ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

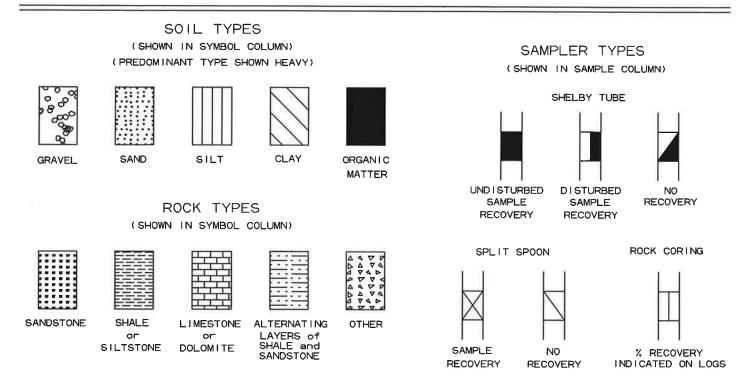


SUBSURFACE INVESTIGATION

IN	FRA	NKLIN & MADISON	COUNTY
STATE HIGHWAY	23	SECTION	7 & 8
HWY. 2	3 SLIDE REPA	R (FRANKLIN & MADISC	ON COS.) (S)
FEDERAL AID PROJEC	CT NO. ER-00	24(35) & ER-0044(28)	
STATE JOB NO.		012289	

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



TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANL	JLAR SOIL		CLAY	CL/	AY-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'					
0ver 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetrati	on					
		31-60	Hard	31-60	Hard	in 60 Blow	vs: Medium Hard					
		Over 60	Very Hard	0ver 60	Very Hard	Less than	2'					
						Penetrati	on					
						in 60 Blow	vs: 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: $\frac{6}{8-9} \Rightarrow 8+9=17 blows/ft$. The "N" Value corrected to 60% efficiency (N₆₀) can be obtained by multiplying N_f by the hammer correction factor published on the boring log.

	HWY. & TRANS. DEPARTMENT		BORIN	3 NC							
	DIVISION - GEOTECHNICAL SEC.		PAGE	1	OF						
	012289 (Internal Job # D04209) Franklin Coul	٠ ١	DATE: January 5, 2016 TYPE OF DRILLING: Hollow Stem Auger								
JOB NAME:	Highway 23 Slide	1	TYPE OF			Н	ollo	w St	em .	Aug	er
	Section 7 Log Mile 22.23		Diam				~		_		
	39+37 10.5' Right of Centerline of Highway 23		EQUIPM	ENT:			CI	ME 7.	5		
	Paul Christenberry		НАММЕ	R CO	RRECT	ION F	۸СТ	OR∙		1.37	
	N DEPTH: 48.7		TIT ELVIIVIE	K CO	Iddet	10111	101	OIC.		1107	
DE											
E S A							20				
	DESCRIPTION OF MATERIAL	SOIL				HT	J.F.I)WS		% T	% R
¦ B P		GROU	ြ	T.		EIG	Z	BL(ż	C	Q
O F			IST I	% MOIST.		DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	D
FT. L S	SURFACE ELEVATION: 1792.5		PLASTIC LIMIT	√ N	LIQUID LIMIT	DR	LBS	NON	PEF		
5	Dry, Medium Stiff, Brown and Gray Clay with Some Gravel (Rock Fragments)							3		H	
$\vdash \cancel{/}\!\!\!/$	Some Graver (Nock Fragments)							3-3	3		
$\vdash + \land \land$											
$\vdash + / /$											
$\vdash -1/2$											
10								6			
— <i>- 133</i>								6-6	3		
— <i>- 1</i>										- 8	
— <i>- [2]</i>											
—_ <i></i>											
15								$-\frac{3}{2-2}$			
— <i>- </i>	SHALE WITH SOME OF AV. Highly Weathered							2-4	٠		
— <i>- 1</i>	SHALE WITH SOME CLAY - Highly Weathered, Very Soft, Gray and Brown										
— <i>- 13</i>	voly coll, cray and brown										
20								15-1			
							1				
25	SHALE - Highly Weathered, Medium Hard, Dark							14			
	Gray							22-5			
	SHALE - Highly Weathered, Soft, Dark Gray									67	0
30											
	SHALE - Highly Weathered, Soft, Gray									16	0
35											
REMARKS:											

	ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.					BORING NO. 1 PAGE 2 OF 2								
JOB N			012289 (Internal Job # D04209) Franklin Cour	ntv	DATE:			Janua	rv 5	5, 20	16	_	_	
JOB N			Highway 23 Slide	,	TYPE O	DRI				ow S		Aug	er	
			Section 7 Log Mile 22.23	Diamond Core						Ū				
STAT	ION:		39+37		EQUIPMENT: CME 75									
LOCA	TION	:	10.5' Right of Centerline of Highway 23											
LOGGED BY: Paul Christenberry HAMMER CORRECTION FACTOR: 1.37														
COMPLETION DEPTH: 48.7														
D	s	S												
E	Y	Α							т	ξ.		%	%	
P T	М	M P	DESCRIPTION OF MATERIAL	SOIL				展	U.F	MO.		Т	R	
lή	В	Ľ		GROU	P ည	ST.		Œ	RC	BI.	ż	C R	Q D	
	0 L	Е			PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	^	וע	
FT.	L	S	SURFACE ELEVATION: 1792.5		PL/ LIN	1%	121	DR	LB	NO	PEI			
			SHALE - Weathered, Medium Hard, Gray											
	mii		SANDSTONE WITH FREQUENT SHALE									70	36	
			PARTINGS - Slightly Weathered, Cemented,											
			Light Gray											
40	###		OANDOTONE MITH EDECHENT OHALE											
- 10			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Slightly Weathered,											
			Cemented, Gray									10d	32	
			•											
	EVEL T		SANDSTONE WITH FREQUENT SHALE											
<u></u>			SEAMS - Slightly Weathered, Cemented, Gray SANDSTONE WITH OCCASIONAL SHALE											
45														
			\LAYERS - Slightly Weathered, Cemented, Gray SANDSTONE WITH OCCASIONAL SHALE	1								10d	30	
			SEAMS - Highly Weathered, Poorly Cemented,											
			Brown and Gray											
<u> </u>		_	Boring Terminated	P										
50			· ·											
<u> </u>														
55														
<u> </u>														
60														
65														
70														
REM	ARKS	3:												
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			HWY. & TRANS. DEPARTMENT		BORIN							
-			DIVISION - GEOTECHNICAL SEC.	at. 4	PAGE	1	OF		6	2016		-
JOB N JOB N			012289 (Internal Job # D04209) Franklin Cour Highway 23 Slide	ıιy	DATE: TYPE O	E INDI			-	, 2016 w Stem	Δ110	re r
JOBIN	AIVID.		Section 7 Log Mile 22.23				Core	110	,,,,	W Diem	riue	,01
STAT	ION:		39+37		EQUIPN				CN	Æ 75		
LOCA			12' Left of Centerline of Highway 23									
LOGG	ED B		Paul Christenberry		HAMMI	ER CO	RRECT	ION FA	CTO	OR:	1.23	
COM	PLET	OI	N DEPTH: 37.3					-	_		_	
D E P T H	S Y M B	SAMPL	DESCRIPTION OF MATERIAL	SOIL GROU	IC 2	ST.		DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
FT.	0 L	E S	SURFACE ELEVATION: 1792.2		PLASTIC LIMIT	% MOIST.	LIQUID	DRY V	CBS PI	NO. OF BI PER 6-IN.	*	
- 1 2	75	_	CONTROL ELEVATION. 1752.2	,		\ <u>^</u>			7	<u> </u>	\vdash	
10		X	SHALE - Highly Weathered, Soft, Brown and Gray							11 15-19 12 16-17 10 16-18		
	11/2										88	0
30			SHALE - Highly Weathered, Soft, Dark Gray*								96	0
REM	ARK	S: *	Total Water Loss at 27.5'									

JOB NO.		ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.). 2 OF	2				
Section 7 Log Mile 22 23 Diamond Core EQUIPMENT: CME 75					nty	PAGE DATE:	_		January				
STATION: 39+37	JOB N	AME:		-					Holl	ow S	tem .	Aug	ger
LOCATION: 12' Left of Centerline of Highway 23 LOGGED BY: Paul Christenberry HAMMER CORRECTION FACTOR: 1.23	STATI	ON:							С	ME 1	75		
COMPLETION DEPTH: 37.3	LOCA	TION		12' Left of Centerline of Highway 23									
S S A M DESCRIPTION OF MATERIAL SOIL GROUP TISTORY TISTORY													
Solition Solition				DEPTH: 37.3		Т				Г			
P	E		Α							S		0/	0/
SANDSTONE WITH FREQUENT SHALE PARTINGS - Slightly Weathered, Cemented, Gray to Dark Gray Boring Terminated 45		М		DESCRIPTION OF MATERIAL					SHIT	MO		Т	R
SANDSTONE WITH FREQUENT SHALE PARTINGS - Slightly Weathered, Cemented, Gray to Dark Gray Boring Terminated 45			L		GROU		IST.	اے کا	WEIG	F BI	Ż		
SANDSTONE WITH FREQUENT SHALE PARTINGS - Slightly Weathered, Cemented, Gray to Dark Gray Boring Terminated 45	FT.			SURFACE ELEVATION: 1792.2		PLAS	% WO	LIQUI	DRY '	NO. O	PER 6		
PARTINGS - Slightly Weathered, Cemented, Gray to Dark Gray Boring Terminated 45			T									92	58
Boring Terminated 40 45 50 60		r.a.r		PARTINGS - Slightly Weathered, Cemented,									
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REMARKS: * Total Water Loss at 27.5'		ARKS	S: *	Total Water Loss at 27.5'							!		

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			DIVISION - GEOTECHNICAL SEC.		PAG	Ε ΄		₹ 1					
JOB N			012289 (Internal Job # D09219) Madison Cou	nty	DATE			Marc	h 14	1, 20	16		
JOB N	AME:		Highway 23 Slide				ILLING		ъ		1.0	,	
G A F	(0) I		Section 8, Log Mile 12.52				Stem A	luger				ore	
STATI			388+44 10' Left of Centerline		EQUI	PMEN?	`:		Cr	ME 7	3		
LOCA			Stanley Bates		TTARG	MED C	ORRECT	CIONI I	ZACT	·ΩD.		1.37	
			N DEPTH: 27.4		HAW	WER C	JKKEC	. ION I	ACI	OK.		1.57	_
D		S	(DDI 111. 27. 1		T		T						_
E	S	A							. 8				
P	Y M	М	DESCRIPTION OF MATERIAL	SOIL				Ħ	J.FT	SM(% T	% R
Ţ	В	P		GROU	P o	<u> </u>	2	EIG]	S CI	BLC	ż	C	Q
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FT.	L		SURFACE ELEVATION: 1568.7		PLASTIC	LIMIT % MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
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5		$\overline{}$	Moist, Soft, Brown Clay with Some Gravel							_	1		
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	///		SHALE - Highly Weathered, Very Soft, Gray*										
	99												
15	<i>99</i>	\sim		ę.						6	0		
			SHALE - Highly Weathered, Medium Hard, Gray							(5			
	11		SHALE - Highly Weathered, Soft, Dark Gray									100	0
<u> </u>			SANDSTONE - Slightly Weathered, Cemented,										
— −	7777		\Slightly Calcareous, Gray \SHALE - Weathered, Medium Hard, Dark Gray										
20	莊		LIMESTONE - Unweathered, Moderately Hard,									90	76
<u> </u>	斑白		Gray	II.									
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	辯												
			LIMECTONE VALLE COORCIONAL CANDOTONE										
25	斑		LIMESTONE WITH OCCASIONAL SANDSTONE LAYERS - Unweathered, Moderately Hard, Gray									98	90
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\vdash	1												
			Boring Terminated										
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35 DEM/	V DIV	2. *	Encountered water at 13.1 Feet				1						-
L'EIVI/	11/1C).	Lincountered water at 13.1 Feet										

ARKANSAS HWY. & TRANS. DEPARTMENT BORING NO. 4													
			DIVISION - GEOTECHNICAL SEC.		PAGE 1 OF 1								
JOB N	Ю.		012289 (Internal Job # D09219) Madison Cou	nty	DATE: March 15, 2016								
JOB N	IAME:		Highway 23 Slide		TYPE O	F DRI	LLING	:					
			Section 8, Log Mile 12.52		Holle	ow S	tem A	uger	- D	iamo	nd C	Core	
STAT			388+64		EQUIPM	ENT:			CI	ME 7	15		
LOCA			23' Right of Centerline										
LOGGED BY: Stanley Bates HAMMER CORRECTION FACTOR: 1.37													
COMPLETION DEPTH: 17.5													
DEPTH	S Y M B	SAMPLE	DESCRIPTION OF MATERIAL	SOIL GROU	PLASTIC LIMIT	% MOIST.	LIQUID	Y WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% T C R	% R Q D
FT,	L	s	SURFACE ELEVATION: 1572.4		PLA LIM	%		DR	LBS	NO.	PER		
5		X	SHALE - Highly Weathered, Very Soft, Gray							1: 6			
			LIMESTONE - Slightly Weathered, Moderately									65	65
— € £			Hard, Gray										
10			SHALE - Slightly Weathered, Medium Hard, Slightly Calcareous, Gray									92	52
15			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Slightly Weathered, Medium Hard, Dark Gray SANDSTONE WITH OCCASIONAL SHALE PARTINGS - Slightly Weathered, Cemented, Gray SHALE - Slightly Weathered, Medium Hard,									100	24
			Occasional Fractures, Dark Gray										
20			Boring Terminated										
25													
300													
30													
35													
REMA	ARKS	' S:											

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI			. 1					
JOB N			012289 (Internal Job # D09219) Madison Cou	ntv	DATE:				ch 1.5	5, 20	16		_
JOB N			Highway 23 Slide	,		OF DRI	LLING:		J11 1 4	, 20			
			Section 8, Log Mile 12.52				tem A		r - D	iamo	ond C	ore	
STAT	ION:		388+83		EQUIP			Ŭ		ME 7			
LOCA			10' Left of Centerline										
			Stanley Bates		HAMM	ER CO	RRECT	ION I	FACT	OR:	1	.37	
COM	PLET		N DEPTH: 27.6	r		_				_		_	
D	s	S											
E P	Υ	A M							H	S.		%	%
T	M	P	DESCRIPTION OF MATERIAL	SOIL				HE SHI	CU.I	ő		Т	R
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	Ľ	Ē			PLASTIC	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
FT,	1 600	S	SURFACE ELEVATION: 1568.3		II.	3 %	122	ī	LE	ž	HE HE		_
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5	00.0 00.0	∇	Moist, Medium Dense, Reddish Brown Sand with Gravel							Ş			
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	//.		Moist, Medium Stiff, Reddish Brown Clay with										
	//		Sand										
15		X	SHALE - Highly Weathered, Medium Hard, Dark							7	- Table 1		
	11		Gray							6 (3	0		
		Т	SHALE WITH OCCASIONAL TO FREQUENT							(5		100	80
	1001 1001		SANDSTONE LAYERS - Slightly Weathered,			1					i	-00	
	==		Medium Hard, Dark Gray SANDSTONE INTERBEDDED WITH SHALE -										
20	==.		Weathered, Cemented, Gray SHALE WITH OCCASIONAL SANDSTONE									90	50
						1						30	30
	斑		SEAMS - Slightly Weathered, Medium Hard, Dark Gray								- 1		
	盘	\pm	Olay								1		
	辯		LIMESTONE WITH OCCASIONAL SANDSTONE										
25			LAYERS - Unweathered, Moderately Hard, Gray									98	80
	辯	11										30	ا۳
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