ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SUBSURFACE INVESTIGATION

STATE JOB NO. BR0405

FEDERAL AID PROJECT NO. STPB-0004(58)

WILDCAT CREEK STR. & APPRS. (S)

COUNTY ROAD NO. 1785

IN BENTON **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 HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
PAGE 1 OF 2

JOB NO. BR0405 Benton County
JOB NAME: Wildcat Creek Str. & Apprs. (S)
County Road 1785
STATION: 105+64
LOCATION: 18' Left of Construction Centerline
LOGGED BY: Paul Christenberry

DATE: July 7, 2016
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 39.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1025.0	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Wet, Loose, Light Brown Sand with Gravel						3 5-5		
10			CHERT/LIMESTONE						10 (0")	100	54
15										100	84
20										100	65
25			CHERT WITH INTERBEDDED LIMESTONE - Unweathered, Hard, Gray							100	64
30										100	66
35											

REMARKS:

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

BORING NO. 1
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JOB NO. BR0405 Benton County
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County Road 1785
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DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1025.0	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
										100	88
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. BR0405 Benton County
JOB NAME: Wildcat Creek Str. & Apprs. (S)
County Road 1785
STATION: 106+36
LOCATION: 15' Right of Construction Centerline
LOGGED BY: Paul Christenberry

DATE: July 6, 2016
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 38.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1026.8	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Wet, Very Loose, White and Brown Sand with Gravel*						2 1-1		
10			Wet, Medium Dense, White and Brown Clayey Sand with Gravel						4 9-11		
15			CHERT WITH INTERBEDDED LIMESTONE - Unweathered, Hard, Light Gray							100	53
20										100	73
25										100	80
30										100	92
35										100	76

REMARKS: * 17 hour water level reading was 1.7 feet below ground level.

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

BORING NO. 2
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JOB NO. BR0405 Benton County
JOB NAME: Wildcat Creek Str. & Apprs. (S)
County Road 1785
STATION: 106+36
LOCATION: 15' Right of Construction Centerline
LOGGED BY: Paul Christenberry

DATE: July 6, 2016
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 38.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1026.8	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
										100	84
			Boring Terminated								
40											
45											
50											
55											
60											
65											
70											

REMARKS: * 17 hour water level reading was 1.7 feet below ground level.

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

BORING NO. 3
PAGE 1 OF 2

JOB NO. BR0405 Benton County
JOB NAME: Wildcat Creek Str. & Apprs. (S)
County Road 1785
STATION: 106+36
LOCATION: 18' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: July 13, 2016
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.6

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1027.1	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Wet, Medium Dense, Sand with Gravel*						4 7-5		
10			Wet, Medium Dense, Brown Sand with Gravel and Some Clay						3 5-7		
			CHERT WITH INTERBEDDED LIMESTONE - Slightly Weathered, Hard, Light Gray							90	0
15										100	96
20										100	96
25										98	82
30			CHERT WITH INTERBEDDED LIMESTONE - Unweathered, Hard, Light Gray							100	66
35											

REMARKS: * Water was encountered at appoximately 2.7 feet below ground level.

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

BORING NO. 3
PAGE 2 OF 2

JOB NO. BR0405 Benton County
JOB NAME: Wildcat Creek Str. & Apprs. (S)
County Road 1785
STATION: 106+36
LOCATION: 18' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: July 13, 2016
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.6

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.	% TCR	% RQD
			SURFACE ELEVATION: 1027.1								
										100	60
40										100	86
45			Boring Terminated								
50											
55											
60											
65											
70											

REMARKS: * Water was encountered at appoximately 2.7 feet below ground level.

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

BORING NO. 4
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JOB NO. BR0405 Benton County
JOB NAME: Wildcat Creek Str. & Apprs. (S)
County Road 1785
STATION: 106+90
LOCATION: 6' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: July 18, 2016
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 48.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1041.5	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Moist, Medium Dense, Brown Clayey Sand with Gravel						5 8-4		
10			Moist, Loose, Brown Clayey Sand with Some Gravel						4 2-4		
15			Moist, Loose, Brown Sand with Gravel and Some Clay						4 4-3		
20			Wet, Medium Dense, Brown Sand with Gravel						5 10-9		
25			Wet, Very Dense, Brown Clayey Sand with Gravel (Rock Fragments)						5 38 (4")		
			CHERT WITH INTERBEDDED LIMESTONE - Slightly Weathered, Hard, Light Gray							72	44
30										98	88
35											

REMARKS:

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

BORING NO. 4
PAGE 2 OF 2

JOB NO. BR0405 Benton County
JOB NAME: Wildcat Creek Str. & Apprs. (S)
County Road 1785
STATION: 106+90
LOCATION: 6' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: July 18, 2016
TYPE OF DRILLING:
Hollow Stem Auger - Diamond Core
EQUIPMENT: CME 850

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 48.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1041.5	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			CHERT WITH INTERBEDDED LIMESTONE - Unweathered, Hard, Light Gray							100	85
40										100	68
45										100	60
50			Boring Terminated								
55											
60											
65											
70											

REMARKS:

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

August 24, 2016

TO: Mr. Rick Ellis, Bridge Engineer

SUBJECT: Job No. BR0405
Wildcat Creek Str. & Apprs. (S)
County Road No. 1785
Benton County

Transmitted herewith are a brief summary of the geology and site conditions, D50 analysis test results, rock mass rating summary, unconfined compressive strength results, and the logs of the borings conducted for the structure 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. The rock cores are available for inspection at the Materials Division.

No borings were obtained in the vicinity of Bent 1 due to the proximity of overhead high voltage power lines. However, based on plans provided by the Bridge Division it is anticipated that Bent 1 will be founded on spread footings. Utilizing the data obtained from the adjacent borings for the intermediate bents and assuming competent rock, containing no cavities, will be encountered at a depth shallower than 15 feet below ground level, spread footings should be sized based on the values provided in Table 1. However, the Material's Division recommends that the elevation, type and quality of rock, and absence of cavities be verified once the overhead high voltage power lines have been relocated and heavy equipment can operate safely.

TABLE 1 – Bearing Capacity Recommendations for Spread Footings

Foundation Description	Presumptive Bearing Resistance at Service Limit State (ksf)
Spread Footing	40

Based on plans provided by the Bridge Division and the depth at which bedrock was encountered, it is anticipated that Bents 2 & 3 will be founded on drilled shafts and Bent 4 will be founded on piling. Piling should be tipped into the competent Chert with interbedded Limestone and preboring may be necessary to achieve minimum penetration requirements. Drilled shafts socketed into the hard gray Chert with interbedded Limestone should be designed based on the values provided in Table 2.

TABLE 2 – Bearing Capacity Recommendations for Drilled Shafts

Foundation Description	Nominal Tip Resistance (ksf)	Factored Tip Resistance (ksf)	Nominal Side Resistance (ksf)	Factored Side Resistance (ksf)
Drilled Shafts	480	240	21.2	11.7

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 4 Engineer
G.C. File