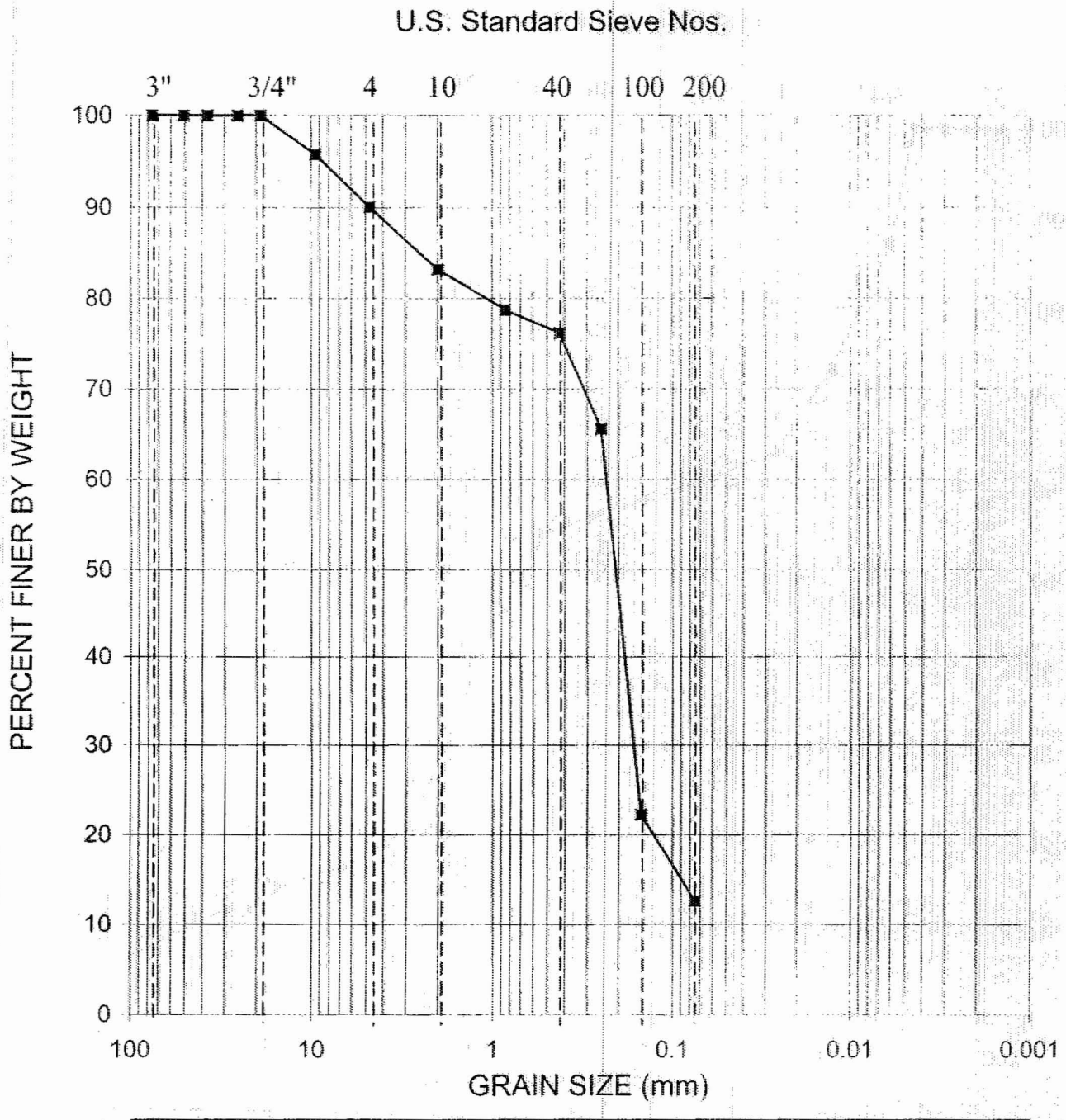


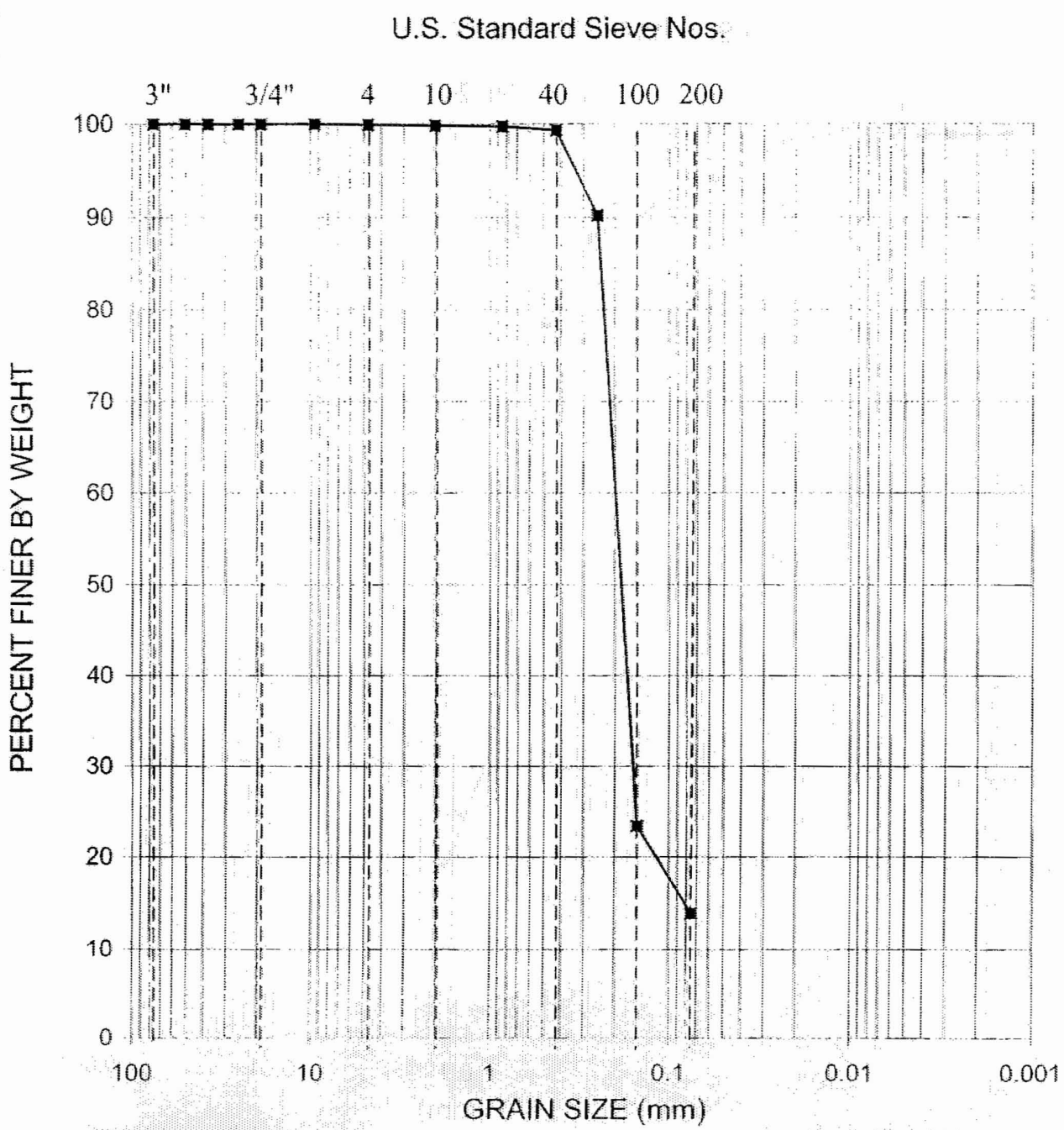

**GRADATION CURVE**

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-334 | 73.5 | Silty SAND, trace shells, dark gray | SM | | |

Schnabel Engineering



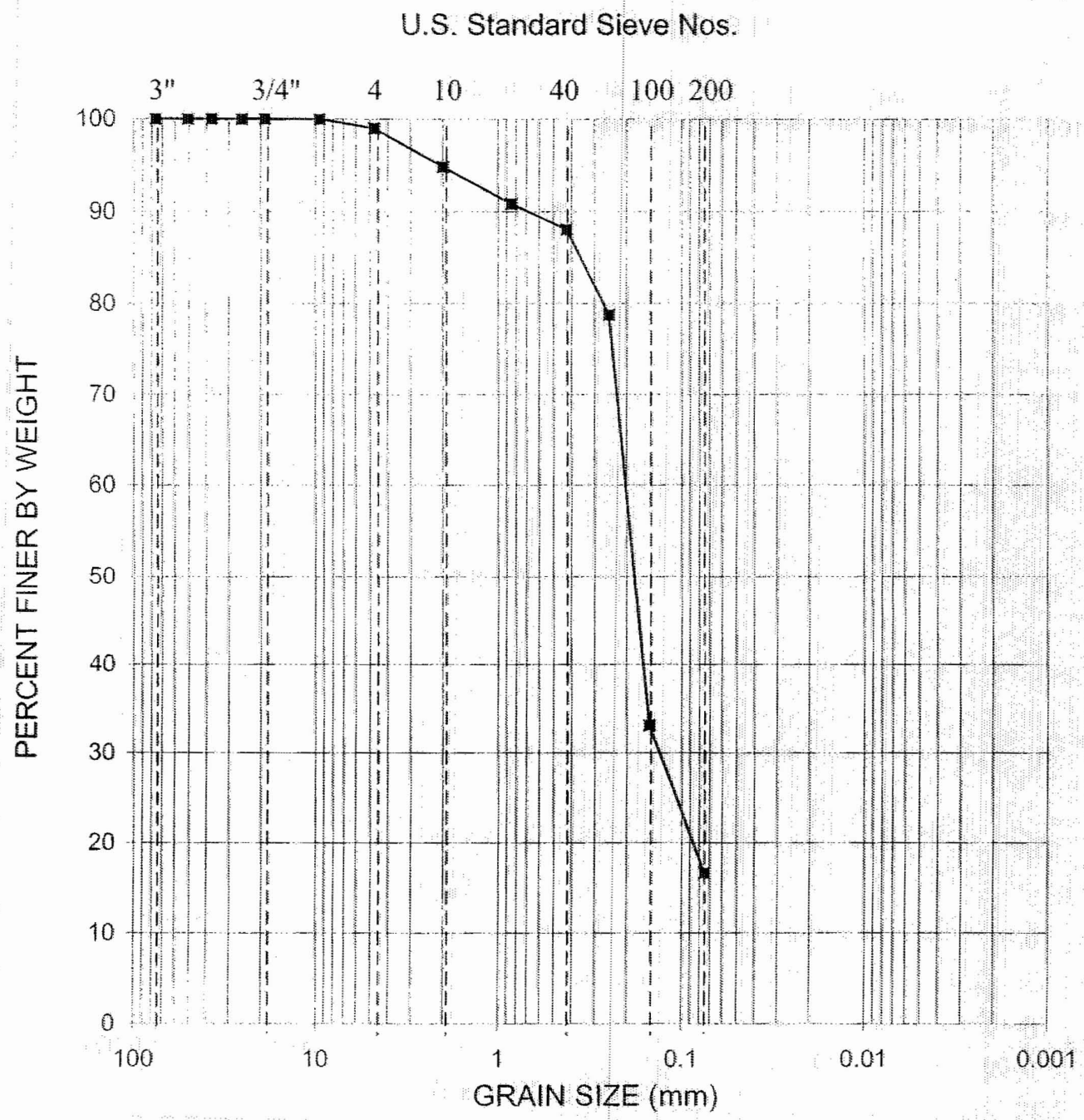

**GRADATION CURVE**

ASTM D422

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

| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI |
|---|---|---|---|---|---|
| B-334 | 83.5 | Silty SAND, contains shells, dark gray | 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: 9/6/2006 |
|---|---|---|---|---|---|

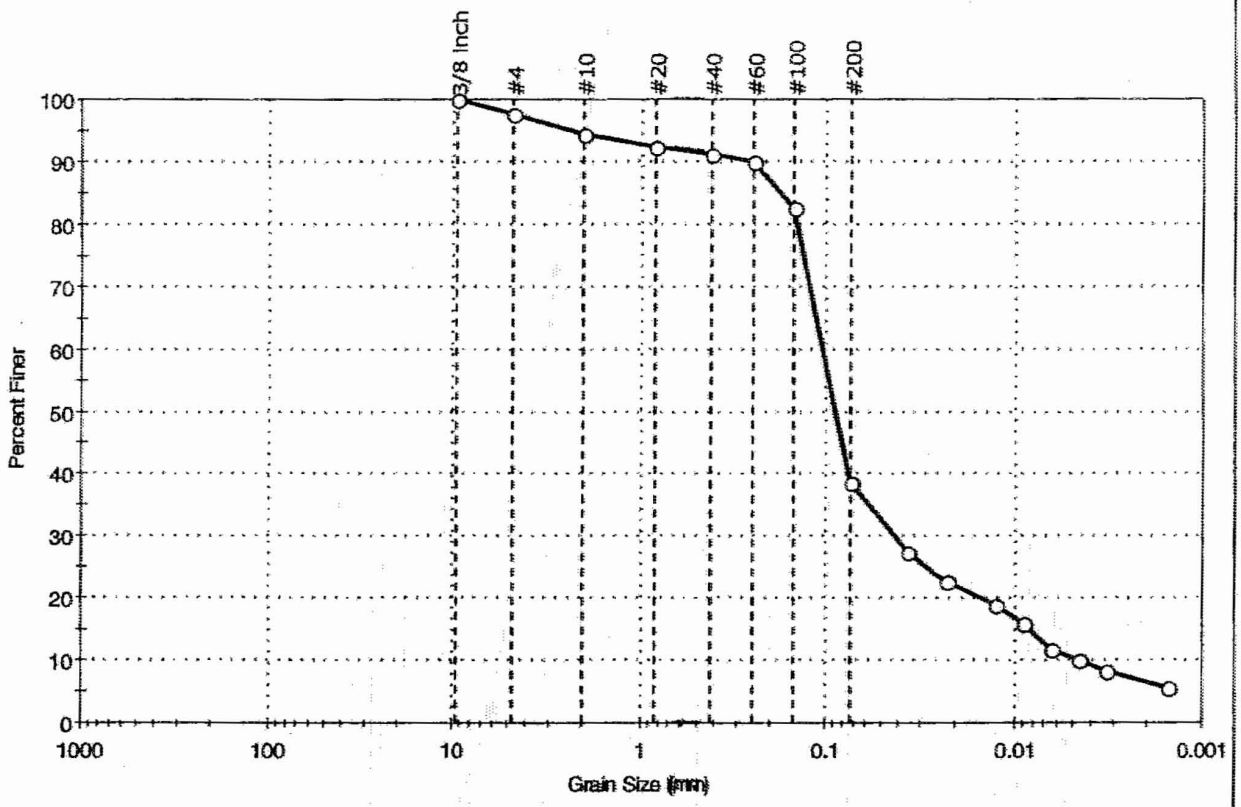
| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI |
|---|---|---|---|---|---|
| B-334 | 98.5 | Silty SAND, trace shells, dark gray | SM | | |

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-337 | Sample Type: tube | Tested By: sam |
| Sample ID: | S-14 | Test Date: 09/28/06 | Checked By: mcm |
| Depth : | 53.5-55.5 ft | Test Id: 95810 | |
| Test Comment: | --- | | |
| Sample Description: | Moist, olive gray clayey sand | | |
| Sample Comment: | --- | | |

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




| %Cobble | %Gravel | %Sand | %Silt & Clay Size |
|---|---|---|---|
| -- | 2.3 | 59.0 | 38.7 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|---|---|---|---|---|
| 3/8 Inch | 9.51 | 100 | | |
| #4 | 4.75 | 98 | | |
| #10 | 2.00 | 94 | | |
| #20 | 0.84 | 92 | | |
| #40 | 0.42 | 91 | | |
| #60 | 0.25 | 90 | | |
| #100 | 0.15 | 83 | | |
| #200 | 0.074 | 39 | | |
| -- | Particle Size (mm) | Percent Finer | Spec. Percent | Complies |
| -- | 0.0354 | 28 | | |
| -- | 0.0222 | 23 | | |
| -- | 0.0127 | 19 | | |
| -- | 0.0090 | 16 | | |
| -- | 0.0065 | 12 | | |
| -- | 0.0046 | 10 | | |
| -- | 0.0033 | 8 | | |
| -- | 0.0015 | 6 | | |
| | | | | |

**Coefficients**

| | |
|---|---|
| $D_{85}$ =0.1754 mm | $D_{30}$ =0.0417 mm |
| $D_{60}$ =0.1038 mm | $D_{15}$ =0.0084 mm |
| $D_{50}$ =0.0885 mm | $D_{10}$ =0.0045 mm |
| $C_u$ =N/A | $C_c$ =N/A |

**Classification**

ASTM Clayey sand (SC)

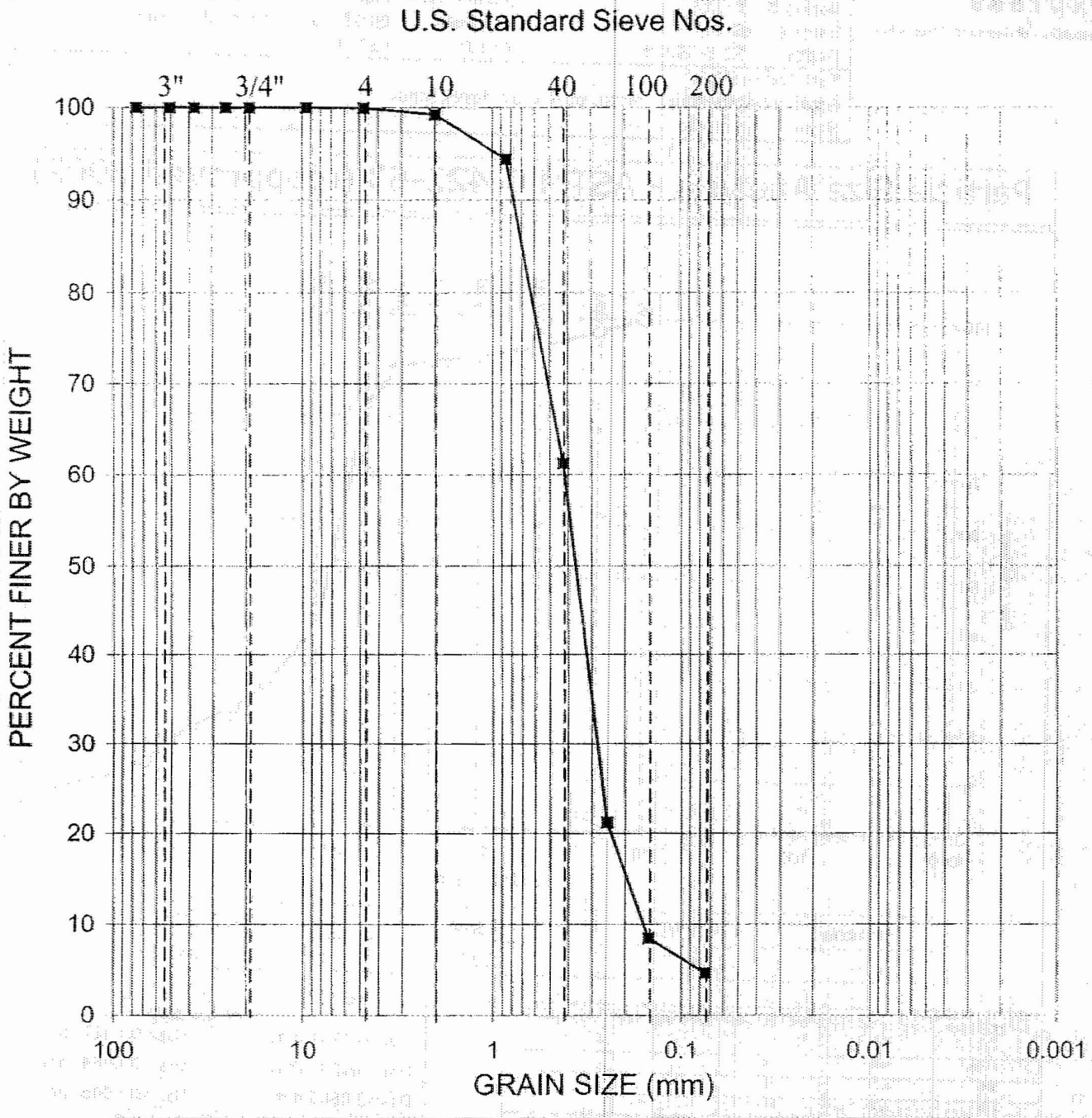
AASHTO Clayey Soils (A-6 (4))

**Sample/Test Description**

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

printed 11/7/2006 4:27:51 PM



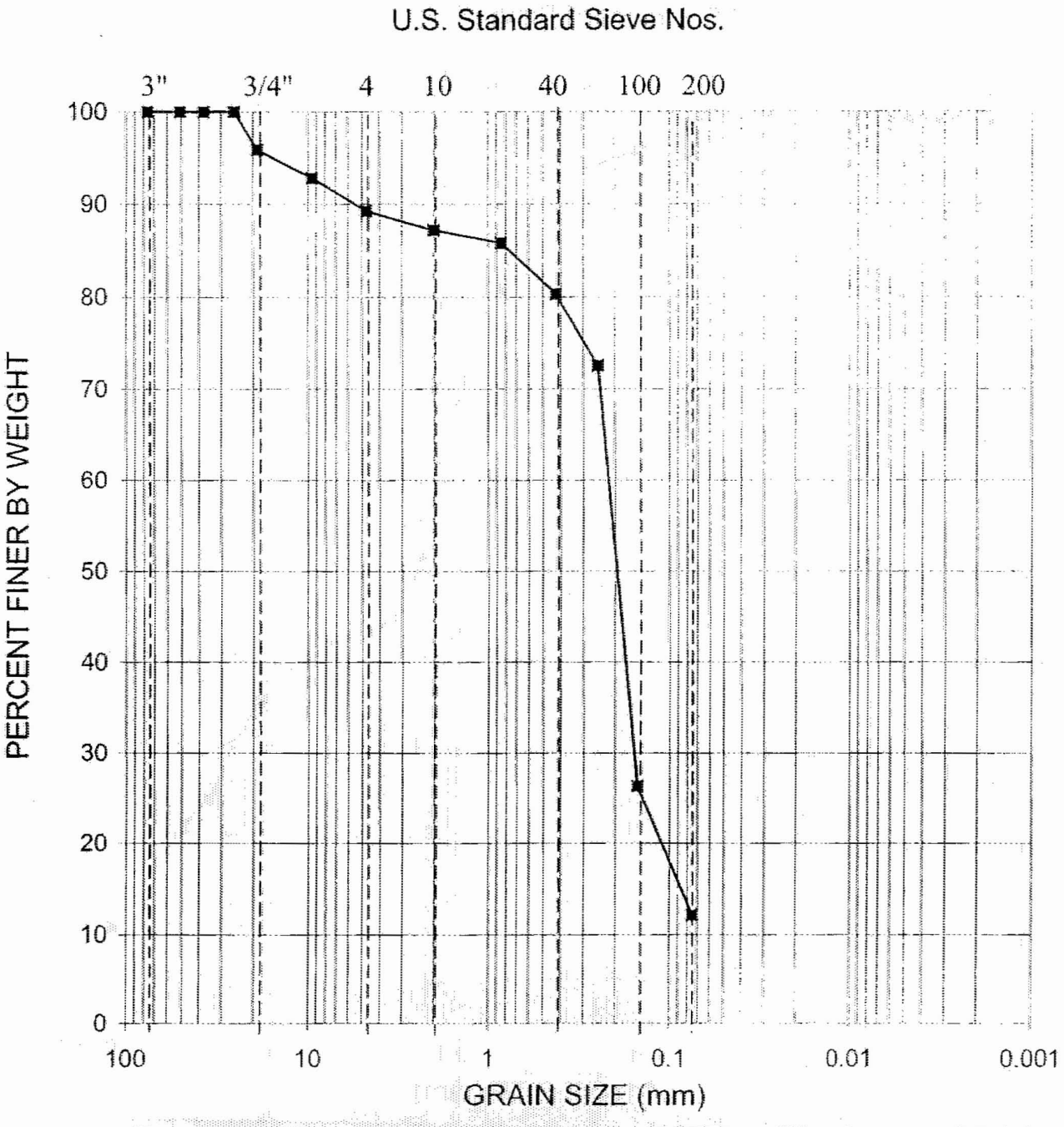

**GRADATION CURVE**

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-339 | 5.0 | Poorly Graded SAND, trace silt, tan | SP | | |

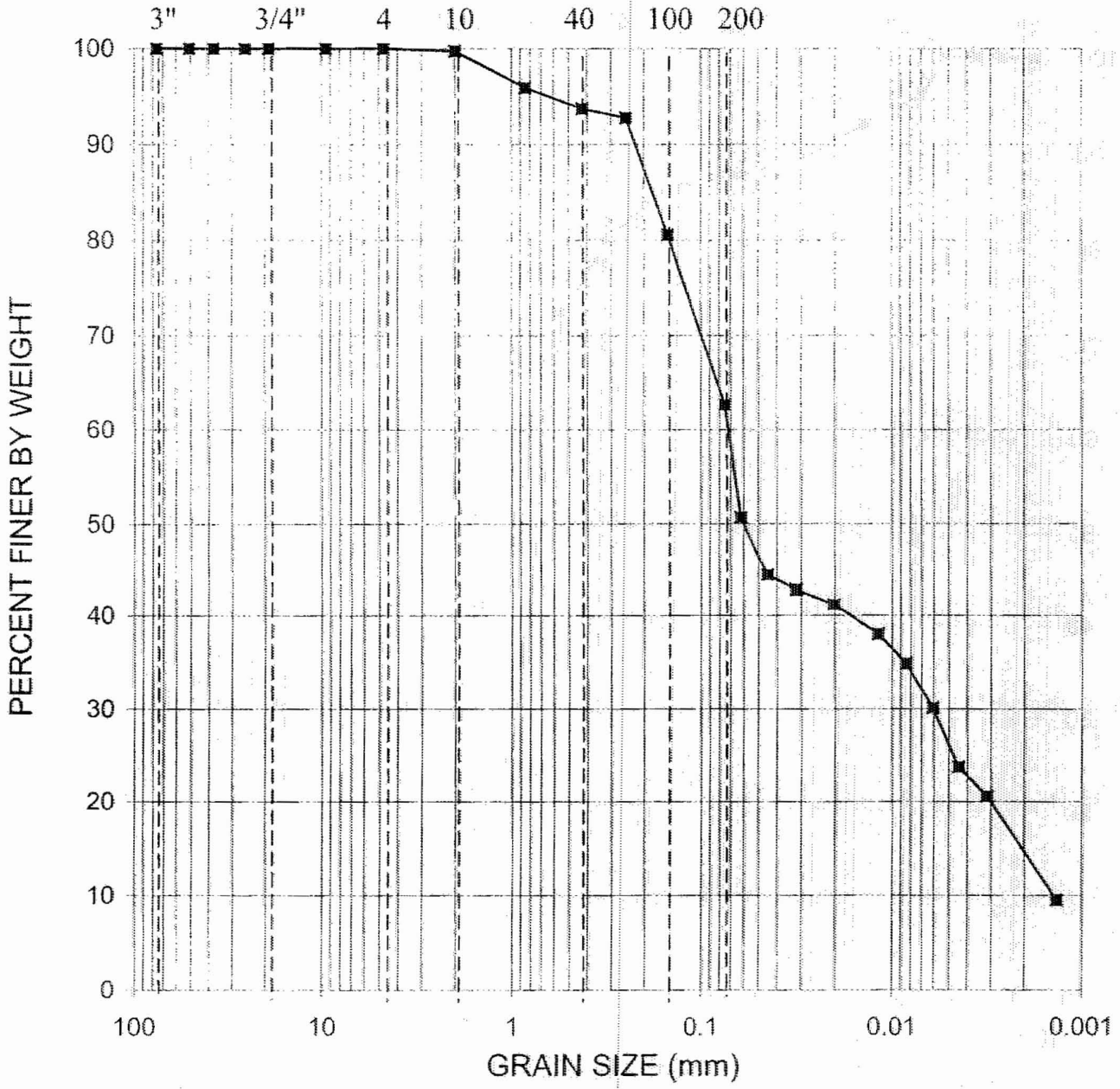
Schnabel Engineering




**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-339 | 13.5 | Silty SAND, trace rock fragments, red-brown | SM | | | Schnabel Engineering |



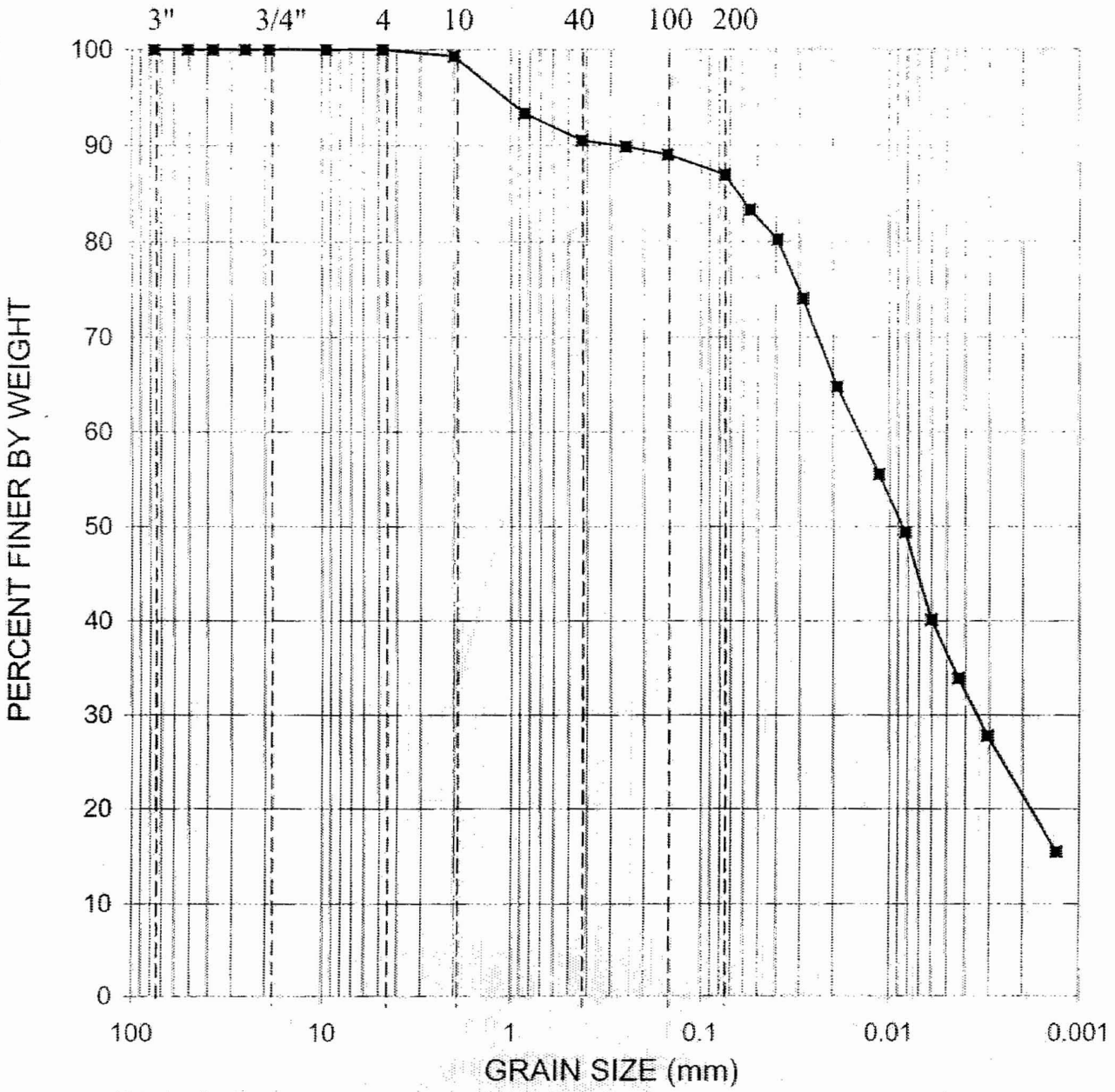

**GRADATION CURVE**

ASTM D422

| Project: | Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland | | Contract No.: 06120048.00 | | Date: 9/5/2006 |
|---|---|---|---|---|---|

| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI |
|---|---|---|---|---|---|
| B-339 | 33.5 | Sandy FAT CLAY, dark gray | CH | 62 | 41 |

Schnabel Engineering



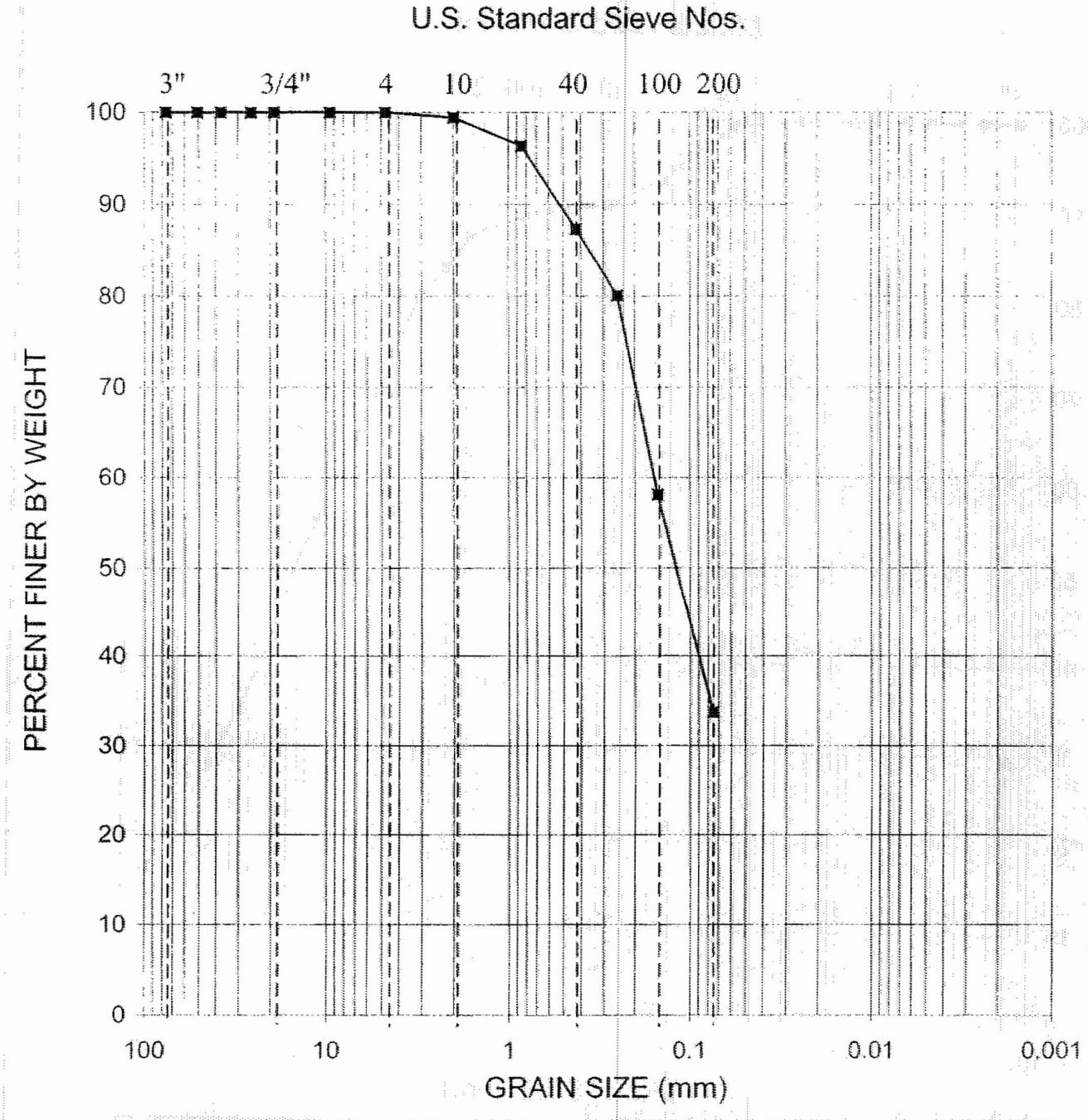

**GRADATION CURVE**

ASTM D422

| Project: | Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland | | Contract No.: 06120048.00 | | Date: 9/5/2006 |
|---|---|---|---|---|---|

| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI |
|---|---|---|---|---|---|
| B-339 | 43.5 | FAT CLAY, trace sand , dark gray | CH | 60 | 38 |

Schnabel Engineering



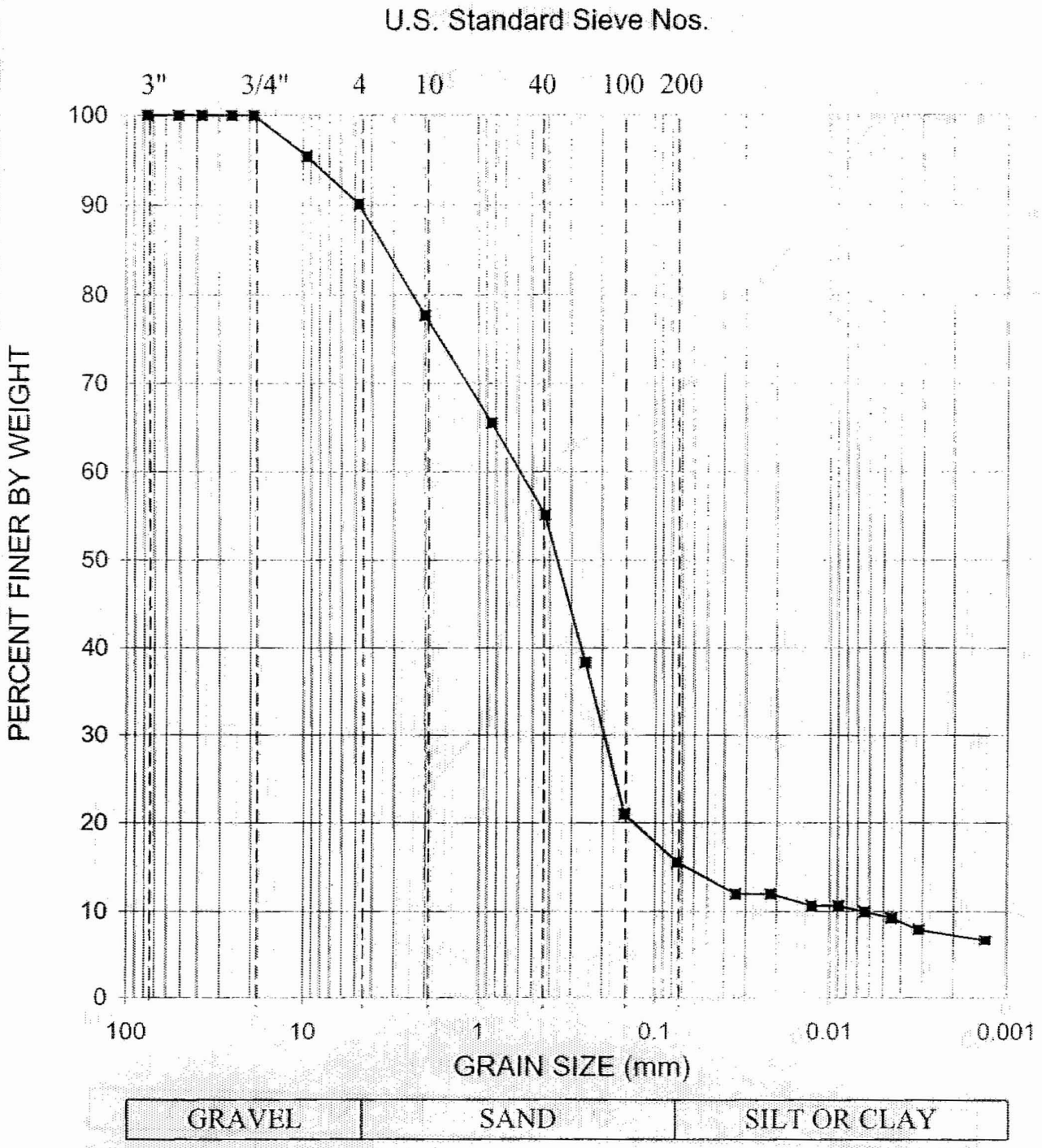

**GRADATION CURVE**

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-339 | 53.5 | Silty SAND, dark green | SM | 48 | 18 |

Schnabel Engineering



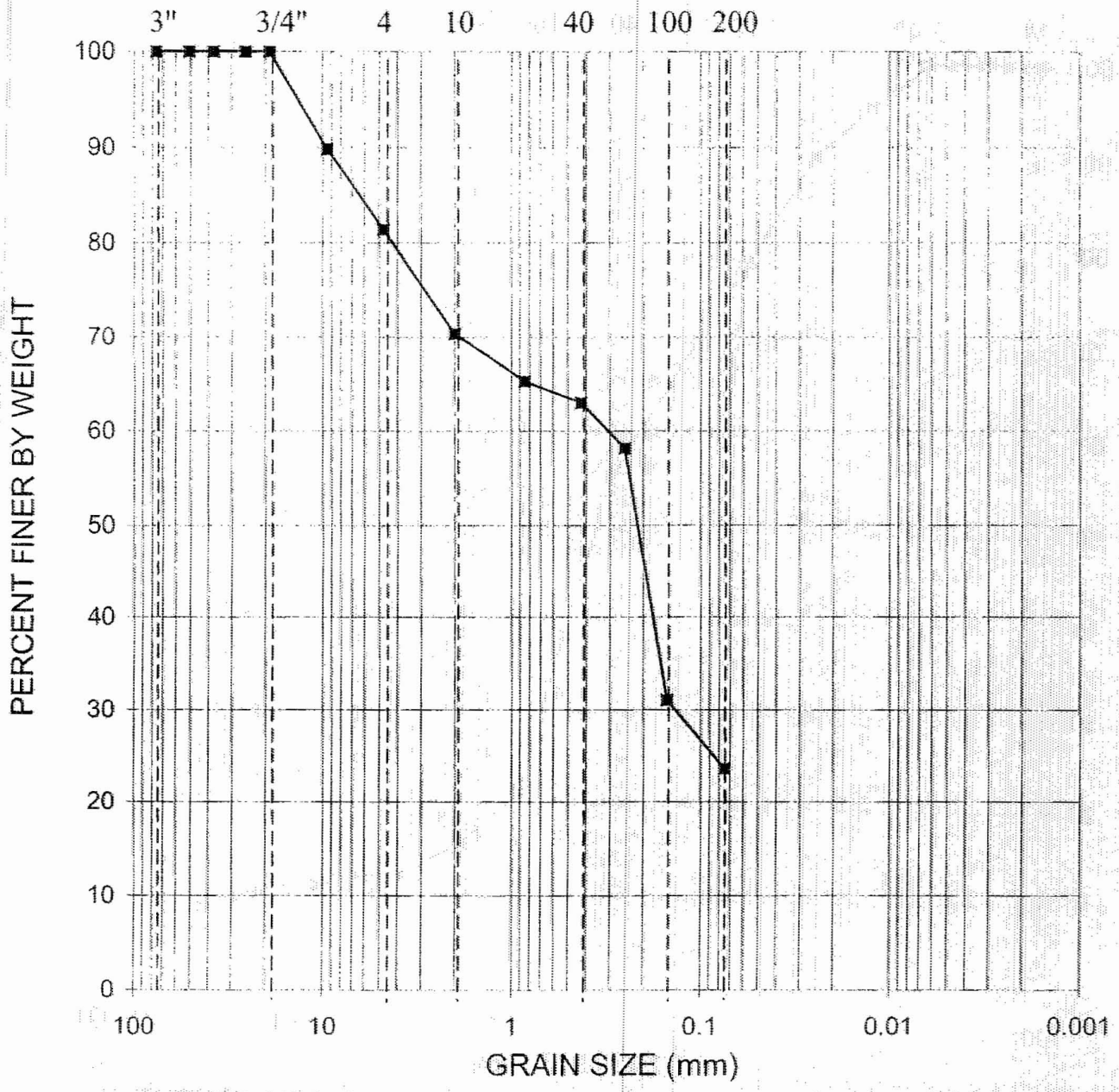

**GRADATION CURVE**

ASTM D422

| Project: | Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland | | Contract No.: 06120048.00 | | Date: 9/11/2006 |
|---|---|---|---|---|---|

| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI |
|---|---|---|---|---|---|
| B-339 | 63.5 | Clayey SAND, trace shells, dark gray | SC | 49 | 28 |

Schnabel Engineering



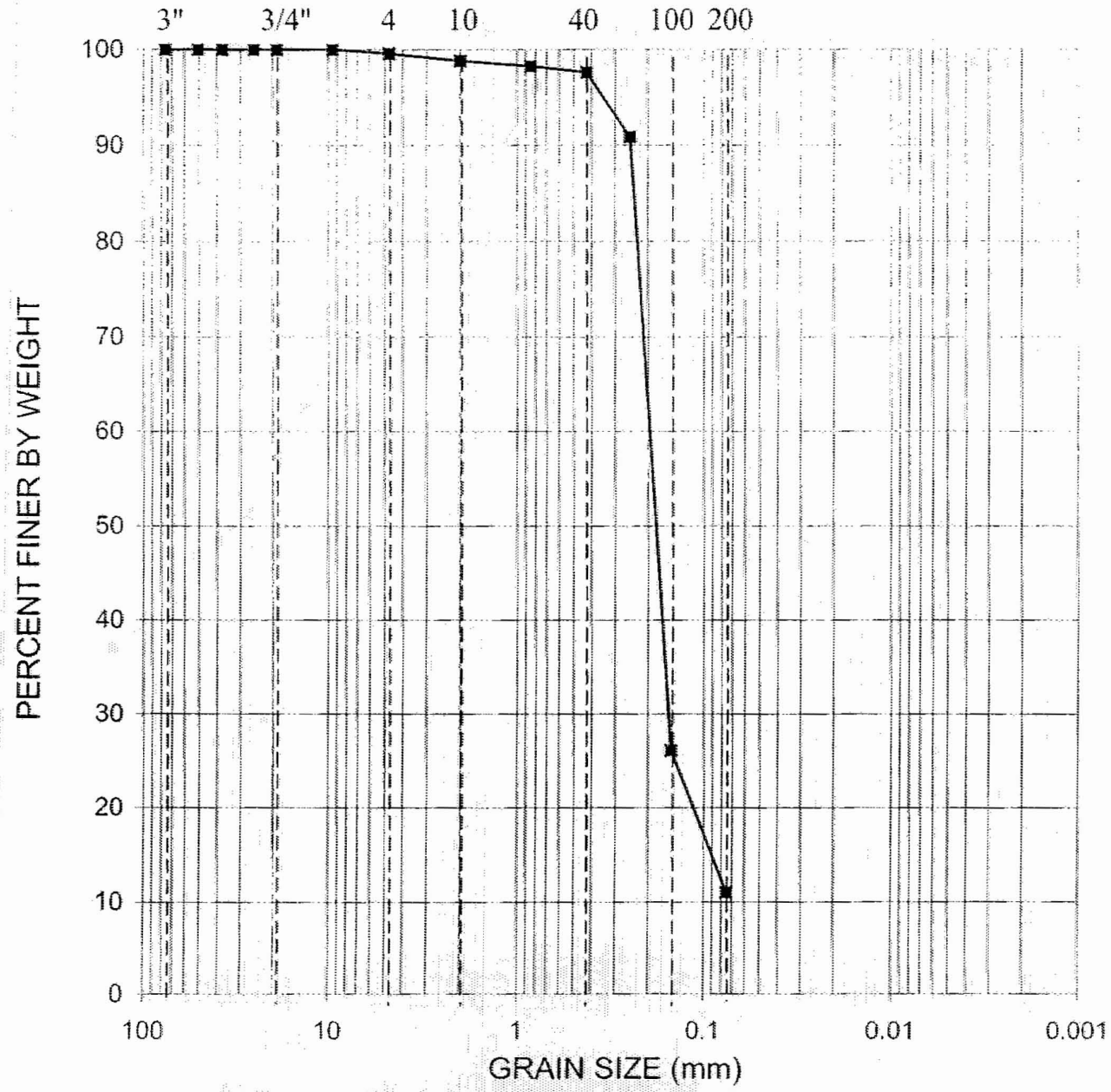

**GRADATION CURVE**

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-339 | 78.5 | Silty SAND, with shells, green | SM | | |

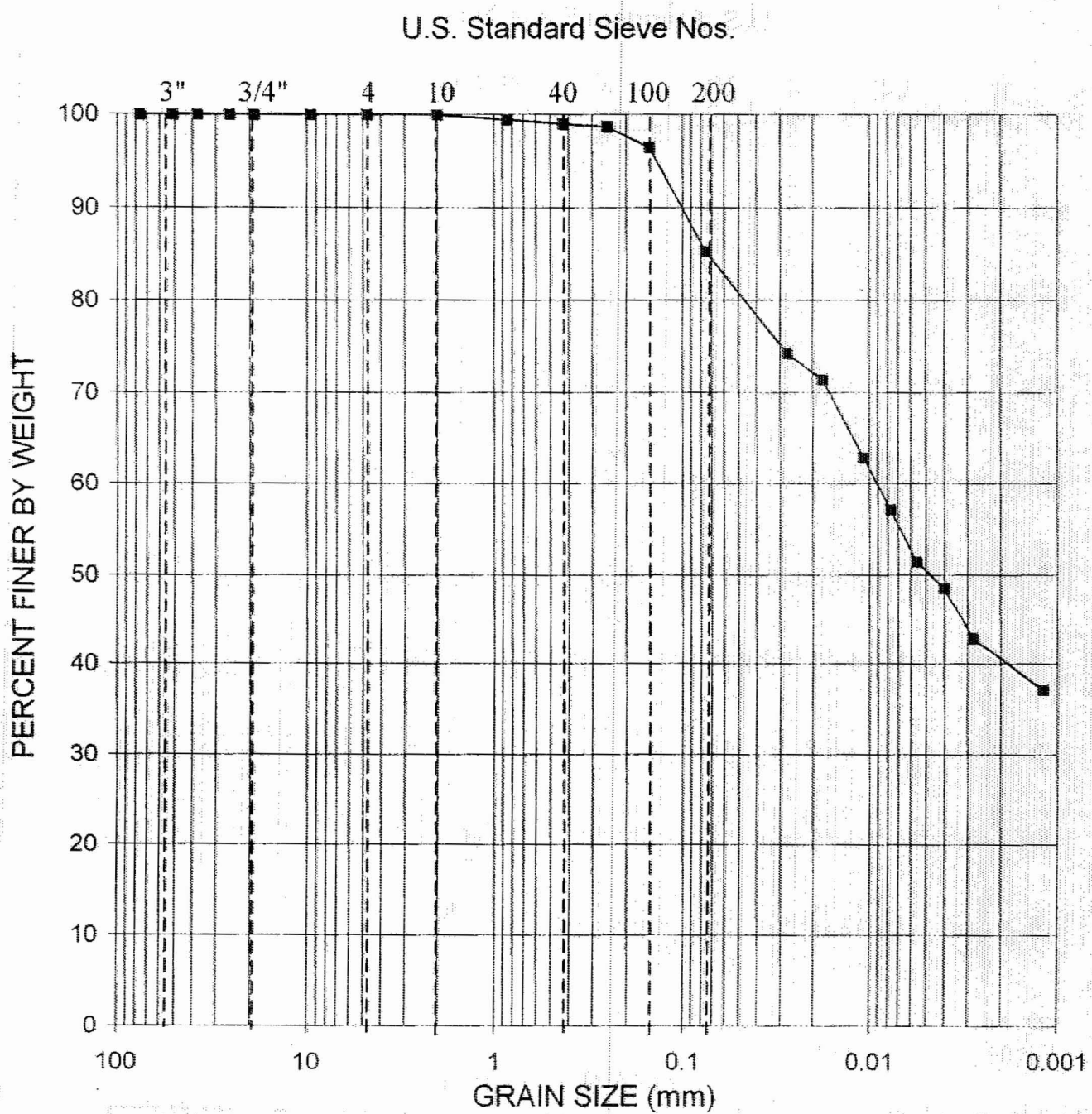
Schnabel Engineering




**GRADATION CURVE**

ASTM D422

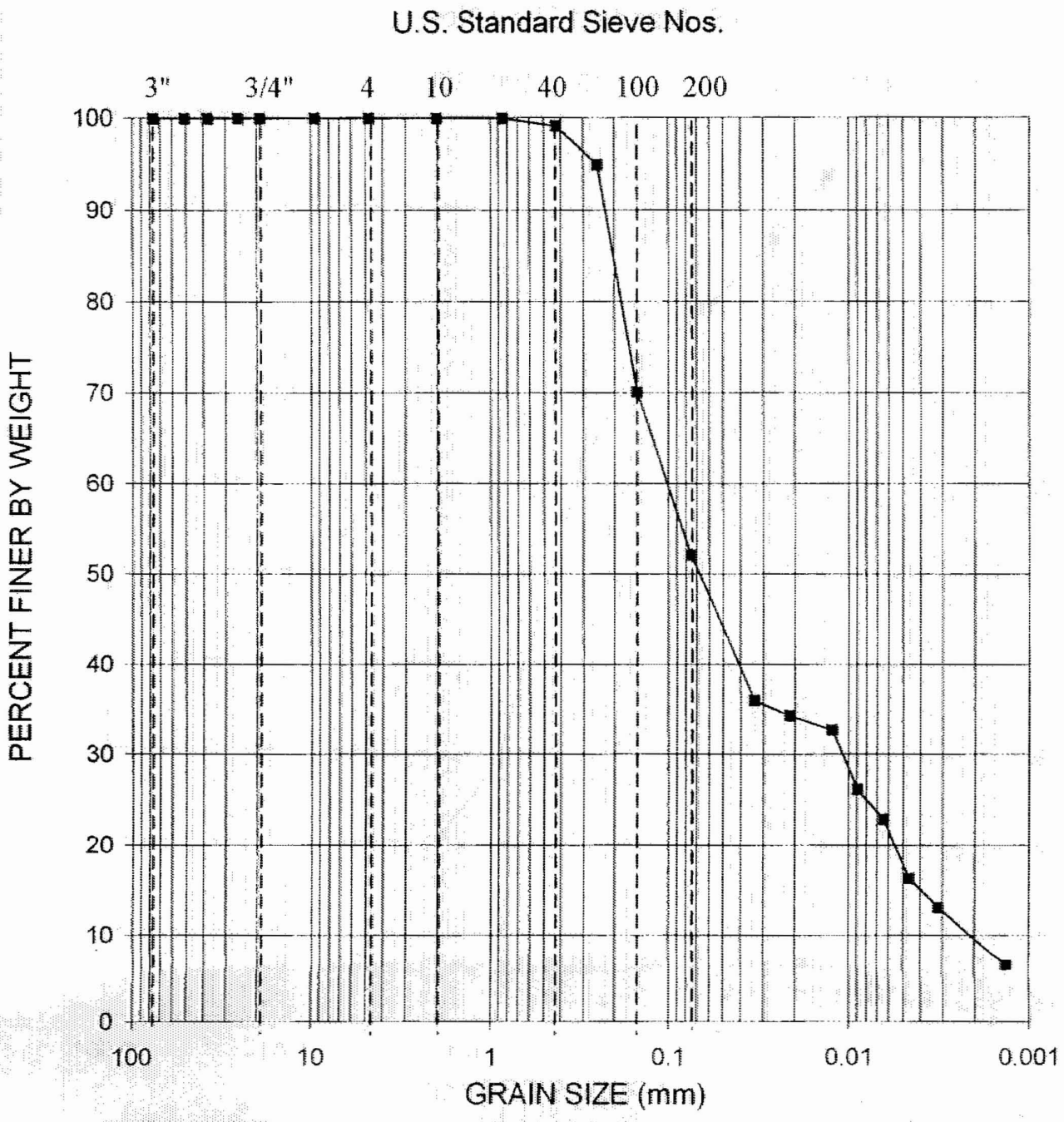
| Project: | Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland | | Contract No.: 06120048.00 | | | Date: 8/31/2006 |
|---|---|---|---|---|---|---|
| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI | |
| B-339 | 88.5 | Poorly Graded SAND, with silt, contains shells, dark green | SP-SM | | | 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: | 9/14/2006 |
|---|---|---|---|---|---|---|
| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI | |
| B-401 | 10.5 | FAT CLAY, with sand, gray-brown | CH | 66 | 46 | 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: | 9/14/2006 |
|---|---|---|---|---|---|---|

| Boring No. | Depth (ft) | Sample Description | Class. | LL | PI |
|---|---|---|---|---|---|
| B-401 | 23.5 | Sandy LEAN CLAY, dark gray | CL | 47 | 19 |

Schnabel Engineering