

Report of Pavement Design
Westminster Drive Extension
School Roads 1 and 2
Rocky Mount, North Carolina
GeoTechnologies Project No. 1-10-0242-EA

Prepared For:

City Of Rocky Mount Department of Engineering
P. O. Box 1180
Rocky Mount, North Carolina 27802

May 12, 2010

GeoTechnologies, Inc. P.A.
3200 Wellington Court, Site 108
Raleigh, North Carolina 27615



May 12, 2010

City of Rocky Mount Department of Engineering
PO Box 1180
Rocky Mount, North Carolina 27802

Attention: Mr. Anthony Mancari, P.E.

Reference: Report of Subsurface Investigation
Westminster Drive Extension
Rocky Mount, North Carolina
Project No. 1-10-0242-EA

Dear Sir:

GeoTechnologies, Inc. has completed the authorized field testing and engineering analysis of subsurface conditions for the proposed Westminster Drive extension and associated private road additions at the nearby elementary school in Rocky Mount, North Carolina. The purpose of this report is to discuss the results of tests performed at the site, our observations, and to make recommendations regarding the pavements at the site.

The following tables and figures are included in the attachments to this report for your review.

Figures 1 - 3	Site Plan with Approximate Boring Locations
Table 1	Boring Logs
Table 1A	Pavement Design Calculations
Table 2	Laboratory Test Result Summary

SITE DESCRIPTION

The site is located between Avondale Avenue and Winstead Avenue, directly south of Winstead Avenue Elementary. The proposed extension of Westminster Drive from Avondale Avenue to Winstead Avenue is approximately 1330 feet long. The two additional roads, School Road 1 and School Road 2, are approximately 465 and 570 feet long, respectively. The area is currently wooded, and a creek runs through, crossing the proposed Westminster Drive extension near Station 8+15.

INVESTIGATION PROCEDURES

Test locations were selected at approximately even intervals with one boring for every 200 feet of proposed roadway. Test borings were extended with hand augers to a depth of 5 feet or to hand auger refusal. A Sowers dynamic cone penetrometer (DCP) was used to evaluate the consistency of the subsurface soils. All test borings were refilled prior to leaving the site. A total of thirteen (13) test borings were made – 7 along the Westminster Drive extension, 1 in the creek, 2 on Private Road 1, and 3 on School Road 2. Four bulk samples were obtained for laboratory testing.

SUBSURFACE CONDITIONS

The soils encountered consist primarily of very loose to medium dense silty to clean medium to fine sands with Unified Soil Classifications of SM and SP. Some moderately plastic sandy silty clay with a Unified Soil Classification of CL-CH was also encountered near the bottom of some of the borings. Topsoil and root mat extended to depths ranging from 3 to 24 inches below the ground surface. The subgrade soils were generally near optimum moisture content in all borings, but were wet of optimum in borings B-1 through B-5, possibly due to rain events immediately prior to performing the borings. Groundwater was only encountered in boring B-2, at a depth of 42 inches below the ground surface.

LABORATORY TESTING

Laboratory testing included grain size analysis (ASTM D-1140), Atterberg limits tests (ASTM D-4318), standard Proctor compaction tests (ASTM D-698), and laboratory CBR tests (ASTM D-1883).

Four bulk samples were obtained from the top 3 feet of the borings: one from B-1, B-2, and B-3, a second from B-4, B-5, B-6, and B-7, a third from B-8 and B-9, and a fourth from B-10, B-11, and B-12. Optimum moisture contents ranged from 8.8 to 10.2 percent with maximum dry densities ranging from 125.3 to 128.0 pounds per cubic foot. Laboratory soaked California Bearing Ratio (CBR) values ranged from 4.6 to 16.5 percent at 0.1 inches of penetration and 5.6 to 23.5 percent at 0.2 inches of penetration, with 0 to 0.1 percent swell. The percent passing the number 200 sieve ranged from 23.8 to 45.3 percent. The samples all exhibited very low plasticity. A summary of the laboratory test results can be found in Table 2.

RECOMMENDATIONS

Upon completion of topsoil stripping and any cut to accommodate the pavement section, the subgrade should be proof rolled with a loaded tandem-axle dump truck. Areas that rut, pump, or deflect under the proofroll truck should be repaired as recommended by the geotechnical engineer. It may be possible to improve the soils by rolling with a large, vibratory smooth-drum roller; however, some of the soils are presently wet of optimum moisture content and will likely require drying to achieve stability.

Off-site borrow should be select fill consisting of clayey or silty sands having a Unified Soil Classification of SC, SM, or SP. Fill soils should be compacted to not less than 95% of the standard Proctor maximum dry density, except in the final 8 inches, where this requirement should be increased to 100% of the standard Proctor maximum. Subgrades should be proof rolled with a loaded tandem axle dump truck prior to placement of aggregate base. CBR values of select borrow material should also be verified prior to use in the construction.

We are providing separate pavement designs for each roadway section. An ADT of 2000, with 1 percent heavy trucks and 5 percent light trucks and buses was assumed for Westminster Drive. An ADT of 1000, with 1 percent heavy trucks and 10 percent light trucks and buses was assumed for School Road 1 and School Road 2. Pavement designs were performed using the Wake Forest design method. All materials for CABC stone and asphalt should be produced and installed in accordance with NCDOT specifications. We recommend using asphalt surface mix S12.5B. We have used a CBR value of 10 percent for Westminster Drive, 5 percent for School Road 1, and 8 percent for School Road 2. The recommended pavement sections are shown below.

Road	Required Structural Number	S12.5B Asphalt (in.)	I19.0B Binder (in.)	CABC Stone (in.)	Actual Structural Number
Westminster Drive	2.55	3	-	9	2.58
School Road 1	3.06	1.5	2.5	9.5	3.09
School Road 2	2.65	3		9.5	2.65

Note: 4 inches of S9.5B mix may be used for School Road 1 in lieu of Intermediate Binder.

The proposed pavement designs are based on CBR values obtained from on site soils. If fill depths will require the importation of additional borrow to achieve required subgrade elevations, it may be possible to reduce pavement sections on School Roads 1 and 2 if material with higher CBR values is imported. Increasing the CBR value of the subgrade soils to 10 percent will result in a pavement section of 3 inches of asphalt and 9 inches of CABC stone. Our experience in the Rocky Mount area has shown that there is ample select borrow material in the area which will meet the CBR-10 criteria. We have recommended that any borrow imported to the site be tested to confirm the CBR value of the material. Increasing this requirement to 10 percent could result in a substantial savings with regards to the cost of constructing pavements.

The most important factors affecting pavement life in the area of the site are the condition of the subgrade immediately prior to base course stone placement and post-construction drainage. As previously discussed, all subgrades should be compacted to a minimum of 100% of the standard Proctor maximum dry density immediately prior to base course stone placement. Additionally, all subgrades should be proof rolled and any areas of instability repaired prior to stone placement. Additionally, all pavements should be properly sloped to prevent ponding of water on the pavement surface which can lead to the eventual saturation of base course stone and subgrade which will lead to premature pavement failures.

GeoTechnologies, Inc. appreciates this opportunity to be of service to the City of Rocky Mount Engineering Department. Please contact us if you have any questions regarding this report.

Sincerely,

GeoTechnologies, Inc.

David R. Harris
 Senior Inspector

David L. Israel, P.E.
 NC Reg. No. 14319



Attachments

TEST BORINGS / SITE PLAN

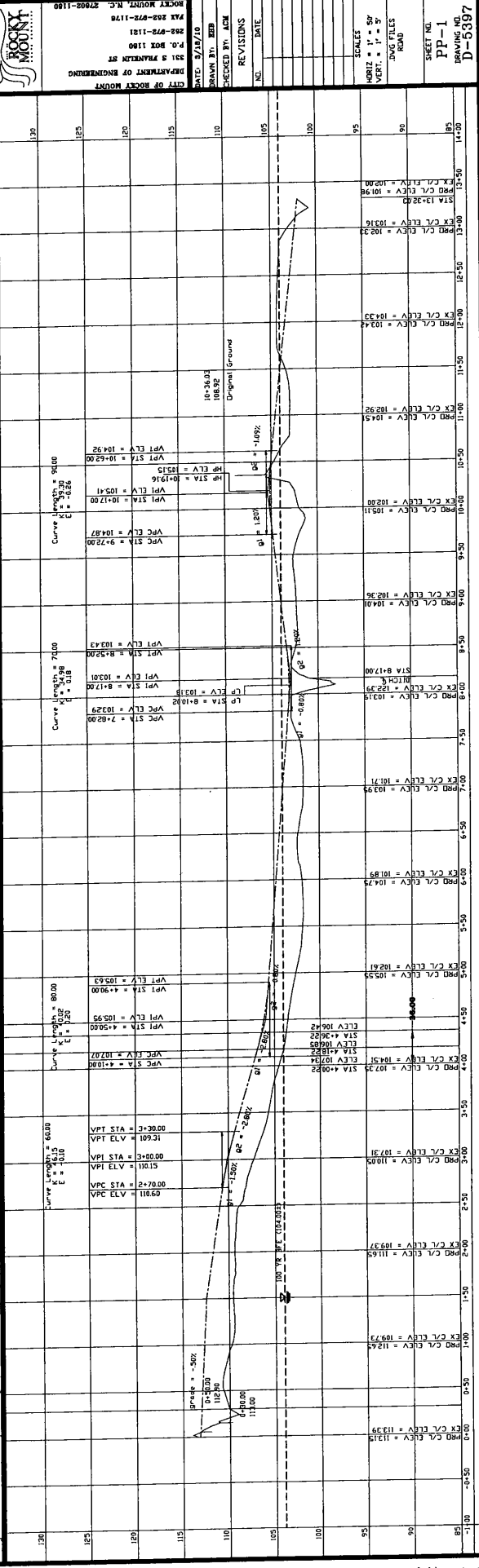
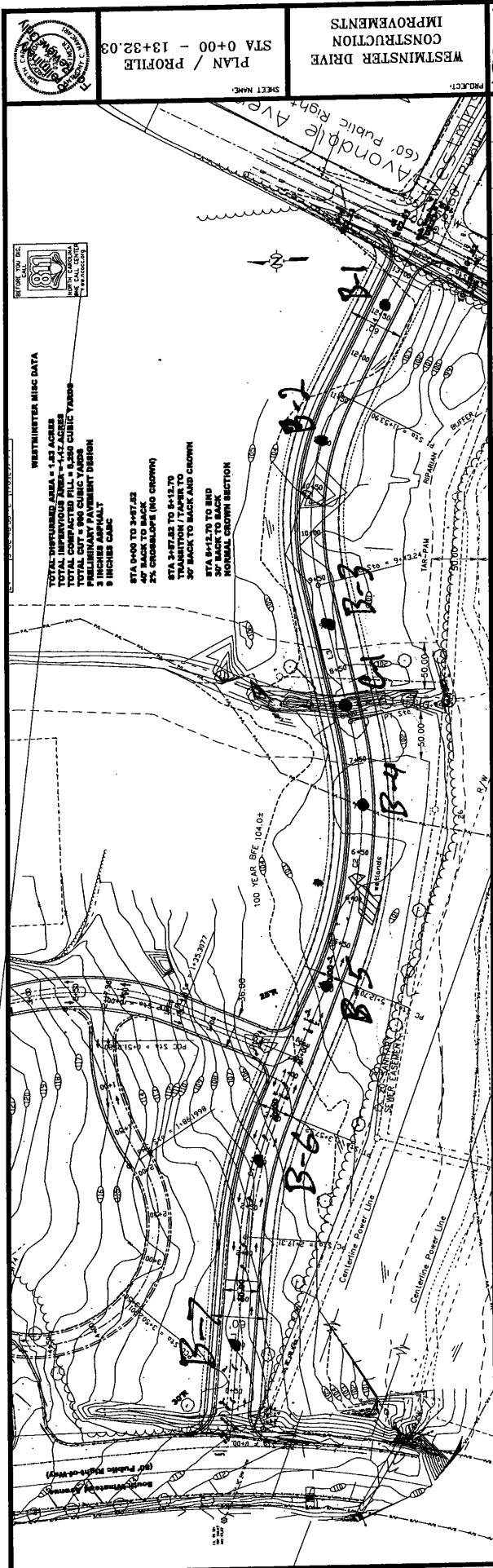


Figure 1

TABLE 1

TEST BORING SUMMARY

Westminster Drive Extension

Rocky Mount, North Carolina

GeoTechnologies Project No. 1-10-0242-EA

Boring	Depth (in.)	Description	Dynamic Cone Penetrometer	
			Depth (in.)	Blows / 1.75"
B-1 Westminster Drive Sta 12+60	0 - 3	Topsoil		
	3 - 60	Medium Dense Yellow Tan Silty SAND	12	15/1.75"
B-2 Westminster Drive Sta 11+00	0 - 5	Topsoil and Rootmat		
	5 - 42	Loose to Medium Dense Tan Gray Slightly Silty SAND	12	8-8-10
	42	cave - water	36	15/1.75"
B-3 Westminster Drive Sta 9+00	0 - 4	Topsoil and Rootmat		
	4 - 24	Very Loose to Medium Dense Dark Gray Silty Fine SAND	12	3-4-4
	24 - 60	Medium Dense Light Tan Dark Gary Silty Fine SAND	24	15/1.75"
			42	8-15/1.5"
C-1 creek	0 - 18	Very Loose Tan SAND	12	4-3-7
	18 - 30	Loose Tan Gray Clayey Fine SAND	24	5-5-6
	30	Hand Auger Refusal due to caving		
B-4 Westminster Drive Sta 7+00	0 - 6	Topsoil and Rootmat		
	6 - 30	Medium Dense Tan Fine SAND	12	9-15/1.5"
	30 - 60	Medium Dense Tan Gray Silty SAND	36	8-10-11
			60	15/1.5"

TABLE 1

TEST BORING SUMMARY

Westminster Drive Extension

Rocky Mount, North Carolina

GeoTechnologies Project No. 1-10-0242-EA

Boring	Depth (in.)	Description	Dynamic Cone Penetrometer	
			Depth (in.)	Blows / 1.75"
B-5 Westminster Drive Sta 5+00	0 - 12	Topsoil and Rootmat		
	12 - 60	Medium Dense Gray Fine SAND	12	9-15/1.75"
			36	15/1.75"
B-6 Westminster Drive Sta 3+00	0 - 24	Topsoil and Rootmat		
	24 - 42	Medium Dense Tan Fine to Medium SAND	24	7-11-15/1.25"
	42	Hand Auger Refusal		
B-7 Westminster Drive Sta 1+00	0 - 4	Topsoil and Rootmat		
	4 - 60	Loose to Medium Dense Tan Fine SAND	12	4-6-6
		root @ 2'	30	6-9-11
			42	11-15/1.5"
B-8 School Road 1 Sta 3+35	0 - 5	Topsoil and Rootmat		
	5 - 36	Very Loose to Loose Tan Slightly Silty Fine SAND	12	3-2-3
	36 - 60	Medium Dense Tan Orange Silty SAND	30	7-11-11
B-9 School Road 1 Sta 1+40	0 - 8	Topsoil and Rootmat		
	8 - 42	Loose Gray Silty Medium SAND	12	5-7-7
	42 - 60	Firm Gray Fine Sandy Silty CLAY	24	7-6-7
			42	7-9-10
			60	6-5-7

TABLE 1

TEST BORING SUMMARY

Westminster Drive Extension

Rocky Mount, North Carolina

GeoTechnologies Project No. 1-10-0242-EA

Boring	Depth (in.)	Description	Dynamic Cone Penetrometer	
			Depth (in.)	Blows / 1.75"
B-10 School Road 2 Sta 0+80	0 - 5	Topsoil and Rootmat		
	5 - 18	Loose to Medium Dense Tan Slightly Silty Medium to Fine SAND	12	3-6-8
	18 - 60	Medium Dense Orange Silty SAND	24	5-10-15/1.75"
			42	11-15/1.75"
60		12-15/1.0"		
B-11 School Road 2 Sta 2+40	0 - 7	Topsoil and Rootmat		
	7 - 30	Medium Dense Tan Slightly Silty Medium to Fine SAND w/ grave	12	10-14-15/1.75"
	30 - 54	Medium Dense Orange Tan Silty SAND w/ gravel	36	9-11-13
			54	Hand Auger Refusal
B-12 School Road 2 Sta 4+00	0 - 4	Topsoil and Rootmat		
4 - 60	Medium Dense Tan Fine SAND	12	12-15/1.5"	
		36	15/1.75"	
		60	15/1.0"	

PAVMENT DESIGN CALCULATIONS

TABLE 1A

PAVEMENT DESIGN CALCULATIONS

Street:	Westminster Drive			
ADT:	2000			
CBR:	10	Percent		
Pavement Design Life:	20	Years		
Growth Factor $G = (1 + i)^n$	1.105			
	<i>i</i>	0.005		
	<i>n</i>	20		
Design Avg. Daily Traffic (\overline{ADT})	$\frac{ADT + (G \times ADT)}{2}$		$\overline{ADT} =$	2105
Truck Factor (\overline{N})	$\overline{ADT} (0.25x + 0.60y)$			
x = % Single Frame Trucks			x =	5%
y = % Multiple Frame Trucks	N =	38.9	y =	1%
Soil Support Value (SSV)	5.32 (log CBR)-1.52			
	SSV =	3.800		
Structural Number (SN)	$\frac{(2.41 (\overline{N}))^{0.151}}{(1.14)^{SSV}}$			
	SN =	2.55		

Recommended Sections

Street	Required Structural No.	S12.5B Asphalt (Inches)	CABC Stone (Inches)	Actual Structural No.
	2.55	3.00	9.00	2.58

TABLE 1A

PAVEMENT DESIGN CALCULATIONS

Street:	School Road 1			
ADT:	1000			
CBR:	5	Percent		
Pavement Design Life:	20	Years		
Growth Factor $G = (1 + i)^n$	1.105			
	<i>i</i>	0.005		
	<i>n</i>	20		
Design Avg. Daily Traffic (\overline{ADT})	$\frac{ADT + (G \times ADT)}{2}$		$\overline{ADT} =$	1052
Truck Factor (\overline{N})	$\overline{ADT} (0.25x + 0.60y)$			
x = % Single Frame Trucks			x =	10%
y = % Multiple Frame Trucks	N =	32.6	y =	1%
Soil Support Value (SSV)	5.32 (log CBR) - 1.52			
	SSV =	2.199		
Structural Number (SN)	$\frac{(2.41 \overline{N})^{0.151}}{(1.14)^{SSV}}$			
	SN =	3.06		

Recommended Sections

Street	Required Structural No.	S12.5B Asphalt (Inches)	CABC Stone (Inches)	Actual Structural No.
	3.06	4.00	9.50	3.09

TABLE 1A

PAVEMENT DESIGN CALCULATIONS

Street:	School Road 1			
ADT:	1000			
CBR:	8	Percent		
Pavement Design Life:	20	Years		
Growth Factor $G = (1 + i)^n$	1.105			
	<i>i</i>	0.005		
	<i>n</i>	20		
Design Avg. Daily Traffic (\overline{ADT})	$\frac{ADT + (G \times ADT)}{2}$		$\overline{ADT} =$	1052
Truck Factor (\overline{N})	$\overline{ADT} (0.25x + 0.60y)$			
x = % Single Frame Trucks			x =	10%
y = % Multiple Frame Trucks	N =	32.6	y =	1%
Soil Support Value (SSV)	5.32 (log CBR)-1.52			
	SSV =	3.284		
Structural Number (SN)	$\frac{(2.41 \overline{N})^{0.151}}{(1.14)^{SSV}}$			
	SN =	2.65		

Recommended Sections

Street	Required Structural No.	S12.5B Asphalt (Inches)	CABC Stone (Inches)	Actual Structural No.
	2.65	3.00	9.50	2.65

LABORATORY TESTS

TABLE 2

SUMMARY OF LABORATORY TESTS

Westminster Drive Extension
 Rocky Mount, North Carolina
 GeoTechnologies Project No. 1-10-0242-EA

Boring	Road	Depth (ft.)	Optimum Moisture (%)	Max. Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Passing #200 Sieve (%)	Lab CBR 0.1" (%)	Lab CBR 0.2" (%)	Lab CBR % Swell	Unified Soil Class.
B-1, 2, 3	Westminster Drive	0 - 3	8.8	128.0	17	13.0	4.0	41.3	16.5	23.5	0.1	SM
B - 4, 5, 6, 7	Westminster Drive	0 - 3	9.9	126.0	15	14.0	1.0	23.8	15.5	19.9	0.0	SM
B - 8, 9	School Road 1	0 - 3	10.2	125.3	18	16.0	2.0	30.7	4.6	5.6	0.0	SM
B - 10, 11, 12	School Road 2	0 - 3	10.1	125.3	20	15.0	5.0	45.3	8.4	11.6	0.0	SM



GeoTechnologies, Inc.

Job No: 1-10-0242-EA Date: 5/12/10

Job Name: Westminster Drive Extension

Job Location: Rocky Mount, North Carolina

Boring No: _____

Sample No: B-1, 2, 3

Depth: _____

TEST RESULTS

Method of Test: ASTM D 698

Maximum Dry Density: 128.0 PCF

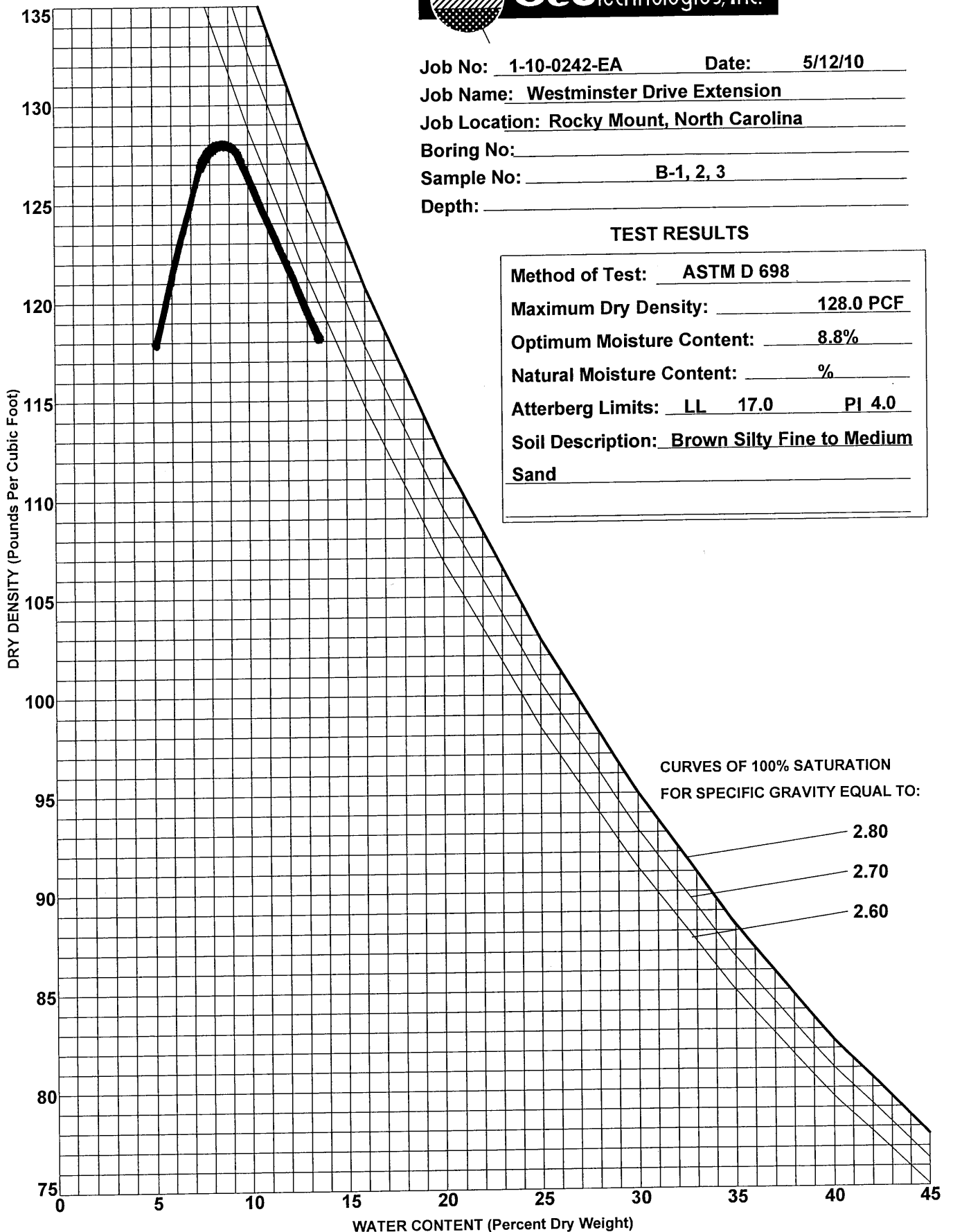
Optimum Moisture Content: 8.8%

Natural Moisture Content: %

Atterberg Limits: LL 17.0 PI 4.0

Soil Description: Brown Silty Fine to Medium

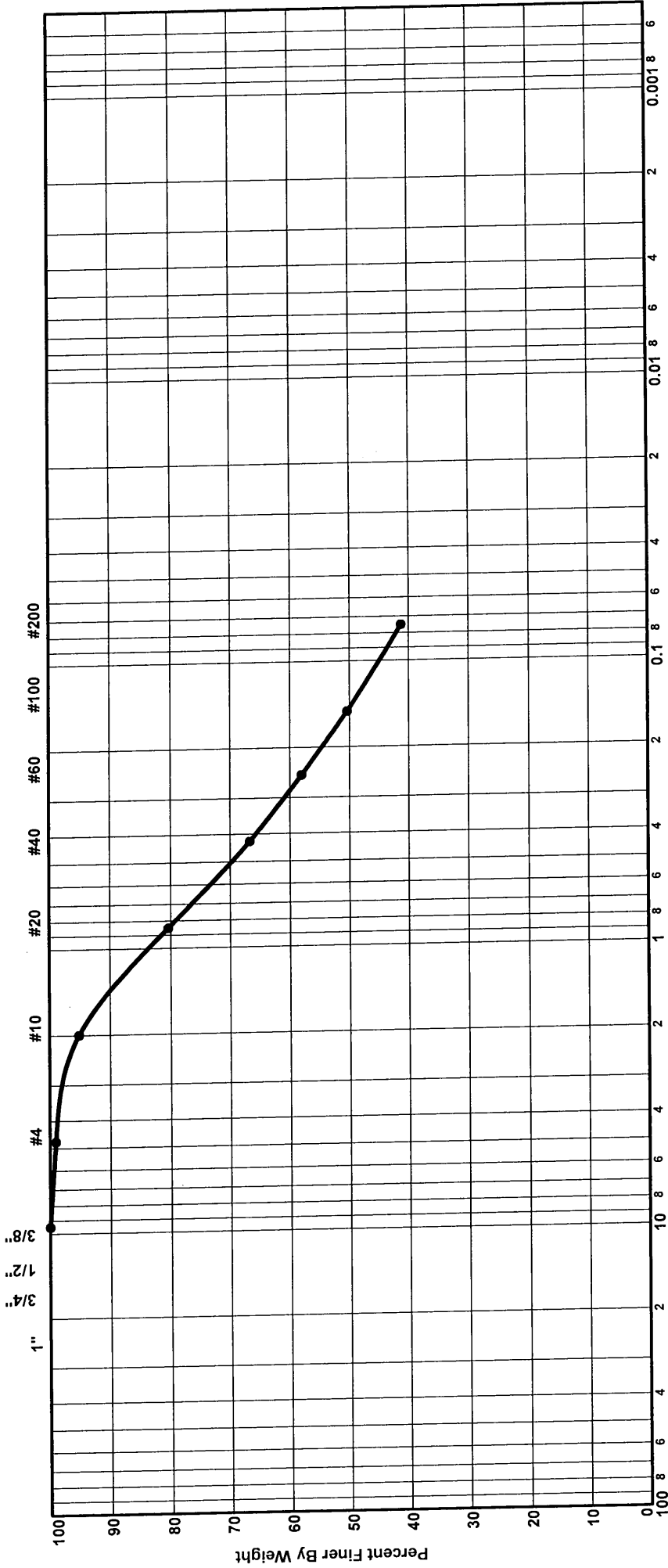
Sand



MOISTURE-DENSITY RELATIONSHIP

GeoTechnologies, Inc.
Raleigh, NC 27615

U.S. Standard Sieve Sizes



Grain Size in Millimeters

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

Boring No.	Elev./Depth	Nat. W.C.	L.L.	P.L.	P.I.	Soil Description or Classification
B-1, 2, 3			17.0	13.0	4.0	Brown Silty Fine to Medium Sand
Project: Westminster Drive Extension Rocky Mount, North Carolina						
Job No.: 1-10-0242-EA						
Date: 5/12/10						

GRAIN SIZE DISTRIBUTION



GeoTechnologies, Inc.

CBR DATA SHEET

JOB #: 1-10-0242-EA

JOB NAME: Westminster Dr. Extension

DATE: 5/3/2010

SAMPLE I.D. B-1, 2, 3 **DEPTH:**

NOTES: PROCTOR DATA:

Opt. Moisture = 8.8%

Max. Dry Density = 128.0 PCF

TEST PROCEDURE: ASTM D 698

SOIL DESCRIPTION: Brown Silty Fine to Medium Sand

CBR SPECIMEN DATA

MOISTURE CONTENT	8.5%
WET DENSITY	138.8 lbs./cu.ft.
DRY DENSITY	127.9 lbs./cu.ft.
% COMPACTION	99.9 %

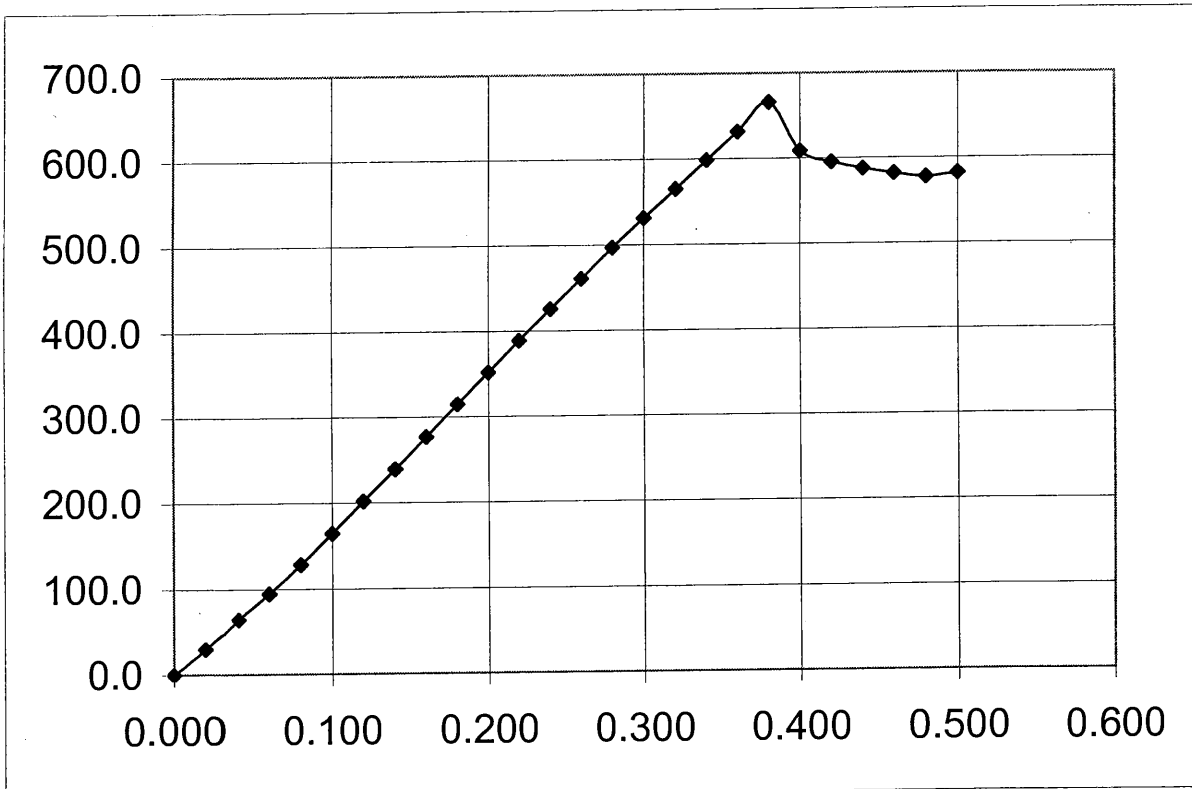
Swell Data

Initial Reading	0.249
Final Reading	0.252
Mold Height	4.573
% Swell	0.07

LOAD CELL 2000 LB.

RATE OF DEFORMATION
SURCHARGE USED

.05 in./min.
10 lbs.



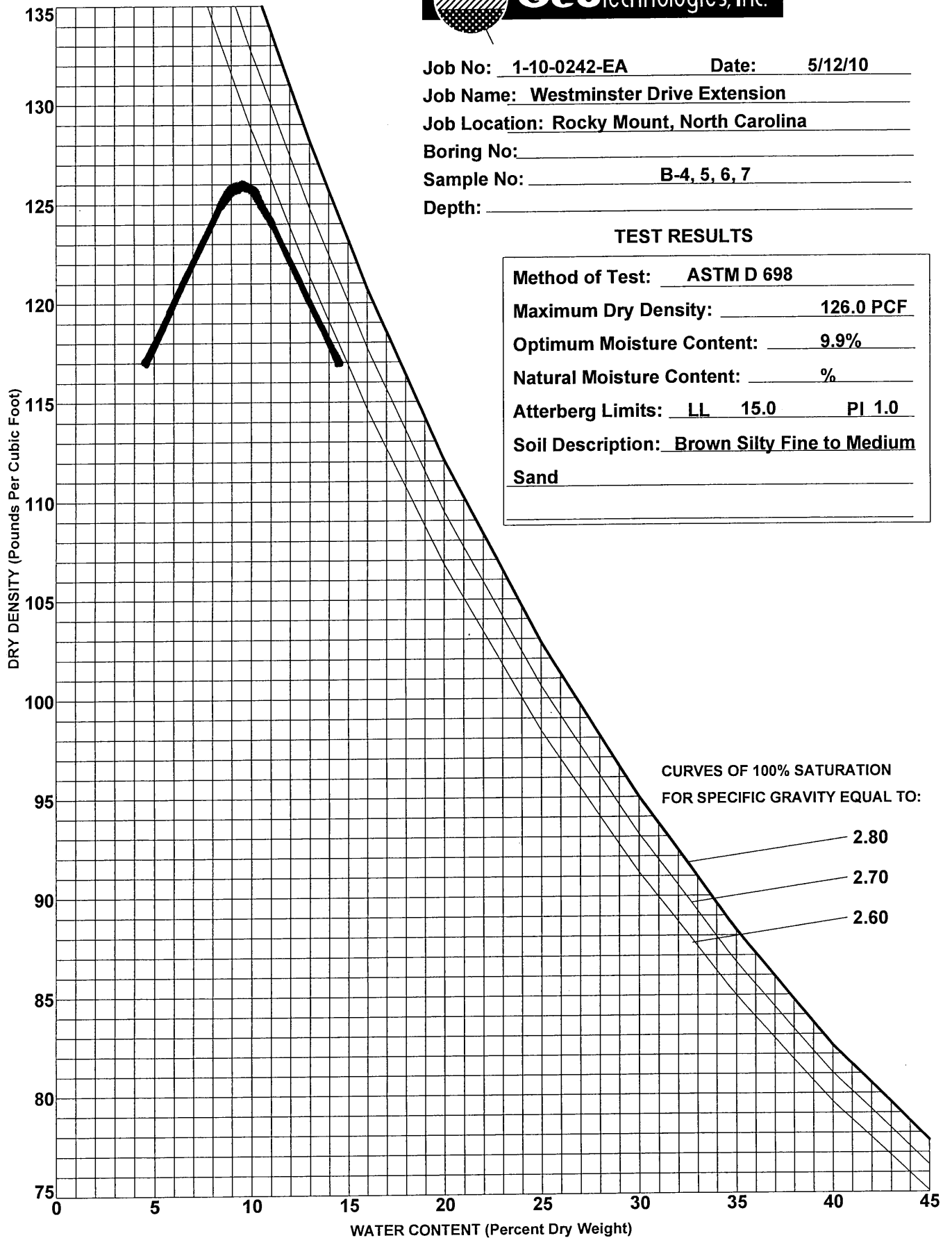
CBR @ 0.1"	16.5
CBR @ 0.2"	23.5
% SWELL	0.1



Job No: 1-10-0242-EA Date: 5/12/10
 Job Name: Westminster Drive Extension
 Job Location: Rocky Mount, North Carolina
 Boring No: _____
 Sample No: B-4, 5, 6, 7
 Depth: _____

TEST RESULTS

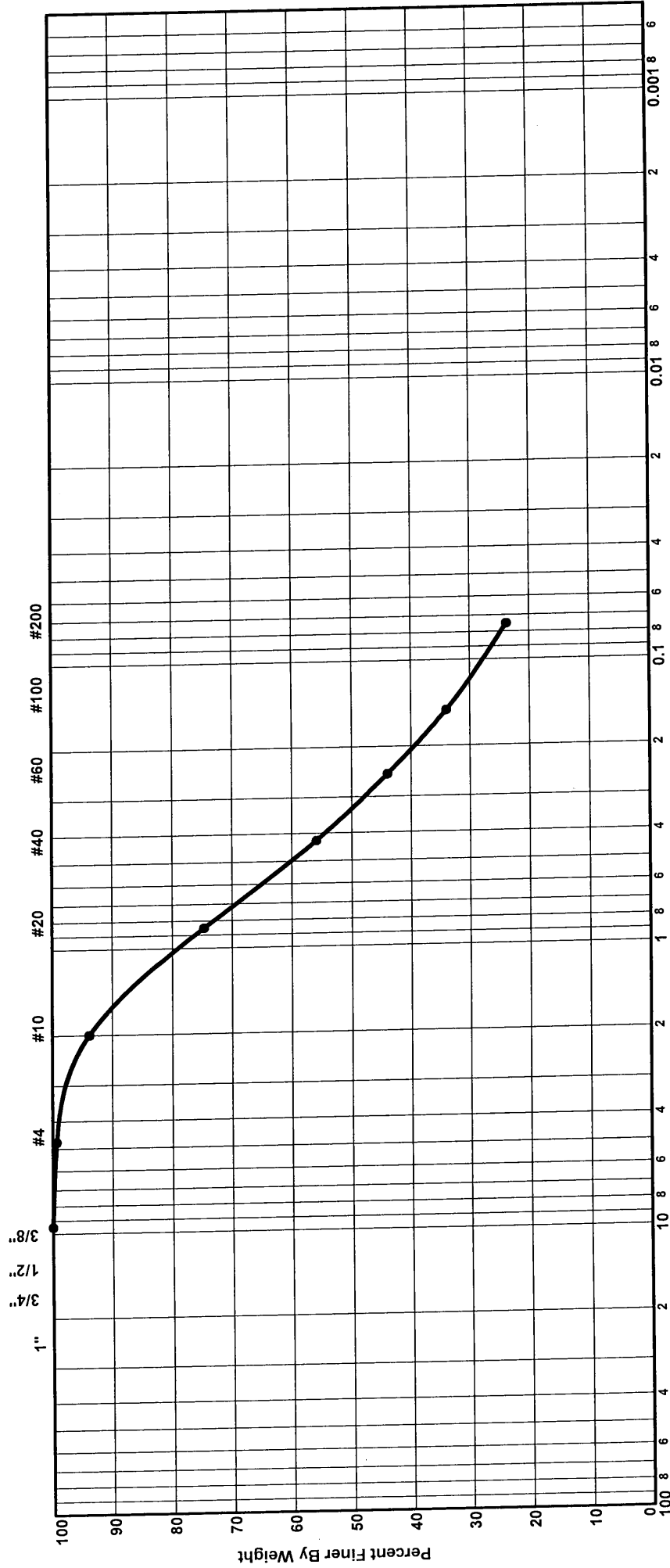
Method of Test: ASTM D 698
 Maximum Dry Density: 126.0 PCF
 Optimum Moisture Content: 9.9%
 Natural Moisture Content: %
 Atterberg Limits: LL 15.0 PI 1.0
 Soil Description: Brown Silty Fine to Medium Sand



MOISTURE-DENSITY RELATIONSHIP

GeoTechnologies, Inc.
 Raleigh, NC 27615

U.S. Standard Sieve Sizes



Grain Size in Millimeters

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

GRAIN SIZE DISTRIBUTION						
Boring No.	Elev./Depth	Nat. W.C.	L.L.	P.L.	P.I.	Soil Description or Classification
B-4, 5, 6, 7			15.0	14.0	1.0	Brown Silty Fine to Medium Sand
Project:		Job No.: 1-10-0242-EA				
Westminster Drive Extension Rocky Mount, North Carolina		Date: 5/12/10				

GeoTechnologies, Inc.

CBR DATA SHEET

JOB #: 1-10-0242-EA

JOB NAME: Westminster Dr. Extension

DATE: 5/3/2010

SAMPLE I.D.: B-4, 5, 6, 7 **DEPTH:**

NOTES: PROCTOR DATA:

Opt. Moisture = 9.9%

Max. Dry Density = 126.0 PCF

TEST PROCEDURE: ASTM D 698

SOIL DESCRIPTION:

Brown Silty Fine to Medium Sand

CBR SPECIMEN DATA		Swell Data	
MOISTURE CONTENT	9.5%	Initial Reading	0.378
WET DENSITY	138.0 lbs./cu.ft.	Final Reading	0.378
DRY DENSITY	126.0 lbs./cu.ft.	Mold Height	4.570
% COMPACTION	100.0 %	% Swell	0.00

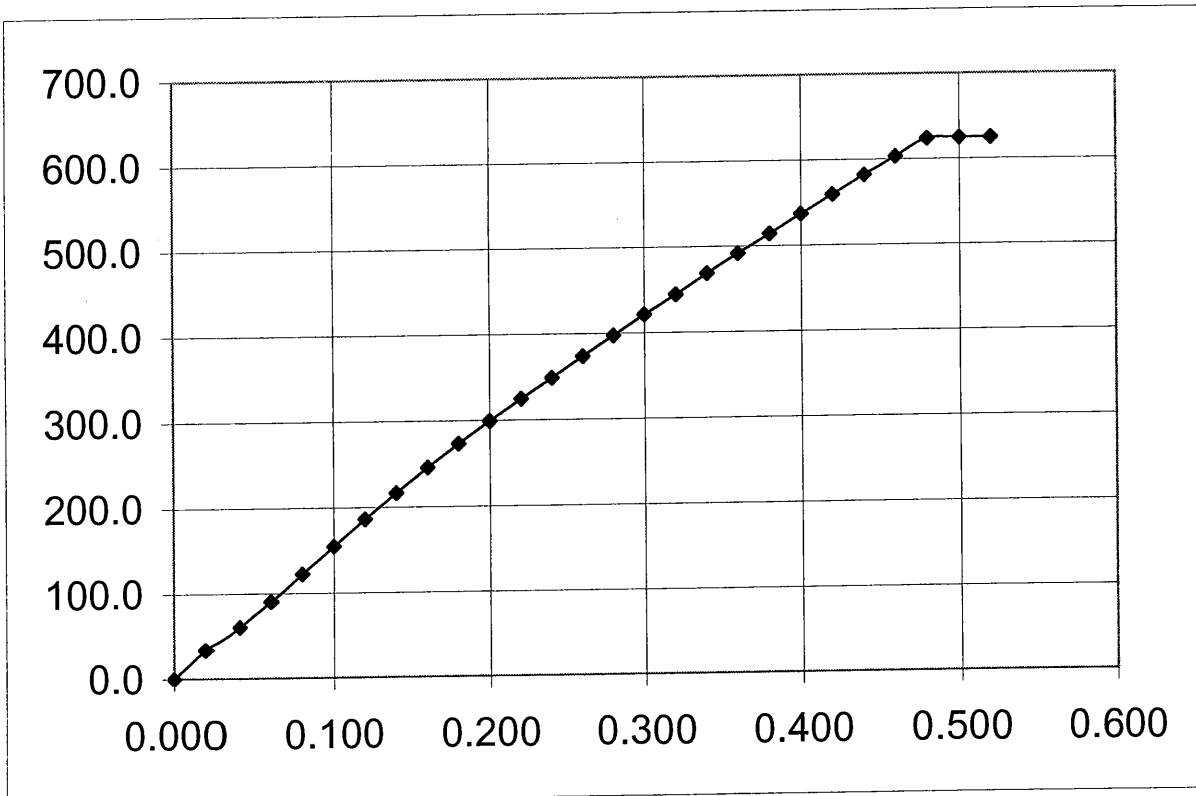
LOAD CELL 2000 LB.

RATE OF DEFORMATION

.05 in./min.

SURCHARGE USED

10 lbs.



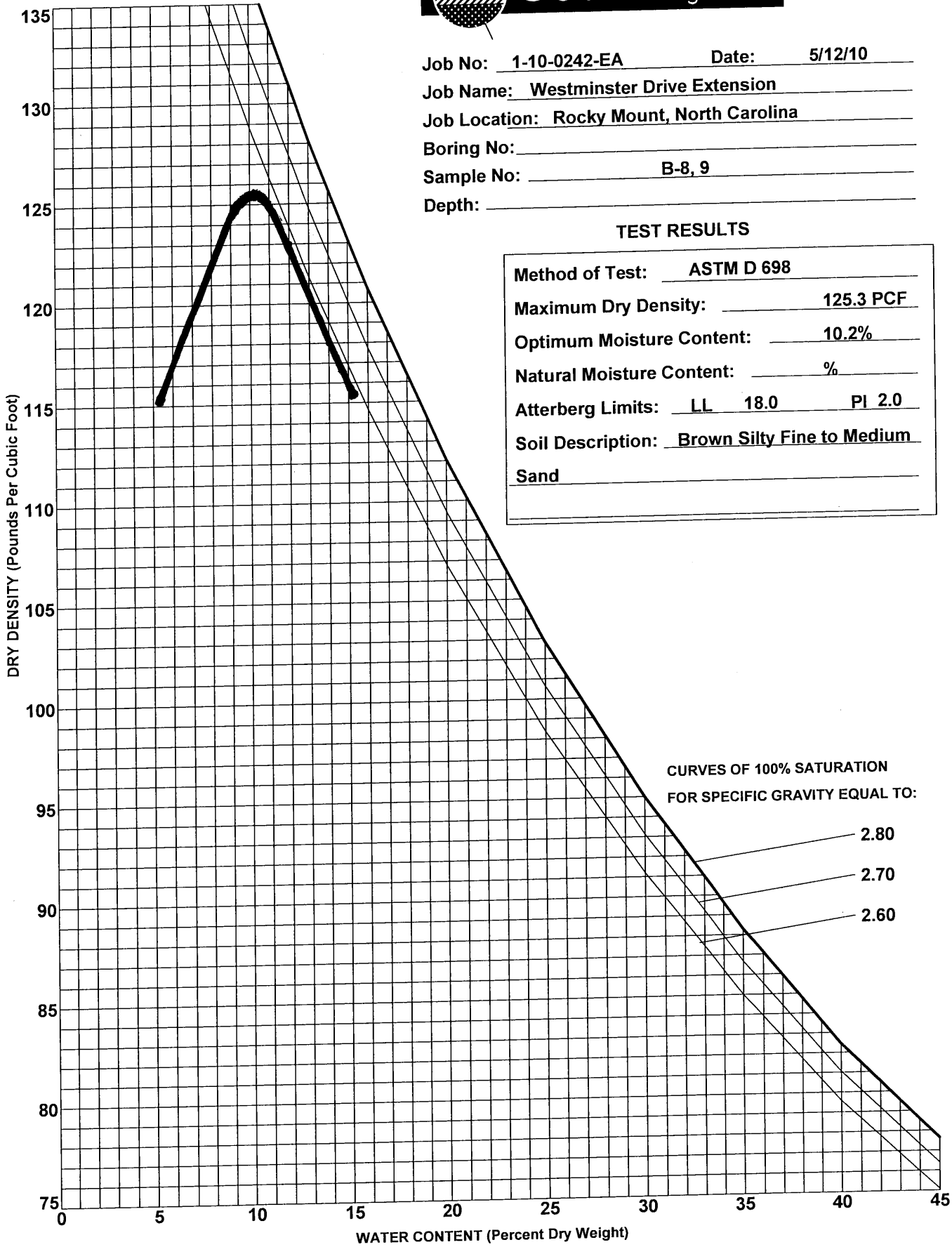
CBR @ 0.1"	15.5
CBR @ 0.2"	19.9
% SWELL	0.0



Job No: 1-10-0242-EA Date: 5/12/10
Job Name: Westminster Drive Extension
Job Location: Rocky Mount, North Carolina
Boring No: _____
Sample No: B-8, 9
Depth: _____

TEST RESULTS

Method of Test:	<u>ASTM D 698</u>
Maximum Dry Density:	<u>125.3 PCF</u>
Optimum Moisture Content:	<u>10.2%</u>
Natural Moisture Content:	<u>%</u>
Atterberg Limits:	<u>LL 18.0 PI 2.0</u>
Soil Description:	<u>Brown Silty Fine to Medium Sand</u>



MOISTURE-DENSITY RELATIONSHIP

GeoTechnologies, Inc.
Raleigh, NC 27615

GeoTechnologies, Inc.

CBR DATA SHEET

JOB #: 1-10-0242-EA

JOB NAME: Westminster Dr. Extension

DATE: 5/3/2010

SAMPLE I.D. B-8, 9 **DEPTH:**

NOTES: **PROCTOR DATA:**
Opt. Moisture = 10.2%

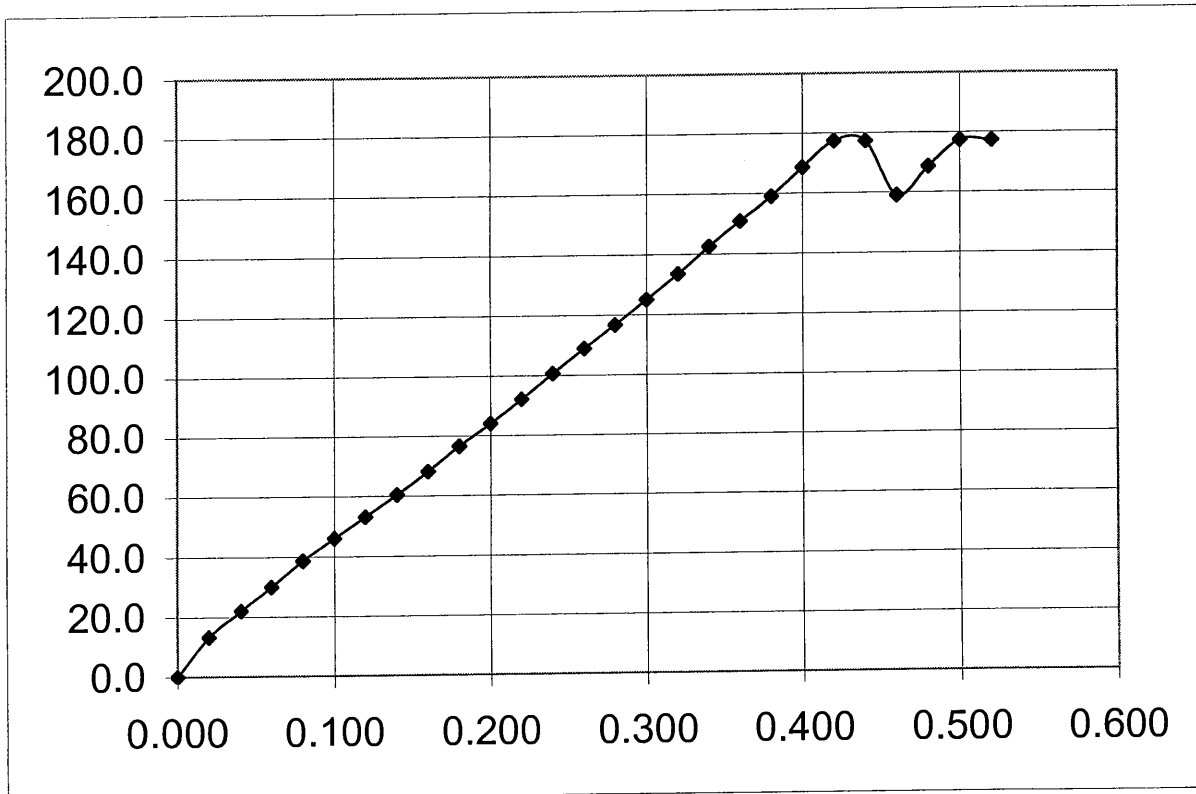
TEST PROCEDURE: ASTM D 698
Max. Dry Density = 125.3 PCF

SOIL DESCRIPTION: Brown Silty Fine to Medium Sand

CBR SPECIMEN DATA		Swell Data	
MOISTURE CONTENT	10.5%	Initial Reading	0.079
WET DENSITY	138.5 lbs./cu.ft.	Final Reading	0.079
DRY DENSITY	125.3 lbs./cu.ft.	Mold Height	4.560
% COMPACTION	100.0 %	% Swell	0.00

LOAD CELL 2000 LB.

RATE OF DEFORMATION .05 in./min.
SURCHARGE USED 10 lbs.



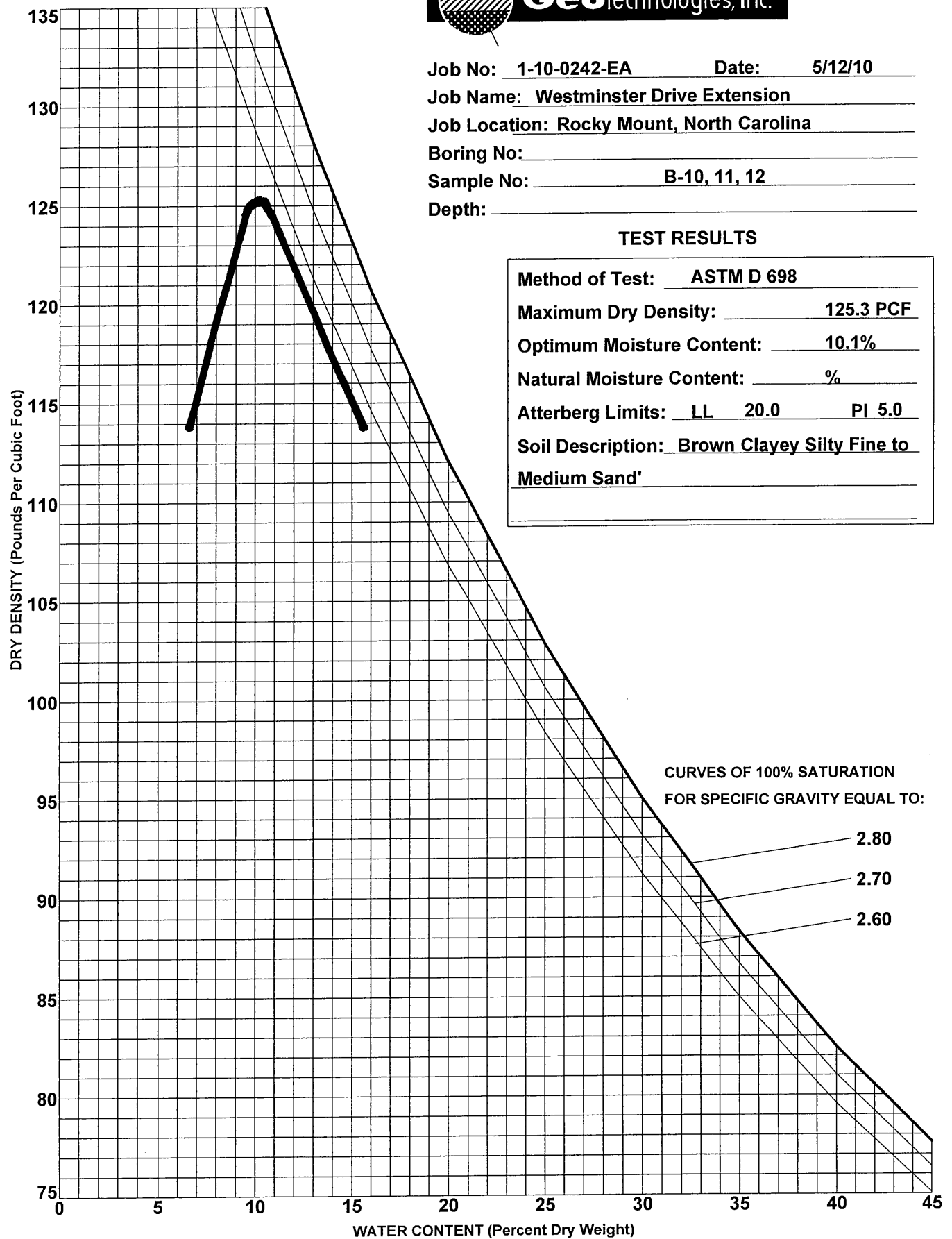
CBR @ 0.1"	4.6
CBR @ 0.2"	5.6
% SWELL	0.0



Job No: 1-10-0242-EA Date: 5/12/10
 Job Name: Westminster Drive Extension
 Job Location: Rocky Mount, North Carolina
 Boring No: _____
 Sample No: B-10, 11, 12
 Depth: _____

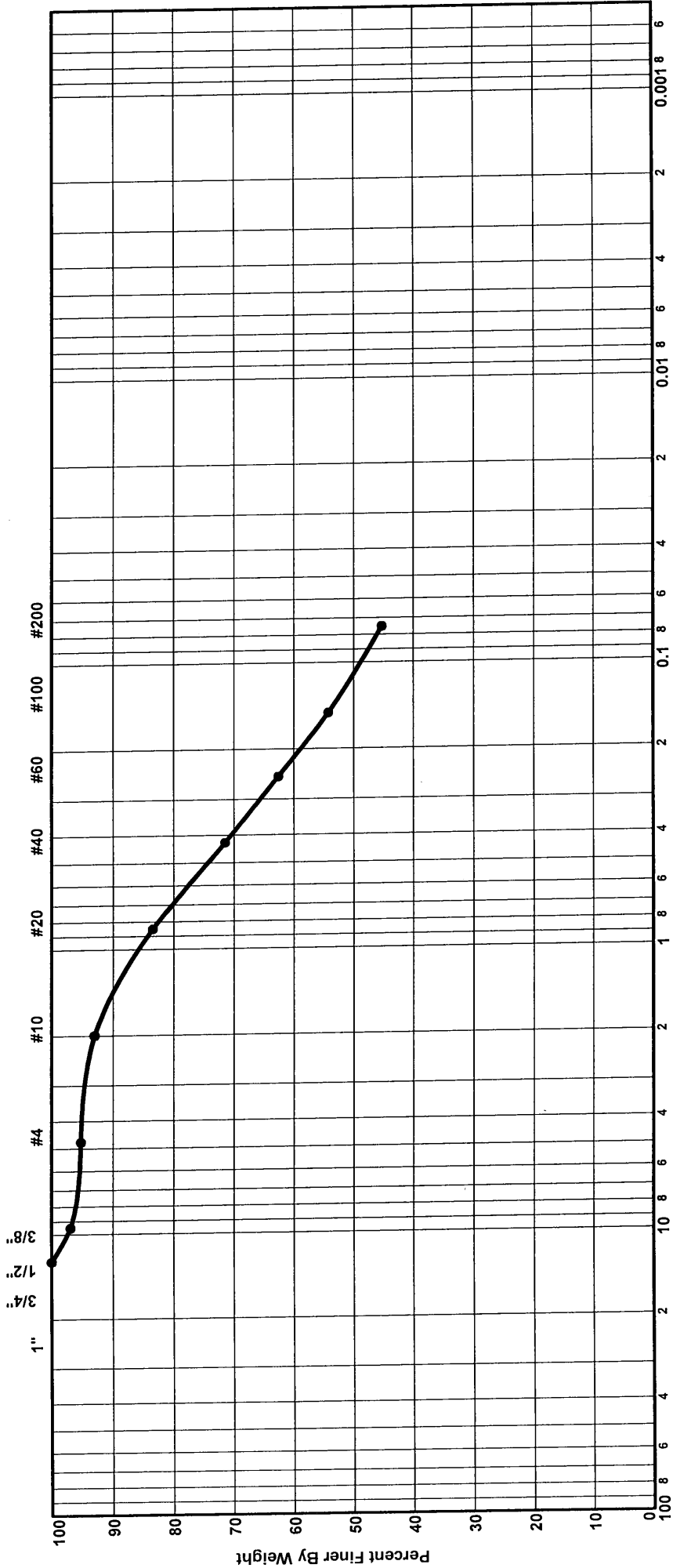
TEST RESULTS

Method of Test:	<u>ASTM D 698</u>
Maximum Dry Density:	<u>125.3 PCF</u>
Optimum Moisture Content:	<u>10.1%</u>
Natural Moisture Content:	<u>%</u>
Atterberg Limits:	<u>LL 20.0 PI 5.0</u>
Soil Description:	<u>Brown Clayey Silty Fine to Medium Sand'</u>



MOISTURE-DENSITY RELATIONSHIP

U.S. Standard Sieve Sizes



Grain Size in Millimeters

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

Boring No.	Elev./Depth	Nat. W.C.	L.L.	P.L.	P.I.	Soil Description or Classification
B-10, 11, 12			20.0	15.0	5.0	Brown Clayey Silty Fine to Medium Sand'
Project:		Job No.: 1-10-0242-EA				
Westminster Drive Extension Rocky Mount, North Carolina		Date: 5/12/10				

GRAIN SIZE DISTRIBUTION



GeoTechnologies, Inc.

CBR DATA SHEET

JOB #: 1-10-0242-EA

JOB NAME: Westminster Dr. Extension

DATE: 5/3/2010

SAMPLE I.D. B-10, 11, 12 **DEPTH:**

NOTES: PROCTOR DATA:

Opt. Moisture = 10.1%

Max. Dry Density = 125.3 PCF

TEST PROCEDURE: ASTM D 698

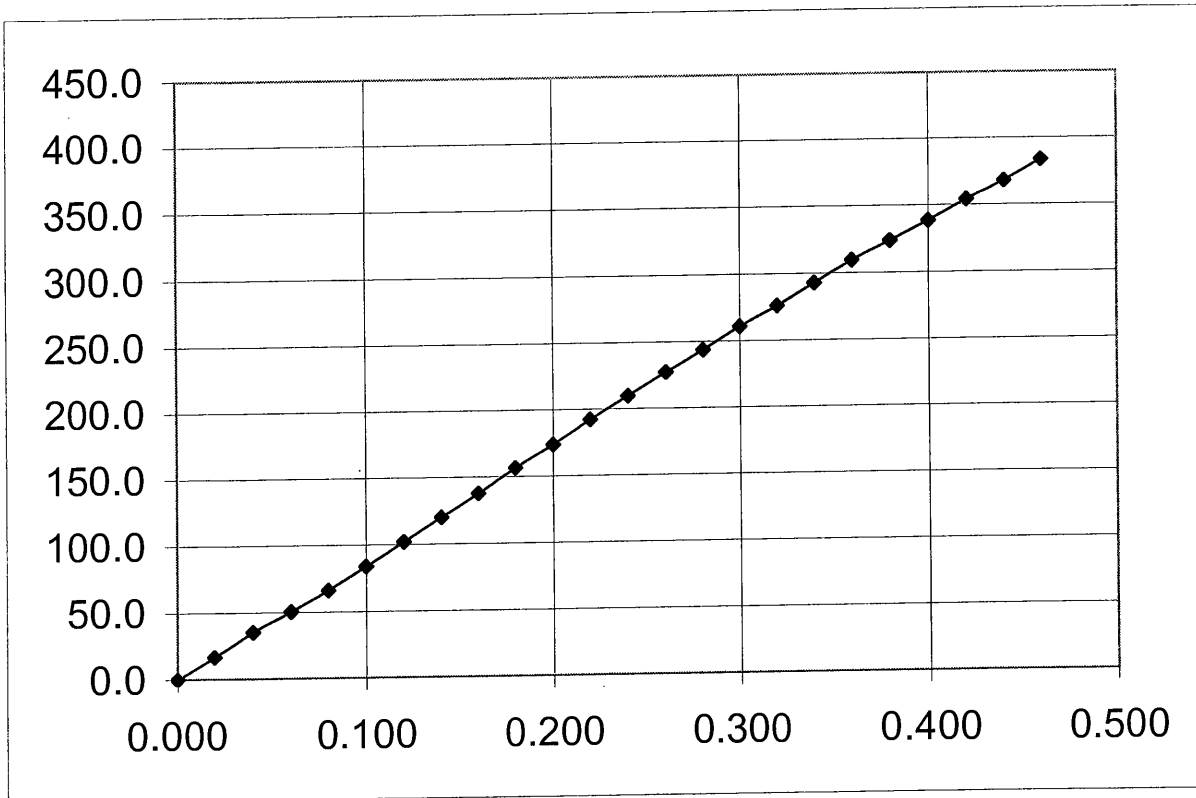
SOIL DESCRIPTION: Brown Silty Fine to Medium Sand

CBR SPECIMEN DATA		Swell Data	
MOISTURE CONTENT	10.3%	Initial Reading	0.026
WET DENSITY	138.2 lbs./cu.ft.	Final Reading	0.026
DRY DENSITY	125.3 lbs./cu.ft.	Mold Height	4.553
% COMPACTION	100.0 %	% Swell	0.00

LOAD CELL 2000 LB.

RATE OF DEFORMATION
SURCHARGE USED

.05 in./min.
10 lbs.



CBR @ 0.1"	8.4
CBR @ 0.2"	11.6
% SWELL	0.0