

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. 080500

FEDERAL AID PROJECT NO. NHPP-0058(45)

CREEK AT L.M. 0.15 STR. & APPRS. (S)

STATE HIGHWAY 331 SECTION 0

IN POPE 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

January 26, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 080500
Creek at L.M. 0.15 Str. & Apprs. (S)
Route 331 Section 0
Pope 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 a bridge on Highway 331. 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 sandy 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.

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 Russellville.
2. Asphalt Concrete Hot Mix

<u>Type</u>	<u>Asphalt Cement %</u>	<u>Mineral Aggregate %</u>
Surface Course	5.2	94.8
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 8 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 - 01/12/2017
JOB NUMBER - 080500

SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 58
DISTRICT NO. - 08

JOB NAME - CREEK AT LM 0.15 STR. & APPRS. (S)

* STATION LIMITS R-VALUE AT 240 psi *

BEGIN JOB - END JOB 14

RESILIENT MODULUS
STA.106+20 6390

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.	080500	Material Code	SSRVPS
Date Sampled:	01/11/17	Station No.:	106+20
Date Tested:	January 11, 2017	Location:	20LT
Name of Project:	CREEK AT LM 0.15 STR. & APPRS. (S)		
County:	Code: 58	Name:	POPE
Sampled By:	THORNTON	Depth:	0-5
Lab No.:	20164129	AASHTO Class:	A-4(0)
Sample ID:	RV516	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	3.96
Average	3.96
Membrane Thickness (in):	0.01
Height of Specimen, Cap and Base (in):	8.04
Height of Cap and Base (in):	0.00
Initial Length, Lo (in):	8.04
Initial Area, Ao (sq. in):	12.23
Initial Volume, AoLo (cu. in):	98.33

3. Soil Specimen Weight:

Weight of Wet Soil Used (g):	3192.80
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4. Soil Properties:

Optimum Moisture Content (%):	13.6
Maximum Dry Density (pcf):	114.1
95% of MDD (pcf):	108.4
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	3192.80
Compaction Moisture content (%):	13.1
Compaction Wet Density (pcf):	123.72
Compaction Dry Density (pcf):	109.39
Moisture Content After Mr Test (%):	13.0

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

7. Resilient Modulus, Mr: $7691(S_c)^{-0.21312}(S_3)^{0.35995}$

8. Comments

9. Tested By: DEB **Date:** January 11, 2017

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

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

Job No. 680500 Material Code SSRVPS
 Date Sampled: 01/11/17 Station No.: 106#20
 Date Tested: January 11, 2017 Location: 20LT
 Name of Project: CREEK AT LM 0.15 STR. & APPRS, (S)
 County: Code: 58 Name: POPE
 Sampled By: THORNTON Depth: 0-5
 Lab No.: 20164129 AASHTO Class: A-4(0)
 Sample ID: RV516 Material Type (1 or 2): 2
 LATITUDE: LONGITUDE:

PARAMETER	Chamber Confining Pressure	Nominal Maximum Axial Stress	Actual Applied		Actual Applied Contact 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
			P _{max}	S _{cyclic}									
DESIGNATION	S ₃	psi	lbs	psi	lbs	lbs	psi	psi	psi	psi	in	in/in	psi
Sequence 1	6.0	2.0	25.2	22.6	22.6	2.7	2.1	1.8	0.2	0.00116	0.00116	0.00014	12,770
Sequence 2	6.0	4.0	47.5	44.9	44.9	2.7	3.9	3.7	0.2	0.00255	0.00255	0.00032	11,552
Sequence 3	6.0	6.0	70.1	66.6	66.6	3.5	5.7	5.4	0.3	0.00415	0.00415	0.00052	10,549
Sequence 4	6.0	8.0	93.9	88.0	88.0	5.9	7.7	7.2	0.5	0.00601	0.00601	0.00075	9,616
Sequence 5	6.0	10.0	117.6	109.2	109.2	8.4	9.6	8.9	0.7	0.00773	0.00773	0.00096	9,289
Sequence 6	4.0	2.0	25.2	22.6	22.6	2.6	2.1	1.9	0.2	0.00137	0.00137	0.00017	10,854
Sequence 7	4.0	4.0	46.7	44.0	44.0	2.7	3.8	3.6	0.2	0.00309	0.00309	0.00038	9,374
Sequence 8	4.0	6.0	67.9	65.2	65.2	2.7	5.6	5.3	0.2	0.00502	0.00502	0.00062	8,546
Sequence 9	4.0	8.0	91.8	86.7	86.7	5.2	7.5	7.1	0.4	0.00700	0.00700	0.00087	8,141
Sequence 10	4.0	10.0	115.5	108.0	108.0	7.5	9.4	8.8	0.6	0.00894	0.00894	0.00111	7,941
Sequence 11	2.0	2.0	24.9	22.4	22.4	2.6	2.0	1.8	0.2	0.00164	0.00164	0.00020	8,967
Sequence 12	2.0	4.0	45.8	43.1	43.1	2.6	3.7	3.5	0.2	0.00374	0.00374	0.00047	7,570
Sequence 13	2.0	6.0	66.2	63.5	63.5	2.7	5.4	5.2	0.2	0.00607	0.00607	0.00075	6,876
Sequence 14	2.0	8.0	88.2	84.0	84.0	4.2	7.2	6.9	0.3	0.00848	0.00848	0.00106	6,507
Sequence 15	2.0	10.0	111.7	105.1	105.1	6.7	9.1	8.6	0.5	0.01081	0.01081	0.00134	6,390

TESTED BY DEB DATE January 11, 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.	080500	Material Code	SSRVPS
Date Sampled:	01/11/17	Station No.:	106+20
Date Tested:	January 11, 2017	Location:	20LT
Name of Project:	CREEK AT LM 0.15 STR. & APPRS. (S)		
County:	Code: 58	Name:	POPE
Sampled By:	THORNTON	Depth:	0-5
Lab No.:	20164129	AASHTO Class:	A-4(0)
Sample ID:	RV516	Material Type (1 or 2):	2
LATITUDE:		LONGITUDE:	

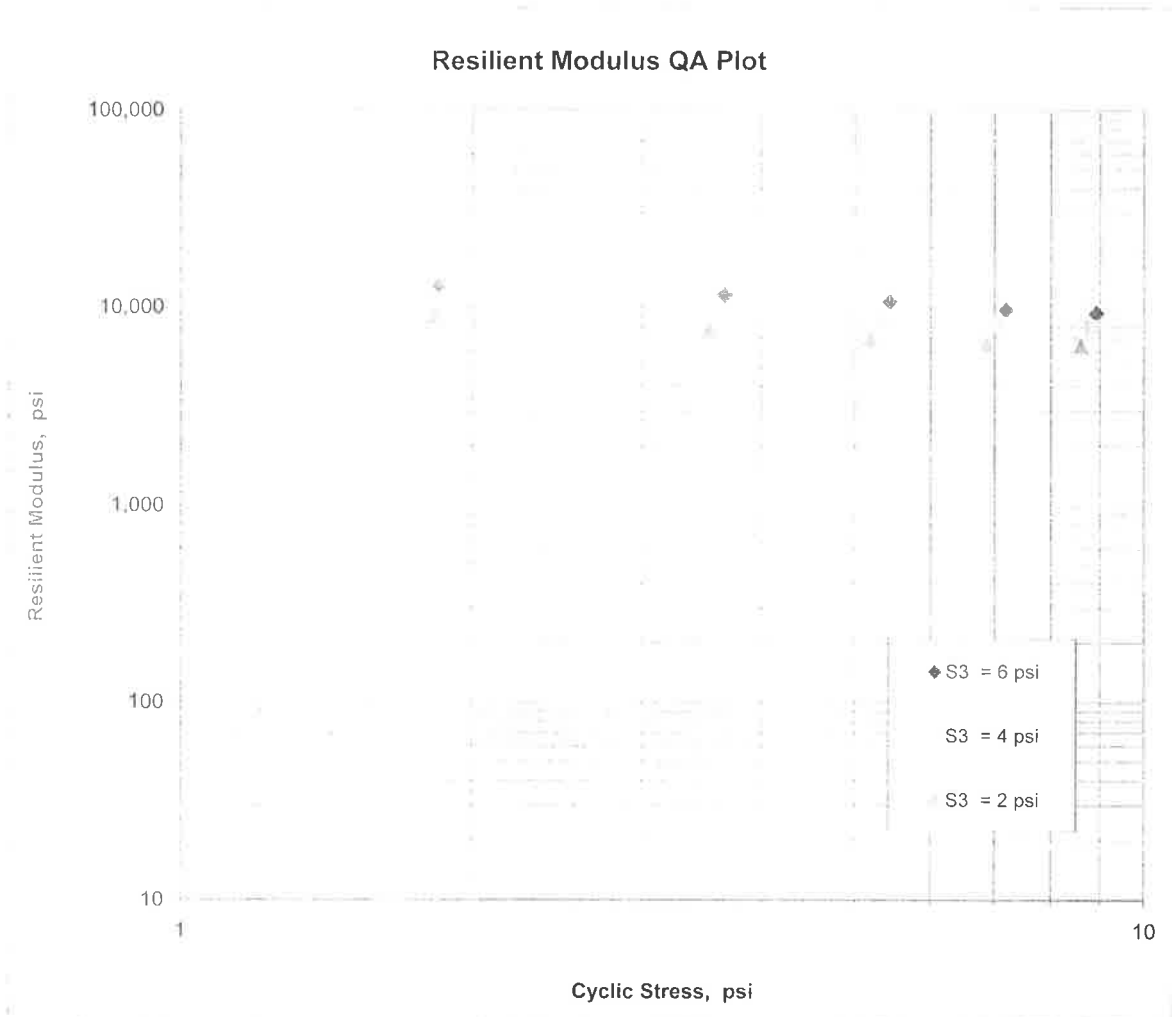
$$M_R = K_1 (S_c)^{K_2} (S_3)^{K_5}$$

$$K_1 = 7,691$$

$$K_2 = -0.21312$$

$$K_5 = 0.35995$$

$$R^2 = 0.99$$



JOB: 080500

Arkansas State Highway Transportation Department

JOB NAME: CREEK AT LM 0.15 STR. & APPRS. (S)

Materials Division

COUNTY NO. 58 DATE TESTED 12/29/2016

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					
106+20	20LT	0-5	BROWN	88	80	73	69	55	ND	NP	A-4(0)	RV516	
105+70	05RT	0-5	BROWN	98	92	83	78	60	ND	NP	A-4(0)	S512	13.4
105+70	12RT	0-5	BROWN	94	85	76	70	54	21	5	A-4(0)	S513	16.7
106+20	05LT	0-5	BROWN	98	91	83	78	65	24	9	A-4(3)	S514	13.5
106+20	15LT	0-5	BROWN	95	87	79	74	58	24	9	A-4(2)	S515	16.5

comments: W=MULTIPLE LAYERS

Monday, January 23, 2017

JOB: 080500

Arkansas State Highway Transportation Department

DATE TESTED

JOB NAME: CREEK AT LM 0.15 STR. & APPRS. (S)

12/29/2016

COUNTY NO. 58

Michael Benson, Materials Engineer

STA.# LOC.

PAVEMENT SOUNDINGS

105+70	12RT	BST	ACHMSC	BST	AGG BASE CRS CL7	AGG BASE CRS CL7
		---	---	---	---	---
105+70	05RT	BST	ACHMSC	BST	AGG BASE CRS CL7	AGG BASE CRS CL7
		4.0W	4.0W	---	---	6.0
106+20	15LT	BST	ACHMSC	BST	AGG BASE CRS CL7	AGG BASE CRS CL7
		---	---	---	---	---
106+20	05LT	BST	ACHMSC	BST	AGG BASE CRS CL7	AGG BASE CRS CL7
		2.5W	1.5	2.5W	2.0	6.0

comments: W=MULTIPLE LAYERS

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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 01/23/17 SEQUENCE NO. - 1
 JOB NUMBER - 080500 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 - 58
 SUPPLIER NAME - STATE DISTRICT NO. - 08
 NAME OF PROJECT - CREEK AT LM 0.15 STR. & APPRS. (S)
 PROJECT ENGINEER - NOT APPLICABLE
 PIT/QUARRY - ARKANSAS
 LOCATION - POPE, COUNTY DATE SAMPLED - 12/21/16
 SAMPLED BY - THORTON-BATES DATE RECEIVED - 12/21/16
 SAMPLE FROM - TEST HOLE DATE TESTED - 12/29/16
 MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20164125	20164126	20164127
SAMPLE ID	S512	S513	S514
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	105+70	105+70	106+20
LOCATION	05RT	12RT	05LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	35 15 5.00	35 15 5.30	35 15 4.00
LONGITUDE DEG-MIN-SEC	93 02 54.50	93 02 54.50	93 02 54.80
% PASSING			
2 IN.			
1 1/2 IN.			
3/4 IN.		100	
3/8 IN.	100	98	100
NO. 4	98	94	98
NO. 10	92	85	91
NO. 40	83	76	83
NO. 80	78	70	78
NO. 200	60	54	65
LIQUID LIMIT	ND	21	24
PLASTICITY INDEX	NP	5	9
AASHTO SOIL	A-4 (0)	A-4 (0)	A-4 (3)
UNIFIED SOIL			
% MOISTURE CONTENT	13.4	16.7	13.5
BST (IN)	4.0W	---	2.5W
ACHMSC (IN)	4.0W	---	1.5
BST (IN)	---	---	2.5W
AGG BASE CRS CL7 (IN)	6.0	---	8.0

REMARKS - W=MULTIPLE LAYERS

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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE	- 01/23/17	SEQUENCE NO.	- 2
JOB NUMBER	- 080500	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	- 58
SUPPLIER NAME	- STATE	DISTRICT NO.	- 08
NAME OF PROJECT	- CREEK AT LM 0.15 STR. & APPRS. (S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS	DATE SAMPLED	- 12/21/16
LOCATION	- POPE, COUNTY	DATE RECEIVED	- 12/21/16
SAMPLED BY	- THORTON-BATES	DATE TESTED	- 12/29/16
SAMPLE FROM	- TEST HOLE		
MATERIAL DESC.	- SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS		

LAB NUMBER	"	20164128	-	-
SAMPLE ID	-	S515	-	-
TEST STATUS	-	INFORMATION ONLY	-	-
STATION	-	106+20	-	-
LOCATION	-	15LT	-	-
DEPTH IN FEET	-	0-5	-	-
MAT'L COLOR	-	BROWN	-	-
MAT'L TYPE	-		-	-
LATITUDE DEG-MIN-SEC	-	35 15 4.30	-	-
LONGITUDE DEG-MIN-SEC	-	93 02 54.70	-	-
% PASSING	2	IN.	-	-
	1 1/2	IN.	-	-
	3/4	IN.	100	-
	3/8	IN.	99	-
	NO. 4		95	-
	NO. 10		87	-
	NO. 40		79	-
	NO. 80		74	-
	NO. 200		58	-

LIQUID LIMIT	"	24	-	-
PLASTICITY INDEX	"	9	-	-
AASHTO SOIL	-	A-4 (2)	-	-
UNIFIED SOIL	-		-	-
% MOISTURE CONTENT	-	16.5	-	-

BST	(IN)	-	-	-
ACHMSC	(IN)	-	-	-
BST	(IN)	-	-	-
AGG BASE CRS CL7	(IN)	-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-

REMARKS - W=MULTIPLE LAYERS
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