

ARKANSAS DEPARTMENT OF TRANSPORTATION



**SUBSURFACE INVESTIGATION**

STATE JOB NO. 100878

FEDERAL AID PROJECT NO. STPR-0028(46)

HWY. 49/HWY. 34 INTERS. IMPVTS. (MARMADUKE) (S)

STATE HIGHWAY 49 & 34 SECTION 2 & 4

IN GREENE 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

July 17, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 100878  
Hwy. 49/Hwy. 34 Inters. Impvts. (Marmaduke) (S)  
Route 49 Section 2  
Green County

Transmitted herewith is the requested Soil Survey test results for the above referenced job. The project consists of constructing a roundabout at the intersection of Highway 49 and Highway 34 in Marmaduke. Samples were obtained in the existing travel lanes and ditch line. An R-Value sample was not obtained due to utility conflicts, an estimated value of less than 5 is appropriate for the soil types within the project limits. There were no paved shoulders within the project limits.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of highly plastic clay with some sand. 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 conventional processing, if the weather is favorable during construction. If soil remediation is needed to allow construction to proceed during adverse weather conditions or if a stable working platform cannot be obtained with normal drying and compactive effort, stabilization with lime is the most appropriate remediation technique. It is recommended that the addition of 4% Lime (by dry weight) mixed to a depth of 16" be used for soil stabilization quantity estimation purposes; however, if the Engineer determines that stabilization is necessary, field trials or local experience may dictate that a stable working platform can be achieved at a lower lime content

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 Pocahontas.
2. Asphalt Concrete Hot Mix

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.2	94.8
Binder Course	4.1	95.9
Base Course	3.9	96.1

  
Michael C. Benson  
Materials Engineer

MCB:pt:bjj  
Attachment

cc: State Constr. Eng. – Master File Copy  
District 10 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 - 07/05/2017  
JOB NUMBER - 100878

SEQUENCE NO. - 1  
MATERIAL CODE - SSRV  
SPEC. YEAR - 2014  
SUPPLIER ID. - 1  
COUNTY/STATE - 28  
DISTRICT NO. - 10

JOB NAME - HWY. 49/HWY. 34 INTERS. IMPVTS. (MARMADUKE)

\*\*\*\*\*  
\* STATION LIMITS R-VALUE AT 240 psi \*  
\*\*\*\*\*

BEGIN JOB - END JOB

LESS THAN 5

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REMARKS -

AASHTO TESTS : T190

**JOB: 100878**

*Arkansas State Highway Transportation Department*

**JOB NAME: HWY. 49/HWY. 34 INTERS. IMPVTS. (MARMADUKE)**

*Materials Division*

**COUNTY NO. 28 DATE TESTED 6/6/2017**

*Michael Benson, Materials Engineer*

STA.#	LOC.	DEPTH	COLOR	#					L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				#4	#10	#40	#80	#200					
103+00	06 RT	0-5	BROWN	100				97	47	27	A-7-6(29)	S380	31.3
108+00	06 LT	0-5	BROWN	96	92	86	84	83	30	13	A-6(9)	S381	28
203+00	15 RT	0-5	BROWN	91	85	78	73	71	40	21	A-6(13)	S382	21.4
208+00	08 LT	0-5	BROWN	100				93	33	16	A-6(14)	S383	19.2

**comments:** W=MULTIPLE LAYERS

*Thursday, July 06, 2017*

**JOB:** 100878

*Arkansas State Highway Transportation Department*

**DATE TESTED**

**JOB NAME:** HWY. 49/HWY. 34 INTERS. IMPVTS. (MARMADUKE)

*Materials Division*

6/6/2017

**COUNTY NO.** 28

*Michael Benson, Materials Engineer*

**STA.# LOC.**  **PAVEMENT SOUNDINGS**

103+00	06 RT	ACHMSC 6.0W	SAND ASPHALT 4.0	SAND ASPHALT 2.5	ASPHALT TREATED BASE ---	AGG. BASE CRS CL-7 7.0
108+00	06 LT	ACHMSC 7.0W	SAND ASPHALT 2.5	SAND ASPHALT ---	ASPHALT TREATED BASE 3.75	AGG. BASE CRS CL-7 8.0
203+00	15 RT	ACHMSC 2.5W	SAND ASPHALT ---	SAND ASPHALT ---	ASPHALT TREATED BASE ---	AGG. BASE CRS CL-7 7.0
208+00	08 LT	ACHMSC 2.5W	SAND ASPHALT ---	SAND ASPHALT ---	ASPHALT TREATED BASE ---	AGG. BASE CRS CL-7 7.0

**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 - 07/05/17 SEQUENCE NO. - 1  
JOB NUMBER - 100878 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 - 28  
SUPPLIER NAME - STATE DISTRICT NO. - 10  
NAME OF PROJECT - HWY. 49/HWY. 34 INTERS. IMPVTS. (MARMADUKE)  
PROJECT ENGINEER - NOT APPLICABLE  
PIT/QUARRY - ARKANSAS  
LOCATION - GREENE, COUNTY DATE SAMPLED - 05/18/17  
SAMPLED BY - THORNTON/TAYLOR DATE RECEIVED - 05/22/17  
SAMPLE FROM - TEST HOLE DATE TESTED - 06/06/17  
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	-	20171678	-	20171679	-	20171680
SAMPLE ID	-	S380	-	S381	-	S382
TEST STATUS	-	INFORMATION ONLY	-	INFORMATION ONLY	-	INFORMATION ONLY
STATION	-	103+00	-	108+00	-	203+00
LOCATION	-	06 RT	-	06 LT	-	15 RT
DEPTH IN FEET	-	0-5	-	0-5	-	0-5
MAT'L COLOR	-	BROWN	-	BROWN	-	BROWN
MAT'L TYPE	-		-		-	
LATITUDE DEG-MIN-SEC	-	36 11 15.60	-	36 11 10.70	-	36 11 12.90
LONGITUDE DEG-MIN-SEC	-	90 23 5.70	-	90 23 5.60	-	90 23 8.30
% PASSING	2 IN.	-	-	-	-	-
	1 1/2 IN.	-	-	-	-	-
	3/4 IN.	-	-	-	-	100
	3/8 IN.	-	-	100	-	96
	NO. 4	- 100	-	96	-	91
	NO. 10	-	-	92	-	85
	NO. 40	-	-	86	-	78
	NO. 80	-	-	84	-	73
	NO. 200	- 97	-	83	-	71
LIQUID LIMIT	-	47	-	30	-	40
PLASTICITY INDEX	-	27	-	13	-	21
AASHTO SOIL	-	A-7-6(29)	-	A-6(9)	-	A-6(13)
UNIFIED SOIL	-		-		-	
% MOISTURE CONTENT	-	31.3	-	28.0	-	21.4
ACHMSC	(IN)	- 6.0W	-	7.0W	-	2.5W
SAND ASPHALT	(IN)	- 4.0	-	2.5	-	---
SAND ASPHALT	(IN)	- 2.5	-	---	-	---
ASPHALT TREATED BASE	(IN)	- ---	-	3.75	-	---
AGG. BASE CRS CL-7	(IN)	- 7.0	-	8.0	-	7.0
		-	-	-	-	-
		-	-	-	-	-
		-	-	-	-	-
		-	-	-	-	-

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	- 07/05/17	SEQUENCE NO.	- 2
JOB NUMBER	- 100878	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	- 28
SUPPLIER NAME	- STATE	DISTRICT NO.	- 10
NAME OF PROJECT	- HWY. 49/HWY. 34 INTERS. IMPVTS. (MARMADUKE)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- GREENE, COUNTY	DATE SAMPLED	- 05/18/17
SAMPLED BY	- THORNTON/TAYLOR	DATE RECEIVED	- 05/22/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 06/06/17
MATERIAL DESC.	- SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS		

LAB NUMBER	- 20171681	-	-
SAMPLE ID	- S383	-	-
TEST STATUS	- INFORMATION ONLY	-	-
STATION	- 208+00	-	-
LOCATION	- 08 LT	-	-
DEPTH IN FEET	- 0-5	-	-
MAT'L COLOR	- BROWN	-	-
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 36 11 13.40	-	-
LONGITUDE DEG-MIN-SEC	- 90 23 2.10	-	-
% PASSING	2 IN.	-	-
	1 1/2 IN.	-	-
	3/4 IN.	-	-
	3/8 IN.	-	-
	NO. 4	- 100	-
	NO. 10	-	-
	NO. 40	-	-
	NO. 80	-	-
	NO. 200	- 93	-
LIQUID LIMIT	- 33	-	-
PLASTICITY INDEX	- 16	-	-
AASHTO SOIL	- A-6(14)	-	-
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	- 19.2	-	-
ACHMSC	(IN) - 2.5W	-	-
SAND ASPHALT	(IN) - ---	-	-
SAND ASPHALT	(IN) - ---	-	-
ASPHALT TREATED BASE	(IN) - ---	-	-
AGG BASE CRS CL-7	(IN) - 7.0	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

REMARKS - W=MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265