**ARKANSAS DEPARTMENT OF TRANSPORTATION** 



# SUBSURFACE INVESTIGATION

STATE JOB NO.		030008		
FEDERAL AID PRO	JECT NO	NHPP-0066(32)		
	JOHNS BF	ANCH STR. & APPRS	5. (S)	
STATE HIGHWAY	71	SECTION	5	
IN		SEVIER		

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

October 5, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 030008 Johns Branch Str. & Apprs. (S) Route 71 Section 5 Sevier 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 Johns Branch on Highway 71. Samples were obtained in the existing travel lanes and ditch line.

Based on laboratory results of samples obtained, the subgrade soils consist of sand and moderately plastic sandy clay. Isolated locations of highly plastic clay were encountered within the project limits. 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.

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 Hatton.
- 2. Asphalt Concrete Hot Mix

PG64-22, PG70-22, PG76-22								
Туре	Asphalt Cement %	Mineral Aggregate %						
Surface Course	5.2	94.8						
Binder Course	4.4	95.6						
Base Course	4.0	96.0						

ael C. Benson

Michael C. Benson Materials Engineer

MCB:pt:bjj

Attachment

cc: State Constr. Eng. – Master File Copy District 3 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 \*\*\* SEQUENCE NO. - 1 DATE - 10/02/2017 MATERIAL CODE - SSRV JOB NUMBER - 030008 SPEC. YEAR = 2014 SUPPLIER ID. - 1 COUNTY/STATE - 66 DISTRICT NO. - 03 JOB NAME - JOHNS BRANCH STR. & APPRS.(S) \* STATION LIMITS R-VALUE AT 240 psi BEGIN JOB - END JOB 7 RESILIENT MODULUS STA. 108 + 10 6787

### 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. Date Sampled: Date Tested: Name of Project:	030008 8/14/17 September 14, 2017 JOHNS BRANCH STR. & APPRS. (S)	Material Code Station No.: Location:	SSRVPS 108+10 24'RT
County: Sampled By: Lab No.: Sample ID: LATITUDE:	Code: 66 Name: SEVIER THORNTON/BATES 20172664 RV557	Depth: AASHTO Class: Material Type (1 or 2): LONGITUDE:	0-5 A-6 (5) 2
1. Testing Inform	nation:		
	Preconditioning - Permanent Strain > 5% (Y=Yes Testing - Permanent Strain > 5% (Y=Yes or N=No Number of Load Sequences Completed (0-15)		N N 15
2. Specimen Info			
3. Soil Specimer 4. Soil Propertie	Weight of Wet Soil Used (g): s: Optimum Moisture Content (%);		3.95 3.93 3.94 0.00 8.03 0.00 8.03 12.21 98.07 3034.90
	Maximum Dry Density (pcf):		102.8
	95% of MDD (pcf): In-Situ Moisture Content (%):		97.7 N/A
5. Specimen Pro	operties:		
	Wet Weight (g):		3034.90
	Compaction Moisture content (%): Compaction Wet Density (pcf): Compaction Dry Density (pcf): Moisture Content After Mr Test (%):	0	18.7 117.91 99.34 18.3
6. Quick Shear 1	「est (Y=Yes, N=No, N/A=Not Applicable):		#VALUE!
7. Resilient Mod	ulus, Mr:	11783(S	c)^-0.31159(S3)^0.21234
8. Comments	· · · · · · · · · · · · · · · · · · ·		
9 Tested By:	GW/ Date	· Sentember 14, 2017	

9. Tested By: <u>GW</u>

Date: September 14, 2017

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No.	030008	<b>Material Code</b>	SSRVPS
Date Sampled:	8/14/17	Station No.:	108 + 10
Date Tested:	September 14, 2017	Location:	24'RT
Name of Project:	JOHNS BRANCH STR. & APPRS. (S)		
County:	Code: 66 Name: SEVIER		
Sampled By:	THORNTON/BATES	Depth:	0-5
Lab No.:	20172664	<b>AASHTO Class:</b>	A-6 (5)
Sample ID:	RV557	Material Type (1 or 2): 2	2): 2
LATITUDE:		LONGITUDE:	

Actual Actual Average Resilient Resilient	Applied F	Cyclic Contact LVDT 1			S <sub>cyclic</sub> S <sub>contact</sub> H <sub>avg</sub> ε <sub>r</sub> M <sub>r</sub>	psi in in/in psi	1.9 0.2 0.00109 0.00014 13,740	3.7 0.2 0.00228 0.00028 12,888	5.4 0.3 0.00391 0.00049 11,122	7.0 0.5 0.00618 0.00077 9,112	8.5 0.7 0.00867 0.00108 7,882	1.8 0.2 0.00122 0.00015 12,129	3.6 0.2 0.00264 0.00033 11,074	5.4 0.2 0.00433 0.00054 9,950	7.0 0.4 0.00648 0.00081 8,652	8.5 0.6 0.00903 0.00112 7,579	1.8 0.2 0.00138 0.00017 10,604	3.6 0.2 0.00300 0.00037 9,603		5.3 0.2 0.00495 0.00062 8,5/0	0.2 0.00495 0.00062 0.00062 0.00062 0.00091
Actual	Applied	Max.	Axial	Stress	S <sub>max</sub>	psi	2.1	3.9	5.7	7.5	9.2	2.1	3.9	5.6	7.4	9.1	2.1	3.8	5.5		7.2
Actual	Applied	Contact	Load		P <sub>contact</sub>	lbs	2.6	2.7	3.5	5.9	8.3	2.6	2.6	2.7	5.2	7.6	2.8	2.8	2.8		4.4
Actual	Applied	Cyclic Load			P <sub>cyclic</sub>	lbs	22.7	44.7	66.1	85.7	104.0	22.6	44.4	65.5	85.2	104.1	22.3	43.9	64.6		84.0
Actual	Applied	~	Load		P <sub>max</sub>	lbs	25.3	47.3	69.6	91.6	112.3	25.2	47.0	68.2	90.4	111.7	25.1	46.7	67.4		88.4
Nominal	Maximum				S <sub>cyclic</sub>	psi	2.0	4.0	6.0	8.0	10.0	2.0	4.0	6.0	8.0	10.0	2.0	4.0	6.0		8.0
Chamber	Confining	Pressure			S <sub>3</sub>	psi	6.0	6.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	2.0	2.0	2.0		2.0
		PARAMETER			DESIGNATION	UNIT	Sequence 1	Sequence 2	Sequence 3	Sequence 4	Sequence 5	Sequence 6	Sequence 7	Sequence 8	Sequence 9	Sequence 10	Sequence 11	Sequence 12	Sequence 13		Sequence 14

TESTED BY REVIEWED BY

GW

DATE September 14, 2017 DATE DATE

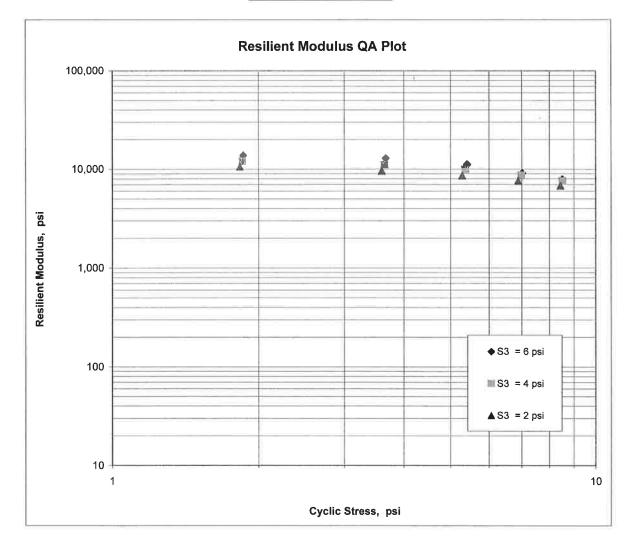
### ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No.	030008		Material Code SSRVPS
Date Sampled:	8/14/17		<b>Station No.:</b> 108+10
Date Tested:	September 14, 2017		Location: 24'RT
Name of Project:	JOHNS BRANCH STR. & AF	PRS. (S)	
County:	Code: 66 Name:	SEVIER	
Sampled By:	THORNTON/BATES		<b>Depth:</b> 0-5
Lab No.:	20172664		AASHTO Class: A-6 (5)
Sample ID:	RV557		Material Type (1 or 2): 2
LATITUDE:			LONGITUDE:

 $M_{R} = K1 (S_{C})^{K2} (S_{3})^{K5}$ 

K1 =	11,783	
K2 =	-0.31159	
K5 =	0.21234	
$R^2 =$	0.90	



## JOB: 030008

Arkansas State Highway Transporation Department

JOB NAME: JOHNS BRANCH STR. & APPRS.(S)

COUNTY NO. 66 DATE TESTED 9/5/2017

Materials Division

Michael Benson, Materials Engineer

STA,#	LOC.	DEPTH	COLOR	#4	#10	#40 F	#80	#200	L.L.	<i>P.I</i> .	SOIL CLASS	LAB #:	%MOISTURE
108+10	24 RT	0-5	BROWN	78	69	61	55	<u>46</u>	37	20	A-6(5)	RV557	
108+00	06 RT	0-5	BROWN	91	84	74	67	57	35	22	A-6(9)	S553	23.8
108+00	24 RT	0-5	BROWN	91	82	73	65	55	43	23	A-7-6(10)	S554	35.6
114+40	06 LT	0-5	BROWN	76	59	39	30	23	ND	NP	A-1-B(0)	S555	28.7
114+40	16 LT	0-5	BROWN	82	77	72	63	41	ND	NP	A-4(0)	S556	20.6

DATE TESTED 9/5/2017								
Arkansas State Highway Transporation Department Materials Division	Michael Benson, Materials Engineer	PAVEMENT SOUNDINGS	AGG BASE CRS CL-7 13	AGG BASE CRS CL-7	AGG BASE CRS CL-7	13		Tuesday, October 03, 2017
Arka		a succession of the second	ACHMBC 2.0	ACHMBC	ACHMBC	Ī		
JOB: 030008 JOB NAME: JOHNS BRANCH STR. & APPRS.(S)			ACHMBC 2.0X	ACHMBC	ACHMBC	I		W=MULTIPLE LAYERS,X=STRIPPED
030008 JOHNS BRANCH (	66		ACHMSC 1.5W	ACHMSC	ACHMSC	4.0WX		/=MULTIPLE LAY
( AME: J	COUNTY NO. 66	LOC.	06 RT	24 RT	06 LT		ż	
JOB: JOB N	COUN	STA.# LOC.	108+00	108+00	114+40			comments:

Page 1 of 1

ARKANSAS STATE HI	MATER	DRTATION DEPARTMENT IALS DIVISION		RKANSAS					
*** {		MATERIALS ENGINEER EMENT SOUNDING TEST							
DATE- 10/02/17SEQUENCE NO 1JOB NUMBER- 030008MATERIAL CODE- 5SIFEDERAL AID NOTO BE ASSIGNEDSPEC. YEAR- 200PURPOSE- SOIL SURVEY SAMPLESUPPLIER ID 1SPEC. REMARKS- NO SPECIFICATION CHECKCOUNTY/STATE- 66SUPPLIER NAME- STATEDISTRICT NO 03NAME OF PROJECT- JOHNS BRANCH STR. & APPRS.(S)PROJECT ENGINEER- NOT APPLICABLEPIT/QUARRY- ARKANSAS									
LOCATION - SEVIER, SAMPLED BY - THORNTON SAMPLE FROM - TEST HO	COUNTY /BATES LE		DATE SAMPLED - DATE RECEIVED - DATE TESTED -	08/16/17					
MATERIAL DESC SOIL	SURVEY - R VALUE	E- PAVEMENT SOUNDIN	GS						
TEST STATUS STATION LOCATION DEPTH IN FEET MAT'L COLOR	- S553 - INFORMATION - 108+00 - 06 RT	- 20172661 _ S554 ONLY - INFORMATIC - 108+00 - 24 RT - 0-5 _ BROWN	= S555	ATION ONLY					
MAT'L TYPE LATITUDE DEG-MIN-SE LONGITUDE DEG-MIN-SE			- 15.20 - 33 18.50 94						
1 1/2 II 3/4 I 3/8 II NO. NO. 1 NO. 4	N 100 N 98 4 - 91 0 - 84 0 - 74 0 - 67	- - - 91 - 82 - 73 - 65 55	- 100 94 76 59 39 30 23	÷					
LIQUID LIMIT PLASTICITY INDEX AASHTO SOIL UNIFIED SOIL	- 35 - 22 - A-6(9) -	- 43 - 23 - A-7-6(10	- -						
ACHMBC (1 ACHMBC (1	$ \begin{array}{c} - & 23.8 \\ (N) - & 1.5W \\ (N) - & 2.0X \\ (N) - & 2.0 \\ (N) - & 13 \\ - & - & - \\ - & - & - \\ - & - & - \\ - & - & - \\ - & - & - \\ - & - $	35.6	28. - 4.0W  - 13 -						
	- -		-						

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

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I	HWAY AND TRANSPORTATIO MATERIALS I MICHAEL BENSON, MATERI DIL SURVEY / PAVEMENT	DIVISION IALS ENGINEER	
DATE - 09/05/1 JOB NUMBER - 030008 FEDERAL AID NO TO BE A PURPOSE - SOIL SU SPEC. REMARKS - NO SPEC SUPPLIER NAME - STATE NAME OF PROJECT - JOHNS PROJECT ENGINEER - NOT A PIT/QUARRY - ARKANSAS	ASSIGNED JRVEY SAMPLE CIFICATION CHECK 5 BRANCH STR. & APPRS.		SEQUENCE NO 2 MATERIAL CODE - SSRVPS SPEC. YEAR - 2014 SUPPLIER ID 1 COUNTY/STATE - 66 DISTRICT NO 03
LOCATION - SEVIER, ( SAMPLED BY - THORNTON/) SAMPLE FROM - TEST HOLD MATERIAL DESC SOIL S	BATES E	EMENT SOUNDIN	DATE SAMPLED - 08/14/17 DATE RECEIVED - 08/16/17 DATE TESTED - 09/05/17 GS
LAB NUMBER SAMPLE ID	- 20172663 - S556		-
			-
TEST STATUS STATION	- 114+40	-	-
LOCATION	- 16 LT	-	-
DEPTH IN FEET			-
MAT'L COLOR		-	-
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 33 54 21.10	-	-
LONGITUDE DEG-MIN-SEC	- 94 10 22.50		
% PASSING 2 IN	-	2	-
1 1/2 IN		-	-
	- 100	3 <b>7</b> 5	-
3/8 IN.	- 91		_
NO. 4	- 82		-
NO. 10		-	-
NO. 40	- 72		-
NO. 80		-	-
NO. 200	- 41		
LIQUID LIMIT	- ND	-	-
PLASTICITY INDEX	- NP	-	
AASHTO SOIL	- A-4(0)	-	-
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	= 20.6		
	-	-	3 <b>.</b>
	570	-	0.00
		-	
	-	-	-
		-	
	÷.	-	
	(H) (H)	-	25
		_	-
	1273	-	
REMARKS - W=MULTIPLE L	AYERS, X=STRIPPED		

### REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

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### AASHTO TESTS : T24 T88 T89 T90 T265

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MIC	AY AND TRANSPORTATION DEPARTMEN MATERIALS DIVISION CHAEL BENSON, MATERIALS ENGINEED SURVEY / PAVEMENT SOUNDING TES	R
DATE - 09/05/17 JOB NUMBER - 030008 FEDERAL AID NO TO BE ASS PURPOSE - SOIL SURV SPEC. REMARKS - NO SPECIF SUPPLIER NAME - STATE NAME OF PROJECT - JOHNS B PROJECT ENGINEER - NOT APP PIT/QUARRY - ARKANSAS	IGNED EY SAMPLE ICATION CHECK RANCH STR. & APPRS.(S)	SEQUENCE NO 1 MATERIAL CODE - RV SPEC. YEAR - 2014 SUPPLIER ID 1 COUNTY/STATE - 66 DISTRICT NO 03
LOCATION - SEVIER, COU SAMPLED BY - THORNTON/BAT SAMPLE FROM - TEST HOLE MATERIAL DESC SOIL SURV		DATE SAMPLED - 08/14/17 DATE RECEIVED - 08/16/17 DATE TESTED - 09/05/17 L RESULTS
LAB NUMBER - SAMPLE ID - TEST STATUS - STATION - LOCATION -	20172664 - RV557 - INFORMATION ONLY - 108+10 -	
DEPTH IN FEET - MAT'L COLOR - MAT'L TYPE - LATITUDE DEG-MIN-SEC - LONGITUDE DEG-MIN-SEC -	0-5 BROWN 33 54 15.30	
* PASSING 2 IN * PASSING 2 IN 1 1/2 IN 3/4 IN 3/8 IN NO. 4 - NO. 10 - NO. 40 -	- - 89 - 78 - 69 -	
NO. 200 - LIQUID LIMIT - PLASTICITY INDEX -	55 - 46 37 - 20 -	-
AASHTO SOIL - UNIFIED SOIL - % MOISTURE CONTENT - -	A-6(5) - - -	-
- - - -		
- - -	- - -	- -
REMARKS - W=MULTIPLE LAYN -	ERS,X=STRIPPED	

### AASHTO TESTS : T24 T88 T89 T90 T265

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