ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO.	050341			
FEDERAL AID PROJE	CT NO.	NHPP-0012(34)		
	MILL & PINEY	CREEK STRS. & APPRS	S. (S)	
STATE HIGHWAY	25	SECTION	2	
IN	CLI	EBURNE 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

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MATERIALS DIVISION

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

October 17, 2017

TO:

Mr. Rick Ellis, Bridge Engineer

SUBJECT:

Job No. 050341

Mill & Piney Creek Strs. & Apprs. (S)

Route 25 Section 2 Cleburne 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 Piney Creek, on Highway 25, northeast of Quitman. The new bridge will be constructed upstream from the existing. A total of eight borings were performed for this project: one for each end bent and three borings at each intermediate bent, one at each proposed drilled shaft location.

Based on plans provided by Bridge Division, it is anticipated that end bents will be founded on steel h-piles, bearing on rock, and intermediate bents will be founded on rock-socketed drilled shafts. Drilled shafts socketed into Sandstone to 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	Factored Shaft Side	Nominal Shaft Tip	Factored Shaft Tip
Resistance (ksf)	Resistance (ksf)	Resistance (ksf)	Resistance (ksf)
32.7	18.0	274	137

Findings from this subsurface investigation revealed that bedrock is less than ten feet deep at each boring location. Therefore, spread footings may be considered as an alternative to drilled shafts and preboring may be necessary in order to achieve minimum penetration requirements for piling. Spread footings founded in Sandstone to Sandstone with Shale should be designed based on the values provided in Table 2.

TABLE 2 – Bearing Capacity Recommendations for Spread Footings

Nominal Bearing	Factored Bearing	Bearing Resistance at
Resistance (ksf)	Resistance (ksf)	Service Limit State (ksf)
430	194	40

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

Michael C. Benson Materials Engineer

MCB:rpt:mlg

State Construction Engineer - Master File Copy
District 5 Engineer

G.C. File

GEOLOGY AND SITE CONDITIONS Job No. 050341

Mill & Piney Creek Strs. & Apprs. (S) Route 25 Section 2 Cleburne County

Site Conditions

The proposed structure is to be located east of the existing bridge. The current bridge is located on highway 25, northeast of Quitman, in Cleburne County. It is a 4 span bridge, approximately 140 foot long, running southwest to northeast. The bridge decking is cast-in-place concrete with steel guardrail and is supported by spread footings and concrete end walls. The west side of the bridge was widened by adding on additional decking and support. Overhead power lines and buried fiber optic parallel the west side of the roadway along the project alignment and a buried gas line parallels the east side of the road.

Piney Creek flows from east to west under the bridge. The creek channel is primarily lined with pasture land to the west of the bridge and moderate to heavy woodland to the east. The creek bank has recently been lined with riprap on the southwestern side of the bridge and appears to be susceptible to erosion. Part of the channel has been dammed up by concrete that was poured to cover a water line that was recently excavated and repaired. The repaired water line crosses the creek approximately 60 feet east of the existing bridge alignment. Horizontally bedded sandstone is exposed in the creek channel and there are several mapped faults to the northwest of the project alignment.

Site Geology

The project alignment is located in the mapped outcrop of the Atoka Formation (map symbol Pa). This formation is Pennsylvanian in age and has the widest areal extent of all the Paleozoic rocks in Arkansas. The Atoka is a sequence of mostly tan to gray marine sandstones and grayish black shales. This formation represents prominent surface exposures in the Boston Mountains, along the Arkansas River Valley and the frontal Ouachita Mountains, where unit thickness can be up to 25,000 feet. This formation contains rare calcareous beds, discontinuous coal, and abundant trace fossils.

Subsurface Conditions

Based on the results of the borings, the subsurface stratigraphy may be generalized as follows:

0 to 5.2 Feet:

Consists of moist to wet, loose to medium dense, brown sand with

occasional gravel (rock fragments).

5.2 to 39.4 Feet:

Consists of weathered to slightly weathered, cemented to well cemented,

occasionally fractured, gray sandstone with interbedded shale.

Rock Core Unconfined Compression Test Summary

Project Number:

050341

Project Name:

Mill & Piney Creek Strs. & Apprs. (S)

Date Tested:

9/26/2017

Station	Location	Sample No.	Depth (ft)	Diameter (in)	Height (in)	Total Load (lbs)	Correction Factor	Stress (psi)	Remarks
505+11	C.L.	1	7.0	1.75	3.40	31,210	1.00	12,976	End Bent (South)
505+61	15' LT	2	8.2	1.75	3.50	48,770	1.00	20,276	Interbed SS/SH
505+61	15' LT	3	19.5	1.75	3.51	69,800	1.00	29,019	SS (light)
505+61	15' LT	4	26.6	1.75	3.52	16,950	1.00	7,047	Interbed SS/SH
505+61	15' LT	5	35.5	1.75	3.50	11,370	1.00	4,727	SS (dark)
505+61	C.L.	6	8.9	1.75	3.49	40,880	1.00	16,996	Interbed SS/SH
505+61	C.L.	7	14.2	1.75	3.53	12,260	1.00	5,097	SS (dark)
505+61	C.L.	8	20.0	1.75	3.49	50,080	1.00	20,821	SS (light)
505+61	C.L.	9	30.0	1.75	3.53	17,600	1.00	7,317	SS (dark)
505+61	C.L.	10	36.8	1.75	3.51	23,200	1.00	9,645	SS
505+61	10' RT	11	5.0	1.75	3.50	21,230	1.00	8,826	Interbed SS/SH
505+61	10' RT	. 12	13.3	1.75	3.50	49,620	1.00	20,629	SS
505+61	10' RT	13	21.8	1.75				BROKE	Interbed SS/SH
505+61	10' RT	14	32.5	1.75	3.51	5,390	1.00	2,241	SS
506+30	15' LT	15	4.3	1.75	3.50	17,750	1.00	7,380	SS w/ iron (WTD/Brown)
506+30	-15' LT	16	12.4	1.75	3.50	26,950	1.00	11,204	Interbed SS/SH
506+30	15' LT	17	20.8	1.75	3.51	49,910	1.00	20,750	SS (light)
506+30	15' LT	18	27.1	1.75	3.50	16,180	1.00	6,727	Interbed SS/SH
506+30	15' LT	19	34.5	1.75	3.52	12,670	1.00	5,268	SS (dark)
506+76	C.L.	20	5.0	1.75	3.51	23,270	1.00	9,674	End Bent (North) SS (light)
506+26	C.L.	21	5.9	1.75	3.50	25,670	1.00	10,672	SS (light)
506+26	C.L.	22	13.4	1.75	3.50	24,880	1.00	10,344	Interbed SS/SH
506+26	C.L.	23	19.4	1.75	3.50	31,590	1.00	13,133	SS (light)
506+26	C.L.	24	26.3	1.75	3.52	22,710	1.00	9,442	SS (dark)
506+26	15' RT	25	6.3	1.75	3.50	32,900	1.00	13,678	SS (brown)
506+26	15' RT	26	17.2	1.75	3.50	14,030	1.00	5,883	SS (dark)
506+26	15' RT	27	29.8	1.75	3.50	20,110	1.00	8,361	Interbed SS/SH

^{*} Please note any broken samples, fractures or other characteristics of sample in Remarks.

ROCK MASS RATING SUMMARY JOB # 050341

SAMPLE #1

Station/Location 505+11\ CL Depth (ft) Relative Rating Uniaxial Compressive Strength RQD 17 Spacing of Joints 25 Condition of Joints 25 Groundwater Conditions 7 Sum 81 Class Number 1 Description VERY GOOD ROCK

SAMPLE #2					
Station/Location	505+61\ 15! LT				
Depth (ft)	8.2				
	Relative Rating				
Uniaxial Compressive Strength	12				
RQD	17				
Spacing of Joints	25				
Condition of Joints	25				
Groundwater Conditions	7				
Sum	86				
Class Number	1				
Description	VERY GOOD ROCK				

SAMPLE #3 505+61\ 15' LT Station/Location Depth (ft) 19,5 Relative Rating Uniaxial Compressive Strength 12 17 RQD Spacing of Joints 20 Condition of Joints Groundwater Conditions Sum Class Number I VERY GOOD ROCK Description

Station/Location	505+61\ 15' LT
Depth (ft)	26.6
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	10
Condition of Joints	20
Groundwater Conditions	7
Sum	49
Class Number	iii i
Description	FAIR ROCK

SAMPLE #5 505+61\ 15' LT Station/Location Depth (ft) 35.5 Relative Rating Uniaxial Compressive Strength RQD 20 Spacing of Joints 20 Condition of Joints 25 **Groundwater Conditions** Sum 76 Class Number 11 GOOD ROCK Description

Station/Location	505+61\ CL
Depth (ft)	8.9
	Relative Rating
Uniaxial Compressive Strength	12
RQD	17
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	81
Class Number	
Description	VERY GOOD ROCK

Station/Location	505+61\CL
Depth (ft)	14.2
	Relative Rating
Jniaxial Compressive Strength [4
RQD	8
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	69
Class Number	11
Description	GOOD ROCK

Station/Location	505+61\CL
Depth (ft)	20
	Relative Rating
Uniaxial Compressive Strength	12
RQD	17
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	81
Class Number	i i
Description	VERY GOOD ROCK

SAMPLE #9

Station/Location	505+61\CL
Depth (ft)	30
	Relative Rating
Uniaxial Compressive Strength 🏾	4
RQD	13
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	69
Class Number	II .
Description	GOOD ROCK

SAMPLE #10

	-L #10
Station/Location	505+61\ CL
Depth (ft)	36.8
Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum	Relative Rating 7 20 20 20 7 7 74
Class Number	II
Description	GOOD ROCK

SAMPLE #11

Station/Location Depth (ft)	505+61\ 10' RT 5
3	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	67
Class Number	
Description	GOOD ROCK

SAMPLE #12

O/AIIII	LE #12
Station/Location Depth (ft)	505+61\ 10' RT
	Relative Rating
Uniaxial Compressive Strength	12
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	82
Class Number	
Description	VERY GOOD ROCK

SAMPLE #13

Station/Location	505+61\ 10' RT
Depth (ft)	21.8
1-	Relative Rating
axial Compressive Strength	N/A
RQD	13
Spacing of Joints	10
Condition of Joints	20
Groundwater Conditions	7
Sum	50
Class Number	ili.
Description	FAIR ROCK

SAMPLE #14

Station/Location [505+61\ 10' RT	
Depth (ft)	32.5	
	Relative Rating	
Uniaxial Compressive Strength		
RQD	20	
Spacing of Joints	20	
Condition of Joints	25	
Groundwater Conditions	7	
Sum	73	
Class Number	11	
Description	GOOD ROCK	

SAMPLE #15

Station/Location	506+30\ 15' LT
Depth (ft)	4.3
	Relative Rating
Jniaxial Compressive Strength	4
RQD	13
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	69
Class Number	
Description	GOOD ROCK

SAMP	LE #16
Station/Location	506+30\ 15' LT
Depth (ft)	12.4
	Relative Rating
Uniaxial Compressive Strength	7
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	300 1 Set 7 (150)
Sum	84
Class Number	
Description	VERY GOOD ROCK

SAMPLE #17

Station/Location Depth (ft)	506+30\ 15' LT 20.8
	Relative Rating
Uniaxial Compressive Strength	12
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	76
Class Number	11
Description	GOOD ROCK

SAMPLE #19

Station/Location [506+30\ 15' LT
Depth (ft)	34.5
_	Relative Rating
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	78
Class Number	10
Description	GOOD ROCK

SAMPLE #21

Station/Location Depth (ft)	506+26\ CL 5.9	
Heiserial Community of the	Relative Rating	
Uniaxial Compressive Strength RQD	7	
Spacing of Joints	13 25	
Condition of Joints	20	
Groundwater Conditions	7	
Sum	72	
Class Number	II I	
Description	GOOD ROCK	

SAMPLE #23

Station/Location [506+26\ CL	
Depth (ft)	19.4	
	Relative Rating	
Uniaxial Compressive Strength	7	
RQD	13	
Spacing of Joints	20	
Condition of Joints	25	
Groundwater Conditions	7	
Sum	72	
Class Number	Ü	
Description	GOOD ROCK	

SAMPLE #18

Station/Location Depth (ft)	506+30\ 15' LT 27.1
Hairaial Occurrence in Order	Relative Rating
Uniaxial Compressive Strength	4
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	81
Class Number	
Description	VERY GOOD ROCK

SAMPLE #20

	Station/Location Depth (ft)	506+76\ CL
ı		Relative Rating
ı	Uniaxial Compressive Strength	7
ı	RQD	8
I	Spacing of Joints	20
I	Condition of Joints	25
ı	Groundwater Conditions	
I	Sum	60
ı	Class Number	III
١	Description	FAIR ROCK

SAMPLE #22

Station/Location	506+26\ CL
Depth (ft)	13.4
	Relative Rating
Uniaxial Compressive Strength	7 - 7
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	
Description	GOOD ROCK

0	
Station/Location	506+26\ CL
Depth (ft)	26.3
n=	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	67
Class Number	- II
Description	GOOD ROCK

SAMI	PLE #25	SAMPLE #26
Station/Location Depth (ft)	506+26\ 15' RT 6.3	Station/Location Depth (ft) 506+26\ 15' RT 17.2
Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description	Relative Rating 7 13 10 20 7 57	Uniaxial Compressive Strength RQD 17 Spacing of Joints 20 Condition of Joints 20 Groundwater Conditions 7 Sum 64 Class Number Description GOOD ROCK
SAMF	PLE #27	SAMPLE #28
Station/Location Depth (ft)	506+26\ 15' RT 29.8	Station/Location Depth (ft)
Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description	7 13 20 20 20 7 60	Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description
, , , , , , , , , , , , , , , , , , ,	TAIR ROOK	Description
SAMP	LE #29	SAMPLE #30
Station/Location Depth (ft)	LE #29	SAMPLE #30 Station/Location Depth (ft)
Station/Location	LE #29	Station/Location
Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions	LE #29	Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions
Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description	LE #31	Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number
Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description		Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description
Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description SAMP		Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description SAMPLE #32

D₅₀ AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

		Job No.	080506		
Creek Name	Station	Sample Type	Location	Depth (FT)	Aggregate Size (D50) (IN)
Piney Creek	311+00	Creek Bank	Construction C.L.	N/A	0.007

LEGEND

SOIL TYPES (SHOWN IN SYMBOL COLUMN) SAMPLER TYPES (PREDOMINANT TYPE SHOWN HEAVY) (SHOWN IN SAMPLE COLUMN) SHELBY TUBE **GRAVEL** SILT ORGANIC MATTER **UNDISTURBED** DISTURBED SAMPLE SAMPLE RECOVERY ROCK TYPES RECOVERY RECOVERY (SHOWN IN SYMBOL COLUMN) ROCK CORING SPLIT SPOON SANDSTONE SHALE LAYERS of or SHALE and SILTSTONE DOLOMITE SAMPLE % RECOVERY SANDSTONE RECOVERY **RECOVERY** INDICATED ON LOGS

TERMS DESCRIBING CONSIST	FENCY OR CONDITION
--------------------------	--------------------

GRANL	LAR SOIL		CLAY	CLA	AY-SHALE	SHALE			
'N' Value	Density	Nº 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	Penetratio	on		
		31-60	Hard	31-60	Hard	in 60 Blow	vs. Medium Har		
		0ver 60	Very Hard	Over 60	Very Hard	Less than	2'		
						Penetration	on		
						in 60 Blow	vsı 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 DIVISION - GEOTECHNICAL SEC.		BORIN			- 0				-	
	B NO		_	050341 Cleburne County		PAGE DATE:	1		F 2	rot 2	20. 20	7	_	
јо	B NA	ME:		Mill & Piney Creek Strs. & Apprs.(S)		TYPE C)E UB		-	IST 3	30, 201	. /		
				Route 25 Section 2	-	i i				» r - Г	Diamoi	nd C	ore	
ST	ATIO	N:		505+11		EQUIP			rugo		ME 75		OI C	
LC	CATI	ION:		Construction Centerline						0.	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,		
				tanley Bates		HAMM	ER C	ORREC	TION	FAC	TOR:	N	I/A	
CC	OMPI	LET	ION	I DEPTH: 38.3										
E E T H	E - - - - - - - - -	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 582.3	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	-	% T C R	% R Q D
5		14 15 15 15 15 15 15 15 15 15 15 15 15 15	X	Wet, Medium Dense, Brown Gravel with Sand			D			I	4 5-9			
												11	oq	88
10				SANDSTONE WITH FREQUENT SHALE SEAMS - Slightly Weathered, Cemented, Gray								10	oc	88
15				SANDSTONE WITH OCCASIONAL SHALE SEAMS AND LAYERS - Unweathered, Well Cemented, Gray								9	8	90
20				SHALE WITH FREQUENT SANDSTONE SEAMS - Unweathered, Hard, Dark Gray SANDSTONE - Unweathered, Well Cemented, Gray								10	od	80
25				SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Unweathered, Cemented to Well Cemented, Gray								10	id	66
30				SANDSTONE WITH OCCASIONAL SHALE SEAMS AND LAYERS - Unweathered, Cemented to Well Cemented, Gray								10	C a	80
-	/IAR	KS:	La	t: 35.4091045 Long: -92.1631248										-
			-											

************************************			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE			F 2					
JOB N			050341 Cleburne County		DATE:			Augu	st 3	0, 20	17		
JOB N	AME:		Mill & Piney Creek Strs. & Apprs.(S)	1	TYPE C		ILLING	h:					25
			Route 25 Section 2	1			Stem A	Auger				Core	;
STATI			505+11	1	EQUIPN	MENT	`:		Cì	VIE 7	5		
			Construction Centerline tanley Bates		HAMM	ED C	7D D C (**	TION E	: A (^1	r∩n.	-	N/A	
			DEPTH: 38.3		TLANVIIVI	ER CC	JKKEC	HONF	ACI	OK.		N/Z	-
D		S			T								
E	S Y	Α								50		0/	0/
P T	M	M P	DESCRIPTION OF MATERIAL	SOIL				HH	U.F) M		% T	% R
нI	В	L		GROUP	CI	ST		ÆIG	RC	BL	ż	С	Q D
	0	Ε			PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	ט
FT.	_	S	SURFACE ELEVATION: 582.3		LIN	1%	HH	DR	LB	<u>8</u>	PEJ		
											-	100	100
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			DIVISION - GEOTECHNICAL SEC.		PAGE			F 2					
JOB N	۷O.		050341 Cleburne County		DATE:			Aug	ıst 2	9, 20	17		
JOB N	NAME:		Mill & Piney Creek Strs. & Apprs.(S)	1	TYPE C								
			Route 25 Section 2	-			Stem A	Auge				Core	;
	ION:		505+61	. 1	EQUIP	MENT			- A	Acke			
	TION:		15' Left of Construction Centerline	1	****	a					,	NT/A	
			tanley Bates DEPTH: 38.8		HAMM	ER C	ORREC"	TION	FACT	OR:		N/A	-
	I		DEI 111. 30.0	Т				T-					-
D E P T H	S Y M B O	SAMPLE	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	
FT.	L	S	SURFACE ELEVATION: 582.7		PL/	%	LIN	D.W.	LBS	NO	PEF		
5		X	Wet, Loose, Brown Sand							3.	<u>.</u>		
	5:53	\vdash	SANDSTONE SANDSTONE WITH FREQUENT SHALE									00	-
		Ш	SEAMS - Slightly Weathered, Cemented, Gray	1								92	1
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 	apri Guni Apri		SHALE WITH FREQUENT SANDSTONE LAYERS - Unweathered, Hard, Dark Gray										
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				HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE		O. 2	5 2					
1	JOB N	-		050341 Cleburne County	- 1	DATE:				ıst 2	9, 20	17		
1	JOB N			Mill & Piney Creek Strs. & Apprs.(S)	9	TYPE C)F DR		_	.St 2	, 20	. ,		
		- 1-(1)		Route 25 Section 2				Stem A		- D	iamo	nd C	ore	;
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1	LOCA			15' Left of Construction Centerline	- 1									
1				tanley Bates	1	HAMM	ER CO	ORREC"	TION	FACT	OR:	I	N/A	
I				DEPTH: 38.8										
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		_	DIVISION - GEOTECHNICAL SEC.		PAGE	1		7 2				
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		_	Stanley Bates		HAMM	ER C	DRREC'	TION	FACT	TOR:	N	[/A
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II A			DIVISION - GEOTECHNICAL SEC.		PAGE			- 2		U. · · · · · · · · · · · · · · · · · · ·		
JOB N	O.		050341 Cleburne County		DATE:			August 1	29, 20)17		
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MATERIALS DIVISION - GEOTECHNICAL SEC. PAGE 1 OF 2	11.7			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.	BORIN PAGE			E 2					
JOB NAME: Mill & Piney Creek Sirs. & Apprs.(\$) Route 25 Section 2 STATION: 505+61 LOCATION: 10 Right of Construction Centerline LOCATION: 10 Right of Constructi									ıst 3	0, 20	17		
Route 25 Section 2 STATION: 505+81 LOCATION: 10 Right of Construction Centerline LOGGED BY: Stanley Bates D ROUTE 25 Section 2 The Computation DEPTH: 36.8 D S S A P M M D DESCRIPTION OF MATERIAL T B P D L S S S S S S P M M D DESCRIPTION OF MATERIAL T B P D L S S S S S S S S S S S S S S S S S S	1			•		F DR		_	<i></i>	0, 20	,		
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ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

December 29, 2016

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 050341

Mill & Piney Creek Strs. & Apprs. (S)

Route 25 Section 2 Cleburne County

Transmitted herewith is the requested Soil Survey, strength data and Resilient Modulus test results for the above referenced job. The project consists of replacing two bridges on Highway 25. Samples were obtained in the existing travel lanes and ditch line. There were no paved shoulders within the project limits. Due to job constraints, a bulk sample was not obtained. Based on soil type and jobs in the surrounding area an estimated R-Value of 20 is recommended.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of low plasticity sandy clay. Cross sections are not currently available; but it is assumed that the construction grade line will closely match that of the existing roadway. The subgrade soils are expected to provide a stable working platform with normal drying and compactive efforts, if the weather is favorable during construction. No slides were observed within the project limits.

Listed below is the additional information requested for use in developing the plans:

1. The Qualified Products List (QPL) indicates that Aggregate Base Course (Class CL-7) is available from commercial producers located in the vicinity of Bee Branch.

2. Asphalt Concrete Hot Mix

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.3	94.7
Binder Course	4.4	95.6
Base Course	3.9	96.1

Michael C. Benson Materials Engineer

MCB:pt:bjj Attachment

cc: State Constr. Eng. – Master File Copy

District 5 Engineer

System Information and Research Div.

G. C. File

JOB: 050341

Arkansas State Highway Transporation Department

JOB NAME: MILL & PINEY CREEK STRS. & APPRS.(S)

Materials Division

COUNTY NO. 12 **DATE TESTED** 12/19/2016

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR	#4	#10	#40	#80	#200	L.L.	<i>P.I</i> .	SOIL CLASS	<i>LAB</i> #:	%MOISTURE
109+00	18RT	0-5	BROWN	74	58	46	38	<i>E S</i> 30	25	8	A-2-4(0)	S499	18.2
109+60	05RT	0-5	BROWN	92	79	69	65	59	30	12	A-6(4)	S500	16.7
110+50	05LT	0-5	BROWN	91	80	70	62	54	25	10	A-4(2)	S501	22.3
110+80	18LT	0-5	BROWN	97	95	92	79	66	20	6	A-4(1)	S502	18.1
214+30	06RT	0-5	BROWN	95	90	86	64	46	21	8	A-4(1)	S503	15
214+30	18RT	0-5	BROWN	82	76	72	53	37	22	10	A-4(0)	S504	16.3
215+80	06LT	0-5	BROWN	97	94	91	70	54	24	12	A-6(3)	S505	14.8
215+80	18LT	0-5	BROWN	89	85	83	65	47	20	6	A-4(0)	S506	16.5

DATE TESTED

12/19/2016

Arkansas State Highway Transporation Department

Materials Division

JOB NAME: MILL & PINEY CREEK STRS. & APPRS.(S)

COUNTY NO. 12

050341

JOB:

Michael Benson, Materials Engineer

PAVEMENT SOUNDINGS AGG BASE CRS CL-7 AGG BASE CRS CL-7 AGG BASE CRS CL-7 AGG BASE CRS CL-7 AGG BASE CRS CL-7 AGG BASE CRS CL-7 2.0 AGG BASE CRS CL-7 7.0 AGG BASE CRS CL-7 ACHIMBC ACHMBC ACHIMBC ACHIMBC ACHMBC **ACHMBC** 1.5 1.5 ACHIMSC 6.25W ACHMSC 5.0W ACHINSC ACHMSC ACHIMSC ACHIMSC ACHIMSC ACHIMSC 5.0X 4.5 18RT 05RT 06LT STA.# LOC. 05LT 18LT 18RT **06RT** 18LT 109+00 109+60 214+30 215+80 110+80 215+80 110+50 214+30

Tuesday, December 27, 2016

W= MULTIPLE LAYERS, X=STRIPPED comments: Page 1 of 1

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS MATERIALS DIVISION

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

BATES		DATE SAMPLED - 12/07/16
E	INCC	DATE RECEIVED - 12/12/16 DATE TESTED - 12/19/16
- S499 - INFORMATION ONLY - 109+00 - 18RT	- 20164002 - S500 - INFORMATIO - 109+60 - 05RT	- 20164003 - S501 N ONLY - INFORMATION ONLY - 110+50 - 05LT - 0-5
- BROWN	BROWN	_ BROWN
		2.50 - 35 23 2.70 52.80 92 12 51.70
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- 25 - 8 - A-2-4(0)	- 30 - 12 - A-6(4)	25 10 A-4(2)
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REMARKS - W= MULTIPLE LAYERS, X=STRIPPED

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AASHTO TESTS 1 T24 T88 T89 T90 T265

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ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS MATERIALS DIVISION

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 12/19/16 SEQUENCE NO 2 JOB NUMBER - 050341 MATERIAL CODE - SSPS FEDERAL AID NO TO BE ASSIGNED SPEC. YEAR - 2014 PURPOSE - SOIL SURVEY SAMPLE SUPPLIER ID 1 SPEC. REMARKS - NO SPECIFICATION CHECK COUNTY/STATE - 12 SUPPLIER NAME - STATE DISTRICT NO 05 NAME OF PROJECT - MILL & PINEY CREEK STRS. & APPRS.(S) PROJECT ENGINEER - NOT APPLICABLE PIT/QUARRY - ARKANSAS LOCATION - CLEBURNE, COUNTY DATE SAMPLED - 12/07/16 SAMPLED BY - THORNTON/BATES DATE RECEIVED - 12/12/16 SAMPLE FROM - TEST HOLE DATE TESTED - 12/19/16												
MATERIAL DESC SOIL SURVEY PAVEMENT SOUNDINGS												
LAB NUMBER		20164004			20164005			201640	006			
SAMPLE ID	-	S502			S503			S504				
TEST STATUS	-		ION ONLY	-	INFORMATI	ON ONLY				ON ONLY		
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AASHTO SOIL	-	A-4(1)		-	A-4(1)		-	A-4 ()			
UNIFIED SOIL	-			-			_					
% MOISTURE CONTENT	-	18.1		-77.0	15.0			16	. 3			
ACHMSC	(IN) -			_	4.5		=					
ACHMBC	(IN) -			-	1.5		_					
AGG BASE CRS CL-7	(IN) -			-	7.0		*					
	-			-			*					
	_			_								
	_			_			=					
	-			_			*					
	-			-			7					
-				-			-					

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

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AASHTO TESTS : T24 T88 T89 T90 T265

#6

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS MATERIALS DIVISION

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 12/ JOB NUMBER - 050 FEDERAL AID NO TO PURPOSE - SOI SPEC. REMARKS - NO SUPPLIER NAME - STA NAME OF PROJECT - M PROJECT ENGINEER - N PIT/QUARRY - ARKAN LOCATION - CLEBU SAMPLED BY - THORNT SAMPLE FROM - TEST	341 BE ASSI L SURVE SPECIFI TE ILL & P OT APPL SAS RNE, CO ON/BATE	Y SAMPLE CATION CHECK INEY CREEK STRS. ICABLE UNTY	& APPRS.(S)	MATERIAL CODE - SPEC. YEAR - SUPPLIER ID COUNTY/STATE - DISTRICT NO DATE SAMPLED - DATE RECEIVED -	2014 1 12 05
MATERIAL DESC SOI	L SURVE	Y PAVEMENT SOUN	DINGS		
LAB NUMBER SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEET MAT'L COLOR MAT'L TYPE LATITUDE DEG-MIN- LONGITUDE DEG-MIN- PASSING 2 1 1/2	SEC - IN	20164007 S505 INFORMATION ONL 215+80 06LT 0-5 BROWN 35 24 34.70 92 09 46.90	- 20164008 - S506 Y - INFORMATION	ON ONLY	
3/8 NO. NO. NO.	IN 4 - 10 - 40 -	100 99 97 94 91 70 54	- 100 - 97 - 89 - 85 - 83 - 65 47		
LIQUID LIMIT PLASTICITY INDEX AASHTO SOIL UNIFIED SOIL % MOISTURE CONTENT	# # # # # # # # # # # # # # # # # # #		- 20 - 6 - A-4(0) - 16.5	18 12 12 15 15	
ACHMSC AGG BASE CRS CL-7	(IN) - 	5.0x 7.0	- mas		

REMARKS - W= MULTIPLE LAYERS, X=STRIPPED

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AASHTO TESTS : T24 T88 T89 T90 T265