

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. 080508

FEDERAL AID PROJECT NO. NHPP-9095(35)

I-40/HWY. 65 INTCHNG. IMPVTS. (CONWAY) (S)

STATE HIGHWAY I-40, 65, & 65B SECTION 9, 9B & 32

IN FAULKNER 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. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 080508
I-40/Hwy. 65 Intchn. Impvts. (Conway) (S)
Routes 65 & 40 Sections 9 & 32
Faulkner County

Transmitted herewith is the requested Soil Survey, strength data and Resilient Modulus test results for the above referenced job. The project consists of making improvements to the Highway 65 and Interstate 40 Interchange. Samples were obtained in the existing travel lanes, ditch line and the new location alignment.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of low plasticity clayey sand with varying amounts of shale fragments. The subgrade soils are expected to provide a stable working platform with conventional processing if the weather is favorable during construction. Rock was encountered at station 127+00 36 feet right of centerline at a depth of 2.5 feet.

Highway 65

Based on currently available cross sections the maximum embankment height is approximately 5 feet. All soft unstable organic material in the ditch line should be undercut prior to embankment construction, anticipated to be no more than two feet. The embankment may be constructed with locally available unspecified material utilizing the 3:1 slope configuration shown in the cross sections.

Exit Ramp

Between stations 201+00 to 203+00 there is a shallow side hill fill approximately 9 feet in height right of centerline. All unstable organic material should be undercut prior to embankment construction, anticipated to be no more than two feet. The embankment may be constructed with locally available unspecified material utilizing the 3:1 slope configuration shown in the cross sections.

A retaining wall is proposed between stations 204+70 to 210+50. A potential alternative to the wall is extending the existing concrete rip-rip on a 2:1 slope as required to achieve the new ramp elevation. Additional borings for the retaining wall will be conducted at your request.

Between stations 205+00 to 210+00 is a cut right of centerline approximately 17 feet deep. The proposed 3:1 cut slopes are acceptable as shown.

Entrance Ramp

Between stations 407+00 to 410+00 is a side hill fill approximately 10 feet in height. All unstable organic material should be undercut prior to embankment construction, anticipated to be no more than two feet. The embankment may be constructed with locally available unspecified material utilizing the 3:1 slope configuration shown in the currently available cross sections.

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 Greenbrier
2. Asphalt Concrete Hot Mix

<u>Type</u>	<u>Asphalt Cement %</u>	<u>Mineral Aggregate %</u>
Surface Course	5.5	94.5
Binder Course	4.4	95.6
Base Course	4.0	96.0



Michael C. Benson
Materials Engineer

MCB:pt:bjj
Attachment

cc: State Constr. Eng. – Master File Copy
District 8 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 - 080508

SEQUENCE NO. - 1

MATERIAL CODE - SSRV

SPEC. YEAR - 2014

SUPPLIER ID. - 1

COUNTY/STATE - 23

DISTRICT NO. - 08

JOB NAME - I-40/HWY.65 INTCHNG. IMPVTS.(CONWAY)(S)

* STATION LIMITS R-VALUE AT 240 psi *

BEGIN JOB - END JOB 5

RESILIENT MODULUS

STA. 302 + 00 5406.

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.	080508	Material Code	SSRVPS
Date Sampled:	4/3/18	Station No.:	302+00
Date Tested:	May 16, 2018	Location:	CL
Name of Project:	I-40/HWY. 65 INTCHNG. IMPVTS. (CONWAY)(S)		
County:	Code: 23	Name:	FAULKNER
Sampled By:	THORNTON/FRAZIER	Depth:	0-5
Lab No.:	20180845	AASHTO Class:	A-4 (2)
Sample ID:	RV233	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):	3299.60
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4. Soil Properties:

Optimum Moisture Content (%):	14.3
Maximum Dry Density (pcf):	114.7
95% of MDD (pcf):	109.0
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	3299.60
Compaction Moisture content (%):	14.6
Compaction Wet Density (pcf):	128.71
Compaction Dry Density (pcf):	112.31
Moisture Content After Mr Test (%):	14.6

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

7. Resilient Modulus, Mr: 8719(Sc)^{-0.41851}(S3)^{0.47645}

8. Comments _____

9. Tested By: GW **Date:** May 16, 2018

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

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

Job No. 080508 **Material Code** SSRVPS
Date Sampled: 4/3/18 **Station No.:** 302+00
Date Tested: May 16, 2018 **Location:** CL
Name of Project: I-40/HWY. 65 INTCHNG. IMPVTS. (CONWAY)(S)
County: Code: 23 **Name:** FAULKNER
Sampled By: THORNTON/FRAZIER
Lab No.: 20180845
Sample ID: RV233
LATITUDE: **Depth:** 0-5
AASHTO Class: A-4 (2)
Material Type (1 or 2): 2
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	psi	psi	lbs	lbs	lbs	psi	psi	psi	in	in/in	psi
Sequence 1	6.0	2.0	25.3	23.7	1.6	2.1	1.9	0.1	0.00099	0.00012	15,742
Sequence 2	6.0	4.0	47.5	46.0	1.4	3.9	3.8	0.1	0.00236	0.00029	12,846
Sequence 3	6.0	6.0	69.6	66.6	3.0	5.7	5.5	0.2	0.00410	0.00051	10,684
Sequence 4	6.0	8.0	92.0	87.3	4.6	7.5	7.2	0.4	0.00653	0.00081	8,803
Sequence 5	6.0	10.0	114.3	107.1	7.2	9.4	8.8	0.6	0.00891	0.00111	7,912
Sequence 6	4.0	2.0	25.3	23.5	1.8	2.1	1.9	0.1	0.00126	0.00016	12,229
Sequence 7	4.0	4.0	46.5	44.5	2.1	3.8	3.7	0.2	0.00303	0.00038	9,657
Sequence 8	4.0	6.0	66.8	64.8	2.0	5.5	5.3	0.2	0.00537	0.00067	7,937
Sequence 9	4.0	8.0	89.3	85.1	4.2	7.3	7.0	0.3	0.00772	0.00096	7,251
Sequence 10	4.0	10.0	111.5	105.1	6.4	9.2	8.6	0.5	0.01028	0.00128	6,734
Sequence 11	2.0	2.0	24.8	22.8	2.0	2.0	1.9	0.2	0.00159	0.00020	9,423
Sequence 12	2.0	4.0	45.0	42.8	2.2	3.7	3.5	0.2	0.00399	0.00050	7,066
Sequence 13	2.0	6.0	64.0	61.7	2.3	5.3	5.1	0.2	0.00673	0.00084	6,035
Sequence 14	2.0	8.0	85.1	81.3	3.8	7.0	6.7	0.3	0.00967	0.00121	5,534
Sequence 15	2.0	10.0	107.3	100.9	6.4	8.8	8.3	0.5	0.01229	0.00153	5,406

TESTED BY _____ DATE May 16, 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.	080508	Material Code	SSRVPS
Date Sampled:	4/3/18	Station No.:	302+00
Date Tested:	May 16, 2018	Location:	CL
Name of Project:	I-40/HWY. 65 INTCHNG. IMPVTS. (CONWAY)(S)		
County:	Code: 23	Name:	FAULKNER
Sampled By:	THORNTON/FRAZIER	Depth:	0-5
Lab No.:	20180845	AASHTO Class:	A-4 (2)
Sample ID:	RV233	Material Type (1 or 2):	2
LATITUDE:		LONGITUDE:	

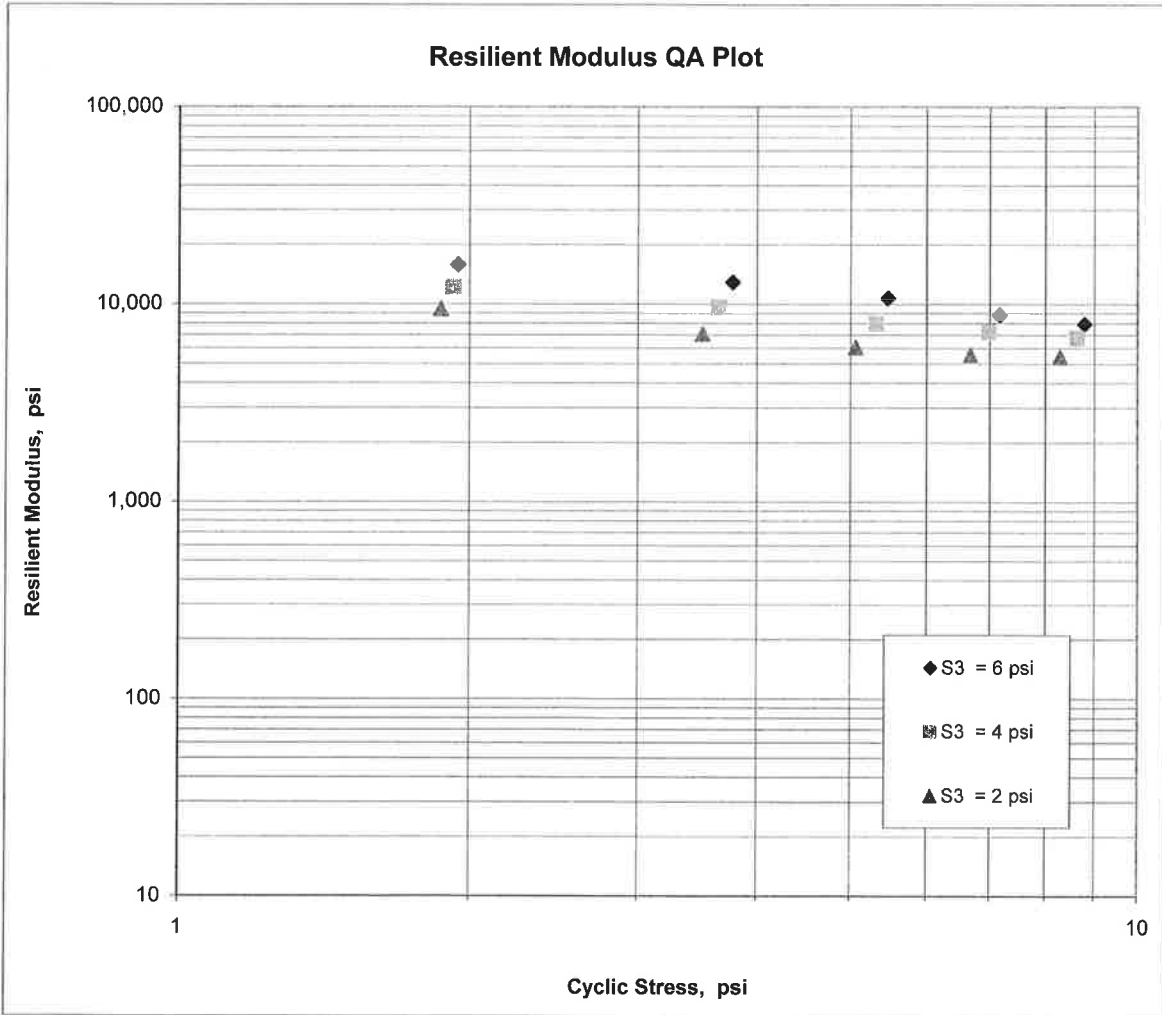
$$M_R = K_1 (S_C)^{K_2} (S_3)^{K_5}$$

$$K_1 = 8,719$$

$$K_2 = -0.41851$$

$$K_5 = 0.47645$$

$$R^2 = 0.98$$



JOB: 080508

Arkansas State Highway Transportation Department

JOB NAME: I-40/HWY.65 INTCHNG. IMPVTS.(CONWAY)(S)

Materials Division

COUNTY NO. 23 DATE TESTED 5/17/2018

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					
302+00	CL	0-5	BROWN	66	60	56	54	48	28	09	A-4(2)	RV233	
117+50	24 RT	0-5	BR/GR	96	91	87	83	73	29	12	A-6(7)	S227	19.9
117+50	42 RT	0-5	BR/GR	84	75	68	63	54	22	08	A-4(1)	S228	18.7
127+00	36 RT	0-2.5Z	BR/GR	90	81	70	65	49	23	08	A-4(1)	S229	20.3
127+00	48 RT	0-5	BROWN	58	49	43	39	29	22	06	A-2-4(0)	S230	13.9
203+00	CL	0-5	BROWN	90	80	71	68	62	29	13	A-6(5)	S231	15.9
302+00	CL	0-5	BROWN	88	82	78	76	68	27	11	A-6(5)	S232	13.1

comments: W=MULTIPLE LAYERS, Z=AUGER REFUSAL

Tuesday, July 24, 2018

JOB: 080508

Arkansas State Highway Transportation Department
Materials Division

DATE TESTED
5/17/2018

JOB NAME: I-40/HWY.65 INTCHNG. IMPVTS.(CONWAY)(S)

COUNTY NO. 23

Michael Benson, Materials Engineer

STA.# LOC. **PAVEMENT SOUNDINGS**

117+50	24 RT	ACHMSC 2.5W	ACHMBC 4.75	ACHMSC 6.25	ACHMBC 1.0	AGG. BASE CRS CL-7 4.0
117+50	42 RT	ACHMSC	ACHMBC	ACHMSC	ACHMBC	AGG. BASE CRS CL-7
127+00	36 RT	ACHMSC 3.0W	ACHMBC 4.0	ACHMSC	ACHMBC	AGG. BASE CRS CL-7 8.0

comments: W=MULTIPLE LAYERS, Z=AUGER REFUSAL

Tuesday, July 24, 2018

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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 05/17/18 SEQUENCE NO. - 1
JOB NUMBER - 080508 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 - 23
SUPPLIER NAME - STATE DISTRICT NO. - 08
NAME OF PROJECT - I-40/HWY.65 INTCHNG. IMPVTS. (CONWAY) (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - FAULKNER, COUNTY DATE SAMPLED - 04/03/18
SAMPLED BY - THORNTON/FRAZIER DATE RECEIVED - 04/05/18
SAMPLE FROM - TEST HOLE DATE TESTED - 05/17/18
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20180839	20180840	20180841
SAMPLE ID	S227	S228	S229
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	117+50	117+50	127+00
LOCATION	24 RT	42 RT	36 RT
DEPTH IN FEET	0-5	0-5	0-2.5Z
MAT'L COLOR	BR/GR	BR/GR	BR/GR
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	35 6 41.30	35 06 41.20	35 6 43.40
LONGITUDE DEG-MIN-SEC	92 26 16.30	92 26 16.20	92 26 5.20
% PASSING			
2 IN.	-	-	-
1 1/2 IN.	-	-	-
3/4 IN.	100	100	100
3/8 IN.	99	92	96
NO. 4	96	84	90
NO. 10	91	75	81
NO. 40	87	68	70
NO. 80	83	63	65
NO. 200	73	54	49
LIQUID LIMIT	29	22	23
PLASTICITY INDEX	12	08	08
AASHTO SOIL	A-6(7)	A-4(1)	A-4(1)
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	19.9	18.7	20.3
ACHMSC (IN)	2.5W	---	3.0W
ACHMBC (IN)	4.75	---	4.0
ACHMSC (IN)	6.25	---	---
ACHMBC (IN)	1.0	---	---
AGG. BASE CRS CL-7 (IN)	4.0	---	8.0
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL

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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 05/17/18 SEQUENCE NO. - 2
JOB NUMBER - 080508 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 - 23
SUPPLIER NAME - STATE DISTRICT NO. - 08
NAME OF PROJECT - I-40/HWY.65 INTCHNG. IMPVTS. (CONWAY) (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - FAULKNER, COUNTY DATE SAMPLED - 04/03/18
SAMPLED BY - THORNTON/FRAZIER DATE RECEIVED - 04/05/18
SAMPLE FROM - TEST HOLE DATE TESTED - 05/17/18
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	-	20180842	-	20180843	-	20180844
SAMPLE ID	-	S230	-	S231	-	S232
TEST STATUS	-	INFORMATION ONLY	-	INFORMATION ONLY	-	INFORMATION ONLY
STATION	-	127+00	-	203+00	-	302+00
LOCATION	-	48 RT	-	CL	-	CL
DEPTH IN FEET	-	0-5	-	0-5	-	0-5
MAT'L COLOR	-	BROWN	-	BROWN	-	BROWN
MAT'L TYPE	-	-	-	-	-	-
LATITUDE DEG-MIN-SEC	-	35 6 43.40	-	35 06 45.10	-	35 6 42.90
LONGITUDE DEG-MIN-SEC	-	92 26 5.20	-	92 26 20.40	-	92 26 13.90
% PASSING	2	IN. -	-	-	-	-
	1 1/2	IN. - 100	-	-	-	-
	3/4	IN. - 92	-	100	-	100
	3/8	IN. - 72	-	99	-	95
	NO. 4	- 58	-	90	-	88
	NO. 10	- 49	-	80	-	82
	NO. 40	- 43	-	71	-	78
	NO. 80	- 39	-	68	-	76
	NO. 200	- 29	-	62	-	68
LIQUID LIMIT	-	22	-	29	-	27
PLASTICITY INDEX	-	06	-	13	-	11
AASHTO SOIL	-	A-2-4(0)	-	A-6(5)	-	A-6(5)
UNIFIED SOIL	-	-	-	-	-	-
% MOISTURE CONTENT	-	13.9	-	15.9	-	13.1
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL

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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 05/17/18 SEQUENCE NO. - 1
JOB NUMBER - 080508 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 - 23
SUPPLIER NAME - STATE DISTRICT NO. - 08
NAME OF PROJECT - I-40/HWY.65 INTCHNG. IMPVTS. (CONWAY) (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - FAULKNER, COUNTY DATE SAMPLED - 04/03/18
SAMPLED BY - THORNTON/FRAZIER DATE RECEIVED - 04/05/18
SAMPLE FROM - TEST HOLE DATE TESTED - 05/17/18
MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS

LAB NUMBER - 20180845 -
SAMPLE ID - RV233 -
TEST STATUS - INFORMATION ONLY -
STATION - 302+00 -
LOCATION - CL -
DEPTH IN FEET - 0-5 -
MAT'L COLOR - BROWN -
MAT'L TYPE - -
LATITUDE DEG-MIN-SEC - 35 6 42.90 -
LONGITUDE DEG-MIN-SEC - 92 26 13.90 -
% PASSING 2 IN. - -
1 1/2 IN. - 100 -
3/4 IN. - 96 -
3/8 IN. - 75 -
NO. 4 - 66 -
NO. 10 - 60 -
NO. 40 - 56 -
NO. 80 - 54 -
NO. 200 - 48 -
LIQUID LIMIT - 28 -
PLASTICITY INDEX - 09 -
AASHTO SOIL - A-4 (2) -
UNIFIED SOIL - -
% MOISTURE CONTENT - -
- -
- -
- -
- -
- -
- -
- -
- -
- -

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL
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