

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. BR1113

FEDERAL AID PROJECT NO. STPB-0011(56)

WHITE WALNUT CREEK STR. & APPRS. NO.2 (S)

COUNTY ROAD NO. CR 76

IN CLAY 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

August 6, 2018

TO: Mr. Claude Klink, State Aid Engineer

SUBJECT: Job No. BR1113
White Walnut Creek. Str. & Apprs.
County Road 76
Clay 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 White Walnut Creek on County Road 76. 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 non-plastic 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.

Additional 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 in the vicinity of Pocahontas.
2. Asphalt Concrete Hot Mix

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


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 - 07/24/2018
JOB NUMBER - BR1113

SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 11
DISTRICT NO. - 10

JOB NAME - WHITE WALNUT CREEK STR. & APPRS. (S)

* STATION LIMITS R-VALUE AT 240 psi *

BEGIN JOB - END JOB 20

RESILIENT MODULUS
STA. 107 + 00 5961

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.	BR1113	Material Code	SSRVPS
Date Sampled:	5/8/18	Station No.:	107+00
Date Tested:	June 21, 2018	Location:	12'RT
Name of Project:	WHITE WALNUT CREEK STR. & APPRS. (S)		
County:	Code: 11	Name: CLAY	
Sampled By:	FRAZIER/BATES	Depth:	0-5
Lab No.:	20181086	AASHTO Class:	A-2-4 (0)
Sample ID:	RV255	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	3.95
Bottom	3.95
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):	3216.20
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4. Soil Properties:

Optimum Moisture Content (%):	12.4
Maximum Dry Density (pcf):	114.5
95% of MDD (pcf):	108.8
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	3216.20
Compaction Moisture content (%):	12.4
Compaction Wet Density (pcf):	125.45
Compaction Dry Density (pcf):	111.61
Moisture Content After Mr Test (%):	12.2

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

7. Resilient Modulus, Mr: $4449(S_c)^{0.04401}(S_3)^{0.42968}$

8. Comments

9. Tested By: GW

Date: June 21, 2018

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

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

Job No. BR1113 **Material Code** SSRVPS
Date Sampled: 5/8/18 **Station No.:** 107+00
Date Tested: June 21, 2018 **Location:** 12'RT
Name of Project: WHITE WALNUT CREEK STR. & APPRS. (S)
County: Code: 11 **Name:** CLAY
Sampled By: FRAZIER/BATES **Depth:** 0-5
Lab No.: 20181086 **AAASHTO Class:** A-2-4 (0)
Sample ID: RV255 **Material Type (1 or 2):** 2
LATITUDE: LONGITUDE:

PARAMETER	DESIGNATION UNIT	Chamber	Nominal	Actual	Actual	Actual	Actual	Actual	Actual	Average	Resilient	Resilient
		Confining Pressure	Maximum Axial Stress	Applied Max. Axial Load	Applied Cyclic Load	Applied Contact Load	Applied Max. Axial Stress	Applied Cyclic Stress	Applied Contact Stress	Recov Def. LVDT 1 and 2	Strain	Modulus
		S ₃	S _{cyclic}	P _{max}	P _{cyclic}	P _{contact}	S _{max}	S _{cyclic}	S _{contact}	H _{avg}	ε _r	M _r
		psi	psi	lbs	lbs	lbs	psi	psi	psi	in	in/in	psi
Sequence 1		6.0	2.0	25.2	22.3	2.8	2.1	1.8	0.2	0.00143	0.00018	10,315
Sequence 2		6.0	4.0	47.6	44.7	2.9	3.9	3.7	0.2	0.00288	0.00036	10,242
Sequence 3		6.0	6.0	70.5	66.8	3.7	5.8	5.5	0.3	0.00427	0.00053	10,296
Sequence 4		6.0	8.0	95.0	88.8	6.2	7.8	7.3	0.5	0.00561	0.00070	10,430
Sequence 5		6.0	10.0	119.6	111.0	8.6	9.8	9.1	0.7	0.00685	0.00085	10,659
Sequence 6		4.0	2.0	24.9	22.0	2.8	2.0	1.8	0.2	0.00171	0.00021	8,482
Sequence 7		4.0	4.0	46.7	43.8	2.9	3.8	3.6	0.2	0.00347	0.00043	8,312
Sequence 8		4.0	6.0	68.6	65.7	2.9	5.6	5.4	0.2	0.00520	0.00065	8,307
Sequence 9		4.0	8.0	93.1	87.8	5.3	7.6	7.2	0.4	0.00673	0.00084	8,584
Sequence 10		4.0	10.0	117.1	109.4	7.7	9.6	9.0	0.6	0.00810	0.00101	8,898
Sequence 11		2.0	2.0	24.1	21.3	2.8	2.0	1.7	0.2	0.00228	0.00028	6,140
Sequence 12		2.0	4.0	44.8	42.0	2.8	3.7	3.4	0.2	0.00464	0.00058	5,961
Sequence 13		2.0	6.0	66.3	63.5	2.8	5.4	5.2	0.2	0.00660	0.00082	6,341
Sequence 14		2.0	8.0	89.2	84.9	4.3	7.3	7.0	0.4	0.00830	0.00104	6,734
Sequence 15		2.0	10.0	112.5	105.7	6.8	9.2	8.7	0.6	0.00982	0.00122	7,086

TESTED BY _____ DATE June 21, 2018
 REVIEWED BY _____ DATE _____
 GW _____

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

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

Job No.	BR1113	Material Code	SSRVPS
Date Sampled:	5/8/18	Station No.:	107+00
Date Tested:	June 21, 2018	Location:	12'RT
Name of Project:	WHITE WALNUT CREEK STR. & APPRS. (S)		
County:	Code: 11	Name:	CLAY
Sampled By:	FRAZIER/BATES		Depth: 0-5
Lab No.:	20181086	AASHTO Class:	A-2-4 (0)
Sample ID:	RV255	Material Type (1 or 2):	2
LATITUDE:		LONGITUDE:	

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

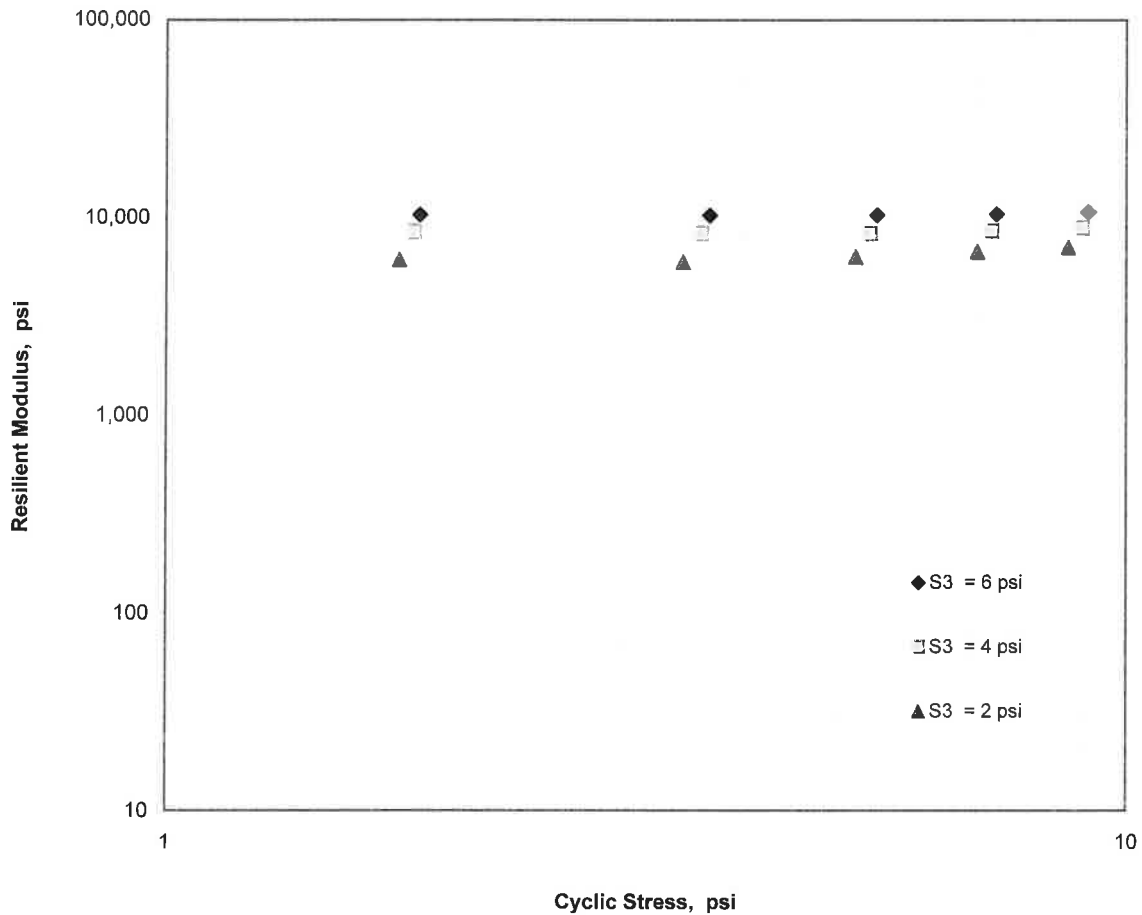
$$K_1 = 4,449$$

$$K_2 = 0.04401$$

$$K_5 = 0.42968$$

$$R^2 = 0.97$$

Resilient Modulus QA Plot



JOB: BR1113

Arkansas State Highway Transportation Department

JOB NAME: WHITE WALNUT CREEK STR. & APPRS. (S)

Materials Division

COUNTY NO. 11 DATE TESTED 5/22/2018

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				
107+00	12 RT	0-5	BROWN	95	94	91	66	31	ND	NP	A-2-4(0)	RV255	
107+00	05 RT	0-5	BROWN	99	99	93	59	23	ND	NP	A-2-4(0)	S251	11.5
107+00	12 RT	0-5	BROWN	98	95	91	82	44	ND	NP	A-4(0)	S252	15.6
113+00	06 LT	0-5	BROWN	99	97	91	62	24	ND	NP	A-2-4(0)	S253	9
113+00	12 LT	0-5	BROWN	99	98	96	69	36	ND	NP	A-4(0)	S254	16.2

comments:

Tuesday, July 24, 2018

