

ARKANSAS DEPARTMENT OF TRANSPORTATION



**SUBSURFACE INVESTIGATION**

STATE JOB NO. 020583

FEDERAL AID PROJECT NO. NHPP-0040(35)

CLEAR CREEK STR. & APPRS. (S)

STATE HIGHWAY 11 SECTION 25

IN LINCOLN 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 25, 2017

**TO:** Mr. Trinity Smith, Engineer of Roadway Design

**SUBJECT:** Job No. 020583  
Clear Creek Str. & Apprs. (S)  
Route 11S Section 2  
Lincoln 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 Clear Creek on Highway 11S. 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 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 Little Rock.
2. Asphalt Concrete Hot Mix

<u>Type</u>	<b>PG 64-22</b>	
	<b>Asphalt Cement %</b>	<b>Mineral Aggregate %</b>
Surface Course	5.2	94.8
Binder Course	4.2	95.8
Base Course	3.5	96.5

<u>Type</u>	<b>PG 70-22</b>	
	<b>Asphalt Cement %</b>	<b>Mineral Aggregate %</b>
Surface Course	5.1	94.9
Binder Course	4.3	95.7
Base Course	3.8	96.2

Job 020583  
August 25, 2017

<b>PG 76-22</b>		
<b>Type</b>	<b>Asphalt Cement %</b>	<b>Mineral Aggregate %</b>
Surface Course	5.2	94.8
Binder Course	4.3	95.7
Base Course	3.6	96.4



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 - 08/18/2017  
JOB NUMBER - 020583

SEQUENCE NO. - 1  
MATERIAL CODE - SSRV  
SPEC. YEAR - 2014  
SUPPLIER ID. - 1  
COUNTY/STATE - 40  
DISTRICT NO. - 02

JOB NAME - CLEAR CREEK STR. & APPRS.(S)

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

BEGIN JOB - END JOB LESS THAN 5

RESILIENT MODULUS  
ST. 110+10 6644

-----  
REMARKS -

AASHTO TESTS : T190

**JOB: 020583**

**Arkansas State Highway Transportation Department**

**JOB NAME: CLEAR CREEK STR. & APPRS.(S)**

**Materials Division**

**COUNTY NO. 40 DATE TESTED 8/1/2017**

**Michael Benson, Materials Engineer**

STA.#	LOC.	DEPTH	COLOR						L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				#4	#10	#40	#80	#200					
110+10	21 RT	0-5	BROWN	72	61	48	43	37	40	23	A-6(3)	RV499	
110+00	06 RT	0-5	BROWN	81	66	52	47	40	33	18	A-6(3)	S495	14.9
110+00	21 RT	0-5	BROWN	84	78	70	65	60	34	18	A-6(8)	S496	16.8
117+00	06 LT	0-5	BROWN	88	82	70	52	38	46	31	A-7-6(6)	S497	15.7
117+00	21 LT	0-5	BROWN	93	89	79	47	33	34	18	A-2-6(1)	S498	10.2

**comments: W=MULTIPLE LAYERS**

**Monday, August 21, 2017**

**JOB:** 020583

**JOB NAME:** CLEAR CREEK STR. & APPRS.(S)

**Arkansas State Highway Transportation Department  
Materials Division**

**DATE TESTED**  
8/1/2017

**COUNTY NO.** 40

**Michael Benson, Materials Engineer**

**STA.# LOC.**

**PAVEMENT SOUNDINGS**

110+00	06 RT	BST	ACHMSC	AGG.BASE CRS CL-7
		--	<b>5.0W</b>	11.0
110+00	21 RT	BST	ACHMSC	AGG.BASE CRS CL-7
		--	--	--
117+00	06 LT	BST	ACHMSC	AGG.BASE CRS CL-7
		.75	<b>2.5W</b>	11.0

**comments:** W=MULTIPLE LAYERS

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

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

<b>Job No.</b>	020583	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	7/19/17	<b>Station No.:</b>	110+10
<b>Date Tested:</b>	August 11, 2017	<b>Location:</b>	21RT
<b>Name of Project:</b>	CLEAR CREEK STR. & APPRS. (S)		
<b>County:</b>	<b>Code:</b> 40	<b>Name:</b>	LINCOLN
<b>Sampled By:</b>	THORNTON/JORDAN		
<b>Lab No.:</b>	20172442	<b>Depth:</b>	0-5
<b>Sample ID:</b>	RV499	<b>AASHTO Class:</b>	A-6(3)
<b>LATITUDE:</b>		<b>Material Type (1 or 2):</b>	2
		<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	3.96
Bottom	3.95
Average	3.95
Membrane Thickness (in):	0.01
Height of Specimen, Cap and Base (in):	8.03
Height of Cap and Base (in):	0.00
Initial Length, Lo (in):	8.03
Initial Area, Ao (sq. in):	12.18
Initial Volume, AoLo (cu. in):	97.80

**3. Soil Specimen Weight:**

Weight of Wet Soil Used (g):	3059.20
------------------------------	---------

**4. Soil Properties:**

Optimum Moisture Content (%):	16.7
Maximum Dry Density (pcf):	106.3
95% of MDD (pcf):	101.0
In-Situ Moisture Content (%):	N/A

**5. Specimen Properties:**

Wet Weight (g):	3059.20
Compaction Moisture content (%):	16.9
Compaction Wet Density (pcf):	119.18
Compaction Dry Density (pcf):	101.95
Moisture Content After Mr Test (%):	17.0

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

**7. Resilient Modulus, Mr:** 10331(Sc)<sup>-0.25980</sup>(S3)<sup>0.20397</sup>

**8. Comments**

\_\_\_\_\_

\_\_\_\_\_

**9. Tested By:** GW **Date:** August 11, 2017

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

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

**Job No.** 020583      **Material Code** SSRVPS  
**Date Sampled:** 7/19/17      **Station No.:** 110+10  
**Date Tested:** August 11, 2017      **Location:** 21'RT

**Name of Project:** CLEAR CREEK STR. & APPRS. (S)

**County:** Code: 40      **Name:** LINCOLN

**Sampled By:** THORNTON/JORDAN

**Lab No.:** 20172442

**Sample ID:** RV499

**LATITUDE:**

**Depth:** 0-5

**AASHTO Class:** A-6(3)

**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
			P <sub>max</sub>	P <sub>contact</sub>								
DESIGNATION	S <sub>3</sub>	S <sub>cyclic</sub>	lbs	lbs	P <sub>cyclic</sub>	P <sub>contact</sub>	psi	psi	psi	in	in/in	psi
Sequence 1	6.0	2.0	25.1	22.4	22.4	2.8	2.1	1.8	0.2	0.00119	0.00015	12,343
Sequence 2	6.0	4.0	47.3	44.5	44.5	2.8	3.9	3.7	0.2	0.00254	0.00032	11,570
Sequence 3	6.0	6.0	69.8	66.2	66.2	3.6	5.7	5.4	0.3	0.00424	0.00053	10,284
Sequence 4	6.0	8.0	92.4	86.4	86.4	6.1	7.6	7.1	0.5	0.00644	0.00080	8,842
Sequence 5	6.0	10.0	114.5	106.0	106.0	8.5	9.4	8.7	0.7	0.00898	0.00112	7,783
Sequence 6	4.0	2.0	25.1	22.3	22.3	2.8	2.1	1.8	0.2	0.00132	0.00016	11,126
Sequence 7	4.0	4.0	47.1	44.3	44.3	2.8	3.9	3.6	0.2	0.00288	0.00036	10,122
Sequence 8	4.0	6.0	68.5	65.6	65.6	2.8	5.6	5.4	0.2	0.00474	0.00059	9,131
Sequence 9	4.0	8.0	91.2	86.0	86.0	5.2	7.5	7.1	0.4	0.00687	0.00086	8,253
Sequence 10	4.0	10.0	113.4	105.8	105.8	7.6	9.3	8.7	0.6	0.00941	0.00117	7,410
Sequence 11	2.0	2.0	25.1	22.2	22.2	2.8	2.1	1.8	0.2	0.00151	0.00019	9,714
Sequence 12	2.0	4.0	46.8	44.0	44.0	2.8	3.8	3.6	0.2	0.00328	0.00041	8,828
Sequence 13	2.0	6.0	67.7	64.9	64.9	2.9	5.6	5.3	0.2	0.00534	0.00067	8,005
Sequence 14	2.0	8.0	89.4	85.0	85.0	4.3	7.3	7.0	0.4	0.00771	0.00096	7,274
Sequence 15	2.0	10.0	111.4	104.6	104.6	6.8	9.1	8.6	0.6	0.01038	0.00129	6,644

TESTED BY \_\_\_\_\_ DATE August 11, 2017  
 REVIEWED BY \_\_\_\_\_ DATE \_\_\_\_\_



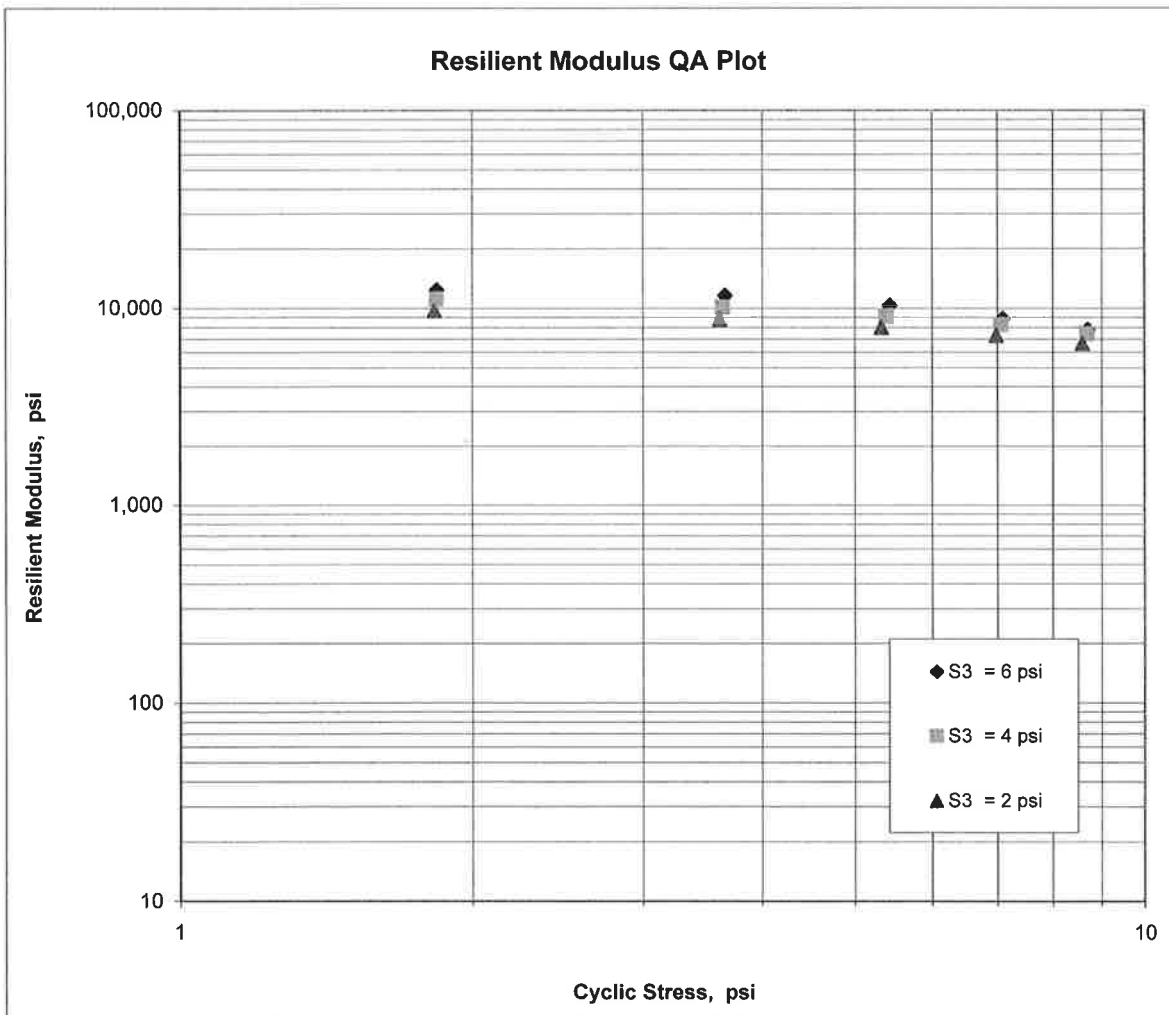
**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
MATERIALS DIVISION**

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

<b>Job No.</b>	020583	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	7/19/17	<b>Station No.:</b>	110+10
<b>Date Tested:</b>	August 11, 2017	<b>Location:</b>	21'RT
<b>Name of Project:</b>	CLEAR CREEK STR. & APPRS. (S)		
<b>County:</b>	<b>Code:</b> 40	<b>Name:</b>	LINCOLN
<b>Sampled By:</b>	THORNTON/JORDAN		<b>Depth:</b> 0-5
<b>Lab No.:</b>	20172442	<b>AASHTO Class:</b>	A-6(3)
<b>Sample ID:</b>	RV499	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

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

$K_1 =$	<u>10,331</u>
$K_2 =$	<u>-0.25980</u>
$K_5 =$	<u>0.20397</u>
$R^2 =$	<u>0.93</u>



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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE	- 08/21/17	SEQUENCE NO.	- 1
JOB NUMBER	- 020583	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	- 40
SUPPLIER NAME	- STATE	DISTRICT NO.	- 02
NAME OF PROJECT	- CLEAR CREEK STR. & APPRS. (S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- LINCOLN COUNTY	DATE SAMPLED	- 07/19/17
SAMPLED BY	- THORNTON/BATES	DATE RECEIVED	- 07/25/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 08/01/17
MATERIAL DESC.	- SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS		

LAB NUMBER	- 20172438	- 20172439	- 20172440
SAMPLE ID	- S495	- S496	- S497
TEST STATUS	- INFORMATION ONLY	- INFORMATION ONLY	- INFORMATION ONLY
STATION	- 110+00	- 110+00	- 117+00
LOCATION	- 06 RT	- 21 RT	- 06 LT
DEPTH IN FEET	- 0-5	- 0-5	- 0-5
MAT'L COLOR	- BROWN	- BROWN	- BROWN
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 33 53 34.30	- 33 53 34.00	- 33 53 38.10
LONGITUDE DEG-MIN-SEC	- 91 53 32.30	- 91 53 32.90	- 91 53 26.60
% PASSING			
2 IN.	-	-	-
1 1/2 IN.	-	-	-
3/4 IN.	- 100	- 100	- 100
3/8 IN.	- 94	- 96	- 96
NO. 4	- 81	- 84	- 88
NO. 10	- 66	- 78	- 82
NO. 40	- 52	- 70	- 70
NO. 80	- 47	- 65	- 52
NO. 200	- 40	- 60	- 38
LIQUID LIMIT	- 33	- 34	- 46
PLASTICITY INDEX	- 18	- 18	- 31
AASHTO SOIL	- A-6 (3)	- A-6 (8)	- A-7-6 (6)
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	- 14.9	- 16.8	- 15.7
BST (IN)	- --	- --	- .75
ACHMSC (IN)	- 5.0W	- --	- 2.5W
AGG.BASE CRS CL-7 (IN)	- 11.0	- --	- 11.0
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

REMARKS - W=MULTIPLE LAYERS

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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE	- 08/01/17	SEQUENCE NO.	- 2
JOB NUMBER	- 020583	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	- 40
SUPPLIER NAME	- STATE	DISTRICT NO.	- 02
NAME OF PROJECT	- CLEAR CREEK STR. & APPRS. (S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- LINCOLN COUNTY	DATE SAMPLED	- 07/19/17
SAMPLED BY	- THORNTON/BATES	DATE RECEIVED	- 07/25/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 08/01/17
MATERIAL DESC.	- SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS		

LAB NUMBER	- 20172441	-	-
SAMPLE ID	- S498	-	-
TEST STATUS	- INFORMATION ONLY	-	-
STATION	- 117+00	-	-
LOCATION	- 21 LT	-	-
DEPTH IN FEET	- 0-5	-	-
MAT'L COLOR	- BROWN	-	-
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 33 53 38.10	-	-
LONGITUDE DEG-MIN-SEC	- 91 53 26.60	-	-
% PASSING	2 IN.	-	-
	1 1/2 IN.	-	-
	3/4 IN.	- 100	-
	3/8 IN.	- 98	-
	NO. 4	- 93	-
	NO. 10	- 89	-
	NO. 40	- 79	-
	NO. 80	- 47	-
	NO. 200	- 33	-
LIQUID LIMIT	- 34	-	-
PLASTICITY INDEX	- 18	-	-
AASHTO SOIL	- A-2-6(1)	-	-
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	- 10.2	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

REMARKS - W=MULTIPLE LAYERS

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	- 08/01/17	SEQUENCE NO.	- 1
JOB NUMBER	- 020583	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	- 40
SUPPLIER NAME	- STATE	DISTRICT NO.	- 02
NAME OF PROJECT	- CLEAR CREEK STR. & APPRS. (S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- LINCOLN COUNTY	DATE SAMPLED	- 07/19/17
SAMPLED BY	- THORNTON/BATES	DATE RECEIVED	- 07/25/17
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 08/01/17
MATERIAL DESC.	- SOIL SURVEY - RESISTANCE R-VALUE	ACTUAL RESULTS	

LAB NUMBER	- 20172442	-	-
SAMPLE ID	- RV499	-	-
TEST STATUS	- INFORMATION ONLY	-	-
STATION	- 110+10	-	-
LOCATION	- 21 RT	-	-
DEPTH IN FEET	- 0-5	-	-
MAT'L COLOR	- BROWN	-	-
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 33 53 34.00	-	-
LONGITUDE DEG-MIN-SEC	- 91 53 32.90	-	-
% PASSING	2 IN.	-	-
	1 1/2 IN.	-	-
	3/4 IN.	- 100	-
	3/8 IN.	- 91	-
	NO. 4	- 72	-
	NO. 10	- 61	-
	NO. 40	- 48	-
	NO. 80	- 43	-
	NO. 200	- 37	-
LIQUID LIMIT	- 40	-	-
PLASTICITY INDEX	- 23	-	-
AASHTO SOIL	- A-6(3)	-	-
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

REMARKS - W=MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265