

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. FA3610

FEDERAL AID PROJECT NO. STPR-0036(24)

PANTHER CREEK STR. & APPRS. (S)

COUNTY ROAD NO. CR36

IN JOHNSON 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.



ARKANSAS DEPARTMENT OF TRANSPORTATION

ArDOT.gov | IDriveArkansas.com | Scott E. Bennett, P.E., Director

MATERIALS DIVISION

11301 West Baseline Road | P.O. Box 2261 | Little Rock, AR 72203-2261 | Phone: 501.569.2185 | Fax: 501.569.2368

June 4, 2019

TO: Mr. Rick Ellis, Bridge Engineer

SUBJECT: Job No. FA3610
Panther Creek Str. & Apprs. (S)
Co. Rd. 36
Johnson County

Transmitted herewith are a brief summary of the geology and site conditions, rock core unconfined compression test summary, RMR, D50 scour analysis, and the logs of the borings conducted for the structures and approaches of the above referenced project. The samples obtained by the Standard Penetration Tests were brought to the laboratory and visually classified by experienced lab personnel to confirm the field identifications.

This project consists of replacing the bridge crossing Panther Creek on County Road 36, east of Oark. The new bridge will be constructed north of the existing. Two of the five requested borings, both intermediate bents, were inaccessible due to high water levels. The borings that were not obtained were located at: 105+60 C.L. Construction and 106+35 C.L. Construction. The remaining borings were adjusted slightly to accommodate field conditions.

Based on the depth at which bedrock was encountered, end bents should be founded on piling. Preboring may be necessary in order to achieve minimum penetration requirements.

Correlating the bedrock elevation between the obtained boring logs, competent bedrock at the intermediate bents should be encountered less than 15 feet below ground level. However, since the overburden at this site consisting of gravel, cobbles, and sand will make coffer dam installation difficult. For this reason, spread footings are not an ideal foundation alternative. It is recommended that all intermediate bents be founded on drilled shafts or piling. If piling is used, preboring may be necessary in order to achieve minimum penetration requirements. Drilled Shafts socketed into Sandstone with Shale should be designed based on the values provided in Table 1.

TABLE 1 – Bearing Capacity Recommendations for Drilled Shafts

Nominal Shaft Side Resistance (ksf)	Factored Shaft Side Resistance (ksf)	Nominal Shaft Tip Resistance (ksf)	Factored Shaft Tip Resistance (ksf)
26	14.3	196	98

If you have any questions concerning these recommendations, please contact the Geotechnical Section.



Michael C. Benson
Materials Engineer

MCB:rpt:mlg

cc: State Construction Engineer - Master File Copy
District 8 Engineer
G.C. File

GEOLOGY AND SITE CONDITIONS

Job No. FA3610

Panther Creek Str. & Apprs.

Co. Rd. 36

Johnson County

Site Conditions

The existing bridge is located on County Road 36 and crosses Panther Creek, east of Oark. It is a 3 span, northwest to southeast oriented bridge that consists of steel beams supported by two concrete spread footing and concrete endwalls. The decking is cast-in-place and is supported by wood cross beams. The guardrails on the bridge are composed of steel, supported by concrete posts. There are stone levees lining the creek bank on the west end of the bridge. Overhead power lines parallel the south side of the bridge, crossing over Panther Creek. There is a buried septic system located in the pasture on the northwest bridge end. The area around the bridge consists of pastureland and a barn on the west bridge end and wooded land around the east bridge end, with the exception of one residence to the northeast of the bridge.

Site Geology

The project alignment lies in the Boston Mountains of the Ozarks in the mapped outcrop of the Atoka Formation (mapped symbol Pa). This unit is a sequence of marine, mostly tan to gray silty sandstones and grayish-black shales. This unit has the largest areal extent of any of the Paleozoic formations in the state. It is the surface rock of the Boston Mountains and dominates the exposures in the Arkansas River Valley and the frontal Ouachita Mountains. It is also present in the southern part of the Ouachita Mountains. This formation may attain a thickness of up to 25,000 feet in some areas. The rock encountered at the project location consisted primarily of sandstone with interbedded shales. Some of the sandstones were more loosely cemented than others and therefore more friable. The project location is bound by multiple east to west trending faults and unmapped faults in the surrounding area are likely.

Scour Potential

There was no visual scour present around the spread footings and end bents of the existing bridge. The majority of the sediment visually observed in the channel consisted of sand, gravel, and boulders. Exposed bedrock was not observed in the field at the existing bridge; however, bedrock is exposed in the channel upstream. Analysis of D50 particle size yielded a median value of 0.22 inches or 5.6 mm, which is not considered a highly scourable sediment size (Fig 1). Based on grain size analysis and visual observation, significant scour is not anticipated at the new bridge location.

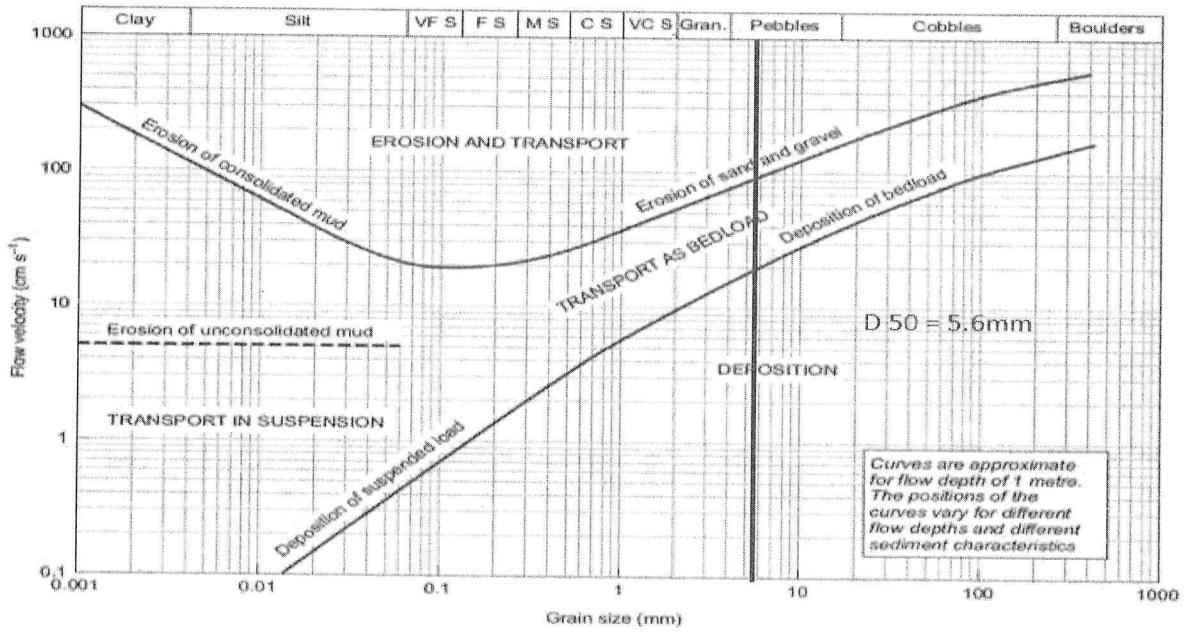


Figure.1 Hjulstrom's Diagram of Sediment Size.



Figure. 2 Coarse sediment deposits on east side of river channel.

Subsurface Conditions

Based on the results of the borings, the subsurface stratigraphy for stations **107+15** through **107+80** may be generalized as follows:

- 0 to 10.1 Feet: Varies from wet, soft to very stiff, brown **sandy clay with gravel and cobbles***.
- 10.1 to 34.3 Feet: Consists of slightly weathered to unweathered, cemented, **gray sandstone with frequent to occasional shale seams and layers.**

* A water stratum was encountered at approximately 7.7 to 8.1 feet below ground level.

Based on the results of the boring made at station **104+88**, the subsurface stratigraphy may be generalized as follows:

- 0 to 16.2 Feet: Consists of moist to wet, medium dense to very dense, **brown sand with gravel and cobbles***.
- 16.2 to 27.1 Feet: Consists of slightly weathered, cemented with occasional poorly cemented layers, gray **sandstone with frequent to occasional shale seams and layers.**
- 27.1 to 43.9 Feet: Consists of unweathered, medium hard, **shale with frequent to occasional sandstone seams and layers.**

* A water stratum was encountered at approximately 14.8 feet below ground level.

Rock Core Unconfined Compression Test Summary

Project Number: FA3610
 Project Name: Panther Creek Str. & Apprs. (S)
 Date Tested: 4/26/2019

Station	Location	Sample No.	Depth (ft.)	Diameter (in)	Height (in)	Total Load (lbs.)	Correction Factor	Stress (psi)	Remarks
104+88	19' Rt.	1	22.3	1.75	3.56	50,360	1.00	20,937	SS
104+88	19' Rt.	2	24.0	1.75	3.92	30,390	1.00	12,635	SS
104+88	19' Rt.	3	28.3		Broke before testing			-	SH w/ SS L & S
104+88	19' Rt.	4	31.3	1.75	4.04	14,150	1.00	5,883	SH w/ SS L & S
104+88	19' Rt.	5	37.3		Broke before testing			-	SH w/ SS Layers
104+88	19' Rt.	6	40.7		Broke before testing			-	SH
107+15	C.L.	7	10.6	1.75	3.56	13,620	1.00	5,663	WTD SS w/ SH Seams
107+15	C.L.	8	13.3	1.75	3.96	5,490	1.00	2,282	WTD SS w/ SH Seams
107+15	C.L.	9	21.6	1.75	3.49	28,180	1.00	11,716	SS w/ SH Seams
107+15	C.L.	10	23.3	1.75	4.83	23,940	1.00	9,953	SS w/ SH L & S
107+15	C.L.	11	26.3	1.75	3.53	14,190	1.00	5,900	WTD SS w/ SH L & S
107+15	C.L.	12	33.1	1.75	3.37	14,840	1.00	6,170	SH
107+15	C.L.	13	36.3	1.75	3.41	2,750	1.00	1,143	SH
107+80	6' Lt.	14	23.0	1.75	3.35	5,940	1.00	2,470	SH w/ Freq. SS L & S
107+80	6' Lt.	15	28.2	1.75	3.94	48,310	1.00	20,085	SS w/ Occ. SH Seams
107+80	6' Lt.	16	30.8	1.75	3.15	34,190	1.00	14,215	SS w/ Freq. SH L & S
107+80	6' Lt.	17	33.5		Broke before testing			-	SH

Terminology

SS = Sandstone

L & S = Layers and Seams

SH = Shale

Freq. = Frequent

WTD = Weathered

Occ. = Occasional

ROCK MASS RATING SUMMARY

JOB # **FA3610**

SAMPLE #1

Station/Location	104+88, 19' Rt.
Depth (ft.)	22.3
Relative Rating	
Uniaxial Compressive Strength	12
RQD	8
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	II
Description	GOOD ROCK

SAMPLE #1

Station/Location	104+88, 19' Rt.
Depth (ft.)	24
Relative Rating	
Uniaxial Compressive Strength	7
RQD	17
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	86
Class Number	I
Description	VERY GOOD ROCK

SAMPLE #3

Station/Location	104+88, 19' Rt.
Depth (ft.)	28.3
Relative Rating	
Uniaxial Compressive Strength	N/A
RQD	8
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	70
Class Number	II
Description	GOOD ROCK

SAMPLE #4

Station/Location	104+88, 19' Rt.
Depth (ft.)	31.3
Relative Rating	
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	74
Class Number	II
Description	GOOD ROCK

SAMPLE #5

Station/Location	104+88, 19' Rt.
Depth (ft.)	37.3
Relative Rating	
Uniaxial Compressive Strength	N/A
RQD	8
Spacing of Joints	30
Condition of Joints	20
Groundwater Conditions	7
Sum	65
Class Number	II
Description	GOOD ROCK

SAMPLE #6

Station/Location	104+88, 19' Rt.
Depth (ft.)	40.7
Relative Rating	
Uniaxial Compressive Strength	N/A
RQD	13
Spacing of Joints	30
Condition of Joints	20
Groundwater Conditions	7
Sum	70
Class Number	II
Description	GOOD ROCK

SAMPLE #7

Station/Location	107+15, CL
Depth (ft.)	10.6
Relative Rating	
Uniaxial Compressive Strength	4
RQD	13
Spacing of Joints	30
Condition of Joints	20
Groundwater Conditions	7
Sum	74
Class Number	II
Description	GOOD ROCK

SAMPLE #8

Station/Location	107+15, CL
Depth (ft.)	13.3
Relative Rating	
Uniaxial Compressive Strength	2
RQD	8
Spacing of Joints	30
Condition of Joints	20
Groundwater Conditions	7
Sum	67
Class Number	II
Description	GOOD ROCK

SAMPLE #9

Station/Location	107+15, CL
Depth (ft.)	21.6
	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	25
Condition of Joints	20
Groundwater Conditions	7
Sum	72
Class Number	II
Description	GOOD ROCK

SAMPLE #10

Station/Location	107+15, CL
Depth (ft.)	23.3
	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	II
Description	GOOD ROCK

SAMPLE #11

Station/Location	107+15, CL
Depth (ft.)	26.3
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	69
Class Number	II
Description	GOOD ROCK

SAMPLE #12

Station/Location	107+15, CL
Depth (ft.)	33.1
	Relative Rating
Uniaxial Compressive Strength	4
RQD	3
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	64
Class Number	II
Description	GOOD ROCK

SAMPLE #13

Station/Location	107+15, CL
Depth (ft.)	36.3
	Relative Rating
Uniaxial Compressive Strength	1
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	71
Class Number	II
Description	GOOD ROCK

SAMPLE #14

Station/Location	107+80, 6' Lt
Depth (ft.)	23
	Relative Rating
Uniaxial Compressive Strength	2
RQD	8
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	72
Class Number	II
Description	GOOD ROCK

SAMPLE #15

Station/Location	107+80, 6' Lt
Depth (ft.)	28.2
	Relative Rating
Uniaxial Compressive Strength	12
RQD	8
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	82
Class Number	I
Description	VERY GOOD ROCK

SAMPLE #16

Station/Location	107+80, 6' Lt
Depth (ft.)	30.8
	Relative Rating
Uniaxial Compressive Strength	7
RQD	8
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	II
Description	GOOD ROCK

SAMPLE #17

Station/Location	107+80, 6' Lt
Depth (ft.)	33.5
Uniaxial Compressive Strength	N/A
RQD	8
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	70
Class Number	II
Description	GOOD ROCK

**D₅₀ AGGREGATE ANALYSIS
FOR SCOUR CALCULATIONS**

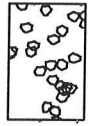
Job No. FA3610

Creek Name	Station	Sample Type	Location	Depth (Ft.)	Soil Description	Aggregate Size (D50) (In.)
Panther Creek	106+35	Creek Bank	Construction Centerline	NA	GM Silty Gravel With Sand	Approximately 0.223

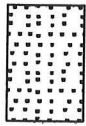
LEGEND

SOIL TYPES

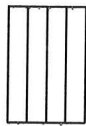
(SHOWN IN SYMBOL COLUMN)
(PREDOMINANT TYPE SHOWN HEAVY)



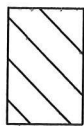
GRAVEL



SAND



SILT



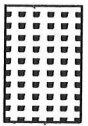
CLAY



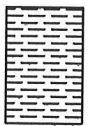
ORGANIC
MATTER

ROCK TYPES

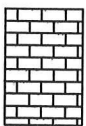
(SHOWN IN SYMBOL COLUMN)



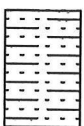
SANDSTONE



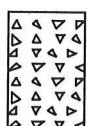
SHALE
or
SILTSTONE



LIMESTONE
or
DOLOMITE



ALTERNATING
LAYERS of
SHALE and
SANDSTONE



OTHER

SAMPLER TYPES

(SHOWN IN SAMPLE COLUMN)

SHELBY TUBE



UNDISTURBED
SAMPLE
RECOVERY



DISTURBED
SAMPLE
RECOVERY

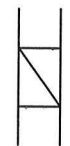


NO
RECOVERY

SPLIT SPOON

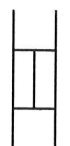


SAMPLE
RECOVERY



NO
RECOVERY

ROCK CORING



% RECOVERY
INDICATED ON LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANULAR SOIL		CLAY		CLAY-SHALE		SHALE	
*N ^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, and 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 DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1
PAGE 1 OF 2

JOB NO. FA3610 Johnson County
JOB NAME: Panther Creek Str. & Apprs. (S)
Co. Rd. 36
STATION: 104+88
LOCATION: 19' Right of Construction Centerline
LOGGED BY: Austin Dillman

DATE: April 10, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: Acker 2094
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 43.9

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: 1100.2									
5			Moist, Medium Dense, Brown Gravel and Cobbles with Sand							6 15-12		
10			Moist, Medium Dense, Brown Sand with Gravel and Cobbles*							7 10-12		
15			Wet, Very Dense, Brown Sand with Gravel							6 10-60 (11")		
			SANDSTONE SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Slightly Weathered, Cemented, Gray								99	0
20			SANDSTONE WITH OCCASIONAL SHALE SEAMS - Slightly Weathered with Occasional Highly Weathered Layers, Cemented with Occasional Poorly Cemented Layers, Gray								94	35
25			SANDSTONE WITH OCCASIONAL SHALE SEAMS - Slightly Weathered, Cemented, Gray								96	76
30			SHALE WITH FREQUENT SANDSTONE SEAMS AND LAYERS - Unweathered, Medium Hard, Dark Gray								97	26
35			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Unweathered, Cemented, Gray									

REMARKS: * Water was encountered at 14.8' below ground level.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1
PAGE 2 OF 2

JOB NO. FA3610 Johnson County
JOB NAME: Panther Creek Str. & Apprs. (S)
Co. Rd. 36
STATION: 104+88
LOCATION: 19' Right of Construction Centerline
LOGGED BY: Austin Dillman

DATE: April 10, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: Acker 2094
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 43.9

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: 1100.2									
			SHALE WITH FREQUENT SANDSTONE SEAMS AND LAYERS - Unweathered, Medium Hard, Dark Gray								80	28
			SANDSTONE - Unweathered, Cemented, Gray									
40			SHALE WITH OCCASIONAL SANDSTONE SEAMS - Unweathered, Medium Hard, Dark Gray								96	70
45			Boring Terminated									
50												
55												
60												
65												
70												

REMARKS: * Water was encountered at 14.8' below ground level.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2
PAGE 1 OF 2

JOB NO. FA3610 Johnson County
JOB NAME: Panther Creek Str. & Apprs. (S)
Co. Rd. 36
STATION: 107+15
LOCATION: Construction Centerline
LOGGED BY: Austin Dillman

DATE: April 9, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: Acker 2094
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 39.2

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: 1094.3									
5			Wet, Soft, Brown Sandy Clay with Some Gravel							0 2-2		
10			Sandy Clay with Gravel and Cobbles*									
			SANDSTONE							70 (3")		
			SANDSTONE WITH FREQUENT SHALE SEAMS - Weathered, Cemented, Gray								92	59
15			SANDSTONE WITH OCCASIONAL SHALE SEAMS - Slightly Weathered, Cemented, Gray								84	7
			SANDSTONE WITH FREQUENT SHALE SEAMS - Unweathered, Cemented, Gray									
20			SHALE WITH FREQUENT SANDSTONE SEAMS - Slightly Weathered, Medium Hard, Dark Gray								99	44
25			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Slightly Weathered, Cemented, Gray								94	82
30			SHALE WITH OCCASIONAL SANDSTONE SEAMS AND LAYERS - Unweathered, Medium Hard, Dark Gray								40	10
35												

REMARKS: * Water was encountered at 8.1' below ground level.

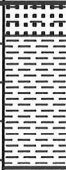
**ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2
PAGE 2 OF 2

JOB NO. FA3610 Johnson County
JOB NAME: Panther Creek Str. & Apprs. (S)
Co. Rd. 36
STATION: 107+15
LOCATION: Construction Centerline
LOGGED BY: Austin Dillman

DATE: April 9, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: Acker 2094
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 39.2

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.	% TCR	% RQD
			SURFACE ELEVATION: 1094.3									
			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Unweathered, Cemented, Gray								92	60
40			SHALE WITH OCCASIONAL SANDSTONE SEAMS - Unweathered, Medium Hard, Dark Gray									
			Boring Terminated									
45												
50												
55												
60												
65												
70												

REMARKS: * Water was encountered at 8.1' below ground level.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3
PAGE 1 OF 2

JOB NO. FA3610 Johnson County
JOB NAME: Panther Creek Str. & Apprs. (S)
Co. Rd. 36
STATION: 107+80
LOCATION: 6' Left of Construction Centerline
LOGGED BY: Austin Dillman

DATE: April 8, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: Acker 2094
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 34.3

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 Q D
			SURFACE ELEVATION: 1094.7									
5			Wet, Very Stiff, Brown Sandy Clay with Gravel*							2 10-13		
10			SANDSTONE							72 (3")	99	0
15			SANDSTONE WITH FREQUENT SHALE SEAMS AND OCCASIONAL SHALE LAYERS - Weathered, Cemented, Gray								99	20
20			SANDSTONE WITH FREQUENT SHALE SEAMS AND OCCASIONAL SHALE LAYERS - Slightly Weathered, Cemented, Gray								96	34
25			SHALE WITH FREQUENT SANDSTONE SEAMS AND LAYERS - Unweathered, Medium Hard, Dark Gray								97	39
30			SANDSTONE WITH OCCASIONAL SHALE SEAMS - Unweathered, Cemented, Gray SHALE WITH OCCASIONAL SANDSTONE SEAMS - Unweathered, Medium Hard, Dark Gray SANDSTONE WITH OCCASIONAL SHALE SEAMS - Unweathered, Cemented, Gray								96	36
35			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Unweathered, Cemented, Gray SHALE WITH OCCASIONAL SANDSTONE SEAMS - Unweathered, Medium Hard, Dark									

REMARKS: * Water was encountered at 7.7' below ground level.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3
PAGE 2 OF 2

JOB NO. FA3610 Johnson County
JOB NAME: Panther Creek Str. & Apprs. (S)
Co. Rd. 36
STATION: 107+80
LOCATION: 6' Left of Construction Centerline
LOGGED BY: Austin Dillman

DATE: April 8, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: Acker 2094
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 34.3

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 Q D
			SURFACE ELEVATION: 1094.7									
			Gray									
			Boring Terminated									
40												
45												
50												
55												
60												
65												
70												

REMARKS: * Water was encountered at 7.7' below ground level.