ARKANSAS DEPARTMENT OF TRANSPORTATION

SUBSURFACE INVESTIGATION

STATE JOB NO. 110616

FEDERAL AID PROJECT NO. STPB-STPR-0039(21)

MCNULTY LAKE, SPRING & HOG TUSK CREEKS STRS. & APPRS. (S)

STATE HIGHWAY 78 **SECTION** 3

IN LEE **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

October 8, 2019

TO: Mr. Rick Ellis, Bridge Engineer

SUBJECT: Job No. 110616
McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Lee County
Route 78 Section 3

Transmitted herewith are a brief summary of the geology and site conditions, D50 scour analysis, summary of percent material passing #200 sieve and Atterberg Limits test results (for liquefaction susceptibility analysis), 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 to confirm the field identifications.

This project consists of replacing the bridge crossing McNulty Lake, on Route 78, west of Aubrey. The new bridge is to be constructed northeast of the existing alignment. Due to unfavorable field conditions and the depth of the water at the proposed bridge location only three borings were obtained. The obtained borings had to be offset to the existing roadway and bridge deck. The borings that were obtained are located at: 309+03 33' Lt. of Construction Centerline, 311+32 57' Lt. of Construction Centerline, and 313+35 35' Lt. of Construction Centerline.

Based on plans provided by Bridge Division and the findings from this subsurface investigation, it is anticipated that all bents will be founded on concrete filled steel shell piling.

Embankment analyses included global stability with seismic design consideration utilizing a horizontal acceleration coefficient of 0.351, as provided by Bridge Design. One-half of this value was used in the design. The proposed embankment configuration provides for a satisfactory Factor of Safety for seismic and static conditions. However, if the embankment geometry is altered in any way the embankment will need to be reanalyzed for seismic and static conditions.

Michael C. Benson
Materials Engineer

MCB:rpt:mlg

cc: State Construction Engineer - Master File Copy
District 1 Engineer
G.C. File

GEOLOGY AND SITE CONDITIONS
Job No. 110616

McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Lee County
Route 78 Section 3

Site Conditions

The existing bridge is an eight span bridge crossing McNulty Lake. The bridge deck is constructed of open grate steel (a bailey bridge). The deck is supported by timber pilings with timber caps and six sets of steel beams. The guardrail consists of steel supported by steel posts leading up to the bridge and timber posts on the bridge. Overhead power lines parallel the northwest side of the bridge and cross the roadway northeast of the bridge. McNulty Lake is part of the Big Creek and flows slowly to the southeast. The area around the channel is heavily wooded with agricultural fields beyond. (The wooded area adjacent to the channel was flooded at the time of observation.) A farm and residence are located a short distance northeast of the bridge.

Site Geology

The proposed bridge is located on the mapped outcrop of early Wisconsin Stage valley train level 2 (map symbol Pve 2). These deposits are composed of glacial outwash or valley train deposits laid down by swiftly flowing, sediment-choked braided streams and consist of sands and gravels. In many places, fine-grained silty and clayey sediments 15 or more feet thick overlie the coarser glacial outwash material in the relict channels. Much of this was deposited in Holocene times by the local drainage that now occupies these topographic lows. In the interfluve areas, sandy surface soils occur grading into clean sands and gravels within 20 to 25 feet of the surface. These coarse-grained deposits extend to depths of 100 to 180 feet. The valley train deposits at McNulty Lake are encountered in borings at a depth of 20 to 40 feet below ground level (bgl) (from 141.2 to 145.3 feet above MSL).

Subsurface Conditions

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

0 to 20 Feet:	Varies from moist to wet, soft to medium stiff, reddish brown to gray **sandy clay** to **clay** to very loose to loose gray **silt** to **sand with silt**.
20 to 60 Feet:	Varies from wet, soft to medium stiff, reddish brown to gray **clay** to very loose to dense gray **silty sand** to **sandy silt**.
60 to 70 Feet:	Consists of wet, medium dense to very dense, gray **sand with silt** to **silty sand**. Many samples in this zone contain a trace to some gravel.
70 to 101.5 Feet:	Consists of wet, medium dense to very dense, gray **sand with silt** to **sand with gravel** to **gravel with sand**.
110 to 121.5 Feet:	Consists of moist to wet, very dense to hard, gray **sandy clay** to **silty sand**.

D_{50} AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS **Job No.** 110616								
Creek Name	**Station**	**Sample Type**	**Location**	**Depth (ft.)**	**Plastic Limit**	**Liquid Limit**	**Soil Description**	**Aggregate Size (D50) (in.)**
McNulty Lake	309+79	Creek Bank	20' RT Const. C.L.	N/A	19	25	CL-ML Sandy Silty Clay	Less than 0.0029

Lab Test Summary

Project Number: 110616
Project Name: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)

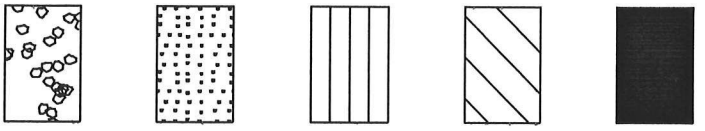
Station	Location	Depth (ft.)	Plastic Limit	Liquid Limit	Plasticity Index	% Passing No. 200	Unified Soil Classification
309+03	33' Lt Const. C.L.	4.5	NT			NT	-
309+03	33' Lt Const. C.L.	9.5	NT			89	-
309+03	33' Lt Const. C.L.	15	12	32	20	60	CL
309+03	33' Lt Const. C.L.	20	17	50	33	96	CH
309+03	33' Lt Const. C.L.	25	NP			36	SM
309+03	33' Lt Const. C.L.	30	NP			34	SM
309+03	33' Lt Const. C.L.	35	NP			57	ML
309+03	33' Lt Const. C.L.	40	NP			10	SP-SM
309+03	33' Lt Const. C.L.	45	NP			27	SM
309+03	33' Lt Const. C.L.	50	NP			7	SP-SM
309+03	33' Lt Const. C.L.	55	NP			15	SM
309+03	33' Lt Const. C.L.	60	NP			13	SM
309+03	33' Lt Const. C.L.	65	NP			17	SM
309+03	33' Lt Const. C.L.	70	NP			8	SP-SM
309+03	33' Lt Const. C.L.	75	NP			9	SP-SM
309+03	33' Lt Const. C.L.	80	NP			7	SP-SM
309+03	33' Lt Const. C.L.	85	NP			6	SP-SM
309+03	33' Lt Const. C.L.	90	NP			5	SP-SM
309+03	33' Lt Const. C.L.	95	NP			8	SP-SM
309+03	33' Lt Const. C.L.	100	NP			6	SP-SM
313+35	35' Lt Const. C.L.	4.5	NT			94	-
313+35	35' Lt Const. C.L.	9.5	NT			93	-
313+35	35' Lt Const. C.L.	15	NT			87	-
313+35	35' Lt Const. C.L.	20	15	30	15	94	CL
313+35	35' Lt Const. C.L.	25	NP			61	ML
313+35	35' Lt Const. C.L.	30	NP			60	ML
313+35	35' Lt Const. C.L.	35	20	44	24	89	CL
313+35	35' Lt Const. C.L.	40	NP			29	SM
313+35	35' Lt Const. C.L.	45	NP			9	SW-SM
313+35	35' Lt Const. C.L.	50	NP			38	SM
313+35	35' Lt Const. C.L.	55	NT			30	-
313+35	35' Lt Const. C.L.	60	NP			7	SP-SM
313+35	35' Lt Const. C.L.	65	NP			8	SP-SM
313+35	35' Lt Const. C.L.	70	NP			4	SP
313+35	35' Lt Const. C.L.	75	NP			4	SW
313+35	35' Lt Const. C.L.	80	NP			6	SP-SM
313+35	35' Lt Const. C.L.	85	NP			5	SP-SM
313+35	35' Lt Const. C.L.	90	NP			6	SP-SM
313+35	35' Lt Const. C.L.	95	NP			7	SP-SM
313+35	35' Lt Const. C.L.	100	NP			5	SP-SM

LEGEND

SOIL TYPES

(SHOWN IN SYMBOL COLUMN)

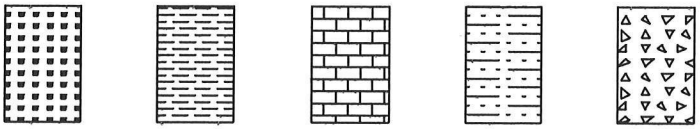
(PREDOMINANT TYPE SHOWN HEAVY)



GRAVEL | SAND | SILT | CLAY | ORGANIC MATTER

ROCK TYPES

(SHOWN IN SYMBOL COLUMN)

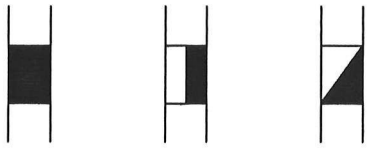


SANDSTONE | SHALE or SILTSTONE | LIMESTONE or DOLOMITE | ALTERNATING LAYERS of SHALE and SANDSTONE | OTHER

SAMPLER TYPES

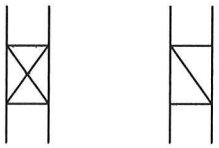
(SHOWN IN SAMPLE COLUMN)

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" Value	Density	"N" 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"	
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: $\frac{6}{8-9} \Rightarrow 8+9=17 blows/ft$. 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 3

JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 309+03
LOCATION: 33' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 6, 2019
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

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.	% TCR	% RQD
			SURFACE ELEVATION: 182.4								
5		X	Moist, Very Loose, Brown Sand with Silt	-							
				NT					2 2-2		
				-							
10		X	Moist, Medium Stiff, Gray Silty Clay	NT					2 3-4		
				-							
15		X	Wet, Medium Stiff, Gray Sandy Lean Clay	CL	12		32		2 2-3		
				-							
20		X	Wet, Medium Stiff, Reddish Brown Fat Clay	CH	17		50		3 3-5		
				-							
25		X	Wet, Medium Dense, Gray Silty Sand	SM	NP				5 5-6		
				-							
30		X		SM	NP				6 6-7		
				-							
35											

REMARKS: * NT = not tested.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
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JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 309+03
LOCATION: 33' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 6, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

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.	% TCR	% RQD
			SURFACE ELEVATION: 182.4								
40			Wet, Loose, Gray Sandy Silt	ML -	NP				2 2-3		
45			Wet, Medium Dense, Gray Poorly Graded Sand with Silt	SP-SM -	NP				6 8-11		
50			Wet, Loose, Gray Silty Sand	SM -	NP				2 3-5		
55			Wet, Medium Dense, Gray Poorly Graded Sand with Silt	SP-SM -	NP				6 7-6		
60			Wet, Medium Dense, Gray Silty Sand	SM -	NP				8 6-10		
65				SM -	NP				9 9-11		
70				SM -	NP				4 6-14		

REMARKS: * NT = not tested.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
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JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 309+03
LOCATION: 33' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 6, 2019
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 182.4	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
75			Wet, Dense, Gray Poorly Graded Sand with Silt and Trace Gravel	SP-SM	NP				10 21-16		
80			Wet, Medium Dense, Gray Poorly Graded Sand with Silt and Trace Gravel	SP-SM	NP				10 13-16		
85			Wet, Very Dense, Gray Poorly Graded Sand with Silt and Trace Gravel	SP-SM	NP				14 27-30		
90			Wet, Dense, Gray Poorly Graded Sand with Silt and Trace Gravel	SP-SM	NP				14 22-25		
95				SP-SM	NP				11 16-20		
100				SP-SM	NP				15 18-20		
			Wet, Dense, Gray Poorly Graded Sand with Silt and Some Gravel	SP-SM	NP				14 22-25		
105			Boring Terminated								

REMARKS: * NT = not tested.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 1 OF 3

JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 311+32
LOCATION: 57' Left of Construction Centerline
LOGGED BY: Troy Frazier

DATE: August 13 and 14, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

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.	% TCR	% RQD
			SURFACE ELEVATION: 165.3								
5											
									3 4-4		
10			Wet, Loose, Gray Silt								
									3 5-4		
15											
20											
									5 9-6		
25			Wet, Medium Dense, Gray Silty Sand								
									5 8-8		
30											
									12 16-18		
			Wet, Dense, Gray Silty Sand								
35											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 2 OF 3

JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 311+32
LOCATION: 57' Left of Construction Centerline
LOGGED BY: Troy Frazier

DATE: August 13 and 14, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 165.3	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
40			Wet, Medium Dense, Gray Sand with Silt						8 12-18		
45			Wet, Dense, Gray Sand with Silt						8 16-24 9 13-19		
50											
55									11 16-18		
60			Wet, Medium Dense, Gray Sand with Silt and Trace Gravel						7 10-15		
65			Wet, Dense, Gray Sand with Silt and Trace Gravel						11 14-18		
70			Wet, Dense, Gray Sand with Silt						12 16-16		

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 3 OF 3

JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S) Route 78 Sec. 3
STATION: 311+32
LOCATION: 57' Left of Construction Centerline
LOGGED BY: Troy Frazier

DATE: August 13 and 14, 2019
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

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.	% TCR	% RQD
			SURFACE ELEVATION: 165.3								
75			Wet, Very Dense, Gray Sand with Silt and Trace Gravel						15 30-35		
80			Wet, Medium Dense, Gray Sand with Silt and Trace Gravel						9 12-15 9 13-13		
85											
90			Wet, Medium Dense, Gray Sand with Gravel						15 14-14		
95			Wet, Dense, Gray Sand with Gravel						17 21-23		
100			Wet, Medium Dense, Gray Gravel with Sand						4 16-14 4 10-16		
105			Boring Terminated								

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 1 OF 3

JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 313+35
LOCATION: 35' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 7, 2019
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 181.2	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
				-							
5		X		NT*					2 2-3		
			Moist, Medium Stiff, Gray Sandy Clay	-							
10		X		NT					3 3-4		
				-							
15											
		X		NT					2 2-2		
			Wet, Soft, Gray Clay	-							
20											
		X		CL	15		30		3 2-3		
			Wet, Medium Stiff, Gray Lean Clay	-							
25											
		X		ML	NP				3 2-2		
			Wet, Very Loose, Gray Sandy Silt	-							
30											
		X		ML	NP				3 8-5		
			Wet, Medium Dense, Gray Sandy Silt	-							
35											

REMARKS: * NT = not tested.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 2 OF 3

JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 313+35
LOCATION: 35' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 7, 2019
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 181.2	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
40		X	Wet, Soft, Gray Lean Clay	CL -	44		20		1 2-2		
45		X	Wet, Medium Dense, Gray Silty Sand	SM -	NP				9 14-11		
50		X	Wet, Medium Dense, Gray Sand with Silt	SW-SM -	NP				7 9-11		
55		X	Wet, Loose, Gray Silty Sand	SM -	NP				6 3-6		
60		X	Wet, Loose, Gray Silty Sand	NT -					7 5-5		
65		X	Wet, Medium Dense, Poorly Graded Sand with Silt	SP-SM -	NP				7 9-16		
70		X	Wet, Very Dense, Poorly Graded Sand with Silt	SP-SM -	NP				16 27-31		

REMARKS: * NT = not tested.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 3 OF 3

JOB NO. 110616 Lee County
JOB NAME: McNulty Lake & Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Sec. 3
STATION: 313+35
LOCATION: 35' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 7, 2019
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 181.2	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
75			Wet, Medium Dense, Poorly Graded Sand with Gravel	SP -	NP				12 12-11		
80			Wet, Medium Dense, Well Graded Sand with Gravel	SW -	NP				8 9-10		
85			Wet, Dense, Poorly Graded Sand with Silt and Trace Gravel	SP-SM -					11 16-18		
90			Wet, Medium Dense, Poorly Graded Sand with Silt and Trace Gravel	SP-SM -	NP				10 13-15		
95			Wet, Very Dense, Poorly Graded Sand with Silt and Trace Gravel	SP-SM -	NP				14 31-38		
100			Wet, Very Dense, Poorly Graded Sand with Silt and Gravel	SP-SM -	NP				19 33-55		
105			Wet, Dense, Poorly Graded Sand with Silt and Gravel	SP-SM	NP				15 22-22		
			Boring Terminated								

REMARKS: * NT = not tested.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

April 3, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 110616
McNulty Lake and Hog Tusk Creek Strs. & Apprs. (S)
Route 78 Section 3
Lee 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 the bridges crossing Hog Tusk Creek and McNulty Lake on Highway 78. Samples were obtained in the existing travel lanes and ditch line. There were no paved shoulders within the project limits.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of moderate to highly plastic clay. Cross sections are not currently available; 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.

Additional earthwork requirements will be made upon request when plans are further developed. Due to seismic considerations embankment recommendations will be made after the subsurface investigation is completed.

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 at the river ports near West Helena.

2. Asphalt Concrete Hot Mix

PG 64-22

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.3	94.7
Binder Course	4.3	95.7
Base Course	4.0	96.0

PG 70-22

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.3	94.7
Binder Course	4.3	95.7
Base Course	4.0	96.0

PG 76-22

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.3	94.7
Binder Course	4.3	95.7
Base Course	3.8	96.2

Michael C. Benson
Materials Engineer

MCB:pt:bjj
Attachment
cc: State Constr. Eng. – Master File Copy
District 1 Engineer
System Information and Research Div.
G. C. File

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY STRENGTH TEST REPORT ***

DATE - 03/17/2017
JOB NUMBER - 110616

SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 39
DISTRICT NO. - 01

JOB NAME - MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)

STATION LIMITS	R-VALUE AT 240 psi
BEGIN JOB - END JOB	LESS THAN 5
RESILIENT MODULUS	
STA. 105+00	7299
STA. 206+00	5991

REMARKS -
-

AASHTO TESTS : T190

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS
RECOMPACTED SAMPLES

Job No.	110616	**Material Code**	SSRVPS
Date Sampled:	2/14/17	**Station No.:**	105+00
Date Tested:	March 15, 2017	**Location:**	15RT
Name of Project:	MCNULTY LAKE & HOG TUSK CREEK STRS. & APPRS. (S)		
County:	**Code:** 39 **Name:** LEE		
Sampled By:	THORNTON/TAYLOR	**Depth:**	0-5
Lab No.:	20170611	**AASHTO Class:**	A-6(11)
Sample ID:	RV175	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

1. Testing Information:

Preconditioning - Permanent Strain > 5% (Y=Yes or N= No)	N
Testing - Permanent Strain > 5% (Y=Yes or N=No)	N
Number of Load Sequences Completed (0-15)	15

2. Specimen Information:

Specimen Diameter (in):	
Top	3.96
Middle	3.95
Bottom	3.95
Average	3.95
Membrane Thickness (in):	0.01
Height of Specimen, Cap and Base (in):	8.01
Height of Cap and Base (in):	0.00
Initial Length, Lo (in):	8.01
Initial Area, Ao (sq. in):	12.20
Initial Volume, AoLo (cu. in):	97.73

3. Soil Specimen Weight:

Weight of Wet Soil Used (g):	2990.20

4. Soil Properties:

Optimum Moisture Content (%):	17.5
Maximum Dry Density (pcf):	103.9
95% of MDD (pcf):	98.7
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	2990.20
Compaction Moisture content (%):	17.7
Compaction Wet Density (pcf):	116.59
Compaction Dry Density (pcf):	99.05
Moisture Content After Mr Test (%):	17.7

6. Quick Shear Test (Y=Yes, N=No, N/A=Not Applicable): #VALUE!

7. Resilient Modulus, Mr: 6976(Sc)^-0.11245(S3)^0.33964

8. Comments _____

9. Tested By: GW **Date:** March 15, 2017

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS
RECOMPACTED SAMPLES

Job No.	110616	**Material Code**	SSRVPS
Date Sampled:	2/14/17	**Station No.:**	105+00
Date Tested:	March 15, 2017	**Location:**	15RT
Name of Project:	MCNULTY LAKE & HOG TUSK CREEK STRS. & APPRS. (S)		
County:	**Code:** 39 **Name:** LEE		
Sampled By:	THORNTON/TAYLOR	**Depth:**	0-5
Lab No.:	20170611	**AASHTO Class:**	A-6(11)
Sample ID:	RV175	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

PARAMETER	*Chamber Confining Pressure*	*Nominal Maximum Axial Stress*	*Actual Applied Max. Axial Load*	*Actual Applied Cyclic Load*	*Actual Applied Contact Load*	*Actual Applied Max. Axial Stress*	*Actual Applied Cyclic Stress*	*Actual Applied Contact Stress*	*Average Recov Def. LVDT 1 and 2*	*Resilient Strain*	*Resilient Modulus*
DESIGNATION	S_3	S_{cyclic}	P_{max}	P_{cyclic}	$P_{contact}$	S_{max}	S_{cyclic}	$S_{contact}$	H_{avg}	ε_r	M_r
UNIT	psi	psi	lbs	lbs	lbs	psi	psi	psi	in	in/in	psi
Sequence 1	6.0	2.0	25.2	22.3	2.8	2.1	1.8	0.2	0.00119	0.00015	12,353
Sequence 2	6.0	4.0	47.3	44.5	2.9	3.9	3.6	0.2	0.00252	0.00031	11,579
Sequence 3	6.0	6.0	69.7	66.1	3.6	5.7	5.4	0.3	0.00405	0.00051	10,701
Sequence 4	6.0	8.0	93.2	87.1	6.1	7.6	7.1	0.5	0.00581	0.00072	9,850
Sequence 5	6.0	10.0	116.3	107.7	8.5	9.5	8.8	0.7	0.00758	0.00095	9,324
Sequence 6	4.0	2.0	25.1	22.2	2.8	2.1	1.8	0.2	0.00136	0.00017	10,697
Sequence 7	4.0	4.0	46.8	44.0	2.9	3.8	3.6	0.2	0.00290	0.00036	9,973
Sequence 8	4.0	6.0	68.3	65.5	2.8	5.6	5.4	0.2	0.00459	0.00057	9,367
Sequence 9	4.0	8.0	91.7	86.4	5.3	7.5	7.1	0.4	0.00635	0.00079	8,927
Sequence 10	4.0	10.0	115.0	107.3	7.7	9.4	8.8	0.6	0.00816	0.00102	8,632
Sequence 11	2.0	2.0	24.6	21.8	2.9	2.0	1.8	0.2	0.00191	0.00024	7,496
Sequence 12	2.0	4.0	46.2	43.4	2.8	3.8	3.6	0.2	0.00376	0.00047	7,585
Sequence 13	2.0	6.0	67.3	64.4	2.8	5.5	5.3	0.2	0.00574	0.00072	7,367
Sequence 14	2.0	8.0	89.4	85.0	4.4	7.3	7.0	0.4	0.00764	0.00095	7,309
Sequence 15	2.0	10.0	112.5	105.7	6.8	9.2	8.7	0.6	0.00951	0.00119	7,299

TESTED BY GW DATE March 15, 2017

REVIEWED BY _____ DATE _____

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

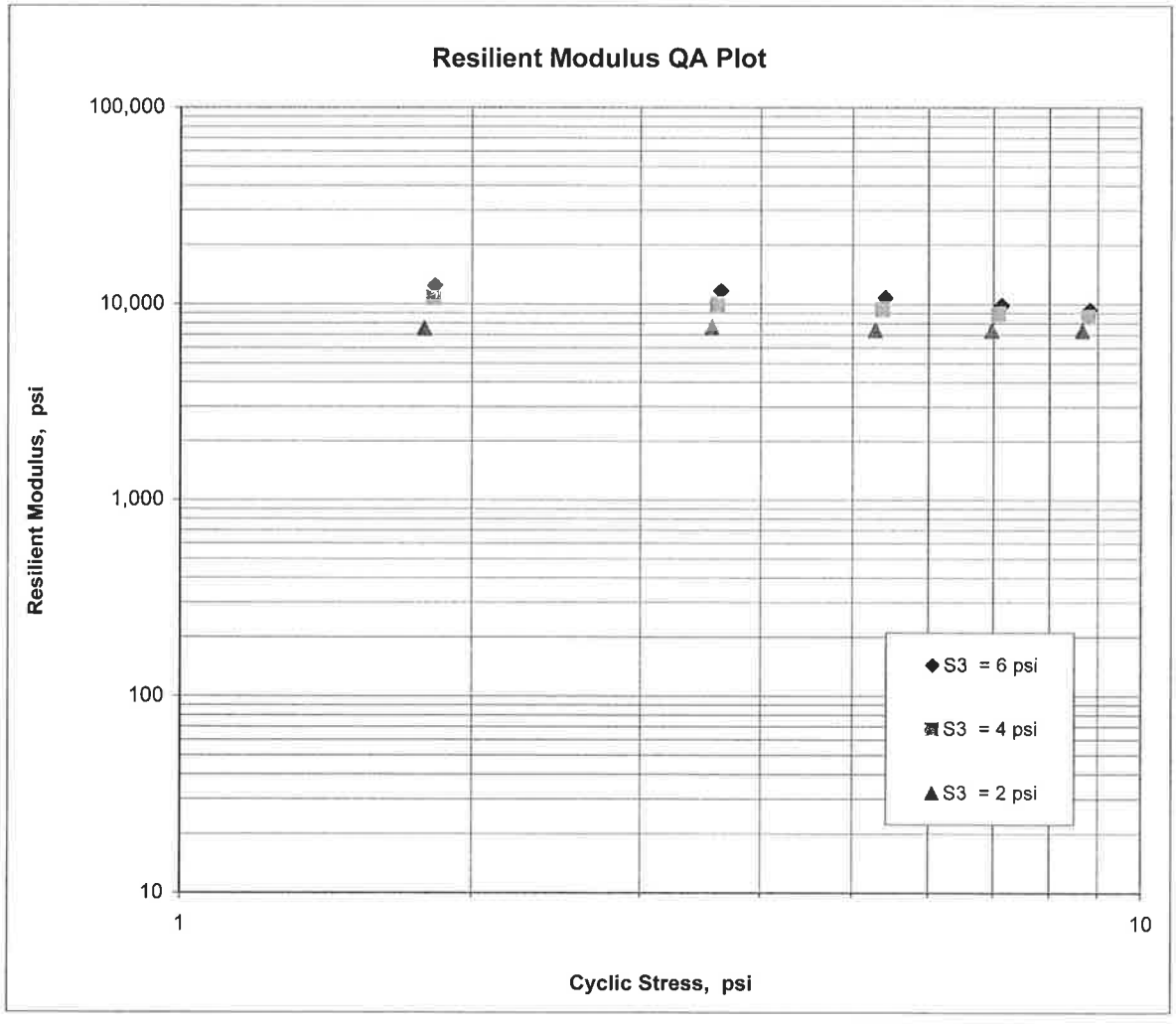
MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS
RECOMPACTED / THINWALL TUBE SAMPLES

Job No.	110616	**Material Code**	SSRVPS
Date Sampled:	2/14/17	**Station No.:**	105+00
Date Tested:	March 15, 2017	**Location:**	15RT
Name of Project:	MCNULTY LAKE & HOG TUSK CREEK STRS. & APPRS. (S)		
County:	**Code:** 39 **Name:** LEE		
Sampled By:	THORNTON/TAYLOR	**Depth:**	0-5
Lab No.:	20170611	**AASHTO Class:**	A-6(11)
Sample ID:	RV175	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

$$M_R = K1\,(S_C)^{K2}\,(S_3)^{K5}$$

K1 = 6,976
K2 = -0.11245
K5 = 0.33964
R^2 = 0.94



ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS
RECOMPACTED SAMPLES

Job No.	110616	**Material Code**	SSRVPS
Date Sampled:	2/14/17	**Station No.:**	206+00
Date Tested:	March 15, 2017	**Location:**	18LT
Name of Project:	MCNULTY LAKE & HOG TUSK CREEK STRS. & APPRS. (S)		
County:	**Code:** 39 **Name:** LEE		
Sampled By:	THORNTON/TAYLOR	**Depth:**	0-5
Lab No.:	20170612	**AASHTO Class:**	A-6(12)
Sample ID:	RV176	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

1. Testing Information:

Preconditioning - Permanent Strain > 5% (Y=Yes or N= No)	N
Testing - Permanent Strain > 5% (Y=Yes or N=No)	N
Number of Load Sequences Completed (0-15)	15

2. Specimen Information:

Specimen Diameter (in):	
Top	3.95
Middle	3.95
Bottom	3.96
Average	3.95
Membrane Thickness (in):	0.01
Height of Specimen, Cap and Base (in):	8.02
Height of Cap and Base (in):	0.00
Initial Length, Lo (in):	8.02
Initial Area, Ao (sq. in):	12.20
Initial Volume, AoLo (cu. in):	97.85

3. Soil Specimen Weight:

Weight of Wet Soil Used (g):	3075.90

4. Soil Properties:

Optimum Moisture Content (%):	17.1
Maximum Dry Density (pcf):	104
95% of MDD (pcf):	98.8
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	3075.90
Compaction Moisture content (%):	17.3
Compaction Wet Density (pcf):	119.78
Compaction Dry Density (pcf):	102.11
Moisture Content After Mr Test (%):	16.9

6. Quick Shear Test (Y=Yes, N=No, N/A=Not Applicable): #VALUE!

7. Resilient Modulus, Mr: 6263(Sc)^-0.15197(S3)^0.35901

8. Comments _____

9. Tested By: GW **Date:** March 15, 2017

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS
RECOMPACTED SAMPLES

Job No.	110616	**Material Code**	SSRVPS
Date Sampled:	2/14/17	**Station No.:**	206+00
Date Tested:	March 15, 2017	**Location:**	18LT
Name of Project:	MCNULTY LAKE & HOG TUSK CREEK STRS. & APPRS. (S)		
County:	**Code:** 39 **Name:** LEE		
Sampled By:	THORNTON/TAYLOR	**Depth:**	0-5
Lab No.:	20170612	**AASHTO Class:**	A-6(12)
Sample ID:	RV176	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

PARAMETER	*Chamber Confining Pressure*	*Nominal Maximum Axial Stress*	*Actual Applied Max. Axial Load*	*Actual Applied Cyclic Load*	*Actual Applied Contact Load*	*Actual Applied Max. Axial Stress*	*Actual Applied Cyclic Stress*	*Actual Applied Contact Stress*	*Average Recov Def. LVDT 1 and 2*	*Resilient Strain*	*Resilient Modulus*
DESIGNATION	S_3	S_{cyclic}	P_{max}	P_{cyclic}	$P_{contact}$	S_{max}	S_{cyclic}	$S_{contact}$	H_{avg}	ε_r	M_r
UNIT	psi	psi	lbs	lbs	lbs	psi	psi	psi	in	in/in	psi
Sequence 1	6.0	2.0	25.2	22.4	2.8	2.1	1.8	0.2	0.00134	0.00017	11,000
Sequence 2	6.0	4.0	47.6	44.7	2.8	3.9	3.7	0.2	0.00285	0.00036	10,306
Sequence 3	6.0	6.0	70.2	66.5	3.6	5.8	5.5	0.3	0.00467	0.00058	9,370
Sequence 4	6.0	8.0	93.8	87.7	6.1	7.7	7.2	0.5	0.00675	0.00084	8,541
Sequence 5	6.0	10.0	117.3	108.8	8.5	9.6	8.9	0.7	0.00893	0.00111	8,010
Sequence 6	4.0	2.0	25.2	22.4	2.8	2.1	1.8	0.2	0.00153	0.00019	9,676
Sequence 7	4.0	4.0	47.1	44.3	2.8	3.9	3.6	0.2	0.00337	0.00042	8,645
Sequence 8	4.0	6.0	68.5	65.8	2.8	5.6	5.4	0.2	0.00540	0.00067	8,000
Sequence 9	4.0	8.0	92.2	87.1	5.1	7.6	7.1	0.4	0.00753	0.00094	7,598
Sequence 10	4.0	10.0	115.8	108.2	7.6	9.5	8.9	0.6	0.00985	0.00123	7,225
Sequence 11	2.0	2.0	25.1	22.3	2.7	2.1	1.8	0.2	0.00219	0.00027	6,698
Sequence 12	2.0	4.0	46.5	43.8	2.7	3.8	3.6	0.2	0.00439	0.00055	6,555
Sequence 13	2.0	6.0	67.5	64.8	2.7	5.5	5.3	0.2	0.00676	0.00084	6,309
Sequence 14	2.0	8.0	90.1	85.9	4.2	7.4	7.0	0.3	0.00908	0.00113	6,223
Sequence 15	2.0	10.0	113.1	106.4	6.7	9.3	8.7	0.5	0.01168	0.00146	5,991

TESTED BY GW DATE March 15, 2017

REVIEWED BY _____ DATE _____

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS

RECOMPACTED / THINWALL TUBE SAMPLES

Job No.	110616	**Material Code**	SSRVPS
Date Sampled:	2/14/17	**Station No.:**	206+00
Date Tested:	March 15, 2017	**Location:**	18LT
Name of Project:	MCNULTY LAKE & HOG TUSK CREEK STRS. & APPRS. (S)		
County:	**Code:** 39 **Name:** LEE		
Sampled By:	THORNTON/TAYLOR	**Depth:**	0-5
Lab No.:	20170612	**AASHTO Class:**	A-6(12)
Sample ID:	RV176	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

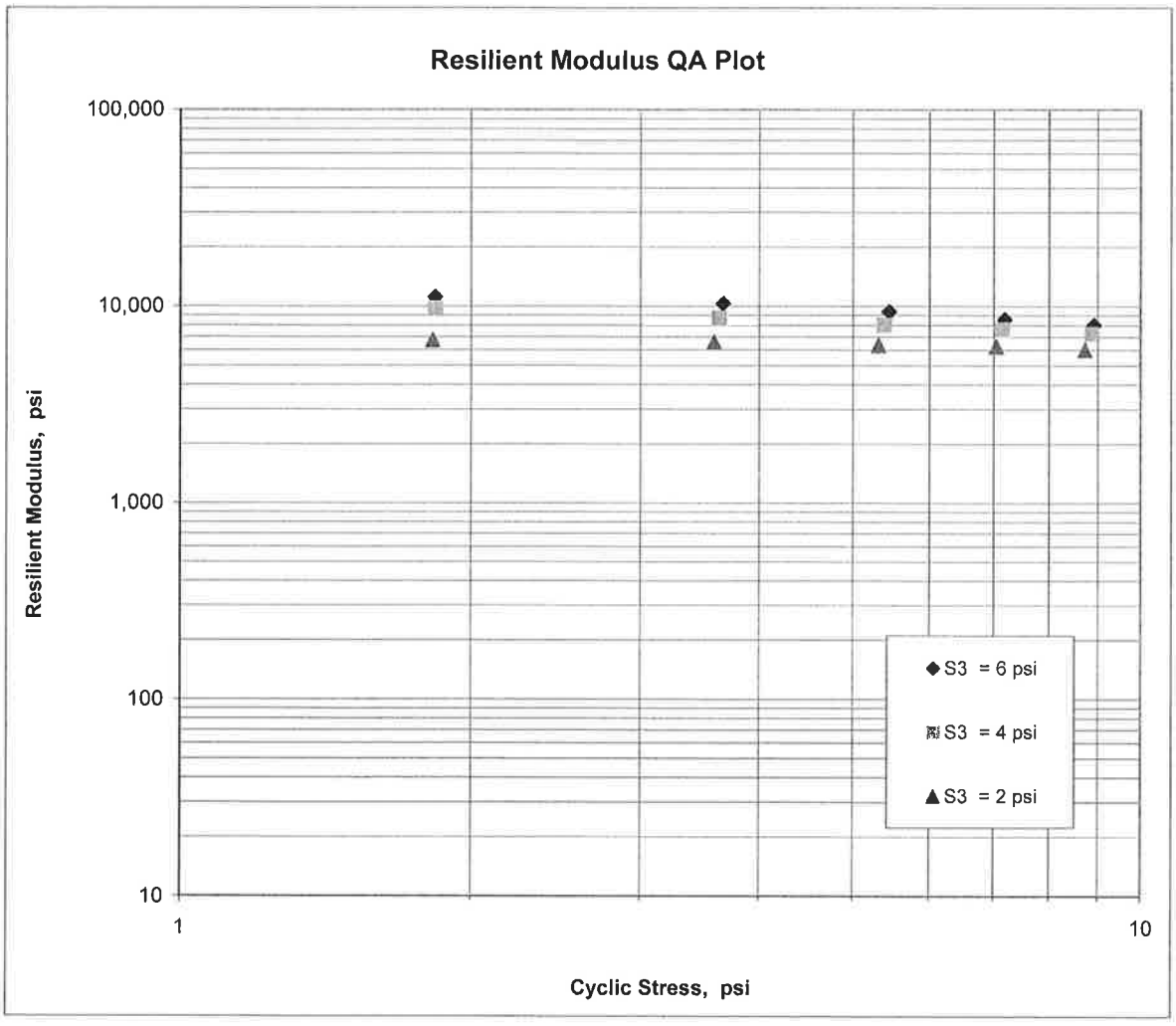
$$M_R = K1\ (S_C)^{K2}\ (S_3)^{K5}$$

K1 = 6,263

K2 = -0.15197

K5 = 0.35901

R^2 = 0.96



JOB: 110616

JOB NAME: MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)

COUNTY NO. 39 **DATE TESTED** 3/8/2017

Arkansas State Highway Transporation Department

Materials Division

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR	#4	#10	#40	#80	#200	L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				S	I	E	V	E S					
105+00	15'RT	0-5	BROWN	100				93	33	12	A-6(11)	RV175	
206+00	18'LT	0-5	BROWN	100				93	32	13	A-6(12)	RV176	
105+00	05'RT	0-5	BROWN	100				98	46	27	A-7-6(29)	S163	27.2
105+00	13'RT	0-5	BROWN	100				99	35	14	A-6(15)	S164	27.2
109+00	15'LT	0-5	BROWN	100				96	28	8	A-4(7)	S165	24.8
116+00	15'LT	0-5	BR/GR	98	97	93	87	81	25	7	A-4(4)	S166	17.2
120+00	05'LT	0-5	BROWN	100				94	34	18	A-6(16)	S167	24.3
120+00	15'LT	0-5	BROWN	98	96	93	91	88	28	11	A-6(8)	S168	19.7
203+00	05'RT	0-5	BROWN	100				97	43	25	A-7-6(26)	S169	25.4
203+00	13'RT	0-5	BROWN	100				99	40	21	A-6(22)	S170	26.3
206+00	15'LT	0-5	BROWN	100				99	42	26	A-7-6(27)	S171	21.9
216+00	15'LT	0-5	BROWN	100				90	33	15	A-6(13)	S172	21.7
222+00	05'LT	0-5	BROWN	95	90	84	81	79	33	18	A-6(13)	S173	23.8
222+00	15'LT	0-5	BROWN	100				92	40	23	A-6(21)	S174	24.2

comments: X=STRIPPED

Wednesday, March 22, 2017

JOB: 110616
JOB NAME: MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)
COUNTY NO. 39

Arkansas State Highway Transporation Department
Materials Division
Michael Benson, Materials Engineer

DATE TESTED
3/8/2017

PAVEMENT SOUNDINGS

STA.#	LOC.		
105+00	13'RT	ACHMSC	SAND ASPHALT
		---	---
105+00	05'RT	ACHMSC	SAND ASPHALT
		1.0X	**5.0**
109+00	15'LT	ACHMSC	SAND ASPHALT
		---	---
116+00	15'LT	ACHMSC	SAND ASPHALT
		---	---
120+00	15'LT	ACHMSC	SAND ASPHALT
		---	---
120+00	05'LT	ACHMSC	SAND ASPHALT
		1.0	**5.0**
203+00	13'RT	ACHMSC	SAND ASPHALT
		---	---
203+00	05'RT	ACHMSC	SAND ASPHALT
		1.0	**7.5**
206+00	15'LT	ACHMSC	SAND ASPHALT
		---	---
216+00	15'LT	ACHMSC	SAND ASPHALT
		---	---
222+00	15'LT	ACHMSC	SAND ASPHALT
		---	---
222+00	05'LT	ACHMSC	SAND ASPHALT
		1.25	**7.5**

comments: X=STRIPPED

Wednesday, March 22, 2017

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 03/21/17
JOB NUMBER - 110616
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
SEQUENCE NO. - 1
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 39
DISTRICT NO. - 01
NAME OF PROJECT - MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - LEE COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
DATE SAMPLED - 02/14/17
DATE RECEIVED - 02/17/17
DATE TESTED - 03/08/17
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20170599	20170600	20170601
SAMPLE ID	S163	S164	S165
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	105+00	105+00	109+00
LOCATION	05'RT	13'RT	15'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 42 11.80	34 42 11.80	34 42 15.90
LONGITUDE DEG-MIN-SEC	90 57 41.80	90 57 41.60	90 57 38.20
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.			
NO. 4	100	100	100
NO. 10			
NO. 40			
NO. 80			
NO. 200	98	99	96
LIQUID LIMIT	46	35	28
PLASTICITY INDEX	27	14	8
AASHTO SOIL	A-7-6(29)	A-6(15)	A-4(7)
UNIFIED SOIL			
% MOISTURE CONTENT	27.2	27.2	24.8
ACHMSC (IN)	1.0X	---	---
SAND ASPHALT (IN)	5.0	---	---

REMARKS - X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 03/21/17
JOB NUMBER - 110616
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
SEQUENCE NO. - 2
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 39
DISTRICT NO. - 01
NAME OF PROJECT - MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - LEE COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
DATE SAMPLED - 02/14/17
DATE RECEIVED - 02/17/17
DATE TESTED - 03/08/17
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20170602	20170603	20170604
SAMPLE ID	S166	S167	S168
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	116+00	120+00	120+00
LOCATION	15'LT	05'LT	15'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BR/GR	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 42 21.00	34 42 21.50	34 42 21.60
LONGITUDE DEG-MIN-SEC	90 57 31.90	90 57 27.20	90 57 27.20
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			100
3/8 IN.	100		99
NO. 4	98	100	98
NO. 10	97		96
NO. 40	93		93
NO. 80	87		91
NO. 200	81	94	88
LIQUID LIMIT	25	34	28
PLASTICITY INDEX	7	18	11
AASHTO SOIL	A-4(4)	A-6(16)	A-6(8)
UNIFIED SOIL			
% MOISTURE CONTENT	17.2	24.3	19.7
ACHMSC (IN)	---	1.0	---
SAND ASPHALT (IN)	---	5.0	---

REMARKS - X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 03/21/17
JOB NUMBER - 110616
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE

SEQUENCE NO. - 3
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 39
DISTRICT NO. - 01

NAME OF PROJECT - MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - LEE COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE

DATE SAMPLED - 02/14/17
DATE RECEIVED - 02/17/17
DATE TESTED - 03/08/17

MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20170605	20170606	20170607
SAMPLE ID	S169	S170	S171
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	203+00	203+00	206+00
LOCATION	05'RT	13'RT	15'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 42 53.70	34 42 53.70	34 42 56.50
LONGITUDE DEG-MIN-SEC	90 57 13.20	90 57 13.10	90 57 12.50
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.			
NO. 4	100	100	100
NO. 10			
NO. 40			
NO. 80			
NO. 200	97	99	99
LIQUID LIMIT	43	40	42
PLASTICITY INDEX	25	21	26
AASHTO SOIL	A-7-6(26)	A-6(22)	A-7-6(27)
UNIFIED SOIL			
% MOISTURE CONTENT	25.4	26.3	21.9
ACHMSC (IN)	1.0	---	---
SAND ASPHALT (IN)	7.5	---	---

REMARKS - X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 03/21/17
JOB NUMBER - 110616
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE

SEQUENCE NO. - 4
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 39
DISTRICT NO. - 01

NAME OF PROJECT - MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - LEE COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE

DATE SAMPLED - 02/14/17
DATE RECEIVED - 02/17/17
DATE TESTED - 03/08/17

MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20170608	20170609	20170610
SAMPLE ID	S172	S173	S174
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	216+00	222+00	222+00
LOCATION	15'LT	05'LT	15'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 43 .60	34 43 .60	34 43 .70
LONGITUDE DEG-MIN-SEC	90 57 3.40	90 56 56.20	90 56 56.20
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.		100	
NO. 4	100	95	100
NO. 10		90	
NO. 40		84	
NO. 80		81	
NO. 200	90	79	92
LIQUID LIMIT	33	33	40
PLASTICITY INDEX	15	18	23
AASHTO SOIL	A-6(13)	A-6(13)	A-6(21)
UNIFIED SOIL			
% MOISTURE CONTENT	21.7	23.8	24.2
ACHMSC (IN)	---	1.25	---
SAND ASPHALT (IN)	---	7.5	---

REMARKS - X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 03/21/17
JOB NUMBER - 110616
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
SEQUENCE NO. - 1
MATERIAL CODE - RV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 39
DISTRICT NO. - 01
NAME OF PROJECT - MCNULTY LAKE & HOG TUSK CREEK STRS.& APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - LEE COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
DATE SAMPLED - 02/14/17
DATE RECEIVED - 02/17/17
DATE TESTED - 03/08/17
MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS

LAB NUMBER	20170611	20170612
SAMPLE ID	RV175	RV176
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY
STATION	105+00	206+00
LOCATION	15'RT	18'LT
DEPTH IN FEET	0-5	0-5
MAT'L COLOR	BROWN	BROWN
MAT'L TYPE		
LATITUDE DEG-MIN-SEC	34 42 11.90	34 42 56.60
LONGITUDE DEG-MIN-SEC	90 56 4.50	90 57 12.60
% PASSING 2 IN.		
1 1/2 IN.		
3/4 IN.		
3/8 IN.		
NO. 4	100	100
NO. 10		
NO. 40		
NO. 80		
NO. 200	93	93
LIQUID LIMIT	33	32
PLASTICITY INDEX	12	13
AASHTO SOIL	A-6(11)	A-6(12)
UNIFIED SOIL		
% MOISTURE CONTENT		

REMARKS - X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265