

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



**SUBSURFACE INVESTIGATION**

STATE JOB NO. 020562

FEDERAL AID PROJECT NO. NHPP-0027(24)

BIG CREEK STR. & APPRS. (S)

STATE HIGHWAY 270 SECTION 9

IN GRANT COUNTY

LETTING OF JANUARY 13, 2016

The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the location, character and depth of the materials encountered. The information is only included and made available so that bidders may have access to subsurface information obtained by the Department and is not intended to be a substitute for personal investigation, interpretation and judgment of the bidder. The bidder should be cognizant of the possibility that conditions affecting the cost and/or quantities of work to be performed may differ from those indicated herein.

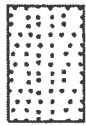
# LEGEND

## SOIL TYPES

(SHOWN IN SYMBOL COLUMN)  
(PREDOMINANT TYPE SHOWN HEAVY)



GRAVEL



SAND



SILT



CLAY



ORGANIC  
MATTER

## ROCK TYPES

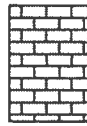
(SHOWN IN SYMBOL COLUMN)



SANDSTONE



SHALE  
or  
SILTSTONE



LIMESTONE  
or  
DOLOMITE



ALTERNATING  
LAYERS of  
SHALE and  
SANDSTONE



OTHER

## SAMPLER TYPES

(SHOWN IN SAMPLE COLUMN)

### SHELBY TUBE



UNDISTURBED  
SAMPLE  
RECOVERY



DISTURBED  
SAMPLE  
RECOVERY



NO  
RECOVERY

### SPLIT SPOON



SAMPLE  
RECOVERY



NO  
RECOVERY

### ROCK CORING



% RECOVERY  
INDICATED ON LOGS

## TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANULAR SOIL		CLAY		CLAY-SHALE		SHALE	
*N' Value	Density	*N' Value	Consistency	*N' Value	Consistency	*N' Value	Consistency
0-4	Very Loose	0-1	Very Soft	0-1	Very Soft		
5-10	Loose	2-4	Soft	2-4	Soft	31-60	Soft
11-30	Medium Dense	5-8	Medium Stiff	5-8	Medium Stiff	Over 60	
31-50	Dense	9-15	Stiff	9-15	Stiff	More than 2'	
Over 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetration	
		31-60	Hard	31-60	Hard	In 60 Blows	Medium Hard
		Over 60	Very Hard	Over 60	Very Hard	Less than 2'	
						Penetration	
						in 60 Blows	Hard

1. Ground water elevations indicated on boring logs represent ground water elevations at date or time shown on boring log. Absence of water surface implies that no ground water data is available but does not necessarily mean that ground water will not be encountered at locations or within the vertical reaches of these borings.
2. Borings represent subsurface conditions at their respective locations for their respective depths. Variations in conditions between or adjacent to boring locations may be encountered.
3. Terms used for describing soils according to their texture or grain size distribution are in accordance with the Unified Soil Classification System.

Standard Penetration Test – Driving a 2.0” O.D., 1-3/8” I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and performing the test are recorded for each 6 inches of penetration on the drill log. The field “N” Value ( $N_f$ ) can be obtained by

adding the bottom two numbers for example:  $\frac{6}{8-9} \Rightarrow 8+9 = 17 \text{ blows/ft}$ . The “N” Value corrected to 60% efficiency ( $N_{60}$ ) can be obtained by multiplying  $N_f$  by the hammer correction factor published on the boring log.

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1  
PAGE 1 OF 3

JOB NO. 020562 Grant County  
JOB NAME: Big Creek Str. & Apprs. (S)

DATE: September 9, 2015  
TYPE OF DRILLING: Hollow Stem Auger -

STATION: 113+73  
LOCATION: 12' Left of Existing Centerline  
LOGGED BY: Stanley Bates

EQUIPMENT: CME 75  
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% S C R	% R O D
			SURFACE ELEVATION: 233.6									
5		X	Moist, Soft, Gray Clay with Gravel							1 2-2		
10		X	Moist, Soft, Gray Clay							0 1-1		
15		X	Wet, Medium Dense, Gray Sand							4 7-4		
20		X	Wet, Medium Stiff, Gray Sandy Clay							4 3-4		
25		X	Wet, Medium Dense, White and Gray Sand with Gravel							3 8-12		
30		X	Wet, Medium Dense, White and Gray Gravel with Sand							1 7-15		
35												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
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			SURFACE ELEVATION: 233.6									
40		X	Wet, Medium Dense, Gray Sand							8 12-11		
45		X	Wet, Very Dense, Gray Sand							10 28-33		
50		X	Wet, Dense, Gray Sand with Some Organic Matter							15 40-42		
55		X	Wet, Very Dense, Gray Sand with Some Gravel							12 24-24		
60		X	Wet, Very Stiff, Gray Clay with Gravel							19 46-42		
65		X								3 10-20		
70		X	Wet, Dense to Very Dense, Gray Sand with							7 12-20		

REMARKS:

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			SURFACE ELEVATION: 233.6									
		X	Clay							9 19-43		
75		X	Wet, Hard, Gray Clay with Sand and Some Gravel							8 16-26		
80		X								34 35-39		
85		X								12 48-60 (11")		
90		X	Wet, Very Dense, Gray Sand							44 56 (5")		
95		X								21 57-22 (8")		
100		X								50 45-5 (7")		
			Boring Terminated									
105												

REMARKS:

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BORING NO. 2  
PAGE 1 OF 3

JOB NO. 020562 Grant County  
JOB NAME: Big Creek Str. & Apprs. (S)

DATE: September 8, 2015  
TYPE OF DRILLING: Hollow Stem Auger -

STATION: 115+73  
LOCATION: 9' Left of Existing Centerline  
LOGGED BY: Stanley Bates

EQUIPMENT: CME 75  
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 96.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% S C R	% F O D
			SURFACE ELEVATION: 234.6									
5		X	Moist, Medium Stiff, Gray Sandy Clay							2 3-2		
10		X	Moist, Very Loose, Gray Clayey Sand							1 2-2		
15		X	Moist, Medium Dense, Gray Sand							6 8-7		
20		X	Moist, Medium Dense, Gray Sand with Trace Gravel							8 15-15		
25		X	Wet, Loose, Gray and White Sand with Gravel and Trace Organic Matter							1 3-7		
30		X	Wet, Medium Dense, Gray and White Gravel with Sand							1 8-7		
35												

REMARKS:

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			SURFACE ELEVATION: 234.6									
40		X	Wet, Very Loose, Gray and White Gravel With Sand							1 1-1		
45		X	Wet, Very Dense, Gray Sand							13 36-58		
50		X	Wet, Medium Dense, Gray Sand with Gravel							6 5-7		
55		X	Wet, Loose, Gray Sand with Gravel							5 5-5		
60		X	Wet, Very Stiff, Gray Sandy Clay							7 9-9		
65		X	Wet, Medium Dense, Gray Sand with Gravel							2 4-10		
70		X	Wet, Hard, Gray Sandy Clay							9 20-24		

REMARKS:

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			SURFACE ELEVATION: 234.6									
75		X	Wet, Very Dense, Gray Sand with Clay							16 23-29		
80		X	Wet, Very Dense, Gray Sand with Clay							17 52-16		
85		X	Wet, Very Hard, Gray Sandy Clay							10 24-28		
90		X	Wet, Very Hard, Gray Sandy Clay							13 30-40		
95		X	Wet, Very Dense, Gray Sand							31 60 (3")		
			Boring Terminated							40 60-15 (7")		
100												
105												

REMARKS: