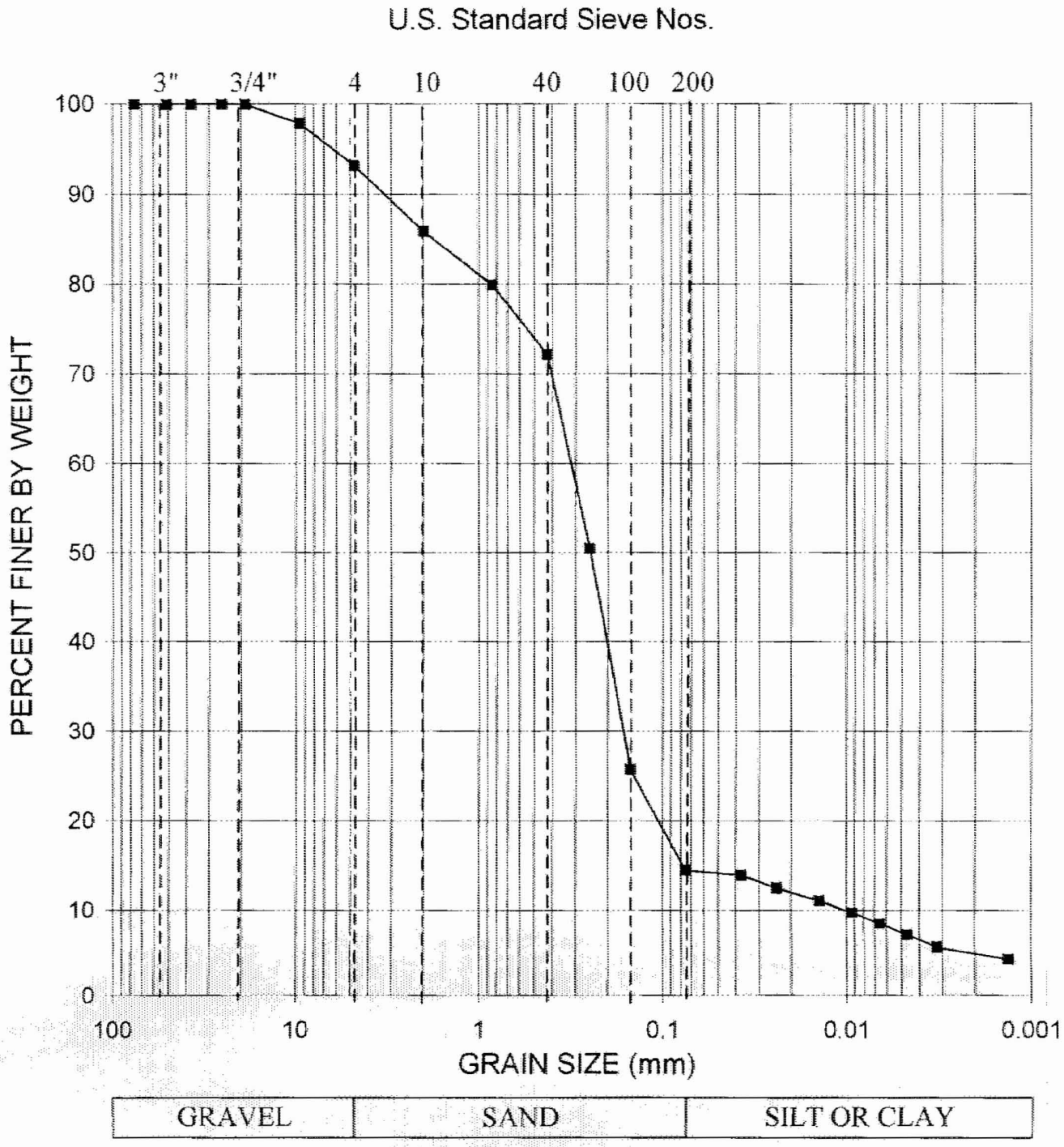


GRADATION CURVE

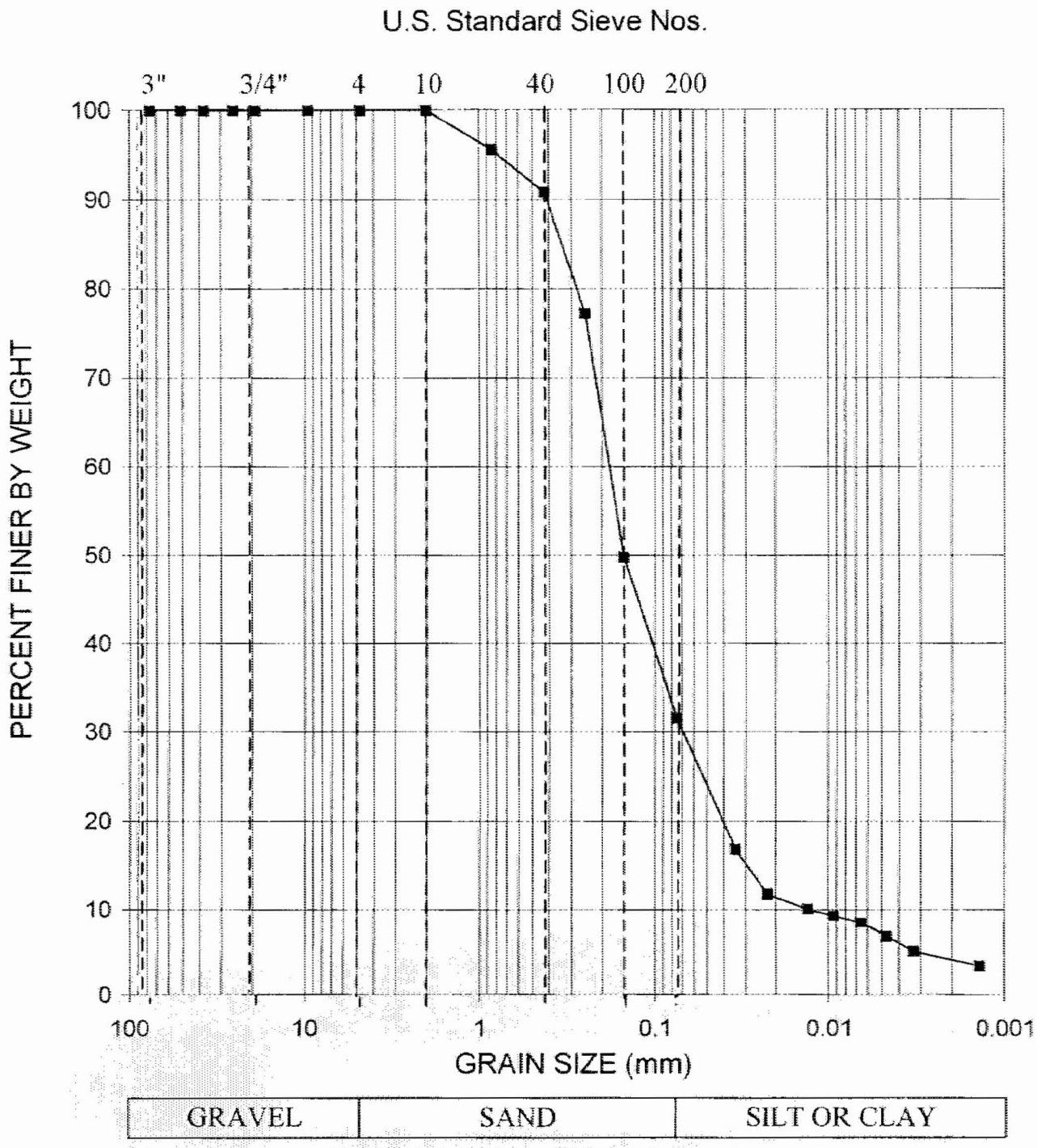
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	1/16/2007

Boring No./ Sample No.	Depth (ft)	Sample Description	Class.	LL	PI
B-735/ C-16A	63.5-65.0, 68.5-70.0	Silty SAND, trace shells, dark gray	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

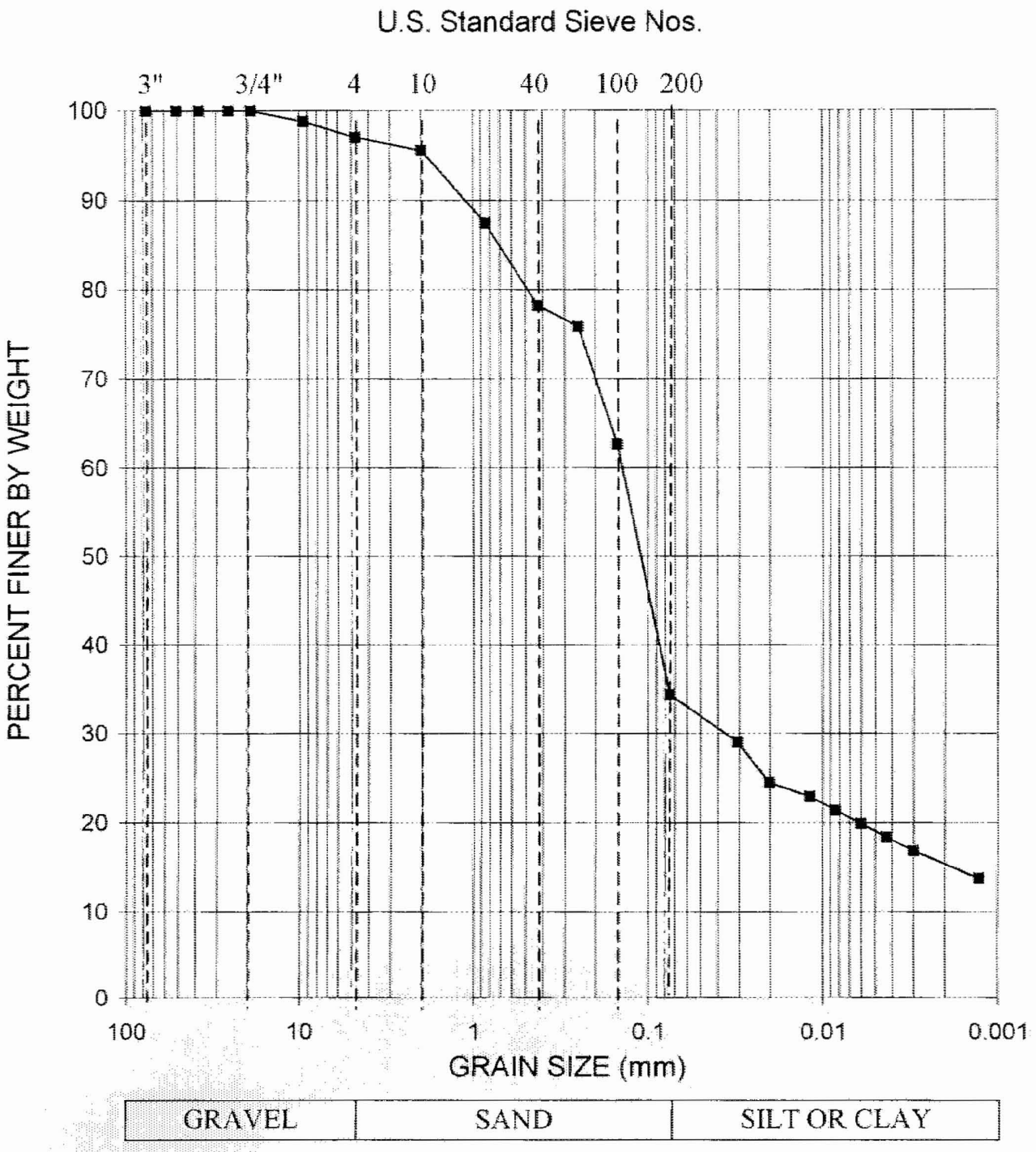
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	1/16/2007

Boring No./ Sample No.	Depth (ft)	Sample Description	Class.	LL	PI
B-744/ C-17A	48.5-50.0, 53.5-55.0	Silty SAND, contains shells, dark gray	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

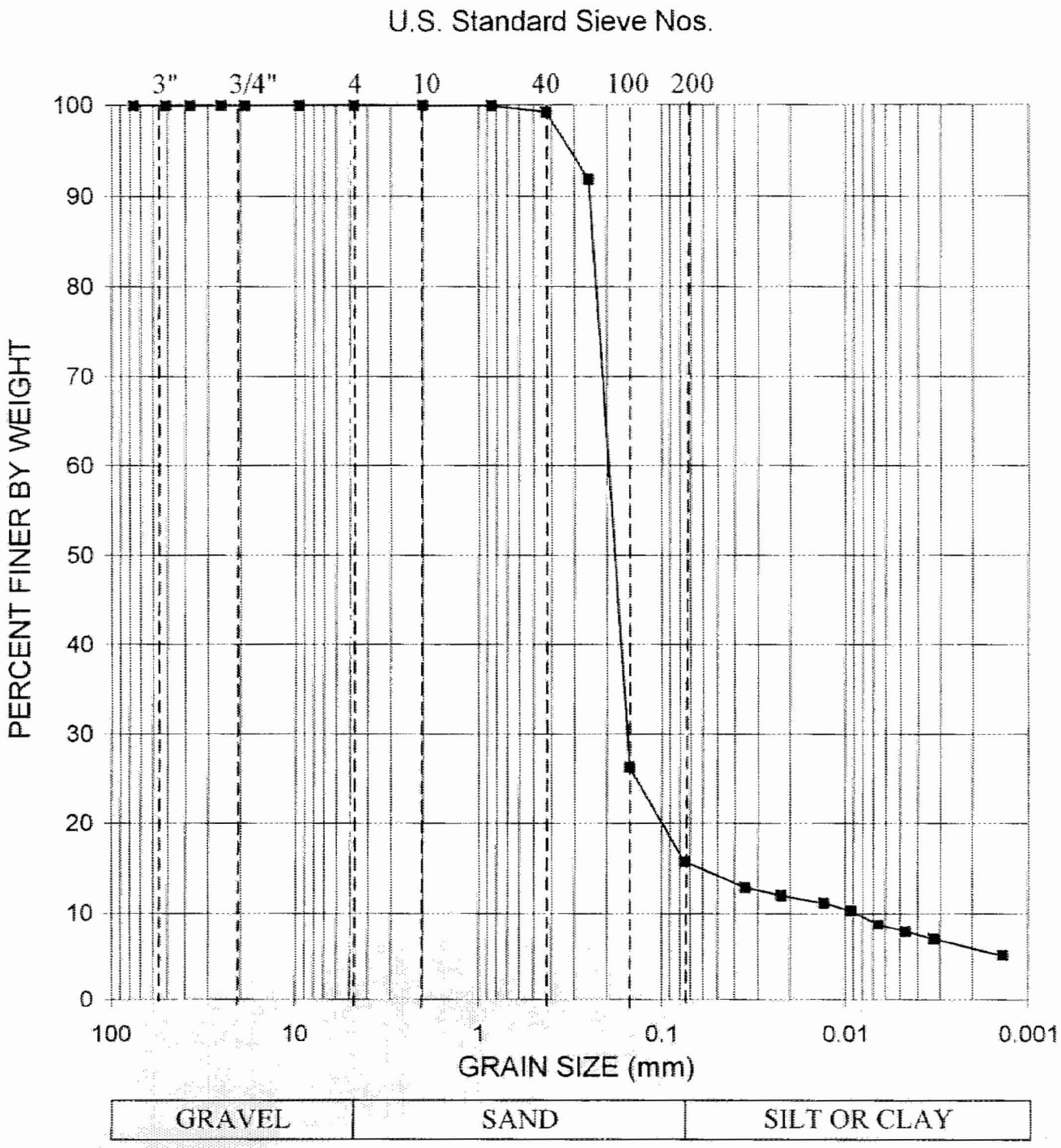
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	1/16/2007

Boring No./ Sample No.	Depth (ft)	Sample Description	Class.	LL	PI
B-756/ C-18A	33.5-35.0, 38.5-40.0	Clayey SAND, trace gravel, orange-brown	SC		

Schnabel

Schnabel Engineering



GRADATION CURVE

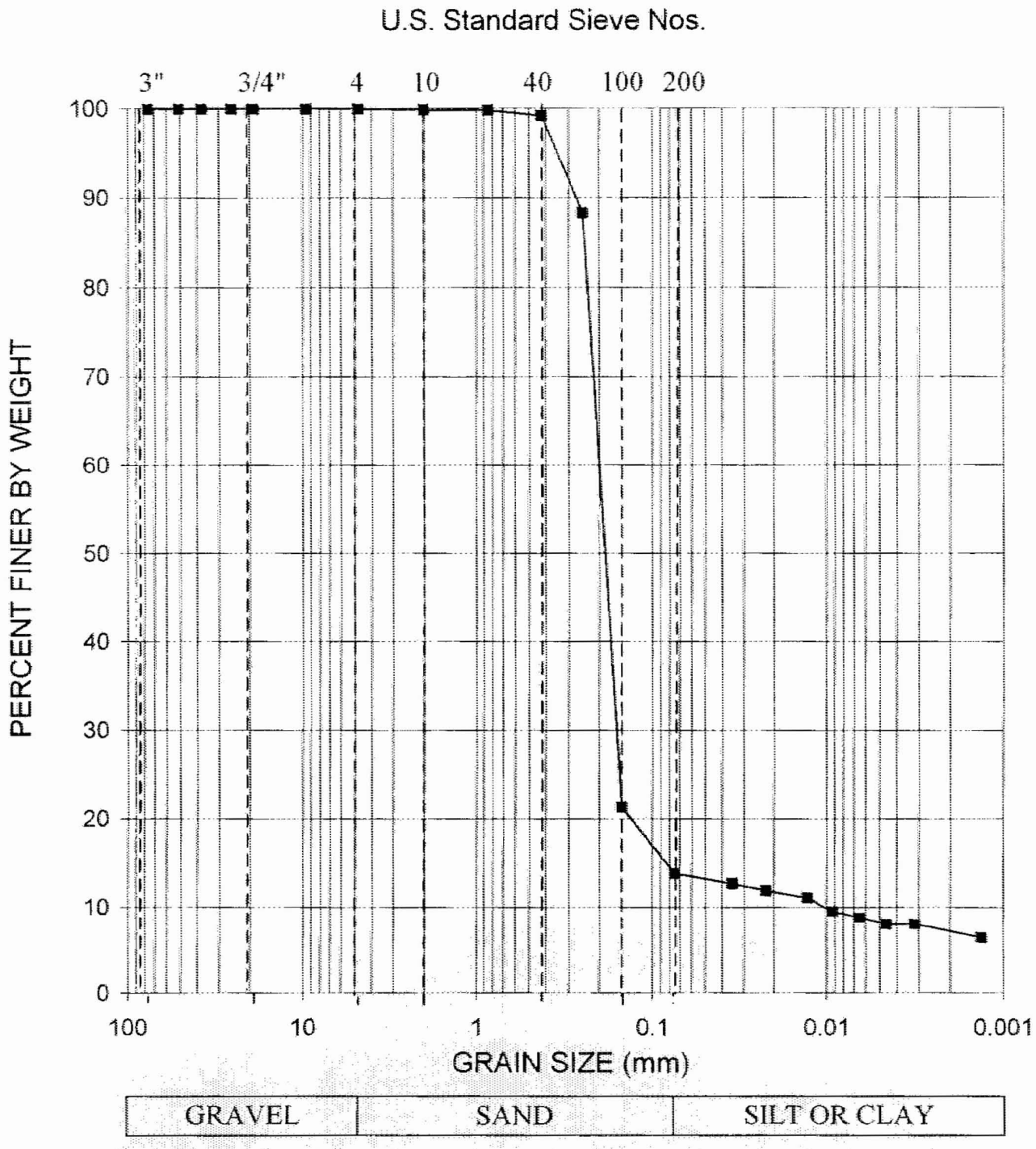
ASTM D422

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	1/16/2007

Boring No./ Sample No.	Depth (ft)	Sample Description	Class.	LL	PI
B-768/ C-19A	43.5-45.0	Silty SAND, dark gray	SM		

Schnabel

Schnabel Engineering



GRADATION CURVE

ASTM D422

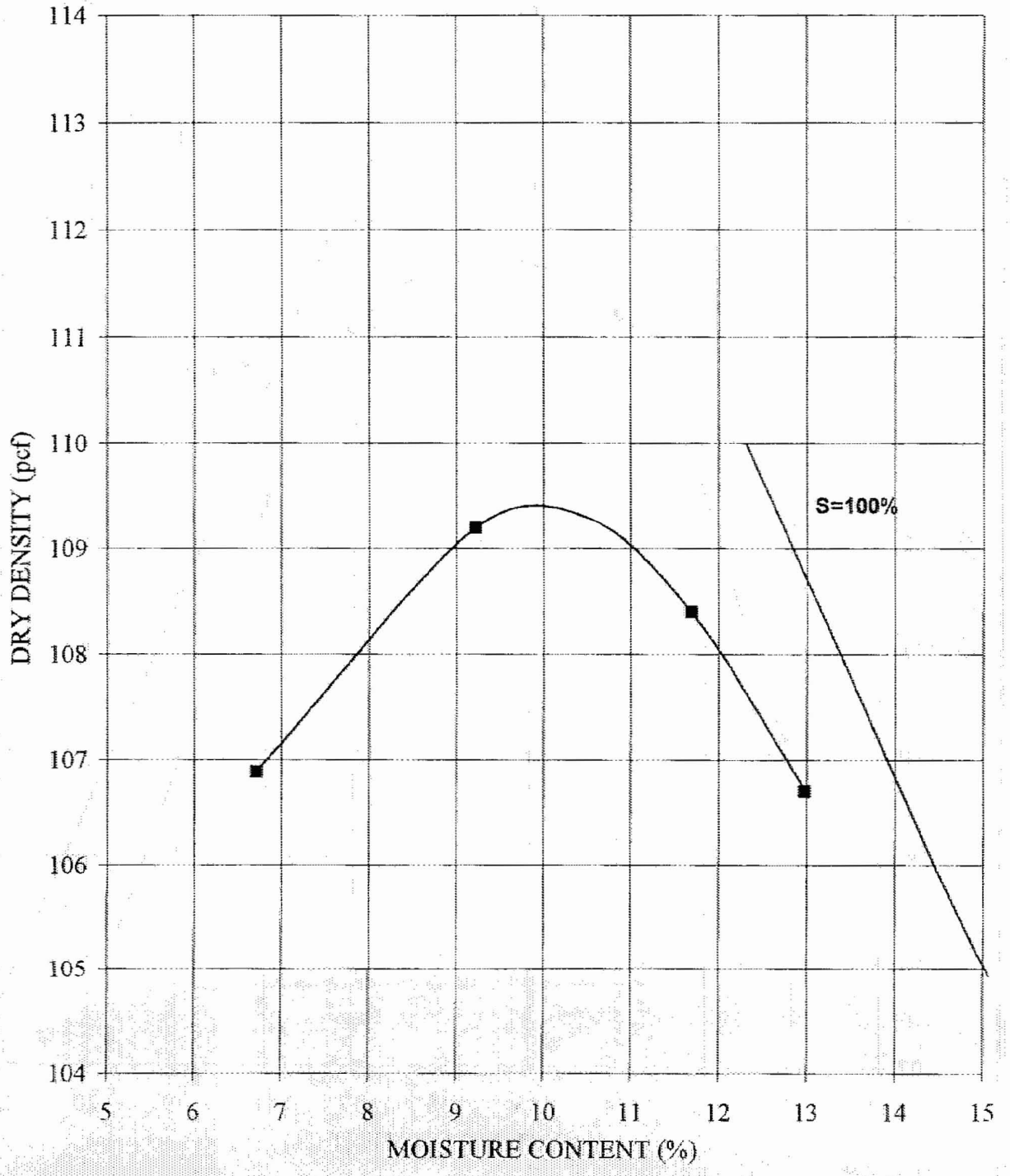
Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	1/16/2007

Boring No./ Sample No.	Depth (ft)	Sample Description	Class.	LL	PI
B-769/ C-20A	43.5-45.0, 48.5-50.0	Clayey SAND, dark gray	SC		

Schnabel

Schnabel Engineering

MOISTURE DENSITY RELATIONSHIPS



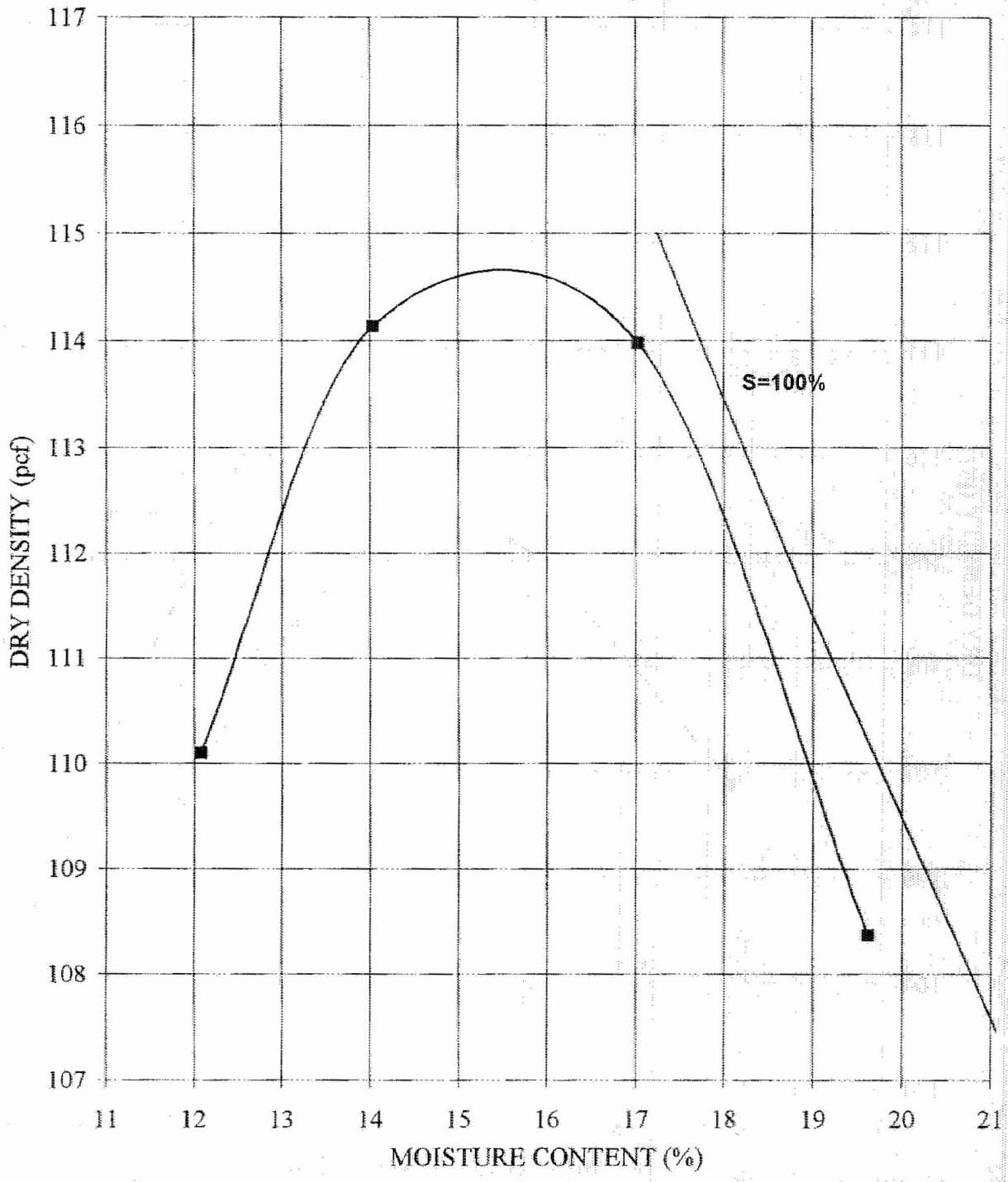
MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

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		
TP-B-307	4.5-5.5	Poorly Graded SAND, with silt, brown	SP-SM				
Assumed Specific Gravity:	2.25	% Passing 3/4" Sieve:		100.0			
		% Passing #4 Sieve:		100.0			
Maximum Dry Density (pcf):	**109.3**	**Optimum Moisture Content (%):**		**10.5**			

Schnabel

Schnabel Engineering

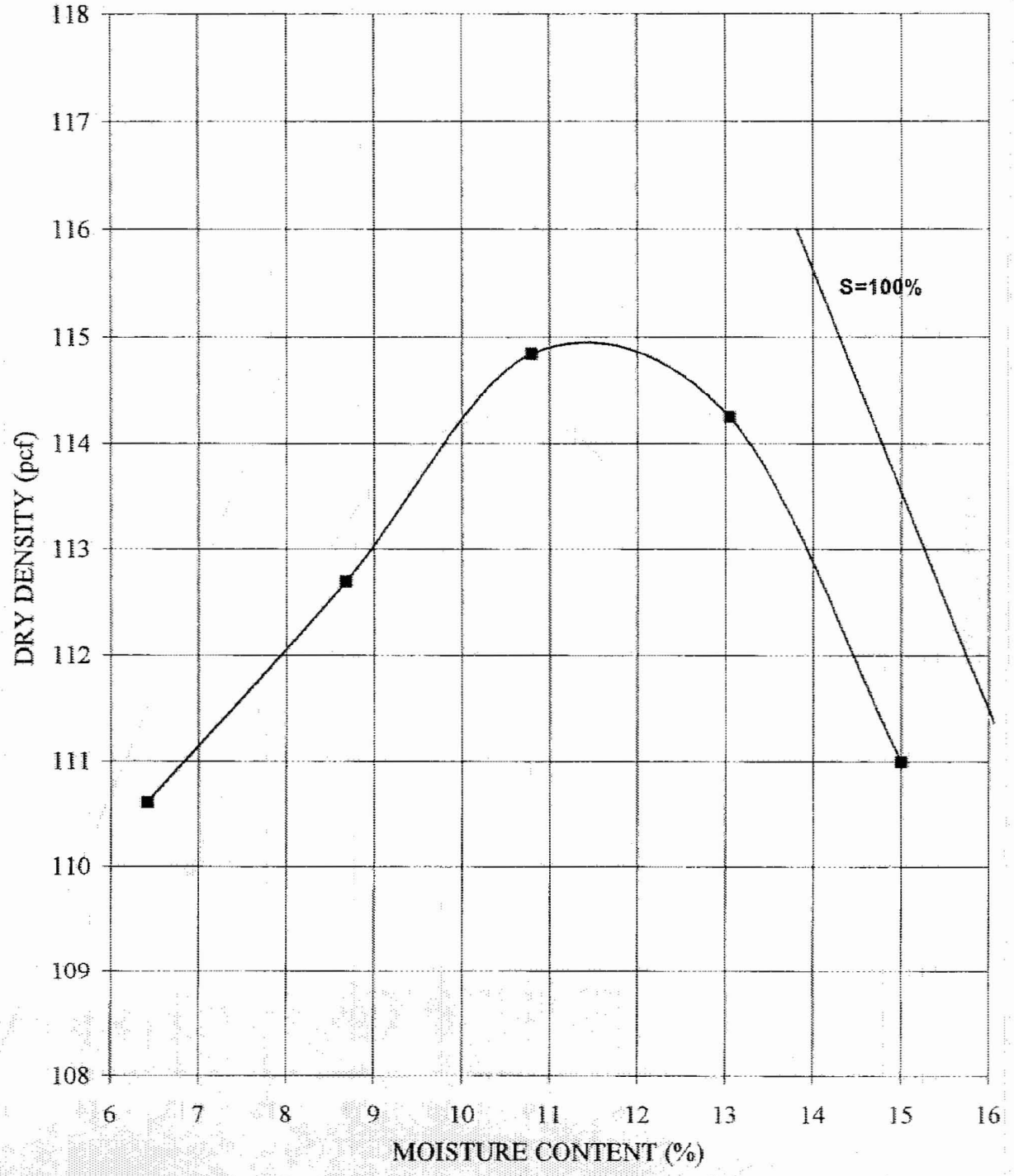


MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland			Contract No.:	06120048.00	Date:	9/26/2006
Boring No.	Depth (ft)	Sample Description	Class.	LL	PI		
TP-B-314	4.0-5.0	FAT CLAY, trace sand, gray-brown	CH	71	47		
Assumed Specific Gravity:	2.70	% Passing 3/4" Sieve:		100.0			
		% Passing #4 Sieve:		100.0			
Maximum Dry Density (pcf):	**114.6**	**Optimum Moisture Content (%):**		**15.5**			

Schnabel Engineering



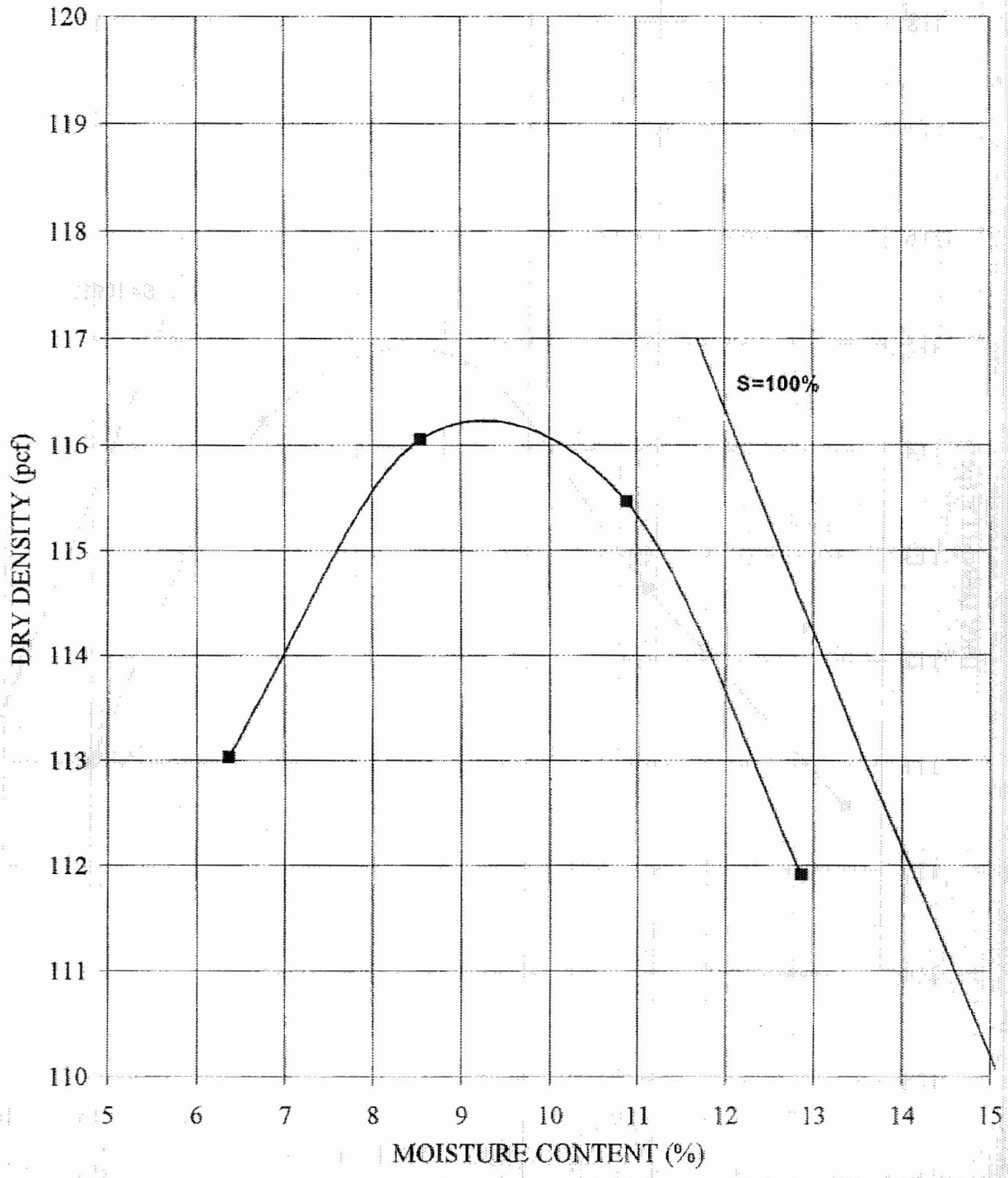
MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

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		
TP-B-315	6.0-7.0	Poorly Graded SAND, with silt, tan	SP-SM				
Assumed Specific Gravity:		2.50	% Passing 3/4" Sieve:	100.0			
			% Passing #4 Sieve:	99.8			
Maximum Dry Density (pcf):		**114.9**	**Optimum Moisture Content (%):**	**11.4**			

Schnabel

Schnabel Engineering



MOISTURE-DENSITY RELATION

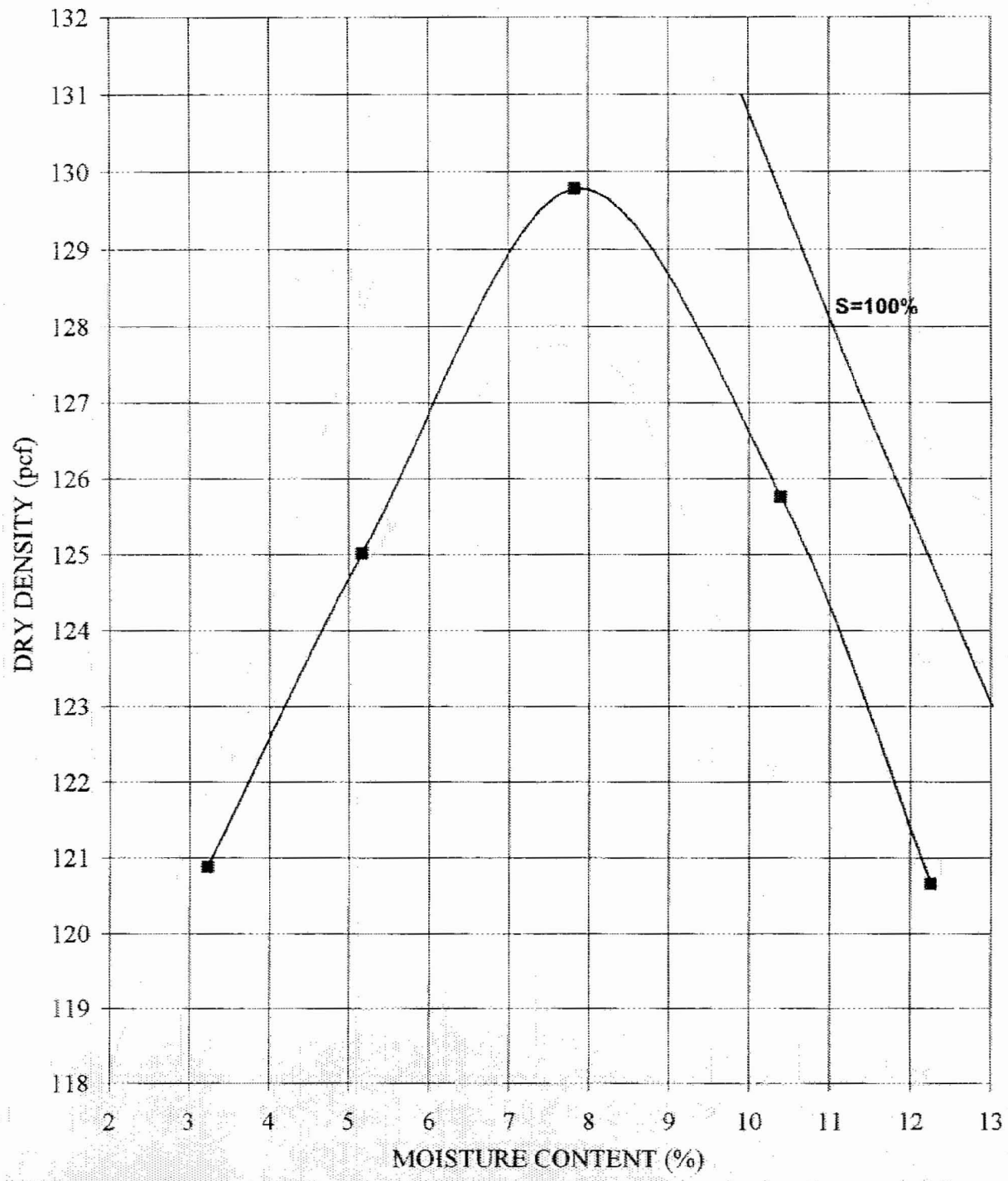
ASTM D-1557 Method A

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland		Contract No.:	06120048.00	Date: 9/20/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
TP-B-334	3.0-4.0	Silty SAND, brown	SM		

Assumed Specific Gravity:	2.40	% Passing 3/4" Sieve:	100.0
		% Passing #4 Sieve:	100.0
Maximum Dry Density (pcf):	**116.3**	**Optimum Moisture Content (%):**	**9.3**

Schnabel Engineering



MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

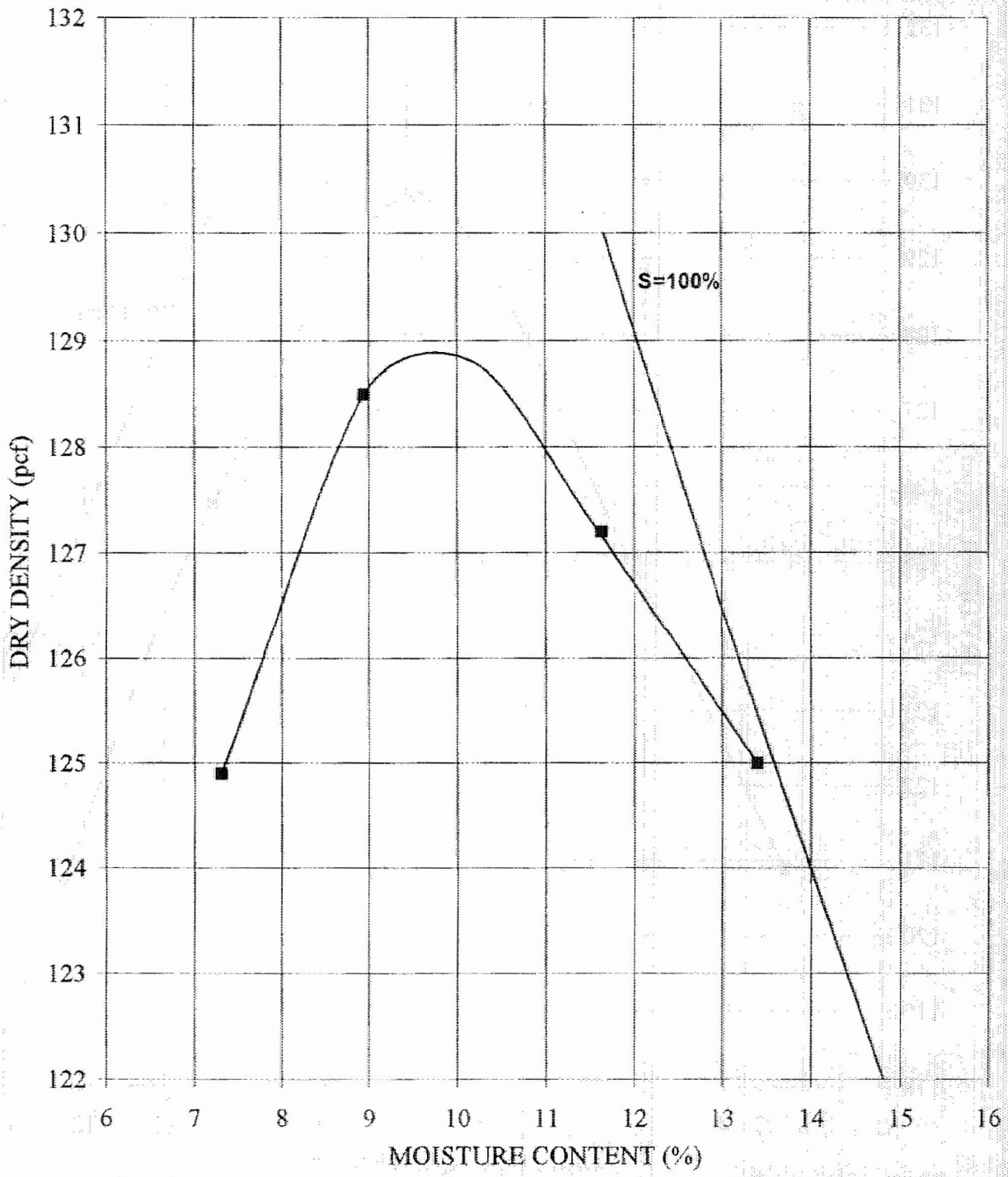
Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland	Contract No.:	06120048.00	Date:	9/28/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
TP-B-334	6.0-7.0	Silty SAND, brown-gray	SM		

Assumed Specific Gravity:	2.65	% Passing 3/4" Sieve:	100.0
		% Passing #4 Sieve:	100.0
Maximum Dry Density (pcf):	**129.8**	**Optimum Moisture Content (%):**	**8.0**

Schnabel

Schnabel Engineering

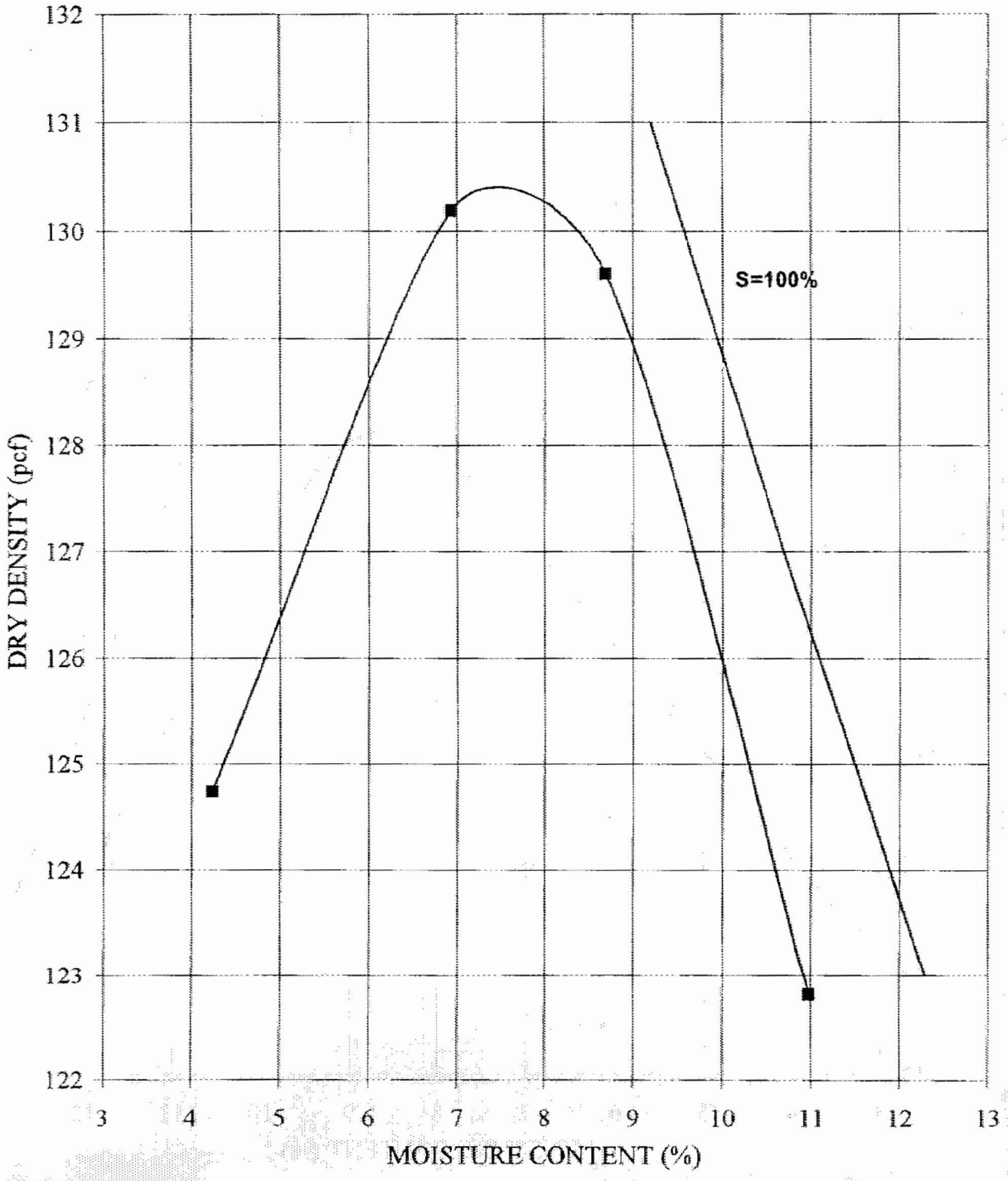


MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

Project:	Constellation Energy Group COLA Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland			Contract No.:	06120048.00	Date:	9/13/2006
Boring No.	Depth (ft)	Sample Description	Class.	LL	PI		
TP-B-335	3.0-4.0	Sandy LEAN CLAY, dark brown	CL	30	10		
Assumed Specific Gravity:	2.75	% Passing 3/4" Sieve:		100.0			
		% Passing #4 Sieve:		100.0			
Maximum Dry Density (pcf):	**128.8**	**Optimum Moisture Content (%):**		**9.9**			

Schnabel Engineering



MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

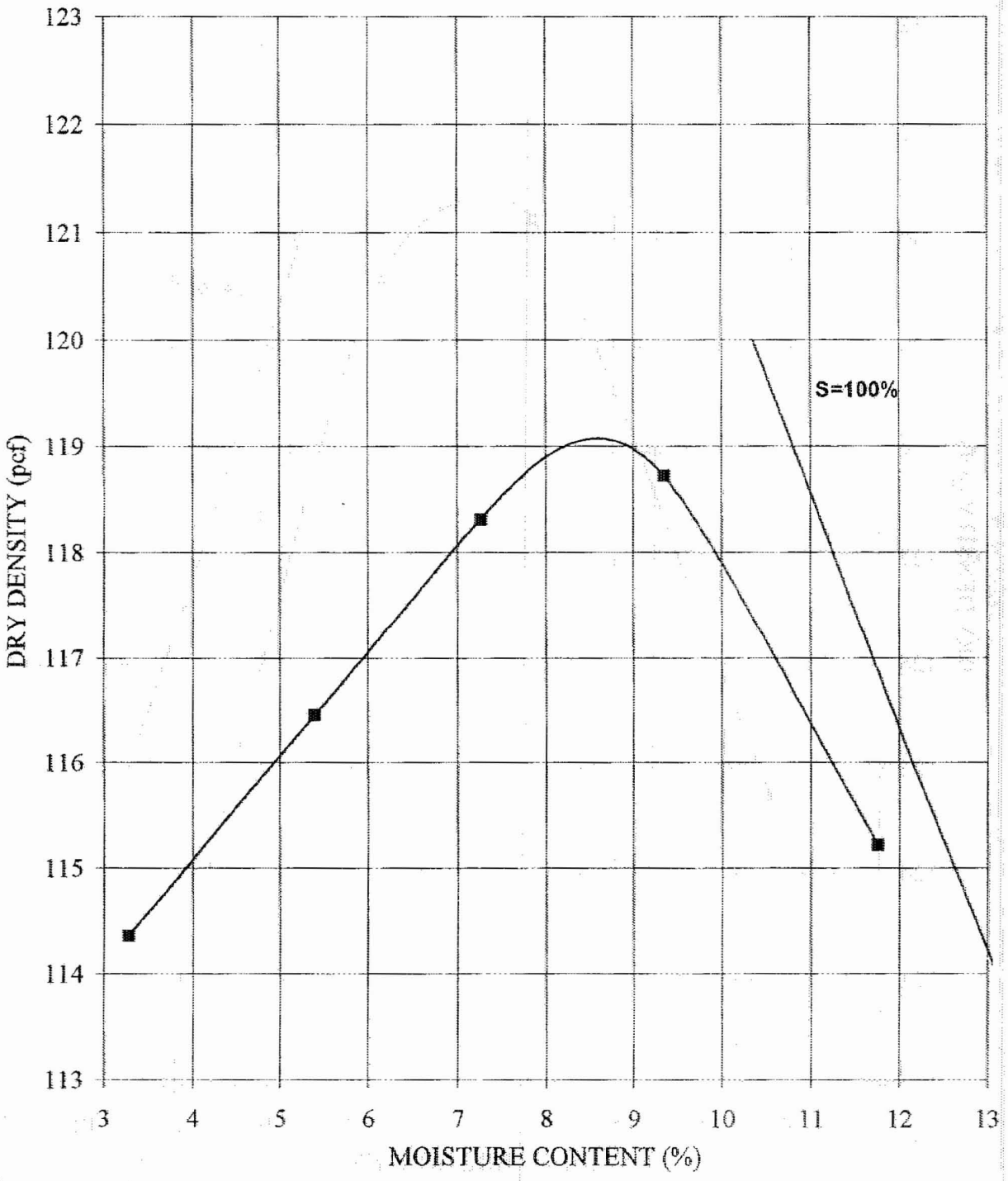
Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland		Contract No.:	06120048.00	Date: 9/20/2006

Boring No.	Depth (ft)	Sample Description	Class.	LL	PI
TP-B-335	5.0-6.0	Silty SAND, brown	SM		

Assumed Specific Gravity:	2.60	% Passing 3/4" Sieve:	100.0
		% Passing #4 Sieve:	100.0
Maximum Dry Density (pcf):	**130.5**	**Optimum Moisture Content (%):**	7.6

Schnabel

Schnabel Engineering

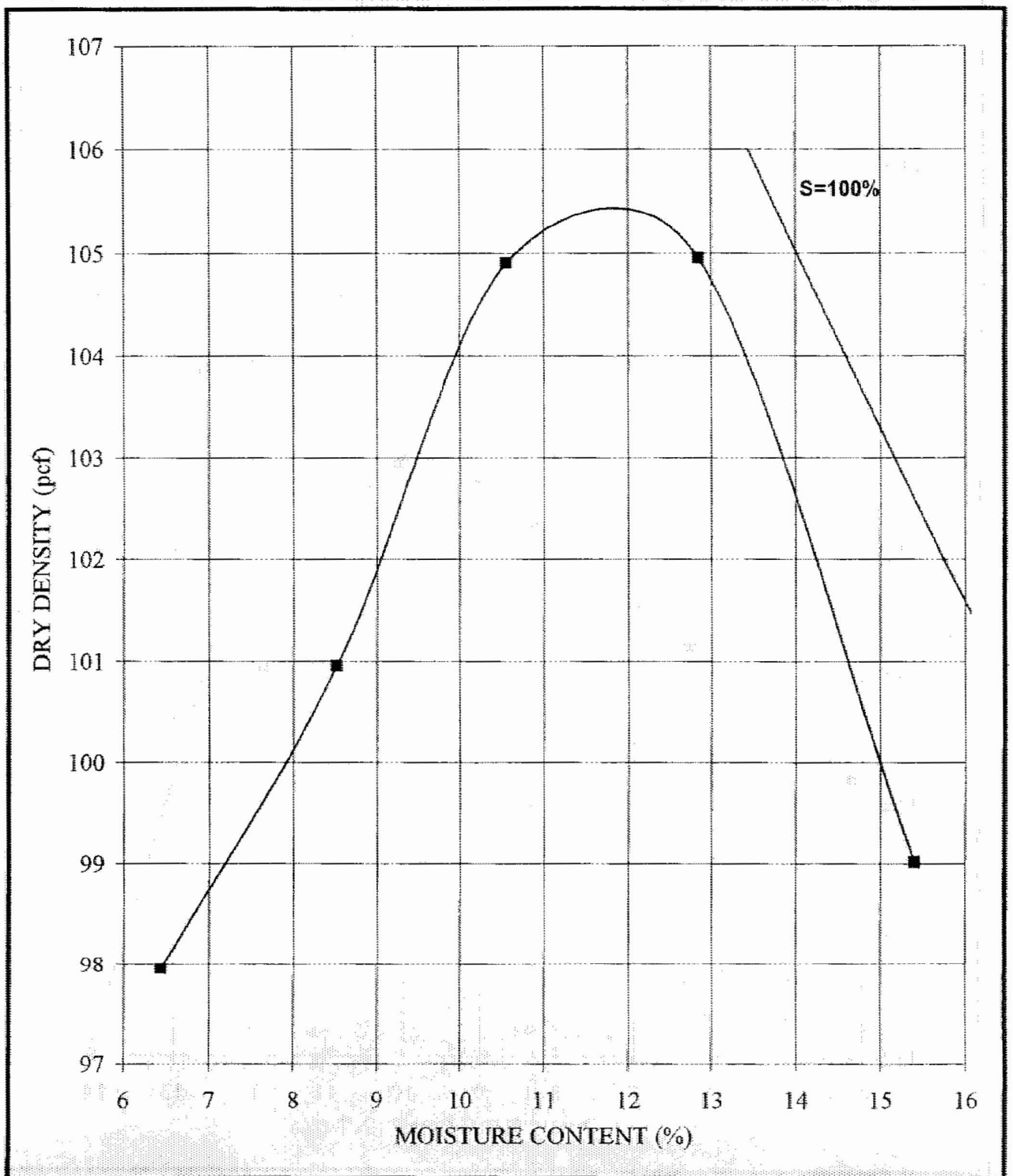


MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland			Contract No.:	06120048.00	Date:	9/18/2006
Boring No.	Depth (ft)	Sample Description		Class.	LL	PI	
TP-B-407	4.5-5.5	Well Graded SAND, with silt, trace gravel, dark		SW-SM			
Assumed Specific Gravity:		2.40	% Passing 3/4" Sieve:		100.0		
			% Passing #4 Sieve:		97.8		
Maximum Dry Density (pcf):		**119.1**	**Optimum Moisture Content (%):**		**8.6**		

Schnabel Engineering

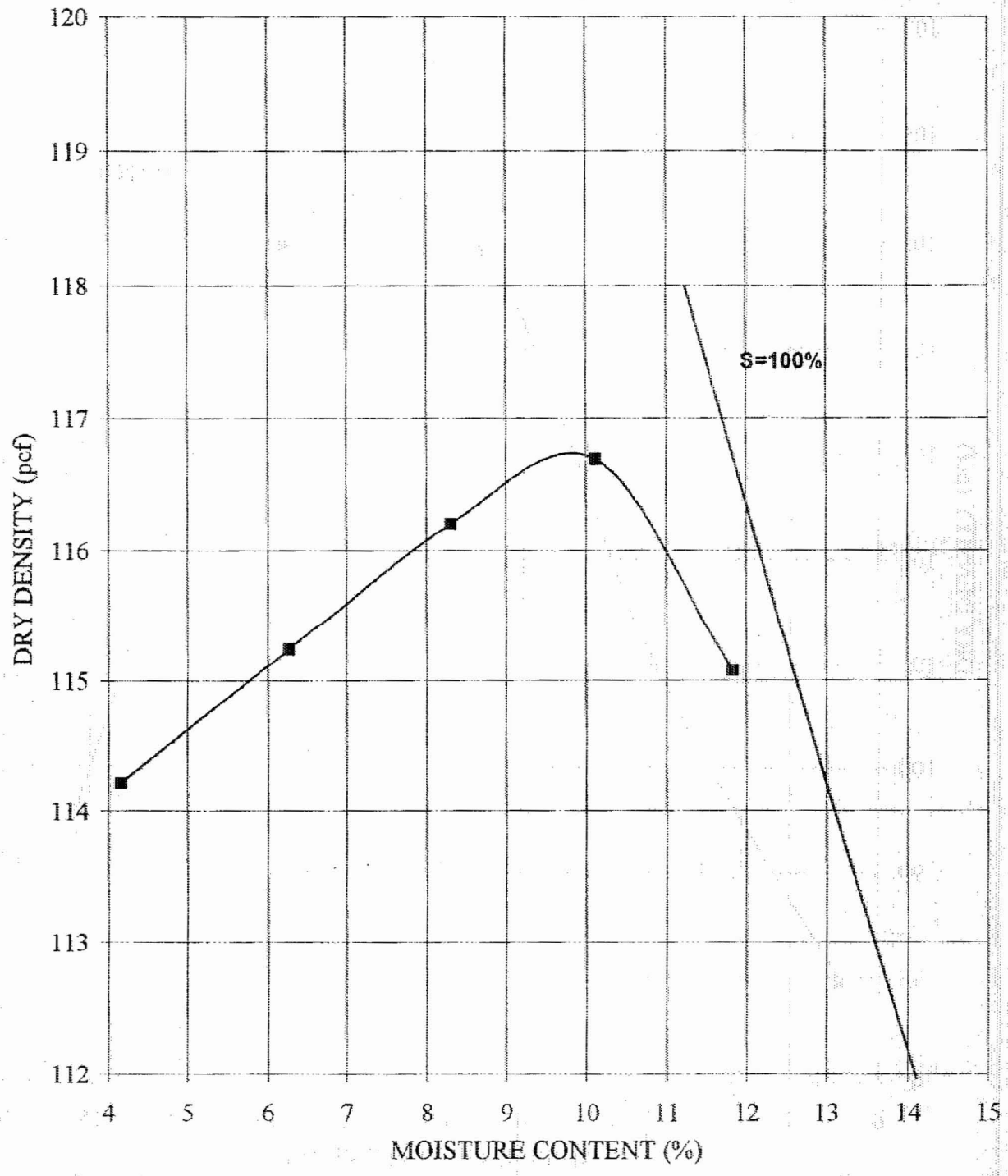


MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland			Contract No.:	06120048.00	Date:	9/21/2006
Boring No.	Depth (ft)	Sample Description	Class.	LL	PI		
TP-B-414	6.0-7.0	Poorly Graded SAND, with silt, light brown	SP-SM				
Assumed Specific Gravity:	2.20	% Passing 3/4" Sieve:		100.0			
		% Passing #4 Sieve:		100.0			
Maximum Dry Density (pcf):	**105.4**	**Optimum Moisture Content (%):**		**11.9**			

Schnabel Engineering

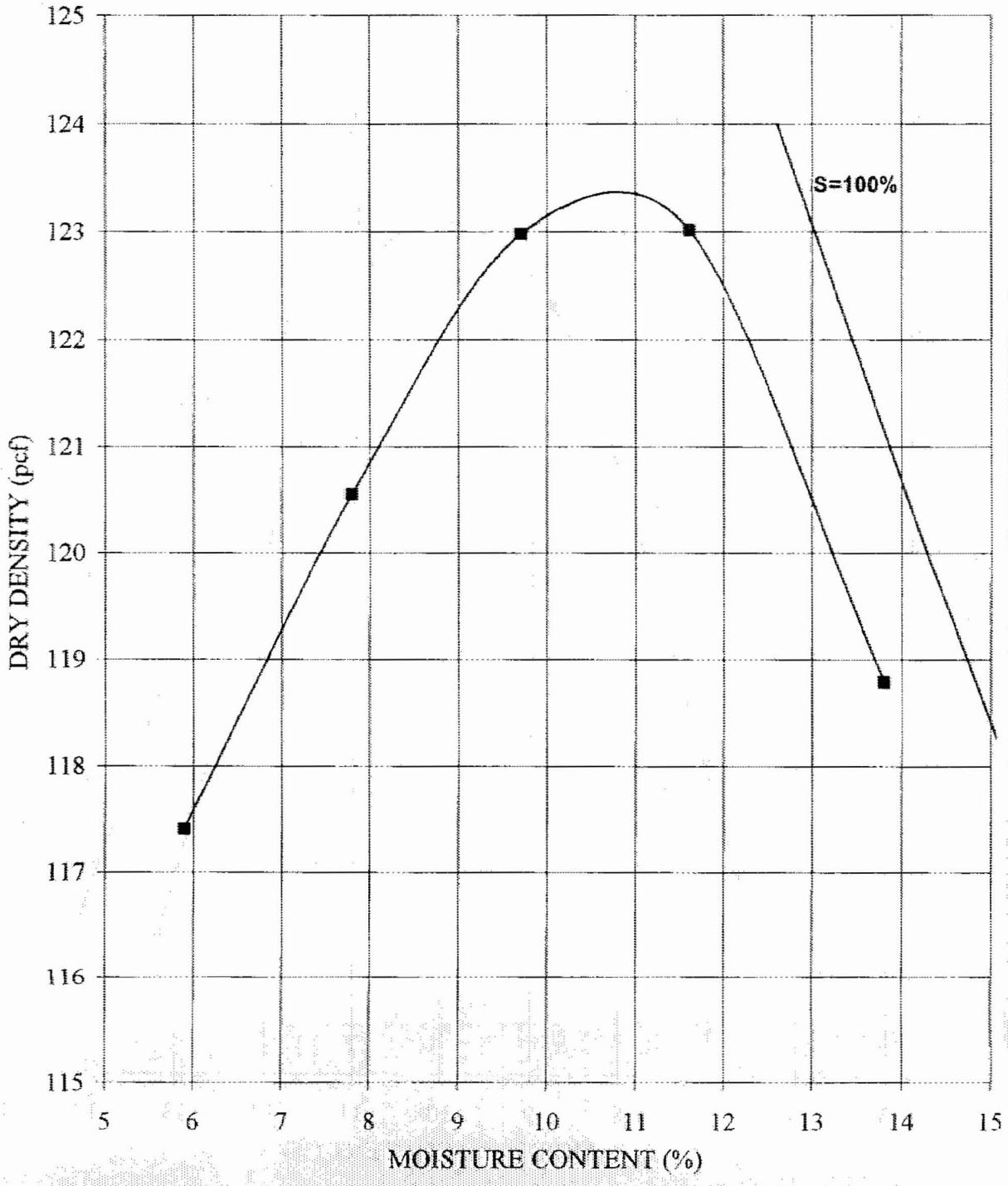


MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

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		
TP-B-415	3.0-4.0	Poorly Graded SAND, trace silt, light brown	SP				
Assumed Specific Gravity:	2.40	% Passing 3/4" Sieve:		100.0			
		% Passing #4 Sieve:		99.8			
Maximum Dry Density (pcf):	**116.7**	**Optimum Moisture Content (%):**		**9.8**			

Schnabel Engineering

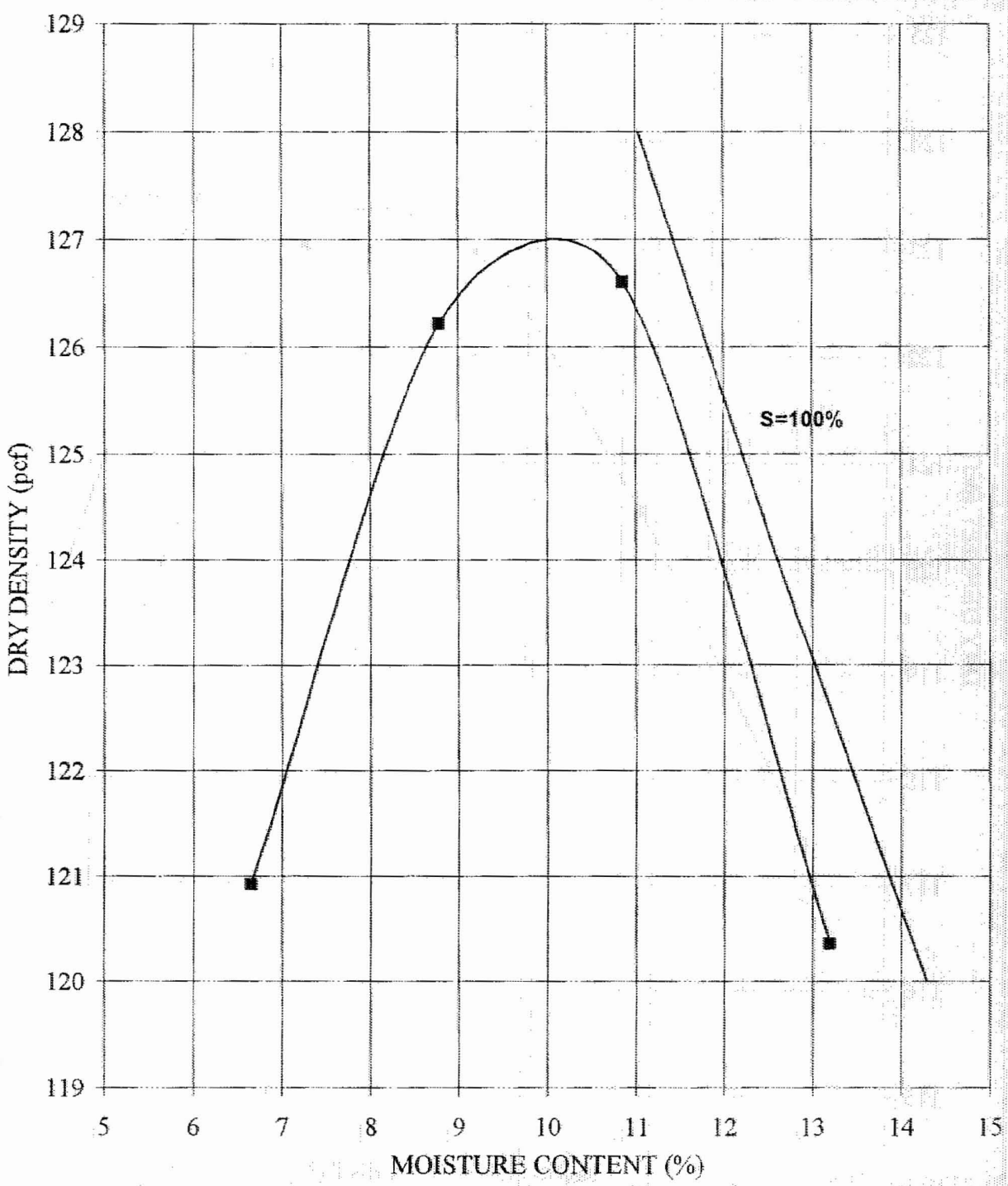


MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

Project:	Constellation Energy Group COLA Project, Calvert Cliffs NuclearPower Plant (CCNPP), Calvert County, Maryland			Contract No.:	06120048.00	Date:	9/18/2006
Boring No.	Depth (ft)	Sample Description	Class.	LL	PI		
TP-B-423	5.0-6.0	Sandy LEAN CLAY, dark brown	CL	24	8		
Assumed Specific Gravity:	2.65	% Passing 3/4" Sieve:		100.0			
		% Passing #4 Sieve:		100.0			
Maximum Dry Density (pcf):	**123.4**	**Optimum Moisture Content (%):**		**10.8**			

Schnabel Engineering



MOISTURE-DENSITY RELATION

ASTM D-1557 Method A

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		
TP-B-434	2.0-3.0	Sandy LEAN CLAY, dark brown	CL	25	7		
Assumed Specific Gravity:	2.65	% Passing 3/4" Sieve:		100.0			
		% Passing #4 Sieve:		99.8			
Maximum Dry Density (pcf):	**127.1**	**Optimum Moisture Content (%):**		**10.1**			

Schnabel

Schnabel Engineering