

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



SUBSURFACE INVESTIGATION

STATE JOB NO. 090503

FEDERAL AID PROJECT NO. ER-0051(20)

HWY. 74 SLIDE REPAIR (NEWTON CO.) (S)

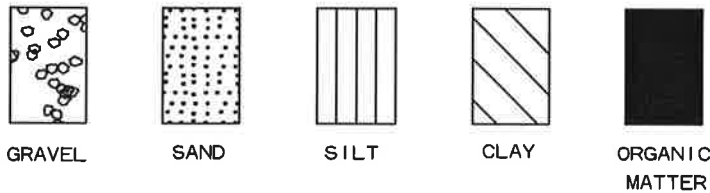
STATE HIGHWAY 74 SECTION 5

IN NEWTON COUNTY

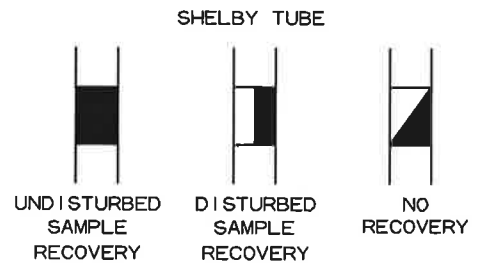
The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the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

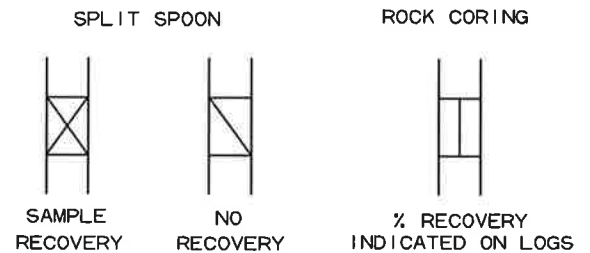
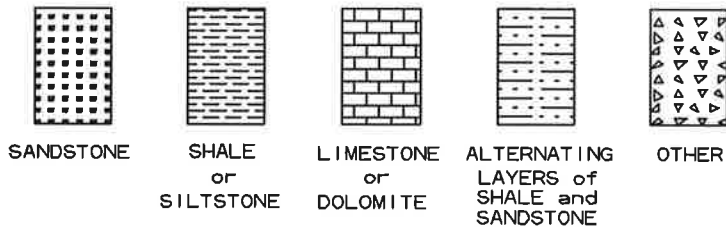
SOIL TYPES (SHOWN IN SYMBOL COLUMN) (PREDOMINANT TYPE SHOWN HEAVY)



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: $\frac{6}{8-9} \Rightarrow 8+9 = 17 \text{ blows/ft}$. 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. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper
STATION: 602+50
LOCATION: 35' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 6, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 37.7

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 Q D
			SURFACE ELEVATION: 1454.3									
			Moist, Medium Stiff, Brown and Gray Sandy Clay with Cobbles and Boulders									
5			Wet, Soft, Brown and Gray Sandy Clay with Gravel (Rock Fragments)							0 2-1		
10			Moist, Stiff, Brown and Gray Sandy Clay with Gravel (Rock Fragments)							1 4-9		
			Moist, Stiff, Brown and Gray Clay with Gravel (Shale Fragments)									
15			Moist, Very Hard, Brown and Gray Clay with Gravel (Shale Fragments)							12 34-37		
20			SHALE WITH CLAY LAYERS - Highly Weathered, Medium Hard, Brown and Gray							20 36-60 (9")		
			SHALE - Highly Weathered with Weathered Layers, Soft with Medium Hard Layers, Dark Gray								100	0
25			SHALE WITH OCCASIONAL LIMESTONE LAYERS - Highly Weathered with Weathered Layers, Soft with Medium Hard Layers, Dark Gray								100	20
30			SHALE WITH OCCASIONAL LIMESTONE LAYERS - Highly Weathered with Weathered Layers, Soft with Medium Hard Layers, Dark Gray								100	0
35												

REMARKS:

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

BORING NO. 1
PAGE 2 OF 2


JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper

STATION: 602+50
LOCATION: 35' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 6, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 37.7

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 Q D
			SURFACE ELEVATION: 1454.3									
			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Highly Weathered with Weathered Layers, Soft with Medium Hard Layers, Dark Gray								98	0
40			Boring Terminated									
45												
50												
55												
60												
65												
70												

REMARKS:

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

BORING NO. 2
PAGE 1 OF 2

JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper
STATION: 602+65
LOCATION: 6' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 20, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 49

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: 1465.9									
			Asphalt/Road Base									
5										4 10-20		
10			Moist, Stiff to Very Stiff, Brown and Gray Sandy Clay with Gravel (Rock Fragments)							2 4-6		
15			Moist, Stiff, Brown and Gray Sandy Clay							3 6-9		
20			Moist, Stiff, Brown and Gray Clay with Gravel, Cobbles, and Boulders							4 8-9		
25			Moist, Very Stiff, Brown and Gray Clay							16 26-53		
			SHALE - Highly Weathered, Medium Hard, Brown and Gray								100	0
30			SHALE - Highly Weathered, Soft, Brown and Gray								78	13
			SHALE - Highly Weathered with Weathered Layers, Soft with Medium Hard Layers, Dark Gray									
35												

REMARKS:

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

BORING NO. 2
PAGE 2 OF 2

JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper

STATION: 602+65
LOCATION: 6' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 20, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 49

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: 1465.9									
			SHALE - Highly Weathered to Weathered, Soft to Medium Hard, Occasional Vertical Fractures, Dark Gray								86	18
40			SHALE WITH OCCASIONAL SANDSTONE SEAMS- Weathered with Highly Weathered Layers, Medium Hard with Soft Layers, Dark Gray								94	12
45											92	36
50			SANDSTONE WITH FREQUENENT SHALE SEAMS - Slightly Weathered, Well Cemented, Calcareous, Gray									
			Boring Terminated									
55												
60												
65												
70												

REMARKS:

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

BORING NO. 3
PAGE 1 OF 2

JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper
STATION: 602+91
LOCATION: 42' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 6, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 53.6

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 Q D
			SURFACE ELEVATION: 1451.2									
5			Moist, Stiff, Brown and Gray Sandy Clay with Cobbles and Boulders							1 2-4		
10			Moist, Medium Stiff, Brown and Gray Clay with Sand and Gravel (Rock Fragments)							6 12-14		
15			SHALE WITH CLAY LAYERS - Highly Weathered, Very Soft, Brown and Gray*							8 15-18		
20			SHALE WITH CLAY LAYERS - Highly Weathered, Soft, Brown and Gray							12 20-17		
25			SHALE WITH CLAY LAYERS - Highly Weathered, Soft, Brown and Gray							12 22-36		
30			SHALE - Highly Weathered, Medium Hard, Brown and Gray							19 60 (2")	99	0
35			SHALE WITH OCCASIONAL SANDSTONE SEAMS - Highly Weathered with Weathered Layers, Soft with Medium Hard Layers, Dark Gray									

REMARKS: * A wet Layer was encountered at 11.2 to 11.5 feet below ground level

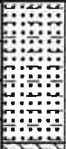

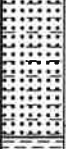
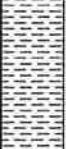
**ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3
PAGE 2 OF 2

JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper
STATION: 602+91
LOCATION: 42' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 6, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 53.6

DEPTH FT.	S Y M B O L	S A M P L E S	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: 1451.2									
			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Slightly Weathered, Well Cemented, Calcareous, Gray and Dark Gray								78	28
40			SHALE - Highly Weathered, Soft, Dark Gray									
			SANDSTONE WITH OCCASIONAL SHALE LAYERS - Slightly Weathered, Well Cemented, Highly Fractured, Calcareous, Gray								58	8
45			SHALE - Slightly Weathered to Unweathered, Medium Hard to Hard, Dark Gray								99	92
50											100	86
55			Boring Terminated									
60												
65												
70												

REMARKS: * A wet Layer was encountered at 11.2 to 11.5 feet below ground level

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

BORING NO. 4
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JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper
STATION: 603+11
LOCATION: 7' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 19 & 20, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 54.1

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.	% T C R	% R O D
			SURFACE ELEVATION: 1462.3									
			Asphalt/Road Base									
5			Moist, Medium Stiff, Brown and Gray Sandy Clay							$\frac{2}{2-5}$		
10			Moist, Stiff, Brown and Gray Clay with Some Gravel (Rock Fragments)							$\frac{2}{4-5}$		
15			Moist, Very Stiff, Brown and Gray Clay							$\frac{3}{7-9}$		
20			SHALE - Highly Weathered, Soft, Brown and Gray									
			SHALE - Highly Weathered, Medium Hard, Brown and Gray							$\frac{16}{34-44}$		
25			SHALE - Highly Weathered, Soft, Brown and Gray								80	0
30											99	0
35											99	0

REMARKS:




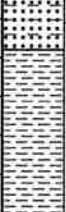
**ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 4
PAGE 2 OF 2

JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper
STATION: 603+11
LOCATION: 7' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 19 & 20, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 54.1

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.	% T C R	% R Q D
			SURFACE ELEVATION: 1462.3									
40			SHALE - Highly Weathered, Soft, Gray								24	0
45			SANDSTONE - Slightly Weathered, Well Cemented, Calcareous, Gray								92	16
50			SHALE - Highly Weathered, Medium Hard, Brown and Gray								80	10
55			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Slightly Weathered, Well Cemented, Calcareous, Occasional Vertical Fracture, Gray								96	42
60			SHALE WITH OCCASIONAL SANDSTONE SEAMS AND LAYERS - Slightly Weathered, Medium Hard, Dark Gray									
65			Boring Terminated									
70												

REMARKS:

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

BORING NO. 5
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JOB NO. 090503 (Internal Job # D09192) Newton County
JOB NAME: Hwy 74 Slide - West of Jasper
STATION: 603+55
LOCATION: 27' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 6, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 47.8

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: 1452.4									
			Moist, Medium Stiff, Brown and Gray Clay with Gravel and Cobbles									
5			Moist, Soft, Brown and Gray Clay with Gravel (Rock Fragments)							1 1-2		
			Moist, Medium Dense, Brown and Gray Cobbles and Boulders with Clay									
10			Moist, Stiff, Brown and Gray Clay with Gravel (Shale Fragments)							7 8-12		
15			Moist, Very Stiff, Brown and Gray Clay with Gravel (Shale Fragments)							5 13-16		
20			SHALE WITH CLAY LAYERS - Highly Weathered, Soft, Brown and Gray							10 19-23		
25			SHALE WITH CLAY LAYERS - Highly Weathered, Medium Hard, Brown and Gray							12 32-42		
			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Soft to Medium Hard, Highly Weathered to Weathered, Dark Gray								61	0
30			SHALE WITH FREQUENT SANDSTONE SEAMS AND LAYERS - Highly Weathered to Weathered, Medium Hard with Soft Layers, Dark Gray								99	19
35			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Slightly Weathered, Well Cemented, Calcareous, Gray									

REMARKS:

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

BORING NO. 5
PAGE 2 OF 2


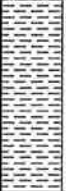
JOB NO. 090503 (Internal Job # D09192) Newton County
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STATION: 603+55
LOCATION: 27' Left of Centerline
LOGGED BY: Steve Faulkner

DATE: October 6, 2015
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 47.8

DEPTH FT.	S Y M B O L	S A M P L E S	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: 1452.4									
40			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Highly Weathered, Soft, Dark Gray								82	7
45			SHALE - Slightly Weathered, Medium Hard, Dark Gray								24	0
50			Boring Terminated								96	50
55												
60												
65												
70												

REMARKS: