U.S. ARMY CORPS OF ENGINEERS

BORING NO. 96-34 DATE: BEGIN 12-9-96 PAGE 1 / 2
JOB NO. 114008619 COMPLETE 12-9-96 Thin Walled Tube
PROJECT Brays Bayou ■ 3" □ 6"
LOCATION along the Bank of Brays Bayou
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG Failing 36
GROUNDWATER: DEPTH ** ft., ELEV. ____ ft., at end of Drilling
WEATHER Clear & Sunny
DRILLER Dempsey Gearen LOGGER Iraj Mostamand

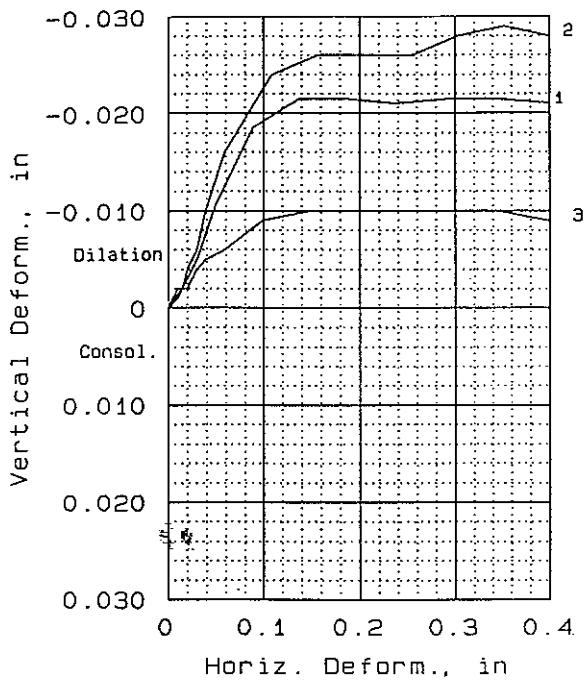
DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
0		1	1.75	DK. gray & Yellowish gray	clay	stiff		-w/roots, gravel & sa pkts Fill material 0-2'
		2	4.5+	DK. gray	clay	Hard		
5		3	4.5+	Gray	clay	Hard		-w/calc nod, Fest, Sa sms
		4	4.5+	Yellowish gray	clay	Hard		-w/calc nod, Fest & sasms
		5	4.25	Yellowish gray	clay	Hard		-w/calc nod, Fest & sasms
10		6	2.75	Yellowish gray & Brown	clay	V. stiff		-w/calc nod, Fest & sasms
		7	3.75	Yellowish gray & Brown	clay	V. stiff	Sandy	-w/calc nod, Fest & sa pkts
15		8	4.00	Yellowish gray & Brown	clay	Hard ~~V. stiff~~	Sandy	-w/calc nod, Fest & sa pkts
		9	3.25	Gray & Yellowish gray	clay	V. stiff	Sandy	-w/calc nod, Fest & sa pkts
	X	10	4 5 6	Gray	Sand	M. Dense	silty	** encounter water @ 20' start wet Rotary
20	X	11	11 8 5	Gray	Sand	M. Dense	silty	- clay layer @ 24'
25		12	3.25	Gray & Yellowish gray	clay	V. stiff		-w/Fest, slickensided
		13	3.25	Gray	clay	V. stiff		-w/calc nod, Fest, slickensided
		14	2.50	Gray & Red	clay	V. stiff		-w/Fest, slickensided
30		15	3.50	Red & gray	clay	V. stiff		-w/calc nod & Fest, slickensided
		16	3.75	Red & gray	clay	V. stiff		-w/calc nod & Fest, slickensided
35		17	4.5+	Red & gray	clay	Hard		-w/calc nod, Fest, slickensided

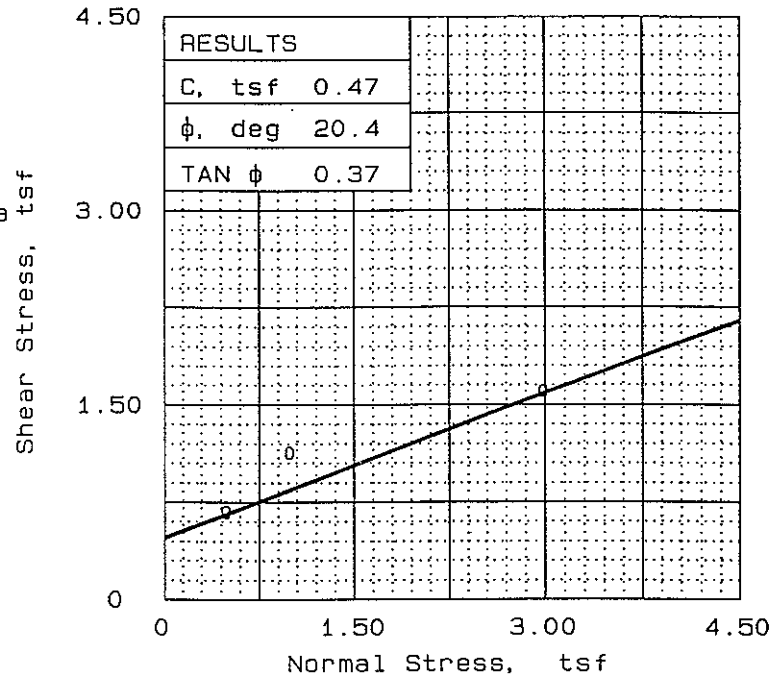
U.S. ARMY CORPS OF ENGINEERS

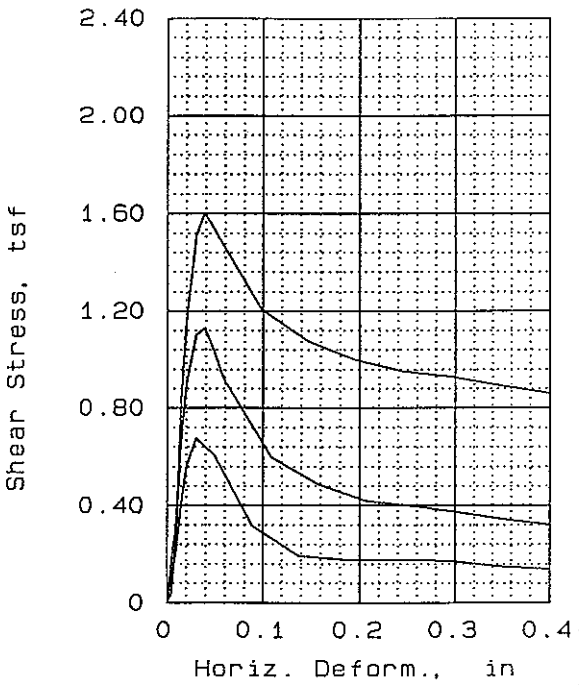
BORING NO. 96-34 DATE: BEGIN 12-9-96 PAGE 2 / 2
JOB NO. 1140086119 COMPLETE 12-9-96 Thin Walled Tube
PROJECT Brays Bayou ■ 3" □ 6"
LOCATION along The Bank of Brays Bayou
ELEVATION OF HOLE
MANUFACTURER'S DESIGNATION OF DRILL RIG Failing 36
GROUNDWATER: DEPTH ** ft., ELEV. ____ ft., at end of Drilling
WEATHER Clear & sunny
DRILLER Dempsey Gearen LOGGER Iraj Mostamand

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
35								
		18	4.5+	Red & gray	Clay	Hard		-w/calc nod, Fest, SLS
		19	4.5+	Red & gray	Clay	Hard	silty	-w/calc nod, Fest, sasms,
40		20	3.75	Red	Clay	V.stiff	silty	-w/Fest, Sasms & sasi layer
		21	3.75	Red	clay	V.stiff	silty	-w/calc nod, Fest & sasi layer
45		22	4.5+	Red	Clay	Hard	Silty	-w/calc nod, Fest
		23	2.50	Red	Clay	V.stiff	silty	-w/calc nod, Fest, si layer
		24	2.50	Red	clay	V.stiff	silty	-w/calc nod, Fest, si layer & siltstone
50		25	3.25	Red	clay	V.stiff		-w/Fest, silt stone, siltsms, slickensided
		26	3.25	Red	clay	V.stiff		-w/calc nod, Fest, slickensided
55	X	27	8 13 18	Brown	Sand	Dense	silty	
60	X	28	12 38 50/4"	Brown	Sand	V.Dense	Silty	-w/Sa stone
	X	29	12 18 33	Brown	Sand	V. Dense	silty	
65	X	30	14 20 35	Brown	Sand	V. Dense	silty	
								Drilling Fluid level after drilling @ 1'-4"
70								

GEOTEST ENGINEERING, INC.







	SAMPLE NO.	1	2	3
INITIAL	WATER CONTENT, %	18.0	17.6	18.3
	DRY DENSITY, pcf	111.1	111.5	110.4
	SATURATION, %	94.1	92.8	94.0
	VOID RATIO	0.518	0.512	0.527
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	20.3	19.6	19.4
	DRY DENSITY, pcf	110.5	111.1	111.8
	SATURATION, %	104.5	102.7	103.3
	VOID RATIO	0.525	0.516	0.507
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	1.01	1.00	0.99
NORMAL STRESS, tsf		0.50	1.00	3.00
MAX. SHEAR, tsf		0.67	1.13	1.60
STRAIN RATE, %/min.		0.004	0.004	0.004
ULT. SHEAR, tsf		0.14	0.32	0.86

SAMPLE DATA

SAMPLE TYPE: UNDISTURBED

DESCRIPTION: FAT CLAY (CH)

LL= 62 PL= 14 PI= 48.0

SPECIFIC GRAVITY= 2.70

REMARKS: SPECIFIC GRAVITY EST.

FIG. NO.

CLIENT: US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT

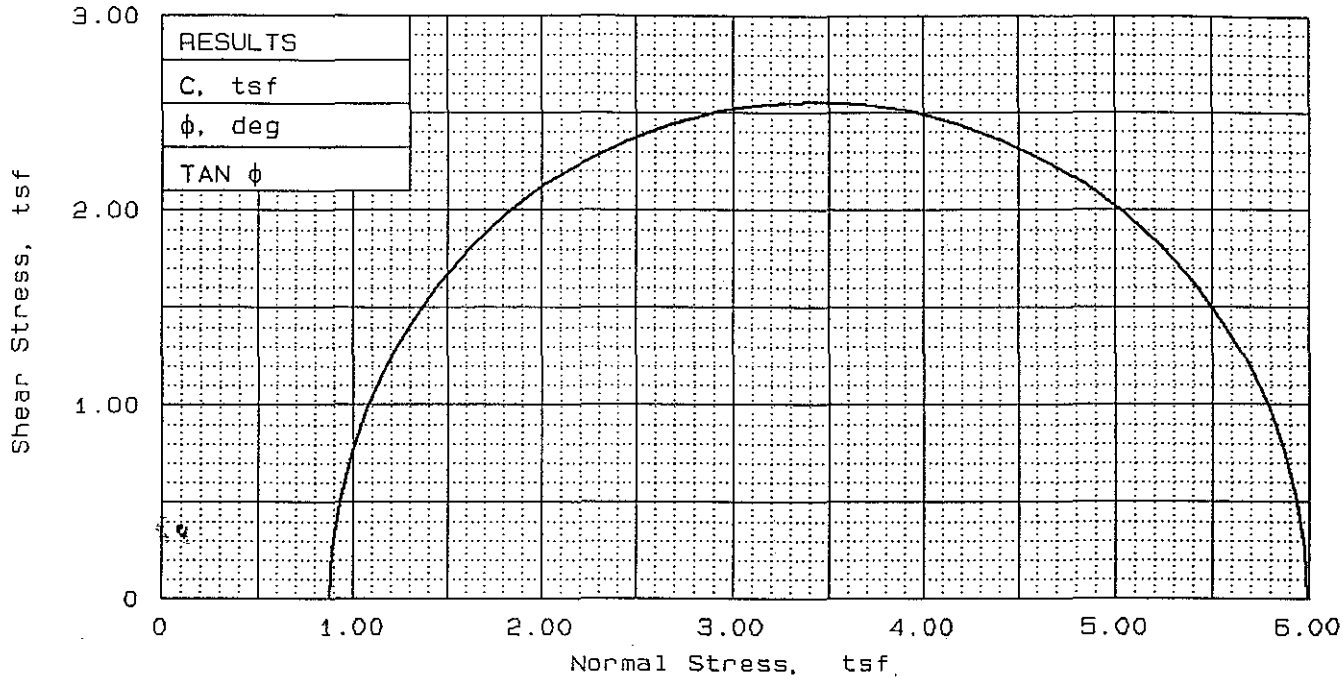
PROJECT: BRAYS BAYOU
MID-BASIN

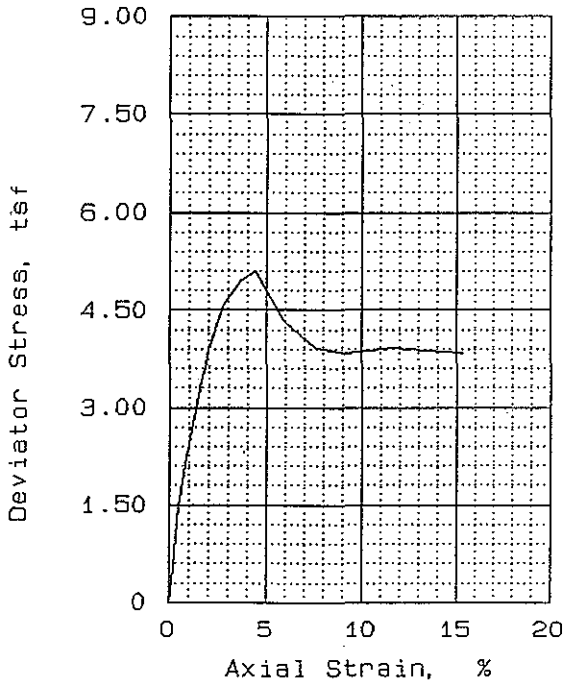
SAMPLE LOCATION: BORING: 96-34, ST-5,
8.9'-10.0', SWD LAB No. 97/ 75

PROJ. NO.: 16724 DATE: MARCH 1997

DIRECT SHEAR TEST

CORPS OF ENGINEERS – SOUTHWESTERN





SAMPLE NO.		1
INITIAL	WATER CONTENT, %	14.4
	DRY DENSITY, pcf	118.1
	SATURATION, %	92.4
	VOID RATIO	0.417
	DIAMETER, in	1.38
	HEIGHT, in	3.04
AT TEST	WATER CONTENT, %	14.4
	DRY DENSITY, pcf	118.1
	SATURATION, %	92.4
	VOID RATIO	0.417
	DIAMETER, in	1.38
	HEIGHT, in	3.04
BACK PRESSURE, tsf		0.00
CELL PRESSURE, tsf		0.88
FAILURE STRESS, tsf		5.11
PORE PRESSURE, tsf		
STRAIN RATE, %/min.		0.900
ULTIMATE STRESS, tsf		3.85
PORE PRESSURE, tsf		
σ_1 FAILURE, tsf		5.99
σ_3 FAILURE, tsf		0.88

TYPE OF TEST:
Unconsolidated undrained

SAMPLE TYPE: UNDISTURBED

DESCRIPTION: SANDY LEAN CLAY (CL)

LL= 39 PL= 13 PI= 26.0

SPECIFIC GRAVITY= 2.68

REMARKS: SPECIFIC GRAVITY EST.

CLIENT: US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT

PROJECT: BRAYS BAYOU
MID-BASIN

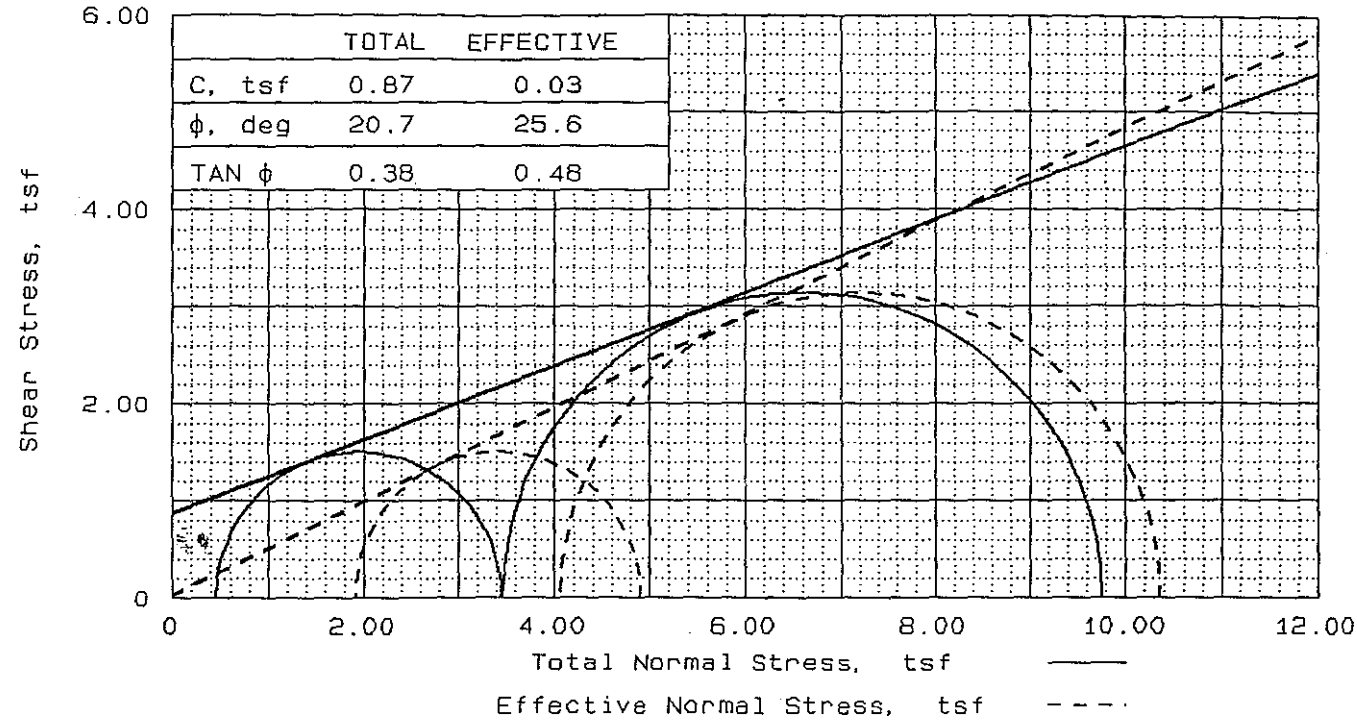
SAMPLE LOCATION: BORING: 96-34, ST-7, 13.0'-14.0', SWD LAB No. 97/ 76

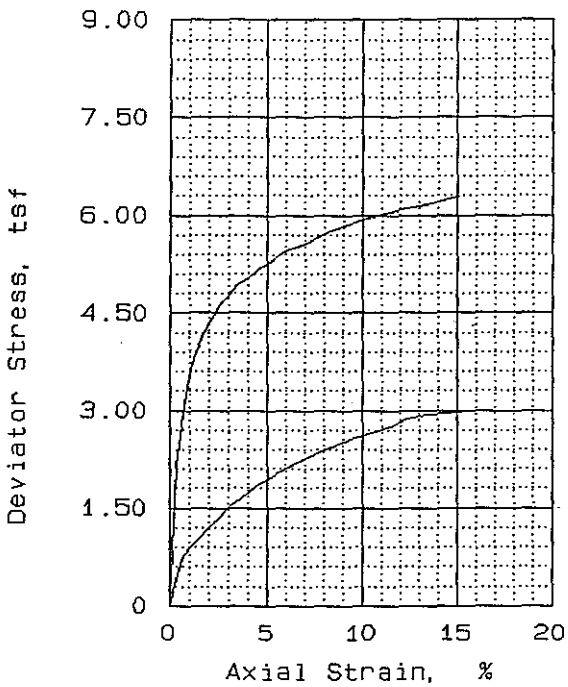
PROJ. NO.: 16724 DATE: MAR 1997

TRIAXIAL COMPRESSION TEST

CORPS OF ENGINEERS – SOUTHWESTERN

FIG. NO.





SAMPLE NO.		1	2
INITIAL	WATER CONTENT, %	15.6	14.5
	DRY DENSITY, pcf	116.1	116.8
	SATURATION, %	94.7	90.7
	VOID RATIO	0.442	0.432
	DIAMETER, in	1.41	1.40
	HEIGHT, in	3.04	3.04
AT TEST	WATER CONTENT, %	18.0	16.2
	DRY DENSITY, pcf	112.8	116.7
	SATURATION, %	100.0	100.0
	VOID RATIO	0.483	0.433
	DIAMETER, in	1.43	1.40
	HEIGHT, in	3.04	3.03
BACK PRESSURE, tsf		6.19	4.39
CELL PRESSURE, tsf		6.65	7.86
FAILURE STRESS, tsf		3.00	6.29
PORE PRESSURE, tsf		4.74	3.79
STRAIN RATE, %/min.		0.045	0.045
ULTIMATE STRESS, tsf			
PORE PRESSURE, tsf			
$\bar{\sigma}_1$ FAILURE, tsf		4.92	10.35
$\bar{\sigma}_3$ FAILURE, tsf		1.91	4.07

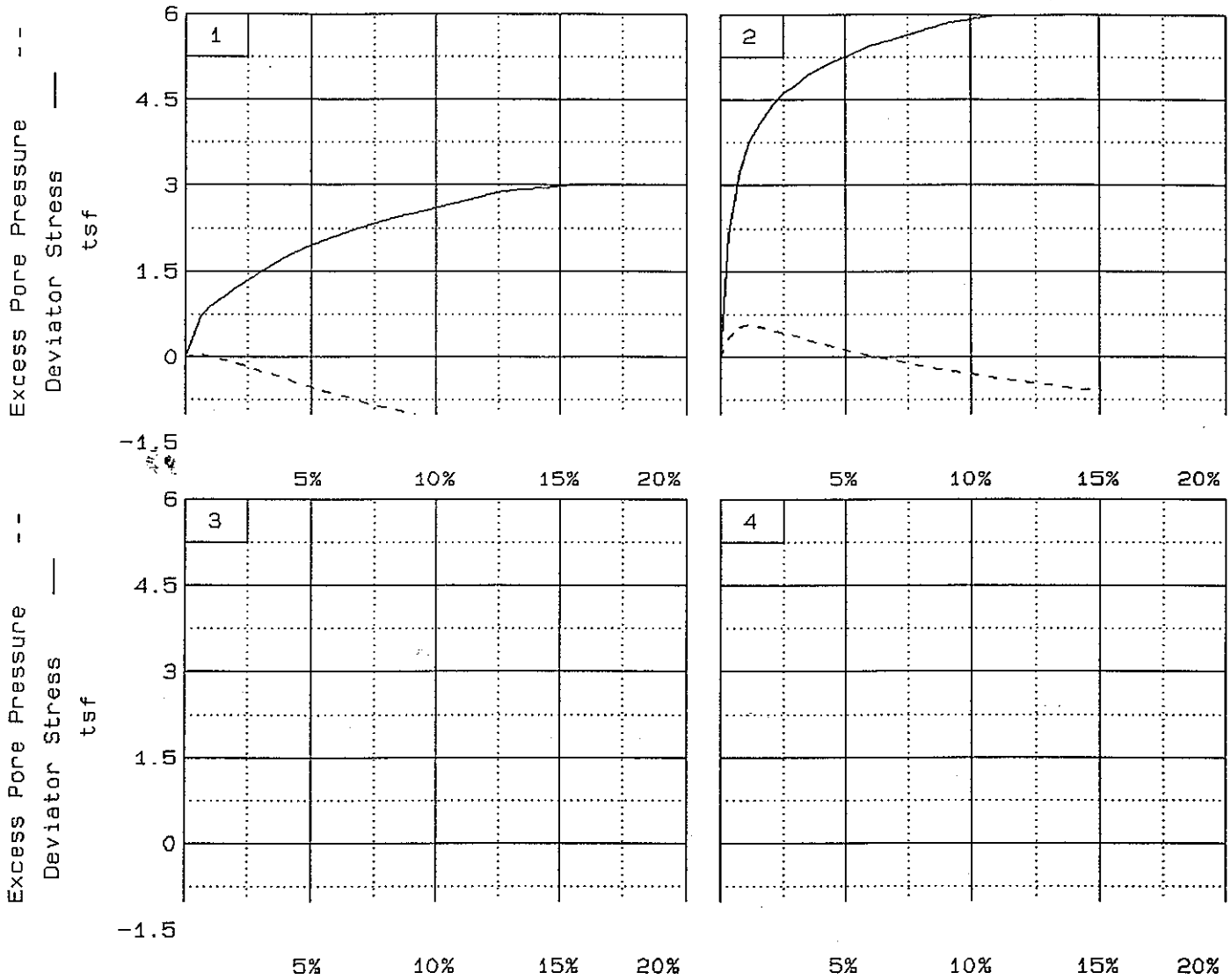
TYPE OF TEST:
CU with pore pressures
SAMPLE TYPE: UNDISTURBED
DESCRIPTION: SANDY LEAN CLAY (CL)
LL= 39 PL= 13 PI= 26.0
SPECIFIC GRAVITY= 2.68
REMARKS: SPECIFIC GRAVITY EST. Insufficient material for additional test specimens

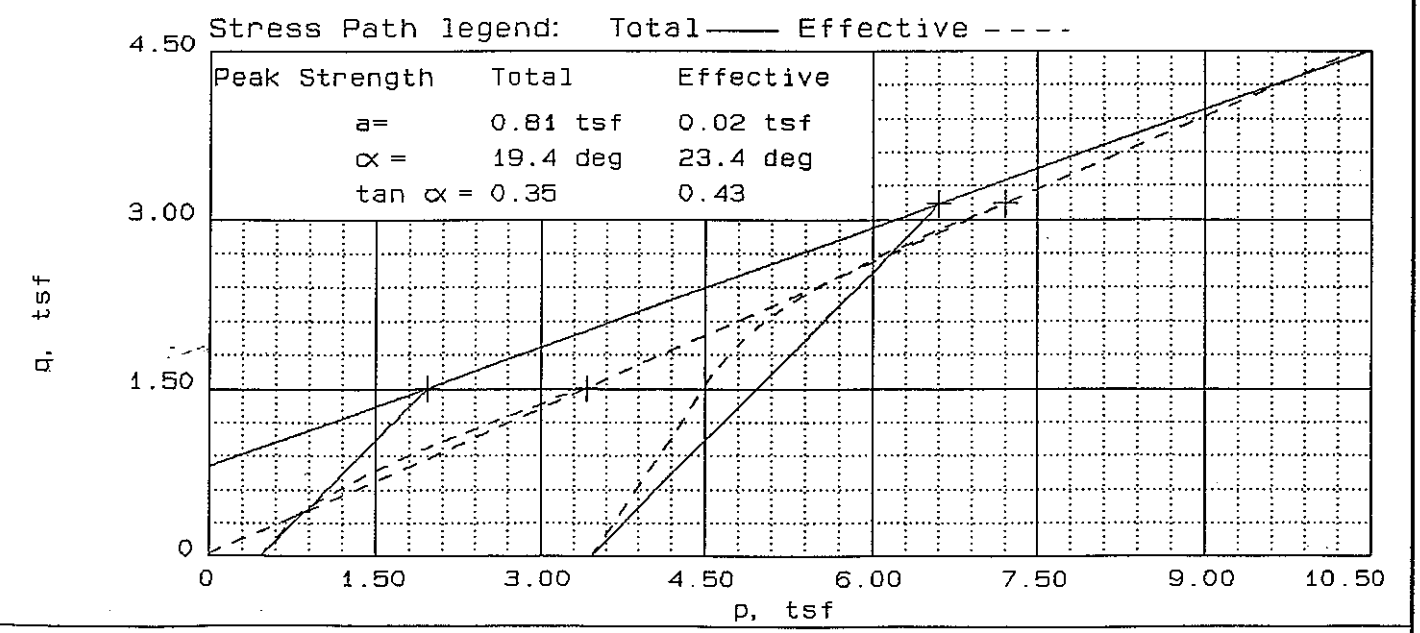
CLIENT: US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
PROJECT: BRAYS BAYOU
MID-BASIN
SAMPLE LOCATION: BORING: 96-34, ST-7
13.0'-14.0', SWD LAB No. 97/ 76
PROJ. NO.: 16724 DATE: MAR 1997

TRIAXIAL COMPRESSION TEST

CORPS OF ENGINEERS – SOUTHWESTERN

FIG. NO.



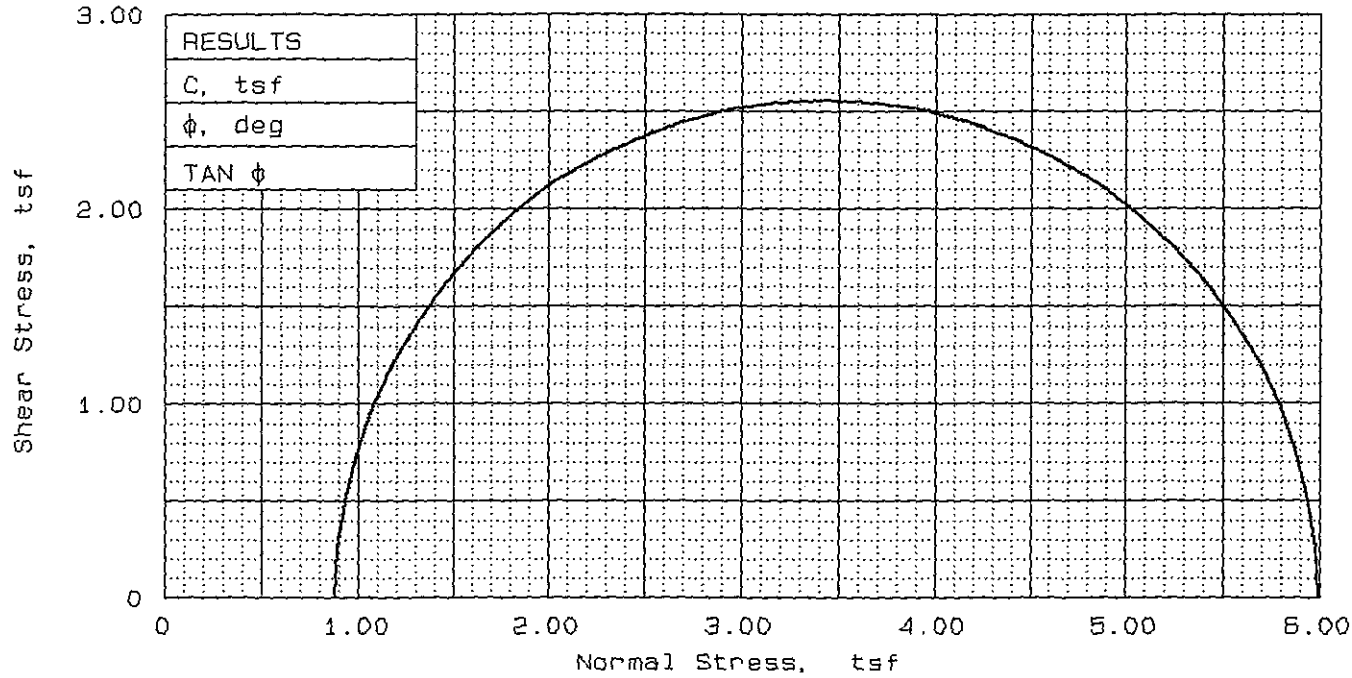


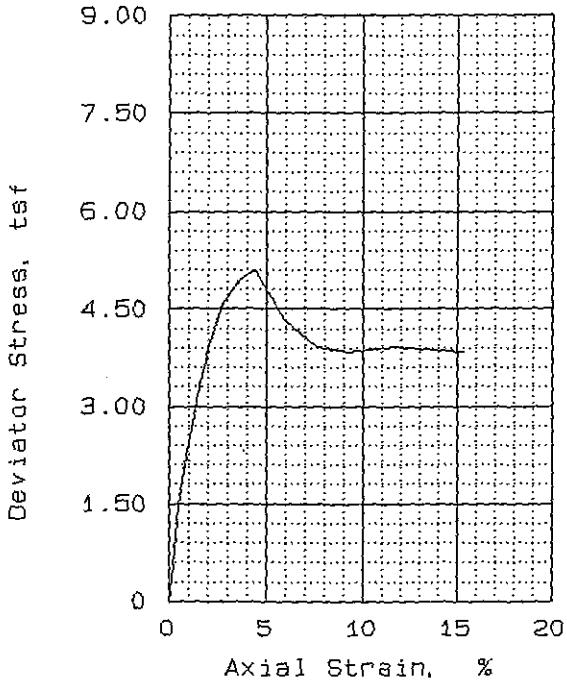
Client: US ARMY CORPS OF ENGINEERS GALVESTON DISTRICT

Project: BRAYS BAYOU MID-BASIN

Location: BORING: 96-34, ST-7 13.0'-14.0', SWD LAB No. 97/ 76

File: 76R Project No.: 16724 Page 2/2 Fig. No. 8





SAMPLE NO.		1
INITIAL	WATER CONTENT, %	14.4
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	VOID RATIO	0.417
	DIAMETER, in	1.38
	HEIGHT, in	3.04
AT TEST	WATER CONTENT, %	14.4
	DRY DENSITY, pcf	118.1
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BACK PRESSURE, tsf		0.00
CELL PRESSURE, tsf		0.88
FAILURE STRESS, tsf		5.11
PORE PRESSURE, tsf		
STRAIN RATE, %/min.		0.900
ULTIMATE STRESS, tsf		3.85
PORE PRESSURE, tsf		
σ_1 FAILURE, tsf		5.99
σ_3 FAILURE, tsf		0.88

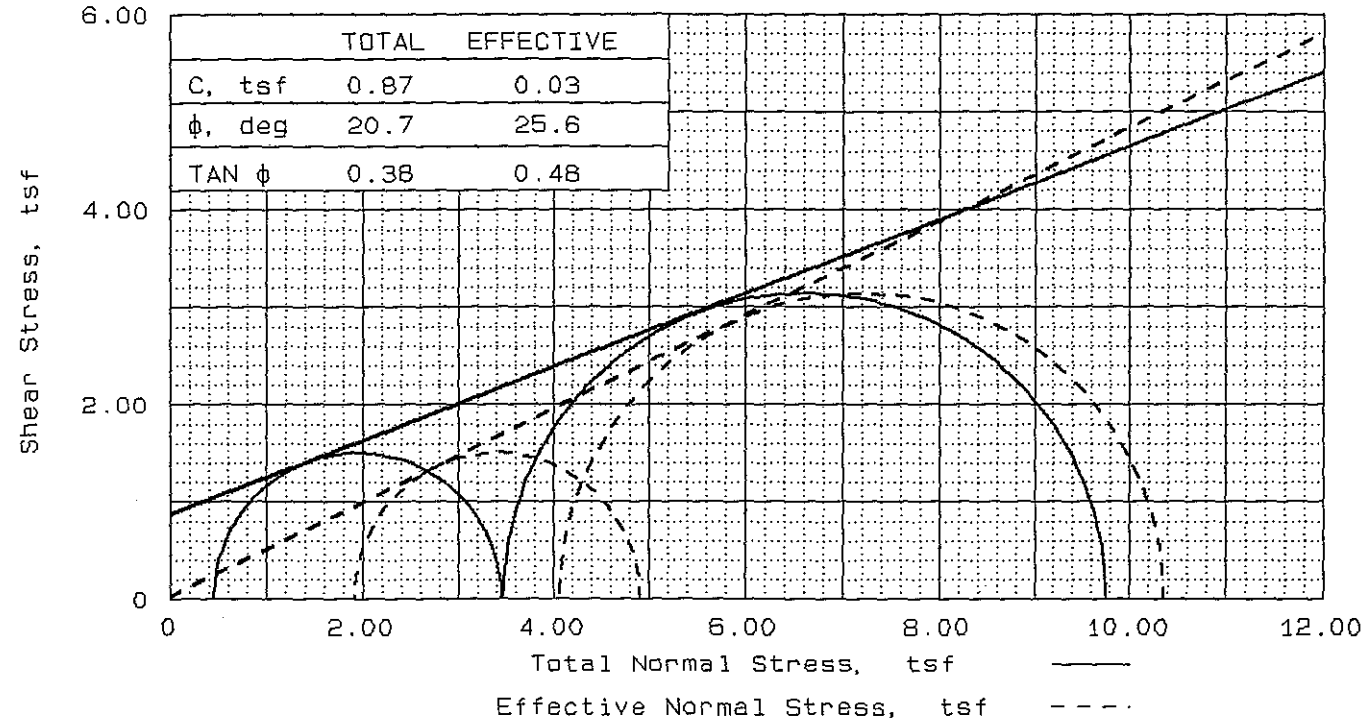
TYPE OF TEST:
Unconsolidated undrained
SAMPLE TYPE: UNDISTURBED
DESCRIPTION: SANDY LEAN CLAY (CL)
LL= 39 PL= 13 PI= 26.0
SPECIFIC GRAVITY= 2.68
REMARKS: SPECIFIC GRAVITY EST.

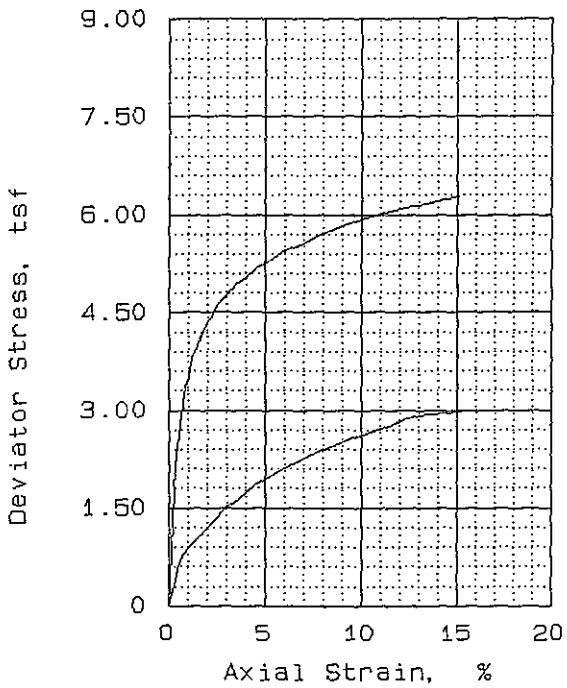
CLIENT: US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
PROJECT: BRAYS BAYOU
MID-BASIN
SAMPLE LOCATION: BORING: 96-34, ST-7, 13.0'-14.0', SWD LAB No. 97/ 76
PROJ. NO.: 16724 DATE: MAR 1997

TRIAXIAL COMPRESSION TEST

CORPS OF ENGINEERS - SOUTHWESTERN

FIG. NO.





SAMPLE NO.		1	2
INITIAL	WATER CONTENT, %	15.6	14.6
	DRY DENSITY, pcf	116.1	116.8
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	DRY DENSITY, pcf	112.8	116.7
	SATURATION, %	100.0	100.0
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STRAIN RATE, %/min.		0.045	0.045
ULTIMATE STRESS, tsf			
PORE PRESSURE, tsf			
$\bar{\sigma}_1$ FAILURE, tsf		4.92	10.35
$\bar{\sigma}_3$ FAILURE, tsf		1.91	4.07

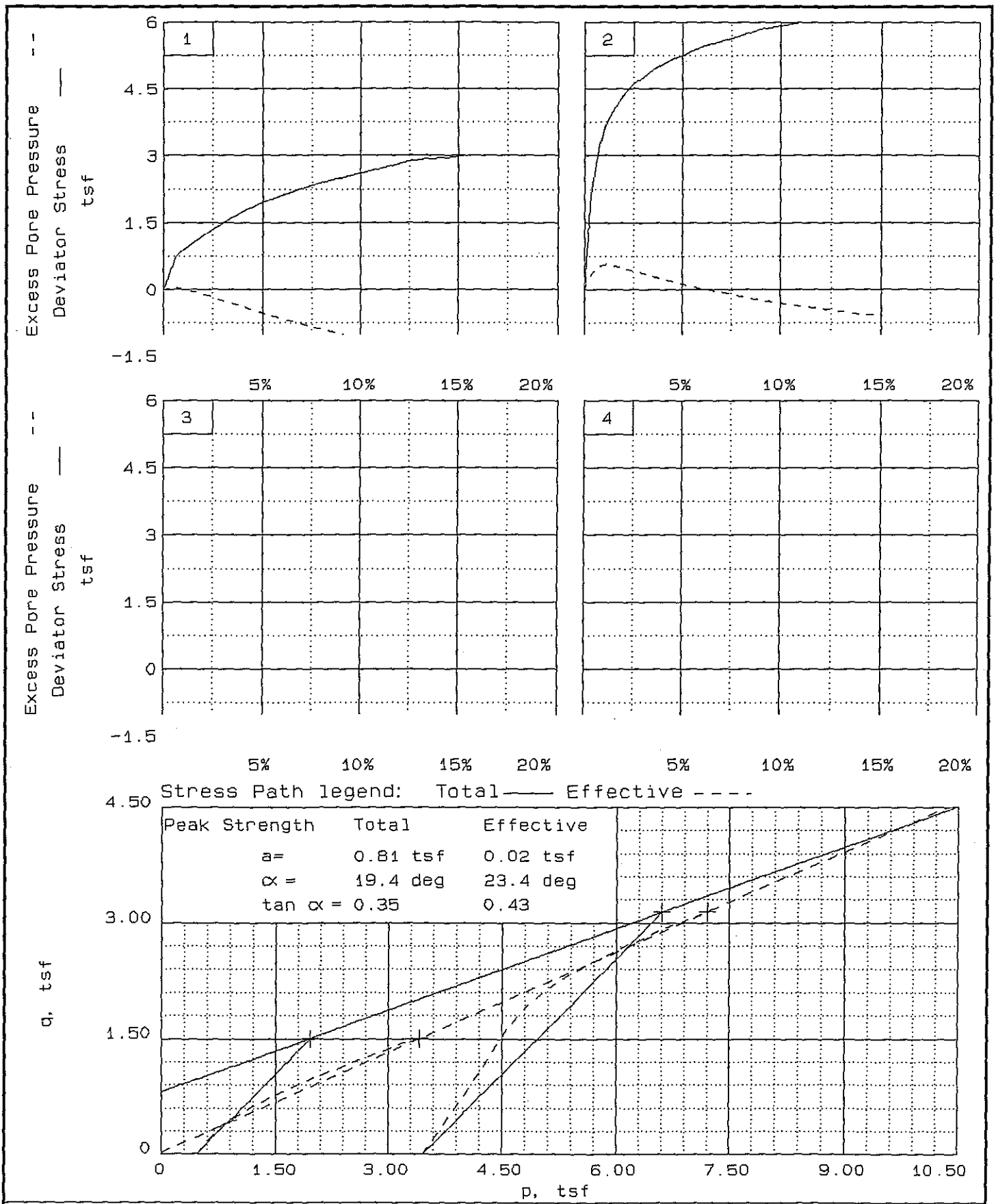
TYPE OF TEST:
CU with pore pressures
SAMPLE TYPE: UNDISTURBED
DESCRIPTION: SANDY LEAN CLAY (CL)
LL= 39 PL= 13 PI= 26.0
SPECIFIC GRAVITY= 2.68
REMARKS: SPECIFIC GRAVITY EST.
Insufficient material for additional test specimens

CLIENT: US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
PROJECT: BRAYS BAYOU
MID-BASIN
SAMPLE LOCATION: BORING: 96-34, ST-7
13.0'-14.0', SWD LAB No. 97/ 76
PROJ. NO.: 16724 DATE: MAR 1997

TRIAXIAL COMPRESSION TEST

CORPS OF ENGINEERS - SOUTHWESTERN

FIG. NO.

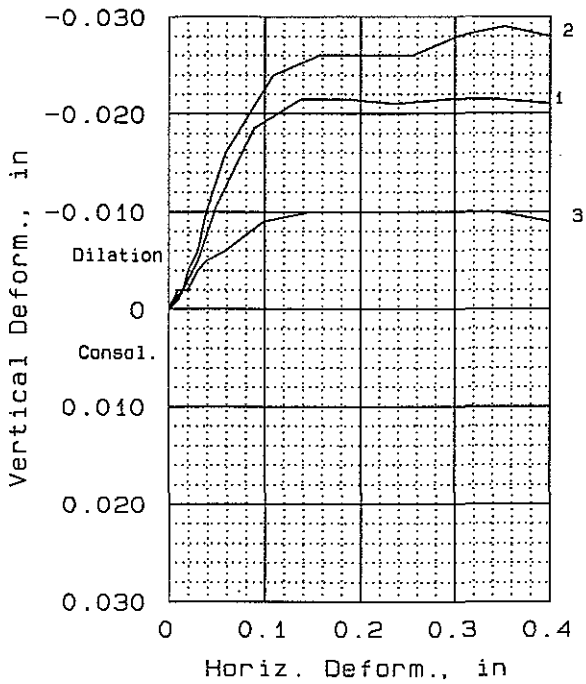


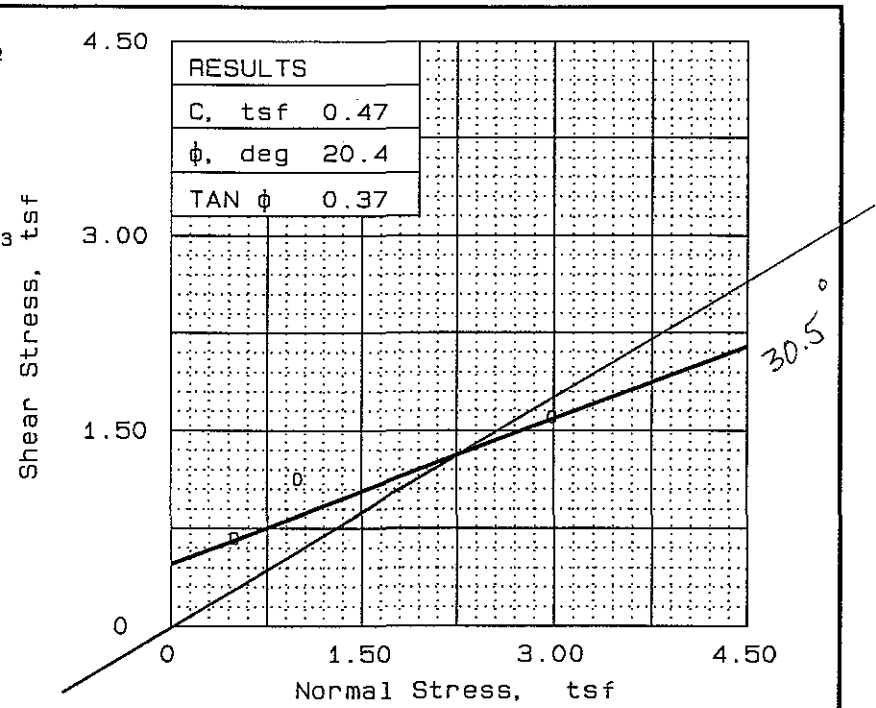
Client: US ARMY CORPS OF ENGINEERS GALVESTON DISTRICT

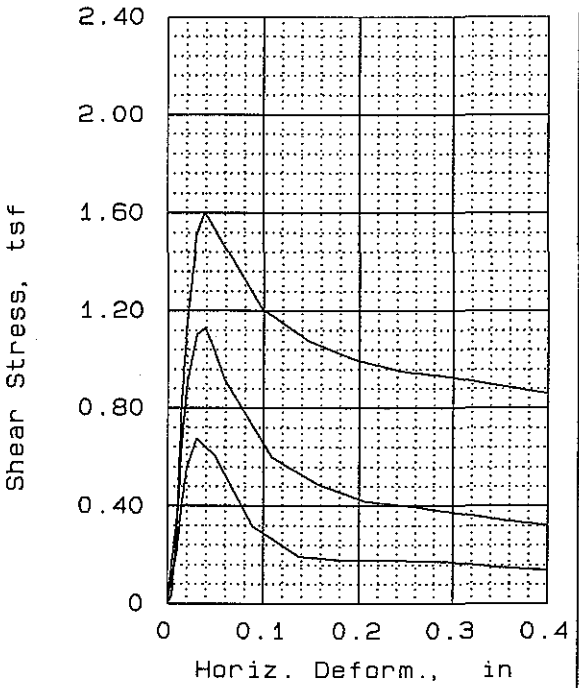
Project: BRAYS BAYDU MID-BASIN

Location: BORING: 96-34, ST-7 13.0'-14.0', SWD LAB No. 97/ 76

File: 76R Project No.: 16724 Page 2/2 Fig. No. 8







	SAMPLE NO.	1	2	3
INITIAL	WATER CONTENT, %	18.0	17.6	18.3
	DRY DENSITY, pcf	111.1	111.5	110.4
	SATURATION, %	94.1	92.8	94.0
	VOID RATIO	0.518	0.512	0.527
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	20.3	19.6	19.4
	DRY DENSITY, pcf	110.5	111.1	111.8
	SATURATION, %	104.5	102.7	103.3
	VOID RATIO	0.525	0.516	0.507
	DIAMETER, in	2.51	2.51	2.51
	HEIGHT, in	1.01	1.00	0.99
NORMAL STRESS, tsf		0.50	1.00	3.00
MAX. SHEAR, tsf		0.67	1.13	1.60
STRAIN RATE, %/min.		0.004	0.004	0.004
ULT. SHEAR, tsf		0.14	0.32	0.86

SAMPLE DATA

SAMPLE TYPE: UNDISTURBED

DESCRIPTION: FAT CLAY (CH)

LL= 62 PL= 14 PI= 48.0

SPECIFIC GRAVITY= 2.70

REMARKS: SPECIFIC GRAVITY EST.

CLIENT: US ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT

PROJECT: BRAYS BAYOU
MID-BASIN

SAMPLE LOCATION: BORING: 96-34, ST-5, 8.9'-10.0', SWD LAB No. 97/ 75

PROJ. NO.: 16724 DATE: MARCH 1997

DIRECT SHEAR TEST

CORPS OF ENGINEERS – SOUTHWESTERN

FIG. NO.