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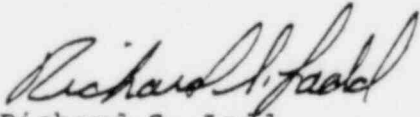
Woodward-Clyde Consultants

TEST RESULTS
DIESEL GENERATOR BUILDING
SOIL BORING AND TESTING PROGRAM
MIDLAND PLANT - UNITS 1 AND 2
MIDLAND, MICHIGAN

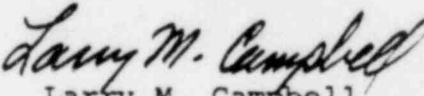
For

Consumers Power Company
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8 July 1981

81C217
(81C4055)

Consulting Engineers, Geologists
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Offices in Other Principal Cities

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1. INTRODUCTION

During the period 13 March through 7 July 1981, Woodward-Clyde Consultants (WCC) conducted a Soil Boring and Testing Program on the fill materials and natural foundation soils in various areas at the Consumers Power Company (CPCo) Midland Plant - Units 1 and 2. This report describes the scope of the boring and sampling program and the subsequent laboratory testing program for the fill materials at the Diesel Generator Building (DGB). In addition, the results of these programs are presented in the form of logs of borings and both tabular and graphical data summaries of index property, strength, and compressibility testing.

All strength and compressibility testing have been completed. Tests have been performed on test specimens considered to be representative of the range of material types and material properties encountered in the DGB borings. The test results presented herein supercede a similar presentation of results given in our draft report of 17 June 1981 entitled "Preliminary Test Results, Soil Boring and Testing Program, Diesel Generator Building, Midland Plant - Units 1 and 2".

Corps of Engineer (COE) personnel continually observed the drilling and sampling operations in the field. COE and CPCo personnel also visited our Clifton, NJ laboratory and observed laboratory operations, including extrusion of tubes, preparation of triaxial and consolidation test specimens, and performance of index and engineering property testing.

2. FIELD INVESTIGATION

Two borings were originally scheduled to be drilled and sampled at each of six locations in close proximity to the DGB, as shown on Fig. 1. The first of each pair of borings was designated a "stratigraphy" boring and was to be continuously sampled. These samples were to be processed in a field laboratory and

the data used to help establish the sampling interval of cohesive fill materials in the second boring, which was designated an "engineering property" boring.

Stratigraphy borings COE-8, 9⁽¹⁾, 10, 11, 12, and 13 (13R)⁽²⁾ were drilled, logged, and continuously sampled through the fill materials (below a depth of 5 to 6 ft) using "undisturbed" sampling techniques. Typically, undisturbed samples were obtained (and retained) in 3-in.-dia thin-walled tubes using Osterberg, Hvorslev, and Pitcher samplers. Stratigraphy borings were advanced a minimum distance of 5 ft into foundation soils underlying fill materials, and Standard Penetration Tests (SPT) using a split-barrel sampler were performed in the bottom 5 ft of the borings.

Following processing of the stratigraphy boring tubes in the field laboratory, the sampling intervals in the engineering property borings were selected. Engineering property borings COE-9A⁽³⁾, 10A, 11A, 12A (12B)⁽⁴⁾, and 13A (13B)⁽⁴⁾ were typically drilled within about 3 ft of their counterpart stratigraphy borings. These borings were logged and the cohesive fill materials were continuously sampled in 3-in.-dia thin-walled tubes using Osterberg and Pitcher samplers. Scheduled engineering property boring COE-8A was not drilled because cohesive fill materials were not encountered in stratigraphy boring COE-8.

Several borings (COE-9, 12B, 13, and 13B) encountered obstructions (e.g., concrete footings) and were relocated and redrilled. All stratigraphy and engineering property borings were properly closed, either by installation of an observation well or by grouting the borehole from the bottom to the ground surface with a bentonite-cement grout.

-
- (1) Boring COE-9 was drilled as a stratigraphy boring, but the resulting samples were processed as if the boring were an engineering property boring (see footnote 5).
- (2) Boring COE-13R was a redrill of boring COE-13 which encountered an obstruction.
- (3) Boring COE-9A was drilled and sampled as described for stratigraphy borings.
- (4) Borings COE-12B and COE-13B were the initial attempts to drill borings COE-12A and COE-13A, respectively.

Pertinent details of the drilling, sampling, and closing of the stratigraphy and engineering property borings at the DGB are summarized in Table 1. Synthesized logs of borings COE-8 through COE-13B are presented in Figs. A-1 through A-14 in Appendix A in the boring-number order listed in Table 1. These synthesized logs are based on the WCC drilling inspectors' original field boring logs. As such, the logs present descriptions of soil strata encountered in the boreholes and pertinent details of the drilling and sampling operations. Results from subsequent laboratory testing have been used only to refine the locations of strata changes that occurred within the intervals sampled. Abbreviations used on the logs are listed in Table A-1 in Appendix A.

3. LABORATORY INVESTIGATION

Index property testing included processing of tube samples and determinations of density, water content, consistency (pocket penetrometer), liquid and plastic limits, particle-size distribution, and specific gravity. Strength testing included isotropically consolidated-undrained triaxial compression tests with pore water pressure measurements (\overline{CIU}) and anisotropically consolidated-undrained triaxial compression tests with pore water pressure measurements (\overline{CAU}). Compressibility testing consisted of one-dimensional consolidation tests with an unload-reload cycle.

Index property, strength, and compressibility testing were performed as described in a memorandum dated 11 April 1981 from Mr. D. M. Hendron (WCC) to the attendees of the 1 April laboratory work plan meeting in Savoy, IL, and in our letter to CPCo dated 14 May 1981 from Dr. H. M. Horn (WCC).

Index property testing was performed on samples of granular and cohesive fill materials from both stratigraphy and engineering property borings. Strength and compressibility testing, however, were performed only on high-quality samples of cohesive fill materials from the engineering property borings.

and from stratigraphy boring COE-9⁽⁵⁾. Samples from damaged tubes, or those that were otherwise obviously disturbed, were not used for engineering property testing.

Samples from stratigraphy borings COE-8, 10, 11, 12, 13, and 13R were processed in the field laboratory for stratigraphy data, photographs, and some index property tests (density, consistency by pocket penetrometer, and water content). Additional index property testing (liquid and plastic limits and particle-size distribution) was later completed in the Clifton laboratory.

Laboratory test results from both the field and Clifton laboratories are presented by boring and by test type in both tabular and graphical forms as subsequently described.

3.1 Index Property Testing

Index property test results and other pertinent data are listed for borings COE-8 through COE-13B in boring-number order in Tables B-1 through B-13 in Appendix B. The tube densities reported in these tables were calculated assuming the sample diameter was equal to that of the inside diameter of the sampling tube. Where two densities are reported, the larger value was calculated assuming the sample diameter was equal to that of the inside diameter of the cutting edge of the tube. A list of abbreviations and symbols applicable to the laboratory testing data is included in Table B-0.

The index property data are plotted by boring to create index property profiles as presented on Figs. B-1 through B-13. Classifications of soil strata

(5) Because of the possibility that engineering property boring COE-9A might not be drilled due to space limitations, tube samples from stratigraphy boring COE-9 were not extruded in the field laboratory, but were transported to the Clifton laboratory for processing and subsequent testing. Boring COE-9A, however, was later drilled and sampled. Both borings COE-9 and COE-9A, therefore, have been considered as engineering property borings, and engineering property testing was performed on samples from both borings.

are based on pertinent index property testing unless noted otherwise. The locations at which triaxial and consolidation test specimens were selected are noted at the right margin of these figures. A legend illustrating soil symbols and test designations is presented in Fig. B-0.

All tube samples have not been extruded and processed for stratigraphy and index property testing. Accordingly, gaps exist in the index property profiles and in the locations of some strata changes. Tubes that have been extruded and processed are noted by a solid vertical bar at the right margin of the profile figures. Gaps where no sampling was attempted or where a sample was not recovered are indicated, respectively, as "no sample" and "no rec.".

Particle-size distribution data for selected sieve sizes are summarized in Tables B-1 through B-13; complete particle-size distribution curves and descriptions for 97 fill specimens from the DGB borings are presented in boring-number sequence on Figs. C-1 through C-12 in Appendix C.

3.2 Strength Testing

Strength testing included one series each of \overline{CTU} and \overline{CAU} triaxial compression tests performed on specimens of cohesive fill from the DGB borings. In all but one case, test specimens were selected from high-quality samples within the elevation range (el. 628 to el. 618) requested by Dr. A. J. Hendron, Jr. (see our letter of 14 May 1981 from Dr. H. M. Horn); one \overline{CAU} test, however, was performed on a test specimen from el. 617.2.

A series of five \overline{CTU} triaxial tests was performed on cohesive fill specimens consolidated to pressures ranging from 0.7 to 8.2 ksf. In addition, a series of six \overline{CAU} triaxial tests was performed on similar cohesive fill specimens. These \overline{CAU} tests were anisotropically consolidated at an effective principal stress ratio ($k_c = \overline{\sigma}_{1c} / \overline{\sigma}_{3c}$) of approximately 1.9 and at maximum effective principal consolidation stresses ($\overline{\sigma}_{1c}$) of about 1, 2, 4, 8, 12, and 16 ksf. Strength test results are presented in both tabular and graphical forms in Appendix D.

Results of \overline{CIU} and \overline{CAU} triaxial testing are summarized, respectively, in Tables D-1 and D-2, and are presented graphically in Figs. D-1 and D-2. The graphical presentation includes a series of four plots (a, b, c, d) for each test type. Stress-strain characteristics are presented in the first figure (a) of each series, and include deviator stress, obliquity (principal stress ratio), and A-factor plotted vs axial strain. A sketch of the specimen at test completion is also included. Stress paths are presented in p-q diagrams in the second figure (b) of each series. In the third figure (c), Mohr circles are plotted on a Mohr-Coulomb diagram of shear stress vs effective normal stress. In the fourth figure (d), the shear stress on an assumed failure plane is plotted vs the effective normal consolidation stress on the assumed failure plane; assumed material properties are $\overline{\phi} = 30^\circ$ and $\overline{c} = 0$.

As shown in Tables D-1 and D-2, failure characteristics have been summarized for conditions of both peak deviator stress and peak obliquity. These conditions are noted by small arrows on the stress-strain characteristics plots ("a" figures). The condition of peak obliquity is noted by a solid (filled in) symbol on the p-q diagrams ("b" figures). Mohr circles are plotted in the "c" figures only for the condition of peak obliquity. The undrained strength data in the "d" figures are presented for the conditions of peak deviator stress or the deviator stress at approximately 20 percent axial strain, as applicable.

The strength envelope plotted in the p-q diagram ("b" figure) is that determined by a linear regression analysis using all data points for the condition of peak obliquity (i.e., solid symbols). The slope and intercept ($\overline{\alpha}$ and \overline{a}) of the regression line on the p-q diagram were then mathematically converted to the slope and intercept ($\overline{\phi}$ and \overline{c}) of the strength envelope of the Mohr-Coulomb diagram ("c" figure). For the condition of peak obliquity, the \overline{CIU} test results indicate $\overline{\phi} = 32.5^\circ$ and $\overline{c} = 0.06$ ksf, whereas the \overline{CAU} test results indicate $\overline{\phi} = 31.3^\circ$ and $\overline{c} = 0.15$ ksf.

Detailed supporting data for the \overline{CIU} and \overline{CAU} triaxial tests are presented in boring/sample-number order in Appendices F and G, respectively. These supporting data include copies of the original laboratory data sheet used for set up and take down of triaxial tests (front of form WCC L-202) and the summary calculation sheet for triaxial tests (back of form WCC L-202). Also included are copies of the computer listing of the recorded test data (piston displacement, piston load, and pore water pressure), followed by the printout of computed test results.

3.3 Compressibility Testing

Compressibility testing consisted of performing 27 one-dimensional consolidation tests on specimens of cohesive fill from the DGB borings. Test specimens were selected to be representative of the types and ranges of cohesive fill materials recovered from the borings, as well as to be spatially distributed among the DGB borings and throughout the depth of the cohesive fill. In general, at least one consolidation test was performed for each tube that contained high-quality samples of cohesive material. Samples from damaged tubes, or those that were otherwise obviously disturbed, were not selected for testing.

Consolidation testing included nominal 8-hr loading increments, an unload-reload cycle, and maximum loading to 64 tsf (128 ksf). Compression ratios and other pertinent results of the consolidation tests are summarized in boring-number order in Tables E-1 through E-7 in Appendix E. Consolidation characteristics are presented by boring in Figs. E-1 through E-7, and include volumetric strain (ϵ_v), coefficient of secondary compression (c_α), and coefficient of consolidation (c_v) plotted vs log of applied pressure (in tsf).

Detailed supporting data (form WCC L-302) for each consolidation test are presented in Appendix H in boring/sample-number order. In addition to the parameters tabulated and plotted in the tables and figures of Appendix E, the supporting data in Appendix H include calculated coefficients of permeability (k) and void ratios (e).

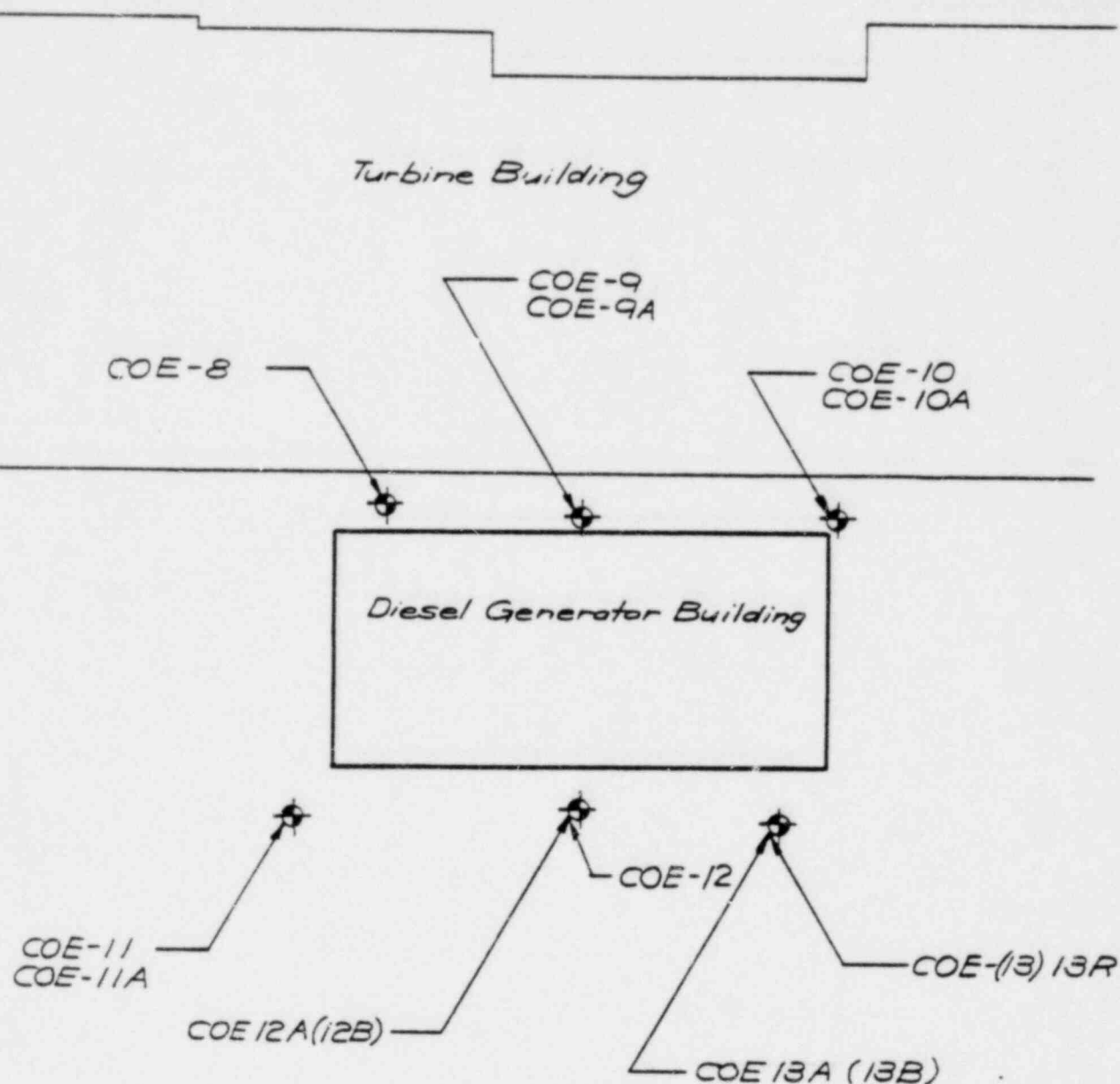
TABLE 1
Soil Boring Details
Diesel Generator Building

Boring Number	Date Started	Date Finished	Depth (ft)	Surface Elev. (ft)	Bottom Elev. (ft)	Drill Rig	No. of Samples U/D*	Notes
COE-8	20 April	21 April	40.4	634.2	593.8	CME-55	18/2	a, d
COE-8A	-	-	-	-	-	-	-	j
COE-9	22 April	23 April	23.4	634.0	610.6	CME-55	8/1	a, c, d, f
COE-9A	5 May	6 May	41.4	634.0	592.6	CME-55	17/3	a, e, f
COE-10	15 April	16 April	42.5	633.9	591.4	B-56	13/3	a, e
COE-10A	27 April	27 April	23.0	634.0	611.0	B-61	5/0	b, d
COE-11	13 April	14 April	38.0	633.5	595.5	B-56	15/2	a, d
COE-11A	4 May	4 May	29.1	633.4	604.3	B-61	8/0	b, e
COE-12	14 April	15 April	40.0	633.6	593.6	B-61	12/5	a, d
COE-12A	23 April	24 April	39.0	633.6	594.6	B-61	10/0	b, e, g
COE-12B	23 April	23 April	8.3	633.6	625.3	B-61	1/0	b, c, d, g
COE-13	21 April	22 April	11.9	633.6	621.7	B-61	4/2	a, c, d, h
COE-13R	22 April	23 April	47.6	633.6	586.0	B-61	16/3	a, d, h
COE-13A	1 May	1 May	47.5	633.5	586.1	B-61	12/0	b, e, i
COE-13B	30 April	1 May	17.2	633.5	616.3	B-61	4/0	b, c, d, i

* U/D = Undisturbed sampler (thin-walled tube)
Disturbed sampler (auger, split-barrel)

NOTES:

- a) Continuous sampling through fill; advance borehole minimum 5 ft into foundation soils
- b) Continuous sampling of cohesive fill materials only
- c) Hit obstruction before completed; boring was redrilled
- d) Borehole closed by grouting
- e) Observation well installed
- f) COE-9A was considered redrill and continuation (below 23.4-ft depth) of COE-9
- g) COE-12B was first attempt to drill COE-12A
- h) COE-13R was redrill of COE-13
- i) COE-13B was first attempt to drill COE-13A
- j) COE-8A was not drilled because cohesive fill materials were not encountered in COE-8



BORING LOCATION PLAN -
DIESEL GENERATOR BUILDING

10 JUNE 81

81C217-4

Fig. 1

APPENDIX A

Logs of Borings

TABLE A-1
BORING LOG ABBREVIATIONS

Samplers

HB	High Recovery Core Barrel, 4" (ID) X 5 1/2" (OD)
HS	Hvorsley-Type Sampler
OS	Osterberg Sampler
PQ3	PQ-size Triple-Tube Core Barrel, 3 1/4" (ID) X 4 3/4" (OD)
PS	Pitcher Sampler
SS	Split Spoon (Barrel) Sampler
TW	Thin-walled (Shelby-type) Tube

bbl	Barrel
CFA	Continuous Flight Auger
cont	Continued
dia, ϕ	Diameter
dk	Dark
in., "	inch
ft, '	feet
ID	Inside Diameter
lb	Pounds
lt	Light
min	Minutes
N	Standard Penetration Test Resistance
N/A	Not Applicable
NX	Drill Rod Size--Outside Diameter 2-3/8 in.
OD	Outside Diameter
OK	Acceptable
P.P.	Pocket Penetrometer
PSI	Pounds Per Square Inch
S	Sample (such as S-4)
Sec	Seconds
Temp	Temperature
Therm	Thermometer
tr	Trace
TSF	Tons Per Square Foot
USGS	United States Geological Survey (elevation datum)
V.	Very
W/	With
F-C	Fine-Coarse
MED.	Medium
F-M	Fine-Medium
N	North
S	South
W	West
E	East

>	Greater Than
<	Less Than
~	Approximate

Project	MIDLAND NUCLEAR PLANT	Project no.	81C 217
Location	MIDLAND, MICHIGAN	elevation & datum	COORDINATES + 634.2 (USGS) S 5044, E 191
Drilling agency	D & G DRILLING	date started	20 APRIL 81
Drilling equipment	CME 55	date finished	21 APRIL 81
size & type of bit	4" ANGER, 4 7/8" TRICONE ROLLER	completion depth	40.4 FT
casing	5" ID STEEL	rock depth	NOT ENCOUNTERED
casing hammer:	N/A weight - drop -	no. samples	dist. 2 undist. 18 core 0
sampler	OSTERBERG, HVORSLEV, PITCHER, SPLIT SPOON	water level first	N/A compl. N/A 24 hr. N/A
sampler hammer:	No. 2 weight 140 lb drop 30 in.	driller	LARRY KOBITEK
		prepared by	LURE L. HEFFERNAN
		supervisor	KEVIN O'HEA
		reviewed by	12 JUNE 81 James Stenborg

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	depth	depth		
42								SET UP RIG 0.4 FT EAST OF SURVEY NAIL. DONALD SIF. HAS CALO APPROVED BORING LOCATION.	
	BROWN, NONPLASTIC SAND w/ SOME FINES, TRACE FINE GRAVEL (FINE-COARSE SAND) SM	1						ADVANCED BORING w/ 4" CFA TO 4.5 FT. SET 5" ID CASING TO 3.5 FT.	
		2						ADVANCE BORING WITH 4 7/8" TRICONE ROLLER BIT & REVERT DRILLING FLUID	
		3							
		4							
62.2	V. STIFF, BROWN, LOW PLASTIC, SANDY CLAY - CLAYEY SAND, (FINE-COARSE SUBGRADED POORLY GRADED SAND), MOIST (CL)	5	5-1	OS	0.9/0.7 FT			S-1 REFUSAL AFTER 0.7 FT PUSH 86% RECOVERY	
	BROWN, LOW PLASTIC TO NONPLASTIC CLAYEY SAND, WET (POSSIBLE SLUGH)	6	5-2	SEE REMARKS				S-2 OSTERBERG PUSHED 0.7 FT. RECOVERY 0.1/0.7 FT (14% REC) NO PP ON GRANULAR MATL. SWITCHED TO HVORSLEV SAMPLER	
	BROWN w/ MIXED COLORS, NONPLASTIC SAND w/ TRACE OF FINES, FINE GRAVEL WET. (FINE-COARSE SUBGRADED GRADED SAND) (SP) MORE GRAVELLY	7	5-3	HS	1.8/1.9 FT			S-3 REFUSAL AFTER 1.9 FT PUSH 95% RECOVERY	
		8	5-4	SEE REMARKS				S-4 HVORSLEV SAMPLER REFUSED AFTER 0.6 FT PUSH. BOTTOM OF TUBE IS BENT. RECOVERY 0.6/0.6 FT (100% REC) NO PP ON SAND.	
	LESS SAND BECOMING LESS GRADED.	9	5-5	HS	1.6/1.7 FT			S-5 94% RECOVERY	
		10	5-6	HS	1.6/1.6 FT			S-6 100% RECOVERY	
		11	5-7	HS	1.1/1.1 FT			S-7 100% RECOVERY	
	BECOMING WELL GRADED w/ NO FINES	12	5-8	HS	SEE REMARKS			S-8 RECOVERY 1.0/1.1 FT (91% REC) NO PP ON SAND	
		13						END OF SHIFT 20 APRIL 81	
		14							

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Fig. A-1

SHEET. 2. OF. 3...

SYNTHESIZED
LOOSE BORING COE-B...

ELEVATION	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet resist blows			
220.2	BROWN NON PLASTIC, SAND, W/TRACE FINE GRAVEL, WET. (FINE-COARSE SUBROUNDED SAND) (SP) -	15	S-9	SEE REMARKS				S-9 REFUSAL AFTER 0.5 FT PUSH OF HYDRAULIC SAMPLER. RECOVERY 0.5/0.5 FT (100%). NO PP ON SAND	N/A
		16	S-10	PS	1.8/2.5 FT		NO PP ON SAND	SWITCHED TO PITCHER SAMPLER DUE TO SHORT ADVANCE OF HYDRAULIC SAMPLER	
		17						S-10 72% RECOVERY	
		18	S-11	PS	2.5/2.5 FT		NO PP ON SAND	S-11 SAMPLER WAS DIFFICULT TO EXTRACT FROM BORING. 100% RECOVERY	
		19							
		20							
		21	S-12	PS	1.5/2.5 FT		NO PP ON SAND	S-12 0.5 FT OF SAMPLE SLIDES FROM TUBE UPON TUBE EXTRACTION. 60% RECOVERY.	
		22							
		23							
		24	S-13	PS	0.7/2.5 FT		NO PP ON SAND	S-13 28% RECOVERY NOTED LOSS OF DRILLING FLUID AT THIS DEPTH. EXCESSIVE AMOUNTS OF CUTTINGS WERE REMOVED FROM AND TUB. CASING NOTED IN BORING. (C. DRILL RODS WILL NOT SET AT BOTTOM OF BORING WHEN LIFTED. SAND SETTLING) REMOVED REVERT DRILLING FLUID AND REPLACES WITH BENTONITE DRILLING FLUID.	
		25							
		26	S-14	PS	2.0/2.5 FT		NO PP ON SAND	DRILL W/ 4 7/8" & TRI-CONE ROLLER BIT TO REMOVE SLUGHED SAND S-14 80% RECOVERY	
		27							
		28							
		29	S-15	PS	1.0/2.5 FT		NO PP ON SAND	S-15 40% RECOVERY	
	BROWN, NON PLASTIC, SAND, W/ TRACE FINE GRAVEL, WET. (FINE- COARSE SUBROUNDED POORLY GRADED SAND) (SP) -	30							
		31	S-16	PS	1.7/2.5 FT		NO PP ON SAND	S-16 68% RECOVERY	
		32						NOTE: LOST ~ 25 GALLONS OF DRILLING FLUID IN THE BORE HOLE SINCE CHANGING DRILLING FLUID TO BENTONITE.	

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Fig. A-1

5) THE SIZED
LOC OF BORING .COE-8...

SHEET 3 OF 3...

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet resist bl/6in		
66.2	BROWN, NON PLASTIC, SAND, with trace F. Gravel (SP)	33	5-17	P3	1.6/2.0 FT	NO PP ON SAND	S-17 BOTTOM OF TUBE BENT. A PIECE OF STEEL WEDGE WAS FOUND IN TOP OF SAMPLE. 80% RECOVERY NOTE: DRILLING MUD VERY THICK, LADDERED W/ SAND.	N/A
	LT BROWN, NON PLASTIC, SAND, (FINE- MED, SUBROUNDED, POORLY GRADED), W/ OCCASIONAL FINE GRAVEL, TRACE ORGANICS, WET. (SP)	34						
	BECOMING MORE GRADED W/ MORE FINE GRAVEL. (SP)	35	5-18	P3	1.5/2.5 FT	NO PP ON SAND	S-18 DRILLING INDICATES OCCASIONAL COBBLE OR GRAVEL BOTTOM OF TUBE BENT. 60% RECOVERY	
77.2		36						
	V DENSE, LT GRAY-GRAY BROWN, NON PLASTIC, SILTY SAND, (V. FINE-FINE, POORLY GRADED SAND) W/ LT BROWN LAYERING (EVIDENT STAINING) (SM-ML) LIGNITE FRAGMENTS AT 38 FT	37	5-19	33	1.2/1.5 FT	26 66 78	SWITCH TO SPLIT SPOON SAMPLING S-19 80% RECOVERY N = 144	N/A
		38						
		39	5-20	33	1.3/1.5 FT	43 72 135	S-20 87% RECOVERY 100 blows/0.3 ft at 40.2 ft	
73.2	LT GRAY NON PLASTIC SANDY SILT MUD BOTTOM OF BORING 40.4 FT	40						
		41						N/A
		42						
		43						
		44						
		45						
		46						
		47						
		48						
		49						
82.2		50						
							BORE HOLE BACKFILLED W/ BENTONITE CEMENT GROUT UP TO GROUND SURFACE.	

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CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-2

SHEET 1. OF 3...

SYNTHESIZED
OF BORING. 99F-9...

location	MIDLAND NUCLEAR PLANT	project no.	81C217-2a
drilling agency	MIDLAND, MICHIGAN	elevation & datum	COORDINATES +639.0 ft USGS 5050, E 259
drilling equipment	DY G DRILLING	date started	22 APRIL 81
size & type of bit	CME-55	date finished	23 APRIL 81
using	5 IN 10 steel	completion depth	23.4 ft NOT ENCOUNTERED
using hammer:	N/A weight N/A drop N/A	no. samples dist.	1 undist. 8 core 0
sampler	Harsco (HS); Pitcher (PS)	water level first	N/A compl. N/A 24 hr. N/A
sampler hammer:	N/A weight N/A drop N/A	driller	LARRY KORITEK
		prepared by	KEVIN O'DEA
		supervisor	KEVIN O'DEA
		reviewed by	12 June 81 James Stenborg

ELEV. ft	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist. bl/6 in		
34.0								
	Brown, nonplastic, SAND w/ trace of fine gravel and fines, fine and coarse, poorly graded, subrounded sand, moist (SP)	1					Set up rig within 0.1 ft. of survey nail.	
		2					Approval to advance boring given by Donald Sibbald of CFCO. Boring was advanced to 4.0 ft w/ 4 1/2" CFA.	
		3					Install 5 in steel casing to 3.1 ft. Mix drilling fluid. 10 lbs Revert with 50 gals water.	
		4					Drill w/ 4 1/2" in Tricone to 4.8 ft	
62.0	Brown, nonplastic, SAND w/ trace fine gravel, fine to coarse, poorly graded, subround sand, wet (SP)	5	5-1	HS	23	NO	S-1 67% Recovery Hydraulic chuck slips during test. Stop test after a 3 ft push. Bottom of tube badly bent.	
	Brown, nonplastic SAND w/ trace fine gravel, fine to coarse, subrounded, poorly graded, wet (SP)	6	5-2	PS	1.5/2.4	NO PP ON SAND	S-2 62% Recovery Concrete in cuttings from 7.4 to 7.5 ft. Stop drilling. Inform CFCO. Instructed to continue drilling.	
		7					Drill w/ 4 1/2" in Tricone to 7.8 ft	
	CONCRETE	8		sec	remark		Concrete and steel in cuttings. D. Sibbald stops drilling to investigate obstruction. End of shift 22 APRIL 81 at 7:00 ft	
	V. stiff to hard, brown and gray, med plastic, silty CLAY w/ occasional fine gravel, clumps of soil vary from stiff to hard and from dry to wet (CL)	9	5-3	HS	1.0/2.5	PP = 2.5-4.5 TFE	Begin shift 23 APRIL 81 D. Sibbald instructs to continue drilling. Obstruction cleared at 8.3 ft.	
		10					S-3 40% Recovery	
		11						
	Hard, gray brown, low to med. plastic, silty CLAY w/ trace sand and occasional fine gravel moist (CL)	12	5-4	HS	0.8/2.5	PP = 4.0-14.5	S-4 32% Recovery	
		13						
		14	5-5					

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Fig. A-2

SYNTHESIZED
L OF BORING .SPE.-9..

SHEET. 2. OF. 2.

E EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist bl/6in		
619.0	Hard, brown, low to med. plastic, silty CLAY w/ trace sand and occasional gravel, moist (CL)	15	S-5 cont	PS	0.7/2.5	PP=30-45	S-5 36% Recovery Drilling indicates varying matl. and occasional gravel	
		16					S-6 48% Recovery Drilling indicates hard matl from 17.9 to 18.3 ft (gravel or cobble). lost 30 gals of drilling fluid during sampler advance. Mix ~10 lbs Revert to 30 gals water to replace lost fluid.	
	Stiff, brown, gray, and lt. brown med. med. plastic, silty CLAY w/ trace sand and occasional gravel, moist (CL)	17	S-6	PS	1.2/3.5	PP=1.5-2.0 TSF	Attempt to drill through obstructions by drilling to 18.8 ft w/ 4 1/8 IN. TRICONE. Unable to remove obstruction (pushing rock)	
		18						
	Light BROWN, NONPLASTIC, FINE TO MED SAND, SUBROUNDED, POORLY GRADED, WITH TRACE COARSE SAND, MOIST, FILL (SP)	19	S-7	PS	0.1/1.0	No PP	S-7 Not able to accurately record recovery. Advance pitcher sampler 0.4 ft to recover cobble.	
21.0		20	S-8	PS	1.9/2.5	DRILLING NO PP ON SAND	S-8 56% Recovery	
		21					S-9 25% Recovery	
		22					Drilled cuttings indicates cement at 23.3 to 23.4 ft, stop drilling. Piece of red concrete at bottom of sampler.	
	OCCASIONAL GRAVEL NOTED	23	S-9	PS	0.4/1.6	DRILLING NO PP ON	CPCO informed of obstruction and presence of red matrix concrete.	
10.6	BOTTOM OF BORING 23.4 ft	24					D. Sibbald instructs WCC to abandon boring after confirming that the red matrix concrete indicates that an electrical conduit has been encountered.	
		25					Boring back-filled w/ cement bentonite grout. Up to ground surface.	
		26						
		27						
		28						
		29						
		30						
		31						
		32						

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Fig. A-3

SYNTHESIZED
OF BORING. FDE-9A

SHEET...1. OF 3....

Project	MIDLAND NUCLEAR PLANT	project no.	81C217-2a
Location	MIDLAND, MICHIGAN	elevation & datum	COORDINATES +634.0 (NGS) S 5052 E 259
drilling agency	D Y G DRILLING	date started	5 MAY 81
drilling equipment	CME-55	date finished	6 MAY 81
size & type of bit	6 IN CFA 4 3/4 IN TRICONE	completion depth	41.4 ft.
casing	5 IN ID STEEL	rock depth	NOT ENCOUNTERED
casing hammer:	N/A weight N/A drop N/A	no. samples	3
sampler	Osterberg (OS) Pitcher (PS) split spoon (SS)	dist.	undist. 17 core 0
sampler hammer:	No. 1 weight 140 lbs drop 30 IN	water level first	N/A compl. N/A 24 hr. N/A
		driller	BARRY THOMASSON
		prepared by	KEVIN ODEA
		supervisor	GEORGE HESS
		reviewed by	12 June 81 James Stenborg

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist bl/6in		
640	BROWN, SAND W/TRACE FINE GRAVEL, FINE TO MED, POORLY GRADED SAND, MOIST(SP)	1					SET UP RIG 2 FT. SOUTH AND 0.1 FT WEST OF COE-9	
		2					APPROVAL TO ADVANCE BORING GIVEN BY DONALD SIBBALD OF CPCO. ANCHOR RIG W/ 2 CONCRETE BLOCKS. BORING WAS ADVANCED TO 6.4 FT W/ 6 IN CFA	
		3					HARD OBSTRUCTION ENCOUNTERED AT 6.4 FT. STOP DRILLING AND INFORM CPCO.	
		4					OBSTRUCTION IDENTIFIED AS CONCRETE MUD MAT CPCO AUTHORIZES WCC TO DRILL THROUGH CONCRETE.	
629.0		5					DRILL 4 3/4 IN TRICONE AND REVERT DRILL FLUID TO 7.7 FT	
		6					SET 5 IN ID STEEL CASING TO 7.1 FT.	
	CONCRETE	7					RIG ANCHORED W/ 2 CONCRETE BLOCKS	
		8					S-1 76% RECOVERY	
		9					CASING ADVANCED TO 7.5 FT AFTER TAKING 6-1.	
	STIFF, MOTTLED GRAY AND BROWN, LOW PLASTIC SILTY CLAY W/TRACE TO SOME FINE TO COARSE SAND, AND FINE MED. TO HIGHLY PLASTIC CLAY, MOIST (CL)	10	5-1	OS	1.9/2.5	PP = 1.0 - 2.2 TSF		
24.0		11	5-2	OS	1.0/3.5	PP = 0.5 - 1.0 TSF	S-2 40% RECOVERY, Push 2.5 ft BECAUSE 1.5 FT OF SAMPLE WAS NOT RECOVERED, DRILL TO 11.2 FT TO BEGIN SAMPLE S-3.	
	SOFT TO FIRM, GRAY AND BROWN, LOW PLASTIC SILTY CLAY W/TRACE TO SOME FINE TO MED SAND, TRACE OF COARSE SAND AND FINE GRAVEL, MOIST TO WET (CL)	12	5-3	OS	2.25/2.5	PP = 0.25 - 3.75	S-3 90% RECOVERY PUSH OS FROM 11.2 TO 13.7 TOP 1.5 FT OF RECOVERED SAMPLE CONSIDERED RECOVERY OF SAMPLE LOST IN S-2.	
	BECOMES FIRM TO STIFF	13						
		14						

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Fig. A-3

V. THESIZED

LOG OF BORING CFE-9A.

SHEET 2 OF 3...

ELEVATION	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet resist bl/6in			
10.0	STIFF to HARD, LT. BROWN, LOW PLASTIC SILTY CLAY w/ TRACE TO SOME FINE to MEDIUM SAND AND FINE GRAVEL, MOIST (CL)	15	5-4	OS	0.8/2.5	PP=10.5 TSF	2.5 TSF	5-4 36% RECOVERY, PUSH 2.6 FT BOTTOM 1.6 FT OF SAMPLE SLIDES FROM TUBE DURING REMOVAL. DRILL TO 14.7 FT. AND PUSH OS TO 16.2 FT TO ATTEMPT TO RECOVER SAMPLE LOST IN 5-4.	
	BECOMES HARD	16	5-5	OS	1.0/2.5	PP=10.5 TSF	2.5 TSF	5-5 95% RECOVERY SET OS AT 14.7 FT. PUSH OS TO 16.7 FT TO ATTEMPT TO RECOVER SAMPLE LOST IN 5-4. TOP OF SAMPLE POSSIBLY DISTURBED	
		17	5-6	OS	1.0/2.5	PP=10.5 TSF	2.5 TSF	5-6 100% RECOVERY PUSH 0.2 FT BEFORE SAMPLER IS REFUSED.	
		18	5-7	PS	1.2/2.5	PP=4.5 - 2.5	2.5 TSF	5-7 48% RECOVERY CHANGE TO PS DUE DIFFICULTY PUSHING OSTERBERG.	
14.0	STIFF to V. STIFF, LT BROWN AND GRAY, LOW PLASTIC SILTY CLAY w/ TRACE FINE to COARSE SAND AND LT. BROWN to TAN, MED. PLASTIC CLAY, MOIST (CL)	20	5-8	PS	1.0/1.0	PP=20- 2.5 TSF	2.5 TSF	5-8 100% RECOVERY	
		21	5-9	OS	1.5/1.6	NO PP ON SAND	2.5 TSF	5-9 94% RECOVERY	
	LT. BROWN, NONPLASTIC SAND, FINE, POORLY GRADED w/ TRACE OF FINES, MOIST (SP)	22							
		23	5-10	OS	2.1/2.3	NO PP ON SAND	2.5 TSF	5-10 71% RECOVERY	
19.0	OCCASIONAL LIGNITE AND ORGANICS	25	5-11	OS	2.2/2.2	NO PP ON SAND	2.5 TSF	5-11 100% RECOVERY	
		26						END SHIFT 5 MAY 81 BEGIN SHIFT 6 MAY 81	
		27	5-12	OS	1.6/1.6	NO PP ON SAND	2.5 TSF	5-12 100% RECOVERY	
		28	5-13	OS	0.2/1.1	NO PP ON SAND	2.5 TSF	5-13 18% RECOVERY BOTTOM OF TUBE BADLY BENT.	
14.0	V. STIFF to HARD, GRAY BROWN, LOW PLASTIC SILTY CLAY w/ TRACE SAND AND GRAVEL (CL)	29							
	LT. BROWN, NONPLASTIC, SAND, FINE, POORLY GRADED SAND w/ TRACE OF FINES AND ORGANICS (SP)	30	5-14	OS	2.5/2.5	PP ON CL = 33-34.5 TSF	2.5 TSF	5-14 100% RECOVERY SILTY CLAY IN TOP OF TUBE. SAME MATERIAL INFERRED IN BOTTOM OF 5-13	
		31							
		32						5-15 - SEE P. 3 OF 3.	

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CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-3

SYNTHESIZED
LOCATION OF BORING C.P.E. - 9A

SHEET 3.. OF 3...

ELEVATION	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penetr. resist. bl/6in		
9.0	LT. BROWN, NONPLASTIC SAND, FINE TO MED. POORLY GRADED, W/ TRACE FINE TO MED. GRAVEL AND OCCASIONAL ORGANICS, WET (SP)	33	5-15 (cont)	OS	2.3/2.5	NO PPON SAND	5-15 92% RECOVERY	
		34						
		35	5-16	OS	1.8/2.1	NO PPON SAND	5-16 86% RECOVERY	
		36						
	LT. TO MED. BROWN, SAND, FINE TO MED. POORLY GRADED SAND W/ TRACE OF FINES AND FINE GRAVEL, MOIST (SP)	37	5-17	OS	0.25/0.2	NO PPON SAND	5-17 42% RECOVERY SAMPLER REFUSED AFTER 0.6 FT PUSH. SOIL BECOMES MORE DENSE.	
	VERY DENSE	38	5-18	SS	0.7/1.5	16	5-18 60% RECOVERY	
						24		
						33	N=57	
	VERY DENSE	39	5-19	SS	1.05/1.5	20	5-19 70% RECOVERY	
						32	N=71	
						39		
9.0		40	5-20	SS	1.1/1.5	24	5-20 73% RECOVERY	
	VERY DENSE	41				37	N=85	
						48		
9.6	BOTTOM OF BORING 41.4 ft	42					PIEZOMETER WAS INSTALLED IN BOREHOLE AT COMPLETION.	

WOODWARD-CLYDE CONSULTANTS

SYNTHESIZED CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
JOB OF BORING. COE-10.Fig. A-9
SHEET 1.. OF 3...

Project	MIDLAND NUCLEAR PLANT	project no.	81C 217
Location	MIDLAND, MICHIGAN	elevation & datum	COORDINATES + 638.9 FT (USGS) S 5050, E 330
Drilling agency	D & G DRILLING	date started	15 APRIL '81
Drilling equipment	MOBILE A-56	date finished	16 APRIL '81
Size & type of bit	4" PAWNER, 4 7/8 IN TRICONE ROLLER	completion depth	42.5 FT
Casing	5 IN. ID STEEL	rock depth	NOT ENCOUNTERED
Casing hammer	N/A weight N/A drop N/A	no. samples	dist. 3 undist. 13 core NONE
Sampler	OSTERBERG, PITCHER, SPLIT SPOON	water level first	N/A compl. N/A 24 hr. N/A
Sampler hammer	2 weight 140 lb drop 30 in.	driller	LARRY KODITER
		supervisor	KEVIN ODEA
		prepared by	LURE L. HEFFERNAN
		reviewed by	15 JUN 81 James Stenborg

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			to loc	type	recov.	penet resist bl/6in			
629		1						RIG SET UP 0.5 FT WEST AND 0.1 FT SOUTH OF SURVEY NAIL. DONALD SIBBOLD CPG. APPROVED BORING LOCATION.	
	BROWN, NONPLASTIC, SAND, FINE-COARSE SUBROUNDED W/ TRACE FINES, OCCASIONAL FINE GRAVEL, DRY-MOIST. (SP)	2						ADVANCED CORE HOLE TO 4.5 FT W/ 4" Ø CFA. SET 5 IN. ID CASING TO 3.4 FT. CONTINUE ADVANCING CORE HOLE W/ 4 7/8 IN. TRICONE ROLLER BIT AND REVERT DRILLING FLUID TO 60 FT.	
		3							
		4							
628.7		5							
		6							
	BROWN, NONPLASTIC, SAND, FINE-COARSE SUBANGULAR - SUB ROUNDED, WELL GRADED, MOIST. (SP)	7	5-1	OS	2.3/2.5 FT			S-1 0.2 FT OF SAMPLE FALLS FROM BOTTOM OF TUBE DURING EXAMINATION. 92% RECOVERY.	N/A
		8							
	OCCASIONAL GRAVEL W/ BLACKISH SLUDGE, PAINT ORGANIC ADH	9	5-2	OS	0.9/0.9 FT			S-2 SAMPLER IS REFUSED AT 9.4 FT DEPTH. HIT HARD MATERIAL AT THIS DEPTH. CPG. IDENTIFIES MATL AS MUD MAT AND REQUESTS DRILLER TO DRILL THROUGH IT. 89% RECOVERY	
623.9	CONCRETE	10		DAILY	9 7/8 IN TRICONE ROLLER BIT			DRILLED OUT WITH ROLLER BIT.	
		11							
	NO SAMPLE OBSERVED IN FIELD SEE REMARKS.	12	5-3	OS				S-3 TUBE BADLY CRIMPED FROM ITS BOTTOM TO 1.4 FT UP. THE REST OF THE TUBE IS OUT OF ROUND. UNABLE TO CLEAN OUT SLOUGH ON TOP OF SAMPLE OR EXAMINE BOTTOM OF SAMPLE. UNABLE TO RECORD ACCURATE RECOVERY FIGURE	
		13							
619.9	HARD, BROWN AND GRAY, LOW-MED PLASTIC SILTY CLAY W/ TRACE-SOME SAND, OCCASIONAL GRAVEL MOIST (CL)	14	5-4						

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Fig. A-4

S. PRESIZED
LA. BORING COE-10.

SHEET...2 OF 3...

E. TV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist. bl/ft		
619.9	HARD, BROWN AND GRAY, LOW-MED PLASTIC SILTY CLAY W/TRACE-SOME SAND, OCCASIONAL FINE GRAVEL, MOIST. (CL)	15	S-4 CONF.	PS	11/2.5 FT.	PP > 4.5 SF	S-4 DRILLING INDICATES SORTED MATE. (INCREASED DRILLING RATE) FROM 15.2 - 15.7 FT. 44% RECOVERY.	
	LESS SAND, BECOMES WET.	16					S-5 0.2 FT OF SAMPLE FALLS FROM TUBE UPON EXTRACTION, SAND MOVES TO BOTTOM OF TUBE BEFORE EXAMINATION OF SAMPLE. THE SAMPLE RETAINED ITS PLACE AT THE BOTTOM OF THE TUBE.	
	BROWN, NON PLASTIC, SAND, FINE-MED, SUBROUNDED POORLY GRADED W/TRACE FINES, OCCASIONAL GRAVEL, WET. (SP) FILL	17	S-5	OS	2.5/2.5 FT	NO PP ON SAND		
14.9	NO RECOVERY	18					S-6 NO RECOVERY - UPON EXTRACTION, BROWN FLUID (SAND AND DRILL FLUID) RUNNING OUT OF BOTTOM OF TUBE, TUBE WAS NOT DAMAGED.	
	BROWN, NON PLASTIC SAND, FINE-MED, SUBROUNDED, W/TRACE FINES, WET. (SP)	19	S-6A	OS	0.0/2.5	1	S-6B SECOND ATTEMPT TO RETAIN SAMPLE FROM 18.5 TO 21.0 FT. (PUSH 0.3 FT BELOW PREVIOUS ATTEMPT) OSTERBERG SAMPLER USED. RECOVERY 0.7/2.5 FT (28%)	
	W/OCCASIONAL GRAVEL	20					S-7 TUBE BENT ON BOTTOM. OUT OF ROUND. 92% RECOVERY.	
	W/TRACE ORGANICS	21	S-7	OS	2.3/2.5 FT	NO PP ON SAND		
609.9		22					S-8 SAMPLE AT TOP OF TUBE AND BOTTOM OF TUBE POSSIBLE SEPERATION OF SAMPLE IN TUBE. UNABLE TO ACCURATELY MEASURE RECOVERY BOTTOM OF TUBE IS BADLY CRIMPED.	
	SAND SIZE BECOMING VERY FINE, W/OCCASIONAL FINE GRAVEL	23	S-8	OS	SEE REMARKS	NO PP ON SAND	S-9 100% RECOVERY	
		24						
		25	S-9	OS	2.5/2.5 FT	NO PP ON SAND		
		26					S-10 BOTTOM OF TUBE BENT. 84% RECOVERY.	
		27						
		28	S-10	OS	2.1/2.5 FT.	NO PP ON SAND	S-11 88% RECOVERY	
601.9	MIXED COLORS, NON PLASTIC SAND, MED-COARSE, SUBANGULAR-SUB ROUNDED, WELL GRADED, W/TRACE FINE GRAVEL, WET. (SW)	29						
	SAND BECOMING FINER SIZED.	30						
		31	S-11	OS	2.2/2.5 FT.	NO PP ON SAND		
		32						

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Fig. A-4

SYNTHESIZED
LOG OF BORING LOG-10...

SHEET. 3. OF 3.

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penetration resist bl/6in		
601.9								
		33	S-11	cont.			END OF SHIFT 15 APRIL 81 START OF SHIFT 16 APRIL 81	
	GREENISH-BROWN, NON PLASTIC SAND (V FINE-FINE SURROUNDED POORLY GRADED W/ TRACE ORGANICS, FAINT ORGANIC odor, WET. (SP)	34	S-12	OS	2.1/2.5 FT.	NO PLOW SAMPLE	S-12 BOTTOM OF TUBE BENT 84% RECOVERY	
		35						
	GRADES TO GRAY SILTY SAND (SM)	36					S-13 BOTTOM OF TUBE BENT 96% RECOVERY	
586.9	HARD, GRAY, MEDIUM PLASTIC SILTY CLAY W/ TRACE ORGANICS, DRY LT GRAY SILT PARTINGS. (CL)	37	S-13	OS	2.4/2.5 FT.	NO PLW CLAY > 4.5 FT		N/A
		38					SWITCHED TO SPLIT SPOON SAMPLING S-14 80% RECOVERY	
		39	S-14	SS	1.2/1.5 FT.	11	N=64	
	W/ THIN LAMINATIONS OF LT GRAY DRY SILT (ROCK FLOUR).	40	S-15	SS	1.4/1.5 FT.	25	S-15 93% RECOVERY N=95	
		41				38		
		42	S-16	SS	1.5/1.5 FT.	15	S-16 100% RECOVERY	
581.9						37		
						58		
						14		
						26		
						45	N=71	
	BOTTOM OF BORING 42.5 FT	43						
		44					A MONITORING WELL WAS INSTALLED IN THIS CORE HOLE.	
		45						
		46						
586.9		47						
		48						
		49						
582.9		50						

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-5

SYNTHESIZED
LOG OF BORING. COE-10A

SHEET...1..OF..2....

Project MIDLAND NUCLEAR PLANT		Project no. 81C217	
Location MIDLAND, MICHIGAN		elevation & datum +634.0 (USGS) COORDINATES S 5050, E 327	
drilling agency D & G DRILLING		date started 27 APRIL '81 date finished 27 APRIL '81	
drilling equipment MOBILE B-61		completion depth 23.0 FT. rock depth NOT ENCOUNTERED	
size & type of bit 6 IN. & AUGER, 4 7/8 IN. & TRICONE AUGER		no. samples 0 dist. 0 undist. 5 NOUE	
using 5 IN. I.D. STEEL		water level first N/A compl. N/A 24 hr N/A	
using hammer: N/A weight N/A drop N/A		driller GARRY THOMASSON	
sampler OSTERBERG		prepared by LUKE L. HEFFERNAN	
impler hammer: N/A weight N/A drop N/A		supervisor GEORGE K. HESS	
reviewed by James Stenborg 1981			

ELEV. ft	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist.		
14.0	LT BROWN, FINE-MED GRAINED POORLY GRADED GRAVELLY SAND w/TRACE SILT, CLAY, MOIST. (SP)	1					RIG SET UP WITHIN 0.1 FT OF CPG SURVEY NAIL LOCATION. DONALD SIBBALD (KPO) APPROVED DRILLING LOCATION.	
	LT BROWN, SAND, FINE-MED, POORLY GRADED, w/SOME COARSE SAND, MOIST. (SP)	2					BORING WAS ADVANCED w/ 6 IN. & CFA TO 2.2 FT. DEPTH	
		3					ADVANCEMENT OF BORING WAS CONTINUED w/ 4 7/8 IN. TRICONE ROLLER BIT, AND BENTONITE DRILLING FLUID.	
		4						
629.0		5						
		6						
		7						
		8						
		9						
	CONCRETE	10						
629.0		11					S-1 END OF TUBE SLIGHTLY BENT 60% RECOVERY	
	HARD, MOTTLED LT BROWN AND GRAY, LOW PLASTIC, SILTY CLAY w/TRACE FINE-MED SAND, FINE- MED GRAVEL, MOIST. (CL)	12	5-1	OS	1.7/2.5 FT	PP > 4.5 TSP		
		13	5-2	OS	1.5/2.5 FT	PP > 3.5 TSP	S-2 64% RECOVERY	
628.0		14						

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-5

SYNTHESIZED
LOCATION OF BORING C.O.E.-10.A.

SHEET 2 OF 2...

ELEVATION	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recovery	depth	depth		
6-2.0	V. STIFF - HARD, MOTTLED GRAY BROWN LOW-MED PLASTIC SILTY CLAY W/ TRACE - SOME SAND, TRACE FINE GRAVEL, MOIST. (CL)	15	S-2	CONF.	↑	↑		S-3 100% RECOVERY	
	LT. BROWN, SAND. (FINE GRAINED, POORLY GRADED), W/ TRACE SILT, MOIST-WET. (SP)	16	S-3	OS	1.8/1.8 FT.	NO PROUS SAND			
		17							
		18	S-4	OS	1.25/2.5 FT.	NO PROUS SAND		S-4 END OF TUBE BENT INWARD 50% RECOVERY	
150	BECOMING WET	19							N/A
		20						BORING CONTINUED W/ 4 3/4" TRICONE ROLLER BIT AND BENTONITE SLURRY TO NEXT SAMPLE ZONE.	
		21							
		22	S-5	OS	2.1/2.5 FT.	NO PROUS SAND		S-5 84% RECOVERY	
	TRACE FINE GRAVEL, MED SAND.	23							
610.0	BOTTOM OF BORING 23.0	24						SAMPLING ENDED AT 23.0 FT DEPTH BASED ON COHESIVE SOIL (FILL) LOCATION IN BORING C.O.E.-10.	
		25							
		26						BORING BACKFILLED WITH BENTONITE-CEMENT GROUT UP TO GROUND SURFACE.	
		27							
		28							
605.0		29							
		30							
		31							
602.0		32							

WOODWARD-CLYDE CONSULTANTS

SYNTHESIZED CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
LOG OF BORING. P.O.E.-11..Fig. A-6
SHEET. 1. OF. 3...

Project		MIDLAND NUCLEAR PLANT		project no. 81C217	
Location		MIDLAND, MICHIGAN		elevation & datum +633.5 FT (USGS) COORDINATES 55790, E 171	
drilling agency		A Y G DRILLING		date started 13 APRIL 81 date finished 14 APRIL 81	
drilling equipment		MOBILE B-56		completion depth 38.0 FT. rock depth NOT ENCOUNTERED	
size & type of bit		4 IN CFA ; 4 3/8 IN TRICONE		no. samples dist. 2 undist. 15 core 0	
casing		5 IN ID STEEL		water level first N/A compl. N/A 24 hr. N/A	
casing hammer:		N/A weight N/A drop N/A		driller LARRY KODITEK prepared by KEVIN O'DEA	
sampler		OSTERBERG (OS) PITCHER (PS) SPLITSPOON (SS)		supervisor KEVIN O'DEA reviewed by 15 June James Stenborg 1981	
sampler hammer:		No. 2 weight 140 lbs drop 30 IN			

F' EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recovery	penetration resist bl/6in		
6.5	BROWN, NONPLASTIC, SAND, MED. TO COARSE W/SOME FINES AND TRACE OF FINE GRAVEL, DRY TO MOIST (SP-SM)	1					SET UP RIG WITHIN 0.1 FT OF SURVEY NAIL. ANCHOR RIG W/ 2 CONCRETE BLOCKS. APPROVAL TO ADVANCE BORING GIVEN BY DON SIBBALD OF CPCO. BORING WAS ADVANCED TO 4.5 FT W/ 4 IN. CFA. SET 5 IN ID STEEL CASING TO 3.6 FT. MIX DRILLING FLUID - 20 LBS BENTONITE TO 50 GALS. WATER. DRILL W/ 4 3/8 IN TRICONE TO 5.3 FT. OBSTRUCTION ENCOUNTERED AT 4.8 FT. CPCO AUTHORIZES WCC TO DRILL THROUGH (4.8-5.3 FT) OBSTRUCTION (CONCRETE MVD MAT).	↑
2								
3								
4								
28.5	CONCRETE	5						
	MIXED COLORS, NONPLASTIC, SAND MED TO COARSE W/ TRACE OF FINES, TRACE OF FINE GRAVEL, WET (SP)	6	S-1	OS	2.1/2.5	AB P P ON SAND	S-1 84% RECOVERY	N/A
		7						
		8						
		9						
23.5	STIFF, BROWN, MED. PLASTIC, SILTY CLAY W/ TRACE TO SOME SAND AND OCCASIONAL FINE GRAVEL, MOIST (CL)	10	S-2	OS	2.4/2.5	PP = 1.25 TSF	S-2 96% RECOVERY	
		11	S-3	OS	1.4/1.6	PP = 3.5 TSF	S-3 88% RECOVERY CHAIN AND BINDER BREAK AFTER 1.6 FT. PUSH	
	BROWN AND GRAY	12	S-4	OS	0.9/1.0	PP = 1.0 TSF	S-4 90% RECOVERY TUBE BADLY BENT.	
		13	S-5	OS	0.9/1.0	PP = 1.0 TSF	S-5 76% RECOVERY	
	BELONGS HARD	14						

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-6

5) THE SIZED
L OF BORING . GPF-11.

SHEET. 2. OF. 3....

E. IV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist bl/6in		
3.5	V. STIFF TO HARD, BROWN AND GRAY, MED. PLASTIC, <u>SILTY CLAY</u> W/ TRACE OF SAND, MOIST (CL)	15	5-5 CONT	OS	1.9/2.5	PP = 4.57	5-5 76% RECOVERY	A
		16	5-6	PS	1.0/2.5	PP = 3.35	5-6 40% RECOVERY	
		17						
		18	5-7	OS	1.0/2.5	PP = 4.57	5-7 0.2 ft Rec. - placed in Jar STOP TEST AFTER 0.5 FT PUSH BECAUSE OF EXCESSIVE LEAKAGE THROUGH DRILL ROD JOINTS	
		19	5-8	OS	1.0/2.5	PP = 4.57	5-8 NO RECOVERY, FIRST ATTEMPT PUSH OS AGAIN FROM 18.4 to 20.9. RECOVER 1.8 FT. SAMPLE POSSIBLY DISTURBED.	
13.5		20						
	LT. BROWN, NONPLASTIC, SAND FINE TO MED, SUBROUNDED, POORLY GRADED W/ TRACE OF FINES AND COARSE SAND, wet (SP-SM)	21	5-9	OS	1.0/2.5	PP = 4.57	5-9 NO RECOVERY. CHAIN AND BINDER BREAK AFTER 0.2 FT PUSH, STOP TEST. TUBE BENT. SMALL AMOUNT OF DISTURBED SAMPLE RECOVERED DRILL TO 21.2 FT W/ 4 3/8" TRICONE TO REMOVE COBBLE FROM 21.0-21.2 FT.	N/A
		22	5-10	OS	1.1/2.2	PP = 4.57	5-10 50% RECOVERY STOP SAMPLER ADVANCE AT 23.2 FT. BECAUSE CIRCULATION IS BLOCKED. REARM BORING TO 23.4 FT W/ TRICONE ENCOUNTER COBBLE. DRILL THROUGH TO 23.8 FT TO REMOVE.	
		23						
		24						
		25	5-11	OS	2.2/2.5	PP = 4.57	5-11 88% RECOVERY	
8.5		26						
	BROWN, LOW PLASTIC, <u>SANDY CLAY</u> W/ TRACE OF GRAVEL, WET (CL)	27	5-12	OS	1.9/2.5	PP = 4.57	5-12 76% RECOVERY * * TUBE BENT AND CRIMPED. SAMPLE POSSIBLY DISTURBED. NOT ABLE TO MEASURE RECOVERY ACCURATELY. NOT ABLE TO TEST W/ PP.	
		28						
	LT. BROWN, NONPLASTIC, <u>SAND</u> V. FINE TO FINE, SUBROUNDED, POORLY GRADED, W/ SOME FINES AND TRACE OF ORGANICS, WET (SM)	29	5-13	OS	1.0/2.5	PP = 4.57	5-13 * NOT ABLE TO MEASURE RECOVERY ACCURATELY AS ~ 0.2 FT OF SAMPLE SLIDES FROM TUBE DURING EXAMINATION.	
		30						
		31	5-14	OS	2.3/2.5	PP = 4.57	5-14 92% RECOVERY	
		32						

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CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-6

SYNTHESIZED
OF BORING .CCE.-11.

SHEET. 3. OF. 3...

E EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet resist bl/6in		
B.5	LT. BROWN, NONPLASTIC, SAND, V. FINE TO FINE, SUBROUNDED, POORLY GRADED W/ SOME FINES AND TRACE FINE GRAVEL	33	5-14	CONT			S-15 88 % RECOVERY BOTTOM OF TUBE EARLY BENT	N/A
		34	5-15	OS	2 1/2	NO PROB SAND	ON N. RAMANUJAM'S DIRECTION, SALT SPOON SAMPLING BEGAN AT 35.3 FT.	
	V. DENSE, GRAY, NONPLASTIC, SAND, V. FINE TO FINE SUBROUNDED, POORLY GRADED W/ 30 TO 50% FINES AND TRACE OF LIGNITE FRAGMENTS, NET (SM)	35						
		36	5-16	SS	0 1/2	24 102	S-16 90% RECOVERY N = 102 / 0.5 FT. (R)	
	37.3-37.7 V. DENSE, GRAY, NONPLASTIC SANDY SILT, V. FINE SAND, MOST (ML)	37					S-17 100% RECOVERY	
595.5		38	5-17	SS	0 3/4	75 100	N = 100 / 0.2 FT (R)	
	BOTTOM OF BORING 38.0 FT.	39					RAMANUJAM OF CCL INSTRUCTS K. O'DEA TO TERMINATE BORING AT 38.0 FT.	
		40					BORING IS BACKFILLED W/ CEMENT-BENTONITE GROUT	

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SYNTHESIZED
LOG OF BORING. FDE-11A.

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-7
SHEET 1 OF 2...

Project	MIDLAND NUCLEAR PLANT	project no.	BIC217-
Location	MIDLAND, MICHIGAN	elevation & datum	COORDINATES +633.4 FT. (USGS) S 5141 E 168
drilling agency	O & G DRILLING	date started	date finished 4 MAY 81 4 MAY 81
drilling equipment	MOBILE B-61	completion depth	rock depth 29.1 FT N/A
size & type of bit	6 IN 4 CFA; 4 3/4 IN Ø TRICONE	no. samples	dist. 0 undist. 8 core 0
casing	5 IN ID STEEL	water level first	N/A compl. N/A 24 hr. N/A
casing hammer:	N/A weight N/A drop N/A	driller	prepared by BARRY THOMASSON KEVIN O'DEA
sampler	OSTERBERG (OS) PITCHER (PS)	supervisor	reviewed by 15 June GEORGE NESS James Stenberg 1981
sampler hammer:	N/A weight N/A drop N/A		

F.T. EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc.	type	recov.	sample length ft	resist bl/6in		
3.4		1						SET UP RIG 0.75 FT SE OF STAVEY NAIL. ANCHOR RIG W/ 2 CONCRETE BLOCKS.	
	BROWN, SAND, MED W/SOME COARSE AND TRACE FINE SAND AND FINE GRAVEL, POORLY GRADED, MOIST (SL)	2						APPROVAL TO ADVANCE BORING GIVEN BY DON SIGBALD OF CPLC	
		3						DRILL TO 7.5 FT W/ 6 IN CFA.	
		4							
628.4		5							
		6							
	BECOMING WET	7						WATER DETECTED AT 7.5 FT	
		8						DRILL W/ 4 3/4 IN TRICONE W/ REVERT DRILLING FLUID TO 9.0 FT.	
		9						SET 5 IN ID CASING TO 8.4 FT.	
23.4		10	5-1	OS	2.3/2.5			S-1 92% RECOVERY	
	HARD, GRAY AND BROWN, LOW PLASTIC SILTY CLAY, W/ TRACE TO SOME FINE SAND AND TRACE FINE GRAVEL, MOIST (CL); and MED PLASTIC LT BROWN CLAY, moist (CL)	11						S-2 93% RECOVERY*	
		12	5-2	OS	1.9/1.5			SAMPLE TUBE LEFT IN BORING WHEN OS IS EXTRACTED. RECOVER SAMPLE TUBE BY ADVANCING PITCHER SAMPLER W/ 5 INNER PARTS OVER LODGED TUBE OVERDRILL TO 13.5 FT. TO FORM SOIL PLUG	
	BROWN AND GRAY ONLY	13	5-3	OS	0.3/0.5			AT BOTTOM OF SAMPLER TO RETAIN SAMPLE. RECOVERY IS 1.4 FT INSIDE RETRIEVED TUBE	
		14							

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-7

SYNTHESIZED
OF BORING COE-11A

SHEET 2 OF 2...

E EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist bl/6in		
8.4	HARD, BROWN GRAY, LOW PLASTIC, SILTY CLAY w/ TRACE TO SOME FINE TO MED. SAND AND TRACE FINE GRAVEL, DRY TO MOIST (CL)	15	5-4 (CONT)	OS	1.4/2.5	PP > 4.5 TSF	5-4 64% RECOVERY	
	BECOMES V. STIFF. MIXED w/ LT. BROWN HIGHLY PLASTIC CLAY, MOIST (CL-CH)	16	5-5	OS	1.4/2.5	PP = 3.7 to 4.5 TSF	5-5 56% RECOVERY	
	BECOMES STIFF to V. STIFF	17	5-6	OS	1.3/2.5	PP = 2.0 TSF	5-6 40% RECOVERY	
6.3.4		18	5-7	OS	1.2	NO PP ON SAND	5-7 NOT ABLE TO ACCURATELY RECOVER RECOVERY. CLAY PORTION OF SAMPLE SEPARATED FROM SAND PORTION. CLAY PULLED UP IN TUBE BY PISTON. TUBE BADLY BENT.	N/A
	LT. BROWN, NONPLASTIC SAND FINE TO MED., POORLY GRADED w/ TRACE COARSE SAND AND FINE GRAVEL WET (SP).	19						
		20						
		21						
		22						
		23						
		24						
		25						
		26						
		27						
		28	5-8	OS	0/1.8		5-8 NO RECOVERY! BOTTOM OF TUBE BADLY BENT. NO CLAY OBSERVED ON INSIDE OR OUTSIDE OF TUBE. BORING CAVES SLIGHTLY BEFORE IT IS POSSIBLE TO MAKE A SECOND ATTEMPT TO RECOVER SAMPLE. ABANDON BORING.	
0.4.3	BOTTOM OF BORING. 29.1 FT.	29						
		30					PIEZOMETER INSTALLED IN BORING ON 4 MAY 81.	

SYNTHESIZED CONSULTING ENGINEERS, GEOLOGISTS AND ENVIROMENTAL SCIENTISTS
O OF BORING. COE-12.

SHEET 1 OF 3

Project	MIDLAND NUCLEAR PLANT	Project no.	81C217
Location	MIDLAND, MICHIGAN.	elevation & datum	COORDINATES +633.6 M (USGS) 5 5136, E 24A
drilling agency	D & G DRILLING	date started	date finished 14 APRIL 81 15 APRIL 81
drilling equipment	MOBILE B-61	completion depth	rock depth 40.0 NOT ENCOUNTERED
size & type of bit	4 7/8" TRICONE ROLLER	no. samples	dist. 5 undist. 12 core NONE
bitting	5" 1A STEEL	water level first	N/A compl. N/A 24 hr. N/A
bitting hammer:	N/A weight N/A drop N/A	driller	prepared by
sampler	OSTERBERG (OS) HYDRAULIC (HG) SPLIT SPOON (SS)	BARRY THOMASSEN	LUKE L. HEFFERNAN
sampler hammer:	1 weight 140 lb drop 30"	supervisor	reviewed by 16 June James Stentora 1981
		GEORGE R. NESS	

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet resist bl/min		
13.6	V. DENSE, GRAY BROWN, FINE GRAINED POORLY GRADED, <u>SANDY GRAVEL</u> , DAMP. (GP)	1	S-1	JAR	N/A	—	APPROVAL TO ADVANCE BORING WAS GIVEN BY D. WALD SIBBALD (CFO).	
	LT. BROWN <u>SAND</u> , MED- COARSE GRAINED, POORLY GRADED, W/ TRACE FINE GRAVEL, DAMP. (SP)	2	S-2	JAR	N/A	—	BORING WAS STARTED WITHIN 0.05 FT OF CFO SURVEY LOCATION.	
		3					BORING WAS ADVANCED TO 30 FT W/ 6" D.A. CFA.	
		4					BORING CONTINUED W/ 4 7/8" TRI- CONE ROLLER BIT W/ REVERT SLURRY	
62.6	BECOMING CLAYEY	5						
		6					S-3 76% RECOVERY	
	V. STIFF, MOTTLED GRAY-LT BROWN, LOW PLASTIC <u>SILTY CLAY</u> , W/ SOME SAND, TRACE FINE GRAVEL, MOIST. (CL)	7	S-3	OS	1.9 / 2.5 FT	PP = 3.6 TSF		
		8						
		9					S-4 LOST BOTTOM 0.4 FT OF SAMPLE 72% RECOVERY	
62.6		10	S-4	OS	1.0 / 2.5 FT	—		
	DK GRAY-BLACK <u>SAND</u> , MED-COARSE, POORLY GRADED W/ SOME FINE SAND, TRACE ORGANICS, MOIST. (SP)	11					S-5 TUBE BENT ON BOTTOM. BOTTOM 0.2 FT OF SAMPLE SLIDES OUT OF TUBE. PLACED IN JAR. 56% RECOVERY	
		12	S-5	OS	1.4 / 2.5 FT	—		
	BECOMING LT BROWN W/ TRACE FINE GRAVEL.	13						
61.6		14	S-6	+	+	+		

WOODWARD-CLYDE CONSULTANTS
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Fig. A-8

SYNTHESIZED
OF BORING COE-12.

SHEET 2 OF 3...

E EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist		
619.6	V. STIFF MOTTLED GRAY TO BROWN, LOW PLASTIC SILTY CLAY W/ SOME FINE-MED SAND, TRACE FINE GRAVEL, MOIST. (CL) FILL	15	5-6	OS	1.5/2.5 FT	PP: 2.6-3.4 TSE	S-6 60% RECOVERY	
		16					S-7 56% RECOVERY	
		17	5-7	OS	1.4/2.5 FT	PP: 2.5 TSP		
		18						
614.6	BECOMING LT BROWN TAN W/ LOW-MED PLASTICITY, TRACE VERY FINE SAND. (CL)	19			1.5/2.5 FT	PP: 3.0 TO 4.5 TSE	S-8 SAMPLE LESS MOIST THAN S-7 60% RECOVERY	
		20	5-8	OS	1.5/2.5 FT	PP: 3.0 TO 4.5 TSE		
		21	SEE REMARKS				HIT COBBLE AT 21.0 FT. PUSHED BIT TO 21.3 FT. DRILLED OUT TO 21.5 FT W/ 4 3/8" TRICONE ROLLER BIT.	
		22					S-9 END OF TUBE SLIGHTLY BENT 48% RECOVERY	
		23	5-9	OS	1.2/2.5 FT	PP: 3.5 TSE		
	MORE GRAY AND LESS PLASTIC	24						
609.6	HARD, MOTTLED LT BROWN, LT BROWN-TAN LOW-MED PLASTIC, CLAY, W/ SOME SILT, TRACE SAND, MOIST. (CL) FILL	25	5-10	OS	1.7/2.5 FT	PP: 4.5 TO 7.5 TSE	S-10 68% RECOVERY	
		26						
		27						
		28	5-11	OS	1.9/2.5 FT	PP: 1.6 TO 3.5 TSE	S-11 76% RECOVERY	
	STIFF-HARD, LT BROWN-TAN LOW PLASTIC SILTY CLAY TO CLAYEY SILT W/ SOME SAND, TRACE FINE GRAVEL, MOIST. (CL-MG) FILL	29						
604.6	LT. BROWN SAND, FINE-V. FINE GRAINED POORLY GRADED, W/ TRACE SILT, COBBLE, SATURATED. (SP) FILL	30	5-12 A, B, C	A-OS	0.9/0.9 FT, 0.9/1.1 FT		S-12A OSTERBERG SAMPLER PUSHED FROM 29.0 TO 29.5 FT, NO RECOVERY. S-12B PUSH FROM 29.5 TO 30.0 FT WITH OSTERBERG, NO RECOVERY. S-12C HYDRAULIC SAMPLER USED, PUSH FROM 29.1 TO 30.0 FT 100% RECOVERY FOR THIS PUSH. END OF TUBE BENT. BORING ADVANCED TO 31.0 FT W/ 4 3/8" TRICONE ROLLER BIT.	
		31						
601.6		32						

N/A

FLUID LEVEL 21 FT.

END OF SHIFT 14 APRIL 81
START OF SHIFT 15 APRIL 81

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. 4-8

ANTHESIZED
L OF BORING .COE.-12.

SHEET. 3. OF. 3...

E. EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS	
			no. loc	type	recov.	penet resist bl/6in			
601.6	LT BROWN, SAND FINE GRAINED, POORLY GRADED, SATURATED. (SP)	33	S-13	N5	1.1/1.18	NO A	ON S-13	S-13 END OF TUBE BENT. SAMPLE WAS PULLED UP TUBE WITH THE SAMPLER PISTON. 100% RECOVERY.	N/A
		34	S-14	S-14 N5	0.9/1.5	NO A	SAND	S-14 SAMPLER MALFUNCTIONED (TUBE WOULD NOT ADVANCE OUT OF SAMPLER) REMOVED FROM HOLE & REMAINED. WENT BACK IN.	
	NATURAL SAND CONTACT	35	S-15	S5	1.2/1.3	40		S-15 92% RECOVERY N=150/10in. (REFUSAL)	
	V. DENSE, LT BROWN-TAN, SAND, FINE GRAINED, POORLY GRADED, W/TRACE SILT, COARSE SAND, ORGANICS. (SP)	36	S-16	S5	1.0/1.07	54		S-16 100% RECOVERY N=130/6in. (REFUSAL)	
76.6		37	S-17	S5	0.9/0.9	62		S-17 100% RECOVERY N=115/5in. (REFUSAL)	
	TRACE MED SANDS	38						BORING ADVANCED TO 40.0 FT TO ACCOMMODATE PIEZOMETER INSTALLATION. THIS INSTALLATION WAS LATER CANCELLED AND THE BORING WAS BACKFILLED WITH BENTONITE-CEMENT GROUT.	
52.6		39							
	BOTTOM OF BORING 40.0 FT.	40							
		41							
51.6		42							
		43							
		44							
		45							
		46							
58.6		47							
		48							
		49							
57.6		50							

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Fig. A-9

SYNTHESIZED
OF BORING. COE-12A

SHEET. 1...OF. 3....

Project	MIDLAND NUCLEAR PLANT	project no.	81C217
Location	MIDLAND, MICHIGAN	elevation & datum	COORDINATES +633.64 (1965) S 5137, E 253
drilling agency	D&G DRILLING	date started	23 APRIL 81
drilling equipment	MOBILE R-61	date finished	24 APRIL 81
size & type of bit	4 7/8 IN. TRICONE ROLLER	completion depth	39.0
casing	5 IN. ID CASING	rock depth	NOT ENCOUNTERED
casing hammer: N/A weight N/A drop N/A		no. samples	0
sampler OSTERGERS ^(OS) PITCHER (PS)		dist.	undist. 10
sampler hammer: N/A weight N/A drop N/A		water level first	compl. N/A
		driller	BARRY THOMASSEN
		supervisor	GEORGE HEN / KEVIN O'DEA
		prepared by	LUKE L. HEFFERNAN
		reviewed by	16 JUNE 1981 JAMES STENBORG

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc.	type	recov.	weight lb		
628.6	V. DENSE, GRAY-BROWN, FINE-MED POORLY GRADED GRAVEL w/TRACE CLAY AND SAND, MOIST. (GA) FILL	1					APPROVAL TO ADVANCE COE 12A WAS GIVEN BY DONALD SIBBOLD (CRA) BORING IS LOCATED 1.0 FT SE OF 120 (FIRST ATTEMPT AT 12A) ADVANCED W/ 6 IN. DIA. CRA	
	LT BROWN, MED-COARSE GRAINED POORLY GRADED SAND w/TRACE FINE GRAVEL, DAMP. (SP)	2					BORING CONTINUED W/ 4 7/8" TRI CONE ROLLER BIT w/ REVERT SLURRY TO 6.0 FT.	
		3						
		4						
		5						
		6					S-1 END OF TUBE SLIGHTLY BENT 92% RECOVERY.	
	HARD, GRAY BROWN, LOW PLASTIC SILTY CLAY, w/TRACE-SOME FINE- MED SAND, TRACE FINE GRAVEL, MOIST. (CL)	7	S-1	OS	2.3/2.5 FT	PP > 4.5 TSF		
		8						
		9					END OF SHIFT 23 APRIL 81 START OF SHIFT 24 APRIL 81	
		10	S-2	OS	2.0/2.5 FT	PP = 3.0 TSF	S-2 80% RECOVERY	
	LESS SAND	11						
		12	S-3	OS	1.8/2.5 FT	PP = 4.0 TSF	S-3 72% RECOVERY	
	HARD, BROWN, LOW PLASTIC, SILENT CLAY w/SOME SILT AND CLAYEY SAND MIXED, w/TRACE FINE-COARSE GRAVEL (FINE-MED SUBROUNDED SAND) SAMPLE VARYING IN PIECES, MOIST. (CL) FILL	13						
619.6		14	S-4	+	+	+		

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Fig. A-9

SYNTHESIZED
LOG OF BORING COE-12A.

SHEET 2. OF 3....

E EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet.	resist.		
619.6	V. STIFF, BROWN, LOW PLASTIC SILTY CLAY W/ TRACE SAND, MOIST MIXED W/ CLUMPS OF HARD GRAY (CL) LOW PLASTIC, SILTY CLAY OR CLAYEY SILT, DRY TO MOIST. (CL)	15	5-4	OS	10/25 FT	10/25 FT	10/25 FT	5-4 CREASE IN SAMPLE TUBE FROM BOTTOM OF SAMPLE TUBE UP 1.3 FT. SAMPLE POSSIBLE DISTURBED. 40% RECOVERY	
		16						5-5 48% RECOVERY	
	BECOMING HARD, BROWN & GRAY W/ TRACE FINE-COARSE GRAVEL AND LESS CLUMPS OF HARD GRAY SILTY CLAY (CL)	17	5-5	OS	12/25 FT	12/25 FT	12/25 FT		
		18						5-6 REFUSAL AFTER 1.6 FT PUSH. 75% RECOVERY	
514.6	MORE PLASTIC (MED) W/ LESS SAND AND OCCASIONAL FINE GRAVEL (CL)	19	5-6	OS	1.2/16 FT	1.2/16 FT	1.2/16 FT	SWITCH TO PITCHER SAMPLER	
		20						5-7 DRILLING INDICATE GRAVEL OR COBBLE FROM 21.2 TO 21.9 FT. 44% RECOVERY.	
	LOW-MED PLASTIC, MOIST. (CL)	21	5-7	PS	1.1/25 FT	1.1/25 FT	1.1/25 FT		
		22						5-8 GRAVEL INDICATED AT 24.0 FT FROM DRILLING. 40% RECOVERY	
		23							
609.6	GRAY CLAY IS DRYER THAN BROWN. (CL)	24	5-8	PS	1.0/25 FT	1.0/25 FT	1.0/25 FT		
		25						5-9 40% RECOVERY	
	V. STIFF-HARD, BROWN AND LT. BROWN MIXED, LOW-MED PLASTIC SILTY CLAY W/ TRACE FINE SAND, OCCASIONAL FINE GRAVEL, MOIST. (CL) FILL	26	5-9	PS	1.0/25 FT	1.0/25 FT	1.0/25 FT		
		27						5-10 REFUSAL AFTER 1.3 FT PUSH. TUBE CRIMPED ON BOTTOM. 100% RECOVERY.	
	MED PLASTIC (CL)	28	5-10	OS	1.3/13 FT	1.3/13 FT	1.3/13 FT		
604.6	GRAY BROWN AND BROWN NON PLASTIC SAND W/ SOME SILT, TRACE ORGANICS, OCCASIONAL COARSE GRAVEL, (VERY FINE-MED POORLY SORTED SAND) STAGNANT ODOOR. (SM) FILL	29						BORING ADVANCED TO 39.0 FT W/ 4 7/8" TRI-CONE ROLLER BIT, TO PROVIDE A 10 FT INTERVAL FOR THE MONITORING WELL SCREEN.	
	CUTTINGS IN DRILLING MUD INDICATE FINE, BROWN SAND 28.9- 39.0 FT.	30							
601.6		31							
		32							

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Fig. A-9

SYNTHESIZED
LOG OF BORING COE-12A

SHEET 3..OF.3....

E. EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet.	resist.		
674.6	CUTTINGS IN DRILLING FLUID INDICATE FINE BROWN SAND FROM 29.0 - 39.0 FT.	33						DRILLED w/ 4 7/8 IN ϕ TRICONE ROLLER BIT.	N/A
		34							
		35							
		36							
766		37							
		38							
	BOTTOM OF BORING 39.0 FT	39						THIS BORE HOLE WAS USED FOR INSTALLING A PIEZOMETER.	
		40							
		41							
571.6		42							
		43							
		44							
		45							
		46							
586		47							
		48							
		49							
582.6		50							

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 OF BORING... COE-12B (FIRST ATTEMPT OF BORING COE-12A)

Fig. A-10
 SHEET. 1.. OF. 1....

Project	MIDLAND NUCLEAR PLANT	project no.	B/C 217
Location	MIDLAND MICHIGAN	elevation & datum	COORDINATES + 633.6 FT. (USGS) 55136, E 252
Drilling agency	D&G DRILLING	date started	date finished 23 APRIL '81 23 APRIL '81
Drilling equipment	B-61	completion depth	rock depth 8.3 FT NONE ENCOUNTERED
size & type of bit	6 in CFA, 4 7/8 in. TRICONE ROLLER	no. samples	dist. 0 undist. 1 core NONE
casing	3.4 FT LONG, SM. I.C. STEEL	water level first	N/A compl. N/A 24 hr N/A
casing hammer:	N/A weight - drop -	driller	prepared by BARRY THOMASSON LUKE L. HEFFERNAN
sampler	OSTERBERG (OS)	supervisor	reviewed by GEORGE A. HESS JAMES STENDORF
sampler hammer:	- weight - drop -		16 JUNE 1981

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			to loc	type	recov.	depth	resist		
33.6	V. DENSE, GRAY-BROWN, FINE-MED. POORLY GRADED GRAVEL w/ TRACE CLAY, SOME SAND, MOIST (GP)	1						APPROVAL TO ADVANCE BORING WAS GIVEN BY DONALD SIGBALD (CFO).	
		2						BORING LOCATION STARTED WITHIN 0.1 FT OF CFA SURVEY MARK. BORING ADVANCES w/ 6" CFA	
	LT BROWN SAND w/ TRACE FINE GRAVEL. (SP)	3	N/A					BORING CONTINUED w/ 4 7/8 in TRICONE ROLLER BIT w/ REVERT DRILLING FLUID.	
		4							
628.6		5							
	BROWN, FINE-COARSE GRAINED POORLY GRADED SAND w/ TRACE CLAY, MOIST. (SM)	6						S-1 REFUSAL AFTER 1.5 FT PUSH BOTTOM OF TUBE BENT, 73% RECOVERY.	
		7	S-1	OS		1.1/1.5 ft			
		8						ATTEMPTED TO ADVANCE BORING. OBSTRUCTION IN NW SIDE OF HOLE IS FORCING HOLE OFF VERTICAL	
	BOTTOM OF BORING 8.3 FT	9						TOWARDS SE DIRECTION. THIS BORING HOLE WAS ABANDONED AND BACKFILLED WITH BENTONITE-CEMENT GROUT UP TO GROUND SURFACE.	
		10							
		11							
		12							
		13							
619.6		14							

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Fig. A-11

C OF BORING. COE-13.

SHEET. 1..OF.1....

Project	MIDLAND NUCLEAR PLANT	project no.	81C217-2A
Location	MIDLAND, MICHIGAN	elevation & datum	COORDINATES +677.6 FT (USGS) 55132, E 311
drilling agency	O & G DRILLING	date started	21 APRIL 81
drilling equipment	MOBILE B-61	date finished	22 APRIL 81
size & type of bit	6 IN Ø CFA, 4 3/8 IN TRICONE	completion depth	11.9 FT
casing	5 IN ID STEEL	rock depth	NOT ENCOUNTERED
casing hammer:	N/A weight N/A drop N/A	no. samples	2
sampler	OSTERBERG (OS), PITCHER (PS)	dist.	undist. 4 core 0
sampler hammer:	N/A weight N/A drop N/A	water level first	N/A compl. N/A 24 hr. N/A
		driller	GARY THOMASSEN
		prepared by	KEVIN O'DEA
		supervisor	GEORGE HESS
		reviewed by	16 JUNE James Stenboya 1981

ELEV. ft	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc.	type	recov.	percent recovery	depth ft		
628.6	GRAY BROWN, GRAVEL, FINE TO MED, POORLY GRADED W/ TRACE OF FINES DRY (GP)	1	S-1	JAR	1	1		SET UP RIG 0.1 FT SOUTH OF SURVEY NAIL ANCHOR RIG W/ TWO CONCRETE BLOCKS. APPROVAL TO ADVANCE THE BORING GIVEN BY WAYNE BIEHLER OF CPCO.	
	LT. BROWN, NONPLASTIC, SAND, FINE TO MED, POORLY GRADED W/ TRACE COARSE SAND AND FINE GRAVEL, MOIST (SP)	2	S-2	JAR	1	1		ADVANCE BORING TO 2.7 FT W/ 6 IN CFA. RETAIN SAMPLES S-1 AND S-2 IN JARS FROM AUGER CUTTINGS. DRILL W/ 4 3/8 IN TRICONE TO 5.0 FT	
		3							
		4							
		5	S-3	OS	0/0.9	1		S-3 NO RECOVERY. SAMPLE SLID FROM TUBE WHEN SAMPLER IS AT TOP OF CASING	
		6	S-4	OS	0/0.7	1		S-4 NOT ABLE TO ACCURATELY RECORD RECOVERY BECAUSE IT WAS PROBABLY PULLED UP IN TUBE (1.1 FT RECOVERY INVALIDATED)	
	CONCRETE	7						CONCRETE ENCOUNTERED AT 6.6 FT. DRILL THROUGH TO 7.4 FT ON CFA. APPROVAL	
	GRAY BROWN AND LT BROWN, LOW PLASTIC SILTY CLAY W/ SOME SAND AND TRACE FINE TO MED GRAVEL, MOIST (CL)	8	S-5	OS	0.5/0.6	1		S-5 83% RECOVERY	
		9						END SHIFT 21 APR BEGIN SHIFT 22 APR	
		10						ENCOUNTER COBBLE AT 8.0 FT. ATTEMPT TO DRILL THROUGH W/ TRICONE	
		11	S-6	PS	0/0.5 FT	1		S-6 NO RECOVERY BOTTOM OF TUBE WORN THIN FROM TURNING ON COBBLE. IN AN ATTEMPT TO REMOVE THE COBBLE PUSH THIN WALL SAMPLE W/ FLARED TUBE FROM 11.7 TO 11.9 FT. ABANDON BORING ON CPCO INSTRUCTION. BORING BACK- FILLED W/ CEMENT-BENTONITE GROUT.	
621.7	BOTTOM OF BORING 11.9 FT CANNOT MOVE OBSTRUCTION	12	SEE REMARKS						
		13							
		14							

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Fig. A-12

SYNTHESIZED
LOG OF BORING COE-13.R.

(REDRILL OF COE-13)

SHEET 1...OF 3....

Project	MIDLAND NUCLEAR PLANT	Project no.	61C217-2A
Location	MIDLAND, MICHIGAN	Elevation & datum	COORDINATES +633.6 (USGS) S 5133 E 313
Drilling agency	D & G DRILLING	Date started	22 APRIL 81
Drilling equipment	MOBILE R-61	Date finished	23 APRIL 81
Size & type of bit	6 IN Ø CFA; 4 1/8 IN TRICONE	Completion depth	47.6 FT
Casing	5 IN ID STEEL	Rock depth	NOT ENCOUNTERED
Casing hammer	N/A weight N/A drop N/A	No. samples dist.	3 undist. 16 core 0
Sampler	OSTERBERG (OS) PITCHER (PS) SPLIT SPOON (SS)	Water level first	N/A compl. N/A 24 hr. N/A
Sampler hammer	weight 140 lb drop 30 inches	Driller	BARRY THOMASSON
		Prepared by	KEVIN O'DER
		Supervisor	GEORGE NESS
		Reviewed by	16 JUNE 1981 JAMES STENBERG

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			to loc	type	recov.	percent resist	dry blow		
136	GRAY BROWN, GRAVEL, FINE TO MED, POORLY GRADED W/ TRACE OF SAND AND FINES, MOIST (GP)	1						SET UP RIG 20 FT SE OF WESTERN SURVEY NAIL. BORING IS A RELOCATION OF COE-13 IN WHICH AN OBSTRUCTION WAS ENCOUNTERED AT 8.0 FT.	
		2						APPROVAL TO ADVANCE BORING GIVEN BY DONALD SIBBOLD OF CFC.	
		3						ADVANCE BORING TO 2 FT W/ 6 IN CFA.	
		4						BEGIN DRILLING W/ 4 1/8 IN TRICONE AND BENTONITE DRILL FLUID	
		5						DRILL TO 8.0 FT. WHICH IS THE DEPTH AT WHICH THE OBSTRUCTION WAS ENCOUNTERED IN BORING COE-13 AT 8.0 FT.	
		6							
		7							
		8							
		9						5-7 64% RECOVERY SEE BORING LOG COE-13 for 6-1 through 5-6	
		10							
		11						5-8 64% RECOVERY	
		12							
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Fig. A-12

SHEET 2 OF 3

WATER-SIZED
OF BORING COE-13R

DEPTH SCALE ft	DESCRIPTION	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
		no. loc	type	recov.	depth		
15	HARD, GRAY BROWN, LOW PLASTIC, CLAYEY SILT TO SILTY CLAY W/SOME SAND AND TRACE FINE GRAVEL MOIST (CL-ML)	5-9	PS	1.2/1.5 FT	PP > 4.5 TSF	5-9 4% RECOVERY	
16	STIFF TO HARD, LT BROWN AND GRAY, LOW PLASTIC, SILTY CLAY W/SOME FINE TO MED. SAND AND TRACE FINE TO MED. GRAVEL, MOIST (CL)	5-10	PS	1.2/2.5 FT	PP = 1.6 TO 4.5 TSF	5-10 40% RECOVERY	
17		5-11	OS	1.4/2.5 FT	PP = 2.3 TO 4.5 TSF	5-11 56% RECOVERY	
18		5-12	OS	1.2/1.2	—	5-12 100% RECOVERY No PP, TUBE IS BENT INWARD.	
19	HARD, GRAY AND LT BROWN, LOW PLASTIC SILT W/SOME CLAY AND FINE SAND AND TRACE COARSE SAND AND FINE GRAVEL (ML)	5-13	PS	2.5/4.5 FT	PP > 4.5 TSF	5-13 100% RECOVERY	
20		5-14	PS	1.9/2.5 FT	PP > 4.5 TSF	5-14 76% RECOVERY	
21		5-15	PS	2.5/2.5 FT	NO PP ON SAND	5-15 100% RECOVERY	
22	HARD GRAY BROWN, LOW PLASTIC SILTY CLAY W/SOME FINE SAND TRACE MED-COARSE SAND, MOIST-DRY. (CL)	5-16	OS	1.7/1.8 FT	NO PP ON SAND	5-16 REFUSAL AFTER 18 FT PUSH 74% RECOVERY	
23		5-17	—	—	—		
24		5-18	—	—	—		
25	LT BROWN, FINE GRAINED POORLY GRADED SAND W/TRACE SILT, MOIST. (SP)						
26	SAND W/SOME STIFF LT GRAY-LT BROWN, LOW-MED PLASTIC CLAY W/SOME SILT, MOIST (CL)						
27	(SP) W/ LESS SILT						

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Fig. A-12

SYNTHESIZED
LOG OF BORING CORE-13R

SHEET 3 OF 3

ELEV.		DESCRIPTION	DEPTH SCALE ft	SAMPLES					REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
	91.6			no. loc	type	recov.	penet. resist	blows/ft		
		LT BROWN, FINE GRAINED, POORLY GRADED SAND, MOIST (SP)	33	5-17 GWT	OS	2.2/2.5 FT	N/A	NO PP ON SAND	5-17 88% RECOVERY	
			34	5-18	OS	2.0/2.0 FT	N/A	NO PP ON SAND	5-18 100% RECOVERY	
		TRACE SILT	35					N/A	DRILLING FLUID LEVEL @ TOP OF CASING END OF SHIFT 22 APRIL '81 START OF SHIFT 23 APRIL '81	
			36	5-19	OS	2.0/2.0 FT	N/A	NO PP ON SAND	5-19 100% RECOVERY	
	59.6	LT. BROWN-TAN, FINE GRAINED, POORLY GRADED SAND W/ TRACE ORGANICS, TRACE SILT, MOIST TO WET. (SP)	37							
			38	5-20	OS	1.9/1.9 FT	N/A	NO PP ON SAND	5-20 END OF TUBE BENT INWARD 100% RECOVERY	
			39							
			40	5-21	OS	2.2/2.2 FT	N/A	NO PP ON SAND	5-21 100% RECOVERY	
		LESS SILT. (SP)	41							
			42	5-22	OS	2.0/2.0 FT	N/A	NO PP ON SAND	5-22 100% RECOVERY	
	91.6	MORE SILT. (SM)	43							
		V. DENSE, LESS SILT. (SP)	44	5-23	SS	0.9/0.9 FT	32 100 0.4 FT		SWITCHED TO SPLIT SPOON PLACED SAMPLES IN SMALL JARS. 5-23 100% RECOVERY N = 100/0.4 FT (REFUSAL)	
			45						BORING CONTINUED W/ 4 1/2 IN TRI-CONE ROLLER BIT AND BENTONITE SLURRY.	
			46	5-24	SS	1.0/1.0 FT	62 114 0.5 FT		5-24 100% RECOVERY N = 114/0.5 FT (REFUSAL)	
		LESS SILT, MOIST. (SP)							BORING CONTINUED W/ 4 1/2 IN TRI-CONE ROLLER BIT AND BENTONITE SLURRY.	
	86.6		47	5-25	SS	1.0/1.0 FT	60 118 0.5 FT		5-25 100% RECOVERY N = 100/0.5 FT (REFUSAL)	
		BOTTOM OF BORING 47.6 FT.	48							
			49							
	83.6		50						BORE HOLE WAS BACKFILLED W/ BENTONITE-CEMENT GROUT.	

N/A

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Fig. A-13

SYNTHESIZED
LOG OF BORING. COE-13A

SHEET..1..OF..3...

Project		MIDLAND NUCLEAR PLANT		project no. 81C217	
Location		MIDLAND MICHIGAN		elevation & datum +633.5 FT (USGS) COORDINATES 5 5134 E 317	
Drilling agency		D & G DRILLING		date started 1 MAY 81 date finished 1 MAY 81	
Drilling equipment		MOBILE B-61		completion depth 47.5 FT. rock depth NOT ENCOUNTERED	
size & type of bit		6 IN DIA CFA, 4 3/4 IN DIA TRICONE ROLLER		no. samples dist. 0 undist. 12 core N/A	
Casing		5 IN ID STEEL		water level first N/A compl. N/A 24 hr N/A	
Casing hammer: N/A weight - drop -		driller BARRY THOMASSON		prepared by LUKE L. HEFFERNAN	
Sampler OSTERGERG (OS), PITCHER (PS)		supervisor GEORGE R. HESS		reviewed by 16 JUNE JAMES STENBORG 1981	
Sampler hammer: N/A weight - drop -					

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			to loc	type	recov.	penet resist bl/6in		
32.5	GRAY, FINE-MED, POORLY GRADED GRAVEL, W/TRACE FINE-MED SAND, CLAY. (GP)	1					APPROVAL TO ADVANCE COE-13A WAS GIVEN BY DONALD SIBBALD (CPLG).	N/A
	LT. BROWN, FINE-MED GRAINED, POORLY GRADED SAND, W/TRACE COARSE SAND, SILT, MOIST. (SP)	2					CENTER OF BORING STARTED 2.2 FT SOUTH OF COE-13C	
		3					BORING WAS ADVANCED WITH 6 IN. DIA. CFA TO 8.0 FT.	
		4						
628.5		5						
		6						
		7						
		8						
	HARD, GRAY BROWN, LOW PLASTIC SILTY CLAY W/ SOME FINE-MED SAND, TRACE COARSE SAND, FINE GRAVEL, MOIST. (CL)	9					BORING CONTINUED W/ 4 3/4 IN. DIA. TRICONE ROLLER BIT, W/ REVERT DRILLING FLUID.	
623.5		10					S-1 52% RECOVERY	
	BECOMING V. STIFF W/ LESS SAND. (CL)	11	5-1	OS	1.3/2.5 FT	PP = 2.3 TSE		
		12						
		13	5-2	OS	1.4/2.5 FT	PP = 4.25 PP = 2.5 TSE	S-2 SAMPLE TUBE PUSHED ALONGSIDE GRAVEL BOTTOM 0.8 FT OF TUBE IS BROVED. 56% RECOVERY	
619.5		14						

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Fig. A-13

SYNTHESIZED
L OF BORING .COE.-13A

SHEET. 2. OF 3. . . .

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penet. resist bl/6in		
15.5	HARD, GRAY, LOW PLASTIC, <u>SILTY</u> <u>CLAY</u> W/ SOME FINE-MED SAND, TRACE FINE GRAVEL & COARSE SAND, MOIST. (CL)	15	S-2	OS	↑	↑	S-3 56% RECOVERY	
	V. STIFF - HARD W/ LESS SAND (CL)	16	S-3	OS	1.4/2.5 FT	PP: 2.5 TO 4.5 TSE	S-4 56% RECOVERY	
		17						
		18						
14.5	GRAY - GRAY BROWN IN COLOR, W/ OCCASIONAL TAN - LT BROWN, HIGHLY PLASTIC CLAY ZONES. (CL)	19	S-4	OS	1.4/2.5 FT	PP: 2.5 TO 4.5 TSE	S-5 87% RECOVERY	
		20						
	BELOWIES BROWN W/ OUT PLASTIC CLAY ZONES.	21	S-5	OS	1.3/1.5 FT	PP: 4.5 TO 7.5 TSE	S-6 92% RECOVERY	
		22	S-6	OS	1.1/1.2 FT	PP: 4.5 TO 7.5 TSE	S-7 90% RECOVERY	
		23	S-7	OS	0.9/1.0 FT	PP: 4.5 TO 7.5 TSE	SWITCH TO PITCHER SAMPLER S-8 36% RECOVERY	
13.5		24						
	GRAY - BROWN COLOR	25	S-8	PS	0.9/2.5 FT	PP: 4.5 TSE	S-9 100% RECOVERY	
		26						
		27	S-9	OS	1.2/1.2 FT	PP: 4.5 TSE	S-10 REFUSAL AFTER 0.1 FT PUSH WITH OSTERBERG SAMPLER. BOTTOM OF TUBE WAS MODERATELY BENT. NO RECOVERY DRILLED OUT TO 27.8 FT WITH 4 3/4 IN TELECON ROLLER BIT TO REMOVE POSSIBLE COBBLE	
	POSSIBLE COBBLE	28	S-11	OS	SEE REMARKS	SEE REMARKS	S-11 REFUSAL AFTER 0.5 FT PUSH. 100% RECOVERY.	
12.5	HARD, GRAY-BROWN, LOW PLASTIC <u>SILTY CLAY</u> W/ TRACE - SOME FINE-MED SAND, TRACE FINE GRAVEL, COARSE SAND, MOIST. (CL)	29	S-12	PS	1.4/2.5 FT	NO AP ON SAND	SWITCH TO PITCHER SAMPLER S-12 56% RECOVERY	
		30						
	LT BROWN, FINE-MED GRAINED POORLY GRADED <u>SAND</u> , W/ TRACE FINE SAND, MOIST. (SP)	31					BORING CONTINUED TO 47.5 FT FOR THE PURPOSE OF INSTALLING AN OBSERVATION WELL. NO SAMPLES WERE TAKEN BELOW 30.8 FT.	
11.5		32						

N/A

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Fig. A-13

SYNTHESIZED
OF BORING COE-13A

SHEET 3 OF 3

E' EV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penetr resist bl/6in		
1.5								
		33						
		34						
		35						
		36						
596.5		37						
		38						
		39						
		40						
		41						
591.5		42						
		43						
		44						
		45						
		46						
586.5		47						
		48						
		49						
583.5		50						

WOODWARD-CLYDE CONSULTANTS

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SYNTHESIZED LOG OF BORING... COE-138 (FIRST ATTEMPT OF COE-13A)

Fig. A-14

SHEET. 1. OF 2...

Project		MIDLAND NUCLEAR PLANT		project no. 81C217	
Location		MIDLAND, MICHIGAN		elevation & datum +633.5 FT. (USGS) COORDINATES S 5132, E 517	
Drilling agency		D & G DRILLING		date started 30 APRIL '81 date finished 1 MAY '81	
Drilling equipment		B-61		completion depth 47.2 FT. rock depth NOT ENCOUNTERED	
Size & type of bit		6 IN. CFA, 4 7/8 IN. TRICONE ROLLER		no. samples dist. 0 undist. 4 core NONE	
Casing		8.4 FT LONG OF 5 IN. I.D.		water level first N/A compl. N/A 24 hr N/A	
Drilling hammer		N/A weight N/A drop N/A		driller BARRY THOMASSON prepared by LUKE L. HEFFERNAN	
Sampler		OSTERBERG (OS)		supervisor GEORGE K. NESS reviewed by JAMES STENBORG	
Sampler hammer		N/A weight N/A drop N/A		10 JUNE 1981	

ELEV.	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	percent resist		
33.5	V. DENSE, GRAY, FINE-MED POORLY GRADED GRAVEL, W/SOME SILT, TRACE CLAY, MOIST. (GP) FILL	1					APPROVAL TO ADVANCE COE 138 WAS GIVEN BY DONALD SIBBOLD (CPL). BORING STARTED ON CMC SURVEY MARK (MAIL). BORING ADVANCED W/ 6 IN. DIA. CFA	
	LT BROWN, FINE-MED GRAINED POORLY GRADED SAND, W/ TRACE SILT (SP)	2					BORING CONTINUED W/ 4 7/8 IN. TRICONE ROLLER BIT W/ REVERT DRILLING FLUID.	
		3						
		4						
28.5		5						
		6						
	CONCRETE	7					DRILLED THROUGH OBSTRUCTION (PROBABLY CONCRETE MUDMAT) WITH ROLLER BIT PER CPOC APPROVAL	N/A
		8					S-1 60% RECOVERY	
	V. STIFF-HARD, GRAY-LT BROWN MIX, LOW PLASTIC SILTY CLAY W/ TRACE-SOME SAND, TRACE FINE GRAVEL, MOIST. (CL) FILL	9	5-1	OS	15/2.5	AP = 2.5-4.5 TGF		
23.5		10						
	LESS GRAVEL	11	5-2A	OS	0.6/2.5 AT 10.5 FT	PAIF-225 TGF	S-2A LOW RECOVERY FROM FIRST PUSH (20%) THUS A SECOND ATTEMPT TO RECOVER SAMPLE AT THIS LOCATION WAS MADE	
		12	5-2B	OS (JHR)	0.6/2.5 AT 12.5 FT		S-2B SECOND PUSH FROM 10.5-12.0 FT. PUSHED SAMPLE ON OBSTRUCTION (COBBLE) SAMPLE TUBE BENT. RECOVERED CRESENT SHAPED SAMPLE IN CROSS SECTION. 24% RECOVERY.	
	OCCASIONAL COBBLE, STIFF TO V. STIFF.	13	5-3	4				
19.5		14						

Fig. A-14

SHEET. 2. OF. 2.

ELEVATION ft	DESCRIPTION	DEPTH SCALE ft	SAMPLES				REMARKS (DRILLING FLUID, FLUID LOSS, DEPTH OF CASING, CASING BLOWS, ETC.)	CASING BLOWS
			no. loc	type	recov.	penetration resist bl/ft		
6.5								
	HARD, GRAY & BROWN MIX, LOW PLASTIC SILTY CLAY W/ TRACE-SOME FINE-MED SAND, TRACE FINE GRAVEL, MOIST. (CL) FILL	15	5-3	OS	18/25	AP 24.5	S-3 END OF TUBE SLIGHTLY BENT 72% RECOVERY.	
	BECOMING GRAY IN COLOR	16	5-4	OS	02/10		S-4 REPRISAL AFTER 10 FT. PUSH, TUBE BENT ALONG VERTICAL AXIS, END BENT MODERATELY. UNABLE TO ATTAIN PP READING. 20% RECOVERY.	
	POSSIBLE COBBLE NOTED AT 17	17					AFTER DRILLING THROUGH COBBLE IT MOVED IN TOWARDS THE NOSE CAUSING THE HOLE TO BE BLOCKED OFF & NOT ACCESSIBLE FOR SAMPLING INSTRUMENTS.	
	BOTTOM OF BORING 17.2 FT	18						
14.5		19					THIS HOLE WAS ABANDONED & GROUTED UP TO GROUND SURFACE W/ BENTONITE-CEMENT GROUT.	
		20					A NEW BORING WAS STARTED OFF SET FROM THIS ONE'S LOCATION. THIS BORING IS LABELLED COE-130 & THE NEW OFFSET BORING IS LABELLED COE-13A.	
		21						
		22						
		23						
09.5		24						
		25						
		26						
		27						
		28						
04.5		29						
		30						
		31						
00.5		32						

APPENDIX B

Index Property Test Results

TABLE B-0

WOODWARD-CLYDE CONSULTANTS
CLIFTON GEOTECHNICAL LABORATORY
FREQUENTLY USED NOTATION/SYMBOLS

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Symbols

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1.2.1 UNCONSOLIDATED

PP Pocket Penetrometer

TV Torvane

LV Labvane

CP Cone Penetration

UC Unconfined-Compression Triaxial Test

UU or Q Unconsolidated-Undrained Triaxial Test

1.2.2 CONSOLIDATED-TRIAXIAL: INDIVIDUAL SYMBOLS

C	Consolidated
---	--------------

CI Consolidated Isotropically

CA Consolidated Anisotropically along a given stress path

CK₀ Consolidated Anisotropically along a K₀ stress path

U	Undrained loading
---	-------------------

D	Drained loading
---	-----------------

U-C Undrained loading in compression

U-E Undrained loading in expansion

With Bar or Undrained loading with pore water pressure measurements

CyS Cyclic triaxial strength test

CyP	Cyclic triaxial property (moduli and damping) test
-----	--

1.2.3

CONSOLIDATED-TRIAXIAL: COMBINED SYMBOLS

CIU-C	Isotropically-consolidated undrained triaxial compression test without pore water pressure measurements
$\overline{\text{CIU}}\text{-C}$ or $\text{CIU}'\text{-C}$	Same as above but with pore water pressure measurements
$\overline{\text{CK}}_0\text{U-E}$ or $\text{CK}_0\text{U}'\text{-E}$	Anisotropically (K_0)-c consolidated undrained triaxial extension test with pore water pressure measurements
$\overline{\text{CAU}}\text{-C}$ or $\text{CAU}'\text{-C}$	Anisotropically-consolidated undrained triaxial compression test with pore water pressure measurements
$\overline{\text{CAD}}\text{-C}$ or $\text{CAD}'\text{-C}$	Anisotropically-consolidated drained triaxial compression test with volume change measurements
CyP- $\overline{\text{CIU}}$	Cyclic triaxial property test with isotropic-consolidation and pore water pressure measurements
CyS- $\overline{\text{CAU}}$	Cyclic triaxial strength test with anisotropic-consolidation and pore water pressure measurements
CyP- $\overline{\text{CIU}}\text{-C}$	Cyclic triaxial property test with isotropic-consolidation, pore water pressure measurements and post cyclic undrained loading in compression (post cyclic monotonic loading)

1.2.4 CONSOLIDATED-SIMPLE SHEAR (DIRECT SIMPLE SHEAR):
INDIVIDUAL SYMBOLS

DSS	Undrained simple shear test with K_0 consolidation
S- or α -	Shear stress applied during consolidation
CyS-	Cyclic undrained simple shear strength test
CyP-	Cyclic undrained simple-shear property (moduli and damping) test
-U	Undrained loading after undrained cyclic loading

1.2.5 CONSOLIDATED SIMPLE-SHEAR: COMBINED SYMBOLS

S-DSS or α -DSS	Undrained simple shear test with K_0 consolidation and shear stress applied during consolidation
CyS-DSS	Cyclic undrained simple shear strength test
CyP-DSS-U	Cyclic undrained simple shear property test with post cyclic undrained loading (post cyclic monotonic loading)

1.2.6 CONSOLIDATED DIRECT-SHEAR

DS	Consolidated drained direct shear test
DS-R	Consolidated drained direct shear test with loading to obtain residual shear strength

W	Water Content
W_o or W_n	Initial or "natural" water content
W_c or W_f	Water content after consolidation or test
W_{max} or $W_{c.m}$	Water content at maximum induced consolidation stress
γ_{do}	Initial dry density (mass)
γ_{to}	Initial total density (mass)
γ_{dc} or γ_{df}	Dry density (mass) after consolidation or test
γ_{tc} or γ_{tf}	Total density (mass) after consolidation or test
$\gamma_{d,m}$	Dry density (mass) at maximum induced consolidation stress
$\gamma_{t,m}$	Total density (mass) at maximum induced consolidation stress
γ_{sat} or γ_s	Saturated density
γ_{sub} or γ_b	Submerged (buoyant) density
W_L or LL	Liquid limit
W_P or PL	Plastic limit
I_P or PI	Plasticity index
I_L or LI	Liquidity index
W_{opt}	Optimum water content - compaction test
γ_{max} or γ_{opt}	Maximum or optimum dry density (mass) - compaction test
γ_{min}	Minimum index density (mass) - relative density test
γ_{max}	Maximum index density (mass) - relative density test
D_r	Relative density

R_c	Percent compaction
G_s^- or G	Specific gravity of soil solids (particles)
G_a	Apparent specific gravity of soil solids (particles)
SC	Salt content or desolved solids content
e	Void ratio
S	Degree of saturation
n	Porosity
N_g	Gas content
V_s	Volume of solids
V_w	Volume of water
V_a	Volume of air
V_v	Volume of voids
H_s	Height of solids
PP	Pocket penetrometer reading (undrained compressive strength)
TV	Torvane reading (undrained shear strength)

NOTES - (1)

Subscript notation associated with relative density, void ratio, degree of saturation, etc.

- a) subscript (0) indicates initial conditions
- b) subscript (c or f) indicates conditions after consolidation or test
- c) subscript (,m) indicates conditions at maximum induced consolidation stress

(2)

A (-) or (') over or after these symbols indicates that the data has been corrected for dissolved solids (such as salt) contained in the pore fluid.

H_o or L_o	Initial height/length
H_c or L_c	Height/length after consolidation
H_f , L_f , H_T or L_T	Height/length after test
A_o	Initial area
A_c	Area after consolidation
A_{fm}	Area measured after test
V_o	Initial volume
V_c	Volume after consolidation
V_f	Volume after test
ΔL_c	Change in height/length during consolidation
ΔL_{max} or $\Delta L_{c,m}$	Change in height/length at maximum induced consolidation stress
ΔL_T or ΔH_T	Change in height/length during loading
ΔV_c	Change in volume during consolidation
ΔV_{max} or $\Delta V_{c,m}$	Change in volume at maximum induced consolidation stress
ΔV_T	Change in volume during drained loading
ΔV_m	Volume change measured
ΔV_a	Volume change calculated based on change in height
W or W_T	Total weight (mass)
W_o or W_{To}	Initial total weight (mass)
W_s	Dry weight (mass)
W_w	Weight (mass) of water
W_c or W_{Tc}	Total weight (mass) after consolidation or test
ΔW_c or ΔW_{Tc}	Change in total weight (mass) during consolidation

σ_c
 $\bar{\sigma}_c$ or σ'_c
 $\bar{\sigma}_{3c}$ or σ'_{3c}

$\bar{\sigma}_{1c}$ or σ'_{1c}

$\bar{\sigma}_v$ or σ'_v

$\bar{\sigma}_h$ or σ'_h

$\sigma_1 - \sigma_3, \sigma_v - \sigma_h$ or σ_d

$\bar{\sigma}_1 / \bar{\sigma}_3$ or σ'_1 / σ'_3

q

\bar{p} or p'

\bar{p}_c or $\bar{\sigma}_p$

\bar{p}_{\max} or $\bar{\sigma}_{p,m}$

$\bar{\sigma}_m$ or \bar{p}_m

$\bar{\sigma}_{m,m}$ or $\bar{p}_{m,m}$

$\bar{\sigma}_{\max}$ or $\bar{\sigma}_{v,m}$

K_c or $\bar{\sigma}_{1c} / \bar{\sigma}_{3c}$

K_o

α or $\tau_c / \bar{\sigma}_{vc}$

u_b

Cell pressure

Effective isotropic consolidation stress

Effective isotropic consolidation or minor principal consolidation stress if principal stresses during consolidation are different

Effective major principal consolidation stress

Vertical effective stress

Horizontal effective stress

Principal stress difference (deviator stress)

Principal stress ratio (obliquity)

Peak shear stress - $(\sigma_v - \sigma_h) / 2$

Average principal stress - $(\bar{\sigma}_v + \bar{\sigma}_h) / 2$

Average principal stress after consolidation

Average principal stress at maximum induce consolidation stress

Mean principal stress - $(\bar{\sigma}_v + 2 \bar{\sigma}_h) / 3$

Mean principal stress at maximum induced consolidation stress

Maximum induced vertical consolidation stress

Consolidation principal stress ratio

Coefficient of earth pressure at rest or reciprocal of consolidation principal stress ratio

Consolidation shear stress ratio - simple shear test

Backpressure

U	Pore water pressure
ΔU	Change in pore water pressure
OCR	Over-consolidation Ratio
S_u	Undrained shear strength
q_u	Undrained compressive strength
c	Total stress cohesion intercept - Mohr envelope
\bar{c} or c'	Effective stress cohesion intercept - Mohr envelope
ϕ	Total stress angle of internal friction - Mohr envelope
$\bar{\phi}$ or ϕ'	Effective stress angle of internal friction - Mohr envelope
a	Total stress cohesion intercept - $q - p$ envelope
α	Total stress angle of internal friction - $q - p$ envelope
\bar{a} or a'	Effective stress cohesion intercept - $q - p$ envelope
$\bar{\alpha}$ or α'	Effective stress angle of internal friction - $q - p$ envelope
$\bar{\delta}$ or δ'	Effective stress angle of external friction (between soil and another material) - Mohr envelope

ϵ_a	Axial strain
ϵ_v	Volumetric strain
ϵ_r	Radial strain
ϵ_{ac} or $\epsilon_{a,c}$	Axial strain at end of consolidation
$\Delta\epsilon_{ac}$ or $\Delta\epsilon_{a,c}$	Change in axial strain during consolidation increment
$\epsilon_{a \max}$ or $\epsilon_{a,m}$	Axial strain at maximum induced consolidation stress
ϵ_{vc} or $\epsilon_{v,c}$	Volumetric strain at end of consolidation
$\Delta\epsilon_{vc}$ or $\Delta\epsilon_{v,c}$	Change in volumetric strain during consolidation increment
γ	Shear strain
ϵ_f or ϵ_T	Axial strain at end of test
ϵ_{vT} or $\epsilon_{v,T}$	Volumetric strain during drained test
$\dot{\epsilon}_a$	Axial strain rate
$\dot{\gamma}$	Shear strain rate
ϵ_{at}	Total axial strain during testing (consolidation plus loading)
ϵ_{vt}	Total volumetric strain during testing

1.7

MODULI E

Young's modulus

 E_s

Young's secant modulus

 E_t

Young's tangent modulus

 E_{pp} Young's modulus from cyclic triaxial test
and based on peak to peak measurements G

Shear modulus - secant

 G_t

Shear modulus - tangent

 G_{pp} Shear modulus from cyclic simple shear
test and based on peak to peak measurements ν

Poisson's ratio

1.8 BY TYPE OF TEST

1.8.1 CONSOLIDATION

C_c	Compression index
c_v	Coefficient of consolidation
r	Primary compression ratio
c_r or c_α	Coefficient of secondary compression or rate of secondary compression
CR	Compression ratio - $\Delta \epsilon_v / \Delta \log \bar{\sigma}_v$
RR	Recompression ratio
SR	Swelling ratio
$\bar{\sigma}_{\max}$, $\bar{\sigma}_{v,m}$ or \bar{P}_c	Maximum past consolidation pressure (stress) or maximum induce consolidation stress
t_{90}	Time for 90% primary consolidation (square root fitting method)
t_{50}	Time for 50% primary consolidation (log fitting method)
d_f	Final dial reading
d_s	Initial dial reading from fitting method
d'_o	Initial dial reading corrected for compressibility of stones and filter paper
d_{100}	Dial reading at 100% primary consolidation
d_{90}	Dial reading at 90% primary consolidation
d_{50}	Dial reading at 50% primary consolidation

1.8.2

TRIAXIAL

P_a	Actual load applied to test specimen
P_m	Measured load applied to loading rod (piston)
P_c	Load correction
P_{mo}	Load measured prior to starting triaxial test with piston not in contact with specimen during consolidation
ΔP_{af}	Load carried by filter strips
A_p	Area of loading rod (piston)
B or B_f	Skempton's B parameter
A	Skempton's A parameter
D_{os}	Initial diameter of test specimen
D_{om}	Initial diameter of rubber membrane
t_{om}	Initial thickness of rubber membrane
K_a	Axial membrane correction constant
C	Area correction factor during loading
LVDT	Linear variable differential transformer

1.8.3 CYCLIC TESTING

1.8.3.1 STRESSES/LOADS

$\pm \tau$	Cyclic shear stress amplitude
$\pm \sigma_d$	Cyclic deviator stress amplitude
SR or $\pm \sigma_d / 2\sigma_{3c}$	Cyclic stress ratio - cyclic triaxial test
β or $\pm \tau / \sigma_{vc}$	Cyclic stress ratio - cyclic simple shear test
$\bar{\sigma}_{3min}$ or σ'_{3min}	Minimum effective minor principal stress with a given loading cycle - cyclic triaxial test
$\bar{\sigma}_{vmin}$ or σ'_{vmin}	Minimum effective vertical stress within a given loading cycle - cyclic simple shear test
CR or $\bar{\sigma}_{3min} / \bar{\sigma}_{3c}$	Effective confining ratio - cyclic triaxial test
CR_r	Effective confining ratio after cyclic loading - cyclic triaxial test
VCR or $\bar{\sigma}_{vmin} / \bar{\sigma}_{vc}$	Effective vertical confining ratio - cyclic simple shear test
VCR_r	Effective vertical confining ratio after cyclic loading - cyclic simple shear test
σ_{dc} or $\sigma_{d,c}$	Deviator stress in compression
σ_{de} or $\sigma_{d,e}$	Deviator stress in extension
OCR_{cy}	Overconsolidation ratio resulting from cyclic loading
OCR_{max} or OCR_m	Maximum OCR resulting from induced OCR and cyclic loading - $(OCR \times OCR_{cy})$

$\bar{\sigma}_{v,cy}$	Effective vertical consolidation stress after cyclic loading
\bar{P}_{cy}	Average principal stress after cyclic loading - cyclic triaxial test
$\pm P$	Load amplitude - cyclic triaxial
P_c	Measured peak load in compression - cyclic triaxial
P_e	Measured peak load in extension - cyclic triaxial
P_{pp}	Measured peak to peak load - cyclic triaxial
$\pm P_h$	Horizontal load amplitude - cyclic simple shear
P_{hf} or $P_{h,f}$	Peak forward horizontal load - cyclic simple shear
P_{hb} or $P_{h,b}$	Peak backwards horizontal load - cyclic simple shear
ΔU_p	Peak positive change (increase) in pore pressure - cyclic triaxial test
ΔU_n	Peak negative change (decrease) in pore pressure - cyclic triaxial test
ΔP_v	Peak change in vertical load - cyclic simple shear
D_c	Percent deviation in measured compression load from programmed load - cyclic triaxial
D_e	Percent deviation in measured extension load from programmed load - cyclic triaxial
D_f	Percent deviation in measured forward load from programmed load - cyclic simple shear
D_b	Percent deviation in measured backwards load from programmed load - cyclic simple shear

1.8.3 CYCLIC TESTING (continued)

1.8.3.2 STRAINS/DEFORMATIONS

ϵ_{pp}	Peak-to-peak (double amplitude) axial strain - cyclic triaxial test
ϵ_{pe}	Peak axial strain in extension - cyclic triaxial test
ϵ_{pc}	Peak axial strain in compression - cyclic triaxial test
ϵ_m or $(\epsilon_{pc} + \epsilon_{pp})/2$	Median cyclic axial strain - cyclic triaxial test
$\pm \epsilon_a$ or $\epsilon_{pp}/2$	Axial strain amplitude - cyclic triaxial test
γ_{pp}	Peak-to-peak (double amplitude) shear strain - cyclic simple shear test
γ_{pf}	Peak shear strain forward - cyclic simple shear test
γ_{pb}	Peak shear strain backwards - cyclic simple shear test
$\pm \gamma$	Shear strain amplitude - cyclic test
γ_m or $\gamma_{pf} + \gamma_{pb}/2$	Median cyclic shear strain - cyclic simple shear test
ΔL_{pp}	Peak-to-peak deformation within given loading cycle
$\Delta L_{cyl.}$	Peak-to-peak deformation of steel calibration cylinder - cyclic triaxial test

1.8.3.3 MISCELLANEOUS

N	Number of loading cycles
CF	Correction factor for equipment compressibility
λ	Damping ratio
LF	Factor of safety against applying a tensile stress (liftoff of loading platens)
TSF	Deformation trace scale factor
MTS	MTS Systems Corporation Loading System

1.8.4 PERMEABILITY

k	Coefficient of permeability or hydraulic conductivity
k_v	Vertical permeability
k_h	Horizontal permeability
h	Head
h_o	Initial head
h_f	Final head
i	Hydraulic gradient
$k_{20^\circ\text{C}}$	Permeability corrected to 20°C
$k_v, 20^\circ\text{C}$ or $k_v @ 20^\circ\text{C}$	Vertical permeability corrected to 20°C
$k_h, 20^\circ\text{C}$ or $k_h @ 20^\circ\text{C}$	Horizontal permeability corrected to 20°C

1.8.5 SONIC VELOCITY

μ	Poisson's ratio
v_p	Velocity of compression wave
v_s	Velocity of shear wave

1.9 MIDLAND UNITS 1 AND 2 PROJECT SPECIFIC NOTATION/SYMBOLS

HR	High Recovery Core Barrel, 4" (ID) X 5 1/2" (OD)
HS	Hvorsley-Type Sampler
OS	Osterberg Sampler
PQ3	PQ-size Triple-Tube Core Barrel, 3 1/4" (ID) X 4 3/4" (OD)
PS	Pitcher Sampler
SS	Split Spoon (Barrel) Sampler
TW	Thin-walled (Shelby-type) Tube
Con	Consolidation
Spec	Specimen
()	Parentheses indicates an assumed value

BIC405573 (BIC217)

Prepared by TRP

Reviewed by _____

Checked by HE

6/29/81

BORING NO. COE-BGROUND SURFACE ELEV. (FT) 634.2Sheet 1 of 3

Sample No.	Section No.	Depth			Tube			Section				Ave. PP t/ft ²	W %	w _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
		ft.	Type	Rea. ft ²	d _t lb/ft ³	USCS Symbol	W %	d _c lb/ft ³	d _b lb/ft ³							#	#	#	#	
S-1		5.0-5.7	QS	0.54	138.8															
		5.10					11.9													
		5.25					13.3													
		5.27					13.5													
S-3		6.4-8.2	HS	1.710	122.9															
	A	6.6				SP	3.5									97	68	25	1	
		7.8					9.0													
S-4		8.2-8.9	HS	0.49	127.2															
	A	8.45				SP-SM	10.0									89	54	29	6	
S-5		8.9-10.6	HS	1.62	122.7															
	A	9.2					4.5													
	B	10.4				SP	9.5									93	61	31	2	
S-6		10.5-12.2	HS	1.39	124.5															
	A	10.85					4.4													
	B	11.65					7.2													
S-7		12.2-13.3	H	1.03	132.0															
	A	12.4				SP	7.4									94	66	34	3	
		12.7					10.3													
	B	13.0					9.5									96	76	48	15	
S-8		13.3-14.4	HS	0.95	129.3	SM														
	A	13.5					8.9									91	61	32	3	
	B	14.2				SP	6.1									94	64	32	3	
						SP														

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Table B-1 (1/3)

BORING NO. COE-8

GROUND SURFACE ELEV. (FL) 634.2

Sheet 2 of 3

Sample No.	Section No.	Tube			Section				Ave. PP $\frac{t}{t^2}$	ω %	d_r 1b/ft ³	d_r 1b/ft ³	USCS Symbol	ω %	PI %	% Passing Sieve				Type Eng. Prop. Test
		Type	Rec. ft	d_r 1b/ft ³	d_r 1b/ft ³	ω %	d_r 1b/ft ³	d_r 1b/ft ³								#	#	#	#	
S-9		14.4-14.9 HS	0.41	131.1																
	A	14.6				9.6							SP			94	87	29	3	
S-10		14.9-17.4 PS	1.65	125.9																
	A	15.1				3.9														
	B	15.6				5.8							SP			96	66	33	2	
	C	16.2				8.9														
S-11		17.4-19.9 PS	2.42	124.1																
	A	17.6				4.5							SP			95	44	6	1	
	B	18.1				3.8														
	C	18.6				4.3														
	D	19.4				11.9							SP			96	68	34	2	
S-12		19.9-22.4 PS	1.34	129.6																
	A	20.1				6.0							SP			84	55	25	1	
	B	20.6				9.7														
	C	21.0				10.9							SP			96	66	34	3	
S-13		22.4-24.9 PS	0.60	126.1												89	45	21	2	
S-14		24.9-27.4 PS	1.93	128.4																
	A	25.1				8.2							SP			89	48	24	3	
	B	25.6				12.6														
	C	26.1				14.9														
	D	26.6											SP			99	75	36	4	

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

BORING NO. C0E-BGROUND SURFACE ELEV. (FL) 634.2Sheet 3 of 3

Sample No.	Section No.	Depth ft.	Tube		USCS Symbol	Section				Ave. PP t/ft ²	W %	d _e lb/ft ³	d _h lb/ft ³	FI %	% Passing Sieve				Type Eng. Prop. Test
			Type	Rec. ft.		d _e lb/ft ³	W %	d _e lb/ft ³	d _h lb/ft ³						#	#	#	#	
S-15		27.4-29.9	PS	0.88		120.8													
	A	27.5			SP	13.4									100	96	86	3	
	B	28.0			SPSM	10.2									99	81	42	6	
S-16		29.9-32.4	PS	1.56		136.2													
	A	30.1				11.9													
	B	30.6			SPSM	12.3									97	84	67	6	
	C	31.1			SP	8.6									97	73	49	5	
S-17		32.4-34.9	PS	1.31		123.7													
	A	32.7			SP	9.0		127.2	116.7						94	75	54	3	
	B	32.9				17.2													
	C	33.2				16.5		120.2	103.2										
		33.6			SP	16.8									100	99	94	5	
S-18		34.9-37.4	PS	1.22		115.1													
	A	35.2			SP	15.6									100	99	92	4	
	B	35.8			SP	16.4									100	96	88	4	

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Boring No. COE-9

GROUND SURFACE ELEV. (ft.) 634.0

Street L of L

[illegible]

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

BORING NO. 20E-9A GROUND SURFACE ELEV. (FT.) 634.0 Sheet 1 of 1

Sample No.	Section No.	Depth		Tube		Section				Ave. PP $\frac{t}{t^2}$	ω %	w_L %	PI %	% Passing Sieve				Type Eng Prop. Test
		Type	Rec. ft	d_t 16/12 ³	d_t 16/12 ³	ω %	USCS Symbol	d_t 16/12 ³	d_t 16/12 ³					#	#	#	#	
S-1		OS	1.95	127.4	136.0													
	A		8.0				CL				14.6	25	12					
	B		8.2							1.00	14.3							
			8.5								13.2							
	C		8.8							1.5	13.0							
	D		9.3				CL	11.7	143.6	128.6		20	8	97	94	85	55	CAU G_s used = 2.74
			9.5					11.0										
S-2		OS	0.90	112.6	116.2													
	A		10.5				(CL)	12.3						98	96	91	62	
	B		11.0															
S-4		OS	0.77	137.6	142.4					74.5								
	A		13.8					10.3		1.25								
			13.9							74.5	9.9							
	B		14.2				CL	11.2	141.5	127.3		22	9	97	94	85	56	CAU
S-8		PS	0.90	131.3	136.5					2.0								
	A		19.6															
			19.7							2.4	13.4							
	B		19.9				CL	13.8	137.5	120.8		26	12	99	96	90	67	CAU
	C		20.2															

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

BORING NO. CDE-10GROUND SURFACE ELEV. (FE) 633.9Sheet 1 of 4

Sample No.	Section No.	Depth ft.	Tube			Section				Ave. PP t/ft ²	W %	w _L %	PI %	% Passing Sieve				G _s	Type Eng. Prop. Test
			Type	Reo. ft	d _t 16/ft ²	USCS	W %	d _t 16/ft ²	d _t 16/ft ²					#	#	#	#		
S-1		6.0-8.5	QS	2.24	109.3														
	A	6.1					8.2												
		6.3					4.1	133.0	127.8										
	B	6.8				SP	3.7	112.2	108.2					100	78	34	2		
	C	7.5					6.9												
S-2		8.0-9.4	QS	0.77	124.6														
	A	8.3				SP	11.2	120.7	108.5					99	79	34	2		
	B	8.6					13.2												
S-4		13.2-15.7	PS	0.91	134.2														
	A	13.6					20.7	128.4	106.4	0.75									
	B	14.1					12.4	140.3	124.8	74.5									
S-5		15.7-18.2	QS	2.42	102.3														
	A	16.0					17.6	129.0	109.7	0.5									Void in section
	B	16.5																	
	C	17.0					16.0	125.1	107.8										
	D	17.6					17.5	128.6	109.5										
	E	18.0					17.5												
S-6		18.3-20.3	QS	0.71	111.5														
	A	18.6					18.1	111.9	94.7										
	B	18.9					17.5												
S-7		21.0-23.5	QS	1.27	124.9														
	A	21.3					16.4												
	B	21.8					17.0												

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Table B-4 (1/4)

BORING NO. CDE-10

GROUND SURFACE ELEV. (FL) 633.9

Sheet 2 of 4

Sample No.	Section No.	Tube			Section				Ave. PP t/l ²	W %	d _h lb/ft ³	d _h lb/ft ³	USCS Symbol	w %	% Passing Sieve			PT %	w _L %	Type Eng. Prop. Test
		Type	Rec. ft	d _h lb/ft ³	d _h lb/ft ³	w %	d _h lb/ft ³	d _h lb/ft ³							#	#	#			
S-7	C		22.2			15.9														
S-8		DS	23.5-25.5	1.61	115.0															
	A		23.8			16.8														
	B		24.8			18.3							SP		100	98	93	4		
	C		25.3			14.7														
S-9		DS	25.5-28.0	2.44	128.8															
	A		25.8			12.6	115.0	12.1												
	B		26.3			10.7	123.7	11.8					SP-SM		97	94	84	7		
	C		26.8			14.5														
	D		27.3			13.9	118.4	104.0												
	E		27.8			15.0														
S-10		DS	28.0-30.5	1.14	120.2															
	A		28.3			15.7	119.4	103.1					SP-SM		99	97	85	9		
	B		28.8			14.0														
	C		29.0			9.1							SP		84	57	17	1		
	D		29.6			8.6														
S-11		DS	30.5-33.0	1.19	122.2															
	A		31.1			8.9														
	B		31.2										SP		98	94	32	3		
	D		32.1			11.3														
S-12		DS	33.0-35.5	1.07	124.5								SP		100	99	94	3		
	C		34.6			19.2														
	D		34.7			19.3														

Sieve sample
from depth 34.3'

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Checked by AS

Sheet 3 of 4

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MIDLAND PLANT UNITS 1 and 2- CONSUMERS POWER CO.
LAB TESTING SUMMARY- DIESEL GENERATOR BUILDING

BORING NO. C0E-10GROUND SURFACE ELEV. (RL) 633.9Sheet 4 of 4

Sample No.	Section No.	Depth ft.	Tube			Section						Ave. PP t/l ²	W %	w _L %	PI %	% Passing Sieve				Type Eng. Prop. Test																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			Type	Rec. ft	d _e lb/l ²	d _e lb/l ²	W %	d _e lb/l ²	d _g lb/l ²	# 4	# 10					# 40	# 200	G _s																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
S-13		35.5-38.0	OS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

See Sample

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

BORING NO. COE-10AGROUND SURFACE ELEV. (ft.) 634.0Sheet 1 of 1

Sample No.	Section No.	Depth ft.	Tube			Section				Ave. PP t/ft ²	w_L %	PI %	% Passing Sieve				G_s	Type Eng. Prop. Test
			Type	Rec. ft	d_t lb/ft ³	USCS Symbol	w %	d_c lb/ft ³	d_b lb/ft ³				#	#	#	#		
S-1		10.3-12.8	QS	1.65	1341					2.7								
	A	10.6					11.2			74.5 2.0	9.6							
	B	10.8								2.2	10.6	7	97	95	86	56	2.73	Con
		11.2								3.1	11.7							
	C	11.4																
		11.8				CL	11.2	141.7	127.5			12	96	92	84	55	2.75	CAU
S-2		12.0-15.3	QS	1.53	137.8 142.5					74.5 2.8								
	A	12.9					10.3			2.5	11.4							
		13.1																
	B	13.4				CL	11.1	142.0	127.8			11	94	91	83	53	2.75	CAU
	C	13.8				CL	12.3	133.0	118.4	74.5	10.4	8	100	97	90	53	2.74	Con
		14.0								3.8	15.4							
	D	14.1					10.6			3.25								

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Checked by ITC 7/1/81

Reviewed by _____

Prepared by PEP

BIC4055T3 (BIC217)

Sheet 1 of 3

GROUND SURFACE ELEV. (ft.) 633.5

BORING NO. COE-11

Sample No.	Section No.	Depth ft.	Tube			Section				W %	W _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
			Type	Rec. ft.	d _e lb/ft ³	USCS Symbol	W %	d _e lb/ft ³	d _g lb/ft ³				# 4	# 10	# 40	# 200	
S-1		5.3-7.8	OS	2.03	134.9												
	A	5.6					12.3			4.5							
	B	6.1					14.7			0.75							
	C	6.7					12.8	139.1	123.3	1.75							
	D	7.1					7.9										
S-2		7.8-10.3	OS	2.06	140.7												
	A	8.1					8.6						94	63	31	4	
	B	8.6				SP	10.4										
	C ₁	9.0					10.3										
	C ₂	9.1					12.1										
	D	9.6					11.7	137.6	123.2	2.6							
S-3		10.3-11.9	OS	1.29	143.0												
	A	10.6					10.4			74.5							
	B	11.2					10.8			74.5							
	C	11.5					10.9										
S-4		11.9-12.8	OS														
	A	12.1					18.5										
S-5		12.9-15.4	OS	1.79	140.5												
	A	13.1					22.0										
	B	13.6					12.2	139.9	124.6	2.3							
	C	14.2					10.9	140.8	126.9	74.5							
	D	14.5					11.9			74.5							

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY-DIESEL GENERATOR BUILDING

Table B-6 (1/3)

Sample No.	Section No.	Tube		Section				W	w	PI	% Passing Sieve				Type Eng. Prop. Test
		Type	Rec. ft	d_r lb/ft ³	USCS	Symbol	w				#	#	#	#	
S-6		Depth ft.													
		15.4-17.9	PS	0.92	140.4										
	A	15.7					12.5	137.4	123.9	2.1					
S-8	B	16.1					10.4	139.9	126.7	2.9					
	A	18.4-20.9	OS	1.84	131.6		20.9								
	B	18.8					16.8								
S-10	C	19.2					11.8								
		19.8													
	A	21.1-23.4	PS	1.01	119.4										
S-11	A	21.1				SP	12.3	116.2	103.4						
	B	21.6					14.3	121.1	105.9						
		23.9-26.4	OS	1.96	118.6										
S-12	A	24.1					7.3								
	B	24.6				SP	8.7								
	C	25.2					14.4	115.1	100.7						
S-13	D	25.7					17.1	122.3	104.5						
		26.4-28.9	OS												
	A	26.8					7.5								
S-13	B	27.8					18.5								
		28.9-30.4	OS	1.86	124.2										
	A ₁	29.0					10.2								
S-13	A ₂	29.4					19.7								
	B	29.9				SM	19.8								
	C	30.4					19.7								
S-13	D	30.8					19.3								

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY-DIESEL GENERATOR BUILDING

B12405573 (01/2/17)

Prepared by BBF

Reviewed by _____

Checked by HEBORING NO. COE-11GROUND SURFACE ELEV. (ft.) 633.5Sheet 3 of 3

Sample No.	Section No.	Depth ft.	Tube			Section				Ave. PP t/ft ²	W %	W _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
			Type	Rec. ft	\bar{d}_t 16/ft ²	\bar{d}_t 16/ft ²	W %	\bar{d}_t 16/ft ²	\bar{d}_t 16/ft ²					#	#	#	#	
S-14		30.4-32.9	QS	2.25	126.7													
	A	30.7					SM	16.0	120.4	103.8				100	99	15		
	B	31.2						18.5	123.1	103.9								
	C	31.7					SPSM	18.6						100	99	12		
	D	32.2						19.4										
	E	32.5						21.1										
S-15		32.9-35.3	QS	1.58	125.3													
	A	33.1						20.7										
	B	33.6						18.0										
	C	34.1					SM	18.1						100	100	45		
	D	34.6						18.7										
	E	34.9						19.9										
S-7		17.9-18.4	QS					24.3										Jar Sample
S-9		20.9-21.1	QS					8.6										"
S-11		30.2-30.4	QS					23.7										"
S-16	A	35.3-35.8	SS					19.3										"
	B	35.8-36.3						21.6										"
S-17	A	37.3-37.6	SS					19.2										"
	B	37.6-38.0						18.8										"

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY-DIESEL GENERATOR BUILDING

BIC4055T3 (BIC217)

Prepared by PPE

Reviewed by

Checked by JWS 305-81

BORING NO. COE-11A

GROUND SURFACE ELEV. (RL) 633.4

Sheet 1 of 1

Sample No	Section No	Tube			USCS Symbol	Section				Ave. PP $\frac{t}{R^2}$	w %	w_L %	PI %	% Passing Sieve				Type Eng. Prop. Test
		Type	Req. ft	d_t 1b/R ³		w %	d_t 1b/R ³	d_t 1b/R ³	d_t 1b/R ³					#	#	#	#	
S-1		Q5	2.22	128.0														
	A-E	Q5		132.6	SP									95	64	29	2	
	F																	becoming clayey
S-2		Q5	1.34	145.5														
	A			146.7		16.3				74.5	10.3							
	B					10.1				74.5								
					CL	10.5	138.6	125.4				22	10	99	94	85	58	2.75 Con
										74.5	10.1							
S-4		Q5	1.53	142.9						74.5								
	C			147.2	CL	10.7	141.9	128.2		74.5				96	94	87	60	
	A					10.6				2.7								
										74.5	11.1							
	B				CL	11.8	137.9	123.3				22	10	98	95	85	57	2.75 Con
	C				CL	10.5	142.1	128.6				21	8	97	93	84	55	2.72 CIU $G_s = 2.74$ used
										74.5	11.4							
	D					8.3				74.5								
S-5		Q5	1.24															
	A																	
										2.3	11.7							
	B				CL	12.1	135.1	120.5				21	9	99	95	85	51	2.71 Con
										2.3	11.6							

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

B104055T3 (B10217)

Prepared by DEP

Reviewed by _____

Checked by _____

6/29/01

BORING NO. CDE-12GROUND SURFACE ELEV. (ft.) 6033.60Sheet 1 of 3

Sample No.	Section No.	Depth ft.	Tube			Section				Ave. PP t/ft ²	W %	W _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
			Type	Req. ft	γ _t lb/ft ³	USCS Symbol	W %	γ _c lb/ft ³	γ _s lb/ft ³					# 4	# 10	# 40	# 200	
5-3		6.0-8.5	OS	1.87	140.8													
	A	6.3					11.6	137.5	123.2	74.5								
	B	6.9				CL	13.7	136.5	120.1	74.5		24	10					
	C	7.4				CL	11.4	140.7	126.3	1.5		21	9	92	89	81	53	
	D	7.80					11.0	140.6	126.6	2.1				94	91	83	55	
5-4		8.5-11.0	OS	1.58	141.6													
	A ₁	8.7					5.5											
	A ₂	8.8					11.1											
	A ₃	8.75					11.3	129.2	116.0									
	B	9.7					10.6	140.2	126.7	2.75				97	93	84	55	
	C	10.2					10.4	138.8	126.6	1.75				95	91	83	53	
5-5		11.0-13.5	OS	0.78	128.7													
	A	11.4				SP	11.3							92	66	26	4	
5-6		13.5-16.0	OS	1.39	141.4													
	A	13.8					11.9	140.2	125.3	1.75								
	B	14.3					10.4	140.0	126.8	3.10								
	C	15.9					9.9	140.9	128.2	74.5				96	95	85	57	gravel discarded
5-7		16.0-18.5	OS	1.35	143.4													
	A	16.3				CL	10.5	139.2	126.0	3.5		21	8	94	90	81	52	
	B	16.9				CL	10.4	142.5	129.1	74.5		21	8					gravel discarded
	C	17.2					10.7	141.4	127.9	3.75								

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Table B-8 (1/)

Checked by

Reviewed by

Prepared by

8104055T3 (6/12/21)

Sheet 2 of 3

BORING NO. CDE-12

GROUND SURFACE ELEV. (ft.) 533.6

Sample No.	Section No.	Depth ft.	Tube			Section				w %	w _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
			Type	Pie. ft.	d _e 16/10 ³	USCS	100% d ₅₀	w %	d ₆₀ 16/10 ³	d ₈₅ 16/10 ³			# 4	# 10	# 40	# 200	
S-8		18.5-21.0	OS	1.43	137.2												
	A	18.8						13.2	137.5	121.5	1.4		95	91	81	51	
	B	19.3						11.9	138.9	124.1	74.5		95	93	87	64	
	C	19.7						12.6	144.3	128.2	74.5						
S-9		21.5-24.0	OS	1.18	125.8												
	A	21.7				CL		14.1	136.2	119.4	3.5	26	98	97	93	75	
	B	22.3				CL		13.9	136.5	119.9	74.5	29	14				
	C	22.6															
S-10		24.5-26.5	OS	1.61	139.2												
	A	24.8						11.8	137.4	122.8	4.5						Average
	A ₁	24.6						11.0									
	A ₂	24.9						9.3									
S-11		25.3						14.3	137.3	120.0	2.25		99	98	93	75	
	B	25.3						15.9	136.5	117.9	4.0		99	98	94	80	
	C	25.8															
		26.5-29.0	OS	1.83	134.9												
S-12		26.5						14.5	134.1	117.2							
	A	26.8						12.0				22	10				
	B	27.3						18.0	132.9	115.6	1.30	26	11				
	C	27.9															
S-13		29.1-30.0	H5	0.66	132.2												
	B	29.8				CL		18.1	115.4	97.7	3.25	35	20				
		32.0-33.1	H5	1.02	121.3												
	A	32.3				SP-SM		19.3	118.3	99.1							
S-14		32.8				SP		18.1									
	B	32.8															

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

BIC4055T3 (BIC217)

Prepared by

E. J. F. R.

Reviewed by

Checked by

Date

Sheet 3 of 3

GROUND SURFACE ELEV. (ft.) 633.6

BORING NO. CCE-12

BORING NO. CDE-12															GROUND SURFACE ELEV. (ft.) 633.6														
Sample No.	Section No.	Depth ft.	Tube			USCS Symbol	Section				Ave. pp t/ft ²	W %	w _L %	PI %	% Passing Sieve				G _s	Type Eng. Prop. Test									
			Type	Res. ft.	d _c lb/ft ³		W %	d _c lb/ft ³	d _u lb/ft ³	#					#	#	#												
5-14B		33.1-34.6	H5	0.78	116.5																								
	A	33.4				SP-SM	9.4	107.0	99.6																				
	B	33.8					15.3	114.5	99.3																				

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Table B-8 (3/3)

BORING NO. COE-12A GROUND SURFACE ELEV. (ft.) 633.6 Sheet 1 of 3

Sample No.	Section No.	Depth ft.	Tube			Section				Ave. PP t/ft ²	W %	W _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
			Type	Req. ft.	δ _i lb/ft ³	USCS Symbol	W %	δ _r lb/ft ³	δ _h lb/ft ³					# 4	# 10	# 40	# 200	
S-2		8.5-11.0	Q5	1.86	134.1 139.0													
	A	8.6					11.3			4.25								
	B	8.8						11.5 (Clay) 6.8 (sand)		3.6	11.7							
	C	9.1								3.1				95	91	82	51	PP on clay clayey portion
	D	9.5								2.25	11.4							
S-3		9.7								4.1	10.4	21	8	97	92	83	55	2.76 Cont
		9.8				CL	11.2	139.2	125.2									
		10.0					10.6											
		11.0-13.5	Q5	1.72	141.3 147.0													
	A	11.3					11.5			1.8								
S-5	B	11.7				CL	12.2	139.0	123.9	74.5		22	10	96	93	85	56	2.76 CAU
	C	12.1				CL	11.9	138.8	124.1			21	8	99	96	89	58	2.74 Cont
		12.2								2.4	11.0							
	D	12.4					8.9	147.2	135.2	74.5								
		16.0-18.5	Q5	1.10	130.4 133.2													
	A	16.2					10.5			74.5								
		16.4								74.5	14.4							
	B	16.6					9.7			74.5				91	87	79	53	
		16.8									11.1							
	C	16.9				CL	9.7	141.5	128.9			21	9				56	2.78 Cont
		17.0					9.5	141.4	129.0	74.5								
	D	17.2								74.5								
		17.3					10.0											

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

ne 81

Checked by JWS 30

Reviewed by

Approved by PPF

8104055T3 (810227)

Sheet 2 of 3

GROUND SURFACE ELEV (ft) 633.6

BORING NO. CDE-12A

Sample No	Section No	Depth ft.	Tube			USCS Symbol	Section				Ave. PP t/ft ²	W %	w _L %	PI %	% Passing Sieve				G _s	Type Eng. Prop. Test
			Type	Rec. ft	γ _t lb/ft ³		W %	γ _d lb/ft ³	γ _d lb/ft ³	γ _d lb/ft ³					#	#	#	#		
S-6		18.5-20.1	OS	117	135.2/ 138.4															
	A	18.7					18.7				4.5									
		18.9										18.5								
	B	19.0				CL	18.0	132.3	112.1				46	28			84	2.77	Con	
		19.1					18.8	130.5	109.8		4.1									
S-7		19.3									74.5	10.3								
	C	19.5				CL	11.8				74.5		23	10	98	97	91	65		
	D	19.7					11.1				74.5									
		20.1-22.6	PS	1.07	140.5/ 145.2		14.6													
	A	20.3									74.5	12.0								
S-8		20.4									74.5		41	24						
	B	20.6				CL	15.9				74.5	18.4								
		20.7									74.5		38	21			80	2.15	Con	
	C	20.8				CL	17.2	132.1	112.7											
		21.0					12.4													
S-9		22.6-25.1	PS	0.92	141.6/ 146.6															
	A	22.8					13.1				74.5	13.8								
		22.9									74.5									
	B	23.0				CL	14.6	135.9	118.6				23	9			78	2.74	Con	
		23.1					12.3													
S-10		23.2									74.5	12.1								
	C	23.4					12.2													

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

BIC4055T3 (BIC217) Prepared by PRF Reviewed by JWS 30 me 811
 BORING NO. CDE-12A GROUND SURFACE ELEV. (ft.) 633.6 Sheet 3 of 3
 Checked by JWS 30 me 811

Sample No.	Section No.	Depth ft.	Tube			USCS Symbol	Section				Ave. PP t/ft ²	W %	w _L %	PI %	% Passing Sieve				Type Eng Prop. Test
			Type	Rec. ft	d _t lb/ft ³		w %	d _t lb/ft ³	d _t lb/ft ³	d _t lb/ft ³					# 4	# 10	# 40	# 200	
S-0		25.1-27.6	P5	0.90	138.0 142.6														
	A	25.3					17.0				4.1								
		25.5									74.5	13.7							
	B	25.6				CL	14.5	135.0	113.0		74.5 4.3		28	13	-	-	81	2.78	Con
S-10		25.7					14.8				74.5	15.1							
		25.8																	
	C	25.9					13.7	136.6	120.2										
		27.6-28.5	OS	1.10															
	A	27.7																	
		27.8									2.0	18.0							
	B	28.0				CL	18.8	131.1	110.4				34	19	100	99	97	76	2.73
		28.1									3.5	17.8							Con

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
 LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

B104055T3 (B10217)

Prepared by MLB

Reviewed by _____

Checked by HEP 6/26/8BORING NO. COE-13RGROUND SURFACE ELEV. (ft.) 633.6Sheet 1 of 4

Sample No.	Section No.	Depth ft.		Tube		USCS Symbol	Section				Ave. PP t/ft ²	w _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
		Type	Rec. ft	d _e lb/ft ²	w %	d _e lb/ft ²	d _e lb/ft ²	d _e lb/ft ²	G _s	#	#	#	#	#	#	#	#	
S-5	A																	
S-7	-																	
	A		1.95	1422														
	B																	
	C																	
S-8																		
	A		1.51	1450														Gravel removed
	B																	Gravel removed
	C																	
S-9																		
	A		1.02	1401														
	B																	
S-10																		
	A		0.96	1394														
	B																	
S-11																		
	A		1.30	1408														
	B																	
S-12																		
	A		0.5															
	B																	
S-13																		
	A		2.32	1411														
	B																	
	C																	

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Table B-11 (1/4)

BIC4055T3 (BIC217)

Prepared by MLC

Reviewed by _____

Checked by DEPBORING NO. COE-13RGROUND SURFACE ELEV (FL) 633.6Sheet 2 of 4

Sample No.	Section No.	Depth ft.	Tube			Section				Ave. PP t/ft ²	W %	W _L %	PI %	% Passing Sieve				Type Eng. Prop. Test
			Type	Rec. ft	d _t lb/ft ³	USCS Symbol	W %	d _c lb/ft ³	d _b lb/ft ³					# 4	# 10	# 40	# 200	
S-13	D	23.6					11.3	—	—	4.5								
	E	23.9					10.8	—	—	—								
S-14		24.2-26.7	PS	18.7	145.2		—	—	—	—								
	A	24.5					11.6	139.4	124.9	3.1								
	B	25.0					12.5	137.5	122.3	4.5								
	C	25.6					10.6	141.3	127.3	4.5								
	D	25.9					11.1	140.5	126.5	4.5								
S-15		26.7-29.2	PS	2.33	133.9													
	A	27.0					12.5			3.0								
	B	27.4					13.8			—								
	C	27.8					15.3			—								
	D	28.3					—			—								
	E ₁	28.8					12.2	—	—	—								
	E ₂	28.9					20.1	—	—	—								
S-16		29.2-31.0	QS	1.17	118.4													
	A	29.5					11.3											
	B	30.0				SP	18.4							100	100	86	2	
	C	30.5					19.1											
S-17		31.0-33.5	QS	2.00	116.3													
	A	31.3				SP	7.0	—	—	—				100	99	68	4	
	B	31.8					6.5	109.0	102.3									
	C	32.4				SP	16.5	119.3	102.4					100	100	85	1	
	D	32.84																

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

Table B-11 (2/4)

BIC4055T3 (BIC217)

Prepared by MLL

Reviewed by _____

Checked by MLLBORING NO. COE 13K

GROUND SURFACE ELEV. (ft.) _____

Sheet 3 of 4

Sample No.	Section No.	Depth ft.	Tube		USCS Symbol	Section				Ave. PP t/ft ²	W %	WL %	PI %	% Passing Sieve				Gs	Type Eng. Prop. Test
			Type	Rec. ft.	dc lb/ft ³	dc lb/ft ³	W %	dc lb/ft ³	dc lb/ft ³					#	#	#	#		
S-18		33.5-35.5	DS	1.98	120.8														
	A	33.8				10.0	110.1	100.1											
	B	34.3				SP-SM	15.3	—	—					99	99	97	10		
	C	34.8					20.3	—	—										
	D	35.2					20.1	—	—										
S-19		35.5-37.5	DS	1.93	113.8														
	A	35.7				7.2													
	B	36.2				SP	10.3							97	96	88	2		
	C	36.9					18.8												
S-20		37.4-39.4	DS	1.52	119.4														
	A	37.7				7.8	120.3	11.6											Gravel removed
	B	38.2				SP	15.0	115.8	100.7					100	100	95	3		Gravel removed
	C	38.7					20.4	123.9	102.9										
S-21		39.4-41.6	DS	2.02	120.3														
	A	39.7				4.0	109.1	104.9											
	B	40.2				7.4	111.9	104.2											
	C	40.7				SP	18.2	125.0	105.8					99	99	97	2		
	D	41.2					21.0	—	—										
S-22		41.6-43.6	DS	1.83	121.0														
	A	41.9				SP	8.2	—	—					96	86	51	3		
	B	42.4				SP	10.1	114.3	103.8					100	98	87	3		
	C	42.9					17.6	123.0	104.6										
	D	43.3					20.4	—	—										

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY-DIESEL GENERATOR BUILDING

Table B-11 (3/4)

Checked by HEE 9/26/81

Reviewed by

Checked by HEE 9/26/81

Sheet 4 of 4

[illegible]

MIDLAND PLANT UNITS 1 and 2- CONSUMERS POWER CO.
LAB TESTING SUMMARY- DIESEL GENERATOR BUILDING

Table B-11 (4/4)

BORING NO. CDE-13A

GROUND SURFACE ELEV (Ft.) 633.6

Sample No.	Section No.	Depth ft.	Tube		USCS Symbol	Section				Ave. PP t/ft ²	W %	W _L %	PI %	% Passing Sieve				G _s	Type Eng Prop. Test
			Type	Req. ft		d _c 16/ft ³	W %	d _e 16/ft ³	d _g 16/ft ³					# 4	# 10	# 40	# 200		
S-1		10.0-12.5	Q5	1.21		137.3 142.0													
	A	10.3					11.6			2.5	10.9								
	B	10.8			CL		10.7	142.8	128.7	74.5 3.5		20	8	96	93	84	54	2.74	CU
S-2		11.1					9.2												
	A	12.5-15.0	Q5	1.27		140.2													
	B	13.1			CL		10.3	142.2	128.9			20	8	95	92	84	53	2.71	CU
S-3		13.4					7.2			3.0	10.8								Gr _{used} =2.74
	A	15.0-17.5	Q5	1.33		139.6 143.5				74.5									
	B	15.5					9.8			74.5	10.8			95	91	83	48		
S-4		15.8			SM-S		10.7			2.9									
	A	16.0								2.7	11.2								
	B	16.1			CL		11.0	142.6	128.5			20	8	99	96	88	57	2.13	Con
S-5		17.5-20.0	Q5	1.28															
	A	17.7																	
	B	18.0			CL		12.1	136.5	121.7		10.9								
S-5		18.2																	
	A	20.0-21.5	Q5	1.23		145.8 148.4													
	B	20.2					11.1	140.3	126.2	3.0									
S-5		20.4								74.5 4.0	10.1								
	B	20.7			(CL)		10.9			74.5				99	94	90	67		

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY-DIESEL GENERATOR BUILDING

BOARING NO. C0E-13A

GROUND SURFACE ELEV. (ft.) 633.6

Sheet 2 of 2

[illegible]

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

BIC4055T3 (BIC217)

Prepared by RF



Reviewed by _____

Checked by JWS 30 June 81BORING NO. CDE-13BGROUND SURFACE ELEV. (ft.) 633.5Sheet 1 of 1

Sample No	Section No	Depth ft.	Tube			Section			Ave. PP t/ft ²	w %	w _L %	PI %	% Passing Sieve				G _s	Type Eng. Prop. Test
			Type	Rec. ft	γ _t lb/ft ³	USCS Symbol	w %	γ _t lb/ft ³	γ _d lb/ft ³				# 4	# 10	# 40	# 200		
S-1		7.5-10.0	QS	1.40	134.8 141.7													
	A	7.6					10.9											
		7.7							74.5	11.1								
	B	8.2				CL	9.9	137.9	125.5		23	10	96	92	83	53	2.75	Con
	C	8.6				CL	10.7	142.7	128.9		21	8	96	92	82	52	2.73	CIU G _s used = 2.74
S-3		13.0-15.5	QS	1.41	144.4													
	A	13.3					11.0											
		13.5							1.8	11.0								
	B	13.7					10.4											
		13.8							74.5 2.0	10.4								
	C	14.1				CL	10.0	145.1	131.9		20	8	99	96	91	55	2.73	CIU
	D	14.4				CL-ML	9.6	142.2	129.8		19	6	100	100	89	56	2.74	Con

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
LAB TESTING SUMMARY - DIESEL GENERATOR BUILDING

LEGEND FOR INDEX PROPERTY PROFILES

<u>SYMBOL</u>	<u>EXPLANATION</u>
	MISCELLANEOUS FILL
SP	SAND
SP-SM	SAND WITH 5% TO 12% FINES (-200 MATERIAL)
SM	SILTY SAND
ML	SILT
CL	SILTY CLAY, PLASTICITY INDEX $\geq 8\%$
CL-ML	SILTY CLAY, PLASTICITY INDEX OF 4% TO 7%
CH	CLAY
SC	CLAYEY SAND
SC-SM	SILTY CLAYEY SAND
	TUBE SAMPLE PROCESSED

<u>ABBREVIATION</u>	<u>EXPLANATION</u>
CON	CONSOLIDATION TEST
UU	UNCONSOLIDATED, UNDRAINED TRIAXIAL TEST
\overline{CU}	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE MEASUREMENTS
\overline{CAU}	ANISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE MEASUREMENTS
SPEC.	SPECIMEN
NO. REC.	NO RECOVERY
NO SAMPLE	NO SAMPLING ATTEMPTED

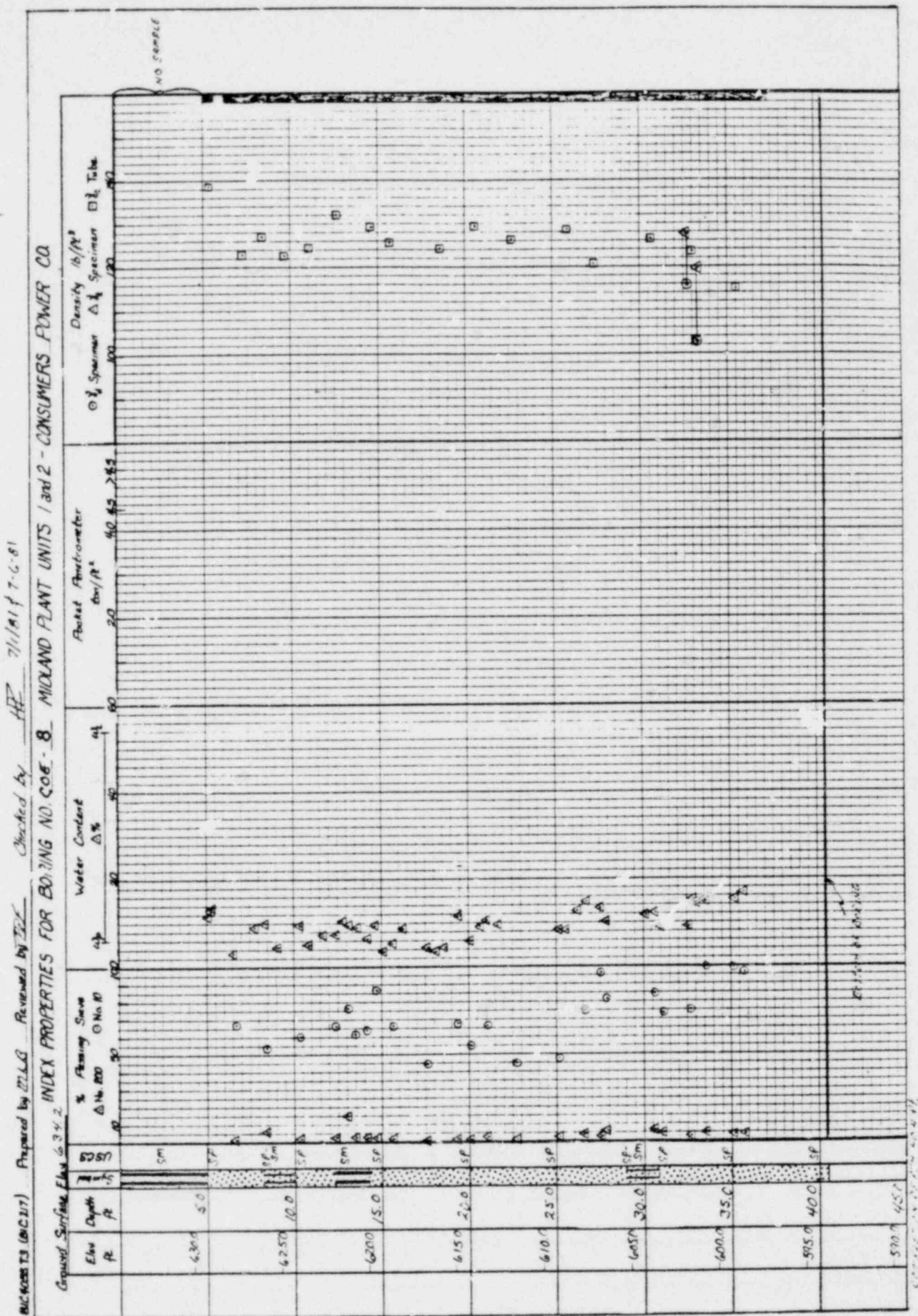


Fig. B-1

BUCKINGHAM (M.C. 17) Prepared by R.G.R. Reviewed by J.L.C. CHECKED BY J.C.M. 7/1/61 / NR 7-6-61

INDEX PROPERTIES FOR BORING NO. C06-9 MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

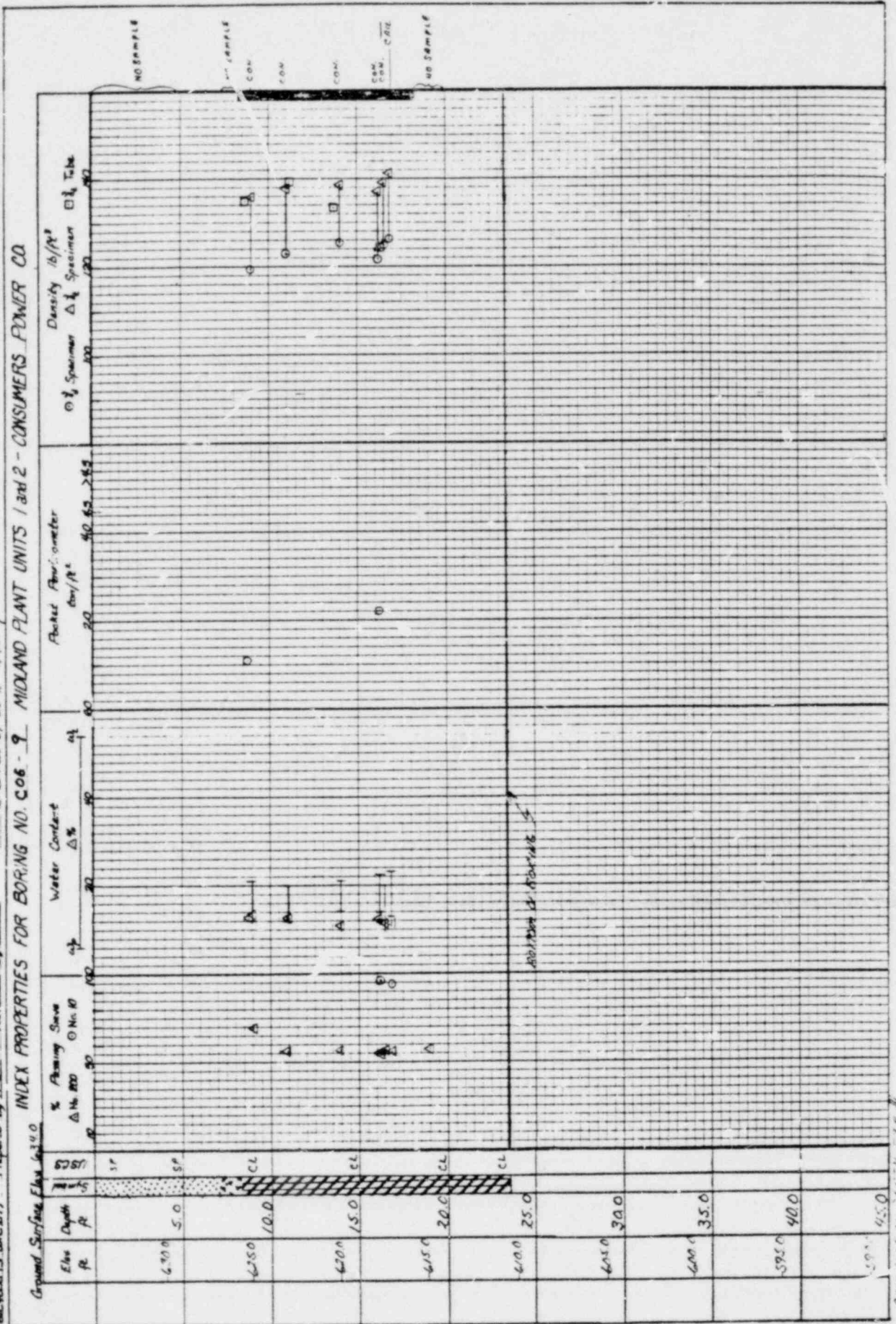
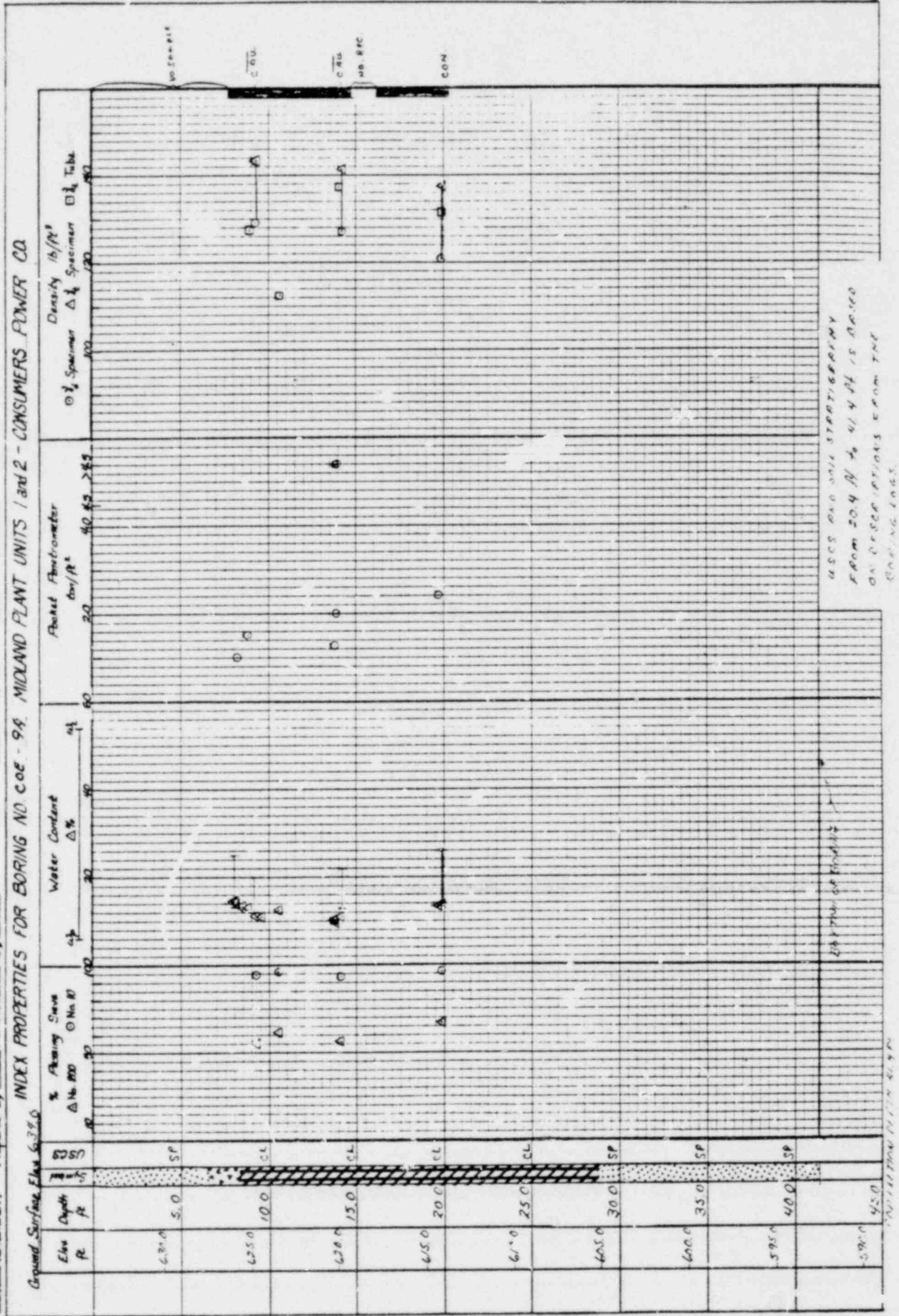


Fig. B-2

BUC 6055 TS (ANC 317) Prepared by C.B.G. Reviewed by Z.R.

CHECKED BY L.H.H. 11/10/51 HEP 7-4-51

INDEX PROPERTIES FOR BORING NO. COE - 98 MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.



USGS AND SOIL STRATIGRAPHY FROM 20.4 ft to 41.4 ft is 10-100 ON RECORDED FROM THE BORING LOGS.

THIS IS THE GROUNDWATER

WATER TABLE 41.4 ft

Fig. B-3

ALC 4055 T3 (01C217) Prepared by LLA Reviewed by TLL

18-9-1 at 1.5:00 PM 24 Nov 1964

INDEX PROPERTIES FOR BORING NO. COE-10 MIDLAND PLANT UNITS / 3rd 2 - CONSUMERS POWER CO.

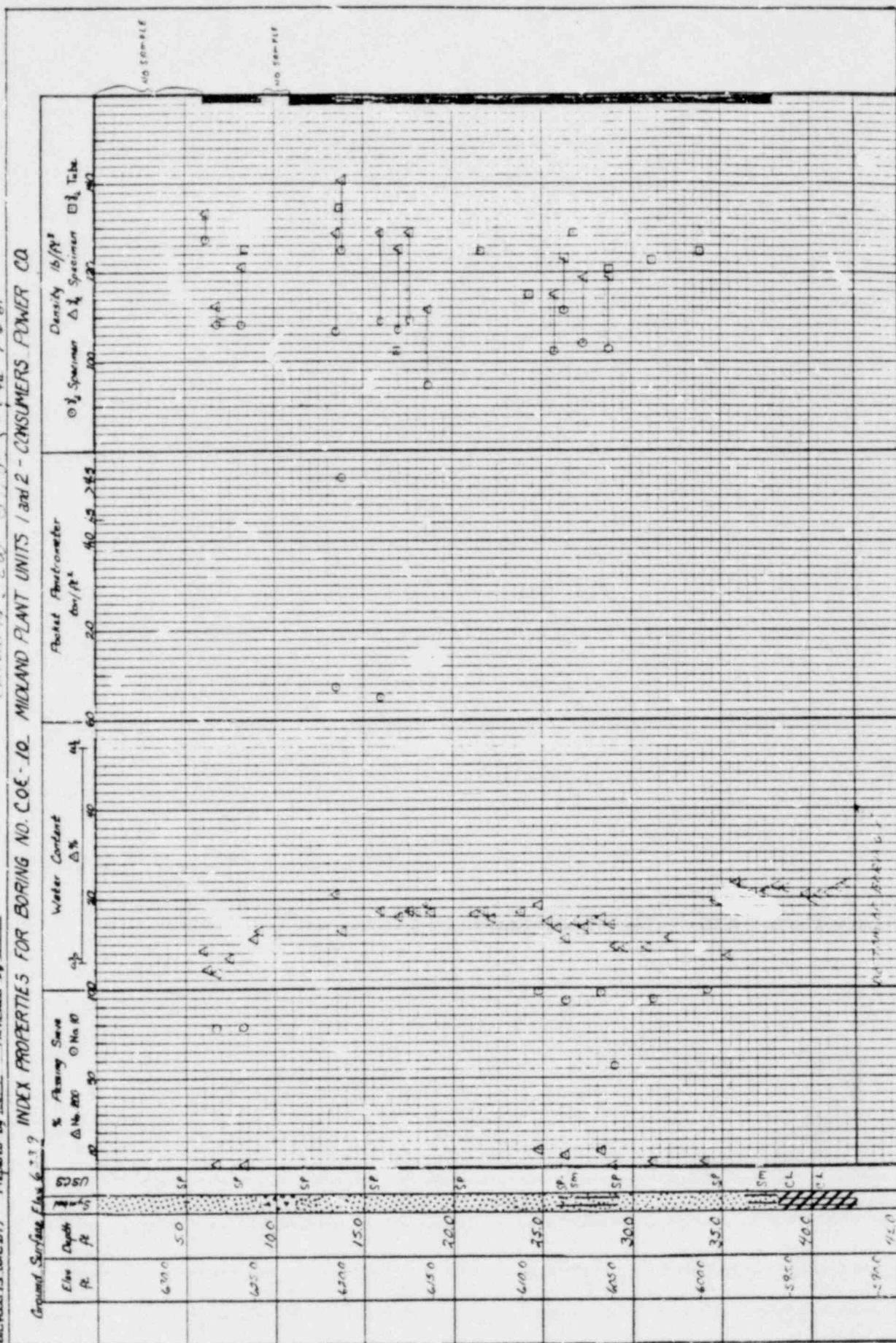


Fig. B-4

Checked by JHP-7-6-81

Reviewed by ELL

Prepared by R.C.C.

BUC 4005 TS (04C317)

INDEX PROPERTIES FOR BORING NO. COE-108 MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

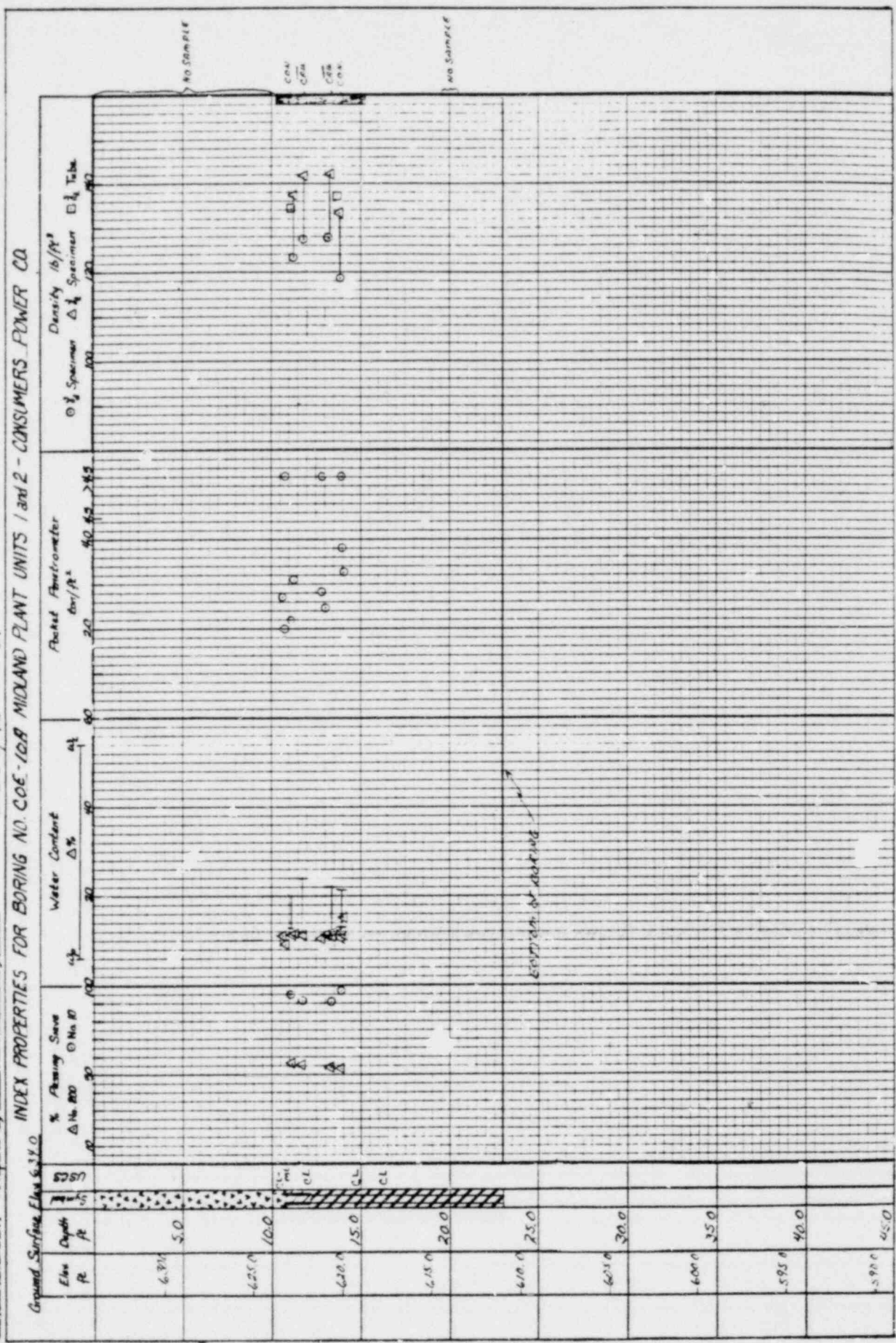


Fig. B-5

BUC 6055 TS (BUC 6117) Prepared by JRE Reviewed by JH
 INDEX PROPERTIES FOR BORING NO. COE - 11 MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
 Checked by J.W. 07/04/81 JRE 7-6-81

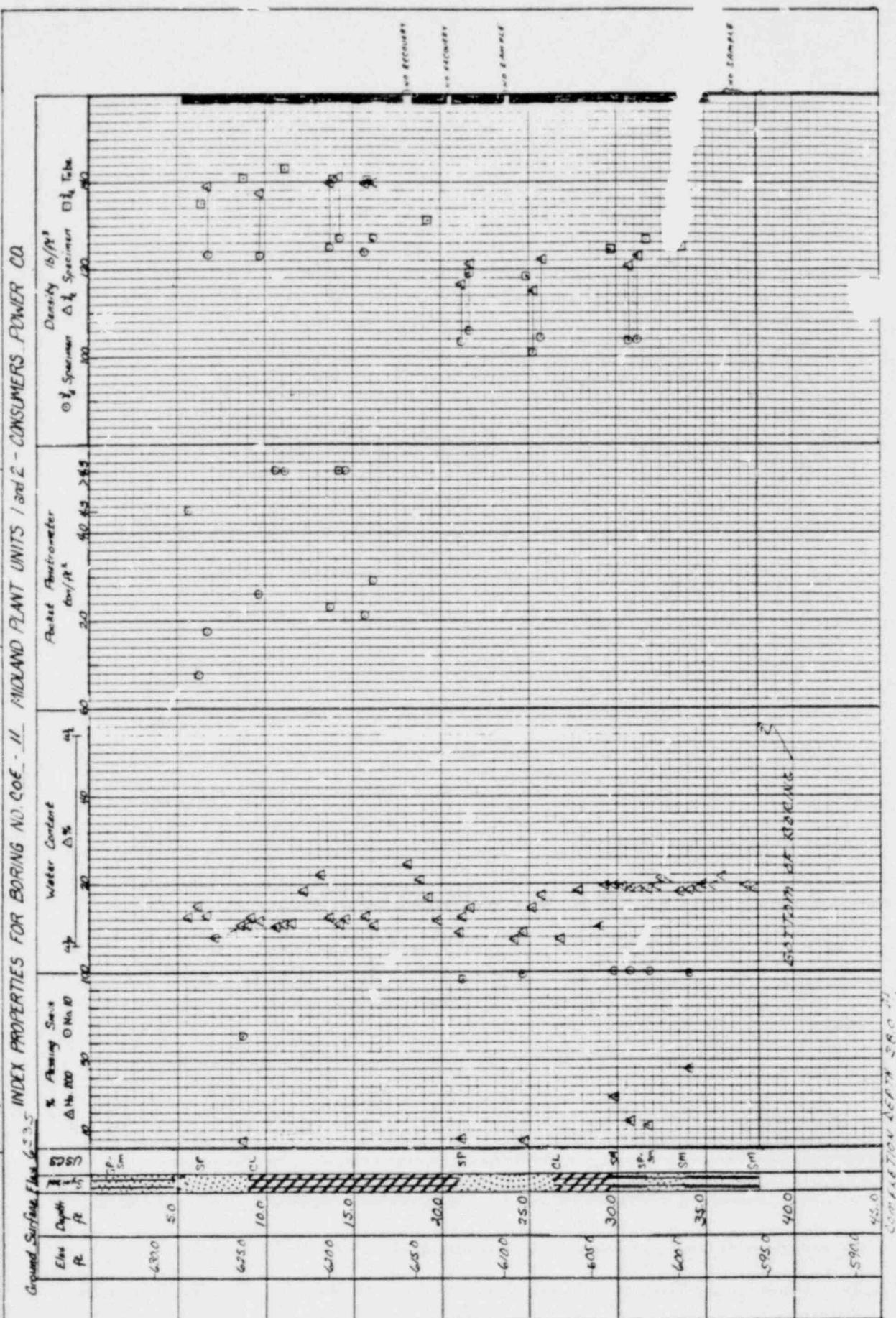


Fig. B-6

CHECKED BY DEE 7/10/61 HP 7-6-81

INDEX PROPERTIES FOR BORING NO. COE-11A MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

Prepared by ROD Reviewed by DEE

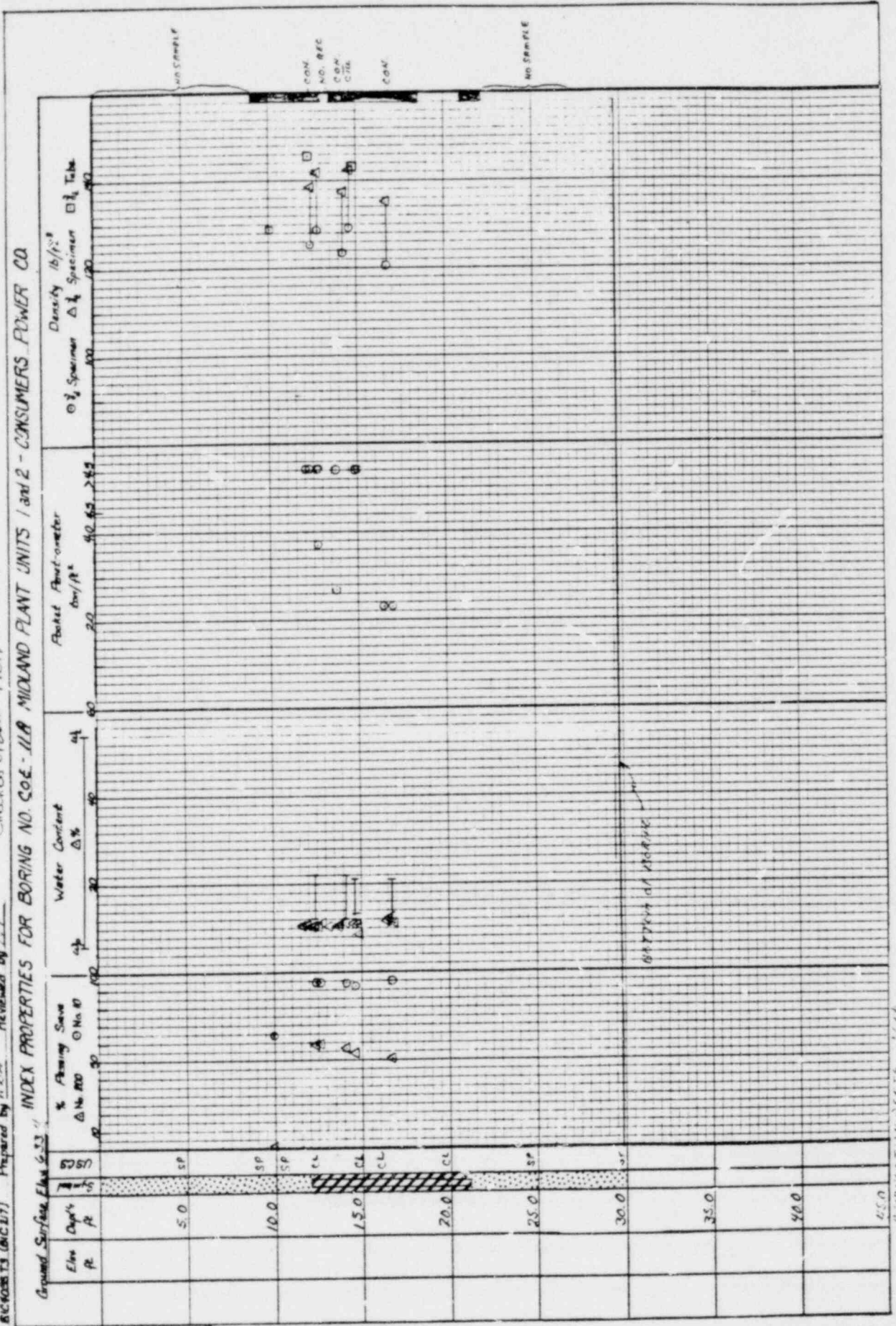


Fig. B-7

REC-6035 T9 (B/C 17) Prepared by DPE Reviewed by DPE

Checked by TUL 07/06/10 7-6-81

INDEX PROPERTIES FOR BORING NO. COE - 12. MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

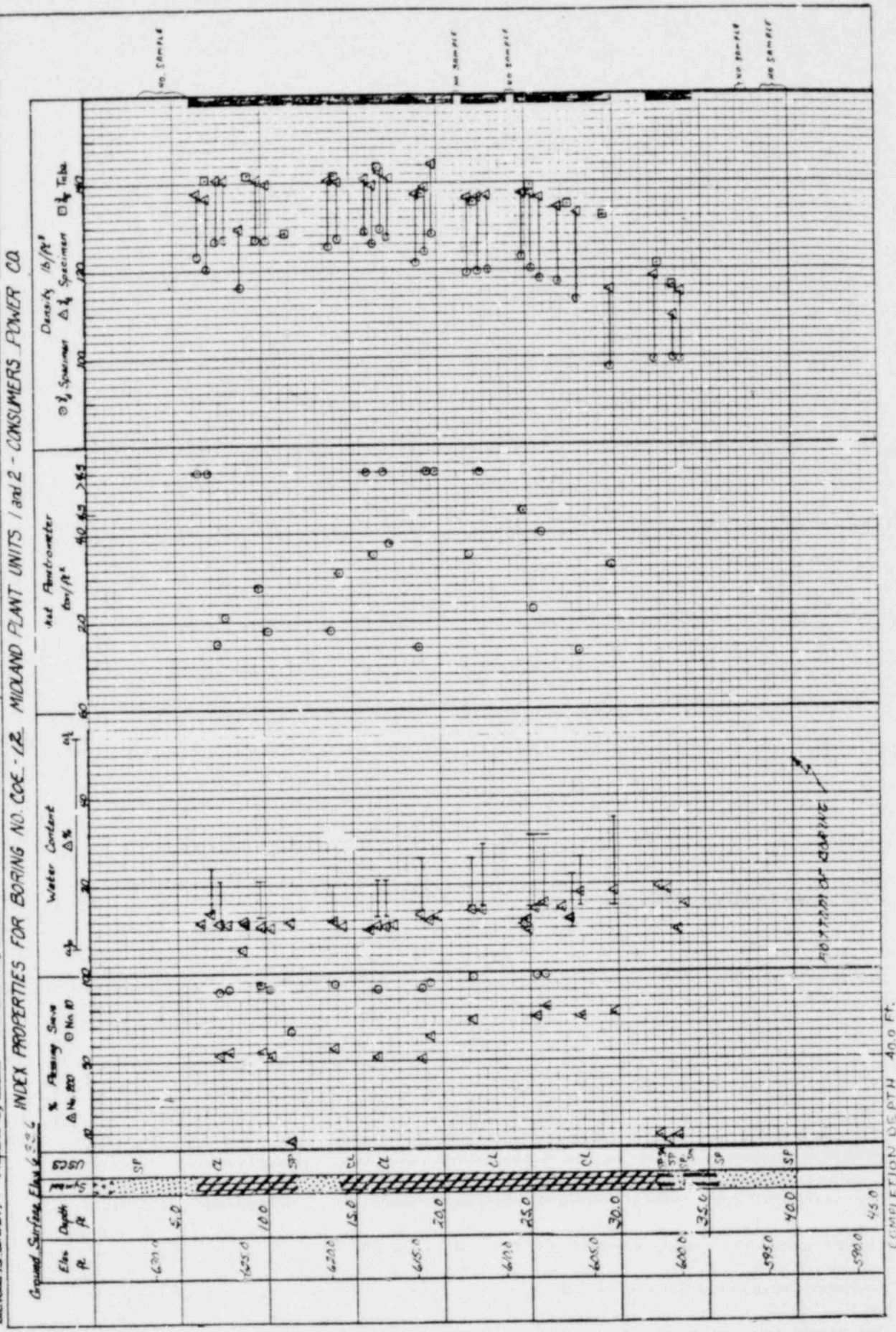


Fig. B-8

BACRODITS (BACUT) - Prepared by C.B. Reviewed by P.E.

Checked by J.L.W. 02/01/81, 087 7-0-81

INDEX PROPERTIES FOR BORING NO. COE-12A MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

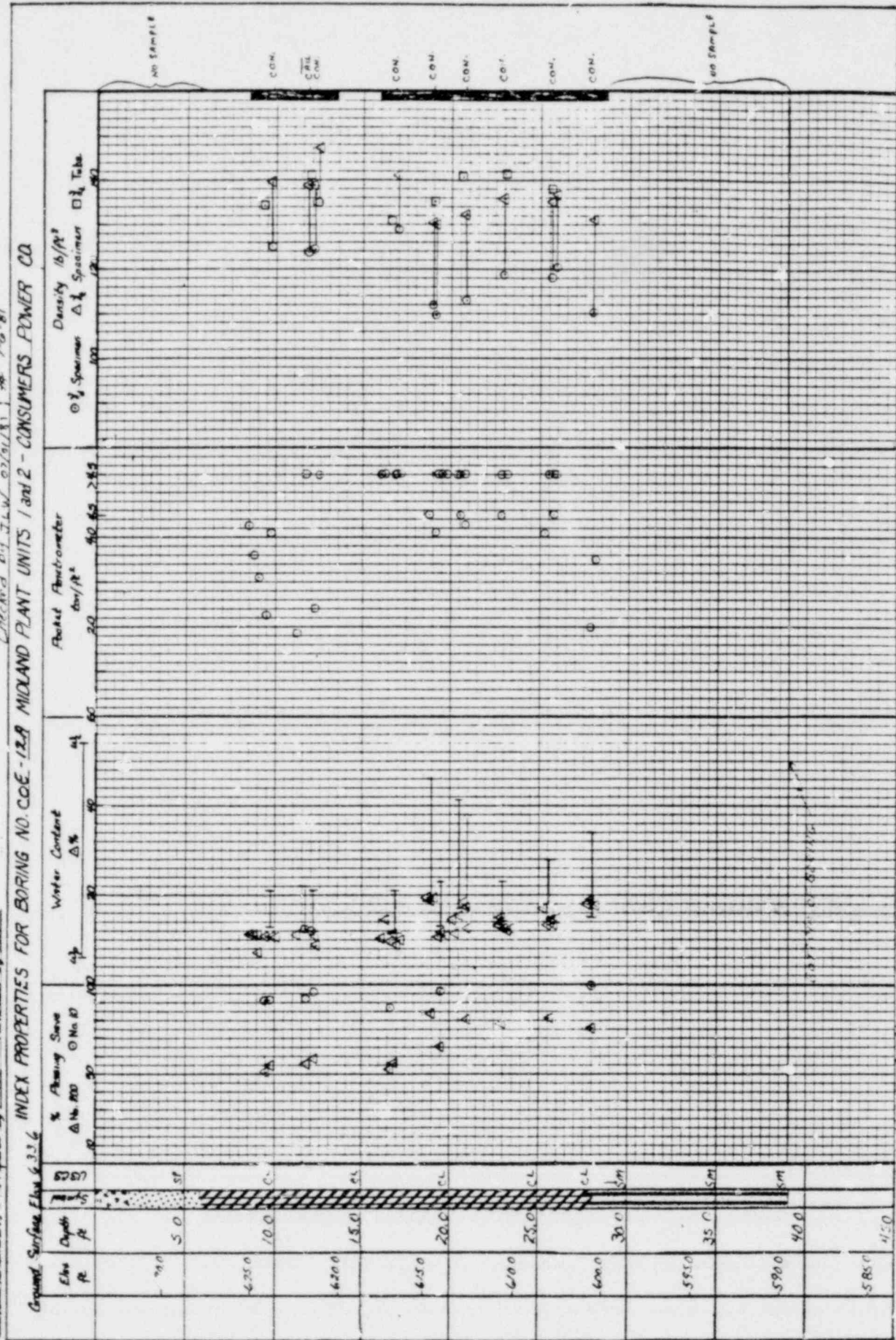
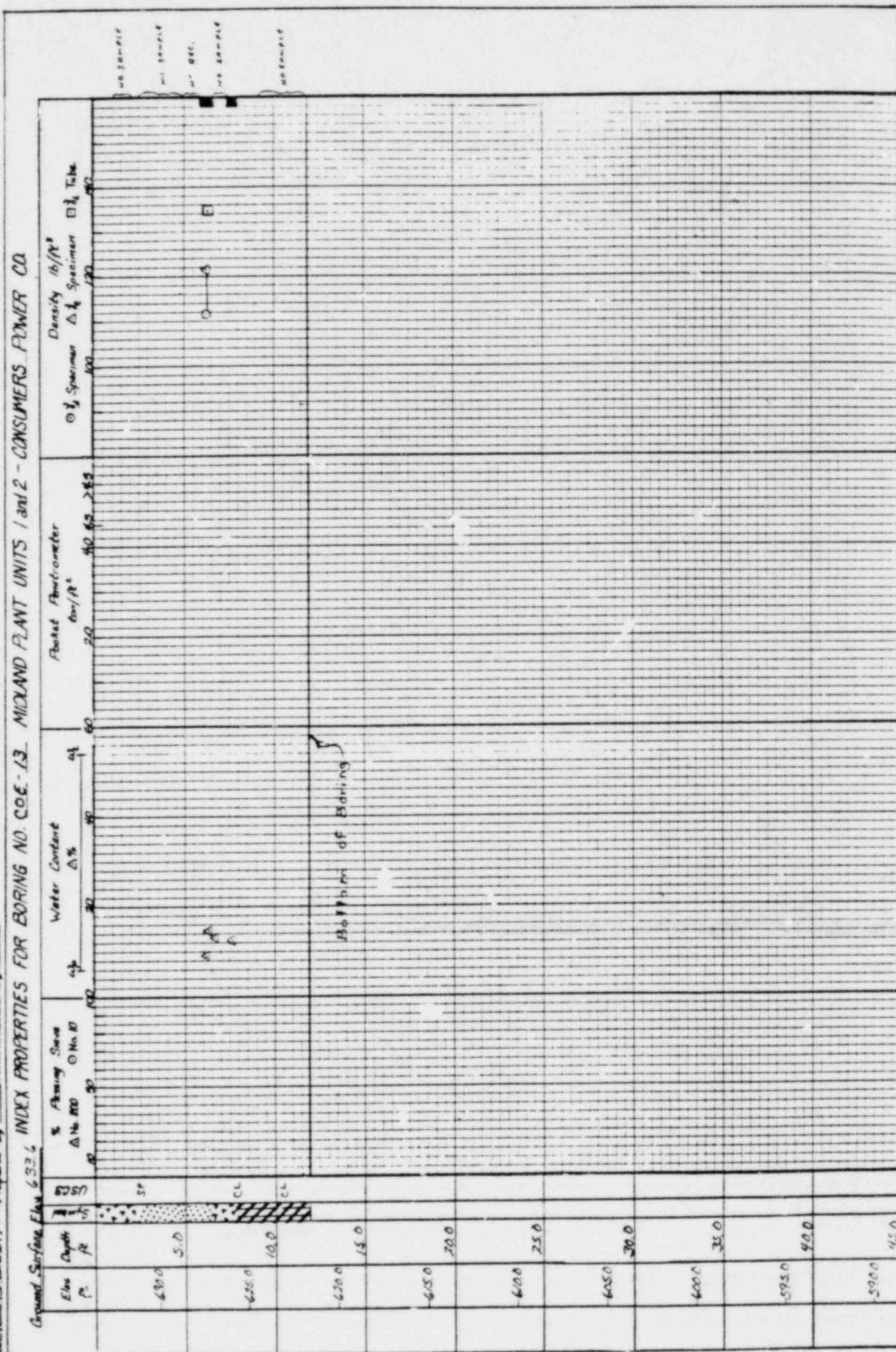


Fig. B-9

CHECKED BY JHM 7-10-61

Prepared by JSSO Reviewed by JHE

INDEX PROPERTIES FOR BORING NO. COE-13 MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.



COMPLETION DEPTH 11.9 FT

Fig. B-10

BUCROSS T3 (60C217) Prepared by CEC/MS Reviewed by LIE Dated by HP 7-1-81 7-6-81

INDEX PROPERTIES FOR BORING NO. COE-19E MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

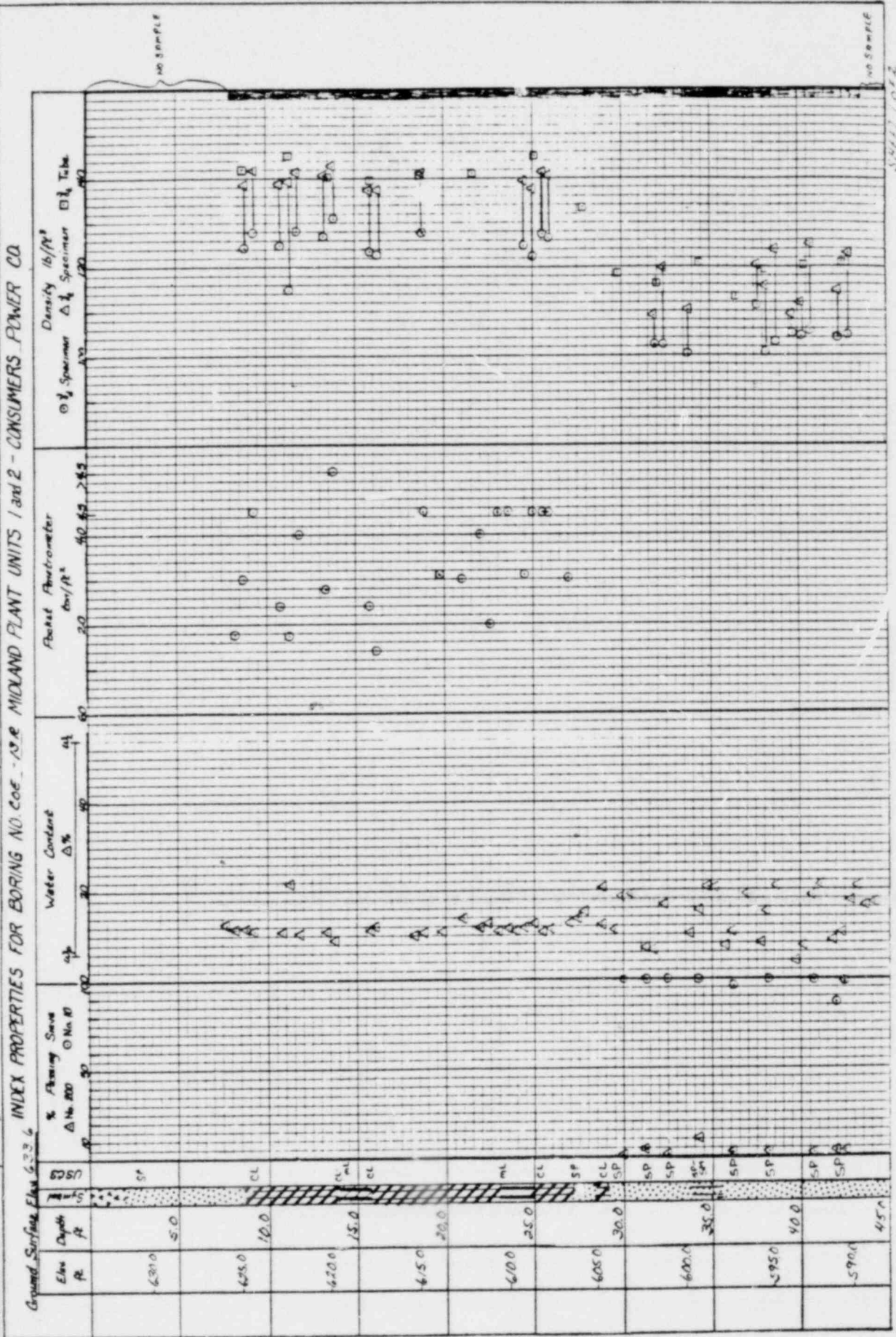


Fig. B-11 (1/2)

BUC 4088 T3 (M/C 217) Prepared by JWS Reviewed by DCL Checked by HRP 7-1-81 7-16-81

INDEX PROPERTIES FOR BORING NO. COE-13-R MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

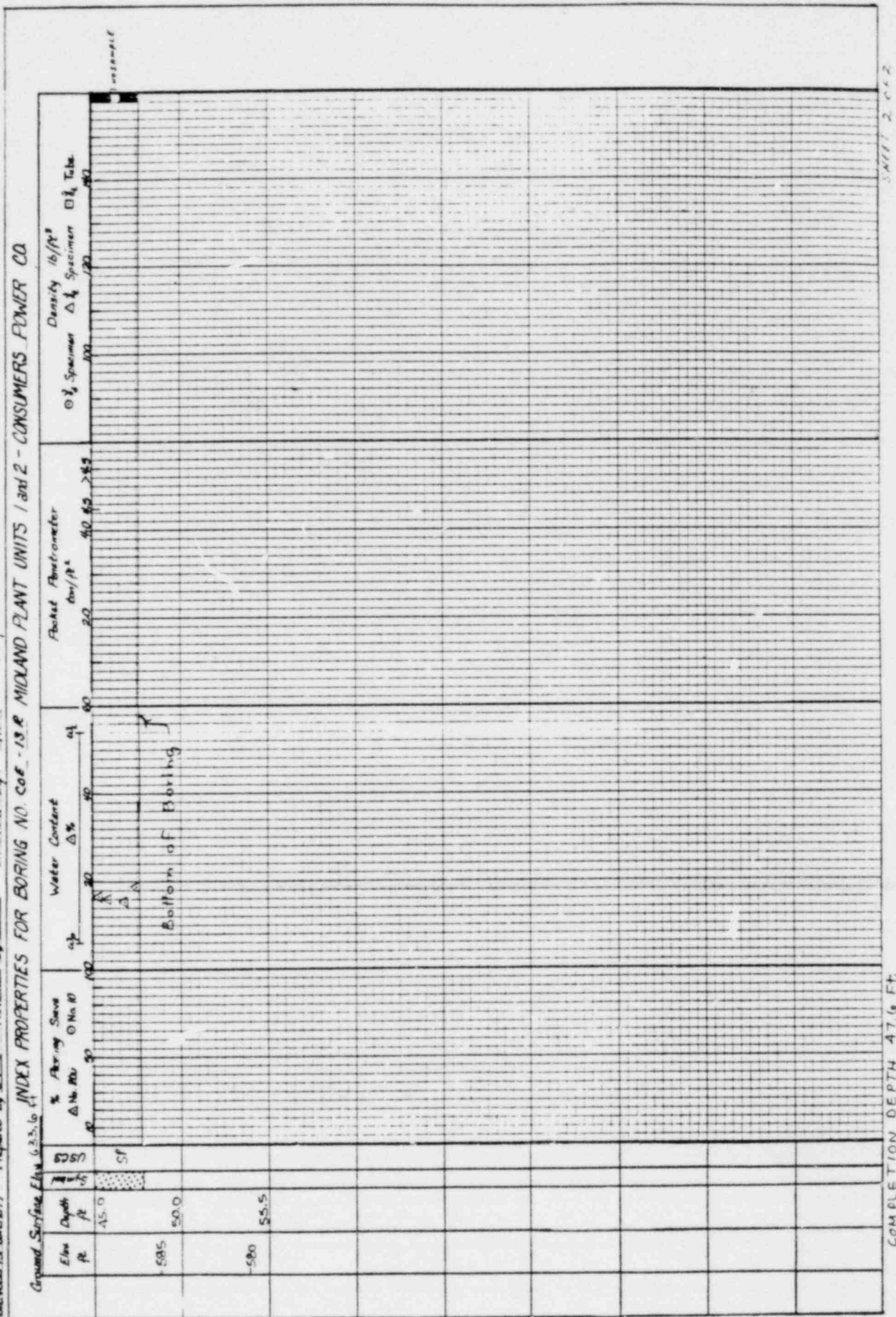


Fig. B-11 (2/2)

BUSKOSIS (M.C.217) Prepared by C.C.2. Reviewed by L.L.

Checked by J.M. 7/1/81 187 7-6-81

INDEX PROPERTIES FOR BORING NO. C.O.E. - 138 MIDLAND PLANT UNITS / and 2 - CONSUMERS POWER CO.

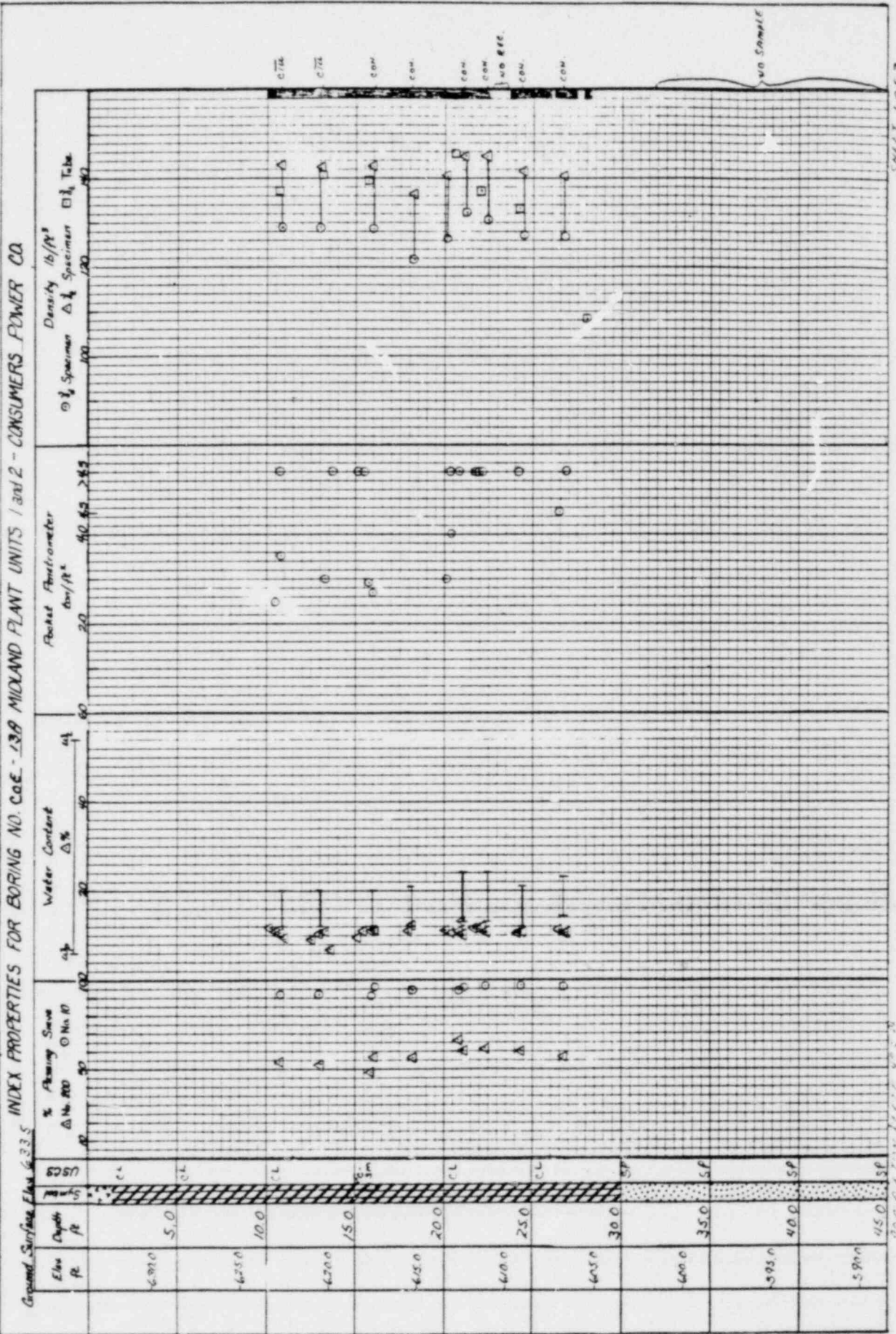


Fig. B-12 (1/2)

Prepared by ALB Reviewed by DLK

Checked by HP 7-6-81

INDEX PROPERTIES FOR BORING NO. COE-13A MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

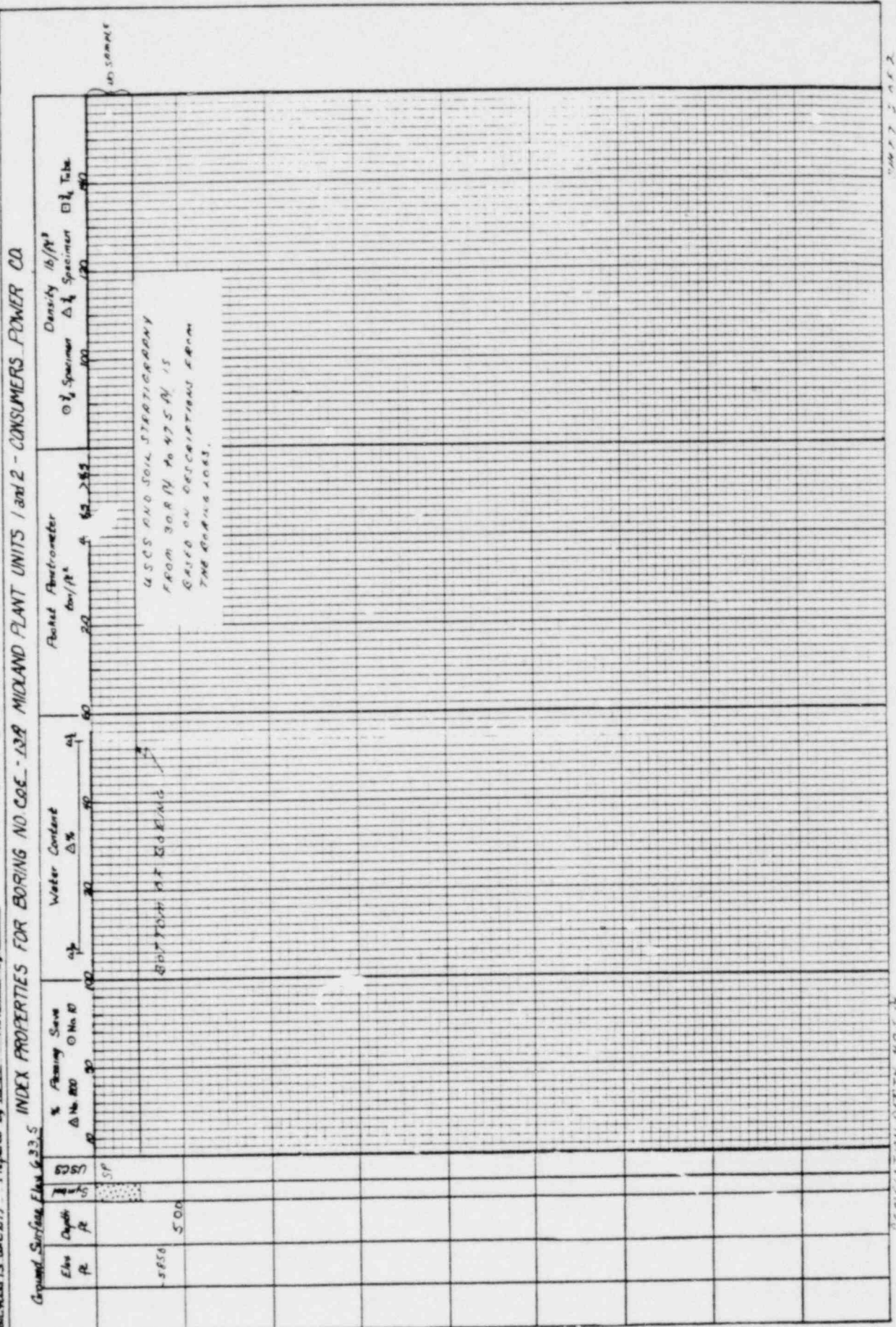


Fig. B-12 (2/2)

BUC 4055 TS (BUC 117) Prepared by E.E.L. Reviewed by Checked by ABZ 7-6-87

INDEX PROPERTIES FOR BORING NO COE-13-B MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.

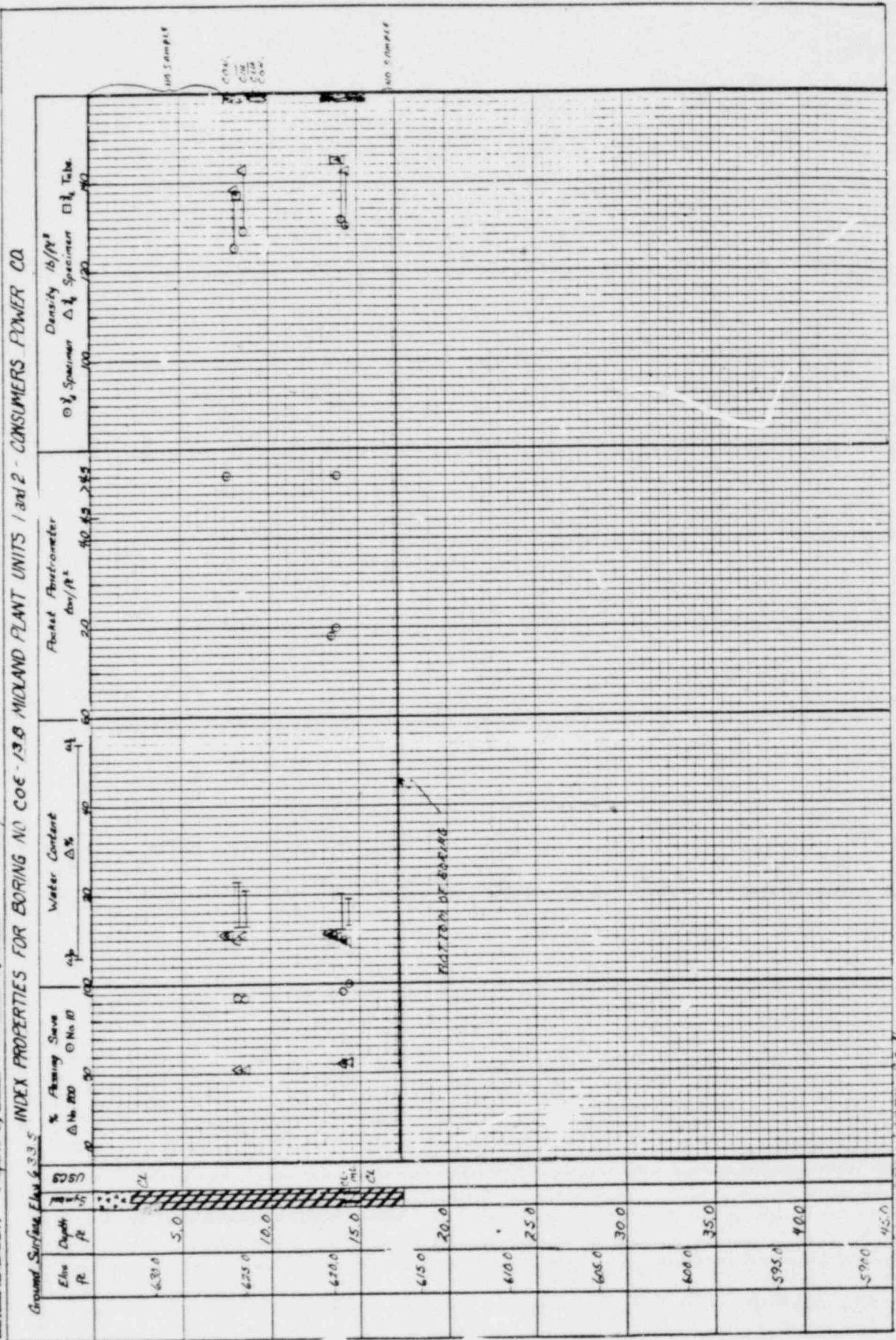
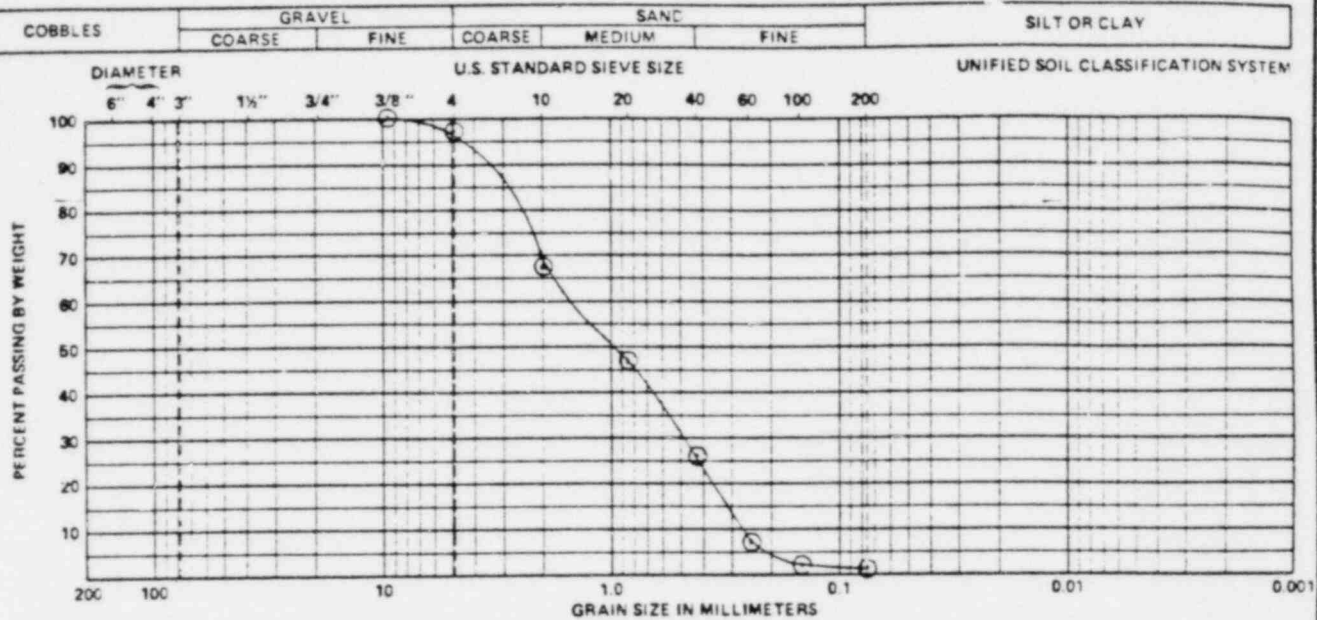
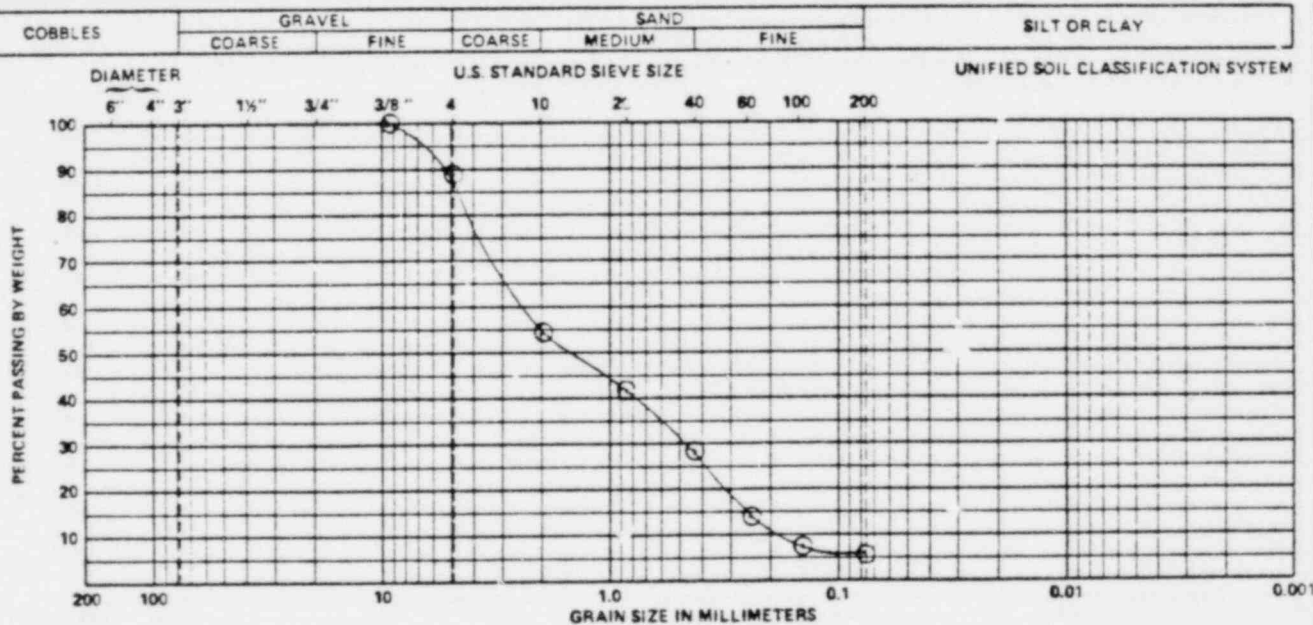


Fig. B-13

APPENDIX C

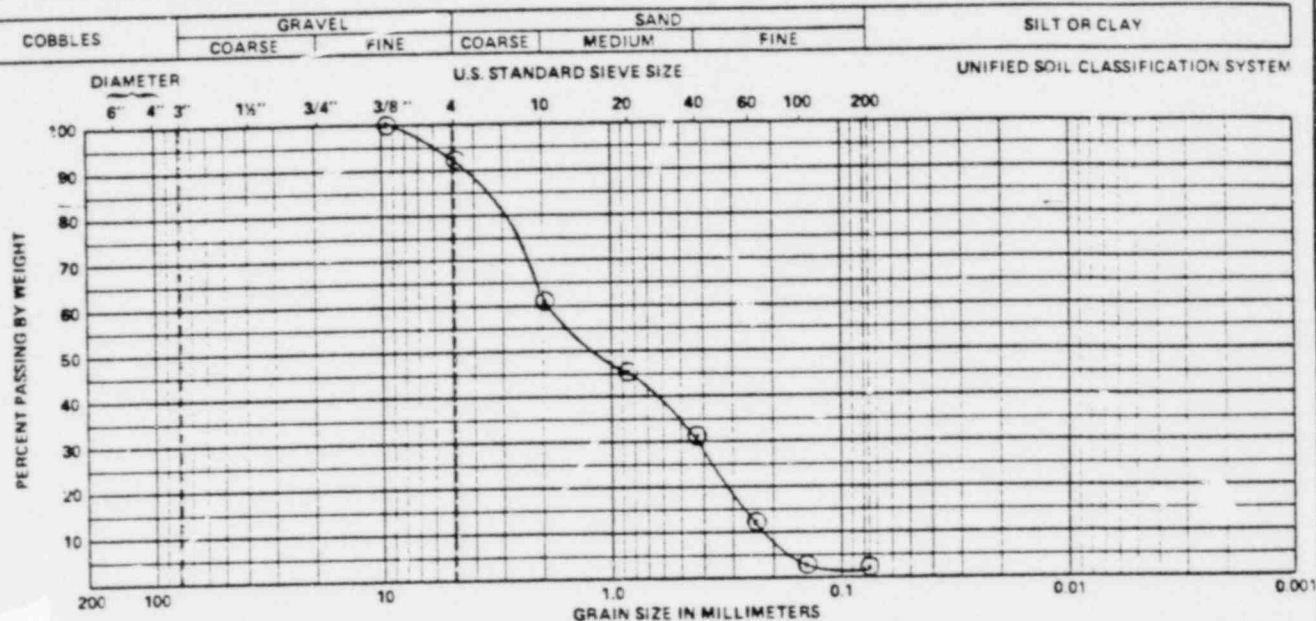
Particle-Size Distribution Curves

PARTICLE-SIZE DISTRIBUTION

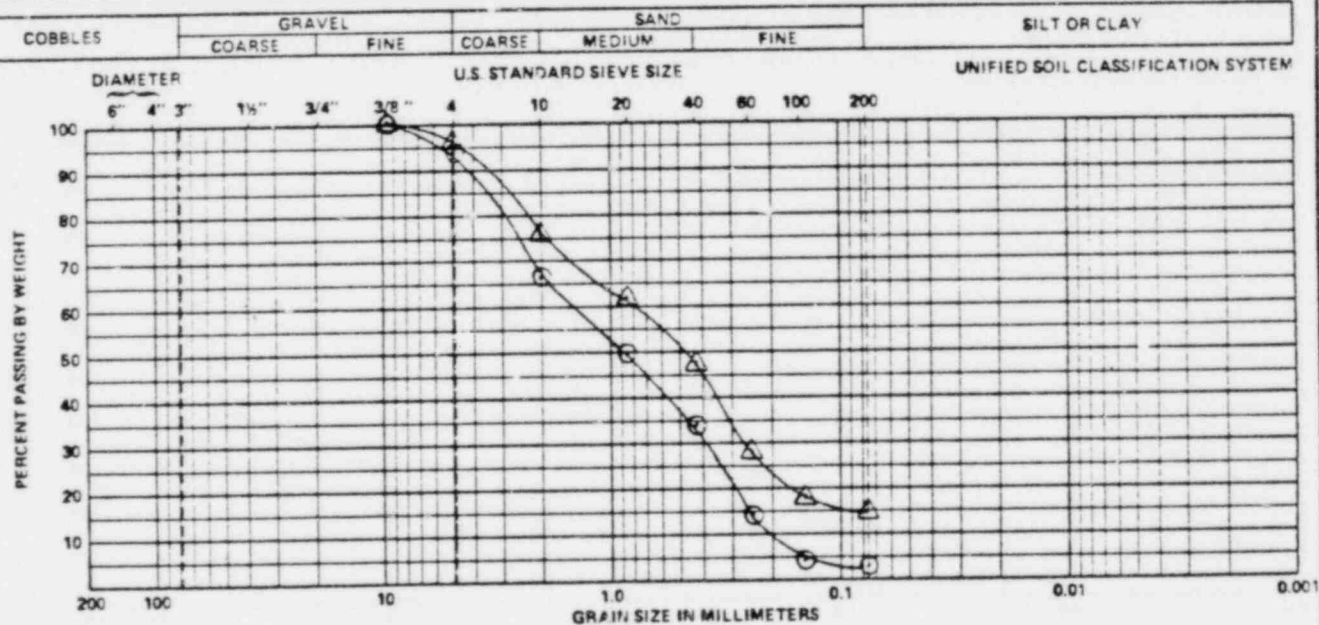
[illegible]

BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-4A	B-45	⊙	SP-SM, brown, c. to f. SAND, to f. gravel, to silt	10.0		

PARTICLE-SIZE DISTRIBUTION

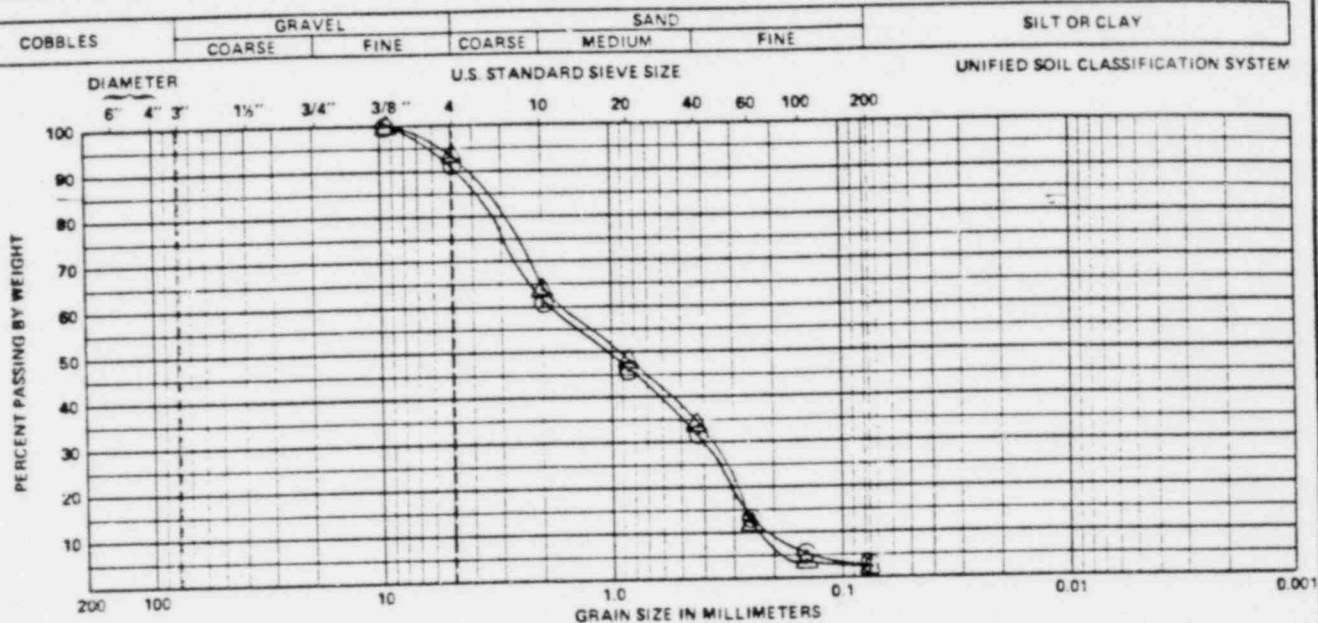


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-5-B	10.4	○	SP, brown, c. to f. SAND, tr. f. gravel, tr. silt	9.5		

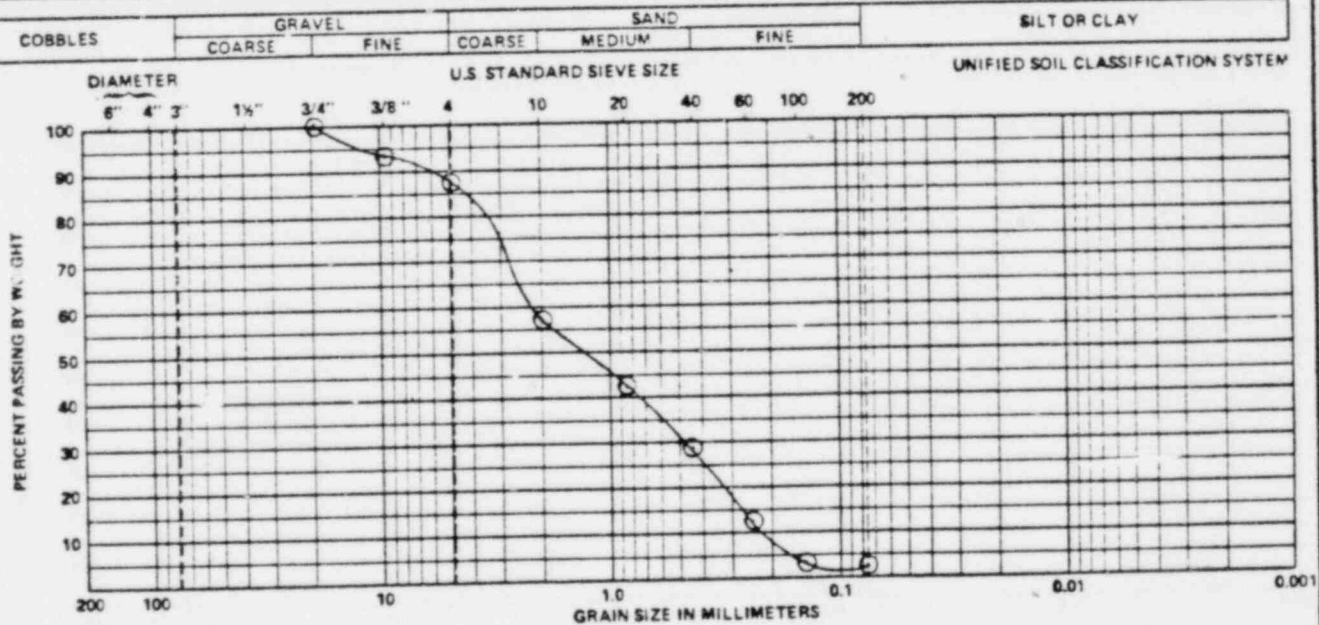


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-7-A	12.4	○	SP, tan, c. to f. SAND, tr. f. gravel, tr. silt	7.4		
COE B	S-7-B	12.8	△	SP-SM, tan, c. to f. SAND, tr. f. gravel, some silt with occ. pockets gray sandy silty CLAY (CL)	9.5		

PARTICLE-SIZE DISTRIBUTION

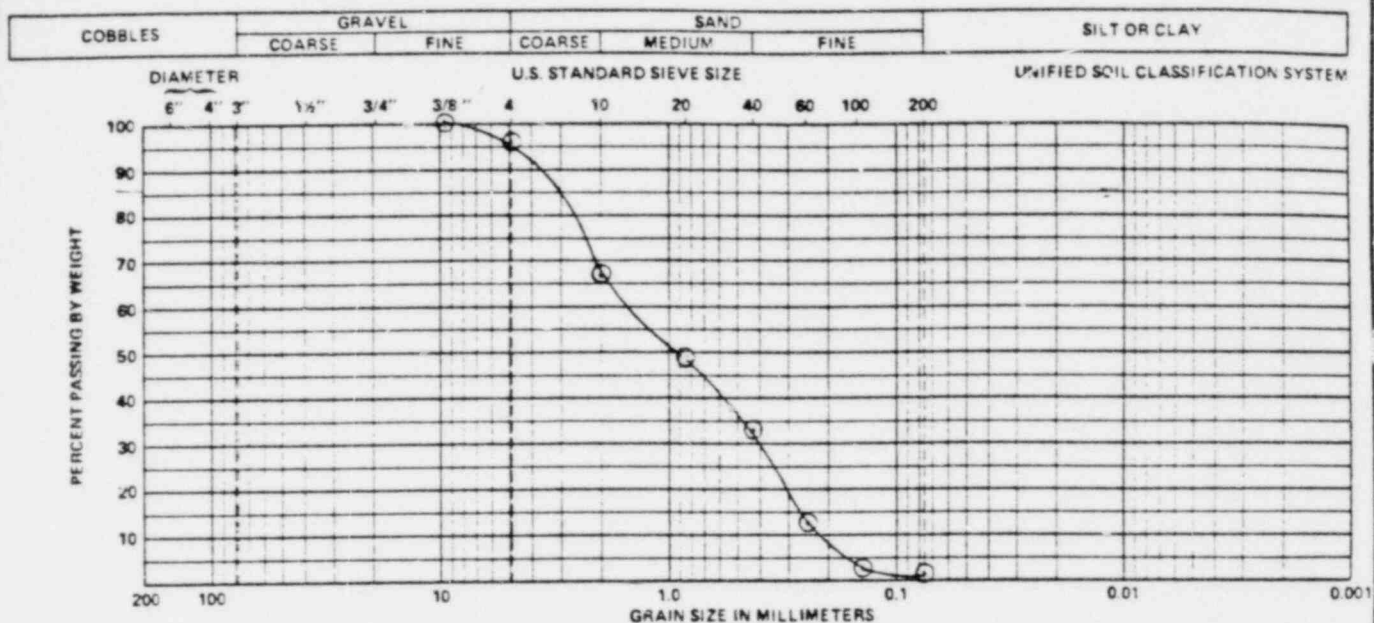


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-B-A	13.5	⊙	SP, brown, c. to f. SAND, tr. f. gravel, tr. silt	8.9		
COE B	S-B-B	14.2	△	SP, brown, c. to f. SAND, tr. f. gravel, tr. silt	6.1		

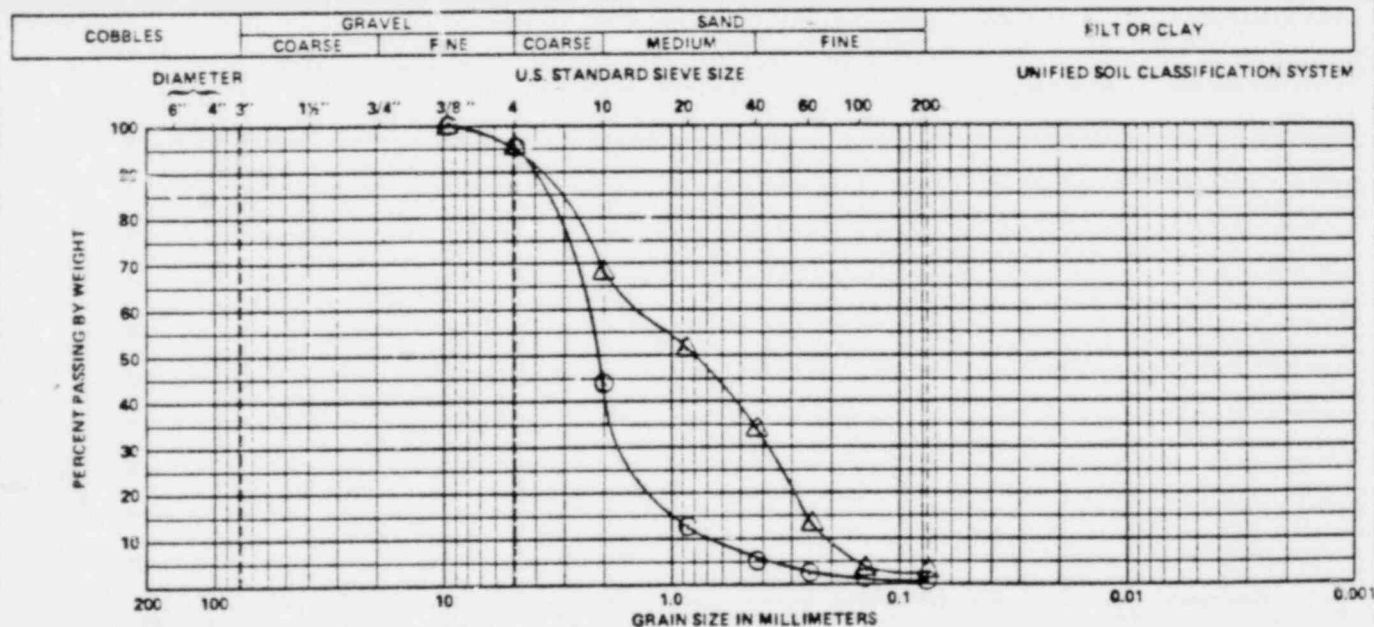


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-9-A	14.65	⊙	SP, brown, c. to f. SAND, tr. f. gravel, tr. silt	9.6		

PARTICLE-SIZE DISTRIBUTION

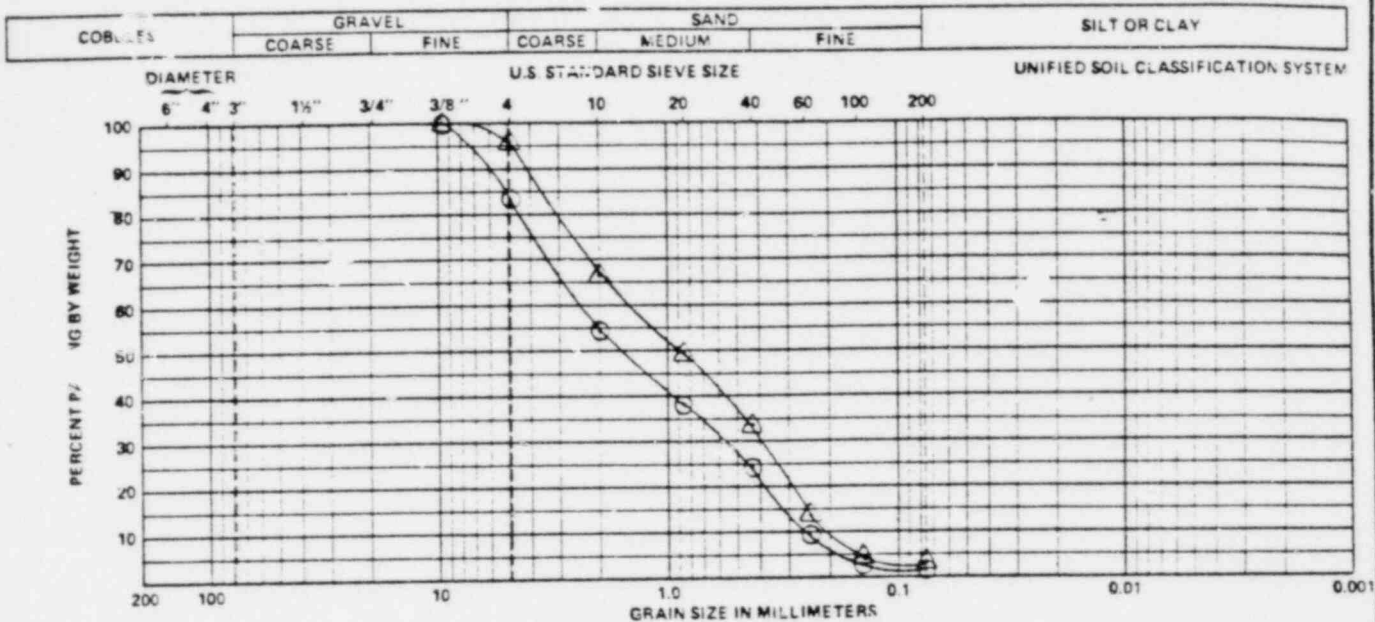


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-10-B	15.65	⊙	SP, tan, c. to f. SAND, tr. f. gravel, tr. silt			

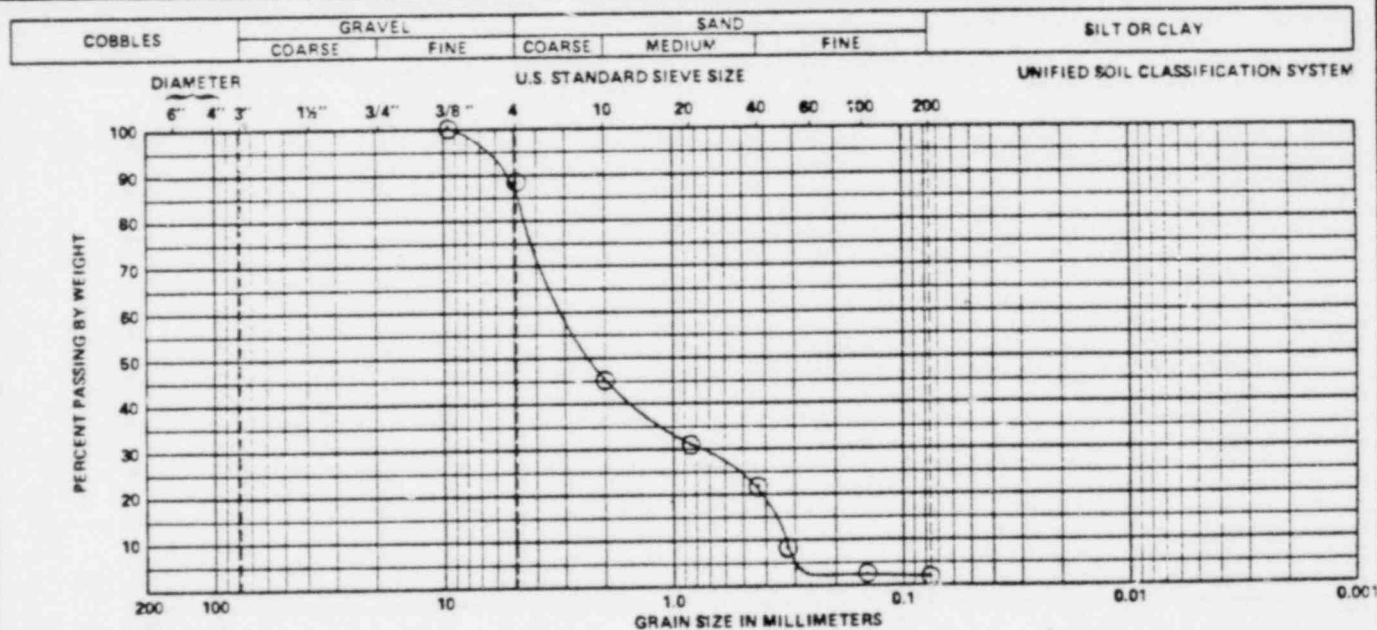


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-11-A	17.7	⊙	SP, tan, c. to f. SAND, tr. f. gravel, tr. silt	4.5		
COE B	S-11-D	19.4	△	SP, tan, c. to f. SAND, tr. f. gravel, tr. silt	11.9		

PARTICLE-SIZE DISTRIBUTION



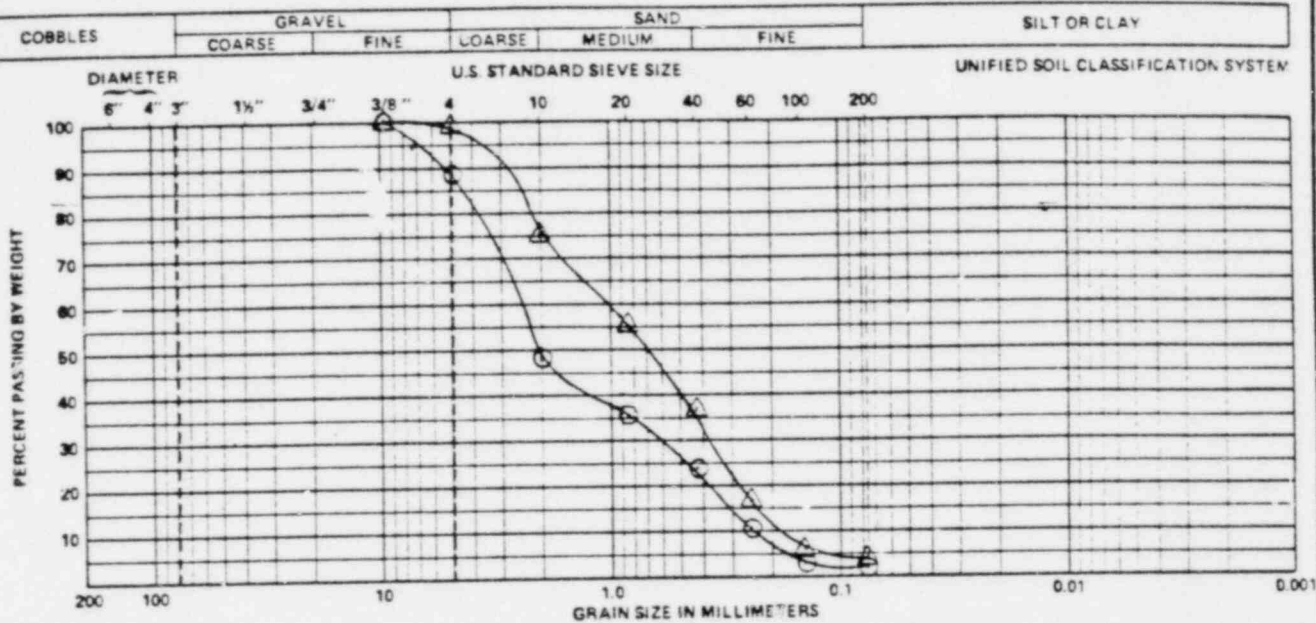
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-12-A	20.1	⊙	SP, tan, c. to f. SAND, some f. gravel, to silt	6.0		
COE B	S-12-C	21.0	△	SP, tan, c. to f. SAND, to f. gravel, to silt	10.9		



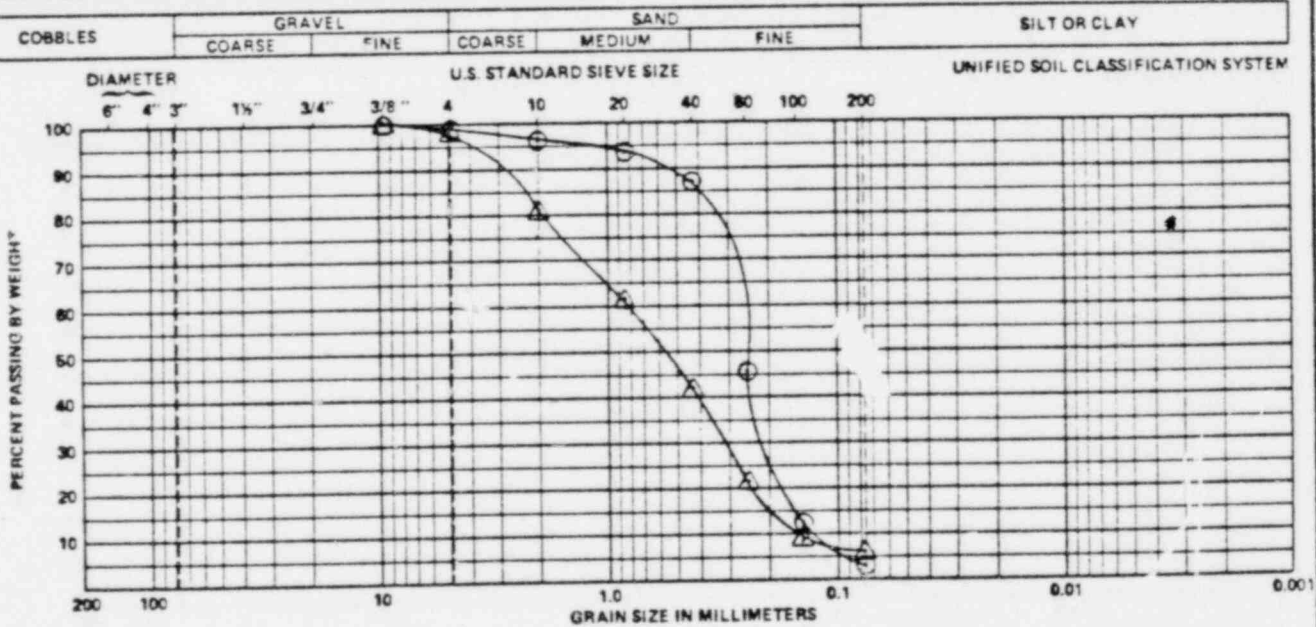
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-13	22.8	⊙	SP, brown, c. to m SAND, some f. gravel, some f. sand, to silt	10.2		

Fig. C-1 (5/8)

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _p (%)	w _L (%)
COE B	5-14-A	22.15	⊙	SP, tan, c. to m. SAND, some f. gravel some f. sand, tr. silt	8.2		
COE B	5-14-D	26	⊙	SP, tan, c. to f. SAND, tr. f. gravel tr. silt	14.9		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-15-A	27.5	○	SP, tan f. SAND some f gravel to m. silt	13.4		
COE B	S-15-B	28.0	△	SP-SM, tan c. to f. SAND, tr. f. gravel, tr. silt	10.2		

PARTICLE-SIZE DISTRIBUTION

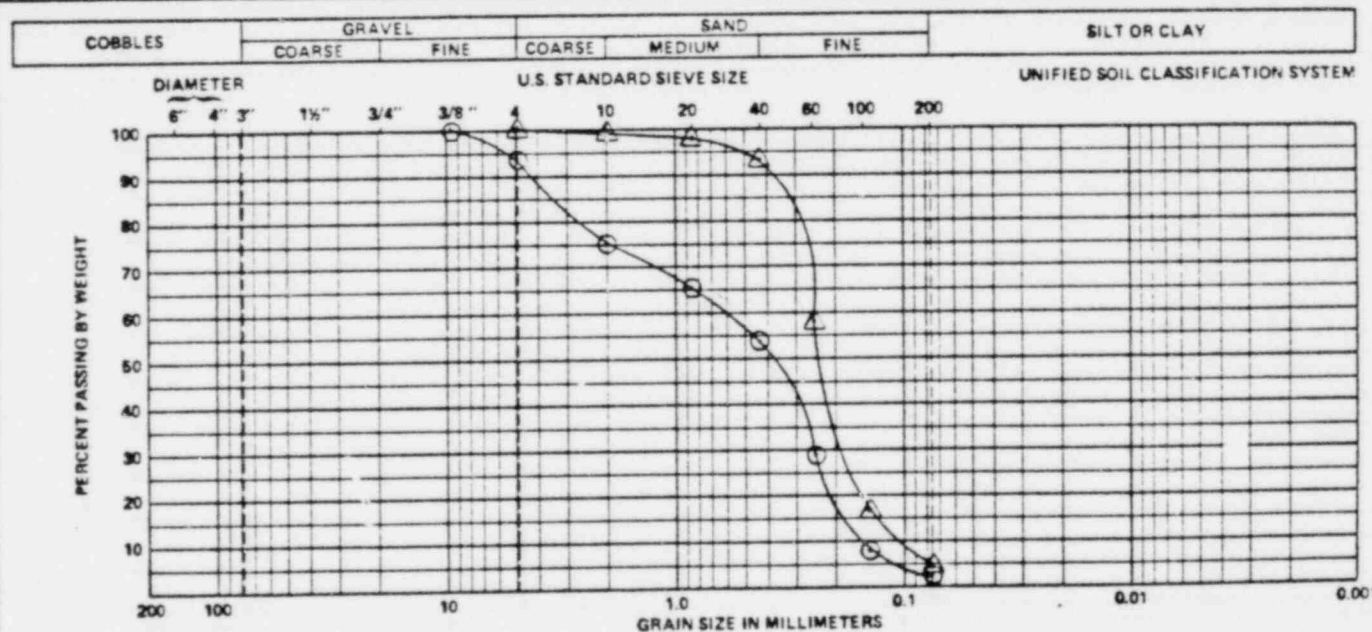
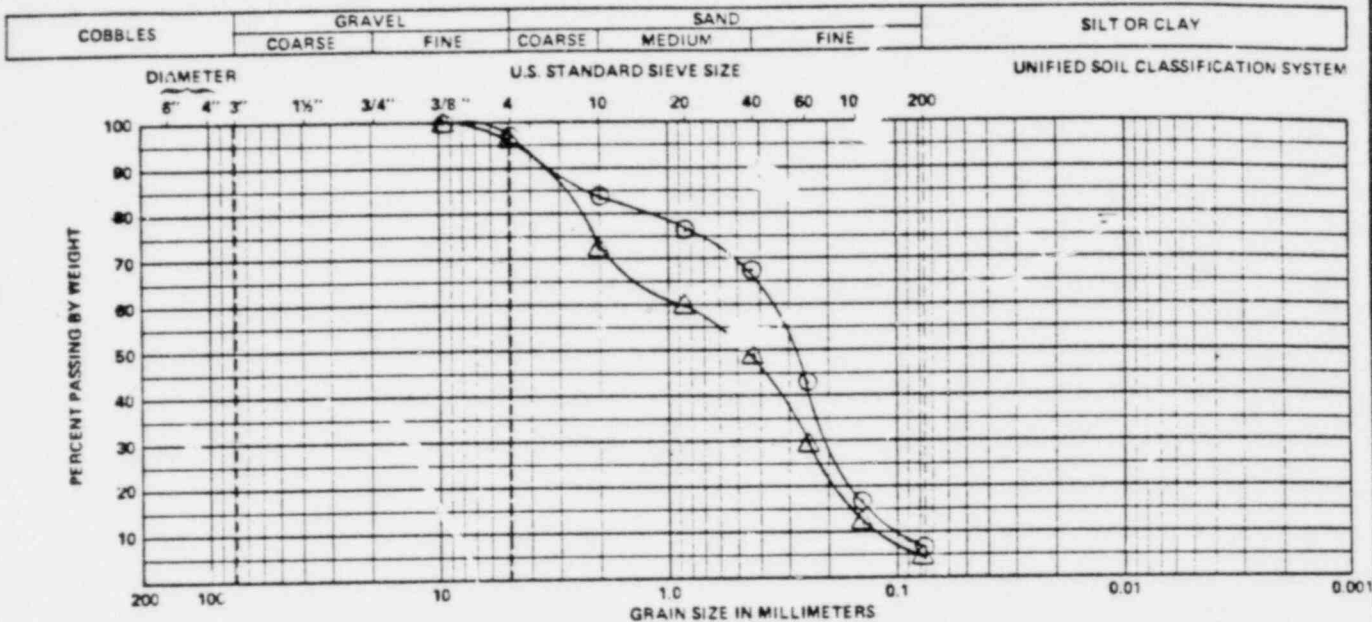
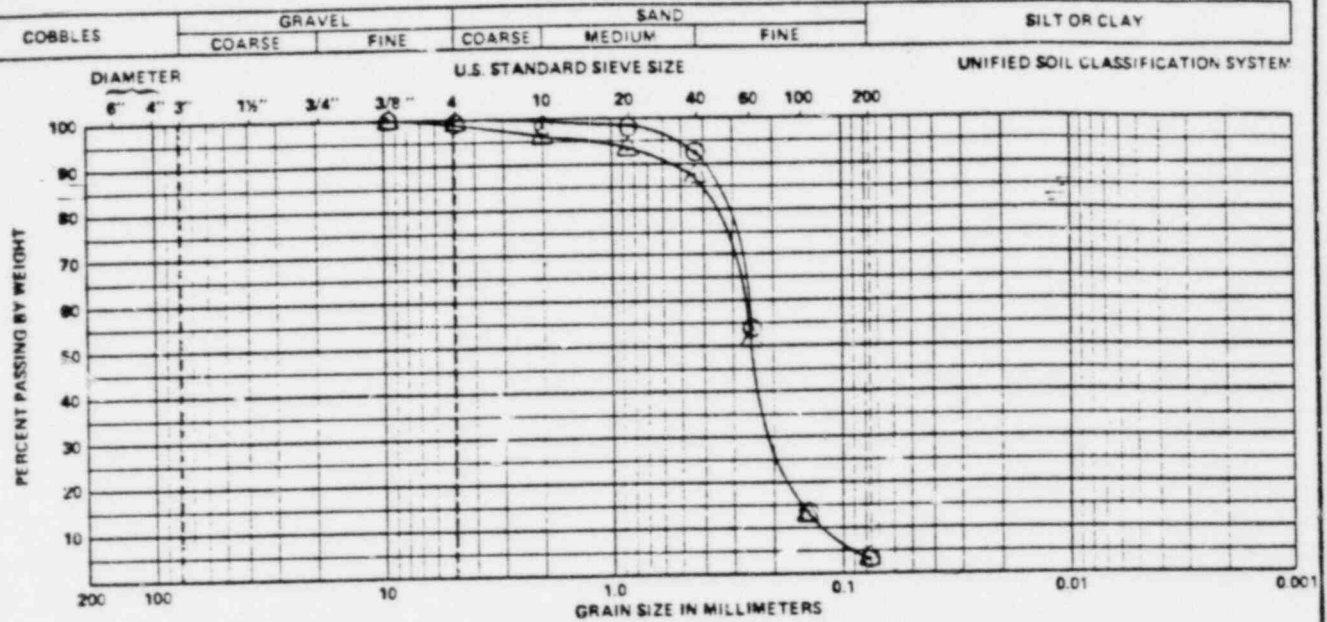
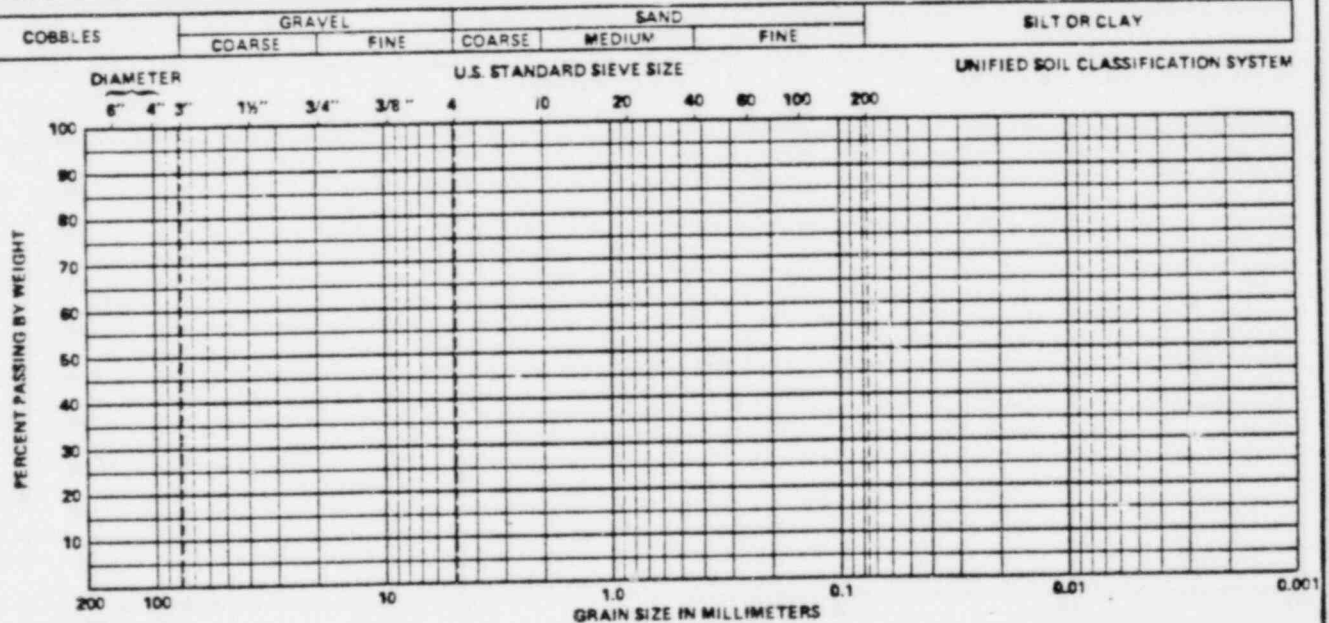


Fig. C-1 (7/8)

PARTICLE-SIZE DISTRIBUTION

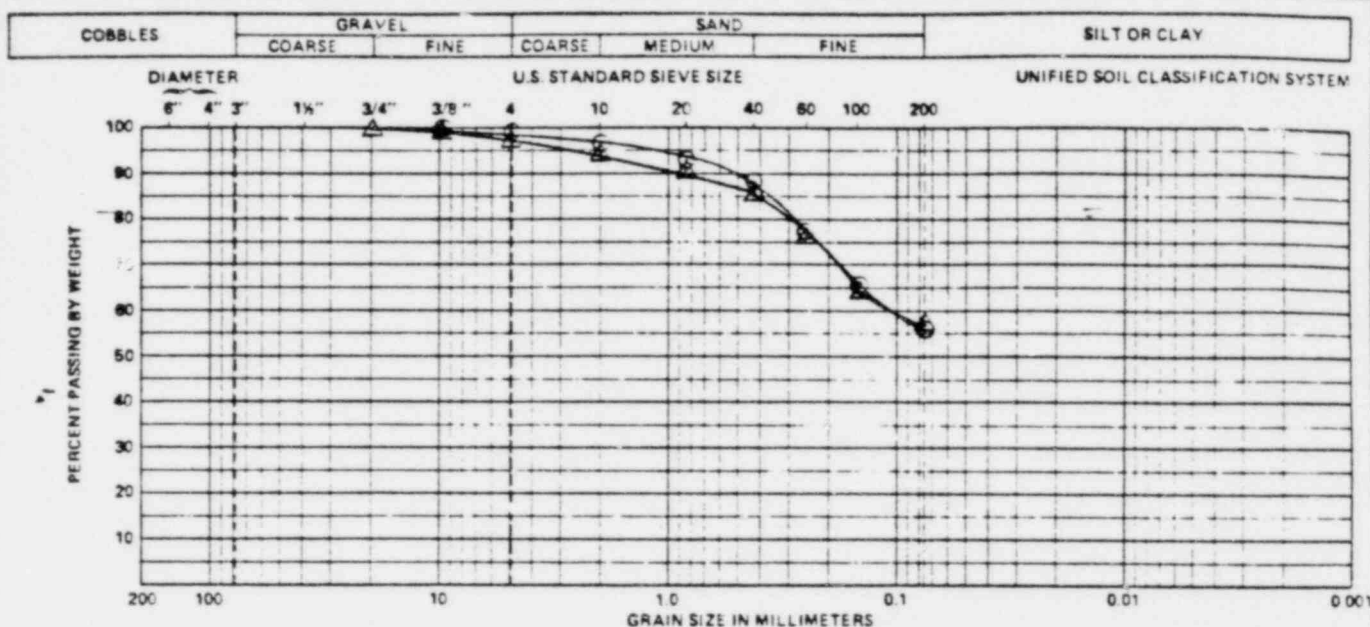


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE B	S-12-A	35.2	⊙	SP, tan, f. SAND, to f. gravel to m. sand, to silt	15.6		
COE B	S-12-B	35.8	△	SP, tan, f. SAND, to f. gravel to m. sand, to silt	16.4		

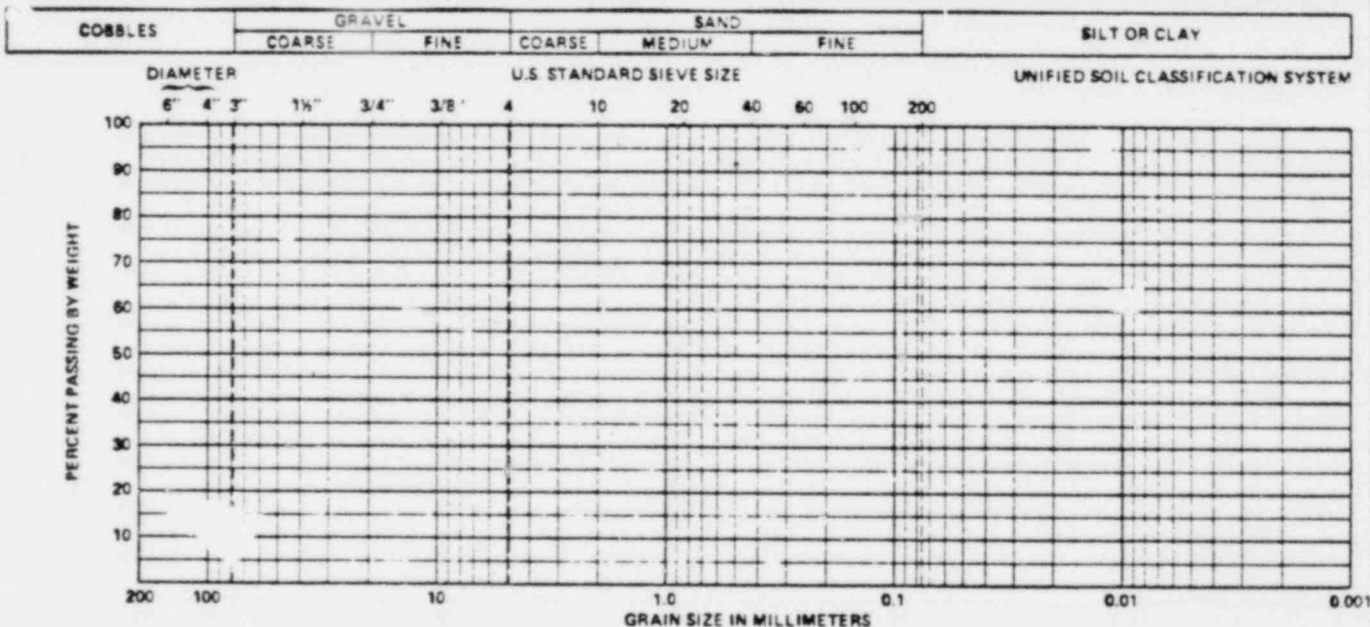


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION



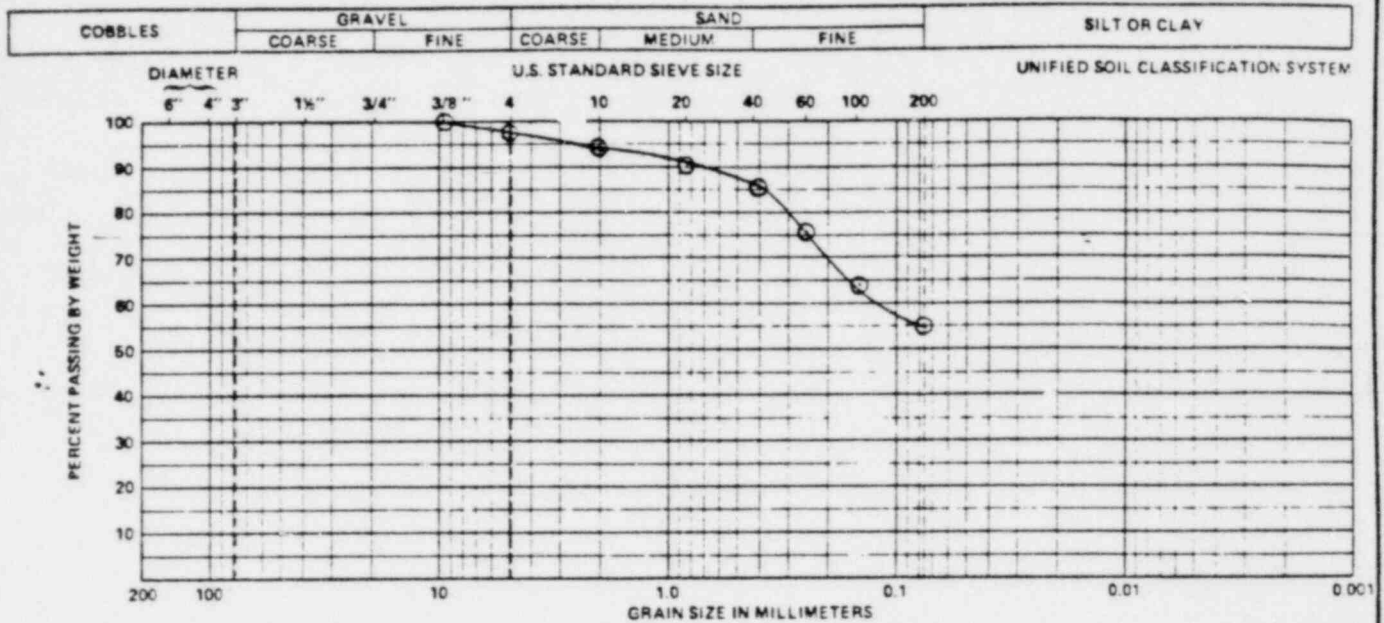
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 9	S-6-C	16.2	⊙	CL, brown, m to f sandy s.p. silty CLAY, some f gravel to c. sand - Con. spec	12.1	22	14
COE 9	S-6-D	16.8	△	CL, brown, m to f sandy, s.p. tan p. silty CLAY, tr. f gravel to c. sand - CLAY spec	11.8	23	13



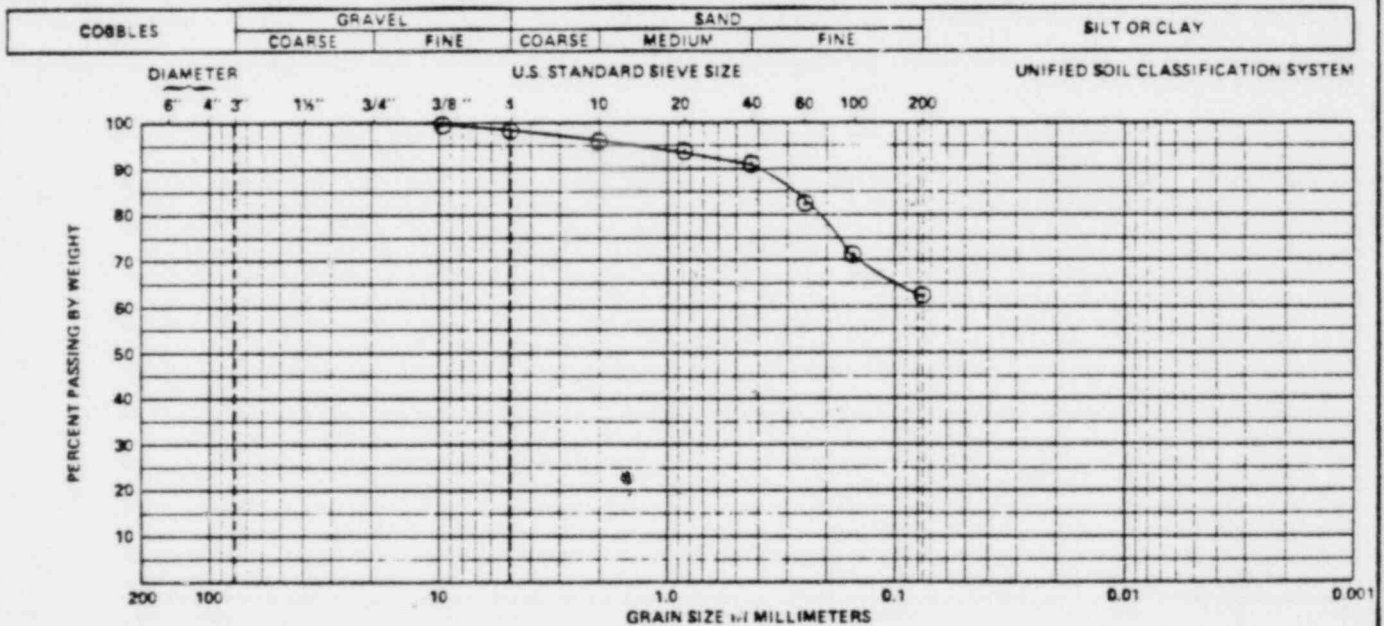
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

Fig. C-2 (1/1)

PARTICLE-SIZE DISTRIBUTION

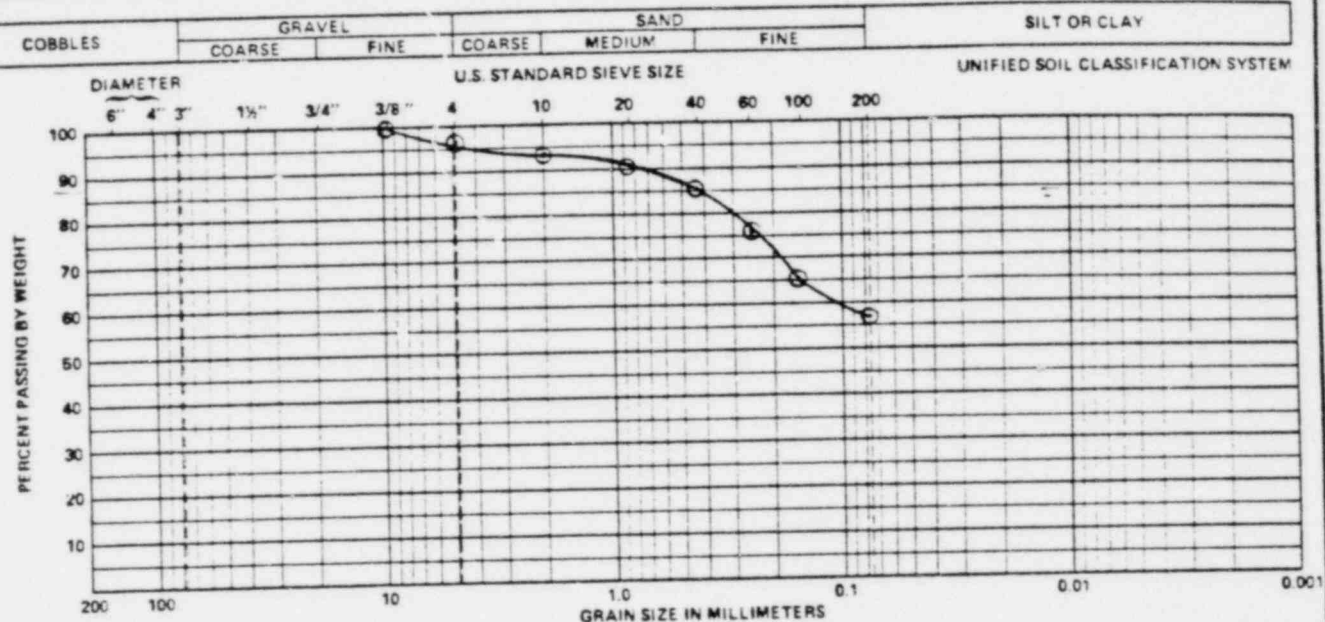


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 9A	S-1-C	9.3	⊙	CL, mottled brown and gray, m to f sandy, sp. silty CLAY, to f gravel to m sand - Lab spec	11.7	20	12

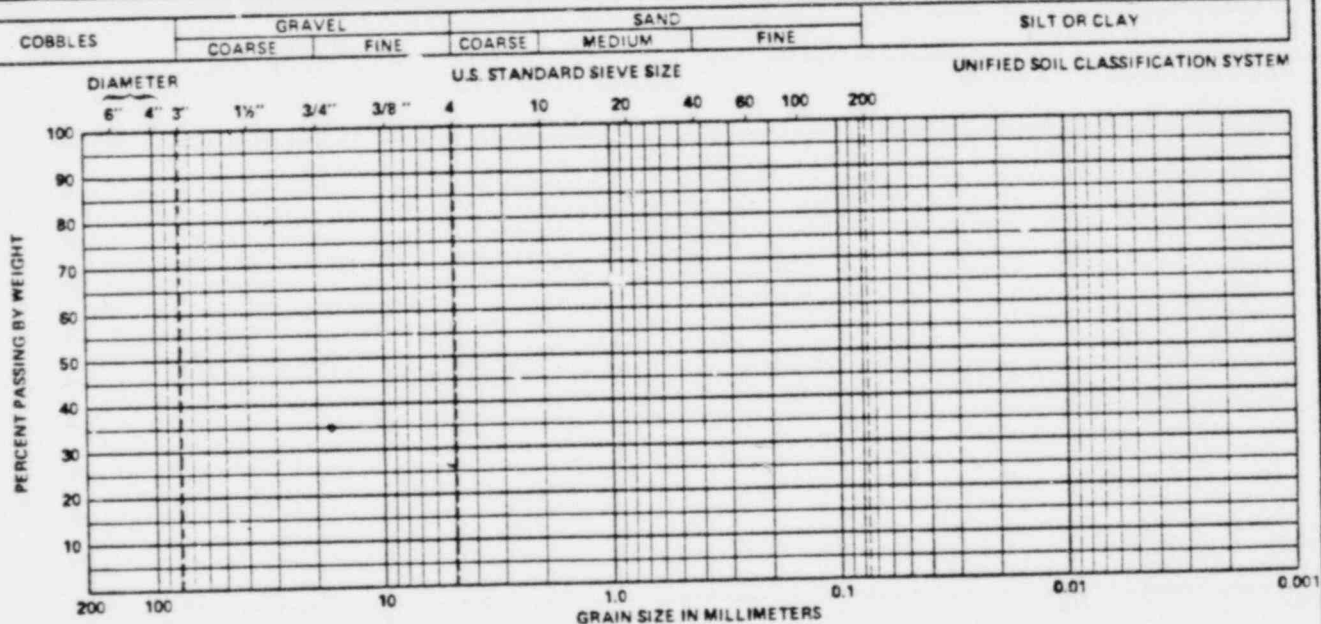


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 9A	S-2-A	10.5	⊙	CL, mottled gray and brown, f sandy, sp. silty CLAY, to f gravel to m sand	12.3		

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE9A	S-4-B	14.5	⊙	CL, gray-brown, m to f. sandy s. silty CLAY, tr. f gravel to c. sand - CAU spec.	11.2	2.2	13



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

Fig. C-3 (2/3)

PROJECT NO: 01C 7222 / 2 WINNERS: 2, 2

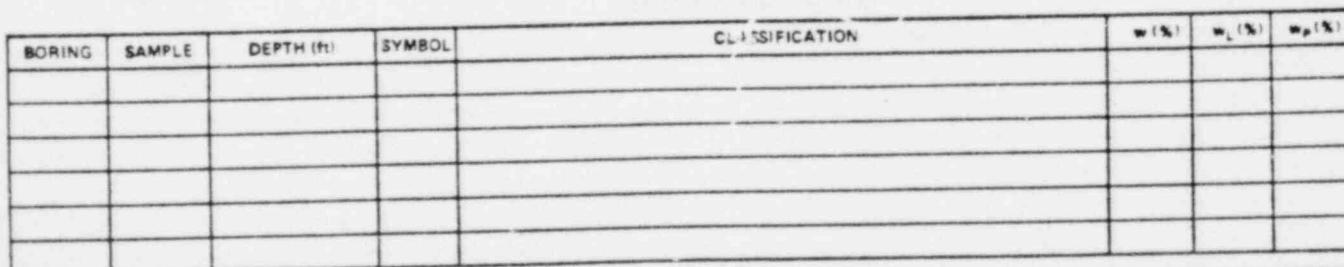
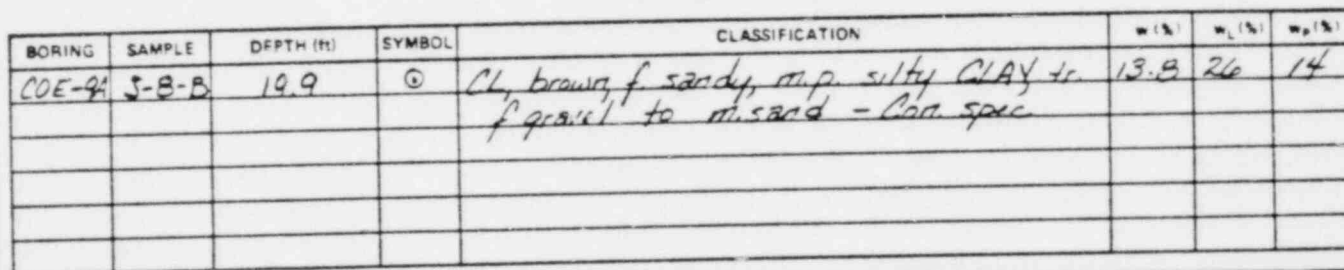
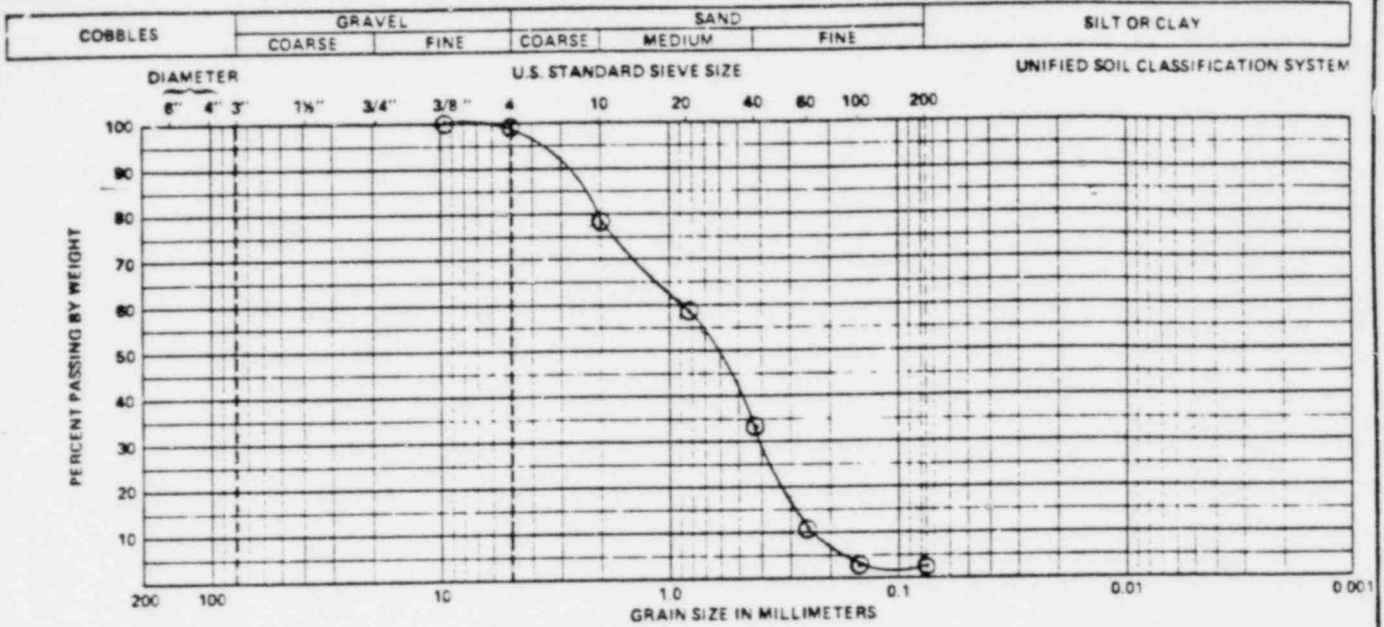
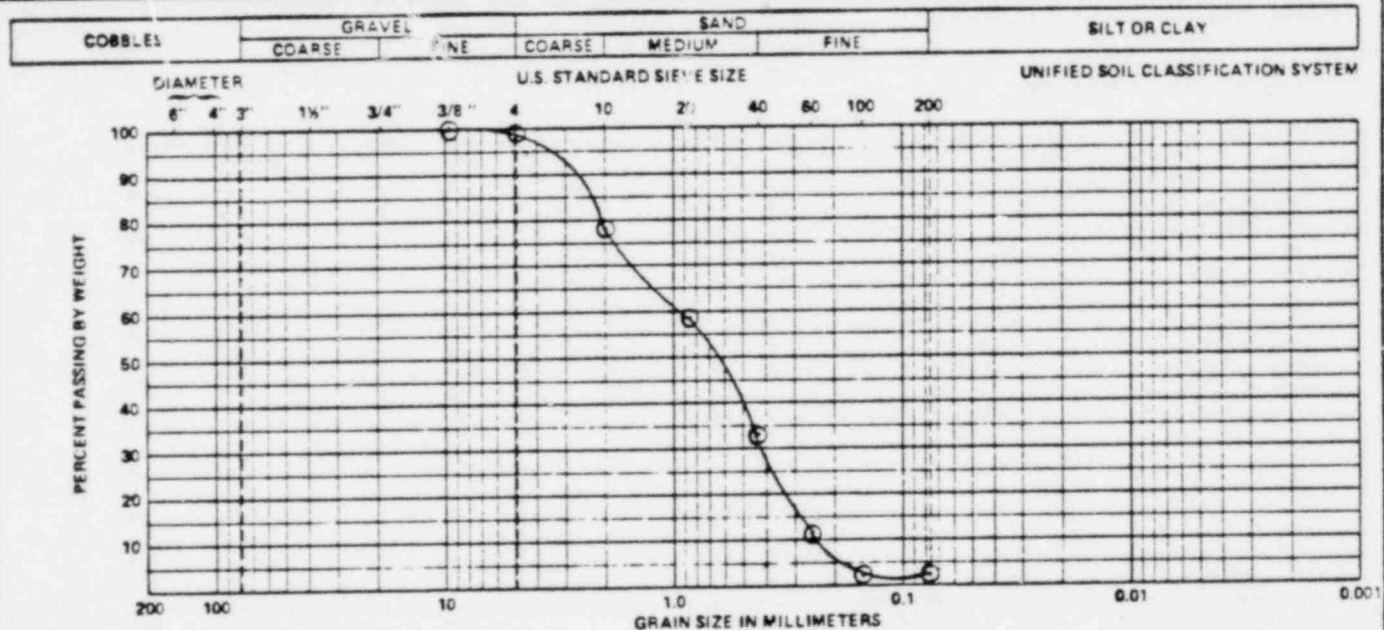


Fig. C-3 (3/3)

PARTICLE-SIZE DISTRIBUTION



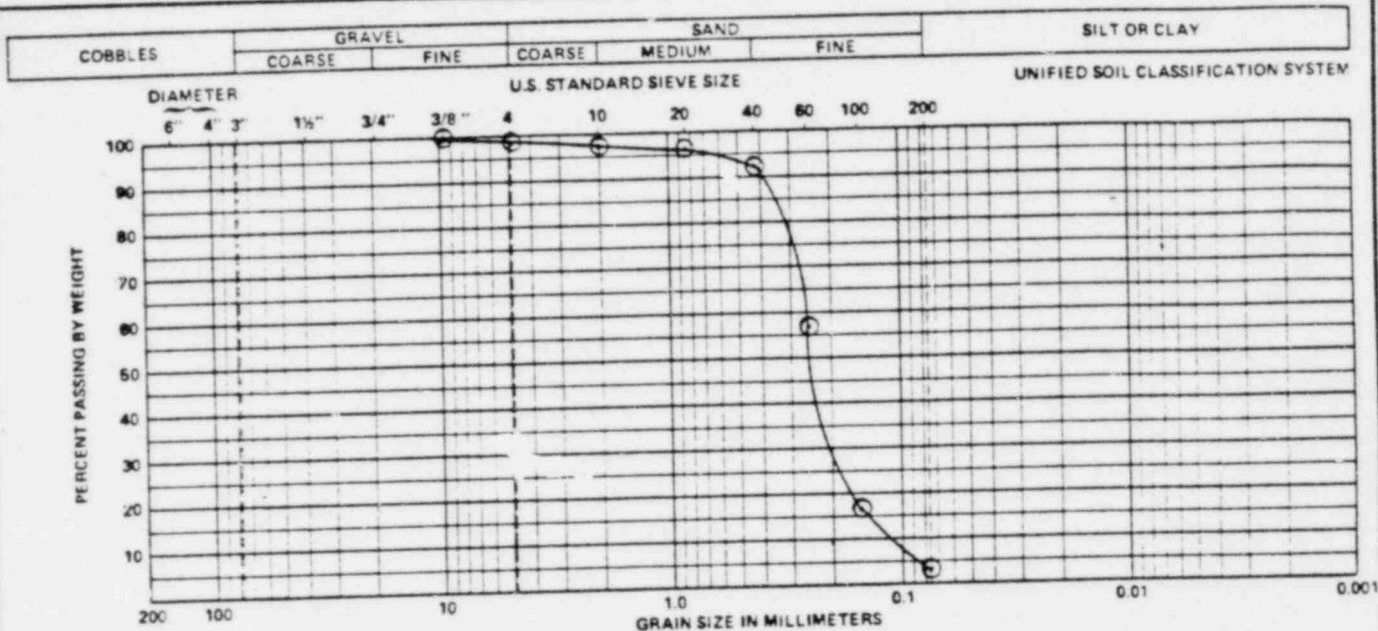
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 10	S-1B	6.8	○	SP, tan, c. to f. SAND, tr. f. gravel, tr. silt	3.7		



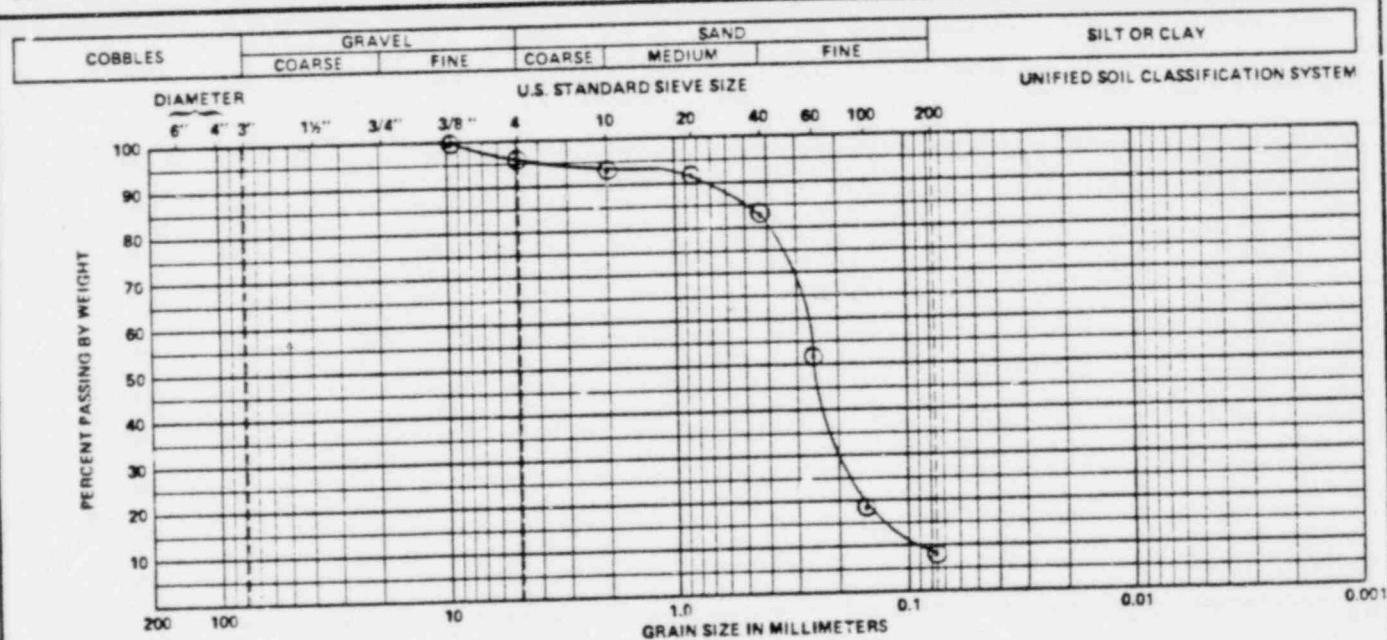
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 10	S-2-A	8.3	○	SP, tan, c. to f. SAND, tr. f. gravel, tr. silt	11.2		

PROJECT NO. 87C 000000 UNDRAWN BY: PL 5

PARTICLE-SIZE DISTRIBUTION



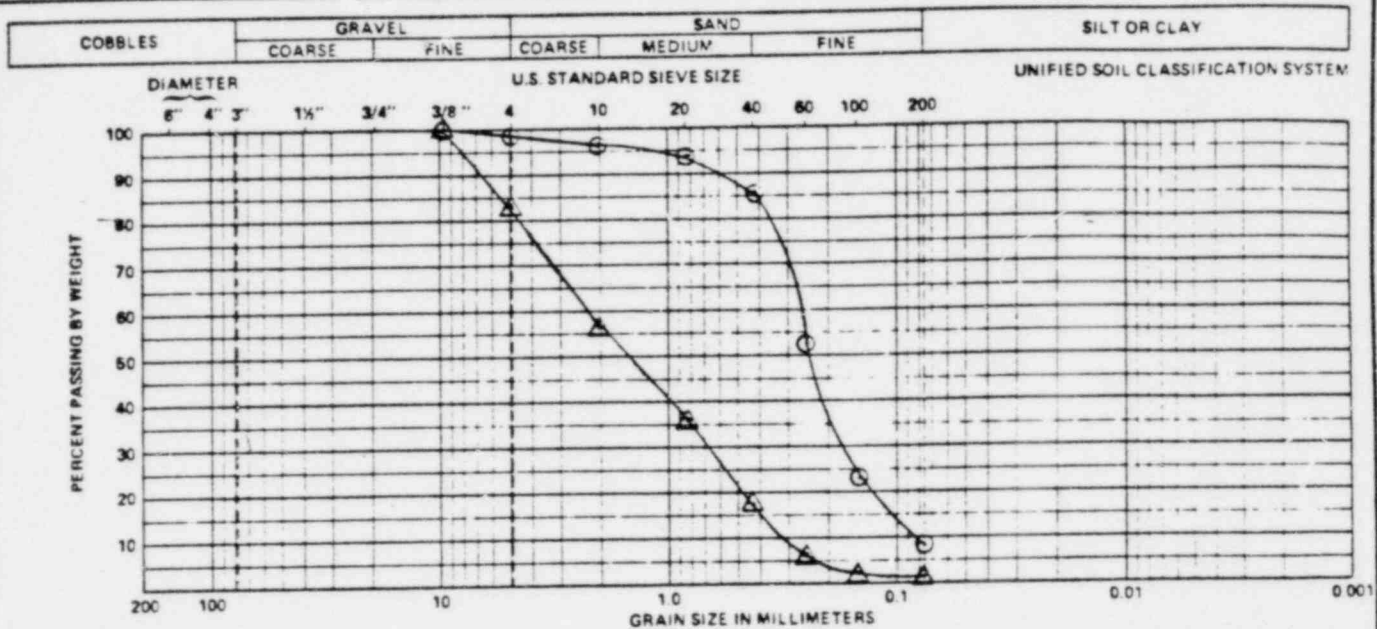
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COE-10	S-8-B	24.2	⊙	SP, tan, f SAND, tr f gravel to m. sand, tr silt, with occ gray sandy silty CLAY (CL)	18.3		



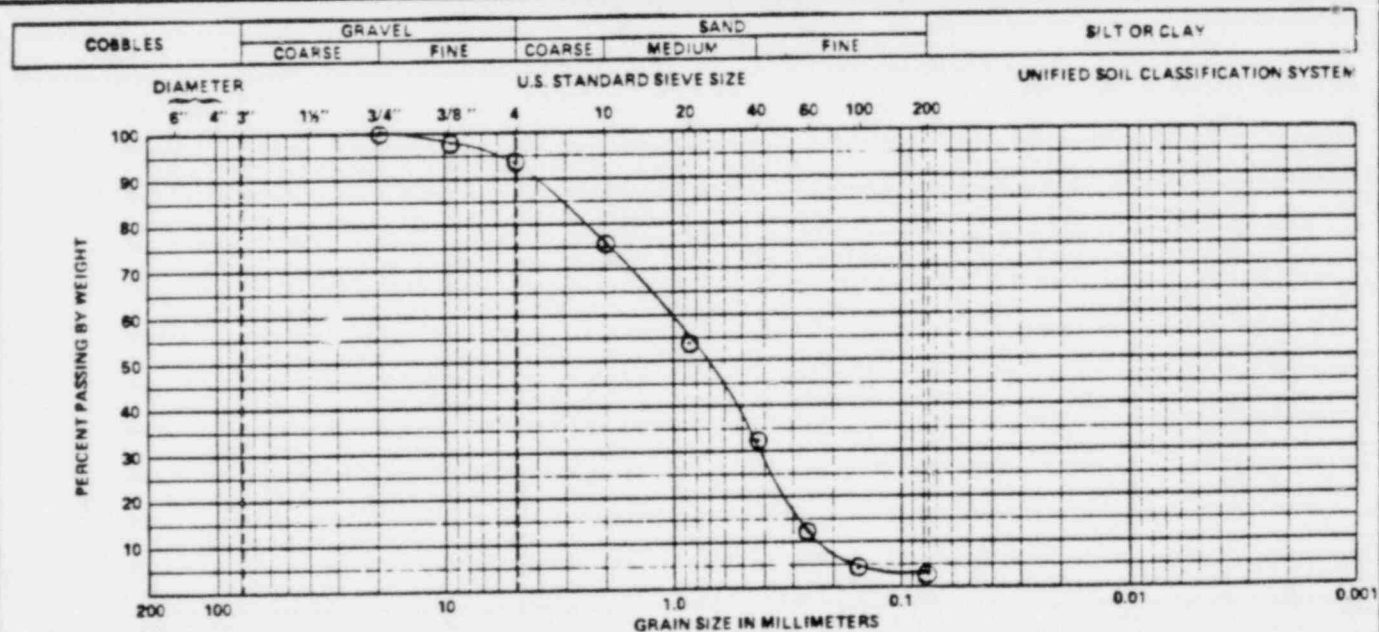
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-10	S-9-B	26.3	⊙	SP-SM, tan, m. to f. SAND, tr f gravel to c sand, tr silt	10.7		

Fig. C-4 (2/4)

PARTICLE-SIZE DISTRIBUTION



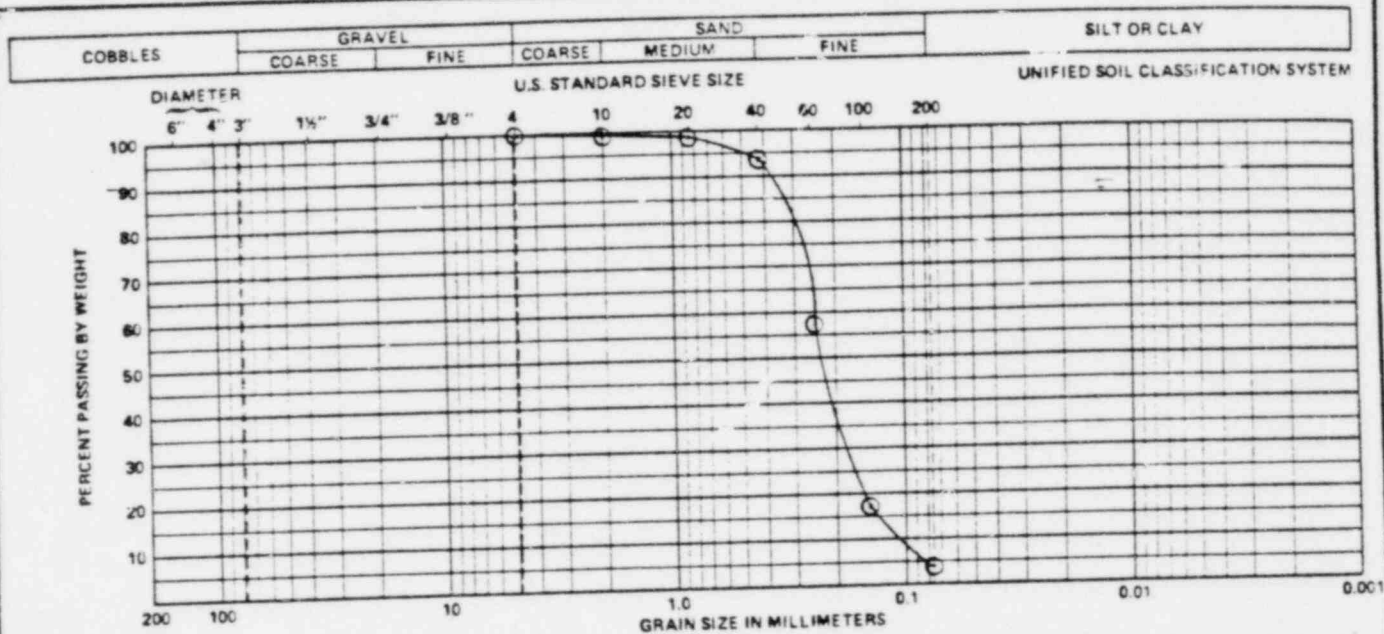
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
C0510	S-10-A	28.8	⊙	SP. sm brown, c. to f. SAND, tr. f. gravel, tr. silt, with occ. c. gravel	15.7		
C0510	S-10-C	29.0	Δ	SP. brown, c. to f. SAND, tr. f. gravel, tr. silt	9.1		



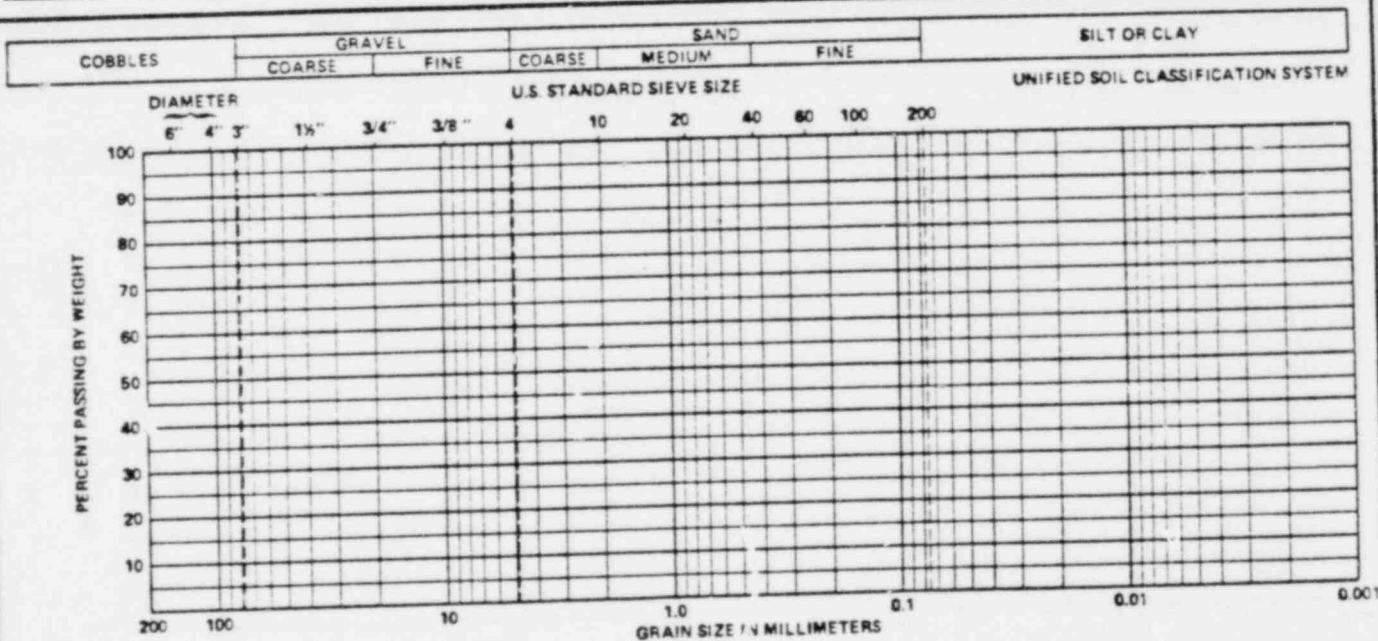
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
C0510	S-11-E	31.2	⊙	SP, gray-brown, c. to f. SAND, tr. f. gravel, tr. silt			

Fig. C-4 (3/4)

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE10	5-12-C	34.6	⊙	SP, brown, f SAND, tr. c. to m sand, to silt	19.2		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

Fig. C-4 (4/4)

Checked by: H.T. 1/10/81

REVIEWED BY: WCC LR-101 (8/80)

PRO. 5810 and 573

BY: M.B.

PROJECT NO. 87C-4000-1 UNCLASSIFIED

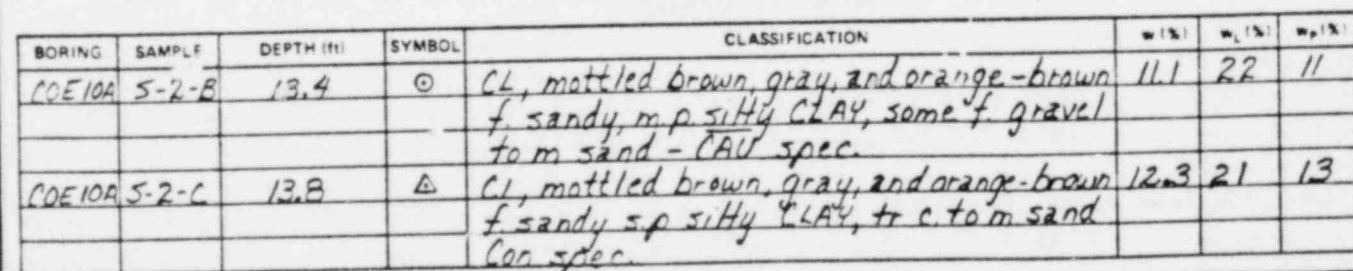
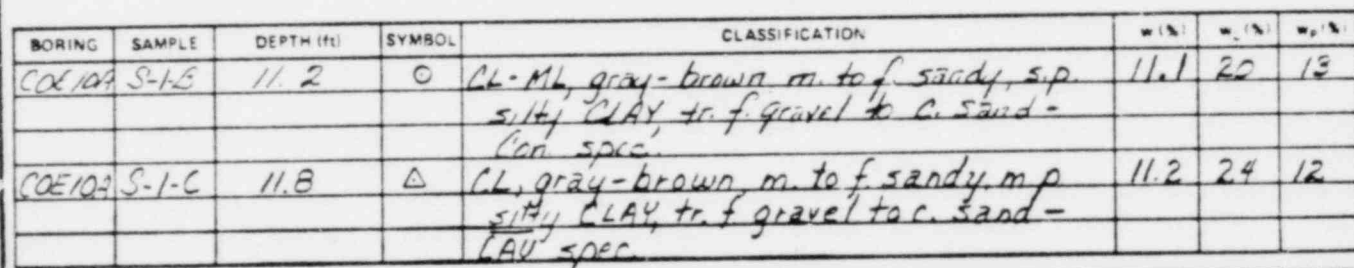
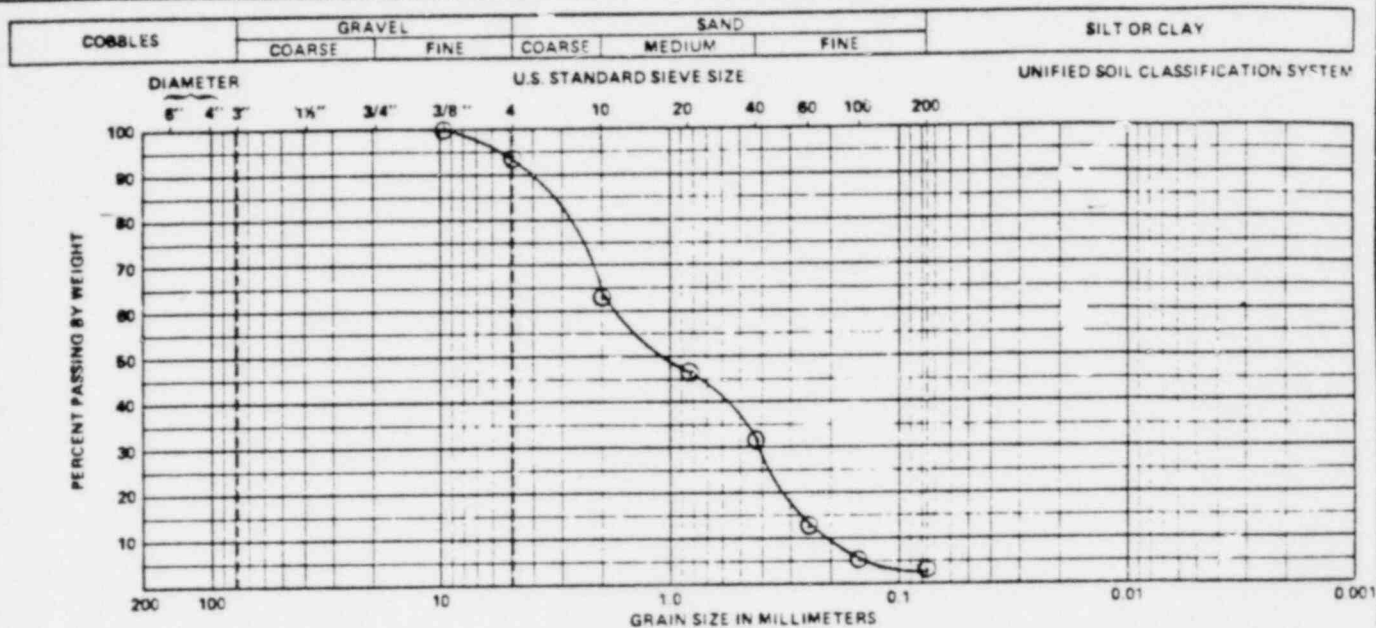
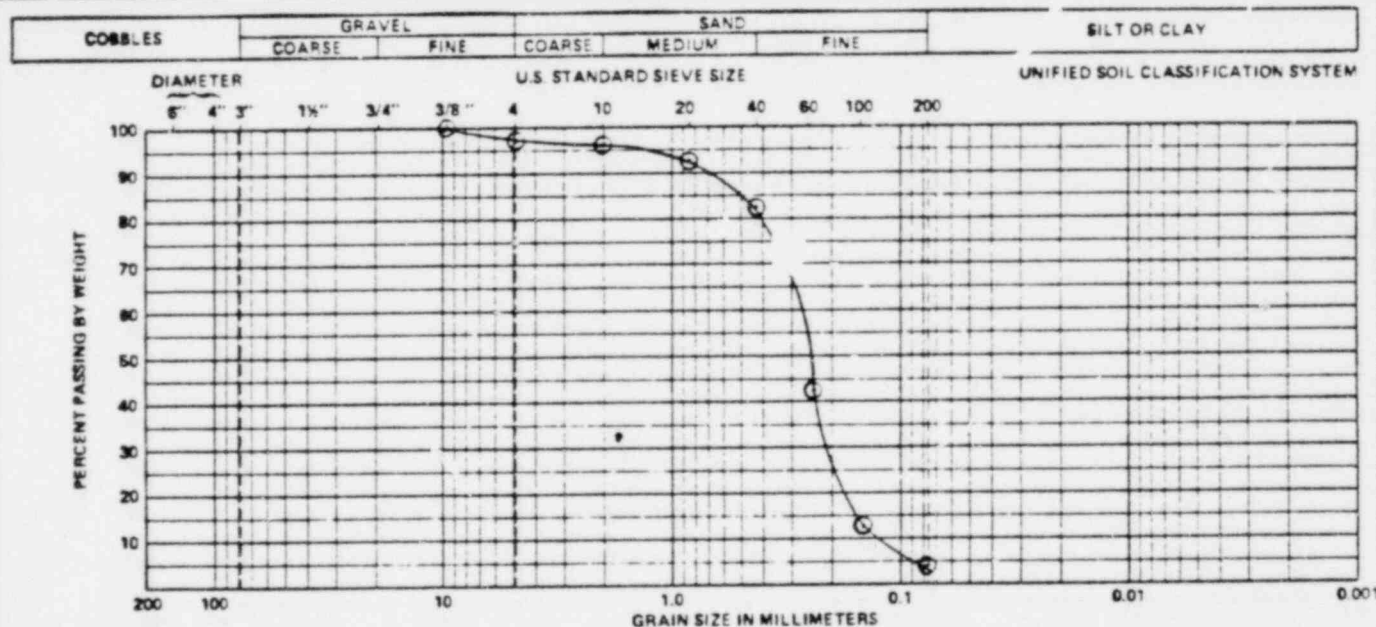


Fig. C-5 (1/1)

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-11	S-2-B	8.6	⊙	SP, gray-brown, c. to f. SAND, tr. f. gravel, tr. silt	10.4		

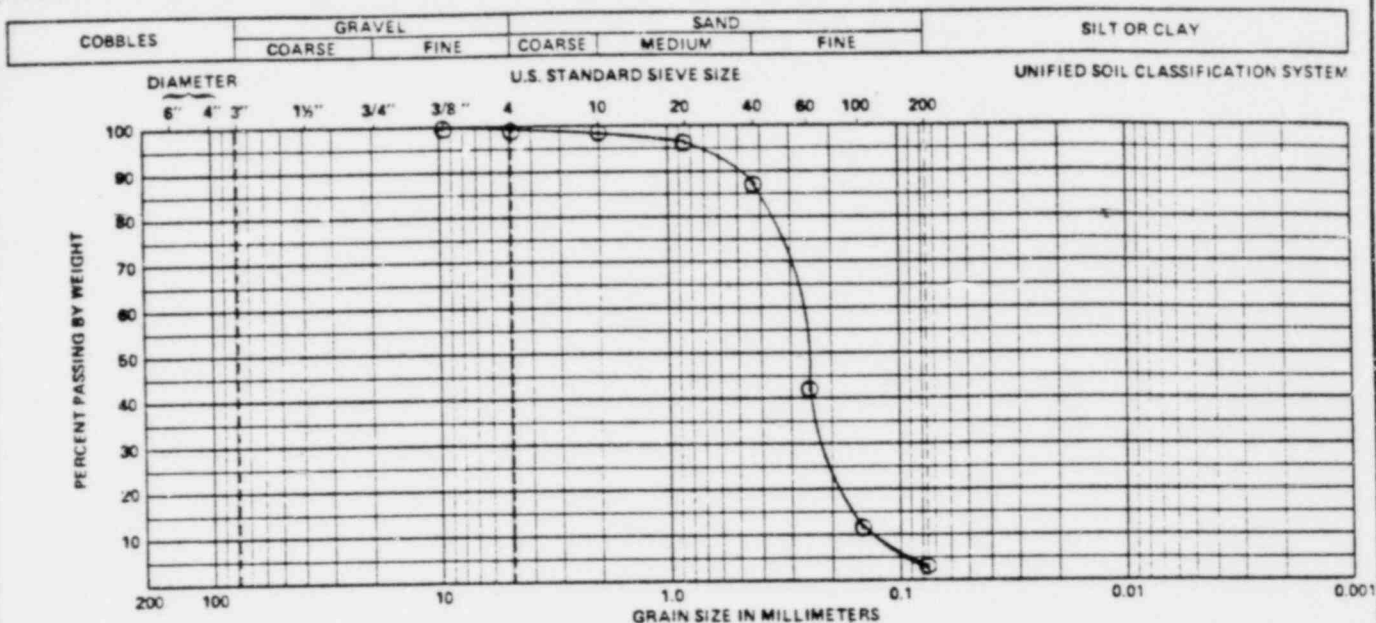


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-11	S-10-A	21.1	⊙	SP-SM, tan, m. to f. SAND, tr. f. gravel to c. sand, tr. silt	12.3		

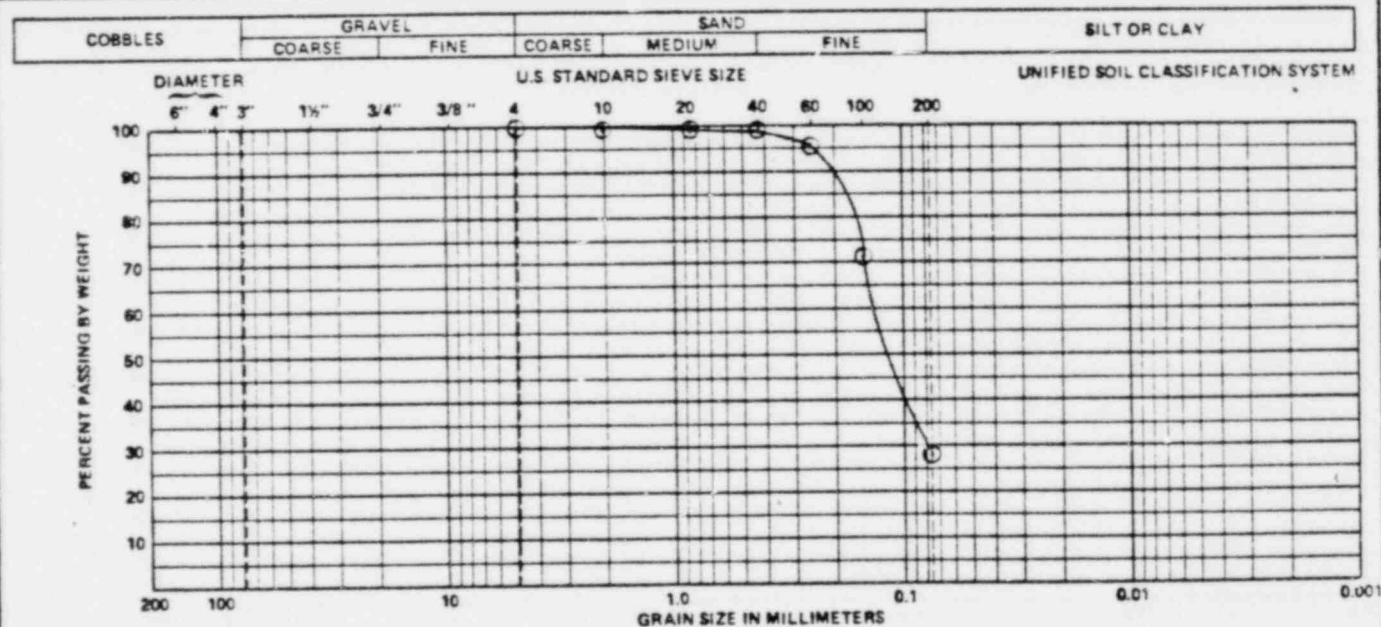
Fig. C-6 (1/3)

PROJECT NO. F/C 4053 (3) DRAWN BY: A-244

PARTICLE-SIZE DISTRIBUTION

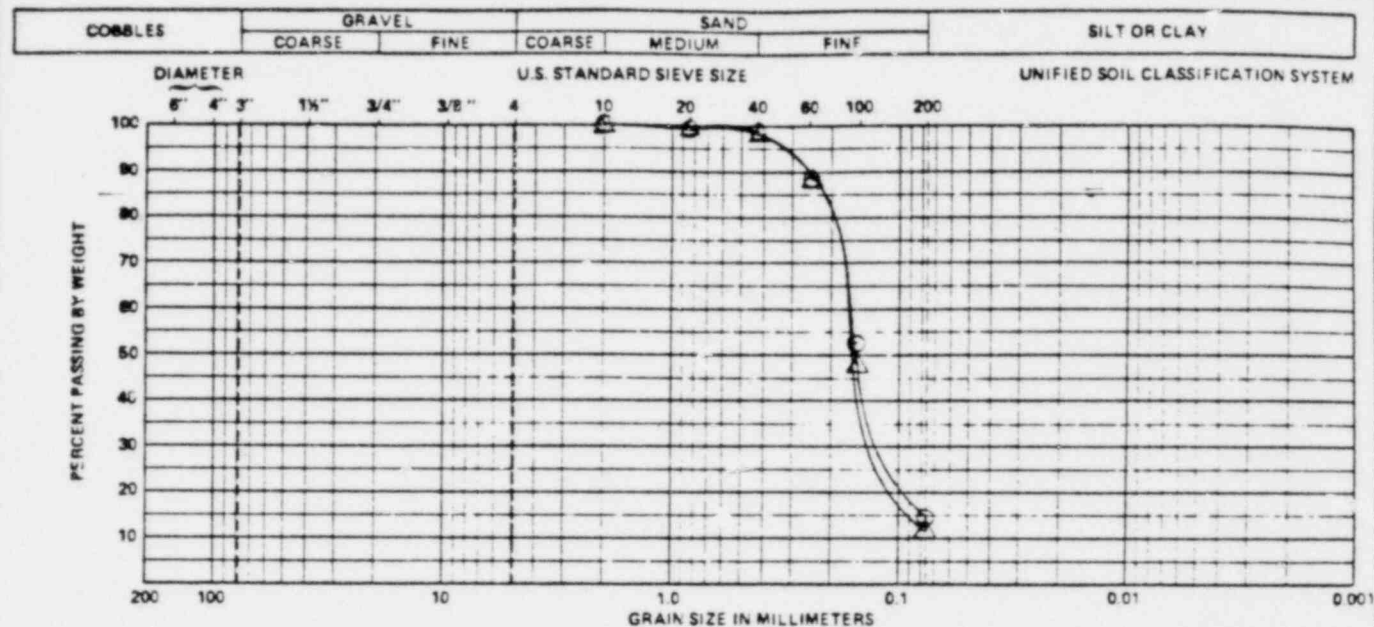


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE II	S-11-B	24.6	⊙	SP, tan, f SAND, some f gravel to m. sand, tr. silt	8.7		

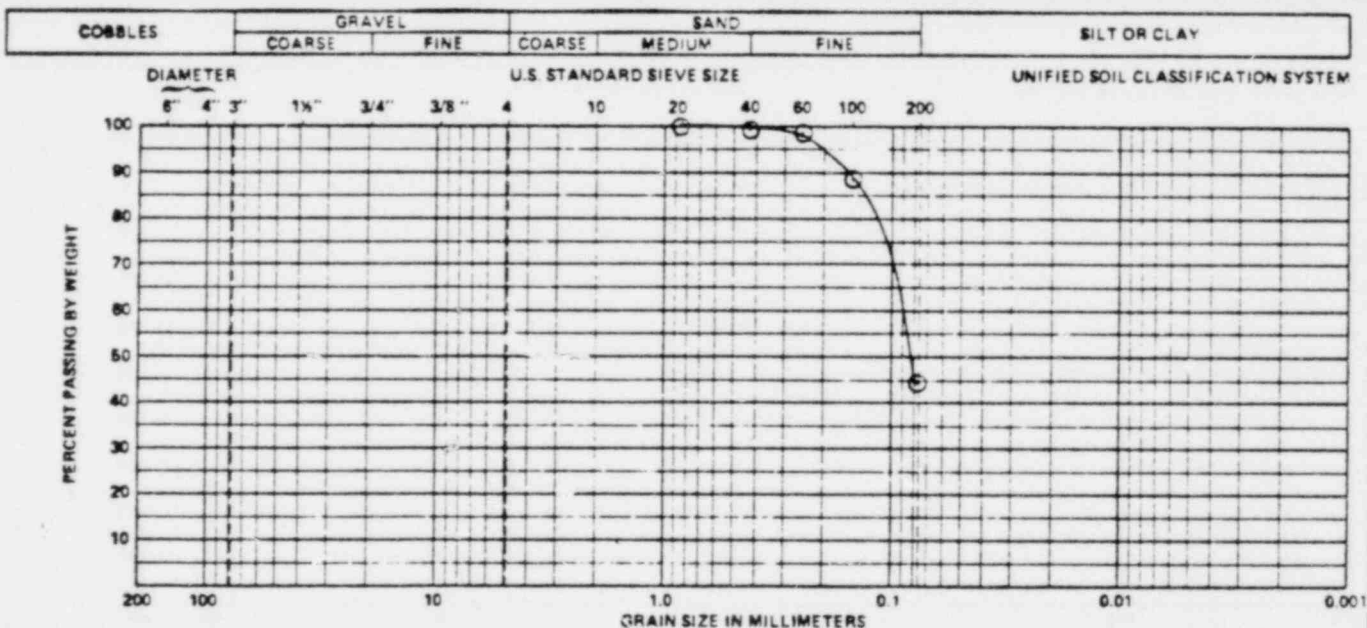


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE II	S-13-B	29.9	⊙	SM, tan, f SAND, tr. m sand, some silt	19.8		

PARTICLE-SIZE DISTRIBUTION

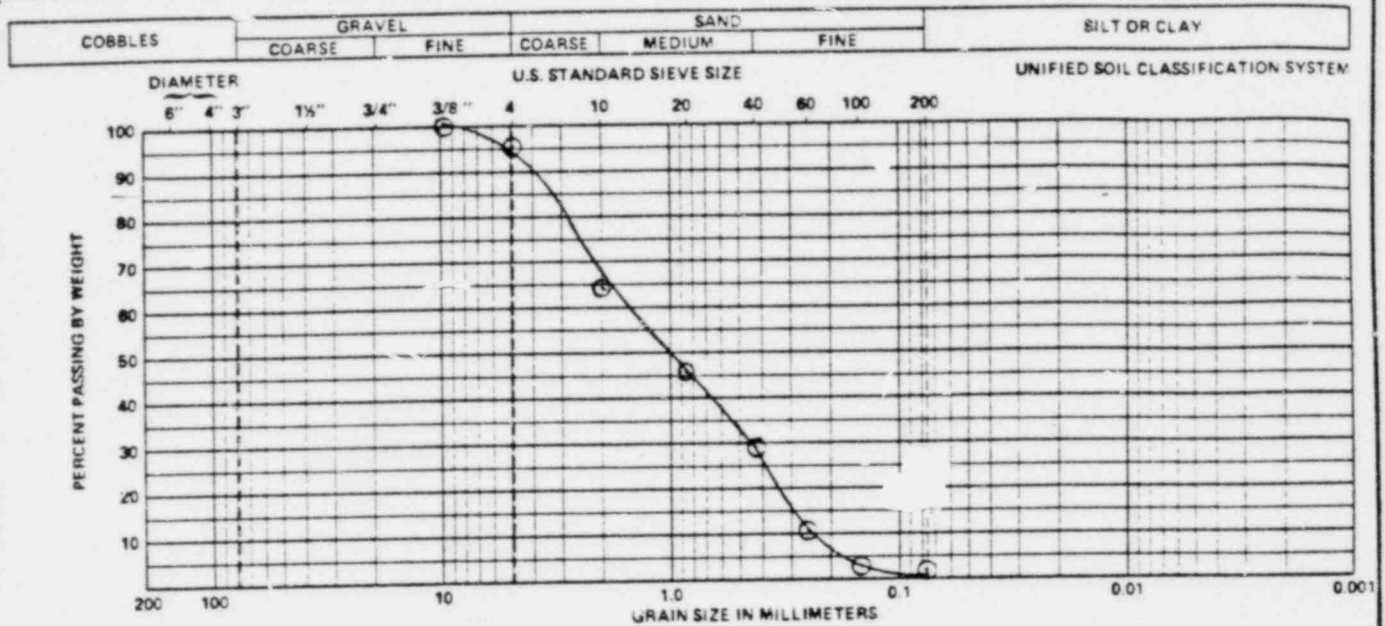


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 11	S-14A	30.7	○	SM, tan, f. SAND, tr. m. sand, some silt	16.0		
COE 11	S-14C	31.7	△	SP-SM tan, f. SAND, tr. m. sand, some silt	18.6		

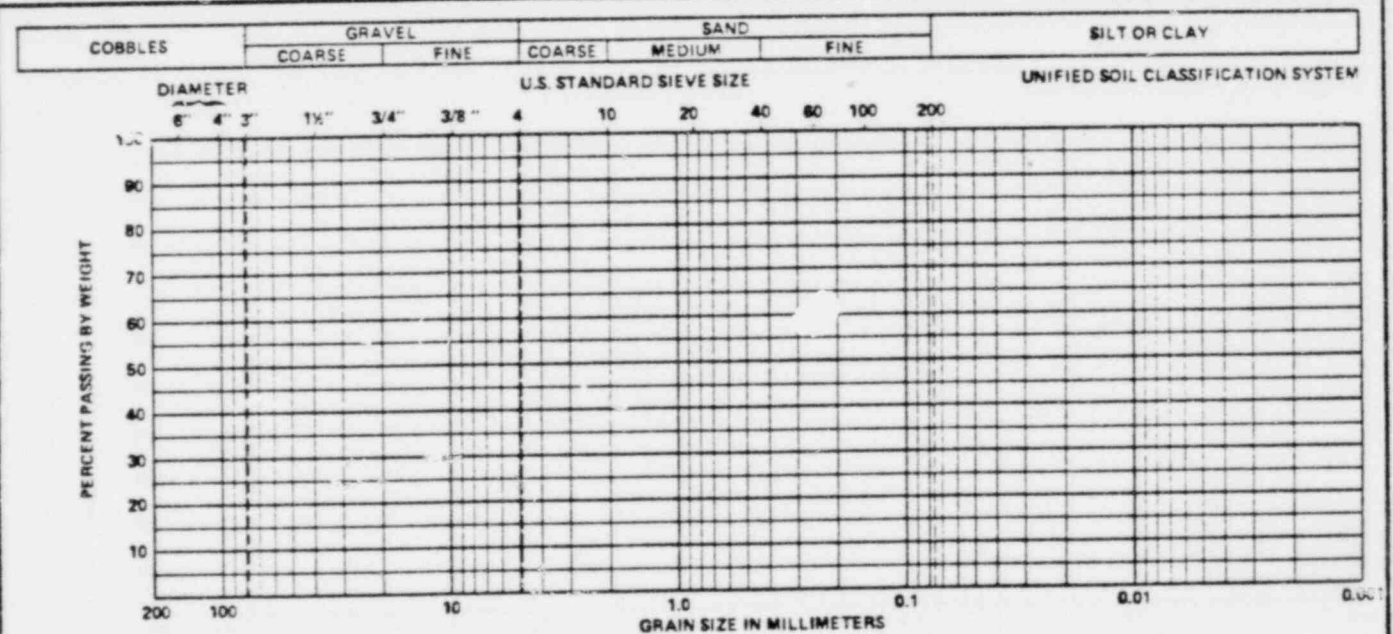


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 11	S-15C	34.1	○	SM, lt gray, silty f. SAND, tr. m. sand	18.1		

PARTICLE-SIZE DISTRIBUTION

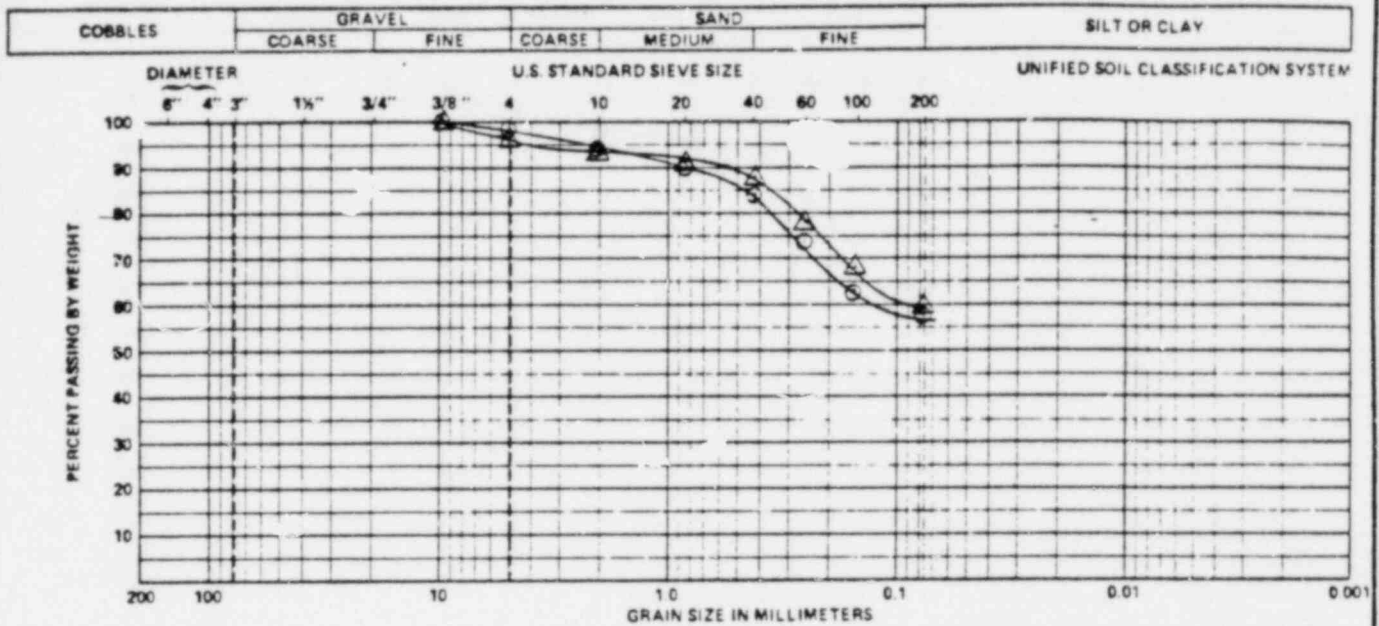


BORING	SAMPLE	DEPTH (ft)	SYM.	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COENAS-1A-E	97	97	○	SP, lt. gray-brown, c. to f SAND, tr. f. gravel			

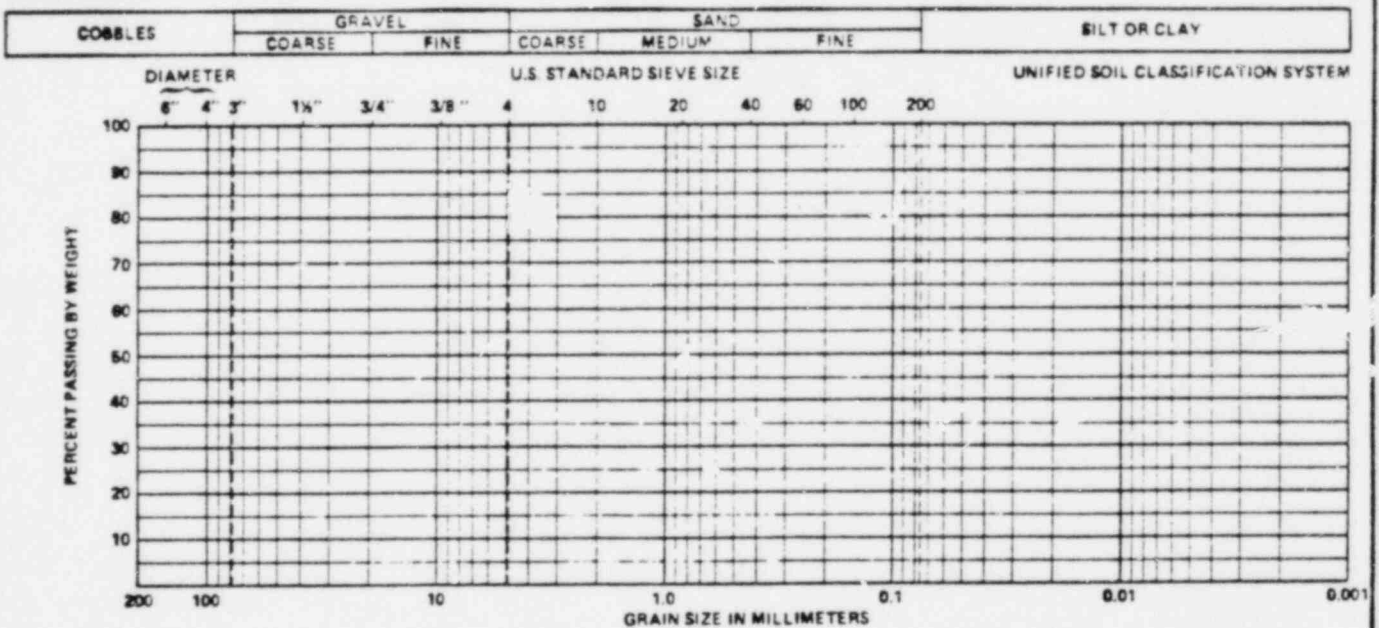


BORING	SAMPLE	DEPTH (ft)	SYM.	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COENAS-1A-E	97	97	○	SP, lt. gray-brown, c. to f SAND, tr. f. gravel			

PARTICLE-SIZE DISTRIBUTION

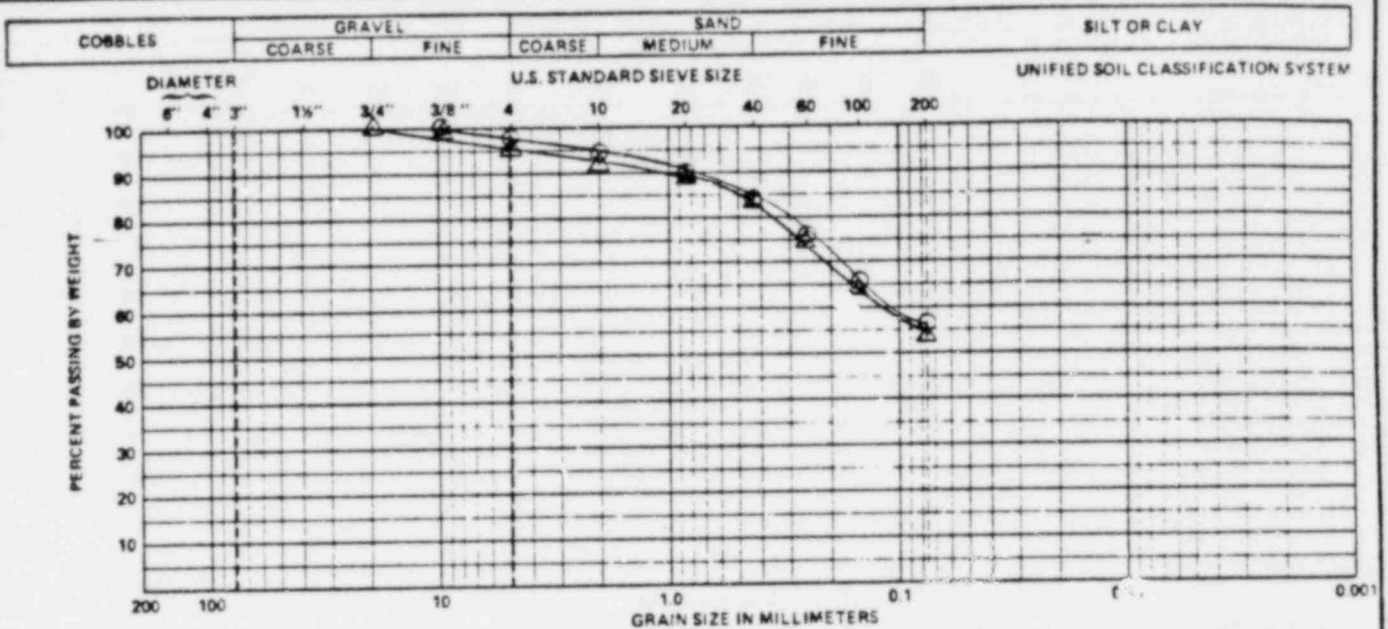


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 11A	S-2B	12.4	○	CL, mottled gray and brown, m. to f. sandy, s.p. to m.p. silty CLAY, tr. f. gravel to c. sand - Con. spec.	10.5	22	12
COE 11A	S-2C	12.7	△	CL, mottled gray and brown, m. to f. sandy s.p. to m.p. silty CLAY, tr. f. gravel to c. sand	10.7		

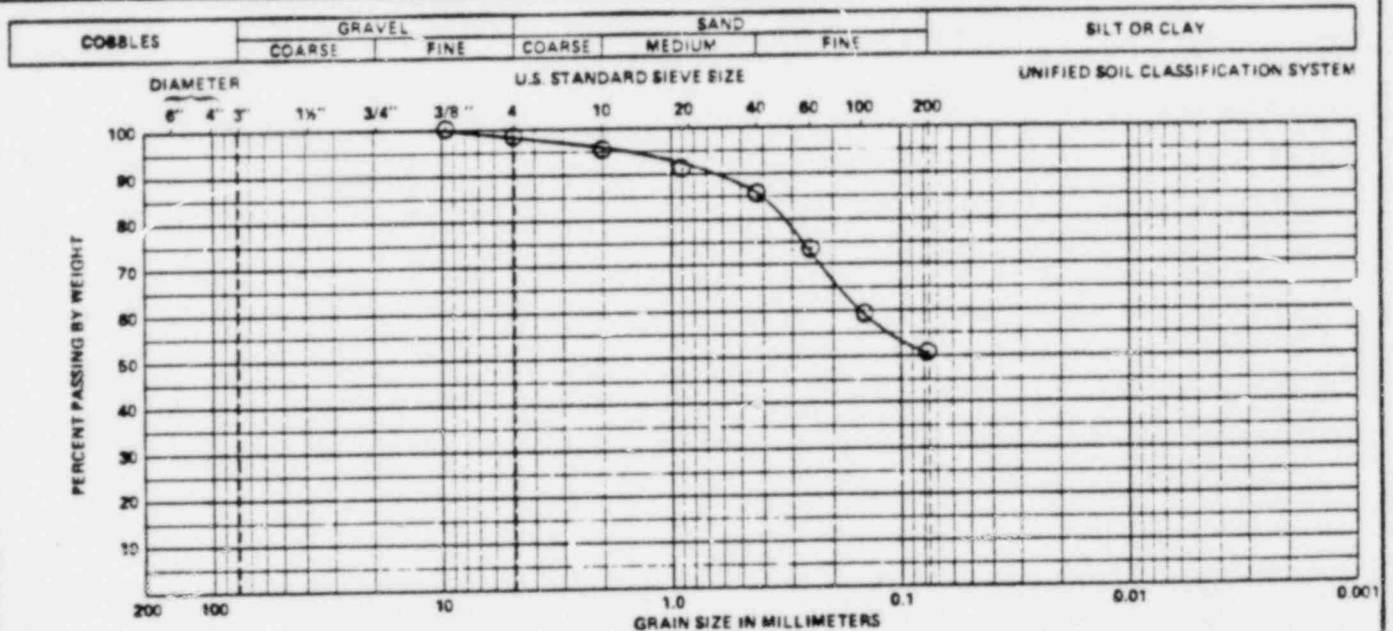


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION



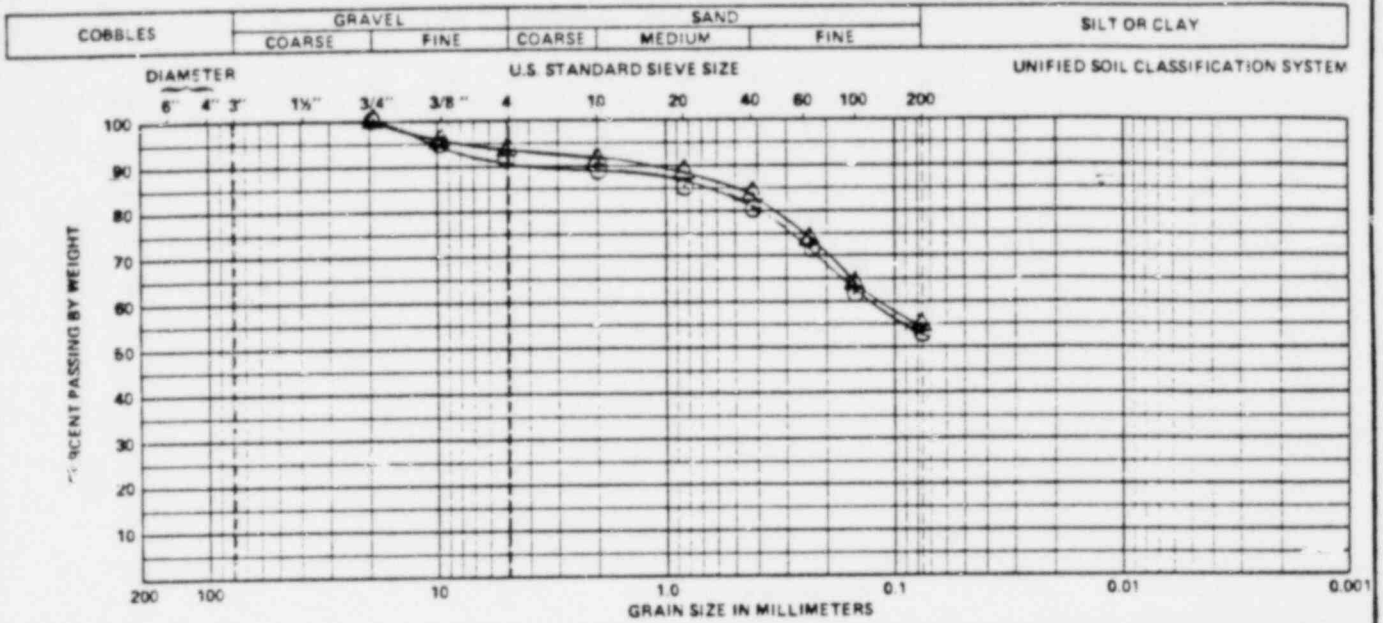
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE11A	S-4B	14.1	⊙	CL, gray-brown, m. to f. sandy, s.p. to m.p. silty CLAY, tr. f. gravel to c. sand - Con. spec.	11.8	22	12
COE11A	S-4C	14.6	△	CL, gray-brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand - Con. spec.	10.5	21	13



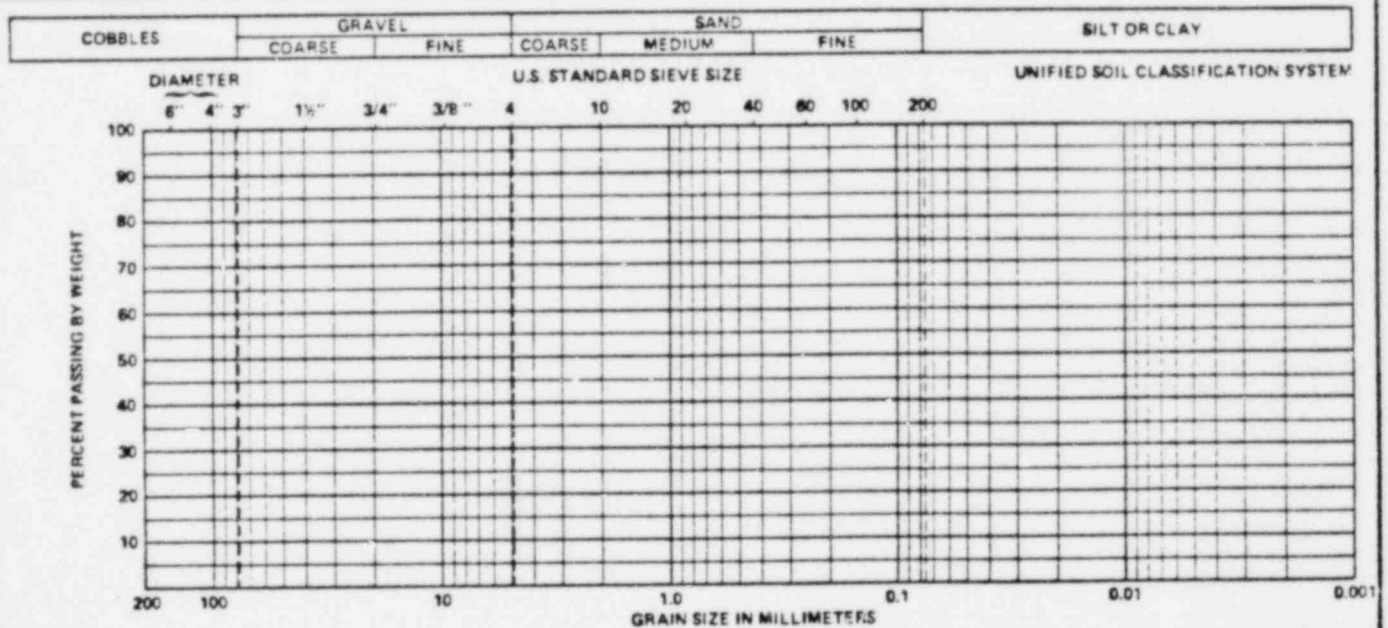
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE11A	S-5B	16.7	⊙	CL, gray-brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand - Con. spec.	12.1	21	12

Fig. C-7 (3/3)

PARTICLE-SIZE DISTRIBUTION

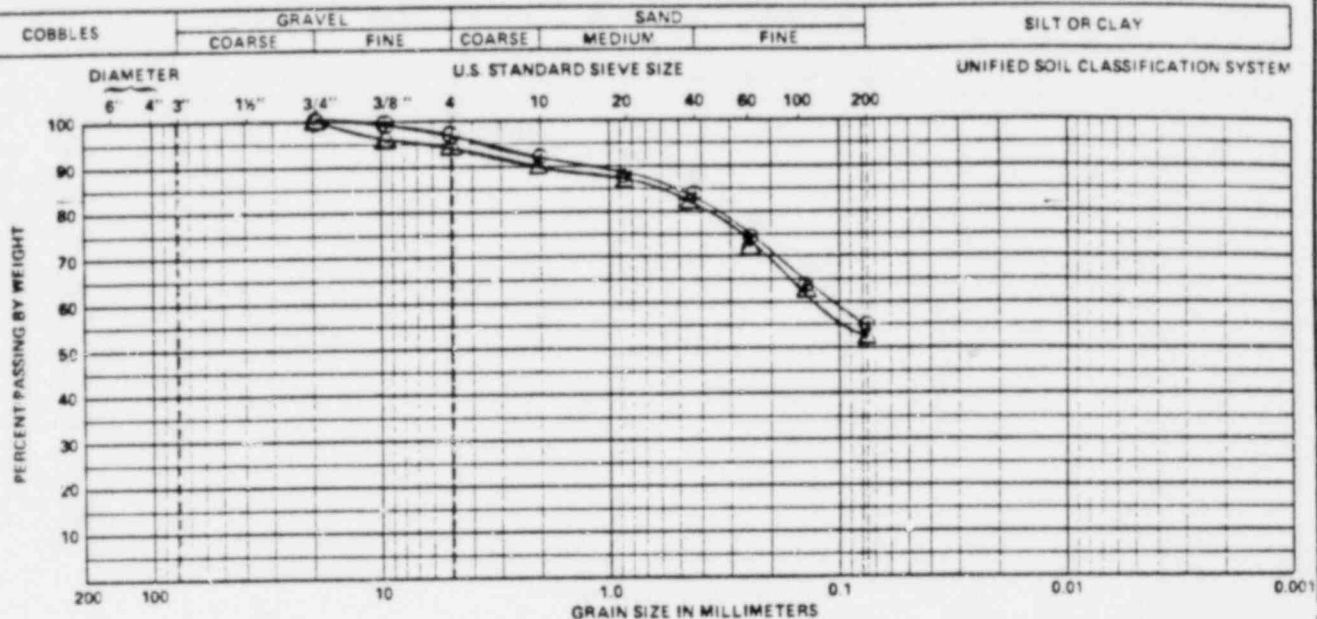


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 12	S-3-C	7.4	⊙	CL, green-gray, m to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand	11.4	21	12
COE 12	S-3-D	7.8	△	CL, green-gray, m to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand	11.0		

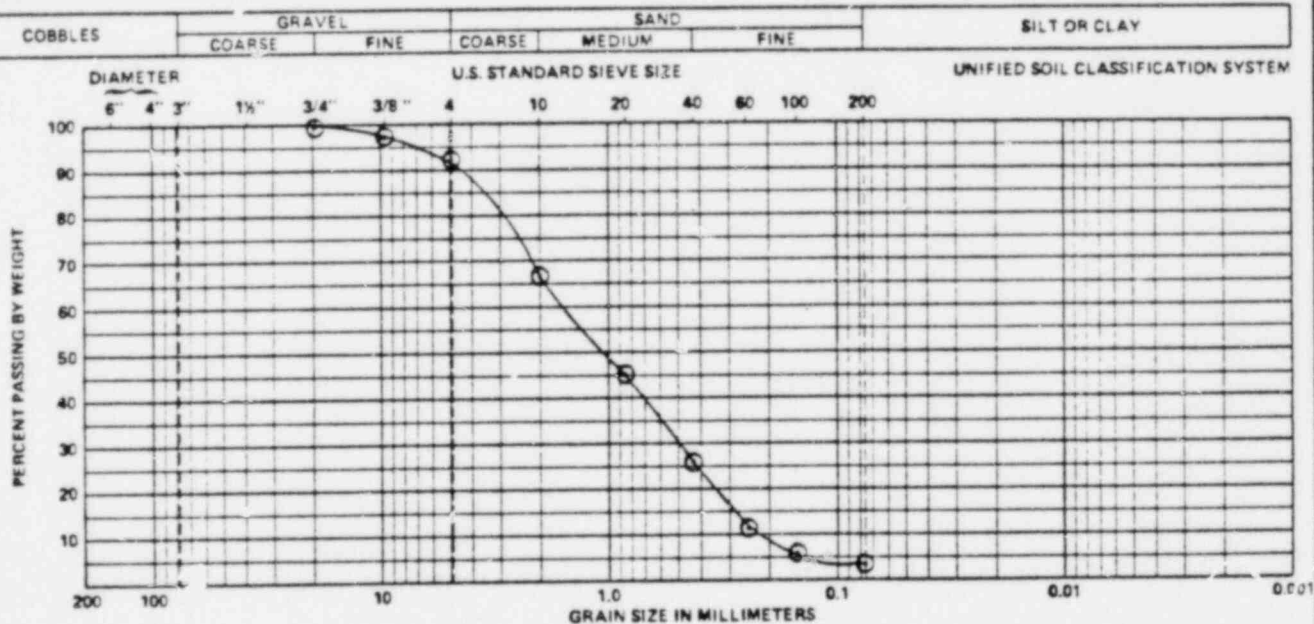


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION

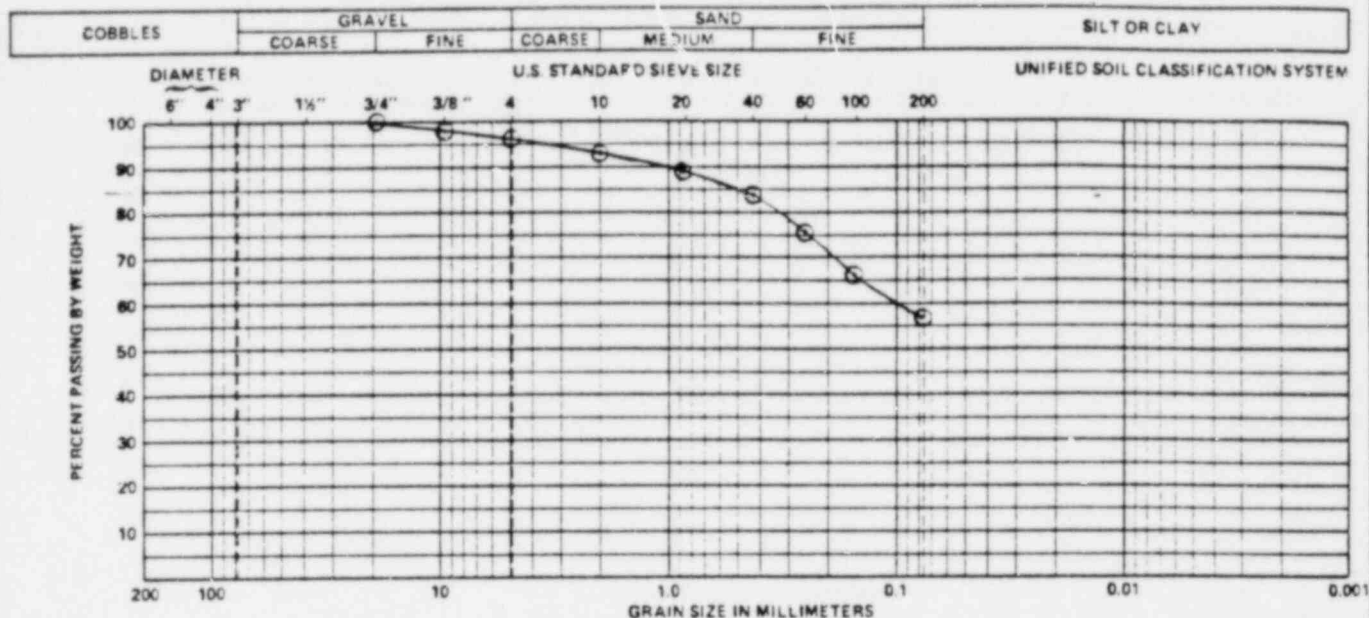


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-12	S-4E	9.7	⊙	CL, gray, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand	10.6	21	13
COE-12	S-4C	10.2	⊙	CL, gray-brown, m. to f. sandy, s.p. silty CLAY, to f. gravel to c. sand	10.4		

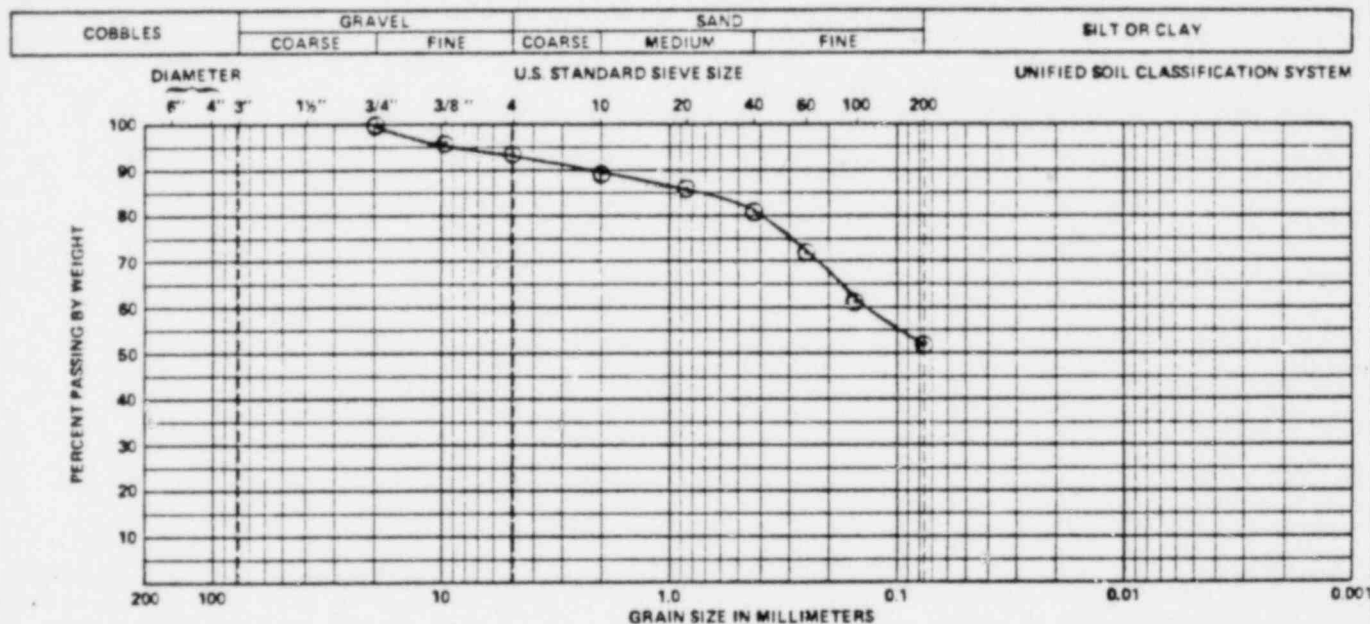


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-12	S-5A	11.4	⊙	SP, tan, c to f SAND, tr. f. gravel, tr. silt	11.3		

PARTICLE-SIZE DISTRIBUTION



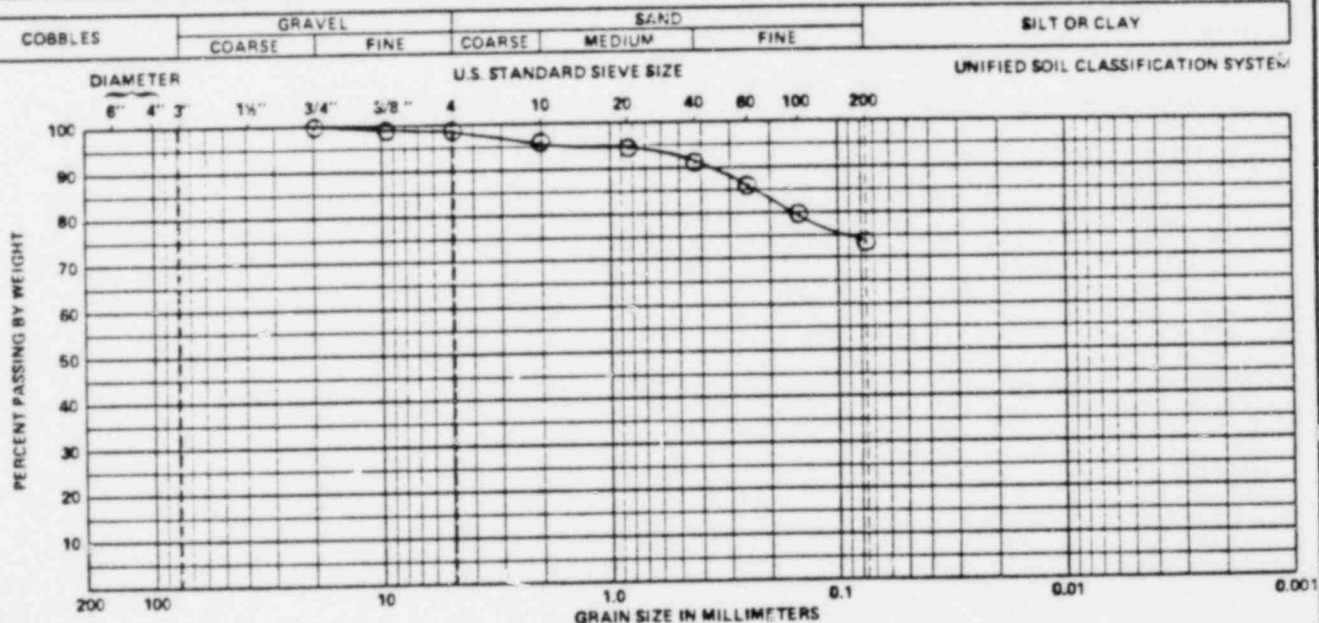
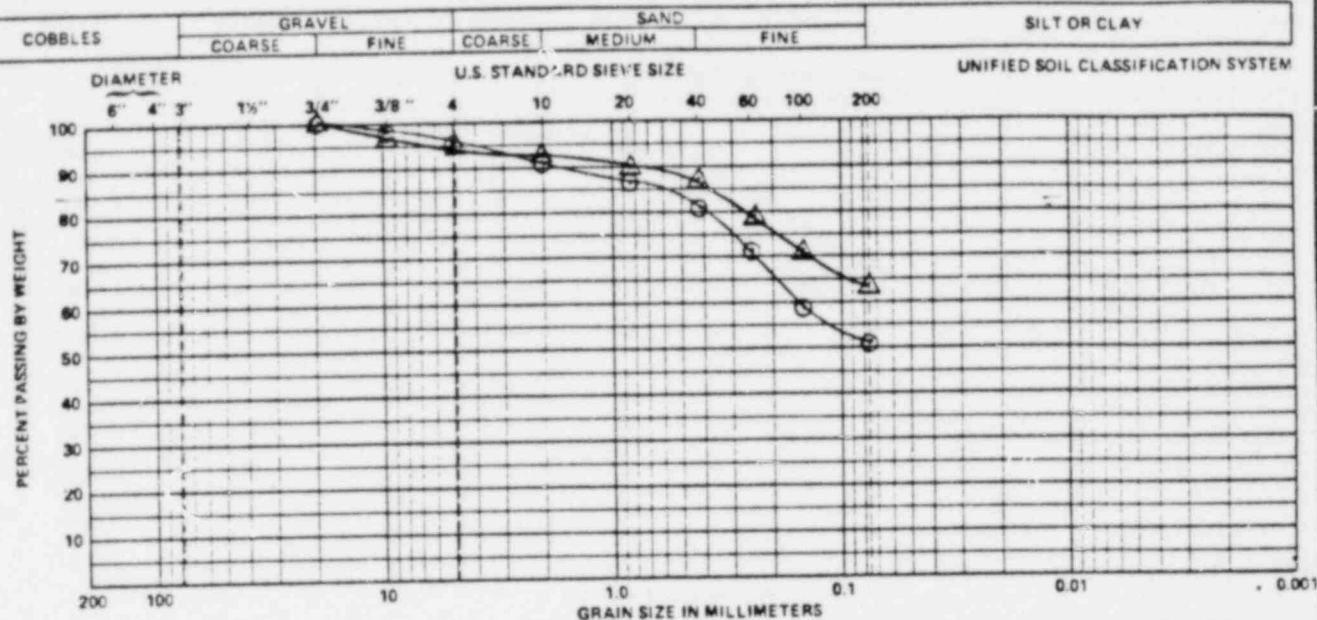
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-12	S-6-A	13.8	⊙	CL, gray, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand	11.9	20	12



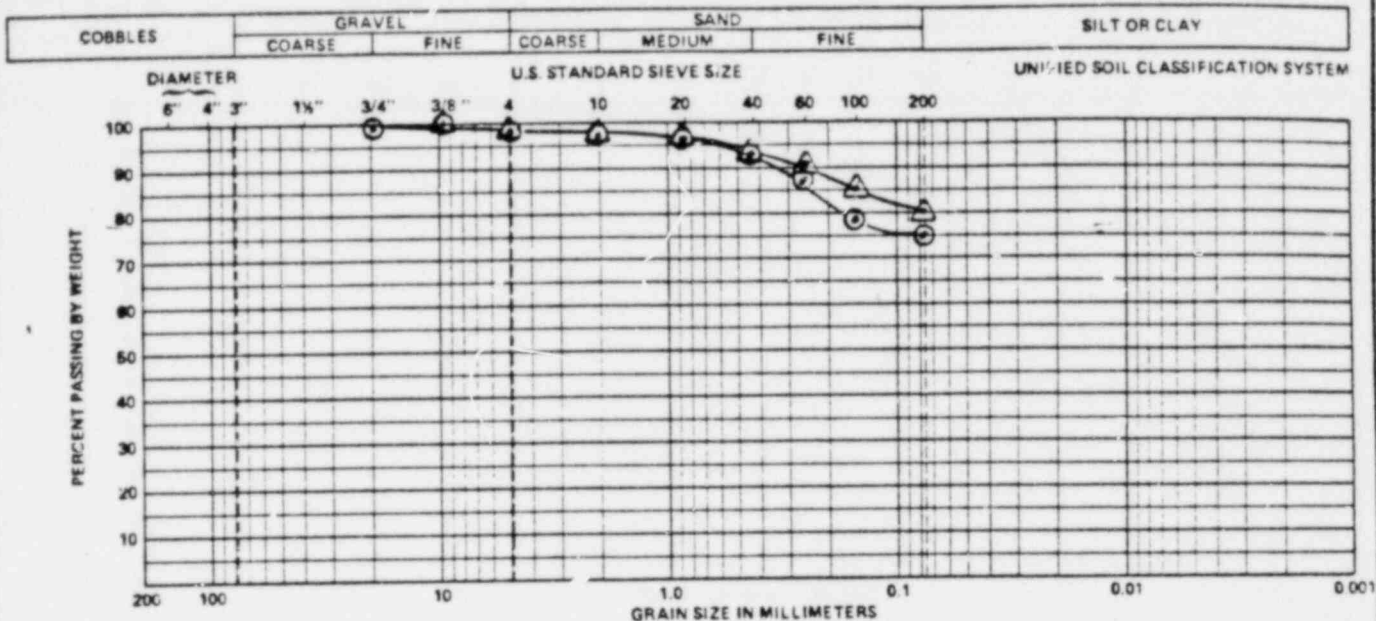
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-12	S-7-A	16.3	⊙	CL, gray, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand	10.5	21	13

Fig. C-8 (3/5)

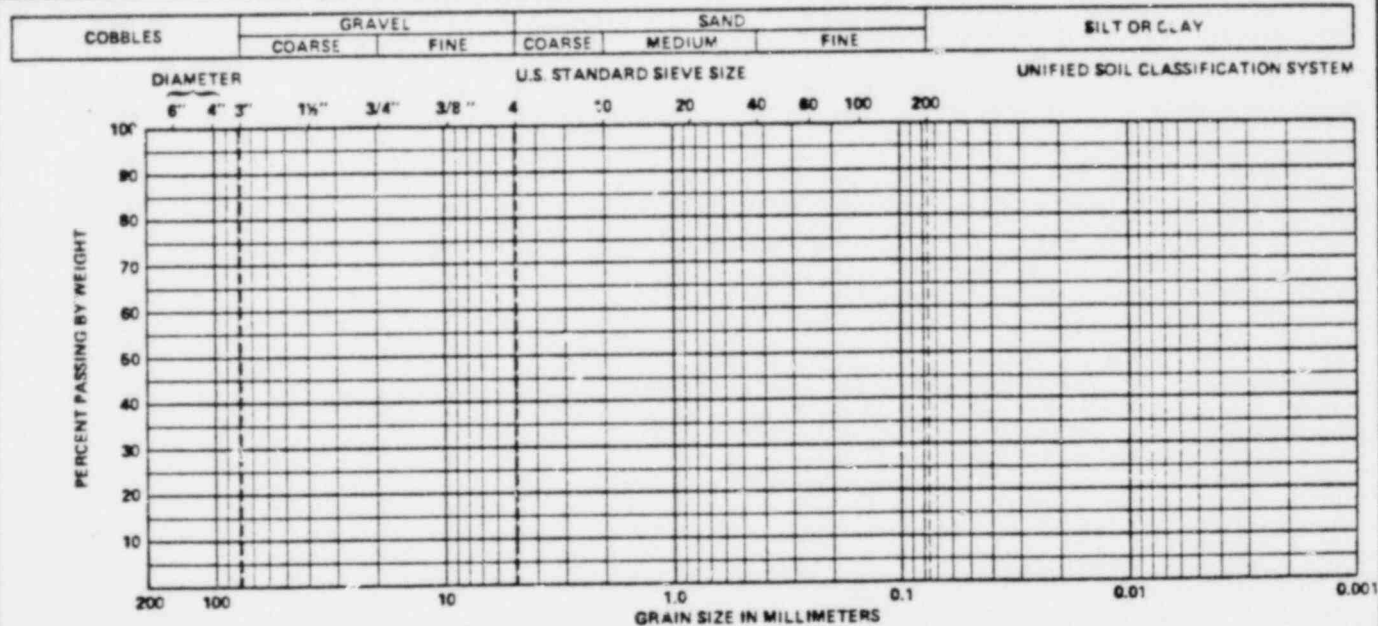
PARTICLE-SIZE DISTRIBUTION



PARTICLE-SIZE DISTRIBUTION

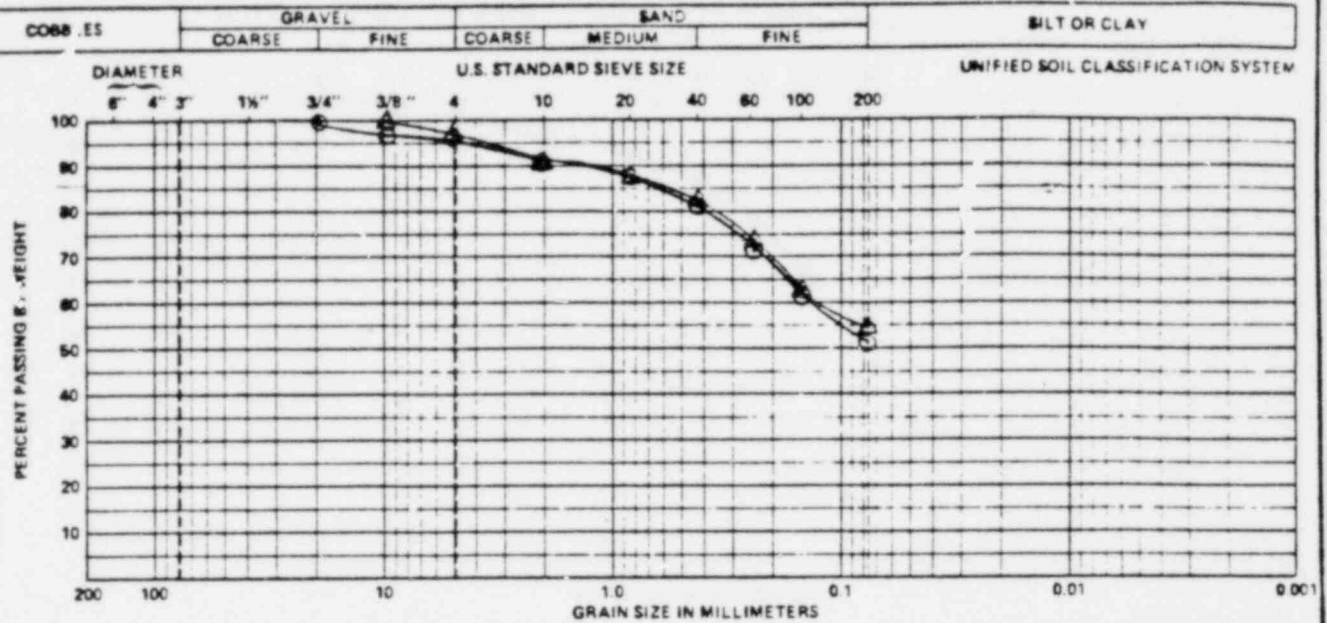


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE-12	S-10B	25.3	⊙	CL, brown, m.p. silty CLAY, some f. sand tr. f. gravel to m. sand	14.3	31	15
COE-12	S-10C	25.9	⊙	CL, brown, m.p. silty CLAY, some f. sand, tr. f. gravel to c. sand	15.9	31	15

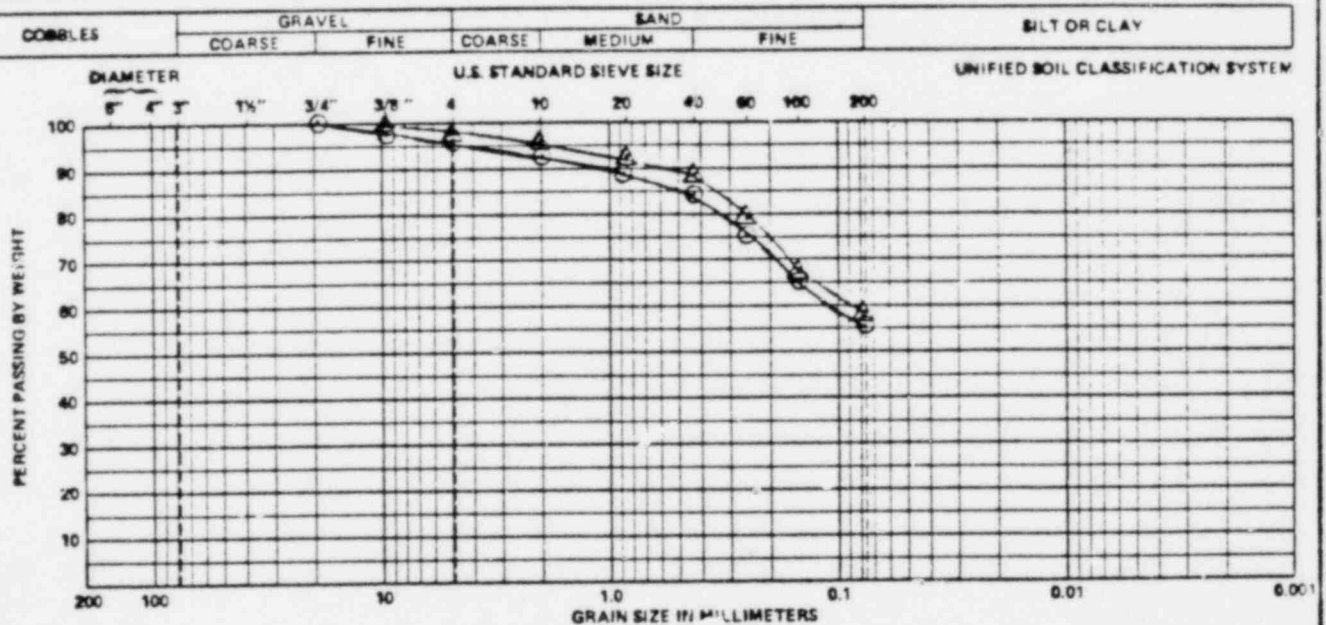


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION

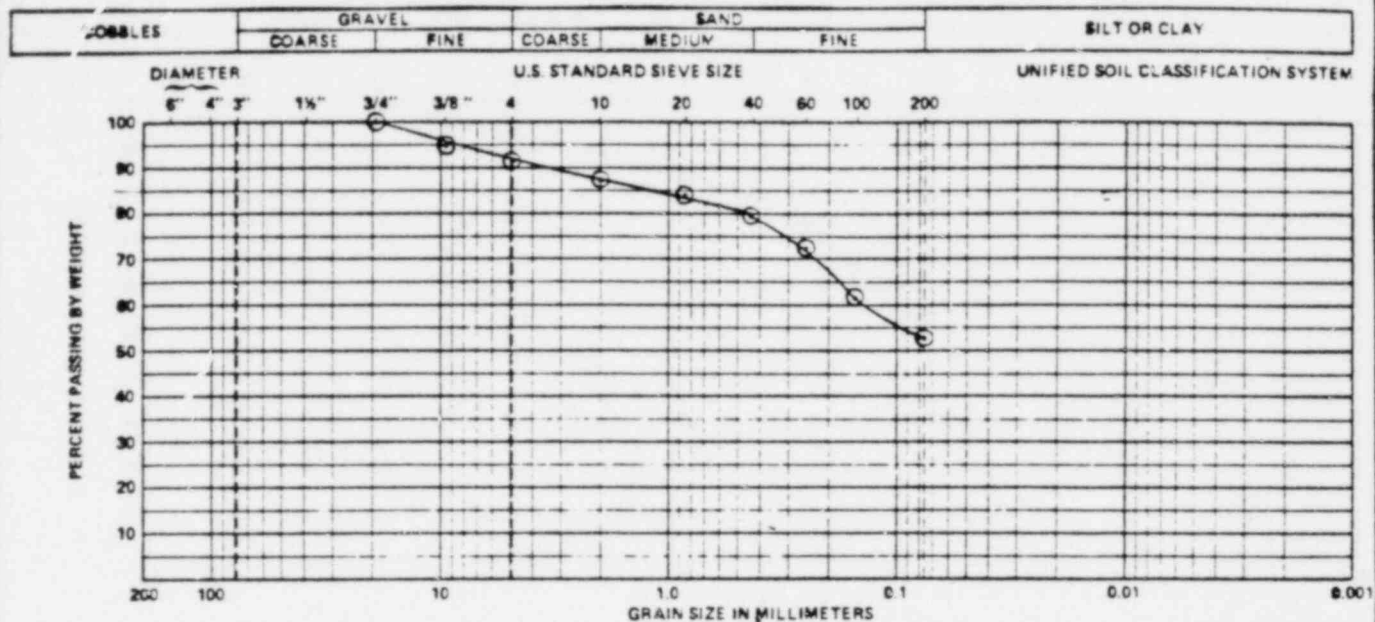


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE12A	S-2-C	9.5	⊙	CL, gray, f. sandy, s.p. silty CLAY, some f. gravel to m. sand, with pocket of brown c. to f. SAND (SP)			
COE12A	S-2-D	9.8	Δ	CL, brown, m to f sandy, s.p. silty CLAY, tr. f. gravel to c. sand - Con spec.	11.2	21	13

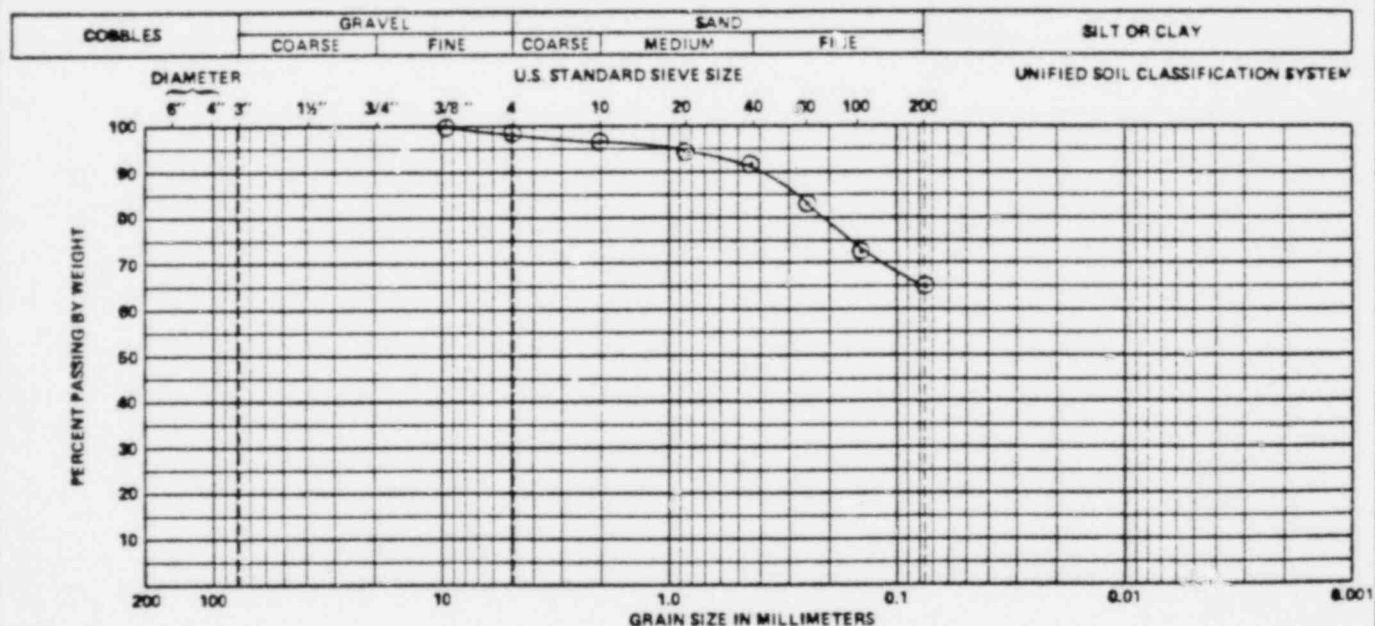


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE12A	S-3-B	11.7	⊙	CL, mottled brown and gray, m. to f. sandy, s.p. to m.p. silty CLAY, tr. f. gravel to c. sand - CAU spec.	12.2	22	12
COE12A	S-3-C	12.1	Δ	CL, mottled brown and gray, f. sandy, s.p. silty CLAY, tr. f. gravel to m. sand - Con spec.	11.9	21	13

PARTICLE-SIZE DISTRIBUTION

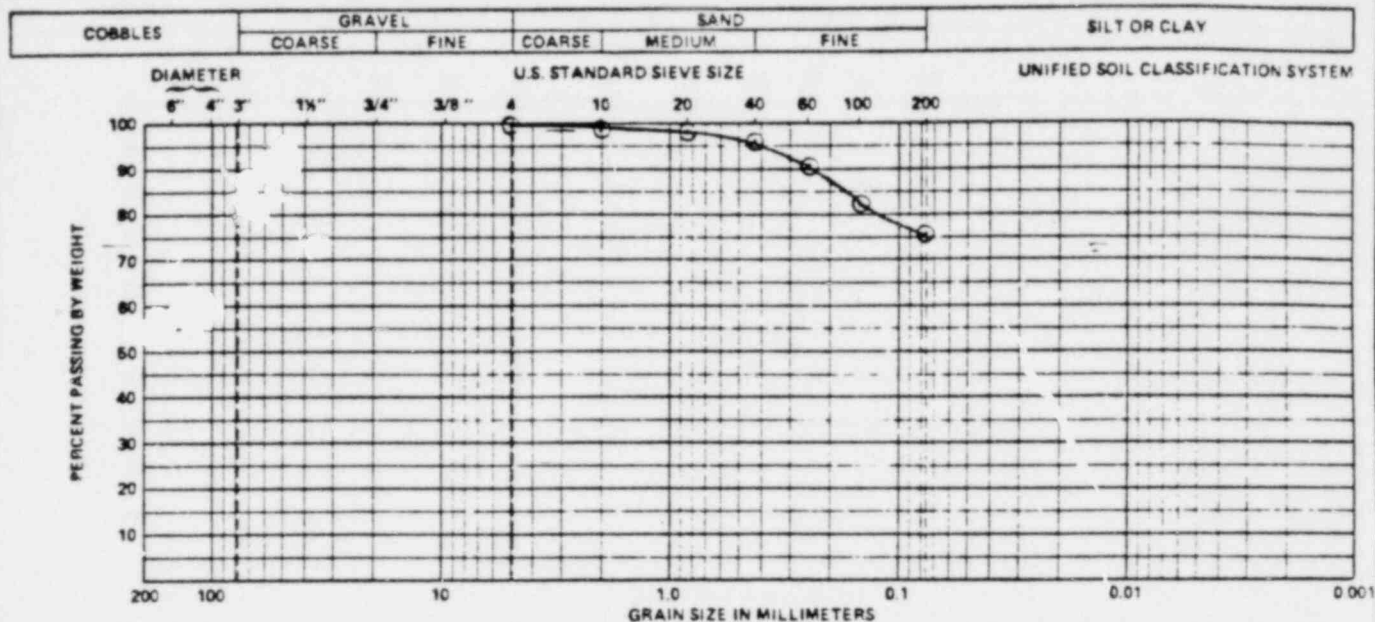


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 12A	S-5-B	16.6	⊙	CL, mottled brown, gray and lt. brown, s.p. silty CLAY, some c. to f. sand, tr. f. gravel	9.7		

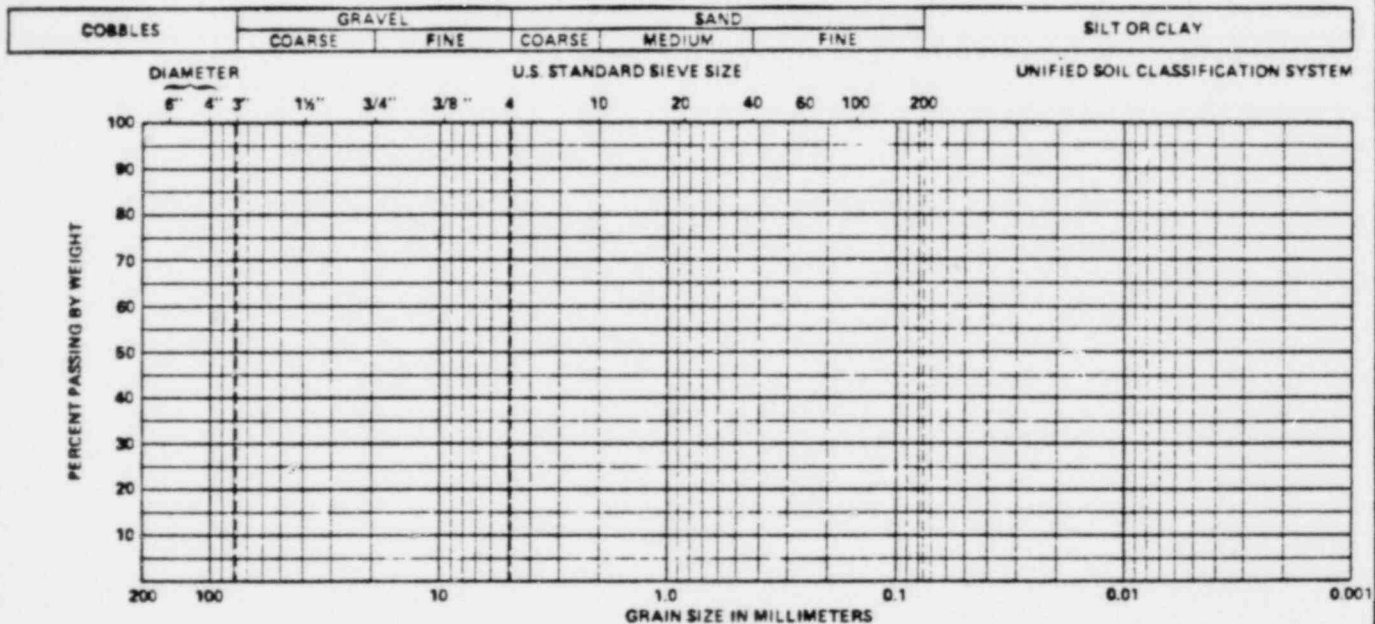


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 12A	S-6-C	19.5	⊙	CL, mottled brown, gray and red brown, f. sandy, s.p. to m.p. silty, CLAY tr. f. gravel to c. sand	11.8	23	13

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 12A	S-10-B	28.0	⊙	CL, brown, m.p. silty CLAY, some f sand, tr f gravel to m sand - Con spec.	19.8	34	15



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION

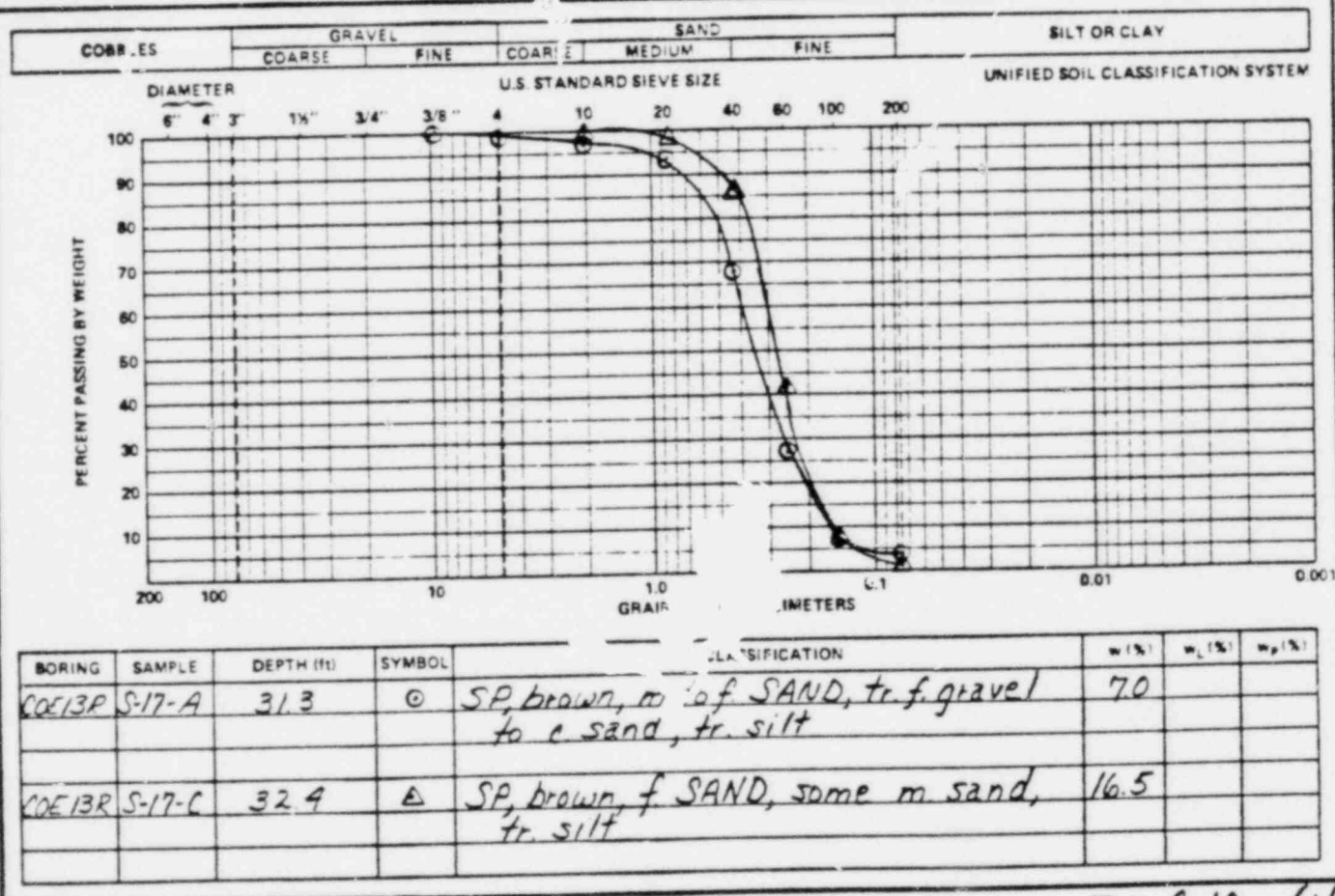
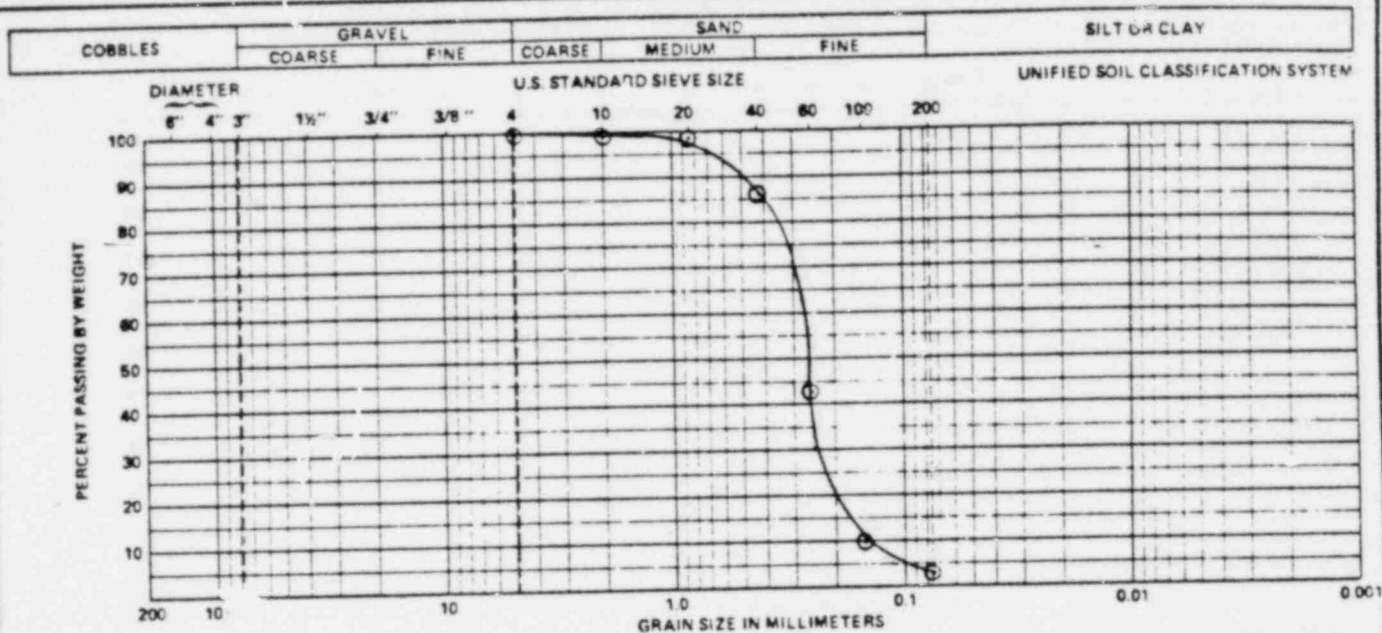
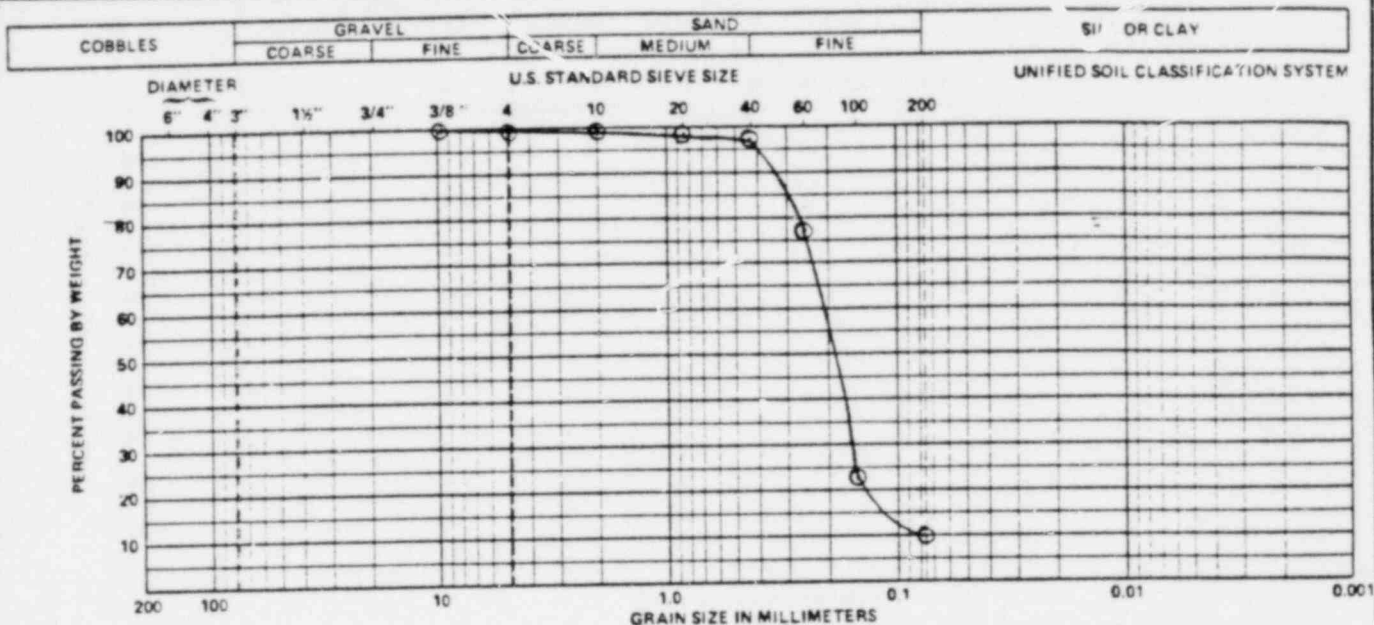
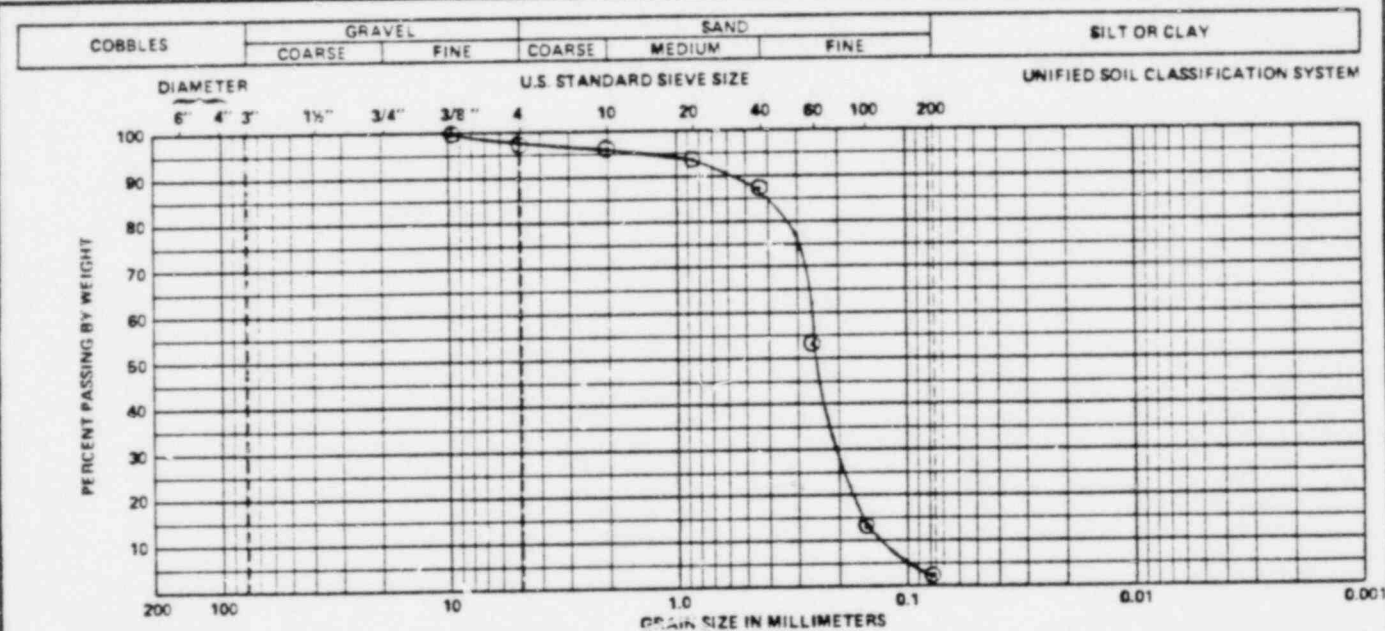


Fig. C-10 (1/4)

PARTICLE-SIZE DISTRIBUTION



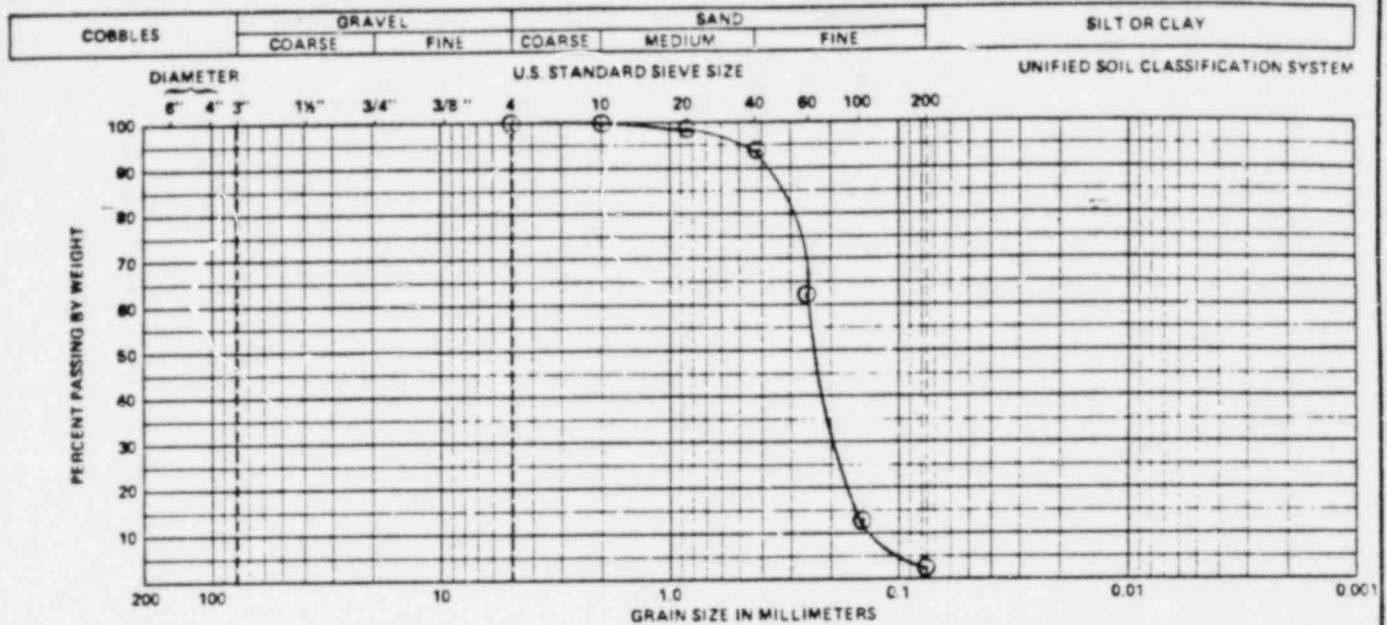
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
CDE13R	S-18-B	34.3	⊙	SP-SM, H gray-brown, f SAND, tr. f gravel to m sand, tr silt	15.3		



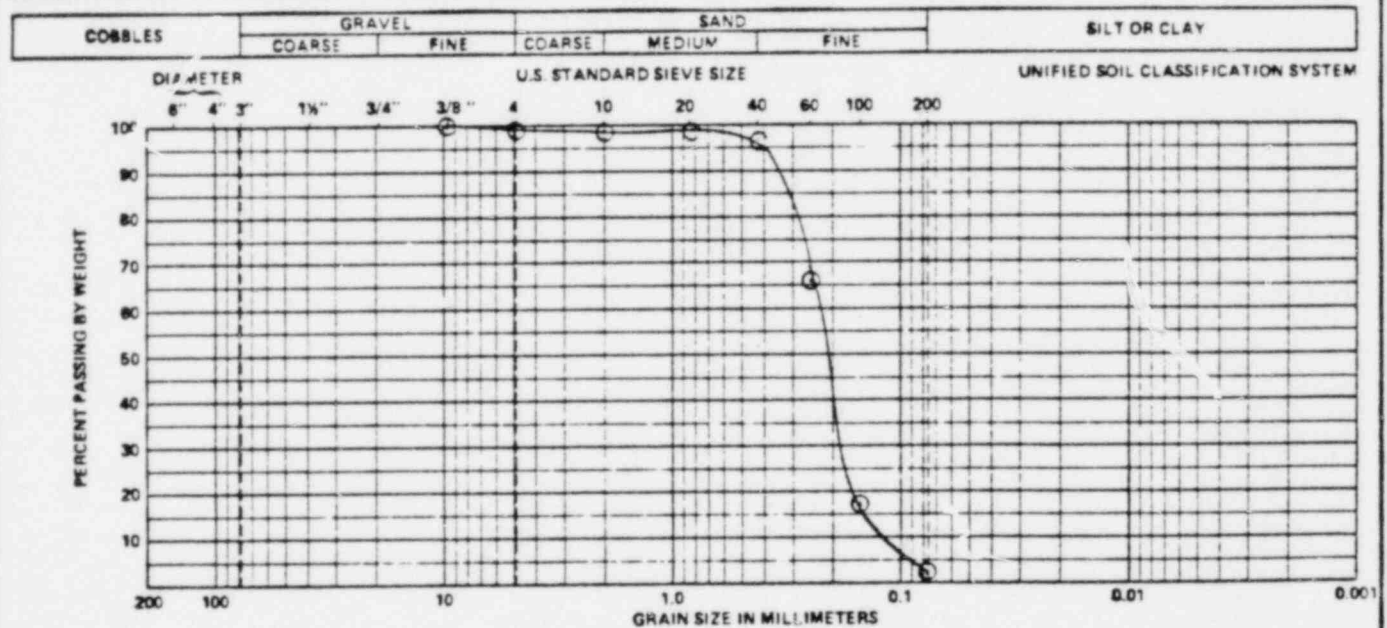
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
CDE13R	S-19-B	36.2	⊙	SP, lt. brown, m to f SAND, tr. f gravel to c sand, tr. silt	10.3		

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PARTICLE-SIZE DISTRIBUTION

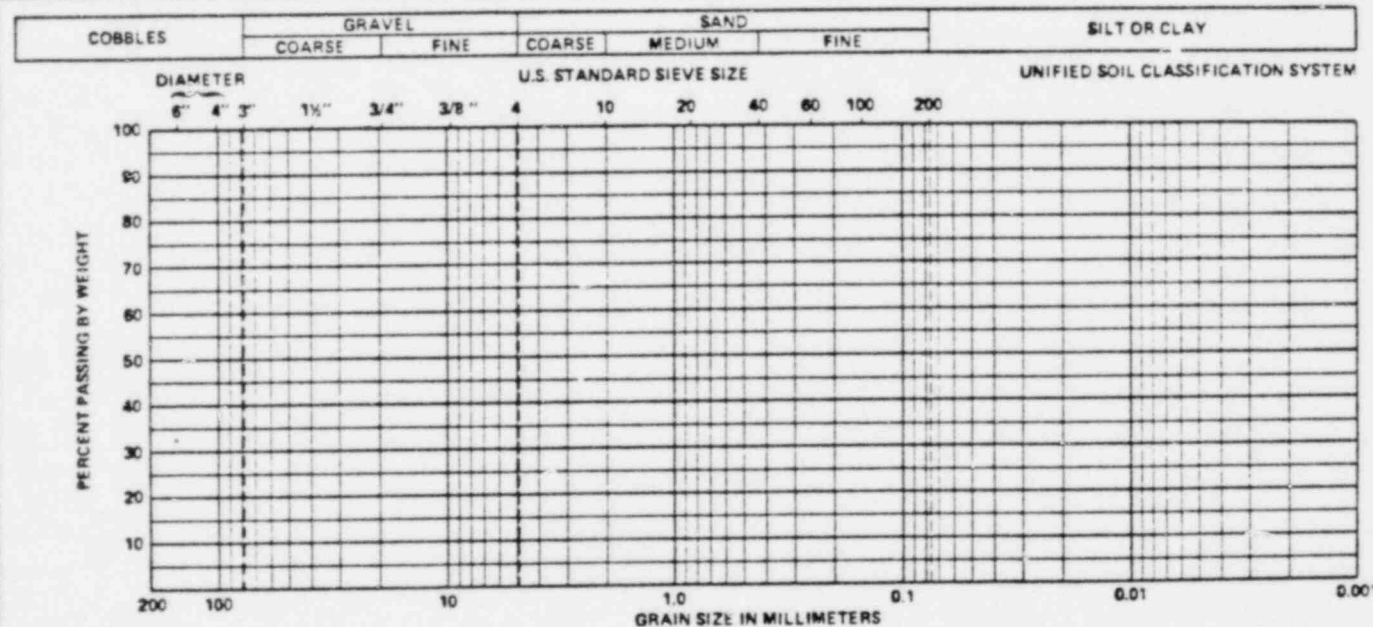
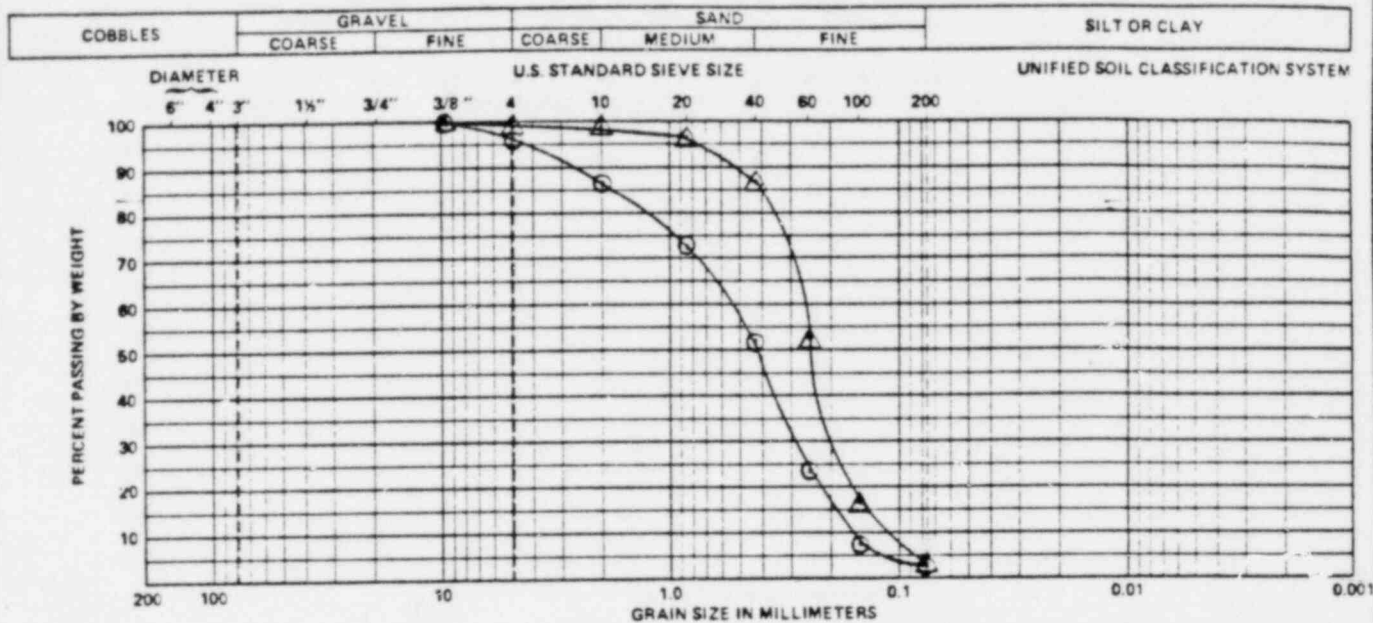


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE13R	S-20-B	38.2	○	SP, lt. gray-brown, f SAND, tr. m. sand, ff silt, with occ c gravel	15.0		



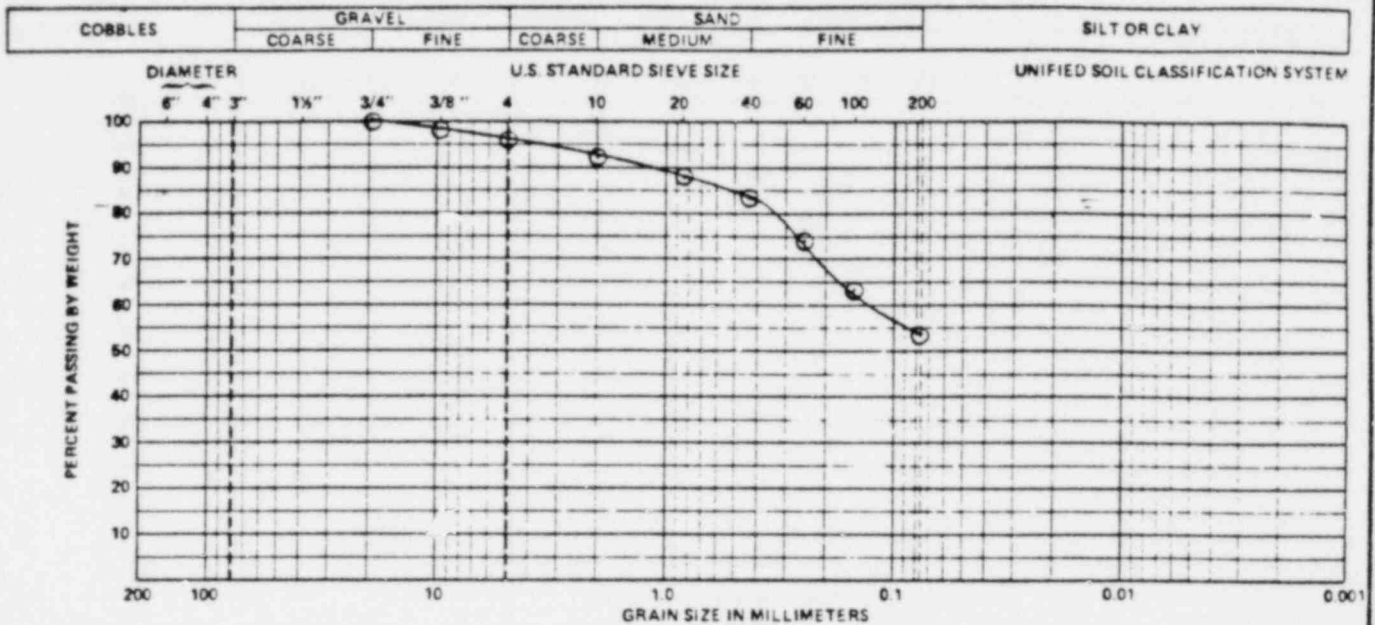
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE13R	S-21-C	40.7	○	SP, lt. gray-brown, f SAND, tr m sand, tr. silt	18.2		

PARTICLE-SIZE DISTRIBUTION

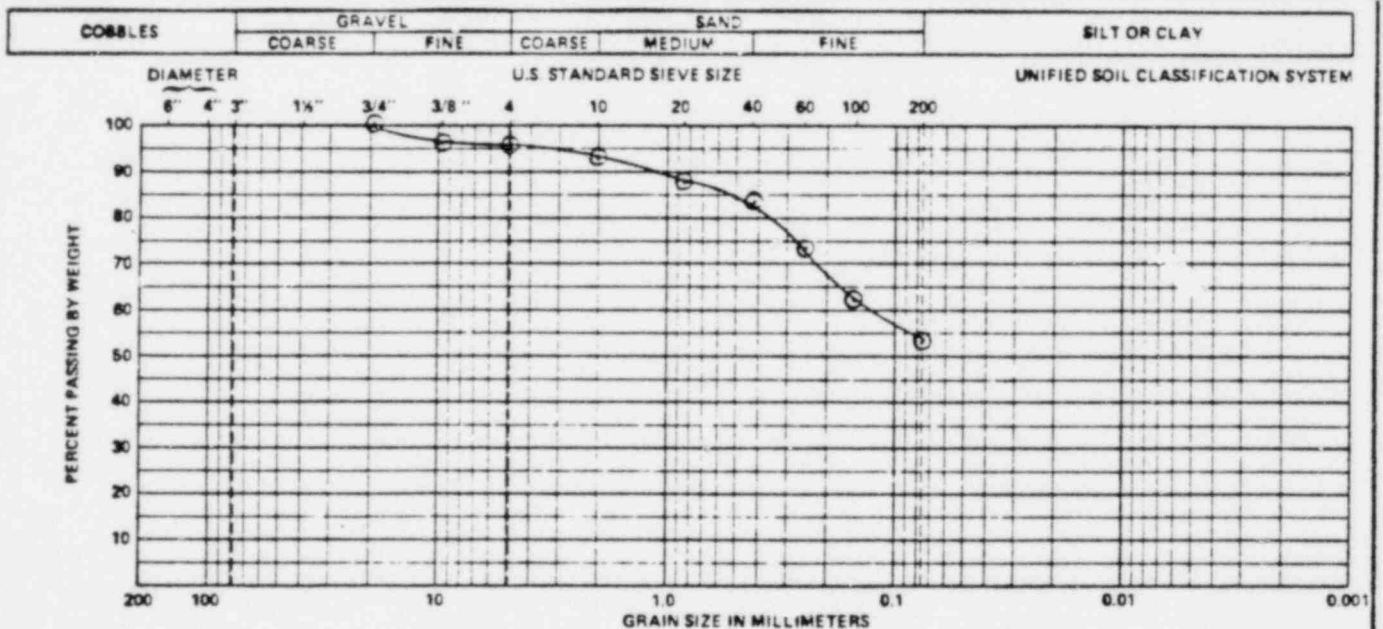


BOREING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION



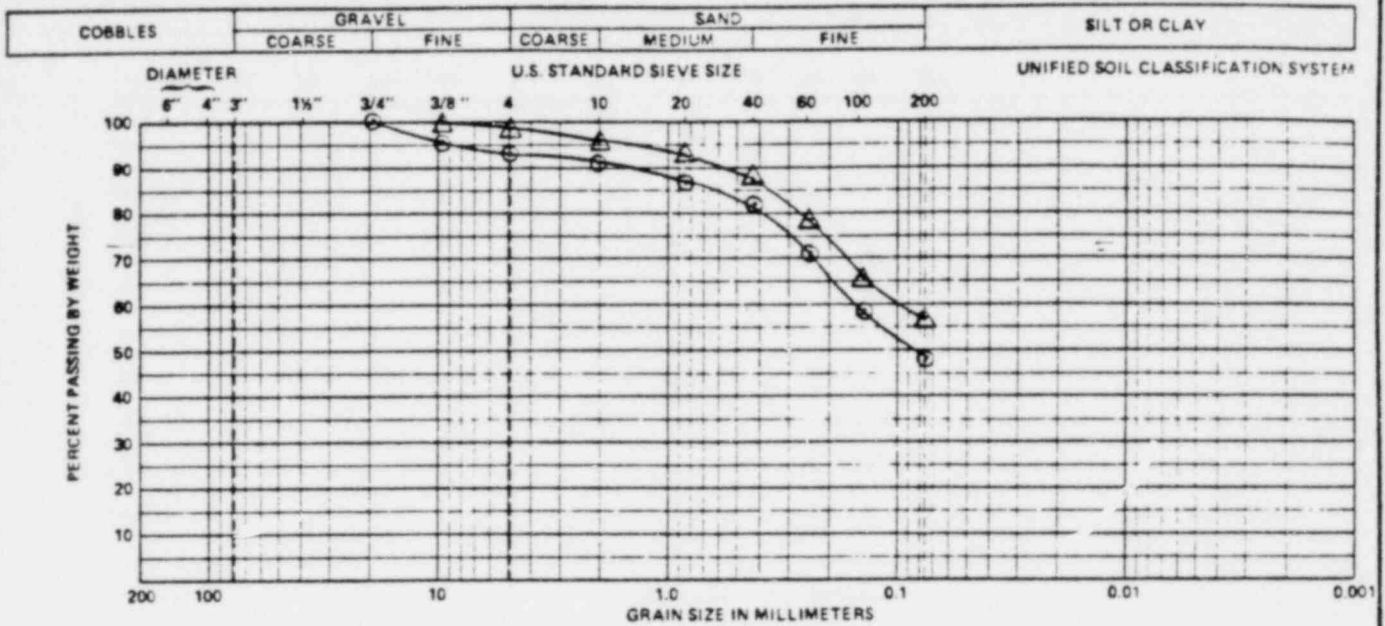
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 13A	S-1C	10.8	⊙	CL, gray-brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand - CIV spec.	10.7	20	12



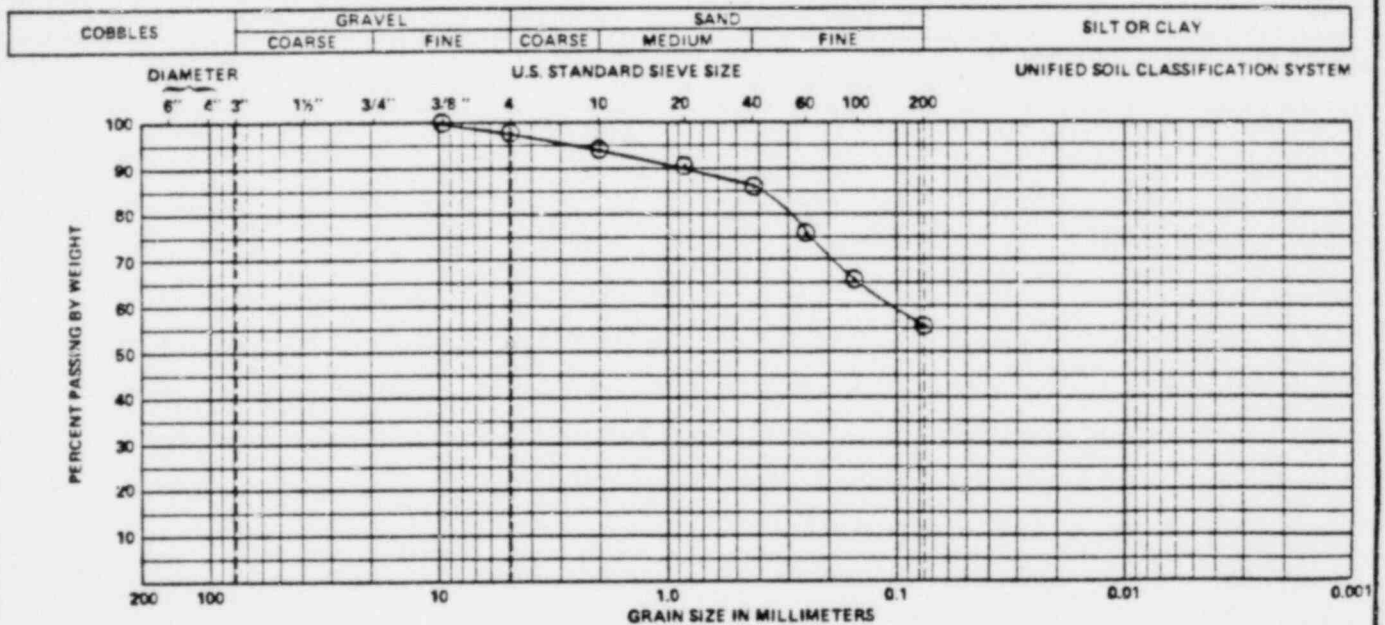
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 13A	S-2-B	13.1	⊙	CL, gray, m to f sandy, s.p. silty CLAY, tr. f. gravel to m sand - CIV spec	10.3	20	12

Fig. C-11 (1/7)

PARTICLE-SIZE DISTRIBUTION



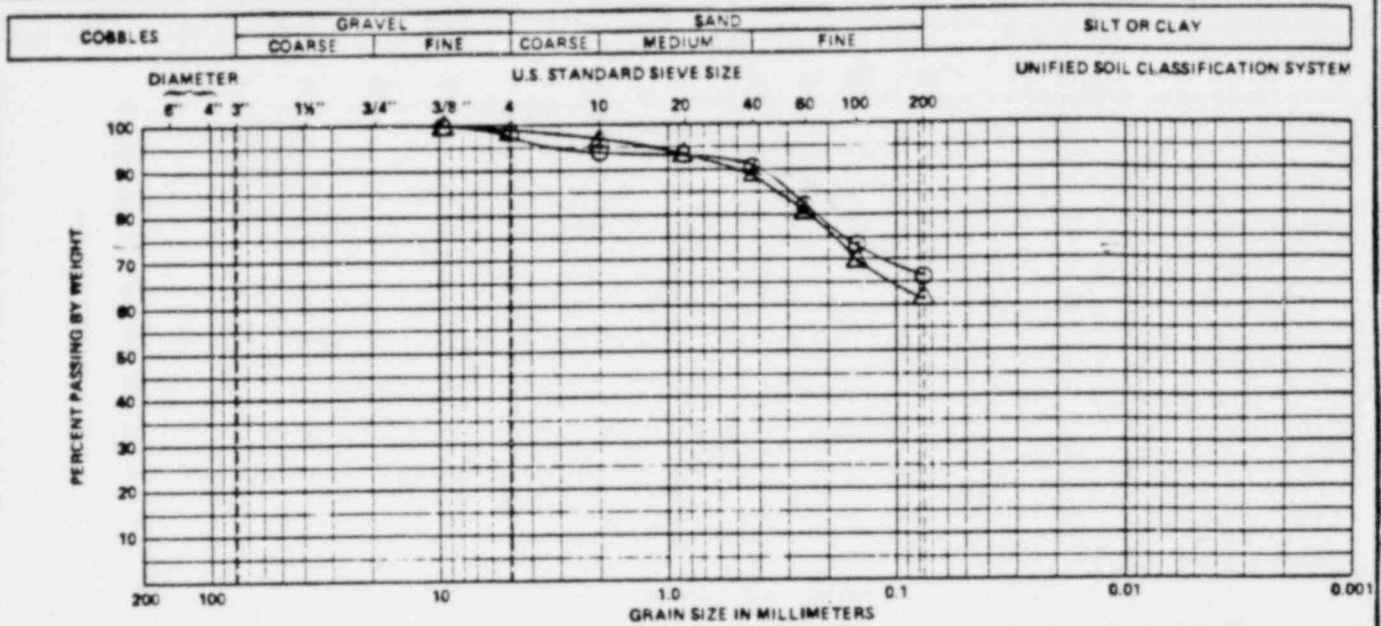
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 13A	S-3-B	15.8	⊙	SC, gray-brown, silty clayey f. SAND, some f gravel to m. sand	10.7		
COE 13A	S-3-C	16.1	⊙	CL, gray-brown f. sandy, s.p. silty CLAY, some f gravel to m. sand - con spec.	11.0	20	12



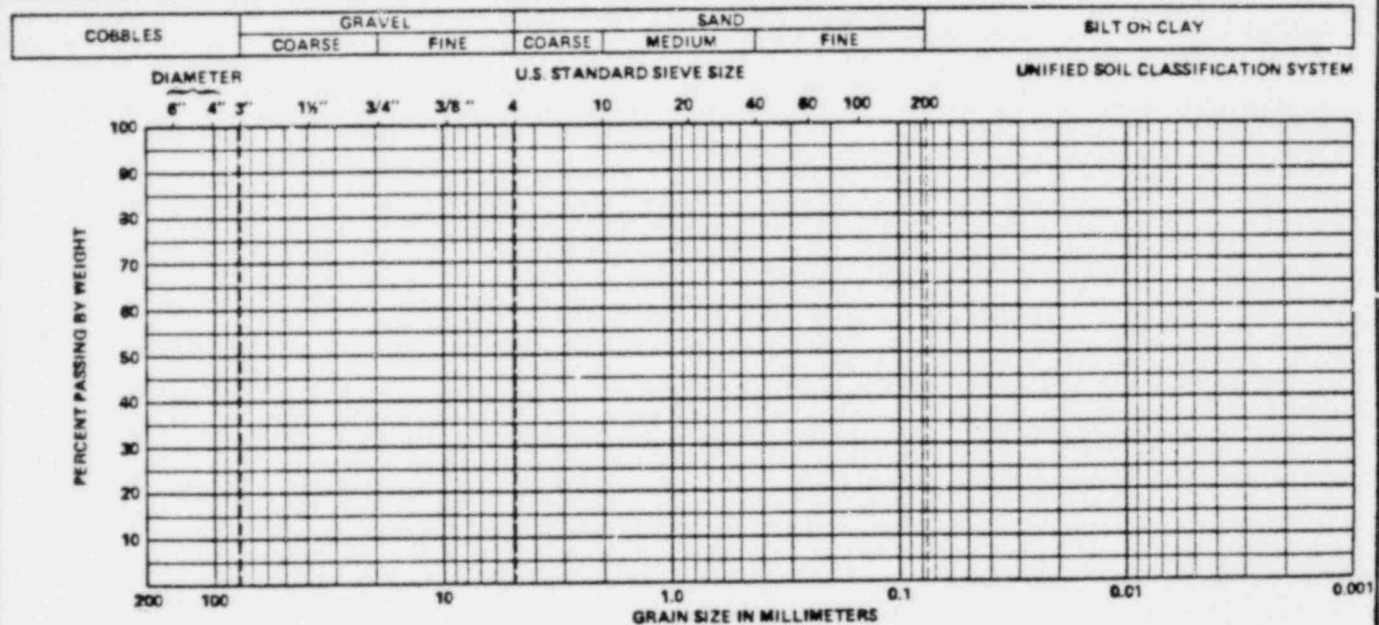
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COE-BA	S-4-B	18.2	⊙	CL, gray-brown, m. to f. sandy, s.p., silty CLAY, tr. f. gravel to c. sand - con spec.	12.1	21	12

Fig. C-11 (2/7)

PARTICLE-SIZE DISTRIBUTION

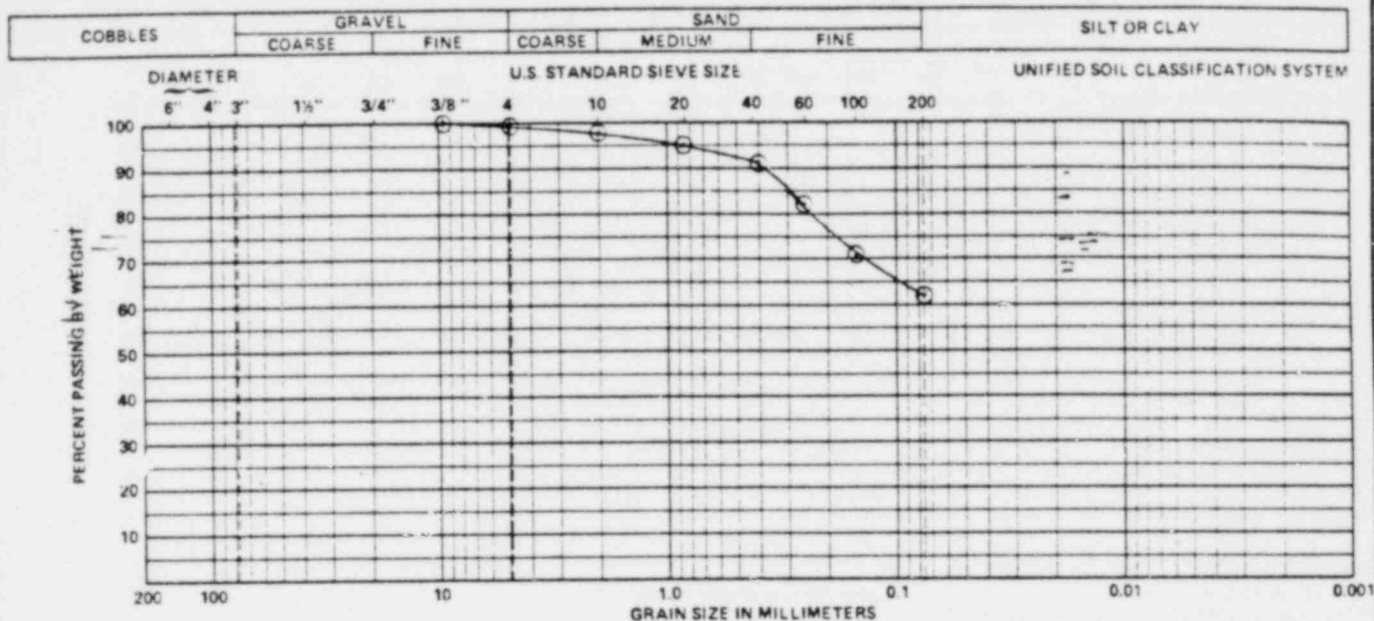


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 13A	S-5B	20.7	⊙	CL, mottled brown and orange-brown, m.p. silty CLAY, some f. gravel to f. sand	10.9		
NE 13A	S-5C	21.1	△	CL mottled brown and orange-brown, f. sandy, m.p. silty CLAY, tr. f. gravel to m. sand - Can spec.	10.0	24	13

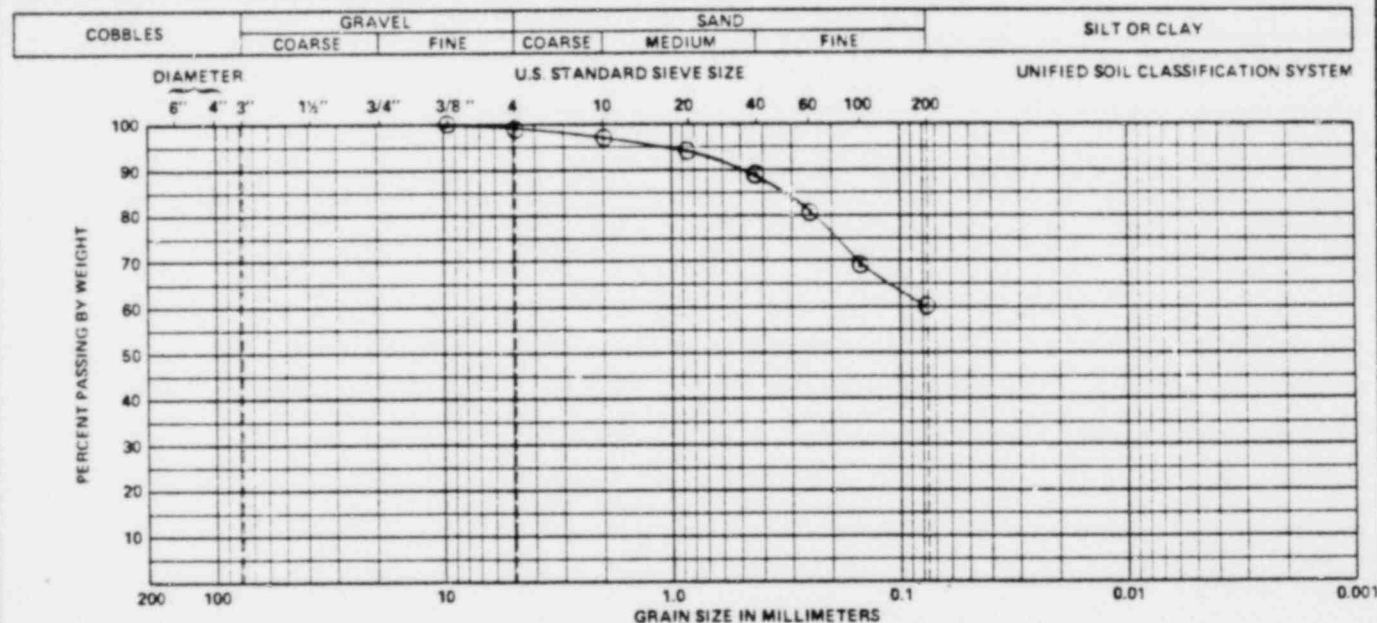


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION



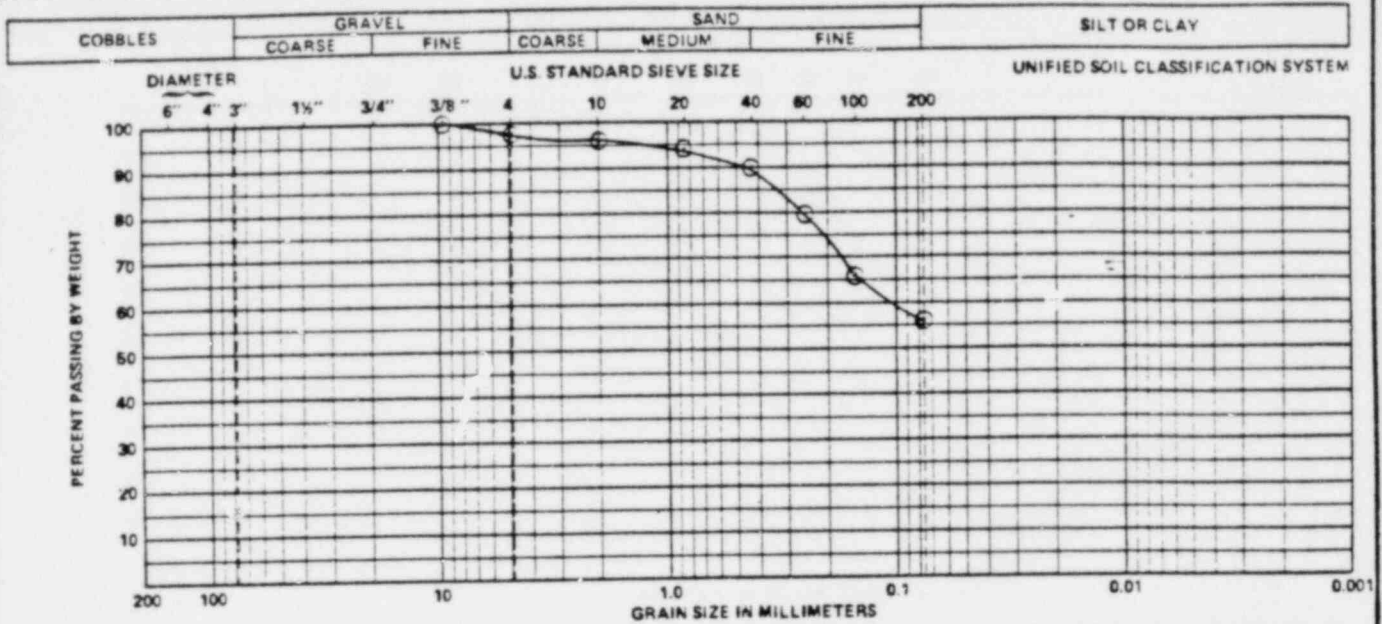
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
NO-13A	S-6C	22.4	⊙	CL, brown, m to f sandy, mp silty CLAY, tr. f gravel to c. sand - Con spec.	10.9	24	13



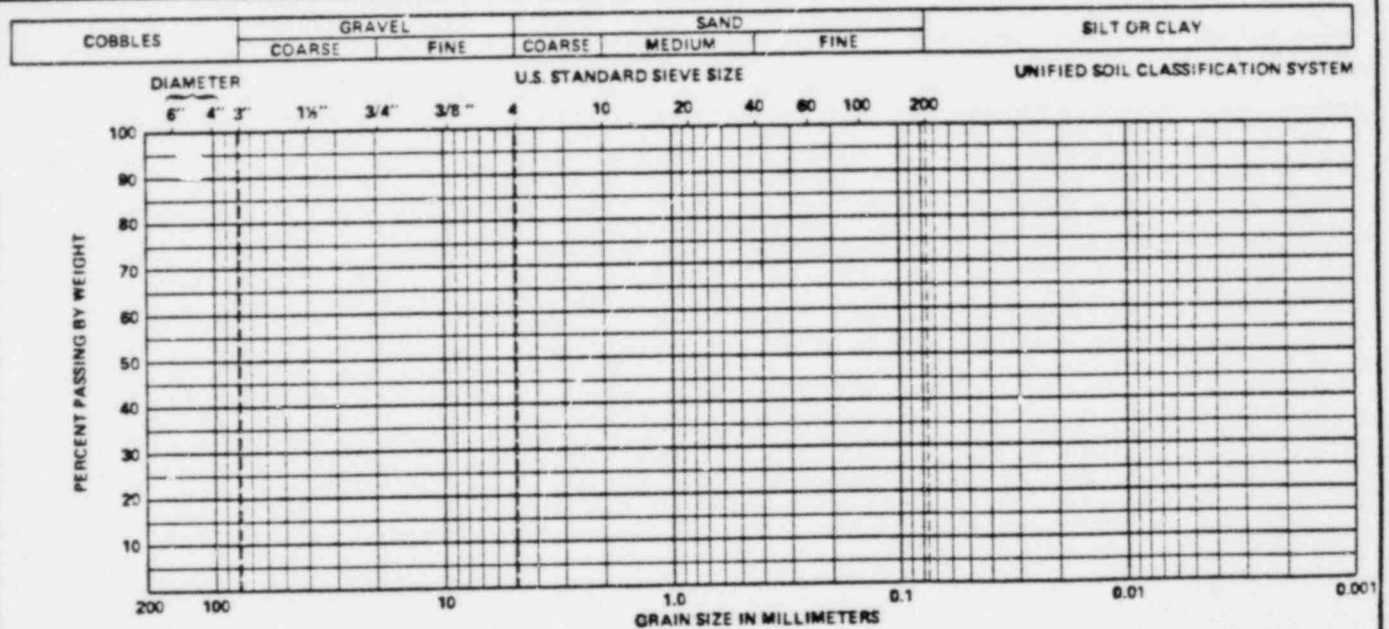
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
NO-13A	S-8B	24.4	⊙	CL, mottled gray-brown and orange-brown, m to f sandy, s.p. silty CLAY, tr. f gravel to c. sand - Con spec	10.7	21	12

Fig. C-11 (4/7)

PARTICLE-SIZE DISTRIBUTION

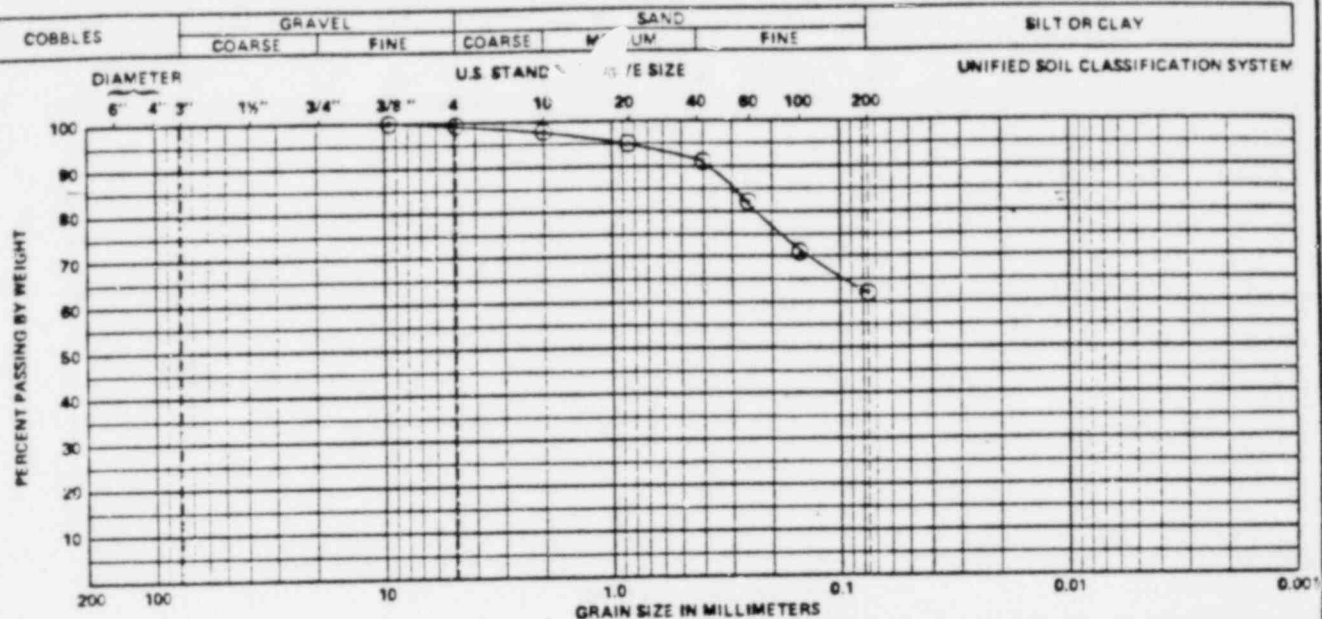


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
ME-13A	S-9B	26.7	⊙	CL, brown, f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand - con. spec.	10.4	23	14

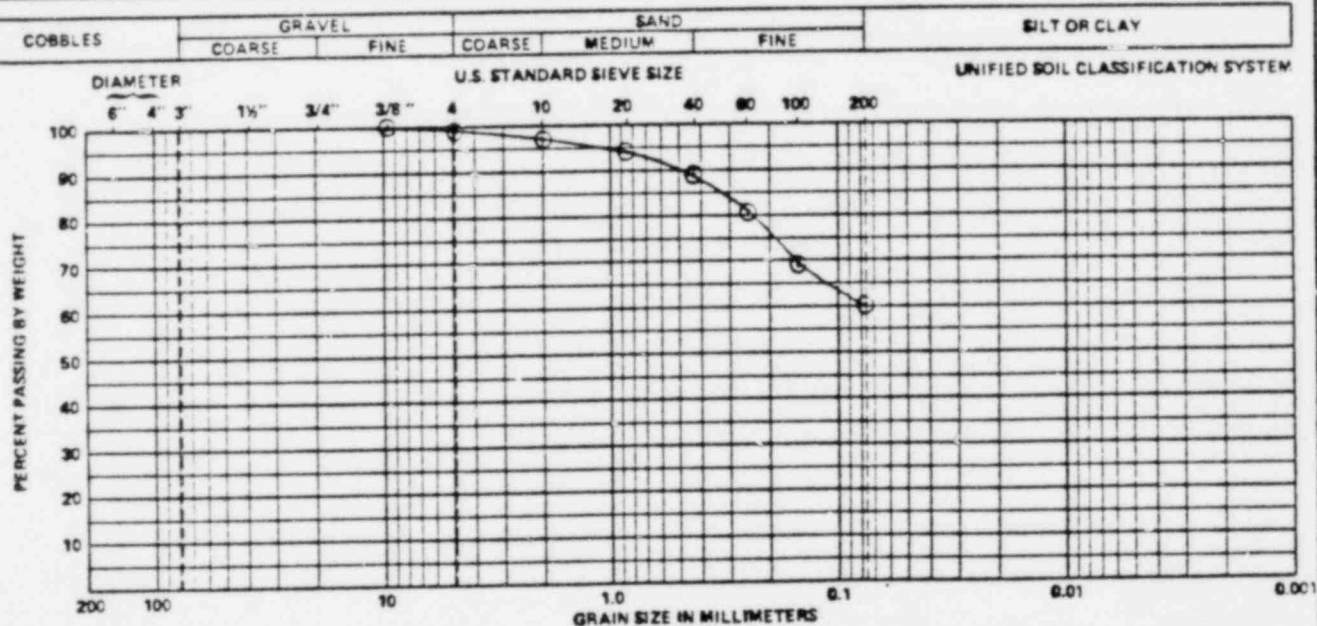


BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)

PARTICLE-SIZE DISTRIBUTION



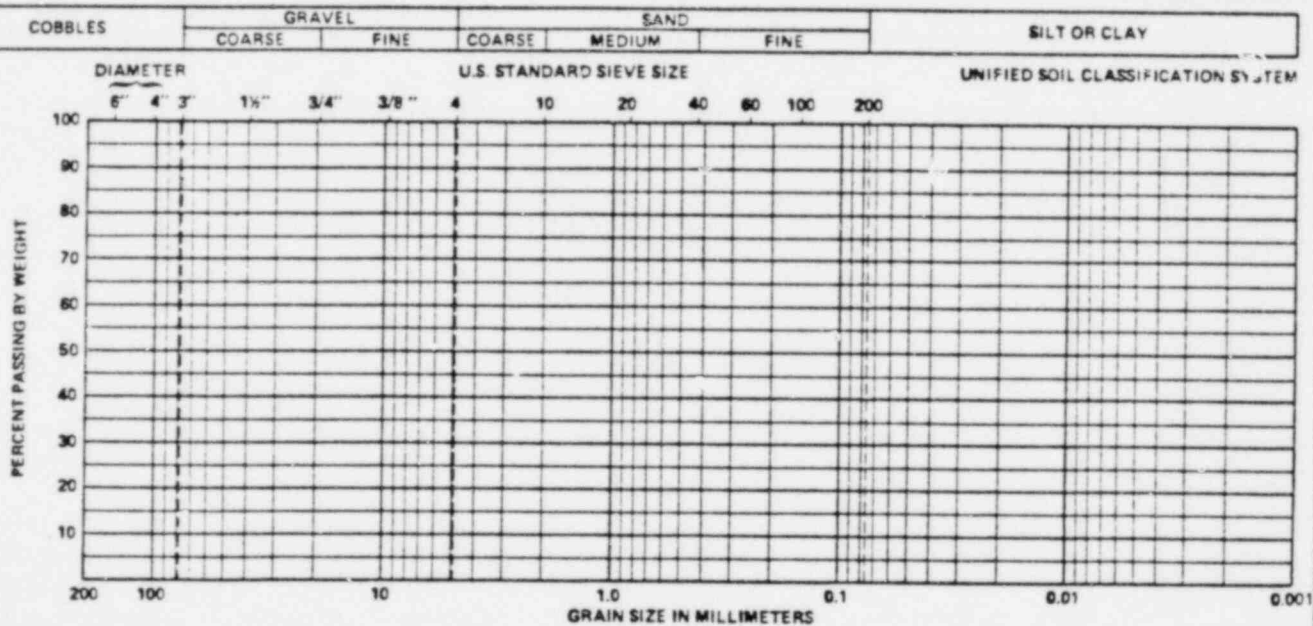
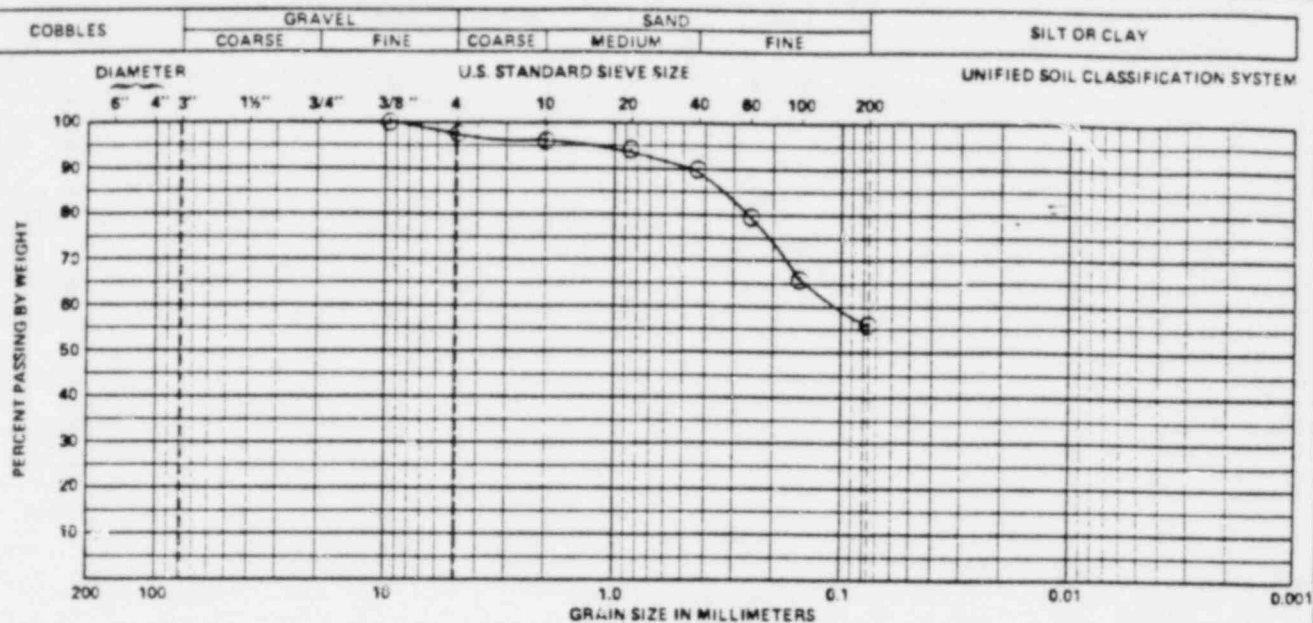
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
ML-13A	S-6C	22.4	○	CL, brown, m. to f. sandy, m.p. silty CLAY, tr. f. gravel to c. sand - Can spec.	10.9	24	13



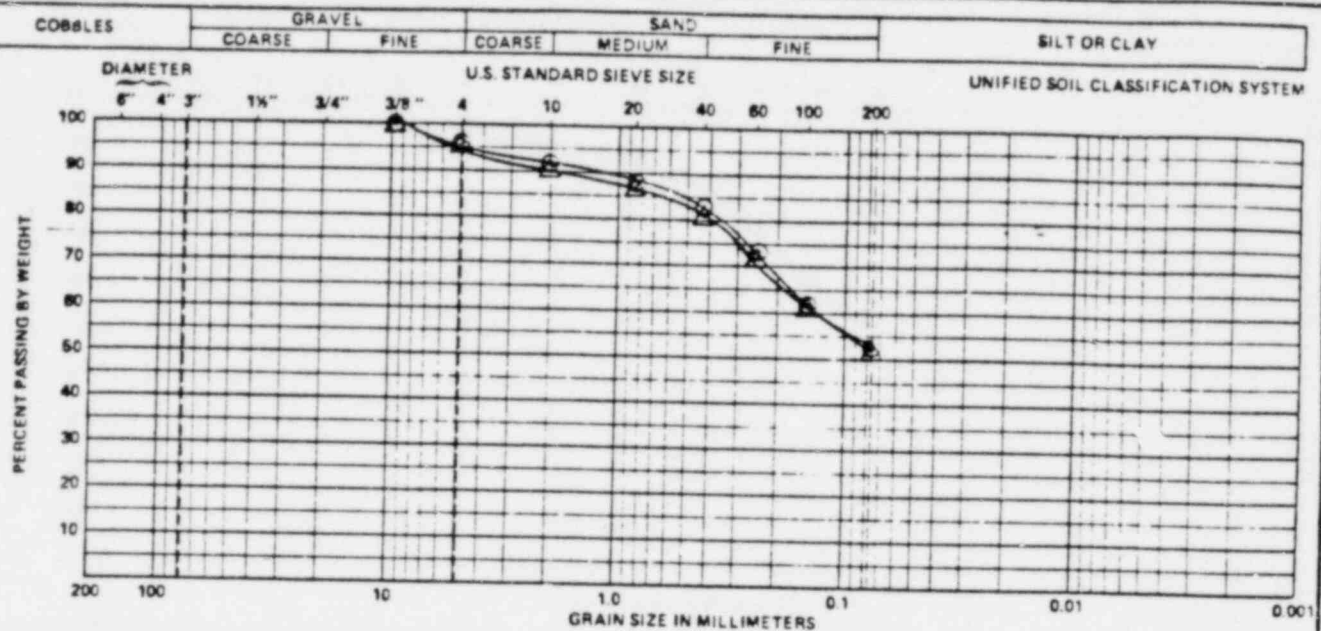
BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
ML-13A	S-8B	24.4	○	CL, mottled gray-brown and orange-brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand - Can spec.	10.7	21	12

Fig. C-11 (6/7)

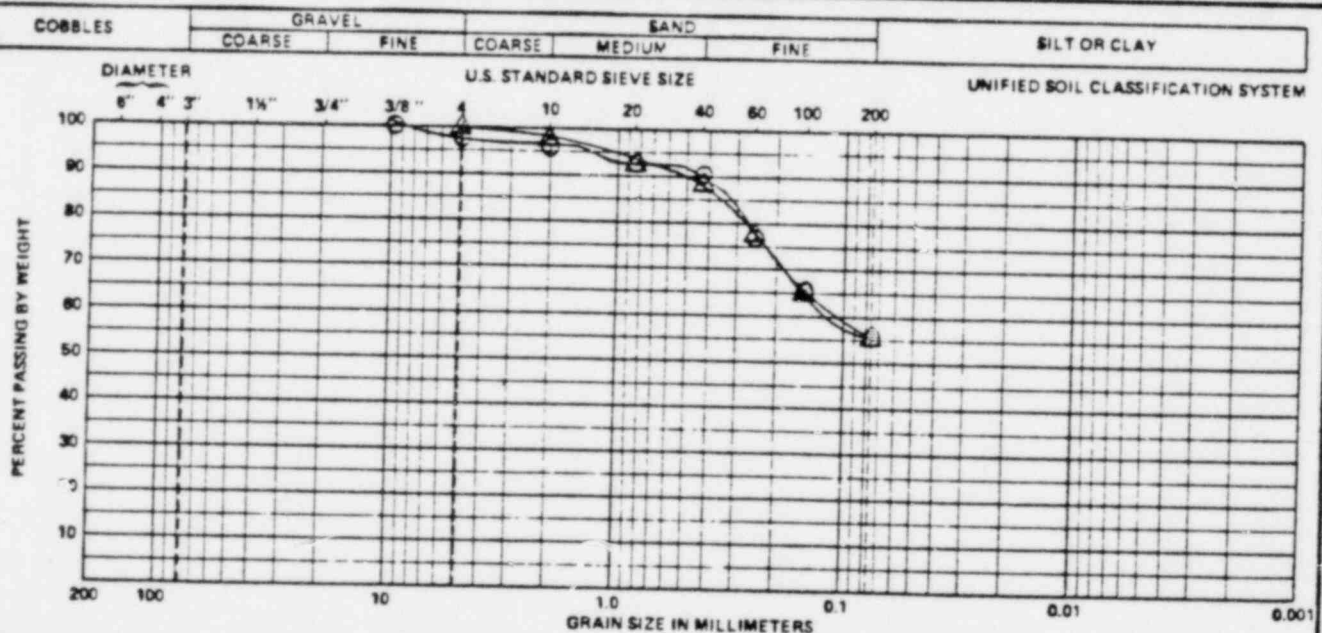
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PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 13B	S-1B	8.2	○	CL, gray-brown, m. to f. sandy, s.p. to m.p. silty CLAY, tr. f. gravel to c. sand - Con spec	9.9	23	13
COE 13B	S-1C	8.6	△	CL, gray-brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand - CIV spec	10.7	21	13



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w _L (%)	w _p (%)
COE 13B	S-3C	14.1	⊙	CL, brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand - CIV spec	10.0	20	12
COE 13B	S-3D	14.4	△	CL-MI, brown, f. sandy, s.p. silty CLAY, tr. c. to m. sand - Con spec	9.6	19	13

Fig. C-12 (1/1)

APPENDIX D

Strength Test Results

\overline{CIU} and \overline{CAU} Triaxial Compression Tests

612-4255 TS (01/2017) Prepared by EEF, Reviewed by RSW Checked by JUDS 30 June 1981

Series - Test No	Blowing Core	Sample No	Section	Depth ft	USCS Symbol	q _s	Limits		Placed Along Sieve	w _L		d _w		Type Test	Spec. Dia. in	σ _{uc} kip/in ²	K _{cs} σ _{uc} / σ _{uc}	E _w		E _c days	At Peak Deviator Stress						Remarks		
							w _L PI	%		w _L %	w _L 10/100	d _w 10/100	d _w 10/100					S _w %	ε _w %		ε _w %/in	ε _s %	σ ₁ - σ ₃ 2 kip/in ²	σ ₁ + σ ₃ 2 kip/in ²	σ ₁ / σ ₃	A		S _w σ _{uc}	φ for c=0 degrees
1-1	13B	1-C	8.6 624.9	CL	274 (assumed)	21	96	10.7	142.7	128.9	90	CU	2.9	0.680	0.994	0.29	1	20.1	1.866	3.420	3.125	0.284	2.704	—	B = 98.0 %				
1-2	13A	2-B	13.1 620.5	CL	274 (assumed)	20	92	10.3	142.2	128.9	87	CU	2.0	1.379	0.966	0.50	1	19.9	1.814	3.580	3.055	0.099	1.315	—	B = 96.6 %				
1-3	13A	1-B	10.8 622.8	CL	274	20	96	10.7	142.8	129.0	90	CU	2.9	2.729	0.989	0.86	1	19.7	2.436	4.799	3.061	0.028	0.893	—	B = 99.7 %				
1-4	11A	4-C	14.6 618.8	CL	274 (assumed)	21	97	10.5	142.1	128.6	88	CU	2.9	5.438	0.987	1.40	1	20.0	5.837	11.453	3.078	0.012	1.073	—	B = 97.6 %				
1-5	13B	3-C	14.1 619.4	CL	273	20	99	10.0	145.1	131.9	94	CU	2.9	8.183	0.996	0.72	1	20.0	7.473	14.430	3.148	0.083	0.913	—	B = 97.1 %				
						8	55	9.3	148.3	135.7	100							2.76	0.77	5.15	4.959	9.152	3.365	0.423	0.606	32.8			

DESCRIPTIONS OF MATERIALS TESTED

1-1	CL gray-brown, m to f sandy, s.p. silty CLAY, tr. f. gravel to c. sand
1-2	CL, gray, m to f sandy, s.p. silty CLAY, tr. f. gravel to c. sand
1-3	CL gray-brown, m to f sandy, s.p. silty CLAY, tr. f. gravel to c. sand
1-4	CL gray-brown, m to f sandy, s.p. silty CLAY, tr. f. gravel to c. sand
1-5	CL brown m to f sandy, s.p. silty CLAY, tr. f. gravel to c. sand

STRENGTH ENVELOPE SUMMARY				
Test Series	$\bar{\phi}$ degree	\bar{c} kip/ft ²	$\bar{\alpha}$ degree	Correlation Coefficient
1	32.5	0.056	28.3	0.999

MIDLAND PLANT UNITS 1 and 2
CONSUMERS POWER CO.
CIVIL-TRIAXIAL TEST SERIES
DIESEL GENERATOR BUILDING
CONCRETE / III

Table D-1

DIC 4050 T3 (DIC 217) Prepared by BRF

Reviewed by RIV Checked by JCL 30 June 1961

Series-Test No	Blowing No COE	Sample / Section No S-	Depth Elev. ft.	USCS Symbol	q_c	Limits		Percent Flaming Sieve No. 4 200			Type Test	Spec. Dia. in.	$\bar{\sigma}_{vc}$ kip/ft ²	K_{σ} $\frac{\bar{\sigma}_{vc}}{\bar{\sigma}_{he}}$	E_{vc} E_{vc} %	E_{σ} days E_{σ} %/hr.	At Peak Deviator Stress								Remarks	
						w_L % -15	No. 4 200		w_p % -15	d_{60} in/ft ³ d_{60}							d_{10} in/ft ³ d_{10}	S_u %	At Peak Obliquity							
																			E_d %	$\frac{\sigma_1 - \sigma_3}{2}$ kip/ft ²	$\frac{\sigma_1 + \sigma_3}{2}$ kip/ft ²	$\frac{\sigma_1}{\sigma_3}$	A	$\frac{S_u}{\bar{\sigma}_{vc}}$		$\bar{\phi}$ for c=0 degrees
1-1	9A	1-C	9.3 6247	CL	2.74 (assumed)	20 8	97 55	11.7 11.5	143.6 144.7	128.6 129.7	98 100	CAU	2.9	1.008	1.891	0.44 0.84	2 0.66	20.1 0.96	1.855 0.76	3.624 1.254	3.098 4.085	0.36 0.038	1.840 0.755	— 37.4	B = 98.3 % Findings between 10% 11% to 14% in 1958	
1-2	10A	2B	13.4 620.6	CL	2.75	22 11	94 53	11.1 11.1	142.0 145.8	127.8 131.2	90 100	CAU	2.9	2.051	1.788	0.79 2.63	2 0.70	17.9 2.63	2.428 1.277	4.815 2.197	3.033 3.778	0.314 0.138	1.184 0.623	— 35.6	B = 99.5 %	
1-3	10A	1C	11.8 622.2	CL	2.75	24 12	96 55	11.2 10.8	141.7 146.4	127.5 132.1	90 100	CAU	2.9	4.078	1.916	1.48 3.53	2 0.68	20.0 2.68	3.207 1.929	6.475 3.521	2.962 3.423	0.254 0.288	0.783 0.471	— 33.2	B = 99.7 %	
1-4	12A	3B	11.7 621.9	CL	2.76	22 10	96 56	12.2 11.0	139.0 146.7	123.9 132.2	87 100	CAU	2.9	8.038	1.912	3.07 6.27	2 0.69	20.0 5.65	3.896 3.069	7.621 5.625	3.092 3.402	0.121 0.717	0.485 0.382	— 33.1	B = 95.5 %	
1-5	9A	4B	14.2 619.8	CL	2.75	22 9	97 56	11.1 10.0	141.5 147.7	127.3 134.3	89 100	CAU	2.0	12.126	1.917	2.35 5.24	2 0.72	20.0 5.65	7.870 5.703	15.244 10.462	3.135 3.396	0.106 0.277	0.649 0.470	— 33.0	B = 96.5 %	
1-6	9	6D	16.8 617.2	CL	2.73	23 10	97 56	11.8 10.2	140.9 146.7	126.1 133.1	91 100	CAU	2.9	16.008	1.899	3.07 5.29	2 0.71	16.1 3.98	7.921 6.413	16.248 12.316	2.898 3.173	0.010 0.481	0.475 0.401	— 31.4	B = 96.6 %	

DESCRIPTIONS OF MATERIALS TESTED

1-1	CL, mottled brown and gray, m to f sandy, sp silty CLAY, to f. gravel to c. sand
1-2	CL, mottled brown, gray, and orange-brown, f. sandy, mp. silty CLAY, some f. gravel to m. sand
1-3	CL, gray-brown, m to f sandy, mp. silty CLAY, to f. gravel to c. sand
1-4	CL, mottled brown and gray, m to f sandy, sp to mp. silty CLAY, to f. gravel to c. sand
1-5	CL, gray-brown, m to f sandy, sp. silty CLAY, to f. gravel to c. sand
1-6	CL, brown, m to f sandy, sp to mp. silty CLAY, to f. gravel to c. sand

STRENGTH ENVELOPE SUMMARY

Test Series	$\bar{\phi}$ degree	\bar{c} kip/ft ²	$\bar{\alpha}$ degree	\bar{a} kip/ft ²	Correlation Coefficient
1	31.3	0.15	27.5	0.13	0.9994

MIDLAND PLANT UNITS 1 and 2

CONSUMERS POWER CO.

CALL-TRIAXIAL TEST SERIES

DIESEL GENERATOR BUILDING

COHESIVE FILL

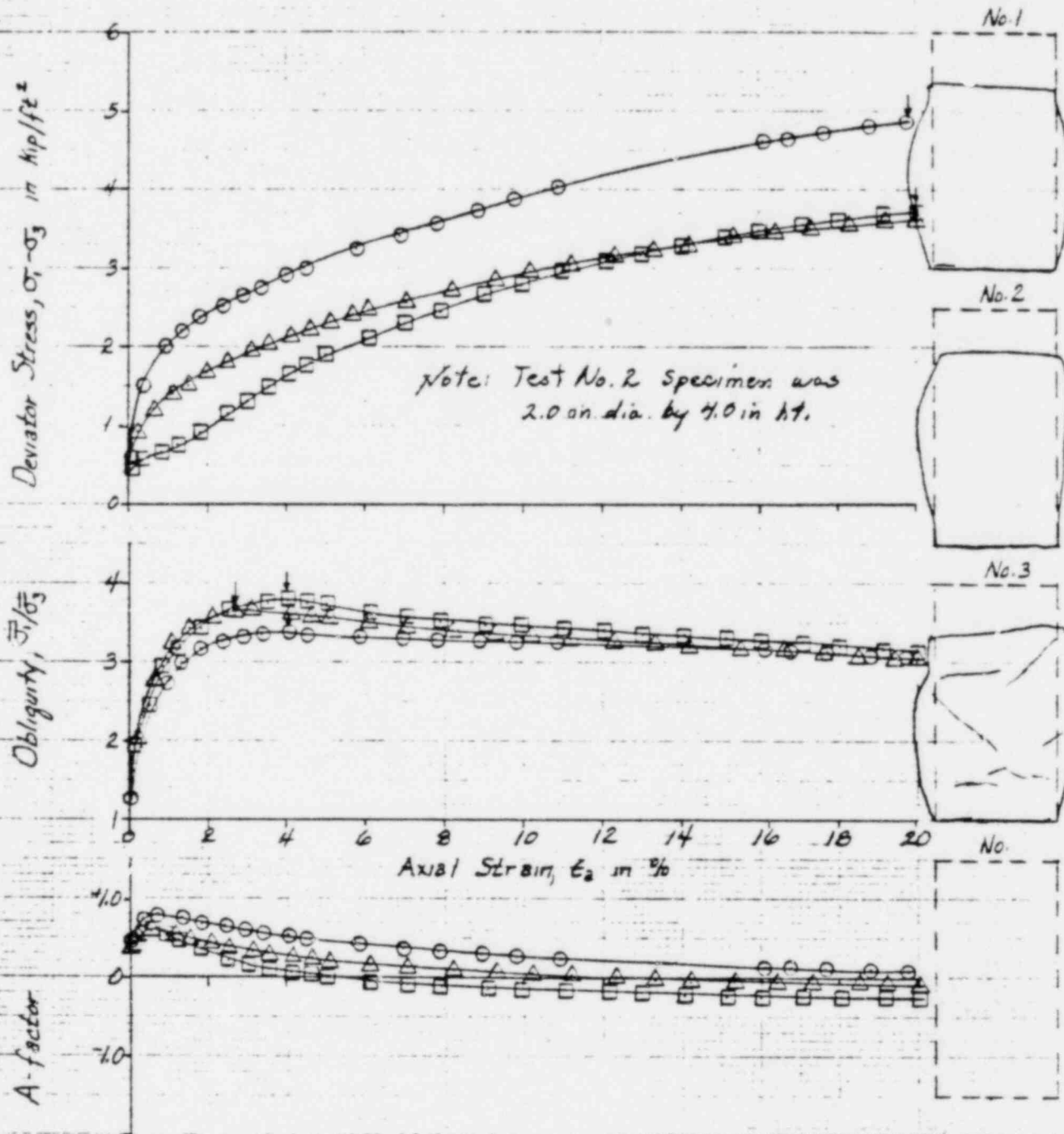
Table D-2

Reviewed by RST Checked by JWS
30 June 1981

BIC405573 Drawn by RST

Specimens: 2.9 in. dia. by 6.0 in. ht. with top, bottom, and radial (filter strips) drainage boundaries

Test No.	Symbol	Flowing No.	Sample No.	Elev. ft.	USCS Symbol	w_p %	w_c %	γ_{d0} lb/ft ³	γ_{dc} lb/ft ³	\bar{c}_{vc} kip/ft ²	K_c	B-factor	$\dot{\epsilon}$ %/hr	t_c days
1	□	13L	1-C	624.9	CL	10.7	11.2	128.9	130.6	0.69	0.994	96.0	0.67	1
2	△	13A	2-B	620.5	CL	10.3	10.8	128.9	131.7	1.379	0.966	96.6	0.68	1
3	○	13A	1-B	622.8	CL	10.7	10.5	129.0	132.6	2.724	0.989	99.7	0.65	1



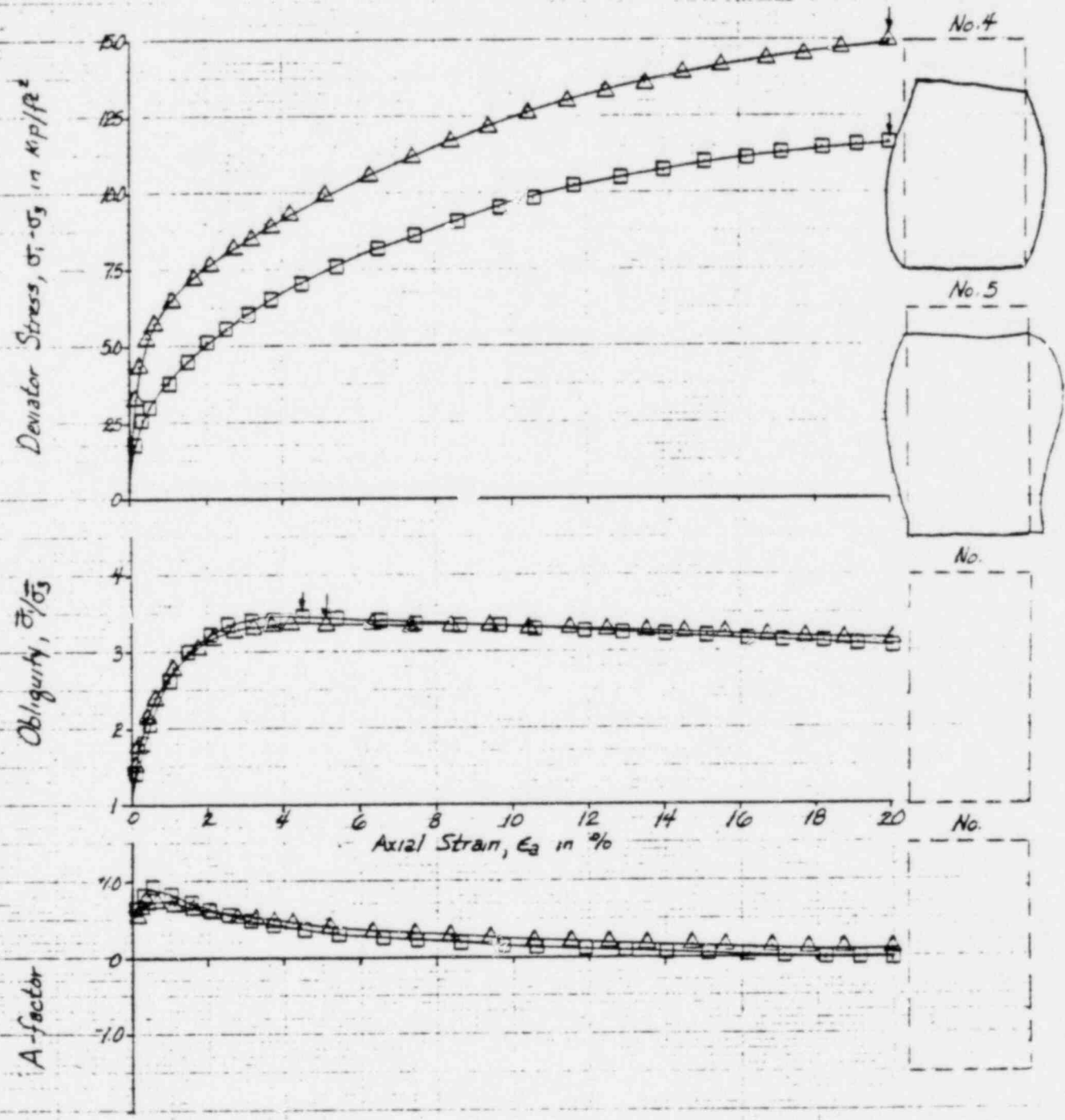
MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CTU - TRIAXIAL TEST SERIES - STRESS/STRAIN CHARACTERISTICS
AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

Reviewed by ROR Directed by JWS
30 June 1981

Drawn by JEF
BIC405573

Specimens: 2.9 in. dia. by 6.0 in. ht. with top, bottom, and radial (filler strips) drainage boundaries

Test No.	Symbol	Boring No.	Sample No.	Elev. ft.	USCS Symbol	w, %	w _c , %	I _p , lb/ft ³	I _c , lb/ft ³	$\bar{\sigma}_{vc}$, kip/ft ²	K _c	E-factor	$\dot{\epsilon}$, %/hr	t _c , days
4	□	11A	4-C	618.8	CL	10.5	10.4	125.6	132.9	5.438	0.937	97.6	0.67	1
5	△	15B	3-C	619.4	CL	10.0	9.3	131.9	135.7	8.183	0.996	97.1	0.72	1



MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CIU-TRIAXIAL TEST SERIES - STRESS/STRAIN CHARACTERISTICS
AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

3, June 1981

Test No.	Test Symbol	Boring No. COE -	Sample No.	Elev. ft.	$\bar{\sigma}_{v3}$ kip/ft ²
----------	-------------	------------------	------------	-----------	---

1 □
2 △
3 ○

13B
13A
13A

1-C
2-B
1-B

624.9
620.5
622.8

0.690
1.375
2.729

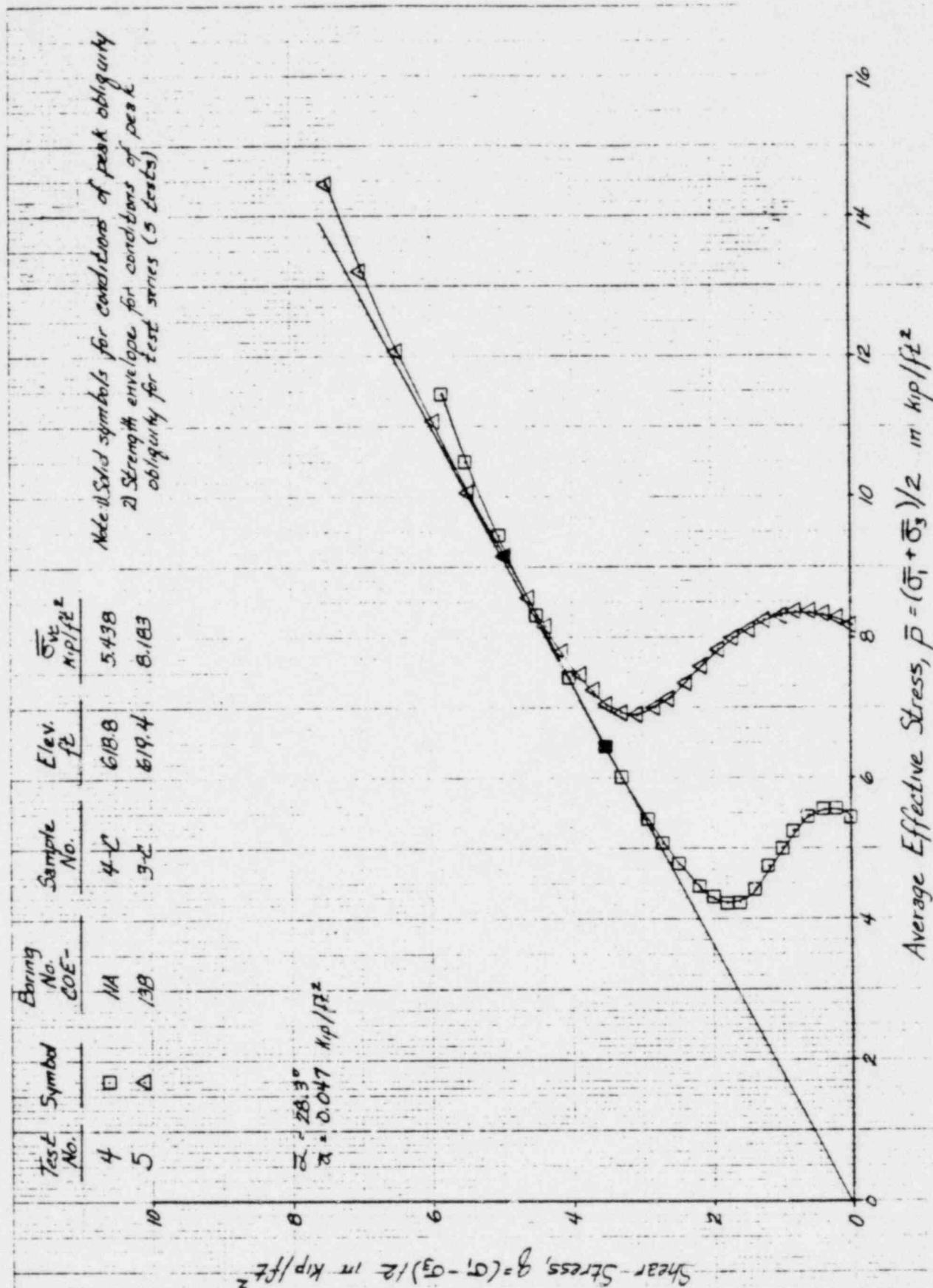
Note: 1) Solid symbols for conditions of peak obliquity
2) Strength envelope for conditions of peak obliquity for test series (5 tests)

Shear Stress, $\bar{\sigma} = (\sigma_1 - \sigma_3)/2$ in kip/ft²

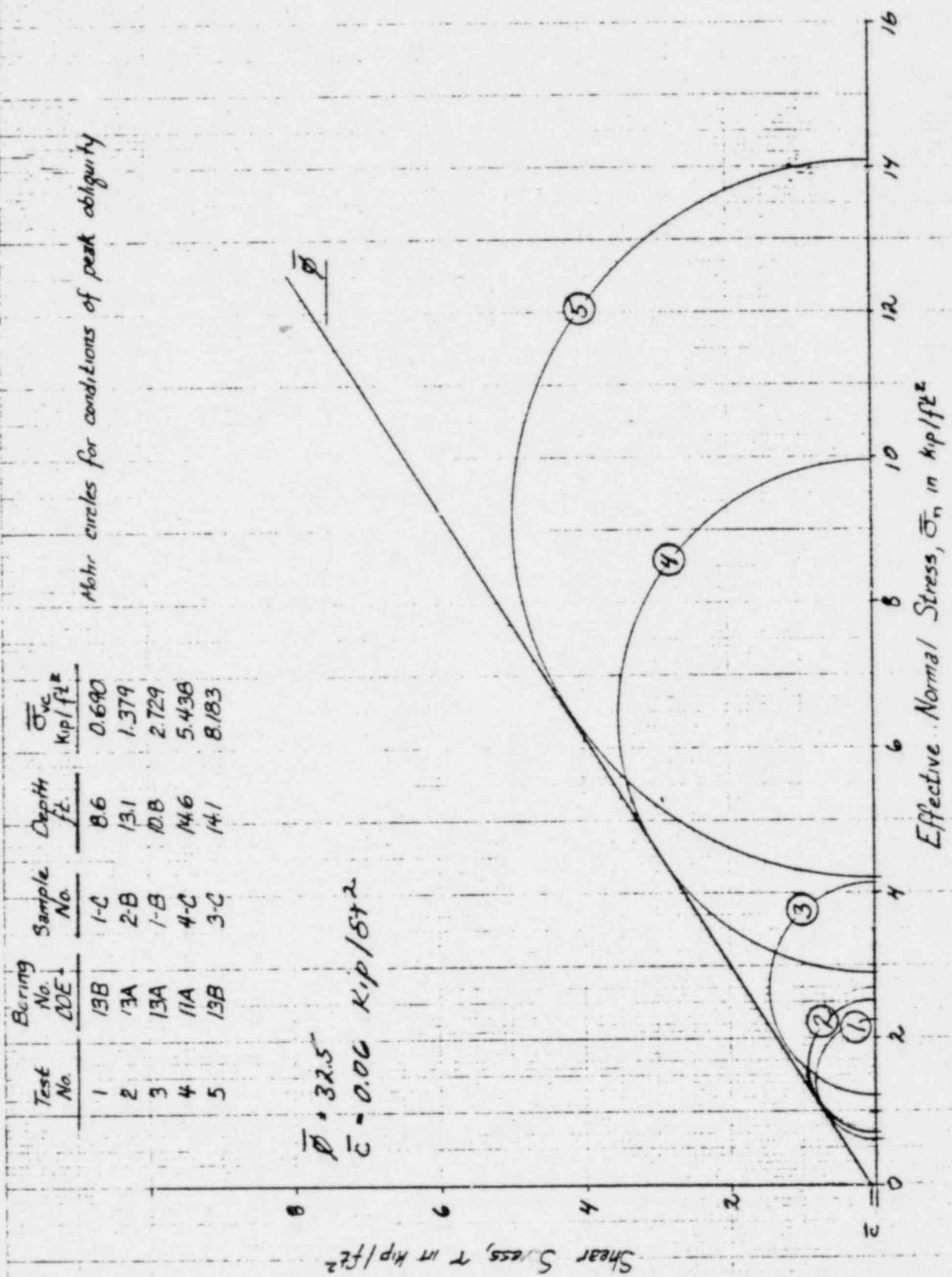
$\bar{\alpha} = 28.3^\circ$
 $\bar{q} = 0.047$ kip/ft²

Average Effective Stress, $\bar{p} = (\sigma_1 + \sigma_3)/2$ in kip/ft²

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CTU - TRIAXIAL TEST SERIES - STRESS PATHS
AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL



MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CTU - TRIAXIAL TEST SERIES - STRESS PATHS
AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL



MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
 CTU - TRIAXIAL TEST SERIES - STRENGTH ENVELOPE
 AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

Fig. D-1c

BIC405573

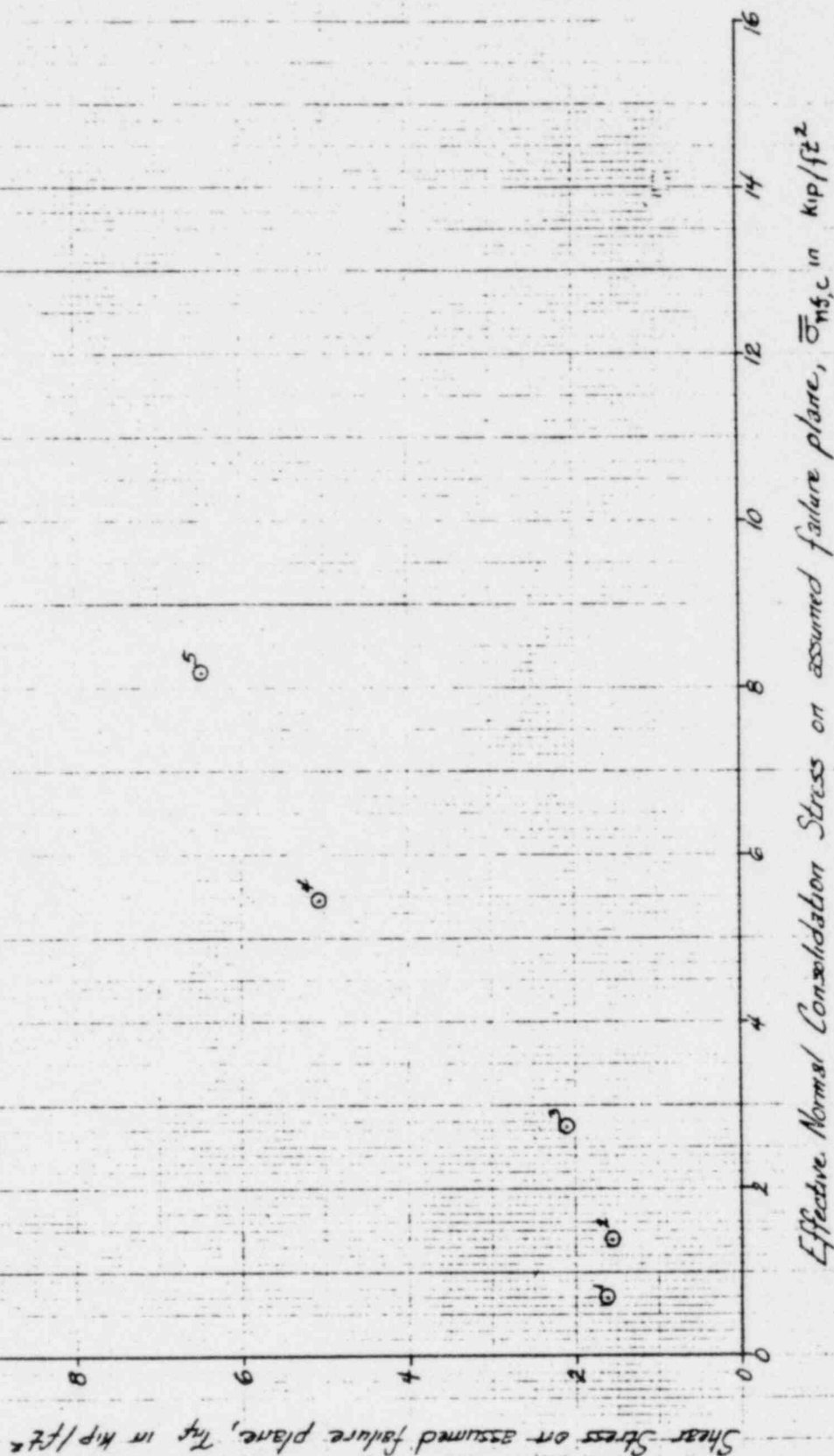
Drawn by THF

Reviewed by R.A. checked by JWS
30 June 1981

Test No.	Boring No. COE -	Sample No.	Depth ft.	$\bar{\sigma}_{vc}$ kip/ft ²
1	13B	1-C	8.6	0.690
2	13A	2-B	13.1	1.379
3	13A	1-B	10.8	2.729
4	11A	4-C	14.6	5.438
5	13B	3-C	14.1	8.183

Note: Data for conditions of peak deviator stress or deviator stress at 20% strain

: Assumed failure plane = 45° , $\bar{\sigma}/2 = 60^\circ$

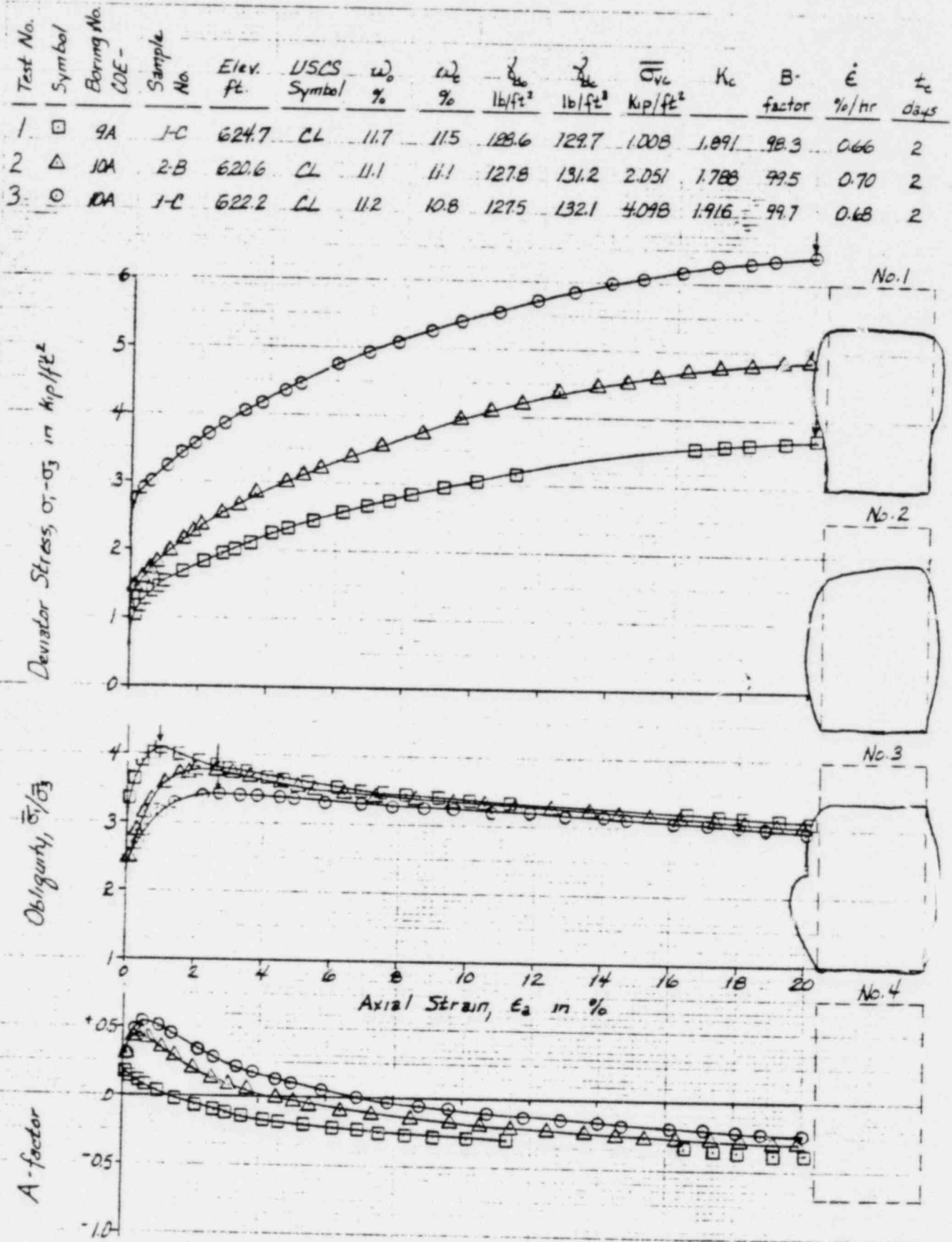


MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CTU-TRIAXIAL TEST SERIES-UNDRAINED STRENGTH
AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

Fig. D-1d

B/C 405573 Drawn by THF
 Reviewed by JWS
 Checked by JWS
 30 June 81

Specimens: 2.9 in. dia. by 6.0 in. ht. with top, bottom, and radial (filter strips) drainage boundaries



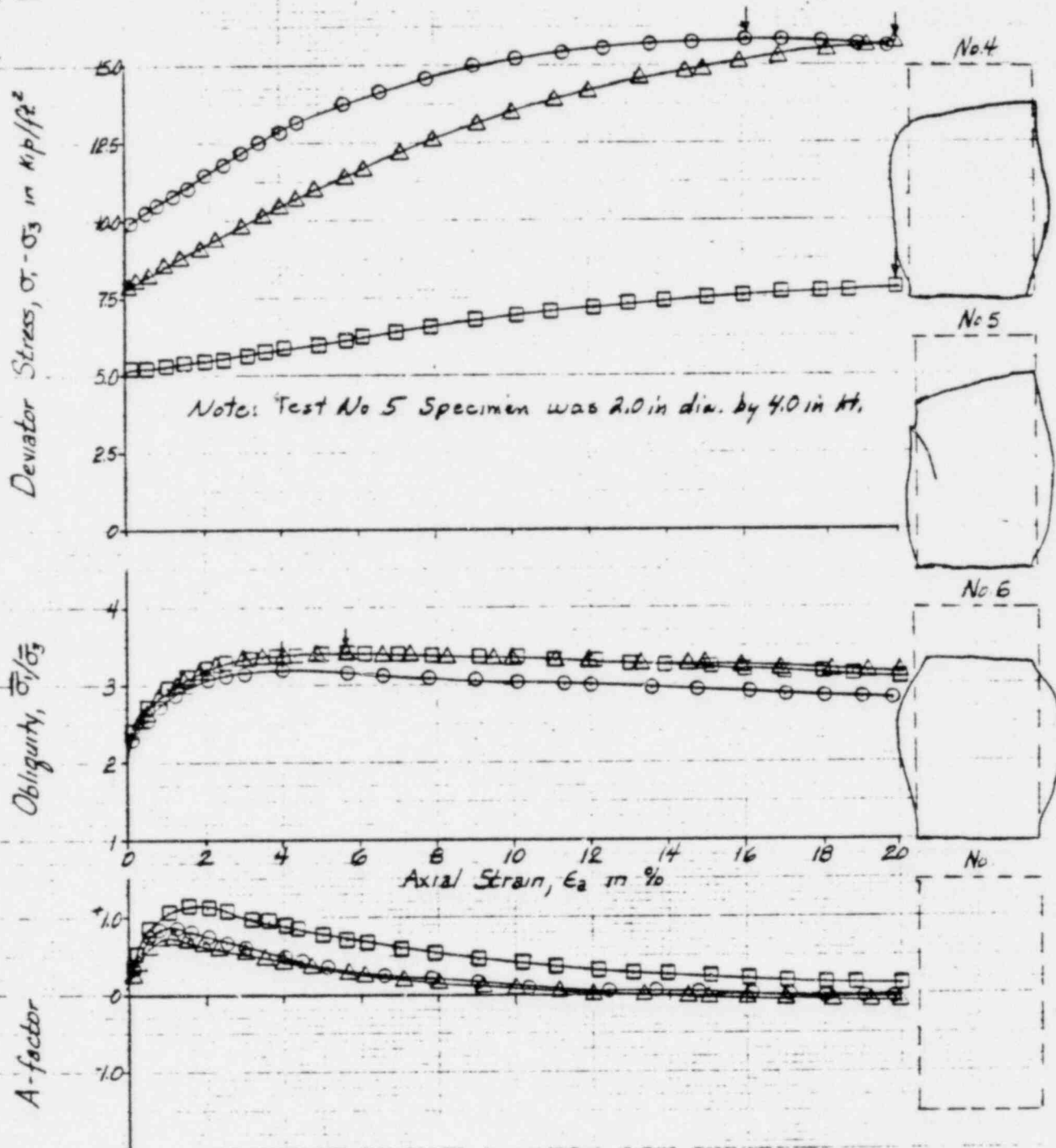
MIDLAND PLANT UNITS 1 and 2- CONSUMERS POWER CO.
 CAU - TRIAXIAL TEST SERIES - STRESS/STRAIN CHARACTERISTICS
 AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

Reviewed by ROL Checked by JWS
30 June 61

B/C40573 Drawn by PRF

Specimens: 2.9 in. dia. by 6.0 in. ht. with top, bottom, and radial (filter strips) drainage boundaries

Test No.	Symbol	Boring No.	Sample No.	Elev. ft.	USCS Symbol	w_0 %	w_c %	γ_d lb/ft ³	γ_{dc} lb/ft ³	$\bar{\sigma}_{vc}$ kip/ft ²	K_c	B-factor	$\dot{\epsilon}$ %/hr	t_c days
4	□	12A	3-B	621.9	CL	12.2	11.0	123.9	132.2	8.038	1.912	95.5	0.41	2
5	△	9A	4-B	619.8	CL	11.1	10.0	127.3	134.3	12.126	1.917	96.5	0.72	2
6	○	9	6-D	617.2	CL	11.8	10.2	126.1	133.1	16.008	1.899	96.6	0.71	2

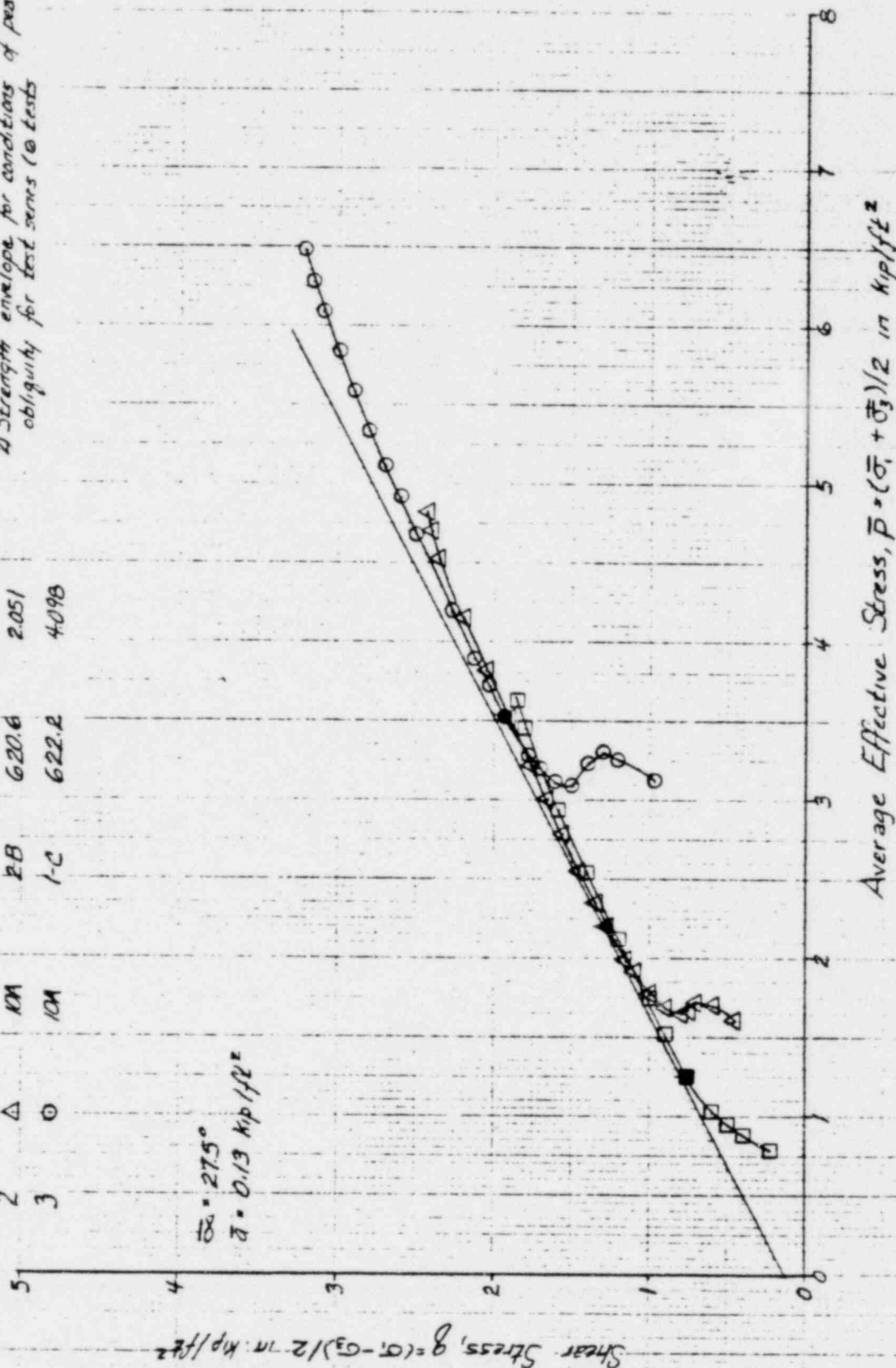


MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CAU-TRIAXIAL TEST SERIES - STRESS/STRAIN CHARACTERISTICS
AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

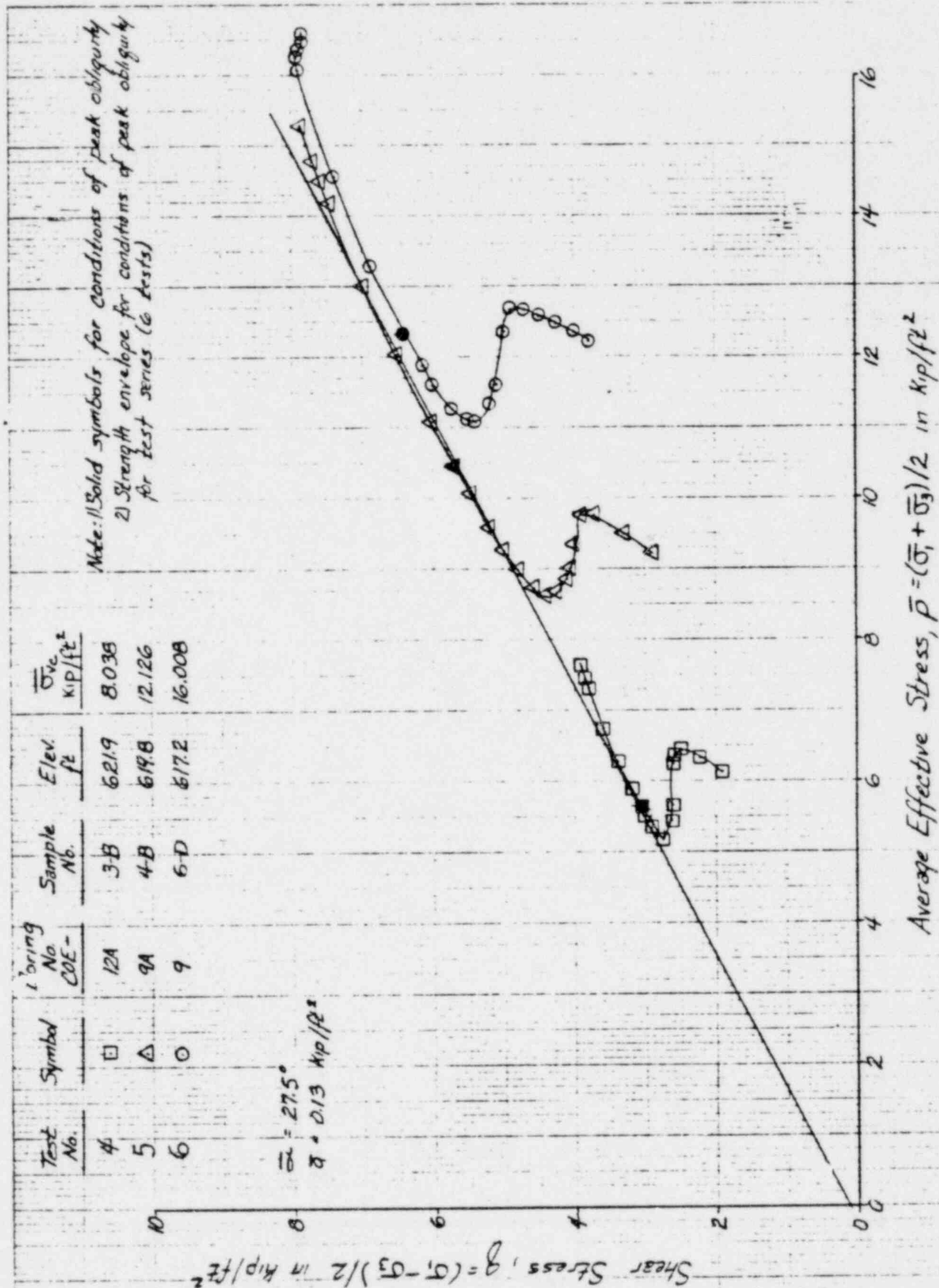
30 June 81

Test No.	Symbol	Boring No. COE -	Sample No.	Elev. ft.	$\bar{\sigma}_{vc}$ kip/ft ²
1	□	9A	1-C	624.7	1.008
2	△	10A	2B	620.6	2.051
3	○	10A	1-C	622.2	4.098

Note: 1) Solid symbols for conditions of peak obliquity
2) Strength envelope for conditions of peak obliquity for test series 1 & 2 tests



MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CAU - TRIAXIAL TEST SERIES - STRESS PATHS
AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

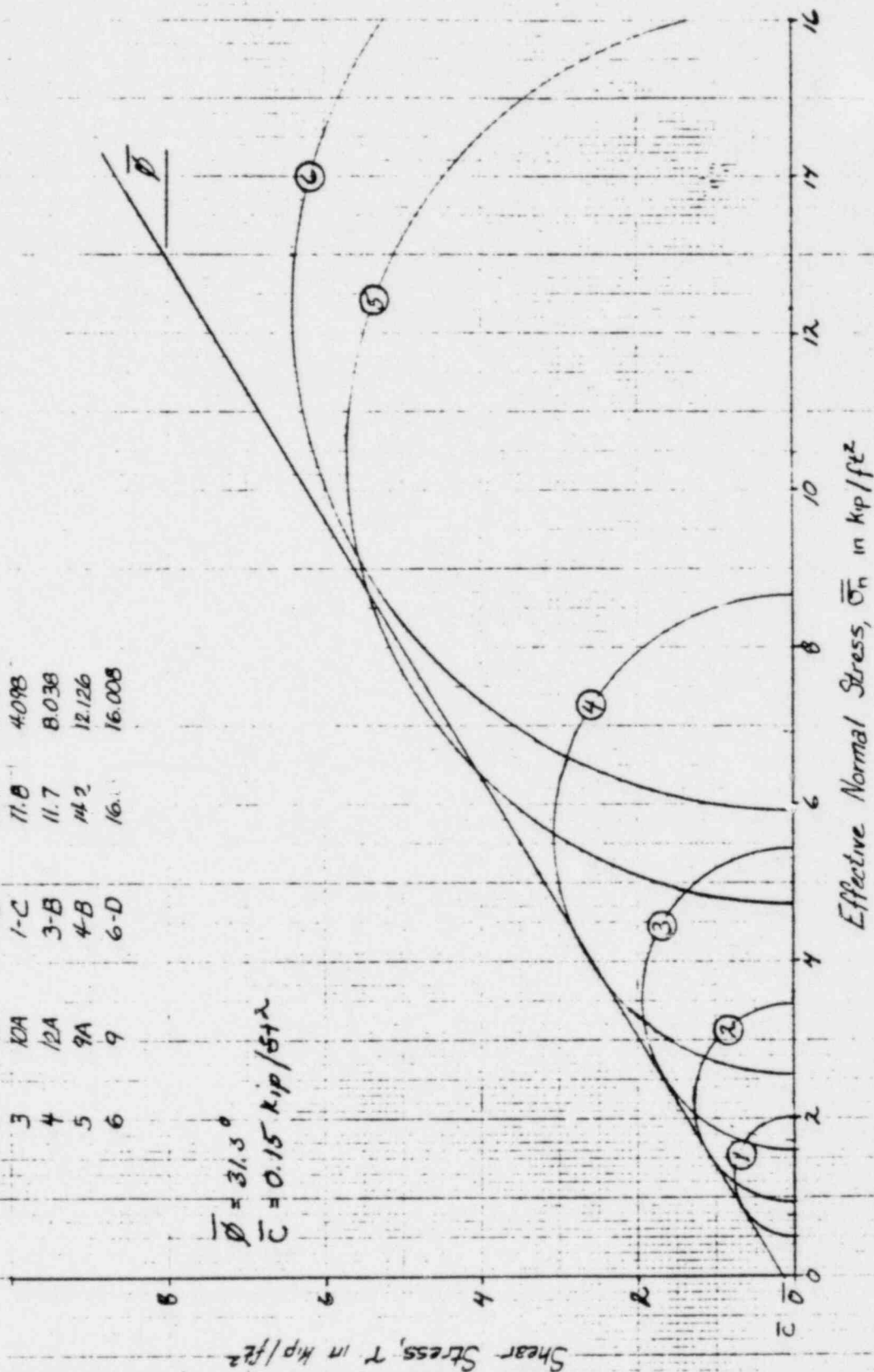


MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
 CAU - TRIAXIAL TEST SERIES - STRESS PATHS
 AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

30 June 81

Test No.	Boring No. COE-	Sample No.	Depth ft.	$\bar{\sigma}_{vc}$ kip/ft ²
1	9A	1-C	9.3	1.008
2	10A	2-B	13.4	2.051
3	10A	1-C	11.0	4.098
4	12A	3-B	11.7	8.038
5	9A	4-B	14.2	12.126
6	9	6-D	16.1	16.008

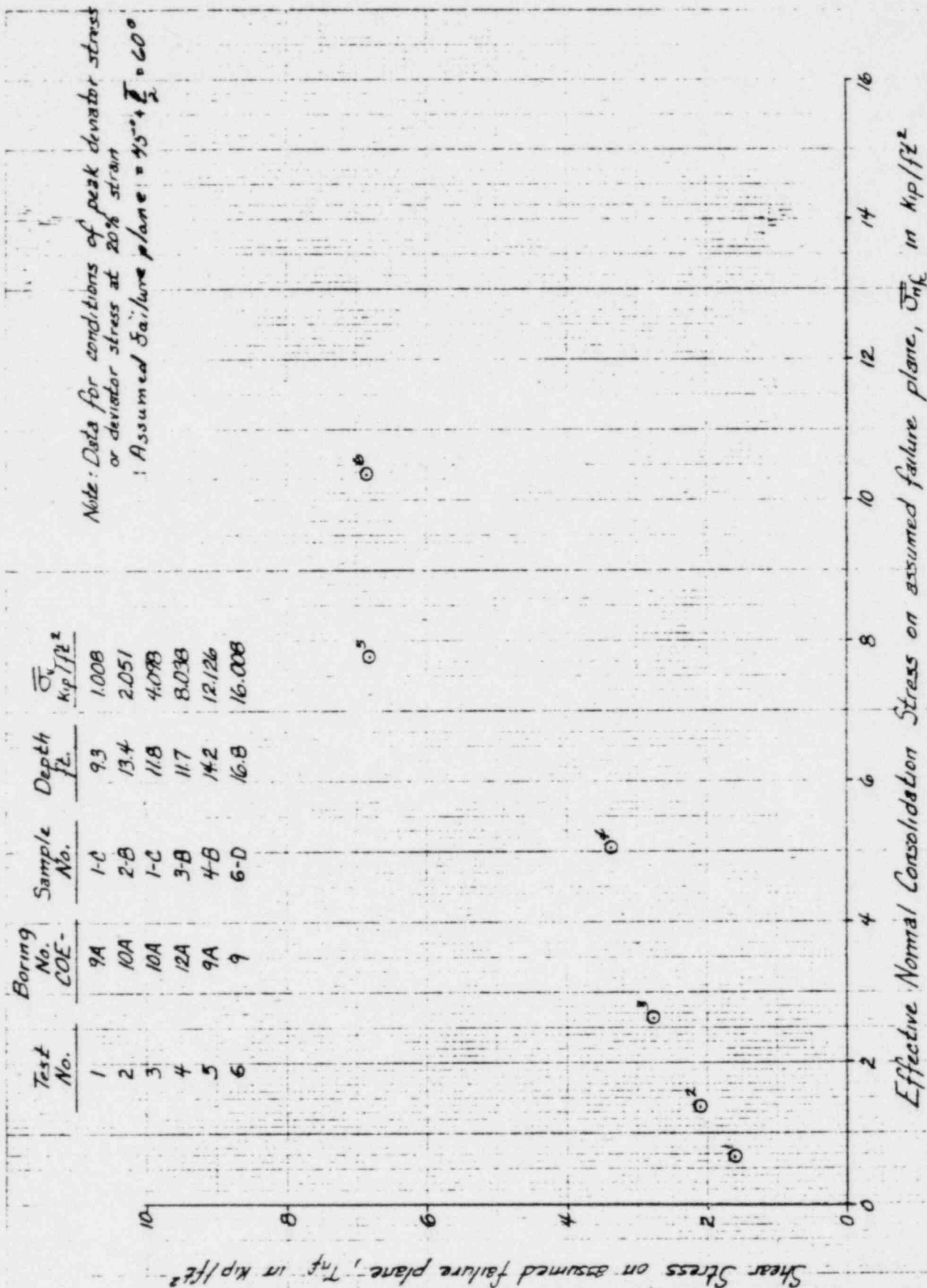
Mohr circles for conditions of peak obliquity



MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
 CAU - TRIAXIAL TEST SERIES - STRENGTH ENVELOPE
 AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

Fig. D-2 c

30 June 1961



MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
 CAU - TRIAXIAL TEST SERIES - UNDRAINED STRENGTH
 AREA: DIESEL GENERATOR BUILDING - COHESIVE FILL

Fig. D-2d

APPENDIX E
Consolidation Test Results

8C4055T3 (61C217)

Prepared by AE,

Reviewed by REL

Checked by JLW 07/06/81

Boring No.	Sample/ Section No.	Depth Elev. ft.	% Passing Sieve No.	$\frac{w_L}{PI}$ %	$\frac{w_L}{e_0}$ %	$\frac{\delta_h}{\delta_{h0}}$ lb/ft ²	$\frac{G_s}{S_0}$ %	Compression Ratios $\Delta e_v / \Delta \sigma_v$			DESCRIPTION OF MATERIAL TESTED and REMARKS
								CR ⁽¹⁾ by w_L	CR ⁽²⁾ for loading 64-128	RR for relaxing 4-32	
9	3B	9.0 625.0	70	21 9	13.7 0.440	135.9 119.5	2.762 86.1	0.069	0.061	0.006	CL, brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand
9	4A	11.0 623.0	55	20 8	12.3 0.393	137.9 122.8	2.745 85.9	0.065	0.056	0.005	CL, brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand
9	5B	14.0 620.0	57	21 8	11.0 0.357	139.3 125.5	2.732 84.5	0.013	0.052	0.005	CL, brown, f. sandy, s.p. silty CLAY, tr. f. gravel to m. sand
9	6B	16.2 617.8	55	22 8	12.1 0.408	136.6 121.8	2.751 81.9	0.077	0.056	0.006	CL, brown, m. to f. sandy, s.p. silty CLAY, tr. f. gravel to c. sand
9	6C	16.5 617.5	56	20 8	11.7 0.374	139.2 124.5	2.745 86.3	0.066	0.049	0.005	CL, brown, f. sandy s.p. silty CLAY, some f. gravel to m. sand
								88-132	5.4-44	()	indicates these stresses apply

Notes: (1) CR by $w_L = [0.009(w_L - 10)] / (1 + e_0)$

(2) Loading values in kip/ft²

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CONSOLIDATION DATA SUMMARY
DIESEL GENERATOR BUILDING - COHESIVE FILL

Table E-1

81C4055 T3 (81C217)

[illegible]

Notes: (1) CR by ω_L by $\omega_L = [0.009(\omega_L - 10)] / (1 + e_0)$

(2) Loading values in kip/ft²

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CONSOLIDATION DATA SUMMARY

DIESEL GENERATOR BUILDING - COHESIVE FILL Table E-2

81C4055T3 (81C217) Prepared by DPF, Reviewed by RW Checked by JLW 07/06/81

[illegible]

Notes: (1) CR by $\omega_1 = [0.009(\omega_1 - 10)] / 1 + e_0$
(2) Loading values in $\frac{1}{4}, 1, 10, 100$

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CONSOLIDATION DATA SUMMARY

DIESEL GENERATOR BUILDING - COHESIVE FILL

Table E-3

Checked by JLW 07/06/81

Reviewed by Rhr

Prepared by JFF.

81C4055 T3 (81C217)

) indicates these stresses apply

Notes: (1) CR by $\omega_L = [0.009(\omega_L - 10)] / (1 + e_0)$

(2) Loading values in kip/ft²

DIESEL GENERATOR BUILDING-COHESIVE FILL

Table E-4

81C4055 T3 (81C217)

Prepared by PCF, _____

Reviewed by RSL

Checked by ILW 07/06/81

[illegible]

Notes: (1) CR by $\omega_L = [0.009(\omega_L - 10)] / 1 + e_0$

(2) Loading values in kip/ft²

88-132 5.4-44 : () indicates these stresses apply

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CONSOLIDATION DATA SUMMARY
DIESEL GENERATOR BUILDING-COHESSIVE FILL Table E-6

81C4055 T3 (81C217)

Prepared by PIF, _____

Reviewed by RS

Checked by JLW 07/06/81

[illegible]

Notes: (1) CR by $\omega_L = [0.009(\omega_L - 10)] / 1 + e$.

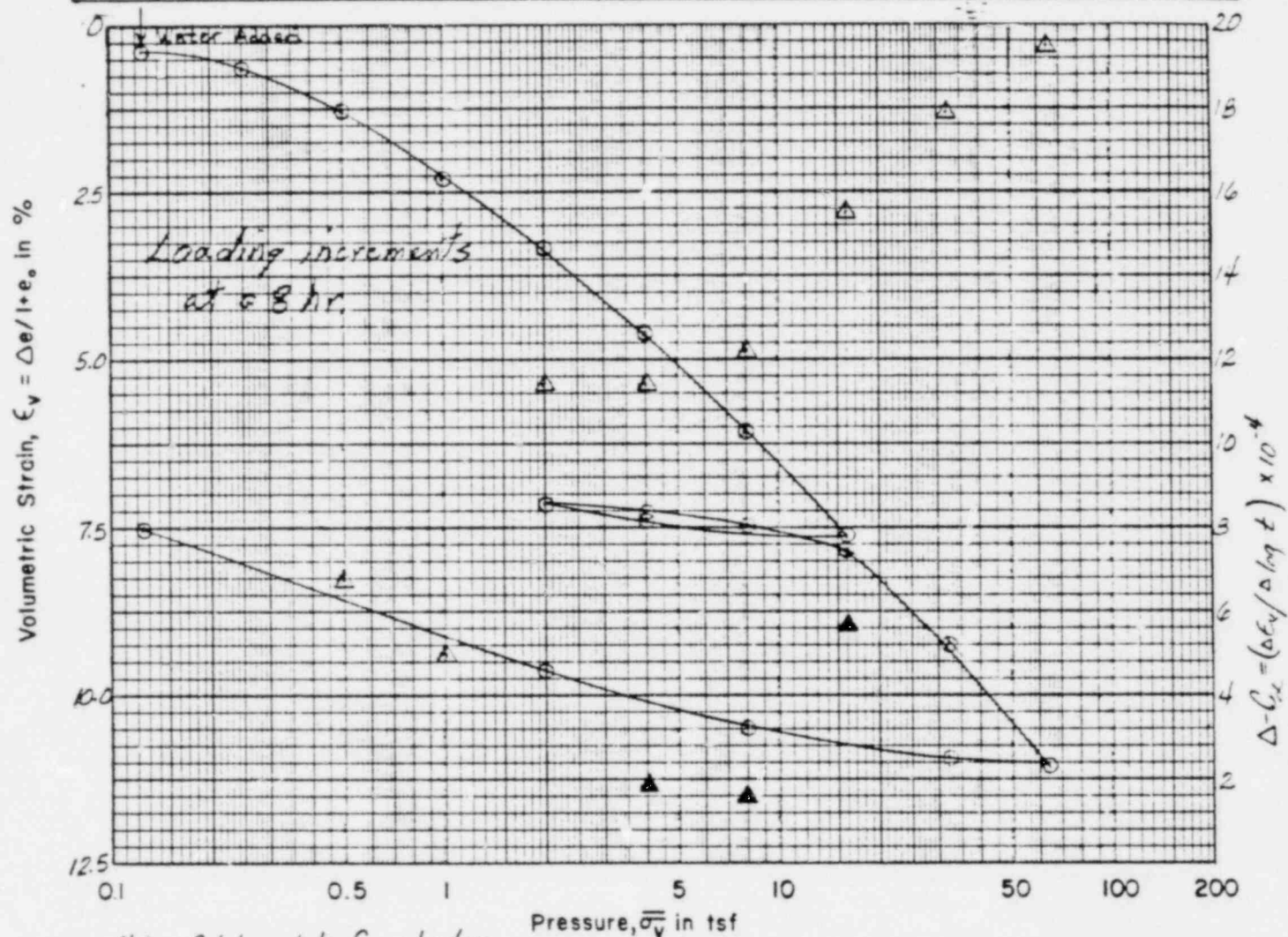
(2) Loading values in kip/ft²

88-132 54-44 : () indicates these stresses apply

MIDLAND PLANT UNITS 1 and 2 - CONSUMERS POWER CO.
CONSOLIDATION DATA SUMMARY
DIESEL GENERATOR BUILDING - COHESIVE FILL
Table E-7

CONSOLIDATION TEST

Boring No: COE-9		Sample No: S-3B				Depth, ft: 9.0			
Material: CL, br. m to f sandy s.p. silty CLAY, trace f. gravel to c. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	13.7	135.9	0.440	86.1	0.615	2.50	2.762	21	12
Final	13.0	142.1	0.369	97.7	0.584				



Note: Solid symbols for reloading

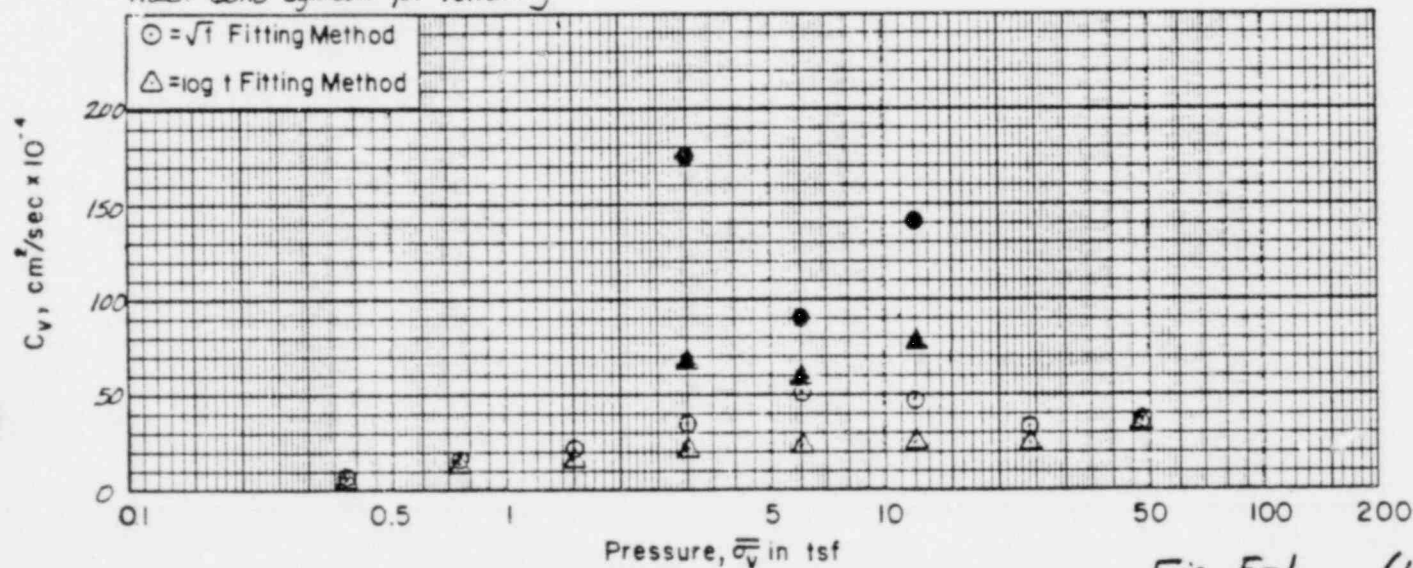


Fig. E-1 (1/5)

CONSOLIDATION TEST

Boring No: COE-9		Sample No: S-4A				Depth, ft: 11.0			
Material: CL, br. m. to f. sandy s.p. silty CLAY, trace s. gravel to c. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	12.3	137.9	0.393	85.9	0.611	2.50	2.745	20	12
Final	10.5	145.3	0.301	95.8	0.571				

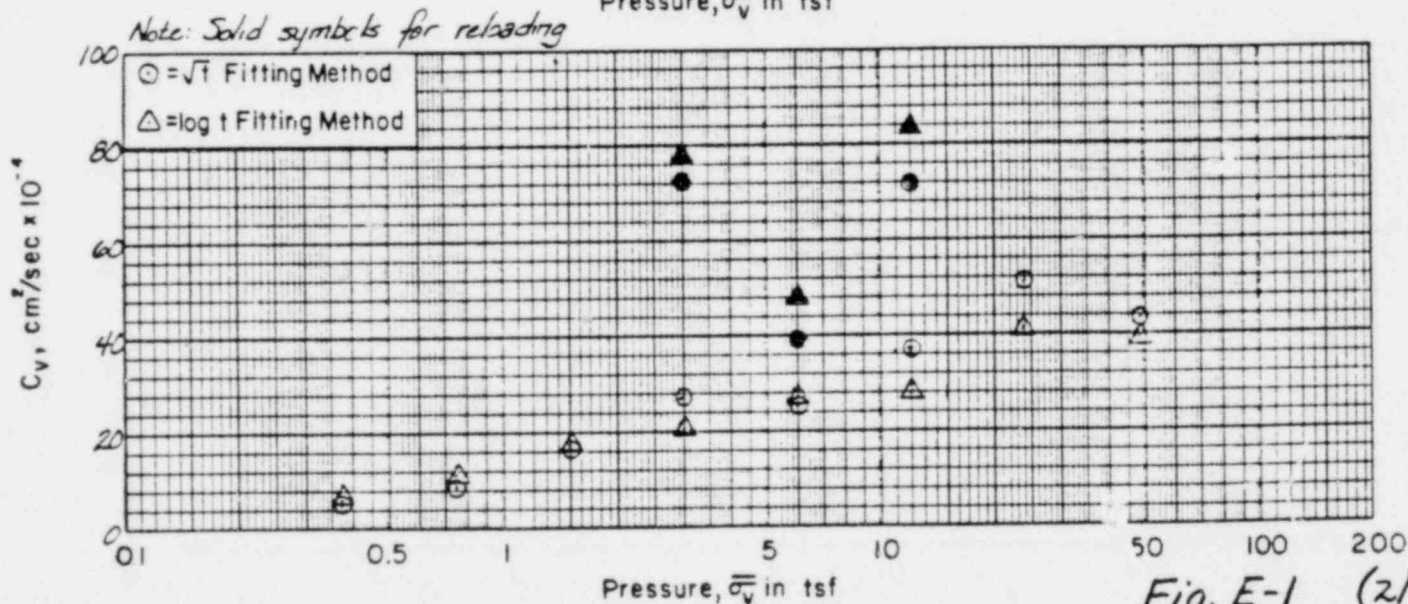
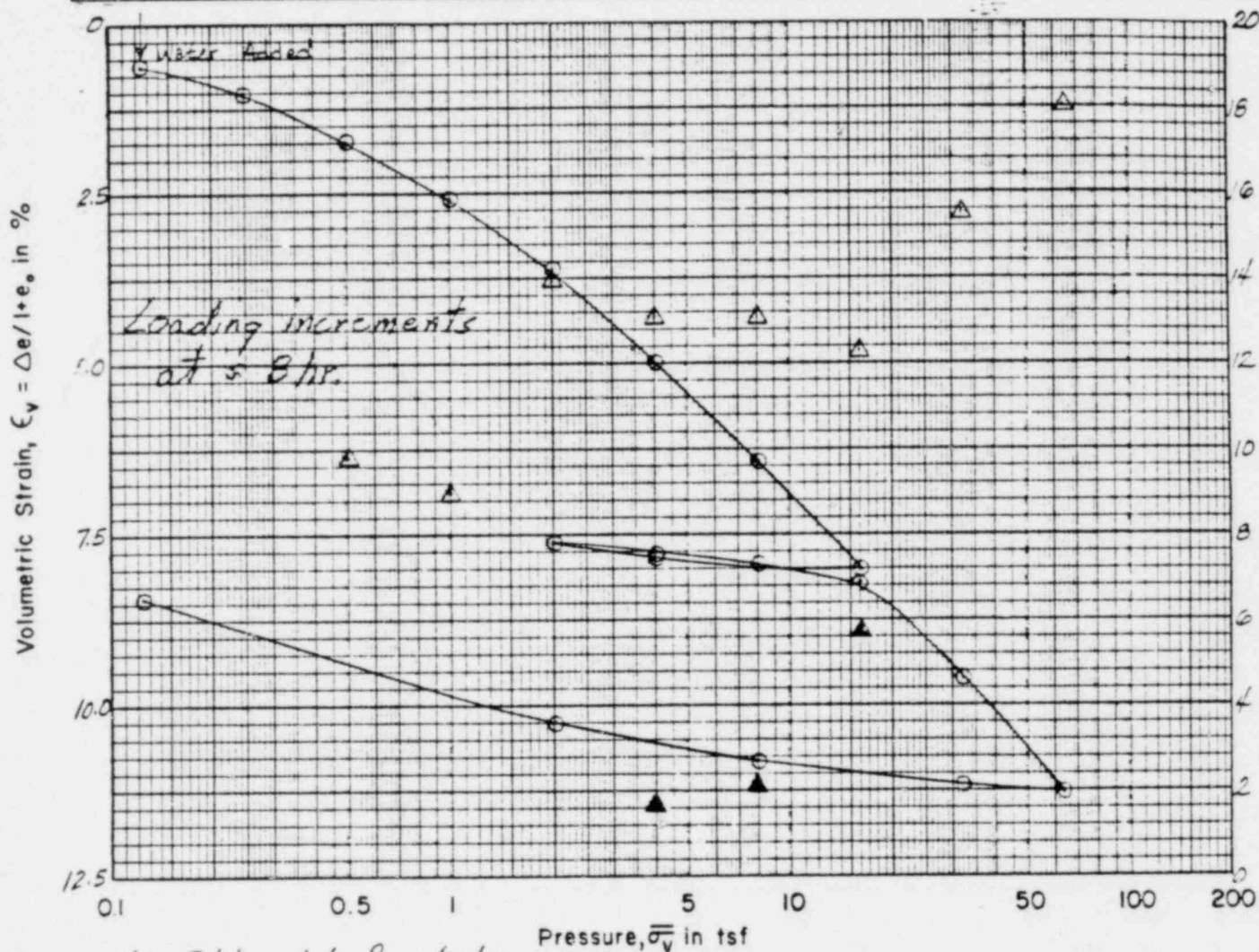


Fig. E-1 (2/5)

06/29/81

405-73

CONSOLIDATION TEST

Boring No: <i>CDE-9</i>		Sample No: <i>S-5B</i>				Depth, ft: <i>14.0</i>			
Material: <i>CL, brown & sandy s.p. silty CLAY, trace & gravel to m. sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>11.0</i>	<i>139.3</i>	<i>0.357</i>	<i>84.5</i>	<i>0.611</i>	<i>2.50</i>	<i>2.732</i>	<i>21</i>	<i>13</i>
Final	<i>10.3</i>	<i>147.0</i>	<i>0.277</i>	<i>101.6</i>	<i>0.575</i>				

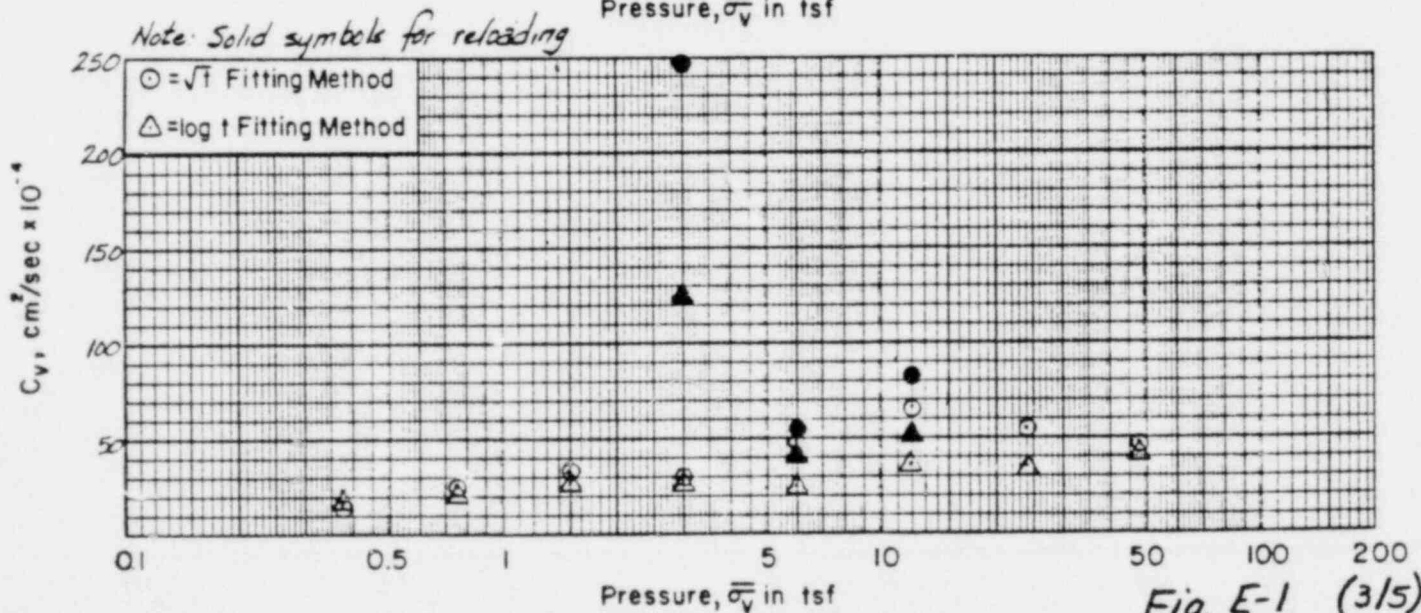
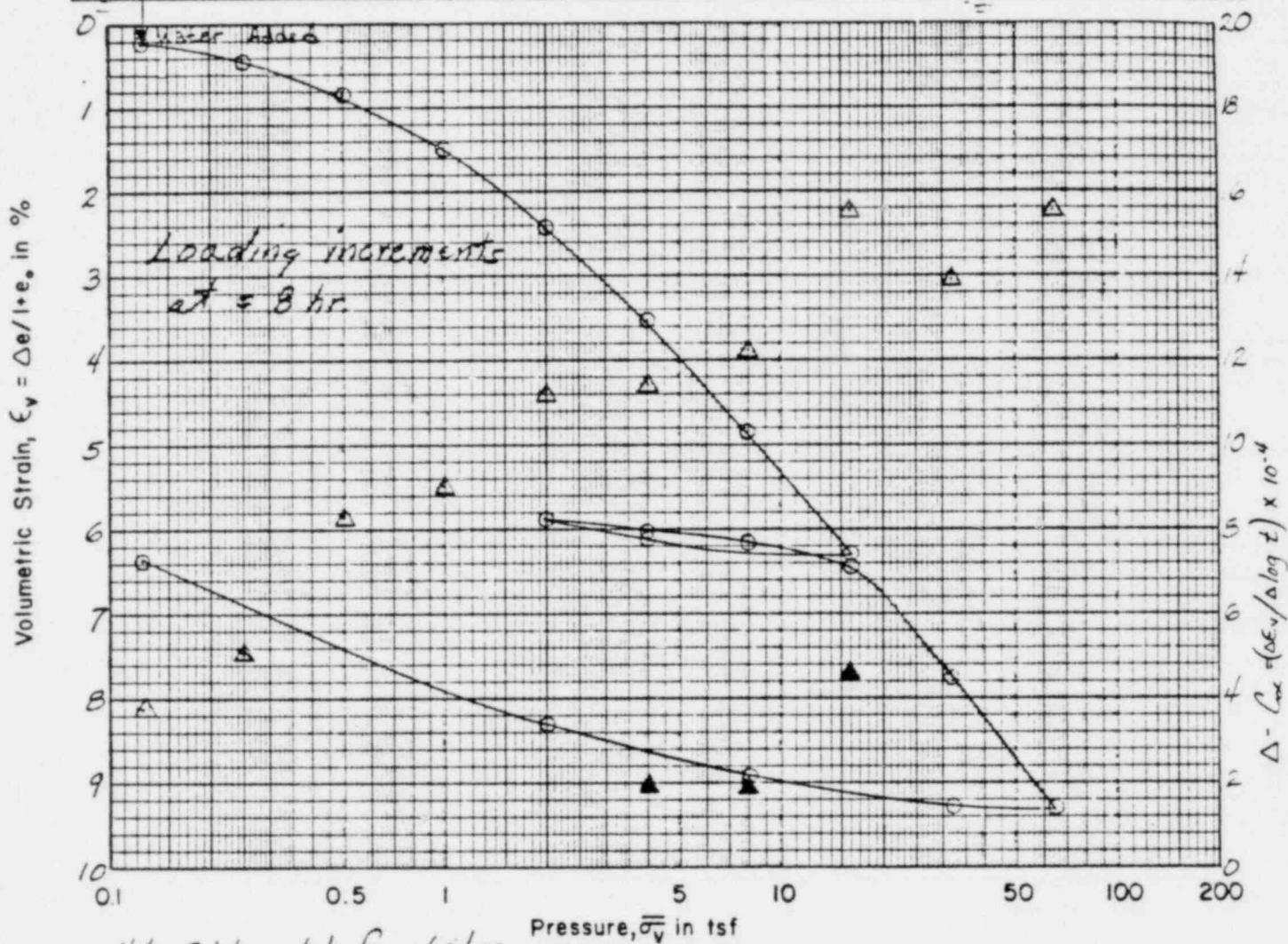


Fig. E-1 (3/5)

CONSOLIDATION TEST

Boring No: COE-9			Sample No: S-6B			Depth, ft: 16.2			
Material: CL, br m to s sandy s.p. silty CLAY, trace s. gravel to c. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	12.1	136.6	0.408	81.9	0.615	2.50	2.751	22	14
Final	10.7	145.7	0.302	97.1	0.569				

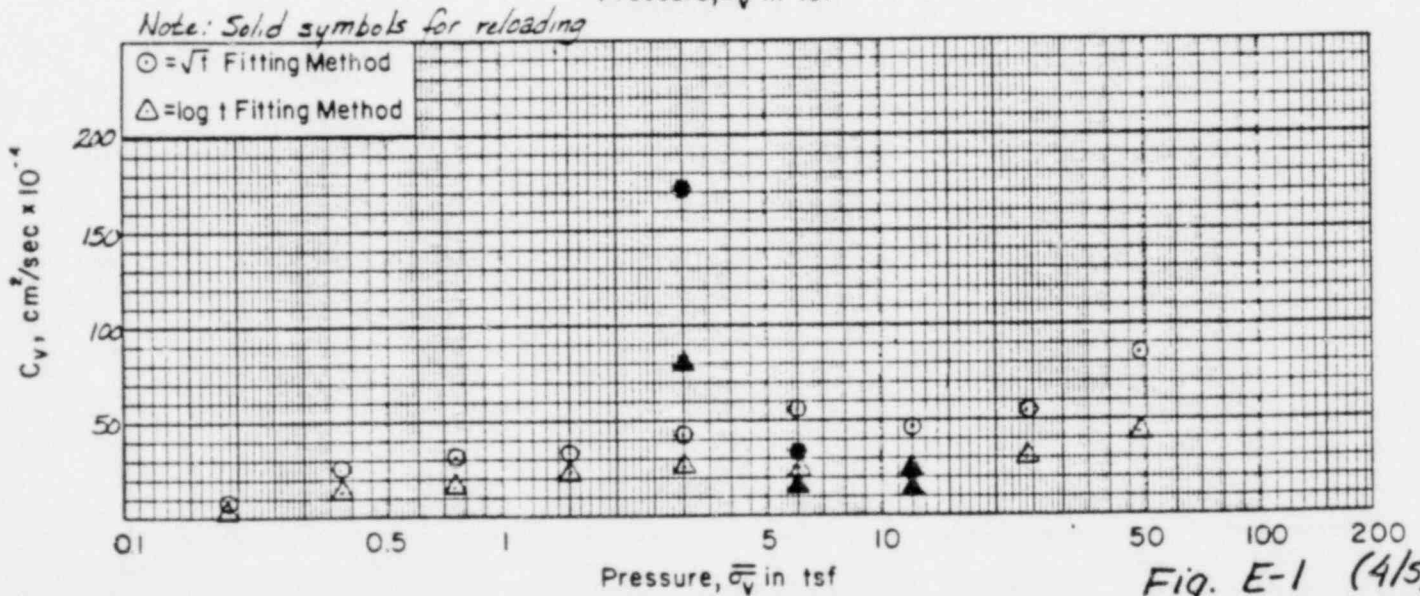
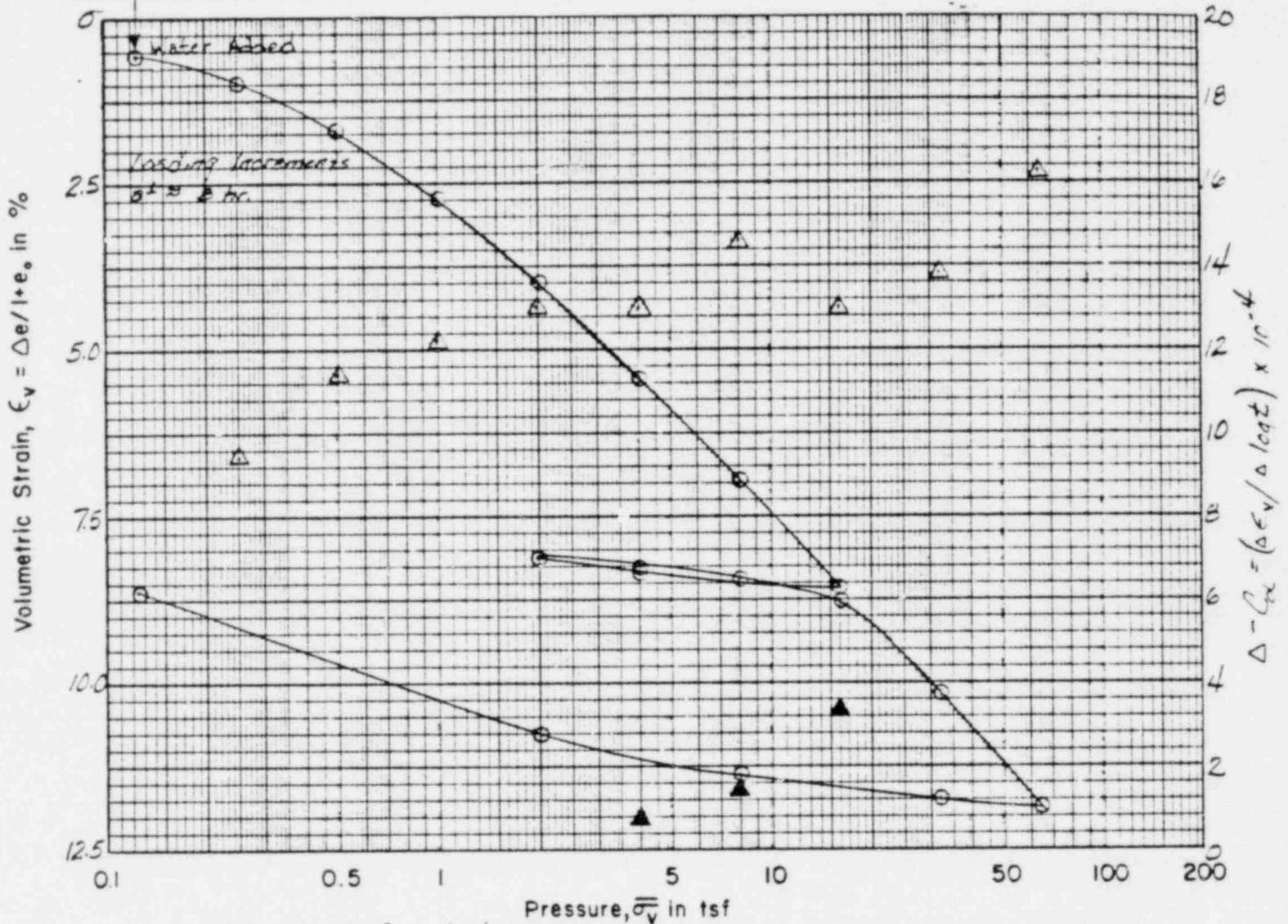
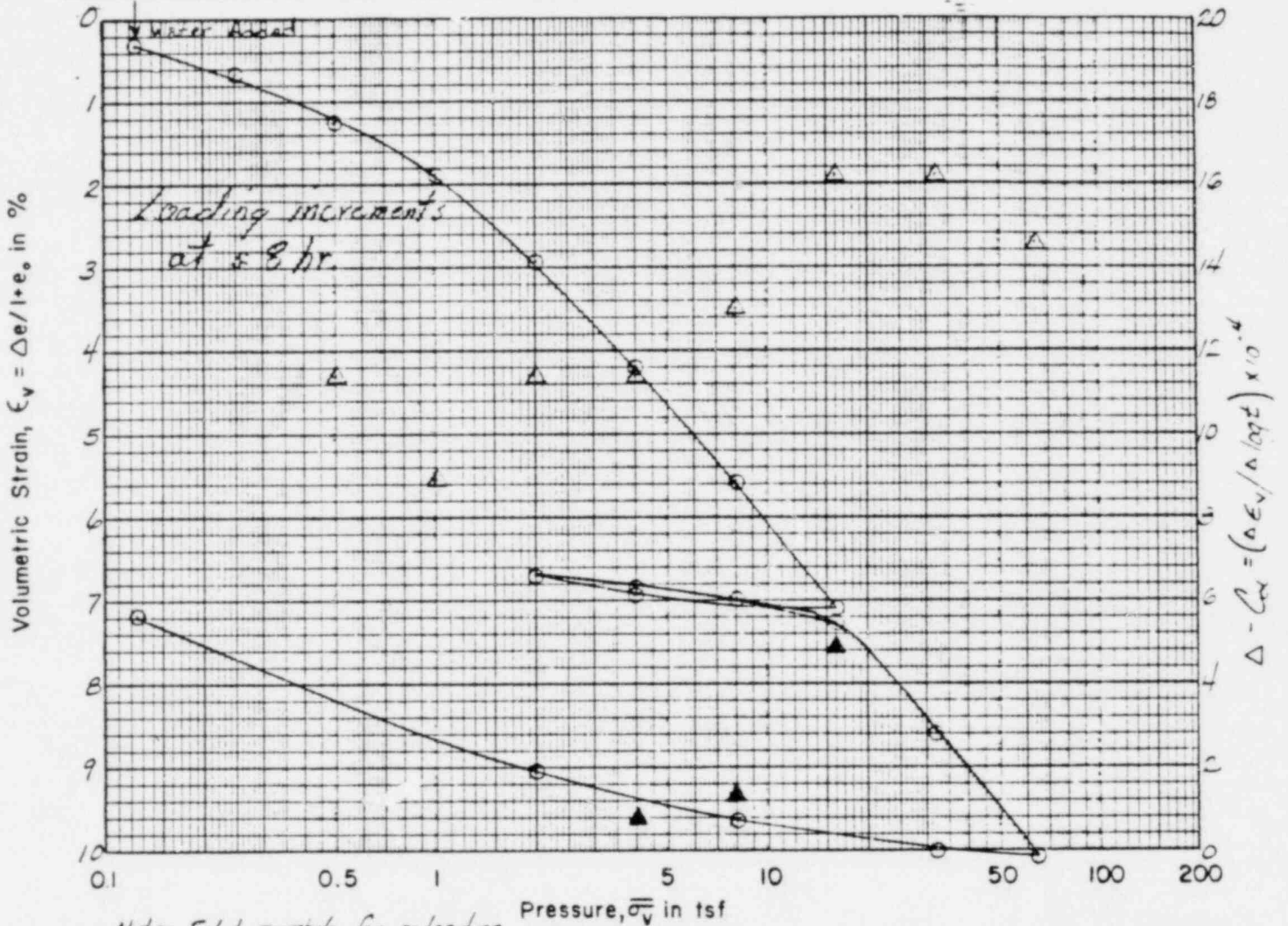


Fig. E-1 (4/5)

CONSOLIDATION TEST

Boring No: COE-9		Sample No: S-6C				Depth, ft: 16.5			
Material: CL, brown & sandy s.p. silty CLAY, some f. gravel to m. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	11.7	139.2	0.374	86.3	0.616	2.50	2.745	20	12
Final	10.4	146.1	0.292	97.3	0.550				



Note: Solid symbols for reloading

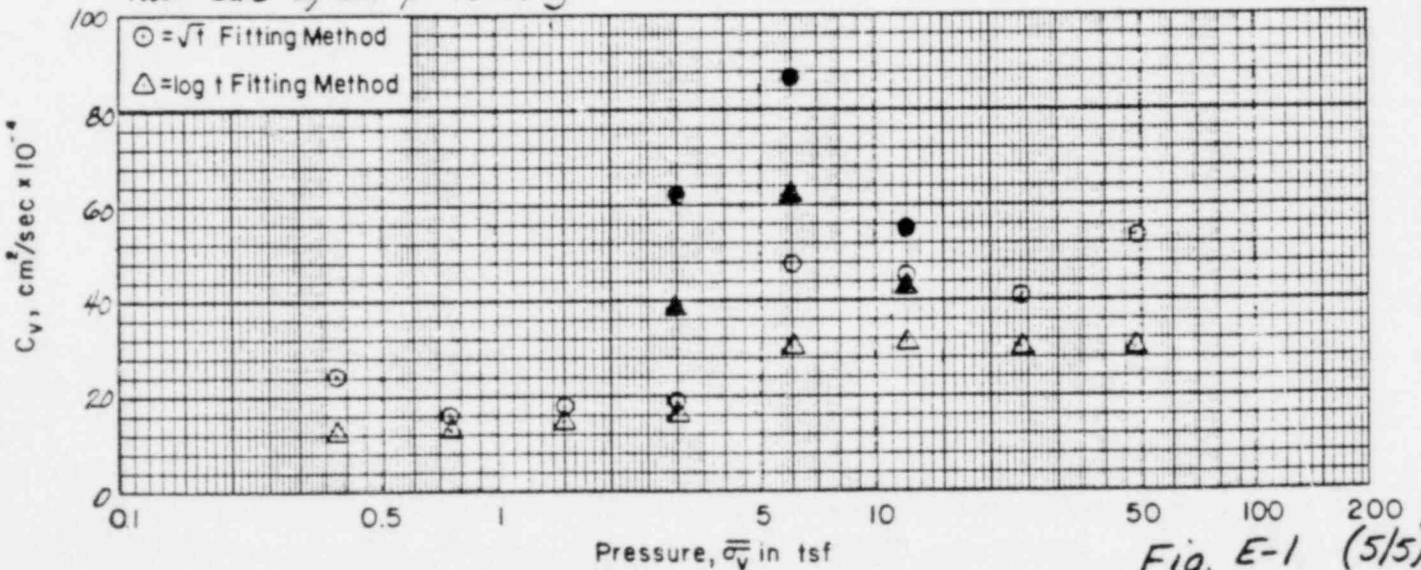
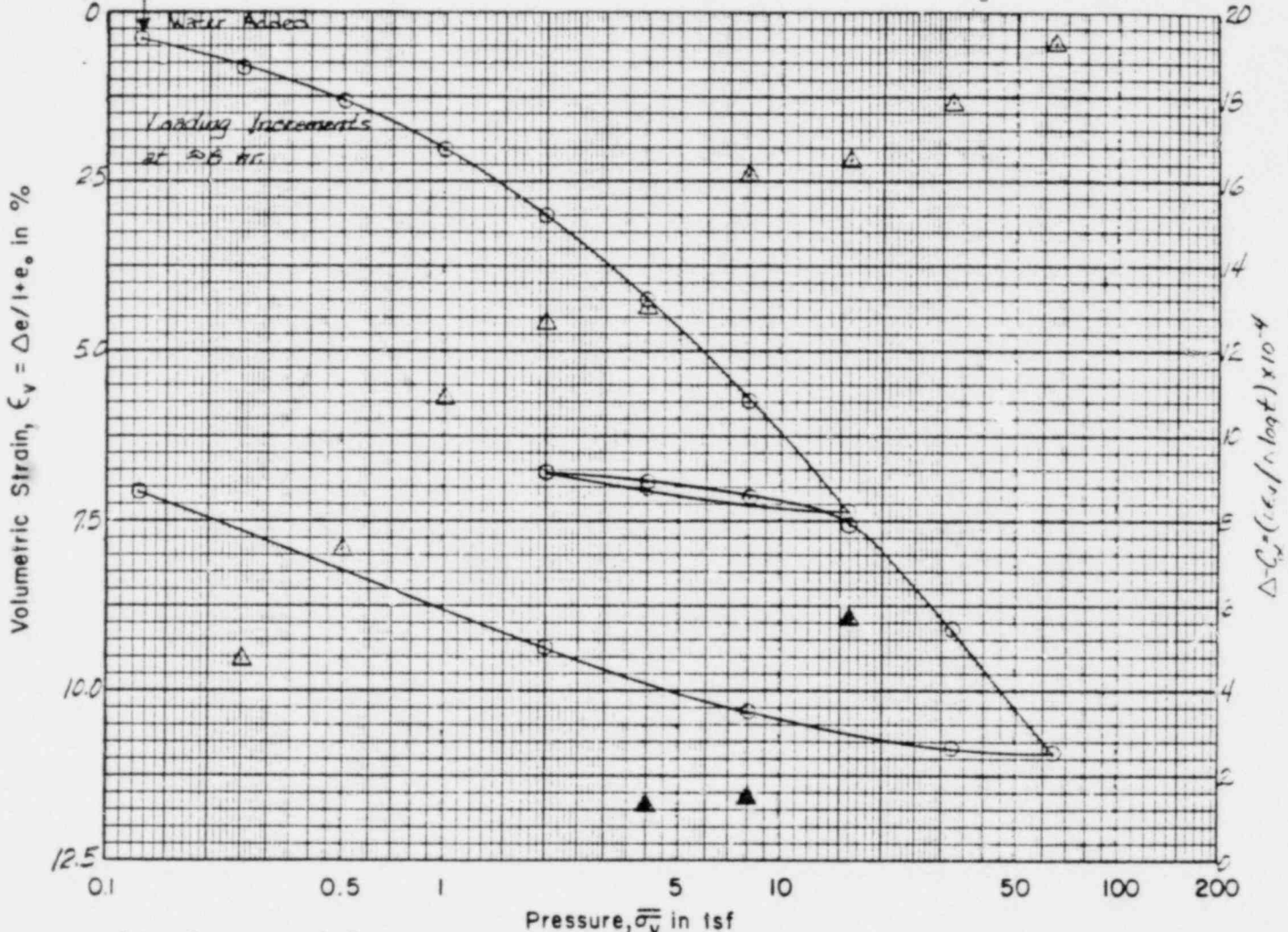


Fig. E-1 (5/5)

CONSOLIDATION TEST

Boring No: COE-9A		Sample No: S-8B				Depth, ft: 19.9			
Material: CL, br. f. sandy m.p. s. H ₂ CLAY, trace S. gravel to m. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	13.8	137.5	0.418	91.0	0.614	2.50	2.748	26	14
Final	12.7	142.9	0.351	99.9	0.585				



Note: Solid symbols for reloading

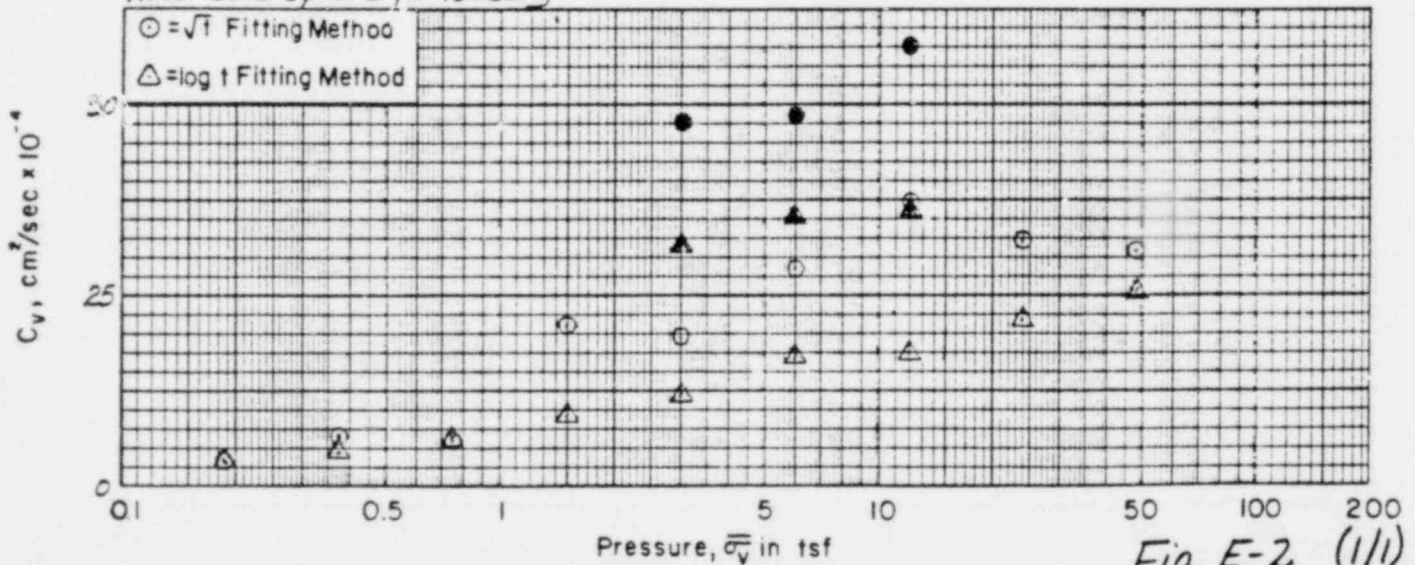


Fig. E-2 (1/1)

B/C 405573 Drawn by T.H. 6/30/81. Checked by T.W. 06/30/81. Reviewed by: R.S.L.

CONSOLIDATION TEST

Boring No: COE 10A		Sample No: S-1B				Depth, ft: 11.2			
Material: CL-MIL, gr-br m.to & sandy slightly plastic silty CLAY, trace & gravel to c. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	11.1	137.2	0.379	79.9	0.613	2.50	2.734	20	13
Final	10.4	145.6	0.291	97.2	0.574				

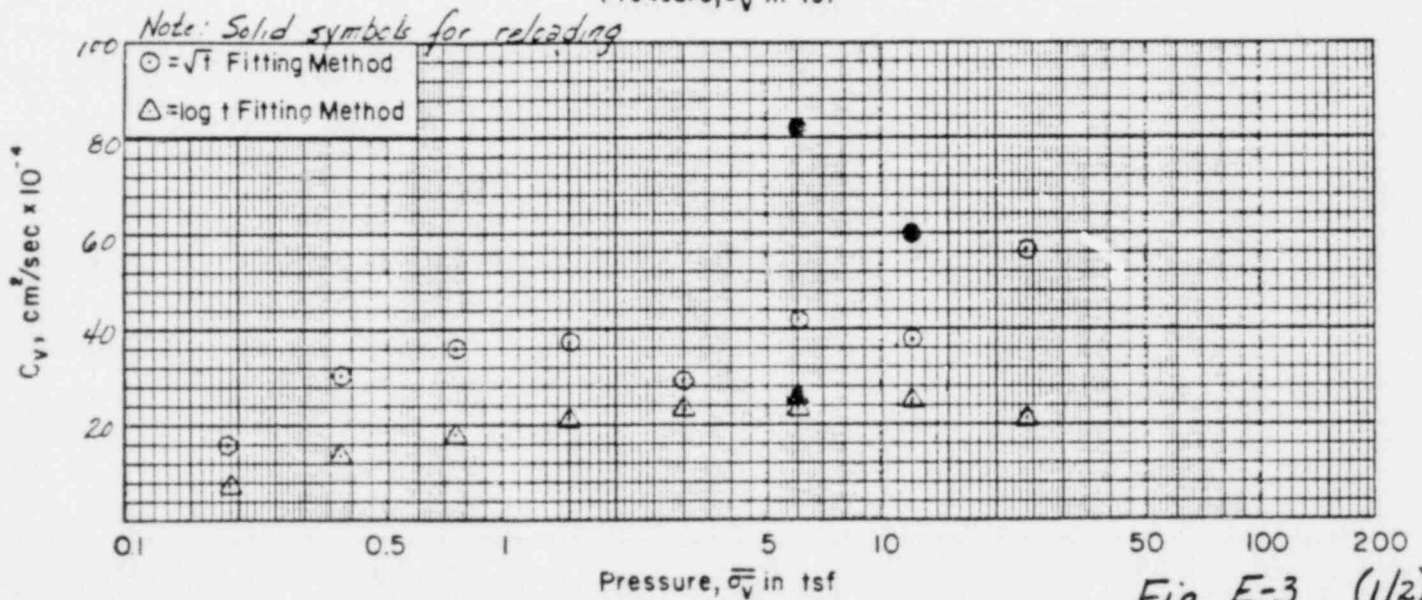
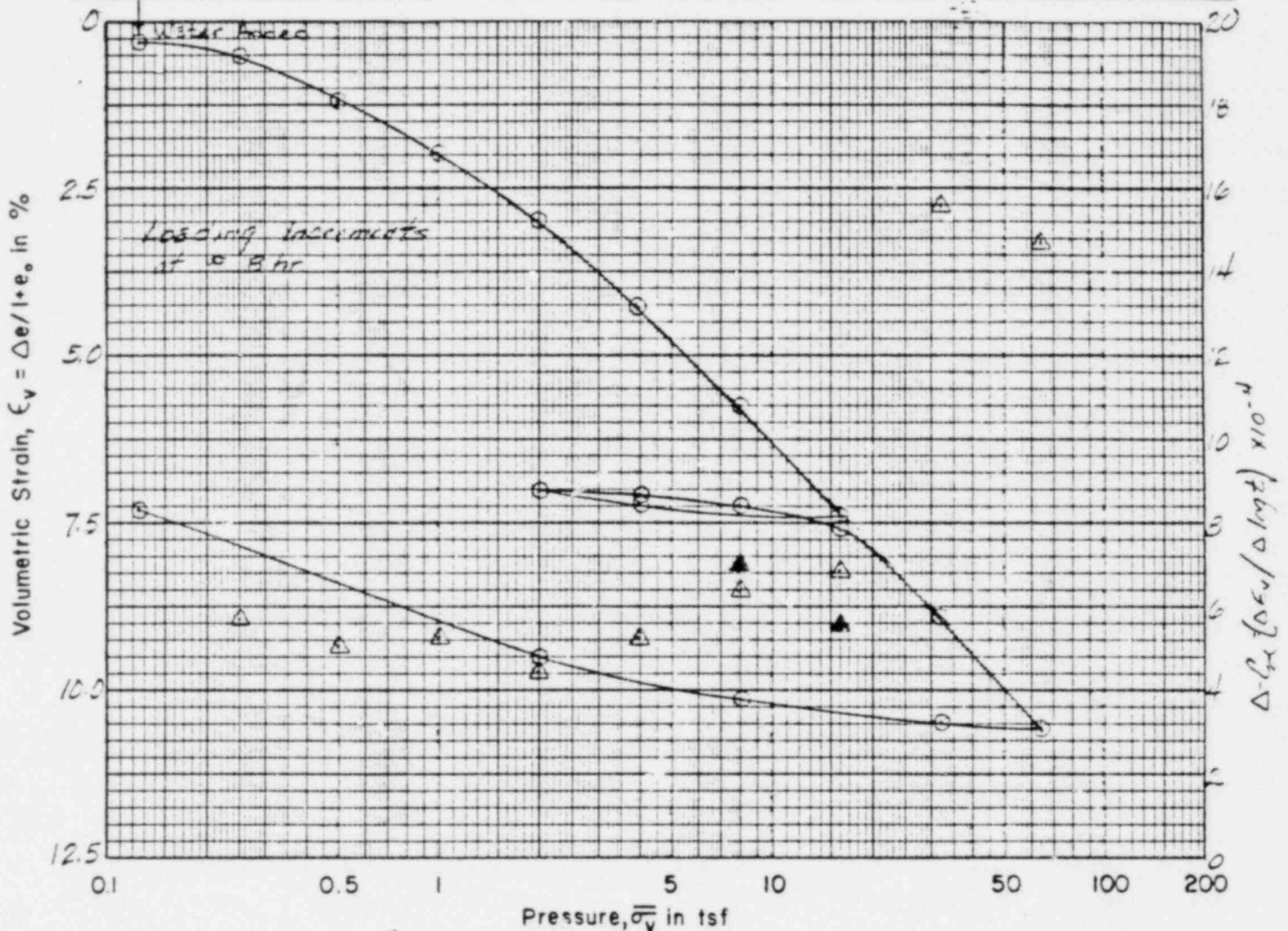
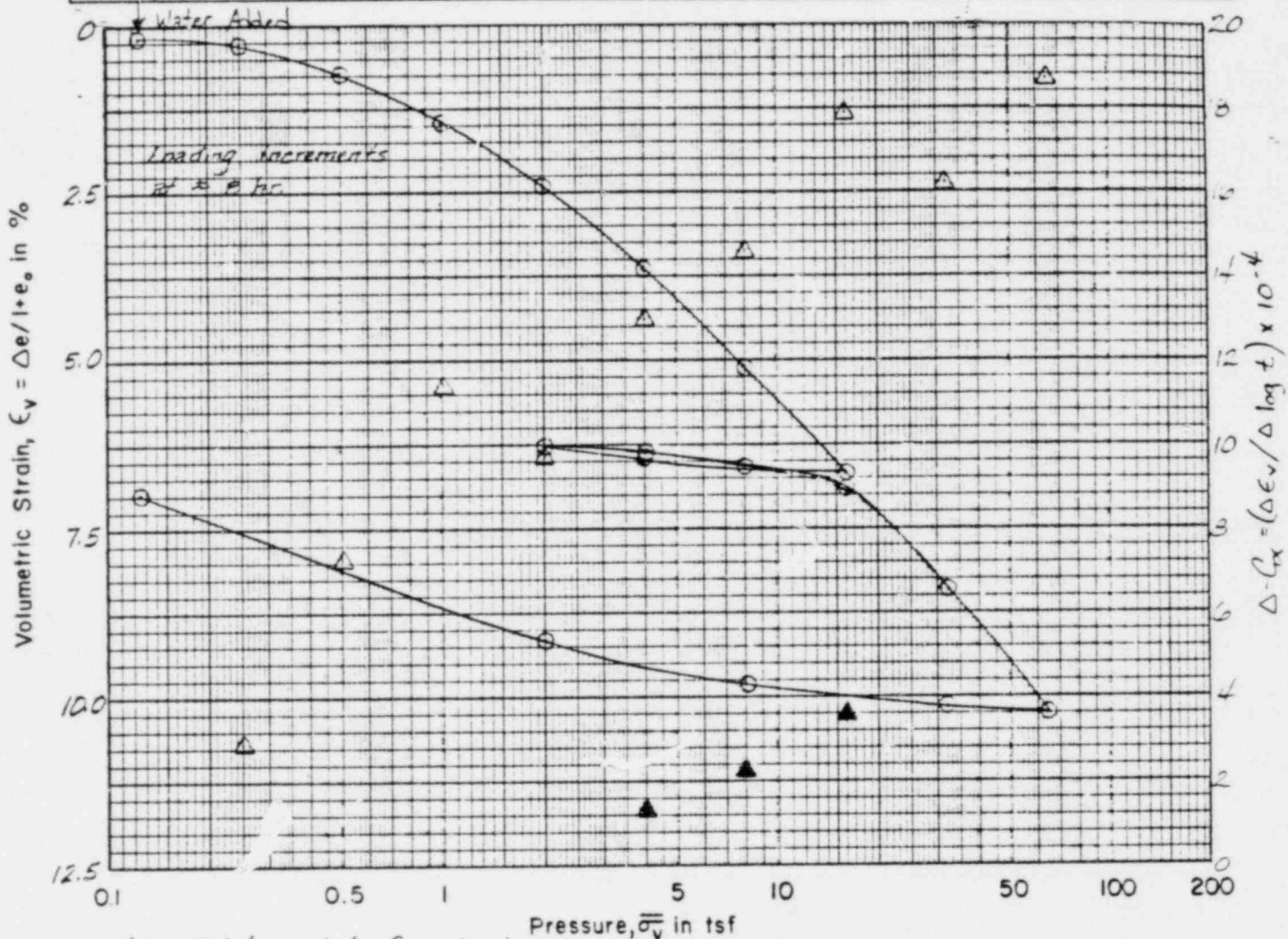


Fig. E-3 (1/2)

1/6/81
 06/29/81
 2104/8573
 Drawn by: H.H.
 Checked by: R.V.
 1/6/81

CONSOLIDATION TEST

Boring No: CDE-10A			Sample No: S-20			Depth, ft: 15.8			
Material: CL, mottled br or and orange-br, f. sandy s.p. silty CLAY fr. C-17.5%									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	12.3	133.0	0.443	76.4	0.616	2.50	2.741	21	13
Final	12.5	143.0	0.343	99.7	0.574				



Note: Solid symbols for reloading

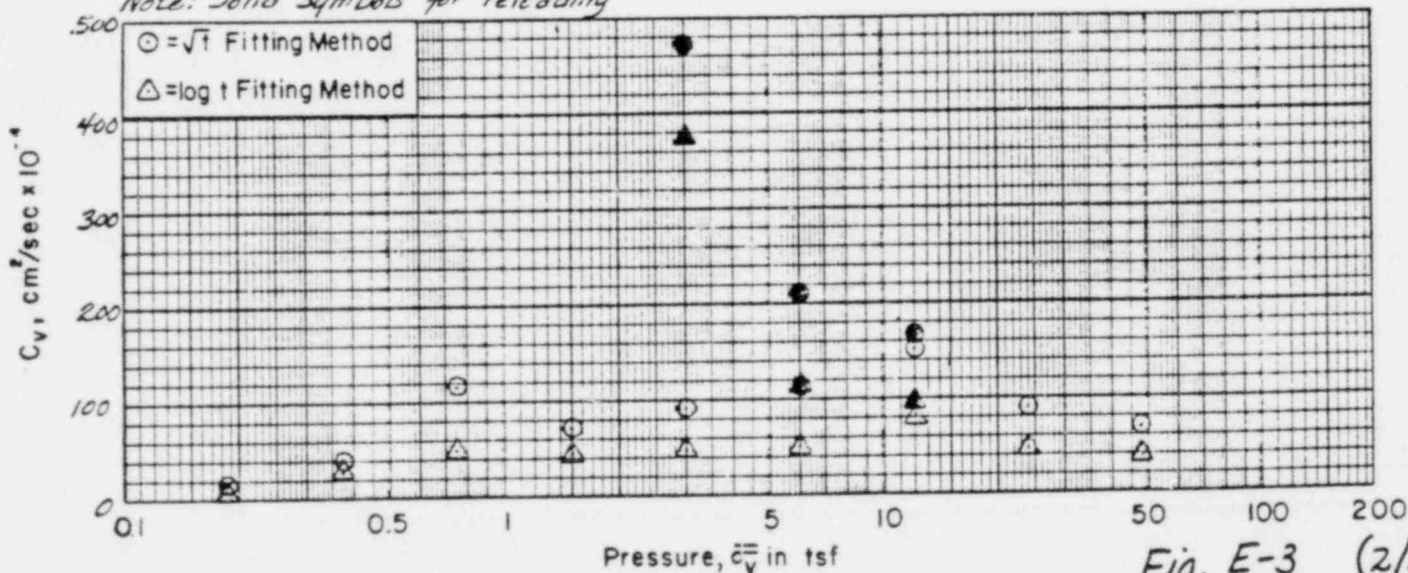


Fig. E-3 (2/2)

Drawn by: PPK
 Checked by: JLV
 Date: 06/29/81
 E-1045-73

CONSOLIDATION TEST

Boring No: COE-11A		Sample No: S-2B				Depth, ft: 12.4			
Material: CL, mottled gray brown m.to. S sandy Spt to mp. silty CLAY, tr. S. gravel to S. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	10.5	138.6	0.366	79.0	0.614	2.50	2.748	22	12
Final	10.8	145.6	0.303	97.8	0.586				

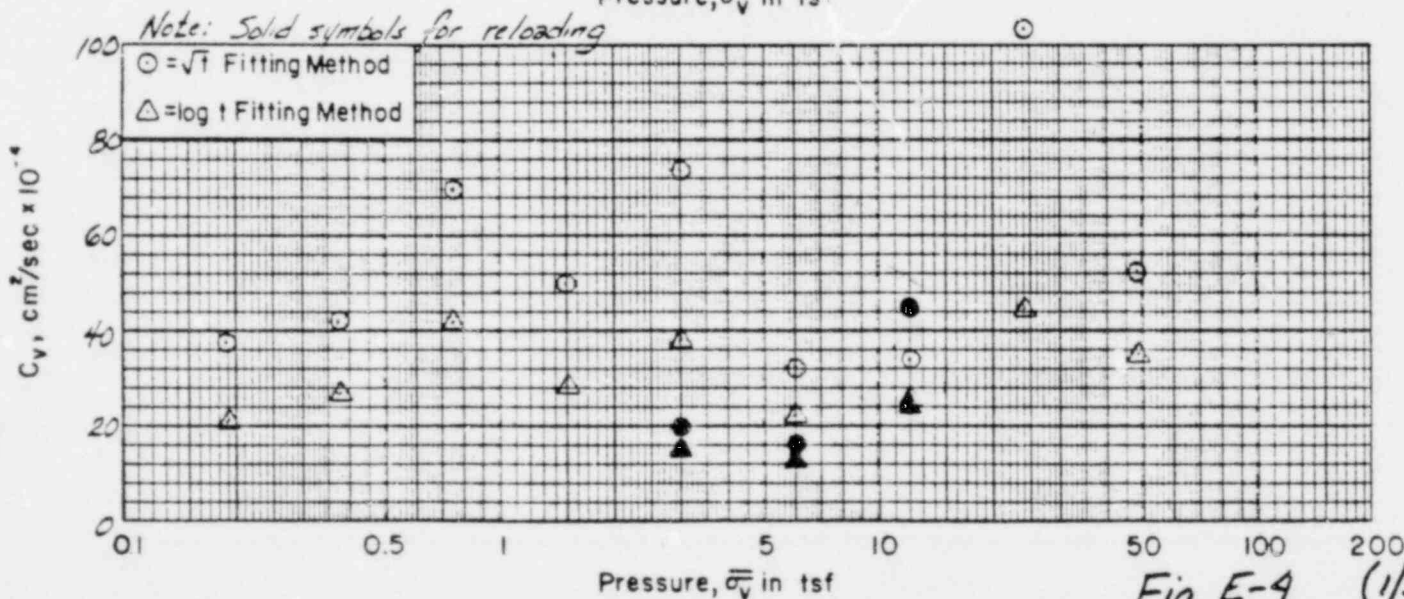
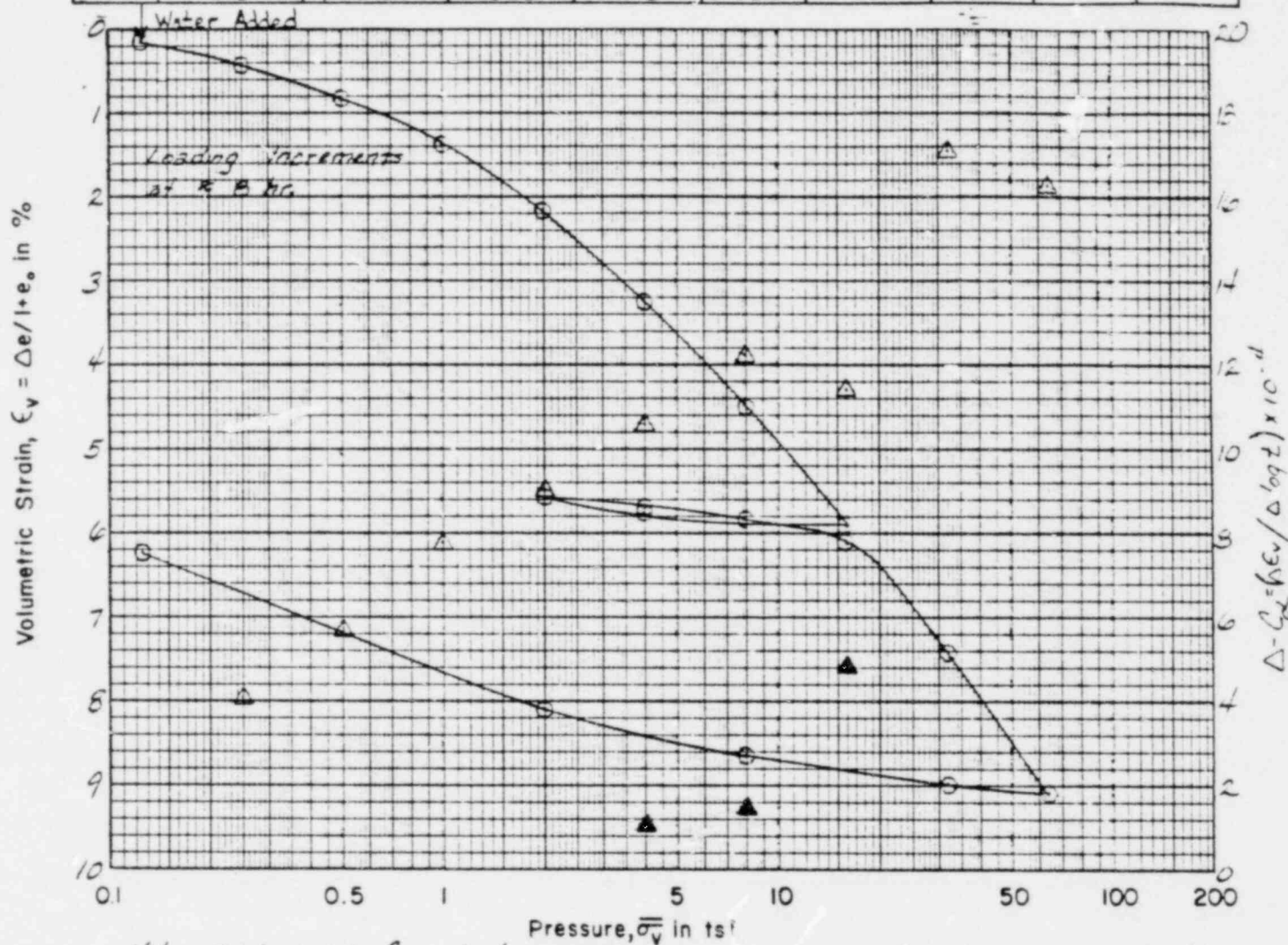
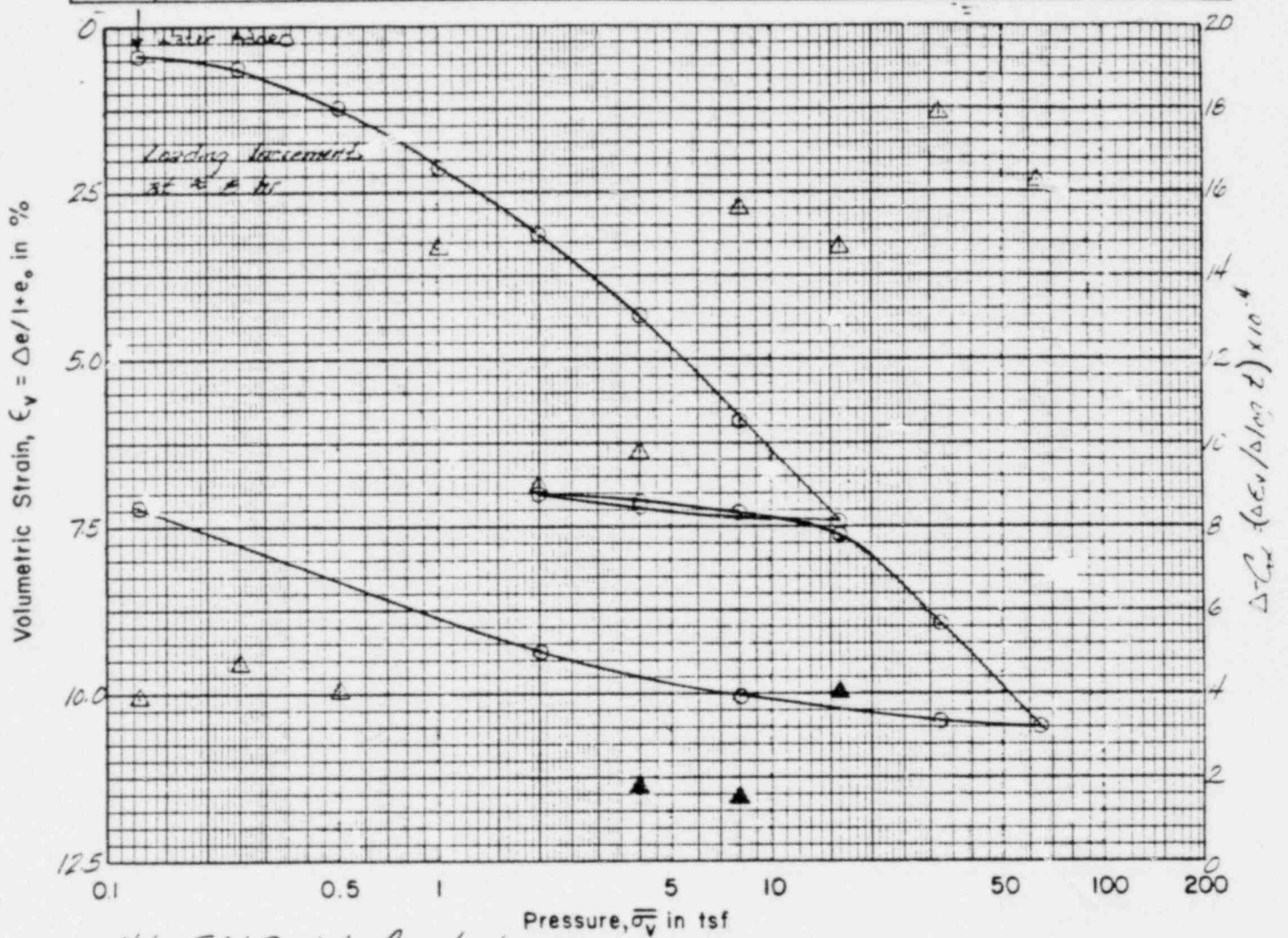


Fig. E-4 (1/3)

B124055 T3 Drawn by: PFT Reviewed by: RSL Checked by: JCLW 06/29/81

CONSOLIDATION TEST

Boring No: <i>CDE-11A</i>		Sample No: <i>S-4B</i>				Depth, ft: <i>14.1</i>			
Material: <i>CL, gr-br m to S. sandy sp to mp silty CLAY, trace S. gravel to c. sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>11.8</i>	<i>137.9</i>	<i>0.389</i>	<i>83.3</i>	<i>0.614</i>	<i>2.50</i>	<i>2.747</i>	<i>22</i>	<i>12</i>
Final	<i>11.6</i>	<i>145.1</i>	<i>0.318</i>	<i>100.3</i>	<i>0.583</i>				



Note: Solid Symbols for reloading

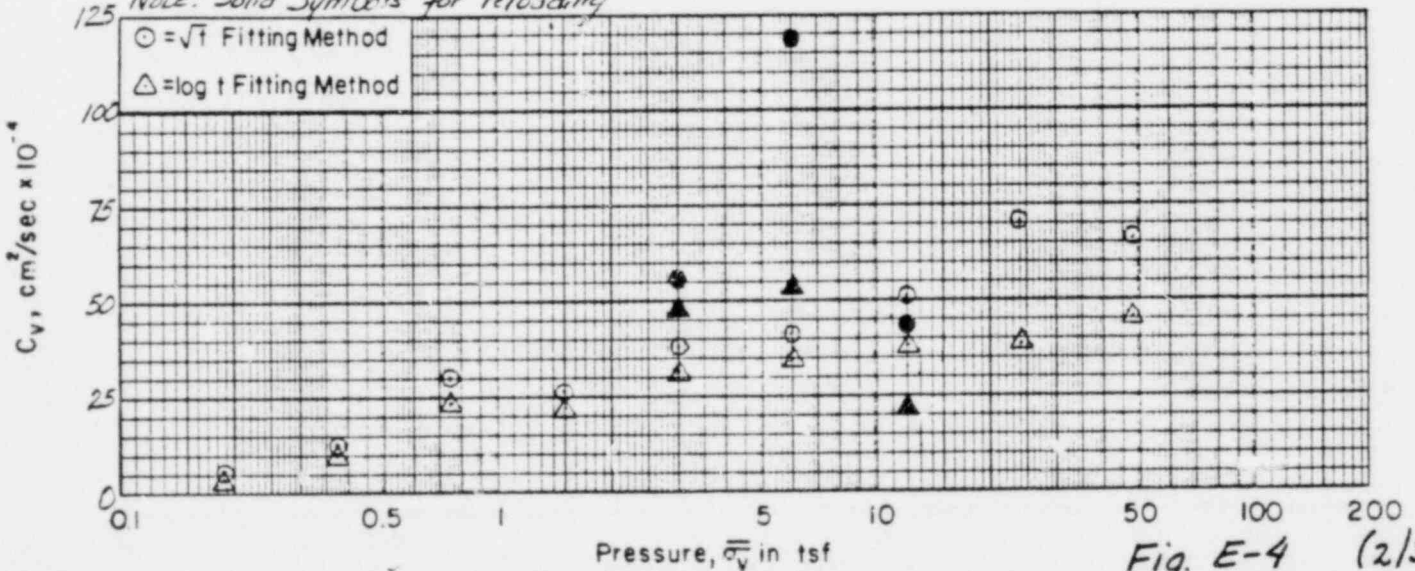


Fig. E-4 (2/3)

CONSOLIDATION TEST

Boring No: COE-11A		Sample No: S-5B				Depth, ft: 16.7			
Material: CL, gr-br m to s. sandy sp silty CLAY, trace s. gravel to c. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	12.1	135.1	0.403	81.4	0.610	2.50	2.714	21	12
Final	11.0	144.7	0.297	100.4	0.564				

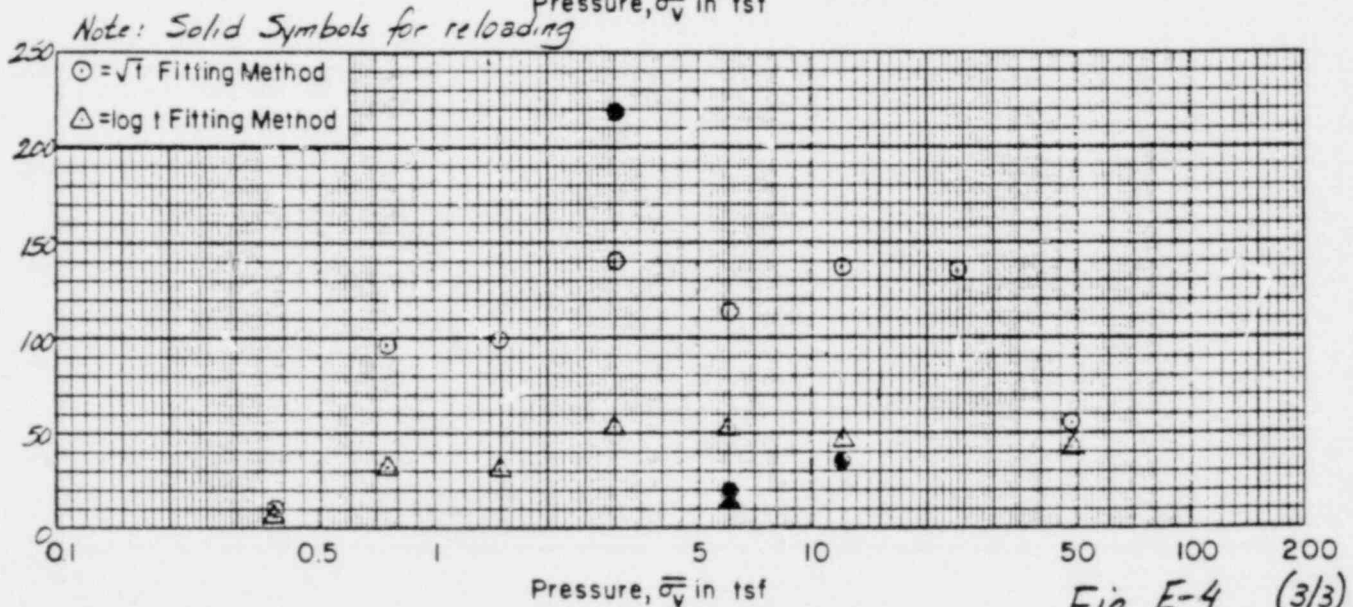
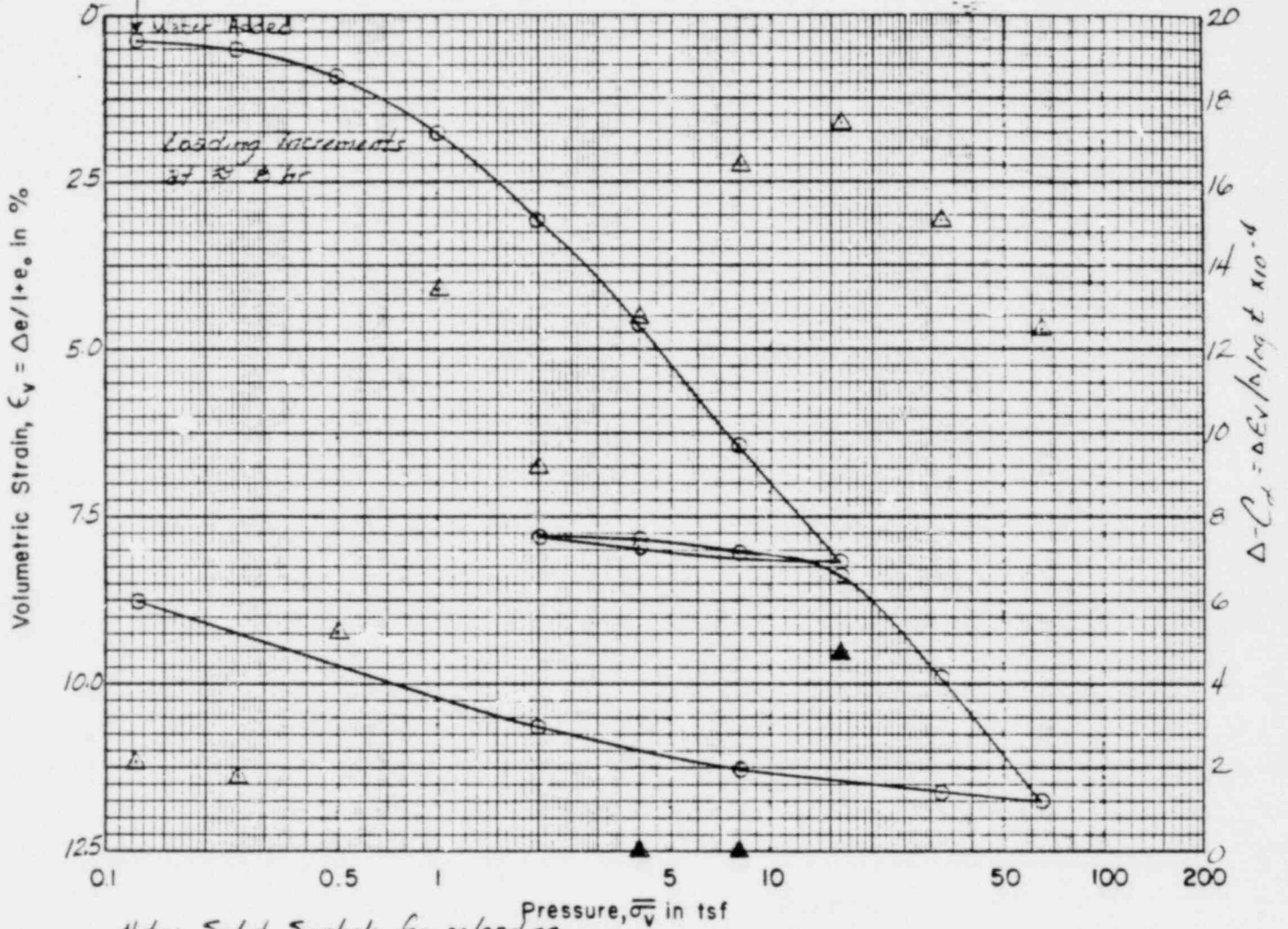
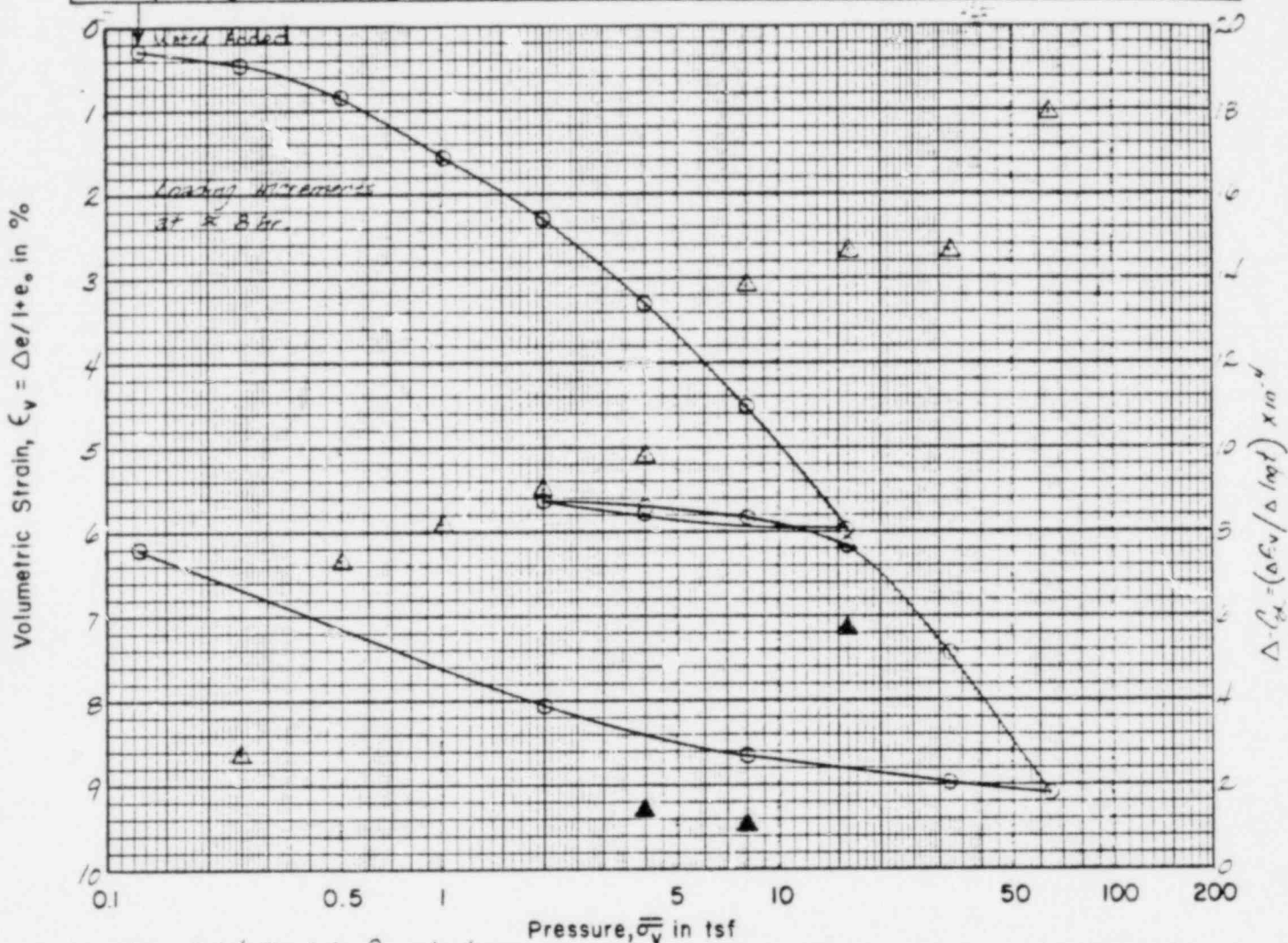


Fig. E-4 (3/3)

B/C 4055 13 U.S. 117 4195 11/11/54 BY J.L.W. 06/29/

CONSOLIDATION TEST

Boring No: <i>CD-12A</i>		Sample No: <i>S 2-D</i>				Depth, ft: <i>9.5</i>			
Material: <i>CL, br. m. s. sandy s.p. silty CLAY, trace s. gravel to c. sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>11.2</i>	<i>139.2</i>	<i>0.376</i>	<i>82.4</i>	<i>0.614</i>	<i>2.50</i>	<i>2.764</i>	<i>21</i>	<i>13</i>
Final	<i>10.6</i>	<i>145.3</i>	<i>0.314</i>	<i>95.6</i>	<i>0.586</i>				



Note: Solid Symbols for reloading

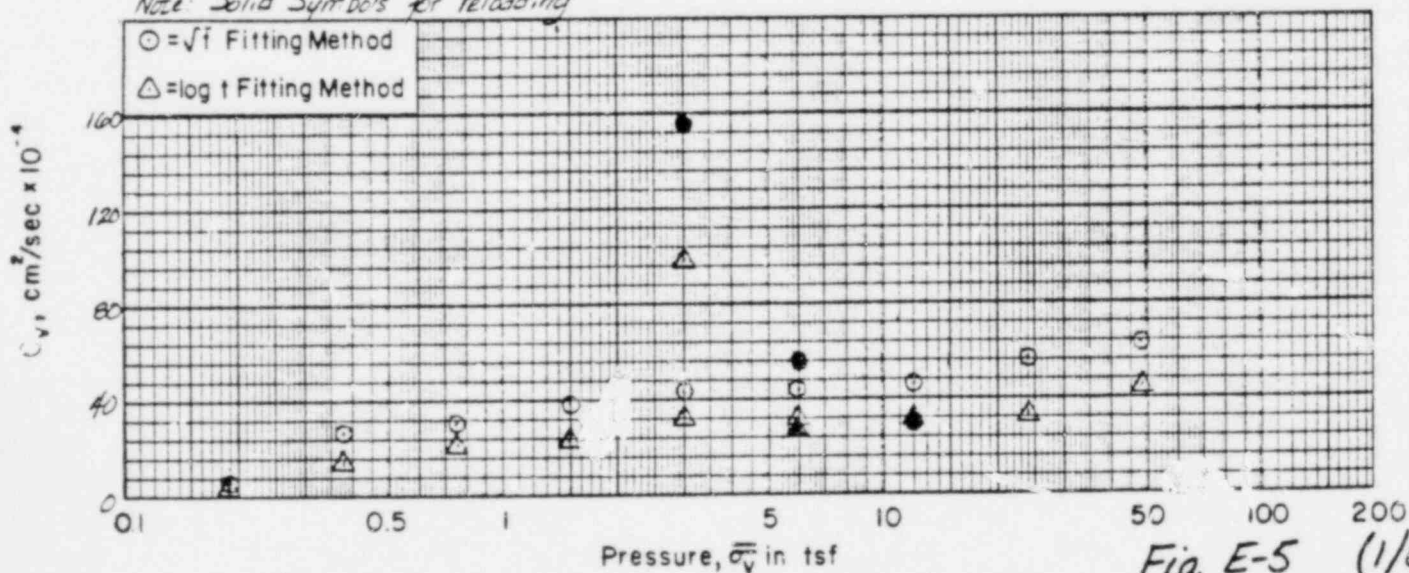


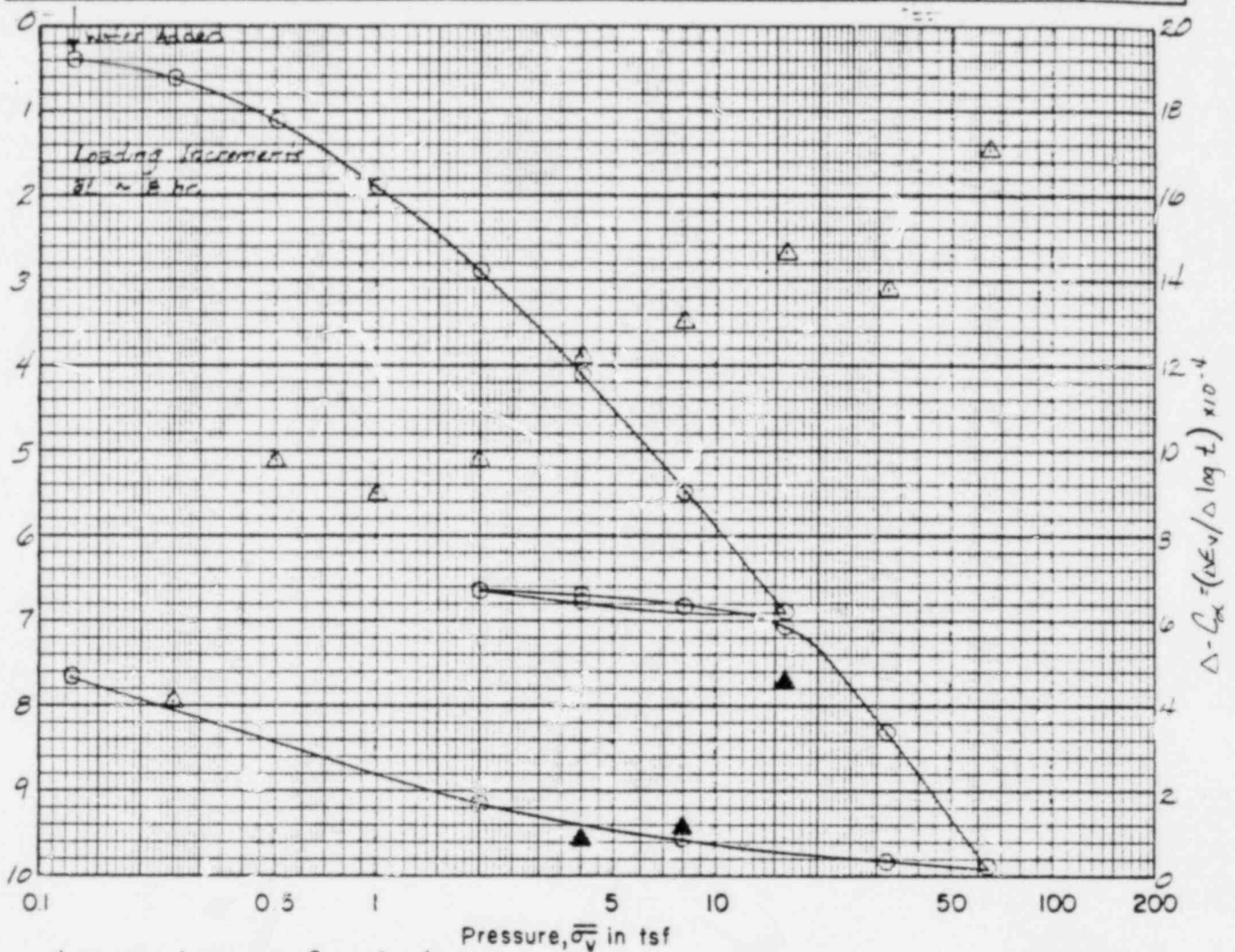
Fig. E-5 (1/8)

RIC405513 Under by test Andrews W. A.S.L. Checked by: J.L.W. 06/29/51

CONSOLIDATION TEST

Boring No: COE-12A			Sample No: S-3C			Depth, ft: 12.1			
Material: CL, mottled gray & br. S. sandy s.p. silty CLAY, tr. S. grave / to m. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	11.9	135.8	0.376	86.7	0.614	2.50	2.740	21	13
Final	10.5	147.1	0.283	102.0	0.573				

Volumetric Strain, $\epsilon_v = \Delta e / (1 + e_0)$ in %



Note: Solid symbols for reloading

- = \sqrt{t} Fitting Method
- △ = log t Fitting Method

$C_v, \text{cm}^2/\text{sec} \times 10^{-4}$

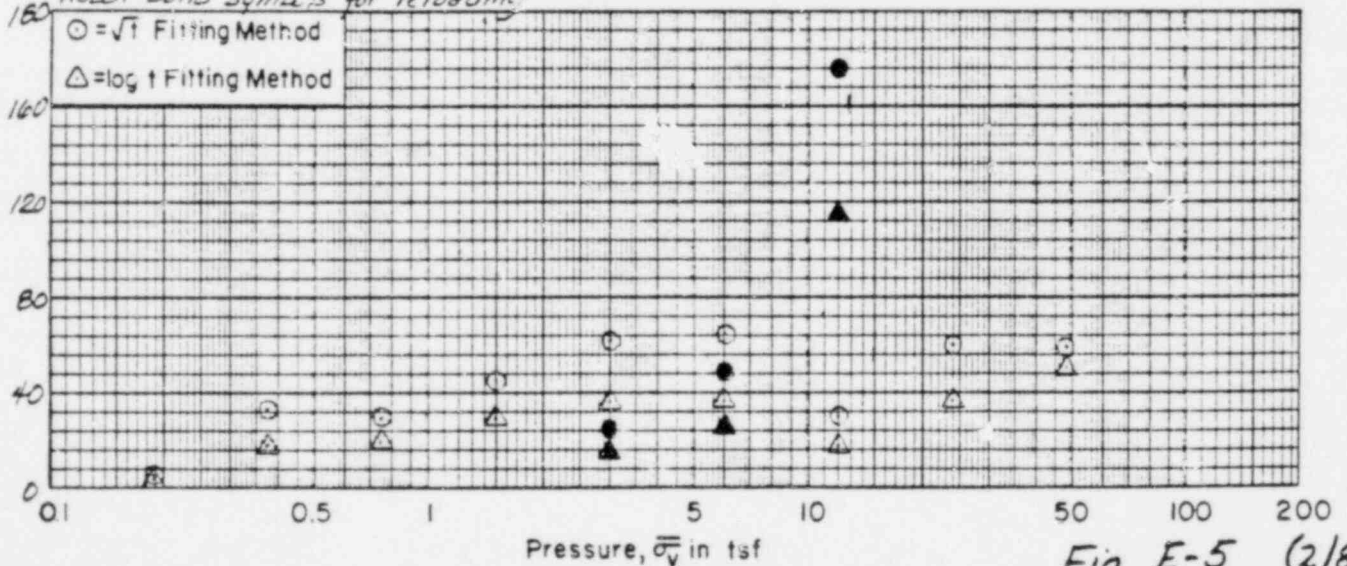


Fig. E-5 (2/8)

CONSOLIDATION TEST

Boring No: <i>COE-12A</i>		Sample No: <i>S-5C</i>				Depth, ft: <i>16.9</i>			
Material: <i>CL, mottled br, grgy H. br. n to S. sandy sp silty CLAY, some S gravel to c. sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>9.7</i>	<i>141.5</i>	<i>0.345</i>	<i>78.4</i>	<i>0.611</i>	<i>2.50</i>	<i>2.783</i>	<i>21</i>	<i>12</i>
Final	<i>9.4</i>	<i>146.1</i>	<i>0.299</i>	<i>87.7</i>	<i>0.590</i>				

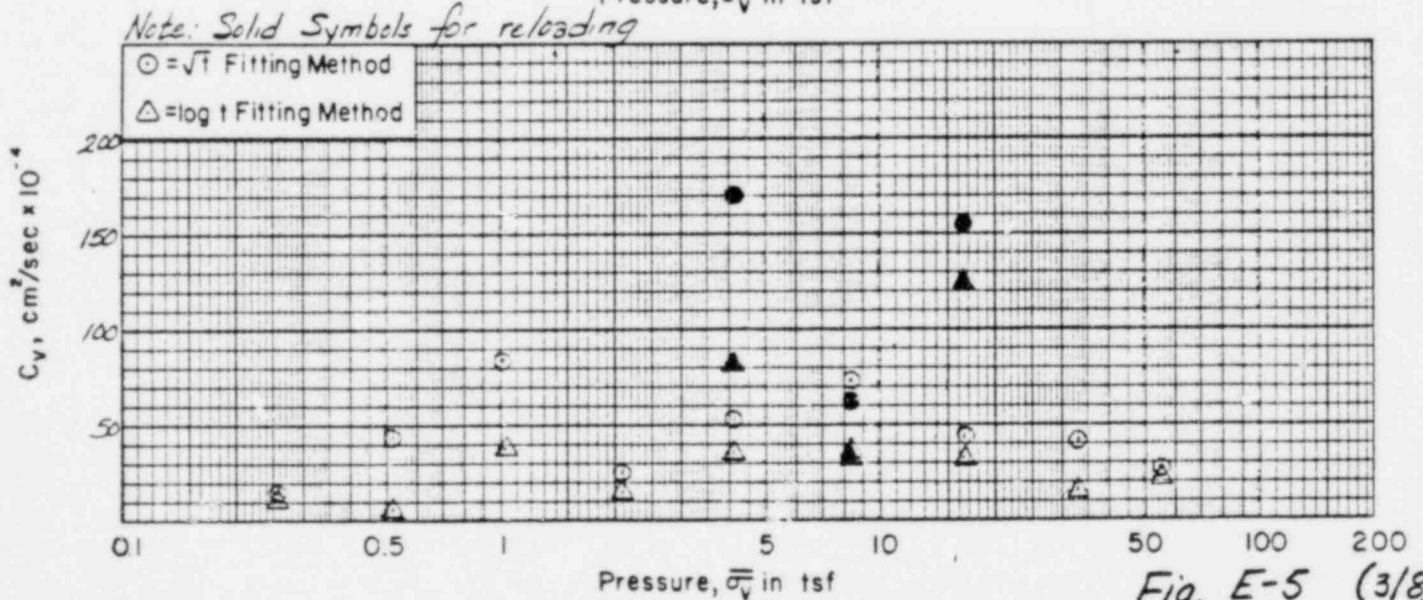
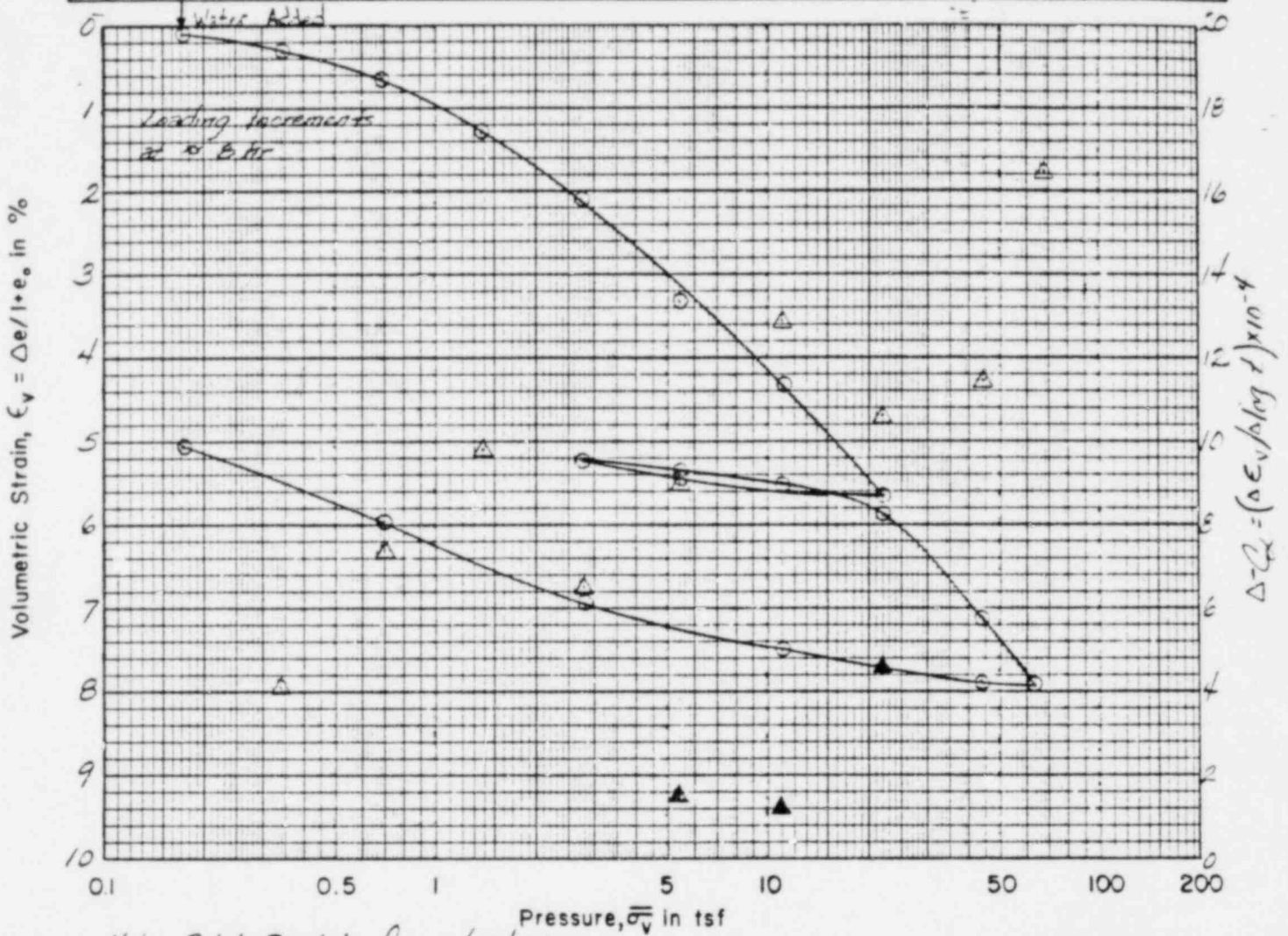


Fig. E-5 (3/8)

CONSOLIDATION TEST

Boring No: <i>CDE-12A</i>		Sample No: <i>S-6B</i>				Depth, ft: <i>19.0</i>			
Material: <i>CL, mottled br, gr and red-br plastic silty CLAY, some m. to s. sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>18.0</i>	<i>132.3</i>	<i>0.542</i>	<i>92.3</i>	<i>0.617</i>	<i>2.50</i>	<i>2.774</i>	<i>46</i>	<i>18</i>
Final	<i>19.6</i>	<i>131.9</i>	<i>0.567</i>	<i>95.7</i>	<i>0.627</i>				

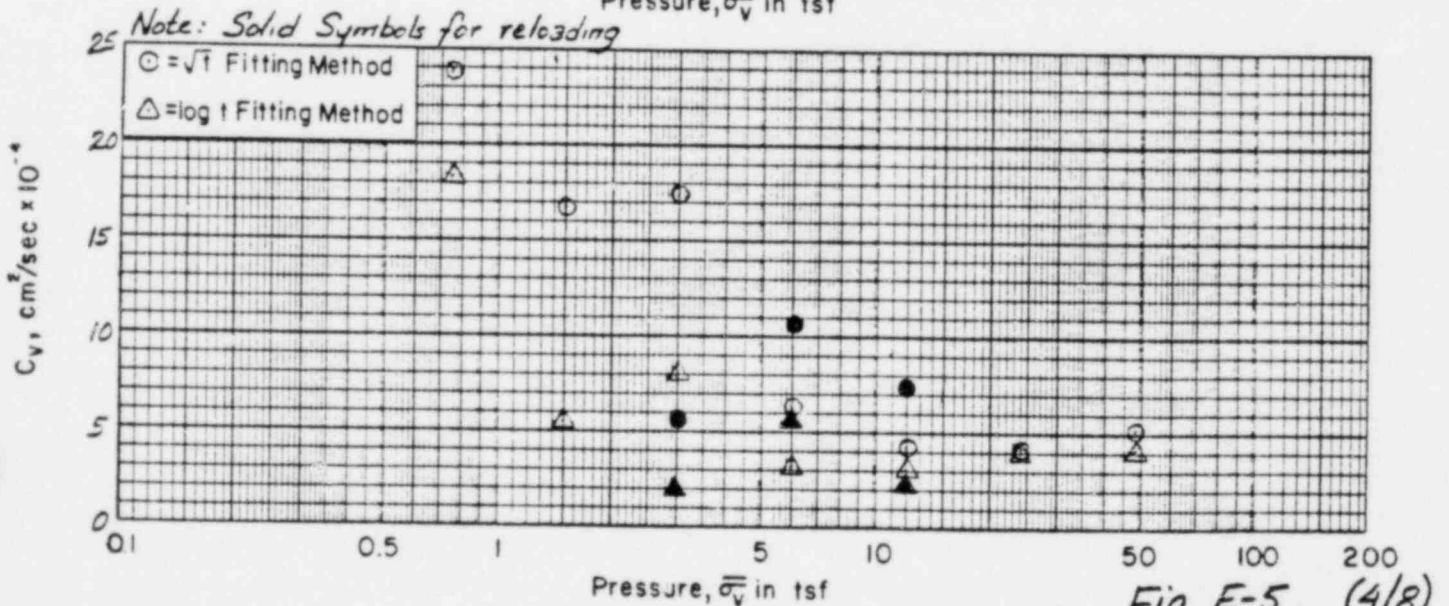
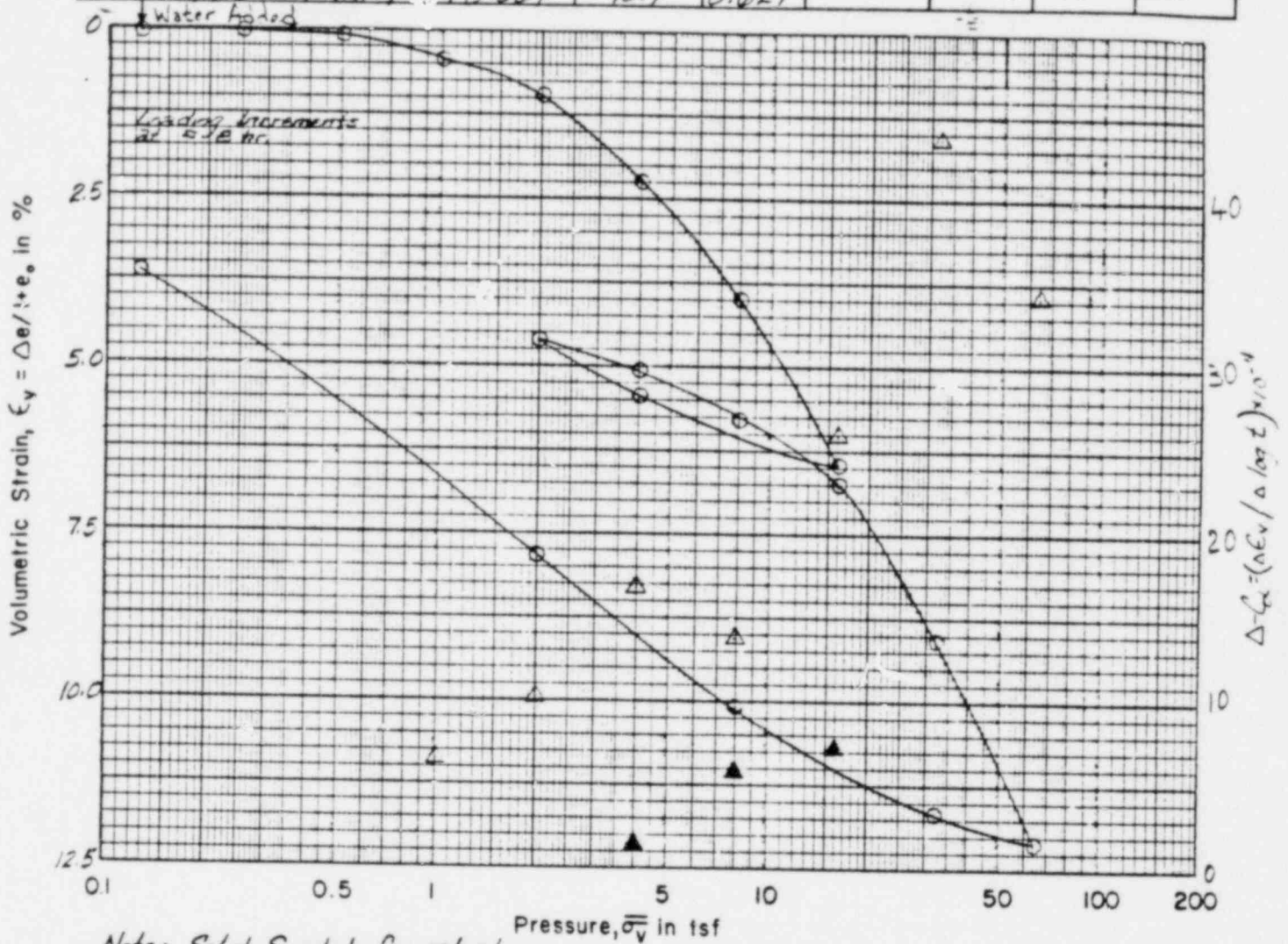


Fig. E-5 (4/8)

18/52/90

Boring No: <u>COE 12A</u>		Sample No: <u>S-7C</u>				Depth, ft. <u>20.6</u>			
Material: <u>CL, mottled br. gr. & orange-br plastic silty CLAY some m. to f. sand</u>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<u>17.2</u>	<u>132.1</u>	<u>0.519</u>	<u>91.2</u>	<u>0.414</u>	<u>2.50</u>	<u>2.747</u>	<u>38</u>	<u>17</u>
Final	<u>19.7</u>	<u>131.6</u>	<u>0.557</u>	<u>97.0</u>	<u>0.430</u>				



Fig. E-5 (5/8)

CONSOLIDATION TEST

Boring No: COE-12A			Sample No: S-8B			Depth, ft: 23.0			
Material: CL, mottled H. br, br & Hgr sp. silty CLAY, some f. gravel to f. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	14.6	135.9	0.443	90.7	0.611	2.50	2.745	23	14
Final	15.7	138.2	0.433	99.8	0.606				

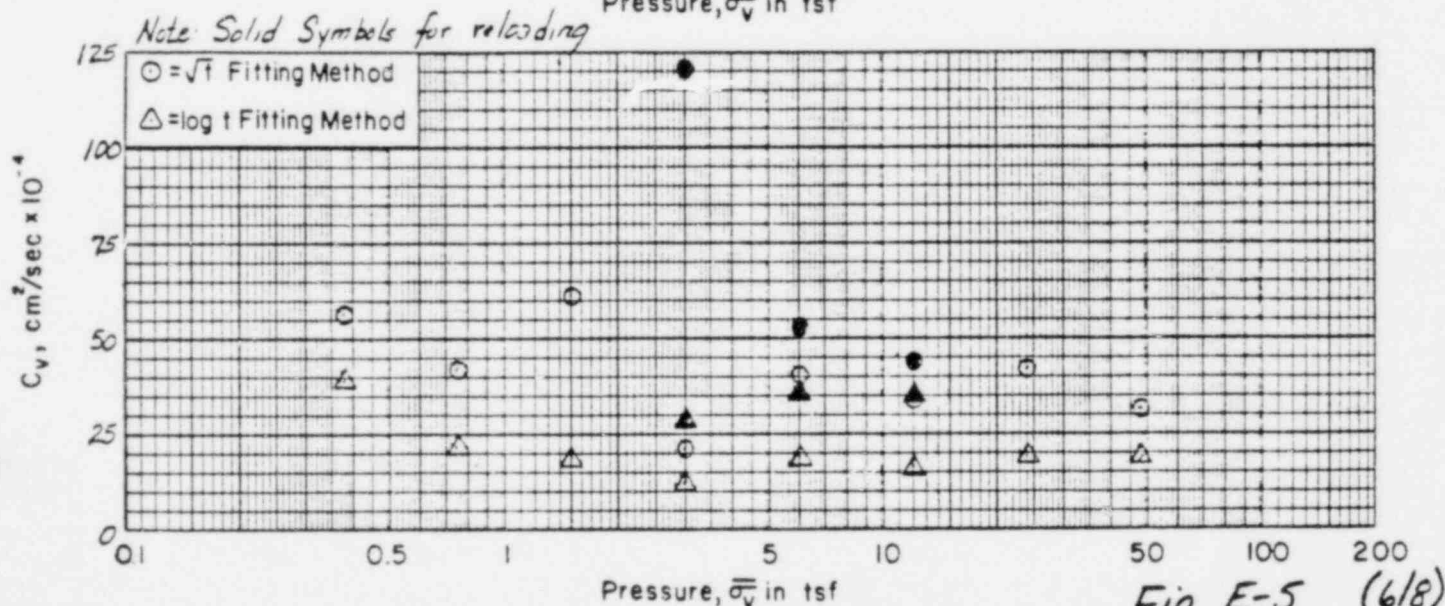
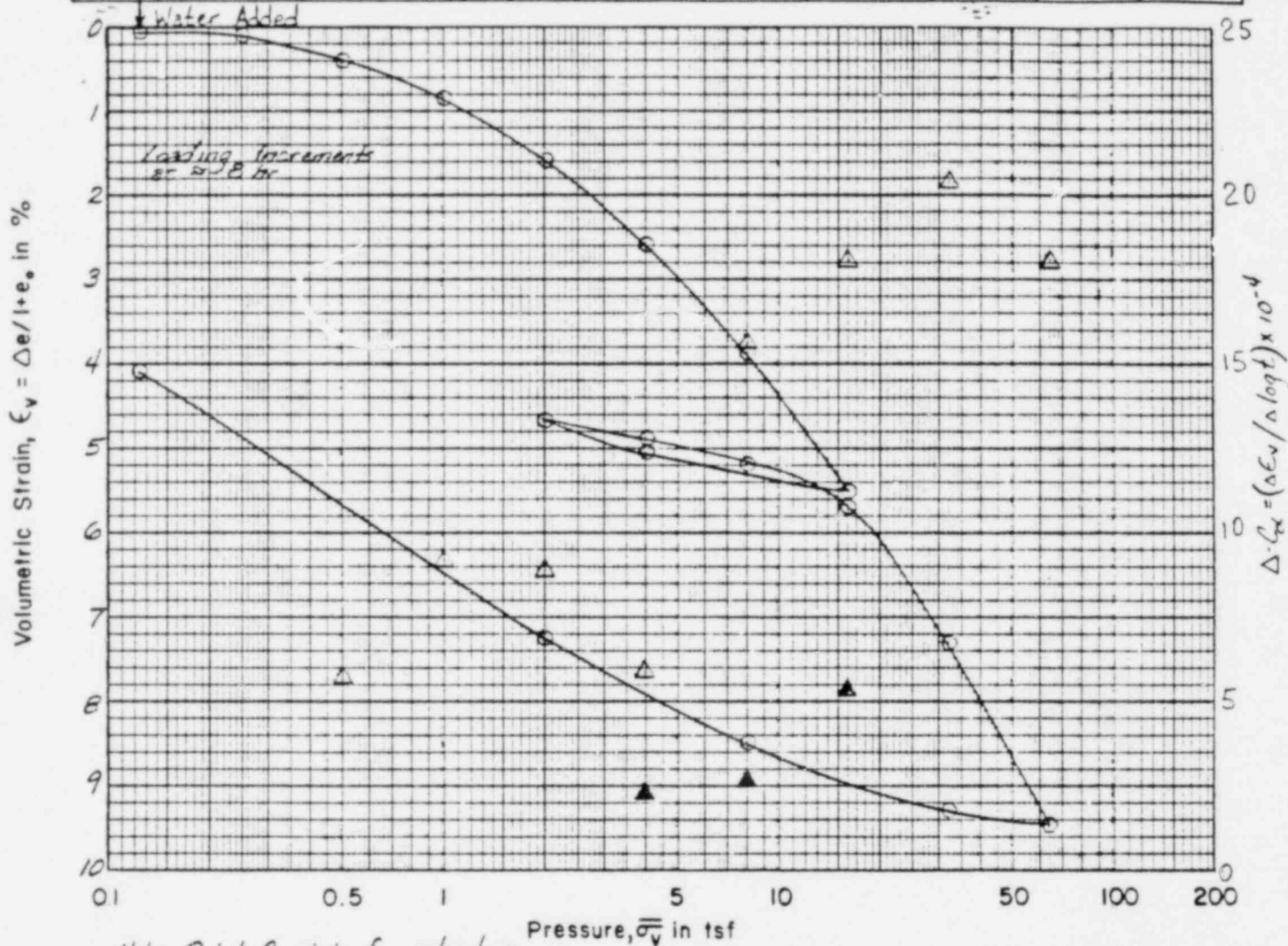


Fig. E-5 (6/8)

CONSOLIDATION TEST

Boring No:		COE-12A		Sample No:		5-9B		Depth, ft:		25.4	
Material: CL, brown med plastic silty CLAY some s gravel to s sand											
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %		
Initial	14.5	135.0	0.470	85.7	0.618	2.50	2.783	28	13		
Final	14.8	139.2	0.431	95.7	.601						

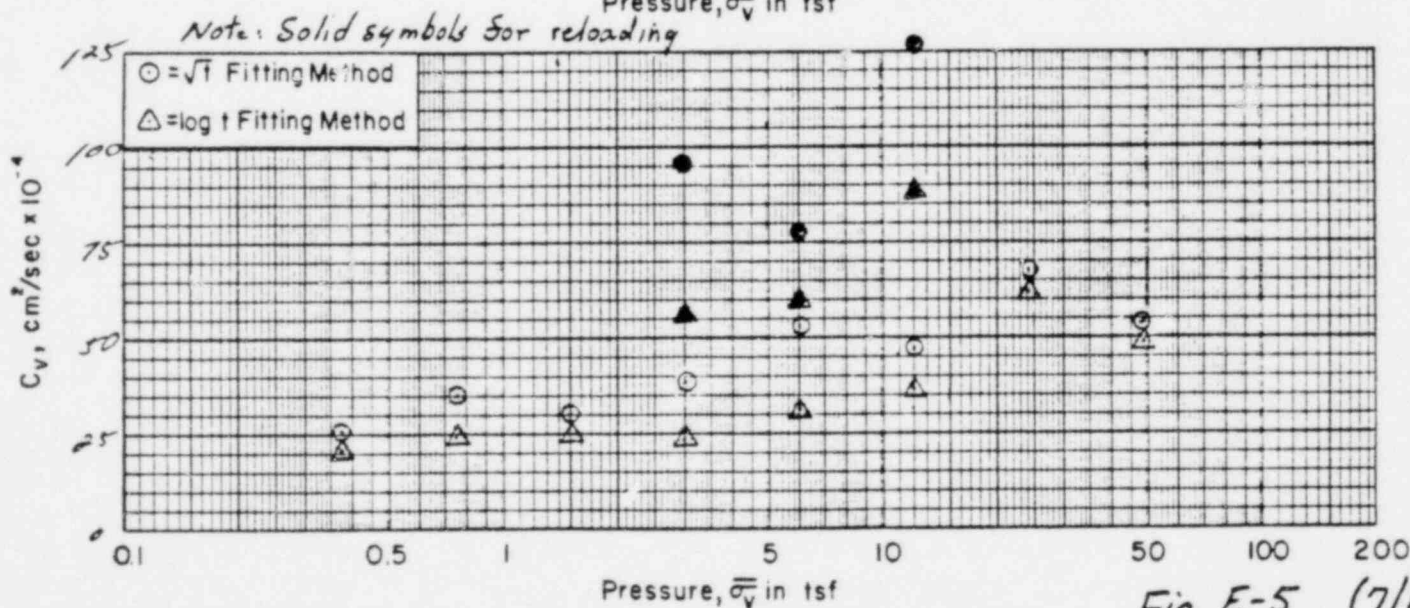
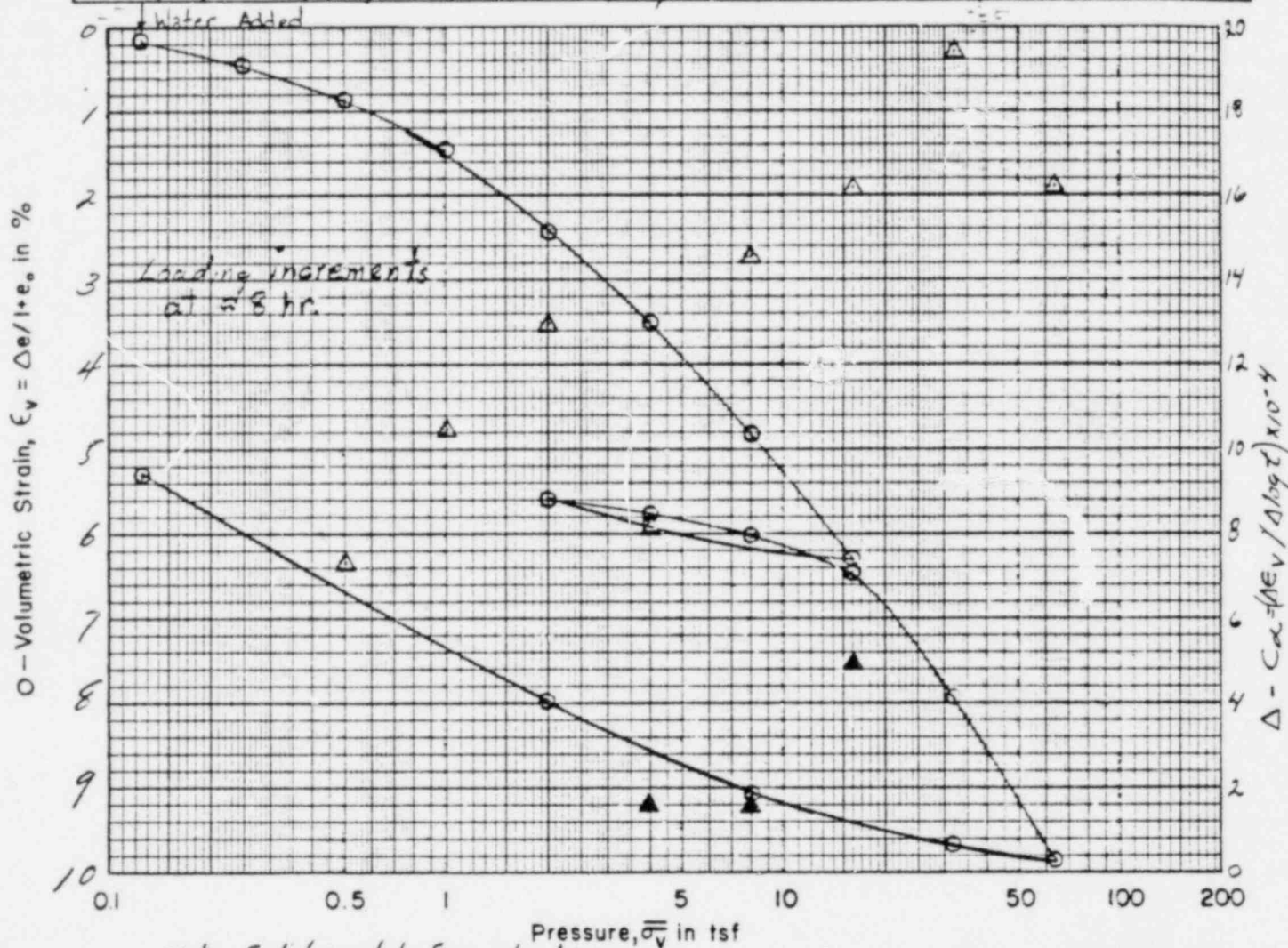


Fig. E-5 (7/8)

CONSOLIDATION TEST

Boring No: <i>COE-12A</i>		Sample No: <i>S-10B</i>				Depth, ft: <i>26.0</i>			
Material: <i>CL, brown m.p. silty CLAY, some S. sand, trace c to m sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>18.8</i>	<i>131.1</i>	<i>0.542</i>	<i>94.6</i>	<i>0.612</i>	<i>2.50</i>	<i>2.732</i>	<i>34</i>	<i>15</i>
Final	<i>18.9</i>	<i>133.5</i>	<i>0.517</i>	<i>100.0</i>	<i>0.602</i>				

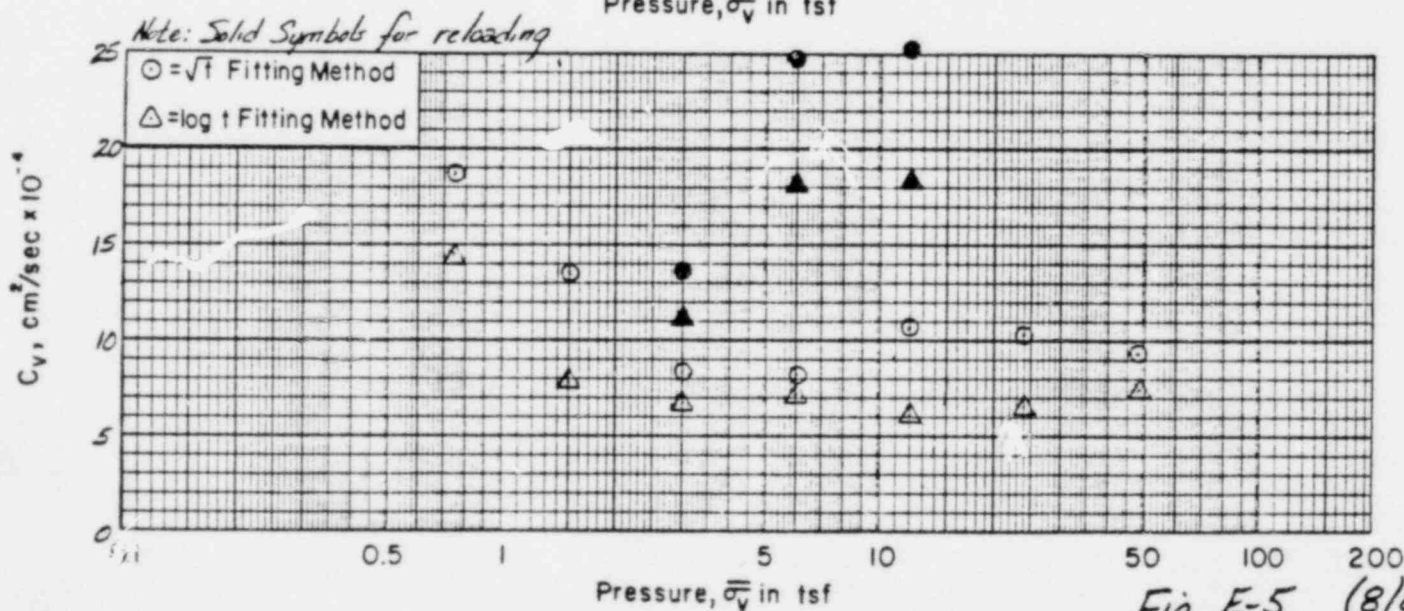
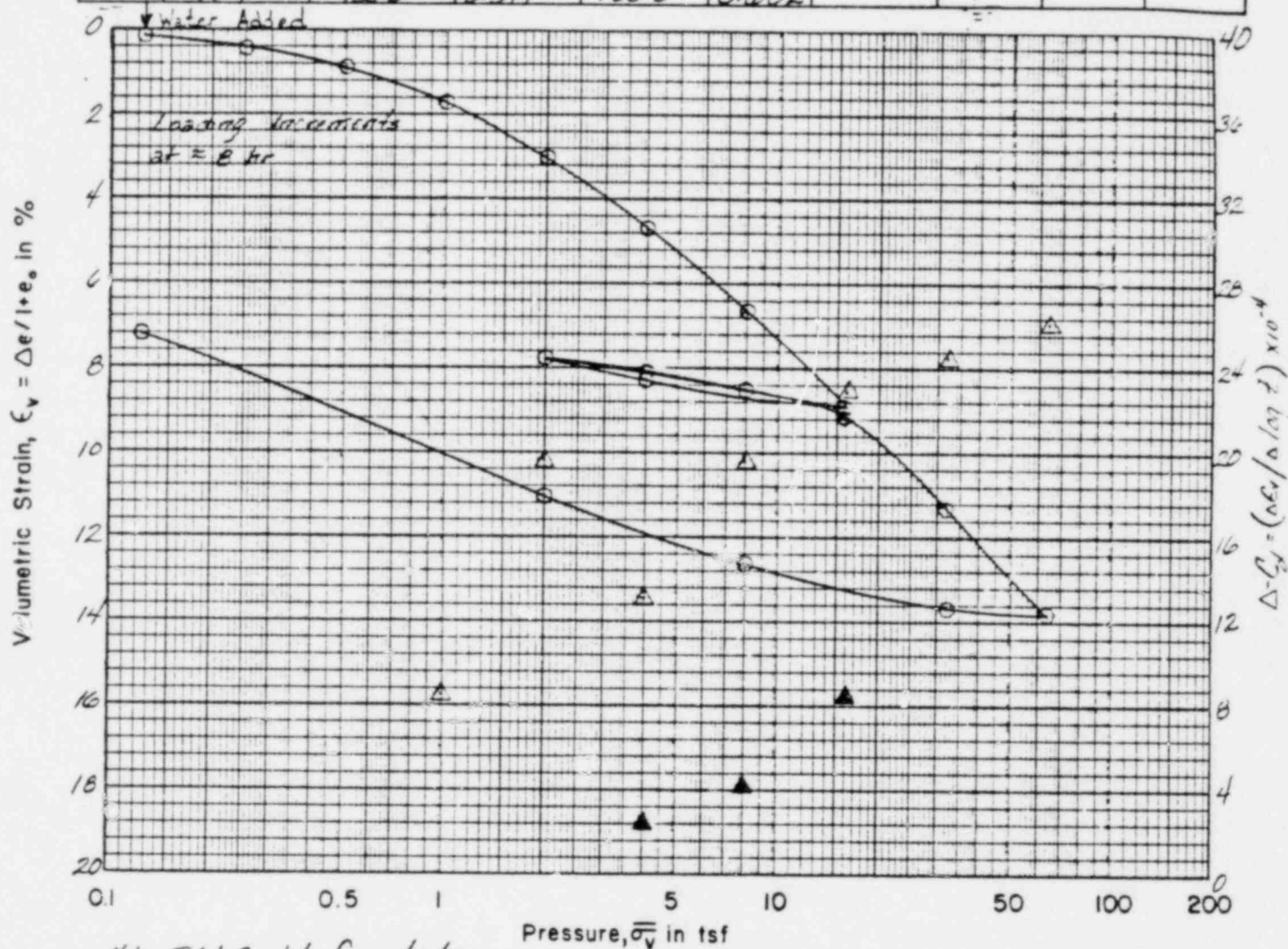
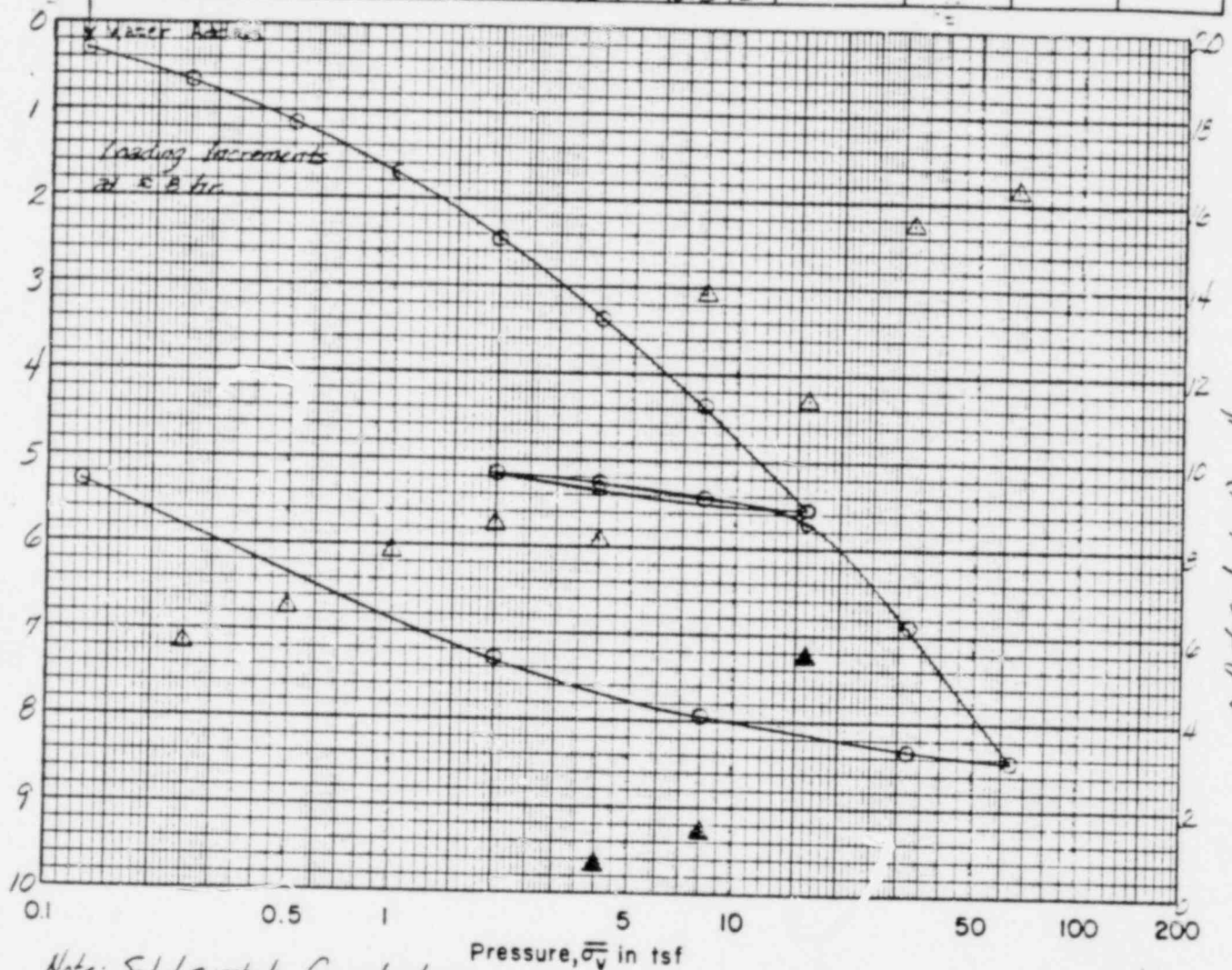


Fig. E-5 (8/8)

CONSOLIDATION TEST

Boring No: CDE-13A			Sample No: S-30			Depth, ft: 16.3			
Material: CL, gr-br & sandy s.p. silty CLAY, some & gravel to m. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	11.0	142.6	0.325	92.0	0.613	2.50	2.733	20	12
Final	10.1	145.7	0.286	96.1	0.595				

Volumetric Strain, $\epsilon_v = \Delta e / (1 + e_0)$ in %



Note: Solid symbols for reloading

$\circ = \sqrt{t}$ Fitting Method
 $\triangle = \log t$ Fitting Method

$C_v, \text{cm}^2/\text{sec} \times 10^{-4}$

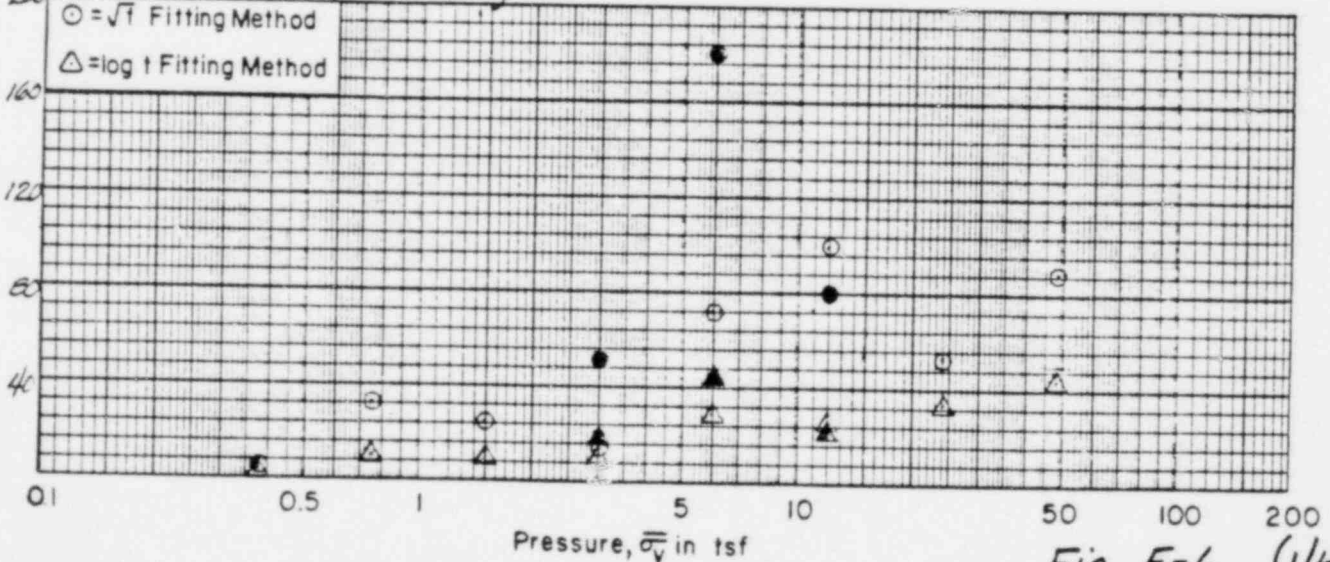


Fig. E-6 (1/6)

CONSOLIDATION TEST

Boring No: COE-13A			Sample No: S-4B			Depth, ft: 13.2			
Material: CL, gr-br m.t.f sandy sp silt, CLAY, trace S gravel to c. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	12.1	136.5	0.410	81.4	0.619	2.50	2.754	21	12
Final	10.6	146.6	0.294	99.3	0.568				

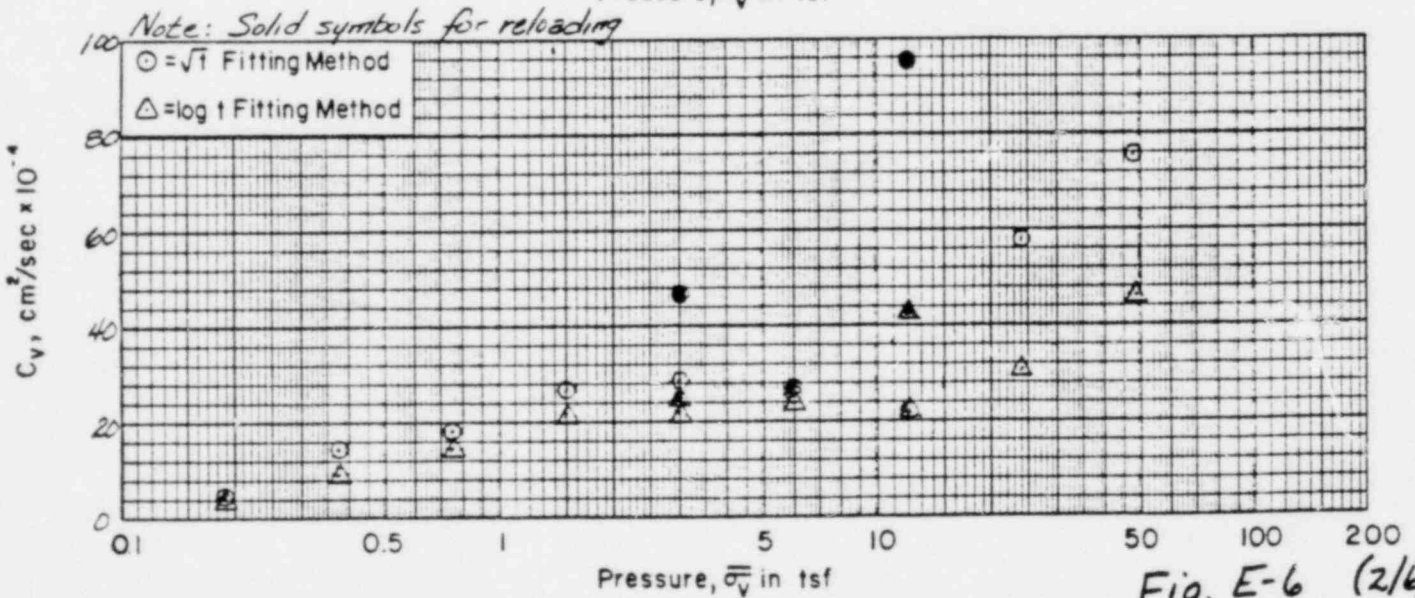
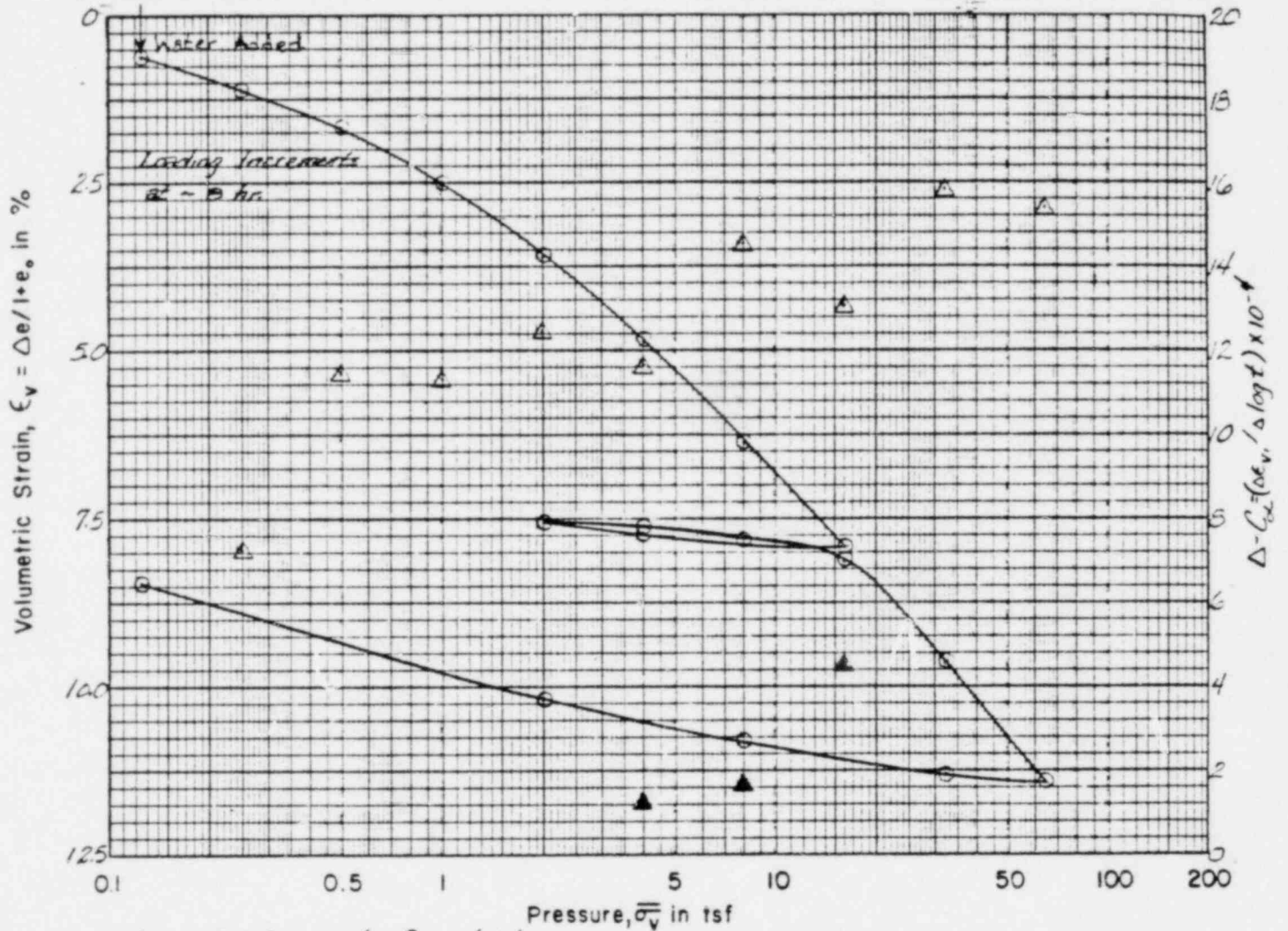


Fig. E-6 (2/6)

CONSOLIDATION TEST

Boring No: COE-13A		Sample No: S-5C				Depth, ft: 21.1			
Material: CL, mottled br. & orange-br s. sandy m.p. silty CLAY, tr. & gravel to m. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	10.0	145.4	0.294	93.5	0.611	2.50	2.745	24	13
Final	10.1	145.9	0.292	95.5	0.610				

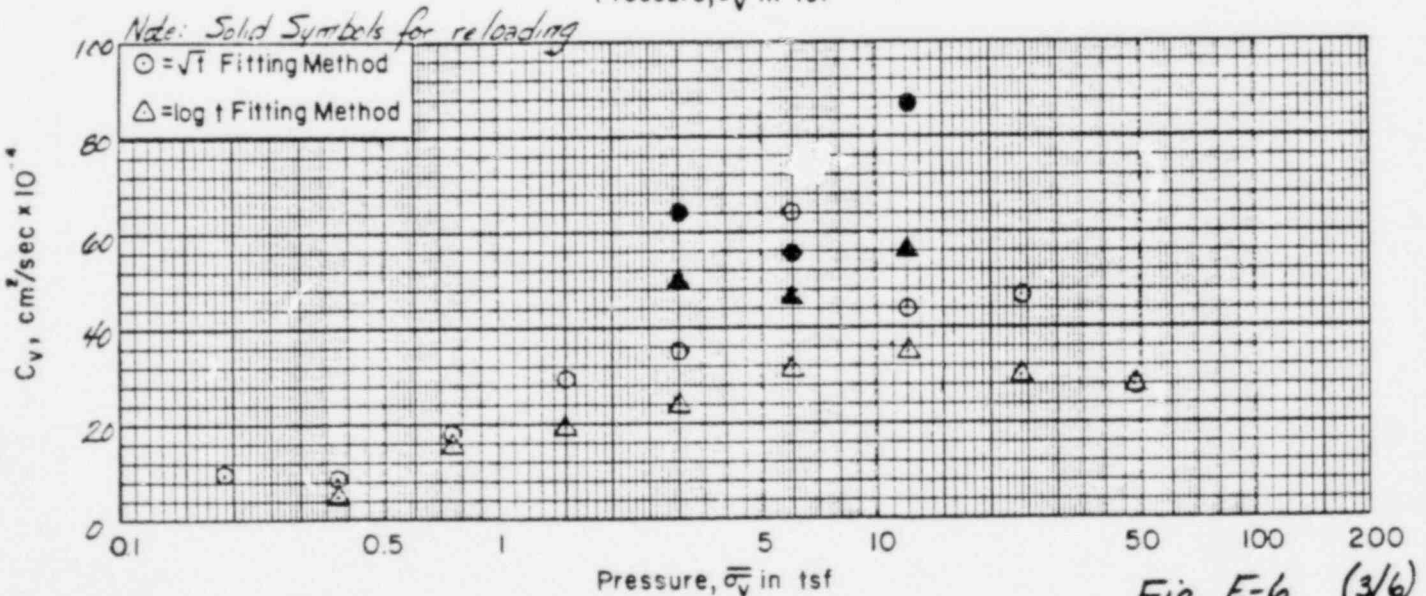
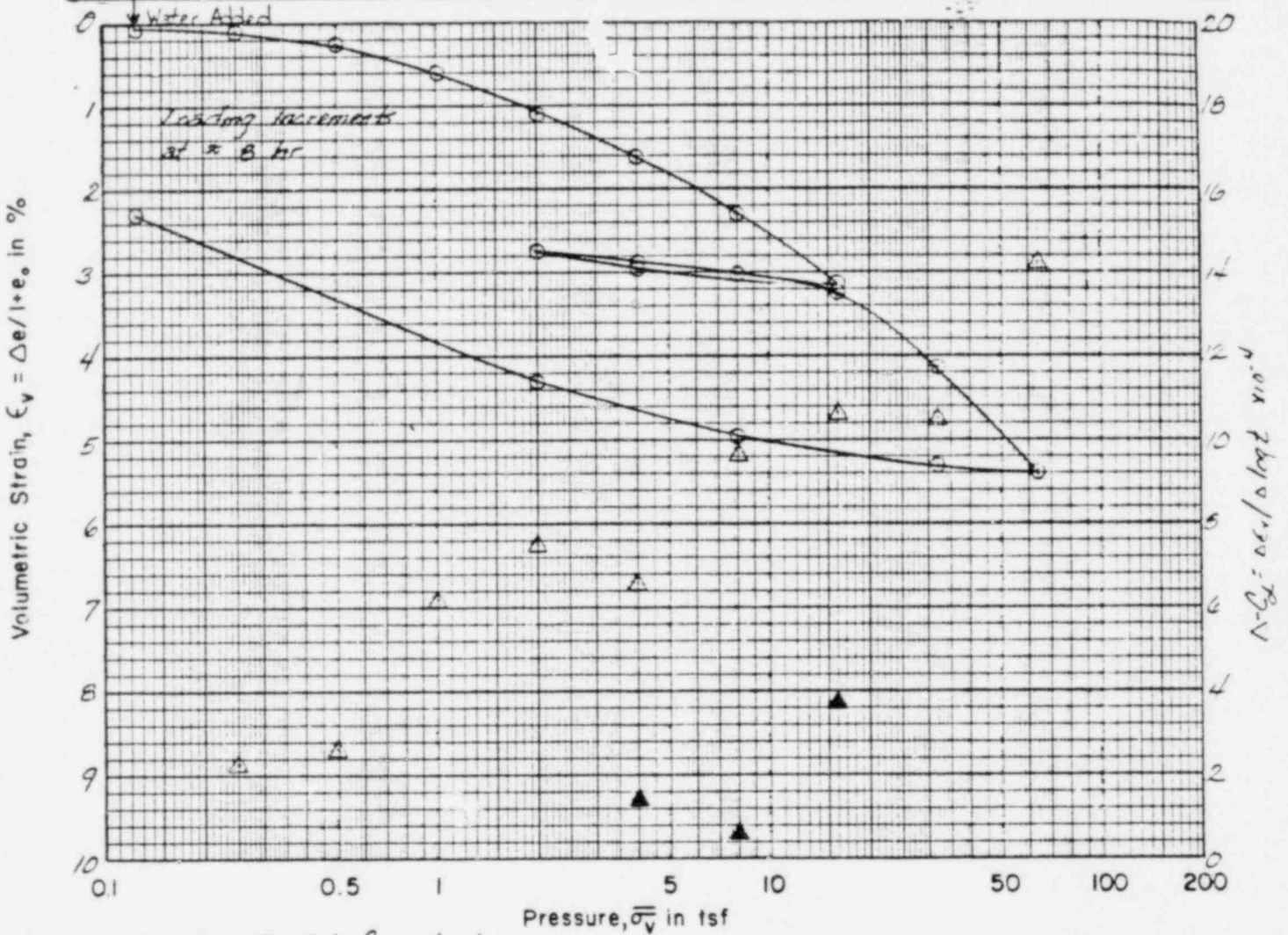


Fig. E-6 (3/6)

CONSOLIDATION TEST

Boring No: COE-13A			Sample No: S-6C			Depth, ft: 22.4			
Material: CL, br. m. to s. sandy mp silty CLAY, trace s. gravel to c. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	10.9	144.9	0.331	91.9	0.613	2.50	2.790	24	13
Final	10.6	146.5	0.314	94.7	0.605				

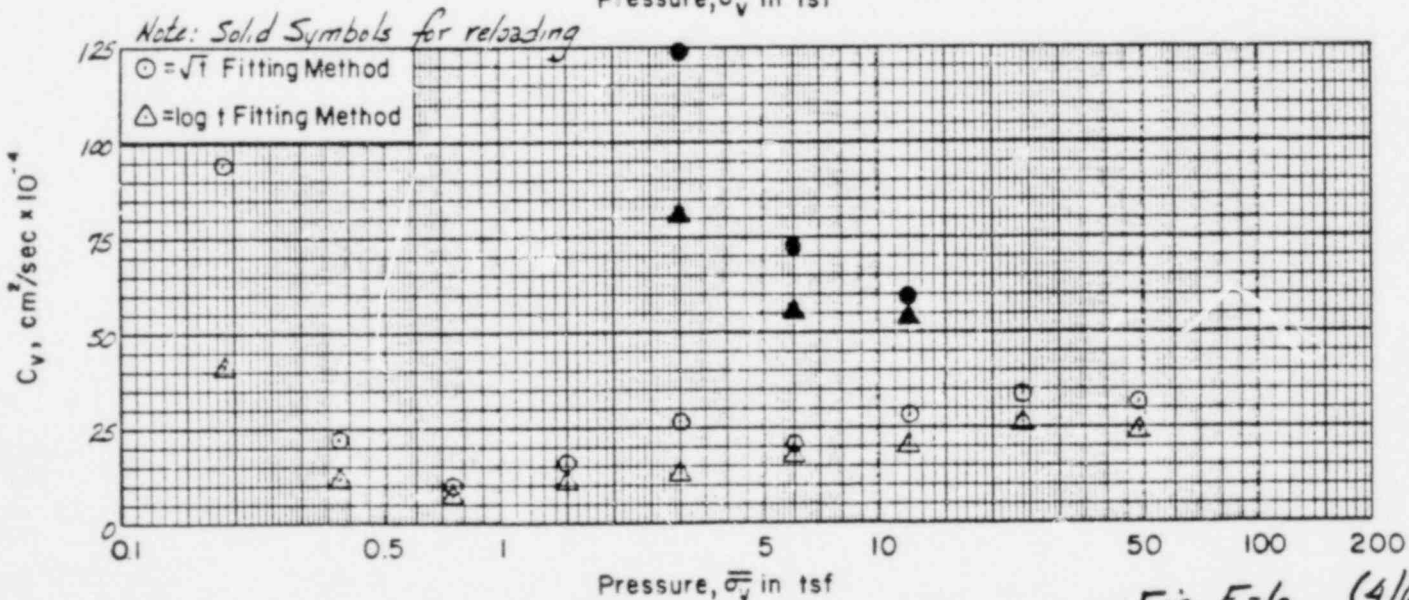
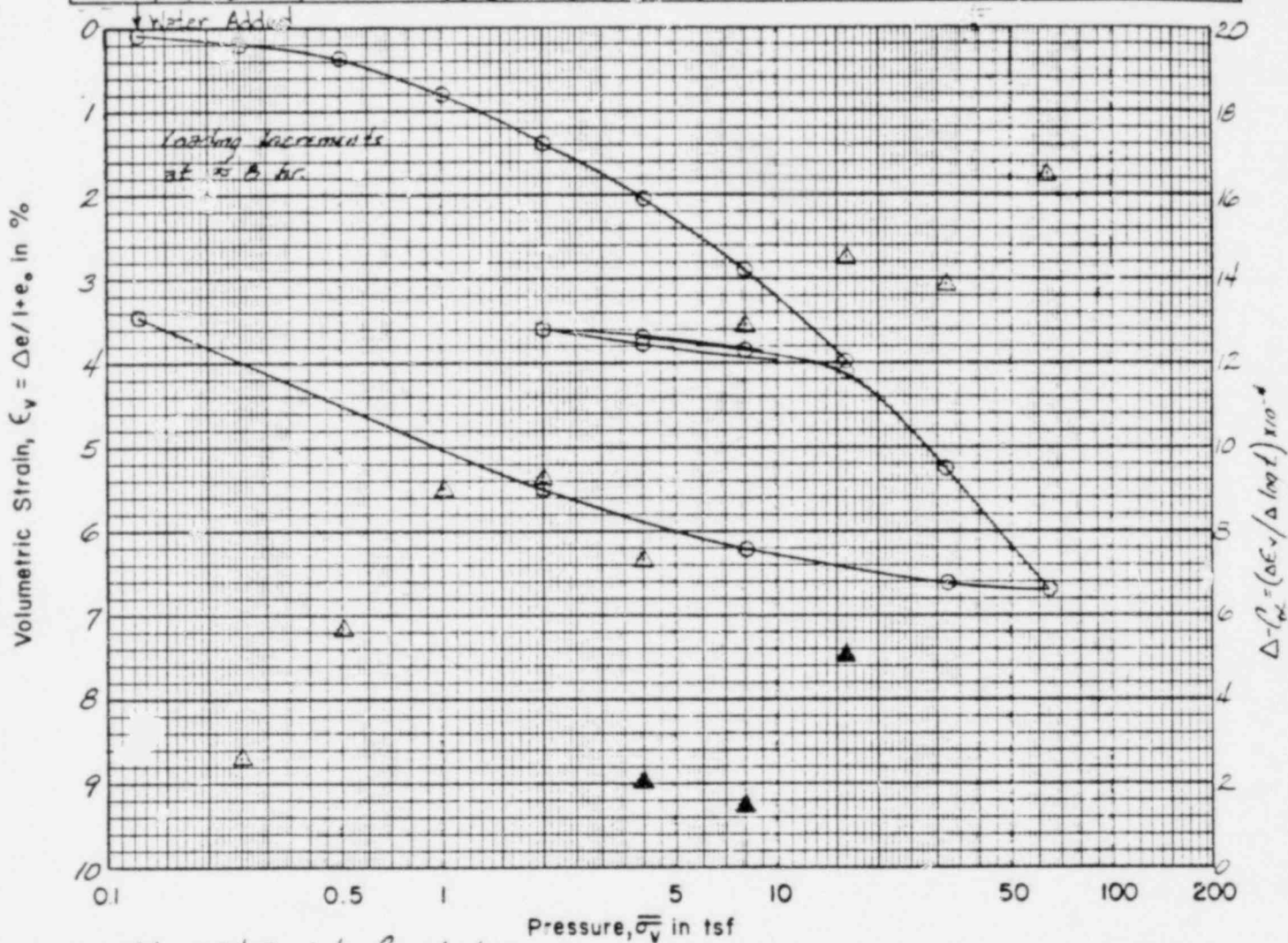


Fig. E-6 (4/6)

BIC 405573 Drawn by: JST 9/5/81 Reviewed by: JST Checked by: JLV 06/29/81

CONSOLIDATION TEST

Boring No: <i>00E-13A</i>		Sample No: <i>S-6B</i>				Depth, ft: <i>24.4</i>			
Material: <i>CL, mottled gr-br. & cr-br. m to s. sandy s.p. silty CLAY, tr. & gravel to c. sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>10.7</i>	<i>141.3</i>	<i>0.340</i>	<i>86.4</i>	<i>0.613</i>	<i>2.50</i>	<i>2.744</i>	<i>21</i>	<i>12</i>
Final	<i>10.4</i>	<i>144.7</i>	<i>0.304</i>	<i>93.7</i>	<i>0.597</i>				

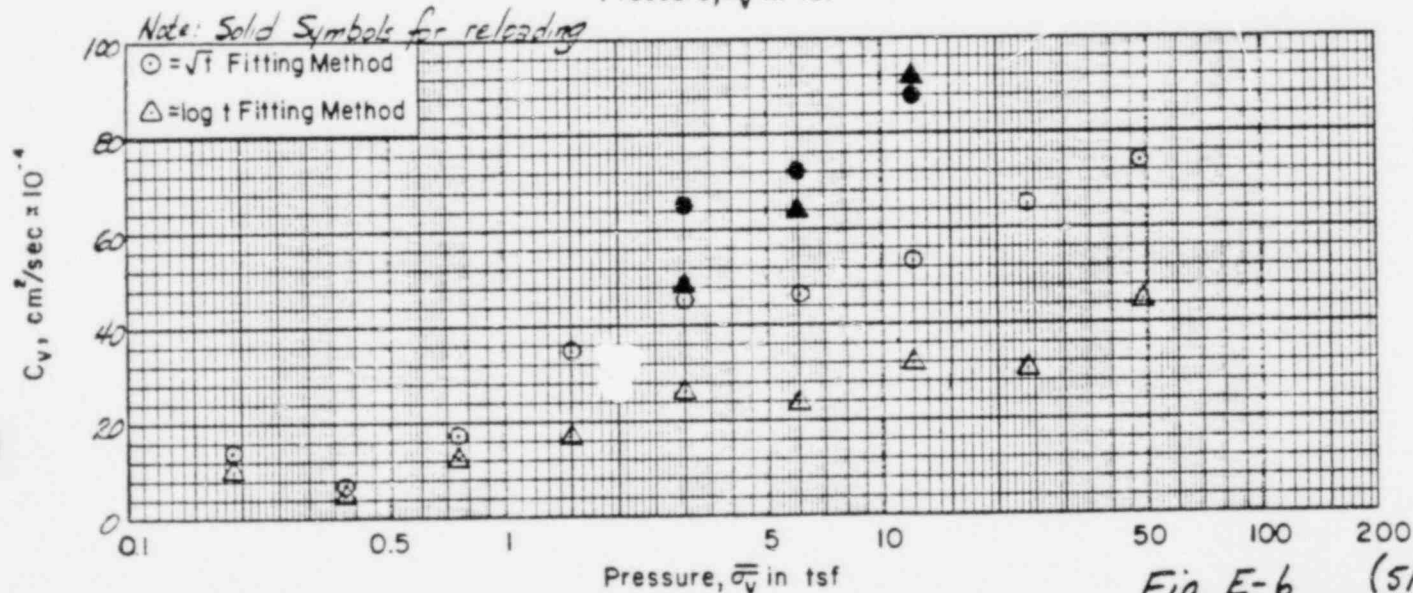
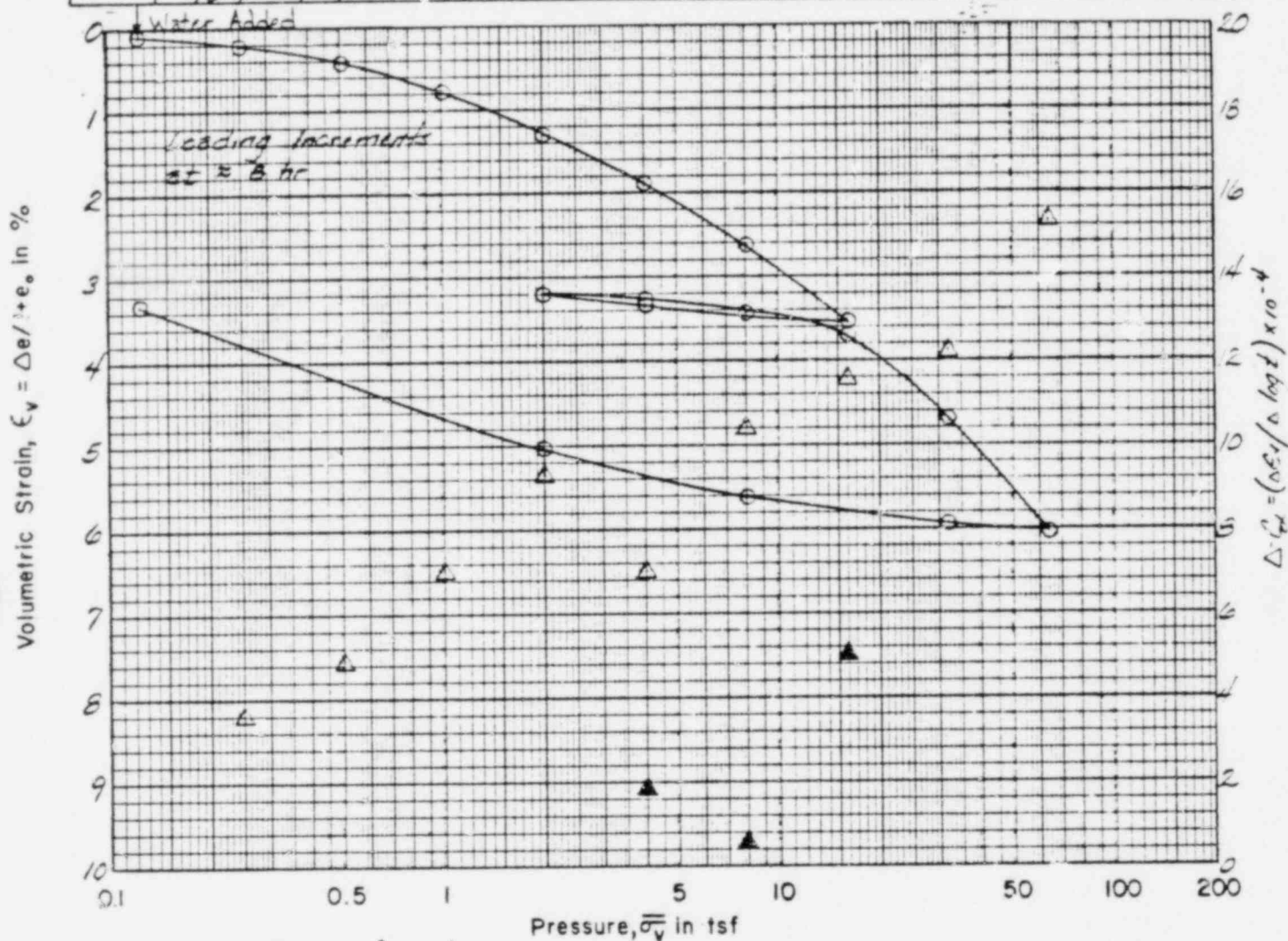
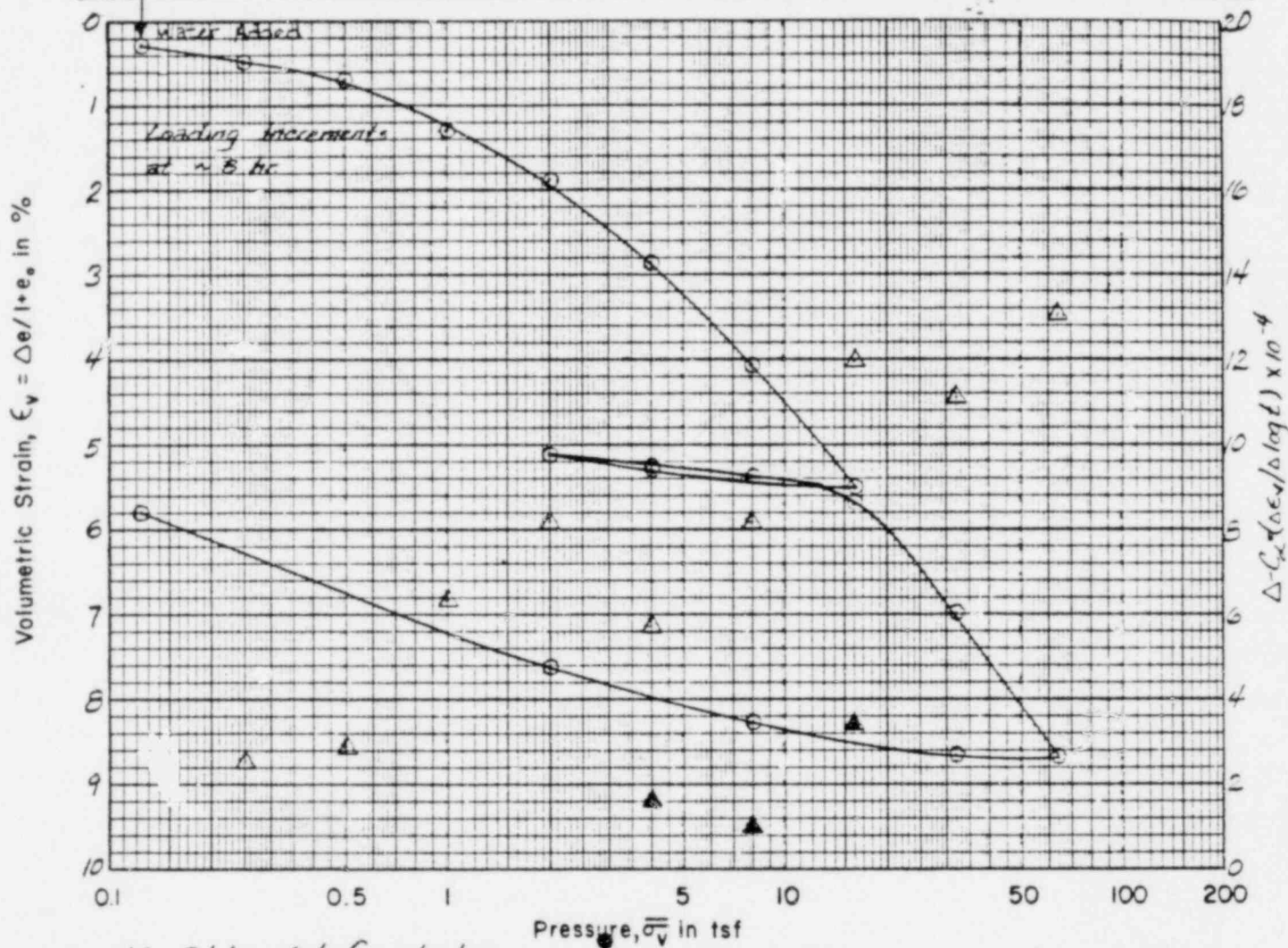


Fig. E-6 (5/6)

CONSOLIDATION TEST

Boring No: COE-13A		Sample No: S-98				Depth, ft: 26.7			
Material: CL, br. & sandy s.p. silty CLAY, trace S. gravel to m. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	10.4	140.1	0.346	82.1	0.613	2.50	2.742	23	14
Final	10.6	145.4	0.300	97.1	0.592				



Note: Solid symbols for reloading

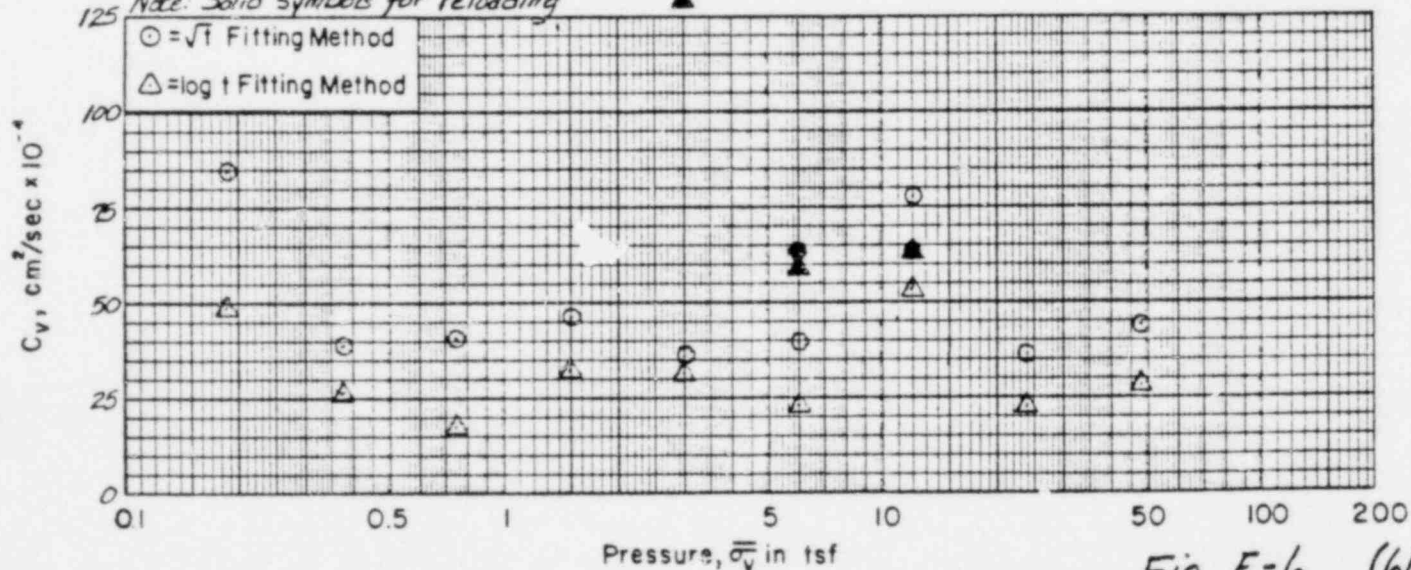


Fig. E-6 (6/6)

CONSOLIDATION TEST

Boring No: <i>COE-13B</i>			Sample No: <i>S-1B</i>			Depth, ft: <i>8.2</i>			
Material: <i>CL, gr-br m to S. sandy sp to mp silty CLAY, trace S. gravel to c. sand</i>									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	<i>9.9</i>	<i>137.9</i>	<i>0.365</i>	<i>74.4</i>	<i>0.613</i>	<i>2.50</i>	<i>2.748</i>	<i>23</i>	<i>13</i>
Final	<i>10.0</i>	<i>145.9</i>	<i>0.291</i>	<i>94.2</i>	<i>0.580</i>				

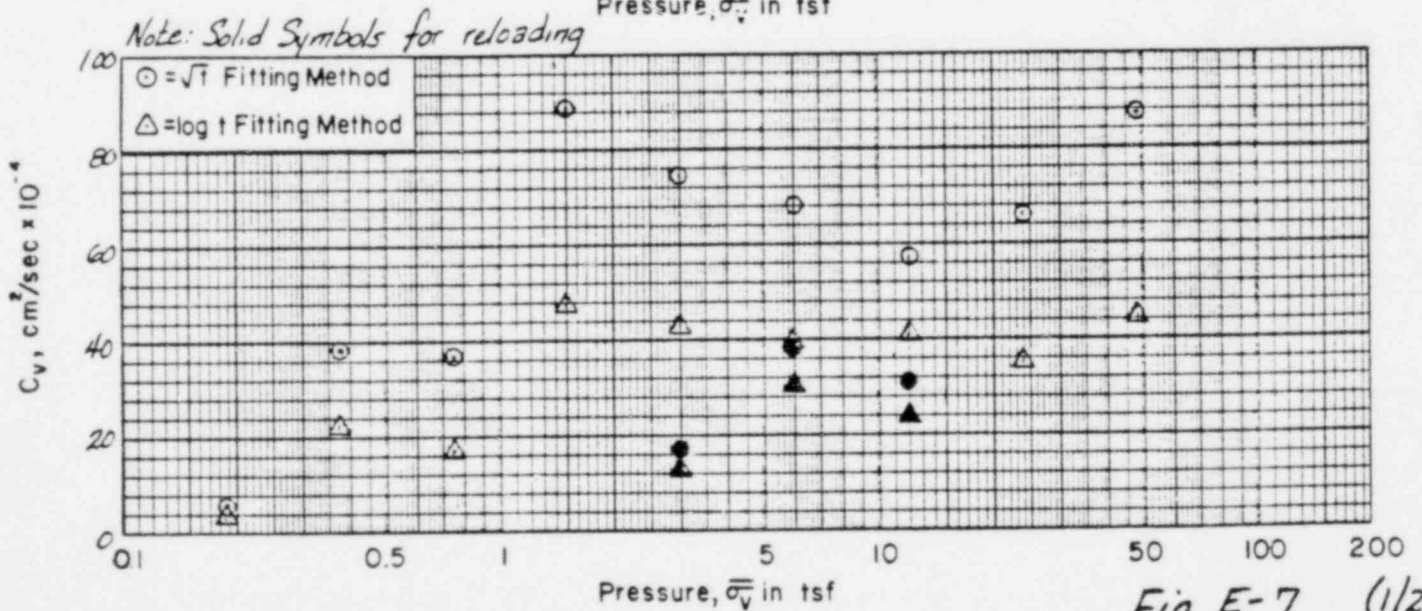
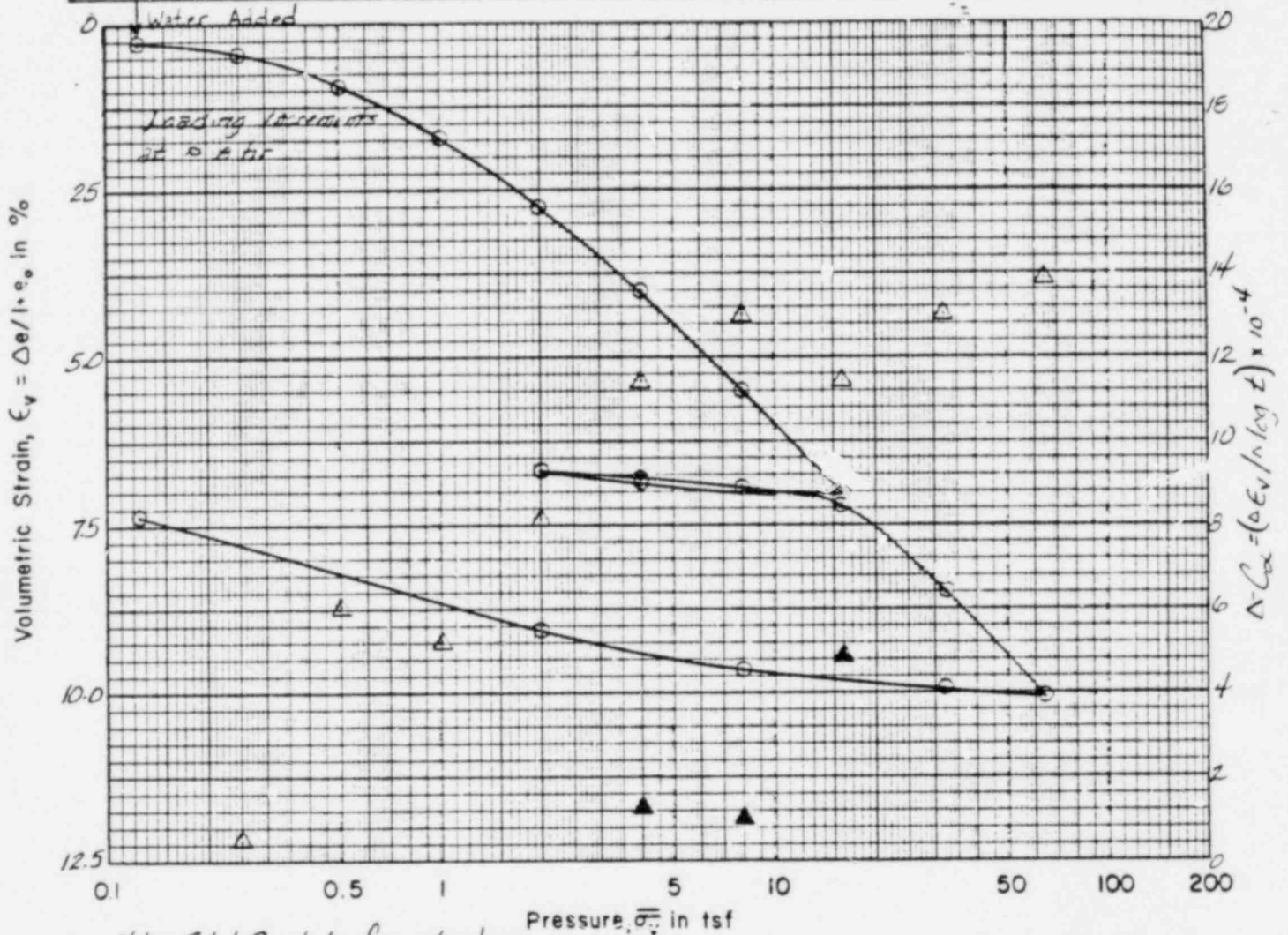


Fig. E-7 (1/2)

CONSOLIDATION TEST

Boring No: CDE-13B		Sample No: S-3D				Depth, ft: 14.4			
Material: CL-ML, br. & sandy S.P. silty CLAY, trace c. to m. sand									
	Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation, %	Height, inches	Diameter, inches	Specific Gravity	Liquid Limit, %	Plastic Limit, %
Initial	9.6	142.2	0.315	83.1	0.612	2.50	2.740	19	13
Final	9.8	147.6	0.270	99.1	0.591				

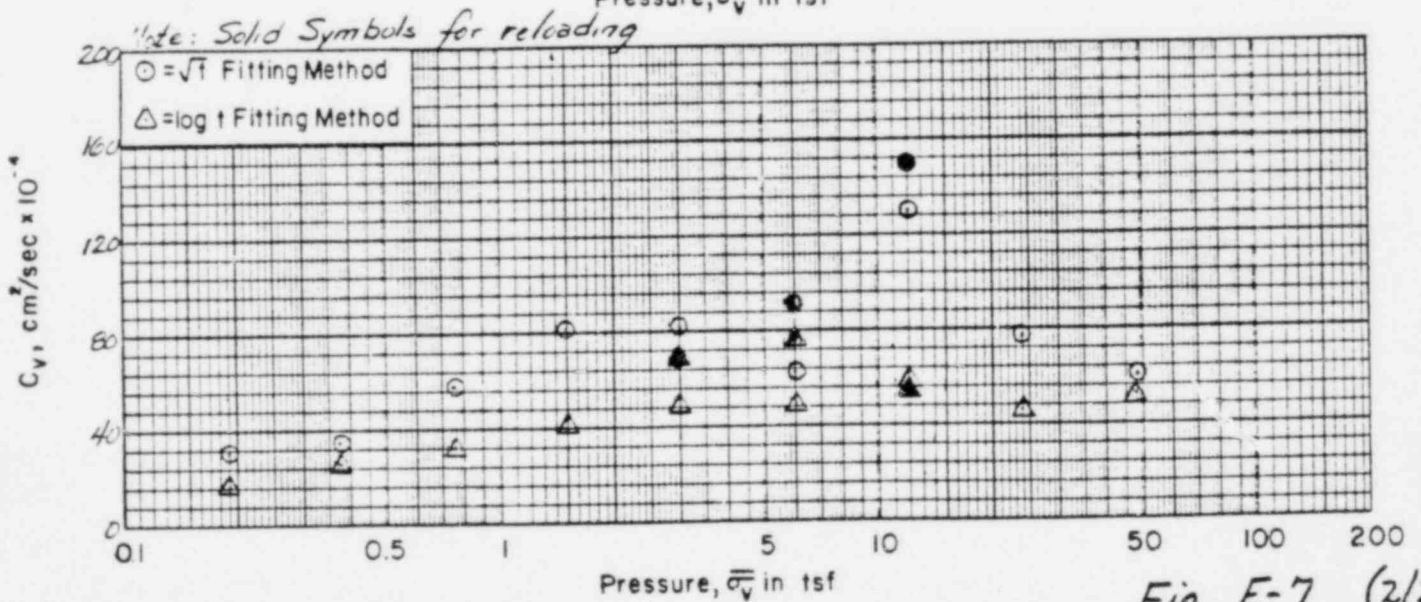
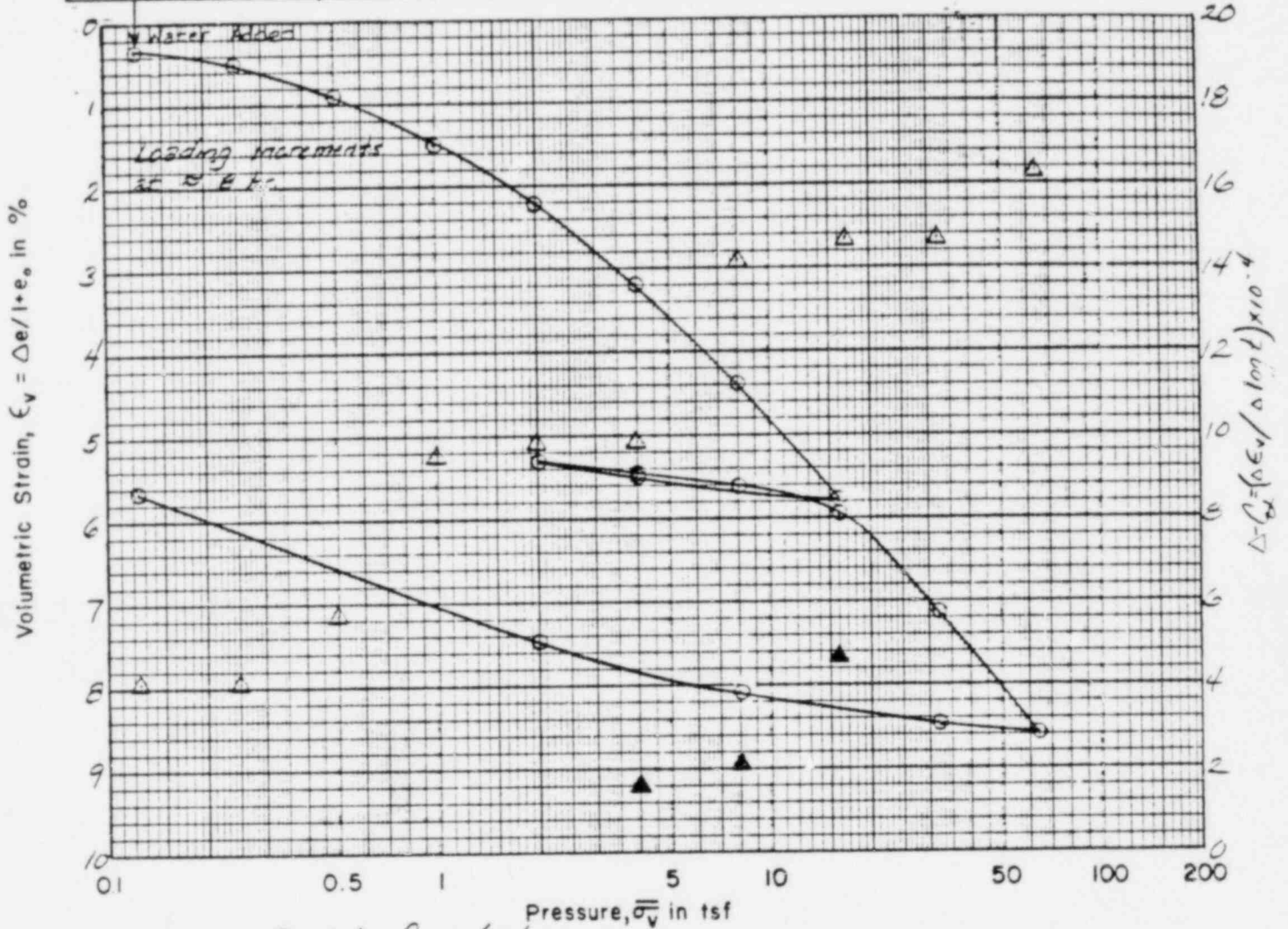


Fig. E-7 (2/2)

APPENDIX F

Supporting Data

CIU Triaxial Compression Tests

TRIAXIAL TEST (Set up / Take Down)

WCC
4-202
(1180)

Proj. No. 810 WST-3 Proj. Eng. LN Cell No. 1 Piston diam. ☒ 46"; ☐ 42"
Type Test CU-C File No. T-228

Loading Conditions:	<input type="checkbox"/> Dynamic	<input checked="" type="checkbox"/> Undrained	<input checked="" type="checkbox"/> Compression	<input checked="" type="checkbox"/> Constant cell pressure
	<input checked="" type="checkbox"/> Static	<input type="checkbox"/> Drained	<input type="checkbox"/> Extension	<input type="checkbox"/> Variable cell pressure
Type:	<input checked="" type="checkbox"/> Isotropic			<input type="checkbox"/> K ₀ Stress path
Consolidation:	<input type="checkbox"/> Anisotropic			<input type="checkbox"/> 45° Stress path
				Piston Screwed in: <input type="checkbox"/> Yes; <input checked="" type="checkbox"/> No

<input checked="" type="checkbox"/> Undisturbed	<input type="checkbox"/> Reconstituted	<input type="checkbox"/> Impact	<input type="checkbox"/> Constant Effort
Boring No. <u>COE 11A</u>	Composite No. _____	<input type="checkbox"/> Static	_____ layers; _____ 16" ^{Hammer} Tamp
Sample No. <u>S-4</u>	Specimen No. <u>C</u>	<input type="checkbox"/> Kneading	_____ Blows-Tamps / layer
Depth (ft) <u>14.6</u>	Remarks <u>ID 371</u>	<input type="checkbox"/> Tamping	<input type="checkbox"/> Under compaction
<input type="checkbox"/> Ends capped with Castor; <input type="checkbox"/> Geomarine Sample		<input type="checkbox"/> Other	_____ layers; _____ Uni (%)

Water Content		Final	
Location	<u>Ave</u>	Ave	
Container No	<u>CB-4</u>	<u>568</u>	
Wgt Container + Wet Soil (gm)	<u>72.11</u>	<u>412.95</u>	
Wgt Container + Dry Soil (gm)	<u>68.25</u>	<u>387.22</u>	
Wgt. Container (gm)	<u>32.94</u>	<u>139.85</u>	
Wgt Dry Soil (gm)	<u>35.31</u>	<u>94.737</u>	
WATER CONTENT (%)	<u>10.93</u>	<u>10.40</u>	

☐ See attached data sheet(s) for additional water contents

Specimen Weight	
Wet + Stone (etc):	_____ gm
Stone (etc):	_____ gm
Wet Initial:	<u>1443.0</u> gm
Wet Final:	<u>1441.3</u> gm
Excess Overdry Dish No	_____
Wgt Dish + Dry Soil	_____ gm
Wgt. Dish	_____ gm
Wgt. Excess Dry Soil	_____ gm

Dimensions of Specimen		Diameter (in) or	
Height (in)			
Initial (Ls)	Final (Ls)	Initial	Final
1 6.010	4.815	1-T 2.856	2.990
2 6.013	4.823	2-M 2.858	3.240
3 6.0125	4.811	3-B 2.863	3.280
4 6.0125	4.814	1-T 2.867	
5 6.0111	4.818	2-M 2.854	
Ave 6.0118	4.8162	3-B 2.876	
Ave		2.8623	3.2375

$D_{ave} = (D_1 + 2D_2 + D_3)/4$

$\Delta L = \quad \text{in} :$
 $\Delta L_0 = \quad \text{in} :$
 $EOL = \quad \text{in} :$
 $L_0 - L_0 = \quad \text{in} :$

$A_0 = \pi D^2/4 = 6.4347 \text{ in}^2$
 $V_0 = \text{in}^3 = 16.8871 = 633.92 \text{ cm}^3$
 $A_{0m} = 5.45 + 2(0)^2 = 57.1677 \text{ in}^2$

Membrane Thickness = .0275 in
Circumference (in) = 9.772 in
Diam = Cn/π = 3.1222 in

Filter Paper: Top + bottom: ☐ Yes; ☒ No
Filter Strips: ☐ Yes; ☒ No
1/2 Vertical at 1/4" - Whatman #54
1/2 Spiral at 1/4" - Whatman #1 or _____

Wgt top cap = _____ gm, 0.57 10⁻³ gm
Wgt (cap, dial) = _____ gm, _____ 10⁻³ gm

Preliminary
Y₀ = 142.11 10⁻³ Y₀ = 128.11 10⁻³

Failure Sketch



Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☒ Photo taken.
CL, gray-br mottled sandy s.p. silty CLAY, fr.
S. gravel to c. sand

Other Remarks: $\bar{\sigma} = 5.474 = 2.737$ Tef = 31.01 psi
Bottom drainage line plugged & high pore pressure build up.

Preliminary Cal. by RB Reviewed by RA

<input type="checkbox"/> Triaxial	by _____	Setup by _____	Taken down by _____
<input type="checkbox"/> Reconstituted	Date _____	Date <u>5/19/81</u>	Date _____

See back for Summary Calculations

TRIAXIAL TEST SUMMARY CALCULATIONS

T228

Type Test: CU-C ☒ Undisturbed ☐ Reconstituted - Specimen:
☐ Dynamic ϵ / H_0 or sinusoidal or ☒ Static ϵ 0.67 %/hr

Consolidation History Units: tsf or kSF	Max. Induced Past Pressure		<input checked="" type="checkbox"/> Preshear / <input type="checkbox"/> Pre-cy-loading		Preshear after Cy-loading	
	Uncorr.	Corr. #	Uncorr.	Corr. #	Uncorr.	Corr. #
σ_{cell}			19.956			
u			14.3856			
$\bar{\sigma}_v$				5.4025		
			54720	54735		
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h) / 2$				54380		
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$			1.00	0.9870		
OCR			1.00			
Consol. Time	<input type="checkbox"/> Overnight		<input type="checkbox"/> Overnight		<input type="checkbox"/> Overnight	
	days	hours	days	hours	days	hours

$H_0 = 6.0118$ in.
 $A_c = 6.4247$ in²
 $V_0 = 633.921$ cm³
 $D_{50} = 1.0851$
 $G_s = 2.74$ ☒ Assumed ☐ Measured
 $B_g = 97.6$ %
 Area Corr. Factors C
 Undrained: 1.228
 $C_u = \frac{1}{G_s} (1 - A_c / A_{100})$
 Drained: $C_d = \frac{1}{G_s} [1 - \frac{A_c (1 + e_v)}{A_{100}}]$

Calculate	By Initial	By Final	By Total	Variations	During	During	After Backpressure
W ₁ & Dry Soil	water Content	water Content	Gravimetric Specimen	in Height and Volume	Initial Consol. with out back pressure	Back - Pressure	From $\bar{\sigma}_v$ To $\bar{\sigma}_h$
w_1 (%)				Consolidation	Sign. Convention: (+) ΔV in, (-) ΔV out, (-) ΔV up, (+) ΔV down		
w_2 (%)				ΔL (in)	0.016	0.010	0.009
w_{ave} (%)	10.93	10.40		ΔV_m (cm ³)	-13.80	2.47	14.32
W ₁ & W ₂ Dry Soil (gm)	1443.0	1441.3		$R = \Delta V_m / \Delta V_v$	5.061	3.163	2.847
Initial W ₁ & Dry Soil (gm)				Corrected $\Delta V_m = R \cdot \Delta V_v$	4.393	2.745	
W ₁ & W ₂ Dry Soil (gm)				Circle Selected Value	ΔV_1	ΔV_2	ΔV_3
W ₁ & W ₂ Dry Soil (gm)				$\Delta L_{cy} = \Delta V_{rebound} = \sigma_{max} \text{ to } \sigma_{post} =$			
W ₁ & W ₂ Dry Soil (gm)				in ΔV_T (during drained loading) =			

Calculation	ΔV_c by W ₁ & W ₂ Change	ΔV_c by recorded/calculated volume changes	ΔV_c assuming $S_u = 100\%$
ΔV_c during Consolidation by $\bar{\sigma}_v$ & $\bar{\sigma}_h$ Procedures	$\Delta V_c = W_2 - W_1 - (\Delta V_v + \Delta V_T)$ $\Delta W_{s,t} = 1.7$ gm $\Delta V_c = 4.393 + 2.745 + 14.32$ $\Delta V_c = 21.458$ cm ³	$\Delta V_c = 4.393 + 2.745 + 14.32$ $\Delta V_c = 21.458$ cm ³	$\Delta V_c = V_0 - V_F$ $V_F = V_0 - (\Delta V_c + \Delta V_T)$ $V_F = 613.350$ cm ³ $\Delta V_c = 20.571$ cm ³

ΔV_c used (ave value) = 20.571 cm³ $\therefore V_c = 613.350$ cm³ $\Delta L_c = 0.084$ in; $\therefore L_c = 5.9278$ in
 $A_c = V_c / L_c (\text{cm}^3/\text{in}) / 16.3871 = 6.3141$ in² $10.144 = 43.8480 \times 10^{-3} \text{ ft}^2$
 $e_{av} = 1.840$ %; $e_v = 3.25$ %; $e_{ev} = 0.9675$ $e_s^* = 0.1898$; $e_{ev}^* =$ * not in percent
 At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ cm³; $\Delta L_{max} =$ in

Summary	Height (in)	Area (in ² or cm ² ft x 10 ⁻³)	Volume (cm ³)	Water Content (%)	Total or Dry Density (lb/ft ³)	Saturation (%)
Initial	6.0118	4.6854	633.921	10.53	142.11 128.57	87.9
After Consol.	5.9278	43.8480	613.350	10.40	146.70 132.88	100.0

$$S = w G_s \gamma_d / (G_s \gamma_w - \gamma_d) = w \cdot G_s \cdot \gamma_d / (G_s \cdot \gamma_w (1 + w) - \gamma_d)$$

Calculated by PL Reviewed by Re

$P_{ci} \times 0.072 = \text{conf}$
 $w \text{ for } S_u = 100\% = G_s \gamma_w - \gamma_d / (G_s \gamma_w - \gamma_d) = G_s \gamma_w - \gamma_d / (G_s \gamma_w (1 + w) - \gamma_d)$

1 DATA FILE IDENT. NO.
 2 PROJECT NO.
 3 BORING NO.
 4 SAMPLE NO.
 5 SPECIMEN NO.
 6 DEPTH
 7 TEST NO.
 8 FILE # FOR LOAD CELL OR PROVING RING
 9 FILE # FOR PORE PRESSURE CONST.
 10 FILE # FOR CELL PRESSURE CONST
 11 FILE # FOR FRICTION CORRECTION
 12 TYPE OF CONSOLIDATION
 13 DRAINAGE CONDITIONS DURING LOADING
 14 MODE OF LOADING
 15 CELL PRESSURE DURING LOADING
 16 INITIAL HEIGHT OF SPECIMEN IN INCHES
 17 INITIAL DIAMETER OF SPECIMEN IN INCHES
 18 INITIAL VOLUME OF SPECIMEN IN CU. CM.
 19 PISTON DIAMETER IN INCHES
 20 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
 21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
 22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
 23 WAS PISTON INTACT DURING CONSOL
 24 MEMBRANE THICKNESS IN INCHES
 25 MEMBRANE DIAMETER IN INCHES
 26 FILTER STRIP CORRECTION CONSTANT
 27 RIGHT CYLINDER DISTORTION FACTOR
 28 DOES SPECIMEN HAVE AN INDUCED OCR
 29 CELL PRESSURE IN TSF
 30 BACK PRESSURE IN TSF
 31 AXIAL DEFORMATION DURING CONSOL. IN INCHES
 32 VOLUME CHANGE DURING CONSOL. IN CU. CM.
 33 APPLIED AXIAL LOAD IN TONS*10**-3
 34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF
 35 BACK PRESSURE IN TSF
 36 AXIAL DEFORMATION IN INCHES
 37 VOLUME CHANGE IN CU. CM.
 38 PISTON DRAG CORRECTION IN TONS*10**-3
 39 SPECIMEN CYCLICALLY LOADED BEFORE SHEARING
 40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING
 41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.
 42 PORE PRESSURE IN TSF
 43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES
 44 OUTPUT UNITS REQUIRED
 45 DATA NORMALIZATION SELECTION
 46 RESULT FILE DESIRED

T-228
 81C4055T3
 COE-11A
 S-4
 C
 14.6
 10-371
 2000
 1000
 2000
 NONE
 I
 U
 C
 C
 6.0118
 2.8623
 633.921
 0.375
 0.51
 1.10
 1.775
 NO
 0.0275
 2.7922
 2.128
 1.228
 NO
 0.0
 0.0
 0.0
 0.0
 9.9288
 7.1928
 0.084
 20.571
 7.896
 NO
 NO
 0.0
 0.0
 0.0
 KSF
 2.0
 0.0

DIS (in.)	LOAD (lbs)	PORE PRESSURE (tsf)
0.00440	15.792	7.202
.00458	17.149	7.209
.00476	20.893	7.220
.00504	28.708	7.250
.00522	32.724	7.268
.00531	36.84	7.289
.00568	44.88	7.329
.00577	48.24	7.347
.00586	50.36	7.359
.00614	55.73	7.393
.00628	58.17	7.411
.00664	62.46	7.443
.00723	70.76	7.507
.00761	74.40	7.540

00000 64.78, 1.453
00733 70.76, 7.507
00761 74.40, 7.540
00797 77.71, 7.571
00857 83.63, 7.630
00894 86.50, 7.659
00930 88.83, 7.684
00999 93.18, 7.737
01031 95.08, 7.760
01063 97.03, 7.784
01169 102.46, 7.851
01306 108.26, 7.933
01370 110.98, 7.968
01444 113.37, 8.006
01586 117.71, 8.067
01655 119.77, 8.096
01728 121.45, 8.124
01866 124.92, 8.177
01934 126.61, 8.199
02008 128.07, 8.220
02283 133.44, 8.301
02407 135.62, 8.335
02540 137.79, 8.364
02792 141.97, 8.419
02916 143.81, 8.443
03044 145.60, 8.466
03296 149.24, 8.506
03420 150.92, 8.524
03984 158.68, 8.594
04172 161.18, 8.615
04364 163.51, 8.634
04745 168.01, 8.667
04938 170.35, 8.679
05194 173.39, 8.699
05841 181.09, 8.736
06162 184.57, 8.750
06487 188.26, 8.763
07134 195.53, 8.785
07464 199.00, 8.793
07785 202.58, 8.800
08450 210.13, 8.809
08789 213.71, 8.813
09133 217.24, 8.815
09472 220.44, 8.818
10151 227.77, 8.818
10495 231.02, 8.818
10834 234.28, 8.812
11861 244.43, 8.808
12200 247.30, 8.804
12539 250.13, 8.800
12874 253.22, 8.794
13920 261.96, 8.779
14598 267.60, 8.765
15295 273.19, 8.752
15983 278.29, 8.737
17363 288.55, 8.708
18743 297.88, 8.678
19435 302.82, 8.661
20815 312.16, 8.629
21508 316.12, 8.613
22186 320.57, 8.599
22902 325.07, 8.582
24282 333.3, 8.553
24965 337.5, 8.537
25653 341.5, 8.522
27023 349.9, 8.490
27739 353.8, 8.474
28454 357.4, 8.459

.28454.	357.4.	8.459
.29165.	361.5.	8.443
.29862.	364.9.	8.429
.31251.	372.4.	8.398
.32571.	379.7.	8.370
0.3392.	386.7.	8.342
0.3526.	393.8.	8.313
0.3794.	407.5.	8.255
0.3929.	413.9.	8.230
0.4061.	420.1.	8.206
0.4196.	426.8.	8.177
0.4461.	439.4.	8.126
0.4595.	445.7.	8.102
0.4728.	451.8.	8.078
0.4861.	457.5.	8.053
0.4994.	463.7.	8.029
0.5127.	469.7.	8.006
0.5261.	475.5.	7.982
0.5391.	481.1.	7.962
0.5524.	486.9.	7.937
0.5791.	497.9.	7.895
0.5921.	503.0.	7.872
0.6053.	508.5.	7.855
0.6182.	513.9.	7.830
0.6311.	518.9.	7.811
0.6443.	524.6.	7.790
0.6574.	528.9.	7.772
0.6702.	533.8.	7.753
0.6829.	539.6.	7.734
0.7085.	549.2.	7.696
0.7209.	553.4.	7.678
0.7334.	558.5.	7.660
0.7460.	563.3.	7.641
0.7587.	568.2.	7.625
0.7712.	572.7.	7.608
0.7838.	577.1.	7.592
0.7966.	581.5.	7.577
0.8093.	586.1.	7.560
0.8343.	595.7.	7.528
0.8469.	600.0.	7.511
0.8597.	604.4.	7.494
0.8727.	608.8.	7.479
0.8858.	613.3.	7.464
0.8989.	618.1.	7.448
0.9119.	622.3.	7.435
0.9246.	626.9.	7.420
0.9378.	630.8.	7.404
0.9640.	639.9.	7.376
0.9774.	644.1.	7.362
0.9907.	648.5.	7.347
1.0040.	653.3.	7.334
1.0177.	657.7.	7.316
1.0312.	661.0.	7.299
1.0321.	661.7.	7.301
1.0447.	665.2.	7.290
1.0581.	669.0.	7.272
1.0847.	677.8.	7.244
1.0980.	682.0.	7.229
1.1115.	685.9.	7.216
1.1249.	689.8.	7.203
1.1380.	694.1.	7.189
1.1513.	697.7.	7.176
1.1648.	702.0.	7.160
1.1728.	704.0.	7.154
1.1781.	705.4.	7.150
1.1902.	710.5.	7.138
-999..0.0.0.0		

A. TRIAX

THIS IS A CIU TEST. IT HAS BEEN

CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6

USING FILE NO. T-22B

PROJ. NO. 81C4055T3
BORING NO. COE-11A
SAMPLE NO. S-4
SPECIMEN NO. C
DEPTH(FT.) 14.6

REVIEWED BY: *[Signature]*
DATE: 6/5/81
INPUT DATA CHECKED BY: *[Signature]*
TEST NO. ID-371

ISOTROPIC TYPE OF CONSOLIDATION
UNDRAINED DRAINAGE CONDITIONS DURING LOADING
COMPRESSION MODE OF LOADING
CONSTANT CELL PRESSURE DURING LOADING

6.0118 INITIAL HEIGHT OF SPECIMEN IN INCHES
2.8623 INITIAL DIAMETER OF SPECIMEN IN INCHES
633.92 INITIAL VOLUME OF SPECIMEN IN CU. CM.
.3750 PISTON DIAMETER IN INCHES
.5100 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
1.1000 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
1.3750 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
NO WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0275 MEMBRANE THICKNESS IN INCHES
2.7922 MEMBRANE DIAMETER IN INCHES
2.1280 FILTER STRIP CORRECTION CONSTANT AT
2% AXIAL STRAIN IN TONS ** 10-3
1.2280 RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

9.9288 CELL PRESSURE IN TSF
7.1928 BACK PRESSURE IN TSF
.0840 AXIAL DEFORMATION DURING CONSOL. IN INCHES
20.57 VOLUME CHANGE DURING CONSOL. IN CU. CM.
7.8960 MEASURED AXIAL LOAD PRIOR TO STATIC LOADING
FROM FIRST LINE OF LOADING DATA IN TONS*10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:

AXIAL = 5.4025 KSF
LATERAL = 5.4135 KSF
MEAN = 5.4459 KSF
PBAR = 5.4380 KSF
LATERAL/AXIAL = 1.0131
AXIAL/LATERAL = .9870
OCR = ~~4.000~~

7.8960 PISTON DRAG CORRECTION IN TONS *10**-3
2000 FILE NUMBER FOR LOAD CELL OR PROVING RING
1000 FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
2000 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES IS DATA NORMALIZATION REQUIRED?
DATA NORMALIZED TO PRE-SHEAR STRESSES
WITH NORM = P-BAR OF 5.4380 KSF

AXIAL STRAIN %	DEVIATOR STRESS KSF	DELTA-U A-FACTOR KSF	G KSF	P-BAR KSF	SECANT MODULUS KSF	TANGENT MODULUS KSF	DEVIATOR NORM	DELTA-U NORM	G NORM	P-BAR NORM	SECANT NORM
0.0000	0.0000	0.0000	-0.0355	5.4386	0.0000	0.0000	-0.0131	0.0000	-0.0045	1.0000	0.0000
0.0030	-0.0710	0.120	-0.0201	5.4414	1013.492	1909.742	-0.0074	0.0022	-0.0037	1.0006	186.3715
0.0061	-0.0402	0.360	0.0205	5.4400	1019.742	3286.415	0.0083	0.0046	0.0041	1.0040	351.1875
0.0108	0.0083	0.960	0.1114	5.4890	2722.222	3388.236	0.0410	0.0177	0.0205	1.0094	500.5909
0.0138	0.1320	1.0588	0.3425	5.4987	2785.312	4592.535	0.0750	0.0316	0.0299	1.0112	512.1926
0.0154	0.4080	1.0770	0.3570	5.5055	3120.598	4552.979	0.0750	0.0316	0.0375	1.0124	573.8485
0.0216	0.5910	1.1132	0.3837	5.5150	3065.655	3984.816	0.087	0.0467	0.0543	1.0142	563.7449
0.0231	0.6675	1.1288	0.3927	5.5173	3195.298	4108.042	0.127	0.0533	0.0614	1.0146	587.5951
0.0246	0.7157	1.1387	0.3991	5.5174	3194.169	2881.048	0.1316	0.0577	0.0658	1.0146	587.3774
0.0294	0.8378	1.1645	0.4189	5.5104	3096.161	2466.770	0.1541	0.0702	0.0770	1.0133	569.3547
0.0317	0.8933	1.1767	0.4466	5.5022	3040.478	1975.895	0.1643	0.0769	0.0821	1.0118	555.1151
0.0378	0.9906	1.1585	0.4953	5.4869	2809.515	1610.780	0.1822	0.0886	0.0911	1.0090	516.6431
0.0494	1.1790	1.2424	0.5895	5.4530	2528.944	1683.622	0.2168	0.1122	0.1084	1.0028	465.0525
0.0542	1.2616	1.2630	0.6088	5.4283	2460.934	1491.888	0.2320	0.1243	0.1160	0.9982	452.5425
0.0602	1.3366	1.2822	0.6683	5.4038	2337.282	1279.999	0.2458	0.1357	0.1229	0.9937	426.8041
0.0703	1.4707	1.3185	0.7354	5.3529	2191.670	1182.670	0.2705	0.1574	0.1352	0.9843	403.0274
0.0766	1.5357	1.3368	0.7678	5.3274	2097.817	953.223	0.2824	0.1681	0.1412	0.9797	385.7686
0.0827	1.5883	1.3522	0.7941	5.3037	2007.344	854.969	0.2921	0.1773	0.1460	0.9753	369.1316
0.0943	1.6845	1.3830	0.8432	5.2468	1863.692	818.702	0.3101	0.1968	0.1551	0.9648	342.7153
0.0997	1.7293	1.3969	0.8647	5.2222	1805.765	804.343	0.3180	0.2052	0.1590	0.9603	332.0631
0.1051	1.7733	1.4115	0.8867	5.1962	1754.866	749.169	0.3261	0.2140	0.1630	0.9555	322.7032
0.1230	1.8955	1.4540	0.9128	5.1233	1599.085	623.346	0.3486	0.2387	0.1743	0.9421	294.0566
0.1461	2.0257	1.5050	1.0434	5.0244	1435.208	564.175	0.3725	0.2688	0.1863	0.9239	263.9211
0.1569	2.0867	1.5294	1.0700	4.9849	1375.334	496.263	0.3837	0.2817	0.1919	0.9167	252.9109
0.1694	2.1401	1.5536	1.0700	4.9356	1305.463	415.573	0.3935	0.2957	0.1968	0.9076	240.0624
0.1933	2.2368	1.5975	1.1188	4.8619	1193.737	398.925	0.4113	0.3181	0.2037	0.8941	219.5169
0.2050	2.2827	1.6194	1.1413	4.8269	1148.323	347.874	0.4198	0.3288	0.2099	0.8876	211.1658
0.2173	2.3198	1.6391	1.1599	4.7895	1100.338	315.986	0.4266	0.3391	0.2133	0.8807	202.3418
0.2406	2.3967	1.6802	1.1984	4.7219	1025.818	328.250	0.4407	0.3586	0.2204	0.8693	189.6382
0.2520	2.4341	1.6991	1.2171	4.6986	993.975	291.636	0.4476	0.3643	0.2238	0.8640	182.7825
0.2645	2.4662	1.7174	1.2331	4.6707	959.197	255.615	0.4535	0.3744	0.2268	0.8599	176.3873
0.3109	2.5841	1.7889	1.2921	4.5676	853.997	240.948	0.4752	0.4042	0.2376	0.8399	157.0419
0.3318	2.6318	1.8205	1.3159	4.5235	814.517	219.160	0.4840	0.4167	0.2420	0.8318	149.7620
0.3543	2.6790	1.8506	1.3395	4.4891	776.268	212.330	0.4926	0.4274	0.2463	0.8255	142.7484
0.3968	2.7700	1.9113	1.3850	4.4246	716.033	202.228	0.5094	0.4476	0.2547	0.8136	131.6717
0.4177	2.8098	1.9392	1.4042	4.3968	684.594	184.568	0.5167	0.4564	0.2584	0.8095	126.8308
0.4393	2.8484	1.9670	1.4242	4.3698	644.894	181.907	0.5238	0.4649	0.2619	0.8036	122.2125
0.4818	2.9270	2.0214	1.4635	4.3291	622.261	178.737	0.5383	0.4796	0.2691	0.7961	114.4279
0.5027	2.9631	2.0472	1.4816	4.3112	603.552	173.930	0.5449	0.4862	0.2724	0.7928	110.9876
0.5979	3.1298	2.1637	1.5649	4.2545	535.385	173.347	0.5755	0.5120	0.2978	0.7824	98.4522
0.6296	3.1842	2.2027	1.5921	4.2397	517.053	164.628	0.5855	0.5197	0.2928	0.7796	95.0812
0.6620	3.2353	2.2398	1.6177	4.2273	499.474	155.497	0.5947	0.5267	0.2975	0.7743	91.8485
0.7262	3.3338	2.3106	1.6669	4.2105	468.830	155.223	0.6131	0.5388	0.3065	0.7743	86.2134
0.7588	3.3850	2.3434	1.6925	4.2121	455.460	155.484	0.6225	0.5432	0.3112	0.7746	83.7547
0.8020	3.4514	2.3919	1.7257	4.2054	439.212	153.766	0.6347	0.5506	0.3173	0.7733	80.7670
0.9111	3.6192	2.5045	1.8096	4.2153	409.021	146.546	0.6545	0.5685	0.3328	0.7752	74.4795
0.9653	3.6947	2.5539	1.8473	4.2250	395.114	142.631	0.6794	0.5923	0.3397	0.7769	71.7383
1.0201	3.7747	2.6051	1.8874	4.2390	376.992	145.018	0.6941	0.5741	0.3471	0.7795	69.3252
1.1293	3.9230	2.7038	1.9660	4.2737	354.480	139.124	0.7231	0.5922	0.3615	0.7859	65.1856
1.1849	4.0067	2.7483	2.0033	4.2951	344.129	138.311	0.7368	0.5851	0.3684	0.7928	63.2822
1.2391	4.0838	2.7929	2.0419	4.3196	335.316	143.639	0.7510	0.5877	0.3755	0.7943	61.6614
1.3513	4.2463	2.8791	2.1231	4.3829	319.501	139.393	0.7808	0.5910	0.3904	0.8060	58.7531
1.4094	4.3229	2.9198	2.1614	4.4132	311.967	131.883	0.7949	0.5925	0.3975	0.8115	57.2678
1.4665	4.3982	2.9567	2.1991	4.4469	304.758	124.247	0.8088	0.5932	0.4044	0.8177	56.0422
1.5237	4.4661	2.9922	2.2330	4.4748	297.775	127.540	0.8213	0.5943	0.4106	0.8229	54.7580
1.6382	4.6223	3.0618	2.3112	4.5530	286.490	127.311	0.8500	0.5943	0.4230	0.8372	52.6829
1.6962	4.6909	3.0924	2.3455	4.5873	280.734	119.266	0.8626	0.5943	0.4313	0.8436	51.6243
1.7534	4.7597	3.1118	2.3799	4.6337	275.501	121.868	0.8753	0.5921	0.4376	0.8521	50.6621
1.8267	4.9736	3.1989	2.4868	4.7487	261.828	113.907	0.9146	0.5907	0.4573	0.8732	48.1477
1.9839	5.0333	3.2174	2.5166	4.7845	257.269	103.515	0.9256	0.5892	0.4629	0.8802	47.3130
2.0411	5.0920	3.2354	2.5460	4.8239	252.954	108.347	0.9364	0.5877	0.4682	0.8871	46.5163
2.0974	5.1564	3.2510	2.5760	4.8661	248.518	106.141	0.9469	0.5865	0.4741	0.8940	45.7880

1.9267	4.9736	3.1989	3.2120	6.366	2.4868	4.7487	261.828	113.907	9146	5907	4573	8732	49.1477
1.9839	5.0333	3.2174	3.2040	6.276	2.5166	4.7865	257.289	103.515	9256	5992	4628	8802	47.3130
2.0411	5.0920	3.2254	3.1960	6.189	2.5460	4.8239	252.956	108.347	9364	5977	4682	8871	46.5163
2.0976	5.1564	3.2518	3.1840	6.090	2.5782	4.8601	248.211	109.151	9452	5955	4741	8952	45.8280
2.1740	5.3369	3.3004	3.1540	5.931	2.6484	4.9884	237.811	101.823	9914	5900	4907	9173	43.7312
2.3684	5.4528	3.3223	3.1260	5.659	2.7244	5.0744	231.278	92.264	1.0027	5748	5014	9331	42.5298
2.5060	5.5671	3.3450	3.1000	5.497	2.7835	5.1576	224.964	93.019	1.0237	5701	5119	9484	41.3725
2.6221	5.6702	3.3586	3.0700	5.346	2.8351	5.2392	218.960	88.818	1.0427	5645	5214	9634	40.2447
2.8449	5.8768	3.3869	3.0120	5.063	2.9364	5.4006	209.342	84.078	1.0607	5539	5303	9931	38.3121
3.0877	6.0617	3.4033	2.9520	4.812	3.0308	5.5531	198.620	81.665	1.1147	5428	5373	1.0217	36.5244
3.2044	6.1597	3.4097	2.9180	4.682	3.0798	5.6361	194.442	81.316	1.1327	5366	5464	1.0364	35.7560
3.3472	6.3429	3.4207	2.8540	4.448	3.1715	5.7918	186.603	71.701	1.1644	5332	5532	1.0651	34.3146
3.5541	6.4185	3.4199	2.8220	4.347	3.2093	5.8616	182.593	70.063	1.1803	5199	5602	1.0779	33.5772
3.6885	6.5048	3.4268	2.7940	4.248	3.2524	5.9328	179.252	73.512	1.1962	5138	5681	1.0910	32.9628
4.0221	6.7913	3.4282	2.7600	4.141	3.2956	6.0101	175.820	69.340	1.2121	5075	5660	1.1052	32.3317
4.0221	6.7475	3.4337	2.7020	3.961	3.3737	6.1463	169.527	68.111	1.2408	4949	5745	1.1202	31.1744
4.1373	6.8271	3.4343	2.6700	3.869	3.4136	6.2181	166.731	66.864	1.2514	4910	5777	1.1435	30.6603
4.2333	6.9021	3.4349	2.6400	3.784	3.4310	6.2856	163.944	66.456	1.2692	4855	5846	1.1559	30.1478
4.4845	7.0600	3.4356	2.5760	3.611	3.5200	6.4287	159.016	63.772	1.2983	4737	5821	1.1822	29.2415
4.6053	7.1315	3.4334	2.5440	3.530	3.5658	6.4965	156.399	56.496	1.3116	4678	5857	1.1946	28.7402
4.7259	7.1964	3.4306	2.5140	3.459	3.5982	6.5590	153.779	58.314	1.3233	4623	5867	1.2061	28.2785
4.8458	7.2718	3.4297	2.4820	3.378	3.6359	6.6287	151.529	57.111	1.3372	4564	5886	1.2190	27.8647
4.9634	7.3322	3.4272	2.4540	3.313	3.6661	6.6870	149.156	54.515	1.3483	4513	5942	1.2297	27.4283
5.1977	7.4673	3.4221	2.3920	3.171	3.7337	6.8166	145.031	58.223	1.3732	4399	5866	1.2535	26.6499
5.4204	7.5985	3.4206	2.3360	3.044	3.7992	6.9383	141.494	56.559	1.3973	4296	5986	1.2759	26.0193
5.6480	7.7218	3.4167	2.2800	2.924	3.8609	7.0561	137.976	54.697	1.4200	4193	6015	1.2975	25.3726
5.8740	7.8465	3.4119	2.2220	2.804	3.9233	7.1766	134.790	53.727	1.4429	4096	6096	1.3197	24.7867
6.3261	8.0829	3.3988	2.1060	2.580	4.0414	7.4109	128.893	49.670	1.4864	3873	7215	1.3628	23.7021
6.5339	8.1901	3.3950	2.0560	2.466	4.0951	7.5147	126.050	46.626	1.5061	3781	7300	1.3819	23.1793
6.7765	8.2929	3.3915	2.0080	2.398	4.1465	7.6142	123.425	47.645	1.5250	3693	7425	1.4002	22.6967
7.0043	8.4048	3.3838	1.9500	2.298	4.2024	7.7282	121.009	47.556	1.5456	3586	7728	1.4211	22.2524
7.4513	8.6104	3.3733	1.8480	2.126	4.3052	7.9331	116.508	43.938	1.5834	3398	7917	1.4589	21.4248
7.6774	8.7117	3.3698	1.8000	2.046	4.3559	8.0321	114.398	43.938	1.6020	3310	8010	1.4770	21.0366
7.9018	8.8083	3.3651	1.7520	1.970	4.4042	8.1285	112.372	41.517	1.6198	3222	8099	1.4948	20.6481
8.1261	8.8980	3.3574	1.7020	1.894	4.4490	8.2235	110.373	41.179	1.6363	3130	8191	1.5122	20.2966
8.3505	8.9931	3.3526	1.6540	1.821	4.4966	8.3192	108.546	41.760	1.6538	3042	8269	1.5298	19.9406
8.5749	9.0854	3.3484	1.6080	1.753	4.5427	8.4115	106.782	39.863	1.6707	2957	8354	1.5468	19.6363
8.8009	9.1727	3.3418	1.5600	1.684	4.5863	8.5032	105.031	38.307	1.6868	2869	8434	1.5637	19.3142
9.0202	9.2560	3.3391	1.5200	1.626	4.6280	8.5851	103.402	38.183	1.7021	2795	8510	1.5787	19.0146
9.2446	9.3421	3.3313	1.4700	1.558	4.6710	8.6782	101.823	36.664	1.7179	2703	8590	1.5958	18.7242
9.4750	9.4296	3.3218	1.3860	1.444	4.7498	8.7498	98.718	33.587	1.7489	2549	8734	1.6258	18.1532
9.9143	9.5702	3.3130	1.3400	1.386	4.7851	8.8228	97.246	33.487	1.7599	2464	8799	1.6408	17.8826
10.1370	9.6477	3.3126	1.3060	1.339	4.8238	8.8957	95.874	34.747	1.7741	2402	8871	1.6542	17.6303
10.3546	9.7232	3.3030	1.2560	1.278	4.8616	8.9636	94.588	32.735	1.7880	2310	8940	1.6704	17.3939
10.5722	9.7902	3.2981	1.2180	1.230	4.8951	9.0352	93.275	33.210	1.8003	2240	9002	1.6836	17.1523
10.7949	9.8696	3.2940	1.1760	1.178	4.9348	9.1071	92.066	29.448	1.8149	2163	9075	1.6986	16.9337
11.0159	9.9209	3.2867	1.1400	1.136	4.9605	9.2389	90.705	26.296	1.8244	2096	9122	1.7100	16.6798
11.2318	9.9843	3.2813	1.1020	1.091	4.9922	9.3688	89.525	33.512	1.8360	2026	9180	1.7228	16.4629
11.4461	10.0500	3.2798	1.0640	1.044	5.0325	9.4473	88.555	32.706	1.8509	1957	9254	1.7373	16.2844
11.6779	10.1848	3.2677	9.9800	0.958	5.0924	9.5836	86.344	28.456	1.8729	1817	9364	1.7623	15.8778
12.0871	10.2333	3.2603	9.9520	0.918	5.1166	9.6440	85.250	27.026	1.8818	1751	9409	1.7734	15.6767
12.2980	10.2984	3.2567	9.9160	0.878	5.1492	9.7128	84.318	27.193	1.8938	1684	9469	1.7861	15.5053
12.5105	10.3569	3.2515	9.8780	0.836	5.1784	9.7802	83.353	27.645	1.9045	1615	9523	1.7985	15.3278
12.7248	10.4164	3.2479	9.8460	0.801	5.2082	9.8421	82.417	26.184	1.9155	1556	9577	1.8099	15.1558
12.9357	10.4882	3.2425	9.8120	0.764	5.2341	9.9022	81.474	23.841	1.9250	1493	9625	1.8209	14.9824
13.1482	10.5174	3.2376	9.7800	0.730	5.2587	9.9590	80.531	22.670	1.9340	1434	9670	1.8314	14.8089
13.3594	10.5619	3.2334	9.7500	0.699	5.2827	10.0132	79.589	23.154	1.9429	1379	9714	1.8413	14.6357
13.5784	10.6159	3.2282	9.7160	0.663	5.3085	10.0732	78.713	23.100	1.9524	1317	9762	1.8524	14.4746
13.7941	10.7271	3.2213	9.6820	0.627	5.3366	10.1277	77.129	22.542	1.9726	1199	9863	1.8743	14.1833
14.0001	10.7717	3.2149	9.6180	0.593	5.3658	10.2492	76.289	20.972	1.9808	1136	9904	1.8847	14.0288
14.2066	10.8170	3.2086	9.5840	0.559	5.4085	10.3041	75.461	20.572	1.9891	1074	9946	1.8952	13.8766
14.4179	10.8612	3.2041	9.5540	0.499	5.4306	10.3584	74.633	20.309	1.9973	1019	9986	1.9048	13.7243
14.6289	10.9064	3.1997	9.5240	0.470	5.4532	10.4113	73.800	20.222	2.0056	964	1.0078	1.9145	13.5763
14.8399	10.9567	3.1956	9.4920	0.438	5.4783	10.4666	73.080	20.222	2.0148	9095	1.0074	1.9251	13.4387
15.0502	11.0035	3.1919	9.4600	0.413	5.4978	10.5143	72.287	19.735	2.0220	8557	1.0110	1.9335	13.2928
15.2635	11.0421	3.1880	9.4360	0.384	5.5211	10.5678	71.589	17.988	2.0305	8002	1.0153	1.9433	13.1466
15.4746	11.0738	3.1803	9.4040	0.354	5.5469	10.6159	70.778	18.863	2.0364	7453	1.0182	1.9522	13.0154
15.6881	11.1050	3.1731	9.3690	0.301	5.5800	10.7445	69.378	17.489	2.0522	6840	1.0261	1.9705	12.7590
16.1412	11.1250	3.1680	9.3200	0.275	5.5975	10.8163	67.636	16.294	2.0586	6293	1.0293	1.9789	12.6115
16.6386	11.2333	3.1627	9.2900	0.247	5.6167	10.9107	65.941	16.431	2.0657	5753	1.0325	1.9869	12.4637

14.6479	10.8612	3.2041	-5540	.0477	5.4306	10.4584	74.633	21.600	1.0056	.0964	1.0028	1.9143	13.3763
14.8889	10.9064	3.1997	5240	.0470	5.4322	10.4113	73.828	20.222	2.0148	.0905	1.0074	1.9251	13.4387
15.0899	10.9567	3.1956	4920	.0438	5.4783	10.4686	73.080	19.735	2.0220	.0857	1.0110	1.9335	13.4928
15.3092	10.9955	3.1919	4660	.0413	5.4978	10.5143	72.287	19.735	2.0305	.0802	1.0153	1.9433	13.5446
15.5225	11.0421	3.1880	4360	.0384	5.5211	10.5628	71.589	17.988	2.0364	.0743	1.0182	1.9522	13.6154
15.7461	11.0738	3.1803	4040	.0354	5.5369	10.6159	70.778	16.863	2.0522	.0640	1.0261	1.9705	12.7580
16.1881	11.1600	3.1731	3480	.0301	5.5800	10.7155	69.378	17.488	2.0586	.0598	1.0293	1.9789	12.6215
16.4142	11.1950	3.1680	3200	.0275	5.5925	10.7613	68.636	16.284	2.0637	.0533	1.0329	1.9880	12.4937
16.6386	11.2333	3.1627	2900	.0247	5.6167	10.8107	67.941	18.591	2.0740	.0495	1.0370	1.9970	12.3766
16.8629	11.2784	3.1605	2640	.0223	5.6392	10.8595	67.304	17.821	2.0804	.0419	1.0403	2.0069	12.2479
17.0940	11.3144	3.1524	2280	.0191	5.6572	10.9138	66.604	11.357	2.0836	.0357	1.0418	2.0147	12.1042
17.3218	11.3507	3.1415	1940	.0160	5.6853	10.9662	65.823	35.482	2.0854	.0324	1.0427	2.0149	12.1039
17.5495	11.3826	3.1402	1760	.0144	5.6702	10.9571	65.821	37.156	2.0925	.0257	1.0447	2.0211	11.9806
17.7756	11.3873	3.1303	1400	.0112	5.6936	11.0391	64.461	13.214	2.0940	.0257	1.0470	2.0300	11.8537
18.2243	11.4370	3.1208	0840	.0062	5.7285	11.1306	63.256	14.563	2.1068	.0154	1.0534	2.0468	11.6322
18.4497	11.4875	3.1146	0540	.0036	5.7437	11.1761	62.652	12.072	2.1124	.0099	1.0562	2.0552	11.5211
18.6764	11.5115	3.1088	0280	.0013	5.7557	11.2144	62.017	10.556	2.1169	.0051	1.0584	2.0622	11.4043
18.9025	11.5354	3.1031	0020	.0010	5.7677	11.2527	61.401	12.375	2.1212	.0004	1.0606	2.0693	11.2911
19.1235	11.5667	3.0980	-0260	.0034	5.7834	11.2967	60.856	11.103	2.1270	.0048	1.0635	2.0774	11.1908
19.3478	11.5847	3.0912	-0520	.0057	5.7923	11.3320	60.243	10.370	2.1303	.0096	1.0652	2.0838	11.0791
19.5756	11.6137	3.0843	-0840	.0084	5.8048	11.3788	59.690	9.118	2.1356	.0154	1.0678	2.0925	10.9765
19.7105	11.6211	3.0811	-0960	.0095	5.8106	11.3947	59.319	6.188	2.1373	.0177	1.0685	2.0954	10.9083
19.7999	11.6273	3.0792	-1040	.0102	5.8136	11.4059	59.082	14.824	2.1381	.0191	1.0691	2.0974	10.8647
20.0040	11.6238	3.0784	-1280	.0122	5.8369	11.4535	58.712	351.000	2.1467	.0235	1.0733	2.1062	10.7966 STOP

A. BASIC RESPT

CDS 16K BASIC, VERSION 5.4

TRIAxIAL TEST (Set Up / Take Down)

Proj. No. 814011 Proj. Eng. MM Cell No. 3 Piston dia.: ☒ 3/8"; ☐ 1/2" WCC 4-202 (1180)
 Type Test CUM - C File No. T-222

Loading Conditions: ☐ Dynamic ☒ Undrained ☒ Compression ☒ Constant Cell Pressure
☒ Static ☐ Drained ☐ Extension ☐ Variable cell pressure

Type: ☒ Isotropic ☐ K₀ stress path
 Consolidation: ☐ Anisotropic ☐ 45° Stress path
 Piston Screwed in: ☐ Yes; ☒ No

☒ Undisturbed ☐ Reconstituted ☐ Impact ☐ Constant Effort
 Boring No. COC 13A Composite No. _____ ☐ Static _____ layers; _____ 16" Hammer
 Sample No. 5-1 Specimen No. B ☐ Kneading _____ Blows-Tamps / layer
 Depth (ft) 10.8 Remarks _____ ☐ Tamping ☐ Undercompaction
☐ Ends capped with Castor; ☐ Geomarine Sample ☐ Other _____ layers; _____ Uni (%)

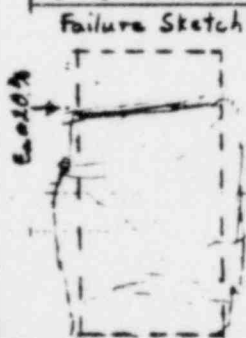
Water Content			Final
Location	<u>MM</u>		Ave
Container No.	<u>1A20</u>		<u>228</u>
Wgt Container + Wet Soil (gm)	<u>50.90</u>		<u>496.10</u>
Wgt Container + Dry Soil (gm)	<u>49.30</u>		<u>466.83</u>
Wgt Container (gm)	<u>34.02</u>		<u>189.41</u>
Wgt Dry Soil (gm)	<u>15.28</u>		<u>277.42</u>
WATER CONTENT (%)	<u>10.47</u>		<u>10.55</u>

☐ See attached data sheet(s) for additional water contents

Specimen Weight
Wet + Stone (wt): _____ gm
Stone (wt): _____ gm
Wet Initial: <u>1444.0</u> gm
Wet Final: <u>1441.9</u> gm
Excess Oven Dry: Dish No. _____
Wgt Dish + Dry Soil _____ gm
Wgt. Dish _____ gm
Wgt. Excess Dry Soil _____ gm

Dimensions of Specimen		Specimen Diameter (in) or	
Initial (Lg)	Final (Lg)	Initial	Final
1 6.010	4.859	1-T 2.855	3.000
2 6.005	4.866	2-M 2.855	3.286
3 6.012	4.870	3-B 2.866	2.955
4 6.004	4.848	1-T 2.843	
5 6.003	4.843	2-M 2.148	
Ave 6.0068	4.8572	3-B 2.880	
Ave		Ave 2.9578	3.18175
A ₀ = _____ in		A ₀ = $\pi D^2/4 = 6.4145$ in ²	
A _L = _____ in		V ₀ = in ³ 16.8871 = 631.405 cm ³	
EOL = _____ in		A ₀ = $5.4542(D^2)^2 = 55.2158$ in ²	
L ₀ - L ₈ = _____ in			

Membrane Thickness: 0.275 in
 Circumference (cm) = 8.92175 in
 Diam = $Cm/\pi = 2.8209$ in
 Filter Paper: Top + bottom: ☐ Yes; ☒ No
 Filter Strips: ☒ Yes; ☐ No
 Vertical at 1/4" Whatman #540r
 Spiral at 1/4" Whatman #1 or
 Wgt top cap: _____ gm, _____ 10⁻³ gm
 Wgt (cap, dial) = _____ gm, _____ 10⁻³ gm
 Preliminary
 Y₀ = 142.78 14/51³ Y₀ = 129.24 16/51³



Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☒ Photo taken.
CL grey-brown s-s plastic silty CLAC
Some s-s sand in lower gravel
m-f sandy
tr s. gravel to c. sand

Other Remarks: σ_c 2737 ksf = 1.368 tsf 19.01 psi

Preliminary Cal. by PE Reviewed by PE
☐ Trimmed by _____ Setup by _____ Taken down by MM
☐ Reconstituted Date _____ Date 5/9/61 Date 5/26/61
 See back for Summary Calculations

(3)

TRIAXIAL TEST SUMMARY CALCULATIONS

T 222

 Type Test: CU-C ☒ Undisturbed, ☐ Reconstituted Specimen: ☐ Dynamic / H_z or ☒ Sinusoidal or ☒ Static σ_3 0.65 %/hr

Consolidation History	Max. Induced Past Pressure	<input checked="" type="checkbox"/> Preshear/perm. Pre-cy. loading	Preshear after Cy. loading
Units: <u>tsf</u> or <u>kSF</u>	Uncorr. Corr. #	Uncorr. Corr. #	Uncorr. Corr. #
σ_{cell}		17.1504	
σ_v		14.400	
σ_h		2.7141	
$\sigma_p = (\sigma_v + \sigma_h)/2$		2.7504	2.7443
$K_c = \sigma_v / \sigma_h$		1.00	0.989
OCR		100	
Consol. Time	<input type="checkbox"/> Overnight	<input type="checkbox"/> Overnight	<input type="checkbox"/> Overnight
	days hours	days hours	days hours

$H_0 = 6.0068$ in.
$A_0 = 6.4145$ in ²
$V_0 = 631.405$ cm ³
Do ₅₀ /Dom ₅₀ = <u>1.0063</u>
$G_s = 2.743$ <input type="checkbox"/> Assumed <input checked="" type="checkbox"/> Measured
$E_g = 99.7$ %
Area Corr. Factors C
Undrained: <u>1.113</u>
$C = \frac{1}{E_g} (1 - A_v / \text{fin})$
Drained: <u>1.113</u>
$C = \frac{1}{E_g} [1 - \frac{A_v (1 + e_{v0})}{e_{v0}}]$

Calculate Wt of Dry Soil	By Initial water content	By Final water content	By Total Overdried Specimen	Variations in Height and Volume During Consolidation	During Initial Consolidation	During Each Consolidation	After Backpressure
W_1 (%)							
W_2 (%)							
W_{ave} (%)	10.47	10.55					
Wt. Wet Soil, Wt (gm)	1444.0	1441.9					
Actual Wt Dry Soil (gm)	ΔV_T (cm ³) during test						
Wt. Facs: ΔV_T (cm ³)							
Total Wt Dry Soil, Wt (gm)	1307.14	1304.30					
W_s used:		Final = 1304.30 gm					

Calculation	ΔV_c by Wt. Change	ΔV_c by recorded/calculated volume changes	V_c assuming 5% air
ΔV_c during Consolidation by Diss. Sols	$W_c - W_s - (\Delta V_c + \Delta V_T)$		
Procedure	$\Delta W_{wt} = 2.1$ gm $E(\Delta V_c + \Delta V_T) = (-13.95)$ cm ³ $\therefore \Delta V_c = 116.05$ cm ³	$\Delta V_c = 6.915 + 2.183 + 9.51 = 18.608$ cm ³	V_c assuming 5% air $V_F = (V_0 - W_s) / W_s / C$ $\Delta V_c = V_0 - V_F$ $W_s = 10.55$ % $V_F = 614.211$ cm ³ $V_0 + \Delta V_T = 17.194$ cm ³ $\therefore \Delta V_c = 17.194$ cm ³

ΔV_c used (ave volume) = <u>17.194</u> cm ³ $\therefore V_c = 614.211$ cm ³ ; $\Delta L_c = 0.0515$ in; $\therefore L_c = 5.9553$ in
$A_c = V_c / L_c$ (cm ²) / 16.3871 = <u>6.2938</u> in ² / 0.144 = <u>43.7068</u> x 10 ⁻³ ft ²
$E_{ac} = 0.86$ %; $E_v = 2.72$ %; $E_{ev} = 0.9728$ $E_g^* = 0.1872$; $E_{ev}^* =$ <u>not in percent</u>
At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ <u>17.194</u> cm ³ ; $\Delta L_{max} =$ <u>0.0515</u> in

Summary	Height (in)	Area (in ² or cm ²)	Volume (cm ³)	Water Content (%)	Total/Dry Density (lb/ft ³)	Saturation (%)
Initial	6.0068	44.5451	631.405	10.71	142.78 128.96	90.2
After Consol.	5.9553	43.7068	614.211	10.55	146.56 132.57	100.0

$$S = W G_s \gamma_d / (G_s \gamma_w - \gamma_d) = W \cdot G_s \cdot \gamma_w / (G_s \cdot \gamma_w (1 + W) - \gamma_w)$$

 Calculated by SP Reviewed by RR

psi x 0.072 = tsf
 W for S = 100% = $G_s \gamma_w - \gamma_d / G_s \gamma_w = G_s \gamma_w - \gamma_d / (G_s \gamma_w (1 + W) - \gamma_w)$

1 DATA FILE IDENT. NO.
2 PROJECT NO.
3 BORING NO.
4 SAMPLE NO.
5 SPECIMEN NO.
6 DEPTH
7 TEST NO.
8 FILE # FOR LOAD CELL OR PROVING RING
9 FILE # FOR PORE PRESSURE CONST.
10 FILE # FOR CELL PRESSURE CONST.
11 FILE # FOR PISTON FRICTION CORRECTION
12 TYPE OF CONSOLIDATION
13 DRAINAGE CONDITIONS DURING LOADING
14 MODE OF LOADING
15 CELL PRESSURE DURING LOADING
16 INITIAL HEIGHT OF SPECIMEN IN INCHES
17 INITIAL DIAMETER OF SPECIMEN IN INCHES
18 INITIAL VOLUME OF SPECIMEN IN CU. CM.
19 PISTON DIAMETER IN INCHES
20 WEIGHT OF TOP CAP ONLY IN TONS*10**3
21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**3
22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**3
23 WAS PISTON INTACT DURING CONSOL.
24 MEMBRANE THICKNESS IN INCHES
25 MEMBRANE DIAMETER IN INCHES
26 FILTER STRIP CORRECTION CONSTANT
27 RIGHT CYLINDER DISTORTION FACTOR
28 DOES SPECIMEN HAVE AN INDUCED OCR
29 CELL PRESSURE IN TSF
30 BACK PRESSURE IN TSF
31 AXIAL DEFORMATION DURING CONSOL. IN INCHES
32 VOLUME CHANGE DURING CONSOL. IN CU. CM.
33 APPLIED AXIAL LOAD IN TONS*10**3
34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF
35 BACK PRESSURE IN TSF
36 AXIAL DEFORMATION IN INCHES
37 VOLUME CHANGE IN CU. CM.
38 PISTON DRAG CORRECTION IN TONS*10**3
39 SPECIMEN CYCLICLY LOADED BEFORE SHEARING
40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING
41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.
42 PORE PRESSURE IN TSF
43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES
44 OUTPUT UNITS REQUIRED
45 DATA NORMALIZATION SELECTION
46 RESULT FILE DESIRED

T-222
81C405513
COE-13A
S-1
B
10.8
ID-354
2000
1000
2000
NONE
I
U
C
C
6.0068
2.8578
631.405
0.375
0.51
1.10
1.375
NO
0.0275
2.8399
2.128
1.113
NO
0.0
0.0
0.0
0.0
0.0
0.0
8.5752
7.200
0.0515
17.194
6.51
NO
NO
NO
0.0
0.0
0.0
KSF
2.0
0.0

DIS LOAD PORE PRESSURE
(in.) (lbs) (tsf)

0.01505, 13.02, 7.215
.01514, 13.212, 7.216
.01536, 13.521, 7.215
.01558, 13.676, 7.217
.01571, 13.986, 7.219
.01597, 14.760, 7.220
.01606, 15.689, 7.225
.01619, 17.444, 7.231
.01637, 19.198, 7.238
.01650, 20.950, 7.242
.01659, 22.914, 7.250
.01672, 24.411, 7.257

.01637,	19.198,	7.238
.01650,	20.850,	7.242
.01659,	22.914,	7.250
.01672,	24.411,	7.257
.01690,	26.372,	7.269
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.01707,	30.088,	7.287
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.01747,	34.42,	7.311
.01774,	37.31,	7.327
.01800,	39.68,	7.345
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.01941,	49.75,	7.422
.01972,	51.45,	7.439
.02002,	53.00,	7.452
.02029,	54.50,	7.466
.02064,	55.79,	7.480
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.02209,	61.51,	7.540
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.02399,	66.47,	7.598
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.04419,	91.81,	7.893
.04542,	92.79,	7.902
.04736,	94.03,	7.914
.04925,	95.32,	7.926
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.05313,	97.85,	7.947
.05506,	98.93,	7.954
.05700,	99.91,	7.964
.05885,	100.84,	7.971
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.09886,	116.84,	8.038
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.10890,	119.68,	8.043
.11550,	121.59,	8.043

-10890, 119.68, 8.043
-11550, 121.59, 8.043
-12233, 123.34, 8.042
-12897, 125.05, 8.041
-13566, 126.65, 8.041
-14218, 128.40, 8.038
-14891, 130.00, 8.036
-15561, 131.50, 8.033
-16234, 132.99, 8.030
-16899, 134.44, 8.028
-17563, 135.78, 8.024
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-26730, 154.10, 7.963
-28046, 156.68, 7.951
-29384, 159.32, 7.942
-30705, 161.64, 7.931
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-33337, 166.49, 7.912
-34701, 168.71, 7.901
-36004, 171.13, 7.893
-37388, 173.40, 7.883
-38711, 175.83, 7.873
-40002, 178.10, 7.863
-41341, 180.37, 7.854
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-43994, 184.76, 7.836
-45261, 186.87, 7.824
-46556, 189.51, 7.815
-47888, 191.52, 7.808
-49201, 194.05, 7.800
-50552, 196.37, 7.790
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-54551, 202.87, 7.766
-55881, 205.20, 7.755
-57241, 207.26, 7.748
-58591, 209.38, 7.739
-59993, 211.96, 7.732
-61251, 213.97, 7.723
-62556, 216.09, 7.718
-63889, 218.25, 7.710
-65201, 220.21, 7.701
-66511, 222.69, 7.692
-67827, 232.14, 7.601
-69277, 271.72, 7.527
-69740, 271.62, 7.524
-69921, 271.88, 7.519
-69857, 272.61, 7.516
-69990, 274.30, 7.509
-69912, 275.75, 7.501
-69902, 277.91, 7.493
-69901, 279.82, 7.487
-69891, 281.73, 7.482
-69881, 283.39, 7.475
-69871, 285.35, 7.467
-69861, 287.05, 7.462
-69851, 289.17, 7.454
-69841, 291.28, 7.445
-69831, 293.04, 7.441
-69821, 295.00, 7.433
-69811, 296.44, 7.427
-69801, 298.15, 7.422
-69791, 300.31, 7.414
-69781, 300.88, 7.412
-69771, 300.00, 0.000

A.TRIAX

THIS IS A CIU TEST. IT HAS BEEN

CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6

USING FILE NO.

T-222

PROJ. NO. 81C4055T3
BORING NO. COE-13A
SAMPLE NO. S-1
SPECIMEN NO. B
DEPTH(FT.) 10.8

REVIEWED BY: *PR*
DATE: *4/17/81*
INPUT DATA CHECKED BY: *PR*
TEST NO. 1D-354

ISOTROPIC TYPE OF CONSOLIDATION
UNDRAINED DRAINAGE CONDITIONS DURING LOADING
COMPRESSION MODE OF LOADING
CONSTANT CELL PRESSURE DURING LOADING

6.0068 INITIAL HEIGHT OF SPECIMEN IN INCHES
2.8578 INITIAL DIAMETER OF SPECIMEN IN INCHES
631.41 INITIAL VOLUME OF SPECIMEN IN CU. CM.
.3750 PISTON DIAMETER IN INCHES
.5100 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
1.1000 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
1.3750 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
NO WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0275 MEMBRANE THICKNESS IN INCHES
2.8399 MEMBRANE DIAMETER IN INCHES
2.1280 FILTER STRIP CORRECTION CONSTANT AT
2% AXIAL STRAIN IN TONS ** 10-3
1.1130 RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

8.5752 CELL PRESSURE IN TSF
7.2000 BACK PRESSURE IN TSF
.0515 AXIAL DEFORMATION DURING CONSOL. IN INCHES
17.19 VOLUME CHANGE DURING CONSOL. IN CU. CM.
6.5100 MEASURED AXIAL LOAD PRIOR TO STATIC LOADING
FROM FIRST LINE OF LOADING DATA IN TONS*10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:

AXIAL = 2.7141 KSF
LATERAL = 2.7443 KSF
MEAN = 2.7342 KSF
PBAR = 2.7292 KSF
LATERAL/AXIAL = 1.0111
AXIAL/LATERAL = .9890
OCR = 1.000

6.5100 PISTON DRAG CORRECTION IN TONS *10**-3
2000 FILE NUMBER FOR LOAD CELL OR PROVING RING
1000 FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
2000 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES IS DATA NORMALIZATION REQUIRED?
DATA NORMALIZED TO PRESHEAR STRESSES
WITH NORM = P-BAR OF 2.7292 KSF

AXIAL STRAIN %	DEVIATOR STRESS KSF	DELTA-U A-FACTOR KSF	Q KSF	P-BAR KSF	SECANT MODULUS KSF	TANGENT MODULUS KSF	DEVIATOR NORM	DELTA-U NORM	Q NORM	P-BAR NORM	SECANT NORM
0.0000	0.0000	0.0000	0.0000	2.7292	0.0000	0.0000	-0.1111	0.0000	-0.0035	1.0000	0.0000
0.0005	-0.0302	0.0000	-0.0130	2.7293	294.854	235.182	-0.0095	0.0007	-0.0047	1.0001	104.3729
0.0010	-0.0259	0.0000	-0.0095	2.7348	214.352	137.881	-0.0058	0.0000	-0.0035	1.0020	78.5405
0.0015	-0.0191	0.0000	-0.0079	2.7324	162.838	204.430	-0.0058	0.0015	-0.0029	1.0012	59.6654
0.0020	-0.0157	0.0040	-0.0044	2.7319	193.599	359.355	-0.0032	0.0029	-0.0016	1.0010	70.9364
0.0025	-0.0088	0.0080	0.0043	2.7386	251.845	900.051	0.0032	0.0037	0.0016	1.0035	92.2783
0.0030	0.0087	0.0100	0.0149	2.7392	354.193	1616.773	0.1019	0.0073	0.0055	1.0037	129.7794
0.0035	0.0299	0.0200	0.0349	2.7472	522.845	1577.308	0.2556	0.1117	0.1028	1.0066	191.5750
0.0040	0.0699	0.0320	0.0549	2.7532	631.749	1523.310	0.4002	0.1619	0.2011	1.0088	231.4783
0.0045	0.1098	0.0460	0.0737	2.7640	729.777	2421.462	0.5540	0.1988	0.2700	1.0128	267.3969
0.0050	0.1475	0.0540	0.0973	2.7716	869.335	2340.191	0.7133	0.2556	0.3566	1.0155	318.5318
0.0055	0.1946	0.0700	0.1143	2.7747	923.303	1520.202	0.8838	0.3088	0.4199	1.0167	338.3061
0.0060	0.2287	0.0840	0.1367	2.7773	977.253	2219.595	1.0002	0.3966	0.5011	1.0160	358.0739
0.0065	0.2734	0.1080	0.1591	2.7794	1069.311	2971.666	1.1166	0.54	0.5833	1.0184	391.8049
0.0070	0.3181	0.1240	0.1791	2.7794	1145.049	2941.441	1.312	0.528	0.6566	1.0184	419.5561
0.0075	0.3582	0.1440	0.1991	2.7834	1181.093	1521.610	1.459	0.5866	0.7229	1.0199	432.7627
0.0080	0.3982	0.1600	0.2137	2.7820	1190.232	1343.615	1.566	0.645	0.7833	1.0194	436.1113
0.0085	0.4275	0.1760	0.2284	2.7807	1198.554	1398.260	1.674	0.704	0.837	1.0189	439.1606
0.0090	0.406	0.1920	0.2413	2.7816	1223.929	1343.147	1.915	0.821	0.957	1.0192	448.4582
0.0095	0.526	0.2240	0.2613	2.7726	1224.898	1127.474	2.113	0.821	1.056	1.0159	448.8134
0.0100	0.5765	0.2400	0.2883	2.7648	1208.304	983.343	2.276	1.063	1.138	1.0131	442.7330
0.0105	0.6211	0.2900	0.3105	2.7615	1185.262	913.804	2.456	1.165	1.228	1.0118	434.2903
0.0110	0.6704	0.3180	0.3352	2.7458	1140.948	888.398	2.603	1.282	1.398	1.0074	426.3466
0.0115	0.7103	0.3500	0.3551	2.7329	1141.120	942.091	2.950	1.517	1.475	1.0061	418.0533
0.0120	0.7629	0.3800	0.4026	2.7202	1114.482	718.193	3.022	1.634	1.546	0.9967	408.3558
0.0125	0.8052	0.4140	0.4219	2.7097	1089.255	622.127	3.220	1.737	1.610	0.9929	399.1125
0.0130	0.8437	0.4460	0.4394	2.6987	1071.745	539.727	3.345	1.839	1.672	0.9898	392.6967
0.0135	0.8788	0.4740	0.4564	2.6852	1035.623	467.574	3.451	1.942	1.726	0.9839	379.4612
0.0140	0.9128	0.5020	0.4709	2.6760	1015.579	548.971	3.545	2.023	1.772	0.9805	372.1169
0.0145	0.9419	0.5300	0.4837	2.6487	967.448	518.167	3.740	2.220	1.870	0.9705	354.4814
0.0150	0.9674	0.5520	0.5104	2.6298	931.465	467.574	3.924	2.282	1.962	0.9636	341.2968
0.0155	1.0208	0.6040	0.5355	2.6092	889.429	338.563	4.081	2.536	2.041	0.9560	325.8947
0.0160	1.0709	0.6500	0.5569	2.5848	837.145	322.438	4.195	2.682	2.098	0.9471	306.7371
0.0165	1.1138	0.6920	0.5725	2.5648	807.478	334.737	4.331	2.807	2.165	0.9414	295.8672
0.0170	1.1450	0.7320	0.5910	2.5493	771.874	308.413	4.448	2.939	2.224	0.9341	282.8215
0.0175	1.1820	0.7660	0.6070	2.5301	745.309	312.433	4.571	3.071	2.286	0.9270	273.0876
0.0180	1.2141	0.8020	0.6238	2.5176	719.680	270.185	4.685	3.173	2.342	0.9225	263.6971
0.0185	1.2476	0.8380	0.6393	2.5002	693.854	223.801	4.777	3.283	2.389	0.9161	254.2342
0.0190	1.2786	0.8660	0.6519	2.4816	667.204	225.810	4.861	3.393	2.430	0.9093	244.4895
0.0195	1.3038	0.8960	0.6759	2.4702	647.041	229.060	4.953	3.481	2.477	0.9051	237.0815
0.0200	1.3265	0.9260	0.6986	2.4429	607.208	197.714	5.120	3.644	2.560	0.8951	222.4865
0.0205	1.3518	0.9500	0.7190	2.4173	570.749	164.792	5.269	3.833	2.635	0.8857	209.1273
0.0210	1.3972	1.0000	0.7336	2.3899	540.100	157.359	5.376	3.967	2.698	0.8757	197.8973
0.0215	1.4380	1.0880	0.7510	2.3713	514.383	157.565	5.504	4.118	2.752	0.8689	188.4744
0.0220	1.4774	1.1240	0.7661	2.3564	490.493	145.831	5.614	4.228	2.807	0.8634	179.7210
0.0225	1.5021	1.1540	0.7813	2.3376	469.340	137.482	5.725	4.353	2.863	0.8565	171.9701
0.0230	1.5322	1.1880	0.7946	2.3189	449.828	132.257	5.823	4.470	2.912	0.8497	164.8210
0.0235	1.5690	1.2200	0.8096	2.3059	431.585	130.043	5.933	4.573	2.966	0.8449	158.1366
0.0240	1.6192	1.2480	0.8229	2.2836	399.873	109.433	6.106	4.661	3.015	0.8410	152.1940
0.0245	1.6458	1.2720	0.8333	2.2633	386.449	103.574	6.200	4.741	3.053	0.8367	146.5169
0.0250	1.6666	1.2940	0.8460	2.2451	372.299	97.202	6.271	4.925	3.100	0.8311	141.5984
0.0255	1.6920	1.3220	0.8557	2.2251	360.629	89.483	6.355	4.969	3.135	0.8266	136.4136
0.0260	1.7115	1.3440	0.8672	2.2055	350.080	83.631	6.431	5.034	3.177	0.8236	132.1375
0.0265	1.7344	1.3560	0.8775	2.2479	333.791	81.694	6.525	5.122	3.215	0.8215	128.2725
0.0270	1.7551	1.3740	0.8904	2.2367	320.020	81.632	6.623	5.210	3.262	0.8195	122.3039
0.0275	1.7807	1.3980	0.9038	2.2261	307.064	80.375	6.717	5.276	3.312	0.8157	117.2591
0.0280	1.8076	1.4220	0.9166	2.2209	295.602	74.935	6.815	5.364	3.359	0.8138	112.5108
0.0285	1.8332	1.4400	0.9300	2.2103	284.613	64.080	6.896	5.423	3.408	0.8099	108.2913
0.0290	1.8600	1.4640	0.9410	2.2053	274.243	60.185	6.969	5.469	3.454	0.8050	104.2946
0.0295	1.8819	1.4800	0.9508	2.1971	274.243	60.185	6.969	5.469	3.454	0.8050	100.4850

7355	1.9202	2.5582	1.5120	7752	9601	2.1924	265.193	61.375	7036	5540	3518	8033	97.1692
7370	1.9337	2.5794	1.5200	7739	9689	2.1912	259.446	63.357	7085	5569	3543	8029	95.0631
8109	1.9482	2.6370	1.5420	7716	9841	2.1864	246.451	60.094	7212	5650	3606	8011	90.3017
8634	1.9977	2.6839	1.5580	7730	9989	2.1852	234.872	52.240	7309	5709	3660	8007	86.0591
9173	2.0237	2.7321	1.5760	7673	1.0119	2.1802	223.906	50.531	7415	5775	3708	7989	82.0411
9712	2.0522	2.7747	1.5880	7625	1.0261	2.1825	214.411	48.292	7519	5819	3760	7997	78.5620
1.0253	2.0759	2.8108	1.5980	7597	1.0379	2.1843	205.412	44.870	7606	5855	3803	8003	75.2648
1.0792	2.1007	2.8551	1.6120	7565	1.0503	2.1827	197.449	45.219	7697	5907	3849	7998	72.3669
1.1324	2.1243	2.8927	1.6160	7500	1.0622	2.1905	190.258	43.986	7784	5921	3892	8026	69.7121
1.1872	2.1481	2.9208	1.6260	7464	1.0741	2.1924	183.491	41.795	7871	5958	3935	8033	67.2327
1.2411	2.1698	2.9506	1.6320	7418	1.0849	2.1973	177.263	35.196	7950	5980	3975	8051	64.9506
1.2958	2.1863	2.9761	1.6380	7389	1.0932	2.1996	171.055	42.107	8011	6002	4005	8059	62.6759
1.3504	2.2158	3.0027	1.6380	7293	1.1079	2.2143	166.320	47.738	8119	6002	4059	8113	60.9412
1.4073	2.2394	3.0383	1.6460	7252	1.1197	2.2181	161.274	38.611	8205	6031	4103	8127	59.0923
1.4636	2.2595	3.0646	1.6500	7206	1.1297	2.2241	156.446	34.643	8279	6046	4139	8149	57.3232
1.5159	2.2973	3.1107	1.6560	7115	1.1486	2.2370	147.691	34.346	8417	6068	4209	8197	54.1154
1.6847	2.3361	3.1463	1.6560	6998	1.1681	2.2565	140.291	32.795	8560	6068	4280	8268	51.4039
1.8014	2.3711	3.1745	1.6540	6887	1.1856	2.2760	133.303	30.575	8688	6060	4344	8339	48.8434
1.9129	2.4053	3.2017	1.6520	6782	1.2026	2.2951	127.318	29.351	8813	6053	4407	8409	46.6505
2.0253	2.4368	3.2306	1.6520	6696	1.2184	2.3109	121.814	29.988	8929	6053	4464	8467	44.6336
2.1347	2.4717	3.2501	1.6460	6578	1.2359	2.3343	117.202	29.812	9057	6031	4528	8553	42.9439
2.2477	2.5031	3.2704	1.6420	6481	1.2515	2.3540	112.704	26.769	9171	6016	4586	8625	41.2956
2.3603	2.5321	3.2842	1.6360	6384	1.2661	2.3746	108.562	25.606	9278	5994	4639	8701	39.7780
2.4733	2.5608	3.2977	1.6300	6290	1.2804	2.3949	104.762	25.144	9383	5972	4692	8775	38.3857
2.5849	2.5886	3.3143	1.6260	6208	1.2943	2.4129	101.311	23.775	9495	5958	4769	8841	37.1214
2.6964	2.6139	3.3202	1.6180	6118	1.3069	2.4335	98.059	23.580	9577	5928	4789	8917	35.9298
2.8167	2.6478	3.3349	1.6020	5936	1.3339	2.4765	92.503	23.621	9704	5870	4888	9074	33.8939
3.1370	2.7180	3.3499	1.5880	5777	1.3590	2.5156	87.604	22.885	9879	5819	4979	9217	32.0989
3.3989	2.7690	3.3572	1.5700	5607	1.3845	2.5592	83.339	22.799	1.0046	5753	5073	9377	30.8362
3.7983	2.8186	3.3671	1.5540	5453	1.4093	2.6000	78.612	22.505	1.0317	5694	5164	9527	29.1706
3.7986	2.8680	3.3687	1.5340	5291	1.4340	2.6448	76.296	21.609	1.0509	5621	5254	9691	27.9556
4.0226	2.9145	3.3718	1.5160	5146	1.4573	2.6861	73.205	18.959	1.0679	5555	5340	9842	26.8229
4.2557	2.9511	3.3629	1.4960	5016	1.4755	2.7244	70.384	19.007	1.0813	5481	5406	9983	25.7894
4.4567	2.9972	3.3545	1.4720	4860	1.4986	2.7715	67.930	20.894	1.0982	5394	5491	1.0155	24.8900
4.6814	3.0442	3.3580	1.4540	4727	1.5221	2.8131	65.673	19.446	1.1154	5328	5577	1.0307	24.0631
4.9032	3.0841	3.3487	1.4320	4596	1.5420	2.8551	63.515	17.780	1.1300	5247	5650	1.0461	23.2726
5.1279	3.1236	3.3536	1.4180	4494	1.5618	2.8869	61.503	18.624	1.1445	5196	5722	1.0585	22.5351
5.3507	3.1674	3.3441	1.3940	4357	1.5837	2.9349	59.761	18.090	1.1606	5108	5803	1.0754	21.8968
5.5740	3.2043	3.3333	1.3720	4239	1.6021	2.9754	58.028	17.324	1.1741	5027	5870	1.0902	21.2618
5.7990	3.2451	3.3424	1.3600	4149	1.6225	3.0079	56.480	17.366	1.1890	4983	5945	1.1021	20.6947
6.0240	3.2824	3.3289	1.3360	4030	1.6412	3.0506	54.990	17.378	1.2027	4895	6014	1.1178	20.1488
6.2474	3.3230	3.3245	1.3160	3921	1.6615	3.0910	53.674	17.507	1.2176	4822	6088	1.1326	19.6665
6.4673	3.3600	3.3179	1.2960	3819	1.6800	3.1296	52.421	16.709	1.2311	4749	6156	1.1467	19.2075
6.6890	3.3968	3.3144	1.2780	3725	1.6984	3.1661	51.233	16.519	1.2446	4683	6223	1.1601	18.7722
6.9056	3.4324	3.3133	1.2620	3640	1.7162	3.2000	50.143	16.008	1.2577	4624	6288	1.1725	18.3727
7.1256	3.4666	3.3052	1.2420	3547	1.7333	3.2372	49.075	15.129	1.2702	4551	6351	1.1861	17.9814
7.3472	3.4992	3.2901	1.2180	3446	1.7496	3.2776	48.038	17.354	1.2822	4463	6411	1.2009	17.6015
7.5655	3.5429	3.2916	1.2000	3356	1.7714	3.3175	47.229	16.769	1.2981	4397	6491	1.2156	17.3051
7.7872	3.5729	3.2901	1.1860	3286	1.7885	3.3466	46.270	15.933	1.3091	4346	6546	1.2262	16.9537
8.0068	3.6135	3.2925	1.1700	3206	1.8068	3.3830	45.497	17.277	1.3240	4287	6620	1.2396	16.6703
8.2305	3.6495	3.2861	1.1500	3120	1.8247	3.4211	44.708	15.086	1.3372	4214	6686	1.2535	16.3815
8.4555	3.6809	3.2743	1.1280	3034	1.8404	3.4589	43.890	18.273	1.3487	4133	6744	1.2674	16.0816
8.6822	3.7140	3.2721	1.1120	2964	1.8570	3.4916	43.125	14.347	1.3608	4074	6804	1.2793	15.8014
8.9072	3.7457	3.2774	1.1020	2912	1.8728	3.5176	42.392	14.893	1.3724	4038	6862	1.2889	15.5326
9.1305	3.7807	3.2682	1.0800	2827	1.8904	3.5572	41.739	14.187	1.3853	3957	6928	1.3034	15.2934
9.3599	3.8097	3.2664	1.0660	2701	1.9048	3.5958	41.029	13.038	1.3959	3906	6980	1.3139	15.0336
9.5899	3.8398	3.2599	1.0480	2638	1.9199	3.6190	40.381	15.338	1.4069	3840	7035	1.3260	14.7958
9.8106	3.8790	3.2642	1.0340	2638	1.9395	3.6527	39.947	14.865	1.4213	3789	7106	1.3384	14.6003
10.0322	3.9065	3.2564	1.0160	2573	1.9533	3.6847	39.242	12.975	1.4316	3757	7157	1.3501	14.3785
10.2522	3.9363	3.2603	1.0060	2528	1.9681	3.7096	38.689	13.482	1.4423	3686	7211	1.3592	14.1761
10.4755	3.9664	3.2567	9900	2469	1.9832	3.7408	38.152	12.640	1.4533	3627	7267	1.3707	13.9790
10.6955	3.9924	3.2482	9720	2408	1.9962	3.7719	37.619	14.143	1.4628	3561	7314	1.3821	13.7806
10.9155	4.0286	3.2457	9540	2342	2.0143	3.8092	37.184	6.887	1.4761	3496	7381	1.3954	13.6245
11.1355	4.0647	3.2464	9360	1947	2.0321	3.8465	36.722	216.792	1.4899	3430	7458	1.4089	13.4785
11.3555	4.1008	3.2471	9180	1323	2.0498	4.4415	28.959	210.089	1.5022	3364	7535	1.4217	13.3324
11.5755	4.1369	3.2478	9000	1311	2.0675	4.4459	28.908	210.011	1.5145	3298	7612	1.4345	13.1863
11.7955	4.1730	3.2485	8820	1311	2.0852	4.4459	28.908	210.011	1.5268	3232	7689	1.4473	13.0402
12.0155	4.2091	3.2492	8640	1311	2.1029	4.4459	28.908	210.011	1.5391	3166	7766	1.4601	12.8941
12.2355	4.2452	3.2499	8460	1311	2.1206	4.4459	28.908	210.011	1.5514	3100	7843	1.4729	12.7480
12.4555	4.2813	3.2506	8280	1311	2.1383	4.4459	28.908	210.011	1.5637	3034	7920	1.4857	12.6019
12.6755	4.3174	3.2513	8100	1311	2.1560	4.4459	28.908	210.011	1.5760	2968	8000	1.4985	12.4558
12.8955	4.3535	3.2520	7920	1311	2.1737	4.4459	28.908	210.011	1.5883	2902	8080	1.5113	12.3097
13.1155	4.3896	3.2527	7740	1311	2.1914	4.4459	28.908	210.011	1.6006	2836	8160	1.5241	12.1636
13.3355	4.4257	3.2534	7560	1311	2.2091	4.4459	28.908	210.011	1.6129	2770	8240	1.5369	12.0175
13.5555	4.4618	3.2541	7380	1311	2.2268	4.4459	28.908	210.011	1.6252	2704	8320	1.5497	11.8714
13.7755	4.4979	3.2548	7200	1311	2.2445	4.4459	28.908	210.011	1.6375	2638	8400	1.5625	11.7253
13.9955	4.5340	3.2555	7020	1311	2.2622	4.4459	28.908	210.011	1.6498	2572	8480	1.5753	11.5792
14.2155	4.5701	3.2562	6840	1311	2.2799	4.4459	28.908	210.011	1.6621	2506	8560	1.5881	11.4331
14.4355	4.6062	3.2569	6660	1311	2.2976	4.4459	28.908	210.011	1.6744	2440	8640	1.6009	11.2870
14.6555	4.6423	3.2576	6480	1311	2.3153	4.4459	28.908	210.011	1.6867	2374	8720	1.6137	11.1409
14.8755	4.6784	3.2583	6300	1311	2.3330	4.4459	28.908	210.011	1.6990	2308	8800	1.6265	10.9948
15.0955	4.7145	3.2590	6120	1311	2.3507	4.4459	28.9						

10.2155	4.0286	3.2457	.9540	.2342	2.0143	3.8082	37.184	6.887	1.4761	.3126	.7134	1.4385	1.0421
15.2127	5.6939	2.9665	.7720	.1947	1.9470	3.9271	24.660	216.792	1.4268	.2829	.8476	1.6274	9.0358
16.0806	4.6265	3.1738	.6240	.1323	2.3133	4.4415	28.959	210.088	1.6252	.2586	.8470	1.6290	10.4107
16.1025	4.6230	3.1660	.6180	.1311	2.3115	4.4458	28.828	-9.011	1.6239	.2264	.8466	1.6324	10.5883
16.1898	4.6213	3.1551	.6080	.1290	2.3107	4.4551	28.731	3.267	1.6233	.2228	.8463	1.6363	10.4274
16.2989	4.6306	3.1532	.6029	.1274	2.3153	4.4658	28.596	6.689	1.6267	.2206	.8483	1.6363	10.4777
16.3223	4.6416	3.1442	.5980	.1241	2.3208	4.4855	28.276	4.722	1.7007	.2154	.8504	1.6435	10.3605
16.7456	4.6517	3.1328	.5720	.1203	2.3258	4.5068	27.959	7.431	1.7044	.2096	.8522	1.6513	10.2444
16.9689	4.6748	3.1276	.5560	.1163	2.3374	4.5346	27.727	9.021	1.7119	.2037	.8564	1.6615	10.1594
17.1990	4.6925	3.1238	.5440	.1132	2.3462	4.5557	27.459	7.764	1.7194	.1993	.8597	1.6693	10.0613
17.4257	4.7102	3.1220	.5340	.1107	2.3551	4.5749	27.204	6.766	1.7259	.1957	.8629	1.6763	9.9677
17.6523	4.7231	3.1142	.5200	.1074	2.3616	4.5956	26.928	6.759	1.7306	.1905	.8653	1.6839	9.8665
17.8824	4.7411	3.1069	.5040	.1035	2.3706	4.6208	26.682	6.781	1.7372	.1847	.8686	1.6931	9.7764
18.1108	4.7542	3.1031	.4940	.1011	2.3771	4.6377	26.418	7.571	1.7420	.1810	.8710	1.6993	9.6797
18.3341	4.7752	3.0973	.4780	.0973	2.3876	4.6644	26.210	9.234	1.7497	.1751	.8748	1.7091	9.6037
18.5591	4.7956	3.0895	.4600	.0931	2.3978	4.6929	26.003	7.667	1.7572	.1685	.8786	1.7195	9.5276
18.7824	4.8096	3.0881	.4520	.0911	2.4048	4.7082	25.768	7.023	1.7623	.1656	.8811	1.7251	9.4416
19.0058	4.8270	3.0809	.4360	.0874	2.4135	4.7332	25.557	5.556	1.7687	.1598	.8843	1.7343	9.3642
19.2324	4.8345	3.0732	.4240	.0848	2.4173	4.7492	25.295	4.565	1.7714	.1554	.8857	1.7402	9.2682
19.4524	4.8473	3.0695	.4140	.0824	2.4237	4.7659	25.074	7.454	1.7761	.1517	.8880	1.7463	9.1874
19.6757	4.8676	3.0638	.3980	.0788	2.4338	4.7924	24.893	7.485	1.7835	.1458	.8918	1.7560	9.1210
19.7480	4.8719	3.0621	.3940	.0779	2.4359	4.7986	24.823	148.220	1.7851	.1444	.8926	1.7582	9.0955 STOP

A. BASIC RESFRT

CDOS 1-K BASIC, VERSION 5.4

81C4055T3 TRIAXIAL TEST (Set Up / Take Down)

Proj. No. 81C4055T3 Proj. Eng. RS Cell No. 6 Piston dia. 3/8" 1/2"
 Type Test CU-C File No. T-229

WCC
 2-202
 (1185)

Loading Conditions: <input type="checkbox"/> Dynamic <input checked="" type="checkbox"/> Undrained <input checked="" type="checkbox"/> Compression <input checked="" type="checkbox"/> Constant cell pressure <input checked="" type="checkbox"/> Static <input type="checkbox"/> Drained <input type="checkbox"/> Extension <input type="checkbox"/> Variable cell pressure	Type: <input checked="" type="checkbox"/> Isotropic <input type="checkbox"/> K ₀ stress path Consolidation: <input type="checkbox"/> Anisotropic <input type="checkbox"/> 45° stress path	Piston Screwed in: <input type="checkbox"/> Yes; <input checked="" type="checkbox"/> No
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<input checked="" type="checkbox"/> Undisturbed <input type="checkbox"/> Reconstituted <input type="checkbox"/> Impact <input type="checkbox"/> Constant E55ort Boring No. <u>COE-13A</u> Composite No. <u>355</u> <input type="checkbox"/> Static _____ layers; _____ 16" Hammer Tamp Sample No. <u>5-2</u> Specimen No. <u>B</u> <input type="checkbox"/> Kneading _____ Blows-Tamps / layer Depth (ft) <u>13.1</u> Remarks _____ <input type="checkbox"/> Tamping <input type="checkbox"/> Under compaction <input type="checkbox"/> Ends capped with Castor; <input type="checkbox"/> Geomarine Sample <input type="checkbox"/> Other _____ layers; _____ Uni (%)

Water Content			Final
Location			Ave
Container No.	<u>CA-42</u>		<u>607</u>
Wgt Container + Wet Soil (gm)	<u>150.21</u>		<u>211.91</u>
Wgt Container + Dry Soil (gm)	<u>138.52</u>		<u>203.90</u>
Wgt Container (gm)	<u>34.15</u>		<u>129.96</u>
Wgt Dry Soil (gm)	<u>104.37</u>		<u>73.94</u>
WATER CONTENT (%)	<u>11.20</u>		<u>10.83</u>

☐ See attached data sheet(s) for additional water contents

Specimen Weight	
Wet + Screws (g):	_____ gm
Stone (etc):	_____ gm
Wet Initial:	<u>484.70</u> gm
Wet Final:	<u>487.02</u> gm
Excess Oven-dry: Dish No.	_____
Wgt Dish + Dry Soil	_____ gm
Wgt. Dish	_____ gm
Wgt. Excess Dry Soil	_____ gm

Dimensions of Specimen		Diameter (in)	
Initial (Lb)	Final (Lb)	Initial	Final
1 <u>0.30</u>	<u>3.262</u>	1-T <u>2.035</u>	<u>2.250</u>
2 <u>0.30</u>	<u>3.267</u>	2-M <u>2.030</u>	<u>2.350</u>
3 <u>0.29</u>	<u>3.299</u>	3-B <u>2.037</u>	<u>2.200</u>
4 <u>0.30</u>	<u>3.261</u>	1-T <u>2.002</u>	
5 <u>0.31</u>	<u>3.239</u>	2-M <u>2.015</u>	
Ave <u>0.30</u>	<u>3.2654</u>	3-B <u>2.035</u>	

ΔL = _____ in	ΔL = <u>2.0257</u>	<u>2.2875</u>
ΔL = _____ in	$A_0 = \pi D^2/4 = 3.3229 \text{ in}^2$	
ΔL = _____ in	$V_0 = 1h \cdot 16.8871 = 212.840 \text{ cm}^3$	
L ₀ -L ₀ = _____ in	$A_{0m} = 5.4542(D^2) = 28.5400 \text{ D}^2$	

Membrane Thickness = 0.011 in
 Circumference (cm) = 5.60775 in
 Diam = $C/\pi = 1.8137$ in

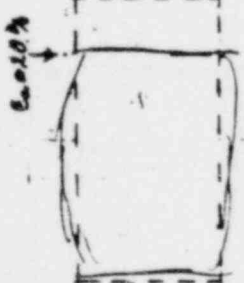
Filter Paper: Top + bottom: ☐ Yes; ☒ No
 Filter Strips: ☒ Yes; ☐ No
12 Vertical at 1/4" - Whatman #54 or
 _____ Spiral at 1/4" - Whatman #1 or

Wgt top cap = _____ gm, 0.255 10⁻³ gm
 Wgt (Cap, dial) = _____ gm, _____ 10⁻³ gm

Preliminary
 Y₀ = 142.23 10⁻³ Y_d = 127.90 10⁻³

Failure Sketch

Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☐ Photo taken.



Clay gray m. to s. sandy s.p. silty CLAY, tr. s. gravel to c. sand.

Other Remarks: 1. 265 Ksf = 0.684 (No. 5 Gr. Regel.)

Preliminary Cal. by RS Reviewed by RR

<input type="checkbox"/> Trimmed by <u>Hulk</u> <input type="checkbox"/> Reconstituted Date <u>5/21/4</u>	Setup by <u>Hulk</u> Date <u>5/21/4</u>	Taken down by _____ Date _____
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See back for Summary Calculations

TRIAXIAL TEST SUMMARY CALCULATIONS

Type Test: CU-c ☒ Undisturbed; ☐ Reconstituted - Specimen: T 229
☐ Dynamic e/H_0 or sinusoidal or Static e 0.68 %/hr

Consolidation History Units: <u>tsf</u> or <u>kse</u>	Max. Induced Past Pressure Uncorr. Corr. #	<input checked="" type="checkbox"/> Preshear/perm. Pre cy-loading Uncorr. Corr. #	Preshear after Cy-loading Uncorr. Corr. #
σ_{cell}		15.7833	
U		14.4144	
$\bar{\sigma}_v$		1.3550	
$\bar{\sigma}_h$		1.3749	1.4024
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h)/2$		1.3787	
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$		1.00	0.966
OCR		1.00	
Consol. Time	<input type="checkbox"/> Overnight days hours	<input type="checkbox"/> Overnight days hours	<input type="checkbox"/> Overnight days hours

$H_0 = 4.030$ in
 $A_c = 3.2899$ in²
 $V_0 = 212.840$ cm³
 $D_{50}/D_{10} = 1.116$
 $G_s = 2.74$ ☒ Assumed
 $B_g = 36.6$ %
 Area Corr. Factor C
 Undrained: $= 1.199$
 $C = \frac{1}{G_s} (1 - A_v / \rho_{hs})$
 Drained: $=$
 $C = \frac{1}{G_s} [1 - \frac{A_v (1 + e_v)}{G_s}]$

Calculate Wgt. of Dry Soil	By Initial water Content	By Final water Content	By Total Overdried Specimen	Variations in Height and Volume During Consolidation	During Initial Comp. with out back-Pressure	During Back-Pressure	After Backpressure
w_1 (%)							
w_2 (%)							
w_{ave} (%)	11.20	10.83					
Wgt. Wet Soil, Wt (gm)	454.90	487.00					
Wgt. Dry Soil (gm)							
Wgt. Excess: ΔV_T (cm ³)							
Total Wgt. Dry Soil, W_s (gm)	436.06	439.41					
W_s used:		Final = 439.41 gm					

Calculation of ΔV_c during Consolidation by σ & e Procedures	ΔV_c by W_s Change $W_s - W_0 = (\Delta V_c + \Delta V_T)$ $\Delta W_{wt} = -2.1$ gm $\Delta V_c = \frac{\Delta W_{wt}}{G_s - 1} = \frac{-2.1}{2.74 - 1} = -1.576$ cm ³ $\therefore \Delta V_c = (1.576)$ cm ³	ΔV_c by recorded/calculated volume changes = Σ selected ΔV $\Delta V_c = 3.066 + 1.466 + 0.88 = 5.412$ cm ³	ΔV_c assuming 5% Δe and drained $\Delta V_c = V_0 - V_F = V_0 - (V_F + \Delta V_T)$ $w_0 = 10.35$ % $V_F = 908.332$ cm ³ $V_F + \Delta V_T = 906.232$ cm ³ $\therefore \Delta V_c = 4.508$ cm ³
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ΔV_c used (ave. value) = 4.508 cm³ $\therefore V_c = 208.332$ cm³; $\Delta L_c = 0.0903$ in; $\therefore L_c = 4.0097$ in
 $A_c = V_c / L_c$ (cm²/in) / 16.3871 = 3.1706 in² / 0.144 = 22.0181 x 10⁻³ ft²
 $e_{av} = 0.50$ %; $e_v = 2.12$ %; $t_{ev} = 0.9788$ $e_v^* = 0.1905$; $e_{wv}^* =$ not in percent
 At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ cm³; $\Delta L_{max} =$ in

Summary	Height (in)	Area (in ² or cm ² ft ² x 10 ⁻³)	Volume (cm ³)	Water Content (%)	Total/Dry Density (lb/ft ³)	Saturation (%)
Initial	4.030	22.3812	212.840	10.35	142.23 128.89	87.3
After Consol.	4.0097	22.0181	208.332	10.83	145.94 131.68	100.0

$$S = w G_s \gamma_d / (G_s \gamma_w - \gamma_d) = w \cdot G_s \cdot \gamma_w / (G_s \cdot \gamma_w (1 + w) - \gamma_w)$$

Calculated by GB Reviewed by RA

$P_{ci} \times 0.072 = \text{conf}$
 $W_{50} S = 100\%$
 $G_s \gamma_w - \gamma_d / (G_s \gamma_w - \gamma_d) = G_s \gamma_w - \gamma_w / (G_s \gamma_w (1 + w) - \gamma_w)$
 $V_0 @ 20^\circ C (\text{found}) = 22.32$ in² / 0.144 = 0.9982 gm/cm³; $G_s \gamma_w = 84.2$ (lb/ft³)

1 DATA FILE IDENT. NO. T-229
2 PROJECT NO. BIC40513
3 BORING NO. C0E-13A
4 SAMPLE NO. S-2
5 SPECIMEN NO. B
6 DEPTH 13.1
7 TEST NO. 10-35
8 FILE # FOR LOAD CELL OR PROVING RING 2000
9 FILE # FOR PORE PRESSURE CONST. 1000
10 FILE # FOR CELL PRESSURE CONST. 2000
11 FILE # FOR PISTON FRICTION CORRECTION NONE
12 TYPE OF CONSOLIDATION I
13 DRAINAGE CONDITIONS DURING LOADING U
14 MODE OF LOADING C
15 CELL PRESSURE DURING LOADING C
16 INITIAL HEIGHT OF SPECIMEN IN INCHES 4.030
17 INITIAL DIAMETER OF SPECIMEN IN INCHES 2.0257
18 INITIAL VOLUME OF SPECIMEN IN CU. CM. 212.840
19 PISTON DIAMETER IN INCHES 0.375
20 WEIGHT OF TOP CAP ONLY IN TONS*10**-3 0.255
21 WEIGHT OF TOP CAP + PISTON *DIAL IN TONS*10**-3 0.84
22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3 1.115
23 WAS PISTON INTACT DURING CONSOL. NO
24 MEMBRANE THICKNESS IN INCHES 0.011
25 MEMBRANE DIAMETER IN INCHES 1.8137
26 FILTER STRIP CORRECTION CONSTANT 1.596
27 RIGHT CYLINDER DISTORTION FACTOR 1.199
28 DOES SPECIMEN HAVE AN INDUCED OCR NO
29 CELL PRESSURE IN TSF 0.0
30 BACK PRESSURE IN TSF 0.0
31 AXIAL DEFORMATION DURING CONSOL. IN INCHES 0.0
32 VOLUME CHANGE DURING CONSOL. IN CU. CM. 0.0
33 APPLIED AXIAL LOAD IN TONS*10**-3 0.0
34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF 7.8947
35 BACK PRESSURE IN TSF 7.2072
36 AXIAL DEFORMATION IN INCHES 0.0203
37 VOLUME CHANGE IN CU. CM. 4.508
38 PISTON DRAG CORRECTION IN TONS*10**-3 5.92
39 SPECIMEN CYCLICLY LOADED BEFORE SHEARING NO
40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING NO
41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM. 0.0
42 PORE PRESSURE IN TSF 0.0
43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES 0.0
44 OUTPUT UNITS REQUIRED KSF
45 DATA NORMALIZATION SELECTION 2.0
46 RESULT FILE DESIRED 0.0

DIS (in.)	LOAD (lbs)	PORE PRESSURE (tsf)
0.02071	11.84	7.226
.02084	12.597	7.229
.02097	14.389	7.236
.02110	16.290	7.245
.02123	17.810	7.254
.02136	18.679	7.263
.02145	19.765	7.270
.02176	21.285	7.285
.0218	21.937	7.293
.02215	23.131	7.307
.02224	23.674	7.312
.02237	23.946	7.319
.02277	25.303	7.337

.02277	25.303	7.337
.02303	25.846	7.347
.02325	26.389	7.355
.02369	27.312	7.371
.02390	27.801	7.378
.02412	28.127	7.381
.02456	28.887	7.396
.02482	29.159	7.402
.02504	29.484	7.408
.02552	30.027	7.420
.02596	30.625	7.430
.02644	31.168	7.438
.02736	31.928	7.456
.02785	32.362	7.464
.02828	32.79	7.472
.02920	33.50	7.484
.03012	34.15	7.495
.03104	34.80	7.505
.03152	34.96	7.508
.03240	35.62	7.519
.03424	36.59	7.535
.03516	37.08	7.541
.03612	37.57	7.547
.03796	38.17	7.559
.03884	38.49	7.564
.03980	38.87	7.569
.04164	39.63	7.577
.04308	40.07	7.582
.04453	40.67	7.587
.04733	41.48	7.594
.04869	41.91	7.596
.05009	42.29	7.598
.05285	43.05	7.604
.05564	43.71	7.605
.05697	44.20	7.608
.06402	46.04	7.612
.06638	46.75	7.614
.07115	47.67	7.613
.07356	48.21	7.616
.07588	48.65	7.612
.08066	49.73	7.612
.08302	50.22	7.612
.08543	50.66	7.609
.09016	51.47	7.606
.09248	51.96	7.603
.09484	52.39	7.604
.09962	52.94	7.602
.10203	53.48	7.601
.10435	53.70	7.599
.10667	54.13	7.596
.11144	54.95	7.592
.11626	55.71	7.589
.12099	56.58	7.586
.12589	57.34	7.581
.13583	58.96	7.568
.14096	59.73	7.562
.14603	60.38	7.558
.15081	61.03	7.553
.16075	62.49	7.542
.16561	62.77	7.536
.17047	63.63	7.530
.17529	64.18	7.528
.18531	65.48	7.516
.19031	65.92	7.511
.19512	66.51	7.508
.19994	67.11	7.502
.20467	67.76	7.497
.20952	68.26	7.491

.20467,	67.76,	7.497
.20953,	68.36,	7.491
.21452,	69.12,	7.486
.21951,	69.55,	7.481
.22420,	70.15,	7.476
.23405,	71.40,	7.466
.23883,	71.56,	7.462
.24824,	72.76,	7.454
.25739,	73.79,	7.443
.26676,	74.77,	7.435
.27609,	75.58,	7.425
.28524,	76.45,	7.417
.29435,	77.37,	7.408
.30346,	78.46,	7.401
.32225,	80.25,	7.385
0.3314,	81.06,	7.376
0.3409,	82.10,	7.369
0.3503,	82.86,	7.362
0.3596,	83.89,	7.354
0.3687,	84.92,	7.347
0.3777,	85.73,	7.339
0.3864,	86.55,	7.333
0.3951,	87.42,	7.325
0.4124,	89.05,	7.312
0.4211,	89.97,	7.303
0.4295,	90.78,	7.296
0.4378,	91.44,	7.292
0.4461,	92.31,	7.285
0.4544,	93.01,	7.278
0.4629,	93.88,	7.274
0.4713,	94.75,	7.264
0.4795,	95.56,	7.260
0.4961,	96.92,	7.247
0.5045,	97.84,	7.241
0.5128,	98.28,	7.235
0.5209,	99.09,	7.229
0.5294,	100.02,	7.225
0.5360,	100.61,	7.216
0.5474,	101.54,	7.213
0.5547,	102.30,	7.208
0.5635,	102.78,	7.203
0.5807,	104.36,	7.192
0.5893,	105.07,	7.184
0.5979,	105.83,	7.179
0.6067,	106.64,	7.174
0.6157,	107.73,	7.168
0.6247,	108.16,	7.162
0.6337,	108.98,	7.159
0.6427,	109.57,	7.153
0.6514,	110.39,	7.147
0.6696,	111.53,	7.135
0.6789,	112.40,	7.131
0.6880,	113.10,	7.127
0.6970,	113.81,	7.121
0.7062,	114.73,	7.116
0.7155,	115.33,	7.110
0.7249,	115.76,	7.101
0.7255,	115.93,	7.103
0.7341,	116.96,	7.098
0.7529,	118.21,	7.087
0.7622,	119.02,	7.082
0.7715,	119.78,	7.077
0.7812,	120.22,	7.071
0.7907,	121.19,	7.064
0.8004,	121.90,	7.059
0.8098,	122.60,	7.056
0.8192,	123.36,	7.051
0.8249,	123.58,	7.047
-999.,	0.0,0.0	

A. TRIAX

THIS IS A CIU TEST. IT HAS BEEN CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE N°. T-229

PROJ. NO. 81C405513
BORING NO. COE-13A
SAMPLE NO. S-2
SPECIMEN NO. B
DEPTH (FT.) 13.1
REVIEWED BY: R. J. H. / 1/1/81
INPUT DATA CHECKED BY: R. J. H.
TEST N°. ID-355

ISOTROPIC UNDRAINED COMPRESSION CONSTANT
TYPE OF CONSOLIDATION DRAINAGE CONDITIONS DURING LOADING
MODE OF LOADING CELL PRESSURE DURING LOADING
INITIAL HEIGHT OF SPECIMEN IN INCHES
INITIAL DIAMETER OF SPECIMEN IN INCHES
INITIAL VOLUME OF SPECIMEN IN CU. CM.
PISTON DIAMETER IN INCHES
WEIGHT OF TOP CAP ONLY IN TONS*10**3
WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**3
WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**3
WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?
NO

MEMBRANE THICKNESS IN INCHES
MEMBRANE DIAMETER IN INCHES
FILTER STRIP CORRECTION CONSTANT AT 2% AXIAL STRAIN IN TONS ** 10-3
RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

CELL PRESSURE IN TSF
BACK PRESSURE IN TSF
AXIAL DEFORMATION DURING CONSOL. IN INCHES
VOLUME CHANGE DURING CONSOL. IN CU. CM.
MEASURED AXIAL LOAD PRIOR TO STATIC LOADING
FROM FIRST LINE OF LOADING DATA IN TONS*10**3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:
AXIAL = 1.3550 KSF
LATERAL = 1.4024 KSF
MEAN = 1.3866 KSF
PRAR = 1.3787 KSF
LATERAL/AXIAL = 1.0350
AXIAL/LATERAL = .9661
OCR = 1.4000

5.9200
2000
1000
2000
NONE
YES
PISTON DRAG CORRECTION IN TONS *10**3
FILE NUMBER FOR LOAD CELL OR PROVING RING
FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
IS DATA NORMALIZATION REQUIRED?
DATA NORMALIZED TO PRESHEAR STRESSES
WITH NORM = P-PAR OF 1.3787 KSF

AXIAL STRAIN	DEVIATOR STRESS	OBLIQUITY	DELTA-U	A-FACTOR	Q	P-BAR	SECANT MODULUS	TANGENT MODULUS	DEVIATOR NORM	DELTA-U NORM	Q NORM	P-BAR NORM	SECANT NORM
%	KSF		KSF		KSF	KSF	KSF	KSF					
0.0000	-.0475	.9661	0.0000	0.0000	-.0237	1.3787	0.0000	0.0000	-.0344	0.0000	-.0172	1.0000	0.0000
.0032	-.0134	.9904	.0060	.1758	-.0067	1.3898	1052.707	1777.538	-.0097	.0044	-.0048	1.0080	763.5502
.0065	.0678	1.0490	.0200	.1735	.0339	1.4163	1777.538	2578.614	.0492	.0145	.0246	1.0273	1289.2858
.0097	.1538	1.1128	.0380	.1887	.0769	1.4414	2069.978	2387.931	.1116	.0276	.0558	1.0455	1501.3984
.0130	.2226	1.1653	.0560	.2073	.1113	1.4578	2082.735	1665.047	.1615	.0406	.0807	1.0573	1510.6509
.0162	.2618	1.1971	.0740	.2392	.1309	1.4594	1908.004	1698.989	.1899	.0537	.0950	1.0585	1383.9149
.0185	.3109	1.2366	.08	.2455	.1555	1.4699	1942.165	1536.702	.2255	.0638	.1128	1.0662	1408.6929
.0262	.3793	1.2953	.1180	.2764	.1897	1.4741	1629.906	1097.539	.2751	.0856	.1376	1.0692	1182.2052
.0284	.4087	1.3222	.1340	.2937	.2044	1.4728	1604.695	1013.398	.2965	.0972	.1482	1.0683	1163.9191
.0359	.4623	1.3727	.1620	.3177	.2312	1.4716	1419.598	903.078	.3353	.1175	.1677	1.0674	1029.6643
.0382	.4868	1.3956	.1720	.3219	.2434	1.4739	1400.206	731.231	.3531	.1248	.1765	1.0690	1015.5985
.0414	.4989	1.4101	.1860	.3404	.2494	1.4659	1319.726	490.804	.3618	.1349	.1809	1.0632	957.2249
.0514	.5596	1.4741	.2220	.3656	.2798	1.4603	1181.734	490.356	.4059	.1610	.2030	1.0592	857.1362
.0579	.5837	1.5030	.2420	.3834	.2919	1.4523	1090.948	406.150	.4234	.1755	.2117	1.0534	791.2875
.0633	.6079	1.5312	.2580	.3936	.3040	1.4484	1034.623	406.924	.4409	.1871	.2205	1.0506	750.4340
.0743	.6489	1.5833	.2900	.4164	.3244	1.4369	936.962	394.163	.4706	.2103	.2353	1.0422	679.5984
.0796	.6706	1.6105	.3040	.4233	.3353	1.4338	902.610	338.069	.4864	.2205	.2432	1.0399	654.6819
.0850	.6849	1.6278	.3100	.4232	.3425	1.4349	861.216	283.316	.4968	.2248	.2484	1.0408	624.6382
.0960	.7185	1.6762	.3400	.4439	.3592	1.4217	797.720	243.648	.5211	.2466	.2606	1.0312	578.6031
.1025	.7302	1.6952	.3520	.4526	.3651	1.4156	758.749	220.848	.5297	.2553	.2648	1.0268	550.3362
.1080	.7445	1.7169	.3640	.4596	.3723	1.4107	733.409	228.556	.5400	.2640	.2700	1.0232	531.9572
.1200	.7681	1.7571	.3880	.4757	.3841	1.3985	679.888	217.758	.5571	.2814	.2786	1.0144	493.1373
.1309	.7943	1.7987	.4080	.4847	.3971	1.3916	642.890	217.695	.5761	.2959	.2880	1.0094	466.3017
.1429	.8178	1.8358	.4240	.4899	.4089	1.3874	605.535	169.184	.5932	.3075	.2966	1.0063	439.2069
.1658	.8503	1.9022	.4600	.5123	.4251	1.3676	541.325	146.794	.6167	.3336	.3084	.9920	392.6344
.1781	.8689	1.9378	.4760	.5194	.4344	1.3609	514.619	162.128	.6302	.3453	.3151	.9871	373.2638
.1888	.8873	1.9746	.4920	.5262	.4437	1.3542	495.161	151.726	.6436	.3569	.3218	.9822	359.1510
.2117	.9175	2.0349	.5160	.5347	.4587	1.3452	455.740	125.417	.6655	.3743	.3327	.9757	330.5580
.2347	.9449	2.0930	.5380	.5421	.4724	1.3370	422.863	119.426	.6854	.3902	.3427	.9697	306.7113
.2576	.9723	2.1513	.5580	.5471	.4861	1.3307	395.835	85.491	.7052	.4047	.3526	.9652	287.1076
.2696	.9785	2.1669	.5640	.5497	.4892	1.3278	380.550	89.393	.7097	.4091	.3548	.9630	276.0206
.2915	1.0064	2.2325	.5860	.5560	.5032	1.3197	361.478	106.934	.7299	.4250	.3650	.9572	262.1872
.3374	1.0462	2.3334	.6180	.5650	.5231	1.3076	324.106	87.128	.7588	.4482	.3794	.9484	235.0809
.3604	1.0662	2.3802	.6300	.5656	.5331	1.3057	309.047	85.547	.7734	.4570	.3867	.9470	224.1582
.3843	1.0862	2.4282	.6420	.5662	.5431	1.3037	294.997	66.779	.7879	.4657	.3939	.9456	213.9674
.4302	1.1092	2.5059	.6660	.5757	.5546	1.2912	268.869	53.421	.8045	.4831	.4023	.9365	195.0160
.4522	1.1217	2.5438	.6760	.5781	.5608	1.2874	258.575	59.700	.8136	.4903	.4068	.9338	187.5499
.4761	1.1367	2.5862	.6860	.5792	.5683	1.2849	248.720	64.130	.8244	.4976	.4122	.9320	180.4017
.5220	1.1668	2.6654	.7020	.5780	.5834	1.2840	232.627	55.906	.8463	.5092	.4231	.9313	168.7290
.5579	1.1834	2.7135	.7120	.5783	.5917	1.2823	220.623	55.915	.8583	.5164	.4292	.9301	160.0225
.5941	1.2071	2.7735	.7220	.5753	.6036	1.2842	211.191	54.388	.8755	.5237	.4378	.9314	153.1812
.6639	1.2372	2.8559	.7360	.5727	.6186	1.2853	193.510	45.499	.8974	.5338	.4487	.9322	140.3572
.6978	1.2535	2.8915	.7400	.5686	.6267	1.2894	186.433	43.839	.9092	.5367	.4546	.9352	135.2236
.7327	1.2673	2.9241	.7440	.5657	.6377	1.2923	179.445	40.108	.9192	.5396	.4596	.9374	130.1549
.8016	1.2952	3.0028	.7560	.5629	.6476	1.2943	167.507	48.621	.9394	.5483	.4697	.9388	121.4966
.8462	1.3207	3.0485	.7580	.5538	.6604	1.3051	161.688	42.901	.9579	.5498	.4790	.9466	117.2759
.9043	1.3373	3.0937	.7640	.5515	.6687	1.3074	153.136	33.109	.9700	.5541	.4850	.9483	111.0728
1.0801	1.4035	3.2250	.7720	.5318	.7017	1.3325	134.333	41.143	1.0180	.5599	.5090	.9665	97.4342
1.1390	1.4298	3.2810	.7760	.5250	.7149	1.3417	129.699	34.931	1.0370	.5628	.5185	.9732	94.0733
1.2579	1.4597	3.3213	.7740	.5133	.7299	1.3587	119.817	27.963	1.0588	.5614	.5294	.9855	86.9055
1.3181	1.4782	3.3732	.7800	.5110	.7391	1.3620	115.754	27.623	1.0722	.5658	.5361	.9879	83.9588
1.3759	1.4924	3.3655	.7720	.5010	.7462	1.3771	111.917	27.735	1.0825	.5599	.5412	.9988	81.1760
1.4951	1.5293	3.4239	.7720	.4893	.7646	1.3956	105.462	32.291	1.1092	.5599	.5546	1.0122	76.4936
1.5540	1.5491	3.4552	.7720	.4832	.7745	1.4055	102.741	31.892	1.1236	.5599	.5618	1.0194	74.5203
1.6141	1.5672	3.4604	.7660	.4741	.7836	1.4206	100.038	29.109	1.1367	.5556	.5684	1.0304	72.5598
1.7320	1.6003	3.4888	.7600	.4609	.8002	1.4432	95.136	31.591	1.1607	.5512	.5804	1.0468	69.0043
1.7899	1.6206	3.4970	.7540	.4516	.8103	1.4594	93.196	32.509	1.1755	.5469	.5877	1.0585	67.5971
1.8488	1.6382	3.5318	.7560	.4481	.8191	1.4662	91.181	23.896	1.1883	.5483	.5941	1.0635	66.1355
1.9680	1.6596	3.5489	.7520	.4401	.8298	1.4809	86.742	27.552	1.2037	.5454	.6019	1.0741	62.9155
2.0281	1.6819	3.5752	.7500	.4333	.8410	1.4941	85.274	25.711	1.2199	.5440	.6100	1.0837	61.8508
2.0959	1.6902	3.5720	.7460	.4289	.8451	1.5022	83.303	22.228	1.2259	.5411	.6130	1.0896	60.4211

1.6488	1.6382	3.5318	7.750	.4481	.8191	1.4662	91.181	23.896	1.1883	.5483	.5941	1.0640	66.1305
1.9680	1.6596	3.5489	7.7520	.4401	.8296	1.4809	86.742	27.552	1.2037	.5454	.6019	1.0741	62.9155
2.0819	1.6819	3.5752	7.7500	.4333	.8410	1.4941	85.274	25.711	1.2199	.5440	.6100	1.0837	61.8508
2.0859	1.6902	3.5720	7.7460	.4289	.8451	1.5022	83.303	22.228	1.2259	.5411	.6130	1.0896	60.4211
2.1438	1.7077	3.5750	7.7400	.4212	.8538	1.5170	81.871	29.019	1.2366	.5367	.6193	1.1003	59.3825
2.2628	1.7407	3.5924	7.7320	.4089	.8704	1.5416	79.028	26.490	1.2426	.5309	.6313	1.1181	57.3204
2.3830	1.7710	3.6149	7.7260	.3988	.8855	1.5628	76.312	27.444	1.2485	.5266	.6423	1.1335	55.3504
2.5009	1.8061	3.6432	7.7200	.3980	.9030	1.5863	74.115	27.151	1.3100	.5222	.6550	1.1506	53.7572
2.6231	1.8361	3.6481	7.7100	.3765	.9180	1.6114	71.806	25.191	1.3318	.5150	.6652	1.1688	52.0827
2.8710	1.9001	3.6410	6.940	.3507	.9501	1.6695	67.836	24.623	1.3792	.4961	.6891	1.2109	49.2027
2.9990	1.9301	3.6385	6.720	.3393	.9650	1.6965	65.941	21.465	1.3999	.4874	.7000	1.2305	47.8285
3.1254	1.9547	3.6431	6.640	.3311	.9774	1.7169	64.063	20.151	1.4178	.4816	.7089	1.2453	46.4659
3.2446	1.9795	3.6408	6.540	.3221	.9898	1.7394	62.473	21.693	1.4358	.4744	.7179	1.2616	45.129
3.4925	2.0355	3.6377	6.320	.3028	1.0178	1.7895	59.642	17.622	1.4764	.4584	.7382	1.2979	43.596
3.6137	2.0509	3.6167	6.200	.2848	1.0254	1.8092	58.066	17.284	1.4875	.4497	.7438	1.3122	42.1165
3.7349	2.0774	3.6105	6.080	.2855	1.0387	1.8385	56.893	19.276	1.5068	.4410	.7534	1.3306	41.2655
3.8552	2.0974	3.6223	6.040	.2809	1.0487	1.8486	55.638	17.947	1.5213	.4381	.7607	1.3408	40.3552
4.1050	2.1455	3.6039	5.800	.2638	1.0728	1.8967	53.423	15.593	1.5562	.4207	.7781	1.3757	38.7487
4.2297	2.1604	3.5904	5.700	.2574	1.0802	1.9142	52.200	14.899	1.5670	.4134	.7835	1.3884	37.8615
4.3497	2.1819	3.5972	5.640	.2523	1.0909	1.9310	51.253	17.993	1.5825	.4091	.7913	1.4006	37.1747
4.4699	2.2036	3.5860	5.520	.2445	1.1018	1.9539	50.362	19.199	1.5983	.4004	.7992	1.4172	36.5284
4.5879	2.2276	3.5836	5.420	.2375	1.1138	1.9760	49.588	19.043	1.6157	.3931	.8078	1.4332	35.8673
4.7091	2.2491	3.5727	5.300	.2300	1.1246	1.9968	48.770	20.249	1.6314	.3844	.8157	1.4498	35.3740
4.8335	2.2774	3.5754	5.200	.2229	1.1387	2.0230	48.099	16.986	1.6518	.3772	.8259	1.4673	34.8870
4.9580	2.2914	3.5621	5.100	.2172	1.1457	2.0401	47.175	14.829	1.6620	.3699	.8310	1.4797	34.2167
5.0749	2.3129	3.5574	5.000	.2110	1.1565	2.0609	46.511	19.239	1.6776	.3627	.8388	1.4948	33.7353
5.3206	2.3574	3.5498	4.800	.1987	1.1787	2.1032	45.199	10.098	1.7099	.3482	.8549	1.5255	32.7639
5.4398	2.3599	3.5305	4.720	.1952	1.1799	2.1125	44.255	10.063	1.7117	.3424	.8558	1.5323	32.0987
5.6745	2.4022	3.5321	4.560	.1852	1.2011	2.1498	43.170	16.701	1.7424	.3307	.8712	1.5593	31.3121
5.9027	2.4373	3.5106	4.340	.1737	1.2186	2.1894	42.095	14.642	1.7678	.3148	.8839	1.5880	30.5326
6.1364	2.4698	3.5025	4.180	.1651	1.2349	2.2218	41.022	12.364	1.7914	.3032	.8957	1.6115	29.7542
6.3691	2.4949	3.4775	3.980	.1555	1.2475	2.2545	39.918	11.465	1.8096	.2887	.9048	1.6352	28.9537
6.5973	2.5226	3.4655	3.820	.1476	1.2613	2.2845	38.957	12.562	1.8297	.2771	.9148	1.6570	28.2562
6.8245	2.5521	3.4510	3.640	.1389	1.2761	2.3174	38.093	14.513	1.8511	.2640	.9256	1.6808	27.6296
7.0516	2.5885	3.4527	3.500	.1317	1.2943	2.3497	37.382	13.907	1.8775	.2539	.9388	1.7043	27.1137
7.2803	2.6308	3.4307	3.180	.1170	1.3219	2.4096	35.787	11.167	1.9176	.2307	.9588	1.7477	25.9573
7.5034	2.6679	3.4126	3.000	.1093	1.3339	2.4397	35.044	12.218	1.9351	.2176	.9675	1.7696	25.4179
7.7285	2.7008	3.4116	2.860	.1028	1.3504	2.4703	34.416	11.492	1.9589	.2074	.9795	1.7918	24.9629
8.2198	2.7221	3.4003	2.720	.0969	1.3610	2.4951	33.694	11.492	1.9744	.1973	.9872	1.8098	24.4389
8.4518	2.7543	3.3947	2.560	.0900	1.3772	2.5274	33.151	14.041	1.9978	.1857	.9989	1.8331	24.0449
8.6787	2.7865	3.3932	2.420	.0840	1.3933	2.5576	32.655	12.243	2.0211	.1755	1.0106	1.8551	23.6851
8.9032	2.8096	3.3801	2.260	.0777	1.4048	2.5853	32.091	10.602	2.0379	.1639	1.0189	1.8752	23.2764
9.1201	2.8333	3.3757	2.180	.0728	1.4166	2.6092	31.587	11.324	2.0551	.1522	1.0275	1.8925	22.9108
9.3371	2.8588	3.3651	1.980	.0667	1.4294	2.6381	31.126	11.208	2.0735	.1436	1.0368	1.9135	22.5763
9.7686	2.9048	3.3521	1.720	.0567	1.4524	2.6874	30.223	11.530	2.1069	.1248	1.0535	1.9492	21.9211
9.9855	2.9317	3.3395	1.540	.0501	1.4659	2.7190	29.835	11.593	2.1264	.1117	1.0632	1.9721	21.6400
10.1950	2.9543	3.3312	1.400	.0450	1.4772	2.7444	29.444	9.408	2.1428	.1015	1.0714	1.9906	21.3563
10.4020	2.9709	3.3294	1.320	.0421	1.4855	2.7609	29.017	9.991	2.1549	.0957	1.0774	2.0025	21.0470
10.6090	2.9957	3.3230	1.180	.0371	1.4978	2.7874	28.685	10.295	2.1728	.0856	1.0864	2.0218	20.8057
10.8160	3.0135	3.3115	1.040	.0323	1.5068	2.8105	28.301	10.010	2.1858	.0754	1.0929	2.0385	20.5272
11.0280	3.0377	3.3156	.9960	.0294	1.5188	2.8307	27.976	11.443	2.2033	.0696	1.1017	2.0532	20.2915
11.2375	3.0618	3.2987	.9760	.0227	1.5309	2.8629	27.669	11.069	2.2208	.0551	1.1104	2.0765	20.0686
11.4420	3.0835	3.3009	.9680	.0199	1.5418	2.8919	27.364	9.263	2.2366	.0493	1.1183	2.0903	19.8479
11.6560	3.1162	3.2805	.9420	.0114	1.5581	2.9245	26.684	9.973	2.2602	.0305	1.1301	2.1212	19.3545
12.0655	3.1414	3.2788	.9300	.0075	1.5707	2.9493	26.430	7.629	2.2786	.0218	1.1393	2.1392	19.1704
12.2725	3.1481	3.2636	.9180	.0037	1.5740	2.9648	26.038	6.805	2.2833	.0131	1.1417	2.1504	18.8861
12.4745	3.1691	3.2590	.9060	.0001	1.5846	2.9874	25.785	11.101	2.2986	.0044	1.1493	2.1668	18.7026
12.6805	3.1941	3.2636	.9020	.0027	1.5970	3.0081	25.551	8.591	2.3167	.0015	1.1584	2.1818	18.5329
12.8853	3.2057	3.2430	.9020	.0082	1.6028	3.0320	25.216	8.599	2.3251	.0145	1.1626	2.1922	18.2899
13.1105	3.2304	3.2506	.9060	.0100	1.6152	3.0506	25.002	10.283	2.3431	.0169	1.1715	2.2126	18.1344
13.3175	3.2485	3.2473	.9360	.0131	1.6243	3.0698	24.750	5.901	2.3562	.0261	1.1781	2.2266	17.9514
13.5369	3.2552	3.2362	.9460	.0161	1.6276	3.0833	24.398	5.825	2.3611	.0334	1.1805	2.2364	17.6960
13.7659	3.2721	3.2274	.9680	.0226	1.6461	3.1241	23.913	7.847	2.3899	.0409	1.1939	2.2660	17.3484
14.0000	3.2721	3.2134	.9840	.0274	1.6537	3.1479	23.658	7.479	2.3989	.0609	1.1994	2.2832	17.1597
14.2400	3.2422	3.2097	.9940	.0302	1.6621	3.1665	23.423	8.113	2.4111	.0682	1.2056	2.2967	16.9932
14.4800	3.3425	3.2069	.1040	.0331	1.6713	3.1859	23.197	10.478	2.4244	.0754	1.2122	2.3108	16.8250
14.7200	3.3708	3.2078	.1160	.0364	1.6854	3.2122	23.036	7.078	2.4449	.0841	1.2225	2.3299	16.7099
15.0000	3.3743	3.1926	.1280	.0399	1.6872	3.2261	22.716	4.746	2.4475	.0928	1.2237	2.3400	16.4766
15.2877	3.3922	3.1953	.1340	.0415	1.6961	3.2412	22.499	6.007	2.4604	.0972	1.2302	2.3509	16.3193
15.5121	3.4013	3.1840	.1460	.0449	1.7006	3.2580	22.233	6.157	2.4670	.1059	1.2335	2.3631	16.1759

13.2659	3.2921	3.2274	-0.0680	-0.0246	1.6461	3.1241	43.913	7.847	2.3899	-0.0609	1.1337	4.4300	17.0949
14.1804	3.3073	3.2134	-0.0940	-0.0274	1.6537	3.1479	23.658	7.479	2.3989	-0.0609	1.1994	2.2832	17.1597
14.3948	3.3242	3.2097	-0.0940	-0.0302	1.6621	3.1665	23.423	8.113	2.4111	-0.0682	1.2056	2.2967	16.9852
14.6143	3.3425	3.2069	-0.1040	-0.0331	1.6713	3.1859	23.197	10.478	2.4244	-0.0754	1.2122	2.3109	16.8250
14.8388	3.3708	3.2078	-0.1160	-0.0364	1.6854	3.2122	23.036	7.078	2.449	-0.0841	1.2225	2.3299	16.7099
15.0632	3.3743	3.1926	-0.1280	-0.0399	1.6872	3.2261	22.716	4.746	2.4475	-0.0928	1.2237	2.3400	16.4766
15.2877	3.3922	3.1953	-0.1346	-0.0415	1.6961	3.2412	22.499	6.007	2.4604	-0.0972	1.2302	2.3509	16.3193
15.5121	3.4013	3.1840	-0.1460	-0.0449	1.7006	3.2580	22.233	6.157	2.4670	-0.1059	1.2335	2.3631	16.1259
15.7291	3.4192	3.1784	-0.1580	-0.0482	1.7053	3.2791	22.040	5.856	2.4800	-0.1146	1.2400	2.3784	15.9859
16.1930	3.4349	3.1550	-0.1820	-0.0530	1.7175	3.3114	21.519	5.681	2.4914	-0.1320	1.2457	2.4018	15.6081
16.4149	3.4532	3.1553	-0.1900	-0.0571	1.7266	3.3288	21.326	6.636	2.5047	-0.1378	1.2523	2.4144	15.4684
16.6419	3.4654	3.1519	-0.1980	-0.0592	1.7327	3.3431	21.109	5.482	2.5135	-0.1436	1.2568	2.4248	15.3107
16.8663	3.4780	3.1435	-0.2100	-0.0624	1.7390	3.3616	20.902	7.076	2.5226	-0.1523	1.2613	2.4382	15.1609
17.0958	3.4976	3.1421	-0.2200	-0.0650	1.7455	3.3816	20.737	5.955	2.5369	-0.1596	1.2684	2.4528	15.0408
17.3277	3.5054	3.1309	-0.2320	-0.0683	1.7511	3.3977	20.504	1.963	2.5425	-0.1683	1.2713	2.4644	14.8719
17.5622	3.5067	3.1084	-0.2500	-0.0734	1.7531	3.4166	20.238	17.642	2.5435	-0.1813	1.2718	2.4782	14.6790
17.7771	3.5119	3.1185	-0.2460	-0.0722	1.7566	3.4152	20.250	22.917	2.5473	-0.1784	1.2736	2.4771	14.6879
17.9916	3.5358	3.1179	-0.2560	-0.0745	1.7679	3.4374	20.140	7.251	2.5466	-0.1957	1.2823	2.4932	14.6082
18.2605	3.5516	3.0991	-0.2780	-0.0804	1.7758	3.4678	19.710	4.783	2.5761	-0.2016	1.2880	2.5152	14.2959
18.4924	3.5660	3.0949	-0.2880	-0.0830	1.7830	3.4852	19.540	5.748	2.5845	-0.2089	1.2932	2.5279	14.1730
18.7243	3.5784	3.0896	-0.2980	-0.0855	1.7892	3.5016	19.364	2.744	2.5855	-0.2161	1.2977	2.5398	14.0454
18.9663	3.5787	3.0750	-0.3100	-0.0889	1.7894	3.5140	19.119	4.098	2.5857	-0.2248	1.2979	2.5488	13.8676
19.2032	3.5978	3.0690	-0.3240	-0.0923	1.7989	3.5378	18.983	5.977	2.6096	-0.2350	1.3048	2.5661	13.7686
19.4451	3.6073	3.0622	-0.3340	-0.0949	1.8036	3.5528	18.793	3.957	2.6164	-0.2423	1.3082	2.5769	13.6325
19.6795	3.6166	3.0602	-0.3400	-0.0963	1.8083	3.5638	18.619	4.412	2.6232	-0.2466	1.3116	2.5849	13.5047
19.9140	3.6279	3.0547	-0.3500	-0.0988	1.8140	3.5727	18.457	1.861	2.6314	-0.2539	1.3157	2.5964	13.3869
20.0561	3.6264	3.0444	-0.3580	-0.1011	1.8132	3.5870	18.318	60.950	2.6303	-0.2597	1.3151	2.6018	13.2864

A. BASIC RESPT

CDOS 16K BASIC, VERSION 5.4

TRIAXIAL TEST (Set Up / Take Down)
Proj. No. 81-CVOST-F3 Proj. Eng. RSL Cell No. H-6 Piston diam. ☐ 3/8" ☒ 1/2" (1.180)
Type Test CI A - File No T-227

Proj. No. 81C405T-F3 Proj. Eng. RSL Cell No. H-6 Piston dia.: ☐ 3/8"; ☒ 1/2" (1/80)
Type Test C1A-C File No. T-227

Type Test CID-C File No T-997

Loading Conditions: <input type="checkbox"/> Dynamic <input checked="" type="checkbox"/> Undrained <input checked="" type="checkbox"/> Compression <input checked="" type="checkbox"/> Constant cell pressure <input checked="" type="checkbox"/> Static <input type="checkbox"/> Drained <input type="checkbox"/> Extension <input type="checkbox"/> Variable cell pressure	Type: <input checked="" type="checkbox"/> Isotropic <input type="checkbox"/> K_0 stress path <input type="checkbox"/> Anisotropic <input type="checkbox"/> 45° Stress path	Piston Screwed in: <input type="checkbox"/> Yes; <input checked="" type="checkbox"/> No
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<input checked="" type="checkbox"/> Undisturbed	<input type="checkbox"/> Reconstituted	<input type="checkbox"/> Impact	<input type="checkbox"/> Constant Effort
Boring No. <u>QDE-13B</u>	Composite No. <u>351</u>	<input type="checkbox"/> Static	<u> </u> layers; <u> </u> 16 { Hammer Tamp
Sample No. <u>5-1</u>	Specimen No. <u>5</u>	<input type="checkbox"/> Kneading	<u> </u> Blows-Tamps/layer
Depth (ft) <u>8.5</u>	Remarks <u> </u>	<input type="checkbox"/> Tamping	<input type="checkbox"/> Undercompaction
<input type="checkbox"/> End capped with Castone	<input type="checkbox"/> Geomarine Sample	<input type="checkbox"/> Other	<u> </u> layers; <u> </u> Uni (%)

Water Content		Final		Specimen Weight	
Location			Ave	Wet + Sene (etc) :	gm
Container No	CA-219		84	Sene (etc) :	gm
Wgt. Container + Wet Soil (gm)	113.90		117.30	Wet Initial :	142.40 gm
Wgt. Container + Dry Soil (gm)	106.41		389.90	Wet, Final :	1430.6 gm
Wgt. Container (gm)	33.13		145.38	Excess Oven-dry Dish No	
Wgt Dry Soil (gm)	73.28		244.52	Wgt Dish + Dry Soil	gm
WATER CONTENT (%)	10.22		11.21	Wgt. Dish	gm
<input type="checkbox"/> See attached data sheet(s) for additional water contents				Wgt. Excess Dry Soil	gm

Dimensions of Specimen		Specimen		Date = (Day + 2Dm + 0.014)
Initial (L ₀)	Final (L _f)	Initial	Final	
1 6.000	4.857	1-T 2.842	2.925	
2 6.001	4.881	2-M 2.849	3.475	
3 6.002	4.831	3-B 2.869	3.125	
4 6.000	4.832	1-T 2.827		
5 5.998	4.855	2-M 2.807		
Ave 6.0007	4.8512	3-B 2.825		
Ave =		Ave 2.8358 3.25		
A ₀ = $\pi D^2/4$ = 6.3340 in ²		V ₀ = in ³ = 16.8871 = 622.796 cm ³		
A _f = $\pi D_f^2/4$ = 57.6150 in ²		V _f = in ³ = 16.8871 = 622.796 cm ³		
L ₀ - L _f =		A ₀ - A _f =		

Failure Sketch

Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☐ Photo taken.

CL, gr-br m. to f. sandy s.p. silty CLAY, tr. E. gravel
to c. sand.

Other Remarks: $\bar{N}_h = 0.684$ ^{Ref} (No sp Gr Ref.)

Preliminary Cal. by JS Reviewed by RR
☐ Trimmed by _____ Setup by JS Taken down by JS
☐ Reconstituted Date _____ Date 5/29/81
 → See back for Summary Calculations

TRIAXIAL TEST SUMMARY CALCULATIONS

Type Test: C/D-C ☒ Undisturbed; ☐ Reconstituted - Specimen: Static 0.67 %/hr T 227

☐ Dynamic H_3 or sinusoidal or Static 0.67 %/hr

Consolidation History	Max. Induced Test Pressure	<input checked="" type="checkbox"/> Preshear/pore pressure loading	Preshear after Cy-loading
Units: <u>ksi</u> or <u>kSF</u>	Uncorr. Corr. #	Uncorr. Corr. #	Uncorr. Corr. #
$\bar{\sigma}_{cell}$		15.0857	
$\bar{\sigma}_h$		14.400	
$\bar{\sigma}_v$		0.6876	
$\bar{\sigma}_h$		0.6857	0.6921
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h)/2$		0.6898	
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$		1.00	0.9935
OCR		1.00	
Consl. Time	<input type="checkbox"/> Overnight days hours	<input type="checkbox"/> Overnight days hours	<input type="checkbox"/> Overnight days hours

$H_0 = 6.002$ in.
$A_0 = 6.340$ in ²
$V_0 = 622.796$ cm ³
$D_{50}/D_{10} = 1.0518$
$G_s = 2.74$ <input checked="" type="checkbox"/> Assumed
$E_g = 25.0$ %
Area Corr. Factors: C
Undrained: 1.281
$C_u = \frac{1}{6} (1 - A_u / 100)$
Drained: $C_d = \frac{1}{6} [1 - \frac{A_u (1 + E_v)}{100}]$

Calculate V _{at} of Dry Soil	By Initial Water Content	By Final Water Content	By Total Overdried Specimen	Variations in Height and Volume During Consolidation	During Initial Loading	During Backpressure	After Backpressure
					ΔV_m (cm ³)	ΔV_m (cm ³)	ΔV_m (cm ³)
W_1 (%)					0.007	0.007	0.0025
W_2 (%)							
W_{ave} (%)	10.22	11.21					
W _{at} W _{at} Soil, W _{at} (gm)	1494.0	1430.6					
At _{at} W _{at} Dry Soil (gm)	ΔV_T (cm ³)						
W _{at} Excess Porewater Soil							
Est _{at} W _{at} Dry Soil, W _{at} (gm)	1291.96	1286.40					
W _s used:		Final = 1286.40 gm					

Calculation of ΔV_c During Consolidation by Different Procedures	ΔV_c by W _{at} Change	ΔV_c by recorded/calculated volume changes	ΔV_c assuming $S_r = 100\%$
	$\Delta V_c = W_2 - W_1 - (\Delta V_0 + \Delta V_T)$	$\Delta V_c = \sum \Delta V_i$	$\Delta V_c = V_0 - V_F$
	$\Delta W_{at} = -6.6$ gm	$\Delta V_c = 3.699 + 3.699 + 1.85$	$\Delta V_c = 614.801$ cm ³
	$\Delta V_c = (9.56)$ cm ³	$\Delta V_c = 9.248$ cm ³	$\Delta V_c = 7.995$ cm ³

ΔV_c used (ave. value) = 7.995 cm ³ ; $V_c = 614.801$ cm ³ ; $\Delta L_c = 0.0175$ in; $\Delta L_c = 5.9827$ in
$A_c = V_c / L_c$ (cm ² /in) / 16.3871 = 6.2710 in ² / 0.144 = 43.5485 x 10 ⁻³ ft ²
$E_v = 0.23$ %; $E_v = 1.28$ %; $E_v = 0.9872$ %; $E_v = 0.1905$ %; $E_v =$ not in percent
At max. induced test pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ cm ³ ; $\Delta L_{max} =$ in

Summary	Height (in)	Area (in ² cm ² ft ² x 10 ⁻³)	Volume (cm ³)	Water Content (%)	Total of Dry Density (lb/ft ³)	Saturation (%)
Initial	6.0002	43.3861	622.796	10.70	142.74 128.95	90.4
After final	5.9827	43.5485	614.801	11.21	145.27 130.63	100.0

$$S = W G_s \gamma_d / (G_s \gamma_w - \gamma_d) = W \cdot \gamma_w \gamma_d / (\gamma_w (1 + e) - \gamma_d)$$

Calculated by EL Reviewed by PL

$\gamma_w = 20^\circ C$ (fresh) = 62.32 lb/ft³ = 0.9982 gm/cm³; $G_s = 2.74$ (assumed)
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 $\gamma_w = 20^\circ C$ (fresh) = 62.32 lb/ft³ = 0.9982 gm/cm³; $G_s = 2.74$ (assumed)
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1	DATA FILE IDENT. NO.	T-227
2	PROJECT NO.	81C4055T3
3	BORING NO.	COE-13B
4	SAMPLE NO.	S-1
5	SPECIMEN NO.	C
6	DEPTH	8.6
7	TEST NO.	ID-351
8	FILE # FOR LOAD CELL OR PROVING RING	2000
9	FILE # FOR PORE PRESSURE CONST.	1000
10	FILE # FOR CELL PRESSURE CONST	2000
11	FILE # FOR PISTON FRICTION CORRECTION	NONE
12	TYPE OF CONSOLIDATION	I
13	DRAINAGE CONDITIONS DURING LOADING	U
14	MODE OF LOADING	C
15	CELL PRESSURE DURING LOADING	C
16	INITIAL HEIGHT OF SPECIMEN IN INCHES	6.0002
17	INITIAL DIAMETER OF SPECIMEN IN INCHES	2.8398
18	INITIAL VOLUME OF SPECIMEN IN CU. CM.	622.796
19	PISTON DIAMETER IN INCHES	0.5
20	WEIGHT OF TOP CAP ONLY IN TONS*10**-3	0.51
21	WEIGHT OF TOP CAP + PISTON +DIAL IN TONS*10**-3	1.27
22	WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3	1.595
23	WAS PISTON INTACT DURING CONSOL	NO
24	MEMBRANE THICKNESS IN INCHES	0.0275
25	MEMBRANE DIAMETER IN INCHES	2.7793
26	FILTER STRIP CORRECTION CONSTANT	2.128
27	RIGHT CYLINDER DISTORTION FACTOR	1.281
28	DOES SPECIMEN HAVE AN INDUCED OCR	NO
29	CELL PRESSURE IN TSF	0.0
30	BACK PRESSURE IN TSF	0.0
31	AXIAL DEFORMATION DURING CONSOL. IN INCHES	0.0
32	VOLUME CHANGE DURING CONSOL. IN CU. CM.	0.0
33	APPLIED AXIAL LOAD IN TONS*10**-3	0.0
34	PRE SHEAR CONDITION - CELL PRESSURE IN TSF	7.5428
35	BACK PRESSURE IN TSF	7.200
36	AXIAL DEFORMATION IN INCHES	0.0175
37	VOLUME CHANGE IN CU. CM.	7.995
38	PISTON DRAG CORRECTION IN TONS*10**-3	10.365
39	SPECIMEN CYCLICLY LOADED BEFORE SHEARING	NO
40	SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING	NO
41	SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.	0.0
42	PORE PRESSURE IN TSF	0.0
43	TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES	0.0
44	OUTPUT UNITS REQUIRED	KSF
45	DATA NORMALIZATION SELECTION	2.0
46	RESULT FILE DESIRED	0.0

DIS (in.)	LOAD (lbs)	PORE PRESSURE (tsf)
0.01040,	20.73,	7.233
.01054,	21.876,	7.234
.01072,	24.227,	7.236
.01091,	26.415,	7.242
.01105,	28.274,	7.247
.01133,	30.462,	7.254
.01147,	31.282,	7.258
.01166,	32.157,	7.262
.01218,	34.34,	7.273
.01255,	35.38,	7.278
.01288,	36.36,	7.286
.01358,	37.79,	7.297
.01396,	38.39,	7.303
.01433,	38.93,	7.307
.01508,	39.92,	7.316

.01396. 36.39. 7.303
.01433. 38.93. 7.307
.01508. 38.92. 7.316
.01546. 40.19. 7.320
.01583. 41.12. 7.330
.01653. 41.12. 7.334
.01691. 41.45. 7.339
.01761. 41.89. 7.348
.01916. 42.60. 7.352
.01986. 43.15. 7.358
.02061. 43.36. 7.363
.02216. 43.97. 7.367
.02295. 44.29. 7.372
.02375. 44.51. 7.376
.02529. 45.00. 7.378
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.21869. 92.86. 7.301
.22562. 94.66. 7.290
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.24657. 100.35. 7.278
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.26034. 103.41. 7.271
.26709. 104.95. 7.271

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31605, 115.55, 7.230
32293, 116.87, 7.222
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0.3765, 127.42, 7.178
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0.4039, 132.24, 7.157
0.4173, 134.92, 7.145
0.4309, 137.54, 7.133
0.4446, 139.78, 7.122
0.4582, 142.13, 7.114
0.4718, 144.27, 7.103
0.4853, 146.78, 7.097
0.5124, 151.54, 7.076
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0.5520, 159.31, 7.048
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0.6835, 181.13, 6.968
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0.7088, 185.12, 6.955
0.7215, 186.76, 6.949
0.7342, 189.22, 6.941
0.7470, 191.57, 6.933
0.7730, 195.24, 6.920
0.7862, 197.10, 6.911
0.7991, 198.74, 6.907
0.8120, 201.09, 6.898
0.8251, 202.79, 6.893
0.8384, 204.64, 6.879
0.8512, 206.56, 6.872
0.8647, 208.25, 6.864
0.8777, 210.28, 6.854
0.9037, 213.72, 6.848
0.9168, 215.91, 6.840
0.9299, 217.77, 6.840
0.9426, 219.58, 6.834
0.9559, 221.71, 6.827
0.9694, 223.62, 6.821
0.9826, 225.65, 6.814
0.9957, 227.45, 6.810
1.0092, 229.36, 6.803
1.0355, 232.92, 6.790
1.0495, 234.56, 6.779
1.0502, 234.72, 6.782
1.0627, 236.20, 6.778
1.0760, 237.68, 6.770
1.0895, 239.70, 6.762
1.1027, 241.51, 6.756
1.1165, 243.26, 6.752
1.1301, 244.90, 6.744
1.1574, 248.34, 6.731
1.1711, 250.15, 6.725
1.1847, 251.68, 6.722
1.1931, 252.55, 6.717
1.1985, 252.88, 6.712
1.2109, 255.07, 6.709
-999.0, 0.0, 0

A. TRIAX

THIS IS A CIU TEST. IT HAS BEEN
CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE NO. T-227

PROJ. NO. 81C405513
BORING NO. COE-13B
SAMPLE NO. S-1
SPECIMEN NO. C
DEPTH(FT.) 8.6

REVIEWED BY: *FS*
DATE: *4/11/81*
INPUT DATA CHECKED BY: *FS*

TEST NO. 1D-351

ISOTROPIC
UNDRAINED
COMPRESSION
CONSTANT

TYPE OF CONSOLIDATION
DRAINAGE CONDITIONS DURING LOADING
MODE OF LOADING
CELL PRESSURE DURING LOADING

6.0002 INITIAL HEIGHT OF SPECIMEN IN INCHES
2.8398 INITIAL DIAMETER OF SPECIMEN IN INCHES
622.80 INITIAL VOLUME OF SPECIMEN IN CU. CM.
.5000 PISTON DIAMETER IN INCHES
.5100 WEIGHT OF TOP CAP ONLY IN TONS*10**3
1.2700 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**3
1.5950 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**3
NO WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0275 MEMBRANE THICKNESS IN INCHES
2.7793 MEMBRANE DIAMETER IN INCHES
2.1280 FILTER STRIP CORRECTION CONSTANT AT
2% AXIAL STRAIN IN TONS ** 10-3
1.2810 RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

7.5428 CELL PRESSURE IN TSF
7.2000 BACK PRESSURE IN TSF
.0175 AXIAL DEFORMATION DURING CONSOL. IN INCHES
7.99 VOLUME CHANGE DURING CONSOL. IN CU. CM.
10.3650 MEASURED AXIAL LOAD PRIOR TO STATIC LOADING
FROM FIRST LINE OF LOADING DATA IN TONS*10**3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS. ETC:

AXIAL = .6876 KSF
LATERAL = .6921 KSF
MEAN = .6906 KSF
PBAR = .6898 KSF
LATERAL/AXIAL = 1.0066
AXIAL/LATERAL = .9935
OCR = -1.0000-

10.3650 PISTON DRAG CORRECTION IN TONS *10**3
2000 FILE NUMBER FOR LOAD CELL OR PROVING RING
1000 FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
2000 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES IS DATA NORMALIZATION REQUIRED?
DATA NORMALIZED TO PRESHEAR STRESSES
WITH NORM = P-BAR OF .6898 KSF

AXIAL DEVIATOR ORBILITY DELTA-U A-FACTOR Q P-BAR SECANT TANGENT DEVIATOR DELTA-U SECANT
STRAIN STRESS NORM NORM NORM NORM NORM NORM

AXIAL STRAIN	DEVIATOR STRESS	OBLIQUITY	DELTA-U	A-FACTOR	Q	P-BAR	SECANT MODULUS	TANGENT MODULUS	DEVIATOR	DELTA-U	Q	P-BAR	SECANT MODULUS
%	KSF	KSF	KSF	KSF	KSF	KSF	KSF	KSF	KSF	KSF	KSF	KSF	KSF
0.0000	-0.0045	0.9935	0.0000	0.0000	-0.0023	0.0000	0.0000	0.0000	-0.0045	0.0000	-0.0023	0.0000	0.0000
0.0003	0.0217	1.0314	0.0020	0.0764	0.0108	0.0020	1118.612	1453.479	0.314	0.0029	0.0157	1.0161	1621.5771
0.0053	0.0053	1.1100	0.0060	0.0750	0.0377	0.0060	7238.1495	1652.124	1.004	0.0067	0.0547	1.0493	2167.8887
0.0085	1.1255	1.1862	0.0180	1.364	0.0628	0.0180	7368.1525	1696.905	1.820	0.0190	0.0761	1.0682	2211.1990
0.0109	1.681	1.2531	0.0280	1.623	0.0840	0.0280	7481.1588	1742.575	2.436	0.0406	0.1218	1.0845	2302.5437
0.0155	2.180	1.3353	0.0420	1.887	0.1090	0.0420	7591.1431	1792.785	3.160	0.0609	0.1580	1.1004	24075.1008
0.0179	2.367	1.3686	0.0500	2.073	0.1183	0.0500	7604.1438	1822.323	3.431	0.0725	0.1716	1.1023	2455.0122
0.0211	2.566	1.4046	0.0580	2.221	0.1283	0.0580	7624.1239	1868.316	3.719	0.0841	0.1860	1.1052	2497.1191
0.0298	3.061	1.5002	0.0800	2.575	0.1531	0.0800	7652.1044	1915.005	4.438	0.1160	0.2219	1.1092	2513.6399
0.0359	3.296	1.5475	0.0900	2.693	0.1648	0.0900	7669.9258	1950.597	4.778	0.1305	0.2389	1.1117	2547.8761
0.0415	3.518	1.6002	0.1060	2.975	0.1759	0.1060	7620.8505	1978.816	5.099	0.1537	0.2550	1.1046	2585.9483
0.0532	3.839	1.6805	0.1280	3.296	0.1919	0.1280	7560.7305	2022.260	5.564	0.1856	0.2782	1.0959	2659.1757
0.0595	3.972	1.7195	0.1400	3.485	0.1986	0.1400	7507.6751	202.171	5.758	0.2029	0.2879	1.0882	278.6716
0.0657	4.092	1.7521	0.1480	3.577	0.2046	0.1480	7487.6268	184.361	5.932	0.2145	0.2966	1.0853	913.0034
0.0782	4.311	1.8195	0.1660	3.810	0.2156	0.1660	7417.5568	132.929	6.250	0.2406	0.3125	1.0751	807.2888
0.0846	4.369	1.8433	0.1740	3.942	0.2185	0.1740	7365.5219	114.194	6.333	0.2522	0.3167	1.0677	756.5793
0.0908	4.453	1.8690	0.1840	4.063	0.2228	0.1840	7322.4505	104.668	6.405	0.2604	0.3210	1.0621	747.8019
0.1025	4.571	1.9177	0.1940	4.203	0.2285	0.1940	7266.4505	104.668	6.626	0.2812	0.3313	1.0534	653.0649
0.1088	4.642	1.9472	0.2020	4.309	0.2321	0.2020	7222.4307	96.227	6.730	0.2928	0.3365	1.0469	624.4808
0.1205	4.736	1.9864	0.2120	4.434	0.2368	0.2120	7169.3967	88.050	6.865	0.3073	0.3433	1.0392	575.0764
0.1464	4.882	2.0564	0.2300	4.668	0.2441	0.2300	7062.3364	78.789	7.077	0.3334	0.3538	1.0237	487.7745
0.1581	5.000	2.1011	0.2380	4.717	0.2500	0.2380	7041.3197	66.556	7.248	0.3450	0.3624	1.0207	462.5401
0.1707	5.040	2.1400	0.2500	4.916	0.2520	0.2500	6941.2977	39.649	7.306	0.3624	0.3653	1.0062	431.9574
0.1766	5.163	2.1948	0.2600	4.992	0.2581	0.2600	6903.2649	48.198	7.494	0.3769	0.3742	1.0006	384.0851
0.2098	5.228	2.2326	0.2680	5.082	0.2614	0.2680	6855.2513	38.092	7.578	0.3889	0.3819	0.9922	364.3765
0.2231	5.269	2.2724	0.2780	5.231	0.2635	0.2780	6776.2381	34.092	7.639	0.4030	0.3819	0.9822	345.2468
0.2489	5.365	2.3210	0.2860	5.286	0.2682	0.2860	6743.2173	20.721	7.777	0.4146	0.3888	0.9775	315.0926
0.2748	5.527	2.4389	0.3080	5.527	0.2763	0.3080	6706.2071	12.622	7.785	0.4204	0.3892	0.9722	300.2888
0.3035	5.619	2.5003	0.3180	5.619	0.2807	0.3180	6680.1988	23.068	7.825	0.4242	0.3913	0.9684	287.1463
0.3477	5.674	2.5329	0.3220	5.630	0.2837	0.3220	6658.1543	24.357	8.012	0.4465	0.4006	0.9574	247.9494
0.4142	5.770	2.5847	0.3280	5.639	0.2885	0.3280	6627.1404	10.106	8.365	0.4755	0.4183	0.9461	203.5401
0.4361	5.717	2.5787	0.3300	5.717	0.2859	0.3300	6480.1321	13.137	8.288	0.4784	0.4144	0.9394	191.5300
0.4588	5.766	2.6101	0.3340	5.747	0.2883	0.3340	6464.1265	22.810	8.359	0.4842	0.4179	0.9371	183.6063
0.5035	5.874	2.6680	0.3400	5.743	0.2937	0.3400	6459.1173	17.365	8.515	0.4929	0.4257	0.9362	170.4254
0.527	5.985	2.6807	0.3420	5.766	0.2942	0.3420	6444.1130	19.215	8.531	0.4958	0.4265	0.9341	163.8365
0.557	5.963	2.7129	0.3440	5.724	0.2982	0.3440	6463.1077	17.669	8.645	0.4987	0.4322	0.9369	156.2540
0.6225	6.057	2.7807	0.3520	5.767	0.3029	0.3520	6430.9803	17.664	8.781	0.5103	0.4390	0.9321	142.1144
0.6539	6.123	2.8106	0.3540	5.738	0.3061	0.3540	6443.9432	22.430	8.876	0.5132	0.4438	0.9340	136.7419
0.6866	6.201	2.8338	0.3540	5.666	0.3101	0.3540	6482.9097	22.124	8.908	0.5132	0.4495	0.9397	131.8737
0.7187	6.266	2.8752	0.3580	5.671	0.3133	0.3580	6475.8781	21.332	9.084	0.5190	0.4542	0.9386	127.2997
0.7869	6.419	2.9441	0.3620	5.599	0.3209	0.3620	6511.8214	23.090	9.305	0.5248	0.4531	0.9439	119.0767
0.8324	6.527	2.9532	0.3580	5.445	0.3264	0.3580	6606.7895	18.449	9.462	0.5190	0.4731	0.9576	114.4590
0.8887	6.601	2.9752	0.3580	5.385	0.3300	0.3580	6642.7478	17.669	9.569	0.5190	0.4784	0.9629	108.4059
0.9444	6.725	3.0366	0.3620	5.345	0.3362	0.3620	6644.7168	21.956	9.749	0.5248	0.4874	0.9661	103.9185
1.0379	6.971	3.0732	0.3560	5.072	0.3485	0.3560	6647.6631	22.937	1.0105	0.5161	0.5052	0.9226	96.1372
1.1142	7.107	3.0889	0.3520	4.920	0.3554	0.3520	6956.6419	23.779	1.0303	0.5103	0.5151	1.0083	93.0521
1.1714	7.240	3.1406	0.3540	4.857	0.3620	0.3540	7003.6219	22.328	1.0496	0.5132	0.5248	1.0151	90.1619
1.2285	7.362	3.1638	0.3520	4.750	0.3681	0.3520	7084.6029	22.396	1.0673	0.5103	0.5336	1.0269	87.4048
1.3392	7.622	3.2139	0.3480	4.537	0.3811	0.3480	7253.5756	22.344	1.1049	0.5045	0.5524	1.0515	83.0004
1.3942	7.743	3.2232	0.3440	4.415	0.3871	0.3440	7354.5578	24.299	1.1224	0.4987	0.5612	1.0661	80.8613
1.4542	7.902	3.2430	0.3400	4.276	0.3951	0.3400	7474.5468	28.126	1.1455	0.4929	0.5727	1.0834	79.2194
1.5129	8.071	3.2910	0.3400	4.187	0.4036	0.3400	7559.5348	26.102	1.1700	0.4929	0.5850	1.0957	77.7702
1.6350	8.356	3.3063	0.3300	3.925	0.4178	0.3300	7801.5138	23.926	1.2113	0.4784	0.6057	1.1309	74.4863
1.6937	8.500	3.3459	0.3300	3.859	0.4250	0.3300	7873.5045	28.635	1.2322	0.4784	0.6143	1.1413	73.1373
1.7509	8.687	3.3975	0.3300	3.776	0.4344	0.3300	7967.4987	33.280	1.2593	0.4784	0.6297	1.1549	72.2925
1.8089	8.893	3.4248	0.3260	3.648	0.4442	0.3260	8105.4939	33.078	1.2878	0.4726	0.6439	1.1750	71.5527
1.9224	9.250	3.4578	0.3160	3.396	0.4625	0.3160	8369.4835	34.238	1.3410	0.4581	0.6705	1.2161	70.0969
1.9795	9.457	3.4732	0.3100	3.259	0.4729	0.3100	8552.4800	35.338	1.3709	0.4494	0.6855	1.2398	69.5951
2.0360	9.652	3.4851	0.3040	3.132	0.4826	0.3040	8710.4729	33.329	1.3992	0.4407	0.6964	1.2640	69.0438
2.0932	9.836	3.5323	0.3040	3.073	0.4880	0.3040	8802.4720	32.226	1.4258	0.4407	0.7129	1.2760	68.4275
2.2059	1.0200	3.5473	0.2920	2.647	0.5104	0.2920	9104.4646	35.155	1.4786	0.4233	0.7393	1.3198	67.3291
2.2202	1.0634	3.5762	0.2900	2.618	0.5317	0.2900	9442.46028	36.178	1.5416	0.4059	0.7708	1.3697	66.7235

1.0200	3.5473	2.9220	2.947	9.9104	46.486	35.155	1.4786	4.233	1.3198	1.2760	6H.8265
2.2052	3.5782	2.8000	2.918	9.9442	46.028	36.178	1.5416	4.059	1.3687	1.3198	67.3291
2.4362	3.6364	2.7400	2.970	9.9701	45.474	36.038	1.5994	3.972	1.4063	1.3687	68.7237
2.5512	3.6835	2.6200	2.772	1.0038	45.123	37.221	1.6622	3.798	1.4552	1.4063	69.9203
2.7822	3.7333	2.4200	1.954	1.0663	44.438	34.884	1.7953	3.508	1.5458	1.4552	71.4552
2.9005	3.7586	2.3200	1.815	1.0959	43.962	35.225	1.8419	3.363	1.5887	1.5458	72.9291
3.0149	3.7673	2.1800	1.650	1.1313	43.715	36.544	1.9040	3.160	1.5887	1.5887	74.3729
3.1307	3.7547	2.0200	1.482	1.1680	43.416	37.792	1.9638	2.928	1.6400	1.6400	75.8263
3.2515	3.7268	1.8600	1.209	1.2336	42.615	39.587	2.0726	2.522	1.6932	1.6932	77.2807
3.3815	3.7473	1.7000	1.085	1.2646	42.170	40.342	2.1738	2.145	1.7457	1.7457	78.7341
3.5974	3.7526	1.4800	0.979	1.2946	41.811	40.342	2.1738	2.145	1.7457	1.7457	80.1875
3.7110	3.7533	1.3600	0.880	1.3235	41.439	41.661	2.2227	1.972	1.7972	1.7972	81.6409
3.9475	3.7862	1.1400	0.700	1.3854	40.973	42.381	2.3381	1.653	1.8511	1.8511	83.0943
4.0634	3.7912	1.0400	0.626	1.4108	40.565	43.161	2.3829	1.508	1.8914	1.8914	84.5477
4.1777	3.7730	0.9200	0.532	1.4390	40.130	43.986	2.4238	1.305	1.9219	1.9219	86.0011
4.2905	3.7580	0.7600	0.440	1.4678	39.766	44.868	2.4668	1.102	1.9524	1.9524	87.4545
4.5207	3.7419	0.5200	0.289	1.5200	38.962	45.811	2.5481	0.980	1.9829	1.9829	88.9079
4.6397	3.7482	0.4000	0.217	1.5506	38.783	46.809	2.6019	0.860	1.9829	1.9829	90.3613
4.7581	3.7266	0.2800	0.148	1.5753	38.352	47.844	2.6388	0.746	1.9829	1.9829	91.8147
4.8747	3.7366	0.1600	0.080	1.6036	38.100	48.911	2.6858	0.632	1.9829	1.9829	93.2681
4.9929	3.7228	0.0400	0.015	1.6276	37.677	49.978	2.7205	0.518	1.9829	1.9829	94.7215
5.1089	3.7194	0.0600	0.036	1.6501	37.310	51.045	2.7567	0.404	1.9829	1.9829	96.1749
5.2239	3.6920	0.0200	0.020	1.6782	36.950	52.112	2.7915	0.290	1.9829	1.9829	97.6283
5.3390	3.6814	0.0400	0.029	1.7261	36.437	53.179	2.8264	0.176	1.9829	1.9829	99.0817
5.4540	3.6711	0.0700	0.052	1.7740	35.748	54.246	2.8612	0.062	1.9829	1.9829	100.5351
5.5690	3.6571	0.1000	0.056	1.8616	34.648	55.313	2.9070	0.000	1.9829	1.9829	101.9885
5.6840	3.6325	0.1400	0.054	1.9147	34.107	56.380	2.9528	0.000	1.9829	1.9829	103.4419
5.7990	3.5992	0.1800	0.068	1.9452	33.496	57.447	2.9986	0.000	1.9829	1.9829	104.8953
5.9140	3.5610	0.2200	0.079	1.9928	33.082	58.514	3.0444	0.000	1.9829	1.9829	106.3487
6.0290	3.5016	0.2600	0.080	2.0394	32.654	59.581	3.0902	0.000	1.9829	1.9829	107.8021
6.1440	3.4814	0.3000	0.080	2.0870	32.226	60.648	3.1360	0.000	1.9829	1.9829	109.2555
6.2590	3.4612	0.3400	0.080	2.1346	31.798	61.715	3.1818	0.000	1.9829	1.9829	110.7089
6.3740	3.4410	0.3800	0.080	2.1822	31.369	62.782	3.2276	0.000	1.9829	1.9829	112.1623
6.4890	3.4208	0.4200	0.080	2.2298	30.940	63.849	3.2734	0.000	1.9829	1.9829	113.6157
6.6040	3.4006	0.4600	0.080	2.2774	30.511	64.916	3.3192	0.000	1.9829	1.9829	115.0691
6.7190	3.3804	0.5000	0.080	2.3250	30.082	65.983	3.3650	0.000	1.9829	1.9829	116.5225
6.8340	3.3602	0.5400	0.080	2.3726	29.653	67.050	3.4108	0.000	1.9829	1.9829	117.9759
6.9490	3.3400	0.5800	0.080	2.4202	29.224	68.117	3.4566	0.000	1.9829	1.9829	119.4293
7.0640	3.3198	0.6200	0.080	2.4678	28.795	69.184	3.5024	0.000	1.9829	1.9829	120.8827
7.1790	3.2996	0.6600	0.080	2.5154	28.366	70.251	3.5482	0.000	1.9829	1.9829	122.3361
7.2940	3.2794	0.7000	0.080	2.5630	27.937	71.318	3.5940	0.000	1.9829	1.9829	123.7895
7.4090	3.2592	0.7400	0.080	2.6106	27.508	72.385	3.6398	0.000	1.9829	1.9829	125.2429
7.5240	3.2390	0.7800	0.080	2.6582	27.079	73.452	3.6856	0.000	1.9829	1.9829	126.6963
7.6390	3.2188	0.8200	0.080	2.7058	26.650	74.519	3.7314	0.000	1.9829	1.9829	128.1497
7.7540	3.1986	0.8600	0.080	2.7534	26.221	75.586	3.7772	0.000	1.9829	1.9829	129.6031
7.8690	3.1784	0.9000	0.080	2.8010	25.792	76.653	3.8230	0.000	1.9829	1.9829	131.0565
7.9840	3.1582	0.9400	0.080	2.8486	25.363	77.720	3.8688	0.000	1.9829	1.9829	132.5099
8.0990	3.1380	0.9800	0.080	2.8962	24.934	78.787	3.9146	0.000	1.9829	1.9829	133.9633
8.2140	3.1178	1.0200	0.080	2.9438	24.505	79.854	3.9604	0.000	1.9829	1.9829	135.4167
8.3290	3.0976	1.0600	0.080	2.9914	24.076	80.921	4.0062	0.000	1.9829	1.9829	136.8701
8.4440	3.0774	1.1000	0.080	3.0390	23.647	81.988	4.0520	0.000	1.9829	1.9829	138.3235
8.5590	3.0572	1.1400	0.080	3.0866	23.218	83.055	4.0978	0.000	1.9829	1.9829	139.7769
8.6740	3.0370	1.1800	0.080	3.1342	22.789	84.122	4.1436	0.000	1.9829	1.9829	141.2303
8.7890	3.0168	1.2200	0.080	3.1818	22.360	85.189	4.1894	0.000	1.9829	1.9829	142.6837
8.9040	3.0000	1.2600	0.080	3.2294	21.931	86.256	4.2352	0.000	1.9829	1.9829	144.1371
9.0190	2.9832	1.3000	0.080	3.2770	21.502	87.323	4.2810	0.000	1.9829	1.9829	145.5905
9.1340	2.9674	1.3400	0.080	3.3246	21.073	88.390	4.3268	0.000	1.9829	1.9829	147.0439
9.2490	2.9516	1.3800	0.080	3.3722	20.644	89.457	4.3726	0.000	1.9829	1.9829	148.4973
9.3640	2.9358	1.4200	0.080	3.4198	20.215	90.524	4.4184	0.000	1.9829	1.9829	149.9507
9.4790	2.9200	1.4600	0.080	3.4674	19.786	91.591	4.4642	0.000	1.9829	1.9829	151.4041
9.5940	2.9042	1.5000	0.080	3.5150	19.357	92.658	4.5100	0.000	1.9829	1.9829	152.8575
9.7090	2.8884	1.5400	0.080	3.5626	18.928	93.725	4.5558	0.000	1.9829	1.9829	154.3109
9.8240	2.8726	1.5800	0.080	3.6102	18.499	94.792	4.6016	0.000	1.9829	1.9829	155.7643
9.9390	2.8568	1.6200	0.080	3.6578	18.070	95.859	4.6474	0.000	1.9829	1.9829	157.2177
10.0540	2.8410	1.6600	0.080	3.7054	17.641	96.926	4.6932	0.000	1.9829	1.9829	158.6711
10.1690	2.8252	1.7000	0.080	3.7530	17.212	97.993	4.7390	0.000	1.9829	1.9829	160.1245
10.2840	2.8094	1.7400	0.080	3.8006	16.783	99.060	4.7848	0.000	1.9829	1.9829	161.5779
10.3990	2.7936	1.7800	0.080	3.8482	16.354	100.127	4.8306	0.000	1.9829	1.9829	163.0313
10.5140	2.7778	1.8200	0.080	3.8958	15.925	101.194	4.8764	0.000	1.9829	1.9829	164.4847
10.6290	2.7620	1.8600	0.080	3.9434	15.496	102.261	4.9222	0.000	1.9829	1.9829	165.9381
10.7440	2.7462	1.9000	0.080	3.9910	15.067	103.328	4.9680	0.000	1.9829	1.9829	167.3915
10.8590	2.7304	1.9400	0.080	4.0386	14.638	104.395	5.0138	0.000	1.9829	1.9829	168.8449
10.9740	2.7146	1.9800	0.080	4.0862	14.209	105.462	5.0596	0.000	1.9829	1.9829	170.2983
11.0890	2.6988	2.0200	0.080	4.1338	13.780	106.529	5.1054	0.000	1.9829	1.9829	171.7517
11.2040	2.6830	2.0600	0.080	4.1814	13.351	107.596	5.1512	0.000	1.9829	1.9829	173.2051
11.3190	2.6672	2.1000	0.080	4.2290	12.922	108.663	5.1970	0.000	1.9829	1.9829	174.6585
11.4340	2.6514	2.1400	0.080	4.2766	12.493	109.730	5.2428	0.000	1.9829	1.9829	176.1119
11.5490	2.6356	2.1800	0.080	4.3242	12.064	110.797	5.2886	0.000	1.9829	1.9829	177.5653
11.6640	2.6198	2.2200	0.080	4.3718	11.635	111.864	5.3344	0.000	1.9829	1.9829	179.0187
11.7790	2.6040	2.2600	0.080	4.4194	11.206	112.931	5.3802	0.000	1.9829	1.9829	180.4721
11.8940	2.5882	2.3000	0.080	4.4670	10.777	113.998	5.4260	0.000	1.9829	1.9829	181.9255
12.0090	2.5724	2.3400	0.080	4.5146	10.348	115.065	5.4718	0.000	1.9829	1.9829	183.3789
12.1240	2.5566	2.3800	0.080	4.5622	9.919	116.132	5.5176	0.000	1.9829	1.9829	184.8323
12.2390	2.5408	2.4200	0.080	4.6098	9.490	117.199	5.5634	0.000	1.9829	1.9829	186.2857
12.3540	2.5250	2.4600	0.080	4.6574	9.061	118.266	5.6092	0.000	1.9829	1.9829	187.7391
12.4690	2.5092	2.5000	0.080	4.7050	8.632	119.333	5.6550	0.000	1.9829	1.9829	189.1925
12.5840	2.4934	2.5400	0.080	4.7526	8.203	120.400	5.7008	0.000	1.9829	1.9829	190.6459
12.6990	2.4776	2.5800	0.080	4.8002	7.774	121.467	5.7466	0.000	1.9829	1.9829	192.0993
12.8140	2.4618	2.6200	0.080	4.8478	7.345	122.534	5.7924	0.000	1.9829	1.9829	193.5527
12.9290	2.4460	2.6600	0.080	4.8954	6.916	123.601	5.8382	0.000	1.9829	1.9829	195.0061
13.0440	2.4302	2.7000	0.080	4.9430	6.487	124.668	5.8840	0.000	1.9829	1.9829	1

15.8034	3.4524	3.2822	-8120	-2378	1.768	3.2593	21.811	7.731	5.0054	-1.1771	2.5027	4.6959	31.7136
16.0296	3.4724	3.2767	-8240	-2396	1.7362	3.2614	21.691	9.262	5.0337	-1.1945	2.5169	4.7278	31.4436
16.2502	3.4942	3.2698	-8380	-2422	1.7471	3.2866	21.530	8.929	5.0653	-1.2148	2.5327	4.7643	31.2111
16.4692	3.5117	3.2690	-8480	-2433	1.7558	3.3035	21.350	8.147	5.0906	-1.2264	2.5453	4.7889	30.9499
16.6948	3.5304	3.2603	-8600	-2461	1.7652	3.3272	21.174	7.903	5.1178	-1.2467	2.5589	4.8232	30.6945
16.9448	3.5634	3.2433	-8860	-2512	1.7817	3.3702	20.823	6.439	5.1856	-1.2844	2.5828	4.8855	30.1857
17.3684	3.5760	3.2201	-9080	-2566	1.7890	3.3988	20.615	11.309	5.1839	-1.3163	2.5919	4.9269	29.8842
17.3901	3.5780	3.2296	-9020	-2548	1.7890	3.3938	20.613	11.327	5.1848	-1.3076	2.5934	4.9197	29.8809
17.8890	3.5893	3.2252	-9100	-2553	1.7947	3.4077	20.432	4.999	5.2032	-1.3192	2.6016	4.9399	29.6193
17.8114	3.5995	3.2092	-9260	-2600	1.7997	3.4291	20.234	6.558	5.2180	-1.3424	2.6090	4.9709	29.3324
18.0370	3.6188	3.1991	-9420	-2632	1.8094	3.4550	20.088	7.823	5.2459	-1.3656	2.6229	5.0084	29.1203
18.2576	3.6344	3.1922	-9540	-2654	1.8172	3.4751	19.931	6.511	5.2686	-1.3829	2.6343	5.0376	28.8929
18.4883	3.6481	3.1895	-9620	-2667	1.8240	3.4902	19.756	5.540	5.2884	-1.3945	2.6442	5.0595	28.6394
18.7156	3.6598	3.1753	-9780	-2703	1.8299	3.5124	19.579	5.372	5.3054	-1.4177	2.6527	5.0917	28.3825
19.1719	3.6853	3.1563	-1.0040	-2756	1.8426	3.5517	19.246	5.820	5.3423	-1.4554	2.6712	5.1487	27.8995
19.4009	3.6992	3.1489	-1.0160	-2779	1.8496	3.5710	19.090	4.997	5.3624	-1.4728	2.6812	5.1766	27.6738
19.6283	3.7081	3.1462	-1.0220	-2789	1.8541	3.5818	18.915	3.442	5.3754	-1.4815	2.6877	5.1923	27.4194
19.7687	3.7123	3.1360	-1.0320	-2814	1.8561	3.5940	18.801	751	5.3814	-1.4960	2.6907	5.2101	27.2550
19.8589	3.7109	3.1229	-1.0420	-2842	1.8555	3.6035	18.709	4.433	5.3795	-1.5105	2.6898	5.2238	27.1216
20.0862	3.7323	3.1275	-1.0480	-2843	1.8662	3.6205	18.623	125.840	5.4105	-1.5192	2.7053	5.2484	26.9959 STOP

A. BASIC RESPT

CDOS 16K BASIC, VERSION 5.4

16/10/1961

TRIAXIAL TEST (Set up / Take Dwnr.)

WCC
4-202
(1/80)

Proj. No. HC 40 T-F Proj. Eng. RSC Cell No. 2 Piston diam. ☒ 3/8" ☐ 1/2" ()
Type Test C10-C File No. T-230

Loading Conditions: <input type="checkbox"/> Dynamic <input checked="" type="checkbox"/> Undrained <input checked="" type="checkbox"/> Compression <input checked="" type="checkbox"/> Constant cell pressure	
<input checked="" type="checkbox"/> Static <input type="checkbox"/> Drained <input type="checkbox"/> Extension <input type="checkbox"/> Variable cell pressure	
Type: <input checked="" type="checkbox"/> Isotropic <input type="checkbox"/> K ₀ stress path	Piston Screwed in: <input type="checkbox"/> Yes; <input checked="" type="checkbox"/> No
Consolidation: <input type="checkbox"/> Anisotropic <input type="checkbox"/> 45° Stress path	
<input checked="" type="checkbox"/> Undisturbed <input type="checkbox"/> Recrystallized	<input type="checkbox"/> Impact <input type="checkbox"/> Constant ESSort
Boring No. <u>COE-18B</u> ^{ID} <u>353</u>	<input type="checkbox"/> Static _____ layers; _____ 16 { Hammer Tamp
Sample No. <u>5-3</u> Specimen No. <u>C</u>	<input type="checkbox"/> Kneading _____ Blows-Tamps / layer
Depth (ft) <u>14.1</u> Remarks _____	<input type="checkbox"/> Tamping <input type="checkbox"/> Undercompaction
<input type="checkbox"/> Ends cased with Castore; <input type="checkbox"/> Geomarine Sample	<input type="checkbox"/> Other _____ layers; _____ Uni (%)

Water Content		Final	Specimen Weight
Location		At	Wet + Stone (etc) : _____ gm
Container No	1A-109	612	Stone (etc) : _____ gm
Wgt Container + Wet Soil (gm)	134.11	380.5	Wet Initial : <u>1456.1</u> gm
Wgt Container + Dry Soil (gm)	125.92	360.11	Wet Final : <u>1477.1</u> gm
Wgt. Container (gm)	33.89	138.85	Excess Oven-dry Dish No _____
Wgt Dry Soil (gm)	92.03	221.26	Wgt Dish + Dry Soil _____ gm
WATER CONTENT (%)	8.90	9.33	Wgt. Dish _____ gm
<input type="checkbox"/> See attached data sheet(s) for additional water contents			Wgt. Excess Dry Soil _____ gm

Dimensions of Height (in)		Specimen Diameter (in) or		Date = (Day + 20th + 10th)
Initial (L _i)	Final (L _f)	Initial	Final	
1	6.003	4.821	1-T 2.595	2.920
2	6.000	4.8135	2-M 2.595	2.465
3	6.012	4.843	3-B 2.900	3.060
4	6.011	4.827	1-T 2.542	
5	6.003	4.814	2-M 2.549	
Ave	6.0058	4.8237	3-B 2.875	

ΔL = _____ in

ΔL_z = _____ in

ΣΔL = _____ in

L_i - L_f = _____ in

Ave 2.876 3.2275

$A_0 = \pi D^2/4 = 6.4963 \text{ in}^2$

$V_0 = \text{in}^3 \cdot 16.8871 = 639.351 \text{ cm}^3$

$\rho_{\text{nom}} = 545 + 2(D^2)^2 = 56.851 \text{ 10}^{-6}$

Membrane Thickness = 0.0275 in

Circumference (C_m) = 8.7675 in

Dis = C_m/π = 2.7820 in

Filter Paper: Top + bottom: ☐ Yes; ☒ No

Filter Strips: ☒ Yes; ☐ No

1/2 Vertical at 1/4" - What mar # 54 or

Spiral at 1/4" - What mar # 1 or

Wgt top cap = _____ gm, 0.57 10⁻³

Wgt (cap, dial) = _____ gm, _____ 10⁻³

Preliminary

Y_{co} = 145.11 10/st² Y_d = 133.25 10/st²

Failure Sketch

Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☐ Photo taken

Cl, brown m. to s. sandy sp. silty CLAY, tr. S
gravel to c. sand.

Other Remarks: $\bar{\sigma} = 8.211 \text{ Ksf} = 4.1055 = 57.0293$

Preliminary Cal. by JB Reviewed by RL

☐ Trimmed by _____ Setup by WJN Taken down by 96
☐ Recount, total Date _____ Date 5/19/81 Date 5/27/81
 See back for Summary Calculations

TRIAXIAL TEST SUMMARY CALCULATIONS T230

Type Test: C10-C ☒ Undisturbed; ☐ Reconstituted - Specimen:
☐ Dynamic / Hz or + sinusoidal or ☒ Static @ 0.72 %/hr

Consolidation History	Units: <u>CS</u> or <u>VSE</u>	Max Induced Past Pressure	Uncorr.	Corr. #	<input checked="" type="checkbox"/> Preshear/perm. <input type="checkbox"/> Pre cy-loading	Uncorr.	Corr. #	Preshear after Cy-loading	Uncorr.	Corr. #
$\bar{\sigma}_{cell}$										
U										
$\bar{\sigma}_v$										
$\bar{\sigma}_h$										
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h)/2$										
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$										
OCR										
Consol. Time		<input type="checkbox"/> Overnight	days	hours	<input type="checkbox"/> Overnight	days	hours	<input type="checkbox"/> Overnight	days	hours

$H_0 = 6.0058$ in
 $A_c = 6.3263$ in²
 $V_0 = 622.351$ cm³
 $D_{50}/D_{10} = 1.0212$
 $G_s = 2.732$ ☐ Assumed ☒ Measured
 $E_g = 97.1$ %
 Area Corr. Factor: C
 Undrained: $= 1.209$
 $C = \frac{1}{E_g} (1 - A_c / \text{fish})$
 Drained: $=$
 $C = \frac{1}{E_g} [1 - \frac{A_c (1 + e_{vc})}{e_{vc}}]$

Calculate	By Initial	By Final	By Total	Variations	During	During	After Backpressure
W _{at} & Dry Soil	Water Content	Water Content	Ovoidrial Specimen	Height and Volume	Initial	Each -	From $\bar{\sigma}_v$ To $\bar{\sigma}_h$
W_1 (%)				Consolidation	Sign. Convention: (-) ΔV in, (+) ΔV out		
W_2 (%)				ΔL (in)	0.007	0.006	0.004
W_{ave} (%)	8.90	9.33		ΔV_m (cm ³)	-7.66	-7.66	2.93
W _{at} / W _{dry} (g/g)	1486.1	1477.1		ΔV_a	2.236	1.916	1.277
Actual W _{at} Dry Soil (g/g)	ΔV_t (cm ³)			$R = \Delta V_m / \Delta V_a$	Used = 2.294	2.294	
W _{at} Excess: Quantity Soil	Corr. Wet exp. e			Corrected $\Delta V_a = R \cdot \Delta V_a$	5.129	4.395	
Total W _{at} Dry Soil (g/g)	1364.65	1351.05		Circle Selected Value	ΔV_1	ΔV_2	ΔV_3
W_s used:		Final = 1351.05 gm		$\Delta L_{cy} = 12 \Delta V_{rebound} = \sigma_{max} \rightarrow \sigma_{test} =$			

Calculation	ΔV_c by W _{at} Change	ΔV_c by recorded/calculated volume changes	ΔV_c assuming 5% ΔV_c
ΔV_c during Consolidation by 0.55 cm ² Procedures	$\Delta V_c = W_c - W_s - (V_0 \cdot \Delta W) = 9.0 \text{ gm} \cdot E(\Delta W) = (-7.80) \text{ cm}^3$ $\therefore \Delta V_c = 16.86 \text{ cm}^3$	$\Delta V_c = \frac{\Delta V_1}{\Delta V_2} \cdot \Delta V_2 = \frac{5.129}{4.395} \cdot 14.39 = 23.914 \text{ cm}^3$	$\Delta V_c = V_0 - V_F = V_0 - (V_F + \Delta V_t)$ $W_s = 3.33 \text{ %}$ $V_F = 621.700 \text{ cm}^3$ $V_0 \cdot \Delta V_t = 16.86 \text{ cm}^3$ $\therefore \Delta V_c = 17.651 \text{ cm}^3$

ΔV_c used (ave value) = 17.651 cm³ $\therefore V_c = 621.700$ cm³; $\Delta L_c = 0.0432$ in; $\therefore L_c = 5.9626$ in
 $A_c = V_c / L_c (\text{cm}^2) / 16.3871 = 6.3627$ in²; $0.144 = 44.1856 \times 10^{-3} \text{ ft}^2$
 $E_{uc} = 0.72$ %; $E_v = 2.76$ %; $\therefore E_v = 0.9724$ $E_g^* = 0.1843$; $e_{vc}^* =$ not in percent
 At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ cm³; $\Delta L_{max} =$ in

Summary	Height (in)	Area (in ² cm ² ft ² x 10 ⁻³)	Volume (cm ³)	Water Content (%)	Total/Dry Density (lb/ft ³)	Saturation (%)
Initial	6.0058	45.1132	622.351	10.0	145.11 131.92	94.01
After Consol.	5.9626	44.1856	621.700	9.33	148.33 135.67	100.0

$S = W G_s \gamma_d / (G_s \gamma_{sat} - \gamma_d) = W \cdot G_s \cdot \gamma_s / (G_s \cdot \gamma_s (1 + w) - \gamma_s)$

Calculated by Reviewed by

$P_{ci} \times 0.072 = \text{dot}$
 $W_s \text{ for } S = 100\% = G_s \cdot \gamma_{sat} - \gamma_d / (G_s \cdot \gamma_s - \gamma_d) = G_s \cdot \gamma_s \cdot Y_d / (G_s \cdot \gamma_s (1 + w) - \gamma_s)$

1 DATA FILE IDENT. NO. T-230
 2 PROJECT NO. B1C405513
 3 BORING NO. ROE-13R
 4 SAMPLE NO.
 5 SPECIMEN NO.
 6 DEPTH 1.1
 7 TEST NO. 1D-353
 8 FILE # FOR LOAD CELL OR PROVING RING 2000
 9 FILE # FOR PORE PRESSURE CONST. 1000
 10 FILE # FOR CELL PRESSURE CONST. 2000
 11 FILE # FOR PISTON FRICTION CORRECTION NONE
 12 TYPE OF CONSOLIDATION I
 13 DRAINAGE CONDITIONS DURING LOADING U
 14 MODE OF LOADING C
 15 CELL PRESSURE DURING LOADING C
 16 INITIAL HEIGHT OF SPECIMEN IN INCHES 6.0059
 17 INITIAL DIAMETER OF SPECIMEN IN INCHES 2.8760
 18 INITIAL VOLUME OF SPECIMEN IN CU. CM. 639.351
 19 PISTON DIAMETER IN INCHES 0.375
 20 WEIGHT OF TOP CAP ONLY IN TONS*10**-3 0.51
 21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3 1.10
 22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3 1.375
 23 WAS PISTON INTACT DURING CONSOL. NO
 24 MEMBRANE THICKNESS IN INCHES 0.0275
 25 MEMBRANE DIAMETER IN INCHES 2.7890
 26 FILTER STRIP CORRECTION CONSTANT 2.128
 27 RIGHT CYLINDER DISTORTION FACTOR 1.209
 28 DOES SPECIMEN HAVE AN INDUCED OCR NO
 29 CELL PRESSURE IN TSF 0.0
 30 BACK PRESSURE IN TSF 0.0
 31 AXIAL DEFORMATION DURING CONSOL. IN INCHES 0.0
 32 VOLUME CHANGE DURING CONSOL. IN CU. CM. 0.0
 33 APPLIED AXIAL LOAD IN TONS*10**-3 0.0
 34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF 11.28%
 35 BACK PRESSURE IN TSF 7.1928
 36 AXIAL DEFORMATION IN INCHES 0.0432
 37 VOLUME CHANGE IN CU. CM. 17.651
 38 PISTON DRAG CORRECTION IN TONS*10**-3 9.20
 39 SPECIMEN CYCLICLY LOADED BEFORE SHEARING NO
 40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING NO
 41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM. 0.0
 42 PORE PRESSURE IN TSF 0.0
 43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES 0.0
 44 OUTPUT UNITS REQUIRED KSF
 45 DATA NORMALIZATION SELECTION 2.0
 46 RESULT FILE DESIRED 0.0

DIS LOAD PORE PRESSURE
 (lb.) (lbf) (tsf)

0.00293, 18.40, 7.222
 .00324, 19.186, 7.226
 .00346, 19.891, 7.230
 .00373, 20.667, 7.233
 .00395, 21.896, 7.237
 .00418, 24.713, 7.246
 .00431, 31.056, 7.267
 .00435, 36.58, 7.286
 .00444, 40.65, 7.302
 .00453, 45.47, 7.321
 .00467, 51.43, 7.346
 .00475, 56.96, 7.372
 .00502, 67.09, 7.421
 .00515, 77.29, 7.474

00502. 67.09. 7.421
00515. 77.28. 7.474
00538. 86.88. 7.528
00564. 95.71. 7.583
00591. 103.84. 7.634
00622. 111.16. 7.685
00649. 117.83. 7.732
00680. 124.28. 7.779
00716. 136.35. 7.826
00747. 136.04. 7.871
00773. 141.35. 7.915
00809. 146.17. 7.956
00845. 150.73. 7.997
00881. 154.95. 8.034
00917. 163.25. 8.109
01009. 170.35. 8.178
01085. 176.74. 8.244
01218. 188.4. 8.360
01281. 192.89. 8.413
01361. 197.93. 8.462
01432. 202.16. 8.510
01574. 210.18. 8.597
01645. 213.76. 8.637
01716. 216.96. 8.674
01792. 220.37. 8.712
02081. 232.13. 8.837
02232. 237.07. 8.894
02388. 241.94. 8.943
02535. 246.61. 8.990
02620. 254.19. 9.072
02775. 257.93. 9.107
03122. 261.00. 9.139
03278. 264.76. 9.171
03665. 272.19. 9.237
03900. 276.31. 9.270
04114. 279.99. 9.301
04350. 283.95. 9.330
04790. 291.10. 9.376
05035. 294.36. 9.396
05266. 297.50. 9.415
05577. 301.35. 9.436
06342. 310.78. 9.479
06743. 315.11. 9.496
07121. 319.40. 9.511
07499. 323.35. 9.523
08277. 330.7. 9.539
08624. 334.5. 9.546
09011. 338.2. 9.550
09416. 341.6. 9.555
10163. 348.2. 9.559
10572. 351.7. 9.560
10924. 354.8. 9.560
11289. 357.8. 9.559
12062. 364.1. 9.556
12436. 367.3. 9.554
12819. 370.2. 9.553
13215. 373.2. 9.549
13993. 379.0. 9.541
14335. 382.4. 9.537
14749. 384.9. 9.532
15514. 390.7. 9.521
16301. 396.3. 9.511
17058. 401.7. 9.499
17845. 406.8. 9.485
18597. 412.0. 9.473
19353. 417.3. 9.460
20910. 428.1. 9.431
21639. 433.1. 9.417
22395. 438.2. 9.403
23273. 443.0. 9.388

2.910. 428.1. 9.431
21639. 433.1. 9.417
22395. 438.2. 9.403
23263. 443.0. 9.388
24726. 453.3. 9.353
25424. 458.2. 9.339
26207. 463.3. 9.324
27048. 468.1. 9.306
28671. 477.9. 9.274
29454. 482.8. 9.258
30224. 487.7. 9.242
31002. 492.4. 9.226
31834. 497.1. 9.208
32612. 501.3. 9.192
0.3333. 506.2. 9.177
0.3414. 511.0. 9.160
0.3494. 515.6. 9.143
0.3805. 533.3. 9.080
0.3961. 542.5. 9.049
0.4117. 551.1. 9.018
0.4278. 559.9. 8.986
0.4426. 568.5. 8.954
0.4583. 576.5. 8.924
0.4732. 585.1. 8.895
0.4889. 593.3. 8.866
0.5025. 601.1. 8.836
0.5335. 617.8. 8.779
0.5494. 625.3. 8.751
0.5648. 633.6. 8.724
0.5806. 641.0. 8.696
0.5957. 648.8. 8.669
0.6107. 656.7. 8.643
0.6261. 664.4. 8.619
0.6416. 671.9. 8.592
0.6585. 679.8. 8.567
0.6875. 693.8. 8.518
0.7026. 701.2. 8.492
0.7185. 708.2. 8.468
0.7307. 715.0. 8.445
0.7464. 722.8. 8.421
0.7619. 729.3. 8.397
0.7766. 736.3. 8.377
0.7920. 743.4. 8.354
0.8077. 750.2. 8.332
0.8382. 763.5. 8.287
0.8548. 769.9. 8.267
0.8684. 777.2. 8.245
0.8851. 784.1. 8.224
0.9010. 790.2. 8.204
0.9143. 796.1. 8.184
0.9304. 803.0. 8.163
0.9490. 808.5. 8.144
0.9637. 815.0. 8.125
0.9958. 828.2. 8.085
1.0115. 834.3. 8.067
1.0254. 840.4. 8.048
1.0439. 846.0. 8.031
1.0569. 851.9. 8.012
1.0736. 857.9. 7.995
1.0908. 863.8. 7.978
1.1048. 870.3. 7.957
1.1196. 876.6. 7.939
1.1347. 881.9. 7.922
1.1502. 888.1. 7.904
1.1643. 893.8. 7.887
1.1821. 898.6. 7.869
1.1948. 905.1. 7.851
-999.0.0.0.0

A. TRIAX

THIS IS A CIU TEST. IT HAS BEEN
CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE NO. T-230

PROJ. NO. 81C4055T3 REVIEWED BY: *PR*
BORING NO. COE-138 DATE: *8/8/81*
SAMPLE NO. S-3 INPUT DATA CHECKED BY: *PR*
SPECIMEN NO. C TEST NO. 1D-353
DEPTH(FT.) 14.1

ISOTROPIC TYPE OF CONSOLIDATION
UNDRAINED DRAINAGE CONDITIONS DURING LOADING
COMPRESSION MODE OF LOADING
CONSTANT CELL PRESSURE DURING LOADING

6.0058 INITIAL HEIGHT OF SPECIMEN IN INCHES
2.8760 INITIAL DIAMETER OF SPECIMEN IN INCHES
639.35 INITIAL VOLUME OF SPECIMEN IN CU. CM.
.3750 PISTON DIAMETER IN INCHES
.5100 WEIGHT OF TOP CAP ONLY IN TONS*10**3
1.1000 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**3
1.3750 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**3
NO. WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0275 MEMBRANE THICKNESS IN INCHES
2.7890 MEMBRANE DIAMETER IN INCHES
2.1280 FILTER STRIP CORRECTION CONSTANT AT
2% AXIAL STRAIN IN TONS ** 10-3
1.2090 RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

11.2896 CELL PRESSURE IN TSF
7.1928 BACK PRESSURE IN TSF
.0432 AXIAL DEFORMATION DURING CONSOL. IN INCHES
17.65 VOLUME CHANGE DURING CONSOL. IN CU. CM.
9.2000 MEASURED AXIAL LOAD PRIOR TO STATIC LOADING
FROM FIRST LINE OF LOADING DATA IN TONS*10**3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:

AXIAL	=	8.1656	KSF
LATERAL	=	8.1997	KSF
MEAN	=	8.1893	KSF
PBAR	=	8.1827	KSF
LATERAL/AXIAL	=	1.0042	
AXIAL/LATERAL	=	.9958	
OCR	=	1.000	

9.2000 PISTON DRAG CORRECTION IN TONS *10**3
2000 FILE NUMBER FOR LOAD CELL OR PROVING RING
1000 FILE NUMBER FOR POPE PRESSURE CONVERSION CONSTANT
2000 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES IS DATA NORMALIZED TO PRESHEAR STRESSES
DATA NORMALIZED TO PRESHEAR STRESSES
NORTH NORTH = P-BAR OF 8.1827 KSF

AXIAL STRAIN	DEVIATOR STRESS	OBLIQUITY	DELTA-U	A-FACTOR	Q	P-BAR	SECANT MODULUS	TANGENT MODULUS	DEVIATOR	DELTA-U	Q	P-BAR	SECANT NORM
ε	KSF	YF	YF	YF	KSF	KSF	KSF	YF	NORM	NORM	NORM	NORM	NORM
0.0000	-0.0341	.9958	0.0000	0.0000	-0.0170	8.1827	0.0000	0.0000	-0.0042	0.0000	-0.0021	1.0000	0.0000
0.0052	-0.1666	.9980	.0080	.4574	-0.0004	8.1834	336.413	381.523	-0.0020	.0010	-0.0010	1.0001	41.1130
0.0099	-0.0008	.9999	.0160	.4814	-0.0004	8.1833	373.863	454.272	-0.0001	.0020	-0.0001	1.0001	45.6997
0.0134	.0210	1.0026	.0220	.3996	.0105	8.1892	410.329	553.577	.0026	.0027	.0013	1.0007	50.1462
0.0171	.0441	1.0054	.0300	.3840	.0220	8.1917	456.683	1136.503	.0054	.0037	.0027	1.0011	55.8111
0.0210	.1076	1.0132	.0480	.3388	.0538	8.2055	675.842	4111.042	.0132	.0059	.0066	1.0028	82.5944
0.0231	.2510	1.0309	.0900	.3122	.1880	8.2352	1231.4961	2599.366	.0307	.0110	.0153	1.0064	150.5007
0.0238	.3759	1.0466	.1280	.3122	.1880	8.2356	1721.4351	2359.412	.0459	.0156	.0230	1.0094	210.3760
0.0253	.4679	1.0582	.1600	.3188	.2339	8.2736	1982.076	6656.408	.0572	.0196	.0286	1.0111	242.2289
0.0268	.5765	1.0721	.1980	.3241	.2884	8.2901	2276.620	6477.287	.0705	.0242	.0352	1.0131	278.2249
0.0292	.7115	1.0895	.2480	.3326	.3558	8.3075	2554.974	7527.090	.0870	.0303	.0435	1.0153	312.2426
0.0305	.8366	1.1059	.3000	.3446	.4183	8.3180	2852.250	7185.988	.1022	.0367	.0511	1.0165	348.5725
0.0351	1.0654	1.1366	.3980	.3620	.5327	8.3344	3136.682	7809.841	.1302	.0486	.0651	1.0185	383.3329
0.0372	1.2958	1.1684	.5040	.3790	.6479	8.3436	3571.716	8054.008	.1584	.0616	.0792	1.0197	436.4983
0.0411	1.5126	1.1994	.6120	.3957	.7563	8.3440	3764.220	5097.531	.1849	.0748	.0924	1.0197	460.0241
0.0454	1.7120	1.2290	.7220	.4135	.8560	8.3337	3841.792	4312.905	.2092	.0882	.1046	1.0185	469.5042
0.0500	1.8956	1.2570	.8240	.4270	.9478	8.2235	3860.933	3614.637	.2317	.1007	.1158	1.0172	471.8434
0.0552	2.0607	1.2833	.9260	.4421	1.0304	8.3040	3796.416	3249.589	.2518	.1132	.1259	1.0148	463.9588
0.0597	2.2112	1.3080	1.0200	.4543	1.1056	8.2853	3760.507	3060.012	.2702	.1247	.1351	1.0125	459.5704
0.0649	2.3566	1.3326	1.1140	.4660	1.1783	8.2640	3683.333	2530.900	.2880	.1361	.1440	1.0099	450.1389
0.0709	2.4933	1.3566	1.2080	.4780	1.2467	8.2384	3562.01	2365.261	.3047	.1476	.1524	1.0068	435.3843
0.0761	2.6215	1.3798	1.2980	.4888	1.3108	8.2125	3487.709	2605.086	.3204	.1586	.1602	1.0036	426.2318
0.0805	2.7412	1.4023	1.3860	.4994	1.3706	8.1843	3447.445	2270.070	.3350	.1694	.1675	1.0002	421.3111
0.0845	2.8496	1.4233	1.4680	.5091	1.4248	8.1565	3332.211	1746.952	.3483	.1794	.1741	.9948	407.2285
0.0926	2.9322	1.4440	1.5500	.5190	1.4761	8.1258	3225.642	1656.957	.3608	.1894	.1804	.9930	394.2046
0.0984	3.0470	1.4634	1.6240	.5271	1.5235	8.0992	3129.653	1637.895	.3724	.1985	.1862	.9898	382.4738
0.1097	3.2335	1.5032	1.7740	.5429	1.6168	8.0425	2979.094	1596.706	.3952	.2168	.1976	.9829	364.0740
0.1201	3.3930	1.5396	1.9120	.5579	1.6965	7.9842	2853.907	1328.145	.4147	.2337	.2073	.9757	348.7751
0.1328	3.5361	1.5744	2.0440	.5725	1.7680	7.9238	2687.800	1138.225	.4321	.2498	.2161	.9684	328.4751
0.1531	3.7934	1.6404	2.2760	.5946	1.8967	7.8204	2467.201	1069.670	.4636	.2781	.2318	.9557	301.5158
0.1657	3.8976	1.6699	2.3820	.6059	1.9488	7.7645	2372.738	911.807	.4763	.2911	.2382	.9491	289.9715
0.1791	4.0100	1.7011	2.4800	.6132	2.0050	7.7247	2257.763	814.656	.4901	.3031	.2450	.9440	275.9205
0.1910	4.1042	1.7298	2.5760	.6225	2.0521	7.6758	2166.362	770.453	.5016	.3148	.2508	.9381	264.7504
0.2148	4.2827	1.7859	2.7500	.6370	2.1413	7.5911	2009.294	708.510	.5234	.3361	.2666	.9278	245.5551
0.2267	4.3622	1.8124	2.8300	.6437	2.1811	7.5508	1938.834	631.492	.5331	.3491	.2709	.9181	228.7525
0.2387	4.4331	1.8371	2.9040	.6501	2.2165	7.5123	1871.804	593.944	.5418	.3549	.2709	.9181	228.7525
0.2514	4.5086	1.8638	2.9800	.6560	2.2543	7.4740	1806.942	564.192	.5510	.3642	.2755	.9134	220.8258
0.2999	4.7683	1.9595	3.2300	.6726	2.3842	7.3539	1601.498	482.040	.5827	.3947	.2914	.8987	195.7186
0.3252	4.8768	2.0043	3.3440	.6809	2.4384	7.2941	1510.127	417.995	.5960	.4087	.2980	.8914	184.5521
0.3514	4.9835	2.0474	3.4520	.6860	2.4917	7.2495	1428.044	411.372	.6090	.4206	.3045	.8860	174.5208
0.3760	5.0858	2.0905	3.5360	.6906	2.5429	7.2066	1361.619	380.036	.6215	.4321	.3108	.8807	166.4030
0.4238	5.2507	2.1669	3.7000	.7001	2.6254	7.1251	1246.977	328.412	.6417	.4407	.3208	.8706	152.3927
0.4498	5.3318	2.2036	3.7700	.7026	2.6659	7.0956	1192.925	293.485	.6516	.4476	.3258	.8672	145.7869
0.4745	5.3926	2.2368	3.8240	.7056	2.6998	7.0656	1145.242	289.679	.6595	.4536	.3299	.8635	139.9596
0.5006	5.4792	2.2737	3.8980	.7070	2.7396	7.0414	1101.282	274.487	.6696	.4607	.3348	.8605	134.5873
0.5655	5.6381	2.3521	4.0300	.7105	2.8191	6.9888	1002.995	233.564	.6890	.4925	.3445	.8541	122.5757
0.6049	5.7257	2.3952	4.0960	.7111	2.8629	6.9666	952.128	219.888	.6997	.5006	.3499	.8514	116.3592
0.6408	5.8036	2.4359	4.1580	.7122	2.9019	6.9437	910.986	214.645	.7093	.5081	.3546	.8486	111.3313
0.6804	5.8876	2.4779	4.2160	.7119	2.9438	6.9276	870.311	208.057	.7195	.5152	.3598	.8466	106.3604
0.7542	6.0384	2.5516	4.3080	.7094	3.0192	6.9110	805.153	184.543	.7380	.5265	.3690	.8446	98.3974
0.7953	6.1061	2.5853	4.3480	.6968	3.0531	6.9049	772.064	166.957	.7462	.5360	.3731	.8438	94.2537
0.8340	6.1713	2.6182	4.3860	.7068	3.0857	6.8995	744.023	160.188	.7542	.5411	.3819	.8423	86.4684
0.8862	6.2506	2.6572	4.4280	.7045	3.1253	6.8971	709.177	151.460	.7639	.5411	.3819	.8423	86.4684
1.0145	6.5145	2.7484	4.5140	.6943	3.2221	6.9080	638.578	140.562	.7876	.5518	.3938	.8442	78.0404
1.0817	6.5318	2.7886	4.5480	.6926	3.2659	6.9178	605.971	133.747	.7983	.5587	.3991	.8454	74.1778
1.1451	6.6189	2.8275	4.5780	.6881	3.3094	6.9313	580.970	131.209	.8089	.5695	.4044	.8471	71.0002
1.2085	6.6982	2.8617	4.6020	.6835	3.3491	6.9470	557.058	119.187	.8186	.5624	.4093	.8490	68.0779
1.3090	6.8460	2.9198	4.6340	.6735	3.4230	6.9889	513.812	124.556	.8366	.5663	.4183	.8541	62.7928
1.3972	6.9250	2.9496	4.6480	.6679	3.4625	7.0144	498.049	126.530	.8463	.5690	.4278	.8609	58.8027
1.4621	7.0011	2.9755	4.6560	.6618	3.5005	7.0445	481.162	109.384	.8556	.5702	.4320	.8630	56.7433
1.5300	7.0701	3.0006	4.6640	.6569	3.5350	7.0690	464.311	104.339	.8640	.5735	.4405	.8659	54.8004
1.5553	7.0943	3.0255	4.6740	.6527	3.5691	7.0901	449.037	100.141	.8719	.5769	.4489	.8687	52.9504

1.7239	7.2750	3.0644	4.6760	6.397	3.6375	7.1615	423.983	104.723	.8891	.5715	.4445	.8752	51.8148
1.7829	7.3378	3.0822	4.6760	6.343	3.6889	7.1929	413.463	102.317	.8790	.5715	.4484	.8790	50.5292
1.8442	7.3980	3.0981	4.6760	6.289	3.6990	7.2250	403.004	97.772	.8630	.5712	.4521	.8630	49.2509
1.9038	7.4582	3.1302	4.6680	6.176	3.7620	7.2941	382.917	99.734	.8472	.5705	.4598	.8472	46.7962
2.0365	7.5981	3.1459	4.6640	6.118	3.7941	7.3302	374.274	95.717	.8273	.5700	.4637	.8273	45.7399
2.1008	7.6584	3.1609	4.6620	6.070	3.8227	7.3608	365.556	89.100	.8096	.5697	.4672	.8096	44.6785
2.1672	7.7145	3.1727	4.6540	6.013	3.8523	7.3984	357.082	89.131	.7946	.5688	.4708	.7946	43.6389
2.2977	7.8183	3.1948	4.6380	.5906	3.9022	7.4713	341.757	103.401	.7555	.5668	.4777	.9131	41.7660
2.3550	7.8869	3.2091	4.6300	.5845	3.9435	7.5136	336.346	93.924	.7439	.5658	.4819	.9182	41.1047
2.4244	7.9343	3.2341	4.6200	.5797	3.9672	7.5473	328.668	78.253	.7367	.5646	.4848	.9224	40.1664
2.5527	8.0475	3.2341	4.5980	.5689	4.0238	7.6260	316.585	85.041	.7285	.5619	.4917	.9220	38.6897
2.6847	8.1556	3.2515	4.5780	.5589	4.0778	7.7000	305.044	81.803	.7207	.5595	.4983	.9240	37.2793
2.8117	8.2594	3.2651	4.5540	.5490	4.1297	7.7760	294.962	77.368	.7109	.5565	.5047	.9240	36.0472
3.4577	8.7584	3.3155	4.4180	.5024	4.3792	8.1617	254.286	77.176	.6704	.5352	.5074	.9274	31.0762
3.5800	8.8519	3.3230	4.3900	.4939	4.4260	8.2365	248.212	75.591	.6618	.5365	.5106	.9296	30.3340
3.7028	8.9467	3.3307	4.3620	.4856	4.4733	8.3119	242.278	66.753	.6531	.5331	.5167	.9318	29.6088
3.8523	9.0322	3.3347	4.3320	.4777	4.5161	8.3847	235.344	68.289	.6459	.5294	.5219	.9347	28.7613
4.0977	9.2231	3.3440	4.2660	.4607	4.6116	8.5463	225.911	77.462	.6382	.5213	.5266	.9379	27.6085
4.2148	9.3134	3.3479	4.2340	.4528	4.6567	8.6235	221.778	73.743	.6312	.5174	.5291	.9409	27.1035
4.3461	9.4058	3.3533	4.2040	.4452	4.7029	8.6997	217.203	65.074	.6247	.5138	.5317	.9439	26.5443
4.4871	9.4901	3.3532	4.1680	.4375	4.7451	8.7779	212.255	61.698	.6186	.5094	.5347	.9469	25.9306
4.8907	9.7499	3.3613	4.0720	.4161	4.8350	8.9040	200.055	66.538	.6129	.5015	.5395	.9499	24.4486
5.0198	9.8366	3.3639	4.0400	.4092	4.8783	8.9793	196.634	64.898	.6071	.4976	.5428	.9528	24.0306
5.1503	9.9184	3.3654	4.0080	.4026	4.9227	9.0523	193.241	60.114	.6011	.4937	.5461	.9557	23.6159
5.2898	9.9986	3.3642	3.9720	.3958	4.9693	9.1255	189.661	55.802	.5954	.4898	.5494	.9586	23.1784
5.4203	10.0822	3.3630	3.9400	.3898	5.0166	9.1988	186.397	62.963	.5897	.4854	.5527	.9615	22.7796
5.5407	10.1557	3.3666	3.9100	.3836	5.0639	9.2721	183.907	66.040	.5840	.4815	.5560	.9644	22.4753
5.6740	10.2376	3.3669	3.8760	.3772	5.1188	9.3454	181.948	59.016	.5783	.4777	.5593	.9673	22.1136
5.8107	10.3151	3.3662	3.8420	.3711	5.1735	9.4183	179.104	57.109	.5726	.4737	.5626	.9702	21.7661
6.3323	10.6095	3.3652	3.7160	.3489	5.3047	9.7904	168.083	57.352	.5669	.4695	.5659	.9731	20.5413
6.5939	10.7619	3.3664	3.6540	.3383	5.3809	9.9287	163.725	55.636	.5612	.4666	.5692	.9760	20.0088
6.8556	10.9006	3.3646	3.5920	.3283	5.4503	10.0602	159.500	52.477	.5555	.4637	.5725	.9789	19.4924
7.1256	11.0408	3.3621	3.5280	.3183	5.5204	10.1945	155.424	53.837	.5498	.4608	.5758	.9818	18.9944
7.3738	11.1792	3.3594	3.4640	.3087	5.5896	10.3278	152.068	51.102	.5441	.4579	.5791	.9847	18.5842
7.6371	11.3015	3.3553	3.4040	.3001	5.6508	10.4591	148.428	50.394	.5384	.4550	.5824	.9876	18.1393
7.8870	11.4373	3.3550	3.3460	.2914	5.7186	10.5751	145.446	50.728	.5327	.4521	.5857	.9905	17.7749
8.1503	11.5614	3.3524	3.2880	.2833	5.7807	10.6954	142.270	50.047	.5270	.4492	.5890	.9934	17.3868
8.3784	11.6822	3.3483	3.2280	.2759	5.8411	10.8159	139.839	50.498	.5213	.4463	.5923	.9963	17.0896
8.5983	11.8320	3.3446	3.1140	.2599	5.9660	11.0551	134.476	43.684	.5156	.4434	.5956	.9992	16.4342
9.1650	12.0368	3.3394	3.0580	.2530	6.0184	11.1637	131.707	43.138	.5100	.4405	.5989	.1000	16.0959
9.4232	12.1581	3.3363	3.0040	.2461	6.0791	11.2785	129.384	43.552	.5043	.4376	.6022	.1008	15.8120
9.6882	12.2650	3.3337	2.9480	.2394	6.1325	11.3882	126.949	40.697	.4986	.4347	.6055	.1016	15.5144
9.9415	12.3690	3.3294	2.8940	.2330	6.1845	11.4943	124.760	42.614	.4929	.4318	.6088	.1024	15.2469
10.1930	12.4801	3.3275	2.8420	.2268	6.2401	11.6021	122.772	42.392	.4872	.4289	.6121	.1032	15.0039
10.4513	12.5850	3.3262	2.7940	.2211	6.2925	11.7027	120.741	39.442	.4815	.4260	.6154	.1040	14.7557
10.7113	12.6845	3.3213	2.7400	.2151	6.3422	11.8067	118.740	37.108	.4758	.4231	.6187	.1048	14.5112
10.9947	12.7863	3.3186	2.6900	.2094	6.3932	11.9078	116.605	36.529	.4701	.4202	.6220	.1056	14.2503
11.4811	12.9669	3.3102	2.6360	.2036	6.4435	12.0065	113.238	37.257	.4644	.4173	.6253	.1064	13.8388
11.7343	13.0616	3.3056	2.5800	.1987	6.4924	12.1059	109.815	34.307	.4587	.4144	.6286	.1072	13.6388
12.0010	13.1449	3.3007	2.5240	.1939	6.5418	12.2074	108.718	40.679	.4530	.4115	.6319	.1080	13.4205
12.2056	13.2356	3.2980	2.4660	.1899	6.5911	12.3074	107.204	32.361	.4473	.4086	.6352	.1088	13.2864
12.4689	13.3300	3.2957	2.3980	.1849	6.6406	12.4044	105.580	30.786	.4416	.4057	.6385	.1096	13.1013
12.7288	13.4051	3.2891	2.3500	.1794	6.6902	12.5066	104.217	32.791	.4359	.4028	.6418	.1104	12.9029
12.9754	13.4886	3.2876	2.3100	.1703	6.7443	12.6046	102.803	29.944	.4302	.4000	.6451	.1112	12.7364
13.4970	13.5705	3.2836	2.2640	.1659	6.8224	12.7278	102.803	28.083	.4245	.3971	.6484	.1120	12.5856
13.9970	13.6485	3.2791	2.2200	.1618	6.8939	12.8418	98.668	24.873	.4188	.3942	.6517	.1128	12.3856
14.0085	13.7878	3.2887	2.1300	.1536	6.9242	13.0418	97.170	30.025	.4131	.3913	.6550	.1136	12.1856
14.2869	13.8485	3.2637	2.0900	.1500	6.9679	13.1297	96.244	31.209	.4074	.3884	.6583	.1144	11.9856
14.5150	13.9256	3.2618	2.0460	.1459	6.9679	13.1297	96.244	31.209	.4017	.3855	.6616	.1152	11.7856
14.7951	14.0034	3.2571	2.0040	.1422	7.0017	13.2058	94.879	22.326	.3960	.3826	.6649	.1160	11.5856
15.0617	14.0581	3.2513	1.9640	.1387	7.0290	13.2734	93.563	23.456	.3903	.3797	.6682	.1168	11.3856
15.2649	14.1170	3.2444	1.9240	.1353	7.0569	13.3434	92.299	24.586	.3846	.3768	.6715	.1176	11.1856

13.2337	13.5705	3.2836	2.2640	1.1659	6.7858	12.7278	108.803	29.944	1.6584	.2767	.8292	1.5555	12.5635
13.4970	13.6448	3.2791	2.2200	.1618	6.8224	12.8092	101.347	28.083	1.6675	.2713	.8338	1.5654	12.3856
14.0085	13.7878	3.2687	2.1300	.1536	6.8939	12.9712	98.668	24.873	1.6850	.2603	.8425	1.5852	12.0582
14.2869	13.8485	3.2637	2.0900	.1500	6.9242	13.0418	97.170	30.025	1.6924	.2554	.8462	1.5938	11.8751
14.5150	13.9358	3.2616	2.0460	.1459	6.9679	13.1297	96.244	31.209	1.7031	.2500	.8515	1.6046	11.7620
14.7951	14.0034	3.2571	2.0040	.1422	7.0017	13.2058	94.879	22.326	1.7113	.2449	.8557	1.6139	11.5952
15.0617	14.0581	3.2513	1.9640	.1387	7.0290	13.2734	93.563	23.656	1.7180	.2400	.8590	1.6221	11.4342
15.2848	14.1179	3.2464	1.9240	.1353	7.0589	13.3436	92.588	25.799	1.7253	.2351	.8627	1.6307	11.3152
15.5548	14.1848	3.2420	1.8820	.1317	7.0924	13.4194	91.412	17.348	1.7335	.2300	.8668	1.6400	11.1714
15.8667	14.2157	3.2333	1.8440	.1287	7.1078	13.4731	89.809	17.722	1.7373	.2254	.8686	1.6465	10.9755
16.1133	14.2787	3.2298	1.8060	.1255	7.1393	13.5429	88.826	22.919	1.7450	.2207	.8725	1.6551	10.8554
16.6684	14.3913	3.2194	1.7260	.1189	7.1957	13.6799	86.543	20.900	1.7588	.2109	.8794	1.6718	10.5764
16.9149	14.4443	3.2152	1.6900	.1160	7.2222	13.7427	85.595	22.622	1.7652	.2065	.8826	1.6795	10.4606
17.1481	14.4997	3.2107	1.6520	.1129	7.2498	13.8087	84.754	16.295	1.7720	.2019	.8860	1.6876	10.3578
17.4583	14.5272	3.2033	1.6180	.1103	7.2636	13.8568	83.406	16.743	1.7754	.1977	.8877	1.6934	10.1930
17.6763	14.5809	3.1987	1.5800	.1073	7.2904	13.9219	82.681	19.450	1.7819	.1931	.8910	1.7014	10.1044
17.9564	14.6208	3.1934	1.5460	.1047	7.3104	13.9763	81.614	13.249	1.7868	.1899	.8934	1.7080	9.9740
18.2449	14.6561	3.1874	1.5120	.1021	7.3280	14.0283	80.516	18.435	1.7911	.1848	.8956	1.7144	9.8399
18.4797	14.7140	3.1823	1.4700	.0988	7.3570	14.0995	79.807	22.444	1.7982	.1796	.8991	1.7231	9.7531
18.7279	14.7642	3.1780	1.4340	.0960	7.3821	14.1610	79.017	16.190	1.8043	.1752	.9022	1.7306	9.6567
18.9811	14.7949	3.1715	1.4000	.0935	7.3975	14.2107	78.125	14.523	1.8081	.1711	.9040	1.7367	9.5476
19.2411	14.8389	3.1664	1.3640	.0908	7.4194	14.2691	77.298	16.970	1.8135	.1667	.9067	1.7438	9.4465
19.4776	14.8792	3.1614	1.3300	.0882	7.4396	14.3235	76.566	9.942	1.8184	.1625	.9092	1.7505	9.3571
19.7761	14.8877	3.1513	1.2940	.0857	7.4438	14.3642	75.453	15.133	1.8194	.1581	.9097	1.7554	9.2211
19.9891	14.9461	3.1484	1.2580	.0830	7.4730	14.4297	74.941	444.050	1.8266	.1537	.9133	1.7635	9.1586 STOP

A.BASIC RESPT

CDOS 16K BASIC, VERSION 5.4

APPENDIX G

Supporting Data

CAU Triaxial Compression Tests

TRIAXIAL TEST (Set Up / Take Down)

WCC
4-202
(1/80)

Proj. No. SIC4055 Proj. Eng. W Cell No. H-1 Piston diam. ☐ 3/8" ☒ 1/2"
Type Test CH-1-C File No. T-207

Loading Conditions	<input type="checkbox"/> Dynamic	<input checked="" type="checkbox"/> Undrained	<input checked="" type="checkbox"/> Compression	<input checked="" type="checkbox"/> Constant cell pressure
	<input checked="" type="checkbox"/> Static	<input type="checkbox"/> Drained	<input type="checkbox"/> Extension	<input type="checkbox"/> Variable cell pressure
Type	<input checked="" type="checkbox"/> Isotropic			<input type="checkbox"/> K ₀ stress path
Consolidation	<input checked="" type="checkbox"/> Anisotropic			<input checked="" type="checkbox"/> 45° Stress path
				Piston Screwed in: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<input type="checkbox"/> Undisturbed	<input type="checkbox"/> Reconstituted	<input type="checkbox"/> Impact	<input type="checkbox"/> Constant ESSort
Boring No. <u>COE-9</u>	Composite No. _____	<input type="checkbox"/> Static	_____ layers; _____ 16 (Hammer Tamp)
Sample No. <u>S-6</u>	Specimen No. <u>D</u>	<input type="checkbox"/> Kneading	_____ Blows-Tamps/layer
Depth (ft) <u>16.8</u>	Remarks <u>EQ 287</u>	<input type="checkbox"/> Tamping	<input type="checkbox"/> Under compaction
<input type="checkbox"/> Ends capped with Castone; <input type="checkbox"/> Geomarine Sample		<input type="checkbox"/> Other	_____ layers; _____ Uni (%)

Water Content			Final
Location	<u>TYPE</u>		Ave
Container No.	<u>CA203</u>		<u>428</u>
Wgt. Container + Wet Soil (gm)	<u>72.26</u>		<u>428.10</u>
Wgt. Container + Dry Soil (gm)	<u>68.22</u>		<u>407.59</u>
Wgt. Container (gm)	<u>33.03</u>		<u>206.44</u>
Wgt. Dry Soil (gm)	<u>15.19</u>		<u>201.15</u>
WATER CONTENT (%)	<u>11.48</u>		<u>10.20</u>
<input type="checkbox"/> See attached data sheet(s) for additional water contents			

Specimen Weight

Wet + Sleeve(s): _____ gm

Stone(s): _____ gm

Wet Initial: 1413 gm

Wet Final: 13928 gm

Excess Oven-dry Dish No. _____

Wgt. Dish + Dry Soil _____ gm

Wgt. Dish _____ gm

Wgt. Excess Dry Soil _____ gm

Dimensions of		Specimen		
Height (in)		Diameter (in)		
Initial (lb)	Final (lb)	Initial	Final	
1 5.9485	4.700	1-T 2.867	2.980	$\Delta L_e = (D + 2D_0) \Delta L / 4$
2 5.9525	4.710	2-M 2.869	3.385	
3 5.944	4.743	3-B 2.848	3.330	
4 5.951	4.680	1-T 2.849		
5 5.955	4.656	2-M 2.868		
Ave 5.9504	4.6978	3-B 2.852		
$\Delta L_e =$	in	Ave 2.8588	2.97	
$\Delta L_e =$	in	$A_0 = \pi D^2/4 = 6.4190 \text{ in}^2$		
$E \Delta L_e =$	in	$V_0 = 1/3 \cdot 16.887 \cdot 6.25 = 35.915 \text{ cm}^3$		
$L_0 - L_0 =$	in	$A_{0m} = 5.4542(D)^2 = 58.3212 \text{ in}^2$		

Membrane Thickness = 0.0258 in

Circumference (in) = 8.78 in

Diam. = $C/\pi = 2.7964$ in

Filter Paper: Top + bottom: ☐ Yes ☒ No

Filter Strips: ☒ Yes ☐ No

16 Vertical at 1/4" - Whatman #540

Spiral at 1/4" - Whatman #1 or _____

Wgt top cap = _____ gm, _____ 10⁻⁶ gm

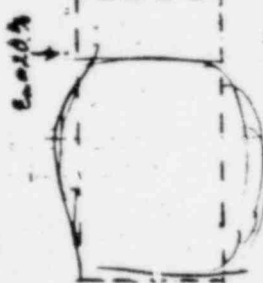
Wgt (Cap, dial) = 952.86 gm, 1.0523 10⁻⁶ gm

Preliminary

Yes 140.94 16/51 Y₀ = 126.43 16/51

Failure Sketch

Final Visual Classification. ☐ See more detailed sketch on attached sheet; ☐ Photo taken.



Other Remarks: $\bar{\sigma}_v = 16$ KsF

$\gamma/n = 1.9$ $\gamma/v = 0.52$

Preliminary Cal. by S Reviewed by RH

☐ Trimmed by _____ Setup by _____ Taken down by _____

☐ Reconstituted Date _____ Date 5/7/81 Date 5/15/81

See back for Summary Calculations

TRIAXIAL TEST SUMMARY CALCULATIONS

T 207

Type Test: CAU - C ☒ Undisturbed; ☐ Reconstituted - Specimen:
☐ Dynamic σ_1 / H_2 \pm sinusoidal or ☒ Static ϵ 0.71 %/hr

Consolidation History Units: <u>lb/s</u> or <u>VSE</u>	Max. Induced Past Pressure		<input checked="" type="checkbox"/> Preshear / <input type="checkbox"/> Pre cy-loading		Preshear after Cy-loading	
	Uncorr.	Corr. #	Uncorr.	Corr. #	Uncorr.	Corr. #
$\bar{\sigma}_{cell}$			22.8096			
$\bar{\sigma}_v$			14.379			
$\bar{\sigma}_h$			16.1528	16.0084		
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h) / 2$			8.4394	8.4318		
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$			12.2956	12.2201		
OCR			1.914	1.8986		
Consol. Time	<input type="checkbox"/> Overnight <u> </u> days <u> </u> hours		<input type="checkbox"/> Overnight <u> </u> days <u> </u> hours		<input type="checkbox"/> Overnight <u> </u> days <u> </u> hours	

$H_0 = 5.9504$ in.
 $A_c = 6.419$ in²
 $V_0 = 625.915$ cm³
 $D_{50}/D_{10} = 1.0223$
 $G_s = 2.731$ ☐ Assumed ☒ Measured
 $B_g = 96.6$ %
 Area Corr. Factors: C
 Undrained: $\epsilon = 1.338$
 $C = \frac{1}{6} (1 - A_v / \bar{\sigma}_h)$
 Drained:
 $C = \frac{1}{6} [1 - \frac{A_v}{A_c} (1 + \epsilon_v)]$

Calculate	By Initial water content	By Final water content	By Total Overdried Specimen	Variations in Height and Volume During Consolidation	During Initial Consol. with out back-pressure	During Back-pressure	After Backpressure
W ₁ % of Dry Soil							
W ₂ (%)							
W _{ave} (%)	11.48	10.20					
W ₁ / W ₂ (g/g)	1413	1392.8					
Initial W ₁ Dry Soil (g/g)							
W ₁ Excess Over Dry Soil							
Total W ₁ Dry Soil (g/g)	1267.43	1263.88					
W ₂ used:		Final = 1263.88 gm					

Calculation of ΔV_c During Consolidation by D.S. Content Procedure	ΔV_c by W ₁ Change $= W_1 - W_2 - (FV_0 + \Delta V_T)$	ΔV_c by recorded/calculated volume changes $= \sum \text{selected } \Delta V$	ΔV_c assuming $S_r = 100\%$ $V_F = (V_0 - W_2) W_2 / C$
	$\Delta W_1 = 20.2$ gm $E(\Delta V_0 + \Delta V_T) = (-7.89)$ cm ³ $\therefore \Delta V_c = 28.09$ cm ³	$\Delta V_1 = 6.03$ $\Delta V_2 = 1.78$ $\Delta V_3 = 25.44$ $\Delta V_c = 33.25$ cm ³	$\Delta V_c = V_0 - V_F$ $W_0 = 10.90$ % $V_F = 592.773$ cm ³ $V_0 + \Delta V_T = 625.915$ cm ³ $\therefore \Delta V_c = 33.142$ cm ³

ΔV_c used (ave. values) = <u>33.142</u> cm ³ $\therefore V_c = 592.773$ cm ³ $\Delta L_c = 0.1829$ in; $\therefore L_c = 5.7675$ in	$A_c = V_c / L_c$ (cm ² /in) / 16.3871 = <u>6.2719</u> in ² / 0.144 = <u>43.5548</u> x 10 ⁻³ ft ²	$E_{ac} = 3.07$ %; $E_v = 5.29$ %; $\epsilon_v = 0.9471$ $E_s^* = 0.1893$; $\epsilon_{vc}^* =$ <u> </u> % not in percent
At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ <u> </u> cm ³ ; $\Delta L_{max} =$ <u> </u> in		

Summary	Height (in)	Area (in ² over 64 x 10 ⁻³)	Volume (cm ³)	Water Content (%)	Total/Dry Density (lb/ft ³)	Saturation (%)
Initial	5.9504	44.5764	625.915	11.80	140.94 126.26	90.7
After Consol.	5.7675	43.5548	592.773	10.20	146.69 133.11	100.0

$$S = W G_s \cdot \gamma_d / (G_s \cdot \gamma_w - \gamma_d) = W \cdot G_s \cdot \gamma_0 / (G_s \cdot \gamma_w (1 + w) - \gamma_0)$$

Calculated by Reviewed by

$P_{sc} \times 0.072 = 6.05$
 $W_{300} S_r = 100\%$
 $G_s \cdot \gamma_w = \gamma_d / (G_s \cdot \gamma_w - \gamma_d) = G_s \cdot \gamma_0 / (G_s \cdot \gamma_w (1 + w) - \gamma_0)$
 $\gamma_w = 20$ lb/ft³ (assumed) = 62.92 lb/ft³ = 0.9982 g/cc = 0.9982 g/cm³; $G_s \cdot \gamma_w = 84.2$ (lb/ft³)

1 DATA FILE IDENT. NO.
 2 PROJECT NO.
 3 BORING NO.
 4 SAMPLE NO.
 5 SPECIMEN NO.
 6 DEPTH
 7 TEST NO.
 8 FILE # FOR LOAD CELL OR PROVING RING
 9 FILE # FOR PORE PRESSURE CONST.
 10 FILE # FOR CELL PRESSURE CONST.
 11 FILE # FOR PISTON FRICTION CORRECTION
 12 TYPE OF CONSOLIDATION
 13 DRAINAGE CONDITIONS DURING LOADING
 14 MODE OF LOADING
 15 CELL PRESSURE DURING LOADING
 16 INITIAL HEIGHT OF SPECIMEN IN INCHES
 17 INITIAL DIAMETER OF SPECIMEN IN INCHES
 18 INITIAL VOLUME OF SPECIMEN IN CU. CM.
 19 PISTON DIAMETER IN INCHES
 20 WEIGHT OF TOP CAP ONLY IN TONS*10**+3
 21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**+3
 22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**+3
 23 WAS PISTON INTACT DURING CONSOL.
 24 MEMBRANE THICKNESS IN INCHES
 25 MEMBRANE DIAMETER IN INCHES
 26 FILTER STRIP CORRECTION CONSTANT
 27 RIGHT CYLINDER DISTORTION FACTOR
 28 DOES SPECIMEN HAVE AN INDUCED OCR
 29 CELL PRESSURE IN TSF
 30 RACK PRESSURE IN TSF
 31 AXIAL DEFORMATION DURING CONSOL. IN INCHES
 32 VOLUME CHANGE DURING CONSOL. IN CU. CM.
 33 APPLIED AXIAL LOAD IN TONS*10**+3
 34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF
 35 RACK PRESSURE IN TSF
 36 AXIAL DEFORMATION IN INCHES
 37 VOLUME CHANGE IN CU. CM.
 38 PISTON DRAG CORRECTION IN TONS*10**+3
 39 SPECIMEN CYCLICALLY LOADED BEFORE SHEARING
 40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING
 41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.
 42 PORE PRESSURE IN TSF
 43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES
 44 OUTPUT UNITS REQUIRED
 45 DATA NORMALIZATION SELECTION
 46 RESULT FILE DESIRED

T-207 ✓
 B174055T3 ✓
 CDE-211 ✓
 S-A ✓
 D ✓
 16.8 ✓
 ID-287 ✓
 2000 ✓
 1000 ✓
 2000 ✓
 NONE ✓
 A-45 ✓
 U ✓
 C ✓
 C ✓
 5.9504 ✓
 2.8588 ✓
 825.915 ✓
 0.5 ✓
 0.51 ✓
 1.0503 ✓
 1.3735 ✓
 YES ✓
 0.0258 ✓
 2.796 ✓
 2.127 ✓
 1.378 ✓
 NO ✓
 0.0 ✓
 0.0 ✓
 0.0 ✓
 0.0 ✓
 0.0 ✓
 11.4048 ✓
 7.1856 ✓
 0.1829 ✓
 33.142 ✓
 182.5 ✓
 NO ✓
 NO ✓
 0.0 ✓
 0.0 ✓
 0.0 ✓
 0.0 ✓
 KSF ✓
 2.0 ✓
 0.0 ✓

DTS (In.)	LOAD (lbs)	PORE PRESSURE (tsf)
0.00858	344.2	7.196
.00862	367.1	7.204
.00867	372.2	7.215
.00875	377.3	7.229
.00880	384.0	7.249
.00884	387.4	7.257
.00889	390.7	7.265
.00893	394.0	7.275
.00898	397.8	7.285
.00906	405.4	7.305
.00911	408.7	7.316
.00920	411.9	7.326
.00924	414.7	7.335
.00927	419.0	7.348
.00950	422.5	7.360

.00937, 419.0, 7.348
.00950, 422.5, 7.360
.00959, 426.1, 7.372
.00968, 429.9, 7.384
.00981, 432.6, 7.388
.00994, 435.4, 7.402
.01003, 437.6, 7.409
.01016, 440.1, 7.417
.01034, 442.2, 7.425
.01043, 444.5, 7.432
.01104, 451.3, 7.460
.01126, 454.2, 7.474
.01162, 456.5, 7.487
.01189, 458.5, 7.500
.01254, 461.6, 7.524
.01285, 463.0, 7.535
.01316, 464.2, 7.548
.01351, 465.4, 7.561
.01413, 466.7, 7.584
.01483, 468.0, 7.608
.01549, 468.9, 7.634
.01619, 469.7, 7.656
.01736, 470.7, 7.704
.01822, 471.1, 7.727
.01898, 471.8, 7.749
.01958, 472.3, 7.770
.02095, 473.1, 7.815
.02185, 473.0, 7.839
.02236, 473.6, 7.859
.02297, 474.0, 7.878
.02438, 474.5, 7.915
.02570, 475.2, 7.954
.02707, 476.1, 7.987
.02843, 477.2, 8.020
.03121, 479.3, 8.077
.03257, 480.1, 8.105
.03398, 480.9, 8.134
.03534, 481.9, 8.159
.03816, 483.4, 8.204
.03948, 484.6, 8.225
.04085, 485.3, 8.244
.04221, 486.7, 8.265
.04357, 487.5, 8.283
.04639, 489.9, 8.322
.04780, 491.0, 8.335
.04912, 491.5, 8.349
.05189, 493.9, 8.379
.05326, 494.9, 8.395
.05462, 495.9, 8.406
.05603, 497.0, 8.418
.06224, 501.5, 8.467
.06572, 503.4, 8.492
.06911, 506.0, 8.513
.07258, 508.5, 8.533
.07945, 513.4, 8.567
.08284, 515.5, 8.580
.08623, 518.2, 8.591
.08962, 520.7, 8.601
.09662, 526.0, 8.617
.10005, 528.4, 8.626
.10353, 530.9, 8.630
.10701, 533.3, 8.635
.11401, 538.4, 8.641
.12083, 543.5, 8.645
.12774, 548.7, 8.647
.13452, 553.3, 8.644
.14825, 562.9, 8.632
.15517, 569.6, 8.626
.16206, 573.0, 8.611

.14825,	562.9,	8.632
.15517,	569.6,	8.626
.16208,	573.2,	8.616
.16886,	578.4,	8.607
.18277,	588.0,	8.582
.18977,	593.2,	8.570
.19672,	597.6,	8.556
.21050,	607.6,	8.527
.23814,	626.2,	8.461
.25201,	635.4,	8.425
.26527,	644.5,	8.391
.27900,	653.6,	8.354
.30691,	670.6,	8.281
0.3346,	686.5,	8.212
0.3483,	692.7,	8.177
0.3622,	700.1,	8.141
0.3896,	714.1,	8.077
0.4029,	721.1,	8.046
0.4165,	728.2,	8.013
0.4302,	734.9,	7.984
0.4575,	748.3,	7.922
0.4713,	754.6,	7.895
0.4851,	760.9,	7.865
0.4990,	767.1,	7.836
0.5264,	778.4,	7.787
0.5400,	783.9,	7.762
0.5535,	789.4,	7.740
0.5669,	795.0,	7.717
0.5939,	806.0,	7.674
0.6072,	811.7,	7.649
0.6205,	816.1,	7.631
0.6336,	821.5,	7.611
0.6602,	832.1,	7.570
0.6731,	836.7,	7.552
0.6861,	842.4,	7.534
0.6990,	847.2,	7.515
0.7251,	856.6,	7.481
0.7384,	860.9,	7.462
0.7515,	865.2,	7.446
0.7646,	869.6,	7.427
0.7908,	878.2,	7.396
0.8041,	882.6,	7.381
0.8171,	886.9,	7.366
0.8303,	890.7,	7.351
0.8569,	899.2,	7.323
0.8700,	903.9,	7.308
0.8832,	906.4,	7.296
0.896,	910.6,	7.282
0.923,	918.5,	7.255
0.9373,	922.6,	7.243
0.9511,	926.0,	7.230
0.9646,	929.7,	7.210
0.9921,	936.4,	7.187
1.0061,	940.1,	7.175
1.0207,	943.2,	7.161
1.0349,	946.6,	7.151
1.0493,	950.5,	7.140
1.0636,	953.2,	7.128
1.0777,	956.0,	7.124
1.0918,	959.8,	7.112
1.1057,	963.9,	7.102
1.1197,	969.2,	7.094
1.1340,	973.5,	7.081
1.1484,	975.7,	7.076
1.1628,	982.2,	7.062
1.1644,	982.6,	7.058

A.TRIAX

THIS IS A CAU TEST. IT HAS BEEN
CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE NO. T-207

PROJ. NO. BIC4055T3 REVIEWED BY: *RR*
BORING NO. COE-9 DATE: *5/22/81*
SAMPLE NO. S-6 INPUT DATA CHECKED BY: *RR*
SPECIMEN NO. D
DEPTH(FT.) 16.8 TEST NO. ID-287

ANISOTROPIC TYPE OF CONSOLIDATION USING 45 STRESS PATH
UNDRAINED DRAINAGE CONDITIONS DURING LOADING
COMPRESSION MODE OF LOADING
CONSTANT CELL PRESSURE DURING LOADING

5.9504 INITIAL HEIGHT OF SPECIMEN IN INCHES
2.8588 INITIAL DIAMETER OF SPECIMEN IN INCHES
625.91 INITIAL VOLUME OF SPECIMEN IN CU.CH.
.5000 PISTON DIAMETER IN INCHES
.5100 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
1.0503 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
1.3735 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
YES WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0258 MEMBRANE THICKNESS IN INCHES
2.7964 MEMBRANE DIAMETER IN INCHES
2.1280 FILTER STRIP CORRECTION CONSTANT AT
2% AXIAL STRAIN IN TONS ** 10-3
1.3380 RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

11.4048 CELL PRESSURE IN TSF
7.1856 BACK PRESSURE IN TSF
.1829 AXIAL DEFORMATION DURING CONSOL. IN INCHES
33.14 VOLUME CHANGE DURING CONSOL. IN CU. CH.

FW

18250*0 MEASURED AXIAL LOAD DURING CONSOL. IN IN TONS *10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:

AXIAL = 16.0084 KSF
LATERAL = 8.4318 KSF
MEAN = 10.9573 KSF
PBAR = 12.2201 KSF
LATERAL/AXIAL = .5267
AXIAL/LATERAL = 1.8986
OCR = 1.000

14.1774 PISTON DRAG CORRECTION IN TONS *10**-3
2000 FILE NUMBER FOR LOAD CELL OR PROVING RING
1000 FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
2000 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES IS DATA NORMALIZATION REQUIRED?
DATA NORMALIZED TO PRESHEAR STRESSES
WITH NORM = P-BAR OF 12.2201 KSF

6800	10.3822	2.6871	2.2780	8.109	5.1911	11.3451	413.110	61.045	6486	14.23	9284	25.8059
6801	10.3902	2.6961	2.3660	8.185	5.1951	11.3210	400.788	66.623	6490	14.40	9284	25.8059
6802	10.4000	2.7207	2.3660	8.259	5.2188	11.2847	381.458	89.557	6520	14.78	9284	25.8059
6803	10.4056	2.7300	2.3980	8.315	5.2283	11.2623	372.232	80.882	6532	14.98	9284	25.8059
6804	10.4158	2.7425	2.4200	8.336	5.2379	11.2499	363.635	84.104	6544	15.12	9284	25.8059
6805	10.4271	2.7530	2.4440	8.358	5.2485	11.2365	355.415	83.289	6557	15.27	9284	25.8059
6806	10.4387	2.7667	2.4720	8.445	5.2614	11.2144	347.492	82.790	6570	15.43	9284	25.8059
6807	10.4503	2.7819	2.5020	8.516	5.2763	11.1933	339.201	82.376	6583	15.60	9284	25.8059
6808	10.4620	2.7977	2.5340	8.584	5.2922	11.1732	330.742	81.930	6596	15.77	9284	25.8059
6809	10.4738	2.8140	2.5680	8.651	5.3091	11.1541	322.219	81.463	6609	15.94	9284	25.8059
6810	10.4856	2.8307	2.6040	8.718	5.3268	11.1359	313.636	80.976	6622	16.11	9284	25.8059
6811	10.4974	2.8475	2.6420	8.785	5.3454	11.1186	304.992	80.476	6635	16.28	9284	25.8059
6812	10.5092	2.8643	2.6820	8.852	5.3649	11.1022	296.297	79.963	6648	16.45	9284	25.8059
6813	10.5210	2.8811	2.7240	8.919	5.3853	11.0867	287.552	79.436	6661	16.62	9284	25.8059
6814	10.5328	2.8979	2.7680	8.986	5.4066	11.0721	278.766	78.895	6674	16.79	9284	25.8059
6815	10.5446	2.9147	2.8140	9.053	5.4288	11.0584	269.939	78.341	6687	16.96	9284	25.8059
6816	10.5564	2.9315	2.8620	9.120	5.4519	11.0455	261.072	77.774	6700	17.13	9284	25.8059
6817	10.5682	2.9483	2.9120	9.187	5.4759	11.0333	252.165	77.194	6713	17.30	9284	25.8059
6818	10.5800	2.9651	2.9640	9.254	5.5008	11.0217	243.217	76.603	6726	17.47	9284	25.8059
6819	10.5918	2.9819	3.0160	9.321	5.5266	11.0106	234.228	76.003	6739	17.64	9284	25.8059
6820	10.6036	2.9987	3.0680	9.388	5.5533	11.0000	225.199	75.394	6752	17.81	9284	25.8059
6821	10.6154	3.0155	3.1220	9.455	5.5808	10.9900	216.130	74.776	6765	17.98	9284	25.8059
6822	10.6272	3.0323	3.1770	9.522	5.6091	10.9805	207.021	74.150	6778	18.15	9284	25.8059
6823	10.6390	3.0491	3.2330	9.589	5.6381	10.9715	197.872	73.516	6791	18.32	9284	25.8059
6824	10.6508	3.0659	3.2900	9.656	5.6678	10.9630	188.683	72.874	6804	18.49	9284	25.8059
6825	10.6626	3.0827	3.3480	9.723	5.6981	10.9549	179.454	72.224	6817	18.66	9284	25.8059
6826	10.6744	3.0995	3.4060	9.790	5.7291	10.9472	170.185	71.566	6830	18.83	9284	25.8059
6827	10.6862	3.1163	3.4640	9.857	5.7606	10.9400	160.876	70.901	6843	19.00	9284	25.8059
6828	10.6980	3.1331	3.5220	9.924	5.7927	10.9332	151.527	70.231	6856	19.17	9284	25.8059
6829	10.7098	3.1499	3.5800	9.991	5.8254	10.9269	142.138	69.556	6869	19.34	9284	25.8059
6830	10.7216	3.1667	3.6380	10.058	5.8587	10.9211	132.709	68.876	6882	19.51	9284	25.8059
6831	10.7334	3.1835	3.6960	10.125	5.8926	10.9157	123.240	68.191	6895	19.68	9284	25.8059
6832	10.7452	3.2003	3.7540	10.192	5.9271	10.9107	113.731	67.501	6908	19.85	9284	25.8059
6833	10.7570	3.2171	3.8120	10.259	5.9622	10.9060	104.182	66.806	6921	20.02	9284	25.8059
6834	10.7688	3.2339	3.8700	10.326	6.0000	10.9016	94.593	66.106	6934	20.19	9284	25.8059
6835	10.7806	3.2507	3.9280	10.393	6.0389	10.8975	84.954	65.401	6947	20.36	9284	25.8059
6836	10.7924	3.2675	3.9860	10.460	6.0788	10.8937	75.265	64.699	6960	20.53	9284	25.8059
6837	10.8042	3.2843	4.0440	10.527	6.1197	10.8902	65.526	63.992	6973	20.70	9284	25.8059
6838	10.8160	3.3011	4.1020	10.594	6.1616	10.8869	55.737	63.281	6986	20.87	9284	25.8059
6839	10.8278	3.3179	4.1600	10.661	6.2045	10.8839	45.898	62.566	6999	21.04	9284	25.8059
6840	10.8396	3.3347	4.2180	10.728	6.2484	10.8811	35.999	61.845	7012	21.21	9284	25.8059
6841	10.8514	3.3515	4.2760	10.795	6.2933	10.8785	26.060	61.124	7025	21.38	9284	25.8059
6842	10.8632	3.3683	4.3340	10.862	6.3392	10.8761	16.081	60.403	7038	21.55	9284	25.8059
6843	10.8750	3.3851	4.3920	10.929	6.3861	10.8738	6.002	59.682	7051	21.72	9284	25.8059
6844	10.8868	3.4019	4.4500	10.996	6.4340	10.8717	0.000	58.961	7064	21.89	9284	25.8059
6845	10.8986	3.4187	4.5080	11.063	6.4829	10.8697	-10.000	58.240	7077	22.06	9284	25.8059
6846	10.9104	3.4355	4.5660	11.130	6.5328	10.8678	-20.000	57.519	7090	22.23	9284	25.8059
6847	10.9222	3.4523	4.6240	11.197	6.5837	10.8660	-30.000	56.798	7103	22.40	9284	25.8059
6848	10.9340	3.4691	4.6820	11.264	6.6356	10.8643	-40.000	56.077	7116	22.57	9284	25.8059
6849	10.9458	3.4859	4.7400	11.331	6.6885	10.8627	-50.000	55.356	7129	22.74	9284	25.8059
6850	10.9576	3.5027	4.7980	11.398	6.7424	10.8612	-60.000	54.635	7142	22.91	9284	25.8059
6851	10.9694	3.5195	4.8560	11.465	6.7973	10.8598	-70.000	53.914	7155	23.08	9284	25.8059
6852	10.9812	3.5363	4.9140	11.532	6.8532	10.8585	-80.000	53.193	7168	23.25	9284	25.8059
6853	10.9930	3.5531	4.9720	11.599	6.9091	10.8573	-90.000	52.472	7181	23.42	9284	25.8059
6854	10.1000	3.5700	5.0300	11.666	6.9659	10.8562	-100.000	51.751	7194	23.59	9284	25.8059
6855	10.1056	3.5870	5.0880	11.733	7.0238	10.8552	-110.000	51.030	7207	23.76	9284	25.8059
6856	10.1112	3.6040	5.1460	11.800	7.0827	10.8543	-120.000	50.309	7220	23.93	9284	25.8059
6857	10.1168	3.6210	5.2040	11.867	7.1426	10.8535	-130.000	49.588	7233	24.10	9284	25.8059
6858	10.1224	3.6380	5.2620	11.934	7.2035	10.8528	-140.000	48.867	7246	24.27	9284	25.8059
6859	10.1280	3.6550	5.3200	12.001	7.2654	10.8521	-150.000	48.146	7259	24.44	9284	25.8059
6860	10.1336	3.6720	5.3780	12.068	7.3283	10.8515	-160.000	47.425	7272	24.61	9284	25.8059
6861	10.1392	3.6890	5.4360	12.135	7.3922	10.8509	-170.000	46.704	7285	24.78	9284	25.8059
6862	10.1448	3.7060	5.4940	12.202	7.4571	10.8504	-180.000	45.983	7298	24.95	9284	25.8059
6863	10.1504	3.7230	5.5520	12.269	7.5230	10.8500	-190.000	45.262	7311	25.12	9284	25.8059
6864	10.1560	3.7400	5.6100	12.336	7.5899	10.8496	-200.000	44.541	7324	25.29	9284	25.8059
6865	10.1616	3.7570	5.6680	12.403	7.6578	10.8492	-210.000	43.820	7337	25.46	9284	25.8059
6866	10.1672	3.7740	5.7260	12.470	7.7267	10.8489	-220.000	43.099	7350	25.63	9284	25.8059
6867	10.1728	3.7910	5.7840	12.537	7.7966	10.8486	-230.000	42.378	7363	25.80	9284	25.8059
6868	10.1784	3.8080	5.8420	12.604	7.8675	10.8483	-240.000	41.657	7376	25.97	9284	25.8059
6869	10.1840	3.8250	5.9000	12.671	7.9394	10.8480	-250.000	40.936	7389	26.14	9284	25.8059
6870	10.1896	3.8420	5.9580	12.738	8.0123	10.8477	-260.000	40.215	7402	26.31	9284	25.8059
6871	10.1952	3.8590	6.0160	12.805	8.0862	10.8474	-270.000	39.494	7415	26.48	9284	25.8059
6872	10.2008	3.8760	6.0740	12.872	8.1611	10.8471	-280.000	38.773	7428	26.65	9284	25.8059
6873	10.2064	3.8930	6.1320	12.939	8.2370	10.8468	-290.000	38.052	7441	26.82	9284	25.8059
6874	10.2120	3.9100	6.1900	13.006	8.3139	10.8465	-300.000	37.331	7454	26.99	9284	25.8059
6875	10.2176	3.9270	6.2480	13.073	8.3918	10.8462	-310.000	36.610	7467	27.16	9284	25.8059
6876	10.2232	3.9440	6.3060	13.140	8.4707	10.8459	-320.000	35.889	7480	27.33	9284	25.8059
6877	10.2288	3.9610	6.3640	13.207	8.5506	10.8456	-330.000	35.168	7493	27.50	9284	25.8059
6878	10.2344	3.9780	6.4220	13.274	8.6315	10.8453	-340.000	34.447	7506	27.67	9284	25.8059
6879	10.2400	3.9950	6.4800	13.341	8.7134	10.8450	-350.000	33.726	7519	27.84	9284	25.8059
6880	10.2456	4.0120	6.5380	13.408	8.7963	10.8447	-360.000	33.005	7532	28.01	9284	25.8059
6881	10.2512	4.0290	6.5960	13.475	8.8802	10.8444	-370.000	32.284	7545	28.18	9284	25.8059
6882	10.2568	4.0460	6.6540	13.542	8.9651	10.8441	-380.000	31.563	7558	28.35	9284	25.8059
6883	10.2624	4.0630	6.7120	13.609	9.0510	10.8438	-390.000	30.842	7571	28.52	9284	25.8059
6884	10.2680	4.0800	6.7700	13.676	9.1379	10.8435	-400.000	30.121	7584	28.69	9284	25.8059
6885	10.2736	4.0970	6.8280	13.743	9.2258	10.8432	-					

13.5625	15.7237	2.9561	4000	.0482	7.8628	15.7020	60.114	8.684	.9836	.0231	.6443	1.3046	3.7014
13.7932	15.7460	2.9513	.3700	.0443	7.8730	15.9424	59.254	8.684	.9836	.0212	.6451	1.3079	3.6505
14.0186	15.7653	2.9464	.3400	.0406	7.8826	15.9822	58.439	6.117	.9848	.0194	.6454	1.3107	3.5956
14.2474	15.7737	2.9402	.3100	.0368	7.8869	16.0167	57.559	5.193	.9853	.0159	.6467	1.3166	3.4960
14.4708	15.8046	2.9306	.2540	.0298	7.9023	16.0886	55.965	6.585	.9873	.0140	.6476	1.3200	3.4527
14.6958	15.8284	2.9264	.2240	.0261	7.9142	16.1307	55.273	1.384	.9898	.0125	.6469	1.3213	3.3934
15.1646	15.8108	2.9186	.2000	.0232	7.9054	16.1462	54.322	-1.258	.9877	.0107	.6474	1.3241	3.3470
15.3970	15.8228	2.9135	.1720	.0197	7.9114	16.1804	53.581	3.847	.9884	.0074	.6479	1.3290	3.2526
15.6668	15.8346	2.9024	.1180	.0131	7.9173	16.2409	52.068	2.617	.9891	.0059	.6482	1.3313	3.2068
16.1061	15.8411	2.8976	.0940	.0102	7.9206	16.2684	51.335	.163	.9896	.0042	.6479	1.3332	3.1583
16.3419	15.8355	2.8910	.0680	.0070	7.9177	16.2918	50.560	-1.263	.9892	.0017	.6479	1.3365	3.1136
16.5760	15.8352	2.8819	.0280	.0021	7.9176	16.3320	49.844	-1.853	.9891	.0011	.6472	1.3396	3.0203
17.0528	15.8181	2.8695	.0180	.0035	7.9091	16.3700	48.350	-2.687	.9878	.0026	.6470	1.3414	2.9764
17.2955	15.8138	2.8637	.0420	.0065	7.9069	16.3921	47.647	-4.540	.9878	.0044	.6463	1.3430	2.9269
17.5487	15.7953	2.8553	.0700	.0099	7.8977	16.4112	46.854	-6.015	.9867	.0056	.6458	1.3442	2.8823
17.7949	15.7836	2.8495	.0900	.0124	7.8918	16.4257	46.140	-3.270	.9860	.0070	.6456	1.3458	2.8408
18.0446	15.7792	2.8442	.1120	.0152	7.8856	16.4458	45.477	-6.019	.9857	.0085	.6446	1.3468	2.7937
18.2925	15.7538	2.8360	.1360	.0182	7.8769	16.4574	44.722	-9.836	.9841	.0090	.6436	1.3465	2.7490
18.5370	15.7307	2.8315	.1640	.0192	7.8654	16.4542	44.008	-6.002	.9827	.0105	.6434	1.3482	2.7112
18.7814	15.7244	2.8256	.1680	.0222	7.8622	16.4754	43.401	-1.431	.9823	.0117	.6434	1.3499	2.6766
19.0225	15.7237	2.8212	.1880	.0247	7.8619	16.4954	42.848	3.692	.9822	.0127	.6441	1.3520	2.6489
19.2650	15.7423	2.8200	.2040	.0267	7.8712	16.5210	42.405	3.700	.9834	.0144	.6441	1.3541	2.6150
19.5091	15.7417	2.8144	.2300	.0299	7.8708	16.5470	41.862	-7.611	.9833	.0150	.6426	1.3534	2.5702
19.7600	15.7043	2.8079	.2400	.0313	7.8522	16.5387	41.145	-5.38	.9810	.0167	.6440	1.3571	2.5499
20.0145	15.7390	2.8060	.2680	.0341	7.8695	16.5844	40.804	3.993	.9832	.0172	.6439	1.3577	2.5449 STOP
20.0402	15.7373	2.8041	.2760	.0351	7.8687	16.5916	40.740	486.750	.9831				

A. BASIC RESPT

WCC
4-202
(1180)

TRIAXIAL TEST (Set Up / Take Down)

Proj. No. WCC-055-1 Proj. Eng. RSL Cell No. H-3 Piston diam. ☐ 3/8"; ☒ 1/2"

Type Test CAU-C File No. T-220

Loading Conditions: <input type="checkbox"/> Dynamic <input checked="" type="checkbox"/> Undrained <input checked="" type="checkbox"/> Compression <input checked="" type="checkbox"/> Constant cell pressure	<input checked="" type="checkbox"/> Static <input type="checkbox"/> Drained <input type="checkbox"/> Extension <input type="checkbox"/> Variable cell pressure
Type: <input type="checkbox"/> Isotropic <input type="checkbox"/> Ko stress path	Piston Screwed in: <input type="checkbox"/> Yes; <input checked="" type="checkbox"/> No
Consolidation: <input checked="" type="checkbox"/> Anisotropic <input checked="" type="checkbox"/> 45° Stress path	
<input checked="" type="checkbox"/> Undisturbed <input type="checkbox"/> Reconstituted	<input type="checkbox"/> Impact <input type="checkbox"/> Constant ESSort
Boring No. <u>COE-9A</u> ID No. <u>387</u>	<input type="checkbox"/> Static _____ layers; _____ 16" Hammer
Sample No. <u>S-16</u> Specimen No. <u>1</u>	<input type="checkbox"/> Kneading _____ Blows-Tamps/layer
Depth (ft) <u>9.3</u> Remarks _____	<input type="checkbox"/> Tamping <input type="checkbox"/> Undercompaction
<input type="checkbox"/> Ends capped with Castorac; <input type="checkbox"/> Geomarine Sample	<input type="checkbox"/> Other _____ layers; _____ Uni. (%)

Water Content			Specimen Weight	
Location		Final	Wet + Stone (g)	
Container No. <u>LB-18</u>		<u>415</u>		
Wgt. Container + Wet Soil (gm)	<u>79.48</u>	<u>758.55</u>	Wet Initial: <u>1474.5</u>	gm
Wgt. Container + Dry Soil (gm)	<u>74.81</u>	<u>432.48</u>	Wet Final: <u>1473.0</u>	gm
Wgt. Container (gm)	<u>32.87</u>	<u>206.70</u>	Excess Oven-dry Dish No. _____	
Wgt. Dry Soil (gm)	<u>41.94</u>	<u>225.78</u>	Wgt. Dish + Dry Soil _____	gm
WATER CONTENT (%)	<u>11.13</u>	<u>11.55</u>	Wgt. Dish _____	gm
<input type="checkbox"/> See attached data sheet(s) for additional water contents			Wgt. Excess Dry Soil _____	gm

Dimensions of Specimen		Height (in)		Diameter (in)	
Initial (Ls)	Final (Ls)	Initial	Final		
1. 5.989	4.824	1-T 2.869	3.200		
2. 5.959	4.844	2-M 2.874	3.485		
3. 5.990	4.832	3-B 2.885	3.820		
4. 5.992	4.808	1-T 2.890			
5. 5.990	4.817	2-M 2.887			
Ave 5.990	4.825	3-B 2.896			
Ave 2.8925		3.2975		D _{ave} = (D + 2D _{av} + D _{av}) / 4	
A ₀ = $\pi D^2/4 = 6.5302 \text{ in}^2$					
V ₀ = $h \cdot A = 16.887 \text{ in}^3 = 640.996 \text{ cm}^3$					
From $5.4542(D^3)^{1/3} = 59.3063 \text{ in}^3$					

Membrane Thickness = 0.0265 in

Circumference (cm) = 8.99 in

Diam = $C/\pi = 2.8726$ in

Filter Paper: Top + bottom: ☐ Yes; ☒ No

Filter Strips: ☒ Yes; ☐ No

Vertical at 1/4" - Whatman #540

Spiral at 1/4" - Whatman #1 or

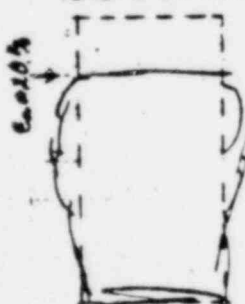
Wgt top cap = 876.7 gm, 0.57 10⁻³ gm

Wgt (cap, dial) = 876.7 gm, 0.9664 10⁻³ gm

Preliminary

Y_{co} = 14.1 10⁻³ gm Y_d = 109.22 10⁻³ gm

Failure Sketch



Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☐ Photo taken.

Cl, mottled br + gr m to c. sandy, s.p. silty CLAY,

trace s. gravel to c. sand

Other Remarks: OT = 1 KSC = 0.5 KSC

Problem with data logger

Preliminary Cal. by RG Reviewed by RL

☐ Trimmed by _____ Setup by RL Taken down by RL

☐ Reconstituted Date _____ Date 5/19/87 Date 3/14/81

See back for Summary Calculations

TRIAXIAL TEST SUMMARY CALCULATIONS

T 220

Type Test: CAJ - C

CAJ - C

☒ Undisturbed; ☐ Reconstituted Specimen

☐ Dynamic H_z or sinusoidal or

Static 0.66 %/hr

☒ Static 0.66 %/hr

Consolidation History Units: <u>CS</u> or <u>KSF</u>	Max. Induced Past Pressure Uncorr. Corr. #	<input checked="" type="checkbox"/> Preshear/perm. <input type="checkbox"/> Pre cy-loading Uncorr. Corr. #	Preshear after Cy-loading Uncorr. Corr. #
$\bar{\sigma}_{cell}$		14.9275	
$\bar{\sigma}_v$		14.400	
$\bar{\sigma}_h$		1.0359	1.0084
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h) / 2$		0.5275	0.5332
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$		0.7617	0.7708
OCR		1.964	1.8913
Consol. Time	<input type="checkbox"/> Overnight days hours	<input type="checkbox"/> Overnight days hours	<input type="checkbox"/> Overnight days hours

$H_0 = 5.990$ in.
$A_c = 6.1902$ in ²
$V_0 = 640.996$ cm ³
$D_{50}/D_{10} = 1.0150$
$G_s = 2.74$ <input checked="" type="checkbox"/> Assumed
$E_g = 98.5$ %
Area Corr. Factors: C
Undrained: 1.948
$C = \frac{1}{6} (1 - A_{vis})$
Drained: $C = \frac{1}{6} [1 - \frac{A_{vis}}{A_{vis}}]$

Calculate Wt of Dry Soil	By Initial Water Content	By Final Water Content	By Total Overdried Specimen	Variations in Moisture and Volume During Consolidation	During Initial Comp. with out back pressure	During Back-Pressure	After Backpressure
W_1 (%)				ΔL (in)	ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
W_2 (%)				ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
W_{ave} (%)	11.13	11.55		ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
Wt. Wet Soil, Wt (gm)	1474.5	1473.0		ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
Wt. Wet Dry Soil, Wt (gm)	ΔV_T (cm ³)			ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
Wt. Excess				ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
Wt. Excess				ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
Wt. Excess				ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)
Wt. Excess				ΔV_m (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)	ΔV_v (cm ³)

Calculation of ΔV_c During Consolidation by Difference	ΔV_c by Wt. Change $= W_c - W_g - (\Delta V_v + \Delta V_T)$	ΔV_c by recorded/calculated volume changes $= \Sigma$ selected ΔV	ΔV_c assuming 5% ΔV_c $V_F = (V_0 - W_g) W_0 / C$
$\Delta W_{wt} = 1.5$ gm	$\Delta V_c = 1.990 + 1.156 + 0.85$	$\Delta V_c = 3.996$ cm ³	$\Delta V_c = 5.409$ cm ³
$\Delta V_c = 8.53$ cm ³			

ΔV_c used (ave value) = 5.409 cm ³	$V_c = 635.587$ cm ³	$\Delta L_c = 0.0264$ in	$L_c = 5.9636$ in
$A_c = V_c / L_c$ (cm ² /in) = 6.5038	$A_c = 6.5038$ in ²	$A_c = 6.5038$ in ²	$A_c = 6.5038$ in ²
$E_{av} = 0.44$ %	$E_{av} = 0.84$ %	$E_{av} = 0.9916$	$E_{av} = 0.9916$
At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$			

Summary	Height (in)	Area (cm ²)	Volume (cm ³)	Water Content (%)	Total/Dry Density (lb/ft ³)	Saturation (%)
Initial	5.990	45.3486	640.996	11.66	143.61	97.5
After Consol.	5.9636	45.1650	635.587	11.55	144.68	100.0

$$S = W G_s \gamma_d / (G_s \gamma_w - \gamma_d) = W \cdot G_s \cdot \gamma_w / (G_s \cdot \gamma_w (1 + W) - \gamma_w)$$

Calculated by JB Reviewed by RL

$P_{cell} \times 0.072 = \text{cell}$
 $W_{gr} S = 100\% = G_s \gamma_w - \gamma_d / G_s \gamma_w = G_s \gamma_w - \gamma_d / (G_s \gamma_w (1 + W) - \gamma_w)$

1 DATA FILE IDENT. NO.
2 PROJECT NO.
3 BORING NO.
4 SAMPLE NO.
5 SPECIMEN NO.
6 DEPTH
7 TEST NO.
8 FILE # FOR LOAD CELL OR PROVING RING
9 FILE # FOR PORE PRESSURE CONST.
10 FILE # FOR CELL PRESSURE CONST.
11 FILE # FOR PISTON FRICTION CORRECTION
12 TYPE OF CONSOLIDATION
13 DRAINAGE CONDITIONS DURING LOADING
14 MODE OF LOADING
15 CELL PRESSURE DURING LOADING
16 INITIAL HEIGHT OF SPECIMEN IN INCHES
17 INITIAL DIAMETER OF SPECIMEN IN INCHES
18 INITIAL VOLUME OF SPECIMEN IN CU. CM.
19 PISTON DIAMETER IN INCHES
20 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
23 WAS PISTON INTACT DURING CONSOL.
24 MEMBRANE THICKNESS IN INCHES
25 MEMBRANE DIAMETER IN INCHES
26 FILTER STRIP CORRECTION CONSTANT
27 RIGHT CYLINDER DISTORTION FACTOR
28 DOES SPECIMEN HAVE AN INDUCED OCR
29 CELL PRESSURE IN TSF
30 BACK PRESSURE IN TSF
31 AXIAL DEFORMATION DURING CONSOL. IN INCHES
32 VOLUME CHANGE DURING CONSOL. IN CU. CM.
33 APPLIED AXIAL LOAD IN TONS*10**-3
34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF
35 BACK PRESSURE IN TSF
36 AXIAL DEFORMATION IN INCHES
37 VOLUME CHANGE IN CU. CM.
38 PISTON DRAG CORRECTION IN TONS*10**-3
39 SPECIMEN CYCLICALLY LOADED BEFORE SHEARING
40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING
41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.
42 PORE PRESSURE IN TSF
43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES
44 OUTPUT UNITS REQUIRED
45 DATA NORMALIZATION SELECTION
46 RESULT FILE DESIRED

T-220
BIC40*ST3
COE-9A
S-1
C
9.3
ID-387
2000
1000
2000
NONE
A-45
U
C
C
5.990
2.8835
640.996
0.5
0.51
0.9664
1.2914
YES
0.0265
2.8326
2.128
1.248
NO
0.0
0.0
0.0
0.0
0.0
0.0
7.4637
7.200
0.0264
5.409
20.695
NO
NO
0.0
0.0
0.0
KSF
2.0
0.0

DIS (in.)	LOAD (lbs)	PORE PRESSURE (tsf)
0.01310	40.79	7.210
.01316	42.11	7.213
.01335	44.68	7.217
.01344	46.32	7.219
.01358	47.74	7.221
.01377	48.83	7.224
.01414	51.73	7.229
.01438	53.21	7.231
.01447	53.92	7.233
.01471	55.51	7.237
.01499	56.47	7.238
.01522	57.53	7.242
.01541	58.29	7.242
.01579	59.61	7.244

.01499,	56.49,	7.238
.01522,	57.53,	7.242
.01541,	58.29,	7.242
.01578,	59.61,	7.244
.01597,	60.21,	7.246
.01611,	60.70,	7.247
.01630,	61.19,	7.247
.01663,	62.12,	7.250
.01686,	62.45,	7.250
.01691,	62.89,	7.250
.01710,	63.27,	7.250
.01742,	63.93,	7.253
.01752,	64.15,	7.253
.01766,	64.42,	7.254
.01784,	64.86,	7.254
.01822,	65.46,	7.254
.01855,	66.06,	7.256
.01898,	66.44,	7.256
.01916,	66.83,	7.256
.01981,	67.65,	7.258
.02014,	67.97,	7.258
.02042,	68.47,	7.258
.02070,	68.69,	7.259
.02131,	69.29,	7.259
.02164,	69.51,	7.260
.02197,	69.72,	7.261
.02253,	70.27,	7.260
.02379,	71.20,	7.260
.02440,	71.58,	7.262
.02501,	72.02,	7.260
.02567,	72.30,	7.258
.02693,	73.17,	7.261
.02750,	73.55,	7.262
.02815,	73.94,	7.260
.02876,	74.37,	7.263
.03129,	75.63,	7.259
.03265,	75.85,	7.259
.03391,	76.62,	7.259
.03518,	77.16,	7.260
.03776,	78.53,	7.256
.03902,	79.13,	7.257
.04033,	79.62,	7.253
.04160,	80.17,	7.257
.04282,	80.72,	7.256
.04544,	81.87,	7.253
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.08100,	94.50,	7.218
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.13150,	106.80,	7.170

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.15844, 112.66, 7.143
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0.6017, 183.48, 6.844
0.6153, 185.45, 6.835
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0.6428, 189.06, 6.821
0.6565, 190.86, 6.815
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0.6981, 202.68, 6.734
0.9982, 235.05, 6.696
0.9995, 235.76, 6.672
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1.0116, 236.75, 6.665
1.0248, 237.73, 6.660
1.0382, 238.94, 6.656
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1.0919, 244.57, 6.639
1.1052, 246.10, 6.635
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1.1322, 249.11, 6.623
1.1455, 250.86, 6.622
1.1592, 252.12, 6.614
1.1729, 253.54, 6.612
1.1864, 255.12, 6.606
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1.2138, 257.91, 6.599
1.2182, 258.35, 6.594
-999., 0.0, 0.0

A. TRIAX

THIS IS A CAU TEST. IT HAS BEEN
CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE NO. T-220

PROJ. NO. 81C405513 REVIEWED BY: *PL*
BORING NO. COE-9A DATE: 4/11/81
SAMPLE NO. S-1 INPUT DATA CHECKED BY: *PL*
SPECIMEN NO. C TEST NO. ID-387
DEPTH(FT.) 9.3

ANISOTROPIC ✓ TYPE OF CONSOLIDATION USING 45 STRESS PATH
UNDRAINED ✓ DRAINAGE CONDITIONS DURING LOADING
UNIMPRESSION ✓ MODE OF LOADING
CONSTANT ✓ CELL PRESSURE DURING LOADING

5.9900 ✓ INITIAL HEIGHT OF SPECIMEN IN INCHES
2.8835 ✓ INITIAL DIAMETER OF SPECIMEN IN INCHES
641.00 ✓ INITIAL VOLUME OF SPECIMEN IN CU. CM.
5000 ✓ PISTON DIAMETER IN INCHES
5100 ✓ WEIGHT OF TOP CAP ONLY IN TONS*10**-3
9664 ✓ WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
1.2514 ✓ WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
YES ✓ WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0265 ✓ MEMBRANE THICKNESS IN INCHES
2.8326 ✓ MEMBRANE DIAMETER IN INCHES
2.1280 ✓ FILTER STRIP CORRECTION CONSTANT AT
5.41 ✓ 2% AXIAL STRAIN IN TONS * 10-3
1.2480 ✓ RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS

7.4637 ✓ CELL PRESSURE IN TSF
7.2000 ✓ BACK PRESSURE IN TSF
.0264 ✓ AXIAL DEFORMATION DURING CONSOL. IN INCHES
5.41 ✓ VOLUME CHANGE DURING CONSOL. IN CU. CM.
20.6950 ✓ MEASURED AXIAL LOAD DURING CONSOL. IN IN TONS *10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:
AXIAL = 1.0084 KSF
LATERAL = .5332 KSF
MEAN = .6916 KSF
PBAR = .7708 KSF
LATERAL/AXIAL = .5287
AXIAL/LATERAL = 1.8913
OCR = 1.000

8.8856 PISTON DRAG CORRECTION IN TONS *10**-3
2000 FILE NUMBER FOR LOAD CELL OR PROVING RING
1000 FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
2000 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES IS DATA NORMALIZED TO PRE-SHEAR STRESSES
WITH NORM = P BAR OF .7708 KSF
AND NORM = VERT STRESS OF 1.0084 KSF

AXIAL STRAIN %	DEVIA TOR STRESS KSF	OBLIQUITY DELTA-U KSF	A-FACTOR DELTA-U KSF	Q KSF	P-BAR KSF	SECANT MODULUS KSF	TANGENT MODULUS KSF	DEVIATOR NORM*	DELTA-U NORM*	Q NORM	P-BAR NORM	SECANT NORM*
0.0000	1.8934	0.0000	0.0000	2.382	7.714	0.000	0.000	.4724	0.0000	.3090	1.0007	0.0000
0.0010	1.9598	0.0060	0.2057	2.527	7.799	2898.667	2339.161	.5013	.0059	.3279	1.0119	2874.4827
0.0020	2.0288	0.0140	0.4300	2.611	8.003	2048.217	2089.599	.5575	.0139	.3647	1.0383	2031.1291
0.0030	2.0928	0.0180	0.6474	2.692	8.144	2141.215	1866.143	.5934	.0178	.3882	1.0566	2123.3503
0.0040	2.1615	0.0220	0.8434	2.768	8.260	1905.411	1641.870	.6244	.0218	.4085	1.0717	1889.5134
0.0050	2.2318	0.0280	1.0179	2.848	8.320	1578.039	1441.870	.6482	.0278	.4240	1.0794	1564.8735
0.0060	2.2938	0.0360	1.1576	2.928	8.359	1382.432	1217.866	.7114	.0377	.4654	1.1078	1370.8984
0.0070	2.4488	0.0420	1.3535	3.007	8.661	1274.634	921.109	.7437	.0416	.4864	1.1237	1263.9994
0.0080	2.5267	0.0460	1.5591	3.082	8.700	1256.872	951.299	.7938	.0456	.4966	1.1286	1248.3695
0.0090	2.5713	0.0540	1.6666	3.159	8.794	1200.589	661.609	.7938	.0535	.5192	1.1409	1190.5723
0.0100	2.6704	0.0560	1.621	3.237	8.881	1090.180	522.727	.8150	.0555	.5331	1.1522	1081.0848
0.0110	2.7222	0.0640	1.738	3.315	8.915	1035.929	555.675	.8375	.0635	.5479	1.1566	1027.2858
0.0120	2.8055	0.0640	1.663	3.393	8.998	993.594	492.665	.8540	.0635	.5586	1.1673	985.3043
0.0130	2.8355	0.0680	1.644	3.471	9.102	920.493	437.020	.8826	.0674	.5773	1.1808	912.8127
0.0140	2.9132	0.0720	1.687	3.549	9.127	866.693	432.524	.8955	.0714	.5858	1.1841	879.2952
0.0150	2.9899	0.0740	1.692	3.627	9.161	866.619	394.327	.9061	.0734	.5927	1.1895	859.3890
0.0160	3.0130	0.0740	1.652	3.705	9.214	834.968	349.293	.9167	.0734	.5996	1.1953	828.0016
0.0170	3.0842	0.0800	1.708	3.783	9.255	791.037	273.765	.9367	.0793	.6127	1.2007	784.4374
0.0180	3.0998	0.0800	1.683	3.861	9.290	753.812	268.347	.9437	.0793	.6173	1.2052	747.5226
0.0190	3.1211	0.0800	1.650	3.939	9.338	759.066	705.621	.9533	.0793	.6236	1.2115	752.7332
0.0200	3.1392	0.0800	1.622	4.017	9.379	735.220	261.140	.9614	.0793	.6289	1.2168	729.0858
0.0210	3.1997	0.0860	1.695	4.095	9.390	700.407	274.294	.9755	.0853	.6381	1.2183	694.5633
0.0220	3.2103	0.0860	1.679	4.173	9.424	690.971	285.432	.9802	.0853	.6412	1.2214	685.2062
0.0230	3.2333	0.0880	1.699	4.251	9.471	677.356	291.568	.9860	.0873	.6450	1.2225	671.7050
0.0240	3.2547	0.0880	1.668	4.329	9.471	663.619	258.488	.9954	.0873	.6511	1.2287	658.0824
0.0250	3.2835	0.0880	1.629	4.407	9.535	629.311	217.125	1.0081	.0873	.6595	1.2370	624.0607
0.0260	3.3334	0.0920	1.663	4.485	9.560	605.308	188.923	1.0209	.0912	.6678	1.2402	600.2574
0.0270	3.3516	0.0920	1.639	4.563	9.600	579.024	160.856	1.0289	.0912	.6730	1.2454	574.1936
0.0280	3.3704	0.0920	1.615	4.641	9.641	560.438	168.078	1.0371	.0912	.6784	1.2508	555.7620
0.0290	3.4318	0.0960	1.636	4.719	9.688	521.589	140.142	1.0543	.0952	.6897	1.2569	517.2375
0.0300	3.4471	0.0960	1.617	4.797	9.721	502.806	174.685	1.0610	.0952	.6940	1.2612	498.6113
0.0310	3.4717	0.0960	1.588	4.875	9.775	492.313	162.546	1.0716	.0952	.7010	1.2682	488.2057
0.0320	3.4934	0.0980	1.609	4.953	9.778	477.734	109.632	1.0761	.0972	.7039	1.2685	473.7486
0.0330	3.5223	0.0980	1.577	5.031	9.841	451.353	101.762	1.0885	.0972	.7121	1.2767	447.5668
0.0340	3.5442	0.1000	1.598	5.109	9.843	437.036	78.864	1.0930	.0992	.7150	1.2770	433.3899
0.0350	3.5659	0.1020	1.619	5.187	9.844	423.636	99.643	1.0972	.1011	.7177	1.2771	420.1019
0.0360	3.5806	0.1000	1.558	5.265	9.922	405.749	102.315	1.1066	.0992	.7252	1.2872	402.3634
0.0370	3.6246	0.1000	1.513	5.343	1.0017	368.557	82.619	1.1275	.0992	.7375	1.2996	365.4822
0.0380	3.6469	0.1040	1.536	5.421	1.0015	352.712	81.483	1.1351	.1031	.7425	1.2993	349.7690
0.0390	3.6630	0.1040	1.476	5.499	1.0100	335.151	68.369	1.1440	.0992	.7483	1.3104	336.3211
0.0400	3.6510	0.0960	1.406	5.577	1.0167	323.906	66.314	1.1494	.0952	.7518	1.3191	321.2032
0.0410	3.7290	0.1040	1.456	5.655	1.0196	302.033	82.255	1.1669	.1011	.7633	1.3228	299.5132
0.0420	3.7597	0.1040	1.468	5.733	1.0215	293.271	76.271	1.1746	.1031	.7683	1.3252	290.8244
0.0430	3.7522	0.1000	1.396	5.811	1.0294	283.709	78.763	1.1824	.0992	.7734	1.3355	281.3417
0.0440	3.8114	0.1060	1.462	5.889	1.0278	275.994	72.024	1.1911	.1051	.7791	1.3334	273.6917
0.0450	3.8166	0.0980	1.307	5.967	1.0481	245.727	36.253	1.2156	.0972	.7952	1.3598	243.6773
0.0460	3.8240	0.0980	1.301	6.045	1.0498	229.616	43.650	1.2188	.0972	.7973	1.3619	227.7000
0.0470	3.8595	0.0980	1.275	6.123	1.0575	220.144	60.941	1.2341	.0972	.8073	1.3719	218.3071
0.0480	3.8966	0.1000	1.284	6.201	1.0607	210.283	55.636	1.2444	.0992	.8140	1.3761	208.5285
0.0490	3.9054	0.0920	1.191	6.279	1.0622	194.828	58.937	1.2713	.0912	.8316	1.4040	193.2030
0.0500	3.9452	0.0940	1.150	6.357	1.0861	188.046	48.590	1.2829	.0932	.8392	1.4090	186.4773
0.0510	3.9131	0.0860	1.040	6.435	1.0987	181.014	45.733	1.2920	.0853	.8451	1.4252	179.5038
0.0520	3.9302	0.0860	1.040	6.513	1.0959	175.158	50.741	1.3024	.0932	.8520	1.4218	173.6963
0.0530	3.9907	0.0940	1.122	6.591	1.0959	175.158	50.741	1.3024	.0912	.8589	1.4313	168.6784
0.0540	4.0007	0.0920	1.085	6.669	1.1033	170.098	51.092	1.3130	.0912	.8659	1.4313	168.6784
0.0550	4.0098	0.0860	0.988	6.747	1.1203	160.392	50.516	1.3349	.0853	.8799	1.4628	155.1006
0.0560	4.0195	0.0840	0.954	6.825	1.1275	156.406	51.747	1.3452	.0833	.8909	1.4790	149.5384
0.0570	4.0303	0.0800	0.891	6.903	1.1400	150.797	48.801	1.3620	.0734	.9097	1.5055	139.2775
0.0580	4.0535	0.0740	0.798	6.981	1.1604	140.449	41.842	1.3907	.0714	.9176	1.5160	134.7029
0.0590	4.0667	0.0720	0.767	7.059	1.1685	135.836	38.967	1.4027	.0694	.9254	1.5264	130.6221
0.0600	4.0793	0.0700	0.736	7.137	1.1765	131.721	40.549	1.4146	.0635	.9339	1.5428	126.8968
0.0610	4.0881	0.0640	0.663	7.215	1.1892	127.964	45.213	1.4278	.0595	.9411	1.5581	123.6623
0.0620	4.0951	0.0600	0.612	7.293	1.2010	124.703	46.432	1.4432	.0555	.9502	1.5693	121.5764
0.0630	4.1062	0.0560	0.560	7.371	1.2097	122.500	43.014	1.4575				

7214	1.4265	4.0793	0.700	0.734	7133	1.1945	131.721	40.549	1.4146	0.694	9254	1.5264	130.6221
7539	1.4398	4.0681	0.640	0.663	7199	1.1892	127.964	45.213	1.4278	0.635	9339	1.5428	126.8968
7851	1.4554	4.0751	0.600	0.612	7277	1.2010	124.703	46.432	1.4432	0.595	9441	1.5581	123.6423
8042	1.4648	4.0690	0.560	0.566	7324	1.2097	122.599	43.014	1.4525	0.555	9502	1.5693	121.5764
8421	1.4880	4.0789	0.500	0.493	7440	1.2273	117.352	35.071	1.4756	0.496	9652	1.5922	116.3720
8621	1.4980	4.0789	0.440	0.427	7521	1.2414	111.889	30.522	1.4916	0.436	9757	1.6105	110.9557
9186	1.5041	4.0741	0.400	0.382	7609	1.2542	107.468	24.418	1.5090	0.397	9871	1.6271	106.5718
9272	1.5217	4.0848	0.320	0.299	7707	1.2720	103.706	26.048	1.5286	0.317	9999	1.6503	102.8408
1.0271	1.5415	4.0749	0.260	0.239	7806	1.2879	100.252	33.218	1.5481	0.258	1.0127	1.6708	99.4156
1.0821	1.5611	4.0772	0.260	0.239	7892	1.3066	96.799	30.466	1.5653	0.219	1.0239	1.6891	95.9916
1.1366	1.5785	4.0512	0.160	0.144	7978	1.3191	93.652	28.245	1.5822	0.119	1.0350	1.7113	92.8710
1.1951	1.5956	4.0605	0.120	0.106	8052	1.3326	90.600	23.813	1.5970	0.059	1.0446	1.7288	89.8443
1.2518	1.6104	4.0539	0.060	0.052	8109	1.3423	87.772	23.103	1.6093	0.020	1.0520	1.7414	87.0398
1.3051	1.6218	4.0523	0.020	0.016	8177	1.3571	85.226	27.967	1.6218	0.000	1.0609	1.7606	84.5154
1.3601	1.6355	4.0323	0.000	0.005	8231	1.3777	83.123	27.924	1.6388	0.178	1.0720	1.7873	82.4297
1.4151	1.6526	3.9973	0.180	0.155	8331	1.3885	80.939	26.400	1.6523	0.218	1.0808	1.8013	80.2635
1.4701	1.6662	4.0001	0.220	0.186	8410	1.4074	78.982	27.454	1.6680	0.278	1.0911	1.8194	78.3226
1.5266	1.6821	3.9963	0.280	0.234	8567	1.4321	75.269	26.452	1.6992	0.416	1.1115	1.8580	74.6408
1.5836	1.7135	3.9779	0.420	0.341	8721	1.4635	71.976	24.918	1.7296	0.575	1.1314	1.8987	71.3752
1.6436	1.7442	3.9491	0.580	0.459	8856	1.4871	69.049	24.701	1.7565	0.674	1.1490	1.9293	68.4734
1.7054	1.7713	3.9450	0.680	0.527	8993	1.5132	66.644	24.503	1.7844	0.793	1.1673	1.9631	65.0875
1.7654	1.7995	3.9333	0.800	0.607	9127	1.5442	64.356	25.158	1.8101	0.972	1.1841	2.0033	63.8190
1.8294	1.8254	3.9006	0.980	0.729	9279	1.5674	62.439	24.727	1.8404	1.051	1.2039	2.0335	61.9181
2.0942	1.8559	3.9020	1.060	0.771	9407	1.5963	60.482	23.986	1.8658	1.230	1.2205	2.0735	59.9779
2.3233	1.8815	3.8614	1.240	0.885	9552	1.6228	58.846	23.254	1.8945	1.329	1.2393	2.1053	58.3552
2.4371	1.9105	3.8619	1.340	0.937	9673	1.6449	57.147	22.218	1.9185	1.428	1.2549	2.1340	56.6706
2.5518	1.9346	3.8552	1.440	0.990	9805	1.6692	55.713	20.755	1.9447	1.527	1.2721	2.1642	55.2486
2.6650	1.9617	3.8521	1.540	1.040	9913	1.6949	54.112	19.388	1.9660	1.686	1.2861	2.1989	53.6610
2.7836	1.9826	3.8176	1.700	1.132	1.0147	1.7404	51.596	21.095	2.0124	1.904	1.3164	2.2578	51.1654
3.0099	2.0293	3.7964	1.920	1.240	1.0386	1.7863	49.530	20.641	2.0599	2.122	1.3474	2.3175	49.1165
3.2321	2.0772	3.7779	2.140	1.340	1.0611	1.8309	47.568	19.748	2.1045	2.240	1.3766	2.3753	47.1710
3.4600	2.1222	3.7568	2.360	1.438	1.0839	1.8738	45.828	18.211	2.1497	2.359	1.4062	2.4309	45.4455
3.6909	2.1678	3.7445	2.560	1.517	1.1026	1.9165	44.159	17.171	2.1867	2.477	1.4304	2.4864	43.7908
3.9149	2.2051	3.7092	2.800	1.624	1.1264	1.9644	42.962	16.447	2.2341	2.601	1.4614	2.5495	42.6036
4.1351	2.2528	3.6884	3.040	1.716	1.1437	2.0018	41.518	16.173	2.2683	2.713	1.4838	2.5970	41.1717
4.3621	2.2874	3.6658	3.240	1.794	1.1631	2.0413	40.311	18.026	2.3069	2.811	1.5090	2.6483	39.9750
4.5892	2.3263	3.6491	3.440	1.865	1.1846	2.0788	39.303	16.966	2.3495	2.950	1.5369	2.6970	38.9753
4.8162	2.3693	3.6496	3.600	1.907	1.2020	2.1163	38.188	15.359	2.3840	3.078	1.5594	2.7456	37.8692
5.0480	2.4040	3.6294	3.800	1.977	1.2198	2.1542	37.223	15.293	2.4192	3.168	1.5825	2.7947	36.9125
5.2743	2.4396	3.6110	4.000	2.043	1.2365	2.1869	36.313	15.146	2.4523	3.259	1.6041	2.8372	36.0096
5.4984	2.4729	3.6018	4.160	2.090	1.2540	2.2286	35.480	15.428	2.4872	3.353	1.6269	2.8912	35.1844
5.7264	2.5081	3.5736	4.400	2.172	1.2715	2.2661	34.718	14.815	2.5218	3.456	1.6496	2.9400	34.4287
5.9528	2.5430	3.5568	4.600	2.233	1.2877	2.2984	33.961	14.848	2.5539	3.559	1.6706	2.9818	33.6775
6.1808	2.5754	3.5481	4.760	2.275	1.3058	2.3366	33.290	14.080	2.5897	3.658	1.6940	3.0340	33.0125
6.4139	2.6115	3.5286	4.980	2.340	1.3201	2.3670	32.587	13.316	2.6182	3.757	1.7126	3.0708	32.3148
6.6403	2.6402	3.5219	5.120	2.374	1.3359	2.4049	31.973	14.367	2.6495	3.855	1.7331	3.1200	31.7065
6.8667	2.6718	3.4993	5.340	2.441	1.3526	2.4377	31.424	13.448	2.6827	3.954	1.7548	3.1626	31.1615
7.0930	2.7052	3.4930	5.500	2.476	1.3694	2.5027	30.321	13.511	2.7109	4.053	1.7733	3.2046	30.5490
7.3278	2.7337	3.4779	5.680	2.525	1.3834	2.5627	29.291	12.997	2.7437	4.151	1.7948	3.2469	30.0676
7.5542	2.7668	3.4718	5.840	2.559	1.3976	2.6350	28.796	12.997	2.7718	4.249	1.8131	3.2888	29.5473
7.7822	2.7951	3.4573	6.020	2.606	1.4115	2.6931	28.291	13.033	2.7995	4.347	1.8313	3.3253	29.0463
8.0119	2.8231	3.4515	6.160	2.635	1.4275	2.7592	28.861	11.961	2.8312	4.445	1.8520	3.3655	28.6205
8.2471	2.8550	3.4408	6.340	2.676	1.4391	2.8209	28.347	11.288	2.8542	4.543	1.8670	3.4002	28.1107
8.4731	2.8782	3.4354	6.480	2.700	1.4533	2.8852	27.936	11.302	2.8823	4.641	1.8854	3.4448	27.7028
8.6994	2.9066	3.4183	6.660	2.752	1.4650	2.9471	27.470	10.382	2.9056	4.739	1.9007	3.4731	27.2404
8.9325	2.9301	3.4174	6.760	2.767	1.4773	2.7075	27.049	11.475	2.9300	4.837	1.9166	3.5126	26.8234
9.1623	2.9546	3.4017	6.940	2.812	1.4915	2.7379	26.681	11.207	2.9582	4.935	1.9351	3.5520	26.4584
9.3953	2.9831	3.3935	7.100	2.845	1.5039	2.7644	26.268	9.928	2.9826	5.033	1.9510	3.5863	26.0489
9.6368	3.0077	3.3862	7.240	2.873	1.5151	2.7837	25.876	10.490	3.0049	5.131	1.9656	3.6115	25.6598
9.8699	3.0302	3.3886	7.320	2.880	1.5280	2.8148	25.547	10.692	3.0366	5.229	1.9824	3.6518	25.3340
10.0979	3.0561	3.3750	7.500	2.921	1.5397	2.8366	25.200	9.603	3.0536	5.327	1.9975	3.6801	24.9899
10.3291	3.0793	3.3743	7.600	2.934	1.5502	2.8653	24.851	9.309	3.0745	5.425	2.0111	3.7172	24.6436
10.5591	3.1003	3.3575	7.780	2.980	1.5611	2.8883	24.523	7.970	3.0941	5.523	2.0252	3.7471	24.3188
10.7888	3.1221	3.3523	7.900	3.001	1.5611	2.9118	24.152	8.449	3.1106	5.621	2.0347	3.7776	23.9508
11.0152	3.1367	3.3349	8.060	3.045	1.5684	2.9317	23.873	8.334	3.1340	5.719	2.0500	3.8035	23.6768
11.2415	3.1604	3.3289	8.140	3.049	1.5807	2.9472	23.673	8.449	3.1494	5.817	2.0672	3.8270	23.4015
11.4678	3.1841	3.3249	8.240	3.079	1.5907	3.0038	15.555	14.323	3.1648	5.915	2.0842	3.8504	23.1262
11.6942	3.2089	3.3209	8.320	3.079	1.5907	3.0038	15.555	14.323	3.1648	6.013	2.1014	3.8738	22.8509
11.9205	3.2337	3.2788	1.0260	3.343	1.7892	3.3594	18.779	19.621	3.3594	6.111	2.1184	3.8972	22.5756
12.1468	3.2583	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.209	2.1354	3.9206	22.3003
12.3731	3.2831	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.307	2.1524	3.9440	22.0250
12.5994	3.3079	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.405	2.1694	3.9674	21.7497
12.8257	3.3327	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.503	2.1864	3.9908	21.4744
13.0520	3.3575	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.601	2.2034	4.0142	21.1991
13.2783	3.3823	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.700	2.2204	4.0376	20.9238
13.5046	3.4071	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.800	2.2374	4.0610	20.6485
13.7309	3.4319	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	6.900	2.2544	4.0844	20.3732
13.9572	3.4567	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	7.000	2.2714	4.1078	20.0979
14.1835	3.4815	3.2788	1.0760	3.343	1.7947	3.4130	18.821	20.249	3.3594	7.100	2.2884	4.1312	19.8226

10.5591	3.1003	3.3575	-1.7780	-1.2980	1.5502	2.8453	24.851	9.309	3.0745	-1.7115	2.0111	3.1111	24.3188
10.7888	3.1221	3.3523	-1.7900	-1.3001	1.5611	2.8883	24.523	7.970	3.0961	-1.7834	2.0252	3.7471	23.9508
11.0152	3.1367	3.3349	-1.8060	-1.3045	1.5684	2.9118	24.152	6.449	3.1106	-1.7922	2.0347	3.7776	23.6768
11.2415	3.1604	3.3383	-1.8140	-1.3049	1.5802	2.9317	23.876	3.834	3.1340	-1.8072	2.0500	3.8035	15.4249
16.3492	3.0194	3.0209	-1.9520	-1.3779	1.5097	3.0038	15.555	163.633	2.9942	-1.9441	1.9586	3.8970	18.6222
16.5185	3.5393	3.2788	-1.0280	-1.3343	1.7892	3.3594	18.779	190.219	3.5485	-1.0194	2.3212	4.3584	18.6222
16.5403	3.5893	3.2180	-1.0760	-1.3466	1.7947	3.4130	18.821	23.959	3.5594	-1.0670	2.3283	4.4278	18.6222
16.6292	3.5871	3.2056	-1.0840	-1.3514	1.7935	3.4199	18.707	1.248	3.5572	-1.0750	2.3269	4.4369	18.5506
16.7432	3.5928	3.2008	-1.0900	-1.3528	1.7944	3.4289	18.613	2.927	3.5629	-1.0809	2.3306	4.4485	18.4579
16.9646	3.5947	3.1882	-1.1000	-1.3558	1.7974	3.4401	18.382	1.671	3.5647	-1.0908	2.3318	4.4630	18.2283
17.1893	3.6003	3.1806	-1.1080	-1.3578	1.8001	3.4512	18.174	4.343	3.5702	-1.0988	2.3354	4.4774	18.0221
17.4123	3.6141	3.1808	-1.1140	-1.3582	1.8071	3.4643	18.021	3.880	3.5840	-1.1047	2.3444	4.4945	17.8702
17.6454	3.6177	3.1695	-1.1240	-1.3611	1.8089	3.4764	17.803	2.405	3.5875	-1.1146	2.3467	4.5101	17.6544
17.8653	3.6249	3.1657	-1.1300	-1.3623	1.8124	3.4862	17.624	3.757	3.5946	-1.1206	2.3514	4.5229	17.4771
18.0897	3.6345	3.1556	-1.1420	-1.3651	1.8172	3.5033	17.458	4.447	3.6041	-1.1325	2.3576	4.5450	17.3124
18.3128	3.6448	3.1512	-1.1500	-1.3645	1.8224	3.5167	17.302	5.150	3.6144	-1.1404	2.3643	4.5624	17.1576
18.5391	3.6576	3.1432	-1.1620	-1.3689	1.8288	3.5254	17.160	4.153	3.6271	-1.1523	2.3726	4.5867	17.0167
18.7655	3.6636	3.1314	-1.1740	-1.3720	1.8318	3.5307	16.985	4.350	3.6330	-1.1642	2.3765	4.6065	16.8430
18.9885	3.6771	3.1364	-1.1760	-1.3712	1.8386	3.5397	16.856	4.017	3.6464	-1.1662	2.3852	4.6182	16.7157
19.2183	3.6817	3.1190	-1.1920	-1.3753	1.8408	3.5783	16.679	2.529	3.6509	-1.1821	2.3892	4.6423	16.5394
19.4480	3.6887	3.1179	-1.1960	-1.3762	1.8444	3.5861	16.518	3.706	3.6579	-1.1950	2.3928	4.6525	16.3801
19.6744	3.6985	3.1085	-1.2080	-1.3789	1.8493	3.6033	16.378	4.199	3.6677	-1.1979	2.3991	4.6748	16.2410
19.9058	3.7079	3.1039	-1.2160	-1.3804	1.8540	3.6164	16.235	2.687	3.6770	-1.2059	2.4052	4.6917	16.0991
20.1338	3.7102	3.0981	-1.2220	-1.3820	1.8552	3.6242	16.066	1.869	3.6800	-1.2116	2.4072	4.7018	15.9315
20.2076	3.7127	3.0872	-1.2320	-1.3849	1.8564	3.6352	16.016	127.560	3.6817	-1.2217	2.4083	4.7161	15.8021 STOP

A. BASIC RESPT

CDOS 1AK BASIC, VERSION 5.4

TRIAXIAL TEST SUMMARY CALCULATIONS

T 223

Type Test: CAC - C ☒ Undisturbed; ☐ Reconstituted Specimen;
☐ Dynamic / H_3 or + sinusoidal or - ☒ Static @ 0.72 %/hr

Consolidation History	Max. Induced Past Pressure	<input checked="" type="checkbox"/> Preshear/perm. <input type="checkbox"/> Pre-cyl. loading	Reshear after Cyl. loading
Units: <u>tons</u> or <u>KSF</u>	Uncorr. Corr. #	Uncorr. Corr. #	Uncorr. Corr. #
$\bar{\sigma}_{cell}$		20.6784	
$\bar{\sigma}_h$		14.400	
$\bar{\sigma}_v$		12.327	12.1262
$\bar{\sigma}_h$		6.2764	6.3239
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h)/2$		9.3020	9.2250
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$		1.964	1.9125
OCR		1.00	
Consol. Time	<input type="checkbox"/> Overnight	<input type="checkbox"/> Overnight	<input type="checkbox"/> Overnight
	days hours	days hours	days hours

* Corrected for effects of membrane, S. Mem. strips, etc.

$H_0 = 3.985$ in.
 $A_c = 3.2302$ in²
 $V_0 = 210.94$ cm³
 $D_{50}/D_{10} = 1.042$
 $G_s = 2.70$ ☐ Assumed ☒ Measured
 $E_g = 96.5$ %
 Area Corr. Factors: C
 Undrained: $= 1.139$
 $C_u = \frac{1}{2} (1 - K_c / \mu_{flow})$
 Drained: $=$
 $C_u = \frac{1}{2} [1 - \frac{A_c (1 + E_g)}{S_{max}}]$

Calculate Wt of Dry Soil	By Initial water content	By Final water content	By Total Overdried Specimen	Variations in Height and Volume During Consolidation	During Initial Comp. with out back. Pressure	During Back. Pressure	After Backpressure
					$\Delta V_b = 2.85$ Vol in	$\Delta V_b = 2.85$ Vol in	$\Delta V_b = 2.85$ Vol in
w_i (%)				ΔL (in)	0.07	0.032	0.058
w_f (%)				ΔV_m (cm ³)	1.112	0.508	0.921
w_{ave} (%)	12.05	9.97		$R = \Delta V_m / \Delta V_b$	1.216	1.216	
Wgt. Wet Soil, Wt (gm)	478.13	473.05		Corrected $\Delta V_m = R \cdot \Delta V_b$	1.352	0.618	
Initial Wt Dry Soil, Wt (gm)	ΔV_T (cm ³)			Circle Selected Value	ΔV_1	ΔV_2	ΔV_3
Wt Excess Overdried Soil				$\Delta L_{cy} =$			
Total Wt Dry Soil, Wt (gm)	426.71	430.16					
Wt used:		Final = 430.16 gm					

Calculation of ΔV_c during Consolidation by O.E.S. Procedure	ΔV_c by Wt Change $= W_c - W_g - (\Delta V_b + \Delta V_T)$	ΔV_c by recorded/calculated volume changes $= \Sigma$ selected ΔV	ΔV_c assuming $S_r = 100\%$ $V_F = (V_0 - w_i) W_0 / C_u$
	$\Delta W_{wt} = 5.08$ gm	$\Delta V_c = 1.352 + 0.618 + 7.17$	$\Delta V_c = V_0 - V_F$
	$\Sigma (\Delta V_b + \Delta V_T) = (-3.91)$ cm ³	$= 9.14$ cm ³	$w_0 = 9.97$ % $V_F = 199.896$ cm ³
	$\therefore \Delta V_c = 8.99$ cm ³		$V_F + \Delta V_T = 11.044$ cm ³

ΔV_c used (ave. value) = 11.044 cm ³ ; $V_c = 199.896$ cm ³ ; $\Delta L_c = 0.09336$ in; $\therefore L_c = 3.8914$ in	
$A_c = V_c / L_c$ (cm ² /in) / 16.3871 = 3.1347 in ² / 0.144 = 21.7688 x 10 ⁻³ ft ²	
$E_{ac} = 2.135$ %; $E_v = 5.24$ %; $E_{ev} = 0.9476$ $E_g = 0.1885$; $E_{ev} =$ # not in percent	
At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ cm ³ ; $\Delta L_{max} =$ in	

Summary	Height (in)	Area (in ² / cm ²)	Volume (cm ³)	Water Content (%)	Total/Dry Density (lb/ft ³)	Saturation (%)
Initial	3.985	22.4319	210.940	11.15	141.51 / 127.31	89.0
After Consol.	3.8914	21.7688	199.896	9.97	147.74 / 134.35	100.0

$$S = W G_s \gamma_d / (G_s \gamma_w - \gamma_d) = w \cdot G_s \gamma_d / (G_s \gamma_w (1 + w) - \gamma_d)$$

Calculated by SB Reviewed by Re

Psi x 0.072 = conf
 w for $S = 100\%$ $= G_s \gamma_w - \gamma_d / (G_s \gamma_w - \gamma_d) = G_s \gamma_w - \gamma_d / (G_s \gamma_w (1 + w) - \gamma_d) = 0.9982$ gm/cm³ (62.4) = 84.2 (16.017)

1 DATA FILE IDENT. NO.
 2 PROJECT NO.
 3 BORING NO.
 4 SAMPLE NO.
 5 SPECIMEN NO.
 6 DEPTH
 7 TEST NO.
 8 FILE # FOR LOAD CELL OR PROVING RING
 9 FILE # FOR PORE PRESSURE CONST.
 10 FILE # FOR CELL PRESSURE CONST.
 11 FILE # FOR PISTON FRICTION CORRECTION
 12 TYPE OF CONSOLIDATION
 13 DRAINAGE CONDITIONS DURING LOADING
 14 MODE OF LOADING
 15 CELL PRESSURE DURING LOADING
 16 INITIAL HEIGHT OF SPECIMEN IN INCHES
 17 INITIAL DIAMETER OF SPECIMEN IN INCHES
 18 INITIAL VOLUME OF SPECIMEN IN CU. CM.
 19 PISTON DIAMETER IN INCHES
 20 WEIGHT OF TOP CAP ONLY IN TONS*10**3
 21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**3
 22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**3
 23 WAS PISTON INTACT DURING CONSOL
 24 MEMBRANE THICKNESS IN INCHES
 25 MEMBRANE DIAMETER IN INCHES
 26 FILTER STRIP CORRECTION CONSTANT
 27 RIGHT CYLINDER DISTORTION FACTOR
 28 DOES SPECIMEN HAVE AN INDUCED OCR
 29 CELL PRESSURE IN TSF
 30 BACK PRESSURE IN TSF
 31 AXIAL DEFORMATION DURING CONSOL. IN INCHES
 32 VOLUME CHANGE DURING CONSOL. IN CU. CM.
 33 APPLIED AXIAL LOAD IN TONS*10**3
 34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF
 35 BACK PRESSURE IN TSF
 36 AXIAL DEFORMATION IN INCHES
 37 VOLUME CHANGE IN CU. CM.
 38 PISTON DRAG CORRECTION IN TONS*10**3
 39 SPECIMEN CYCLICALLY LOADED BEFORE SHEARING
 40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING
 41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.
 42 PORE PRESSURE IN TSF
 43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES
 44 OUTPUT UNITS REQUIRED
 45 DATA NORMALIZATION SELECTION
 46 RESULT FILE DESIRED

DIS LOAD PORE PRESSURE

(in.) (lbs) (tsf)

0.04116, 157.25, 7.194
 .04125, 162.68, 7.218
 .04129, 172.23, 7.229
 .04133, 174.35, 7.239
 .04138, 175.76, 7.246
 .04142, 178.59, 7.257
 .04151, 180.33, 7.264
 .04168, 183.80, 7.279
 .04173, 185.48, 7.287
 .04181, 186.90, 7.294
 .04216, 191.40, 7.320
 .04238, 193.19, 7.330
 .04260, 194.88, 7.341

T-223
 81C405513
 COE-9A
 S-4
 B
 14.2
 ID-390
 2000
 1000
 2000
 NONE
 A-45
 U
 C
 C
 3.985
 2.028
 210.94
 0.5
 0.255
 0.9453
 1.2853
 YES
 0.0265
 1.8366
 1.594
 1.139
 NO
 0.0
 0.0
 0.0
 0.0
 0.0
 10.3392
 7.200
 0.0936
 11.044
 78.975
 NO
 NO
 0.0
 0.0
 0.0
 KSF
 2.0
 0.0

04260, 194.88, 7.341
04300, 197.05, 7.361
04326, 198.03, 7.370
04343, 198.84, 7.381
04392, 200.04, 7.399
04414, 200.47, 7.409
04440, 200.91, 7.418
04488, 201.72, 7.438
04510, 202.05, 7.447
04532, 202.21, 7.456
04580, 202.81, 7.477
04597, 202.97, 7.486
04624, 203.19, 7.494
04672, 203.51, 7.514
04698, 203.67, 7.523
04724, 203.78, 7.532
04748, 204.11, 7.550
04795, 204.22, 7.560
04816, 204.33, 7.568
04865, 204.54, 7.586
04886, 204.65, 7.596
04913, 204.81, 7.606
04961, 205.19, 7.623
05009, 205.25, 7.637
05037, 205.47, 7.655
05154, 205.85, 7.685
05206, 206.01, 7.702
05254, 206.29, 7.718
05355, 206.72, 7.748
05403, 207.04, 7.760
05451, 207.10, 7.773
05548, 207.56, 7.801
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.24211.	289.90.	8.037
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.27057.	301.79.	7.948
.27999.	306.08.	7.922
.29891.	314.07.	7.865
.30810.	317.98.	7.836
.31730.	321.72.	7.808
.32632.	325.31.	7.783
0.3355.	329.1.	7.753
0.3444.	332.6.	7.728
0.3535.	336.3.	7.702
0.3623.	339.7.	7.676
0.3710.	343.0.	7.652
0.3885.	349.9.	7.601
0.3971.	353.2.	7.574
0.4059.	356.7.	7.550
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0.4230.	363.2.	7.505
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0.4484.	372.7.	7.436
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0.4993.	390.1.	7.309
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0.5336.	400.9.	7.230
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0.5591.	409.0.	7.169
0.5678.	412.0.	7.154
0.5767.	414.9.	7.135
0.5859.	417.5.	7.114
0.5953.	420.3.	7.095
0.6046.	422.7.	7.078
0.6139.	425.2.	7.057
0.6232.	428.1.	7.040
0.6325.	430.4.	7.020
0.6519.	436.5.	6.980
0.6617.	439.1.	6.962
0.6714.	441.7.	6.947
0.6811.	444.4.	6.929
0.6907.	447.4.	6.912
0.7004.	450.2.	6.896
0.7099.	452.8.	6.876
0.7194.	455.4.	6.855
0.7292.	458.3.	6.837
0.7487.	464.1.	6.803
0.7587.	466.7.	6.783
0.7687.	469.5.	6.766
0.7787.	472.1.	6.749
0.7888.	475.0.	6.728
0.7983.	477.1.	6.718
0.8078.	479.5.	6.707
0.8176.	482.1.	6.685
0.8204.	484.3.	6.672

-999..0.0.0.0

A. TRIAX

THIS IS A CAU TEST. IT HAS BEEN
CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE NO. T-223

PROJ. NO.	BIC4055T3	REVIEWED BY: <i>POV</i>
BORING NO.	COE-9A	DATE: 6/4/81
SAMPLE NO.	S-4	INPUT DATA CHECKED BY: <i>PTF</i>
SPECIMEN NO.	B	
DEPTH(FT.)	14.2	TEST NO. ID-390

ANISOTROPIC	TYPE OF CONSOLIDATION	USING 45 STRESS PATH
UNDRAINED	DRAINAGE CONDITIONS DURING LOADING	
IMPRESSION	MODE OF LOADING	
CONSTANT	CELL PRESSURE DURING LOADING	
3.860	INITIAL HEIGHT OF SPECIMEN IN INCHES	
3.025	INITIAL DIAMETER OF SPECIMEN IN INCHES	
10	INITIAL VOLUME OF SPECIMEN IN CU. CM.	
3.060	PISTON DIAMETER IN INCHES	
7.750	WEIGHT OF TOP CAP ONLY IN TONS*10**-3	
8.850	WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3	
1.2853	WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3	
YES	WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?	
.0265	MEMBRANE THICKNESS IN INCHES	
1.8366	MEMBRANE DIAMETER IN INCHES	
1.5960	FILTER STRIP CORRECTION CONSTANT AT 2% AXIAL STRAIN IN TONS ** 10-3	
1.1390	RIGHT CYLINDER DISTORTION FACTOR	

PRE-SHEAR CONDITIONS:

10.3392	CELL PRESSURE IN TSF
7.2000	BACK PRESSURE IN TSF
.0936	AXIAL DEFORMATION DURING CONSOL. IN INCHES
11.04	VOLUME CHANGE DURING CONSOL. IN CU. CM.
78.9750	MEASURED AXIAL LOAD DURING CONSOL. IN IN TONS *10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:

AXIAL	=	12.1262	KSF
LATERAL	=	6.3239	KSF
MEAN	=	8.2580	KSF
PBAR	=	9.2250	KSF
LATERAL/AXIAL	=	.5215	
AXIAL/LATERAL	=	1.9175	
OCR	=	4.000	

12.8126	PISTON DRAG CORRECTION IN TONS *10**-3
2000	FILE NUMBER FOR LOAD CELL OR PROVING RING
1000	FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
2000	FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE	FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES	IS DATA NORMALIZATION REQUIRED?
	DATA NORMALIZED TO PRE-SHEAR STRESSES
	WITH NORM = P-BAR OF 9.2250 KSF
	AND NORM* = VERT STRESS OF 12.1262 KSF

AXIAL STRAIN %	DEVIIATOR STRESS KSF	OBLIQUITY	DELTA-U A-FACTOR KSF	Q KSF	P-BAR KSF	SECANT MODULUS KSF	TANGENT MODULUS KSF	DEVIATOR NORTH*	DELTA-U NORTH*	Q NORTH	P-BAR NORTH	SECANT NORTH*
0.0000	5.7995	1.9171	0.0000	2.9998	9.2237	0.000	0.000	.4783	0.0000	.3143	.9999	0.0000
.0023	6.3703	2.0150	.0841	3.1852	9.461124679.33018033.314	0.000	0.000	.5253	.0040	.3453	1.0256	2035.2107
.0033	6.4874	2.0373	.1018	3.2437	9.497420589.68010426.450	0.000	0.000	.5350	.0058	.3516	1.0295	1697.9528
.0044	6.5847	2.0563	.1146	3.2923	9.52617972.350 7248.405	0.000	0.000	.5430	.0074	.3569	1.0326	1482.1115
.0057	6.6493	2.0690	.1224	3.3247	9.544615031.231 8834.217	0.000	0.000	.5483	.0086	.3604	1.0346	1239.5686
.0067	6.7792	2.0938	.1286	3.3896	9.587514662.847 8041.708	0.000	0.000	.5591	.0104	.3674	1.0393	1209.1893
.0090	6.8589	2.1092	.1321	3.4292	9.61341778.706 3542.842	0.000	0.000	.5656	.0115	.3718	1.0421	971.3452
.0134	7.0179	2.1404	.1395	3.5090	9.6629 9117.691 4817.494	0.000	0.000	.5787	.0140	.3804	1.0475	751.9014
.0146	7.0950	2.1559	.1436	3.5475	9.6854 8843.846 4579.507	0.000	0.000	.5851	.0153	.3845	1.0499	729.3184
.0167	7.1600	2.1692	.1470	3.5800	9.7039 8144.707 2725.618	0.000	0.000	.5905	.0165	.3881	1.0519	671.6630
.0257	7.3658	2.2131	.1609	3.6829	9.7548 6094.892 1866.175	0.000	0.000	.6074	.0208	.3992	1.0574	502.6226
.0314	7.4474	2.2306	.1650	3.7237	9.7756 5256.248 1403.505	0.000	0.000	.6142	.0224	.4037	1.0597	433.4628
.0370	7.5245	2.2479	.1704	3.7622	9.7972 4661.420 1161.049	0.000	0.000	.6205	.0242	.4078	1.0615	384.4096
.0473	7.6231	2.2726	.1831	3.8115	9.8015 3856.611 911.307	0.000	0.000	.6286	.0275	.4132	1.0625	318.0400
.0540	7.6674	2.2839	.1884	3.8337	9.8056 3461.289 752.206	0.000	0.000	.6323	.0290	.4156	1.0629	285.4361
.0583	7.7041	2.2948	.1963	3.8521	9.8020 3265.028 634.199	0.000	0.000	.6353	.0308	.4176	1.0625	269.2545
.0709	7.7579	2.3118	.2093	3.8790	9.7929 2761.227 383.070	0.000	0.000	.6398	.0338	.4205	1.0616	227.7079
.0766	7.7771	2.3191	.2164	3.8886	9.7845 2582.394 315.434	0.000	0.000	.6413	.0353	.4215	1.0606	212.9602
.0833	7.7966	2.3269	.2243	3.8983	9.7743 2398.598 291.543	0.000	0.000	.6430	.0369	.4226	1.0595	197.8032
.0956	7.8325	2.3421	.2400	3.9163	9.7522 2126.660 274.314	0.000	0.000	.6459	.0402	.4245	1.0571	175.3775
.1012	7.8471	2.3488	.2471	3.9235	9.7415 2022.293 188.541	0.000	0.000	.6471	.0417	.4253	1.0560	166.7708
.1069	7.8538	2.3541	.2550	3.9269	9.7269 1921.666 166.182	0.000	0.000	.6477	.0432	.4257	1.0544	158.4725
.1192	7.8801	2.3686	.2720	3.9400	9.6980 1744.890 185.224	0.000	0.000	.6498	.0467	.4271	1.0513	143.8945
.1236	7.8870	2.3740	.2770	3.9435	9.6835 1688.791 146.350	0.000	0.000	.6504	.0482	.4275	1.0497	139.2682
.1305	7.8963	2.3795	.2861	3.9482	9.6722 1606.213 121.849	0.000	0.000	.6512	.0495	.4280	1.0485	132.4583
.1429	7.9097	2.3916	.3032	3.9549	9.6389 1476.923 104.021	0.000	0.000	.6528	.0528	.4287	1.0449	121.7962
.1496	7.9164	2.3972	.3108	3.9582	9.6242 1415.385 82.259	0.000	0.000	.6538	.0543	.4291	1.0433	116.7215
.1562	7.9207	2.4024	.3186	3.9604	9.6084 1357.643 94.250	0.000	0.000	.6532	.0557	.4293	1.0416	111.9596
.1675	7.9347	2.4139	.3334	3.9672	9.5794 1274.351 92.838	0.000	0.000	.6543	.0587	.4301	1.0384	105.0909
.1745	7.9390	2.4197	.3342	3.9695	9.5615 1226.153 72.626	0.000	0.000	.6547	.0604	.4303	1.0355	101.1162
.1799	7.9435	2.4246	.3421	3.9717	9.5478 1191.858 74.507	0.000	0.000	.6551	.0617	.4305	1.0350	98.2880
.1925	7.9518	2.4353	.3488	3.9759	9.5159 1118.206 74.491	0.000	0.000	.6558	.0647	.4310	1.0315	92.2142
.1979	7.9563	2.4413	.3642	3.9781	9.4982 1089.972 89.102	0.000	0.000	.6561	.0663	.4312	1.0296	89.8858
.2048	7.9629	2.4478	.3727	3.9814	9.4815 1056.273 112.980	0.000	0.000	.6567	.0680	.4316	1.0278	87.1069
.2171	7.9790	2.4597	.3808	3.9846	9.4556 1003.697 71.254	0.000	0.000	.6580	.0708	.4325	1.0250	82.7711
.2255	7.9805	2.4675	.4062	3.9902	9.4283 950.381 41.526	0.000	0.000	.6581	.0731	.4325	1.0220	78.3743
.2418	7.9893	2.4789	.4210	3.9946	9.3967 905.537 65.289	0.000	0.000	.6588	.0760	.4330	1.0186	74.6762
.2667	8.0040	2.4983	.4454	4.0020	9.3441 826.460 51.808	0.000	0.000	.6601	.0810	.4338	1.0129	68.1550
.2801	8.0100	2.5090	.4595	4.0050	9.3131 789.145 67.004	0.000	0.000	.6606	.0838	.4341	1.0095	65.0778
.2924	8.0210	2.5203	.4717	4.0105	9.2866 759.644 78.387	0.000	0.000	.6615	.0864	.4347	1.0067	62.6449
.3184	8.0384	2.5411	.4949	4.0192	9.2353 703.186 87.611	0.000	0.000	.6629	.0914	.4357	1.0011	57.9891
.3307	8.0518	2.5508	.5025	4.0259	9.2180 680.994 59.927	0.000	0.000	.6640	.0934	.4364	1.0000	56.1590
.3431	8.0532	2.5588	.5137	4.0266	9.1928 656.929 44.602	0.000	0.000	.6641	.0945	.4365	1.0000	54.1744
.3686	8.0725	2.5797	.5340	4.0346	9.1464 617.681 -5.483	0.000	0.000	.6657	.1001	.4375	1.0000	50.9378
.3803	8.0736	2.5838	.5454	4.0368	9.1210 594.778 -19.078	0.000	0.000	.6658	.1018	.4375	1.0000	49.0491
.4050	8.0736	2.6025	.5654	4.0368	9.0750 561.516 59.141	0.000	0.000	.6658	.1061	.4376	1.0000	46.3061
.4566	8.1081	2.6359	.5924	4.0541	9.0103 507.843 62.895	0.000	0.000	.6666	.1128	.4395	1.0000	41.8799
.4805	8.1227	2.6529	.6069	4.0614	8.9756 483.451 78.317	0.000	0.000	.6699	.1163	.4403	1.0000	39.8684
.5052	8.1475	2.6715	.6174	4.0738	8.9480 464.747 67.399	0.000	0.000	.6719	.1196	.4416	1.0000	38.3259
.5568	8.1646	2.6994	.6425	4.0823	8.8866 426.276 57.421	0.000	0.000	.6733	.1253	.4425	1.0000	35.1534
.5928	8.1952	2.7244	.6560	4.0976	8.8666 404.091 74.619	0.000	0.000	.6758	.1296	.4442	1.0000	33.3238
.6301	8.2208	2.7453	.6664	4.1104	8.8208 384.263 65.003	0.000	0.000	.6779	.1331	.4456	1.0000	31.6887
.7054	8.2669	2.7861	.6872	4.1334	8.7419 349.781 103.089	0.000	0.000	.6817	.1399	.4481	1.0000	28.8451
.7437	8.3224	2.8122	.6863	4.1612	8.7537 339.235 109.979	0.000	0.000	.6863	.1428	.4511	1.0000	27.9754
.7866	8.3546	2.8344	.6925	4.1773	8.7318 324.819 58.144	0.000	0.000	.6890	.1460	.4528	1.0000	26.7866
.8293	8.3722	2.8512	.7002	4.1841	8.7086 310.234 52.596	0.000	0.000	.6904	.1486	.4538	1.0000	25.5838
.9148	8.4249	2.8900	.7100	4.2134	8.6726 287.192 59.154	0.000	0.000	.6949	.1539	.4567	1.0000	23.6837
.9565	8.4495	2.9062	.7137	4.2248	8.6574 277.060 59.443	0.000	0.000	.6968	.1560	.4580	1.0000	22.8481
.9991	8.4714	2.9246	.7165	4.2385	8.6432 267.984 73.555	0.000	0.000	.6991	.1583	.4595	1.0000	22.0996
1.0408	8.5114	2.94	.7185	4.2557	8.6364 260.570 73.695	0.000	0.000	.7019	.1603	.4613	1.0000	21.4882
1.1220	8.5440	2.9738	.7181	4.2820	8.6208 246.398 61.284	0.000	0.000	.7042	.1638	.4642	1.0000	20.3195
1.1666	8.5697	2.9876	.7185	4.3035	8.6040 232.200 50.000	0.000	0.000					

9565	8.4495	2.9062	1.8920	7137	4.2248	8.6574	277.060	59.443	6968	1560	4580	9385	22.8481
9991	8.4770	2.9246	1.9200	7168	4.2385	8.6432	267.984	73.555	6991	1583	4595	9369	22.0996
1.0408	8.5114	2.9429	1.9440	7165	4.2557	8.6364	260.570	73.695	7019	1603	4613	9362	21.4882
1.1220	8.5640	2.9738	1.9660	7181	4.2820	8.6200	246.398	61.284	7062	1638	4642	9345	20.3195
1.1646	8.5887	2.9878	2.0040	7182	4.2943	8.6151	238.490	68.276	7093	1653	4655	9339	19.7498
1.2355	8.6445	3.0146	2.0340	7146	4.3223	8.6131	230.262	67.479	7129	1677	4685	9337	18.9889
1.3052	8.6837	3.0370	2.0620	7146	4.3418	8.6047	220.976	60.456	7161	1700	4707	9328	18.2230
1.4470	8.7754	3.0770	2.1000	7053	4.3877	8.6128	205.656	51.117	7237	1732	4756	9336	16.9597
1.5169	8.8017	3.0931	2.1200	7058	4.4008	8.6059	197.909	43.793	7258	1748	4771	9329	16.3208
1.5843	8.8354	3.1121	2.1420	7052	4.4177	8.6008	191.626	40.879	7286	1766	4789	9323	15.8026
1.6518	8.8568	3.1213	2.1500	7028	4.4284	8.6036	185.083	58.477	7304	1773	4800	9326	15.2631
1.9286	9.0927	3.1903	2.1740	6597	4.5464	8.6978	170.755	70.705	7498	1793	4928	9428	14.0815
2.0682	9.1711	3.2133	2.1820	6467	4.5856	8.7291	163.024	60.387	7563	1799	4971	9462	13.4440
2.2077	9.2613	3.2350	2.1820	6298	4.6306	8.7743	156.803	75.046	7637	1799	5020	9511	12.9310
2.3495	9.3825	3.2631	2.1800	6079	4.6913	8.8371	152.498	71.349	7737	1798	5085	9579	12.5759
2.6242	9.5397	3.2932	2.1660	5785	4.7698	8.9299	142.523	58.045	7867	1786	5171	9680	11.7534
2.7525	9.6152	3.3046	2.1540	5639	4.8076	8.9798	138.626	68.071	7929	1776	5211	9734	11.4320
2.8784	9.7125	3.3190	2.1380	5458	4.8562	9.0445	135.942	65.069	8010	1763	5264	9804	11.2106
3.0033	9.7785	3.3258	2.1220	5327	4.8893	9.0937	132.488	62.322	8064	1750	5300	9858	10.9258
3.1225	9.8641	3.3372	2.1060	5175	4.9320	9.1526	130.169	70.898	8135	1737	5346	9921	10.7346
3.2407	9.9469	3.3445	2.0840	5018	4.9734	9.2161	127.975	67.105	8203	1719	5391	9990	10.5536
3.3589	10.0227	3.3545	2.0700	4895	5.0114	9.2681	125.730	66.877	8265	1707	5432	1.0047	10.3685
3.4772	10.1050	3.3605	2.0460	4745	5.0525	9.3334	123.821	66.650	8333	1687	5477	1.0117	10.2111
3.7190	10.2591	3.3698	1.9980	4473	5.1295	9.4587	119.914	64.123	8460	1648	5560	1.0253	9.8888
3.9688	10.4202	3.3805	1.9500	4213	5.2101	9.5875	116.427	61.745	8593	1608	5648	1.0393	9.6013
4.2131	10.5644	3.3860	1.9000	3980	5.2822	9.7098	113.095	54.720	8712	1567	5726	1.0526	9.3265
4.4449	10.6813	3.3886	1.8560	3794	5.3407	9.8126	109.829	59.259	8808	1531	5789	1.0637	9.0572
4.6801	10.8414	3.3942	1.8000	3562	5.4207	9.9488	107.730	62.982	8940	1484	5876	1.0785	8.8841
4.9209	10.9808	3.3932	1.7400	3350	5.4904	10.0788	105.292	58.246	9055	1435	5952	1.0925	8.6830
5.1640	11.1232	3.3959	1.6860	3158	5.5616	10.2043	103.093	58.966	9173	1390	6029	1.1062	8.5017
5.4037	11.2655	3.3954	1.6260	2966	5.6328	10.3357	101.152	58.128	9290	1341	6106	1.1204	8.3416
5.6502	11.4057	3.3965	1.5700	2791	5.7029	10.4621	99.222	52.508	9406	1295	6182	1.1341	8.1825
5.8953	11.5237	3.3900	1.5080	2625	5.7618	10.5834	97.097	54.149	9503	1244	6246	1.1472	8.0072
6.1374	11.6694	3.3943	1.4560	2470	5.8347	10.7085	95.641	57.114	9623	1201	6325	1.1608	7.8872
6.6236	11.9321	3.3920	1.3420	2155	5.9661	10.9545	92.587	53.990	9840	1107	6467	1.1875	7.6353
6.8597	12.0595	3.3896	1.2840	2040	6.0298	11.0765	91.257	52.178	9945	1059	6536	1.2007	7.5256
7.0962	12.1787	3.3866	1.2280	1914	6.0894	11.1924	89.896	49.526	1.0043	1013	6601	1.2133	7.4134
7.3280	12.2914	3.3851	1.1780	1803	6.1457	11.2991	88.591	49.658	1.0136	0971	6662	1.2248	7.3058
7.5639	12.4110	3.3805	1.1180	1679	6.2055	11.4192	87.409	48.891	1.0235	0922	6727	1.2378	7.2083
7.7926	12.5187	3.3782	1.0680	1577	6.2594	11.5233	86.226	47.997	1.0324	0881	6785	1.2491	7.1107
8.0264	12.6331	3.3763	1.0180	1475	6.3165	11.6328	85.138	47.067	1.0418	0838	6847	1.2610	7.0210
8.2526	12.7354	3.3722	9640	1377	6.3677	11.7363	84.045	44.491	1.0502	0795	6903	1.2722	6.9308
8.4761	12.8332	3.3691	9160	1289	6.4166	11.8335	82.982	44.686	1.0583	0755	6956	1.2828	6.8432
8.9258	13.0384	3.3622	8140	1111	6.5192	12.0387	81.100	44.515	1.0752	0671	7067	1.3050	6.6880
9.1468	13.1343	3.3564	7600	1023	6.5671	12.1410	80.189	44.1	1.0831	0627	7119	1.3161	6.6129
9.3730	13.2367	3.3544	7120	0943	6.6183	12.2406	79.347	42.72	1.0916	0587	7174	1.3269	6.5434
9.5965	13.3265	3.3518	6680	0873	6.6632	12.3298	78.434	41.984	1.0990	0551	7223	1.3366	6.4681
9.8124	13.4210	3.3493	6220	0802	6.7105	12.4234	77.672	42.909	1.1068	0513	7274	1.3467	6.4053
10.0334	13.5139	3.3448	5720	0727	6.7569	12.5202	76.887	38.801	1.1144	0472	7325	1.3572	6.3405
10.2493	13.5907	3.3410	5300	0665	6.7954	12.6009	76.017	39.191	1.1208	0437	7366	1.3659	6.2688
10.4651	13.6831	3.3382	4840	0599	6.8415	12.6935	75.332	36.709	1.1284	0399	7416	1.3760	6.2123
10.6836	13.7500	3.3320	4400	0538	6.8750	12.7713	74.418	32.575	1.1339	0363	7453	1.3844	6.1369
11.1153	13.8990	3.3239	3560	0423	6.9495	12.9305	72.868	35.218	1.1462	0294	7533	1.4017	6.0091
11.3311	13.9765	3.3219	3180	0372	6.9883	13.0076	72.164	36.016	1.1526	0262	7575	1.4100	5.9511
11.5521	14.0563	3.3173	2720	0313	7.0282	13.0939	71.474	33.253	1.1592	0224	7619	1.4194	5.8942
11.7731	14.1235	3.3123	2300	0259	7.0618	13.1699	70.703	26.655	1.1647	0190	7655	1.4276	5.8306
11.9941	14.1742	3.3076	1960	0217	7.0971	13.2296	69.823	28.803	1.1689	0162	7682	1.4341	5.7580
12.2100	14.2490	3.3024	1500	0160	7.1245	13.3134	69.202	31.215	1.1751	0124	7723	1.4432	5.7068
12.4310	14.3103	3.2980	1120	0114	7.1552	13.3825	68.464	27.324	1.1801	0092	7756	1.4507	5.6460
12.6546	14.3705	3.2928	0720	0066	7.1853	13.4529	67.730	27.322	1.1851	0059	7789	1.4593	5.5855
12.8730	14.4311	3.2877	0320	0018	7.2155	13.5236	67.052	27.527	1.1901	0026	7822	1.4660	5.5295
13.3099	14.5504	3.2767	-0500	-0077	7.2752	13.6661	65.747	29.158	1.1999	-0041	7886	1.4814	5.4219
13.5334	14.6197	3.2767	-0800	-0110	7.3099	13.7312	65.173	29.409	1.2056	-0066	7924	1.4885	5.3746
13.7621	14.6834	3.2730	-1180	-0153	7.3417	13.8015	64.553	24.417	1.2109	-0097	7958	1.4961	5.3234
13.9986	14.7330	3.2658	-1600	-0200	7.3665	13.8688	63.817	22.021	1.2150	-0132	7985	1.5034	5.2629
14.2401	14.7887	3.2610	-1980	-0241	7.3943	13.9351	63.125	19.910	1.2196	-0163	8016	1.5106	5.2057
14.4791	14.8288	3.2553	-2320	-0278	7.4144	13.9896	62.361	17.466	1.2229	-0191	8037	1.5165	5.1426
14.7181	14.8721	3.2473	-2740	-0324	7.4361	14.0538	61.643	21.198	1.2264	-0226	8061	1.5234	5.0834
14.9571	14.9301	3.2444	-3080	-0360	7.4651	14.1172	61.045	19.338	1.2312	-0254	8092	1.5303	5.0342
15.1961	14.9646	3.2360	-3480	-0402	7.4823	14.1750	60.312	19.150	1.2341	-0297	8111	1.5366	4.9737

13.7621	14.6834	3.2730	-1.1180	-0.0153	7.3417	13.8015	64.553	24.417	1.4100	-0.0132	.7985	1.5106	5.2628
13.9986	14.7330	3.2658	-1.000	-0.0200	7.3665	13.8688	63.817	22.021	1.2150	-0.0163	.8016	1.5106	5.2057
14.2401	14.7887	3.2610	-1.980	-0.0241	7.3943	13.9351	63.125	19.910	1.2196	-0.0191	.8037	1.5165	5.1426
14.4791	14.8288	3.2553	-2.320	-0.0278	7.4144	13.9896	62.361	17.466	1.2229	-0.0226	.8061	1.5234	5.0834
14.7181	14.8721	3.2473	-2.740	-0.0324	7.4361	14.0538	61.643	21.198	1.2264	-0.0254	.8092	1.5303	5.0342
14.9571	14.9301	3.2444	-3.060	-0.0360	7.4651	14.1172	61.045	19.238	1.2312	-0.0287	.8111	1.5366	4.9737
15.1961	14.9646	3.2360	-3.480	-0.0402	7.4823	14.1750	60.312	19.159	1.2341	-0.0353	.8175	1.5416	4.8783
15.4350	15.0637	3.2268	-4.280	-0.0485	7.5419	14.3156	59.155	20.066	1.2439	-0.0383	.8198	1.5580	4.8224
15.6740	15.1246	3.2208	-4.640	-0.0522	7.5623	14.3726	58.477	16.297	1.2473	-0.0407	.8220	1.5635	4.7690
15.9130	15.1854	3.2169	-4.940	-0.0552	7.5827	14.4235	57.829	16.373	1.2506	-0.0437	.8243	1.5699	4.7187
16.1520	15.2092	3.2115	-5.300	-0.0588	7.6046	14.4820	57.219	19.217	1.2542	-0.0465	.8273	1.5766	4.6760
16.3910	15.2641	3.2084	-5.640	-0.0621	7.6321	14.5440	56.702	20.372	1.2588	-0.0491	.8298	1.5826	4.6297
16.6300	15.3102	3.2046	-5.960	-0.0653	7.6551	14.5996	56.140	17.273	1.2626	-0.0524	.8319	1.5891	4.5827
16.8690	15.3494	3.1975	-6.360	-0.0692	7.6747	14.6598	55.371	15.915	1.2658	-0.0559	.8340	1.5958	4.5367
17.1080	15.3879	3.1896	-6.780	-0.0734	7.6940	14.7216	55.013	17.227	1.2690	-0.0582	.8365	1.6023	4.4941
17.3470	15.4349	3.1849	-7.140	-0.0768	7.7175	14.7817	54.496	18.557	1.2729	-0.0645	.8416	1.6149	4.4121
17.5860	15.5273	3.1767	-7.820	-0.0832	7.7637	14.8971	53.502	15.565	1.2805	-0.0678	.8434	1.6210	4.3652
17.8250	15.5600	3.1689	-8.220	-0.0871	7.7800	14.9541	52.933	13.964	1.2832	-0.0706	.8455	1.6269	4.3225
18.0640	15.5991	3.1639	-8.560	-0.0903	7.7996	15.0083	52.415	13.686	1.2864	-0.0734	.8472	1.6324	4.2774
18.3030	15.6303	3.1579	-8.900	-0.0935	7.8151	15.0585	51.869	13.895	1.2890	-0.0769	.8494	1.6392	4.2371
18.5420	15.6709	3.1508	-9.320	-0.0975	7.8355	15.1215	51.380	10.909	1.2923	-0.0795	.8502	1.6422	4.1903
18.7810	15.6860	3.1468	-9.520	-0.0994	7.8430	15.1497	50.812	8.243	1.2936	-0.0803	.8516	1.6461	4.1489
19.0200	15.7112	3.1436	-9.740	-0.1014	7.8556	15.1849	50.311	11.071	1.2956	-0.0840	.8532	1.6525	4.1089
19.2590	15.7409	3.1347	-1.0180	-0.1056	7.8705	15.2445	49.825	47.637	1.2981	-0.0861	.8564	1.6596	4.1188 STOP
20.0247	15.8010	3.1352	-1.0440	-0.1076	7.9005	15.3007	49.946	238.550	1.3030				

A. BASIC RESORT

CDOS 16K BASIC, VERSION 5.4

3

TRIAXIAL TEST (Set Up / Take Down)

WCC
4-202
(1180)

Proj. No. 4055 Proj. Eng. ML Cell No. 4-3 Piston dia.: ☐ 3/8" ☒ 1/2"

Type Test CAU - C

File No T-208

Loading Conditions: <input type="checkbox"/> Dynamic <input checked="" type="checkbox"/> Static <input type="checkbox"/> Undrained <input type="checkbox"/> Drained <input type="checkbox"/> Compression <input type="checkbox"/> Extension <input checked="" type="checkbox"/> Constant cell pressure <input type="checkbox"/> Variable cell pressure	Type: <input type="checkbox"/> Isotropic <input type="checkbox"/> K_0 stress path Consolidation: <input type="checkbox"/> Anisotropic <input checked="" type="checkbox"/> 45° Stress path	Piston Screwed in: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input checked="" type="checkbox"/> Undisturbed <input type="checkbox"/> Reconstituted Boring No. <u>COE10A</u> Composite No. _____ Sample No. <u>S-1</u> Specimen No. <u>C</u> Depth (ft) <u>11.8</u> Remarks <u>IR# 317</u> <input type="checkbox"/> Ends capped with Castor; <input type="checkbox"/> Geomarine Sample	<input type="checkbox"/> Impact <input type="checkbox"/> Constant ESSort <input type="checkbox"/> Static _____ layers; _____ 16" Hammer <input type="checkbox"/> Kneading _____ Blows-Tamps/layer <input type="checkbox"/> Tamping <input type="checkbox"/> Under compaction <input type="checkbox"/> Other _____ layers; _____ Uni (%)	

Water Content				Final
Location	Top	Bot		Ave
Container No	CB-33	CA119		383
Wgt Container + Wet Soil (gm)	83.09	138.49		471.19
Wgt Container + Dry Soil (gm)	78.03	127.19		444.20
Wgt Container (gm)	34.28	34.82		194.92
Wgt Dry Soil (gm)	43.75	92.37	ave	243.28
WATER CONTENT (%)	11.57	12.23	11.90	10.83

☐ See attached data sheet(s) for additional water contents

Specimen Weight

Wet + Stone (etc): _____ gm

Stone (etc): _____ gm

Wet Initial: 1427.4 gm

Wet Final: 1423.2 gm

Excess Oven Dry Dish No. _____

Wgt Dish + Dry Soil _____ gm

Wgt. Dish _____ gm

Wgt. Excess Dry Soil _____ gm

Dimensions of Specimen		Diameter (in)	
Height (in)		Initial	Final
1	5.945	4.757	1-T 2.883
2	5.951	4.774	2-M 2.873
3	5.943	4.752	3-B 2.872
4	5.947	4.741	1-T 2.850
5	5.945	4.760	2-M 2.858
Ave	5.946	4.763	3-B 2.865
Ave		2.8668	3.24225
Ave		A ₀ = $\pi D^2/4 = 6.4548$ in ²	
Ave		V ₀ = $h \times A_0 = 16.887$ in ³ = 638.351 cm ³	
Ave		A _{em} = $5.9542(0.01)^2 = 57.3356$ in ²	

Membrane Thickness = 0.0265 in

Circumference (in) = 87.74 in

Diam = $C/\pi = 2.7929$ in

Filter Paper: Top + bottom: ☐ Yes; ☒ No

Filter Strips: ☐ Yes; ☒ No

16 Vertical at 1/4" Whatman #54 or

Spiral at 1/4" Whatman #54 or

Wgt top cap = _____ gm, _____ 10⁻³ gm

Wgt (+ piston) = 914.43 gm, 100.80 10⁻³ gm

Preliminary

Yes = 141.68 10⁻³ gm, 126.62 10⁻³ gm

Failure Sketch



Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☐ Photo taken.

heavy s-plastic clay w/ lot
some c-f sand c-f gravel

Other Remarks: q_v = 4.0 K_c = 1.9

Preliminary Cal. by JB Reviewed by RL

☐ Trimmed by _____ Setup by ML Taken down by J

☐ Reconstituted Date _____ Date 2/26/61 Date 3/11/61

See back for Summary Calculations

1	DATA FILE IDENT. NO.	
2	PROJECT NO.	T-208 ✓
3	BORING NO.	BIC405513 ✓
4	SAMPLE NO.	COE-10A ✓
5	SPECIMEN NO.	S-1 ✓
6	DEPTH	C ✓
7	TEST NO.	11.8 ✓
8	FILE # FOR LOAD CELL OR PROVING RING	ID-317 ✓
9	FILE # FOR PORE PRESSURE CONST.	2000 ✓
10	FILE # FOR CELL PRESSURE CONST.	1000 ✓
11	FILE # FOR PISTON FRICTION CORRECTION	2000 ✓
12	TYPE OF CONSOLIDATION	NONE ✓
13	DRAINAGE CONDITIONS DURING LOADING	A-45 ✓
14	MODE OF LOADING	U ✓
15	CELL PRESSURE DURING LOADING	C ✓
16	INITIAL HEIGHT OF SPECIMEN	5.9461 ✓
17	INITIAL DIAMETER OF SPECIMEN	2.8668 ✓
18	INITIAL VOLUME OF SPECIMEN	628.951 ✓
19	PISTON DIAMETER	0.5 ✓
20	WEIGHT OF TOP CAP ONLY	0.51 ✓
21	WEIGHT OF TOP CAP + PISTON + DIAL	1.008 ✓
22	WEIGHT OF TOP CAP + PISTON + DIAL + LVDT	1.333 ✓
23	WAS PISTON INTACT DURING CONSOL	YES ✓
24	MEMBRANE THICKNESS	0.0268 ✓
25	MEMBRANE DIAMETER	2.7929 ✓
26	FILTER STRIP CORRECTION CONSTANT	2.128 ✓
27	RIGHT CYLINDER DISTORTION FACTOR	1.238 ✓
28	DOES SPECIMEN HAVE AN INDUCED OCR	NO ✓
29	CELL PRESSURE	0.0 ✓
30	BACK PRESSURE	0.0 ✓
31	AXIAL DEFORMATION DURING CONSOL.	0.0 ✓
32	VOLUME CHANGE DURING CONSOL.	0.0 ✓
33	APPLIED AXIAL LOAD	0.0 ✓
34	PRE SHEAR CONDITIONS - CELL PRESSURE	8.262 ✓
35	BACK PRESSURE	7.1928 ✓
36	AXIAL DEFORMATION	0.0882 ✓
37	VOLUME CHANGE	22.171 ✓
38	PISTON DRAG CORRECTION	55.425 ✓
39	SPECIMEN CYCLICLY LOADED BEFORE SHEARING	NO ✓
40	SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING	NO ✓
41	SUM OF VOLUME CHANGES DURING RECONSOLIDATION	0.0 ✓
42	PORE PRESSURE	0.0 ✓
43	TOTAL CHANGE IN HT DURING CYCLIC LOADING	0.0 ✓
44	OUTPUT UNITS REQUIRED	KSF ✓
45	DATA NORMALIZATION SELECTION	2.0 ✓
46	RESULT FILE DESIRED	0.0 ✓
47	ENTER OPTION NO. DESIRED	
48	EXTENSION (EXT) OR COMPRESSION (COM) TEST ? COM	

THERE ARE 148 LINES IN THIS TEST

1	0.00230	110.29	7.2060
2	0.00233	111.06	7.2080
3	0.00237	115.29	7.2150
4	0.00250	119.52	7.2240
5	0.00264	123.91	7.2360
6	0.00281	127.16	7.2440
7	0.00303	130.26	7.2520
8	0.00316	132.17	7.2570
9	0.00334	133.67	7.2600
10	0.00387	137.17	7.2740
11	0.00404	138.31	7.2790
12	0.00426	139.14	7.2820
13	0.00440	139.86	7.2860
14	0.00484	141.10	7.2900
15	0.00506	141.56	7.2930
16	0.00519	141.92	7.2950
17	0.00527	142.16	7.2960

15	0.00506	141.56	7.2930
16	0.00519	141.92	7.2950
17	0.00537	142.18	7.2960
18	0.00563	142.85	7.3000
19	0.00585	143.06	7.3030
20	0.00598	143.42	7.3040
21	0.00616	143.68	7.3080
22	0.00642	144.09	7.3110
23	0.00660	144.24	7.3110
24	0.00682	144.45	7.3130
25	0.00695	144.55	7.3140
26	0.00726	144.92	7.3180
27	0.00739	144.97	7.3200
28	0.00761	145.12	7.3220
29	0.00770	145.28	7.3230
30	0.00805	145.54	7.3250
31	0.00818	145.59	7.3260
32	0.00836	145.74	7.3290
33	0.00849	145.84	7.3310
34	0.00880	146.21	7.3320
35	0.00911	146.36	7.3360
36	0.00942	146.67	7.3390
37	0.00972	146.83	7.3410
38	0.01043	147.08	7.3460
39	0.01074	147.14	7.3500
40	0.01104	147.19	7.3530
41	0.01135	147.55	7.3540
42	0.01197	147.86	7.3610
43	0.01228	148.01	7.3660
44	0.01258	148.22	7.3670
45	0.01294	148.32	7.3680
46	0.01355	148.74	7.3730
47	0.01391	148.89	7.3780
48	0.01448	149.25	7.3820
49	0.01518	149.51	7.3870
50	0.01637	150.13	7.3960
51	0.01699	150.54	7.3990
52	0.01760	150.80	7.4060
53	0.01826	151.16	7.4080
54	0.01954	151.83	7.4180
55	0.02020	152.04	7.4240
56	0.02082	152.40	7.4260
57	0.02144	152.71	7.4320
58	0.02403	154.00	7.4430
59	0.02531	154.62	7.4490
60	0.02663	155.03	7.4560
61	0.02790	155.65	7.4600
62	0.03169	157.51	7.4760
63	0.03358	158.39	7.4820
64	0.03556	159.01	7.4880
65	0.03750	160.14	7.4930
66	0.04410	162.82	7.5080
67	0.04736	164.22	7.5130
68	0.05062	165.41	7.5190
69	0.05392	166.75	7.5240
70	0.06039	169.02	7.5280
71	0.06360	170.31	7.5300
72	0.06686	171.55	7.5310
73	0.07338	174.08	7.5340
74	0.08667	179.77	7.5330
75	0.09327	180.94	7.5310
76	0.09983	183.26	7.5270
77	0.10648	185.33	7.5240
78	0.13285	193.74	7.5040
79	0.14597	197.87	7.4930
80	0.15913	201.67	7.4800
81	0.17225	205.35	7.4660
82	0.19835	212.89	7.4360

81	0.17225	205.35	7.4660
82	0.19835	212.89	7.4360
83	0.21134	216.24	7.4230
84	0.22414	219.75	7.4060
85	0.23726	223.31	7.3910
86	0.26332	230.02	7.3650
87	0.27644	233.63	7.3480
88	0.28956	236.73	7.3350
89	0.30263	240.29	7.3170
90	0.32860	246.43	7.2890
91	0.34150	249.58	7.2740
92	0.35450	253.04	7.2610
93	0.36760	256.19	7.2480
94	0.38080	259.08	7.2350
95	0.39410	261.92	7.2210
96	0.40730	264.86	7.2070
97	0.42080	267.80	7.1950
98	0.43410	270.84	7.1840
99	0.46030	276.88	7.1600
100	0.47340	279.62	7.1490
101	0.48670	282.46	7.1370
102	0.49990	285.35	7.1250
103	0.51310	288.19	7.1150
104	0.52620	291.13	7.1030
105	0.53910	293.91	7.0940
106	0.55180	296.65	7.0840
107	0.56490	299.18	7.0730
108	0.59060	304.55	7.0520
109	0.60340	307.07	7.0400
110	0.61620	309.86	7.0300
111	0.62900	312.39	7.0210
112	0.64170	315.07	7.0120
113	0.65460	317.76	7.0010
114	0.66740	320.70	6.9910
115	0.68010	322.82	6.9810
116	0.69270	325.50	6.9720
117	0.71850	330.60	6.9530
118	0.73120	333.20	6.9450
119	0.74410	335.60	6.9340
120	0.75700	338.20	6.9250
121	0.76980	340.50	6.9170
122	0.78270	342.80	6.9070
123	0.79560	345.50	6.8980
124	0.80890	347.60	6.8900
125	0.82210	350.30	6.8820
126	0.84890	355.20	6.8630
127	0.86230	357.30	6.8530
128	0.87600	360.10	6.8430
129	0.88960	362.10	6.8360
130	0.90290	364.90	6.8260
131	0.91660	367.40	6.8170
132	0.93050	370.30	6.8110
133	0.94470	372.90	6.7980
134	0.95920	375.10	6.7890
135	0.98920	380.50	6.7700
136	1.00380	382.60	6.7600
137	1.01870	384.90	6.7510
138	1.03340	387.20	6.7420
139	1.04760	389.50	6.7340
140	1.06230	392.20	6.7220
141	1.07690	394.30	6.7150
142	1.09120	396.80	6.7050
143	1.10550	399.50	6.6990
144	1.13360	404.30	6.6810
145	1.14770	406.20	6.6720
146	1.16250	409.30	6.6600
147	1.17560	411.20	6.6490
148	-999.00000	0.00	0.0000

ENTER OPTION NO., DESIRED

A. TRIAX

THIS IS A CAU TEST. IT HAS BEEN

CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6

USING FILE NO.

T-208

PROJ. NO. 81C405313
 BORING NO. COE-10A
 SAMPLE NO. S-1
 SPECIMEN NO. C
 DEPTH(FT.) 11.8
 REVIEWED BY: *RL*
 DATE: 5/22/91
 INPUT DATA CHECKED BY: *RL*
 TEST NO. ID-317

ANISOTROPIC
 UNDRAINED
 COMPRESSION
 CONSTANT
 TYPE OF CONSOLIDATION USING 45 STRESS PATH
 DRAINAGE CONDITIONS DURING LOADING
 MODE OF LOADING
 CELL PRESSURE DURING LOADING

5.9461
 2.8668
 628.95
 .5000
 .5100
 1.0080
 1.3330
 YES
 INITIAL HEIGHT OF SPECIMEN IN INCHES
 INITIAL DIAMETER OF SPECIMEN IN INCHES
 INITIAL VOLUME OF SPECIMEN IN CU.CH.
 PISTON DIAMETER IN INCHES
 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
 WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0269
 2.7929
 2.1280
 1.2380
 MEMBRANE THICKNESS IN INCHES
 MEMBRANE DIAMETER IN INCHES
 FILTER STRIP CORRECTION CONSTANT AT
 2% AXIAL STRAIN IN TONS ** 10-3
 RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

8.2620
 7.1928
 .0862
 22.17
 55.4250
 CELL PRESSURE IN TSF
 BACK PRESSURE IN TSF
 AXIAL DEFORMATION DURING CONSOL. IN INCHES
 VOLUME CHANGE DURING CONSOL. IN CU. CH.
 MEASURED AXIAL LOAD DURING CONSOL. IN IN TONS *10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:
 AXIAL - 4.0983 KSF
 LATERAL - 2.1396 KSF
 MEAN - 2.7925 KSF
 PBAR - 3.1190 KSF
 LATERAL/AXIAL - .5221
 AXIAL/LATERAL - 1.9155
 OCR - 1.000

9.9325
 2000
 1000
 2000
 NONE
 YES
 PISTON DRAG CORRECTION IN TONS *10**-3
 FILE NUMBER FOR LOAD CELL OR PROVING RING
 FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
 FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
 IS DATA NORMALIZATION REQUIRED?
 DATA NORMALIZED TO PRESHEAR STRESSES
 WITH NORM = P-BAR OF 3.1190 KSF
 AND NORM* = VERT STRESS OF 4.0983 KSF

AXIAL STRAIN %	DEVIATOR STRESS KSF	ORLIGUITY	DELTA-U A-FACTOR	Q	P-BAR KSF	SECANT MODULUS KSF	TANGENT MODULUS KSF	DEVIATOR NORM*	DELTA-U NORM*	Q NORM	P-BAR NORM	SECANT NORM*
0.0000	1.9608	1.9164	0.0000	0.0000	3.1200	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000
0.0005	1.9783	1.9263	0.0000	0.0000	3.1247	3416.722	8760.404	0.4827	0.0010	0.3143	1.0003	833.6990
0.0012	2.0746	1.9778	0.0180	0.0000	3.1589	9523.777	9218.885	0.5062	0.0010	0.3171	1.0019	833.6990
0.0034	2.1707	2.0319	0.0360	0.0000	3.1890	6150.212	4254.765	0.5297	0.0088	0.3266	1.0128	2323.8267
0.0058	2.2705	2.0918	0.0600	0.0000	3.2149	5337.238	3359.123	0.5540	0.0146	0.3480	1.0224	1500.8680
0.0087	2.3443	2.1360	0.0760	0.0000	3.2358	4405.625	2206.942	0.5720	0.0185	0.3640	1.0308	1302.3000
0.0125	2.4146	2.1792	0.0920	0.0000	3.2549	3641.912	1911.485	0.5897	0.0224	0.3758	1.0375	1074.9840
0.0147	2.4579	2.2063	0.1020	0.0000	3.2666	3386.385	1601.412	0.5997	0.0249	0.3871	1.0436	888.6361
0.0178	2.4964	2.2288	0.1080	0.0000	3.2798	3016.854	1036.544	0.6091	0.0264	0.3940	1.0473	826.2868
0.0268	2.5707	2.2831	0.1360	0.0000	3.2890	2275.838	853.731	0.6273	0.0332	0.4002	1.0516	736.1204
0.0297	2.5964	2.3024	0.1460	0.0000	3.2918	2140.020	689.975	0.6335	0.0356	0.4121	1.0545	555.3105
0.0335	2.6150	2.3157	0.1520	0.0000	3.2951	1985.291	585.631	0.6381	0.0371	0.4162	1.0554	522.1703
0.038	2.6312	2.3291	0.1600	0.0000	3.2952	1870.072	521.932	0.6420	0.0390	0.4192	1.0565	477.0961
0.0434	2.6587	2.3485	0.1680	0.0000	3.3010	1609.673	318.343	0.6487	0.0410	0.4218	1.0584	456.3025
0.0471	2.6889	2.3578	0.1740	0.0000	3.3000	1502.873	315.016	0.6512	0.0425	0.4262	1.0584	392.7643
0.0493	2.6769	2.3646	0.1780	0.0000	3.3003	1377.136	259.079	0.6532	0.0434	0.4291	1.0581	354.1632
0.0568	2.6973	2.3821	0.1880	0.0000	3.3003	1295.733	226.389	0.6545	0.0439	0.4300	1.0583	336.0248
0.0606	2.7018	2.3887	0.1940	0.0000	3.2945	1222.761	239.174	0.6582	0.0459	0.4324	1.0581	316.1621
0.0628	2.7098	2.3942	0.1960	0.0000	3.2985	1192.287	271.770	0.6612	0.0473	0.4331	1.0569	298.3568
0.0659	2.7154	2.4029	0.2040	0.0000	3.2933	1145.241	192.291	0.6626	0.0498	0.4344	1.0576	290.9211
0.0703	2.7243	2.4119	0.2100	0.0000	3.2918	1085.663	151.571	0.6647	0.0512	0.4367	1.0550	279.4419
0.0734	2.7275	2.4135	0.2100	0.0000	3.2933	1044.486	105.058	0.6655	0.0512	0.4372	1.0559	254.8573
0.0772	2.7319	2.4187	0.2140	0.0000	3.2916	999.398	105.734	0.6666	0.0522	0.4380	1.0553	243.8557
0.0794	2.7340	2.4213	0.2160	0.0000	3.2906	974.067	96.043	0.6690	0.0547	0.4383	1.0550	237.6749
0.0847	2.7419	2.4314	0.2240	0.0000	3.2866	922.561	61.940	0.6693	0.0566	0.4396	1.0537	225.1073
0.0869	2.7429	2.4348	0.2280	0.0000	3.2803	855.529	158.772	0.6702	0.0571	0.4408	1.0517	208.7514
0.0906	2.7459	2.4395	0.2320	0.0000	3.2790	808.924	65.989	0.6722	0.0581	0.4416	1.0513	197.3795
0.0922	2.7494	2.4428	0.2340	0.0000	3.2775	791.970	72.018	0.6724	0.0586	0.4418	1.0508	193.2428
0.0982	2.7548	2.4487	0.2380	0.0000	3.2701	771.474	97.631	0.6732	0.0600	0.4423	1.0494	189.2416
0.1004	2.7557	2.4507	0.2400	0.0000	3.2701	757.232	121.601	0.6737	0.0610	0.4426	1.0485	184.7666
0.1035	2.7589	2.4569	0.2460	0.0000	3.2655	697.630	102.576	0.6756	0.0615	0.4426	1.0485	184.7666
0.1057	2.7609	2.4611	0.2500	0.0000	3.2628	672.657	92.959	0.6779	0.0634	0.4434	1.0491	177.6986
0.1110	2.7689	2.4669	0.2520	0.0000	3.2604	647.962	49.783	0.6787	0.0659	0.4454	1.0470	170.2236
0.1163	2.7718	2.4747	0.2600	0.0000	3.2527	594.668	27.142	0.6798	0.0683	0.4466	1.0453	158.1044
0.1215	2.7784	2.4829	0.2660	0.0000	3.2451	573.435	14.789	0.6800	0.0703	0.4468	1.0429	145.1005
0.1267	2.7815	2.4877	0.2700	0.0000	3.2413	540.196	79.214	0.6802	0.0717	0.4469	1.0404	139.9196
0.1388	2.7861	2.4982	0.2800	0.0000	3.2303	509.238	56.289	0.6821	0.0722	0.4481	1.0392	131.8092
0.1441	2.7870	2.5052	0.2880	0.0000	3.2219	483.137	55.865	0.6835	0.0756	0.4491	1.0357	124.2555
0.1492	2.7876	2.5104	0.2940	0.0000	3.2208	467.729	55.094	0.6853	0.0786	0.4496	1.0753	120.8144
0.1545	2.7953	2.5162	0.2960	0.0000	3.2151	446.838	64.328	0.6857	0.0791	0.4505	1.0330	117.9267
0.1651	2.8014	2.5311	0.3100	0.0000	3.2065	434.415	60.507	0.6878	0.0815	0.4519	1.0308	114.1271
0.1704	2.8043	2.5369	0.3180	0.0000	3.2041	417.586	57.488	0.6903	0.0839	0.4524	1.0281	109.0296
0.1755	2.8086	2.5452	0.3220	0.0000	3.1987	397.075	50.114	0.6915	0.0883	0.4543	1.0267	101.8921
0.1816	2.8103	2.5479	0.3240	0.0000	3.1968	383.570	69.366	0.6944	0.0927	0.4562	1.0242	96.8873
0.1920	2.8189	2.5612	0.3340	0.0000	3.1868	356.335	63.051	0.6965	0.0942	0.4576	1.0198	86.9468
0.1982	2.8218	2.5715	0.3440	0.0000	3.1832	344.019	55.325	0.6977	0.0966	0.4584	1.0161	83.9416
0.2079	2.8290	2.5826	0.3520	0.0000	3.1768	332.008	61.760	0.6994	0.0986	0.4595	1.0160	81.1083
0.2199	2.8338	2.5942	0.3620	0.0000	3.1747	321.204	46.634	0.7026	0.1035	0.4616	1.0117	76.1786
0.2402	2.8460	2.6174	0.3800	0.0000	3.1693	301.909	50.413	0.7053	0.1074	0.4622	1.0084	73.6665
0.2508	2.8544	2.6277	0.3860	0.0000	3.1689	332.008	61.760	0.6994	0.0986	0.4595	1.0160	81.1083
0.2612	2.8593	2.6336	0.4000	0.0000	3.1693	344.019	55.325	0.6977	0.0966	0.4584	1.0161	83.9416
0.2743	2.8664	2.6515	0.4040	0.0000	3.1689	332.008	61.760	0.6994	0.0986	0.4595	1.0160	81.1083
0.3056	2.8833	2.6924	0.4614	0.0000	3.1554	312.204	46.634	0.7026	0.1035	0.4616	1.0117	76.1786
0.3162	2.8905	2.7006	0.4732	0.0000	3.1453	301.909	50.413	0.7053	0.1074	0.4622	1.0084	73.6665
0.3274	2.8965	2.7163	0.4830	0.0000	3.1359	285.780	55.472	0.7067	0.1103	0.4643	1.0054	69.7312
0.3928	2.9217	2.7541	0.4740	0.0000	3.1205	259.033	56.402	0.7129	0.1157	0.4684	1.0024	63.2048
0.4153	2.9408	2.7936	0.4860	0.0000	3.1101	235.971	43.396	0.7176	0.1220	0.4714	1.0005	60.4347
0.4370	2.9529	2.8097	0.5000	0.0000	3.1081	227.013	55.536	0.7205	0.1240	0.4734	0.9965	55.3917
0.5017	2.9889	2.8684	0.5080	0.0000	3.0941	204.917	54.667	0.7251	0.1318	0.4791	0.9920	50.0004
0.5340	3.0062	2.8934	0.5279	0.0000	3.0908	195.778	45.209	0.7335	0.1347	0.4819	0.9910	47.7704
0.5678	3.0186	2.9157	0.5440	0.0000	3.0850	186.312	54.576	0.7365	0.1376	0.4839	0.9891	45.4605
0.6000	3.0476	2.9449	0.5740	0.0000	3.0870	166.666	10.160	0.7454	0.1454	0.4939	0.9933	45.4605

1.4155	2.7408	2.7756	3.0000	3.1101	1.4709	3.1101	233.771	95.021	7.205	1.240	4.734	9.965	55.3917
1.4370	2.9529	2.8097	3.5080	3.120	1.4744	3.1081	227.013	55.536	7.205	1.240	4.734	9.965	55.3917
1.5017	2.9889	2.8584	3.5400	3.120	1.4944	3.0941	204.917	54.667	7.293	1.318	4.791	9.920	50.0004
1.5340	3.0062	2.8934	3.5520	3.120	1.5031	3.0908	195.779	45.209	7.335	1.347	4.819	9.910	47.7704
1.5678	3.0186	2.9157	3.5640	3.120	1.5093	3.085	186.312	54.576	7.365	1.376	4.839	9.901	45.4605
1.6009	3.0426	2.9433	3.5740	3.120	1.5213	3.0870	180.033	60.658	7.424	1.401	4.878	9.897	43.9286
1.7136	3.0977	3.0171	3.6040	3.120	1.5489	3.0846	159.331	50.410	7.559	1.474	4.966	9.890	38.8773
1.7692	3.1266	3.0493	3.6140	3.120	1.5633	3.0890	151.559	47.605	7.629	1.498	5.012	9.904	36.9808
1.8249	3.1507	3.0814	3.6260	3.120	1.5753	3.0891	144.256	45.986	7.688	1.527	5.051	9.904	35.1988
1.8812	3.1781	3.1135	3.6360	3.120	1.5891	3.0928	138.144	44.966	7.755	1.552	5.095	9.916	33.7076
1.9217	3.2237	3.1552	3.6440	3.120	1.6118	3.1076	127.355	44.585	7.866	1.571	5.168	9.964	31.0749
1.0465	3.2499	3.1786	3.6480	3.120	1.6250	3.1167	123.194	46.444	7.930	1.581	5.210	9.993	30.0597
1.1021	3.2750	3.1983	3.6500	3.120	1.6375	3.1273	119.245	45.443	7.991	1.586	5.250	1.0027	29.0961
1.1214	3.3261	3.2416	3.6560	3.120	1.6630	3.1468	112.517	43.484	8.116	1.601	5.332	1.0089	27.4544
1.4403	3.4192	3.3012	3.6540	3.120	1.7096	3.1955	101.263	39.396	8.43	1.596	5.481	1.0245	24.7084
1.5529	3.4617	3.3235	3.6500	3.120	1.7309	3.2207	96.653	39.282	8.447	1.586	5.550	1.0326	23.5835
1.6649	3.5075	3.3416	3.6420	3.120	1.7537	3.2516	92.899	38.015	8.58	1.566	5.623	1.0425	22.6676
1.7785	3.5474	3.3588	3.6360	3.120	1.7737	3.2776	89.215	35.536	8.65	1.552	5.687	1.0509	21.7687
2.2286	3.7090	3.4021	3.5960	3.120	1.8545	3.3985	78.443	35.195	9.050	1.454	5.946	1.0896	19.1404
2.4526	3.7862	3.4176	3.5740	3.120	1.8931	3.4592	74.431	33.298	9.239	1.401	6.070	1.1091	18.1613
2.6772	3.8583	3.4233	3.5480	3.120	1.9292	3.5213	70.878	31.011	9.414	1.337	6.185	1.1290	17.2944
2.9012	3.9254	3.4227	3.5200	3.120	1.9627	3.5829	67.717	30.411	9.578	1.269	6.293	1.1488	16.5231
3.3468	4.0630	3.4179	3.4600	3.120	2.0315	3.7119	62.814	28.755	9.914	1.122	6.513	1.1901	15.3268
3.5685	4.1220	3.4156	3.4340	3.120	2.0610	3.7675	60.565	27.563	1.0058	1.059	6.608	1.2079	14.7780
3.7870	4.1843	3.4041	3.4000	3.120	2.0922	3.8327	58.715	28.225	1.0210	0.976	6.708	1.2288	14.3267
4.0110	4.2469	3.3986	3.3700	3.120	2.1235	3.8940	56.997	26.919	1.0363	0.903	6.808	1.2485	13.9074
4.4559	4.3621	3.3932	3.3180	3.120	2.1811	4.0038	53.892	26.864	1.0644	0.776	6.993	1.2837	13.1497
4.6798	4.4245	3.3828	3.2840	3.120	2.2122	4.0691	52.645	25.294	1.0796	0.693	7.093	1.3046	12.8454
4.9038	4.4754	3.3769	3.2580	3.120	2.2377	4.1206	51.280	24.925	1.0920	0.630	7.175	1.3212	12.5124
5.1269	4.5359	3.3636	3.2220	3.120	2.2679	4.1869	50.227	24.710	1.1068	0.542	7.271	1.3424	12.2555
5.3703	4.6348	3.3465	3.1660	3.120	2.3174	4.2926	48.006	22.677	1.1309	0.405	7.430	1.3763	11.7137
5.7905	4.6856	3.3366	3.1360	3.120	2.3428	4.3481	47.056	24.296	1.1433	0.332	7.511	1.3941	11.4819
6.0124	4.7423	3.3345	3.1100	3.120	2.3711	4.4025	46.263	23.883	1.1571	0.268	7.602	1.4115	11.2893
6.2360	4.7919	3.3290	3.0840	3.120	2.3960	4.4535	45.400	20.793	1.1692	0.205	7.682	1.4279	11.0778
6.4614	4.8356	3.3208	3.0580	3.120	2.4178	4.5014	44.493	18.970	1.1799	0.142	7.752	1.4432	10.8564
6.6884	4.8778	3.3098	3.0300	3.120	2.4389	4.5506	43.613	19.039	1.1902	0.073	7.820	1.4590	10.6416
6.9137	4.9217	3.3000	3.0020	3.120	2.4609	4.6007	42.827	19.135	1.2009	0.005	7.890	1.4751	10.4500
7.1442	4.9650	3.2944	2.9720	3.120	2.4825	4.6464	42.051	19.322	1.2115	0.034	7.959	1.4897	10.2605
7.3712	5.0101	3.2918	2.9440	3.120	2.5051	4.6911	41.368	19.885	1.2225	0.0107	8.032	1.5041	10.0939
7.8185	5.0990	3.2821	2.9120	3.120	2.5495	4.7838	40.139	18.465	1.2442	0.0224	8.174	1.5338	9.7940
8.0421	5.1372	3.2766	2.8840	3.120	2.5686	4.8250	39.497	17.236	1.2535	0.0278	8.235	1.5470	9.6373
8.2692	5.1767	3.2699	2.8580	3.120	2.5884	4.8690	38.891	17.663	1.2631	0.0337	8.299	1.5611	9.4894
8.4945	5.2171	3.2636	2.8320	3.120	2.6085	4.9133	38.334	17.600	1.2730	0.0395	8.363	1.5753	9.3536
8.7198	5.2560	3.2608	2.8060	3.120	2.6280	4.9529	37.790	17.763	1.2825	0.0444	8.426	1.5880	9.2209
8.9435	5.2968	3.2549	2.7800	3.120	2.6484	4.9974	37.301	17.623	1.2924	0.0503	8.491	1.6023	9.1016
9.1637	5.3343	3.2534	2.7540	3.120	2.6671	5.0343	36.814	16.950	1.3016	0.0547	8.551	1.6141	8.9826
9.3805	5.3709	3.2498	2.7280	3.120	2.6854	5.0727	36.353	15.478	1.3105	0.0595	8.610	1.6264	8.8703
9.6041	5.4023	3.2421	2.7020	3.120	2.7012	5.1106	35.834	14.889	1.3182	0.0649	8.660	1.6386	8.7437
10.0428	5.4713	3.2316	2.6760	3.120	2.7356	5.1874	34.955	14.891	1.3350	0.0752	8.771	1.6632	8.5291
10.2614	5.5020	3.2222	2.6500	3.120	2.7510	5.2269	34.510	15.228	1.3425	0.0810	8.820	1.6759	8.4206
10.4799	5.5378	3.2186	2.6240	3.120	2.7689	5.2650	34.132	15.127	1.3512	0.0859	8.878	1.6881	8.3284
10.6984	5.5681	3.2146	2.6000	3.120	2.7841	5.2983	33.719	14.573	1.3586	0.0903	8.926	1.6987	8.2274
10.9152	5.6012	3.2118	2.5740	3.120	2.8006	5.3330	33.352	15.053	1.3667	0.0947	8.979	1.7099	8.1380
11.1354	5.6339	3.2054	2.5480	3.120	2.8169	5.3715	32.986	15.972	1.3747	0.1000	9.032	1.7222	8.0487
11.3539	5.6713	3.2026	2.5220	3.120	2.8356	5.4104	32.680	13.439	1.3838	0.1049	9.092	1.7347	7.9741
11.5707	5.6925	3.1937	2.4960	3.120	2.8462	5.4412	32.251	12.318	1.3890	0.1098	9.126	1.7445	7.8694
11.7858	5.7244	3.1907	2.4700	3.120	2.8622	5.4753	31.934	13.900	1.3968	0.1142	9.177	1.7555	7.7920
12.2252	5.7814	3.1804	2.4440	3.120	2.8907	5.5422	31.249	13.226	1.4107	0.1235	9.268	1.7769	7.6249
12.4430	5.8107	3.1782	2.4180	3.120	2.9054	5.5730	30.940	12.391	1.4178	0.1274	9.315	1.7868	7.5496
12.6632	5.8355	3.1694	2.3920	3.120	2.9178	5.6076	30.598	12.068	1.4239	0.1327	9.355	1.7979	7.4661
12.8835	5.8639	3.1653	2.3660	3.120	2.9319	5.6400	30.295	11.574	1.4308	0.1371	9.400	1.8083	7.3921
13.1020	5.8863	3.1607	2.3400	3.120	2.9432	5.6674	29.961	10.137	1.4353	0.1410	9.436	1.8171	7.3107
13.3222	5.9083	3.1528	2.3140	3.120	2.9542	5.6986	29.631	11.473	1.4416	0.1459	9.472	1.8271	7.2301
13.5458	5.9373	3.1471	2.2880	3.120	2.9686	5.7313	29.356	10.341	1.4487	0.1503	9.518	1.8376	7.1630
13.7694	5.9546	3.1428	2.2620	3.120	2.9773	5.7562	29.005	10.110	1.4529	0.1542	9.546	1.8455	7.0773
13.9948	5.9827	3.1404	2.2360	3.120	2.9914	5.7865	28.739	11.187	1.4598	0.1581	9.591	1.8553	7.0124
14.4523	6.0279	3.1273	2.2100	3.120	3.0140	5.8475	28.142	8.353	1.4708	0.1674	9.663	1.8748	6.8667
14.6810	6.0477	3.1177	2.1840	3.120	3.0218	5.8736	27.810	9.356	1.4746	0.1723	9.688	1.8838	6.7857
14.9149	6.0713	3.1125	2.1580	3.120	3.0357	5.9097	27.560	8.703	1.4814	0.1771	9.733	1.8948	6.7248
15.1471	6.0842	3.1065	2.1320	3.120	3.0421	5.9304	27.222	8.890	1.4845	0.1806	9.754	1.9014	6.6423
15.3741	6.1120	3.1014	2.1060	3.120	3.0510	5.9445	27.001	8.014	1.4881	0.1841	9.774	1.9081	6.5614

13.3222	5.9083	3.1528	-5980	-1532	2.9542	5.6786	29.631	11.972	1.4487	-1503	9518	1.9376	7.1630
13.5558	5.9373	3.1491	-6160	-1567	2.9486	5.7313	29.356	10.341	1.4487	-1542	9546	1.8455	7.0773
13.7694	5.9546	3.1428	-6320	-1601	2.9773	5.7862	29.005	10.110	1.4529	-1581	9591	1.8553	7.0124
13.9948	5.9827	3.1404	-6480	-1630	2.9914	5.7845	28.739	1.187	1.4598	-1674	9663	1.8748	6.8667
14.4523	6.0279	3.1273	-6860	-1706	3.0140	5.8475	28.142	8.353	1.4708	-1723	9688	1.8839	6.7857
14.6810	6.0435	3.1177	-7060	-1743	3.0218	5.8756	27.810	4.356	1.4708	-1771	9733	1.8948	6.7243
14.914	6.0713	3.1125	-7260	-1787	3.0357	5.9097	27.560	8.703	1.4708	-1806	9754	1.9014	6.6423
15	6.0842	3.1065	-7400	-1816	3.0421	5.9304	27.222	8.890	1.4708	-1854	9798	1.9124	6.5804
15.6000	6.1120	3.1014	-7600	-1852	3.0560	5.9445	27.001	10.674	1.4529	-1898	9832	1.9216	6.5229
15.8453	6.1332	3.0955	-7780	-1887	3.0666	5.9934	26.733	10.415	1.4965	-1928	9877	1.9300	6.4681
16.0877	6.1611	3.0963	-7900	-1903	3.0806	6.0196	26.509	10.299	1.5033	-1991	9911	1.9419	6.4032
16.3352	6.1826	3.0849	-8160	-1956	3.0913	6.0566	26.242	7.108	1.5086	-2035	9933	1.9499	6.3200
16.5873	6.1959	3.0766	-8340	-1993	3.0979	6.0815	25.926	6.762	1.5118	-2128	1.0000	1.9689	6.1943
16.8473	6.2376	3.0639	-8720	-2064	3.1188	6.1410	25.386	6.144	1.5220	-2177	1.0016	1.9771	6.1196
17.0966	6.2479	3.0535	-8920	-2106	3.1240	6.1685	25.076	4.621	1.5245	-2220	1.0037	1.9851	6.0472
17.3509	6.2609	3.0455	-9100	-2142	3.1305	6.1913	24.783	5.159	1.5277	-2264	1.0058	1.9930	5.9701
17.6019	6.2740	3.0376	-9280	-2178	3.1370	6.2161	24.504	5.425	1.5309	-2303	1.0080	2.0004	5.9169
17.8443	6.2877	3.0313	-9440	-2209	3.1438	6.2393	24.248	6.705	1.5342	-2362	1.0111	2.0114	5.8609
18.0952	6.3072	3.0217	-9680	-2255	3.1536	6.2734	24.020	5.633	1.5390	-2396	1.0125	2.0174	5.7928
18.3445	6.3159	3.0152	-9820	-2294	3.1579	6.2921	23.741	5.036	1.5411	-2445	1.0151	2.0264	5.7378
18.5886	6.3319	3.0073	-1.0020	-2322	3.1660	6.3004	23.515	7.214	1.5450	-2474	1.0181	2.0335	5.6883
18.8327	6.3511	3.0056	-1.0140	-2350	3.1756	6.3473	23.312	6.833	1.5497	-2562	1.0226	2.0497	5.5822
19.3124	6.3790	2.9913	-1.0500	-2408	3.1895	6.3979	22.878	3.881	1.5565	-2606	1.0234	2.0563	5.5193
19.5531	6.3937	2.9814	-1.0680	-2447	3.1918	6.4136	22.620	5.663	1.5576	-2665	1.0272	2.0679	5.4781
19.8057	6.4073	2.9738	-1.0920	-2489	3.2037	6.4496	22.451	6.055	1.5634	-2718	1.0281	2.0761	5.4244 STOP
20.0294	6.4135	2.9622	-1.1140	-2535	3.2067	6.4752	22.231	202.150	1.5649				

0.784

A. BASIC R'SPRT

②

TRIAXIAL TEST (Set Up / Take Down)

WCC
L-202
(1.180)

Proj. No. 014055T Proj. Eng. W Cell No. 1 Piston dia. ☒ 3/8" ☒ 1/2"
Type Test CU - C File No. T-212

Loading Conditions: <input type="checkbox"/> Dynamic <input checked="" type="checkbox"/> Undrained <input type="checkbox"/> Compression <input checked="" type="checkbox"/> Constant cell pressure <input checked="" type="checkbox"/> Static <input type="checkbox"/> Drained <input type="checkbox"/> Extension <input type="checkbox"/> Variable cell pressure	Type: <input type="checkbox"/> Isotropic <input type="checkbox"/> Ko Stress path Consolidation: <input checked="" type="checkbox"/> Anisotropic <input checked="" type="checkbox"/> 45° Stress path	Piston Screwed in: <input type="checkbox"/> Yes; <input checked="" type="checkbox"/> No
<input checked="" type="checkbox"/> Undisturbed <input type="checkbox"/> Recrystallized <input type="checkbox"/> Impact <input type="checkbox"/> Constant ESSort Boring No. <u>CDE 124</u> Composite No. _____ Sample No. <u>S-25</u> Specimen No. _____ Depth (ft.) <u>13.4</u> Remnant ID <u>314</u> <input type="checkbox"/> Ends capped with Castor; <input type="checkbox"/> Geomarine Sample <input type="checkbox"/> Other _____ layers; _____ Uni (%)	<input type="checkbox"/> Static _____ layers; _____ 16 {Hammer Tamp Blows-Tamps/layer <input type="checkbox"/> Kneading _____ <input type="checkbox"/> Tamping <input type="checkbox"/> Undercompaction <input type="checkbox"/> Other _____ layers; _____	

Water Content			
Location	Top	Bottom	Ave
Container No	<u>412</u>	<u>411</u>	<u>228</u>
Wgt. Container + Wet Soil (gm)	<u>74.70</u>	<u>117.89</u>	<u>449.5</u>
Wgt. Container + Dry Soil (gm)	<u>70.43</u>	<u>100.98</u>	<u>423.41</u>
Wgt. Container (gm)	<u>34.10</u>	<u>34.37</u>	<u>189.41</u>
Wgt. Dry Soil (gm)	<u>36.33</u>	<u>75.61</u>	<u>234.00</u>
WATER CONTENT (%)	<u>11.75</u>	<u>10.46</u>	<u>11.15</u>

☐ See attached data sheet(s) for additional water contents

Specimen Weight	
Wet + Stone (etc.)	_____ gm
Stone (etc.)	_____ gm
Wet Initial	<u>1426.7</u> gm
Wet Final	<u>1426.5</u> gm
Excess Oven Dry Dish No	_____
Wgt. Dish + Dry Soil	_____ gm
Wgt. Dish	_____ gm
Wgt. Excess Dry Soil	_____ gm

Dimensions of Specimen		Specimen Diameter (in)	
Height (in)		Initial	Final
Initial (Lg)	Final (Lg)		
1	<u>5.945</u>	<u>4.799</u>	<u>1-T 2.861</u>
2	<u>5.955</u>	<u>4.810</u>	<u>2-M 2.855</u>
3	<u>5.950</u>	<u>4.823</u>	<u>3-B 2.856</u>
4	<u>5.959</u>	<u>4.744</u>	<u>1-T 2.879</u>
5	<u>5.951</u>	<u>4.793</u>	<u>2-M 2.862</u>
Ave	<u>5.952</u>	<u>4.8002</u>	<u>3-B 2.853</u>

$A_L =$ _____ in
 $A_L =$ _____ in
 $EOL =$ _____ in
 $L_0 - L_0 =$ _____ in

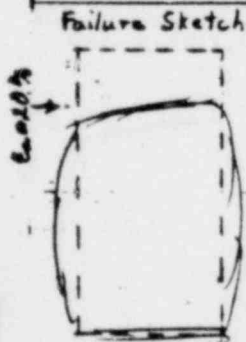
Ave 2.8613 3.22875
 $A_0 = \pi D^2/4 =$ 6.4301 in²
 $V_0 =$ in 3.1416 8871 = 637.166 cm³
 $A_{0m} =$ 5.45 42(10)^2 = 56.8531 10⁻⁶ m²

Thickness = 0.0248 in
 Circumference (cm) = 5.816 in
 Diam = cm/ π = 2.8662 in

Filter Paper: Top + bottom: ☐ Yes; ☒ No
 Filter Strips: ☐ Yes; ☒ No
16 Vertical at 1/4" - Whatman #54 or
 Spiral at 1/4" - Whatman #1 or

Wgt top cap = 914.43 gm / 10080 10⁻⁶ tons
 Wgt (cap, dial) = _____ gm / _____ 10⁻⁶ tons

Preliminary
 $Y_{e0} =$ 142.02 10⁻⁵ $V_d =$ 127.82 10⁻⁵



Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☐ Photo taken.
Final Visual Classification = 336.35 gms

known, giv. s. p. l. e. = 1/4 clay to gravel
 Other Remarks: Sw = 2.0% Kc = 1.9 Th = .5623 Tsf
* if swelling occurs go to Sw = 12.0

Preliminary Cal. by E Reviewed by R
☐ Trimmed by _____ Setup by W Taken down by J
☐ Recrystallized Date _____ Date 5/13/81 Date 4/20/81
 See back for Summary Calculations

T 212

☐ Dynamic ϵ / H_2 or ϵ sinusoidal / or ☒ Static ϵ 0.70 %/hr
$$H_0 = \frac{5.9521}{11.}$$

$$A_c = \frac{6.4301}{12}$$

$$V_0 = \frac{67.166}{\text{cm}^3}$$

$$\text{Dom/Dom} = \frac{1.0146}{}$$

$$G_s = \frac{2.750}{\text{Assumed}}$$

$$P_g = \frac{99.5}{\text{Measured}} \%$$

$$\text{Area Corr. Factors: C}$$

$$\text{Undrained: } = \frac{1.308}{}$$

$$C = \frac{1}{64} (1 - A_c / A_{100})$$

$$\text{Drained: } = \frac{1}{64} \left[1 - \frac{A_c (1 + e_{cr})}{A_{100}} \right]$$

* Corrected for effects of membrane, S. Hare stripes, etc.

$P_{Si} \times 0.072 = 6.08$

$$W_{\text{for } S} = 100\% \times \frac{P_{\text{Si}} \times 0.072}{\text{total}}$$

* not in
exam

$$S = \omega \cdot G_2 \cdot Y_d / (G_2 \cdot Y_w - Y_d) = \omega \cdot G_2 \cdot Y_6 / (G_2 \cdot Y_w (1 + \omega) - Y_d)$$

Calculated by JB Reviewed by Ri

1 DATA FILE IDENT. NO.
 2 PROJECT NO.
 3 BORING NO.
 4 SAMPLE NO.
 5 SPECIMEN NO.
 6 DEPTH
 7 TEST NO.
 8 FILE # FOR LOAD CELL OR PROVING RING
 9 FILE # FOR PORE PRESSURE CONST.
 10 FILE # FOR CELL PRESSURE CONST.
 11 FILE # FOR PISTON FRICTION CORRECTION
 12 TYPE OF CONSOLIDATION
 13 DRAINAGE CONDITIONS DURING LOADING
 14 MODE OF LOADING
 15 CELL PRESSURE DURING LOADING
 16 INITIAL HEIGHT OF SPECIMEN IN INCHES
 17 INITIAL DIAMETER OF SPECIMEN IN INCHES
 18 INITIAL VOLUME OF SPECIMEN IN CU. CM.
 19 PISTON DIAMETER IN INCHES
 20 WEIGHT OF TOP CAP ONLY IN TONS*10**3
 21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**3
 22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**3
 23 WAS PISTON INTACT DURING CONSOL.
 24 MEMBRANE THICKNESS IN INCHES
 25 MEMBRANE DIAMETER IN INCHES
 26 FILTER STRIP CORRECTION CONSTANT
 27 RIGHT CYLINDER DISTORTION FACTOR
 28 DOES SPECIMEN HAVE AN INDUCED OCR
 29 CELL PRESSURE IN TSF
 30 BACK PRESSURE IN TSF
 31 AXIAL DEFORMATION DURING CONSOL. IN INCHES
 32 VOLUME CHANGE DURING CONSOL. IN CU. CM.
 33 APPLIED AXIAL LOAD IN TONS*10**3
 34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF
 35 BACK PRESSURE IN TSF
 36 AXIAL DEFORMATION IN INCHES
 37 VOLUME CHANGE IN CU. CM.
 38 PISTON DRAG CORRECTION IN TONS*10**3
 39 SPECIMEN CYCLICLY LOADED BEFORE SHEARING
 40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING
 41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.
 42 PORE PRESSURE IN TSF
 43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES
 44 OUTPUT UNITS REQUIRED
 45 DATA NORMALIZATION SELECTION
 46 RESULT FILE DESIRED

T-212
 BICA055T3
 COE-10A
 S-2
 B
 13.4
 ID-314
 2000
 1000
 2000
 NONE
 A-45
 U
 C
 C
 5.0452 5.3520
 2.8613
 627.166
 0.5
 0.51
 1.008
 1.333
 YES
 0.0248
 2.8062
 2.128
 1.308
 NO
 0.0
 0.0
 0.0
 0.0
 0.0
 7.7804
 7.2072
 0.0471
 16.510
 30.595
 NO
 NO
 0.0
 0.0
 0.0
 KSF
 2.0
 0.0

DIS LOAD PORE PRESSURE
 (ln.) (lbs) (tsf)

0.00610, 60.81, 7.219
 .00621, 65.10, 7.223
 .00634, 67.49, 7.227
 .00643, 69.82, 7.231
 .00661, 71.73, 7.236
 .00678, 73.95, 7.243
 .00700, 75.53, 7.246
 .00740, 77.64, 7.256
 .00765, 78.68, 7.261
 .00845, 80.68, 7.271
 .00862, 81.12, 7.275
 .00890, 81.50, 7.277
 .00915, 82.04, 7.282
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 .00959, 82.64, 7.286

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01164, 84.65, 7.303
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01466, 86.88, 7.325
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01576, 87.58, 7.331
01611, 87.74, 7.334
01681, 88.29, 7.336
01712, 88.34, 7.339
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02093, 90.40, 7.356
02163, 90.84, 7.359
02233, 90.95, 7.363
02369, 91.60, 7.364
02434, 92.14, 7.367
02504, 92.41, 7.369
02719, 93.28, 7.375
02780, 93.61, 7.378
02825, 94.21, 7.381
03056, 94.86, 7.385
03336, 96.27, 7.391
03485, 96.92, 7.393
03621, 97.41, 7.395
03761, 98.06, 7.398
04107, 99.64, 7.399
04523, 101.26, 7.405
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07080, 111.53, 7.409
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08793, 117.66, 7.402
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09502, 120.22, 7.399
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15414, 138.62, 7.339
16114, 140.52, 7.333
16819, 142.32, 7.323
17525, 144.05, 7.317
18225, 145.52, 7.309
18939, 147.20, 7.300
19635, 148.83, 7.294
21102, 152.96, 7.276
21859, 155.08, 7.269
22592, 156.44, 7.262

18939, 147.20, 7.300
19635, 148.83, 7.294
21102, 152.96, 7.276
21859, 155.08, 7.268
23392, 158.44, 7.252
24141, 159.69, 7.244
24552, 162.73, 7.229
27162, 166.04, 7.213
28686, 168.98, 7.198
30140, 171.91, 7.183
0.3292, 177.99, 7.150
0.3432, 180.81, 7.136
0.3571, 183.58, 7.123
0.3707, 186.30, 7.112
0.3843, 188.80, 7.099
0.3979, 191.62, 7.087
0.4116, 194.66, 7.074
0.4253, 196.89, 7.065
0.4386, 199.38, 7.054
0.4525, 205.03, 7.032
0.4788, 207.64, 7.024
0.4924, 210.30, 7.008
0.5061, 212.85, 7.001
0.5196, 215.95, 6.990
0.5331, 218.77, 6.978
0.5465, 221.70, 6.967
0.5599, 224.63, 6.956
0.5734, 227.02, 6.948
0.6006, 232.51, 6.927
0.6133, 234.57, 6.920
0.6264, 236.69, 6.911
0.6395, 239.13, 6.900
0.6528, 240.65, 6.891
0.6657, 242.77, 6.884
0.6788, 246.46, 6.875
0.6919, 249.50, 6.866
0.7047, 251.51, 6.855
0.7301, 255.48, 6.841
0.7431, 258.35, 6.834
0.7562, 259.93, 6.825
0.7692, 261.94, 6.818
0.7823, 264.22, 6.807
0.7957, 266.39, 6.799
0.8090, 268.18, 6.795
0.8221, 269.70, 6.786
0.8352, 272.09, 6.777
0.8616, 276.06, 6.762
0.8746, 278.55, 6.753
0.8877, 280.62, 6.746
0.9008, 282.63, 6.740
0.9140, 284.47, 6.732
0.9276, 287.46, 6.729
0.9413, 289.31, 6.722
0.9550, 291.37, 6.714
0.9687, 293.15, 6.710
0.9970, 297.07, 6.694
1.0113, 298.32, 6.688
1.0258, 301.25, 6.678
1.0402, 303.15, 6.674
1.0544, 304.84, 6.667
1.0680, 306.57, 6.662
1.0821, 308.74, 6.653
1.0960, 311.13, 6.648
1.1096, 312.00, 6.641
1.1367, 316.89, 6.624
1.1507, 318.03, 6.617
1.1647, 319.93, 6.610
1.1788, 321.61, 6.605
1.1929, 322.86, 6.596
-999, .0.0.0

A. TRIAX

THIS IS A CAU TEST. IT HAS BEEN
CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE NO. T-212

PROJ. NO. BIC4053T3
BORING NO. COE-10A
SAMPLE NO. S-2
SPECIMEN NO. B
DEPTH(FT.) 13.4
REVIEWED BY: 8/8/81
DATE: 5/79/81 6/4/81
INPUT DATA CHECKED BY: TC
TEST NO. ID-314

ANISOTROPIC
UNDRAINED
COMPRESSION
CONSTANT
TYPE OF CONSOLIDATION
DRAINAGE CONDITIONS DURING LOADING
MODE OF LOADING
CELL PRESSURE DURING LOADING
USING 45 STRESS PATH
INITIAL HEIGHT OF SPECIMEN IN INCHES
INITIAL DIAMETER OF SPECIMEN IN INCHES
INITIAL VOLUME OF SPECIMEN IN CU. CM.
PISTON DIAMETER IN INCHES
WEIGHT OF TOP CAP ONLY IN TONS*10**-3
WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?
YES

MEMBRANE THICKNESS IN INCHES
MEMBRANE DIAMETER IN INCHES
FILTER STRIP CORRECTION CONSTANT AT
2% AXIAL STRAIN IN TONS** 10-3
RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

CELL PRESSURE IN TSF
BACK PRESSURE IN TSF
AXIAL DEFORMATION DURING CONSOL. IN INCHES
VOLUME CHANGE DURING CONSOL. IN CU. CM.
MEASURED AXIAL LOAD DURING CONSOL. IN IN TONS *10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:
AXIAL
LATERAL
MEAN
PBAR
LATERAL/AXIAL
AXIAL/LATERAL
OCR

PISTON DRAG CORRECTION IN TONS *10**-3
FILE NUMBER FOR LOAD CELL OR PROVING RING
FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
IS DATA NORMALIZATION REQUIRED?
DATA NORMALIZED TO PRESHEAR STRESSES
WITH NORM = P-BAR OF 1.5990 KSF
AND NORM* = VERT STRESS OF 2.0509 KSF

AXIAL STRAIN %	DEVIIATOR STRESS KSF	ORLIQUITY KSF	DELTA-U A-FACTOR KSF	Q KSF	P-BAR KSF	SECANT MODULUS KSF	TANGENT MODULUS KSF	DEVIATOR NORM*	DELTA-U NORM*	Q NORM	P-BAR NORM	SECANT NORM*
0.0000	1.7932	0.0000	0.0000	.4549	1.6021	0.0000	0.0000	.4437	0.0000	.2845	1.0019	0.0000
0.0019	1.8845	0.0080	.0818	.5038	1.6430	5247.810	3858.860	.4913	.0039	.3151	1.0275	2558.7651
0.0041	1.9620	0.0160	.1512	.5310	1.6622	3743.113	2975.413	.5178	.0078	.3321	1.0395	1825.0951
0.0056	1.9928	0.0240	.1170	.5575	1.6807	3671.605	2451.620	.5437	.0117	.3487	1.0511	1790.2284
0.0086	2.0407	0.0340	.1368	.5792	1.6924	2877.741	1587.202	.5648	.0165	.3622	1.0584	1403.1505
0.0115	2.0999	0.0480	.1605	.6044	1.7036	2596.326	1356.099	.5894	.0234	.3780	1.0654	1265.9362
0.0152	2.1447	0.0540	.1613	.6223	1.7155	2196.364	831.667	.6069	.0263	.3892	1.0728	1070.9194
0.0220	2.2042	0.0740	.1935	.6461	1.7193	1736.934	617.277	.6301	.0361	.4041	1.0752	846.9072
0.0264	2.2375	0.0840	.2070	.6578	1.7210	1536.001	432.415	.6415	.0410	.4114	1.0763	748.9351
0.0328	2.3040	0.1040	.2309	.6802	1.7233	1131.753	337.275	.6681	.0507	.4287	1.0777	551.8287
0.0427	2.3735	0.1120	.2434	.6851	1.7202	1078.412	308.889	.6683	.0546	.4284	1.0758	525.8204
0.0457	2.3786	0.1160	.2475	.6893	1.7205	1024.966	238.477	.6722	.0566	.4311	1.0759	499.7608
0.0517	2.3618	0.1260	.2622	.7001	1.7164	930.325	230.982	.6780	.0614	.4348	1.0764	453.6148
0.0554	2.3711	0.1260	.2570	.7001	1.7213	895.343	176.031	.6827	.0614	.4378	1.0764	431.6822
0.0591	2.4035	0.1340	.2714	.7018	1.7150	835.228	143.138	.6843	.0653	.4369	1.0725	407.2466
0.0664	2.4161	0.1460	.2874	.7089	1.7101	765.102	135.327	.6913	.0712	.4433	1.0694	373.0544
0.0694	2.4156	0.1440	.2822	.7100	1.7132	734.792	96.898	.6924	.0702	.4440	1.0714	358.2785
0.0723	2.4247	0.1480	.2881	.7118	1.7109	710.280	138.199	.6941	.0722	.4451	1.0700	346.3234
0.0791	2.4469	0.1560	.2975	.7171	1.7083	662.916	98.614	.6993	.0761	.4484	1.0683	323.2297
0.0820	2.4569	0.1620	.3083	.7177	1.7029	641.034	98.829	.6998	.0790	.4488	1.0649	312.5601
0.0879	2.4664	0.1620	.3029	.7223	1.7075	608.442	96.216	.7054	.0790	.4516	1.0678	296.6687
0.0938	2.4775	0.1680	.3129	.7234	1.7026	572.194	65.436	.7044	.0819	.4524	1.0647	278.9947
0.0997	2.4894	0.1720	.3170	.7262	1.7014	543.908	94.226	.7082	.0839	.4542	1.0640	265.2029
0.1109	2.5186	0.1840	.3328	.7314	1.6946	498.400	94.210	.7132	.0897	.4574	1.0597	243.0134
0.1169	2.5309	0.1880	.3366	.7342	1.6934	477.996	91.973	.7160	.0917	.4592	1.0590	233.0647
0.1221	2.5421	0.1920	.3409	.7365	1.6917	461.219	66.016	.7182	.0936	.4606	1.0580	224.8844
0.1340	2.5673	0.2040	.3589	.7391	1.6823	424.318	91.736	.7208	.0995	.4622	1.0521	206.8920
0.1450	2.5971	0.2120	.3632	.7468	1.6820	402.670	106.630	.7283	.1034	.4670	1.0519	196.3368
0.1533	2.6181	0.2180	.3672	.7518	1.6910	374.902	80.875	.7331	.1063	.4701	1.0512	182.7976
0.1593	2.6336	0.2240	.3744	.7541	1.6773	365.886	70.747	.7353	.1092	.4716	1.0489	178.3041
0.1699	2.6478	0.2300	.3824	.7557	1.6729	354.780	75.846	.7369	.1121	.4726	1.0462	172.9866
0.1815	2.6677	0.2340	.3910	.7615	1.6747	337.992	55.936	.7426	.1141	.4762	1.0473	164.8007
0.1866	2.6795	0.2400	.3910	.7618	1.6690	328.877	33.837	.7429	.1170	.4764	1.0438	160.3561
0.1919	2.6905	0.2440	.3955	.7634	1.6666	320.407	59.479	.7445	.1190	.4774	1.0423	156.2262
0.2045	2.7142	0.2520	.4034	.7673	1.6625	305.608	70.991	.7482	.1229	.4798	1.0397	149.0106
0.2103	2.7193	0.2520	.4005	.7696	1.6648	299.159	74.406	.7505	.1229	.4813	1.0411	145.8660
0.2274	2.7566	0.2640	.4115	.7757	1.6589	282.080	74.390	.7565	.1287	.4851	1.0374	137.5387
0.2334	2.7658	0.2660	.4117	.7780	1.6572	276.664	74.760	.7587	.1297	.4859	1.0376	134.9954
0.2393	2.7787	0.2700	.4151	.7802	1.6574	271.809	58.429	.7608	.1316	.4879	1.0365	132.5308
0.2511	2.7929	0.2740	.4179	.7828	1.6560	261.059	60.340	.7633	.1336	.4895	1.0356	127.2891
0.2630	2.8157	0.2800	.4212	.7873	1.6545	252.746	44.974	.7678	.1365	.4924	1.0347	123.2357
0.2749	2.8345	0.2880	.4322	.7881	1.6473	242.419	34.847	.7685	.1404	.4929	1.0302	118.2007
0.2979	2.8539	0.2900	.4269	.7946	1.6518	228.035	80.029	.7749	.1414	.4949	1.0330	111.1869
0.3089	2.8804	0.2960	.4285	.8003	1.6515	223.604	73.809	.7804	.1443	.5005	1.0328	109.0263
0.3208	2.8954	0.3000	.4310	.8029	1.6501	216.963	45.194	.7830	.1463	.5021	1.0319	105.7885
0.3372	2.9429	0.3120	.4376	.8114	1.6466	199.581	55.580	.7915	.1521	.5074	1.0297	97.3131
0.3675	2.9650	0.3180	.4419	.8147	1.6439	195.789	56.162	.7945	.1551	.5095	1.0281	95.4644
0.3920	2.9935	0.3240	.4431	.8205	1.6438	186.509	53.126	.8002	.1580	.5131	1.0280	90.9393
0.4142	3.0290	0.3320	.4466	.8271	1.6423	179.660	59.098	.8065	.1619	.5172	1.0270	87.6000
0.4617	3.0945	0.3440	.4453	.8412	1.6444	167.324	55.027	.8203	.1677	.5260	1.0284	81.5852
0.4869	3.1209	0.3480	.4431	.8475	1.6468	161.269	45.393	.8265	.1697	.5300	1.0298	78.6329
0.5099	3.1432	0.3520	.4430	.8522	1.6474	155.805	47.235	.8310	.1716	.5329	1.0302	75.9686
0.5336	3.1758	0.3580	.4434	.8586	1.6476	151.290	53.637	.8373	.1746	.5369	1.0305	73.7670
0.5922	3.2208	0.3600	.4293	.8742	1.6614	141.574	48.559	.8525	.1755	.5467	1.0390	69.0299
0.6627	3.2952	0.3720	.4278	.8897	1.6649	131.203	45.845	.8676	.1814	.5564	1.0412	63.9731
0.6982	3.3169	0.3720	.4197	.8981	1.6733	126.928	45.865	.8758	.1814	.5616	1.0464	61.8886
0.8036	3.3958	0.3780	.4050	.9215	1.6908	116.118	49.920	.8986	.1843	.5763	1.0574	56.6176
0.8615	3.4822	0.3820	.3957	.9375	1.7028	112.034	48.619	.9143	.1863	.5863	1.0649	54.6266
0.9201	3.5022	0.3820	.3859	.9498	1.7151	107.565	49.219	.9262	.1863	.5940	1.0726	52.4475
0.9785	3.5326	0.3840	.3754	.9763	1.7296	104.521	46.631	.9423	.1872	.6043	1.0816	50.9631
1.0957	3.5748	0.3900	.3564	.9878	1.7551	97.265	39.127	.9633	.1853	.6177	1.0976	47.4252
1.1543	3.6133	0.3920	.3503	1.0000	1.7653	94.438	38.471	.9752	.1863	.6254	1.1040	46.0469
1.2129	3.6266	0.3780	.3402	1.0104	1.7797	91.584	39.713	.9853	.1843	.6316	1.1130	44.6554
1.3050	3.6657	0.3760	.3265	1.0464	1.8000	87.454	45.247	1.0024	.1795	.6416	1.1440	41.7640

1.0957	1.9756	3.5748	3800	3564	.9878	1.7551	97.265	39.127	9633	1853	-6177	1.0976	47.4252
1.1543	2.0000	3.6133	3820	3503	1.0000	1.7653	94.438	38.471	9752	1843	-6254	1.1040	46.0468
1.2129	2.0207	3.6266	3780	3402	1.0104	1.7797	91.584	36.713	9853	1833	-6318	1.1130	44.4554
1.3658	2.0969	3.6837	3660	3082	1.0424	1.8298	85.654	45.267	1.0254	1785	-6557	1.1443	41.7640
1.4442	2.1240	3.7115	3640	2997	1.0450	1.8454	84.070	44.040	1.0357	1775	-6642	1.1540	40.9212
1.5059	2.1497	3.7302	3600	2902	1.0748	1.8622	82.331	44.821	1.0497	1755	-6722	1.1646	40.1436
1.5667	2.1789	3.7464	3540	2788	1.0894	1.8928	81.000	40.649	1.0624	1726	-6813	1.1775	39.4947
1.6876	2.2191	3.7553	3520	2611	1.1096	1.9149	77.580	32.771	1.0820	1648	-6939	1.1976	37.8268
1.8077	2.2579	3.7421	3240	2402	1.1289	1.9423	74.571	33.241	1.1009	1580	-7060	1.2209	36.3599
1.9248	2.2979	3.7506	3120	2246	1.1490	1.9844	72.113	37.592	1.1205	1521	-7185	1.2410	35.1613
2.0398	2.3451	3.7738	3020	2102	1.1725	2.0180	70.358	38.802	1.1434	1473	-7333	1.2620	34.3058
2.2705	2.4295	3.7687	2700	1775	1.2148	2.0923	66.930	36.859	1.1846	1316	-7597	1.3084	32.6344
2.5071	2.5178	3.7743	2400	1490	1.2569	2.1664	64.134	34.137	1.2276	1170	-7873	1.3548	31.2711
2.6256	2.5545	3.7780	2280	1384	1.2773	2.1968	62.637	29.869	1.2455	1112	-7988	1.3738	30.5411
2.7450	2.5888	3.7553	2080	1236	1.2944	2.2340	61.164	27.856	1.2623	1015	-8095	1.3971	29.8228
2.8652	2.6215	3.7546	1960	1143	1.3107	2.2624	59.756	24.916	1.2782	9256	-8197	1.4148	29.1267
2.9838	2.6484	3.7369	1800	1033	1.3242	2.2918	58.264	24.362	1.2913	8281	-8281	1.4332	28.4090
3.1040	2.6797	3.7187	1620	0913	1.3398	2.3255	57.016	25.832	1.3066	7879	-8379	1.4543	27.8003
3.2219	2.7099	3.7162	1500	0830	1.3549	2.3526	55.868	28.594	1.3213	7331	-8473	1.4713	27.2404
3.4703	2.7883	3.6973	1140	0604	1.3942	2.4279	54.128	31.374	1.3595	6556	-8719	1.5183	26.3920
3.5985	2.8685	3.6942	0980	0508	1.4141	2.4639	53.310	27.196	1.3790	6478	-8844	1.5409	25.9935
3.8950	2.9093	3.6499	0660	0330	1.4443	2.5261	51.285	19.793	1.4084	6032	-9032	1.5798	25.0058
4.2409	2.9621	3.6261	0200	0094	1.4811	2.5525	50.174	18.506	1.4185	6244	-9097	1.5963	24.4641
4.4966	3.0202	3.6036	-0120	-0061	1.5101	2.6702	46.932	20.975	1.4443	6058	-9262	1.6316	23.5949
4.7577	3.0698	3.5794	-0420	-0199	1.5349	2.7250	45.428	19.671	1.4726	6059	-9444	1.6698	22.8935
5.0097	3.1194	3.5565	-0720	-0330	1.5597	2.7799	44.182	21.074	1.5210	6205	-9599	1.7042	22.1499
5.4717	3.2231	3.5056	-1380	-0602	1.6115	2.8979	42.275	20.809	1.5715	6673	-10073	1.8123	20.6128
5.7088	3.2695	3.4874	-1660	-0709	1.6348	2.9492	41.333	19.378	1.5942	6809	-10223	1.8443	20.1536
5.9442	3.3146	3.4726	-1920	-0804	1.6573	2.9978	40.455	19.123	1.6162	6936	-10364	1.8748	19.7254
6.1745	3.3586	3.4648	-2140	-0880	1.6793	3.0419	39.658	18.300	1.6376	7043	-10502	1.9023	19.3368
6.4049	3.3976	3.4466	-2400	-0971	1.6988	3.0875	38.841	20.480	1.6566	7170	-10624	1.9308	18.9382
6.6352	3.4329	3.4369	-2640	-1049	1.7214	3.1342	38.175	20.480	1.6787	7287	-10765	1.9601	18.6138
6.8672	3.4923	3.4270	-2900	-1130	1.7461	3.1850	37.605	17.583	1.7028	7414	-10920	1.9918	18.3356
7.0992	3.5245	3.4190	-3080	-1185	1.7622	3.2192	36.829	15.303	1.7185	7502	-11021	2.0132	17.9575
7.3244	3.5621	3.4083	-3300	-1251	1.7811	3.2602	36.211	17.995	1.7369	7609	-11138	2.0388	17.6561
7.7800	3.6499	3.3960	-3740	-1373	1.8250	3.3483	35.219	18.305	1.7796	7824	-11413	2.0939	17.1722
8.0052	3.6890	3.3963	-3900	-1411	1.8445	3.3839	34.716	17.229	1.7987	7902	-11535	2.1162	16.9270
8.2355	3.7284	3.3725	-4220	-1506	1.8642	3.4357	34.224	16.465	1.8179	8058	-11658	2.1486	16.6870
8.4675	3.7651	3.3745	-4360	-1536	1.8825	3.4822	33.719	18.340	1.8358	8126	-11773	2.1689	16.4411
8.6962	3.8128	3.3715	-4580	-1587	1.9064	3.5142	33.381	19.535	1.8591	8233	-11922	2.1977	16.2763
8.9248	3.8544	3.3619	-4820	-1646	1.9272	3.5591	32.993	18.704	1.8794	8350	-12052	2.2258	16.0868
9.1517	3.8980	3.3567	-5040	-1696	1.9490	3.6030	32.651	19.112	1.9006	8457	-12188	2.2532	15.9200
9.3787	3.9412	3.3513	-5260	-1745	1.9706	3.6467	32.321	16.485	1.9217	8565	-12323	2.2806	15.7592
9.6073	3.9730	3.3477	-5420	-1780	1.9865	3.6788	31.884	15.557	1.9372	8672	-12423	2.3006	15.5460
10.0577	4.0504	3.3351	-5840	-1870	2.0252	3.7597	31.225	14.042	1.9749	8849	-12665	2.3512	15.2247
10.2830	4.0750	3.3303	-5980	-1900	2.0375	3.7862	30.780	11.260	1.9869	8995	-12742	2.3678	15.0078
10.5048	4.1007	3.3210	-6160	-1942	2.0504	3.8172	30.375	12.954	1.9995	9111	-12822	2.3872	14.8103
10.7267	4.1324	3.3100	-6380	-1992	2.0662	3.8552	30.042	10.077	2.0149	9249	-12916	2.4109	14.6483
10.9519	4.1456	3.2941	-6560	-2040	2.0728	3.8799	29.545	8.684	2.0213	9399	-12963	2.4264	14.4057
11.1704	4.1708	3.2901	-6700	-2067	2.0854	3.9066	29.192	18.183	2.0336	9541	-13041	2.4431	14.2338
11.3922	4.2259	3.2974	-6880	-2088	2.1129	3.9515	28.914	21.900	2.0605	9689	-13214	2.4717	14.1925
11.6141	4.2679	3.2976	-7060	-2167	2.1340	3.9915	28.914	14.593	2.0810	9832	-13345	2.4962	14.0979
12.2610	4.3330	3.2709	-7560	-2223	2.1655	4.0745	27.919	13.514	2.1127	9986	-13442	2.5170	13.9310
12.4812	4.3706	3.2737	-7700	-2239	2.1853	4.1075	27.727	11.347	2.1310	10100	-13549	2.5481	13.8128
12.7030	4.3831	3.2589	-7880	-2284	2.1915	4.1564	27.035	7.490	2.1472	10246	-13666	2.5687	13.5194
12.9232	4.4036	3.2530	-8020	-2311	2.2145	4.1912	26.771	10.653	2.1595	10393	-13770	2.5893	13.3313
13.1450	4.4289	3.2406	-8240	-2368	2.2257	4.2186	26.485	8.331	2.1705	10540	-13849	2.6100	13.1818
13.3719	4.4514	3.2336	-8400	-2388	2.2333	4.2344	26.158	6.331	2.1779	10687	-13966	2.6382	12.9136
13.5972	4.4666	3.2321	-8480	-2401	2.2393	4.2577	25.812	5.675	2.1928	10834	-14079	2.6626	12.7542
13.8190	4.4768	3.2171	-8660	-2445	2.2488	4.2890	25.591	9.953	2.1956	10981	-14223	2.6822	12.4776
14.0409	4.5030	3.2101	-8840	-2478	2.2513	4.2890	25.591	10.246	2.2133	11128	-14310	2.7125	12.2144
14.4890	4.5392	3.1891	-9140	-2537	2.2696	4.3375	25.051	10.506	2.2266	11275	-14457	2.7324	12.1220
14.7081	4.5665	3.1891	-9320	-2568	2.2684	4.3623	24.861	10.246	2.2133	11422	-14544	2.7473	12.0043
14.9300	4.5856	3.1834	-9460	-2593	2.2928	4.3921	24.620	8.304	2.2359	11569	-14613	2.7673	11.8856
15.1518	4.6034	3.1792	-9580	-2613	2.3017	4.4141	24.376	7.178	2.2445	11716	-14671	2.7751	11.7572
15.3754	4.6176	3.1627	-9740	-2647	2.3088	4.4374	24.114	10.421	2.2515	11863	-14749	2.7927	11.6915
15.6057	4.6318	3.1790	-9800	-2640	2.3259	4.4608	23.978	10.240	2.2682	12010	-14827	2.8103	11.6252
15.8377	4.6449	3.1706	-9940	-2640	2.3355	4.4816	23.710	10.069	2.2849	12157	-14905	2.8279	11.5589

13.8190	4.4768	3.2171	-1.8660	-1.2445	2.2394	4.2377	25.812	8.205	2.1828	-4.223	1.3998	2.6646	12.5955
14.0409	4.5030	3.2101	-1.8840	-1.2478	2.2515	4.2890	25.591	9.953	2.1956	-4.310	1.4080	2.6822	12.4776
14.4880	4.5392	3.1951	-1.9140	-1.2537	2.2696	4.3375	25.051	10.246	2.2133	-4.457	1.4193	2.7125	12.2144
14.7081	4.5665	3.1891	-1.9320	-1.2568	2.2833	4.3693	24.861	10.506	2.2266	-4.544	1.4279	2.7324	12.1220
14.9300	4.5856	3.1834	-1.9460	-1.2593	2.2928	4.3931	24.620	8.304	2.2359	-4.613	1.4339	2.7473	12.0043
15.1518	4.6034	3.1792	-1.9580	-1.2613	2.3017	4.4141	24.376	7.178	2.2445	-4.671	1.4394	2.7605	11.8856
15.3754	4.6176	3.1692	-1.9740	-1.2647	2.3088	4.4374	24.114	10.621	2.2515	-4.749	1.4439	2.7751	11.7579
15.5057	4.6318	3.1790	-1.9800	-1.2640	2.3259	4.4608	23.978	10.260	2.2682	-4.778	1.4546	2.7897	11.6915
15.1377	4.6649	3.1706	-1.9940	-1.2668	2.3325	4.4816	23.710	6.400	2.2746	-4.847	1.4587	2.8026	11.5605
16.1697	4.6815	3.1620	-1.0100	-1.2699	2.3408	4.5061	23.471	6.054	2.2827	-4.925	1.4639	2.8180	11.4440
16.3017	4.6930	3.1591	-1.0180	-1.2713	2.3465	4.5201	23.207	5.261	2.2883	-4.964	1.4674	2.8267	11.3154
16.7810	4.7197	3.1394	-1.0500	-1.2779	2.3599	4.5659	22.703	2.829	2.3013	-5.120	1.4759	2.8554	11.0699
17.0231	4.7199	3.1277	-1.0620	-1.2811	2.3600	4.5783	22.382	6.025	2.3014	-5.178	1.4759	2.8631	10.9130
17.2687	4.7493	3.1216	-1.0820	-1.2843	2.3747	4.6132	22.233	8.237	2.3157	-5.276	1.4850	2.8936	10.8408
17.5126	4.7603	3.1187	-1.0900	-1.2856	2.3802	4.6270	21.987	3.783	2.3211	-5.315	1.4885	2.8936	10.7204
17.7531	4.7677	3.1086	-1.1040	-1.2887	2.3838	4.6450	21.730	3.431	2.3247	-5.383	1.4908	2.9048	10.5954
17.9834	4.7764	3.1029	-1.1140	-1.2907	2.3882	4.6596	21.501	5.121	2.3289	-5.432	1.4935	2.9140	10.4835
18.2222	4.7918	3.0928	-1.1320	-1.2943	2.3959	4.6856	21.303	7.296	2.3364	-5.519	1.4983	2.9302	10.3872
18.4576	4.8110	3.0918	-1.1420	-1.2985	2.4055	4.7054	21.136	2.587	2.3458	-5.568	1.5043	2.9426	10.3054
18.6879	4.8041	3.0759	-1.1560	-1.2997	2.4021	4.7163	20.838	2.863	2.3424	-5.637	1.5022	2.9494	10.1605
19.1468	4.8441	3.0624	-1.1900	-1.3054	2.4220	4.7708	20.548	3.616	2.3619	-5.802	1.5147	2.9835	10.0187
19.3839	4.8406	3.0485	-1.2040	-1.3093	2.4203	4.7833	20.278	1.210	2.3602	-5.871	1.5136	2.9914	9.8874
19.6210	4.8498	3.0400	-1.2180	-1.3122	2.4249	4.8023	20.080	3.012	2.3647	-5.939	1.5165	3.0032	9.7909
19.8598	4.8549	3.0307	-1.2280	-1.3144	2.4275	4.8151	19.864	5.64	2.3672	-5.988	1.5181	3.0112	9.6856
20.0986	4.8525	3.0169	-1.2460	-1.3193	2.4263	4.8332	19.617	159.015	2.3660	-6.075	1.5173	3.0219	9.5648 STOP

A. BASIC RESPT

CDOS 16K BASIC, VERSION 5.4

TRIAXIAL TEST (Set Up / Take Down)

WCC
4-202
(1180)

Proj. No. 81C4055 Proj. Eng. AM Cell No. H-2 Piston dia.: ☐ 3/8" ☒ 1/2"
Type Test CAUC File No. T-209

Loading Conditions: ☐ Dynamic ☒ Undrained ☒ Compression ☒ Constant cell pressure
☒ Static ☐ Drained ☐ Extension ☐ Variable cell pressure

Type: ☐ Isotropic ☐ Ko stress path
Consolidation: ☒ Anisotropic ☒ 45° Stress path
Piston Screwed in: ☐ Yes; ☒ No

☒ Undisturbed ☐ Reconstituted ☐ Impact ☐ Constant ESSort
Boring No. COC 124 Composite No. _____ ☐ Static _____ layers; _____ 16" Hammer
Sample No. S-3B Specimen No. _____ ☐ Kneading _____ Blows-Tamps / layer
Depth (ft) 11.7 Remarks ID 293 ☐ Tamping ☐ Under compaction
☐ Ends capped with Castor; ☐ Geomarine Sample ☐ Other _____ layers; _____ Uni (%)

Water Content			Final
Location	<u>Top</u>	<u>Bot</u>	<u>Ave</u>
Container No	<u>UA219</u>	<u>B-4</u>	<u>214</u>
Wgt Container + Wet Soil (gm)	<u>83.20</u>	<u>63.54</u>	<u>458.31</u>
Wgt Container + Dry Soil (gm)	<u>77.64</u>	<u>60.40</u>	<u>432.81</u>
Wgt. Container (gm)	<u>34.57</u>	<u>32.84</u>	<u>201.49</u>
Wgt Dry Soil (gm)	<u>43.07</u>	<u>27.46</u>	<u>231.32</u>
WATER CONTENT (%)	<u>12.81</u>	<u>11.43</u>	<u>12.17</u>
			<u>11.04</u>

Specimen Weight
Wet + Skirt (etc): _____ gm
Stone (etc): _____ gm
Wet Initial: 1398.9 gm
Wet Final: 1383.0 gm
Excess Oven-dry Dish No. _____
Wgt Dish + Dry Soil _____ gm
Wgt. Dish _____ gm
Wgt. Excess Dry Soil _____ gm

Dimensions of Specimen		Diameter (in)	
Initial (Lg)	Final (Lg)	Initial	Final
1 <u>5.985</u>	<u>4.7101</u>	1-T <u>2.854</u>	<u>2.995</u>
2 <u>5.982</u>	<u>4.698</u>	2-M <u>2.852</u>	<u>3.350</u>
3 <u>5.990</u>	<u>4.770</u>	3-B <u>2.889</u>	<u>2.995</u>
4 <u>5.982</u>	<u>4.7285</u>	4-T <u>2.852</u>	
5 <u>5.970</u>	<u>4.646</u>	2-M <u>2.860</u>	
Ave <u>5.9818</u>	<u>4.7146</u>	3-B <u>2.861</u>	
		Ave <u>2.8563</u>	<u>3.1725</u>
$\Delta L_c =$ _____ in		$A_0 = \pi D^2/4 =$ <u>6.4076</u> in ²	
$\Delta L_c =$ _____ in		$V_0 = \text{in}^3 \cdot 16.8871 =$ <u>628.101</u> cm ³	
$\Delta L_c =$ _____ in		$A_{0m} = 5.45 + 2(0.1)^2 =$ <u>54.8952</u> in ²	
$L_0 - L_6 =$ _____ in			

Membrane Thickness = 0.0240 in
Circumference (cm) = 5.882 in
Diam = cm / π = 2.5272 in
Filter Paper: Top + bottom: ☐ Yes; ☒ No
Filter Strips: ☐ Yes; ☒ No
Vertical at 1/4" - Whatman 54 pt
Spiral at 1/4" - Whatman 1 or _____
Wgt top cap: _____ gm, _____ 10⁻³ gm
Wgt (+ cap, dial) = 914.43 gm, 1.00 10⁻³ gm
Preliminary
Yes = 139.04 10⁻³ gm, 133.96 10⁻³ gm



Final Visual Classification: ☐ See more detailed sketch on attached sheet; ☐ Photo taken.

Blown s-plastic clay in soft sand - f
gravel c-f sand. Patch of cl. plastic blown
clay.

Other Remarks: 1/2 SKS, K=1.9
= 4.28 $\bar{\sigma}_m = 2.1053$

Preliminary Cal. by CG Reviewed by RR
☐ Trimmed by _____ Setup by CG Taken down by RR
☐ Reconstituted Date _____ Date 5/11/81 Date 3/18/81
See back for Summary Calculations

TRIAXIAL TEST SUMMARY CALCULATIONS

T209

Type Test: CAU - C ☒ Undisturbed; ☐ Reconstituted - Specimen:
☐ Dynamic / Hz or sinusoidal or ☒ Static @ 0.69 %/hr

Consolidation History	Max. Induced Past Pressure	<input checked="" type="checkbox"/> Preshear/perm. Pre cy. loading	Preshear after Cy. loading
Units: <u>ESS or KSE</u>	Uncorr. Corr. #	Uncorr. Corr. #	Uncorr. Corr. #
$\bar{\sigma}_{cell}$		18.6048	
U_c		14.3856	
$\bar{\sigma}_v$		8.1842	8.0379
$\bar{\sigma}_h$		4.2192	4.2043
$\bar{\sigma}_p = (\bar{\sigma}_v + \bar{\sigma}_h)/2$		6.2017	6.1211
$K_c = \bar{\sigma}_v / \bar{\sigma}_h$		1.940	1.9118
OCR		1.80	
Consol. Time	<input type="checkbox"/> Overnight days hours	<input type="checkbox"/> Over night days hours	<input type="checkbox"/> Over night days hours

$H_0 = 5.9818$ in.
 $A_0 = 44.976$ in²
 $V_0 = 628.101$ cm³
 $D_{ov}/D_{om} = 1.0103$
 $G_s = 2.764$ ☐ Assumed ☒ Measured
 $B_g = 95.5$ %
 Area Corr. Factors: C
 Undrained: 1.143
 $C_u = \frac{1}{E_u} (1 - K_u / K_{sat})$
 Drained: $C_d = \frac{1}{E_d} [1 - \frac{K_u}{K_{sat}} (1 + \nu_u)]$

Calculate Wgt of Dry Soil	By Initial water Content	By Final water Content	By Total Overdried Specimen	Variations in Height and Volume During Consolidation	During Initial Consol. with out back Pressure	During Back-Pressuring	After Backpressuring
							$\bar{\sigma}_h(p-)$ $\bar{\sigma}_h(p-)$ $\bar{\sigma}_h(p-)$
W_1 (%)							From 2.3 To 2.3
W_2 (%)							From 2.3 To 2.3
W_{ave} (%)	12.17	11.04					From 2.3 To 2.3
Wgt. Wet Soil, Wt (gm)	1398.9	1383.0					
Wgt. Wet Dry Soil (gm)							
Wgt. Excess Drying Soil							
Total Wgt. Dry Soil, Wt (gm)	1247.12	1245.50					
Wt used:							

Calculation of ΔV_c during Consolidation by Dissecting Procedures	ΔV_c by Wgt. Change $= W_0 - W_2 - (\Delta V_0 + \Delta V_T)$	ΔV_c by recorded/calculated volume changes $= \sum \text{selected } \Delta V$	ΔV_c assuming $S = 100\%$ $V_F = (V_0 - W_0) W_0 / W_2$
	$\Delta W_1 = 15.9$ gm $E(\Delta V_0 + \Delta V_T) = (-18.68)$ cm ³ $\therefore \Delta V_c = 34.58$ cm ³	$\Delta V_c = 4.98 + 2.43 + 27.46 = 34.87$ cm ³	$\Delta V_c = V_0 - V_F = 588.688$ cm ³ $W_0 = 10.97$ % $V_F = 588.688$ cm ³ $V_F + \Delta V_T =$ cm ³ $\therefore \Delta V_c = 30.43$ cm ³

ΔV_c used (ave. values) = 39.413 cm³ $\therefore V_c = 588.688$ cm³; $\Delta L_c = 0.00$ in; $\therefore L_c = 5.7982$ in
 $A_c = V_c / L_c$ (cm²/in) / 16.3871 = 6.1957 in² / 0.144 = 43.025 in²
 $E_{ac} = 3.07$ %; $E_v = 6.27$ %; $E_{ev} = 0.9373$ $E_s^* = 0.188$; $E_{vc}^* =$ not in percent
 At max. induced past pressure: $\Delta V_{max} = \Delta V_c - \Delta V_{rebound} =$ cm³; $\Delta L_{max} =$ in

Summary	Height (in)	Area (in ² cm ² at 2 x 1/8 in)	Volume (cm ³)	Water Content (%)	Total/Dry Density (lb/lb + 8)	Saturation (%)
Initial	5.9818	44.976	628.101	12.24	139.04 123.88	86.6
After Consol.	5.7982	43.0256	588.688	10.97	146.67 132.17	100.0

$S = W G_s \cdot Y_u / (G_s \cdot Y_u - Y_d) = W \cdot G_s \cdot Y_0 / (G_s \cdot Y_u (1 + W) - Y_0)$

Calculated by RB Reviewed by RL

psi x 0.072 = lbf
 For S=100% $G_s \cdot Y_u = Y_d / G_s \cdot Y_d = G_s \cdot Y_0 \cdot Y_0 / (G_s \cdot Y_u (1 + W) - Y_0)$
 20°C (fixed) = 62.32 lb/ft³ = 0.9982 gm/cc = 62.4 lb/ft³

1 DATA FILE IDENT. NO.
 2 PROJECT NO.
 3 BORING NO.
 4 SAMPLE NO.
 5 SPECIMEN NO.
 6 DEPTH
 7 TEST NO.
 8 FILE # FOR LOAD CELL OR PROVING RING
 9 FILE # FOR PORE PRESSURE CONST.
 10 FILE # FOR CELL PRESSURE CONST.
 11 FILE # FOR PISTON FRICTION CORRECTION
 12 TYPE OF CONSOLIDATION
 13 DRAINAGE CONDITIONS DURING LOADING
 14 MODE OF LOADING
 15 CELL PRESSURE DURING LOADING
 16 INITIAL HEIGHT OF SPECIMEN IN INCHES
 17 INITIAL DIAMETER OF SPECIMEN IN INCHES
 18 INITIAL VOLUME OF SPECIMEN IN CU. CM.
 19 PISTON DIAMETER IN INCHES
 20 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
 21 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
 22 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
 23 WAS PISTON INTACT DURING CONSOL.
 24 MEMBRANE THICKNESS IN INCHES
 25 MEMBRANE DIAMETER IN INCHES
 26 FILTER STRIP CORRECTION CONSTANT
 27 RIGHT CYLINDER DISTORTION FACTOR
 28 DOES SPECIMEN HAVE AN INDUCED OCR
 29 CELL PRESSURE IN TSF
 30 BACK PRESSURE IN TSF
 31 AXIAL DEFORMATION DURING CONSOL. IN INCHES
 32 VOLUME CHANGE DURING CONSOL. IN CU. CM.
 33 APPLIED AXIAL LOAD IN TONS*10**-3
 34 PRE SHEAR CONDITION - CELL PRESSURE IN TSF
 35 JACK PRESSURE IN TSF
 36 AXIAL DEFORMATION IN INCHES
 37 VOLUME CHANGE IN CU. CM.
 38 PISTON DRAG CORRECTION IN TONS*10**-3
 39 SPECIMEN CYCLICALLY LOADED BEFORE SHEARING
 40 SPECIMEN RECONSOLIDATED DURING CYCLIC LOADING
 41 SUM OF VOLUME CHANGES DURING RECONSOLIDATION IN CU. CM.
 42 PORE PRESSURE IN TSF
 43 TOTAL CHANGE IN HT DURING CYCLIC LOADING IN INCHES
 44 OUTPUT UNITS REQUIRED
 45 DATA NORMALIZATION SELECTION
 46 RESULT FILE DESIRED

T-209
 BIC405513
 COE-12A
 S-3
 B
 11.7
 10-293
 2000
 1000
 2000
 NONE
 A-45
 U
 C
 5.9818
 2.8563
 628.101
 0.5
 0.51
 1.008
 1.333
 YES
 0.0240
 2.8272
 2.128
 1.143
 NO
 0.0
 0.0
 0.0
 0.0
 0.0
 9.3024
 7.1928
 0.1836
 39.413
 96.975
 NO
 NO
 0.0
 0.0
 0.0
 KSF
 2.0
 0.0

DIS LOAD PORE PRESSURE
 (ln.) (lbs) (tsf)

 0.00359, 193.52, 7.212
 .00363, 205.19, 7.236
 .00372, 211.49, 7.252
 .00394, 220.62, 7.276
 .00407, 224.80, 7.288
 .00424, 228.49, 7.296
 .00451, 233.97, 7.315
 .00472, 236.36, 7.321
 .00499, 238.97, 7.332
 .00538, 242.44, 7.345
 .00556, 243.64, 7.352
 .00573, 244.78, 7.357
 .00613, 246.68, 7.369
 .00630, 247.44, 7.373
 .00648, 247.98, 7.377

.00630,	247.44,	7.373
.00648,	247.98,	7.377
.00678,	248.91,	7.383
.00696,	249.29,	7.397
.00713,	249.67,	7.391
.00744,	250.43,	7.401
.00753,	250.75,	7.401
.00775,	250.97,	7.406
.00805,	251.40,	7.414
.00823,	251.57,	7.418
.00840,	251.84,	7.422
.00867,	252.11,	7.428
.00884,	252.27,	7.428
.00897,	252.33,	7.432
.00928,	252.60,	7.441
.00945,	252.65,	7.444
.00959,	252.87,	7.450
.00994,	253.09,	7.454
.01011,	253.09,	7.458
.01042,	253.30,	7.461
.01107,	253.58,	7.479
.01138,	253.58,	7.483
.01173,	253.63,	7.489
.01239,	253.52,	7.503
.01274,	253.52,	7.509
.01304,	253.58,	7.514
.01375,	253.68,	7.529
.01440,	253.47,	7.540
.01466,	253.58,	7.547
.01501,	253.30,	7.553
.01537,	253.47,	7.557
.01598,	253.58,	7.567
.01734,	253.47,	7.591
.01795,	253.36,	7.602
.01861,	253.36,	7.613
.01926,	253.47,	7.622
.02058,	253.36,	7.641
.02119,	253.41,	7.650
.02185,	253.52,	7.658
.02250,	253.36,	7.666
.02443,	253.58,	7.694
.02570,	253.63,	7.709
.02701,	253.63,	7.724
.02828,	253.90,	7.737
.03148,	253.68,	7.770
.03358,	253.96,	7.790
.03533,	254.06,	7.806
.03722,	254.06,	7.823
.04243,	254.55,	7.859
.04571,	255.10,	7.881
.04900,	255.59,	7.902
.05224,	256.07,	7.917
.05889,	256.83,	7.950
.06222,	257.49,	7.966
.06550,	257.97,	7.976
.06875,	258.14,	7.988
.08197,	260.53,	8.027
.08858,	261.94,	8.044
.09528,	262.92,	8.052
.10181,	264.00,	8.064
.12129,	267.69,	8.088
.13443,	270.52,	8.098
.14752,	273.07,	8.103
.16049,	275.78,	8.107
.18676,	281.32,	8.107
.19963,	284.15,	8.104
.21264,	286.81,	8.103
.22562,	289.90,	8.097

.21264	286.81	8.103
.22569	289.90	8.097
.23869	292.94	8.091
.25188	295.77	8.085
.26501	298.54	8.076
.27806	301.74	8.070
.29142	304.51	8.061
.31765	310.32	8.044
0.3309	313.09	8.037
0.3441	315.91	8.025
0.3571	318.95	8.018
0.3705	321.94	8.007
0.3836	324.60	7.999
0.3964	327.8	7.987
0.4098	331.1	7.976
0.4234	333.9	7.964
0.4499	339.5	7.947
0.4631	342.6	7.937
0.4763	345.5	7.926
0.4894	348.7	7.913
0.5024	351.3	7.905
0.5154	354.4	7.895
0.5284	357.2	7.885
0.5415	360.0	7.874
0.5542	362.6	7.865
0.5797	367.9	7.845
0.5926	370.6	7.835
0.6055	373.2	7.826
0.6183	375.8	7.815
0.6311	378.4	7.805
0.6439	381.3	7.796
0.6568	383.6	7.784
0.6692	386.0	7.776
0.6819	388.5	7.765
0.7073	393.4	7.751
0.7203	395.9	7.737
0.7331	398.4	7.731
0.7455	400.7	7.720
0.7584	403.3	7.711
0.7714	405.5	7.702
0.7840	407.7	7.696
0.7969	410.1	7.686
0.8101	412.8	7.672
0.8368	417.8	7.656
0.8502	419.8	7.651
0.8634	422.2	7.641
0.8770	424.9	7.634
0.8904	426.9	7.625
0.9037	429.4	7.616
0.9168	431.5	7.607
0.9307	434.1	7.598
0.9446	436.6	7.589
0.9738	442.1	7.574
0.9888	444.8	7.565
1.0033	446.8	7.555
1.0181	449.3	7.545
1.0326	451.4	7.539
1.0470	453.9	7.530
1.0615	456.3	7.520
1.0761	458.3	7.513
1.0902	460.8	7.503
1.1187	465.7	7.488
1.1324	467.5	7.480
1.1459	469.5	7.471
1.1608	472.9	7.458
-999	0.0.0.0	

A. TRIAX

THIS IS A CAU TEST. IT HAS BEEN
CALCULATED BY COMPUTER PROGRAM NO. C-T-1R.6 USING FILE NO. T-209

PROJ. NO. 81C4055T3 REVIEWED BY: P/R
BORING NO. COE-12A DATE: 1/27/81 6/8/81
SAMPLE NO. S-3 INPUT DATA CHECKED BY: TC
SPECIMEN NO. B
DEPTH(FT.) 11.7 TEST NO. ID-293

ANISOTROPIC TYPE OF CONSOLIDATION USING 45 STRESS PATH
UNDRAINED DRA DTE CONDITIONS DURING LOADING
COMPRESSION MO OF RADIATION
CONSTANT CEL PRESSURE DURING LOADING

5.9818 INITIAL HEIGHT OF SPECIMEN IN INCHES
2.8563 INITIAL DIAMETER OF SPECIMEN IN INCHES
628.10 INITIAL VOLUME OF SPECIMEN IN CU. CM.
5000 PISTON DIAMETER IN INCHES
5100 WEIGHT OF TOP CAP ONLY IN TONS*10**-3
1.0080 WEIGHT OF TOP CAP + PISTON + DIAL IN TONS*10**-3
1.3330 WEIGHT OF TOP CAP + PISTON + DIAL + LVDT IN TONS*10**-3
YES WAS PISTON IN CONTACT WITH SPECIMEN DURING CONSOLIDATION?

.0240 MEMBRANE THICKNESS IN INCHES
2.8272 MEMBRANE DIAMETER IN INCHES
2.1280 FILTER STRIP CORRECTION CONSTANT AT
2% AXIAL STRAIN IN TONS ** 10-3
1.1430 RIGHT CYLINDER DISTORTION FACTOR

PRE-SHEAR CONDITIONS:

9.3024 CELL PRESSURE IN TSF
7.1928 BACK PRESSURE IN TSF
.1836 AXIAL DEFORMATION DURING CONSOL. IN INCHES
39.41 VOLUME CHANGE DURING CONSOL. IN CU. CM.
96.9750 MEASURED AXIAL LOAD DURING CONSOL. IN IN TONS *10**-3

EFFECTIVE STRESSES CORRECTED FOR MEMBRANE AND FILTER STRIPS, ETC:
AXIAL = 8.0379 KSF
LATERAL = 4.2043 KSF
MEAN = 5.4822 KSF
PBAR = 6.1211 KSF
LATERAL/AXIAL = .5231
AXIAL/LATERAL = 1.9118
OCR = 1.000

11.3512 PISTON DRAG CORRECTION IN TONS *10**-3
2000 FILE NUMBER FOR LOAD CELL OR PROVING RING
1000 FILE NUMBER FOR PORE PRESSURE CONVERSION CONSTANT
2000 FILE NUMBER FOR CELL PRESSURE CONVERSION CONSTANT
NONE FILE NUMBER FOR PISTON FRICTION CORRECTION CONSTANT
YES IS DATA NORMALIZATION REQUIRED?
DATA NORMALIZED TO PRESHEAR STRESSES
WITH NORM = P-PAR OF 6.1211 KSF
AND NORM = VERT STRESS OF 8.0379 KSF

AXIAL STRAIN %	DEVIATOR STRESS KSF	DEVIATOR OBLIQUITY KSF	DELTA-U A-FACTOR KSF	DELTA-U NORM*	P-BAR KSF	SECANT MODULUS KSF	TANGENT MODULUS KSF	DEVIATOR NORM*	DELTA-U NORM*	Q NORM	P-BAR NORM	SECANT NORM*
0.0000	3.8384	1.9130	0.0000	0.0000	6.1237	0.0000	0.0000	4.776	0.0000	-3136	1.0004	0.0000
0.0007	4.1098	1.9888	0.0480	0.0000	6.2113	1522.4369	248	5.113	0.0000	-3357	1.0147	4890.7539
0.0022	4.2641	2.0320	0.0800	0.0000	6.2524	18622.340	7506.869	5.295	0.0100	-3477	1.0215	2316.8306
0.0060	4.4681	2.0961	0.1280	0.0000	6.3104	10428.307	4956.550	5.559	0.0159	-3650	1.0309	1297.3998
0.0083	4.5651	2.1265	0.1520	0.0000	6.3349	8775.795	3622.677	5.680	0.0189	-3729	1.0349	1091.8986
0.0112	4.6507	2.1522	0.1680	0.0000	6.3617	7243.922	2823.515	5.786	0.0209	-3799	1.0393	901.2261
0.0159	4.7777	2.1949	0.2060	0.0000	6.3872	5918.711	2127.698	5.944	0.0256	-3903	1.0435	736.3549
0.0195	4.8330	2.2124	0.2180	0.0000	6.4029	5102.554	1411.451	6.013	0.0271	-3948	1.0460	634.8156
0.0241	4.8934	2.2343	0.2400	0.0000	6.4110	4368.413	1243.994	6.088	0.0299	-3997	1.0474	543.4802
0.0309	4.9736	2.2629	0.2660	0.0000	6.4251	3676.365	1041.764	6.188	0.0331	-4063	1.0497	457.3816
0.0340	5.0012	2.2744	0.2800	0.0000	6.4250	3421.904	894.069	6.222	0.0348	-4083	1.0496	425.7237
0.0369	5.0273	2.2844	0.2900	0.0000	6.4281	3221.304	764.908	6.255	0.0361	-4107	1.0502	400.7668
0.0438	5.0712	2.3035	0.3140	0.0000	6.4260	2813.715	614.242	6.309	0.0391	-4142	1.0498	350.0580
0.0467	5.0887	2.3107	0.3220	0.0000	6.4267	2674.557	496.354	6.331	0.0401	-4157	1.0499	332.7452
0.0498	5.1010	2.3166	0.3300	0.0000	6.4249	2532.723	404.054	6.346	0.0411	-4167	1.0496	315.0955
0.0550	5.1223	2.3262	0.3420	0.0000	6.4235	2333.167	344.150	6.373	0.0425	-4184	1.0494	290.2724
0.0581	5.1309	2.3312	0.3500	0.0000	6.4198	2223.370	285.849	6.383	0.0435	-4191	1.0488	276.6125
0.0611	5.1395	2.3362	0.3580	0.0000	6.4161	2130.725	308.765	6.394	0.0445	-4198	1.0482	265.0863
0.0664	5.1568	2.3477	0.3780	0.0000	6.4047	1985.197	397.667	6.416	0.0470	-4212	1.0463	246.9810
0.0680	5.1641	2.3496	0.3800	0.0000	6.4084	1950.630	299.881	6.425	0.0470	-4218	1.0469	242.4806
0.0717	5.1690	2.3544	0.3880	0.0000	6.4008	1854.230	156.992	6.431	0.0483	-4222	1.0457	230.8573
0.0800	5.1786	2.3627	0.4040	0.0000	6.3897	1742.031	153.219	6.443	0.0503	-4230	1.0439	216.7284
0.0830	5.1823	2.3665	0.4120	0.0000	6.3835	1679.116	163.620	6.447	0.0513	-4233	1.0429	208.9011
0.0876	5.1944	2.3770	0.4200	0.0000	6.3786	1627.087	167.398	6.455	0.0523	-4238	1.0421	202.4281
0.0905	5.1979	2.3779	0.4320	0.0000	6.3695	1547.400	123.812	6.462	0.0537	-4243	1.0406	192.5142
0.0928	5.1991	2.3811	0.4400	0.0000	6.3713	1501.174	87.563	6.467	0.0537	-4246	1.0409	186.7631
0.0981	5.2050	2.3894	0.4580	0.0000	6.3639	1466.237	82.819	6.468	0.0547	-4247	1.0397	182.4165
0.1011	5.2060	2.3918	0.4640	0.0000	6.3489	1392.366	71.565	6.476	0.0570	-4252	1.0372	173.2261
0.1035	5.2109	2.3976	0.4760	0.0000	6.3433	1352.924	118.691	6.477	0.0577	-4252	1.0363	168.3191
0.1095	5.2156	2.4019	0.4840	0.0000	6.3338	1326.129	141.162	6.483	0.0592	-4257	1.0348	164.9856
0.1124	5.2154	2.4049	0.4920	0.0000	6.3282	1257.320	35.385	6.489	0.0602	-4260	1.0338	156.4249
0.1178	5.2199	2.4084	0.4980	0.0000	6.3201	1224.356	38.687	6.489	0.0612	-4260	1.0325	152.3238
0.1290	5.2256	2.4237	0.5340	0.0000	6.3163	1172.612	67.697	6.494	0.0620	-4264	1.0319	145.8863
0.1344	5.2253	2.4267	0.5420	0.0000	6.3128	1075.151	22.087	6.501	0.0644	-4269	1.0285	133.7610
0.1404	5.2260	2.4316	0.5440	0.0000	6.2750	1032.092	2.719	6.501	0.0674	-4269	1.0251	128.4040
0.1518	5.2227	2.4418	0.5820	0.0000	6.2634	988.244	-8.509	6.502	0.0689	-4269	1.0232	122.9488
0.1578	5.2222	2.4465	0.5940	0.0000	6.2337	911.926	-18.114	6.498	0.0724	-4266	1.0184	113.4539
0.1630	5.2233	2.4508	0.6040	0.0000	6.2111	826.780	6.564	6.497	0.0739	-4266	1.0164	109.0814
0.1732	5.2248	2.4634	0.6340	0.0000	6.2120	849.581	16.021	6.498	0.0751	-4267	1.0149	105.6975
0.1864	5.2191	2.4709	0.6560	0.0000	6.1827	791.051	-19.160	6.500	0.0789	-4268	1.0101	98.4157
0.1909	5.2214	2.4773	0.6700	0.0000	6.1579	740.458	-162	6.493	0.0816	-4263	1.0060	92.1214
0.1970	5.2144	2.4804	0.6820	0.0000	6.1450	724.242	-32.228	6.496	0.0834	-4265	1.0039	90.1039
0.2032	5.2180	2.4848	0.6900	0.0000	6.1296	598.537	-28.946	6.487	0.0848	-4259	1.0014	86.9059
0.2137	5.2198	2.4938	0.7100	0.0000	6.1233	678.919	36.977	6.492	0.0858	-4262	1.0004	84.4552
0.2371	5.2155	2.5134	0.7580	0.0000	6.1043	646.349	-204	6.494	0.0883	-4264	0.9972	80.4131
0.2477	5.2123	2.5221	0.7800	0.0000	6.0542	500.660	-24.462	6.489	0.0943	-4260	0.9891	72.2408
0.2590	5.2116	2.5317	0.8020	0.0000	6.0305	554.672	-19.017	6.485	0.0970	-4258	0.9852	69.0074
0.2703	5.2133	2.5404	0.8200	0.0000	6.0081	529.996	4.477	6.484	0.0998	-4257	0.9815	65.9375
0.2930	5.2092	2.5567	0.8580	0.0000	5.9910	508.668	-1.124	6.486	0.1020	-4256	0.9788	63.2841
0.3035	5.2096	2.5652	0.8760	0.0000	5.9510	467.743	-6.987	6.481	0.1067	-4253	0.9722	58.1926
0.3149	5.2114	2.5733	0.8920	0.0000	5.9332	451.674	9.791	6.481	0.1090	-4253	0.9693	56.1934
0.3261	5.2069	2.5796	0.9080	0.0000	5.9181	435.908	-12.233	6.484	0.1110	-4257	0.9668	54.2319
0.3594	5.2097	2.6078	0.9440	0.0000	5.8998	419.551	-15.766	6.478	0.1130	-4253	0.9639	52.1970
0.3813	5.2094	2.6277	0.9720	0.0000	5.8452	381.475	3.390	6.481	0.1199	-4256	0.9549	47.4598
0.4039	5.2078	2.6375	1.0240	0.0000	5.8151	35.470	-4.258	6.481	0.1237	-4255	0.9500	44.7221
0.4258	5.2125	2.6525	1.0500	0.0000	5.7843	330.977	7.354	6.479	0.1274	-4254	0.9450	42.1726
0.4810	5.2036	2.6849	1.1160	0.0000	5.7607	323.652	2.741	6.485	0.1306	-4258	0.9411	40.1416
0.5172	5.2076	2.7083	1.1560	0.0000	5.6902	283.782	-2.582	6.474	0.1388	-4254	0.9296	35.3057
0.5474	5.2078	2.7265	1.1880	0.0000	5.6522	264.678	5.849	6.479	0.1438	-4254	0.9234	32.9290
0.5800	5.2056	2.7454	1.2220	0.0000	5.6203	250.126	-3.089	6.479	0.1478	-4254	0.9182	31.1185
0.6699	5.2107	2.7904	1.2940	0.0000	5.5852	235.680	-6.25	6.482	0.1570	-4252	0.9125	29.3213
0.7264	5.2194	2.8209	1.3380	0.0000	5.5158	204.826	10.572	6.483	0.1610	-4246	0.9011	25.4827
0.7832	5.2268	2.8506	1.3800	0.0000	5.4761	190.081	14.216	6.494	0.1655	-4243	0.8946	23.6482
0.8391	5.2366	2.8760	1.4200	0.0000	5.4378	177.248	12.894	6.503	0.1717	-4249	0.8964	22.0516

5474	52078	27265	1188	9674	24039	54203	250126	-3089	6479	1478	4254	9182	311185
5800	52056	27454	12220	8939	24028	54852	255680	-625	6476	1520	4252	9125	293213
6699	52107	27904	12940	9431	24053	55158	204826	10572	6483	1610	4256	9011	254827
7264	52194	28209	13380	9689	24097	54761	190081	14216	6494	1665	4263	8946	236882
7832	52268	28506	13800	9941	24134	54378	177248	12894	6503	1717	4269	8884	220516
8391	52339	28730	14100	10105	24170	54114	166297	10541	6512	1754	4275	8841	206892
8937	52434	29218	14760	10506	24217	53502	147293	15945	6523	1836	4283	8697	183249
10112	52546	29487	15080	10649	24273	53237	140030	15945	6537	1876	4292	8670	165806
10677	52616	29659	15280	10737	24308	53073	133272	6210	6546	1901	4298	8631	157532
11238	52616	29837	15520	10906	24308	52833	126622	8453	6546	1931	4298	8535	134522
113518	53003	30588	16300	11151	24501	52246	10817	19071	6594	1931	4330	8485	118006
13458	53244	30958	16640	11199	24622	51938	94000	16705	6624	2070	4330	8330	126109
13814	53386	31147	16800	11235	24776	51781	89523	13470	6642	2090	4361	8230	111377
16940	53551	31416	17040	11114	24704	51638	77645	19378	6662	2120	4374	8130	96600
20299	54148	32078	17520	10911	24731	51444	67061	19577	6676	2205	4423	8030	8522
22566	54624	32454	17720	10702	24751	51244	63162	19885	6687	2217	4452	7930	8430
24823	55034	32716	17820	10470	24773	51087	63162	19885	6692	2227	4452	7830	8330
27060	55478	32971	17900	10245	24810	50938	56558	20376	6704	2227	4532	7730	8230
31591	56380	33547	17900	9945	24810	50738	54587	19777	6704	2227	4532	7630	8130
33810	56842	33840	17840	9663	24821	50630	52581	20716	6704	2227	4532	7530	8030
36054	57262	33633	17820	9437	24831	50481	50513	22457	6704	2227	4532	7430	7930
38305	57774	33726	17700	9126	24887	50327	50513	22457	6704	2227	4532	7330	7830
40547	58271	33812	17580	8837	24936	50166	49042	22457	6704	2227	4532	7230	7730
42822	58716	33876	17460	8584	24952	50000	47475	19248	6704	2227	4532	7130	7630
45086	59145	33875	17280	8320	24972	49845	46042	19248	6704	2227	4532	7030	7530
47337	59666	33969	17160	8059	24983	49696	44954	20668	6704	2227	4532	6930	7430
49641	60085	33963	16980	7821	25004	49546	43711	18961	6704	2227	4532	6830	7330
51865	60978	33993	16800	7600	25021	49397	42504	18961	6704	2227	4532	6730	7230
54150	61388	34021	16500	7368	25042	49248	41710	18961	6704	2227	4532	6630	7130
56427	61807	33959	16260	7168	25064	49100	40748	18961	6704	2227	4532	6530	7030
58727	62272	34008	16120	6937	25085	48952	39880	19567	6704	2227	4532	6430	6930
60969	62717	33976	15900	6743	25106	48804	39177	20009	6704	2227	4532	6330	6830
63280	63092	33972	15740	6529	25127	48656	38450	17928	6704	2227	4532	6230	6730
65539	63584	33939	15500	6364	25148	48508	37697	19445	6704	2227	4532	6130	6630
67747	64085	33929	15280	6144	25169	48360	37195	19445	6704	2227	4532	6030	6530
70058	64592	33924	15040	5939	25190	48212	36682	19445	6704	2227	4532	5930	6430
72404	65092	33924	14800	5758	25211	48064	36173	19445	6704	2227	4532	5830	6330
74794	65592	33924	14500	5565	25232	47916	35664	18268	6704	2227	4532	5730	6230
77250	66092	33924	14280	5302	25253	47768	35155	18268	6704	2227	4532	5630	6130
79704	66592	33924	14020	5146	25274	47620	34646	18268	6704	2227	4532	5530	6030
82157	67092	33924	13760	4969	25295	47472	34137	17648	6704	2227	4532	5430	5930
84608	67592	33924	13500	4854	25316	47324	33628	17648	6704	2227	4532	5330	5830
87060	68092	33924	13240	4711	25337	47176	33119	17648	6704	2227	4532	5230	5730
89513	68592	33924	13000	4584	25358	47028	32610	17648	6704	2227	4532	5130	5630
91966	69092	33924	12760	4453	25379	46880	32101	17648	6704	2227	4532	5030	5530
94419	69592	33924	12520	4344	25400	46732	31592	17648	6704	2227	4532	4930	5430
96872	70092	33924	12280	4211	25421	46584	31083	17648	6704	2227	4532	4830	5330
99325	70592	33924	12040	4010	25442	46436	30574	17648	6704	2227	4532	4730	5230
101778	71092	33924	11800	3912	25463	46288	30065	17648	6704	2227	4532	4630	5130
104231	71592	33924	11560	3804	25484	46140	29556	17648	6704	2227	4532	4530	5030
106684	72092	33924	11320	3704	25505	46000	29047	17648	6704	2227	4532	4430	4930
109137	72592	33924	11080	3606	25526	45860	28538	17648	6704	2227	4532	4330	4830
111590	73092	33924	10840	3506	25547	45720	28029	17648	6704	2227	4532	4230	4730
114043	73592	33924	10600	3406	25568	45580	27520	17648	6704	2227	4532	4130	4630
116496	74092	33924	10360	3306	25589	45440	27011	17648	6704	2227	4532	4030	4530
118949	74592	33924	10120	3206	25610	45300	26502	17648	6704	2227	4532	3930	4430
121402	75092	33924	9880	3106	25631	45160	26000	17648	6704	2227	4532	3830	4330
123855	75592	33924	9640	3006	25652	45020	25500	17648	6704	2227	4532	3730	4230
126308	76092	33924	9400	2906	25673	44880	25000	17648	6704	2227	4532	3630	4130
128761	76592	33924	9160	2806	25694	44740	24500	17648	6704	2227	4532	3530	4030
131214	77092	33924	8920	2706	25715	44600	24000	17648	6704	2227	4532	3430	3930
133667	77592	33924	8680	2606	25736	44460	23500	17648	6704	2227	4532	3330	3830
136120	78092	33924	8440	2506	25757	44320	23000	17648	6704	2227	4532	3230	3730
138573	78592	33924	8200	2406	25778	44180	22500	17648	6704	2227	4532	3130	3630
141026	79092	33924	7960	2306	25799	44040	22000	17648	6704	2227	4532	3030	3530
143479	79592	33924	7720	2206	25820	43900	21500	17648	6704	2227	4532	2930	3430
145932	80092	33924	7480	2106	25841	43760	21000	17648	6704	2227	4532	2830	3330
148385	80592	33924	7240	2006	25862	43620	20500	17648	6704	2227	4532	2730	3230
150838	81092	33924	7000	1906	25883	43480	20000	17648	6704	2227	4532	2630	3130
153291	81592	33924	6760	1806	25904	43340	19500	17648	6704	2227	4532	2530	3030
155744	82092	33924	6520	1706	25925	43200	19000	17648	6704	2227	4532	2430	2930
158197	82592	33924	6280	1606	25946	43060	18500	17648	6704	2227	4532	2330	2830
160650	83092	33924	6040	1506	25967	42920	18000	17648	6704	2227	4532	2230	2730
163103	83592	33924	5800	1406	25988	42780	17500	17648	6704	2227	4532	2130	2630
165556	84092	33924	5560	1306	26009	42640	17000	17648	6704	2227	4532	2030	2530
168009	84592	33924	5320	1206	26030	42500	16500	17648	6704	2227	4532	1930	2430
170462	85092	33924	5080	1106	26051	42360	16000	17648	6704	2227	4532	1830	2330
172915	85592	33924	4840	1006	26072	42220	15500	17648	6704	2227	4532	1730	2230
175368	86092	33924	4600	906	26093	42080	15000	17648	6704	2227	4532	1630	2130
177821	86592	33924	4360	806	26114	41940	14500	17648	6704	2227	4532	1530	2030
180274	87092	33924	4120	706	26135	41800	14000	17648	6704	2227	4532	1430	1930
182727	87592	33924	3880	606	26156	41660	13500	17648	6704	2227	4532	1330	1830
185180	88092	33924	3640	506	26177	41520	13000	17648	6704	2227	4532	1230	1730
187633	88592	33924	3400	406	26198	41380	12500	17648	6704	2227	4532	1130	1630
190086	89092	33924	3160	306	26219	41240	12000	17648	6704	2227	4532	1030	1530
192539	89592	33924	2920	206	26240	41100	11500	17648	6704	2227	4532	930	1430
194992	90092	33924	2680	106	26261	40960	11000	17648	6704	2227	4532	830	1330
197445	90592	33924	2440	006	26282	40820	10500	17648	6704	2227	4532	730	1230
199898	91092	33924	2200	906	26303	40680	10000	17648					

13.9097	7.3856	3.2449	9.200	2.375	8.9754	6.9940	28.509	11.041	.9190	.1145	.6034	1.1410	3.1736
14.3701	7.4327	3.2368	.8680	.2452	3.7164	7.0393	25.011	7.726	.9247	.1105	.6071	1.1500	3.1116
14.6013	7.4454	3.2337	.8780	.2415	3.7227	7.0559	24.702	7.262	.9263	.1092	.6082	1.1527	3.0732
14.8289	7.4660	3.2264	.8580	.2346	3.7330	7.0863	24.461	9.900	.9299	.1067	.6097	1.1577	3.0433
15.0635	7.4912	3.2245	.8440	.2291	3.7456	7.1132	24.248	7.957	.9370	.1050	.6115	1.1621	3.0167
15.2946	7.5031	3.2161	.8260	.2234	3.7516	7.1373	23.959	7.238	.9335	.1028	.6129	1.1660	2.9808
15.5240	7.5245	3.2105	.8080	.2171	3.7623	7.1663	23.743	7.736	.9341	.1005	.6146	1.1717	2.9539
15.7499	7.5384	3.2028	.7900	.2114	3.7692	7.1914	23.491	7.557	.9379	.0983	.6158	1.1749	2.9225
15.9896	7.5593	3.1974	.7730	.2053	3.7800	7.2204	23.273	8.508	.9405	.0960	.6175	1.1796	2.8954
16.2293	7.5792	3.1913	.7540	.1993	3.7896	7.2483	23.048	8.405	.9429	.0938	.6191	1.1841	2.8675
16.4730	7.6233	3.1848	.7240	.1890	3.8117	7.3009	22.618	8.201	.9464	.0901	.6227	1.1927	2.8140
16.9917	7.6431	3.1791	.7060	.1832	3.8215	7.3290	22.390	5.291	.9509	.0878	.6243	1.1973	2.7856
17.2417	7.6504	3.1686	.6860	.1775	3.8252	7.3530	22.108	4.561	.9518	.0853	.6249	1.2013	2.7505
17.4970	7.6642	3.1607	.6660	.1715	3.8331	7.3811	21.876	4.817	.9538	.0829	.6262	1.2059	2.7216
17.7471	7.6749	3.1557	.6540	.1679	3.8374	7.3977	21.616	4.942	.9548	.0814	.6267	1.2086	2.6993
17.9954	7.6908	3.1491	.6360	.1624	3.8454	7.4200	21.407	5.929	.9568	.0791	.6282	1.2129	2.6632
18.2455	7.7044	3.1408	.6160	.1566	3.8522	7.4510	21.188	3.851	.9585	.0766	.6293	1.2173	2.6340
18.4973	7.7101	3.1339	.6020	.1527	3.8551	7.4682	20.930	4.353	.9592	.0749	.6298	1.2201	2.6039
18.7405	7.7258	3.1263	.5820	.1469	3.8629	7.4964	20.742	6.053	.9612	.0724	.6311	1.2247	2.5805
19.2320	7.7536	3.1161	.5520	.1380	3.8758	7.5409	20.357	3.450	.9646	.0687	.6334	1.2319	2.5326
19.4683	7.7566	3.1076	.5360	.1337	3.8783	7.5586	20.125	2.058	.9650	.0667	.6336	1.2348	2.5037
19.7011	7.7633	3.0989	.5180	.1289	3.8816	7.5803	19.921	6.992	.9658	.0644	.6341	1.2384	2.4784
19.9581	7.7918	3.0918	.4920	.1213	3.8959	7.6202	19.807	232.850	.9694	.0612	.6365	1.2450	2.4643 STOP

A. BASIC RESPT

CDOS 16K BASIC, VERSION 5.4

APPENDIX H
Supporting Data
Consolidation Tests

1.1511
6/20/81
6/20/81

CONSOLIDATION TEST - LAMINATING SUMMARY

11-11-81

Prof. No. 61647 Sample No. 5-33 Date Start 5/18/81 Completed 5/14/81
 Apparatus No. 5 Ring No. 6 Diameter, in. 2.50 Specific Gravity, Gs 2.762 Solids Height, Hs 2.4268 inch
 Visual Classification Clay, brown m. to f. sandy s.p. silty CLAY, trace s. gravel to c. sand

Initial Height		Ho		in, Water		13.7		%, Void		0.440		, Deg. of		86.1		%, Total Unit		135.3		pcf, Dry Unit		113.5		pcf							
Final		Height		Hf		0.5842		in, Content		13.0		%, Ratio		0.369		Saturation		37.7		%, Weight		142.1		pcf, Weight		125.7		pcf			
Final	Applied	Final	Comp	Comp	Strain	K	Void	Ratio	Sec	Fitting	Time	From	From	Average	Primary	Comp	Ratio	From	From	Average	Primary	Comp	Ratio	From	From	Average	Primary	Comp	Ratio		
Pressure	Reading	Pressure	and	Filter	Change	cm ² /lb ²	Ratio	Ratio	Comp	Time	sec	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190		
0	0400	0400	0400	0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
18	0439	0415	0415	0415	0024	0.390	0.3584	0.4103	3.25	116.4	300	1,403	2,363	4,183	62.3	77.8	7.99	14.63	7.99	14.63	7.99	14.63	7.99	14.63	7.99	14.63	7.99	14.63	7.99		
14	0464	0423	0423	0423	0041	0.667	2.173	0.4316	6.83	576.6	168	8,186	7,010	7,898	59.9	87.8	9.0	16.8	9.0	16.8	9.0	16.8	9.0	16.8	9.0	16.8	9.0	16.8	9.0		
0.5	0574	0422	0422	0422	0082	1.33	0.708	0.4210	4.88	290.4	72	17,291	14,365	16,128	57.1	79.3	8.05	29.0	8.05	29.0	8.05	29.0	8.05	29.0	8.05	29.0	8.05	29.0	8.05		
1.0	0583	0443	0443	0443	0088	2.28	2.588	0.4180	4.88	240	66	20,496	17,325	18,911	57.2	81.1	7.5	240	7.5	240	7.5	240	7.5	240	7.5	240	7.5	240	7.5		
2.0	0662	0456	0456	0456	0206	3.35	1.960	0.3920	11.29	125	54	35,180	20,503	27,891	51.2	77.2	7.5	125	7.5	125	7.5	125	7.5	125	7.5	125	7.5	125	7.5		
4.0	0758	0471	0471	0471	0287	4.67	1.413	0.3730	11.29	40	43	51,474	22,413	36,319	52.4	77.6	7.8	40	7.8	40	7.8	40	7.8	40	7.8	40	7.8	40	7.8		
8.0	0861	0487	0487	0487	0374	6.08	0.771	0.3526	12.20	13.8	42	47,809	24,870	36,315	51.5	73.7	7.96	13.8	7.96	13.8	7.96	13.8	7.96	13.8	7.96	13.8	7.96	13.8	7.96		
16.0	0972	0503	0503	0503	0469	7.63	0.771	0.3304	12.46							8.0															
4.0	0942	0488	0488	0488	0454	7.39		0.3329								8.0															
2.0	0721	0480	0480	0480	0441	7.17	1.657	0.3369		25.4	15	175.17	68.95	122.06	79.6	93.3	7.1	25.4	7.1	25.4	7.1	25.4	7.1	25.4	7.1	25.4	7.1	25.4	7.1		
4.0	0932	0485	0485	0485	0447	7.27	0.385	0.3355	1.07	47	18	90.52	57.28	73.90	72.2	93.2	7.7	47	7.7	47	7.7	47	7.7	47	7.7	47	7.7	47	7.7		
8.0	0752	0493	0493	0493	0459	7.47	0.548	0.3327	1.03	31	13	149.22	78.84	110.53	55.6	65.0	7.6	31	7.6	31	7.6	31	7.6	31	7.6	31	7.6	31	7.6		
16.0	0985	0504	0504	0504	0481	7.82	0.803	0.3116	5.69	135	37	32.04	25.781	28.910	62.0	73.8	8.05	135	8.05	135	8.05	135	8.05	135	8.05	135	8.05	135	8.05		
32.0	1087	0520	0520	0520	0527	9.22	0.845	0.3041	17.20	107	26	38.291	37.322	37.809	66.0	72.9	7.2	107	7.2	107	7.2	107	7.2	107	7.2	107	7.2	107	7.2		
64.0	1213	0534	0534	0534	0679	11.05		0.2812	19.52							7.25															
32.0	1199	0529	0529	0529	0670	10.90		0.2833								8.1															
8.0	1157	0516	0516	0516	0643	10.46		0.2896																							

Remarks

rebound of 5 ft or more

Remarks

5/26/81
J. P. L.

CONSOLIDATION TEST - LOADING SUMMARY

Project No. 2104055 T-3 Boring No. COC-9 Sample No. 5-4A Date Start 5/6/81 Completed 5/11/81
 Apparatus No. 4 Ring No. C-1 Diameter, in. 2.50 Specific Gravity, Gs 2.705 Solids Height, Hs 0.4387 inch
 Visual Classification ck, brown m. to s. sandy sp. siltly clay, trace s. gravel to c. sand

Initial Final	Height Hf	Ho	Water Content	Volumetric Strain	Comp. Strain and Filter Paper	Final Dial Reading	True Dial Change	K	Void Ratio e	Sec Comp Coef. $\frac{\Delta H}{H_0} \log \frac{1}{1-e}$	Fitting Time, sec.		Coefficient of Consolidation, C_v , 10 ⁻⁴ cm ² /sec		Primary Comp Ratio, r in %		Duration of Load Hours
											150	90	From 150	Average	150	90	
0	0400	0400	0	0	0400	0	0	1.705	1.3923		1410	456	3.598	2.986	3.092	67.2	72.3
10	0463	0463	0.001	0.671	0463	0.001	0.671	1.403	1.31		1007	200	4.075	4.052	4.513	4.8	7.0
14	0494	0494	0.004	1.047	0494	0.004	1.047	1.654	1.18		936	192	5.305	6.011	5.658	6.59	75.6
12	0546	0546	0.007	1.75	0546	0.007	1.75	1.713	9.82		579	102	9.471	11.140	9.805	52.7	73.5
10	0608	0608	0.058	2.57	0608	0.058	2.57	1.878	9.00		290	66	16.523	16.882	16.706	46.2	71.5
2.0	0686	0686	0.223	3.65	0686	0.223	3.65	1.713	13.91		173	54	27.020	20.122	23.511	45.5	65.4
4.0	0784	0784	0.306	5.01	0784	0.306	5.01	1.027	13.09		153	22	25.498	21.052	26.275	42.4	60.9
8.0	0888	0888	0.394	6.45	0888	0.394	6.45	0.704	15.29		113	36	27.251	28.383	22.817	49.1	63.2
16.0	0995	0995	0.489	8.0	0995	0.489	8.0	0.3813	12.28								8.0
4.0	0974	0974	0.479	7.83	0974	0.479	7.83	0.3836									8.0
2.0	0956	0956	0.467	7.68	0956	0.467	7.68	0.3858			60	14	72.574	77.756	75.115	42.1	54.7
4.0	0967	0967	0.475	7.77	0967	0.475	7.77	0.3845	1.72		107	21	29.788	18.007	43.897	35.2	46.7
8.0	0984	0984	0.484	7.92	0984	0.484	7.92	0.3824	2.13		60	12	71.948	83.624	77.796	39.9	47.8
16.0	1012	1012	0.501	8.20	1012	0.501	8.20	0.3786	5.75		26	25	51.076	10.842	45.252	42.7	61.2
32.0	1113	1113	0.527	9.57	1113	0.527	9.57	0.3532	12.52		94	24	43.584	23.681	41.623	32.3	40.8
64.0	1230	1230	0.689	11.28				0.3507	18.00								7.2
32	1217	1217	0.681	11.15				0.3375									7.3
8	125	125	0.662	10.83				0.2119									8.1

Remarks

rebound is 15%

2 1/2 0

Proj. No. 81C405 Proj Eng T-3 M
 Boring No. CCE-9 Sample No. 5-44 Date Start 5/6/86 Completed 5/11/81
 Diameter, in. 2.50 Specific Gravity, Gs 2.765 Solids Height, Hs 0.4387 Inch
 Apparatus No. 4 Ring No. C-1

Visual Classification

[illegible]

Calculations By: J. H. H.

Summary data by Sh Reviewed by RSL

WCC L-302 (3/78)

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. 51001 51001 Proj. Eng. RM Boring No. Cae-9 Sample No. 5-58 Depth, ft. 14.0 Date Start 5/17/01 Completed 5/18/01
Apparatus No. 6 Ring No. C-3 Diameter, in. 2.50 Specific Gravity, Gs 2.732 Solids Height, Hs 0.4505 Inch
Visual Classification Ch. brown S. sandy s.p. silty CLAY, trace S. gravel to m. sand

Initial Height		Ho 0.61134 in.		Water		11.0		%, Void		0.357		Deg. of		24.5		%, Total Unit		139.3		pcf, Dry Unit		125.5		pcf	
Final		Hf 0.5754 in.		Content		10.3		%, Ratio		0.277		Saturation		101.6		%, Weight		147.0		pcf, Weight		133.3		pcf	
Final Applied Pressure, lbf	Final Dial Reading	Comp. Store and Filter Paper	True Dial Change, Inch	Volumetric Strain $\Delta H/H_0, \%$	$K_{cm}/H_0 \times 10^{-6}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec. Comp. $\frac{\Delta H}{\Delta \log t} \times 10^{-4}$	Fitting Tm, sec.		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp. Ratio, r in %		Duration of Load, Hours											
								150	50	Average	150	50													
0	0400	0400	0	0	22.23	0.3569		34.7	13.2	116.98	89.82	118.40	45.2	48.6	7.9										
1/2	0425	0416	0014	2.29	2.162	0.528	3.76	277.4	10.8	18.31	10.93	14.62	66.7	74.5	8.0										
4	0444	0419	0025	4.07	2.597	0.514	5.07	345.6	72.4	14.61	16.21	15.41	54.2	72.4	8.0										
12	0478	0428	0050	8.18	3.714	0.3458	8.34	173.4	55.2	28.79	21.02	24.91	33.0	48.1	7.5										
11.0	0523	0437	0084	15.4	2.915	0.2361	4.00	144.2	40.8	34.06	27.98	31.02	22.4	62.7	7.5										
2.0	0601	0452	0149	24.4	1.716	0.323	11.12	157.1	39.6	30.24	28.24	29.24	43.3	56.6	7.8										
4.0	0684	0467	0217	35.5	1.314	0.2088	11.45	95.3	42	49.23	25.96	37.60	38.9	53.1	7.95										
8.0	0780	0483	0297	48.5	0.995	0.2910	12.27	68.7	28.8	66.25	26.73	51.57	42.8	57.5	8.0										
16.0	0883	0499	0384	62.8		0.2717	15.54								8.0										
4.0	0856	0484	0372	6.08		0.2744									7.05										
2.0	0837	0476	0361	5.91	1.164	0.2768		18.2	8.4	248.38	125.10	186.74	34.9	33.6	7.7										
4.0	0845	0481	0368	6.02	1.74	0.2152	1.96	83.5	2.4	54.00	43.67	48.83	58.3	65.0	7.6										
8.0	0865	0489	0376	6.15	0.872	0.2735	1.96	54.2	12.8	82.81	52.69	67.75	40.1	49.4	8.0										
16.0	0894	0500	0394	6.44	0.608	0.2695	4.59	72.4	27.4	55.57	24.88	45.22	42.9	64.1	7.3										
32.0	0990	0516	0474	7.75	0.499	0.2517	13.91	22.3	22.8	47.90	43.61	45.15	71.3	22.0	7.25										
64.0	1099	0530	0569	9.31		0.2306	15.54								7.0										
32.0	1091	0525	0566	7.26		0.2313									7.1										
8.0	1056	0512	0544	8.90		0.2362																			

Remarks

CONCLUSION ON TEST-LOADING SUPPLEMENT

Proj. No. 814255 T-3 Proj Eng MM Boring No. COE-7 Sample No. 5-5B Depth, ft 14-6 Date Start 5/7/61 Completed 5/14/61
Accuracy No. 6 Ring No. C-3 Diameter, in 2.50 Specific Gravity, Gs 2.732 Solids Height, Hs 0.4505 inch

Visual Classification

Initial Height Ht. 0.6113 in.		Water		11.0 % Void		0.357 % of		24.5 % Total Unit		123.3 pcf, Dry Unit		125.5 pcf	
Final Height Ht 0.5754 in.		Content		10.3 % Ratio		0.277 Saturation		101.6 % Weight		147.0 pcf, Weight		22.3 pcf	
Final Applied Pressure lbf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change Inch.	Volumetric Strain $\Delta H/H_0, \%$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $C_c = \frac{\Delta H/H_0}{\Delta \log 1}$	Fitting Time, sec		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp Ratio, r in %	Duration of Load Hours	
							190	150	From 190	From 150	Average	190	150
8.0	1056	0512	0544	8.90	2.362								7.8
2.0	1007	0473	0507	8.29	2.444								8.03
4.8	0.0858	0468	0390	6.38	2.704								18.97
0	0.0730	0457	0273	4.47									

Remarks

Calculations By: SP, P, Summary data by RL Reviewed by RL

WCC L-302 (3/78)

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. 8104053-T3 Prof. Eng. AM Boring No. Coc 9 Sample No. S-6 B Date Start 5/14/81 Completed 5/14/81
 Apparatus No. 7 Ring No. 5-5 Diameter, in. 2.50 Specific Gravity, Gs 2.751 Solids Height, Hs 0.4366 inch
 Visual Classification Cl, brown m.s. S. sandy s.p. silty CLAY trace gravel to a sand

Initial Height		H _o	Water	% Voids	Deg. of	% Total Unit	pcf, Dry Unit	pcf							
Final		H _f	Content	% Ratio	Saturation	% Weight	pcf, Weight	pcf							
Final		Comp Stone and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_o, \%$	K _{cm} /lbf $\times 10^{-6}$	Void Ratio $e = \frac{H}{H_o} \frac{H_s}{H_s}$	Sec Comp $C_c = \frac{\Delta H/H_o}{\Delta \log 1 + 10^{-4}}$	Fitting Tim, sec	From 190	From 150	Average	Primary Comp Ratio, r in %	Duration of Load Hours		
0	0400	0400	0	0		.4077							4.1		
18	0454	0419	0035	0.575	2.997	.3937		595.4	22.9	8.544	5.186	6.865	54.5	8.0	
14	0488	0427	.0061	.993	5.693	.3937	9.44	205.4	90	21.48	12.93	18.73	50.6	20	
12	0542	0424	.0106	1.725	4.357	.3824	11.39	159.4	72	30.99	15.95	23.47	50.2	7.45	
10	0615	0447	.0168	2.73	5.688	.3692	12.10	149.8	48	32.22	23.37	27.73	34.6	2.5	
2.0	0705	0460	.0245	3.99	2.572	.3516	13.02	118.6	42	41.68	25.98	33.83	32.6	56.9	7.8
4.0	0807	0475	.0332	5.40	1.738	.3317	13.0	79.4	42	57.29	25.18	41.23	23.7	48.6	7.91
8.0	0918	0491	.0427	6.95	0.792	.2099	14.64	93.8	41.4	46.89	24.69	35.79	38.5	58.2	8.0
16.0	1032	0507	.0525	8.54		.2874	13.02								8.0
41.6	1005	0492	.0513	8.35		.2902									7.0
2.0	0984	0484	.0500	8.14	.94	.2932		25.4	12.6	171.4	80.34	125.83	44.7	51.9	7.7
4.0	0997	0489	.0508	8.27	.123	.2912	0.81	123.2	60	32.58	16.81	24.70	25.8	26.4	7.6
8.0	1016	0497	.0519	8.44	.0852	.2888	1.30	174.4	66	22.20	15.20	18.70	30.6	20.5	8.0
16	1047	0508	.0529	8.77	.410	.2842	3.25	78.8	33	55.16	29.84	42.50	13.7	60.1	7.3
32	1147	0524	.0623	10.14	.865	.2650	13.83	43.6	22.2	84.25	12.88	63.56	46.6	60.1	7.2
64	1265	0538	.0727	11.83		.2412	16.27								8.0
128	1355	0533	.0727	11.75		.2423									7.1
256	14219	0520	.0699	11.37		.2476									

Remarks

5-1-53

T-3
 Proj. No. 814055 Boring No. 6029 Sample No. 5-63 Date Start 3/7/51 Completed 5/11/51
 Apparatus No. 1 Ring No. 5-5 Diameter, in. 2.50 - Specific Gravity, Gs. 2.751 Solids Height, Hs. 0.4366 inch

Visual Classification

[illegible]

CONSOLIDATION TEST - LOADING SUMMARY

Proj. No. 87405 T-3 Proj Eng RU Boring No COE-9 Sample No S-6C Depth, ft 16.5 Date Start 5/17/87 Completed 5/14/87
 Apparatus No 8 Ring No 5-7 Diameter, in 2.50 Specific Gravity, Gs 2.745 Solids Height, Hs 0.4487 inch
 Visual Classification Cl, brown S. sandy s.p. silty clay, some s. graded to m. sand

Initial Final	Final Applied Pressure lbf	Final Dial Reading	Comp Stn and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	$K_{\sigma'_{vm}} \times 10^{-4}$	Void Ratio $e = \frac{H-H_0}{H_0}$	Sec Comp Cor. $\frac{\Delta H}{\Delta \log t}$ $\times 10^{-4}$	Fitting Time, sec		Coefficient of Consolidation, C_v $10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp Ratio, r in %		Duration of Load Hours
									150	190	From 150	Average	150	190	
									150	190	From 150	Average	150	190	
0	0400	0800		0	0		0.3735								3.1
1/4	0431	0417		.002	.325	2.185	0.3691								1.0
1/4	0460	0449		.0041	.665	4.486	0.3644	7.79							7.17
1/2	0505	0448		.0077	1.249	1.927	.3564	11.36							2.4
1.0	0555	0439		.0116	1.88	1.859	.3477	23.92							2.3
2.0	0634	0452		.0182	2.95	1.193	.3330	11.36							7.8
4.0	0726	0467		.0259	4.20	1.450	.3158	11.36							7.9
8.0	0827	0483		.0344	5.58	0.774	.2862	12.93							8.0
16.0	0935	0499		.0436	7.07		.2764	16.23							8.0
4.0	0909	0484		.0425	6.90		.2788								7.0
2.0	0832	0476		.0414	6.72	0.315	.2813								1.7
4.0	0902	0481		.0421	6.83	0.299	.2797	0.81							2.6
1.0	0919	0489		.0430	6.78	0.199	.2777	1.30							2.0
16.0	0948	0500		.0448	7.27	0.581	.2737	4.87							7.0
32.0	1045	0516		.0529	8.58	0.219	.2556	16.23							1.2
64.0	1150	0530		.0620	10.06		.2353	14.60							8.0
128.0	1441	0525		.0616	9.97		.2362								1.1
8.0	1105	0512		.0593	9.62		.2514								

Remarks

CONSTRUCTION TEST REPORT

Proj. No. 21C403-13 Proj. Eng. WU Boring No. 5-7 Sample No. 5-6c Depth, ft 16.5 Date Start 5/7/88 Completed 5/14/88

Apparatus No. B Ring No. 5-7 Diameter, in. 2.50 Specific Gravity, Gs 2.715 Solids Height, Hs 0.6987 inch

Visual Classification

Initial Height		Moisture Content		Water		11.7 %		Void		0.374		Deg of		86.2 %		Total Unit		133.2 pcf		Dry Unit		124.5 pcf	
Final		Hr		0.579 in		Content		10.4 %		Ratio		0.232		Saturation		37.3 %		Weight		146.1 pcf		132.4 pcf	
Final Applied Pressure, psi	Final Dial Reading	Comp Stone and Filter Paper	True Dial Change, Inch	Volumetric Strain $\Delta H/H_0, \%$	Void Ratio $\frac{H-H_s}{H_s}$	Sec Comp $\frac{\Delta H/H_0}{\Delta \log t}$	Fitting Tim, sec.		From 190		From 150		Average		Primary Comp Ratio, r in %		190		150		Duration of Load, Hours		
8.0	1105	0.0512	0.593	9.62	0.2414		190														7.8		
2	1053	0.0495	0.558	9.05	0.2492		150														7.9		
4	0911	0.0468	0.443	7.19	0.2718		190														13.47		
9	0.0710	0.0457	0.253	4.11			150																
</																							

Remarks

CONSOLIDATION TEST - LOADING SUMMARY

Proj. No. 51405 T-3 Boring No. Coe 92 Sample No. 5-8B Depth, ft. 19.9 Date Start 6/9/81 Completed 6/16/81
 Apparatus No. 7 Ring No. 6-1 Diameter, in. 2.50 Specific Gravity, Gs 2.718 Solids Height, Hs 0.4323 inch
 Visual Classification Clay brown S. sandy m.p. silty CLAY, trace S. gravel to m. sand 66.8

Initial Height Hf		Ho		in, Water		12.8		%, Void		0.418		Deg. of		137.5		pcf, Dry Unit		190.8		pcf							
Final		Hf		0.5948		in, Content		12.7		%, Ratio		0.551		Saturation		0.1, 9		%, Weight		142.3		pcf, Weight		196.8		pcf	
Final	Applied Pressure lbf	Final Dial Reading	Comp. and Filter Paper	True Dial Change Inch.	Volumetric Strain $\Delta H/H_0, \%$	$V_c \times 10^{-3}$	$e = \frac{H-H_s}{H_s}$	Sec. Comp. $C_c = \frac{\Delta H}{\Delta \log 1}$	Filling Time, sec	From 190	From 150	Average	Primary Comp. Ratio, r in %	190	150	150	150	150	150	150	150	150	150	150	150	150	150
0		0400	0400	0	0		.4176																				
48		0437	0413	0024	.391	1.073	.4121																				
94		0471	0421	0050	.81	1.041	.4061	4.72																			
112		0508	0430	0078	1.27	0.957	.3996	7.33																			
110		0566	0441	0125	2.04	1.523	.3888	10.92																			
210		0638	0454	0184	3.00	1.062	.3751	12.71																			
410		0729	0469	0260	4.24	0.921	.3576	13.06																			
610		0837	0485	0352	5.74	0.488	.3215	16.13																			
1610		0953	0501	0452	7.37		.2172	16.46																			
410		0918	0486	0432	7.04		.2173																				
210		0895	0478	0417	6.79	0.515	.3213																				
410		0757	0483	0426	6.74	0.843	.2107	1.30																			
810		0730	0491	0439	7.15	0.254	.2162	1.47																			
1610		0965	0502	0463	7.54	0.231	.2107	5.70																			
3210		1076	0516	0558	9.09	0.185	.2888	17.92																			
6410		1203	0532	0671	10.93		.2626	19.23																			
3210		1193	0521	0666	10.85		.2155																				
810		1145	0514	0631	10.28		.2119																				
Remarks																											

Remarks

Proj. No. B1C4055 ^{T-3} Proj Eng PM4 Boring No. COE 9A Sample No. 5-80 Depth, ft 19.9 Date Start 6/16/81
Corporatus No. 7 Ring No. 2-1 Diameter, in 2.50 Specific Gravity, Gs 2.748 Solids Height, Hs 0.422 inch
Visual Classification _____

[illegible]

Proj. No. 81C4055 T-3 Boring No. Coe 104 Sample No. 5-10 Date Start 5/29/81 Completed 5/21/81
Apparatus No. 4 Ring No. C-3 Diameter, in. 2.50 Specific Gravity, Gs 2.734 Solids Height, Hs 0.443 inch
Visual Classification CL-ML, gr-br m-s sandy s.p. silty CLAY, trace s.g. gravel to sand.

Initial Height		Ho 0.6122 in, Water		11.1 % Void		Deg of 0.379		79.9 % Total Unit		137.2 pcf, Dry Unit		123.5 pcf				
Final Height		Hf 0.5737 in, Content		10.4 % Ratio		0.231		Saturation		97.2 % Weight		145.6 pcf, Weight		131.9 pcf		
Final Applied Pressure lbf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	$K_{cw}/b^2 \times 10^{-8}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $\frac{Ca \Delta H/H_0}{\Delta \log t \times 10^{-4}}$	Fitting Tim, sec	From 1 50	From 1 90	Coefficient of Consolidation, $C_v, 10^{-4} \text{ cm}^2/\text{sec}$	Average	Primary Comp Ratio, r in %	1 90	1 50	Duration of Load, Hours
0	0400	0400	0	0		0.379										
18	0436	0416	0020	0.33	2281	.3750										11.1
14	0458	0424	0034	0.55	5935	.3718	5.71									7.8
112	0507	0433	0074	1.21	4421	.3628	5.06									8.5
10	0506	0444	0122	1.77	3015	.3520	5.22									7.1
20	0640	0451	0183	2.79	1307	.3383	1.41									8.0
40	0736	0472	0264	4.31	1306	.3201	5.22									8.1
80	0842	0488	0354	5.78		.2998	6.26									7.9
160	0957	0504	0453	7.39	0.690	.2775	6.85									8.03
40	0730	0489	0441	7.20		.2902										7.1
20	0711	0481	0430	7.02		.2821										7.7
40	0922	0486	0436	7.11	0.819	.2813	—									7.8
80	0939	0494	0445	7.26	0.233	.2793	7.02									8.1
160	0970	0505	0465	7.59	0.282	.2748	5.55									7.4
320	1066	0521	0545	8.89		.2568	15.5									7.3
640	1183	0535	0648	10.57		.2326	14.7									8.0
320	1172	0530	0642	10.47		.2329										7.1
80	1137	0517	0620	10.12		.2399										7.85

Remarks

Remarks

Proj. No. 81C465 T-3 Proj. Eng. RSL Boring No. COE108 Sample No. S-26 Depth, ft. 138 Date Start 5/14/81 Completed 5/21/81
Apparatus No. 6 Ring No. C-1 Diameter, in. 2.50 Specific Gravity, Gs. 2.74 Solids Height, Hs. 0.4262 inch

Visual Classification

[illegible]

Remarks

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. ALC4055 T-7 Proj. Eng. W Boring No. COE 11A Sample No. 5-2B Date Start 5/14/82 Completed 5/21/81
 Apparatus No. B Ring No. C-8 Diameter, in. 2.50 Specific Gravity, Gs 2.748 Solids Height, Hs 0.4437 Inch
 Visual Classification Cl, mottled gray & brown m-f sandy silt & silty clay, trace s. gravel to m. sand.

Initial Height	Ho	0.6142	in.	Water	10.5	%	Void	0.366	Deg of	79.0	%	Total Unit	138.6	pcf	Dry Unit	125.4	pcf
Final Height	Hf	0.5861	in.	Content	10.8	%	Ratio	0.303	Saturation	37.8	%	Weight	145.6	pcf	Weight	131.4	pcf
Final Applied Pressure lbf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	$V_{cm}^3 \times 10^{-6}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $\frac{\Delta H}{\Delta \log 1} \times 10^{-4}$	Fitting Time, sec	From 190	From 190	Average	Primary Comp Ratio, r in %	190	50	Duration of Load Hours		
0	0400.	0400	0	0		0.3658										6.7	
1/8	0419	0418	0009	0.15	6.667	0.3638		56.4	37.51	21.15	29.33	34.6	67.6	6.3			
1/4	0444	0418	0026	0.42	5.831	0.3600	4.07	43.2	42.17	27.42	34.77	40.	56.	7.9			
1/2	0478	0427	0051	0.83	6.180	0.3545	5.70	24.2	69.53	11.61	55.51	43.1	54.7	8.4			
1.0	0522	0438	0084	1.37	5.173	0.3471	7.02	40.2	49.12	25.80	28.96	30.8	53.1	7.15			
2.0	0583	0451	0132	2.15	3.304	0.3364	8.95	30	73.81	37.86	55.54	30.7	46.2	7.90			
4.0	0665	0456	0199	3.24	0.917	0.3215	10.58	50.4	52.24	21.99	27.12	22.1	41.0	8.00			
8.0	0759	0482	0277	4.57	0.574	0.3042	12.21	42	34.34	25.66	30.00	31.3	49.4	7.2			
16.0	0862	0498	0364	5.73		0.2849	11.40							7.9			
4.0	0837	0483	0354	5.76		0.2871								7.0			
2.0	0818	0475	0343	5.58	0.0772	0.2895		72	20.14	14.84	17.49	34.9	51.0	7.7			
4.0	0828	0480	0348	5.67	0.0667	0.2884	1.14	78	16.53	13.66	15.09	25.6	43.0	7.9			
8.0	0846	0488	0358	5.83	0.045	0.2862	1.47	42	45.01	25.26	25.13	38.5	51.3	8.0			
16.0	0873	0499	0374	6.01	0.0678	0.2826	4.83	43.4	103.38	44.57	73.98	50.1	43.3	7.5			
32.0	0971	0515	0456	7.42	0.050	0.2644	17.10	23.5	52.02	25.07	13.55	55.3	52.5	7.3			
64.0	1086	0529	0557	9.07		0.2419	16.29							7.9			
128.0	1105	0534	0531	8.97		0.2433								7.2			
256.0	1041	0511	0530	8.63		0.2419											

Remarks

Calculations By: M. J.P., J.C., Summary data by J.P. Reviewed by P.R. HCC L-302 (3/78)

Sheet 2 of 2

LUNSON TION EST - JAD L... SUP - ... Y

Proj. No. 81C455 T-3 Proj Eng RSK Boring No. COE11A Sample No. 5-28 Depth, ft. 12.4 Date Start 5/14/81 Completed 5/21/81
Apparatus No. 8 Ring No. C-8 Diameter, in. 2.50 Specific Gravity, Gs 2.718 Solids Height, Hs 0.4437 inch

Visual Classification

Initial Height		Ho		in, Water		10.5		%, Void		0.366		Deg. of		79.0		%, Total Unit		12.6		pcf, Dry Unit		135.4		pcf			
Final Height		Hf		0.5861		in, Content		10.8		%, Ratio		0.303		Saturation		97.8		%, Weight		15.6		pcf, Weight		131.4		pcf	
Final Applied Pressure, lbf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change, Inch	Volumetric Strain $\Delta H/H_0, \%$	Void Ratio $e = \frac{H-H_s}{H_s}$		Sec Comp $C_c = \frac{\Delta H/H_0}{\Delta \log t} \times 10^{-4}$	Fitting Time, sec		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Average	Primary Comp Ratio, r in %		Duration of Load, Hours												
					e	H_s		t 90	t 50	From t 90	From t 50		t 90	t 50													
8.0	1041	0.511	0.530	8.63	0.2473										7.6												
2.0	0990	0.474	0.496	8.08	0.2555										8.05												
1.8	0857	0.467	0.384	6.25	0.2804										24.4												
0	0738	0.456	0.202	3.23																							
										</																	

Proj. No. BR405573 Proj Eng RM Boring No. COE 11A Sample No. 5-VB Date Start 5/23/81 Completed 8/2/81
Apparatus No. 4 Ring No. C-3 Diameter, in. 2.50 Specific Gravity, G_s 2.747 Solids Height, Hs 0.4422 inch
Visual Classification CL, gr-brown m-s sandy s.p. to mp silty CLAY, trace s. gravel to coarse sand

Initial Height		H ₀ 6.422		in, Water		11.8		% Void		0.283		Deg of		83.3		% Total Unit		137.3		pcf, Dry Unit		122.3		pcf	
Final Height		H _f 0.5828		in, Content		11.6		% Ratio		0.318		Saturation		100.3		% Weight		145.1		pcf, Weight		130.0		pcf	
Final Applied Pressure, lbf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change, Inch	Volumetric Strain, $\Delta H/H_0, \%$	$K, \frac{cm}{s} \times 10^{-6}$	Void Ratio, $e = \frac{H-H_s}{H_s}$	Sec Comp $C_c \frac{\Delta H}{\Delta \log i} \times 10^{-4}$	Fitting Time, sec	From 1'50	From 1'50	Average	Primary Comp Ratio, r in %	1'50	1'50	Duration of Load, Hours										
0	0400	0400	0	0		.3890									77.2										
18	0441	0414	.0027	.44	.055	.3829	3.91	203.3		5.65	1.21	4.33	41.2	100	7.6										
114	0462	0422	.0040	.65	.287	.3193	4.72	375		13.50	10.33	11.91	47.8	83.7	7.6										
112	0507	0431	.0076	1.24	1.947	.3718	4.07	165.3		20.18	23.86	21.02	41.2	59.3	8.0										
1.0	0572	0442	.0130	2.12	3.564	.3536	14.65	143		26.03	22.31	24.17	45.7	62.7	7.6										
21.0	0647	0455	.0192	3.13	2.310	.3455	8.95	124.4		28.43	20.87	24.65	37.5	57.1	7.8										
4.0	0739	0470	.0269	4.3	1.582	.3281	9.77	112.6		41.23	34.59	21.31	37.0	59.9	8.0										
8.0	0850	0486	.0364	5.93	0.915	.3066	15.63	89.3		50.32	27.85	44.03	40.0	55.4	7.55										
16.0	0959	0502	.0457	7.44		.2856	14.65								7.8										
4.0	0930	0487	.0443	7.21		.2888									8.0										
2.0	0910	0479	.0431	7.02	.373	.2915		77.4		56.12	47.95	52.03	37.5	45.0	7.6										
4.0	0923	0484	.0439	7.15	.349	.2897	1.79	37.4		118.78	53.78	86.28	45.7	66.7	7.85										
8.0	0940	0492	.0448	7.27	.442	.2877	1.55	101.4		43.59	22.83	23.21	52.0	75.9	8.0										
16.0	0970	0503	.0467	7.60	.521	.2834	4.07	61.2		70.93	38.22	54.57	45.0	60.7	7.2										
32.0	1070	0519	.0551	8.97	.302	.2644	12.91	63.7		66.01	45.25	55.63	57.9	70.7	7.8										
64.0	1178	0533	.0645	10.50		.2431	16.28								8.1										
32.0	1167	0528	.0637	10.40		.2445									7.4										
8.0	1131	0515	.0616	10.03		.2497																			
Remarks																									

Remarks

Proj. No. 81C405T-3 Proj. Eng. W.S.L. Boring No. CCE11A Sample No. 5-418 Depth, ft. 14.1 Date Start 5/23/81 Completed 8/2/81
Apparatus No. 4 Ring No. C-3 Diameter, in. 2.50 Specific Gravity, Gs. 2.747 Solids Height, Hs. 0.442 Inch
Visual Classification _____

[illegible]

Sheet 1 of 2

CONSOLIDATION TEST - LOADING SUMMARY

Proj No. 80C4055 T-3 Boring No. 00211A Sample No. 5-5B Date Start 5/23/86 Completed 6/2/81
Apparatus No. 7 Ring No. C-8 Diameter, in. 2.50 Specific Gravity, 2.50 Solids Height, Hs 0.4350 inch
Visual Classification CL, gr-br m-f sandy sp silty CLAY, trace s.g. mixed to sand

50.8

Initial Height		Water		Deg of		pcf, Dry Unit		pcf	
Mo <u>0.61028</u>		in, <u>12.1</u>		%, Void <u>0.403</u>		%, Total Unit <u>135.1</u>		pcf, Dry Unit <u>10.5</u>	
Final Height		in, Content		%, Ratio		Saturation		Coefficient of Consolidation, C_v , 10 ⁻⁴ cm ² /sec	
Hf <u>0.5642</u>		in, <u>11.0</u>		%, Ratio <u>0.237</u>		From 190		From 150	
Final Applied Pressure lb	Final Dial Reading	Comp Strain and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	V_{cr}/V_0 $\times 10^{-8}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp Co- $\Delta \log t$ $\times 10^{-4}$	Fitting Time, sec	
								190	150
0	0400	0400	0	0		1.030			
18	0439	0415	0024	.37		.3975	2.13		
114	0454	0423	0031	.51	1.662	.5350	1.80		
112	0488	0432	0056	.92	11.657	.2301	5.24		
110	0552	0443	0109	1.79	8.904	.2719	13.44		
210	0644	0456	0188	3.08	7.951	.3598	9.18		
410	0754	0471	0283	4.64	3.983	.3373	12.78		
810	0877	0487	0372	6.42	2.246	.3129	16.39		
1610	1003	0503	0500	8.19		.2880	17.37		
410	0973	0488	0485	7.95		.2315			
210	0954	0480	0474	7.77	1.392	.2940			
410	0966	0483	0481	7.88	0.091	.2924	0.52		
810	0985	0473	0492	8.06	0.155	.3899	0.33		
1610	1016	0504	0512	8.39	1.486	.2852	4.75		
3210	1124	0520	0604	7.90	0.326	.2641	15.07		
6410	1251	0534	0717	11.75		.2382	18.45		
3210	1239	0529	10710	11.03		.2392			
810	1204	0516	0688	11.27		.2448			

Remarks

Proj. No. 81C4055T-3 Proj. Eng. BSL Boring No. CoE 11A Sample No. S-5B Depth, ft. 16.7 Date Start 5/23/81 Completed 6/2/81
Apparatus No. 7 Ring No. C-8 Diameter, in. 2.50 Specific Gravity, Gs _____ Solids Height, Hs 0.4250 inch

Visual Classification

[illegible]

Calculations By: J.L., L., _____, _____
Summary data by: J.L. _____
Reviewed by: R.A. _____

WCC L-302 (3/78)

Sheets: 1

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. BL-4087 T-3 Boring No. Coe 12A Sample No. S-2D Date Start 5/14/81 Completed 5/21/81
 Apparatus No. 5 Ring No. C-6 Diameter, in. 6.50 Specific Gravity, Gs 2.764 Solids Height, Hs 94.64 inch
 Visual Classification CL, brown m-s sandy s.p. silty CLAY, trace S. graded to c. sand

Final Applied Pressure, lbf	Final Dial Reading	Comp. Stone and Filter Paper	True Dial Change, Inch.	Volumetric Strain $\Delta H/H_0, \%$	K_{exp}/s $\times 10^{-8}/s$	Void Ratio $e = \frac{H-H_0}{H_0}$	Sec Comp $C_c = \frac{\Delta H}{\Delta \log 1 + 10^{-4}}$	Fitting Time, sec		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp. Ratio, r in %		Duration of Load, Hours
								190	150	From 190	Average	190	150	
0	0400	0400	0	0		0.2754								10.4
48	0427	0418	0017	0.28	0.683	0.3716								
114	0442	0418	0027	0.44	3.313	0.3694	2.77	821.4	300	6.33	5.10	63.9	100	7.8
112	0448	0427	0051	0.83	2.954	0.3640	7.33	194.4	79.2	26.19	20.57	50.0	72.2	8.5
1	0533	0438	0095	1.55	2.416	0.3542	8.14	159.4	54	21.59	26.63	37.1	62.5	7.1
2.0	0592	0451	0141	2.30	2.016	0.3429	8.96	126.2	48	29.31	31.67	43.5	69.6	7.95
4.0	0669	0466	0203	3.31	1.234	0.3200	1.77	112.6	34.8	43.27	37.91	36.7	57.3	8.1
8.0	0760	0482	0278	4.53	0.758	0.3132	13.84	109.4	34.2	19.52	37.94	41.4	53.2	7.9
16.0	0864	0498	0366	5.96		0.2935	14.66	101.4	33	45.67	29.14	39.1	51.1	8.0
4.0	0839	0483	0356	5.80		0.2957								7.1
2.0	0821	0475	0346	5.64	0.676	0.2979								7.7
4.0	0832	0480	0352	5.73	0.151	0.2966	1.30	29.4	10.8	156.04	127.29	32.4	30.8	7.7
8.0	0848	0488	0360	5.86	0.121	0.2948	1.14	80.7	37.2	56.71	42.65	51.4	66.3	8.1
16.0	0877	0499	0378	6.16	0.099	0.2908	5.70	149.8	-	20.41	-	28.6	-	7.4
32.0	0971	0515	0456	7.43	0.048	0.2832	14.66	79.4	31.2	56.43	33.38	44.91	42.6	7.3
64.0	1088	0529	0554	9.10		0.2502	12.92	68.7	22.2	63.17	45.41	54.31	46.9	7.0
32.0	1075	0524	0551	8.97		0.2520								7.2
8	1042	0511	0531	8.65		0.2565								7.8

Remarks

Calculations By: ST, J.A., S.B., Summary data by JL, Reviewed by RD, WCC L-302 (3/78)

CONSOBATION TEST -LOADING SUMMARY

Proj. No. 81C40557-3 Proj. Eng. RSL Boring No. COE DA Sample No. 5-2D Depth, ft. 9.8 Date Start 5/14/81 Completed 5/21/81
Apparatus No. 5 Ring No. 6-6 Diameter, in. 3.50 Specific Gravity, Gs 2.764 Solids Height, Hs 0.4464 Inch

Visual Classification

[illegible]

Remarks

Calculations By: J.R. N., Summary data by RA Reviewed by RA WCC L-302 (3/78)

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. 9164011-T-1 Proj Eng. M Boring No. Coe 02 Sample No. 5-36 Date Start 5/14/81 Completed 5/14/81
 Apparatus No. 7 Ring No. 5-3 Diameter, in. 2.50 Specific Gravity, G_s 2.740 Solids Height, Hs 9.1466 inch
 Visual Classification CL, mottled gray-brown S. sandy S.P. silty CLAY, trace gravel to in sand

Initial Final	Height Hf	Ho	in, Water	in, Content	Volumetric Strain $\Delta H/H_0, \%$	Comp Stnd and Filter Paper	True Dial Change Inch	K C_{α}/β $\times 10^{-6}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $C_{\alpha} = \frac{\Delta H}{\Delta \log 1 + 10^{-4}}$	Fitting Tim, sec		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		pcf, Dry Unit		Primary Comp Ratio, r in %	Duration of Load Hour
											190	150	From 190	Average	190	150		
0	0.600	0.600	0	0	0				0.3160									7.7
1/8	0.642	0.617	0.025	0.41	0.41			1.023	.3704		799.4	222	6.40	5.35	5.87	70.9	100	7.9
1/4	0.663	0.623	0.038	0.62	0.62			5.343	.3674	4.07	153.6	69	33.04	17.10	25.07	19.7	78.1	8.4
1/2	0.704	0.634	0.070	1.14	1.14			3.980	.2603	9.76	123.4	60	30.66	19.41	25.02	46.1	71.3	7.1
1.0	0.762	0.643	0.117	1.70	1.70			3.789	.2498	2.95	109.4	37.8	41.99	20.27	27.63	43.3	66.9	7.95
2.0	0.834	0.658	0.176	2.86	2.86			3.236	.2265	9.76	76.6	31.2	62.82	35.85	49.34	39.5	59.2	8.0
4.0	0.925	0.673	0.252	4.10	4.10			1.873	.2185	12.25	72.6	30	64.50	26.28	50.23	42.5	57.6	7.85
8.0	1.026	0.687	0.337	5.48	5.48			0.4650	.2005	13.02	147.9	63	30.73	16.77	23.75	41.7	55.1	7.6
16.0	1.130	0.705	0.425	6.92	6.92				.2408	14.65								7.0
32.0	1.190	0.682	0.416	6.77	6.77				.2223									7.7
64.0	1.090	0.687	0.408	6.64	6.64			0.0916	.2846		181.7	66	24.76	15.84	20.30	40	55	7.9
128.0	1.160	0.687	0.413	6.72	6.72			0.116	.2835	0.90	70.3	42	19.44	24.85	37.14	42.1	60.0	8.0
256.0	1.113	0.695	0.420	6.83	6.83			0.4894	.2819	1.14	25.4	9	176.06	115.50	145.78	33.3	27.3	7.5
512.0	1.141	0.706	0.435	7.08	7.08			0.4650	.2785	4.56	73.9	27.6	53.53	37.05	48.28	43.4	60.9	7.3
1024.0	1.235	0.722	0.513	8.35	8.35			0.3073	.2611	13.83	72.6	19.8	58.74	50.07	54.41	47.9	52.6	8.0
2048.0	1.346	0.736	0.610	9.93	9.93				.2394	17.07								7.3
4096.0	1.336	0.731	0.605	9.85	9.85				.2405									7.6
8192.0	1.303	0.718	0.587	9.55	9.55				.2416									

Remarks

Calculations By: J. J. R., Summary data by J. J. R. Reviewed by R. B. WCC L-302 (3/78)

Proj. No. 81C405-F3 Proj. Eng. RLC Boring No. C0E12A Sample No. S-3C Depth, ft. 12.1 Date Start 5/14/81 Completed 5/21/81
Apparatus No. 7 Ring No. S-5 Diameter, in. 2.50 Specific Gravity, Gs 2.740 Solids Height, Hs 0.4466 inch

Visual Classification

Initial	Ho	6.145	in.	Water	11.9	%	Void	0.276	Deg. of	86.7	%	Total Unit	138.8	pcf	Dry Unit	124.1	pcf
Final	Height	0.5720	in.	Content	10.5	%	Ratio	0.282	Saturation	102.0	%	Weight	147.1	pcf	Weight	133.1	pcf

Final Applied Pressure lbf	Final Dial Reading	Comp Stone and Filter Paper	True Dial Change Inch.	Volumetric Strain $\Delta H/H_0, \%$	Void Ratio $e = \frac{H - H_s}{H_s}$	Sec Comp $C_c = \frac{\Delta H / H_0}{\Delta \log t} \times 10^{-4}$	Fitting Tim., sec. t ₉₀ t ₅₀	Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$ From t ₉₀ From t ₅₀ Average	Primary Comp. Ratio, r in % r ₉₀ r ₅₀	Duration of Load Hours 8.1 7.8 16.27
810	.1305	.0718	.0587	7.55	0.2445					
210	.1283	.0701	.0567	9.15	0.2501					
118	.1145	.0674	.0471	7.66	0.2705					
0	.1010	.0663	0.0220	5.65						

Remarks

Calculations By: J.H., R., Summary data by J.H. Reviewed by R.

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. 81C4055 T-3 Proj. Eng. ML Boring No. 60510A Sample No. 5-E Date Start 2/10/89 Completed 5/6/81
 Apparatus No. 9 Ring No. 1 Diameter, in. 2.50 Specific Gravity, Gs 2.783 Solids Height, Hs 2.4545 inch
 Visual Classification CL, mottled brown, gray + H. br. m-s sandy sp silty CLAY, some gravel

Initial Height Final Height	Ho Hf	in in	Water Content	in in	V _o V _o	Volumetric Strain	True Dial Change	Comp. Strain and Filter Paper	Final Dial Reading	Final Pressure lb/sq	Void Ratio e _s	H _s H _s	Sec Comp Co _s ² ΔH/Δlog 1 A 10 ⁻⁴	Fitting Time, sec	Coefficient of Consolidation, C _v , 10 ⁻⁴ cm ² /sec		Primary Comp. Ratio, r in %	Duration of Load Hours
															From 150	Average		
0	0200	0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0421	0413	0008	0131	1.692	0.131	0008	0413	0421	0	0	0	0	0	0	0	0	0
1376	0443	0422	0021	0343	0.225	0.343	0021	0422	0443	0	0	0	0	0	0	0	0	0
1692	0475	0435	0040	0654	0.581	0.654	0040	0435	0475	0	0	0	0	0	0	0	0	0
1382	0529	0450	0079	1292	1.340	1.292	0079	0450	0529	0	0	0	0	0	0	0	0	0
2127	0598	0468	0130	2126	3.172	2.126	0130	0468	0598	0	0	0	0	0	0	0	0	0
5144	0624	0489	0135	335	1.047	0.335	0135	0489	0624	0	0	0	0	0	0	0	0	0
1107	0778	0512	0266	4135	0.480	0.413	0266	0512	0778	0	0	0	0	0	0	0	0	0
2214	0882	0537	0345	564			0345	0537	0882	0	0	0	0	0	0	0	0	0
3554	0841	0508	0333	545			0333	0508	0841	0	0	0	0	0	0	0	0	0
277	0815	0496	0319	522	0.666	0.522	0319	0496	0815	0	0	0	0	0	0	0	0	0
544	0832	0505	0327	535	0.152	0.535	0327	0505	0832	0	0	0	0	0	0	0	0	0
1107	0858	0514	0337	551	0.495	0.551	0337	0514	0858	0	0	0	0	0	0	0	0	0
2214	0896	0537	0359	587	0.176	0.587	0359	0537	0896	0	0	0	0	0	0	0	0	0
4428	1003	0558	0435	711	0.108	0.711	0435	0558	1003	0	0	0	0	0	0	0	0	0
6643	1023	0592	0486	795			0486	0592	1023	0	0	0	0	0	0	0	0	0
4429	1057	0576	0481	787			0481	0576	1057	0	0	0	0	0	0	0	0	0
1107	0997	0538	0459	751			0459	0538	0997	0	0	0	0	0	0	0	0	0

Remarks

Calculations By: ML Summary data by: ML Reviewed by: ML WCC L-302 (3/78)

leaf —)

Proj. No. 8KPS57-3 Proj. Eng. ABL Boring No. CoE-12A Sample No. 5-5C Depth, ft. 6.9 Date Start 7/28/81 completed 5/6/81
Apparatus No. 9 Ring No. C-1 Diameter, in. 2.50 Specific Gravity, Gs 2.783 Solids Height, Hs 0.4545 inch

Visual Classification

[illegible]

Remarks

Calculations By: J.L.S.

Summary data by YReviewed by RP

WCC L-302 (3/78)

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. 81C4055 T-3 Proj Eng RM Boring No. CDE 10A Sample No. 5-6B Depth, ft. 19.0 Date Start 4/28/91 Completed 5/5/91
 Apparatus No. 4 Ring No. 5-3 Diameter, in. 2.50 Specific Gravity, Gs 2.774 Solids Height, Hs 0.3999 inch
 Visual Classification CL, mottled br, gr + red-br plastic silty CLAY, some m-S sand

84.4

Initial Height Ho 2.6167 in, Water 18.0 %, Void 0.542, Deg. of 92.3 %, Total Unit 132.3 pcf, Dry Unit 112.1 pcf
 Final Height Hf 0.6767 in, Content 19.6 %, Ratio 0.567, Saturation 95.7 %, Weight 131.9 pcf, Weight 110.3 pcf

Final Applied Pressure, lbf	Final Dial Reading	Comp. Stone and Filter Paper	True Dial Change, Inch.	Volumetric Strain $\Delta H/H_0, \%$	$K_{cm}/\%$ $\times 10^{-2}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $C_{\alpha} = \frac{\Delta H/H_0}{\Delta \log \sigma'}$ $\times 10^{-4}$	Fitting Tim, sec.		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$			Primary Comp. Ratio, r in %		Duration of Load, Hours
								1'90	1'50	From 1'90	From 1'50	Average	1'90	1'50	
0	0400	0400	0	0		0.5421									0.05
1/8	0406	0405	0001	0.0162		0.5419									0.033
1/4	0414	0413	0001	0.0162		0.5419									0.10
0.5	0425	0422	0003	0.0486	1.823	0.5414		216.6	66	23.90	18.23	21.06	44.3	77.7	18.6
1.0	0462	0433	0029	0.470	0.599	0.5349	6.49	303.7	216	16.88	5.52	11.20	52.5	25.3	8.0
2.0	0507	0446	0061	0.989	0.822	0.5269	10.05	220.4	147	17.34	7.96	12.65	49.8	87.7	7.4
4.0	0599	0461	0138	2.24	0.222	0.5076	16.86	777.6	360	6.78	3.15	4.72	68.7	31.4	7.6
8.0	0725	0477	0248	4.02	0.181	0.4801	13.78	1084.0	354	4.31	3.07	3.69	74.8	86.7	8.2
16.0	0891	0493	0393	6.45		0.4426	25.94								7.3
7.0	0815	0478	0337	5.46		0.4579									7.8
2.0	0758	0470	0288	4.67	0.074	0.4701		821.4	540	5.73	2.03	3.88	80.8	35.9	8.0
4.0	0725	0475	0310	5.03	0.166	0.4696	1.46	427.4	186	10.64	5.82	8.23	68.8	32.2	7.55
8.0	0839	0483	0356	5.77	0.064	0.4531	5.84	614.4	450	7.44	2.36	4.90	78.2	33.7	7.75
16.0	0909	0494	0415	6.73	0.067	0.4384	7.13	1048.3	258	4.21	3.98	4.09	82.0	86.2	8.0
32.0	1020	0510	0560	7.08	0.048	0.4021	13.78	221.4	237	5.07	4.08	4.57	74.2	84.3	7.4
64.0	1266	0524	0742	12.03		0.3566	34.05								7.4
32.0	1237	0517	0720	11.68		0.3621									7.5
8.0	1121	0506	0673	10.10		0.3862									

Remarks

Calculations By: W. J. P. , J. C.

Summary data by W

Reviewed by RR

WCC L-302 (3/78)

10-11-12

18/5/81 Completed 5/5/81

Visual Classification

[illegible]

Remarks

Calculations By: J.H. E.

Reviewed by RL

WCC L-302 (3/78)

CONSOLIDATION TEST -LOADING SUMMARY

Proj. No. 9104055 T-3 Boring No. 60412A Sample No. 5-7c Depth, ft. 20.8 Date Start 4/20/81 Completed 5/5/81
 Apparatus No. 5 Ring No. C-2 Diameter, in. 2.50 Specific Gravity, Gs 2.747 Solids Height, Hs 0.4042 inch
 Visual Classification CL, mottled br, gr & orange-br plastic silty CLAY, some m-s sand

Initial Final	Height Hf	Ho	Dial Reading	Comp Stone and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	$K_{cs} / 10^{-3}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $Co = \frac{\Delta H}{\Delta \log 1 + 10^{-4}}$	Fitting Time, sec.		Coefficient of Consolidation, C_v , 10 ⁻⁴ cm ² /sec		Primary Comp. Ratio, r in %		Duration of Load Hours
										1' 50	1' 90	From 1' 50	Average	1' 90	1' 50	
0	0400	0400	0	0	0	0		.5129								
1.8	0419	0406	.0013		0.2416			.5157								.025
1.4	0429	0414	.0015		0.2443			.5152								.033
1.2	0440	0423	.0017		0.276			.5147		45.4	25.2	112.54	73.84	43.4	63.3	.033
1.0	0476	0434	.0042		0.614			.5085	4.07	173.4	87	23.18	21.25	52.3	83.1	.033
2.0	0524	0447	.0077		1.25			.4999	4.23	190.1	72	26.16	21.11	57.5	81.2	.033
4.0	0608	0472	.0146		2.38			.4898	10.10	304	105	15.93	13.22	62.4	84.3	.033
8.0	0713	0478	.0235		3.83			.4608	10.42	317	114	14.72	9.51	64.0	78.8	.033
16.0	0861	0474	.0367		5.98			.4281	26.05	228.1	90	20.17	11.88	62.1	90.2	.033
4.0	0795	0477	.0316		5.15			.4108	3.26	751.3	—	6.22	—	707	—	7.7
2.0	0743	0471	.0272		4.43			.4516	—	172.4	72	27.08	15.16	65.6	95.2	8.0
4.0	0767	0476	.0293		4.77			.4465	2.93	194.4	72	23.90	15.00	72.2	87.5	7.6
8.0	0817	0484	.0333		5.42			.4366	6.51	117.6	54	28.92	19.70	59.0	87.5	7.8
16.0	0876	0495	.0381		6.20			.4247	8.47	372	119.4	11.90	9.62	69.3	85.1	7.2
32.0	1033	0511	.0522		6.50			.4398	27.7	362.1	117	11.52	8.31	82.2	87.4	7.4
64.0	1126	0525	.0701		11.42			.4355	26.05	—	—	—	—	—	—	7.4
32	1203	0520	.0683		11.12			.4300	—	348.5	129	11.87	7.45	9.66	65.4	7.5
8.0	1108	0507	.0602		9.80			.4300	5.7							

Remarks

Calculations By: J.P. S. Summary data by J.P. Reviewed by J.P. WCC L-302 (3/78)

WCC L-302 (3/78)

CONSOLIDATION TEST -LOADING SUMMARY

Sheet 1 of 1

Proj. No. 81C4055-F3 Boring No. C06124 Sample No. 5-88 Depth, ft. 23.0 Date Start 4/28/80 Completed 5/5/81
 Apparatus No. 6 Ring No. C-1 Diameter, in. 2.50 Specific Gravity, Gs 2.745 Solids Height, Hs 0.4232 inch
 Visual Classification Shy, mottled lt. br, brown and H. gray s.p. silty CLAY, some expanded to f. sand.

% Fines = 78.5

Final Applied Pressure, lbf	Final Dial Reading	Gr. & p. Stored and Filter Paper	True Dial Change, Inch.	Volumetric Strain $\Delta H/H_0, \%$	$V_{om}/V_0 \times 10$	Void Ratio $e = \frac{H-H_0}{H_0}$	Sec Comp $C_c = \frac{\Delta H/H_0}{\Delta \log \frac{1}{1-e}}$	Fitting Time, sec.		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp. Ratio, r in %		Duration of Load, Hours
								190	150	From 190	Average	190	150	
0	0400	0400	0			.4428								1.033
1/8	0422	0417	.0005	.0819		.4416								2.13
1/4	0432	0425	.0007	.0846	5.817	.4412		29.3	30	56.82	33.31	46.9	69.4	14.43
1/2	0459	0434	.0025	.0807	2.803	.4263	5.73	119.3	54	47.92	21.68	31.95	50.4	68.5
1.0	0476	0445	.0031	.835	3.813	.4308	9.17	80.7	61.2	61.67	18.90	40.23	44.7	75.5
2.0	0556	0458	.0098	1.60	0.885	.4197	8.84	225.8	88.8	21.65	12.80	17.22	56.1	81.3
4.0	0631	0473	.0158	2.59	1.031	.4055	5.90	117.6	58.8	40.60	18.88	23.74	45.6	68.5
8.0	0727	0489	.0238	3.90	0.549	.3866	15.56	135	64.8	34.31	16.62	25.46	56.7	72.4
16.0	0841	0505	.0336	5.50		.3634	18.02							7.7
32.0	0799	0490	.0309	5.06		.3698								8.0
64.0	0767	0482	.0285	4.67	0.854	.3755		28.4	37.2	120.44	28.90	74.67	49.6	76.9
128.0	0785	0487	.0278	4.88	0.376	.3724	2.29	26.4	39.4	53.24	26.37	44.86	76.6	89.4
256.0	0812	0475	.0317	5.19	0.214	.3673	2.62	101.5	29.4	113.64	36.05	39.85	67.7	70.3
512.0	0854	0506	.0348	5.70	0.343	.3606	5.40	106.1	54	42.01	19.19	30.60	58.1	80.0
1024.0	0770	0525	.0448	7.34	0.186	.3370	20.47	135	53.4	31.70	18.63	25.17	62.1	86.0
2048.0	1113	0536	.0577	9.45		.3065	18.02							7.5
4096.0	1072	0531	.0566	9.27		.3091								7.5
8192.0	1039	0518	.0521	8.53		.3197								

Remarks

Calculations By: J.P. Mc, Summary data by PL, Reviewed by Re WCC L-302 (3/78)

Project No. 2144055-7-3 Boring No. Se 10A Date Start 4/28/82 Completed 5/15/82
 Apparatus No. 6 Ring No. -4 Diameter, in. 2.50 Specific Gravity, Gs 2.745 Solids Height, Hs 0.4232 inch
 Visual Classification _____

CONSOLIDATION TEST -LOADING- SUMMARY									
Initial Height	Ho	2.6106	in,	Water	14.6	%	Void	0.443	Deg. of
Final Height	Hf	0.6064	in	Content	15.7	%	Ratio	0.423	Saturation
Final Applied Pressure	Isf			Comp. Stora and Filter Paper					Sec. Comp.
				Final Dial Reading					Co = $\frac{\Delta H}{\Delta \log t}$
				True Dial Change					10-4
				in					10-4
				Volumetric Strain					
				$\Delta H/H_o, \%$					
				Void Ratio					
				$e = \frac{H-H_s}{H_s}$					
				From 190					
				From 150					
				Average					
				10-4 cm ² /sec					
				Primary Comp. Ratio, r in %					
				190					
				50					
				Duration of Load					
				Hours					

Remarks _____
 Calculations By: J.L.H. Summary data by SE Reviewed by _____ WCC L-302 (3/78)

CONSOLIDATION TEST - LOADING SUMMARY

Proj. No. 2164055 F3 Boring No. C0612A Sample No. S-9B Depth, ft. 25.8 Date Start 6/29/81 Completed 5/5/81
 Apparatus No. 7 Ring No. S-1 Diameter, in. 2.50 Specific Gravity, Gs 2.783 Solids Height, Hs 0.4200 inch
 Visual Classification CL, brown m.p. silty CLAY, some graded to S. sand.

Final Applied Pressure, lbf	Final Dial Reading	Comp. Stone and Filter Paper	True Dial Change, Inch	Volumetric Strain $\Delta H/H_0, \%$	K $(\text{cm}^3/\text{sec}) \times 10^{-5}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $\frac{\Delta H/H_0}{\Delta \log t}$ $\times 10^{-4}$	Fitting Tim, sec		Coefficient of Consolidation, C_v , 10 ⁻⁴ cm ² /sec		Primary Comp. Ratio, r in %		Duration of Load, Hours
								190	150	From 190	Average	190	150	
0	0400	0400	0	0										
10	0427	0420	0.007	0.1457		0.4653								2.01
14	0455	0428	0.027	0.437	3.997	0.640		205.4	57.0	25.1	21.0	57.7	82.7	12.97
18	0490	0437	0.053	0.858	3.725	0.4579	7.29	44.2	44.8	35.4	24.7	51.1	62.2	8.1
10	10538	0442	0.09	1.451	2.803	0.4490	10.52	165.3	46.8	30.4	24.9	46.3	60.0	7.3
20	0611	0461	0.150	2.43	1.768	0.4348	12.95	126.2	48.0	38.9	23.8	52.2	68.2	7.5
40	0692	0476	0.216	3.50	1.466	0.4190	8.10	90.8	36.0	52.8	31.0	49.4	66.7	8.1
80	0787	0492	0.277	4.81	1.833	0.3998	14.57	94.3	30.0	47.4	36.1	58.6	68.1	7.35
160	0876	0508	0.368	6.78		0.3781	16.19							7.6
40	0857	0493	0.364	5.89		0.3838								7.9
20	0830	0485	0.345	5.59	0.800	0.3883								
40	0817	0470	0.357	5.78	0.457	0.3855	1.62	48.6	19.2	95.5	56.2	82.6	56.7	7.6
80	0870	0478	0.372	6.07		0.3819	1.62	60.0	12.0	72.0	59.7	58.0	63.9	7.8
160	0908	0507	0.399	6.46	0.640	0.3751	4.86	26.5	12.0	125.7	88.9	107.3	68.5	8.0
320	1016	0525	0.491	7.95	0.68	0.3536	19.43	66.2	16.8	67.9	62.2	65.0	72.8	7.6
640	1117	0537	0.608	9.84	0.346	0.3257	16.19	22.4	20.4	54.5	49.3	64.6	26.1	7.4
320	1132	0534	0.598	9.68										7.4
80	1080	0521	0.559	9.05										7.6

Remarks

Calculations By: J.H., Summary data by J.H. Reviewed by J.H. WCC L-302 (3/78)

7-3

CONCOMITANT TEST -LOADING

SUMMARY

Proj. No. 810405 Boring No. 5-9B Sample No. 25.6 Date Started 4/28/81 Completed 5/5/81 Depth, ft. 25.6

Proj. No. 8124051 Proj. Eng. W Boring No. 0613H Sample No. _____

Proj. Eng. W Boring

Proj. No.

Proj. No. _____ Ring No. 5-1 Diameter, in. 3.50 Specific Gravity, Gs 2.72 Solids Height, Hs 0.420 inch

Prof. No. 1
Apparatus No. 1

Visual Classification

Initial Height		Ho 2.6176 in, Water		14.5 % Voids		0.470 % Total Unit		125.0 pcf, Dry Unit		112.0 pcf		
Final Height		Hf 0.6009 in, Content		14.8 % Ratio		0.431 % Saturation		95.7 % Weight		121.2 pcf		
Final Applied Pressure lbf	Final Dial Reading	Comp Stone and Filler Paper	True Dial Change Inch.	Volumetric Strain $\Delta H/H_0, \%$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec. Comp $C_s = \frac{\Delta H/H_0}{\Delta \log 1 \times 10^{-4}}$	Fitting Tim, sec.		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp Ratio, r in %	Duration of Load Hours
							1 90	1 50	From 1 90	From 1 50		
20	1.080	0.521	0.559	9.05								7.7
2.0	0.997	0.504	0.493	7.98								8.13
1/2	0.804	0.477	0.327	5.29								17.95
0	0.573	0.466	0.107	1.73								
			</									

Remarks

Calculation by: J.P. , Summary data by: J.P.

Reviewed by RL

WCC L-302 (3/78)

CONSOLIDATION TEST - LOADING SUMMARY

Proj. No. B10405-T-3 Proj. Eng. MM Boring No. CR 11A Sample No. 5-10B Depth, ft. 28.0 Date Start 5/23/81 Completed 6/2/81
 Apparatus No. 8 Ring No. C-5 Diameter, in. 2.50 Specific Gravity, Gs 2.72 Solids Height, Hs 0.3968 inch
 Visual Classification ck, brown m/s silty CLAY, some S. sand, to c-m sand.

Initial Height		Mo. 0.6118 in.		Water		18.2		%, Void		0.542		Deg. of		34.6		%, Total Unit		131.1		pcf, Dry Unit		110.4		pcf	
Final		Ht 0.6018 in		Content		12.2		%, Ratio		0.517		Saturation		100.0		%, Weight		122.5		pcf, Weight		112.2		pcf	
Final Applied Pressure, lbf	Final Dial Reading	Comp Stone and Filter Paper	True Dial Change, Inch	Volumetric Strain $\Delta H/H_0, \%$	$U_{wp}/10^{-8}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $C_c = \frac{\Delta H}{\Delta \log 1} \times 10^{-4}$	Fitting Time, sec	Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Average		Primary Comp Ratio, r in %		Duration of Load, Hours										
									150	From 150	From 150	150													
0	0400	0400	0	0		.5118										10m									
18	0417	0410	0007	.11		.5355										75.8									
14	0443	0418	0025	.41		.5230										7.7									
12	0478	0427	0051	.83	.887	.5161										7.7									
10	0540	0438	0102	1.67	1.486	.5161	8.50	79.8	18.87	14.55	16.71	82.5	82.5	82.5	82.5	7.7									
20	0634	0451	0183	2.99	0.685	.4957	19.61	141	13.56	7.89	10.72	77.5	77.5	77.5	77.5	7.8									
40	0754	0466	0288	4.71	0.335	.4693	13.18	162	8.91	6.79	7.50	81.0	81.0	81.0	81.0	7.8									
80	0887	0482	0405	6.62	0.266	.4398	19.61	150	8.16	7.06	7.61	83.8	83.8	83.8	83.8	7.8									
160	1043	0478	0545	8.91		.4045	22.88	168	10.74	6.03	8.28	82.1	82.1	82.1	82.1	8.0									
40	0993	0483	0510	8.34		.4132										7.6									
20	0951	0475	0476	7.78	0.198	.4219		90	13.68	11.21	12.45	87.6	87.6	87.6	87.6	7.9									
40	0923	0480	0493	8.06	0.265	.4176	2.45	55.2	24.84	18.14	21.49	90.0	90.0	90.0	90.0	7.7									
80	1008	0488	0520	9.50	0.194	.4108	4.25	51	25.15	18.33	21.74	85.6	85.6	85.6	85.6	7.6									
160	1058	0499	0559	11.4	0.190	.4010	8.50	114	10.17	6.66	8.42	85.5	85.5	85.5	85.5	7.95									
320	1207	0513	0572	11.31	0.077	.3674	24.52	123	9.29	7.40	8.24	76.1	76.1	76.1	76.1	7.7									
640	1376	0529	0847	13.84		.3284	26.15									7.7									
320	1359	0524	0835	13.65		.3214										8.05									
80	1288	0511	0775	12.67		.3465																			

Remarks

Proj. No. 21K455 T-3 Proj Eng BSI Boring No. 60E12A Sample No. S-10B Depth, ft. 28.0 Date Start 5/23/86 Completed 6/2/87

Apparatus No. 8 Ring No. 2-5 Diameter, in. 2.50 Specific Gravity, Gs 2.72 Solids Height, Hs 0.2968 inch

Visual Classification

Initial Height	Final Height	Moisture Content (%)	Water in Content	True Dial Change	Volumetric Strain	Void Ratio	Sec Comp	Fitting Time, sec	Coefficient of Consolidation, C_v	Primary Comp Ratio, r in %	Duration of Load, Hours
in	in	%	in	Inch	$\Delta H/H_0, \%$	$e = \frac{H-H_s}{H_s}$	$C_c = \frac{\Delta H}{\Delta \log t} \times 10^{-4}$	1 90 1 50	From 1 90 From 1 50 Average	1 90 1 50	Hours
110.4	108.4	14.6	13.1	0.020	12.67	0.3465					8.05
112.2	110.2	15.5	13.5	0.020	11.08	0.3710					7.5
				0.042	7.22	0.4304					7.6
				0.0072	1.18						27.6

Reviewed by Ra

Summary data by

Calculations by T. P.

Sheet 1 of 7

LUNSON TEST - WADING SUPPLY

Proj No. 810405-F3 Boring No. COE-13A Sample No. 5-3C Depth, ft. 16.3 Date Start 6/2/81 Completed 6/9/81
Apparatus No. 6 Ring No. C-6 Diameter, in. 2.50 Specific Gravity, Gs 2.65 Solids Height, Hs 0.4629 inch

Visual Classification

Initial Height		Ho 0.6135 in, Wa: r		11.0 % Void		0.325		Deg of		92.0 % Total Unit		142.6 pcf, Dry Unit		18.5 pcf	
Final Height		Hf 0.5955 in, Content		10.1 % Ratio		0.286		Saturation		26.1 % Weight		145.7 pcf, Weight		137.1 pcf	
Final Applied Pressure lbf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	$K_{cm/lb} \times 10^{-6}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $\frac{C_c \Delta H/H_0}{\Delta \log 1 \pm 10^{-4}}$	Fitting Tim, sec		Coefficient of Consolidation, $C_v, 10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp Ratio, r in %		Duration of Load Hours	
								1 90	1 50	From 1 90	From 1 50	Average	1 90	1 50	
0	0.1004	0.1000	0			0.3253									6.2
1/8	0.1037	0.1018	0.0021	0.34		0.3708									7.3
1/4	0.1064	0.1024	0.0040	0.65	1.065	0.3167	5.70	312.6	252.2	5.54	4.66	5.10	60.2	74.8	8.3
0.5	0.1104	0.1033	0.0071	1.16	0.494	0.3100	6.52	152.6	102.0	22.51	10.71	21.67	53.6	82.4	7.6
1.0	0.1149	0.1044	0.0105	1.71	1.329	0.3021	7.82	305.3	168.0	24.05	10.63	17.29	41.7	65.1	7.7
2.0	0.1207	0.1057	0.0150	2.44	0.680	0.2929	8.48	317.4	87	15.29	12.91	14.12	39.7	64.3	8.15
4.0	0.1278	0.1072	0.0206	3.36	1.259	0.2808	8.15	36.1	26.0	72.01	20.12	51.37	40.1	65.6	7.5
8.0	0.1355	0.1088	0.0267	4.35	1.024	0.2677	13.85	46.5	17.0	100.03	25.11	62.83	34.5	67.6	7.6
16.0	0.1445	0.1104	0.0341	5.56		0.2517	11.41								8.13
32.0	0.1418	0.1089	0.0329	5.36		0.2543									7.8
64.0	0.1399	0.1081	0.0318	5.18	0.489	0.2566		86.4	60	53.52	17.32	25.72	27.0	52.5	7.3
128.0	0.1410	0.1086	0.0324	5.25	0.499	0.2552	0.73	25.35	24.0	181.91	44.67	113.23	27.5	42.0	8.2
256.0	0.1428	0.1074	0.0334	5.44	0.191	0.2532	1.41	57.6		73.63			23.4		7.7
512.0	0.1456	0.1105	0.0351	5.72	0.955	0.2435	5.54	93.5	21.5	54.12	22.35	43.73	31.2	51.1	7.61
1024.0	0.1515	0.1121	0.0421	6.91	0.246	0.2337	15.48	42.1	23.1	23.33	13.60	65.96	41.0	76.5	7.28
2048.0	0.1652	0.1135	0.0517	8.43		0.2137	16.30								8.0
4096.0	0.1641	0.1130	0.0511	8.33		0.2143									7.5
8192.0	0.1604	0.1117	0.0487	7.94		0.2201									

Remarks

Calculations By: J.P. G. Summary data by: J.P. Reviewed by: R.R. WCC L-302 (3/78)

Proj. No. B104055-T-3 Proj. Eng. AM Boring No. Coe-13A Sample No. 5-4B Date Start 6/18/81 Completed 6/16/81
 Apparatus No. 8 Ring No. 2-3 Diameter, in. 2.50 Specific Gravity, Gs 2.754 Solids Height, Hs 0.4390 inch
 Visual Classification Cl, 90-bc m to 8 sandy s.p. silty clay, trace s. gravel to sand

Initial Final	Mo Hf	0.6190 0.5683	in in	Water Content	12.1 10.6	%, Void %, Ratio	0.410 0.244	Deg of Saturation	21.4 99.3	%, Total Unit %, Weight	126.5 146.6	pcf, Dry Unit pcf, Weight	121.7 132.6	pcf
Final Applied Pressure tsf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change Inch.	Volumetric Strain $\Delta H/H_0, \%$	K_{vm}/s $\times 10^{-8}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $C_c = \frac{\Delta H/H_0}{\Delta \log t} \times 10^{-4}$	Fitting Time, sec.		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Primary Comp Ratio, r in %		Duration of Load Hours
								1 50	1 90	From 1 50	Average	1 90	1 50	
0	0400	0400	0			0.4100								0
48	0466	0427	0039	0.63	1.704	0.4011								1.3
114	0503	0435	0068	1.10	2.914	0.2945	7.27							7.6
112	0549	0444	0105	1.70	2.813	0.3861	11.47							7.6
110	0610	0455	0155	0.50	2.686	0.2747	11.31							8.23
210	0689	0468	0221	3.57	1.707	0.3597	12.44							7.4
410	0783	0483	0300	4.85	1.009	0.2417	11.63							7.7
810	0892	0499	0393	6.35	0.4781	0.3205	14.54							8.0
1610	117	0515	0492	7.95		0.2379	13.03							7.4
410	0977	0520	0477	7.70		0.3014								7.8
210	0959	0492	0467	7.54	0.195	0.2026								8.05
410	0970	0497	0473	7.64	0.191	0.2023	1.26							8.0
810	0989	0505	0484	7.82	0.211	0.2038	1.67							8.13
1610	1020	0516	0504	8.14	0.419	0.2952	4.52							8.13
3210	1131	0532	0509	9.67	0.318	0.2726	15.33							7.98
6410	1252	0546	0706	11.40		0.2492	15.35							8.0
3210	1241	0541	0700	10.31		0.2506								7.3
810	1199	0528	0671	10.84		0.2512								7.6

Remarks

Remarks

Proj. No. 81C4055^{T-3} Proj Eng. Allen Boring No. Coe 13A Sample No. S-48 Depth, ft 18.2 Date Start 6/2/81 Completed 6/16/81
Apparatus No. B Ring No. C-3 Diameter, in. 2.50 Specific Gravity, Gs 2.754 Solids Height, Hs 0.420 Inch

Visual Classification

[illegible]

Remarks

Calculations By: JH, JH, JH, Summary data by JH Reviewed by JH

CONSOLIDATION TEST - LOADING SUMMARY

Proj. No. 2104055-F3 Boring No. CAS-13A Sample No. 5-5C Depth, ft. 21.1 Date Start 5/2/81 Completed 6/9/81
 Apparatus No. 4 Ring No. C-1 Diameter, in. 2.50 Specific Gravity, Gs. 2.745 Solids Height, Hs. 0.4722 inch
 Visual Classification cl, mottled brown + orange-br S. sandy m.p. silty clay, tr. S. gravel to m. sand

61.8

Initial Height		Ho		in, Water		10.0 % Void		0.234		Deg. of		33.5 % Total Unit		145.4 pcf, Dry Unit		132.2 pcf	
Final		Height		Hf		0.6100 in		Content		10.1 %		Ratio		0.222		Saturation	
Final Applied Pressure, lbf	Final Dial Reading	Comp. Stroke and Filter Paper	True Dial Change, inch	Volumetric Strain $\Delta H/H_0, \%$	$V_0/H_0 \times 10^{-3}$	$e = H_0/H_s$	Void Ratio	$C_c = \frac{\Delta H}{\Delta \log 1} \times 10^{-4}$	Sec Comp	Fitting Time, sec	From 190	From 150	Average	Primary Comp. Ratio, r in %	150	150	Duration of Load, Hours
0	91000	1000	0	—	—	0.842	0.842	—	—	—	—	—	—	—	—	—	2.07
18	1012	1009	0.003	0.5	0.475	0.835	0.835	2.24	—	—	8.85	—	—	72.2	—	—	7.95
24	1024	1017	0.007	1.1	0.869	0.827	0.827	2.62	—	228	8.55	5.19	6.87	62.5	100	7.3	7.3
25	1041	1026	0.015	2.5	0.839	0.829	0.829	6.22	—	25	17.77	15.70	16.73	52.2	60.0	8.4	8.4
30	1074	1037	0.037	6.1	1.186	0.827	0.827	7.53	—	60	28.97	19.46	24.21	54.1	74.7	7.55	7.55
30	1116	1050	0.066	1.08	0.827	0.827	0.827	6.55	—	48	34.34	21.08	29.51	60.6	79.4	7.3	7.3
40	1164	1065	0.099	1.62	0.859	0.859	0.859	9.65	—	36	64.10	21.70	47.90	52.3	74.3	8.82	8.82
80	1222	1081	0.141	2.31	0.441	0.859	0.859	10.64	—	32.4	44.18	24.68	39.43	63.2	72.8	7.4	7.4
160	1290	1097	0.193	3.16	—	—	—	—	—	—	—	—	—	—	—	7.7	7.7
40	1262	1082	0.180	2.75	—	—	—	—	—	—	—	—	—	—	—	—	—
20	1243	1074	0.169	2.76	0.385	0.858	0.858	—	—	22.2	64.06	50.51	57.28	51.4	62.5	7.8	7.8
80	1256	1079	0.177	2.90	0.177	0.856	0.856	1.39	—	24	55.68	46.53	51.11	76.3	100	7.3	7.3
80	1272	1087	0.185	3.03	0.220	0.850	0.850	2.65	—	19.0	66.65	56.26	71.46	60.0	78.7	8.25	8.25
160	1298	1098	0.200	3.27	0.224	0.848	0.848	3.76	—	101.4	46.71	29.60	28.15	66.9	85.2	7.7	7.7
320	1368	1114	0.254	4.15	0.119	0.848	0.848	10.47	—	165.3	28.02	28.04	28.03	72.2	74.0	7.63	7.63
640	1459	1128	0.331	5.41	—	—	—	14.24	—	—	—	—	—	—	—	7.3	7.3
220	1448	1123	0.325	5.32	—	—	—	—	—	—	—	—	—	—	—	—	—
80	1412	1110	0.302	4.94	—	—	—	—	—	—	—	—	—	—	—	8.0	8.0

Remarks

Calculations By: J.P. R. Summary data by JS Reviewed by JS WCC L-302 (3/78)

Heat 2 of 3

UNSATURATED TEST -LOADING SUMMARY

Proj. No. 81C4055 T-3 Boring No. Core 13A Sample No. 5-5C Depth, ft. 21.1 Date Start 6/2/81 Completed 6/19/81
Apparatus No. 4 Ring No. 6-1 Diameter, in. 2.50 Specific Gravity, Gs 2.745 Solids Height, Hs 0.4722 Inch

Visual Classification

Initial Height		Ho		in, Water		10.0		%, Void		0.294		Deg of		33.5		%, Total Unit		145.4		pcf, Dry Unit		132.2		pcf	
Final Height		Hf		D. 6100 in, Content		10.1		%, Ratio		0.292		Saturation		35.5		%, Weight		145.3		pcf, Weight		132.4		pcf	
Final Applied Pressure lbf	Final Dial Reading	Comp Store and Filter Paper	True Dial Change Inch.	Volumetric Strain $\Delta H/H_0, \%$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp Coef $\frac{\Delta H/H_0}{\Delta \log t \times 10^{-4}}$	Filling Time, sec.	From 1 90	From 1 50	Average	Primary Comp Ratio, r w. %	1 90	1 50	Duration of Load Hours											
8.0	1412	1110	0302	4.94	2302									7.5											
2.0	1355	1093	0262	4.24	2287									8.25											
1.8	1207	1066	0141	2.31	2643									10.92											
0	1066	1055	0011	1.80																					

Remarks

Calculations By: J.H. B., Summary data by J.H. B., Reviewed by RS, MCC L-302 (3/78)

Proj. No. 2K 4055-73 Boring No. 005-13A Sample No. 5-6C Depth, ft. 22.4 Date Start 6/2/81 Completed 6/9/81
Apparatus No. 5 Ring No. C-5 Diameter, in. 2.50 Specific Gravity, Gs 2.730 Solids Height, Hs 0.4607 Initial
Visual Classification CL, br. m-s sandy m.p. silty clay, to Silty to sand

62.2

Initial Height		Ho 0.6131 in, Water		10.3 % Void		0.331		Deg. of		31.9 % Total Unit		144.9 pcf, Dry Unit		130.7 pcf	
Final Height		Hf 0.6052 in, Content		10.6 % Ratio		0.314		Saturation		34.7 % Weight		116.5 pcf, Weight		132.4 pcf	
Final Applied Pressure, lbf	Final Dial Reading	Comp Stone and Filter Paper	True Dial Change, Inch	Volumetric Strain $\Delta H/H_0, \%$	$K_{cr}/10^{-8}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $C_{\alpha} = \frac{\Delta H/H_0}{\Delta \log 1 + 10^{-4}}$	Fitting Time, sec		Coefficient of Consolidation, C_v , 10 ⁻⁴ cm ² /sec		Primary Comp. Ratio, r , in %		Duration of Load, Hours	
								1 50	1 50	From 1 50	Average	1 50	1 50		
0	0.1000	0.1000	0	—		.3308									
1/8	106	0.1016	0.005	.08	6.267	.3297		28.8	34.61	41.33	68.00	62.8	74.0		
1/4	1031	0.1017	0.012	.20	1.27	.3282	2.59	225.8	99	22.64	17.01	17.32	59.6	89.1	7.3
0.5	1051	0.1028	0.023	.38	0.808	.3258	5.71	511.6	138	9.92	8.56	3.25	66.7	80.0	8.35
1.0	1088	0.1039	0.049	.80	0.851	.3202	8.97	303.8	102	16.56	11.46	14.01	60.2	80.6	7.55
2.0	1137	0.1052	0.085	1.39	0.682	.3174	9.30	198.0	84	26.42	13.75	20.09	70.8	76.8	7.7
4.0	1192	0.1052	0.125	2.04	0.498	.3037	7.34	237.6	63	20.53	18.05	13.32	67.1	72.4	8.18
8.0	1261	0.1083	0.178	3.90	0.357	.2922	12.89	167.3	54	28.65	20.63	24.64	61.4	81.3	7.4
16.0	1344	0.1079	0.245	4.00		.2776	14.52								7.7
4.0	1316	0.1084	0.232	3.78		.2904									8.23
2.0	1296	0.1076	0.200	3.59	0.681	.2820		38.4	13.8	124.33	80.42	102.37	66.7	80.0	7.8
4.0	1308	0.1081	0.227	3.70	0.852	.2815	2.04	64.9	19.8	73.36	55.90	64.63	90.2	100	7.3
8.0	1325	0.1087	0.236	3.85	0.811	.2796	1.47	77.4	20.2	53.70	54.55	57.13	68.0	76.5	8.2
16.0	1353	0.1100	0.253	4.13	0.885	.2753	5.06	138.6	42	23.70	25.85	29.78	62.0	81.2	7.7
32.0	1438	0.1116	0.322	5.25	0.189	.2609	13.86	144.2	43.8	21.52	24.12	27.82	65.4	81.1	7.63
64.0	1512	0.1130	0.412	6.71		.2414	16.47								7.3
32.0	1531	0.1125	0.406	6.62		.2427									8.0
8.0	1493	0.1112	0.381	6.21		.2481									

Remarks

UNSCORING TEST -LOADING SUMMARY

est. 3-12

Proj. No. 81C405T-3 Boring No. LA Depth, ft. 22.4 Date Started 6/2/81 Completed 6/9/81

Apparatus No. 5 Ring No. 3 Diameter, in. 2.50 Specific Gravity, Gs 2.730 Solids Height, Hs 0.4607 Inch

Visual Classification _____

Initial Height		Ho 0.6131		in, Water		10.3		%, Void		0.231		Deg of		91.3		%, Total Unit		144.9		pcf, Dry Unit		130.7		pcf	
Final Height		Hf 0.6052		in, Content		10.6		%, Ratio		0.314		Saturation		94.7		%, Weight		146.5		pcf, Weight		132.4		pcf	
Final Applied Pressure lbf	Final Dial Reading	Comp Stand and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $Co - \frac{\Delta H}{H_0} \Delta \log t$	Fitting τ in, sec		From t_{90}		From t_{50}		Average		Primary Comp Ratio, r in %		Duration of Load Hours								
100	1493	1112	0.381	6.21	0.481		1 50										7.5								
200	1433	1075	0.338	5.51	0.2574		1 50										8.28								
400	1380	1068	0.212	3.46	0.2848		1 50										19.1								
0	1138	1057	0.081	1.32			1 50																		
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Calculations By: JH, JB, _____, Summary data by JL
Reviewed by PZ

CONSOLIDATION TEST -LOADING SUMMARY

Proj No. SLC 405-T-2 Proj Eng. CC Boring No. COE 1-A Sample No. 5-8B Date Start 8/2/5 Completed 6/24/81
 Apparatus No. 8 Ring No. C-1 Diameter, in. 2.50 Specific Gravity, G_s 2.65 Solids Height, Hs 2.457 Inch
 Visual Classification CL, mottled gr-br. & or-br. m. to s. sandy s.p. silty clay to 5. gravel to c. sand

Initial Final	Ho Hf	0.6129 0.5366	in in	Water Content	10.7 10.4	% %	Void Ratio	0.240 0.204	Deg of Saturation	26.4 22.1	%, %	Total Unit Weight	141.3 144.7	pcf, pcf	Dry Unit Weight	127.6 131.1	pcf	Duration of Load Hours
Final Applied Pressure, lbf	Final Dial Reading, Dial	0.1000 0.1020 0.1037 0.1059 0.1072 0.1136 0.1187 0.1249 0.1322 0.1395 0.1477 0.1540 0.1605 0.1631 0.1681 0.1705 0.1730 0.1755 0.1780 0.1805 0.1830 0.1855 0.1880 0.1905 0.1930 0.1955 0.1980 0.2005 0.2030 0.2055 0.2080 0.2105 0.2130 0.2155 0.2180 0.2205 0.2230 0.2255 0.2280 0.2305 0.2330 0.2355 0.2380 0.2405 0.2430 0.2455 0.2480 0.2505 0.2530 0.2555 0.2580 0.2605 0.2630 0.2655 0.2680 0.2705 0.2730 0.2755 0.2780 0.2805 0.2830 0.2855 0.2880 0.2905 0.2930 0.2955 0.2980 0.3005 0.3030 0.3055 0.3080 0.3105 0.3130 0.3155 0.3180 0.3205 0.3230 0.3255 0.3280 0.3305 0.3330 0.3355 0.3380 0.3405 0.3430 0.3455 0.3480 0.3505 0.3530 0.3555 0.3580 0.3605 0.3630 0.3655 0.3680 0.3705 0.3730 0.3755 0.3780 0.3805 0.3830 0.3855 0.3880 0.3905 0.3930 0.3955 0.3980 0.4005 0.4030 0.4055 0.4080 0.4105 0.4130 0.4155 0.4180 0.4205 0.4230 0.4255 0.4280 0.4305 0.4330 0.4355 0.4380 0.4405 0.4430 0.4455 0.4480 0.4505 0.4530 0.4555 0.4580 0.4605 0.4630 0.4655 0.4680 0.4705 0.4730 0.4755 0.4780 0.4805 0.4830 0.4855 0.4880 0.4905 0.4930 0.4955 0.4980 0.5005 0.5030 0.5055 0.5080 0.5105 0.5130 0.5155 0.5180 0.5205 0.5230 0.5255 0.5280 0.5305 0.5330 0.5355 0.5380 0.5405 0.5430 0.5455 0.5480 0.5505 0.5530 0.5555 0.5580 0.5605 0.5630 0.5655 0.5680 0.5705 0.5730 0.5755 0.5780 0.5805 0.5830 0.5855 0.5880 0.5905 0.5930 0.5955 0.5980 0.6005 0.6030 0.6055 0.6080 0.6105 0.6130 0.6155 0.6180 0.6205 0.6230 0.6255 0.6280 0.6305 0.6330 0.6355 0.6380 0.6405 0.6430 0.6455 0.6480 0.6505 0.6530 0.6555 0.6580 0.6605 0.6630 0.6655 0.6680 0.6705 0.6730 0.6755 0.6780 0.6805 0.6830 0.6855 0.6880 0.6905 0.6930 0.6955 0.6980 0.7005 0.7030 0.7055 0.7080 0.7105 0.7130 0.7155 0.7180 0.7205 0.7230 0.7255 0.7280 0.7305 0.7330 0.7355 0.7380 0.7405 0.7430 0.7455 0.7480 0.7505 0.7530 0.7555 0.7580 0.7605 0.7630 0.7655 0.7680 0.7705 0.7730 0.7755 0.7780 0.7805 0.7830 0.7855 0.7880 0.7905 0.7930 0.7955 0.7980 0.8005 0.8030 0.8055 0.8080 0.8105 0.8130 0.8155 0.8180 0.8205 0.8230 0.8255 0.8280 0.8305 0.8330 0.8355 0.8380 0.8405 0.8430 0.8455 0.8480 0.8505 0.8530 0.8555 0.8580 0.8605 0.8630 0.8655 0.8680 0.8705 0.8730 0.8755 0.8780 0.8805 0.8830 0.8855 0.8880 0.8905 0.8930 0.8955 0.8980 0.9005 0.9030 0.9055 0.9080 0.9105 0.9130 0.9155 0.9180 0.9205 0.9230 0.9255 0.9280 0.9305 0.9330 0.9355 0.9380 0.9405 0.9430 0.9455 0.9480 0.9505 0.9530 0.9555 0.9580 0.9605 0.9630 0.9655 0.9680 0.9705 0.9730 0.9755 0.9780 0.9805 0.9830 0.9855 0.9880 0.9905 0.9930 0.9955 0.9980 1.0005 1.0030 1.0055 1.0080 1.0105 1.0130 1.0155 1.0180 1.0205 1.0230 1.0255 1.0280 1.0305 1.0330 1.0355 1.0380 1.0405 1.0430 1.0455 1.0480 1.0505 1.0530 1.0555 1.0580 1.0605 1.0630 1.0655 1.0680 1.0705 1.0730 1.0755 1.0780 1.0805 1.0830 1.0855 1.0880 1.0905 1.0930 1.0955 1.0980 1.1005 1.1030 1.1055 1.1080 1.1105 1.1130 1.1155 1.1180 1.1205 1.1230 1.1255 1.1280 1.1305 1.1330 1.1355 1.1380 1.1405 1.1430 1.1455 1.1480 1.1505 1.1530 1.1555 1.1580 1.1605 1.1630 1.1655 1.1680 1.1705 1.1730 1.1755 1.1780 1.1805 1.1830 1.1855 1.1880 1.1905 1.1930 1.1955 1.1980 1.2005 1.2030 1.2055 1.2080 1.2105 1.2130 1.2155 1.2180 1.2205 1.2230 1.2255 1.2280 1.2305 1.2330 1.2355 1.2380 1.2405 1.2430 1.2455 1.2480 1.2505 1.2530 1.2555 1.2580 1.2605 1.2630 1.2655 1.2680 1.2705 1.2730 1.2755 1.2780 1.2805 1.2830 1.2855 1.2880 1.2905 1.2930 1.2955 1.2980 1.3005 1.3030 1.3055 1.3080 1.3105 1.3130 1.3155 1.3180 1.3205 1.3230 1.3255 1.3280 1.3305 1.3330 1.3355 1.3380 1.3405 1.3430 1.3455 1.3480 1.3505 1.3530 1.3555 1.3580 1.3605 1.3630 1.3655 1.3680 1.3705 1.3730 1.3755 1.3780 1.3805 1.3830 1.3855 1.3880 1.3905 1.3930 1.3955 1.3980 1.4005 1.4030 1.4055 1.4080 1.4105 1.4130 1.4155 1.4180 1.4205 1.4230 1.4255 1.4280 1.4305 1.4330 1.4355 1.4380 1.4405 1.4430 1.4455 1.4480 1.4505 1.4530 1.4555 1.4580 1.4605 1.4630 1.4655 1.4680 1.4705 1.4730 1.4755 1.4780 1.4805 1.4830 1.4855 1.4880 1.4905 1.4930 1.4955 1.4980 1.5005 1.5030 1.5055 1.5080 1.5105 1.5130 1.5155 1.5180 1.5205 1.5230 1.5255 1.5280 1.5305 1.5330 1.5355 1.5380 1.5405 1.5430 1.5455 1.5480 1.5505 1.5530 1.5555 1.5580 1.5605 1.5630 1.5655 1.5680 1.5705 1.5730 1.5755 1.5780 1.5805 1.5830 1.5855 1.5880 1.5905 1.5930 1.5955 1.5980 1.6005 1.6030 1.6055 1.6080 1.6105 1.6130 1.6155 1.6180 1.6205 1.6230 1.6255 1.6280 1.6305 1.6330 1.6355 1.6380 1.6405 1.6430 1.6455 1.6480 1.6505 1.6530 1.6555 1.6580 1.6605 1.6630 1.6655 1.6680 1.6705 1.6730 1.6755 1.6780 1.6805 1.6830 1.6855 1.6880 1.6905 1.6930 1.6955 1.6980 1.7005 1.7030 1.7055 1.7080 1.7105 1.7130 1.7155 1.7180 1.7205 1.7230 1.7255 1.7280 1.7305 1.7330 1.7355 1.7380 1.7405 1.7430 1.7455 1.7480 1.7505 1.7530 1.7555 1.7580 1.7605 1.7630 1.7655 1.7680 1.7705 1.7730 1.7755 1.7780 1.7805 1.7830 1.7855 1.7880 1.7905 1.7930 1.7955 1.7980 1.8005 1.8030 1.8055 1.8080 1.8105 1.8130 1.8155 1.8180 1.8205 1.8230 1.8255 1.8280 1.8305 1.8330 1.8355 1.8380 1.8405 1.8430 1.8455 1.8480 1.8505 1.8530 1.8555 1.8580 1.8605 1.8630 1.8655 1.8680 1.8705 1.8730 1.8755 1.8780 1.8805 1.8830 1.8855 1.8880 1.8905 1.8930 1.8955 1.8980 1.9005 1.9030 1.9055 1.9080 1.9105 1.9130 1.9155 1.9180 1.9205 1.9230 1.9255 1.9280 1.9305 1.9330 1.9355 1.9380 1.9405 1.9430 1.9455 1.9480 1.9505 1.9530 1.9555 1.9580 1.9605 1.9630 1.9655 1.9680 1.9705 1.9730 1.9755 1.9780 1.9805 1.9830 1.9855 1.9880 1.9905 1.9930 1.9955 1.9980 2.0005 2.0030 2.0055 2.0080 2.0105 2.0130 2.0155 2.0180 2.0205 2.0230 2.0255 2.0280 2.0305 2.0330 2.0355 2.0380 2.0405 2.0430 2.0455 2.0480 2.0505 2.0530 2.0555 2.0580 2.0605 2.0630 2.0655 2.0680 2.0705 2.0730 2.0755 2.0780 2.0805 2.0830 2.0855 2.0880 2.0905 2.0930 2.0955 2.0980 2.1005 2.1030 2.1055 2.1080 2.1105 2.1130 2.1155 2.1180 2.1205 2.1230 2.1255 2.1280 2.1305 2.1330 2.1355 2.1380 2.1405 2.1430 2.1455 2.1480 2.1505 2.1530 2.1555 2.1580 2.1605 2.1630 2.1655 2.1680 2.1705 2.1730 2.1755 2.1780 2.1805 2.1830 2.1855 2.1880 2.1905 2.1930 2.1955 2.1980 2.2005 2.2030 2.2055 2.2080 2.2105 2.2130 2.2155 2.2180 2.2205 2.2230 2.2255 2.2280 2.2305 2.2330 2.2355 2.2380 2.2405 2.2430 2.2455 2.2480 2.2505 2.2530 2.2555 2.2580 2.2605 2.2630 2.2655 2.2680 2.2705 2.2730 2.2755 2.2780 2.2805 2.2830 2.2855 2.2880 2.2905 2.2930 2.2955 2.2980 2.3005 2.3030 2.3055 2.3080 2.3105 2.3130 2.3155 2.3180 2.3205 2.3230 2.3255 2.3280 2.3305 2.3330 2.3355 2.3380 2.3405 2.3430 2.3455 2.3480 2.3505 2.3530 2.3555 2.3580 2.3605 2.3630 2.3655 2.3680 2.3705 2.3730 2.3755 2.3780 2.3805 2.3830 2.3855 2.3880 2.3905 2.3930 2.3955 2.3980 2.4005 2.4030 2.4055 2.4080 2.4105 2.4130 2.4155 2.4180 2.4205 2.4230 2.4255 2.4280 2.4305 2.4330 2.4355 2.4380 2.4405 2.4430 2.4455 2.4480 2.4505 2.4530 2.4555 2.4580 2.4605 2.4630 2.4655 2.4680 2.4705 2.4730 2.4755 2.4780 2.4805 2.4830 2.4855 2.4880 2.4905 2.4930 2.4955 2.4980 2.5005 2.5030 2.5055 2.5080 2.5105 2.5130 2.5155 2.5180 2.5205 2.5230 2.5255 2.5280 2.5305 2.5330 2.5355 2.5380 2.5405 2.5430 2.5455 2.5480 2.5505 2.5530 2.5555 2.5580 2.5605 2.5630 2.5655 2.5680 2.5705 2.5730 2.5755 2.5780 2.5805 2.5830 2.5855 2.5880 2.5905 2.5930 2.5955 2.5980 2.6005 2.6030 2.6055 2.6080 2.6105 2.6130 2.6155 2.6180 2.6205 2.6230 2.6255 2.6280 2.6305 2.6330 2.6355 2.6380 2.6405 2.6430 2.6455 2.6480 2.6505 2.6530 2.6555 2.6580 2.6605 2.6630 2.6655 2.6680 2.6705 2.6730 2.6755 2.6780 2.6805 2.6830 2.6855 2.6880 2.6905 2.6930 2.6955 2.6980 2.7005 2.7030 2.7055 2.7080 2.7105 2.7130 2.7155 2.7180 2.7205 2.7230 2.7255 2.7280 2.7305 2.7330 2.7355 2.7380 2.7405 2.7430 2.7455 2.7480 2.7505 2.7530 2.7555 2.7580 2.7605 2.7630 2.7655 2.7680 2.7705 2.7730 2.7755 2.7780 2.7805 2.7830 2.7855 2.7880 2.7905 2.7930 2.7955 2.7980 2.8005 2.8030 2.8055 2.8080 2.8105 2.8130 2.8155 2.8180 2.8205 2.8230 2.8255 2.8280 2.8305 2.8330 2.8355 2.8380 2.8405 2.8430 2.8455 2.8480 2.8505 2.8530 2.8555 2.8580 2.8605 2.8630 2.8655 2.8680 2.8705 2.8730 2.8755 2.8780 2.8805 2.8830 2.8855 2.8880 2.8905 2.8930 2.8955 2.8980 2.9005 2.9030 2.9055 2.9080 2.9105 2.9130 2.9155 2.9180 2.9205 2.9230 2.9255 2.9280 2.9305 2.9330 2.9355 2.9380 2.9405 2.9430 2.9455 2.9480 2.9505 2.9530 2.9555 2.9580 2.9605 2.9630 2.9655 2.9680 2.9705 2.9730 2.9755 2.9780 2.9805 2.9830 2.9855 2.9880 2.9905 2.9930 2.9955 2.9980 3.0005 3.0030 3.0055 3.0080 3.0105 3.0130 3.0155 3.0180 3.0205 3.0230 3.0255 3.0280 3.0305 3.0330 3.0355 3.0380 3.0405 3.0430 3.0455 3.0480 3.0505 3.0530 3.0555 3.0580 3.0605 3.0630 3.0655 3.0680 3.0705 3.0730 3.0755 3.0780 3.0805 3.0830 3.0855 3.0880 3.0905 3.0930 3.0955 3.0980 3.1005 3.1030 3.1055 3.1080 3.1105 3.1130 3.1155 3.1180 3.1205 3.1230 3.1255 3.1280 3.1305 3.1330 3.1355 3.1380 3.1405 3.1430 3.1455 3.1480 3.1505 3.1530 3.1555 3.1580 3.1605 3.1630 3.1655 3.1680 3.1705 3.1730 3.1755 3.1780 3.1805 3.1830 3.1855 3.1880 3.1905 3.1930 3.1955 3.1980 3.2005 3.2030 3.2055 3.2080 3.2105 3.2130 3.2155 3.2180 3.2205 3.2230 3.2255 3.2280 3.2305 3.2330 3.2355 3.2380 3.2405 3.2430 3.2455 3.2480 3.2505 3.2530 3.2555 3.2580 3.2605 3.2630 3.2655 3.2680 3.2705 3.2730 3.2755 3.2780 3.2805 3.2830 3.2855 3.2880 3.2905 3.2930 3.2955 3.2980 3.3005 3.3030 3.3055 3.3080 3.3105 3.3130 3.3155 3.3180 3.3205 3.3230 3.3255 3.3280 3.3305 3.3330 3.3355 3.3380 3.3405 3.3430 3.3455 3.3480 3.3505 3.3530 3.3555 3.3580 3.3605 3.3630 3.3655 3.3680 3.3705 3.3730 3.3755 3.3780 3.3805 3.3830 3.3855 3.3880 3.3905 3.3930 3.3955 3.3980 3.4005 3.4030 3.4055 3.4080 3.4105 3.4130 3.4155 3.4180 3.4205 3.4230 3.4255 3.4280 3.4305 3.4330 3.4355 3.4380 3.4405 3.4430 3.4455 3.4480 3.4505 3.4530 3.4555 3.4580 3.4605 3.4630 3.4655 3.4680 3.4705 3.4730 3.4755 3.4780 3.4805 3.4830 3.4855 3.4880 3.4905 3.4930 3.4955 3.4980 3.5005 3.5030 3.5055 3.5080 3.5105 3.5130 3.5155 3.5180 3.5205 3.5230 3.5255 3.5280 3.5305 3.5330 3.5355 3.5380 3.5405 3.5430 3.5455 3.5480 3.5505 3.5530 3.5555 3.5580 3.5605 3.5630 3.5655 3.5680 3.5705 3.5730 3.5755 3.5780 3.5805 3.5830 3.5855 3.5880 3.5905 3.5930 3.5955 3.5980 3.6005 3.6030 3.6055 3.6080 3.6105 3.6130 3.6155 3.6180 3.6205 3.6230 3.6255 3.6280 3.6305 3.6330 3.6355 3.6380 3.6405 3.6430 3.6455 3.6480 3.6505 3.6530 3.6555 3.6580 3.6605 3.6630 3.6655 3.6680 3.6705 3.6730 3.6755 3.6780 3.6805 3.6830 3.6855 3.6880 3.6905 3.6930 3.6955 3.6980 3.7005 3.7030 3.7055 3.7080 3.7105 3.7130 3.7155 3.7180 3.7205 3.7230 3.7255 3.7280 3.7305 3.7330 3.7355 3.7380 3.7405 3.7430 3.7455 3.7480 3.7505 3.7530 3.7555 3.7580 3.7605 3.7630 3.7655 3.7680 3.7705 3.7730 3.7755 3.7780 3.7805 3.7830 3.7855 3.7880 3.7905 3.7930 3.7955 3.7980 3.8005 3.8030 3.8055 3.8080 3.8105 3.8130 3.8155 3.8180 3.8205 3.8230 3.8255 3.8280 3.8305 3.8330 3.8355 3.8380 3.8405 3.8430 3.8455 3.8480 3.8505 3.8530 3.8555 3.8580 3.8605 3.8630 3.8655 3.8680 3.8705 3.8730 3.8755 3.8780 3.8805 3.8830 3.8855 3.8880 3.8905 3.8930 3.8955 3.8980 3.9005 3.9030 3.9055 3.9080 3.9105 3.9130 3.9155 3.9180 3.9205 3.9																

Remarks

Calculations By: J.P. V. Summary data by J.P. Reviewed by LR MCC L-302 (3/78)

Proj. No. 81CY055 T-3 Proj. Eng. DL Boring No. COR 13A Sample No. 5-86 Depth, ft. 24.4 Date Started 6/2/81 Completed 6/9/81

Apparatus No. 8 Ring No. C-8 Diameter, in. 2.50 Specific Gravity, Gs _____ Solids Height, Hs 2.4574 _____ inch

Visual Classification _____

[illegible]

Remarks

Calculations By: J.P. Ph., Summary data by J.P. Reviewed by R.R.

CONSOLIDATION TEST - LOADING SUMMARY

Sheet 1

Proj. No. 5124055 Proj. Eng. PN Boring No. 13A Sample No. 5-9B Depth, ft. 26.7 Date Start 6/2/81 Completed 6/4/81
 Apparatus No. 7 Ring No. C-3 Diameter, in. 2.50 Specific Gravity, Gs 2.712 Solids Height, Hs 0.4559 inch
 Visual Classification CL, br. S. sandy s.p. silty CLAY, trace S. gravel to m. sand

Initial Height Ho 6.126 in, Water 10.4 % Void 0.316 Deg. of 27.1 % Total Unit 140.1 pcf, Dry Unit 126.9 pcf
 Final Height Hf 5.915 in, Content 10.6 % Ratio 0.290 Saturation 27.1 % Weight 145.4 pcf, Weight 121.1 pcf

Final Applied Pressure, lbf	Final Dial Reading	Comp Stone and Filter Paper	True Dial Change, Inch	Volumetric Strain $\Delta H/H_0, \%$	$K_{cm/s} \times 10^{-8}$	Void Ratio $e = \frac{H-H_s}{H_s}$	Sec Comp $C_c = \frac{\Delta H/H_0}{\Delta \log 1 \times 10^{-4}}$	Fitting Time, sec.		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$			Primary Comp. Ratio, r in %		Duration of Load, Hours
								t ₉₀	t ₅₀	From t ₉₀	From t ₅₀	Average	t ₉₀	t ₅₀	
0	1000	1000	0	0		.3464									2m
1/8	1016	1000	0016	.26	10.212	.3429		60	24	84.95	49.37	67.16	46.3	46.7	5.0
1/4	1036	1008	0028	.46	2.253	.3402	2.53	130	45	39.05	26.22	32.63	57.8	76.9	7.3
5/8	1058	1017	0041	.67	2.817	.3374	2.26	125	66	40.26	17.73	28.99	34.2	48.7	8.3
1.0	1108	1028	0080	1.31	2.243	.3288	6.37	109	36	45.62	32.11	38.86	52.3	82.4	7.6
2.0	1155	1041	0114	1.86	1.742	.3213	5.16	135	56	36.27	31.61	33.94	44.4	71.7	7.7
4.0	1230	1056	0174	2.84	1.010	.3081	5.71	120	48	39.89	23.18	31.53	37.5	58.1	8.13
8.0	1320	1072	0248	4.04	1.314	.2819	8.16	60	20	77.56	54.09	65.82	33	53.8	7.5
16.0	1427	1088	0339	5.53		.2713	11.92								7.6
7.0	1398	1073	0325	5.31		.2729									8.2
2.0	1380	1065	0315	5.14	0.812	.2771		34	8.4	135.70	127.68	131.69	36.5	34.3	7.9
4.0	1392	1070	0322	5.26	0.816	.2756	1.63	73	18	63.04	59.42	61.24	58.3	15.0	7.3
8.0	1408	1078	0330	5.39	0.850	.2738	0.93	73	17	62.76	62.64	62.70	30.9	38.8	8.2
16.0	1437	1089	0348	5.68	0.264	.2699	3.35	126	46	35.71	22.76	29.25	46.9	66.2	7.7
32.0	1534	1105	0429	7.00	0.210	.2521	11.10	98	36	44.50	28.16	36.23	47.9	57.8	7.63
64.0	1650	1119	0531	8.66		.2357	13.06								7.2
32.0	1643	1114	0529	8.64		.2301									6.1
8.0	1607	1101	0506	8.26		.2352									

Remarks

Calculations By: J.P., RL, _____, Summary data by RL Reviewed by RL

WCC L-302 (3/78)

Sheet 2 of 2

Initial Height HO 6126 in, Water 10.4 %, Void 0.246, Deg. of 22.1 %, Total Unit 140.1 pcf, Dry Unit 126.9 pcf
Final Ht 0.5915 in, Content 10.6 %, Ratio 0.200, Saturation 97.1 %, Weight 145.4 pcf, Weight 121.4 pcf

Calculations By: J.P., J.B., _____, _____, Summary data by J.B. Reviewed by R.R. WCC L-302 (3/78)

Proj. No. BIC4055T-3 Proj Eng AWK Boring No. Coe 130 Sample No. S-10 Date Start 5/23/81 Completed 6/17/81
Apparatus No. 6 Ring No. C-6 Diameter, in. 2.50 Specific Gravity, Gs 2.65 Solids Height, Hs 0.494 inch
Visual Classification CL, gr-br m-s sandy silt to mp silty CLAY, trace s, gravel to sand

Initial Height		Mo		Water		3.9		%, Void		0.365		Deg of		74.4		%, Total Unit		137.3		pcf, Dry Unit		125.5		pcf				
Final		Hf		0.5800		in, Content		10.0		%, Ratio		0.231		Saturation		34.2		%, Weight		145.9		pcf, Weight		137.7		pcf		
Final Applied Pressure lbf	Final Dial Reading	Comp Stop and Filter Paper	True Dial Change Inch	Volumetric Strain $\Delta H/H_0, \%$	V_{Comp}/V_0	Void Ratio $\frac{H-H_s}{H_s}$	Sec Comp $\frac{\Delta H}{\Delta \log t} \times 10^{-4}$	Fitting Time, sec		Coefficient of Consolidation, C_v , $10^{-4} \text{ cm}^2/\text{sec}$		Average	Primary Comp Ratio, r in %		150	150	Duration of Load Hours											
								150	150	From 150	From 150		150	150														
0	0400	0400	0	0		0.3617																						
1/8	0439	0421	0018	0.29	0.570	0.3607																						
1/4	0456	0429	0027	0.44	0.6246	0.3587	0.449																					
1/2	0496	0437	0058	0.95	0.5343	0.3518	0.623																					
1.0	0555	0449	0106	1.73	0.7400	0.3111	0.522																					
2.0	0632	0462	0170	2.77	0.950	0.3263	0.815																					
4.0	0725	0477	0248	4.04	0.8098	0.2095	11.41																					
8.0	0831	0493	0338	5.51	1.020	0.2895	13.04																					
16.0	0941	0509	0432	7.04		0.2686	11.41																					
30	0914	0494	0420	6.85		0.2713																						
2.0	0897	0486	0411	6.70	0.080	0.2733																						
4.0	0908	0497	0417	6.80	0.022	0.2719	1.30																					
8.0	0921	0499	0423	6.93	0.104	0.2701	0.283																					
16.0	0952	0510	0442	7.21	0.453	0.2664	4.89																					
32.0	1047	0526	0521	8.47	0.263	0.2488	13.04																					
64.0	1157	0540	0611	10.06		0.2214	13.86																					
32.0	1145	0535	0600	7.95		0.2290																						
8.0	1113	0522	0571	9.64		0.2222																						

Remarks

Proj. No. 8K4055T-3 Proj. Eng. RS1 Boring No. COE13B Sample No. S-1B Depth, ft. 8.0 Date Start 5/23/81 Completed 6/27/81

Apparatus No. 6 Ring No. C-6 Diameter, in. 2.50 Specific Gravity, Gs 2.718 Solids Height, Hs 0.44 g/inch

Visual Classification

[illegible]

Remarks

Calculations By: J.L. Smith, _____, _____
Summary data by J.L. Reviewed by R.L.

WCC L-302 (3/78)

WCC L-302 (3/78)

Sheet 2 of 2

CONSOLIDATION TEST - LOADING SUMMARY

Proj No. BIC4055T-3 Proj Eng MA Boring No. 00E13B Sample No. S-3D Date Start 5/23/81 Completed 6/1/81
Apparatus No. 5 Ring No. A-1 Diameter, in. 1.50 Specific Gravity, Gs 2.740 Solids Height, Hs 0.4654 Inch
Visual Classification CL-ML, br. S. sandy sp. silty CLAY, to c.t.m. sand

Initial Height		in, Water		%, Void		Deg of		%, Total Unit		pcf, Dry Unit		pcf	
Final Height		in, Content		%, Ratio		Saturation		Coefficient of Consolidation, C _v		pcf, Weight		pcf	
Final Applied Pressure, lbf		Final Dial Reading	Comp Stand and Filter Paper	True Dial Change, Inch	Volumetric Strain, ΔH/H ₀ , %	K _{cr} /k _s × 10 ⁻²	Void Ratio, e ₀ - H ₀ /H _s	Sec Comp, C _α = ΔH/ΔLog t, 10 ⁻⁴	Fitting Time, sec	From 1 st 50	Average	Primary Comp Ratio, r in %	Duration of Load, Hours
										From 1 st 50		1 st 50	
0	0400	0400	0400	0	0		.3152						16.7
18	0433	0411	0411	.0022	.36	2.8722	.3105	1.08	72	31.16	23.75	56.8	93.3
114	0450	0419	0419	.0031	.51	5.512	.3086	1.08	44.4	34.15	30.30	47.2	64.4
112	0486	0428	0428	.0058	.95	5.069	.3028	5.121	35.4	57.83	45.26	41.2	58.8
1.0	0530	0439	0439	.0091	1.49	4.653	.2957	3.18	28.2	80.67	60.68	40.2	59.2
2.0	0588	0457	0457	.0136	2.22	3.272	.2860	3.80	23.4	80.81	48.20	34.3	50.8
4.0	0607	0467	0467	.0145	3.19	1.767	.2733	3.80	22.3	63.02	48.38	28.1	46.6
8.0	0751	0483	0483	.0268	4.38	1.754	.2576	14.31	15.6	123.74	51.72	32.2	44.7
16.0	0852	0499	0499	.0353	5.77		.2394	14.10					7.8
4.0	0822	0484	0484	.0338	5.52		.2426						8.0
2.0	0802	0476	0476	.0326	5.33	0.482	.2452		15.6	68.07	68.26	55.6	60
4.0	0815	0481	0481	.0334	5.46	0.370	.2434	1.62	13.8	50.03	77.04	83.53	60.0
8.0	0833	0489	0489	.0344	5.62	0.456	.2412	2.12	19.2	150.65	55.08	102.87	38.5
16.0	0864	0500	0500	.0364	5.95	0.502	.2370	4.74	22.2	71.73	46.88	62.31	44.0
32.0	0952	0516	0516	.0436	7.12	0.284	.2215	14.10	73.5	53.35	52.69	56.3	42.7
64.0	1055	0530	0530	.0525	8.58		.2024	16.24					8.1
32.0	1043	0525	0525	.0518	8.46		.2029						7.1
8.0	1007	0512	0512	.0475	8.09		.2063						7.1

Remarks

Calculations By: J.P., JB, Summary data by JK, Reviewed by RA, MCC L-302 (3/78)