

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. 070417

FEDERAL AID PROJECT NO. NHPP-0052(22)

TWO BAYOU CREEK STR. & APPRS. (S)

STATE HIGHWAY 274 SECTION 1 & 2

IN CALHOUN & OUACHITA 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 STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

March 7, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 070417
Two Bayou Creek Str. & Apprs. (S)
Route 274 Section 1
Ouachita & Calhoun Counties

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 Two Bayou Creek on Highway 274. Samples were obtained in the existing travel lanes and ditch line. There were no paved shoulders within the project.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of moderately plastic sandy clay with varying amounts of gravel. 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.

Additional earthwork requirements will be made upon request when plans are further developed.

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 near Malvern.
2. Asphalt Concrete Hot Mix

PG 64-22

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

PG 70-22

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

PG 76-22

Type	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 - 03/01/2017
JOB NUMBER - 070417

SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 76
DISTRICT NO. - XX

JOB NAME - TWO BAYOU CREEK STR.& APPRS.(S)

* STATION LIMITS R-VALUE AT 240 psi *

BEGIN JOB - END JOB 10

RESILIENT MODULUS
315+00 10042

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.	070417	Material Code	SSRVPS
Date Sampled:	2/1/2017	Station No.:	315+00
Date Tested:	February 28, 2017	Location:	22'RT
Name of Project:	TWO BAYOU CREEK STR. & APPRS. (S)		
County:	Code: 52	Name: OUACHITA	
Sampled By:	THORNTON/BATES	Depth:	0-5
Lab No.:	20170423	AASHTO Class:	A-6(1)
Sample ID:	RV112	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	3.94
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):	3211.10
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4. Soil Properties:

Optimum Moisture Content (%):	12.1
Maximum Dry Density (pcf):	117.2
95% of MDD (pcf):	111.3
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	3211.10
Compaction Moisture content (%):	12.1
Compaction Wet Density (pcf):	125.25
Compaction Dry Density (pcf):	111.73
Moisture Content After Mr Test (%):	11.8

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

#VALUE!

7. Resilient Modulus, Mr:

11537(Sc)^{-0.18073}(S3)^{0.32212}

8. Comments

9. Tested By:

G.WENDLAND

Date: February 28, 2017

**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION**

**AAASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS
RECOMPACTED SAMPLES**

Job No. 070417 **Material Code** SSRVPS
Date Sampled: 2/1/2017 **Station No.:** 315+00
Date Tested: February 28, 2017 **Location:** 22'RT

Name of Project: TWO BAYOU CREEK STR. & APPRS. (S)

County: Code: 52 **Name:** OUACHITA

Sampled By: THORNTON/BATES

Lab No.: 20170423

Sample ID: RV112

LATITUDE:

Depth: 0-5

AAASHTO Class: A-6(1)

Material Type (1 or 2): 2
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
	S ₃ psi	S _{cyclic} psi	P _{max} lbs	P _{cyclic} lbs	P _{contact} lbs	S _{max} psi	S _{cyclic} psi	S _{contact} psi	H _{avg} in	ε _r in/in	M _r psi
Sequence 1	6.0	2.0	25.2	22.7	2.6	2.1	1.9	0.2	0.00081	0.00010	18,445
Sequence 2	6.0	4.0	47.5	44.8	2.7	3.9	3.7	0.2	0.00171	0.00021	17,257
Sequence 3	6.0	6.0	70.3	66.6	3.7	5.8	5.5	0.3	0.00280	0.00035	15,664
Sequence 4	6.0	8.0	94.1	88.0	6.0	7.7	7.2	0.5	0.00417	0.00052	13,905
Sequence 5	6.0	10.0	117.4	109.0	8.5	9.6	8.9	0.7	0.00556	0.00069	12,904
Sequence 6	4.0	2.0	25.1	22.4	2.7	2.1	1.8	0.2	0.00091	0.00011	16,207
Sequence 7	4.0	4.0	47.2	44.5	2.8	3.9	3.7	0.2	0.00199	0.00025	14,710
Sequence 8	4.0	6.0	68.9	66.2	2.7	5.7	5.4	0.2	0.00323	0.00040	13,469
Sequence 9	4.0	8.0	92.5	87.3	5.1	7.6	7.2	0.4	0.00459	0.00057	12,541
Sequence 10	4.0	10.0	115.8	108.3	7.5	9.5	8.9	0.6	0.00610	0.00076	11,685
Sequence 11	2.0	2.0	25.0	22.4	2.6	2.1	1.8	0.2	0.00124	0.00016	11,839
Sequence 12	2.0	4.0	46.8	44.1	2.7	3.8	3.6	0.2	0.00250	0.00031	11,620
Sequence 13	2.0	6.0	68.0	65.4	2.7	5.6	5.4	0.2	0.00398	0.00050	10,819
Sequence 14	2.0	8.0	90.4	86.2	4.2	7.4	7.1	0.3	0.00547	0.00068	10,373
Sequence 15	2.0	10.0	113.4	106.7	6.6	9.3	8.8	0.5	0.00700	0.00087	10,042

TESTED BY _____
 REVIEWED BY _____

DATE _____
 DATE _____

DATE February 28, 2017
 DATE _____

TESTED BY: WENDLAND

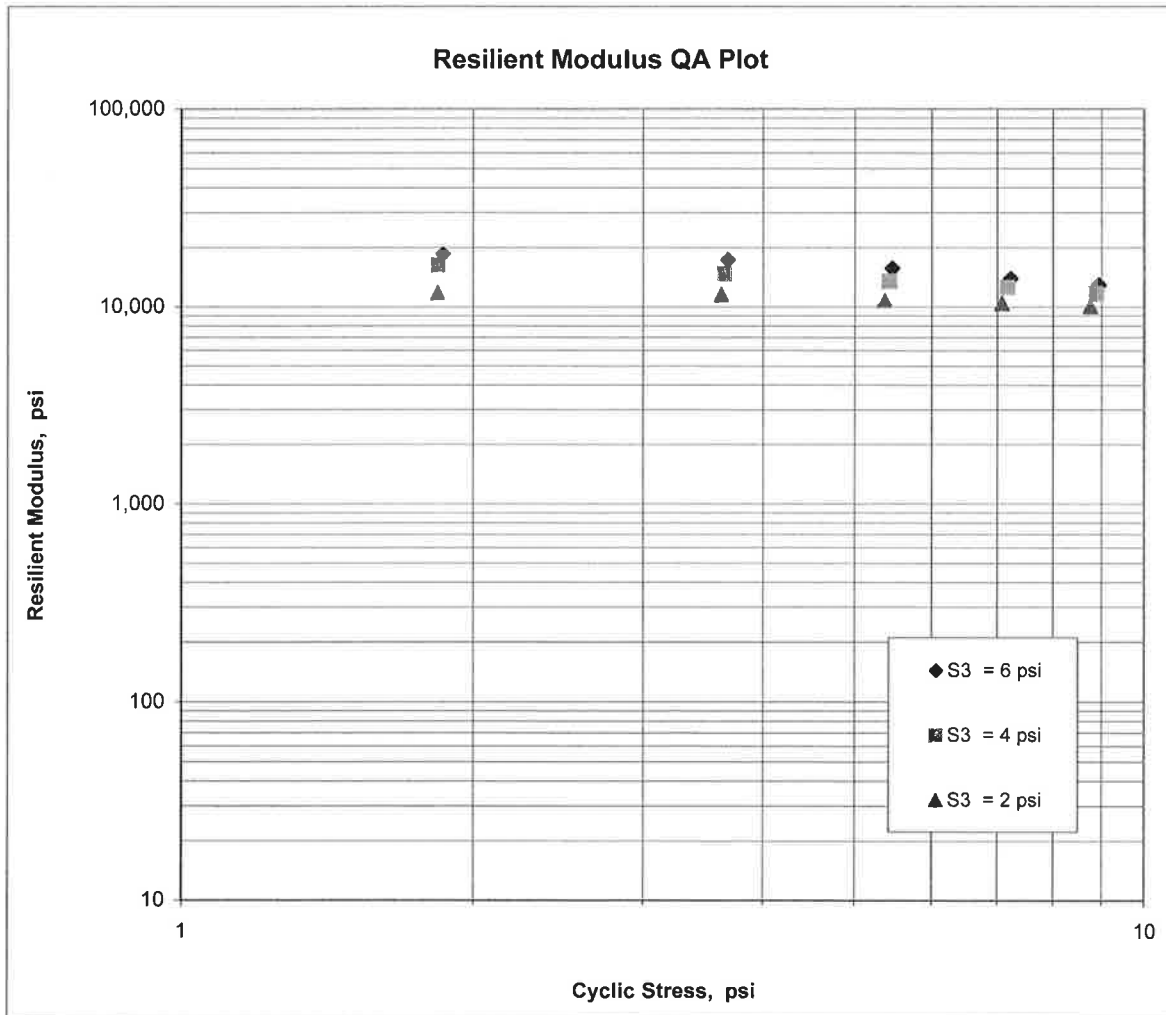
**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION**

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

Job No.	070417	Material Code	SSRVPS
Date Sampled:	2/1/2017	Station No.:	315+00
Date Tested:	February 28, 2017	Location:	22'RT
Name of Project:	TWO BAYOU CREEK STR. & APPRS. (S)		
County:	Code: 52	Name:	OUACHITA
Sampled By:	THORNTON/BATES		
Lab No.:	20170423	Depth:	0-5
Sample ID:	RV112	AASHTO Class:	A-6(1)
LATITUDE:		Material Type (1 or 2):	2
		LONGITUDE:	

$$M_R = K_1 (S_C)^{K_2} (S_3)^{K_5}$$

$K_1 =$	<u>11,537</u>
$K_2 =$	<u>-0.18073</u>
$K_5 =$	<u>0.32212</u>
$R^2 =$	<u>0.95</u>



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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE	- 02/24/17	SEQUENCE NO.	- 1
JOB NUMBER	- 070417	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	- 76
SUPPLIER NAME	- COUNTIES	DISTRICT NO.	- XX
NAME OF PROJECT	- TWO BAYOU CREEK STR. & APPRS. (S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- MULTIPLE COUNTIES	DATE SAMPLED	- 01/30/17
SAMPLED BY	- THORNTON/BATES	DATE RECEIVED	- 02/03/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 02/14/17
MATERIAL DESC.	- SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS		

LAB NUMBER	- 20170419	- 20170420	- 20170421
SAMPLE ID	- S108	- S109	- S110
TEST STATUS	- INFORMATION ONLY	- INFORMATION ONLY	- INFORMATION ONLY
STATION	- 306+00	- 306+00	- 315+00
LOCATION	- 06RT	- 21RT	- 06RT
DEPTH IN FEET	- 0-5	- 0-5	- 0-5
MAT'L COLOR	- BR/GR	- BR/GR	- BR/GR
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 33 36 55.70	- 33 36 55.70	- 33 36 59.30
LONGITUDE DEG-MIN-SEC	- 92 44 2.50	- 92 44 2.40	- 92 43 55.00
% PASSING	2 IN.	-	-
	1 1/2 IN.	-	-
	3/4 IN.	- 100	- 100
	3/8 IN.	- 98	- 99
	NO. 4	- 97	- 98
	NO. 10	- 93	- 95
	NO. 40	- 89	- 92
	NO. 80	- 85	- 87
	NO. 200	- 74	- 70
LIQUID LIMIT	- 27	- 22	- 21
PLASTICITY INDEX	- 13	- 9	- 7
AASHTO SOIL	- A-6 (7)	- A-4 (5)	- A-4 (2)
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	- 20.0	- 18.1	- 15.0
ACHMSC	(IN) - 6.0X	- ---	- 6.0X
PCCP	(IN) - 7.0	- ---	- 7.0
	-	-	-
	-	-	-
	-	-	-
	-	-	-
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REMARKS - X=STRIPPED
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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 - 02/24/17	SEQUENCE NO. - 2
JOB NUMBER - 070417	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 - 76
SUPPLIER NAME - COUNTIES	DISTRICT NO. - XX
NAME OF PROJECT - TWO BAYOU CREEK STR. & APPRS. (S)	
PROJECT ENGINEER - NOT APPLICABLE	
PIT/QUARRY - ARKANSAS	
LOCATION - MULTIPLE COUNTIES	DATE SAMPLED - 01/30/17
SAMPLED BY - THORNTON/BATES	DATE RECEIVED - 02/03/17
SAMPLE FROM - TEST HOLE	DATE TESTED - 02/14/17
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS	

LAB NUMBER	-	20170422	-	-
SAMPLE ID	-	S111	-	-
TEST STATUS	-	INFORMATION ONLY	-	-
STATION	-	315+00	-	-
LOCATION	-	21RT	-	-
DEPTH IN FEET	-	0-5	-	-
MAT'L COLOR	-	BROWN	-	-
MAT'L TYPE	-		-	-
LATITUDE DEG-MIN-SEC	-	33 36 59.60	-	-
LONGITUDE DEG-MIN-SEC	-	92 43 54.30	-	-
% PASSING	2	IN.	-	-
	1 1/2	IN.	-	-
	3/4	IN.	-	100
	3/8	IN.	-	97
	NO. 4		-	95
	NO. 10		-	93
	NO. 40		-	90
	NO. 80		-	85
	NO. 200		-	71
LIQUID LIMIT	-	26	-	-
PLASTICITY INDEX	-	11	-	-
AASHTO SOIL	-	A-6 (5)	-	-
UNIFIED SOIL	-		-	-
% MOISTURE CONTENT	-	16.5	-	-
	-		-	-
	-		-	-
	-		-	-
	-		-	-
	-		-	-
	-		-	-
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REMARKS -
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- X=STRIPPED
AASHTO TESTS : 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	- 03/01/17	SEQUENCE NO.	- 1
JOB NUMBER	- 070417	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	- 76
SUPPLIER NAME	- COUNTIES	DISTRICT NO.	- XX
NAME OF PROJECT	- TWO BAYOU CREEK STR. & APPRS. (S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- MULTIPLE COUNTIES	DATE SAMPLED	- 01/30/17
SAMPLED BY	- THORNTON/BATES	DATE RECEIVED	- 02/03/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 02/14/17
MATERIAL DESC.	- SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS		

LAB NUMBER	- 20170423	-	-
SAMPLE ID	- RV112	-	-
TEST STATUS	- INFORMATION ONLY	-	-
STATION	- 315+00	-	-
LOCATION	- 22RT	-	-
DEPTH IN FEET	- 0-5	-	-
MAT'L COLOR	- BROWN	-	-
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 33 36 59.60	-	-
LONGITUDE DEG-MIN-SEC	- 92 43 54.30	-	-
% PASSING	2 IN.	-	-
	1 1/2 IN.	-	-
	3/4 IN.	- 100	-
	3/8 IN.	- 77	-
	NO. 4	- 64	-
	NO. 10	- 57	-
	NO. 40	- 53	-
	NO. 80	- 48	-
	NO. 200	- 41	-
LIQUID LIMIT	- 25	-	-
PLASTICITY INDEX	- 11	-	-
AASHTO SOIL	- A-6(1)	-	-
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	-	-	-
		-	-
		-	-
		-	-
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REMARKS -
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JOB: 070417

Arkansas State Highway Transportation Department

JOB NAME: TWO BAYOU CREEK STR.& APPRS.(S)

Materials Division

COUNTY NO. 76 DATE TESTED 2/14/2017

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					
315+00	22RT	0-5	BROWN	64	57	53	48	41	25	11	A-6(1)	RV112	
306+00	06RT	0-5	BR/GR	97	93	89	85	74	27	13	A-6(7)	S108	20
306+00	21RT	0-5	BR/GR	100	99	96	95	85	22	9	A-4(5)	S109	18.1
315+00	06RT	0-5	BR/GR	98	95	92	87	70	21	7	A-4(2)	S110	15
315+00	21RT	0-5	BROWN	95	93	90	85	71	26	11	A-6(5)	S111	16.5

comments:

Monday, March 06, 2017

JOB: 070417

Arkansas State Highway Transportation Department

DATE TESTED

JOB NAME: TWO BAYOU CREEK STR. & APPRS.(S)

2/14/2017

Materials Division

COUNTY NO. 76

Michael Benson, Materials Engineer

STA.# LOC.

PAVEMENT SOUNDINGS

306+00	21RT	ACHMSC	---	PCCP
306+00	06RT	ACHMSC	6.0X	PCCP
315+00	06RT	ACHMSC	6.0X	PCCP
				7.0
				7.0

comments: X=STRIPPED