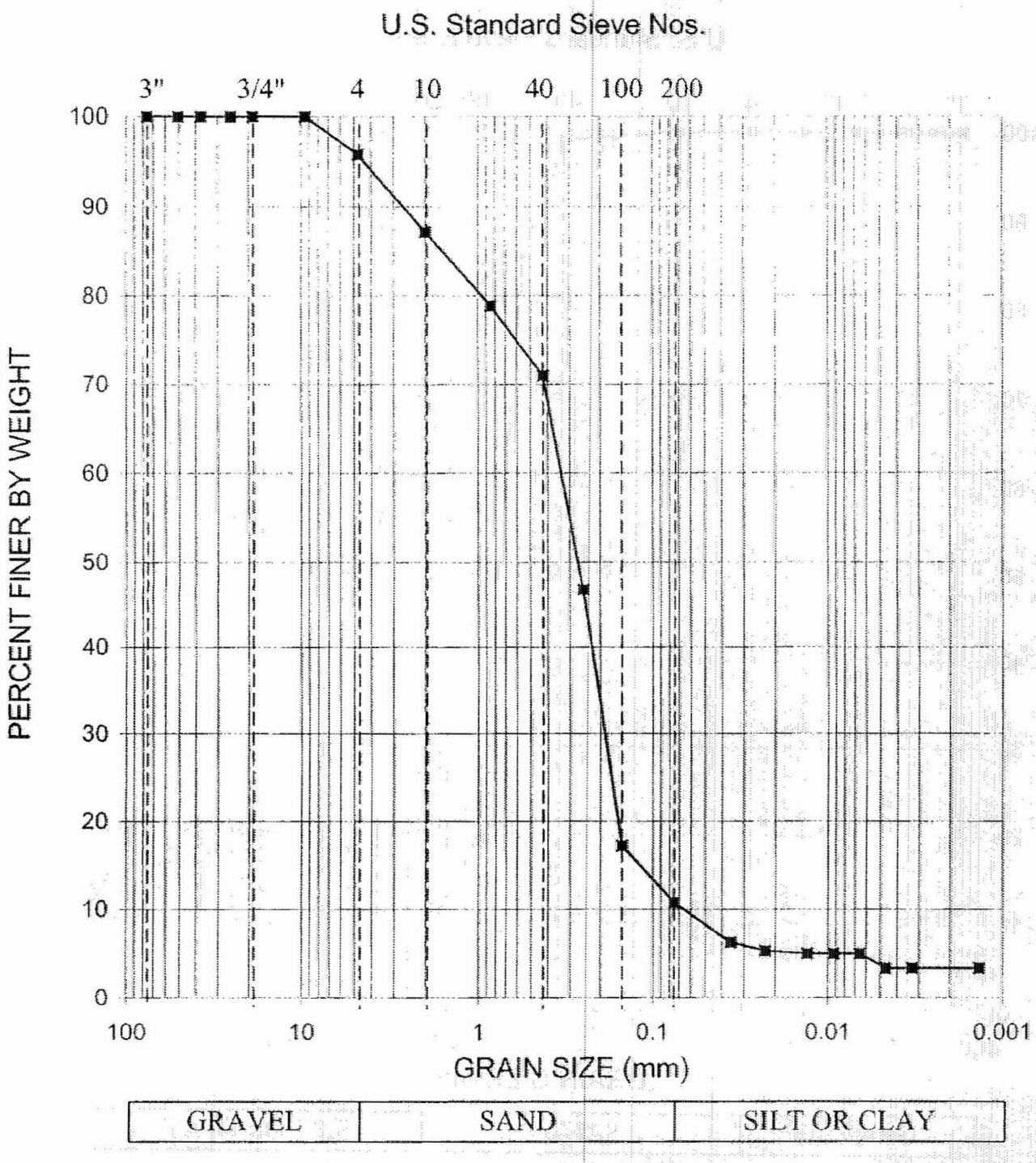


GRADATION CURVE

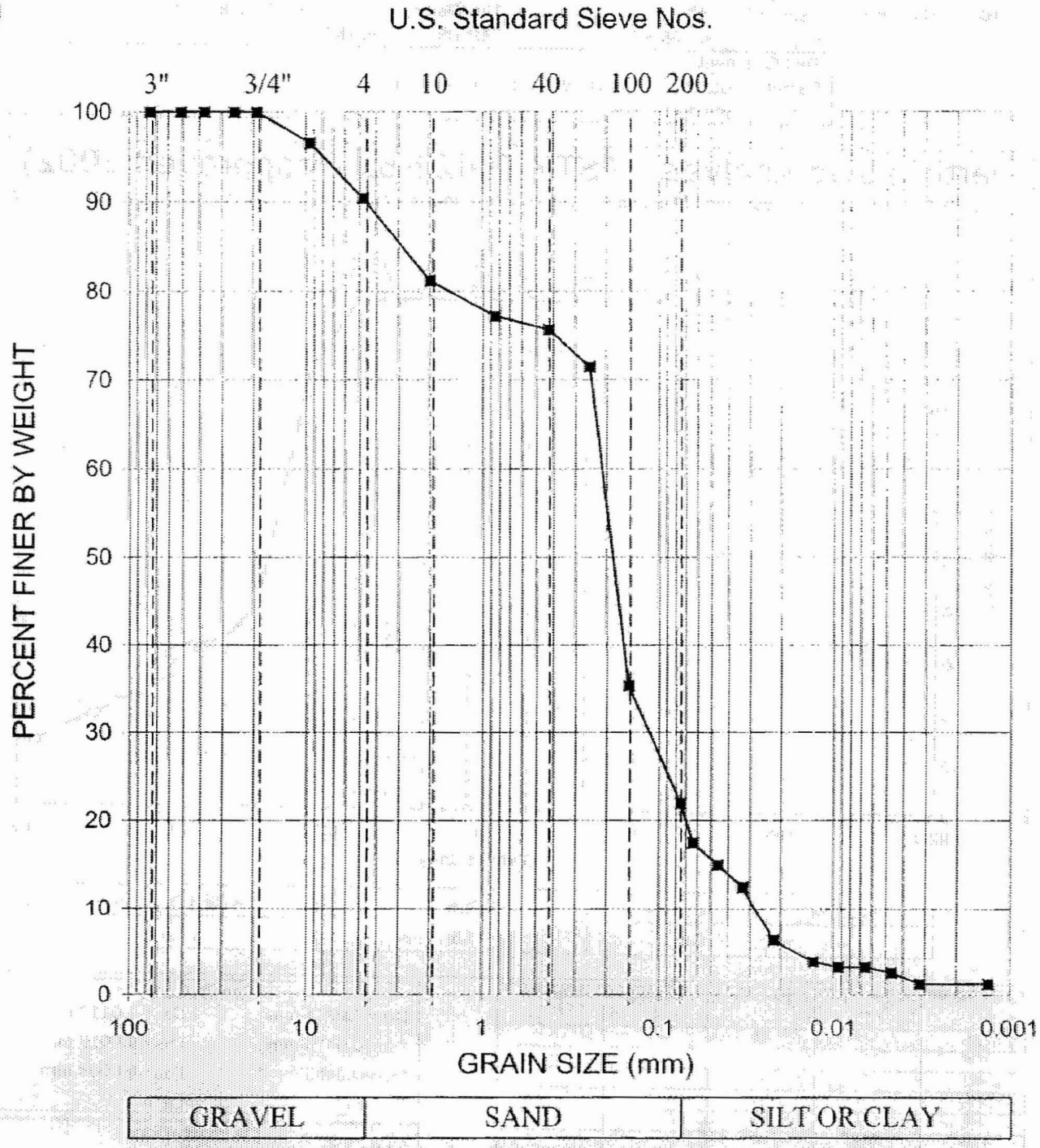
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 9/7/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-328	43.5	Poorly Graded SAND, with silt, trace shells, dark gray	SP-SM	NP	NP

Schnabel

Schnabel Engineering



GRADATION CURVE

ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.	06120048.00	Date:	8/26/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-328	53.5	Silty SAND, trace shells, green	SM		

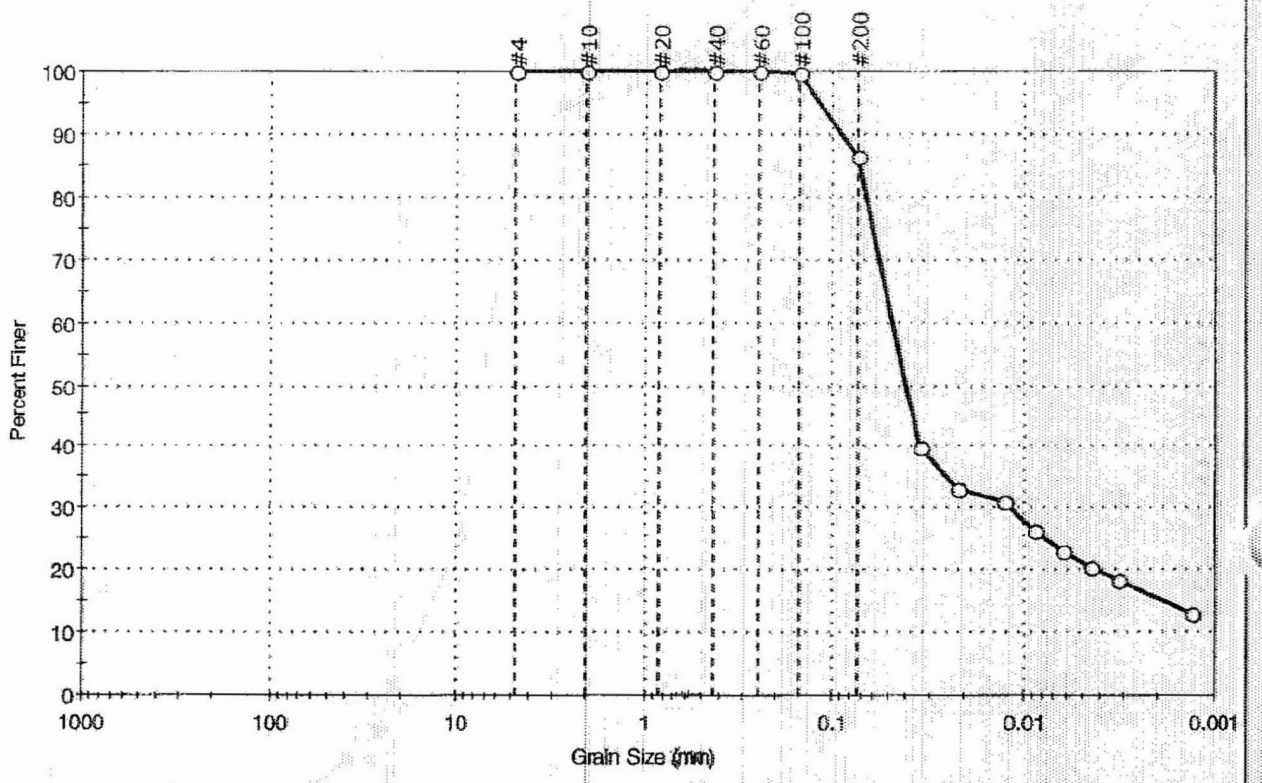
Schnabel

Schnabel Engineering

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Schnabel Engineering, Inc.		
Project:	Subsurface Investigation Calvert Cliffs Nuclear PP		
Location:	Calvert County, MD	Project No:	GTX-6880
Boring ID: B-328	Sample Type: tube	Tested By:	sam
Sample ID:S-16	Test Date: 10/17/06	Checked By:	mcm
Depth : 63.5-65.5 ft	Test ID: 95788		
Test Comment:	---		
Sample Description:	Moist, dark gray organic silt		
Sample Comment:	---		

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	13.5	86.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.074	87		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0340	40		
---	0.0217	33		
---	0.0125	31		
---	0.0088	26		
---	0.0063	23		
---	0.0045	20		
---	0.0032	18		
---	0.0013	13		

Coefficients

D_{85} = 0.0721 mm D_{30} = 0.0117 mm
D_{60} = 0.0476 mm D_{15} = 0.0019 mm
D_{50} = 0.0403 mm D_{10} = 0.0008 mm
C_u = N/A C_c = N/A

Classification

ASTM organic silt (OH)

AASHTO Clayey Soils (A-7-5 (36))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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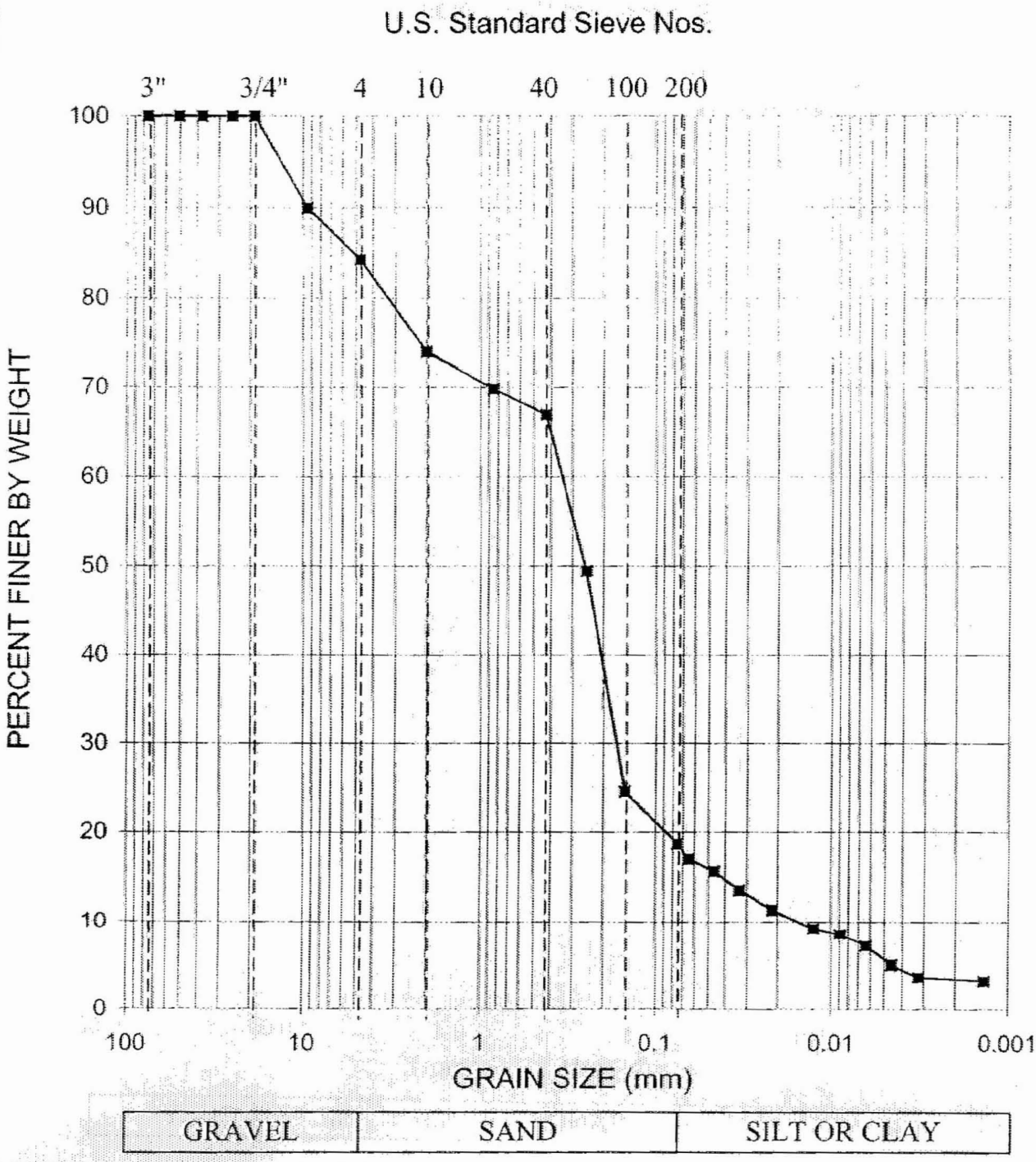


GRADATION CURVE

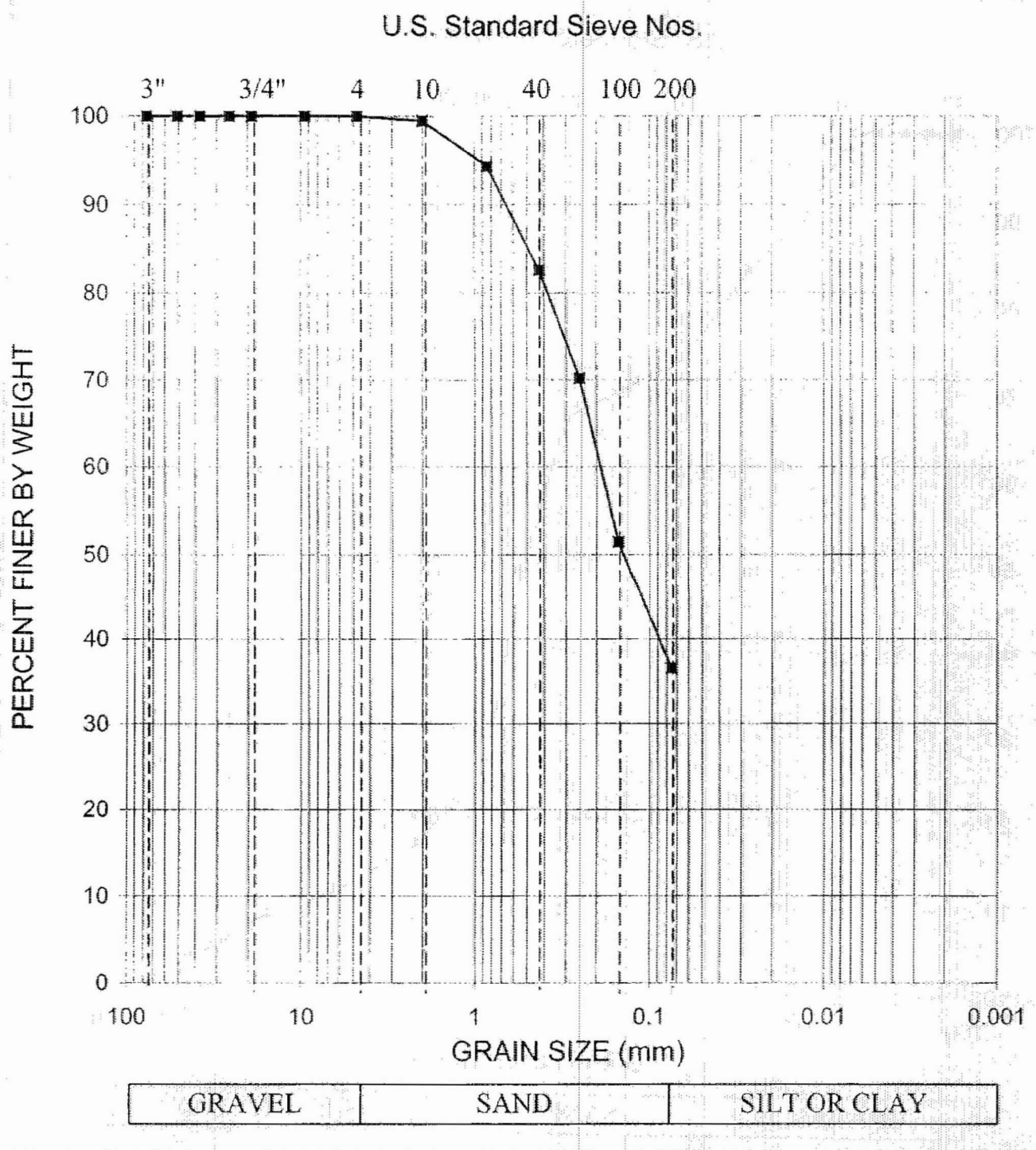
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	9/8/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-328	83.5	Silty SAND, with shells, gray	SM	NP	NP

Schnabel

Schnabel Engineering



GRADATION CURVE

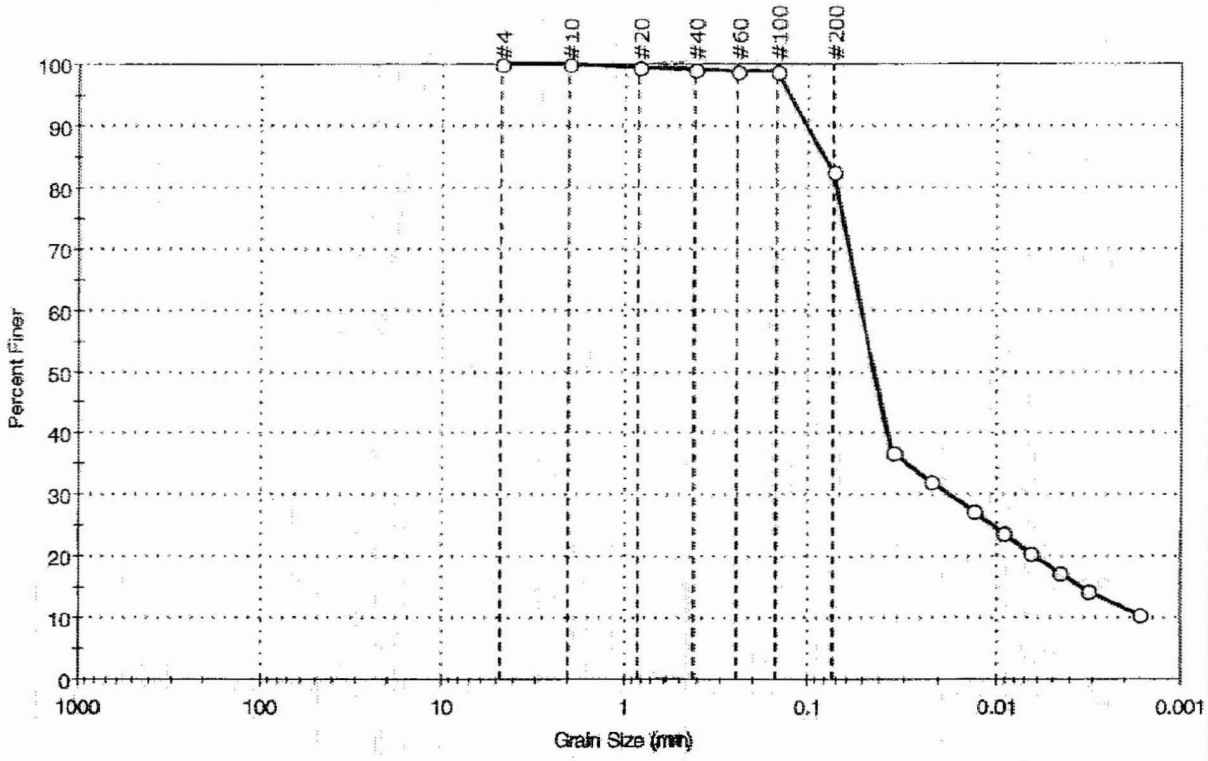
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland		Contract No.: 06120048.00		Date: 8/22/2006	
Boring No.	Depth (ft)	Sample Description	Class.	LL	PI	
B-328	103.5	Silty SAND, dark green	SM			Schnabel Engineering

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Schnabel Engineering, Inc.				
Project:	Subsurface Investigation Calvert Cliffs Nuclear PP				
Location:	Calvert County, MD			Project No:	GTX-6880
Boring ID:	B-328	Sample Type:	tube	Tested By:	sam
Sample ID:	S-28	Test Date:	09/12/06	Checked By:	mcm
Depth :	123.5-125.5 ft	Test Id:	97096		
Test Comment:	---				
Sample Description:	Moist, olive gray silt with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	17.4	82.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	99		
#40	0.42	99		
#60	0.25	99		
#100	0.15	99		
#200	0.074	83		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
—	0.0349	37		
—	0.0224	32		
—	0.0130	28		
—	0.0093	24		
—	0.0066	21		
—	0.0046	17		
—	0.0032	14		
—	0.0017	11		

Coefficients

D_{85} = 0.0821 mm	D_{30} = 0.0173 mm
D_{60} = 0.0510 mm	D_{15} = 0.0035 mm
D_{50} = 0.0432 mm	D_{10} = 0.0015 mm
C_u = N/A	C_c = N/A

Classification

ASTM elastic silt with sand (MH)

AASHTO Clayey Soils (A-7-5 (32))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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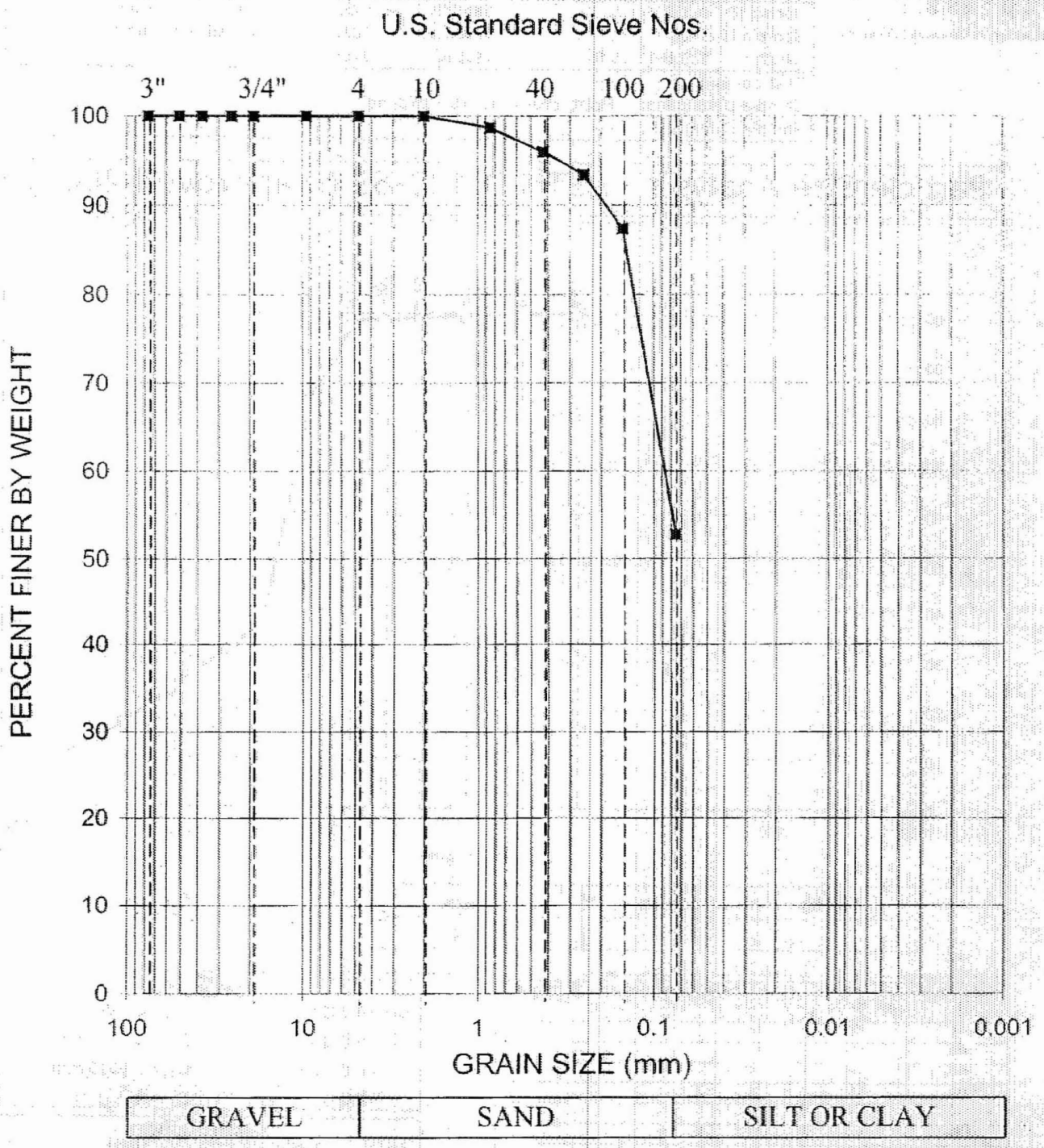


GRADATION CURVE

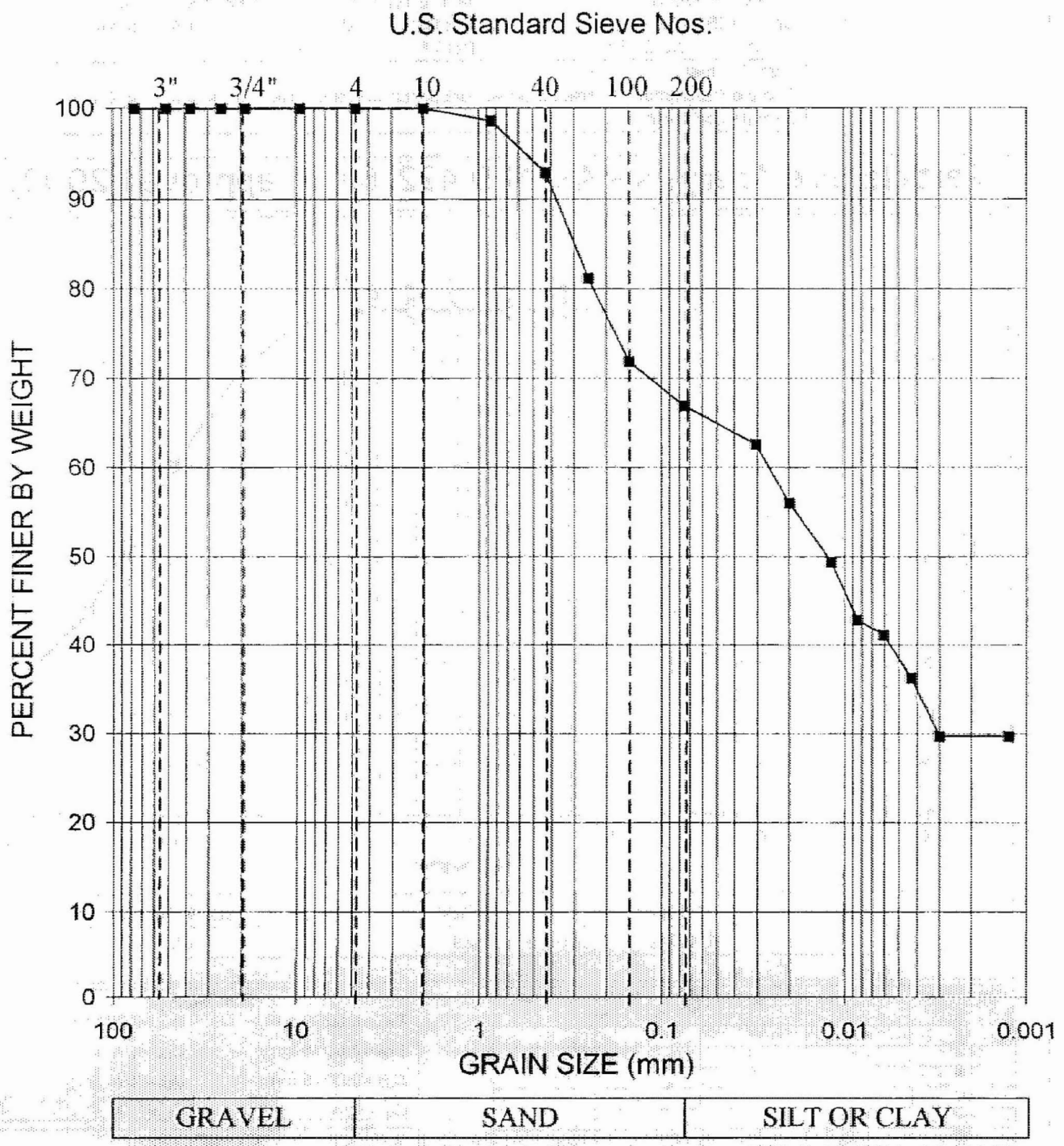
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	8/28/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-328	133.5	SANDY ELASTIC SILT, dark green	MH	70	19

Schnabel

Schnabel Engineering



GRADATION CURVE

ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	10/11/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-331	5	Sandy LEAN CLAY, brown	CL	43	28

Schnabel

Schnabel Engineering

GeoTesting express
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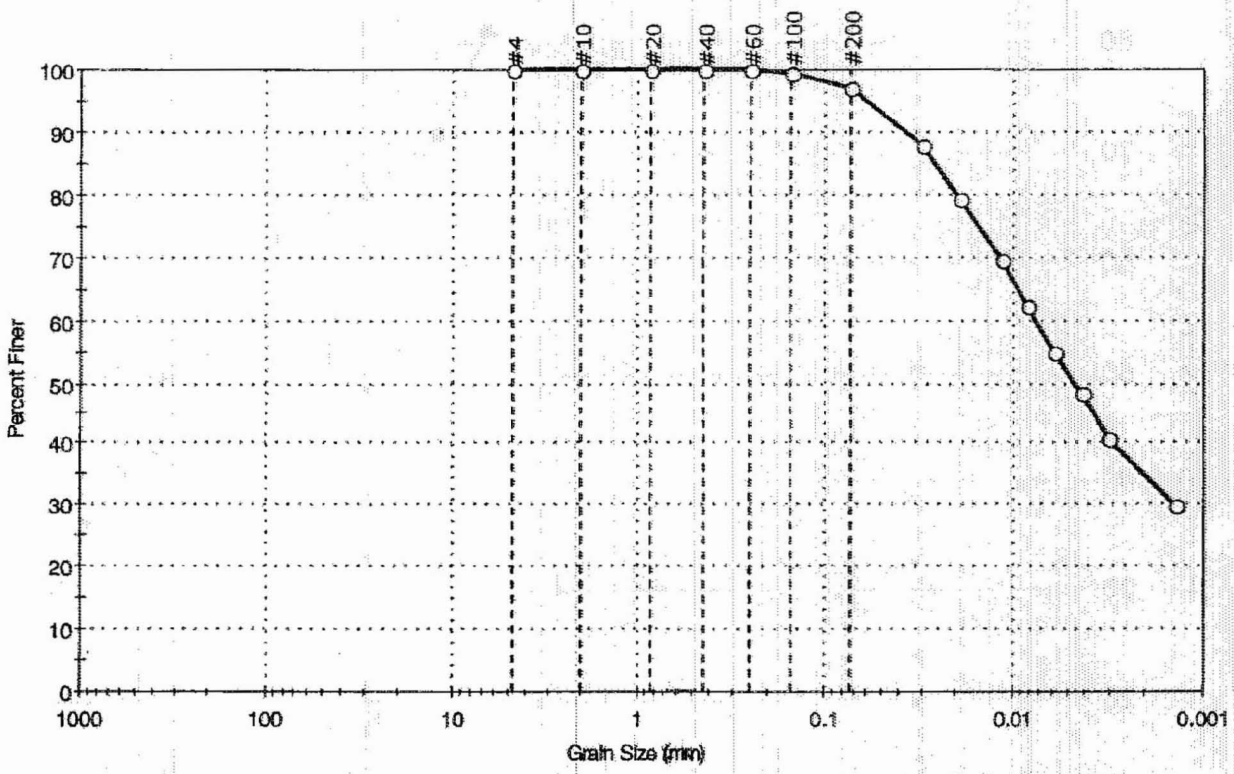
Client:	Schnabel Engineering, Inc.		
Project:	Subsurface Investigation Calvert Cliffs Nuclear PP		
Location:	Calvert County, MD	Project No:	GTX-6880
Boring ID: B-331	Sample Type: tube	Tested By:	sam
Sample ID: S-7	Test Date: 10/17/06	Checked By:	mcm
Depth : 18.5-20.5 ft	Test Id: 100409		

Test Comment: ---
Sample Description: Moist, mottled dark greenish gray, dusky red, and reddish brown clay
Sample Comment: ---

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	2.9	97.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	99		
#200	0.074	97		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0300	88		
---	0.0192	79		
---	0.0113	69		
---	0.0082	62		
---	0.0059	55		
---	0.0042	48		
---	0.0030	41		
---	0.0014	30		

Coefficients

D_{85} = 0.0258 mm	D_{30} = 0.0014 mm
D_{60} = 0.0074 mm	D_{15} = N/A
D_{50} = 0.0046 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM fat clay (CH)

AASHTO Clayey Soils (A-7-6 (41))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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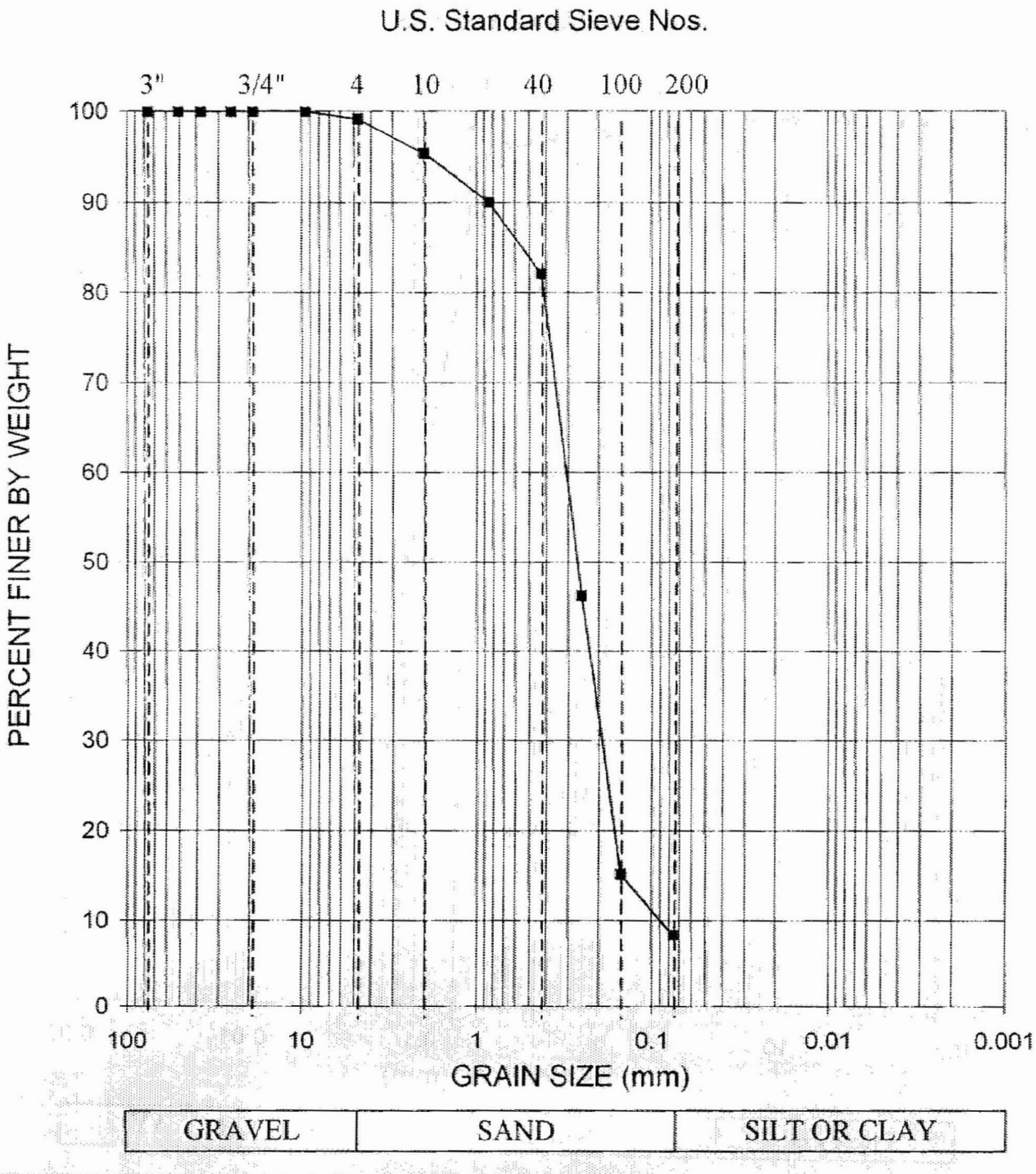


GRADATION CURVE

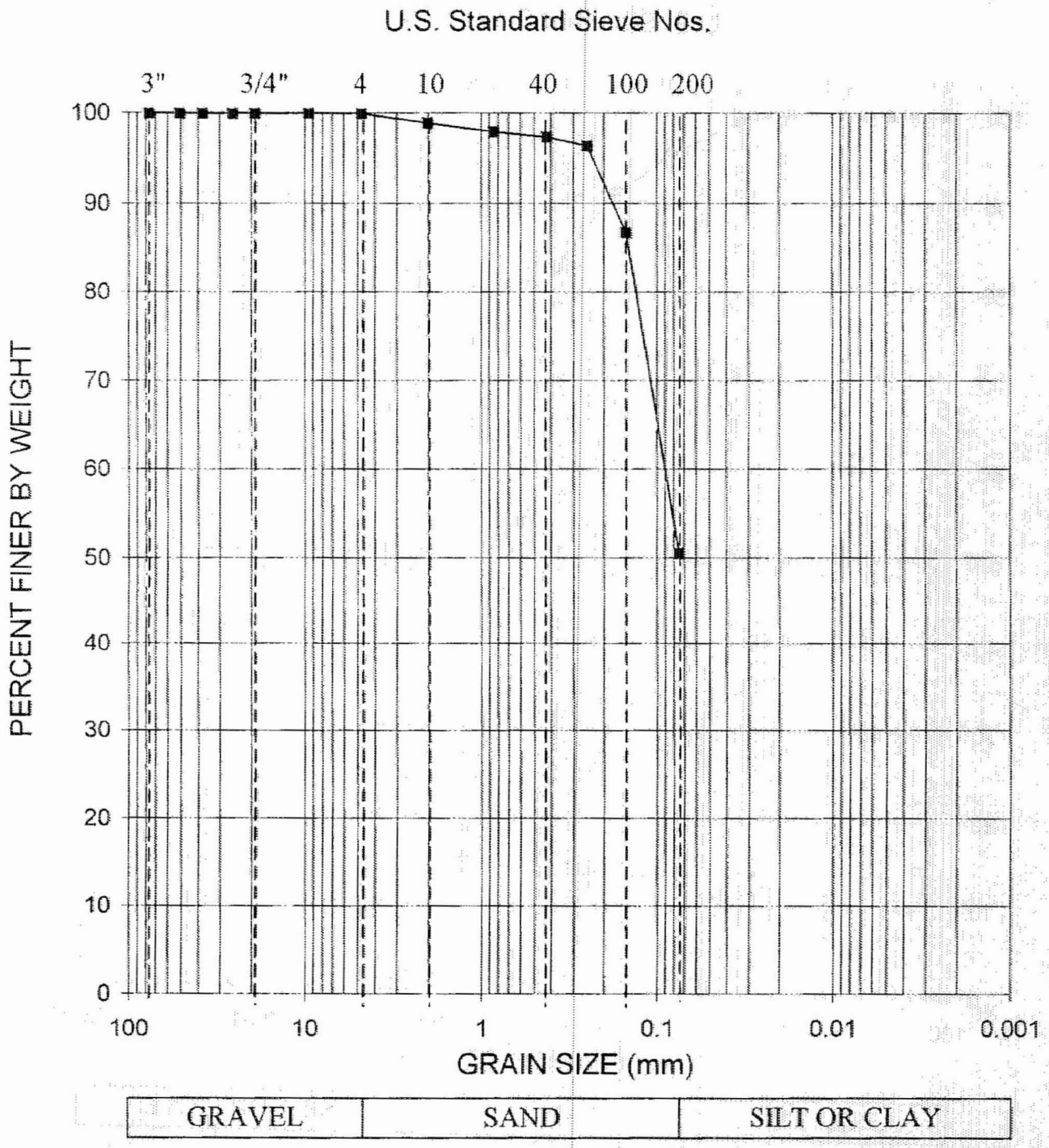
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	10/3/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-331	33.5	Poorly Graded SAND, with silt, trace shells, dark green	SP-SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

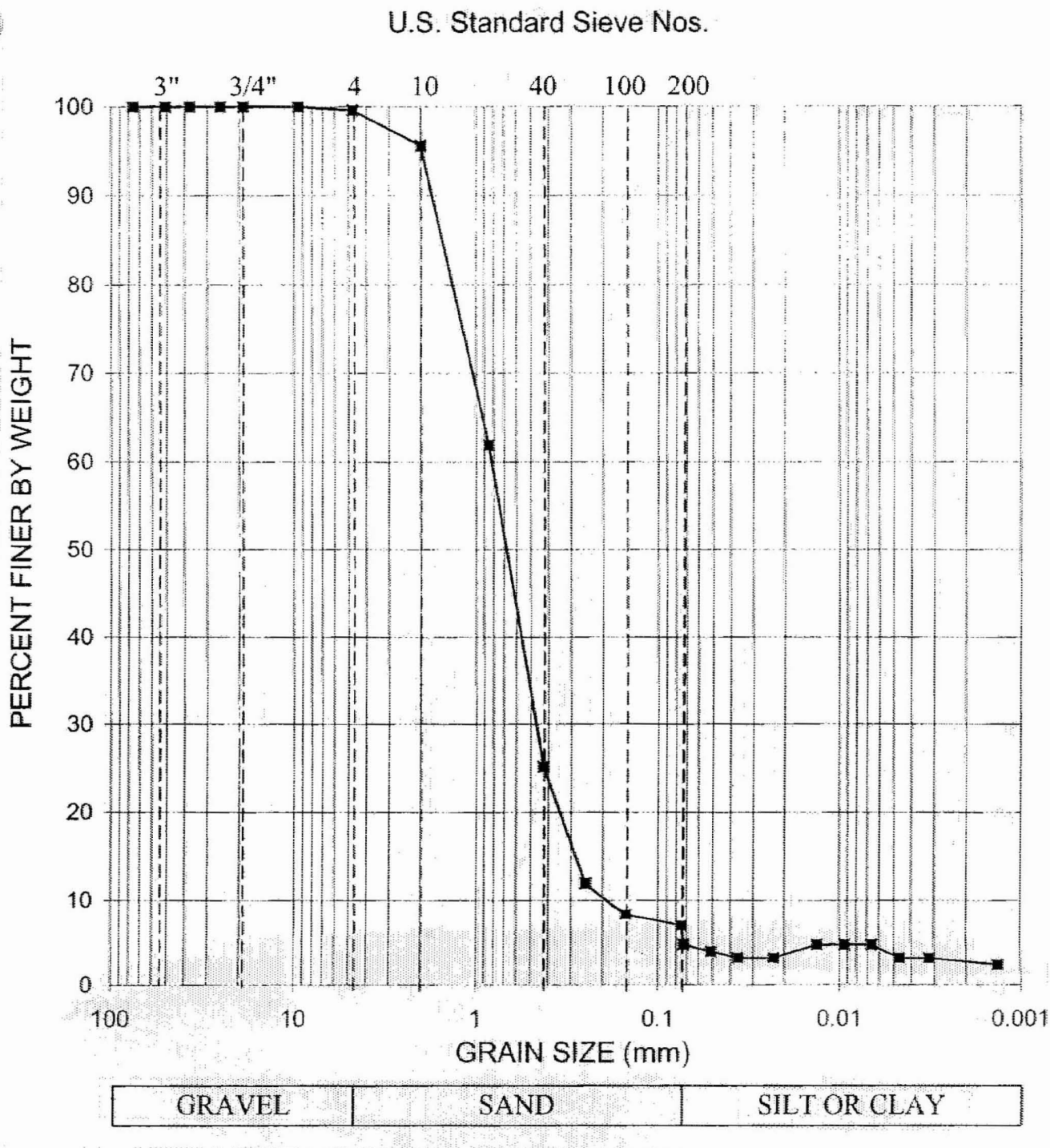
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	10-03-06

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-331	43.5	Sandy SILT, contains shells, gray	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

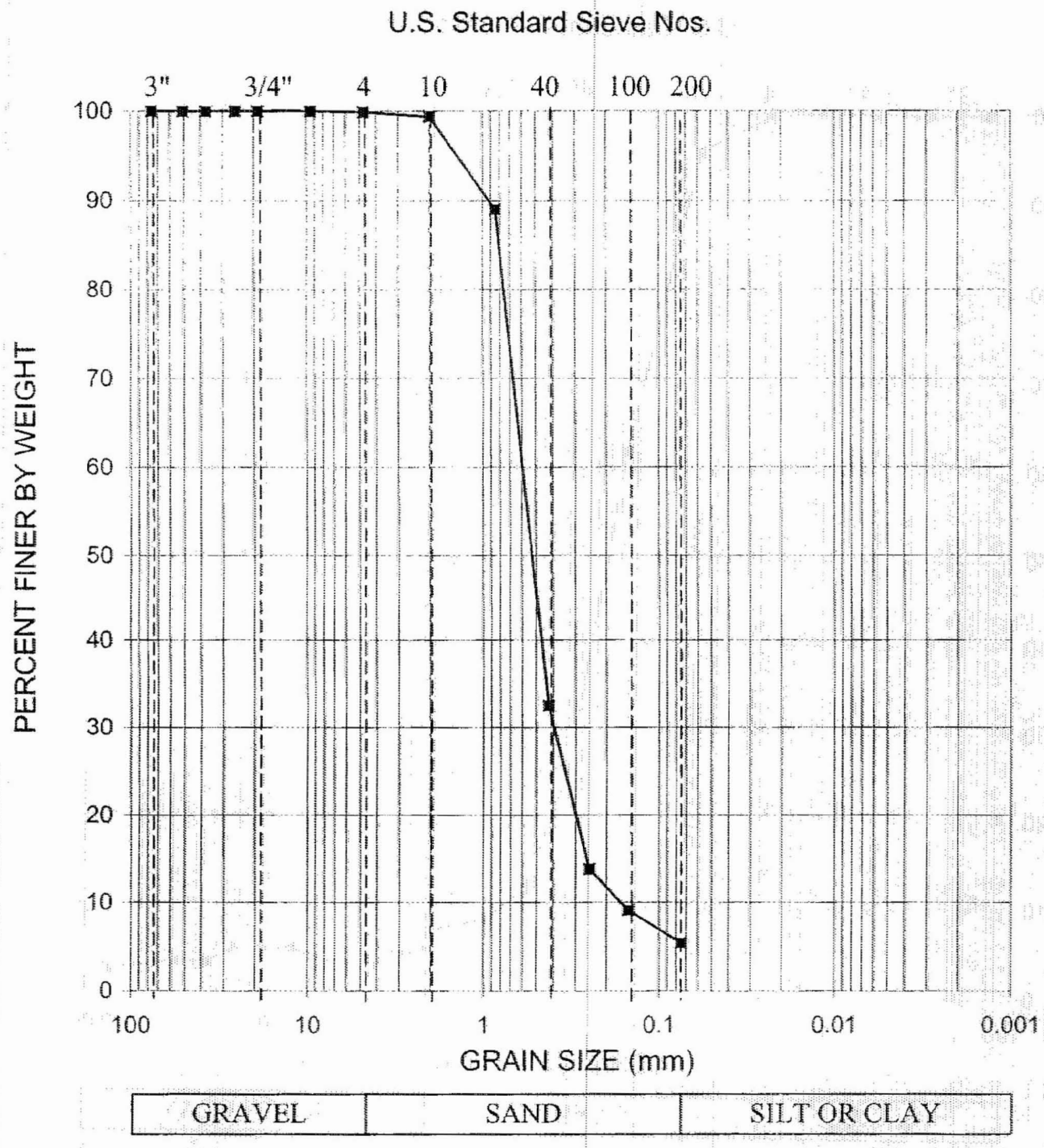
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/26/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-333	2.5	Poorly Graded SAND, with silt, brown	SP-SM		

Schnabel

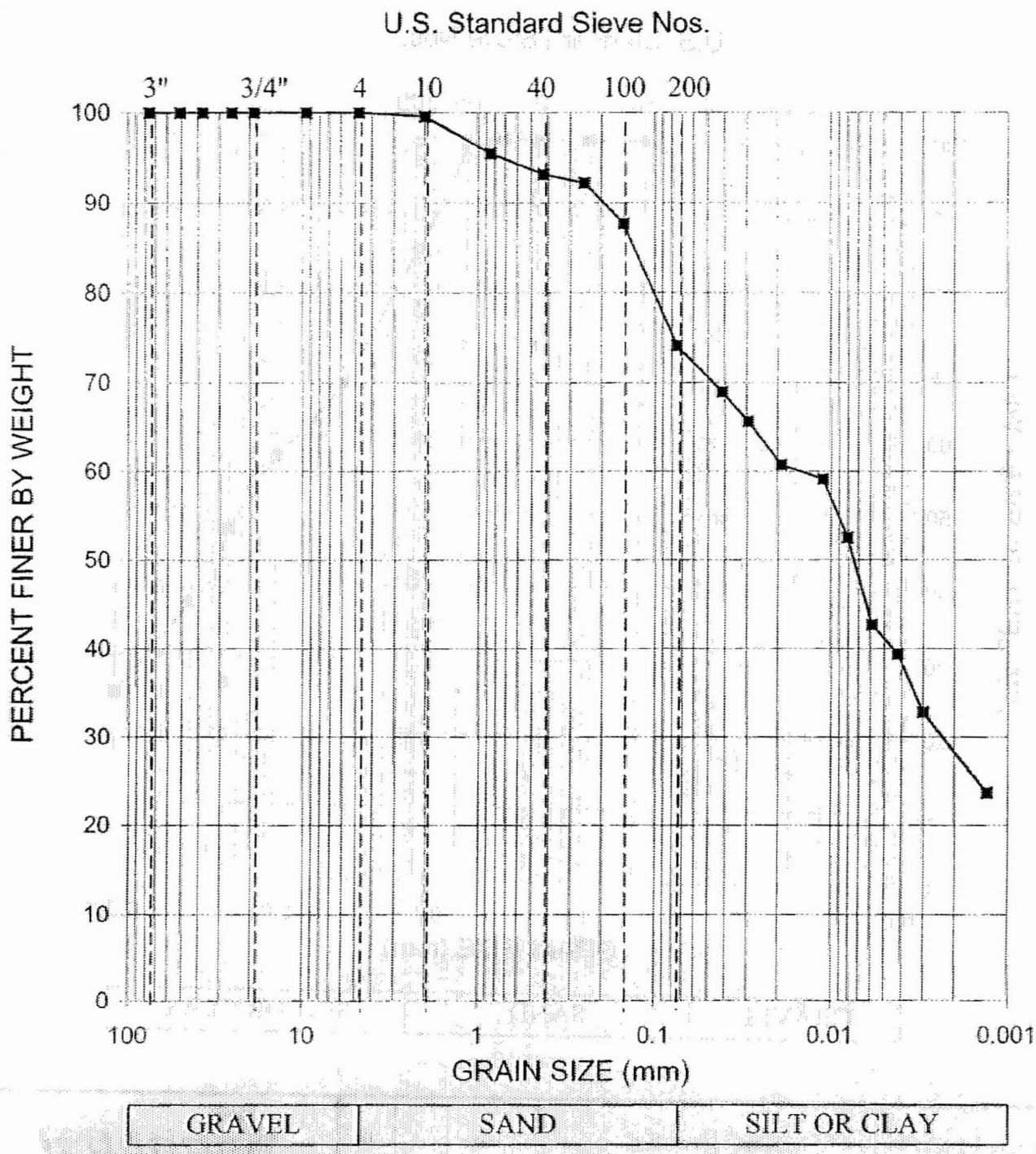
Schnabel Engineering



GRADATION CURVE

ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland		Contract No.: 06120048.00		Date: 8/22/2006	
Boring No.	Depth (ft)	Sample Description	Class.	LL	PI	
B-333	7.5	Poorly Graded SAND, with silt, tan	SP-SM			Schnabel Engineering



GRADATION CURVE

ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	9/8/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-333	23.5	FAT CLAY, with sand, dark gray	CH	57	24

Schnabel

Schnabel Engineering