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D. O. Foster
Vice President and General Manager
Vogtle Project



August 10, 1984

Director of Nuclear Reactor Regulation
Attention: Ms. Elinor G. Adensam, Chief
Licensing Branch #4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

File: X2BA06
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REFERENCE: LETTER NUMBER GN-376 DATED JUNE 13, 1984

NRC DOCKET NUMBERS 50-424 AND 50-425
CONSTRUCTION PERMIT NUMBERS CPPR-108 ABC CPPR-109
VOGTLE ELECTRIC GENERATING PLANT - UNITS 1 AND 2
TESTING PROGRAM FOR CATEGORY I BACKFILL

Dear Mr. Denton:

Enclosed for your information are the results of the confirmatory laboratory testing program for Category I backfill described in the above referenced letter.

If there are any questions concerning the attached information, do not hesitate to contact us.

Yours truly,

D. O. Foster

DOF/JAB/sw

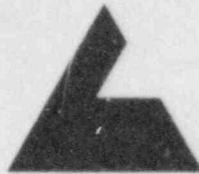
Enclosure

xc: M. A. Miller	W. R. Ferris
R. A. Thomas	M. Malcom
J. A. Bailey	M. A. Perovich
L. T. Gucwa	Z. Yazdani
J. E. Joiner	W. T. Nickerson
G. F. Trowbridge	H. H. Gregory, III
C. A. Stangler	W. F. Sanders
L. Fowler	J. P. O'Reilly

8408170301 840610
PDR ADOCK 05000424
A PDR

Booi
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August 8, 1984



LAW ENGINEERING TESTING COMPANY

geotechnical, environmental & construction materials consultants

396 PLASTERS AVENUE, N.E.
P.O. BOX 13260 • ATLANTA, GEORGIA 30324
(404) 873-4761

Southern Company Services, Inc.
P.O. Box 2625
Birmingham, Alabama 35202

Attention: Mr. J. A. Bailey

Subject: Report of Confirmatory Laboratory Testing Program
For Category I Backfill
Vogle Electrical Generating Plant
LETCo Job Number 7429

Gentlemen:

Law Engineering has completed the requested confirmatory laboratory testing of backfill materials, except for permeability testing. The results of the tests are presented in this report.

Twelve bags of soil were received from Plant Vogle on June 15 and June 19, 1984. Initially testing of fourteen samples was planned. Due to sampling difficulties in the field, samples initially numbered 8 and 14 were not delivered to us.

In the laboratory the following tests were performed:

- ASTM D 422-63 Particle Size Analysis of Soil
- ASTM D 1557-78 Moisture Density Relations of Soils and Soil Aggregate Mixtures using 10 lb. Rammer and 18 inch Drop (Method A).
- ASTM D 2049-69 Relative Density of Cohesionless Soil.
- ASTM D 4253-83 Maximum Index Density of Soils using a Vibratory Table (Appendix non-mandatory information included).
- ASTM D 4254-83 Minimum Index Density of Soils and Calculation of Relative Density.
- ASTM D 423-66 Liquid Limit of Soil.
- ASTM D 424-59 Plastic Limit and Plasticity Index of Soils.

Tests are presently underway to evaluate the permeability of two samples, Number 10 and 11. The results of the permeability testing will be reported to you as soon as it is completed.

Grain Size Tests

The grain size distribution of the twelve samples received was determined by procedures outlined in ASTM D 422-63. Six of the samples had less than 5% passing the No. 200 sieve, two of the samples had between 5 and 9% passing the No. 200 sieve and four of the samples had greater than 9% but less than 12% passing the No. 200 sieve. The particle size distribution for materials coarser than the No. 200 sieve was determined by passing the materials over a set of nested sieves. The particle size distribution for materials finer than the No. 200 sieve was determined by Hydrometer analysis for the three samples initially thought to be in the range of 9 to 12% passing the No. 200 sieve. One sample, Number 10, contained 10% passing the No. 200 sieve, so was outside its planned range of 5% to 9% passing the No. 200 sieve.

During the relative density testing, three grain size tests were performed on samples to determine if grain size changes (degradation) occurred due to performing several relative density tests on the same sample. This grain size testing indicated that the gradation of the soil did not change appreciably during the relative density testing.

The results of the grain size testing is shown on the individual grain size sheets and on the tabulated laboratory test results in the Appendix.

Modified Proctor Compaction Tests

Twelve modified proctor compaction tests were performed to evaluate the moisture density relations of the soils. During testing the soils typically "bled" water from the compaction mold. To evaluate this condition moisture content tests were performed on the soil samples both before and after compaction in the compaction mold. The loss of water from the compaction mold during compaction was measured to vary from approximately one half percent to approximately four percent for tests performed wet of optimum moisture content.

The results of the modified Proctor compaction testing are shown on the individual modified Proctor compaction test sheets and on the Table of Laboratory Test Results in the Appendix.

Relative Density Testing

Relative density testing was initiated using procedures outlined in ASTM D 2049-69. At the request of Mr. Joe Kane of the Nuclear Regulatory Commission, with approval from Mr. Walter Ferris of Bechtel Incorporated, who visited our laboratory to observe the testing from June 27, 1984 through June 29, 1984, the relative density program was modified. Three soil samples were selected from each of the grain size ranges, less than 5% passing the No. 200 sieve, 5% to 9% passing the No. 200 sieve, and 9% to 12% passing the No. 200 sieve to evaluate the optimum amplitude of vibration. Utilizing procedures outlined in ASTM D 4253-83, the

maximum density was determined by the dry method at selected points over a range of amplitudes of vibration. For each grain size range, the amplitude of vibrations which produced the highest maximum density was determined. This optimum amplitude of vibration (3600 cycles per second frequency) was then used within each grain size range for determining maximum density by both the wet and dry methods.

The minimum density of each sample was determined by procedures outlined in ASTM D 4254-83.

The results of the maximum and minimum density testing are shown on the attached relative density test sheets and on the plots of maximum density versus amplitude of vibration in the Appendix.

Plasticity Index

Plasticity index testing was performed on the three soil samples initially expected to fall within the range of 9% to 12% passing the No. 200 sieve by procedures outlined in ASTM D 423-66 and D-424-59. The testing indicated that each of the three samples was non-liquid, non-plastic.

Discussion

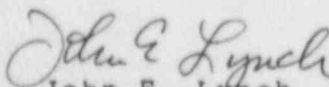
We understand that the results of the modified proctor compaction tests performed in our laboratory will be compared with like tests performed at Plant Vogtle. We point out the precision of this test as shown on Table 3 of ASTM D-1557 allows an acceptable range of two results from different laboratory to be 4% of the mean value. The multilaboratory standard deviation of maximum density by the ASTM D 1557-82 method is shown as ± 1.66 .

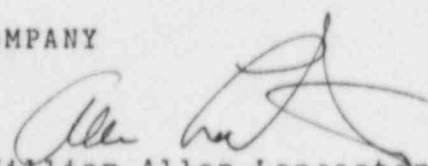
For samples in the 0 - 5% and 5% - 9% passing the #200 sieve grain size range, the relative density test indicated maximum densities ranging from approximately one pound per cubic foot less to approximately three and one half pounds per cubic foot greater than the modified Proctor maximum density. For soils in the 9% to 12% passing the No. 200 sieve grain size range, maximum density determined by the relative density method ranged from approximately three to eight pounds per cubic foot less than the modified Proctor maximum density.

Thank you for the opportunity of working with you on this project. If you have any questions concerning this project or if we can be of additional assistance to you, please contact us.

Very truly yours,

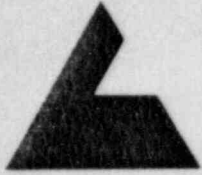
LAW ENGINEERING TESTING COMPANY


John E. Lynch
Laboratory Manager


William Allen Lancaster
Civil Engineer



APPENDIX



LAW ENGINEERING TESTING COMPANY
 geotechnical environmental & construction materials consultants
 396 PLASTERS AVENUE N E
 P.O. BOX 13260 • ATLANTA, GEORGIA 30324
 (404) 873-4761

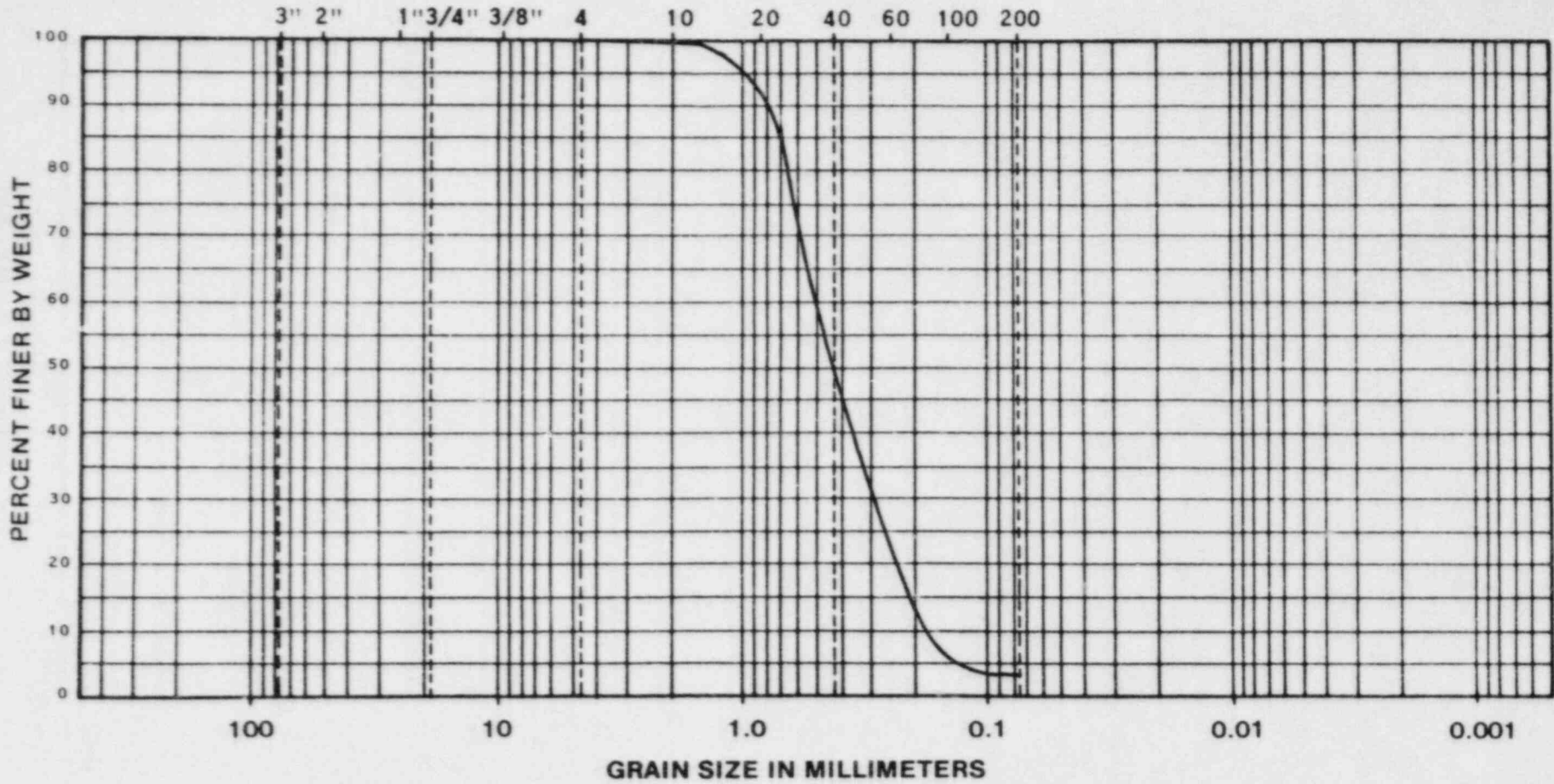
JOB NO. 7429 SHEET 1 OF 1
 JOB NAME G.P.C. Vogtle Plant
 BY K.D. DATE 7-30-84
 CHECKED BY WAC DATE 8/6/84

Sample Classification

Sample No.	Sample Description	Sample Source	Moist. Content %	Grain Size			Grain Size Distribution			Unified Class.
				% Pass. #10	% Pass. #40	% Pass. #200	% Sand	% Silt	% clay	
#1	Pink fine to med. Sand	Borrow mixed	4.2	100.0	48.6	3.2	96.8	-	-	SP
#2	Pink fine to med. Sand	Borrow mixed	3.6	100.0	58.5	3.4	96.6	-	-	SP
#3	Tan fine to med. Sand	Borrow mixed	3.6	100.0	51.7	3.3	96.7	-	-	SP
#4	Tan fine to med. Sand	Borrow mixed	2.5	100.0	38.4	3.3	96.7	-	-	SP
#5	Pink fine to med. Sand	Field Unmixed	8.9	100.0	53.1	3.0	97.0	-	-	SP
#6	Pink fine to med. Sand	Field Unmixed	7.8	100.0	48.1	3.4	96.6	-	-	SP
#7	Orange fine to med. Sand	Borrow mixed	2.5	99.4	67.8	7.5	92.5	-	-	SP-SM
#9	Orange fine to med. Sand	Field Unmixed	4.0	99.9	75.9	10.0	90.0	-	-	SP-SM
#10	Light brown fine to med. Sand	Field Unmixed	1.5	99.2	62.5	5.9	94.1	-	-	SP-SM
#11	Tan fine to med. Sand	Borrow mixed	5.2	98.2	66.4	11.0	89.0	5.8	5.2	SP-SM
#12	Brown fine to med. Sand	Borrow mixed	8.0	100.0	81.2	10.7	89.3	3.7	7.0	SP-SM
#13	Orange fine to med. Sand	Field Unmixed	4.2	99.5	75.4	9.5	90.5	3.6	5.9	SP-SM

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



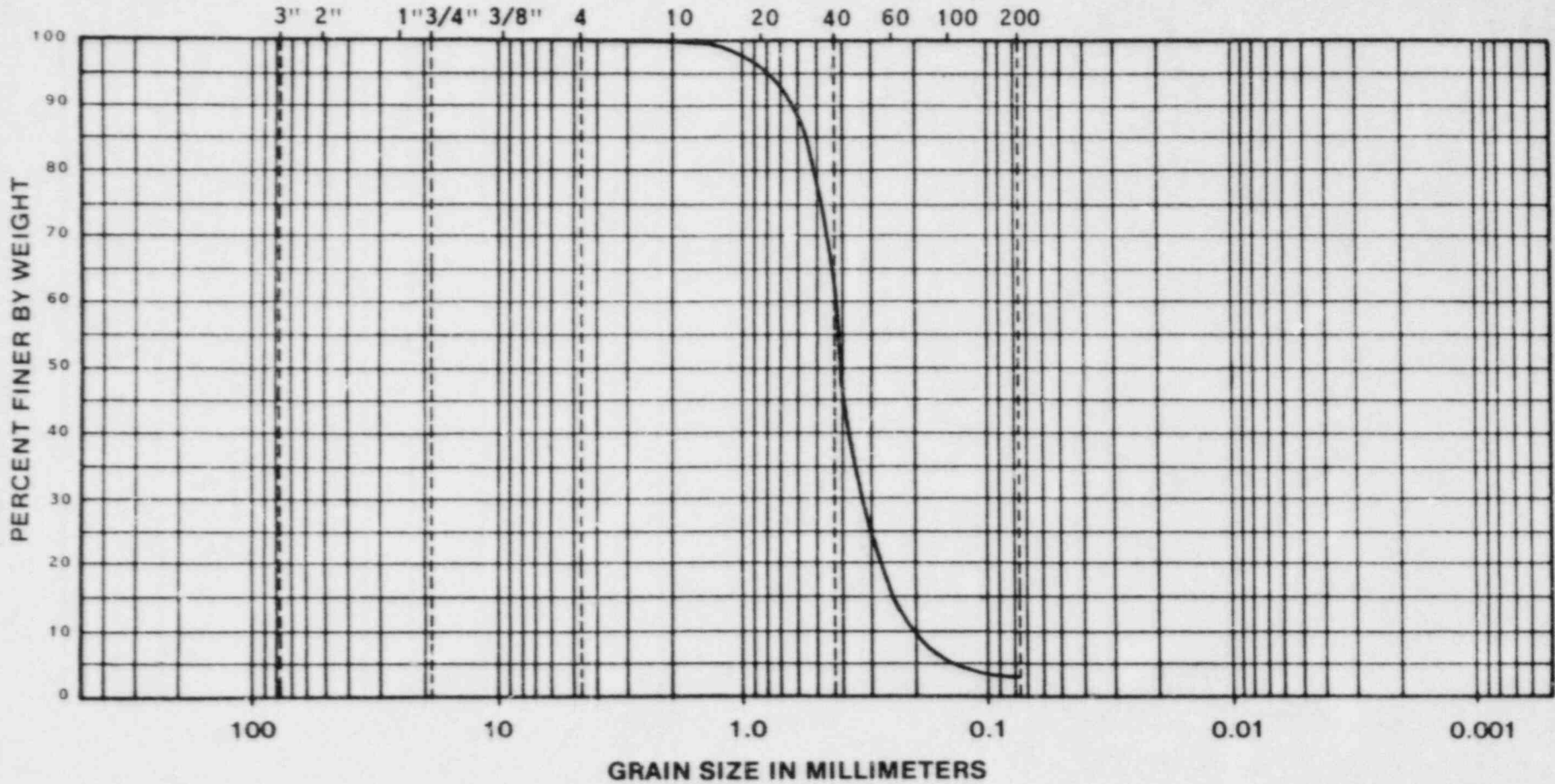
**Law Engineering
Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag #1 S-1	Borrow					Pink fine to med. Sand (SP)
JOB NO. 7429	Mixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



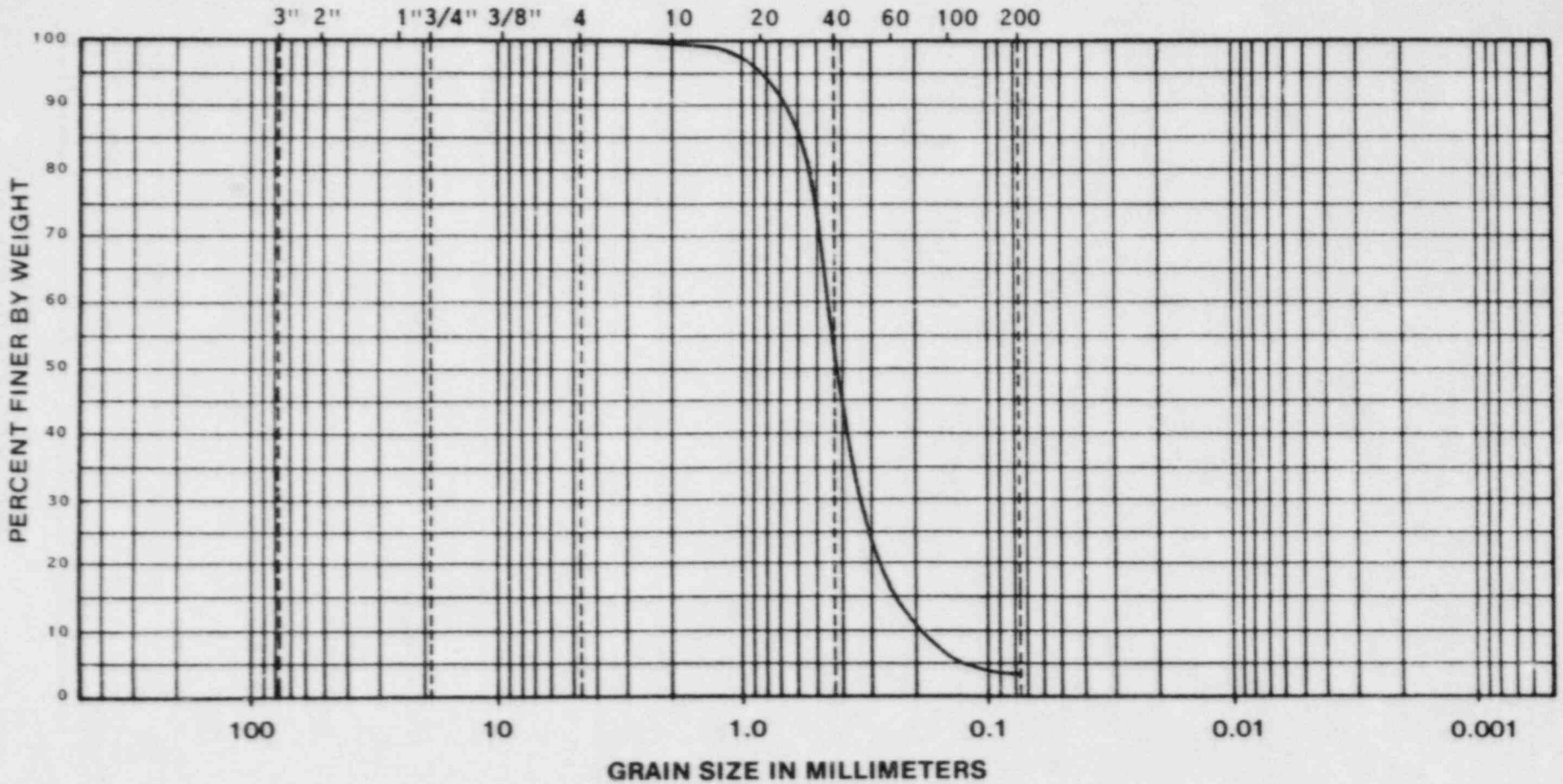
**Law Engineering
Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-2	Borrow					Pink Fine to Med. Sand (SP)
JOB NO. 7429	Mixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



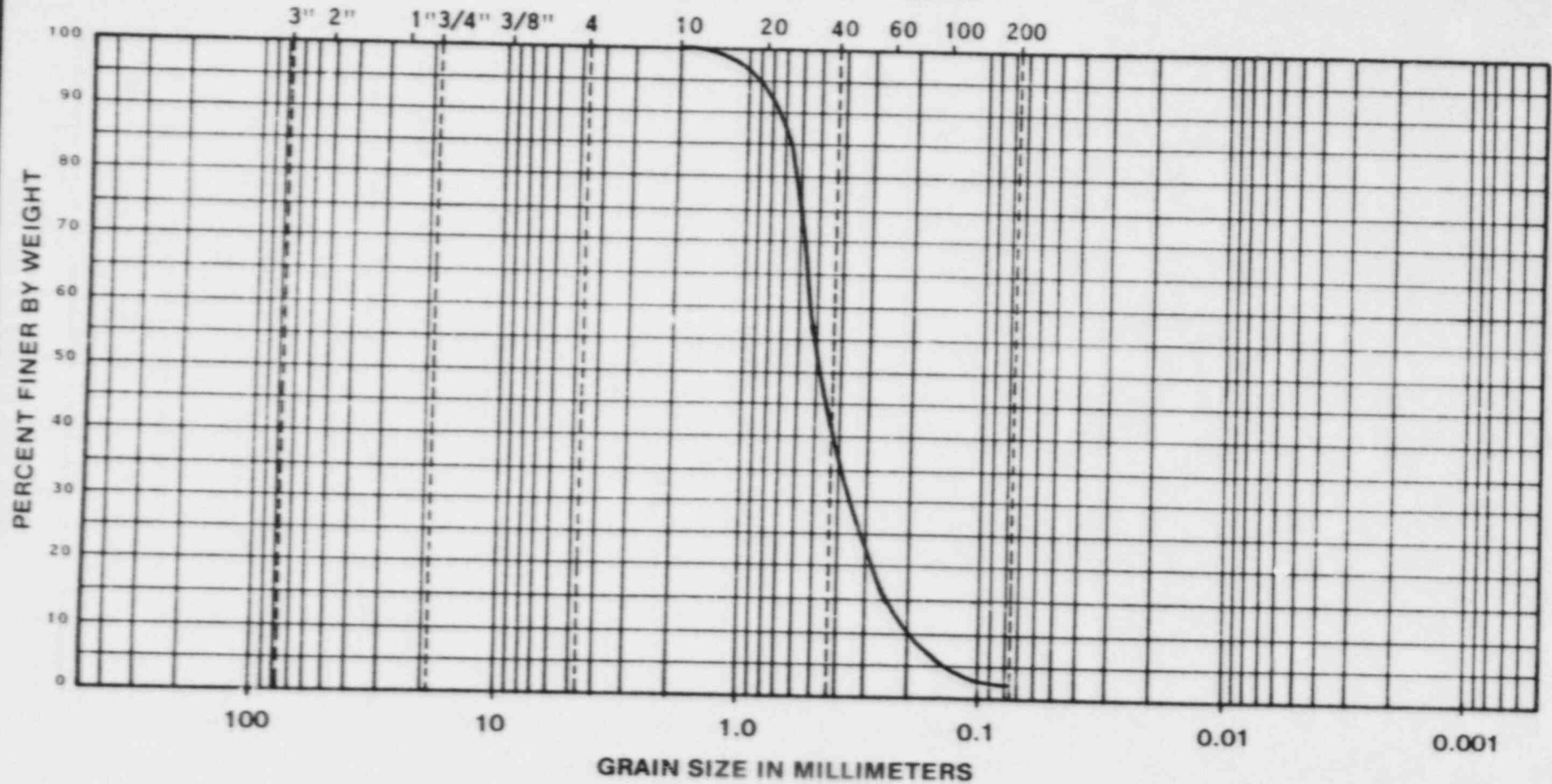
**Law Engineering
Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-3	Borrow					Tan Fine to Med. Sand (SP)
JOB NO. 7429	Mixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



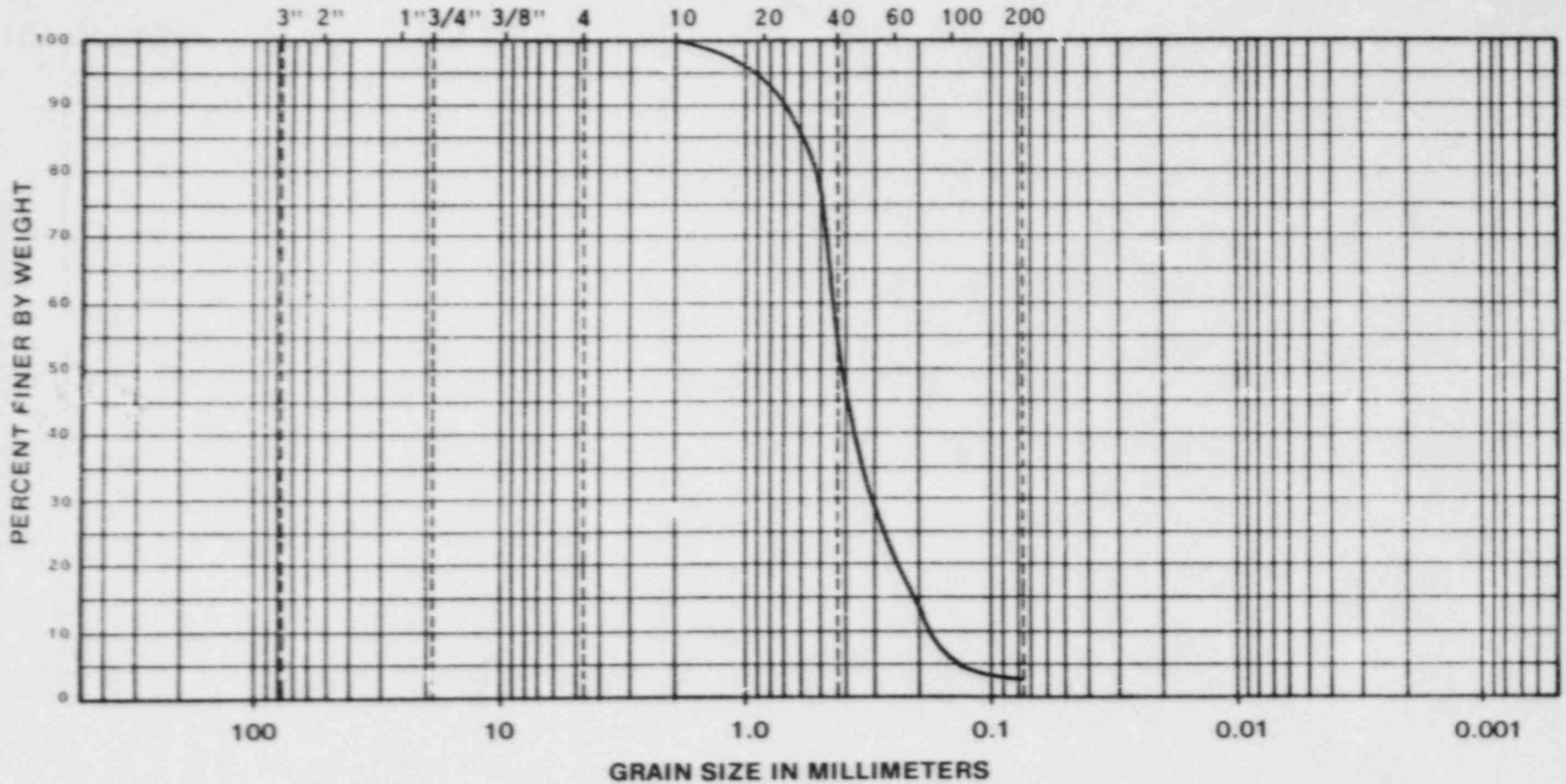
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Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-4	Borrow					Tan Fine to Med. Sand (SP)
JOB NO. 7429	Mixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



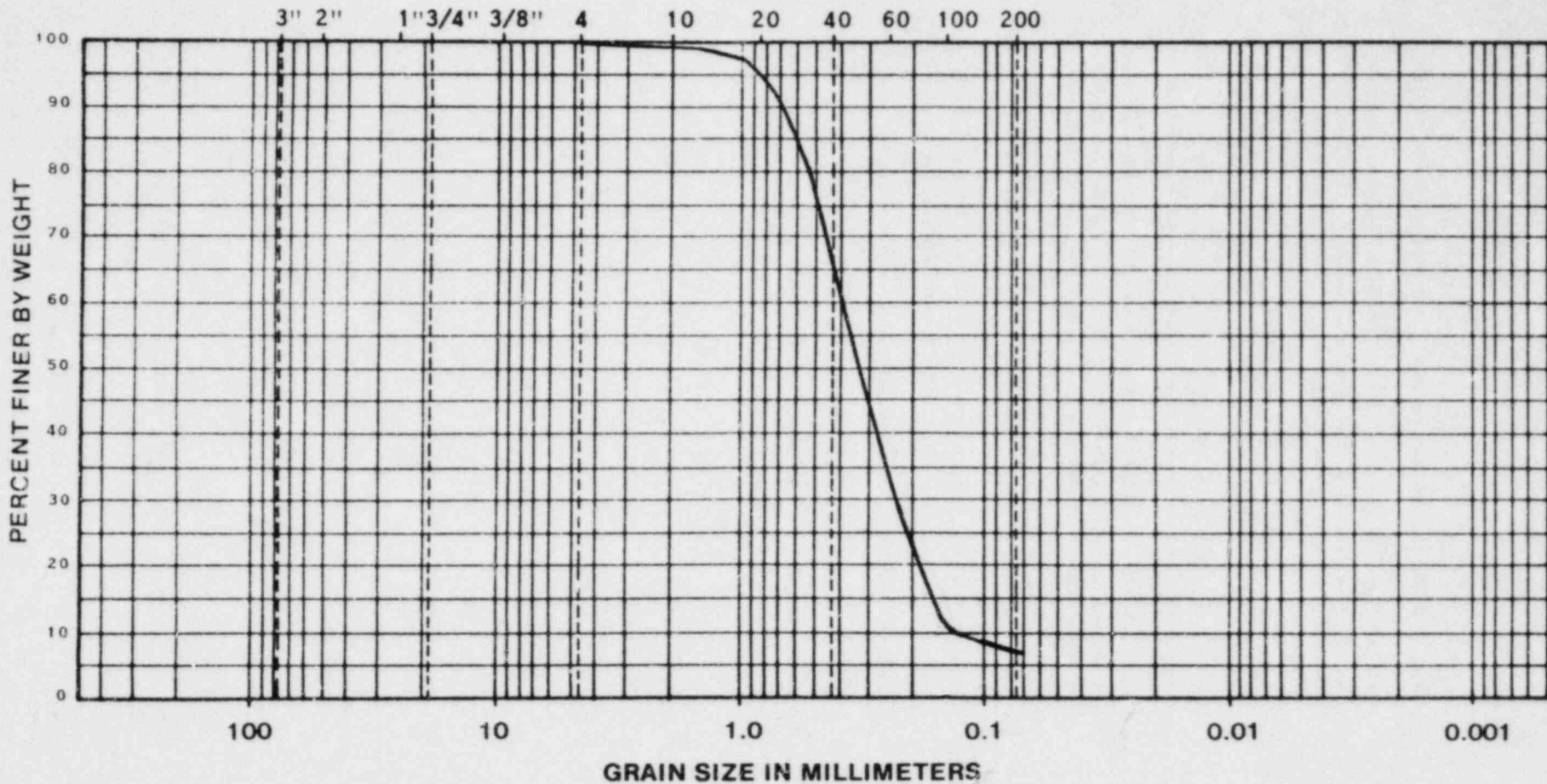
**Law Engineering
Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-5	Field					Pink Fine to Med. Sand (SP)
JOB NO. 7429	Unmixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



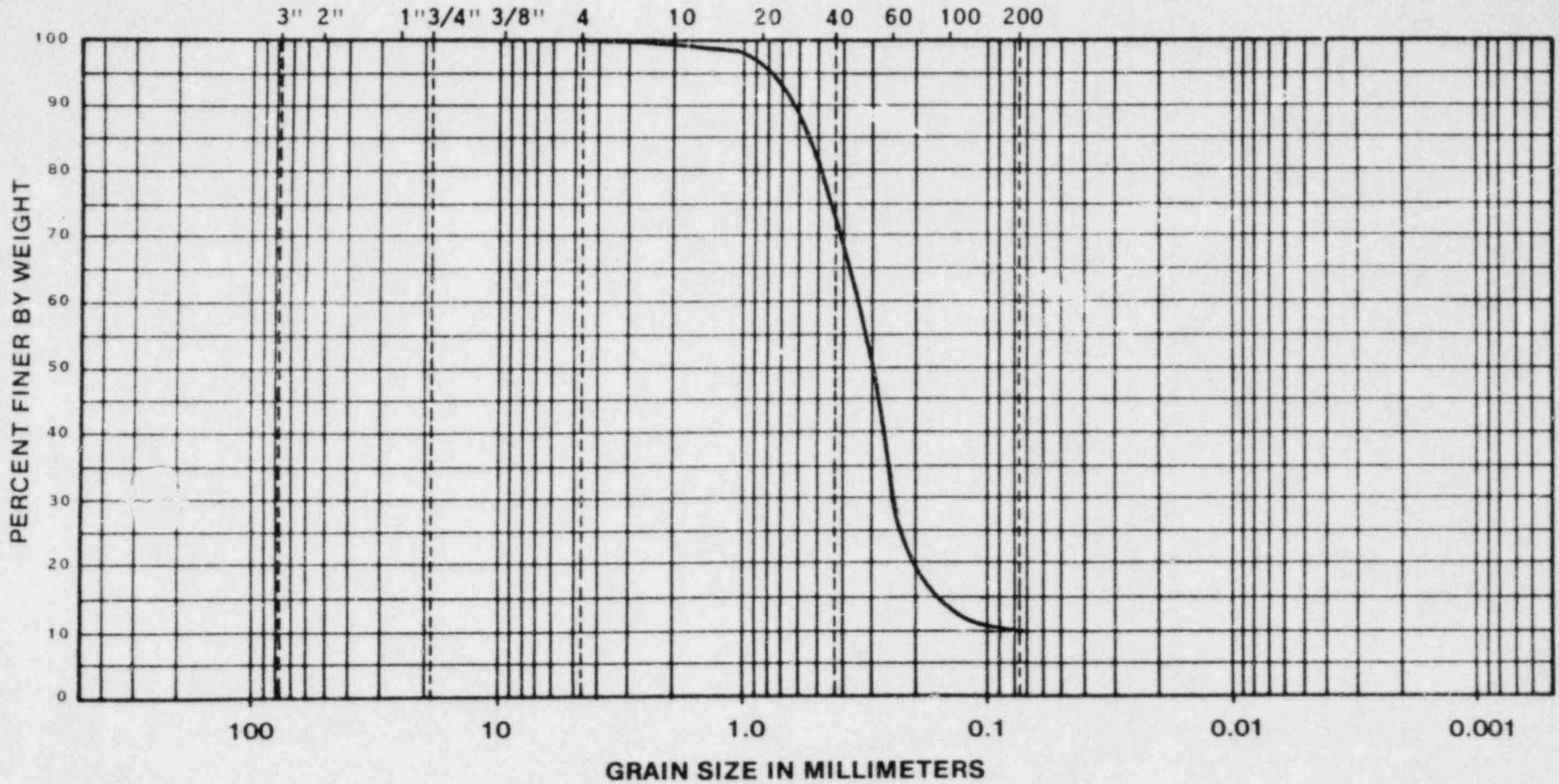
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Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-7	Borrow					Orange Fine to Med. Sand (SP-SM)
JOB NO. 7429	Mixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



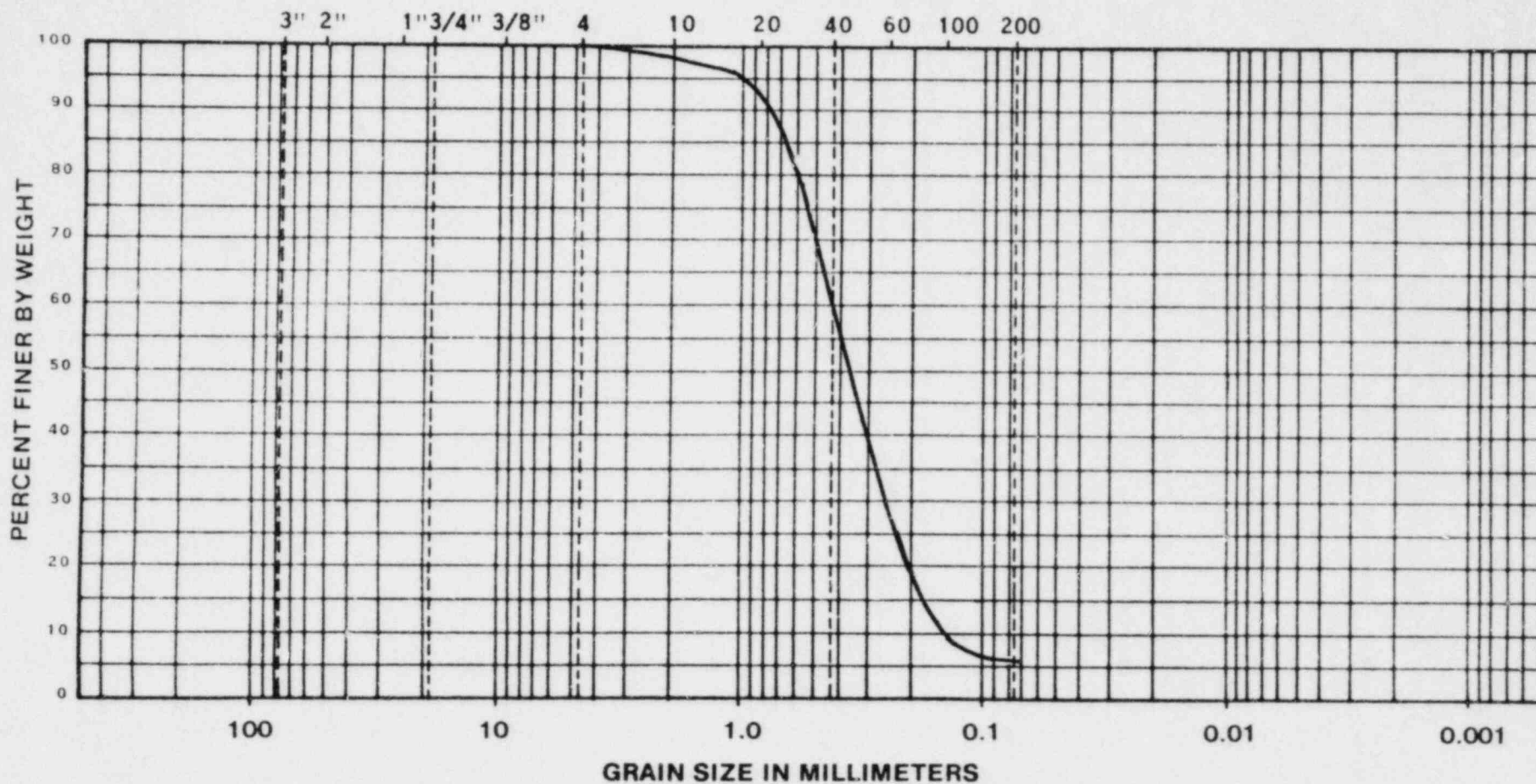
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Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 5-9	Field					Orange Fine to Med. Sand (SP-SM)
JOB NO. 7429	Unmixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



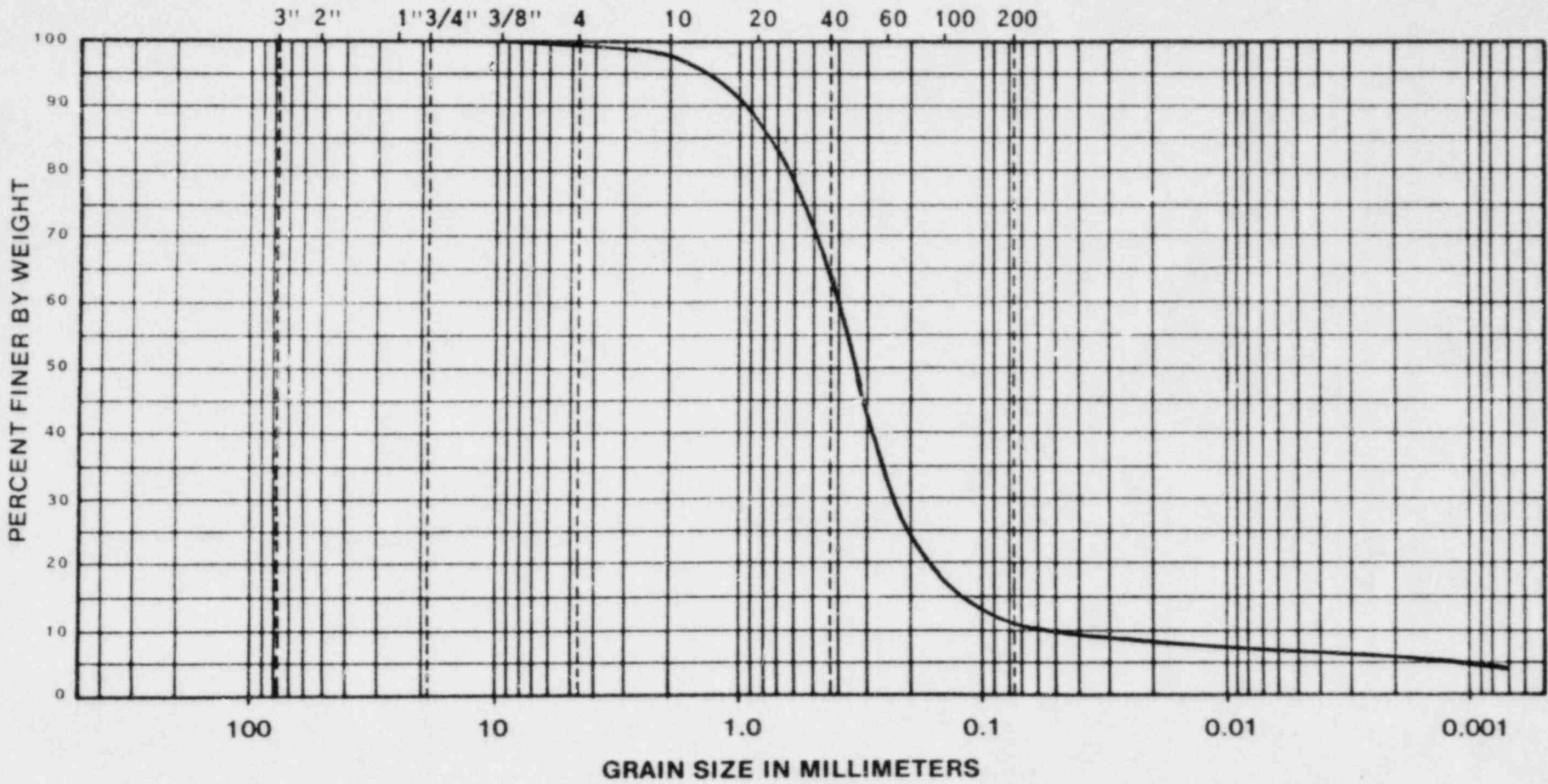
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Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 5-10	Field					Lt. Brown Fine to Med. Sand (SP-SM)
JOB NO. 7429	Unmixed					

BOUL DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



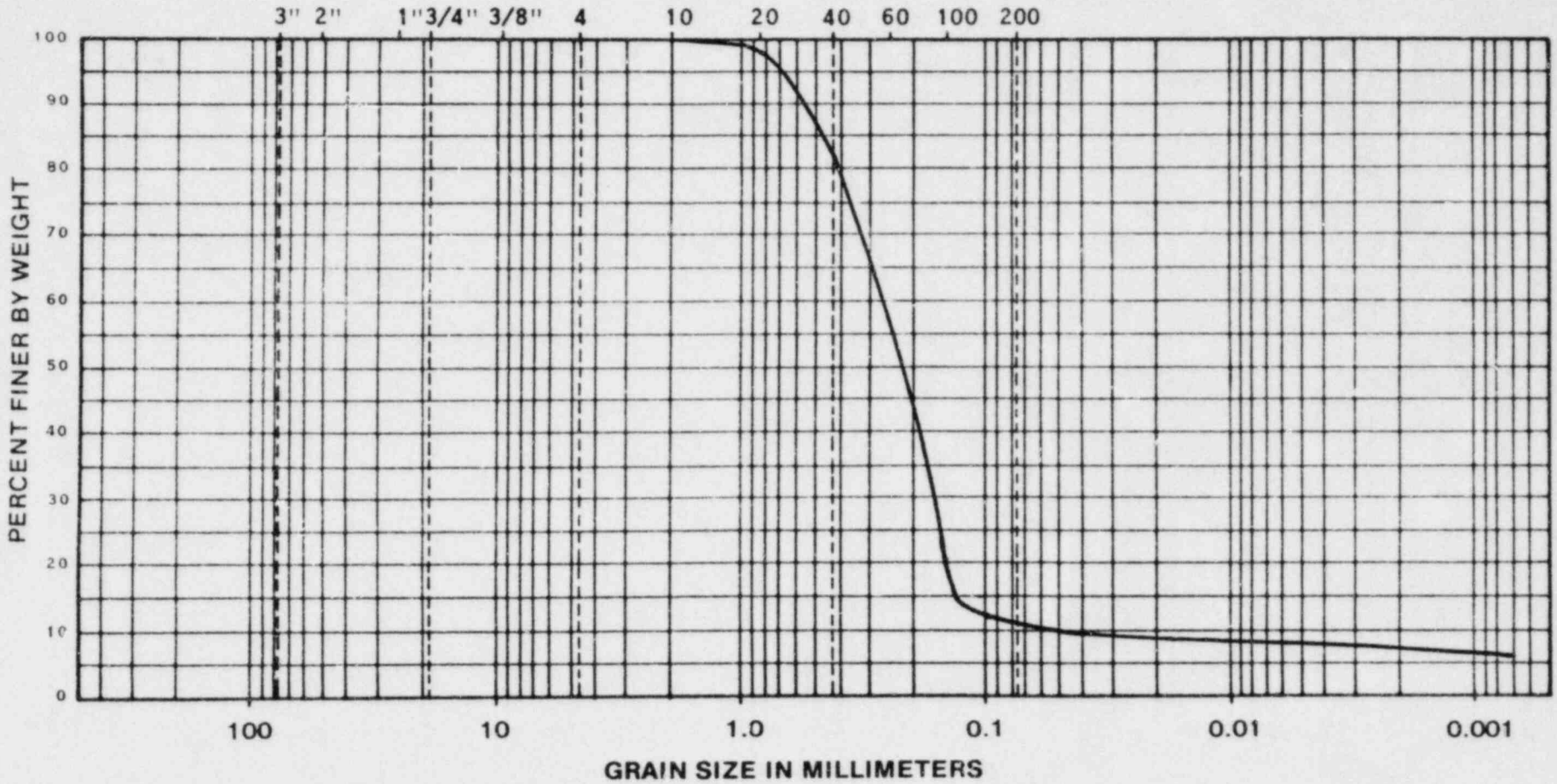
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Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-11	Borrow		NL	NP	-	Tan Fine to Med. Sand (SP-SM)
JOB NO. 7429	Mixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



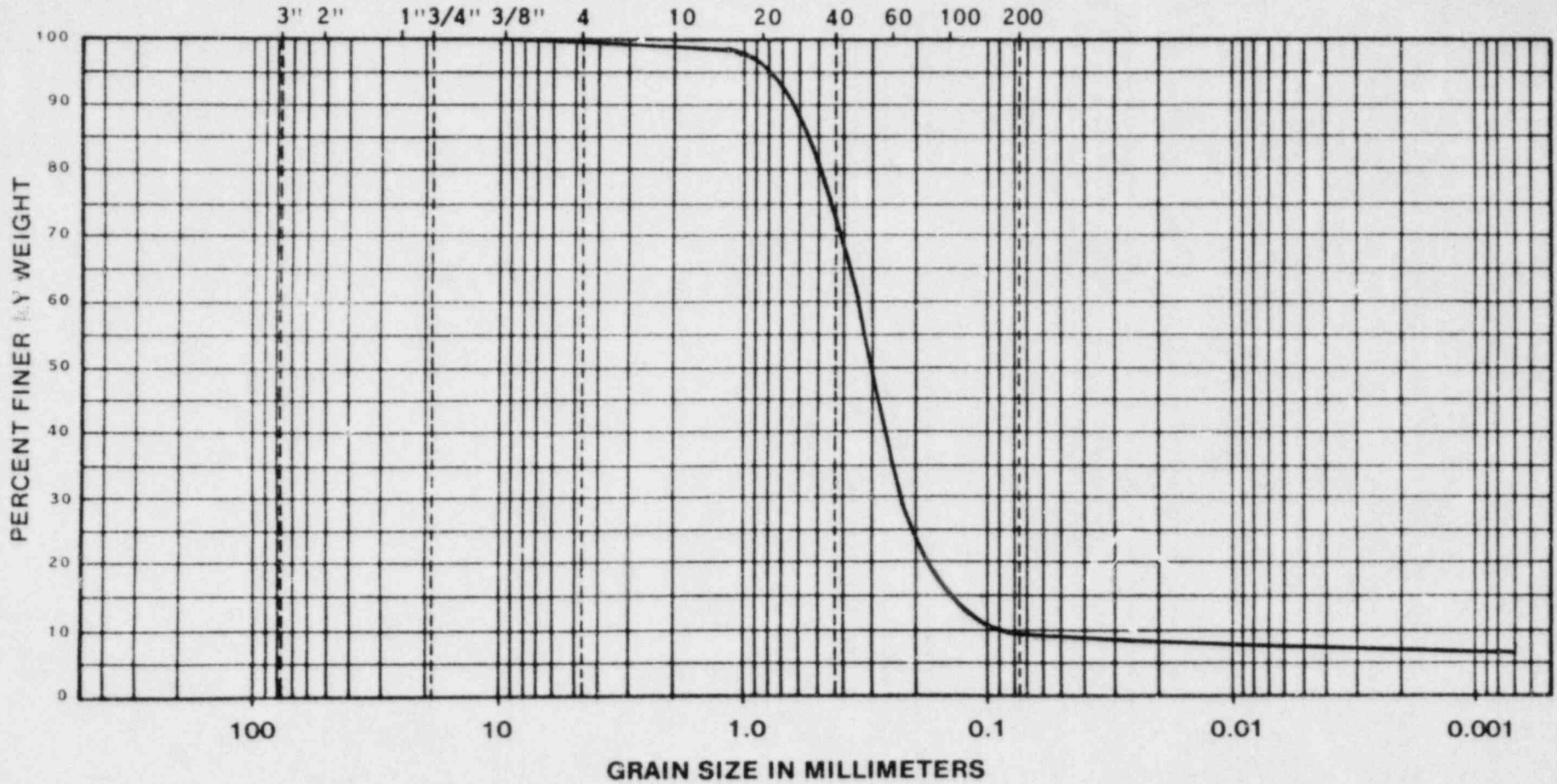
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Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LI	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-12	Borrow		NL	NP	-	Brown Fine to Med. Sand (SP-SM)
JOB NO. 7429	Mixed					

BOUL DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



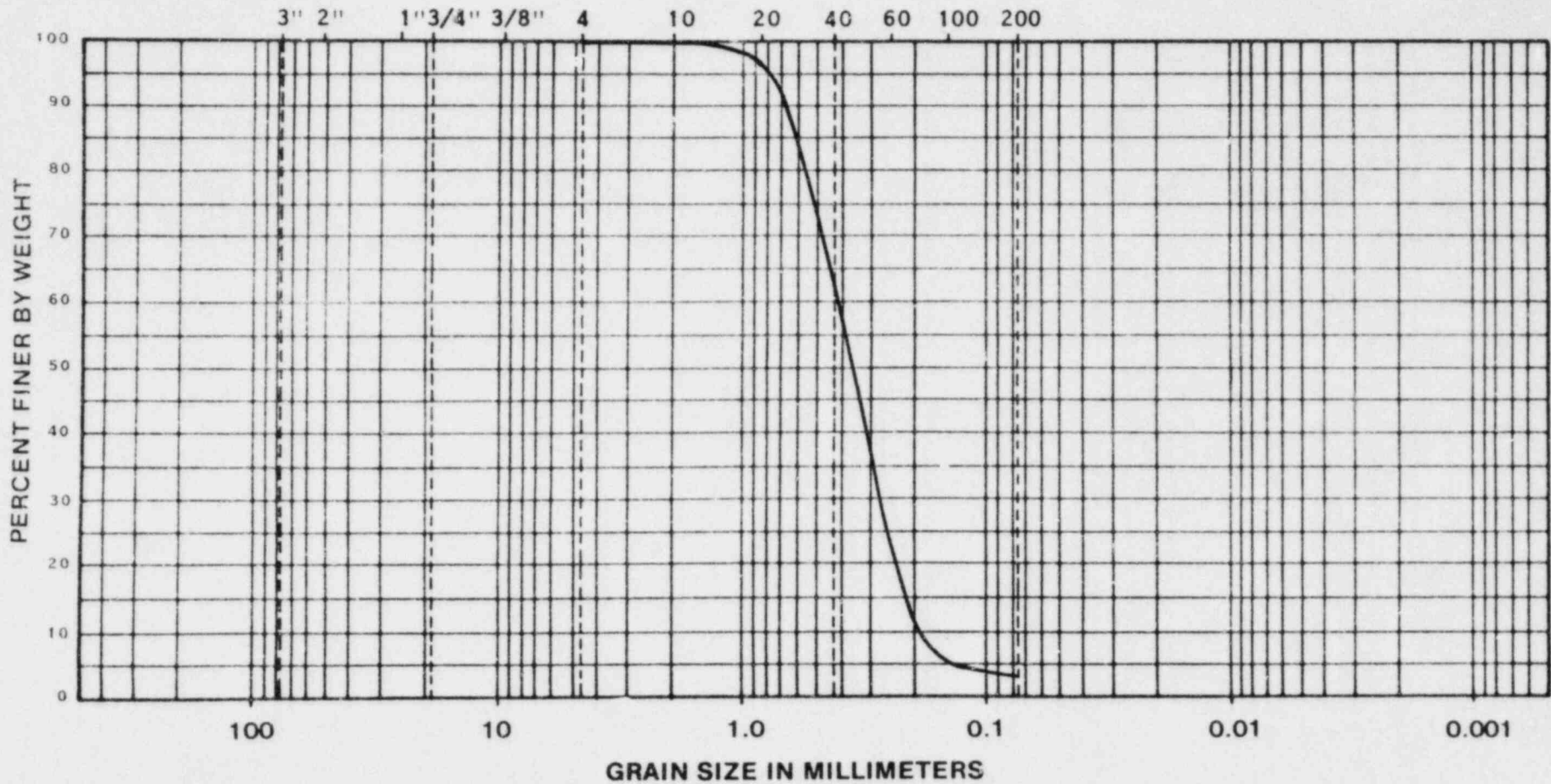
**Law Engineering
Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-13	Field		NL	NP	-	Orange Fine to Med. Sand (SP-SM)
JOB NO. 7429	Unmixed					

BOUL DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



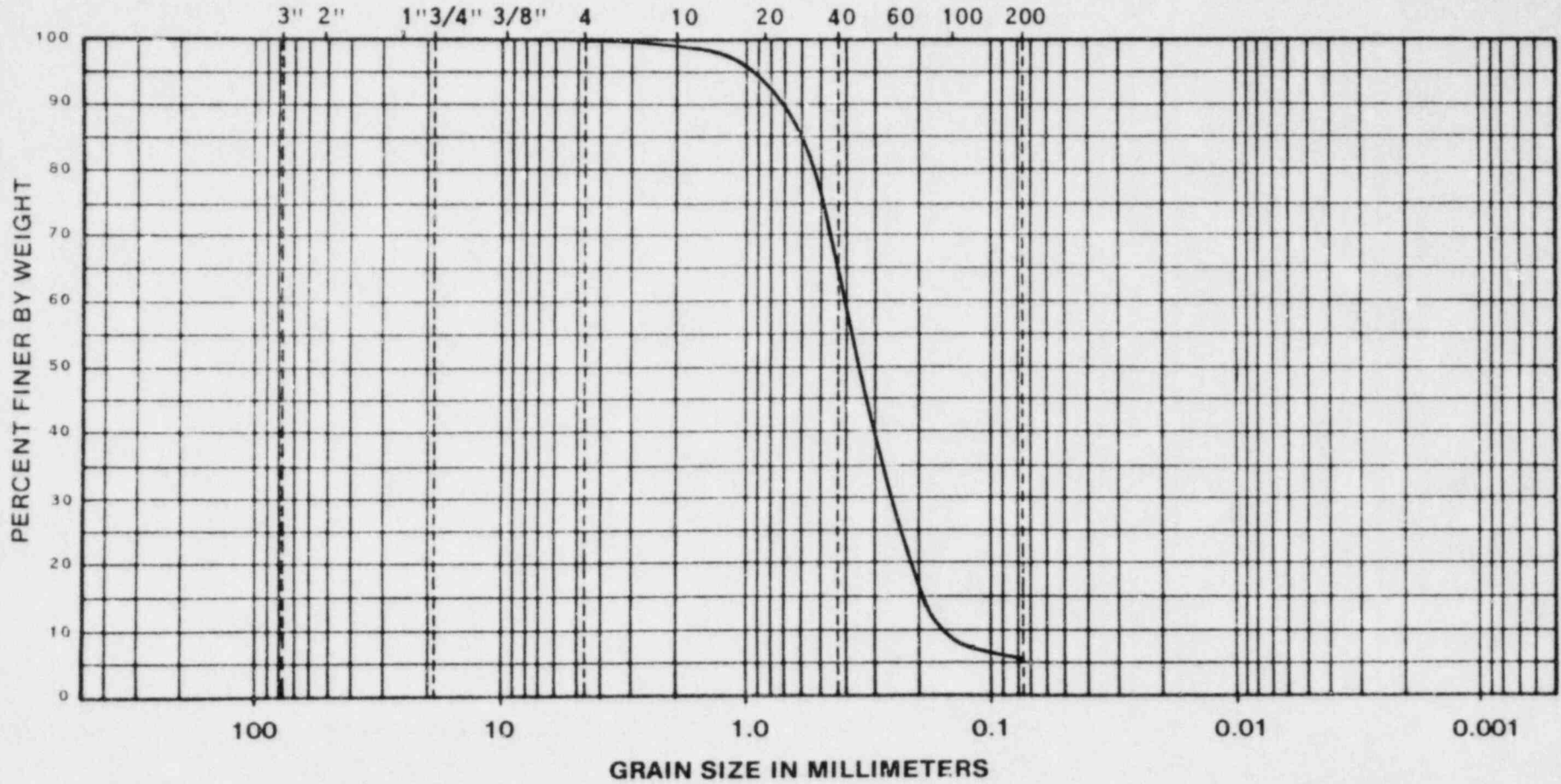
**Law Engineering
Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-5	Field					Run After Relative Density Test
JOB NO. 7429	Unmixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



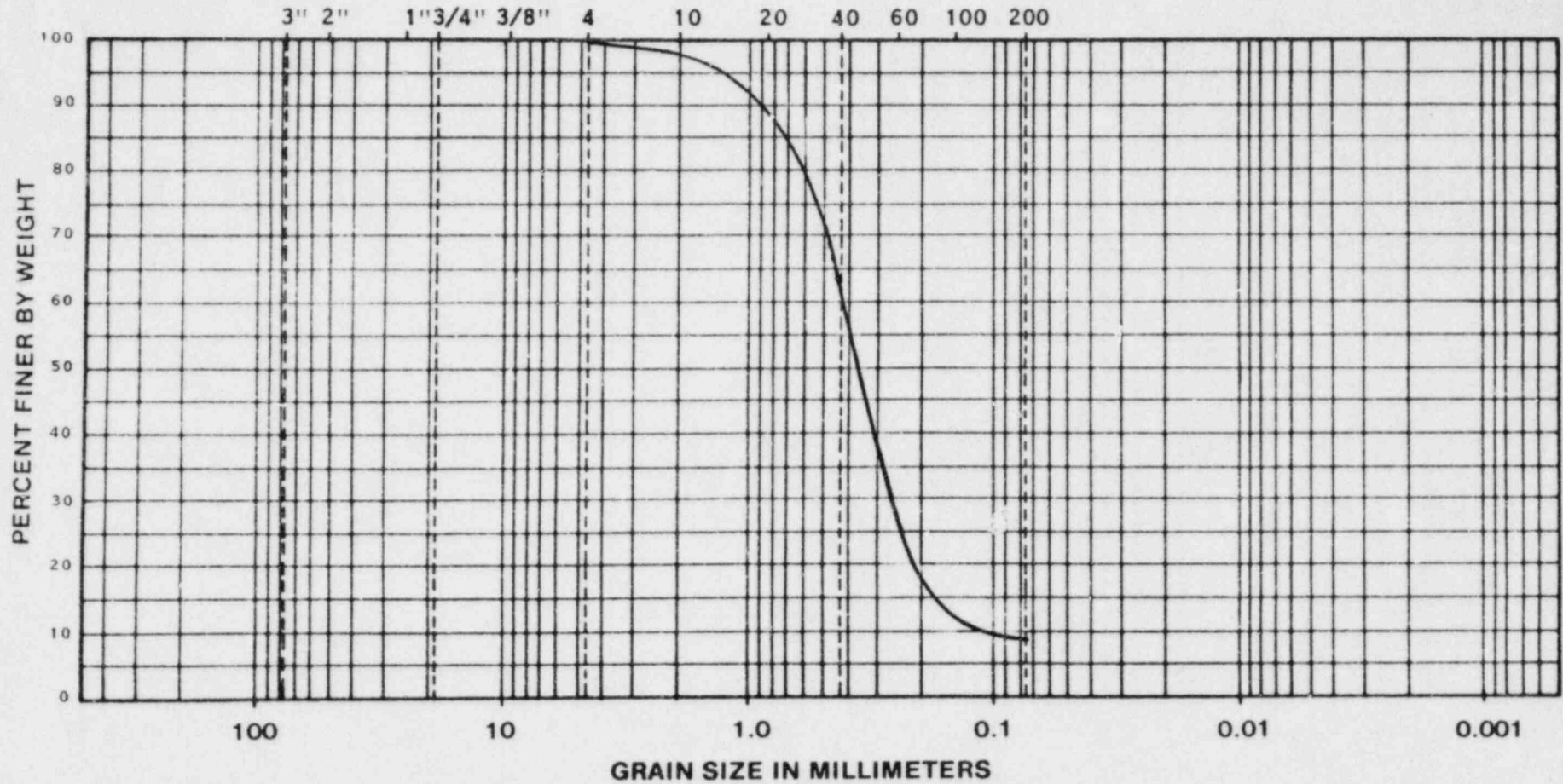
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Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-7	Borrow					Run After Relative Density Test
JOB NO. 7429	Mixed					

BOUL- DERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

U. S. STANDARD SIEVE SIZES



**Law Engineering
Testing Company**

Grain Size Distribution

BORING NO.	DEPTH	NA	WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
Bag 1 S-11	Borrow						Run After Relative Density Test
JOB NO. 7429	Mixed						

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS S-1 BAG 1 SOURCE BORROW MIXED

SPECIFIC GRAVITY = 2.70
NATURAL MOISTURE CONTENT = 4.2 PERCENT

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.1	100.0
20	17.1	93.3
40	131.4	48.6
60	198.3	22.4
100	242.0	5.2
200	247.1	3.2

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 96.8% SAND 3.2% FINES
UNIFORMITY COEF = 2.98 COEF OF CURVATURE = .96

UNIFIED SOIL CLASSIFICATION IS SP

Tested By:	KD
Date:	6-19-84
Reviewed By:	WAC
Date:	8/15/84

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS S-2 BAG-1 SOURCE BORROW MIXED

SPECIFIC GRAVITY = 2.70
NATURAL MOISTURE CONTENT = 3.6 PERCENT

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.0	100.0
20	11.1	96.5
40	132.1	58.5
60	261.2	17.9
100	301.9	5.2
200	307.5	3.4

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 96.6% SAND 3.4% FINES
UNIFORMITY COEF = 2.33 COEF OF CURVATURE = 1.10

UNIFIED SOIL CLASSIFICATION IS SP

Tested By: KD
Date: 6/20/84
Reviewed: 8/17/84



LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS S-3 BAG-1 SOURCE MIXED

SPECIFIC GRAVITY = 2.70
NATURAL MOISTURE CONTENT = 3.6 PERCENT

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.0	100.0
20	12.2	95.5
40	131.1	51.7
60	212.8	21.7
100	257.2	5.3
200	262.6	3.3

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 96.7% SAND 3.3% FINES
UNIFORMITY COEF = 2.81 COEF OF CURVATURE = .99

UNIFIED SOIL CLASSIFICATION IS SP

KD
6/20/84
MHC
3/7/74



LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS S-4 BAG-1 SOURCE BORROW MIXED

SPECIFIC GRAVITY = 2.70
NATURAL MOISTURE CONTENT = 2.5 PERCENT

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.0	100.0
20	17.6	93.7
40	171.5	38.4
60	231.7	16.8
100	264.9	4.8
200	269.0	3.3

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 96.7% SAND 3.3% FINES
UNIFORMITY COEF = 3.03 COEF OF CURVATURE = 1.11

UNIFIED SOIL CLASSIFICATION IS SP

KD
6/20/84
was
8/7/84

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS S-5 BAG-1 SOURCE FIELD UNMIXED

SPECIFIC GRAVITY = 2.70
NATURAL MOISTURE CONTENT = 8.9 PERCENT

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.1	100.0
20	12.7	95.5
40	133.7	53.1
60	226.2	20.6
100	271.4	4.8
200	276.3	3.0

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 97.0% SAND 3.0% FINES
UNIFORMITY COEF = 2.68 COEF OF CURVATURE = 1.00

UNIFIED SOIL CLASSIFICATION IS SP

KD
6/20/84

www
7/2/84

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS S-6 BAG-1 SOURCE FIELD UNMIXED

SPECIFIC GRAVITY = 2.70
NATURAL MOISTURE CONTENT = 7.8 PERCENT

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.0	100.0
20	18.1	94.5
40	169.7	48.1
60	258.9	20.8
100	309.9	5.2
200	315.8	3.4

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 96.6% SAND 3.4% FINES
UNIFORMITY COEF = 2.93 COEF OF CURVATURE = .99

UNIFIED SOIL CLASSIFICATION IS SP

KD
6/20/84
WRE
3/7/84



LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS BAG-1 SAMPLE 7 BORROW MIXED

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	2.3	99.4
20	18.0	95.3
40	124.5	67.7
60	260.8	32.4
100	342.5	11.2
200	357.1	7.5

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 92.5% SAND 7.5% FINES
UNIFORMITY COEF = 3.08 COEF OF CURVATURE = 1.20

KD
6/25/84
msk
2/2/84

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS BAG-1 SAMPLE 9 FIELD UNMIXED

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.4	99.9
20	9.6	97.6
40	98.0	75.9
60	279.8	31.3
100	355.3	12.8
200	366.7	10.0

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 90.0% SAND 10.0% FINES
UNIFORMITY COEF = 4.81 COEF OF CURVATURE = 2.20

KD
6/25/84

max
3/3/84



LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS BAG-1 SAMPLE 10 FIELD UNMIXED

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	3.2	99.2
20	24.5	94.0
40	153.8	62.5
60	294.4	28.2
100	372.6	9.1
200	385.6	5.9

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 94.1% SAND 5.9% FINES
UNIFORMITY COEF = 2.65 COEF OF CURVATURE = 1.07

KD
6/25/84

mm
7/7/84

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS BAG 1 SAMPLE 11

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	2.8	98.2
20	16.9	89.1
40	52.1	66.4
60	106.3	31.4
100	130.8	15.6
200	137.9	11.1

HYDROMETER ANALYSIS ON SOIL PASSING NO.200 SIEVE

ELAPSED TIME	HYDRO READING	CORR HYDRO	TEMP	DIA IN MM	PERCENT FINER
1.0	19.5	15.2	24.	.0467	9.7
2.0	17.0	12.7	24.	.0336	8.1
5.0	16.5	12.2	24.	.0213	7.8
15.0	16.0	11.7	24.	.0123	7.4
30.0	15.0	10.7	24.	.0088	6.8
60.0	14.0	9.7	24.	.0062	6.2
254.0	13.0	8.7	24.	.0030	5.5
4320.0	12.0	7.7	24.	.0007	4.9

PLASTICITY PROPERTIES OF MAT. PASSING NO. 40 SIEVE

SOIL SAMPLE IS NON-PLASTIC

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 88.9% SAND 5.8% SILT 5.2% CLAY
UNIFORMITY COEF = 7.31 COEF OF CURVATURE = 2.81

UNIFIED SOIL CLASSIFICATION IS SW-SM

AASHTO SOIL CLASSIFICATION IS A-2-4 WITH A GROUP INDEX OF 0

KD
6/25/84
ms
8/7/84



LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS BAG 1 SAMPLE 12 BORROW MIXED

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.0	100.0
20	1.8	98.9
40	28.9	81.2
60	67.8	55.9
100	130.9	15.0
200	137.5	10.7

HYDROMETER ANALYSIS ON SOIL PASSING NO.200 SIEVE

ELAPSED TIME	HYDRO READING	CORR HYDRO	TEMP	DIA IN MM	PERCENT FINER
1.0	21.0	16.7	24.	.0463	10.7
2.0	20.0	15.7	24.	.0329	10.1
5.0	19.5	15.2	24.	.0209	9.7
15.0	19.5	15.2	24.	.0121	9.7
30.0	18.5	14.2	24.	.0086	9.1
60.0	17.5	13.2	24.	.0061	8.5
254.0	17.0	12.7	24.	.0030	8.1
4320.0	13.0	8.7	24.	.0007	5.6

PLASTICITY PROPERTIES OF MAT. PASSING NO. 40 SIEVE

SOIL SAMPLE IS NON-PLASTIC

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 89.3% SAND 3.7% SILT 7.0% CLAY
UNIFORMITY COEF = 9.04 COEF OF CURVATURE = 4.07

UNIFIED SOIL CLASSIFICATION IS SP-SM

AASHTO SOIL CLASSIFICATION IS A-2-4 WITH A GROUP INDEX OF 0

KD
6125186
MRE
5/15/84



LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS N/A
SAMPLE IDENTIFICATION IS BAG 1 SAMPLE 13 FIELD UNMIXED

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
38	.0	100.0
4	.5	99.7
10	.8	99.5
20	4.4	97.0
40	36.2	75.4
60	96.2	34.6
100	128.3	12.7
200	133.0	9.5

HYDROMETER ANALYSIS ON SOIL PASSING NO.200 SIEVE

ELAPSED TIME	HYDRO READING	CORR HYDRO	TEMP	DIA IN MM	PERCENT FINER
1.0	17.5	13.2	24.	.0473	8.9
2.0	17.0	12.7	24.	.0336	8.5
5.0	16.5	12.2	24.	.0213	8.2
15.0	16.0	11.7	24.	.0123	7.8
30.0	15.0	10.7	24.	.0088	7.2
60.0	14.0	9.7	24.	.0062	6.5
254.0	13.5	9.2	24.	.0030	6.2
4320.0	12.5	8.2	24.	.0007	5.5

PLASTICITY PROPERTIES OF MAT. PASSING NO. 40 SIEVE

SOIL SAMPLE IS NON-PLASTIC

GRAIN SIZE DISTRIBUTION

.3% GRAVEL 90.2% SAND 3.6% SILT 5.9% CLAY
UNIFORMITY COEF = 4.15 COEF OF CURVATURE = 1.72

UNIFIED SOIL CLASSIFICATION IS SP-SM

AASHTO SOIL CLASSIFICATION IS A3 WITH A GROUP INDEX OF 0

KD
6/25/84
MLC
8/2/84



LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS BAG 1
SAMPLE IDENTIFICATION IS SAMPLE 5 AFTER RELATIVE DENSITY TEST

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	.1	100.0
20	6.2	96.9
40	79.8	60.1
60	152.4	23.8
100	189.5	5.2
200	193.9	3.1

GRAIN SIZE DISTRIBUTION

.0% GRAVEL 96.9% SAND 3.1% FINES
UNIFORMITY COEF = 2.40 COEF OF CURVATURE = 1.06

UNIFIED SOIL CLASSIFICATION IS SP

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS BAG 1
SAMPLE IDENTIFICATION IS SAMPLE 7 AFTER RELATIVE DENSITY TEST

SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	1.4	99.3
20	11.4	94.3
40	70.5	64.8
60	136.9	31.6
100	182.0	9.0
200	187.7	6.2

GRAIN-SIZE DISTRIBUTION

.0% GRAVEL 93.9% SAND 6.2% FINES
UNIFORMITY COEF = 2.58 COEF OF CURVATURE = .97

LAW ENGINEERING TESTING COMPANY
SOIL SAMPLE DATA

PROJECT NAME & NO. ARE PLANT VOGTLE 7429
BORING NUMBER IS BAG 1
SAMPLE IDENTIFICATION IS SAMPLE 11 AFTER RELATIVE DENSITY TEST

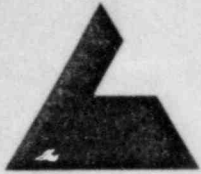
SPECIFIC GRAVITY = 2.70

SIEVE ANALYSIS

SIEVE NUMBER	#CUM WT RETAINED	PERCENT FINER
4	.0	100.0
10	4.0	98.0
20	21.6	89.2
40	70.1	64.9
60	141.6	29.2
100	173.3	13.4
200	181.5	9.2

GRAIN SIZE DISTRIBUTION

0% GRAVEL 90.8% SAND 9.2% FINES
UNIFORMITY COEF = 4.51 COEF OF CURVATURE = 1.85

**LAW ENGINEERING TESTING COMPANY**

geotechnical, environmental & construction materials consultants

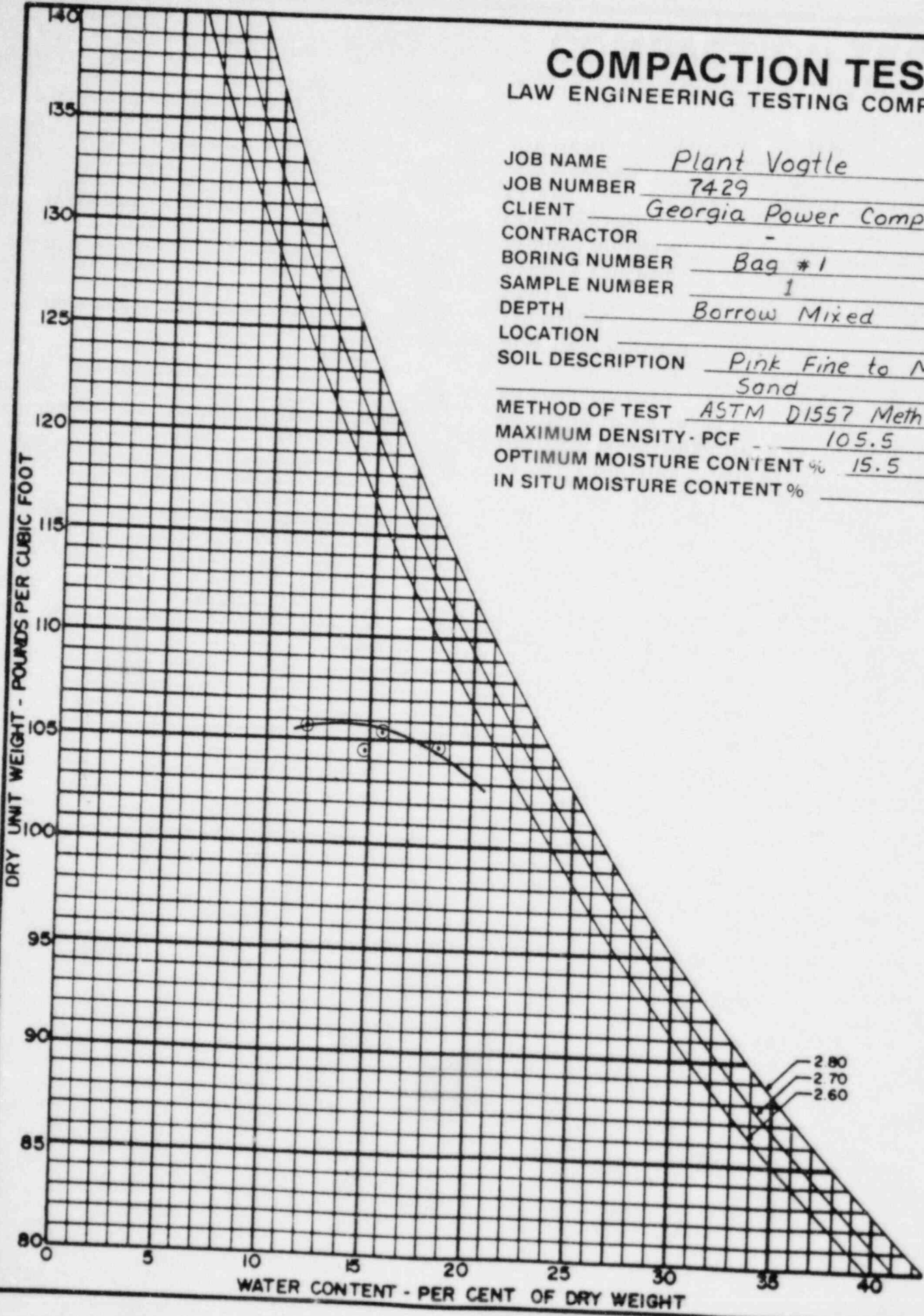
396 PLASTERS AVENUE N.E.
P.O. BOX 13260 • ATLANTA, GEORGIA 30324
(404) 873-4761JOB NO. 7429 SHEET 1 OF 1JOB NAME G.P.C., Vogtle plantBY K.D. DATE 7/30/84CHECKED BY wmc DATE 8/6/84*Laboratory Proctor and Relative Density Results*

Sample No.	Modified Proctor		Relative Density			Vibration Amplitude (Peak to Peak) (2 Yp, In.)	Specific Gravity
	Max. Dry Density (pcf)	Optimum moisture (%)	Min. Dry Density (pcf)	Max. Wet Density (pcf)	Max. Dry Density (pcf)		
#1	105.5	15.5	91.4	105.9	107.5	0.0175	2.63
#2	103.2	16.7	86.0	104.2	105.8	0.0175	2.67
#3	104.2	19.3	87.3	105.8	105.9	0.0175	2.66
#4	108.2	18.1	88.3	104.0	107.1	0.0175	2.68
#5	105.8	18.5	88.6	103.8	107.7	0.0175	2.67
#6	107.0	16.0	89.9	104.0	107.3	0.0175	2.67
#7	110.5	11.3	89.7	110.2	108.4	0.022	2.64
#9	110.3	14.8	82.9	107.0	101.7	0.022	2.66
#10	107.8	14.7	88.4	111.3	106.8	0.022	2.65
#11	115.3	13.2	86.9	106.9	106.9	0.025	2.67
#12	113.2	11.2	81.4	99.5	100.7	0.025	2.67
#13	111.2	13.5	82.5	107.3	102.6	0.025	2.68

COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
JOB NUMBER 7429
CLIENT Georgia Power Company
CONTRACTOR -
BORING NUMBER Bag #1
SAMPLE NUMBER 1
DEPTH Borrow Mixed
LOCATION _____
SOIL DESCRIPTION Pink Fine to Med. Sand
METHOD OF TEST ASTM D1557 Meth. "A"
MAXIMUM DENSITY - PCF 105.5
OPTIMUM MOISTURE CONTENT % 15.5
IN SITU MOISTURE CONTENT % _____



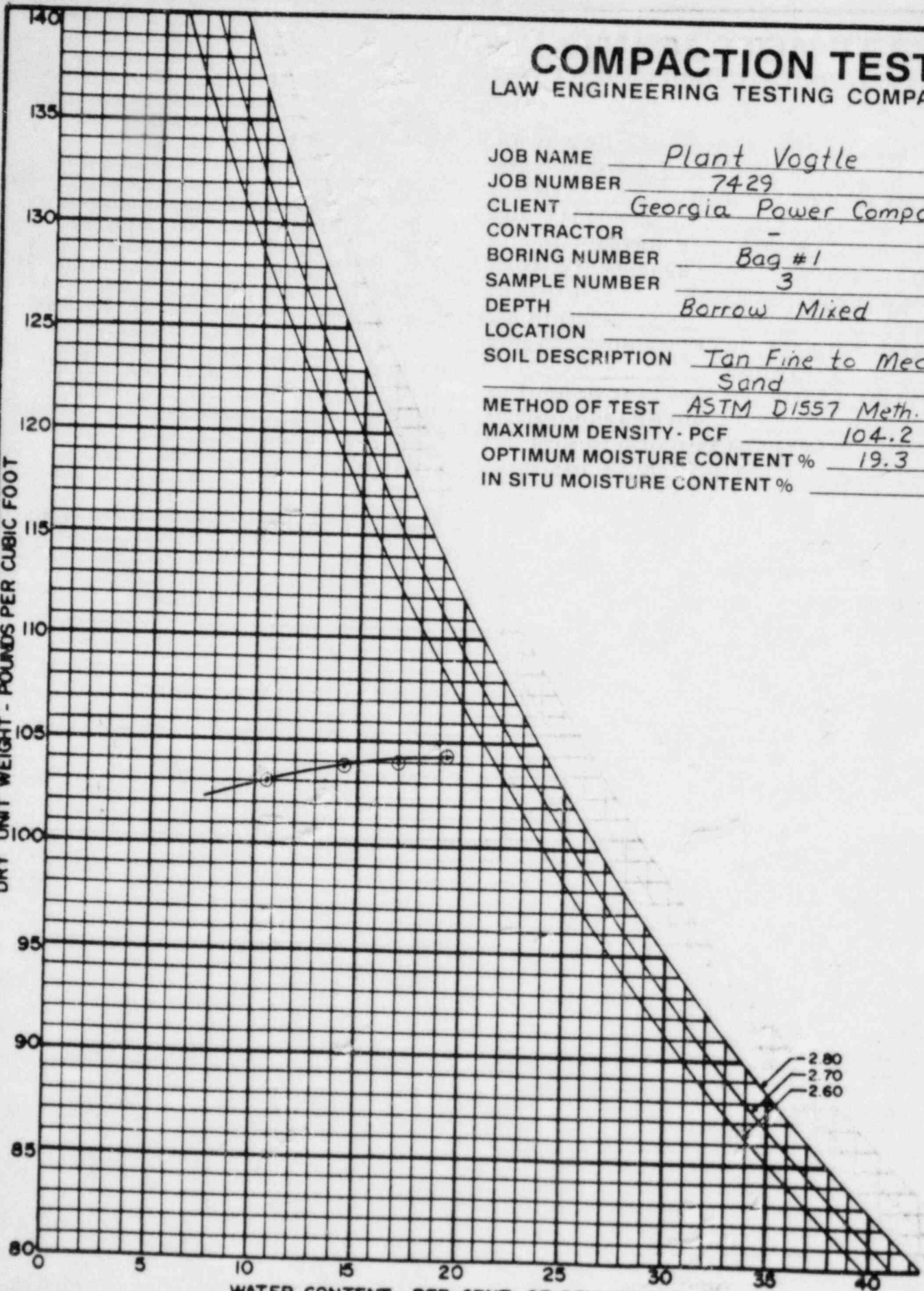
COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 3
 DEPTH Borrow Mixed
 LOCATION _____
 SOIL DESCRIPTION Tan Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 104.2
 OPTIMUM MOISTURE CONTENT % 19.3
 IN SITU MOISTURE CONTENT % _____

DRY UNIT WEIGHT - POUNDS PER CUBIC FOOT

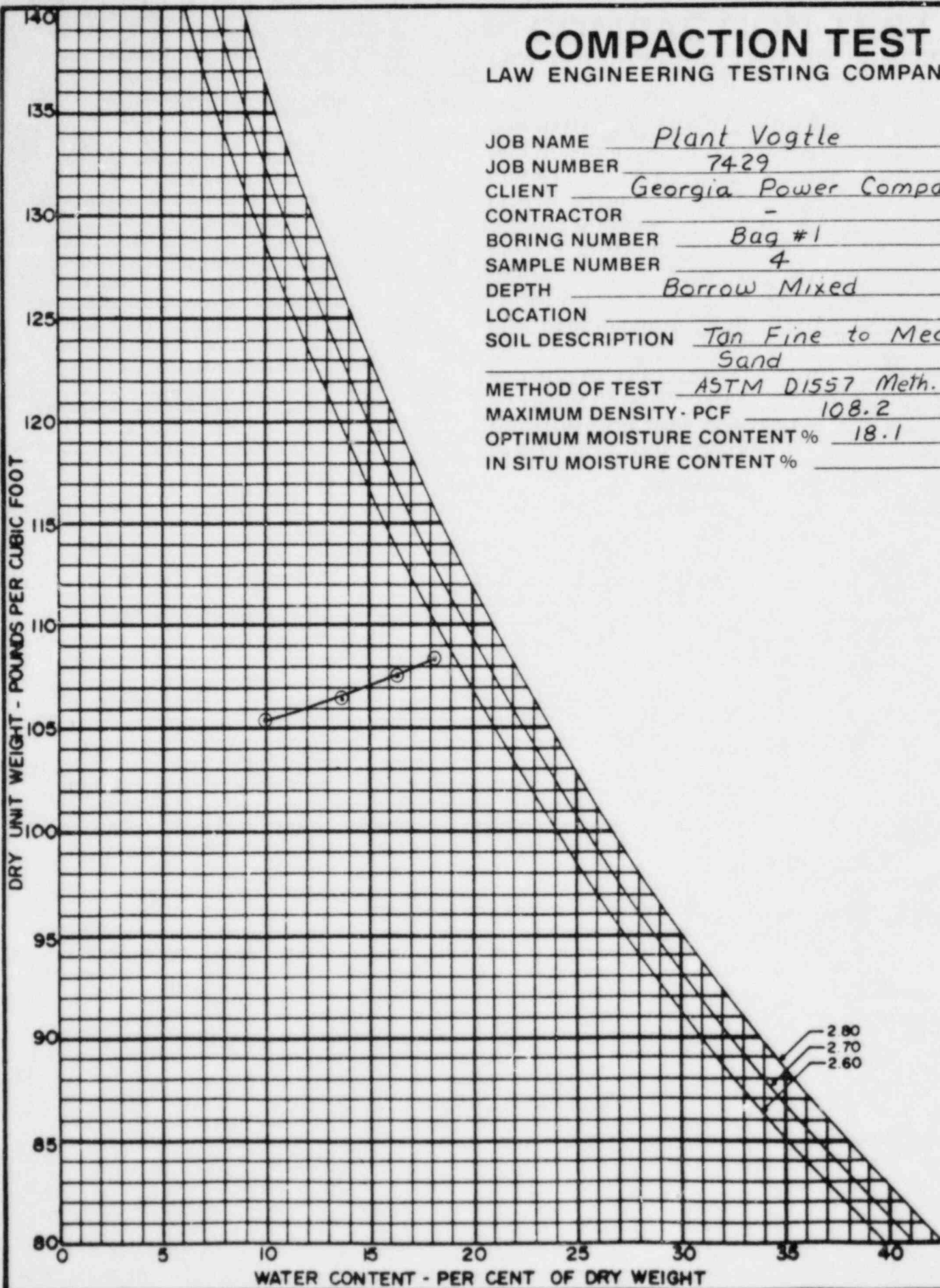
WATER CONTENT - PER CENT OF DRY WEIGHT



COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 4
 DEPTH Borrow Mixed
 LOCATION _____
 SOIL DESCRIPTION Tan Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 108.2
 OPTIMUM MOISTURE CONTENT % 18.1
 IN SITU MOISTURE CONTENT % _____

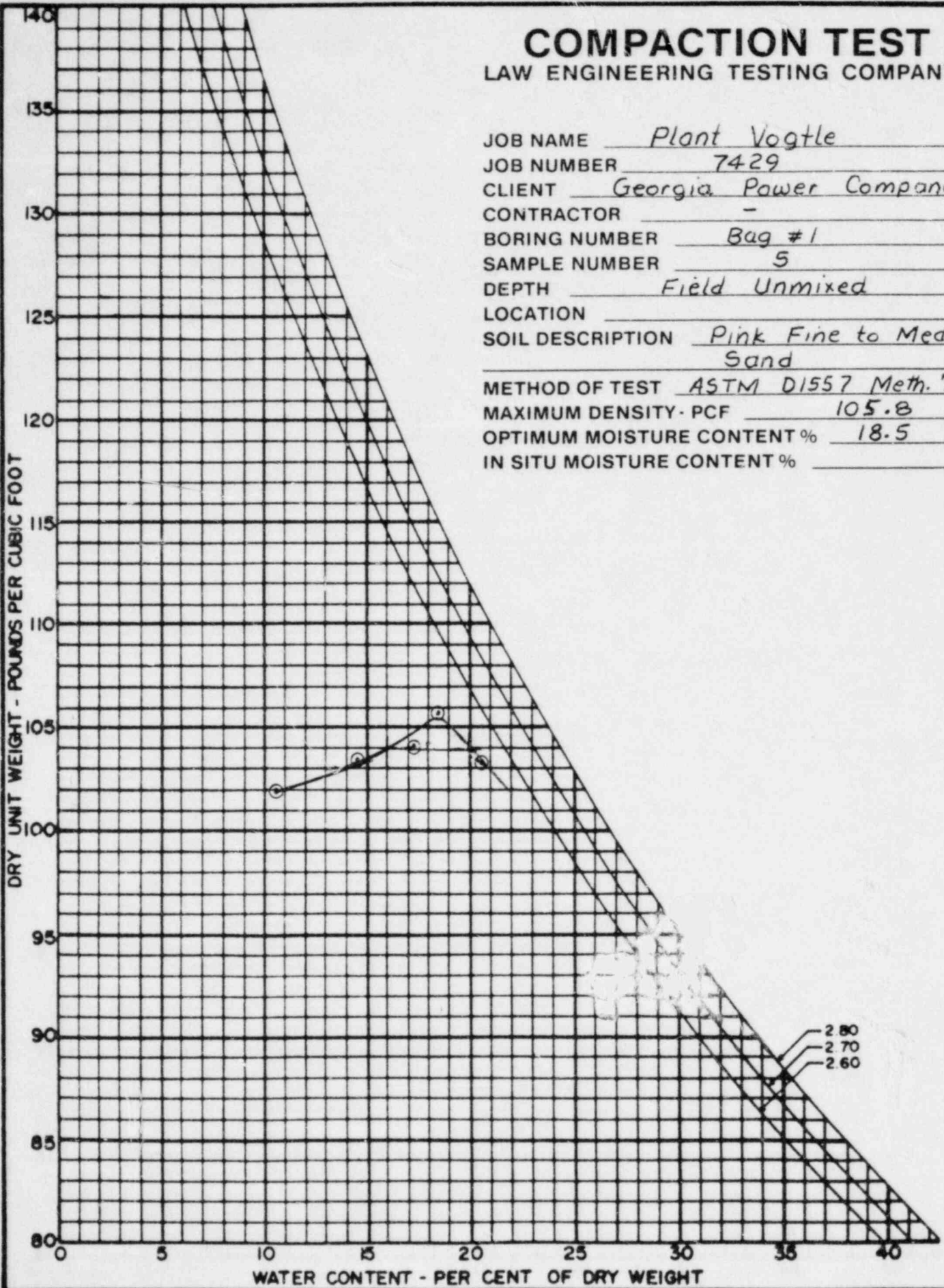


COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 5
 DEPTH Field Unmixed
 LOCATION _____
 SOIL DESCRIPTION Pink Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 105.8
 OPTIMUM MOISTURE CONTENT % 18.5
 IN SITU MOISTURE CONTENT % _____

DRY UNIT WEIGHT - POUNDS PER CUBIC FOOT

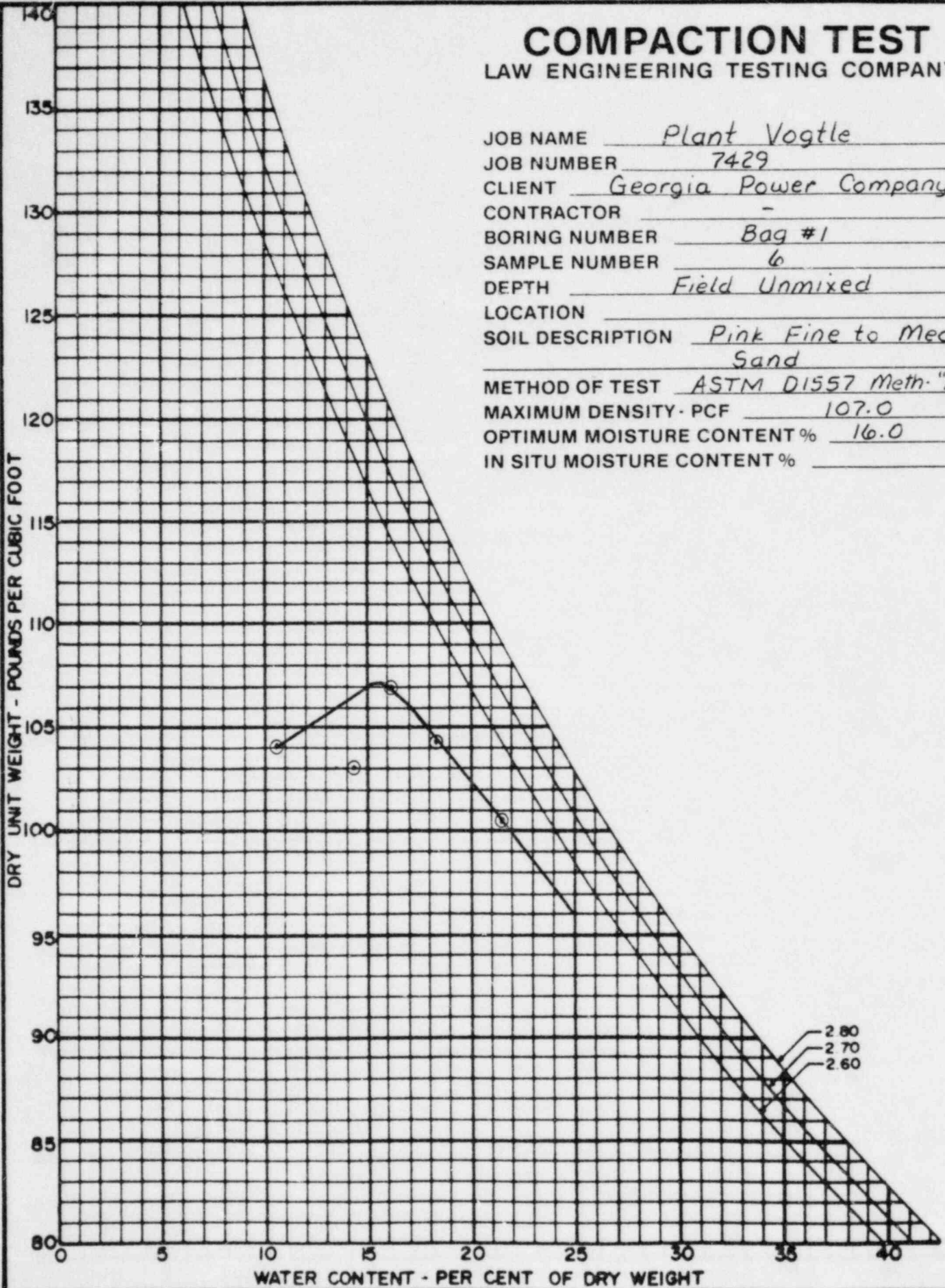


COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 6
 DEPTH Field Unmixed
 LOCATION _____
 SOIL DESCRIPTION Pink Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 107.0
 OPTIMUM MOISTURE CONTENT % 16.0
 IN SITU MOISTURE CONTENT % _____

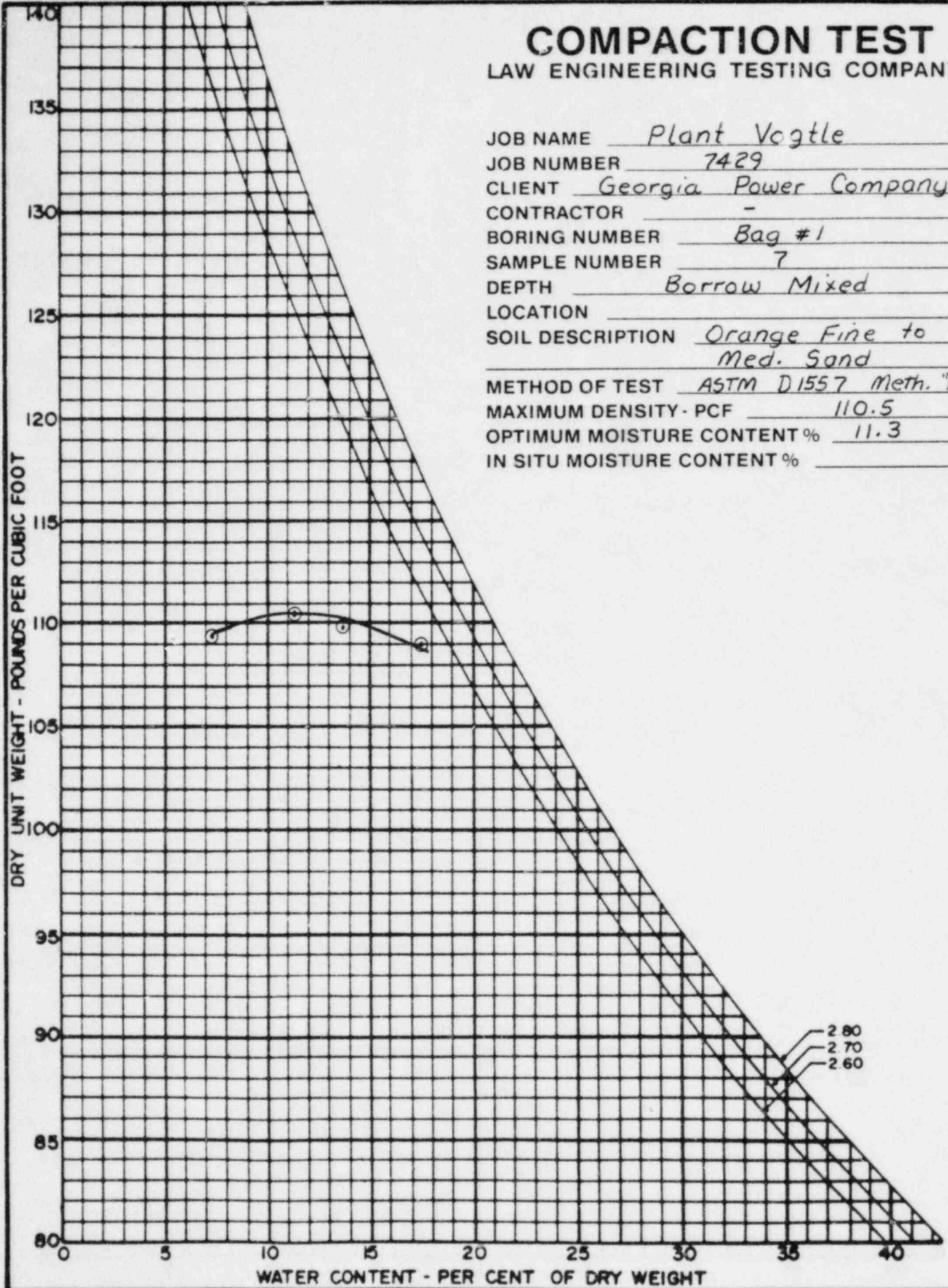
DRY UNIT WEIGHT - POUNDS PER CUBIC FOOT



COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 7
 DEPTH Borrow Mixed
 LOCATION _____
 SOIL DESCRIPTION Orange Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 110.5
 OPTIMUM MOISTURE CONTENT % 11.3
 IN SITU MOISTURE CONTENT % _____

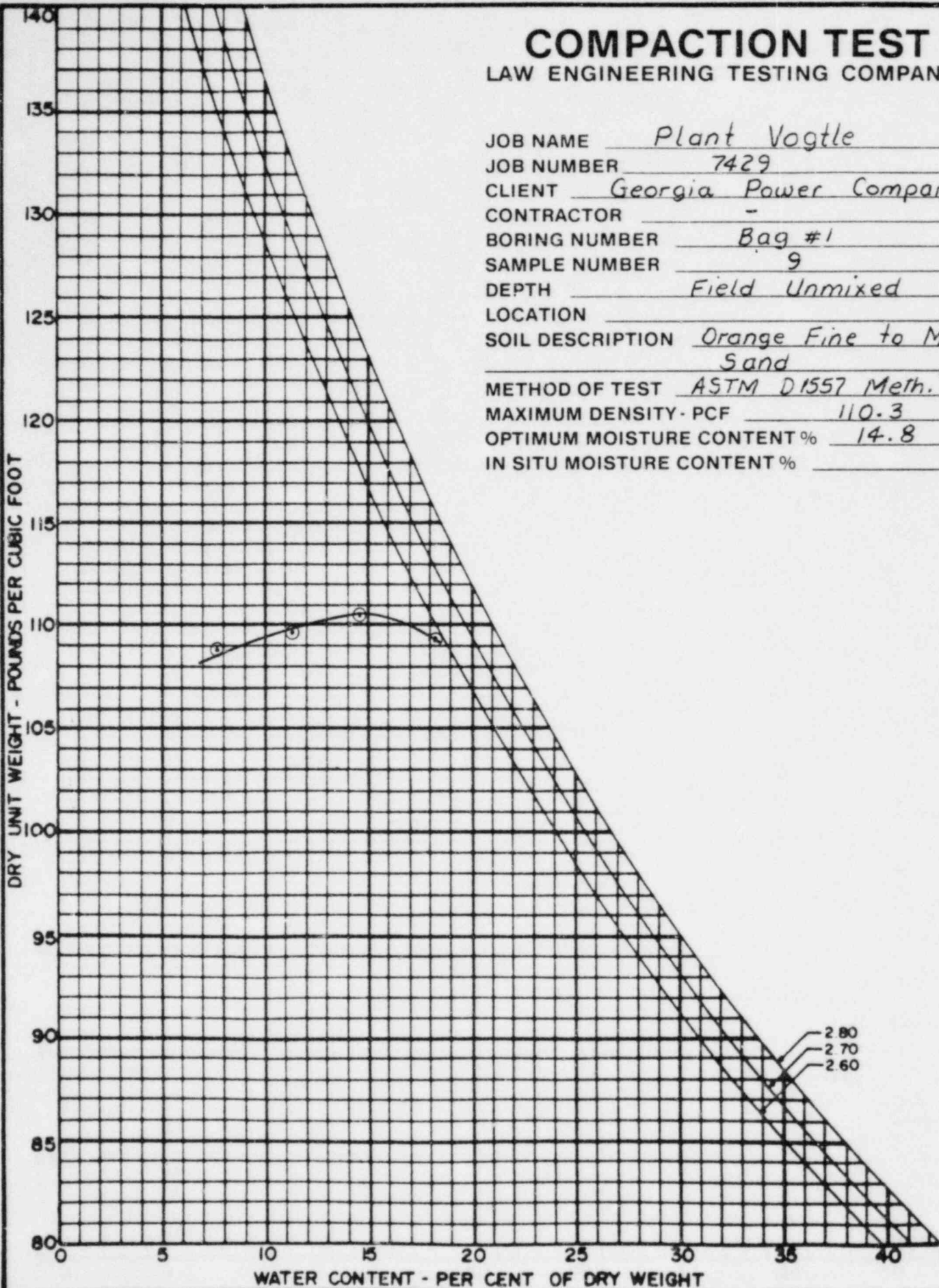


COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 9
 DEPTH Field Unmixed
 LOCATION _____
 SOIL DESCRIPTION Orange Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. A^u
 MAXIMUM DENSITY - PCF 110.3
 OPTIMUM MOISTURE CONTENT % 14.8
 IN SITU MOISTURE CONTENT % _____

DRY UNIT WEIGHT - POUNDS PER CUBIC FOOT

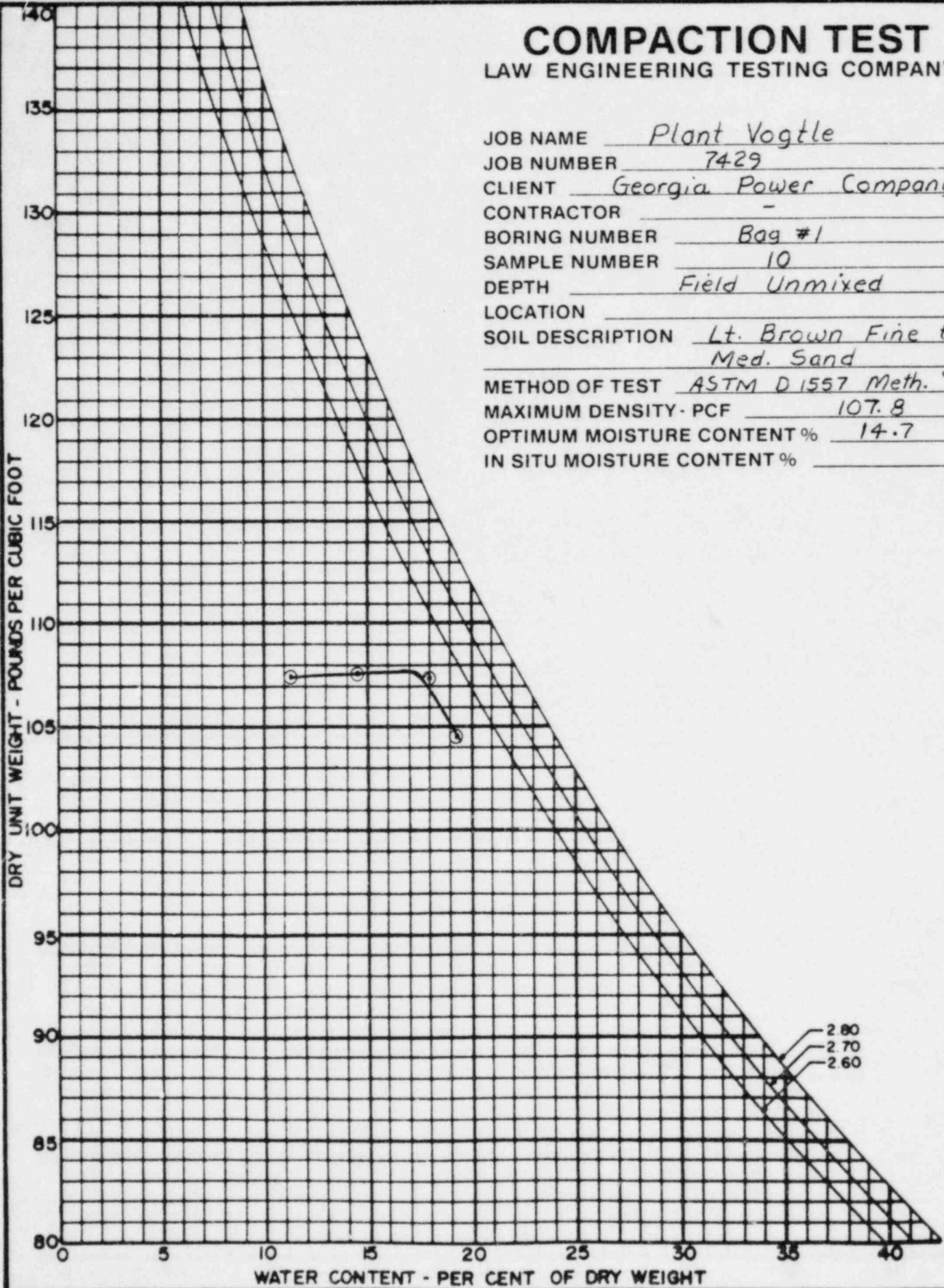


COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 10
 DEPTH Field Unmixed
 LOCATION -
 SOIL DESCRIPTION Lt. Brown Fine to Med. Sand
 METHOD OF TEST ASTM D 1557 Meth. "A"
 MAXIMUM DENSITY - PCF 107.8
 OPTIMUM MOISTURE CONTENT % 14.7
 IN SITU MOISTURE CONTENT % -

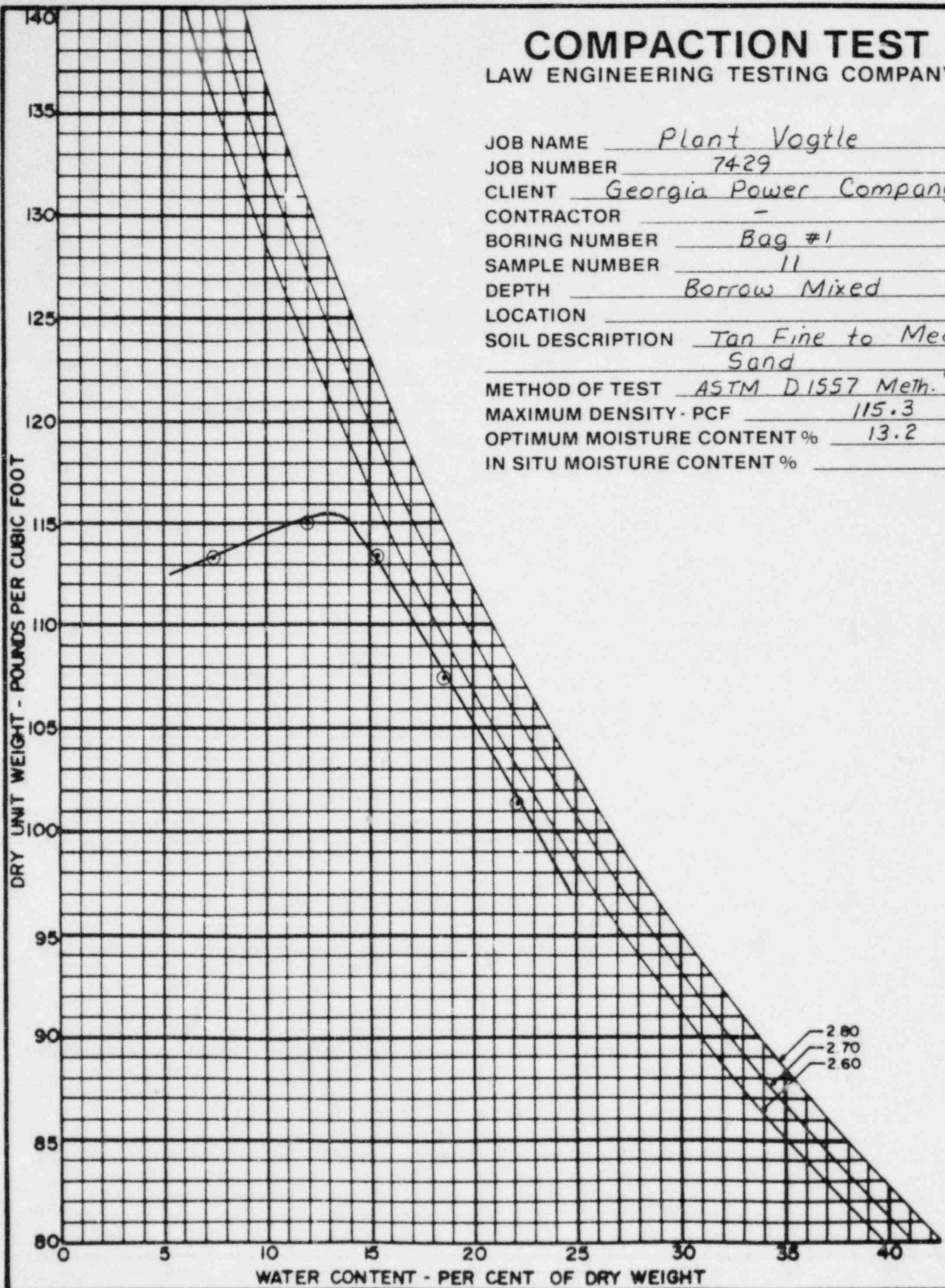
DRY UNIT WEIGHT - POUNDS PER CUBIC FOOT



COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 11
 DEPTH Borrow Mixed
 LOCATION _____
 SOIL DESCRIPTION Tan Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 115.3
 OPTIMUM MOISTURE CONTENT % 13.2
 IN SITU MOISTURE CONTENT % _____

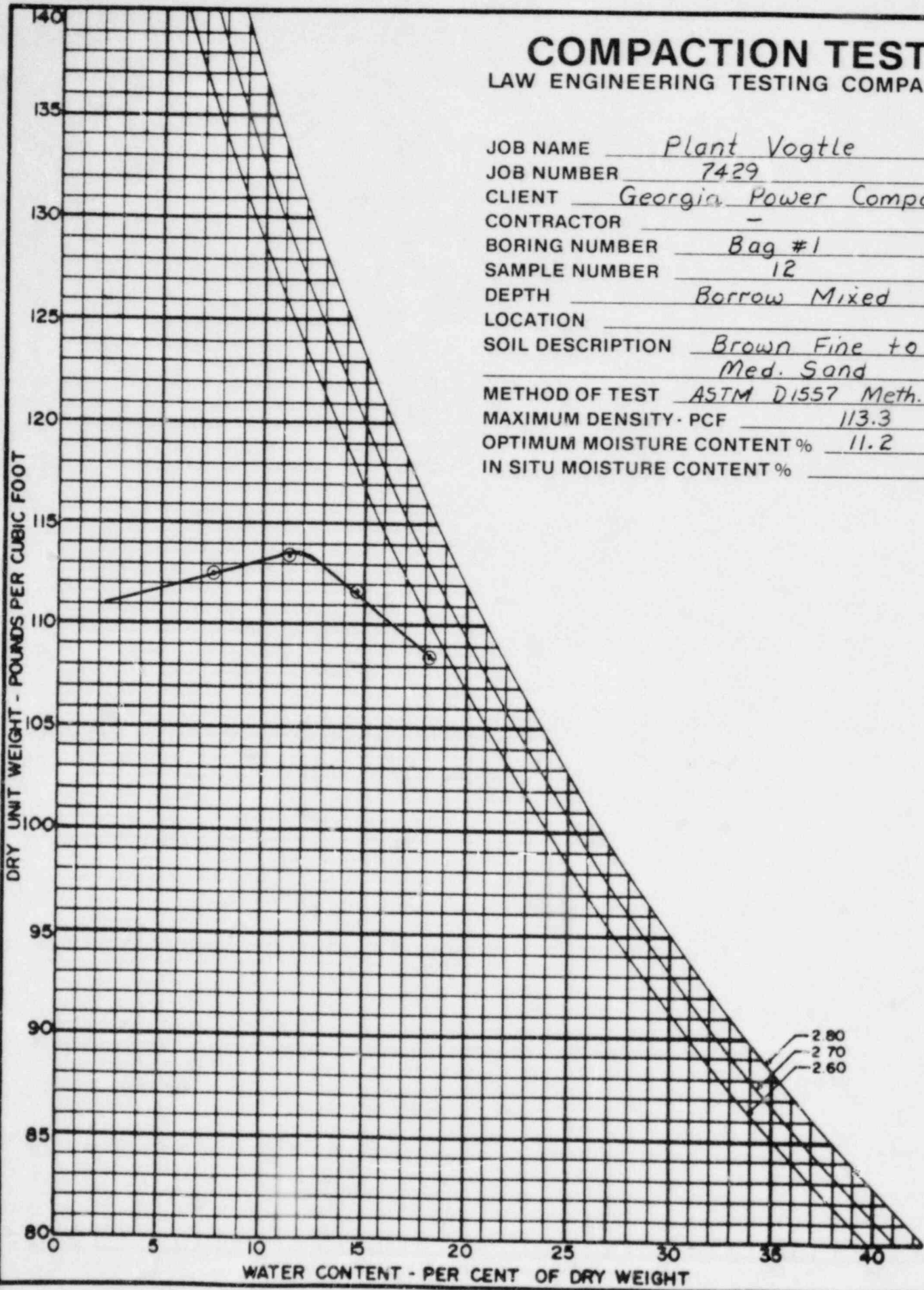


COMPACTION TEST

LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 12
 DEPTH Borrow Mixed
 LOCATION _____
 SOIL DESCRIPTION Brown Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 113.3
 OPTIMUM MOISTURE CONTENT % 11.2
 IN SITU MOISTURE CONTENT % _____

DRY UNIT WEIGHT - POUNDS PER CUBIC FOOT

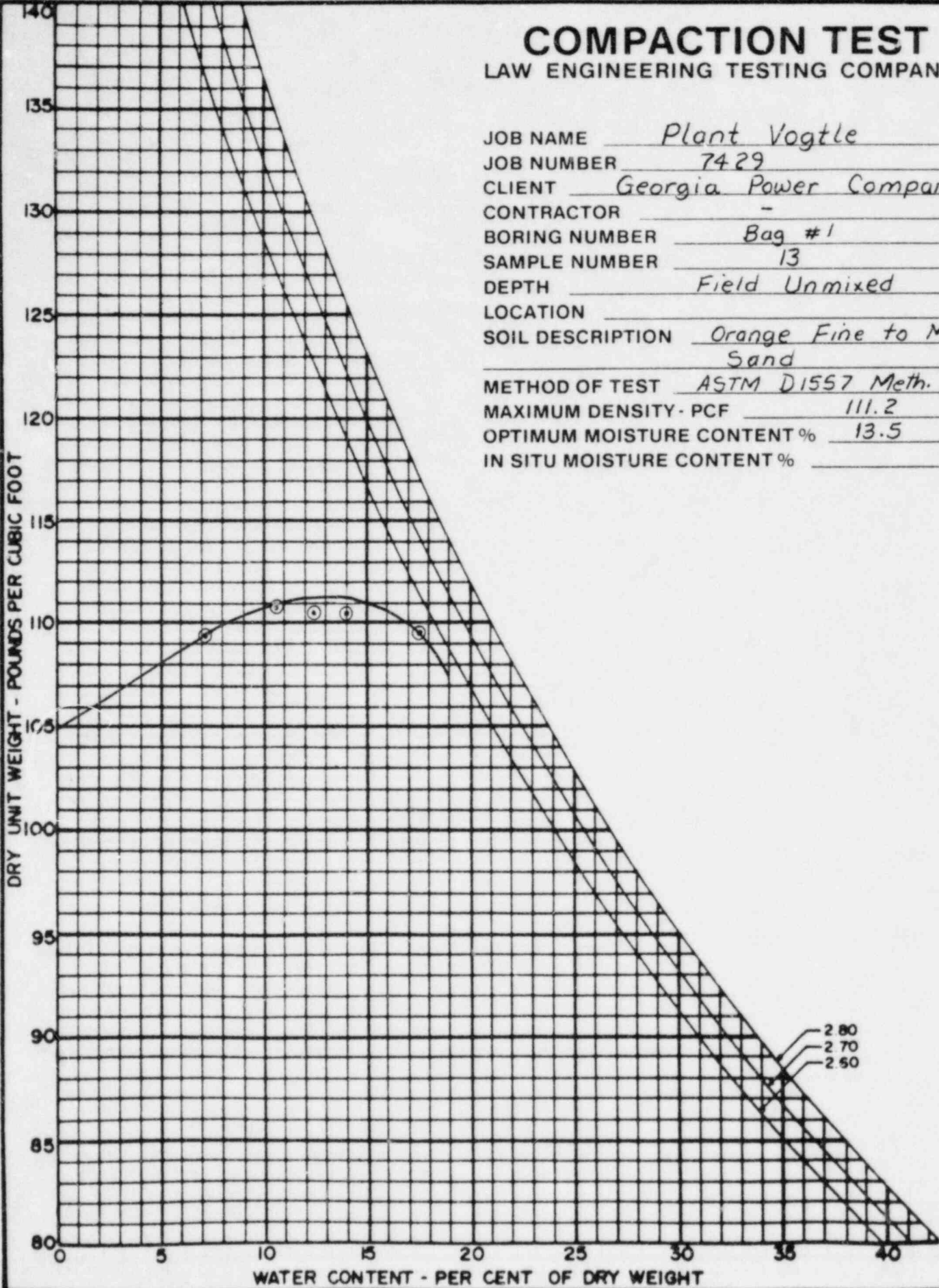


COMPACTION TEST

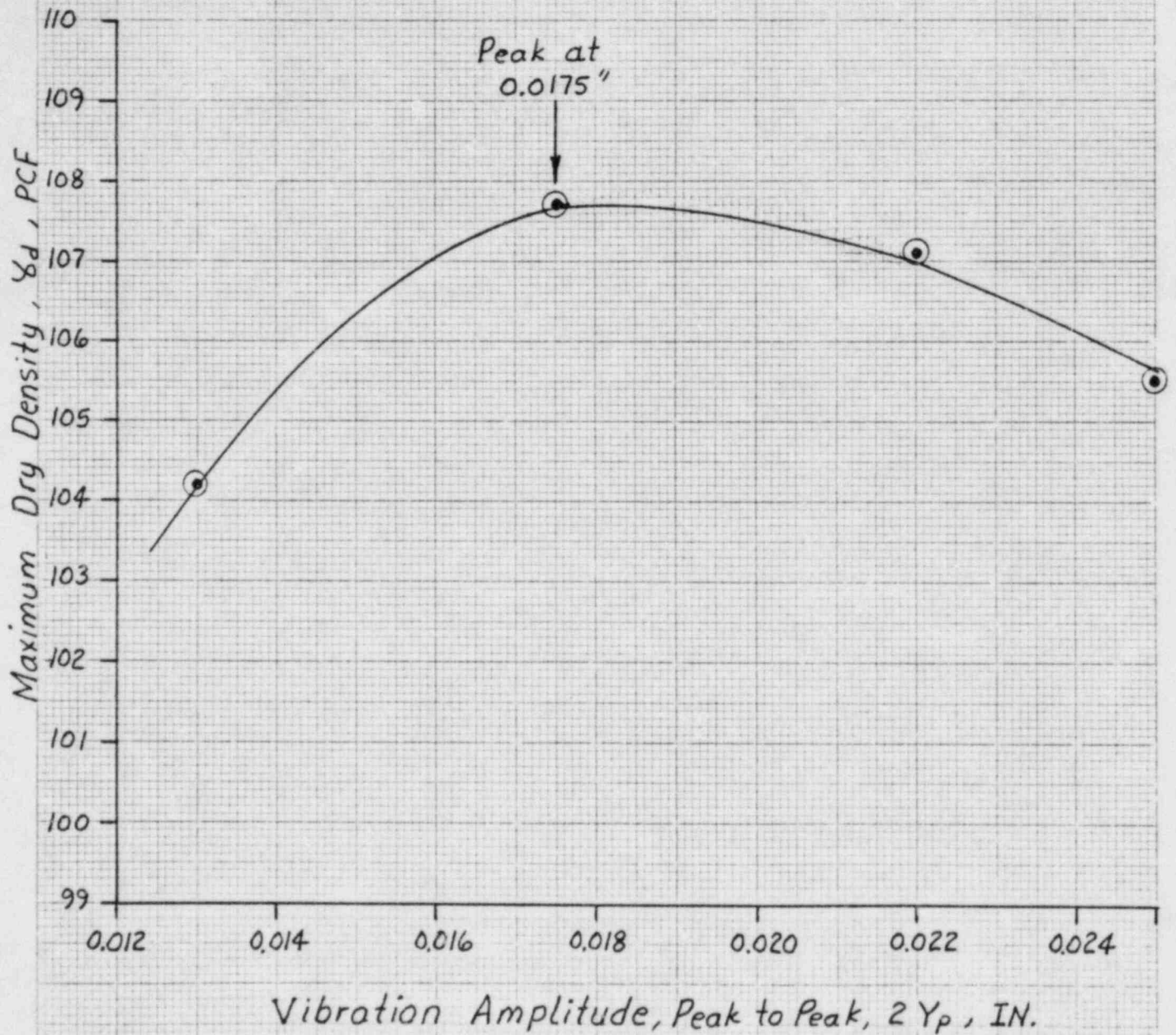
LAW ENGINEERING TESTING COMPANY.

JOB NAME Plant Vogtle
 JOB NUMBER 7429
 CLIENT Georgia Power Company
 CONTRACTOR -
 BORING NUMBER Bag #1
 SAMPLE NUMBER 13
 DEPTH Field Unmixed
 LOCATION _____
 SOIL DESCRIPTION Orange Fine to Med. Sand
 METHOD OF TEST ASTM D1557 Meth. "A"
 MAXIMUM DENSITY - PCF 111.2
 OPTIMUM MOISTURE CONTENT % 13.5
 IN SITU MOISTURE CONTENT % _____

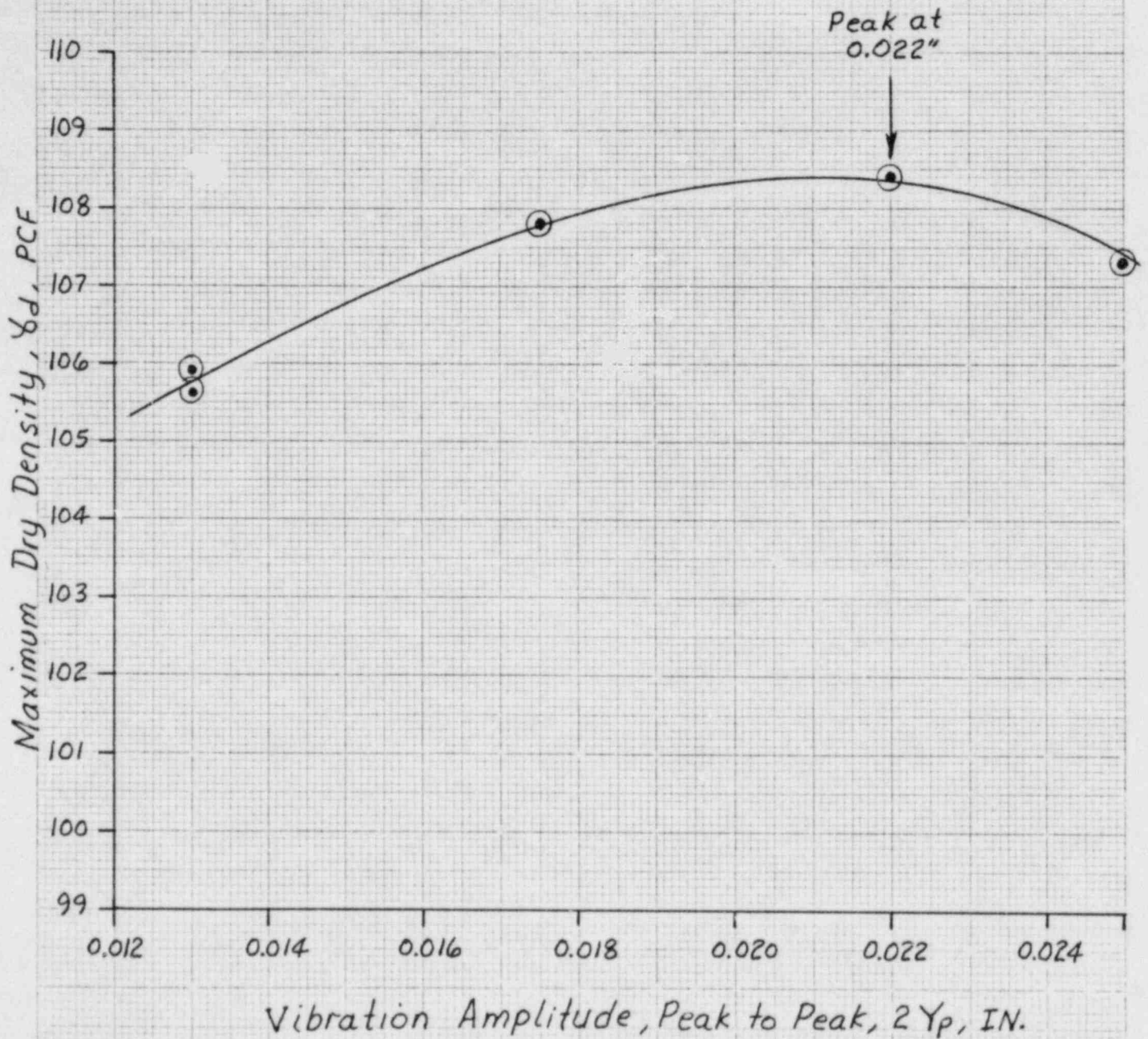
DRY UNIT WEIGHT - POUNDS PER CUBIC FOOT



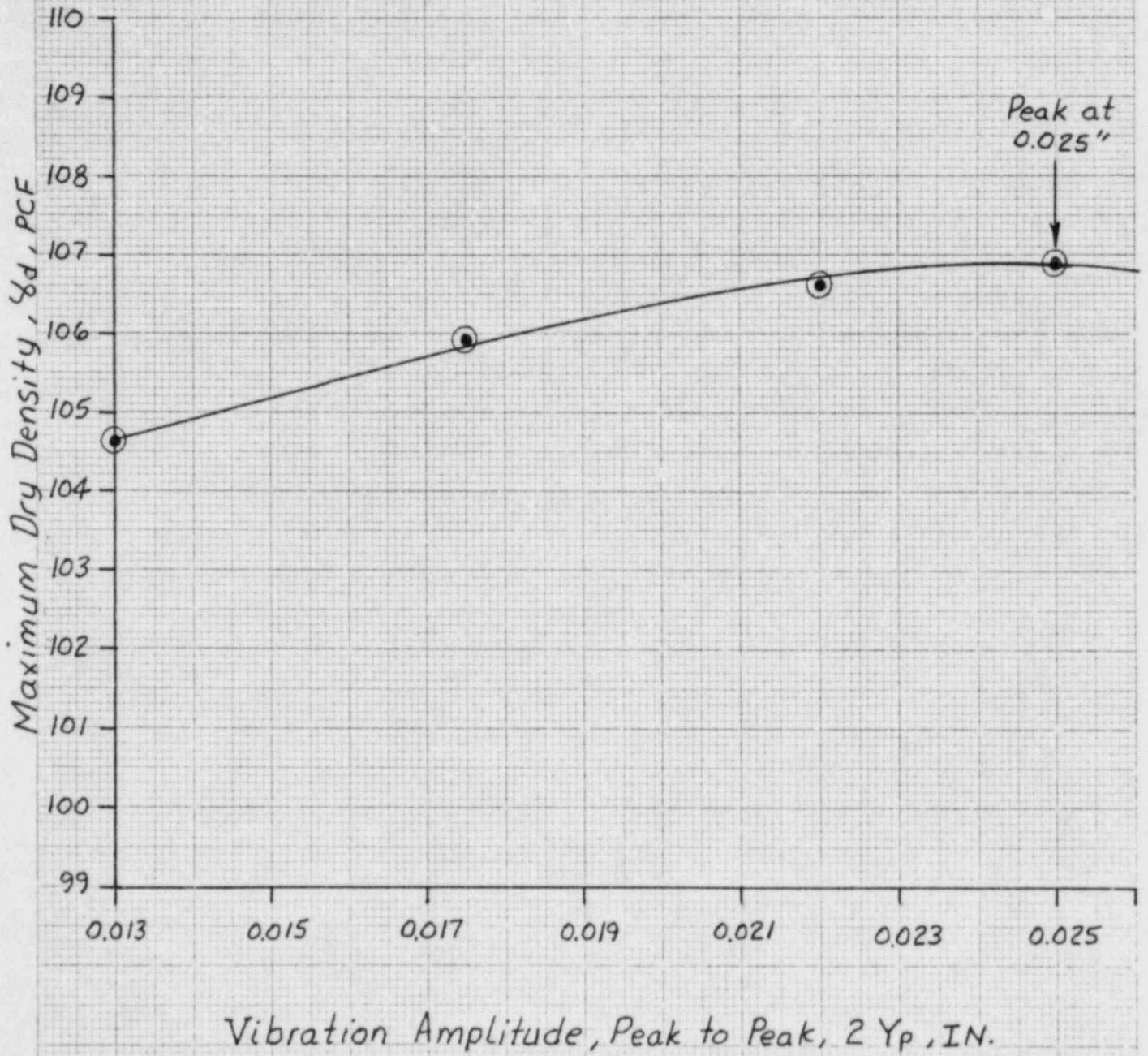
Plant Vogtle
7429
Bag 1, Sample #5



Plant Vogtle
7429
Bag 1, Sample #7



Plant Vogtle
7429
Bag 1, Sample #11

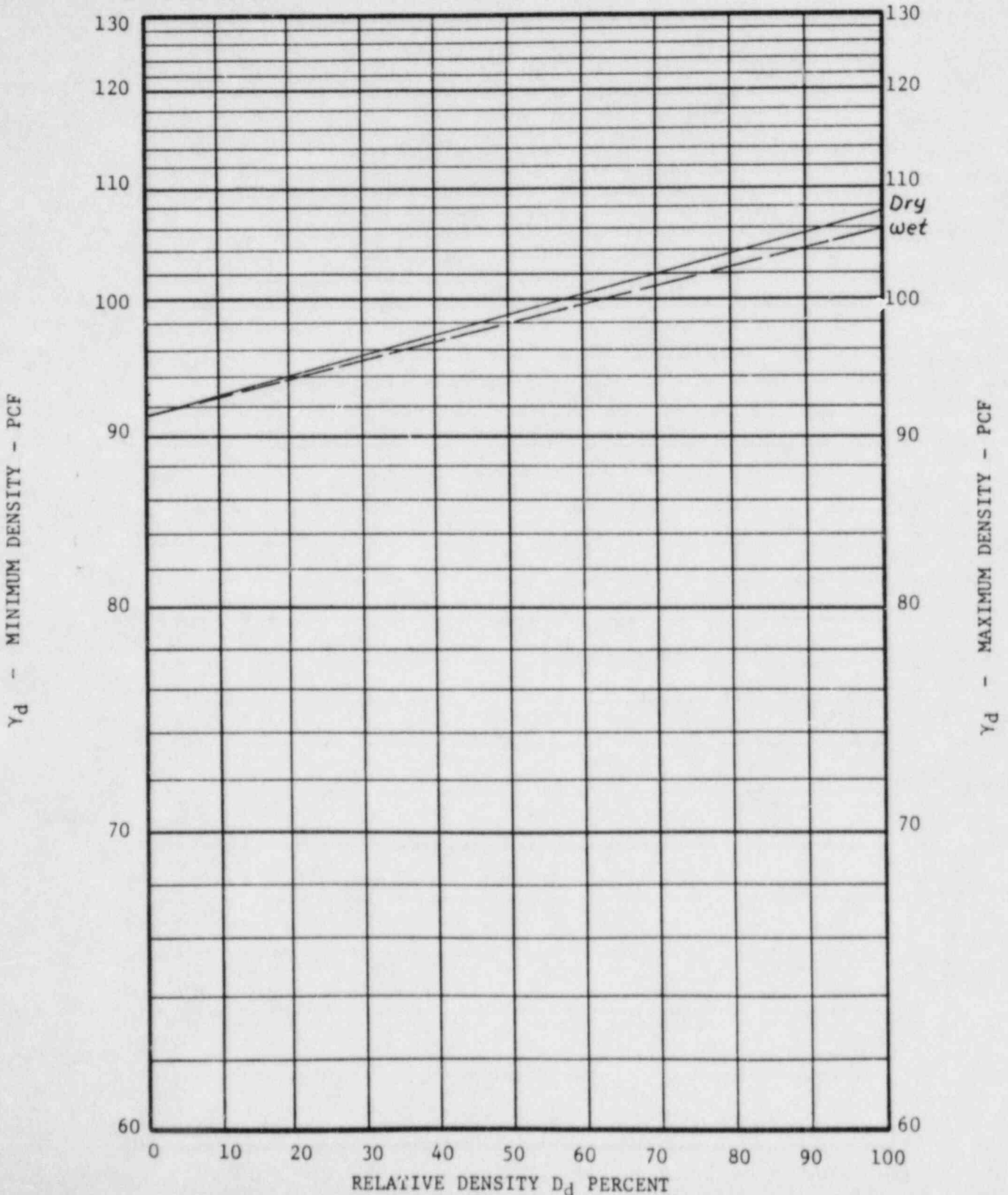


RELATIVE DENSITY TEST

DATE 7-30-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 1
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.3
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & wet
 (DRY OR WET)

γ_d (max)(wet) 105.9 e (min) _____
 γ_d (max)(dry) 107.5 e (min) _____
 γ_d (min) 91.4 e (max) _____
 γ_d _____ e _____
 D_d _____

Specific Gravity 2.63
 Vib. Amplitude - 0.0175"



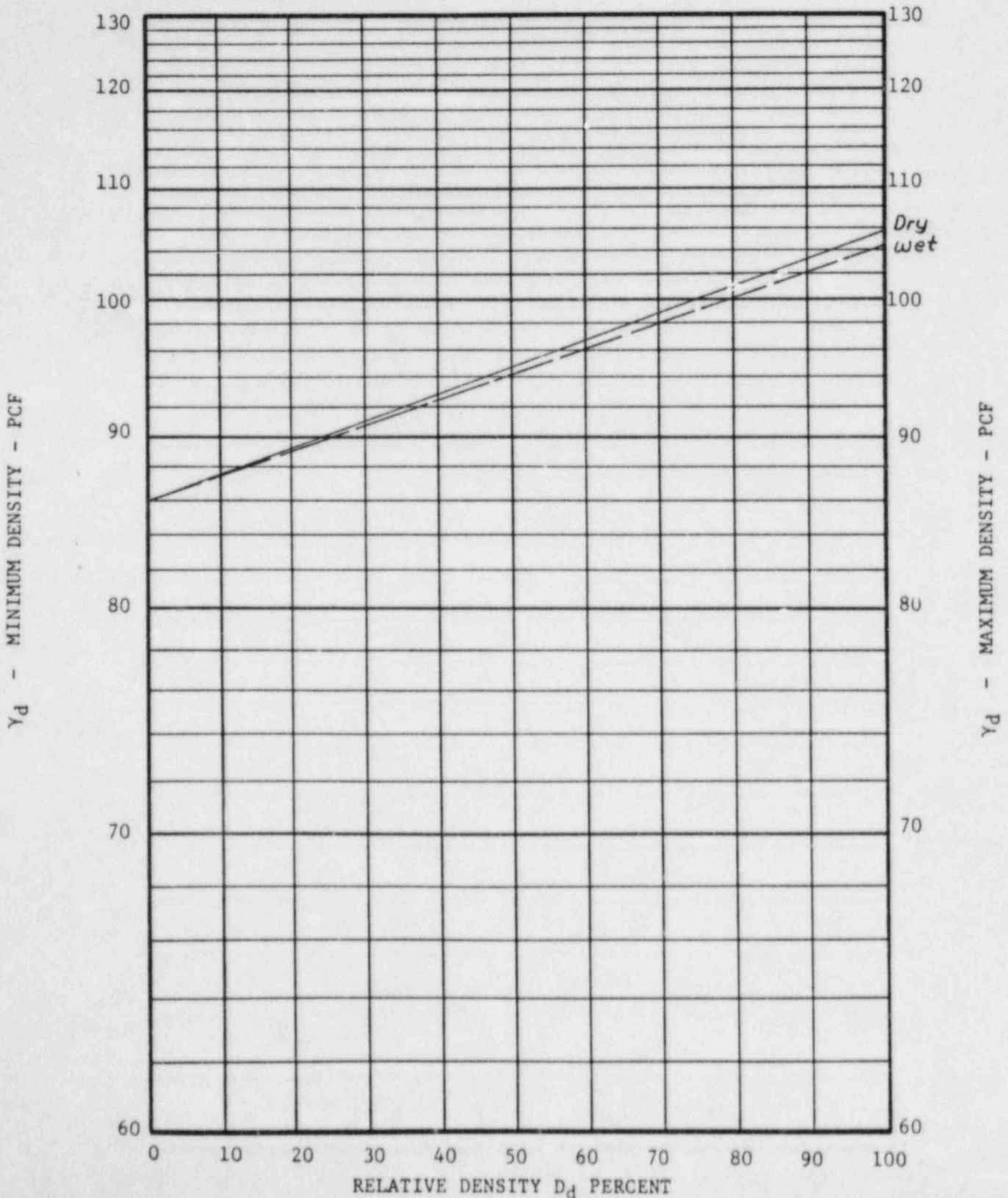
RELATIVE DENSITY TEST

DATE 7-30-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 2
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & wet
 (DRY OR WET)

Y_d (max)(wet) 104.2 e (min) _____
 Y_d (max)(dry) 105.8 e (min) _____
 Y_d (min) 86.0 e (max) _____
 Y_d _____ e _____
 D_d _____

Specific Gravity 2.67

Vib. Amplitude - 0.0175"

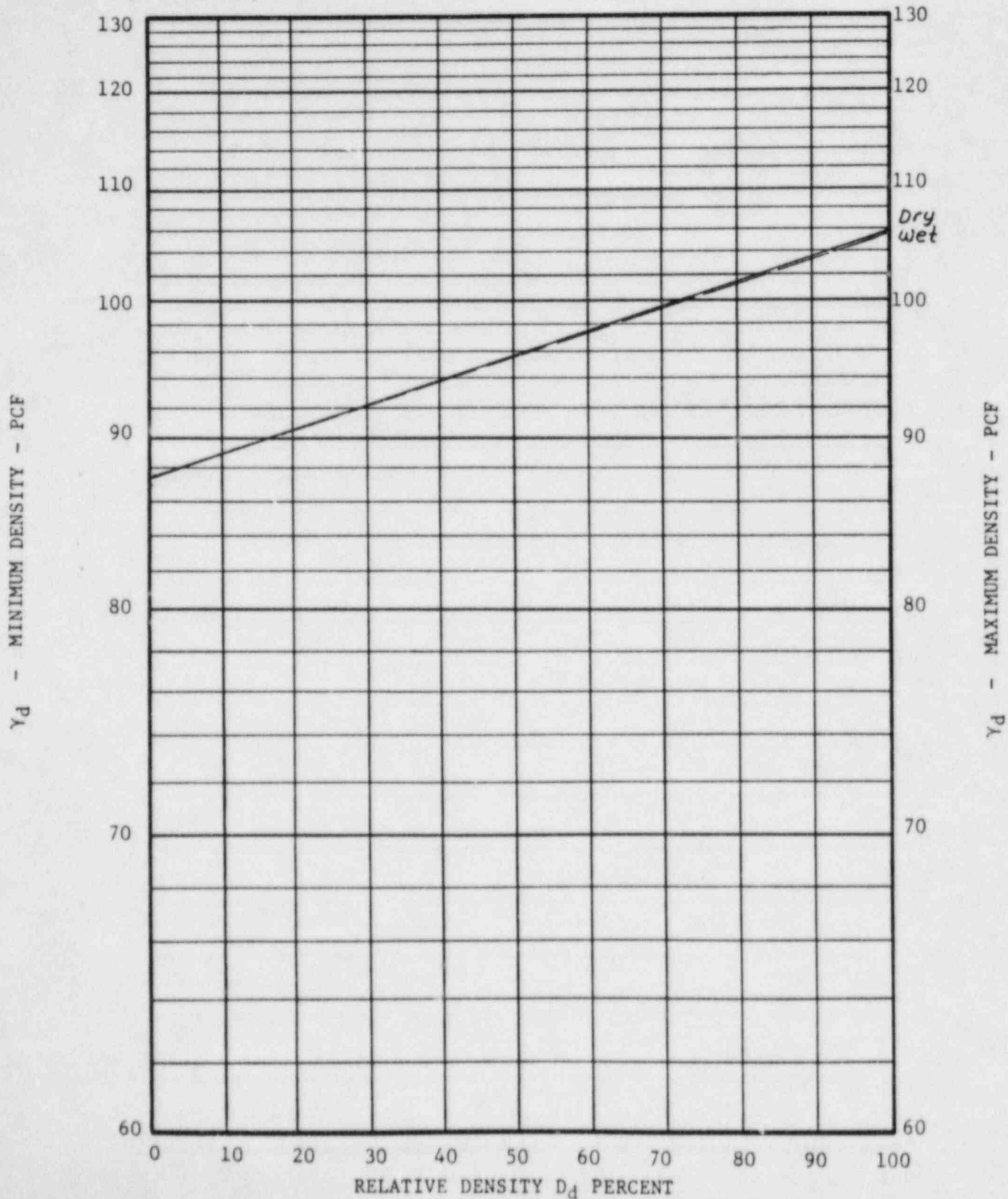


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 3
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & Wet
 (DRY OR WET)

γ_d (max)(wet) 105.8 e (min) _____
 γ_d (max)(dry) 105.9 e (min) _____
 γ_d (min) 87.3 e (max) _____
 γ_d _____ e _____
 D_d _____

Specific Gravity 2.66
 Vib. Amplitude - 0.0175 "

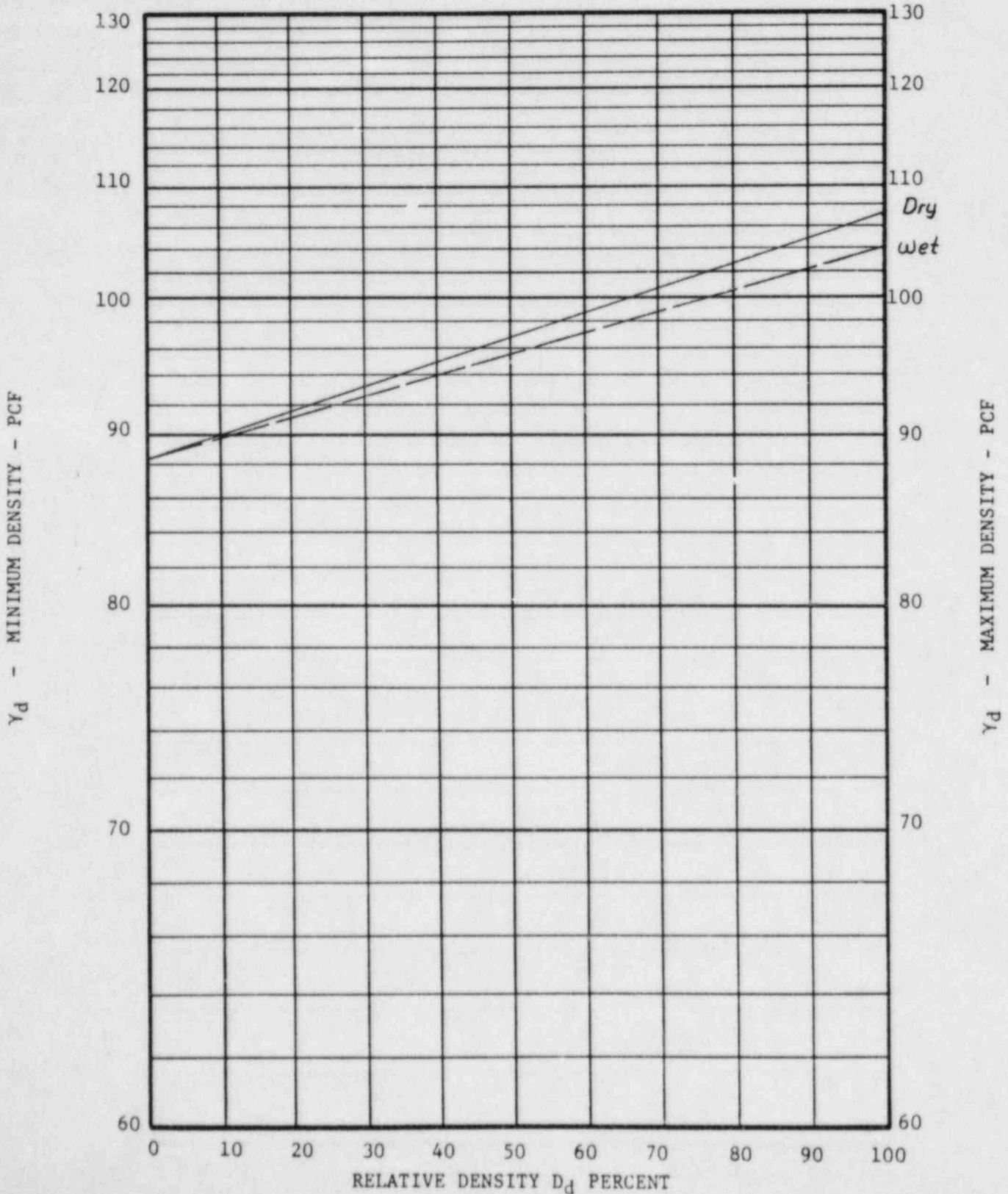


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 4
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & Wet
 (DRY OR WET)

γ_d (max)(wet) 104.0 e (min) _____
 γ_d (max)(dry) 107.1 e (min) _____
 γ_d (min) 88.3 e (max) _____
 γ_d _____ e _____
 D_d _____

Specific Gravity 2.68
 Vib. Amplitude - 0.0175 "

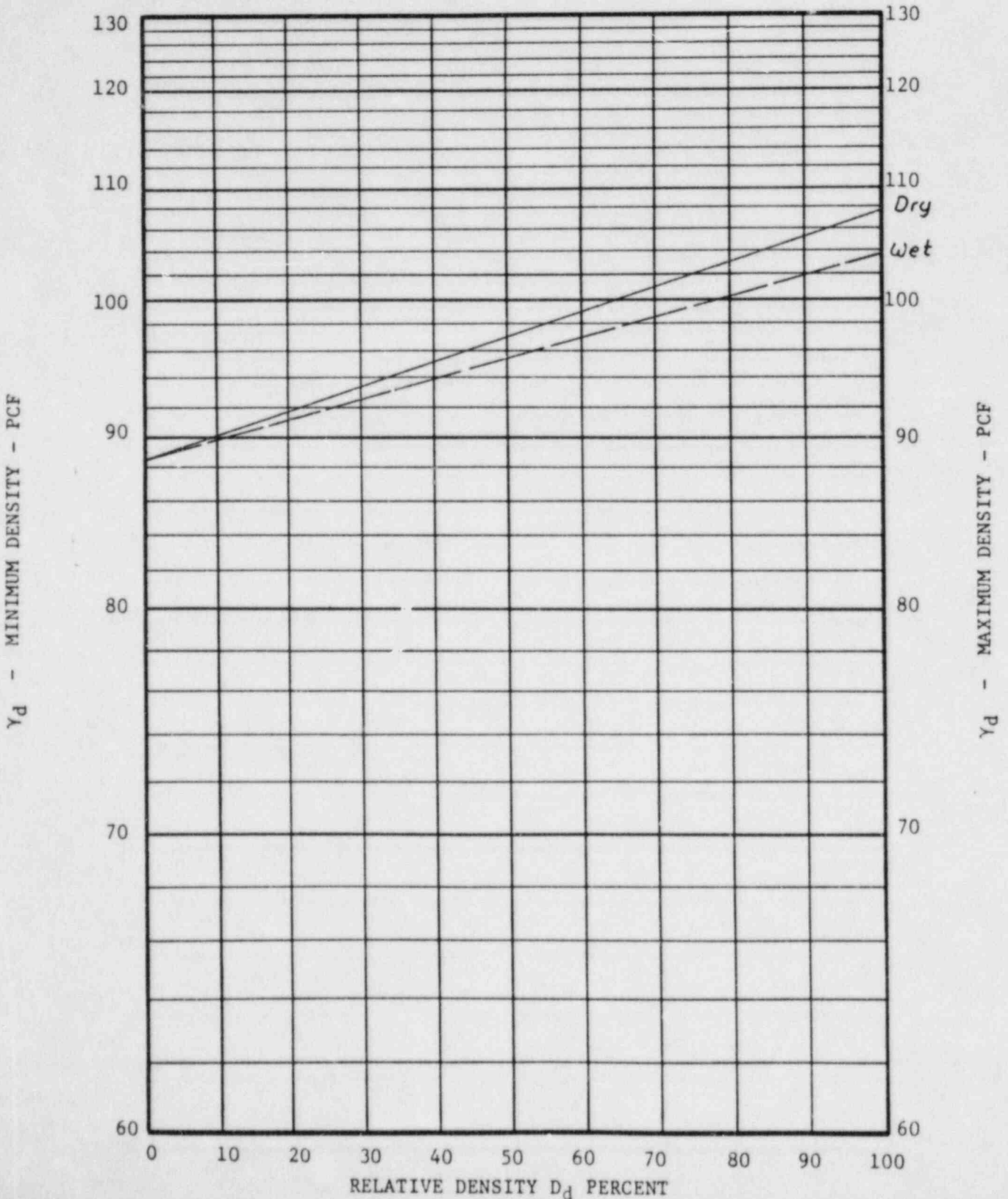


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 5
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & wet
 (DRY OR WET)

γ_d (max) (wet) 103.8 e (min) _____
 γ_d (max) (dry) 107.7 e (min) _____
 γ_d (min) 88.6 e (max) _____
 γ_d _____ e _____
 D_d _____

Specific Gravity 2.67
 Vib. Amplitude - 0.0175"

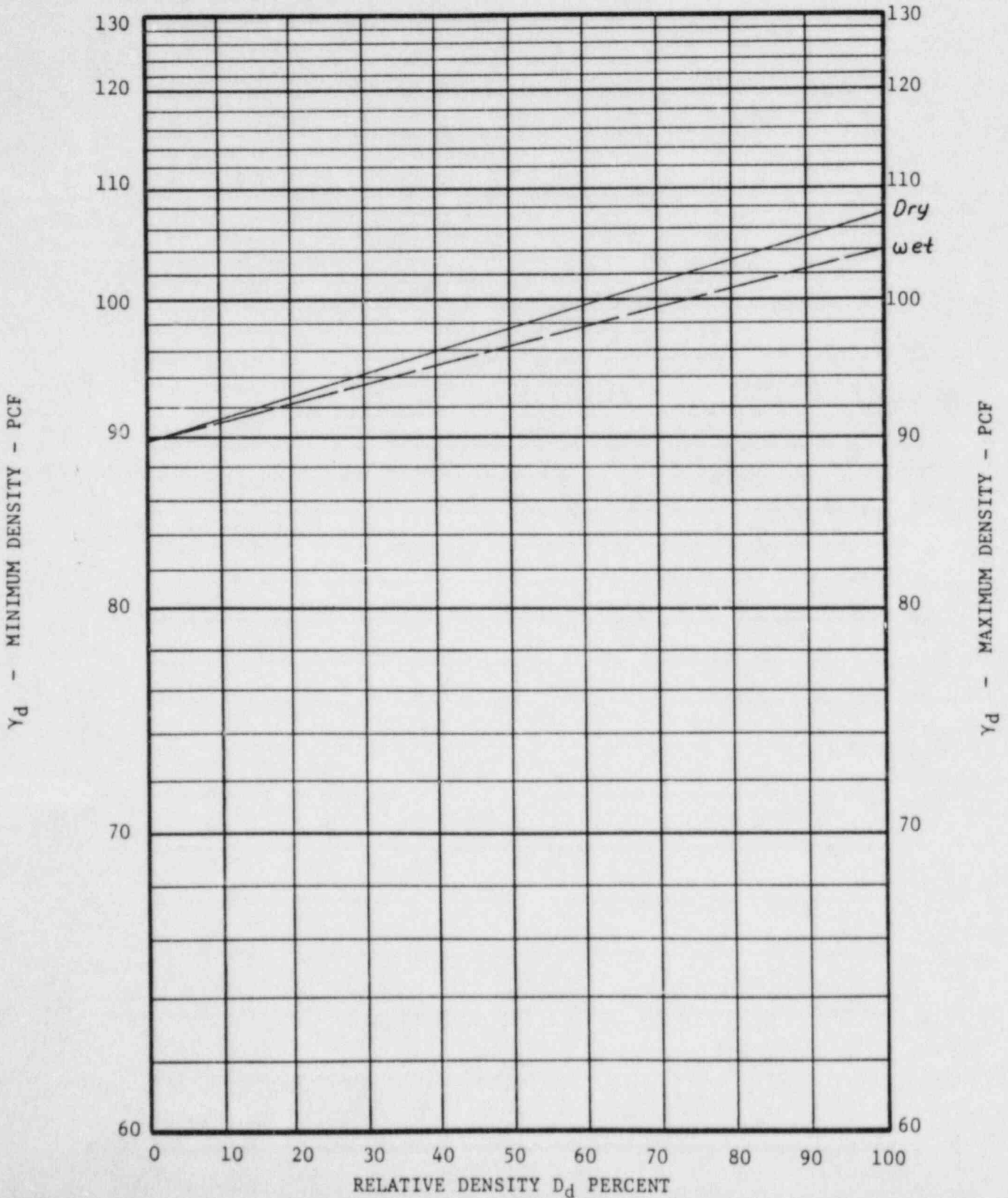


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 6
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & wet
 (DRY OR WET)

Y_d (max)(wet) 104.0 e (min) _____
 Y_d (max)(dry) 107.3 e (min) _____
 Y_d (min) 89.9 e (max) _____
 Y_d _____ e _____
 D_d _____

Specific Gravity 2.67
 Vib. Amplitude - 0.0175 "



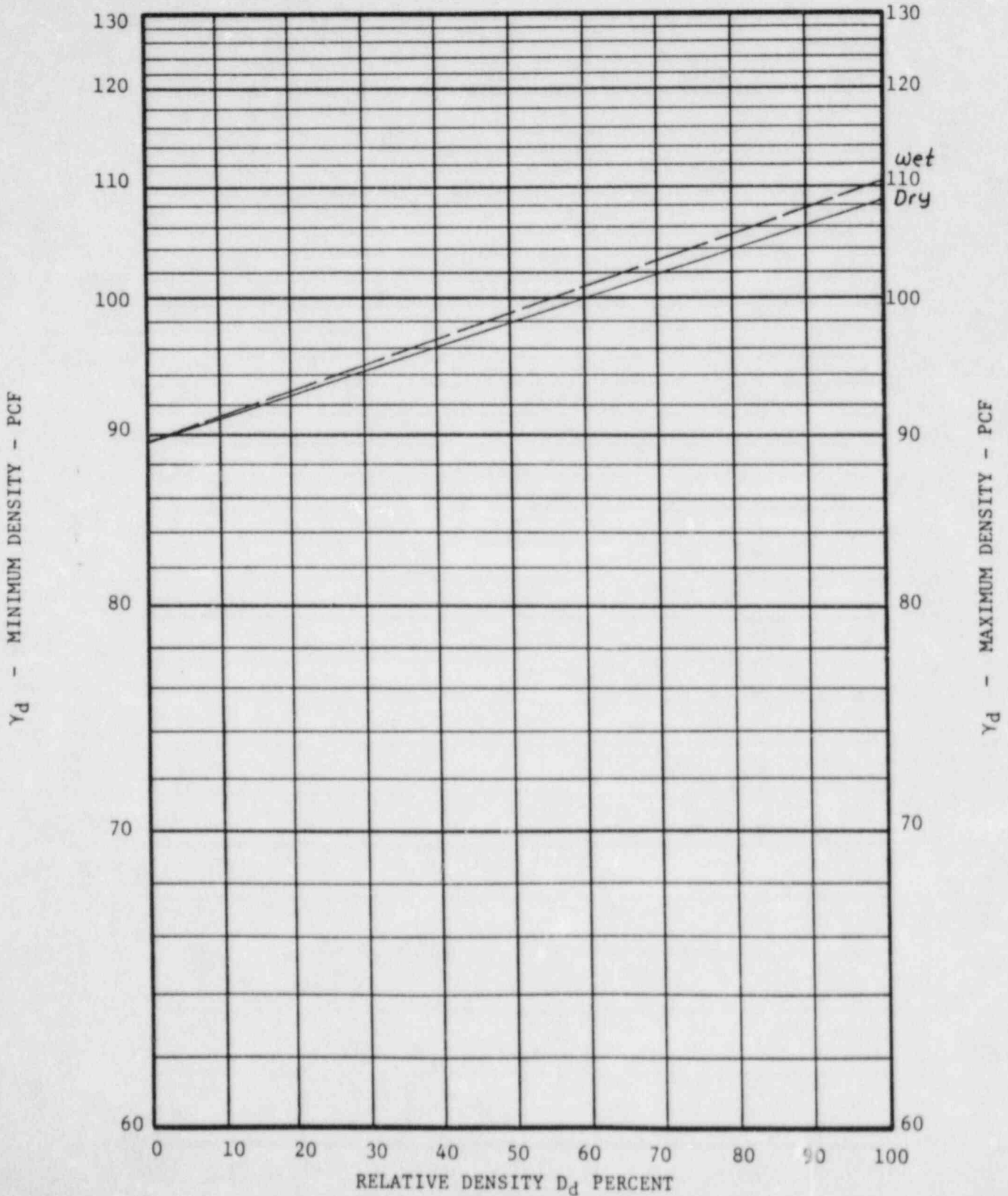
RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 7
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & Wet
 (DRY OR WET)

γ_d (max)(wet) 110.2 e (min) _____
 γ_d (max)(dry) 108.4 e (min) _____
 γ_d (min) 89.7 e (max) _____
 γ_d _____ e _____
 D_d _____

Specific Gravity 2.64

Vib. Amplitude - 0.022"

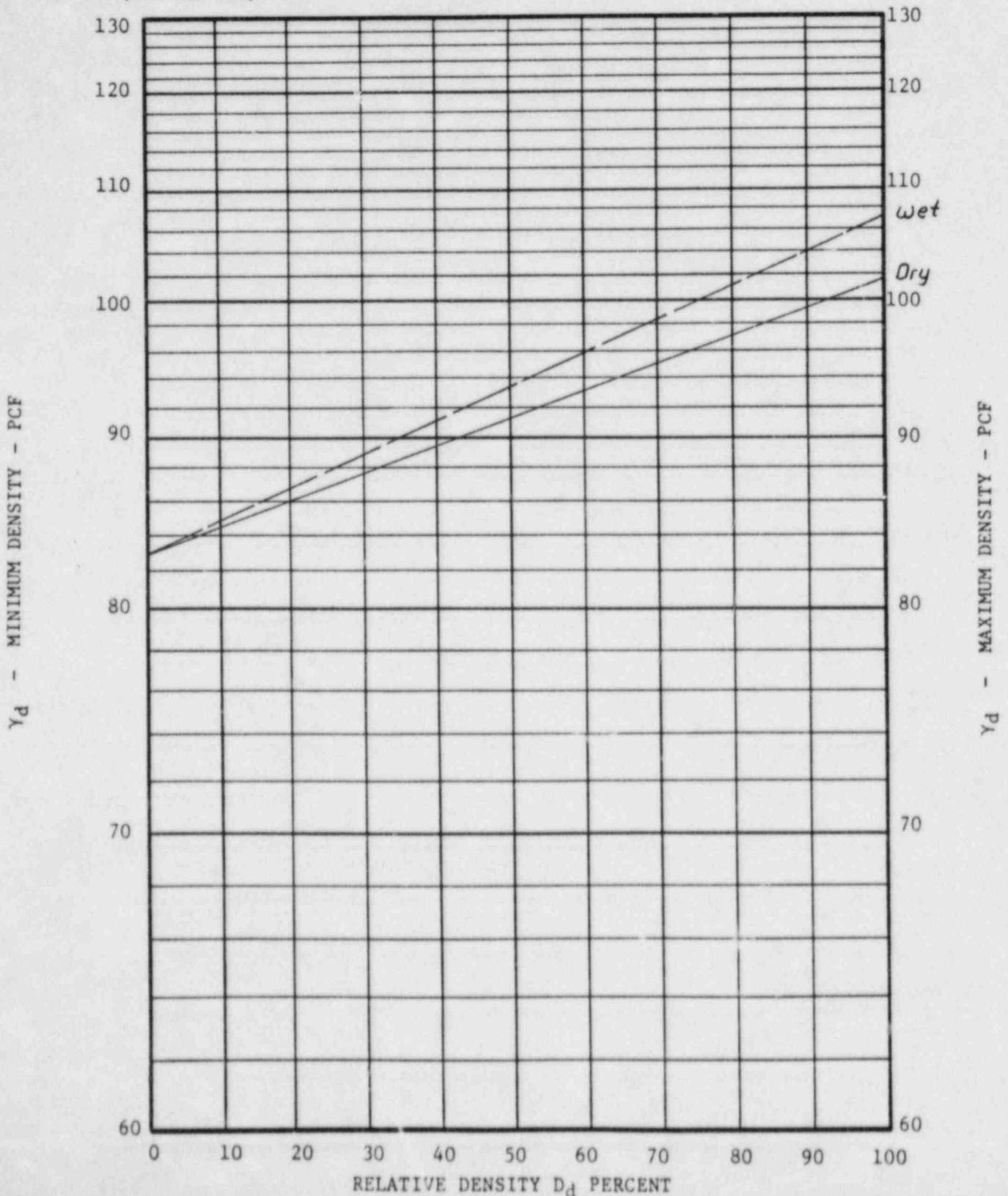


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 9
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & wet
 (DRY OR WET)

γ_d (max) (wet) 107.0 e (min) _____
 γ_d (max) (dry) 101.7 e (min) _____
 γ_d (min) 82.9 e (max) _____
 γ_d _____ e _____
 D_d _____

Specific Gravity 2.66
 Vib. Amplitude - 0.022"

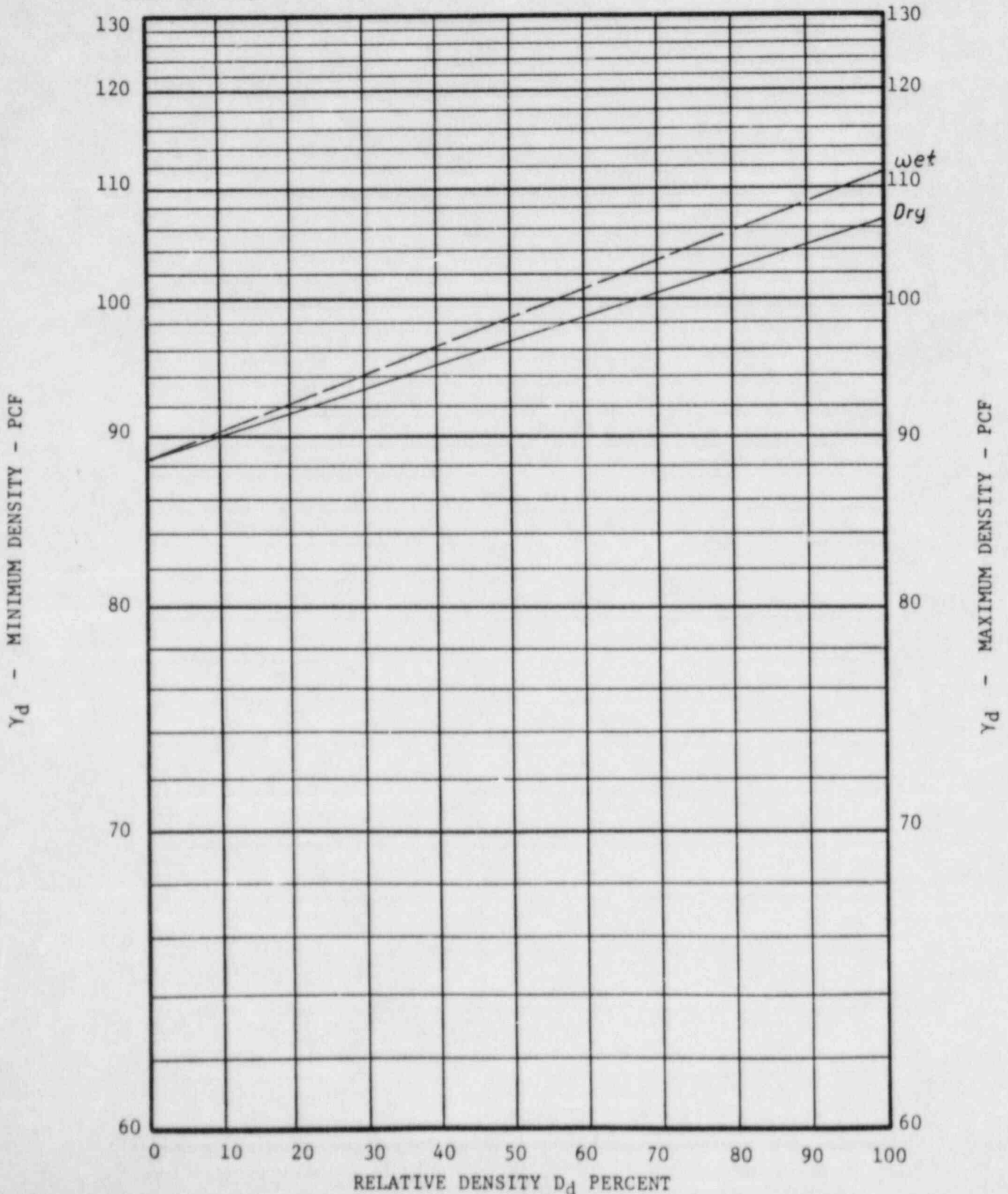


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 10
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & Wet
 (DRY OR WET)

γ_d (max) (wet) 111.3 e (min) _____
 γ_d (max) (dry) 106.8 e (min) _____
 γ_d (min) 88.4 e (max) _____
 γ_d _____ e _____
 D_d _____

Specific Gravity 2.65
 Vib. Amplitude - 0.022"

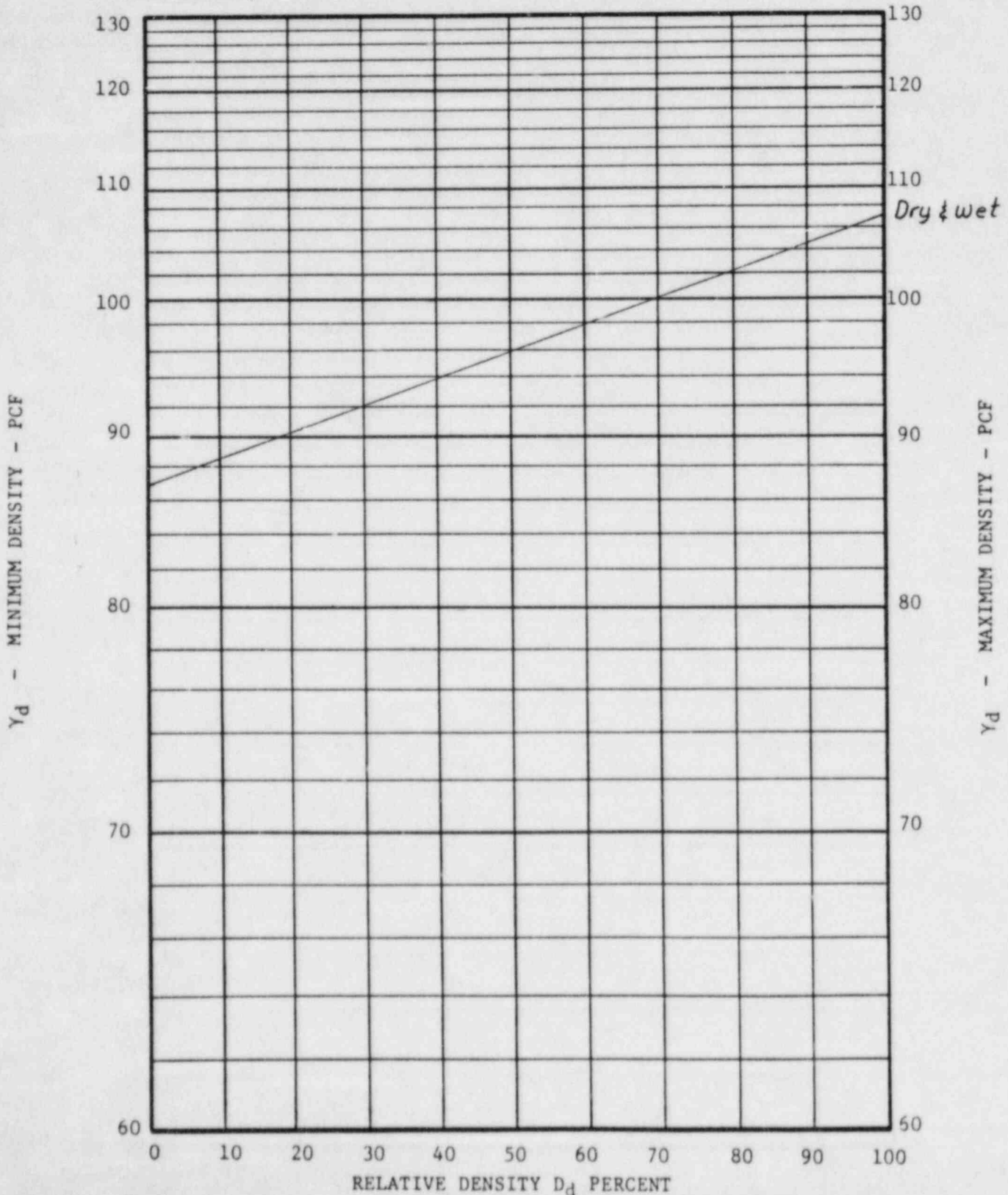


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 11
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & wet
 (DRY OR WET)

Y_d (max) (wet) 106.9 e (min) _____
 Y_d (max) (dry) 106.9 e (min) _____
 Y_d (min) 86.9 e (max) _____
 Y_d _____ e _____
 D_d _____

Specific Gravity 2.67
 Vib. Amplitude - 0.025"

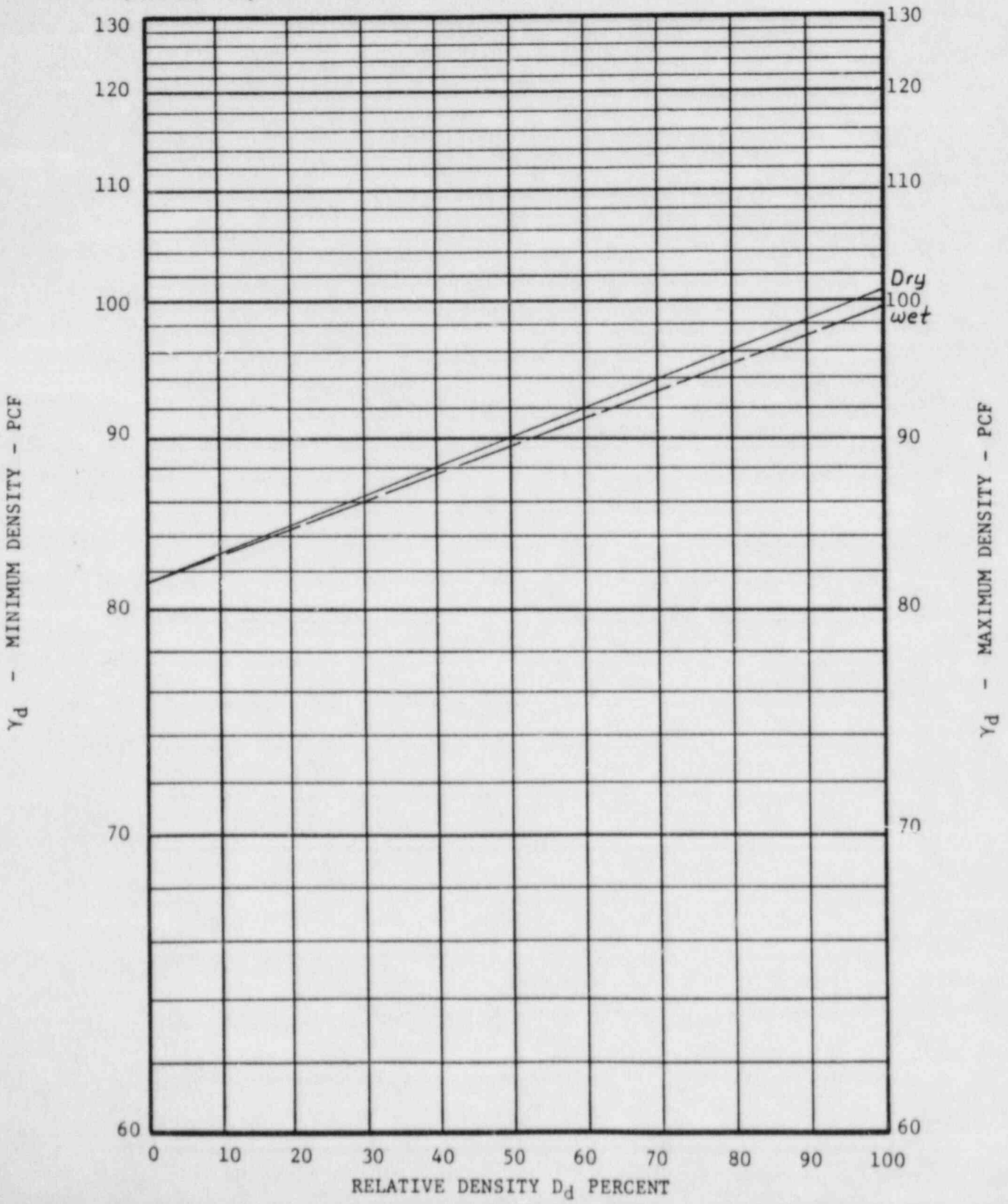


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 12
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & Wet
 (DRY OR WET)

γ_d (max)(wet) 99.5 e (min) _____
 γ_d (max)(dry) 100.7 e (min) _____
 γ_d (min) 81.4 e (max) _____
 γ_d _____ e _____
 D_d _____ e _____

Specific Gravity 2.67
 Vib. Amplitude - 0.025"

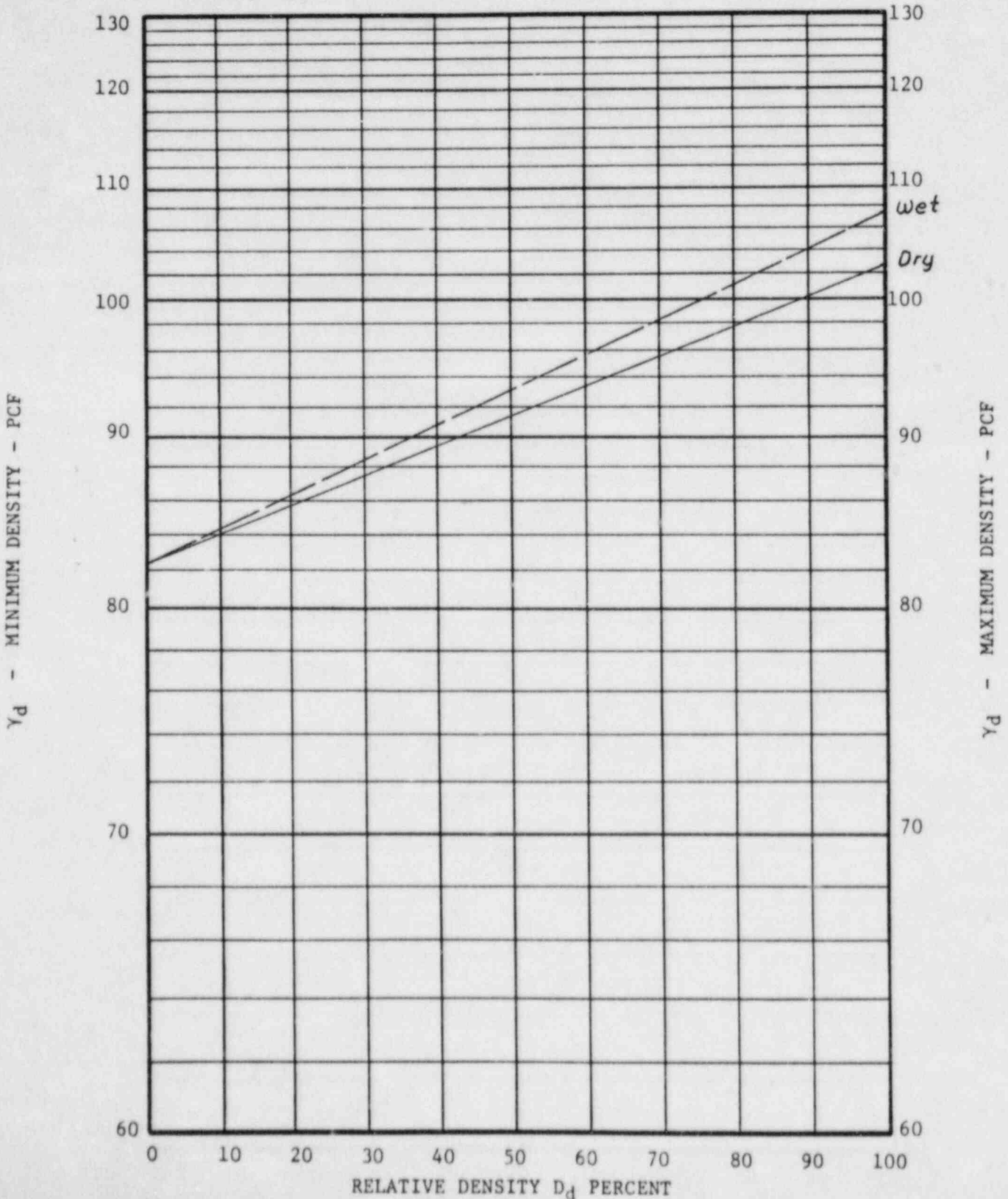


RELATIVE DENSITY TEST

DATE 7-31-84
 JOB NAME Plant Vogtle
 JOB NUMBER 7429
 BORING NUMBER Bag #1
 SAMPLE NUMBER 13
 DEPTH (FT.) _____
 MOLD SIZE 1/10 ft.³
 METHOD-MINIMUM DENSITY Funnel
 (FUNNEL OR SCOOP)
 METHOD-MAXIMUM DENSITY Dry & Wet
 (DRY OR WET)

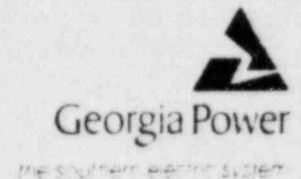
Y_d (max)(wet) 107.3 e (min) _____
 Y_d (max)(dry) 102.6 e (min) _____
 Y_d (min) 82.5 e (max) _____
 Y_d _____ e _____
 D_d _____

Specific Gravity 2.68
 Vib. Amplitude - 0.025"



Georgia Power Company
Construction Department
Post Office Box 260
Waynesboro, Georgia 31790
Telephone 404 724-1541
404 724-1541
404 884-7711

Vogtle Electric Generating Plant



July 27, 1984

Mr. Jim Bailey
Nuclear Safety and License Department
Southern Company Services
P.O. Box 2625
Birmingham, Alabama 35202

Subject: Vogtle Electric Generating Plant - Units 1 & 2
Bechtel Job 9510-001, Laboratory Testing Program
for Category I Backfill

References: 1. Letter BS-5032, dated May 18, 1984
2. Letter BS-32159, dated May 25, 1984
3. Letter BG-32220, dated June 8, 1984

File No: X2BE02, X2BA06, X2AP01 C2.2

Correspondence No: C-4356

Security Code: NC

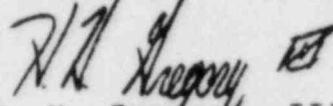
Dear Mr. Bailey:

Attached are the results of the on site soil testing carried out as required in references 1, 2, and 3. Also, attached is a summary sheet which shows the grain size and Modified Proctor results for each sample taken.

If you have any questions, please contact Winston Davis at extension 422 on site.

Mr. Jim Bailey
Bechtel Job 9510-001
July 27, 1984
Page 2

Sincerely,



H. H. Gregory, III
General Manager-
Vogtle Nuclear
Construction Department

WWD
WWD/HHG/lml

xc: D. O. Foster w/a-1
W. T. Nickerson w/a-1
O. Batum w/a-1
G. Bockhold w/a-1
M. Malcom w/a-1
H. D. Burnum w/a-1
M. H. Googe w/a-1
D. M. Fiquett w/a-1
BB B. C. Harbin w/a-1
I. D. Innes w/a-1
D. Kinnsch w/a-1
W. R. Ferris w/a-1
M. A. Perovich w/a-1
Document Control - Original w/a-1
CDC w/a-1

GPC LAB TEST RESULTS

Sample No.	<u>Grain Size</u>				<u>Modified Proctor</u>	
	#8	#10	#40	#200	Max. Dry Density	Optimum Moisture
S1	100	DNR**	49.3	3.7	103.9	12.0
S2	100	DNR	62.1	4.0	101.9	11.3
S3	100	DNR	52.4	3.7	103.4	11.7
S4	100	DNR	41.5	4.4	104.7	13.5
S5	100	DNR	60.9	2.9	103.4	13.2
S6	100	DNR	52.5	3.2	104.7	15.0
S7	99.6	DNR	69.6	7.4	108.6	13.8
S8	Samples in the range could not be obtained at this time.					
S9	99.9	DNR	78.9	9.4	109.0	14.0
S10	99.5	DNR	64.7	5.6	106.8	10.4
S11	99	DNR	67.9	9.7	114.2	14.3
S12	100	DNR	80.9	9.3	110.1	13.5
S13	99.9	DNR	76.9	9.5	109.5	13.5

**DNR did not run

Confirmatory Lab Testing 1. D.

	Bag # 1	Bag # 2	Bag # 3	Bag # 4	Source
S-1	2.1%	2.9%	2.6%	3.1%	Borrow
S-2	3.3%	2.6%	2.9%	2.9%	Borrow
S-3	3.0%	3.3%	2.8%	2.5%	Borrow
S-4	3.0%	2.7%	2.6%	2.7%	Borrow
S-5	3.0%	2.9%	2.9%	3.1%	Fill
S-6	2.5%	2.8%	3.1%	2.9%	Fill
S-7	6.8%	6.9%	7.0%	7.1%	Borrow
S-8*					Borrow
S-9	9.8%	8.7%	8.9%	8.7%	Fill
S-10	5.1%	5.5%	6.3%	6.4%	Fill
S-11	9.3%	9.9%	9.3%	10.0%	Borrow
S-12	10.2%	9.5%	9.9%	9.9%	Borrow
S-13	9.4%	9.1%	9.4%	8.6%	Fill
S-14*					Fill

* Samples in this range could not be obtained at this time.

Proctor Sheet

Date 6-19-84	Sample Description Red Med-fine gr. Silty	
Inspector Cope land	SAND	
Pound Scale Used # C 3371	Gram Scale Used # C 2407	
Proctor No. SI BAG 2	Hammer Control No. C 2410	
Method D 1557 A	Mold C 2409	Oven C 292

		1	2	3	4	5	6	7
Wet Density Determination	A Weight Mold (lbs.)	9.37	9.37	9.37	9.37	9.37	9.37	
	B Mold Volume Factor (Volume)	30	30	30	30	30	30	30
	C Water Added (ml.)	150	200	250	300	350	400	
	D Weight Soil and Mold (lbs.)	13.02	13.10	13.17	13.25	13.28	13.29	
	E Weight of Soil (lbs.) (D - A)	3.65	3.73	3.80	3.88	3.91	3.92	
	F Wet Density (lbs./ft. ³) (B x E)	109.5	111.9	114.0	116.4	117.3	117.6	
Moisture Content Determination	G Tare Number	R3	C1	C2	C3	C4	C5	
	H Tare Weight (grams)	47.9	49.2	49.8	49.0	48.7	49.3	
	J Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	
	K Dry Weight Sample + Tare (grams)	238.8	235.0	232.0	228.5	225.7	223.3	
	L Weight of Dry Soil (grams) (K - H)	190.9	185.8	182.2	179.5	177.0	174.0	
	M Weight of Moisture (grams) (J - K)	11.2	15.0	18.0	21.5	24.3	26.7	
	N Percent Moisture (M/L) x 100%	5.9	8.1	9.9	12.0	13.7	15.3	
	P Dry Density (lbs./ft. ³) (F / (N + 100))	103.4	103.5	103.7	103.9	103.2	102.0	

Maximum Dry Density (Proctor Density): 103.9 (lbs./ft.³) Optimum Moisture (%): 12.8
 (From Curve) (From Curve)

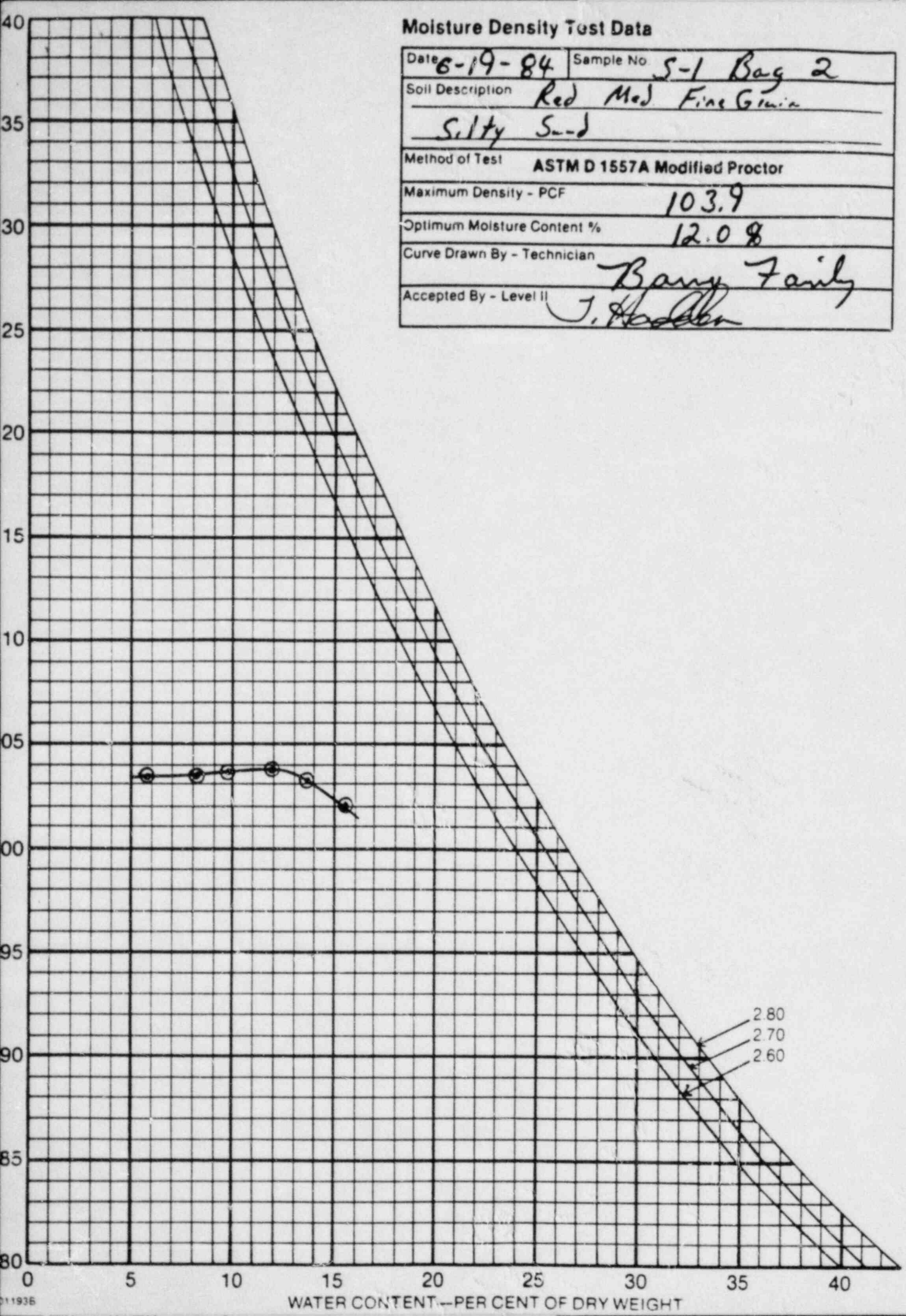
Accepted By: J. Hodder
 Level 1

Moisture content obtained prior to compaction

49.1	49.7	47.5	47.6	47.0	47.6
B2	L1	L2	L3	L4	L5
250.0	250.0	250.0	250.0	250.0	250.0
238.8	235.2	231.8	228.0	225.5	223.0
189.7	185.5	184.3	180.4	178.5	175.4
11.2	14.8	18.2	22.0	24.5	27.0
5.9	8.0	9.9	12.2	13.7	15.3

Moisture Density Test Data

Date	6-19-84	Sample No.	S-1 Bag 2
Soil Description	Red Med Fine Grained Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	103.9		
Optimum Moisture Content %	12.0 %		
Curve Drawn By - Technician	Bany Fairly		
Accepted By - Level II	J. Holden		



Mois
49.1
32
250.0
238.8
189.7
11.2
50

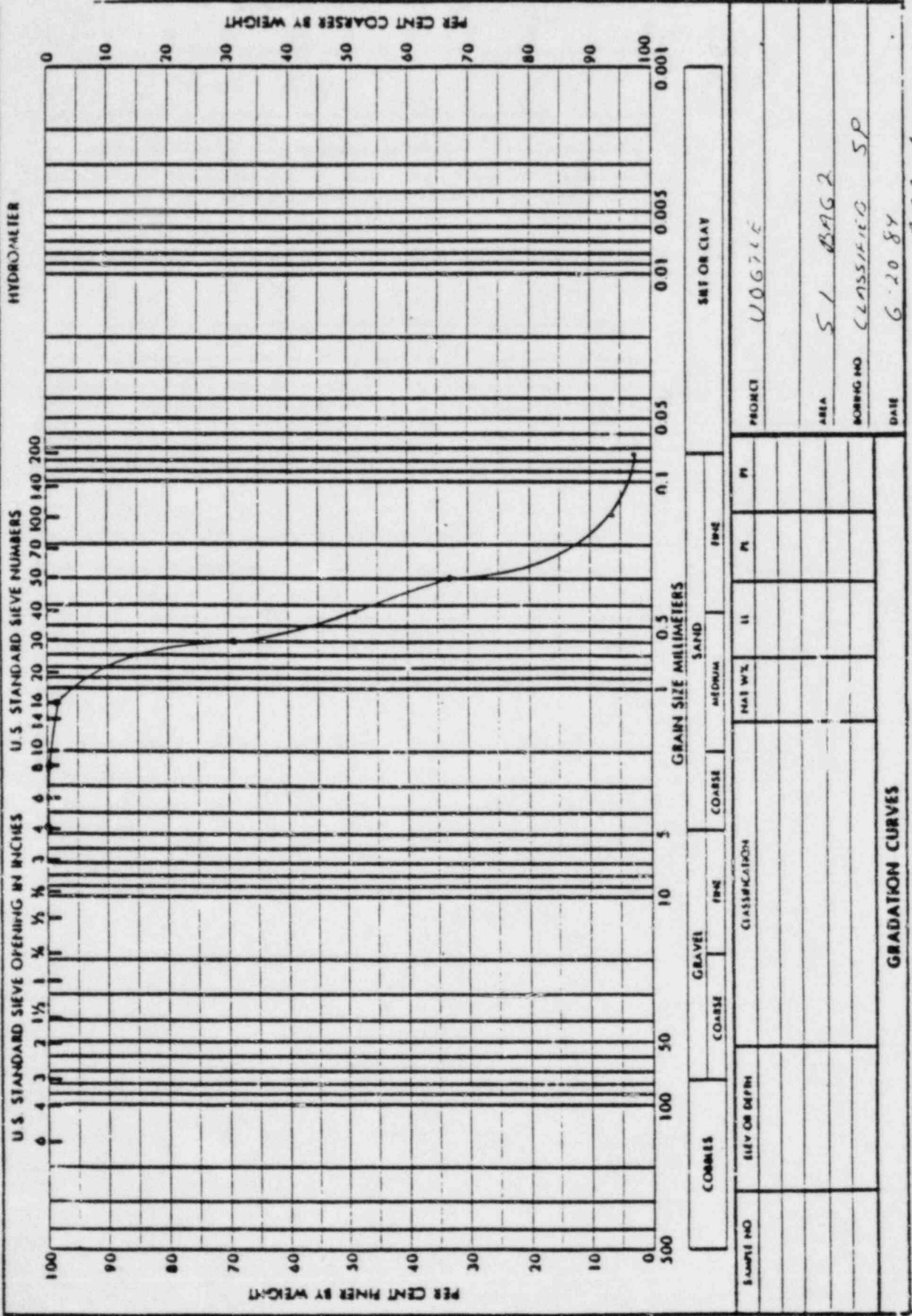
Wash 200 and Sieve Analysis

Date	6-19-84	Test No.	S-1 BAG 2
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Wash 200 (ASTM D1140) Inspector	<i>J.M. Moore</i>	Scale No.	C-2407	Sieve No.	C-1546
Oven Dry Weight Before Wash (grams)	530.8	Oven Dry Weight After Wash (grams)	511.9	% Passing 200 Sieve	3.6
Sieve Analysis (ASTM D422) Inspector	<i>Capo Land</i>	Scale No.	C-2550	Oven No.	C-292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0	0	100
8	C344	0	0	100
16	C343	2.7	.5	99.5
30	C379	164.3	31.0	69.0
40	C380	269.1	50.7	49.3
50	C860	351.1	66.1	33.9
100	C2514	499.5	94.1	5.9
200	C384	511.2	96.3	3.7
Pan	N/A	511.6		
Total	N/A	530.8		

Accepted By: *W.C. Eubank* Level II Date: 6-20-84



SAMPLE NO. _____ SIEVE OR DEPTH _____
 CLASSIFICATION _____
 GRADE _____
 GRAIN SIZE MILLIMETERS: COARSE, MEDIUM, FINE, SAND, SPT OR CLAY

PROJECT	UOGTLE
AREA	S1 BAG 2
BOHRING NO.	CLASSIFIC SP
DATE	6-20-84

W.C. ELLIARD

GRADATION CURVES

Proctor Sheet

Date 6-19-84	Sample Description Reddish-Brown Med-Fine gr.	
Inspector Copeland	SILTY SAND	
Pound Scale Used # C 3371	Gram Scale Used # C 2407	
Proctor No. S2 BAG 2	Hammer Control No. C 2410	
Method DISSTA	Mold C 752	Oven C 292

		1	2	3	4	5	6	7	
	A	Weight Mold (lbs.)	9.27	9.27	9.27	9.27	9.27	9.27	
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30	
	C	Water Added (ml.)	150	200	250	300	350	400	450
Wet Density Determination	D	Weight Soil and Mold (lbs.)	12.82	12.87	12.96	13.05	13.10	13.21	13.23
	E	Weight of Soil (lbs.) (D - A)	3.55	3.60	3.69	3.78	3.83	3.94	3.96
	F	Wet Density (lbs./ft. ³) (B x E)	106.5	108.0	110.7	113.4	114.9	118.2	118.8
	G	Tare Number	T1	T2	T3	T4	T5	T6	T7
Moisture Content Determination	H	Tare Weight (grams)	47.8	47.8	48.3	47.3	47.8	48.2	48.3
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	238.5	235.3	232.0	229.4	225.3	222.2	220.8
	L	Weight of Dry Soil (grams) (K - H)	190.7	187.5	183.7	182.1	177.5	174.0	172.5
	M	Weight of Moisture (grams) (J - K)	11.5	14.7	18.0	20.6	24.7	27.8	29.2
	N	Percent Moisture (M/L) x 100%	6.0	7.8	9.8	11.3	13.9	16.0	16.9
	P	Dry Density (lbs./ft. ³) (F / (N + 100))	100.5	100.2	100.8	101.9	100.9	101.9 +0.1	101.6
								ck 6-19-84	

Maximum Dry Density (Proctor Density): 101.9 (lbs./ft.³) Optimum Moisture (%): 11.3
(From Curve) (From Curve)

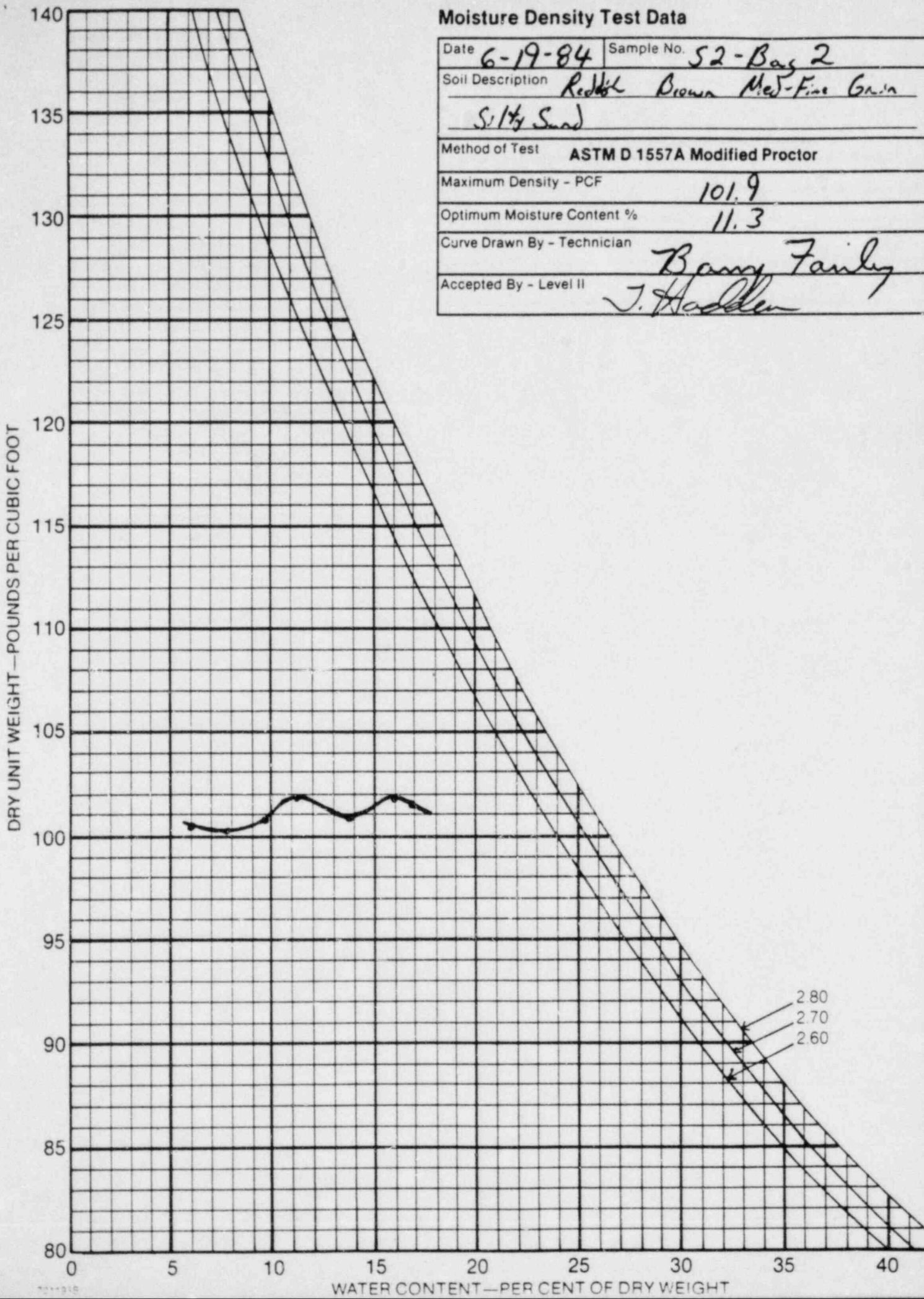
Moist. Content obtained prior to compaction

47.3	49.2	48.3	49.9	49.0	49.2	47.8
E8	E1	E2	E3	E4	E5	E6
250.0	250.0	250.0	250.0	250.0	250.0	250.0
238.5	235.2	231.9	228.7	225.6	222.1	219.0
191.2	186.0	183.6	178.8	176.6	172.9	171.2
11.5	14.8	18.1	21.3	24.4	27.9	31.0
6.0	8.0	9.9	11.9	13.8	16.1	18.1

Accepted By: J. Hadden
Level II

Moisture Density Test Data

Date	6-19-84	Sample No.	52-Bag 2
Soil Description	Reddish Brown Med-Fine Grain Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	101.9		
Optimum Moisture Content %	11.3		
Curve Drawn By - Technician	Barry Fairley		
Accepted By - Level II	J. Hadden		



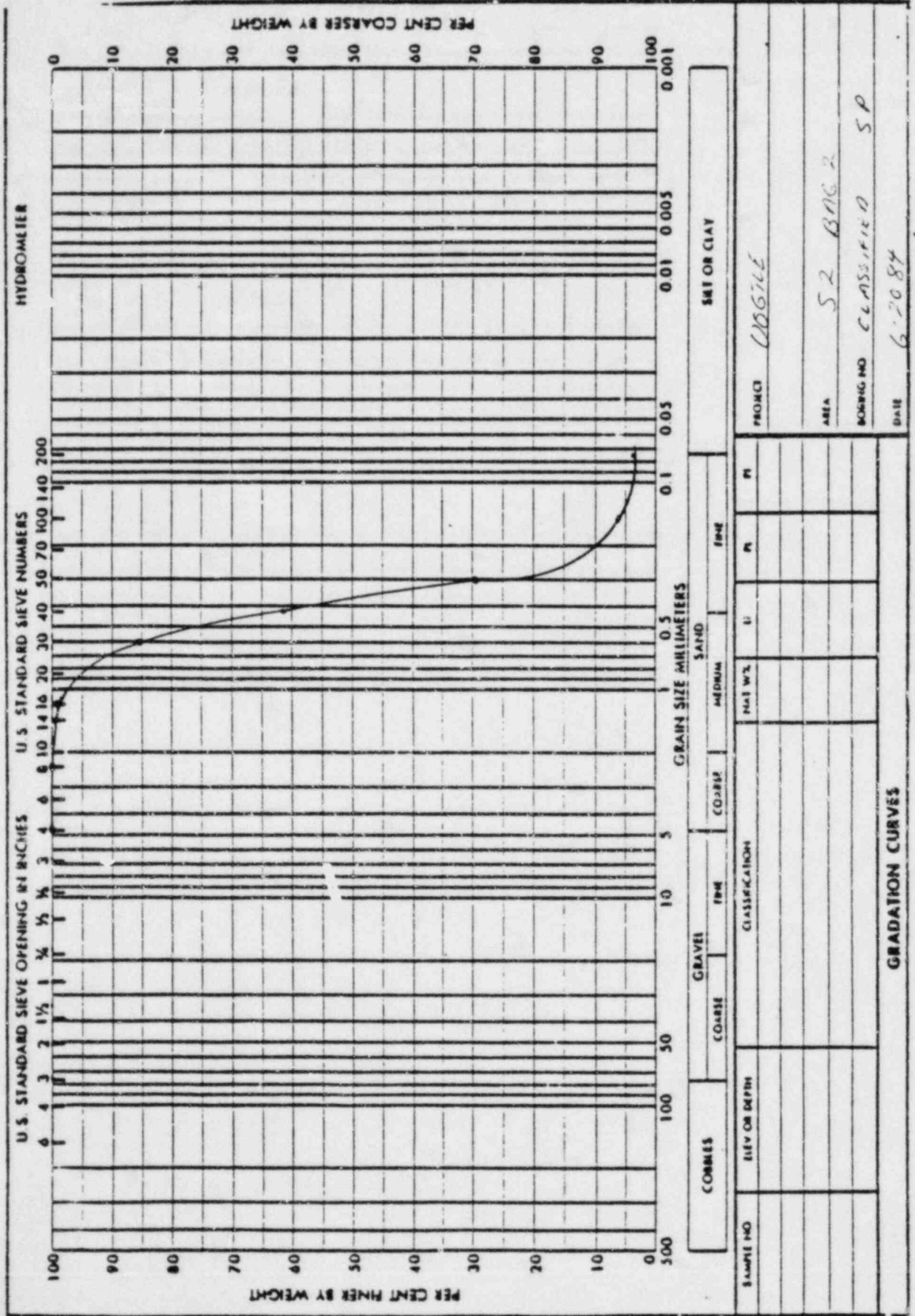
Wash 200 and Sieve Analysis

Date	6-19-84	Test No.	S2 BAG 2
------	---------	----------	----------

Wash 200 (ASTM D1140) Inspector	Copeland, J.M. Moore	Scale No.	C-2407	Sieve No.	C-378 C-1546
Oven Dry Weight Before Wash (grams)	587.5	Oven Dry Weight After Wash (grams)	567.3	% Passing 200 Sieve	3.4
Sieve Analysis (ASTM D422) Inspector	Copeland	Scale No.	C2550	Oven No.	C292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0	0	100
8	C344	0	0	100
16	C343	2.8	.5	99.5
30	C379	84.2	14.3	85.7
40	C380	222.7	37.9	62.1
50	C860	411.7	70.1	29.9
100	C2514	551.7	93.9	6.1
200	C384	564.0	96.0	4.0
Pan	N/A	566.9		
Total	N/A	587.5		

2.0 Accepted By: W.C. Sullivan Level II Date: 6-20-84



Proctor Sheet

Date	6-21-84	Sample Description	Dr. Med. Fine Gr. Silty Sand
Inspector	Copeland, F. J. Leg	Gram Scale Used #	C-2407
Pound Scale Used #	C-3371	Hammer Control No.	C-2410
Proctor No.	S-3 B ₂	Mold	C-2409 C-572 *C-752
Method	D-1557 A	Oven	C-292

		1	2	3	4	* 5	6	7	
Wet Density Determination	A	Weight Mold (lbs.)	9.38	9.38	9.38	9.38	9.28	9.38	9.38
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30	30
	C	Water Added (ml.)	150	200	250	300	325	350	400
Moisture Content Determination	D	Weight Soil and Mold (lbs.)	12.99	13.09	13.13	13.23	13.15	13.29	13.33
	E	Weight of Soil (lbs.) (D - A)	3.61	3.71	3.75	3.85	3.87	3.91	3.95
	F	Wet Density (lbs./ft. ³) (B x E)	108.3	111.3	112.5	115.5	116.1	117.3	118.5
	G	Tare Number	Y-6	Y-1	Y-2	Y-3	A-5	Y-4	Y-5
	H	Tare Weight (grams)	49.2	49.2	49.3	48.2	47.9	49.1	49.2
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	239.0	235.3	232.5	228.9	227.4	225.0	222.5
	L	Weight of Dry Soil (grams) (K - H)	189.8	186.1	183.2	180.7	179.5	175.9	173.3
	M	Weight of Moisture (grams) (J - K)	11.0	14.7	17.5	21.1	22.6	25.0	27.5
	N	Percent Moisture (M/L) x 100%	5.8	7.9	9.6	11.7	12.6	14.2	15.9
P	Dry Density (lbs./ft. ³) (F / (N + 100))	102.3	103.2	102.6	103.4	103.1	102.7	102.2	

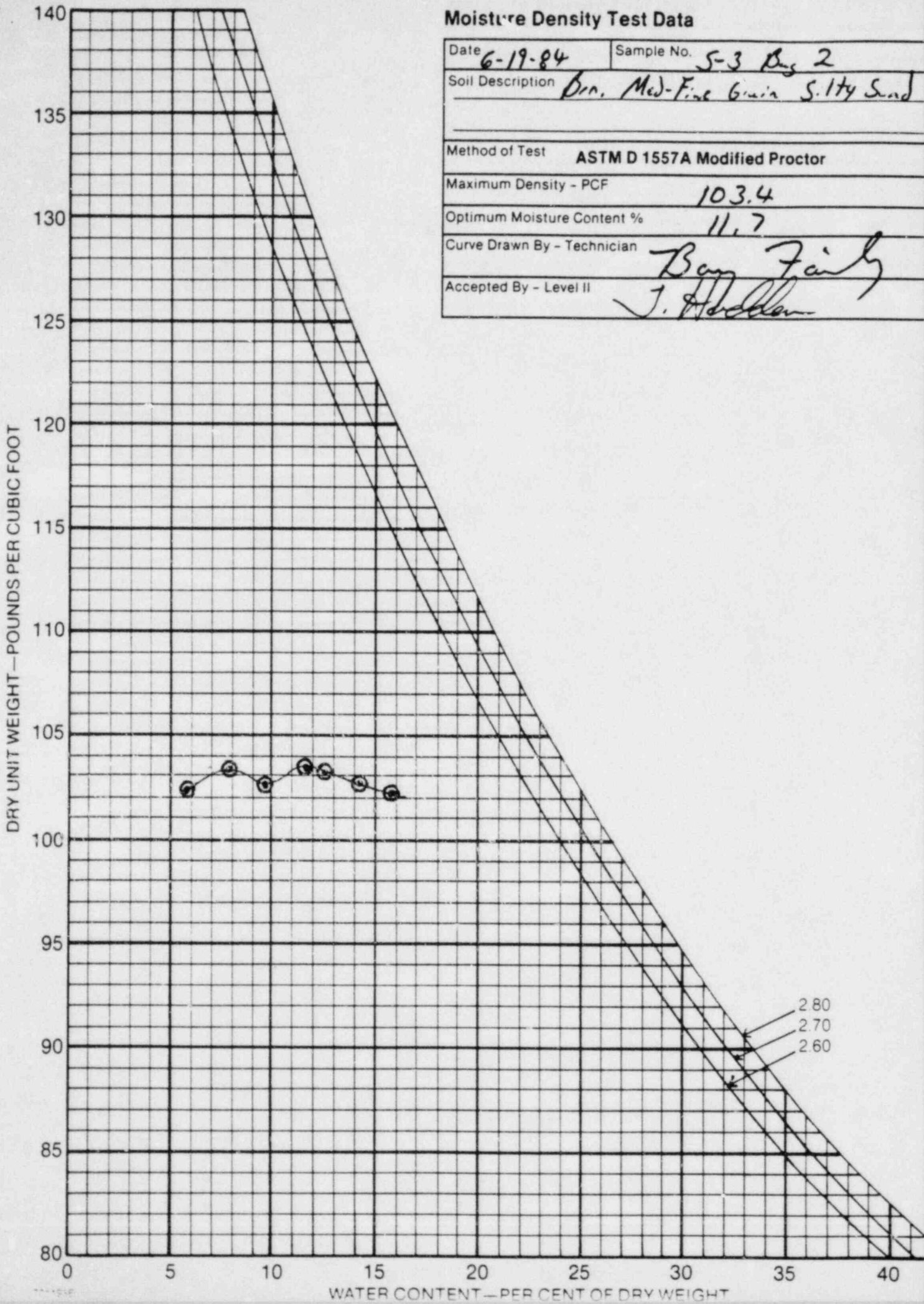
Maximum Dry Density (Proctor Density): 103.4 (lbs./ft.³) Optimum Moisture (%): 11.7%
(From Curve) (From Curve)

Accepted By: [Signature]
Level II

①	②	③	④	⑤	⑥	⑦
48.2	49.1	49.1	49.4	48.5	49.0	49.2
YY-3	X-1	X-2	X-3	A-6	X-4	X-5
250.0	250.0	250.0	250.0	250.0	250.0	250.0
238.5	235.1	231.8	229.0	227.1	226.1	222.0
190.3	186.0	182.7	179.6	178.6	177.1	172.8
11.5	14.9	18.2	21.0	22.9	23.9	28.0
6.0	8.0	10.0	11.7	12.8	13.5	16.2

Moisture Density Test Data

Date	6-19-84	Sample No.	S-3 Box 2
Soil Description	Dir. Med-Fine Grain Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	103.4		
Optimum Moisture Content %	11.7		
Curve Drawn By - Technician	Ben Fairly		
Accepted By - Level II	J. Holden		



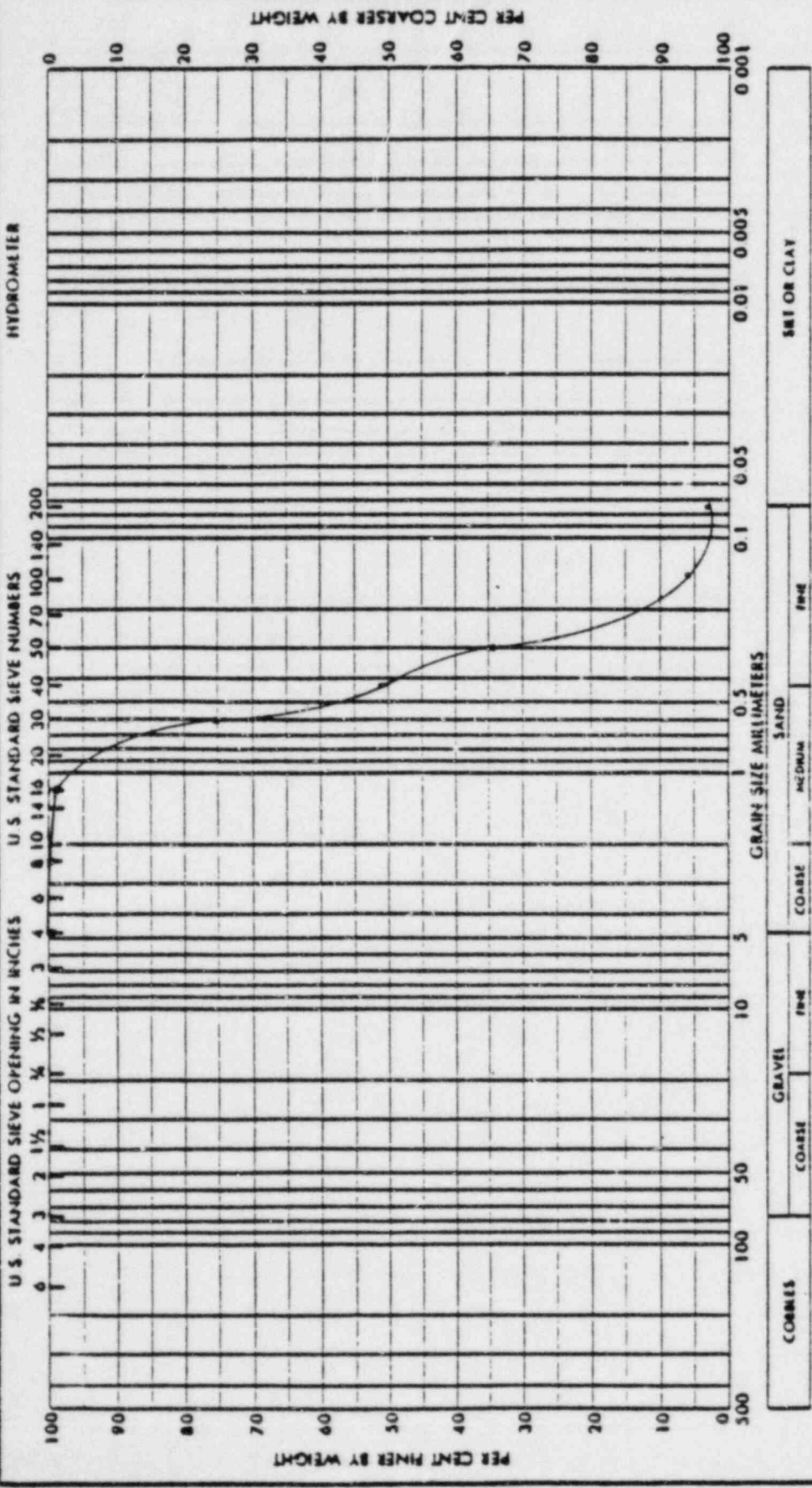
Wash 200 and Sieve Analysis

Date	C-19-84	Test No.	S3 BAG 2
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Wash 200 (ASTM D1140) Inspector	Scale No.	Sieve No.
Copoland, J.H. Moore	C 2407	C-378 C-1546
Oven Dry Weight Before Wash (grams)	Oven Dry Weight After Wash (grams)	% Passing 200 Sieve
584.1	562.9	3.6
Sieve Analysis (ASTM D422) Inspector	Scale No.	Oven No.
Copoland	C 2550	C292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0	0	100
8	C344	0	0	100
16	C343	3.8	.7	99.3
30	C379	145.4	24.9	75.1
40	C380	278.3	47.6	52.4
50	C860	380.2	65.1	34.9
100	C2514	549.6	94.1	5.9
200	C384	562.2	96.3	3.7
Pan	N/A	563.0		
Total	N/A	584.1		

LA Accepted By: W. Eubank Date: 6-20-84
 Level II



SAMPLE NO.		ELEV OR DEPTH		CLASSIFICATION		FINE		PI	
AREA		BORING NO.		DATE		SOURCE			
S3 BAG 2		CLASSIFIED SA		6-20-84		ROGIE			
GRADATION CURVES									

W. E. Ebbel

Proctor Sheet

Date 6-19-84	Sample Description BROWN Med-FINE gr	
Inspector Cope land	SILTY SAND	
Pound Scale Used # C 3371	Gram Scale Used # C 2407	
Proctor No. S4 BAG 2	Hammer Control No. C 2410	
Method DISSTA	Mold C 752	Oven C 292

		1	2	3	4	5	6	7
Wet Density Determination	A	Weight Mold (lbs.)	9.29	9.29	9.29	9.29	9.29	9.29
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30
	C	Water Added (ml.)	150	200	250	300	350	400
	D	Weight Soil and Mold (lbs.)	12.89	12.96	13.07	13.12	13.25	13.27
	E	Weight of Soil (lbs.) (D - A)	3.60	3.67	3.78	3.83	3.96	3.98
	F	Wet Density (lbs./ft. ³) (B x E)	108.0	110.1	113.4	114.9	118.8	119.4
Moisture Content Determination	G	Tare Number	R1	A1	A2	A3	A4	A5
	H	Tare Weight (grams)	48.8	49.9	47.8	46.9	48.7	47.9
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	238.5	236.4	232.1	228.5	226.0	222.5
	L	Weight of Dry Soil (grams) (K - H)	189.7	186.5	184.3	181.6	177.3	174.6
	M	Weight of Moisture (grams) (J - K)	11.5	13.6	17.9	21.5	24.0	27.5
	N	Percent Moisture (M/L) x 100%	6.0	7.3	9.7	11.8	13.5	15.8
	P	Dry Density (lbs./ft. ³) (F / (N + 100))	101.9	102.6	103.4	102.8	104.7	103.1

Maximum Dry Density (Proctor Density): 104.7 (lbs./ft.³) Optimum Moisture (%): 13.5
(From Curve) (From Curve)

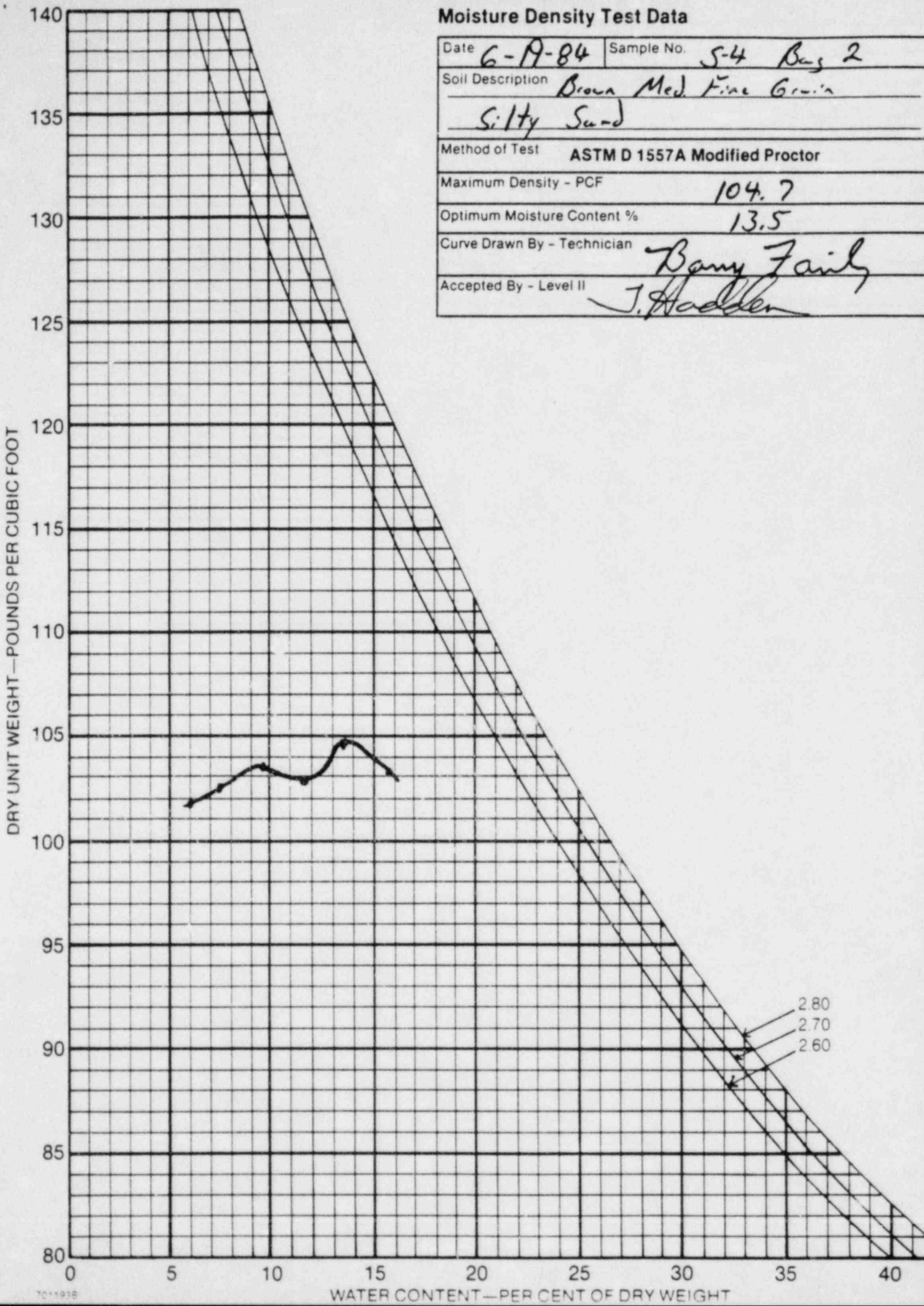
Accepted By: J. Hadden Level II

Moist. Content obtained prior to compaction

47.8	48.5	48.0	47.3	48.5	48.5
P6	P1	P2	P3	P4	P5
250.0	250.0	250.0	250.0	250.0	250.0
237.8	236.0	232.5	229.8	228.2	222.2
190.0	187.5	184.5	182.5	179.7	173.7
12.2	14.0	17.5	20.2	21.8	27.8
	7.5	9.5	11.1	12.1	16.0

Moisture Density Test Data

Date	6-19-84	Sample No.	S-4 Bag 2
Soil Description	Brown Med. Fine Grain Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	104.7		
Optimum Moisture Content %	13.5		
Curve Drawn By - Technician	Benny Fairly		
Accepted By - Level II	J. Hadden		



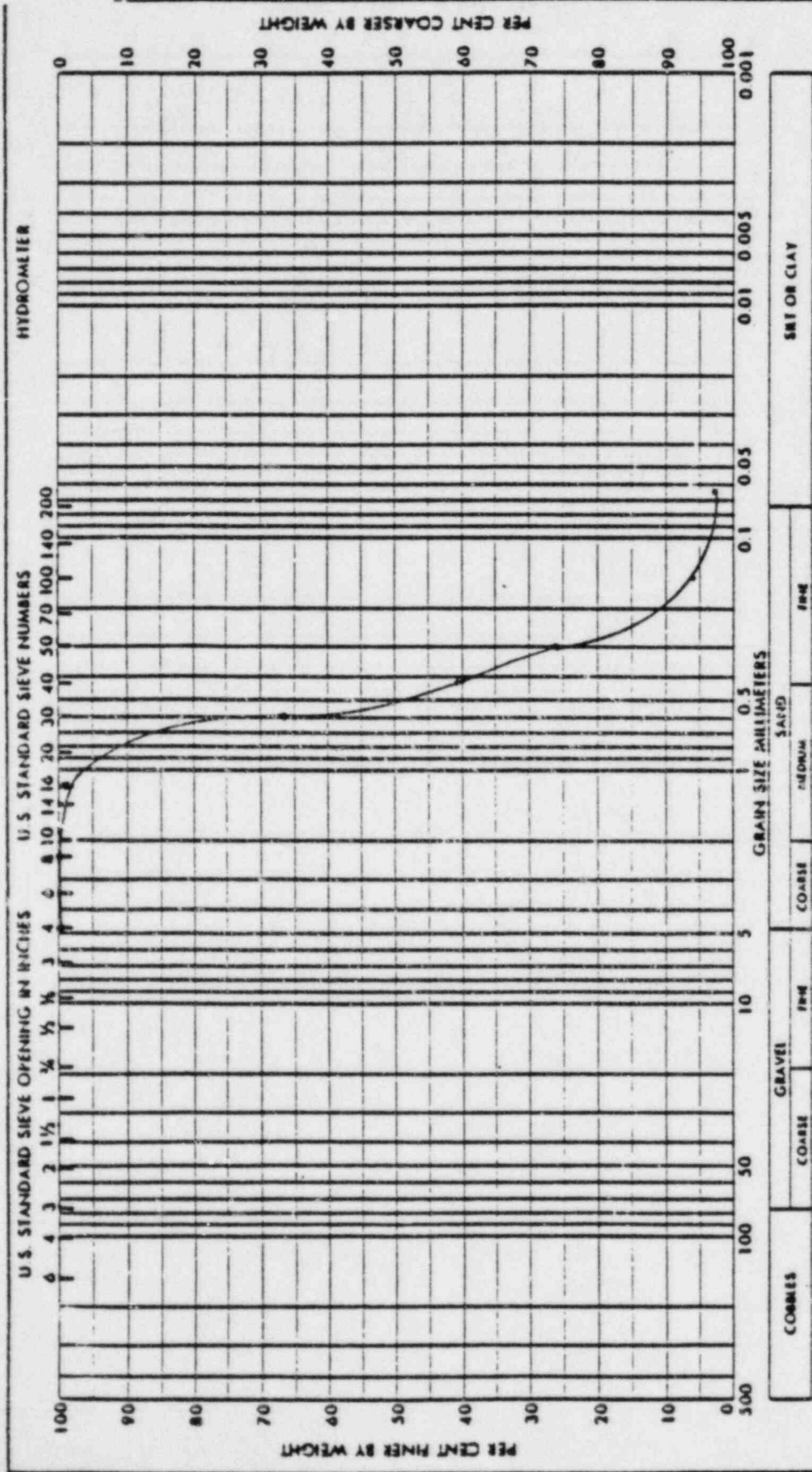
Wash 200 and Sieve Analysis

Date 6-19-84 Test No. S-4 BA92

Wash 200 (ASTM D1140) Inspector <i>G. Moore</i>	Scale No. <i>C-2407</i>	Sieve No. <i>C-378</i> <i>C-1546</i>
Oven Dry Weight Before Wash (grams) <i>545.5</i>	Oven Dry Weight After Wash (grams) <i>521.8</i>	% Passing 200 Sieve <i>4.3</i>
Sieve Analysis (ASTM D422) Inspector <i>Capeland</i>	Scale No. <i>C-2550</i>	Oven No. <i>C-292</i>

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	<i>C321</i>	<i>0</i>	<i>0</i>	<i>100</i>
8	<i>C344</i>	<i>.2</i>	<i>0</i>	<i>100</i>
16	<i>C343</i>	<i>2.6</i>	<i>0.5</i>	<i>99.5</i>
30	<i>C379</i>	<i>182.4</i>	<i>33.4</i>	<i>66.6</i>
40	<i>C380</i>	<i>319.1</i>	<i>58.5</i>	<i>41.5</i>
50	<i>C860</i>	<i>402.9</i>	<i>73.9</i>	<i>26.1</i>
100	<i>C2514</i>	<i>512.7</i>	<i>94.0</i>	<i>6.0</i>
200	<i>C384</i>	<i>521.3</i>	<i>95.6</i>	<i>3.4 4.4</i> ^{21cc} _{6.25}
Pan	<i>N/A</i>	<i>521.7</i>		
Total	<i>N/A</i>	<i>545.5</i>		

Accepted By: *JWC Eubank* *6-20-84*
 Level II Date



SAMPLE NO	ELEV OR DEPTH	CLASSIFICATION	NAI WT	II	PI	PI
PROJECT <i>LOGTLE</i>						
AREA <i>S-4 BAG 2</i>						
BORING NO <i>CLASSIFIED SP</i>						
DATE <i>6-20-87</i>						

W.C. Ebbbeck

GRADATION CURVES

Proctor Sheet

Date	6-22-84	Sample Description	BROWNISH-TAN MED-FINE	
Inspector	J. Seins, P. CAUDAY	GRAIN SILTY SAND		
Pound Scale Used #	C-3371	Gram Scale Used #	C 2407	
Proctor No.	S-5 BA9#2	Hammer Control No.	C 2410	
Method	Astm D 1557A	Mold	C 2409	Oven C 292

		1	2	3	4	5	6	7
A	Weight Mold (lbs.)	9.36	9.36	9.36	9.36	9.36	9.36	9.36
	Mold Volume Factor (Volume)	30	30	30	30	30	30	30
	Water Added (ml.)	100	150	200	250	300	350	400
Wet Density Determination	D Weight Soil and Mold (lbs.)	12.89	12.96	13.03	13.11	13.19	13.26	13.27
	E Weight of Soil (lbs.) (D - A)	3.53	3.60	3.67	3.75	3.83	3.90	3.91
	F Wet Density (lbs./ft. ³) (B x E)	105.9	108.0	110.1	112.5	114.9	117.0	117.3
Moisture Content Determination	G Tare Number	E-1	E-2	E-3	E-4	E-5	X-1	X-2
	H Tare Weight (grams)	49.2	48.3	49.9	49.0	49.2	49.1	49.1
	J Wet Weight Sample + Tare (grams)	249.2	248.3	249.9	249.0	249.2	249.1	249.1
	K Dry Weight Sample + Tare (grams)	241.8	237.1	234.9	231.1	228.1	225.8	222.4
	L Weight of Dry Soil (grams) (K - H)	192.6	188.8	185.0	182.1	178.9	176.7	173.3
	M Weight of Moisture (grams) (J - K)	7.4	11.2	15.0	17.9	21.1	23.3	26.7
	N Percent Moisture (M/L) x 100%	3.8	5.9	8.1	9.8	11.8	13.2	15.4
P Dry Density (lbs./ft. ³) (F/(N + 100))	102.0	102.0	101.9	102.5	102.8	103.4	101.6	

Maximum Dry Density (Proctor Density): 103.4 (lbs./ft.³) Optimum Moisture (%): 13.2
 (From Curve) (From Curve)

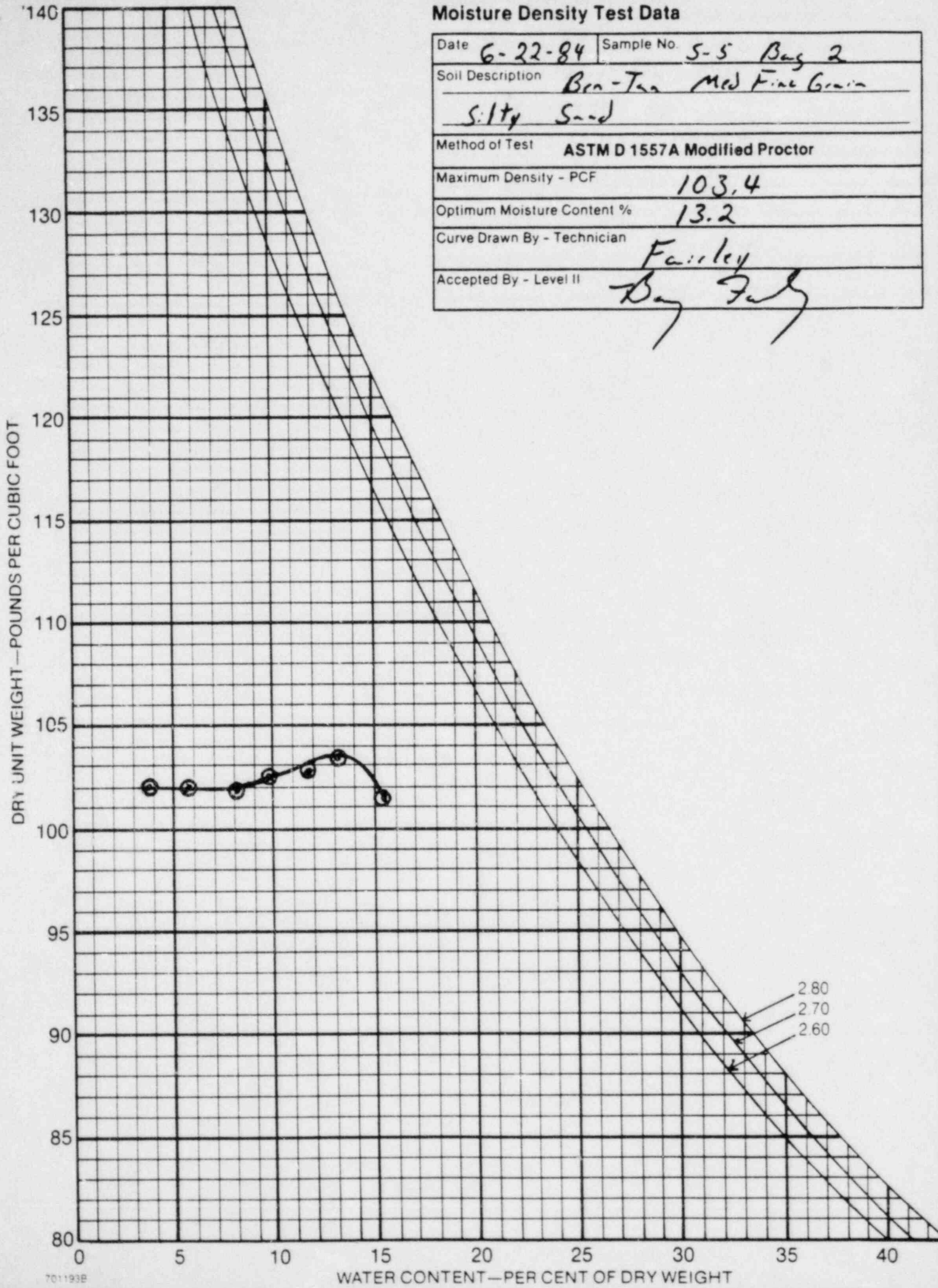
PF

Accepted By: Bay Firdy
 Level II

	AA-1	AA-2	AA-3			
# 1	# 2	# 3	# 4	# 5	# 6	# 7
missed	missed	47.8	47.9	48.5	47.6	47.9
		297.7	293.3	279.3	277.2	267.7
		<u>279.6</u>	<u>271.1</u>	<u>249.4</u>	<u>248.9</u>	<u>237.3</u>
		231.8	223.2	200.9	201.3	189.4
		18.1	22.2	24.9	28.3	30.4
		7.8	9.9	12.4	14.1	16.1

Moisture Density Test Data

Date	6-22-84	Sample No.	S-5 Bag 2
Soil Description	Ben-Ton Med Fine Grain Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	103.4		
Optimum Moisture Content %	13.2		
Curve Drawn By - Technician	Fairley		
Accepted By - Level II	Dag Fuly		



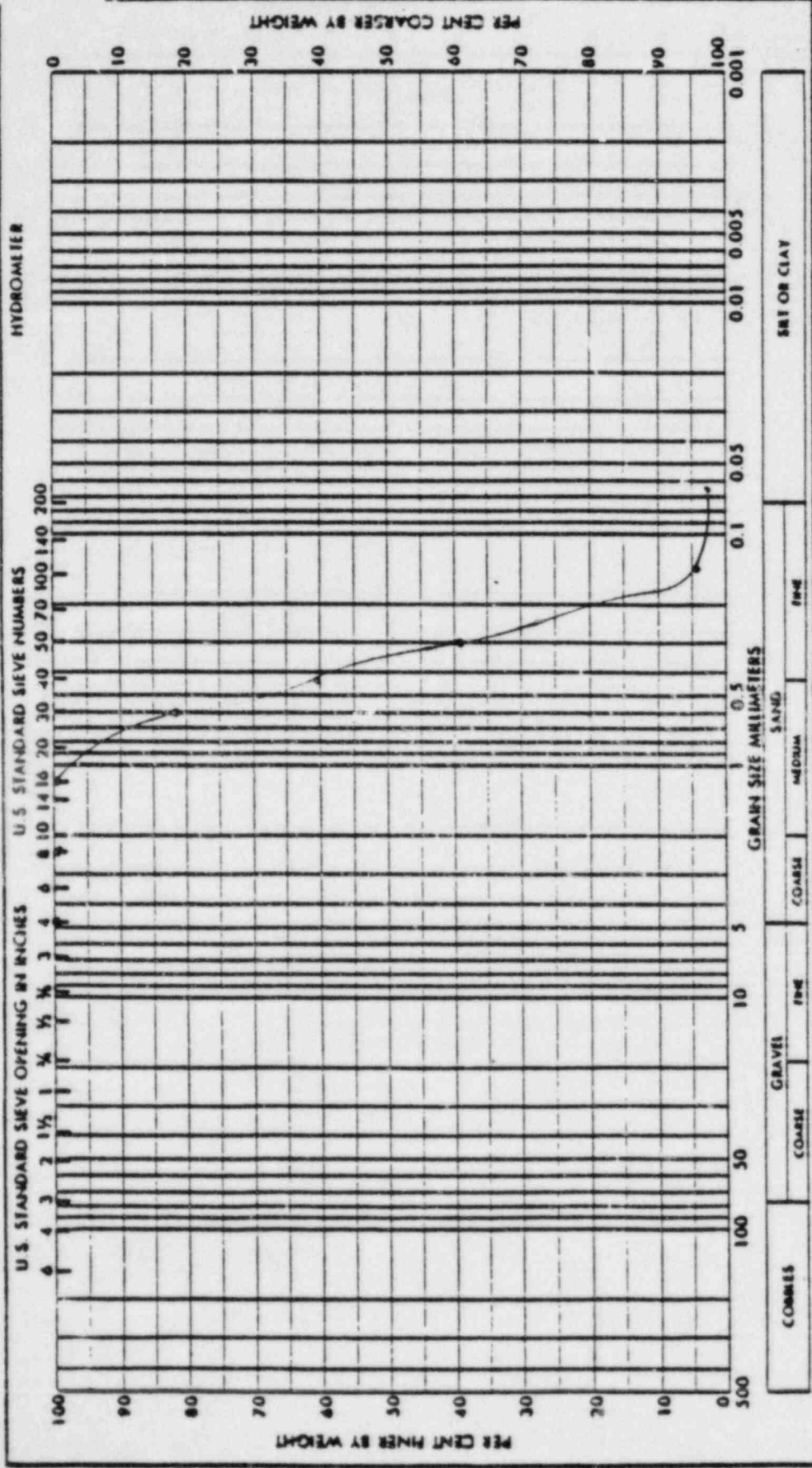
Wash 200 and Sieve Analysis

Date	6-25-84	Test No.	SS BAZ
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Wash 200 (ASTM D1140) Inspector	Pattord	S Scale No.	C-2550	Sieve No.	C-1546
Oven Dry Weight Before Wash (grams)	557.6	Oven Dry Weight After Wash (grams)	543.3	% Passing 200 Sieve	2.6
Sieve Analysis (ASTM D422) Inspector	Pattord	S Scale No.	C-2550	Oven No.	C-292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	371	0	0	100.0
8	344	0	0	100.0
16	343	1.8	0.3	99.7
30	379	100.1	18.0	82.0
40	380	218.0	39.1	60.9
50	860	338.1	60.6	39.4
100	2514	530.6	95.2	4.8
200	384	541.4	97.1	2.9
Pan		542.8		
Total		557.6		

Accepted By: Michael B. Pattord 6-25-84
 Level II Date



SAMPLE NO.	CLASSIFICATION			FINE	PI
	ELEV OR DEPTH				
PROJECT		Vogtle			
AREA		S-5 Bay 2			
BORING NO.		G-25-84			
DATE					

GRADATION CURVES

Proctor Sheet

Date	6-21-84	Sample Description	Br. Med Fine Grain	
Inspector	Pice, Farley, Goins,	Gram Scale Used #	S.H. Sand	
Pound Scale Used #	C-3371	Proctor No.	C-2407	
Proctor No.	S-6 Bag 2	Hammer Control No.	C-2410	
Method	D-1557 A	Mold	C-2409	Oven C-292
			* C-752	

		* 1	2	3	4	5	6	7	
	A	Weight Mold (lbs.)	9.28	9.36	9.36	9.36	9.36	9.36	
	B	Mold Volume Factor ($\frac{\text{Volume}}{\text{Volume}}$)	30	30	30	30	30	30	
	C	Water Added (ml.)	100	150	200	250	300	350	400
Wet Density Determination	D	Weight Soil and Mold (lbs.)	12.84	13.02	13.09	13.16	13.23	13.33	13.39
	E	Weight of Soil (lbs.) (D - A)	3.56	3.66	3.73	3.80	3.87	3.97	4.03
	F	Wet Density (lbs./ft. ³) (B x E)	106.8	109.8	111.9	114.0	116.1	119.1	120.9
Moisture Content Determination	G	Tare Number	A-3	E-2	E-3	E-4	E-5	T-1	T-2
	H	Tare Weight (grams)	46.9	48.3	49.9	49.0	49.2	47.8	48.3
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	242.2	239.8	236.0	232.9	229.0	225.2	222.7
	L	Weight of Dry Soil (grams) (K - H)	195.3	191.5	186.1	183.9	179.8	177.4	174.4
	M	Weight of Moisture (grams) (J - K)	7.8	10.2	14.0	17.1	21.0	24.8	27.3
	N	Percent Moisture (M/L) x 100%	4.0	5.3	7.5	9.3	11.7	14.0	15.7
P	Dry Density (lbs./ft. ³) (F/(N + 100))	102.7	104.3	104.1	104.3	103.9	104.5	104.5	

Maximum Dry Density (Proctor Density): 104.7 (lbs./ft.³) Optimum Moisture (%): 15.08
 (From Curve) (From Curve)

Accepted By: [Signature] Level II

①	②	③	④	⑤	⑥	⑦	⑧
48.7	49.0	48.4	48.9	49.2	49.0	49.6	47.8
A-4	BB-2	BB-3	BB-4	BB-5	BB-6	BB-7	AA-1
250.0	250.0	250.0	250.0	250.0	250.0	250.0	263.4
242.1	239.6	235.8	232.5	228.6	225.9	222.1	232.1
193.4	190.6	187.0	183.6	179.4	176.9	172.5	184.3
7.9	10.4	14.2	17.5	21.4	24.1	27.9	31.3
4.1	5.5	7.6	9.5	11.9	13.6	16.2	17.0

Proctor Sheet

Date	6-21-84	Sample Description	Dir Med Fine Grain
Inspector	Pice, Fairley, Gorns		Silty Sand
Pound Scale Used #	C-3371	Gram Scale Used #	C-2407
Proctor No.	S-6 B ₂	Hammer Control No.	C-2410
Method	D-1557 A	Mold	C-2409
		Oven	C-292

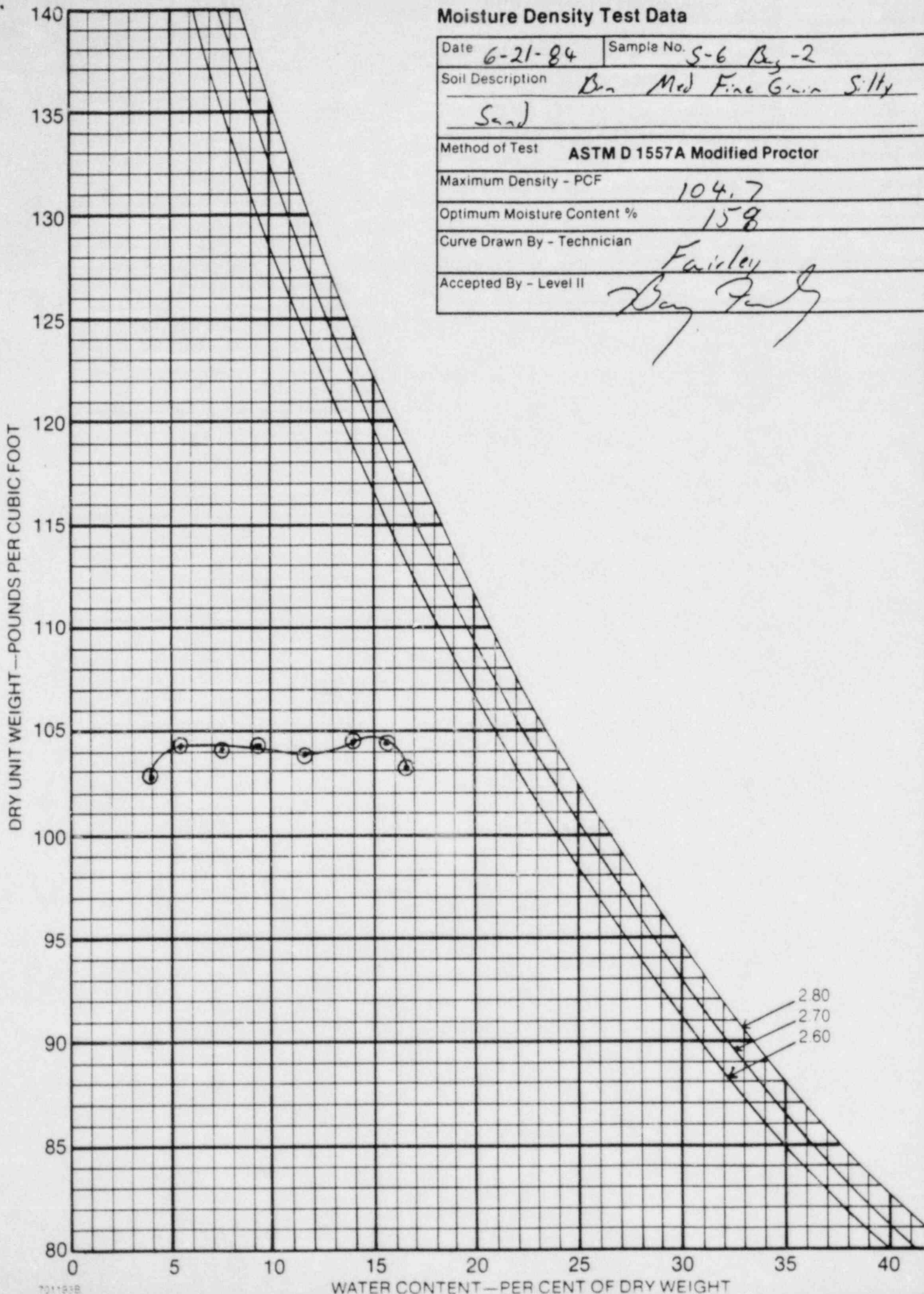
		1	2	3	4	5	6	7
Wet Density Determination	A	Weight Mold (lbs.)	9.36					
	B	Mold Volume Factor ($\frac{1}{\text{Volume}}$)	30	30	30	30	30	30
	C	Water Added (ml.)	450					
	D	Weight Soil and Mold (lbs.)	13.36					
	E	Weight of Soil (lbs.) (D - A)	4.00					
	F	Wet Density (lbs./ft. ³) (B x E)	120.0					
Moisture Content Determination	G	Tare Number	E-3					
	H	Tare Weight (grams)	49.9					
	J	Wet Weight Sample + Tare (grams)	249.9					
	K	Dry Weight Sample + Tare (grams)	221.7					
	L	Weight of Dry Soil (grams) (K - H)	171.8					
	M	Weight of Moisture (grams) (J - K)	28.2					
	N	Percent Moisture (M/L) x 100%	16.4					
	P	Dry Density (lbs./ft. ³) (F / (N + 100))	103.1					

Maximum Dry Density (Proctor Density): 104.7 (lbs./ft.³) Optimum Moisture (%): 15.0%
 (From Curve) (From Curve)

Accepted By: Bay Fairley
 Level II

Moisture Density Test Data

Date	6-21-84	Sample No.	S-6 B ₂ -2
Soil Description	Ben Med Fine Grain Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	104.7		
Optimum Moisture Content %	15.8		
Curve Drawn By - Technician	Fairley		
Accepted By - Level II	Ben Fairley		



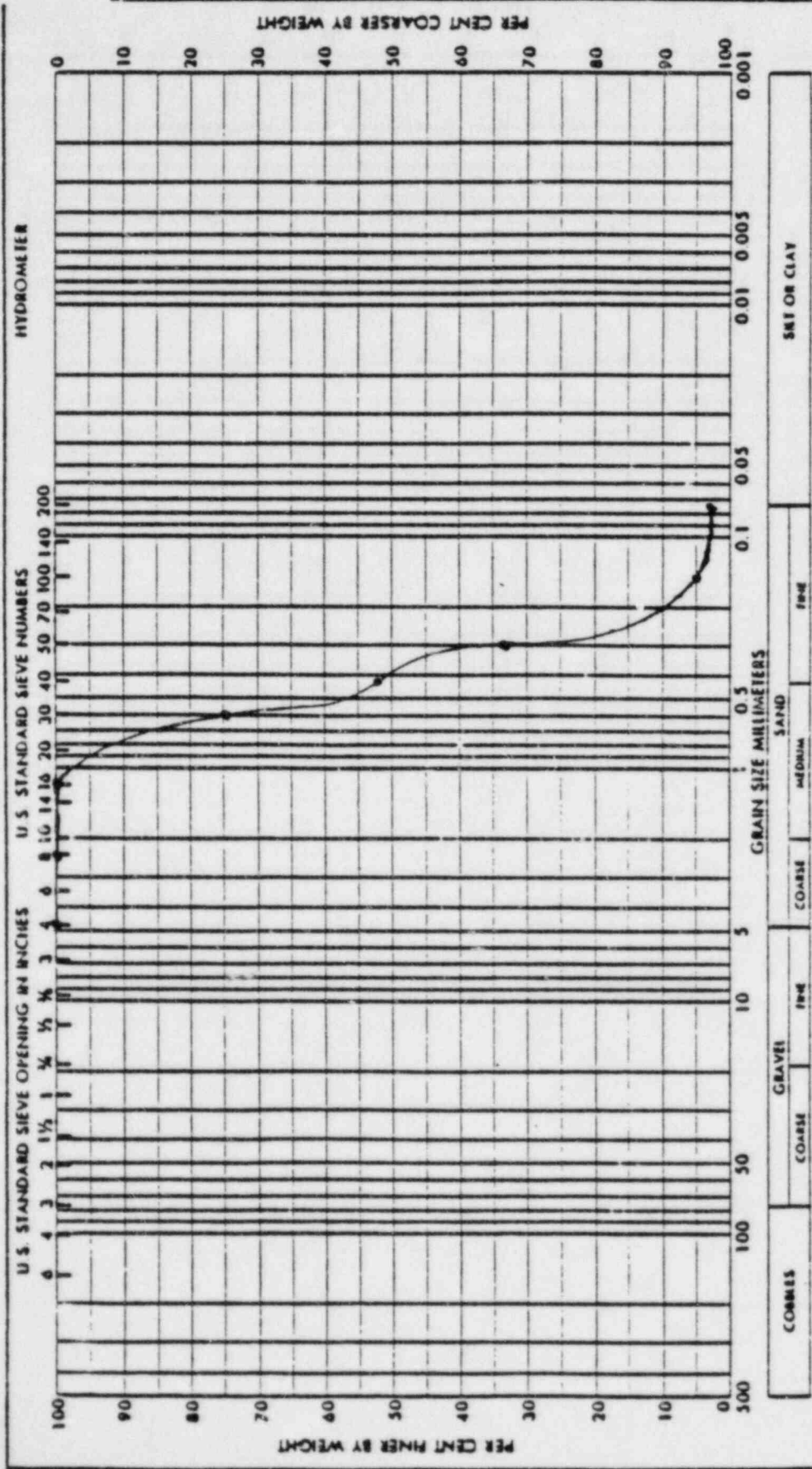
Wash 200 and Sieve Analysis

Date	6-24-84	Test No.	S-6 B ₂ -2
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Wash 200 (ASTM D1140) Inspector	L.V. Blm	Scale No.	C-2550	Sieve No.	2378 / C1546
Oven Dry Weight Before Wash (grams)	560.8	Oven Dry Weight After Wash (grams)	542.9	% Passing 200 Sieve	3.3
Sieve Analysis (ASTM D422) Inspector	Capolank	Scale No.	C 2550	Oven No.	C 292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0	0	100.0
8	C344	0	0	100.0
16	C343	2.1	0.4	99.6
30	C379	143.4	25.6	74.4
40	C380	266.3	47.5	52.5
50	C860	365.9	65.2	34.8
100	C2514	531.7	94.8	5.2
200	C384	543.1	96.8	3.2
Pan	N/A	542.8		
Total	N/A	560.8		

Accepted By: W.C. Eubank Level II Date: 6-25-84



PROJECT		Vogtle				
AREA						
BORING NO		S-6 Beg 2				
DATE		6-25-84				
GRADATION CURVES						

Proctor Sheet

Date	6-21-84	Sample Description	Br. Med Fine Grain
Inspector	Pice * Goins		Silty Sand
Pound Scale Used #	C-3371	Gram Scale Used #	C-2407
Proctor No.	S-7 Bag 2	Hammer Control No	C-2410
Method	D-1557 A	Mold	C-252
		Oven	C-292

* C-2409
*

		1	2	3	4	5	6	7	
Wet Density Determination	A	Weight Mold (lbs.)	9.29	9.29	9.29	9.29	9.29	9.36	9.29
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30	30
	C	Water Added (ml.)	100	150	200	250	300	350	400
	D	Weight Soil and Mold (lbs.)	12.98	13.07	13.15	13.24	13.34	13.48	13.45
Moisture Content Determination	E	Weight of Soil (lbs.) (D - A)	3.69	3.78	3.86	3.95	4.05	4.12	4.16
	F	Wet Density (lbs./ft. ³) (B x E)	110.7	113.4	115.8	118.5	121.5	123.6	124.8
	G	Tare Number	AA1	AA2	AA3	AA4	AA5	E2	AA7
	H	Tare Weight (grams)	47.8	47.9	48.5	47.6	47.9	48.3	47.8
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	248.3	250.0
	K	Dry Weight Sample + Tare (grams)	242.4	238.8	235.2	231.8	228.2	224.0	222.9
	L	Weight of Dry Soil (grams) (K - H)	194.6	190.9	186.7	184.2	180.3	175.7	175.1
	M	Weight of Moisture (grams) (J - K)	7.6	11.2	14.8	18.2	21.8	24.3	27.1
	N	Percent Moisture (M/L) x 100%	3.9	5.8	7.9	9.9	12.1	13.8	15.5
	P	Dry Density (lbs./ft. ³) (F / (N + 100))	106.5	107.1	107.3	107.8	108.4	108.6	108.1

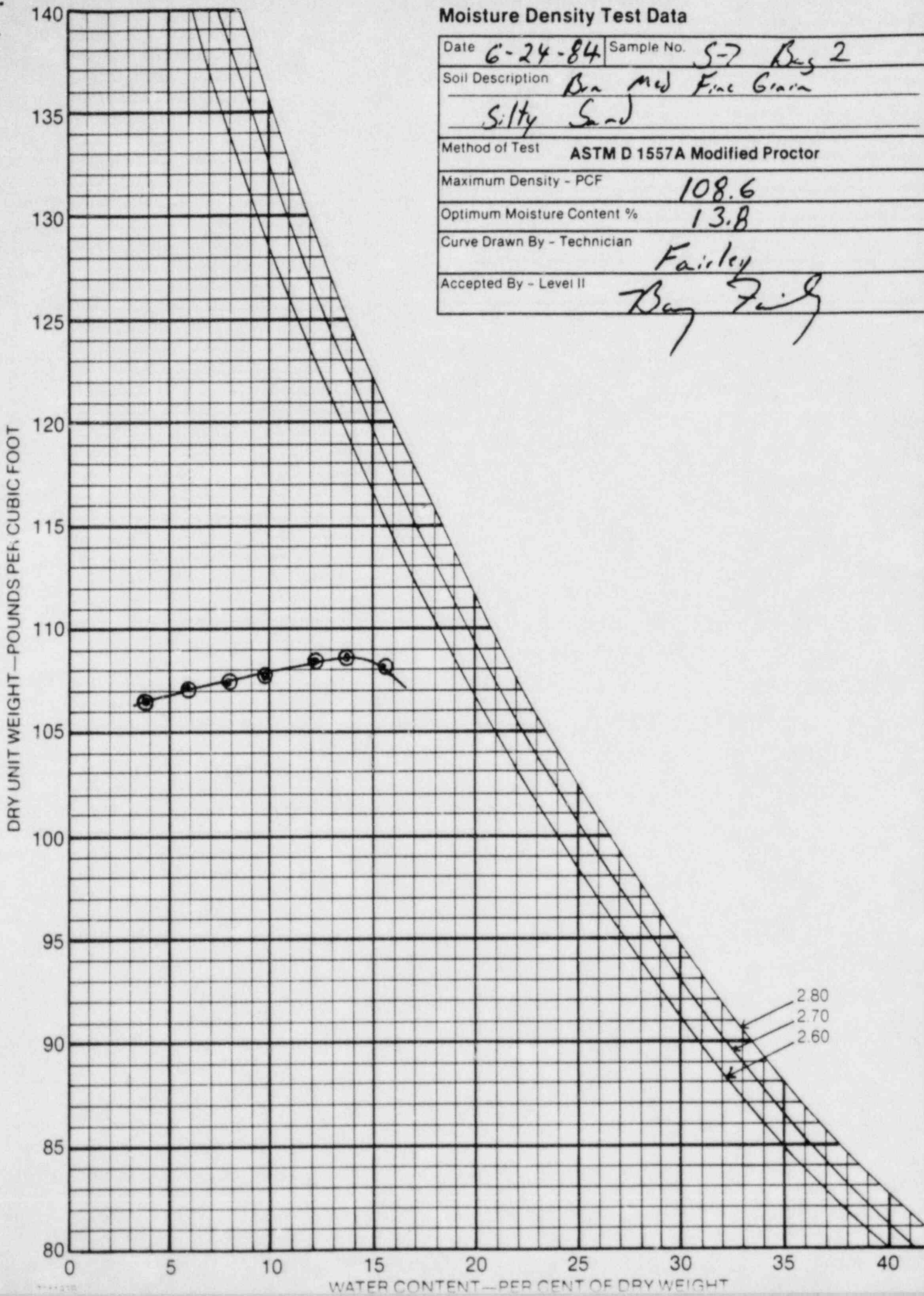
Maximum Dry Density (Proctor Density): 108.6 (lbs./ft.³) Optimum Moisture (%): 13.8
(From Curve) (From Curve)

Accepted By: Big Fish
Level II
A-1 AA-3 (Match up Sample 6)

X1	X2	X3	X4	X5	X6	X7
250.0	250.0	250.0	250.0	250.0	250.0	250.9
242.1	238.5	235.4	232.0	227.9	222.0	225.4
49.1	49.1	49.4	49.0	49.2	49.9	48.5
193.0	189.4	186.0	183.0	178.7	172.1	176.9
7.9	11.5	14.6	18.0	22.1	28.0	25.5
4.1	6.1	7.0	9.8	12.4	16.2	14.1

Moisture Density Test Data

Date	6-24-84	Sample No.	S-7 Bag 2
Soil Description	Dn med Fine Grain Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	108.6		
Optimum Moisture Content %	13.8		
Curve Drawn By - Technician	Fairley		
Accepted By - Level II	Ben Fitch		



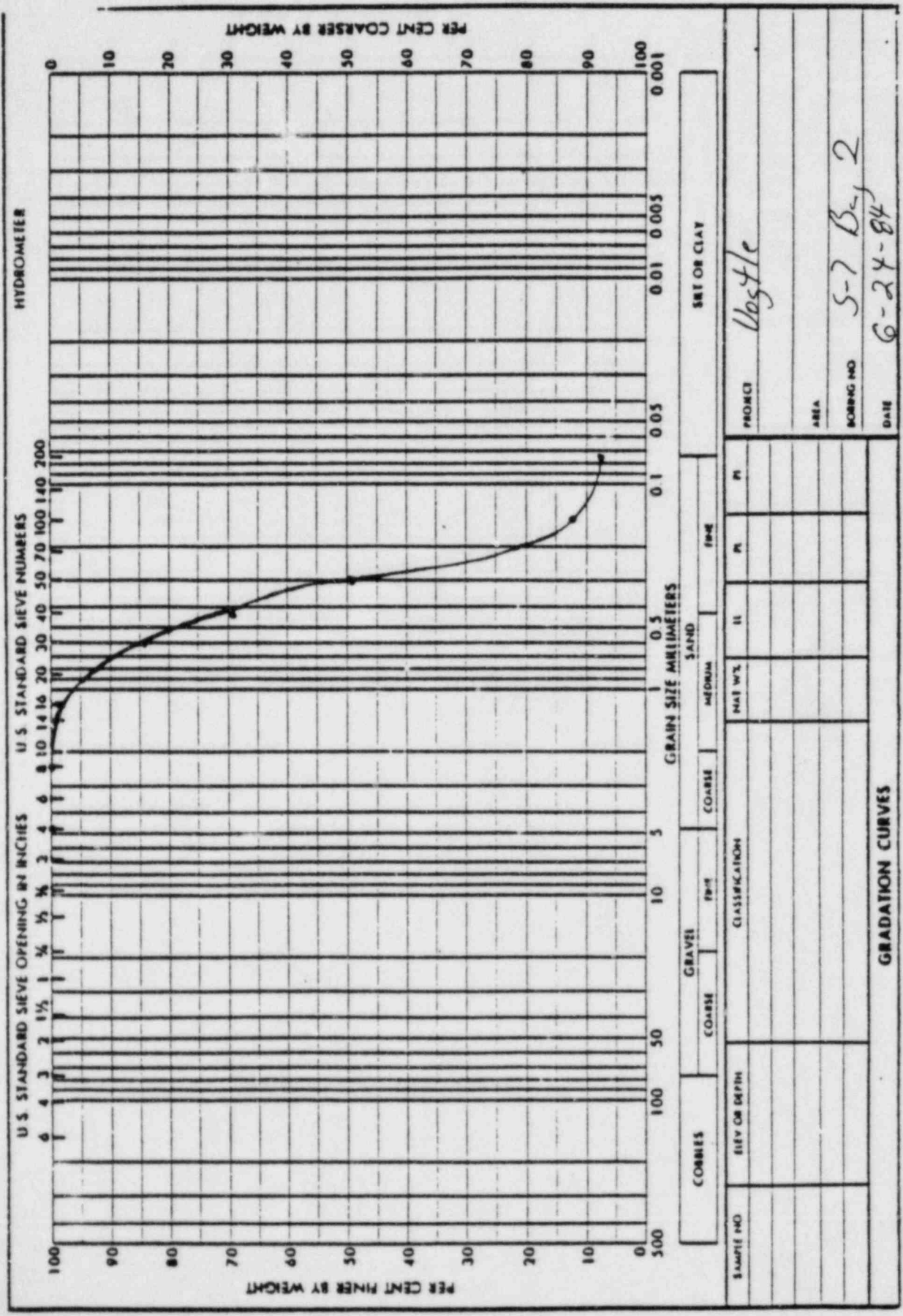
Wash 200 and Sieve Analysis

Date	6-24-84	Test No.	S7 BAG 2
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Wash 200 (ASTM D1140) Inspector	L.V. Alvis	Scale No.	C 2550	Sieve No.	C 378 C 1546
Oven Dry Weight Before Wash (grams)	560.0	Oven Dry Weight After Wash (grams)	518.8	% Passing 200 Sieve	7.4
Sieve Analysis (ASTM D422) Inspector	Capeland	Scale No.	C 2550	Oven No.	C 292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C 371	0	0	100.0
8	C 344	2.1	0.4	99.6
16	C 343	10.8	1.9	98.1
30	C 379	86.2	15.4	84.6
40	C 380	170.5	30.4	69.6
50	C 860	282.4	50.4	49.6
100	C 2514	493.6	88.1	11.9
200	C 384	518.5	92.6	7.4
Pan	N/A	518.7		
Total	N/A	560.0		

Accepted By: W.C. Galland Level II Date: 6-25-84



U.S. STANDARD SIEVE OPENING IN INCHES U.S. STANDARD SIEVE NUMBERS HYDROMETER

PER CENT FINER BY WEIGHT GRAIN SIZE MILLIMETERS PER CENT COARSER BY WEIGHT

COBBLES		GRAVEL		FINE SAND		MEDIUM SAND		FINE		SILT OR CLAY	
COARSE	FINE	COARSE	FINE	COARSE	FINE	COARSE	FINE	COARSE	FINE	COARSE	FINE
CLASSIFICATION											
PROJECT <i>Wastle</i>											
AREA											
BORING NO <i>S-7 B-2</i>											
DATE <i>6-24-84</i>											

GRADATION CURVES

Proctor Sheet

Date	6-21-84	Sample Description	Tan Med Fine Grain Silty
Inspector	Wilkins Moore		Sand
Pound Scale Used #	C-3371	Gram Scale Used #	C-2407
Proctor No.	59 Bag 2	Hammer Control No.	C-2410
Method	D-1557 A	Mold	C-2409
		Oven	C-292

		1	2	3	4	5	6	7	
Wet Density Determination	A	Weight Mold (lbs.)	9.36	9.36	9.36	9.36	9.36	9.36	
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30	
	C	Water Added (ml.)	150	200	250	300	350	400	450
	D	Weight Soil and Mold (lbs.)	13.19	13.25	13.36	13.44	13.52	13.56	13.59
	E	Weight of Soil (lbs.) (D - A)	3.83	3.89	4.0	4.08	4.16	4.20	4.23
	F	Wet Density (lbs./ft. ³) (B x E)	114.9	116.7	120.0	122.4	124.8	126.0	126.9
Moisture Content Determination	G	Tare Number	C-2	Y-1	Y-3	B-1	B-6	B-7	A-4
	H	Tare Weight (grams)	49.8	49.2	48.2	48.3	49.9	49.3	48.5
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	237.6	234.5	231.3	227.7	224.6	222.0	219.8
	L	Weight of Dry Soil (grams) (K - H)	187.8	185.3	183.1	179.4	174.7	172.7	171.3
	M	Weight of Moisture (grams) (J - K)	12.4	15.5	18.7	22.3	25.4	28.0	30.2
	N	Percent Moisture (M/L) x 100%	6.6	8.4	10.2	12.4	14.5	16.2	17.6
	P	Dry Density (lbs./ft. ³) (F / (N + 100))	107.8	107.7	108.9	108.9	109.0	108.4	107.9

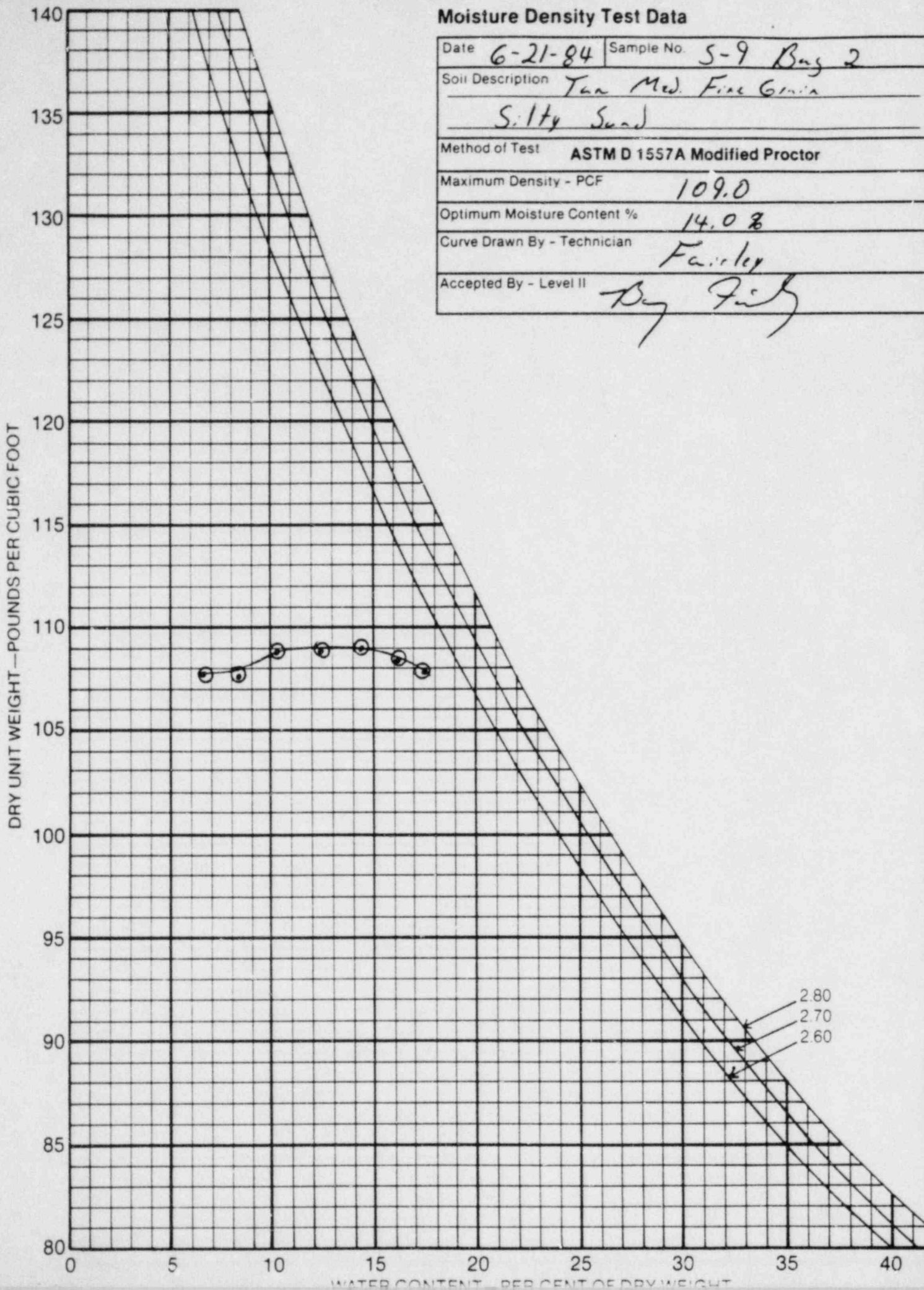
Maximum Dry Density (Proctor Density): 109.0 (lbs./ft.³) Optimum Moisture (%): 14.08
 (From Curve) (From Curve)

①	②	③	④	Accepted By:	⑤	⑥	Level 10
47.3	49.0	49.3	48	47.5	47.8	49.4	
T-3	C-3	Y-2	P-7	P-5	P-6	B-4	
250.0	250.0	250.0	250.0	250.0	250.0	250.0	
237.2	234.1	231.5	227.5	224.1	221.5	219.0	
189.9	185.1	182.2	179.5	176.6	173.7	169.6	
12.8	15.0	18.5	22.5	25.9	28.5	31.0	
6.7	8.6	10.2	12.5	14.7	16.4	18.3	

Big Fish

Moisture Density Test Data

Date	6-21-84	Sample No.	S-9 Bag 2
Soil Description	Tan Med. Fine Grained Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	109.0		
Optimum Moisture Content %	14.0%		
Curve Drawn By - Technician	Fairley		
Accepted By - Level II	By Fairley		



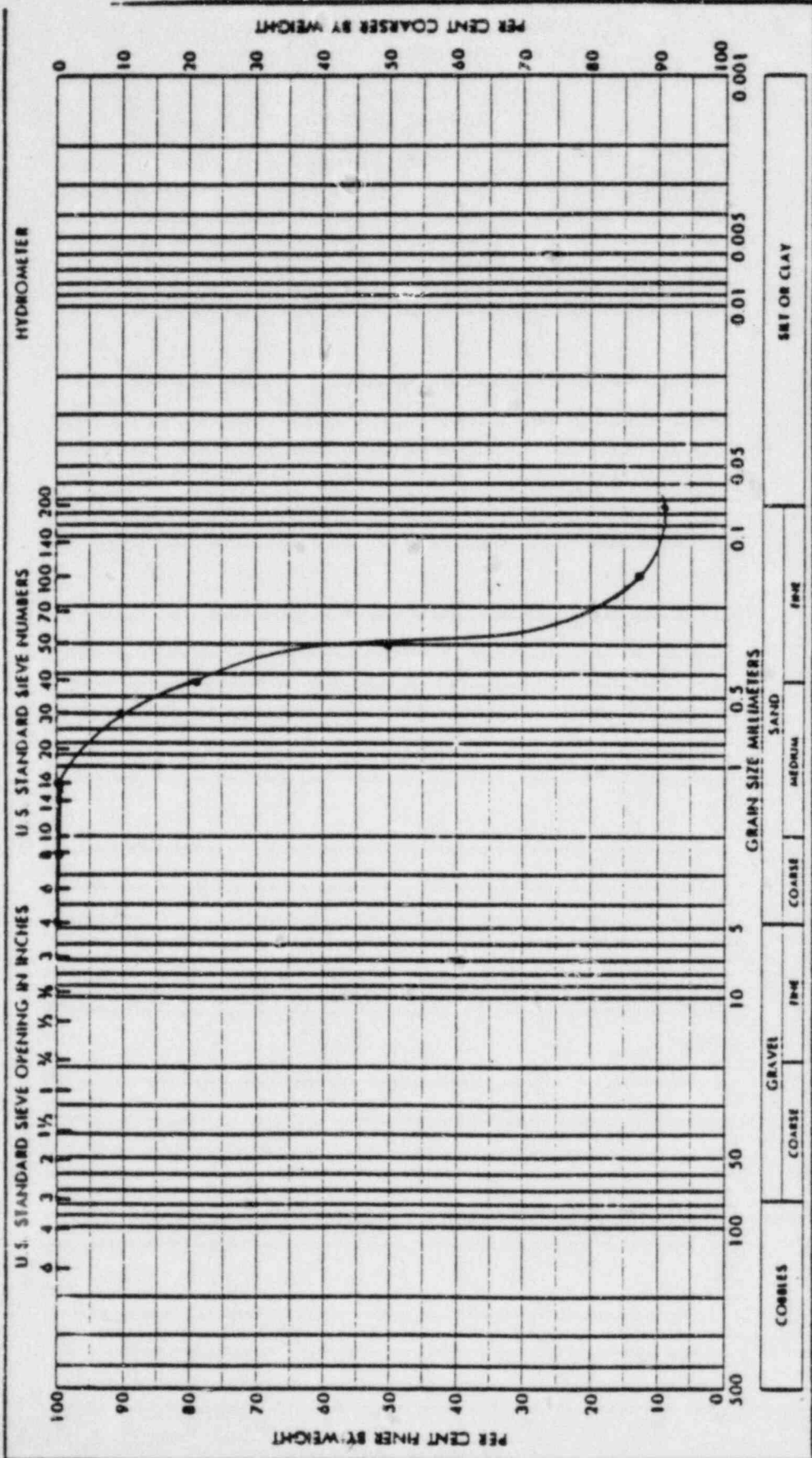
Wash 200 and Sieve Analysis

Date	6-22-84	Test No.	5-9
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Wash 200 (ASTM D1140) Inspector	Robert Mims	Scale No.	C2550	Sieve No.	C1546
Oven Dry Weight Before Wash (grams)	546.2	Oven Dry Weight After Wash (grams)	494.9	% Passing 200 Sieve	9.4
Sieve Analysis (ASTM D422) Inspector	Robert Mims	Scale No.	C2550	Oven No.	C292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0	0	100
8	C344	0.7	.1	99.9
16	C343	2.8	.5	99.5
30	C379	50.3	9.2	90.8
40	C380	115.2	21.1	78.9
50	C860	268.3	49.1	50.9
100	C2514	476.9	87.3	12.7
200	C384	494.7	90.6	9.4
Pan	NA	494.9		
Total	NA	546.2		

Accepted By: Ray Fisher Level II Date: 6-25-84



SAMPLE NO.		ELEV OR DEPTH		CLASSIFICATION		SILT OR CLAY	
						Silt or Clay	
PROJECT		AREA		BORING NO.		DATE	
Vestle				S-9		Dec 2	
						6-24-84	

GRADATION CURVES

Proctor Sheet

Date	6-20-84	Sample Description	Reddish Br. Med Grain
Inspector	P. P. Mims Robinson		S. Hy. S. - J
Pound Scale Used #	C-3371	Gram Scale Used #	C-2407
Proctor No.	S-10 Bag	Hammer Control No.	C-2410
Method	D-1557-A	Mold	C-752
			Oven C-292
		* C-2409	

		1	2	3	4	5	6	7	
	A	Weight Mold (lbs.)	9.30	9.30	9.30	9.30	9.36	9.36	
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30	
	C	Water Added (ml.)	150	200	250	300	350	400	450
Wet Density Determination	D	Weight Soil and Mold (lbs.)	13.06	13.13	13.23	13.28	13.35	13.50	13.52
	E	Weight of Soil (lbs.) (D - A)	3.76	3.83	3.93	3.98	4.05	4.14	4.16
	F	Wet Density (lbs./ft. ³) (B x E)	112.8	114.9	117.9	119.4	121.5	124.2	124.8
Moisture Content Determination	G	Tare Number	X-2	X-3	X-4	X-5	C-1	B-5	P-7
	H	Tare Weight (grams)	49.1	49.4	49.0	49.2	49.2	49.7	48.0
	J	Wet Weight Sample + Tare (grams)	250	250	250	250	250	250	250
	K	Dry Weight Sample + Tare (grams)	237.6	234.4	236.0	227.3	225.3	221.5	219.9
	L	Weight of Dry Soil (grams) (K - H)	188.5	185.0	182.0	178.1	176.1	171.8	171.9
	M	Weight of Moisture (grams) (J - K)	12.4	15.6	19.0	22.7	24.7	28.5	30.1
	N	Percent Moisture (M/L) x 100%	6.6	8.4	10.4	12.7	14.0	16.6	17.6
	P	Dry Density (lbs./ft. ³) (F / (N + 100))	105.8	106.0	106.8	105.9	106.6	106.6	106.1

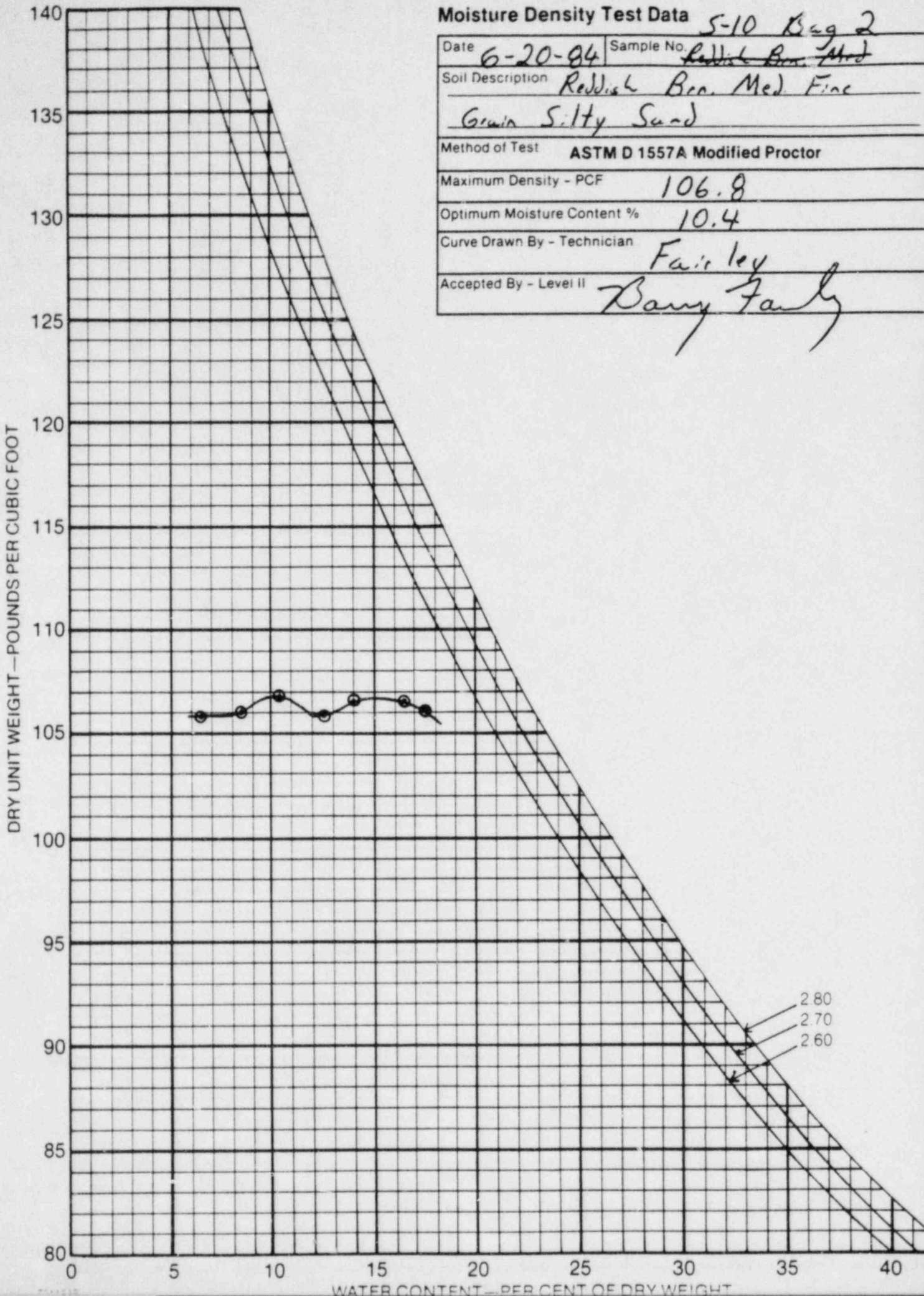
Maximum Dry Density (Proctor Density): 106.8 (lbs./ft.³) Optimum Moisture (%): 10.4
 (From Curve) (From Curve)

Accepted By: Bary Fairly

Y-2	Y-3	Y-4	Y-5	C-3	B-4	P-3 ^{Level II}
250.0	250.0	250.0	250.0	250.0	250.0	250.0
237.2	233.3	230.8	227.0	224.3	222.1	218.7
49.3	48.2	49.1	49.2	49.0	49.4	47.3
187.9	185.1	181.7	177.8	175.3	172.7	171.4
6.8	9.0	10.6	12.4	14.7	16.2	18.3

Moisture Density Test Data *5-10 Bag 2*

Date	<i>6-20-84</i>	Sample No.	<i>Reddish Brn. Med</i>
Soil Description	<i>Reddish Brn. Med. Fine Grain Silty Sand</i>		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	<i>106.8</i>		
Optimum Moisture Content %	<i>10.4</i>		
Curve Drawn By - Technician	<i>Fairley</i>		
Accepted By - Level II	<i>Barry Fairley</i>		



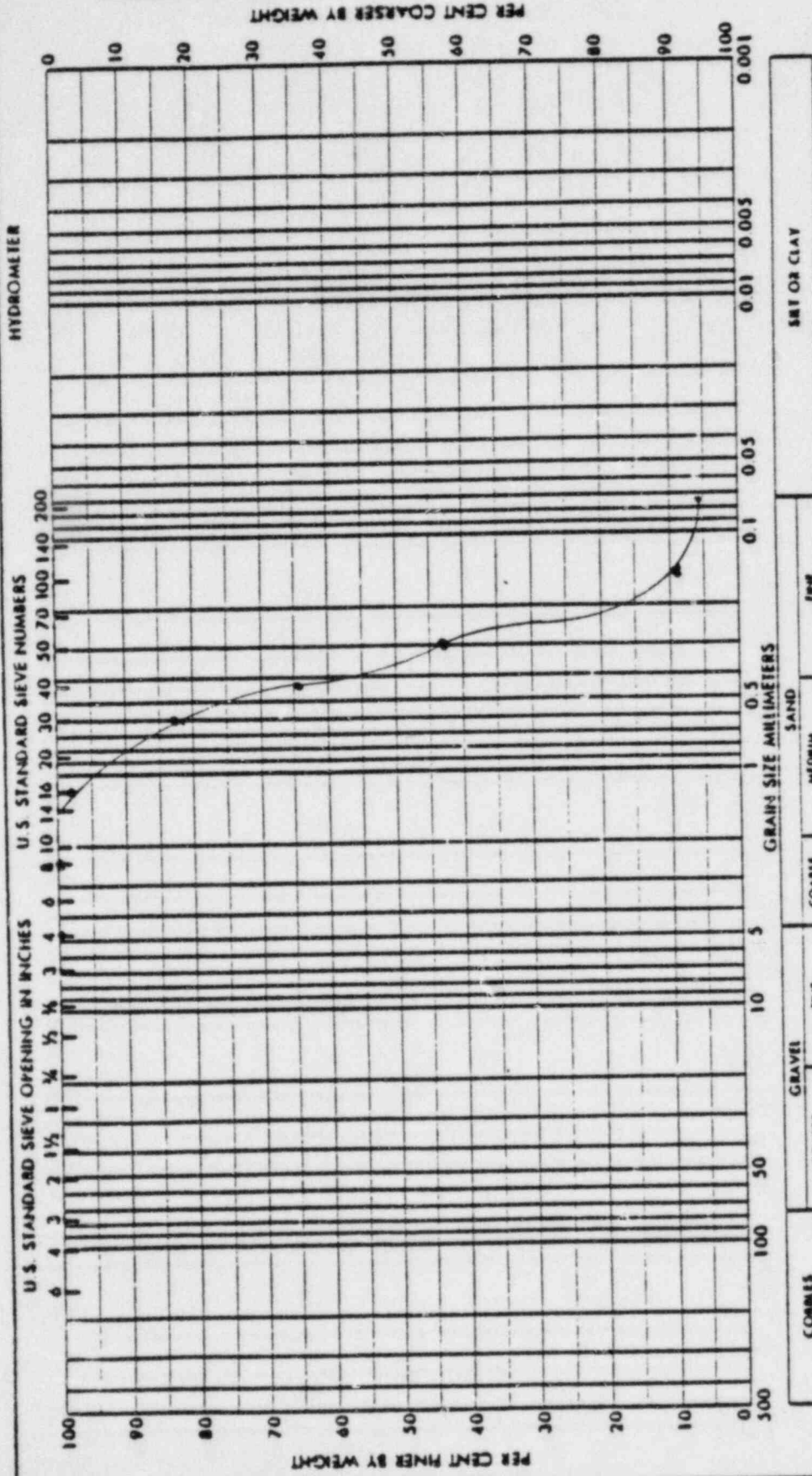
Wash 200 and Sieve Analysis

Date	6-24-84	Test No.	S-10 Bag 2
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Wash 200 (ASTM D1140) Inspector	L.V. Almi	Scale No.	C2550	Sieve No.	C378/ C1546
Oven Dry Weight Before Wash (grams)	530.3	Oven Dry Weight After Wash (grams)	501.1	% Passing 200 Sieve	5.855
Sieve Analysis (ASTM D422) Inspector	Cape/And	Scale No.	C2407	Oven No.	C292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0 2.6 ^{2.6} C-25-84	0	100.0
8	C344	2.6	.5	99.5
16	C343	12.4	2.3	97.7
30	C379	94.5	17.8	82.2
40	C380	187.1	35.3	64.7
50	C860	301.1	56.8	43.2
100	C2514	483.9	91.3	8.7
200	C384	500.6	94.4	5.6
Pan	N/A	501.1		
Total	N/A	530.3		

Accepted By: W.C. Eubank Level II Date: 6-25-84



SAMPLE NO		ELEV OR DEPTH		CLASSIFICATION		PERCENT FINER		PERCENT COARSER	
						COARSE	FINE	COARSE	FINE
AREA		BORING NO		DATE		PROJECT			
		S-10		6-24-84		Ug He			
		B-2							

GRADATION CURVES

Proctor Sheet

Date 6-20-84	Sample Description REDDISH BROWN	
Inspector Potter, Mims	MEDIUM TO FINE GRAIN	
Pound Scale Used # C-3371	Gram Scale Used # C-2407	
Proctor No. S-11 BA92	Hammer Control No. C-2410	
Method D. 1557A	Mold C-2409	Oven C-292

		1	2	3	4	5	6	7	
	A	Weight Mold (lbs.)	9.37	9.37	9.37	9.37	9.37	9.37	
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30	
	C	Water Added (ml.)	100	150	200	250	300	350	400
Wet Density Determination	D	Weight Soil and Mold (lbs.)	13.27	13.36	13.41	13.49	13.59	13.72	13.78
	E	Weight of Soil (lbs.) (D - A)	3.90	3.99	4.04	4.12	4.22	4.35	4.41
	F	Wet Density (lbs./ft. ³) (B x E)	117.0	119.7	121.2	123.6	126.6	130.5	132.3
Moisture Content Determination	G	Tare Number	R-1	R-2	R-3	R-4	R-5	E-1	E-2
	H	Tare Weight (grams)	48.5	48.5	47.9	47.3	47.4	49.2	48.3
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	241.2	237.8	234.8	230.9	228.0	224.9	222.0
	L	Weight of Dry Soil (grams) (K - H)	192.7	189.3	186.9	183.6	180.6	175.7	173.7
	M	Weight of Moisture (grams) (J - K)	8.8	12.2	15.2	19.1	22.0	25.1	28.0
	N	Percent Moisture (M/L) x 100%	4.6	6.4	8.1	10.4	12.2	14.3	16.1
P	Dry Density (lbs./ft. ³) (F/(N + 100))	111.8	112.5	112.1	112.0 ^W 112.0	112.8	114.2	114.0 ^W 113.0	

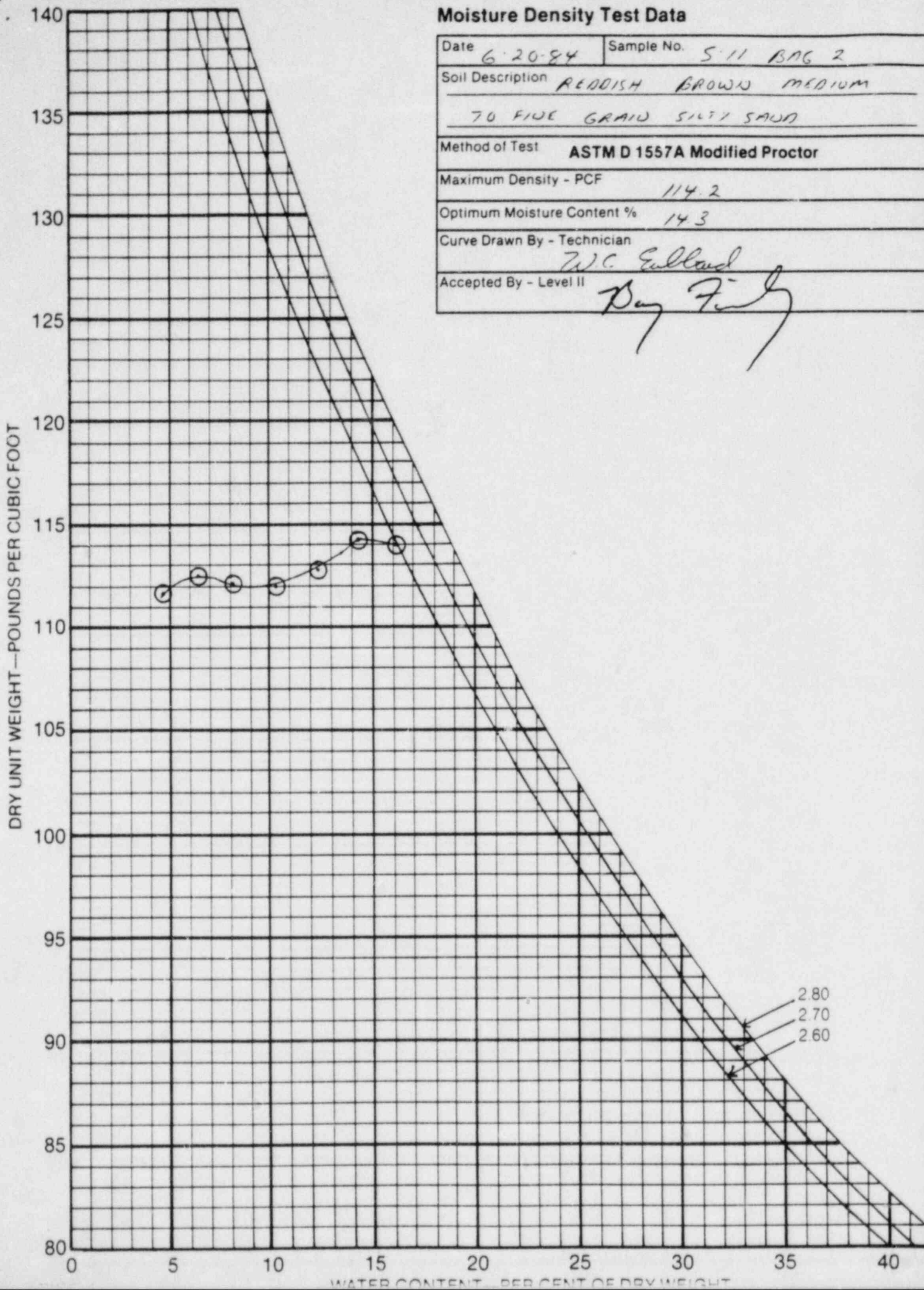
Maximum Dry Density (Proctor Density): 114.2 (lbs./ft.³) Optimum Moisture (%): 14.3
(From Curve) (From Curve)

Accepted By: Ray Finley
Level II

T-1	T-2	T-3	T-4	T-5	E-3	E-4
250.0	250.0	250.0	250.0	250.0	250.0	250.0
240.9	238.2	234.4	231.0	227.8	224.8	221.6
47.8	48.3	47.3	47.8	48.2	49.9	49.0
193.1	189.9	187.1	183.2	179.6	174.9	172.6

Moisture Density Test Data

Date	6-20-84	Sample No.	S-11 BAG 2
Soil Description	REDDISH BROWN MEDIUM 70 FINE GRAIN SILTY SAND		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	114.2		
Optimum Moisture Content %	14.3		
Curve Drawn By - Technician	W.C. Euland		
Accepted By - Level II	Dey F...		



Wash 200 and Sieve Analysis

Date	6-22-84	Test No.	S-11
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Wash 200 (ASTM D1140) Inspector <i>Robert Mims</i>	Scale No. C2550	Sieve No. C1546
Oven Dry Weight Before Wash (grams) 512.1	Oven Dry Weight After Wash (grams) 462.8	% Passing 200 Sieve 9.6
Sieve Analysis (ASTM D422) Inspector <i>Robert Mims</i>	Scale No. C2550	Oven No. C292

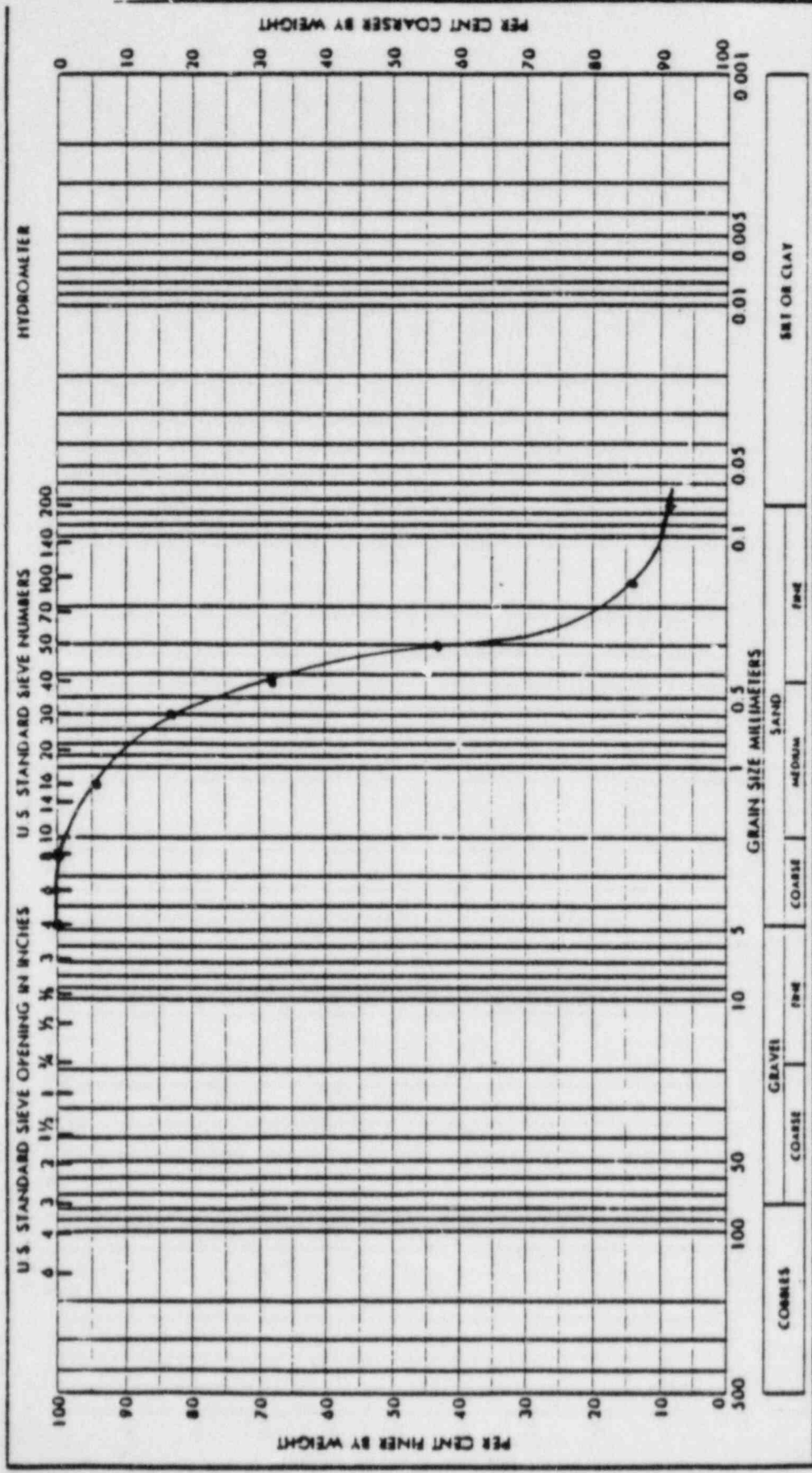
Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0	0	100
8	C344	4.9	1.0	99.0
16	C343	28.7	5.6	94.4
30	C379	86.7	16.9	83.1
40	C350	164.6	32.1	67.9
50	C860	303.1	59.2	43.8
100	C2514	437.3	85.4	14.6
200	C384	462.3	90.3	9.7
Pan	NA	462.7		
Total	NA	512.1		

Accepted By:

Ray Fair
Level II

6-24-84

Date



COMBES	GRAVEL	COARSE	FINE	COARSE	FINE	SAND	SBT OR CLAY
SAMPLE NO	CLASSIFICATION			NAT W%	FI	FI	FI
ELEV OR DEPTH							
GRADATION CURVES							
PROJECT <i>Ugale</i>							
AREA							
BORING NO <i>Sample S-11 B_s 2</i>							
DATE <i>6-24-80</i>							

Proctor Sheet

Date	6-20-84	Sample Description	DEEP RFD FINE GRAIN	
Inspector	PERKINS, M.M.S.		SILTY SAND	
Pound Scale Used #	C-3371	Gram Scale Used #	C-2407	
Proctor No.	5-12 - BA92	Hammer Control No	C-2410	
Method	D 1557 A	Mold	C-752	Oven C-292

		1	2	3	4	5	6	7	
Wet Density Determination	A	Weight Mold (lbs.)	9.30	9.30	9.30	9.30	9.30	9.30	
	B	Mold Volume Factor (Volume)	30	30	30	30	30	30	
	C	Water Added (ml.)	100	150	200	250	300	350	400
	D	Weight Soil and Mold (lbs.)	13.08	13.20	13.28	13.32	13.43	13.48	13.55
	E	Weight of Soil (lbs.) (D - A)	3.78	3.90	3.98	4.02	4.13	4.18	4.25
	F	Wet Density (lbs./ft. ³) (B x E)	113.4	117.0	119.4	120.6	123.9	125.4	127.5
Moisture Content Determination	G	Tare Number	AA-1	AA-2	AA-3	AA-4	AA-5	AA-6	AA-7
	H	Tare Weight (grams)	478	479	48.5	47.6	47.9	46.8	478
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	240.9	237.4	234.0	230.5	227.4	224.6	221.9
	L	Weight of Dry Soil (grams) (K - H)	193.1	189.5	185.5	182.9	179.5	177.8	174.1
	M	Weight of Moisture (grams) (J - K)	9.1	12.6	16.0	19.5	22.6	25.4	28.1
	N	Percent Moisture (M/L) x 100%	4.7	6.6	8.6	10.7	12.6	14.3	16.1
	P	Dry Density (lbs./ft. ³) (F / (N + 100))	108.3	109.8	109.9	108.9	110.0	109.7	109.8

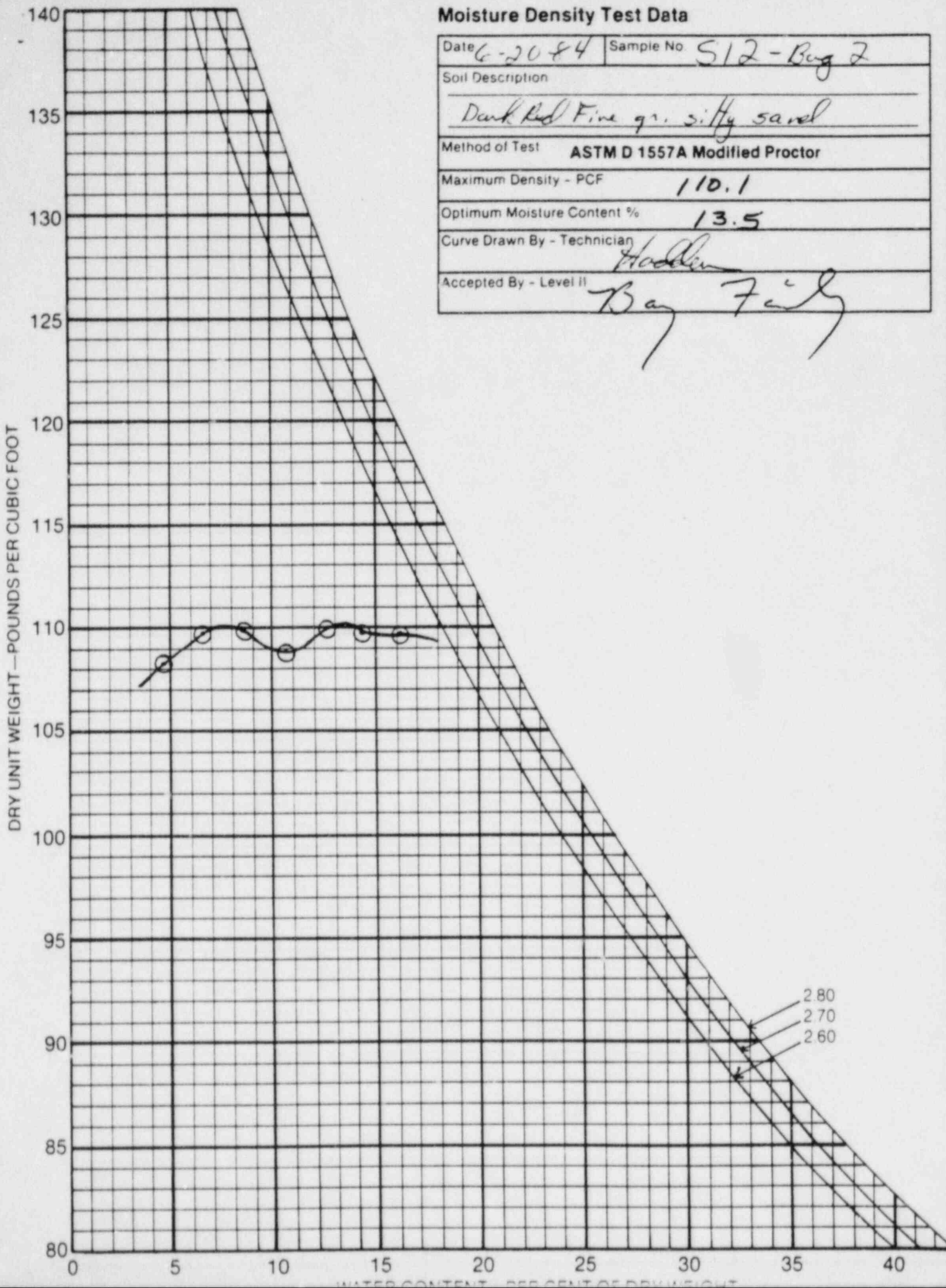
Maximum Dry Density (Proctor Density): 110.1 (lbs./ft.³) Optimum Moisture (%): 13.5
 (From Curve) (From Curve)

Accepted By: [Signature]
 Level II

BB-1	BB-2	BB-3	BB-4	BB-5	BB-6	BB-7
250.0	250.0	250.0	250.0	250.0	250.0	250.0
240.5	237.3	234.6	230.3	226.7	224.5	221.6
49.2	49.0	48.4	48.9	49.2	49.0	45.5
191.3	189.3	186.2	181.4	177.5	175.5	176.1
9.5	12.7	15.4	19.7	23.3	25.5	28.4
5.0	6.7	8.3	10.9	13.1	14.5	16.1

Moisture Density Test Data

Date	6-20-84	Sample No	S12-Bug 7
Soil Description			
Dark Red Fine gr. silty sand			
Method of Test			
ASTM D 1557A Modified Proctor			
Maximum Density - PCF			
110.1			
Optimum Moisture Content %			
13.5			
Curve Drawn By - Technician			
Hadden			
Accepted By - Level II			
Bay Field			



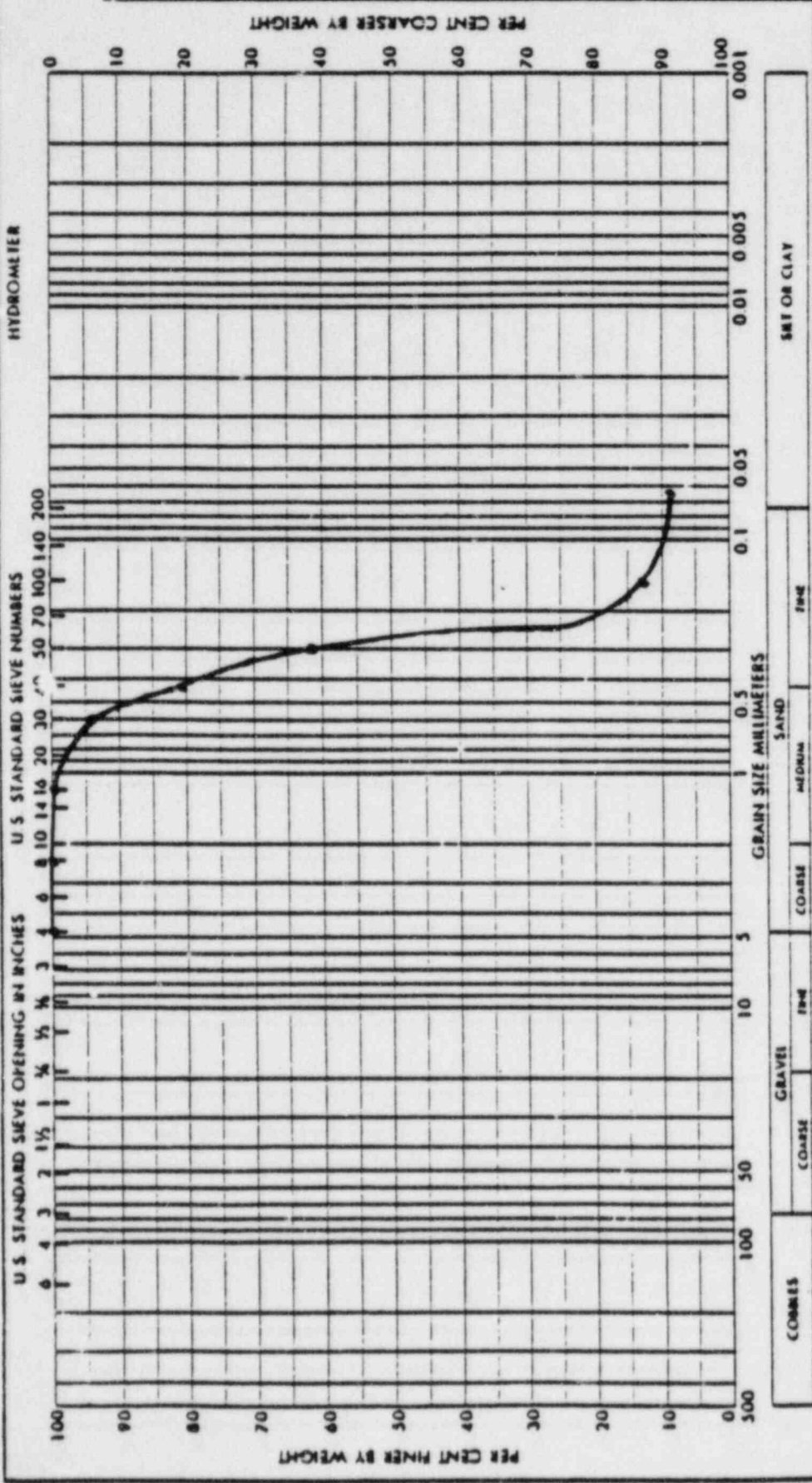
Wash 200 and Sieve Analysis

Date 6-22-84 Test No. S-12

Wash 200 (ASTM D1140) Inspector <i>Robert Mims</i>	Scale No. <i>C2550</i>	Sieve No. <i>C1546</i>
Oven Dry Weight Before Wash (grams) <i>545.4</i>	Oven Dry Weight After Wash (grams) <i>494.7</i>	% Passing 200 Sieve <i>9.3</i>
Sieve Analysis (ASTM D422) Inspector <i>Robert Mims</i>	Scale No. <i>02550</i>	Oven No. <i>C292</i>

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	<i>C371</i>	<i>0</i>	<i>0</i>	<i>100</i>
8	<i>C344</i>	<i>0</i>	<i>0</i>	<i>100</i>
16	<i>C343</i>	<i>0.9</i>	<i>.2</i>	<i>99.8</i>
30	<i>C379</i>	<i>33.5</i>	<i>6.1</i>	<i>93.9</i>
40	<i>C380</i>	<i>103.9</i>	<i>19.1</i>	<i>80.9</i>
50	<i>C860</i>	<i>200.6</i>	<i>36.8</i>	<i>63.2</i>
100	<i>C2514</i>	<i>472.2</i>	<i>86.6</i>	<i>13.4</i>
200	<i>C384</i>	<i>494.5</i>	<i>90.7</i>	<i>9.3</i>
Pan	<i>NA</i>	<i>494.7</i>		
Total	<i>NA</i>	<i>545.4</i>		

Accepted By: *Don Fitch* *6-24-84*
Level II Date



SAMPLE NO		ELEV OR DEPTH		CLASSIFICATION		NAT WZ		SAND		FINE		SILT OR CLAY			
PROJECT				AREA				BORING NO				DATE			
Uoylc				S-12 Bay 2				6-24-84							

GRADATION CURVES

Proctor Sheet

Date 6-20-84	Sample Description REDDISH TO TAN
Inspector Pastor Mims	FINE GRAIN SILTY SAND
Pound Scale Used # C-3371	Gram Scale Used # C-2407
Proctor No. S-13 BAG 2	Hammer Control No. C-2410
Method D1557A	Mold C-2409 Oven C-292

		1	2	3	4	5	6	7	
	A	Weight Mold (lbs.)	9.37	9.37	9.37	9.37	9.37	9.37	
	B	Mold Volume Factor ($\frac{Volume}{Volume}$)	30	30	30	30	30	30	
	C	Water Added (ml.)	100	150	200	250	300	350	400
Wet Density Determination	D	Weight Soil and Mold (lbs.)	13.13	13.23	13.30	13.34	13.49	13.56	13.60
	E	Weight of Soil (lbs.) (D - A)	3.76	3.86	3.93	3.97	4.12	4.19	4.23
	F	Wet Density (lbs./ft. ³) (B x E)	112.8	115.8	117.9	119.1	123.6	125.7	126.9
Moisture Content Determination	G	Tare Number	A-1	A-2	A-3	A-4	A-5	A-6	A-7
	H	Tare Weight (grams)	49.9	47.8	46.9	48.5	47.9	48.5	220.4
	J	Wet Weight Sample + Tare (grams)	250.0	250.0	250.0	250.0	250.0	250.0	250.0
	K	Dry Weight Sample + Tare (grams)	240.6	236.5	233.0	250.0	226.7	223.5	220.4
	L	Weight of Dry Soil (grams) (K - H)	190.7	188.7	186.1	181.5	178.8	175.0	171.9
	M	Weight of Moisture (grams) (J - K)	9.4	13.5	17.0	20.0	23.3	26.5	29.6
	N	Percent Moisture (M/L) x 100%	4.9	7.2	9.1	11.0	13.0	15.1	17.2
	P	Dry Density (lbs./ft. ³) (F/(N + 100))	107.5	108.0	108.1	107.3	109.4	109.2	108.3

Maximum Dry Density (Proctor Density):

109.5

(lbs./ft.³)

Optimum Moisture (%):

13.5

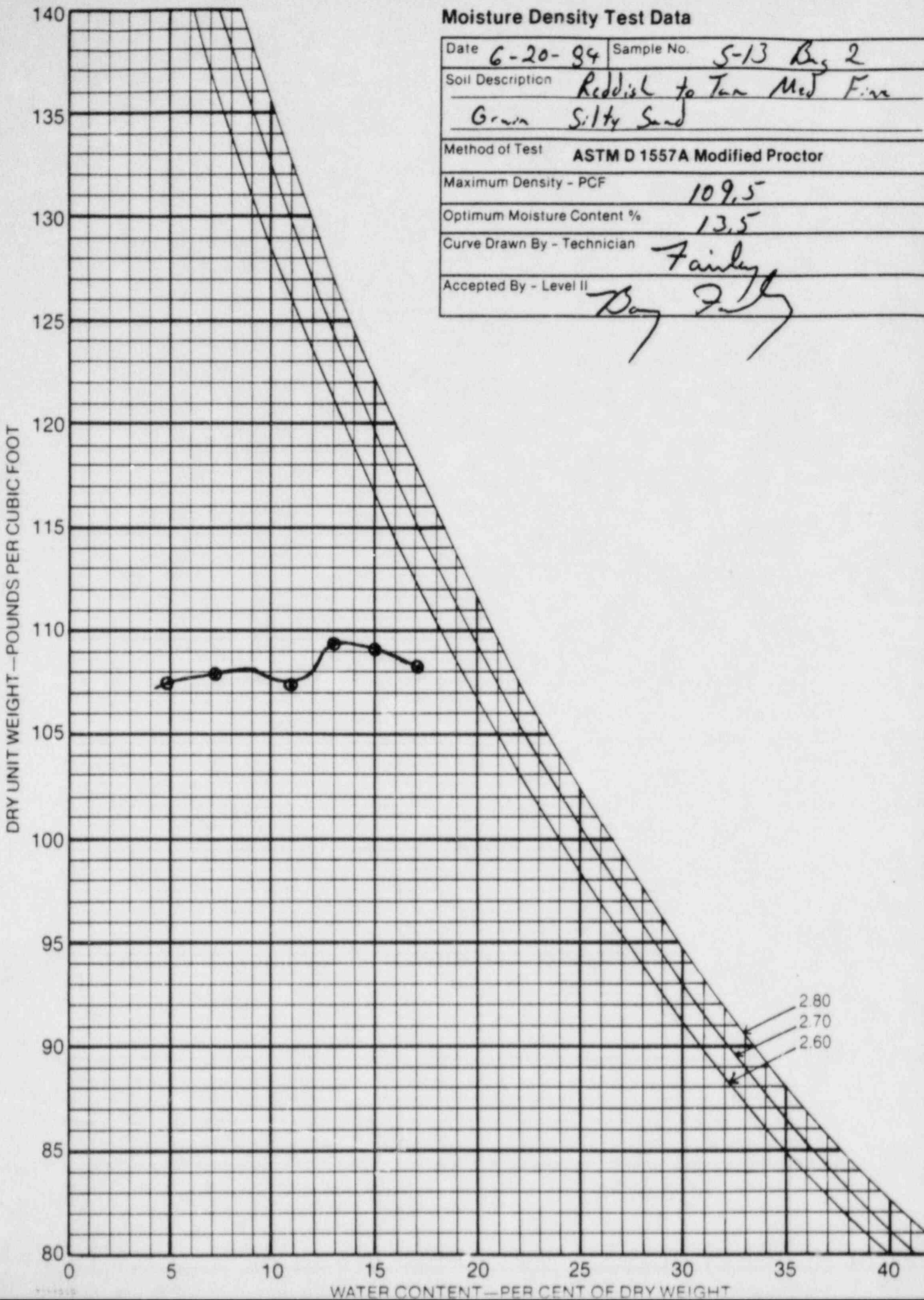
Accepted By:

Ben Fink
Level II

B-1	B-2	B-3	B-4	B-5	B-6	B-7
250	250	250	250	250	250	250
240.5	236.5	232.5	230.0	226.1	223.5	220.0
48.3	49.1	48.3	49.4	49.7	49.9	49.3
192.2	187.4	184.2	20.0	176.4	173.6	170.7
9.5	13.5	17.5	180.6	23.9	26.5	30
4.9	7.2	9.5	11.0	13.5	15.3	17.6

Moisture Density Test Data

Date	6-20-94	Sample No.	S-13 Bag 2
Soil Description	Reddish to Tan Med Fine Grain Silty Sand		
Method of Test	ASTM D 1557A Modified Proctor		
Maximum Density - PCF	109.5		
Optimum Moisture Content %	13.5		
Curve Drawn By - Technician	Fairley		
Accepted By - Level II	Dag 9.5		



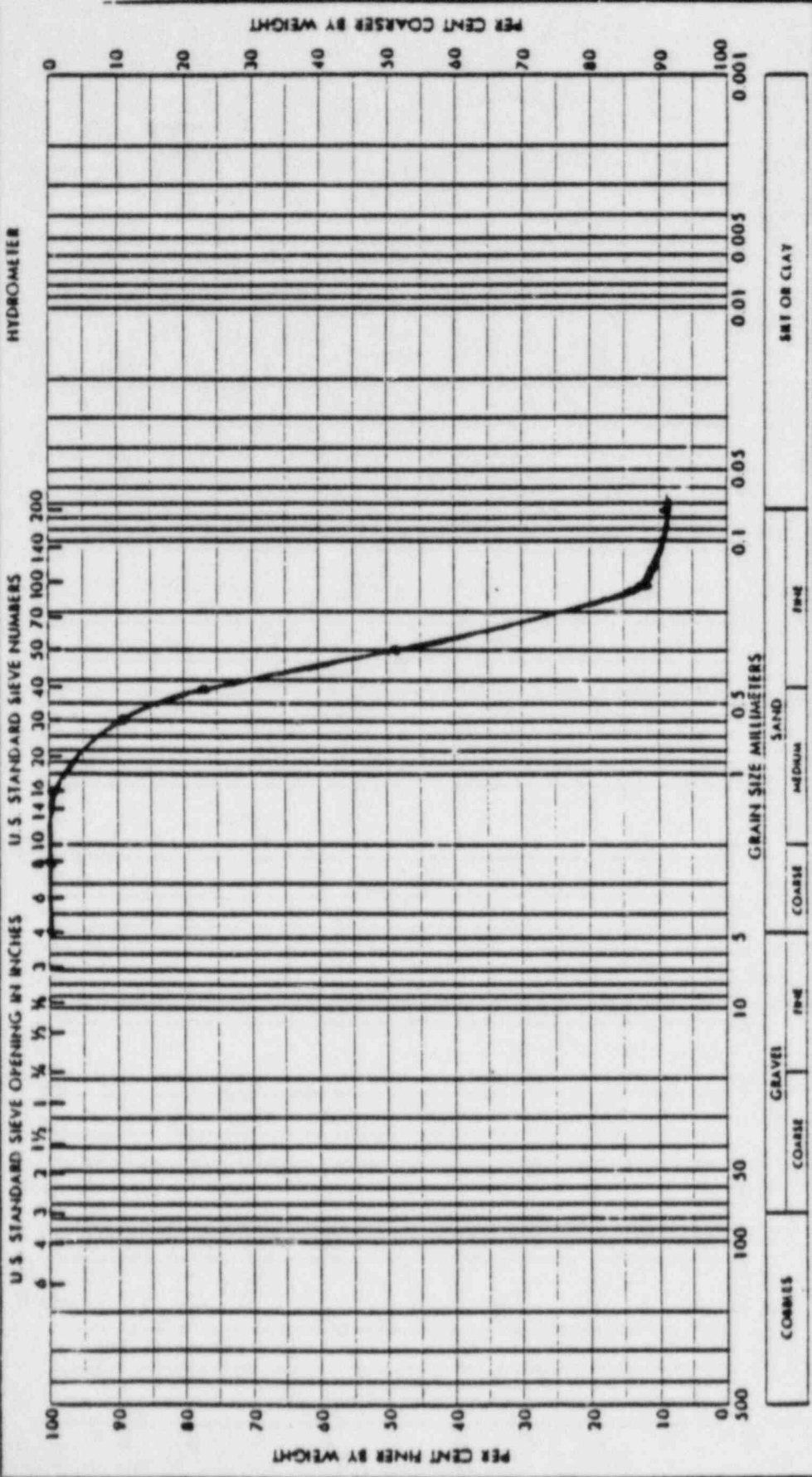
Wash 200 and Sieve Analysis

Date	6-22, 84	Test No.	S 13
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Wash 200 (ASTM D1140) Inspector	Robert Mims	Scale No.	C2550	Sieve No.	C1546
Oven Dry Weight Before Wash (grams)	533.1	Oven Dry Weight After Wash (grams)	483.1	% Passing 200 Sieve	9.4
Sieve Analysis (ASTM D422) Inspector	Robert Mims	Scale No.	C2550	Oven No.	C292

Sieve Size	Control No.	Cum. Wt. Retained	% Total Retained	% Total Passing
No. 4	C371	0	0	100
8	C344	0.5	.1	99.9
16	C343	3.2	.6	99.4
30	C379	55.3	10.4	89.6
40	C380	123.3	23.1	76.9
50	C860	273.9	51.4	48.6
100	C25.14	466.5	87.5	RM 6-22-84 12.5
200	C384	482.7	90.5	9.5
Pan	NA	483.1	RM 6-22-84	
Total	NA	533.1		

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 Accepted By: Bob Fairly Level II Date: 6-24-84



COMBES		GRAVEL		SAND			SILT OR CLAY	
COARSE	FINE	COARSE	FINE	MEDIUM	FINE	FINE	PI	
Sample No		CLASSIFICATION						
ELEV OR DEPTH								
		PROJECT: <i>Weslye</i>			AREA:			
		BORING NO: <i>S-13 B₂</i>			DATE: <i>6-24-84</i>			
GRADATION CURVES								