

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. 020628

FEDERAL AID PROJECT NO. STPC-STPLC-9345(42)

I-530 – HWY. 79B (FRANKLIN ST. & 6TH AVE.) (PINE BLUFF) (S)

STATE HIGHWAY 190 SECTION 5

IN JEFFERSON 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

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

July 27, 2018

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 020628
I-530 – Hwy. 79B (Franklin St. & 6th Ave.) (S)
Route 190 Section 5
Jefferson County

Transmitted herewith is the requested Soil Survey, strength data and Resilient Modulus test results for the above referenced job. The project consists of widening approximately 2 miles of Highway 190. Samples were taken in the existing travel lanes and ditch line. There are no paved shoulders within the project limits.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of low plasticity clayey sands. 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.

The ditches on the west side of Franklin St. had flowing water coming from a pond outside the project limits. Earthwork recommendations will be made upon request when plans are further developed and cross sections become 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 near Sweet Home.
2. Asphalt Concrete Hot Mix

Table with 3 columns: Type, Asphalt Cement %, Mineral Aggregate %. Rows include Surface Course, Binder Course, and Base Course.

Handwritten signature of Michael C. Benson, Materials Engineer

MCB:pt:bjj
Attachment
cc: State Constr. Eng. – Master File Copy
District 2 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 - 07/23/2018  
JOB NUMBER - 020628

SEQUENCE NO. - 1  
MATERIAL CODE - SSRV  
SPEC. YEAR - 2014  
SUPPLIER ID. - 1  
COUNTY/STATE - 35  
DISTRICT NO. - 02

JOB NAME - I-530 - HWY. 79B (FRANKLIN ST. & 6TH AVE.) (S)

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

BEGIN JOB - END JOB 8

RESILIENT MODULUS  
STA. 101 + 00 8486

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REMARKS -

AASHTO TESTS : T190

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

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

<b>Job No.</b>	020628	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	5/22/18	<b>Station No.:</b>	101+00
<b>Date Tested:</b>	June 27, 2018	<b>Location:</b>	12'RT
<b>Name of Project:</b>	I-530 - HWY. 79B (FRANKLIN ST. & 6TH AVE.)(S)		
<b>County:</b>	<b>Code:</b> 35	<b>Name:</b>	JEFFERSON
<b>Sampled By:</b>	FRAZIER/JORDAN	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20181206	<b>AASHTO Class:</b>	A-4 (0)
<b>Sample ID:</b>	RV291	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

**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	3.94
Middle	3.94
Bottom	3.94
Average	3.94
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):	12.12
Initial Volume, AoLo (cu. in):	97.19

**3. Soil Specimen Weight:**

Weight of Wet Soil Used (g):	3317.30
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**4. Soil Properties:**

Optimum Moisture Content (%):	12.5
Maximum Dry Density (pcf):	116.6
95% of MDD (pcf):	110.8
In-Situ Moisture Content (%):	N/A

**5. Specimen Properties:**

Wet Weight (g):	3317.30
Compaction Moisture content (%):	12.4
Compaction Wet Density (pcf):	130.06
Compaction Dry Density (pcf):	115.71
Moisture Content After Mr Test (%):	12.4

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

**7. Resilient Modulus, Mr:** 7330(Sc)<sup>-0.07188</sup>(S3)<sup>0.41338</sup>

**8. Comments**

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**9. Tested By:** GW **Date:** June 27, 2018

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

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

**Job No.** 020628      **Material Code** SSRVPS  
**Date Sampled:** 5/22/18      **Station No.:** 101+00  
**Date Tested:** June 27, 2018      **Location:** 12'RT  
**Name of Project:** I-530 - HWY. 79B (FRANKLIN ST. & 6TH AVE.)(S)  
**County:** Code: 35      **Name:** JEFFERSON  
**Sampled By:** FRAZIER/JORDAN      **Depth:** 0-5  
**Lab No.:** 20181206      **AASHTO Class:** A-4 (0)  
**Sample ID:** RV291      **Material Type (1 or 2):** 2  
**LATITUDE:**      **LONGITUDE:**

PARAMETER	Chamber Confining Pressure	S <sub>3</sub> psi	Nominal Maximum Axial Stress	Actual Applied Max. Axial Load	P <sub>max</sub> lbs	Actual Applied Cyclic Load	P <sub>cyclic</sub> lbs	Actual Applied Contact Load	P <sub>contact</sub> lbs	Actual Applied Max. Axial Stress	S <sub>max</sub> psi	Actual Applied Cyclic Stress	S <sub>cyclic</sub> psi	Actual Applied Contact Stress	S <sub>contact</sub> psi	Average Recov Def. LVDT 1 and 2	H <sub>avg</sub> in	Resilient Strain	ε <sub>r</sub> in/in	Resilient Modulus	M <sub>r</sub> psi
Sequence 1	6.0	2.0	25.0	22.3	2.7	2.1	1.8	0.00100	0.00012	14,793											
Sequence 2	6.0	4.0	47.1	44.3	2.8	3.9	3.7	0.00205	0.00026	14,290											
Sequence 3	6.0	6.0	70.0	66.4	3.5	5.8	5.5	0.00317	0.00040	13,868											
Sequence 4	6.0	8.0	94.2	88.2	5.9	7.8	7.3	0.00439	0.00055	13,300											
Sequence 5	6.0	10.0	118.4	110.0	8.4	9.8	9.1	0.00560	0.00070	13,009											
Sequence 6	4.0	2.0	24.9	22.2	2.6	2.1	1.8	0.00117	0.00015	12,592											
Sequence 7	4.0	4.0	46.6	44.0	2.6	3.8	3.6	0.00250	0.00031	11,649											
Sequence 8	4.0	6.0	68.1	65.4	2.8	5.6	5.4	0.00387	0.00048	11,173											
Sequence 9	4.0	8.0	92.2	87.1	5.0	7.6	7.2	0.00519	0.00065	11,112											
Sequence 10	4.0	10.0	116.4	108.9	7.5	9.6	9.0	0.00651	0.00081	11,079											
Sequence 11	2.0	2.0	24.4	21.7	2.7	2.0	1.8	0.00152	0.00019	9,445											
Sequence 12	2.0	4.0	45.5	42.8	2.7	3.8	3.5	0.00327	0.00041	8,663											
Sequence 13	2.0	6.0	66.5	63.8	2.7	5.5	5.3	0.00497	0.00062	8,486											
Sequence 14	2.0	8.0	88.8	84.6	4.2	7.3	7.0	0.00651	0.00081	8,598											
Sequence 15	2.0	10.0	112.4	105.8	6.6	9.3	8.7	0.00799	0.00100	8,765											

**TESTED BY** \_\_\_\_\_ **DATE** June 27, 2018  
**REVIEWED BY** \_\_\_\_\_ **DATE** \_\_\_\_\_

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

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

<b>Job No.</b>	020628	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	5/22/18	<b>Station No.:</b>	101+00
<b>Date Tested:</b>	June 27, 2018	<b>Location:</b>	12'RT
<b>Name of Project:</b>	I-530 - HWY. 79B (FRANKLIN ST. & 6TH AVE.)(S)		
<b>County:</b>	<b>Code:</b> 35	<b>Name:</b>	JEFFERSON
<b>Sampled By:</b>	FRAZIER/JORDAN	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20181206	<b>AASHTO Class:</b>	A-4 (0)
<b>Sample ID:</b>	RV291	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

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

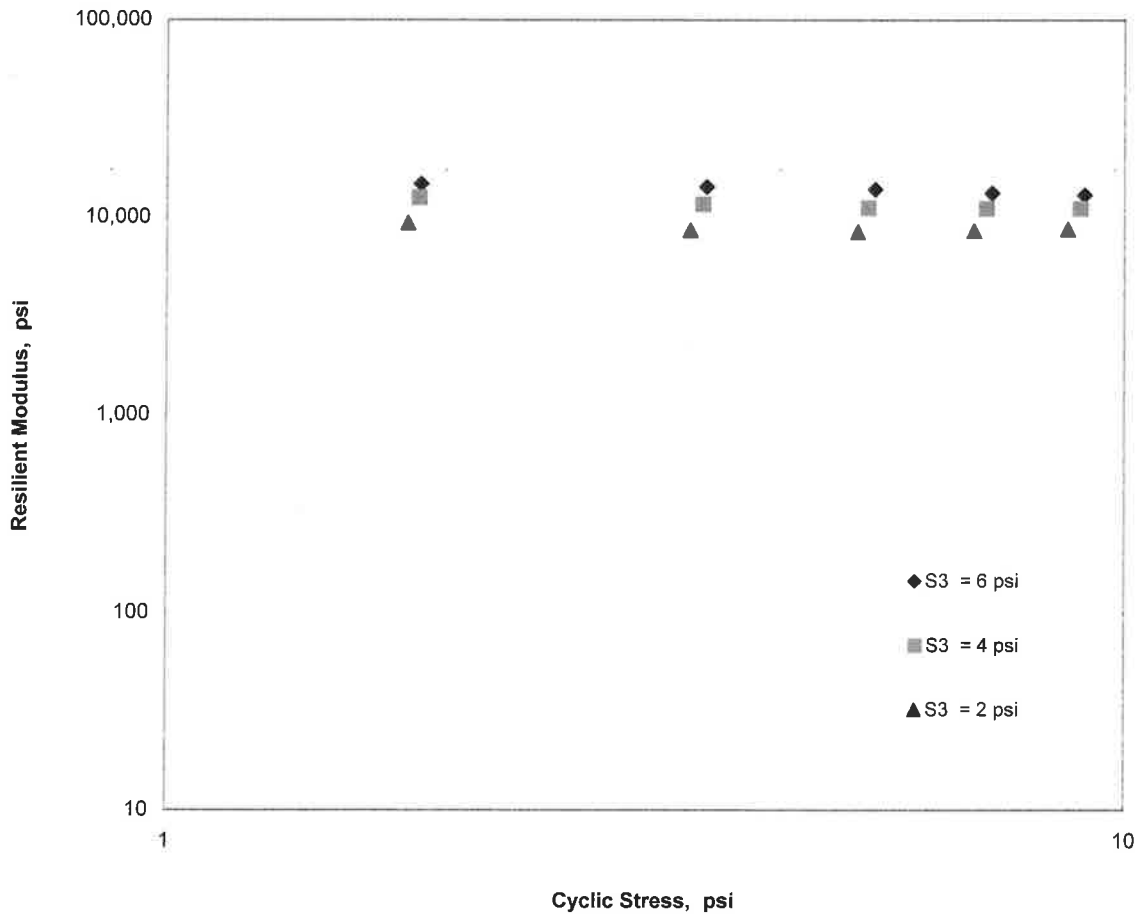
$$K_1 = 7,330$$

$$K_2 = -0.07188$$

$$K_5 = 0.41338$$

$$R^2 = 0.99$$

**Resilient Modulus QA Plot**



JOB: 020628

Arkansas State Highway Transportation Department

JOB NAME: I-530 - HWY. 79B (FRANKLIN ST. & 6TH AVE.)(S)

Materials Division

COUNTY NO. 35 DATE TESTED 6/12/2018

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR						L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				#4	#10	#40	#80	#200					
				S	I	E	V	E	S				
101+00	12RT	0-5	BROWN	97	95	92	88	70	ND	NP	A-4(0)	RV291	
101+00	05RT	0-5	BROWN	96	95	91	89	80	21	6	A-4(2)	S274	17.8
101+00	12RT	0-5	BROWN	99	97	94	90	72	21	6	A-4(2)	S275	18.1
109+00	05LT	0-5	BR/GR	100	99	98	92	64	ND	NP	A-4(0)	S276	16.4
117+00	05RT	0-5	BROWN	98	97	96	93	78	28	14	A-6(9)	S277	22.7
117+00	12RT	0-5	BROWN	99	98	94	91	74	17	2	A-4(0)	S278	24.2
124+00	05LT	0-5	BROWN	99	99	98	91	68	20	6	A-4(1)	S279	19.7
124+00	12LT	0-5	BROWN	97	93	88	80	54	ND	NP	A-4(0)	S280	20.9
202+00	05RT	0-5	BROWN	100	99	98	90	73	ND	NP	A-4(0)	S281	15.5
202+00	12RT	0-5	BROWN	99	97	95	90	73	21	6	A-4(2)	S282	17.5
210+00	05LT	0-5	BROWN	99	99	99	97	88	24	8	A-4(5)	S283	19.8
218+00	05RT	0-5	BROWN	100	99	98	95	82	25	9	A-4(5)	S284	20.9
218+00	12RT	0-5	BROWN	85	82	76	70	59	26	11	A-6(4)	S285	19.2
242+00	05LT	0-5	BROWN	99	99	98	96	85	22	6	A-4(3)	S286	22.9
250+00	05RT	0-5	BROWN	98	96	93	90	77	20	5	A-4(1)	S287	19.4
250+00	12RT	0-5	BROWN	100	99	98	95	70	21	4	A-4(0)	S288	18.2
258+00	05LT	0-5	GRAY	98	97	95	93	73	19	3	A-4(0)	S289	20.2
274+00	05LT	0-5	GRAY	96	93	90	79	64	ND	NP	A-4(0)	S290	18.3

**JOB:** 020628

**JOB NAME:** I-530 - HWY. 79B (FRANKLIN ST. & 6TH AVE.)(S)

**Arkansas State Highway Transportation Department  
Materials Division**

**DATE TESTED**  
6/12/2018

**COUNTY NO.** 35

**Michael Benson, Materials Engineer**

**STA.# LOC.** PAVEMENT SOUNDINGS

101+00	05RT	ACHMSC	CHIP SEAL	AGG. BASE CRS. CL-7
		3.25	1.0X	5.0
101+00	12RT	ACHMSC	CHIP SEAL	AGG. BASE CRS. CL-7
		---	---	---
109+00	05LT	ACHMSC	CHIP SEAL	AGG. BASE CRS. CL-7
		4.25W	---	6.5
117+00	05RT	ACHMSC	AGG. BASE CRS. CL-7	
		6.5WX	5.0	
117+00	12RT	ACHMSC	AGG. BASE CRS. CL-7	
		---	---	---
124+00	05LT	ACHMSC	AGG. BASE CRS. CL-7	
		4.0WX	6.0	
124+00	12LT	ACHMSC	CHIP SEAL	AGG. BASE CRS., CL-7
		---	---	---
202+00	05RT	ACHMSC	CHIP SEAL	AGG. BASE CRS., CL-7
		3.5W	0.5	7.0
202+00	12RT	ACHMSC	CHIP SEAL	AGG. BASE CRS., CL-7
		---	---	---
210+00	05LT	ACHMSC	CHIPS SEAL	AGG. BASE CRS. CL-7
		5.5W	0.25	8.0
218+00	05RT	ACHMSC	CHIPS SEAL	AGG. BASE CRS. CL-7
		7.25W	---	7.0
218+00	12RT	ACHMSC	CHIPS SEAL	AGG. BASE CRS. CL-7
		---	---	---
242+00	05LT	ACHMSC	AGG. BASE CSR, CL-7	
		4.25W	8.0	
250+00	05RT	ACHMSC	AGG. BASE CSR, CL-7	
		5.25W	7.0	
250+00	12RT	ACHMSC	AGG. BASE CSR, CL-7	
		---	---	---
258+00	05LT	ACHMSC	AGG. BASE CRS, CL-7	
		4.25W	8.0	
274+00	05LT	ACHMSC	AGG. BASE CRS, CL-7	
		3.5W	7.0	

**comments:** W=MULTIPLE LAYERS, X=STRIPPED

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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 06/12/18 SEQUENCE NO. - 1  
JOB NUMBER - 020628 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 - 35  
SUPPLIER NAME - STATE DISTRICT NO. - 02  
NAME OF PROJECT - I-530 - HWY. 79B (FRANKLIN ST. & 6TH AVE.) (S)  
PROJECT ENGINEER - NOT APPLICABLE  
PIT/QUARRY - ARKANSAS  
LOCATION - JEFFERSON, COUNTY DATE SAMPLED - 05/22/18  
SAMPLED BY - T.FRAZIER DATE RECEIVED - 05/23/18  
SAMPLE FROM - TEST HOLE DATE TESTED - 06/12/18  
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	-	20181189	-	20181190	-	20181191
SAMPLE ID	-	S274	-	S275	-	S276
TEST STATUS	-	INFORMATION ONLY	-	INFORMATION ONLY	-	INFORMATION ONLY
STATION	-	101+00	-	101+00	-	109+00
LOCATION	-	05RT	-	12RT	-	05LT
DEPTH IN FEET	-	0-5	-	0-5	-	0-5
MAT'L COLOR	-	BROWN	-	BROWN	-	BR/GR
MAT'L TYPE	-		-		-	
LATITUDE DEG-MIN-SEC	-	34 12 58.40	-	34 12 58.40	-	34 13 6.30
LONGITUDE DEG-MIN-SEC	-	92 04 9.70	-	92 04 9.60	-	92 04 9.80
% PASSING						
	2	IN.	-		-	
	1 1/2	IN.	-		-	
	3/4	IN.	-	100	-	
	3/8	IN.	-	97	-	
	NO. 4		-	96	-	100
	NO. 10		-	95	-	99
	NO. 40		-	91	-	98
	NO. 80		-	89	-	92
	NO. 200		-	80	-	72
			-		-	64
LIQUID LIMIT	-	21	-	21	-	ND
PLASTICITY INDEX	-	6	-	6	-	NP
AASHTO SOIL	-	A-4 (2)	-	A-4 (2)	-	A-4 (0)
UNIFIED SOIL	-		-		-	
% MOISTURE CONTENT	-	17.8	-	18.1	-	16.4
ACHMSC	(IN)	3.25	-	---	-	4.25W
CHIP SEAL	(IN)	1.0X	-	---	-	---
AGG. BASE CRS. CL-7	(IN)	5.0	-	---	-	6.5
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED











