

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



SUBSURFACE INVESTIGATION

STATE JOB NO. 070365

FEDERAL AID PROJECT NO. NHPP-9271(10)

HWY. 79 NO.-CO. RD. 525 (MAGNOLIA) (S)

STATE HIGHWAY 82 SECTION 4

IN COLUMBIA COUNTY

LETTING OF MARCH 23, 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.

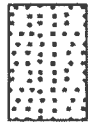
LEGEND

SOIL TYPES

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



GRAVEL



SAND



SILT



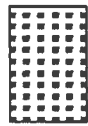
CLAY



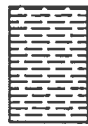
ORGANIC
MATTER

ROCK TYPES

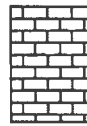
(SHOWN IN SYMBOL COLUMN)



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

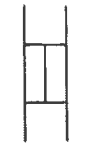


SAMPLE
RECOVERY



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. 070365 Columbia County
JOB NAME: Hwy. 79 - Co. Rd. 525 (Magnolia)
U.S. 82
STATION: 306+36
LOCATION: 25' Left of Center Line of Construction
LOGGED BY: Stanley Bates

DATE: December 9, 2014
TYPE OF DRILLING: Rotary Wash
EQUIPMENT: CME 750 w/ CME Automatic Hammer
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 101.5

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: 275.1									
5		X	Moist, Very Loose, Brown Silt with Sand and some Organic Matter	ML	NP					2 1-1		
10		X	Wet, Very Loose, Brown and Gray Sandy Silt	ML	NP					1 1-1		
15		X	Wet, Medium Dense, Gray Sand with Silt	SW-SM	NP					14 11-10		
20		X	Wet, Medium Dense, Gray Sandy Silt with some Gravel	ML	NP					3 6-7		
25		X	Moist, Dense, Gray Silt with Sand and some Gravel	ML	NP					9 22-24		
30		X	Moist, Very Stiff, Gray Sandy Clay with Trace of Organic Matter	CL	22		36			8 12-18		

REMARKS: Hollow stem augers were utilized to a depth of 8.8'.

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

BORING NO. 1
PAGE 2 OF 3

JOB NO. 070365 Columbia County
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			SURFACE ELEVATION: 275.1									
40		X	Moist, Hard, Gray Clay	CL	22	-	42			9 17-26		
45		X	Moist, Dense, Gray Sandy Silt	ML	28	-	38			9 18-25		
50		X	Moist, Hard, Gray Clay	CH	24	-	50			7 11-20		
55		X	Moist, Hard, Gray Clay with some Cemented Sand Seams	CL	20	-	38			42 22-26		
60		X	Moist, Hard, Gray Clay with Sand	CL	23	-	41			10 19-21		
65		X	Moist, Hard, Gray Clay	CL	23	-	42			14 19-24		
70		X	Moist, Hard, Gray Clay with some Sand Seams	CL	21	-	32			13 21-26		

REMARKS: Hollow stem augers were utilized to a depth of 8.8'.

ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.						BORING NO. 1 PAGE 3 OF 3						
JOB NO. 070365 Columbia County			DATE: December 9, 2014			TYPE OF DRILLING: Rotary Wash						
JOB NAME: Hwy. 79 - Co. Rd. 525 (Magnolia) U.S. 82			EQUIPMENT: CME 750 w/ CME Automatic Hammer			HAMMER CORRECTION FACTOR: 1.23						
STATION: 306+36												
LOCATION: 25' Left of Center Line of Construction												
LOGGED BY: Stanley Bates												
COMPLETION DEPTH: 101.5												
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			SURFACE ELEVATION: 275.1									
75		X	Moist, Hard, Gray Clay	CH	29		64			13 21-28		
80		X	Moist, Hard, Gray Clay with Sand Seams and Lignite	CL	20		37			12 18-27		
85		X	Moist, Hard, Gray Clay	CL	24		44			16 22-27		
90		X	Moist, Hard, Gray Clay	CH	20		56			16 26-30		
95		X	Moist, Hard to Very Hard, Gray Clay with Trace of Cemented Sand	CL	20		35			13 22-29 (3")		
100		X	Moist, Very Dense, Gray Sand with Clay and Gravel	SC	NP					30 60 (5")		
		X	Moist, Hard, Gray Clay with some Sand Seams	CL	18		43			19 23-28		
			Boring Terminated									
105												

REMARKS: Hollow stem augers were utilized to a depth of 8.8'.

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

BORING NO. 2
PAGE 1 OF 3

JOB NO. 070365 Columbia County
JOB NAME: Hwy. 79 - Co. Rd. 525 (Magnolia)
U.S. 82
STATION: 307+93
LOCATION: 42' Left of Center Line of Construction
LOGGED BY: Paul Christenberry

DATE: December 10, 2014
TYPE OF DRILLING: Rotary Wash
EQUIPMENT: CME 750 w/ CME
Automatic Hammer
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 100.5

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: 277.3									
5		X	Moist, Loose, Light Brown Sand with Trace of Clay and Organic Matter							4 4-3		
10		X								4 4-4		
15		X	Wet, Loose, Light Brown Silty Sand with Trace of Organic Matter							5 7-6		
20		X	Wet, Medium Dense, Light Brown Silty Sand							7 12-15		
25		X	Moist, Very Stiff, Gray Clay with Sand Seams							12 15-17		
30		X	Moist, Hard, Gray Clay with Sand Seams and some Organic Matter							13 17-25		
35		X	Moist, Hard, Gray Clay with Sand Seams									

REMARKS: Hollow stem augers were utilized to a depth of 10.4'.

ARKANSAS HWY. & TRANS. DEPARTMENT		BORING NO. 2
MATERIALS DIVISION - GEOTECHNICAL SEC.		PAGE 2 OF 3
JOB NO. 070365	Columbia County	DATE: December 10, 2014
JOB NAME: Hwy. 79 - Co. Rd. 525 (Magnolia)	U.S. 82	TYPE OF DRILLING: Rotary Wash
STATION: 307+93		EQUIPMENT: CME 750 w/ CME Automatic Hammer
LOCATION: 42' Left of Center Line of Construction		HAMMER CORRECTION FACTOR: 1.23
LOGGED BY: Paul Christenberry		

COMPLETION DEPTH: 100.5

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 Q D
			SURFACE ELEVATION: 277.3									
40		X	Wet, Very Hard, Gray Silty Clay with Trace of Sand							26 36-48		
45		X								15 30-39		
50		X	Moist, Hard, Gray Clay with some Sand Seams							12 19-26		
55		X								13 21-31		
60		X	Moist, Hard, Gray Clay with Sand Seams							10 22-29		
65		X								17 22-30		
70		X								16 28-31		

REMARKS: Hollow stem augers were utilized to a depth of 10.4'.

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

BORING NO. 2
PAGE 3 OF 3

JOB NO. 070365 Columbia County
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LOCATION: 42' Left of Center Line of Construction
LOGGED BY: Paul Christenberry

DATE: December 10, 2014
TYPE OF DRILLING: Rotary Wash
EQUIPMENT: CME 750 w/ CME Automatic Hammer
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 100.5

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: 277.3									
75			Moist, Hard, Gray Clay with some Sand Seams							17 22-29		
80			Moist, Very Hard, Gray Clay with Lignite							24 33-37		
85			Moist, Hard, Gray Clay with some Lignite							19 23-30		
90			Moist, Hard, Gray Clay with Sand Seams							19 23-29		
95			Moist, Hard, Gray Clay with Sand Seams and Trace of Lignite							17 19-25		
100			Moist, Hard, Gray Clay with Sand Seams							15 23-27		
			Moist, Very Hard, Gray Sandy Clay with Trace of Lignite							56 (6")		
			Boring Terminated									
105												

REMARKS: Hollow stem augers were utilized to a depth of 10.4'.