REPORT OF SOIL TESTS
TEXAS CITY HURRICANE FLOOD PROTECTION
STATION 290+00 to 330+00

(Borings 3ST-CC-49 and 50)

GALVESTON DISTRICT LABORATORY REPORT NO. 1148

REPORT OF SOIL TESTS
TEXAS CITY HURRICANE FLOOD PROTECTION
STATION 290+00 to 330+00

(Borings 38T-CC-49 and 50)

GALVESTON DISTRICT LABORATORY REPORT NO. 1148

DIRECTIVE

1. See attached Disposition Forms 2 Sept and 7 Oct 1966.

2. Special tests were requested to be performed by the Southwestern Division Laboratory by Order No. GG-22-67.

INCLOSURES

3. The three "Test Data Summary" sheets presents the soil identification test results, the visual classifications, and the field boring data.

4. The boring locations are shown on one sheet.

METHOD OF TEST

5. Classification of the samples was made in accordance with the Unified Soils Classification System and was based on identification tests and field identification procedures. Standard moisture content tests were made on samples. Pocket penetrometer readings were made on undisturbed samples. Density determinations by the "weight in air and weight in water" method were also made on undisturbed samples.

6. The unconfined compression samples were tested at an axial strain rate of one percent per minute.

DISPOSITION OF SAMPLES

7. Small samples representing typical materials from each boring have been stored at Galveston District Laboratory.

CLIFFORD C. RAMSBACHER
Chief, Materials and Testing
Sub-Sec

16 Mar 67: pm

DISPOSITION FORM

(AR 340-15)

1148

OFFICE SYMBOL OR FILE REFERENCE	SUBJECT
SWGED-F	Texas City Hurricane Flood Protection - Exploration and Testing, Station 290+00 to 330+00

TO	FROM	DATE	CMT 1
Ch, Matls & Testing Subsec Ch, Geo Subsec	Ch, Soil Des Sec	20 Sept 66	

1. Locations.- The locations, types and suggested depths of two borings, 3ST-CC-49 and 3ST-CC-50 are shown on the attached layout. The Survey Branch has been requested to stake the boring locations.

2. Sampling.- Sampling should be continuous and every effort made to obtain and preserve all material for testing. Pocket penetrometer tests should be made on all samples and results recorded on the field logs. The depth to the water table should be carefully determined. Borings should be drilled to about 5 feet into the hard stiff pleistocene clay. Requested depths shown on the boring layout are estimated depths to the stiff clay.

3. Testing.-

a. Moisture content, density, pocket penetrometer and visual classification tests to be made on all samples.

b. Atterberg limits, bar linear shrinkage tests and mechanical analysis on a sufficient number of samples to accurately identify all samples.

c. Unconfined compression tests should be made for every two feet of depth on each hole in order that the increase in strength of both the embankment and foundation since the end of first stage construction may be determined.

4. Cost charges are as follows:

Field, 45100-2502-030.16202C

Lab, 41100-2502-030.16202C

VE Bennett

VERNON E. BENNETT
Chief, Soil Design Section

1 Incl
Boring Layout

DISPOSITIO) FORM

(AR 340-15)

REFERENCE OR OFFICE SYMBOL	SUBJECT
SWGED-F	Texas City Hurricane Flood Protection - Station 290+00 to 365+00 - Testing of Samples

TO Ch, Matls & Testing Subsec FROM Ch, Soils Des Sec DATE 7 Oct 66 CMT 1

Mr. Bennett/hl/342

1. The following special tests are requested on samples from borings 3ST-CC-49 and 3ST-CC-50:

a. Unconfined Compression Tests - District Laboratory

Hole No.	Sample No.	Depths/Feet
3ST-CC-49	Cont. 5	8-10
"	Cont. 9	16-18
"	Cont. 11	24-26
"	Cont. 14	30-32
"	Cont. 20	42-44
"	Cont. 25	54-56
"	Cont. 30	66-68 unsuitable No Substitute
"	Cont. 32	70-72
"	Cont. 34	74-76
"	Cont. 37	80-82
"	Cont. 39	86-88
3ST-CC-50	Cont. 5	8-10
"	Cont. 7	12-14
"	Cont. ~~9~~ 8	16-17
"	Cont. 10	18-20
3ST-CC-50	Cont. 15	28-30
"	Cont. 18	34-36
"	Cont. 22	42-44
"	Cont. 24	46-48

b. Special Tests - Samples to be sent to Division Laboratory

Hole No.	Type of Test	Sample No.	Depth/Feet
3ST-CC-49	Q	Cont. 12	26-28
"	Q	Cont. 16	34-36
"	Q	Cont. 23	48-50
3ST-CC-50	Q	Cont. 12	22-24
"	Q	Cont. 17	32-34
"	Q	Cont. 21	40-42

2. Samples to be tested should be set aside as soon as practicable and we be notified. Since samples are only 3 inches in diameter sufficient material for testing must be sent. Similar material up or down from the sample may be required to provide sufficient material. The testing request will then be prepared and samples shipped.

VERNON E. BENNETT
Chief, Soil Design Section

Two years file

INTRA-ARMY ORDER FOR REIMBURSABLE SERVICES (AR 37-108 & AR 37-110)	1. RECEIVING OFFICE CONTROL NUMBER	2. ORDER a. NUMBER: CG-22-67	b. DATE: 18 Oct 66
	☐ FUNDED ☐ AUTOMATIC	3. CHANGE ORDER a. NUMBER	b. DATE

4. ORDERED BY (Command, Installation or Activity, and address)
U. S. Army Engr Dist, Galveston
Corps of Engineers
P. O. Box 1229
Galveston, Texas 77551
ATTN: SWGED-F

5. TO BE PERFORMED BY (Command, Installation or Activity, and address)
Southwestern Division Laboratory
U. S. Army Engr Div, Southwestern
Corps of Engineers
4815 Caos Street
Dallas, Texas 75235

6. DESCRIPTION OF SERVICES TO BE PERFORMED

Job: Texas City Hurricane Flood Protection
Location: Texas City, Texas
Directive Job No.: 41100-2502-030.16-2050
Type of Work: Civil, Hired Labor

Estimated Cost: $954 Testing
56 Overhead
$1,010 Total

See attached sheet for sample data and tests requested.

These tests are needed as soon as practicable to confirm foundation strengths. It is requested advance information be furnished by telephone.

7a NAME AND TITLE OF ORDERING OFFICER	b SIGNATURE	c DATE
D. T. GRAHAM Chief, Engineering Division		18 Oct 66

ORIGINATING FINANCE AND ACCOUNTING OFFICE APPROVAL

8a. ACCOUNTING CLASSIFICATION	b. AMOUNT

c CHANGE
INCREASE AMOUNT _____ DECREASE AMOUNT _____ REVISED AMOUNT _____

9. Services to be performed pursuant to this order are properly chargeable to the appropriations or other accounts indicated above until _____ (Day - Month - Year) the expiration date of this order.

10a TYPED NAME AND TITLE OF APPROVING OFFICER	b. SIGNATURE	c. DATE

ACCEPTING OFFICER

11. THE ABOVE TERMS AND CONDITIONS ARE SATISFACTORY AND ARE ACCEPTED.

a. TYPED NAME AND TITLE OF ACCEPTING OFFICER	b. SIGNATURE	c. DATE ACCEPTED

DA FORM 1 OCT 64 2544 REPLACES PREVIOUS EDITION OF THIS FORM AND DA FORM 1619, 1 JAN 56, EXISTING SUPPLIES OF WHICH WILL BE ISSUED AND USED UNTIL 1 OCT 66 UNLESS SOONER EXHAUSTED.

U.S. GOVERNMENT PRINTING OFFICE : 1965 O - 775-212

18 October 1966

TEXAS CITY HURRICANE FLOOD PROTECTION
STATION 290+00 TO STATION 365+00

TEST REQUEST CC-22-67

A. Samples Submitted

Boring No.	Container Nos.	
3ST-CC-49	12,16 & 17, 23 & 22	use 16 & 17 as one sample if necessary
		" 23 & 22 " " " " "
3ST-CC-50	12,17 & 18,21	" 17 & 18 " " " " "

B. Tests Requested

	S-1	Processing & preparation	6 @ $8	$48
	S-2	Moisture content	6 @ $1	6
	S-4	Mechanical analysis	6 @ $7	42
	S-9	Liquid limit	6 @ $8	48
	S-10	Plastic limit	6 @ $8	48
	S-15	Unit weight	6 @ $7	42
	S-20	Visual classification	6 @ $2	12
(1)	S-43	Triaxial compression, Q-type	6 @ $118	708
			Total	$954

(1) Maximum lateral load 3 tons/sq ft

SWG Form 279 (C)
28 Jan 1965

SUMMARY UNCONFINED COMPRESSION TEST DATA
TABLE 1

TEXAS CITY HURRICANE
PROJECT FLOOD PROTECTION

GALVESTON DISTRICT LABORATORY REPORT NO. 1148

BORING NO	DEPTH FT	% GRAVEL	% SAND	% FINES	% MOISTURE	DRY WT. P.C.F.	L.L.	P.L.	L.S.	% STRAIN @ MAX. STRESS	MAX. STRESS P.S.F.	POCKET PENETRO-METER*	CLASSIFICATION
[illegible]	8'-10'	2	36	62	19	111	31		15	9.38	1930	1.00	Brown sandy clay w/shell (CL) soft
"	16'-18'	2	60	38	16	113	19		4	16.76	1990	1.00	Brown clayey sand w/shell (SC) [illegible]
"	24'-26'	0	12	88	25	95	42		17	19.38	517	0.25	Brown sandy clay (CL) [illegible]
"	30'-32'	0	42	58	34	92	27		9	10.63	666	0.25	Gray sandy clay (CL) [illegible]
"	42'-44'	0	6	94	58	69	88		26	17.50	733	0.25	Gray clay (CH) soft
"	54'-56'	0	2	98	56	65	80		31	11.25	1217	0.50	Gray clay (CH) [illegible]
"	66'-68'	—	Disturbed - unsuitable for test								—	—	
"	70'-72'	0	2	98	70	55	102		22	10.00	670	0.25	Gray clay (CH) soft
"	74'-76'	0	0	100	77	59	116		28	2.50	870	0.50	Gray clay (CH) medium
"	80'-82'	0	2	98	59	69	81		24	4.38	850	0.50	Gray clay (CH) medium
"	86'-88'	0	32	68	22	109	41		12	6.88	2936	2.25	Gray [illegible] clay (CL) [illegible]
[illegible]	8'-10'	2	28	70	15	113	45		16	3.82	2415	1.00	Gray sandy clay w/shell (CL) [illegible]
"	12'-14'	0	52	48	19	112	35		11	20.25	1391	0.50	Brown clayey sand w/shell (SC) [illegible]
"	12'-14'	0	28	72	13	101	47		16	4.41	1609	4.00	Gray sandy clay, stiff (CL)
"	18'-20'	0	64	36	11	106	34		11	10.59	2232	2.00	Brown clayey sand, w/shell (SC)
"	22'-20'	— unsuitable for test due to shell fragments									—	—	
"	24'-26'	— unsuitable for test due to shell fragments									—	—	
"	32'-34'	0	6	94	25	98	64		21	6.17	2435	1.00	Brown clay w/sel. [illegible] (CH)
"	46'-48'	0	2	98	25	98	77		25	4.38	4600	2.75	Brown clay w/shell (CH)

*TONS/SQ.FT. UNCONFINED COMPRESSION

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-5 (8-10)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0 40

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o SQ. IN.	SQ. FT.
2.99	

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	70		025				
	79		050				
	93		075				
	105		100				
	115		125				
	122		150				
	128		175				
	132		200				
	136		225				
	139		250				
	142		275				
	143		300				
	145		325				
	145		350				
	146		375		9.38	3.30	1930
	146		400				
	146		425				
	146		450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 477

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 1.0
Color - Bw.
Dish - 81
W.W. - 379 19%
D.W. - 319 (shell FRAGS, Sand AREAS, Few Voids)

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 THVR-#1-Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 3st-CC-49	SAMPLE NUMBER: C-9 (16-18)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0°028

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o: SQ. IN. 1,534 ; SQ. FT.

HEIGHT, L_o (in.): 2,854

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	11		025				
	22		050				
	30		075				
	36		100				
	40		125				
	45		150				
	49		175				
	53		200				
	57		225				
	61		250				
	65		275				
	68		300				
	71		325				
	74		350				
	77		375				
	80		400				
	82		425				
	83		450				
	84		475		16.76	1.842	1990
	84		500				
	84		525				
	82		550				

WATER CONTENT (%): W.W. in Cyl # 4 350

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 1.0
Color - Bw.
Dish - 289
W.W. - 146 16 %
D.W. - 126 (Shell FRAGS + Few VOIDS)

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 MOH-H, Loose

UNCONFINED COMPRESSION TEST

PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-11 (24-26)
PROVING RING DIAL NUMBER:	PROVING RING NUMBER:	CALIBRATION CURVE NUMBER:
PROVING RING CONSTANT, K_r:	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

DATE:

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o: SQ. IN. 2.99 SQ. FT.

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	7		025				
	15		050				
	19		075				
	21		100				
	23		125				
	24		150				
	26		175				
	27		200				
	28		225				
	29		250				
	30		275				
	31		300				
	32		325				
	33		350				
	33		375				
	34		400				
	35		425				
	36		450				
	37		475				
	38		500				
	39		525				
	39		550		17.38	3.11	517

WATER CONTENT (%): W.W. in Cyl # 1 467 25%

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 326
W.W. - 369 25%
D.W. - 296

(FEW VOIDS & SAND AREAS)

40	575
40	600
41	625
42	650
42	675

43	700
43	725
43	750
44	775
44	800

TECHNICIAN (Signature):

COMPUTED BY (Signature):

CHECKED BY (Signature):

DD FORM 1 AUG 57 1213

thur-Fl-Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T. C. S. P.	EXCAVATION NUMBER: 3st-CC-19	SAMPLE NUMBER: C-19 (30-32)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	9		025				
	18		050				
	25		075				
	30		100				
	33		125				
	37		150				
	39		175				
	42		200				
	43		225				
	45		250				
	47		275				
	48		300				
	49		325				
	49		350				
	50		375				
	50		400				
	51		425		10.63	3.34	666
	51		450				
	51		475				
	51		500				

WATER CONTENT (%): W.W. in Cyl # 1 49.9

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 431
W.W. - 351 34%
D.W. - 262 (sand pockets, shell frags, few voids)

TECHNICIAN (Signature) | COMPUTED BY (Signature) | CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 THVR-#1 - Loose

UNCONFINED COMPRESSION TEST

PROJECT: T. C. S. P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-20 (42-49)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0-70

DATE:

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o: SQ. IN. 2.99 ; SQ. FT.

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	20		025				
	33		050				
	41		075				
	45		100				
	47		125				
	48		150				
	50		175				
	51		200				
	51		225				
	52		250				
	53		275				
	53		300				
	54		325				
	54		350				
	55		375				
	55		400				
	56		425				
	57		450				
	57		475				
	58		500				
	58		525				
	58		550		17.50	3.63	733

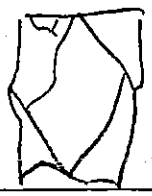
WATER CONTENT (%): W.W. in Cyl # 1

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 333
W.W. - 315
D.W. - 200 58%

59	575	61	700
59	600	61	725
60	625	61	750
60	650	61	775
60	675		800



TECHNICIAN (Signature) | COMPUTED BY (Signature) | CHECKED BY (Signature)

DD FORM 1 AUG 67 1213 THUR ~ #1 - 1050

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 3st-CC-19	SAMPLE NUMBER: C-25 (57-59)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0.90

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	50		025				
	47		050				
	55		075				
	61		100				
	66		125				
	70		150				
	74		175				
	78		200				
	81		225				
	84		250				
	87		275				
	89		300				
	91		325				
	92		350				
	92		375				
	93		400				
	93		425				
	94		450		11.25	3.37	1217
	94		475				
	94		500				
	93		525				

WATER CONTENT (%): W.W. in Cyl # 1 417

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.50
Color - GR.
Dish - 103
W.W. - 318
D.W. - 204 56%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213

Thus #1 - Loose

100

UNCONFINED COMPRESSION TEST

PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35-CC-99	SAMPLE NUMBER: C-32 (70-72)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0 40

DATE

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o	
SQ. IN.	SQ. FT.
2.99	

HEIGHT, L_o (in.): 4.0

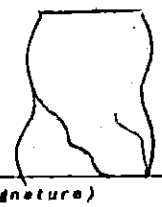
ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	12		025				
	25		050				
	33		075				
	38		100				
	40		125				
	43		150				
	44		175				
	45		200				
	47		225				
	48		250				
	49		275				
	49		300				
	50		325				
	50		350				
	50		375				
	51		400		10.00	3.32	670
	51		425				
	51		450				
	50		475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 385

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 346
W.W. - 282
D.W. - 166 70%



TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 67 1213 THUR-#1 - Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-34 (74-76)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	26		025				
	49		050				
	59		075				
	61		100		2.50	3.06	870
	53		125				
	38		150				
	28		175				
			200				
			225				
			250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 390

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.50
Color - GR.
Dish - 479
W.W. - 297
D.W. - 164 77%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1213 CR1-#1-LOOSE

UNCONFINED COMPRESSION TEST

PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-19	SAMPLE NUMBER: C-37 (80-82)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0 4 0

DATE

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o	
SQ. IN.	SQ. FT.
2.99	

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	18		025				
	33		050				
	45		075				
	50		100				
	56		125				
	60		150				
	61		175		4.38	3.13	850
	59		200				
	55		225				
	51		250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 409

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.50
Color - GR.
Dish - 182
W.W. - 306
D.W. - 192 59%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 67 1213 Thur-#1-Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-39 (86-88)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	17		025				
	60		050				
	102		075				
	131		100				
	153		125				
	170		150				
	185		175				
	197		200				
	206		225				
	213		250				
	216		275		6.88	3.21	2936
	213		300				
	206		325				
	190		350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 485

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 2.25
Color - GR.
Dish - 56
W.W. - ? 9%
D.W. - 327 (Sandy w/few Voids)

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213

FRI-41) - Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 3ST-CC-5D	SAMPLE NUMBER: C-5 (8-10)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0°028

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o	
SQ. IN.	SQ. FT.
1.534	
HEIGHT, L_o (in.)	
2.837	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	25		025				
	55		050				
	71		075				
	79		100				
	84		125				
	87		150				
	90		175				
	91		200				
	92		225				
	93		250		8.82	1.68	2415
	93		275				
	93		300				
	93		325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%)
W.W. in Cyl # 4 346

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)
Pen - 1.00
Color - BR
Dish - 409
W.W. - 143
D.W. - 124 15% / Shell FRAGS & Few VOIDS

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 Man-#1-Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-50	SAMPLE NUMBER: C-7 (12-19)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0°028

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				1.534	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				2.834	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	9		025				
	17		050				
	23		075				
	27		100				
	30		125				
	33		150				
	36		175				
	38		200				
	40		225				
	43		250				
	44		275				
	45		300				
	47		325				
	49		350				
	50		375				
	52		400				
	53		425				
	54		450				
	55		475				
	56		500				
	57		525				
	58		550		20.25	1.92	1341

WATER CONTENT (%): W.W. in Cyl # 4 — 34.5

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

59	575

Pen - 0.50
Color - BW
Dish - 347
W.W. - 142
D.W. - 119 19% (Shell Frags + Few Voids)

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213

MAU-#1 — Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-50	SAMPLE NUMBER: C- 8 (14-16)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0°028

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				1.534	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				2.834	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	18		025				
	34		050				
	45		075				
	55		100				
	59		125		4.41	1.60	1609
	50		150				
	40		175				
	31		200				
			225				
			250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 4 551

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 4.0
Color - pw.
Dish - 293
W.W. - 147
D.W. - 130 13%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 MOU - #1 - LOOSE

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T. C. S. P.	EXCAVATION NUMBER: 357-CC-50	SAMPLE NUMBER: C-10 (18-20)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0.028

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o SQ. IN.	SQ. FT.
1.534	

HEIGHT, L_o (in.): 2.834

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	6		025				
	18		050				
	28		075				
	38		100				
	48		125				
	59		150				
	68		175				
	74		200				
	80		225				
	84		250				
	87		275				
	88		300		10.59	1.72	2232
	86		325				
	82		350				
	75		375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 4 — 346

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 2.0
Color - Dw.
Dish - 425
W.W. - 142
D.W. - 121 17%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 Mon-#1 - Loose

UNCONFINED COMPRESSION TEST

PROJECT: TCSP	EXCAVATION NUMBER: 35TCC-50	DATE:
		SAMPLE NUMBER: C-15 (28-30)
PROVING RING DIAL NUMBER:	PROVING RING NUMBER:	CALIBRATION CURVE NUMBER:
PROVING RING CONSTANT, K_r:	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0°0.28

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o	
SQ. IN.	SQ. FT.
1,534	

HEIGHT, L_o (in.): 2.843

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
			025				
			050				
			075				
			100				
			125				
			150				
			175				
			200				
			225				
			250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 4

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.):

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - Gray
Dish -
W.W. -
D.W. -

Unsuitable For Testing Due To Shell Frags

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: Test	EXCAVATION NUMBER: BST CC50	SAMPLE NUMBER: C-22 (42-44)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0°028

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				1.534	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				2.834	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	33		025				
	62		050				
	74		075				
	82		100				
	87		125				
	90		150				
	91		175		6.17	1.63	2435
	91		200				
	90		225				
	89		250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 4 344

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 100
Color - BR
Dish - 77
W.W. - 140
D.W. - 112 25%

Few small Nods & Voids

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213

MOV #1 Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-50	SAMPLE NUMBER: C-29 (46-48)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	105		025				
	205		050				
	252		075				
	286		100				
	310		125				
	325		150				
	330		175		4.38	3.13	4600
	321		200				
	310		225				
	297		250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 478

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 2.75
Color - Bwn
Dish - 416
W.W. - 381
D.W. - 304 25%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 CR1-#1-LOOSE

SWG Form 267(C)
28 Jan 1965

TEXAS CITY HURRICANE

PROJECT: FLOOD PROTECTION

LOCATION:

BORING NO. 3ST-CC-[illegible]

TEST DATA SUMMARY

DATE DRILLED Sept. 27, 1966

FIELD NO.	DEPTH	CLASSIFICATION ELEVATION TOP BORING	SYMBOL	CONSISTENCY	POCKET (1) PENETROMETER	STAN. PENET. BLOWS/FT (2)	MOISTURE CONTENT %	DRY DENSITY P. c. f.	L.L.	P.L.	BAR L.S.	SIEVE ANALYSIS PERCENT GRVL	SAND	FINES	INIT. WT.	ACC. WT. RTND. SIEVE NO. (3) NO. 4	NO. 10	NO. 40	NO. 200
C-1	0-2	Brown sandy clay 0'-10'	CL	H	4.00		14.7	117											
C-2	2-4			ST	1.50		18.9	111	30		13	0	38	62	50	0	1	1	13
C-3	4-6			VST	2.50		20.5	107											
C-4	6-8			VST	2.00		19.4	114											
C-5	8-10			ST	1.00		18.7	111	31		15	2	36	62	50	1	2	4	13
C-6	10-12	Brown clayey shelly sand	SC	ST	1.50		28.9				17	10	43	47	502	58	75	93	319
C-7	12-14	10-16		VST	3.00		12.5												
C-8	14-16			M	0.75		21.2	109											
C-9	16-18	Brown clayey sand w/	SC-SM	M	0.75		18.5	113	19		4	2	60	38	50	1	1	2	31
C-10	18-20	shell fragment 16-24		ST	1.50		14.4	117											
X	20-22	Thin clay layers 18-20			—		—	—											
T-1	22-24			ST	—	8	26.2	—											
C-11	24-26	Gray sandy clay 24-38	CL	S	0.25		29.9	95	42		17	0	18	82	50	0	0	0	0
C-12	26-28			M	0.50		—	—											
C-13	28-30			S	0.25		32.2	85											
C-14	30-32			S	0.25		32.2	92	27		9	0	42	58	50	0	0	0	21
C-15	32-34			S	0.25		29.4	90											
C-16	34-36			S	0.25		—	—											
C-17	36-38			S	0.25		—	—											
C-18	38-40	Gray clay w/ shell	CH	S	0.25		33.1	(Disturbed)											
C-19	40-42	fragments 38-86		S	0.25		49.7	73											
C-20	42-44			S	0.25		51.8	69	83		26	0	6	94	50	0	0	1	3
C-21	44-46			VS	0.00		58.3	71											
C-22	46-48			S	0.25		—	—											
C-23	48-50			S	0.25		—	—											
X	50-52				—		—	—											
C-24	52-54			S	0.25		40.8	73											
C-25	54-56			S	0.25		[illegible]	65	89		27	0	2	98	50	0	0	0	1
X	56-58				—		—	—											
C-26	58-60			S	0.25		54.2	68											

KEY: CONSISTENCY — COHESIVE SOILS: VS Very Soft, S Soft, M Medium, ST Stiff, VST Very Stiff, H Hard
CONSISTENCY — COHESIONLESS SOILS: VL Very Loose, L Loose, M Medium, D Dense, VD Very Dense

(1) Tons/Sq.Ft. Unconfined Compressive Strength
(2) Split Barrel Sampler
(3) Acc. Wt. Rtnd ÷ Init. Wt. x 100 = % Rtnd.

BORING NO. 3ST CC-[illegible]

SWG Form 267(C)
28 Jan 1965

TEXAS CITY HURRICANE

PROJECT: FLOOD PROTECTION

LOCATION:

TEST DATA SUMMARY

BORING NO. 35T CC-49

DATE DRILLED Sept. 27, 1966

FIELD NO.	DEPTH	CLASSIFICATION ELEVATION TOP BORING	SYMBOL	CONSISTENCY	POCKET (1) PENETROMETER	STAN. PENET. BLOWS/FT (2)	MOISTURE CONTENT %	DRY DENSITY p. c. f.	L.L.	P.L.	BAR L.S.	SIEVE ANALYSIS PERCENT GRVL	SAND	FINES	INIT. WT.	ACC. WT. RTND. SIEVE NO. (3) NO. 4	NO. 10	NO. 40	NO. 200
C-27	60-62			S	0.25		60.0	69											
C-28	62-64			S	0.25		56.8	70			29	0	0	100	50	0	0	0	0
C-29	64-66			S	0.25		62.6	63											
C-30	66-68			S	0.25		43.4	-											
C-31	68-70			S	0.25		54.1	57											
C-32	70-72			S	0.25		71.4	55	110		26	0	2	98	50	0	0	0	1
C-33	72-74			S	0.25		74.3	53											
C-34	74-76			M	0.50		[illegible]	54	116		23	0	0	100	50	0	0	0	0
C-35	76-78			M	0.50		74.0	55											
C-36	78-80			S	0.25		76.1	55											
C-37	80-82			M	0.50		57.7	64	81		24	0	2	98	50	0	0	0	1
X	82-84				-		—												
C-38	84-86			ST	1.50		27.8	102											
C-39	86-88	Gray sandy clay 86-	CL	VST	2.00		21.5	95	41		15	0	32	68	50	0	0	0	16
C-40	88-90	92		ST	1.50		18.7	112											
C-41	90-92	Cal Nod 86-88		M	0.50		20.4	108											
C-42	92-94	Gray clayey sand	SC	ST	1.00		20.2	109	26		10	0	60	40	50	0	0	0	30
C-43	94-96	92-104		M	0.75		20.4	107											
J-2	96-98				-		19.6	—											
C-44	98-100			M	0.75		10.3	109	22		5	0	64	36	50	0	0	0	32
C-45	100-102			S	0.25		23.5	104											
J-3	102-104				—		21.0	—											
		BOTTOM AT 104'																	
		WATER AT -6.9																	

KEY: CONSISTENCY — COHESIVE SOILS: VS Very Soft, S Soft, M Medium, ST Stiff, VST Very Stiff, H Hard
CONSISTENCY — COHESIONLESS SOILS: VL Very Loose, L Loose, M Medium, D Dense, VD Very Dense

(1) Tons/Sq.Ft. Unconfined Compressive Strength
(2) Split Barrel Sampler
(3) Acc. Wt. Rtnd ÷ Init. Wt. x 100 = % Rtnd.

BORING NO. 35T CC-49

SWG Form 267(C)
28 Jan 1965

PROJECT: TEXAS CITY HURRICANE FLOOD PROTECTION

LOCATION:

BORING NO. 3ST-CC-50

TEST DATA SUMMARY

DATE DRILLED Sept. 28 [illegible]

FIELD NO.	DEPTH	CLASSIFICATION ELEVATION TOP BORING _____	SYMBOL	CONSISTENCY	POCKET (1) PENETROMETER	STAN. PENET. BLOWS/FT (2)	MOISTURE CONTENT %	DRY DENSITY p. c. f.	L.L.	P.L.	BAR L.S.	SIEVE ANALYSIS PERCENT GRVL	SAND	FINES	INIT. WT.	ACC. WT. RTND. SIEVE NO. (3) NO. 4	NO. 10	NO. 40	NO. 200
C-1	0 - 2	Gray sandy Clay 0-8	CH	H	4.25		20.6	111											
C-2	2 - 4			VST	3.00		10.6	122											
C-3	4 - 6			VST	2.50		17.5	111			21.0	0	18	82	50	0	1	2	9
C-4	6 - 8			H	4.50+		16.2	113											
C-5	8 - 10	Gray Brown sandy Clay	CL	VST	2.25		15.5	113	45		16.0	2	28	70	50	1	2	3	15
C-6	10 - 12	w/ Shell fragments 8-12		VST	2.75		19.4	109											
C-7	12 - 14	Brown Clayey sand 12-14	SC	M	0.75		17.3	112	35		11.0	0	52	48	50	0	0	1	26
C-8	14 - 16	Gray sandy Clay 14-16	CL	M	0.50		21.9	107	47		16.0	0	28	72	50	0	0	1	14
C-9	16 - 17	Brown silty sand w/shell 16-17	SM	S	0.25		13.1	115			1.0	6	68	26	50	3	9	5	37
X	17 - 18	D.C. - Gray sandy clay 17'-18'			—		—	—											
C-10	18 - 20	Brown Clayey sand 18-22	SC	ST	1.50		18.1	106	34		11.0	0	64	36	50	0	0	0	32
C-11	20 - 22	Shell fragments 20-22		VS	0.00		23.1	101			9.5	10	50	40	50	5	6	11	30
C-12	22 - 24	sent to Division Lab. 22'-24'		M	0.75		—												
C-13	24 - 26	Gray sandy Clay 24-28	CH	M	0.50		36.2	83			18.0	0	16	84	50	0	0	0	8
C-14	26 - 28			S	0.25		34.4	91			19.0	0	22	78	50	0	0	0	11
C-15	28 - 30	Gray sandy Clay w/ shell	CL	S	0.25		36.5	85	49		16.0	2	34	64	50	1	1	2	18
C-16	30 - 32	fragments 28-32		S	0.25		37.2	83	47		17.0	2	30	68	50	1	1	2	16
C-17	32 - 34	sent to Division Lab. 32'-36'		S	0.25		—												
C-18	34 - 36			S	0.25		—												
C-19	36 - 38	Gray clayey silty sand 36-38	SC SM	VS	0.00		29.2	93			4.0	2	50	48	50	1	2	2	26
C-20	38 - 40	Gray clayey shelly sand 38-40	SC	VS	0.00		25.5	99			7.0	23	39	38	424	96	169	115	115
C-21	40 - 42	sent to Division Lab. 40'-42'		S	0.25		—												
C-22	42 - 44	Brown Clay 42-48	CH	ST	1.25		29.0	98	64		21.0	0	6	94	50	0	1	1	3
C-23	44 - 46	Cal Mod 42-50		ST	1.50		39.3	85											
C-24	46 - 48			VST	2.75		27.8	98	77		25.0	0	2	98	50	0	0	0	1
C-25	48 - 50	Brown Clay 48-50'	CL	ST	1.00		20.7	109	31		8.0	2	14	84	50	1	2	3	9
		BORING AT 50'																	
		[illegible] AT - 52																	

KEY: CONSISTENCY — COHESIVE SOILS: VS Very Soft, S Soft, M Medium, ST Stiff, VST Very Stiff, H Hard. CONSISTENCY — COHESIONLESS SOILS: VL Very Loose, L Loose, M Medium, D Dense, VD Very Dense.

(1) Tons/Sq.Ft. Unconfined Compressive Strength
(2) Split Barrel Sampler
(3) Acc. Wt. Rtnd ÷ Init. Wt. x 100 = % Rtnd.

BORING NO. 3ST-CC-50

10022

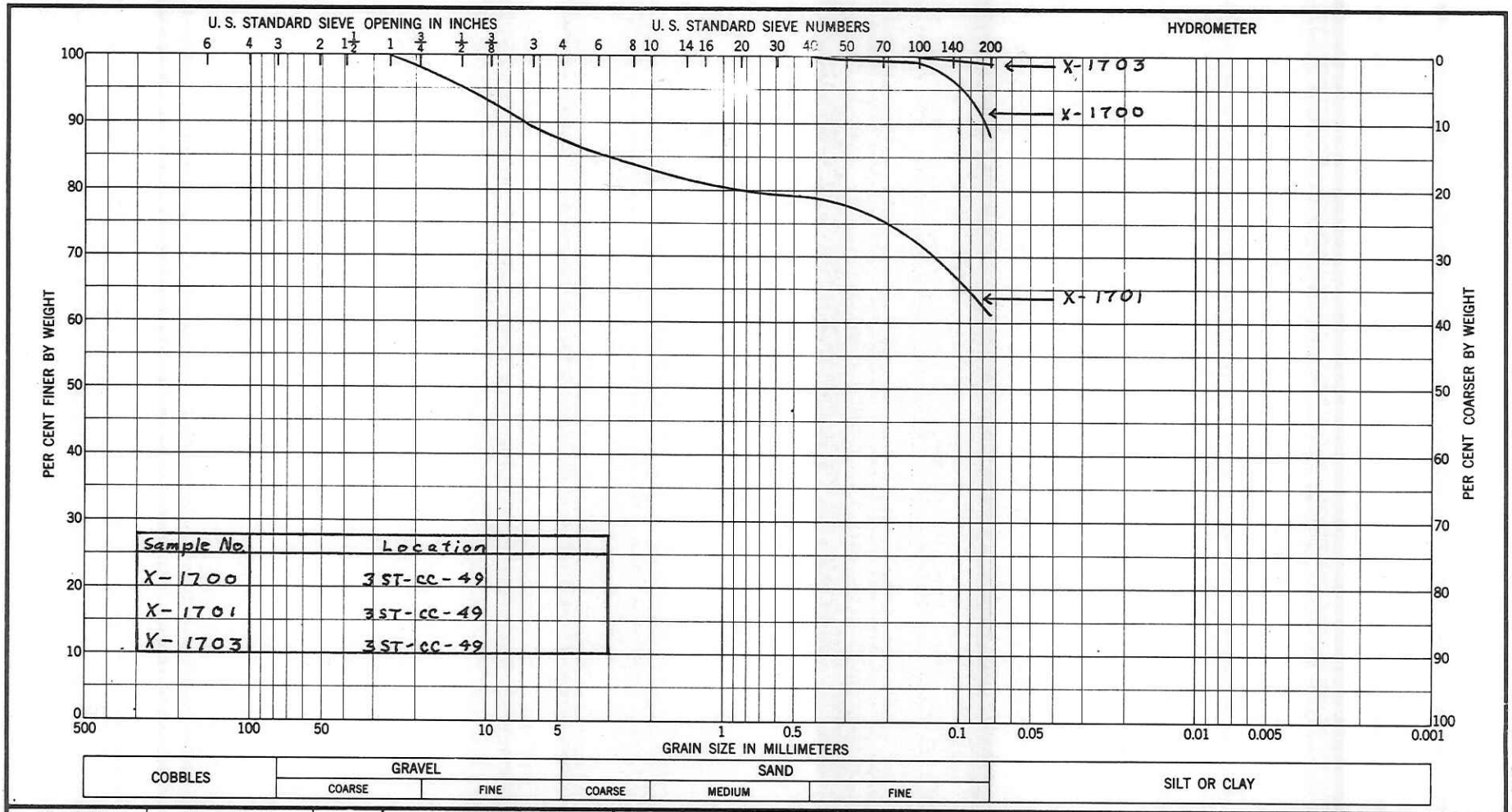
(REPRODUCIBLES)

CORPS OF ENGINEERS

U. S. ARMY

SOUTHWESTERN DIVISION LABORATORY

DALLAS, TEXAS



Sample No.	Location
X-1700	3 ST-CC-49
X-1701	3 ST-CC-49
X-1703	3 ST-CC-49

Sample No.	~~Elev or~~ Depth		Classification		Nat w %	LL	PL	PI
X-1700	26.0-28.0		CLAY (CH)			51	16	35
X-1701	34.0-36.0		CLAY, sandy (CH)			63	17	46
X-1703	46.0-48.0		CLAY (CH)			101	25	76

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area

Boring No. Foundation Material

Date NOV 66

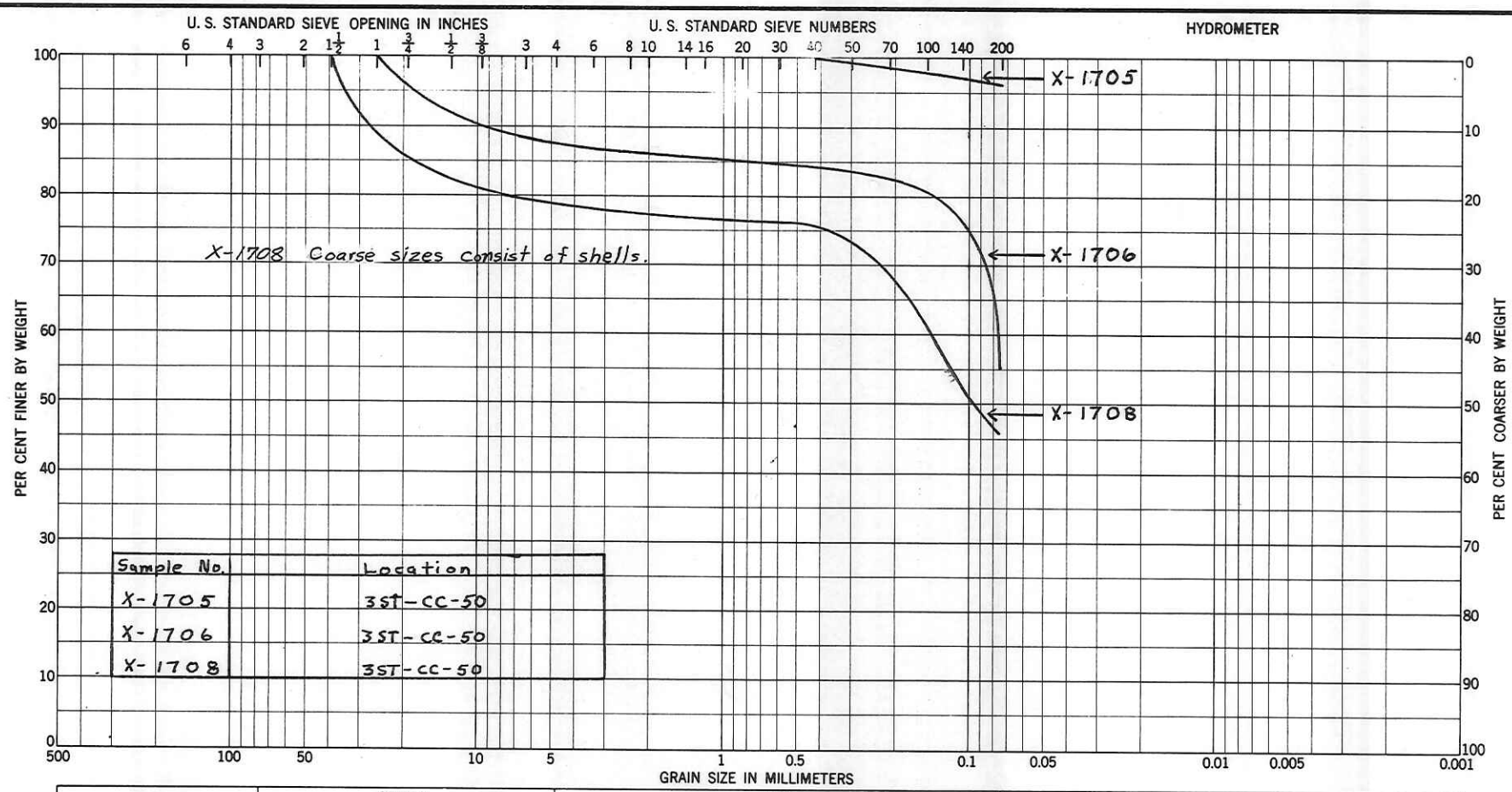
GRADATION CURVES

ENG FORM 1 MAY 63 2087 REPLACES WES FORM NO. 1241, SEP 1962, WHICH IS OBSOLETE. (TRANSLUCENT) C 3-436

Plate No. 1

SWDED-GL Report 10,022

Coarse



Sample No.	Location
X-1705	3ST-CC-50
X-1706	3ST-CC-50
X-1708	3ST-CC-50

Sample No.	~~Elev or~~ Depth		Classification		Nat w %	LL	PL	PI
X-1705	22.0 - 24.0		CLAY (CL)			29	15	14
X-1706	32.0 - 34.0		CLAY, sandy (CL)			45	13	32
X-1708	40.0 - 42.0		SAND, clayey (SC)			49	14	35

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

Boring No.

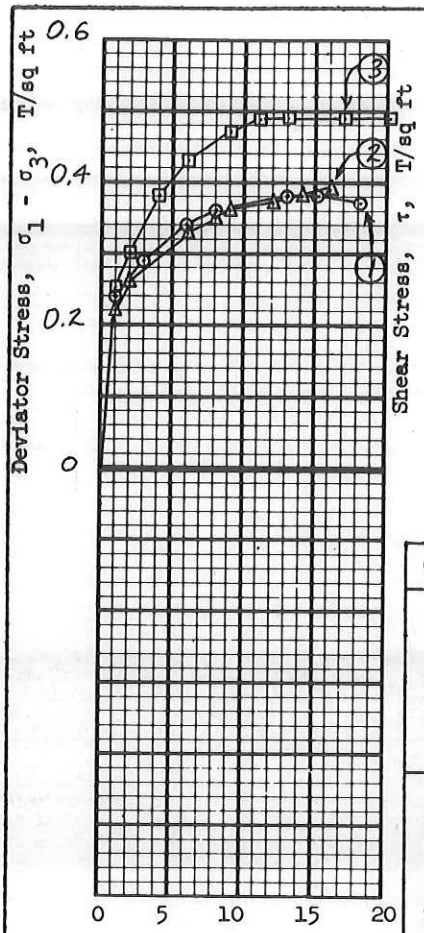
Date NOV 66

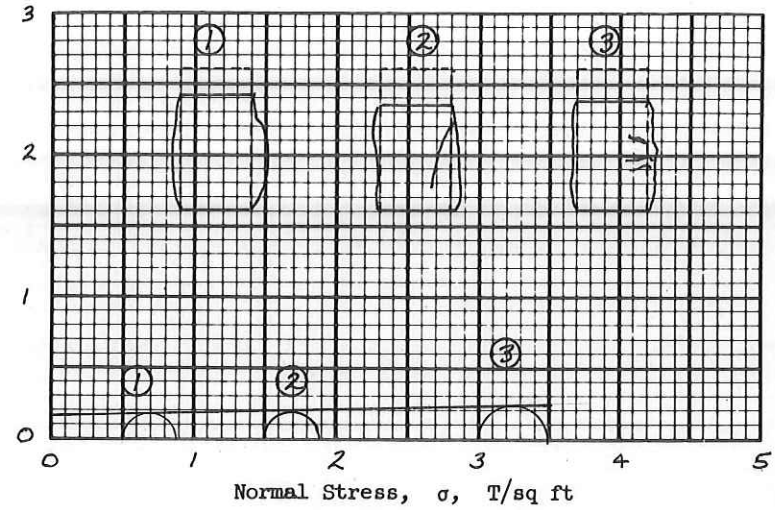
GRADATION CURVES

Plate No. 2

SWDED-GL Report 10,022

ENG FORM 1 MAY 63 2087 REPLACES WES FORM NO. 1241, SEP 1962, WHICH IS OBSOLETE. (TRANSLUCENT) C 0436





Test No.			1	2	3	
Initial	Water content	w_o	40.2 %	40.1%	39.2%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	80	80	82	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.38	0.39	0.49	
Time to failure, min		t_f	20	22	23	
Rate of strain, percent/min			0.7	0.7	0.7	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Shear Strength Parameters

ϕ = 1.2 °

tan ϕ = .022

c = 0.2 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q | Type of specimen Undisturbed

Classification CLAY (CH)

LL 51 | PL 16 | PI 35 | | G_s

Remarks $(\sigma_1-\sigma_3)_{MAX}$ corresponds to a strain of 15% or less.

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

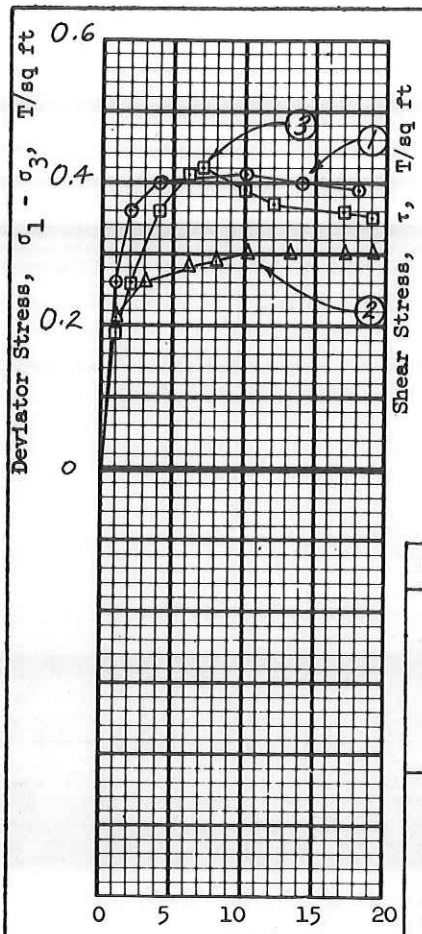
Boring No. 3ST-CC-49 | Sample No. X-1700

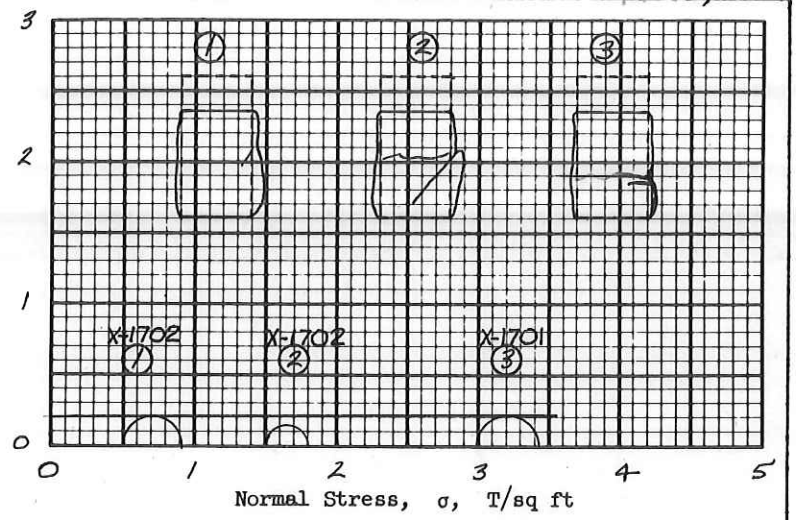
Depth ~~Ft~~ 26.0-28.0 | Date NOV 68

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT





Test No.			1	2	3	
Initial	Water content	w_o	47.7 %	43.5%	54.8%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	72	77	67	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.41	0.30	0.42	
Time to failure, min		t_f	18	15	11	
Rate of strain, percent/min			0.7	0.7	0.6	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Axial Strain, %

Shear Strength Parameters

ϕ = 0.1 °

tan ϕ = .002

c = 0.2 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q | Type of specimen Undisturbed

Classification CLAY, sandy (CH)

LL 63 | PL 17 | PI 48 | | G_s

Remarks _____

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

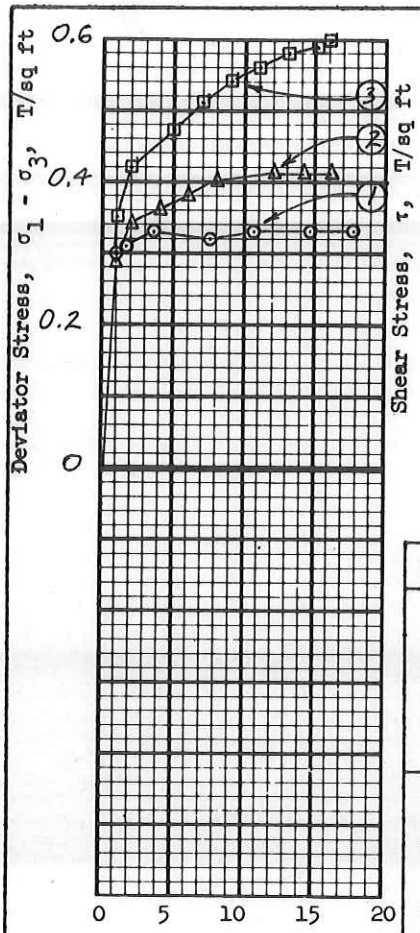
Boring No. 3ST-CC-49 | Sample No. X-1701 & X-1702

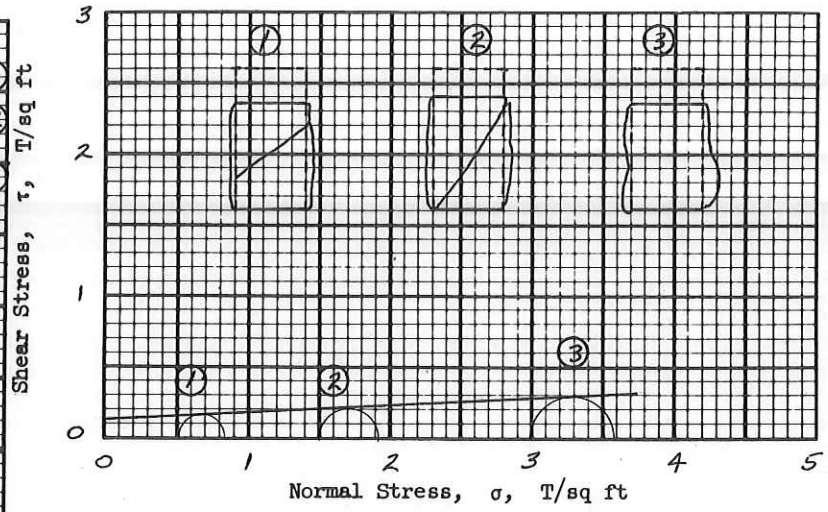
Depth El 34.0 - 38.0 | Date NOV 66

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT





Test No.			1	2	3	
Initial	Water content	w_o	67.9 %	68.9%	66.6%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	59	58	60	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.33	0.41	0.59	
Time to failure, min		t_f	6	18	21	
Rate of strain, percent/min			0.6	0.7	0.7	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Shear Strength Parameters

ϕ = 2.8 °

tan ϕ = .049

c = 0.1 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q | Type of specimen Undisturbed

Classification CLAY (CH)

LL 101	PL 25	PI 76		G_s

Remarks $(\sigma_1-\sigma_3)_{MAX}$ corresponds to a strain of 15% or less.

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

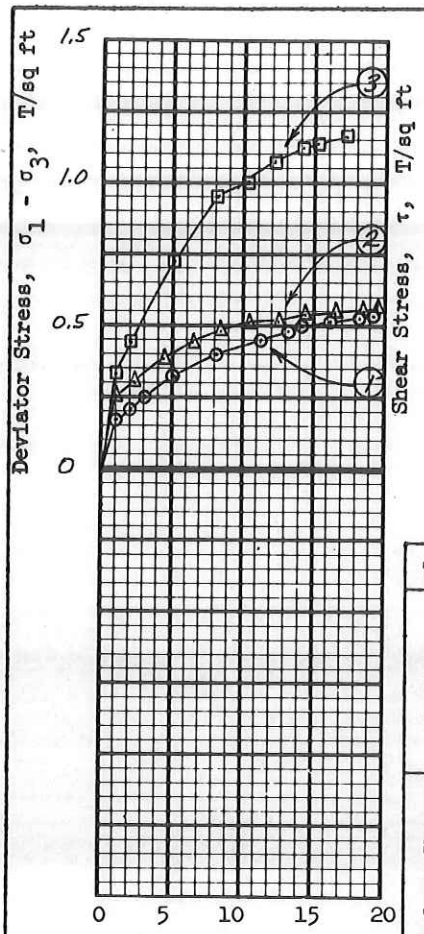
Boring No. 3ST-CC-49 | Sample No. X-1703

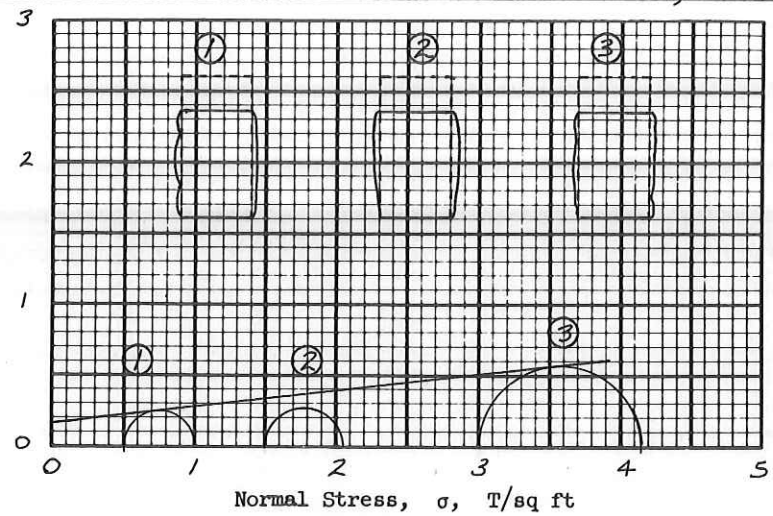
Depth ~~El~~ 46.0-48.0 | Date NOV 66

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT





Test No.			1	2	3	
Initial	Water content	w_o	23.2 %	27.0%	23.7%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	100	96	101	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.50	0.54	1.14	
Time to failure, min		t_f	20	24	22	
Rate of strain, percent/min			0.7	0.6	0.7	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Shear Strength Parameters

ϕ = 6.5 °

tan ϕ = .114

c = 0.2 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q	Type of specimen Undisturbed			
Classification CLAY(CL)				
LL 29	PL 15	PI 14		G_s

Remarks $(\sigma_1-\sigma_3)_{MAX}$ corresponds to a strain of 15% or less.

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

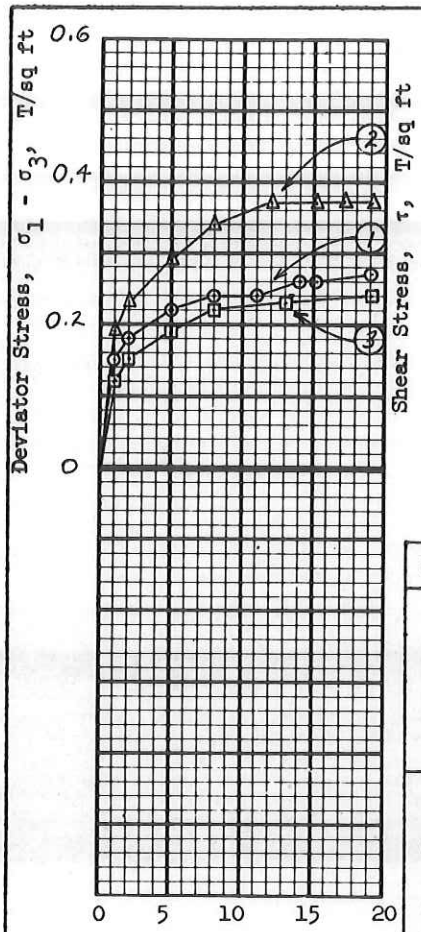
Boring No. 3ST-CC-50 | Sample No. X-1705

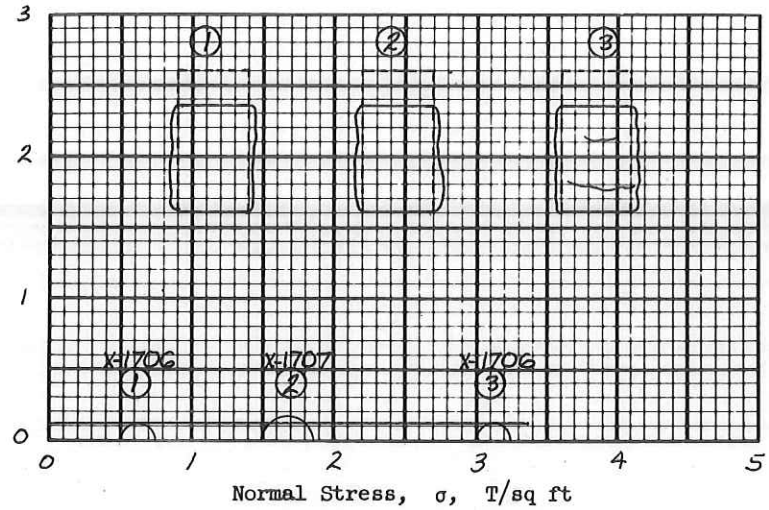
Depth ~~El~~ 22.0-24.0 | Date NOV 66

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT





Test No.			1	2	3	
Initial	Water content	w_o	29.2 %	29.1 %	27.2 %	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	91	94	92	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.26	0.37	0.24	
Time to failure, min		t_f	21	17	24	
Rate of strain, percent/min			0.7	0.7	0.6	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Shear Strength Parameters

ϕ = 0.0 °

tan ϕ = .000

c = 0.1 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q | Type of specimen Undisturbed

Classification CLAY, sandy (CL)

LL 45 | PL 13 | PI 32 | | G_s

Remarks $(\sigma_1-\sigma_3)_{MAX}$ corresponds to a strain of 15% or less.

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

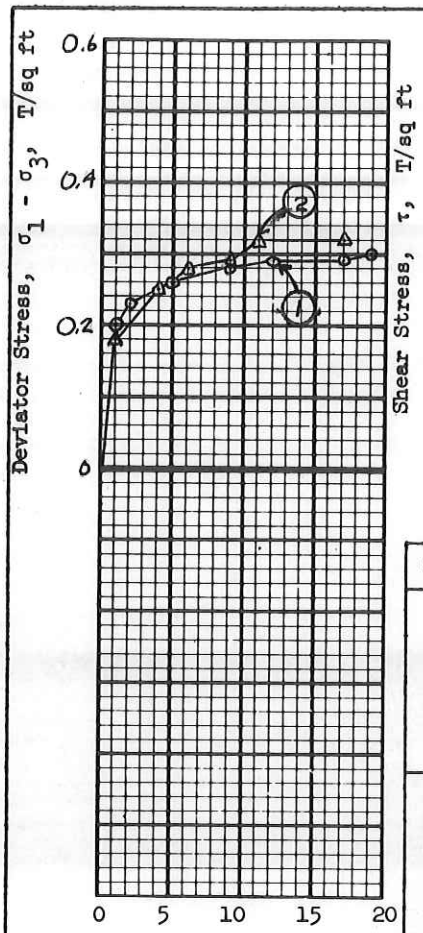
Boring No. 3ST-CC-50 | Sample No. X-1706 & X-1707

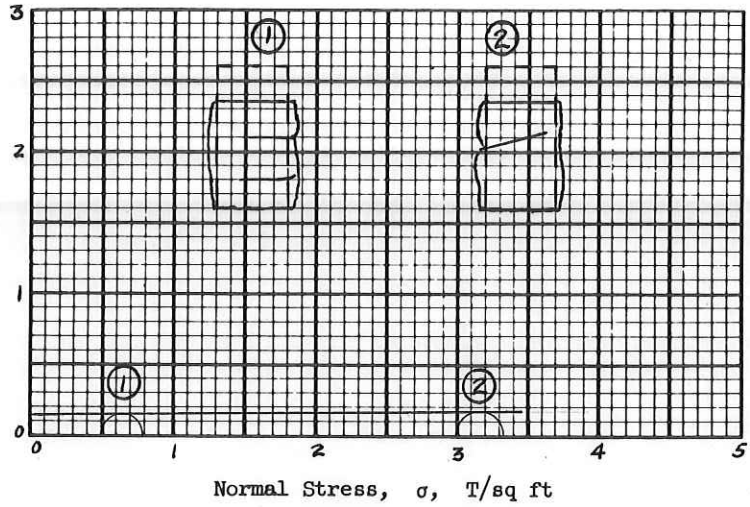
Depth El 32.0 - 36.0 | Date NOV 66

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT





Test No.			1	2		
Initial	Water content	w_o	30.2 %	30.8 %	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	90	85		
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	3.0		
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.29	0.32		
Time to failure, min		t_f	18	16		
Rate of strain, percent/min			0.7	0.7		
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4		
Initial height, in.		H_o	3.0	3.0		

Shear Strength Parameters

ϕ = 0.3 °

tan ϕ = .006

c = 0.1 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q	Type of specimen Undisturbed			
Classification SAND, clayey (SC), w/shells				
LL 49	PL 14	PI 35		G_s

Remarks $(\sigma_1 - \sigma_3)_{MAX}$ corresponds to a strain of 15% or less.

Project TEXAS CITY HURRICANE FLOOD PROTECTION	
Area Foundation Material	
Boring No. 3ST-CC-50	Sample No. X-1708
Depth ~~El~~ 40.0 - 42.0	Date NOV 66

TRIAXIAL COMPRESSION TEST REPORT

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-5 (8-10)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0 40

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o SQ. IN.	SQ. FT.
2.99	

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	70		025				
	79		050				
	93		075				
	105		100				
	115		125				
	122		150				
	128		175				
	132		200				
	136		225				
	139		250				
	142		275				
	143		300				
	145		325				
	145		350				
	146		375		9.38	3.30	1930
	146		400				
	146		425				
	146		450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 477

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 1.0
Color - Bw.
Dish - 81
W.W. - 379 19%
D.W. - 319 (shell FRAGS, Sand AREAS, Few Voids)

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 THVR-#1-Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 3st-CC-49	SAMPLE NUMBER: C-9 (16-18)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 4	RATE OF LOAD APPLICATION: 0°028

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o: SQ. IN. 1,534 ; SQ. FT.

HEIGHT, L_o (in.): 2,854

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	11		025				
	22		050				
	30		075				
	36		100				
	40		125				
	45		150				
	49		175				
	53		200				
	57		225				
	61		250				
	65		275				
	68		300				
	71		325				
	74		350				
	77		375				
	80		400				
	82		425				
	83		450				
	84		475		16.76	1.842	1990
	84		500				
	84		525				
	82		550				

WATER CONTENT (%): W.W. in Cyl # 4 350

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 1.0
Color - Bw.
Dish - 289
W.W. - 146 16 %
D.W. - 126 (Shell FRAGS + Few VOIDS)

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 MOH-H, Loose

UNCONFINED COMPRESSION TEST

PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-11 (24-26)
PROVING RING DIAL NUMBER:	PROVING RING NUMBER:	CALIBRATION CURVE NUMBER:
PROVING RING CONSTANT, K_r:	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

DATE:

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o: SQ. IN. 2.99 SQ. FT.

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	7		025				
	15		050				
	19		075				
	21		100				
	23		125				
	24		150				
	26		175				
	27		200				
	28		225				
	29		250				
	30		275				
	31		300				
	32		325				
	33		350				
	33		375				
	34		400				
	35		425				
	36		450				
	37		475				
	38		500				
	39		525				
	39		550		17.38	3.11	517

WATER CONTENT (%): W.W. in Cyl # 1 467 25%

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 326
W.W. - 369 25%
D.W. - 296

(FEW VOIDS & SAND AREAS)

40	575
40	600
41	625
42	650
42	675

43	700
43	725
43	750
44	775
44	800

TECHNICIAN (Signature):

COMPUTED BY (Signature):

CHECKED BY (Signature):

DD FORM 1 AUG 57 1213

thur-Fl-Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T. C. S. P.	EXCAVATION NUMBER: 3st-CC-19	SAMPLE NUMBER: C-19 (30-32)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	9		025				
	18		050				
	25		075				
	30		100				
	33		125				
	37		150				
	39		175				
	42		200				
	43		225				
	45		250				
	47		275				
	48		300				
	49		325				
	49		350				
	50		375				
	50		400				
	51		425		10.63	3.34	666
	51		450				
	51		475				
	51		500				

WATER CONTENT (%): W.W. in Cyl # 1 49.9

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 431
W.W. - 351 34%
D.W. - 262 (sand pockets, shell frags, few voids)

TECHNICIAN (Signature) | COMPUTED BY (Signature) | CHECKED BY (Signature)

DD FORM 1 AUG 57 1213 THVR-#1 - Loose

UNCONFINED COMPRESSION TEST

PROJECT: T. C. S. P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-20 (42-49)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0-70

DATE:

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o: SQ. IN. 2.99 ; SQ. FT.

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	20		025				
	33		050				
	41		075				
	45		100				
	47		125				
	48		150				
	50		175				
	51		200				
	51		225				
	52		250				
	53		275				
	53		300				
	54		325				
	54		350				
	55		375				
	55		400				
	56		425				
	57		450				
	57		475				
	58		500				
	58		525				
	58		550		17.50	3.63	733

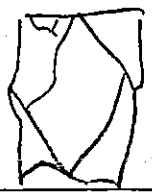
WATER CONTENT (%): W.W. in Cyl # 1

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 333
W.W. - 315
D.W. - 200 58%

59	575	61	700
59	600	61	725
60	625	61	750
60	650	61	775
60	675		800



TECHNICIAN (Signature) | COMPUTED BY (Signature) | CHECKED BY (Signature)

DD FORM 1 AUG 67 1213 THUR ~ #1 - 1050

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 3st-CC-19	SAMPLE NUMBER: C-25 (57-59)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0.90

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \quad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \quad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \quad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	50		025				
	47		050				
	55		075				
	61		100				
	66		125				
	70		150				
	74		175				
	78		200				
	81		225				
	84		250				
	87		275				
	89		300				
	91		325				
	92		350				
	92		375				
	93		400				
	93		425				
	94		450		11.25	3.37	1217
	94		475				
	94		500				
	93		525				

WATER CONTENT (%): W.W. in Cyl # 1 417

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.50
Color - GR.
Dish - 103
W.W. - 318
D.W. - 204 56%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213

Thus #1 - Loose

100

UNCONFINED COMPRESSION TEST

PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35-CC-99	SAMPLE NUMBER: C-32 (70-72)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0 40

DATE

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o	
SQ. IN.	SQ. FT.
2.99	

HEIGHT, L_o (in.): 4.0

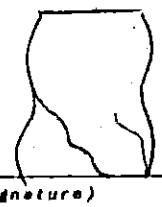
ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	12		025				
	25		050				
	33		075				
	38		100				
	40		125				
	43		150				
	44		175				
	45		200				
	47		225				
	48		250				
	49		275				
	49		300				
	50		325				
	50		350				
	50		375				
	51		400		10.00	3.32	670
	51		425				
	51		450				
	50		475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 385

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.25
Color - GR.
Dish - 346
W.W. - 282
D.W. - 166 70%



TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 67 1213 THUR-#1 - Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-34 (74-76)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	26		025				
	49		050				
	59		075				
	61		100		2.50	3.06	870
	53		125				
	38		150				
	28		175				
			200				
			225				
			250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 390

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.50
Color - GR.
Dish - 479
W.W. - 297
D.W. - 164 77%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1213 CR1-#1-LOOSE

UNCONFINED COMPRESSION TEST

PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-19	SAMPLE NUMBER: C-37 (80-82)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°0 4 0

DATE

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)
TOP			
CENTER			
BOTTOM			

AVERAGE AREA, A_o	
SQ. IN.	SQ. FT.
2.99	

HEIGHT, L_o (in.): 4.0

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	18		025				
	33		050				
	45		075				
	50		100				
	56		125				
	60		150				
	61		175		4.38	3.13	850
	59		200				
	55		225				
	51		250				
			275				
			300				
			325				
			350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 409

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 0.50
Color - GR.
Dish - 182
W.W. - 306
D.W. - 192 59%

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 67 1213 Thur-#1-Loose

UNCONFINED COMPRESSION TEST

DATE		
PROJECT: T.C.S.P.	EXCAVATION NUMBER: 35T-CC-49	SAMPLE NUMBER: C-39 (86-88)
PROVING RING DIAL NUMBER	PROVING RING NUMBER	CALIBRATION CURVE NUMBER
PROVING RING CONSTANT, K_r	~~VERTICAL DIAL NUMBER~~ Cyl # 1	RATE OF LOAD APPLICATION: 0°040

FORMULAS

$$\text{Area} = \frac{\pi D^2}{4} = \frac{C^2 D}{4} \qquad \text{Corrected Area, } A = \frac{A_o \text{ (sq. ft.)}}{1 - E} \qquad \text{Unit Strain, } E = \frac{\Delta L}{L_o} \qquad \text{Unit Stress} = \frac{P \text{ (lb.)}}{A \text{ (sq. ft.)}}$$

INITIAL MEASUREMENTS ON SAMPLE	DIAMETER, D (in.)	CIRCUMFERENCE, C (in.)	AREA (sq. in.)	AVERAGE AREA, A_o SQ. IN.	SQ. FT.
TOP				2.99	
CENTER				HEIGHT, L_o (in.)	
BOTTOM				4.0	

ELAPSED TIME (min.)	PROVING RING DIAL READING (0.0001 in.)	LOAD, P (lb.) (Ring Dial x K_r, or from calibration curve)	VERTICAL DIAL READING (in.)	VERTICAL DIAL DIFFERENCE, ΔL (in.)	UNIT STRAIN, E (in./in.)	CORRECTED AREA, A (sq. ft.)	UNIT STRESS (lb./sq. ft.)
	17		025				
	60		050				
	102		075				
	131		100				
	153		125				
	170		150				
	185		175				
	197		200				
	206		225				
	213		250				
	216		275		6.88	3.21	2936
	213		300				
	206		325				
	190		350				
			375				
			400				
			425				
			450				
			475				
			500				

WATER CONTENT (%): W.W. in Cyl # 1 485

UNCONFINED COMPRESSIVE STRENGTH, q_u (lb./sq. ft.)

REMARKS AND CALCULATIONS (Use reverse side, if more space is needed)

Pen - 2.25
Color - GR.
Dish - 56
W.W. - ? 9%
D.W. - 327 (Sandy w/few Voids)

TECHNICIAN (Signature)	COMPUTED BY (Signature)	CHECKED BY (Signature)

DD FORM 1 AUG 57 1213

FRI-41) - Loose

SWG Form 267(C)
28 Jan 1965

TEXAS CITY HURRICANE

PROJECT: FLOOD PROTECTION

LOCATION:

BORING NO. 3ST-CC-[illegible]

TEST DATA SUMMARY

DATE DRILLED Sept. 27, 1966

FIELD NO.	DEPTH	CLASSIFICATION ELEVATION TOP BORING	SYMBOL	CONSISTENCY	POCKET (1) PENETROMETER	STAN. PENET. BLOWS/FT (2)	MOISTURE CONTENT %	DRY DENSITY P. c. f.	L.L.	P.L.	BAR L.S.	SIEVE ANALYSIS PERCENT GRVL	SAND	FINES	INIT. WT.	ACC. WT. RTND. SIEVE NO. (3) NO. 4	NO. 10	NO. 40	NO. 200
C-1	0-2	Brown sandy clay 0'-10'	CL	H	4.00		14.7	117											
C-2	2-4			ST	1.50		18.9	111	30		13	0	38	62	50	0	1	1	13
C-3	4-6			VST	2.50		20.5	107											
C-4	6-8			VST	2.00		19.4	114											
C-5	8-10			ST	1.00		18.7	111	31		15	2	36	62	50	1	2	4	13
C-6	10-12	Brown clayey shelly sand	SC	ST	1.50		28.9				17	10	43	47	502	58	75	93	319
C-7	12-14	10-16		VST	3.00		12.5												
C-8	14-16			M	0.75		21.2	109											
C-9	16-18	Brown clayey sand w/	SC-SM	M	0.75		18.5	113	19		4	2	60	38	50	1	1	2	31
C-10	18-20	shell fragment 16-24		ST	1.50		14.4	117											
X	20-22	Thin clay layers 18-20			—		—	—											
T-1	22-24			ST	—	8	26.2	—											
C-11	24-26	Gray sandy clay 24-38	CL	S	0.25		29.9	95	42		17	0	18	82	50	0	0	0	0
C-12	26-28			M	0.50		—	—											
C-13	28-30			S	0.25		32.2	85											
C-14	30-32			S	0.25		32.2	92	27		9	0	42	58	50	0	0	0	21
C-15	32-34			S	0.25		29.4	90											
C-16	34-36			S	0.25		—	—											
C-17	36-38			S	0.25		—	—											
C-18	38-40	Gray clay w/ shell	CH	S	0.25		33.1	(Disturbed)											
C-19	40-42	fragments 38-86		S	0.25		49.7	73											
C-20	42-44			S	0.25		51.8	69	83		26	0	6	94	50	0	0	1	3
C-21	44-46			VS	0.00		58.3	71											
C-22	46-48			S	0.25		—	—											
C-23	48-50			S	0.25		—	—											
X	50-52				—		—	—											
C-24	52-54			S	0.25		40.8	73											
C-25	54-56			S	0.25		[illegible]	65	89		27	0	2	98	50	0	0	0	1
X	56-58				—		—	—											
C-26	58-60			S	0.25		54.2	68											

KEY: CONSISTENCY — COHESIVE SOILS: VS Very Soft, S Soft, M Medium, ST Stiff, VST Very Stiff, H Hard
CONSISTENCY — COHESIONLESS SOILS: VL Very Loose, L Loose, M Medium, D Dense, VD Very Dense

(1) Tons/Sq.Ft. Unconfined Compressive Strength
(2) Split Barrel Sampler
(3) Acc. Wt. Rtnd ÷ Init. Wt. x 100 = % Rtnd.

BORING NO. 3ST CC-[illegible]

SWG Form 267(C)
28 Jan 1965

TEXAS CITY HURRICANE

PROJECT: FLOOD PROTECTION

LOCATION:

TEST DATA SUMMARY

BORING NO. 35T CC-49

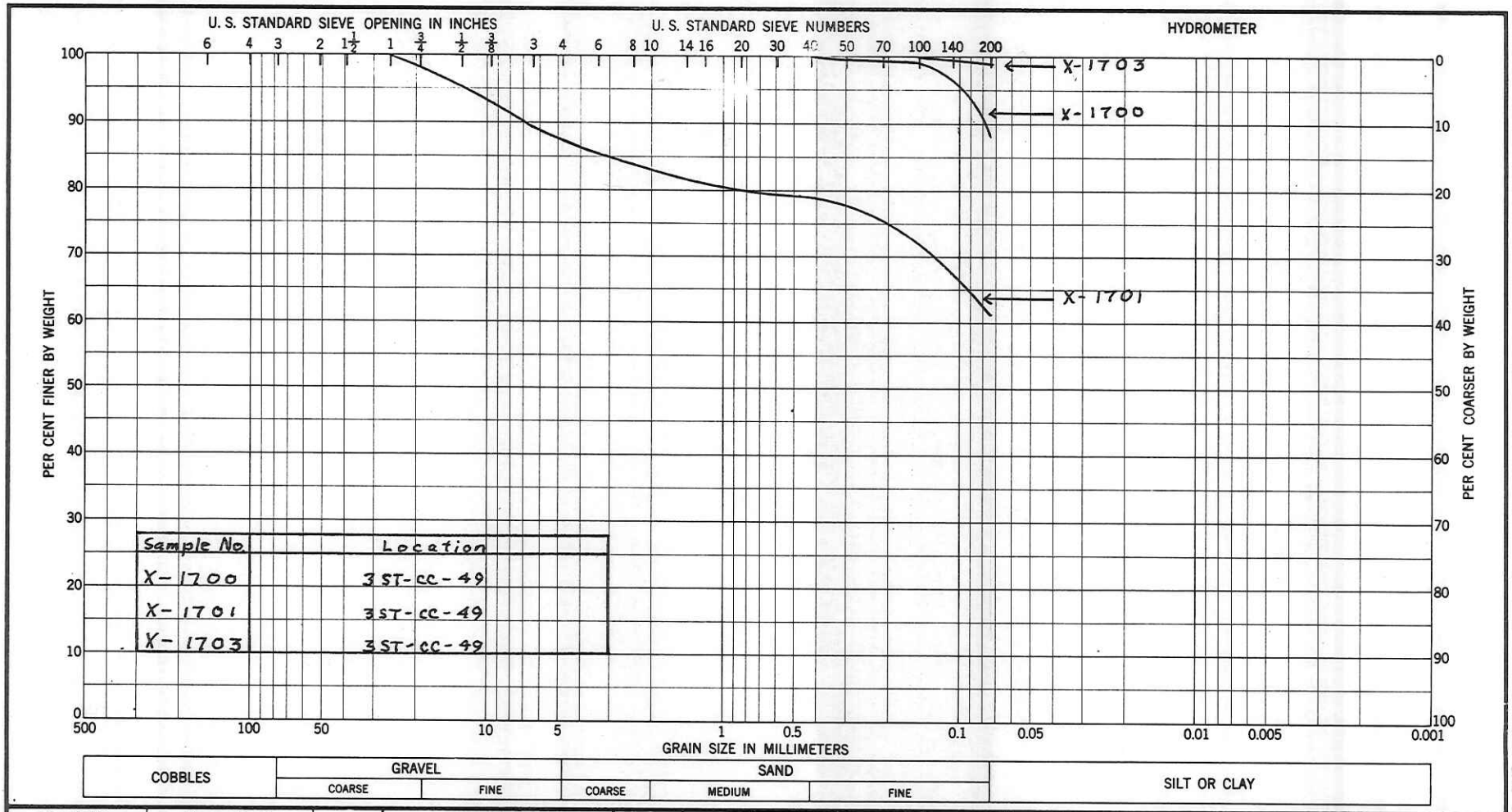
DATE DRILLED Sept. 27, 1966

FIELD NO.	DEPTH	CLASSIFICATION ELEVATION TOP BORING	SYMBOL	CONSISTENCY	POCKET (1) PENETROMETER	STAN. PENET. BLOWS/FT (2)	MOISTURE CONTENT %	DRY DENSITY p. c. f.	L.L.	P.L.	BAR L.S.	SIEVE ANALYSIS PERCENT GRVL	SAND	FINES	INIT. WT.	ACC. WT. RTND. SIEVE NO. (3) NO. 4	NO. 10	NO. 40	NO. 200
C-27	60-62			S	0.25		60.0	69											
C-28	62-64			S	0.25		56.8	70			29	0	0	100	50	0	0	0	0
C-29	64-66			S	0.25		62.6	63											
C-30	66-68			S	0.25		43.4	-											
C-31	68-70			S	0.25		54.1	57											
C-32	70-72			S	0.25		71.4	55	110		26	0	2	98	50	0	0	0	1
C-33	72-74			S	0.25		74.3	53											
C-34	74-76			M	0.50		[illegible]	54	116		23	0	0	100	50	0	0	0	0
C-35	76-78			M	0.50		74.0	55											
C-36	78-80			S	0.25		76.1	55											
C-37	80-82			M	0.50		57.7	64	81		24	0	2	98	50	0	0	0	1
X	82-84				-		—												
C-38	84-86			ST	1.50		27.8	102											
C-39	86-88	Gray sandy clay 86-	CL	VST	2.00		21.5	95	41		15	0	32	68	50	0	0	0	16
C-40	88-90	92		ST	1.50		18.7	112											
C-41	90-92	Cal Nod 86-88		M	0.50		20.4	108											
C-42	92-94	Gray clayey sand	SC	ST	1.00		20.2	109	26		10	0	60	40	50	0	0	0	30
C-43	94-96	92-104		M	0.75		20.4	107											
J-2	96-98				-		19.6	—											
C-44	98-100			M	0.75		10.3	109	22		5	0	64	36	50	0	0	0	32
C-45	100-102			S	0.25		23.5	104											
J-3	102-104				—		21.0	—											
		BOTTOM AT 104'																	
		WATER AT -6.9																	

KEY: CONSISTENCY — COHESIVE SOILS: VS Very Soft, S Soft, M Medium, ST Stiff, VST Very Stiff, H Hard
CONSISTENCY — COHESIONLESS SOILS: VL Very Loose, L Loose, M Medium, D Dense, VD Very Dense

(1) Tons/Sq.Ft. Unconfined Compressive Strength
(2) Split Barrel Sampler
(3) Acc. Wt. Rtnd ÷ Init. Wt. x 100 = % Rtnd.

BORING NO. 35T CC-49



Sample No.	Location
X-1700	3 ST-CC-49
X-1701	3 ST-CC-49
X-1703	3 ST-CC-49

Sample No.	~~Elev or~~ Depth		Classification		Nat w %	LL	PL	PI
X-1700	26.0-28.0		CLAY (CH)			51	16	35
X-1701	34.0-36.0		CLAY, sandy (CH)			63	17	46
X-1703	46.0-48.0		CLAY (CH)			101	25	76

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area

Boring No. Foundation Material

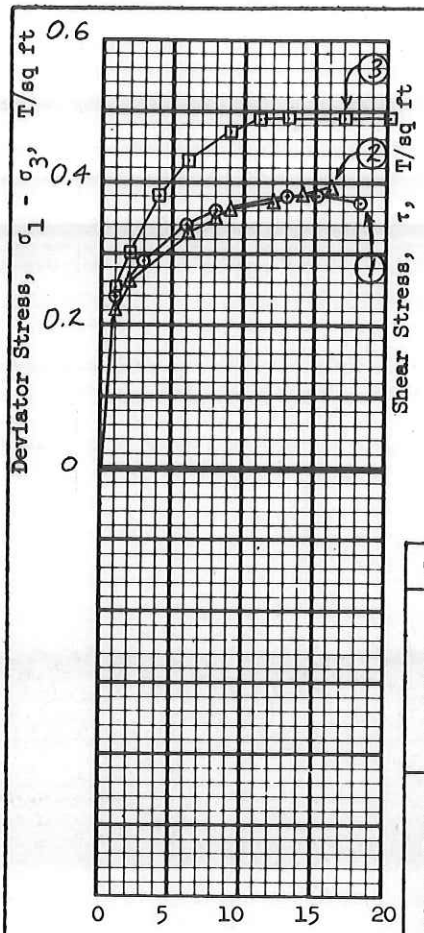
Date NOV 66

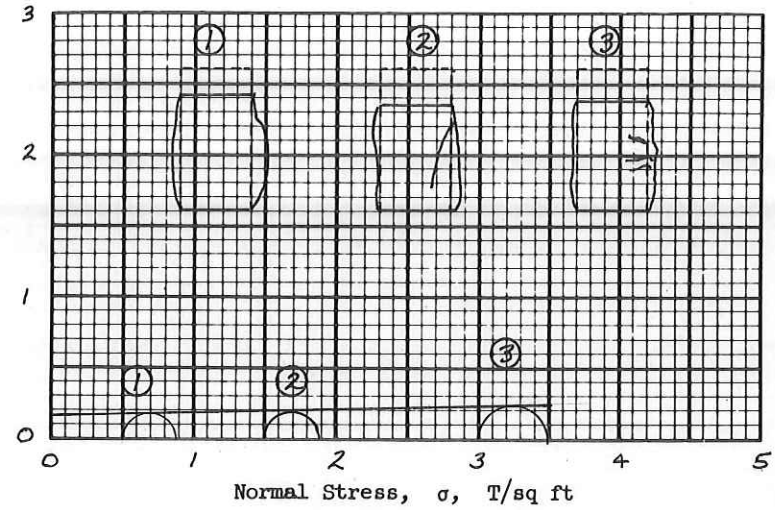
GRADATION CURVES

ENG FORM 1 MAY 63 2087 REPLACES WES FORM NO. 1241, SEP 1962, WHICH IS OBSOLETE. (TRANSLUCENT) C 3-436

Plate No. 1

SWDED-GL Report 10,022





Test No.			1	2	3	
Initial	Water content	w_o	40.2 %	40.1%	39.2%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	80	80	82	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.38	0.39	0.49	
Time to failure, min		t_f	20	22	23	
Rate of strain, percent/min			0.7	0.7	0.7	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Shear Strength Parameters

ϕ = 1.2 °

tan ϕ = .022

c = 0.2 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q | Type of specimen Undisturbed

Classification CLAY (CH)

LL 51 | PL 16 | PI 35 | | G_s

Remarks $(\sigma_1-\sigma_3)_{MAX}$ corresponds to a strain of 15% or less.

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

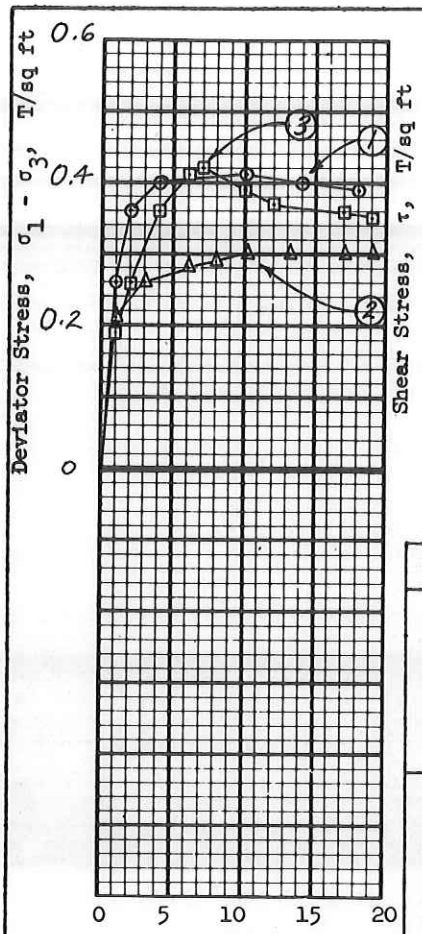
Boring No. 3ST-CC-49 | Sample No. X-1700

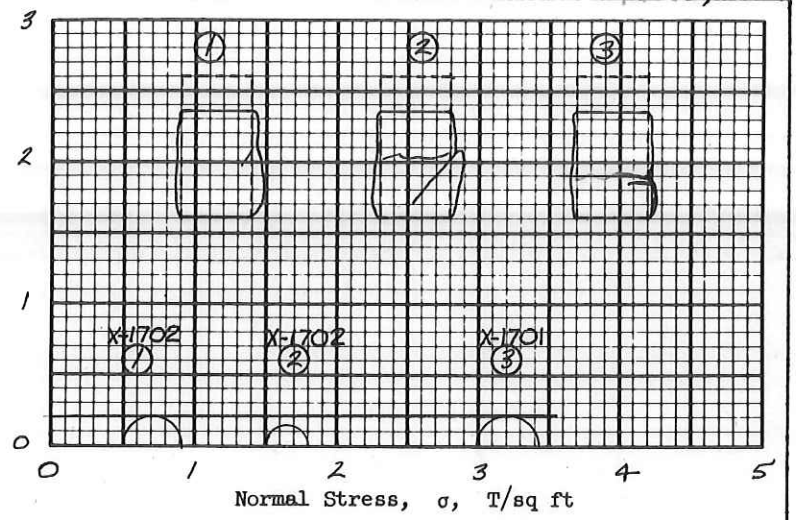
Depth ~~Ft~~ 26.0-28.0 | Date NOV 68

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT





Test No.			1	2	3	
Initial	Water content	w_o	47.7 %	43.5%	54.8%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	72	77	67	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.41	0.30	0.42	
Time to failure, min		t_f	18	15	11	
Rate of strain, percent/min			0.7	0.7	0.6	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Axial Strain, %

Shear Strength Parameters

ϕ = 0.1 °

tan ϕ = .002

c = 0.2 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q | Type of specimen Undisturbed

Classification CLAY, sandy (CH)

LL 63 | PL 17 | PI 48 | | G_s

Remarks _____

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

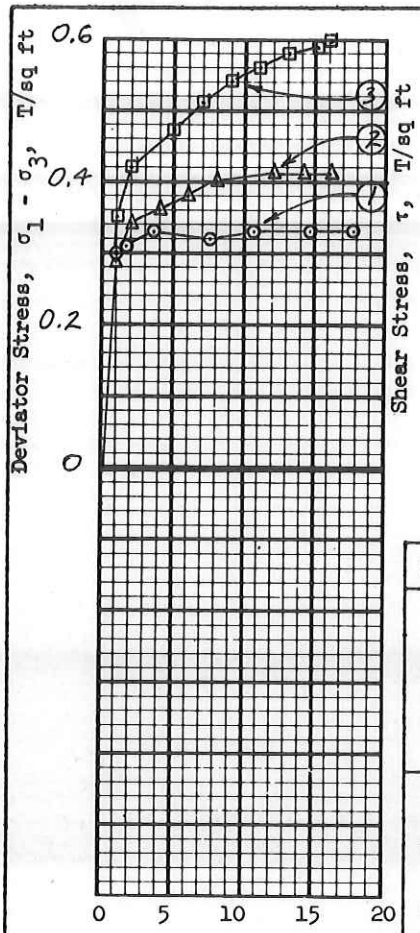
Boring No. 3ST-CC-49 | Sample No. X-1701 & X-1702

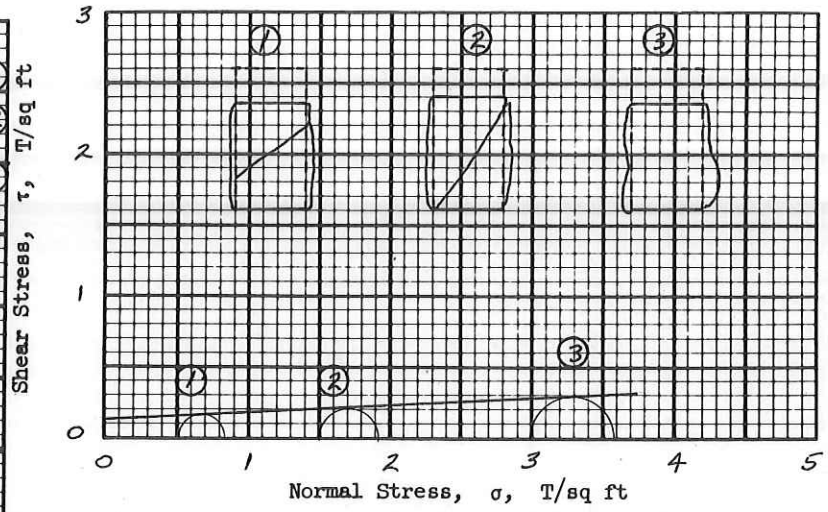
Depth El 34.0 - 38.0 | Date NOV 66

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT





Test No.			1	2	3	
Initial	Water content	w_o	67.9 %	68.9%	66.6%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	59	58	60	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.33	0.41	0.59	
Time to failure, min		t_f	6	18	21	
Rate of strain, percent/min			0.6	0.7	0.7	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.4	1.4	1.4	
Initial height, in.		H_o	3.0	3.0	3.0	

Shear Strength Parameters

ϕ = 2.8 °

tan ϕ = .049

c = 0.1 T/sq ft

Method of saturation _____

☐ Controlled stress

☑ Controlled strain

Type of test Q | Type of specimen Undisturbed

Classification CLAY (CH)

LL 101	PL 25	PI 76		G_s

Remarks $(\sigma_1-\sigma_3)_{MAX}$ corresponds to a strain of 15% or less.

Project TEXAS CITY HURRICANE FLOOD PROTECTION

Area Foundation Material

Boring No. 3ST-CC-49 | Sample No. X-1703

Depth ~~El~~ 46.0-48.0 | Date NOV 66

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT