.4	
	VOID RATIO				
	SATURATION, %				
NORMAL STRESS, TSF		0.5	1.0	3.0	
MAXIMUM SHEAR STRESS, TSF		0.24	0.46	1.18	
TIME TO FAILURE, MIN		1097	1097	740	
RATE OF STRAIN, IN/MIN		.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, TSF					

TYPE SPECIMEN UNDISTURBED	3.00 IN. SQUARE	0.628 IN. THICK
CLASSIFICATION CLAY (CH), GRAY		

LL 60	PL 20	PI 40		GS 2.70 (EST)

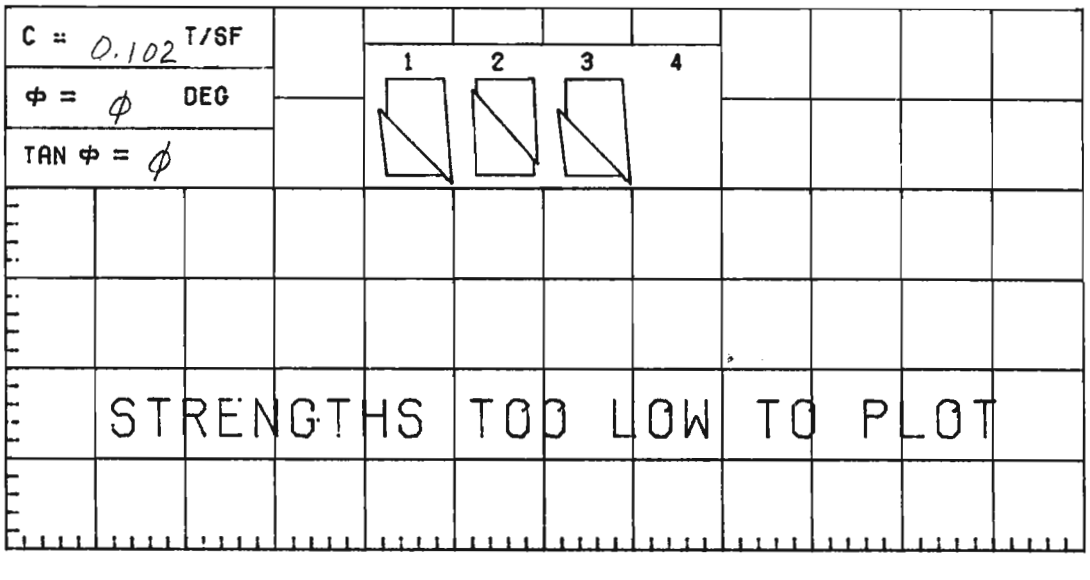
REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 10-SCU	SAMPLE 12-C
	DEPTH/ELEV 41.9/-39.6	DATE 28 APR 87

DIRECT SHEAR TEST REPORT

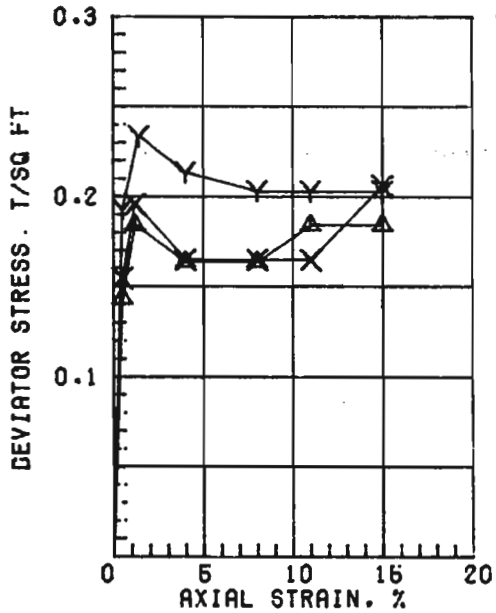
C = 0.102 T/SF

Φ = φ DEG

TAN Φ = φ



γ_{SAT} = 97 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	74.0	74.4	75.0	
	DRY DENSITY, PCF	55.4	55.8	54.3	
	SATURATION, %	97.8	99.3	96.3	
	VOID RATIO	2.044	2.022	2.102	
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	0.23	0.20	
TIME TO FAILURE, MIN.		2	10	5	
RATE OF STRAIN INCR.%			8	11	
INITIAL DIAMETER, IN.		1.39	1.39	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 74.5

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

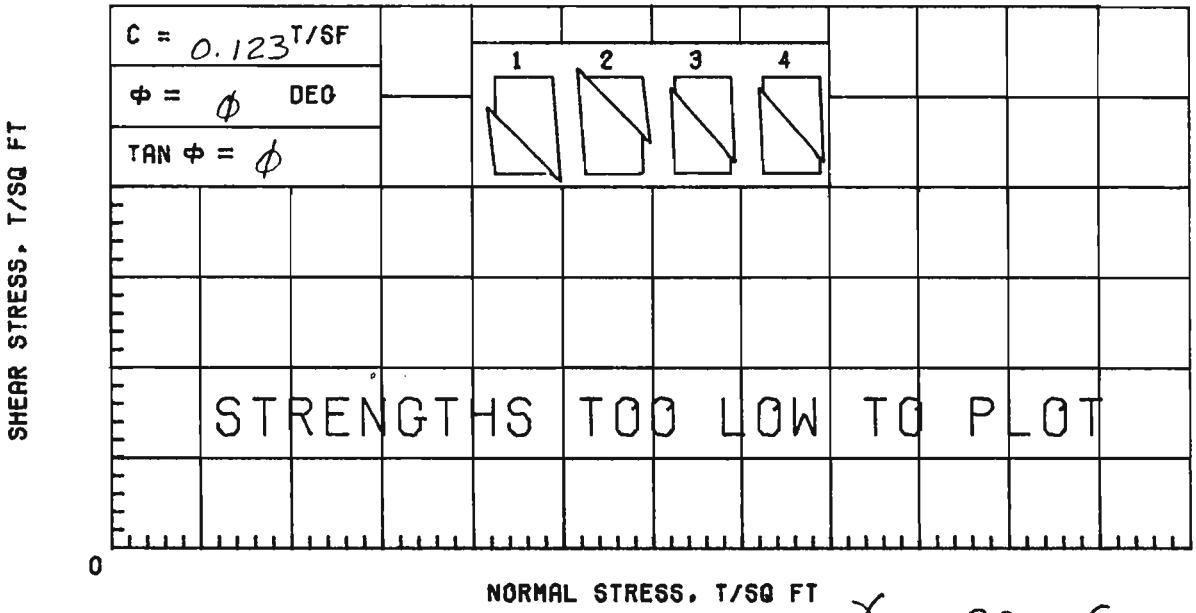
LL 75	PL 32	PI 43	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 10-SCU	SAMPLE NO. 13-C
	DEPTH/ELEV 46.4/-44.0	TECH. BD
	LABORATORY USAE WES	DATE 01 APR 87
	TRIAXIAL COMPRESSION TEST REPORT	

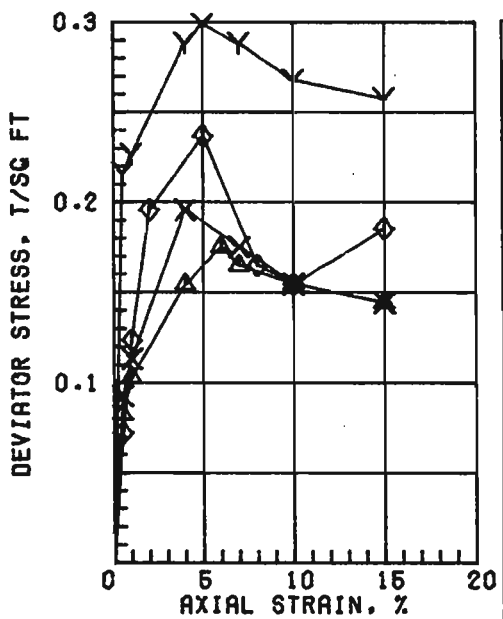
C = 0.123 T/SF

Φ = ϕ DEG

TAN Φ = ϕ



γ_{SAT} = 98 pcf



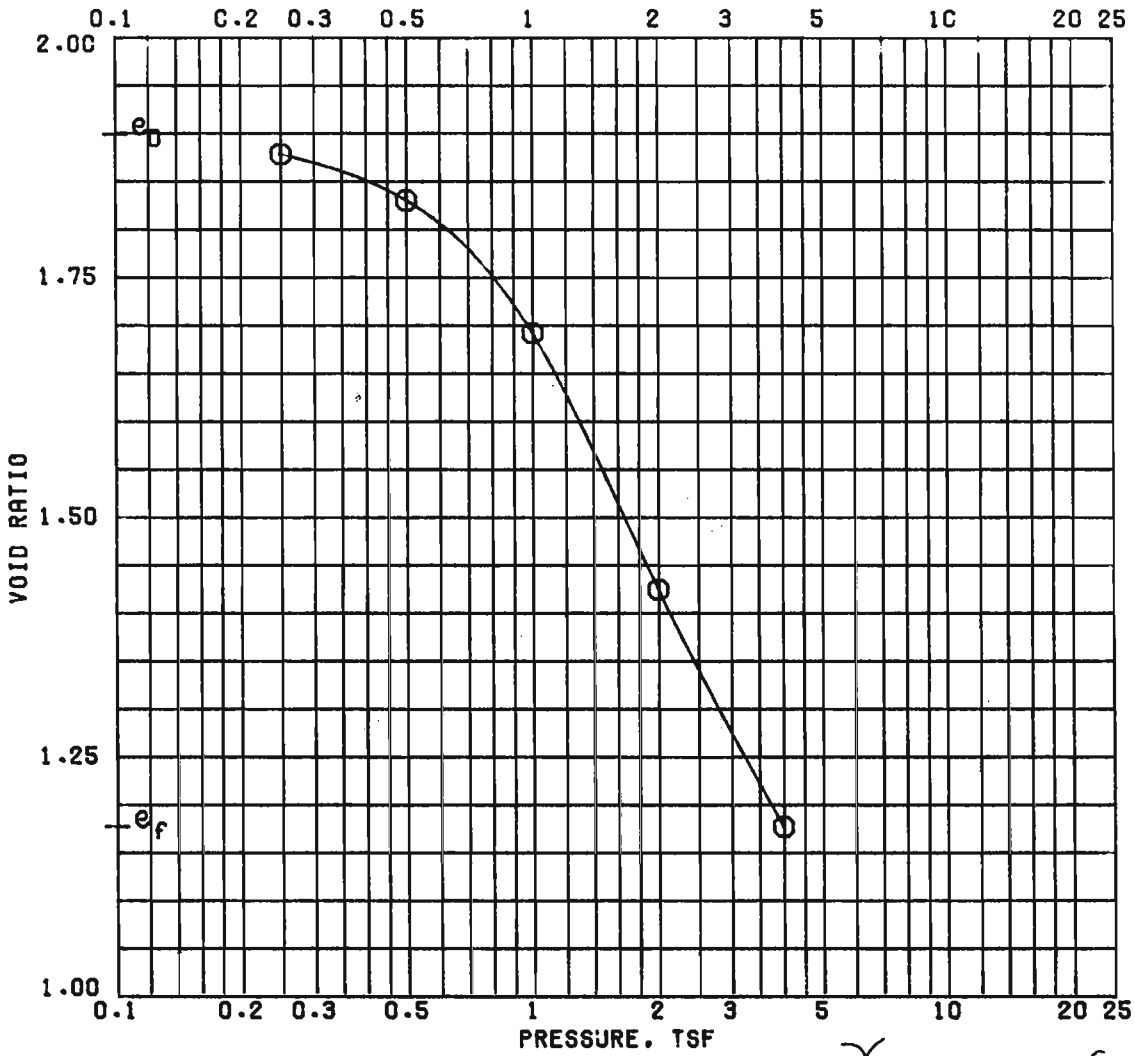
SPECIMEN NO.		▲1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	74.6	73.6	73.8	74.5	74.1
	DRY DENSITY, PCF	55.8	56.1	56.3	56.3	
	SATURATION, %	99.7	99.1	100.0	100+	
	VOID RATIO	2.021	2.004	1.992	1.996	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.17	0.30	0.20	0.24	
TIME TO FAILURE, MIN.		12	10	8	12	
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	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 90	PL 25	PI 65	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 10-SCU	SAMPLE NO. 15-B
	DEPTH/ELEV 53.5/-51.1	TECH. BD
	LABORATORY USAE WES	DATE 01 APR 87
	TRIAXIAL COMPRESSION TEST REPORT	



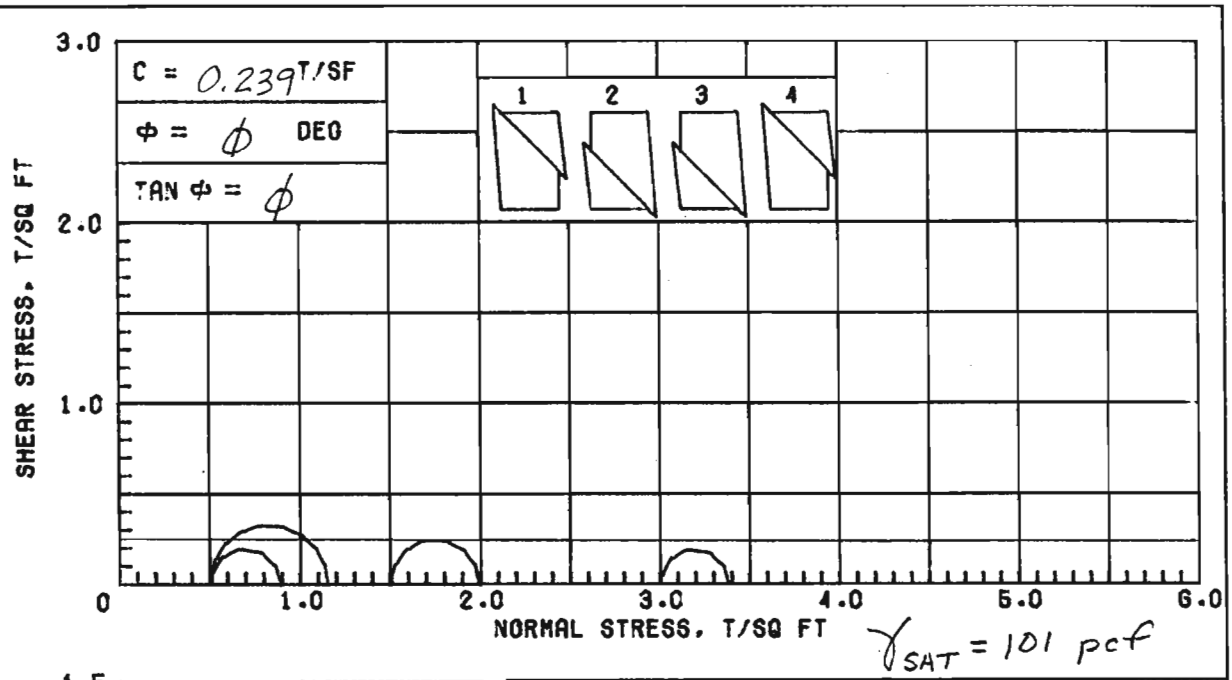
γ_{SAT} = 99 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	69.3	45.0
PRECONSOL. PRESSURE, TSF	0.78	DRY DENSITY, PCF	58.2	77.5
COMPRESSION INDEX	0.85	SATURATION, %	98.6	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.898	1.176
DIA. IN 4.44	HT. IN 1.128	BACK PRESSURE, TSF		

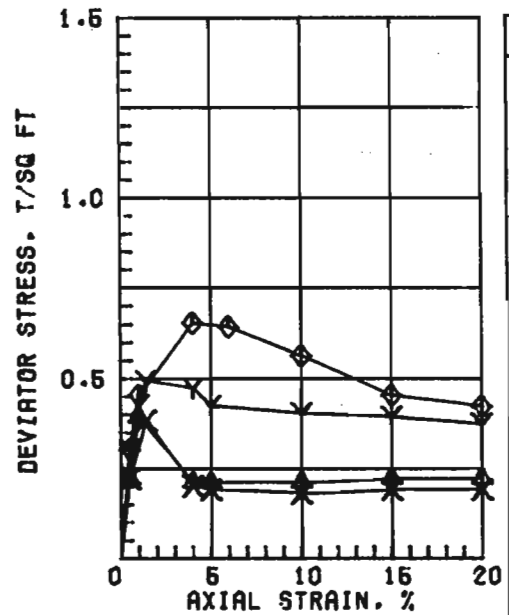
CLASSIFICATION CLAY (CH), GRAY

LL 85	PL 23	PI 62	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 10-SCU / SAMPLE NO. 15-C
			DEPTH/ELEV 54.4/-52.0 / DATE 02 APR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 101 pcf



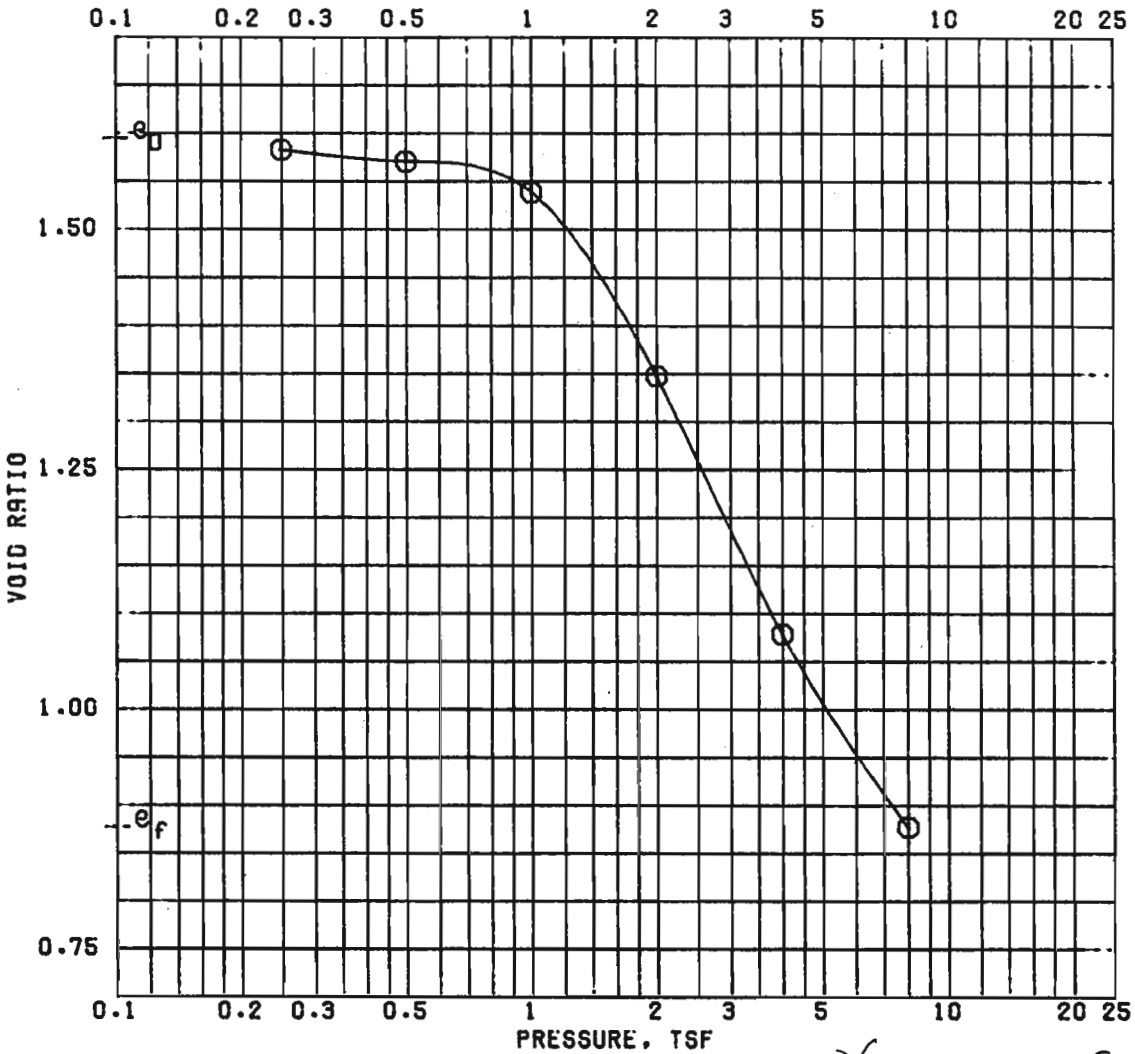
SPECIMEN NO.		▲1	Y2	X3	◊4	AVE
INITIAL	WATER CONTENT, %	65.9	66.5	63.2	59.0	63.7
	DRY DENSITY, PCF	60.1	59.8	61.4	64.0	
	SATURATION, %	98.5	98.8	97.7	97.6	
	VOID RATIO	1.806	1.817	1.747	1.632	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.39	0.49	0.38	0.65	
TIME TO FAILURE, MIN.		2	24	14	24	
RATE OF STRAIN INCR.%			2	3	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: CLAY (CH), GRAY

LL 88	PL 23	PI 65	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 10-SCU	SAMPLE NO. 17-B
	DEPTH/ELEV 61.5/-59.1	TECH. KOC
	LABORATORY USAE WES	DATE 02 APR 87
	TRIAXIAL COMPRESSION TEST REPORT	



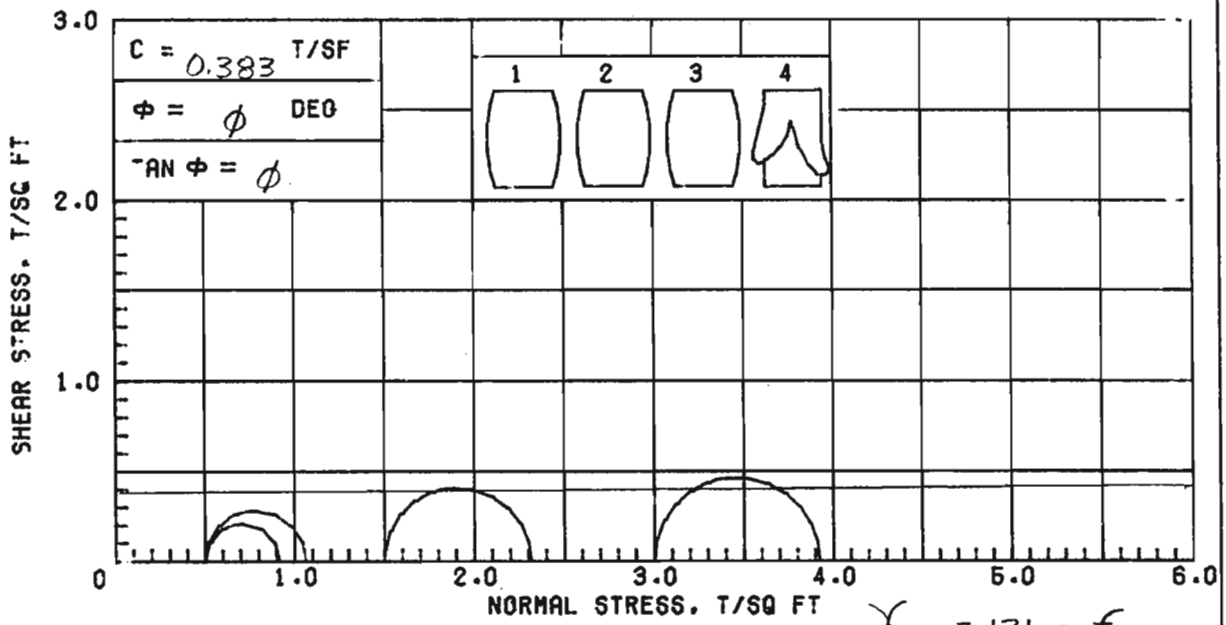
γ_{SAT} = 103 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	58.8	33.9
PRECONSOL. PRESSURE, TSF	1.21	DRY DENSITY, PCF	65.0	89.9
COMPRESSION INDEX	0.83	SATURATION, %	99.7	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.593	0.876
DIA. IN 4.44	HT. IN 1.113	BACK PRESSURE, TSF		

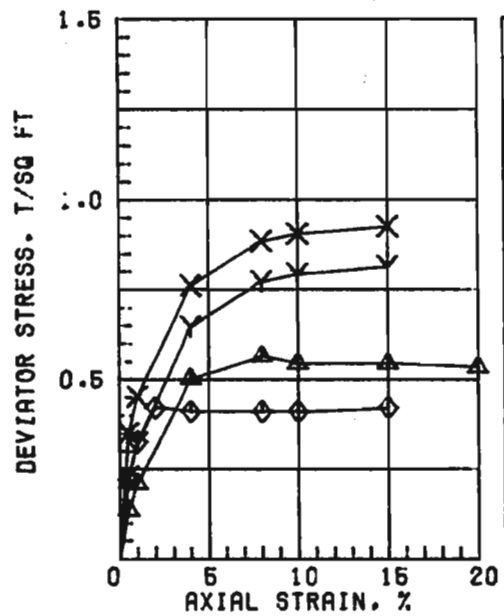
CLASSIFICATION CLAY (CH), GRAY

LL 69	PL 18	PI 51	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHALRES PARISH
REMARKS			BORING NO. 10-SCU / SAMPLE NO. 18-B
			DEPTH/ELEV 64.7/-62.3 / DATE 03 APR 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 121 pcf



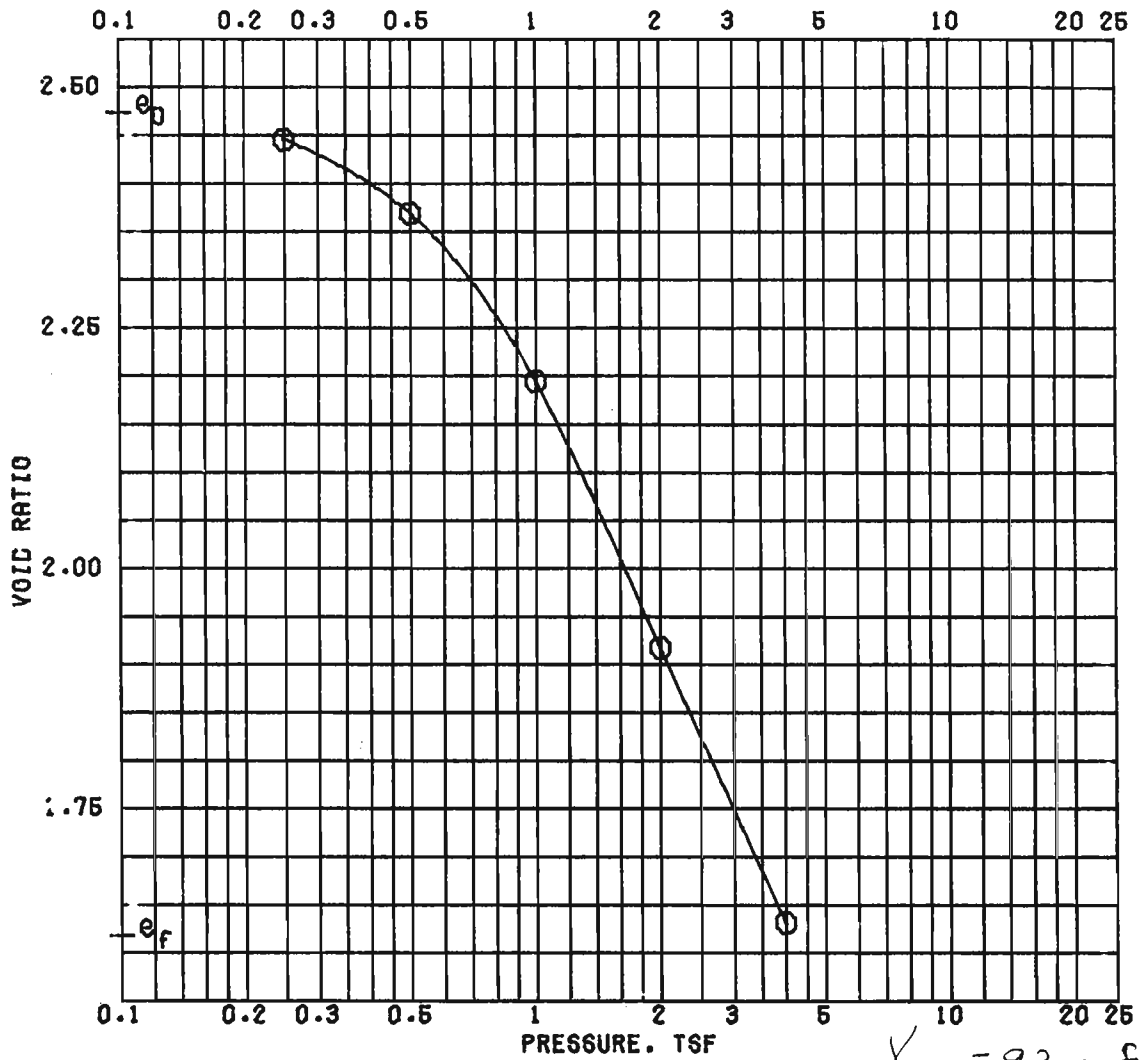
	SPECIMEN NO.	▲1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	26.7	26.4	29.1	27.7	27.5
	DRY DENSITY, PCF	93.5	94.4	94.1	90.8	
	SATURATION, %	90.3	91.3	99.8	87.7	
	VOID RATIO	0.796	0.778	0.784	0.849	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
	MIN PRIN. STRESS, TSF	0.5	1.5	3.0	0.5	
	MAX. DEV. STRESS, TSF	0.56	0.81	0.93	0.42	
	TIME TO FAILURE, MIN.	17	31	31	4	
	RATE OF STRAIN INCR.%					
	INITIAL DIAMETER, IN.	1.37	1.37	1.38	1.36	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	3.00	

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: SILTY CLAY (CL), DARK GRAY; ORGANIC MATERIAL

LL 28	PL 19	PI 9	GS 2.69 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS: LIMITS ON MIXTURE OF MATERIALS.	PROJECT LK PONT & VIC HURR PROT ST CHARLES PARISH
	BORING NO. 10-SCU — SAMPLE NO. 19-C
	DEPTH/ELEV 69.7/-67.3 — TECH. BD
	LABORATORY USAE WES — DATE 02 APR 87
	TRIAXIAL COMPRESSION TEST REPORT



$\gamma_{SAT} = 93$ pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	89.7	60.9
PRECONSOL. PRESSURE, TSF	0.69	DRY DENSITY, PCF	48.5	64.4
COMPRESSION INDEX	0.93	SATURATION, %	98.0	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	2.472	1.616
DIA. IN 4.44	HT. IN 1.121	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CH), GRAY; ORGANIC MATERIAL

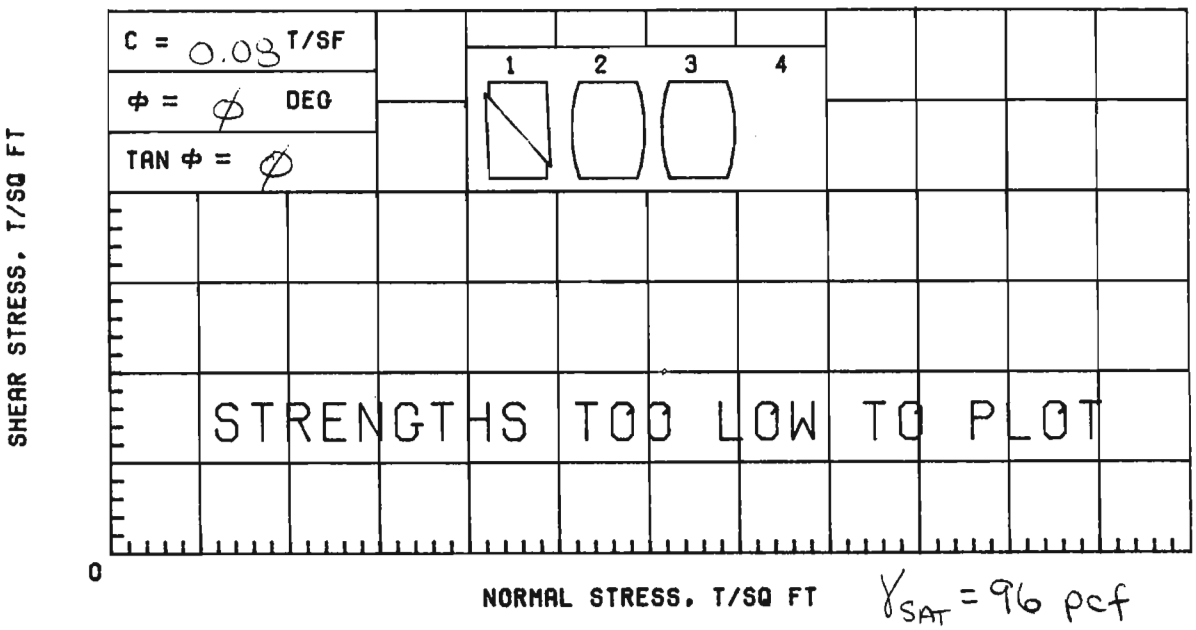
LL 122	PL 29	PI 93	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 11-SCU / SAMPLE NO. 3-B
			DEPTH/ELEV 7.7/-6.5 / DATE 14 JUL 87

CONSOLIDATION TEST REPORT

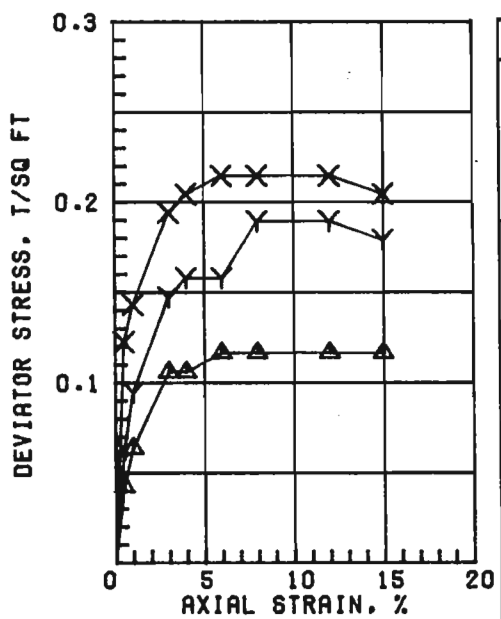
C = 0.03 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 96 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	74.8	72.0	74.7	
	DRY DENSITY, PCF	54.8	49.9	55.3	
	SATURATION, %	97.3	81.8	98.6	
	VOID RATIO	2.077	2.375	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		0.11	0.16	0.21	
TIME TO FAILURE, MIN.		6	23	26	
RATE OF STRAIN INCR.%			7		
INITIAL DIAMETER, IN.		1.36	1.36	1.39	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 73.8

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY; ORGANIC MATERIAL

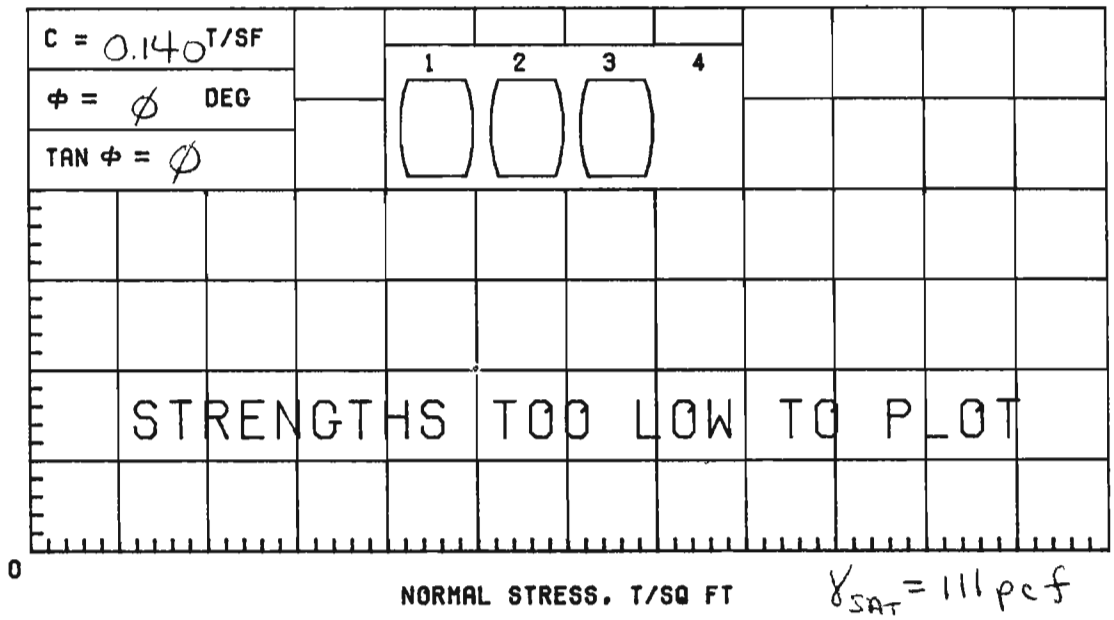
LL 116	PL 30	PI 86	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 11-SCU	SAMPLE NO. 3-C
	DEPTH/ELEV 8.6/-7.4	TECH. BD
	LABORATORY USAE WES	DATE 06 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	

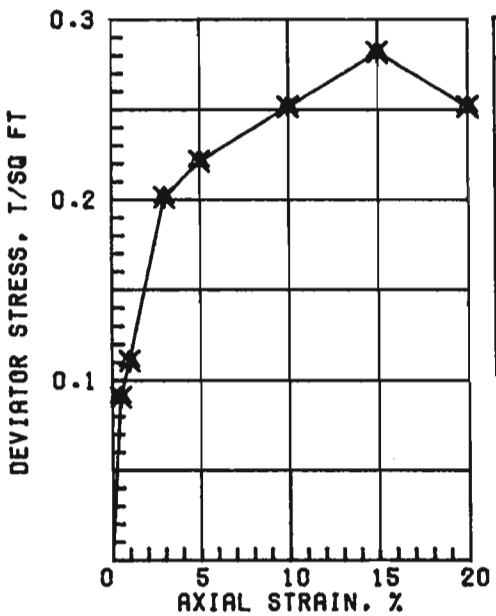
C = 0.140 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 111 pcf



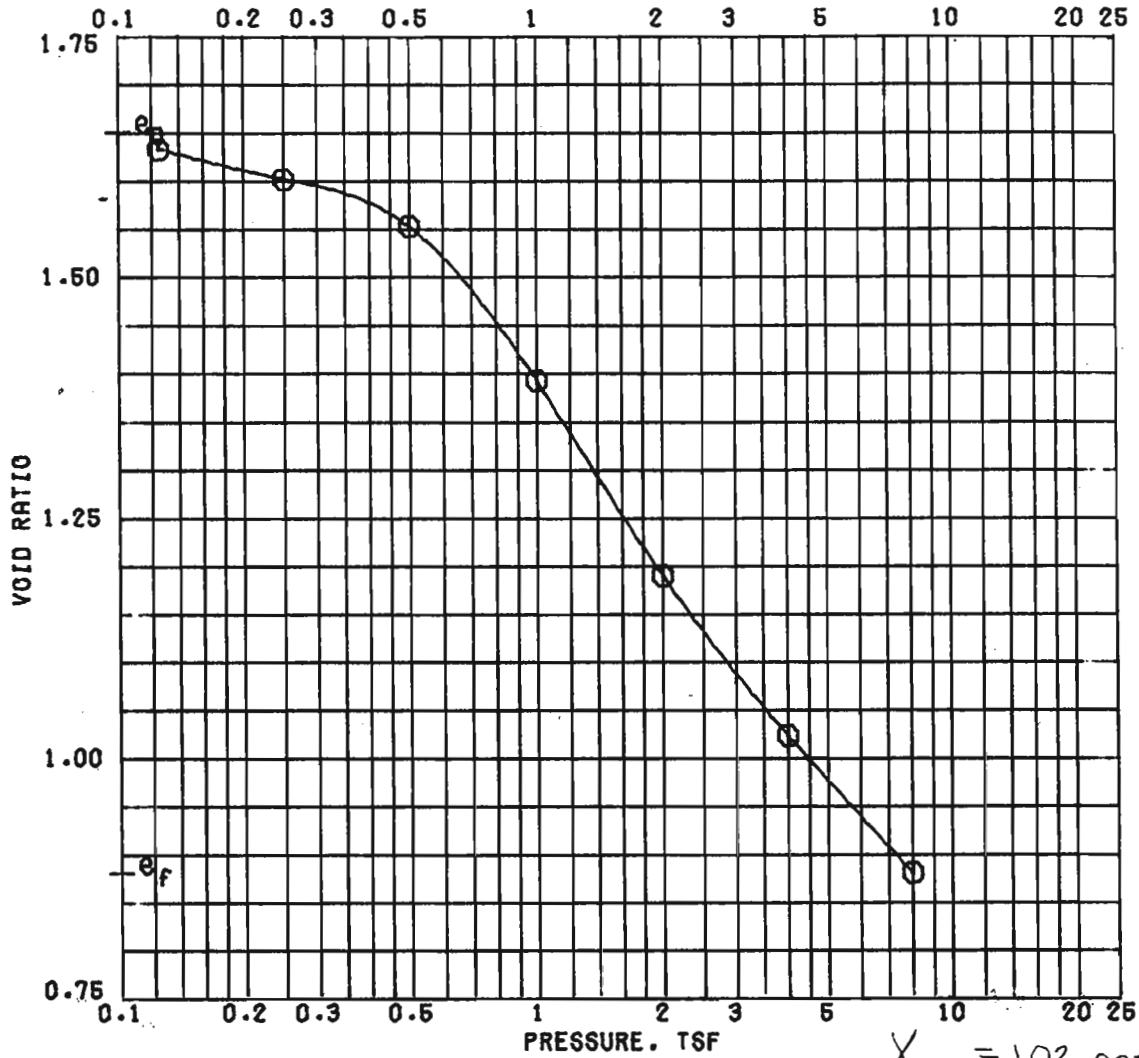
SPECIMEN NO.		Δ1	Y2	X3	4	AVE
INITIAL	WATER CONTENT, %	40.8	40.3	42.4		41.2
	DRY DENSITY, PCF	78.0	78.0	75.8		
	SATURATION, %	94.9	93.8	93.7		
	VOID RATIO	1.161	1.160	1.222		
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0		
MAX. DEV. STRESS, TSF		0.28	0.28	0.28		
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		

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY & BROWN

LL 42	PL 15	PI 27	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 11-SCU	SAMPLE NO. 6-B
	DEPTH/ELEV 20.1/-18.9	TECH. KOC
	LABORATORY USAE WES	DATE 05 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	



γ_{SAT} = 102 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	59.8	33.4
PRECONSOL. PRESSURE, TSF	0.63	DRY DENSITY, PCF	63.6	89.7
COMPRESSION INDEX	0.67	SATURATION, %	97.9	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.649	0.879
DIA. IN 4.44	HT. IN 1.148	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY; SILT SEAMS

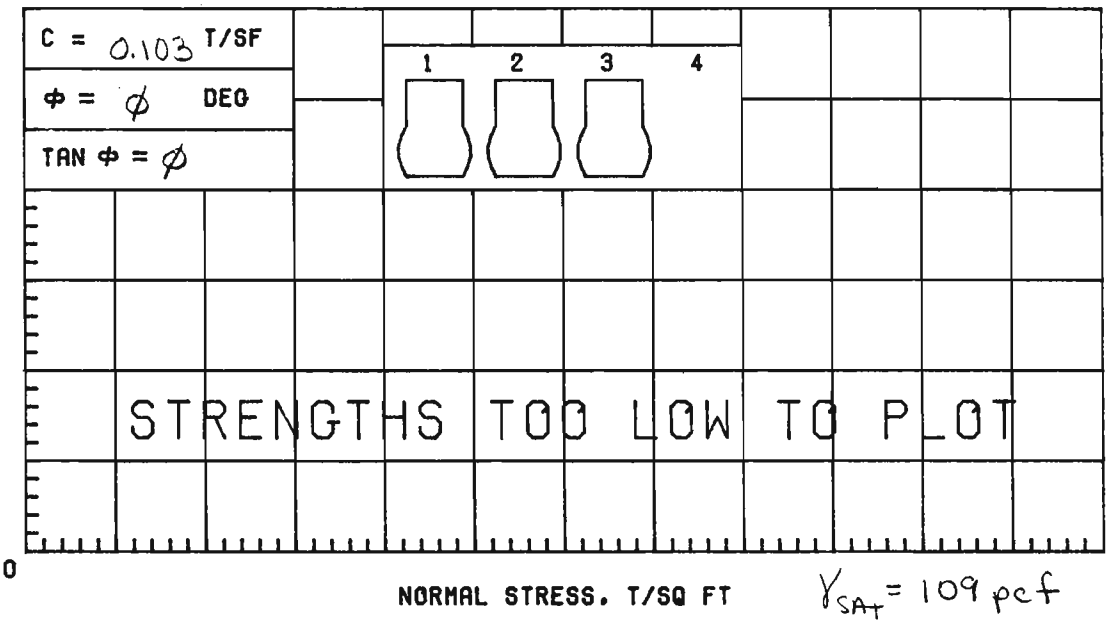
LL	PL	PI	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 11-SCU	SAMPLE NO. 6-C
			DEPTH/ELEV 20.9/-19.7	DATE 07 JUL 87

CONSOLIDATION TEST REPORT

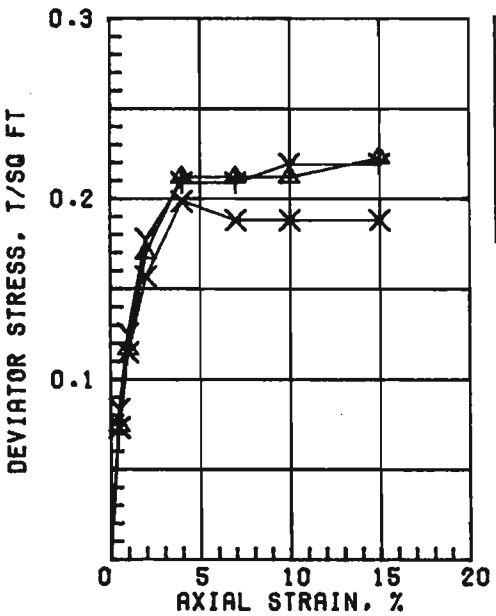
C = 0.103 T/SF

Φ = ∅ DEG

TAN Φ = ∅



γ_{SAT} = 109 pcf



SPECIMEN NO.		Δ1	Y2	X3	4
INITIAL	WATER CONTENT, %	43.8	46.1	48.8	
	DRY DENSITY, PCF	75.9	73.8	71.7	
	SATURATION, %	96.9	97.1	97.5	
	VOID RATIO	1.220	1.283	1.350	
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	0.21	0.20	
TIME TO FAILURE, MIN.		8	15	15	
RATE OF STRAIN INCR.%			7		
INITIAL DIAMETER, IN.		1.36	1.37	1.37	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	

AVE 46.23

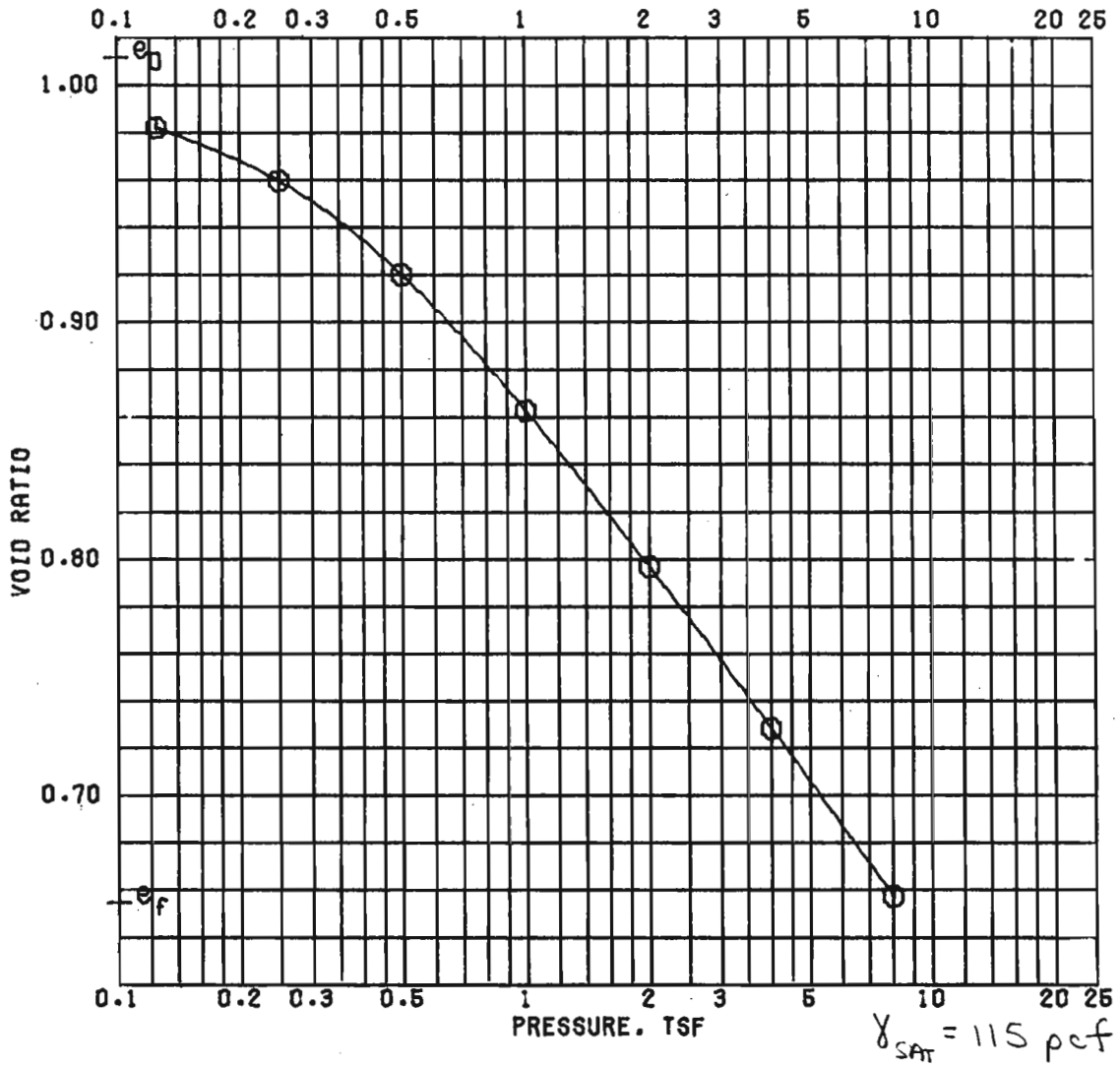
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY

LL 45	PL 16	PI 29	OS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 11-SCU / SAMPLE NO. 7-C
	DEPTH/ELEV 25.4/-24.2 / TECH. BD
	LABORATORY USAE WES / DATE 05 MAY 87

TRIAXIAL COMPRESSION TEST REPORT



			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	36.5	25.6
PRECONSOL. PRESSURE, TSF	0.44	DRY DENSITY, PCF	83.8	101.9
COMPRESSION INDEX	0.223	SATURATION, %	97.6	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.011	0.654
DIA. IN 4.44	HT. IN 1.134	BACK PRESSURE, TSF		

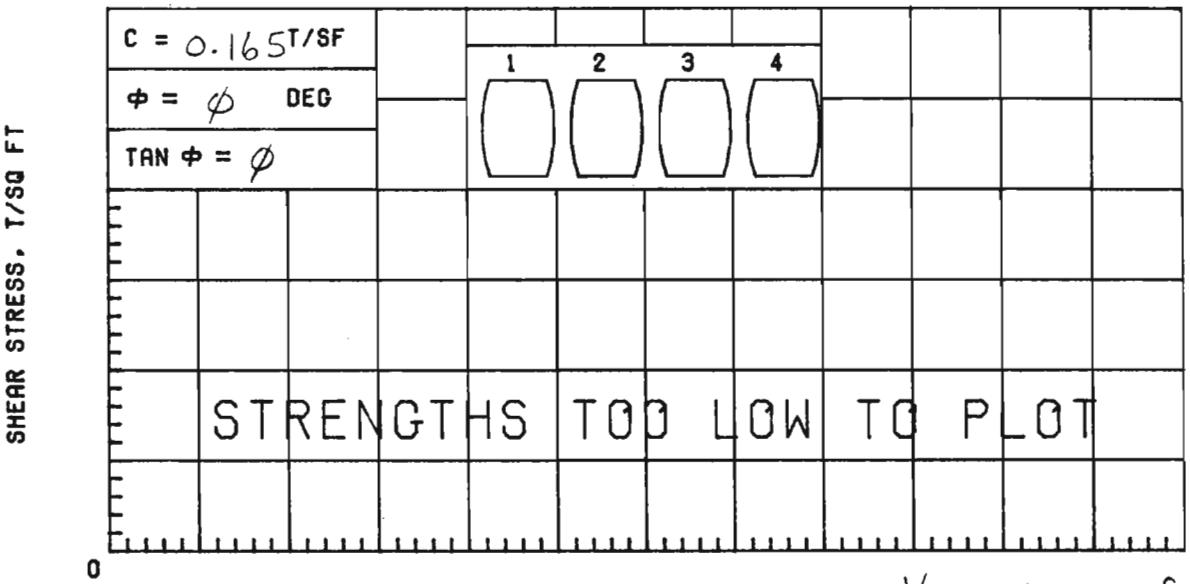
CLASSIFICATION	CLAY (CL), GRAY; SILT & COARSE SAND POCKETS		
LL 32	PL 18	PI 14	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS		BORING NO. 11-SCU	SAMPLE NO. 8-B
		DEPTH/ELEV 28.5/-27.3	DATE 08 JUL 87

CONSOLIDATION TEST REPORT

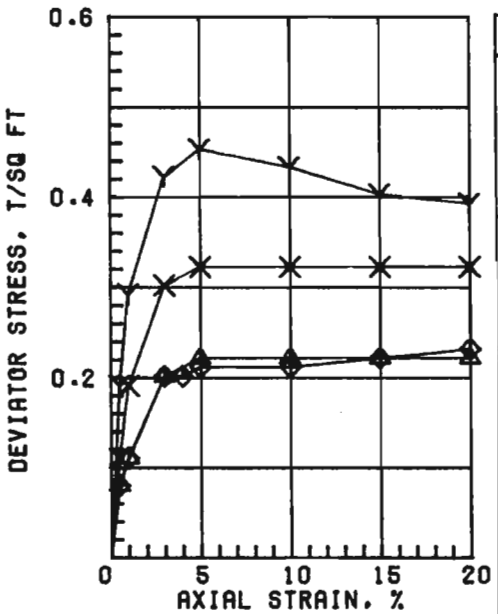
C = 0.165 T/SF

Φ = Ø DEG

TAN Φ = Ø



γ_{SAT} = 107 pcf



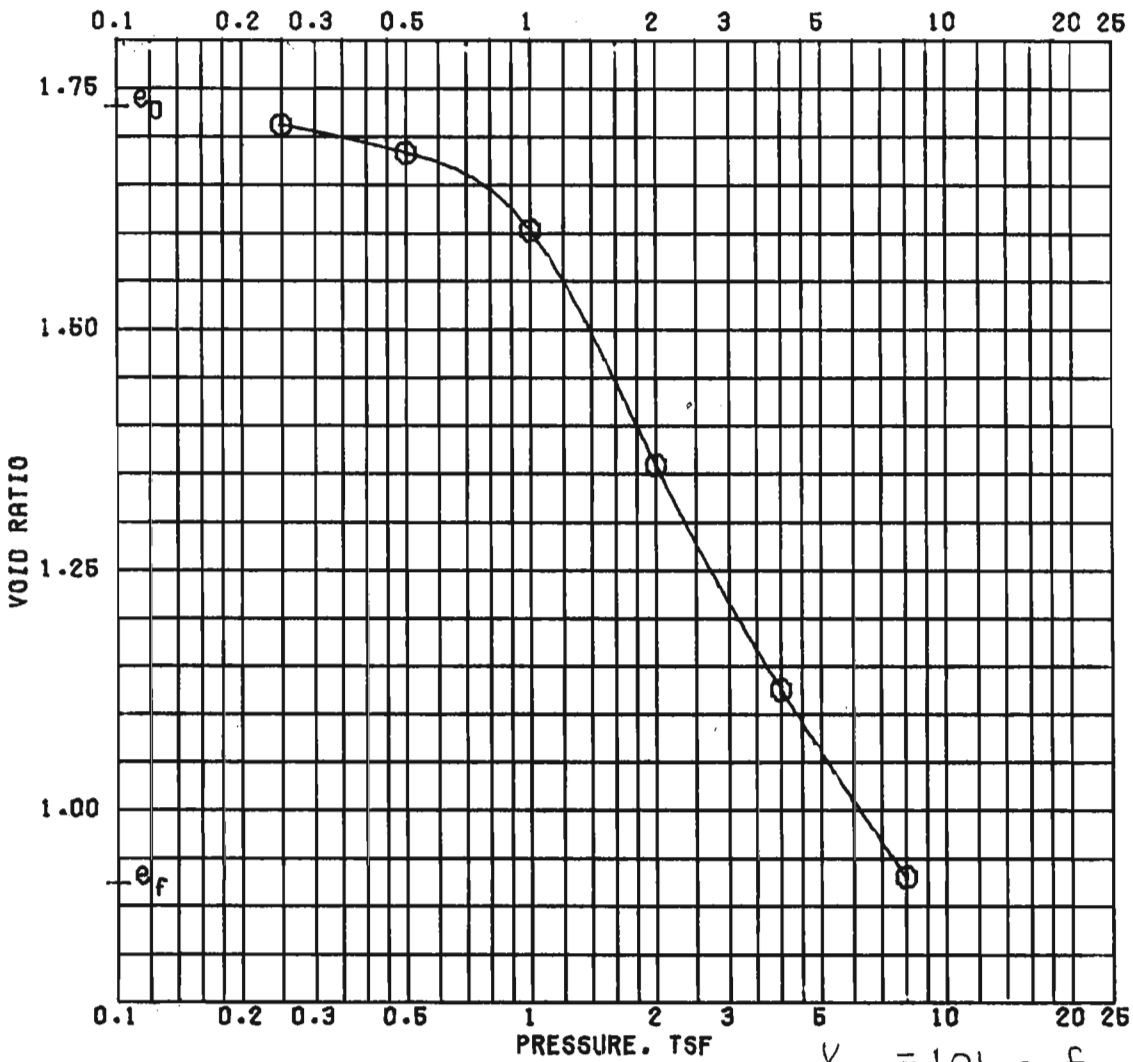
SPECIMEN NO.		▲1	Y2	X3	◊4	AVE
INITIAL	WATER CONTENT, %	52.7	48.3	47.2	49.1	49.3
	DRY DENSITY, PCF	67.9	71.8	72.6	70.7	
	SATURATION, %	96.1	96.7	96.5	95.8	
	VOID RATIO	1.481	1.349	1.321	1.383	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.22	0.45	0.32	0.20	
TIME TO FAILURE, MIN.		10	10	10	6	
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 (CH), GRAY; 1/2" SILT LAYERS

LL 50	PL 19	PI 31	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

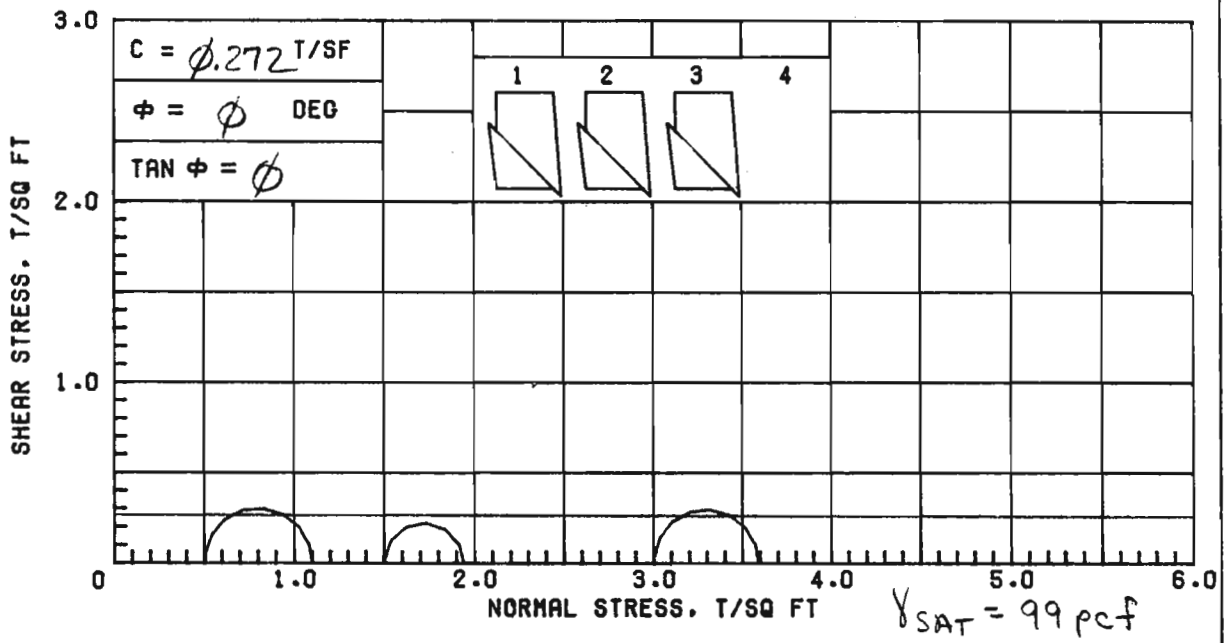
REMARKS:	PROJECT LK PONT & VIC HURR PROT
	ST CHARLES PARISH
	BORING NO. 11-SCU / SAMPLE NO. 9-C
	DEPTH/ELEV 33.0/-31.8 / TECH. KOC
	LABORATORY USAE WES / DATE 06 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT



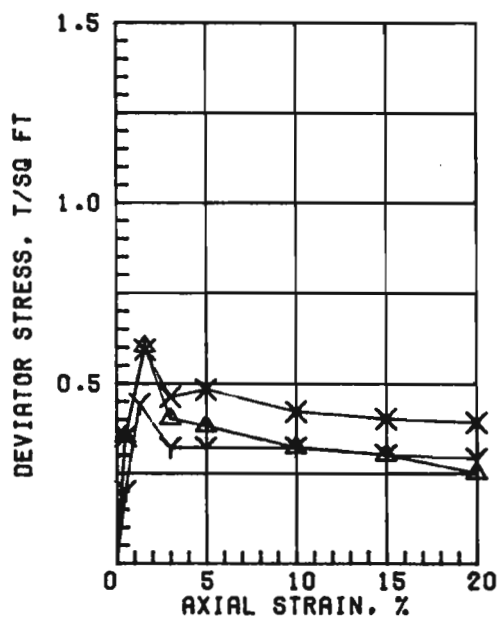
γ_{SAT} = 101 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	64.0	37.2
PRECONSOL. PRESSURE, TSF	0.98	DRY DENSITY, PCF	61.7	87.7
COMPRESSION INDEX	0.86	SATURATION, %	99.8	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	1.730	0.922
DIA. IN 4.44	HT. IN 1.128	BACK PRESSURE, TSF		
CLASSIFICATION	CLAY (CH), GRAY; 1/4" SILT LAYERS			
LL 60	PL 18	PI 42	PROJECT LK PONT & VIC HURR PROT	
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH	
REMARKS			BORING NO. 11-SCU	SAMPLE NO. 10-B
			DEPTH/ELEV 36.5/-35.3	DATE 09 JUL 87

CONSOLIDATION TEST REPORT



γ_{SAT} = 99 pcf



	SPECIMEN NO.	△1	Y2	X3	4
INITIAL	WATER CONTENT, %	72.9	71.8	70.3	
	DRY DENSITY, PCF	56.5	57.3	57.8	
	SATURATION, %	99.1	100.0	99.0	
	VOID RATIO	1.986	1.939	1.917	
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	0.60	0.44	0.59	
	TIME TO FAILURE, MIN.	3	10	17	
	RATE OF STRAIN INCR.%		4	3	
	INITIAL DIAMETER, IN.	1.40	1.40	1.40	
	INITIAL HEIGHT, IN.	3.00	3.00	3.00	

AVE 71.7

CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CH), GRAY

LL 90	PL 26	PI 64	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:

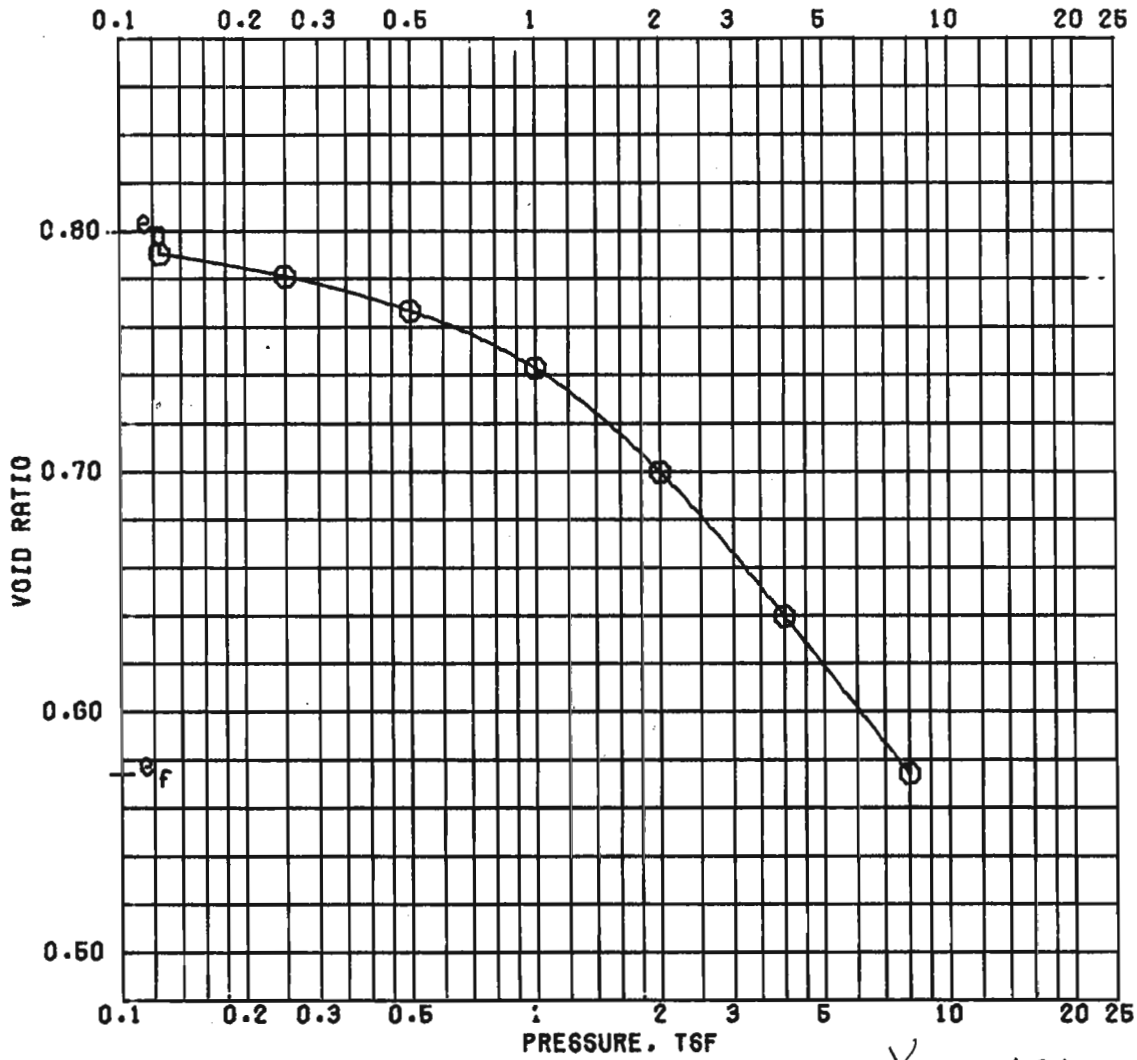
PROJECT LK PONT & VIC HURR PROT
ST CHARLES PARISH

BORING NO. 11-SCU — SAMPLE NO. 12-C

DEPTH/ELEV 45.2/-44.0 — TECH. KOC

LABORATORY USAE WES — DATE 06 MAY 87

TRIAXIAL COMPRESSION TEST REPORT



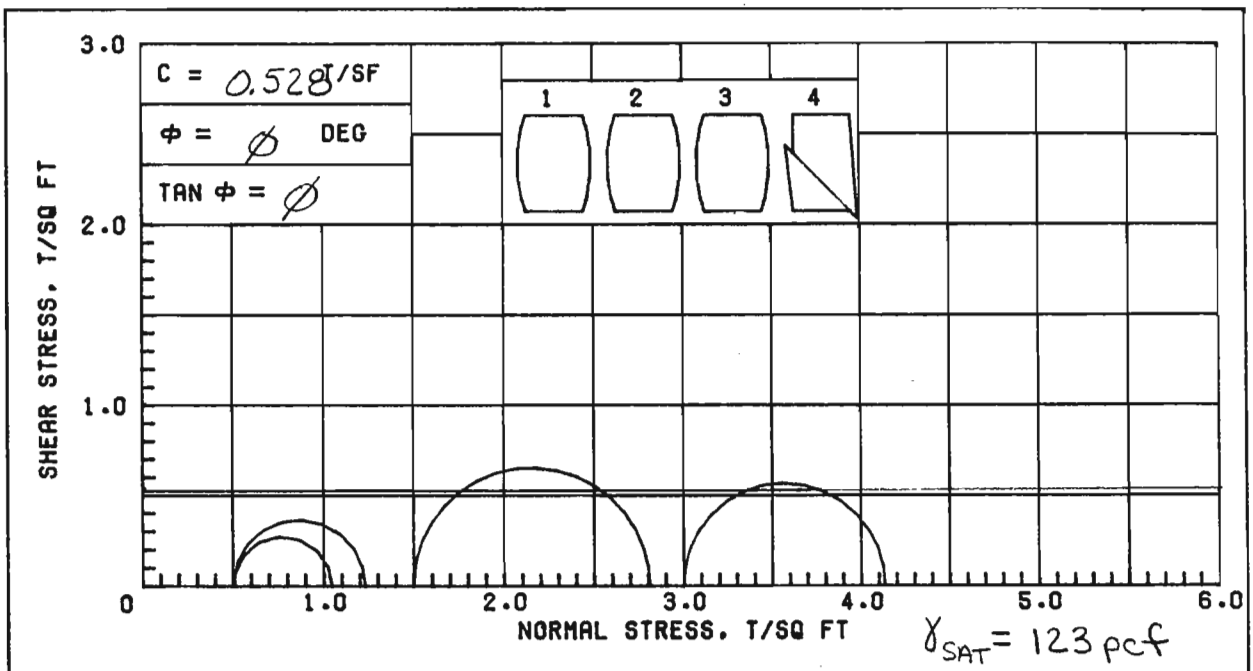
γ_{SAT} = 121 pcf

			BEFORE TEST	AFTER TEST
OVERBURDEN PRESSURE, TSF		WATER CONTENT, %	29.4	22.3
PRECONSOL. PRESSURE, TSF	1.12	DRY DENSITY, PCF	93.7	107.1
COMPRESSION INDEX	0.20	SATURATION, %	99.3	100 +
TYPE SPECIMEN	UNDISTURBED	VOID RATIO	0.799	0.573
DIA. IN 4.44	HT. IN 1.156	BACK PRESSURE, TSF		

CLASSIFICATION CLAY (CL), GRAY

LL 36	PL 15	PI 21	PROJECT LK PONT & VIC HURR PROT
GS 2.70 (EST)	D_{10}		ST CHARLES PARISH
REMARKS			BORING NO. 11-SCU / SAMPLE NO. 14-B
			DEPTH/ELEV 52.0/-50.8 / DATE 10 JUL 87

CONSOLIDATION TEST REPORT



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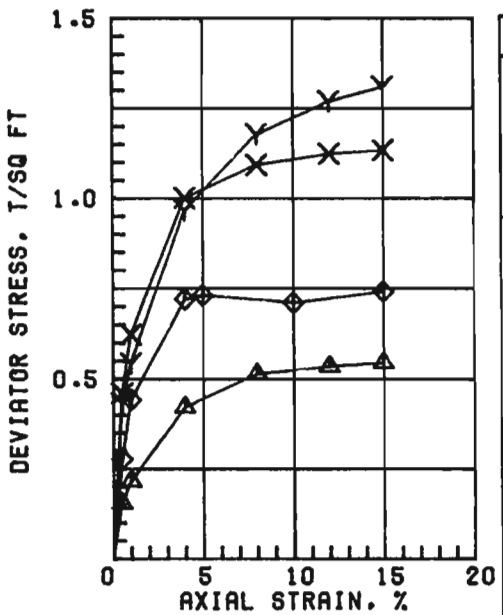


SPECIMEN NO.		△1	Y2	X3	◇4	AVE
INITIAL	WATER CONTENT, %	26.2	23.4	27.3	24.1	25.3
	DRY DENSITY, PCF	92.1	97.7	95.4	96.4	
	SATURATION, %	85.2	87.1	95.9	87.0	
	VOID RATIO	0.831	0.726	0.768	0.748	
BEFORE SHEAR	WATER CONTENT, %					
	DRY DENSITY, PCF					
	SATURATION, %					
	VOID RATIO					
	BACK PRESS., TSF					
MIN PRIN. STRESS, TSF		0.5	1.5	3.0	0.5	
MAX. DEV. STRESS, TSF		0.55	1.31	1.13	0.73	
TIME TO FAILURE, MIN.		32	33	33	10	
RATE OF STRAIN INCR.%						
INITIAL DIAMETER, IN.		1.38	1.39	1.39	1.38	
INITIAL HEIGHT, IN.		3.00	3.00	3.00	3.00	

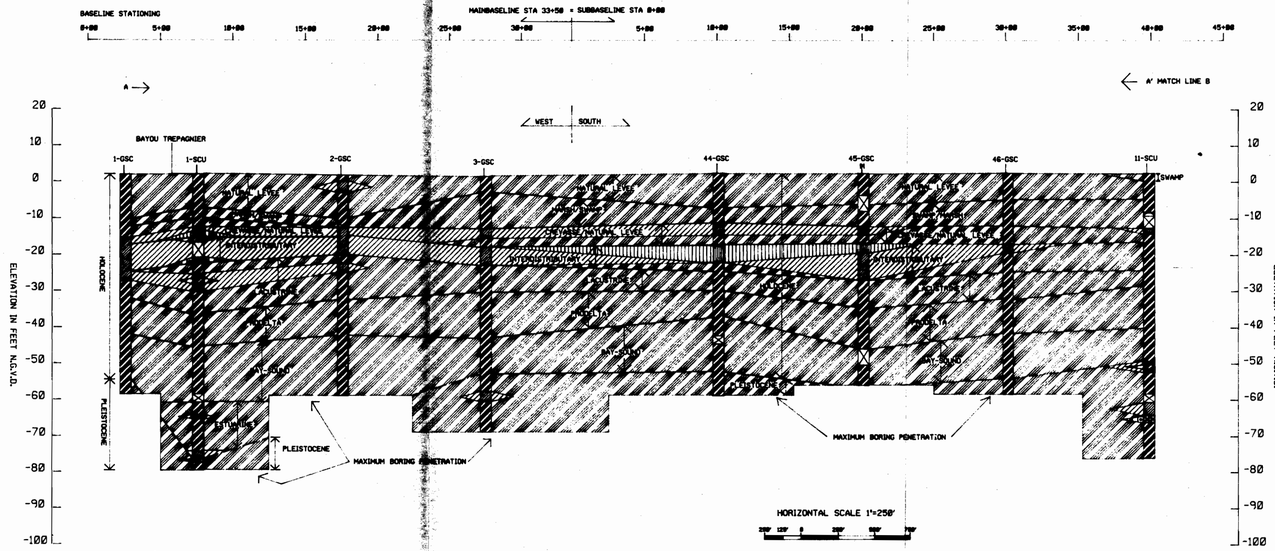
CONTROLLED-STRAIN TEST

DESCRIPTION OF SPECIMENS: CLAY (CL), GRAY; SHELL PARTICLES

LL 36	PL 14	PI 22	GS 2.70 (ESTIMATED)	UNDISTURBED SPECIMEN	Q TEST

REMARKS:	PROJECT LK PONT & VIC HURR PROT	
	ST CHARLES PARISH	
	BORING NO. 11-SCU	SAMPLE NO. 14-C
	DEPTH/ELEV 53.3/-52.1	TECH. BD
	LABORATORY USAE WES	DATE 06 MAY 87
	TRIAXIAL COMPRESSION TEST REPORT	

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



SAMPLING METHODS

'U' DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (WIRELINE) SAMPLER IN COHESIVE SOILS.

SOIL LEGEND

- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- WD - WOOD
- NO SAMPLE

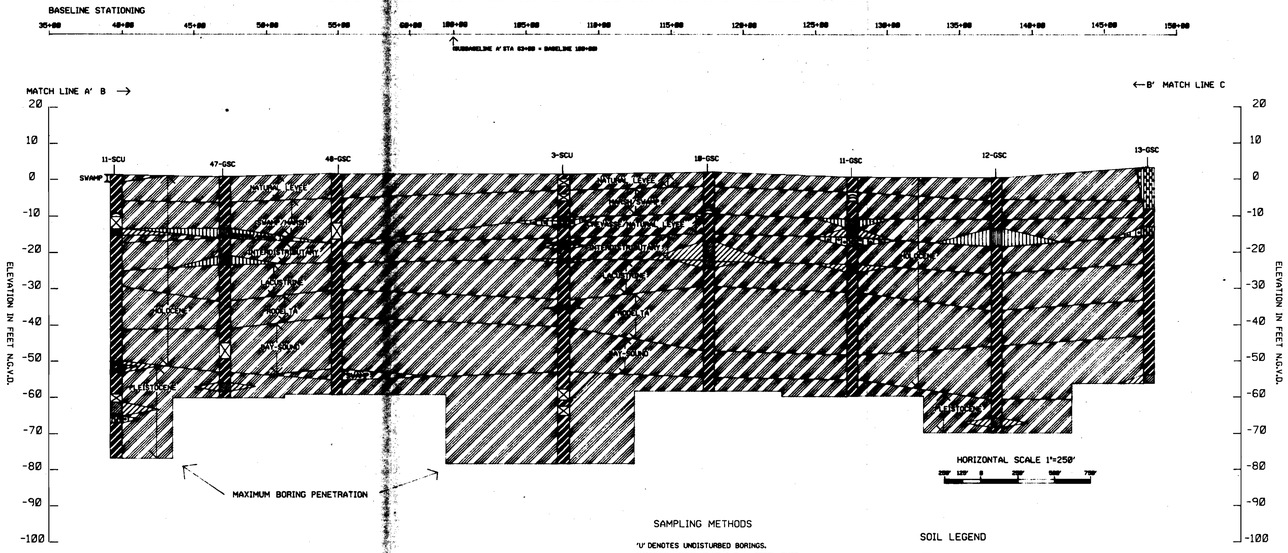
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE

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

DATE: JANUARY 1989 FILE NO. H-2-30423

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



SAMPLING METHODS

"U" DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (WIRELINE) SAMPLER IN COHESIVE SOILS.

SOIL LEGEND

- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- WD - WOOD
- NO SAMPLE

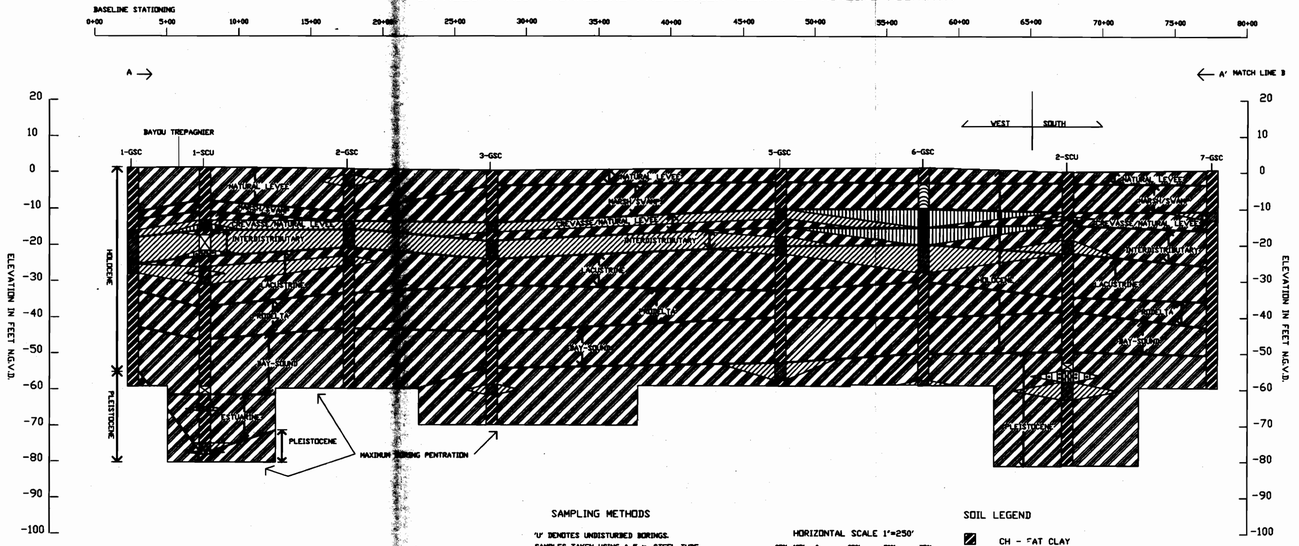
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 19, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

PLATE 52

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



SAMPLING METHODS

'U' DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 IN. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8' I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8' I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8' I.D. CORE BARREL (VIRELINE) SAMPLER IN COHESIVE SOILS.

HORIZONTAL SCALE 1"=250'

250' 125' 0 250' 500' 750'

SOIL LEGEND

- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- WD - WOOD
- NO SAMPLE

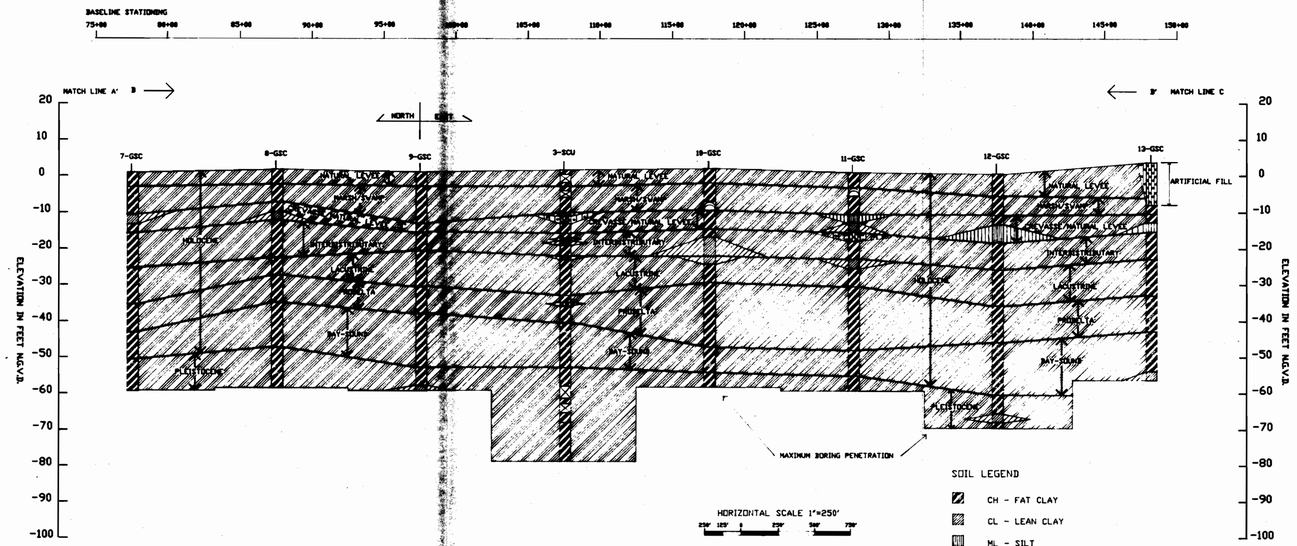
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE
ALTERNATE ALINEMENT

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

DATE: JANUARY 1989 FILE NO. H-2-30423

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



HORIZONTAL SCALE 1"=250'

250' 125' 0 250' 500' 750'

SOIL LEGEND

- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- WD - WOOD
- NO SAMPLE

SAMPLING METHODS

'U' DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (WIRELINE) SAMPLER IN COHESIVE SOILS.

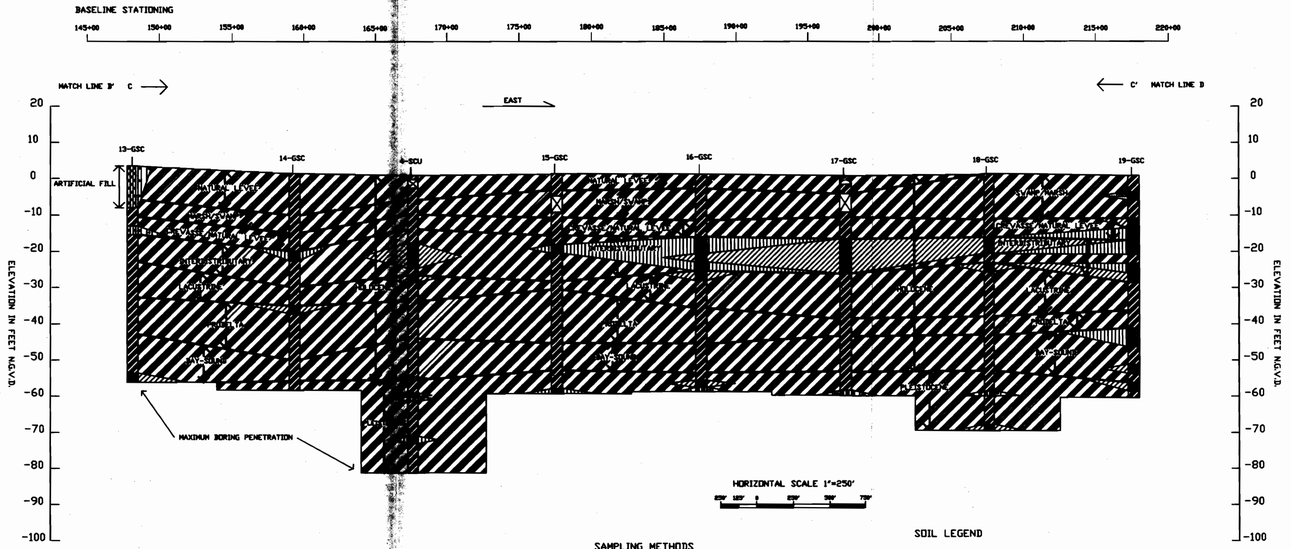
LAKE PONTCHARTRAIN, LA AND VICINITY
HNH LEVEL PLAN
DESIGN MEMORANDUM NO. 18 GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE
ALTERNATE ALINEMENT

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

DATE: JANUARY 1989 FILE NO. H-2-30423

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



SAMPLING METHODS

'U' DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (WIRELINE) SAMPLER IN COHESIVE SOILS.

SOIL LEGEND

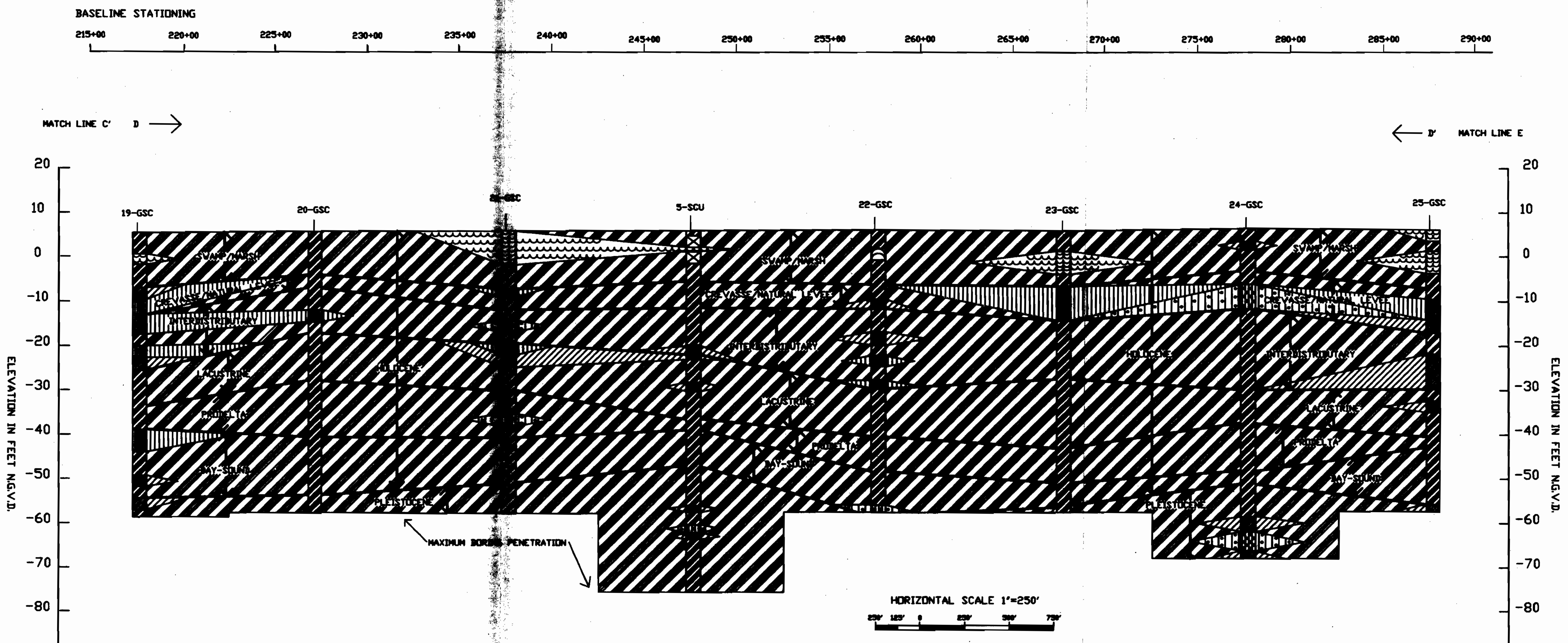
- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- WD - WOOD
- PT - PEAT
- NO SAMPLE

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



SAMPLING METHODS

'U' DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (WIRELINE) SAMPLER IN COHESIVE SOILS.

SOIL LEGEND

- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- PT - PEAT
- WD - WOOD
- NO SAMPLE

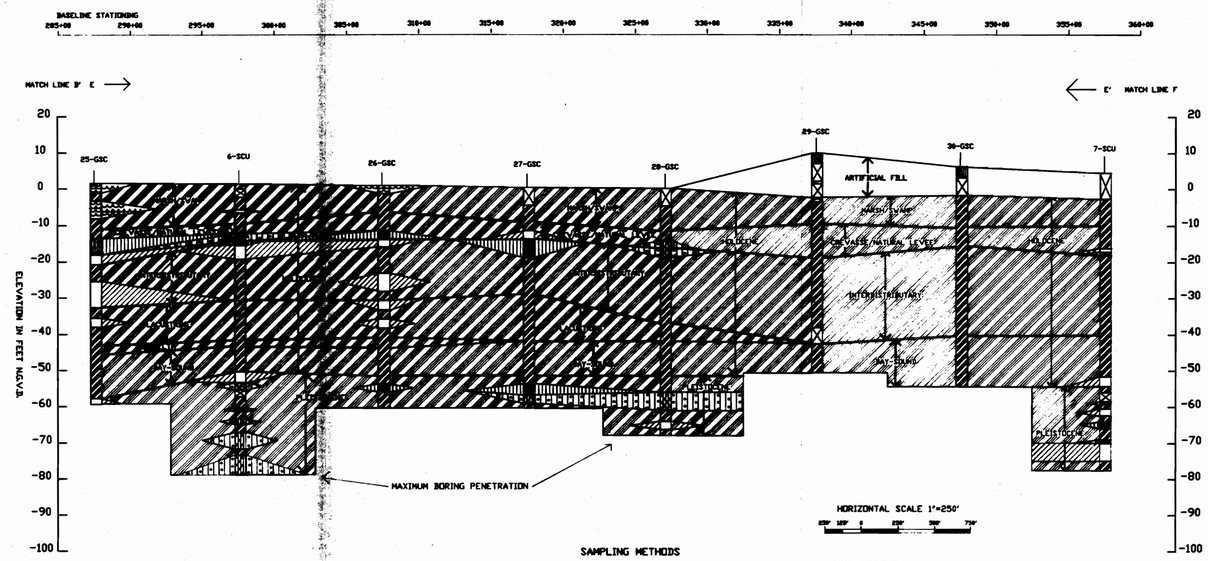
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE

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

DATE: JANUARY 1989 FILE NO. H-2-30423

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



SAMPLING METHODS

'U' DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (VIBRALINE) SAMPLER IN COHESIVE SOILS.

SOIL LEGEND

- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- PT - PEAT
- WD - WOOD
- NO SAMPLE

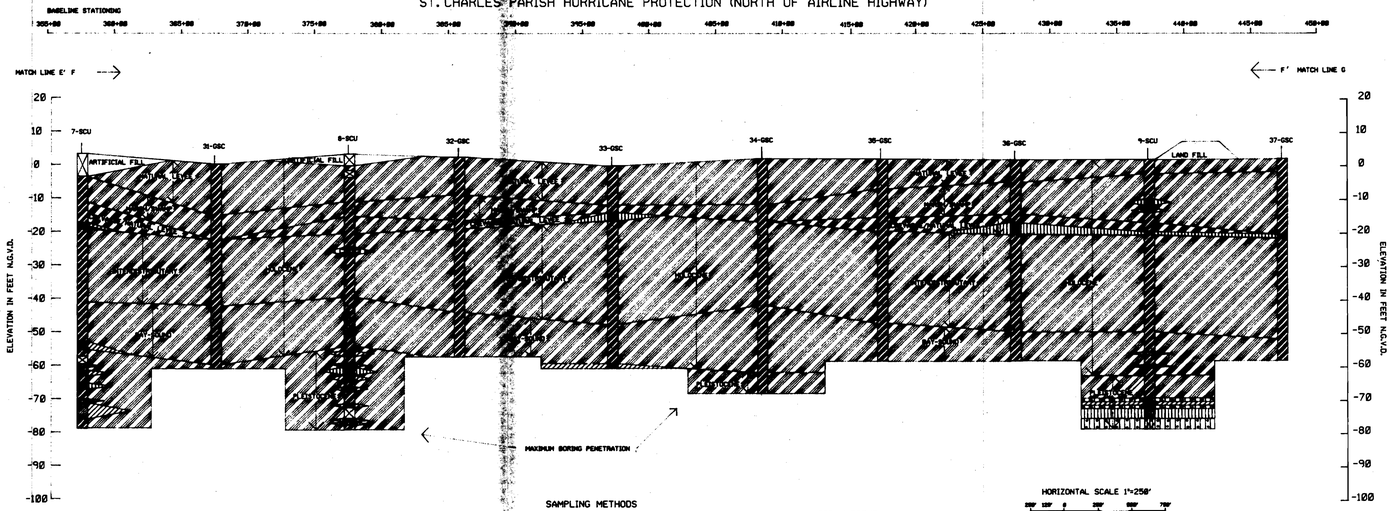
LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE

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

DATE: JANUARY 1989 FILE NO. H-2-30423

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



HORIZONTAL SCALE 1"=250'

SAMPLING METHODS

"U" DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (WIRELINE) SAMPLER IN COHESIVE SOILS.

SOIL LEGEND

- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- SM - SILTY SAND
- SL - SHELLS
- NO SAMPLE

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

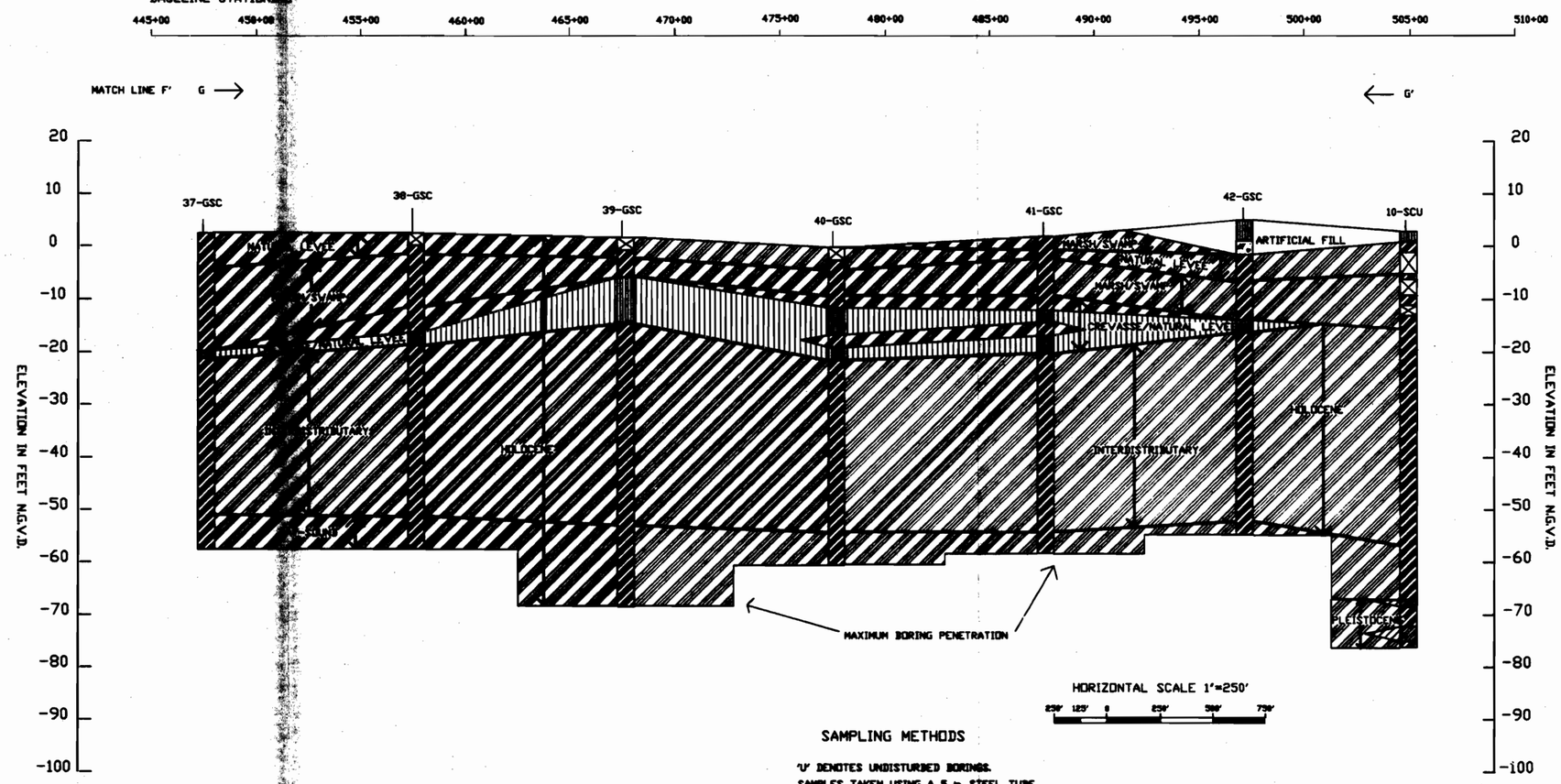
SOIL AND GEOLOGIC PROFILE

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

DATE: JANUARY 1989 FILE NO. H-2-30423

PLATE 58

ST. CHARLES PARISH HURRICANE PROTECTION (NORTH OF AIRLINE HIGHWAY)



HORIZONTAL SCALE 1"=250'

250' 125' 0 250' 500' 750'

SAMPLING METHODS

'U' DENOTES UNDISTURBED BORINGS. SAMPLES TAKEN USING A 5 in. STEEL TUBE PISTON-TYPE SAMPLER IN COHESIVE SOILS AND A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL.

GENERAL TYPE BORINGS WERE MADE USING A 1-3/8" I.D. SPLITSPOON-TYPE SAMPLER IN GRANULAR MATERIAL AND A 1-7/8" I.D. CORE BARREL (WIRELINE) SAMPLER IN COHESIVE SOILS.

SOIL LEGEND

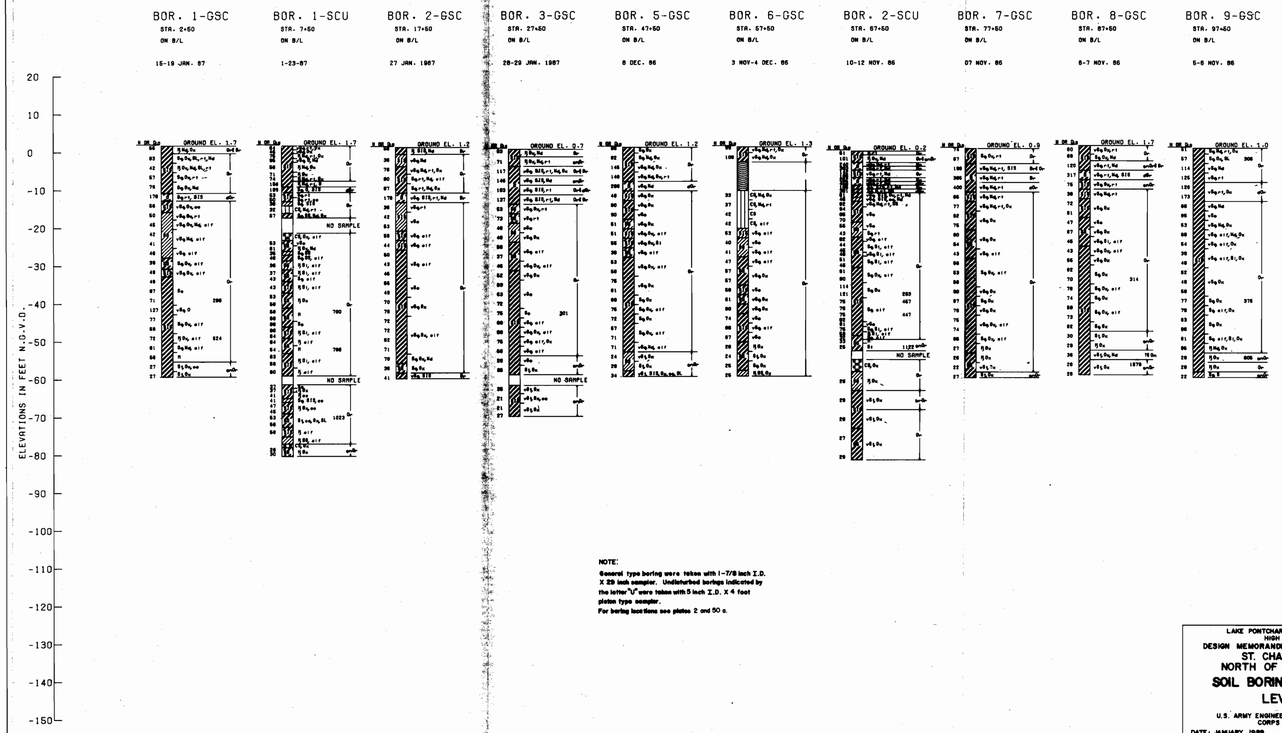
- CH - FAT CLAY
- CL - LEAN CLAY
- ML - SILT
- GP - GRAVEL
- NO SAMPLE

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL AND GEOLOGIC PROFILE

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

DATE: JANUARY 1989 FILE NO. H-2-30423



NOTE:

General type boring were taken with 1-7/8 inch I.D. X 29 inch sampler. Undisturbed borings indicated by the letter "U" were taken with 3 inch I.D. X 4 foot piston type sampler.

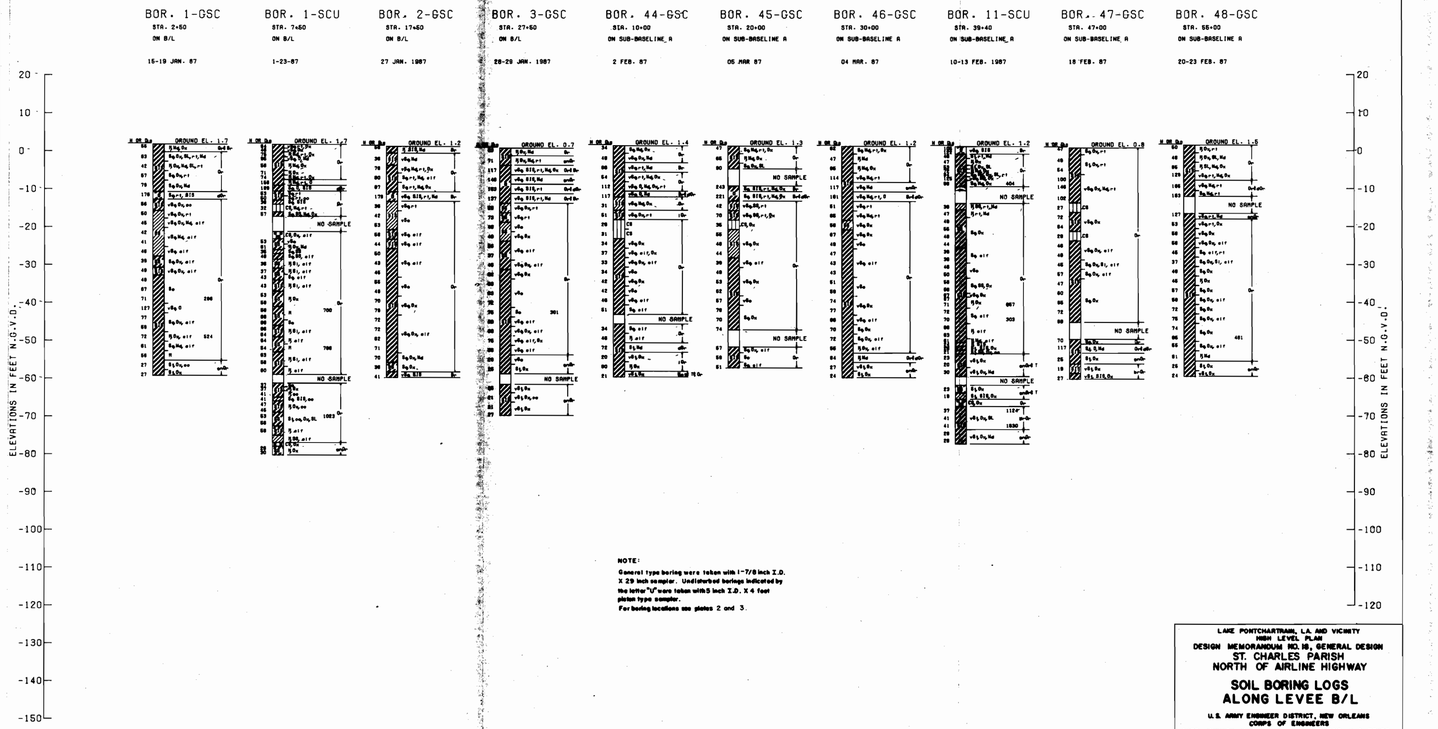
For boring locations see plates 2 and 50 a.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL BORINGS LOGS ALONG LEVEE B/L

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

DATE: JANUARY 1989 FILE NO. H-2-30423

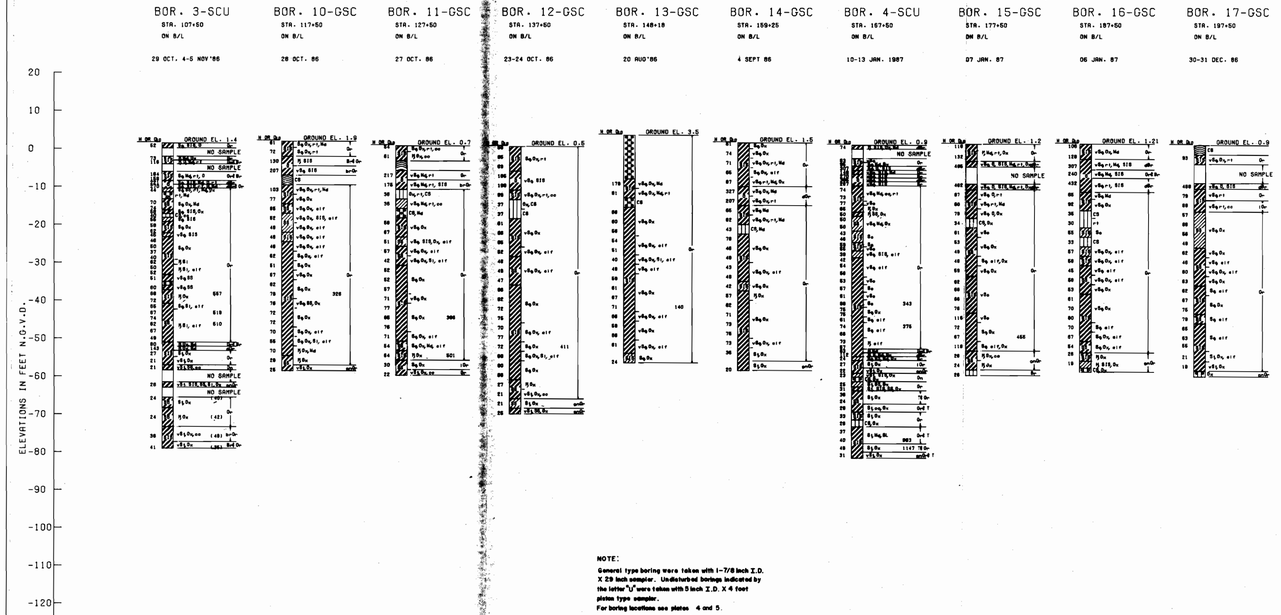


NOTE:
General type boring were taken with 1-7/8 inch I.D. X 29 inch sampler. Undisturbed borings indicated by the letter "U" were taken with 3 inch I.D. X 4 foot piston type sampler.
For boring locations see plates 2 and 3.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL BORING LOGS ALONG LEVEE B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30483



NOTE:

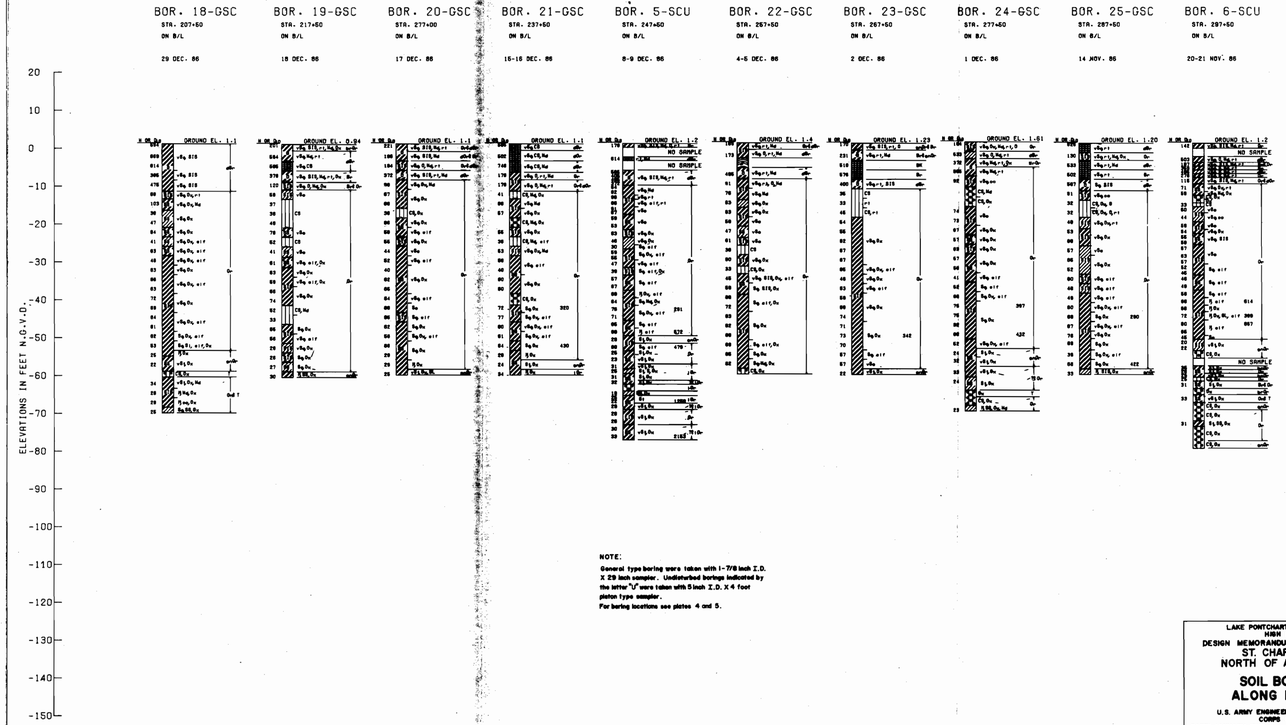
General type boring were taken with 1-7/8 inch I.D. X 29 inch sampler. Undisturbed borings indicated by the letter "U" were taken with 5 inch I.D. X 4 foot piston type sampler.

For boring locations see plates 4 and 5.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL BORING LOGS
ALONG LEVEE B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

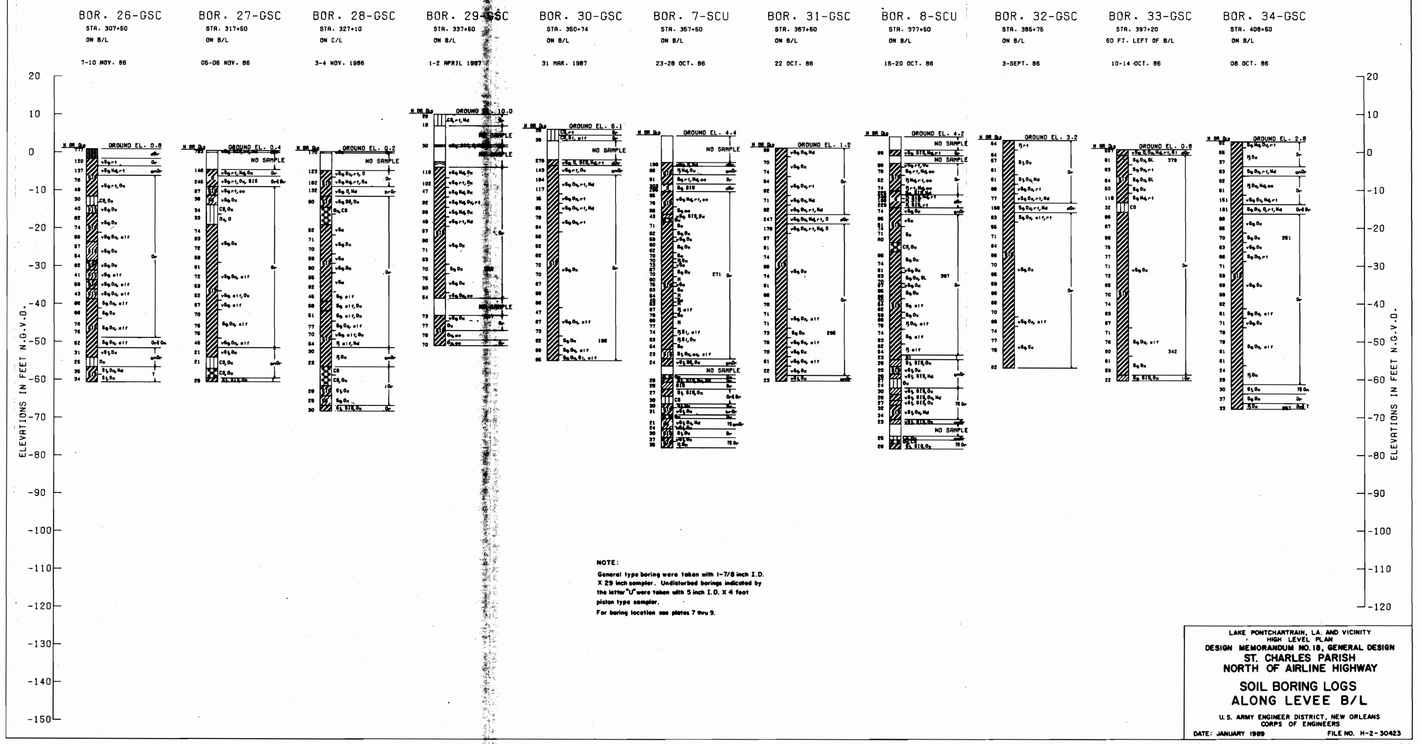


NOTE:
General type boring were taken with 1-7/8 inch I.D. X 2.9 inch sampler. Undisturbed borings indicated by the letter "U" were taken with 5 inch I.D. X 4 foot piston type sampler.
For boring locations see plates 4 and 5.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 10, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL BORING LOGS ALONG LEVEE B/L

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



NOTE:

General type boring were taken with 1-7/8 inch I.D. X 29 inch sampler. Undisturbed borings indicated by the letter "U" were taken with 5 inch I.D. X 4 foot piston type sampler.

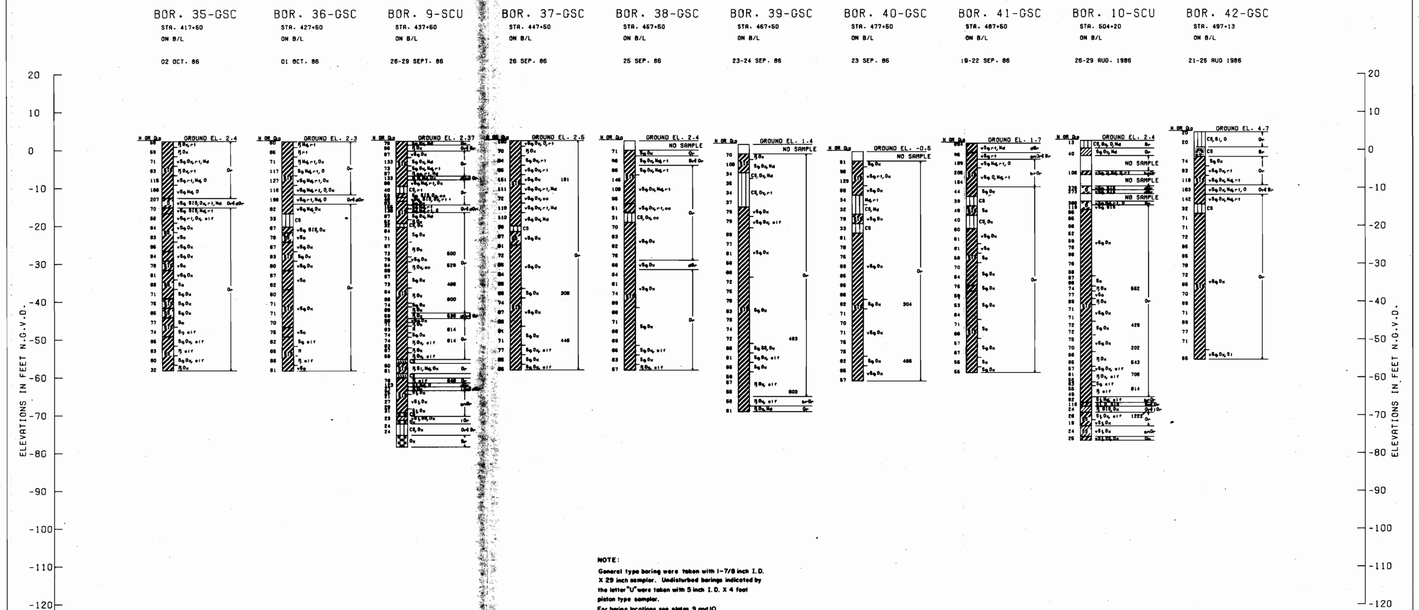
For boring location see plates 7 thru 9.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 10, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL BORING LOGS
ALONG LEVEE B/L

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

DATE: JANUARY 1989 FILE NO. H-2-30423



NOTE:

General type boring were taken with 1-7/8 inch I.D. X 29 inch sampler. Undisturbed borings indicated by the letter "U" were taken with 5 inch I.D. X 4 foot piston type sampler.

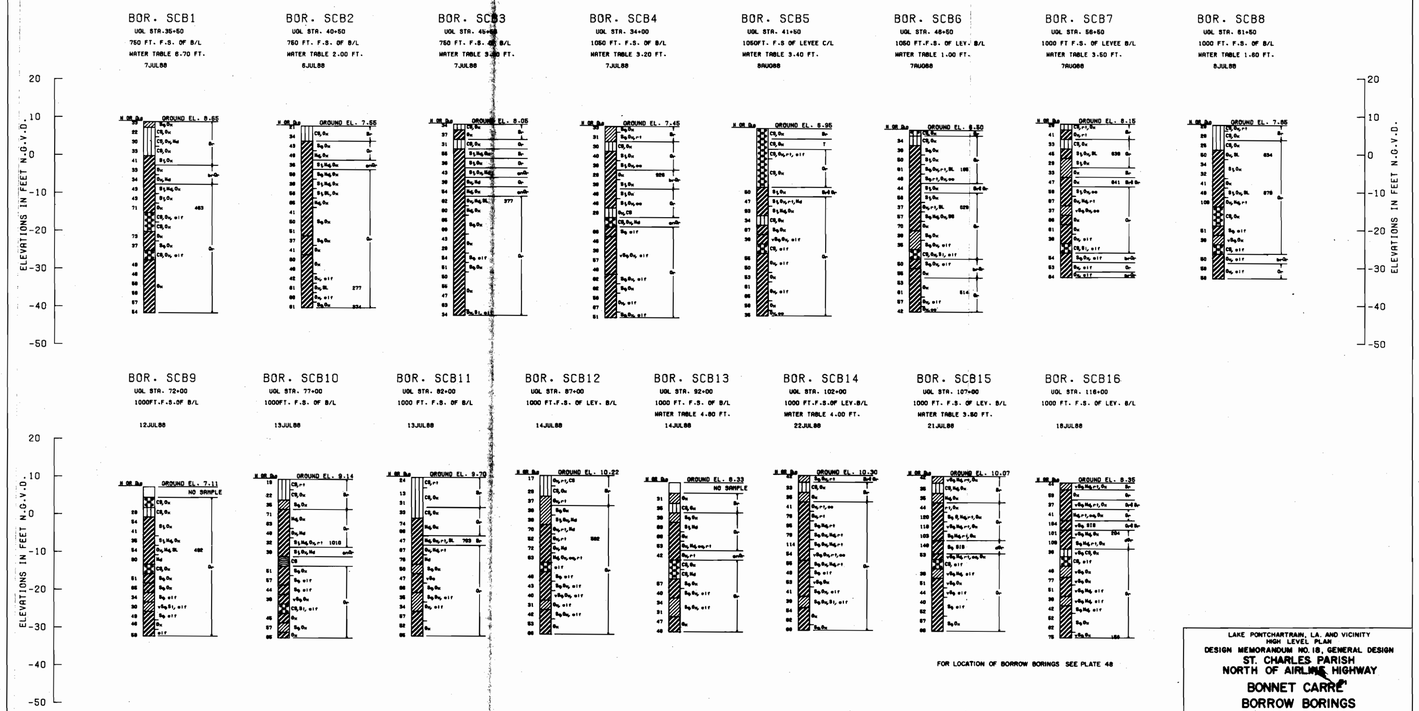
For boring locations see plates 9 and 10.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 19, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SOIL BORING LOGS ALONG LEVEE B/L

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

DATE: JANUARY 1989 FILE NO. H-2-30423



FOR LOCATION OF BORROW BORINGS SEE PLATE 48

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
BONNET CARRE
BORROW BORINGS

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

DATE: JANUARY 1989 FILE NO. H-2-30423

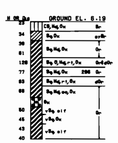
BOR. SCB17

STA. R76+50M

1950 FT. SOUTH OF R.R. C/L

WATER TABLE 3.5 FT.

29JUL88



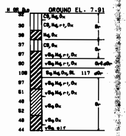
BOR. SCB18

STA. R76+50M

1450 FT. SOUTH OF R.R. C/L

WATER TABLE 4.5 FT.

29JUL88



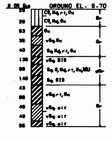
BOR. SCB19

STA. R76+50M

950 FT.SOUTH OF R.R. C/L

WATER TABLE 4.5 FT.

28JUL88



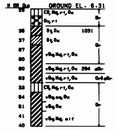
BOR. SCB20

STA. R71+50M

1900 FT. SOUTH OF R.R. C/L

WATER TABLE 3.3 FT.

28JUL88



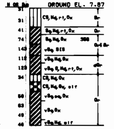
BOR. SCB21

STA. R71+50M

1300 FT. SOUTH OF R.R. C/L

WATER TABLE 0.0 FT.

02RU088



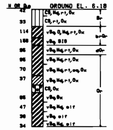
BOR. SCB22

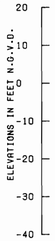
STA. R71+50M

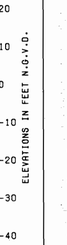
800 FT. SOUTH OF R.R. C/L

WATER TABLE 0.0 FT.

03RU088







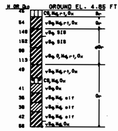
BOR. SCB23

STA. R71+50M

300 FT. SOUTH OF R.R. C/L

WATER TABLE 0.0 FT.

02RU088



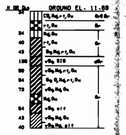
BOR. SCB24

STA. R67+50M

1300 FT. SOUTH OF R.R. C/L

WATER TABLE 2.30 FT.

11RU088



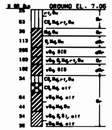
BOR. SCB25

STA. R67+50M

400 FT. SOUTH OF R.R. C/L

WATER TABLE 2.10 FT.

01RU088



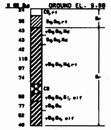
BOR. SCB26

STA. R64+00M

900 FT. SOUTH OF R.R. C/L

WATER TABLE 2.0 FT.

10RU088



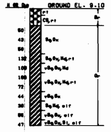
BOR. SCB27

STA. R61+00M

400 FT. SOUTH OF R.R. C/L

WATER TABLE 1.70 FT.

03RU088



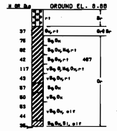
BOR. SCB28

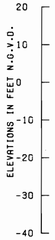
STA. R58+00M

1000 FT. SOUTH OF R.R. C/L

WATER TABLE 1.7 FT.

11RU088





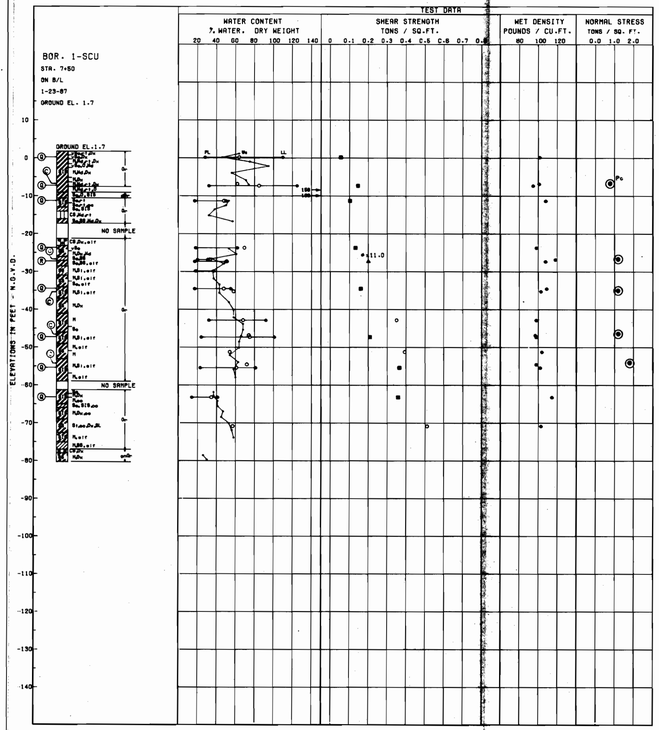
FOR LOCATION OF BORROW BORINGS SEE PLATE 48

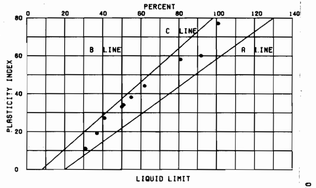
LAKE PONTCHARTRAIN, L.A. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

BONNET CARRE'
BORROW BORINGS

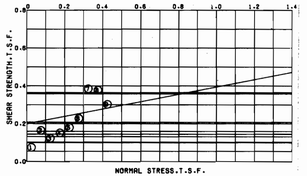
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

BOR. I-SCU
STA. 7+50
ON B/L
1-23-87
GROUND EL. 1.7



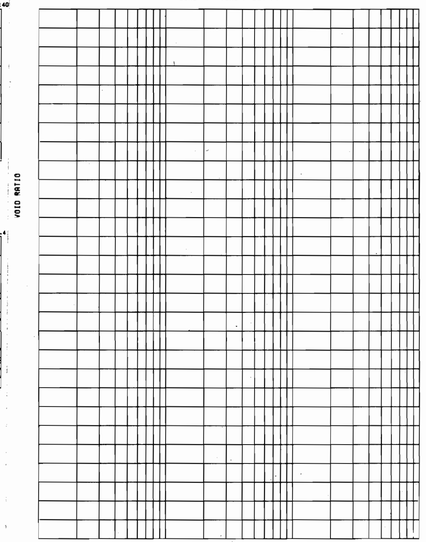


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE		TYPE	STRENGTH		CLASS
NO.	EL.		Φ	C - TSF	
1	0.20	Q	0.0	0.066	CH
2	-7.30	Q	0.0	0.145	CH
3	-11.30	Q	0.0	0.103	CH
4	-23.70	Q	0.0	0.132	CH
5	-34.60	Q	0.0	0.160	CH
6	-47.90	Q	0.0	0.206	CH
7	-55.40	Q	0.0	0.365	CH
8	-63.20	Q	0.0	0.369	CL
9	-27.30	R	11.0	0.200	CH



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
□ - (S) CONSOLIDATED - DRAINED SHEAR TEST
BORINGS WERE TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE A
FOR LOCATION OF BORING SEE PLATE 2.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.10, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORINGS I-SCU

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

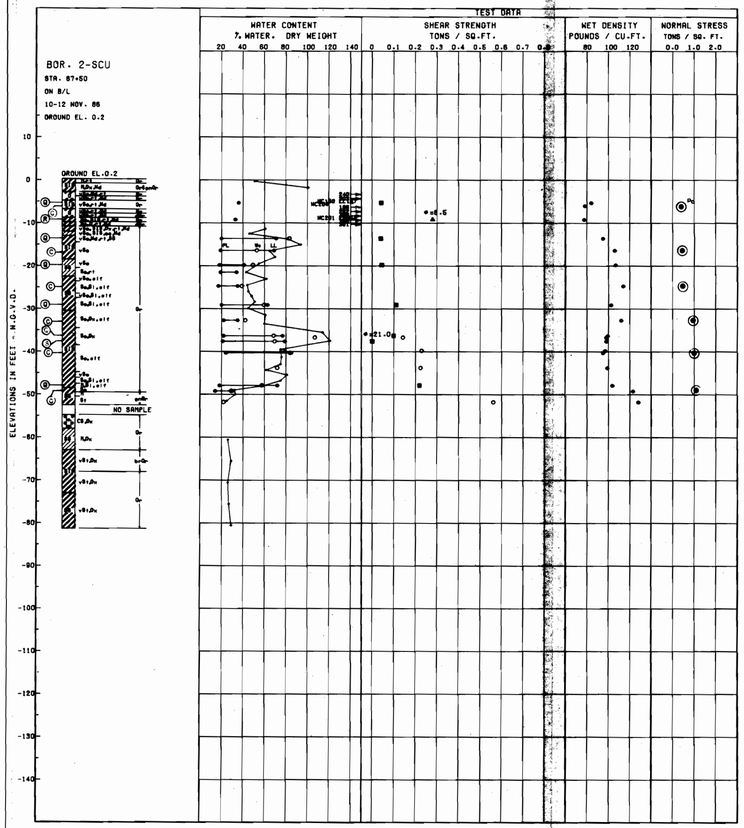
BOR. 2-SCU

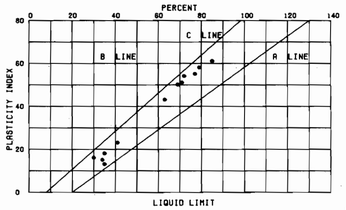
STA. 67+50

ON B/L

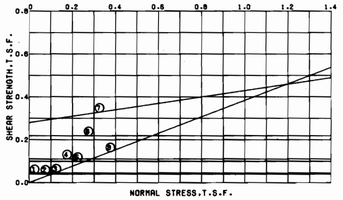
10-12 NOV. 86

GROUND EL. 0.2



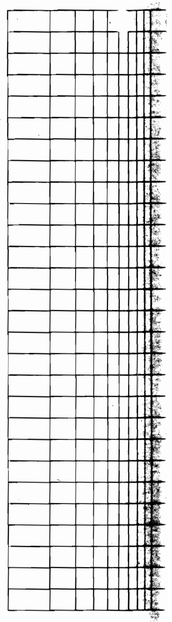


PLASTICITY CHART



SHEAR STRENGTH DATA

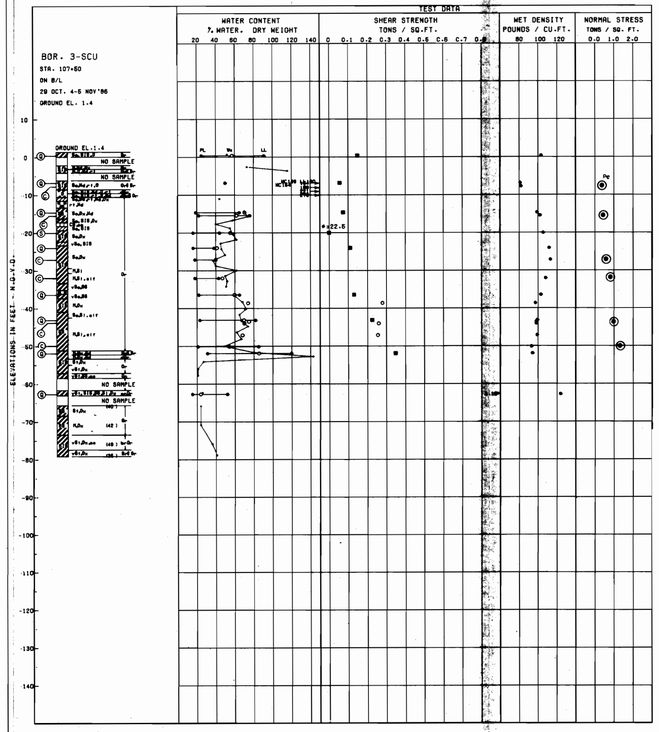
ENVELOPE NO.	EL.	TYPE	STRENGTH ϕ	STRENGTH C - TSF	CLASS
1	-6.90	Q	0.0	0.042	CH
2	-13.60	Q	0.0	0.040	CH
3	-19.80	Q	0.0	0.045	CL
4	-29.10	Q	0.0	0.111	CH
5	-36.30	Q	0.0	0.089	CH
6	-47.90	Q	0.0	0.219	CH
7	-8.20	R	8.5	0.280	CH
8	-37.60	S	21.0	0.000	CH

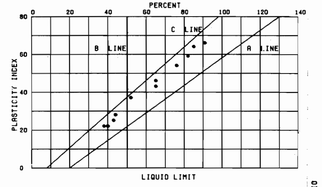


CON

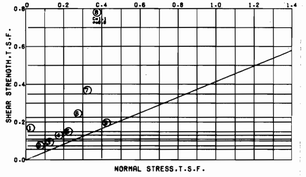
○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHE
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR
⊡ - (S) CONSOLIDATED - DRAINED SHEAR T
BORINGS WERE TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE A
FOR LOCATION OF BORING SEE PLATE 50-A

BOR. 3-SCU
STA. 107+50
ON B/L
29 OCT. 4-6 NOV'86
GROUND EL. 1.4



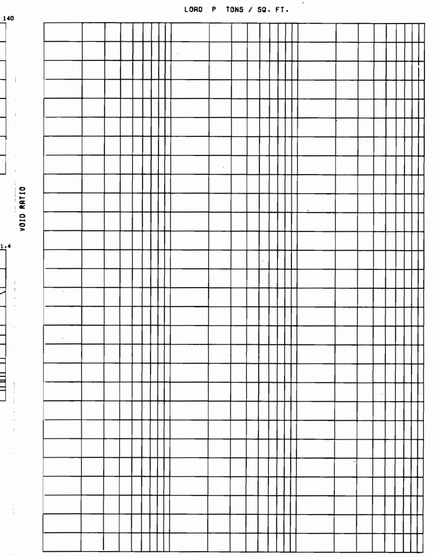


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE		TYPE	STRENGTH		CLASS
NO.	EL.		Φ	C - TSF	
1	0.40	Q	0.0	0.149	CH
2	-8.80	Q	0.0	0.066	CH
3	-14.60	Q	0.0	0.074	CH
4	-24.00	Q	0.0	0.110	CL
5	-36.40	Q	0.0	0.130	CH
6	-43.10	Q	0.0	0.225	CH
7	-51.90	Q	0.0	0.348	CH
8	-62.70	Q	0.0	1.120	CH
9	-20.00	S	22.5	0.000	CL



CONSOLIDATION DATA

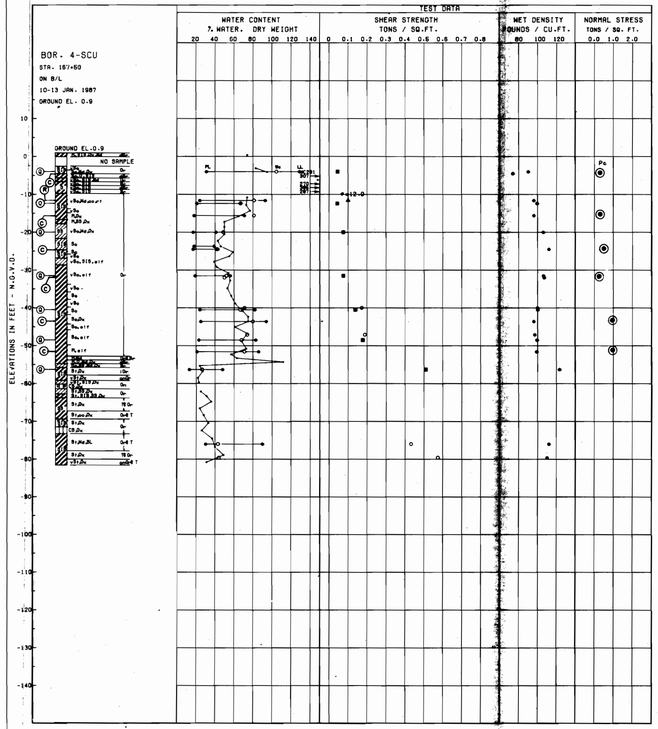
○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
◫ - (S) CONSOLIDATED - DRAINED SHEAR TEST
BORINGS WERE TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE A
FOR LOCATION OF BORING SEE PLATE 4

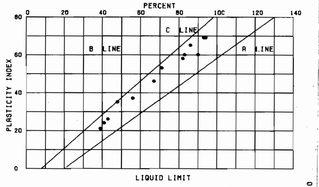
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 10, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORINGS 3-SCU

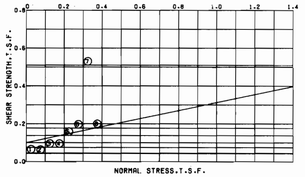
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

BOR. 4-SCU
STA. 167+50
ON B/L
10-13 JAN. 1987
GROUND EL. 0.9



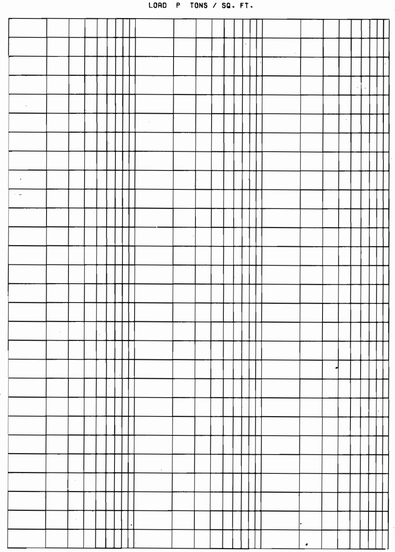


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE		TYPE	STRENGTH		CLASS
NO.	EL.		Φ	C - TSF	
1	-4.00	Q	0.0	0.045	CH
2	-12.40	Q	0.0	0.043	CH
3	-20.00	Q	0.0	0.075	CL
4	-31.50	Q	0.0	0.075	CH
5	-40.50	Q	0.0	0.138	CH
6	-48.50	Q	0.0	0.177	CH
7	-56.30	Q	0.0	0.510	CL
8	-11.80	R	12.0	0.100	CH



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
◫ - (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORING SEE PLATE 5

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN

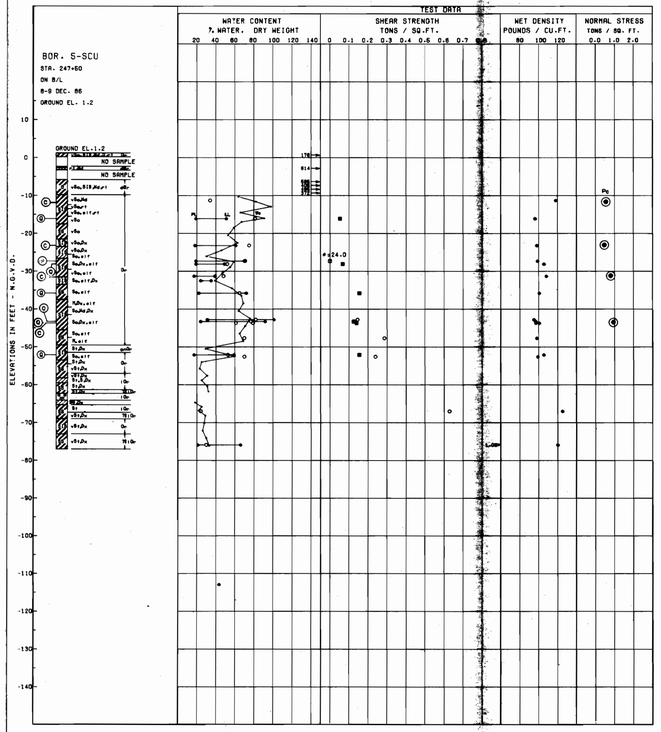
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

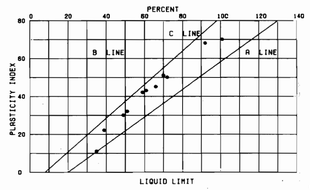
UNDISTURBED BORINGS 4-SCU

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

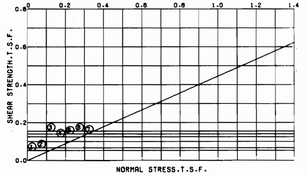
DATE: JANUARY 1989 FILE NO. H-2-30423

BOR. 5-SCU
STA. 247+60
ON B/L
8-9 DEC. 86
GROUND EL. 1.2



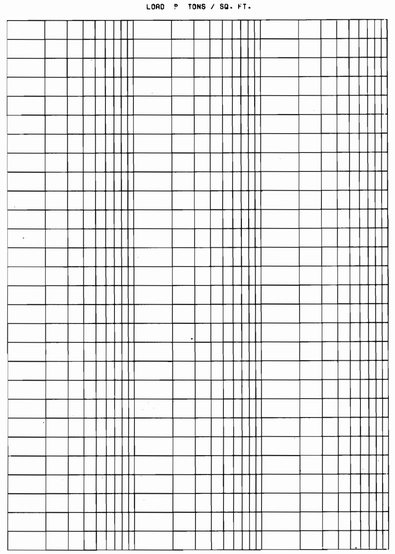


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH φ	STRENGTH C - TSF	CLASS
1	-18.10	Q	0.0	0.063	CH
2	-28.10	Q	0.0	0.067	CH
3	-35.80	Q	0.0	0.155	CH
4	-43.30	Q	0.0	0.125	CH
5	-43.70	Q	0.0	0.140	CH
6	-52.10	Q	0.0	0.155	CH
7	-27.30	S	24.0	0.000	CH



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
⊡ - (S) CONSOLIDATED - DRAINED SHEAR TEST

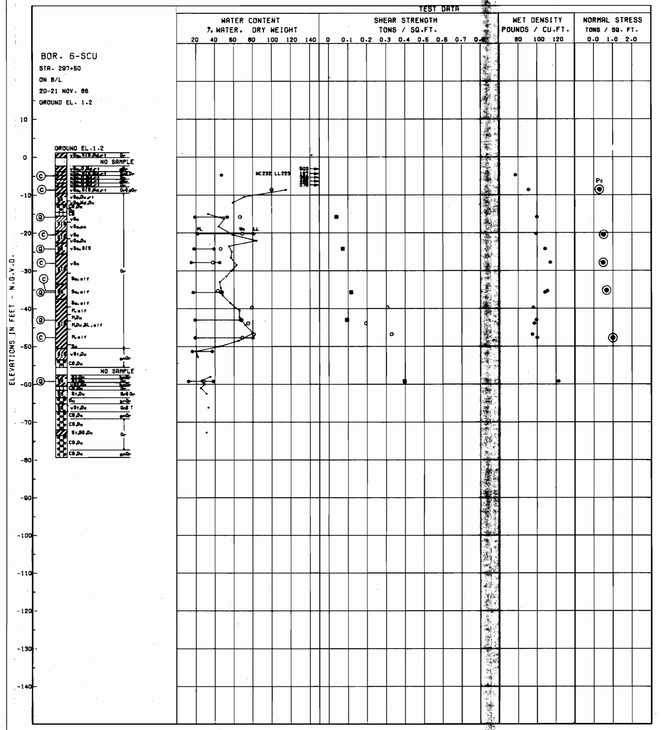
BORINGS WERE TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE A
FOR LOCATION OF BORING SEE PLATE 6

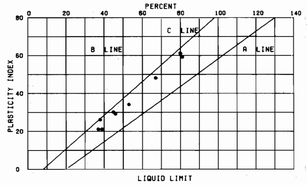
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 19, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORINGS 5-SCU

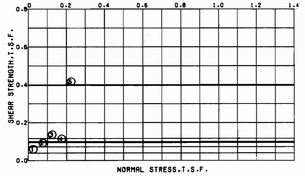
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

BOR. 6-SCU
STA. 297+50
ON B/L
20-21 NOV. 86
GROUND EL. 1.2



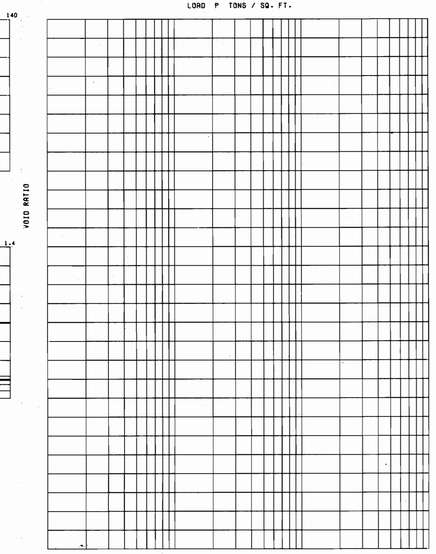


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE		TYPE	STRENGTH		CLASS
NO.	EL.		Φ	C - TSF	
1	-15.80	Q	0.0	0.040	CH
2	-24.20	Q	0.0	0.073	CL
3	-35.70	Q	0.0	0.117	CH
4	-43.00	Q	0.0	0.095	CH
5	-59.20	Q	0.0	0.387	CL



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
⊡ - (S) CONSOLIDATED - DRAINED SHEAR TEST
BORINGS WERE TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE A
FOR LOCATION OF BORING SEE PLATE 7

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORINGS 6-SCU

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

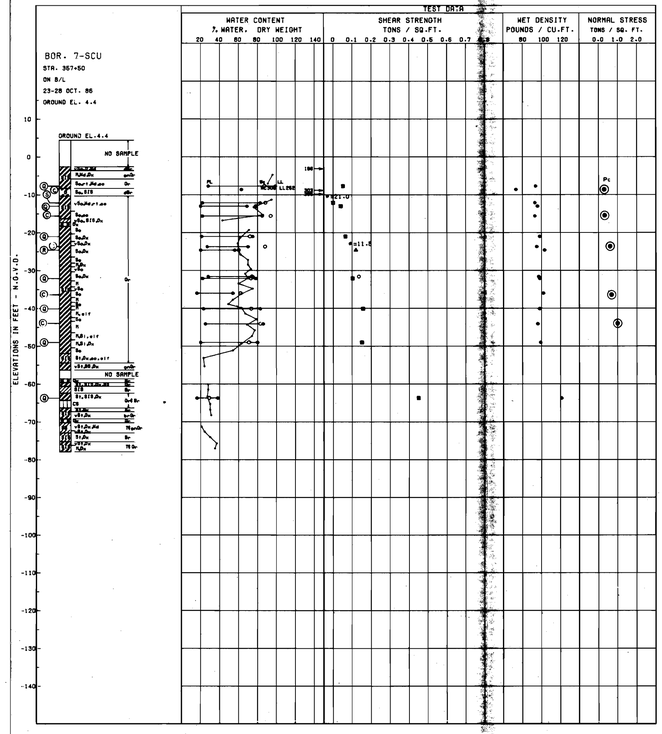
BOR. 7-SCU

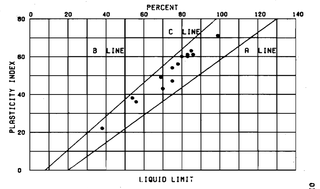
STA. 357+50

ON B/L

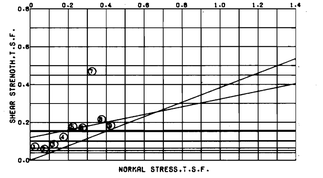
23-28 OCT. 86

GROUND EL. 4.4



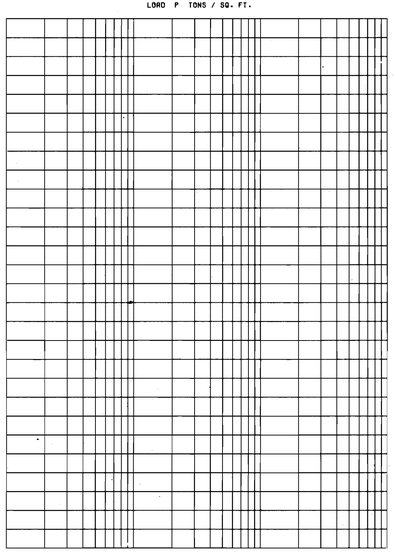


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH ϕ	STRENGTH C - TSF	CLASS
1	-7.70	Q	0.0	0.062	CH
2	-13.00	Q	0.0	0.040	CH
3	-21.00	Q	0.0	0.065	CH
4	-32.10	Q	0.0	0.103	CH
5	-40.10	Q	0.0	0.158	CH
6	-49.00	Q	0.0	0.152	CH
7	-53.70	Q	0.0	0.450	CL
8	-24.80	R	11.5	0.120	CH
9	-12.10	S	21.0	0.000	CH



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
⊡ - (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORING SEE PLATE 7.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN

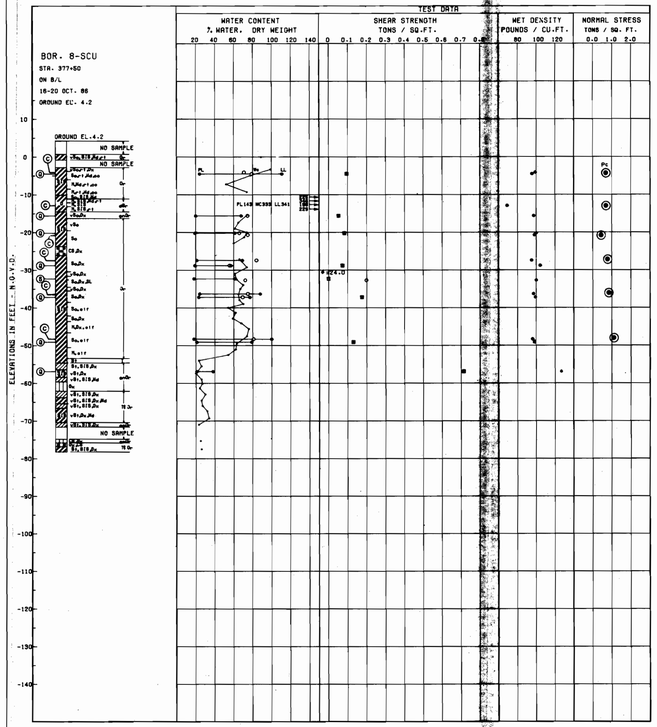
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

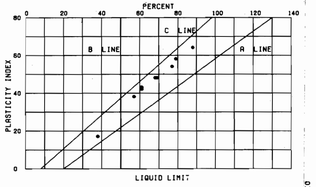
UNDISTURBED BORINGS 7-SCU

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

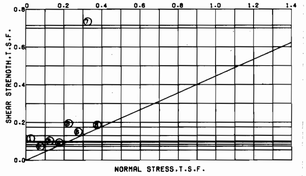
DATE: JANUARY 1989 FILE NO. H-2-30423

BOR. 8-SCU
STA. 377+50
ON B/L
16-20 OCT. 86
GROUND EL. 4.2



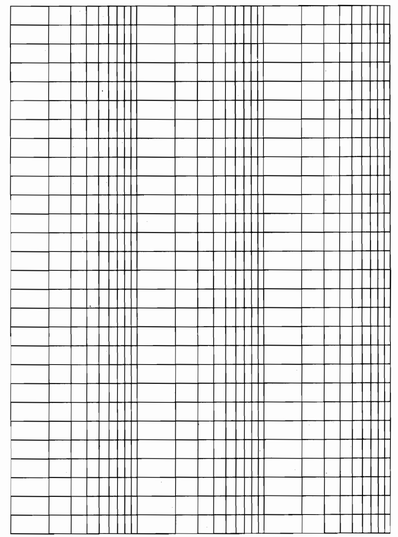


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH Φ	STRENGTH C - TSF	CLASS
1	-4.50	Q	0.0	0.066	CH
2	-15.60	Q	0.0	0.063	CH
3	-20.20	Q	0.0	0.083	CH
4	-28.80	Q	0.0	0.073	CH
5	-37.20	Q	0.0	0.175	CH
6	-49.10	Q	0.0	0.130	CH
7	-56.90	Q	0.0	0.715	CL
8	-92.30	R	24.0	0.000	CH



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
⊡ - (S) CONSOLIDATED - DRAINED SHEAR TEST

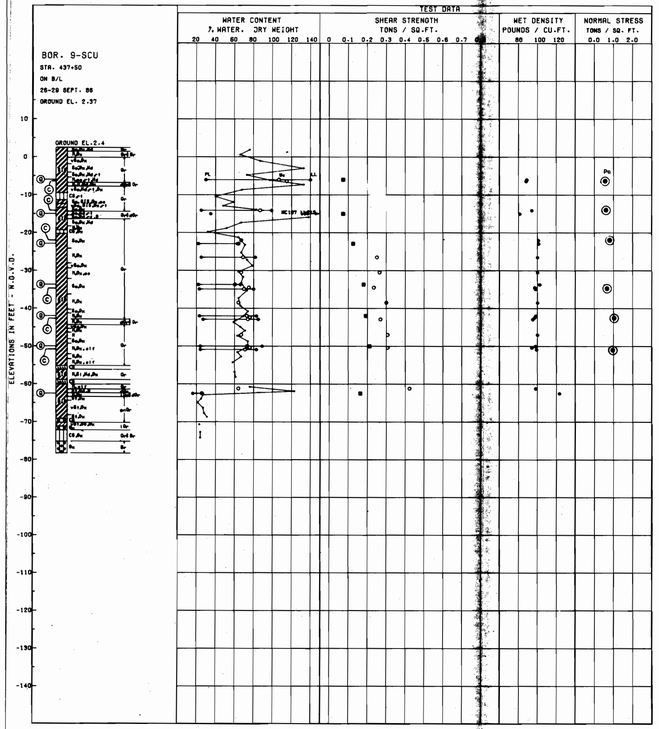
BORINGS WERE TAKEN WITH A 6 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE A
FOR LOCATION OF BORING SEE PLATE B.

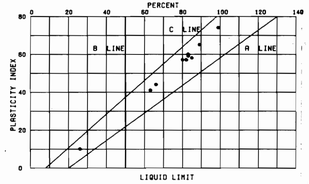
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORINGS 8-SCU

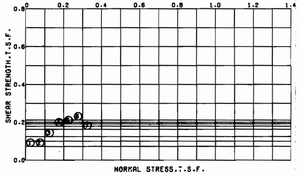
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989
FILE NO. H-2-30423

BOR. 9-SCU
STA. 437+50
ON B/L
26-28 SEPT. 86
GROUND EL. 2.37



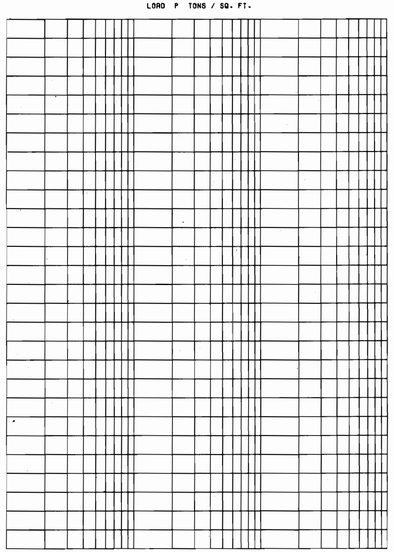


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH Φ	STRENGTH C - TSF	CLASS
1	-8.00	Q	0.0	0.073	CH
2	-15.00	Q	0.0	0.073	CH
3	-22.50	Q	0.0	0.125	CH
4	-33.70	Q	0.0	0.180	CH
5	-42.00	Q	0.0	0.182	CH
6	-50.00	Q	0.0	0.212	CH
7	-62.50	Q	0.0	0.163	CL



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
⊡ - (S) CONSOLIDATED - DRAINED SHEAR TEST
BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE A
FOR LOCATION OF BORING SEE PLATE 9.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORINGS 9-SCU

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

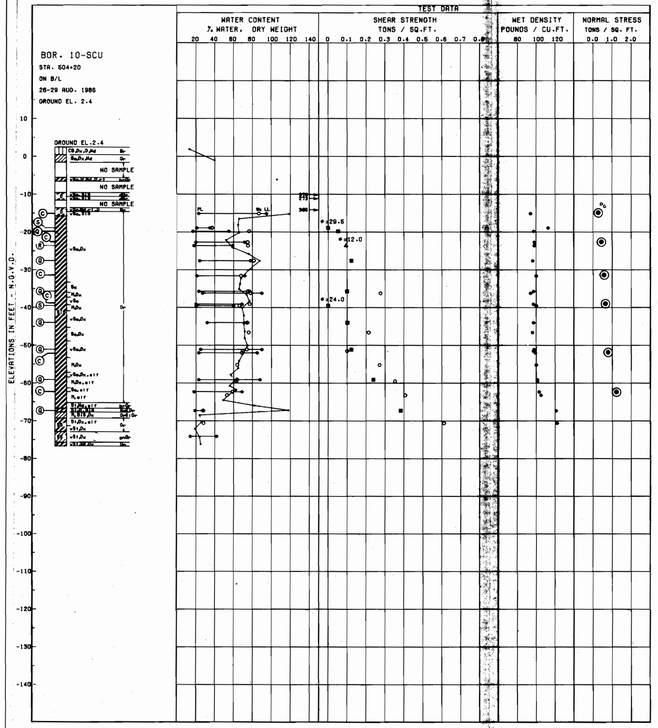
BOR. 10-SCU

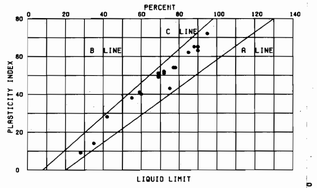
STA. 504+20

ON B/L

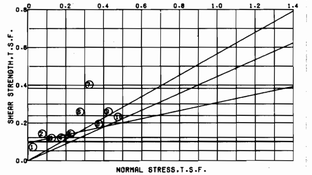
26-29 AUG. 1986

GROUND EL. 2.4



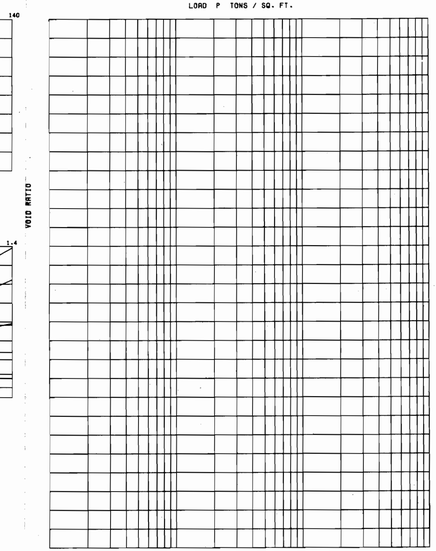


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH φ	STRENGTH C - TSF	CLASS
1	-19.80	Q	0.0	0.063	CH
2	-27.80	Q	0.0	0.123	CH
3	-36.70	Q	0.0	0.100	CH
4	-44.00	Q	0.0	0.102	CH
5	-61.10	Q	0.0	0.123	CH
6	-69.10	Q	0.0	0.239	CH
7	-87.30	Q	0.0	0.383	CL
8	-23.80	R	12.0	0.096	CH
9	-18.90	S	29.5	0.000	CL
10	-39.60	S	24.0	0.000	CH



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
⊡ - (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORING SEE PLATE 10.

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.1B, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORING 10-SCU

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

DATE: JANUARY 1989

FILE NO. H-2-30423

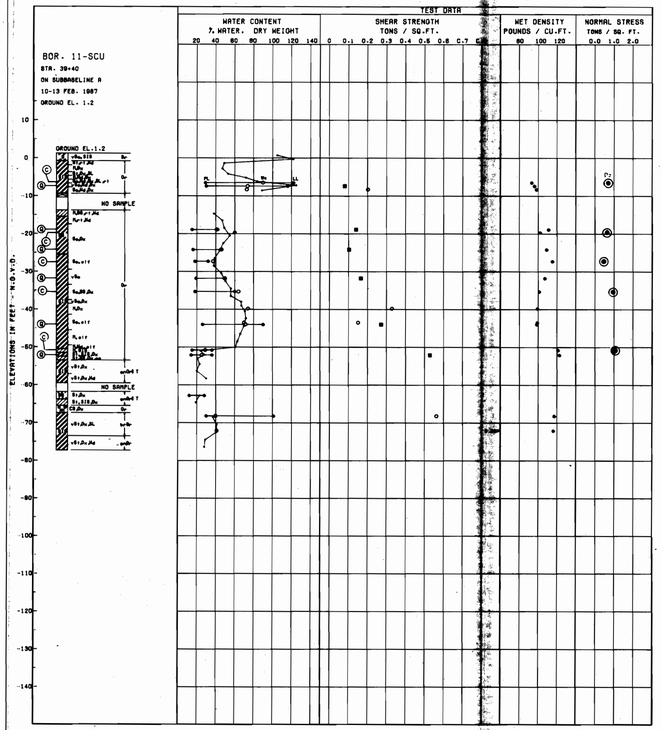
BOR. 11-SCU

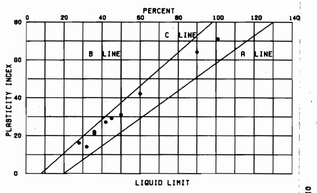
STA. 39+40

ON SUBBASELINE A

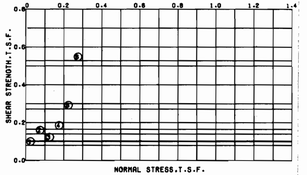
10-13 FEB. 1987

GROUND EL. 1.2



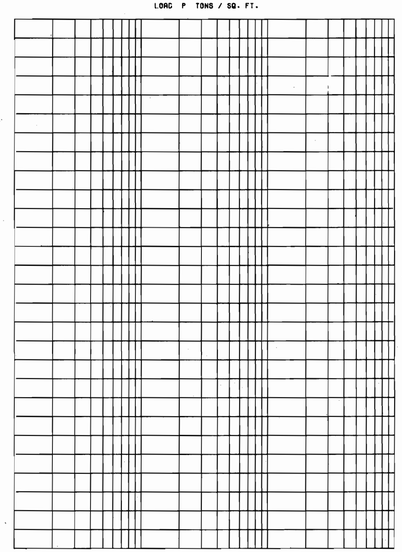


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE		TYPE	STRENGTH		CLASS
NO.	EL.		Φ	C - TSF	
1	-7.40	Q	0.0	0.080	CH
2	-19.90	Q	0.0	0.140	CL
3	-24.20	Q	0.0	0.103	CL
4	-31.90	Q	0.0	0.168	CH
5	-44.00	Q	0.0	0.272	CH
6	-62.10	Q	0.0	0.828	CL



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
■ - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST
□ - (S) CONSOLIDATED - DRAINED SHEAR TEST

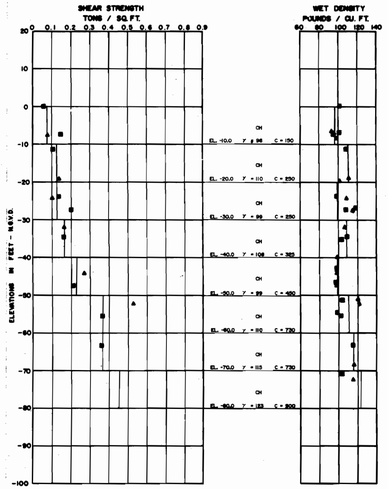
BORINGS WERE TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER
FOR SOIL BORING LEGEND SEE PLATE "A
FOR LOCATION OF BORING SEE PLATE 3

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.19, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

UNDISTURBED BORING 11-SCU

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

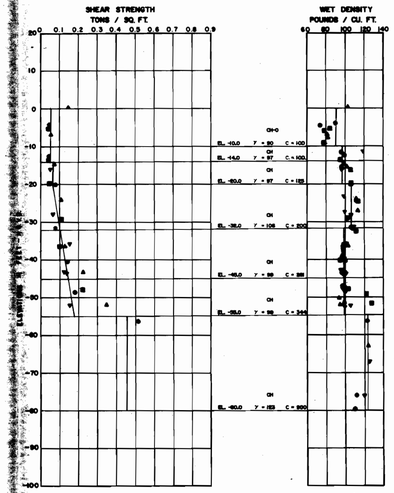
DATE: JANUARY 1989 FILE NO H-2-30423



BORING LEGEND:

- ■ 1-SCU
- ▲ 11-SCU

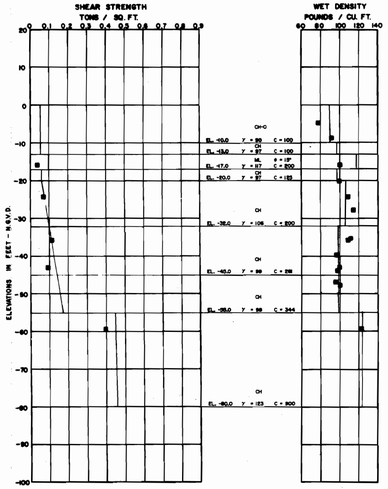
REACH 1 B/L STA. 0+00 TO B/L STA. 96+24
(96+24.45 = 101+82.23 CS)



BORING LEGEND:

- ■ 2-SCU
- ● 4-SCU
- ▲ 3-SCU
- ▼ 5-SCU

REACH 2 B/L STA. 101+82 TO 265+00



BORING LEGEND:

- ■ 6-SCU

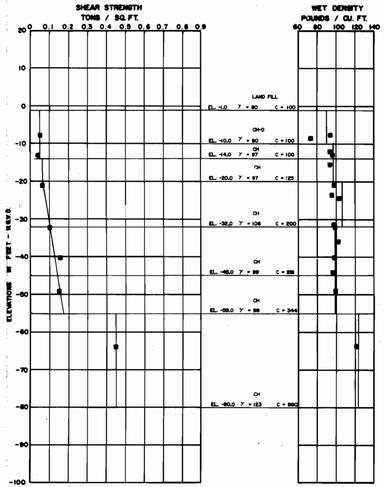
REACH 3 B/L STA. 265+00 TO B/L STA. 331+40
REACH 7 B/L STA. 470+00 TO B/L STA. 495+00

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

DESIGN SOIL PARAMETERS

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

DATE: JANUARY 1989 FILE NO. H-2-30423

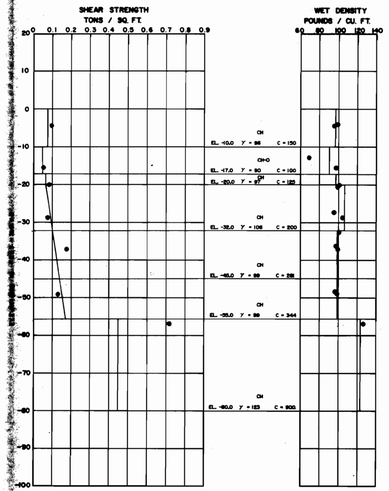


BORING LEGEND:

■ 7-SCU

LAND FILL

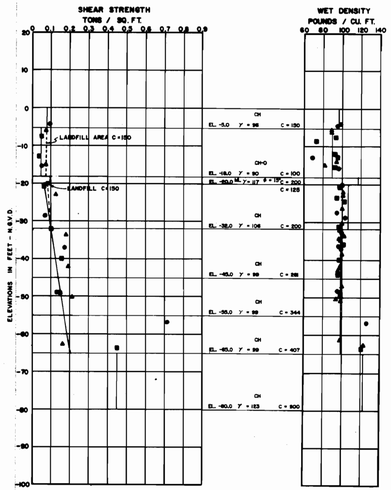
REACH 4 B/L STA. 331+40 TO B/L STA. 370+90



BORING LEGEND:

● 8-SCU

REACH 5 B/L STA. 370+90 TO B/L STA. 425+00



BORING LEGEND:

■ 7-SCU ▲ 9-SCU

● 8-SCU

REACH 6 B/L STA. 425+00 TO B/L STA. 470+00

LANDFILL B/L STA. 440+80 TO B/L STA. 449+20

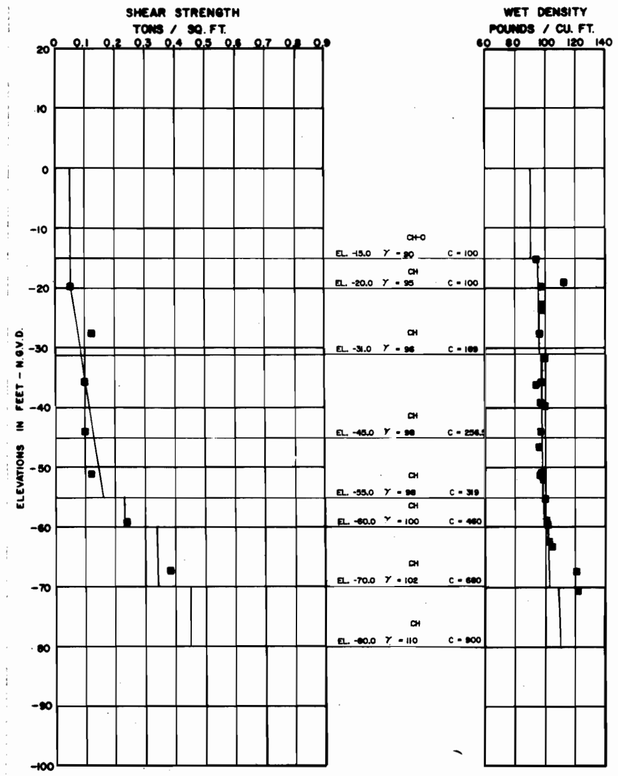
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN

ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

DESIGN SOIL PARAMETERS

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

DATE: JANUARY 1989 FILE NO. H-2-30423



BORING LEGEND:

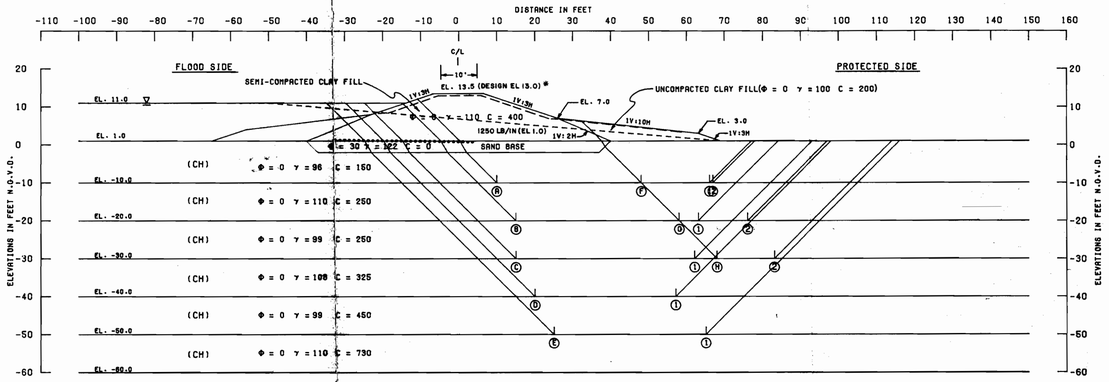
■ 10-SCU

REACH 8 B/L STA. 495+00 TO AIRPORT EXTENSION

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

DESIGN SOIL PARAMETERS

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		REGISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_F	D_B	$-D_F$	REGISTING	DRIVING	
(R) (1)	-10.0	13470	8400	3300	29589	5958	25170	23631	1.07
(B) (1)	-20.0	17419	12000	8300	57950	22486	37719	35464	1.06
(C) (1)	-30.0	19781	11750	13300	95223	49181	44831	46042	0.97
(D) (1)	-40.0	25207	12025	19800	142360	87228	57032	55132	1.03
(E) (1)	-50.0	33209	18000	28800	198767	132710	80009	66057	1.21
(F) (2)	-10.0	8044	2842	3300	11784	5878	12186	5906	2.06
(G) (2)	-20.0	11044	4800	8300	30922	21867	23844	9055	2.63
(H) (2)	-30.0	16044	3750	13300	59148	48376	33094	10772	3.07

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFOREMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE►►►►►►►►►►►. SEE PLATE 11 FOR GEOTEXTILE AND SAND DIMENSIONS.

CONSTRUCTION SEQUENCE

1. CLEAR BASE OF EMBANKMENT & GRUB BELOW FABRIC WIDTH
2. PUMP OR DUMP A SAND WORKING BASE TO EL 2.0
3. LAY 1250 LB/IN GEOTEXTILE (SETTLE TO EL. 1.0 DURING CONSTRUCTION)
4. COMPLETE SECTION WITH SEMI-COMPACTED & UNCOMPACTED FILL

NOTES

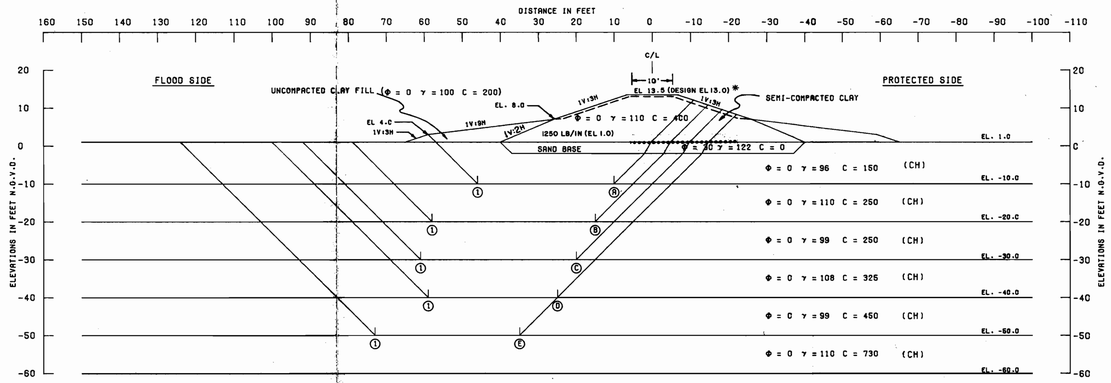
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
F -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_F}{D_B - D_F}$

B/L NOTE

96+24.45 = 101+82.23 CS

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 1 - PROTECTED SIDE
B/L STA.0+00 TO B/L STA. 96 + 24
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE			RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.		ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(B)	(1)	-10.0	14183	5400	4099	29589	9229	23682	20360	1.16
(B)	(1)	-20.0	18184	10750	8300	57946	22672	37234	35274	1.06
(C)	(1)	-30.0	22011	10250	13300	95039	48643	45561	46396	0.98
(D)	(1)	-40.0	27145	11050	19800	140756	85834	57995	54922	1.06
(E)	(1)	-50.0	36145	17100	28800	194696	132443	82045	62253	1.32

GENERAL NOTES:

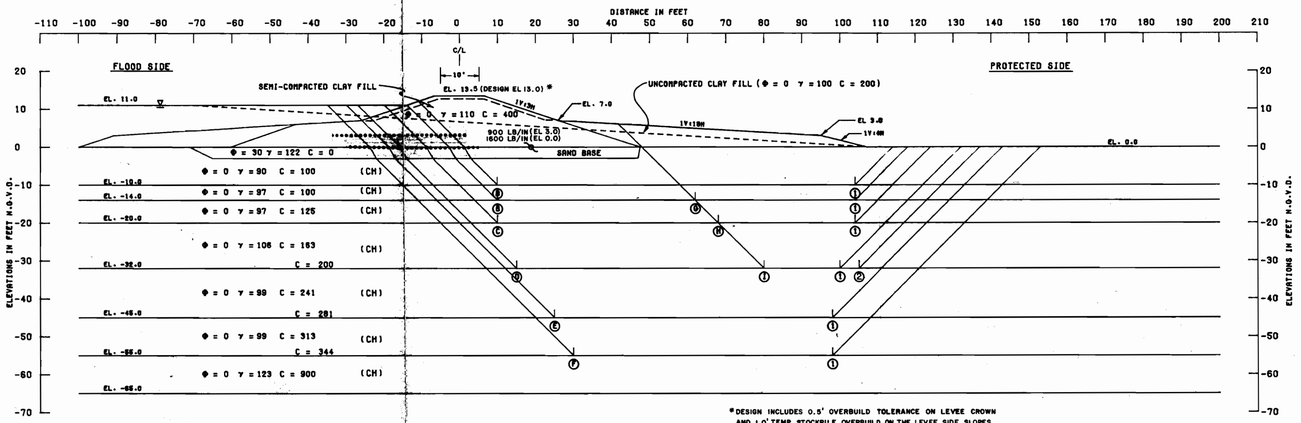
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE••••••••••••. SEE PLATE 11 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 1 PROTECTED SIDE STABILITY PLATE 82.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 1 - FLOOD SIDE
B/L STA. 0+00 TO B/L STA. 96 + 24
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989
FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE				REBISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.		ELEV.		R_a	R_s	R_p	D_a	$-D_p$	REBISTING	DRIVING	
Ⓐ	Ⓘ	-10.0		13388	8400	2000	29510	4812	24188	24698	1.00
Ⓑ	Ⓘ	-14.0		13358	8400	2800	38380	8988	29558	30372	0.84
Ⓒ	Ⓘ	-20.0		13512	11750	4300	58414	18482	29582	37952	0.78
Ⓓ	Ⓘ	-32.0		15481	17000	8200	101382	49033	40981	62329	0.78
Ⓔ	Ⓘ	-45.0		21015	20513	14453	184781	98643	55981	86138	0.85
Ⓕ	Ⓘ	-55.0		28807	23392	20703	223747	147881	70902	75866	0.93
Ⓖ	Ⓘ	-14.0		5231	4200	2800	18075	8988	12231	9087	1.35
Ⓗ	Ⓘ	-20.0		8731	4500	4300	30386	18482	15631	11933	1.30
Ⓘ	Ⓙ	-32.0		10631	5000	8200	65630	48471	23631	17059	1.40

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D
3. GEOTEXTILE ..... SEE PLATE 11 FOR GEOTEXTILE AND SAND DIMENSIONS.

CONSTRUCTION SEQUENCE

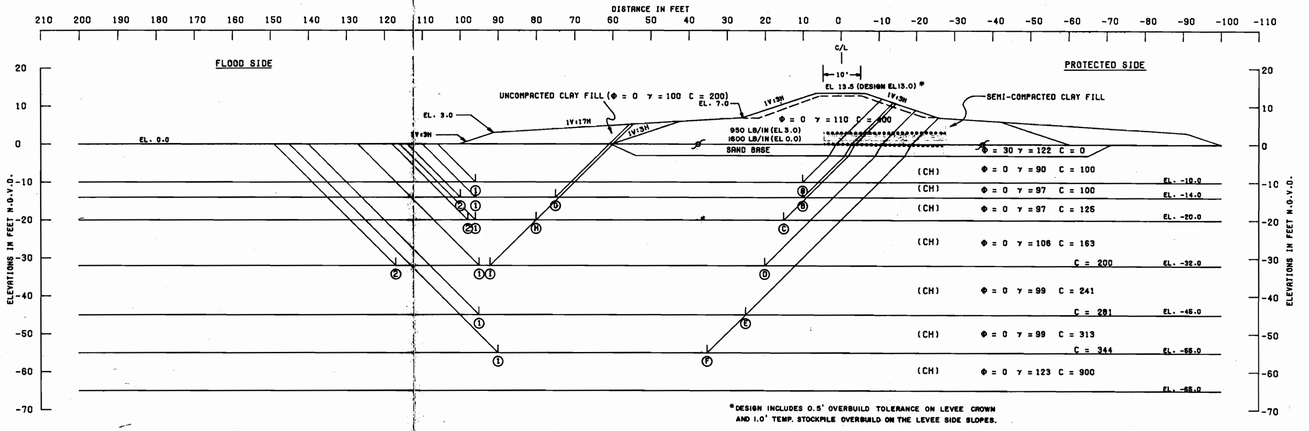
1. CLEAR BASE OF EMBEKMENT & GRUB BELOW FABRIC WIDTH
2. PUMP OR DUMP A SAND WORKING BASE TO EL 2.0
3. LAY BOTTOM GEOTEXTILE (SETTLED TO EL 0.0 DURING CONSTRUCTION)
4. PLACE 3 FT. OF SEMI-COMPACTED FILL & UNCOMPACTED FILL
5. LAY TOP GEOTEXTILE (SETTLED EL 3.0 DURING CONSTRUCTION)
6. COMPLETE SECTION WITH SEMI-COMPACTED & UNCOMPACTED CLAY FILL

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
a -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
s -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
p -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_a + R_s + R_p}{D_a - D_p}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 2A - PROTECTED SIDE
B/L STA. 101+82 TO B/L STA. 170+00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1989 FILE NO. H-2-30424



ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_B	$-D_P$	RESISTING	DRIVING	
A 1	-10.0	14202	8600	2000	29511	4786	24802	24745	1.00
B 1	-14.0	14203	8600	2900	39360	9142	25603	30218	0.85
C 1	-20.0	15503	10125	4300	56937	18616	29928	38321	0.78
D 1	-32.0	17757	15000	8200	101058	49837	40957	52231	0.78
E 1	-45.0	21824	19670	14453	162748	98047	55947	64699	0.86
F 1	-55.0	28074	18920	20703	220388	148521	67697	71867	0.94
G 2	-14.0	4955	2500	2800	16308	8976	10155	7430	1.37
H 2	-20.0	6447	2250	4300	28213	18416	12997	9797	1.33
I 2	-32.0	10347	5000	8200	62237	48420	23547	13817	1.70

GENERAL NOTES:

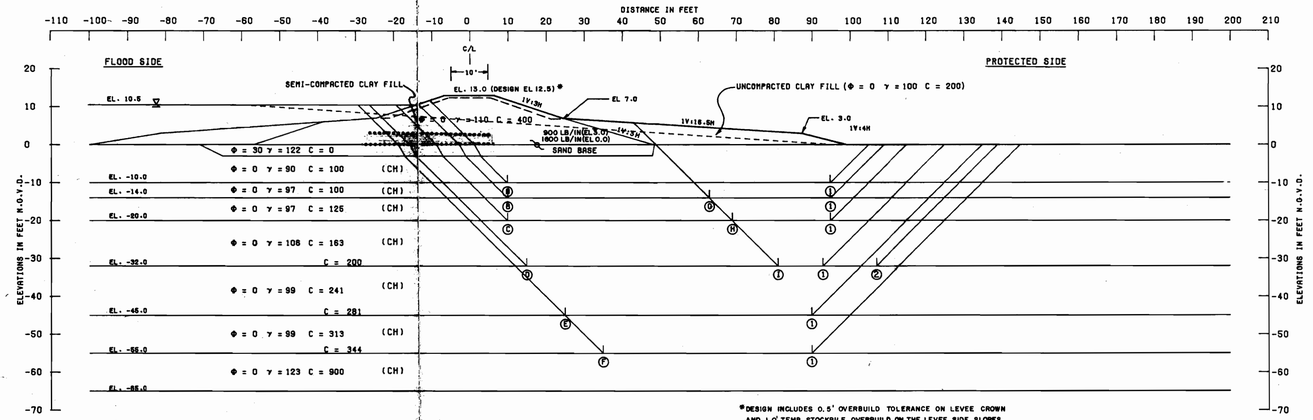
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE ========== SEE PLATE 11 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_B - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 2A — FLOOD SIDE
B/L STA. 101+82 TO B/L STA. 170 +00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1989
FILE NO. H-2-30423



SELECTED FAILURE SURFACE NO.	SELECTED FAILURE SURFACE ELEV.	RESISTING FORCES R_B	RESISTING FORCES R_B	RESISTING FORCES R_F	DRIVING FORCES D_B	DRIVING FORCES $-D_F$	SUMMATION OF FORCES RESISTING	SUMMATION OF FORCES DRIVING	FACTOR OF SAFETY
(H) (1)	-10.0	13002	8500	2000	28307	4752	23502	23555	1.00
(B) (1)	-14.0	12969	8500	2800	37993	9128	24269	28865	0.84
(C) (1)	-20.0	13119	10625	4300	54758	18602	28044	36154	0.78
(D) (1)	-32.0	15083	15800	8200	89086	40948	38883	50138	0.78
(E) (1)	-45.0	20798	18285	14453	161818	98757	53516	63061	0.85
(F) (1)	-56.0	27048	18920	20703	219202	147986	66671	71206	0.94
(D) (1)	-14.0	5125	3200	2800	17457	9128	11125	8329	1.34
(H) (1)	-20.0	6825	3250	4300	29548	18602	14175	10947	1.29
(I) (2)	-32.0	10525	5200	8200	64171	40421	23925	15750	1.52

GENERAL NOTES:

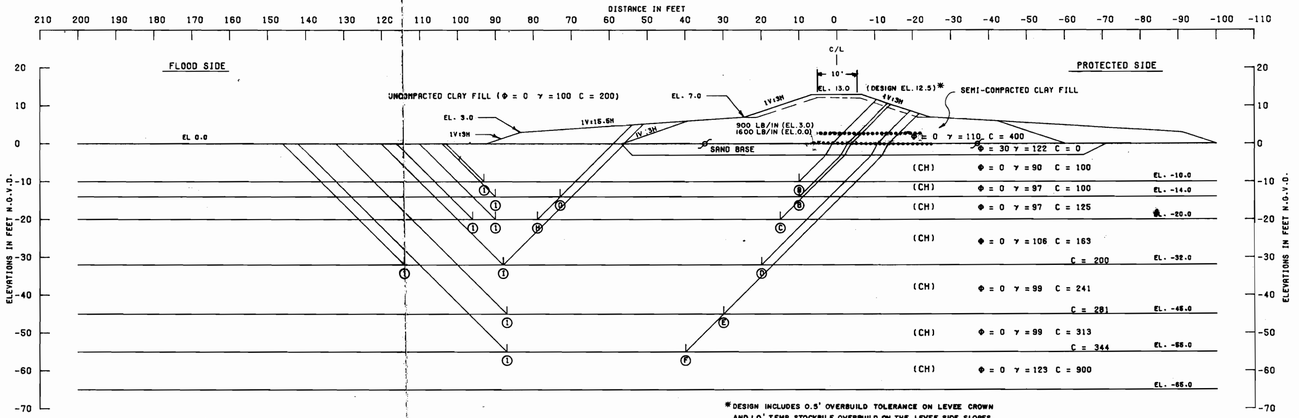
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D
3. GEOTEXTILE **********, SEE PLATE II FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_B - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 2B - PROTECTED SIDE
B/L STA. 170+00 TO B/L STA. 265+00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989
FILE NO. H-2-30423



ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_F	D_A	$-D_F$	RESISTING	DRIVING	
Ⓐ ①	-10.0	13792	6300	2000	28307	4500	24092	23807	1.01
Ⓑ ①	-14.0	13793	8000	2800	37992	8980	24693	29012	0.85
Ⓒ ①	-20.0	15093	9375	4300	55253	18454	28768	36799	0.78
Ⓓ ①	-32.0	17347	13600	8200	98820	48758	39147	50062	0.78
Ⓔ ①	-46.0	22780	18017	14463	158841	98135	53350	61706	0.86
Ⓕ ①	-55.0	29030	18168	20703	216855	147373	65901	69582	0.95
Ⓐ ①	-14.0	4800	1700	2800	15900	8980	9300	6920	1.34
Ⓑ ①	-20.0	6300	2125	4300	27477	18350	12725	9127	1.39
Ⓒ ①	-32.0	10455	5200	8200	61510	48420	23855	13090	1.82

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE ....., SEE PLATE 11 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

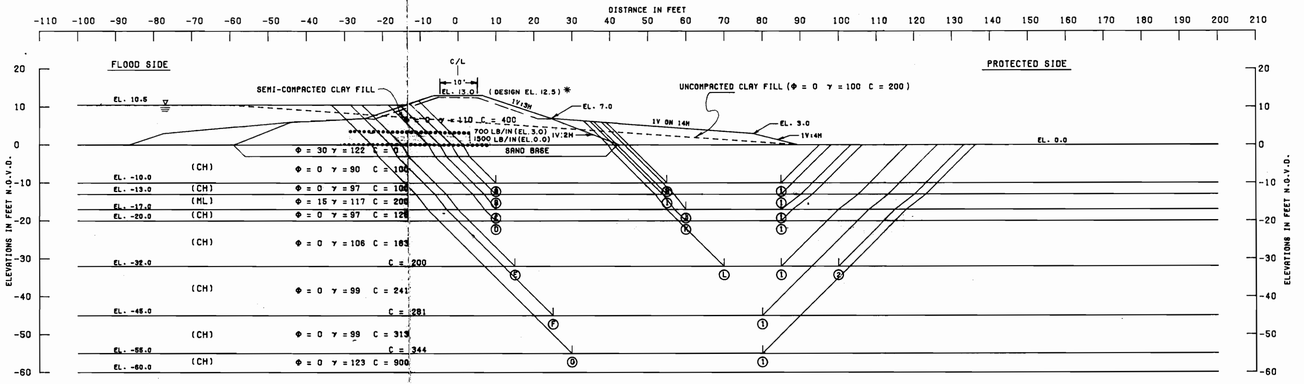
NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
F -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_F}{D_A - D_F}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 2B- FLOOD SIDE
B/L STA. 170+00 TO B/L STA. 265+00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423

PLATE 87



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(R) (1)	-10.0	13026	7500	2000	28306	4753	22526	23553	0.96
(B) (1)	-13.0	13000	7500	2600	35466	7889	23100	27577	0.84
(C) (1)	-17.0	16195	9375	6155	46392	13530	31725	32862	0.97
(D) (1)	-20.0	16378	9375	6803	55502	18996	32556	36506	0.89
(E) (1)	-32.0	19267	14000	10697	100855	50033	42964	50822	0.85
(F) (1)	-45.0	23916	16455	16950	164648	101158	56221	63490	0.89
(G) (1)	-55.0	29448	17200	23200	224032	151196	69848	72836	0.96
(H) (1)	-10.0	4359	3000	2000	11182	4753	9359	6429	1.46
(I) (1)	-13.0	5182	3000	2600	16125	7889	10782	8236	1.31
(J) (1)	-17.0	7629	3125	6155	23320	13530	16809	9790	1.72
(K) (1)	-20.0	8754	3125	6803	30691	18996	18582	11595	1.61
(L) (2)	-32.0	13212	6000	10697	66909	49780	29909	17129	1.75

GENERAL NOTES:

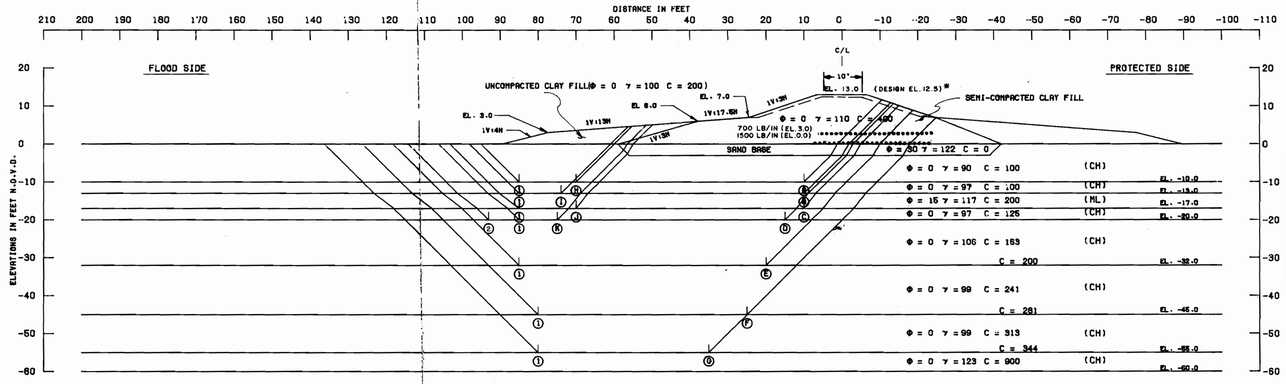
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE ....., SEE PLATE 12 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
$\underline{\nabla}$ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 3A- PROTECTED SIDE
B/L STA. 265+00 TO 283+00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989
FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
Ⓐ ①	-10.0	13793	7600	2000	28306	4753	23293	23553	0.99
Ⓑ ①	-13.0	13793	7600	2600	35466	7889	23993	27577	0.87
Ⓒ ①	-17.0	17600	9376	6182	46379	13630	33157	32849	1.01
Ⓓ ①	-20.0	18630	8750	5812	55766	18996	34192	36770	0.93
Ⓔ ①	-32.0	21191	13000	10897	100652	50033	44888	50619	0.89
Ⓕ ①	-45.0	25276	15455	16950	152975	101158	57681	51817	0.93
Ⓖ ①	-55.0	31526	15480	23200	221216	151196	70206	70020	1.00
Ⓗ ①	-10.0	3889	1500	2000	9451	4753	7389	4698	1.57
Ⓘ ①	-13.0	4436	1100	2600	13490	7889	8136	5601	1.45
Ⓙ ①	-17.0	8315	1875	6182	21811	13630	16372	8281	1.98
Ⓚ ②	-20.0	9630	2250	5797	27748	18749	17677	8999	1.96

GENERAL NOTES:

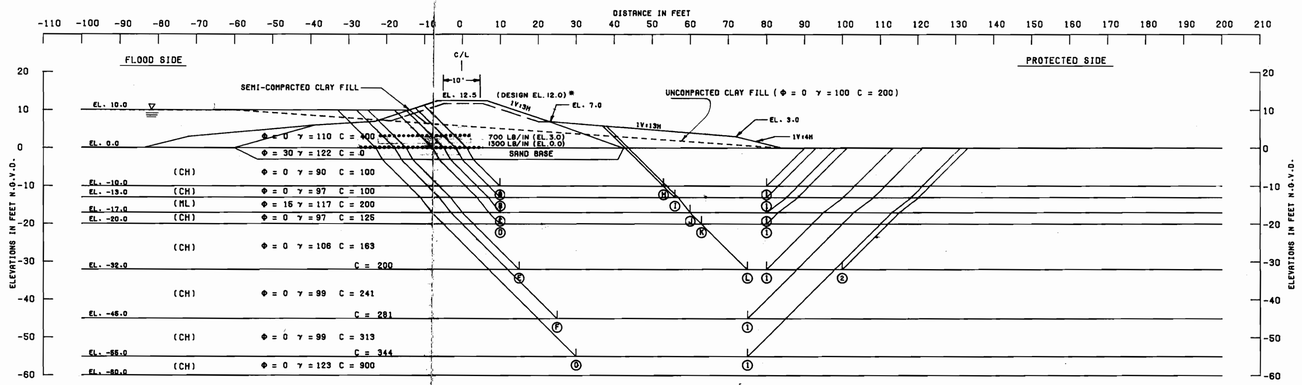
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D.
3. GEOTEXTILE ********** SEE PLATE 12. FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 3A - FLOOD SIDE
B/L STA. 265+00 TO 283+00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(B) (1)	-10.0	12672	7000	2000	27123	4700	21672	22423	0.97
(B) (1)	-13.0	12547	7000	2600	34159	7835	22247	26323	0.85
(D) (1)	-17.0	15797	8750	6130	44899	13489	30677	31410	0.98
(D) (1)	-20.0	15980	8750	6798	53862	18946	31528	34916	0.90
(E) (1)	-32.0	17871	13000	10697	98597	49980	41568	48617	0.86
(F) (1)	-46.0	23647	14050	18950	161753	101042	54847	60711	0.90
(G) (1)	-55.0	29241	15480	23200	220860	161081	67921	59779	0.97
(H) (1)	-10.0	4337	2700	2000	11026	4700	9037	6326	1.43
(I) (1)	-13.0	4937	2400	2800	15490	7835	9937	7654	1.30
(J) (1)	-17.0	7427	2500	6130	22889	13489	16057	9200	1.75
(K) (1)	-20.0	8177	2125	6798	29259	18946	17100	10313	1.66
(L) (2)	-32.0	12077	5000	10697	64105	49780	27774	14325	1.94

GENERAL NOTES:

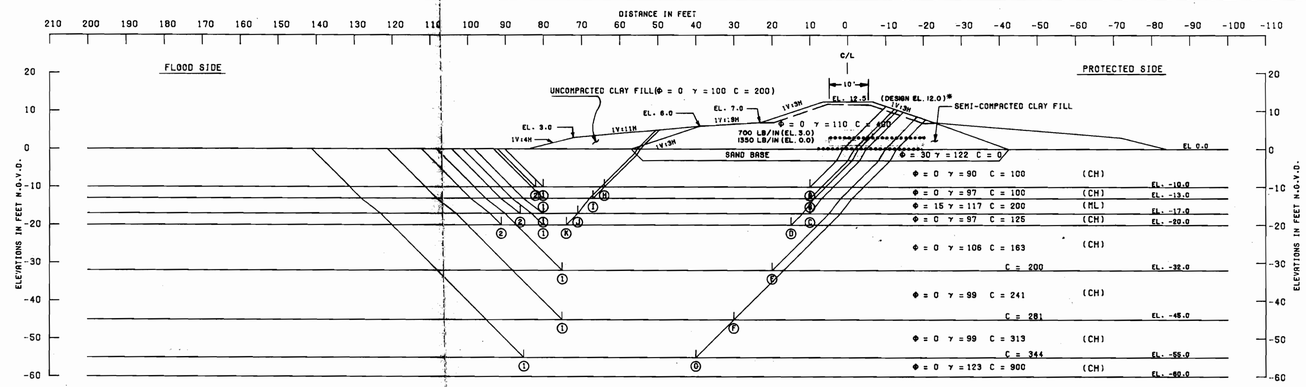
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D.
3. GEOTEXTILE ..... SEE PLATE 12. FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 3B-PROTECTED SIDE
B/L STA. 283+00 TO 331+40
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE NO.	ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_B	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
Ⓐ ①	-10.0	13383	7000	2000	27123	4700	22383	22423	1.00
Ⓑ ①	-13.0	13383	7000	2600	34159	7836	22983	26323	0.87
Ⓒ ①	-17.0	17100	8750	6154	44894	13489	32004	31405	1.02
Ⓓ ①	-20.0	18129	8125	6804	54090	18946	33058	35144	0.94
Ⓔ ①	-32.0	20690	11000	10697	98411	50792	42387	47619	0.89
Ⓕ ①	-45.0	26124	12645	16950	160164	101042	55719	59122	0.94
Ⓖ ①	-55.0	32374	15480	23200	218034	150069	71054	67965	1.05
Ⓗ ②	-10.0	4690	1800	2000	8919	4550	8490	5369	1.58
Ⓘ ①	-13.0	5290	1300	2600	14132	7836	8190	6296	1.46
Ⓙ ②	-17.0	7597	1875	6047	20935	13336	15519	7599	2.04
Ⓚ ②	-20.0	8347	2125	6797	27202	18749	17269	8453	2.04

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D.
3. GEOTEXTILE ********** SEE PLATE 12. FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
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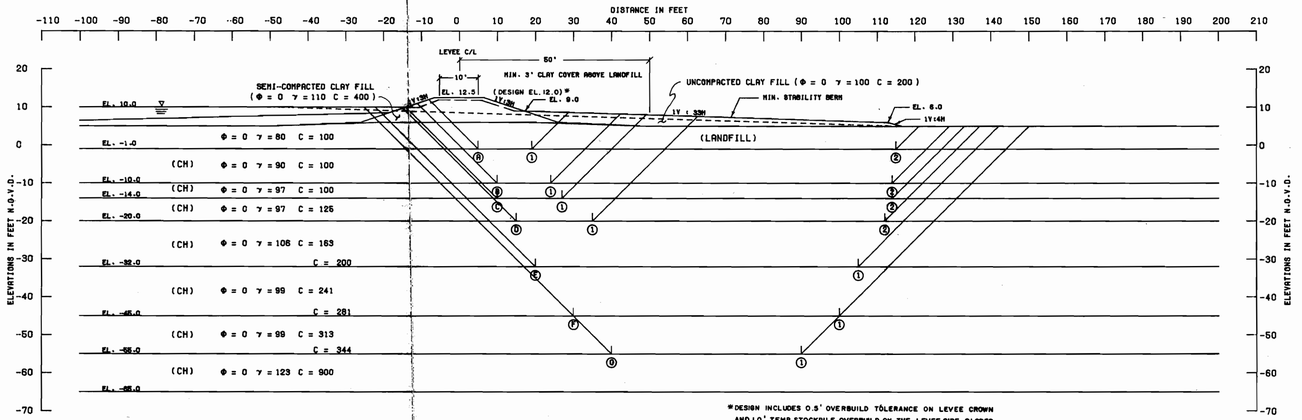
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_P}{D_B - D_P}$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 3B - FLOOD SIDE
B/L STA. 283+00 TO 331+40
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



SOUNDED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_B	$-D_P$	RESISTING	DRIVING	
(B) (1)	-1.0	6200	1400	2571	9233	4397	10171	4836	2.10
(B) (2)	-1.0	6200	11000	1200	9233	1490	18400	7743	2.38
(B) (1)	-10.0	7201	1400	4248	23687	15100	12849	8587	1.50
(B) (2)	-10.0	7201	10400	3000	23687	9517	20601	14170	1.45
(C) (1)	-14.0	7202	1700	4986	31924	22096	13888	9828	1.41
(C) (2)	-14.0	7202	10400	3600	31924	15453	21402	16471	1.30
(D) (1)	-20.0	8502	2500	6330	47128	35047	17332	12079	1.43
(D) (2)	-20.0	8502	12125	5300	47128	27456	25927	19671	1.32
(E) (1)	-32.0	11181	17000	9200	87255	63003	37381	24252	1.54
(F) (1)	-46.0	17123	19670	15453	148502	117947	52246	28555	1.83
(G) (1)	-55.0	23374	17200	21703	202990	172648	62277	30342	2.05

GENERAL NOTES:

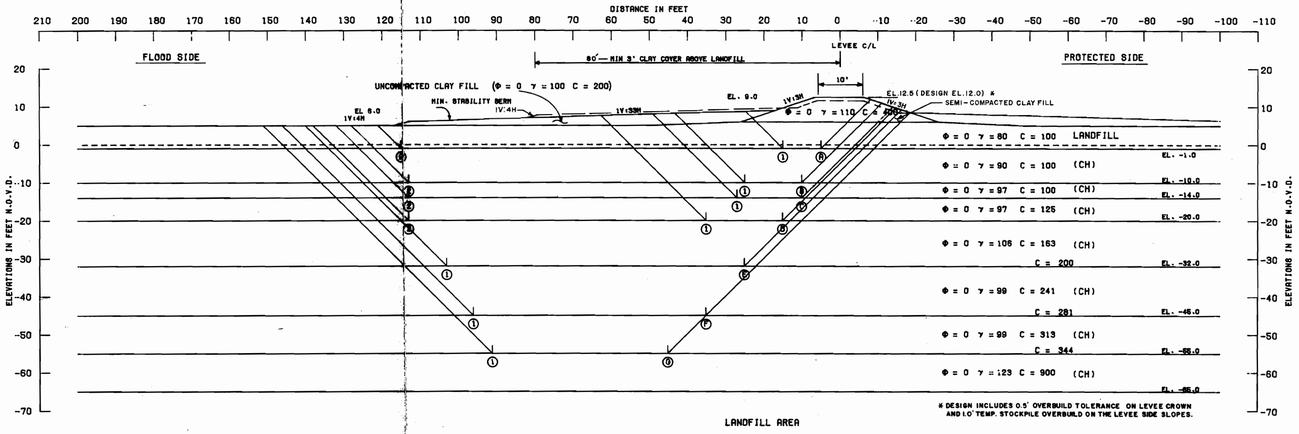
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES
2. MINIMUM 3 FT. CLAY COVER ABOVE LANDFILL WHEN LANDFILL IS AT EL. 8.0 OR BELOW. CLAY COVER VARIES IN THICKNESS FROM 3 FT. TO 0 WHEN LANDFILL ELEVATION VARIES FROM EL. 8.0 TO 11.0, RESPECTIVELY. NO MINIMUM CLAY COVER IS REQUIRED FOR SEEPAGE WHEN LANDFILL IS ABOVE EL. 11.0.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_B - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
UNREINFORCED LEVEE SECTION
REACH 4 - PROT. SIDE (LANDFILL)
B/L STA. 331+40 TO 356+50
(NON CONTI)
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989
FILE NO. H-2-30423



ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
Ⓐ ①	-1.0	6200	1000	2903	9233	4661	10103	4572	2.21
Ⓐ ②	-1.0	6200	11000	1200	9233	1490	18400	7743	2.38
Ⓑ ①	-10.0	7201	1500	4193	23687	14981	12894	8706	1.48
Ⓑ ②	-10.0	7201	10300	3000	23687	9604	20501	14083	1.46
Ⓒ ①	-14.0	7202	1700	4968	31924	22032	13870	9892	1.40
Ⓒ ②	-14.0	7202	10300	3600	31924	15540	21302	16384	1.30
Ⓓ ①	-20.0	8602	2500	8330	47118	35019	17332	12099	1.43
Ⓓ ②	-20.0	8602	12250	5300	47118	27364	26062	19754	1.32
Ⓔ ①	-32.0	12002	15500	9200	86788	63260	36802	23506	1.57
Ⓕ ①	-46.0	17655	17141	15453	145684	118536	50249	27129	1.85
Ⓖ ①	-55.0	23905	15824	21703	202000	172478	61432	29522	2.08

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. SEE REACH 4 PROTECTED SIDE STABILITY PLATE FOR ADDITIONAL MINIMUM CLAY COVER NOTES.

NOTES

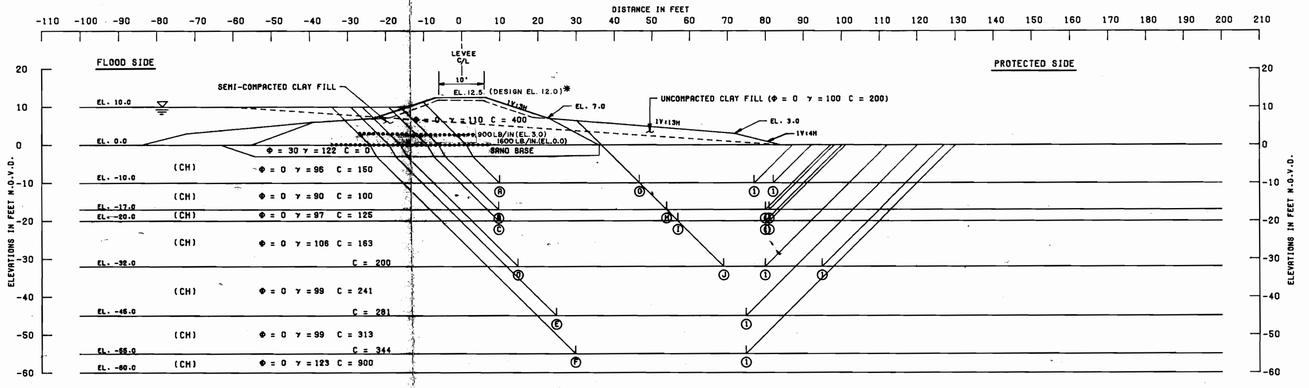
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN

ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
UNREINFORCED LEVEE SECTION
REACH 4 — FLOOD SIDE (LANDFILL)
B/L STA. 331+40 TO B/L STA. 356+50
(NON CONT.)

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

FAILURE SURFACE NO.		ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_A	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
R	1	-10.0	13372	6700	3000	27270	5412	23072	21858	1.06
B	1	-17.0	13313	7000	4400	44806	13924	24713	30882	0.80
C	1	-20.0	13337	8760	5150	53369	19131	27237	34238	0.80
D	1	-32.0	15299	13000	9050	96898	48334	37349	47662	0.78
E	1	-45.0	21248	14050	16303	159009	99489	50602	59510	0.85
F	1	-55.0	27085	15480	21553	217298	149847	64098	68441	0.94
G	1	-10.0	5551	3500	3000	12115	4850	12051	7265	1.66
H	1	-17.0	6951	2700	4400	24367	13837	14051	10530	1.33
J	1	-20.0	7701	3000	5150	30877	19043	15851	11834	1.34
K	1	-32.0	11901	5200	9050	85560	49134	25851	16426	1.57

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE ********** SEE PLATE 12 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84

NOTES

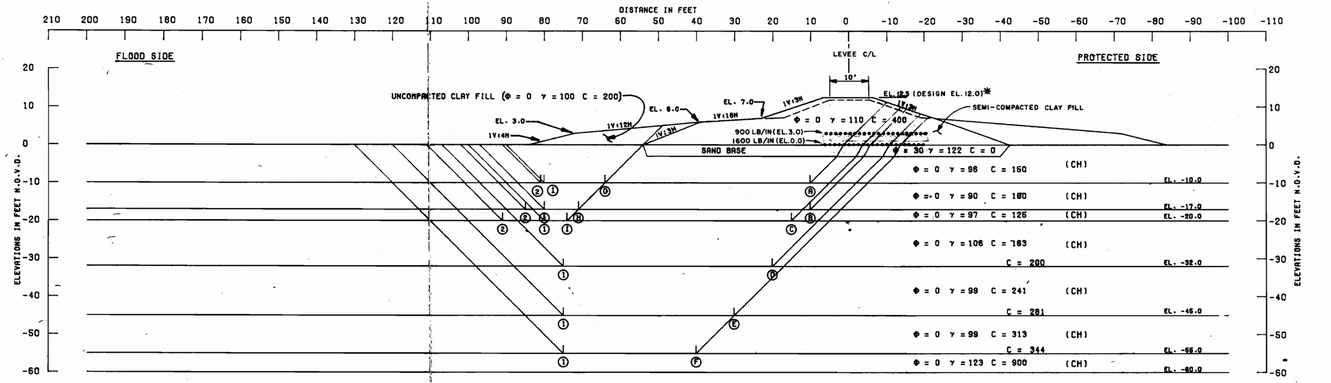
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18 GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

GEOTEXTILE REINFORCED LEVEE SECTION
REACH 5 - PROTECTED SIDE
B/L STA. 370+90 TO B/L STA. 425+00

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_B	R_R	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(B) (1)	-10.0	14083	7000	3000	27270	5000	24083	22270	1.09
(B) (1)	-17.0	14084	7000	4400	44783	13924	25484	30859	0.83
(C) (1)	-20.0	15234	8125	5150	53937	19131	28509	34806	0.82
(D) (1)	-32.0	17488	11000	9060	98767	50148	37538	48611	0.81
(E) (1)	-45.0	22921	12845	15303	157302	99499	50869	57803	0.88
(F) (1)	-55.0	29171	12040	21553	214301	148847	62764	65454	0.96
(D) (2)	-10.0	5040	1700	3000	10162	4912	9740	5250	1.85
(H) (2)	-17.0	8440	1400	4400	21472	13725	12240	7747	1.58
(I) (2)	-20.0	7180	2125	5150	27532	18931	14455	8601	1.68

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE ********** SEE PLATE 12 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84

NOTES

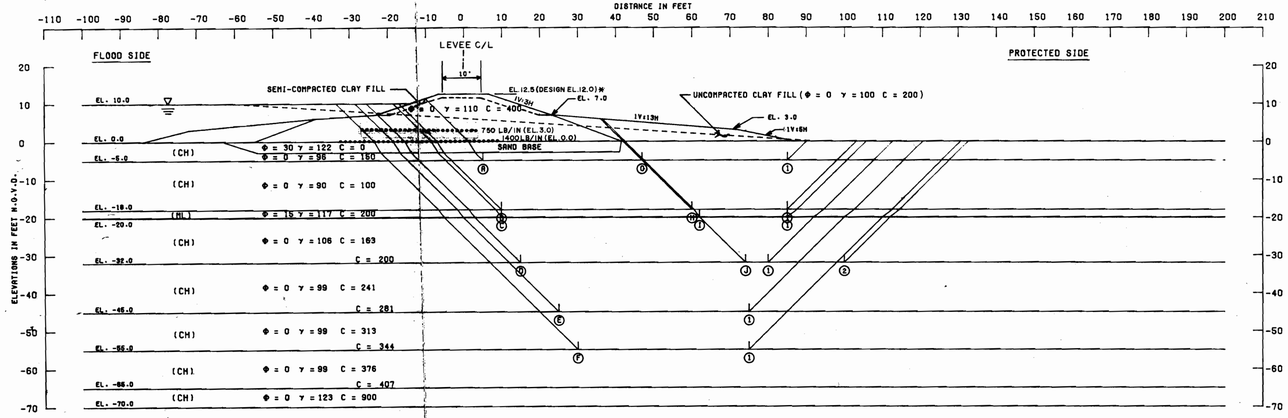
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

GEOTEXTILE REINFORCED LEVEE SECTION
REACH 5 — FLOOD SIDE
B/L STA. 370+90 TO B/L STA. 425+00

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_B	$-D_P$	RESISTING	DRIVING	
(B) (1)	-5.0	11786	8000	1500	16621	1240	21286	15381	1.38
(B) (1)	-18.0	12722	7500	4100	47225	15086	24322	32140	0.76
(C) (1)	-20.0	14256	9375	5841	53084	19809	29672	34475	0.86
(D) (1)	-32.0	19277	13000	9844	96798	49307	39121	47492	0.82
(E) (1)	-46.0	22156	14060	18097	158828	98649	52303	59179	0.88
(F) (1)	-56.0	27981	16480	22347	217164	149027	66788	68137	0.97
(G) (1)	-5.0	3673	3800	1500	5438	1240	9173	4198	2.19
(H) (1)	-18.0	5473	2600	4100	25144	15086	13073	10059	1.30
(I) (1)	-20.0	7782	2875	5941	29363	18809	16578	10754	1.54
(J) (2)	-32.0	11854	5200	9844	63568	48817	26898	14751	1.81

GENERAL NOTES:

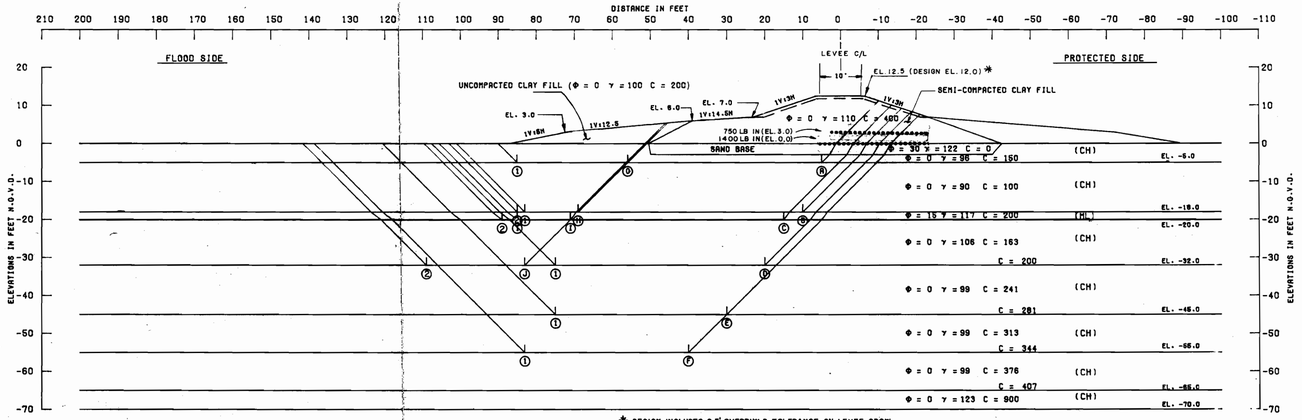
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D
3. GEOTEXTILE ********** SEE PLATE 13 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
$\underline{\nabla}$ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_P}{D_B - D_P}$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18 GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 6A-- PROTECTED SIDE
B/L STA. 425+00 TO B/L STA. 470+00
NON-CONTINUOUS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(B) (1)	-5.0	12501	9000	1500	16621	1240	22001	15381	1.43
(B) (1)	-18.0	13501	7500	4100	47165	15086	25101	32080	0.78
(C) (1)	-20.0	16245	9750	5973	53419	18609	30968	34810	0.89
(D) (1)	-32.0	18738	11000	9844	96587	50257	39582	46310	0.85
(E) (1)	-45.0	24201	12645	18097	157170	99649	52943	57521	0.92
(F) (1)	-55.0	30451	14792	22347	214172	147748	67590	66424	1.02
(G) (1)	-5.0	3660	2900	1500	4985	1240	8060	3626	2.22
(H) (2)	-18.0	5260	1400	4100	23731	16206	11760	8526	1.38
(I) (2)	-20.0	7691	2250	6852	27797	18578	15793	9219	1.71
(J) (2)	-32.0	11484	5200	9844	60430	48817	26528	11613	2.28

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D.
3. GEOTEXTILE ********** SEE PLATE 13. FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE. SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
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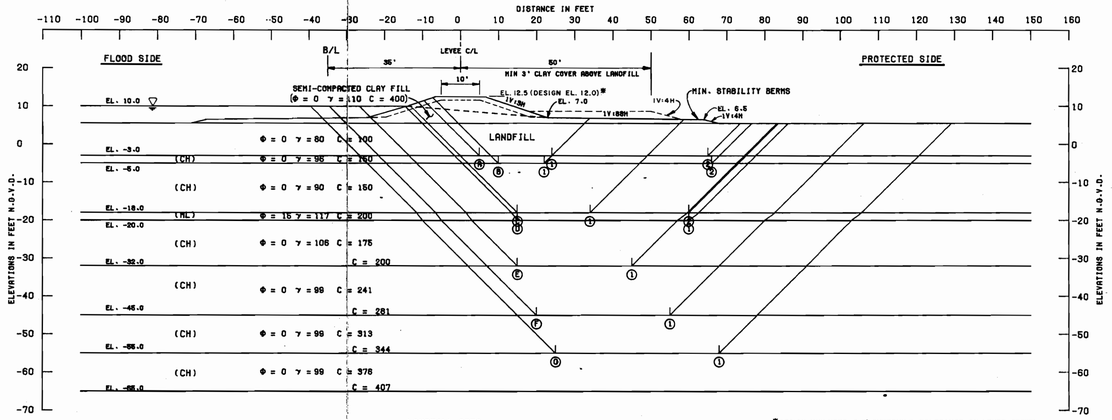
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 6A - FLOOD SIDE
B/L STA. 425+50 TO B/L STA. 470+00
NON-CONTINUOUS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1989
FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE NO.		ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_B	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
B	1	-3.0	5501	1900	2793	11909	4336	11194	7573	1.48
B	2	-3.0	5501	6000	1700	11909	3013	14201	8896	1.60
B	1	-5.0	7700	1800	3393	14981	6236	12893	8745	1.47
B	2	-5.0	7700	8400	2300	14981	4497	18400	10484	1.76
C	1	-18.0	10002	2850	7051	41732	26602	19903	15130	1.32
C	2	-18.0	10002	6750	6200	41732	24062	22952	17690	1.30
D	1	-20.0	11123	6750	8188	47048	28301	26061	18747	1.39
E	1	-32.0	13368	6000	12385	67238	55120	31753	22118	1.44
F	1	-45.0	19360	9835	18587	146370	118393	47752	27977	1.71
G	1	-55.0	25404	14792	24817	202320	170430	65013	31890	2.04

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. SEE REACH 4 PROTECTED SIDE STABILITY PLATE FOR ADDITIONAL MINIMUM CLAY COVER NOTES.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
γ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
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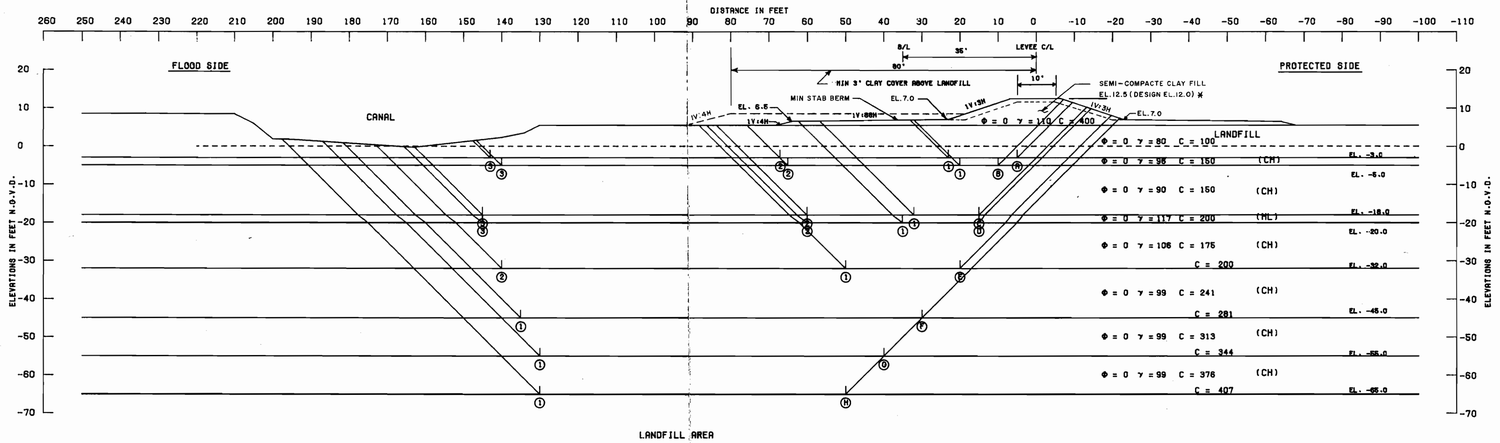
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_B - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
UNREINFORCED LEVEE SECTION
REACH 6B - PROTECTED SIDE
B/L STA.440+80 TO B/L STA.445+20
(LANDFILL)
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



REQUIRED FAILURE SURFACE NO.	ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_B	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
(B) (1)	-3.0	6500	1600	2803	11909	4349	11103	7560	1.47
(B) (2)	-3.0	6500	6200	1700	11909	2904	14400	9005	1.60
(B) (3)	-3.0	6500	13800	891	11909	884	21191	11025	1.92
(B) (1)	-5.0	7700	1500	3413	14981	5409	12613	8572	1.47
(B) (2)	-5.0	7700	8250	2300	14981	4565	18250	10416	1.75
(B) (3)	-5.0	7700	19500	1512	14981	1947	28712	13034	2.20
(C) (1)	-18.0	10001	2550	7071	41731	26669	19622	15062	1.30
(C) (2)	-18.0	10001	6750	6200	41731	24052	22951	17679	1.30
(C) (3)	-18.0	10001	19500	5046	41731	15289	34547	26442	1.31
(D) (1)	-20.0	11507	3000	9621	47045	31095	24128	15950	1.51
(D) (2)	-20.0	11507	6750	8758	47045	28301	27015	18744	1.44
(D) (3)	-20.0	11507	19500	7034	47045	18602	38041	28443	1.34
(E) (1)	-32.0	14513	6000	12947	86630	64465	33460	22165	1.51
(E) (2)	-32.0	14513	24000	11237	86630	49167	49750	37463	1.33
(F) (1)	-45.0	20189	29505	17500	143582	99494	67194	44158	1.52
(G) (1)	-55.0	26439	30960	23821	198439	150529	81220	47910	1.70
(H) (1)	-65.0	33949	32560	31519	262991	210549	98028	52442	1.87

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. SEE REACH 4 PROTECTED SIDE STABILITY PLATE FOR ADDITIONAL MINIMUM CLAY COVER NOTES.

✱ DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
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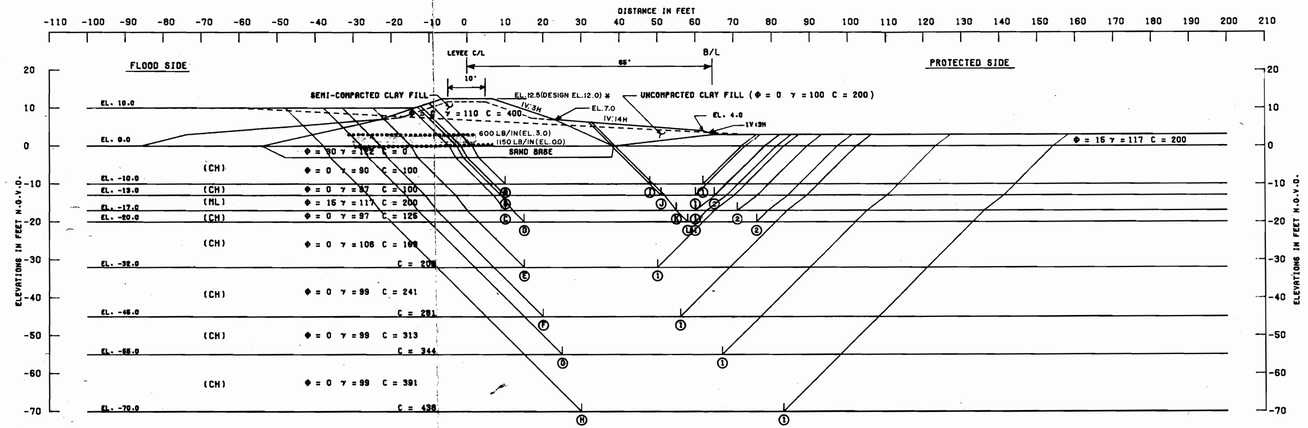
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
UNREINFORCED LEVEE SECTION
REACH 6B—FLOOD SIDE
B/L STA. 440+80 TO B/L STA. 449+20
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989
FILE NO. H-2-30423



✱ DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
SH.	ELEV.	R_B	R_S	R_P	D_B	$-D_P$	RESISTING	DRIVING	
B 1	-10.0	12539	5200	3729	27125	8677	21467	19448	1.16
B 1	-13.0	12520	5000	4332	34160	13088	21852	21094	1.04
C 1	-17.0	15656	6250	8317	44900	20091	30123	24809	1.21
D 1	-20.0	16609	5625	8946	54091	26822	31180	27469	1.14
E 1	-32.0	17689	7000	12831	98998	63223	37500	36375	1.06
F 1	-45.0	22441	10116	18142	162248	117160	51699	45096	1.15
G 1	-55.0	27765	14448	25392	221608	169900	67605	51708	1.31
H 1	-70.0	38005	23214	37121	328844	268784	98340	60060	1.64
I 1	-10.0	4627	1400	3729	11693	8677	9756	3216	3.03
J 2	-13.0	5227	1400	4336	16581	12726	10962	3855	2.84
K 2	-17.0	7628	2000	8226	24147	18928	17761	4319	4.11
L 2	-20.0	8276	2250	9969	30990	26296	19516	4694	4.16

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D.
3. GEOTEXTILE ********** SEE PLATE 13 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE. SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
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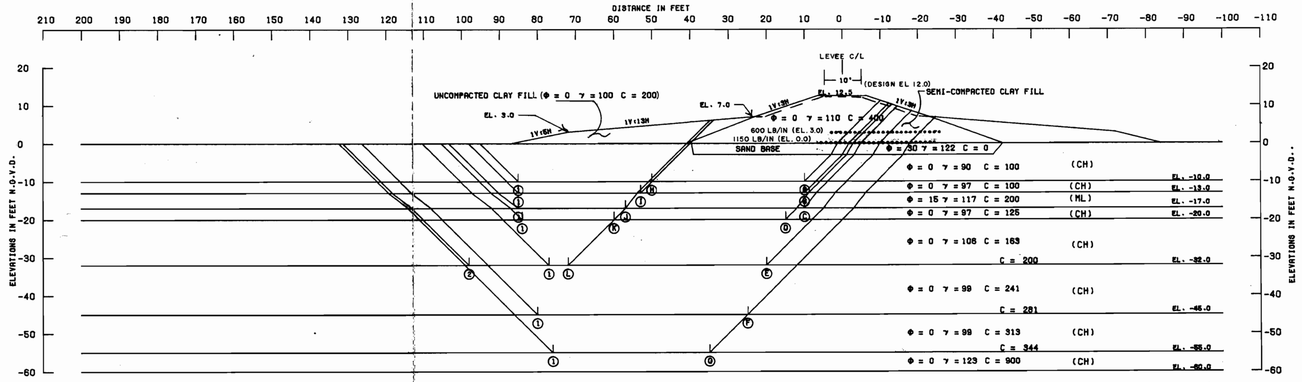
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_B + R_S + R_P}{D_B - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.19, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 7 — PROTECTED SIDE
B/L STA. 470+00 TO B/L STA. 495+00

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423

PLATE 100



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON LEVEE SIDE SLOPES.

ASSUMED FAILURE		SURFACE	REBISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.		ELEV.	R_A	R_B	R_P	D_B	$-D_P$	REBISTING	DRIVING	
(A)	(1)	-10.0	13383	7600	2000	27123	4540	22983	22583	1.01
(B)	(1)	-13.0	13383	7600	2600	34159	7676	23483	26483	0.89
(C)	(1)	-17.0	17100	8375	6068	44894	13367	32543	31527	1.03
(D)	(1)	-20.0	18129	8625	8797	54089	18839	33651	35250	0.95
(E)	(1)	-32.0	20690	11400	10697	98411	50780	42787	47631	0.90
(F)	(1)	-45.0	24873	15455	16950	160202	100520	57278	59682	0.96
(G)	(1)	-55.0	31123	14104	23200	218048	151278	68427	66770	1.02
(H)	(1)	-10.0	4696	3500	2000	11420	4540	10196	6880	1.48
(I)	(1)	-13.0	5296	3200	2600	15959	7676	11096	8283	1.34
(J)	(1)	-17.0	7773	3500	6068	23250	13367	17341	9883	1.75
(K)	(1)	-20.0	8523	3000	8797	29693	18839	18320	11054	1.66
(L)	(1)	-32.0	12423	5200	10697	65110	49780	28320	15330	1.85

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL HERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D
3. GEOTEXTILE ..... SEE PLATE 13 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE. SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
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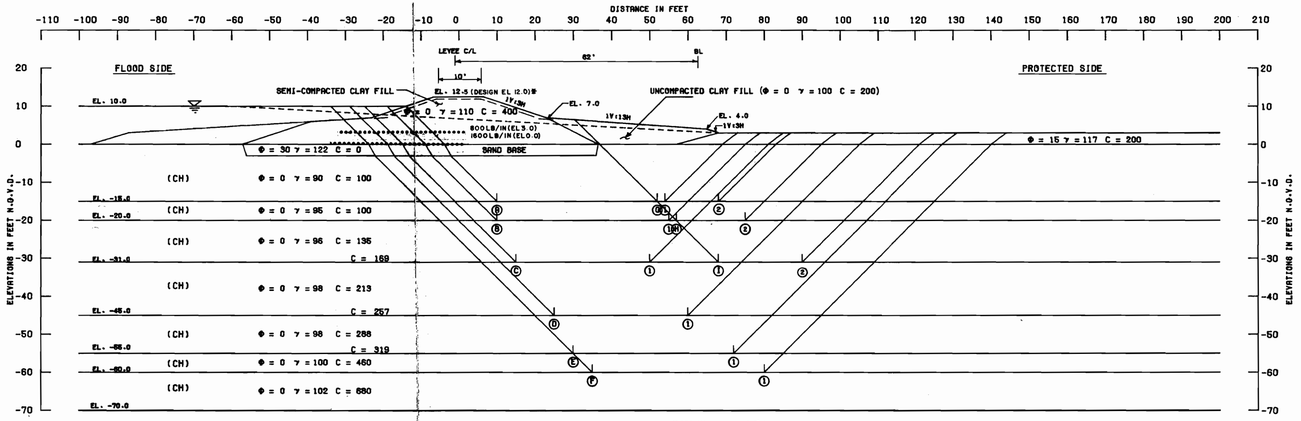
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_B - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.15, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 7 - FLOOD SIDE
B/L STA. 470+00 TO B/L STA. 495+00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989
FILE NO. H-2-30423



FAILURE SURFACE NO.	FAILURE SURFACE ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_B	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
(A) (1)	-18.0	12525	4400	4735	39111	17163	21860	21948	0.99
(B) (1)	-20.0	12390	4500	5735	52834	26731	22825	26103	0.87
(C) (1)	-31.0	13675	5915	8684	91321	57188	28284	34135	0.83
(D) (1)	-45.0	19091	8978	14658	155190	110792	42727	44398	0.96
(E) (1)	-55.0	24427	13398	20418	211765	181140	58243	50625	1.15
(F) (1)	-60.0	29027	20700	25018	242917	190309	74745	52608	1.42
(G) (2)	-18.0	5584	1600	4735	20258	15916	11919	4342	2.75
(H) (2)	-20.0	6584	1800	5735	30570	25608	14119	4962	2.85
(I) (2)	-31.0	9543	3718	8684	61210	58351	21958	5859	3.75

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D.
3. GEOTEXTILE ********** SEE PLATE 13. FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

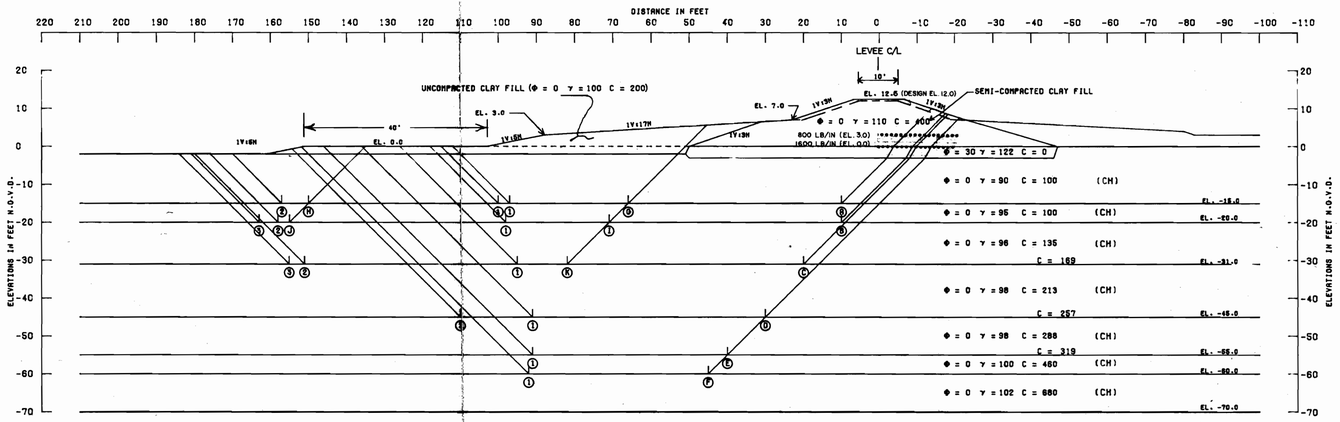
Φ — ANGLE OF INTERNAL FRICTION, DEGREES
C — UNIT COHESION, P.S.F.
▽ — STATIC WATER SURFACE
D — HORIZONTAL DRIVING FORCE IN POUNDS
R — HORIZONTAL RESISTING FORCE IN POUNDS
A — AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B — AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P — AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18 GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

GEOTEXTILE REINFORCED LEVEE SECTION
REACH 8 - PROTECTED SIDE
B/L STA. 495+00 TO B/L STA. 508+50

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_a	R_s	R_p	D_a	$-D_p$	RESISTING	DRIVING	
(B) (1)	-15.0	13384	8700	3400	39112	10784	25484	28348	0.90
(B) (2)	-15.0	13384	14700	2600	39112	7765	30684	31347	0.98
(B) (1)	-20.0	13284	9500	4400	52661	18691	26484	33970	0.78
(B) (2)	-20.0	13284	14900	3600	52661	14732	31884	37929	0.84
(C) (1)	-31.0	15970	12875	7359	81140	45183	36004	45957	0.78
(C) (2)	-31.0	15970	22139	6559	81140	39643	44698	51597	0.87
(D) (1)	-45.0	20841	15647	13323	153484	96198	49811	57286	0.87
(D) (2)	-45.0	20841	20520	13056	153484	94823	54417	58881	0.92
(E) (1)	-55.0	26601	18269	19082	209646	143928	61952	64820	0.96
(F) (1)	-60.0	31201	21620	23616	239567	171101	76437	68466	1.12
(G) (3)	-15.0	5649	3400	3400	19110	10494	12449	8616	1.44
(G) (2)	-15.0	5649	9100	2600	19110	7765	17349	11345	1.53
(H) (1)	-15.0	3400	700	2600	10403	7765	6700	2638	2.54
(I) (1)	-20.0	6649	2700	4400	29246	18691	13749	10555	1.30
(I) (2)	-20.0	6649	8700	3600	29246	14732	18949	14514	1.31
(J) (3)	-20.0	4400	800	3600	19279	14842	8800	3637	2.42
(K) (3)	-31.0	9606	12337	6559	59425	38904	28504	20521	1.39

GENERAL NOTES:

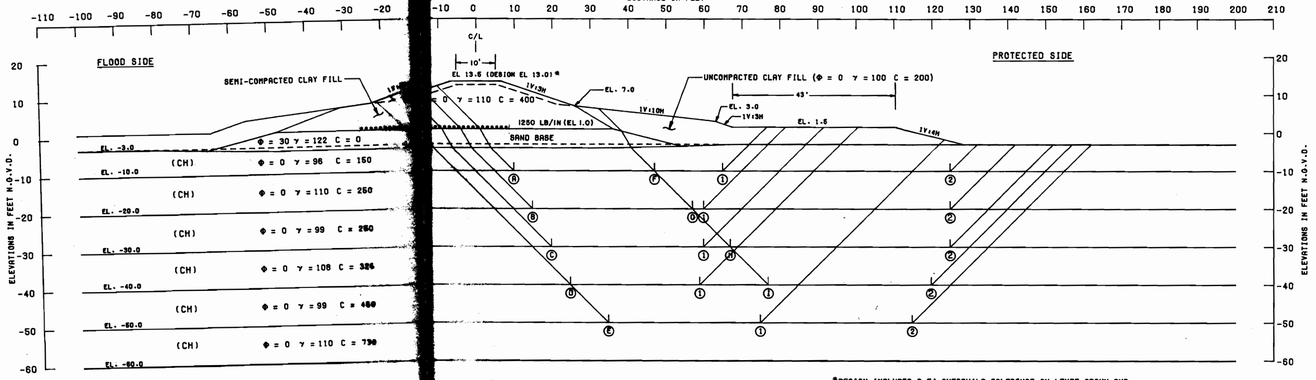
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D
3. GEOTEXTILE ..... SEE PLATE 13 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_a + R_s + R_p}{D_a - D_p}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
GEOTEXTILE REINFORCED LEVEE SECTION
REACH 8 - FLOOD SIDE
B/L STA. 495+00 TO B/L STA. 508+50
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

TYPICAL GEOTEXTILE REINFORCED CANAL CLOSURE SECTION
DESIGN BASED ON SOIL BORING 1

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_B	R_A	R_P	D_A	$-D_P$	RESISTING	DRIVING	
B ①	-10.0	16402	9250	3900	30076	6619	29552	23457	1.26
B ②	-10.0	16402	17250	2100	30076	2505	35752	27571	1.30
B ①	-20.0	20404	11250	8900	59069	24073	40554	34996	1.16
B ②	-20.0	20404	27500	7100	59069	14724	55004	44345	1.24
C ①	-30.0	24293	10000	13900	96833	51241	48193	45592	1.06
C ②	-30.0	24293	28250	12100	96833	37394	52633	59439	1.06
D ①	-40.0	29178	11050	20399	143034	86948	60627	54086	1.12
D ②	-40.0	29178	30875	18600	143034	71182	78653	71782	1.09
E ①	-50.0	38178	18000	28120	197479	133224	84298	64255	1.31
E ②	-50.0	38178	36000	27600	197479	115905	101778	81574	1.25
F ①	-10.0	6361	2700	3900	12474	6619	12961	5855	2.21
F ②	-10.0	6361	11700	2100	12474	2505	20161	9969	2.02
G ②	-20.0	11361	17000	7100	32053	14724	35461	17329	2.05
H ②	-30.0	16361	14500	12100	60858	37394	42961	23262	1.85
I ②	-40.0	22861	13875	18600	98179	71182	55438	27017	2.05

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE **********, SEE PLATE 14 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION NOTES, SEE REACH 1 PROTECTED SIDE REINFORCED LEVEE SECTION PLATE 82.
5. THE CONTROLLING STABILITY CASE IS SHOWN. THE CASE FOR SPH AT EL 11.0 AND TAILWATER AT EL -1.0. THE REQUIRED FABRIC STRENGTH FOR A F.S.=1.3 IS 1200 LB/IN (EL 1.0)

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

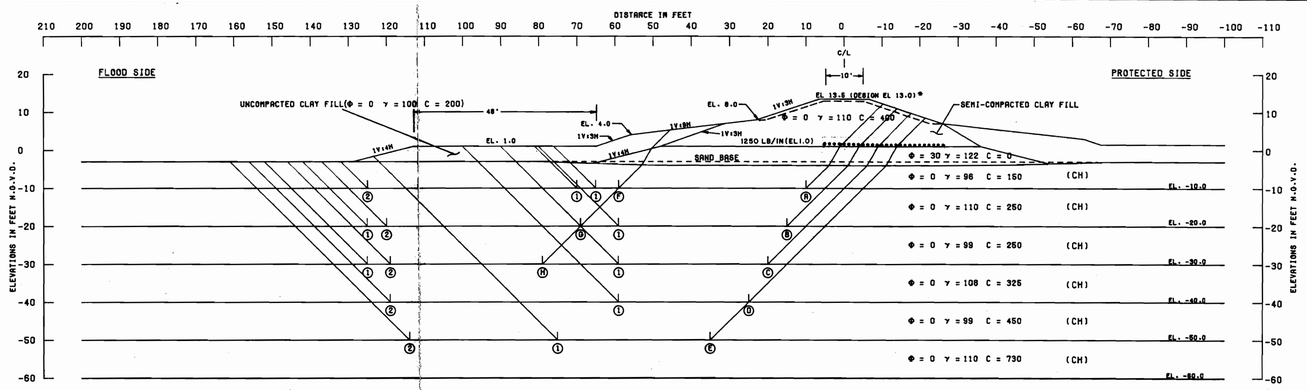
$$\text{FACTOR OF SAFETY} = \frac{R_B + R_A + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

TYPICAL GEOTEXTILE REINFORCED CANAL CLOSURE-PROTECTED SIDE

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

DATE: JANUARY 1969 FILE NO. H-2-30423



* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

TYPICAL GEOTEXTILE REINFORCED CANAL CLOSURE SECTION

DESIGN BASED ON SOIL REACH 1

PROBABLE FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_B	$-D_P$	RESISTING	DRIVING	
(A) (1)	-10.0	16402	8250	3730	30076	5986	28382	24110	1.18
(A) (2)	-10.0	16402	17250	2100	30076	2552	35752	27624	1.30
(B) (1)	-20.0	20402	11000	8715	59069	22850	40117	36119	1.11
(B) (2)	-20.0	20402	26250	7100	59069	15584	53752	43485	1.24
(C) (1)	-30.0	24282	9750	13700	96831	49620	47732	47211	1.01
(C) (2)	-30.0	24282	24750	12100	96831	38490	61132	58341	1.05
(D) (1)	-40.0	28177	11050	20198	143078	86638	60426	56441	1.07
(D) (2)	-40.0	28177	30550	18600	143078	71509	78327	71570	1.09
(E) (1)	-50.0	38177	19000	28160	198337	131536	84337	66801	1.26
(E) (2)	-50.0	38177	35550	27600	198337	116439	101327	81898	1.24
(F) (1)	-10.0	5666	1650	3711	10786	5958	11027	4828	2.28
(F) (2)	-10.0	5666	9900	2100	10786	2552	17666	8244	2.14
(G) (1)	-20.0	10666	14000	7100	27767	14771	31766	13016	2.44
(H) (1)	-30.0	15666	11500	12100	54484	37441	39266	17023	2.31

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFOREMENT FABRIC. SEE APPENDIX D
3. GEOTEXTILE**********. SEE PLATE 14 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR ADDITIONAL NOTES. SEE PROTECTED SIDE STABILITY ANALYSIS PLATE.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_B - D_P}$$

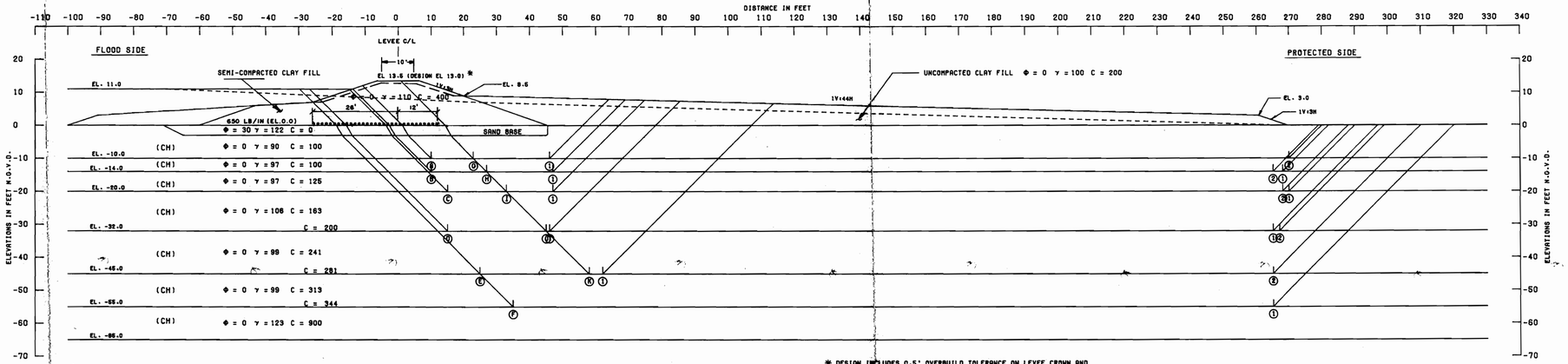
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

TYPICAL GEOTEXTILE REINFORCED CANAL CLOSURE - FLOOD SIDE

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

DATE: JANUARY 1989 FILE NO. H-2-30423

PLATE 105



TYPICAL GEOTEXTILE REINFORCED PIPELINE CROSSING

DESIGN IS BASED ON REACH 2A WITH F.S. = 1.3

WITHOUT FABRIC AND 1.5 WITH FABRIC.

* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_B	$-D_P$	RESISTING	DRIVING	
(B) (1)	-10.0	13203	3600	5162	29510	15928	21965	13582	1.62
(B) (2)	-10.0	13203	26000	2000	29510	4500	41203	25010	1.65
(B) (1)	-14.0	13184	9700	5913	39360	23392	22797	15968	1.43
(B) (2)	-14.0	13184	25500	2800	39360	9213	41484	30147	1.38
(C) (1)	-20.0	14478	4000	7355	56941	37481	25833	19460	1.33
(C) (2)	-20.0	14478	31625	4300	56941	18387	50403	38554	1.31
(D) (1)	-32.0	15339	8200	11148	101362	76649	32687	24713	1.32
(D) (2)	-32.0	15339	50400	8200	101362	48524	73939	52838	1.40
(E) (1)	-45.0	20882	10397	17118	165185	133163	48397	32002	1.51
(E) (2)	-45.0	20882	67440	14463	165185	97987	102776	67198	1.53
(F) (1)	-55.0	27132	79120	22703	224681	147205	128955	77476	1.64
(G) (1)	-10.0	13782	24700	2000	24930	4500	40482	20430	1.98
(H) (1)	-14.0	14592	24100	2800	33529	8913	41492	24616	1.69
(I) (1)	-20.0	16082	29625	4300	49156	18349	50007	30807	1.62
(J) (1)	-32.0	19982	44000	8200	90885	48757	72182	42128	1.71
(K) (1)	-45.0	26236	58167	14453	150814	97987	98855	52847	1.87

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.5. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D
3. GEOTEXTILE********** SEE PLATE 15 FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.
5. THE FABRIC SHOWN IS THE MINIMUM FABRIC STRENGTH AND LENGTH FOR A FACTOR OF SAFETY = 1.5.

NOTES

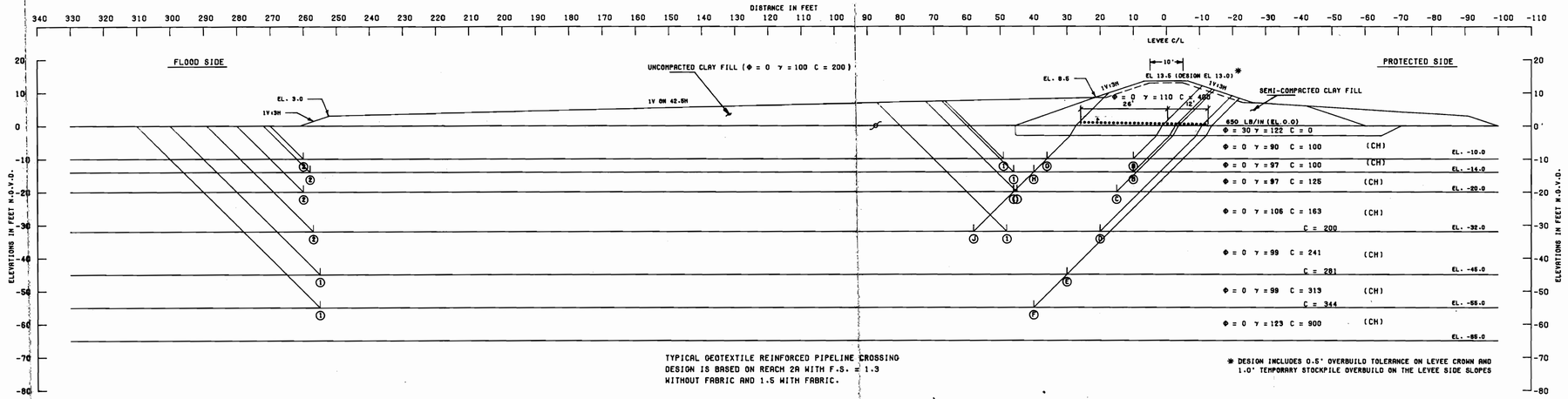
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_P}{D_B - D_P}$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HHR LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

TYPICAL GEOTEXTILE REINFORCED PIPELINE CROSSING - PROT. SIDE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



TYPICAL GEOTEXTILE REINFORCED PIPELINE CROSSING
DESIGN IS BASED ON REACH 2A WITH F.S. = 1.3
WITHOUT FABRIC AND 1.5 WITH FABRIC.

* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

FAILURE SURFACE NO.	FAILURE SURFACE ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_A	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
(B) (1)	-10.0	14202	3900	4972	29511	15050	23074	14461	1.60
(B) (2)	-10.0	14202	25000	2000	29511	4526	41202	24985	1.65
(B) (1)	-14.0	14203	3600	5762	39360	22532	23565	16828	1.40
(B) (2)	-14.0	14203	24800	2800	39360	9051	41803	30309	1.38
(C) (1)	-20.0	15503	3750	7216	56938	36513	26469	20425	1.30
(C) (2)	-20.0	15503	30625	4300	56938	18375	50428	38563	1.31
(D) (1)	-32.0	17757	5800	10978	101068	74843	34333	26225	1.31
(D) (2)	-32.0	17757	47400	8200	101068	48720	73357	52348	1.40
(E) (1)	-46.0	23190	63225	14463	163432	99280	100868	65152	1.55
(F) (1)	-56.0	29440	73950	20703	222181	147518	124103	74663	1.66
(G) (1)	-10.0	11260	22400	2000	18171	4526	35660	13645	2.61
(H) (1)	-14.0	12060	21800	2800	28279	9051	36860	17228	2.13
(I) (1)	-20.0	13560	26750	4300	41119	18375	44610	22744	1.96
(J) (1)	-32.0	17460	39800	8200	80518	48720	65460	31798	2.05

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.5. FOR DESIGN OF THE REINFOREMENT FABRIC. SEE APPENDIX D
3. GEOTEXTILE **********. SEE PLATE 15 FOR GEOTEXTILE AND BAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE B4.
5. THE FABRIC SHOWN IS THE MINIMUM FABRIC STRENGTH AND LENGTH FOR A FACTOR OF SAFETY = 1.5.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

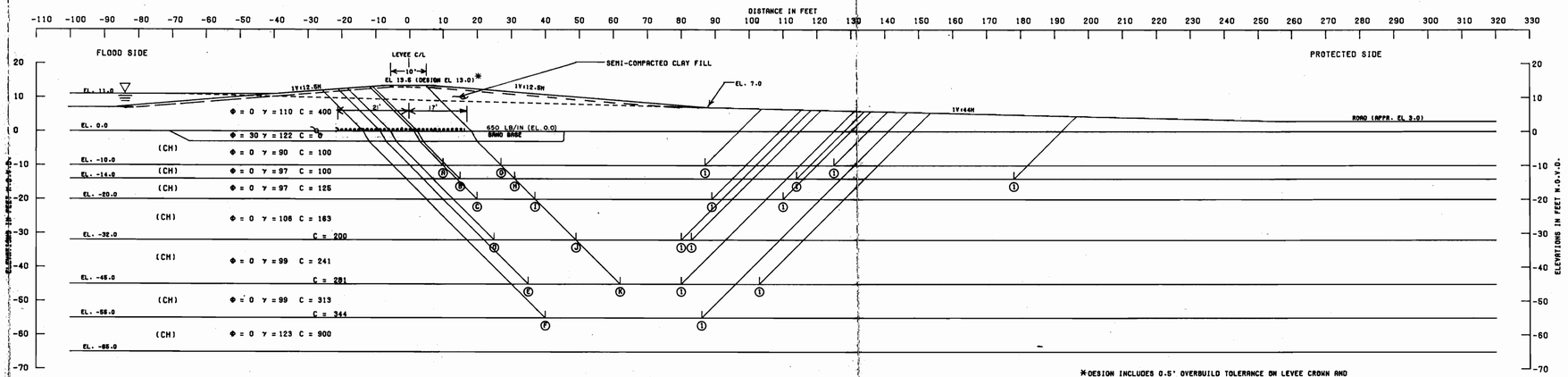
$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HNM LEVEL PLAN
DESIGN MEMORANDUM NO.1B, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

TYPICAL GEOTEXTILE REINFORCED PIPELINE CROSSING - FLOOD SIDE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423

PLATE 107



TYPICAL GEOTEXTILE REINFORCED RAMP CROSSING OVER A PIPELINE

DESIGN BASED ON REACH 2A WITH F.S.=1.3 WITHOUT FABRIC & 1.5

*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

REFERENCED FAILURE SURFACE			RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.		ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(A)	(1)	-10.0	13884	7700	7298	30009	14569	28882	15450	1.87
(B)	(1)	-14.0	14742	9900	7522	40484	20400	32164	20084	1.60
(C)	(1)	-20.0	16184	6825	9375	58919	36426	34184	23423	1.46
(D)	(1)	-32.0	19673	11800	13164	108764	74368	44437	32409	1.37
(E)	(1)	-45.0	26727	12645	19231	174119	132738	57603	41380	1.39
(F)	(1)	-55.0	31602	15824	25184	237054	187290	72610	49764	1.46
(G)	(1)	-10.0	14033	9800	6592	28197	12950	30425	15247	2.00
(H)	(1)	-14.0	14833	14700	6333	38104	17193	35866	20911	1.72
(I)	(1)	-20.0	16333	8125	8986	55611	33993	34443	21618	1.59
(J)	(1)	-32.0	20233	6200	13219	100468	74771	39652	25686	1.54
(K)	(1)	-45.0	28486	11521	18904	163364	129602	58911	33862	1.68

GENERAL NOTES:

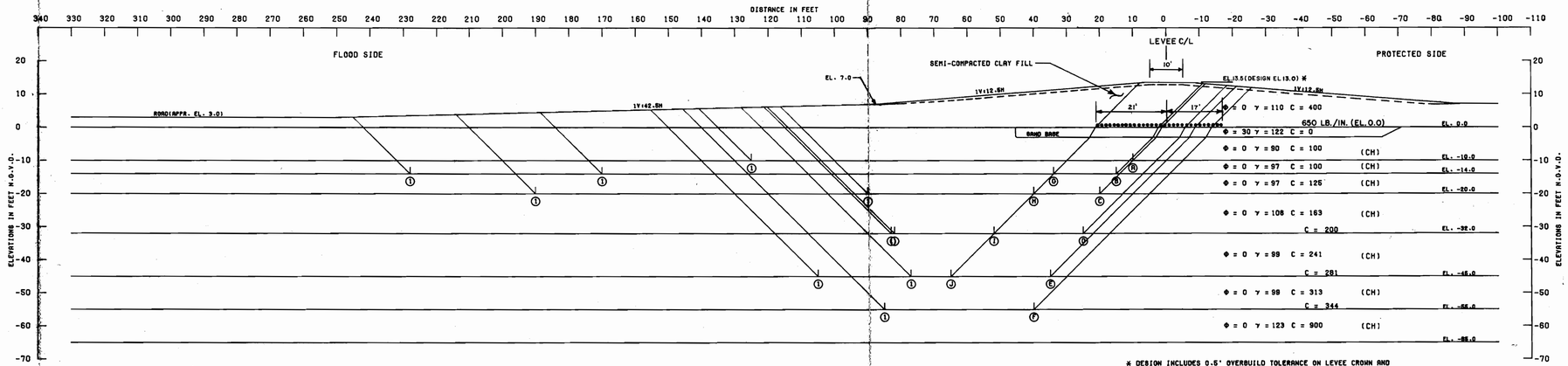
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.5. FOR DESIGN OF THE REINFORCEMENT FABRIC. SEE APPENDIX D.
3. GEOTEXTILE **********, SEE PLATE 15. FOR GEOTEXTILE AND BAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 1 PROTECTED SIDE STABILITY PLATE B2.
5. THE FABRIC SHOWN IS THE MINIMUM FABRIC STRENGTH AND LENGTH FOR A FACTOR OF SAFETY - 1.5)

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_P}{D_A - D_P}$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
TYPICAL GEOTEXTILE REINFORCED RAMP/PIPELINE CROSSING
PROTECTED SIDE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



TYPICAL GEOTEXTILE REINFORCED RAMP CROSSING OVER A PIPELINE CROSSING SECTION

DESIGN BASED ON REACH 2A WITH F.S. = 1.3 WITHOUT FABRIC & 1.5 WITH FABRIC

* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

DESIGNED FAILURE SURFACE			RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.		ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
A	A	-10.0	15009	11500	6556	30001	12881	33065	17120	1.93
B	B	-14.0	15868	15500	6413	40479	17416	37781	23063	1.64
C	C	-20.0	17309	8750	9337	58911	35318	36396	23593	1.50
D	D	-32.0	20794	11400	13180	105723	74437	45354	32286	1.40
E	E	-45.0	28846	11502	19259	174064	133231	57907	40823	1.42
F	F	-55.0	32711	16480	25183	236940	187300	73364	49640	1.48
G	G	-14.0	15784	19400	5296	37392	14814	40480	22578	1.79
H	H	-20.0	17284	18750	7412	54741	28514	43446	26227	1.65
I	I	-32.0	21184	6200	13141	98981	74301	40525	24680	1.64
J	J	-45.0	27437	11240	18720	181546	129032	57397	32514	1.77

GENERAL NOTES:

1-CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

2. SEE PROTECTED SIDE PLATE FOR ADDITIONAL NOTES

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

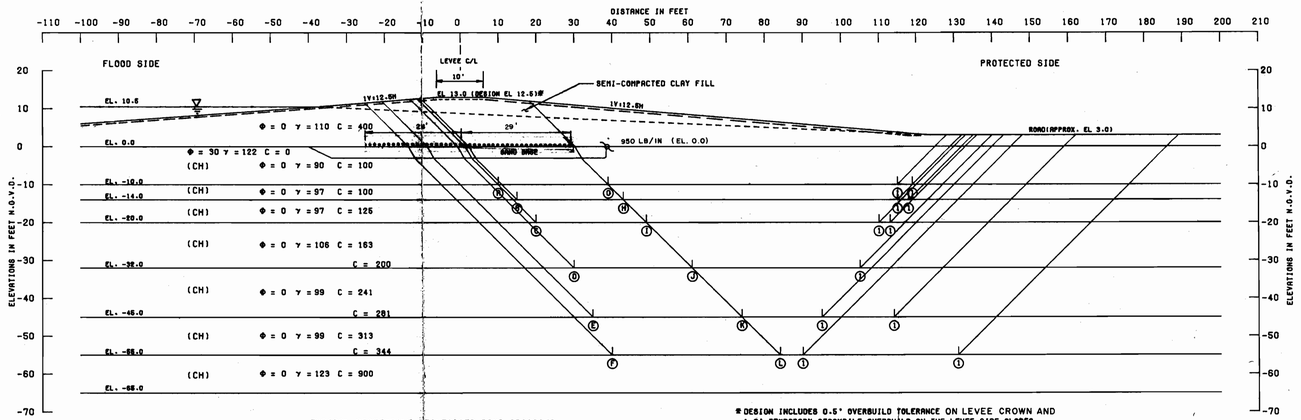
$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

TYPICAL GEOTEXTILE REINFORCED RAMP/PIPLINE CROSSING-FLOOD SIDE

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

DATE: JANUARY 1969 FILE NO. H-2-30423



TYPICAL GEOTEXTILE REINFORCED RAMP CROSSING
DESIGN BASED ON SOIL REACH 2B(F.S. = 1.3 WITH FABRIC)

*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_F	D_B	$-D_F$	RESISTING	DRIVING	
B 1	-10.0	13444	10900	4400	28740	8401	28744	20339	1.41
B 1	-14.0	14310	10000	5200	38976	14350	29610	24626	1.20
C 1	-20.0	15744	11250	6700	57061	26331	33694	30720	1.10
D 1	-32.0	19513	15000	10600	103695	61124	45113	42471	1.06
E 1	-45.0	25218	18560	16863	170670	116852	60931	53818	1.10
F 1	-55.0	31062	17200	23103	232779	170856	71365	61923	1.15
G 1	-10.0	12659	7600	4400	24200	8654	24659	15546	1.59
H 1	-14.0	13469	7500	5200	33001	14146	25169	18855	1.33
I 1	-20.0	14859	8000	6700	48831	25985	29859	22846	1.30
J 1	-32.0	18569	8600	10600	90600	61124	38269	29476	1.30
K 1	-45.0	25112	11240	16863	150959	113421	53205	37538	1.42
L 1	-55.0	31362	16188	23103	207695	165512	70633	42183	1.67

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. GEOTEXTILE WILL BE USED AS SHOWN TO OBTAIN A FACTOR OF SAFETY OF 1.3. FOR DESIGN OF THE REINFORCEMENT FABRIC, SEE APPENDIX D.
3. GEOTEXTILE ********** SEE PLATE 14. FOR GEOTEXTILE AND SAND DIMENSIONS.
4. FOR CONSTRUCTION SEQUENCE, SEE REACH 2A PROTECTED SIDE STABILITY PLATE 84.
5. THE FABRIC SHOWN IS THE MINIMUM FABRIC STRENGTH AND LENGTH FOR A FACTOR OF SAFETY = 1.3.
6. IN LIEU OF THE ABOVE FABRIC STRENGTH AND LENGTH, THE FABRIC REQUIREMENTS FOR REACH 2B SHOULD BE USED FOR THIS RAMP CROSSING.

NOTES

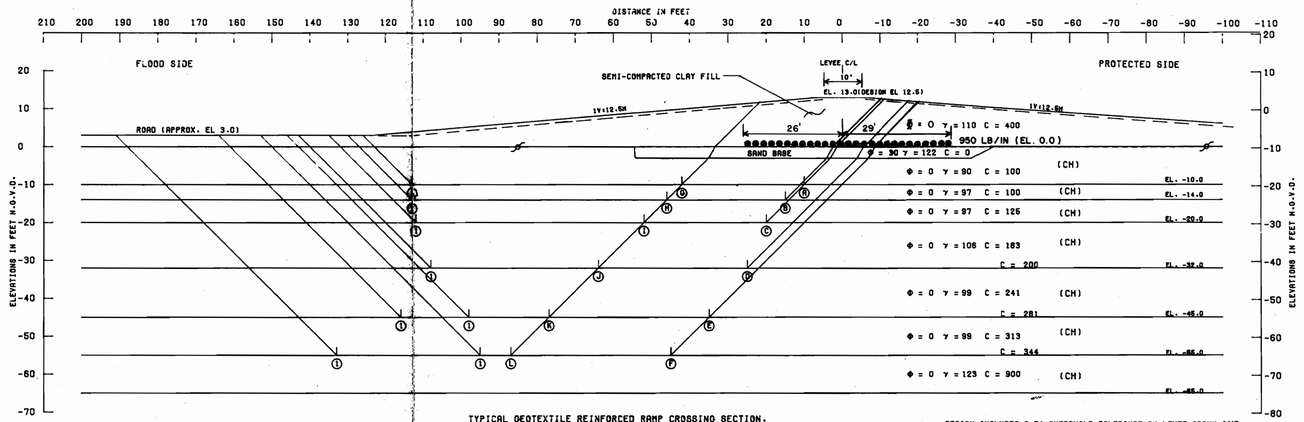
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
F -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_F}{D_B - D_F}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 19, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

TYPICAL GEOTEXTILE REINFORCED RAMP CROSSING-PROTECTED SIDE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



TYPICAL GEOTEXTILE REINFORCED RAMP CROSSING SECTION.
DESIGN BASED ON SOIL REACH 2 WITH F.S. = 1.3 WITH FABRIC

*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

FAILURE NO.	SURFACE	ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_A	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
Ⓐ	1	-10.0	14525	10300	4400	28740	8837	29225	19903	1.47
Ⓑ	1	-14.0	15386	9800	5200	38977	14533	30386	24444	1.24
Ⓒ	1	-20.0	16826	11500	5700	57051	26092	35026	30959	1.13
Ⓓ	1	-32.0	20308	16600	10500	104181	60839	47508	43342	1.09
Ⓔ	1	-45.0	26358	17703	16863	170670	116085	60814	54585	1.12
Ⓕ	1	-55.0	32608	17200	23103	232025	189391	72911	62634	1.16
Ⓖ	1	-10.0	13292	7100	4400	23640	8837	24792	14803	1.67
Ⓗ	1	-14.0	14092	6700	5200	32712	14533	25892	18179	1.43
Ⓘ	1	-20.0	15692	7500	5700	48849	26092	29792	22857	1.30
Ⓙ	1	-32.0	19492	9800	10500	90614	60839	38892	29975	1.30
Ⓚ	1	-45.0	26745	10959	16863	150607	113257	53557	37350	1.43
Ⓛ	1	-55.0	31995	15824	23103	207062	165512	70922	41550	1.71

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

2. FOR ADDITIONAL NOTES.SEE PROTECTED SIDE STABILITY PLATE

NOTES

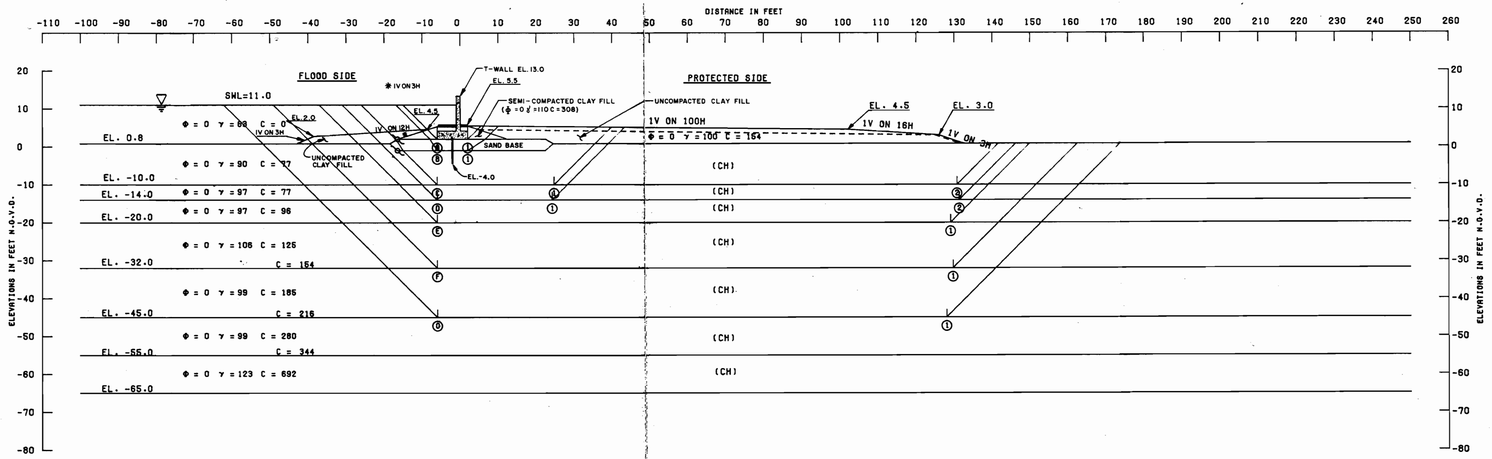
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_P}{D_A - D_P}$

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

TYPICAL GEOTEXTILE REINFORCED RAMP CROSSING-FLOOD SIDE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	Ua	Ra	Ra	Ra	Rc	Rc	Rc	Ua	Ua - Up
A-1	+2.0	2733	1583	[illegible]	1875	[illegible]	1176	[illegible]	-1357
B-1	-1.0	5334	1876	6187	2648	2279	8858	[illegible]	-1885
C-1	-10.0	17880	1586	2304	2984	7[illegible]964	16854	[illegible]	-268
C-2	-10.0	17840	1556	8526	1663	5388	16854	17459	-1443
D-1	-14.0	24918	2278	2325	3698	7360	22641	23285	-644
D-2	-14.0	24918	2278	16572	2279	9348	22641	22791	-150
E-1	-20.0	30652	3430	12968	3431	28838	35222	36424	-1202
F-1	-32.0	77242	6431	28882	6431	59[illegible]	78611	78216	-7495
G-1	-45.0	135478	11241	28922	11241	181[illegible]	124437	141429	-16992

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. ANALYSIS WAS PERFORMED WITH A FACTOR OF SAFETY OF 1.3 INCORPORATED INTO THE SOIL PARAMETERS.
3. A DECREASING TOTAL Ua-Up INDICATES THAT NO UNBALANCED LOAD EXISTS.
4. SEEPAGE-CUTOFF CALCULATION (SAMPLE) BASED ON LANE'S WEIGHTED CREEP RATIO.

LWCR = $\frac{\text{WEIGHTED CREEP DISTANCE}}{\text{HEAD}}$

LWCR = 3.0 FOR SOFT CLAY.

$3 = \frac{3.5 + 8/3 + 3.5 + 2d}{5.5}$ (d = DEPTH OF SHEETPILE BELOW GROUND SURFACE)

d = 3.4' (EL. -1.41)

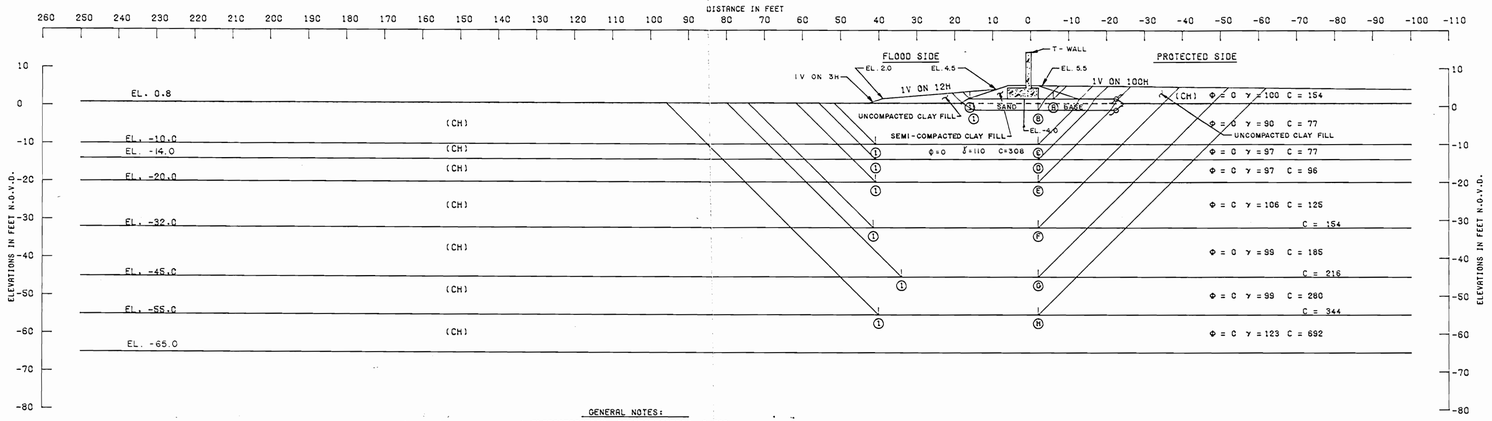
EL. = -4.0 TO GO THRU SAND BASE.

NOTES

φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
Σ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_P}{D_A - D_P}$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
SHELL OIL FIELD
T-WALL APPROX. STA. 149+70-RS.
DEEP SEATED STABILITY ANALYSIS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969
FILE NO. H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = O_A - R_A$		$U_P = R_B + R_P + D_P$			U_A	U_P	$U_A - U_P$
		O_A	R_A	R_B	R_P	D_P			
A-1	+2.8	618	1556	8	582	178	-346	752	-1698
B-1	-1.8	2321	2639	1383	1813	1281	-318	4323	-4641
C-1	-10.8	12378	3222	3296	1663	5383	5898	18262	-1164
D-1	-14.8	15177	3865	3296	2275	9966	15312	15541	-229
E-1	-28.8	32269	5887	4189	3431	19872	27262	27412	-158
F-1	-32.8	68558	7763	6684	6431	58777	68795	63892	-3897
G-1	-45.8	124238	12532	7776	11241	181818	111787	128835	-8128
H-1	-55.8	178338	18181	14448	16841	158978	168237	182258	-22822

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. ANALYSIS WAS PERFORMED WITH A FACTOR OF SAFETY OF 1.3 INCORPORATED INTO THE SOIL PARAMETERS.
3. A DECREASING TOTAL $U_A - U_P$ INDICATES THAT NO UNBALANCED LOAD EXISTS.

NOTES

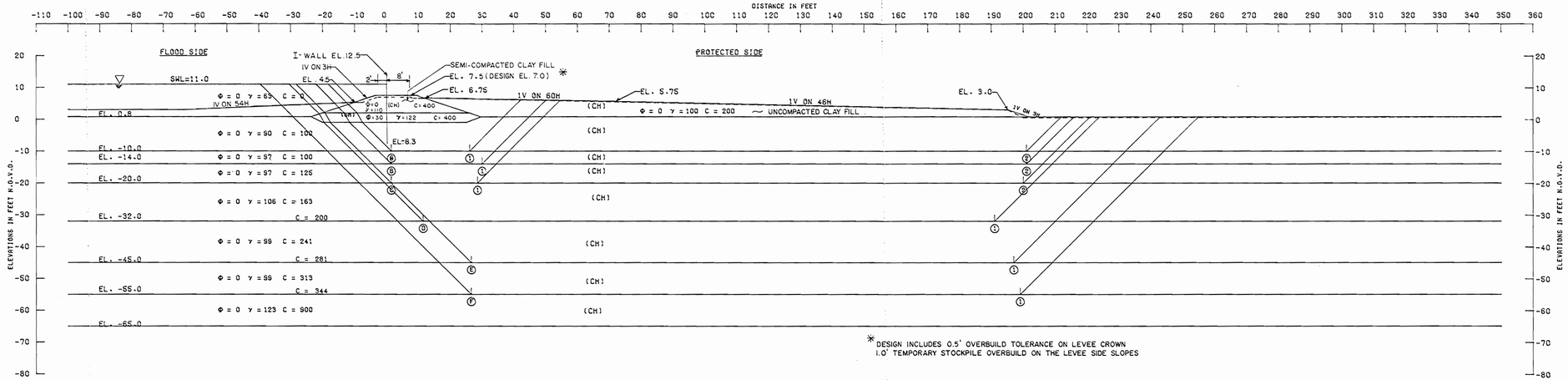
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
Ω -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SHELL OIL FIELD
T-WALL APPROX. STA. 149+70-F.S.
DEEP SEATED STABILITY ANALYSIS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



ASSUMED FAILURE SURFACE NO.	ASSUMED FAILURE SURFACE ELEV.	RESISTING FORCES R_a	R_s	R_p	DRIVING FORCES D_a	$-D_p$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
B 1	-10.0	4596	2450	4317	19429	12873	11363	6556	1.73
B 2	-10.0	4596	19950	2160	19429	5261	26706	14169	1.88
B 1	-14.0	4800	2850	5065	27604	19419	12715	8185	1.55
B 2	-14.0	4800	19950	2960	27604	9924	27710	17680	1.57
C 1	-20.0	5485	3375	6535	42685	32528	15395	10157	1.52
C 2	-20.0	5485	24812	4460	42685	19875	34757	22810	1.52
D 1	-32.0	8866	35900	7880	83311	52431	52646	30880	1.70
E 1	-45.0	15158	47911	14133	142036	101290	77202	40746	1.89
F 1	-55.0	21517	59340	20383	199777	150993	101240	48784	2.08

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

2. SEE PLATE 116 FOR SHEET PILE ANALYSIS

NOTES

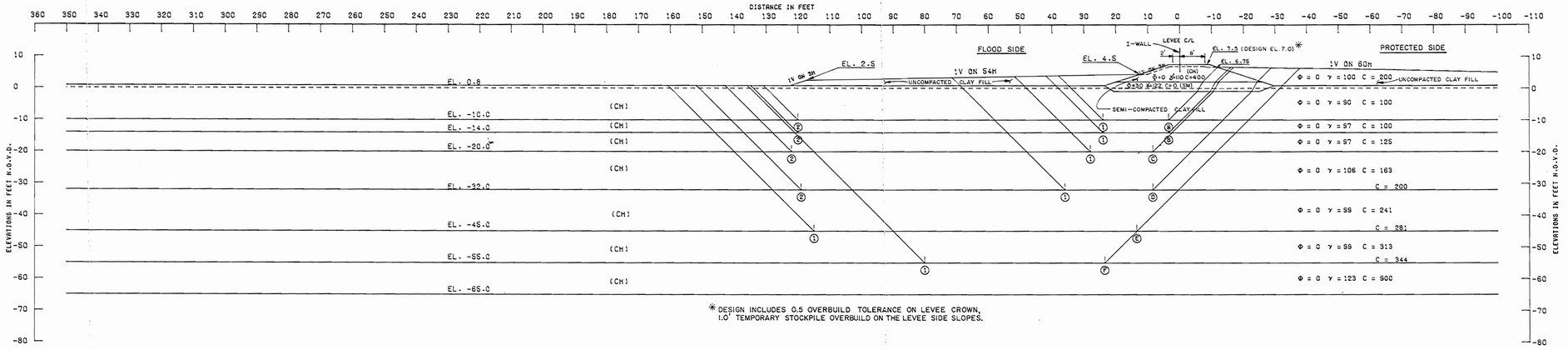
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_a + R_s + R_p}{D_a - D_p}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SHELL OIL FIELD I-WALL
APPROX. STA. 149+70 (1ST LIFT)
STABILITY ANALYSIS — PROT. SIDE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



* DESIGN INCLUDES 0.5 OVERBUILD TOLERANCE ON LEVEE CROWN, 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(B) (1)	-10.0	7098	2050	3428	16269	9354	12576	6905	1.82
(B) (2)	-10.0	7098	11650	2160	16269	9361	20908	10898	1.92
(B) (1)	-14.0	7407	2050	4198	23730	15270	13655	8460	1.61
(B) (2)	-14.0	7407	11650	2960	23730	10025	22017	13705	1.61
(C) (1)	-20.0	8727	2437	5626	37867	26825	16790	11042	1.52
(C) (2)	-20.0	8727	14187	4460	37867	19824	27374	18043	1.52
(D) (1)	-32.0	10725	5500	8500	76806	60603	25125	16203	1.55
(D) (2)	-32.0	10725	22100	7880	76806	50969	40705	25837	1.58
(E) (1)	-45.0	16320	28522	14133	134319	101762	58975	32557	1.81
(F) (1)	-55.0	22570	19436	20383	188571	158956	62389	29615	2.11

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

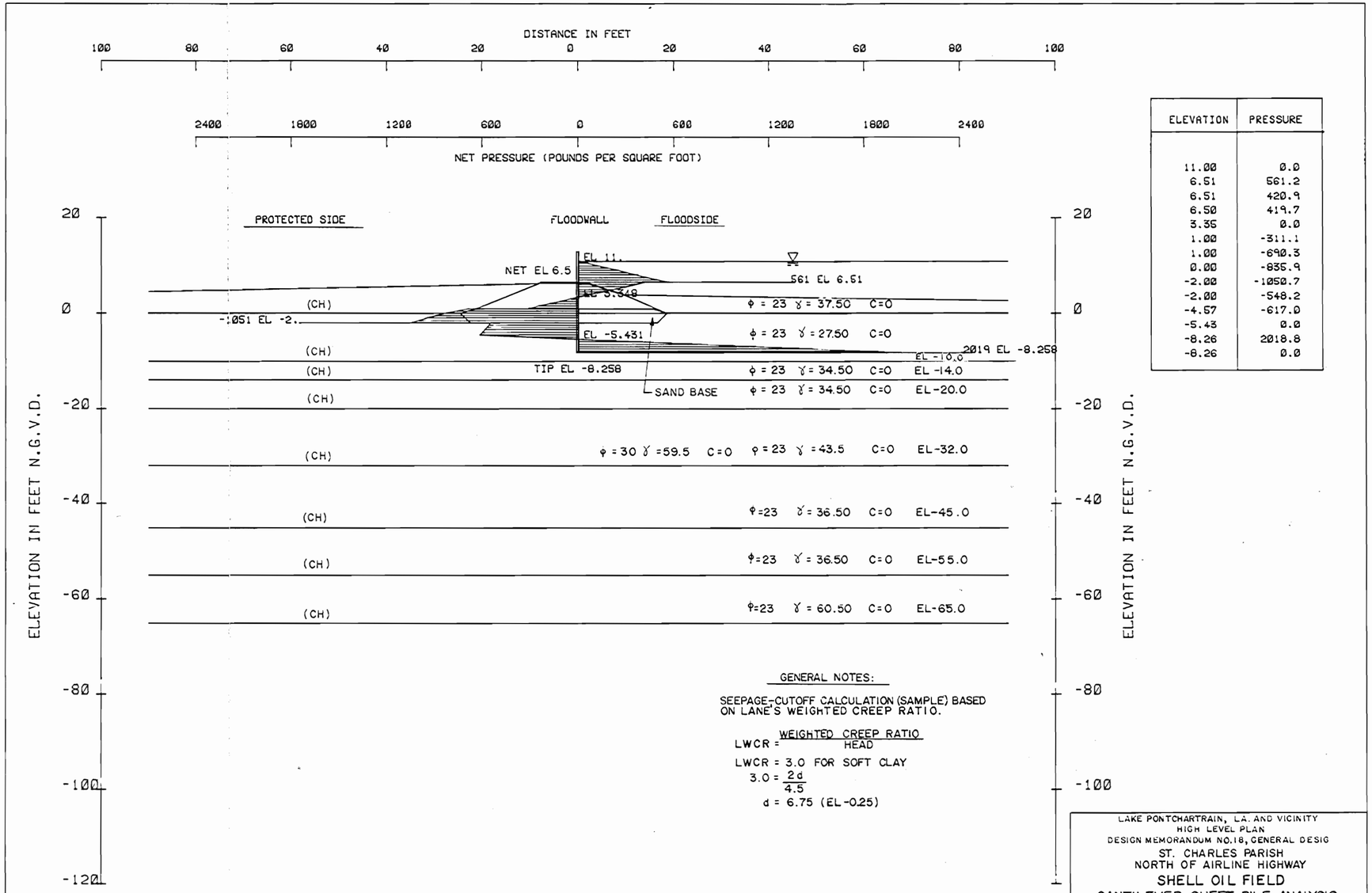
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SHELL OIL FIELD I-WALL
APPROX. STA. 149+70 (1st LIFT)
STABILITY ANALYSIS – FLOOD SIDE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



ELEVATION	PRESSURE
11.00	0.0
6.51	561.2
6.51	420.9
6.50	419.7
3.35	0.0
1.00	-311.1
1.00	-690.3
0.00	-835.9
-2.00	-1050.7
-2.00	-548.2
-4.57	-617.0
-5.43	0.0
-8.26	2018.8
-8.26	0.0

GENERAL NOTES:

SEEPAGE-CUTOFF CALCULATION (SAMPLE) BASED ON LANE'S WEIGHTED CREEP RATIO.

$$LWCR = \frac{\text{WEIGHTED CREEP RATIO}}{\text{HEAD}}$$

LWCR = 3.0 FOR SOFT CLAY

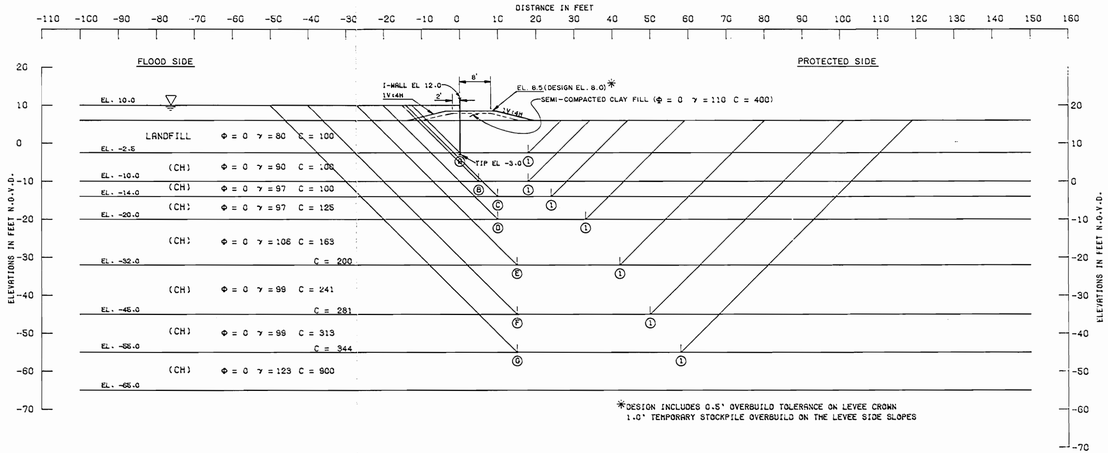
$$3.0 = \frac{2d}{4.5}$$

d = 6.75 (EL-0.25)

NET DIAGRAM

(S) CASE F.S.=1.2

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIG
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
SHELL OIL FIELD
CANTILEVER SHEET PILE ANALYSIS
APPROX. B/L STA 149+70
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



ASSUMED FAILURE SURFACE			RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.		ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
B	1	-2.5	2601	1800	1700	6406	2921	6001	3485	1.72
B	1	-10.0	3601	1300	3200	16130	10652	8101	5578	1.45
C	1	-14.0	4561	1400	4000	23418	16717	9961	6701	1.49
D	1	-20.0	5502	2875	5500	37160	28920	13877	8260	1.68
E	1	-32.0	9401	5400	9400	75423	64461	24201	10972	2.21
F	1	-45.0	15664	9835	15663	133799	119576	41142	14224	2.89
G	1	-55.0	21903	14792	21903	190088	173363	58598	16725	3.50

GENERAL NOTES:

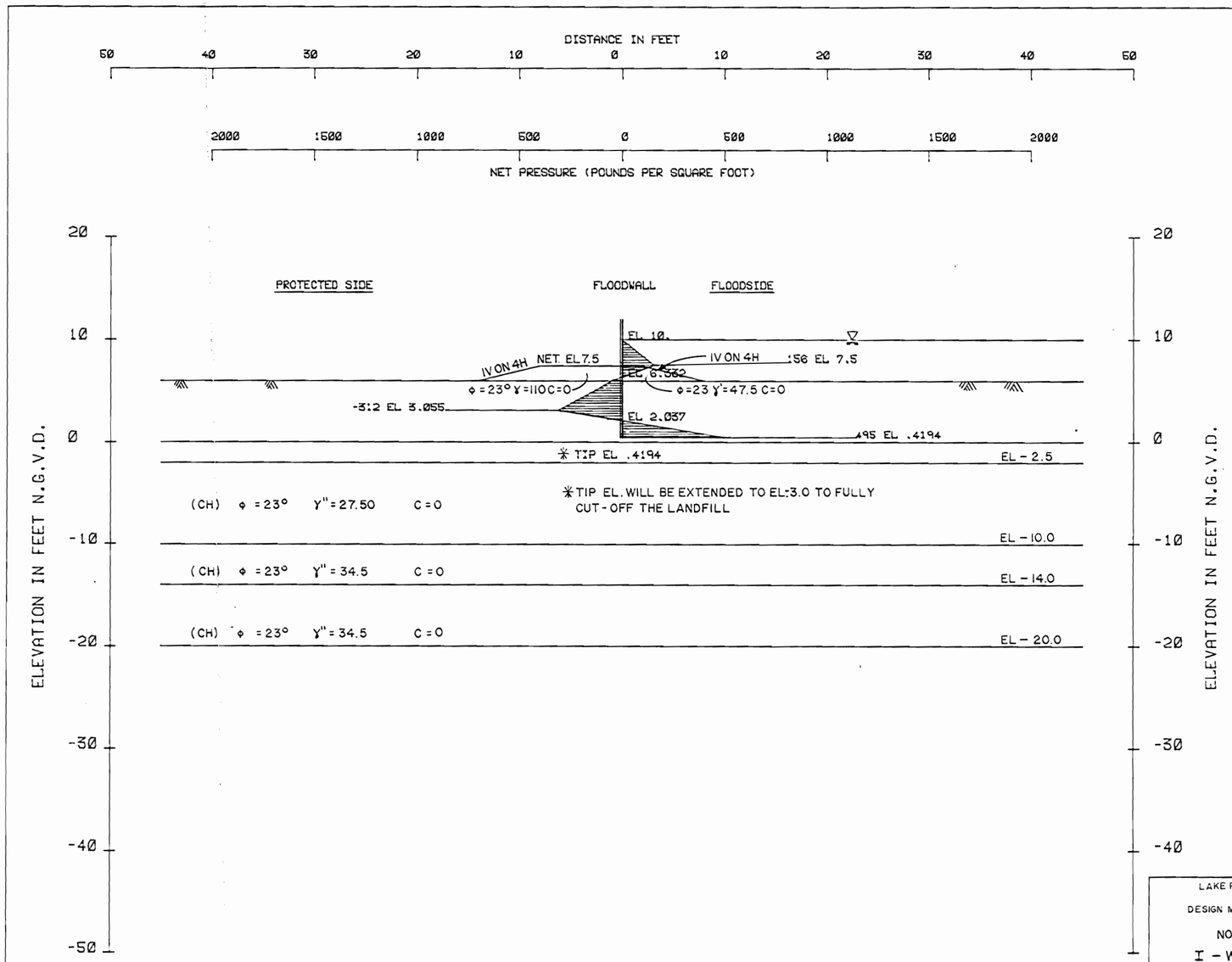
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. PROTECTED SIDE STABILITY ANALYSIS IS SHOWN ONLY. (CONTROLLING CASE)
3. SEE PLATE 118 FOR SHEET PILE.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
I-WALL (WEST OF I-310 T-WALL)
STABILITY ANALYSIS – PROT. SIDE
STAS. 355+75 TO 357+00 (1ST LIFT)
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



ELEVATION	PRESSURE
10.00	0.0
7.50	156.3
6.33	0.0
6.00	-44.5
3.06	-311.8
2.04	0.0
0.42	495.4
0.42	0.0

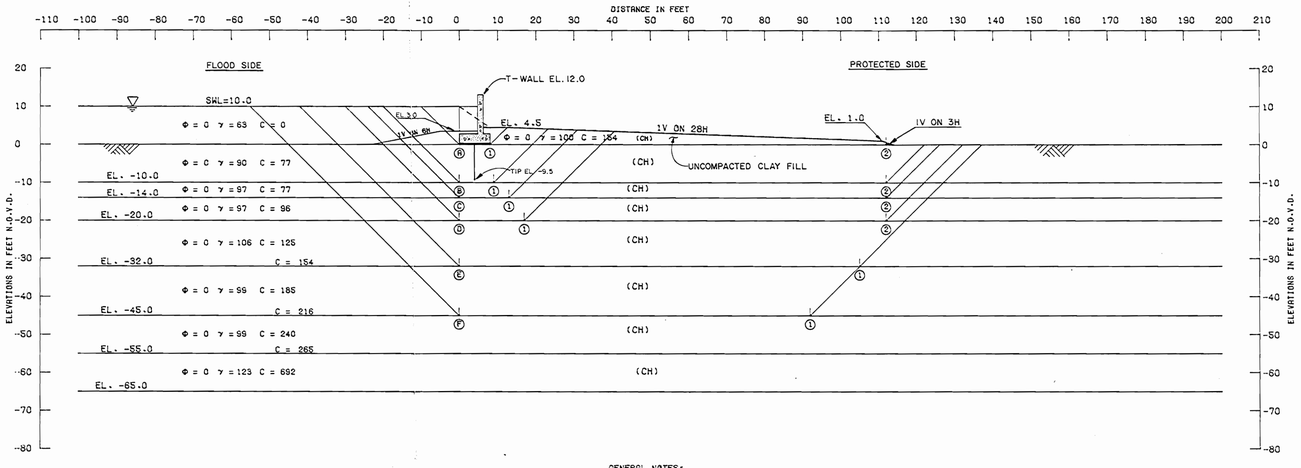
NET DIAGRAM

(S) CASE F.S.=1.2

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

I - WALL (WEST OF I - 310)
CANTILEVER SHEET PILE ANALYSIS
B/L STAS. 355+75 TO 357+00

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - \Sigma\Omega$		$U_P = R_B + R_R + R_P - D_P$			U_A	U_P	$U_A - U_P$
		D_A	K_A	R_B	R_R	D_P			
A-1	8.0	3354	1078	0	1386	992	2276	2378	-102
A-2	8.0	3354	1073	8888	154	17	2276	8179	-5903
B-1	-10.0	15196	2192	693	2814	9822	13884	13329	-325
B-2	-10.0	15196	2192	8624	1548	4566	13884	14738	-1726
C-1	-14.0	22285	2683	1881	3345	15541	19677	19887	-210
C-2	-14.0	22285	2683	8624	2156	8886	19677	19666	11
D-1	-20.0	35568	3453	1632	4391	26764	32181	32767	-686
D-2	-20.0	35568	3453	10752	3388	18192	32181	32252	-151
E-1	-32.0	72824	6388	16178	6388	48673	66516	71151	-4635
F-1	-45.0	129795	11118	19872	11118	99396	118677	136386	-17709

GENERAL NOTES:

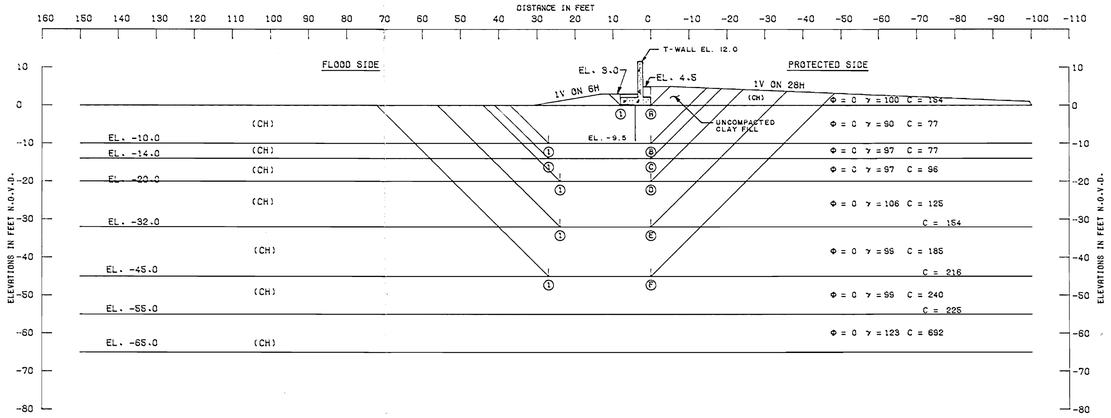
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. ANALYSIS WAS PERFORMED WITH A FACTOR OF SAFETY OF 1.3 INCORPORATED INTO THE SOIL PARAMETERS.
3. THE SMALL UNBALANCED LOAD IS NEGLIGIBLE.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
Ω -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_B + R_R + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
T-WALL BENEATH I-310
STAS. 357+00 TO 370+00
DEEP SEATED STABILITY ANALYSIS-P.S.
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - R_A$		$U_P = R_B + R_P + D_P$			U_A	U_P	$U_A - U_P$
		D_A	R_A	R_B	R_P	D_P			
R-1	8.0	1258	1548	8	924	436	-290	1368	-1658
B-1	-18.0	12547	2955	2879	1548	4633	7592	8252	-660
C-1	-14.0	16727	3521	2879	2156	9988	13206	13244	-38
D-1	-28.0	28787	4598	2384	3388	18756	24188	24378	-181
E-1	-32.0	63591	7448	3696	6388	48829	56143	58833	-2698
F-1	-45.0	117269	12895	5832	11118	97764	105174	114714	-9548

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. ANALYSIS WAS PERFORMED WITH A FACTOR OF SAFETY OF 1.3 INCORPORATED INTO THE SOIL PARAMETERS.
3. A DECREASING TOTAL $U_A - U_P$ INDICATES THAT NO UNBALANCED LOAD EXISTS.

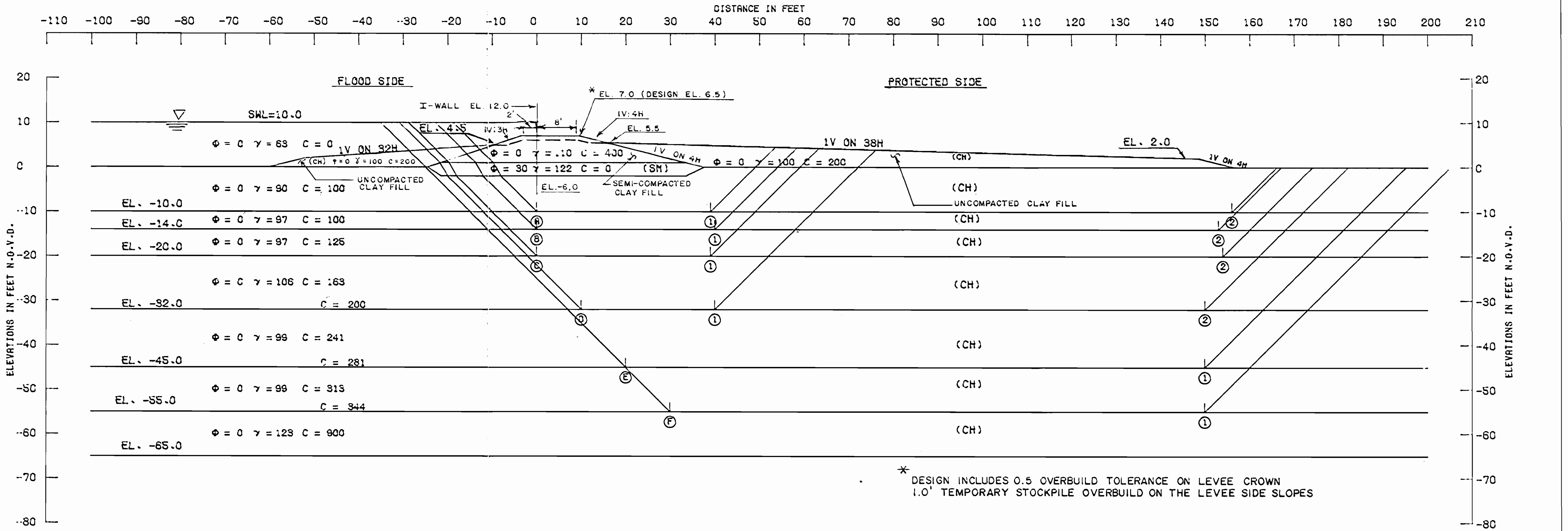
NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
T-WALL BENEATH I-310
B/L STA 357+00 TO 370+00
DEEP SEATED STABILITY ANALYSIS F.S.

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



* DESIGN INCLUDES 0.5 OVERBUILD TOLERANCE ON LEVEE CROWN
1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
Ⓐ ①	-10.0	4846	3900	3800	18132	10288	12546	7844	1.60
Ⓐ ②	-10.0	4846	15600	2000	18132	4503	22446	13629	1.65
Ⓑ ①	-14.0	5080	4000	4548	26100	16395	13628	9705	1.40
Ⓑ ②	-14.0	5080	15300	2800	26100	9029	23180	17071	1.36
Ⓒ ①	-20.0	5749	4875	5997	40824	28509	16621	12315	1.35
Ⓒ ②	-20.0	5749	19250	4300	40824	18427	29299	22397	1.31
Ⓓ ①	-32.0	9416	6000	9764	81069	63392	25180	17677	1.42
Ⓓ ②	-32.0	9416	28000	8200	81069	48948	45616	32121	1.42
Ⓔ ①	-45.0	15911	36530	14453	139871	98157	66894	41714	1.60
Ⓕ ①	-55.0	22161	41280	20618	195431	147300	84059	48131	1.75

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. SEE PLATE 123 FOR SHEET PILE ANALYSIS.

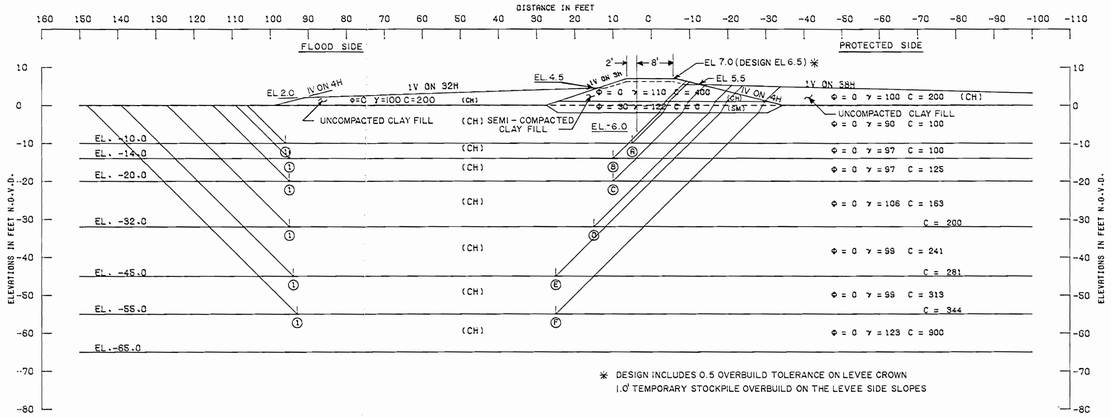
NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
I-WALL (EAST OF I-310)
STABILITY ANALYSIS - PROT. SIDE
STA. 370+00 TO 370+90 (1st LIFT)

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
Ⓐ ①	-10.0	7326	9100	2000	15399	4612	18426	10787	1.71
Ⓑ ①	-14.0	8286	8500	2800	23015	9075	19586	13940	1.41
Ⓒ ①	-20.0	8818	10626	4300	36687	18549	23743	18138	1.31
Ⓓ ①	-32.0	11852	16000	8200	74354	48620	36052	26734	1.40
Ⓔ ①	-45.0	17803	19389	14453	130759	97941	51646	32818	1.57
Ⓕ ①	-55.0	23048	23392	20703	185980	147317	67143	38663	1.74

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

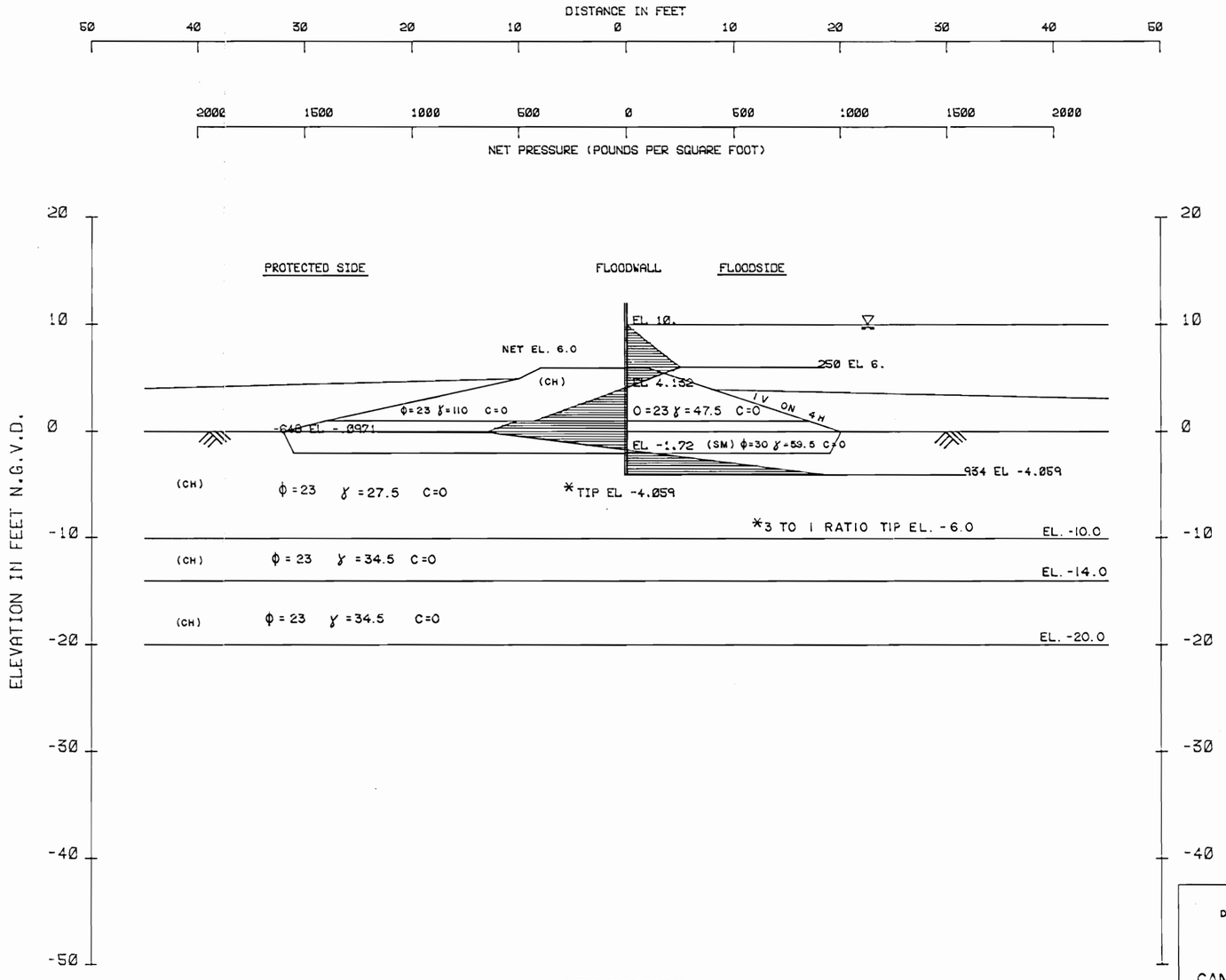
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

I-WALL (EAST OF I-310 T-WALL)
STABILITY ANALYSIS - FLOOD SIDE
STA. 370+00 TO 370+90 (1st LIFT)

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



ELEVATION	PRESSURE
10.00	0.0
6.00	250.0
4.13	0.0
3.00	-152.3
1.00	-429.0
1.00	-510.2
0.00	-647.8
-0.10	-648.1
-1.72	0.0
-4.06	934.4
-4.06	0.0

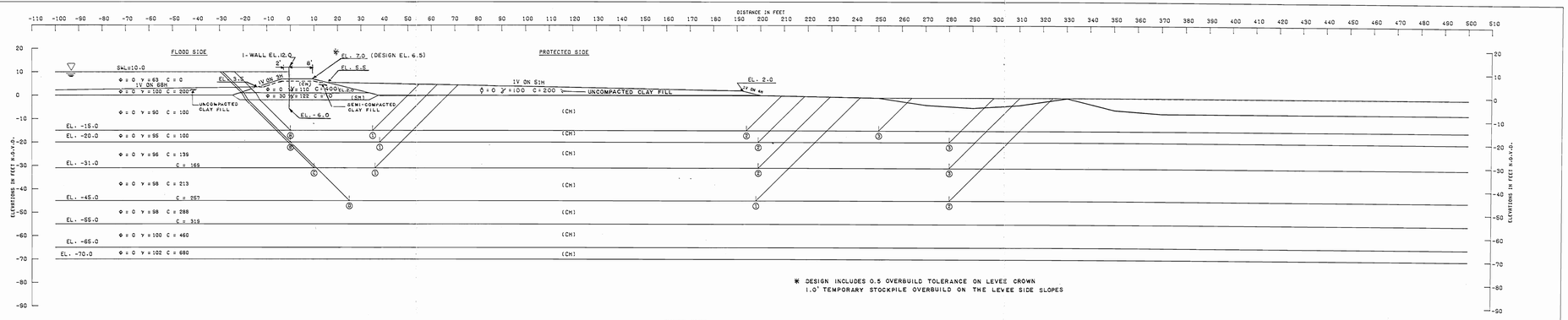
NET DIAGRAM

(S) CASE F.S.=1.2

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

I-WALL (EAST OF I-310)
CANTILEVER SHEET PILE ANALYSIS
B/L STA. 370+00 TO 370+90

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



BASIS FOR FAILURE SURFACE			RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.		ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(B)	(1)	-15.0	4683	3500	4889	27936	18775	13072	9161	1.43
(B)	(5)	-15.0	4683	19400	2965	27936	10503	27048	17433	1.55
(A)	(5)	-15.0	4683	25000	2435	27936	8468	32118	19468	1.65
(B)	(1)	-20.0	5107	3600	5826	40093	28835	14733	11258	1.31
(B)	(5)	-20.0	5107	19900	3925	40093	17766	28932	22337	1.30
(B)	(6)	-20.0	5107	28000	3021	40093	14468	36128	25636	1.41
(C)	(1)	-31.0	8051	4394	8814	76274	59787	21259	15487	1.37
(C)	(5)	-31.0	8051	31941	6940	76274	43162	46932	32112	1.46
(D)	(5)	-31.0	8051	46930	6220	76274	38279	59601	38996	1.52
(D)	(1)	-45.0	14129	44375	12853	134802	92299	71357	42503	1.68
(D)	(2)	-45.0	14129	65408	12610	134802	86087	92147	48715	1.89

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

2. SEE PLATE 126 FOR SHEET PILE ANALYSIS.

NOTES

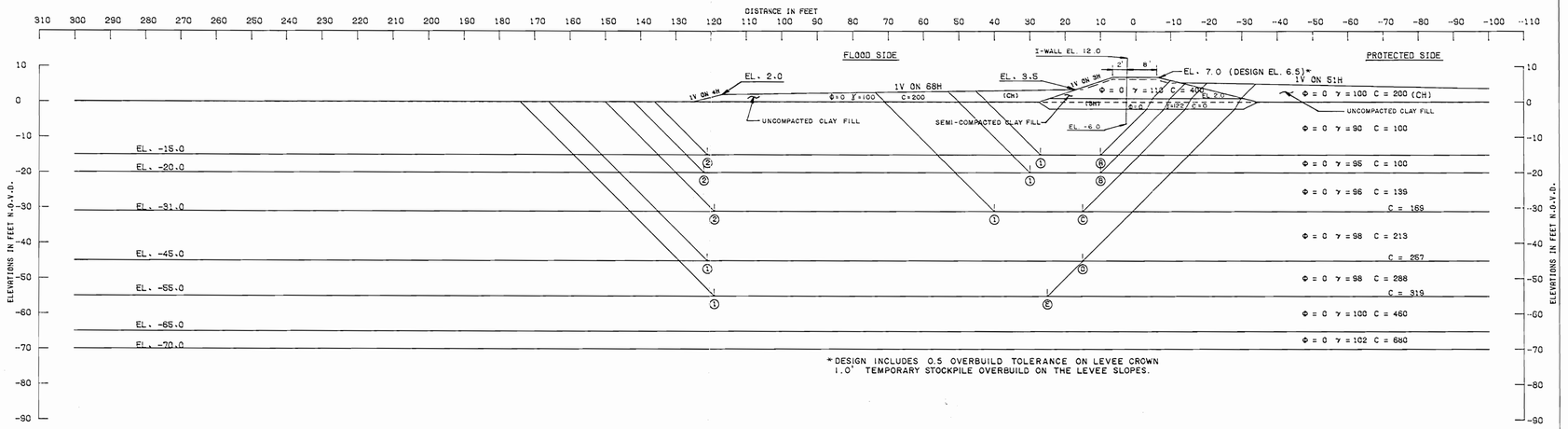
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.1B, GENERAL DESIGN
ST. CHARLES PARISH,
NORTH OF AIRLINE HIGHWAY

PARISH LINE R/R GATE I-WALL
APPROX. STA. 518+40 (1st LIFT)
STABILITY ANALYSIS (FS=1.3)-P.S.

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1969 FILE NO.H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN
1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SLOPES.

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
(B) (1)	-15.0	8326	1700	4231	26028	15466	14257	9563	1.49
(B) (2)	-15.0	8326	11100	3000	26028	10324	22426	14704	1.53
(B) (1)	-20.0	8523	2000	5164	36400	24616	16707	11684	1.36
(B) (2)	-20.0	8523	11200	4000	36400	18174	23723	18226	1.30
(C) (1)	-31.0	10834	4225	6116	69247	53360	23177	15887	1.46
(C) (2)	-31.0	10834	17676	7056	69247	44394	35468	24853	1.43
(D) (1)	-45.0	15446	27189	13022	127834	94081	55657	33753	1.65
(E) (1)	-55.0	21206	29966	16762	179787	141769	69974	38028	1.84

GENERAL NOTES:

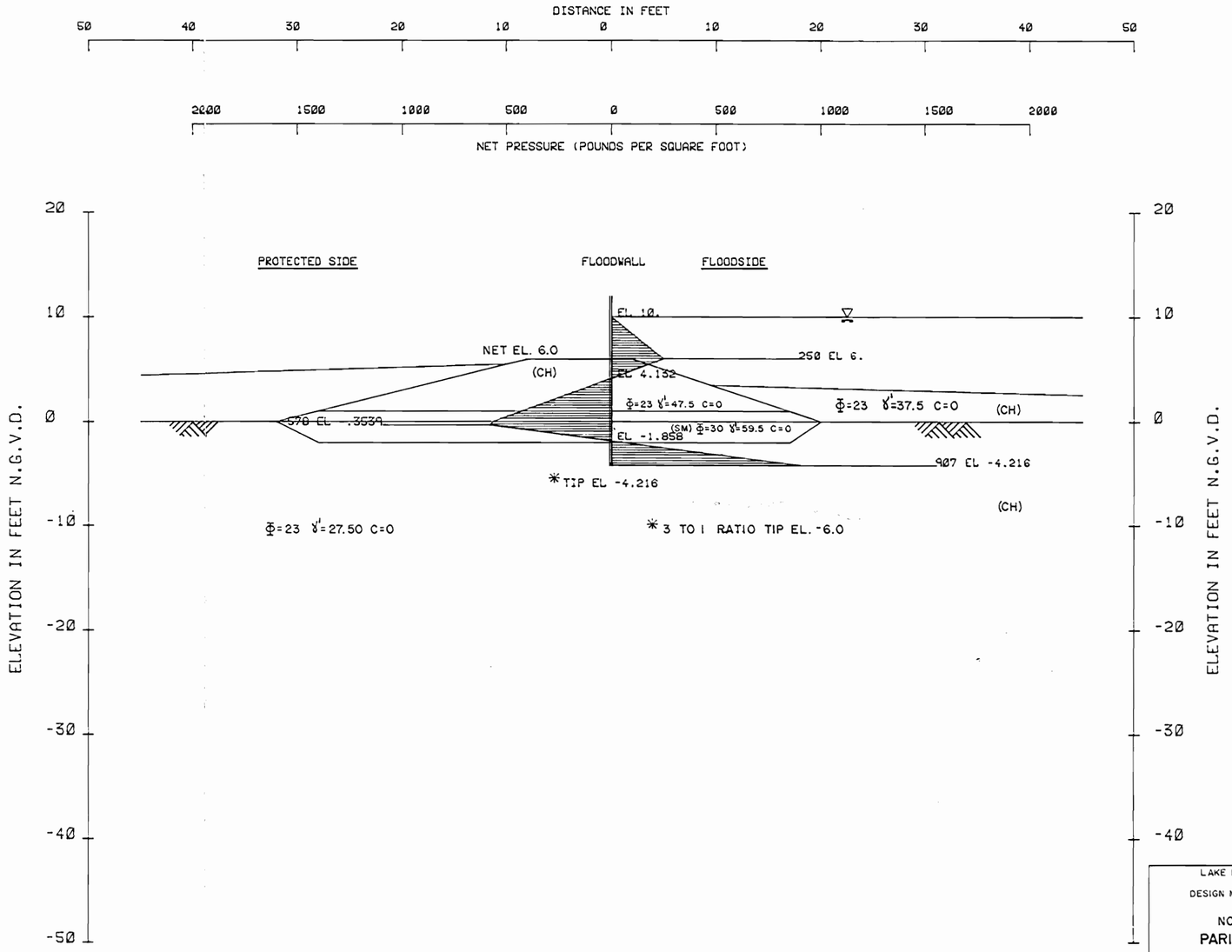
CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
PARISH LINE R/R GATE I-WALL
APPROX. STA. 518 + 40 (1st. LIFT)
STABILITY ANALYSIS (F.S.=1.3) - F.S.
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



ELEVATION	PRESSURE
10.00	0.0
6.00	250.0
4.13	0.0
3.00	-152.3
0.00	-565.6
-0.35	-578.4
-1.86	0.0
-4.22	906.8
-4.22	0.0

NET DIAGRAM

(S) CASE F.S.=1.2

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN

ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

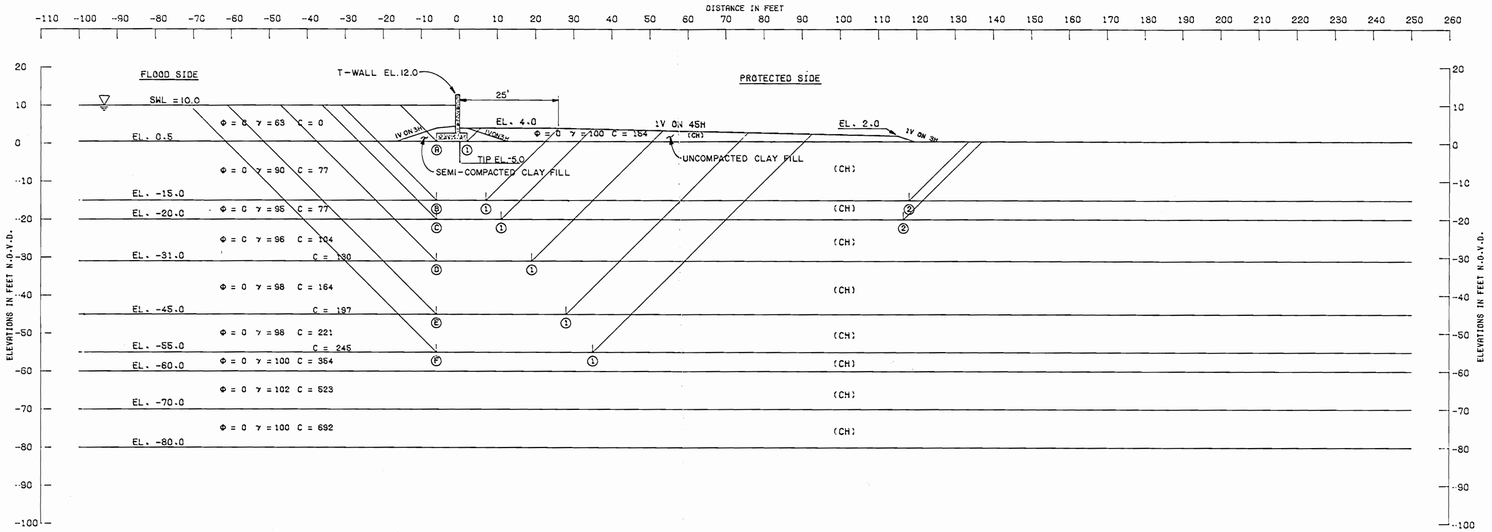
PARISH LINE RAILROAD GATE

I-WALL

CANTILEVER SHEET PILE ANALYSIS

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

DATE: JANUARY 1989 FILE NO. H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - R_A$		$U_P = R_B + R_P + D_P$					$U_A - U_P$
		D_A	R_A	R_B	R_P	D_P	U_A	U_P	
A-1	+8.5	3838	1617	8	1886	658	1421	2544	-1123
B-1	-15.8	23788	2389	1881	3458	16837	21318	21356	-37
B-2	-15.8	23788	2389	9548	2387	18848	21315	22783	-1464
C-1	-20.8	34848	3158	1389	4168	26655	31682	32132	-450
C-2	-20.8	34848	3158	9433	3157	19123	31682	31713	-31
D-1	-31.8	67749	5495	3258	6318	56872	62914	65648	-3326
E-1	-45.8	126628	18812	6658	18741	189521	116617	126968	-10343
F-1	-55.8	188445	14432	18845	15847	158761	166813	183853	-17848

GENERAL NOTES:

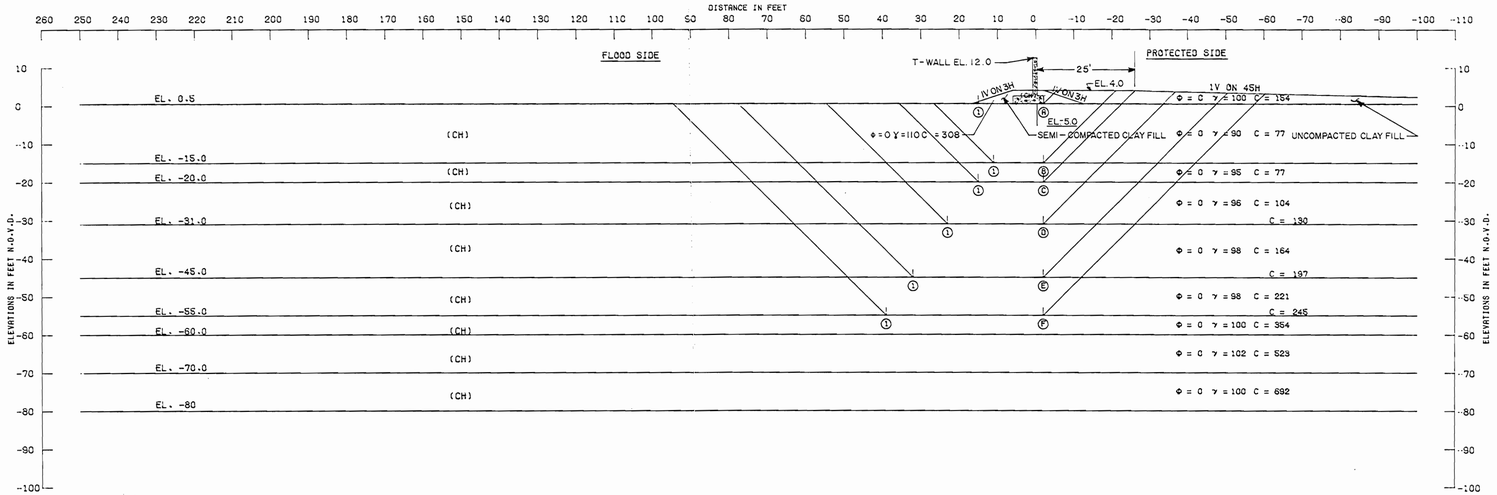
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. ANALYSIS WAS PERFORMED WITH A FACTOR OF SAFETY OF 1.3 INCORPORATED INTO THE SOIL PARAMETERS.
3. A DECREASING TOTAL $U_A - U_P$ INDICATES THAT NO UNBALANCED LOAD EXISTS.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_B + R_B + R_P}{D_A - D_P}$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
PARISH LINE RAILROAD GATE
T-WALL APPROX. STA. 518+40-P.S.
DEEP SEATED STABILITY ANALYSIS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - R_A$		$U_P = R_S + R_P + D_P$			U_A	U_P	$U_A - U_P$
		D_A	R_A	R_S	R_P	D_P			
A-1	+8.5	3838	1617	8	1886	658	1421	2544	-1123
B-1	-15.8	23788	2389	1801	3458	16857	21319	21356	-37
B-2	-15.8	23788	2389	9548	2387	18848	21319	22783	-1464
C-1	-20.8	34848	3158	1389	4168	26655	31682	32132	-450
C-2	-20.8	34848	3158	9433	3157	19123	31682	31713	-31
D-1	-31.8	67745	5435	3258	6318	56872	62314	65648	-3326
E-1	-45.8	126629	18812	6698	18741	189521	116617	126968	-18343
F-1	-55.8	188445	14432	18845	15847	158761	166813	183853	-17848

GENERAL NOTES:

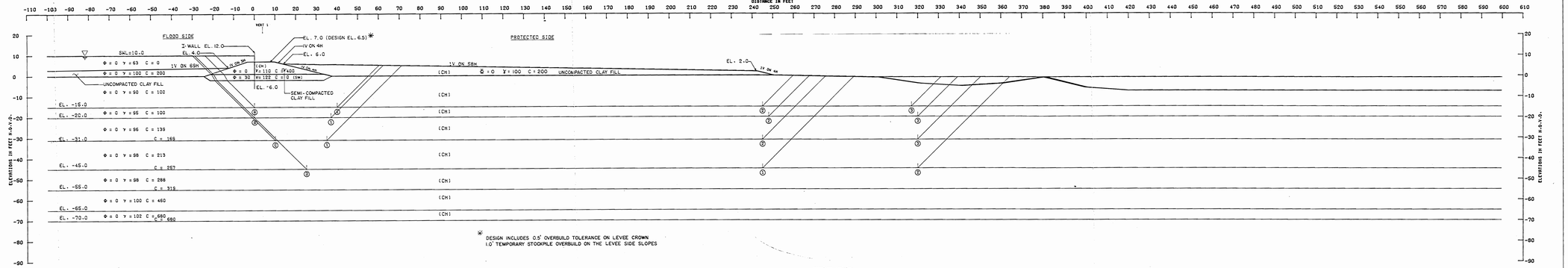
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. ANALYSIS WAS PERFORMED WITH A FACTOR OF SAFETY OF 1.3 INCORPORATED INTO THE SOIL PARAMETERS.
3. A DECREASING TOTAL U_A-U_P INDICATES THAT NO UNBALANCED LOAD EXISTS.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
Ψ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
PARISH LINE RAILROAD GATE
T-WALL APPROX. STA. 5+18+40 - F.S.
DEEP SEATED STABILITY ANALYSIS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



* DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN
1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

FAILURE SURFACE NO.	FAILURE SURFACE ELEV.	RESISTING FORCES R_A	RESISTING FORCES R_A	RESISTING FORCES R_P	DRIVING FORCES D_A	DRIVING FORCES $-D_P$	SUMMATION OF FORCES ABSAFTER	SUMMATION OF FORCES BEFORE	FACTOR OF SAFETY
4	-15.0	4903	4000	5073	28030	19598	13976	6430	1.46
5	-15.0	4903	24600	2961	28030	10348	30364	17662	1.83
6	-15.0	4903	31700	2109	28030	7767	38712	22273	1.91
1	-20.0	5337	3700	6059	42281	30239	15096	10242	1.50
2	-20.0	5337	24800	3929	42281	17826	34266	22455	1.52
3	-20.0	5337	32000	3015	42281	14664	40356	25617	1.58
1	-31.0	8282	4255	9055	75481	61871	21562	13610	1.58
2	-31.0	8282	39715	6556	75481	43660	54953	31921	1.73
3	-31.0	8282	52390	6082	75481	38337	66764	37144	1.80
1	-46.0	14359	56430	12986	135480	82791	93654	42709	1.96
2	-46.0	14359	76668	10258	135480	85713	102285	49777	2.05

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

2. SEE PLATE 130 FOR SHEET PILE ANALYSIS

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

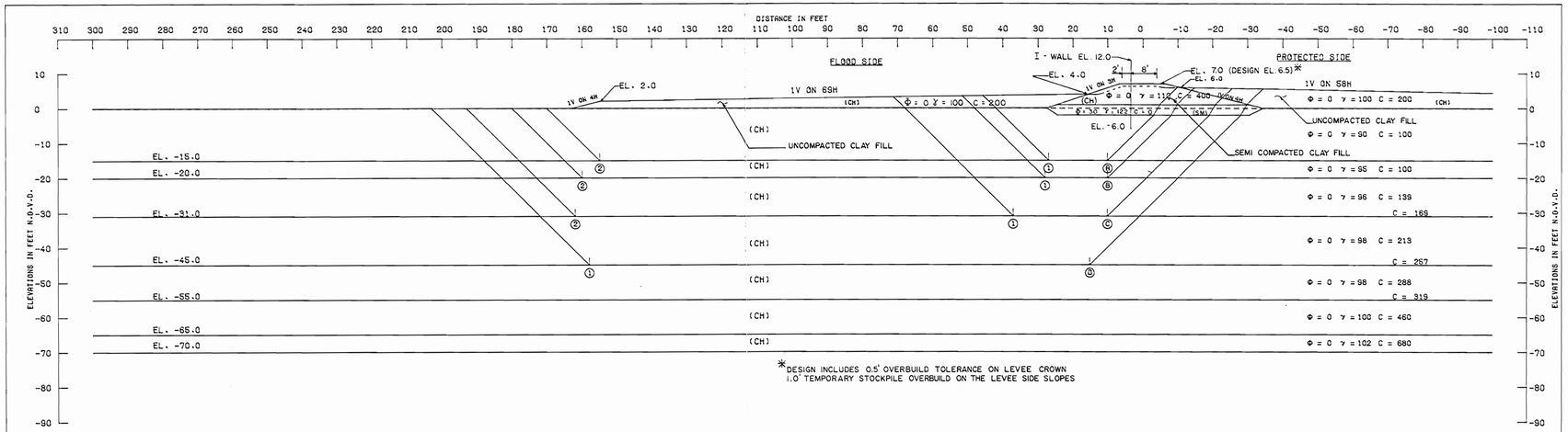
$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, L.& VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

I-WALL FROM R.R. GATE TO AIRPORT EXT. (1ST LIFT)
STABILITY ANALYSIS (F.S. = 1.5) - P.S.

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS, U.S. ARMY
DATE JANUARY 1966 FILE NO. H-2-30833

PLATE 129



ASSUMED FAILURE SURFACE NO.		ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_A	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
B	1	-15.0	8327	1700	4428	26028	16365	14455	8663	1.67
B	2	-15.0	8327	14600	3000	26028	10924	25827	14104	1.83
B	1	-20.0	8706	1800	5394	36537	26032	16900	10505	1.61
B	2	-20.0	8706	16000	4000	36537	18174	27706	18363	1.51
C	1	-31.0	10636	4563	8339	70007	55219	23538	14788	1.59
C	2	-31.0	10636	25688	7058	70007	43957	43382	26050	1.67
D	1	-45.0	15739	36680	13022	128980	94193	65441	34787	1.88

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

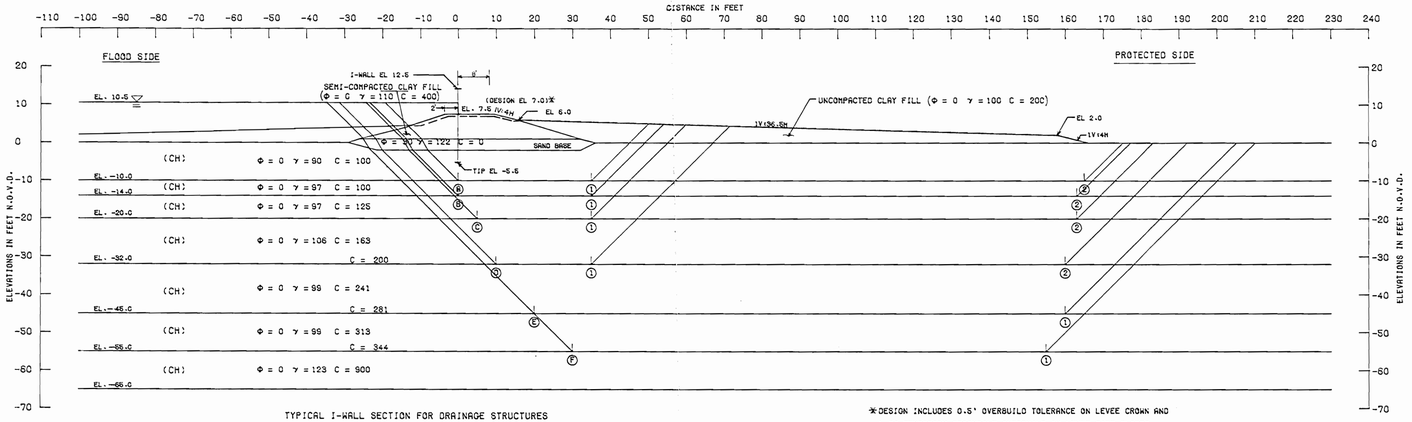
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
$\mathcal{X}$ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

I-WALL FROM R.R. GATE TO AIRPORT EXT. (1ST LIFT)
STABILITY ANALYSIS (F.S. = 1.5) - F.S.

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1969 FILE NO. H-2-30423



TYPICAL I-WALL SECTION FOR DRAINAGE STRUCTURES

DESIGN BASED ON SOIL REACH 2 - CROSS BAYOU

*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON LEVEE SIDE SLOPES

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	D_P	RESISTING	DRIVING	
B 1	-10.0	4946	3500	4012	19041	11123	12458	7918	1.57
B 2	-10.0	4946	16500	2000	19041	4612	23446	14529	1.61
B 1	-14.0	5239	3500	4768	27090	17489	13507	9601	1.41
B 2	-14.0	5239	16300	2800	27090	8986	24339	18102	1.34
C 1	-20.0	6638	3750	6203	41996	29866	16591	12133	1.37
C 2	-20.0	6638	19750	4300	41999	18462	30688	23537	1.30
D 1	-32.0	9850	5000	9972	62957	65449	24822	17506	1.42
D 2	-32.0	9850	30000	8200	62957	48870	48050	34087	1.41
E 1	-46.0	15790	39340	14453	142559	98080	69583	44479	1.56
F 1	-55.0	22040	43000	20703	198601	148280	85743	50321	1.70

GENERAL NOTES:

1 CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

2 SEE PLATE 133 FOR CANTILEVER I-WALL ANALYSIS

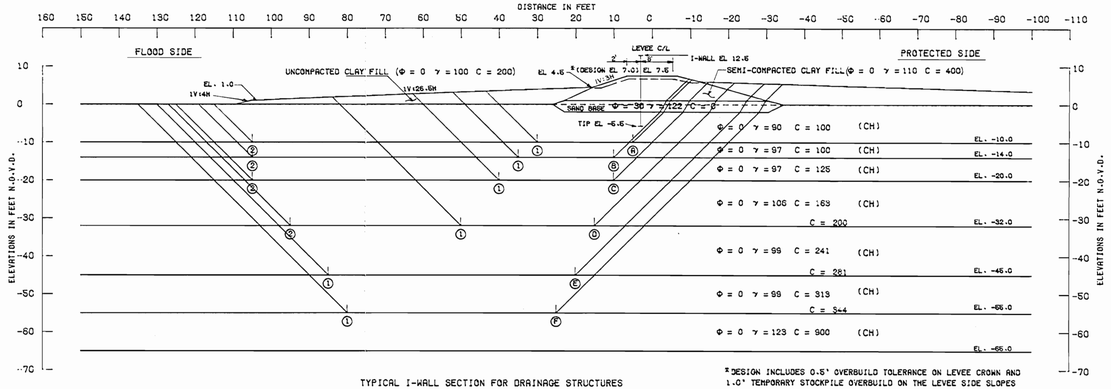
NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
DRAINAGE STRUCTURE
TYPICAL I-WALL STABILITY
ANALYSIS - P.S.(1½ LIFT)
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: JANUARY 1989 FILE NO. N-2-30423



TYPICAL I-WALL SECTION FOR DRAINAGE STRUCTURES
DESIGN BASED ON SOIL REACH 2 - CROSS BAYOU

*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMPORARY STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
A ①	-10.0	7756	2500	3364	16299	8843	13620	7456	1.83
A ②	-10.0	7756	10000	2000	16299	4724	19756	11576	1.71
B ①	-14.0	8716	2500	4029	24145	14219	15245	9926	1.54
B ②	-14.0	8716	9500	2800	24145	9100	21016	15045	1.40
C ①	-20.0	9265	3750	5364	38098	25025	18379	13072	1.41
C ②	-20.0	9265	11875	4300	38098	18574	25440	19524	1.30
D ①	-32.0	12241	7000	8834	76377	56692	28175	19685	1.43
D ②	-32.0	12241	16000	8200	76377	45849	36441	26528	1.37
E ①	-46.0	17619	18265	14453	133667	100654	50337	33013	1.52
F ①	-55.0	23322	16920	20703	188667	150836	62945	37731	1.67

GENERAL NOTES:

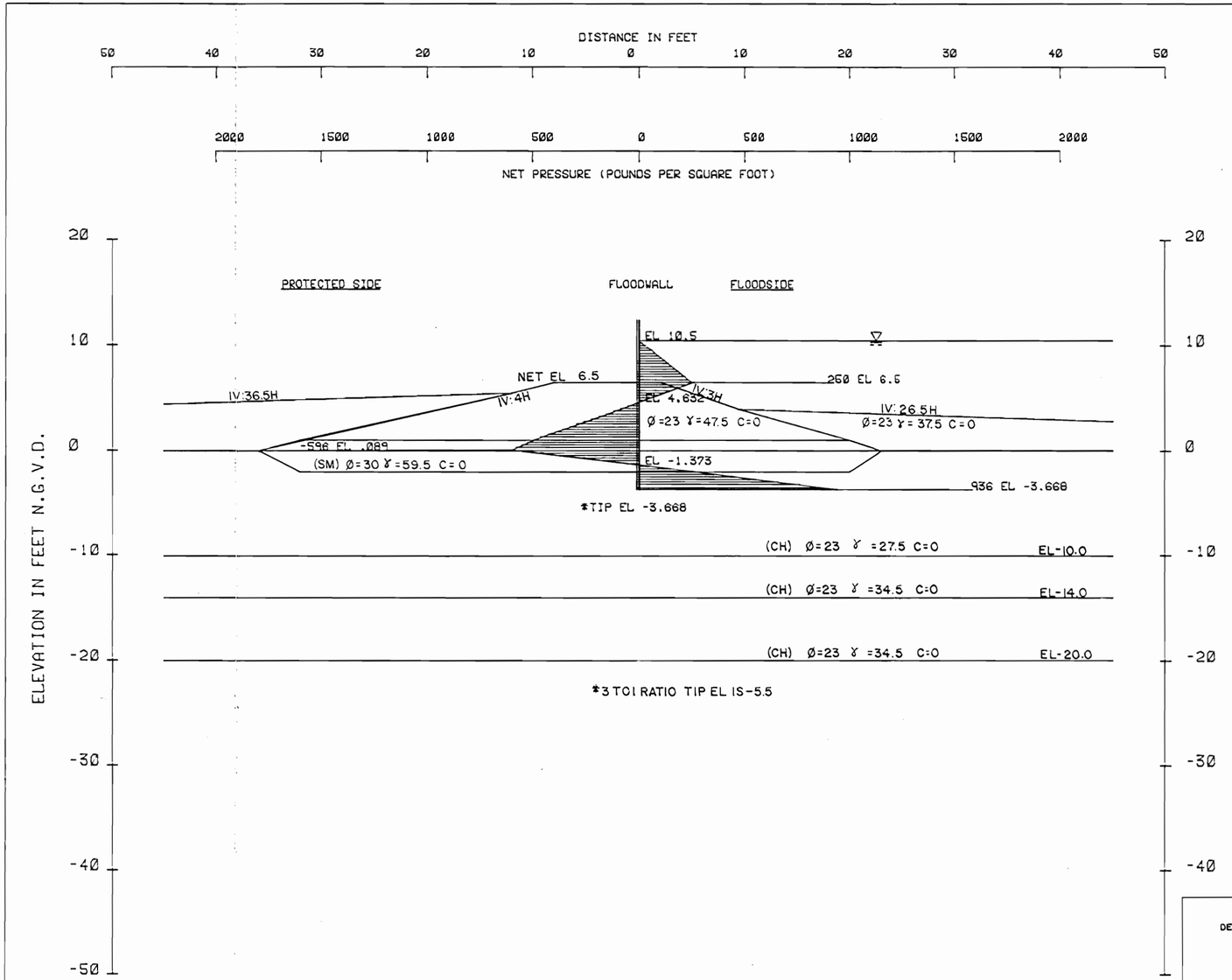
CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
DRAINAGE STRUCTURE
TYPICAL I-WALL STABILITY
ANALYSIS- F.S. (1ST LIFT)
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969
FILE NO. N-2-30423



ELEVATION	PRESSURE
10.50	0.0
6.50	250.0
4.63	0.0
3.50	-152.3
1.00	-498.2
0.09	-596.4
-1.37	0.0
-3.67	935.8
-3.67	0.0

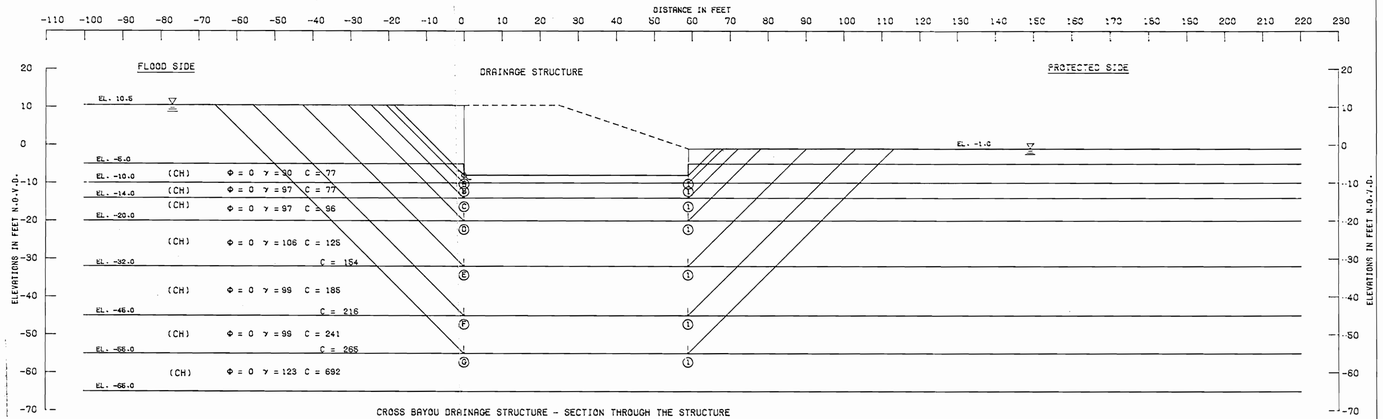
NET DIAGRAM

(S) CASE F.S.=1.2

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
DRAINAGE STRUCTURE

TYP. CANTILEVER ANALYSIS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



CROSS BAYOU DRAINAGE STRUCTURE - SECTION THROUGH THE STRUCTURE
DESIGN BASED ON SOIL REACH 2

DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - R_A$		$U_P = R_B + R_P + D_P$					$U_A - U_P$
		D_A	R_A	R_B	R_P	D_P	U_A	U_P	
A-1	-8.0	18818	482	0	462	1631	18356	2093	8263
B-1	-18.0	13476	778	4543	778	2851	12786	8164	4542
C-1	-14.0	19927	1386	4543	1386	6427	18541	12356	6185
D-1	-28.0	32513	2538	5664	2538	14781	29975	22983	7072
E-1	-32.0	68889	5538	9886	5538	42372	63271	56996	6275
F-1	-45.0	124763	18348	12744	18348	88882	114415	112074	2341
G-1	-55.0	179183	15158	15635	15158	136221	164831	167814	-2983

GENERAL NOTES:

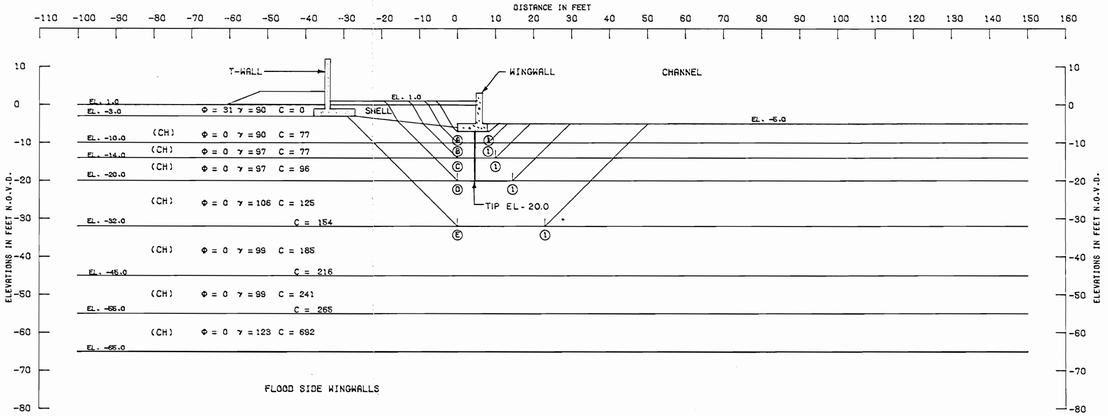
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. DEEP SEATED STABILITY ANALYSIS UTILIZED A FACTOR OF SAFETY 1.3 INCORPORATED INTO THE SOIL PARAMETERS (C = COHESION VALUES/1.3)

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

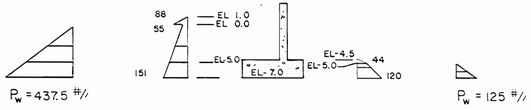
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
DRAINAGE STRUCTURE
DEEP SEATED STABILITY ANALYSIS
SECTION THRU STRUCTURE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1985 FILE NO.H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = O_A - R_A$		$U_P = R_R + R_P + O_P$			U_A	U_P	$U_A - U_P$
		O_A	R_A	R_R	R_P	O_P			
A-1	-7.8	3838	1596	8	222	218	1434	448	994
B-1	-18.8	5855	2881	778	616	1191	3654	2577	1077
C-1	-14.8	18471	2688	778	1386	3728	7863	5876	1987
D-1	-28.8	28684	3754	1382	2538	18475	16858	14485	2445
E-1	-32.8	58429	5846	3542	5538	35146	44583	44226	357

AT REST PRESSURE DIAGRAM HURRICANE CONDITIONS LOW WATER EL- 5.0



GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. DEEP SEATED STABILITY ANALYSIS UTILIZED A FACTOR OF SAFETY 1.5 INCORPORATED INTO THE SOIL PARAMETERS (C = COHESION VALUES/1.5)
3. THE STABILITY ANALYSIS OF THE WINGWALL IS VALID TO EL -14.0 SINCE THE WINGWALL IS 23 FT. IN LENGTH (SIMULATE A MASS ANALYSIS)
4. TOTAL UNBALANCED LOAD OF 1451 LB/LIN FT. SHOULD BE APPLIED AT THE BASE OF THE STRUCTURE.

NOTES

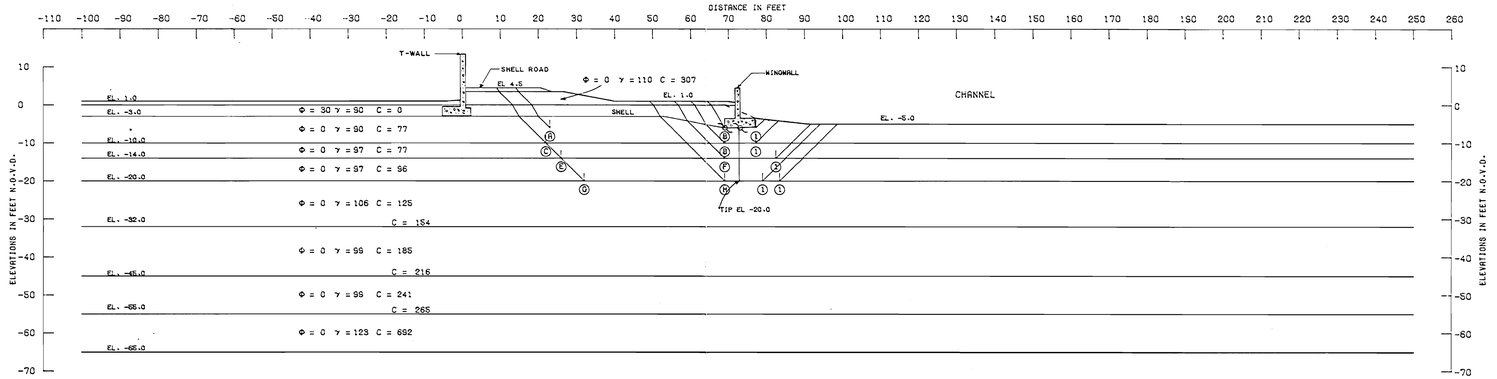
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
O -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_R + R_B + R_P}{O_A - O_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16 - GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

DEEP SEATED STABILITY ANALYSIS W/EARTH PRESSURES AND TYPICAL SECTION THRU F.S. WINGWALL

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1989 FILE NO. H-2-30423

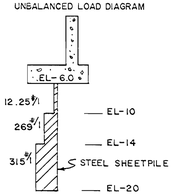


PROTECTED SIDE WINGWALLS

DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - R_A$		$U_P = R_B + R_P + D_P$			U_L	U_P	$U_L - U_P$
		D_A	R_A	R_B	R_P	D_P			
A-1	-6.0	5488	3873	3567	338	243	1725	4138	-2395
B-1	-6.0	2335	1383	0	338	243	552	573	379
C-1	-18.0	18248	4289	4258	982	1716	5859	6842	-983
D-1	-18.0	5652	1981	631	982	1716	3671	3243	428
E-1	-14.0	16157	4985	4358	1386	4852	11292	9788	1504
F-1	-14.0	18471	2593	1848	1386	4852	7878	6478	1488
G-1	-28.0	27672	6857	4512	2538	11171	21615	18221	3394
H-1	-28.0	28694	9762	1392	2538	10748	16642	14678	2164

UNBALANCED LOAD DIAGRAM



(CANTILEVER) SEE NOTE 3

GENERAL NOTES:

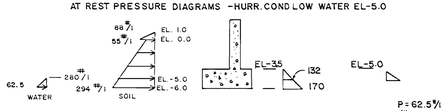
1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. DEEP SEATED STABILITY ANALYSIS UTILIZED A FACTOR OF SAFETY 1.3 INCORPORATED INTO THE SOIL PARAMETERS (C = COHESION VALUES/1.3)
3. TOTAL UNBALANCED LOAD 3015 LB/LINFT SHOULD BE APPLIED AT THE BASE OF THE STRUCTURE.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
∇ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

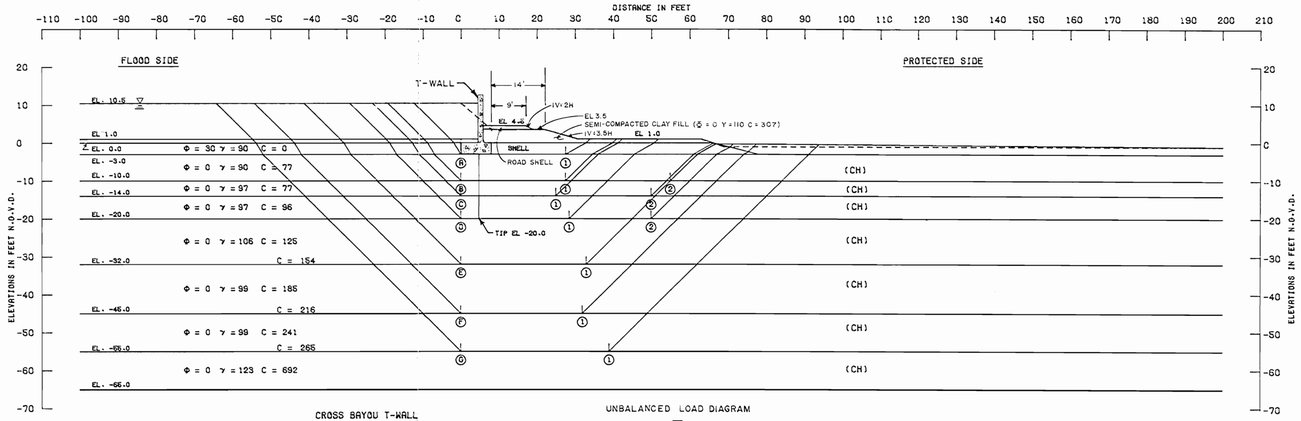
$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

AT REST PRESSURE DIAGRAMS -HURR.COND LOW WATER EL-5.0



LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
DEEP SEATED STABILITY ANALYSIS
W/EARTH PRESSURES AND
TYPICAL SECTION THRU P.S WINGWALL

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY FILE NO. H-2-30423

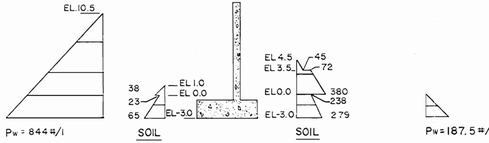


CROSS BAYOU T-WALL

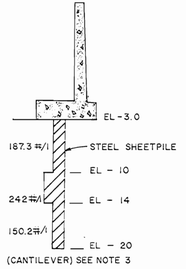
DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - R_A$		$U_P = R_B + R_P + D_P$			U_A	U_P	$U_A - U_P$
		D_A	R_A	R_B	R_P	D_P			
A-1	-3.0	6863	867	1433	1182	937	5276	3682	1674
B-1	-18.0	15886	1869	2869	2224	5898	13137	10183	2954
B-2	-18.0	15886	1869	4235	1519	5427	13137	11181	1956
C-1	-14.0	22197	2485	2295	2839	18484	19712	15618	4094
C-2	-14.0	22197	2485	3858	2221	18311	19712	16382	3338
D-1	-28.0	35893	3637	2767	3998	28661	32256	27418	4838
D-2	-28.0	35893	3637	4898	3647	19896	32256	28343	3913
E-1	-32.0	74489	6637	5116	6266	51748	67772	63130	4642
F-1	-45.0	132768	11447	6912	12882	181137	121321	128131	1198
G-1	-55.0	189844	16257	18335	17862	149935	172787	177332	-4545

AT REST PRESSURE DIAGRAMS — HURR. COND. LOW WATER EL 0.0



UNBALANCED LOAD DIAGRAM



GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. DEEP SEATED STABILITY ANALYSIS UTILIZED A FACTOR OF SAFETY 1.3 INCORPORATED INTO THE SOIL PARAMETERS (C = COHESION VALUES/1.3)
3. TOTAL UNBALANCED LOAD 3180 LB/LIN FT SHOULD BE APPLIED AT THE BASE OF THE STRUCTURE

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
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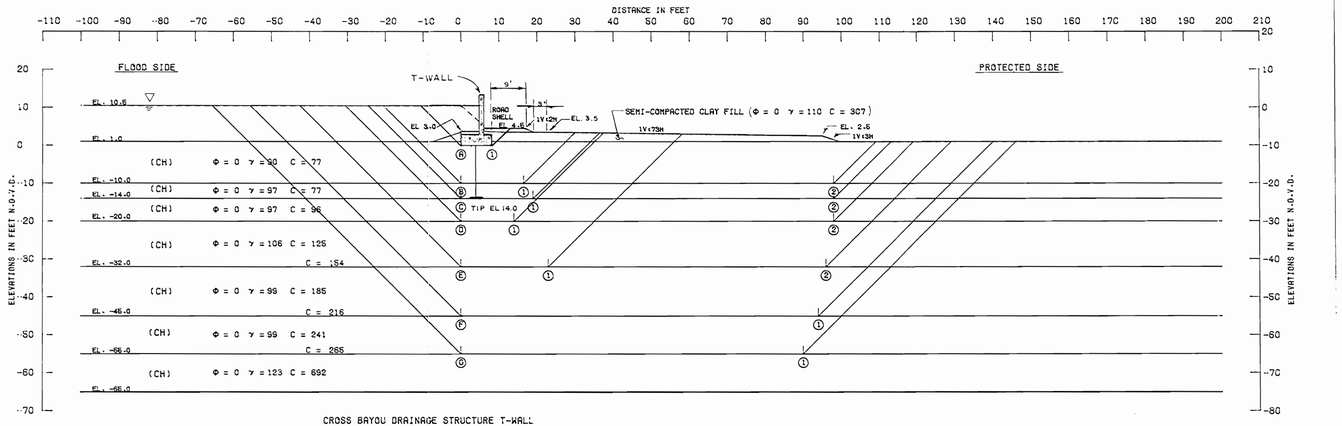
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.18 - GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

DEEP SEATED STABILITY ANALYSIS
W/EARTH PRESSURES
TYPICAL T-WALL NEXT TO STRUCTURE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423

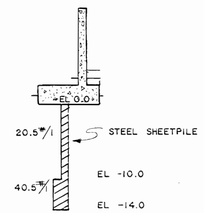


CROSS BAYOU DRAINAGE STRUCTURE T-WALL

DEEP SEATED STABILITY ANALYSIS

NO	ELEV.	$U_A = D_A - R_A$		$U_P = R_B + R_P + D_P$			U_A	U_P	$U_A - U_P$
		D_A	R_A	R_B	R_P	D_P			
A-1	8.8	3738	1153	0	2388	1881	2577	3381	-804
B-1	-10.8	15242	1694	1271	3163	8985	13548	13343	205
B-2	-10.8	15242	1694	7546	1694	5486	13548	14726	-1178
C-1	-14.8	22353	2318	1463	3726	14487	20843	19676	367
C-2	-14.8	22353	2318	7546	2318	18222	20843	20878	-35
D-1	-20.8	35829	3462	1344	4868	26493	32467	32705	-238
D-2	-20.8	35829	3462	9488	3462	28235	32467	33105	-638
E-1	-32.8	74285	6462	3542	7694	59773	67743	71009	-3266
E-2	-32.8	74285	6462	14784	6462	51569	67743	72815	-5072
F-1	-45.8	132384	11272	28384	11272	182261	121832	133837	-12005
G-1	-55.8	188388	16882	23858	16882	153876	172298	193888	-28718

UNBALANCED LOAD DIAGRAM



(CANTILEVER) SEE NOTE 3

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES
2. DEEP SEATED STABILITY ANALYSIS UTILIZED A FACTOR OF SAFETY 1.3 INCORPORATED INTO THE SOIL PARAMETERS (C = COHESION VALUES/1.3)
3. TOTAL UNBALANCED LOAD 367 LB/LIN FT SHOULD BE APPLIED AT THE BASE OF THE STRUCTURE.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
$\underline{\nabla}$ -- STATIC WATER SURFACE
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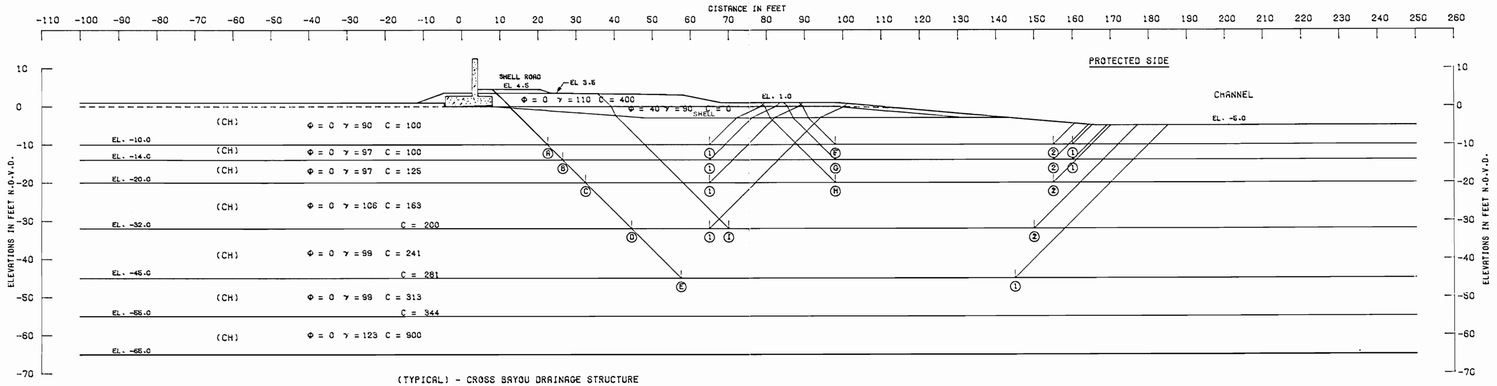
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_B + R_A + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

DEEP SEATED STABILITY ANALYSIS
TYPICAL T-WALL WITH STABILITY BERM
APPROX. 90' FROM DRAINAGE STRUCT.

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1989 FILE NO. H-2-30423



(TYPICAL) - CROSS BAYOU DRAINAGE STRUCTURE
DESIGN BASED ON SOIL REACH 2

SEARCHED FAILURE NO.	SEARCHED SURFACE ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_A	D_P	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
B 1	-10.0	4898	4250	3833	10222	5754	12981	4468	2.91
B 2	-10.0	4898	13250	1096	10222	1469	19244	8753	2.20
B 1	-14.0	5698	3850	4632	16152	10569	14180	5583	2.54
B 2	-14.0	5698	12850	1832	16152	4160	20380	11992	1.70
C 1	-20.0	7198	4063	6132	27905	20703	17393	7202	2.42
C 2	-20.0	7198	16312	3300	27905	10948	26810	16957	1.52
D 1	-32.0	11098	4100	9886	62344	52060	26084	10284	2.44
D 2	-32.0	11098	21100	7200	62344	36147	39398	26197	1.50
E 1	-46.0	17351	24588	13453	116002	80232	55392	35770	1.55
F 1	-10.0	2555	6200	1016	5654	1262	9771	4392	2.22
G 1	-14.0	3355	6200	1800	10470	3842	11355	6628	1.71
H 1	-20.0	4855	7125	3300	20604	10948	15280	9656	1.58
I 1	-32.0	11145	16000	7200	58392	36147	34345	22245	1.54

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
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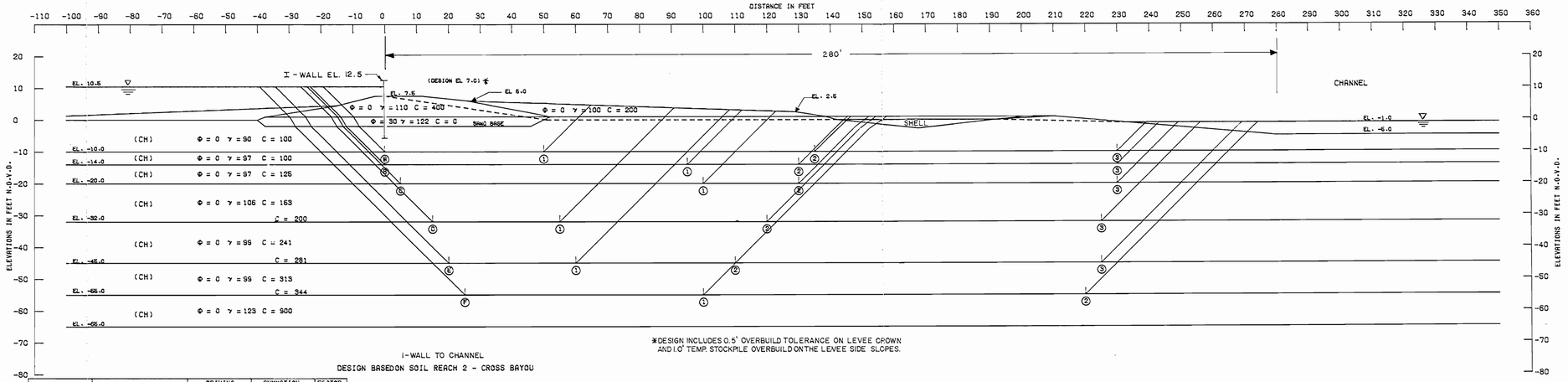
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 1a, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

STABILITY ANALYSIS
SKEWED SECTION FROM T-WALL TO CHANNEL

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



*DESIGN INCLUDES 0.5' OVERBUILD TOLERANCE ON LEVEE CROWN AND 1.0' TEMP. STOCKPILE OVERBUILD ON THE LEVEE SIDE SLOPES.

I-WALL TO CHANNEL

DESIGN BASED ON SOIL REACH 2 - CROSS BAYOU

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
Ⓑ ①	-10.0	5341	5000	3674	19188	10579	14015	8609	1.63
Ⓑ ②	-10.0	5341	13500	2449	19188	5584	21290	13594	1.57
Ⓑ ③	-10.0	5341	23000	1710	19188	3653	30051	15535	1.93
Ⓑ ①	-14.0	5611	9500	3830	27296	14002	18941	13294	1.42
Ⓑ ②	-14.0	5611	13000	5232	27296	10793	21843	16503	1.32
Ⓑ ③	-14.0	5611	23000	2447	27296	7602	31058	19694	1.58
Ⓒ ①	-20.0	7019	11876	5185	42207	24614	24079	17593	1.38
Ⓒ ②	-20.0	7019	16626	4848	42207	20567	27492	21340	1.29
Ⓒ ③	-20.0	7019	28126	3653	42207	16371	38897	25836	1.51
Ⓓ ①	-32.0	10750	6000	6619	83067	63146	28269	19921	1.42
Ⓓ ②	-32.0	10750	21000	5794	83067	53667	40544	29400	1.38
Ⓓ ③	-32.0	10750	42000	7642	83067	46296	60392	37772	1.60
Ⓔ ①	-45.0	16410	11240	15535	143779	116064	43185	27715	1.56
Ⓔ ②	-45.0	16410	26290	15123	143779	106061	56823	37728	1.51
Ⓔ ③	-45.0	16410	57605	13690	143779	92512	87705	51267	1.71
Ⓕ ①	-55.0	22288	25800	21373	201396	158505	69461	42891	1.62
Ⓕ ②	-55.0	22288	67080	19861	201396	140854	109229	60542	1.80

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
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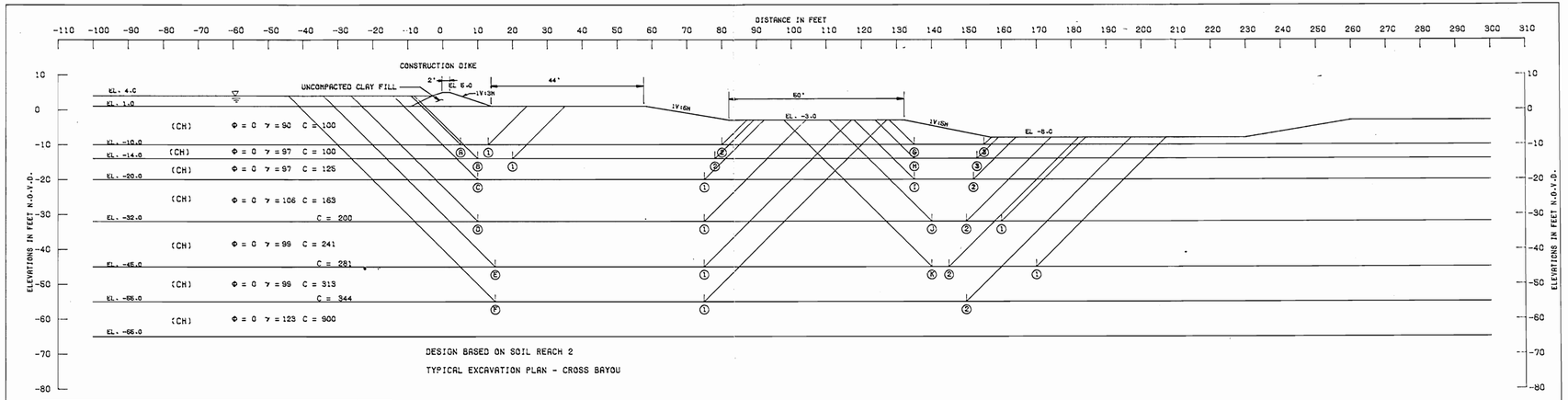
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.1B GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
STABILITY ANALYSIS
SKEWED SECTION FROM I-WALL TO CHANNEL

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



DESIGN BASED ON SOIL REACH 2

TYPICAL EXCAVATION PLAN - CROSS BAYOU

ASSUMED FAILURE SURFACE		RESISTING FORCES			DRIVING FORCES		SUMMATION OF FORCES		FACTOR OF SAFETY
NO.	ELEV.	R_A	R_B	R_P	D_A	$-D_P$	RESISTING	DRIVING	
B 1	-10.0	2401	800	2200	9470	5461	5401	4009	1.35
B 2	-10.0	2401	7500	1400	9470	2235	11301	7235	1.56
B 3	-10.0	2401	15000	400	9470	216	17801	9254	1.92
B 1	-14.0	3267	1000	3000	15057	10180	7267	4877	1.49
B 2	-14.0	3267	6800	2200	15057	5621	12267	9436	1.30
B 3	-14.0	3267	14300	1200	15057	1820	18767	13237	1.42
C 1	-20.0	4501	8125	3700	26297	13722	16326	12575	1.30
C 2	-20.0	4501	17750	2700	26297	7055	24951	19242	1.30
D 1	-32.0	8401	13000	7600	59700	40553	29001	19147	1.51
D 2	-32.0	8401	28000	6600	59700	28702	43001	30998	1.39
E 1	-45.0	14654	16550	13553	111848	86252	45357	25596	1.77
E 2	-45.0	14654	36530	12553	111848	69408	64037	42440	1.51
F 1	-55.0	20904	20540	20103	163562	132789	61547	31073	1.98
F 2	-55.0	20904	46440	19103	163562	110593	86447	53269	1.62
G 1	-10.0	1400	2000	400	2123	216	3800	1907	1.99
G 1	-14.0	2200	1800	1200	5418	1820	5200	3598	1.45
I 1	-20.0	3700	2125	2700	13271	7055	8525	6215	1.37
J 1	-32.0	7600	4000	6600	39606	28262	18200	11344	1.60
K 1	-45.0	13853	8430	12853	86306	68114	35136	17192	2.04

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

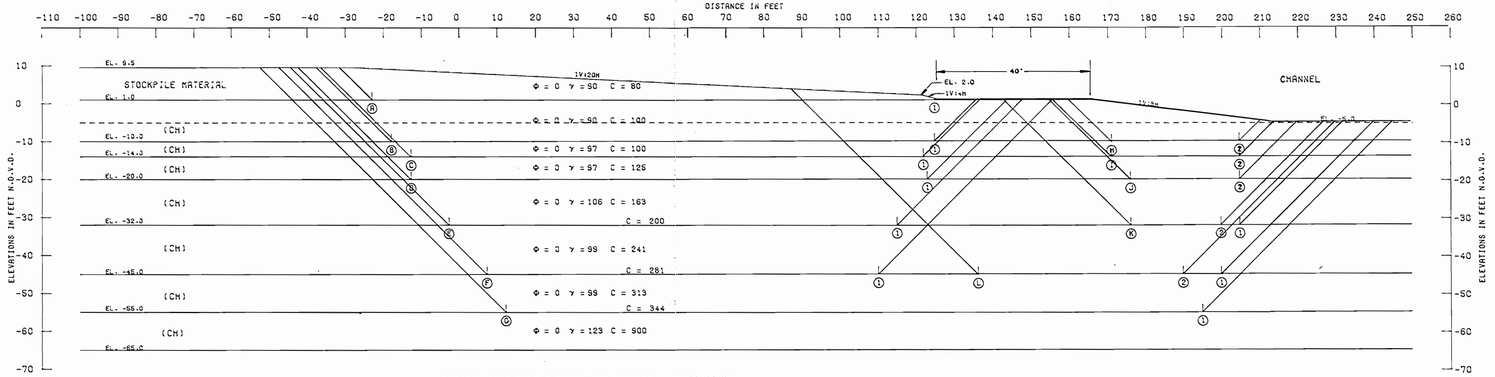
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

DRAINAGE STRUCTURE
TYP. EXCAVATION CUT
STABILITY ANALYSIS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. N-2-30423



TYPICAL STOCKPILE & CANAL CUT SECTION - CROSS BAYOU
DESIGN BASED ON SOIL REACH 2

ASSUMED FAILURE SURFACE NO.		ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_A	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
A	1	1.0	1360	11840	32	3195	2	13232	3193	4.14
B	1	-10.0	3560	14300	2200	16885	5456	20060	11429	1.76
B	2	-10.0	3560	22300	1085	16885	1501	26945	15384	1.75
C	1	-14.0	4360	13500	3000	24399	10360	20860	14039	1.49
C	2	-14.0	4360	21800	1800	24399	4156	27560	20243	1.36
D	1	-20.0	5860	17000	4500	39003	20295	27360	18708	1.46
D	2	-20.0	5860	27250	3300	39003	10930	36410	28073	1.30
E	1	-32.0	9760	23600	8400	78434	52264	41760	26170	1.60
E	2	-32.0	9760	40600	7200	78434	36248	57560	42186	1.36
F	1	-45.0	16013	28543	14653	137428	103306	59609	34102	1.75
F	2	-45.0	16313	51423	13463	137428	81746	80885	55662	1.45
G	1	-55.0	22263	62952	15703	154363	129276	104918	69078	1.52
H	1	-10.0	2200	3400	1085	5303	1501	6689	3802	1.76
J	1	-14.0	3000	3400	1800	10035	4156	8200	5883	1.39
J	1	-20.0	4500	3625	3300	19630	10930	11425	8700	1.31
K	1	-32.0	8400	5800	7200	50781	35601	21400	15180	1.41
L	1	-45.0	15091	17584	13463	107403	79608	46528	27795	1.67

GENERAL NOTES:

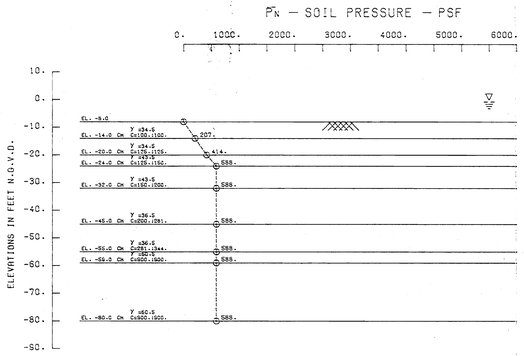
CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

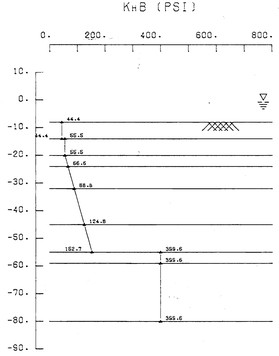
NOTES

Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
K -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_A - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
DRAINAGE STRUCTURE
TYPICAL STOCKPILE & CHANNEL CUT
STABILITY ANALYSIS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE JANUARY 1969 FILE NO. H-2-30423





S-CASE
CH.CL- ϕ=23°
ML- ϕ=28°
SM.SP- ϕ=30°

TYPICAL SOIL PROFILE

SOIL STRATIFICATION IS BASED ON GEOLOGIC PROFILE
SHEAR STRENGTH AND WET DENSITIES SEE PLATE 79
SECOND ORDER STATIONS

D	PILE SPACING IN DIRECTION OF LOADING
1.00	9B
0.85	7B
0.70	6B
0.55	5B
0.40	4B
0.25	3B

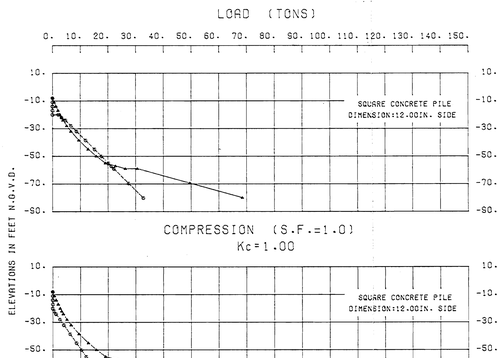
C	LOADING CONDITION
1.00	INITIAL LOADING
0.30	CYCLIC LOADING

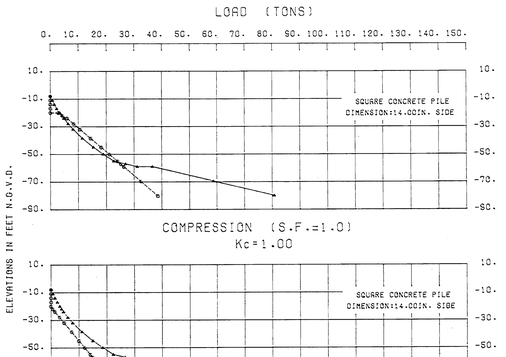
NOTES: $K_H = \phi K_1/B_S(0.2222\,q_u/B)(C)(D)$ COHESIVE

ϕ = 0.4 = Factor of material properties of soil and pile
K_1 = Modulus of subgrade reaction for test plate (psi)
B_1 = Width or diameter of test plate (in)
$K_1 = K_1 B_1 = 80\,q_u$ (psf) = 0.5556 q_u (psi)
q_u = 2·c = Unconfined compressive strength (psf)
C = Reduction for cyclic loading-not applicable
D = Group effect reduction factor
B = Width of pile measured at right angles to the direction of displacement (in)
$K_H = (\phi K_1)(2/B)(C)(D)$ COHESIONLESS
ϕK_1 = Coefficient of horizontal subgrade reaction (psi)
Z = Depth below equivalent ground surface (in)

THE FACTOR SHOWN, (MODULUS OF HORIZONTAL SUBGRADE K_H), TIMES THE PILE WIDTH IN INCHES (B), MEASURED AT RIGHT ANGLES TO THE DIRECTION OF DISPLACEMENT MUST BE MODIFIED BY A REDUCTION FACTOR FOR THE EFFECT OF GROUP ACTION (D) AND A REDUCTION FACTOR FOR CYCLIC LOADING (C) EX: $K_H = \frac{0.2222\,q_u}{B}(C)(D)$

(B)





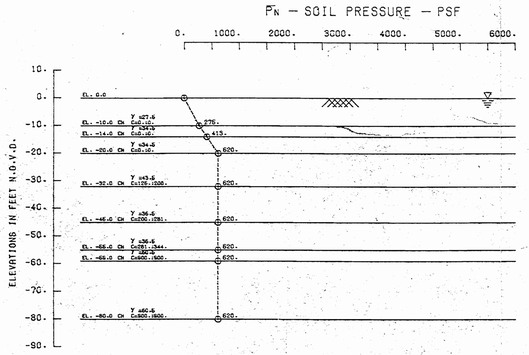
LOAD VS. TIP ELEVATION
----- S-CASE
——— Q-CASE.

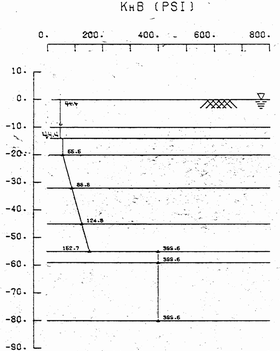
PILE NOTES
1. ALLOWABLE CAPACITY SHOULD BE BETTER DETERMINED THROUGH FIELD PILE TEST OR F.S.= 2.0 WITHOUT PILE TEST.
2. MINIMUM PILE TIP ELEVATION FOR COMPUTATION IS ELEV -40.0 N.G.V.D.
3. PILE CAPACITY BASED ON SOIL LEADING.

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
NORTH SHORE, ALTERNATIVE
NORTH OF AIRLINE HIGHWAY

DRAINAGE STRUCTURE
TYPICAL PILE CAPACITY CURVES
STA. 72+50 TO STA. 490+00

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1986 FILE NO. H-2-30425





S-CASE

CH.CL- ϕ=23°

ML- ϕ=28°

SM.SP- ϕ=30°

TYPICAL SOIL PROFILE

SOIL STRATIFICATION IS BASED ON GEOLOGIC PROFILE

SHEAR STRENGTH AND WET DENSITIES SEE PLATE 79

SECOND ORDER STATIONS

D	PILE SPACING IN DIRECTION OF LOADING
1.00	8B
0.85	7B
0.70	6B
0.55	5B
0.40	4B
0.25	3B

C	LOADING CONDITION
1.00	INITIAL LOADING
0.30	CYCLIC LOADING

NOTES: $K_H = *K_1/B*[0.2222\,\alpha_u/B]\,C\,\Sigma\,D$ COHESIVE

$* = 0.4$ = Factor of material properties of soil and pile

K_1 = Modulus of subgrade reaction for test plate (psi)

B_1 = Width or diameter of test plate (in)

$K_1 = K_1 B_1 = 80\,\alpha_u$ (psf) $= 0.5556\,\alpha_u$ (psi)

α_u = 2·c = Unconfined compressive strength (psf)

C = Reduction for cyclic loading-not applicable

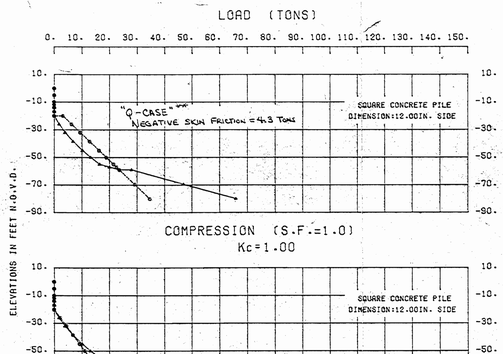
D = Group effect reduction factor

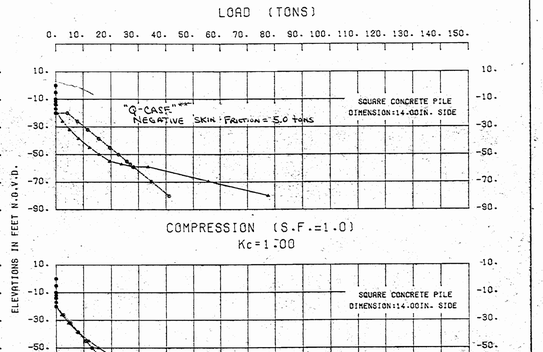
B = Width of pile measured at right angles to the direction of displacement (in)

$K_H = (nh)(12)B\,C\,\Sigma\,D$ COHESIONLESS

nh = Coefficient of horizontal subgrade reaction (psi)

Σ = Depth below equivalent ground surface (in)





THE FACTOR SHOWN, (MODULUS OF HORIZONTAL SUBGRADE K_H) TIMES THE PILE WIDTH IN INCHES (B), MEASURED AT RIGHT ANGLES TO THE DIRECTION OF DISPLACEMENT; MUST BE MODIFIED BY A REDUCTION FACTOR FOR THE EFFECT OF GROUP (D) AND A REDUCTION FACTOR FOR CYCLIC LOADING (C) EX: $K_H = \frac{0.2222\,\alpha_u}{(B)}(C)(D)$

"Q-CASE" (COMPRESSION)

$Q_{ALL\,(COMP)} = \frac{Q_{ULT}}{F.S.} - \text{NEGATIVE SKIN FRICTION}$

LOAD VS. TIP ELEVATION

----- S-CASE

——— Q-CASE

PILE NOTES

1. ALLOWABLE CAPACITIES SHOULD BE DETERMINED INCORPORATING F.S.=2.0 WITH PILE TEST OR F.S.=3.0 WITHOUT PILE TEST.
2. MINIMUM PILE TIP ELEVATION FOR COMPRESSION IS ELEV. -60 NGVD.
3. PILE CURVES BASED ON SOIL REPTH 2.

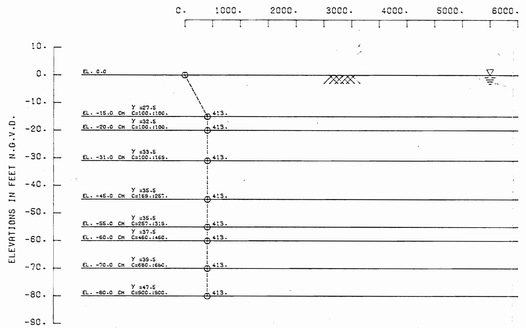
LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
T-WALL

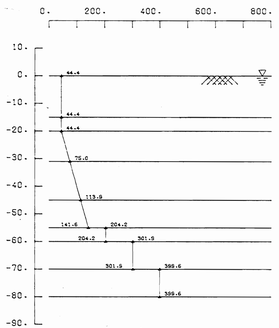
TYP. PILE CAPACITY CURVES

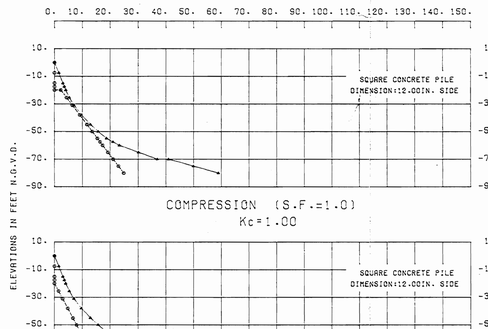
STA. 72+50 to STA. 490+00

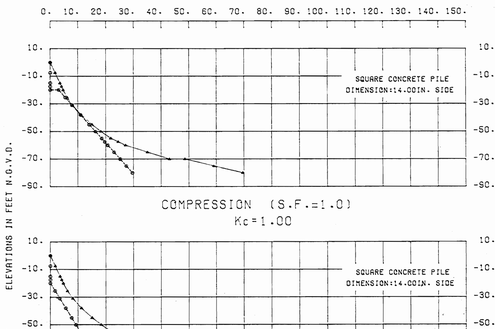
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1965 FILE NO. 64-2-3468

PLATE 144









S-CASE

CH,CL- ϕ=23°

ML- ϕ=28°

SM,SP- ϕ=30°

TYPICAL SOIL PROFILE

SOIL STRATIFICATION IS BASED ON GEOLOGIC PROFILE

SHEAR STRENGTH AND WET DENSITIES SEE PLATE 81

SECOND ORDER STATIONS

C	PILE SPACING IN DIRECTION OF LOADING
1.00	8B
0.85	7B
0.70	6B
0.55	5B
0.40	4B
0.25	3B

C	LOADING CONDITION
1.00	INITIAL LOADING
0.30	CYCLIC LOADING

NOTES: $K_H = \phi K_1/B = (0.2222\,q_u/B)(C)(D)$ COHESIVE

ϕ = 0.4 = Factor of material properties of soil and pile

K_1 = Modulus of subgrade reaction for test plate (psi)

B1 = Width or diameter of test plate (in)

$K_1 = K_1 B1 = 80\,q_u$ (psf) = 0.5556 q_u (psi)

q_u = 2·c = Unconfined compressive strength (psf)

C = Reduction for cyclic loading-not applicable

D = Group effect reduction factor

B = Width of pile measured at right angles to the direction of displacement (in)

$K_H = (nh)(Z/B1)(C)(D)$ COHESIONLESS

nh = Coefficient of horizontal subgrade reaction (psi)

Z = Depth below equivalent ground surface (in)

THE FACTOR SHOWN, (MODULUS OF HORIZONTAL SUBGRADE K_H, TIMES THE PILE WIDTH IN INCHES (B), MEASURED AT RIGHT ANGLES TO THE DIRECTION OF DISPLACEMENT) MUST BE MODIFIED BY A REDUCTION FACTOR FOR THE EFFECT OF GROUP ACTION (D) AND A REDUCTION FACTOR FOR CYCLIC LOADING (C) EX: $K_H = \frac{0.2222\,q_u\,(C)(D)}{(B)}$

LOAD VS. TIP ELEVATION

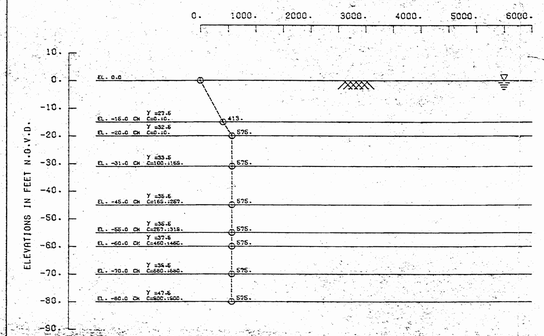
----- S-CASE

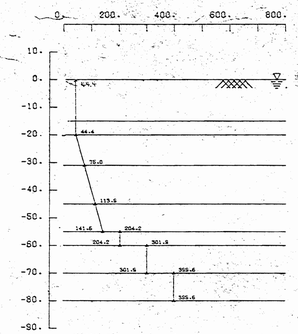
——— Q-CASE

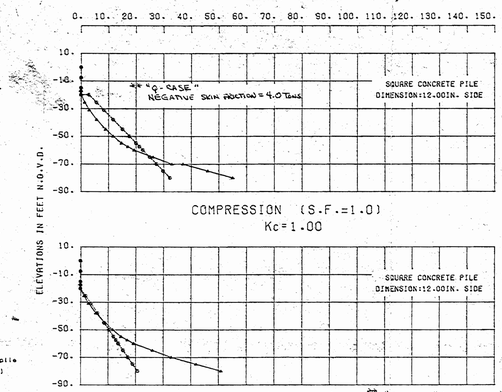
*PILE NOTES:

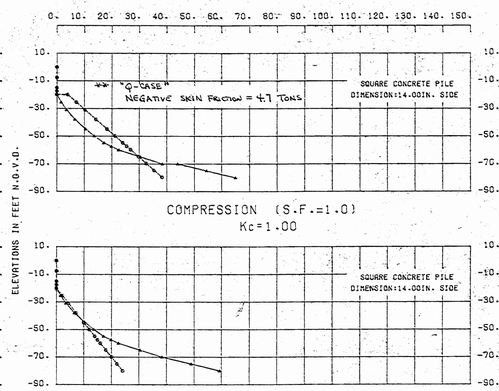
1. ALLOWABLE CAPACITY = [illegible] BASED ON MINIMUM INCORPORATION [illegible] WITH PILE TEST AS FOLLOWS [illegible] PILE TEST.
2. MINIMUM PILE TIP ELEVATION FOR COMPRESSION [illegible] ELEV -70 NGVD
3. PILE CURVES [illegible]

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO.19, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
T-WALL AND WINGWALL
HP 12"X53" TYP PILE CAP. CURVES
STA. 72+50 to STA. 490+00
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969
FILE NO. H-2-30425









S-CASE
CH.CL- ϕ=23°
ML- ϕ=28°
SM.SP- ϕ=30°

TYPICAL SOIL PROFILE

SOIL STRATIFICATION IS BASED ON GEOLOGIC PROFILE
SHEAR STRENGTH AND WET DENSITIES SEE PLATE 81
SECOND ORDER STATIONS

D	PILE SPACING IN DIRECTION OF LOADING
1.00	9B
0.85	7B
0.70	6B
0.55	5B
0.40	4B
0.25	3B

C	LOADING CONDITION
1.00	INITIAL LOADING
0.30	CYCLIC LOADING

NOTES: $K_H = \alpha K_1/B = (0.2222\alpha_u/B)(C)(D)$ COHESIVE

α = 0.4 = Factor of material properties of soil and pile
K_1 = Modulus of subgrade reaction for test plate (pci)
B_1 = Width or diameter of test plate (in)
$K_1 = K_1 B_1$ = 80 α_u (psf) = 0.5556 α_u (psi)
α_u = 2-σ_c = Unconfined compressive strength (psf)
C = Reduction for cyclic loading-not applicable
D = Group effect reduction factor
B = Width of pile measured at right angles to the direction of displacement (in)
K_H = $(nh)(12/B)(C)(D)$ COHESIONLESS
nh = Coefficient of horizontal subgrade reaction (pci)
Z = Depth below equivalent ground surface (in)

THE FACTOR SHOWN, (MODULUS OF HORIZONTAL SUBGRADE K_H) TIMES THE PILE WIDTH IN INCHES (B), MEASURES AT RIGHT ANGLES TO THE DIRECTION OF DISPLACEMENT, MUST BE ADJUSTED BY A REDUCTION FACTOR FOR THE EFFECT OF GROUP WIDTH (D) AND A REDUCTION FACTOR FOR CYCLIC LOADING (C) EX: $K_H = \frac{0.2222\ \alpha_u\ (D)(C)}{(B)}$

LOAD VS. TIP ELEVATION
----- S-CASE
——— Q-CASE

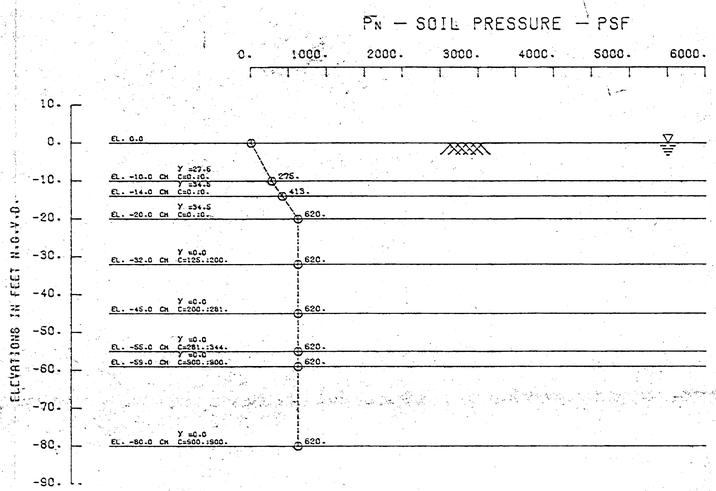
** "Q-CASE" (COMPRESSION)
Q_{ALLOW} (CONP) = $\frac{Q_{ULT}}{F.S.}$ − NEGATIVE SKIN FRICTION

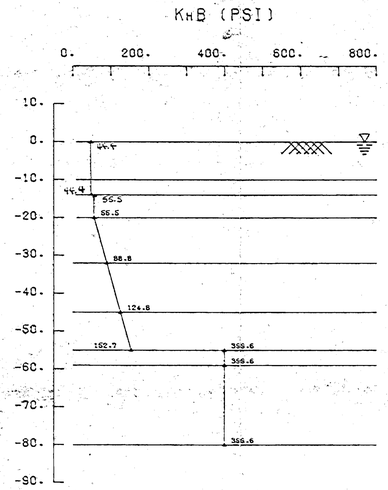
PILE NOTES
1. ALLOWABLE CAPACITIES SHOULD BE DETERMINED INCORPORATING F.S.=2.0 WITH PILE TEST OR F.S.=3.0 WITHOUT PILE TEST.
2. MINIMUM PILE TIP ELEVATION FOR COMPRESSION IS ELEV −70 NGVD
3. PILE CURVES RATES ON SOIL PROF # 8

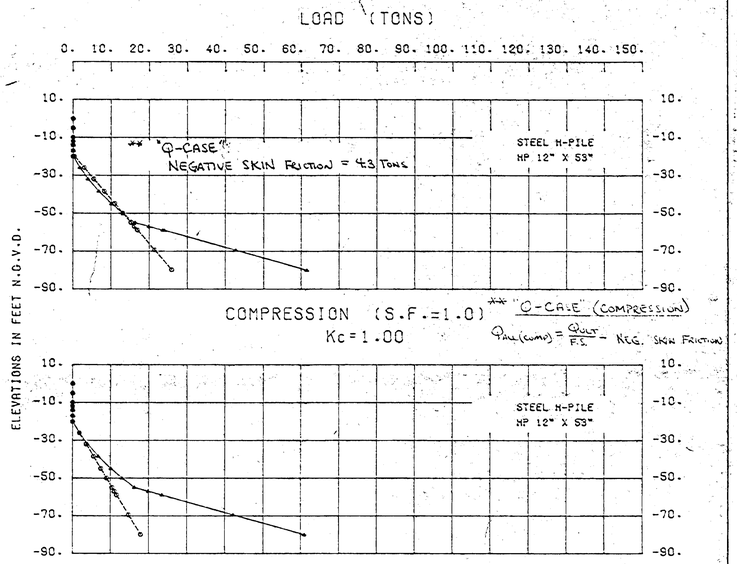
LAKE PONTCHARTRAIN AND VICINITY
DESIGN MEMORANDUM NO.16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

RAILROAD GATE
PILE CAPACITY CURVES

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1968 FILE NO. H-2-30423







S-CASE

CH.CL- ϕ=23°

ML- ϕ=28°

SM.SP- ϕ=30°

TYPICAL SOIL PROFILE

SOIL STRATIFICATION IS BASED ON GEOLOGIC PROFILE

SHEAR STRENGTH AND WET DENSITIES SEE PLATE 79

SECOND ORDER STATIONS

D	PILE SPACING IN DIRECTION OF LOADING
1.0D	8B
0.8S	7B
0.7D	6B
0.5S	5B
0.4D	4B
0.2S	3B

C	LOADING CONDITION
1.0D	INITIAL LOADING
0.3D	CYCLIC LOADING

NOTES: $K_H = \alpha K_1/B = (0.2222\,q_u/B)(C)(D)$ COHESIVE

α = 0.4 = Factor of material properties of soil and pile

k_1 = Modulus of subgrade reaction for test plate (pci)

B_1 = Width or diameter of test plate (in)

$K_1 = k_1 B_1 = 80\,q_u$ (psf) = $0.5556\,q_u$ (psi)

$q_u = 2\cdot c$ = Unconfined compressive strength (psf)

C = Reduction for cyclic loading-not applicable

D = Group effect reduction factor

B = Width of pile measured at right angles to the direction of displacement (in)

$K_H = (nh)(Z/B)(C)(D)$ COHESIONLESS

nh = Coefficient of horizontal subgrade reaction (pci)

Z = Depth below equivalent ground surface (in)

THE FACTOR SHOWN, (MODULUS OF HORIZONTAL SUBGRADE K_H, TIMES THE PILE WIDTH IN INCHES (B), MEASURED AT RIGHT ANGLES TO THE DIRECTION OF DISPLACEMENT) MUST BE MODIFIED BY A REDUCTION FACTOR FOR THE EFFECT OF GROUP ACTION (D) AND A REDUCTION FACTOR FOR CYCLIC LOADING (C) EX: $K_H = \frac{0.2222\,q_u\,(C)(D)}{(B)}$

PILE NOTE:

SEE PLATE 144

----- S-CASE

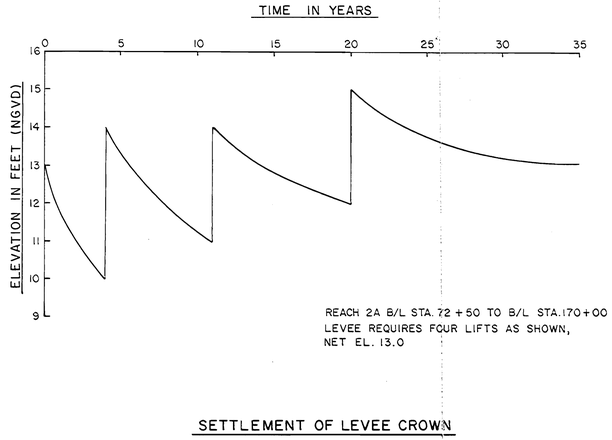
——— Q-CASE

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY
T-WALL

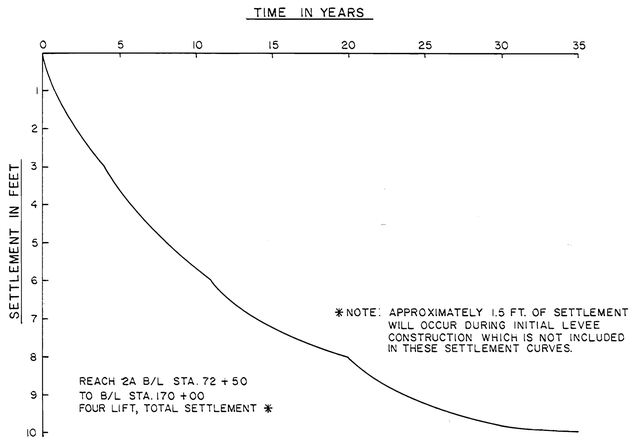
TYP. PILE CAPACITY CURVES

STA. 490+00 to AIRPORT EXT.

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1985 FILE NO. H-2-30423



SETTLEMENT OF LEVEE CROWN

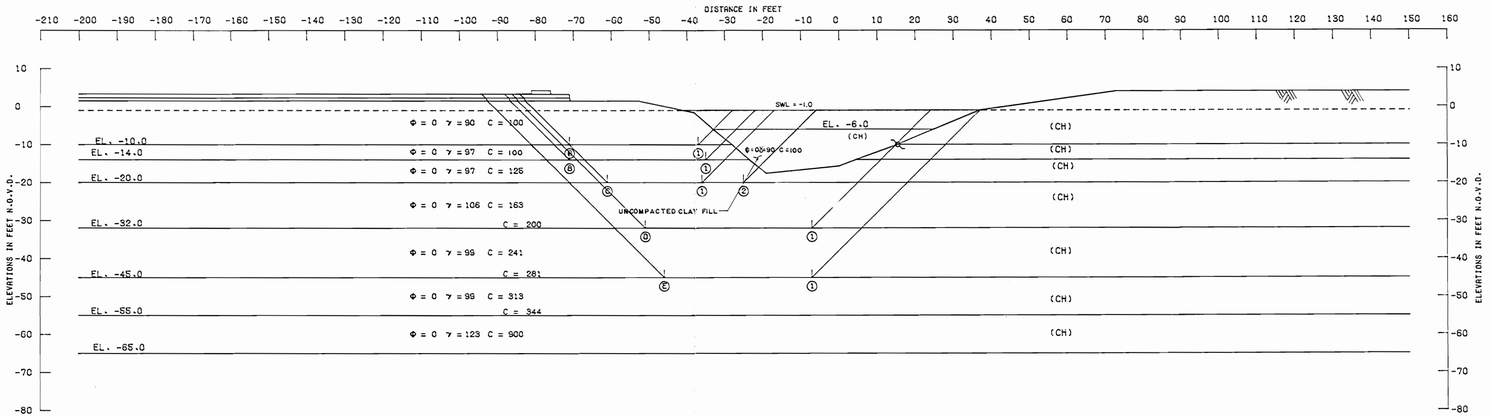


ACCUMULATIVE SETTLEMENT

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

SETTLEMENT VS. TIME

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423



ASSUMED FAILURE SURFACE NO.	ELEV.	RESISTING FORCES R_A	R_B	R_P	DRIVING FORCES D_B	$-D_P$	SUMMATION OF FORCES RESISTING	DRIVING	FACTOR OF SAFETY
⑥ ①	-10.0	2330	3400	800	7363	2944	6530	4419	1.48
⑥ ①	-14.0	3129	3600	1600	12626	6266	8329	6361	1.31
⑥ ①	-20.0	4630	3125	3100	22655	14427	10855	8128	1.34
⑥ ②	-20.0	4630	4500	3000	22655	14077	12130	8478	1.43
⑥ ①	-32.0	8529	8800	7000	54364	41064	24329	13300	1.83
⑥ ①	-45.0	14780	10969	14263	105582	87799	39992	17783	2.25

GENERAL NOTES:

CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.

NOTES

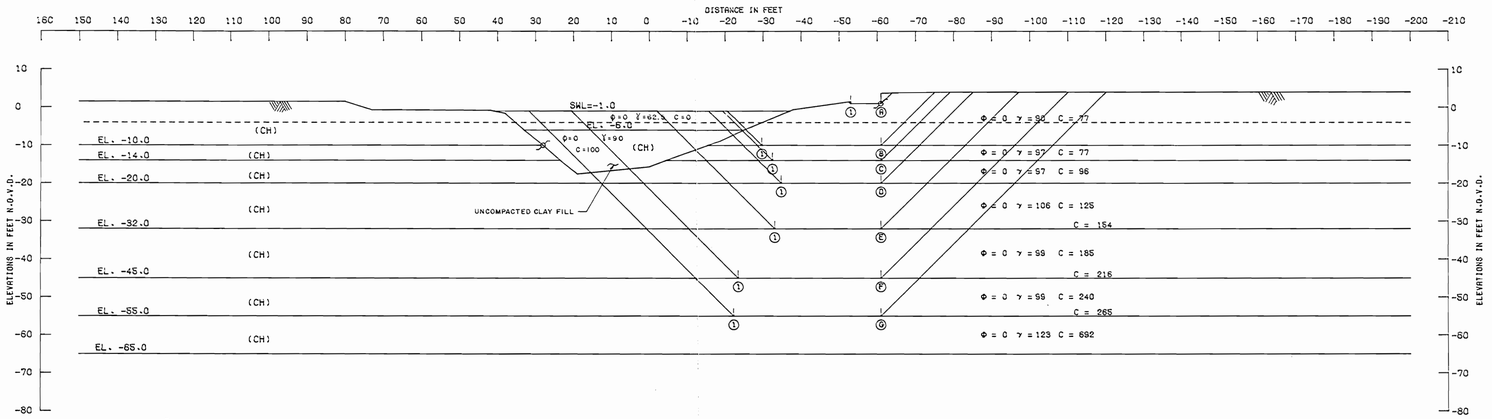
Φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

$$\text{FACTOR OF SAFETY} = \frac{R_A + R_B + R_P}{D_B - D_P}$$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 18, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

BRIDGE CROSSING
STABILITY ANALYSIS
NORTH SIDE

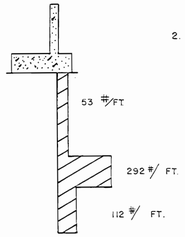
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1989 FILE NO. H-2-30423



DEEP SEATED STABILITY ANALYSIS

NO.	ELEV.	$U_A = D_A - R_A$		$U_P = R_B + R_P + D_P$			U_A	U_P	$U_A - U_P$
		D_A	R_A	R_B	R_P	D_P			
A-1	1.0	343	438	8	83	8	-87	77	-164
B-1	-10.0	8673	2156	2418	648	2876	6517	5934	583
C-1	-14.0	14488	2772	2192	1232	6542	11717	9966	1751
D-1	-20.0	26123	3924	2515	2384	14676	22199	19775	2424
E-1	-32.0	68514	6924	4296	5384	42825	53598	51785	1885
F-1	-45.0	114484	11734	8186	18189	87255	102678	105476	-2888
G-1	-55.0	167243	16534	18246	14878	133693	150795	158889	-8188

UNBALANCED LOAD DIAGRAM



CANTILEVER (SEE NOTE 2)

GENERAL NOTES:

1. CLASSIFICATION, STRATIFICATION, SHEAR STRENGTH, AND UNIT WEIGHT OF THE SOIL WERE BASED ON THE RESULTS OF UNDISTURBED BORINGS. SEE BORING DATA PLATES.
2. TOTAL UNBALANCED LOAD 2424 LB/LIN. FT SHOULD BE APPLIED AT THE BASE OF THE STRUCTURE.

NOTES

φ -- ANGLE OF INTERNAL FRICTION, DEGREES
C -- UNIT COHESION, P.S.F.
▽ -- STATIC WATER SURFACE
D -- HORIZONTAL DRIVING FORCE IN POUNDS
R -- HORIZONTAL RESISTING FORCE IN POUNDS
A -- AS A SUBSCRIPT, REFERS TO ACTIVE WEDGE
B -- AS A SUBSCRIPT, REFERS TO CENTRAL BLOCK
P -- AS A SUBSCRIPT, REFERS TO PASSIVE WEDGE

FACTOR OF SAFETY = $\frac{R_A + R_B + R_P}{D_A - D_P}$

LAKE PONTCHARTRAIN, LA. AND VICINITY
HIGH LEVEL PLAN
DESIGN MEMORANDUM NO. 16, GENERAL DESIGN
ST. CHARLES PARISH
NORTH OF AIRLINE HIGHWAY

BRIDGE CROSSING
STABILITY ANALYSIS
SOUTH SIDE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: JANUARY 1969 FILE NO. H-2-30423

UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION		TYPE	LETTER SYMBOL	SYMBOL	TYPICAL NAMES
COARSE - GRAINED SOILS More than half of material is larger than No 200 sieve size	GRAVELS More than half of coarse fraction is larger than No 4 sieve size	CLEAN GRAVEL (Little or No Fines)	GW		GRAVEL, Well Graded, gravel-sand mixtures, little or no fines
			GP		GRAVEL, Poorly Graded, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES (Appreciable Amount of Fines)	GM		SILTY GRAVEL, gravel-sand-silt mixtures
			GC		CLAYEY GRAVEL, gravel-sand-clay mixtures
	SANDS More than half of coarse fraction is smaller than No 4 sieve size	CLEAN SAND (Little or No Fines)	SW		SAND, Well-Graded, gravelly sands
			SP		SAND, Poorly-Graded, gravelly sands
		SANDS WITH FINES (Appreciable Amount of Fines)	SM		SILTY SAND, sand-silt mixtures
			SC		CLAYEY SAND, sand-clay mixtures
FINE - GRAINED SOILS More than half the material is smaller than No 200 sieve size		SILTS AND CLAYS (Liquid Limit <50)	ML		SILT & very fine sand, silty or clayey fine sand or clayey silt with slight plasticity
			CL		LEAN CLAY, Sandy Clay, Silty Clay, of low to medium plasticity
			OL		ORGANIC SILTS and organic silty clays of low plasticity
		SILTS AND CLAYS (Liquid Limit >50)	MH		SILT, fine sandy or silty soil with high plasticity
			CH		FAT CLAY, inorganic clay of high plasticity
			OH		ORGANIC CLAYS of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt		PEAT, and other highly organic soil
WOOD			Wd		WOOD
SHELLS			Sl		SHELLS
NO SAMPLE					

NOTE: Soils possessing characteristics of two groups are designated by combinations of group symbols

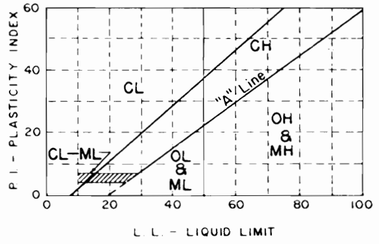
DESCRIPTIVE SYMBOLS

COLOR

COLOR	SYMBOL
TAN	T
YELLOW	Y
RED	R
BLACK	BK
GRAY	Gr
LIGHT GRAY	lGr
DARK GRAY	dGr
BROWN	Br
LIGHT BROWN	lBr
DARK BROWN	dBr
BROWNISH-GRAY	br Gr
GRAYISH-BROWN	gy Br
GREENISH-GRAY	gn Gr
GRAYISH-GREEN	gy Gn
GREEN	Gn
BLUE	Bl
BLUE-GREEN	Bl Gn
WHITE	Wh
MOTTLED	Mot

CONSISTENCY FOR COHESIVE SOILS

CONSISTENCY	COHESION IN LBS./SQ. FT. FROM UNCONFINED COMPRESSION TEST	SYMBOL
VERY SOFT	< 250	vSo
SOFT	250 - 500	So
MEDIUM	500 - 1000	M
STIFF	1000 - 2000	St
VERY STIFF	2000 - 4000	vSt
HARD	> 4000	H



PLASTICITY CHART
For classification of fine-grained soils

MODIFICATIONS

MODIFICATION	SYMBOL
Traces	Tr-
Fine	F
Medium	M
Coarse	C
Concretions	cc
Rootlets	rt
Lignite fragments	lg
Shale fragments	sh
Sandstone fragments	sds
Shell fragments	slf
Organic matter	O
Clay strata or lenses	CS
Silt strata or lenses	SIS
Sand strata or lenses	SS
Sandy	S
Gravelly	G
Boulders	B
Slickensides	SL
Wood	Wd
Oxidized	Ox

NOTES:

FIGURES TO LEFT OF BORING UNDER COLUMN "W OR D_{10}"

Are natural water contents in percent dry weight

When underlined denotes D_{10} size in mm*

FIGURES TO LEFT OF BORING UNDER COLUMNS "LL" AND "PL"

Are liquid and plastic limits, respectively

SYMBOLS TO LEFT OF BORING

▽ Ground-water surface and date observed

Ⓒ Denotes location of consolidation test**

Ⓢ Denotes location of consolidated-drained direct shear test**

Ⓡ Denotes location of consolidated-undrained triaxial compression test**

Ⓠ Denotes location of unconsolidated-undrained triaxial compression test**

Ⓣ Denotes location of sample subjected to consolidation test and each of the above three types of shear tests**

FW Denotes free water encountered in boring or sample

FIGURES TO RIGHT OF BORING

Are values of cohesion in lbs./sq. ft. from unconfined compression tests

In parenthesis are driving resistances in. blows per foot determined with a standard split spoon sampler ($1\frac{3}{8}$" I. D., 2" O. D.) and a 140 lb. driving hammer with a 30" drop

Where underlined with a solid line denotes laboratory permeability in centimeters per second of undisturbed sample

Where underlined with a dashed line denotes laboratory permeability in centimeters per second of sample remoulded to the estimated natural void ratio

*The D_{10} size of a soil is the grain diameter in millimeters of which 10% of the soil is finer, and 90% coarser than D_{10}

**Results of these tests are available for inspection in the U. S. Army Engineer District Office, if these symbols appear beside the boring logs on the drawings

TYPICAL NOTES

While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and, if encountered, such variations will not be considered as differing materially within the purview of the contract clause entitled "Differing Site Conditions".

Ground-water elevations shown on the boring logs represents ground-water surfaces encountered in such borings on the dates shown. Absence of water surface data on certain borings indicates that no ground-water data are available from the boring but does not necessarily mean that ground-water will not be encountered at the locations or within the vertical reaches of such borings.

Consistency of cohesive soils shown on the boring logs is based on driller's log and visual examination and is approximate, except within those vertical reaches of the borings where shear strengths from unconfined compression tests are shown.

SOIL BORING LEGEND

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

1 JUNE 1987 FILE NO. H-2-21800