

D.V. and Faye Smith  
590 Wendell Blvd.  
P.O. Box 1932  
Wendell, NC 27591

D.V.  
- (C) 919-909-1774

(H) 919-365-1159

PRELIMINARY  
SUBSURFACE EXPLORATION

Wendell Site  
Wendell, North Carolina

PREPARED FOR

AAC Real Estate Services  
8211 Brier Creek Parkway, Suite 103  
Raleigh, North Carolina 27617

BY

**MOSHER ENGINEERING, INC.**

557 D Pylon Drive, Raleigh, North Carolina 27606

Project No. 05.080.GE

June 24, 2005

# MOSHER ENGINEERING

---

June 24, 2005

AAC Real Estate Services  
8211 Brier Creek Parkway, Suite 103  
Raleigh, North Carolina 27617

Attention: Mr. Joe Dye

Reference: Report Of Preliminary Subsurface Exploration  
AAC Wendell Site  
Wendell Boulevard at U.S. Highway 64 Bypass  
Wendell, North Carolina  
Mosher Engineering Project No. 05.080.GE

Mosher Engineering, Inc. has completed a preliminary subsurface exploration for the referenced project. This work was authorized by Mr. Joe Dye on May 31, 2005 and performed in general accordance with Mosher Engineering Proposal No. 05.096P.GE-Rev 1. The purpose of this preliminary exploration was to determine the general subsurface conditions at the site, and to evaluate those conditions with regard to site development. This report presents our findings along with our conclusions and preliminary recommendations for design and construction of the project.

## SCOPE OF INVESTIGATION

Field Exploration: The subsurface exploration included drilling seven (7) soil test borings and fifteen (15) auger probe borings at the approximate locations shown on the Boring Location Plan, Drawing No. 1, included in the Appendix. Mosher Engineering and Bore and Core (drilling subcontractor) personnel staked the boring locations using existing site features for reference. The borings and probes were drilled to depths ranging from 5.2 to 20 feet by mechanized truck and all-terrain vehicle-mounted drill rigs using continuous-flight, hollow-stem augers for the borings and solid stem augers for the probes.

Standard Penetration Tests were performed in the soil test borings at designated intervals in general accordance with ASTM D 1586. The Standard Penetration Test (SPT) is used to provide an index for estimating soil strength and density. In conjunction with the penetration testing, split-barrel soil samples were recovered for soil classification. Brief descriptions of the field testing procedures and Test Boring Records are included in the Appendix. Elevations shown on the Test Boring and Auger Probe Records are interpolated from contours shown on a topographic plan of the site obtained from Wake County Geographic Information Services.

Laboratory Services: The laboratory services provided for this project included visual classification of the soil samples by the project engineer. The color, texture and plasticity

characteristics were used to identify each soil sample in general accordance with the Unified Soil Classification System (USCS). The results of the visual classifications are presented on the Test Boring Records included in the Appendix.

In addition to the visual classifications, laboratory testing was conducted to determine Atterberg Limits, natural moisture content, and percent passing a No. 200 sieve on split spoon samples obtained from Borings B-1 and B-4. The results of the laboratory testing are summarized in the Appendix.

### SITE AND SUBSURFACE FINDINGS

Site: The site is comprised of 11 contiguous tracts and lots, which when combined total about 250 acres. The site is located in the southeast quadrant of the intersection of the new U.S. Highway 64 bypass with Wendell Boulevard in Wendell, North Carolina. Most of the site is used for agricultural purposes, although a few single-family residential lots are present in the northeastern corner. Some areas of the site are heavily wooded and others are open. The terrain is gently rolling with several streams and/or wet weather drainage features that meander through the western half. Surface water generally flows from the higher elevations along the northern and eastern property boundaries toward the southwestern corner of the site. Two (2) ponds are located near the middle of the site. Several rock outcrops were observed along ridgelines near the south-central portion of the site.

Area Geology: The subject site is located in the Raleigh Belt of the Piedmont Physiographic Province of North Carolina. Surficial geology consists of residual soils that have weathered in-place from the underlying bedrock. Surrounding topography consists of rolling land and broad ridges. According to the geologic map of North Carolina, the regional bedrock underlying the site generally consists of megacrystic to equigranular granitic rock.

Subsurface: The subsurface conditions at the site, as indicated by these widely spaced borings and auger probes, generally consist of a residual soil profile that has formed from the in-place weathering of the underlying parent bedrock. The generalized subsurface conditions for soil test borings and auger probes are described below. For more detailed descriptions refer to the Generalized Subsurface Profiles, Test Boring Records, and Auger Probe Records included in the Appendix of this report.

Soil Test Borings: In all the soil test borings (B-1 through B-7) performed for this phase of the project, an upper stratum of topsoil was encountered and measured 0.1 to 1.0 feet thick. The thicker layers of topsoil occurred in agricultural fields where the surficial soils had been disturbed by crop cultivation. Within wooded areas, the root systems of large trees can be quite extensive and may extend several feet below the ground surface.

Beneath the topsoil layers, the borings encountered a residual soil profile of silty CLAYs, silty SANDs and sandy SILT that extended to the termination depths of six (6) borings, and to the top of partially weathered rock (PWR) in one (1) boring. Generally the fine-grained silty CLAYs and



sandy SILTs were encountered within the upper 6 feet below the ground surface. Laboratory testing of two (2) samples obtained from Borings B-1 and B-4 at depths of 1.5 to 2.5 feet indicated moderately plastic fine-grained soils classified as CL and MH according to the Unified Soil Classification System.

Standard Penetration Test (SPT) resistances in the soil profile range from 8 to 21 blows per foot (BPF) with an average value of about 13 BPF.

Boring B-6 encountered partially weathered rock (PWR) at 6 feet and auger refusal at 11.9 feet. For engineering purposes, PWR is defined as any dense residual soil exhibiting an SPT resistance value in excess of 100 BPF. Generally, auger refusal is encountered at bedrock or on top of boulders, and is indicative of materials that will likely require rock excavation techniques for removal.

Auger Probe Borings: The auger probe borings were drilled at thirteen (13) general locations to explore for the presence of rock or hard soils that may be difficult to excavate with conventional construction equipment. At one location, two (2) additional probes were drilled at offset locations after the initial probe encountered refusal material at a shallow depth.

An upper stratum of topsoil was encountered at most probe locations and typically measured 0.3 to 1.2 feet thick. Several of the thicker topsoil layer measurements were obtained from probes conducted in formerly cultivated fields.

Beneath the topsoil layer, the auger probes encountered soil strata consisting of silty SANDs, sandy SILTs, and silty CLAYs. At most locations the auger probes were advanced with relative ease down to their termination depth of 20 feet below the ground surface. At AP 6A through AP-6C, AP-8, AP-9, and AP-10 partially weathered rock (PWR) was encountered at depths ranging from 3.0 to 12.1 feet. Auger refusal in these borings occurred at depths ranging from 4.9 to 13.7 feet.

Groundwater Observations: Groundwater measurements were attempted at the completion of each boring and auger probe. No measurable groundwater was encountered in most of the borings and probes. However, several of the borings and probes encountered groundwater at about 18 below the ground surface. One 24-hour water level measurement obtained from probe AP2-A indicated groundwater at about 9 feet below the ground surface. This particular probe was located near the bottom of a wide wet-weather drainage swale. Some fluctuation in groundwater levels will occur with normal climatic and seasonal variations.

### PROJECT DESCRIPTION

A conceptual site plan, provided to us by AAC, indicates the project will include construction of about 1.5 million square feet of retail and commercial space. The site plan indicates the project will include individual stand-alone buildings and strip buildings that range from 5,000 square feet of floor space to 170,000 square feet. Three (3) major anchor stores are also planned and will

range in size from 150,000 to 220,000 square feet. A major roadway is planned and will provide access to numerous contiguous parking lots. Most of the larger buildings are located around the perimeter of the project site, north of the railroad tracks. The smaller buildings and parking areas are clustered near the center of the proposed project.

No preliminary proposed grades were provided to us, however; we assume that mass grading activities on the site will likely consist of excavating soil from the higher elevations along the northern and eastern portions of the site and filling in the lower areas.

### PRELIMINARY RECOMMENDATIONS

The borings performed at this site represent the subsurface conditions at the location of the borings only. Due to the prevailing geology there can be changes in the subsurface conditions over relatively short distances that have not been detected by the borings. Consequently, there may be undisclosed subsurface conditions that require special treatment or additional preparation once these conditions are revealed during more detailed subsurface exploration or construction.

Our preliminary recommendations are based on the general project description outlined above, and on the data obtained from our testing program. Additional subsurface exploration should be conducted during the design development phase to assist designers in preparing final project plans and specifications.

Site Preparation: The proposed construction areas should be stripped of topsoil, organic material and other soft or unsuitable material. Some undercutting or bridging of soft/saturated soils in lower portions of the site may be necessary prior to placing fill, particularly during wet months of the year.

Site Grading: Most of the soils on the site appear suitable for use as structural fill and can be excavated with conventional earthmoving equipment. However, difficult excavation, possibly including rock excavation techniques, may be required in the vicinity of probes AP-6A through AP-6C, AP-8, AP-9, and AP-10. Due to the variable nature of the site geology, other areas of difficult excavation will likely be present between boring and probe locations.

Where dense soils or PWR are encountered, a D-8 or similar size dozer equipped with a steel tooth ripper, or a Caterpillar 330 or similar size backhoe equipped with rock teeth may be required to loosen these materials prior to their removal. Rock excavation techniques will likely be necessary for mass excavations that extend below auger refusal depths of the augers and probes. Auger refusal occurred at five (5) boring and probe locations at depths ranging from 4.9 to 13.7 feet.

Rock excavation techniques, including blasting and/or use of a pneumatic hoe-ram, may also be needed to break up and loosen hard soils and PWR within trenches and confined areas.

Groundwater And Surface Water: Based on the groundwater levels encountered, the groundwater will likely be well below building slabs and pavements. However, this will be dependent upon the proposed finished grades for the site. As a result, it does not appear that permanent dewatering

will be required beneath the buildings and/or pavements, although some temporary dewatering may be required within the areas of the existing drainage features or while attempting to undercut soft/saturated soils. The necessary dewatering should be achieved through the use of conduits (pipes), diversion trenches, temporary sumps, and/or filtered trench drains that discharge to suitable outlet areas.

**Fill Material And Placement:** Most of the onsite soils should be suitable for use as project fill. However, some moisture modification (drying and/or wetting) of the soils may be required. The type, extent and difficulty associated with obtaining the required moisture modification will be influenced by the soil plasticity and the weather conditions encountered during site grading. In addition, the plastic, fine-grained sandy SILTs and silty CLAYs will not be suitable for use behind some retaining wall systems.

All fill placed for the project should be compacted to at least 95 percent of its Standard Proctor maximum dry density. Compaction to at least 100 percent of Standard Proctor maximum dry density is recommended for the final lift of soil underlying flexible pavements.

For mass-grading operations using relatively heavy compaction equipment (e.g., CAT 815 or similar) fill should be placed in lifts not exceeding twelve (12) inches loose thickness. However, for isolated excavations around the footing locations, behind below-grade walls or within utility excavations, a hand tamper or walk-behind roller will likely be required. While using a hand tamper or walk-behind roller, the maximum lift thickness (loose) should not exceed 5 inches. We recommend that field density tests be performed on the fill as it is being placed, at a frequency determined by a geotechnical engineer from our office, to verify that proper compaction is achieved.

Due to the plasticity characteristics associated with the onsite SILTs and CLAYs, these materials are susceptible to fluctuations in moisture and may, if wet of their optimum moisture content, become unstable beneath the weight of repeated construction traffic.

**Foundation Support:** Based on our current understanding of the project, the proposed structures can be adequately supported on shallow foundation systems consisting of spread footings bearing on suitable residual soils or on structural fill. A net allowable bearing pressure of up to 3,000 pounds per square foot (PSF) can be used for preliminary design of the foundations. However, higher bearing pressures are possible for those portions of the site where the foundations will bear directly on the very firm to dense residual soils. More specific recommendations in this regard can be provided once building locations and grades are known and additional borings are conducted.

**Floor Slabs and Pavement Support:** Slab-on-grade floor systems and pavements can be adequately supported on suitable residual soils or on structural fill provided the site is properly prepared and fill is adequately compacted.

**Cut And Fill Slopes:** Permanent cut slopes within residual soils and properly compacted fill slopes should be no steeper than 2½(H):1(V) and should be properly seeded to minimize erosion. For maintenance purposes, the permanent slopes may need to be flattened to allow

access to mowing equipment. Also, any fill placed in sloping areas should be properly benched into the adjacent soils. Temporary slopes in confined or open excavations should perform satisfactorily at inclinations of 1(H):1(V); however, if soft/saturated soil conditions are encountered within the excavations, then flatter slopes and/or shoring will be required. All excavations should conform to applicable OSHA regulations.

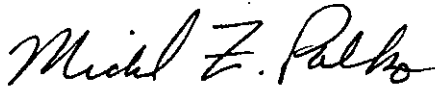
The crest of all slopes should be maintained at least five (5) feet horizontally from building and pavement limits. Appropriately sized ditches should run above and parallel to the crest of all permanent slopes to divert surface runoff away from the slope face. To aid in obtaining proper compaction on the slope face, the fill slopes should be overbuilt with properly compacted structural fill and then excavated back to the proposed grades.

Additional Exploration: Additional soil test borings should be conducted when building locations and proposed site grades are finalized. Once the additional subsurface test data is obtained, more detailed recommendations can be provided for design and construction of the project.

### CLOSURE

Mosher Engineering appreciates having the opportunity to assist you during this phase of the project. If you have any questions concerning this report, please contact us.

Respectfully,  
*MOSHER ENGINEERING, INC.*



Michael F. Palko, E.I.  
Project Engineer



William R. Mosher, P.E.  
Principal Engineer  
North Carolina License No. 17909



Appendix



## **APPENDIX**

**Boring Location Plan**

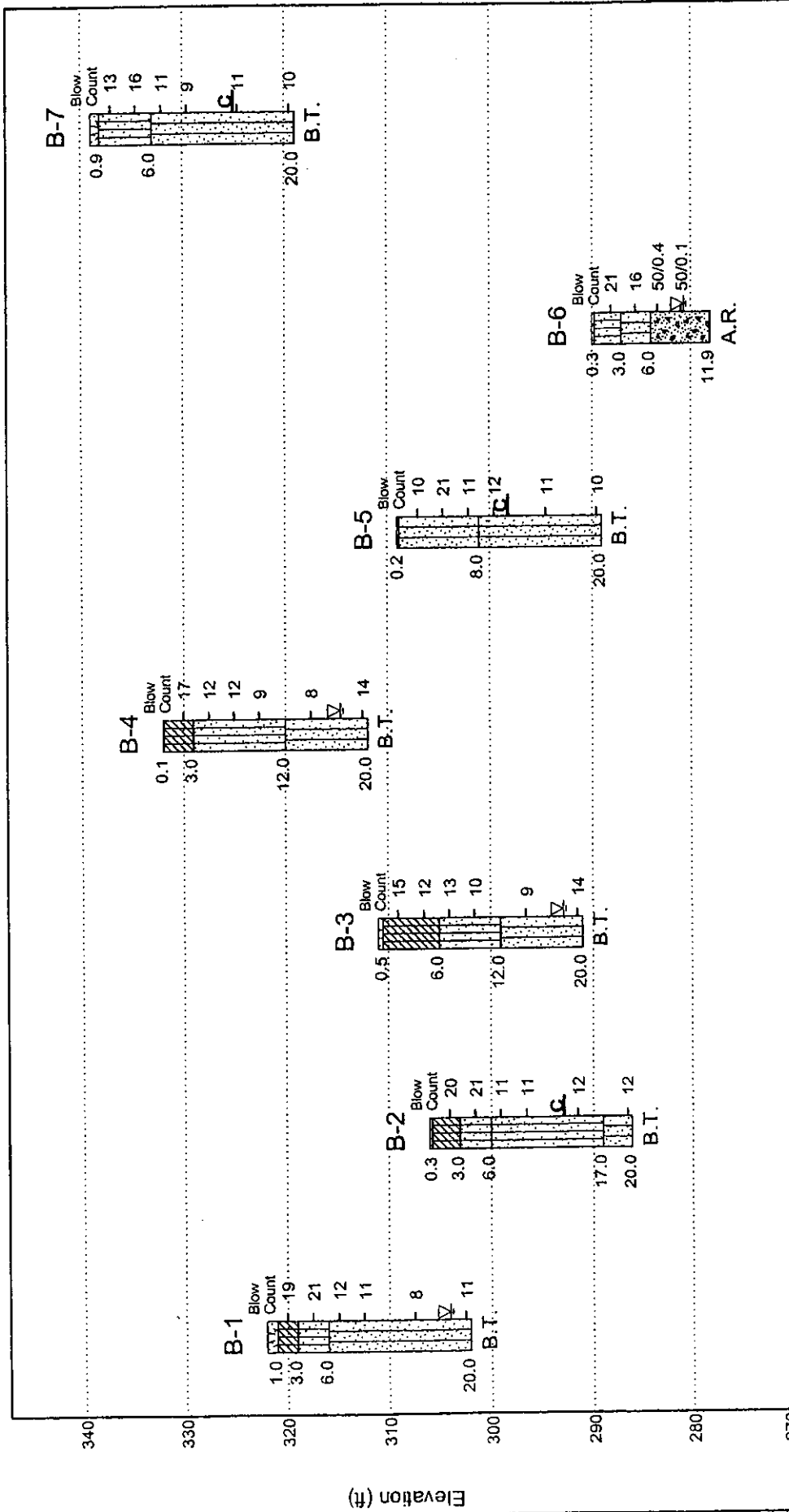
**Generalized Subsurface Profiles**

**Investigative Procedures**

**Test Boring Records**

**Auger Probe Records**

**Laboratory Test Results**



Not to Scale

**LEGEND**

	Topsoil and Roots		Silty Clay		Sandy Silt		Silty Sand		24-Hr Water Level
	Partially Weathered Rock		Auger Refusal		1-Hr Water Level		Caved Depth		

**Generalized Subsurface Profile**

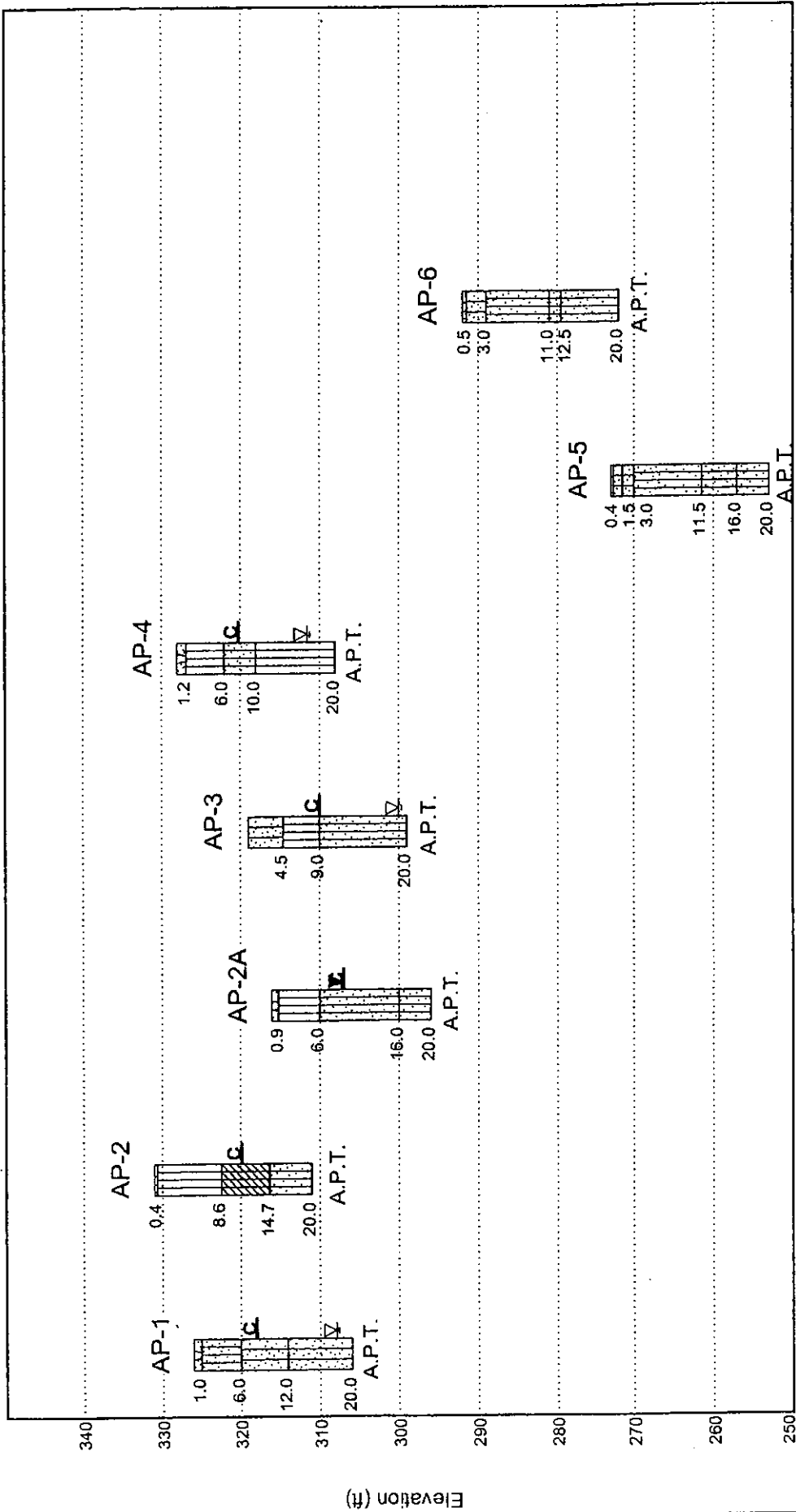
**AAC Wendell Site**

Project Number: 05.080.GE

Date Drawn: 6/24/2005 Drawing No. 2

**Mosher Engineering, Inc.**

557 D Pylon Drive  
Raleigh, NC 27606



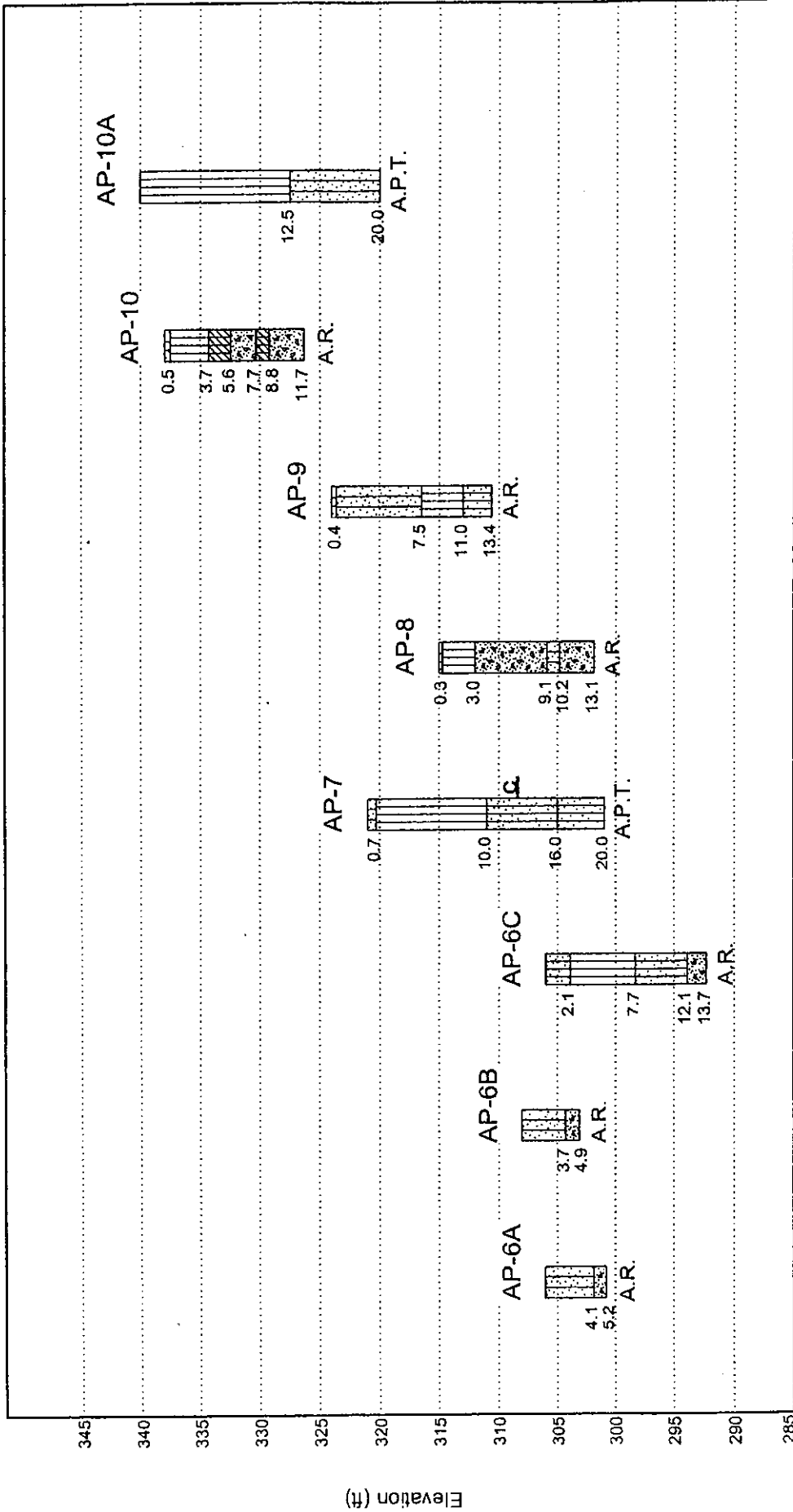
Not to Scale

**LEGEND**

	Silty Clay		Auger Refusal		24-Hr Water Level
	Partially Weathered Rock		Terminated		1-Hr Water Level
	Silty Silt		Clayey Silt		Caved Depth
	Sandy Silt		Silty Sand		
	Topsoil and Roots				

**Mosher Engineering, Inc.**  
 557 D Pylon Drive  
 Raleigh, NC 27606

**Generalized Subsurface Profile**  
**AAC Wendell Site**  
 Project Number: 05.080.GE  
 Date Drawn: 6/24/2005 Drawing No. 3



Not to Scale

**LEGEND** A.P.T. Auger Probe Terminated 24-Hr Water Level  
 Topsoil and Roots Clayey Silt Silty Clay Partially Weathered Rock  
 Weathered Rock 1-Hr Water Level  
 Silty Sand Sandy Silt Caved Depth

**Mosher Engineering, Inc.**  
 557 D Pylon Drive  
 Raleigh, NC 27606

**Generalized Subsurface Profile**  
**AAC Wendell Site**  
 Project Number: 05.080.GE  
 Date Drawn: 6/24/2005 Drawing No. 4

***MOSHER ENGINEERING, INC.***  
**INVESTIGATIVE PROCEDURES**  
AAC Wendell Site  
Wendell, North Carolina  
Mosher Engineering Project No. 05.080.GE

Page 1 of 2

**FIELD**

**Soil Test Borings:** Seven (7) soil test borings (B-1 through B-7) were drilled at the approximate locations shown on the attached Boring Location Plan, Drawing No. 1. Soil sampling and penetration testing were performed in accordance with ASTM D 1586-99.

The borings were advanced with hollow-stem, continuous-flight augers and, at standard intervals, soil samples were obtained with a standard 1.4-inch (3.6cm) I.D., 2-inch (5.1cm) O.D., split-tube sampler. The sampler was first seated 6 inches (15.2cm) to penetrate any loose cuttings, then driven an additional 12 inches (30.5cm) with blows of a 140 pound (63.5kg) hammer falling 30 inches (76.2cm). The number of hammer blows required to drive the sampler the final 12 inches (30.5cm) was recorded and is designated the "Standard Penetration Resistance" (N-Value). The Standard Penetration Resistance, when properly evaluated, is an index to soil strength, density and ability to support foundations.

Representative portions of each soil sample were placed in glass jars and taken to our laboratory. The samples were then examined by an engineer to verify the driller's field classifications. Test Boring Records are attached indicating the soil descriptions and Standard Penetration Resistances.

**Auger Probe Borings:** Fifteen (15) auger probe borings were drilled at the approximate locations shown on the attached Boring Location Plan, Drawing No. 1. Auger probe borings are designated on the drawing as AP-1, etc.

Probe borings were advanced by a mechanized ATV drilling rig using 6" diameter solid-stem, continuous flight augers. As the probes were advanced the driller recorded observations about the type of soils encountered and their consistency. These observations were based upon auger cuttings returned to the ground surface, and the rate and degree of difficulty in advancing the augers. No soil samples were obtained.

**LABORATORY**

**Moisture Content:** The moisture content is the ratio, expressed as a percentage, of the weight of the water in a given mass of soil to the weight of the solid particles. This test was conducted in accordance with ASTM Designation D 2216-66. The test results are presented on the attached sheets.

**Soil Plasticity Test (Atterberg Limits Test):** A representative sample was selected for Atterberg Limits testing to determine the soil's plasticity characteristics. The Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The Liquid Limit is the moisture content at which the soil will flow as a heavy viscous fluid and is determined in accordance with

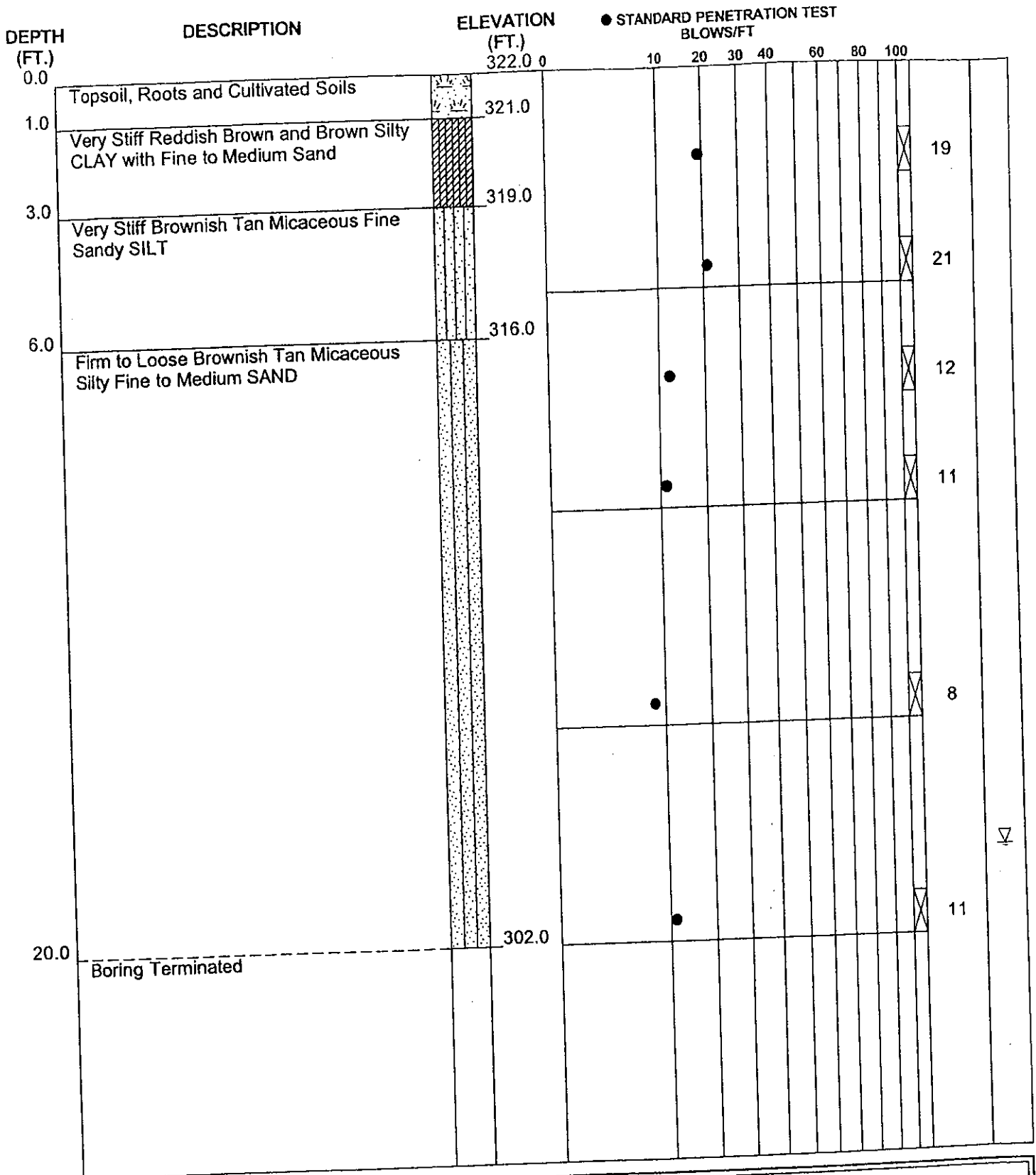
**MOSHER ENGINEERING, INC.**  
**INVESTIGATIVE PROCEDURES**  
AAC Wendell Site  
Wendell, North Carolina  
Mosher Engineering Project No. 05.080.GE

Page 2 Of 2

Laboratory (Continued)

ASTM D 423. The Plastic Limit is the moisture content at which the soil begins to lose its plasticity and is determined in accordance with ASTM D 424. The data obtained is presented on the attached sheets.

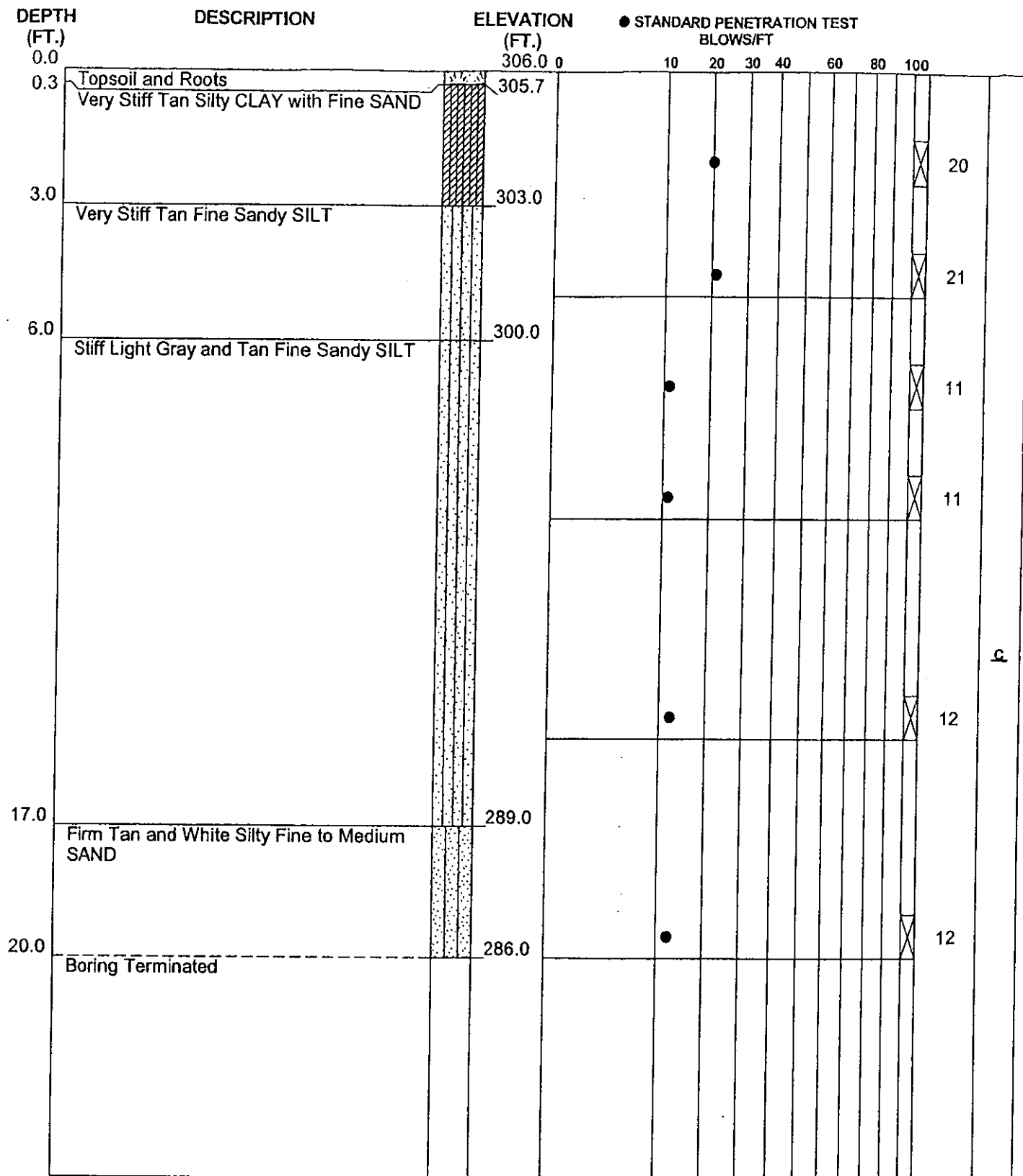
Soils Finer Than the No. 200 Sieve (ASTM D 1140): Two (2) samples were selected to determine the percentage of fines. In this test, the sample is dried and then washed over a standard No. 200 sieve. The percentage of soil, by weight, passing the sieve is the percentage of fines or portion of the sample in the silt and clay size range. The data obtained is presented on the attached sheets.



REMARKS: Boring was backfilled upon completion

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-45 ATV

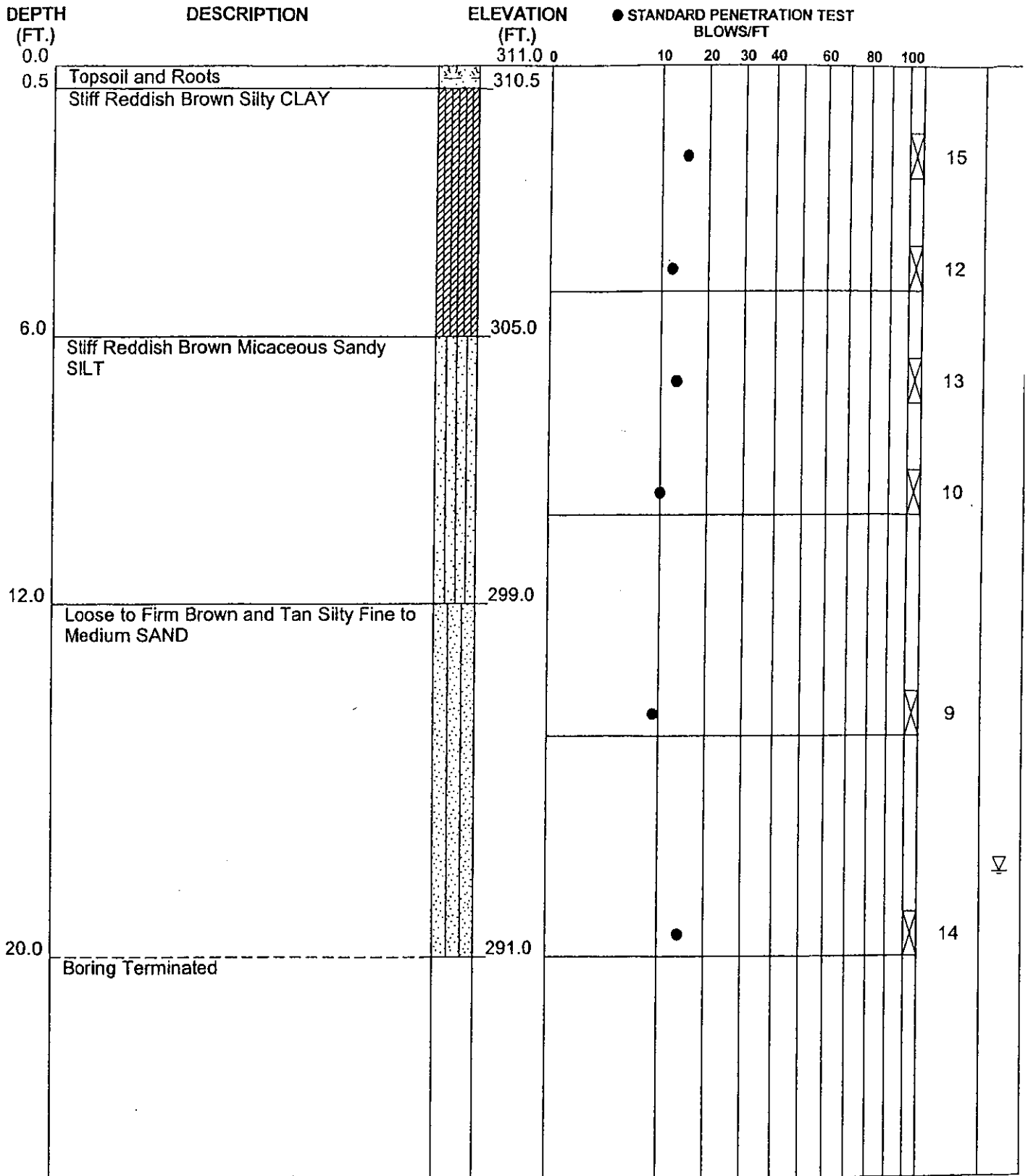
TEST BORING RECORD	
BORING NUMBER	B-1
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	



TEST BORING RECORD	
BORING NUMBER	B-2
DATE(s) DRILLED	6/16/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-550 ATV

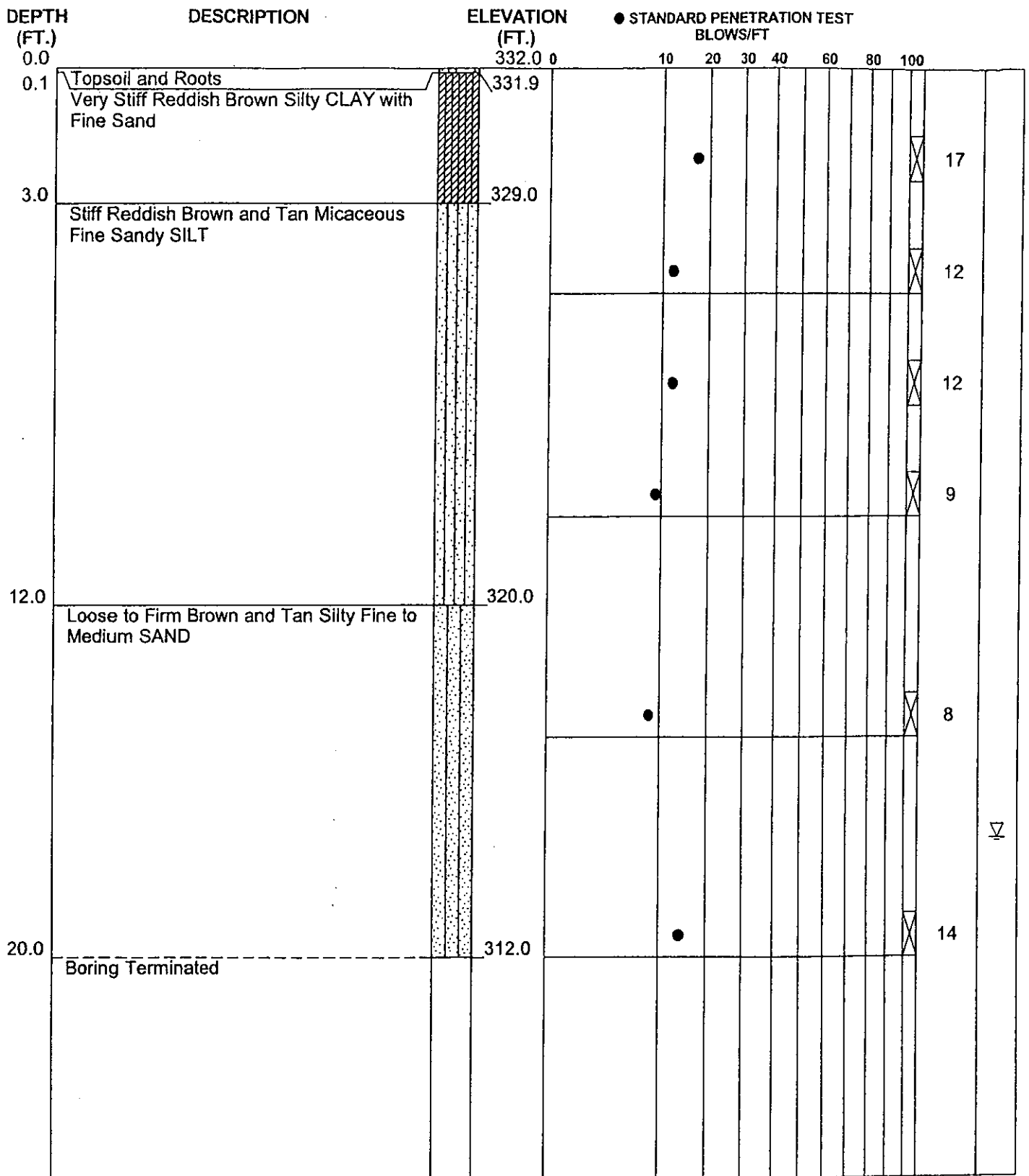




REMARKS: Boring was backfilled upon completion

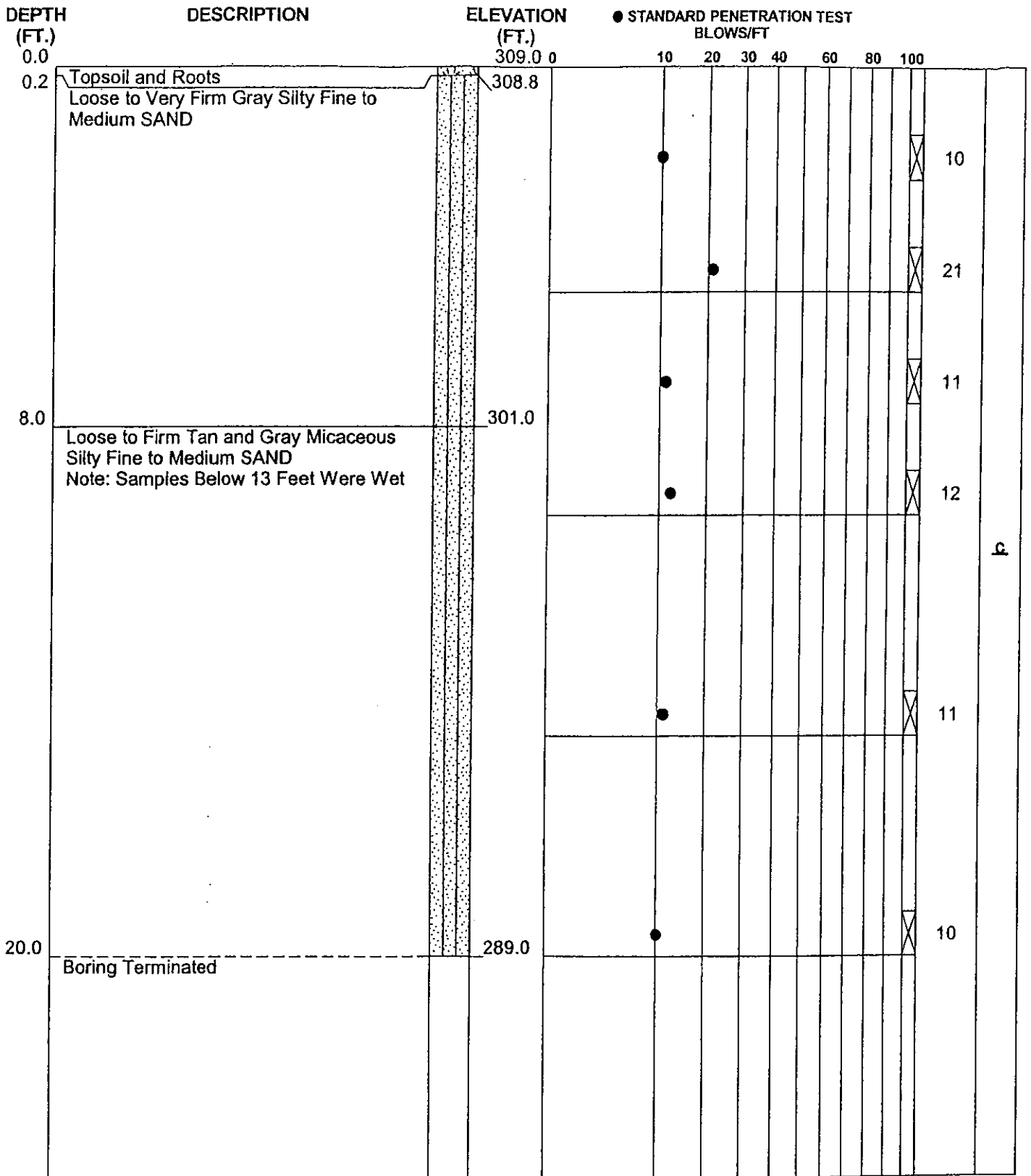
CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

TEST BORING RECORD	
BORING NUMBER	B-3
DATE(s) DRILLED	6/10/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	



TEST BORING RECORD	
BORING NUMBER	B-4
DATE(s) DRILLED	6/10/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

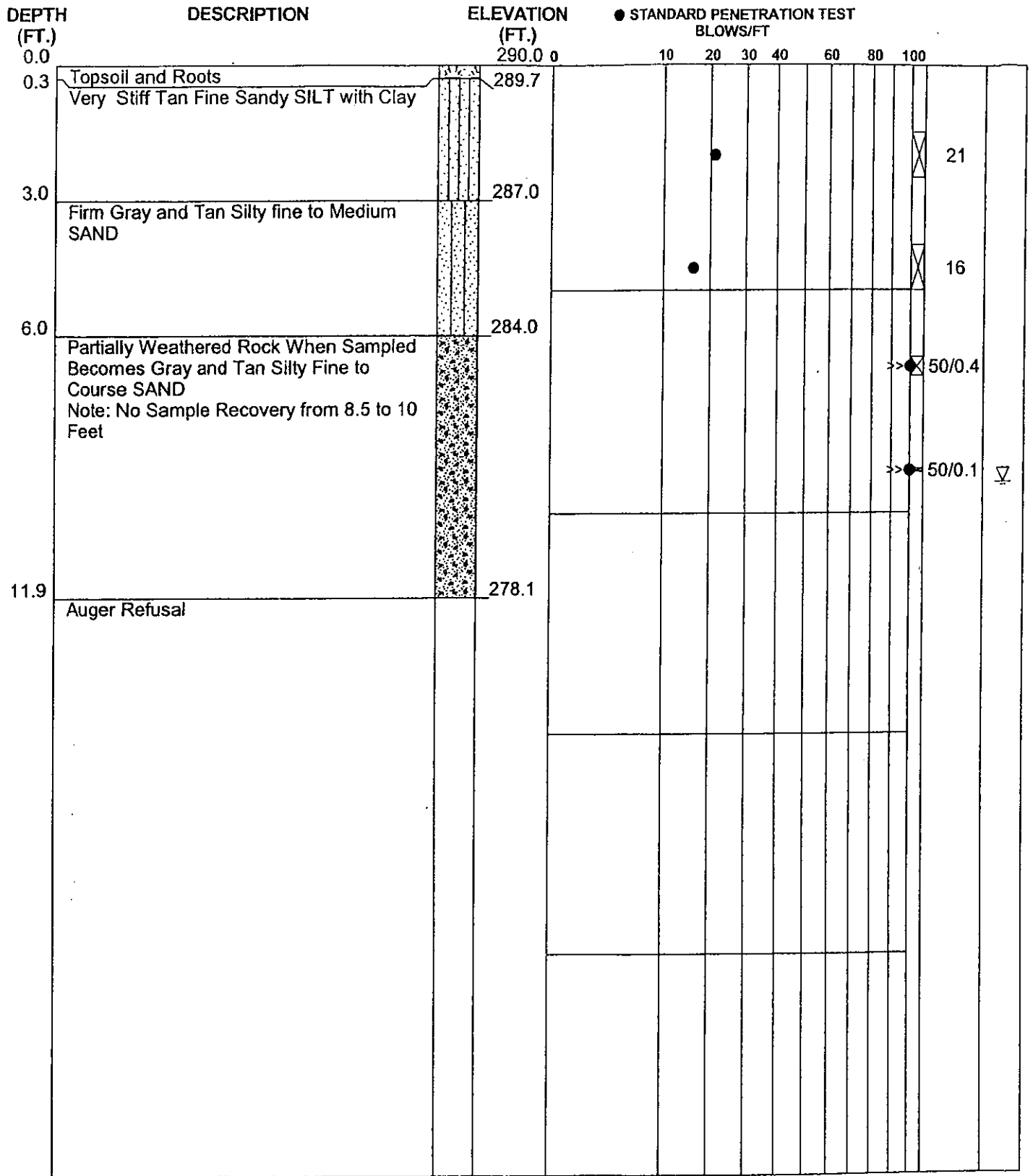


**TEST BORING RECORD**

BORING NUMBER	B-5
DATE(s) DRILLED	6/16/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-550 ATV

**Mosher Engineering, Inc.**



TEST BORING RECORD	
BORING NUMBER	B-6
DATE(s) DRILLED	6/16/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-550 ATV

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	● STANDARD PENETRATION TEST BLOWS/FT												
			0	10	20	30	40	60	80	100					
0.0	Topsoil, Roots and Cultivated Soils	339.0													
0.9		338.1													
	Stiff to Very Stiff Reddish Brown and Tan Micaceous Fine Sandy SILT														
6.0		333.0													
	Loose to Firm Tan and Gray Micaceous Silty Fine to Medium SAND with Clay Seams in 8.5 to 10 Feet Sample Interval														
20.0	Boring Terminated	319.0													

TEST BORING RECORD	
BORING NUMBER	B-7
DATE(s) DRILLED	6/10/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																	
0.0	Topsoil, Roots and Cultivated Soils	326.0																	
1.0	Tan and Brown Micaceous Fine to Medium Sandy SILT	325.0																	
6.0	Tan and Brown Micaceous Silty Fine to Medium SAND	320.0																	
12.0	Orange Brown Micaceous Silty Fine to Medium SAND	314.0																	
20.0	Auger Probe Terminated	306.0																	

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-450 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-1
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0		331.0																		
0.4	Topsoil and Roots Brown Clayey SILT with Fine to Medium SAND	330.6																		
8.6	Orange Brown Silty CLAY with Fine to Medium SAND	322.4																		
14.7	Orange Brown Micaceous Fine to Medium Sandy SILT	316.3																		
20.0	Auger Probe Terminated	311.0																		

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-2
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0	Topsoil and Roots	316.0																		
0.9	Brown and Tan Clayey SILT with Fine to Medium SAND	315.1																		
6.0	Orange Brown Micaceous Fine to Medium Sandy SILT	310.0																		
16.0	Tan and Brown Fine to Medium Sandy SILT	300.0																		
20.0	Auger Probe Terminated	296.0																		

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-450 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-2A
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	



DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)											
0.0	Tan and Brown Silty Fine To Medium SAND with Gravel	319.0											
4.5	Orange Brown Clayey SILT with Fine to Medium Sand	314.5											
9.0	Orange Brown Fine to Medium Sandy SILT	310.0											
20.0	Auger Probe Terminated	299.0											

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-450 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-3
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Moshier Engineering, Inc.	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0	Topsoil, Roots and Cultivated Soils	328.0																		
1.2	Tan and Brown Clayey SILT with Fine to Medium Sand	326.8																		
6.0	Orange Brown and Brown Micaceous Fine to Medium Sandy SILT	322.0																		
10.0	Brown Micaceous Clayey SILT with Fine to Medium Sand	318.0																		
20.0	Auger Probe Terminated	308.0																		

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

<b>AUGER PROBE RECORD</b>	
AUGER PROBE NUMBER	AP-4
DATE(s) DRILLED	6/11/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0		273.0																		
0.4	Topsoil and Roots	272.6																		
	Brown Silty Fine to Medium SAND																			
1.5		271.5																		
	Gray Silty Fine to Medium SAND																			
3.0		270.0																		
	Brown Fine Sandy SILT																			
11.5		261.5																		
	Tan and Brown Fine Sandy SILT with Gravel																			
16.0		257.0																		
	Tan and Brown Fine Sandy SILT																			
20.0		253.0																		
	Auger Probe Terminated																			

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-550 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-5
DATE(s) DRILLED	6/16/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0		292.0																		
0.5	Topsoil and Roots	291.5																		
	Brown and Tan Silty Fine to Medium SAND																			
3.0		289.0																		
	Brown and Tan Fine to Medium Sandy SILT																			
11.0		281.0																		
	Brown Fine to Medium Sandy SILT with Gravel																			
12.5		279.5																		
	Brown Micaceous Fine to Medium Sandy SILT																			
20.0		272.0																		
	Auger Probe Terminated																			

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-550 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-6
DATE(s) DRILLED	6/16/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																	
0.0	Tan and Brown Silty Fine to Medium SAND with Gravel	306.0																	
4.1	Partially Weathered Rock	301.9																	
5.2	Auger Refusal	300.8																	

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-450 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-6A
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0	Tan and Brown Silty Fine to Medium SAND with Gravel	308.0																		
3.7	Partially Weathered Rock	304.3																		
4.9	Auger Refusal	303.1																		

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-450 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-6B
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																	
0.0	Tan and Brown Fine To Medium Sandy SILT	306.0																	
2.1	Orange Brown Clayey SILT with Fine to Medium Sand	303.9																	
7.7	Brown Fine to Medium Sandy SILT	298.3																	
12.1	Partially Weathered Rock	293.9																	
13.7	Auger Refusal	292.3																	

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-450 ATV

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-6C
DATE(s) DRILLED	6/13/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0		321.0																		
0.7	White and Tan Silty Fine to Medium SAND Tan and Brown Clayey SILT with Fine to Medium Sand	320.3																		
10.0	Brown Micaceous Fine to Medium Sandy SILT	311.0																		
16.0	Tan and Brown Fine to Medium Sandy SILT	305.0																		
20.0	Auger Probe Terminated	301.0																		

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-7
DATE(s) DRILLED	6/11/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	



DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0		315.0																		
0.3	Topsoil and Roots Tan and Brown Clayey SILT with Fine Sand	314.7																		
3.0	Partially Weathered Rock	312.0																		
9.1	Gray Silty Fine to Medium SAND	305.9																		
10.2	Partially Weathered Rock	304.8																		
13.1	Auger Refusal	301.9																		

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-8
DATE(s) DRILLED	6/11/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
<b>Mosher Engineering, Inc.</b>	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0		324.0																		
0.4	Topsoil and Roots	323.6																		
	Tan and Brown Silty Fine to Medium SAND																			
7.5		316.5																		
	Orange Clayey SILT with Fine to Medium SAND																			
11.0		313.0																		
	Orange Fine to Medium Sandy SILT																			
13.4		310.6																		
	Auger Refusal																			

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-9
DATE(s) DRILLED	6/11/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)
0.0		338.0
0.5	Topsoil, Roots and Cultivated Soils	337.5
	Tan and Brown Clayey SILT with Fine to Medium SAND	
3.7		334.3
	Tan and Brown Silty CLAY with Fine to Medium SAND	
5.6		332.4
	Partially Weathered Rock	
7.7		330.3
	Tan and Brown Silty CLAY with Fine to Medium SAND	
8.8		329.2
	Partially Weathered Rock	
11.7		326.3
	Auger Refusal	

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-10
DATE(s) DRILLED	6/11/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

DEPTH  
(FT.)  
0.0

DESCRIPTION

ELEVATION  
(FT.)  
340.0

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)																		
0.0	Tan Clayey SILT	340.0																		
12.5	Tan and Brown Silty Fine to Medium SAND	327.5																		
20.0	Auger Probe Terminated	320.0																		

REMARKS: Soil classifications are based on driller's descriptions

CONTRACTOR: Bore and Core  
 DRILL RIG: CME-75 Truck

AUGER PROBE RECORD	
AUGER PROBE NUMBER	AP-10A
DATE(s) DRILLED	6/11/2005
PROJECT NUMBER	05.080.GE
PROJECT	AAC Wendell Site
PAGE 1 OF 1	
Mosher Engineering, Inc.	

**SUMMARY OF LABORATORY TEST DATA**

Boring Number	Sample Depth (Feet)	Sample Type**	USCS Classification	Max. Dry Density (pcf)	% Finer No. 200	Compression Ratio	Optimum Moisture Content (%)	CBR Unit Weight (psf)		Natural Moisture Content %	Atterberg Limits		
								Dry	Wet		L.L.	P.L.	P.I.
B-1	1.0 - 2.5'	SS	CL		53.2					16.3	47	26	21
B-4	1.0' - 2.5'	SS	MH		73.0					32.8	76	41	35

**MOSHER ENGINEERING, INC.  
RALEIGH, NORTH CAROLINA**

Project Number: 05.080.GE

NP=Non plastic  
\*\* SS=Split Spoon Sample (ASTM D-1586)