



# St. Johns River

## Water Management District

Ann B. Shortelle, Ph.D., Executive Director

525 Community College Parkway S.E. • Palm Bay, FL 32909 • 321-984-4940  
On the internet at [www.sjrwmd.com](http://www.sjrwmd.com).

DATE: August 10, 2020  
TO: Prospective Respondents  
FROM: Amy Lucey, Contracts Administrator  
SUBJECT: Addendum #1 to Invitation for Bids # 35891, S96D Rehabilitation

As a result of inquiries, the following clarifications/changes are provided for your information. Please make all appropriate changes to your bid documents. Note: changes are reflected with original language shown with strike-through and new language is underlined.

Q1. Will there be a geotechnical report made available for the project?  
A1: Yes, Core Boring Logs and Lab Test Data report is attached.

Corrections:

Page, 55, Statement of Work, Attachments, 14-6320 Water Control Structure ~~Drawings~~  
**Core boring logs and Lab Test Data**

Attachments:

**Core boring logs and Lab Test Data**

**NOTE:** The Bid Opening **remains** 2:00 p.m., **Tuesday, September 8, 2020**

Please acknowledge receipt of this Addendum on the **BID FORM** provided in the bid package.

If you have any questions, please e-mail me at [alucey@sjrwmd.com](mailto:alucey@sjrwmd.com).

any delays encountered, as determined by the District. All amounts under the “Daily Impact Fee” will be authorized in writing by the District’s Project Manager through issuance of a District Supplemental Instruction (DSI) form. Contractor is not entitled to receive any unspent or remaining funds in the Daily Impact Fee item. The number of days included in the cost schedule is an estimate and will be adjusted according to the actual number of days of overflow incurred.

43. Supplemental Work Allowance

If necessary, this item will be used for increases in the Contract Price within the amount set forth on the Cost Schedule or negotiated price if the item is not included in the cost schedule, due to District approved changes in the unit price quantities, unforeseen site conditions, or minor changes to the work.

## V. TIMEFRAMES & DELIVERABLES

1. Contractor shall begin work within 15 days of the Effective Date. The Effective Date is the date upon which the last party to this Agreement has dated and executed the same.
2. The rehabilitated roller gate and cable drum hoist system shall be reinstalled and fully operational, and the cofferdams shall be removed on or before June 1, 2021.
3. All work shall be complete and the site demobilized in accordance with the plans and scope of work before June 30, 2021.

## VI. BUDGET

Contractor shall submit monthly itemized invoices based on a percentage of completion for each lump sum item and unit cost for each unit cost item identified in the Cost Schedule. Quantities may vary for those items requiring a “per unit cost” and the total quantities of these items will be determined during construction. The District reserves the right to increase, decrease, or delete any class, item, or part of the Work at the stated unit prices in determining the value of a change order. Contractor shall submit monthly invoices by one of the following two methods: (1) by mail to the St. Johns River Water Management District, Director, Division of Financial Management, 4049 Reid Street, Palatka, Florida 32177, or (2) by e-mail to [acctpay@sjrwmd.com](mailto:acctpay@sjrwmd.com). Each invoice shall be submitted in detail sufficient for proper pre-audit and post-audit review. If necessary for audit purposes, the District may require, and Contractor shall provide, additional supporting information to document invoices.

Attachments:

S96D As Built Drawings— separate cover

S96D Rehab Drawings – separate cover

14-6320 Water Control Structure Drawings— separate cover

**Core boring logs and Lab Test Data**



Upper St. Johns  
Structures 96C & 96D  
Contract No. 4a

Invitation Number  
DACW17-89-B-0035

CORE BORING LOGS AND  
LABORATORY TEST DATA

APPENDIX A

TO

SPECIFICATIONS  
FOR  
CONSTRUCTION OF  
STRUCTURE 96C AND STRUCTURE 96D  
UPPER ST. JOHNS RIVER BASIN  
CENTRAL AND SOUTHERN FLORIDA PROJECT

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CORE BORING LOGS AND  
LABORATORY TEST DATA  
APPENDIX A  
TO  
SPECIFICATIONS  
FOR  
CONSTRUCTION OF  
STRUCTURES 96C AND STRUCTURE 96D  
UPPER ST. JOHNS RIVER BASIN  
CENTRAL AND SOUTHERN FLORIDA PROJECT

1. CORE BORING DESIGNATIONS:

WP-Washed Probing  
CB-Core Boring  
TP-Test Pit

2. CORE BORING NOTES:

A. Boring Locations are shown on Sheet 1/4, 1/5, 2/2 and 10/1.

B. General. Standard Penetration tests were performed during drilling to determine the consistency, relative density, and approximate strength of the materials samples. The tests consist of dropping a hammer weighing 140 pounds onto the drill rods from a height of 30 inches. The number of blows (N) necessary to produce a penetration of 1 foot is regarded as the standard penetration resistance. To avoid seating errors, the blows for the first 6 inches of penetration are not taken into account; those required to increase the penetration from 6 to 18 inches constitute the N-value. The relation between the number of blows (N) and the consistency of the fined-grained soils and the relative density of the granular materials (from Terzaghi and Peck, 1948) are as follows:

(1) For Fined-Grained Soils:

Penetration Resistance N (blows/foot)	Consistency
2	very soft
2-4	soft
4-8	medium
8-15	stiff
15-30	very stiff
30	very dense

(2) For Granular Materials:

Penetration Resistance N (blows/foot)	Relative Density
0-4	very loose
4-10	loose
10-30	medium
30-50	dense
50	very dense

C. Rock hardness is defined by the following:

Soft - Can be scratched with fingernail.

Medium Hard - Can be scratched easily with knife; cannot be scratched with fingernail.

Hard - Difficult to scratch with knife.

Very Hard - Cannot be scratched with knife.

D. (SP) and (SM) Etc., refers to the Corps of Engineers unified soils classification system. Classification of materials is based on visual examination.

E. Core samples taken during the boring operations are available for inspection at the Corps of Engineers Jacksonville District Warehouse.

F. Original boring notes are available for inspection at the Jacksonville District Office.


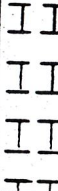


G. Ground water elevations were observed on the completion dates of the borings and are subject to fluctuations. Where ground water elevations were not observed or not recorded, it does not necessarily indicate that ground water will not be encountered at the location and throughout the depth of the hole. Refer to notes at the ends of the borings logs.



<b>DRILLING LOG</b>		South Atlantic		Jacksonville District		of 2 SHEETS	
1. PROJECT Upper St. Johns S-96B				10. SIZE AND TYPE OF BIT See remarks			
2. LOCATION (Coordinate or Station) X=583,239 Y=1,268,000				11. DAY USE FOR ELEVATION BROWN (YES or NO) MSJ			
3. DRILLING AGENCY Corps of Engineers				12. MANUFACTURER'S DESIGNATION OF DRILL Acker			
4. HOLE NO. (As shown on drawing title and file number) CB-USJ96B-5				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER R. Randall				14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER +15.5		16. DATE HOLE STARTED 3/19/86 COMPLETED 3/20/86	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE +16.4			
8. DEPTH DRILLED INTO ROCK				18. TOTAL CORE RECOVERY FOR BORING 60 %			
9. TOTAL DEPTH OF HOLE 27.0				19. SIGNATURE OF INSPECTOR GEOLOGIST J. Hand			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
+16.4	0.0					Bit or Barrel
						+16.4 BLS/0.5
		oooo	PEAT, black to dark brown (PT)	100	1	Split Spoon Settled
		oooo				+14.9
		oooo		90	2	" Settled
		oooo				+13.4
		oooo		40	3	" Settled
		oooo				+11.9
+10.6	5.8	oooo		70	4	" Settled
		oooo				+10.4
		oooo	CLAY, gray (CH)	60	5	" 1
+8.1	8.3	oooo				+ 8.9 1
		oooo				1
		oooo		80	6	" 1
		oooo	CLAY, with a trace of shell and sand, green (CH)			+ 7.4 2
		oooo		70	7	" 3
		oooo				+ 5.9 1
		oooo				3
		oooo	Layers of soft limestone +4.0 to +4.5	30	9	" 1
		oooo				+ 4.4 3
		oooo		80	10	" 1
		oooo				+ 2.9 2
		oooo				" 2
+0.7	15.7	oooo		0	-	" 4
		oooo				+ 1.4 9
		oooo				8
-0.1	16.5	oooo	SILT, clayey, slightly sandy gray (MH)	70	11	" 7
		oooo				- 0.1 7
		oooo				



DRILLING LOG (Cont Sheet)				ELEVATION TOP OF HOLE +16.4		Hole No. CB-USJ96B-5	
PROJECT Upper St. Johns S-96B			INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
						Bit or Barrel	
-0.1	16.5					-0.1 BLS/0.5 FT	
			CLAY, silty, nodules and layers of soft limestone and calcareous silt, green to white (CH)	90	13	Split Spoon 4	
						-1.6	8
				20	14	"	6
						-3.1	13
-4.1	20.5			30	15	" 2	
			LIMESTONE, very soft with calcareous silt and sand, light gray			-4.6 5	
				75	16	"	1
						-6.1	2
				0	-	"	1
-7.6	24.0					Settled -7.6 2	
			SILT, clayey, slightly sandy, nodules of soft limestone, gray to green to white (MH)	80	17	" 5	
-9.1	25.5					-9.1	11
			LIMESTONE with calcareous silt and sand, very soft, light gray	90	18	" 3	
-10.6	27.0					-10.6	4
			Hole backfilled			140# hammer with 30" drop used on 2' split spoon (1-3/8" ID x 2" OD) 6	

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
South Atlantic		Jacksawville District		SHEET 1		of 3 SHEETS	
1. PROJECT Upper St. Johns River Basin - Structure 96C				10. SIZE AND TYPE OF BIT MSL			
2. LOCATION (Coordinates or Station) X = 503,068 Y = 1,267,665				11. DATUM FOR ELEVATION BROWN (72M or REL.) MSL			
3. DRILLING AGENCY U.S. Army Corps of Engineers				12. MANUFACTURER'S DESIGNATION OF DRILL Sproague and Henwood			
4. HOLE NO. (As shown on drawing title and title number) CB-96C-1				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER J. DETLOFF				14. TOTAL NUMBER CORE BOXES 1		15. ELEVATION GROUND WATER	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				16. DATE HOLE STARTED 30 June -87 COMPLETED 8 July -87		17. ELEVATION TOP OF HOLE +4.6 ft	
7. THICKNESS OF OVERBURDEN				18. TOTAL CORE RECOVERY FOR BORING 78		19. SIGNATURE OF <del>INSPECTOR</del> Geologist J. Hand	
8. DEPTH DRILLED INTO ROCK							
9. TOTAL DEPTH OF HOLE 49.5 ft.							
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
+4.6	0.0					Blows 05/ft	
+1.2	3.4		Peat, brown (P)	100	1	Split Spoon soil	
-1.4	6.0		Clay, with some silt and layers and nodules of soft and moderately hard white limestone, brown (CH)	77	3*	-1.4	15
-4.9	9.5		Sand, with some silt and clay, calcareous, nodules and layers of soft white limestone, light green (SC)	85	4	-2.9	7
-6.7	11.3		Sandstone, moderately hard, quartz, calcareous, fossiliferous, slightly permeable, light gray, some soft and semi-consolidated materials	40	6	-5.9	6
-8.9	13.5		Sand, clayey, some silt, calcareous, nodules of moderately hard limestone (SC)	77	8	-7.4	7
			Sand, fine quartz, silty with a little clay, layers of (SC), calcareous, nodules and layers of soft and medium hard sandstone and limestone, light green (SM)	66	10	-10.4	10
				50	11	-11.9	7



DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
PROJECT		INSTALLATION		SHEET		
Upper St. Johns River Basin S96C		Jacksonville District		2 of 3 SHEETS		
ELEVATION	DEPTH	LOGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
-12.4	17.0					-13.9 Blank 5 ft
			Sand, medium to fine quartz, a little shell and calcareous, silt, layers and nodules of moderately hard, calcareous quartz sandstone, gray (SP)	66	12	Split Screen
					13	ABA
					14	-14.9
					15	"
					16	-16.4
					*	"
					17	-17.9
					18	-19.4
					19	"
					20	-20.9
					*	"
					21	-22.4
					22	-23.9
					23	-25.4
					24	-26.9
					25	-28.4
					*	"
					26	-29.9
					27	-31.4
					*	"
					28	-32.9

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE + 4.6		Hole No. CB 576C-1		
PROJECT Upper St. Johns River Basin-Starter 92		INSTALLATION Jacksonville District		SHEET 3 OF 3 SHEETS		
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
-32.9	37.5					Blow 65 ft
			Clay, silty, green (CH)	100	29	Split spoon 3
						2
						5
						2
						3
				100	30	-35.9 7
					*	" 2
				45	31	-37.4 3
						" 6
						" 8
-38.4	43.0					" 8
			Sand, medium to fine quartz and shell, a little silt calcareous, gray (SP)	0	-	-38.9 10
						" 7
-40.4	45.0			55	32	-40.4 10
						" 16
			Clay, silty, calcareous, a little sand and shell gray to green (CL)	77	33	-41.9 10
			includes and layers of soft to moderately hard sand- stone 7 - 4 = 5		*	" 11
				70	34	-43.4 20
						" 11
						" 11
-44.9	49.5			100	35	-44.9 20
						140 lb hammer with 30" drop used on 2.0 ft. split spoon (1 3/8" I.D. x 2.0" O.D.)
<p>Notes:</p> <p>1) On 30 June 87 water level in canal at +22.9 water depth 17.6'</p> <p>2) On 8 July 87 water level in canal at +23.0 water level in casing +20.0 elev. at bottom of casing -31.0 elev. bottom of hole -29.7</p> <p>3) Hole grouted with sakrete.</p> <p>4) * Indicates sample has been laboratory tested. Core log reflects the laboratory classification.</p>						



DRILLING LOG		DIVISION		INSTALLATION		SHEET	
1. PROJECT		South Atlantic		Jacksonville District		1	
2. LOCATION (Coordinates or Station)		Upper St. Johns River Basin - Structure 96C		10. SIZE AND TYPE OF BIT		OF 3 SHEETS	
X=583,067 Y=1,267,637				11. BAYON FOR ELEVATION BROWN (FT or IN)			
3. DRILLING AGENCY		U.S. Army Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL		HSL	
4. HOLE NO. (As shown on drawing title and file number)		CB-5962-2		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER		WHITSON & DETLOFF		14. TOTAL NUMBER CORE BOXES		1	
6. DIRECTION OF HOLE		<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER			
7. THICKNESS OF OVERBURDEN				16. DATE MOLE		STARTED 23-June-87 COMPLETED 29-June-87	
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF MOLE		+4.2	
9. TOTAL DEPTH OF MOLE		49.5 FT.		18. TOTAL CORE RECOVERY FOR BORING		60	
				19. SIGNATURE OF INSPECTOR		J. Hand	
				20. SIGNATURE OF GEOLOGIST			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
+4.2	0.0					+4.2	Blows/5FT
+2.1	2.1		Peat, brown (Pt)		1	Split spoon	settled
			Clay, silty, calcareous nodules and layers of soft and moderately hard limestone, green to white (CL)	40	2	0.7	
			layers of green and brown (CL) clay from +1.3 to 0	93	3	0.8	
-2.3	6.5			100	4	-2.3	
-3.1	7.3		Sand, clayey, silty, calcareous nodules of soft limestone and sandstone, brown (SC)		5		
-3.8	8.0		Sandstone, quartz, silty, calcareous, soft, light gray	93	6	-3.8	
			Clay silty, slightly sandy, calcareous, nodules of moderately hard white limestone, fossils and nodules of calcareous, fossil, ferrous, gray sandstone, light gray (CL)	0	-	-5.3	
				10	7	-6.8	
				33	8	-8.3	
-9.3	13.5			-	-	-9.3	WATER
			Sandstone, soft to moderately hard, quartz, calcareous, green	42	9	-10.8	
-10.8	15.0						
			Sand, fine quartz calcareous, nodules of moderately hard white limestone, brown to green (SC)	33	10	-12.3	
-13.8	18.0			45	11	-13.8	



DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		+ 4.2		Hole No. CB-546-2	
PROJECT		INSTALLATION		DISTRICT		SHEET	
Upper St. Johns River Basin - Shuchman		Jacksonville		District		OF 3 SHEETS	
ELEVATION	DEPTH	LOGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
a	b	c	d	e	f	g	
-13.8	18.0					Blows/0.5FT	
						-13.8	
						split spoon	
				33	12	-15.3	2
							6
							9
							6
							6
-16.3	20.5						7
				50	13	-16.8	7
					*		6
							7
-18.3	22.5			60	14	-18.3	7
					*		5
							5
				85	15	-19.8	6
-19.8	24.0						3
					16		3
				100	17	-21.3	7
-21.0	25.2						4
-21.5	25.7						4
				85	18	-22.8	5
					*		4
				93	19	-24.3	6
-24.3	28.5						2
				93	20	-25.8	3
							5
				100	21	-27.3	4
-27.5	31.7						3
				77	22	-28.8	1
					*		3
				60	23	-30.3	4
-30.3	34.5						7
				93	24	-31.8	4
-31.8	36.0						5
				93	25	-33.3	6
-33.3	37.5				*		4
							5
							8

CR-526D-2 2, P. 7

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
PROJECT		INSTALLATION		SHEET		
Upper St. Johns River Basin - Shushone No. 90		Jacksonville District		3 of 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. BY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
-33.3	37.5					
						Blows/0.5 FT.
			Clay, green (CH)		*	split spoon
			lower of (CL), elevation	100	26	-34.8
			-34.2 / -37.2			
				72	27	-36.3
					*	"
				100	28	-37.8
-38.3	42.5					
			Sand, clayey, calcareous	10	-	-39.3
			Some shell and nodules		*	"
			and layers of soft and	85	29	-40.8
			moderately hard sand			
			stone, gray (SC)	43	30	-42.3
					*	"
				93	31	-43.8
-45.3	47.5			93	32	-45.3
						140 # hammer with 30" drop used on 2.0 ft. split spoon sampler (1 1/8" I.D. x 2" O.D.)
			Notes:			
			1) On 23 June 87			
			water level in casing at +22.8			
			water depth 18.0'			
			2) On 29 June 87			
			water level in casing +18.3			
			Bottom casing -17.7			
			Bottom hole -32.7			
			3) On 30 June 87			
			water level in casing at +22.9			
			water level in casing -17.7			
			Bottom of hole -44.7			
			4) Hole Grouted with sackrete			
			5) * Indicates sample			
			has been laboratory			
			tested. Core log			
			reflects the			
			laboratory			
			classification.			



DRILLING LOG		DIVISION		INSTALLATION		SHEET	
PROJECT		South Atlantic		Jacksonville District		of 4 SHEETS	
1. PROJECT		Upper St. Johns River Basin - Structure 96D		10. SIZE AND TYPE OF BIT		MSL	
2. LOCATION (Coordinates or Station)		X=594,081 Y=1,242,757		11. DATUM FOR ELEVATION BROWN (TBM or B.M.)		MSL	
3. DRILLING AGENCY		CORPS OF ENGINEERS		12. MANUFACTURER'S DESIGNATION OF DRILL		Failing 1500	
4. HOLE NO. (As shown on drawing title and B.M. number)		CB-596D-1		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER		J. Detloff		14. TOTAL NUMBER CORE BOXES		2	
6. DIRECTION OF HOLE		VERTICAL <input checked="" type="checkbox"/> INCLINED <input type="checkbox"/> DEG. FROM VERT.		15. ELEVATION GROUND WATER		SEE NOTES	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 8 NOV 87 COMPLETED 12 NOV 87	
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF HOLE		+30.4	
9. TOTAL DEPTH OF HOLE		66.0 FT.		18. TOTAL CORE RECOVERY FOR BORING		81 %	
				19. SIGNATURE OF INSPECTOR		J. Hand	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
+30.4	0.0					Borehole 5 FT	
+30.0	0.4		Sand & shell road base	100	1	8" Fish Tail	
			Sand, clayey with calcareous and organic silt and few pieces of limestone and shell, gray, dike fill (SC)	80	2	+28.9	
			dike fill is reinforced with plastic mesh placed horizontally on two-ft. intervals	80	3	+27.4	
				80	4	+25.9	
				93	5*	+24.4	
				66	6	+22.9	
				54	7	+21.4	
				100	8*	+19.9	
				93	9	+18.4	
				75	10	+16.9	
				66	11*	+15.4	
				66	12	+13.7	
				75	13	+12.4	



SHEET 2  
OF 4

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DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE +30.4		Hole No. CB-5960		
PROJECT Upper St. Johns River Basin - Structure No. D		INSTALLATION Jacksonville District		SHEET 4 OF 4 SHEETS		
ELEVATION a	DEPTH b	LOG NO. c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						-29.1 Blows/p. 50
						SPLIT SPOON
				100	42	29.6
					*	"
				100	43	-31.6
						"
				100	44	-32.1
						"
				100	45	-34.6
						"
-35.1	66.6			80	46	-35.1
						140 # hammer with 30" drop USED ON 2.0 ft SPLIT SPOON SAMPLER (1 3/8" I.D. x 2' O.D.)

Notes:

- Water Levels taken 17-Nov-87  
at drill hole (after standing open  
since 12-May-87  
a) tape bottom -9.6, water  
level +22.7  
b) at 216 240 canal (approx  
100' west of drill hole) +25.1  
c) at adjacent canal to the  
South +25.4  
d) at adjacent canal to  
the north +18.4
- Hole Grouted with concrete
- \* indicates sample  
has been laboratory  
tested. Core log  
reflects the  
laboratory classification.

DRILLING LOG		DIVISION <u>South Atlantic</u>		JACKSONVILLE DISTRICT		OF 3 SHEETS	
1. PROJECT <u>Upper St. Johns River Basin - Structure No. D</u>				10. SIZE AND TYPE OF BIT			
2. LOCATION (Coordinates or Station) <u>X = 594,081 Y = 1,242,808</u>				11. DAY ON ELEVATION KNOWN (TBM or BBL) <u>MSL</u>			
3. DRILLING AGENCY <u>Corps of Engineers</u>				12. MANUFACTURER'S DESIGNATION OF DRILL <u>SOMMER &amp; HERNDON</u>			
4. HOLE NO. (As shown on drawing title and all numbers) <u>CB-396D-2</u>				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED	
5. NAME OF DRILLER <u>J. Petillof</u>				14. TOTAL NUMBER CORE BOXES <u>2</u>		15. ELEVATION GROUND WATER <u>see notes</u>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				16. DATE HOLE <u>1 DEC 1987</u>		COMPLETED <u>3 DEC 87</u>	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE <u>+14.5</u>			
8. DEPTH DRILLED INTO ROCK				18. TOTAL CORE RECOVERY FOR BORING <u>B2</u>			
9. TOTAL DEPTH OF HOLE <u>49.5 ft.</u>				19. SIGNATURE OF INSPECTOR <u>J. Hord</u> Geologist			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
+14.5	0.0					+14.5 Blows/c. 5 FT.
			Sand, clayey with calcareous and organic silt and a few fragments of limestone, brown to gray (SC)	60	1	+13.0 Split spoon settled 1
			DIKE fill	40	2	+11.5 " 2
				60	3	+10.0 " 3
				33	4	+8.5 " 4
+8.5	6.0			73	5	+7.0 " 5
			Clay with some sand and silt and nodules of mo- derately hard and soft limestone (CL)	66	6	+5.5 " 6
				75	7	+4.0 " 7
+4.0	10.5			50	8	+2.5 " 8
			Sand, clayey, silty, calcareous, nodules of white moderately hard limestone light green (SC)	84	9	+1.0 " 9
+1.0	13.5			77	10	-0.5 " 10
			Clay, sandy, silty, calcareous, nodules of limestone, green to white (CL)	93	12	-2.0 " 12
-1.0	15.5					
-2.0	16.5		Sand, fine to medium quartz with some calcareous silt, green (SM)			



DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE +14.5		Hole No. CB-S760-2	
PROJECT Horn St. Johns River Basin - Structure 960			INSTALLATION Jacksonville District		SHEET 2 OF 3 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
-2.0	16.5					Blank/ASFT
			Sand, fine quartz. clayey with some calcareous silt, green (SC)	100	13	split spoon
			layers of (CL) from -3.5 to -5.0	100	14	
-6.2	20.7			84	15	
			Clay. silty, green (CH)			
				100	16	
				100	17	
				93	18	
-11.8	26.3				19	
			Sand, clayey, silty, calcareous, shells to very shelly light green (SC)	70	20	
-13.3	27.8				21	
			Sand, fine to very fine quartz some silt and little shell, light brown (SP-SM)	93	22	
				100	23	
				97	24	
				100	25	
					26	
				100	27	
				100	28	

DRILLING LOG (Cont Sheet)		ELEVATION OF HOLE		Hole No. CB-596D-2		
PROJECT		ELEVATION		INSTALLATION		
Upper St. Johns River Basin - Structure 96D		+14.5		Jacksonville District		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
						23.0 Blows/0.5 ft
						split spoon
-24.5	39.0			93	29	-24.5
						15
						21
			Sand, very fine quartz with some silt and shell, gray (sm)	93	30	-26.0
					31	"
					32	-27.5
-27.9	41.4			93	32	-27.5
					*	"
			Sand, clayey silty, with a little shell, green (sc)	100	33	-29.0
					34	-30.5
					35	-32.0
					36	-33.5
-33.5	48.0			67	36	-33.5
					*	"
-35.0	49.5			100	37	-35.0
						140# hammer with 30" drop used on 2.0 ft. split spoon sampler (1 1/2" I.D. x 2.0" O.D.)
			Notes:			
			① Elev. water in canal +20.0 (water level was raised to float barge)			
			② * Indicates sample has been laboratory tested. Core log reflects the laboratory classification.			

TP-S96B-11  
Location:  
20,500 ft. East of S-96  
on centerline of C-54 North  
Spoil Bank

Date Excavated: July 1986  
Equipment Used: Hydraulic Backhoe  
(Case 880)  
Geologist: Joe Gentile

Surface Elevation: +43.2 ft.

Depth (ft)	
	0'
SAND, fine to medium, quartz, little clay, brown, (SC)	
	1.5'
SAND, fine to medium, quartz, trace clay, scattered clay lumps, tan, shelly. (SP)	
	5'
	10'
	11'

NOTES: 1. Ground water not reached.  
2. Hole caved in at 11.0 ft.



TP-S96B-12  
Location:  
21,500 ft. east of S-96  
on E of C-54 North Spoil Bank  
Surface Elevation: +43.1 ft.

Date: July 1986  
Equipment Used:  
Hydraulic Backhoe  
(CASE 800)

Depth (ft.)	
SAND, fine to medium, quartz, clayey, scattered clay lumps, tan (SC)	
	3'
SAND, fine to medium, quartz, trace of clay, shelly, tan, isolated clay lumps (SP)	
	10'

- NOTES: 1. Ground water not reached.  
2. Hole caved in at 10.0 ft.

TP-S96B-13  
 Location:  
 22,500 ft. East of S-96  
 on centerline of North  
 Spoil Bank

Date Excavated: July 1986  
 Equipment Used: Hydraulic Backhoe  
 (Case 880)  
 Geologist: Joe Gentile

Surface Elevation: +41.6 ft.

	Depth (ft)
	0'
SAND, fine to medium, quartz, some clay, some clay lumps, trace of gravel. (SC)	
	2'
SAND, fine to medium, quartz, trace clay, trace of stiff brown clay lumps, tan, some shell. (SP)	
	5.5'
SEAM of clayey sand (SC), with stiff clay lumps from 5.5' to 7.5'	
	7.5'
SAND, gray to tan, some shell, clean (SP) from 7.5' to 12'	
	10'
	12'

NOTES: 1. Ground water not reached.  
 2. Hole caved in at 12.0'.

TP-S96B-14

Location:

23,500 ft. East of S-96  
on E of C-54 North Spoil Bank

Surface Elevation: +40.6 ft.

Date Excavated: 7/31/86  
Equipment Used: Hydraulic  
Backhoe (CASE 855)  
Geologist: Joe Gentile

Depth  
(ft.)

SAND, fine to medium, quartz, little to some clay, many seams of  
shelly (SP) sand, scattered fat clay lumps (SC)

5'

10'

- NOTES:
1. Ground water not reached.
  2. Hole caved in at 10.0 ft.

TP-S96B-15  
Location:  
24,350 ft. East of S-96  
on centerline of C-54  
North Spoil Bank

Date Excavated: 8/1/86  
Equipment Used: Hydraulic Backhoe  
(Case 880)  
Geologist: Joe Gentile

Surface Elevation: +44.5 ft.

Depth (ft)	
0'	SAND, fine to medium, quartz, little clay, tan. (SC)
5'	SAND, clayey, gray-blue, some lumps and seams of stiff blue clay. (SC)
10'	
14'	

NOTES: 1. Groundwater not reached.  
2. Hole caved in at 14.0 ft.

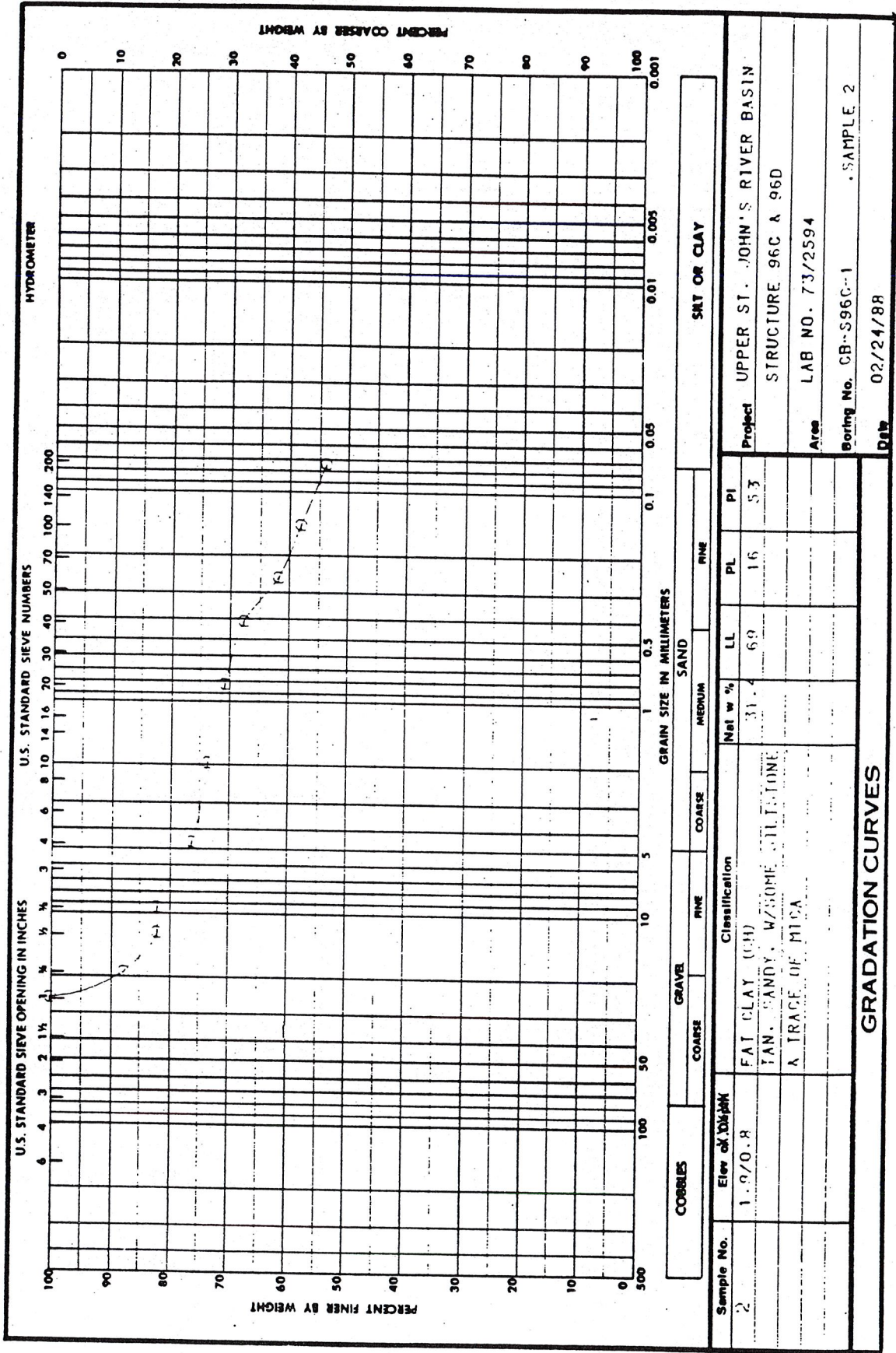




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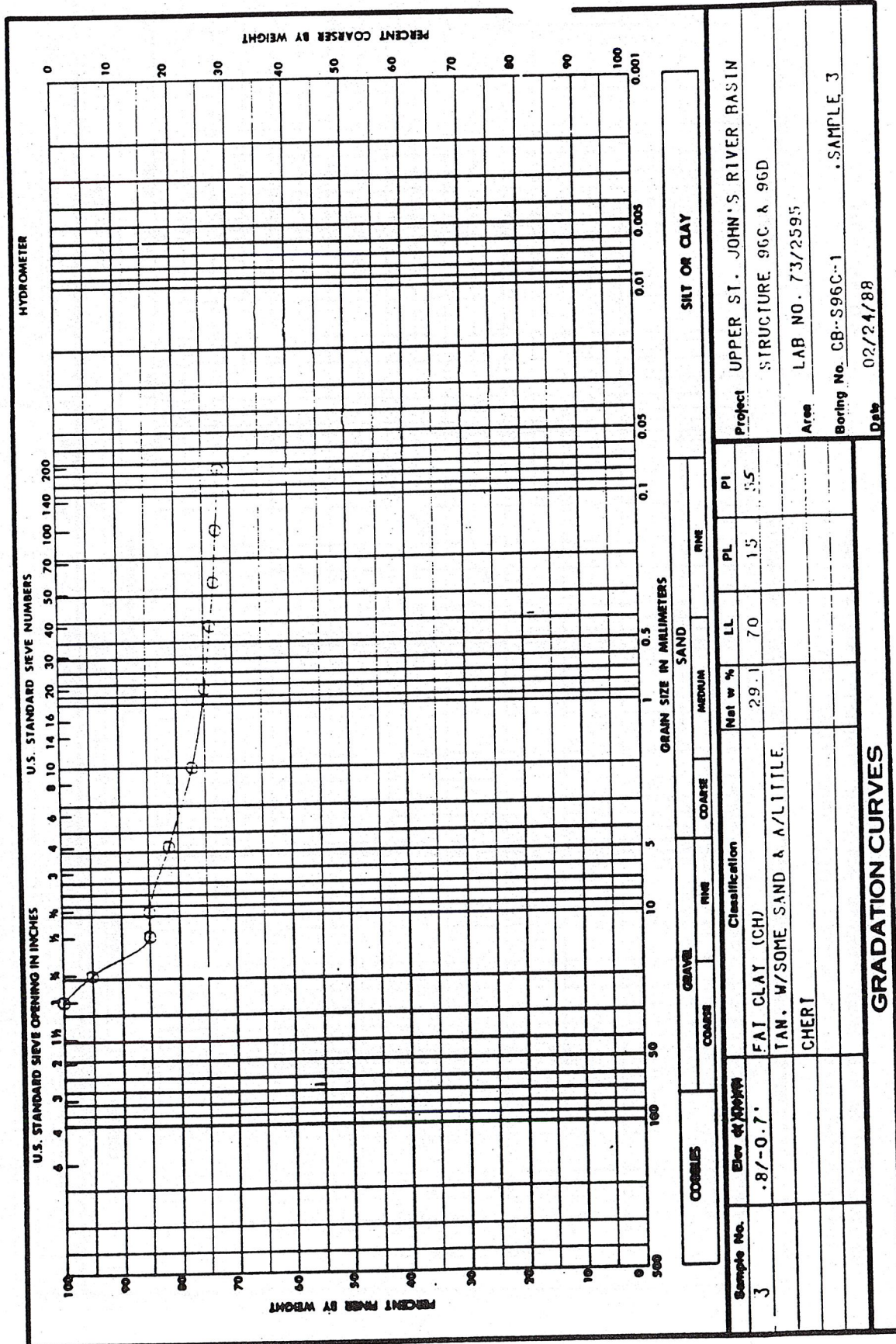
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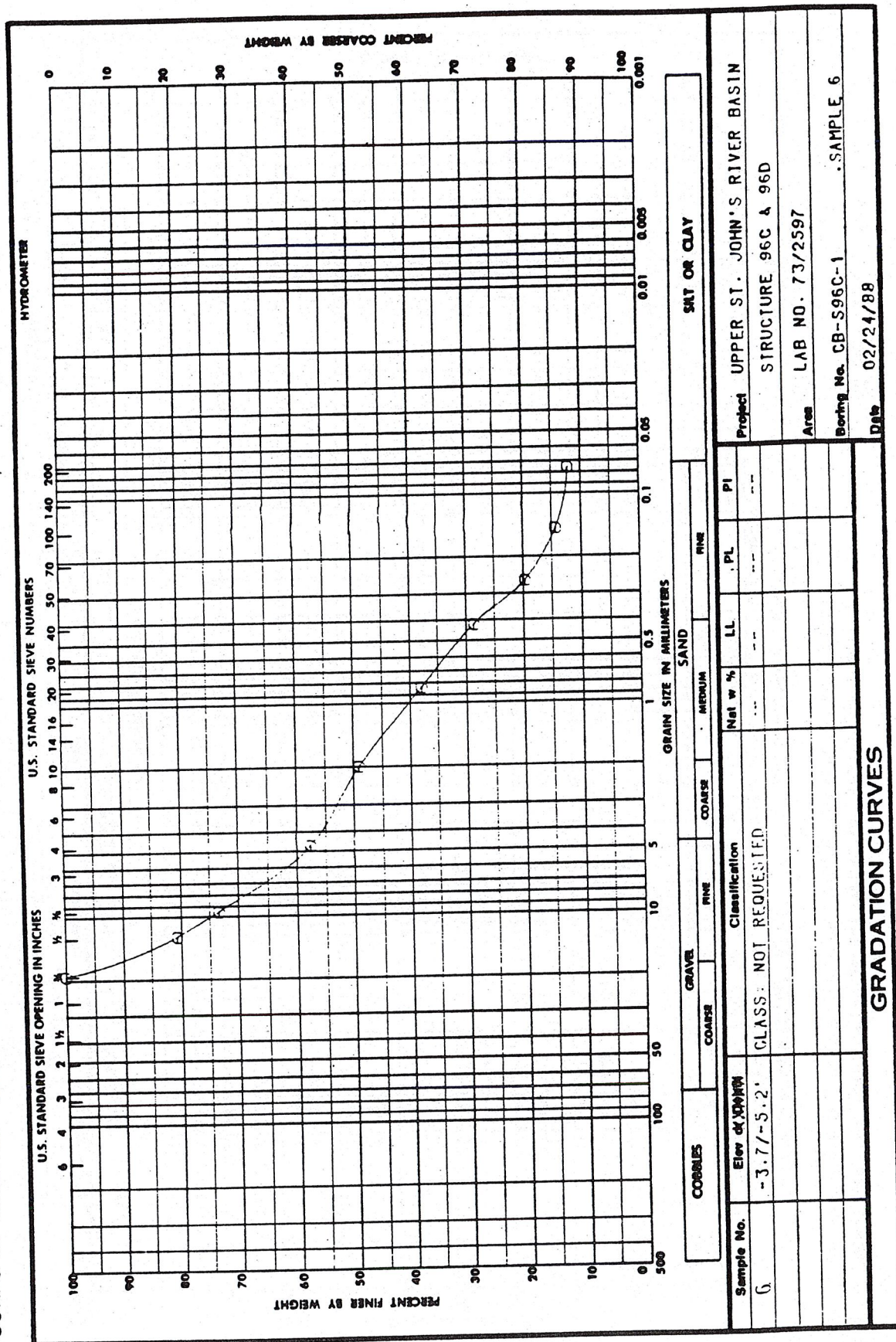
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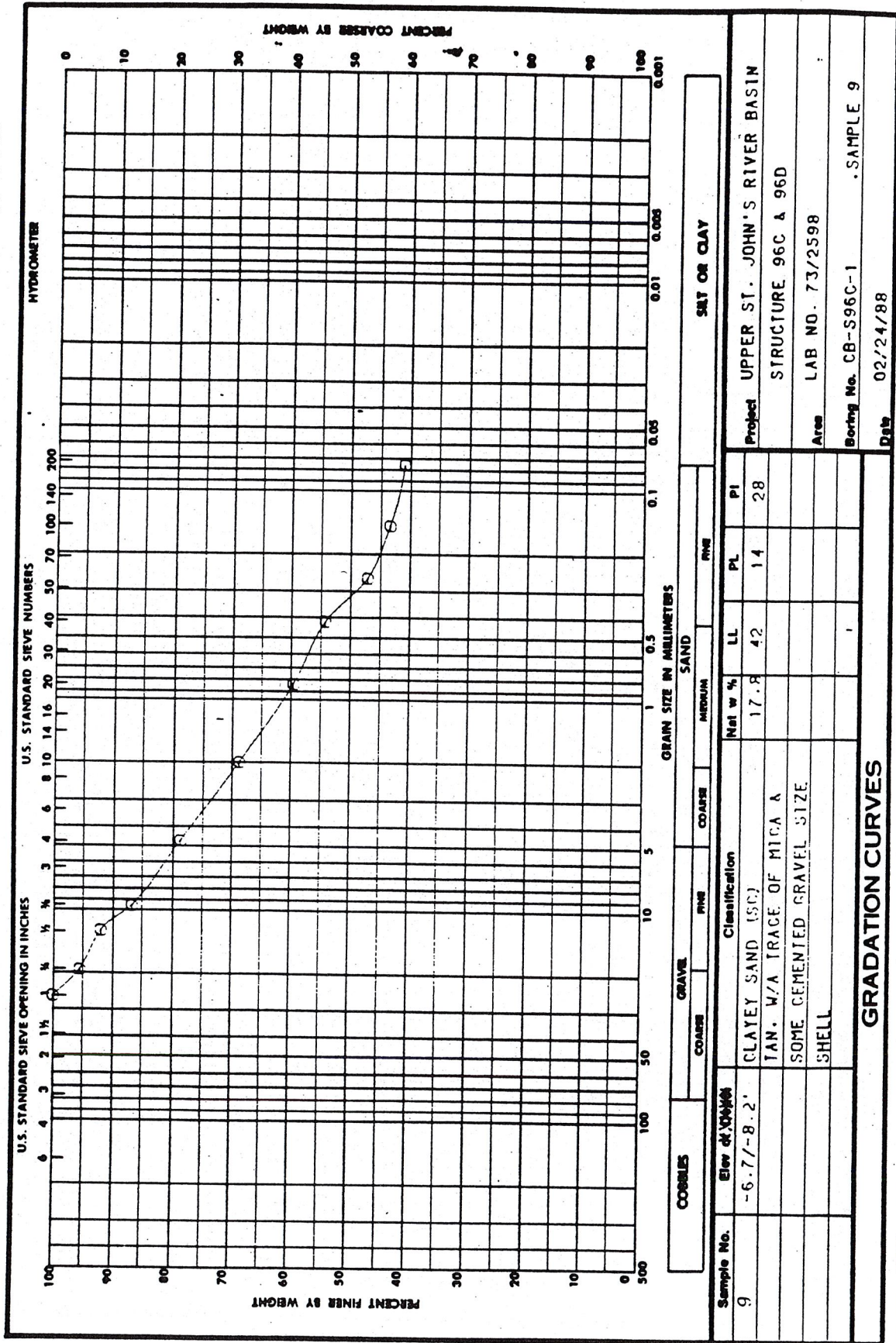
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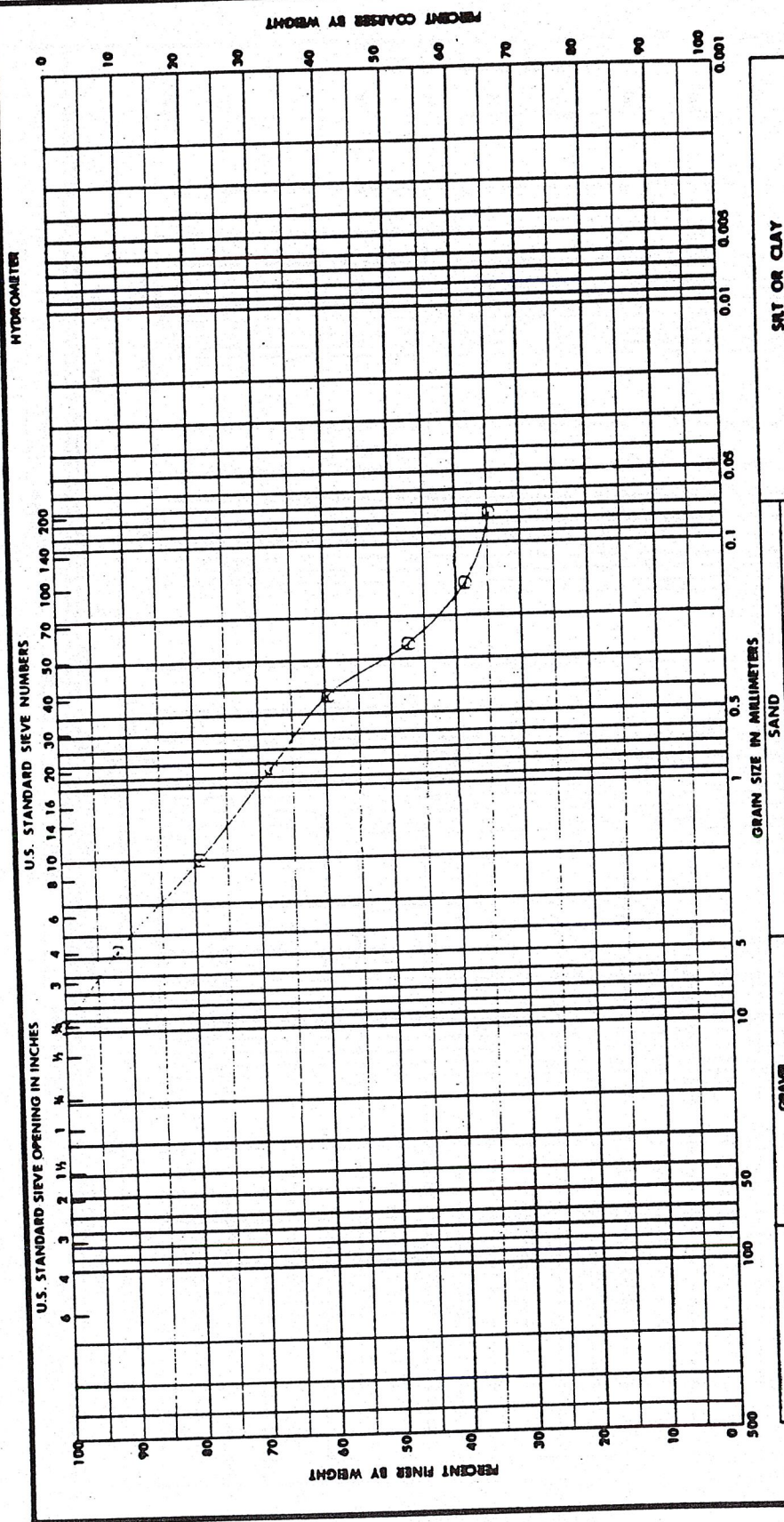
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### U.S. STANDARD SIEVE NUMBERS

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## GRADATION CURVES

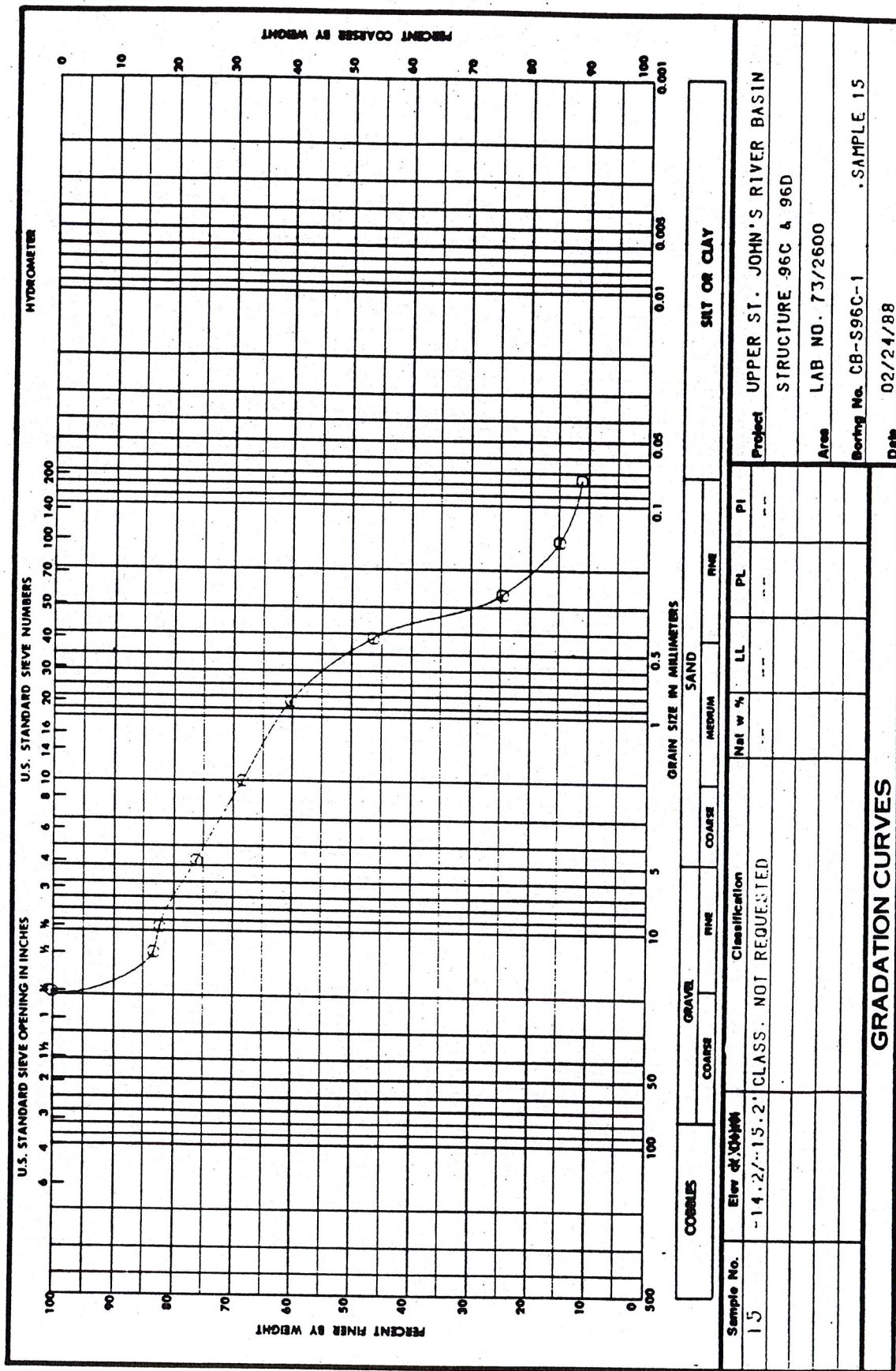
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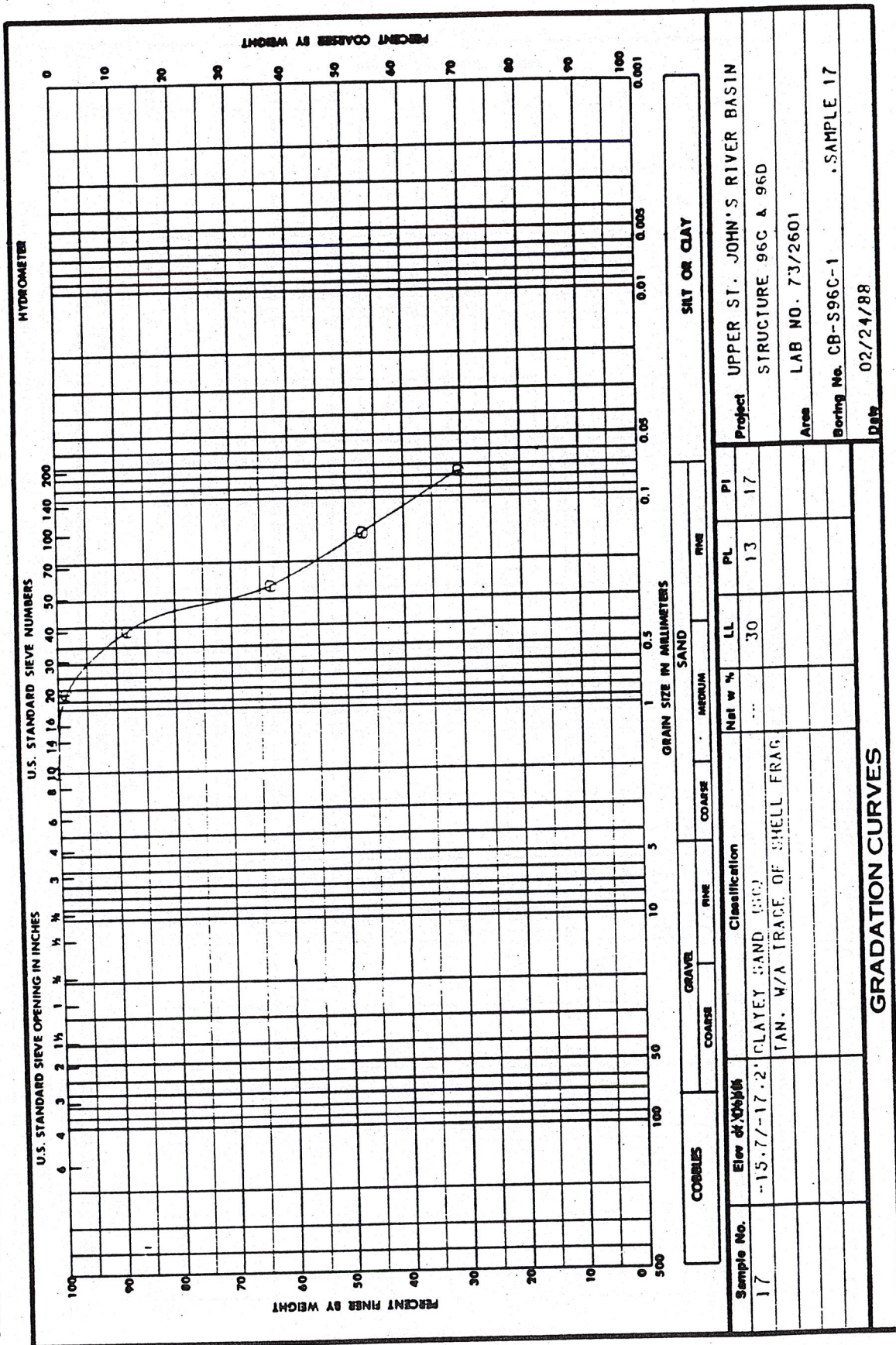
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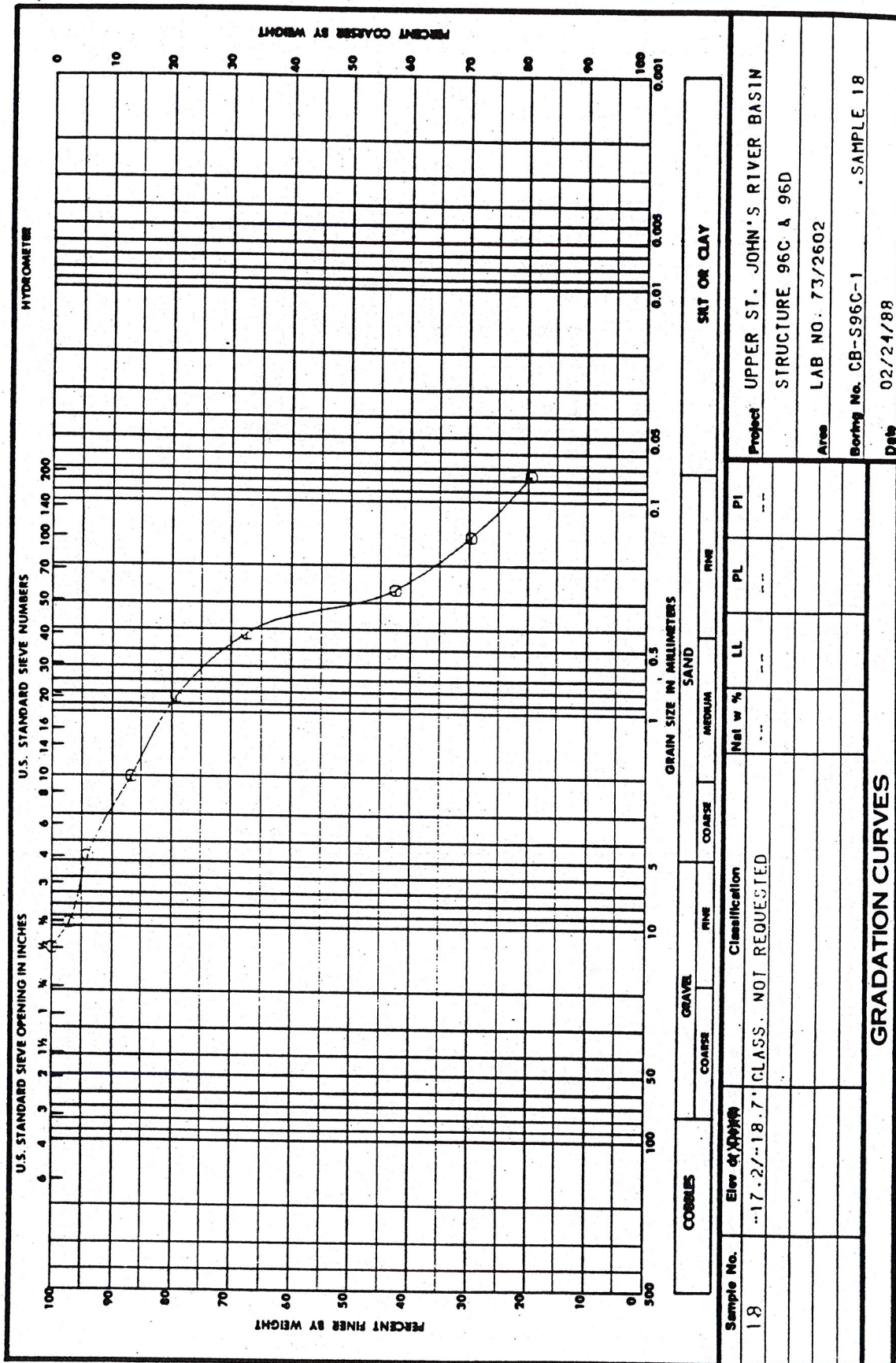
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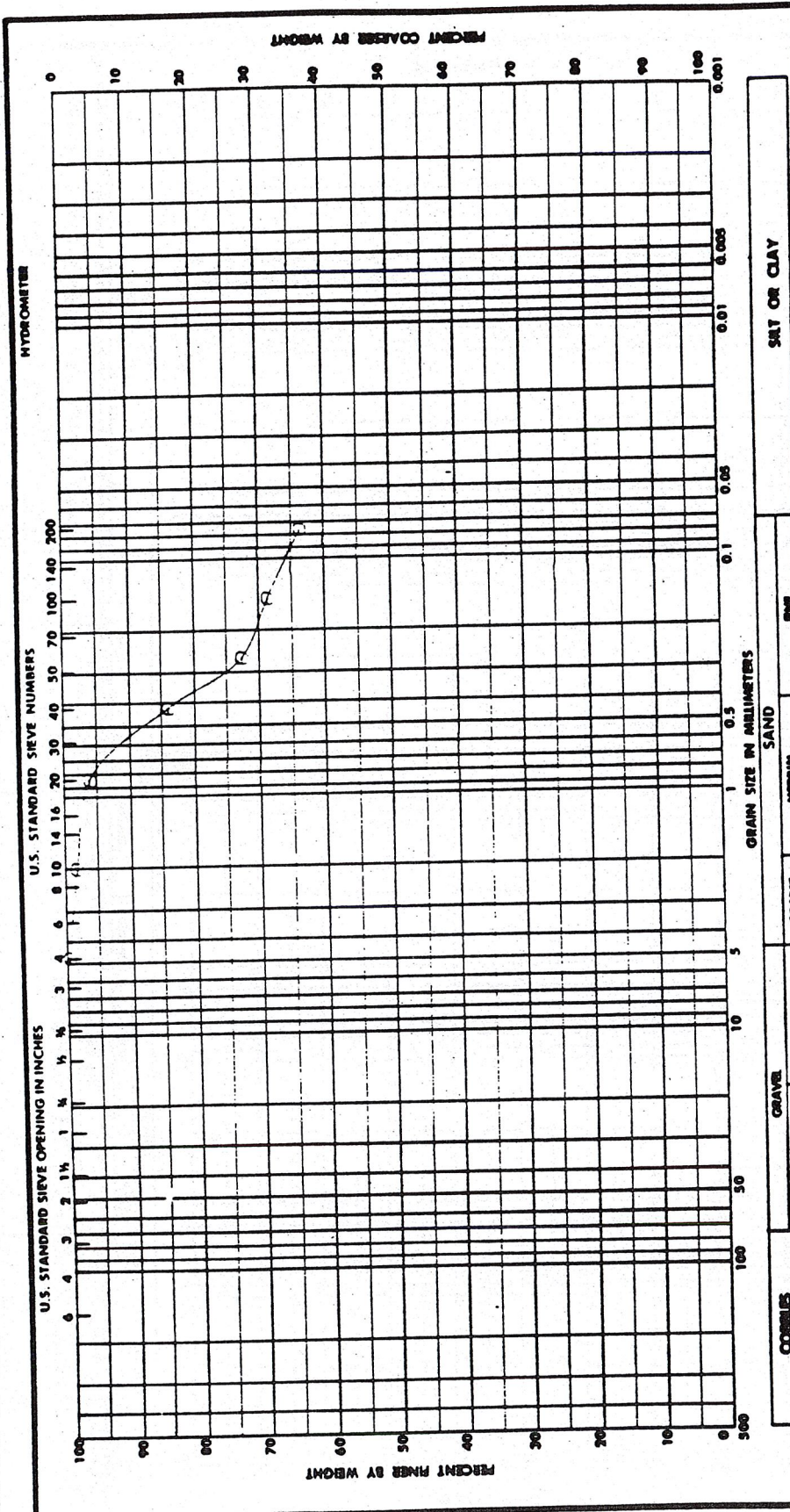
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COBBLES		GRAVEL		FINE		SAND		SILT OR CLAY	
Sample No.	Elev. at Depth	Classification		Net w %	LL	PL	PI	Project	
21	-20.2/-21.7	LEAN CLAY (CL)		...	22	12	10	UPPER ST. JOHN'S RIVER BASIN	
		TAN. SANDY. W/A TRACE OF MICA						STRUCTURE 96C & 96D	
		A SHELL FRAG.						LAB NO. 73/2603	
								Boring No. GB-S96C-1	
								SAMPLE 21	
GRADATION CURVES								Date 02/24/88	

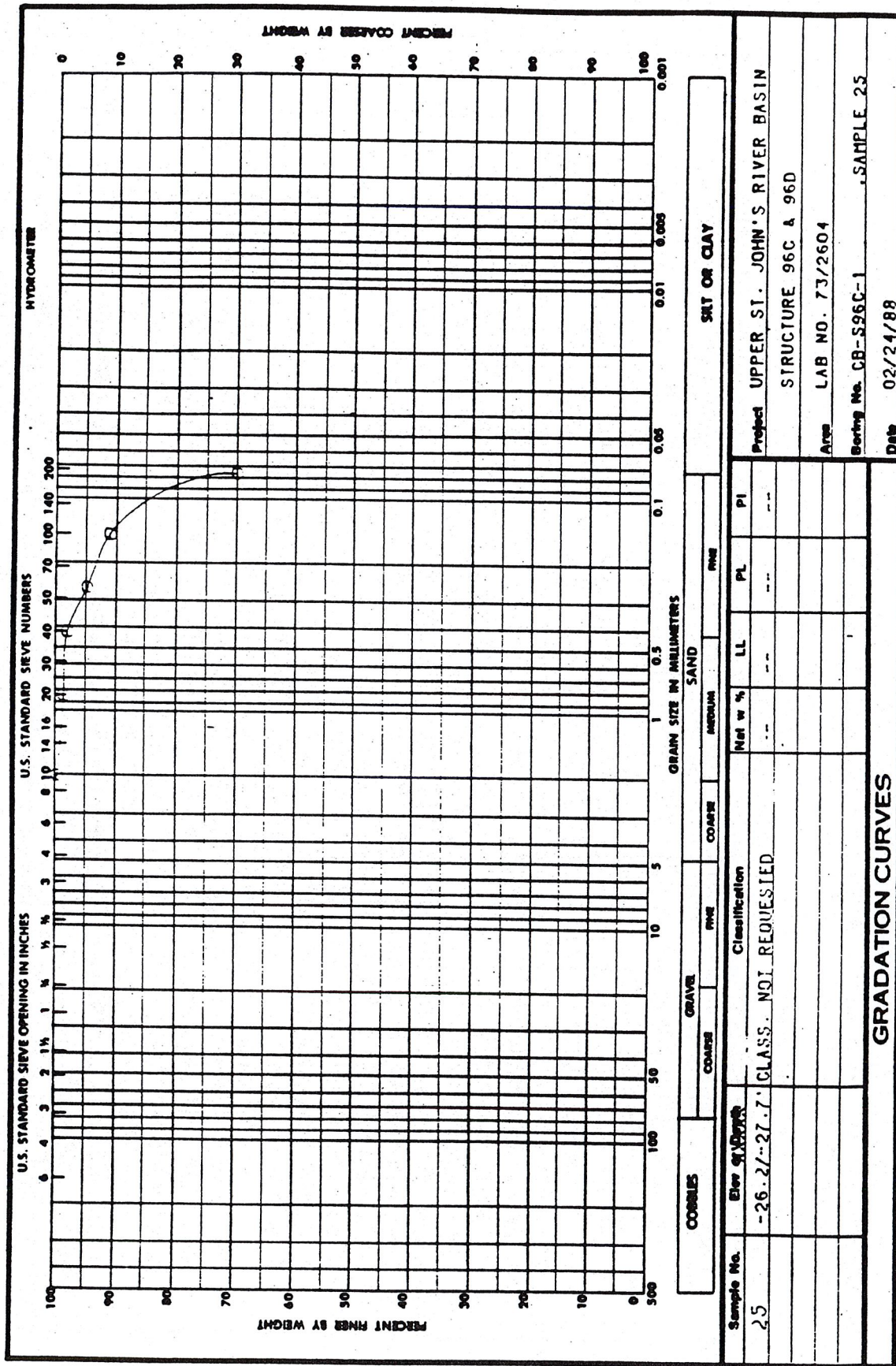
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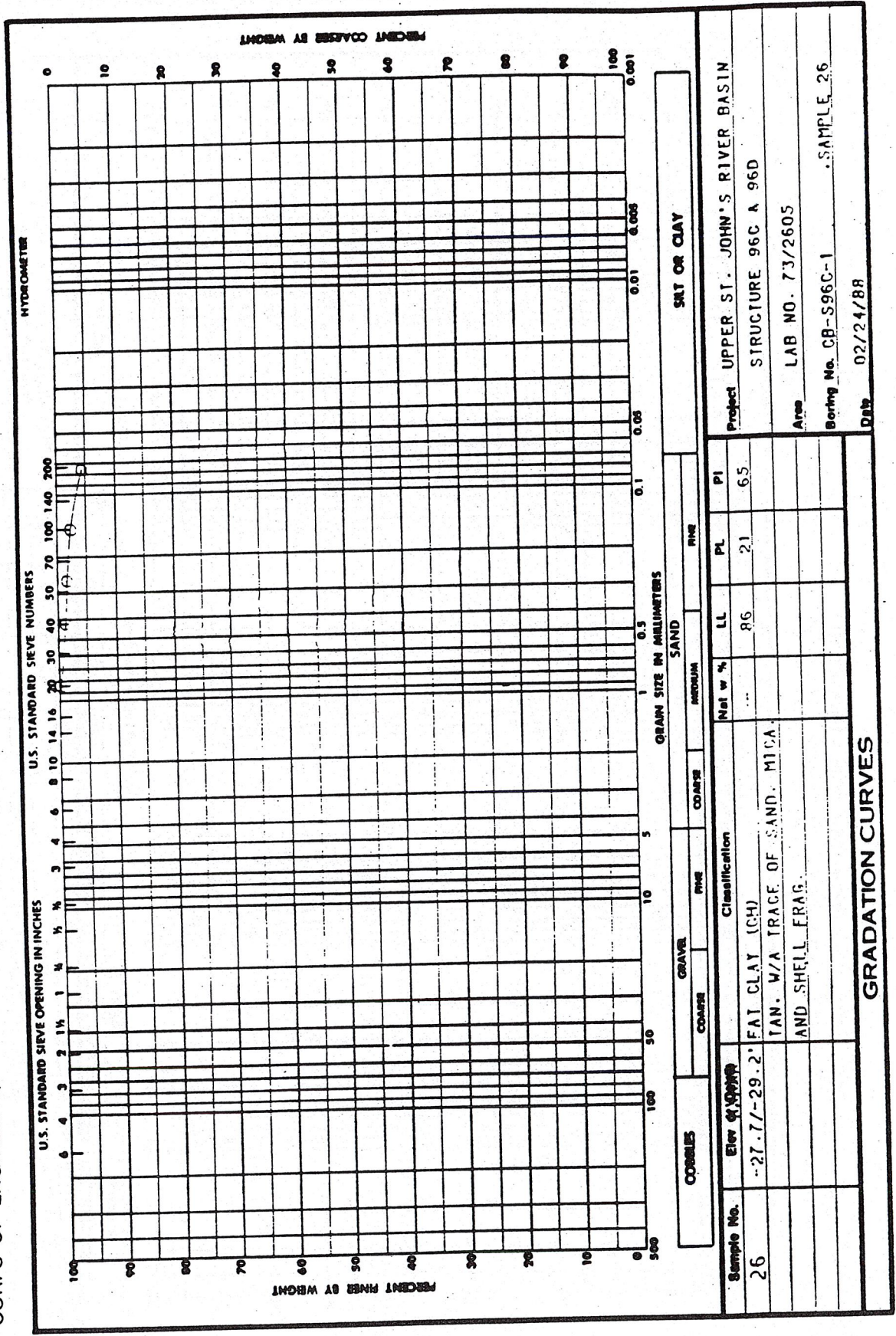
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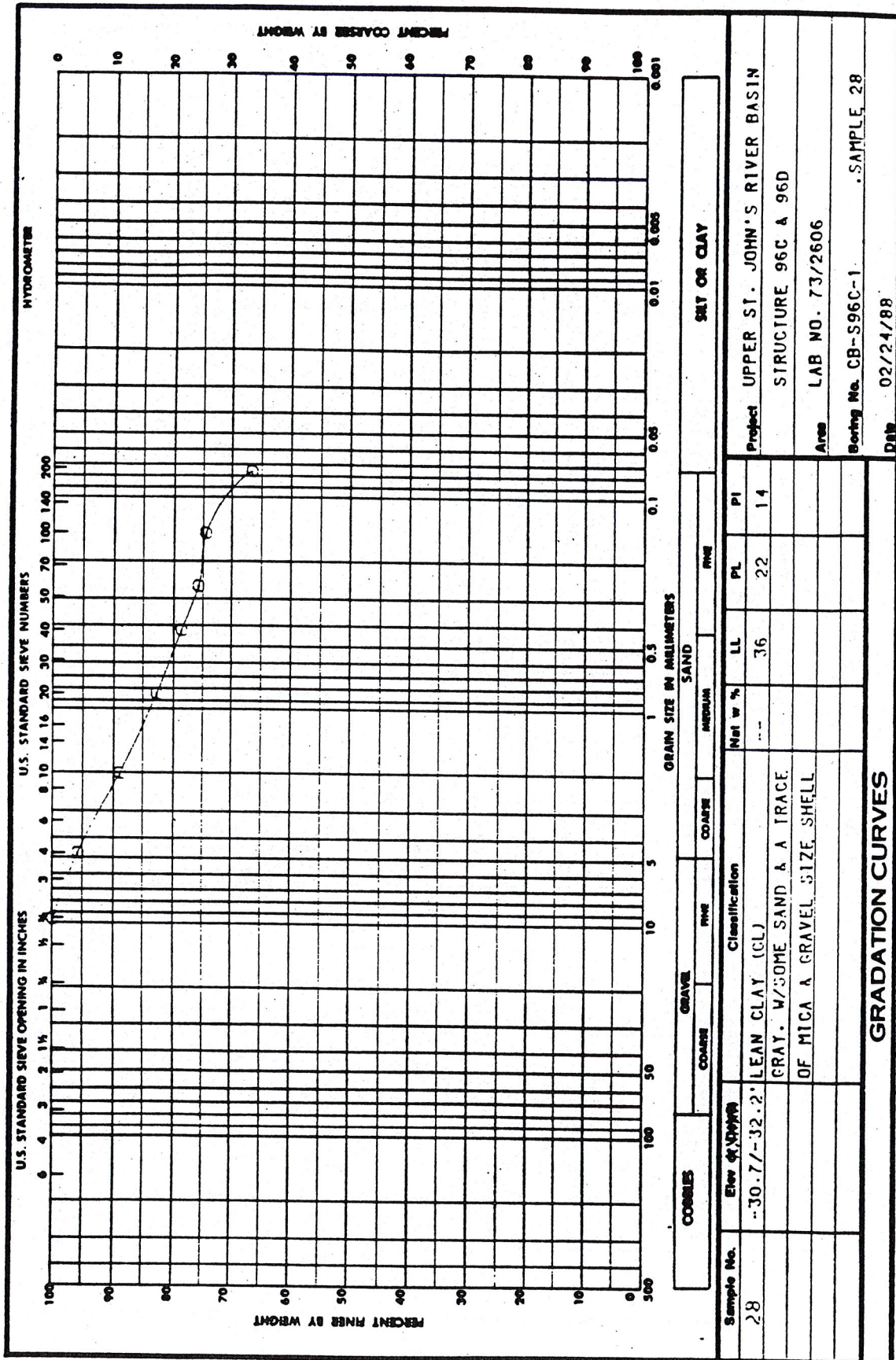
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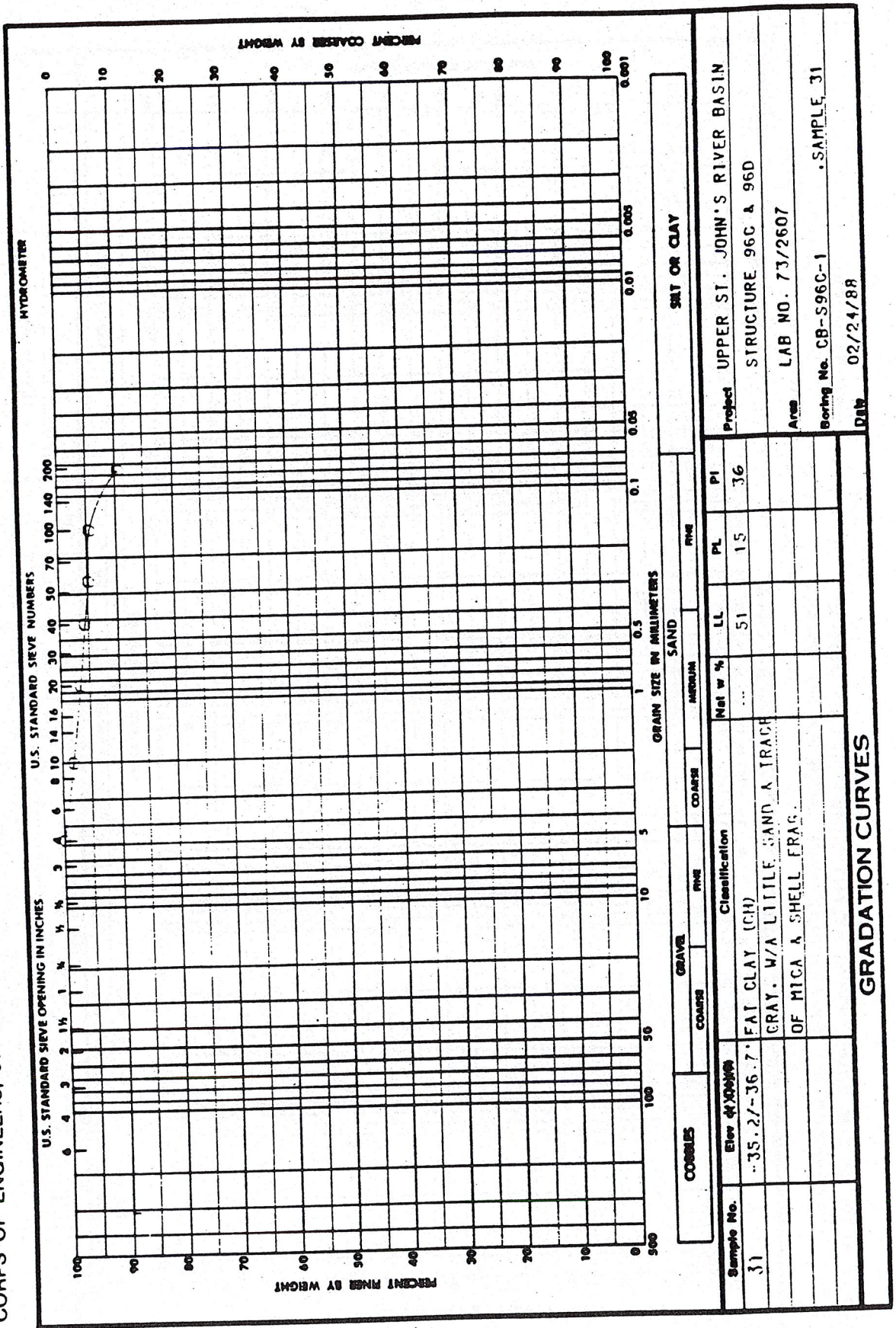


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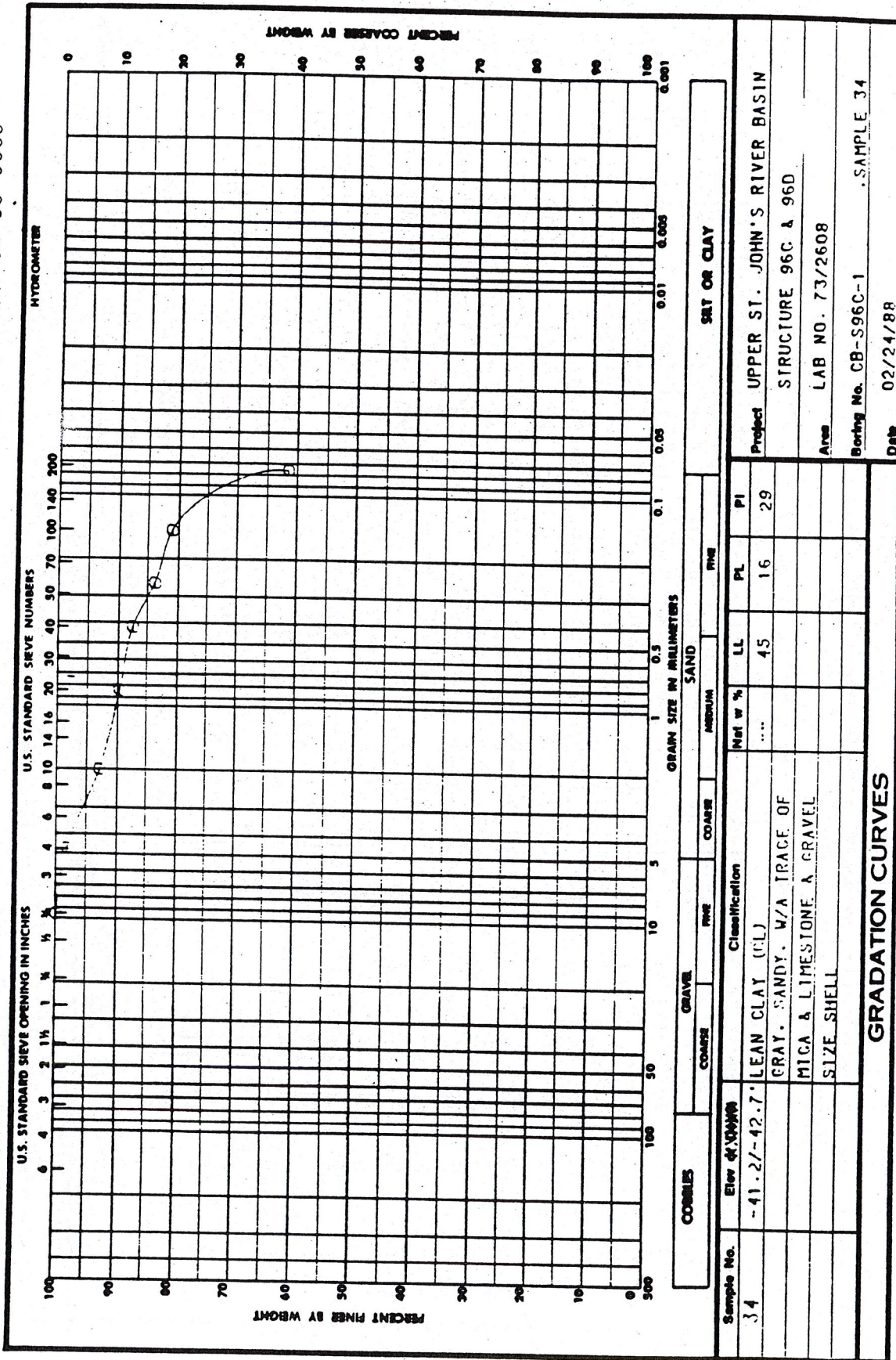
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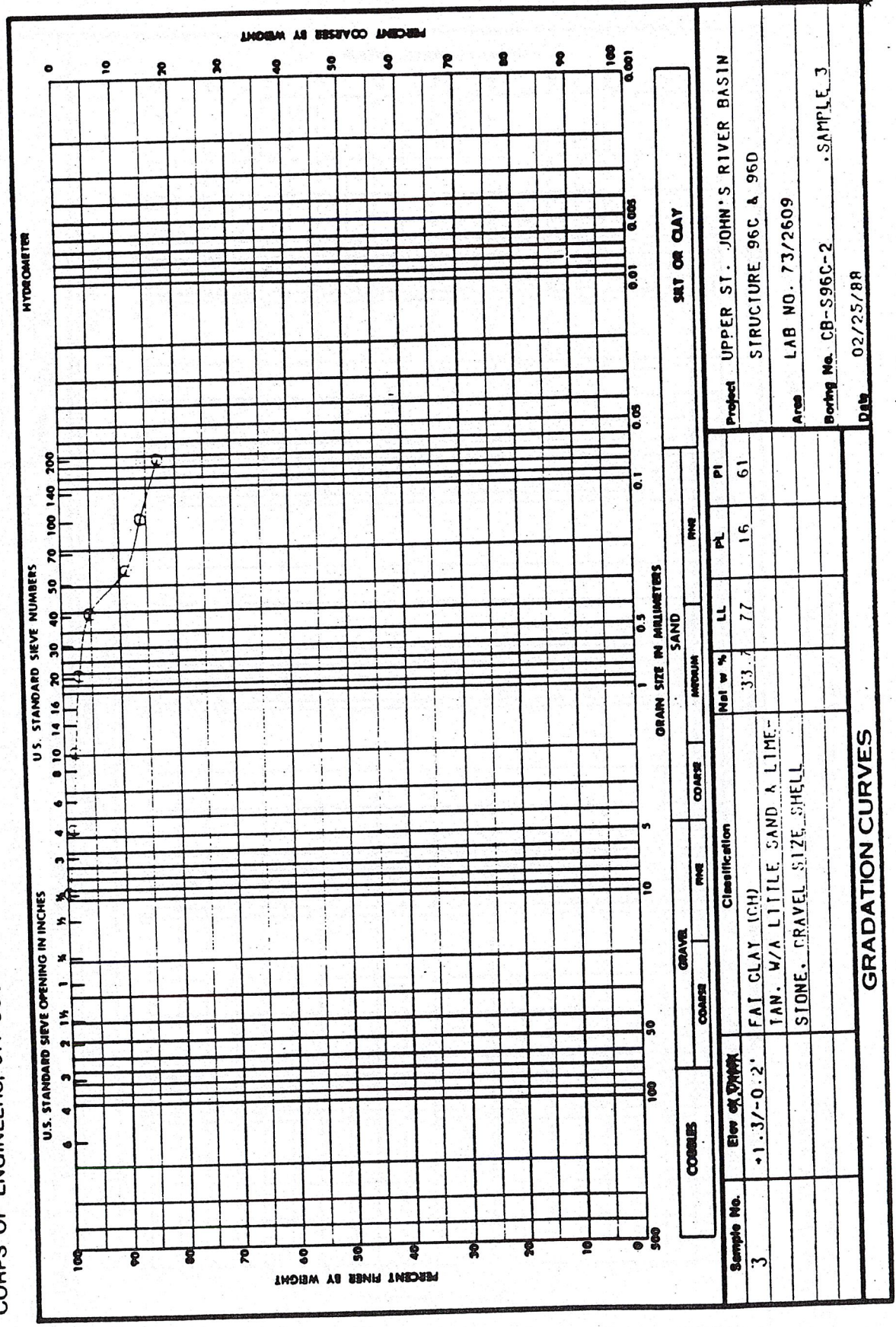
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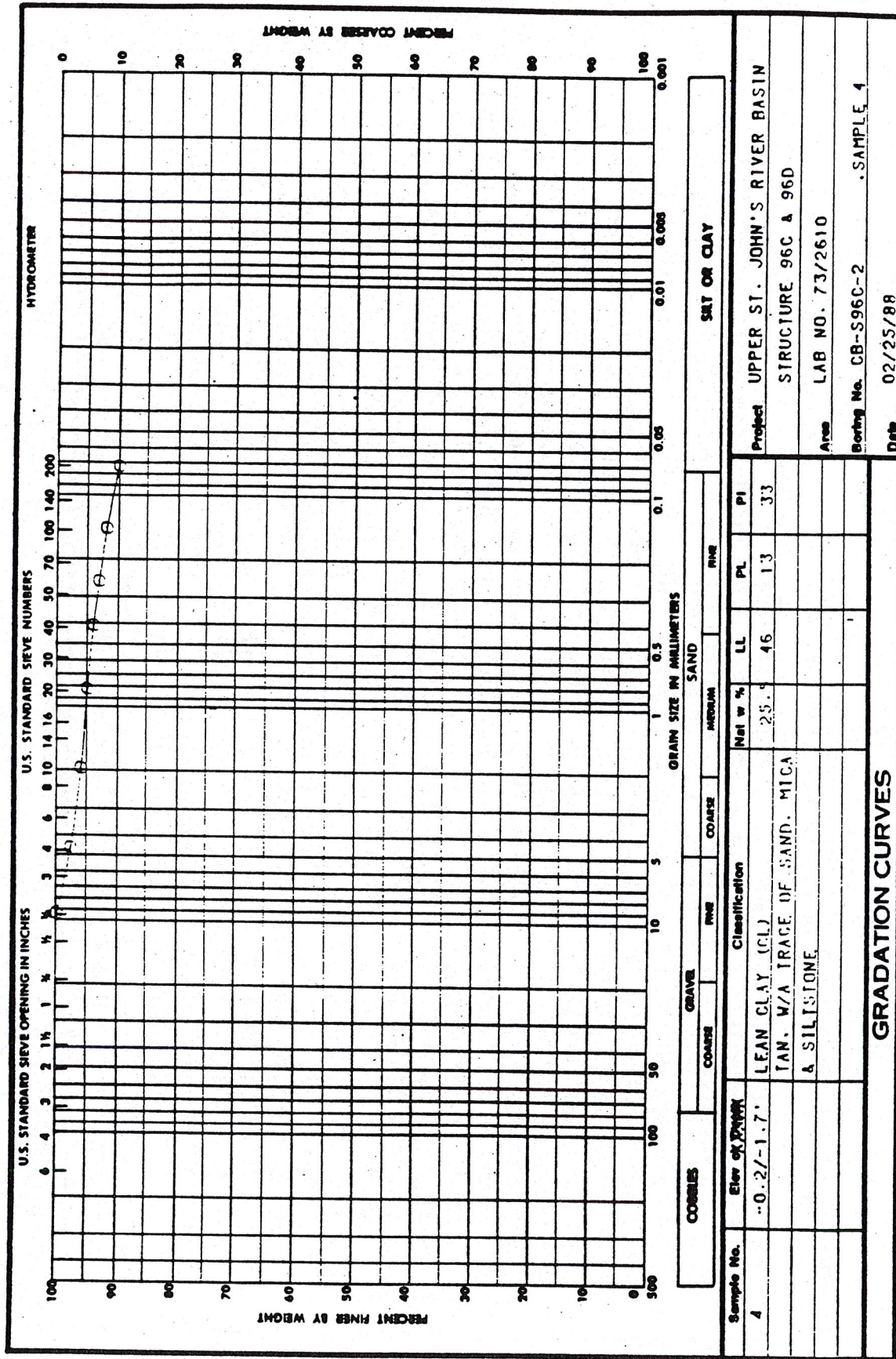
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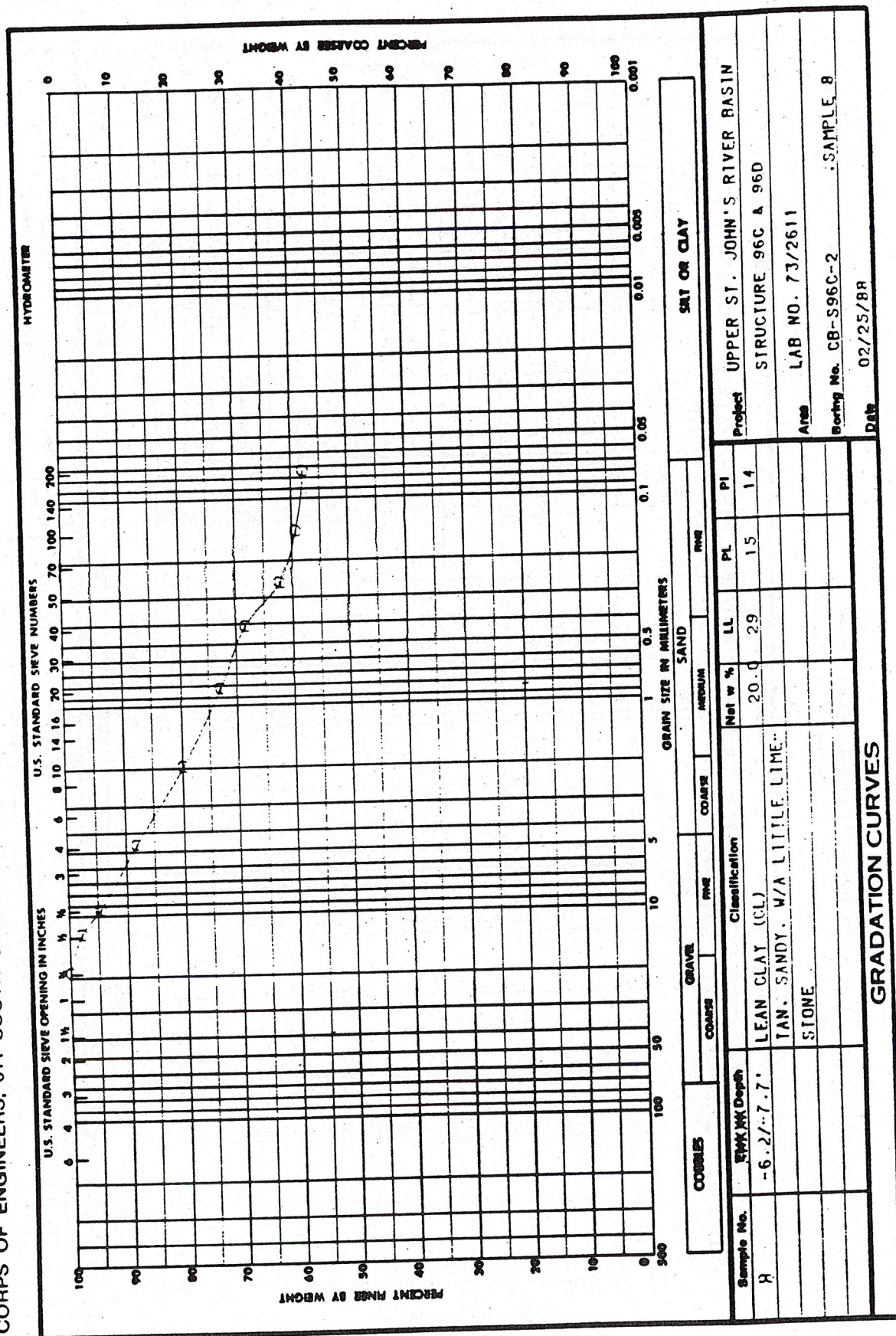
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1 MAY 83

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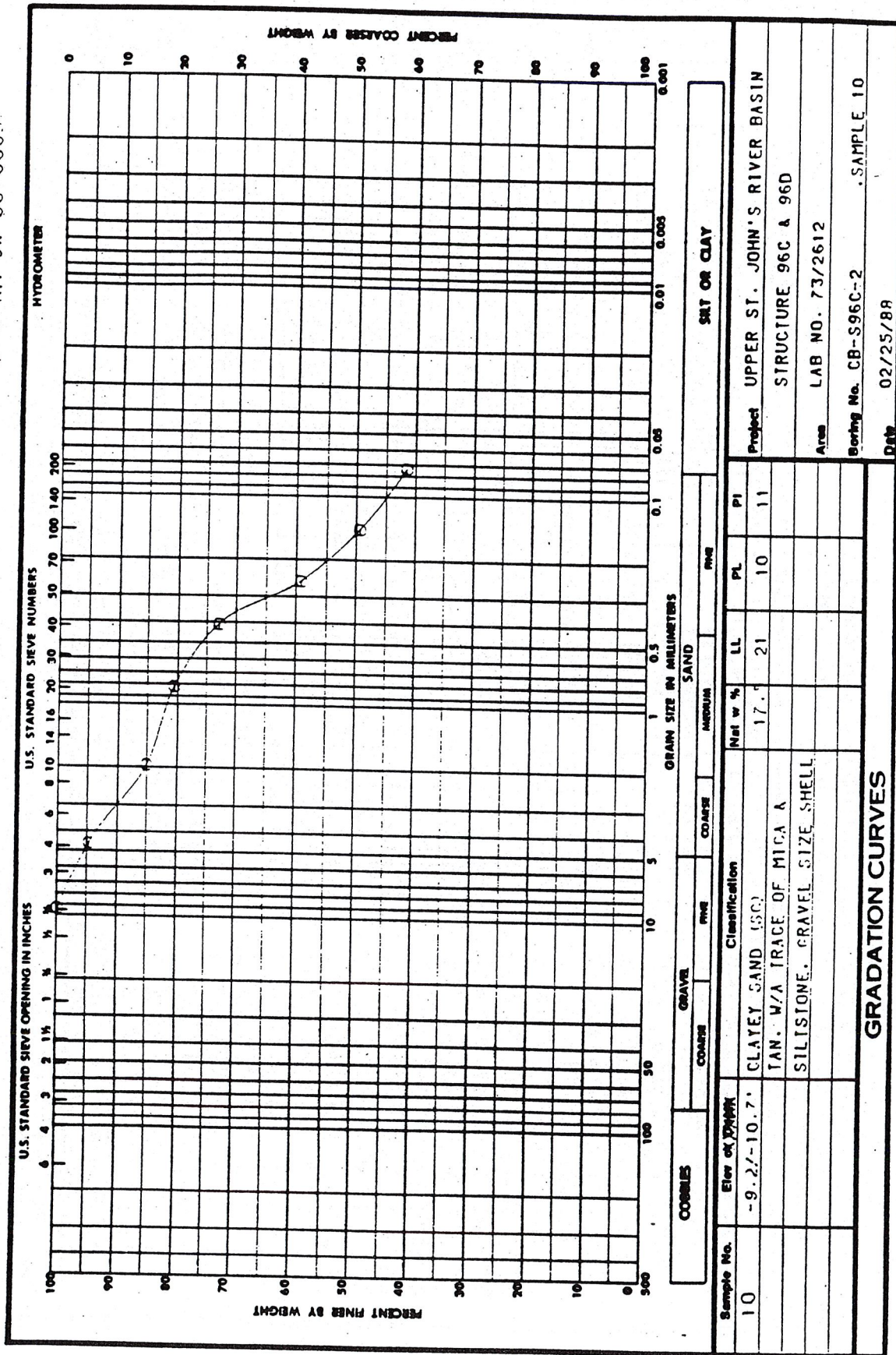
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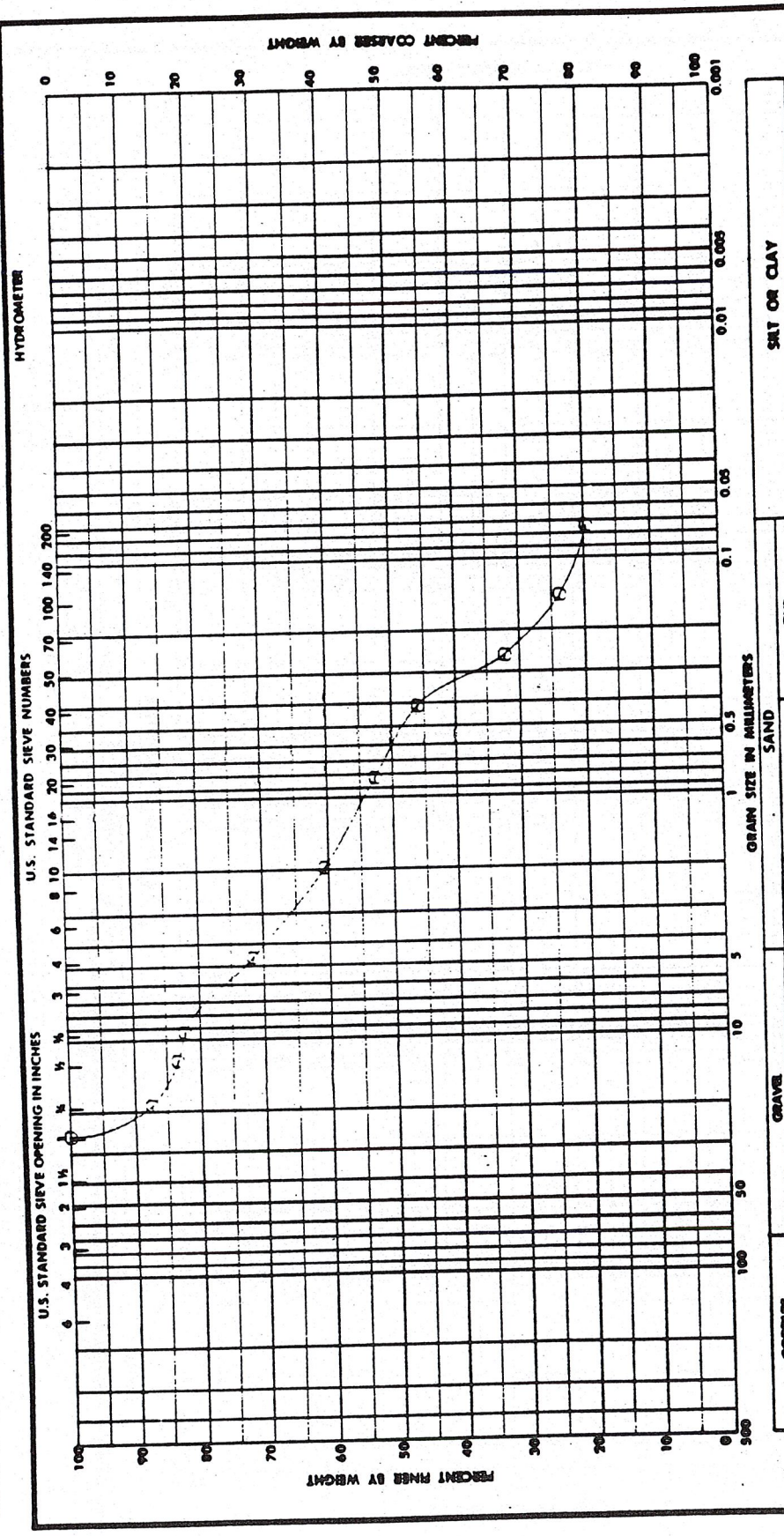
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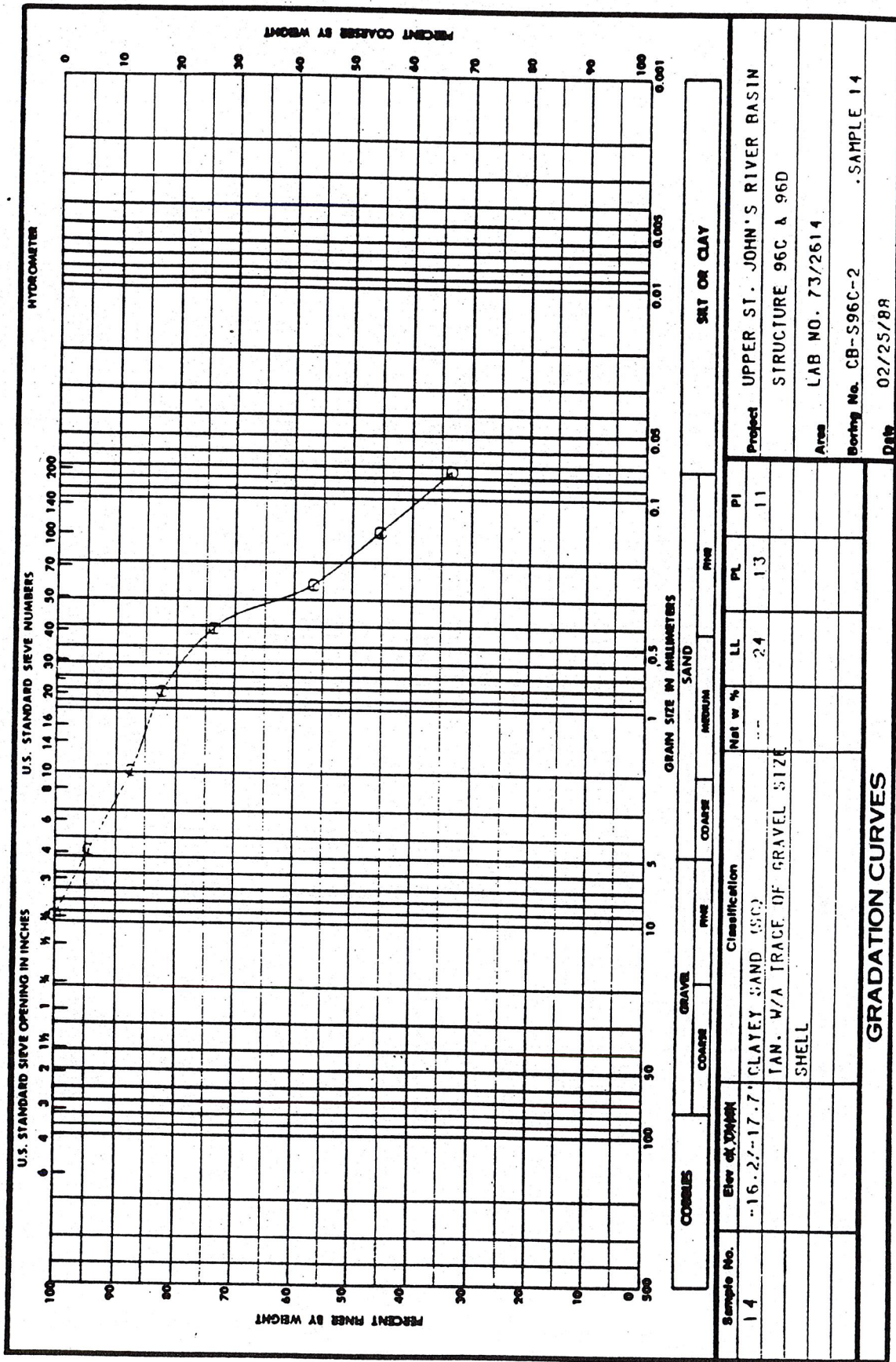




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Req. No. RM-CW-88-0039

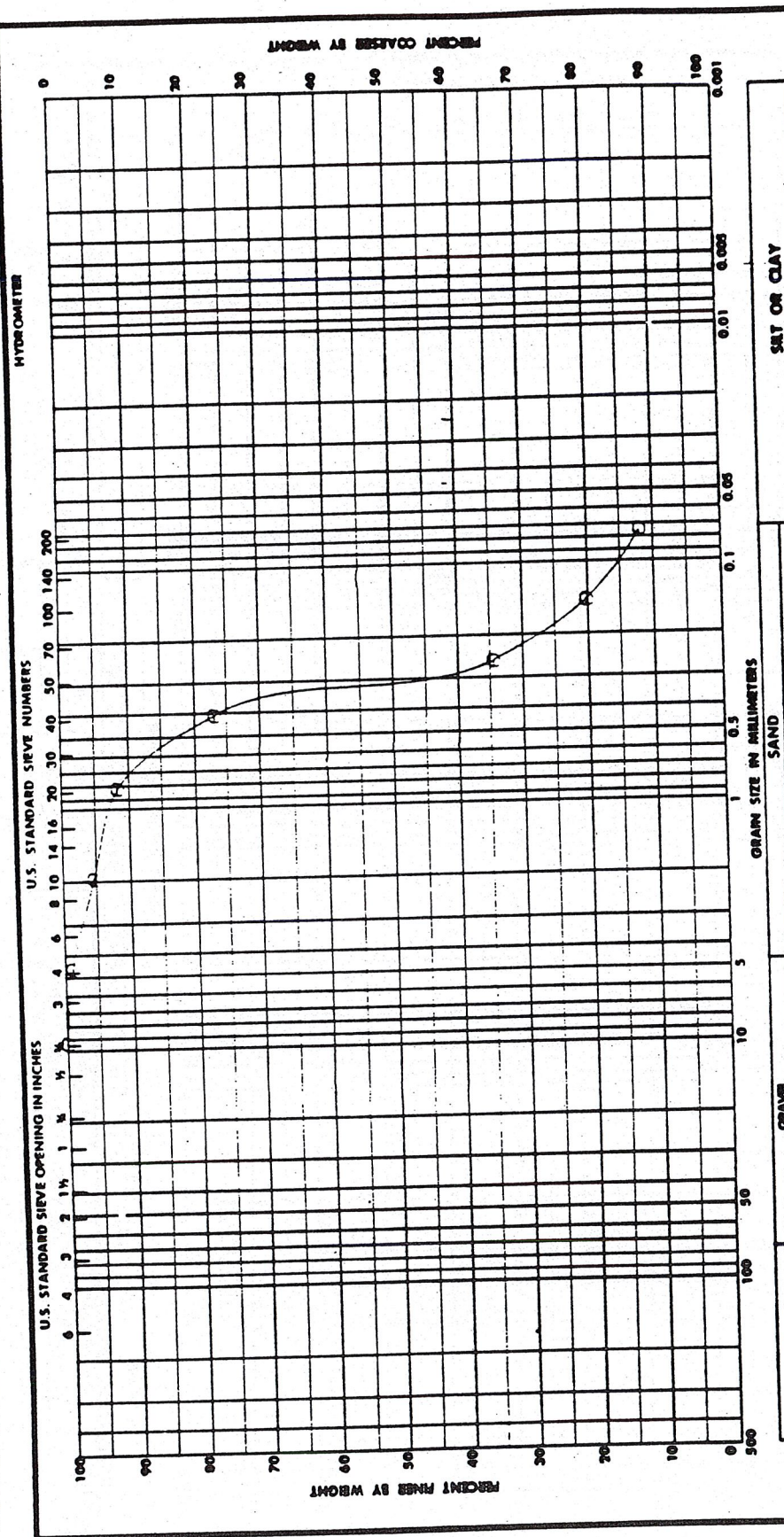


ENG FORM 2087  
1 MAY 63



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 Req. No. RM-CW-88-0039

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Sample No.	15	Elav at 104400	Classification	PL	PI
		-17.7/-19.2	SILTY SAND (SM)	NP	NP
			TAN. W/A TRACE OF MICA A		
			GRAVEL SIZE SHELL		
Project UPPER ST. JOHN'S RIVER BASIN					
Structure 96C A 96D					
Area LAB NO. 73/2615					
Boring No. CB-S96C-2 .SAMPLE 15					
Date 02/25/88					

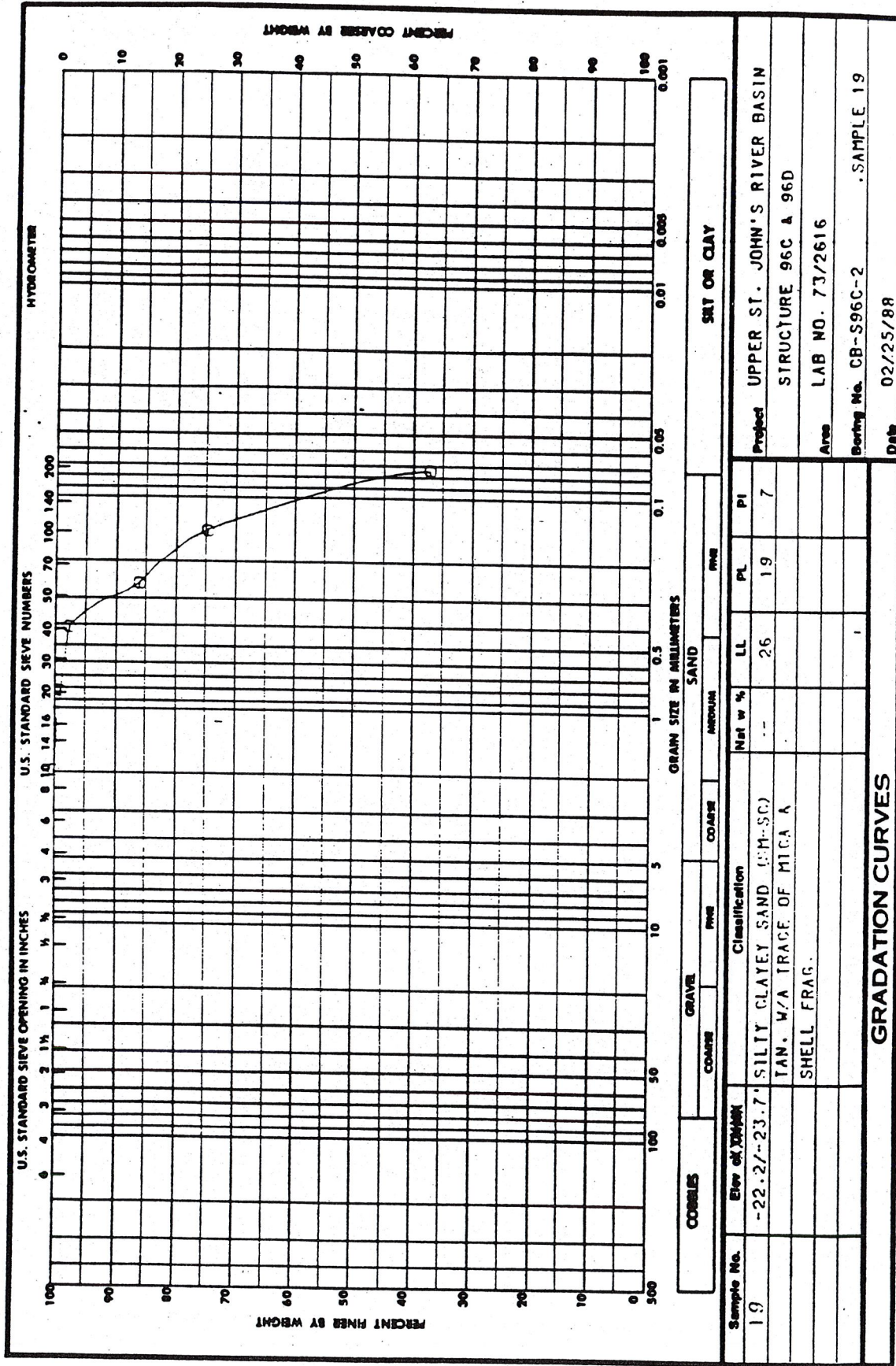
GRADATION CURVES



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

W.O. No. 5468

Req. No. RM-CW-88-0039

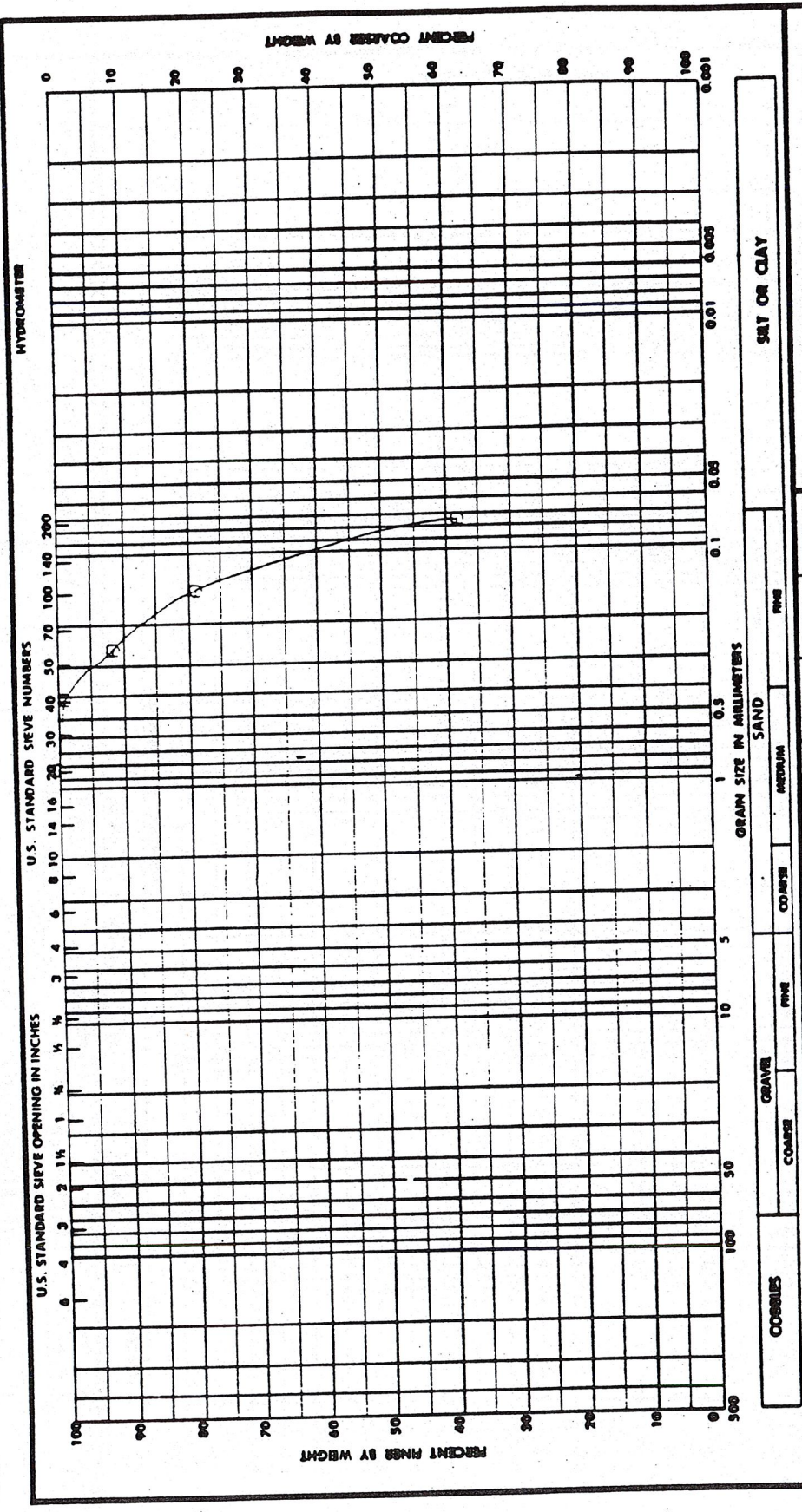


ENG FORM 2087  
1 MAY 63



W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



Sample No.	20	Elev at Station	-23.7/-25.2	Classification	CLAYEY SAND (SC) TAN. W/A TRACE OF MICA & SHELL FRAG.	LL	32	PL	18	PI	14
Project											
UPPER ST. JOHN'S RIVER BASIN											
Structure 96C & 96D											
Area											
LAB NO. 73/2617											
Sorting No. CB-S96C-2											
Date											
02/25/88											
SAMPLE 20											

GRADATION CURVES

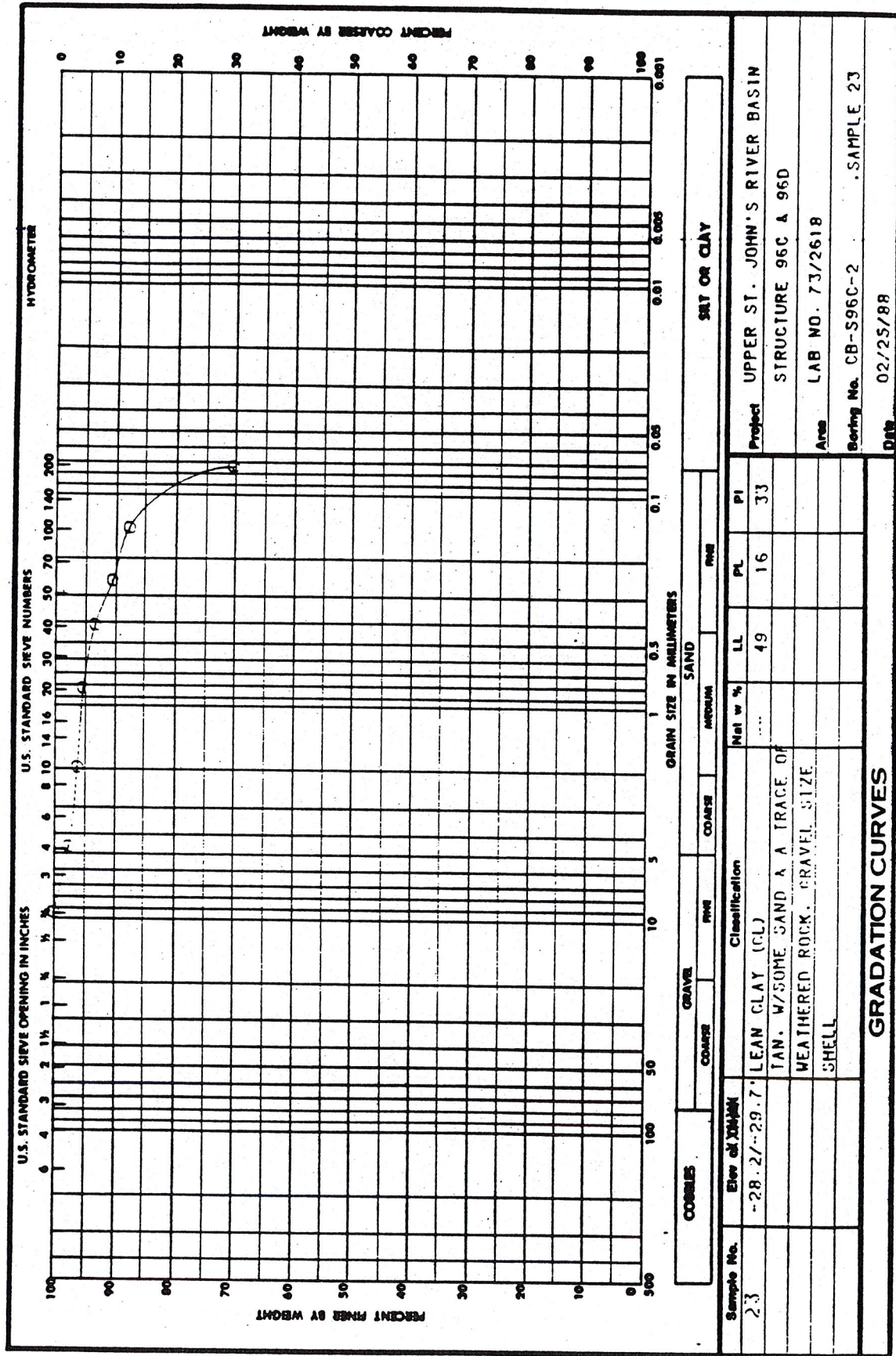
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CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5468

Req. No. RM-CW-88-0039



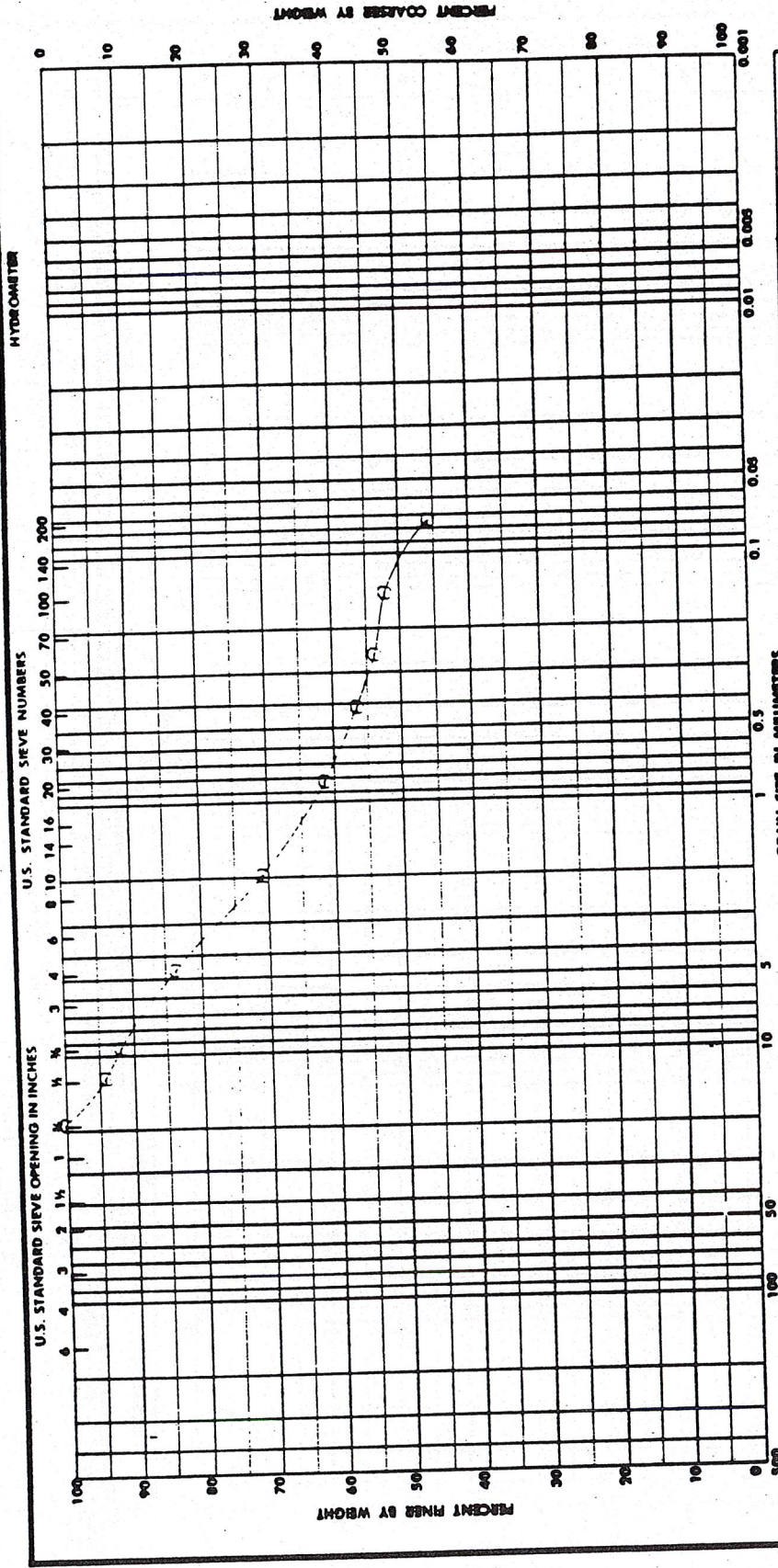
ENG FORM 1 MAY 83 2087

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W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



COBBLES		GRAVEL		SAND		SILT OR CLAY	
Sample No.	Elev of X-Mark	Classification	Net w %	LL	PL	PI	
25	-31.2/-32.7	CLAYEY SAND (SC)	---	42	13	29	
		TAN. W/A LITTLE LIMESTONE A					
		GRAVEL SIZE SHELL					
Project							UPPER ST. JOHN'S RIVER BASIN
Structure							STRUCTURE 96C & 96D
Area							LAB NO. 73/2619
Boring No.							CB-S96C-2
Date							02/25/88
GRADATION CURVES							

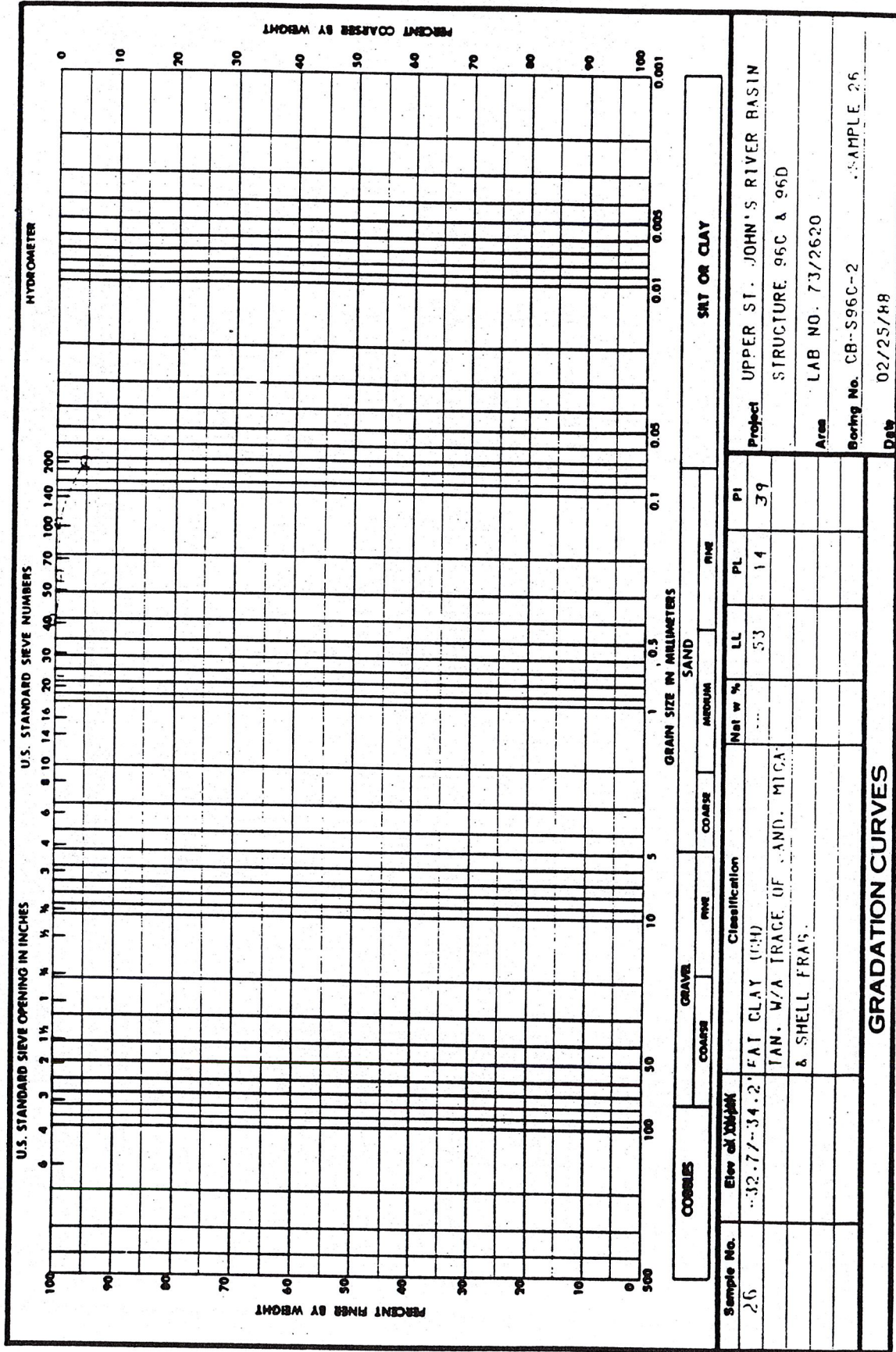
A-47



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

W.O. No. 5468

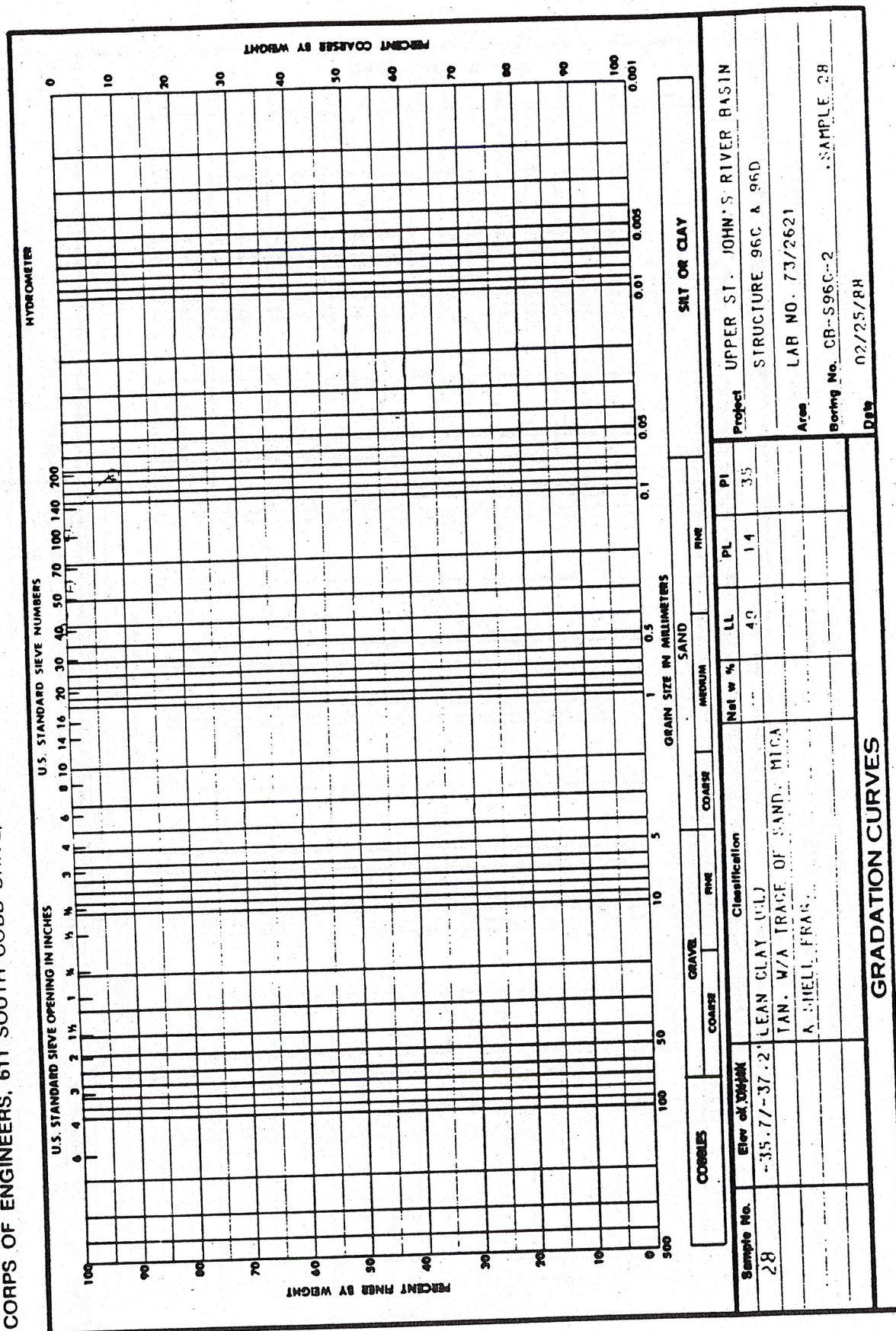
Req. No. RM-CW-88-0039





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

Req. No. RM-CW-88-0039

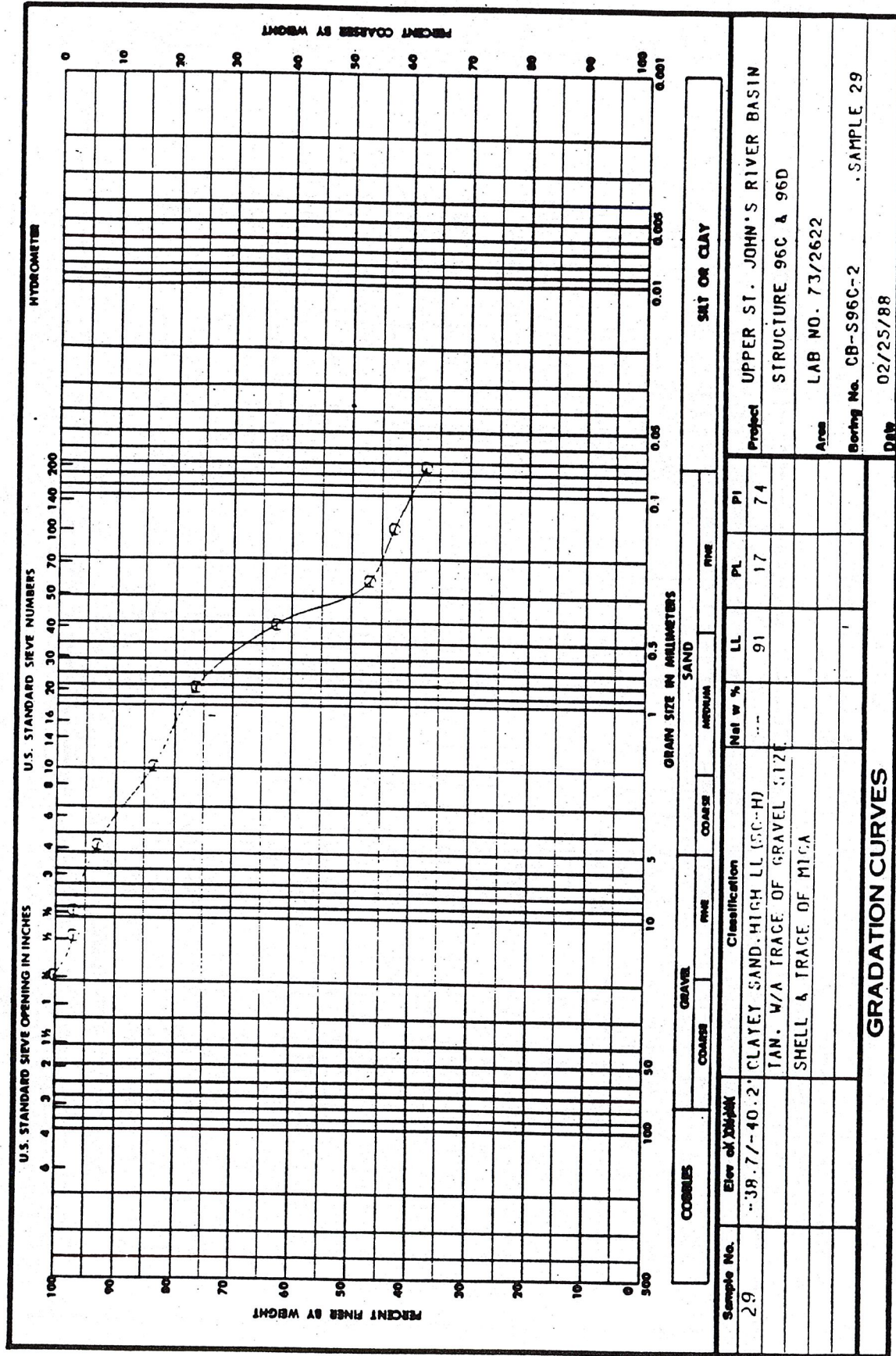




DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY  
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5468

Req. No. RM-CW-88-0039

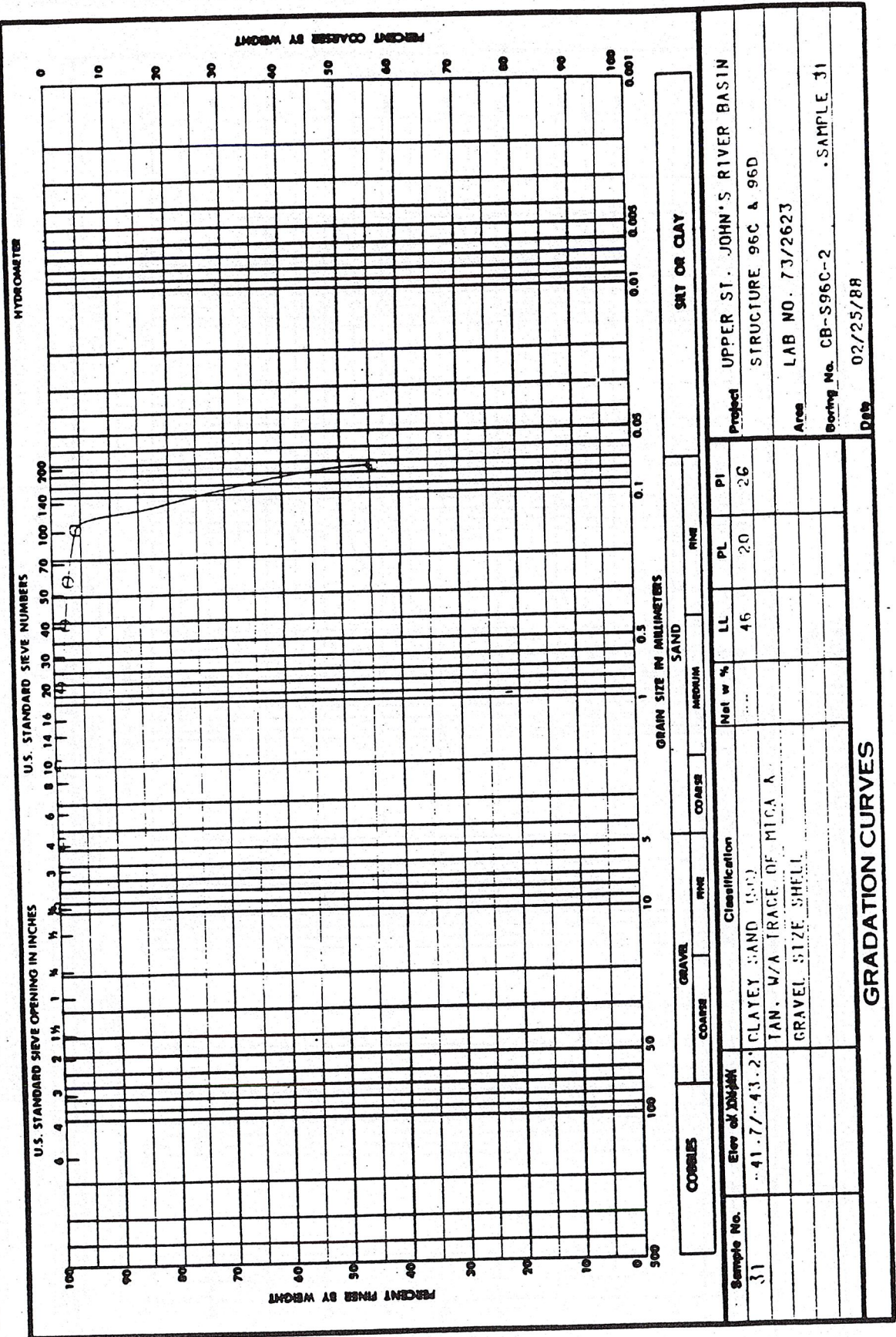


ENG FORM 2087  
1 MAY 63



W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



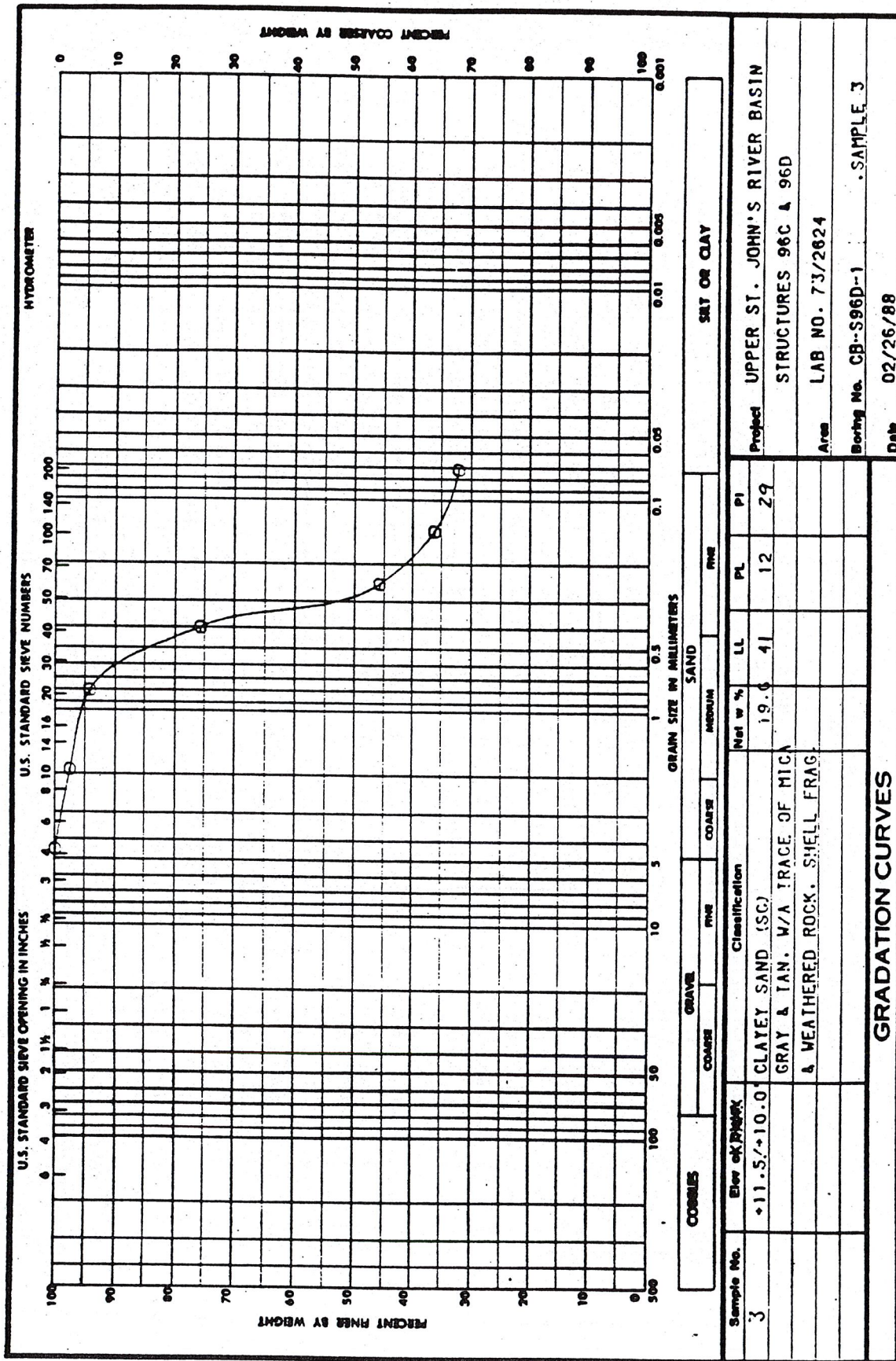
A-51



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

W.O. No. 5468

Req. No. RM-CW-88-0039

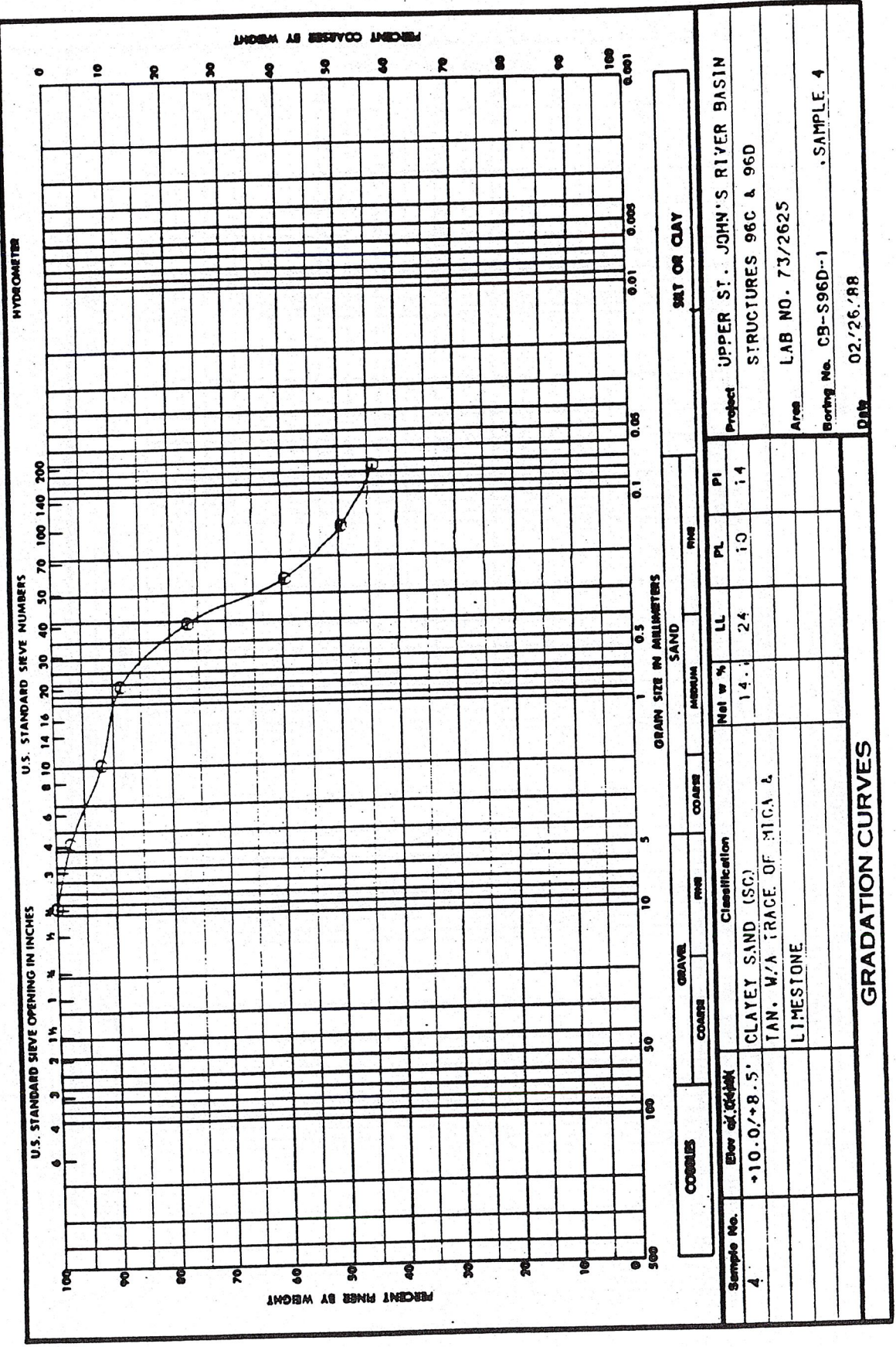


ENG FORM 2087  
1 MAY 63



W.O. No. 5468  
 Reg. No. RM-CW-88-0039

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



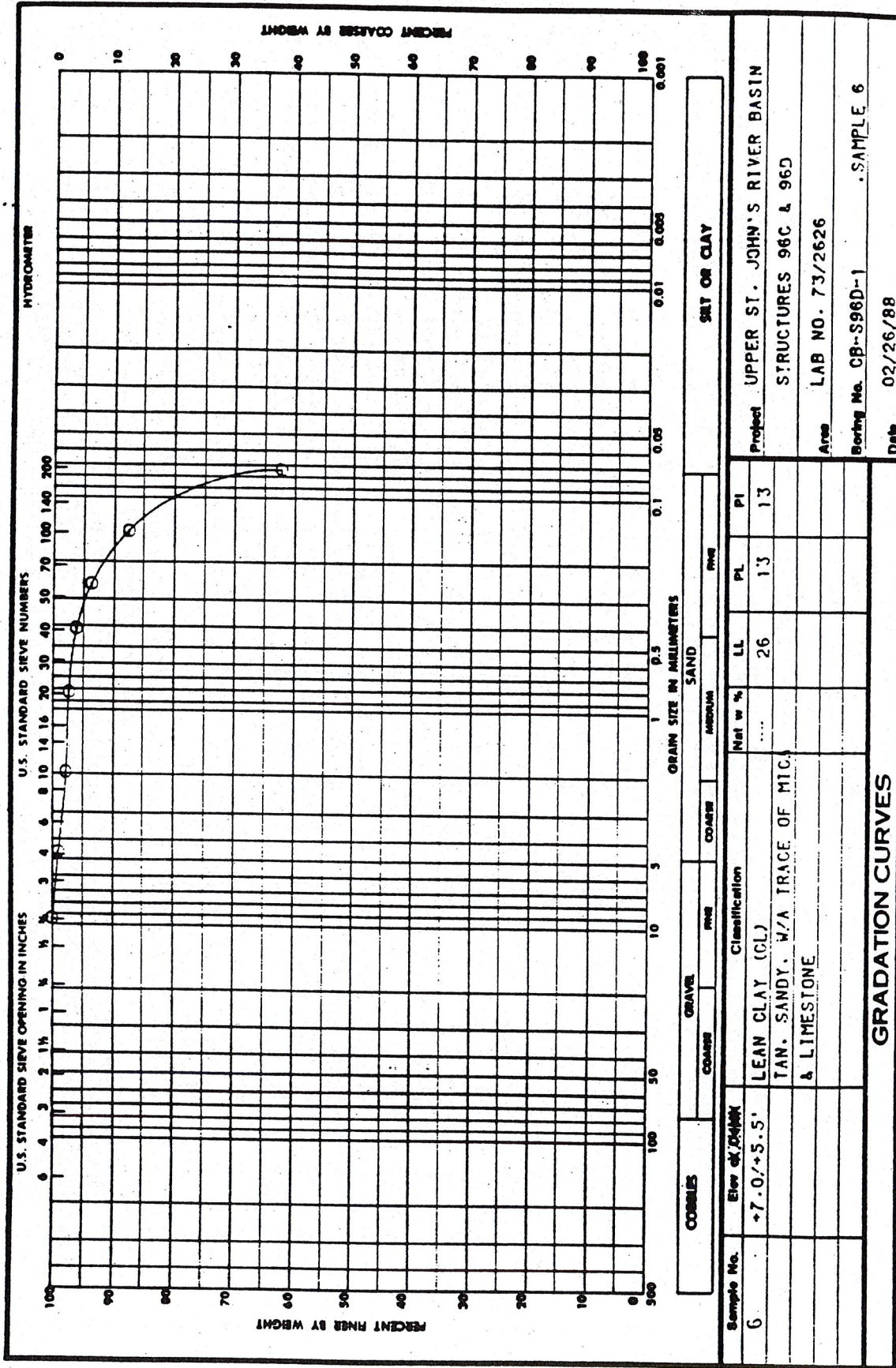
A-53



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

W.O. No. 5468

Req. No. RM-CW-88-0039

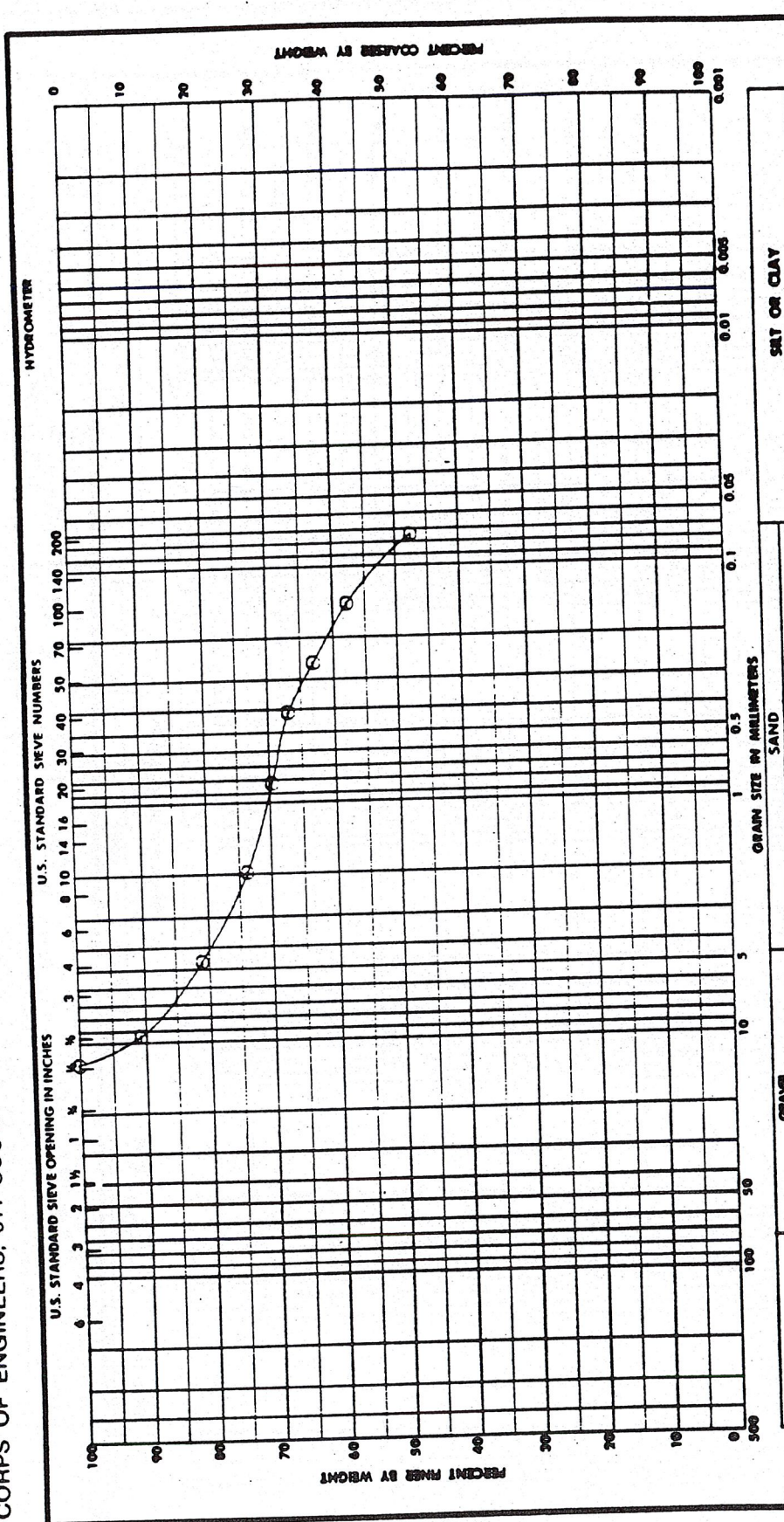


ENG FORM 2087  
1 MAY 63

A-54



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



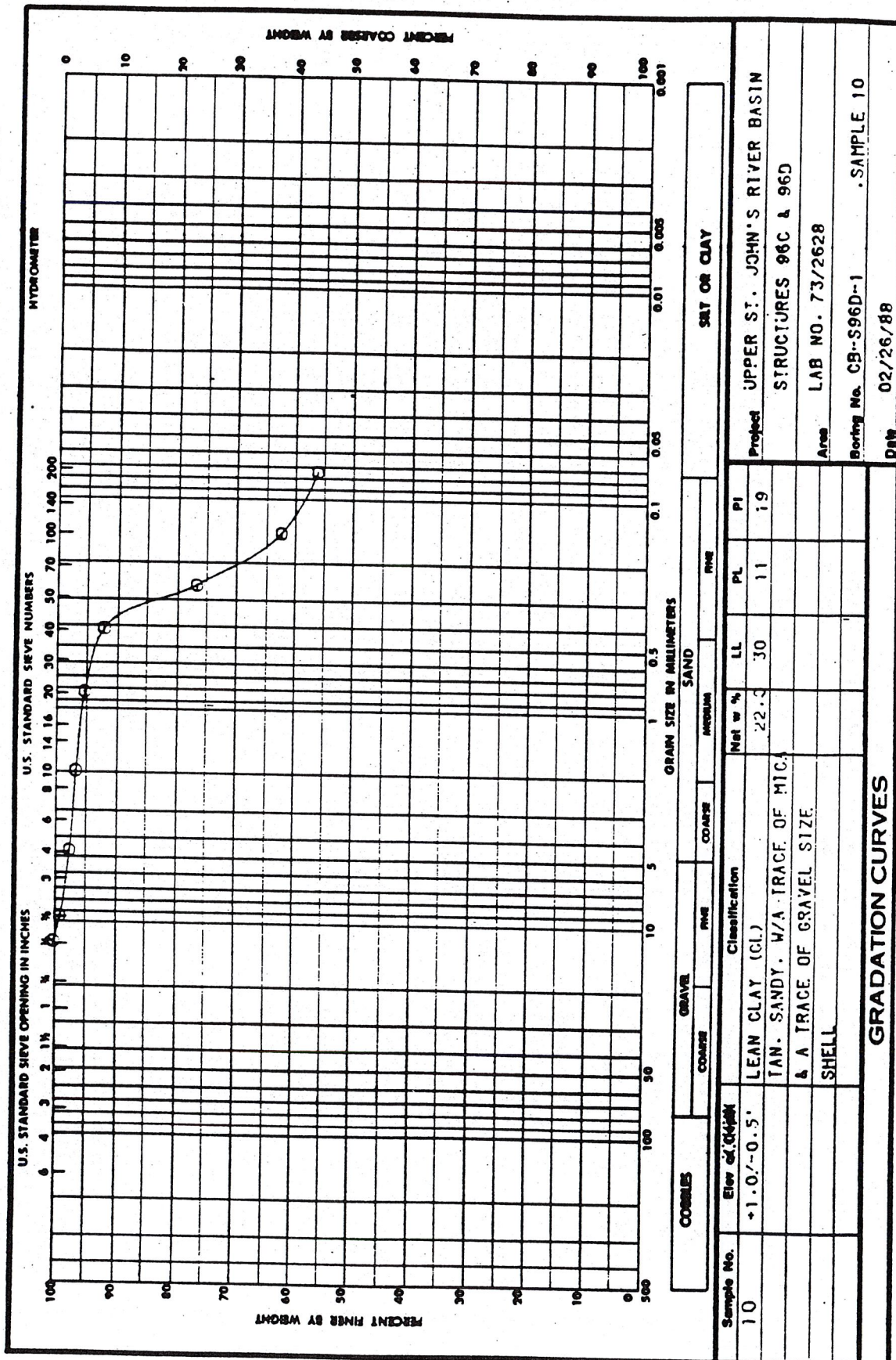
COBBLES		GRAVEL		SAND		FINE SAND		SILT		CLAY		TOTAL	
		COARSE		MEDIUM		FINE		COLLOIDAL		FINE		TOTAL	
Sample No.	Elev at Depth	Classification						Nat w %	LL	PL	PI		
8	+4.0/-2.5'	CLAYEY SAND (SC)						---	25	13	12		
		TAN. W/A TRACE OF MICA & A/											
		LITTLE LIMESTONE											
		Project UPPER ST. JOHN'S RIVER BASIN											
		STRUCTURES 96C & 96D											
		LAB NO. 73/2627											
		Area											
		Boring No. CB-S96D-1											
		SAMPLE 8											
		Date 02/26/88											
GRADATION CURVES													



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

W.O. No. 5468

Req. No. RM-CW-88-0039

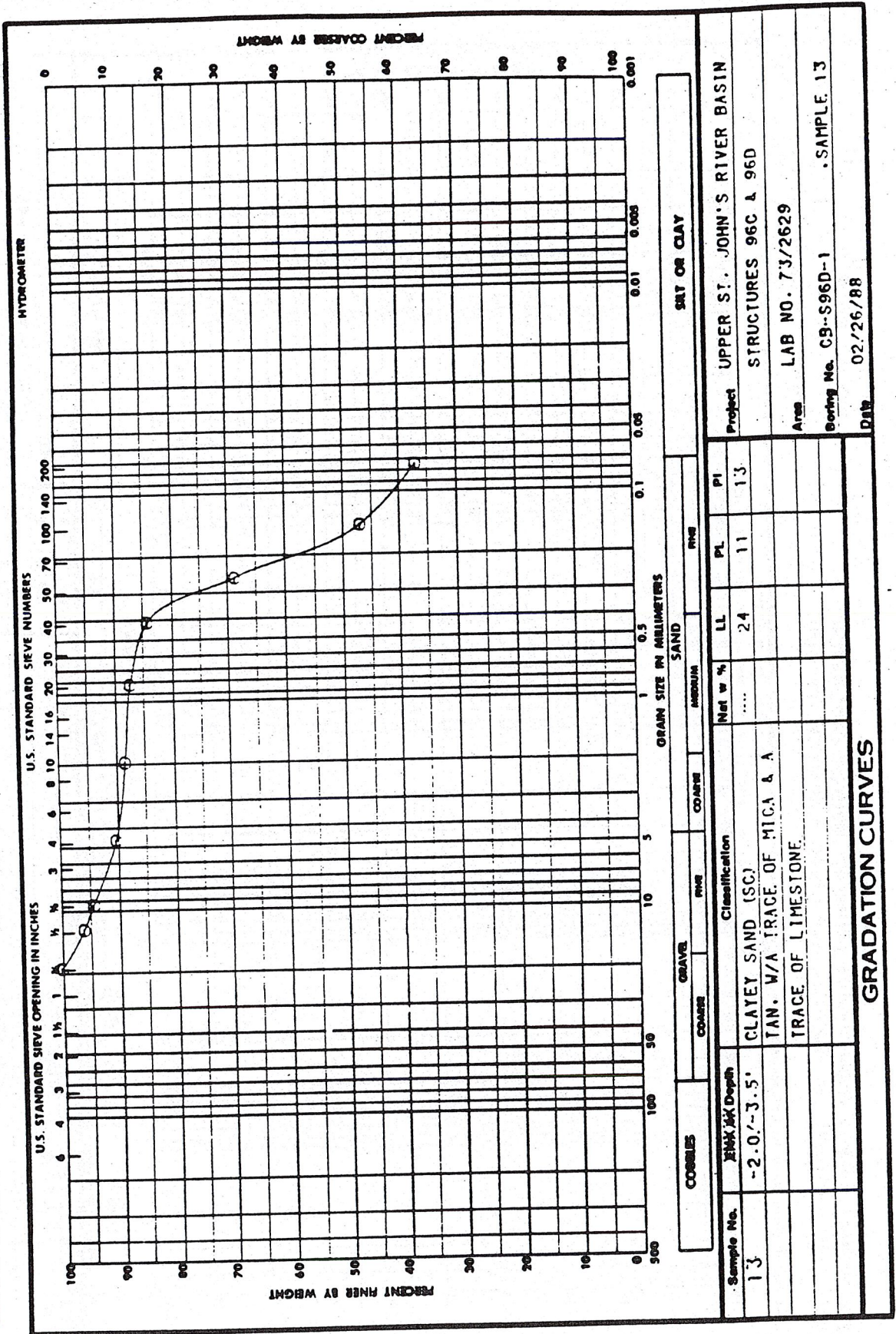


ENG FORM 1 MAY 63 2087



W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



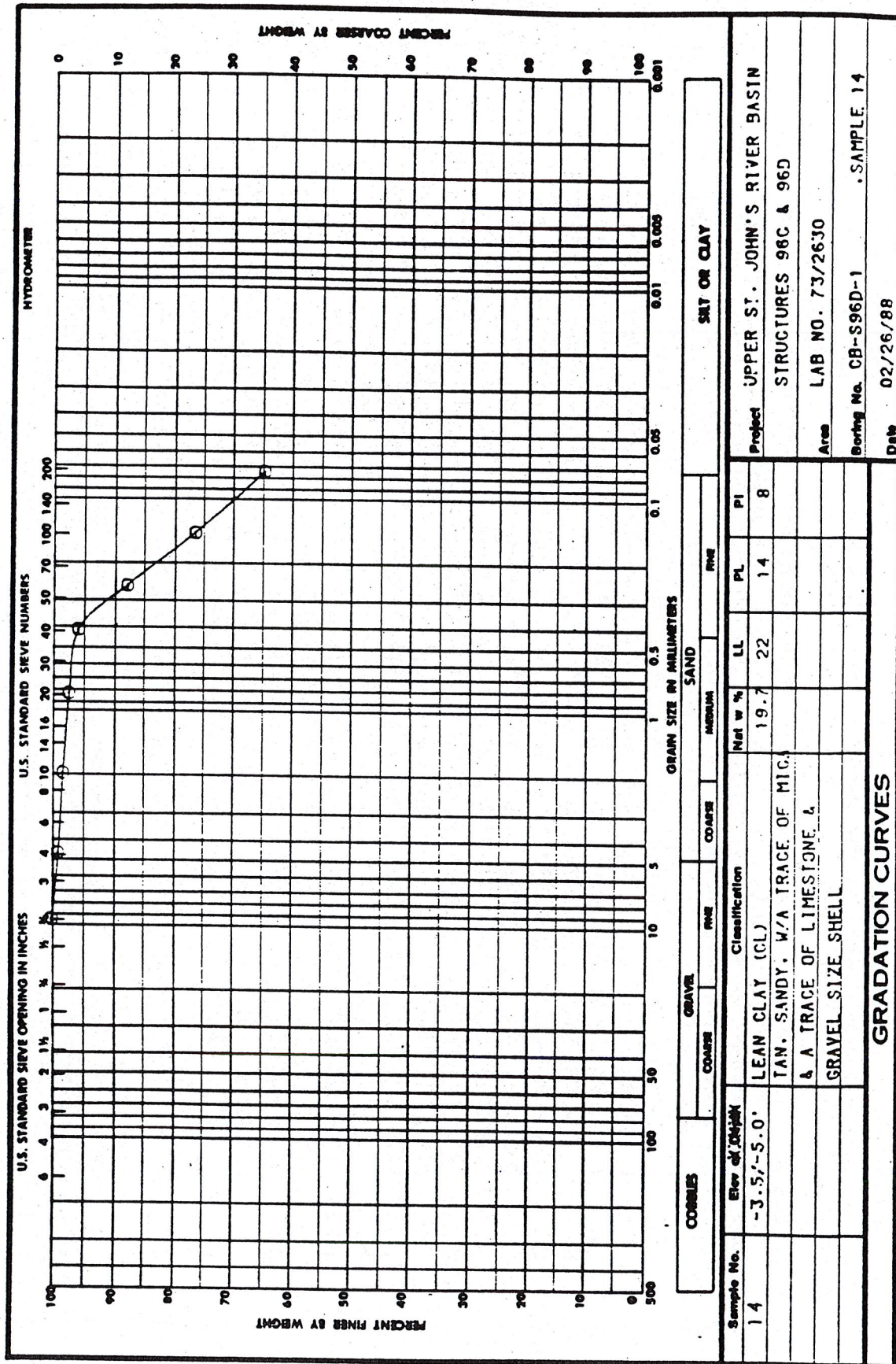
A-57



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

W.O. No. 5468

Req. No. RM-CW-88-0039



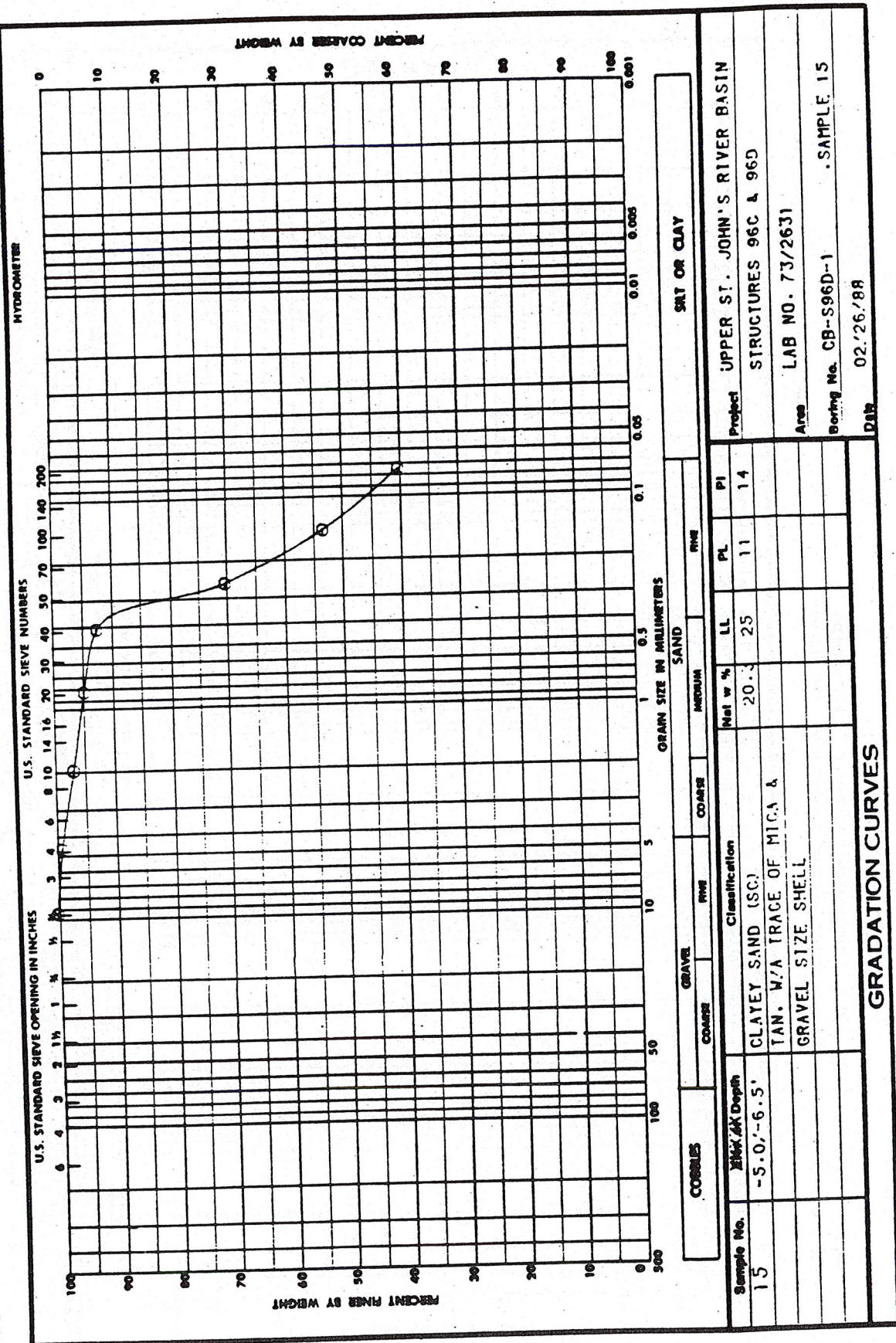
ENG FORM 2087  
1 MAY 63

A-58



W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



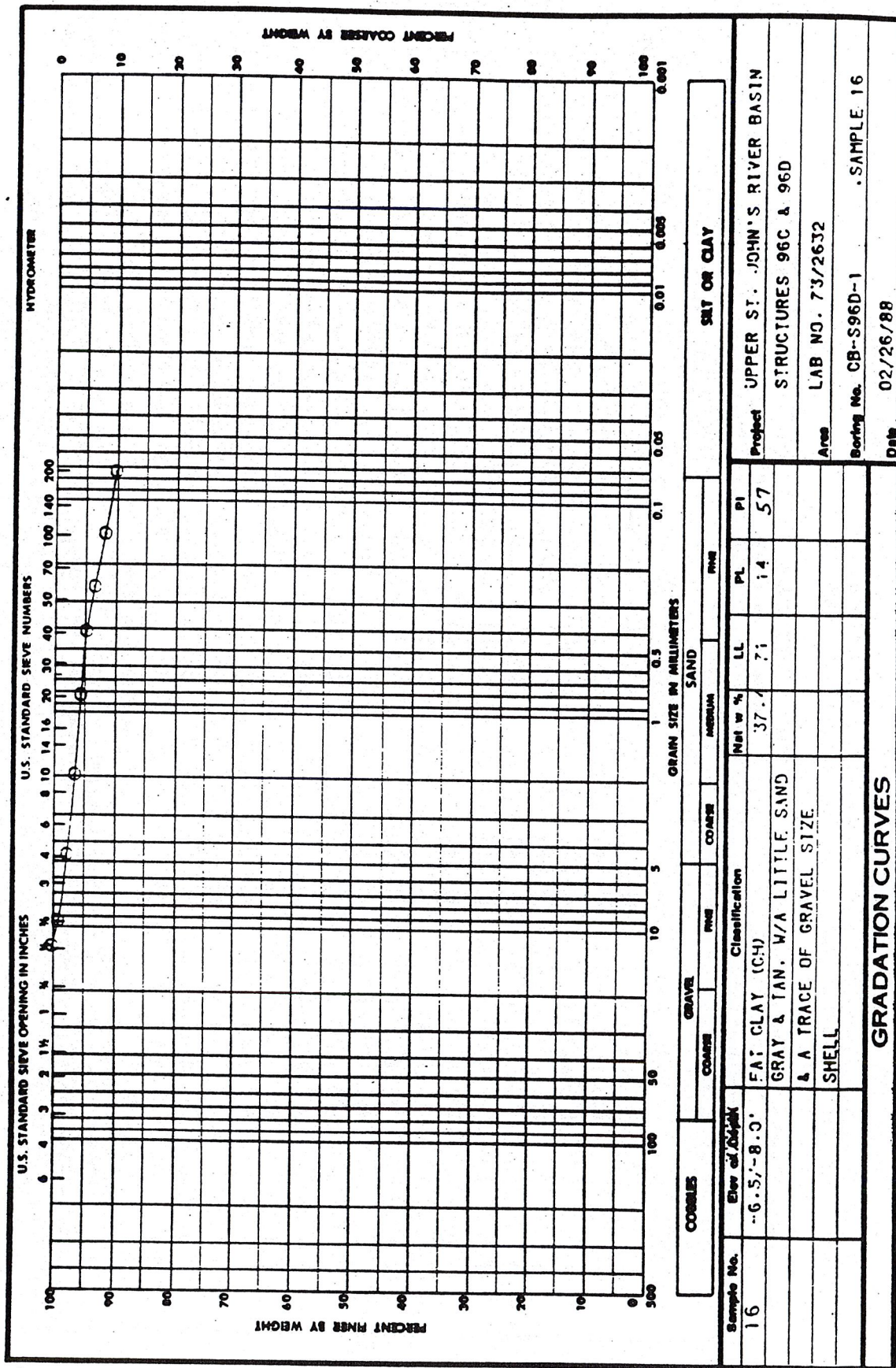
A-59



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

W.O. No. 5468

Req. No. RM-CW-88-3039

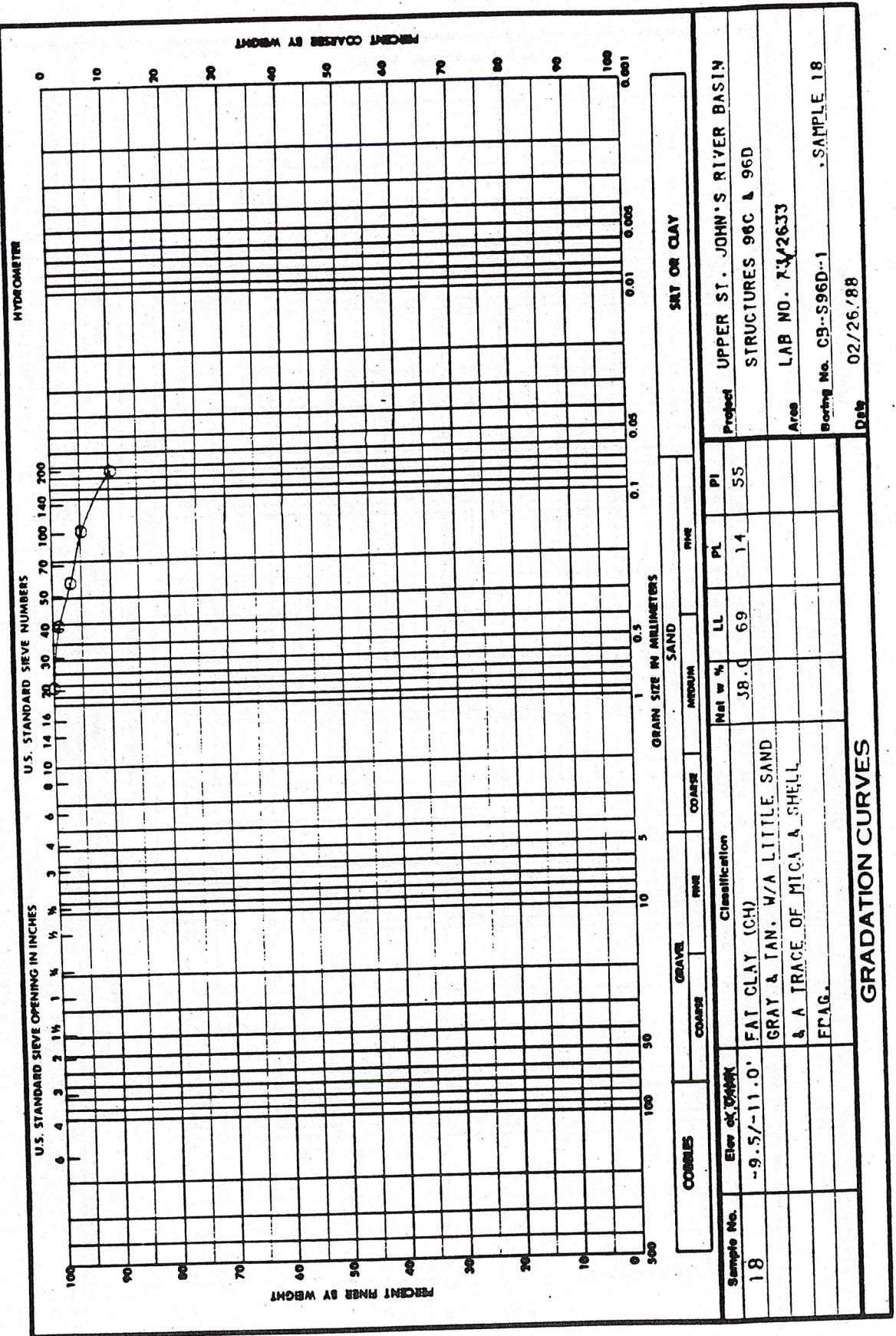


ENG FORM 1 MAY 85 2087

A-60



W.O. No. 5468  
 Req. No. RM-CW-88-0039  
 DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY  
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

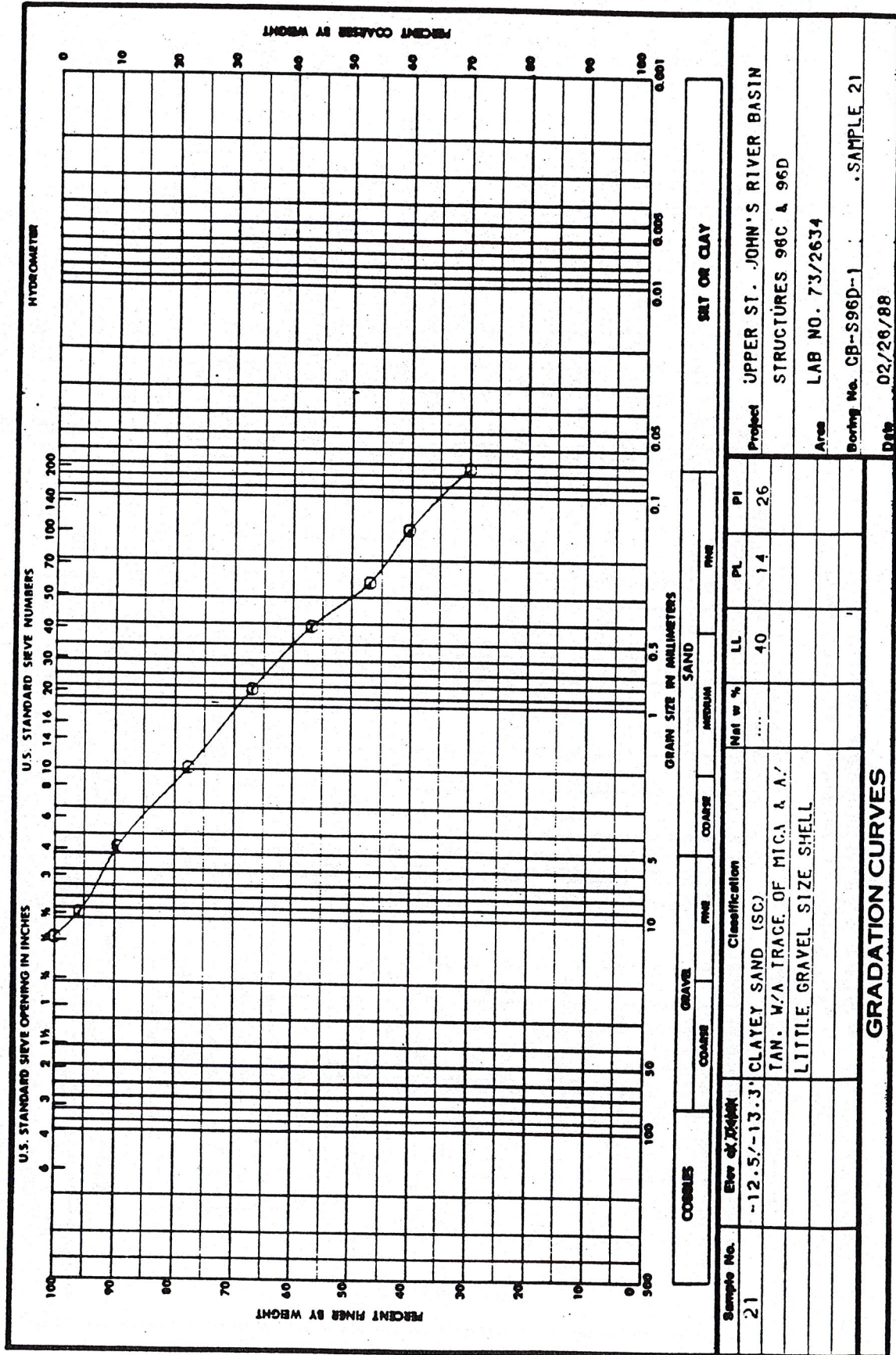




DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY  
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5468

Req. No. RM-CW-88-0039



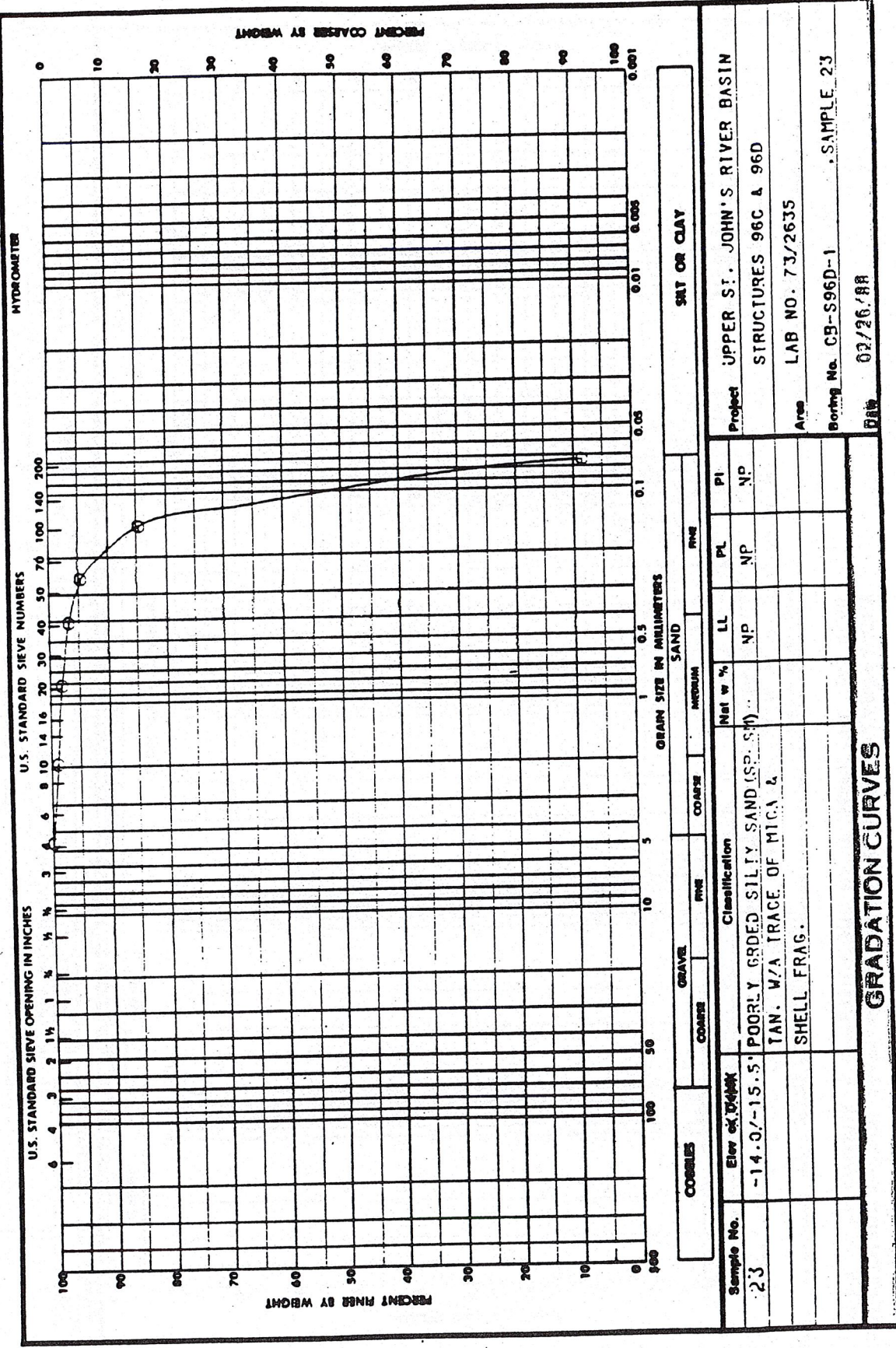
ENG FORM 2087  
1 MAY 63

A-62



W.O. No. 5468  
 Reg. No. RM-CW-88-0039

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



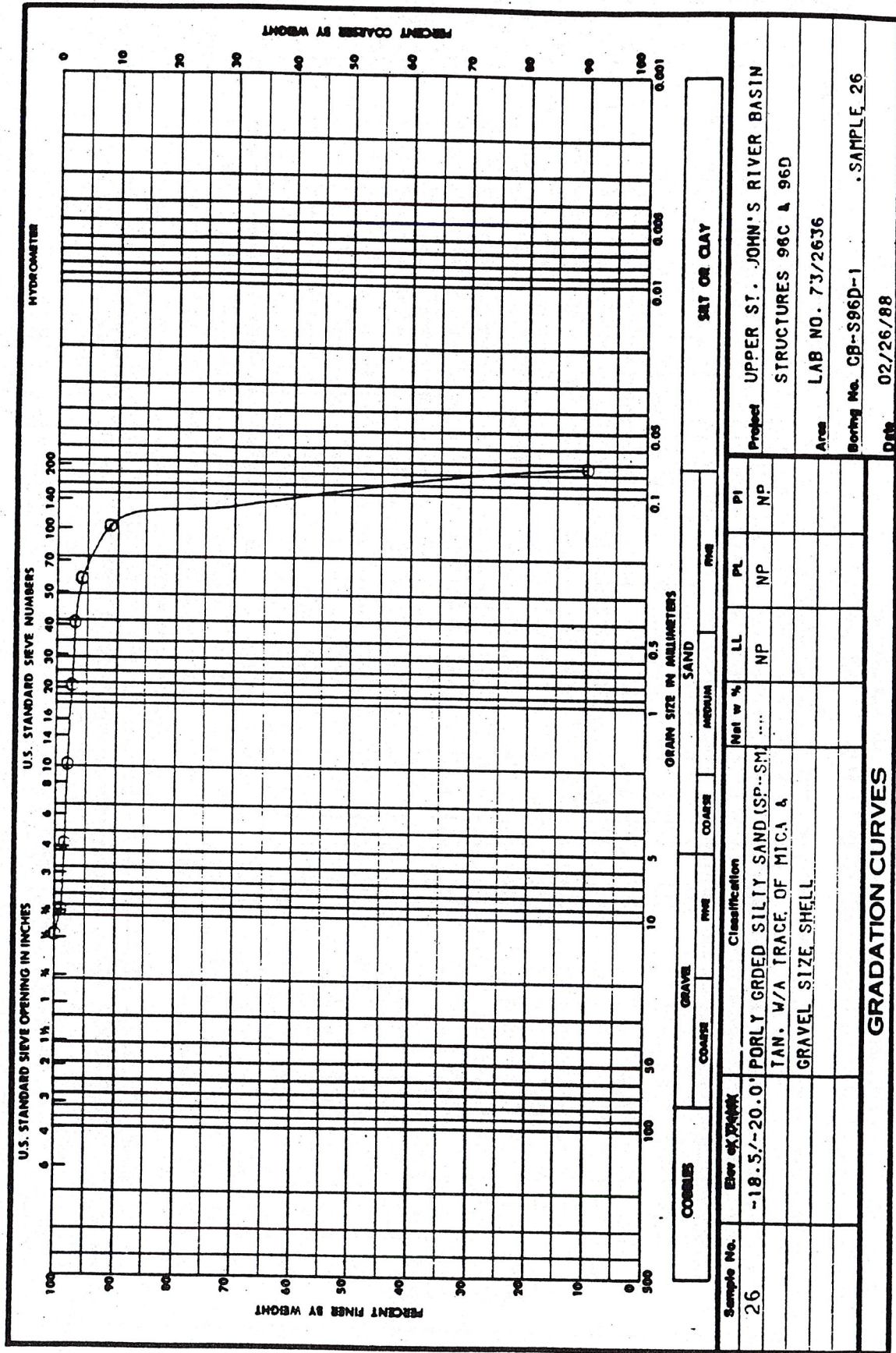
A-63



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

W.O. No. 5468

Req. No. RM-CW-88-0039

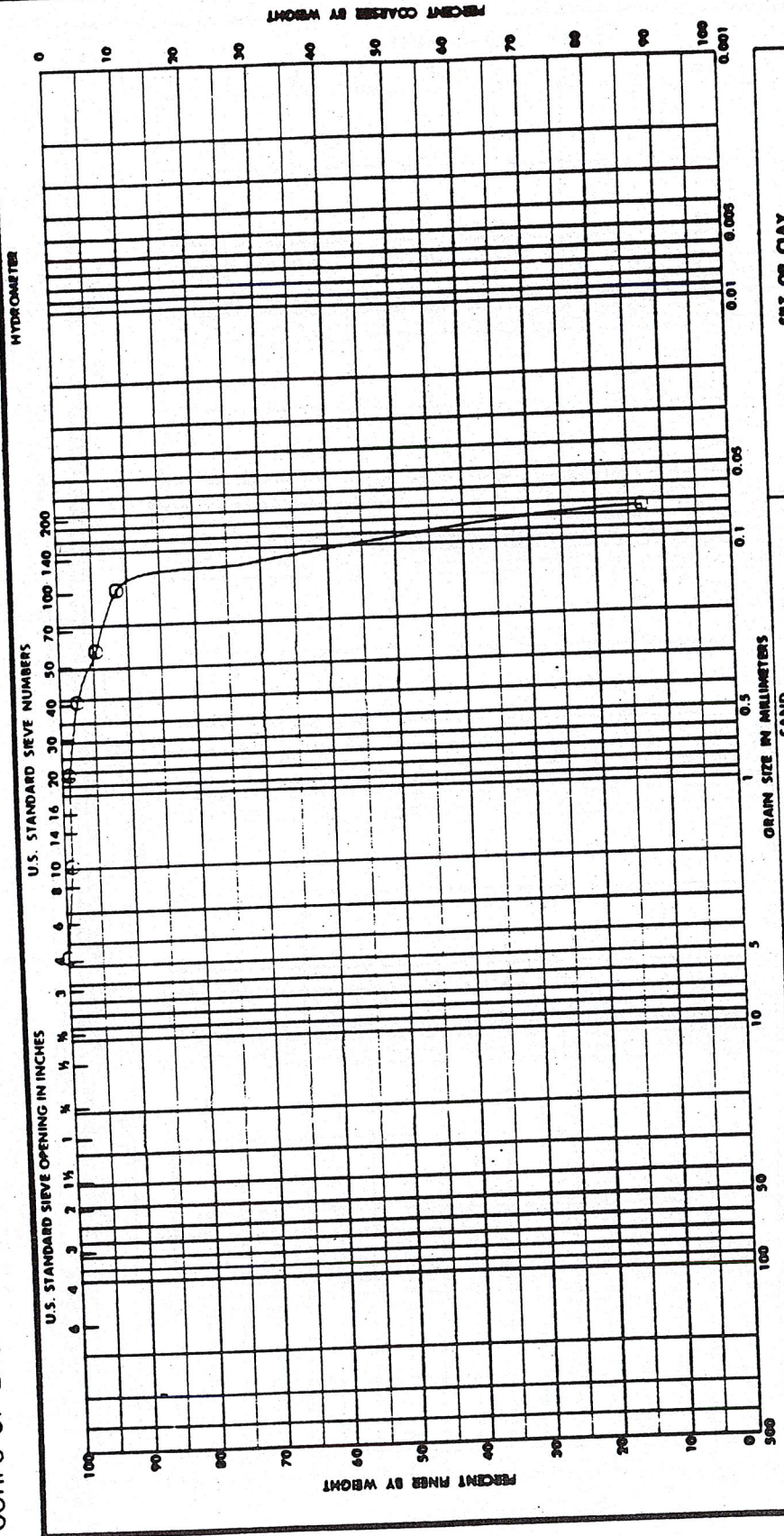


ENG FORM 2087  
1 MAY 63

A-64



W.O. No. 5468  
 Req. No. RM-CW-88-0039  
 DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY  
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060



COBBLES		GRAVEL		FINE SAND		MEDIUM SAND		FINE SAND		SILT OR CLAY	
Sample No.	Elev of Dd/KK	Classification		LL	NP	PL	NP	PI	NP	Project	
30	-24.5/-26.0'	SILT SAND (SM)		NP	NP	NP	NP	NP	NP	UPPER ST. JOHN'S RIVER BASIN	
		TAN. W/A TRACE OF MICA &								STRUCTURES 96C & 96D	
		SHELL FRAG.								LAB NO. 73/2637	
										Area	
										Boring No. CB-S96D-1	
										Date	
										02/26/88	

GRADATION CURVES

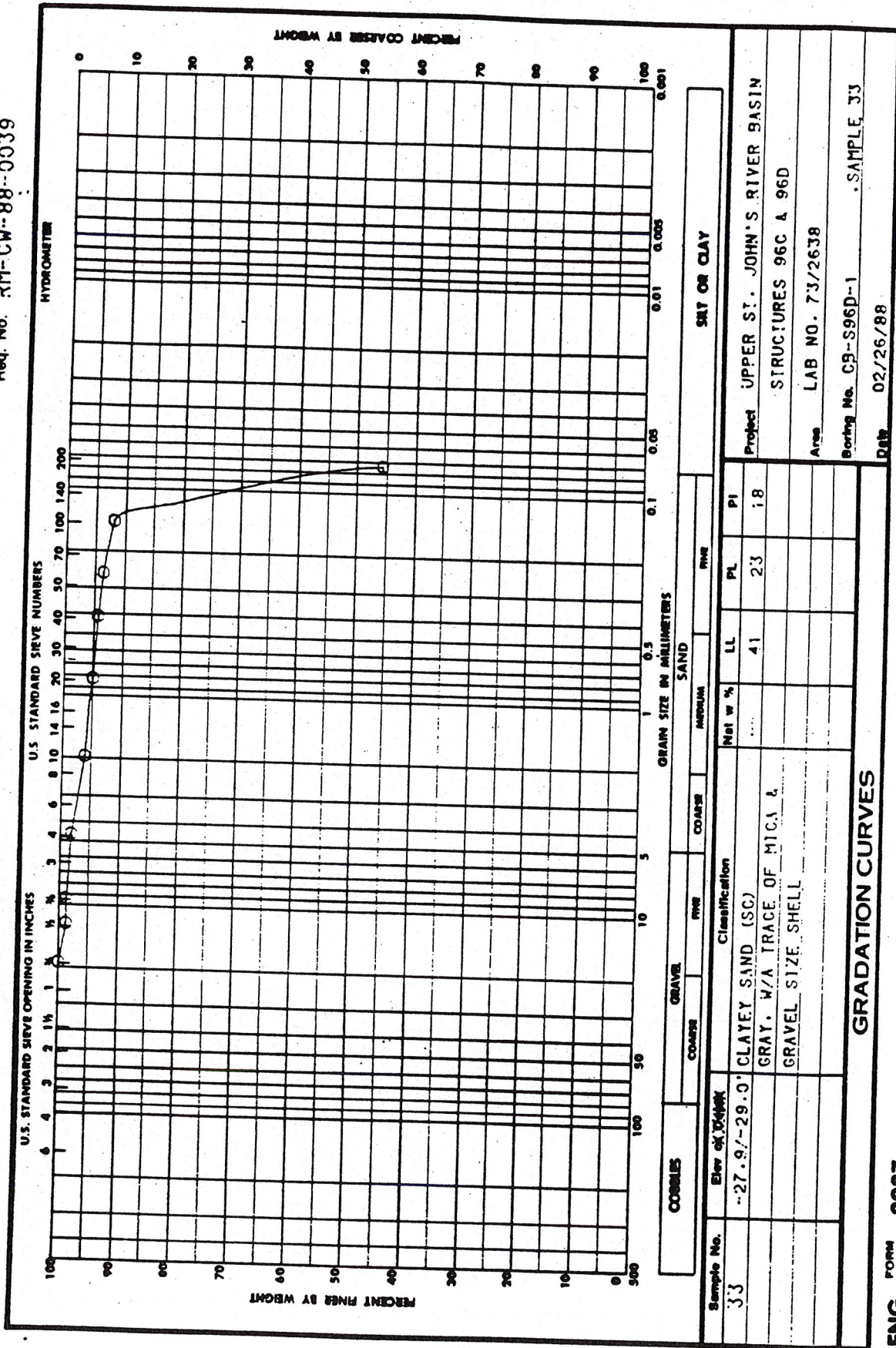
A-65



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

W.O. No. 5468

Req. No. RM-CW-88-0039



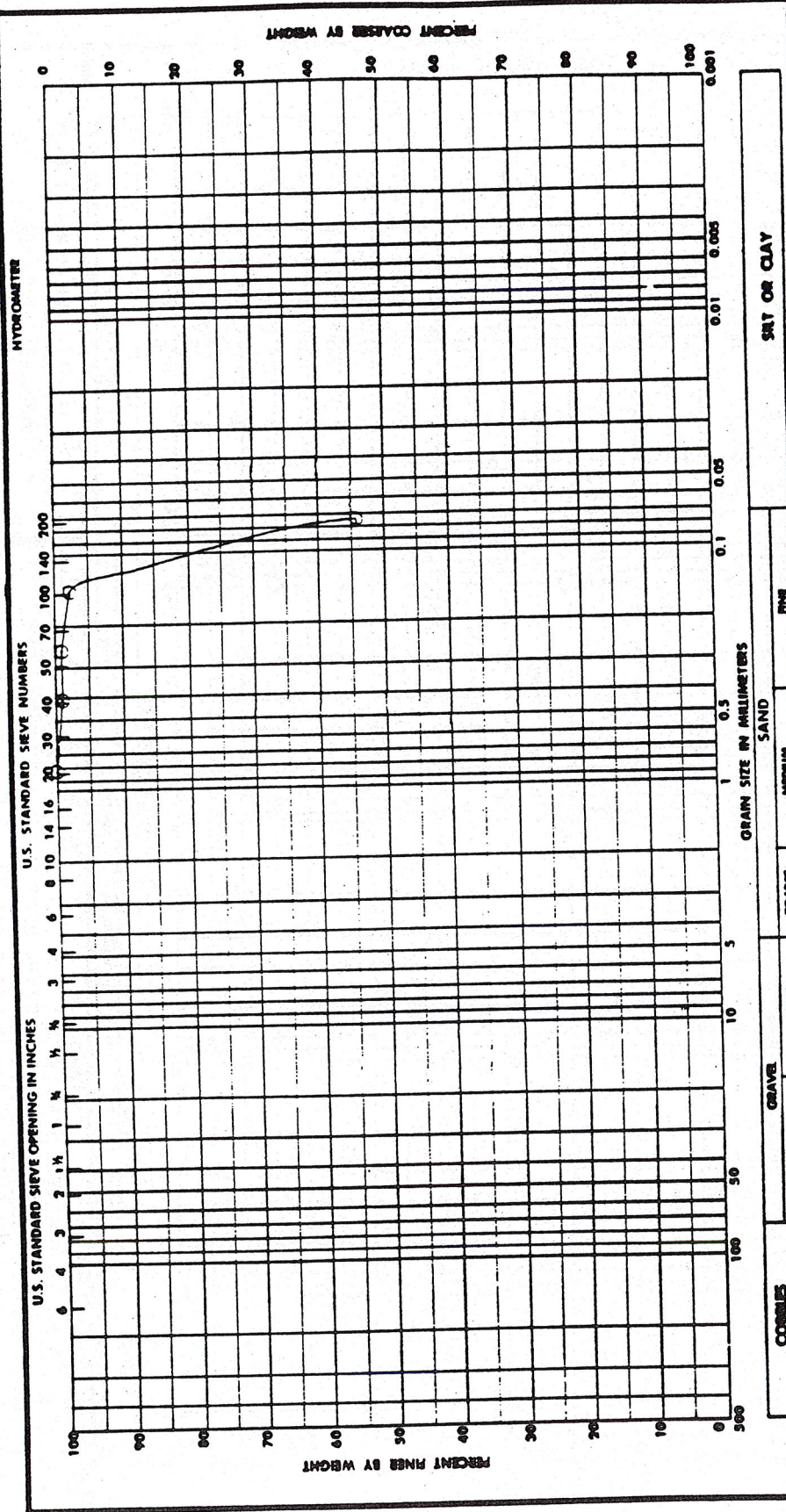
ENG FORM 2087  
1 MAY 63

A-66



W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



Sample No.	Projct	UPPER ST. JOHN'S RIVER BASIN
37	STRUCTURES 96C & 96D	
	LAB NO. 73/2639	
	Boring No. CB-S96D-1	SAMPLE 37
	DATE	02/26/88

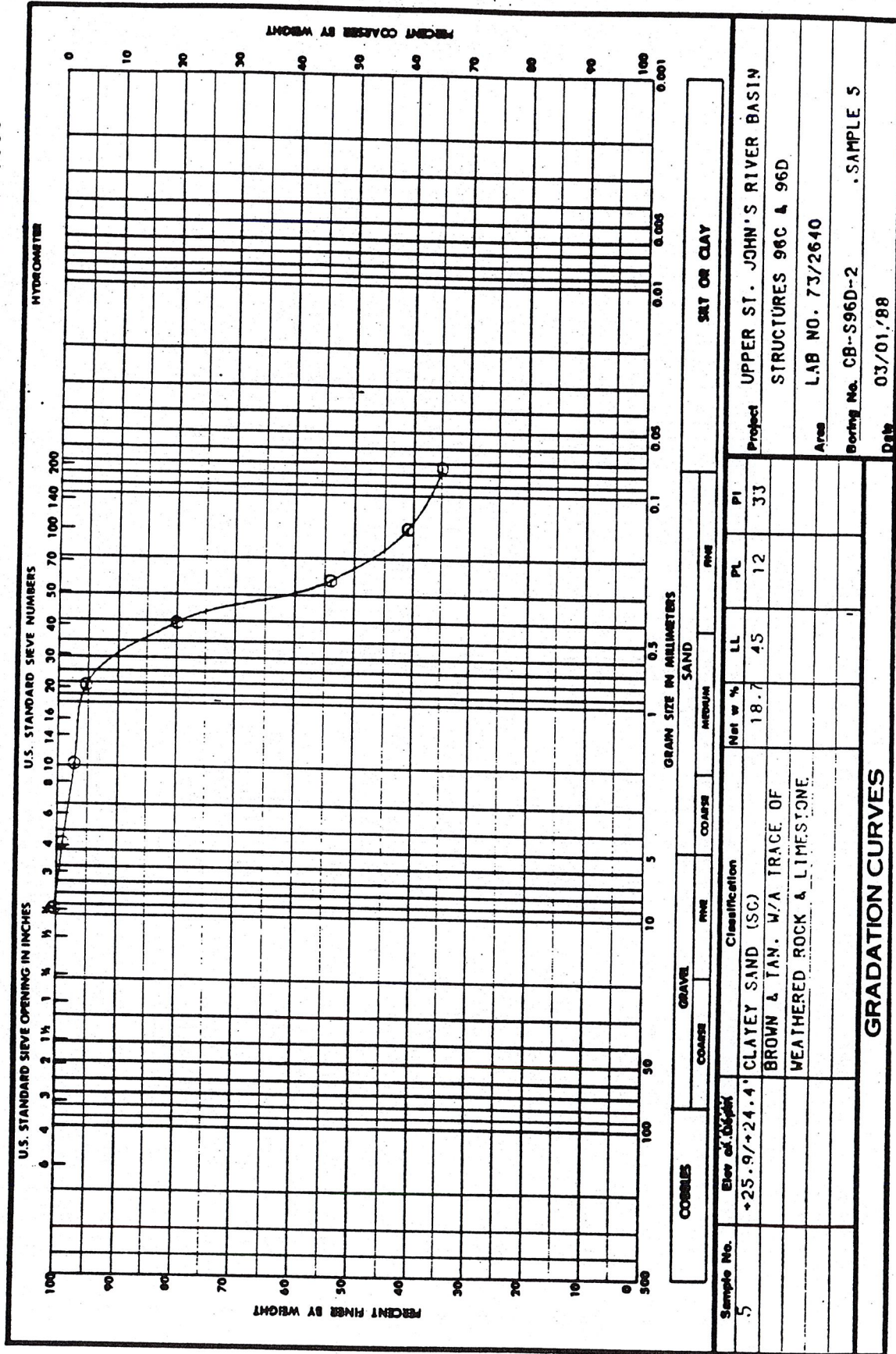
GRADATION CURVES

A-67



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

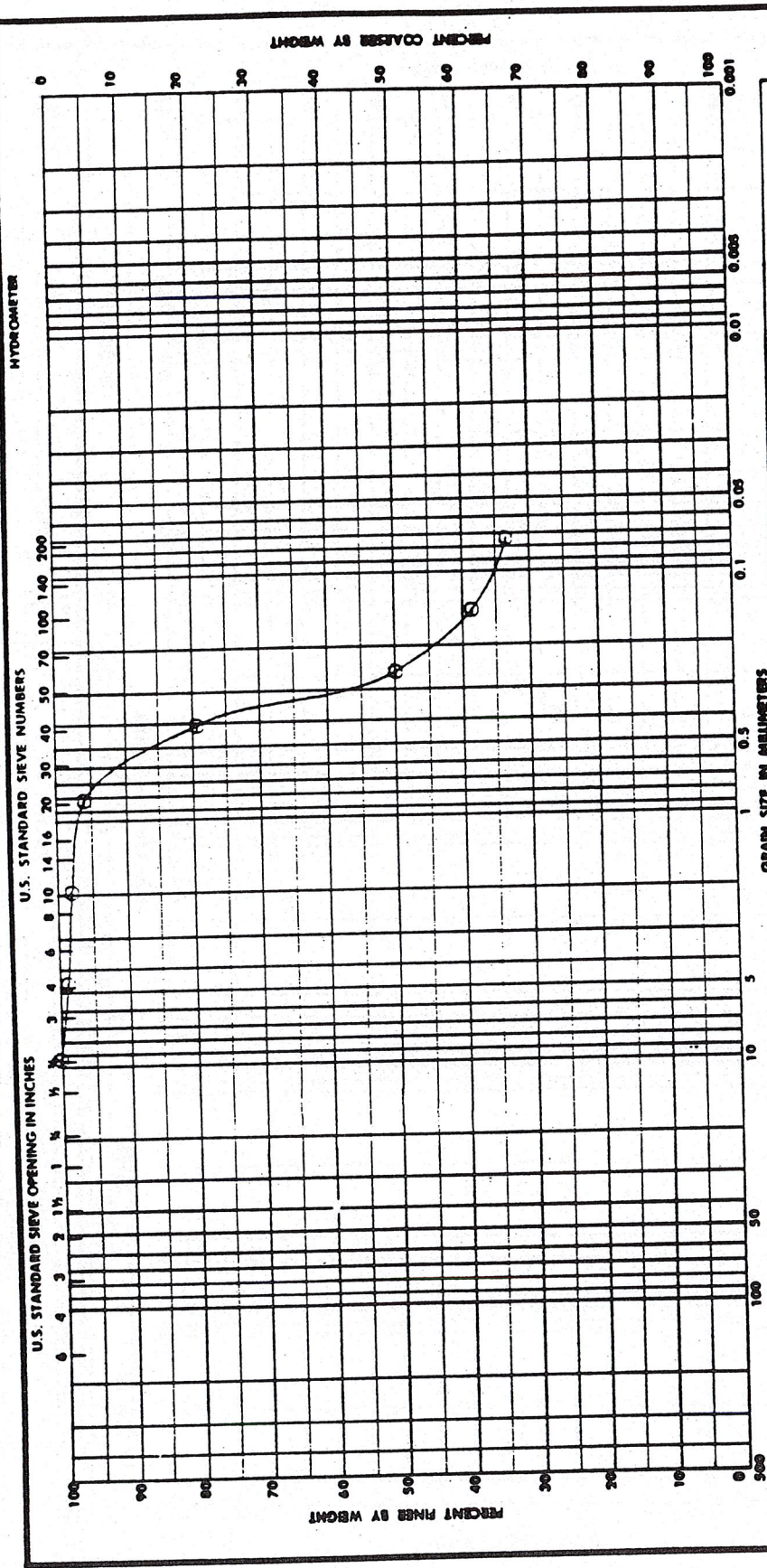
W.O. No. 5468  
Req. No. RM-CW-88-0039





W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



COBBLES		GRAVEL		SAND		SILT OR CLAY	
COARSE		FINE		FINE		FINE	
Sample No.	Elev at Station	Classification		Mat w %	LL	PL	PI
8	+21.4/+19.9	CLAYEY SAND (SC)		17.5	48	12	36
		BROWN & TAN, W/A TRACE OF					
		MICA & WEATHERED ROCK, GRAVEL					
		SIZE SHELL					
Project UPPER ST. JOHN'S RIVER BASIN							
Structures 96C & 96D							
Area LAB NO. 73/2641							
Boring No. CG-S96D-2							
Date 03/01/88							
SAMPLE 8							

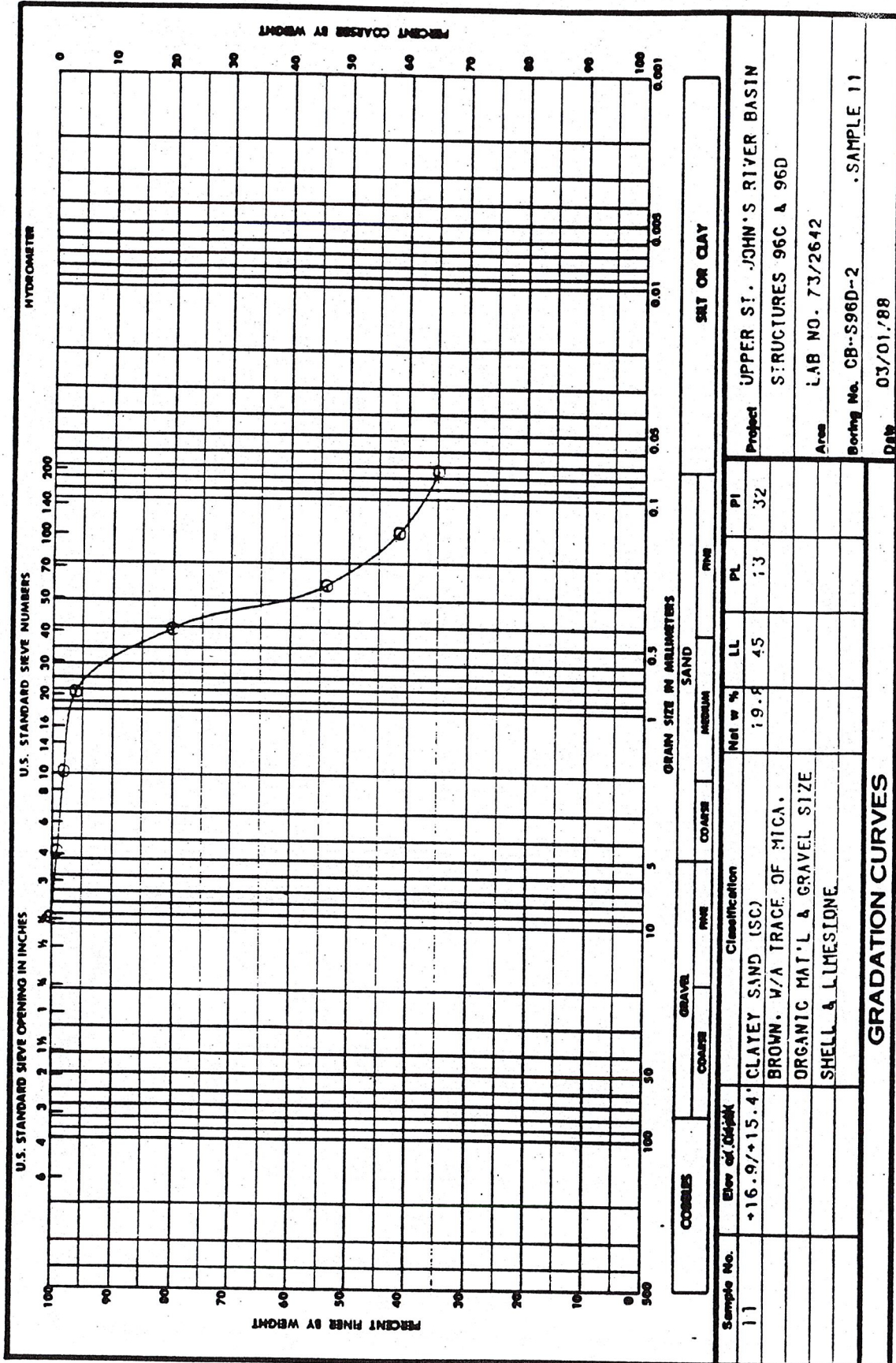
GRADATION CURVES

A-69



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

W.O. No. 5468  
Req. No. RM-CW-88-0039



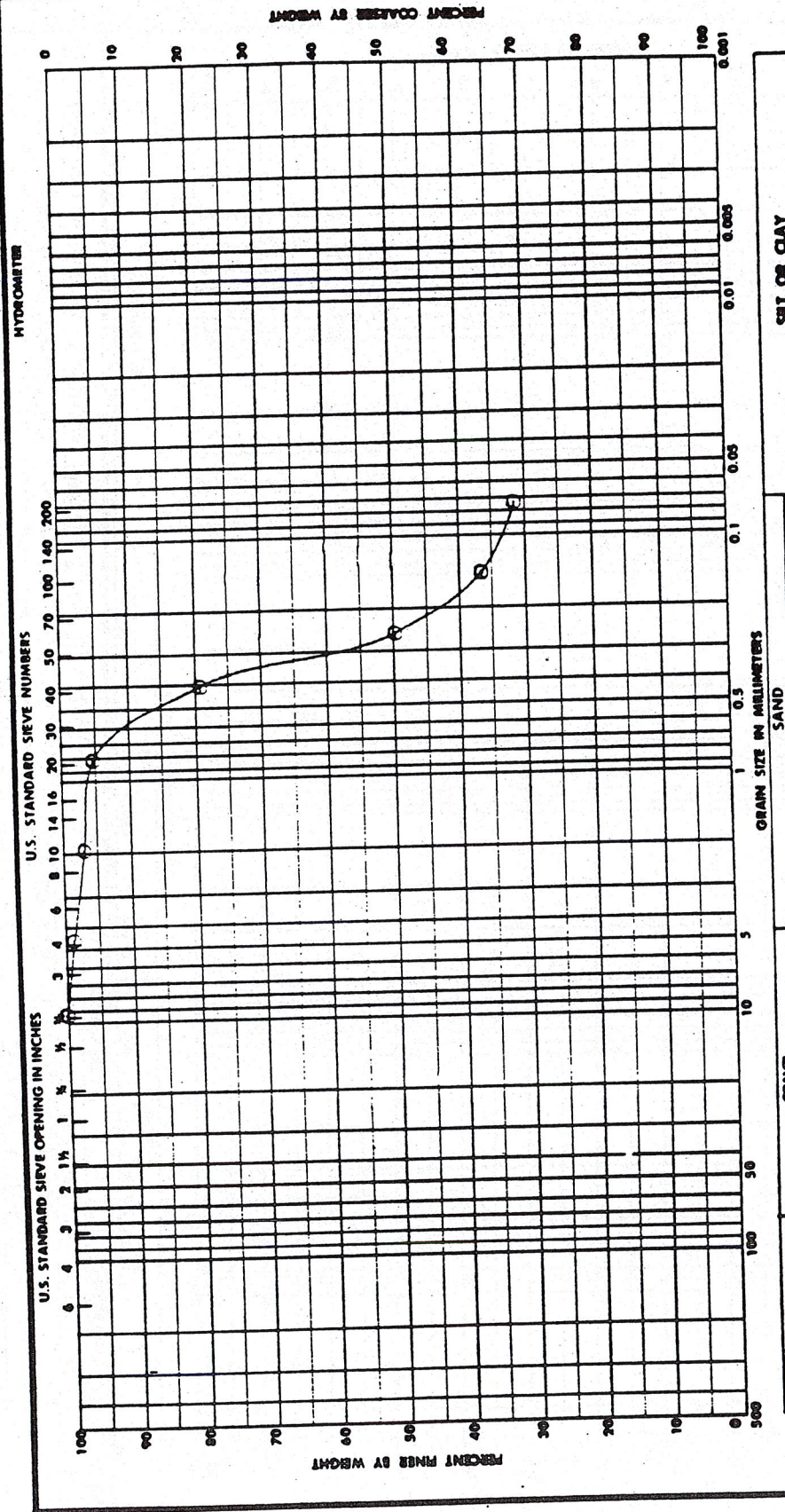
ENG FORM 2087  
1 MAY 63

A-70



W.O. No. 5468  
 Reg. No. RM-CW-88-0039

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



Project UPPER ST. JOHN'S RIVER BASIN  
 Structures 96C & 96D  
 Area LAB NO. 73/2643  
 Boring No. CB-S96D-2  
 Date 03/01/88

GRADATION CURVES

ENG FORM 2087, 1 MAY 63

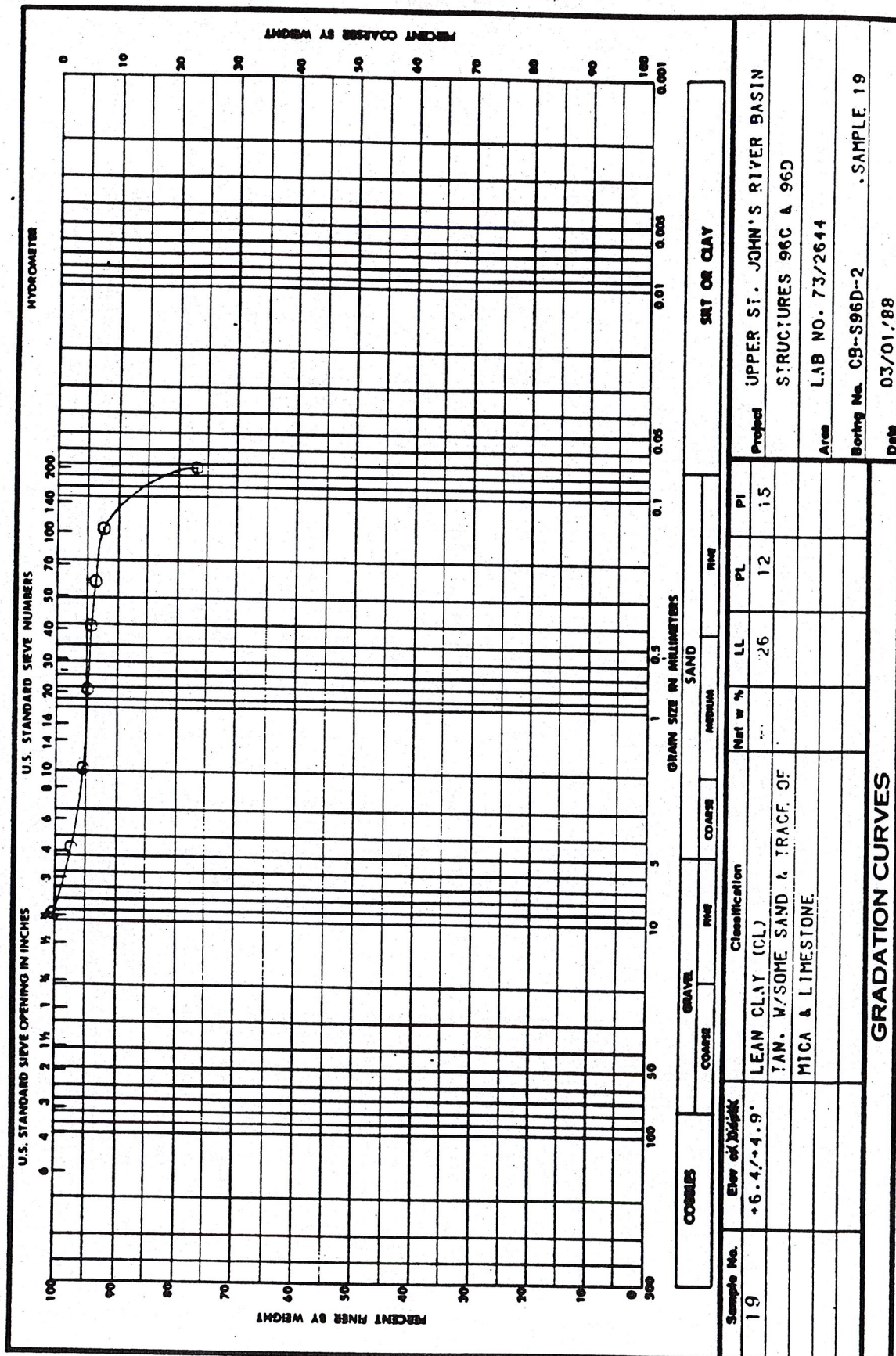
A-71



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

W.O. No. 5468

Req. No. RM-CW-88-0039



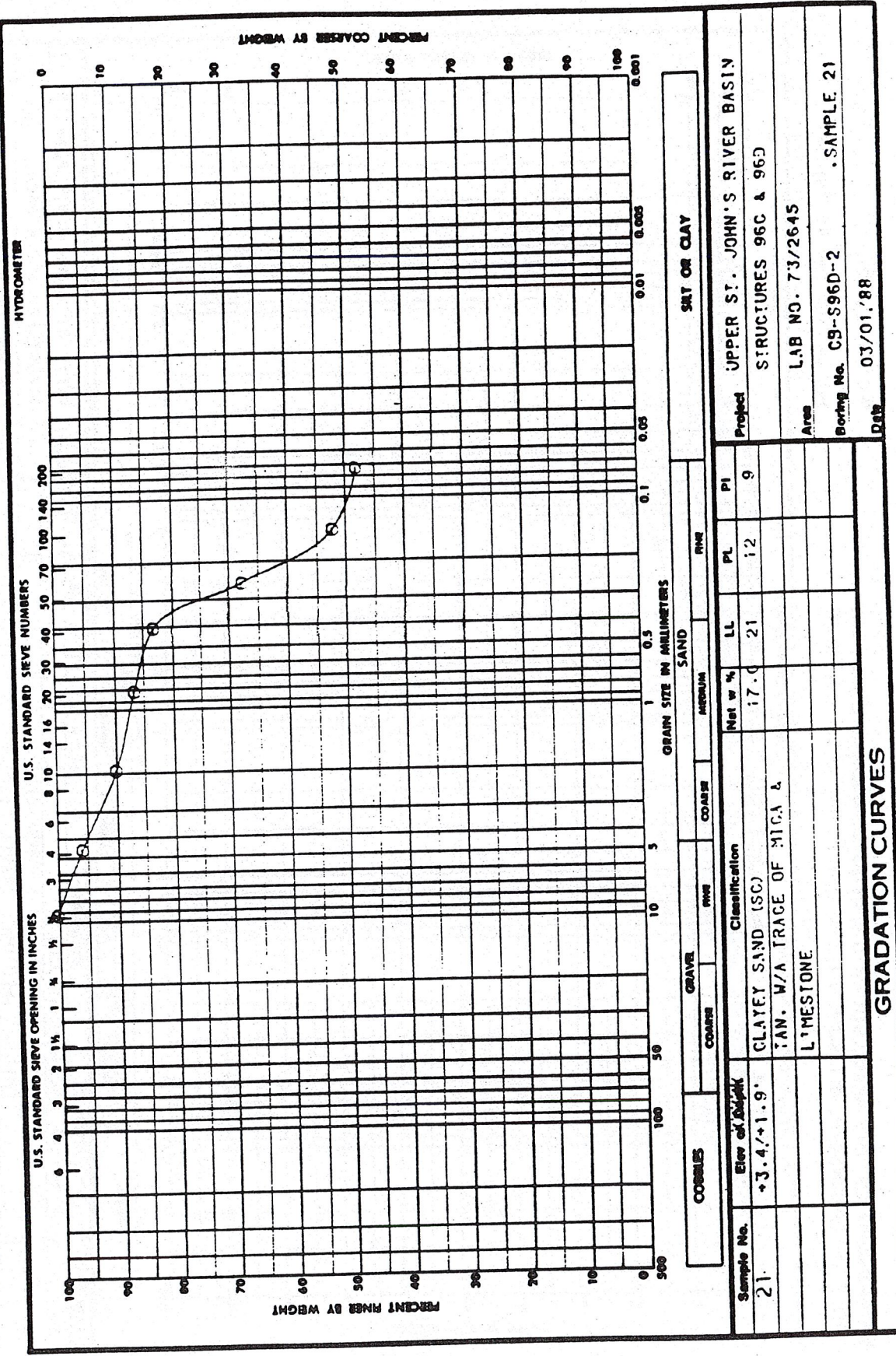
ENG FORM 2087  
1 MAY 63

A-72



W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



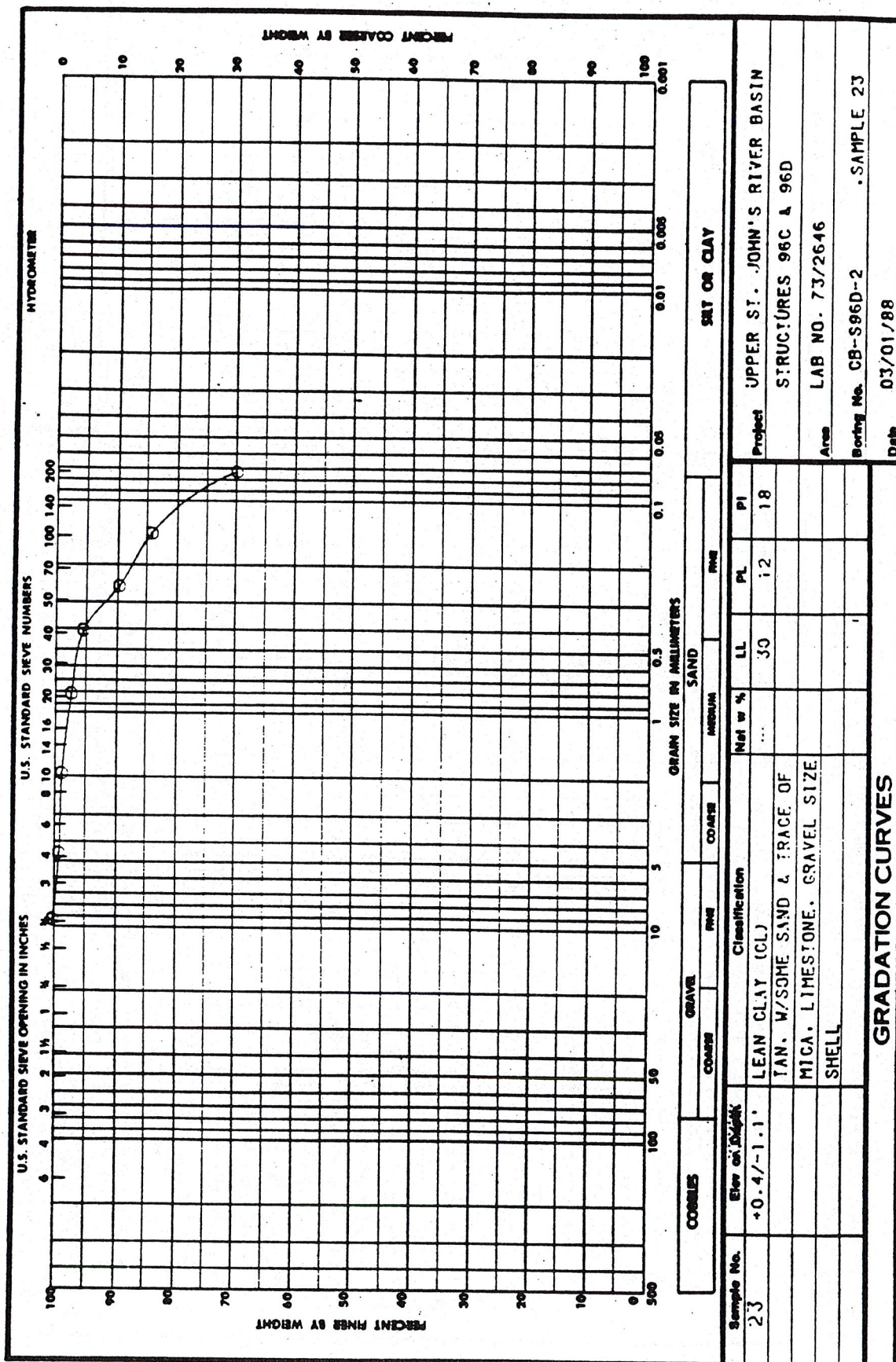
A-73



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

W.O. No. 5468

Req. No. RM-CW-88-0039



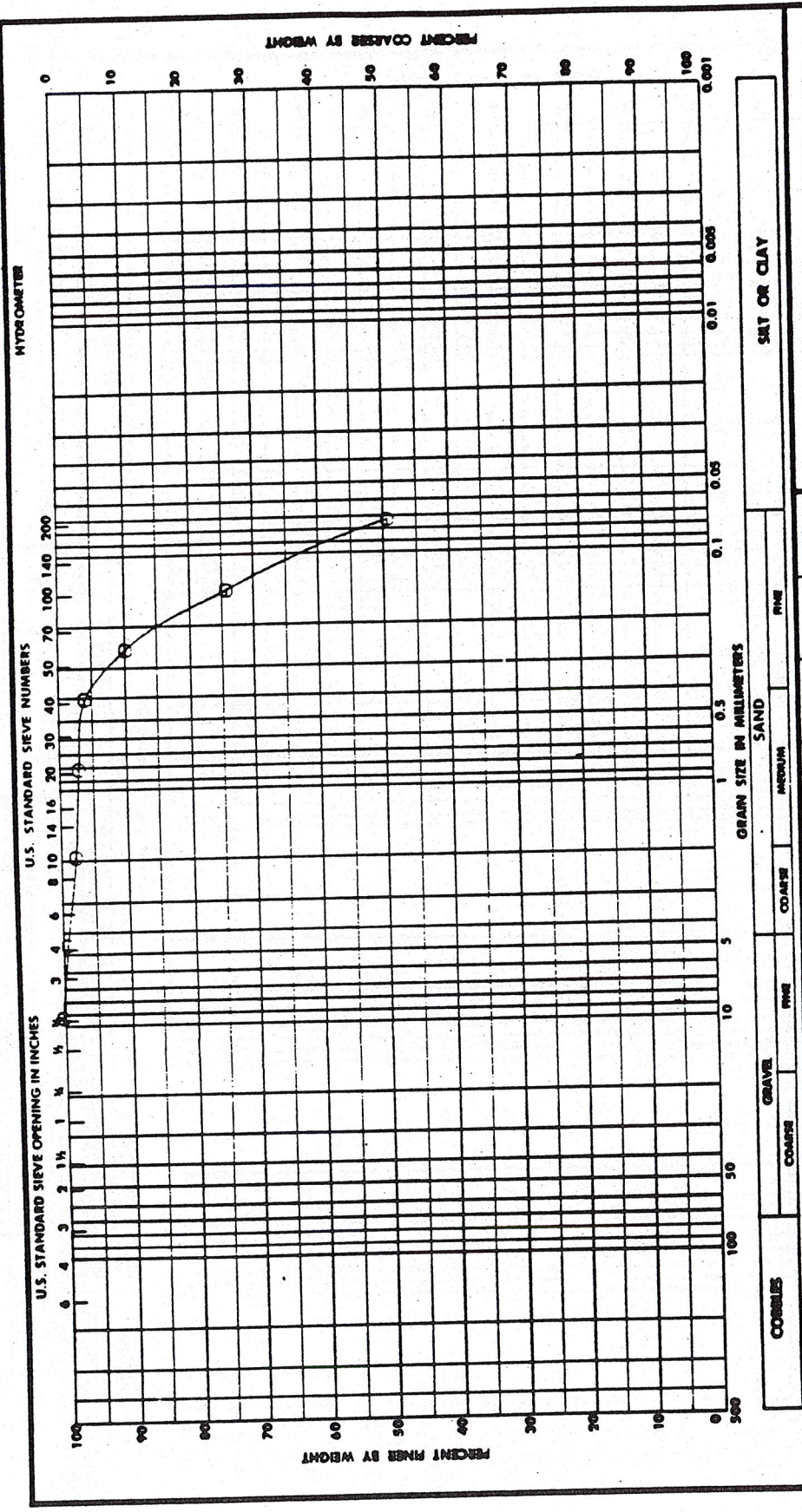
ENG FORM 2087  
1 MAY 63

A-74



W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



Sample No.	25	Elav at Depth	-2.6/-4.1'	Classification	CLAYEY SAND, HIGH LL (SC-H) TAN. W/A TRACE OF MICA & LIMESTONE (LIDS OFF SAMPLE AT ARRIVAL - LOST MOISTURE)	Net w %	19.3	LL	84	PL	15	PI	69	Project	UPPER ST. JOHN'S RIVER BASIN
														Structures	STRUCTURES 96C & 96D
														Area	LAB NO. 73/2647
														Boring No.	CB-S96D-2 .SAMPLE 25
														Date	03/01/88

GRADATION CURVES

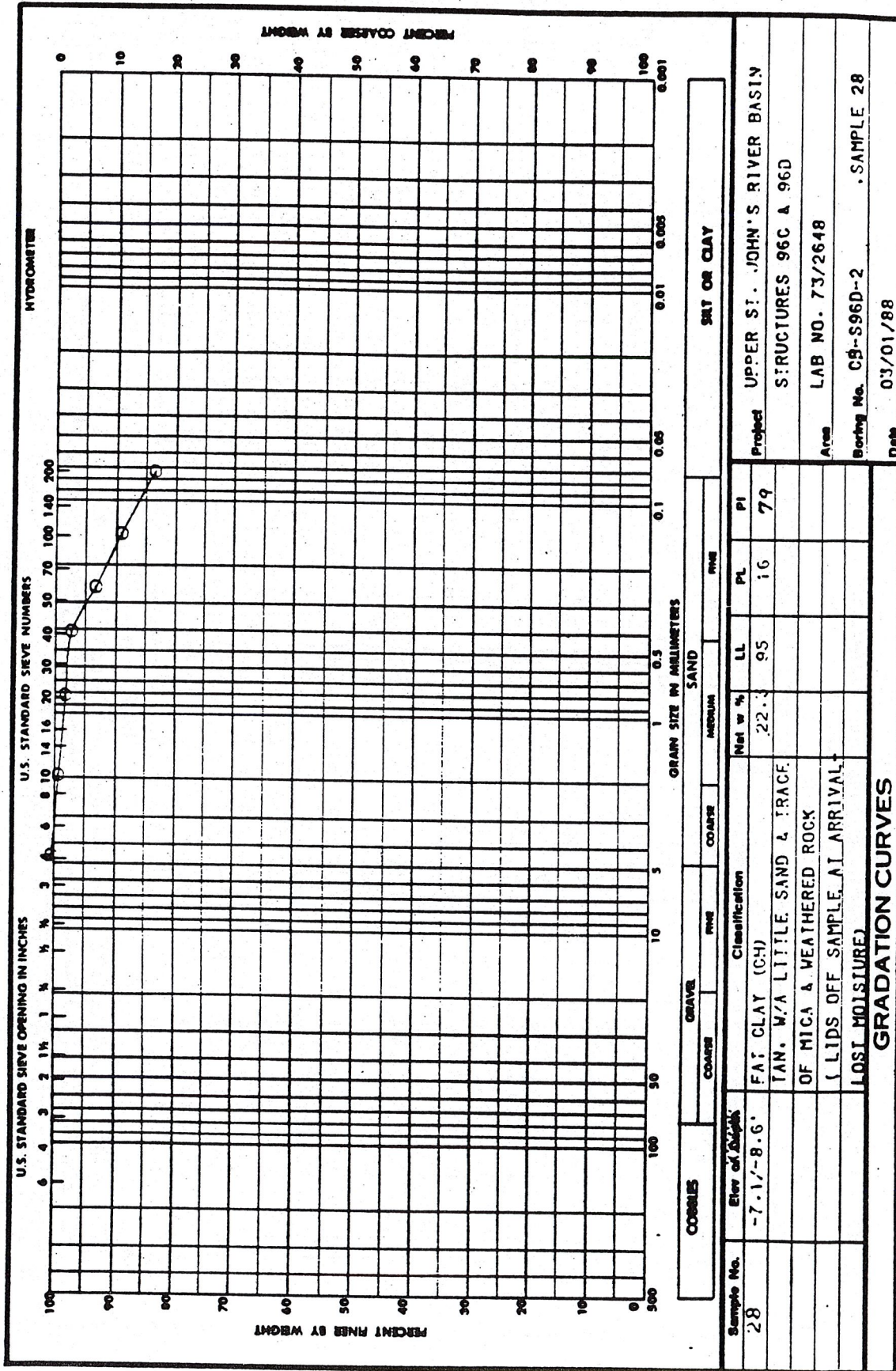
A-75



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

W.O. No. 5468

Req. No. RM-CW-88-0039

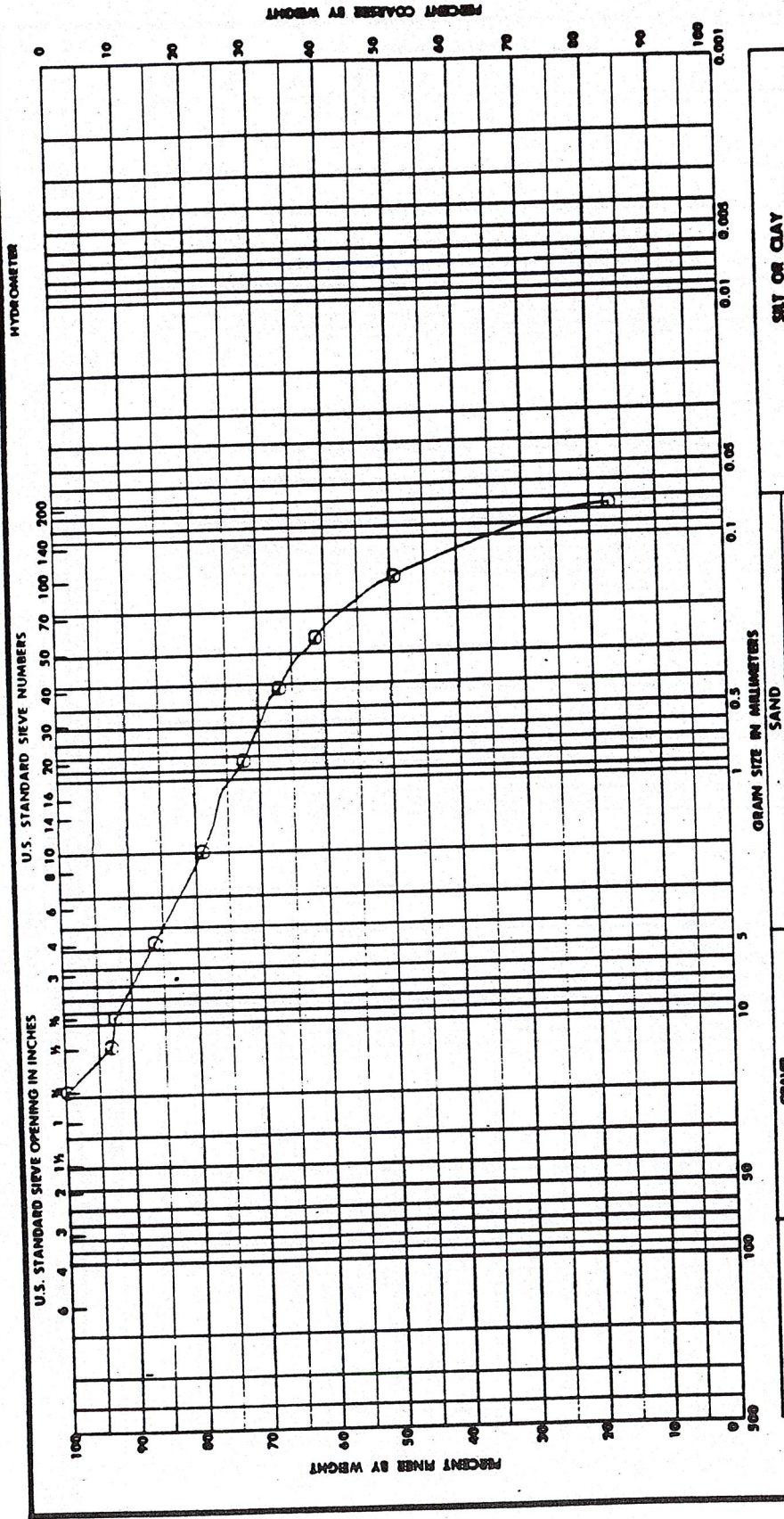


A-76



W.O. No. 5468  
 Reg. No. RM-CW-88-0039

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



COBBLES		GRAVEL		FINE		SAND		FINE		SILT OR CLAY	
Sample No.	31	Elev. of Center	-13.1/-14.0'	Classification	SILTY CLAYEY SAND (SM-SC)	Net w %	24	LL	19	PL	5
			TAN. W/A TRACE OF MICA &								
			GRAVEL ... SIZE SHELL LIME STONE								
			ILLD OFF SAMPLE AT ARRIVAL								
			LAST MOISTURE								
GRADATION CURVES											
Project UPPER ST. JOHN'S RIVER BASIN											
Structures 96C & 96D											
Area LAB NO. 73/2649											
Boring No. CB-S96D-2											
Date 03/01/88											
SAMPLE 31											

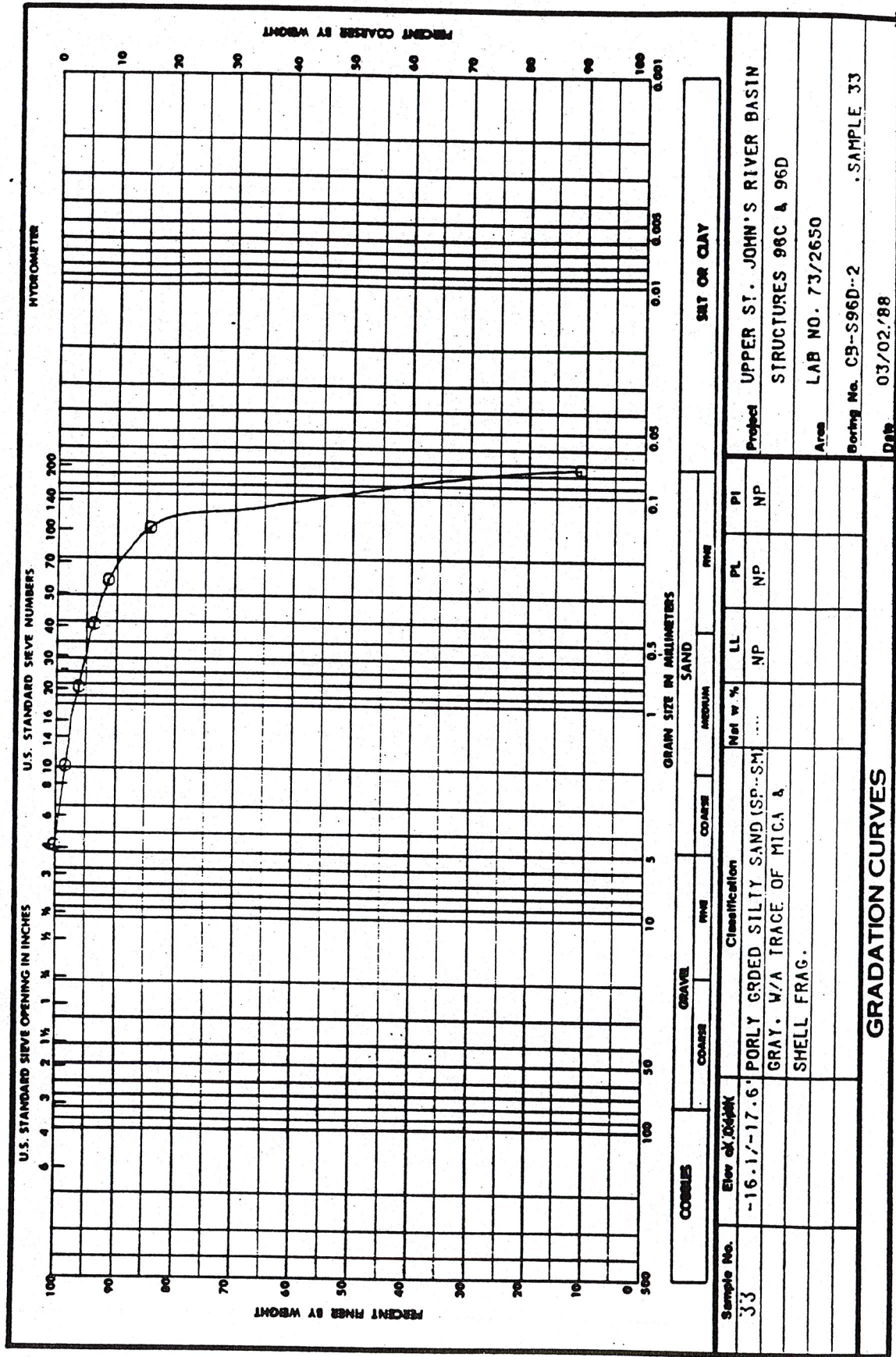
A-77



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

W.O. No. 5468

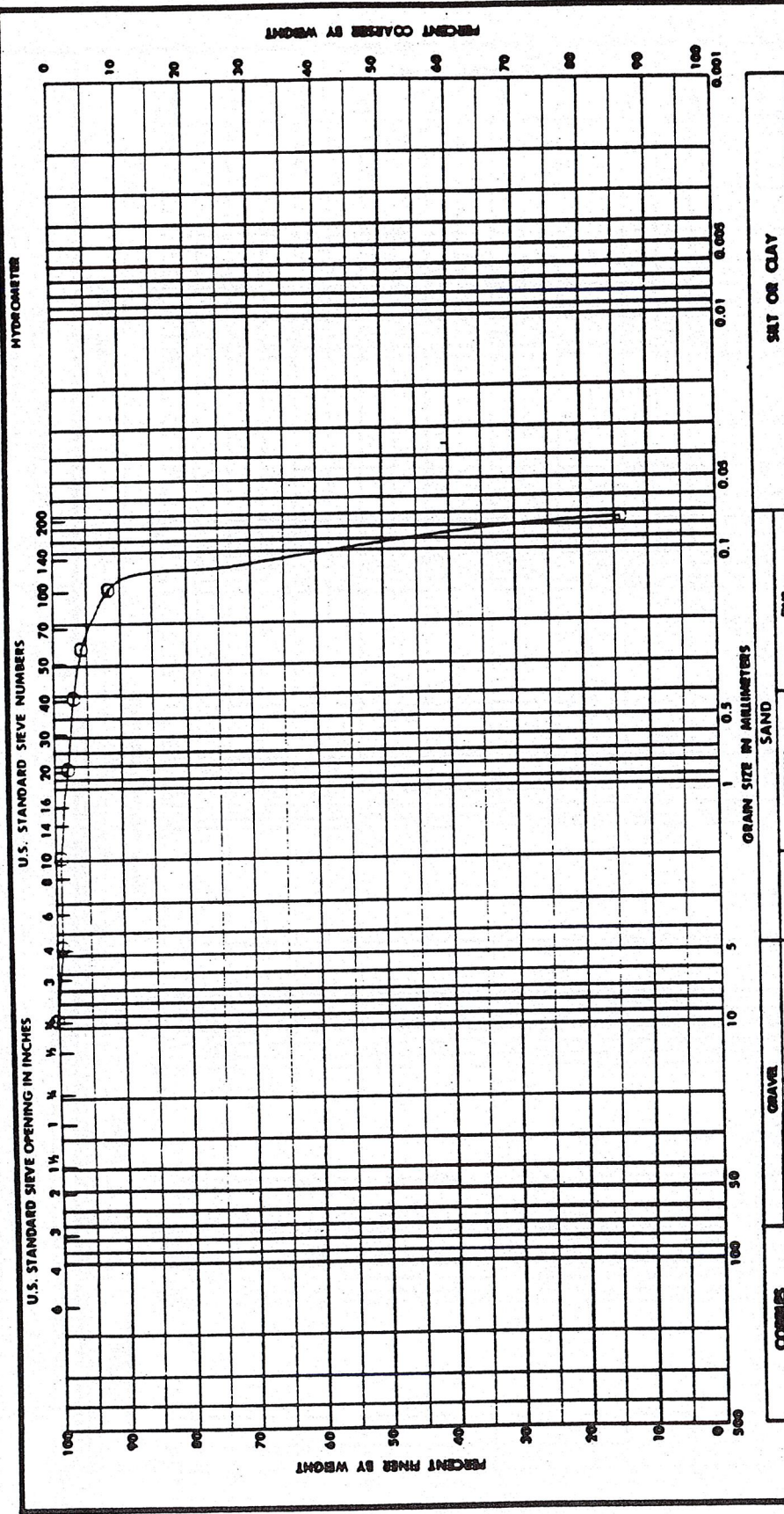
Req. No. RM-CW-88-0039





W.O. No. 5468  
 Req. No. RM-CW-88-0039

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



Sample No. 36		Elev. of Top of Peak		Classification		PI		PL		NP	
-20.6/-22.1'				SILTY SAND (SM)		LL		NP		NP	
				GRAY, W/A TRACE OF MICA &		Nat. w. %					
				GRAVEL SIZE SHELL							
				ILID OFF SAMPLE AT ARRIVAL							
				LOST MOISTURE							

Project		UPPER ST. JOHN'S RIVER BASIN	
Structures		96C & 96D	
Area		LAB NO. 73/2651	
Boring No.		CB-S96D-2	
Date		03/02/88	

GRADATION CURVES

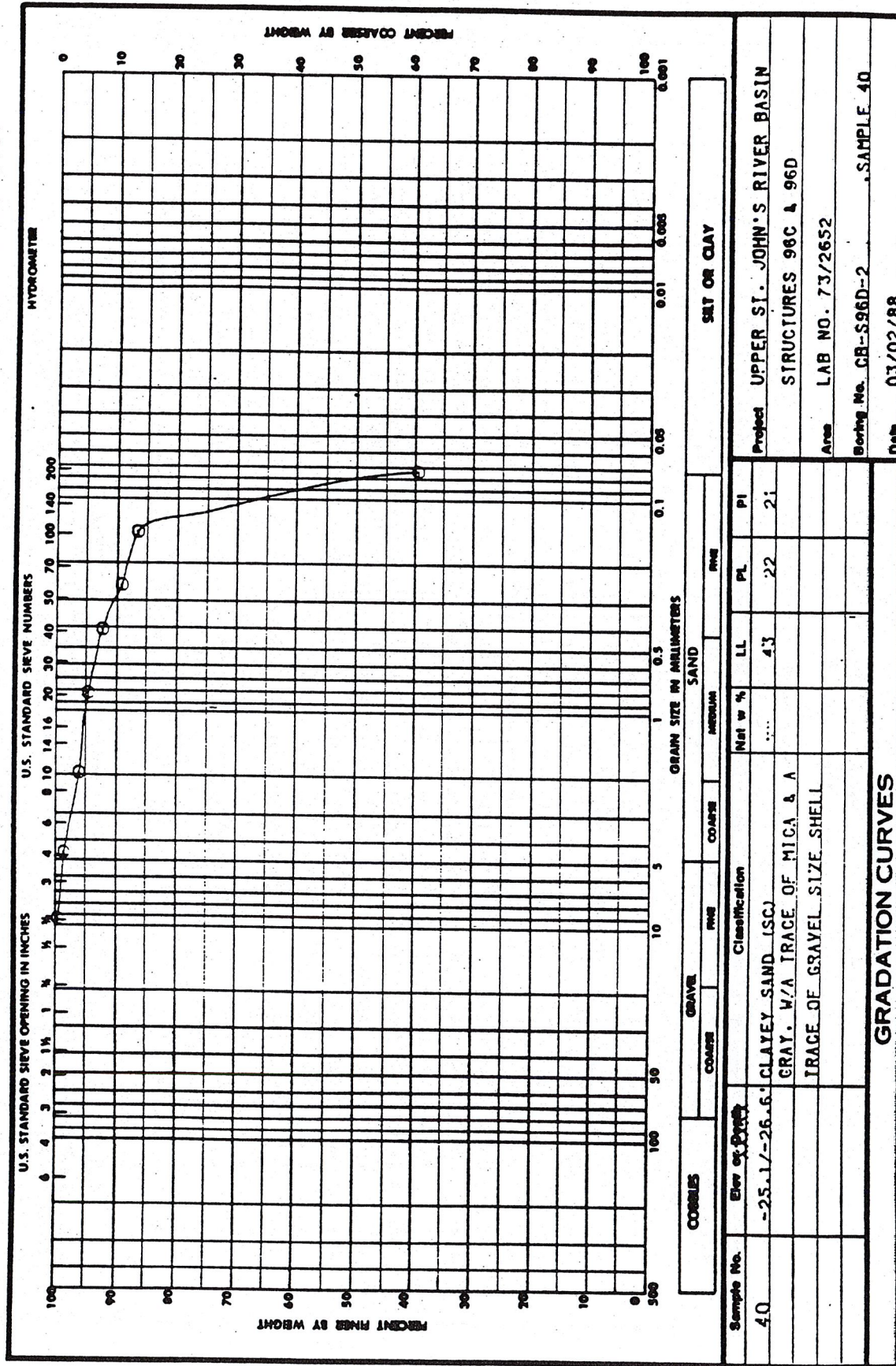
A-79



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

W.O. No. 5468

Req. No. RM-CW-88-0039



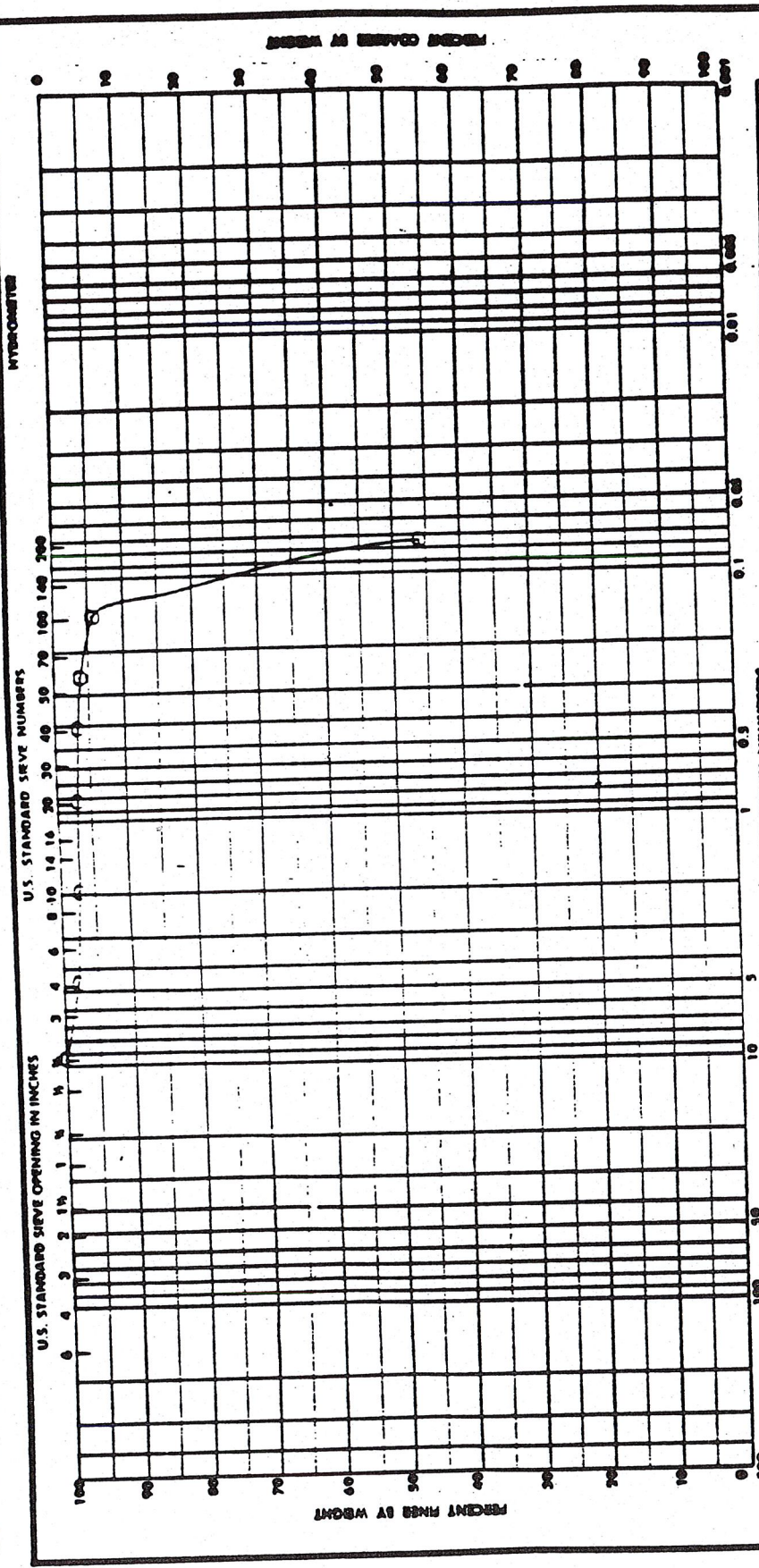
A-80

ENG FORM 2087  
1 MAY 65



W.O. No. 5468  
 Reg. No. RM-CV-88-0039

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



COBBLES		GRAVEL		SAND		SILT OR CLAY	
Sample No.	43	Classification	CLAYEY SAND, HIGH LL (SC-1)	LL	23	PI	81
			GRAY, W/A TRACE OF MICA & A	LL	104		
			TRACE OF GRAVEL SIZE SHELL				
GRADATION CURVES							
Project UPPER ST. JOHN'S RIVER BASIN							
Structures 96C & 96D							
Lab No. 73/2653							
Boring No. CG-S96D-2							
Date 03/02/88							

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PROJECT UPPER ST. JOHNS	HOLE NO.
RIVER BASIN STRUCTURE 96C	CB-S96C-1



S-96C		JACKSONVILLE DISTRICT				OF 3 SHEETS
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						-11.9 BLOWS/0.5 FT
-12.4	17.0				12	Split-spoon 7
				66	13	-13.4 8
			SAND, medium to fine quartz, a little shell and calcareous silt, layers and nodules of moderately hard calcareous quartz sandstone gray (SP)			15
				27	14	-14.9 3
						8
-15.9	20.5				15	" 6
				66	16	-16.4 4
			SAND, fine quartz, clayey, green (SC)			4
				50	17	-17.9 8
-18.4	23.0					10
						3
			SAND, medium to fine quartz, shelly with a little calcareous silt, nodules of soft sandstone gray (SP-SM)	85	18	-19.4 5
-19.9	24.5				19	" 9
			CLAY, sandy, fine quartz, silty, calcareous, some shell, nodules and layers of soft sandstone, light green (CL)	77	20	-20.9 3
						8
				66	21	-22.4 4
-23.1	27.7					7
						10
						4
			SHELL, sandy, silty, layers of soft sandstone, white and green	33	22	-23.9 5
-24.4	29.0					10
			SAND, fine quartz, silty to very silty, calcareous, trace of shell, light green (SM)	33	23	-25.4 2
						7
				50	24	-26.9 8
						2
				85	25	-28.4 3
-28.4	33.0					3
			CLAY, with a little silt and sand, slightly calcareous, light green (CH)			4
-29.9	34.5			93	26	-29.9 7
			CLAY, silty with a little; very fine quartz sand (CL)			8
				100	27	-31.4 2
						5
						7
-32.9	37.5			100	28	-32.9 4
						4
						6




ENG FORM 1836-A  
JAN 67

SPD: 1000 OP-SEP-64

PROJECT UPPER ST. JOHNS  
RIVER BASIN STRUCTURE 96C

HOLE NO.  
CB-S96C-1



PROJECT UPPER ST. JOHNS RIVER BASIN- STRUCTURE 96C				INSTALLATION		SHEET 3 OF 3 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
-32.9	37.5					BLOWS/0.5 FT	
			CLAY, silty, green (CH)	100	29	-34.4	3
							2
							5
							2
							3
				100	30	-35.9	7
							2
							3
				45	31	-37.4	6
							8
-38.4	43.0						8
				0	-	-38.9	10
							7
							10
-40.4	45.0		SAND, medium to fine quartz and shell, a little silt calcareous, gray (SP)	85	32	-40.4	16
							10
							18
				77	33	-44.9	20
							11
				70	34	-43.4	20
							11
-44.9	49.5		CLAY, silty, calcareous a little sand and shell gray to green. (CL) Nodules and layers of soft to moderately hard sand- stone -39.7 to -42.5	100	35	-44.9	20
			NOTES			140# hammer with 30" drop used on 2.0 ft. split-spoon (1 3/8" I.D. X 2.0" O.D.)	
			1) On 30 June 87 Water level in canal at +22.9 Water depth 17.6'				
			2) On 8 July 87 Water level in canal at +23.0 Water level in casing +20.0 elev. of bottom of casing -31.0 elev. bottom of hole -39.7				
			3) Hole grouted with sakrete				

ENG FORM 1836-A  
JAN 67

SPD: 1000 SP-545-545

PROJECT UPPER ST. JOHNS  
RIVER BASIN STRUCTURE 96C

HOLE NO.  
CB-S96C-1



DRILLING LOG			DIVISION SOUTH ATLANTIC		INSTALLATION JACKSONVILLE DISTRICT		SHEET 1 OF 3 SHEETS	
1. PROJECT UPPER ST. JOHNS RIVER BASIN - STRUCTURE 96C					10. SIZE AND TYPE OF BIT			
2. LOCATION (Coordinates or Station) X=583,067 Y=1,267,637					11. DAY OF ELEVATION SHOWN (FEET or MSL) MSL			
3. DRILLING AGENCY U.S. ARMY CORPS OF ENGINEERS					12. MANUFACTURER'S DESIGNATION OF DRILL SPRAGUE AND HENWOOD			
4. HOLE NO. (As shown on drawing sheet and file number) CB-S96C-2					13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER WHITSON & DETLOFF					14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.					15. ELEVATION GROUND WATER		16. DATE HOLE	
					STARTED 23 JUN 87		COMPLETED 29 JUN 87	
7. THICKNESS OF OVERBURDEN					17. ELEVATION TOP OF HOLE +4.2			
8. DEPTH DRILLED INTO ROCK					18. TOTAL CORE RECOVERY FOR BORING 60			
9. TOTAL DEPTH OF HOLE 49.5 FT					19. SIGNATURE OF <del>XXXXXXXX</del> GEOLOGIST J. HAND			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
+4.2	0.0					+4.2 Blows/0.5 FT
+2.1	2.1	oooo	PEAT, brown (PT)		1	Split-Spoon SETTLED
		eee		40	2	+0.7
		ooo	CLAY, silty, calcareous nodules and layers of soft and moderately hard limestone, green to white (CL)			
		eee	Layers of green and brown (CH) clay from +1.3/+0.1	93	3	-0.8
-2.3	6.9			100	4	-2.3
-3.1	7.3		SAND, clayey, silty, calcareous nodules of soft limestone and sandstone, brown (SC)	93	5	
-3.8	8.0		SANDSTONE, quartz, silty calcareous, soft light gray		6	-3.8
			CLAY silty, slightly sandy, calcareous, nodules of moderately hard white limestone, layers and nodules of calcareous; fossiliferous; gray sandstone, light gray (CL)	0	-	-5.3
				10	7	-6.8
				33	8	-8.3
-9.3	13.5					-9.3 WASHED
-10.8	15.0		SANDSTONE, soft to moderately hard, quartz, calcareous, green	42	9	-10.8
			SAND, fine quartz calcareous, nodules of moderately hard white limestone, brown to green (SC)	33	10	-12.3
-13.8	18.0			45	11	-13.8

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.  
(TRANSLUCENT)

PROJECT UPPER ST. JOHNS RIVER BASIN STRUCTURE 96C HOLE NO. CB-S96C-2




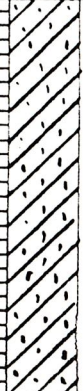
PROJECT UPPER ST. JOHNS RIVER BASIN- STRUCTURE 96C			INSTALLATION JACKSONVILLE District			SHEET 2 OF 3 SHEETS
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
-13.8	18.0					-13.8 BLOWS/0.5 FT.
-16.3	20.5		SAND, medium to fine quartz with a little shell and silt, white (SP)	33	12	Split-Spoon 2 6 9 -15.3
-18.3	22.5		SAND, fine, quartz, clayey gray to green (SC)	50	13	6 6 7 -16.8
-19.8	24.0		SAND, fine quartz with a little silt, calcareous, some shell-white (SP-SM)	66	14	7 6 7 -18.3
-21.0	25.2		SAND, fine quartz, slightly silty, calcareous, some clay and shell (SM)	85	15	5 5 6 -19.8
-21.5	25.7		CLAY, silty with some sand, calcareous white (CL)	100	16 17	3 3 7 -21.3
-24.3	28.5		SAND, fine quartz, clayey, silty, calcareous, light gray (SM)	85	18	4 4 5 -22.8
-27.5	31.7		SAND, very fine quartz silty to clayey, calcareous light gray (SC)	93	19	4 4 6 -24.3
-30.3	34.5		CLAY, slightly silty slightly calcareous with a trace of sand and shell gray to green (CL)	93	20	2 3 5 -25.8
-31.8	36.0		SILT, green and gray (ML)	100	21	4 3 5 -27.3
-33.3	37.5		SAND, clayey, silty, with gravel sized shell, gray green (SC)	77	22	1 3 4 -28.8
				66	23	3 4 7 -30.3
				93	24	4 5 6 -31.8
				93	25	4 5 8 -33.3

ENG FORM 1836-A  
JAN 67

SPD: 1500 DP-207-145

PROJECT UPPER ST. JOHNS  
RIVER BASIN STRUCTURE 96C HOLE NO.  
CB-S96C-2



PROJECT UPPER ST. JOHNS RIVER BASIN- STRUCTURE 96C			INSTALLATION JACKSONVILLE DISTRICT		FIGURE NO. CD-5700-2 SHEET OF 3 SHEETS			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g		
-33.3	37.5					Blows/0.5 FT.		
-38.3	42.5		CLAY, green (CH) layer of (CL) elevation -34.2/-37.2	100	26	-34.8	5	
							4	
							6	
						"	3	
				72	27	-36.3	4	
							7	
						"	2	
				100	28	-37.8	3	
-45.3	49.5		SAND, clayey, calcareous some shell and nodules and layers of soft and moderate- ly hard sandstone, gray (SC)				8	
				10	-	-39.3	"	4
								8
								4
				85	29	-40.8	"	10
								15
								17
				43	30	-42.3	"	8
								9
				93	31	-43.8	"	6
				11				
				20				
				5				
				7				
				13				
						140# hammer with 30" drop used on 2.0 ft. Split-spoon sampler (1 3/8" I.D. X 2" O.D.)		
NOTES: 1) On 23 June 87 water level in canal at +22.8 water depth 18.0' 2) On 29 June 87 water level in casing +18.3 Bottom casing -17.7 Bottom hole -32.7 3) On 30 June 87 water level in canal at +22.9 water level in casing -17.7 Bottom of hole -44.7 4) Hole grouted with sakrete								

ENG FORM 1836-A  
JAN 67

DD FORM 1001-67-200-201

PROJECT UPPER ST. JOHNS  
RIVER BASIN STRUCTURE 96C

HOLE NO.  
CB-S96C-2



1. PROJECT UPPER ST. JOHNS, STRUCTURE 96C				10. SIZE AND TYPE OF BIT MSL	
2. LOCATION (Continuation of location) X = 583.025 Y = 1267.665				11. DATUM FOR ELEVATION SHOW (TBM or B.M.)	
3. DRILLING AGENCY CORPS OF ENGINEERS				12. MANUFACTURER'S DESIGNATION OF DRILL S&H SKID RIG	
4. HOLE NO. (As shown on drawing title and file number) CB-S96-C-3				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	
5. NAME OF DRILLER C. MASON				14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER +20.2 (after 18 hours)	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 11-17-88 COMPLETED 11-22-88	
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF HOLE +21.0	
9. TOTAL DEPTH OF HOLE 49.5'				18. TOTAL CORE RECOVERY FOR BORING 59	
				19. SIGNATURE OF <u>J. GENTILE</u> GEOLOGIST	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g		
+21.0	0.0							
			PEAT, roots, loose wet, brown, (PT)	NO REC		SETTLED		
					+19.5			
				NO REC		PUSHED		
					+18.0			
						PUSHED		
				12	1	+16.5		
						PUSHED		
				12	2	+15.0		
						PUSHED		
				12	3	+13.5		
						PUSHED		
				NO REC		+12.0		
+11.0	10.0				4		PUSHED	
+10.5	10.5		SILT, plastic, strong organic stain, gray slick, (MH) organic clay (OH) from +11.0 to +11.5	53	5	+10.5		
						PUSHED		
+9.0	12.0			100	6	+9.0		
					7			
			CLAY, plastic, trace silt, trace shell, gray (CH)	100		+7.5		
					88	8	+6.0	
					80	9	+4.5	
+3.0	18.0			88	10	+3.0		
				88	11	+1.5		

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PROJECT UPPER ST. JOHNS,  
S-96C

HOLE NO.  
CB-S96C-3

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE	Hole No. CB-S96C-3		
PROJECT UPPER ST. JOHNS, S96C-3			INSTALLATION JACKSONVILLE DISTRICT			SHEET 2 OF 3 SHEETS
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
-1.5	22.5		CLAY, slightly plastic, trace to little silt, limy, fragment weathered soft limestone; tan, buff, to gray, (CL), from 18.0' to 22.5	80	12	0.0
					13	
				88		-1.5
			Many thin lenses hard limestone, & trace sand, gray from 22.5' to 25.7	73	14	
					15	
			CLAY (CH), very thin lenses hard limestone	73		-4.5
					16	
			LIMESTONE, medium hard, porous, permeable, very fossiliferous gray, some seams loose silty sand, beds (CH) limy clay	66		-6.0
					17	
			(CH) limy clay	60		-7.5
			(CL) clay, silty, limestone fragments from -7.7 to -8.2 with many seams loose silty sand, from -8.2 to -10.0	66	18	
			clay, (CL), limy, silty, sandy, from -10.0 to -10.5		19	
				93		-10.5
			SAND, fine quartz, clayey, limy, gray to tan, lenses medium hard calcareous sandstone, (SC)	60	20	
					21	
			SAND, fine to med, quartz, little to some silt, trace clay, limy, tan, lenses calcareous sandstone (SM)	56		-13.5
					22	
			LIMESTONE, medium hard, porous, permeable, lenses hard limestone, sandy in composition lt gray, very to sandstone, seams loose silty, shelly sand	33		-15.0
					23	
				07		-16.5
			SAND, fine to medium, quartz, clayey, little shell, Gray-green, (SC)	66	24	
			Lt gray, fine quartz, limy, isolated sandstone lenses, little shell, little shell, little to some clay, (SC) from 39.0' to 42.0'	40	25	
					26	
				66		-21.0
			SAND, very fine, quartz, silty, trace clay, trace shell, gray to tan, (SM)	88	27	
					28	
				88		-24.0

ENG FORM 1836-A (SR 1110-1-1801)

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PROJECT UPPER ST. JOHNS,  
S-96C

HOLE NO.  
CB-S96C-3



DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE +21.0		Hole No. CB-S96C-3	
PROJECT UPPER ST. JOHNS, S96C-3			INSTALLATION JACKSONVILLE DISTRICT		SHEET 3 OF 3 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
				66	29	1 3 4 -25.5
-27.0	48.0			66	30	2 4 5 -27.0
-28.5	49.5		SILT, trace clay, damp, gray, (ML)	80	31	1 3 4 -28.5
			Notes: 1) Core hole grouted upon completion with 8 bags of sakrete sand mix. 2) The groundwater reading on 11-14-88 after 14 hours was at +20.2. The bottom of the casing was at elev. -6.0 and the bottom of the hole was at el. -7.5			140 # hammer with 30" drop used on 5.0 ft. split spoon sampler (1 7/8" I.D. x 2" O.D.)

ENG FORM 1836-A  
JAN 67

(ER 1110-1-1801)

GPO 1980 OF - 628 - 603

PROJECT UPPER ST. JOHNS,  
S-96C

HOLE NO.  
CB-S96C-3

PROJECT		LOCATION		DATE		SHEET	
UPPER ST. JOHNS, STRUCTURE 96C		SOUTH ATLANTIC		JACKSONVILLE DISTRICT		OF 3 SHEETS	
1. PROJECT		2. LOCATION (Coordinates or Station)		10. SIZE AND TYPE OF BIT		11. DAYUM FOR ELEVATION SHOWN (FEET or MSL)	
Y=583,024 Y=1,267,637				MSL			
3. DRILLING AGENCY		4. HOLE NO. (As shown on drawing title and file number)		12. MANUFACTURER'S DESIGNATION OF DRILL		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	
CORPS OF ENGINEERS		CB-S96C-4		FAILING 1500		DISTURBED UNDISTURBED	
5. NAME OF DRILLER		6. DIRECTION OF HOLE		14. TOTAL NUMBER CORE BOXES		15. ELEVATION GROUND WATER	
M. WHITSON		<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		16. DATE HOLE		STARTED 11-30-88 COMPLETED 12-5-88	
7. THICKNESS OF OVERBURDEN		8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		18. TOTAL CORE RECOVERY FOR BORING	
		49.5'		+20.2		58	
9. TOTAL DEPTH OF HOLE		19. SIGNATURE OF		GEOLOGIST			
		J. GENTILE					

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
+20.2	0.0					
			PEAT, loose wet, roots etc., brown, (PT)	21	1	PUSHED
+10.5	9.7		CLAY, plastic, dark gray, organic stain, damp, (CH)	46	3	+9.7 PUSHED
+8.2	12.0		Gray-green, little shell, damp, (CH), from +8.2 to +3.7, trace weathered soft limestone fragments,	33	4	+8.2 PUSHED
+3.7	16.5		Many weathered soft thin lenses limestone, slick, trace silt, gray-green-tan, (CH), from 16.5' to 22.5'	88	5	+6.7 PUSHED
				73	6	+5.2
				100	7	+3.7
				73	8	+2.2
						+0.7

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PROJECT UPPER ST. JOHNS,  
CB-S96C-4

HOLE NO.  
CB-S96C-4



DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE +20.2		Hole No. CB-S96C-4	
PROJECT UPPER ST. JOHNS, STRUCTURE 96C			INSTALLATION JACKSONVILLE DISTRICT		SHEET 2 OF 3 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
					9	8
				80		11
						9
					10	8
						7
-2.3	22.5			93		11
			CLAY, slightly plastic, silty limy, limestone lenses, sandy, (CL)	93	11	5
-3.8	24.0					5
			SANDSTONE, calcareous, cemented quartz sand & shell fragments, very porous, very permeable, many seams loose sand, lt gray, fossiliferous very thin bedded, material comes up as gravel with little silt (GP-GM)	60	12	4
						2
				60	13	4
-6.8	27.0			60		5
			LIMESTONE, porous, thin bedded, poorly consolidated riddled with seams clay (CL), clay is sandy with limestone fragment.	13	14	5
						5
					15	9
-9.8	30.0			40		7
			SAND, fine to medium, quartz, gravelly (limestone & sand- stone fragments) thin lime- stone & sandstone lenses broken up by spoon into gravel; clayey, little silt, limy, tan, 45% rock, (SC)	66	16	5
					R-15	3
						4
					17	12
-12.8	33.0			60		15
			SAND, fine to medium, quartz few calcareous sandstone lenses, trace silt, lt gray, (SP), little shell, clean, lt gray, fine to medium, quartz from 36.0' to -17.3, many sandstone lenses -17.3 to -17.8	56	18	10
						10
					19	9
				66		13
						18
-17.3	37.5				20	9
				100		17
-17.8	38.0					16
			SAND, fine to medium, quartz, little clay, compacted little shell, gray-green (SC)	66	21	25
-18.8	39.0					35
			limy, many lenses calcareous sandstone, trace to little silt, little clay, lt gray, from 39.0' to 40.5	53	22	50
						8
-20.3	40.5					8
			CLAY, limy, sandstone lenses, trace to little silt, trace sand, SL plastic (CL)	NO		6
				REC		7
-21.8	42.0					4
			SAND, fine to medium, quartz some clay to clayey, trace shell, gray, trace to little silt, (SC)	93	23	6
						3
				93		3
						4
					24	3
				93		2
						3
						3

ENG FORM 1236-A (R 1110-1-1801)

GPO 1980 OF - 628 - 603

PROJECT UPPER ST. JOHNS,

HOLE NO.

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.	
PROJECT		+20.2		CB-S96C-4	
UPPER ST. JOHNS, STRUCTURE 96C		INSTALLATION		JACKSONVILLE DISTRICT	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO
a	b	c	d	e	f
-26.3	46.5		Very fine, quartz, clayey, little silt, gray, (SC), from -46.5' to 48.0'	100	25
-27.8	48.0		CLAY, slightly plastic, little silt, gray, trace shell, (CL)	80	26
-29.3	-29.3			93	27
<p>Notes:</p> <p>1) Core hole grouted upon completion with approximately 93 gal of cement grout (6 bags of cement)</p> <p>2) Groundwater table on 12-2-88 at +19.8; bottom of casing at -12.8 and bottom of hole at elev. 15.8</p>					
<p>40 # hammer with 30' drop used on 2.0 FT split spoon sampler (1 7/8" I.D. x 2" O.D.)</p>					

ENG FORM 1036-A

(ER 1110-1-1801)

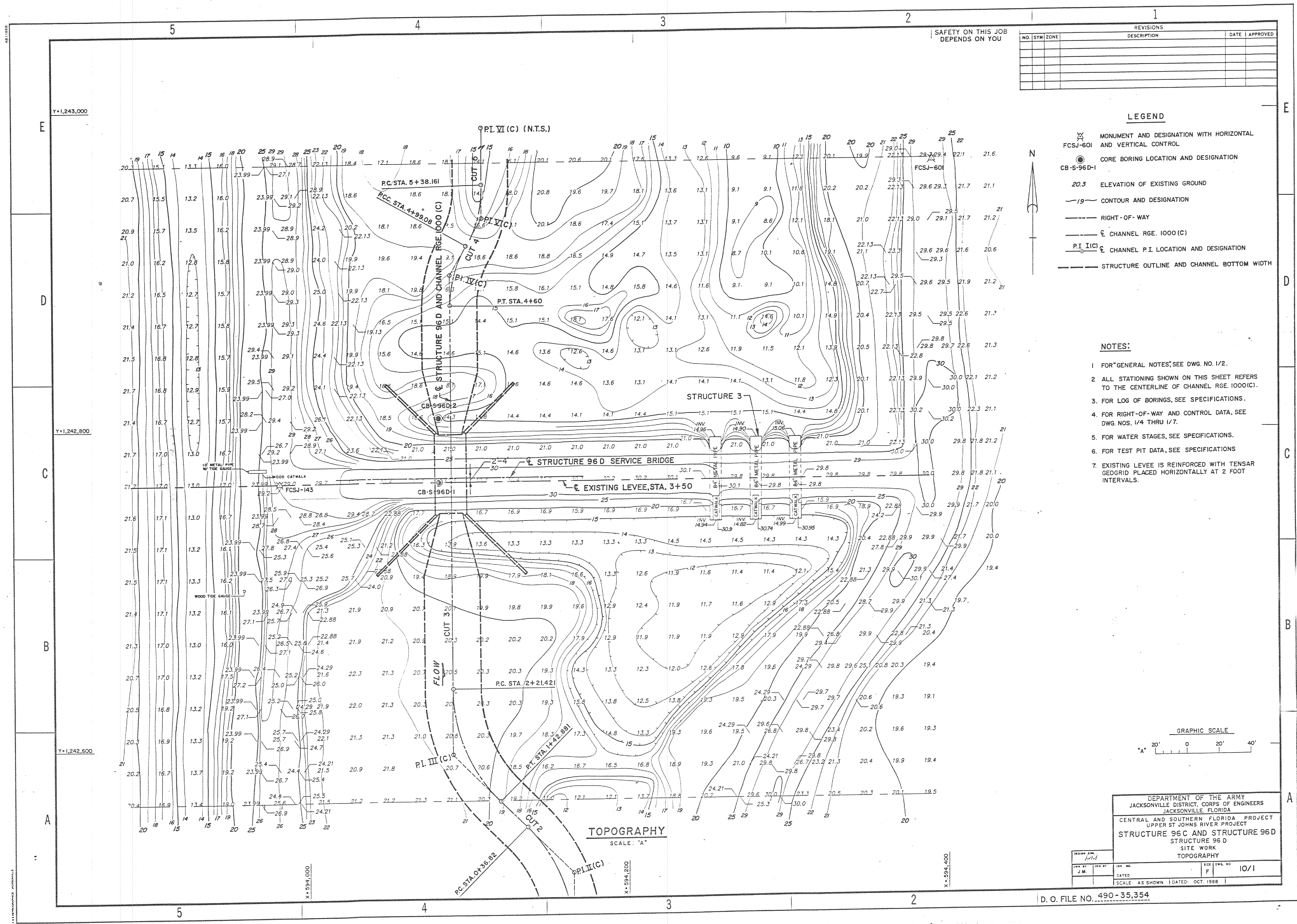
OPD 1580 OF - 628 - 603

PROJECT

ISSUED BY

HOLE NO.





SAFETY ON THIS JOB  
DEPENDS ON YOU

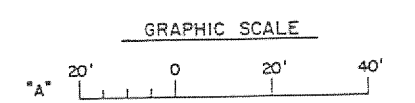
NO. SYM. ZONE		REVISIONS	DATE	APPROVED
		DESCRIPTION		

LEGEND

- MONUMENT AND DESIGNATION WITH HORIZONTAL AND VERTICAL CONTROL
- CORE BORING LOCATION AND DESIGNATION
- ELEVATION OF EXISTING GROUND
- CONTOUR AND DESIGNATION
- RIGHT-OF-WAY
- CHANNEL RGE. 1000(C)
- CHANNEL P.I. LOCATION AND DESIGNATION
- STRUCTURE OUTLINE AND CHANNEL BOTTOM WIDTH

NOTES:

- FOR "GENERAL NOTES", SEE DWG. NO. 1/2.
- ALL STATIONING SHOWN ON THIS SHEET REFERS TO THE CENTERLINE OF CHANNEL RGE. 1000(C).
- FOR LOG OF BORINGS, SEE SPECIFICATIONS.
- FOR RIGHT-OF-WAY AND CONTROL DATA, SEE DWG. NOS. 1/4 THRU 1/7.
- FOR WATER STAGES, SEE SPECIFICATIONS.
- FOR TEST PIT DATA, SEE SPECIFICATIONS.
- EXISTING LEVEE IS REINFORCED WITH TENSAR GEOGRID PLACED HORIZONTALLY AT 2 FOOT INTERVALS.



DEPARTMENT OF THE ARMY  
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS  
JACKSONVILLE, FLORIDA

CENTRAL AND SOUTHERN FLORIDA PROJECT  
UPPER ST. JOHNS RIVER PROJECT  
STRUCTURE 96C AND STRUCTURE 96D  
SITE WORK  
TOPOGRAPHY

SCALE: AS SHOWN | DATED: OCT. 1988

D. O. FILE NO. 490-35,354