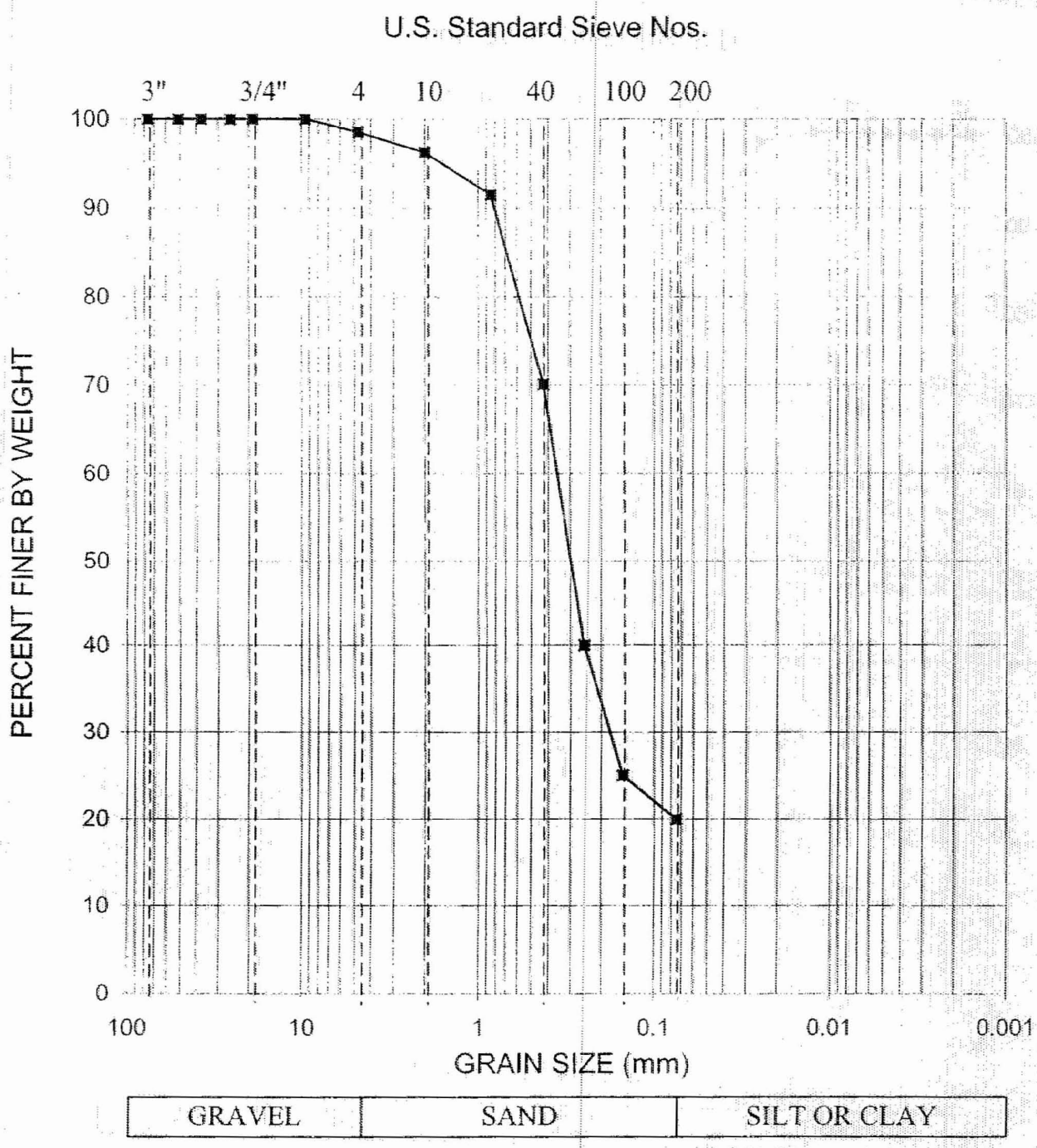


GRADATION CURVE

ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/21/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-319	23.5	Clayey SAND, trace gravel, light brown	SC		

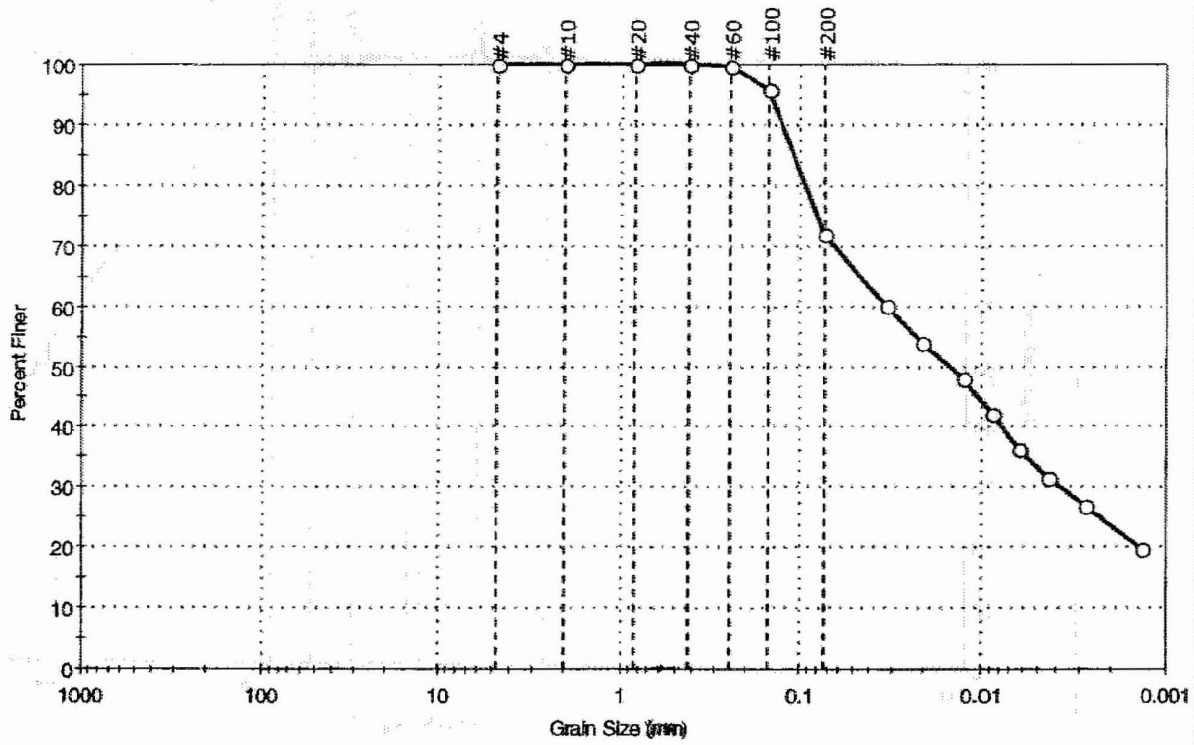
Schnabel

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-319	Sample Type: tube	Tested By:	sam
Sample ID:S-10	Test Date: 09/08/06	Checked By:	mcm
Depth : 33.5-35.5 ft	Test Id: 95775		
Test Comment: ---			
Sample Description:	Moist, dark gray clay with sand		
Sample Comment: ---			

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



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	28.0	72.0

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	96		
#200	0.074	72		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0328	60		
---	0.0207	54		
---	0.0122	48		
---	0.0087	42		
---	0.0063	36		
---	0.0044	32		
---	0.0028	27		
---	0.0014	20		

Coefficients

D_{85} = 0.1081 mm	D_{30} = 0.0038 mm
D_{60} = 0.0326 mm	D_{15} = N/A
D_{50} = 0.0145 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM lean clay with sand (CL)

AASHTO Clayey Soils (A-7-6 (28))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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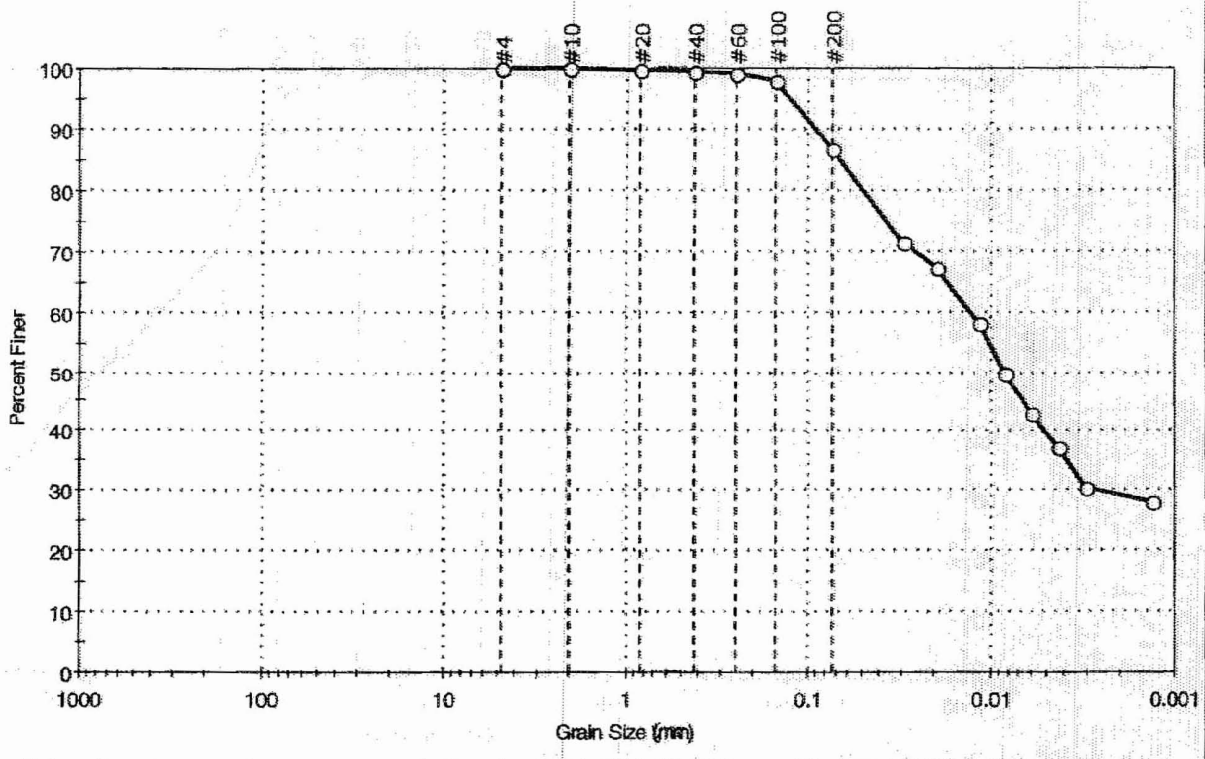
GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Schnabel Engineering, Inc.		
Project:	Subsurface Investigation Calvert Cliffs Nuclear PP		
Location:	Calvert County, MD	Project No:	GTX-6880
Boring ID: B-319	Sample Type: tube	Tested By:	sam
Sample ID: S-12	Test Date: 09/07/06	Checked By:	mcm
Depth : 43.5-45.2 ft	Test Id: 95776		
Test Comment: ---			
Sample Description:	Moist, dark gray clay		
Sample Comment: ---			

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



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	13.3	86.7

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	99		
#60	0.25	99		
#100	0.15	98		
#200	0.074	87		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0296	71		
---	0.0190	67		
---	0.0114	58		
---	0.0083	50		
---	0.0060	43		
---	0.0043	37		
---	0.0031	30		
---	0.0013	28		

Coefficients

D_{85} = 0.0670 mm D_{30} = 0.0027 mm
D_{60} = 0.0127 mm D_{15} = N/A
D_{50} = 0.0083 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM fat clay (CH)

AASHTO Clayey Soils (A-7-6 (46))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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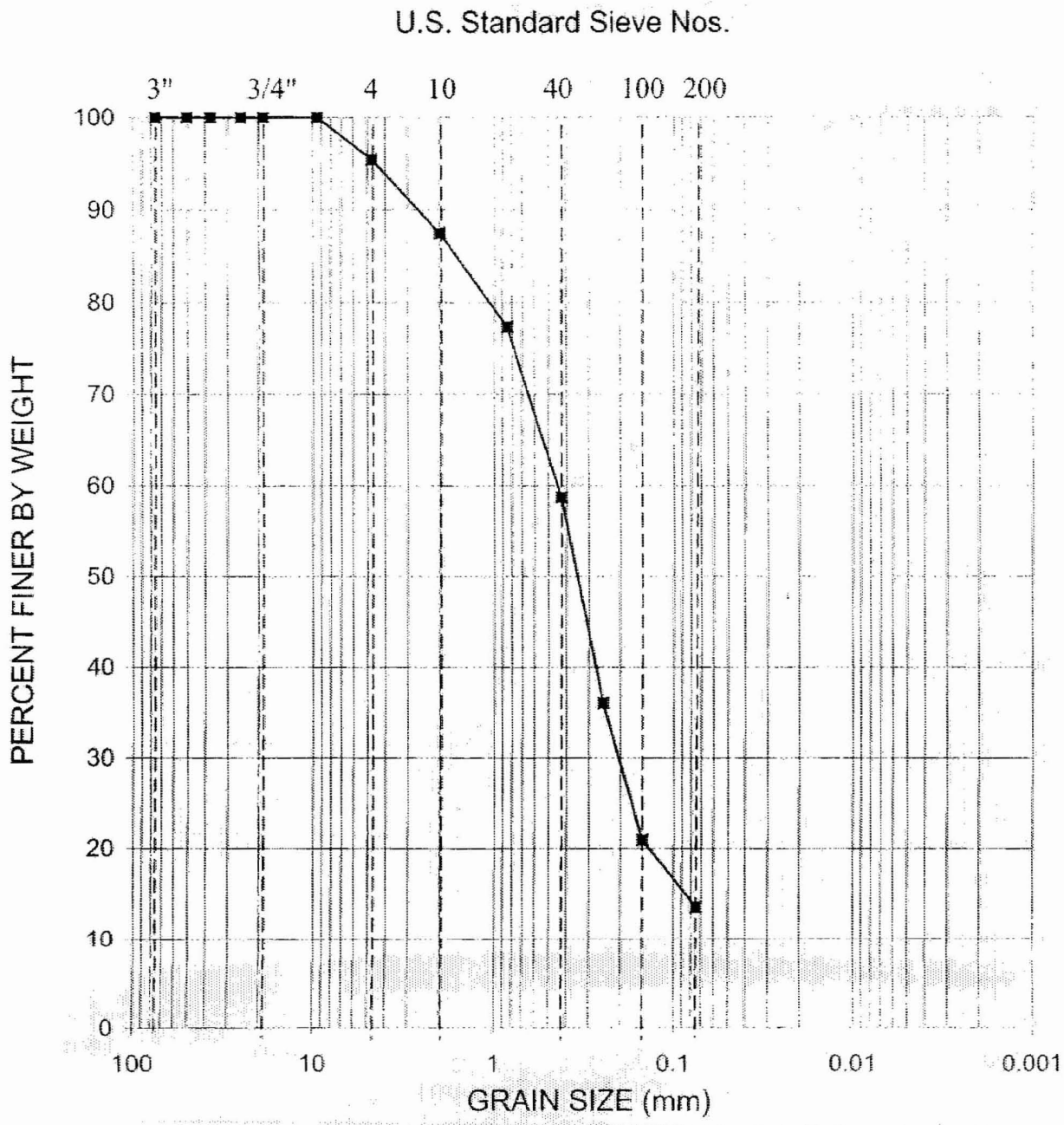


GRADATION CURVE

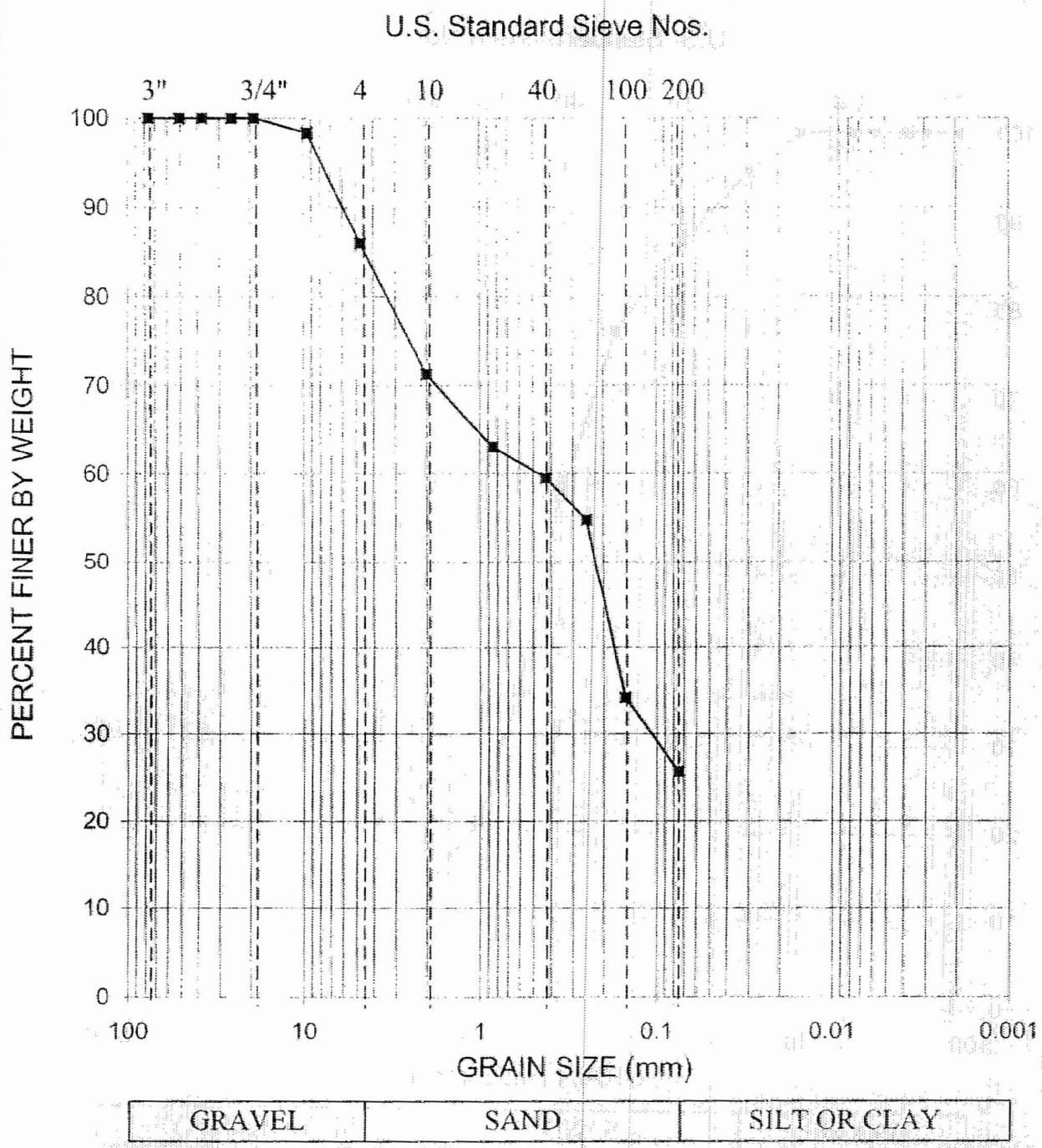
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/21/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-319	73.5	Silty SAND, trace shells, gray	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

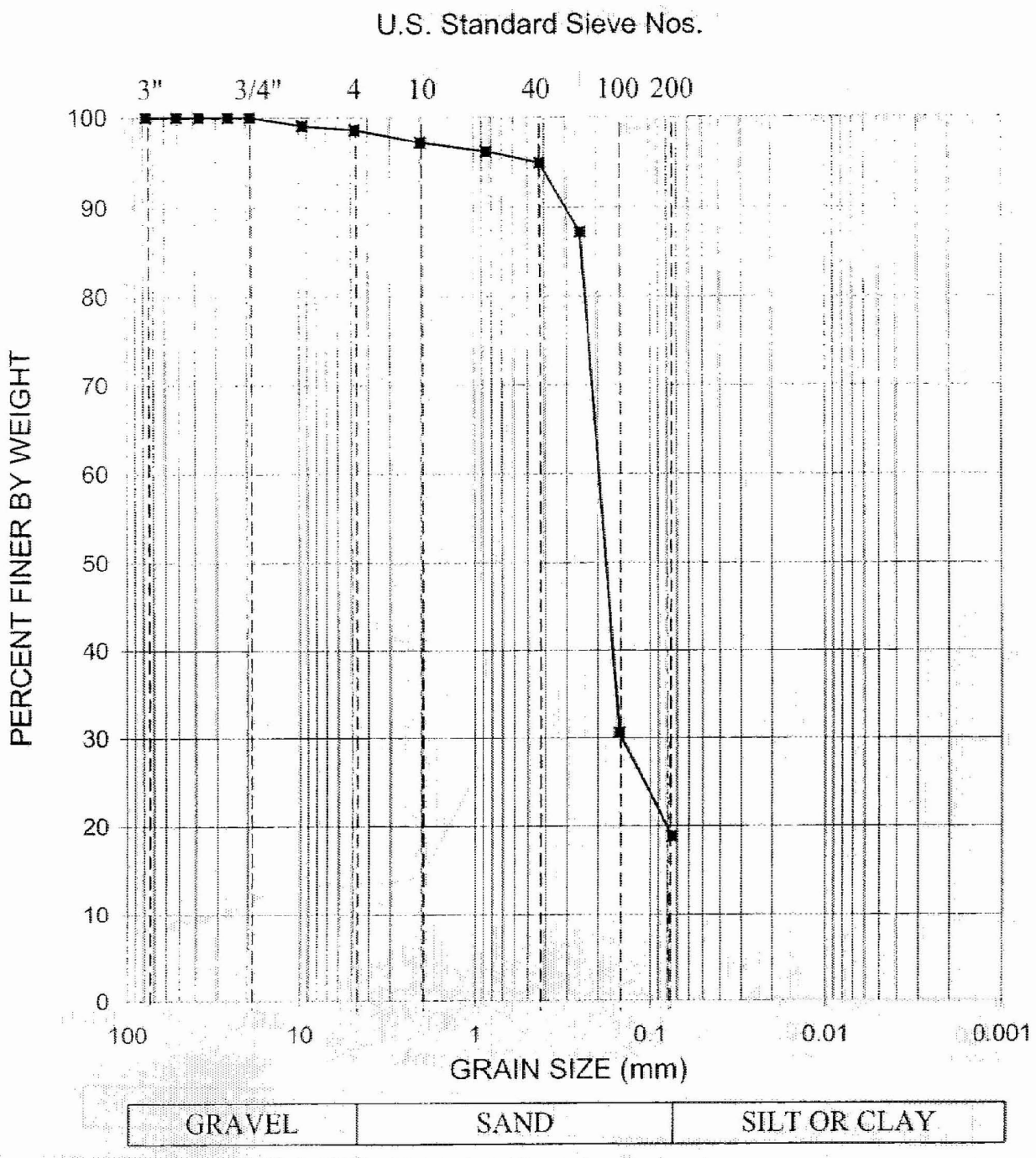
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/21/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-319	83.5	Silty SAND, trace cemented sand , green	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

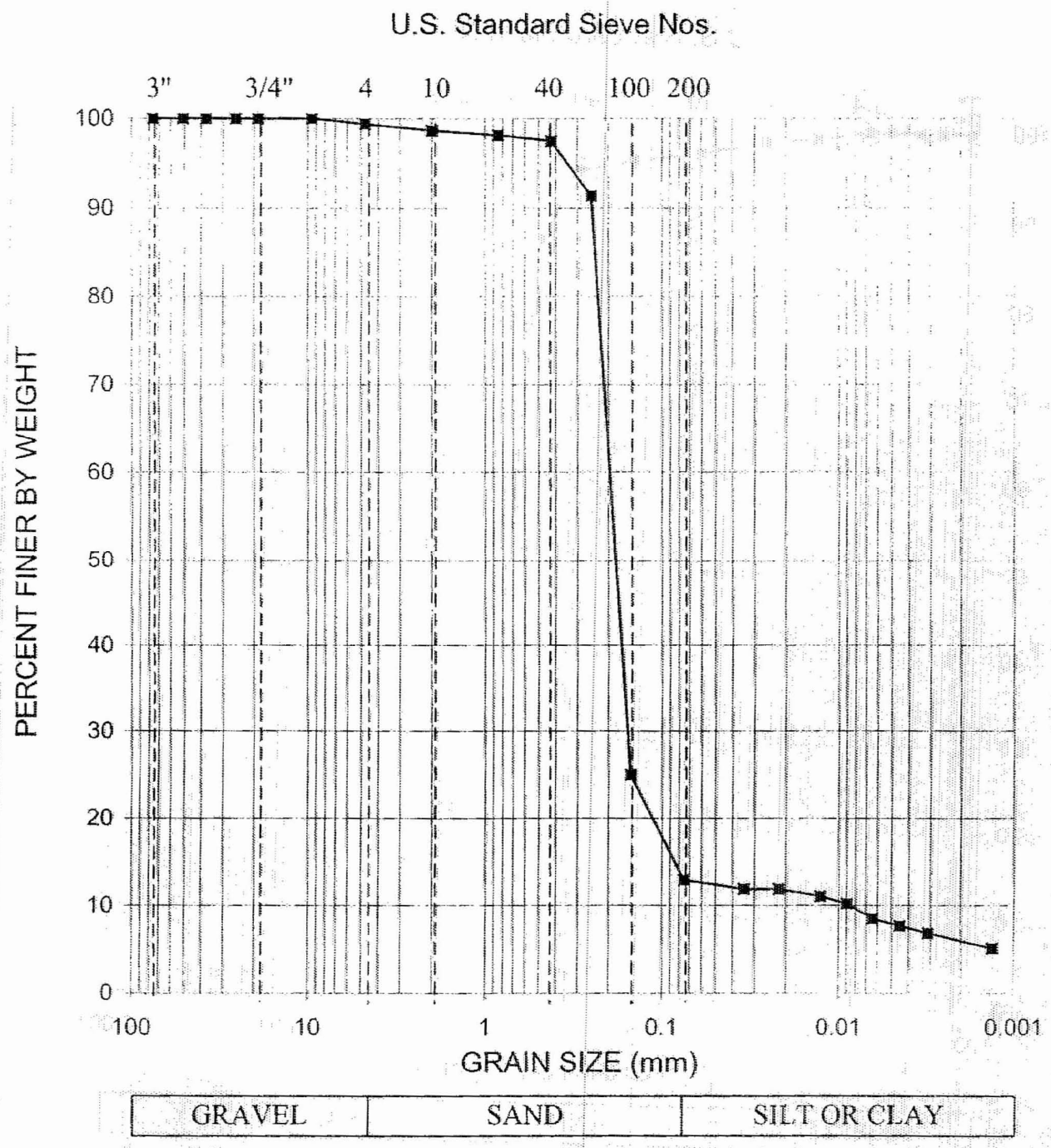
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/21/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-319	88.5	Silty SAND, trace shells, gray	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

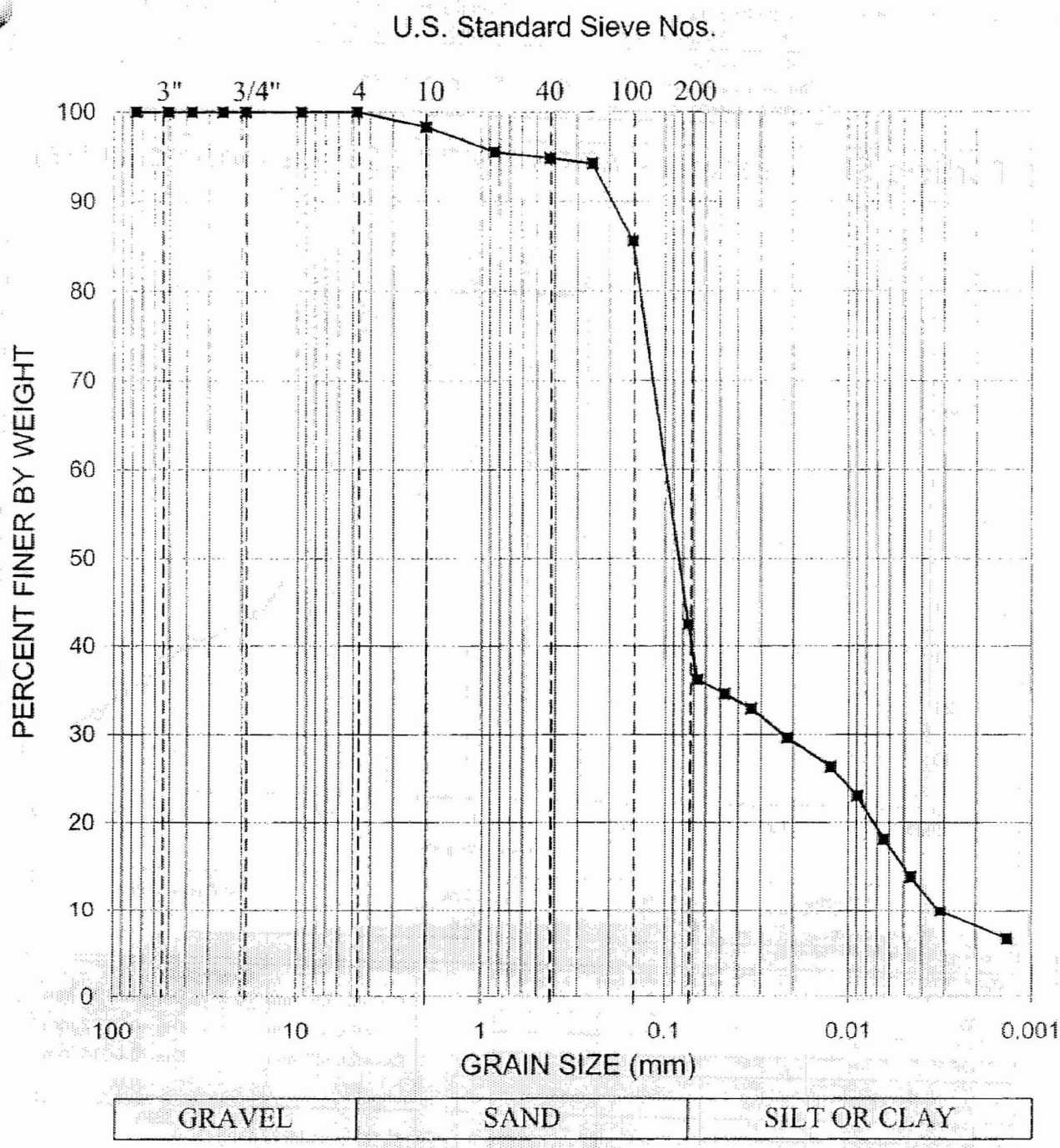
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/31/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-319	98.5	Silty SAND, trace shells, dark green	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: 8/31/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-320	33.5	Clayey SAND, dark gray	SC	33	15

Schnabel Engineering

GeoTesting express
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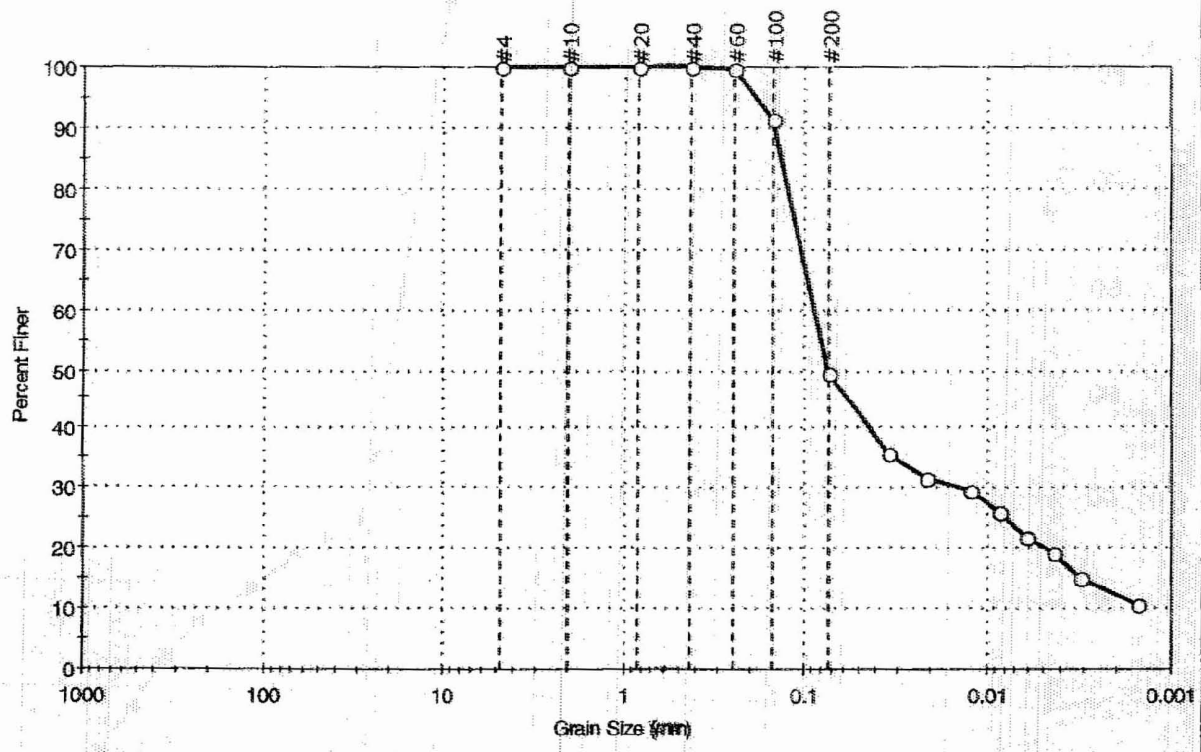
Client:	Schnabel Engineering, Inc.		
Project:	Subsurface Investigation Calvert Cliffs Nuclear PP		
Location:	Calvert County, MD	Project No:	GTX-6880
Boring ID: B-320	Sample Type: tube	Tested By:	sam
Sample ID:S-11	Test Date: 10/12/06	Checked By:	mcm
Depth : 38.5-40.5 ft	Test Id: 100202		
Test Comment: ---			
Sample Description:	Moist, very dark gray clayey sand		
Sample Comment: ---			

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



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	50.6	49.4

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	92		
#200	0.074	49		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0339	36		
---	0.0211	32		
---	0.0122	30		
---	0.0086	26		
---	0.0062	22		
---	0.0044	19		
---	0.0032	15		
---	0.0015	11		

Coefficients

D_{85} = 0.1336 mm	D_{30} = 0.0137 mm
D_{60} = 0.0882 mm	D_{15} = 0.0032 mm
D_{50} = 0.0747 mm	D_{10} = 0.0014 mm
C_u = N/A	C_c = N/A

Classification

ASTM Clayey sand (SC)

AASHTO Clayey Soils (A-6 (8))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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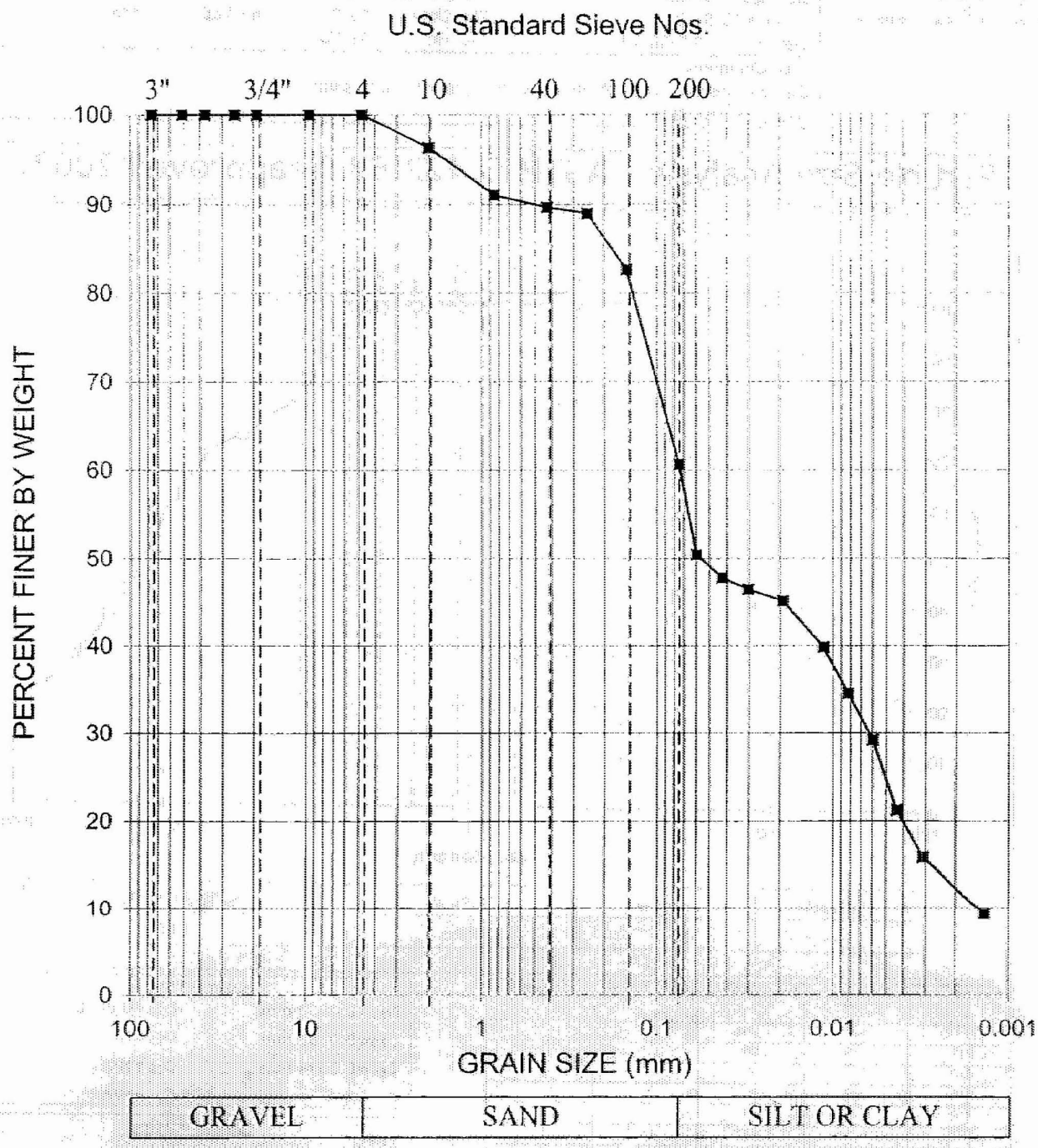


GRADATION CURVE

ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 9/6/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-320	43.5	Sandy FAY CLAY, dark gray	CH	56	37

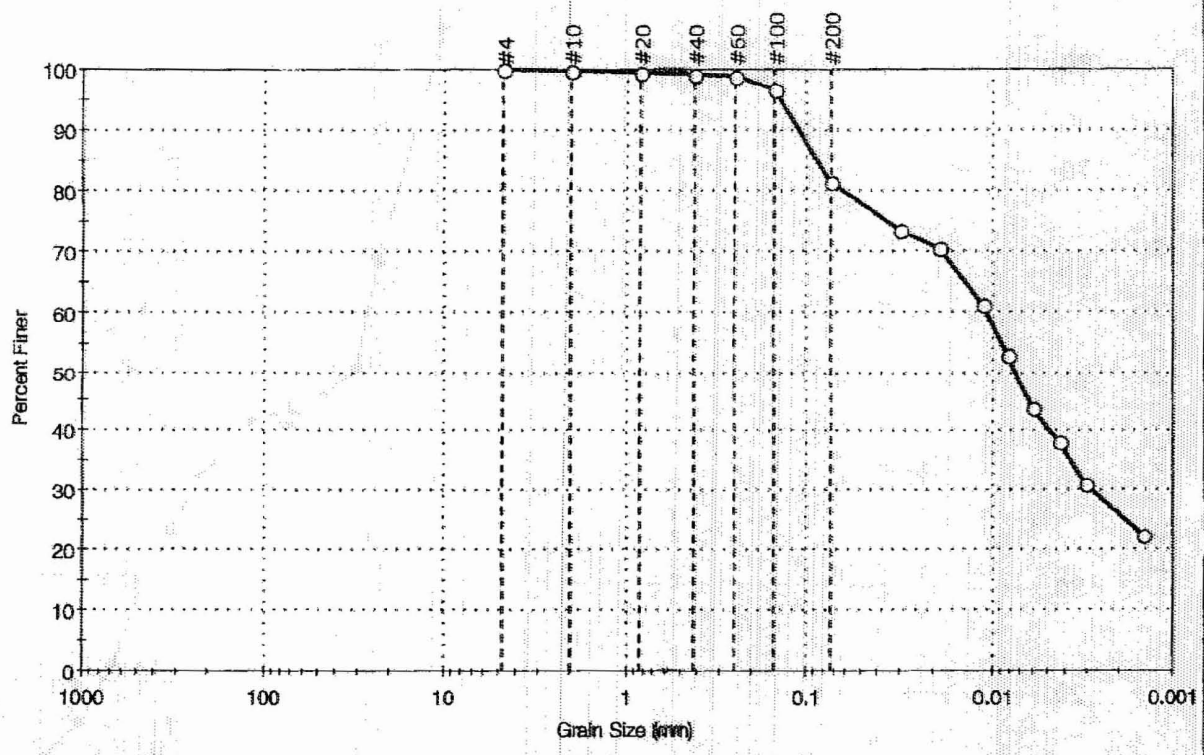
Schnabel

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-320	Sample Type: tube	Tested By:	sam
Sample ID:S-13	Test Date: 09/29/06	Checked By:	mcm
Depth : 48.5-50.0 ft	Test Id: 95767		
Test Comment:	---		
Sample Description:	Moist, dark olive gray clay with sand		
Sample Comment:	---		

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



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	18.5	81.5

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	97		
#200	0.074	82		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0303	74		
---	0.0190	70		
---	0.0112	61		
---	0.0081	53		
---	0.0059	44		
---	0.0042	38		
---	0.0031	31		
---	0.0015	22		

Coefficients

D_{85} = 0.0869 mm	D_{30} = 0.0028 mm
D_{60} = 0.0107 mm	D_{15} = N/A
D_{50} = 0.0074 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM fat clay with sand (CH)

AASHTO Clayey Soils (A-7-6 (38))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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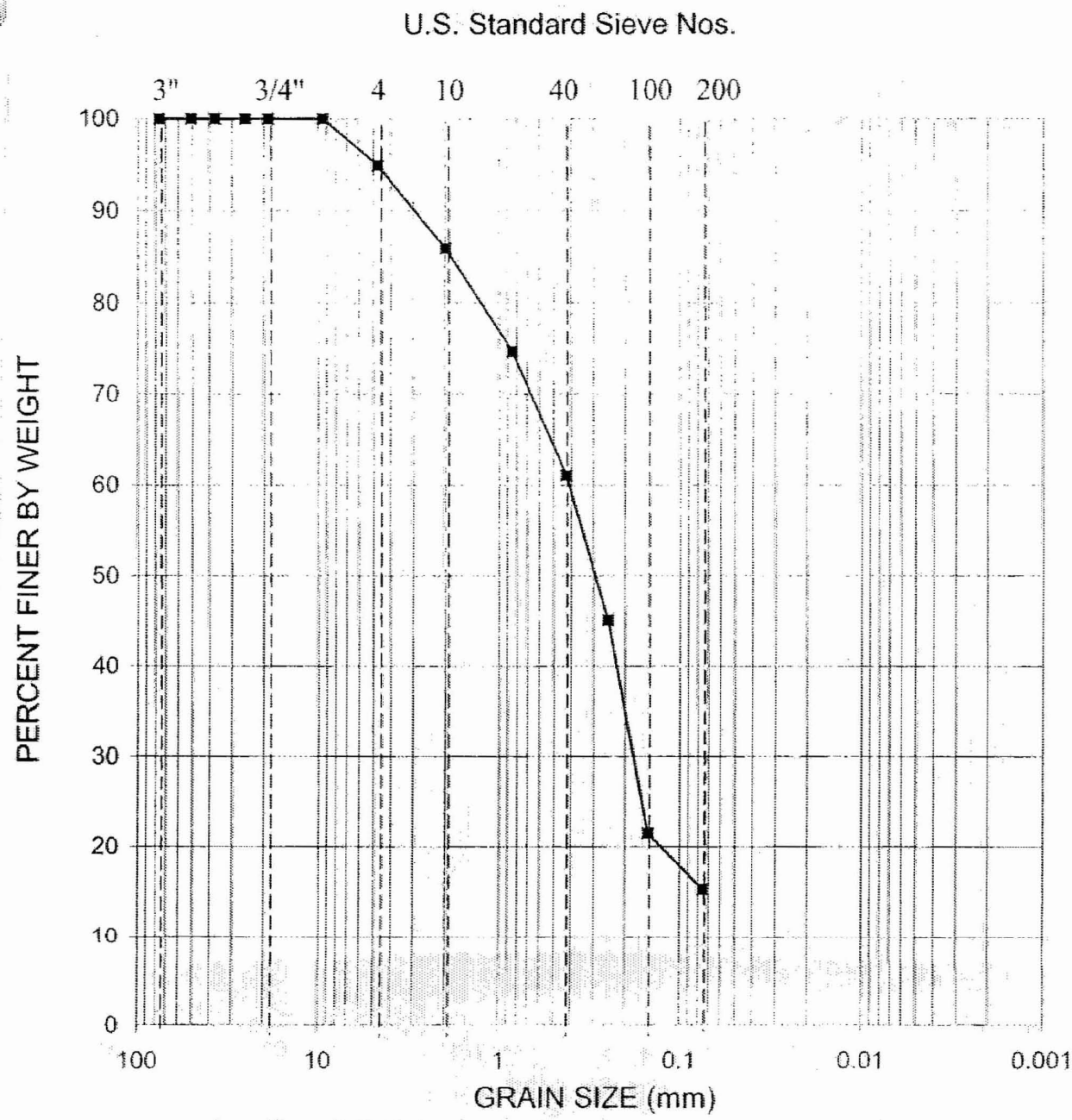


GRADATION CURVE

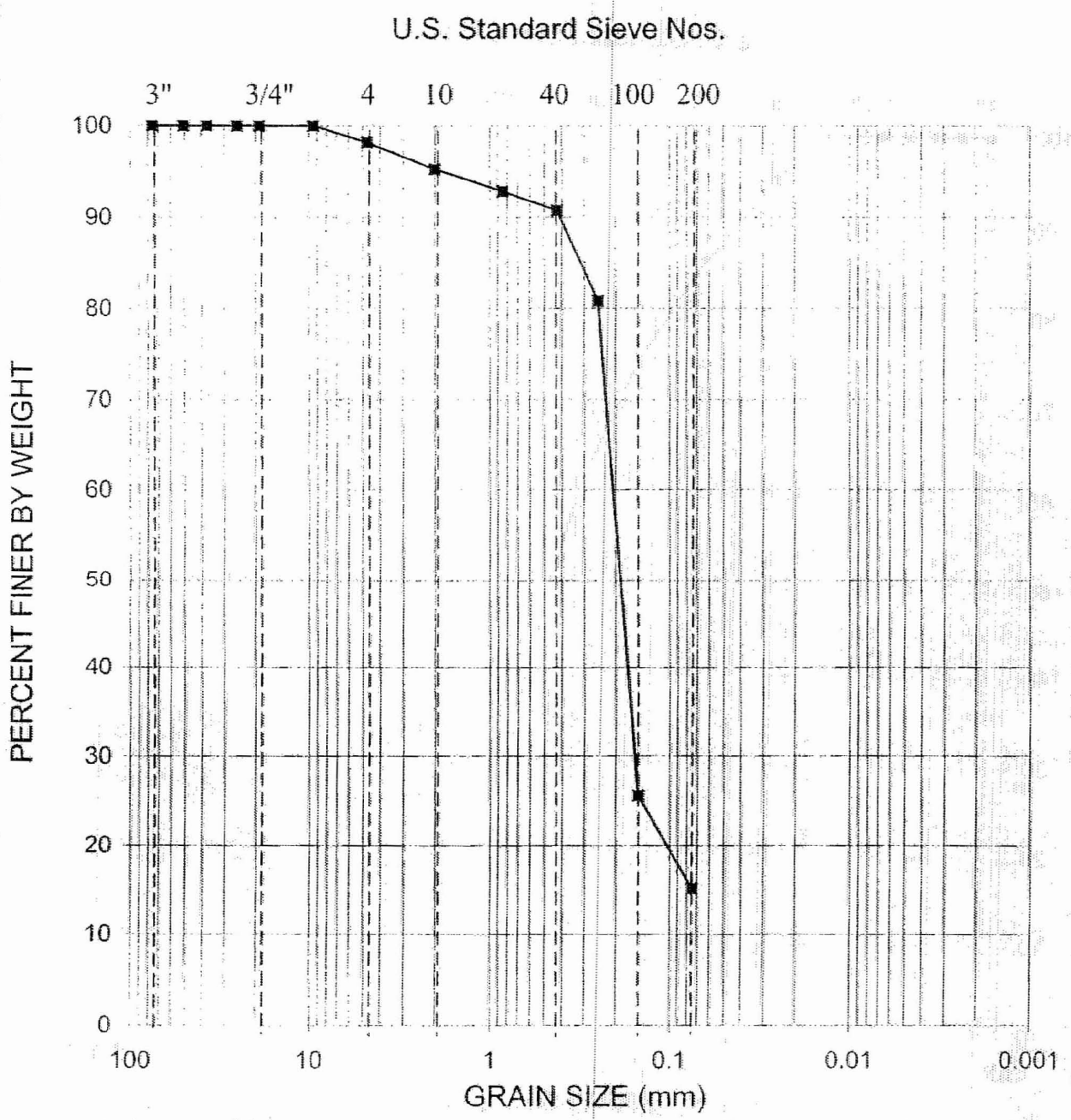
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/21/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-320	73.5	Silty SAND, trace cemented sand, contains shells	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

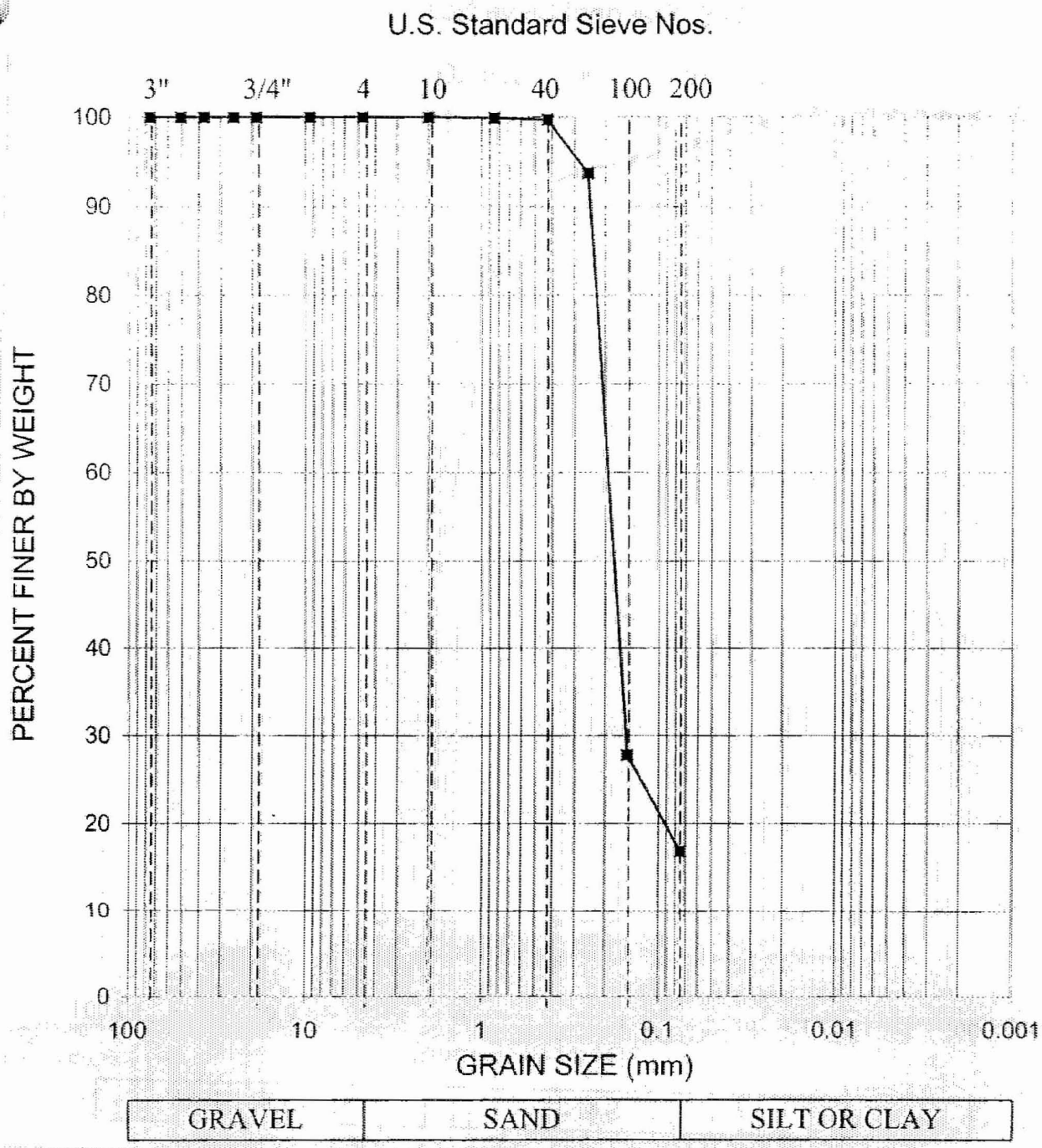
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland	Contract No.: 06120048.00	Date: 8/21/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-320	93.5	Silty SAND, trace shells, dark green	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:	8/21/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
B-320	103.5	Silty SAND, gray	SM		

Schnabel

Schnabel Engineering