ARKANSAS DEPARTMENT OF TRANSPORTATION

SUBSURFACE INVESTIGATION

STATE JOB NO. 070375

FEDERAL AID PROJECT NO. NHPP-0020(21)

ALSOBROOK SLOUGH STR. & APPRS. (S)

STATE HIGHWAY 8 **SECTION** 6

IN DALLAS **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

January 2, 2019

TO: Mr. Rick Ellis, Bridge Engineer

SUBJECT: Job No. 070375
Alsobrook Slough Str. & Apprs. (S)
Dallas County
Route 8 Section 6

Transmitted herewith are a brief summary of the geology and site conditions, D50 scour 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 Highway 8 Bridge, over Alsobrook Slough, between the towns of Manning and Princeton. The new bridge will be constructed on the existing alignment and a temporary detour structure will be constructed south of the existing. Three of the six requested borings were inaccessible due to steep slopes and high water levels in the channel. The three borings that were not obtained were located at: 109+99.5 C.L. Construction, 110+30.5 C.L. Construction, and 110+61.5 C.L. Construction. The three borings that were obtained had to be offset, due to traffic restrictions. The obtained borings are anticipated to represent uniform site conditions and should be adequate to design the proposed prestressed concrete pile foundations.

Embankment analyses included global stability with seismic design consideration utilizing a horizontal acceleration coefficient of 0.131, as provided by Bridge Design. The proposed embankment configuration provides for a satisfactory Factor of Safety for seismic and static conditions. 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 7 Engineer
G.C. File

GEOLOGY AND SITE CONDITIONS
Job No. 070375
Alsobrook Slough Str. & Apprs. (S)
Dallas County
Route 8 Section 6

Site Conditions

The existing bridge has seven spans and is constructed of a precast concrete deck with concrete caps on timber pilings and concrete end walls. The guardrail is composed of steel held up by concrete posts. A concrete footing has been poured around bent four with steel pilings placed on both sides of the pier. Some pilings appear to show some rotation. Alsobrook Slough flows in a southerly direction. The area surrounding the bridge is moderately wooded.

Site Geology

The proposed bridge locations are located on deposits mapped as Quaternary alluvial deposits. Alluvial deposits are typically composed of gravels, sands, silts, clays, and mixtures of any and/or all of these. The alluvial deposits here are located over the Sparta Formation of the Claiborne Group of Paleogene age.

The Paleogene deposits were encountered between 14.5 to 20.5 feet below ground level. The Sparta at the job site is composed of primarily silty sands down to a depth of 75 to 85 feet below ground level. At this depth, the lithology changes to consist primarily of sandy clay.

Subsurface Conditions

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

0 to 25 Feet:	Varies from moist to wet, very loose to dense, brown and gray **sandy silt** to **silty sand** to **clayey sand** to very soft **sandy clay**. **Gravel** was encountered in some samples in this zone. **Cobbles and boulders** were encountered in two of the borings in the upper five feet of this zone.
25 to 75 Feet:	Consists of wet, medium dense to very dense, gray to brown **silty sand** to **silt with sand**. One sample in this zone contained hard **sandy clay**.
75 to 95 Feet:	Varies from wet, dense to very dense, brown to gray **silt with sand** to **clayey sand** to moist, very stiff to hard **clay**.
95 to 101.5 Feet:	Consists of moist to wet, hard, brown to gray **sandy clay** to **clay**.

D_{50} AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

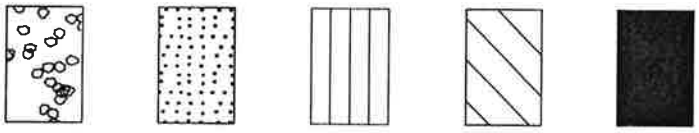
Job No. 070375					
Creek Name	**Station**	**Sample Type**	**Location**	**Depth (FT)**	**Aggregate Size (D50) (IN)**
Alsobrook Slough	110+24	Slough Bank	24' Left of Construction C.L.	N/A	0.0029

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

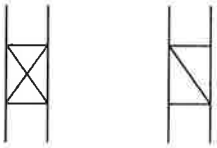
SAMPLER TYPES

(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, 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. 070375 Dallas County
JOB NAME: Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
STATION: 109+68
LOCATION: 21' Right of Construction Centerline
LOGGED BY: Connor Bunton

DATE: Sept 19 and 20, 2018
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779
HAMMER CORRECTION FACTOR: N/A

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: 214.9								
5			Wet, Very Soft, Gray Sandy Clay						0 0-1		
10			Wet, Dense, Light Brown Silty Sand with Gravel						11 17-20		
15			Wet, Medium Dense, Brown Clayey Sand						5 11-14		
20									24 28-24		
25			Wet, Very Dense, Brown Silty Sand						18 28-33		
30									20 35-44 (10")		
35											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
PAGE 2 OF 3

JOB NO. 070375 Dallas County
JOB NAME: Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
STATION: 109+68
LOCATION: 21' Right of Construction Centerline
LOGGED BY: Connor Bunton

DATE: Sept 19 and 20, 2018
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779

HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 214.9	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
40			Wet, Very Dense, Brown Silty Sand with Trace Lignite						16 26-32 (7")		
45			Wet, Medium Dense, Brown Silty Sand						10 12-16		
50			Wet, Very Dense, Brown Silty Sand with Trace Pyrite Nodules						31 48-21 (10")		
55			Wet, Very Dense, Brown Clayey Sand with Trace Pyrite Nodules						7 25-38		
60			Wet, Very Dense, Brown Silty Sand						20 30-26 (7")		
65			Wet, Very Dense, Brown Silty Sand with Trace Lignite						18 42-35 (8")		
70			Wet, Very Dense, Brown Sand with Some Clay						26 58-16 (7")		

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
PAGE 3 OF 3

JOB NO. 070375 Dallas County
JOB NAME: Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
STATION: 109+68
LOCATION: 21' Right of Construction Centerline
LOGGED BY: Connor Bunton

DATE: Sept 19 and 20, 2018
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779
HAMMER CORRECTION FACTOR: N/A

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: 214.9								
									21 48-31 (10")		
75			Wet, Very Dense, Brown Silty Sand								
									19 37-40		
80											
									22 41-25		
			Wet, Very Dense, Brown Sand with Some Clay								
85											
									10 13-18		
90											
									11 18-18		
			Moist, Hard, Brown Sandy Clay								
95											
									7 15-31		
100											
									15 24-21		
			Moist, Hard, Brown Clay								
			Boring Terminated								
105											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 1 OF 3

JOB NO. 070375 Dallas County
JOB NAME: Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
STATION: 110+94
LOCATION: 22' Right of Construction Centerline
LOGGED BY: Connor Bunton

DATE: Sept 10, 11, and 12, 2018
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779

HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 216.4	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Sandy Clay with Gravel, Cobbles, and Boulders	-							
10		X	Moist, Loose, Brown and Gray Silty Sand with Trace Gravel*	SM -	NP				4 3-3		
15		X	Wet, Medium Dense, Gray Silty Sand with Trace Gravel	SM -					3 6-12		
20		X	Wet, Medium Dense, Gray Sandy Silt	ML -	NP				8 14-16		
25		X	Wet, Dense, Gray Silty Sand	SM -	NP				25 28-22		
30		X	Wet, Dense, Gray Silty Sand with Gravel	SM -	NP				7 22-16		
35		X	Wet, Dense, Gray Silty Sand with Some Lignite	SM -	NP				6 9-12		

REMARKS: * Water level reading at 17 hours was approximately 8' below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 2 OF 3

JOB NO. 070375 Dallas County
JOB NAME: Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
STATION: 110+94
LOCATION: 22' Right of Construction Centerline
LOGGED BY: Connor Bunton

DATE: Sept 10, 11, and 12, 2018
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779

HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 216.4	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
40			Wet, Hard, Gray Sandy Lean Clay	CL -	21		29		5 10-22		
45			Wet, Dense, Gray Silty Sand	SM -	NP				17 17-22		
50			Wet, Dense, Gray Sandy Silt with Trace Pyrite Nodules	ML -	NP				6 10-28		
55			Wet, Very Dense, Gray Silty Sand	SM -	NP				20 38-38		
60			Wet, Very Dense, Gray Silty Sand	SM -	NP				44 34-20		
65			Wet, Very Dense, Gray Silt with Sand	ML -	NP				23 25-48		
70			Wet, Very Dense, Gray Silty Sand	SM -	NP				16 32-42		

REMARKS: * Water level reading at 17 hours was approximately 8' below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 3 OF 3

JOB NO. 070375 Dallas County
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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: 216.4								
75			Wet, Very Dense, Gray Silty Sand with Some Lignite	SM -	NP				24 45-21 (8")		
80			Wet, Very Stiff, Gray Lean Clay with Sand and Some Lignite	CL -	16		34		8 12-17		
85			Wet, Dense, Gray Silt with Sand	ML -	27		38		10 17-16		
90			Wet, Dense, Gray Clayey Sand	SC -	21		25		12 20-23		
95			Wet, Medium Dense, Gray Silt with Sand	ML -	26		39		9 12-17		
100			Wet, Hard, Gray Lean Clay	CL -	22		31		10 14-19		
105			Wet, Hard, Gray Lean Clay with Sand	CL	23		34		8 16-20		
			Boring Terminated								

REMARKS: * Water level reading at 17 hours was approximately 8' below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 1 OF 3

JOB NO. 070375 Dallas County
JOB NAME: Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
STATION: 111+26
LOCATION: 19' Right of Construction Centerline
LOGGED BY: Connor Bunton

DATE: Sept 13, 17, and 18, 2018
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779

HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 101.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 218.9	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Clayey Sand with Gravel and Cobbles								
		X	Moist, Loose, Reddish Brown Clayey Sand with Some Gravel						6 5-5		
10		X	Wet, Very Loose, Gray Clayey Sand*						0 0-2		
15		X	Wet, Medium Dense, Gray Gravel with Sand						8 9-15		
20		X	Wet, Medium Dense, Brown Sand with Clay and Trace Pyrite Nodules						3 9-19		
25		X	Wet, Dense, Brown Silty Sand						18 16-18		
30		X							22 41-37 (10")		
35											

REMARKS: * Water level was measured at approximately 10.6 feet below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 2 OF 3

JOB NO. 070375 Dallas County
JOB NAME: Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
STATION: 111+26
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LOGGED BY: Connor Bunton

DATE: Sept 13, 17, and 18, 2018
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779

HAMMER CORRECTION FACTOR: N/A

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: 218.9								
			Wet, Very Dense, Brown Silty Sand						37 59-4 (7")		
40											
			Wet, Dense, Brown Clayey Sand with Some Lignite						12 20-21		
45											
			Wet, Very Dense, Brown Silty Sand						28 22-31		
50											
			Wet, Very Dense, Brown Silty Sand with Some Lignite						15 29-42		
55											
			Wet, Very Dense, Brown Silty Sand Trace Pyrite Nodules						36 48-16 (7")		
60											
									29 55-16 (8")		
65											
			Wet, Very Dense, Brown Silty Sand						28 41-31 (10")		
70											

REMARKS: * Water level was measured at approximately 10.6 feet below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
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DATE: Sept 13, 17, and 18, 2018
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash
EQUIPMENT: Acker 1779
HAMMER CORRECTION FACTOR: N/A

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: 218.9								
									32 48-20 (9")		
75											
									9 12-15		
80											
			Moist, Hard, Brown Sandy Clay						8 14-17		
85											
									7 15-29		
90											
			Moist, Hard, Brown Sandy Clay with Trace Gravel						13 13-32		
95											
									10 14-20		
100			Moist, Hard, Brown Sandy Clay								
									9 23-20		
			Boring Terminated								
105											

REMARKS: * Water level was measured at approximately 10.6 feet below ground level.

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

December 20, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 070375
Alsobrook Slough Str. & Apprs. (S)
Route 8 Section 6
Dallas 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 bridge crossing Alsobrook Creek on Highway 8. 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 low plasticity clayey sand and gravel. Cross-sections are not currently available, but it is assumed 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 processing if the weather is favorable during construction.

The proposed detour crosses the ditch on the south side of Highway 8, and based on seasonal conditions may contain standing water. Prior to embankment construction the ditch should be drained and all organic material should be undercut, anticipated to be no more than 2 feet. The embankment may be constructed with locally available unspecified material.

Additional earthwork recommendations will be made upon request when plans are further developed and cross-sections are available.

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 Bismarck.

2. Asphalt Concrete Hot Mix

	PG64-22	
Type	**Asphalt Cement %**	**Mineral Aggregate %**
Surface Course	5.3	94.7
Binder Course	4.4	95.6
Base Course	4.0	96.0

	PG70-22	
Type	**Asphalt Cement %**	**Mineral Aggregate %**
Surface Course	5.2	94.8
Binder Course	4.4	95.6
Base Course	4.0	96.0

Type	PG76-22 Asphalt Cement %	Mineral Aggregate %
Surface Course	5.2	94.8
Binder Course	3.8	96.2
Base Course	3.6	96.4

Michael C. Benson
Materials Engineer

MCB:pt:bjj
Attachment
cc: State Constr. Eng. – Master File Copy
District 7 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 - 12/06/2017
JOB NUMBER - 070375

SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 20
DISTRICT NO. - 07

JOB NAME - ALSOBROOK SLOUGH STR. & APPRS.(S)

STATION LIMITS	R-VALUE AT 240 psi
BEGIN JOB - END JOB	20
RESILIENT MODULUS	
STA. 106 + 00	8433

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.	070375	**Material Code**	SSRVPS
Date Sampled:	11/20/17	**Station No.:**	106+00
Date Tested:	November 30, 2017	**Location:**	15'RT
Name of Project:	ALSOBROOK SLOUGH STR. & APPRS. (S)		
County:	**Code:** 20 **Name:** DALLAS		
Sampled By:	FRAZIER/BOUIE/JORDAN	**Depth:**	0-5
Lab No.:	20173461	**AASHTO Class:**	A-2-4 (0)
Sample ID:	RV692	**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	3.95
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):	12.18
Initial Volume, AoLo (cu. in):	97.68

3. Soil Specimen Weight:

Weight of Wet Soil Used (g):	3393.70

4. Soil Properties:

Optimum Moisture Content (%):	10.4
Maximum Dry Density (pcf):	122.6
95% of MDD (pcf):	116.5
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	3393.70
Compaction Moisture content (%):	10.4
Compaction Wet Density (pcf):	132.38
Compaction Dry Density (pcf):	119.91
Moisture Content After Mr Test (%):	10.2

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

7. Resilient Modulus, Mr: 7961(Sc)^-0.13355(S3)^0.43565

8. Comments _____

9. Tested By: GW **Date:** November 30, 2017

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

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

Job No.	070375	**Material Code**	SSRVPS
Date Sampled:	11/20/17	**Station No.:**	106+00
Date Tested:	November 30, 2017	**Location:**	15'RT
Name of Project:	ALSOBROOK SLOUGH STR. & APPRS. (S)		
County:	**Code:** 20 **Name:** DALLAS		
Sampled By:	FRAZIER/BOUIE/JORDAN	**Depth:**	0-5
Lab No.:	20173461	**AASHTO Class:**	A-2-4 (0)
Sample ID:	RV692	**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	0.00093	0.00012	15,935
Sequence 2	6.0	4.0	47.4	44.6	2.8	3.9	3.7	0.2	0.00193	0.00024	15,193
Sequence 3	6.0	6.0	70.2	66.6	3.6	5.8	5.5	0.3	0.00309	0.00039	14,184
Sequence 4	6.0	8.0	94.4	88.5	5.9	7.8	7.3	0.5	0.00440	0.00055	13,235
Sequence 5	6.0	10.0	118.5	110.2	8.3	9.7	9.0	0.7	0.00563	0.00070	12,881
Sequence 6	4.0	2.0	25.0	22.4	2.6	2.1	1.8	0.2	0.00107	0.00013	13,748
Sequence 7	4.0	4.0	46.7	44.0	2.6	3.8	3.6	0.2	0.00242	0.00030	11,964
Sequence 8	4.0	6.0	68.0	65.3	2.7	5.6	5.4	0.2	0.00386	0.00048	11,136
Sequence 9	4.0	8.0	92.1	87.0	5.0	7.6	7.1	0.4	0.00520	0.00065	11,018
Sequence 10	4.0	10.0	115.9	108.5	7.4	9.5	8.9	0.6	0.00663	0.00083	10,777
Sequence 11	2.0	2.0	24.4	21.8	2.6	2.0	1.8	0.2	0.00142	0.00018	10,058
Sequence 12	2.0	4.0	45.1	42.5	2.6	3.7	3.5	0.2	0.00318	0.00040	8,798
Sequence 13	2.0	6.0	65.8	63.0	2.7	5.4	5.2	0.2	0.00492	0.00061	8,433
Sequence 14	2.0	8.0	88.3	84.1	4.2	7.3	6.9	0.3	0.00655	0.00082	8,458
Sequence 15	2.0	10.0	111.6	105.0	6.6	9.2	8.6	0.5	0.00806	0.00101	8,580

TESTED BY GW DATE November 30, 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.	070375	**Material Code**	SSRVPS
Date Sampled:	11/20/17	**Station No.:**	106+00
Date Tested:	November 30, 2017	**Location:**	15'RT
Name of Project:	ALSOBROOK SLOUGH STR. & APPRS. (S)		
County:	**Code:** 20 **Name:** DALLAS		
Sampled By:	FRAZIER/BOUIE/JORDAN	**Depth:**	0-5
Lab No.:	20173461	**AASHTO Class:**	A-2-4 (0)
Sample ID:	RV692	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

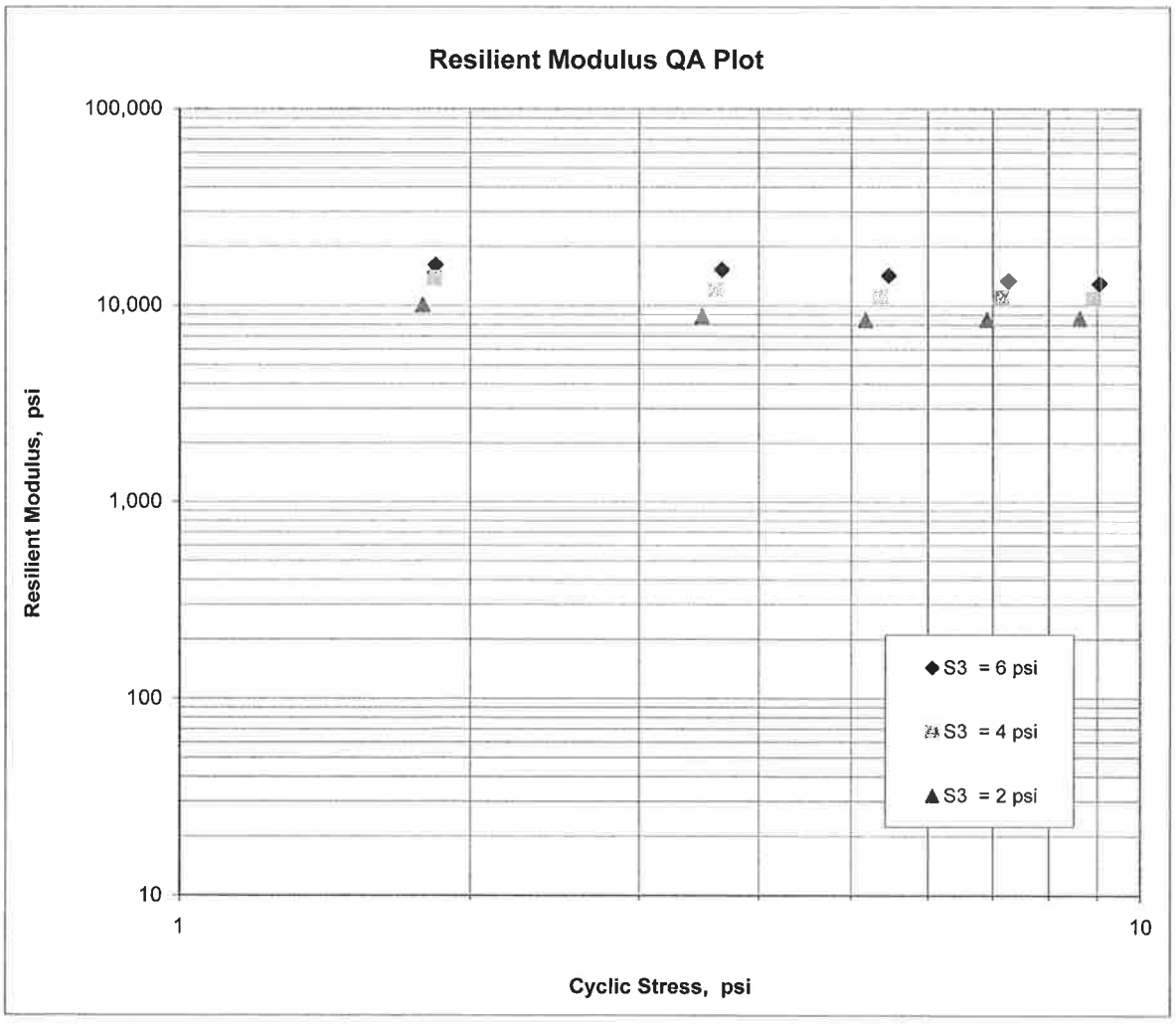
$$M_R = K1\ (S_C)^{K2}\ (S_3)^{K5}$$

K1 = 7,961

K2 = -0.13355

K5 = 0.43565

R^2 = 0.98



JOB: 070375

JOB NAME: ALSOBROOK SLOUGH STR. & APPRS.(S)

COUNTY NO. 20 **DATE TESTED** 11/29/2017

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					
106+00	15RT	0-5	RD/BR	69	58	50	37	27	ND	NP	A-2-4(0)	RV692	
106+00	05RT	0-5	BR/GR	94	85	76	59	44	19	6	A-4(0)	S688	11
106+00	15RT	0-5	RD/BR	57	49	42	31	23	21	7	A-2-4(0)	S689	18.5
115+00	05LT	0-5	BROWN	95	91	87	78	57	23	9	A-4(2)	S690	17.8
115+00	15LT	0-5	BROWN	92	89	86	71	45	ND	NP	A-4(0)	S691	12

comments: W=MULTIPLE LAYERS

Thursday, December 07, 2017

JOB: 070375
JOB NAME: ALSOBROOK SLOUGH STR. & APPRS.(S)

COUNTY NO. 20

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

DATE TESTED
11/29/2017

PAVEMENT SOUNDINGS

STA.#	LOC.			
106+00	05RT	ACHMSC	ACHMBC	AGG. BASE CRS CL-5
		6.0W	**1.25**	**7.0**
106+00	15RT	ACHMSC	ACHMBC	AGG. BASE CRS CL-5
		---	---	---
115+00	05LT	ACHMSC	ACHMBC	AGG. BASE CRS CL-5
		7.0W	**1.25**	**6.0**

comments: W=MULTIPLE LAYERS

Thursday, December 07, 2017

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

DATE - 11/29/17
JOB NUMBER - 070375
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - ALSOBROOK SLOUGH STR. & APPRS.(S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - DALLAS, COUNTY
SAMPLED BY - FRAIZER/BOUIE/JORDAN
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 1
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 20
DISTRICT NO. - 07

DATE SAMPLED - 11/20/17
DATE RECEIVED - 11/21/17
DATE TESTED - 11/29/17

LAB NUMBER	20173457	20173458	20173459
SAMPLE ID	S688	S689	S690
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	106+00	106+00	115+00
LOCATION	05RT	15RT	05LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BR/GR	RD/BR	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	33 59 23.50	33 59 23.40	33 59 26.90
LONGITUDE DEG-MIN-SEC	92 43 57.00	92 43 57.00	92 43 47.40
% PASSING 2 IN.			
1 1/2 IN.		100	
3/4 IN.		94	
3/8 IN.	100	74	100
NO. 4	94	57	95
NO. 10	85	49	91
NO. 40	76	42	87
NO. 80	59	31	78
NO. 200	44	23	57
LIQUID LIMIT	19	21	23
PLASTICITY INDEX	6	7	9
AASHTO SOIL	A-4(0)	A-2-4(0)	A-4(2)
UNIFIED SOIL			
% MOISTURE CONTENT	11.0	18.5	17.8
ACHMSC (IN)	6.0W	---	7.0W
ACHMBC (IN)	1.25	---	1.25
AGG. BASE CRS CL-5 (IN)	7.0	---	6.0

REMARKS - W=MULTIPLE LAYERS

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	- 11/29/17	SEQUENCE NO.	- 2
JOB NUMBER	- 070375	MATERIAL CODE	- SSRVPS
FEDERAL AID NO.	- TO BE ASSIGNED	SPEC. YEAR	- 2014
PURPOSE	- SOIL SURVEY SAMPLE	SUPPLIER ID.	- 1
SPEC. REMARKS	- NO SPECIFICATION CHECK	COUNTY/STATE	- 20
SUPPLIER NAME	- STATE	DISTRICT NO.	- 07
NAME OF PROJECT	- ALSOBROOK SLOUGH STR. & APPRS.(S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- DALLAS, COUNTY	DATE SAMPLED	- 11/20/17
SAMPLED BY	- FRAIZER/BOUIE/JORDAN	DATE RECEIVED	- 11/21/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 11/29/17

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

LAB NUMBER	20173460
SAMPLE ID	S691
TEST STATUS	INFORMATION ONLY
STATION	115+00
LOCATION	15LT
DEPTH IN FEET	0-5
MAT'L COLOR	BROWN
MAT'L TYPE	
LATITUDE DEG-MIN-SEC	33 59 27.00
LONGITUDE DEG-MIN-SEC	92 43 47.50
% PASSING 2 IN.	
1 1/2 IN.	
3/4 IN.	100
3/8 IN.	96
NO. 4	92
NO. 10	89
NO. 40	86
NO. 80	71
NO. 200	45
LIQUID LIMIT	ND
PLASTICITY INDEX	NP
AASHTO SOIL	A-4(0)
UNIFIED SOIL	
% MOISTURE CONTENT	12.0

REMARKS - W=MULTIPLE LAYERS

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	- 11/29/17	SEQUENCE NO.	- 1
JOB NUMBER	- 070375	MATERIAL CODE	- RV
FEDERAL AID NO.	- TO BE ASSIGNED	SPEC. YEAR	- 2014
PURPOSE	- SOIL SURVEY SAMPLE	SUPPLIER ID.	- 1
SPEC. REMARKS	- NO SPECIFICATION CHECK	COUNTY/STATE	- 20
SUPPLIER NAME	- STATE	DISTRICT NO.	- 07
NAME OF PROJECT	- ALSOBROOK SLOUGH STR. & APPRS.(S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- DALLAS, COUNTY	DATE SAMPLED	- 11/20/17
SAMPLED BY	- FRAIZER/BOUIE/JORDAN	DATE RECEIVED	- 11/21/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 11/29/17

MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS

LAB NUMBER	20173461
SAMPLE ID	RV692
TEST STATUS	INFORMATION ONLY
STATION	106+00
LOCATION	15RT
DEPTH IN FEET	0-5
MAT'L COLOR	RD/BR
MAT'L TYPE	
LATITUDE DEG-MIN-SEC	33 59 23.40
LONGITUDE DEG-MIN-SEC	92 43 57.00
% PASSING 2 IN.	
1 1/2 IN.	
3/4 IN.	100
3/8 IN.	88
NO. 4	69
NO. 10	58
NO. 40	50
NO. 80	37
NO. 200	27
LIQUID LIMIT	ND
PLASTICITY INDEX	NP
AASHTO SOIL	A-2-4(0)
UNIFIED SOIL	
% MOISTURE CONTENT	

REMARKS - W=MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265