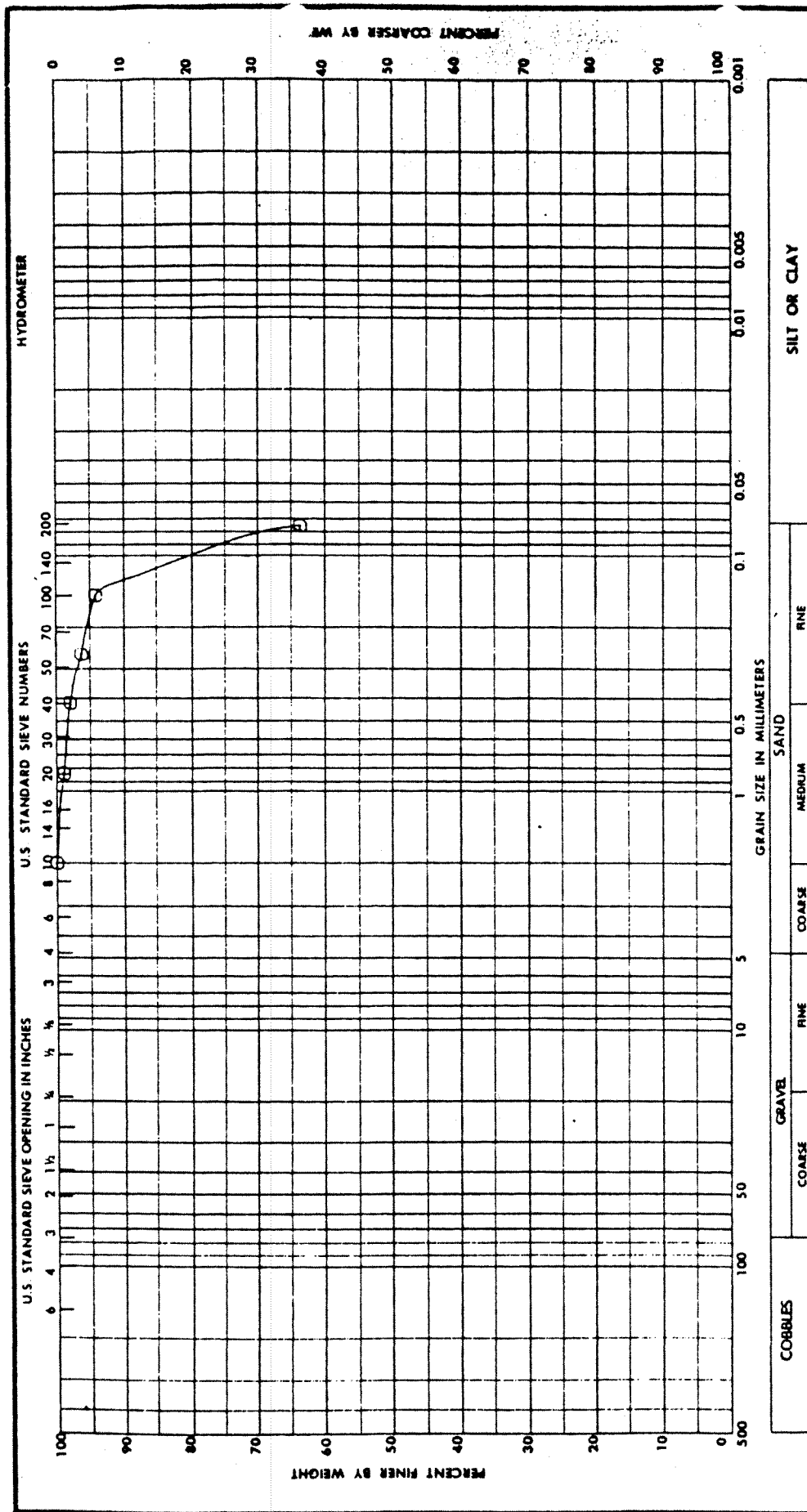


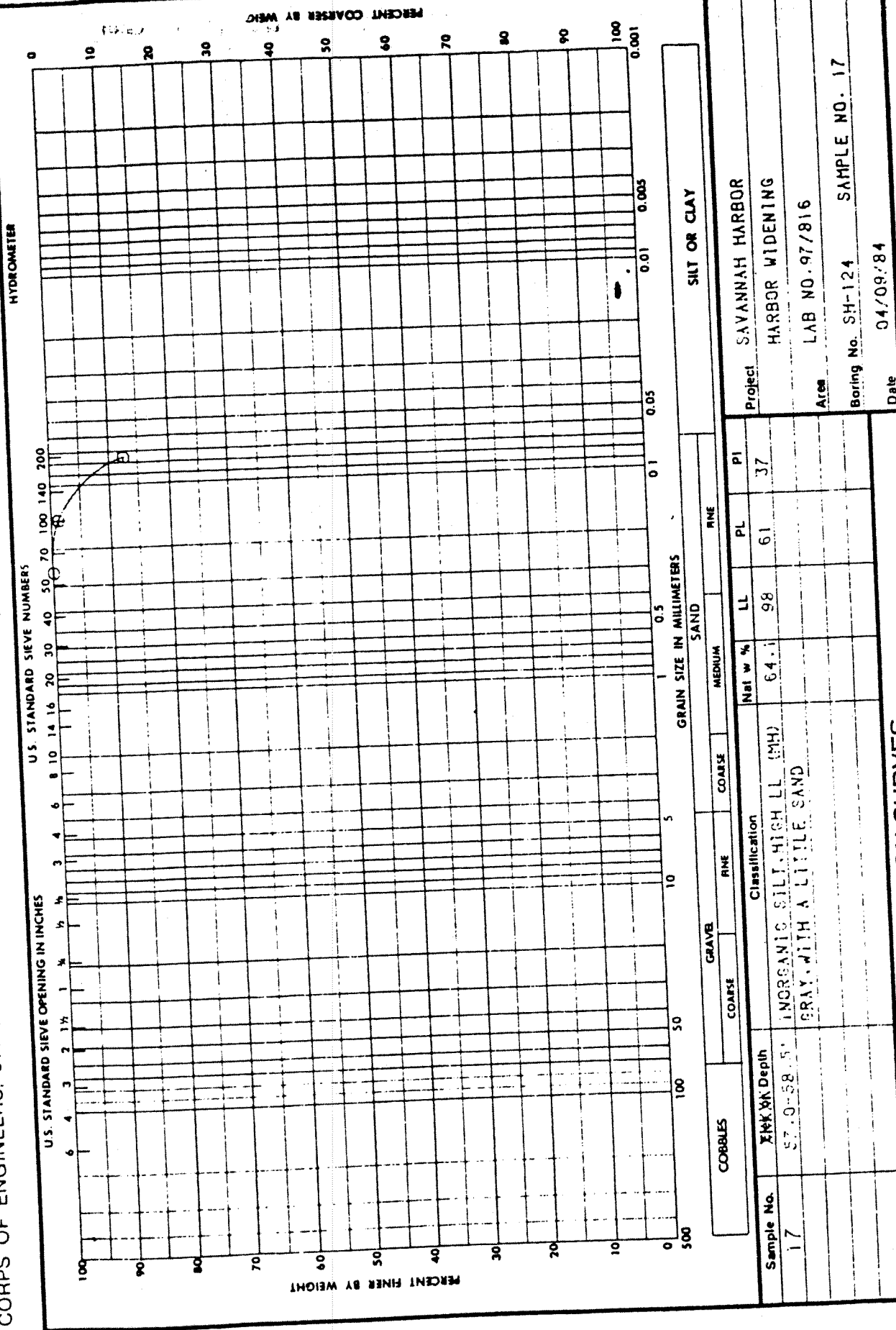
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



Sample No.	FWK ØK Depth	Classification	Nat w %	LL	PL	PI
12	36.0-37.5'	INORGANIC SILT, LOW LL (ML) GRAY, SANDY	19.5	31	27	4
Project SAVANNAH HARBOR HARBOR WIDENING Area LAB NO. 97/811 Boring No. SH-124 SAMPLE NO. 12 Date 04/09/84						
GRADATION CURVES						

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 3778
Req No EN-GS-84-03



GENERAL TEST REPORT		DISTRICT/OFFICE		
U.S. ARMY ENGINEER DIVISION LABORATORY, SOUTH ATLANTIC CORPS OF ENGINEERS MARIETTA, GEORGIA		Savannah		
		CONTRACT NO. --		
PROJECT Savannah Harbor Savannah Harbor Widening		DATE REPORTED 9 June 1987		
		WORK ORDER NO. 5193		
TYPE SAMPLE Jar Samples of Disturbed Soil		REQN. NO. SAS-EN-GS-87-23		
SOURCE SH-130, 132, 133, 134, 135, 136, 138, 139, 137, HOLE NO. 143, 144, and 148		BASE UNIT COST --		
FOR USE AS Investigation		DATE SAMPLE RECEIVED 27 Feb - 16 March 1987		
TESTED FOR Moisture Content		LAB NO. See below		
☐ MEETS SPECIFICATIONS N/A ☐ FAILS SPECIFICATIONS (See below)				
Lab No.	Hole No.	Sample No.	Depth (ft)	Moisture Content (%)
977				
1139	SH-130	3	4.5-6.0	45.8
1141	"	5	10.5-12.0	93.0
1118	SH-132	4	13.5-15.0	16.6
1135	"	21	66.0-67.5	58.7
1158	SH-133	6	12.0-13.5	43.0
1161	"	9	16.5-18.0	65.4
1180	SH-134	6	12.0-13.5	112.0
1197	SH-135	4	13.5-15.0	78.6
1200	"	7	27.0-28.5	107.2
1216	SH-136	5	12.0-13.5	78.5
1219	"	8	21.0-22.5	86.1
957	SH-137	9	24.0-25.5	118.6
966	"	18	58.5-60.0	60.0
968	SH-138	2	3.0-3.5	21.3
970	"	4	7.5-9.0	19.9
971	"	5	12.0-13.5	117.3
REMARKS:				
NOTE: See test results for all other samples on enclosed ENG Forms 2087.				
REPORTED BY		TESTED BY		CHECKED BY
☐ PHONE ☐ WIRE		WB, JL, ES		ES
DATE		SAMPLED BY		
		District		

GENERAL TEST REPORT (Continued)

(SOILS)

PROJECT Savannah Harbor
Savannah Harbor Widening

WORK ORDER NO. 5193

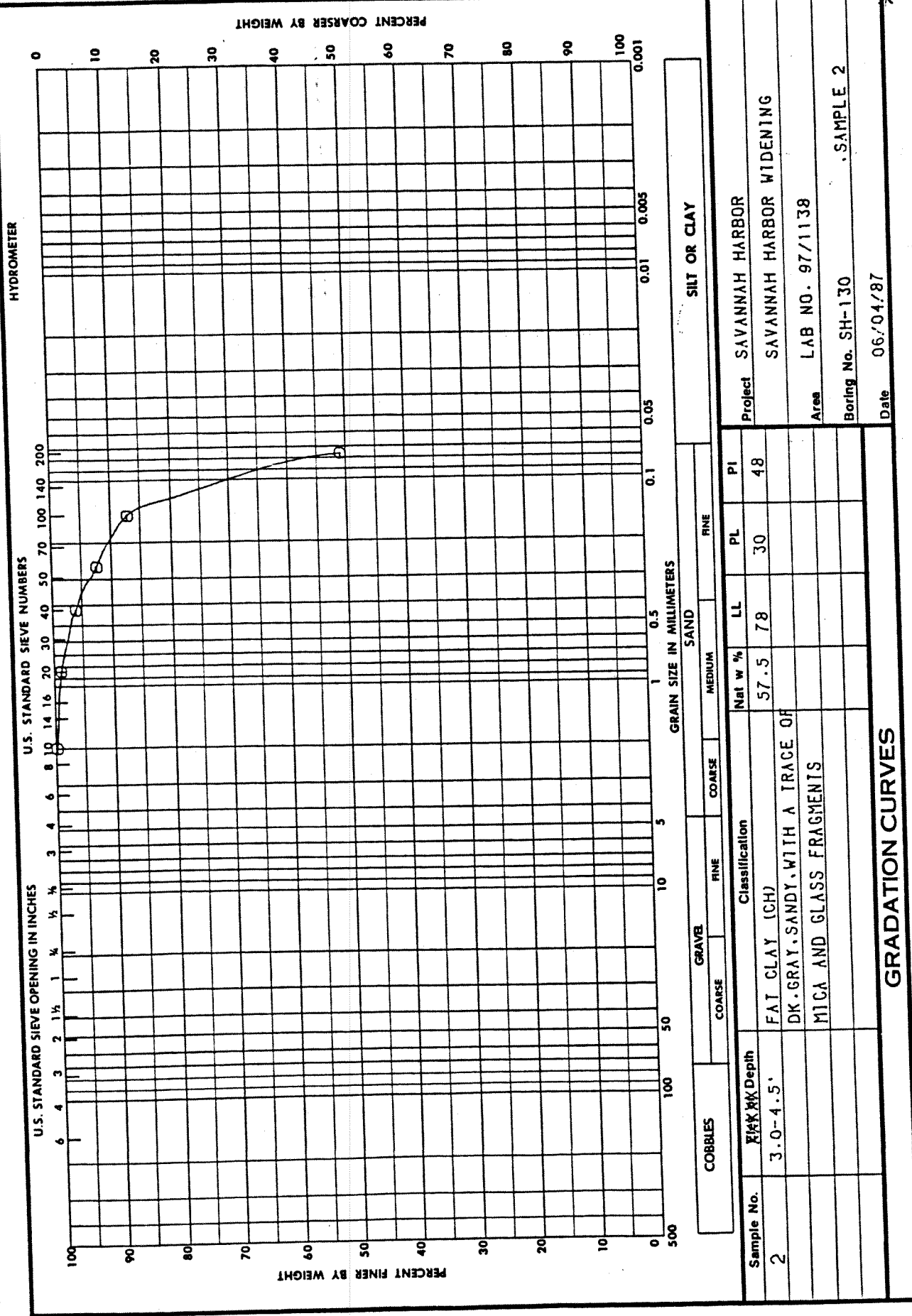
REQ. NO. SAS EN GS 87-23

LAB NO. See Below

DATE 9 June 1987

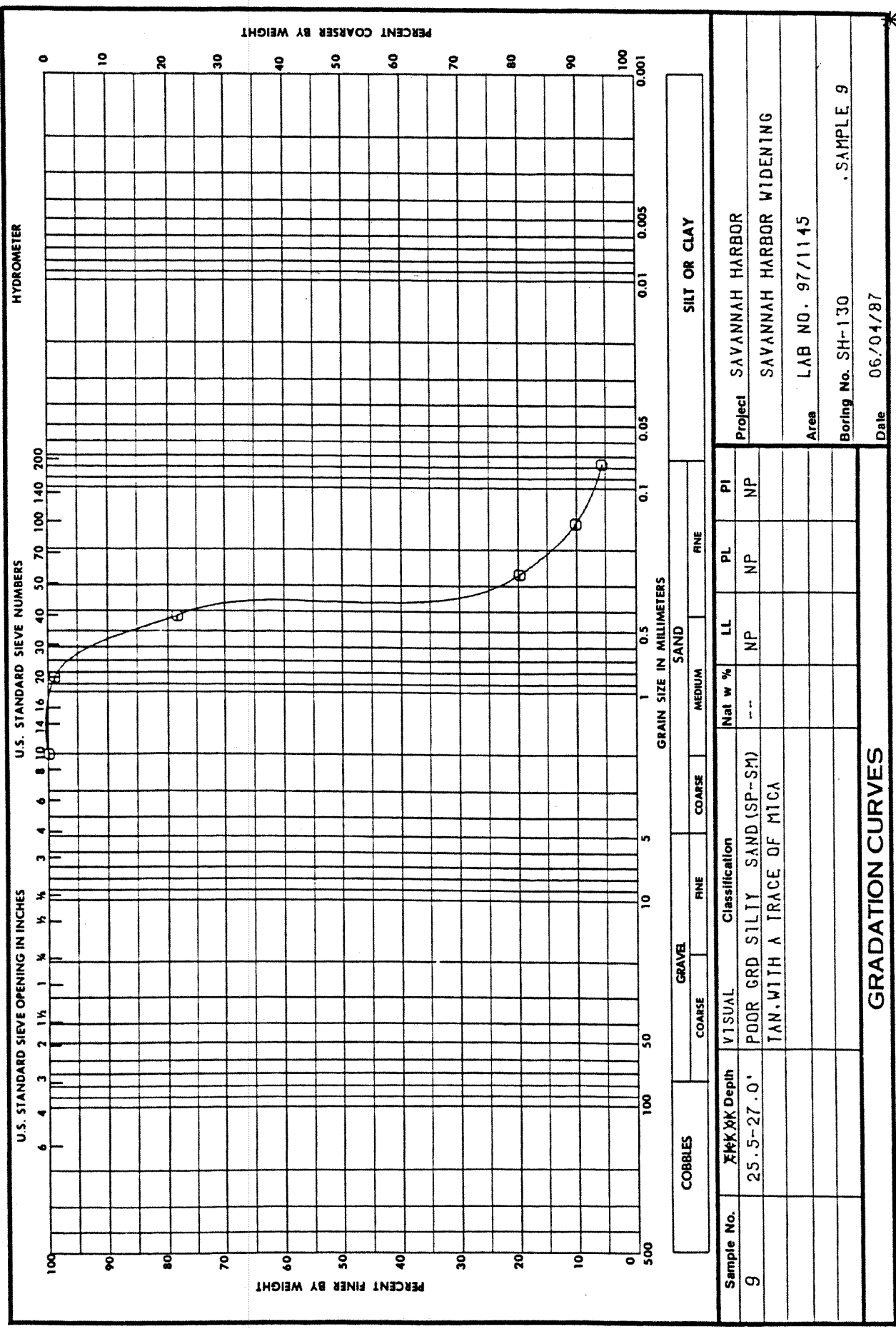
Lab No.	Hole No.	Sample No.	Depth (ft)	Moisture Content (%)
977 999	SH-139	15	46.5-48.0	25.1
1022	SH-143	1	0.0-1.5	19.2
1024	"	3	7.5-9.0	22.5
1256	SH-144	5	12.0-13.5	101.1
1269	SH-148	1	0.0-1.5	40.7
1273	"	5	12.0-13.5	44.4
1274	"	6	16.5-18.0	40.8

GENERAL TEST REPORT U.S. ARMY ENGINEER DIVISION LABORATORY, SOUTH ATLANTIC CORPS OF ENGINEERS MARIETTA, GEORGIA		DISTRICT/OFFICE Savannah CONTRACT NO. --																																																																																						
PROJECT Savannah Harbor Savannah Harbor Widening		DATE REPORTED 8 April 1987 WORK ORDER NO. 5193																																																																																						
TYPE SAMPLE SOILS: Jar Samples of Disturbed Soils		REQN. NO. SAS-EN-GS-87-23																																																																																						
SOURCE HOLE NO: SH -141, 145, 146 and 147		BASE UNIT COST --																																																																																						
FOR USE AS Investigation		DATE SAMPLE RECEIVED 27 Feb thru 16 Mar 1987																																																																																						
TESTED FOR Lab Classification and Field Moisture		LAB NO. 97/1007-1088																																																																																						
☒ MEETS SPECIFICATIONS N/A ☐ FAILS SPECIFICATIONS (See below)																																																																																								
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Lab. No.</th> <th style="text-align: left;">Hole No.</th> <th style="text-align: left;">Sample No.</th> <th style="text-align: left;">Depth (Ft.)</th> <th style="text-align: left;">Moisture Content (%)</th> </tr> </thead> <tbody> <tr><td>97/</td><td></td><td></td><td></td><td></td></tr> <tr><td>1007</td><td>SH-141</td><td>5</td><td>9.0/10.5</td><td>90.8*</td></tr> <tr><td>1008</td><td>"</td><td>6</td><td>13.5/15.0</td><td>66.1</td></tr> <tr><td>1018</td><td>"</td><td>16A</td><td>52.5/53.5</td><td>39.0</td></tr> <tr><td colspan="5"> </td></tr> <tr><td>1044</td><td>SH-145</td><td>3A</td><td>6.0/7.0</td><td>28.4</td></tr> <tr><td>1045</td><td>"</td><td>3B</td><td>7.0/7.5</td><td>91.3*</td></tr> <tr><td>1047</td><td>"</td><td>5</td><td>13.5/15.0</td><td>18.9</td></tr> <tr><td>1050</td><td>"</td><td>7</td><td>21.0/22.5</td><td>94.4</td></tr> <tr><td>1052</td><td>"</td><td>9A</td><td>27.0/27.5</td><td>103.3*</td></tr> <tr><td colspan="5"> </td></tr> <tr><td>1065</td><td>SH-146</td><td>4</td><td>13.5/15.0</td><td>84.5</td></tr> <tr><td colspan="5"> </td></tr> <tr><td>1079</td><td>SH-147</td><td>2</td><td>3.0/4.5</td><td>29.3</td></tr> <tr><td>1082</td><td>"</td><td>5</td><td>12.0/15.0</td><td>96.7</td></tr> <tr><td>1088</td><td>"</td><td>11</td><td>40.5/42.0</td><td>134.2*</td></tr> </tbody> </table>				Lab. No.	Hole No.	Sample No.	Depth (Ft.)	Moisture Content (%)	97/					1007	SH-141	5	9.0/10.5	90.8*	1008	"	6	13.5/15.0	66.1	1018	"	16A	52.5/53.5	39.0						1044	SH-145	3A	6.0/7.0	28.4	1045	"	3B	7.0/7.5	91.3*	1047	"	5	13.5/15.0	18.9	1050	"	7	21.0/22.5	94.4	1052	"	9A	27.0/27.5	103.3*						1065	SH-146	4	13.5/15.0	84.5						1079	SH-147	2	3.0/4.5	29.3	1082	"	5	12.0/15.0	96.7	1088	"	11	40.5/42.0	134.2*
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DATE _____		CHECKED BY ES																																																																																						
☐ PHONE ☐ WIRE		SAMPLED BY District																																																																																						



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193
 Req. No. SAS-ENG-GS-87-23



COBBLES		GRAVEL		SAND		SILT OR CLAY	
COARSE	FINE	COARSE	FINE	MEDIUM	FINE		

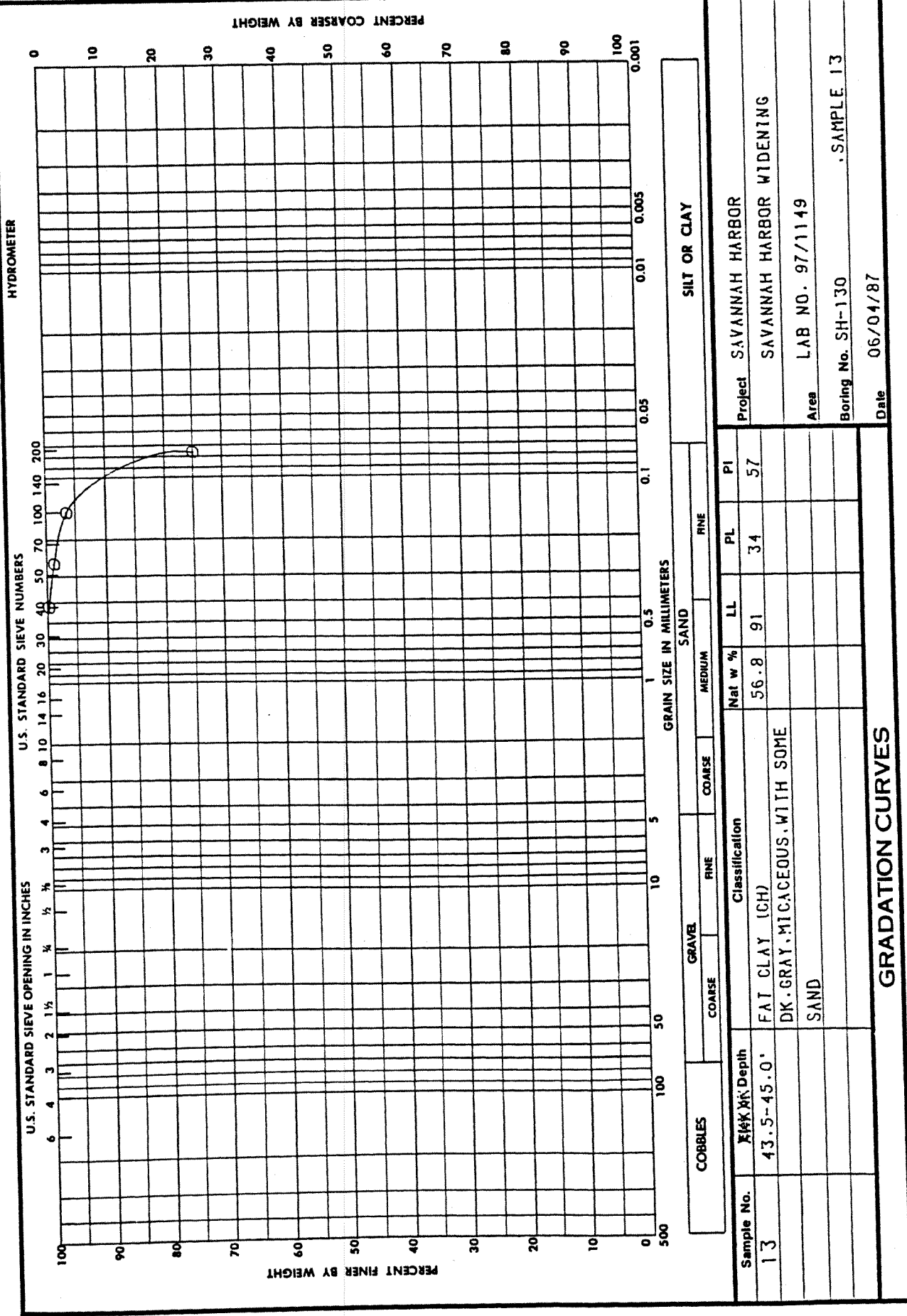
Sample No.	25.5-27.0'	Visual	Classification	Nat w %	LL	PL	PI
9		POOR GRD SILTY SAND (SP-SH)		---	NP	NP	NP
		TAN. WITH A TRACE OF MICA					
GRADATION CURVES							

Project	SAVANNAH HARBOR
	SAVANNAH HARBOR WIDENING
Area	LAB NO. 97/1145
Boring No.	SH-130
	SAMPLE 9
Date	06/04/87

W.O. No. 5193

Req. No. SAS-ENG-GS-87-23

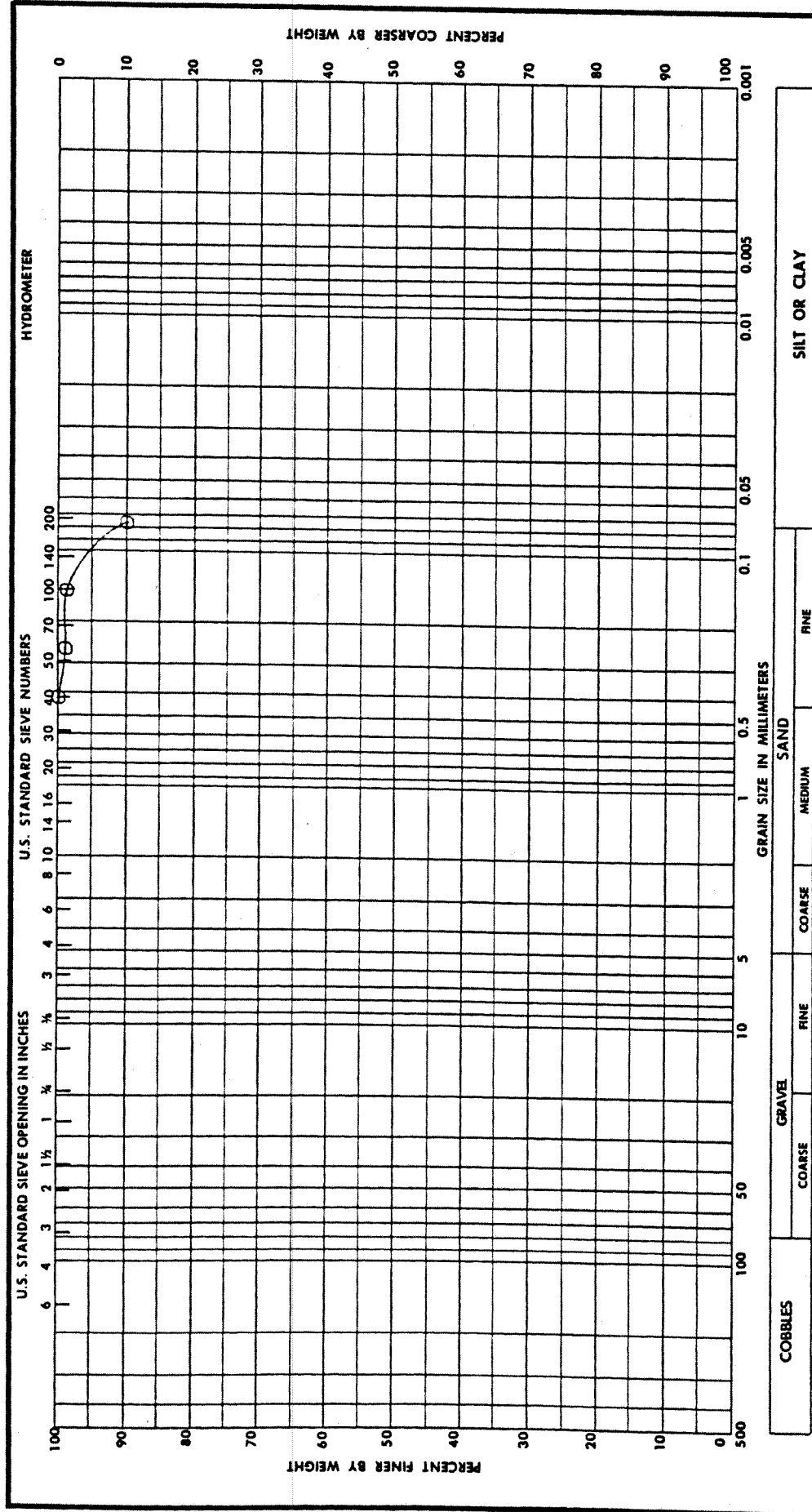
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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



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W.O. No. 5193

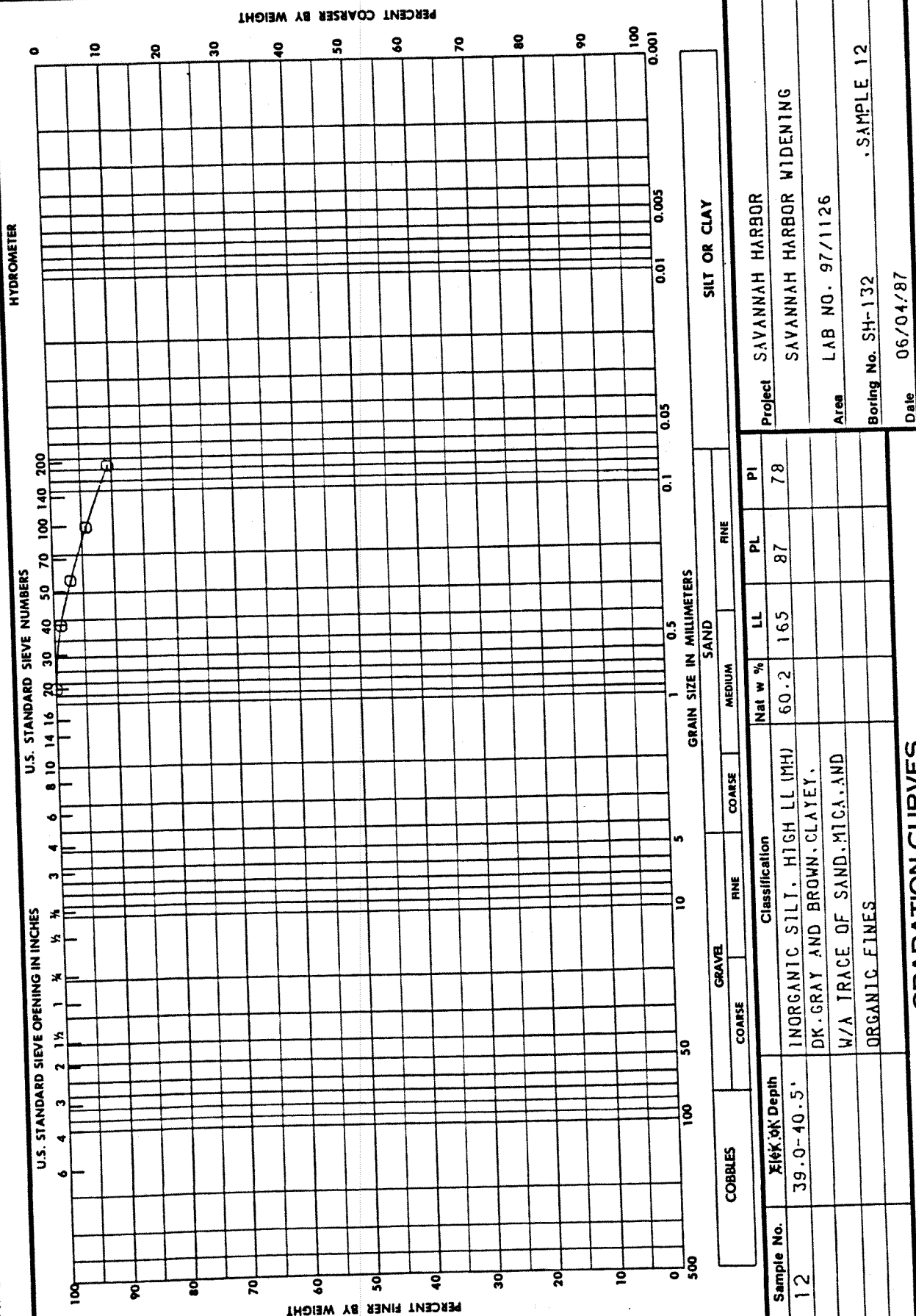
Req. No. SAS-ENG-GS-87-23



Sample No.	Field Depth	Visual Classification	Nat w %	LL	PL	PI
15	52.5-54.0'	FAT CLAY (CH). GREENISH GRAY. WITH A LITTLE SAND AND WITH A TRACE OF MICA	--	--	--	--
GRADATION CURVES						
Project SAVANNAH HARBOR						
Area LAB NO. 97/1151						
Boring No. SH-130						
Date 06/04/87						

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. SAS-ENG-GS-87-23

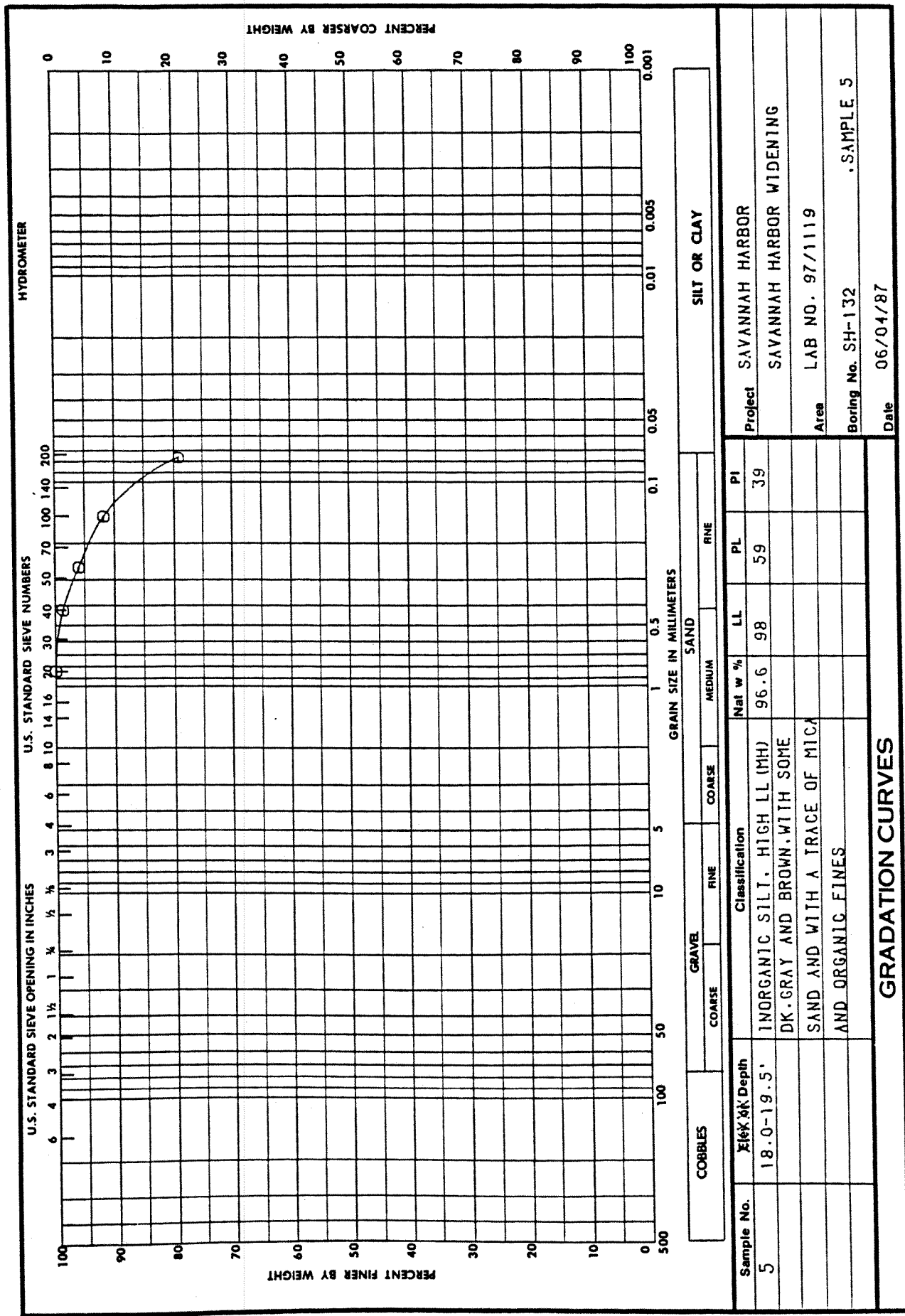


ENG **FORM** **2087**
1 MAY 63

FORM
MAY 63

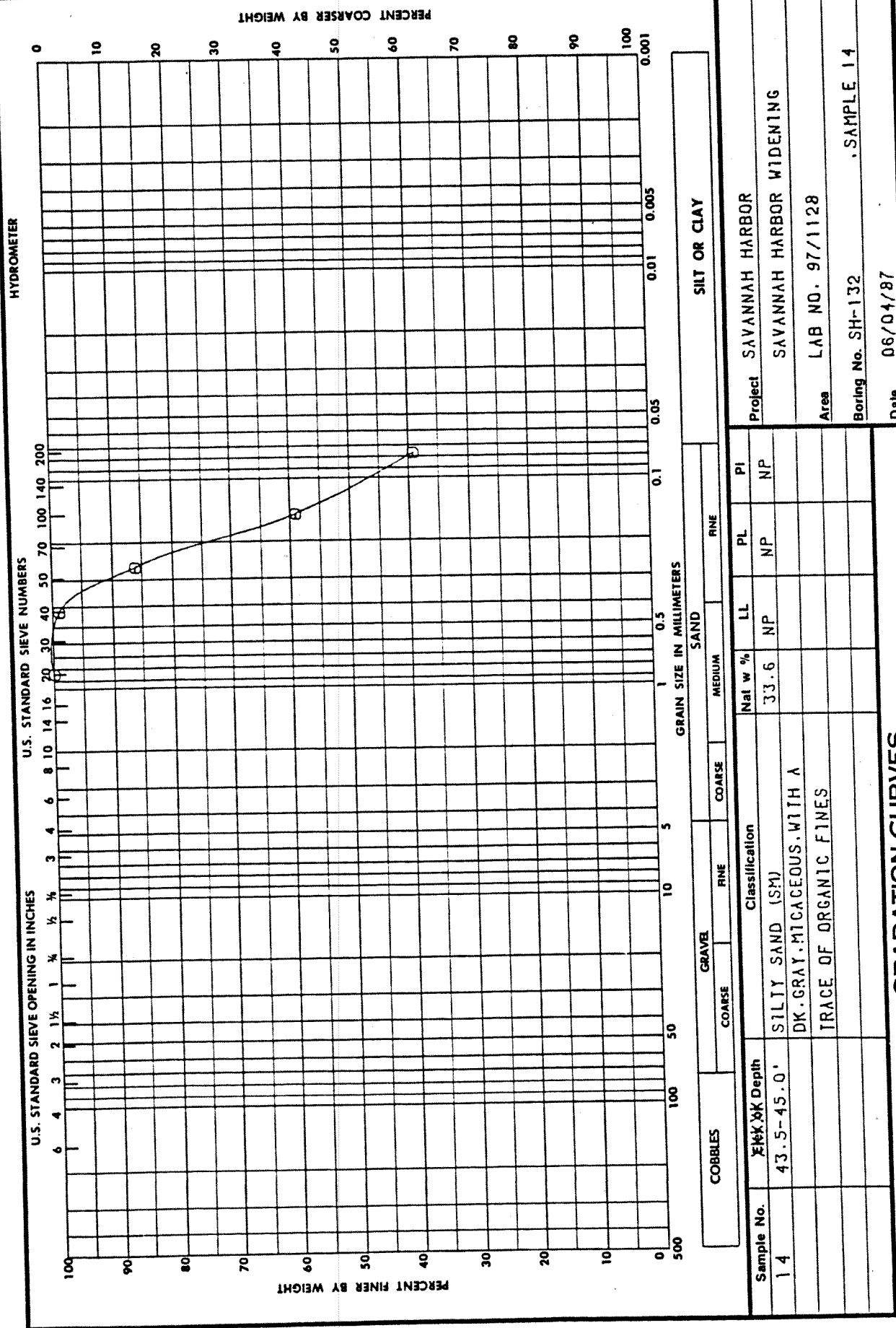
W.O. No. 5193
 Req. No. SAS-ENG-GS-87-23

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

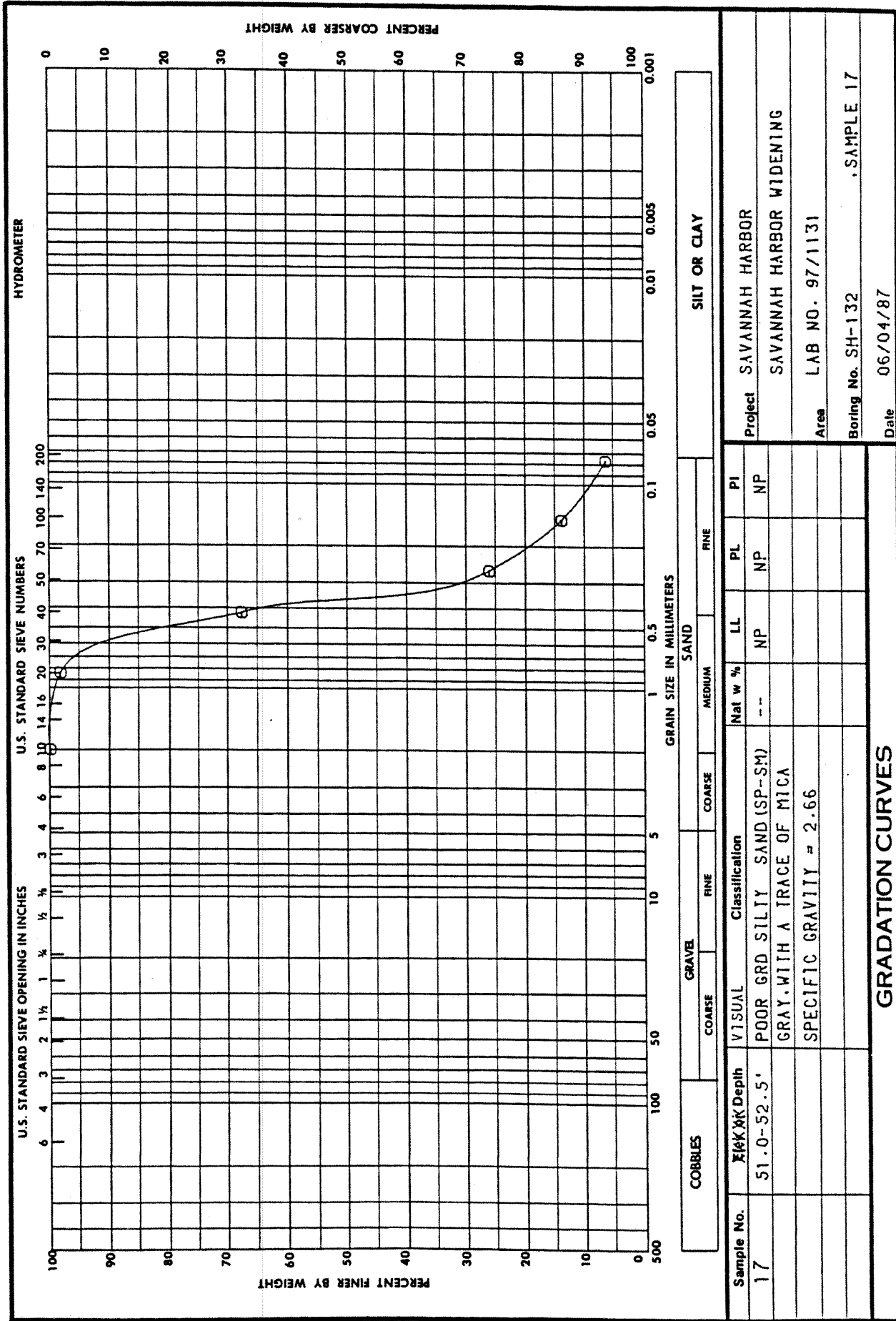
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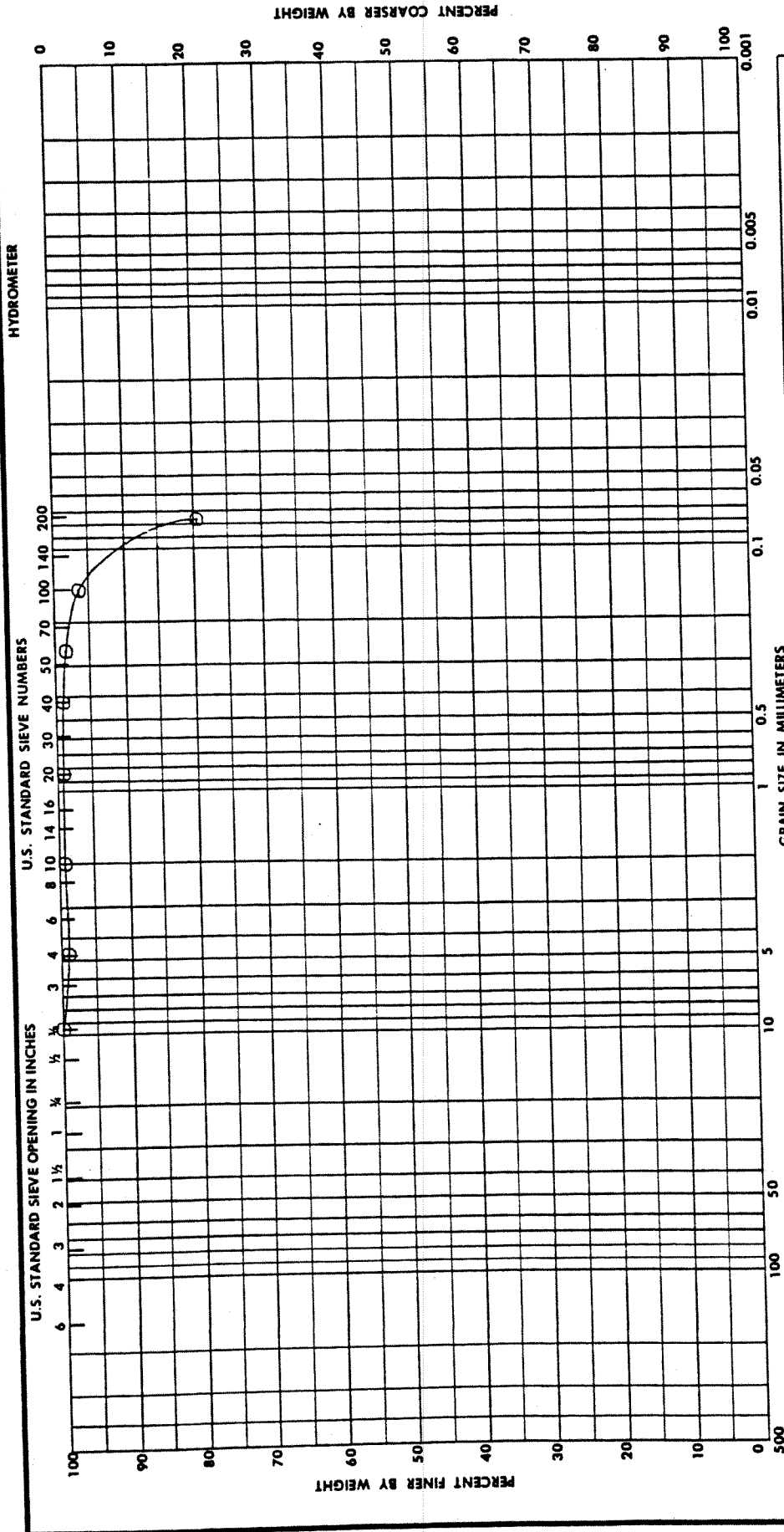


DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193

Req. No. SAS-ENG-GS-87-23



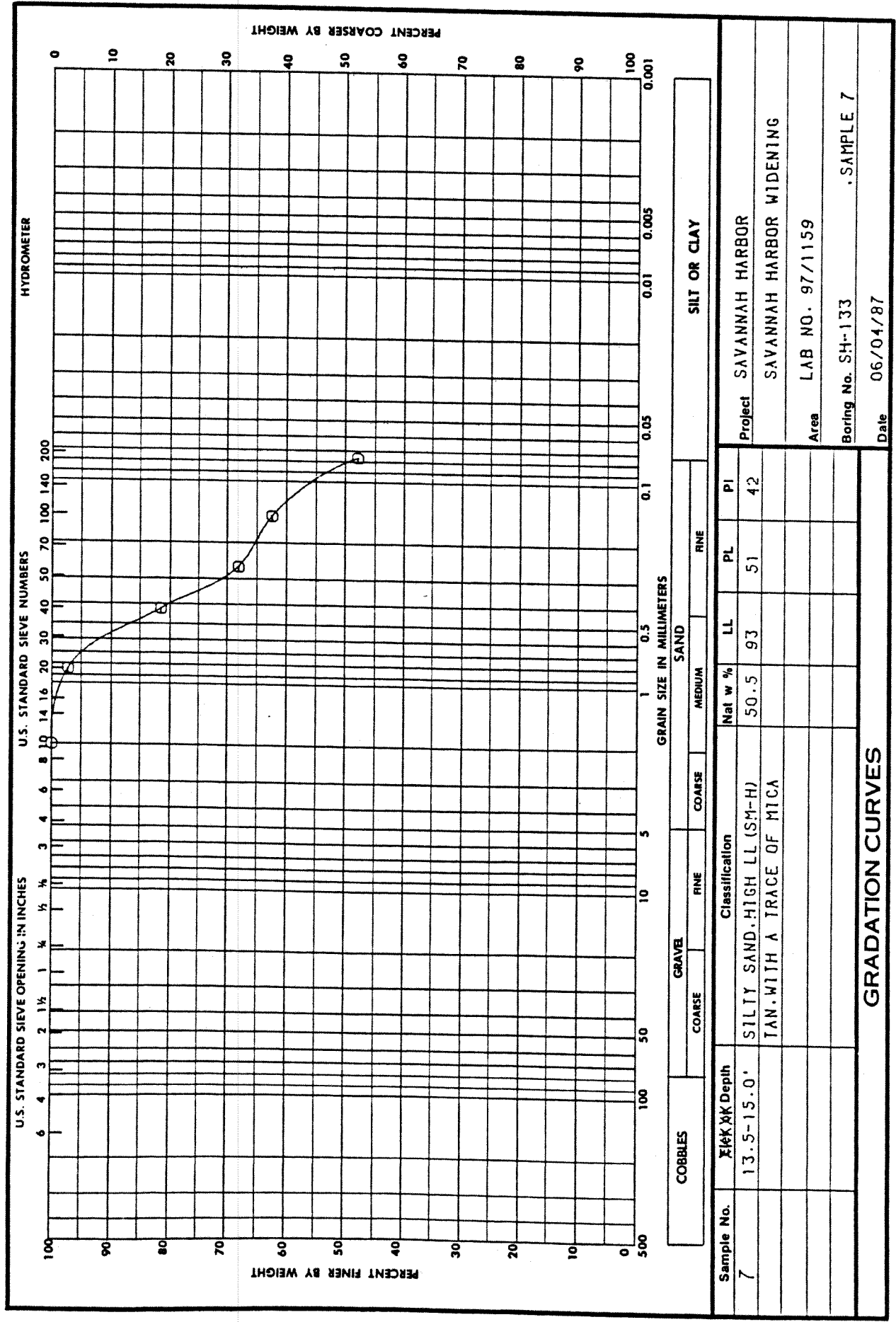


COBBLES		GRAVEL		SAND		SILT OR CLAY	
		COARSE	FINE	COARSE	MEDIUM	FINE	
Sample No.	20	Classification		Nat w %	LL	PL	PI
	61.5-63.0'	FAT CLAY (CH)		57.7	107	42	65
		DK. GRAY, WITH SOME SAND, MICA--					
		CEOUS, WITH A TRACE OF GRAVEL					
		SIZE WEATHERED ROCK					
GRADATION CURVES							
Project SAVANNAH HARBOR							
Area SAVANNAH HARBOR WIDENING							
Boring No. SH-132							
Date 06/04/87							

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193

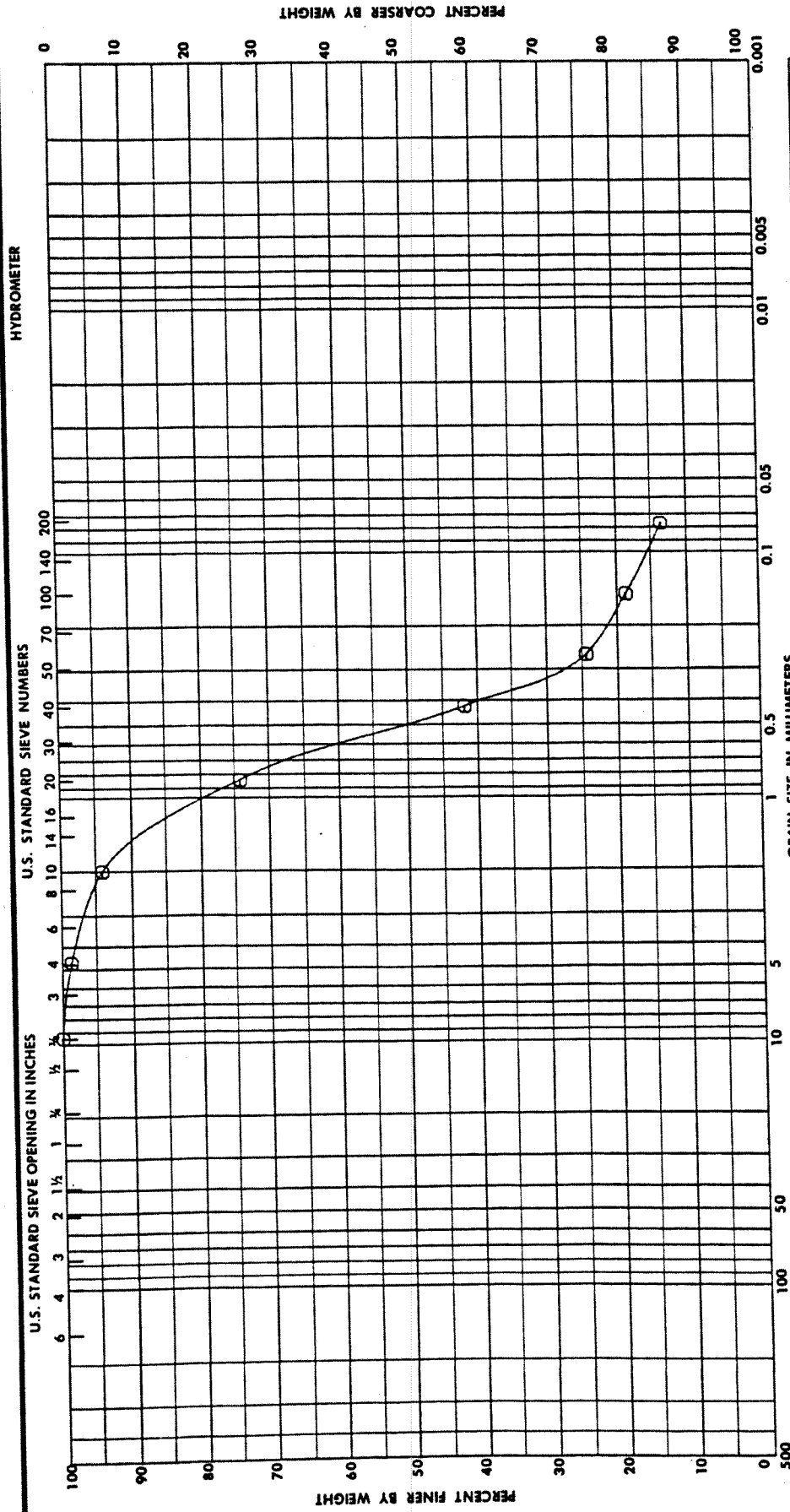
Req. No. SAS-ENG-GS-87-23



W.O. No. 5193

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. SAS-ENG-GS-87-23



SILT OR CLAY

Project	SAVANNAH HARBOR
Area	SAVANNAH HARBOR WIDENING
Boring No.	LAB NO. 97/1160
Date	SH-133
	06/04/87
	SAMPLE 8

Sample No.	8	Visual	Classification	Nat w %	LL	PL	PI
	15.0-16.5'		SILTY CLAYEY SAND (SM-SC)	19.4	--	--	--
			BROWN WITH A TRACE OF MICA.				
			WOOD AND GRAVEL SIZE WEATHERED ROCK				

GRADATION CURVES

ENG FORM 2087
1 MAY 63

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

PERCENT FINER BY WEIGHT

GRAIN SIZE IN MILLIMETERS

U.S. STANDARD SIEVE NUMBERS

HYDROMETER

PERCENT COARSER BY WEIGHT

GRAVEL

SAND

SILT OR CLAY

GRAVEL		SAND			SILT OR CLAY	
COARSE	FINE	COARSE	MEDIUM	FINE		
0	0	0	0	0		

Sample No.	Test Depth	Visual	Classification	Nat w %	LL	PL	PI
11	22.5-24.0'		POORLY GRADED SAND (SP)	---	NP	NP	NP
			BROWN WITH A TRACE OF MICA				
			AND WOOD				

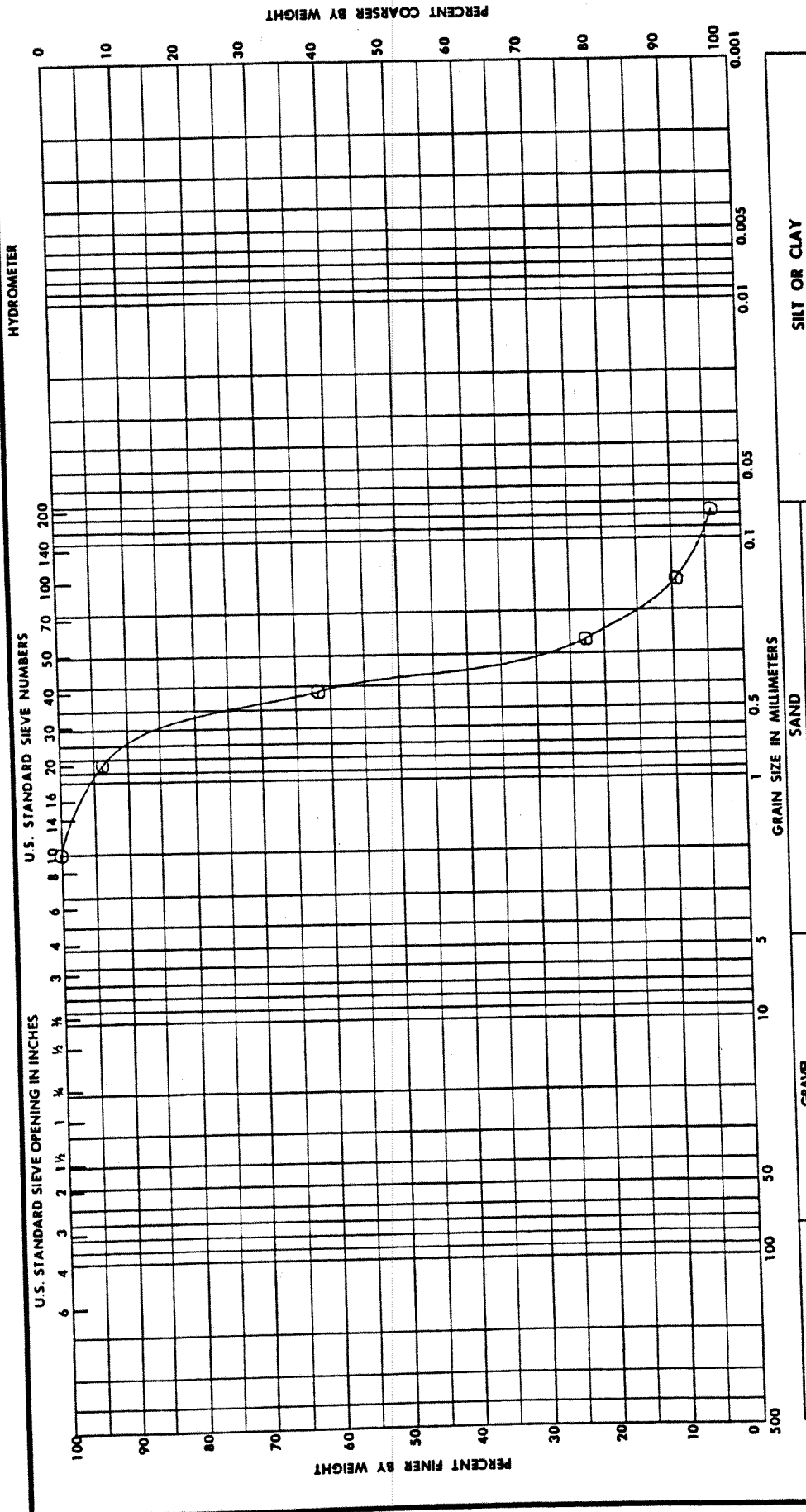
Project	SAVANNAH HARBOR
	SAVANNAH HARBOR WIDENING
Area	LAB NO. 97/1163
Boring No.	SH-133
	SAMPLE 11
Date	06/04/87

GRADATION CURVES							
------------------	--	--	--	--	--	--	--

W.O. No. 5193

Req. No. SAS-ENG-GS-87-23

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



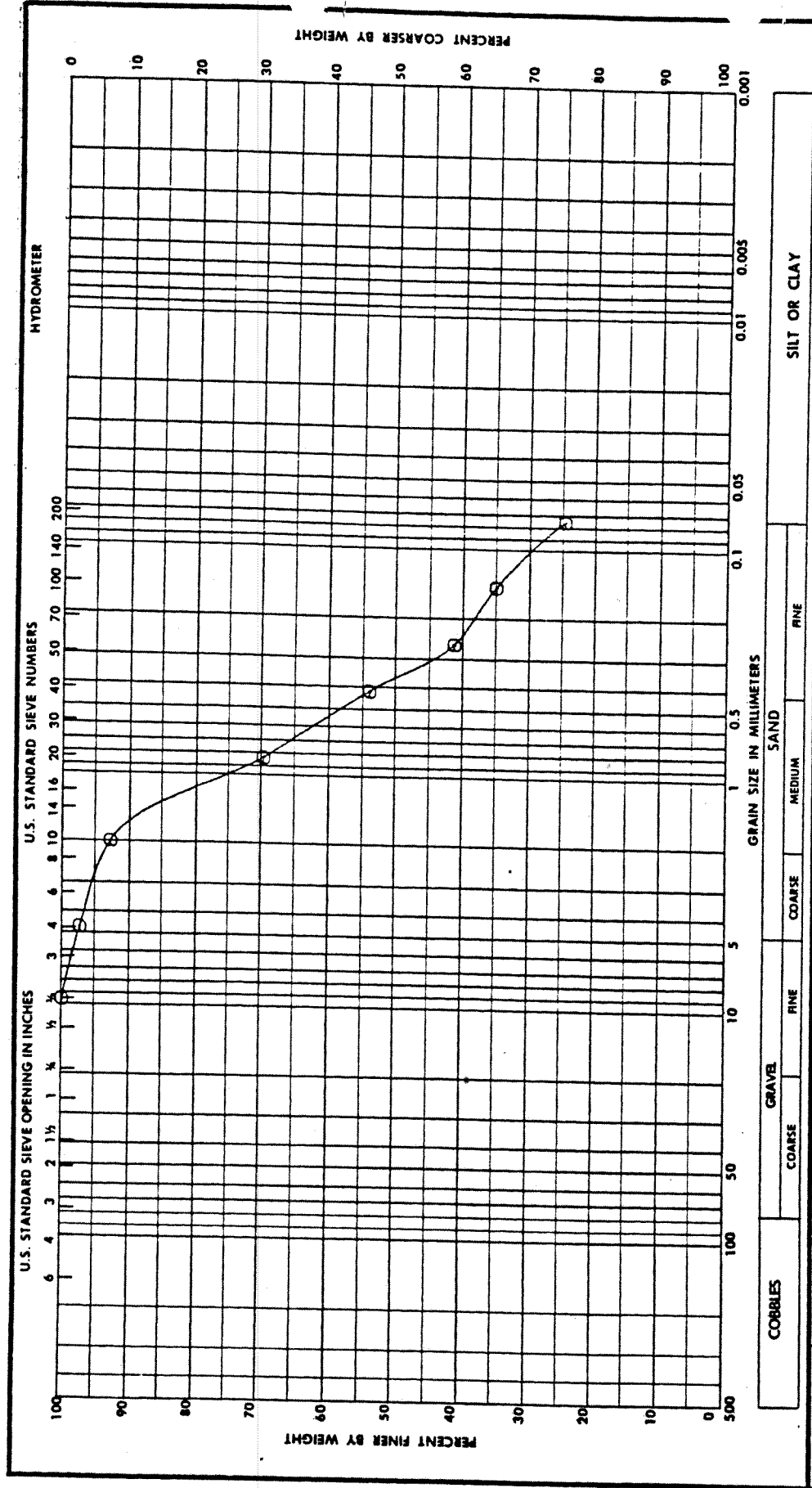
Sample No.	16	Visual Classification	POORLY GRADED SAND (SP) LT. BROWN WITH A TRACE OF MICA	Nat w %	NP	LL	NP	PL	NP	PI	NP
Field Depth	45.0-46.5'										
Project	SAVANNAH HARBOR										
Area	SAVANNAH HARBOR WIDENING										
Boring No.	LAB NO. 97/1168										
Date	SH-133										
	SAMPLE 16										
	06/04/87										

GRADATION CURVES

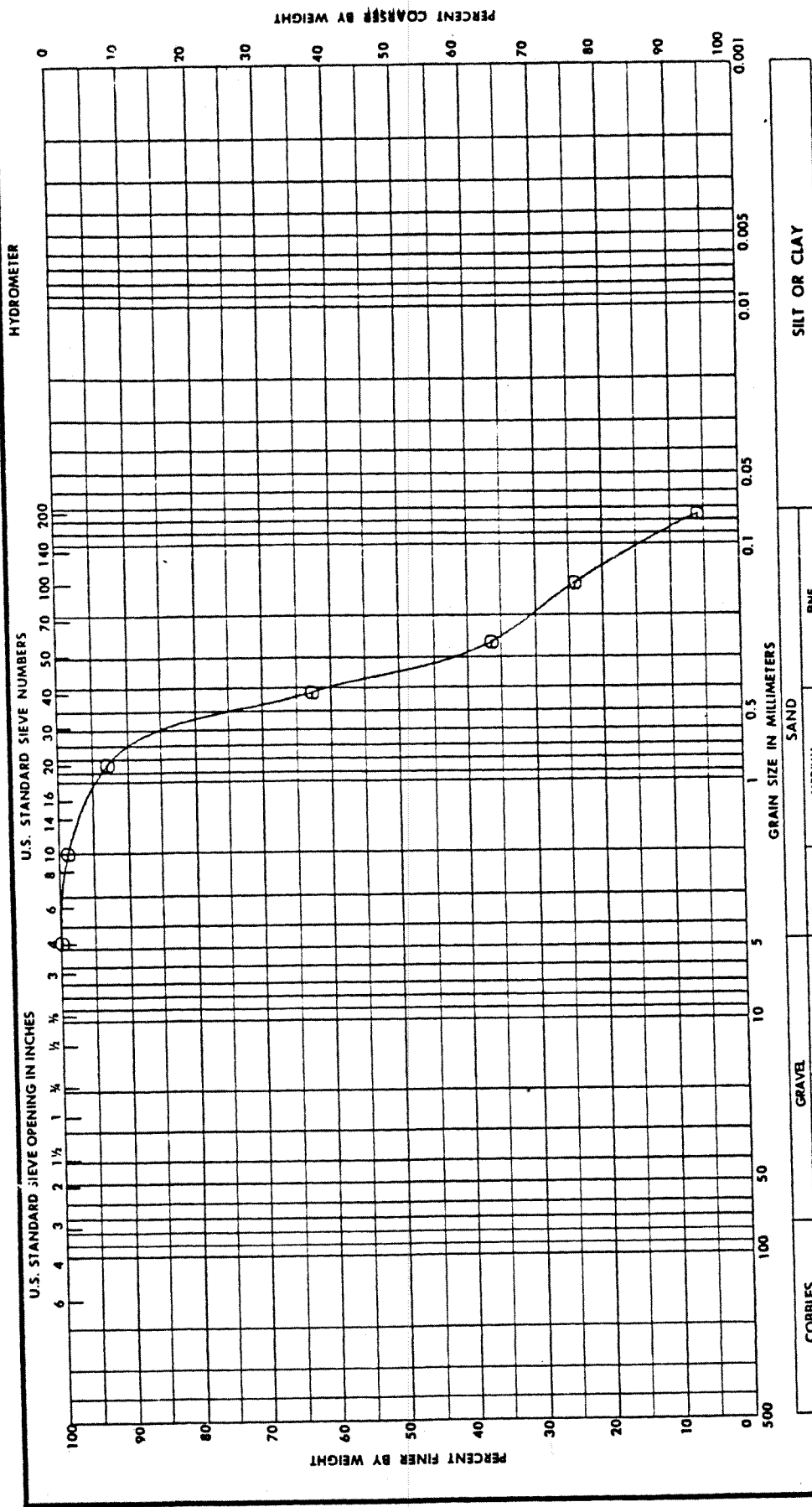
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 3778

Req. No. EN-GS-84-03



Project	SAVANNAH, GA.
Area	SAVANNAH HARBOR WIDENING
Boring No.	SH-101
Sample No.	5
Date	11/21/83



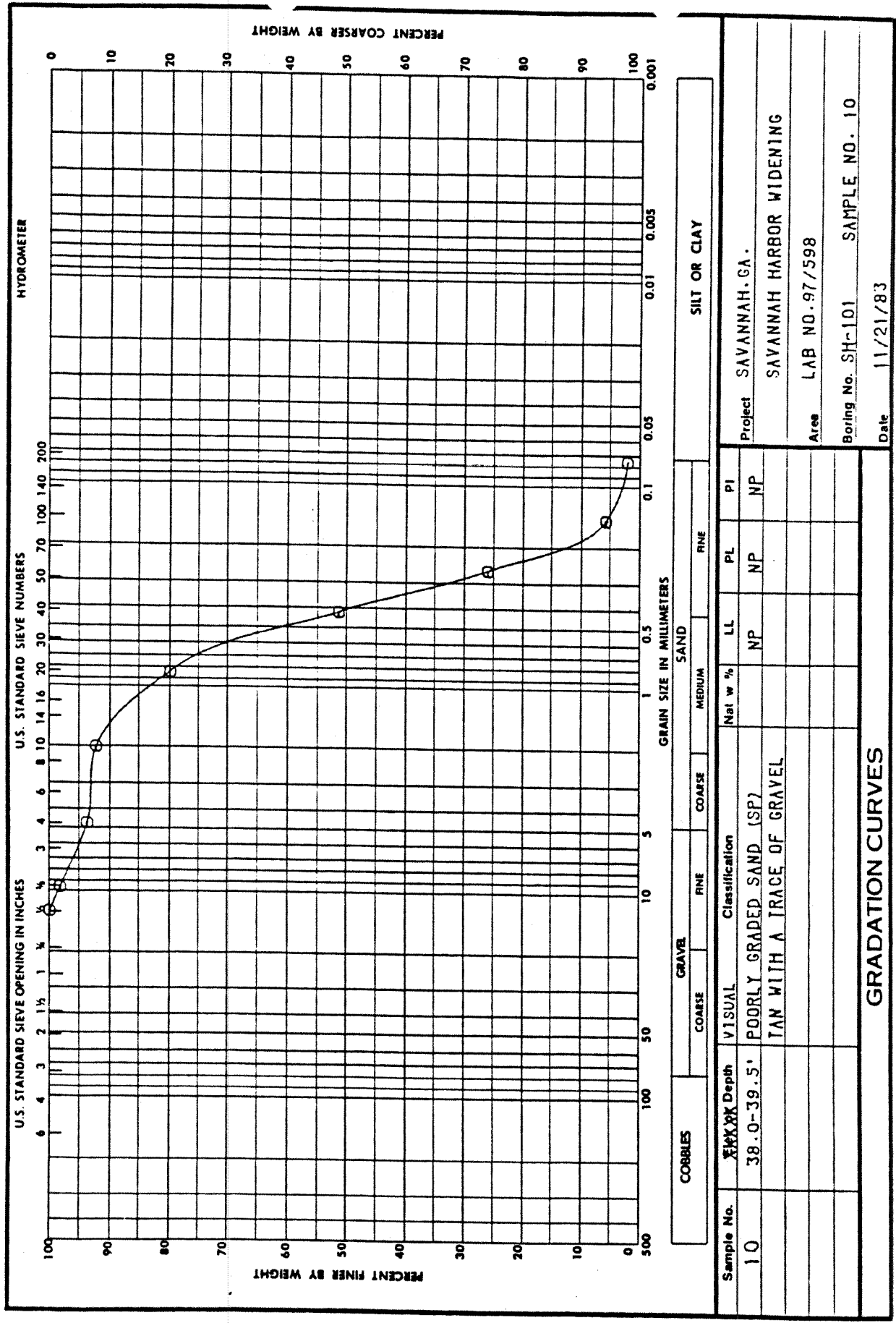
Project		SAVANNAH, GA.	
Area		LAB NO. 97/S95	
Boring No.		SH-101	
Sample No.		7	
Date		11/21/83	

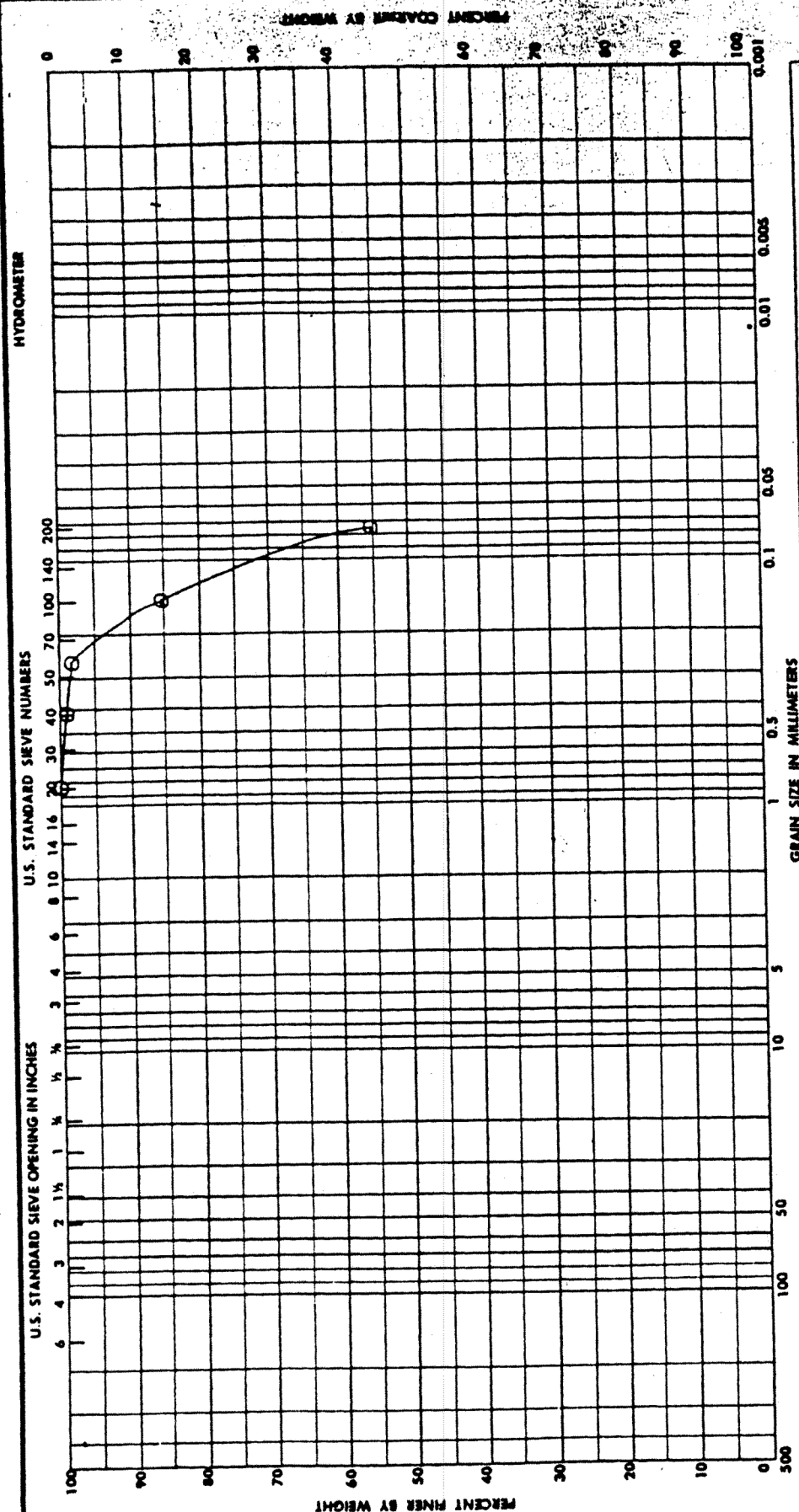
Sample No.	Depth	Visual Classification	SAND		FINE		PI
			COARSE	FINE	LL	PL	
7	30.9-32.4'	POORLY GRADED SILTY SAND (SP-SM)	15.9	NP	NP	NP	NP
		TAN					

GRADATION CURVES

W.O. No. 3778
 Req. No. EN-GS-84-03

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060





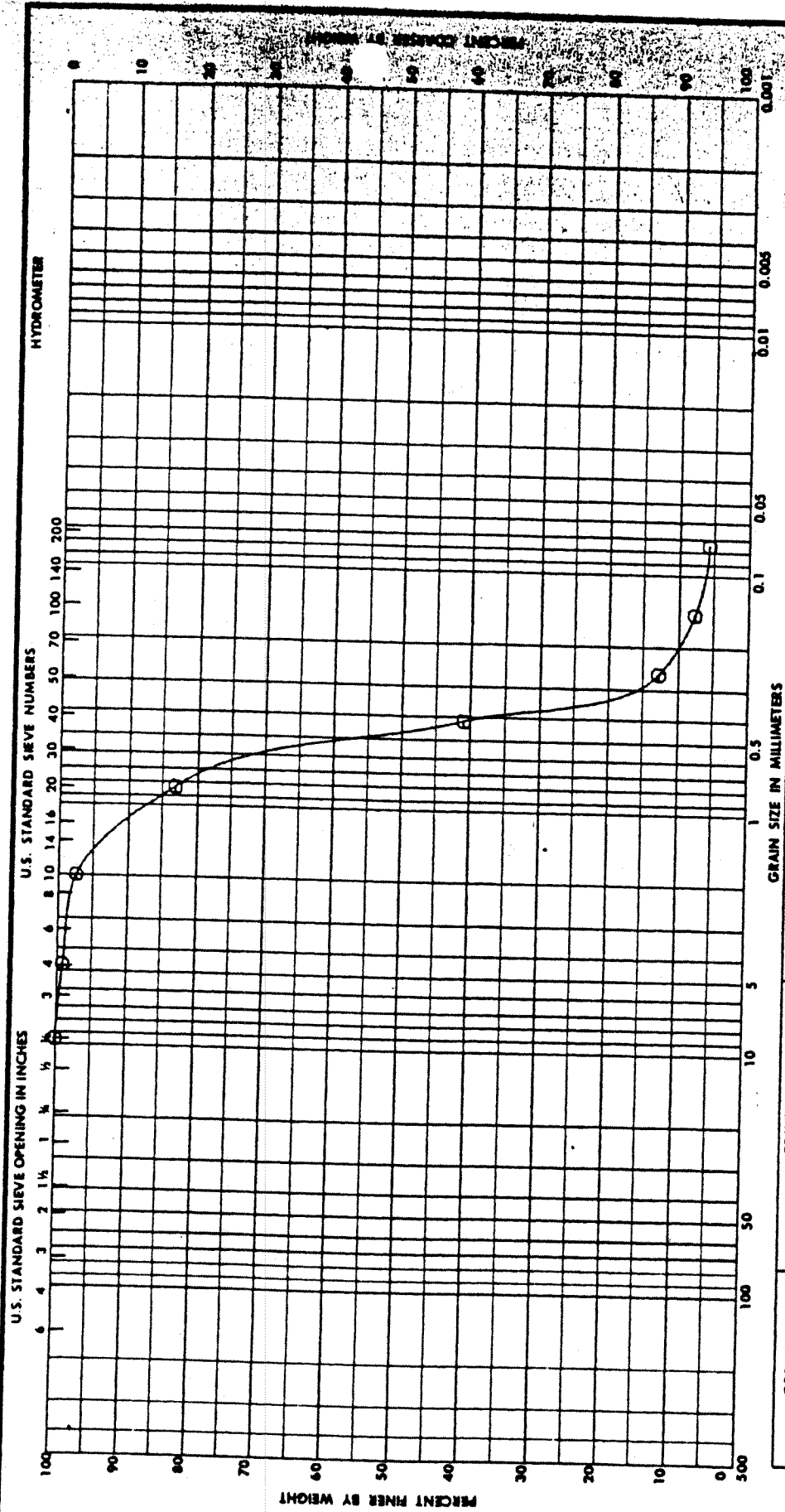
GRAIN SIZE IN MILLIMETERS								SILT OR CLAY
		SAND						
		COARSE		FINE	MEDIUM		R.F.N.E.	
CORBLES								
Sample No.	KHK/KK Depth	Classification						
1	2.0-3.0'	FAT CLAY (CH)						
		GRAY SANDY						
		Nat w %	LL	PL	PI			
		73.7	86	34	52			
		Area			LAB NO.97/617			
		Boring No.	SH-102		SAMPLE NO. 1			
		Date	04/03/84					

GRADATION CURVES

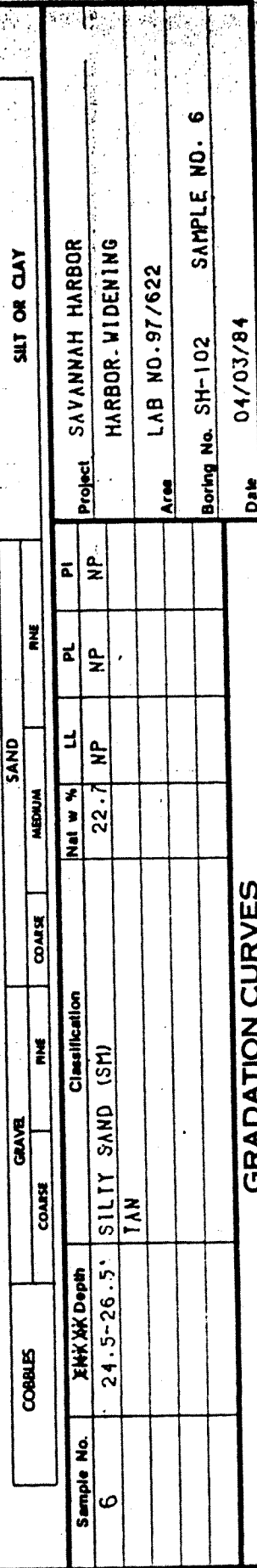
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 3778

Req. No. EN-GS-84-03



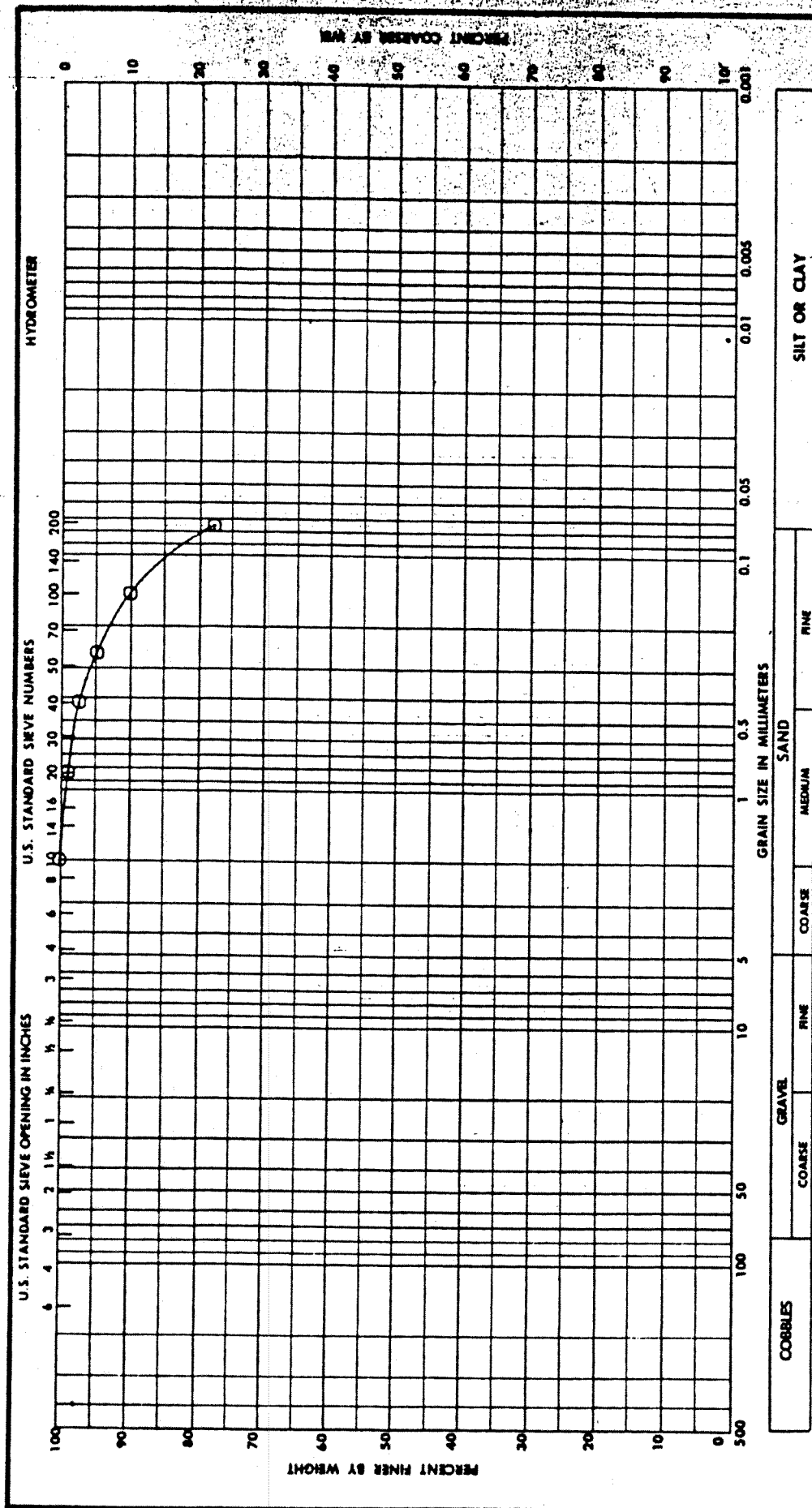
COBBLES		GRAVEL		SAND		SILT OR CLAY	
COARSE		FINE		COARSE		FINE	
Sample No.	MAXIMUM Depth	Classification				PI	
4	13.5-15.0'	POORLY GRADED SILTY SAND (SP-SM)				LL	NP
		GRAY. WITH A TRACE OF GRAVEL				PL	NP
Project: SAVANNAH HARBOR							
HARBOR WIDENING							
Area: LAB NO. 97/620							
Boring No. SH-102 SAMPLE NO. 4							
Date: 04/03/84							
GRADATION CURVES							



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 3778

Req. No. EN-GS-84-03

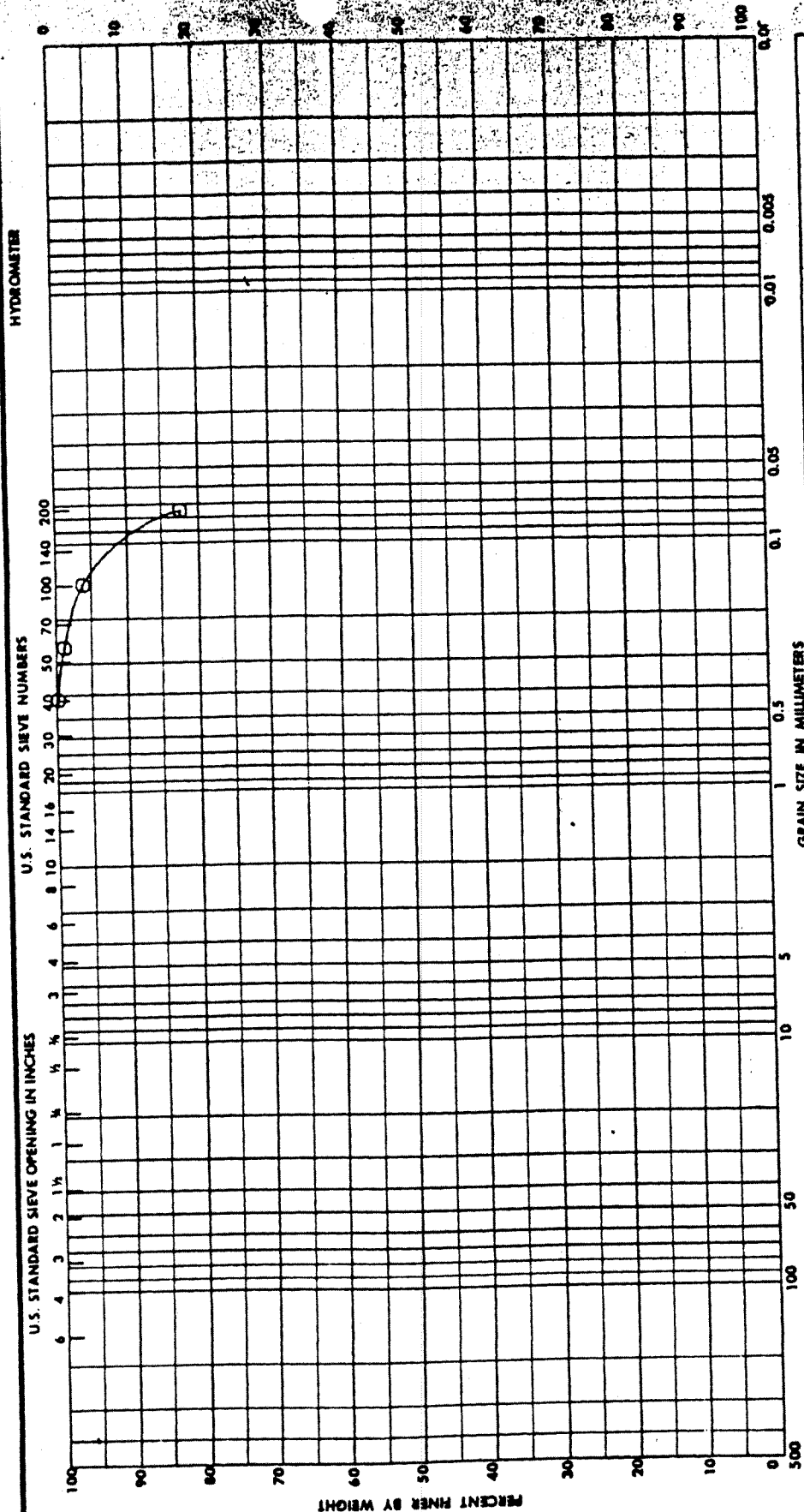


Sample No.	Site/Depth	Classification	Nat w %	LL	PL	PI
7	26.5-28.0'	INORGANIC SILT-HIGH LL (MH)	88.1	80	40	40
		GRAY-CLAYEY WITH SOME SAND				
		AND A TRACE OF ROOTS				
GRADATION CURVES						
Project SAVANNAH HARBOR						
HARBOR WIDENING						
LAB NO. 97/623						
Boring No. SH-102 SAMPLE NO. 7						
Date 04/03/84						

W.O. No. 3778

Req. No. EN-GS-84-03

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



SILT OR CLAY

SAND

GRAVEL

COARSE

FINE

COARSE

FINE

Sample No.	33.2-35.7	Classification	INORGANIC SILT-HIGH LL (MH) GRAY, CLAYEY WITH A LITTLE SAND	LL	70	PL	35	PI	35
XMK Depth									
Project		SAVANNAH HARBOR HARBOR-WIDENING							
Area		LAB NO. 97/625							
Boring No.		SH-102							
SAMPLE NO.		9							
Date		04/03/84							

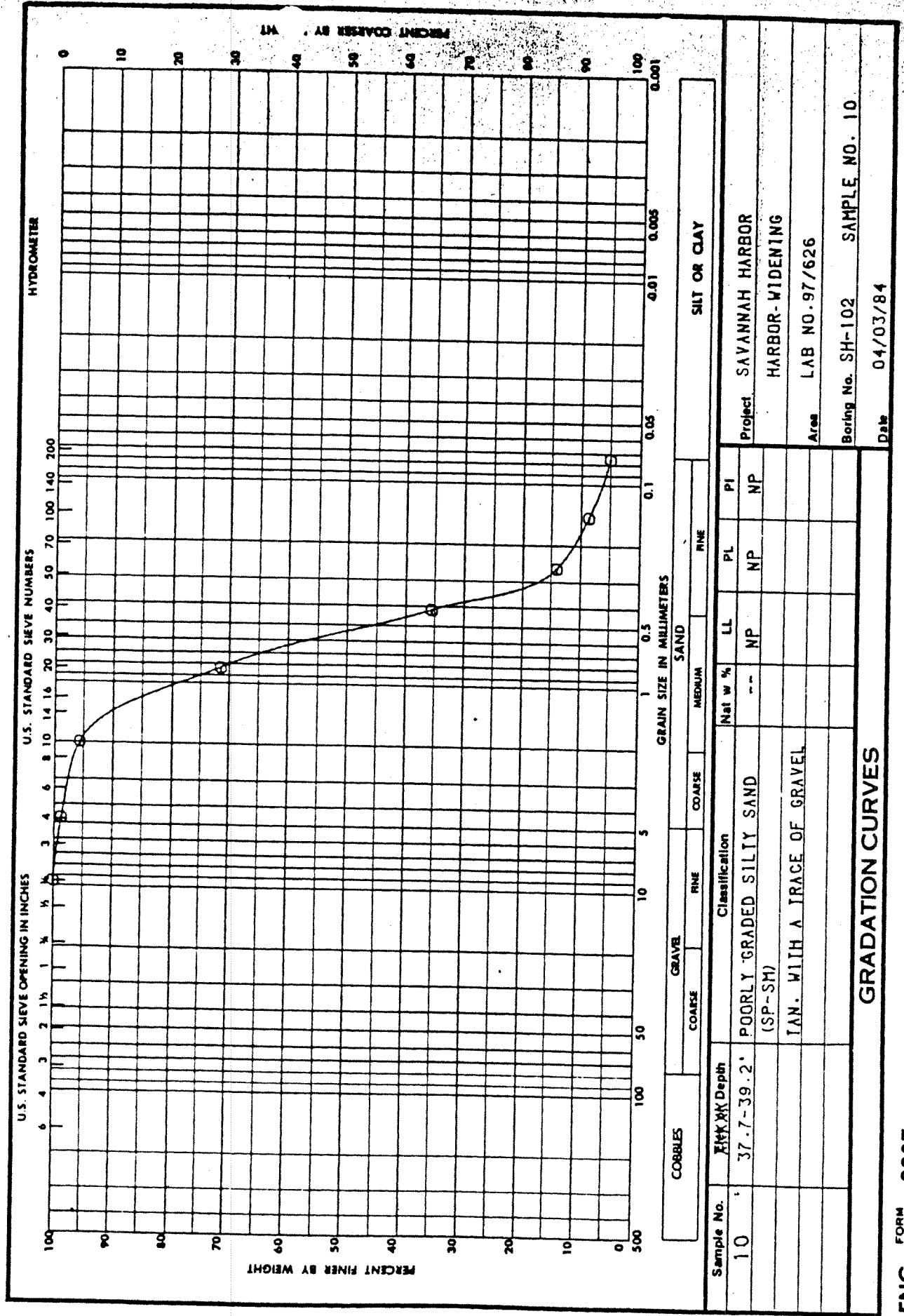
GRADATION CURVES

ENG FORM 2087
1 MAY 63

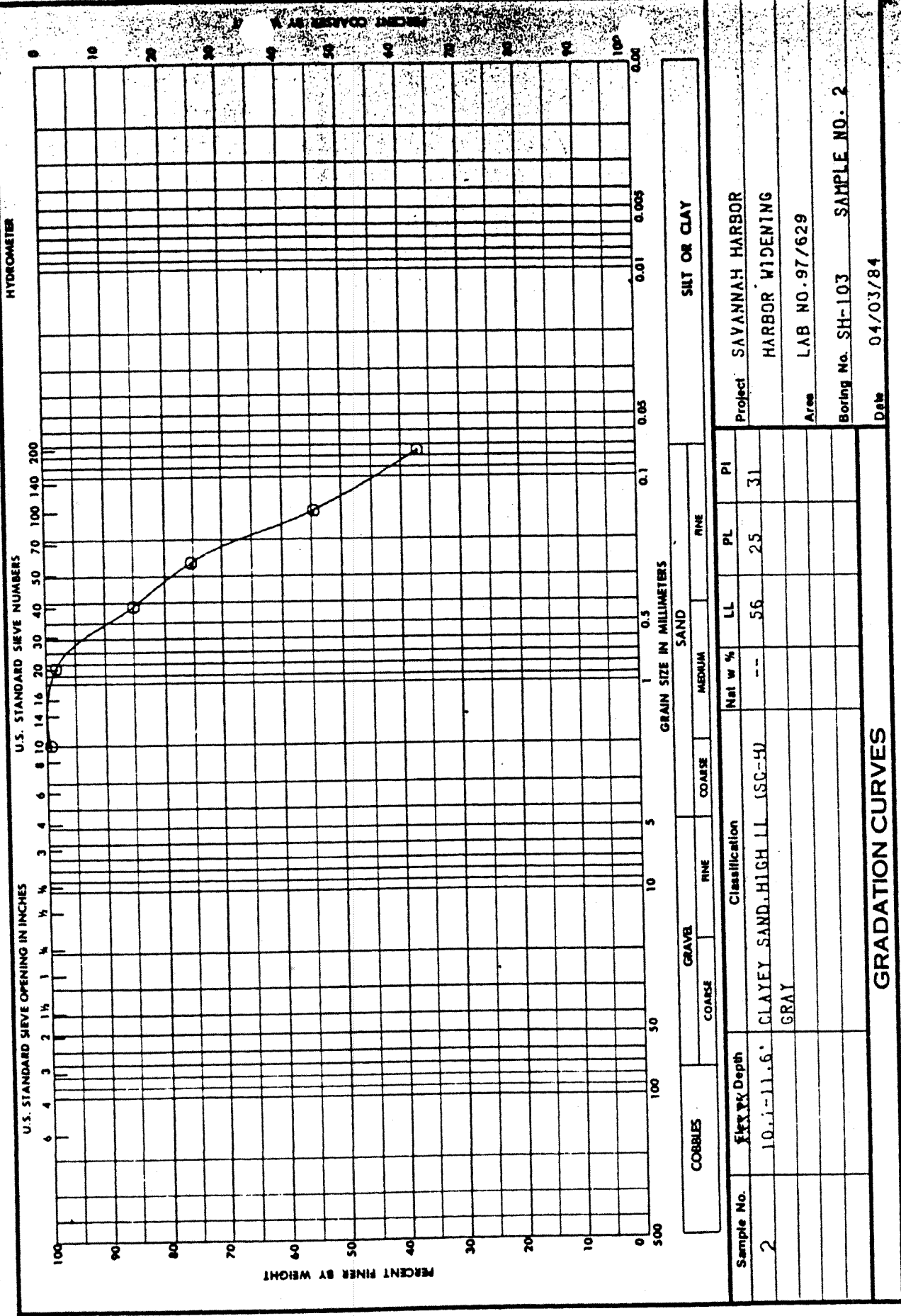
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 3778

Req. No. EN-GS-84-03



GRADATION CURVES

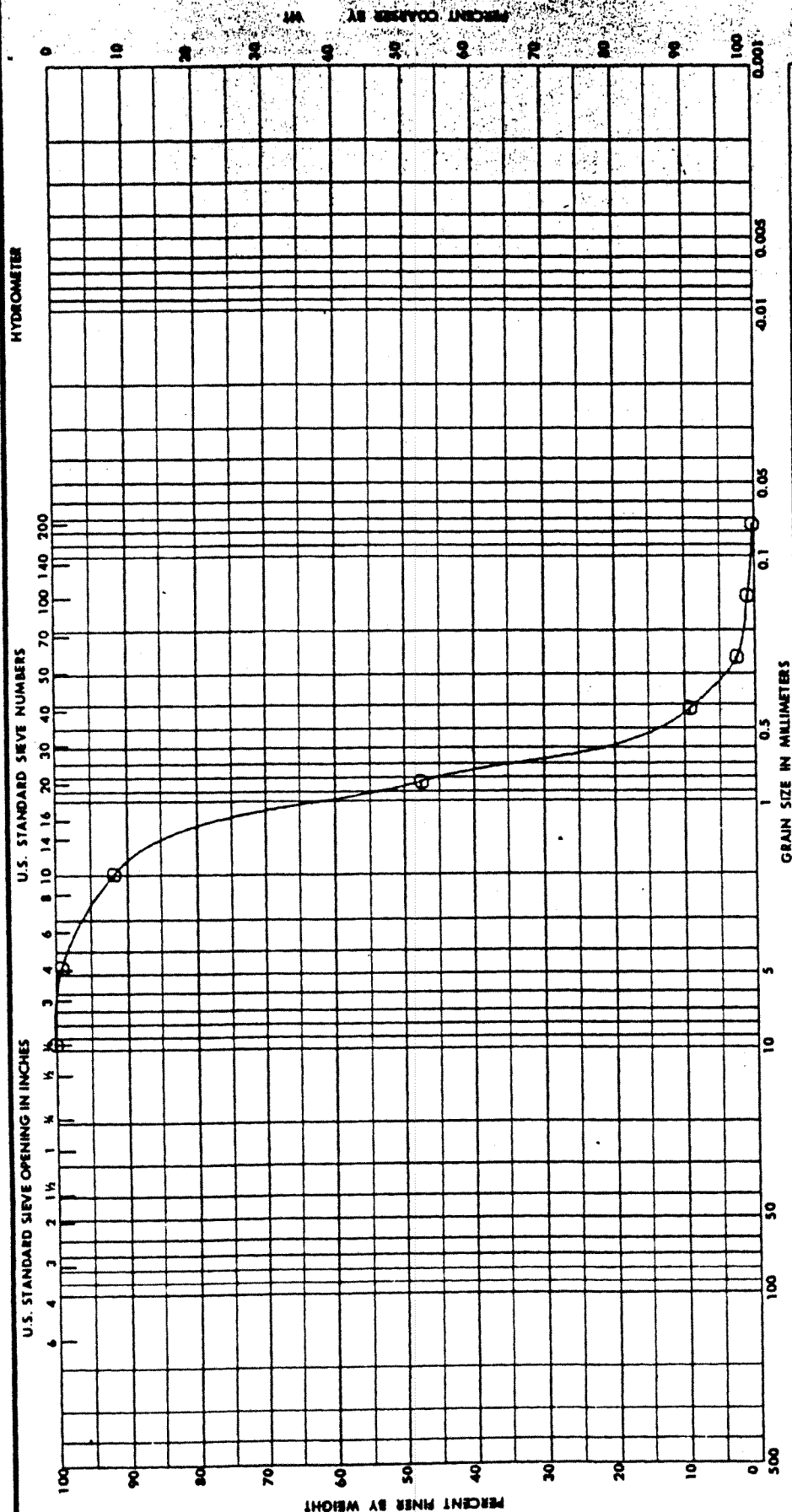


Req. No. EN-GS-84-03



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

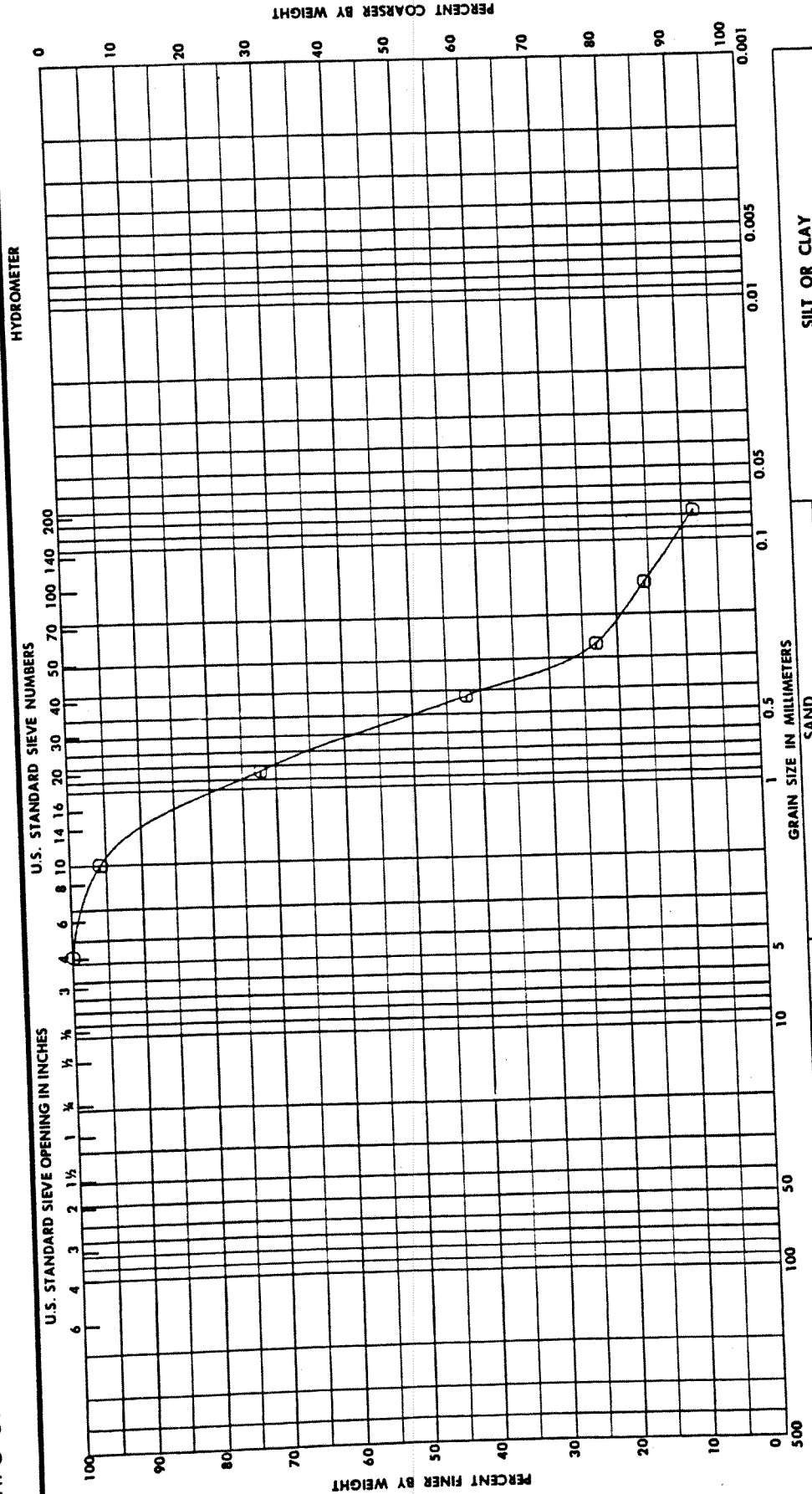
Req. No. EN-GS-84-03



COBBLES		GRAVEL		SAND			SILT OR CLAY	
		COARSE	FINE	COARSE	MEDIUM	FINE		
Sample No.	MARK Depth	VISUAL Classification		Nat w %	LL	PL	PI	
8	41.5-43.0	POORLY GRADED SAND (SP) TAN WITH A TRACE OF GRAVEL		--	NP	NP	NP	Project SAVANNAH HARBOR HARBOR WIDENING
								Area LAB NO. 97/635
								Boring No. SH-103 SAMPLE NO. 8
								Date 04/06/84

GRADATION CURVES

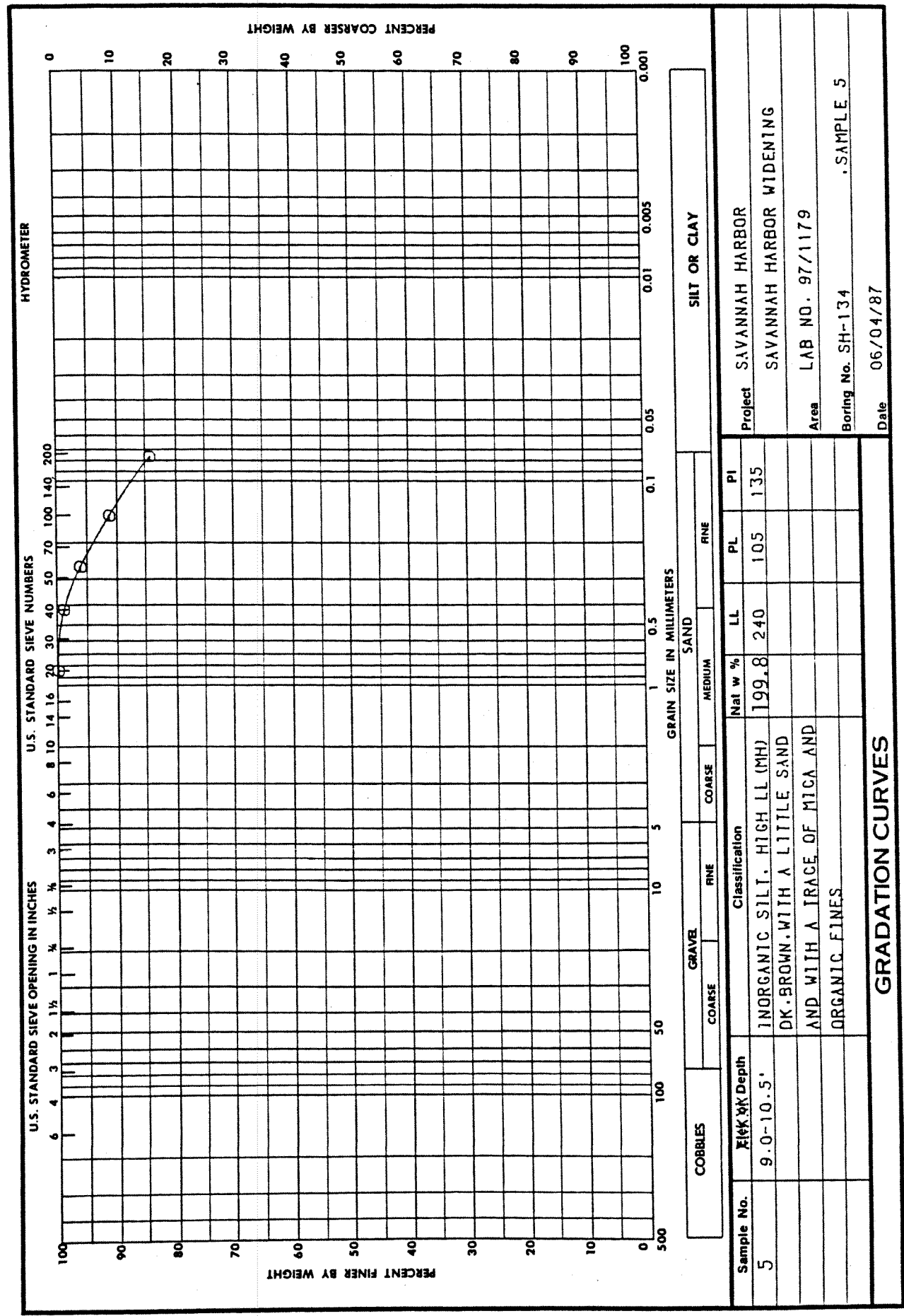
ENG FORM 2087
1 MAY 63



COBBLES		GRAVEL		SAND		SILT OR CLAY	
COARSE		FINE		COARSE		FINE	
COARSE		FINE		COARSE		FINE	
Sample No.	2	Visual	Classification	Nat w %	LL	PL	PI
1.5-3.0'		WELL GRD SILTY SAND (SW-SM)		--	NP	NP	NP
		TAN. WITH A TRACE OF MICA AND					
		WOOD AND WITH POCKETS OF GRAY					
		SANDY (CH)					
GRADATION CURVES							
Project				SAVANNAH HARBOR			
Area				SAVANNAH HARBOR WIDENING			
Boring No.				LAB NO. 97/1176			
Date				SH-134			
Date				06/04/87			
Date				SAMPLE 2			

W.O. No. 5193
Req. No. SAS-ENG-GS-87-23

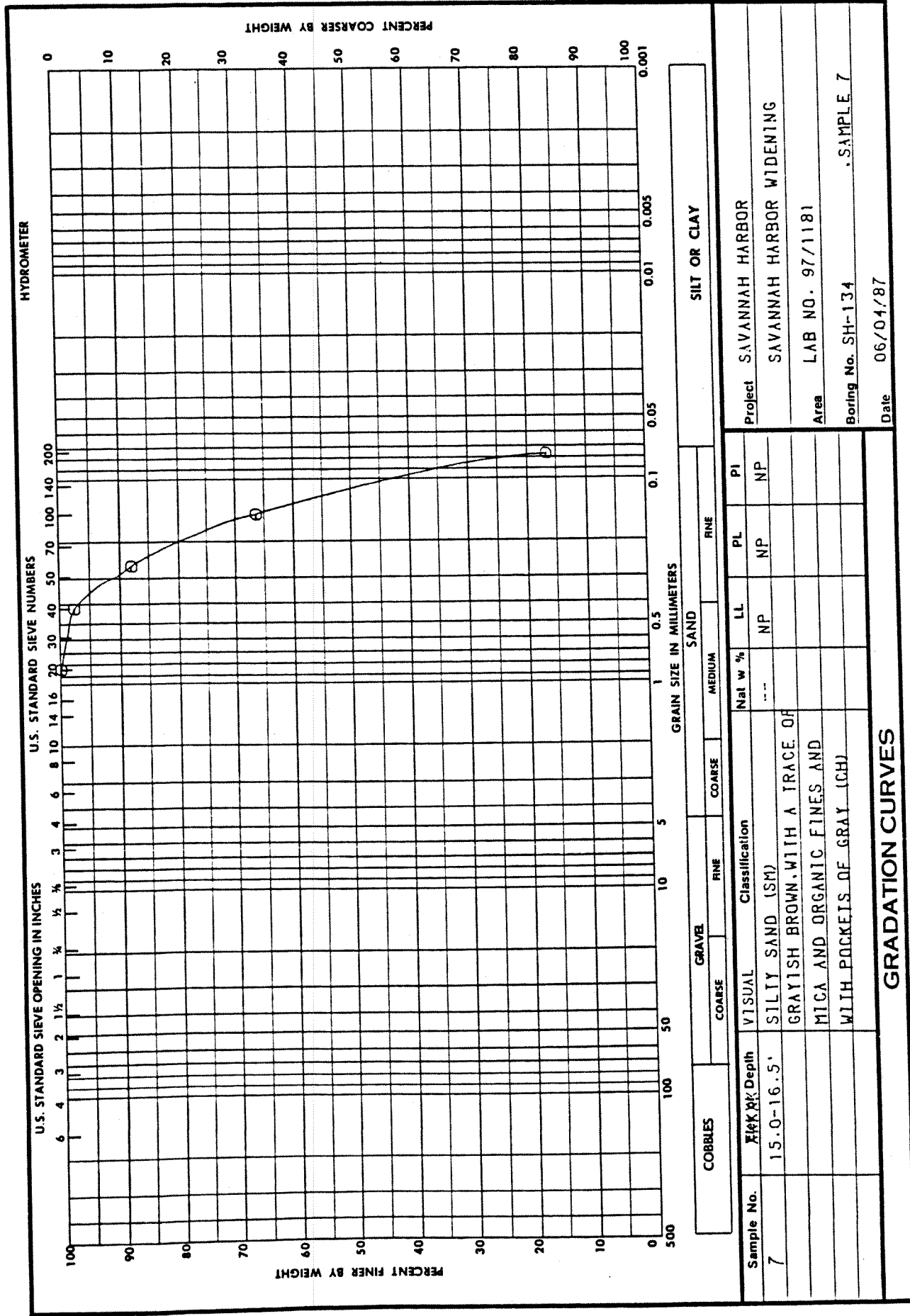
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193

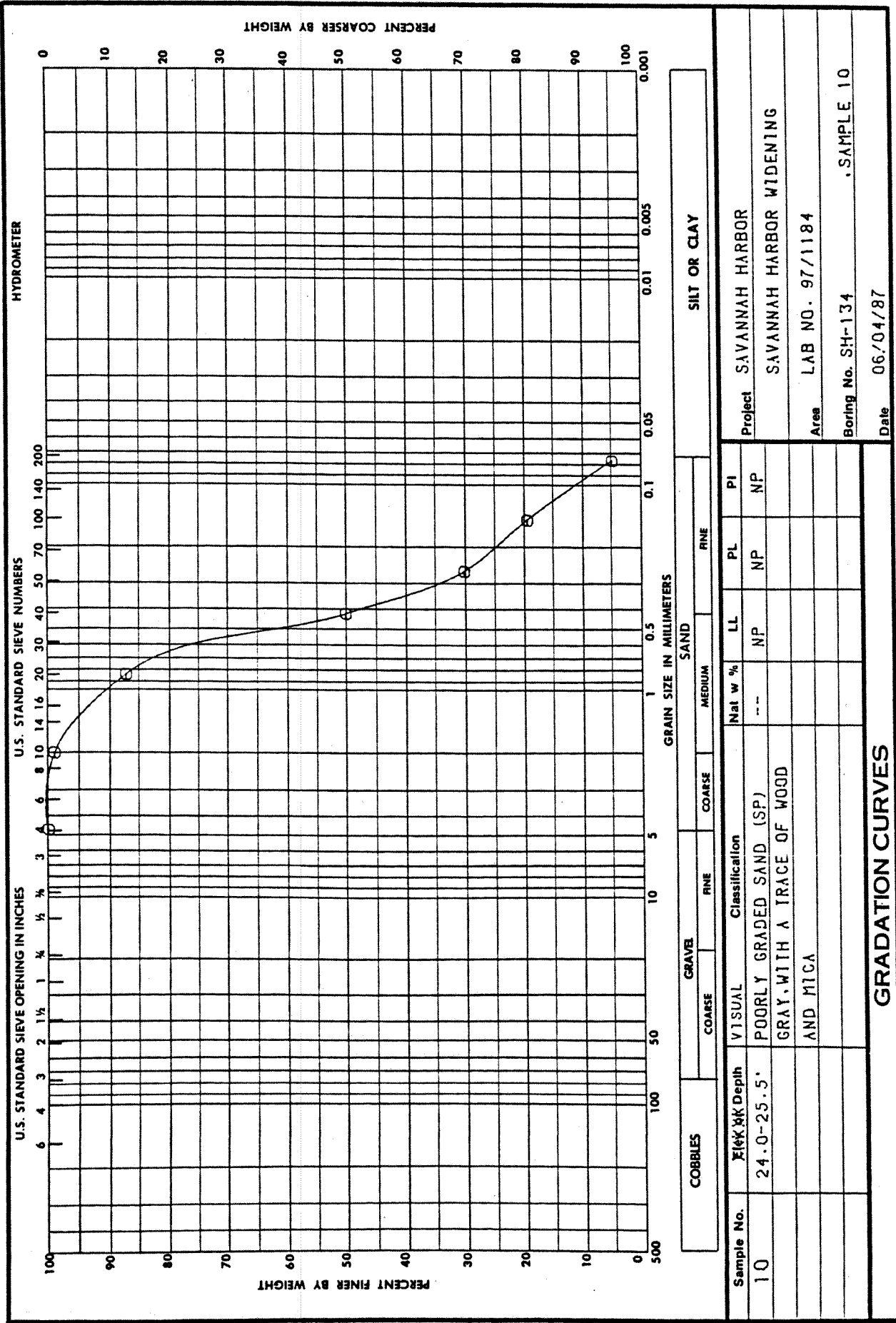
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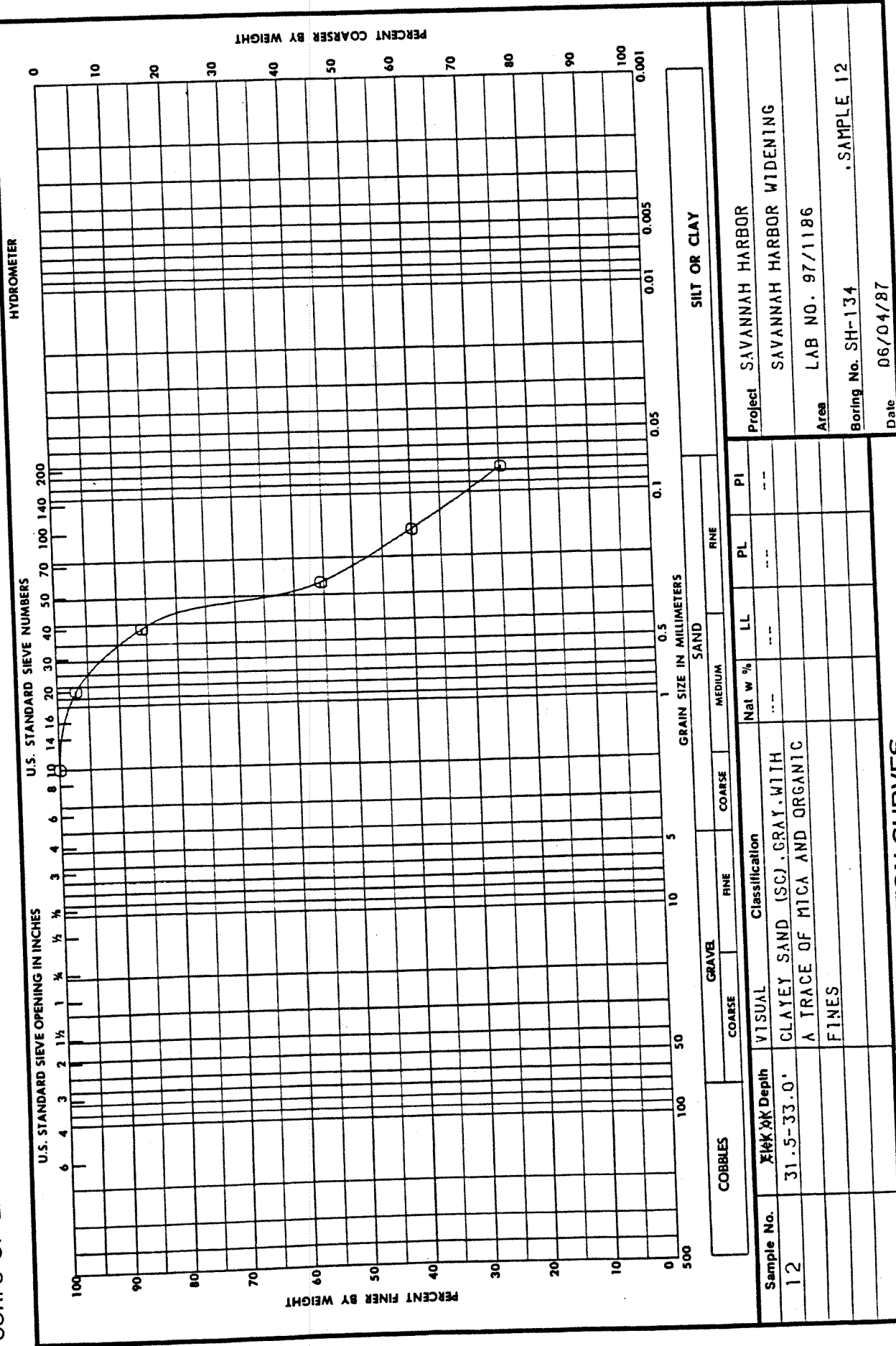
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

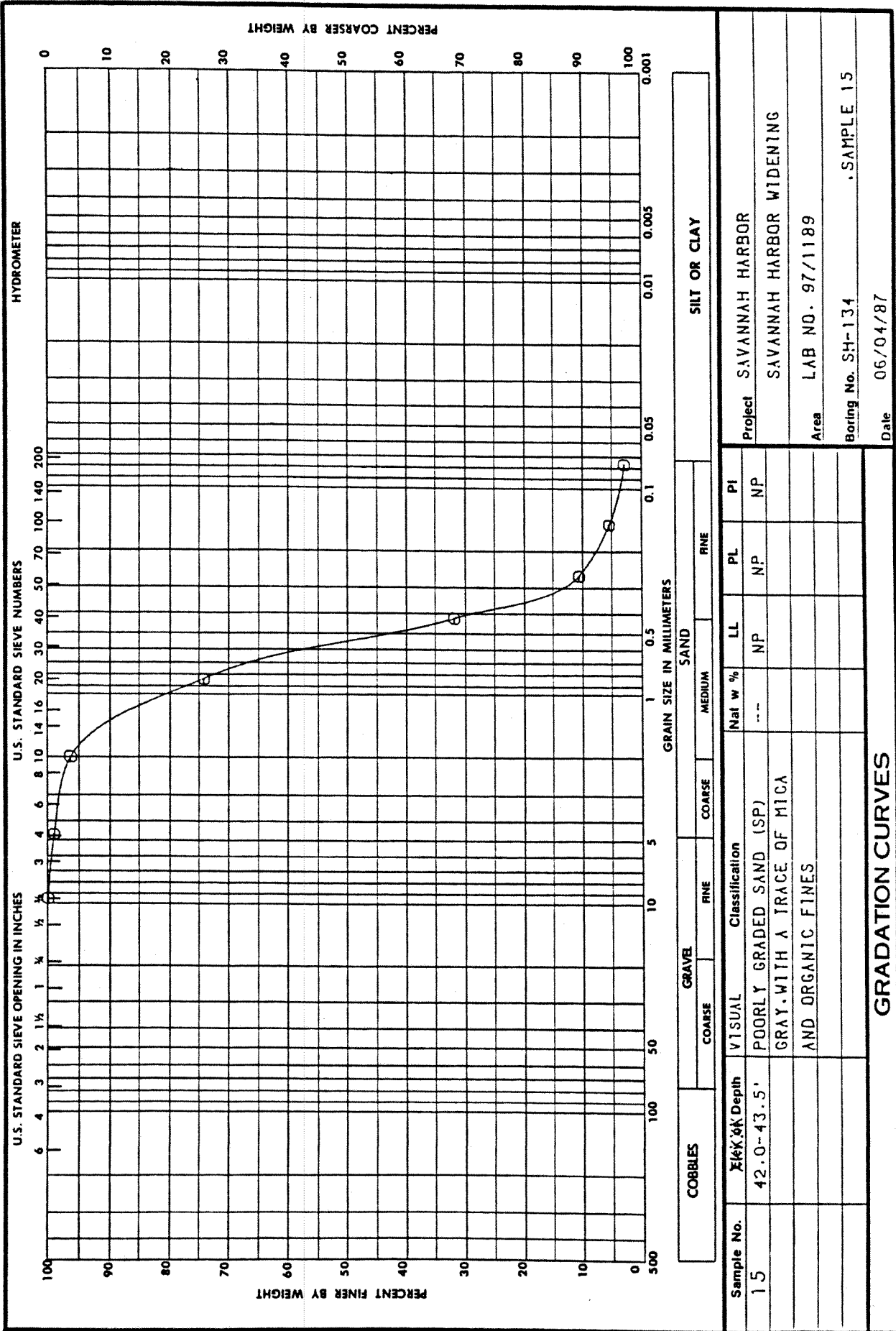
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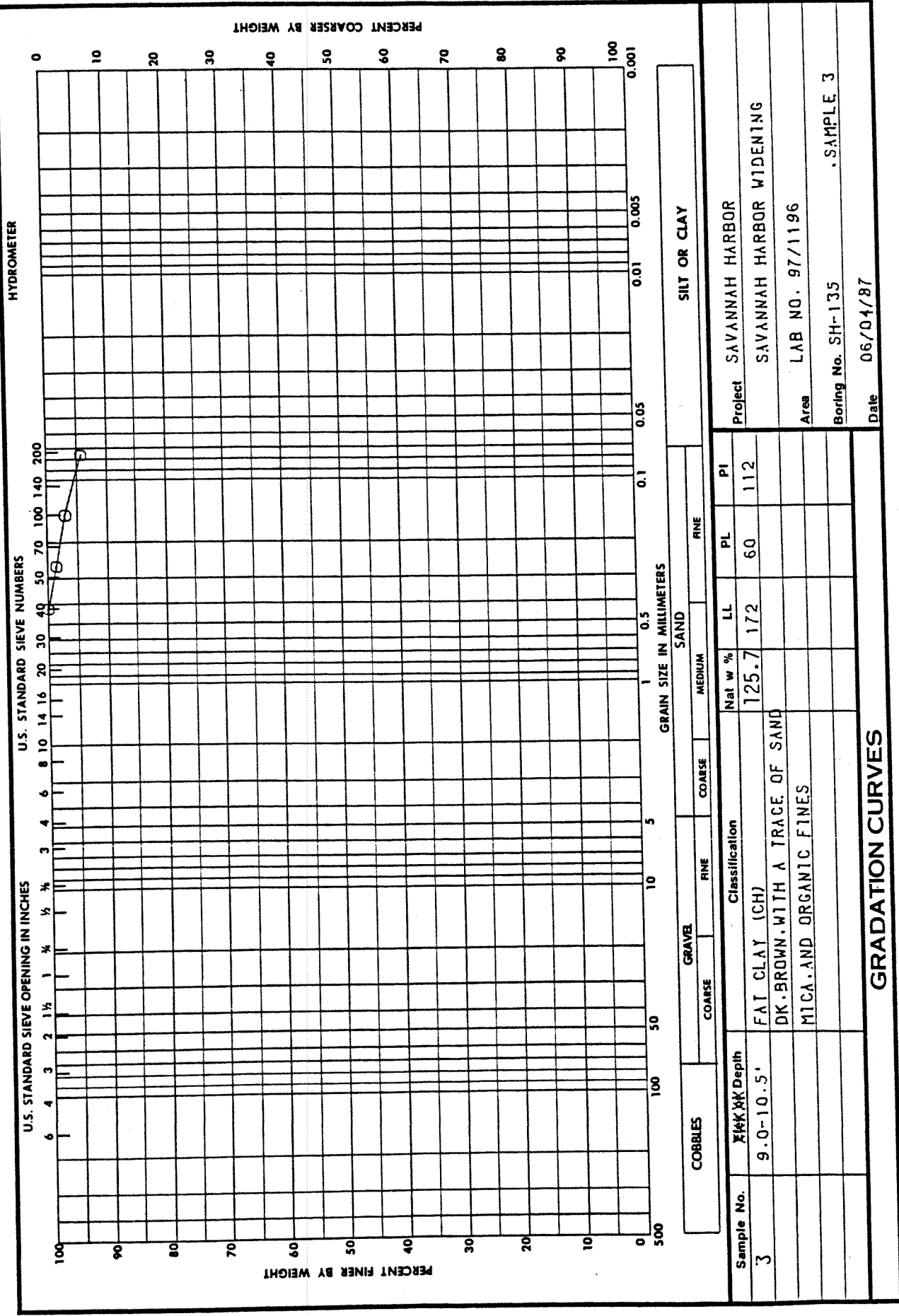
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 Req. No. SAS-EN-GS-87-23
 DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060





W.O. No. 5193
Req. No. SAS-EN-GS-87-23

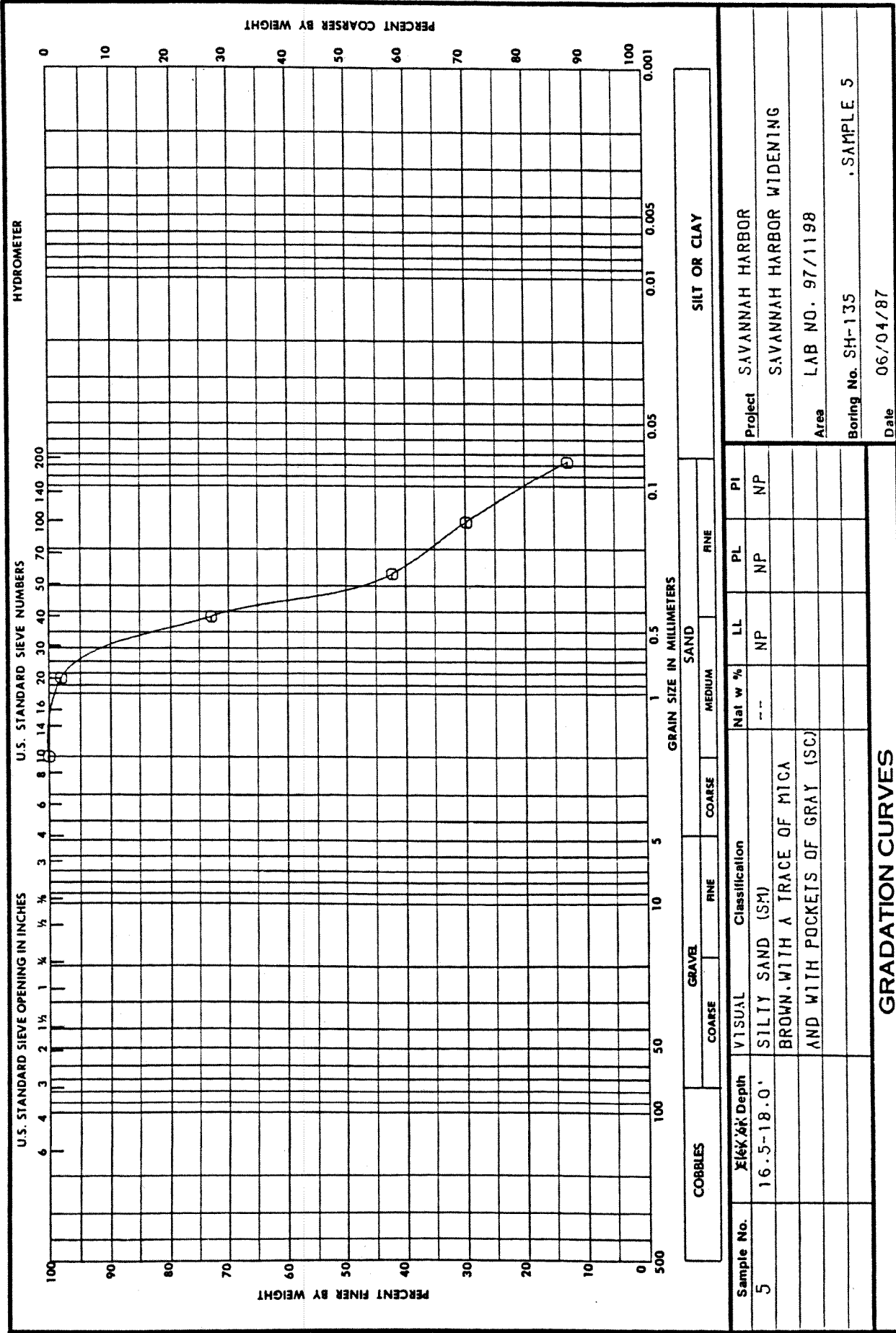
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

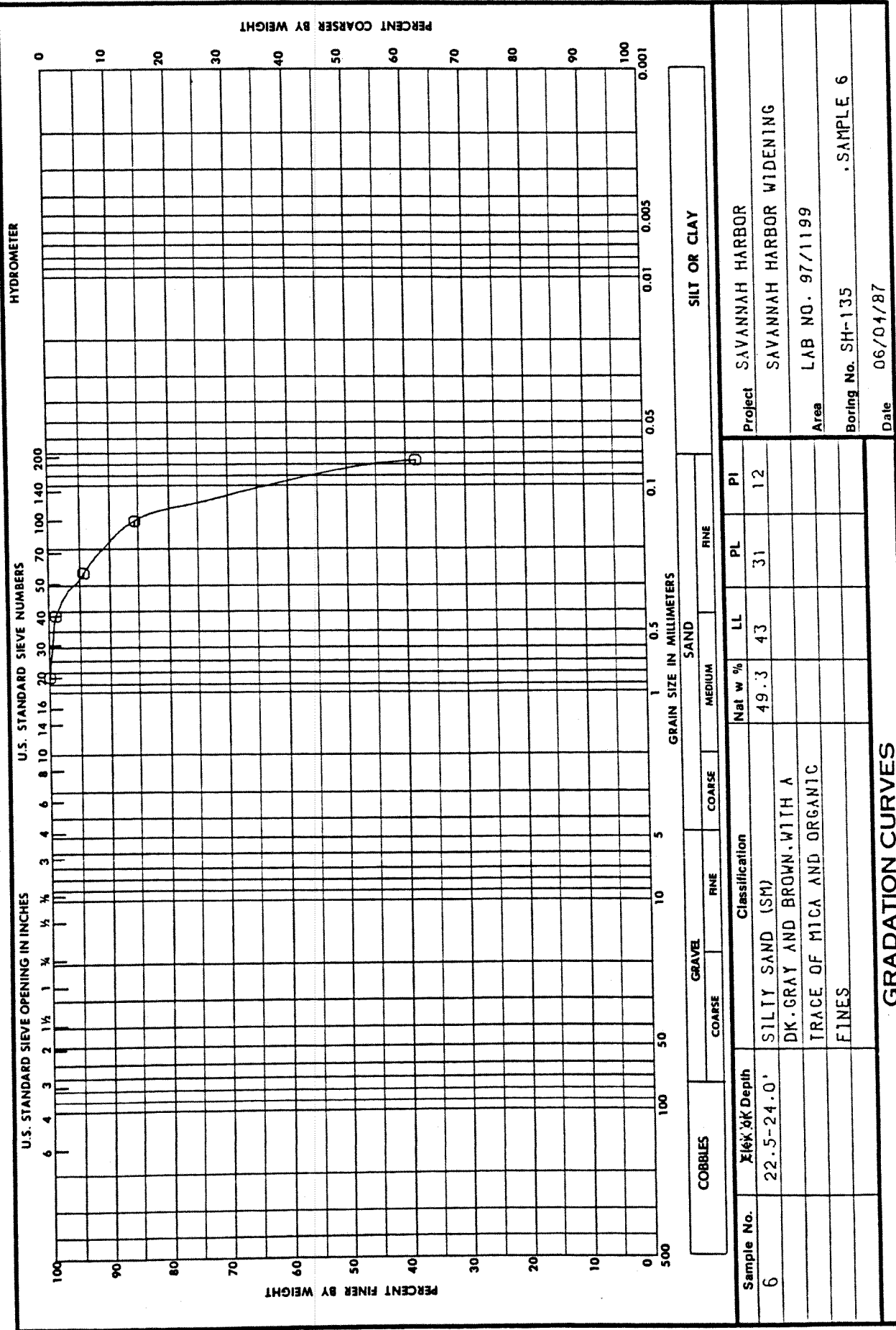


DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193

Req. No. SAS-EN-GS-87-23

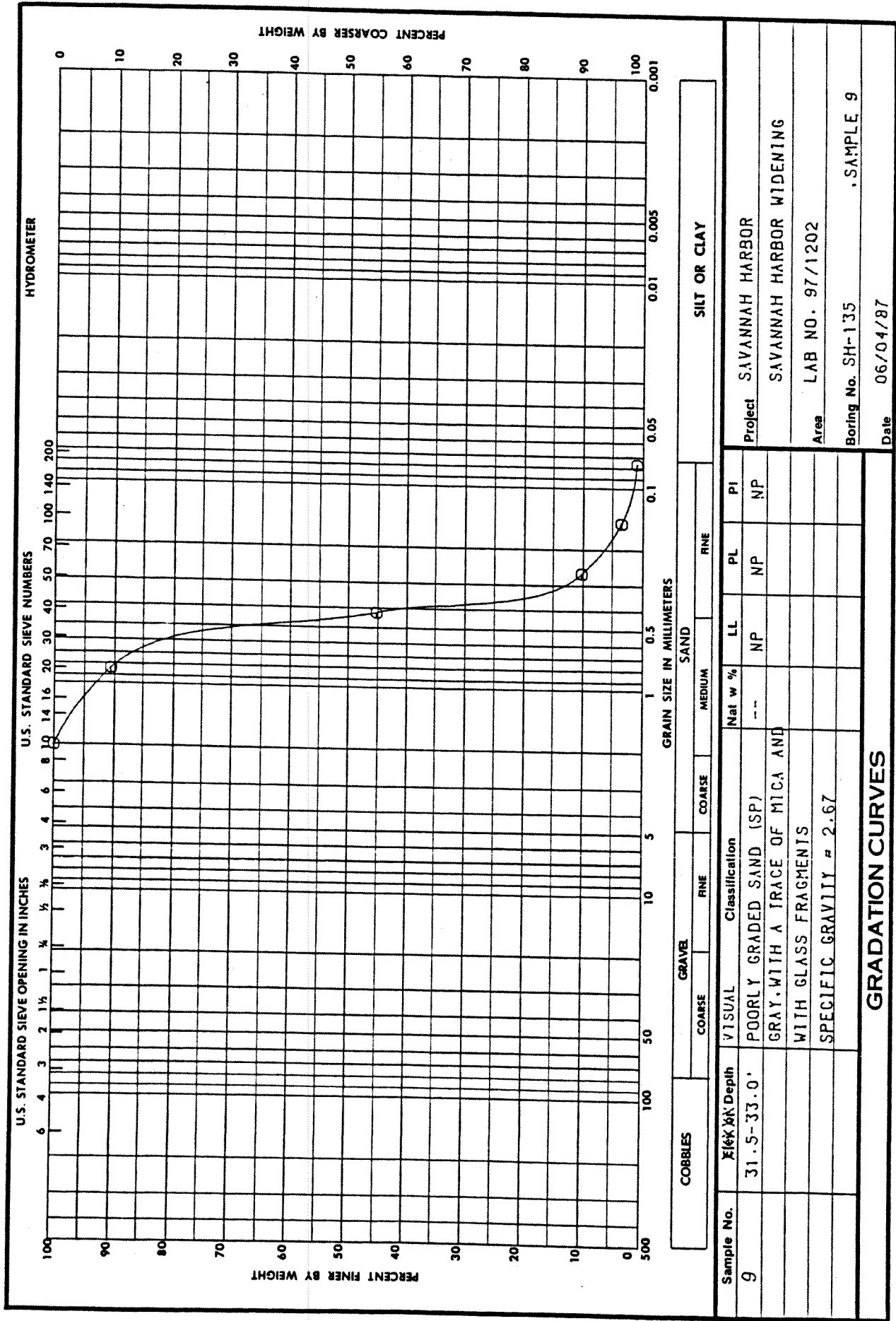


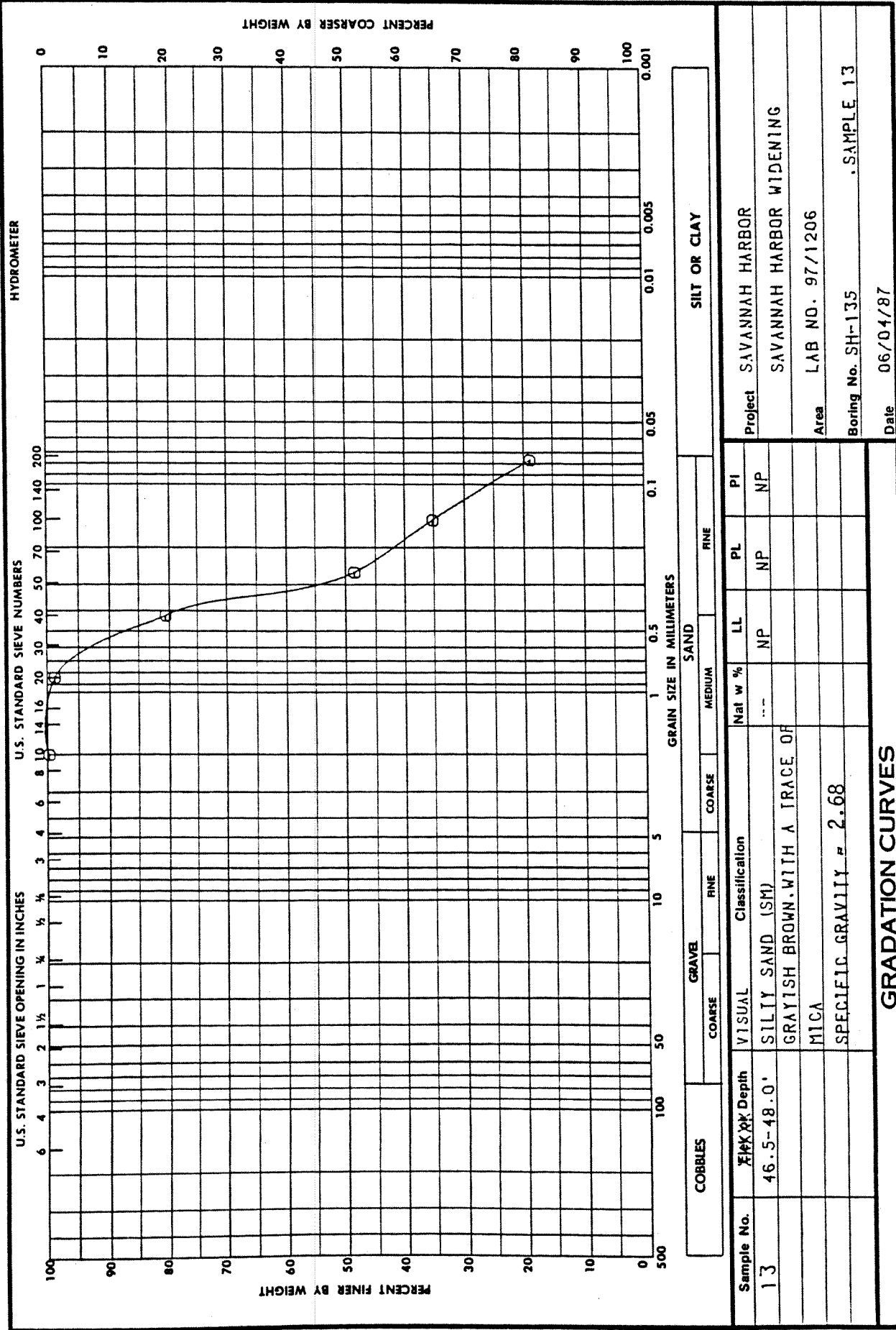


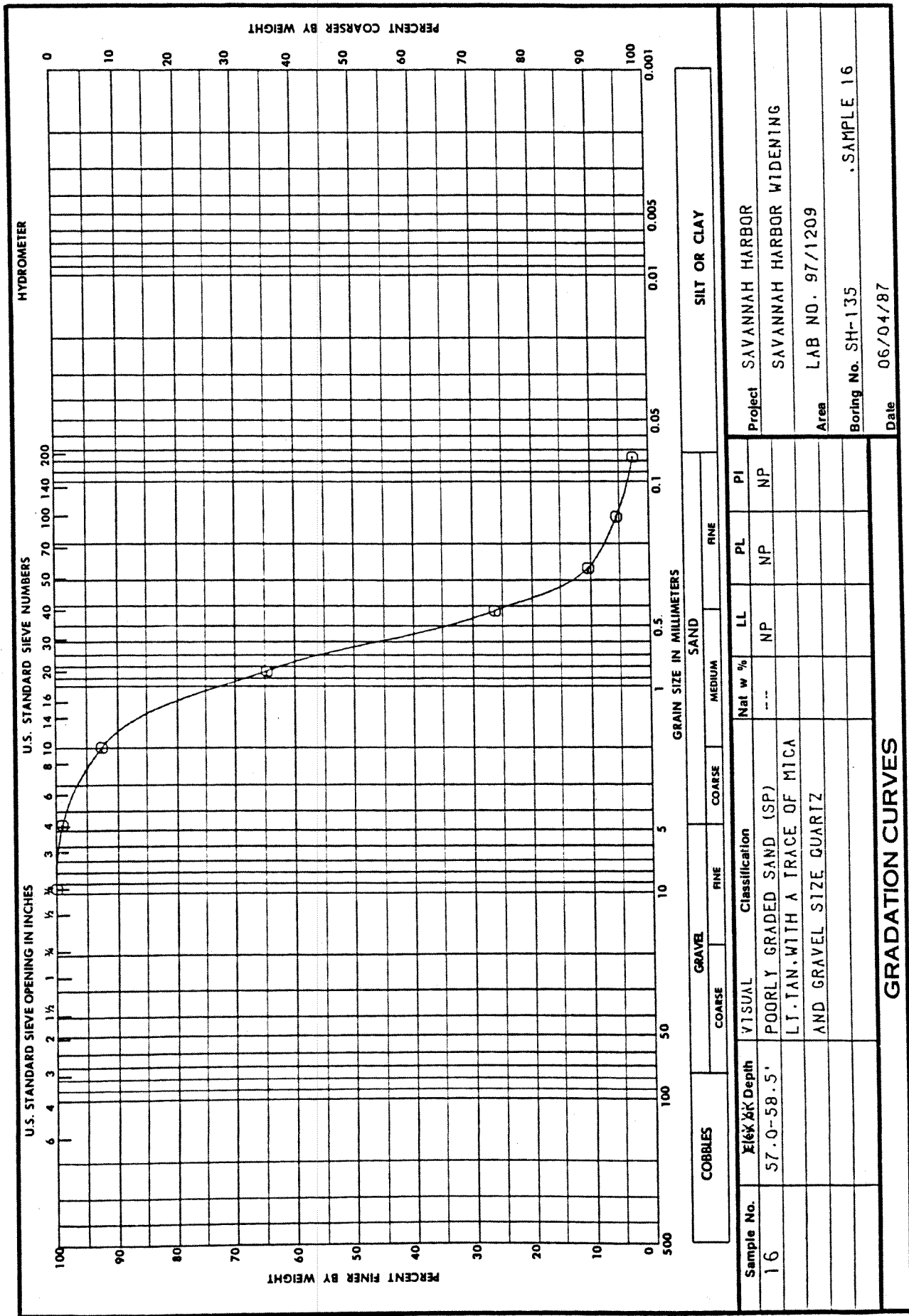
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193

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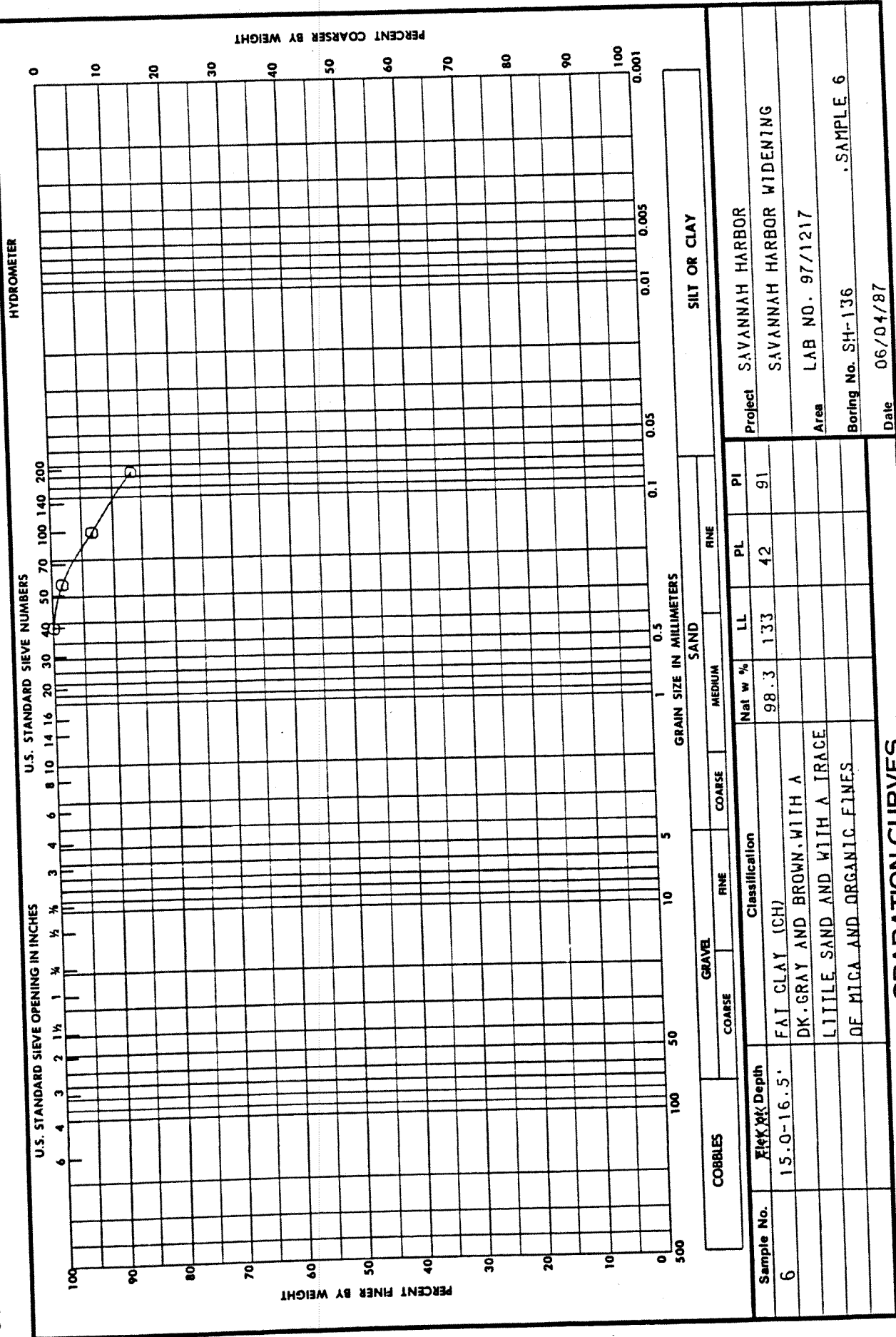






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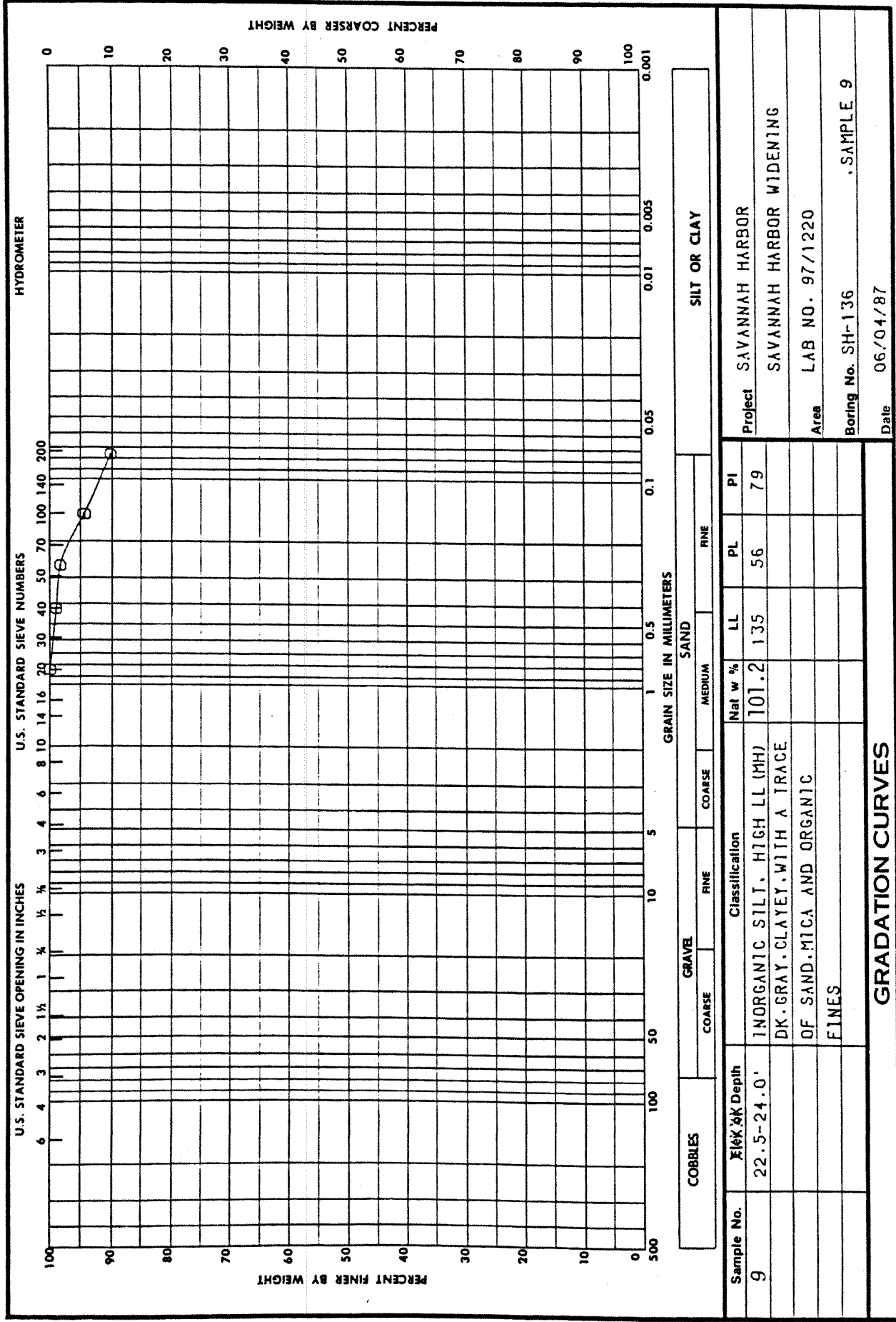
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

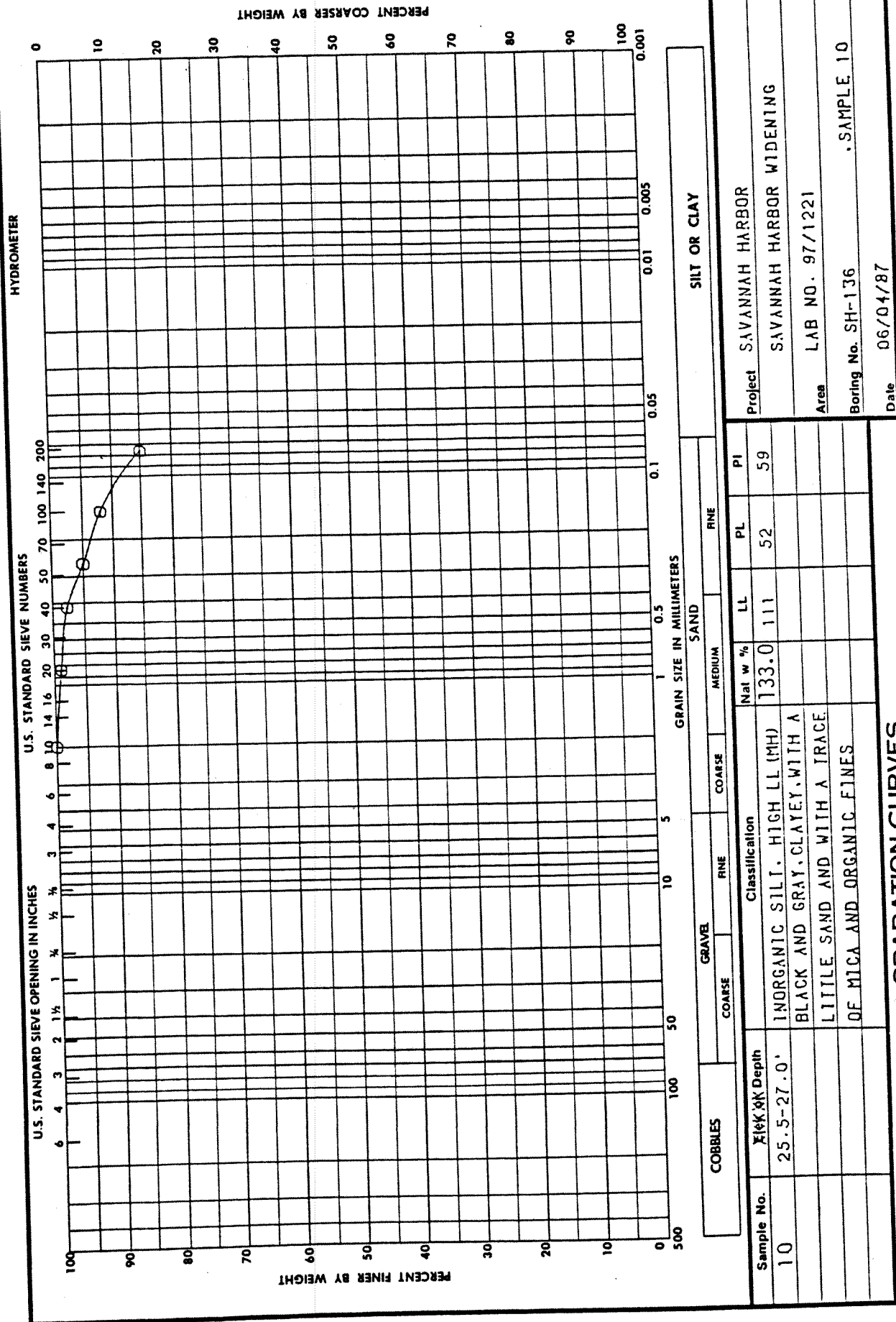
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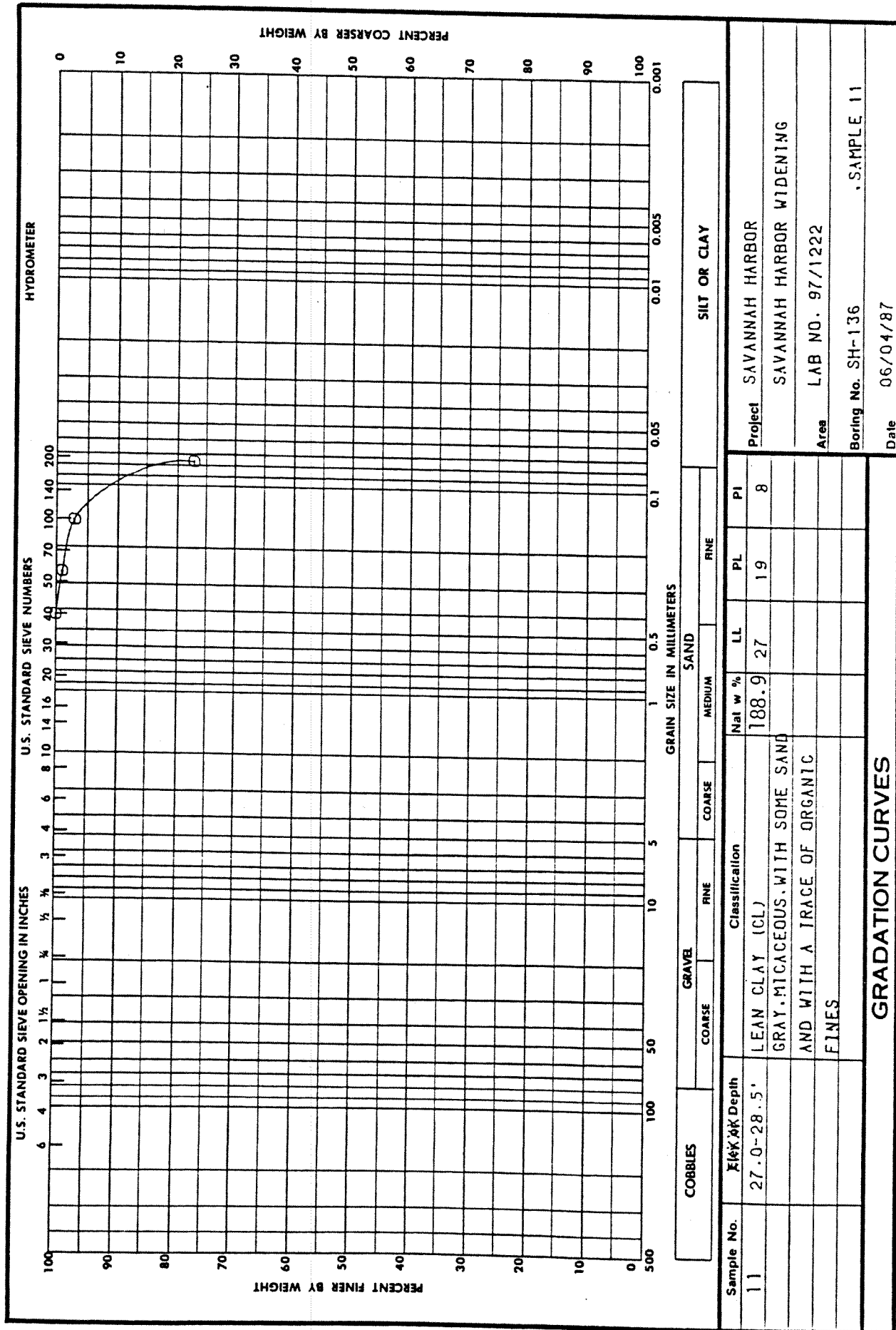
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DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

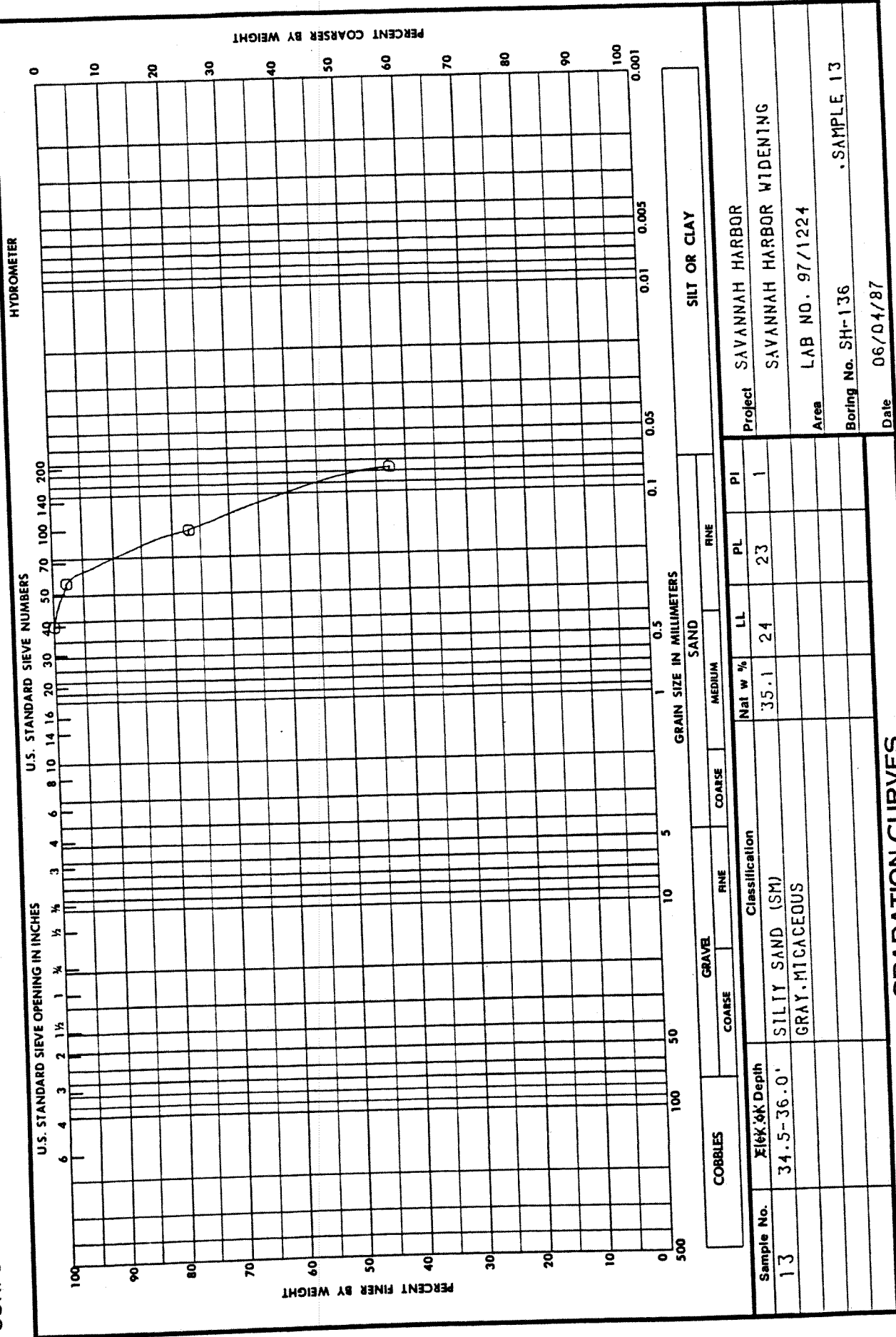
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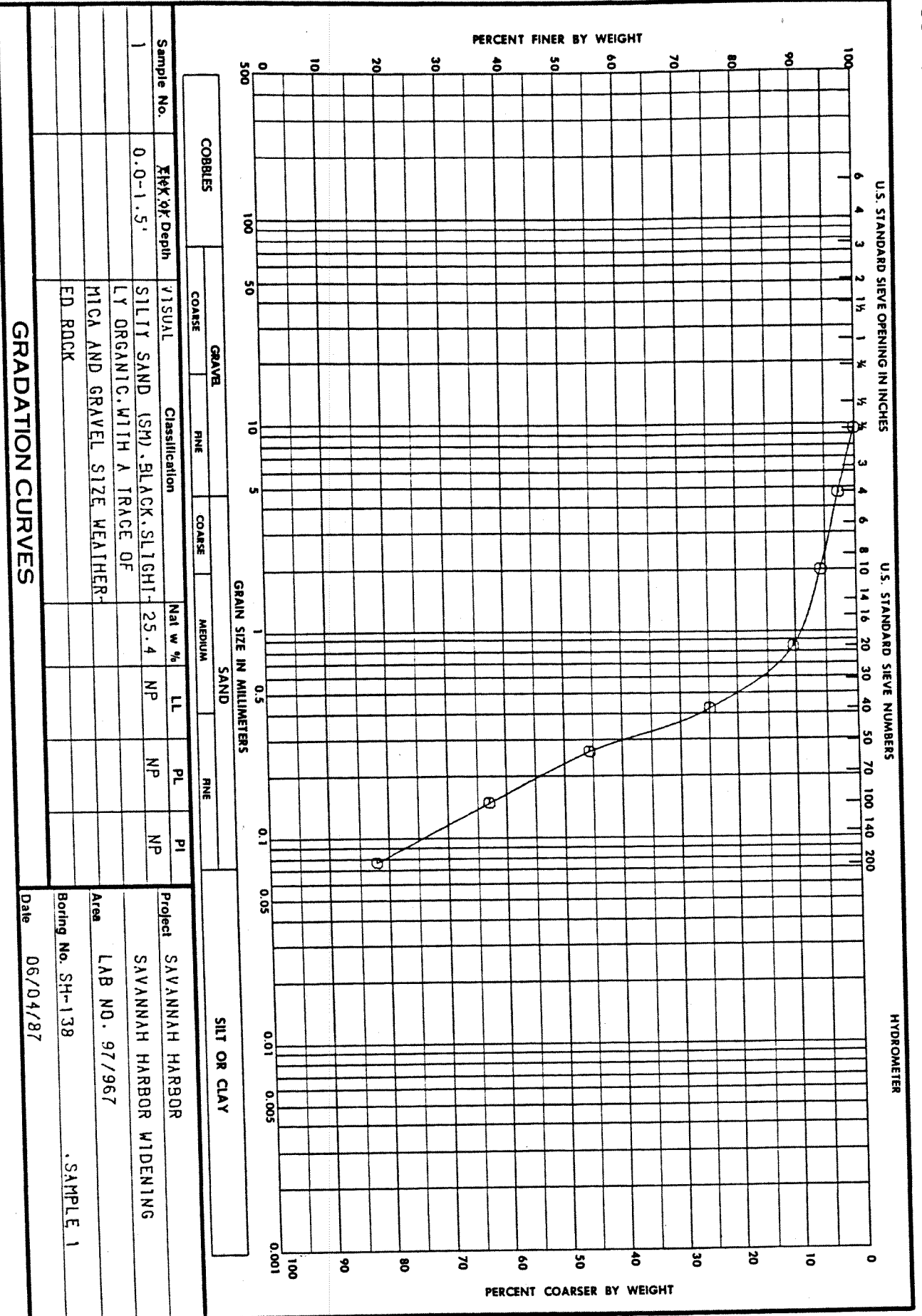


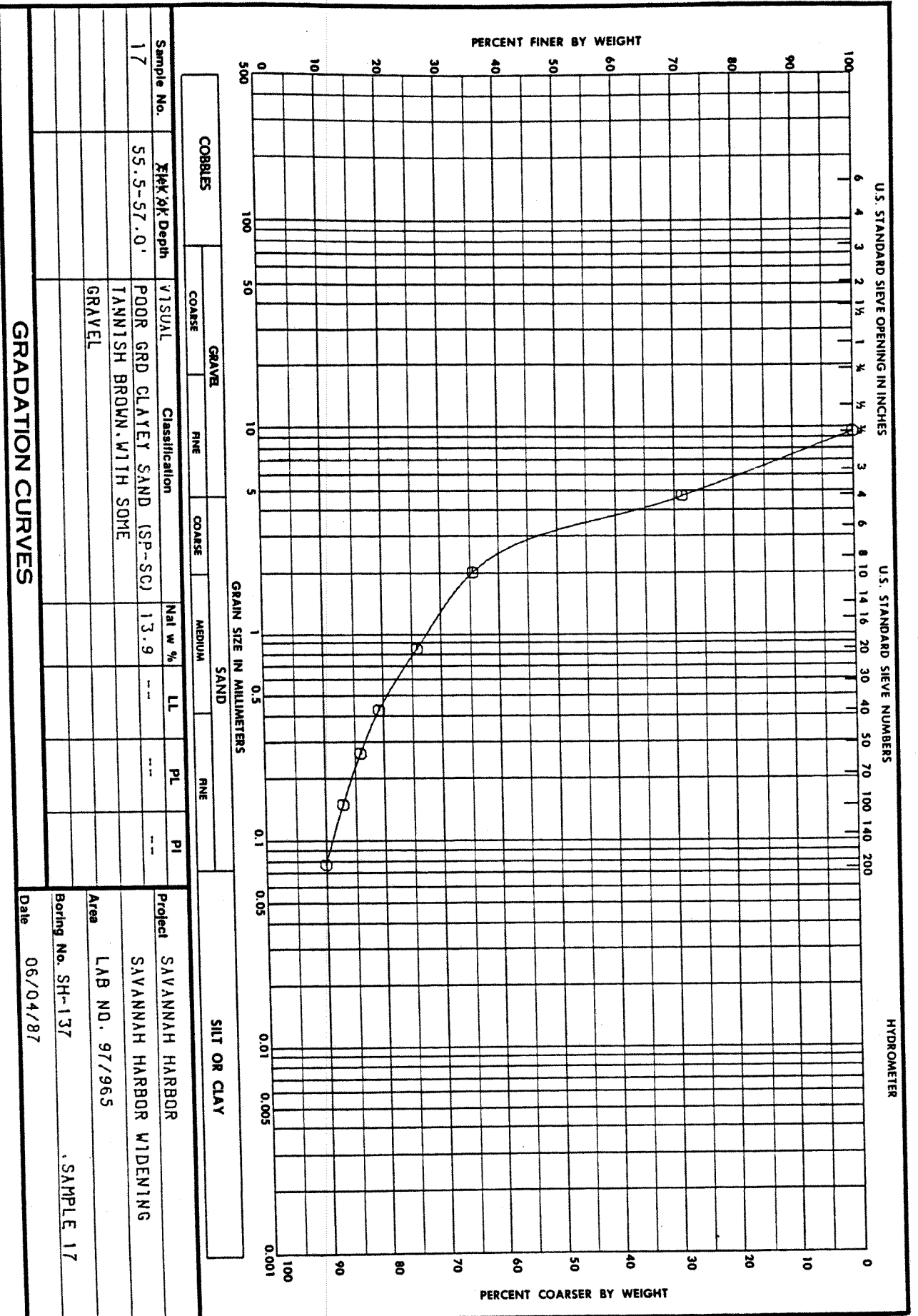


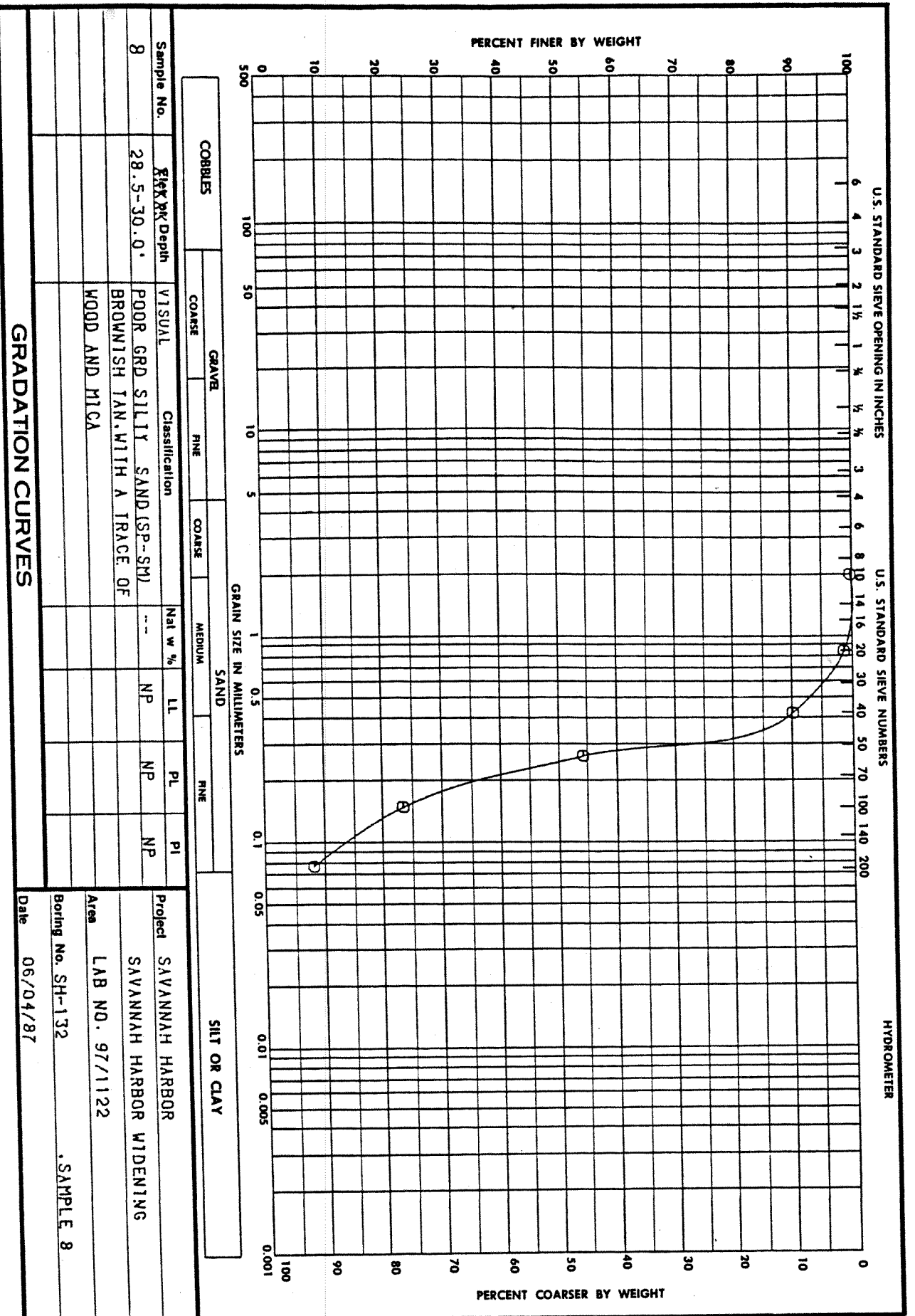
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193
Req. No. SAS-EN-GS-87-23

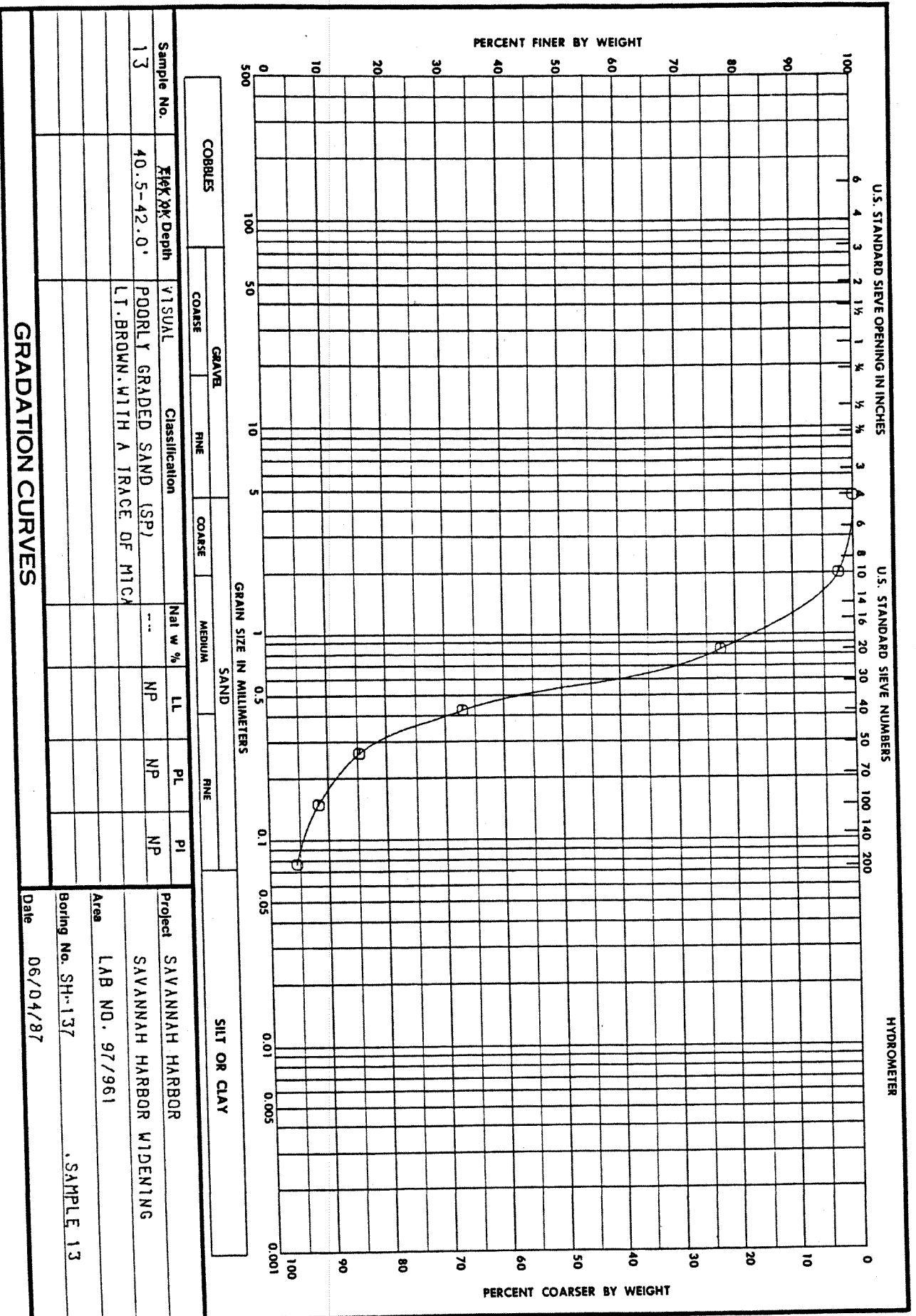


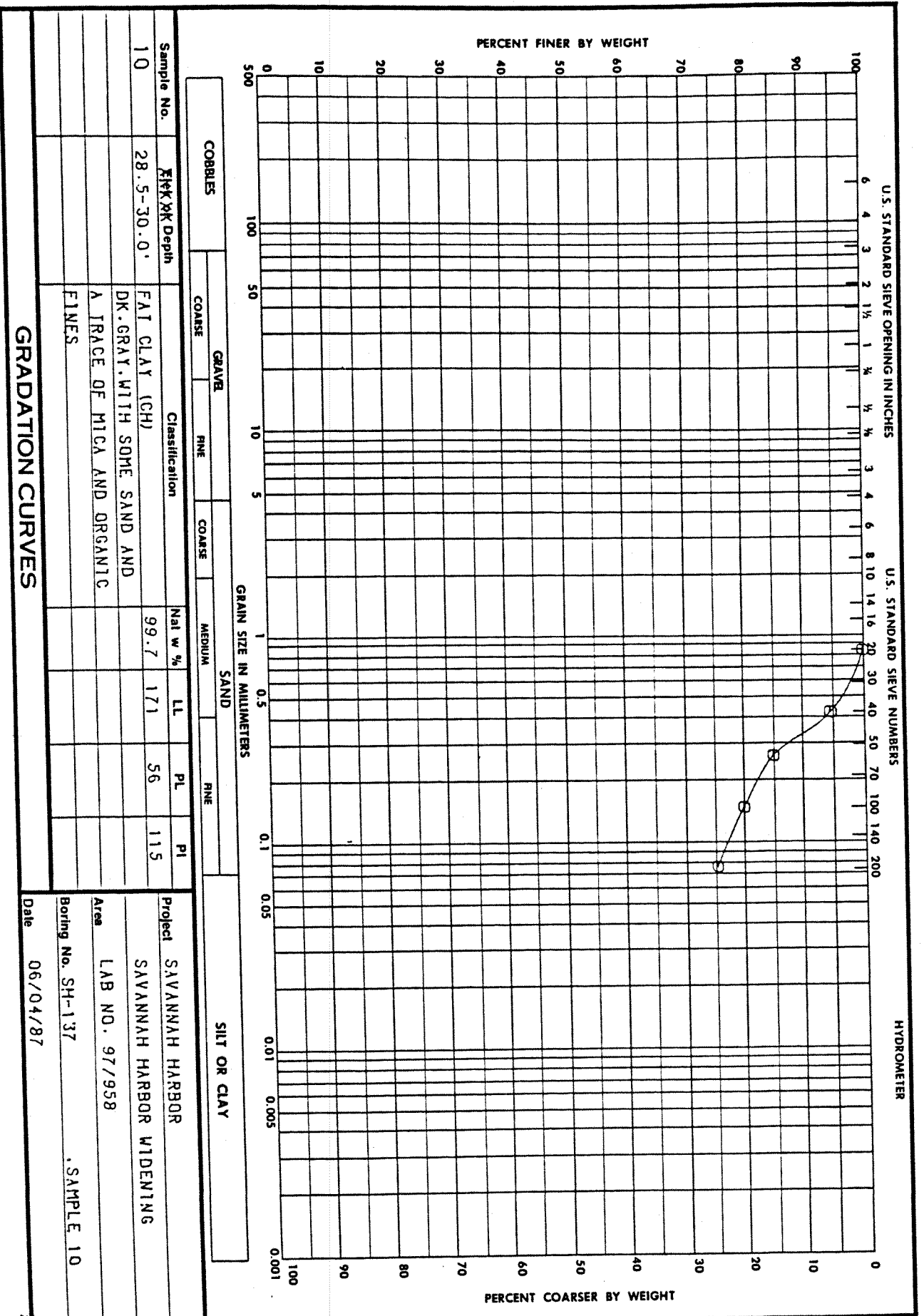


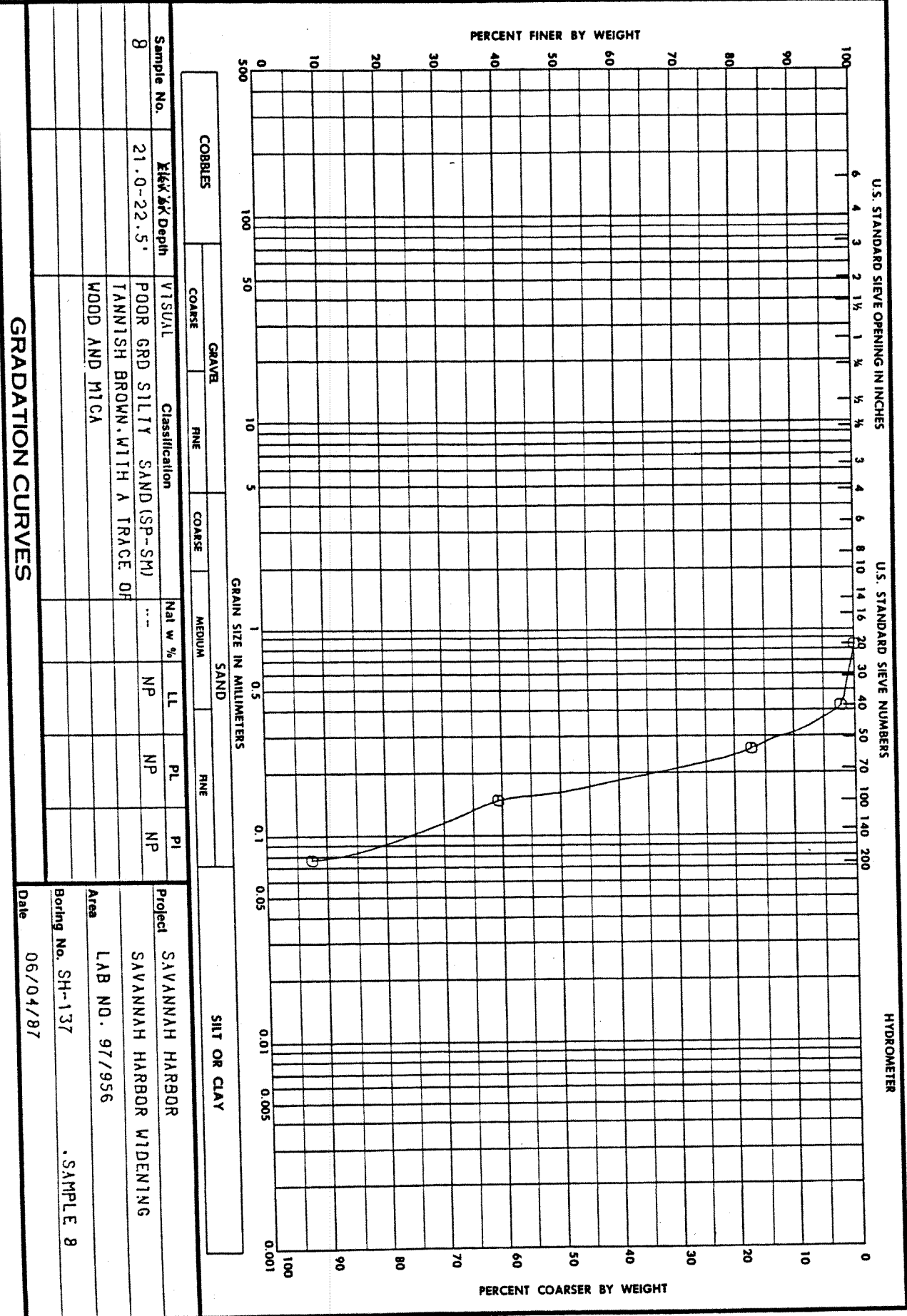


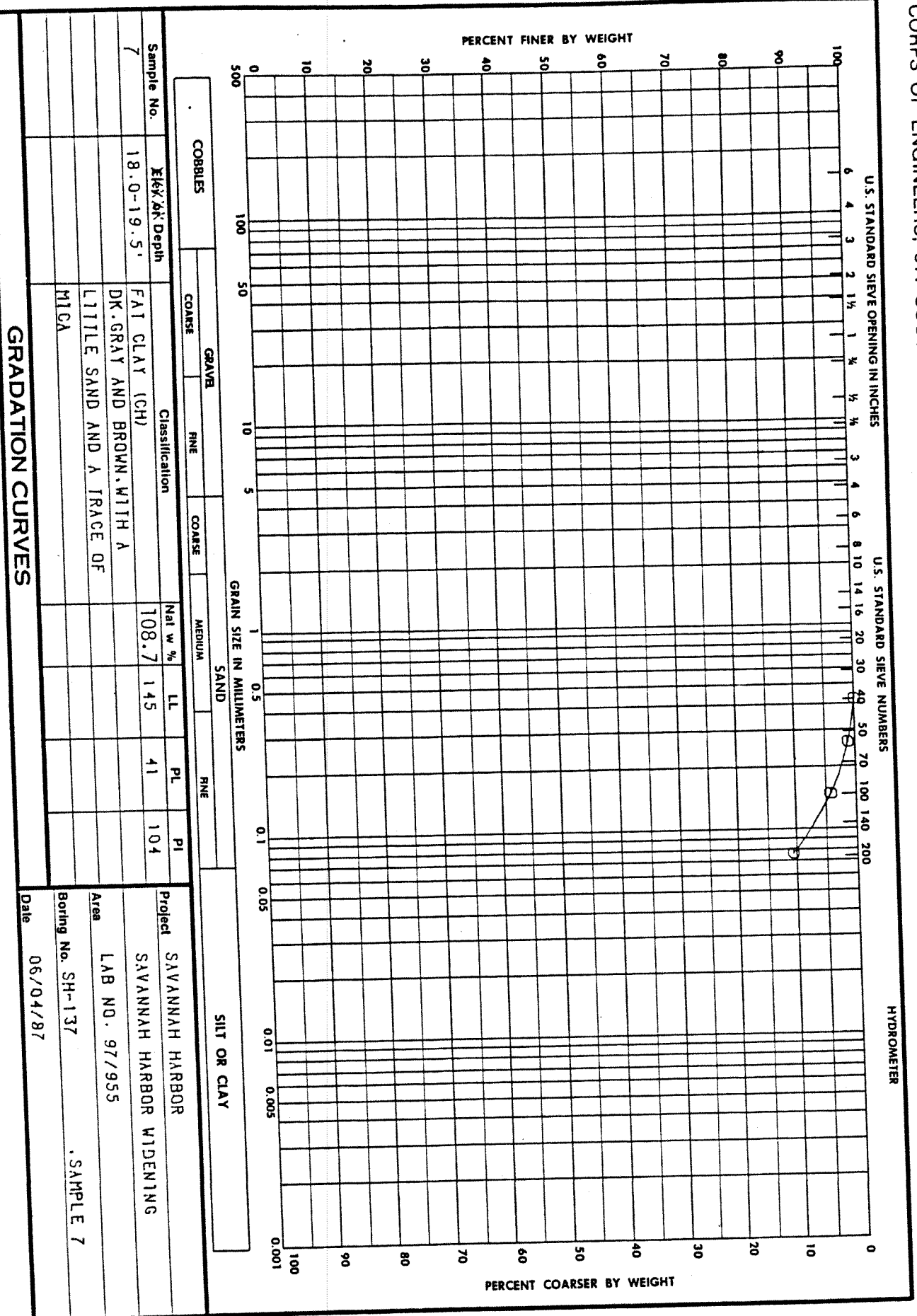


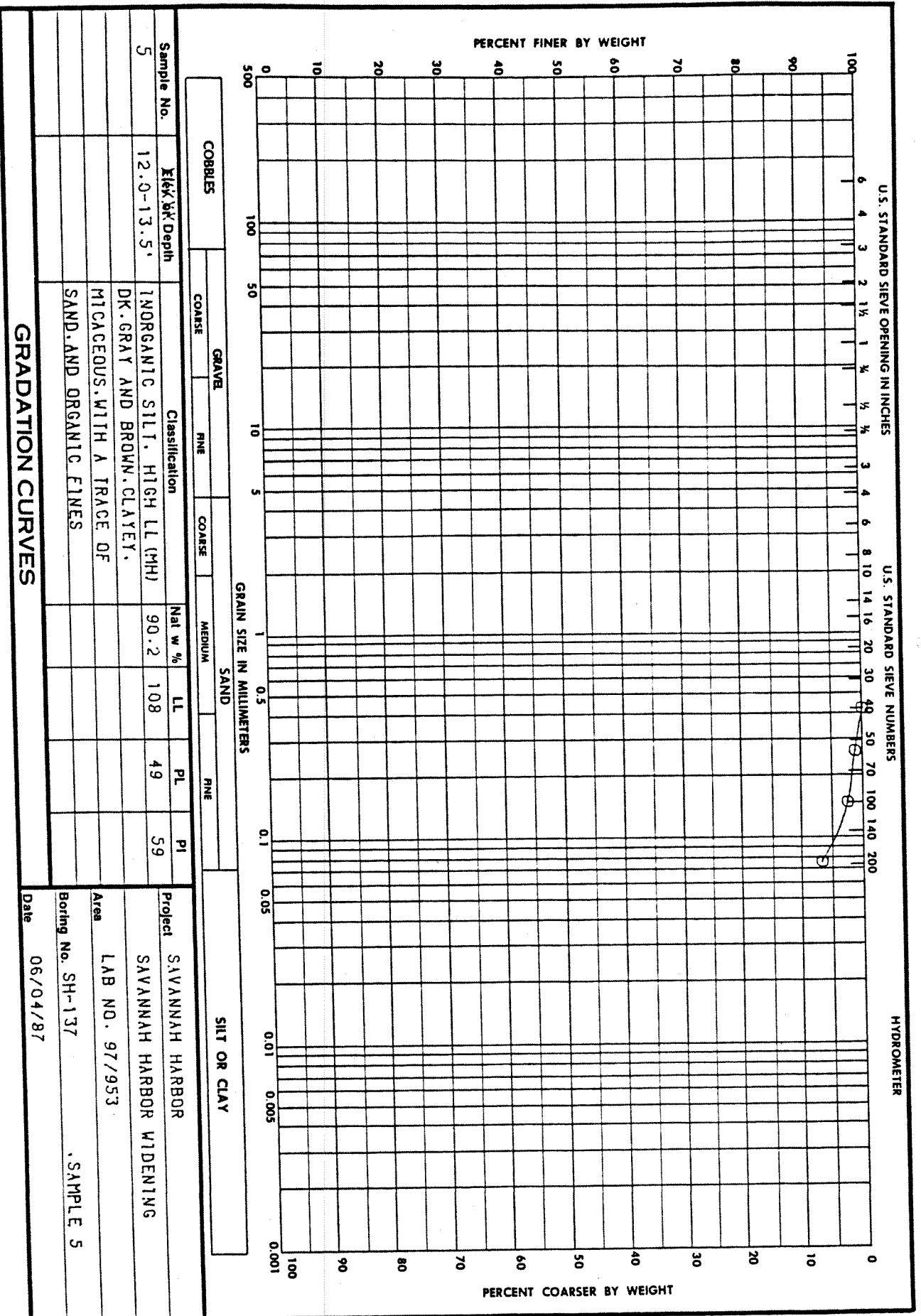
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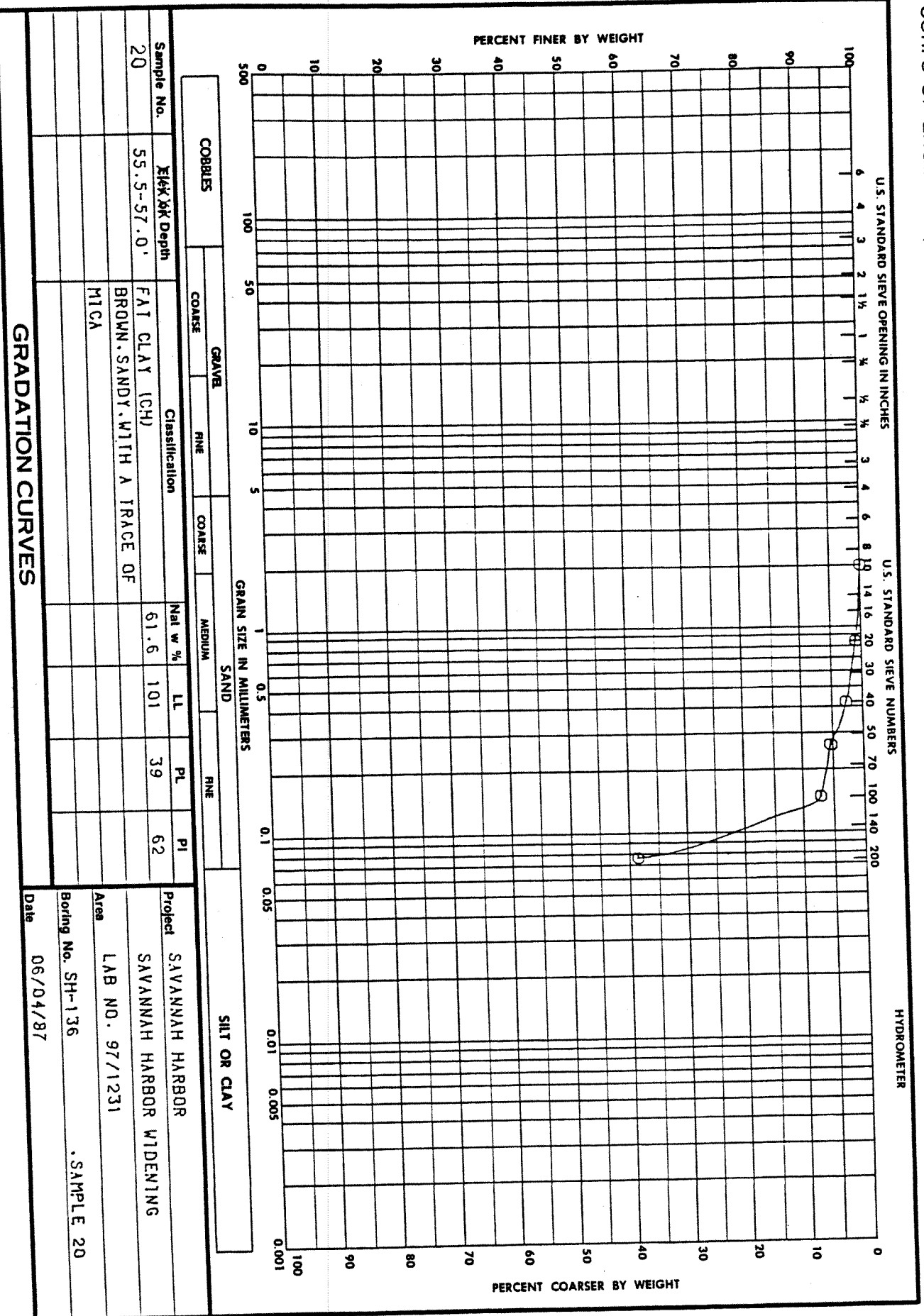


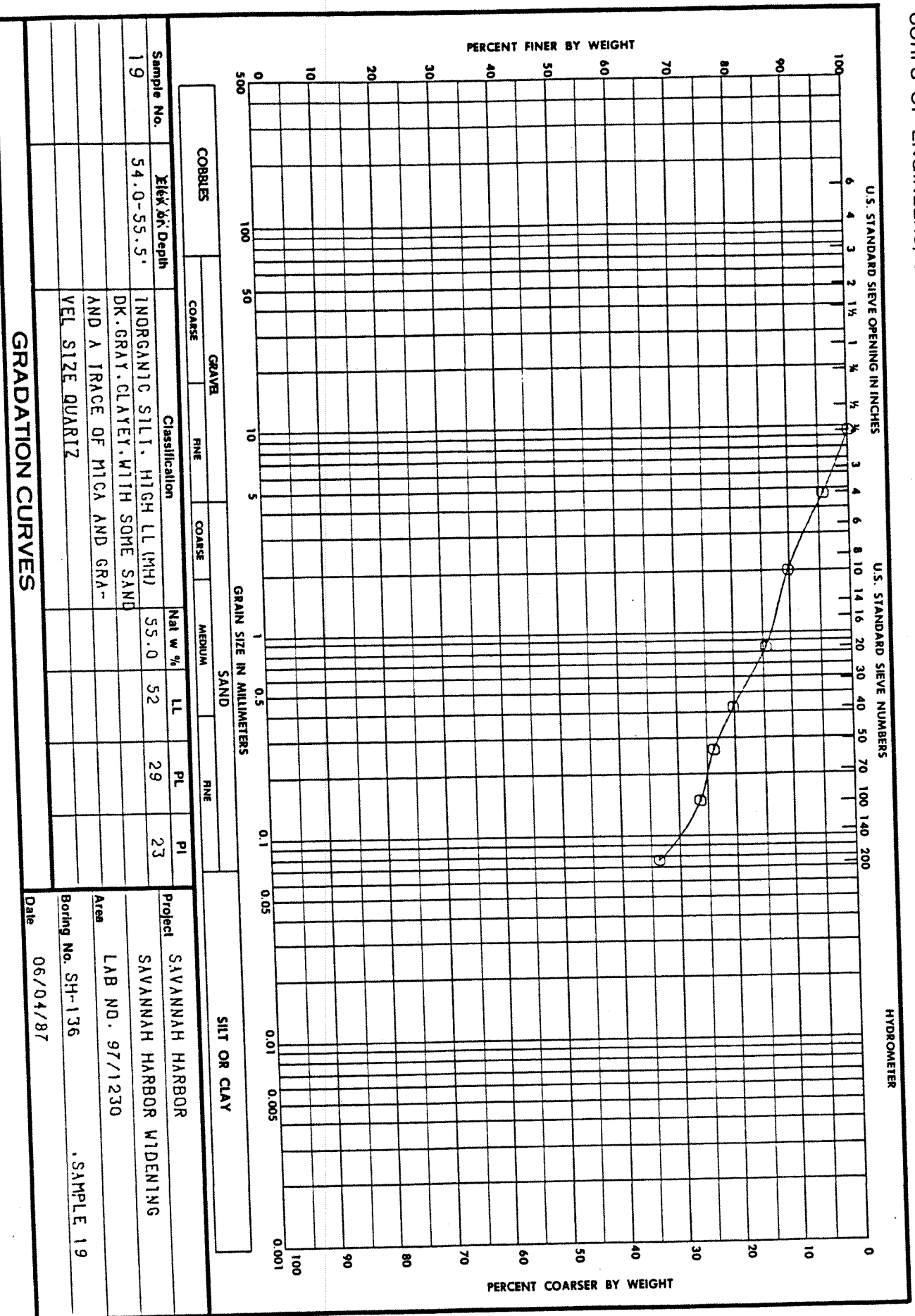


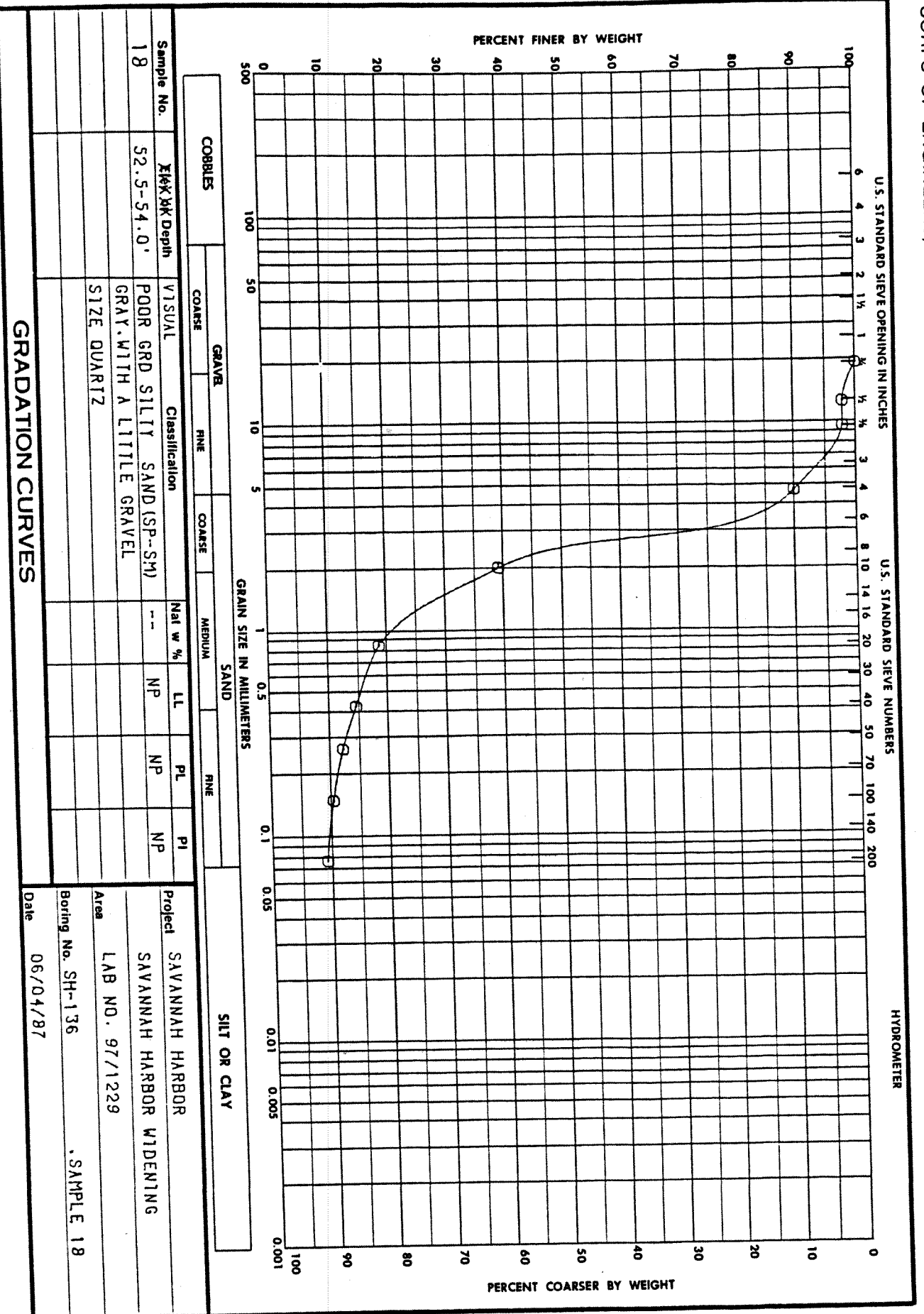


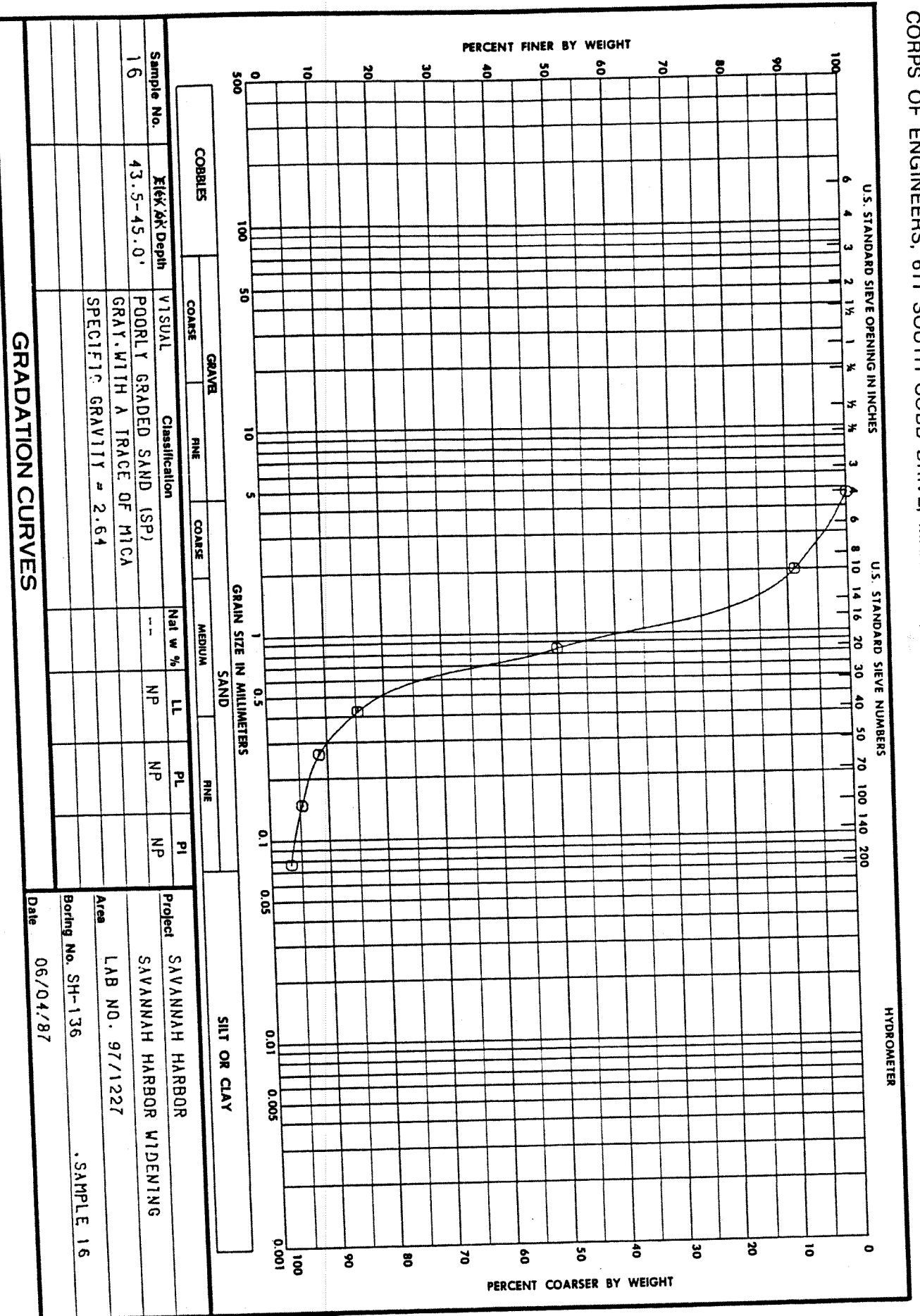


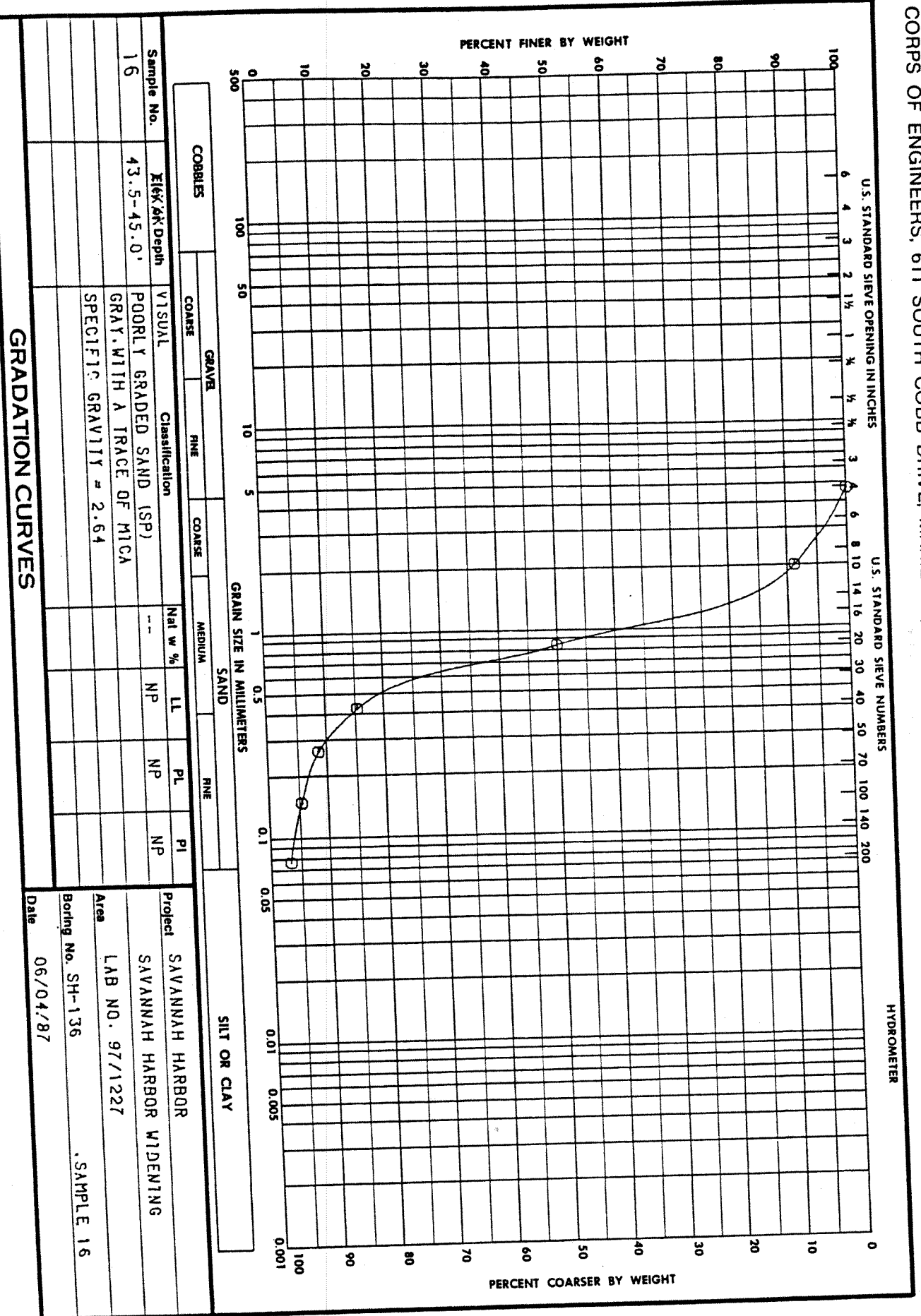


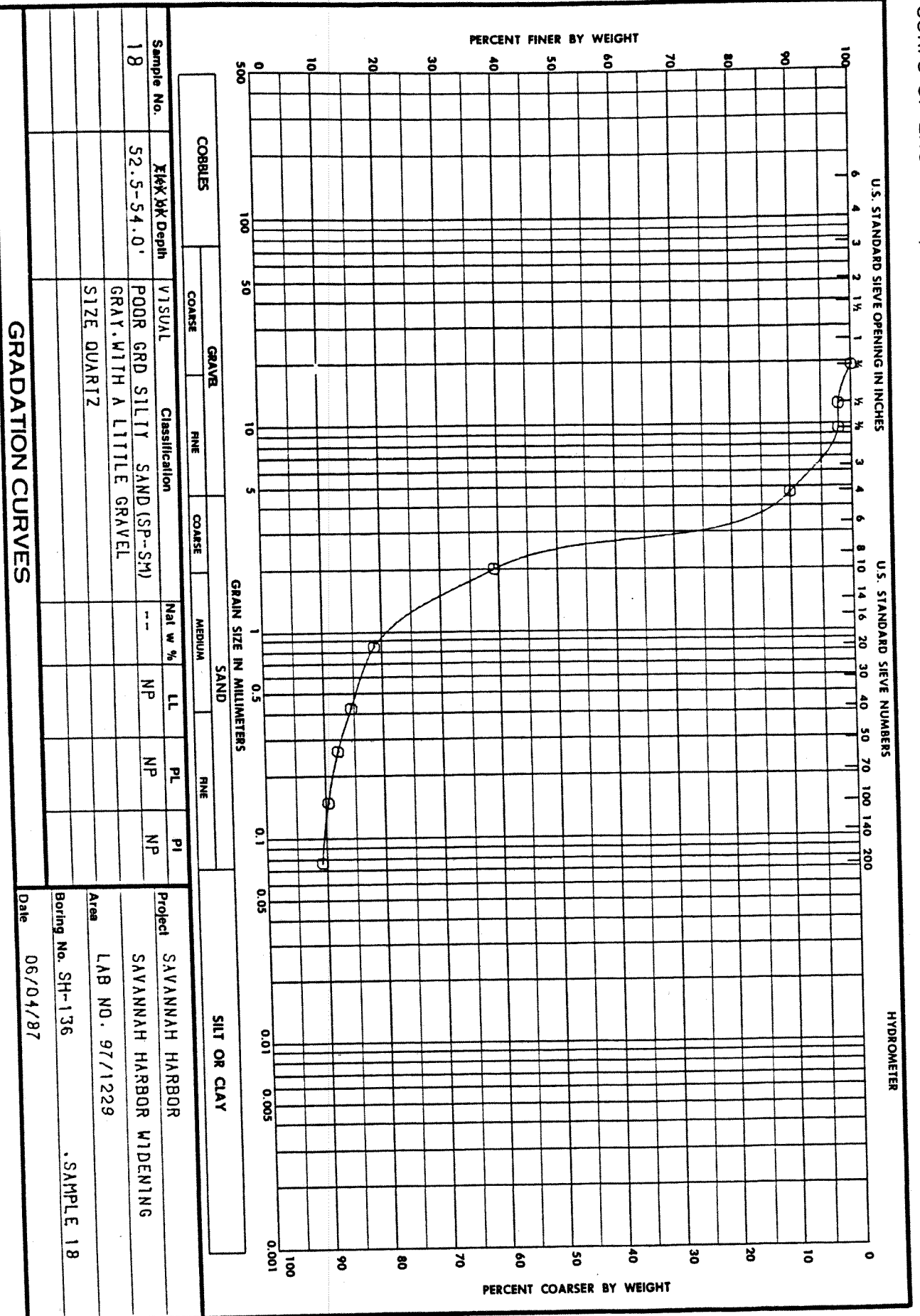








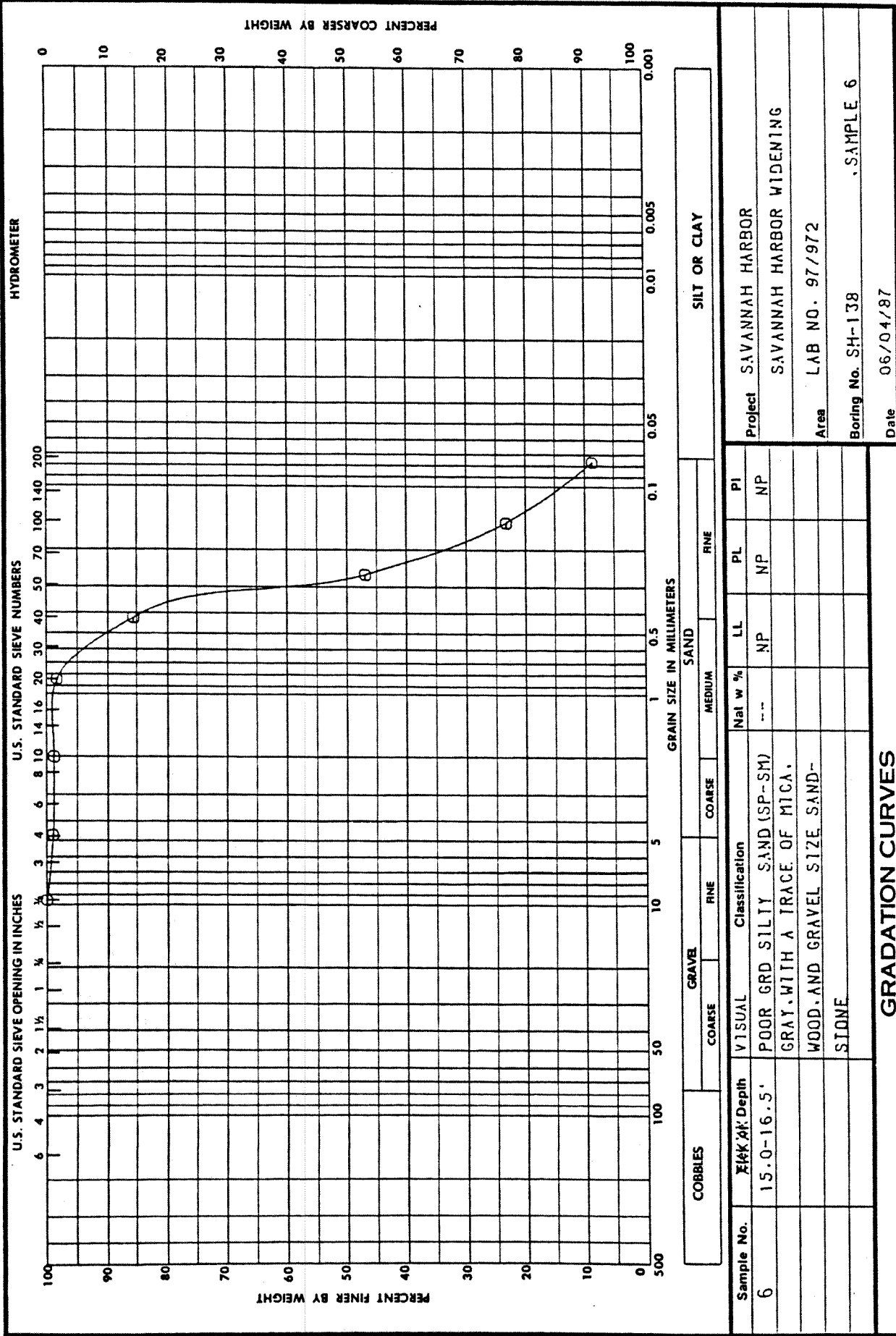




DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193

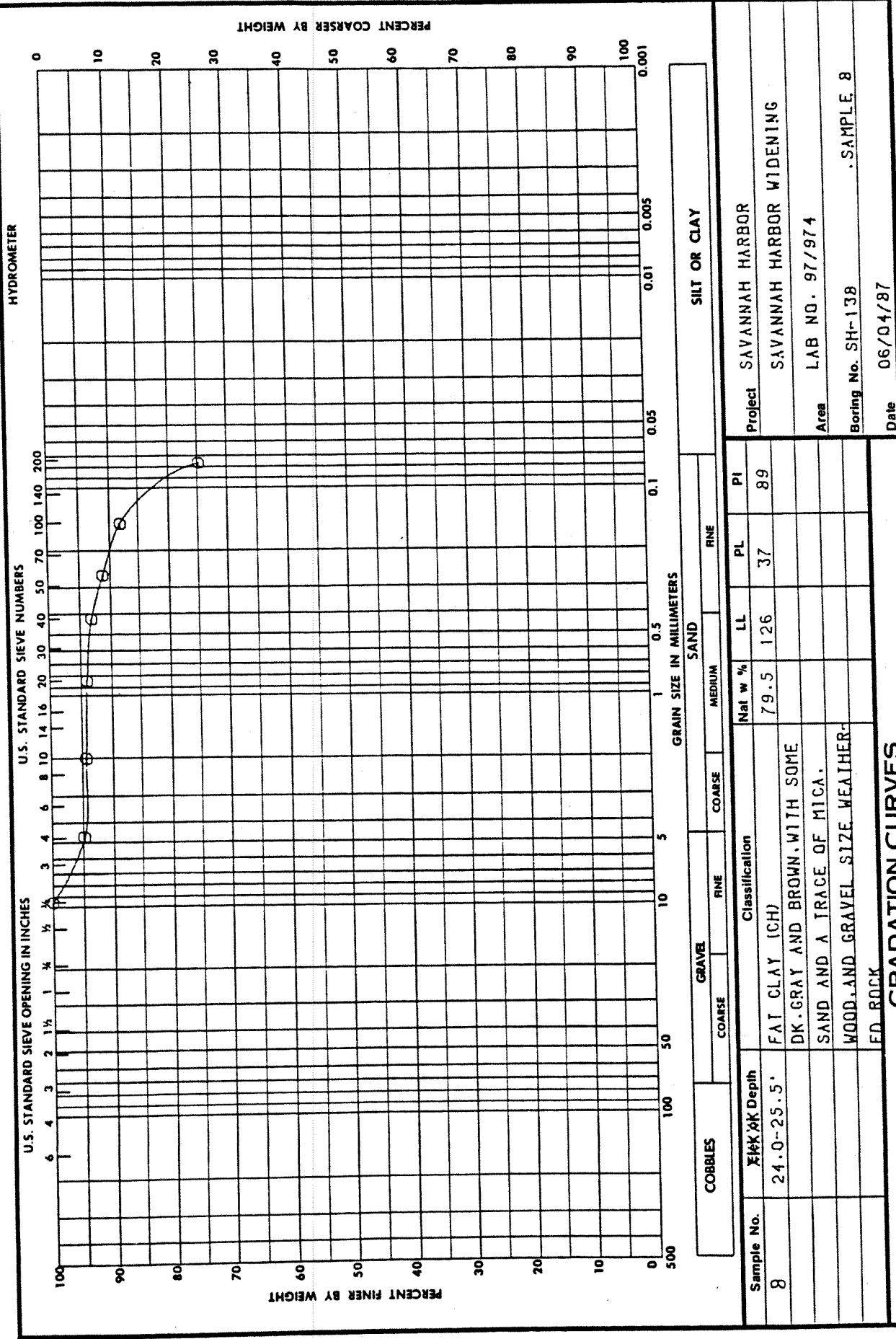
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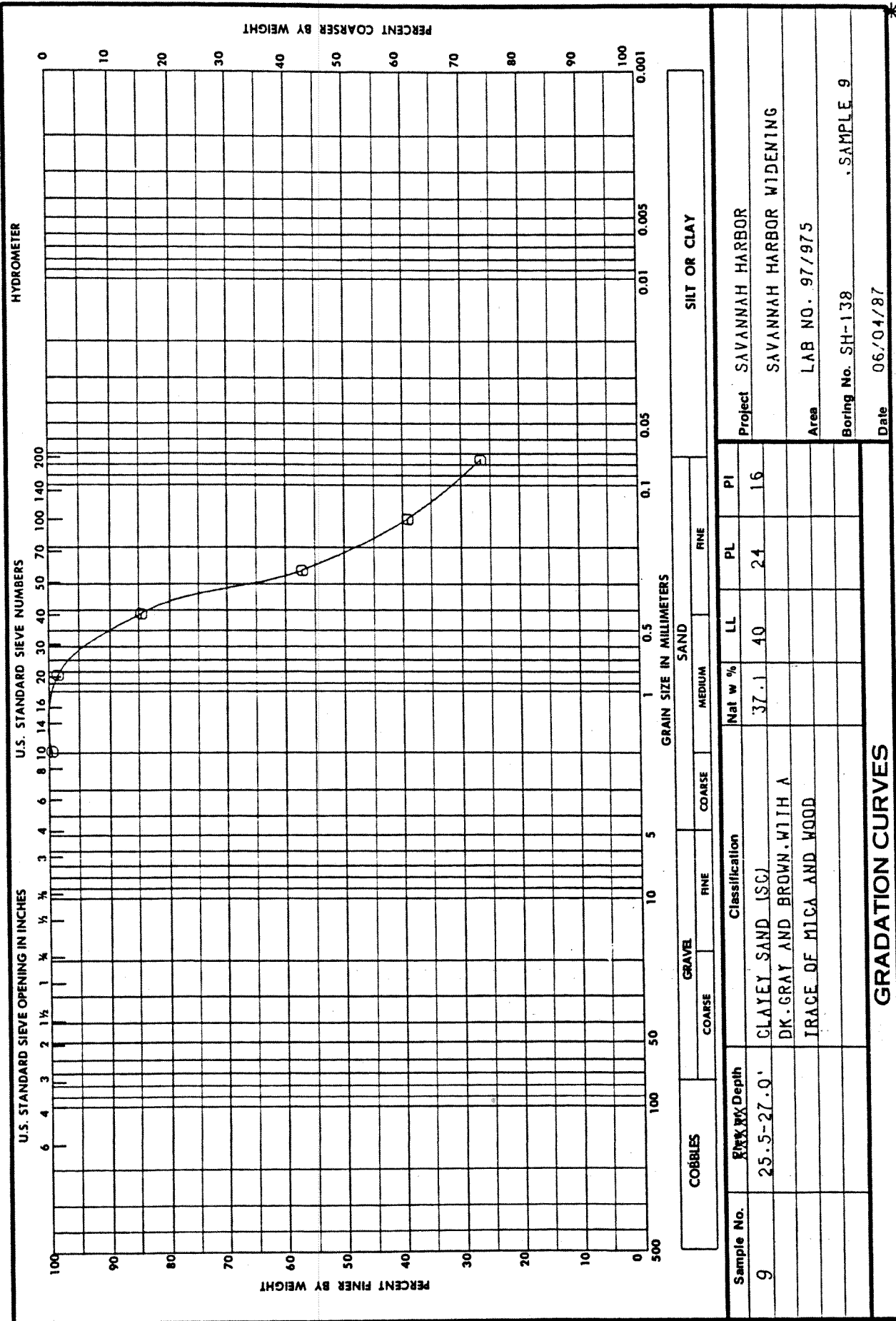


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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

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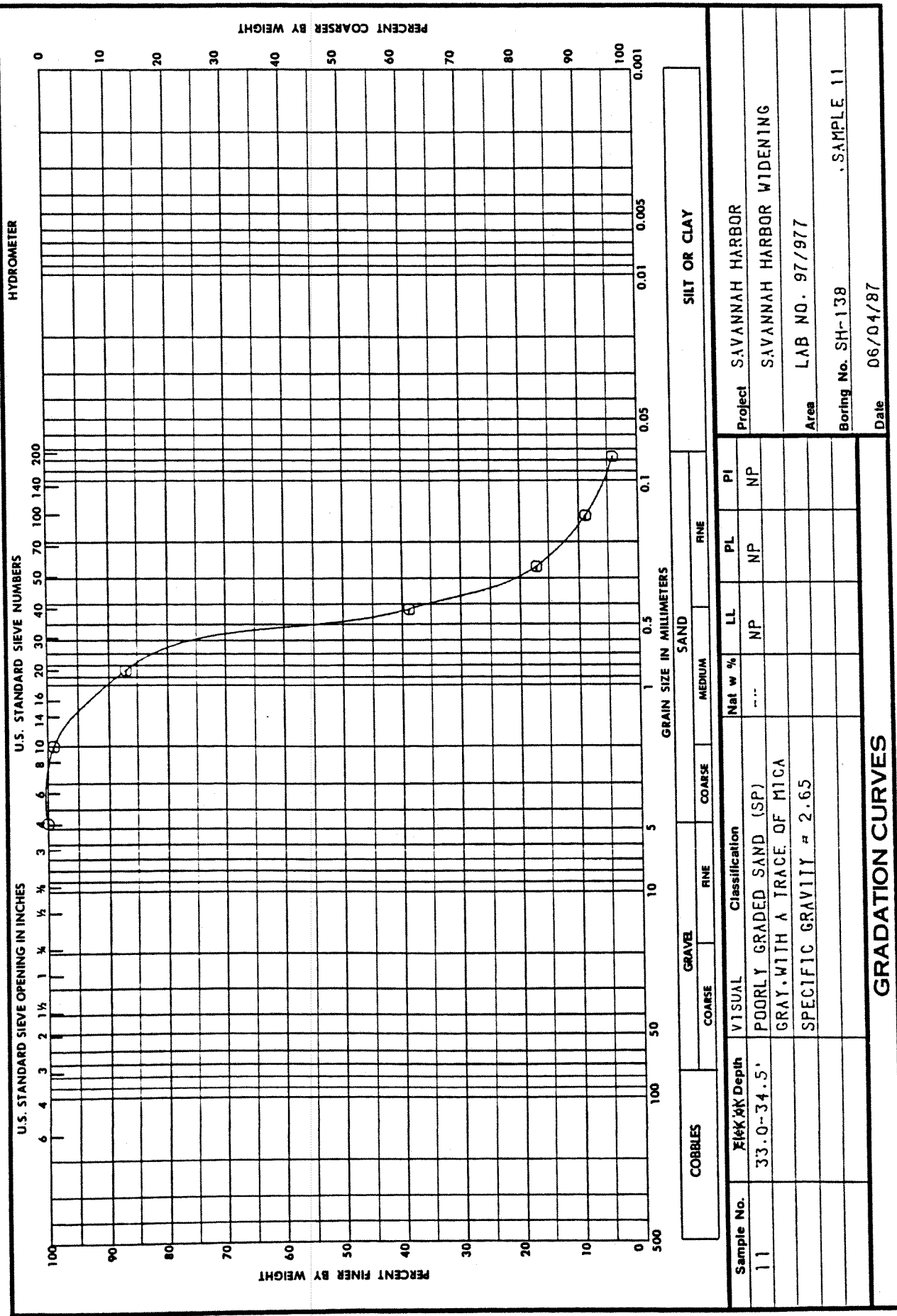
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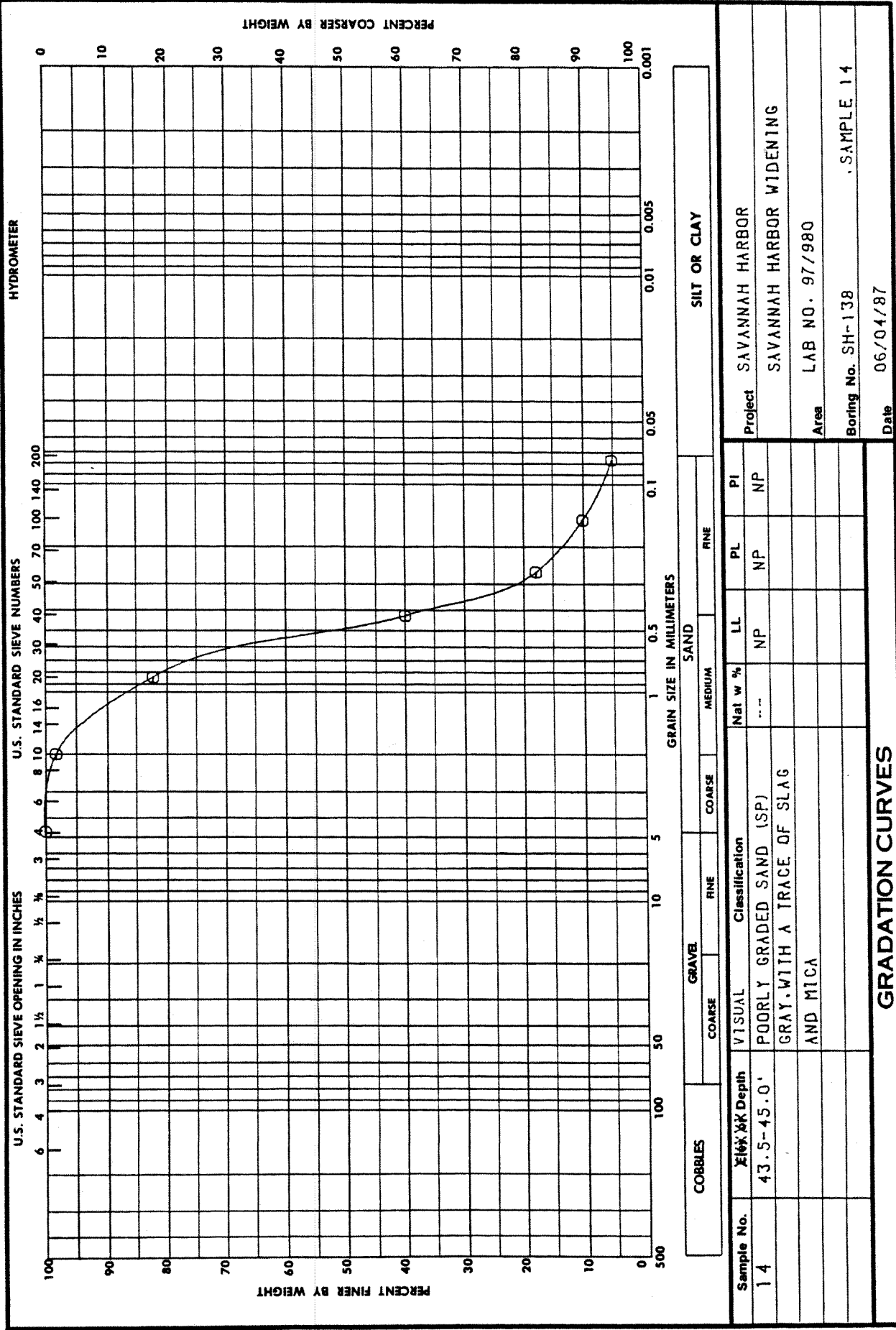
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Req. No. SAS-EN-6S-87-23

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



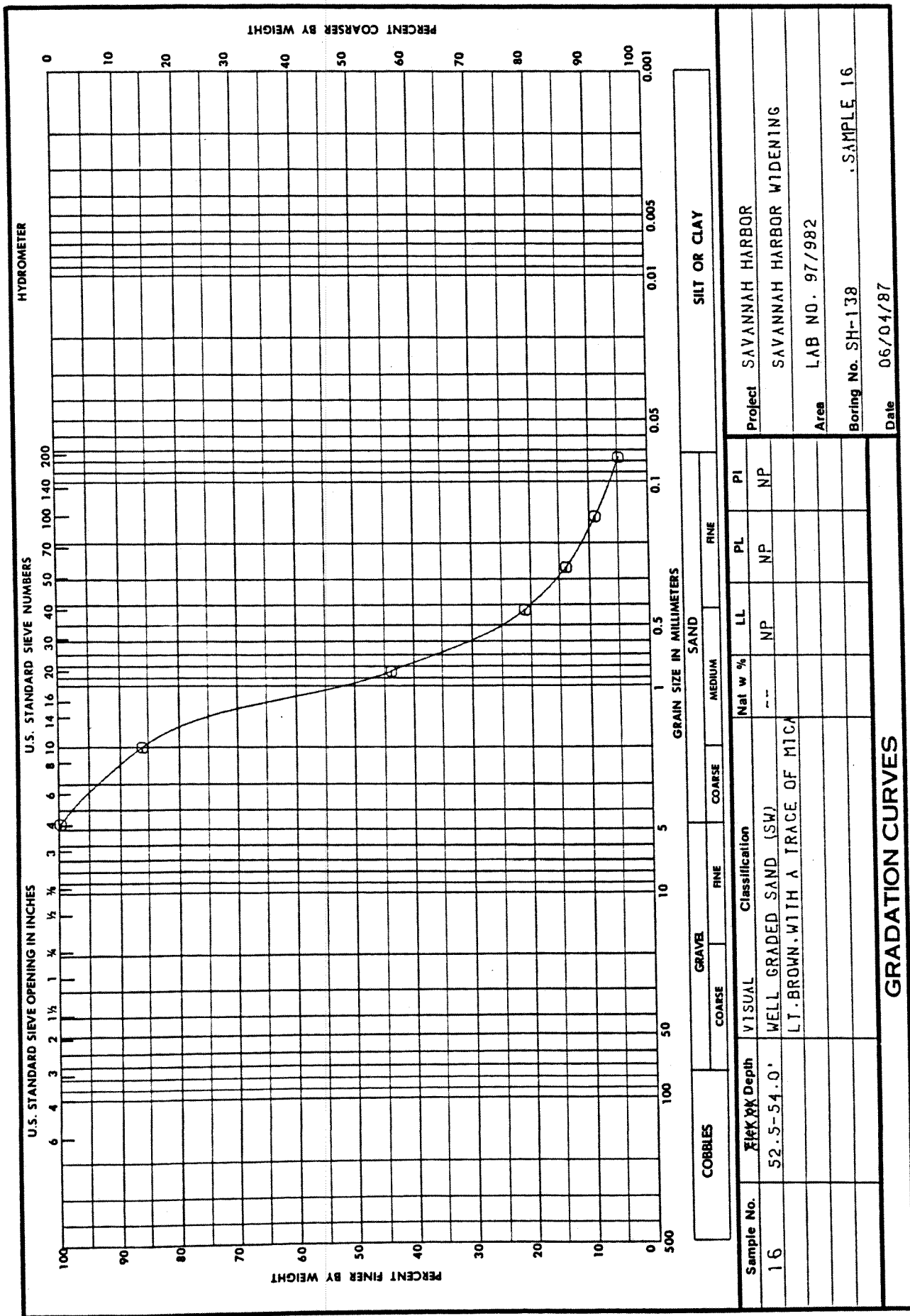
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193
Req. No. SAS-EN-GS-87-23



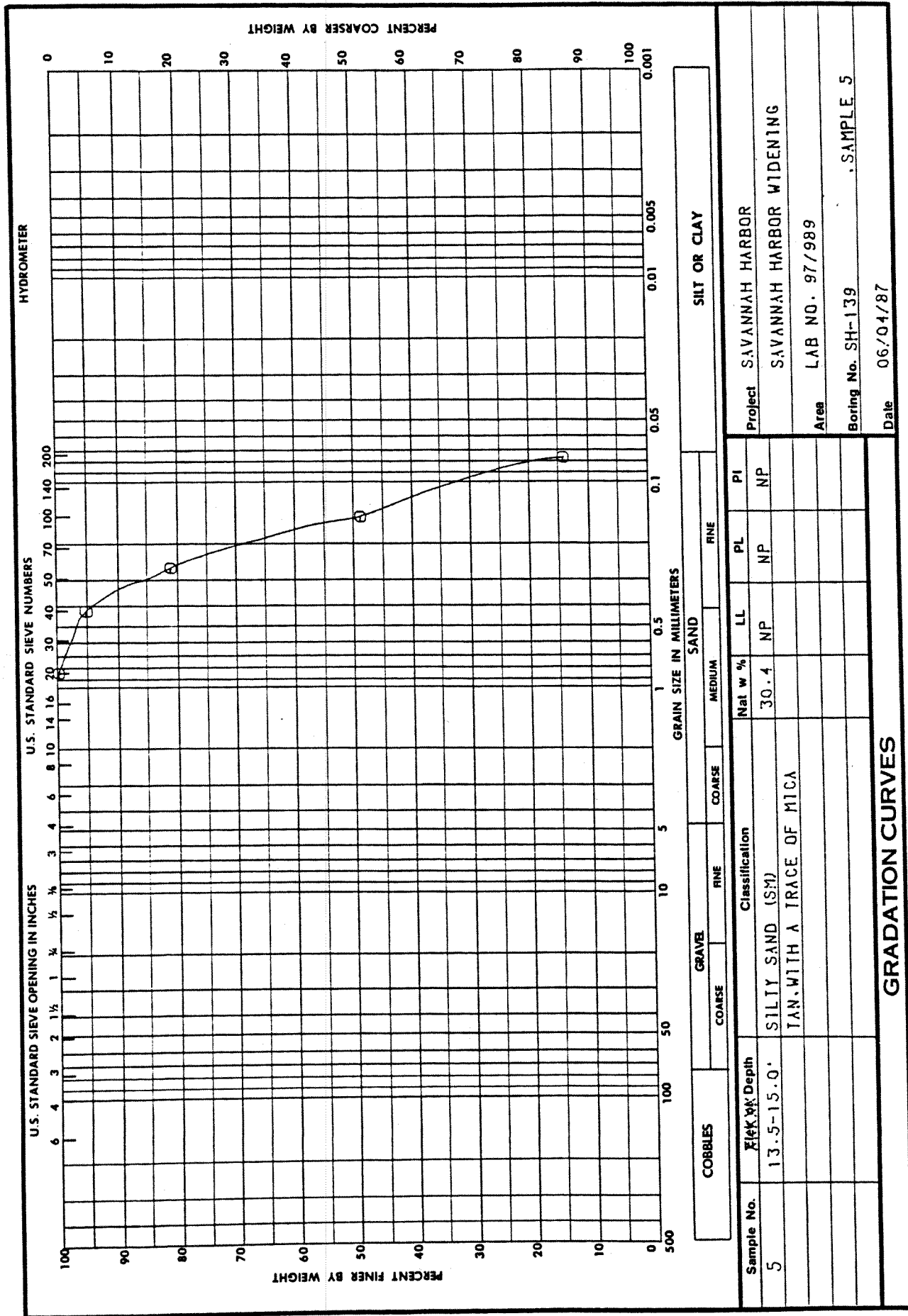
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Req. No. SAS-EN-GS-87-23

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. SAS-EN-GS-87-23



ENG **FORM 2087**
1 MAY 63

FORM
1 MAY 63

GENERAL TEST REPORT (Continued)

(— SOILS —)

PROJECT Savannah Harbor
Savannah Harbor Widening

WORK ORDER NO. 5193

REQ. NO. SAS EN GS 87-23

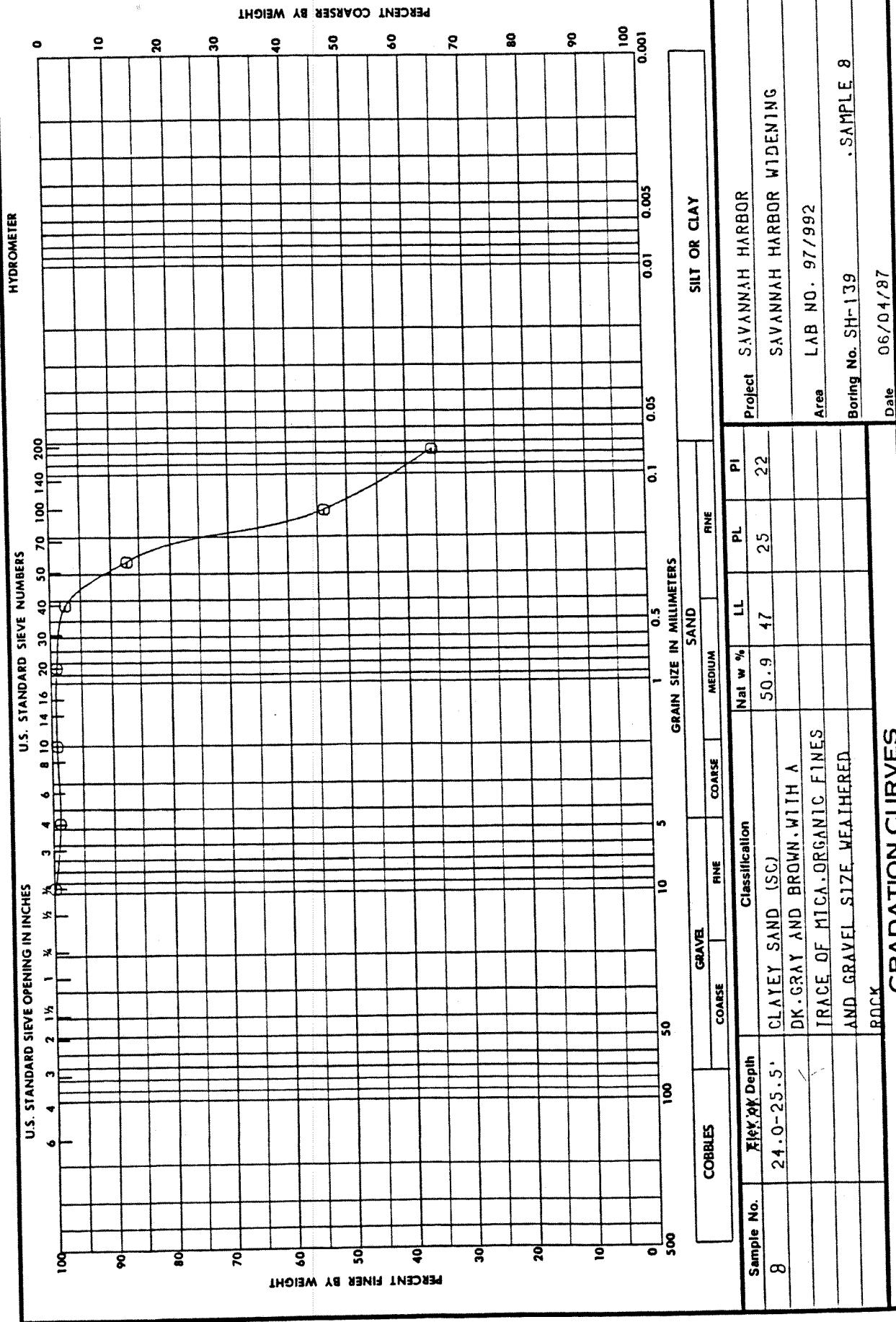
LAB NO. See Below

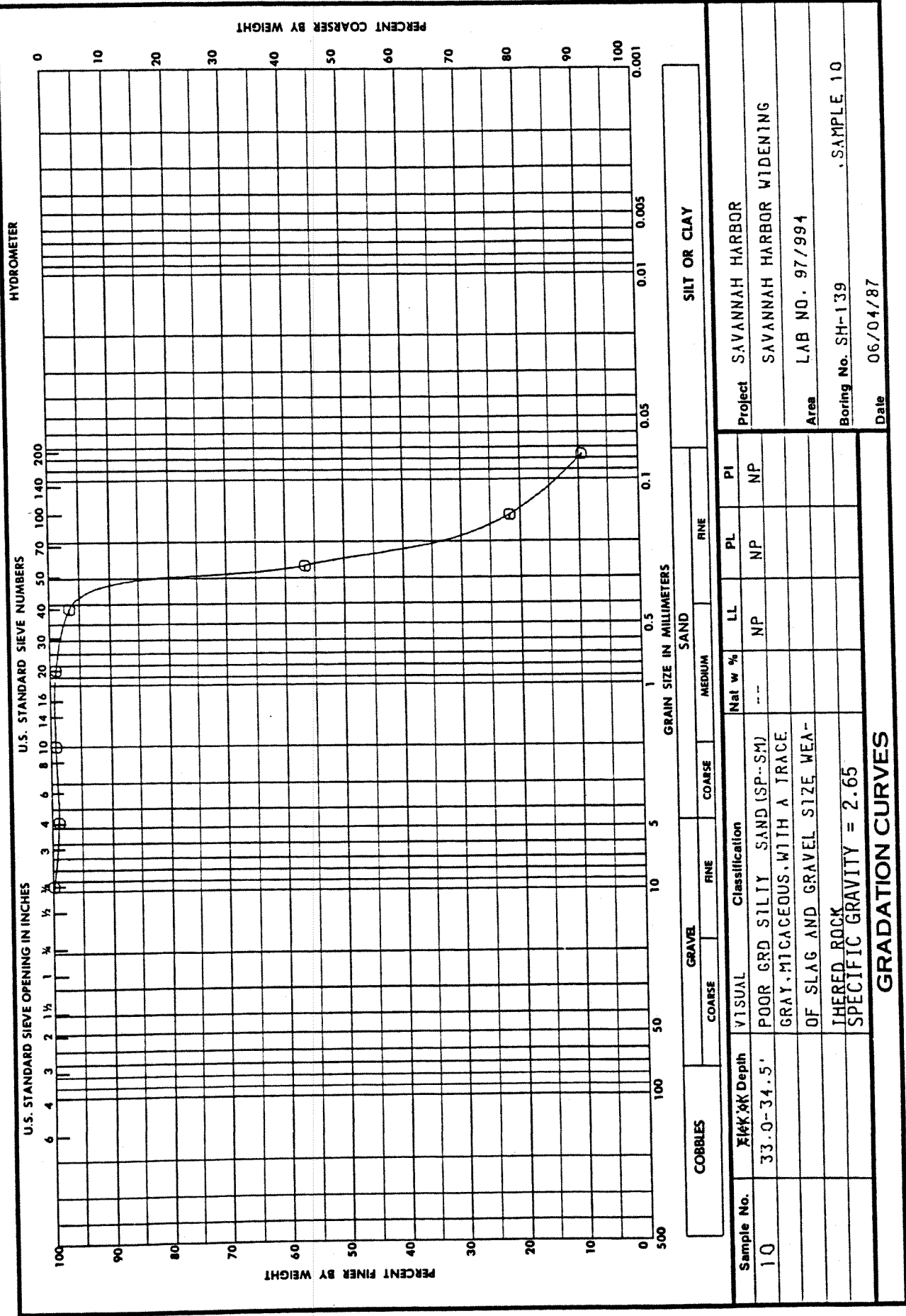
DATE 9 June 1987

<u>Lab No.</u>	<u>Hole No.</u>	<u>Sample No.</u>	<u>Depth (ft)</u>	<u>Moisture Content (%)</u>
97/ 999	SH-139	15	46.5-48.0	25.1
1022	SH-143	1	0.0-1.5	19.2
1024	"	3	7.5-9.0	22.5
1256	SH-144	5	12.0-13.5	101.1
1269	SH-148	1	0.0-1.5	40.7
1273	"	5	12.0-13.5	44.4
1274	"	6	16.5-18.0	40.8

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. SAS-EN-GS-87-23

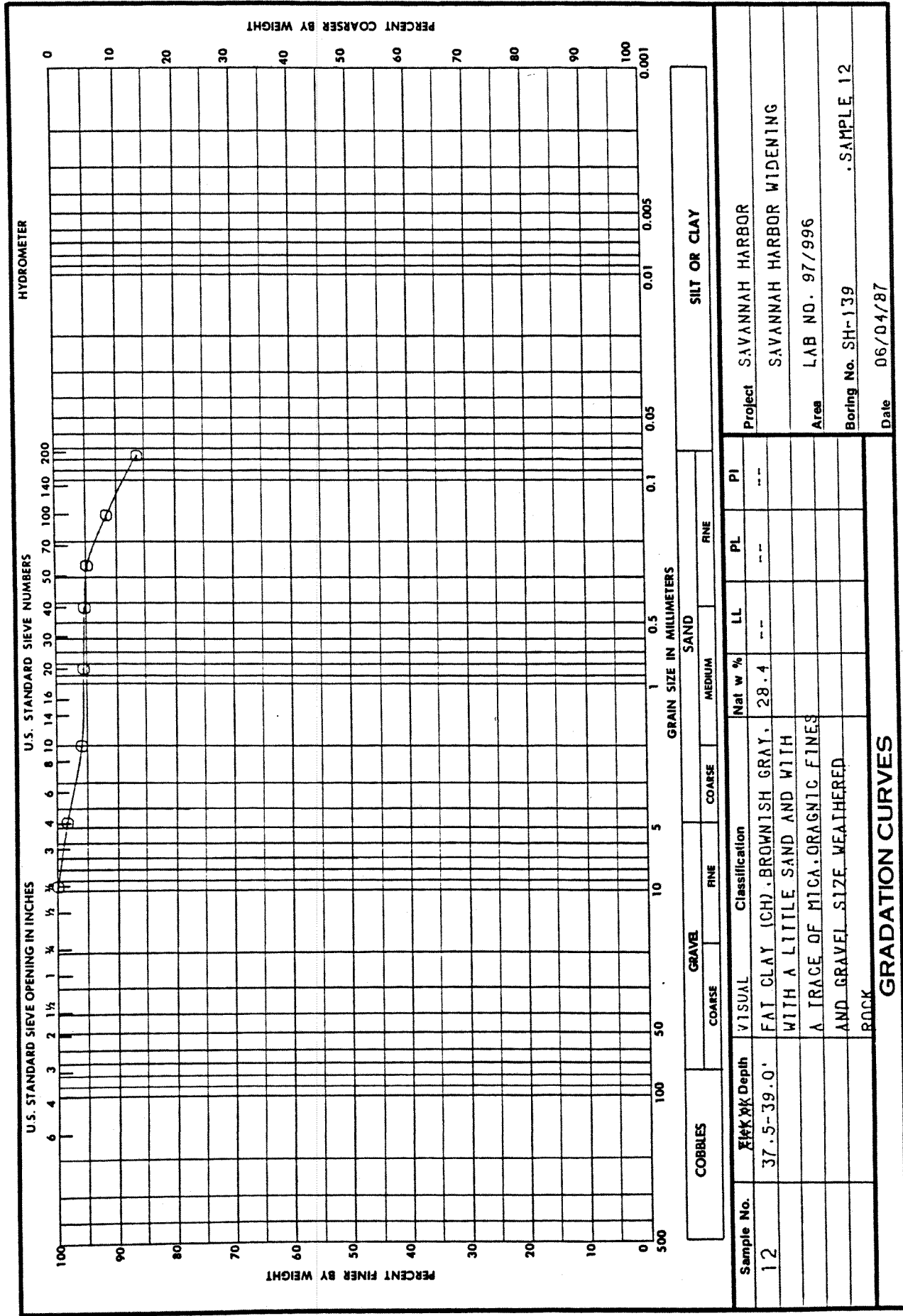




DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

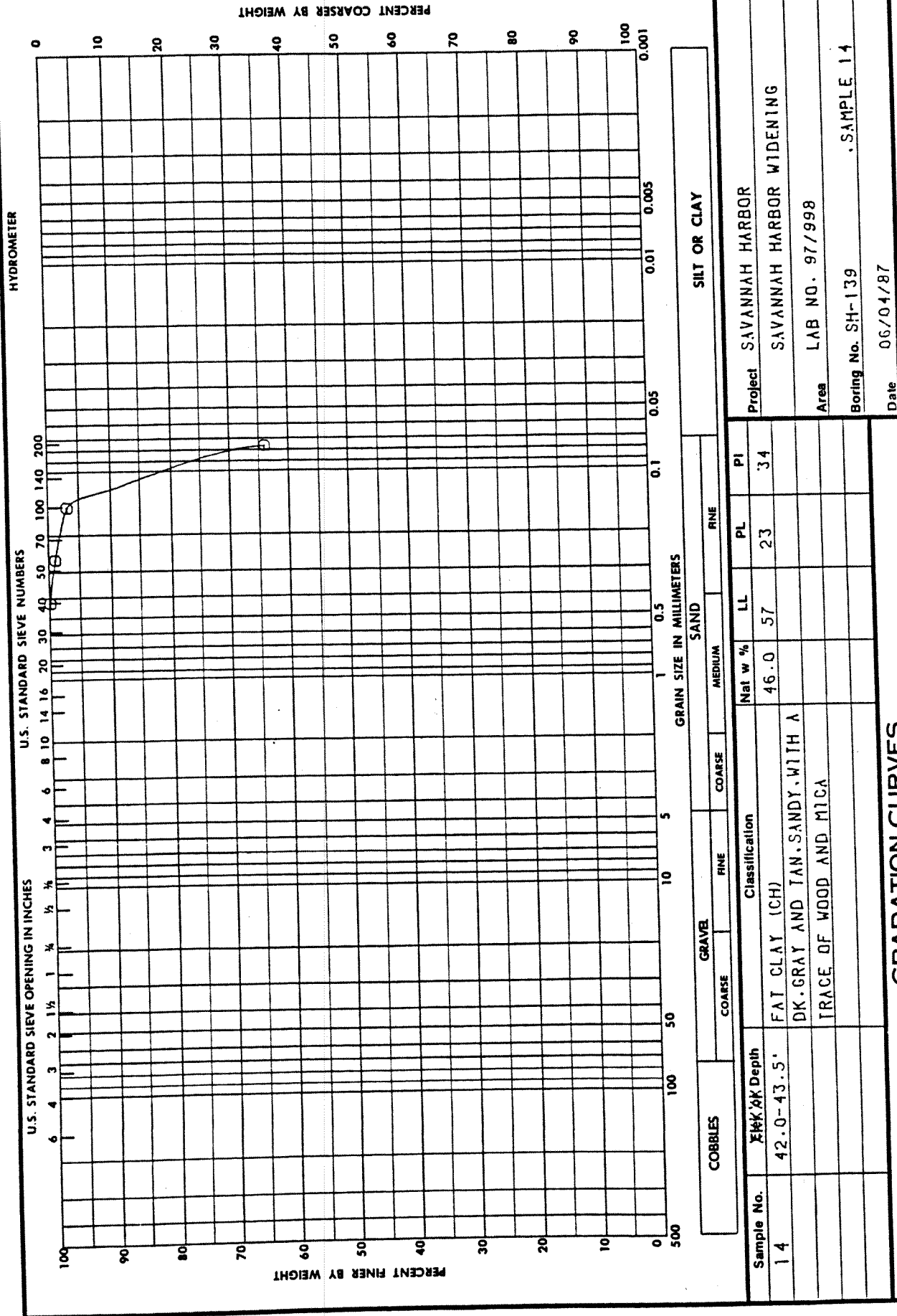
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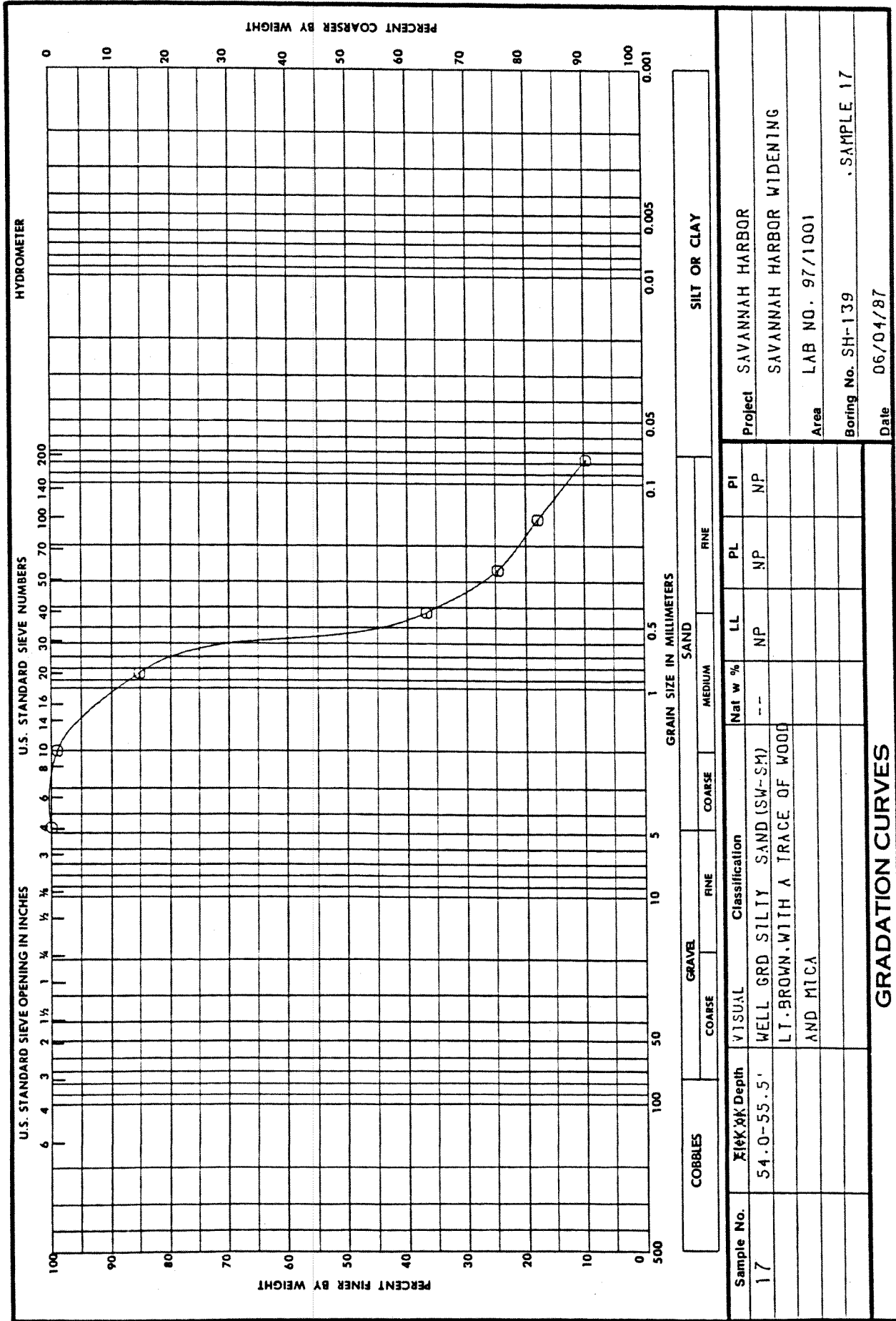
Req. No. SAS-EN-GS-87-23



W.O. No. 5193
Req. No. SAS-EN-6S-87-23

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060





GENERAL TEST REPORT U.S. ARMY ENGINEER DIVISION LABORATORY, SOUTH ATLANTIC CORPS OF ENGINEERS MARIETTA, GEORGIA		DISTRICT/OFFICE
		Savannah
PROJECT Savannah Harbor Savannah Harbor Widening		CONTRACT NO. --
		DATE REPORTED 8 April 1987
TYPE SAMPLE SOILS: Jar Samples of Disturbed Soils		WORK ORDER NO. 5193
		REQN. NO. SAS-EN-GS-87-23
SOURCE HOLE NO: SH -141, 145, 146 and 147		BASE UNIT COST --
FOR USE AS Investigation		DATE SAMPLE RECEIVED 27 Feb thru 16 Mar 1987
TESTED FOR Lab Classification and Field Moisture		LAB NO. 97/1007-1088



MEETS
SPECIFICATIONS

N/A



FAILS
SPECIFICATIONS (See below)

Lab. No.	Hole No.	Sample No.	Depth (Ft.)	Moisture Content (%)
97/				
1007	SH-141	5	9.0/10.5	90.8*
1008	"	6	13.5/15.0	66.1
1018	"	16A	52.5/53.5	39.0
1044	SH-145	3A	6.0/7.0	28.4
1045	"	3B	7.0/7.5	91.3*
1047	"	5	13.5/15.0	18.9
1050	"	7	21.0/22.5	94.4
1052	"	9A	27.0/27.5	103.3*
1065	SH-146	4	13.5/15.0	84.5
1079	SH-147	2	3.0/4.5	29.3
1082	"	5	12.0/15.0	96.7
1088	"	11	40.5/42.0	134.2*

REMARKS:

*See lab classification data on ENG Form 2087.

REPORTED BY ☐ PHONE ☐ WIRE

DATE

TESTED BY

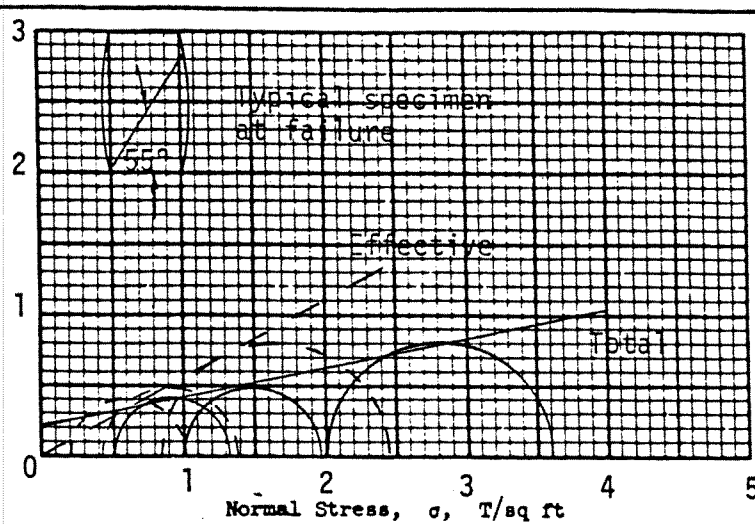
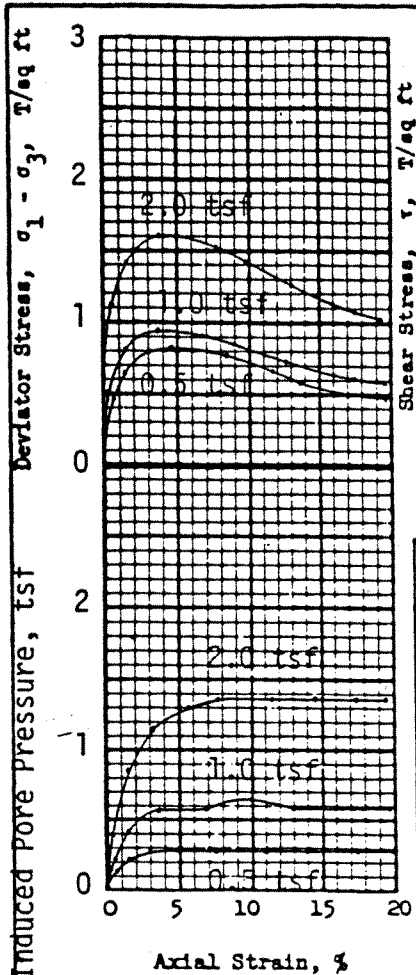
WB, JL

CHECKED BY

ES

SAMPLED BY

District



Shear Strength Parameters
Total Effective
 $\phi = 11.5 \quad 29.8$
 $\tan \phi = 0.203 \quad 0.554$
 $c = 0.21 \quad 0.0$ T/sq ft

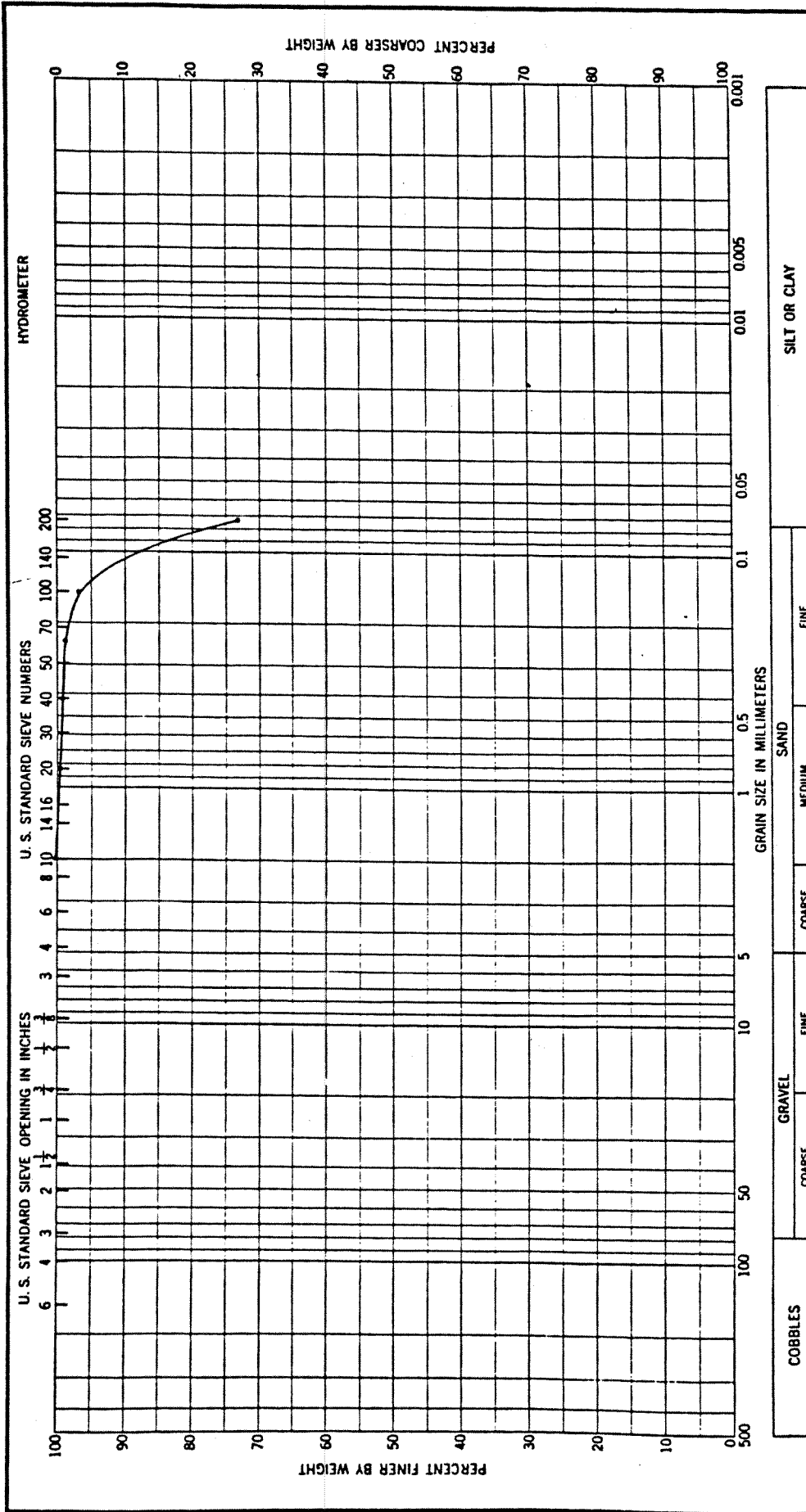
Method of saturation _____
Back Pressure _____
☐ Controlled stress
☒ Controlled strain

Test No.		1	2	3	
Initial	Water content	w_o 94.9 %	89.1 %	75.7 %	%
	Void ratio	e_o 2.468	2.326	1.968	
	Saturation	s_o 100.0 %	99.6 %	100.0%	%
	Dry density, lb/cu ft	γ_d 46.8	48.8	54.7	
Before Shear	Water content	w_c 89.2 %	80.3 %	58.3 %	%
	Void ratio	e_c 2.318	2.087	1.516	
	Saturation	s_c 100.0 %	100.0%	100.0%	%
	Final back pressure, T/sq ft	u_o 5.00	5.00	5.00	
Final	Water content	w_f 89.2 %	80.3 %	58.3 %	%
	Void ratio	e_f 2.318	2.087	1.516	
Minor principal stress, T/sq ft		σ_3 0.50	1.00	2.00	
Max deviator stress, T/sq ft ($\sigma_1 - \sigma_3$) _{max}		0.83	0.96	1.61	
Time to failure, min		t_f 45	35	35	
Rate of strain, percent/min		0.10	0.11	0.11	
Strain @ ($\sigma_1 - \sigma_3$) _{Max.}		4.4	3.7	3.7	
Ult deviator stress, T/sq ft ($\sigma_1 - \sigma_3$) _{ult}		0.55	0.66	1.18	
Initial diameter, in.		D_o 1.38	1.38	1.38	
Initial height, in.		H_o 3.08	3.08	3.08	

Type of test	$\bar{R}$	Type of specimen	Undisturbed
Classification	Dark gray clayey inorganic silt, high LL (MH), with some sand and a trace of organic matter and mica		
LL	95	PL	45
		PI	50
			--
		G_s	2.60
Remarks	See gradation curve on ENG Form 2087.		
Project		Savannah Harbor Widening	
Lab No.		97/948	
Area		--	
Boring No.	SH-141	Sample No.	UD-1
Depth	12.0-14.0'	Date	16 April 1987

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA 30060-3112

Work Order No. 5193
Reqn No. SAS EN GS 87-23



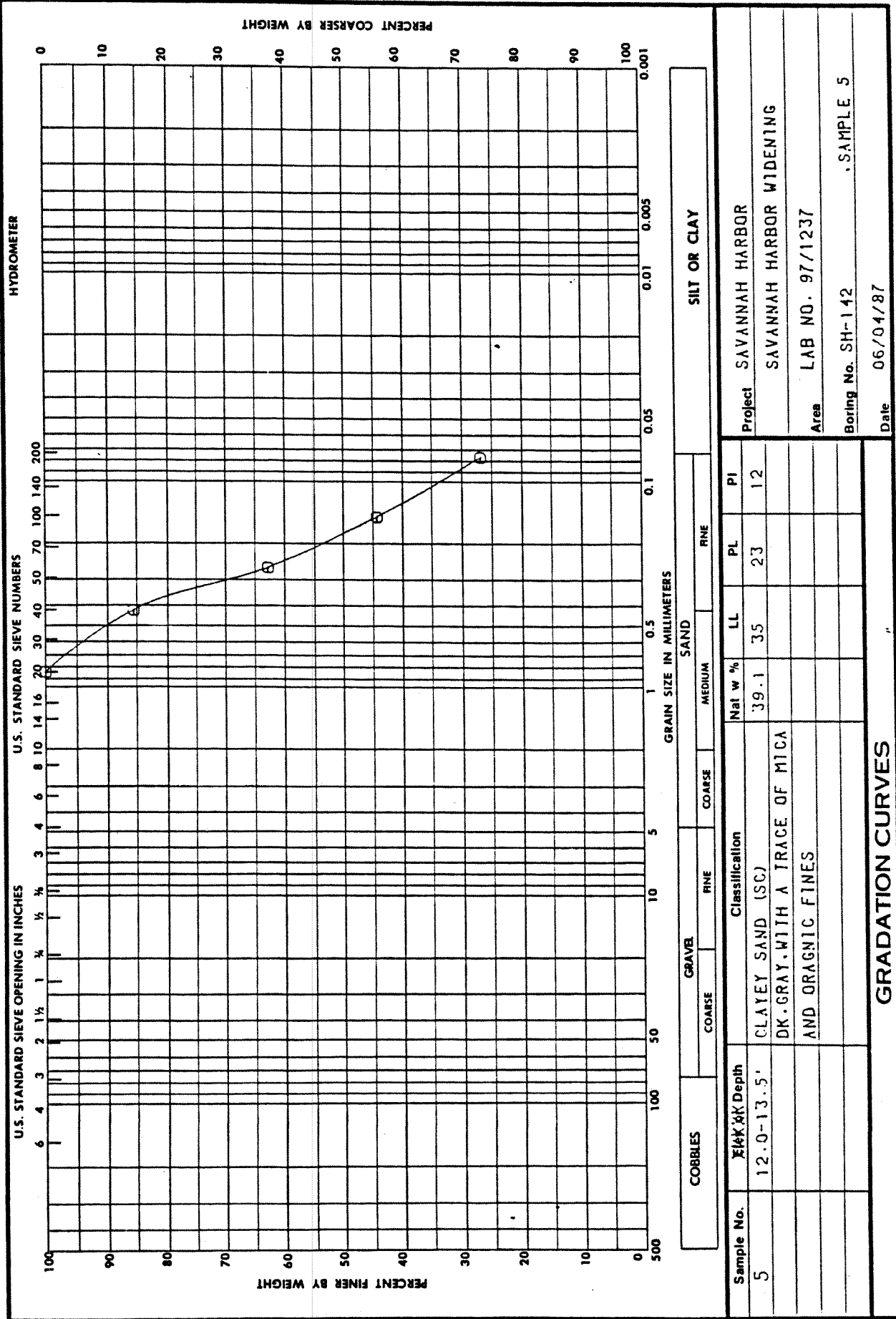
Sample No.	UD-1	Classification	Dark gray clayey inorganic silt, high LL (MH), with some sand, a trace of organic matter, and mica	Nat w %	86.6	LL	95	PL	45	PI	50
Depth	12.0-14.0'										
GRADATION CURVES											
Project Savannah Harbor Widening											
Lab No. 97/948*											
Area --											
Boring No. SH-141, Sample No. UD-1											
Date 16 April 1987											

ENG FORM 1 MAY 63 2087

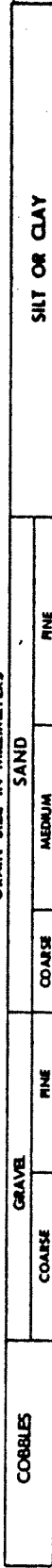
*R Triaxial Test

W.O. No. 5193
Req. No. SAS-EN-GS-87-23

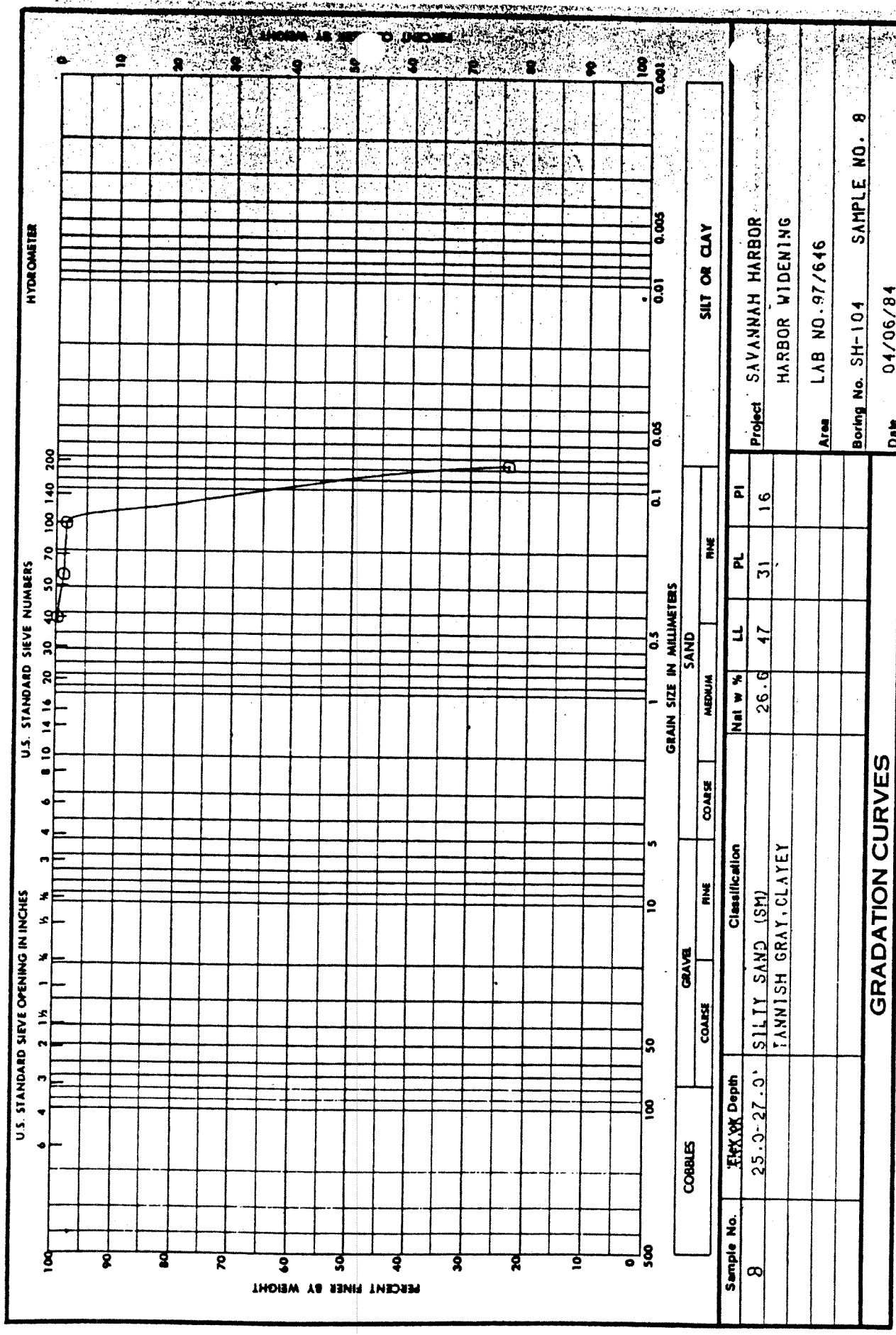
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



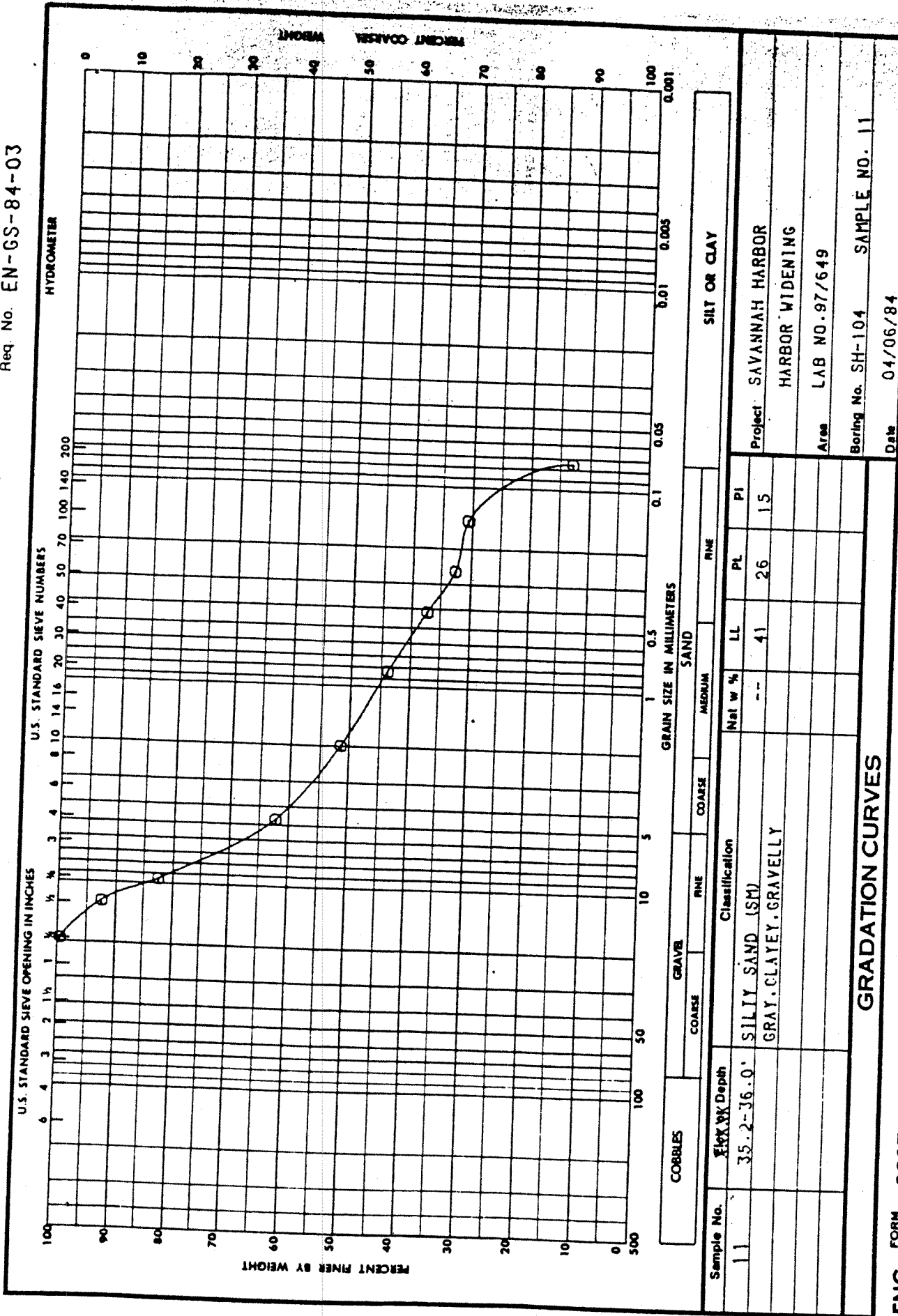
Req. No. EN-GS-84-0.

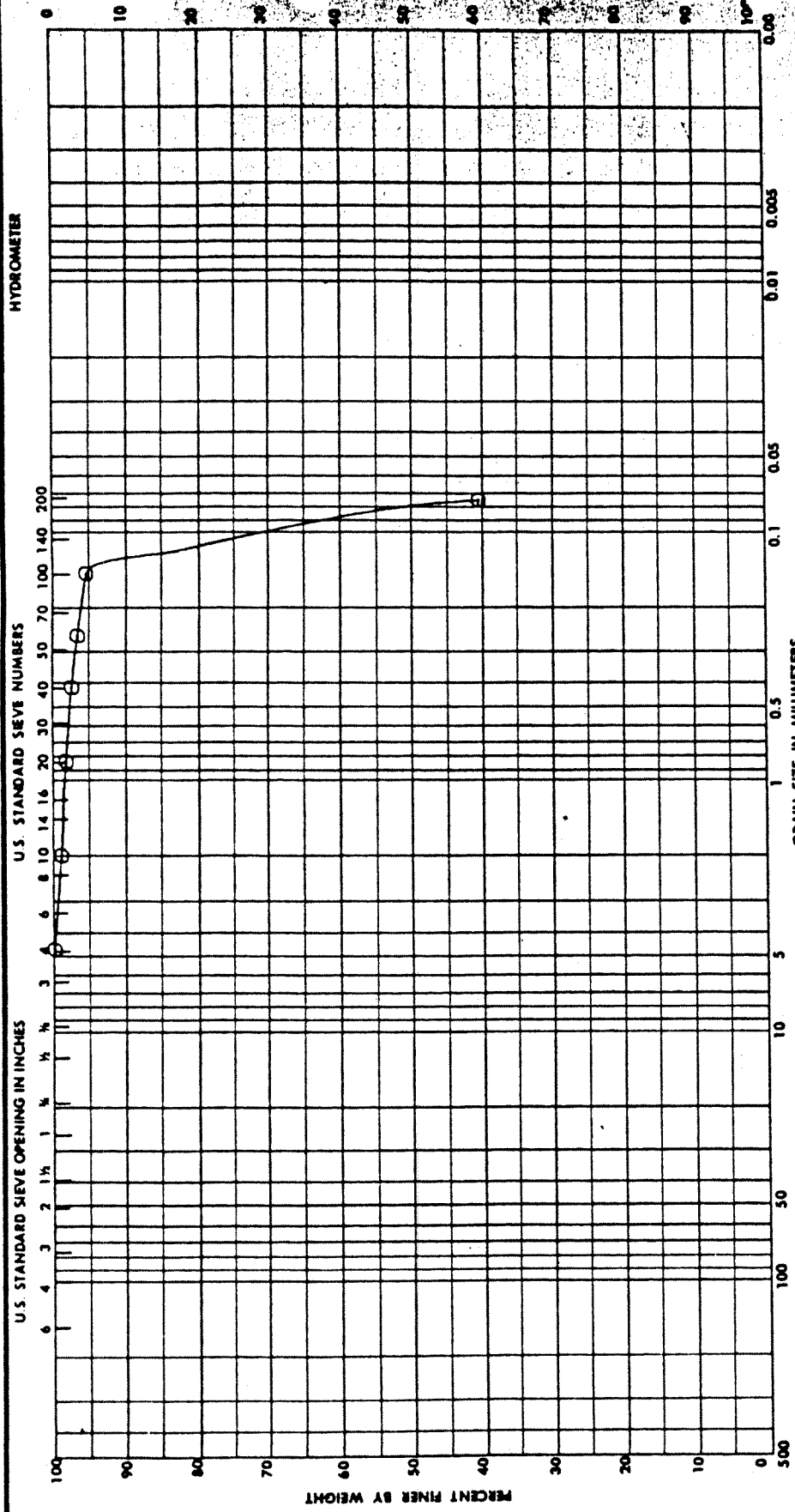


ENG **FORM** **2087**
1 MAY 63



Req. No. EN-GS-84-03





Sample No.	Plot Depth	Visual Classification	SAND			SILT OR CLAY		
			COARSE	FINE	CLASSIFICATION	COARSE	FINE	CLASSIFICATION
12	36.9-37.5'	SILTY SAND (SM) GRAY						
GRADATION CURVES								
Project: SAVANNAH HARBOR HARBOR WIDENING Area: LAB NO. 97/650 Boring No. SH-104 SAMPLE NO. 12 Date: 04/06/84								

Req. No. EN-GS-84-03



GRADATION CURVES

FORM
MAY 6

HYDROMETER

U.S. STANDARD SIEVE NUMBERS

U.S. STANDARD SIEVE OPENING IN INCHES

THE 15 PERCENT COARSEST BY

PERCENT FINER BY WEIGHT

SILT OR CLAY

GRAIN SIZE IN MILLIMETERS

SAND

COARSE

FINE

COABLES

WILSON

Classification

Classification

Nal w %	
1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100
11	100
12	100
13	100
14	100
15	100
16	100
17	100
18	100
19	100
20	100
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100	100

13

7d

13

SAVANNAH HARBOUR

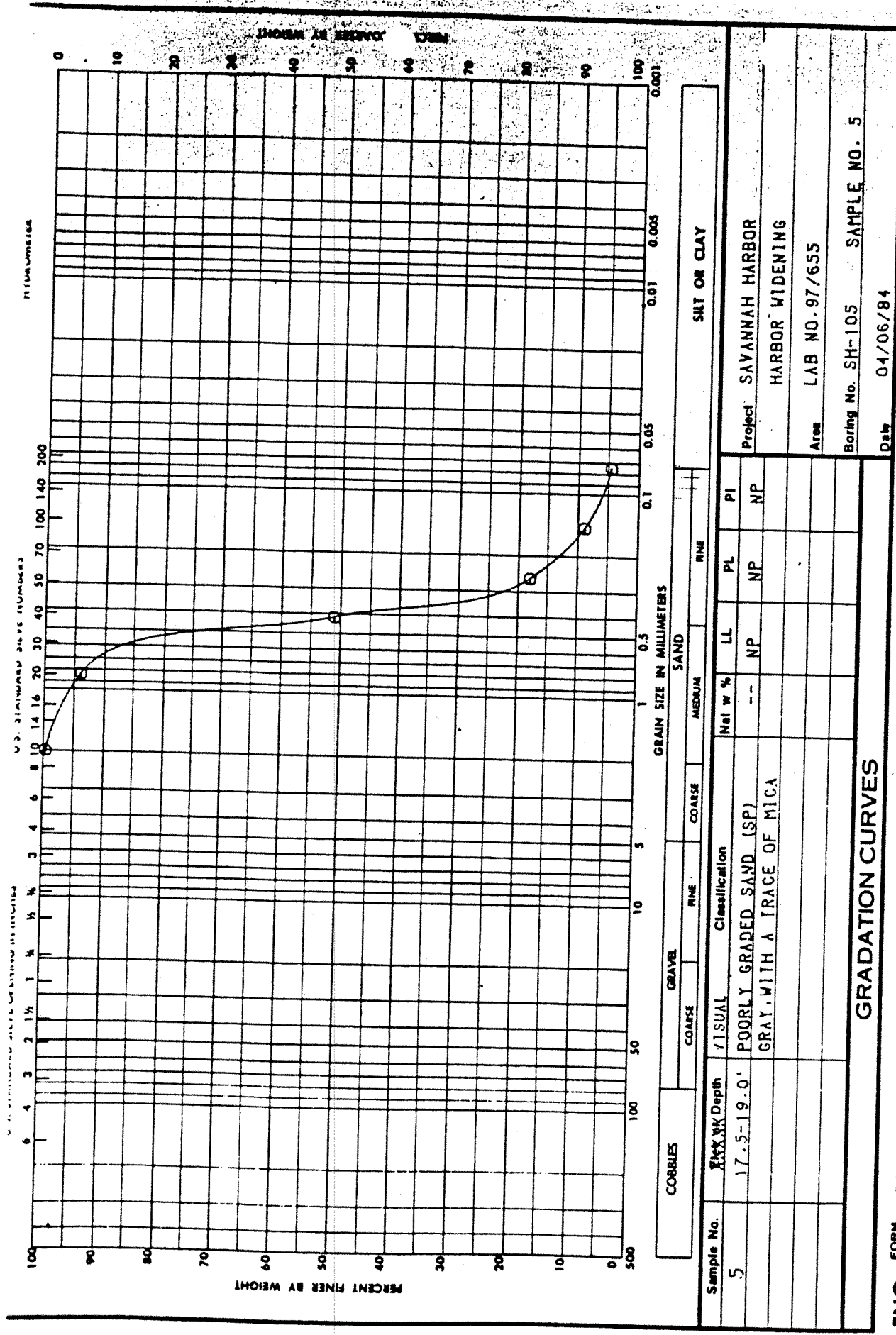
HARBOR-WIDENING

LAB NO. 97/653

CU-105
SAMPLE NO. 3

04/06/84

GRADATION CURVES

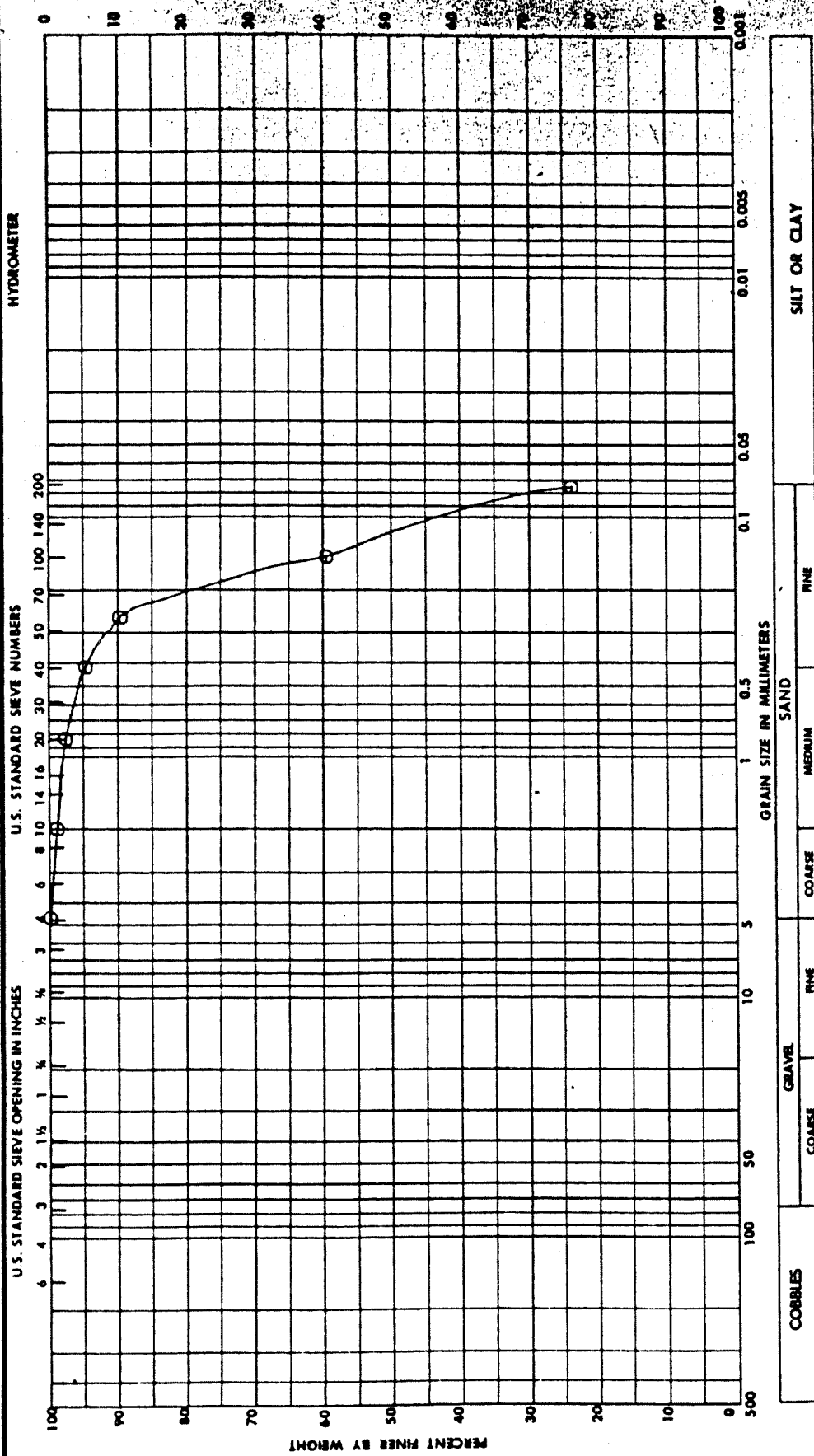


ENG FORM 2087
1 MAY 63

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 3778

Req. No. EN-GS-84-03

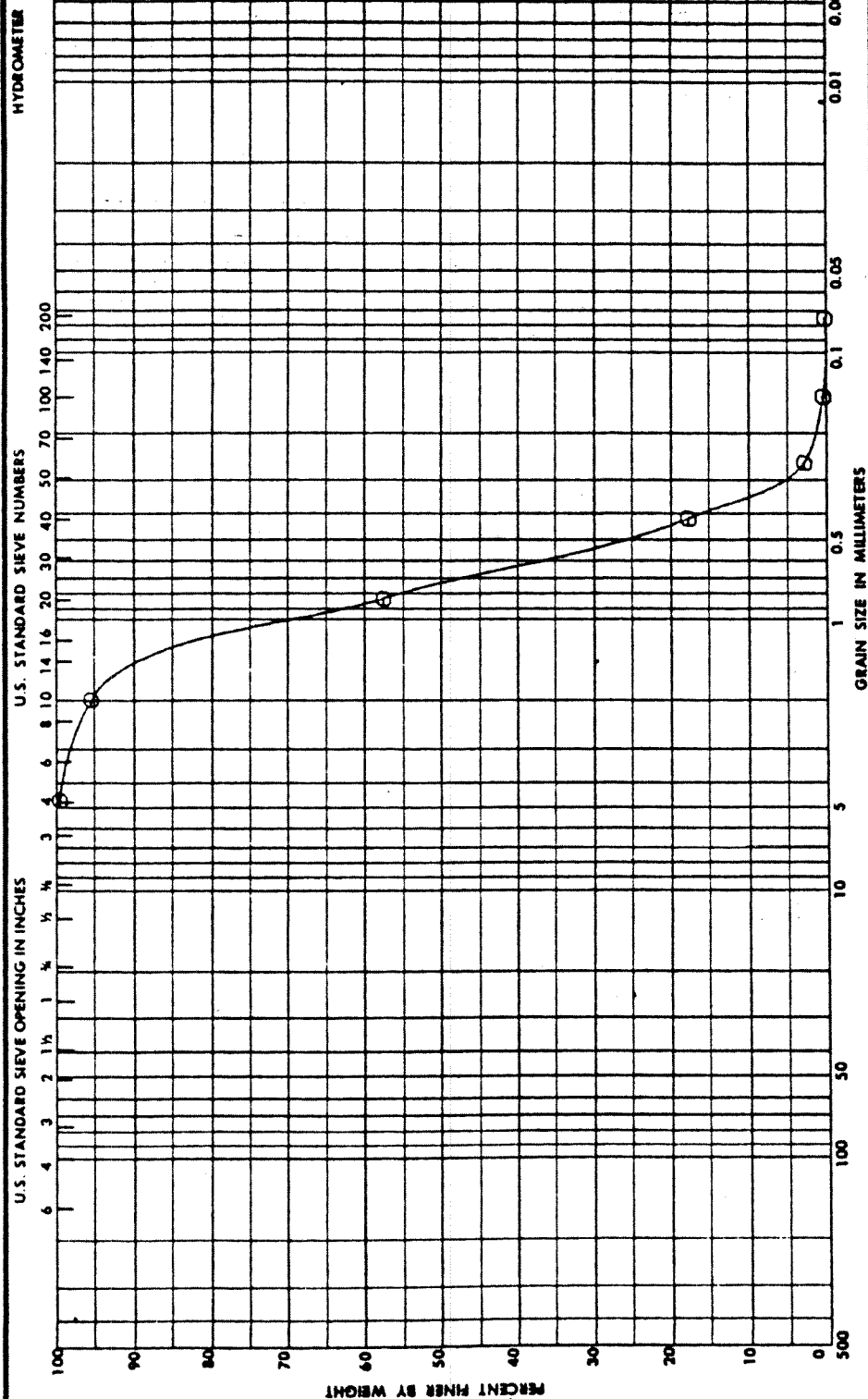


COBBLES		GRAVEL		SAND		SILT OR CLAY	
		COARSE	FINE	COARSE	MEDIUM	FINE	
Sample No.	7	Visual	Classification	Na ₂ w %	LL	PL	PI
	23.5-25.0'	SILTY SAND (SM)		--	NP	NP	NP
		TAN					
Project SAVANNAH HARBOR							
HARBOR WIDENING							
Area LAB NO. 97/657							
Boring No. SH-105 SAMPLE NO. 7							
Date 04/06/84							
GRADATION CURVES							

ENG FORM 2087
1 MAY 63

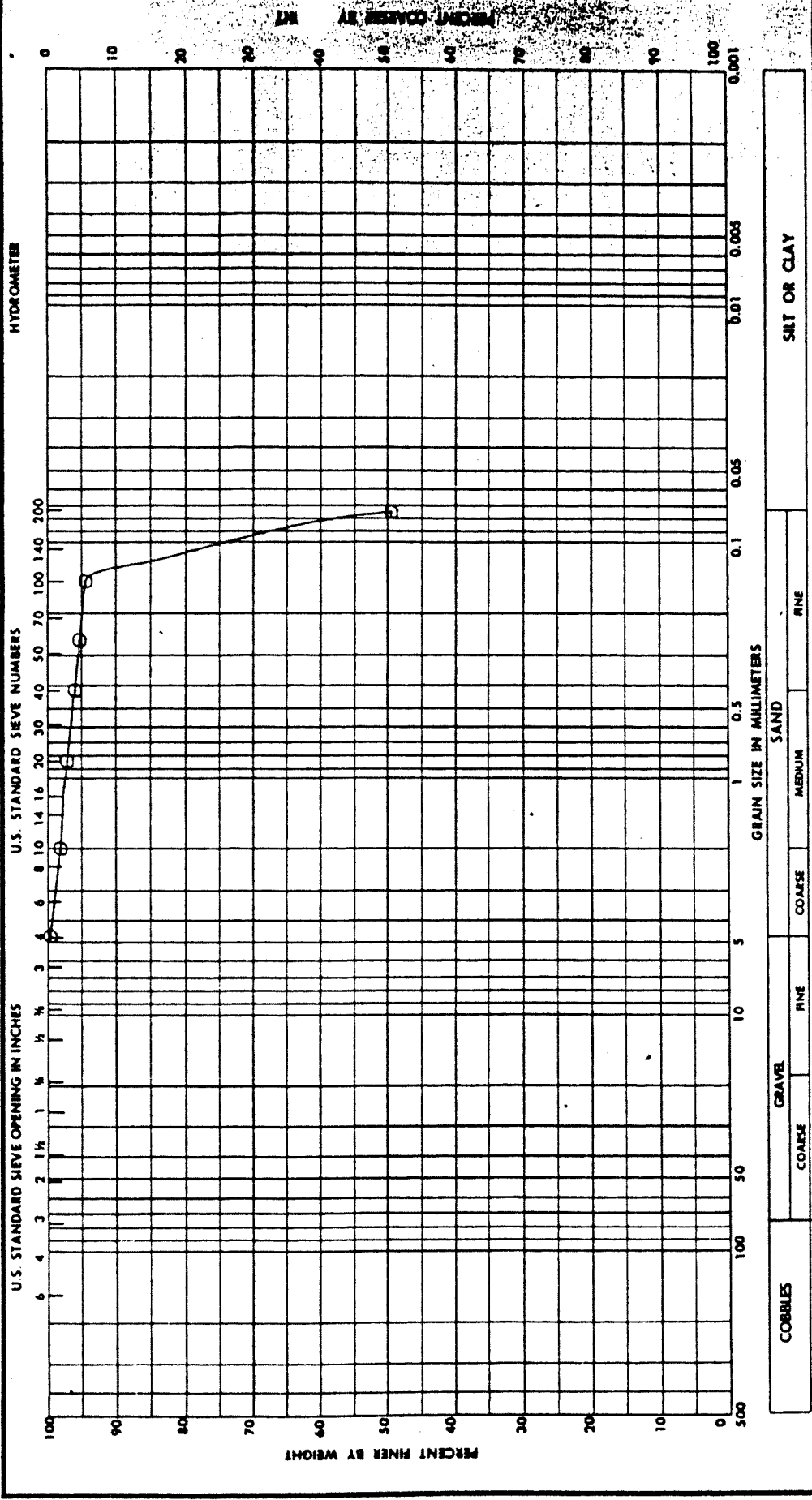
PARTEMENT OF THE ARMY, SOUTH ATLANTIC DIVISIC ABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIE...A, GA. 30060

Req. No. EN-GS-84-03



GRAIN SIZE BY MILLIMETERS									
COBBLES		GRAVEL		SAND			SILT OR CLAY		
		COARSE	FINE	COARSE	MEDIUM	FINE			
Sample No.	Field No.	Depth	Visual	Classification	Net w %	LL	PL	PI	
9	31.0-32.5'		POORLY GRADED SAND (SP)		--	NP	NP	NP	
			TAN						
GRADATION CURVES									
					Project: SAVANNAH HARBOR				
					HARBOR WIDENING				
					Area: LAB NO.97/659				
					Boring No. SH-105 SAMPLE NO. 9				
					Date: 04/06/84				

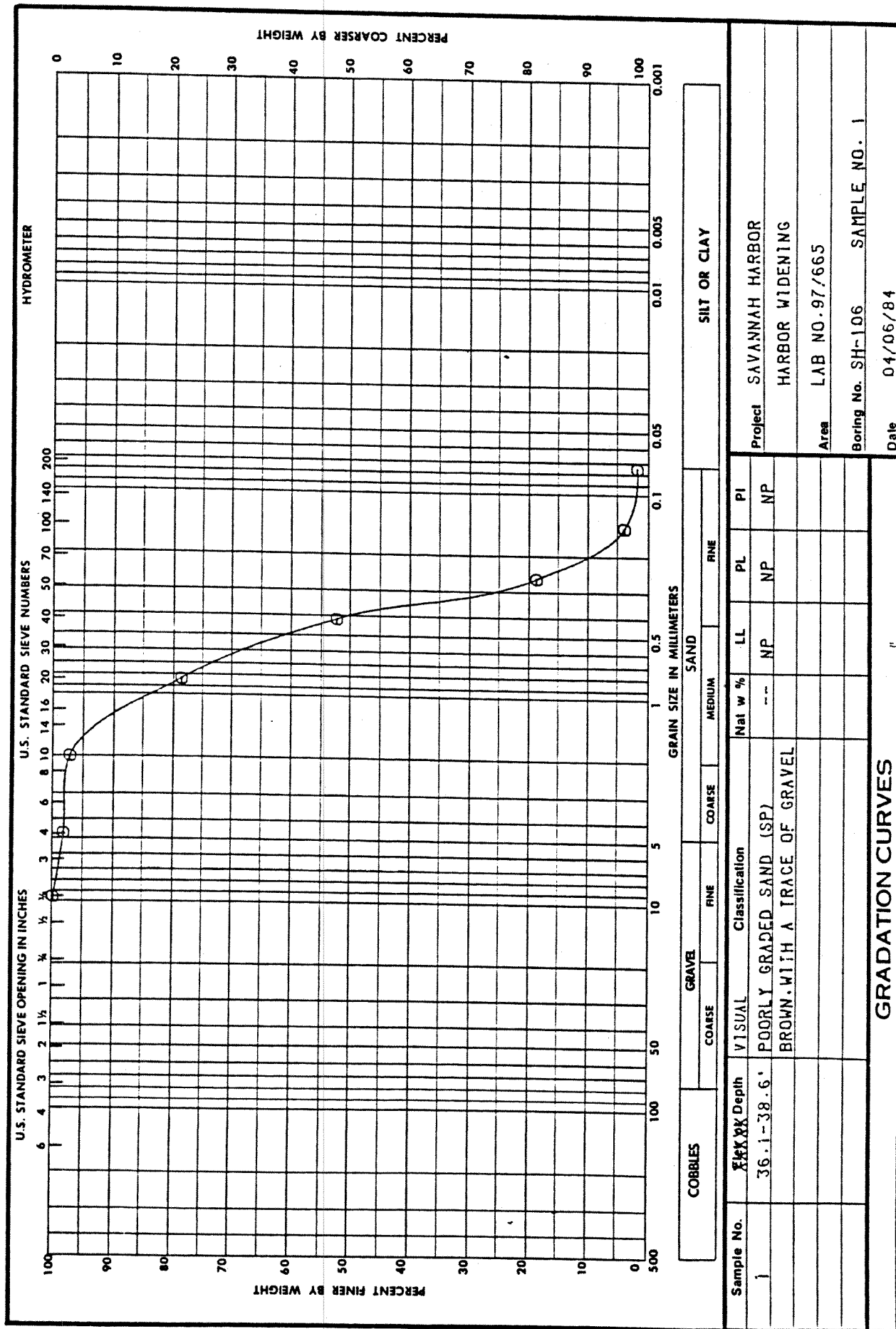
ENG FORM 2087
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Sample No.	Field No.	Depth	Classification	Nat w %	LL	PL	PI
14	47.5-50.3'		SILTY SAND (SM) TAN. CLAYEY	--	44	26	15
GRADATION CURVES							
Project: SAVANNAH HARBOR							
HARBOR WIDENING							
Area: LAB NO. 97/664							
Boring No. SH-105 SAMPLE NO. 14							
Date: 04/06/84							

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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

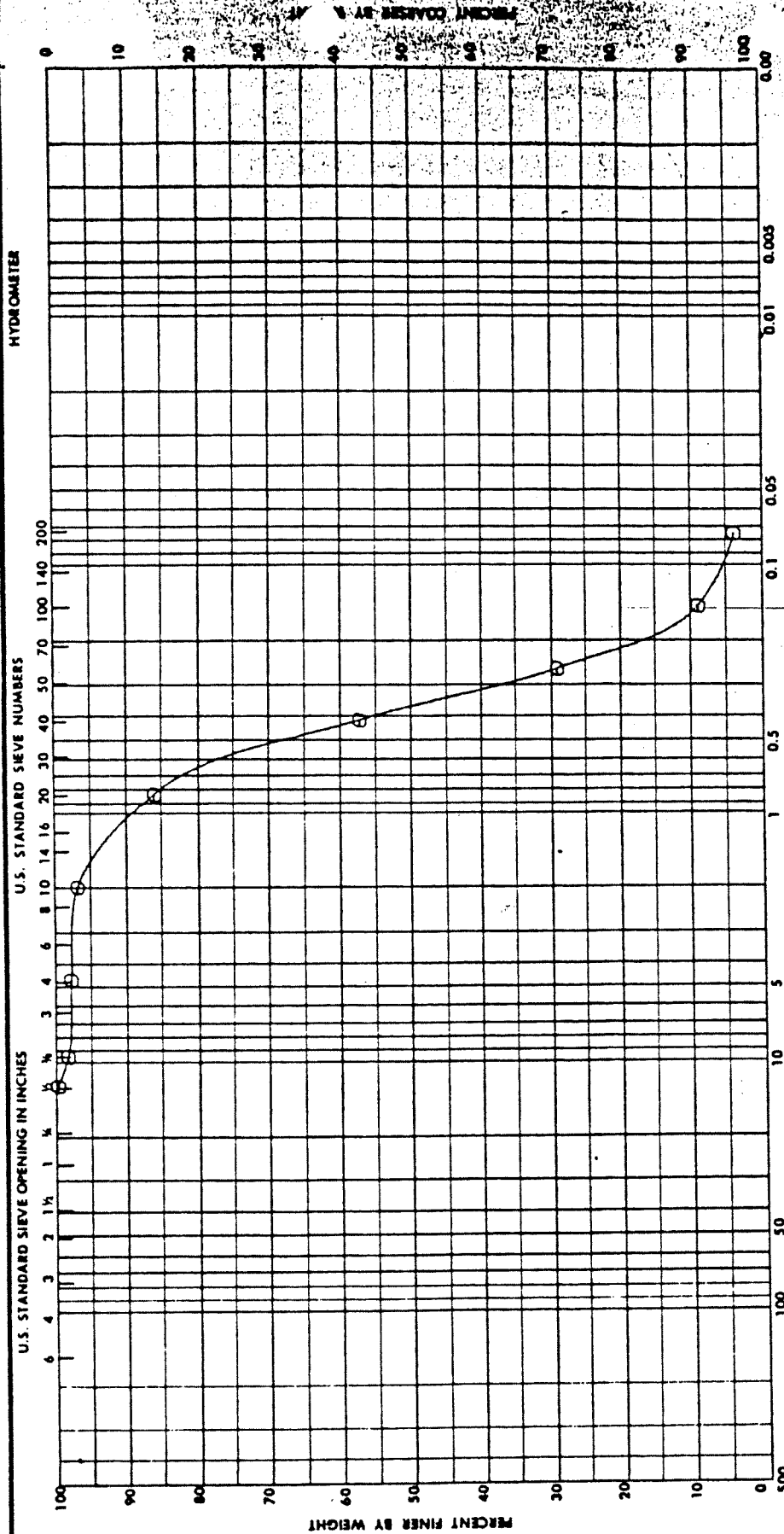
W.O. No. 3778
Req. No. EN-GS-84-03



W.O. No. 3778

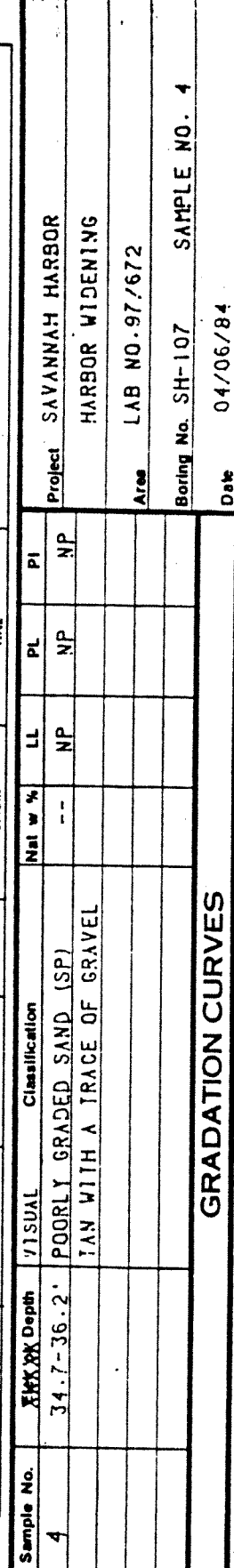
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. EN-GS-84-03



COBBLES		GRAVEL		SAND		SILT OR CLAY	
		COARSE	FINE	COARSE	MEDIUM	FINE	
Sample No.	2	VISUAL		Classification		PI	PL
Field PK Depth	24.2-25.7	POORLY GRADED SAND (SP)		NP		NP	NP
		TAN. WITH A TRACE OF GRAVEL					
GRADATION CURVES							
Project SAVANNAH HARBOR							
HARBOR WIDENING							
Area LAB NO. 97/670							
Boring No. SH-107 SAMPLE NO. 2							
Date 04/06/84							

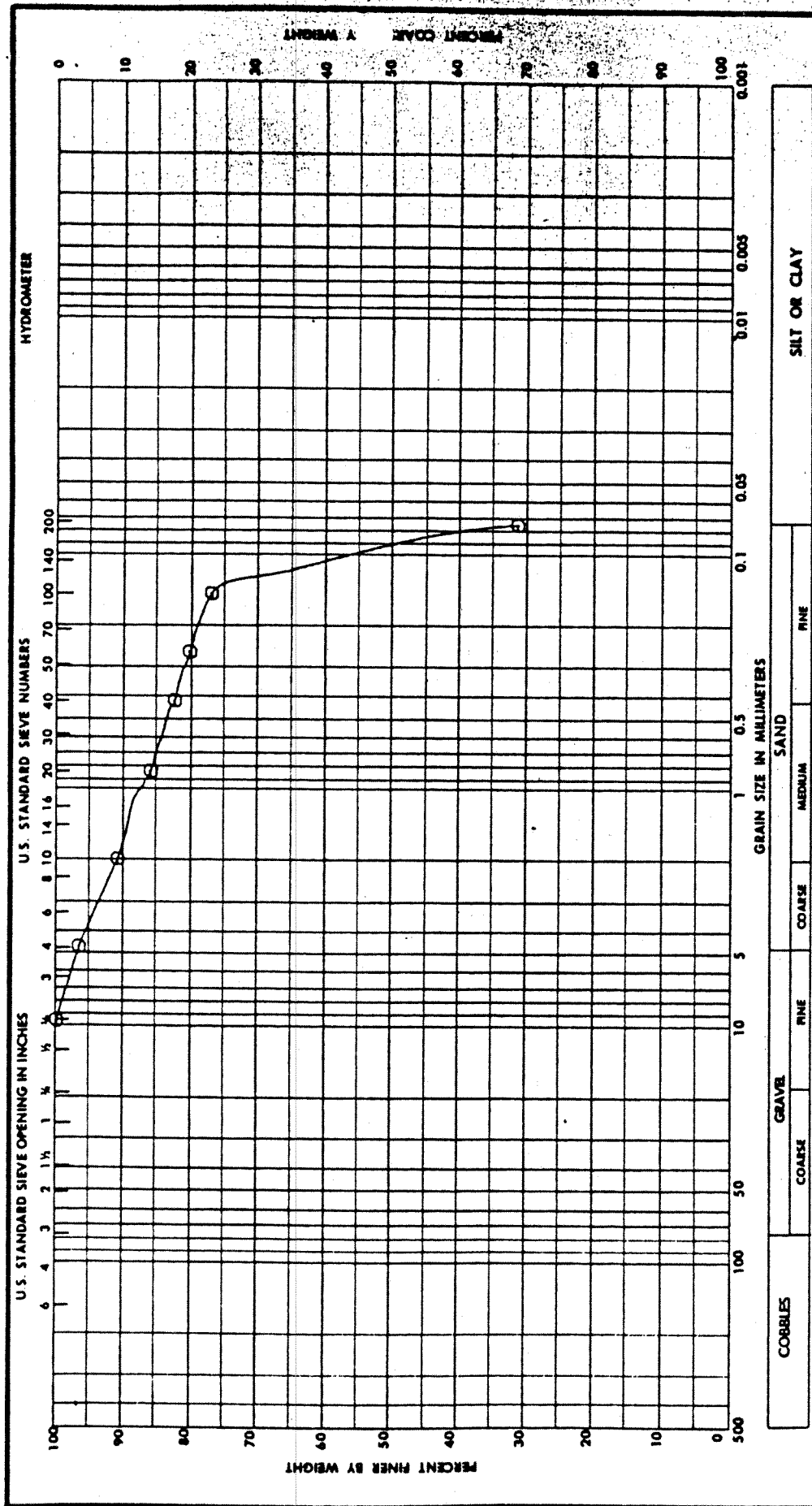
Req. No. EN-GS-84-03



ENG FORM 2087
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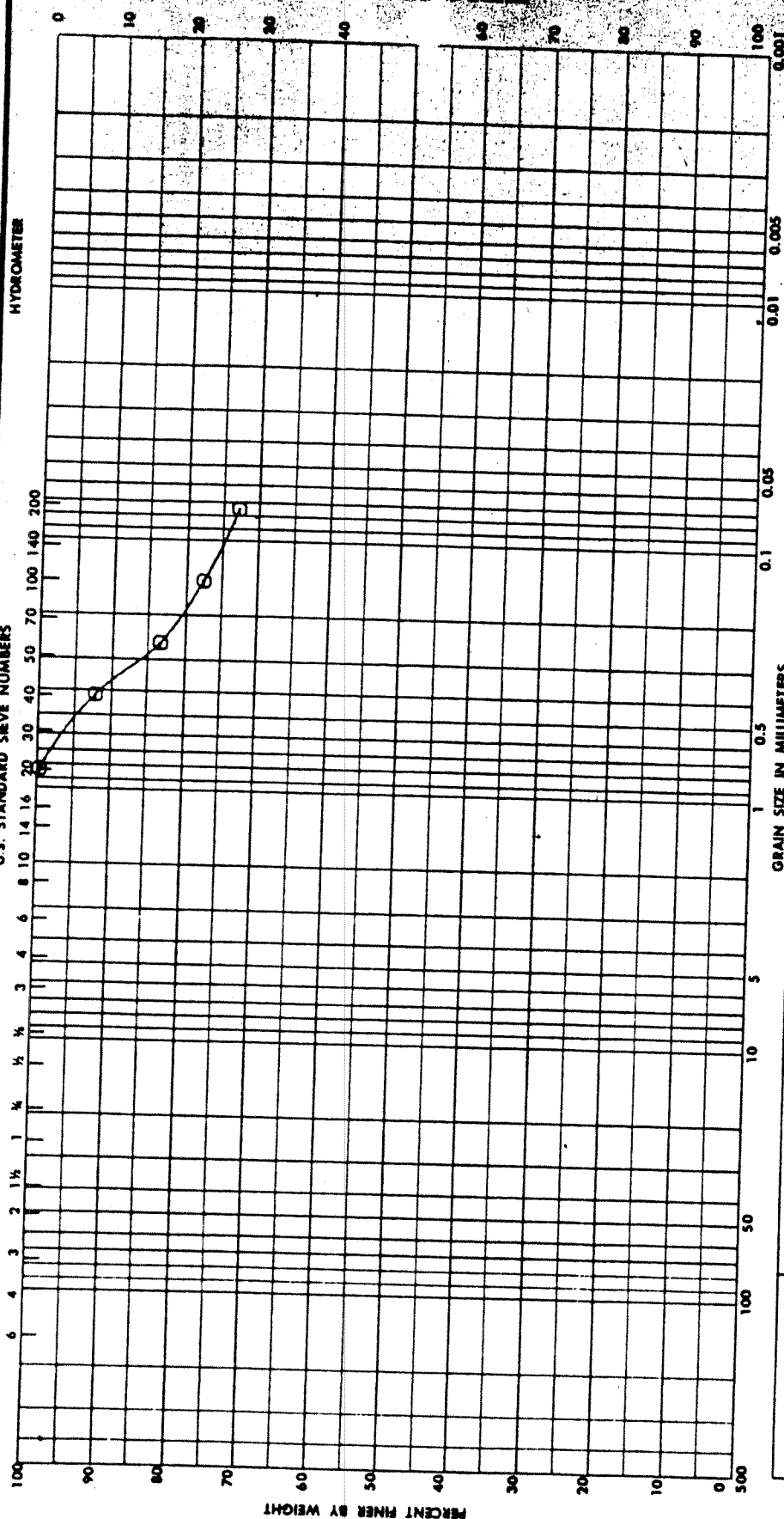
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. EN-GS-84-03



Sample No.	45.2-46.7	Classification	SILTY SAND (SM) GRAY CLAYEY	LL	45	PL	31	PI	14
Depth	45.2-46.7'								
Project: SAVANNAH HARBOR									
HARBOR WIDENING									
Area: LAB NO. 97/674									
Boring No. SH-107 SAMPLE NO. 6									
Date: 04/06/84									
GRADATION CURVES									

U.S. STANDARD SIEVE OPENING IN INCHES

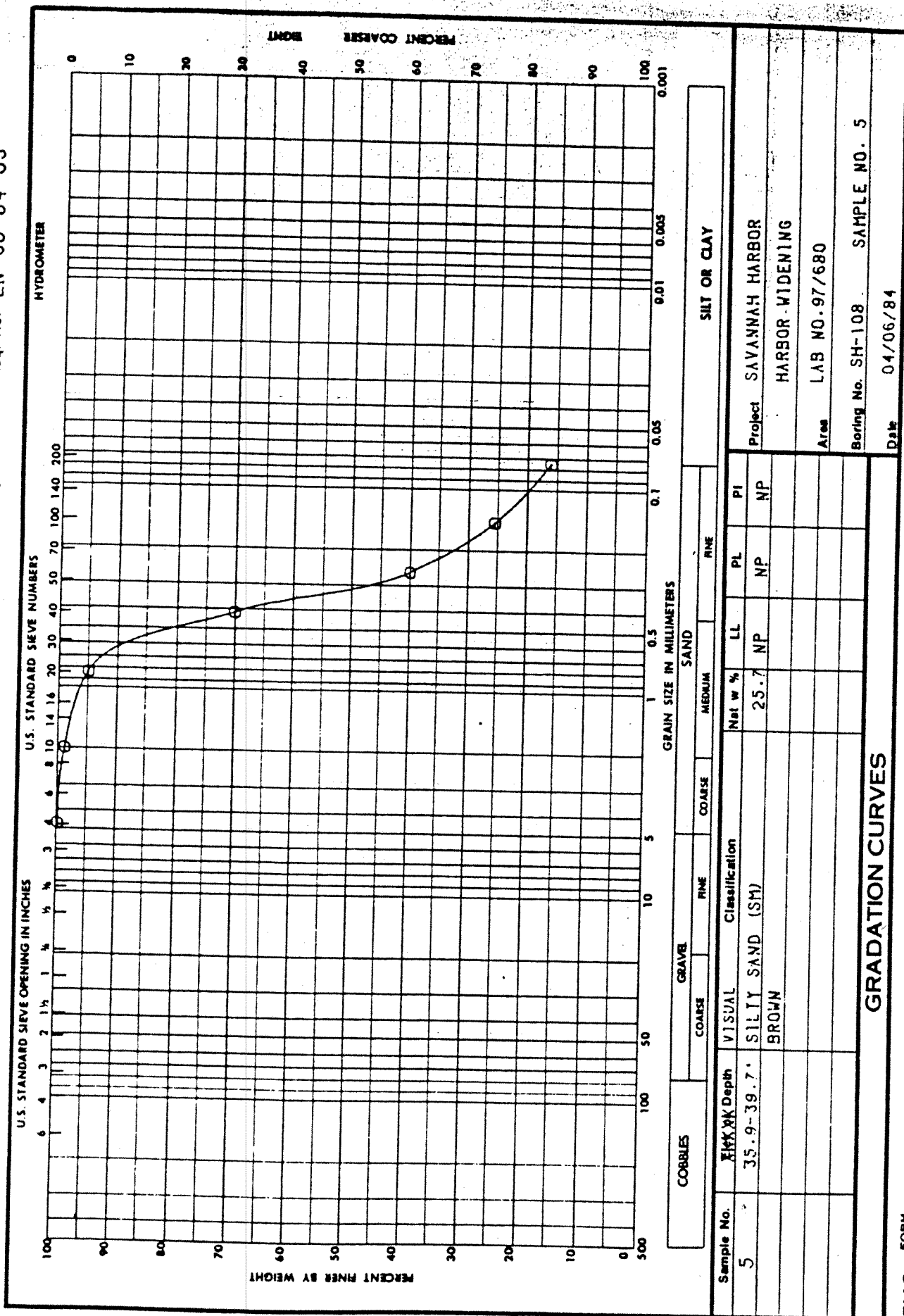
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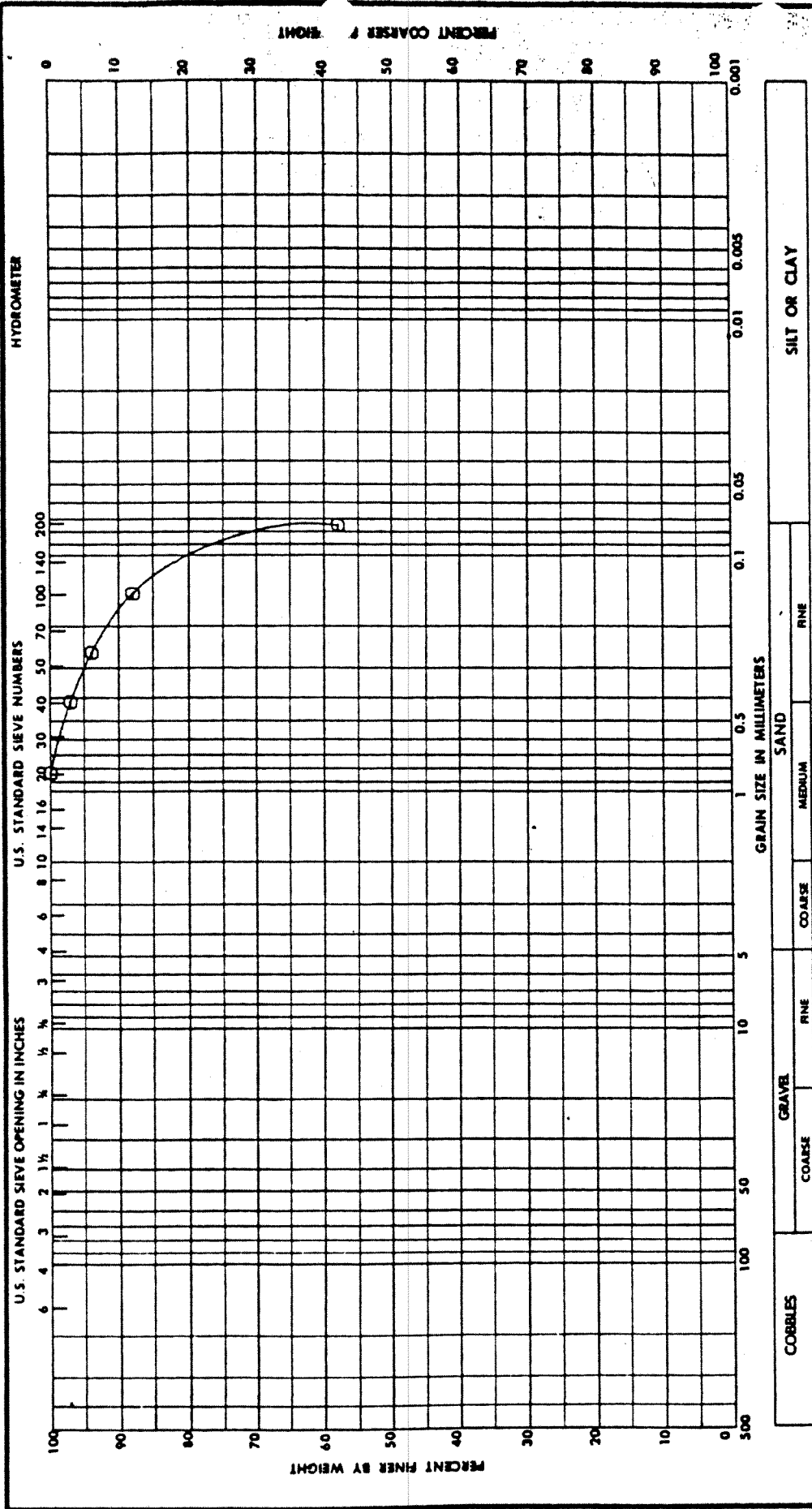


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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

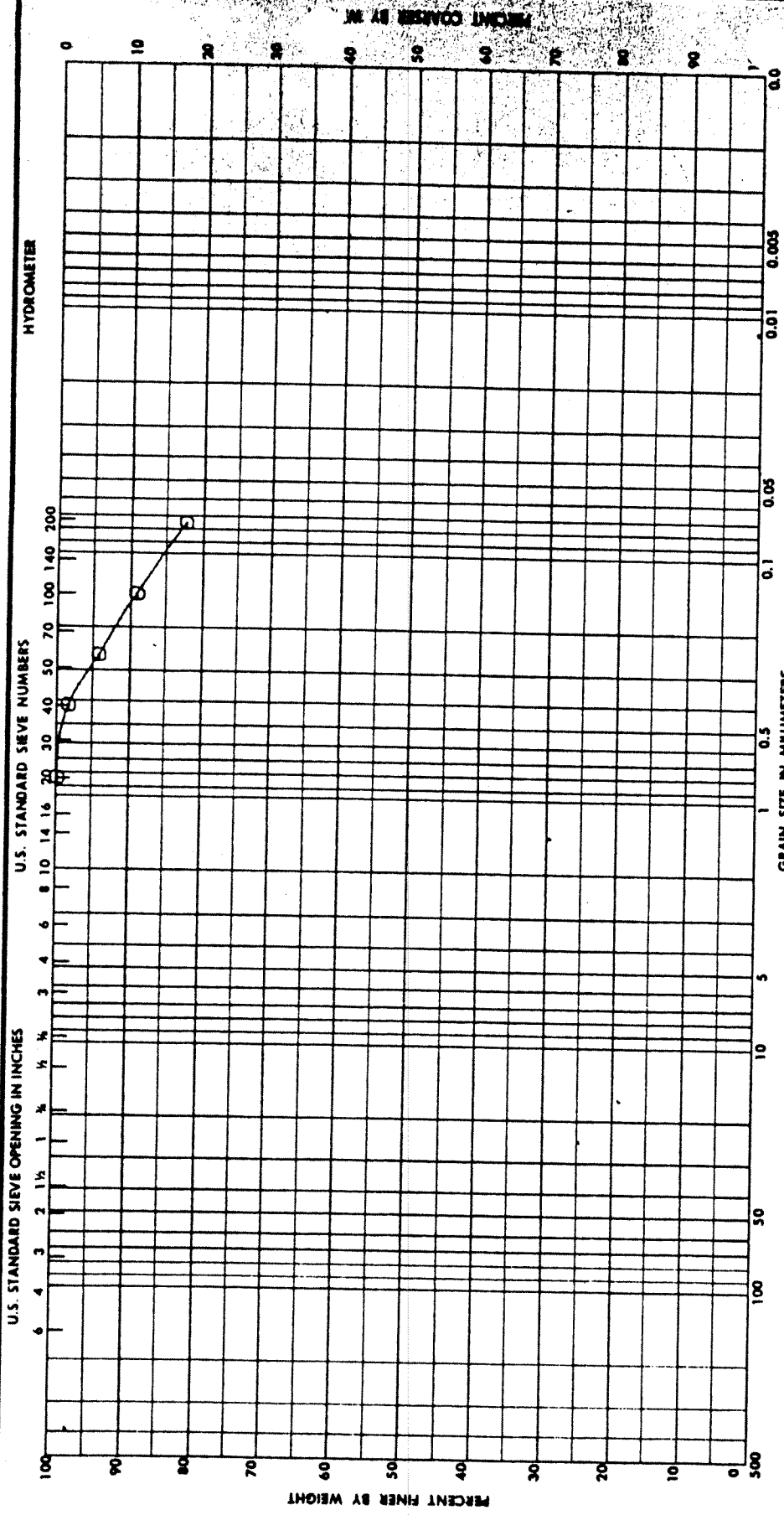
W.O. No. 3778

Req. No. EN-GS-84-03





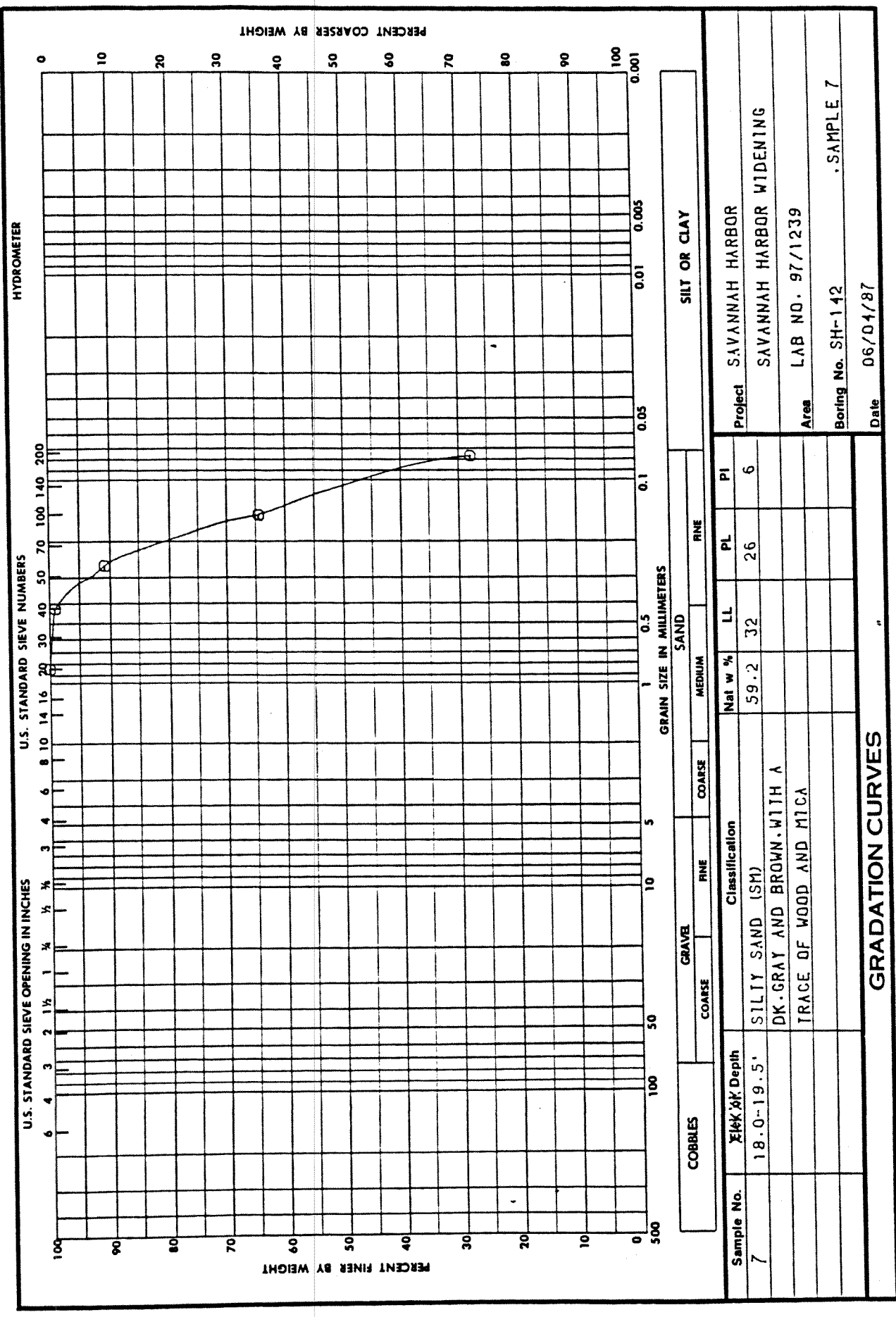
Sample No.	9	Test Depth	48.5-50.0'	Classification	INORGANIC SILT, HIGH LL (MH) GRAY, CLAYEY, SANDY	Nat w %	33.3	LL	56	PL	32	PI	24
GRADATION CURVES													
Project SAVANNAH HARBOR HARBOR WIDENING													
Area LAB NO. 97/684													
Boring No. SH-108 SAMPLE NO. 9													
Date 04/08/84													

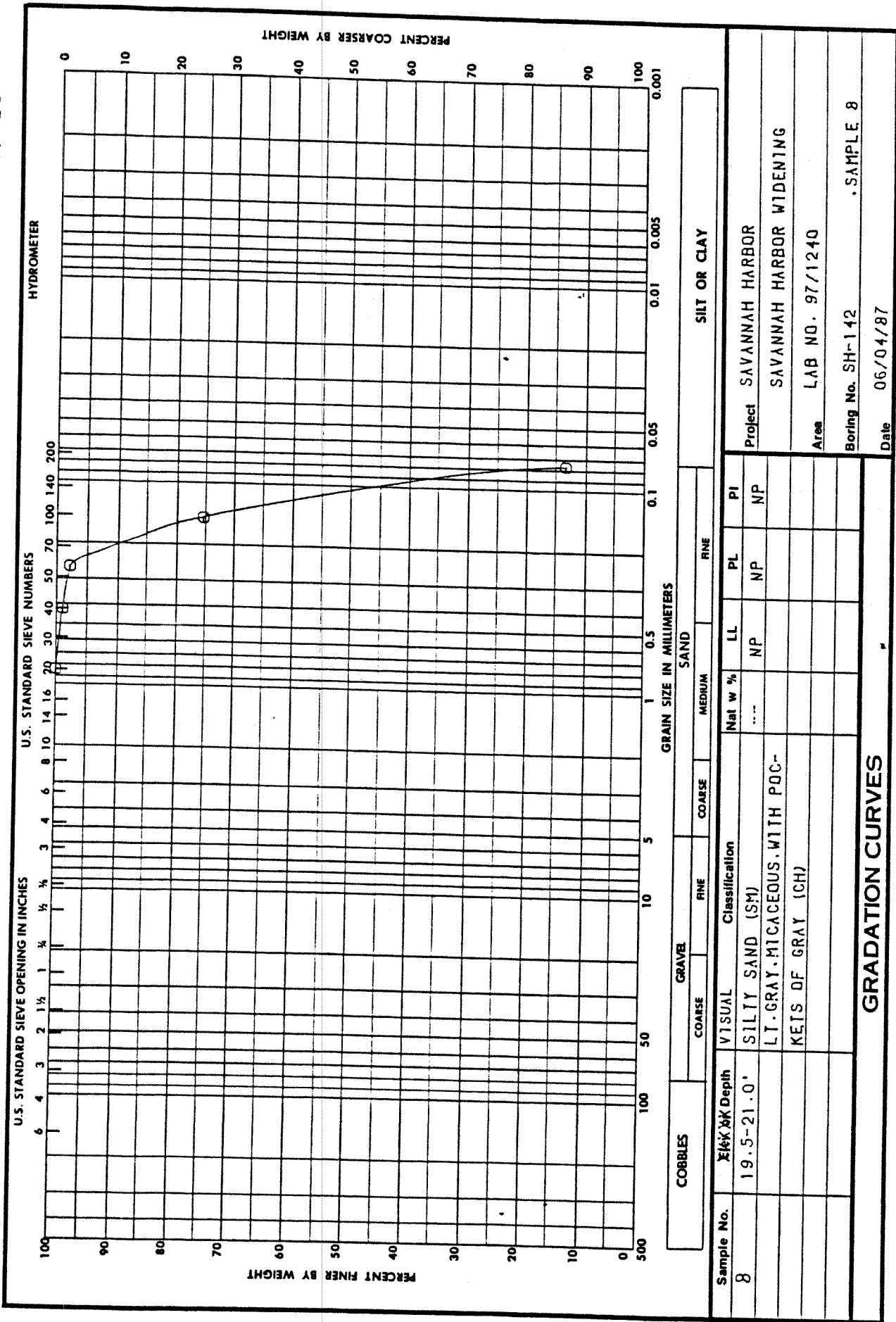


Sample No.	X ₁ X ₂ X ₃ Depth	Classification				GRAVEL				SAND				SILT OR CLAY							
		COARSE	FINE	COARSE	FINE	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE							
1	38.6-40.1'	INORGANIC SILT-HIGH LL (MH)				163.6				156				60				96			
		BLACK AND BROWN WITH A LITTLE																			
		SAND																			
GRADATION CURVES																					
Project SAVANNAH HARBOR																					
Area LAB NO. 97/685																					
Boring No. SH-109 SAMPLE NO. 1																					
Date 04/06/84																					

W.O. No. 5193
Req. No. SAS-EN-GS-87-23

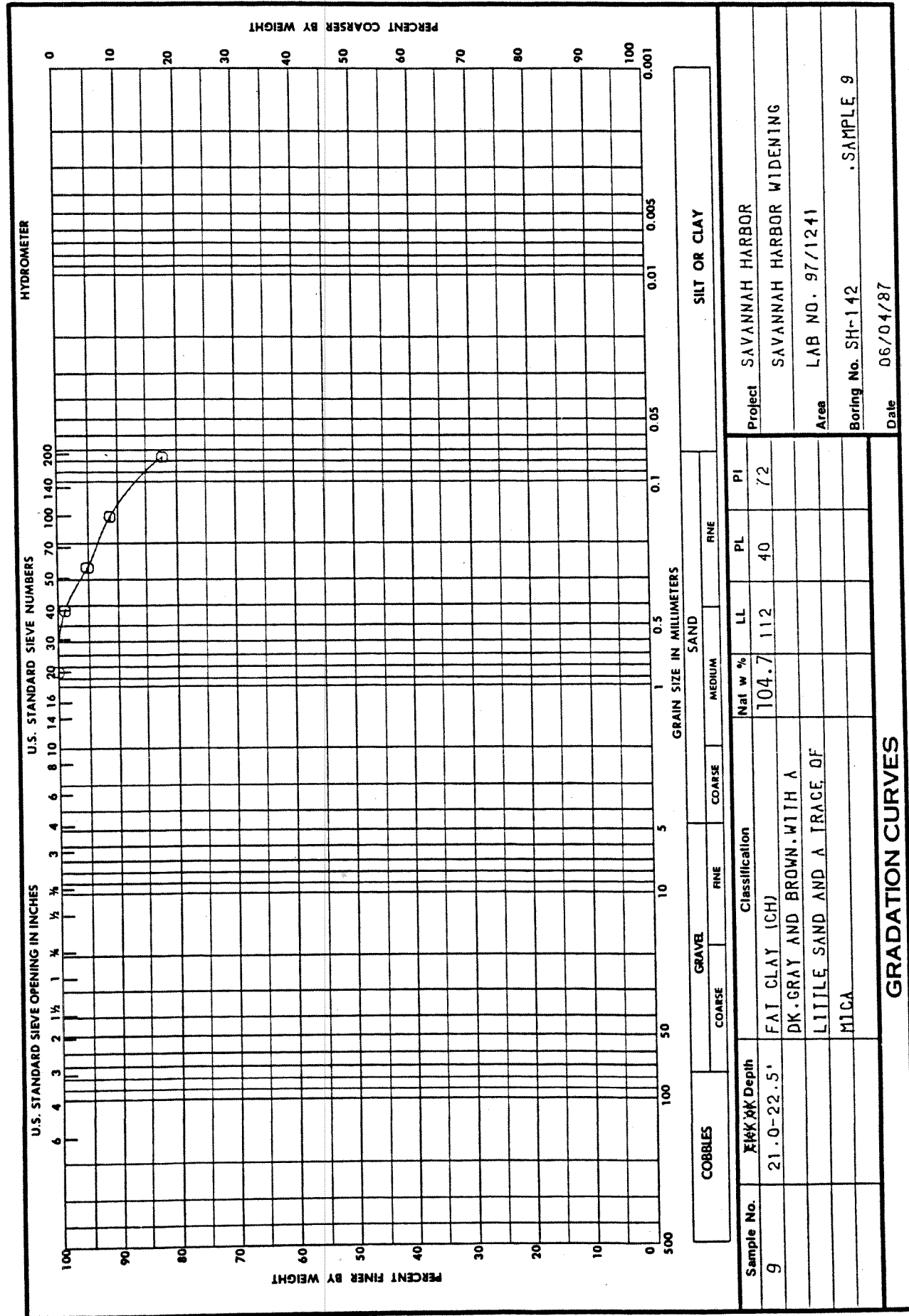
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

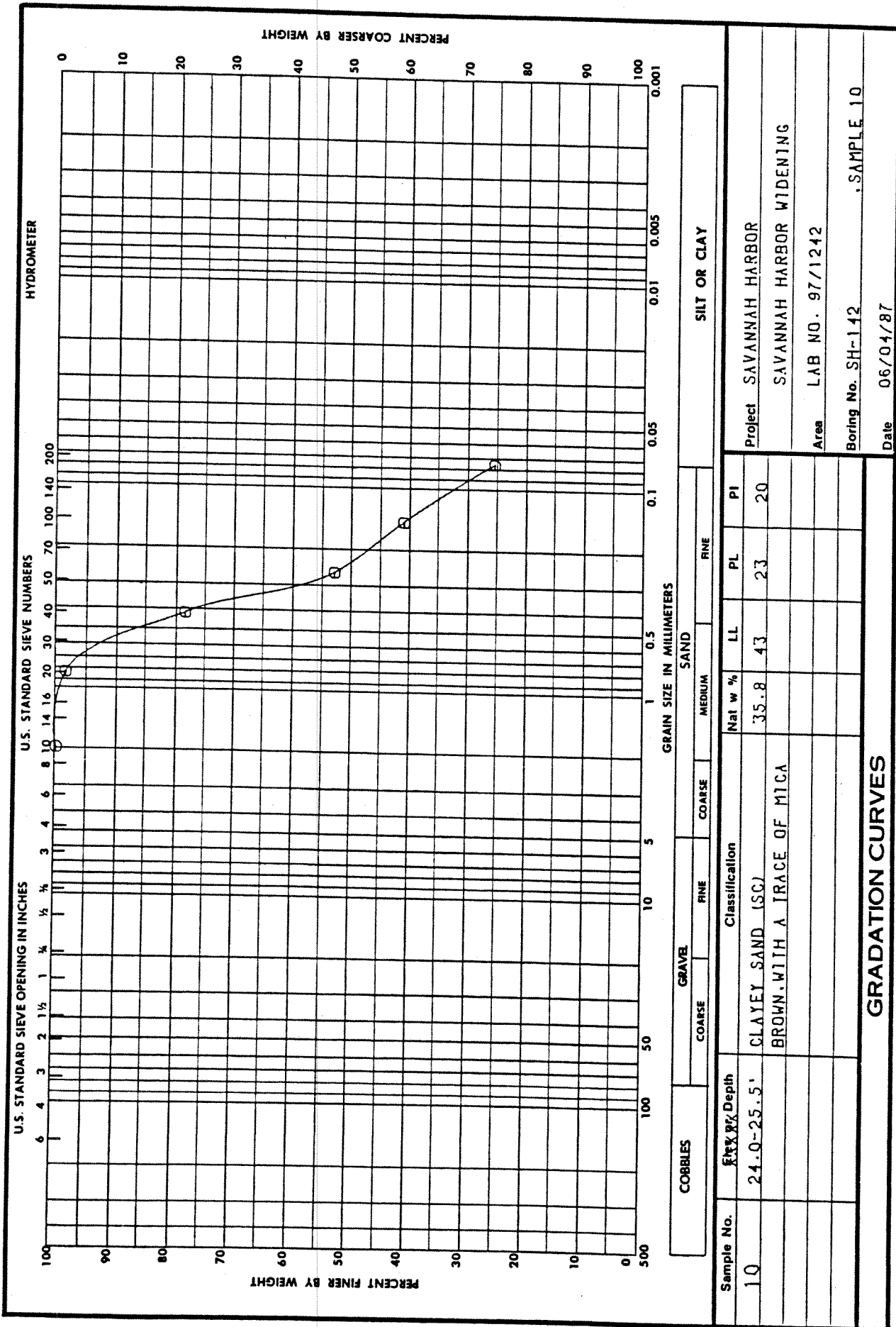




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Req. No. SAS-EN-GS-87-23

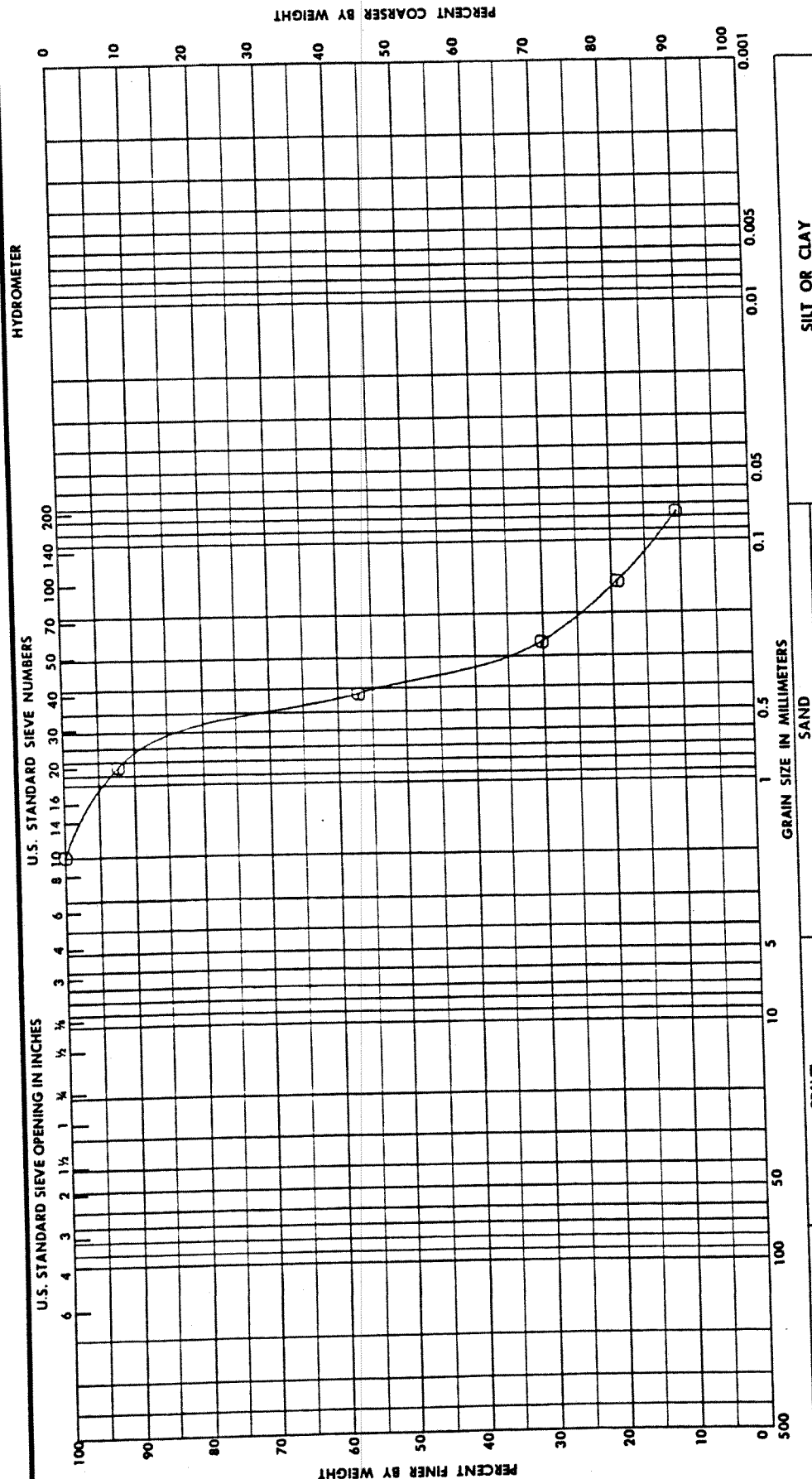
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060





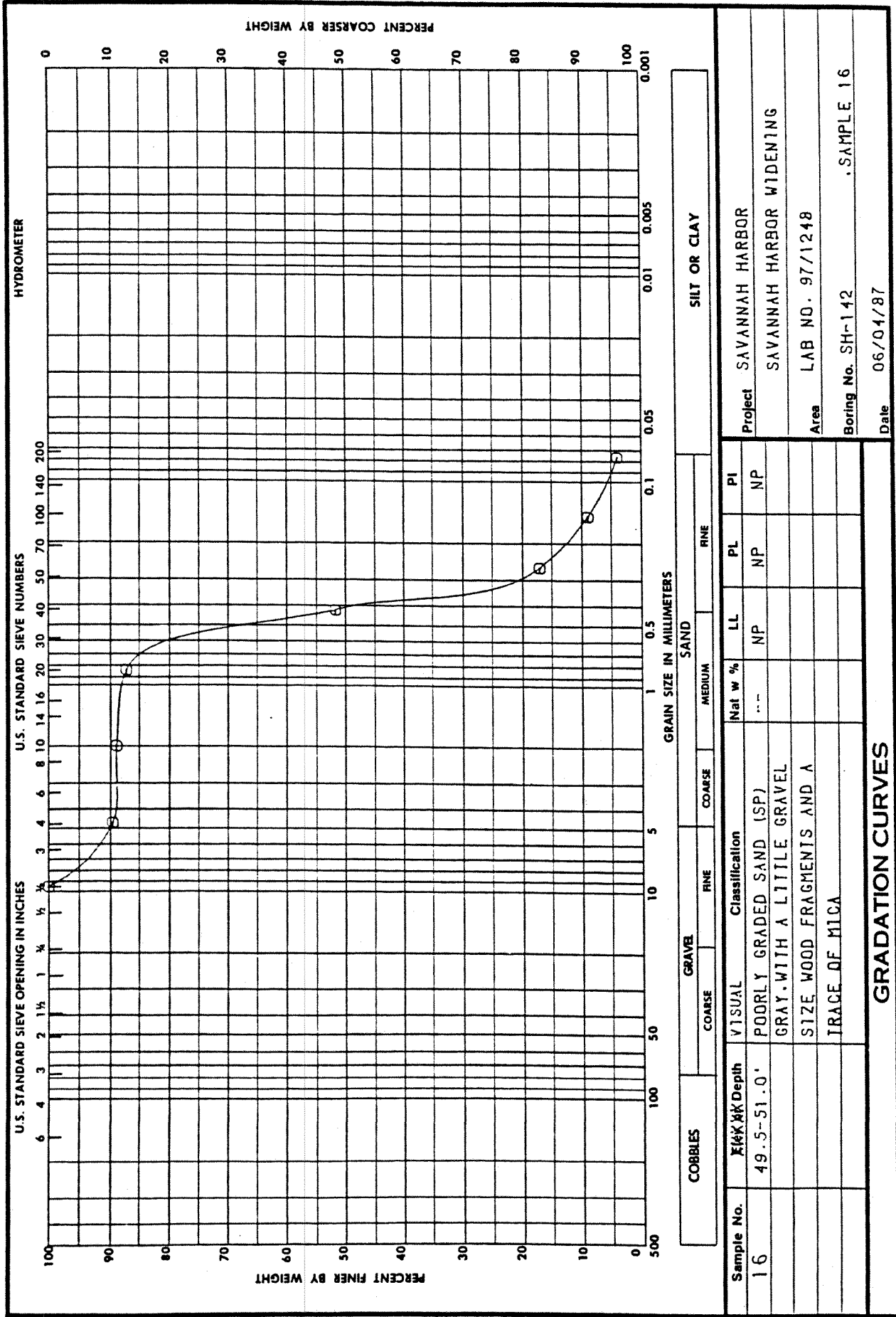
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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. SAS-EN-GS-87-23



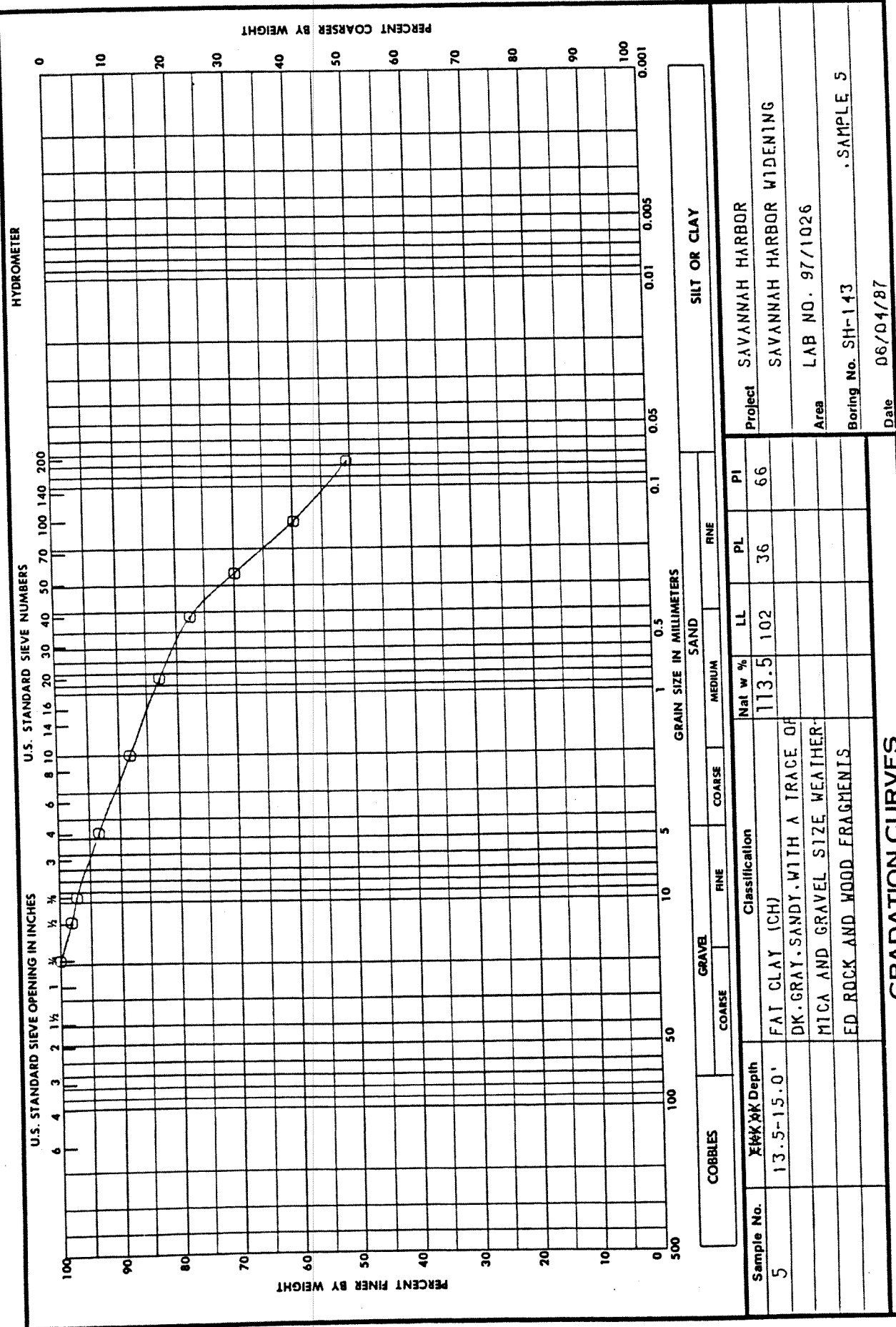
COBBLES		GRAVEL		FINE		MEDIUM		FINE		Project	Area	Boring No.
COARSE		FINE		COARSE		MEDIUM		FINE				
Sample No.	Σ(Δk)Δk' Depth	Classification		Nat w %		LL	PL	PI				
13	36.0-37.5'	WELL GRD SILTY SAND (SW-SM)		--		NP	NP	NP		SAVANNAH HARBOR		
		GRAY WITH A TRACE OF MICA								SAVANNAH HARBOR	LAB NO. 97/1245	SAMPLE 13

GRADATION CURVES



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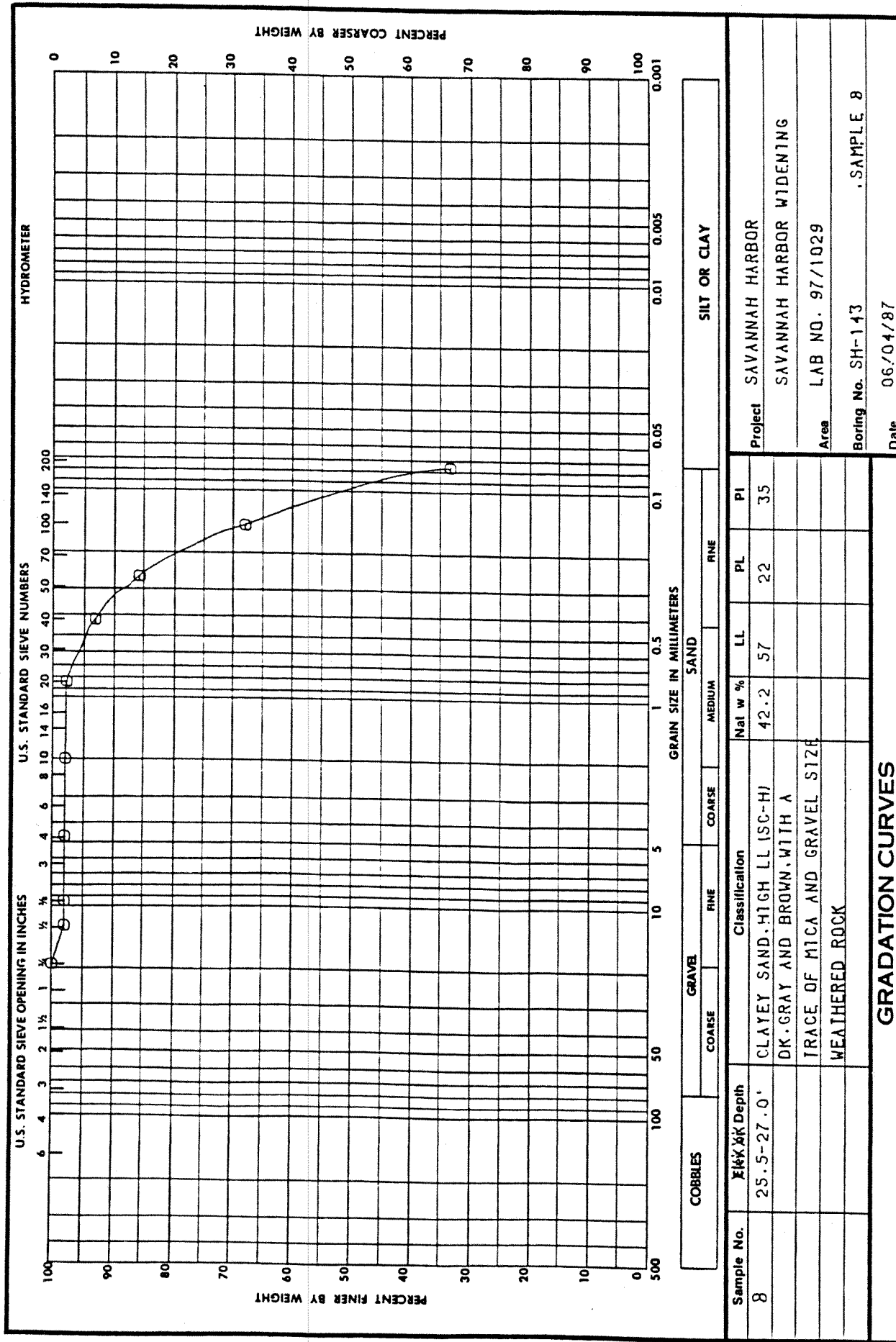
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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

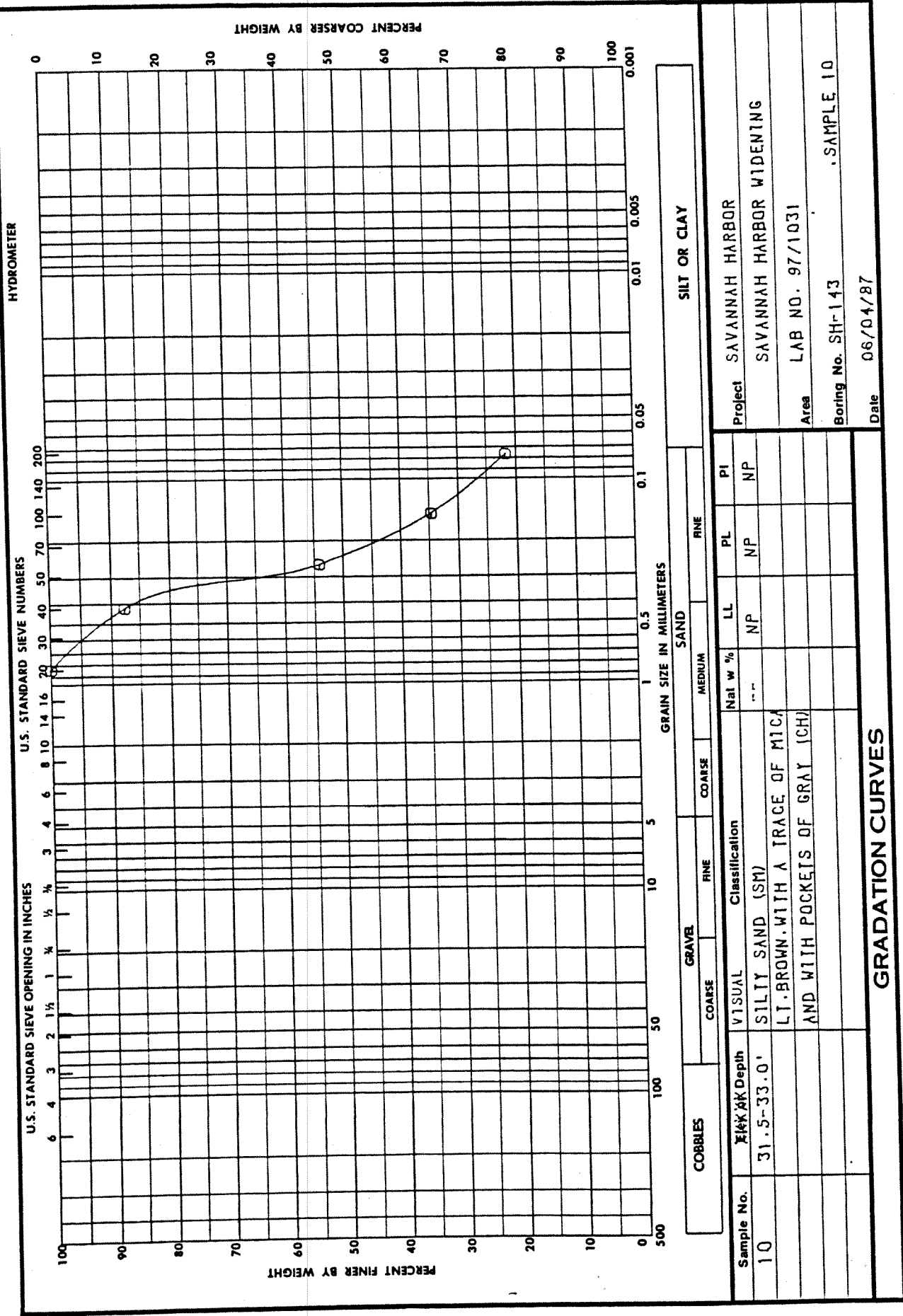
W.O. No. 5193

Req. No. SAS-EN-6S-87-23



W.O. No. 5193
Req. No. SAS-EN-6S-87-23

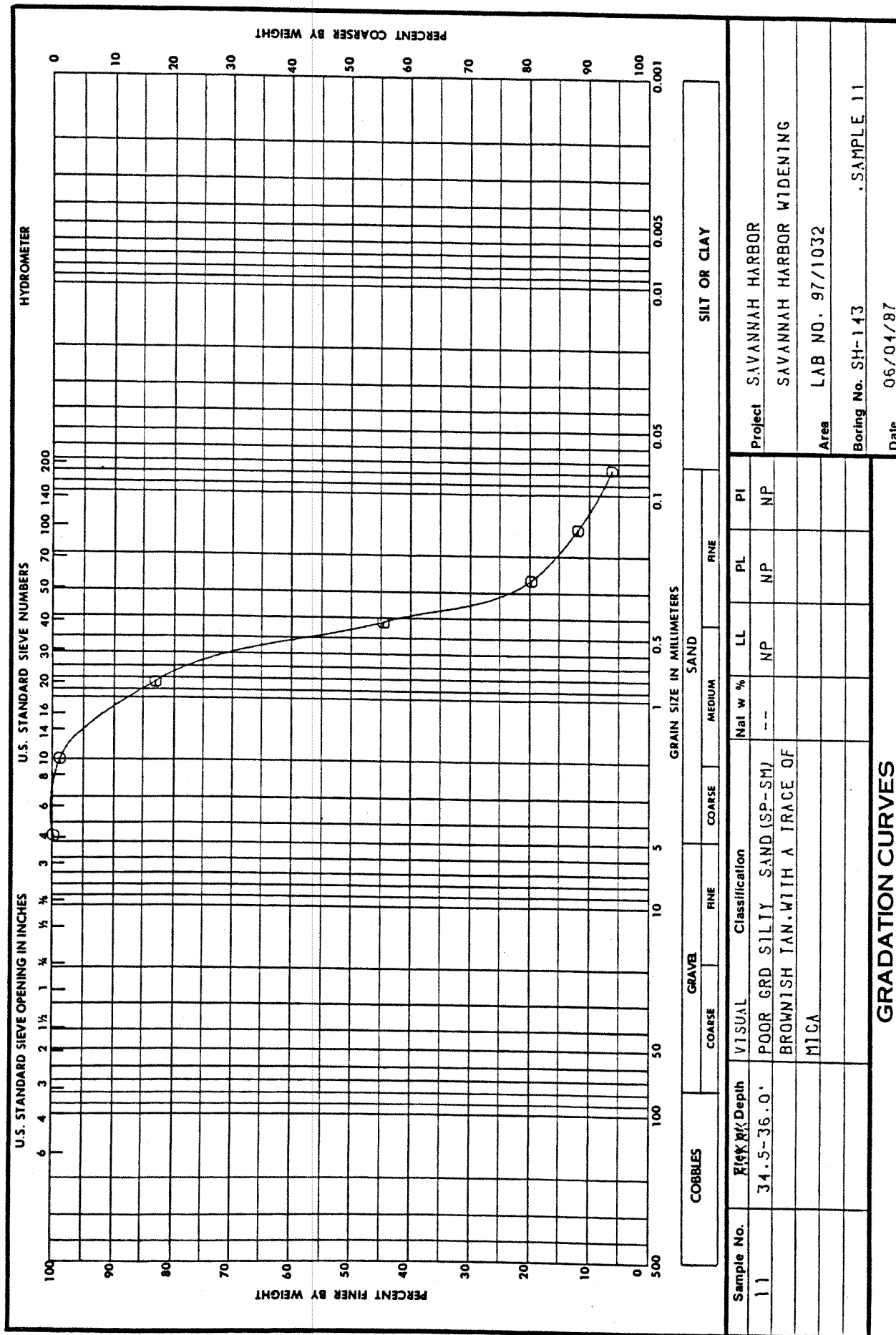
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
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W.O. No. 5193

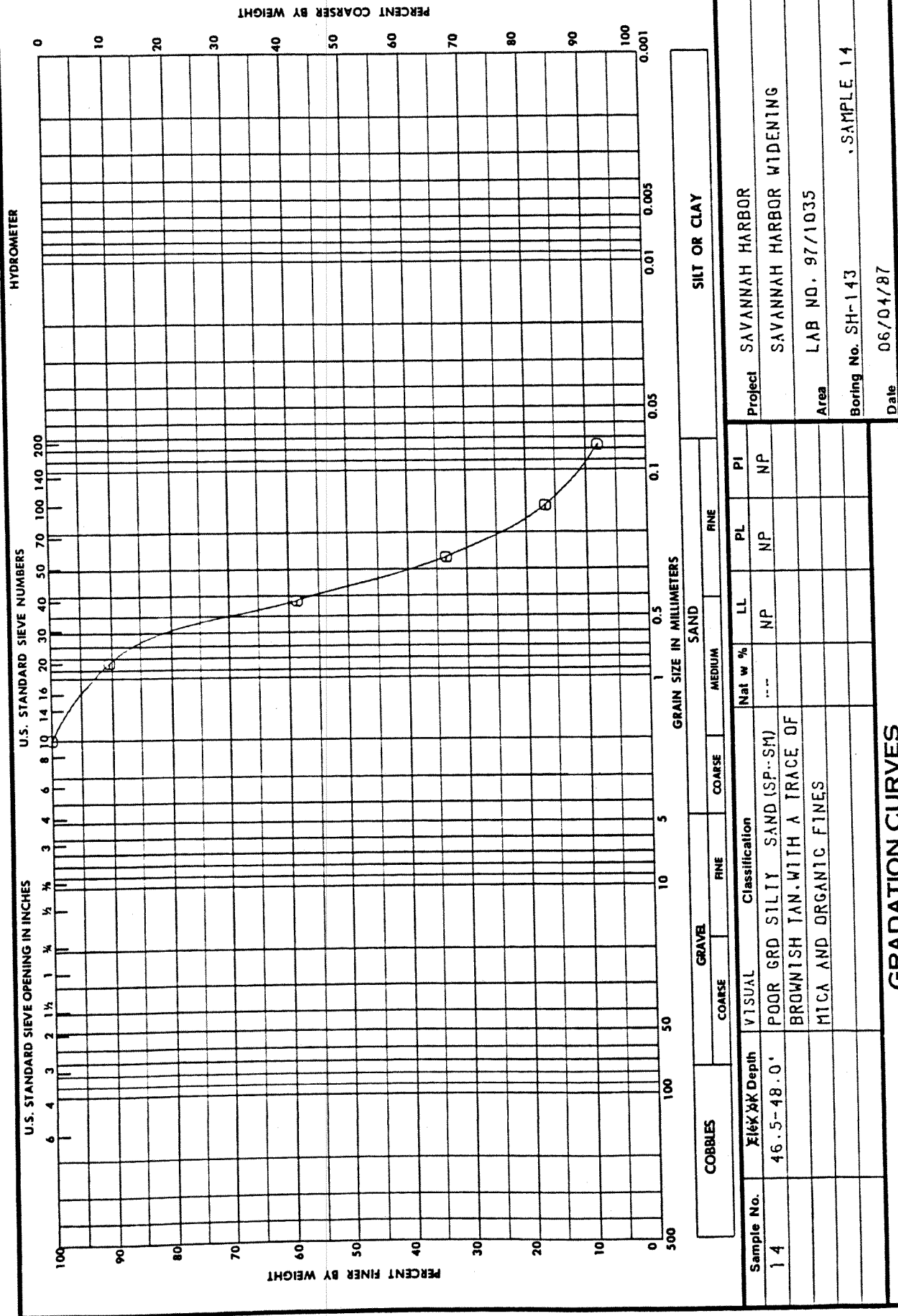
Req. No. SAS-EN-GS-87-23



Sample No.	11	Visual Classification	GRAVEL				SAND				SILT OR CLAY			
	34.5-36.0'		COARSE	FINE	COARSE	FINE	COARSE	MEDIUM	FINE	COARSE	FINE	COARSE	FINE	
Size of Depth	34.5-36.0'	POOR GRD SILTY SAND (SP-SM)	Nat w %		LL	PL	PI	Project		SAVANNAH HARBOR				
		BROWNISH TAN WITH A TRACE OF MICA	---		NP	NP	NP	Area		LAB NO. 97/1032				
								Boring No.		SH-143				
								Date		06/04/87				
GRADATION CURVES														
SAMPLE 11														

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Req. No. SAS-EN-GS-87-23

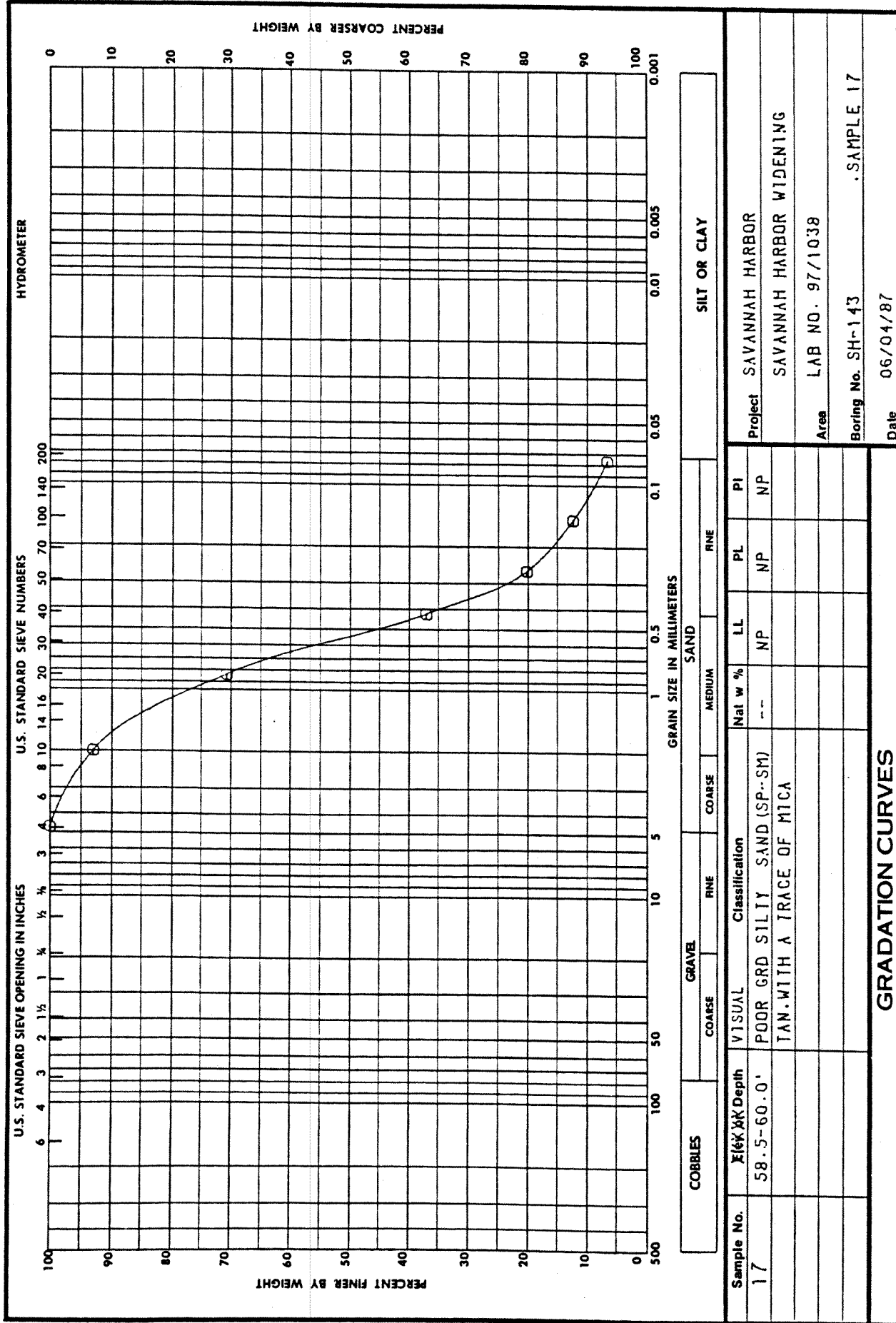


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DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

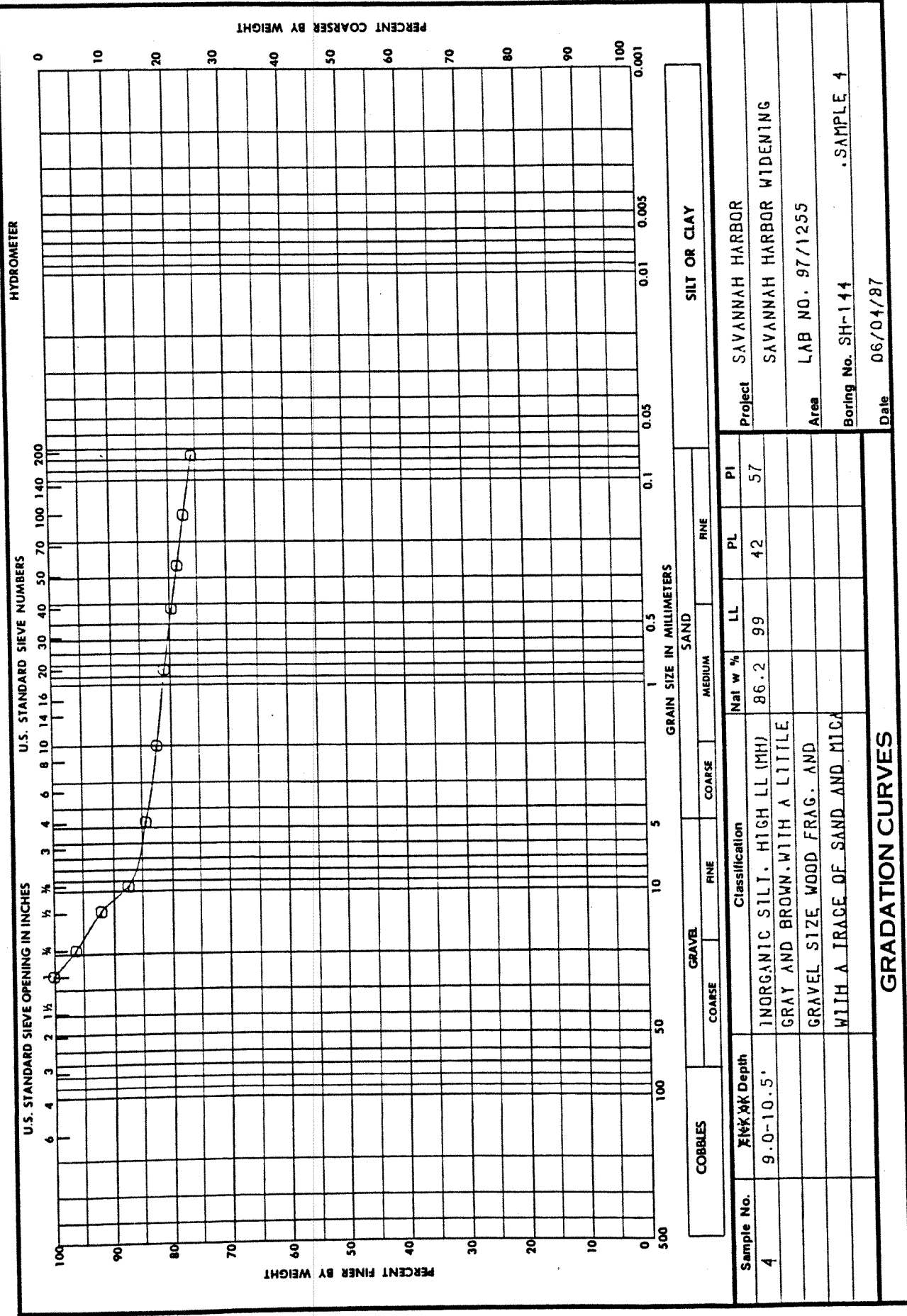
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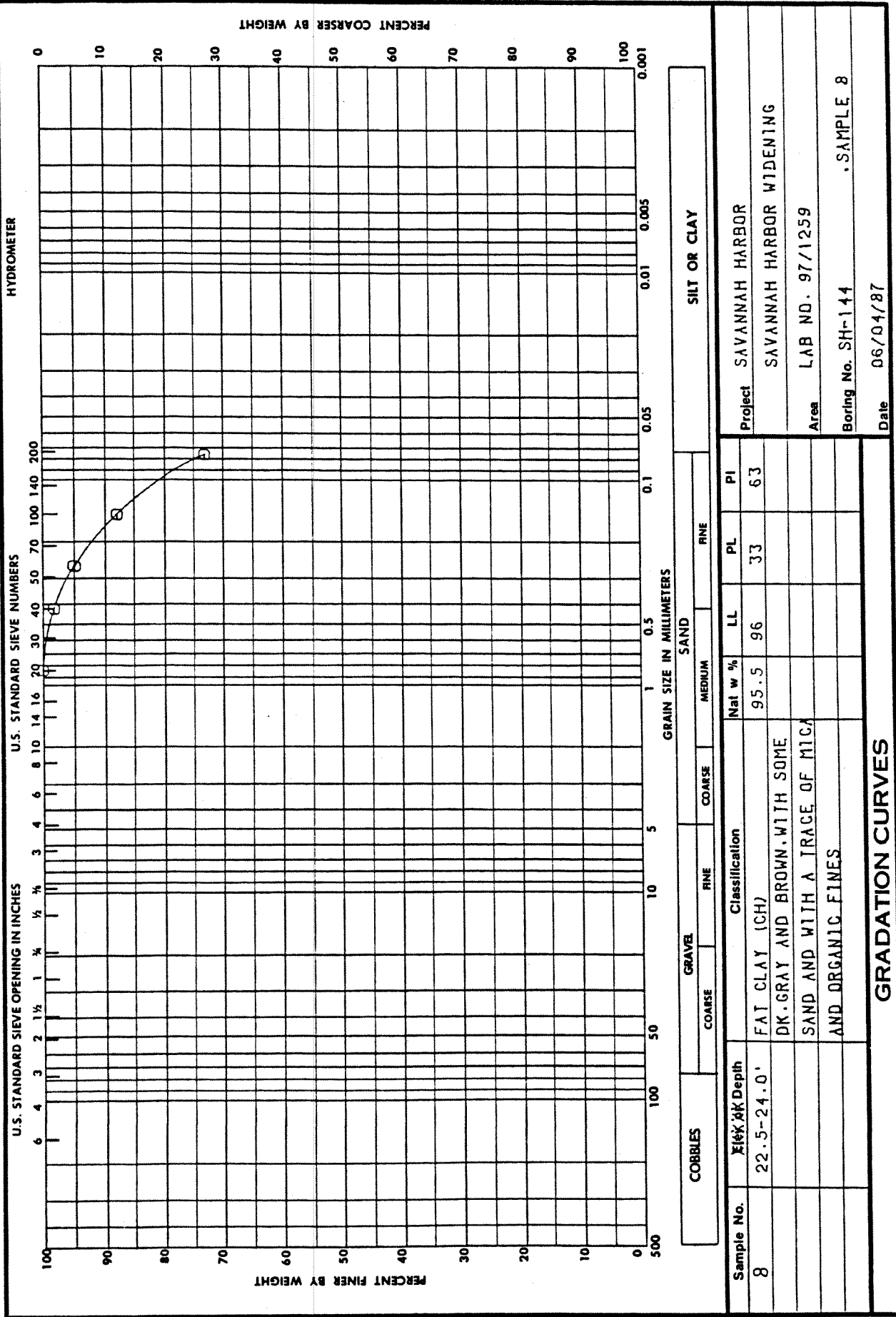


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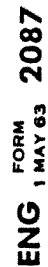
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

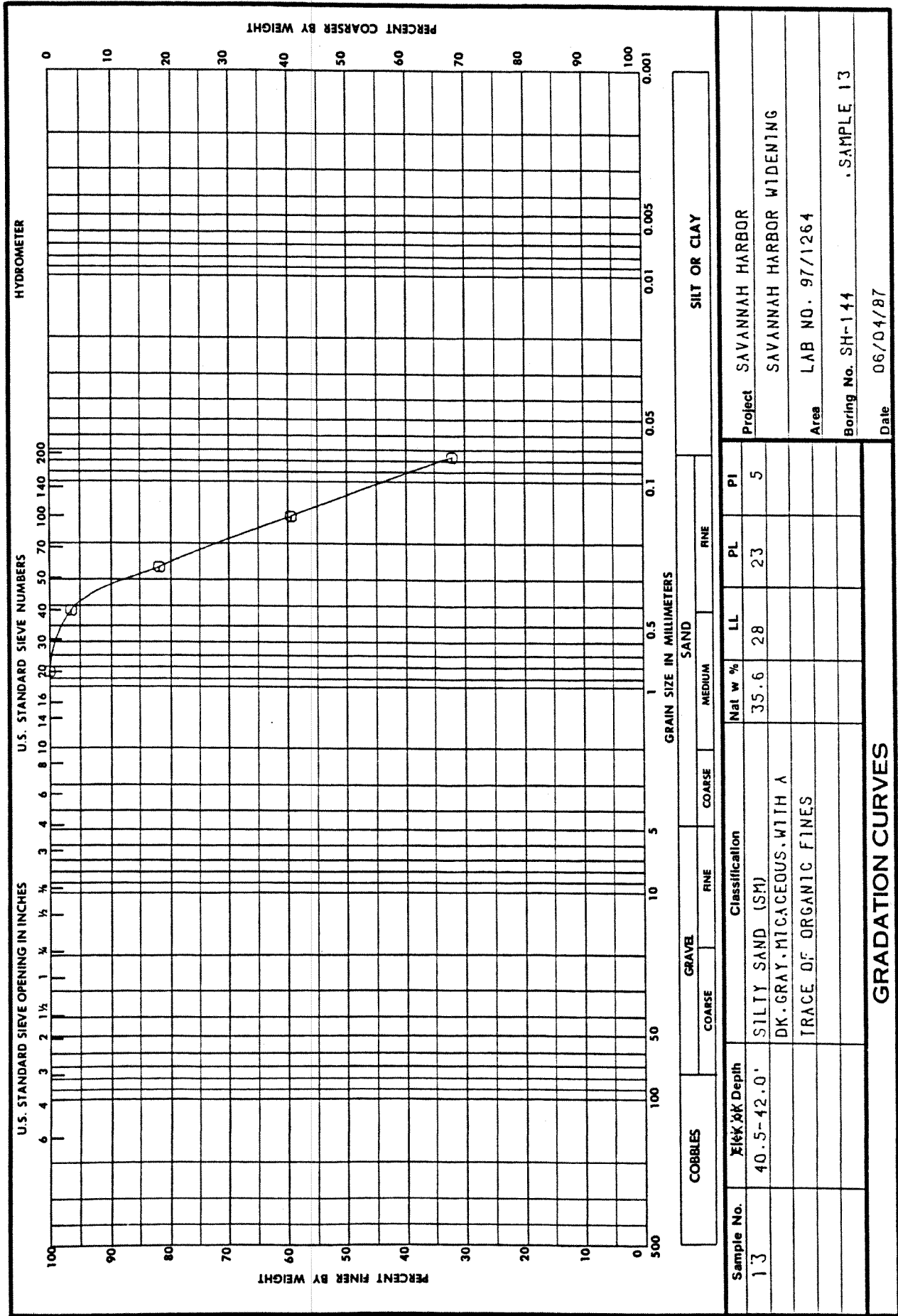


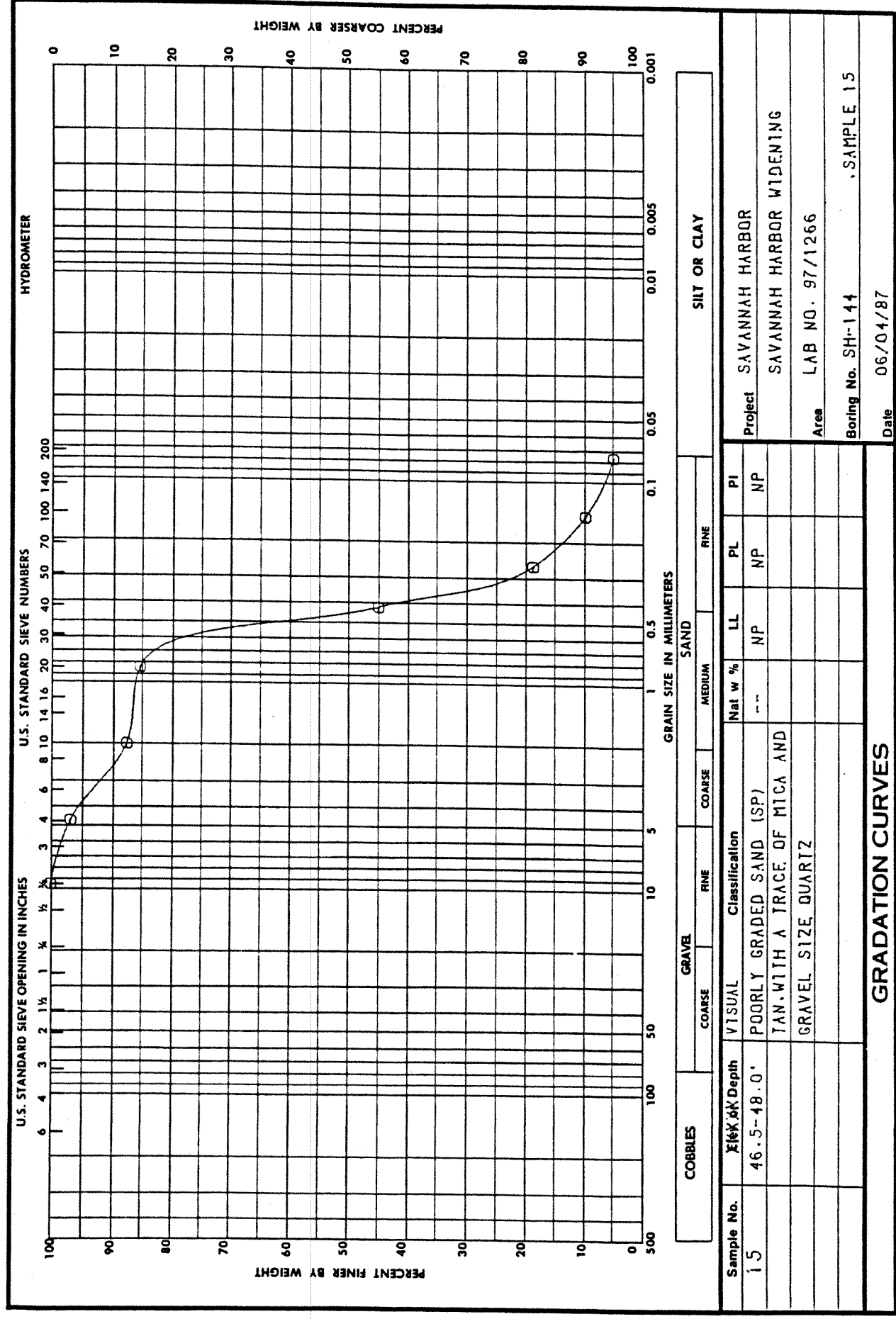
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Req. No. SAS-EN-GS-87-23

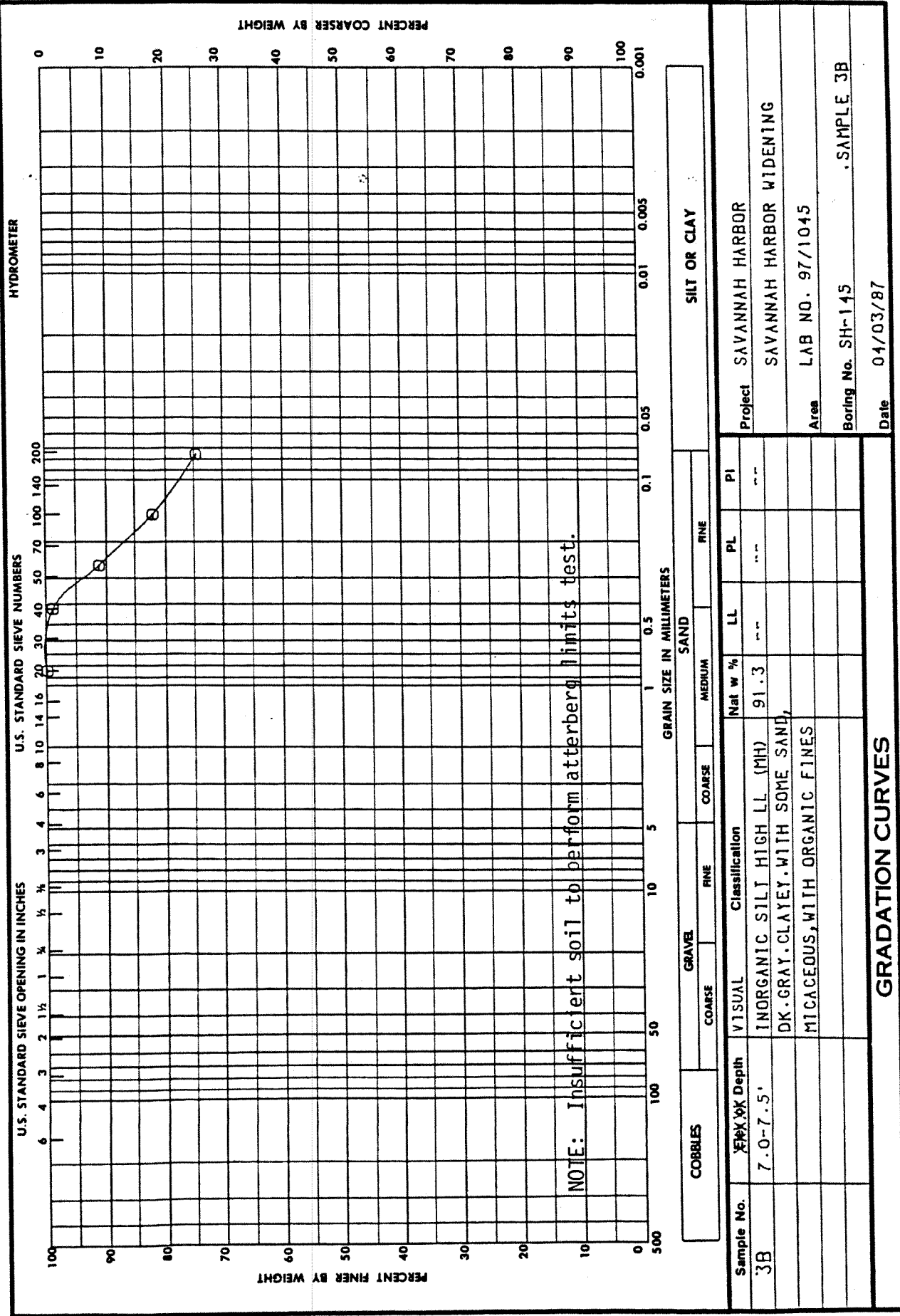


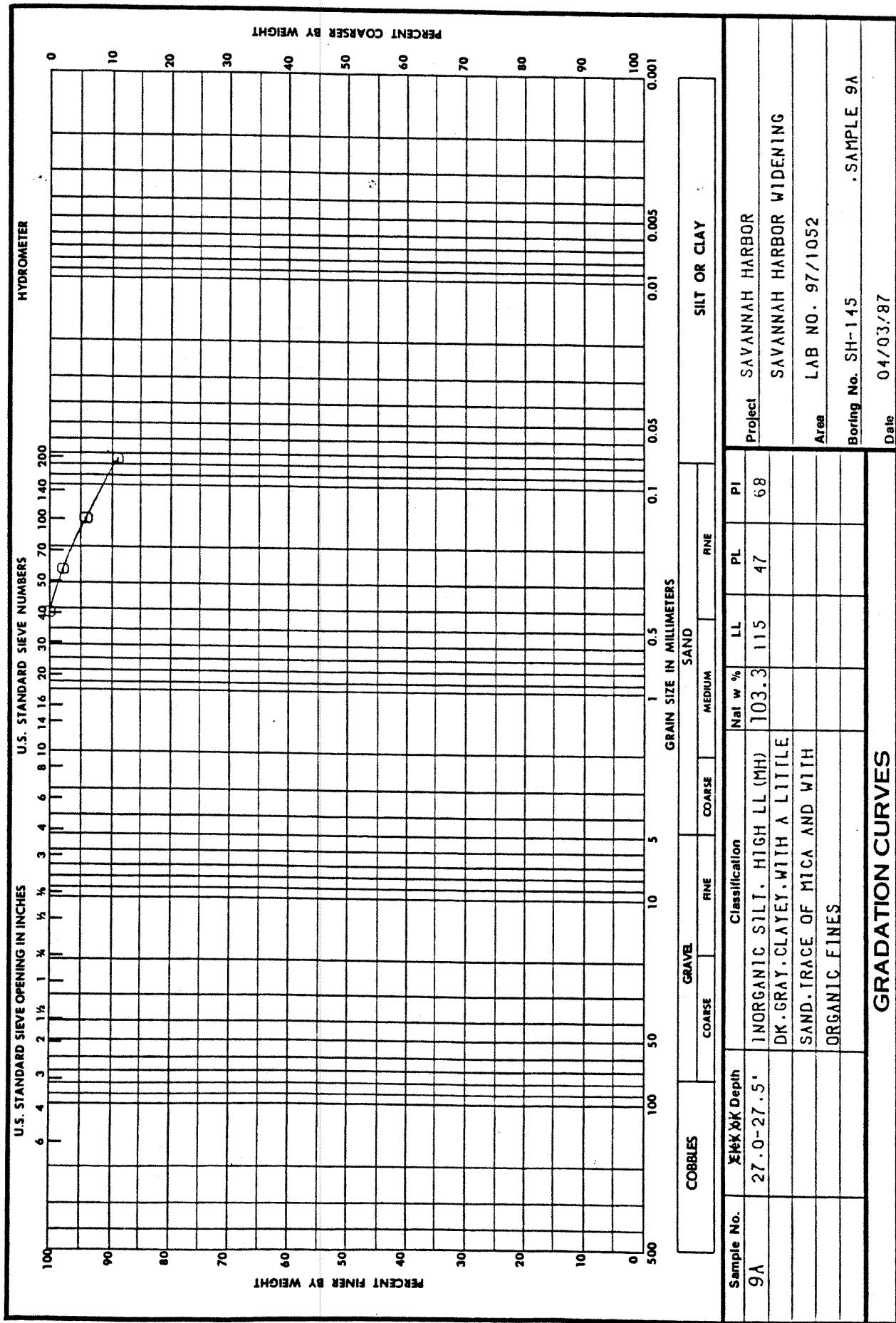




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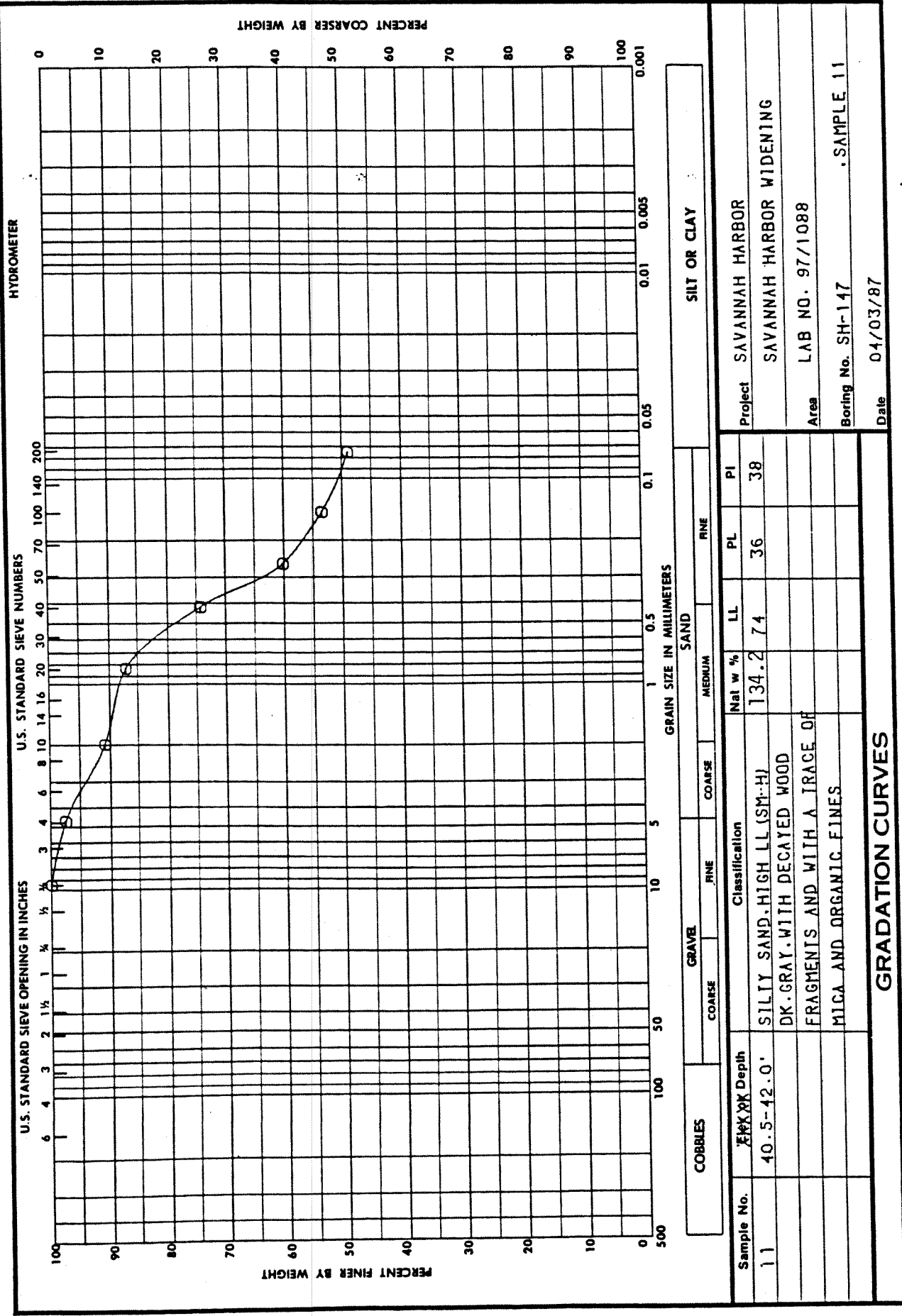
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

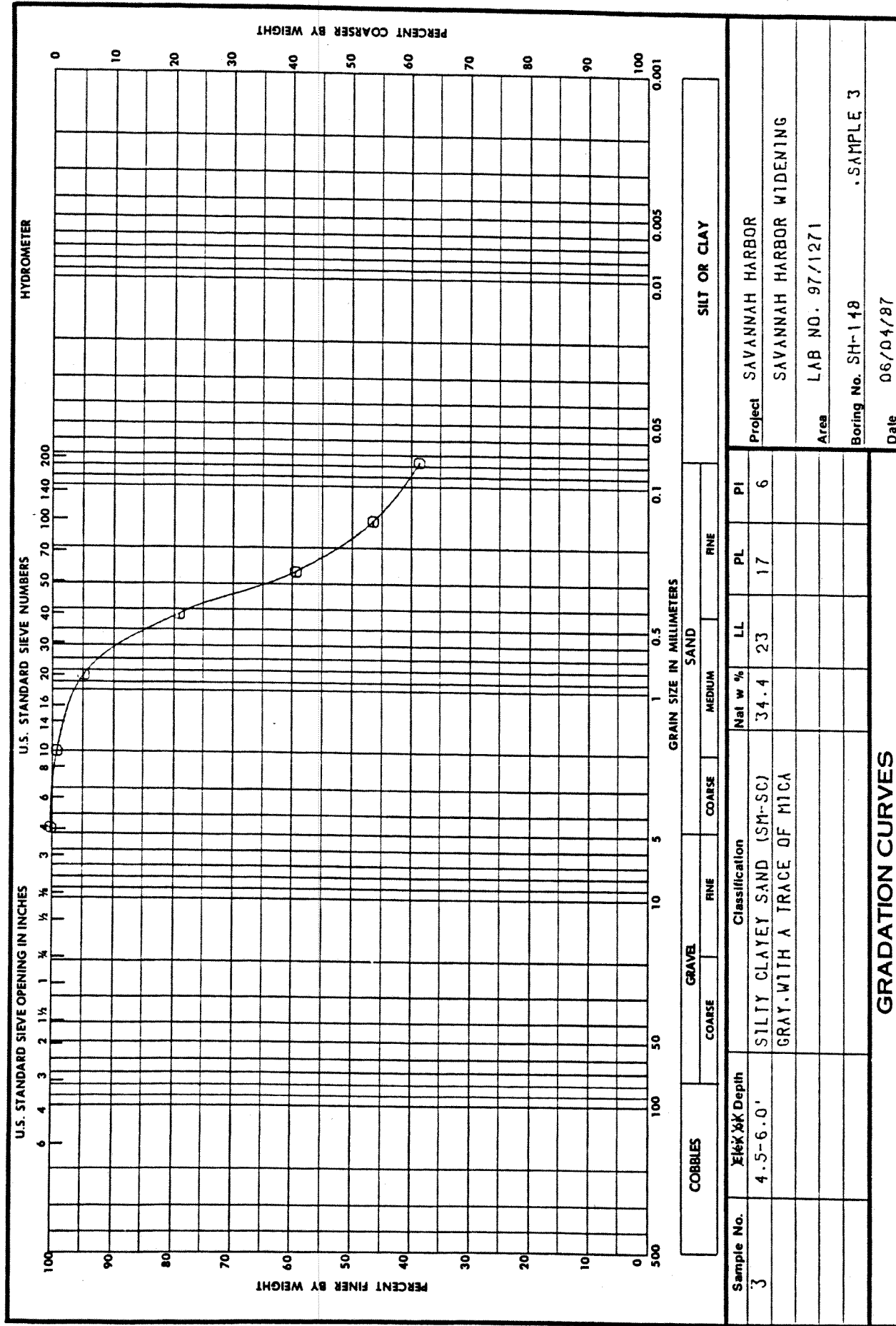


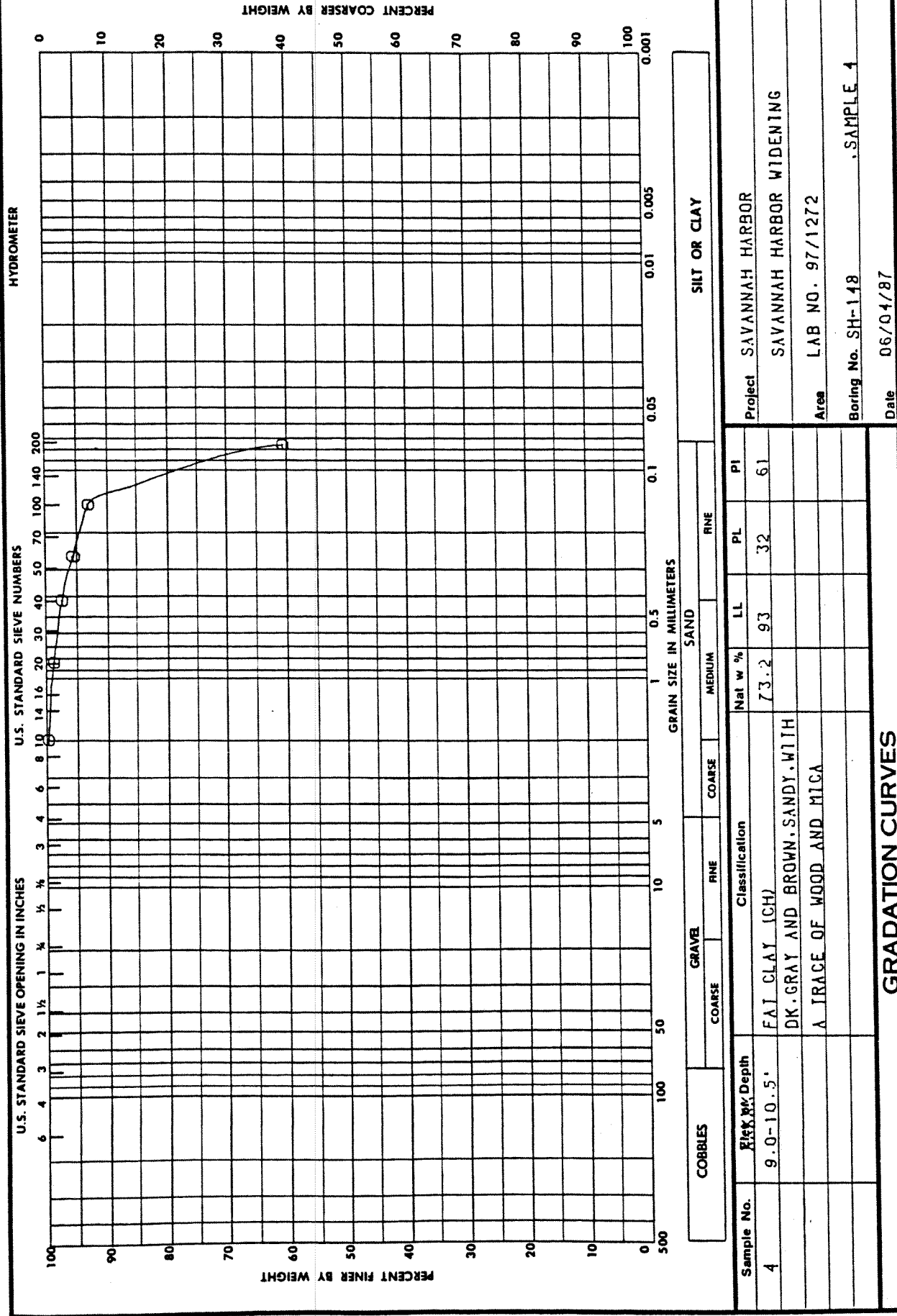


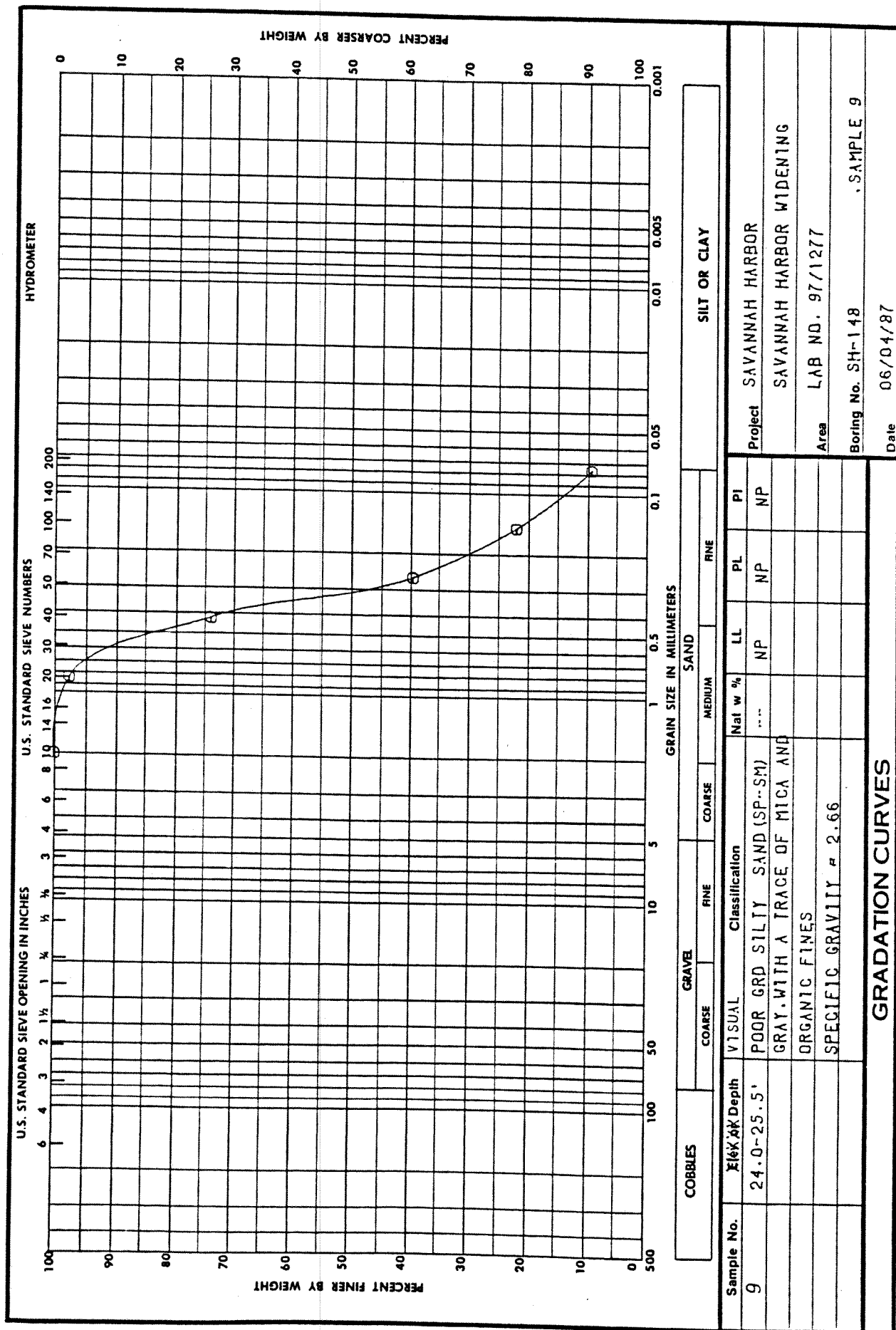
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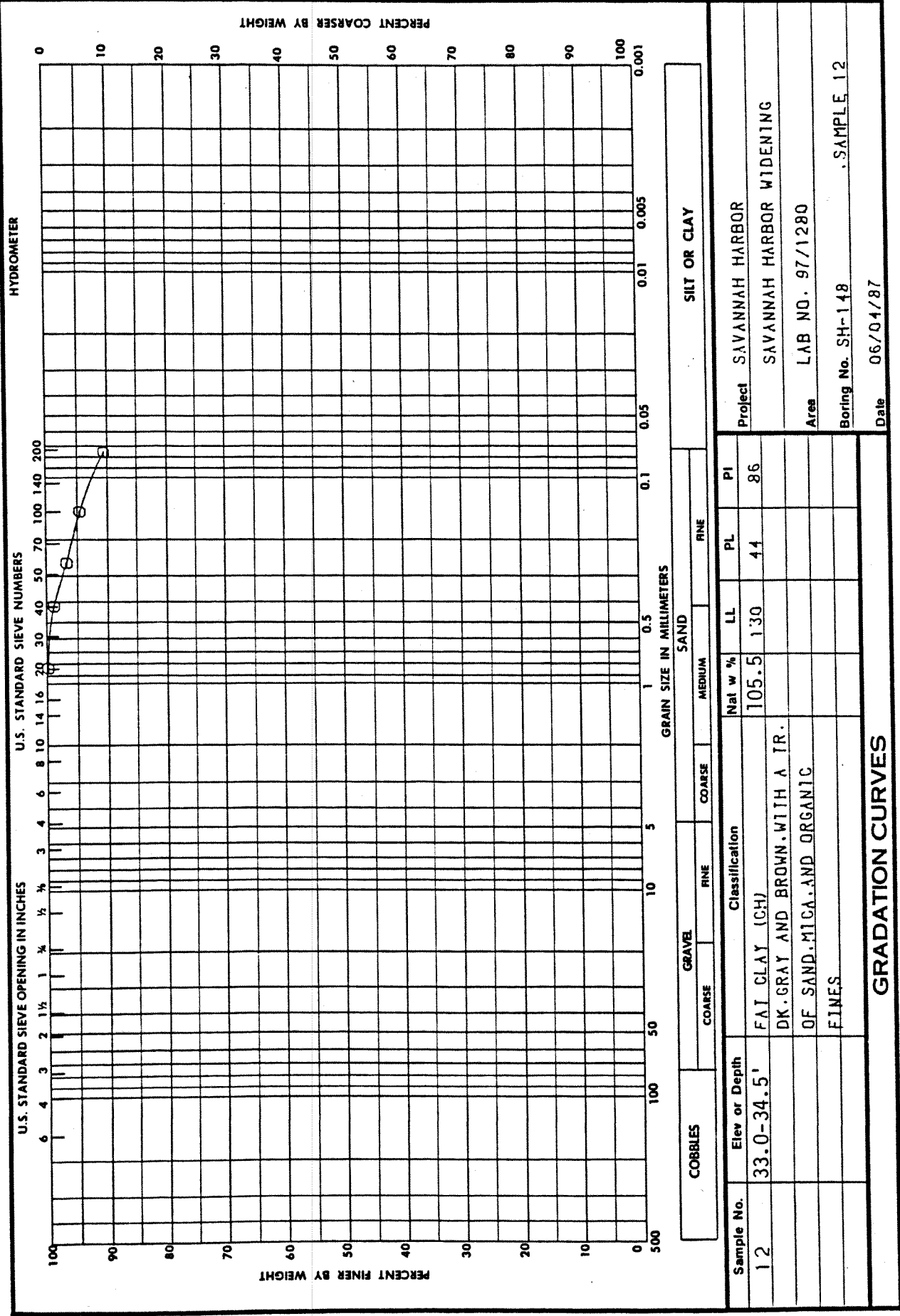


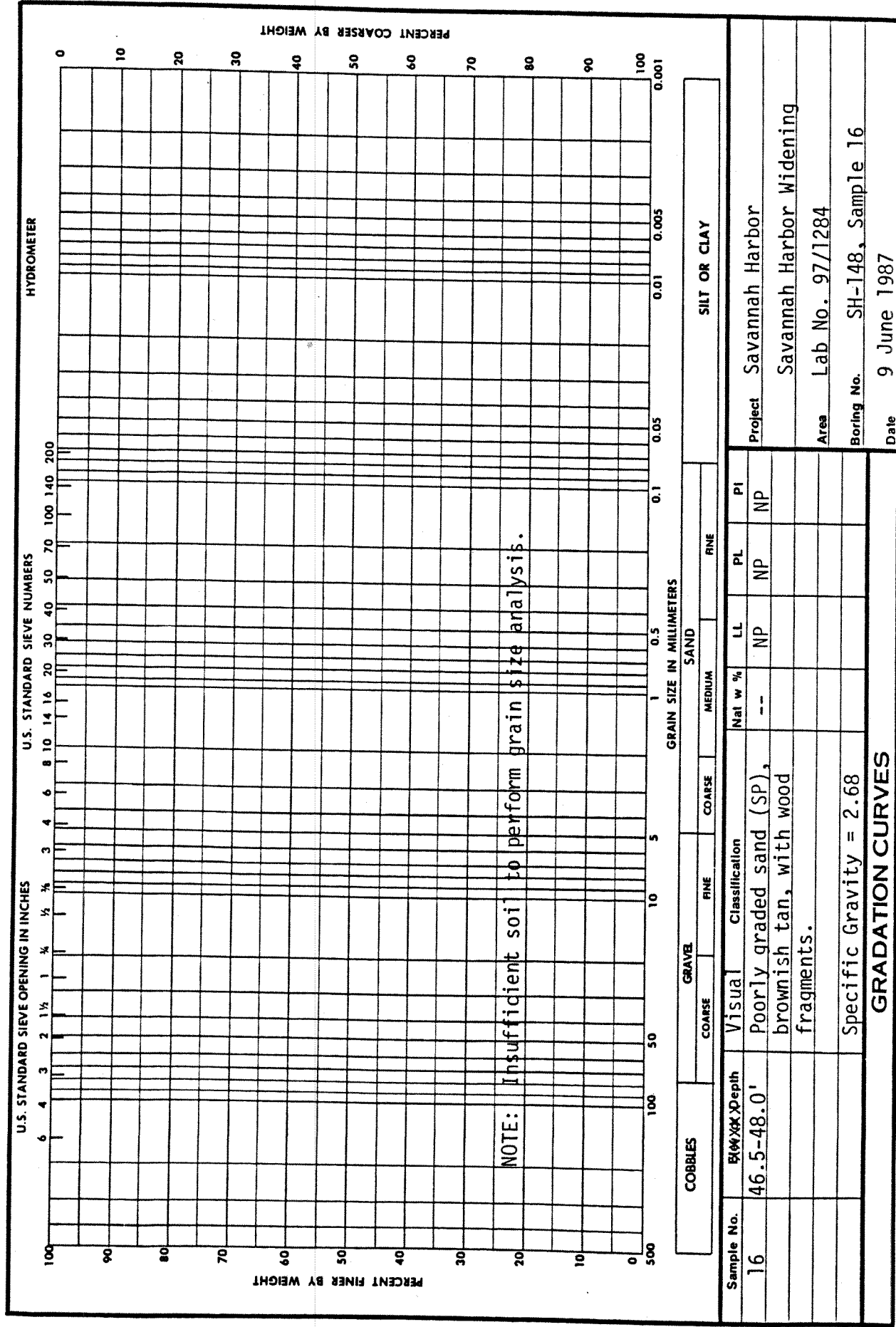




W.O. No. 5193
Req. No. SAS-EN-6S-87-23

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

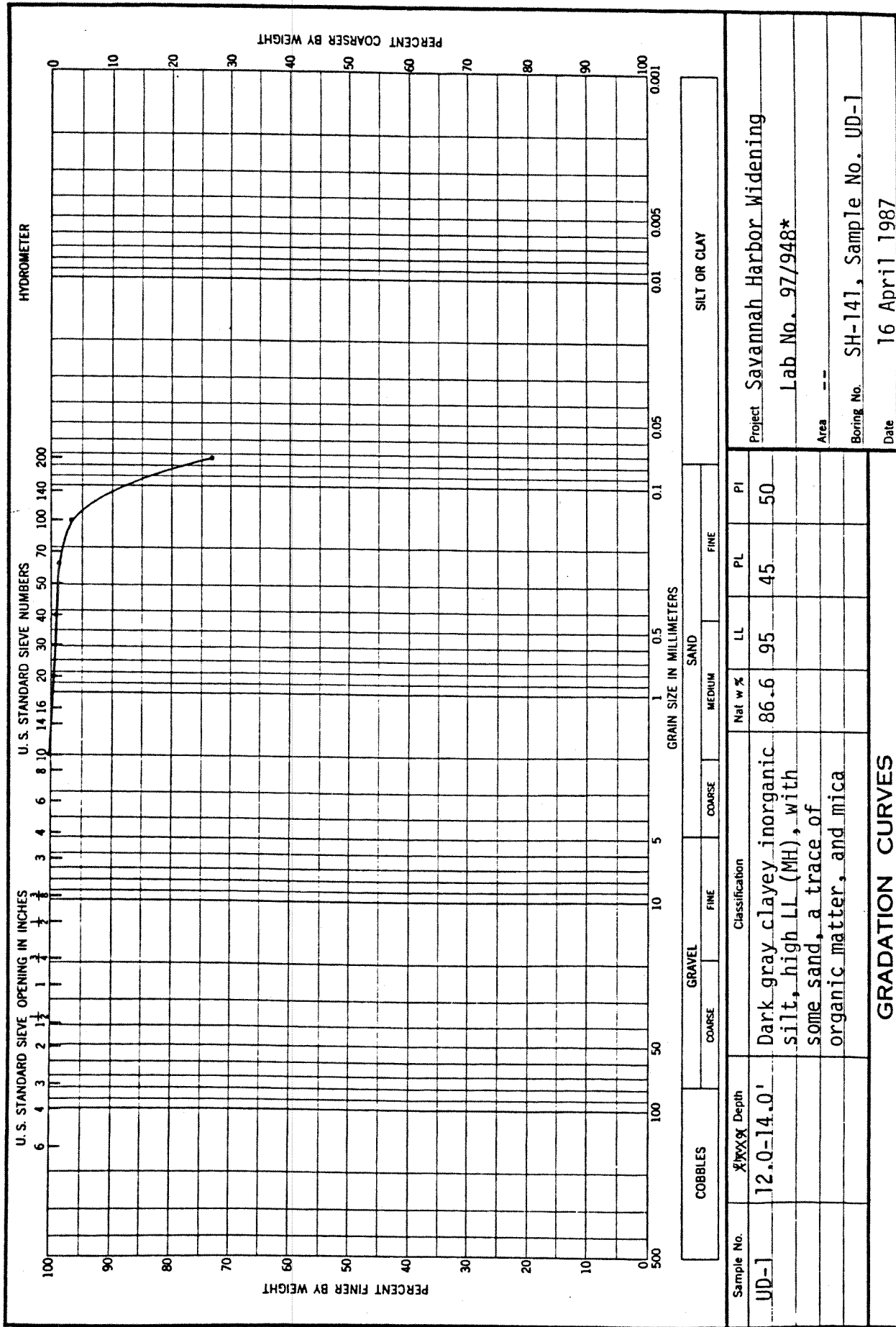


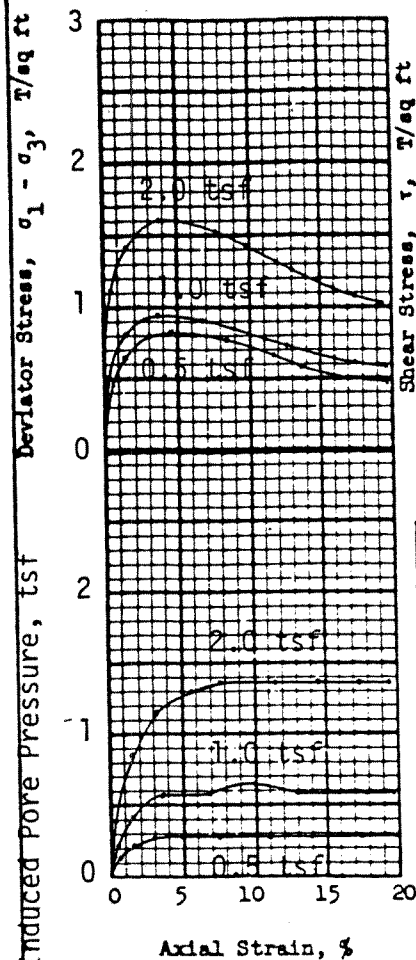


GENERAL TEST REPORT U.S. ARMY ENGINEER DIVISION LABORATORY, SOUTH ATLANTIC CORPS OF ENGINEERS MARIETTA, GEORGIA		DISTRICT/OFFICE Savannah																																																																																						
PROJECT Savannah Harbor Savannah Harbor Widening		CONTRACT NO. --																																																																																						
		DATE REPORTED 8 April 1987																																																																																						
TYPE SAMPLE SOILS: Jar Samples of Disturbed Soils		WORK ORDER NO. 5193																																																																																						
		REQ. NO. SAS-EN-GS-87-23																																																																																						
SOURCE HOLE NO: SH -141, 145, 146 and 147		BASE UNIT COST --																																																																																						
FOR USE AS Investigation		DATE SAMPLE RECEIVED 27 Feb thru 16 Mar 1987																																																																																						
TESTED FOR Lab Classification and Field Moisture		LAB NO. 97/1007-1088																																																																																						
☒ MEETS SPECIFICATIONS N/A ☐ FAILS SPECIFICATIONS (See below)																																																																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Lab. No.</th> <th style="text-align: left;">Hole No.</th> <th style="text-align: left;">Sample No.</th> <th style="text-align: left;">Depth (Ft.)</th> <th style="text-align: left;">Moisture Content (%)</th> </tr> </thead> <tbody> <tr><td>97/</td><td></td><td></td><td></td><td></td></tr> <tr><td>1007</td><td>SH-141</td><td>5</td><td>9.0/10.5</td><td>90.8*</td></tr> <tr><td>1008</td><td>"</td><td>6</td><td>13.5/15.0</td><td>66.1</td></tr> <tr><td>1018</td><td>"</td><td>16A</td><td>52.5/53.5</td><td>39.0</td></tr> <tr><td colspan="5"> </td></tr> <tr><td>1044</td><td>SH-145</td><td>3A</td><td>6.0/7.0</td><td>28.4</td></tr> <tr><td>1045</td><td>"</td><td>3B</td><td>7.0/7.5</td><td>91.3*</td></tr> <tr><td>1047</td><td>"</td><td>5</td><td>13.5/15.0</td><td>18.9</td></tr> <tr><td>1050</td><td>"</td><td>7</td><td>21.0/22.5</td><td>94.4</td></tr> <tr><td>1052</td><td>"</td><td>9A</td><td>27.0/27.5</td><td>103.3*</td></tr> <tr><td colspan="5"> </td></tr> <tr><td>1065</td><td>SH-146</td><td>4</td><td>13.5/15.0</td><td>84.5</td></tr> <tr><td colspan="5"> </td></tr> <tr><td>1079</td><td>SH-147</td><td>2</td><td>3.0/4.5</td><td>29.3</td></tr> <tr><td>1082</td><td>"</td><td>5</td><td>12.0/15.0</td><td>96.7</td></tr> <tr><td>1088</td><td>"</td><td>11</td><td>40.5/42.0</td><td>134.2*</td></tr> </tbody> </table>				Lab. No.	Hole No.	Sample No.	Depth (Ft.)	Moisture Content (%)	97/					1007	SH-141	5	9.0/10.5	90.8*	1008	"	6	13.5/15.0	66.1	1018	"	16A	52.5/53.5	39.0						1044	SH-145	3A	6.0/7.0	28.4	1045	"	3B	7.0/7.5	91.3*	1047	"	5	13.5/15.0	18.9	1050	"	7	21.0/22.5	94.4	1052	"	9A	27.0/27.5	103.3*						1065	SH-146	4	13.5/15.0	84.5						1079	SH-147	2	3.0/4.5	29.3	1082	"	5	12.0/15.0	96.7	1088	"	11	40.5/42.0	134.2*
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REPORTED BY _____		TESTED BY WB, JL																																																																																						
DATE _____		CHECKED BY ES																																																																																						
☐ PHONE ☐ WIRE		SAMPLED BY District																																																																																						

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA 30060-3112

Work Order No. 5193
Reqn No. SAS EN GS 87-23

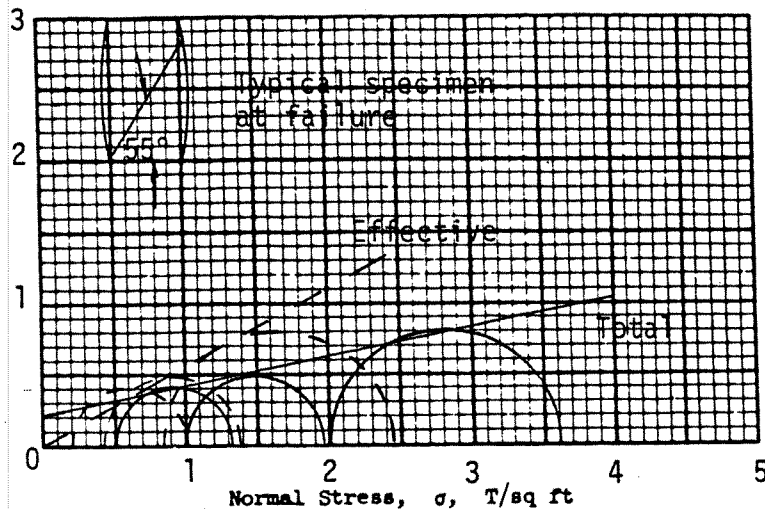




Shear Strength Parameters
 Total Effective
 $\phi = 11.5 \quad 29.8$
 $\tan \phi = 0.203 \quad 0.554$
 $c = 0.21 \quad 0.0 \text{ T/sq ft}$

Method of saturation _____
 Back Pressure _____

- ☐ Controlled stress
☒ Controlled strain



Test No.		1	2	3	
Initial	Water content	w_o 94.9 %	89.1 %	75.7 %	%
	Void ratio	e_o 2.468	2.326	1.968	
	Saturation	s_o 100.0 %	99.6 %	100.0 %	%
	Dry density, lb/cu ft	γ_d 46.8	48.8	54.7	
Before Shear	Water content	w_c 89.2 %	80.3 %	58.3 %	%
	Void ratio	e_c 2.318	2.087	1.516	
	Saturation	s_c 100.0 %	100.0 %	100.0 %	%
	Final back pressure, T/sq ft	u_o 5.00	5.00	5.00	
Final	Water content	w_f 89.2 %	80.3 %	58.3 %	%
	Void ratio	e_f 2.318	2.087	1.516	
Minor principal stress, T/sq ft		σ_3 0.50	1.00	2.00	
Max deviator stress, T/sq ft ($\sigma_1 - \sigma_3$) _{max}		0.83	0.96	1.61	
Time to failure, min		t_f 45	35	35	
Rate of strain, percent/min		0.10	0.11	0.11	
Strain @ ($\sigma_1 - \sigma_3$) _{Max.}		4.4	3.7	3.7	
Ult deviator stress, T/sq ft ($\sigma_1 - \sigma_3$) _{ult}		0.55	0.66	1.18	
Initial diameter, in.		D_o 1.38	1.38	1.38	
Initial height, in.		H_o 3.08	3.08	3.08	

Type of test $\bar{R}$ Type of specimen Undisturbed
 Classification Dark gray clayey inorganic silt, high LL (MH), with some sand and a trace of organic matter and mica
 LL 95 PL 45 PI 50 -- G_s 2.60

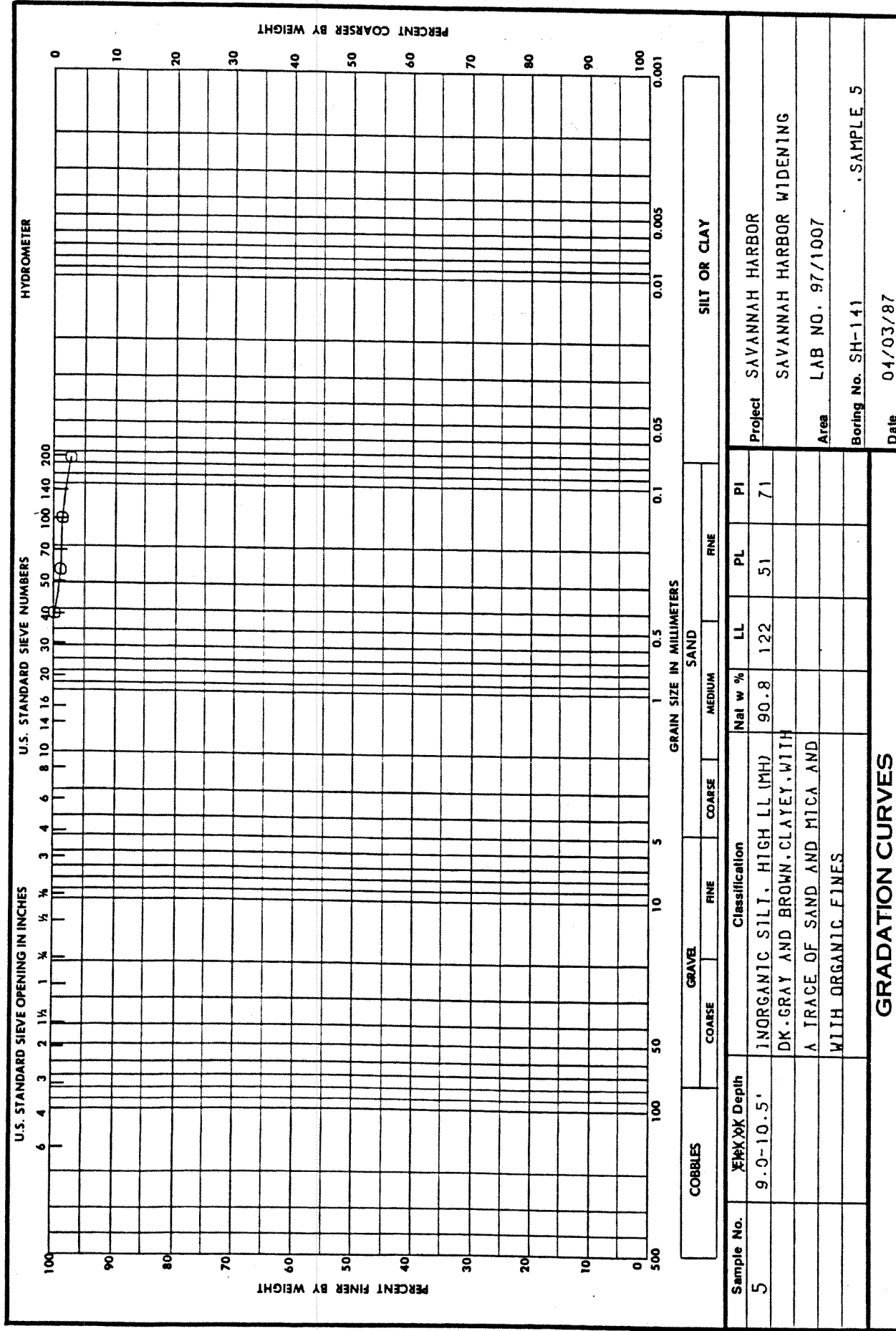
Remarks See gradation curve on ENG Form 2087.

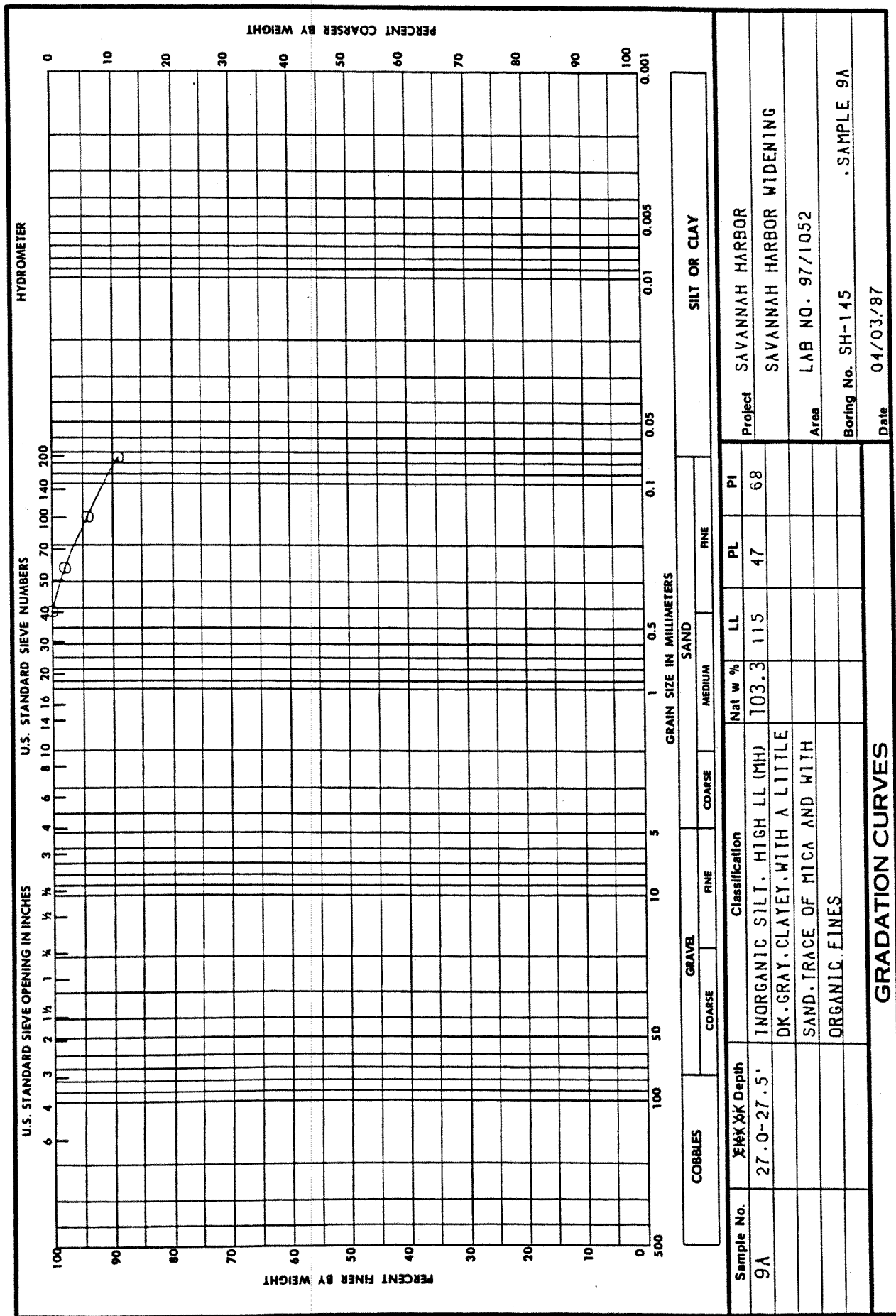
Project Savannah Harbor Widening
 Lab No. 97/948
 Area --
 Boring No. SH-141 Sample No. UD-1
 Depth 12.0-14.0' Date 16 April 1987
 TRIAXIAL COMPRESSION TEST REPORT

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193

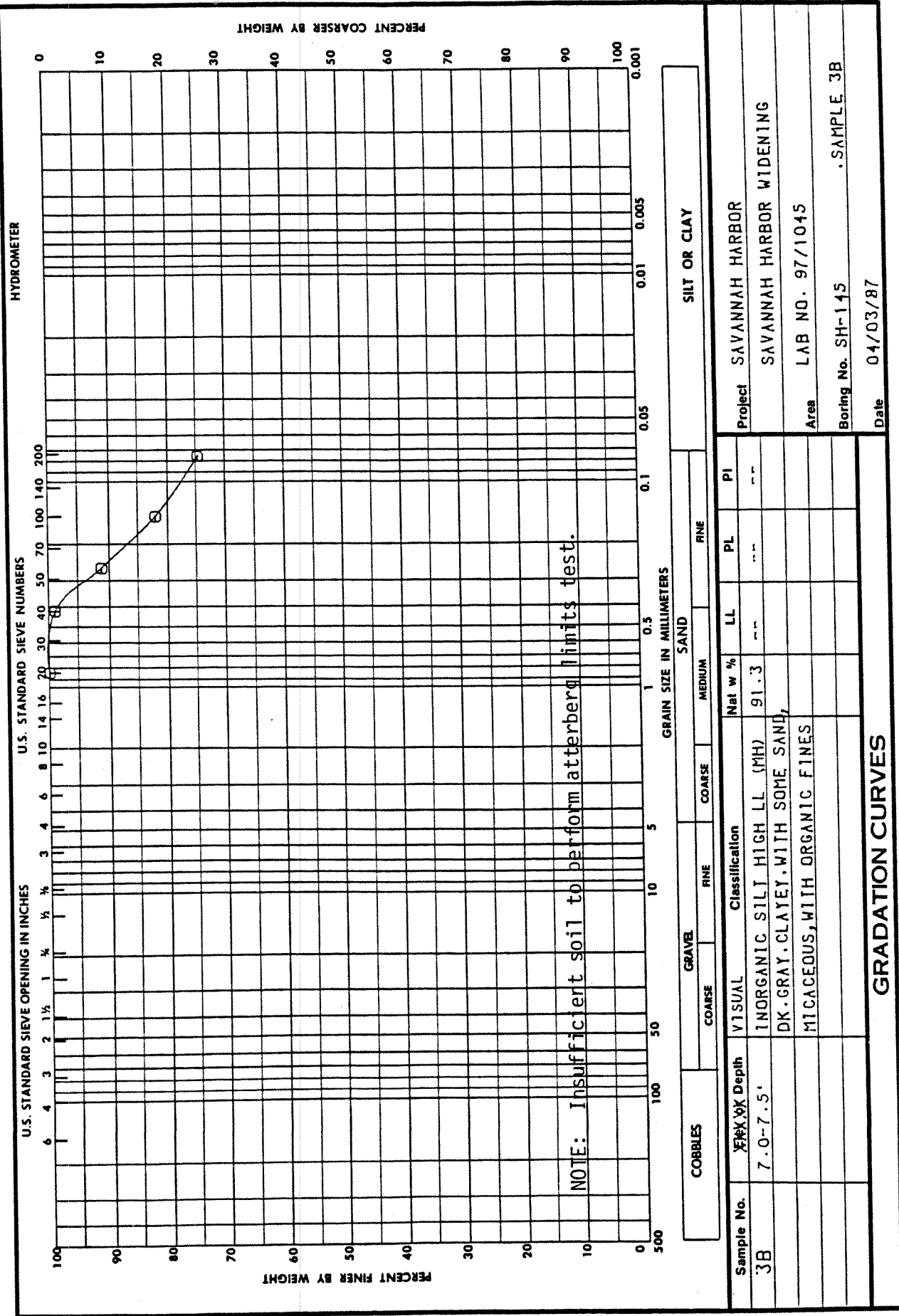
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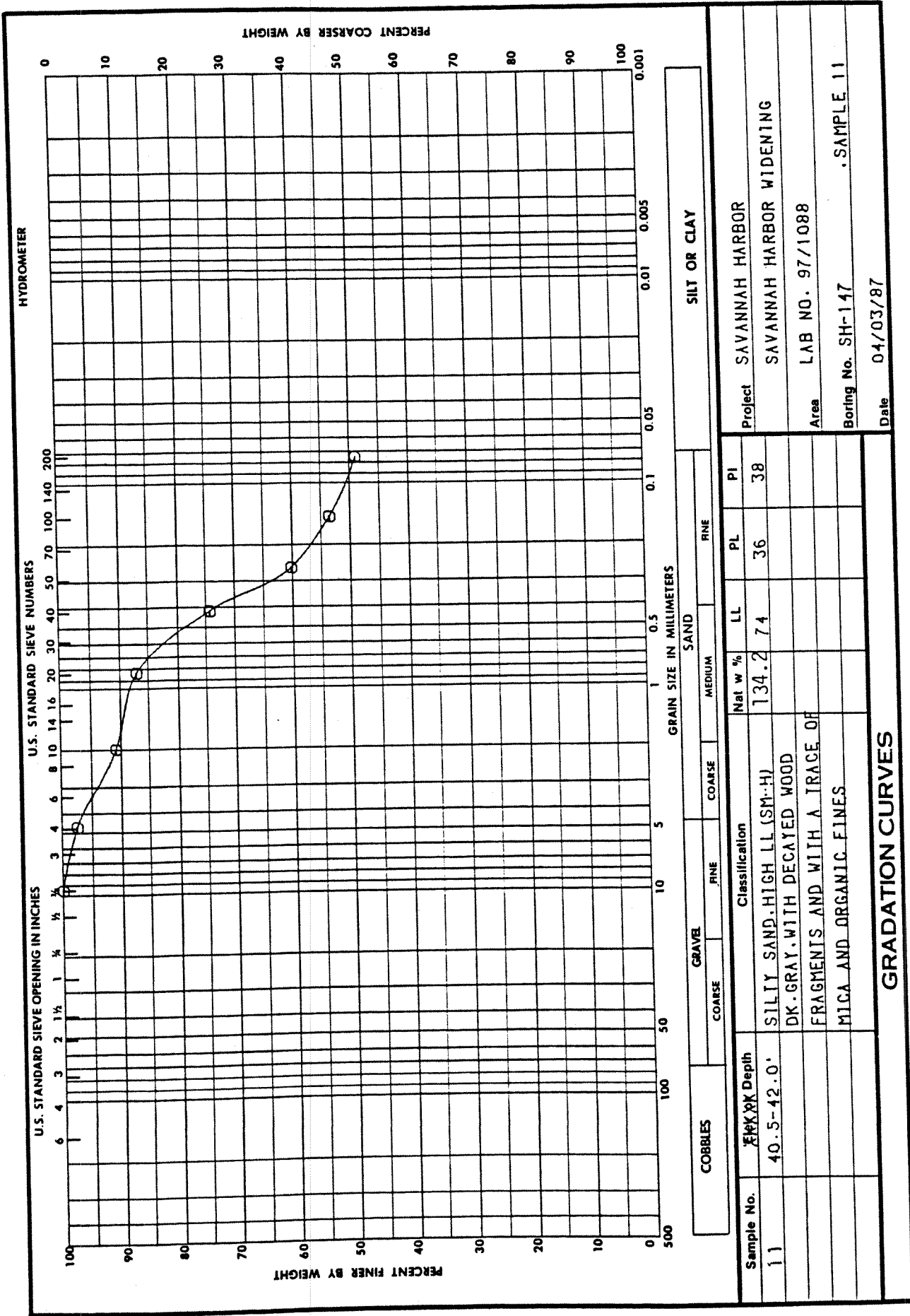




W.O. No. 5193
Req. No. SAS-EN-GS-87-23

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060





WORK ORDER: 6585
REQUISITION: EN-GG-92-37



WORK ORDER: 6585
REQUISITION: EN-GG-92-37



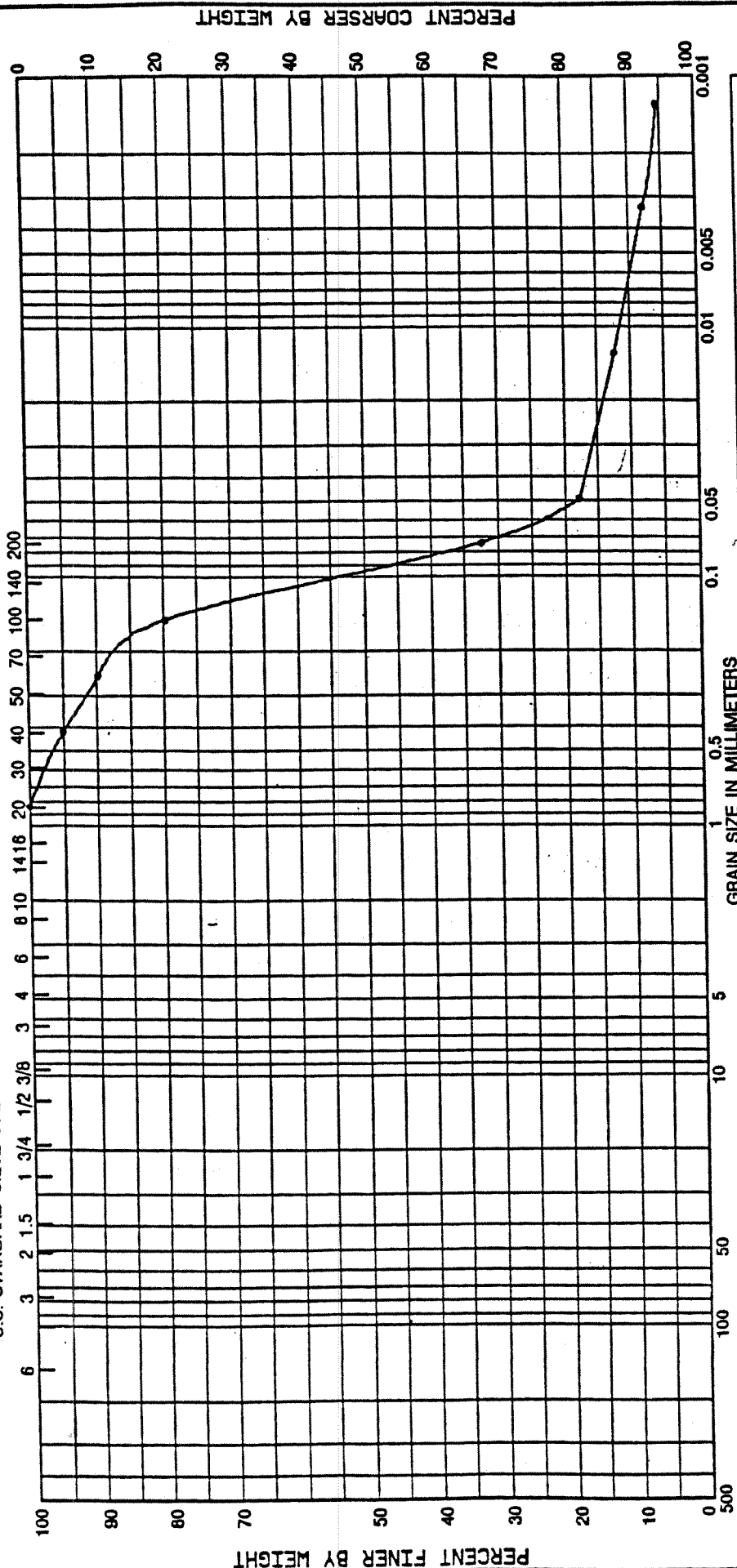
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6585
REQUISITION: EN-GG-92-37

HYDROMETER

U.S. STANDARD SIEVE NUMBERS

U.S. STANDARD SIEVE OPENING IN INCHES



SILT OR CLAY

GRAIN SIZE IN MILLIMETERS

COBBLES	GRAVEL		SAND			FINE		
	COARSE	FINE	COARSE	MEDIUM	FINE	LL	PL	PI

Sample No.	Depth/Elev	Classification	Nat w%	LL	PL	PI
8	50.5-52.0'	Greenish gray clayey sand high LL (SC-H) with a trace of mica. Specific gravity = 2.76	37.6	57	27	30

Project SAVANNAH HARBOR

PRELIMINARY BORINGS

Lab No. 97/1487

Boring No. SH-154

Date 04/30/92

GRADATION CURVES



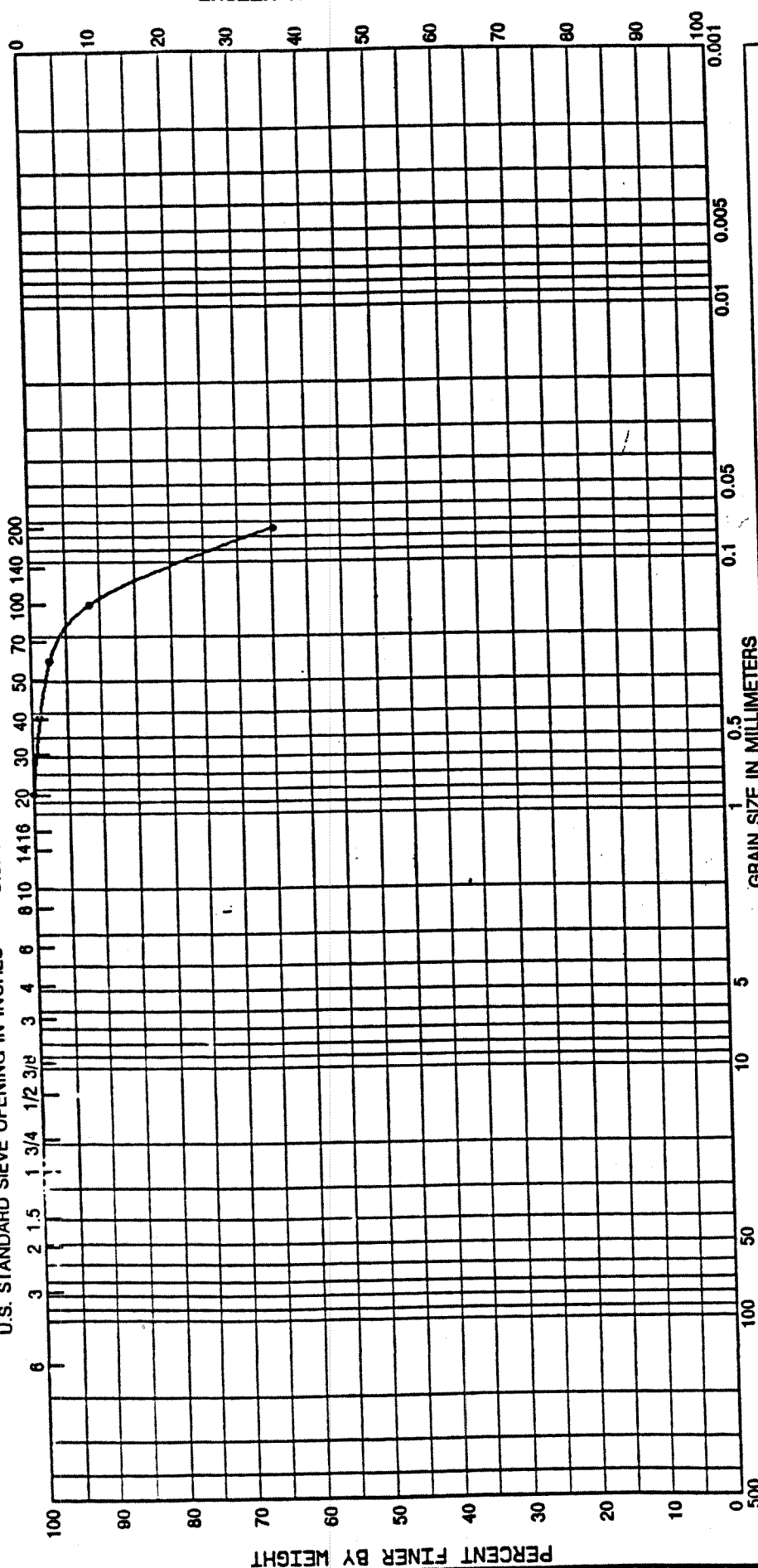
WORK ORDER: 6552
REQUISITION: EN-66-92-25

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

HYDROMETER

U.S. STANDARD SIEVE NUMBERS

U.S. STANDARD SIEVE OPENING IN INCHES



GRAIN SIZE IN MILLIMETERS

SILT OR CLAY

Sample No.	Depth/Elev	COBBLES		GRAVEL		SAND		LL	PL	PI
		COARSE	FINE	COARSE	MEDIUM					
2	42.0-43.1'	Classification Gray inorganic silt high LL (MH), clayey, sandy, micaceous. Specific Gravity = 2.67								
		Nat w% - 111								
		Project SAVANNAH HARBOR								
		PRELIMINARY BORINGS								
		Lab No. 97/1346								
		Boring No. SH-155								
		Date 02/12/92								

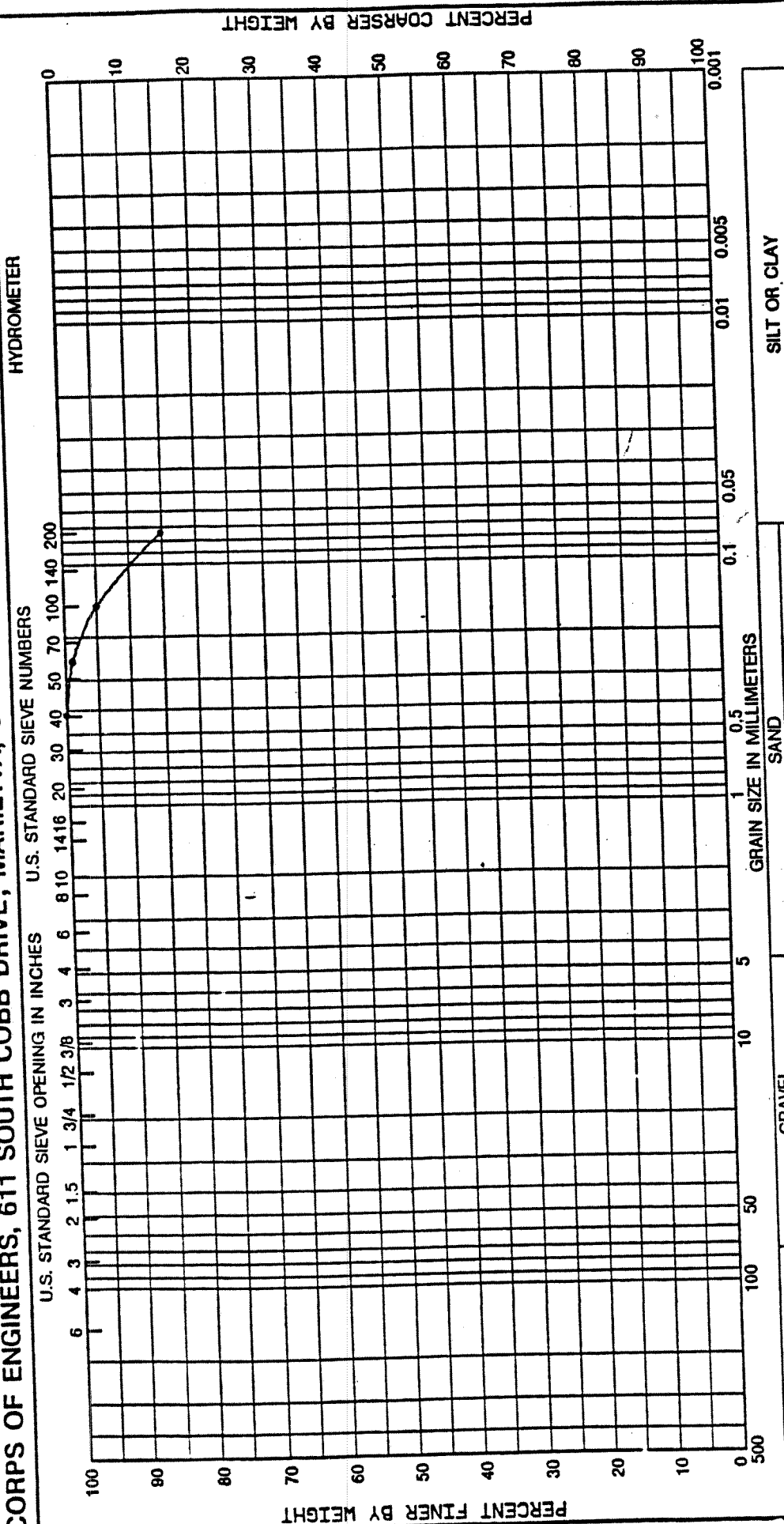
GRADATION CURVES



WORK ORDER: 6585
REQUISITION: EN-GG-92-37



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



COBBLES		GRAVEL		MEDIUM		FINE		PI
		COARSE	FINE	COARSE	MEDIUM	FINE		
Sample No.	Depth/Elev	Classification						Nat w%
3	47.7-49.2'	Greenish gray inorganic silt high LL						-
		(MH), clayey, micaceous, with a little sand.						
		Specific gravity = 2.68						
		Project SAVANNAH HARBOR						
		PRELIMINARY BORINGS						
		Lab No. 97/1493						
		Boring No. SH-156						
		Date 04/28/92						



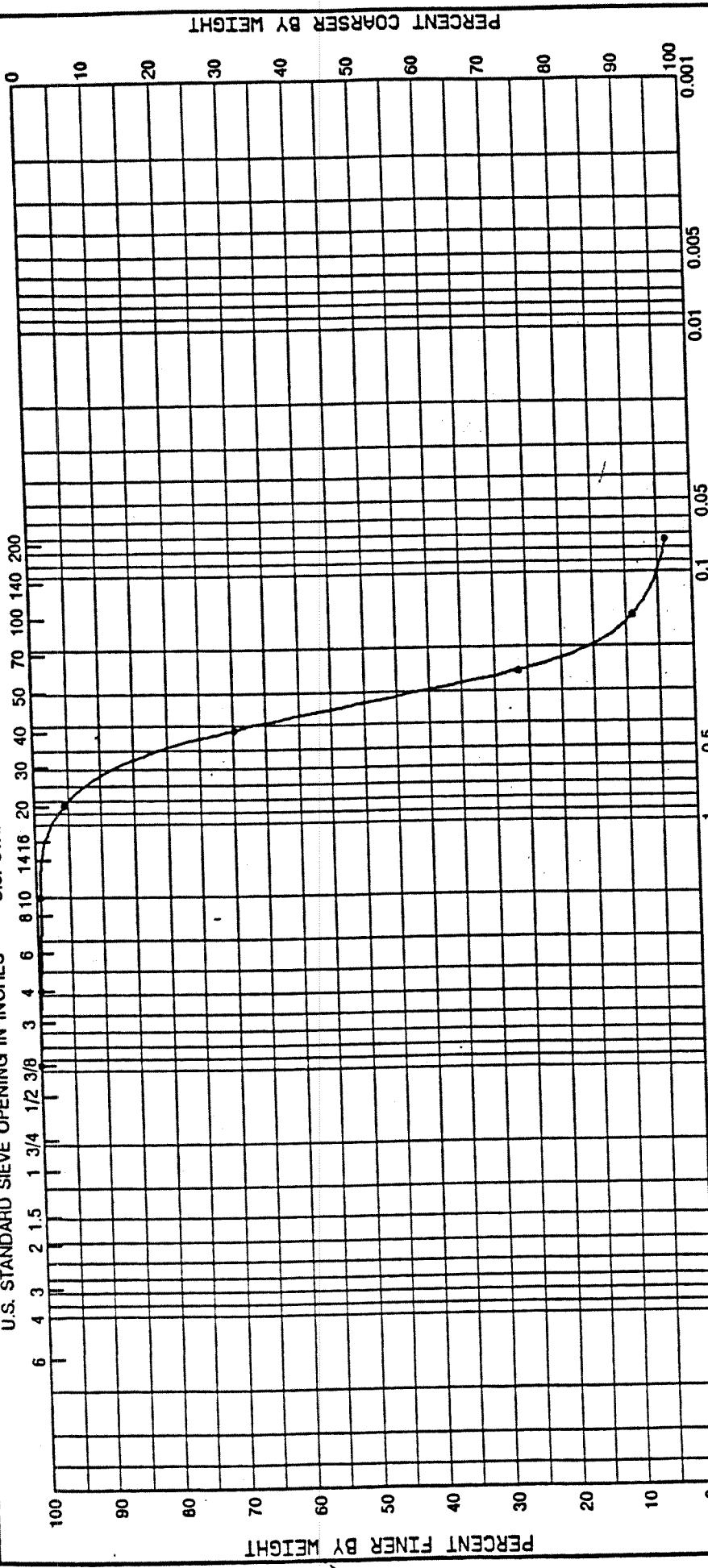
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 REQUISITION: EN-GG-92-37

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

HYDROMETER

U.S. STANDARD SIEVE NUMBERS

U.S. STANDARD SIEVE OPENING IN INCHES



GRAIN SIZE IN MILLIMETERS

SILT OR CLAY

COBBLES		GRAVEL		SAND		FINE		SILT OR CLAY	
COARSE	FINE	COARSE	FINE	COARSE	MEDIUM	FINE	LL	PL	PI
Classification Brown poorly graded sand (SP), with a trace of mica, roots and gravel size rusty metal fragments.									
Sample No.	Depth/Elev	Nat w% -							
1	34.5-37.5'	NP NP NP							
Project SAVANNAH HARBOR PRELIMINARY BORINGS									
Lab No. 97/1502 Boring No. SH-158 Date 04/28/92									

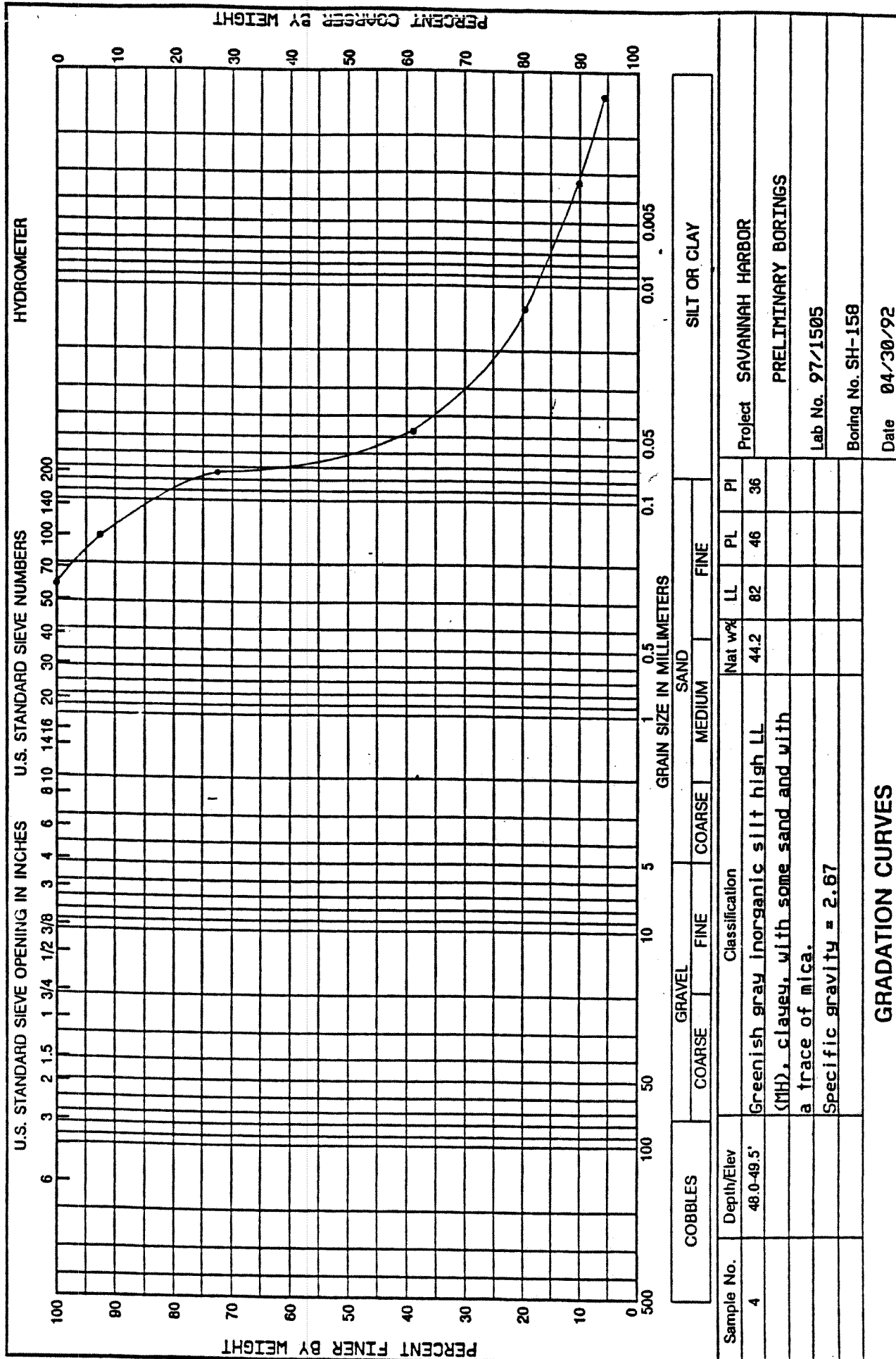
Specific gravity = 2.66

GRADATION CURVES



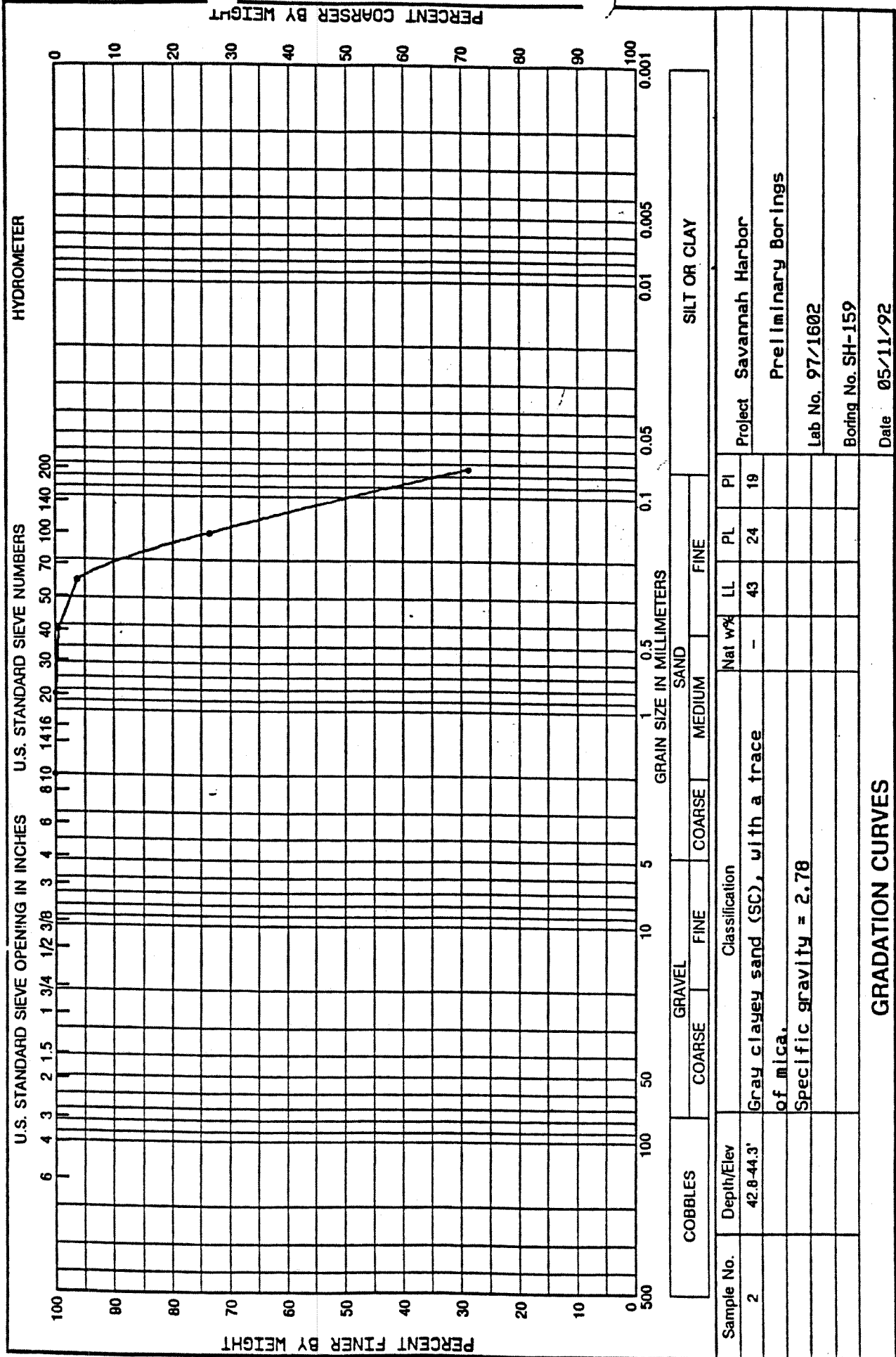
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6585
REQUISITION: EN-66-92-37



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6600
REQUISITION: EN-66-92-53

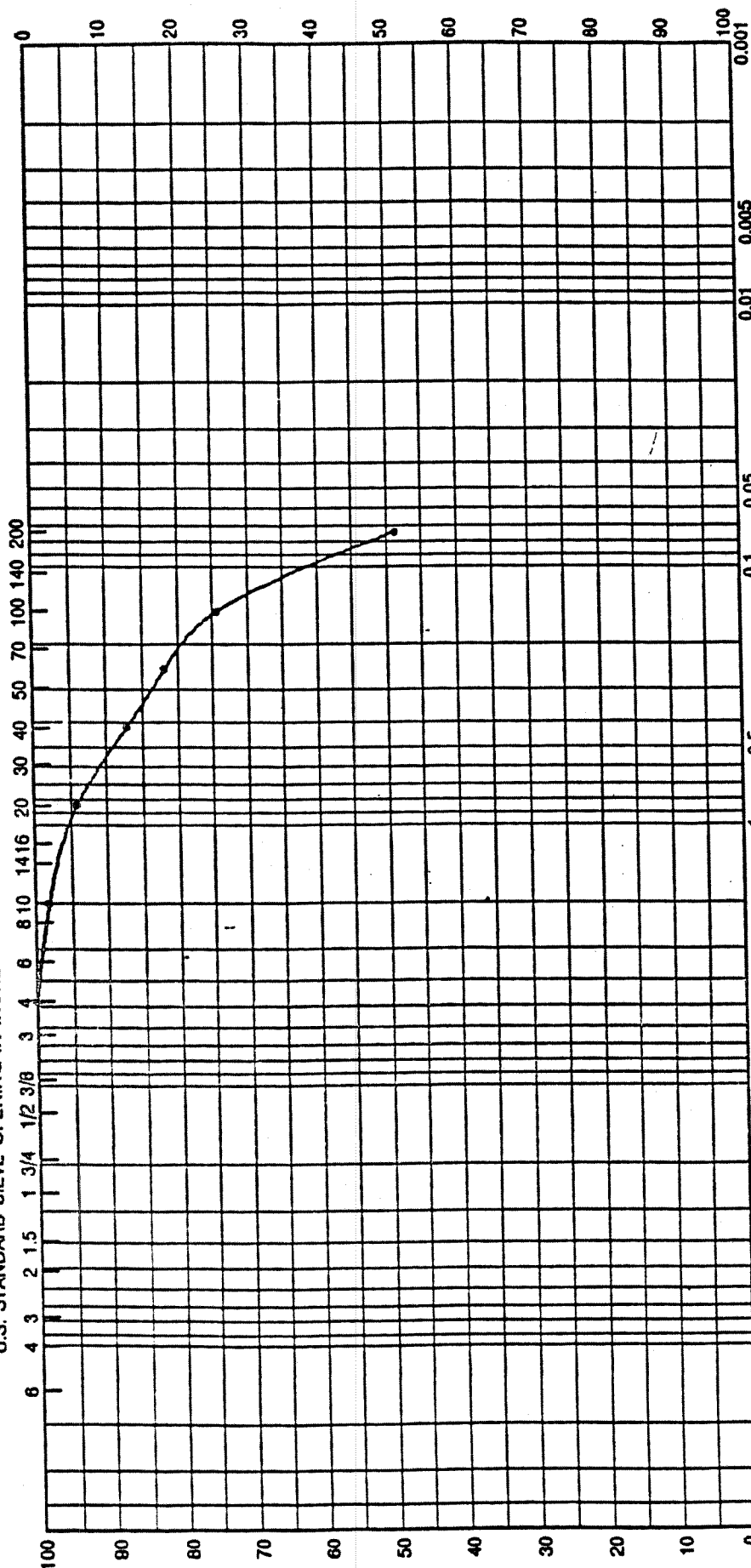


WORK ORDER: 6600
REQUISITION: EN-GG-92-53

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

HYDROMETER

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



SILT OR CLAY

GRAIN SIZE IN MILLIMETERS

SAND

MEDIUM

COARSE

FINE

GRAVEL

COARSE

FINE

COBBLES

Project Savannah Harbor

Preliminary Borings

Lab No. 97/1606

Boring No. SH-160

Date 05/13/92

Classification

Gray silty sand high LL (SM-H), with a trace of mica and shell.

Specific gravity = 2.75

Sample No. 2

Depth/Elev 42.6-43.3'

Nat w%

82

PL

42

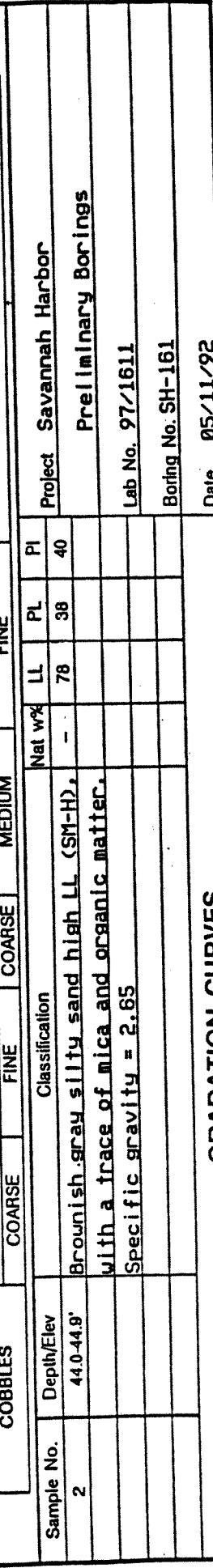
PI

40

GRADATION CURVES



WORK ORDER: 6600
REQUISITION: EN-GG-92-53



GRADATION CURVES



WORK ORDER: 6600
REQUISITION: EN-GG-92-53



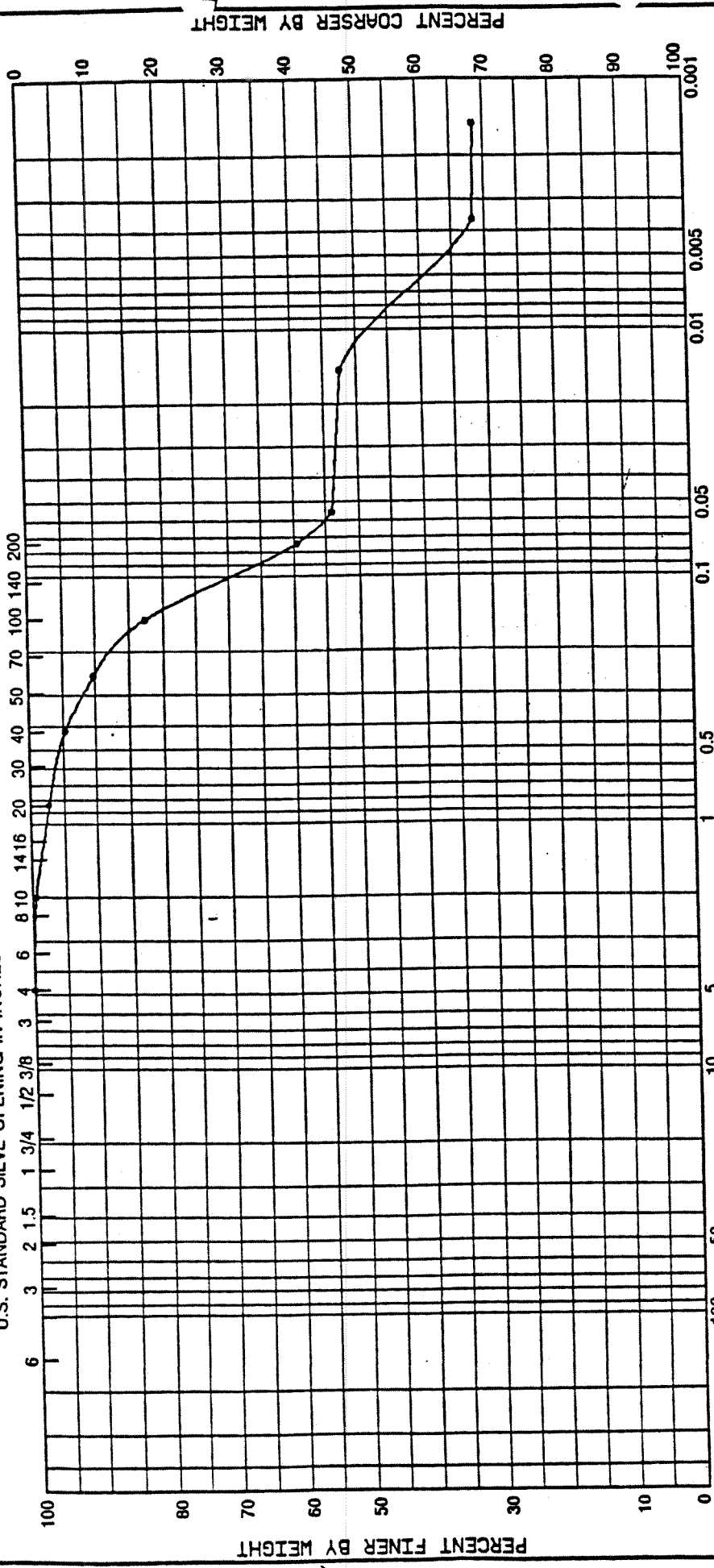
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION, LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6552
 REQUISITION: EN-GG-92-25

HYDROMETER

U.S. STANDARD SIEVE NUMBERS

U.S. STANDARD SIEVE OPENING IN INCHES



SILT OR CLAY

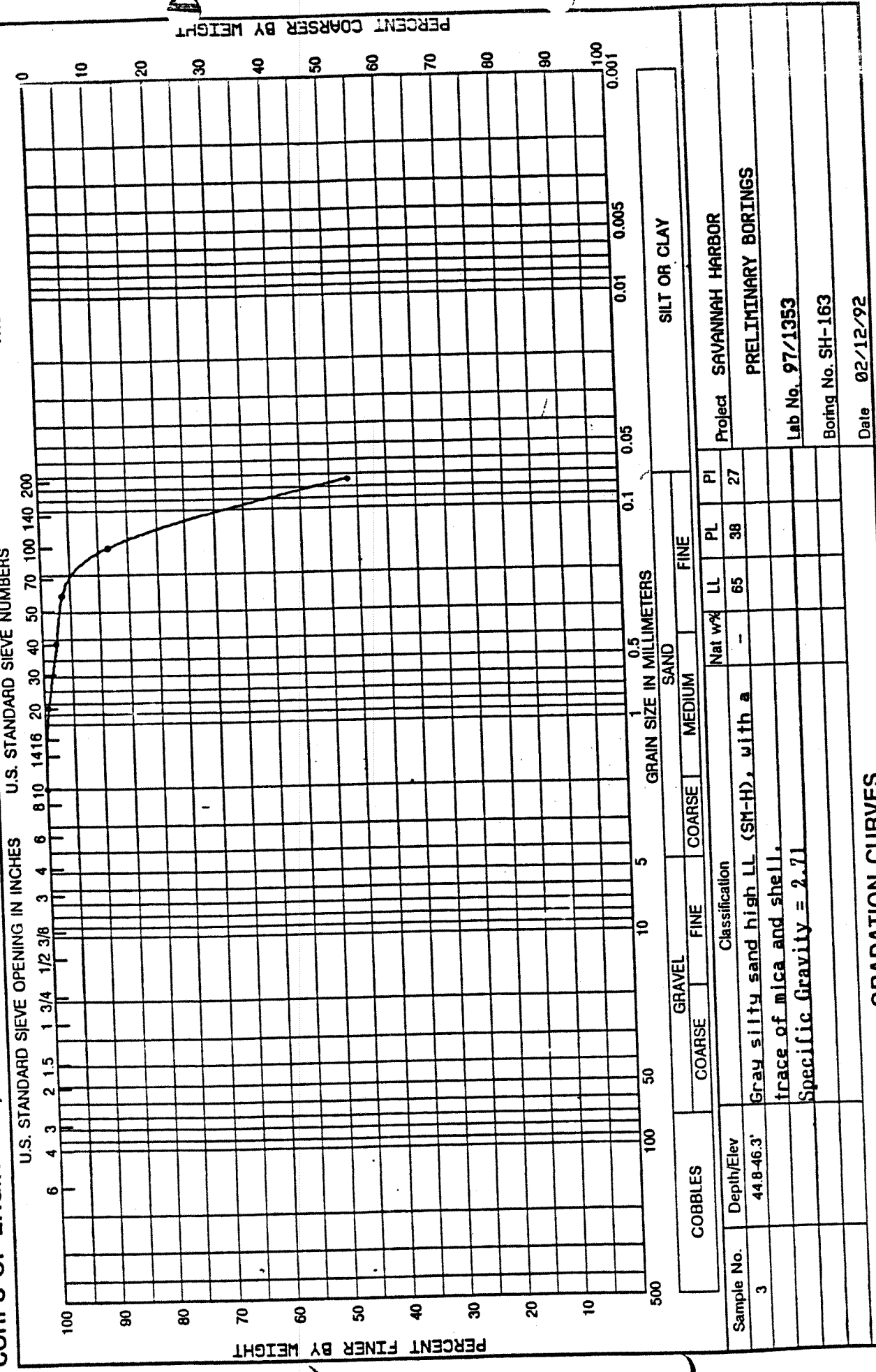
GRAIN SIZE IN MILLIMETERS

Sample No.	Depth/Elev	Visual Classification	GRAVEL				SAND				FINE				PI				Project	Date
			COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE		
1	41.8-44.3'	Gray inorganic silt high LL (MH), sandy, clayey, with a trace of mica & organic matter.																	SAVANNAH HARBOR	02/14/92
																			PRELIMINARY BORINGS	
																			Lab No. 97/1351	
																			Boring No. SH-163	

GRADATION CURVES



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060
 WORK ORDER: 6552
 REQUISITION: EN-GG-92-25
 HYDROMETER



GRADATION CURVES



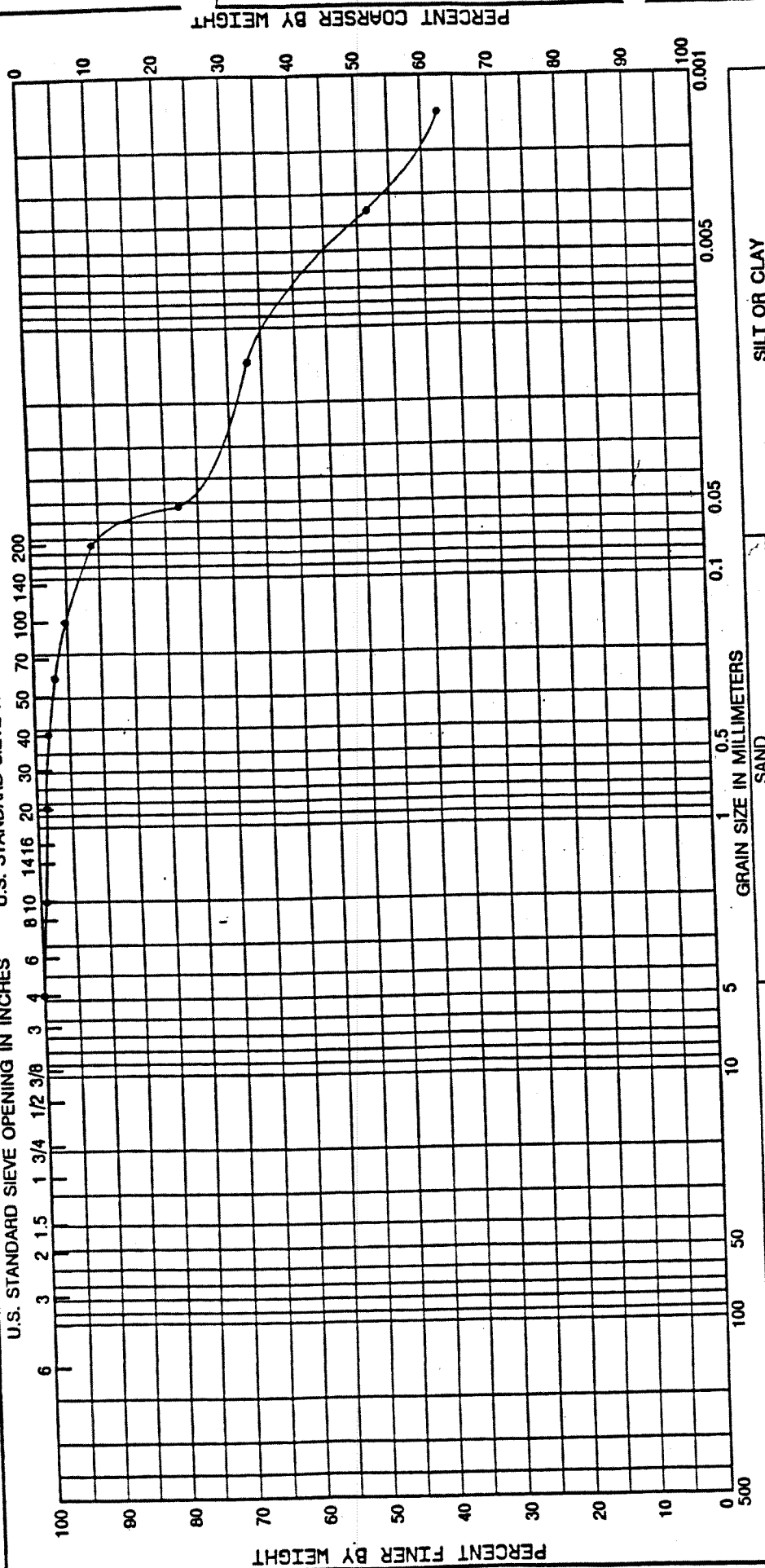
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6552
REQUISITION: EN-GG-92-25

HYDROMETER

U.S. STANDARD SIEVE NUMBERS

U.S. STANDARD SIEVE OPENING IN INCHES



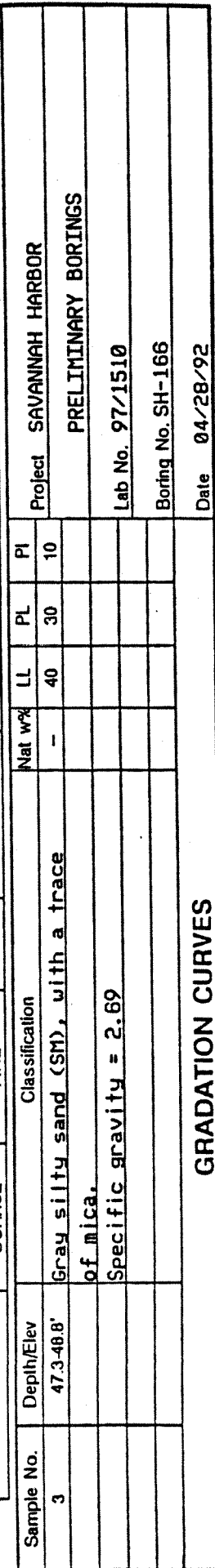
SILT OR CLAY

COBBLES		GRAVEL		MEDIUM		FINE		PI		Project	SAVANNAH HARBOR
		COARSE	FINE	COARSE	MEDIUM	FINE	COARSE	FINE	PI		
Sample No.	Depth/Elev	Classification						Nat w%	LL	PL	PI
1	38.6-43.7'	Gray inorganic silt high LL (MH), clayey with a trace of sand & organic matter.						-	175	71	104
		Specific gravity = 2.60									

WORK ORDER: 6552
REQUISITION: EN-GG-92-25



WORK ORDER: 6585
REQUISITION: EN-GG-92-37



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

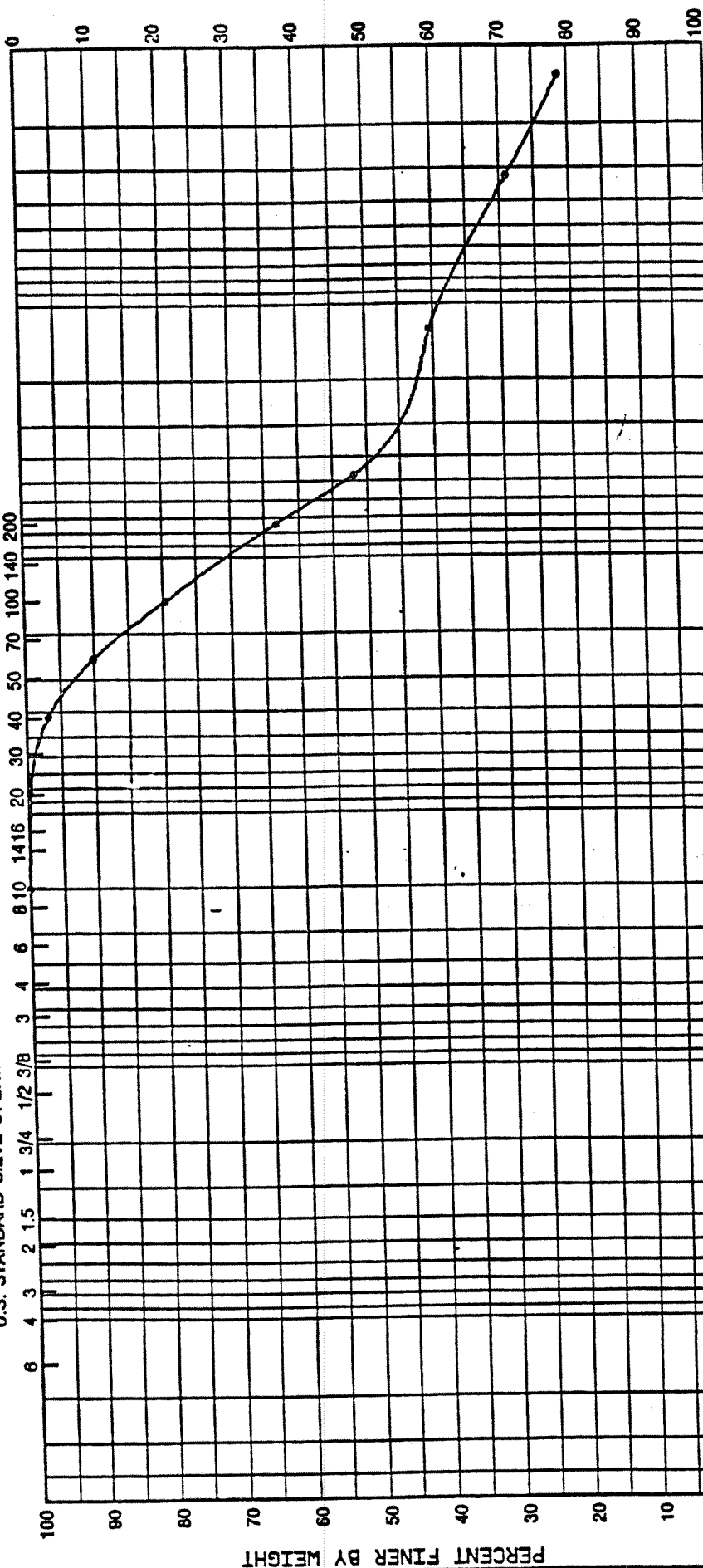
WORK ORDER: 6600
REQUISITION: EN-GG-92-53

HYDROMETER

U.S. STANDARD SIEVE NUMBERS

U.S. STANDARD SIEVE OPENING IN INCHES

6 4 3 2 1.5 1 3/4 1/2 3/8 3 4 6 8 10 14 16 20 30 40 50 70 100 140 200



PERCENT COARSER BY WEIGHT

PERCENT FINER BY WEIGHT

GRAIN SIZE IN MILLIMETERS

500 100 50 10 5 1 0.5 0.1 0.05 0.01 0.005 0.001

SILT OR CLAY

COBBLES SAND GRAVEL

COARSE FINE COARSE FINE

COARSE FINE COARSE FINE

COARSE FINE COARSE FINE

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COARSE FINE COARSE FINE

COARSE FINE COARSE FINE

Project Savannah Harbor

Preliminary Borings

Lab No. 97/1626

Boring No. SH-167

Date 05/11/92

GRADATION CURVES

Sample No. 1

Depth/Elev 42.6-44.7

Classification Gray inorganic silt high LL (MH), clayey

sandy, with a trace of mica.

Specific gravity = 2.68

