

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



SUBSURFACE INVESTIGATION

STATE JOB NO. 012289

FEDERAL AID PROJECT NO. ER-0024(35) & ER-0044(28)

HWY. 23 SLIDE REPAIR (FRANKLIN & MADISON COS.) (S)

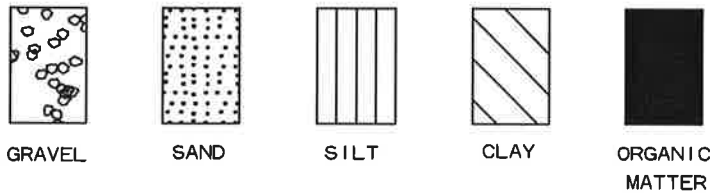
STATE HIGHWAY 23 SECTION 7 & 8

IN FRANKLIN & MADISON COUNTY

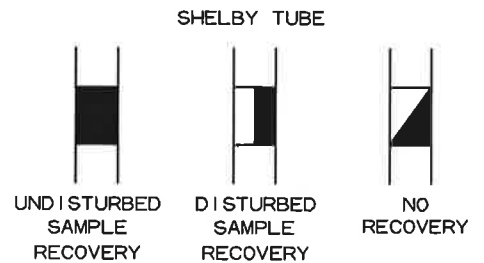
The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the 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

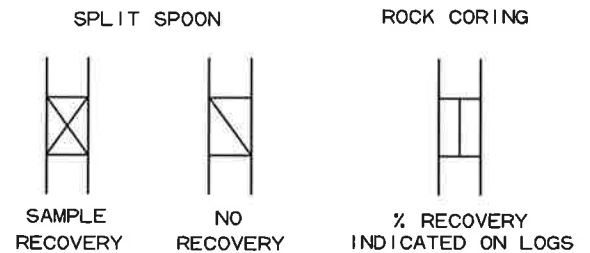
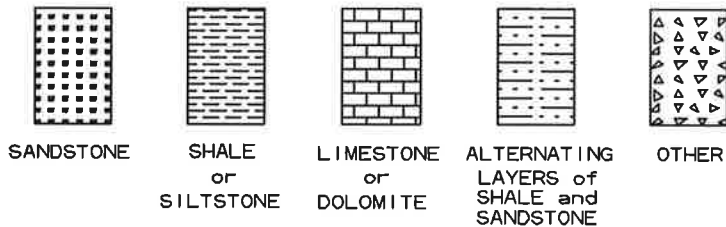
SOIL TYPES (SHOWN IN SYMBOL COLUMN) (PREDOMINANT TYPE SHOWN HEAVY)



SAMPLER TYPES (SHOWN IN SAMPLE COLUMN)



ROCK TYPES (SHOWN IN SYMBOL COLUMN)



TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANULAR SOIL		CLAY		CLAY-SHALE		SHALE	
*N ^o Value	Density	*N ^o Value	Consistency	*N ^o Value	Consistency	*N ^o 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: $\frac{6}{8-9} \Rightarrow 8+9 = 17 \text{blows} / \text{ft}$. 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 2

JOB NO. 012289 (Internal Job # D04209) Franklin County
 JOB NAME: Highway 23 Slide
 Section 7 Log Mile 22.23
 STATION: 39+37
 LOCATION: 10.5' Right of Centerline of Highway 23
 LOGGED BY: Paul Christenberry

DATE: January 5, 2016
 TYPE OF DRILLING: Hollow Stem Auger
 Diamond Core
 EQUIPMENT: CME 75
 HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 48.7

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.	% T C R	% R O D
			SURFACE ELEVATION: 1792.5									
5		X	Dry, Medium Stiff, Brown and Gray Clay with Some Gravel (Rock Fragments)							3 3-3		
10		X	SHALE WITH SOME CLAY - Highly Weathered, Very Soft, Gray and Brown							6 6-6		
15		X								3 2-2		
20		X								12 15-15		
25		X		SHALE - Highly Weathered, Medium Hard, Dark Gray							14 22-50	
			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
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JOB NO. 012289 (Internal Job # D04209) Franklin County
JOB NAME: Highway 23 Slide
Section 7 Log Mile 22.23
STATION: 39+37
LOCATION: 10.5' Right of Centerline of Highway 23
LOGGED BY: Paul Christenberry

DATE: January 5, 2016
TYPE OF DRILLING: Hollow Stem Auger
Diamond Core
EQUIPMENT: CME 75
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COMPLETION DEPTH: 48.7

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.	% T C R	% R O D
			SURFACE ELEVATION: 1792.5									
			SHALE - Weathered, Medium Hard, Gray								70	36
			SANDSTONE WITH FREQUENT SHALE PARTINGS - Slightly Weathered, Cemented, Light Gray									
40			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Slightly Weathered, Cemented, Gray								100	32
45			SANDSTONE WITH FREQUENT SHALE SEAMS - Slightly Weathered, Cemented, Gray SANDSTONE WITH OCCASIONAL SHALE LAYERS - Slightly Weathered, Cemented, Gray SANDSTONE WITH OCCASIONAL SHALE SEAMS - Highly Weathered, Poorly Cemented, Brown and Gray								100	30
50			Boring Terminated	P								
55												
60												
65												
70												

REMARKS:

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

BORING NO. 2
PAGE 1 OF 2

JOB NO. 012289 (Internal Job # D04209) Franklin County
JOB NAME: Highway 23 Slide
Section 7 Log Mile 22.23
STATION: 39+37
LOCATION: 12' Left of Centerline of Highway 23
LOGGED BY: Paul Christenberry

DATE: January 6, 2016
TYPE OF DRILLING: Hollow Stem Auger
Diamond Core
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 37.3

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.	% T C R	% R O D
			SURFACE ELEVATION: 1792.2									
5		X	SHALE - Highly Weathered, Soft, Brown and Gray	c						11		
										15-19		
10		X								12		
										16-17		
15		X	SHALE - Highly Weathered, Soft, Dark Gray*							10		
										16-18		
20		X								14		
										15-28		
25			SHALE - Highly Weathered, Soft, Dark Gray*							88		0
										96		
30										40		
35												

REMARKS: * Total Water Loss at 27.5'


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

BORING NO. 2
PAGE 2 OF 2

JOB NO. 012289 (Internal Job # D04209) Franklin County
 JOB NAME: Highway 23 Slide
 Section 7 Log Mile 22.23
 STATION: 39+37
 LOCATION: 12' Left of Centerline of Highway 23
 LOGGED BY: Paul Christenberry

DATE: January 6, 2016
 TYPE OF DRILLING: Hollow Stem Auger
 Diamond Core
 EQUIPMENT: CME 75
 HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 37.3

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.	% T C R	% R O D
			SURFACE ELEVATION: 1792.2									
			SANDSTONE WITH FREQUENT SHALE PARTINGS - Slightly Weathered, Cemented, Gray to Dark Gray								92	58
40			Boring Terminated									
45												
50												
55												
60												
65												
70												

REMARKS: * Total Water Loss at 27.5'

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

BORING NO. 3
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JOB NO. 012289 (Internal Job # D09219) Madison County
 JOB NAME: Highway 23 Slide
 Section 8, Log Mile 12.52
 STATION: 388+44
 LOCATION: 10' Left of Centerline
 LOGGED BY: Stanley Bates

DATE: March 14, 2016
 TYPE OF DRILLING:
 Hollow Stem Auger - Diamond Core
 EQUIPMENT: CME 75
 HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 27.4

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.	% T C R	% R O D
			SURFACE ELEVATION: 1568.7									
5			Moist, Soft, Brown Clay with Some Gravel							4 2-2		
10			SHALE - Highly Weathered, Very Soft, Gray*							3 3-6		
15			SHALE - Highly Weathered, Medium Hard, Gray							60 (5")		
			SHALE - Highly Weathered, Soft, Dark Gray								100	0
			SANDSTONE - Slightly Weathered, Cemented, Slightly Calcareous, Gray									
20			SHALE - Weathered, Medium Hard, Dark Gray								90	76
			LIMESTONE - Unweathered, Moderately Hard, Gray									
25			LIMESTONE WITH OCCASIONAL SANDSTONE LAYERS - Unweathered, Moderately Hard, Gray								98	90
30			Boring Terminated									
35												

REMARKS: * Encountered water at 13.1 Feet

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

BORING NO. 4
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JOB NO. 012289 (Internal Job # D09219) Madison County
 JOB NAME: Highway 23 Slide
 Section 8, Log Mile 12.52
 STATION: 388+64
 LOCATION: 23' Right of Centerline
 LOGGED BY: Stanley Bates

DATE: March 15, 2016
 TYPE OF DRILLING:
 Hollow Stem Auger - Diamond Core
 EQUIPMENT: CME 75
 HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 17.5

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.	% T C R	% R Q D
			SURFACE ELEVATION: 1572.4									
5			SHALE - Highly Weathered, Very Soft, Gray							13 6-16		
			LIMESTONE - Slightly Weathered, Moderately Hard, Gray								65	65
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								100	24
			SHALE - Slightly Weathered, Medium Hard, Occasional Fractures, Dark Gray									
20			Boring Terminated									
25												
30												
35												

REMARKS:

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

BORING NO. 5
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JOB NO. 012289 (Internal Job # D09219) Madison County
 JOB NAME: Highway 23 Slide
 Section 8, Log Mile 12.52
 STATION: 388+83
 LOCATION: 10' Left of Centerline
 LOGGED BY: Stanley Bates

DATE: March 15, 2016
 TYPE OF DRILLING:
 Hollow Stem Auger - Diamond Core
 EQUIPMENT: CME 75
 HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 27.6

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.	% T C R	% R O D
			SURFACE ELEVATION: 1568.3									
5			Moist, Medium Dense, Reddish Brown Sand with Gravel							9 6-6		
10			Moist, Medium Stiff, Reddish Brown Clay with Sand							2 3-4		
15			SHALE - Highly Weathered, Medium Hard, Dark Gray							7 60 (3")		
			SHALE WITH OCCASIONAL TO FREQUENT SANDSTONE LAYERS - Slightly Weathered, Medium Hard, Dark Gray								100	80
20			SANDSTONE INTERBEDDED WITH SHALE - Weathered, Cemented, Gray								90	50
			SHALE WITH OCCASIONAL SANDSTONE SEAMS - Slightly Weathered, Medium Hard, Dark Gray									
25			LIMESTONE WITH OCCASIONAL SANDSTONE LAYERS - Unweathered, Moderately Hard, Gray								98	80
30			Boring Terminated									
35												

REMARKS: