ARKANSAS DEPARTMENT OF TRANSPORTATION

SUBSURFACE INVESTIGATION

STATE JOB NO. 050323

FEDERAL AID PROJECT NO. NHPP-0033(23)

DITCH AT L.M. 1.43 STR. & APPRS. (S)

STATE HIGHWAY 69B SECTION 1B

IN IZARD 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

December 29, 2016

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 050323
Ditch at L.M. 1.43 Str. & Apprs. (S)
Route 69 Section 1B
Izard 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 a ditch at Log mile 1.43 on Highway 69B. 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 moderately plastic sandy clay. Cross sections are not currently available; but 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. Rock was encountered at station 112+00 7 feet left of centerline at a depth of 4.5 feet. No slides were observed within the project limits.

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 Violet Hill.

2. Asphalt Concrete Hot Mix

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.3	94.7
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 5 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 - 12/21/2016
JOB NUMBER - 050323

SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 33
DISTRICT NO. - 05

JOB NAME - DITCH AT LM 1.43 STR. & APPRS.(S)

STATION LIMITS	R-VALUE AT 240 psi
BEGIN JOB - END JOB	LESS THAN 5
RESILIENT MODULUS	
STA. 106+00	8082

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.	050323	**Material Code**	SSRVPS
Date Sampled:	12/06/16	**Station No.:**	106+00
Date Tested:	December 20, 2016	**Location:**	18' RT
Name of Project:	DITCH AT LM 1.43 STR & APPRS (S)		
County:	**Code:** 33 **Name:** IZARD		
Sampled By:	THORNTON AND BATES	**Depth:**	0-5
Lab No.:	20164000	**AASHTO Class:**	A-2-6(0)
Sample ID:	RV498	**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	3.94
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):	12.18
Initial Volume, AoLo (cu. in):	97.68

3. Soil Specimen Weight:

Weight of Wet Soil Used (g):	3286.80

4. Soil Properties:

Optimum Moisture Content (%):	13.6
Maximum Dry Density (pcf):	116.1
95% of MDD (pcf):	110.3
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	3286.80
Compaction Moisture content (%):	13.5
Compaction Wet Density (pcf):	128.21
Compaction Dry Density (pcf):	112.96
Moisture Content After Mr Test (%):	13.6

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

7. Resilient Modulus, Mr: 10207(Sc)^-0.19217(S3)^0.26927

8. Comments

9. Tested By: G.WENDLAND **Date:** December 20, 2016

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

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

Job No.	050323	**Material Code**	SSRVPS
Date Sampled:	12/06/16	**Station No.:**	106+00
Date Tested:	December 20, 2016	**Location:**	18' RT
Name of Project:	DITCH AT LM 1.43 STR & APPRS (S)		
County:	**Code:** 33 **Name:** IZARD		
Sampled By:	THORNTON AND BATES	**Depth:**	0-5
Lab No.:	20164000	**AASHTO Class:**	A-2-6(0)
Sample ID:	RV498	**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	25.0	22.2	2.8	2.1	1.8	0.2	0.00100	0.00012	14,621
Sequence 2	6.0	4.0	47.1	44.2	2.8	3.9	3.6	0.2	0.00209	0.00026	13,962
Sequence 3	6.0	6.0	69.6	65.9	3.7	5.7	5.4	0.3	0.00339	0.00042	12,796
Sequence 4	6.0	8.0	92.8	86.7	6.1	7.6	7.1	0.5	0.00510	0.00064	11,195
Sequence 5	6.0	10.0	114.8	106.3	8.5	9.4	8.7	0.7	0.00699	0.00087	10,020
Sequence 6	4.0	2.0	25.0	22.2	2.8	2.1	1.8	0.2	0.00116	0.00014	12,602
Sequence 7	4.0	4.0	46.8	43.9	2.8	3.8	3.6	0.2	0.00246	0.00031	11,767
Sequence 8	4.0	6.0	68.1	65.4	2.8	5.6	5.4	0.2	0.00393	0.00049	10,956
Sequence 9	4.0	8.0	91.0	85.8	5.2	7.5	7.0	0.4	0.00559	0.00070	10,113
Sequence 10	4.0	10.0	113.4	105.8	7.6	9.3	8.7	0.6	0.00747	0.00093	9,330
Sequence 11	2.0	2.0	24.9	22.1	2.8	2.0	1.8	0.2	0.00139	0.00017	10,435
Sequence 12	2.0	4.0	46.3	43.5	2.8	3.8	3.6	0.2	0.00291	0.00036	9,841
Sequence 13	2.0	6.0	67.1	64.3	2.8	5.5	5.3	0.2	0.00456	0.00057	9,285
Sequence 14	2.0	8.0	89.1	84.8	4.3	7.3	7.0	0.4	0.00644	0.00080	8,663
Sequence 15	2.0	10.0	110.8	104.1	6.7	9.1	8.5	0.6	0.00848	0.00106	8,082

TESTED BY i.WENDLAND DATE December 20, 2016
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.	050323	**Material Code**	SSRVPS
Date Sampled:	12/06/16	**Station No.:**	106+00
Date Tested:	December 20, 2016	**Location:**	18' RT
Name of Project:	DITCH AT LM 1.43 STR & APPRS (S)		
County:	**Code:** 33 **Name:** IZARD		
Sampled By:	THORNTON AND BATES	**Depth:**	0-5
Lab No.:	20164000	**AASHTO Class:**	A-2-6(0)
Sample ID:	RV498	**Material Type (1 or 2):**	2
LATITUDE:		**LONGITUDE:**	

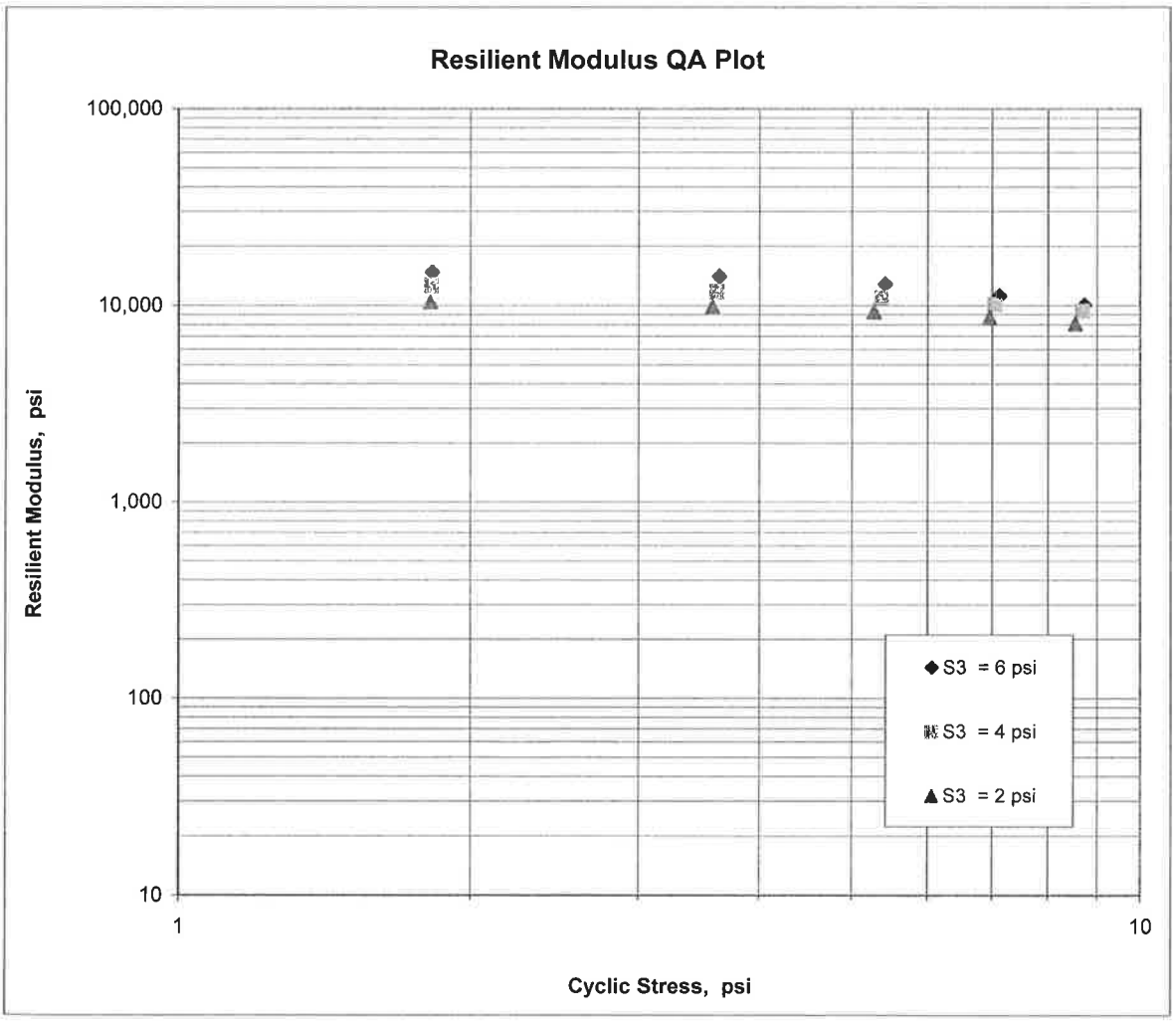
$$M_R = K1\,(S_C)^{K2}\,(S_3)^{K5}$$

K1 = 10,207

K2 = -0.19217

K5 = 0.26927

R^2 = 0.93



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

DATE - 12/19/16
JOB NUMBER - 050323
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - DITCH AT LM 1.43 STR. & APPRS.(S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - IZARD COUNTY
SAMPLED BY - THORNTON/BATES
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 - 33
DISTRICT NO. - 05

DATE SAMPLED - 12/06/16
DATE RECEIVED - 12/12/16
DATE TESTED - 12/19/16

LAB NUMBER	20163996	20163997	20163998
SAMPLE ID	S494	S495	S496
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	106+00	106+00	112+00
LOCATION	06RT	18RT	07LT
DEPTH IN FEET	0-5	0-5	0-4.5Z
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	36 2 46.20	36 02 46.40	36 2 43.80
LONGITUDE DEG-MIN-SEC	91 49 1.70	91 49 1.60	91 48 55.20
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.	100	100	
3/8 IN.	98	98	100
NO. 4	95	94	99
NO. 10	94	92	99
NO. 40	90	88	94
NO. 80	48	55	52
NO. 200	34	45	37
LIQUID LIMIT	20	33	27
PLASTICITY INDEX	10	22	13
AASHTO SOIL	A-2-4(0)	A-6(5)	A-6(1)
UNIFIED SOIL			
% MOISTURE CONTENT	16.1	16.6	10.8
ACHMSC (IN)	5.0W	---	7.0W
ACHMBC (IN)	2.0	---	---
AGG BASE CRS CL 7 (IN)	5.0	---	5.0

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL

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	- 12/20/16	SEQUENCE NO.	- 2
JOB NUMBER	- 050323	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	- 33
SUPPLIER NAME	- STATE	DISTRICT NO.	- 05
NAME OF PROJECT	- DITCH AT LM 1.43 STR. & APPRS.(S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- IZARD COUNTY	DATE SAMPLED	- 12/06/16
SAMPLED BY	- THORNTON/BATES	DATE RECEIVED	- 12/12/16
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 12/19/16

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

LAB NUMBER	20163999
SAMPLE ID	S497
TEST STATUS	INFORMATION ONLY
STATION	112+00
LOCATION	18LT
DEPTH IN FEET	0-5
MAT'L COLOR	BROWN
MAT'L TYPE	
LATITUDE DEG-MIN-SEC	36 2 43.80
LONGITUDE DEG-MIN-SEC	91 48 55.20
% PASSING 2 IN.	
1 1/2 IN.	
3/4 IN.	100
3/8 IN.	99
NO. 4	96
NO. 10	94
NO. 40	89
NO. 80	52
NO. 200	36
LIQUID LIMIT	24
PLASTICITY INDEX	13
AASHTO SOIL	A-6(1)
UNIFIED SOIL	
% MOISTURE CONTENT	14.3

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL

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	- 12/20/16	SEQUENCE NO.	- 2
JOB NUMBER	- 050323	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	- 33
SUPPLIER NAME	- STATE	DISTRICT NO.	- 05
NAME OF PROJECT	- DITCH AT LM 1.43 STR. & APPRS.(S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- IZARD COUNTY	DATE SAMPLED	- 12/06/16
SAMPLED BY	- THORNTON/BATES	DATE RECEIVED	- 12/12/16
SAMPLE FROM	- TESTHOLE	DATE TESTED	- 12/19/16

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

LAB NUMBER	20164000
SAMPLE ID	RV498
TEST STATUS	INFORMATION ONLY
STATION	106+00
LOCATION	18RT
DEPTH IN FEET	0-5
MAT'L COLOR	BROWN
MAT'L TYPE	
LATITUDE DEG-MIN-SEC	36 2 46.40
LONGITUDE DEG-MIN-SEC	91 49 1.60
% PASSING 2 IN.	
1 1/2 IN.	
3/4 IN.	100
3/8 IN.	73
NO. 4	67
NO. 10	64
NO. 40	59
NO. 80	34
NO. 200	26
LIQUID LIMIT	25
PLASTICITY INDEX	13
AASHTO SOIL	A-2-6(0)
UNIFIED SOIL	
% MOISTURE CONTENT	

REMARKS -

AASHTO TESTS : T24 T88 T89 T90 T265

JOB: 050323

JOB NAME: DITCH AT LM 1.43 STR. & APPRS.(S)

COUNTY NO. 33 **DATE TESTED**

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	18RT	0-5	BROWN										
106+00	18RT	0-5	BROWN	67	64	59	34	26	25	13	A-2-6(0)	RV498	
106+00	06RT	0-5	BROWN	95	94	90	48	34	20	10	A-2-4(0)	S494	16.1
106+00	18RT	0-5	BROWN	94	92	88	55	45	33	22	A-6(5)	S495	16.6
112+00	07LT	0-4.5Z	BROWN	99	99	94	52	37	27	13	A-6(1)	S496	10.8
112+00	18LT	0-5	BROWN	96	94	89	52	36	24	13	A-6(1)	S497	14.3

comments: W=MULTIPLE LAYERS,Z=AUGER REFUSAL

Tuesday, December 27, 2016

JOB: 050323
JOB NAME: DITCH AT LM 1.43 STR. & APPRS.(S)

COUNTY NO. 33

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

DATE TESTED
12/19/2016

PAVEMENT SOUNDINGS

STA.#	LOC.			
106+00	18RT	ACHMSC	ACHMBC	AGG BASE CRS CL 7
		---	---	---
106+00	06RT	ACHMSC	ACHMBC	AGG BASE CRS CL 7
		5.0W	**2.0**	**5.0**
112+00	07LT	ACHMSC	ACHMBC	AGG BASE CRS CL 7
		7.0W	---	**5.0**

comments: W=MULTIPLE LAYERS, Z=AUGER REFUSAL

Wednesday, December 21, 2016