

ARKANSAS DEPARTMENT OF TRANSPORTATION



**SUBSURFACE INVESTIGATION**

STATE JOB NO. 080529

FEDERAL AID PROJECT NO. NHPP-0058(44)

HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS. (S)

STATE HIGHWAY 105 SECTION 1

IN POPE COUNTY

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ARKANSAS DEPARTMENT OF TRANSPORTATION

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MATERIALS DIVISION

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October 29, 2019

**TO:** Mr. Rick Ellis, Bridge Engineer

**SUBJECT:** Job No. 080529  
Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Pope County  
Route 105 Section 1

Transmitted herewith are a brief summary of the geology and site conditions, rock core unconfined compression test summary, RMR, D50 scour analysis, and the logs of the borings conducted for the structures and approaches of the above referenced project. The samples obtained by the Standard Penetration Tests were brought to the laboratory and visually classified by experienced lab personnel to confirm the field identifications.

This project consists of replacing the bridge crossing Isabell Creek, on Highway 105, in Oak Grove. The new bridge will be constructed on the existing alignment. Two of the eight requested borings, both intermediate bents, were inaccessible due to steep slopes and high water levels in the channel. The borings that were not obtained were located at: 204+29 12' Rt. of Construction C.L. and 204+41 12' Lt. of Construction C.L.. Both proposed bridge end borings were located on the centerline of the existing roadway and had to be offset.

The subsurface investigation revealed that bedrock is less than 5 feet deep on the north bridge end and over 20 feet deep on the south bridge end. Based on this information, it is anticipated that the north bridge end bent, at approximately station 203+94, will be founded on a spread footing and the south bridge end will be founded on piling. A spread footing founded in competent Sandstone should be sized based on the values provided in Table 1.

TABLE 1 – Bearing Capacity Recommendations for North Bridge End Spread Footing

Nominal Bearing Resistance (ksf)	Factored Bearing Resistance (ksf)	Bearing Resistance at Service Limit State (ksf)
2,200	990	40

Based on the depth at which bedrock was encountered in the intermediate bents and correspondence with Bridge Division, it is anticipated that intermediate bents will be founded on drilled shafts. Drilled Shafts socketed in competent Shale to Sandstone should be designed based on the values provided in Table 2.

TABLE 2 – Bearing Capacity Recommendations for Drilled Shafts

Nominal Shaft Side Resistance (ksf)	Factored Shaft Side Resistance (ksf)	Nominal Shaft Tip Resistance (ksf)	Factored Shaft Tip Resistance (ksf)
32.7	18	235	117.5

If you have any questions concerning these recommendations, please contact the Geotechnical Section.



Michael C. Benson  
Materials Engineer

MCB:rpt:mlg

cc: State Construction Engineer - Master File Copy  
District 8 Engineer  
G.C. File

**GEOLOGY AND SITE CONDITIONS**  
**Job No. 080529**  
**Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)**  
**Pope County**  
**Route 105 Section 1**

**Site Conditions**

The existing bridge is a five span, north-south oriented bridge on Route 105, south of the intersection of Bradfield Rd., in Oak Grove. The superstructure consists of cast-in-place concrete decking and concrete guardrail. The decking is supported by pre-cast concrete beams and concrete columns on spread footings. The north bridge end is resting on a sandstone and shale bluff. The fourth bridge span consists of a pre-cast concrete arch that spans Isabell Creek. There are old timber pilings, from a previous bridge, in the creek channel. Isabell Creek flows from the northwest to the southeast and has a rocky bottom. Overhead powerlines parallel the east side of the bridge and a gas line, suspended by cables, parallels the west side of the bridge and runs underground at the bridge ends. The Isabell Creek channel is primarily lined with trees. There is a church down-station and east of the existing bridge. There are dispersed residences up-station from the bridge on both sides of the road.

**Site Geology**

The project alignment is located in the mapped outcrop of the Atoka Formation (mapped symbol Pa). This unit is a sequence of marine, mostly tan to gray silty sandstones and grayish-black shales. It is the surface rock of the Boston Mountains and dominates the exposures in the Arkansas River Valley and the frontal Ouachita Mountains. It is also present in the southern part of the Ouachita Mountains. An outcrop of this unit, located on the north side of Isabell Creek, consists of a 7.8 feet thick layer of sandstone overlying shale with frequent sandstone partings and seams, down to the base of the creek channel.

The proposed location for the new bridge is on the southwest limb of the Lee Mountain Syncline and the northeast limb of the Solgohachia Anticline. A number of faults parallel these structural features and measured dips rarely exceed 5 degrees. It is possible that the Solgohachia Anticline joins the Dover Anticline to the west.



## Scour Potential

The channel at this location cuts into a rocky bluff consisting of sandstone and shale (See figure 1). D50 analysis of the sediment in the channel yielded a median value of 0.0029 inches, which is not considered a highly scourable sediment size. Based on grain size analysis and visual observation, scour is not anticipated at the new bridge.



Figure 1. Isabell Creek Cutting into the sandstone and shale bluff on the north bridge end.

## Subsurface Conditions

Based on the results of the boring for station 204+04 (north bridge end), the subsurface stratigraphy may be generalized as follows:

- 0 to 7.8 Feet: Consists of weathered, cemented, brown **sandstone**.
- 7.8 to 21.8 Feet: Consists of unweathered, well-cemented, gray **sandstone with frequent shale partings and seams**.

Based on the results of the borings for stations 205+02 to 205+70, the subsurface stratigraphy may be generalized as follows:

- 0 to 9.5 Feet: Varies from moist, stiff, brown **sandy clay with gravel (rock fragments)** to moist, loose to medium dense, brown **clayey sand with gravel (rock fragments)**.
- 9.5 to 34.8 Feet: Consists of weathered to unweathered, medium hard to hard, frequently to occasionally fractured and slickensided gray **shale with frequent to occasional sandstone partings, seams, and layers**.\*

\*A well-cemented 1.0 to 1.5 feet thick **sandstone layer** was encountered in all four of these borings between 12.0 and 14.2 feet below ground level.

Based on the results of the boring for station 206+20 (south bridge end), the subsurface stratigraphy may be generalized as follows:

- 0 to 22.0 Feet: Varies from moist, very loose, reddish brown **clayey sand** to moist, medium dense to very dense brown **sand with gravel (rock fragments)**.
- 22.0 to 44.3 Feet: Consists of weathered to unweathered, medium hard, gray **shale with frequent to occasional sandstone partings, seams, and layers**.

# Rock Core Unconfined Compression Test Summary

Project Number: 080529  
 Project Name: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
 Date Tested: 10/22/2019

Station	Location	Sample No.	Depth (ft.)	Diameter (in)	Height (in)	Total Load (lbs.)	Correction Factor	Stress (psi)	Remarks
204+04	18' Lt	1	4.3	1.75	4.61	55,950	1.00	23,261	SS
204+04	18' Lt	2	9.2	1.75	4.09	32,840	1.00	13,653	SS w/ SH
205+02	14' Rt	3	14.0	1.75	4.50	8,730	1.00	3,630	SH
205+02	14' Rt	4	18.0	Broke Before Testing			N/A	No Test	SH
205+02	14' Rt	5	23.7	1.75	3.94	11,770	1.00	4,893	SH
205+02	14' Rt	6	31.3	Broke Before Testing			N/A	No Test	SH
205+20	16' Lt	7	13.0	1.75	4.53	40,710	1.00	16,925	SS w/ SH
205+20	16' Lt	8	17.2	Broke Before Testing			N/A	No Test	SH w/ SS P,L,&S
205+20	16' Lt	9	23.5	Broke Before Testing			N/A	No Test	SH
205+20	16' Lt	10	28.3	Broke Before Testing			N/A	No Test	SH
205+59	20' Rt	11	12.7	1.75	4.57	66,420	1.00	27,614	SS
205+59	20' Rt	12	16.9	Broke Before Testing			N/A	No Test	SH w/ SS
205+59	20' Rt	13	23.0	1.75	4.02	8,380	1.00	3,484	SH
205+59	20' Rt	14	31.1	1.75	4.32	5,650	1.00	2,349	SH
205+70	15' Lt	15	13.1	1.75	4.17	11,440	1.00	4,756	SS w/ SH
205+70	15' Lt	16	16.8	1.75	4.28	19,420	1.00	8,074	SH
205+70	15' Lt	17	21.3	1.75	3.81	8,600	1.00	3,575	SH
205+70	15' Lt	18	27.0	Broke Before Testing			N/A	No Test	SH
205+70	15' Lt	19	31.2	Broke Before Testing			N/A	No Test	SH

## Terminology

SS = Sandstone

L & S = Layers and Seams

SH = Shale

P & S = Partings and Seams

\* Please note any broken samples, fractures or other characteristics of sample in Remarks.

## ROCK MASS RATING SUMMARY

JOB # **080529**

**SAMPLE #1**

Station/Location	204+04, 18' LT
Depth (ft.)	4.3
<b>Relative Rating</b>	
Uniaxial Compressive Strength	12
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	82
Class Number	I
Description	VERY GOOD ROCK

**SAMPLE #2**

Station/Location	204+04, 18' LT
Depth (ft.)	9.2
<b>Relative Rating</b>	
Uniaxial Compressive Strength	7
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	84
Class Number	I
Description	VERY GOOD ROCK

**SAMPLE #3**

Station/Location	205+02, 14' RT
Depth (ft.)	14
<b>Relative Rating</b>	
Uniaxial Compressive Strength	2
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	72
Class Number	II
Description	GOOD ROCK

**SAMPLE #4**

Station/Location	205+02, 14' RT
Depth (ft.)	18
<b>Relative Rating</b>	
Uniaxial Compressive Strength	Broke before testing
RQD	13
Spacing of Joints	10
Condition of Joints	10
Groundwater Conditions	7
Sum	40
Class Number	IV
Description	POOR ROCK

**SAMPLE #5**

Station/Location	205+02, 14' RT
Depth (ft.)	23.7
<b>Relative Rating</b>	
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	78
Class Number	II
Description	GOOD ROCK

**SAMPLE #6**

Station/Location	205+02, 14' RT
Depth (ft.)	31.1
<b>Relative Rating</b>	
Uniaxial Compressive Strength	Broke before testing
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	II
Description	GOOD ROCK

**SAMPLE #7**

Station/Location	205+20, 16' LT
Depth (ft.)	13
<b>Relative Rating</b>	
Uniaxial Compressive Strength	12
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	82
Class Number	I
Description	VERY GOOD ROCK

**SAMPLE #8**

Station/Location	205+20, 16' LT
Depth (ft.)	17.2
<b>Relative Rating</b>	
Uniaxial Compressive Strength	Broke before testing
RQD	13
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	65
Class Number	II
Description	GOOD ROCK

**SAMPLE #9**

Station/Location	205+20, 16' LT
Depth (ft.)	23.5
	Relative Rating
Uniaxial Compressive Strength	Broke before testing
RQD	17
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	69
Class Number	II
Description	GOOD ROCK

**SAMPLE #10**

Station/Location	205+20, 16' LT
Depth (ft.)	28.3
	Relative Rating
Uniaxial Compressive Strength	Broke before testing
RQD	17
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	79
Class Number	II
Description	GOOD ROCK

**SAMPLE #11**

Station/Location	205+59, 20' RT
Depth (ft.)	12.7
	Relative Rating
Uniaxial Compressive Strength	12
RQD	17
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	81
Class Number	I
Description	VERY GOOD ROCK

**SAMPLE #12**

Station/Location	205+59, 20' RT
Depth (ft.)	16.9
	Relative Rating
Uniaxial Compressive Strength	Broke before testing
RQD	17
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	74
Class Number	II
Description	GOOD ROCK

**SAMPLE #13**

Station/Location	205+59, 20' RT
Depth (ft.)	23
	Relative Rating
Uniaxial Compressive Strength	2
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	79
Class Number	II
Description	GOOD ROCK

**SAMPLE #14**

Station/Location	205+59, 20' RT
Depth (ft.)	31.1
	Relative Rating
Uniaxial Compressive Strength	2
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	79
Class Number	II
Description	GOOD ROCK

**SAMPLE #15**

Station/Location	205+70, 15' LT
Depth (ft.)	13.1
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	69
Class Number	II
Description	GOOD ROCK

**SAMPLE #16**

Station/Location	205+70, 15' LT
Depth (ft.)	16.8
	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	II
Description	GOOD ROCK

**SAMPLE #17**

Station/Location	205+70, 15' LT
Depth (ft.)	21.3
	Relative Rating
Uniaxial Compressive Strength	2
RQD	20
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	84
Class Number	I
Description	VERY GOOD ROCK

**SAMPLE #18**

Station/Location	205+70, 15' LT
Depth (ft.)	27
	Relative Rating
Uniaxial Compressive Strength	Broke before testing
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	II
Description	GOOD ROCK

**SAMPLE #19**

Station/Location	205+70, 15' LT
Depth (ft.)	31.2
	Relative Rating
Uniaxial Compressive Strength	Broke before testing
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	77
Class Number	II
Description	GOOD ROCK

**D<sub>50</sub> AGGREGATE ANALYSIS  
FOR SCOUR CALCULATIONS**

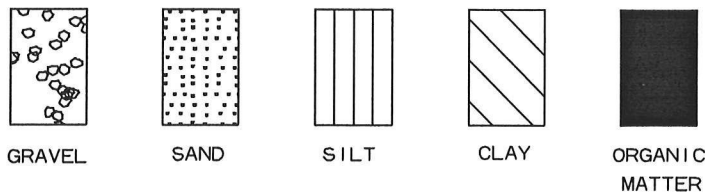
<b>Job No. 080529</b>					
<b>Creek Name</b>	<b>Station</b>	<b>Sample Type</b>	<b>Location</b>	<b>Depth (FT)</b>	<b>Aggregate Size (D50) (IN)</b>
Isabell Creek	205+20	Creek Bank	24' LT Const. C.L.	N/A	0.0029



# LEGEND

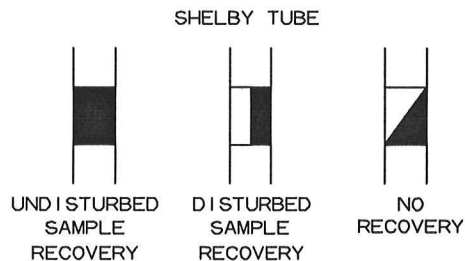
## SOIL TYPES

(SHOWN IN SYMBOL COLUMN)  
(PREDOMINANT TYPE SHOWN HEAVY)



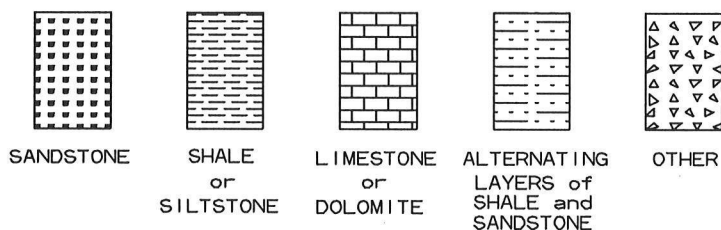
## SAMPLER TYPES

(SHOWN IN SAMPLE COLUMN)



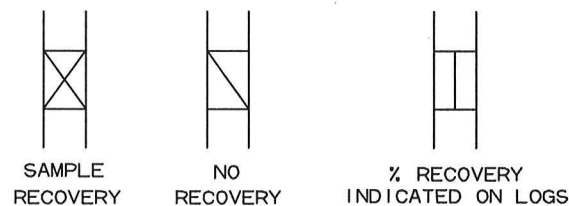
## ROCK TYPES

(SHOWN IN SYMBOL COLUMN)



## SPLIT SPOON

## ROCK CORING



## TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANULAR SOIL		CLAY		CLAY-SHALE		SHALE	
*N <sup>o</sup> Value	Density	*N <sup>o</sup> Value	Consistency	*N <sup>o</sup> Value	Consistency	*N <sup>o</sup> Value	Consistency
0-4	Very Loose	0-1	Very Soft	0-1	Very Soft		
5-10	Loose	2-4	Soft	2-4	Soft	31-60	Soft
11-30	Medium Dense	5-8	Medium Stiff	5-8	Medium Stiff	Over 60	
31-50	Dense	9-15	Stiff	9-15	Stiff	More than 2'	
Over 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetration	
		31-60	Hard	31-60	Hard	in 60 Blows Medium Hard	
		Over 60	Very Hard	Over 60	Very Hard	Less than 2'	
						Penetration	
						in 60 Blows Hard	

1. Ground water elevations indicated on boring logs represent ground water elevations at date or time shown on boring log. Absence of water surface implies that no ground water data is available but does not necessarily mean that ground water will not be encountered at locations or within the vertical reaches of these borings.
2. Borings represent subsurface conditions at their respective locations for their respective depths. Variations in conditions between or adjacent to boring locations may be encountered.
3. Terms used for describing soils according to their texture or grain size distribution are in accordance with the Unified Soil Classification System.

Standard Penetration Test – Driving a 2.0” O.D., 1-3/8” I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140-pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6.0 inches to seat into undisturbed soil, and then perform the test. The number of hammer blows for seating the spoon and performing the test are recorded for each 6 inches of penetration on the drill log. The field “N” Value (N<sub>f</sub>) can be obtained by

adding the bottom two numbers for example:  $\frac{6}{8-9} \Rightarrow 8+9 = 17 \text{ blows/ft}$ . The “N” Value corrected to 60% efficiency (N<sub>60</sub>) can be obtained by multiplying N<sub>f</sub> by the hammer correction factor published on the boring log.



**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1  
PAGE 1 OF 1

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 204+04  
LOCATION: 18' Left Construction Centerline  
LOGGED BY: Troy Frazier

DATE: September 25, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 21.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 549.3									
			No Sample									
5			SANDSTONE - Weathered, Cemented, Brown								95	40
10											100	84
15			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Unweathered, Well Cemented, Gray								100	100
20											100	100
25			Boring Terminated									
30												
35												

REMARKS:

**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2  
PAGE 1 OF 2

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 205+02  
LOCATION: 14' Right of Construction Centerline  
LOGGED BY: Troy Frazier

DATE: September 18, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 34.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 531.8									
5			Moist, Loose, Brown Clayey Sand with Gravel							5 4-4		
10			SHALE WITH FREQUENT SANDSTONE PARTINGS AND SEAMS - Slightly Weathered, Medium Hard, Frequent Fractures, Gray							15 (4")	100	50
15			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS -Slightly Weathered, Well Cemented, Frequent Fractures, Gray								96	56
20			SHALE WITH FREQUENT TO OCCASIONAL SANDSTONE PARTINGS AND SEAMS - Unweathered, Hard, Occassional Fractures, Gray								99	84
25											97	72
30											100	97
35												

REMARKS:

**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2  
PAGE 2 OF 2

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 205+02  
LOCATION: 14' Right of Construction Centerline  
LOGGED BY: Troy Frazier

DATE: September 18, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 34.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 531.8									
			Boring Terminated									
40												
45												
50												
55												
60												
65												
70												

REMARKS:

**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3  
PAGE 1 OF 1

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 205+20  
LOCATION: 16' Left of Construction Centerline  
LOGGED BY: Troy Frazier

DATE: September 10, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 34.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 531.2									
5			Moist, Stiff, Brown Sandy Clay with Gravel (Rock Fragments)							11 5-6		
10			SHALE - Weathered, Medium Hard, Gray							25 (1")		
15			SHALE WITH OCCASIONAL SANDSTONE PARTINGS AND SEAMS - Weathered, Medium Hard, Gray								100	64
20			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Slightly Weathered, Well Cemented, Occasional Fractures, Gray								100	68
25			SHALE WITH FREQUENT TO OCCASIONAL SANDSTONE PARTINGS AND SEAMS - Unweathered, Hard, Occasional Fractures, Gray								100	84
30			SHALE WITH FREQUENT TO OCCASIONAL SANDSTONE PARTINGS AND SEAMS - Unweathered, Hard, Occasional Fractures, Gray								100	84
35			Boring Terminated								97	89

REMARKS:

**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 4  
PAGE 1 OF 1

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 205+59  
LOCATION: 20' Right of Construction Centerline  
LOGGED BY: Troy Frazier

DATE: September 17, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 33.9

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 531.5									
5			Moist, Medium Dense, Brown Clayey Sand with Gravel (Rock Fragments)							6 6-11		
10			SHALE WITH OCCASIONAL SANDSTONE PARTINGS - Slightly Weathered, Medium Hard, Occasional Fractures, Gray							41 35 (4")	100	77
15			SANDSTONE WITH FREQUENT SHALE PARTINGS - Slightly Weathered, Well Cemented, Gray								96	80
20			SHALE WITH OCCASIONAL SANDSTONE PARTINGS, LAYERS, AND SEAMS - Unweathered, Medium Hard, Gray								96	92
25											100	100
30											100	99
35			Boring Terminated									

REMARKS:

**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 5  
PAGE 1 OF 1

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 205+70  
LOCATION: 15' Left of Construction Centerline  
LOGGED BY: Troy Frazier

DATE: September 11, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 33.3

DEPTH FT.	SYMBOLS	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 531.1									
5			Moist, Medium Dense, Brown Sand with Some Clay and Gravel							6 8-9		
10			SHALE - Highly Weathered, Medium Hard, Gray SHALE WITH OCCASIONAL SANDSTONE PARTINGS AND SEAMS - Slightly Weathered, Medium Hard, Occasional Fractures, Gray*							60 (4")	62	41
15			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Slightly Weathered, Well Cemented, Occasional Fractures, Gray								98	50
20											100	96
25			SHALE - Unweathered, Hard, Occasional Sandstone Partings and Seams, Occasional Fractures, Gray								100	100
30											100	97
35			Boring Terminated									

REMARKS: \*Total water loss at approximately 12.9 feet below ground level.

**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 6  
PAGE 1 OF 2

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 206+20  
LOCATION: 9' Left of Constructiion Centerline  
LOGGED BY: Troy Frazier

DATE: October 10, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 44.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 547.0									
			Asphalt									
5		X	Moist, Very Loose, Reddish Brown Clayey Sand							2 2-2		
10		X	Moist, Medium Dense, Reddish Brown Sand with Some Clay							2 7-7		
15		X	Moist, Medium Dense, Riddish Brown Sand with Gravel (Rock Fragments)							2 15-6		
20		X	Dry, Very Dense, Brown Sand with Gravel (Sandstone Fragments)							25 20-25 (7")		
25			SHALE - Weathered, Medium Hard, Gray								100	22
30			SHALE WITH OCCASIONAL CALCAREOUS SANDSTONE PARTINGS AND SEAMS - Unweathered, Medium Hard, Gray								100	88
35			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS -Unweathered, Well Cemented, Gray								100	76

REMARKS:

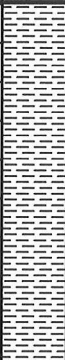
**ARKANSAS DEPARTMENT OF TRANSPORTATION  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 6  
PAGE 2 OF 2

JOB NO. 080529 Pope County  
JOB NAME: Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)  
Route 105 Section 1  
STATION: 206+20  
LOCATION: 9' Left of Constructiion Centerline  
LOGGED BY: Troy Frazier

DATE: October 10, 2019  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: Acker 2094  
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 44.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 547.0									
40			SHALE WITH FREQUENT TO OCCASIONAL SANDSTONE PARTINGS AND SEAMS - Unweathered, Hard, Gray								100	82
												100
45			Boring Terminated									
50												
55												
60												
65												
70												

REMARKS:





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

November 20, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 080529
Hector, Isabell, & Alewine Creeks Strs. & Apprs. (S)
Route 105 Section 1
Pope 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 bridges crossing Hector, Isabel and Alewine creeks on Highway 105. 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 sands and moderately plastic clayey sands with gravel. 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 normal processing if the weather is favorable during construction. Rock was encountered at station 202+00 6 feet right of centerline at a depth of 0.7 feet, and at station 208+00 6 feet left of centerline at a depth of 0.8 feet.

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 near Gum Log.

- 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 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 - 10/30/2017  
JOB NUMBER - 080529

SEQUENCE NO. - 1  
MATERIAL CODE - SSRV  
SPEC. YEAR - 2014  
SUPPLIER ID. - 1  
COUNTY/STATE - 58  
DISTRICT NO. - 08

JOB NAME - HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.

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

BEGIN JOB - END JOB 8

RESILIENT MODULUS  
STA. 102 + 00 7128  
STA. 208 + 00 6175  
STA. 301 + 00 7764

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REMARKS -

AASHTO TESTS : T190

JOB: 080529

Arkansas State Highway Transportation Department

JOB NAME: HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.

Materials Division

COUNTY NO. 58 DATE TESTED 10/5/2017

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR						L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				#4	#10	#40	#80	#200					
102+10	18 RT	0-5	BROWN	82	74	66	61	57	36	16	A-6(6)	RV604	
208+00	18 LT	0-5	BROWN	87	81	75	65	36	ND	NP	A-4-0	RV605	
301+10	18 RT	0-5	BROWN	92	89	86	83	76	ND	NP	A-4-0	RV606	
102+00	06 RT	0-5	BROWN	96	93	85	78	73	37	21	A-6(13)	S592	14.9
102+00	18 RT	0-5	BROWN	86	81	74	70	66	37	19	A-6(10)	S593	14
108+00	18 LT	0-5	BROWN	93	87	77	70	59	28	13	A-6(5)	S595	13.2
202+00	06 RT	0-0.7Z	BROWN	93	84	78	67	40	ND	NP	A-4-0	S596	16.9
202+00	18 RT	0-5	BROWN	88	77	68	61	39	ND	NP	A-4-0	S597	5.8
208+00	06 LT	0-0.8Z	BROWN	82	74	67	57	30	ND	NP	A-2-4(0)	S598	15.2
208+00	18 LT	0-5	BROWN	80	67	57	50	29	ND	NP	A-2-4(0)	S599	11.4
301+00	06 RT	0-5	BROWN	96	91	86	77	65	25	10	A-4(4)	S600	17.1
301+00	18 RT	0-5	BROWN	97	94	88	81	71	27	6	A-4(3)	S601	15.2
306+00	06 LT	0-5	BROWN	98	95	90	82	67	24	10	A-4(4)	S602	22.4
306+00	24 LT	0-5	BROWN	92	90	86	78	63	21	5	A-4(1)	S603	25.4
108+00	06 LT	0-5	BROWN	95	87	74	70	67	35	17	A-6(9)	S94	16.3

comments: W=MULTIPLE LAYERS,Z=AUGER REFUSAL

Monday, October 30, 2017

**JOB:** 080529

**Arkansas State Highway Transportation Department**  
**Materials Division**

**DATE TESTED**  
10/5/2017

**JOB NAME:** HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.

**COUNTY NO.** 58

**Michael Benson, Materials Engineer**

**STA.# LOC.**

**PAVEMENT SOUNDINGS**

102+00	06 RT	ACHMSC 8.0W	ACHMBC 1.0	AGG. BASE CRS CL-7 4.0	
102+00	18 RT	ACHMSC	ACHMBC	AGG. BASE CRS CL-7	
108+00	06 LT	ACHMSC 10.0	ACHMBC 1.0	AGG. BASE CRS CL-7 4.0	
108+00	18 LT	ACHMSC	BST	ACHMBC	AGG. BASE CRS CL-7
202+00	06 RT	ACHMSC 6.0W	BST 0.5	ACHMBC 1.0	AGG. BASE CRS CL-7 5.0
202+00	18 RT	ACHMSC	BST	ACHMBC	AGG. BASE CRS CL-7
208+00	06 LT	ACHMSC 6.0W	BST 1.0	AGG. BASE CRS CL-7 4.0	
208+00	18 LT	ACHMSC	BST	AGG. BASE CRS CL-7	
301+00	06 RT	ACHMSC 9.0W	BST	AGG. BASE CRS CL-7 4.0	
301+00	18 RT	ACHMSC	ACHMBC	AGG. BASE CRS CL-7	
306+00	06 LT	ACHMSC 9.0W	ACHMBC 2.0	AGG. BASE CRS CL-7 4.0	
306+00	24 LT	ACHMSC	ACHMBC	AGG. BASE CRS CL-7	

**comments:** W=MULTIPLE LAYERS, Z=AUGER REFUSAL

Monday, October 30, 2017

Page 1 of 1

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

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

<b>Job No.</b>	080529	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	9/18/17	<b>Station No.:</b>	208+00
<b>Date Tested:</b>	October 13, 2017	<b>Location:</b>	18'LT
<b>Name of Project:</b>	HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.		
<b>County:</b>	<b>Code:</b> 58	<b>Name:</b> POPE	
<b>Sampled By:</b>	THORNTON/BUIE	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20173025	<b>AASHTO Class:</b>	A-4 (0)
<b>Sample ID:</b>	RV605	<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	3.95
Bottom	3.94
Average	3.94
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):	12.14
Initial Volume, AoLo (cu. in):	97.47

**3. Soil Specimen Weight:**

Weight of Wet Soil Used (g):	3273.20
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**4. Soil Properties:**

Optimum Moisture Content (%):	13.0
Maximum Dry Density (pcf):	115.1
95% of MDD (pcf):	109.3
In-Situ Moisture Content (%):	N/A

**5. Specimen Properties:**

Wet Weight (g):	3273.20
Compaction Moisture content (%):	12.7
Compaction Wet Density (pcf):	127.95
Compaction Dry Density (pcf):	113.53
Moisture Content After Mr Test (%):	12.9

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

**7. Resilient Modulus, Mr:**  $5792(S_c)^{-0.14838}(S_3)^{0.48592}$

**8. Comments**

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**9. Tested By:** GW **Date:** October 13, 2017

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

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

**Job No.** 080529      **Material Code** SSRVPS  
**Date Sampled:** 9/18/17      **Station No.:** 208+00  
**Date Tested:** October 13, 2017      **Location:** 18'LT

**Name of Project:** HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.

**County:** Code: 58      **Name:** POPE

**Sampled By:** THORNTON/BUJIE

**Lab No.:** 20173025

**Sample ID:** RV605

**LATITUDE:**

**Depth:** 0-5

**AAASHTO Class:** A-4 (0)

**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
	S <sub>3</sub> psi	S <sub>cyclic</sub> psi	P <sub>max</sub> lbs	P <sub>cyclic</sub> lbs	P <sub>contact</sub> lbs	S <sub>max</sub> psi	S <sub>cyclic</sub> psi	S <sub>contact</sub> psi	H <sub>avg</sub> in	ε <sub>r</sub> in/in	M <sub>r</sub> psi
Sequence 1	6.0	2.0	25.2	22.5	2.7	2.1	1.9	0.2	0.00118	0.00015	12,585
Sequence 2	6.0	4.0	47.4	44.7	2.7	3.9	3.7	0.2	0.00252	0.00031	11,727
Sequence 3	6.0	6.0	69.8	66.4	3.5	5.8	5.5	0.3	0.00401	0.00050	10,950
Sequence 4	6.0	8.0	93.5	87.6	5.9	7.7	7.2	0.5	0.00573	0.00071	10,108
Sequence 5	6.0	10.0	117.3	109.0	8.3	9.7	9.0	0.7	0.00729	0.00091	9,891
Sequence 6	4.0	2.0	25.0	22.4	2.7	2.1	1.8	0.2	0.00140	0.00017	10,582
Sequence 7	4.0	4.0	46.6	43.9	2.7	3.8	3.6	0.2	0.00311	0.00039	9,335
Sequence 8	4.0	6.0	67.7	65.0	2.7	5.6	5.4	0.2	0.00500	0.00062	8,590
Sequence 9	4.0	8.0	91.5	86.4	5.1	7.5	7.1	0.4	0.00680	0.00085	8,400
Sequence 10	4.0	10.0	115.3	107.6	7.6	9.5	8.9	0.6	0.00861	0.00107	8,267
Sequence 11	2.0	2.0	24.5	21.7	2.8	2.0	1.8	0.2	0.00192	0.00024	7,462
Sequence 12	2.0	4.0	45.0	42.2	2.9	3.7	3.5	0.2	0.00428	0.00053	6,518
Sequence 13	2.0	6.0	65.3	62.4	2.9	5.4	5.1	0.2	0.00662	0.00082	6,240
Sequence 14	2.0	8.0	87.5	83.2	4.3	7.2	6.9	0.4	0.00891	0.00111	6,178
Sequence 15	2.0	10.0	110.3	103.5	6.8	9.1	8.5	0.6	0.01109	0.00138	6,175

TESTED BY \_\_\_\_\_  
 REVIEWED BY \_\_\_\_\_

GW \_\_\_\_\_  
 DATE \_\_\_\_\_

DATE October 13, 2017  
 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>	080529	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	9/18/17	<b>Station No.:</b>	208+00
<b>Date Tested:</b>	October 13, 2017	<b>Location:</b>	18'LT
<b>Name of Project:</b>	HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.		
<b>County:</b>	<b>Code:</b> 58	<b>Name:</b>	POPE
<b>Sampled By:</b>	THORNTON/BUIE	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20173025	<b>AASHTO Class:</b>	A-4 (0)
<b>Sample ID:</b>	RV605	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

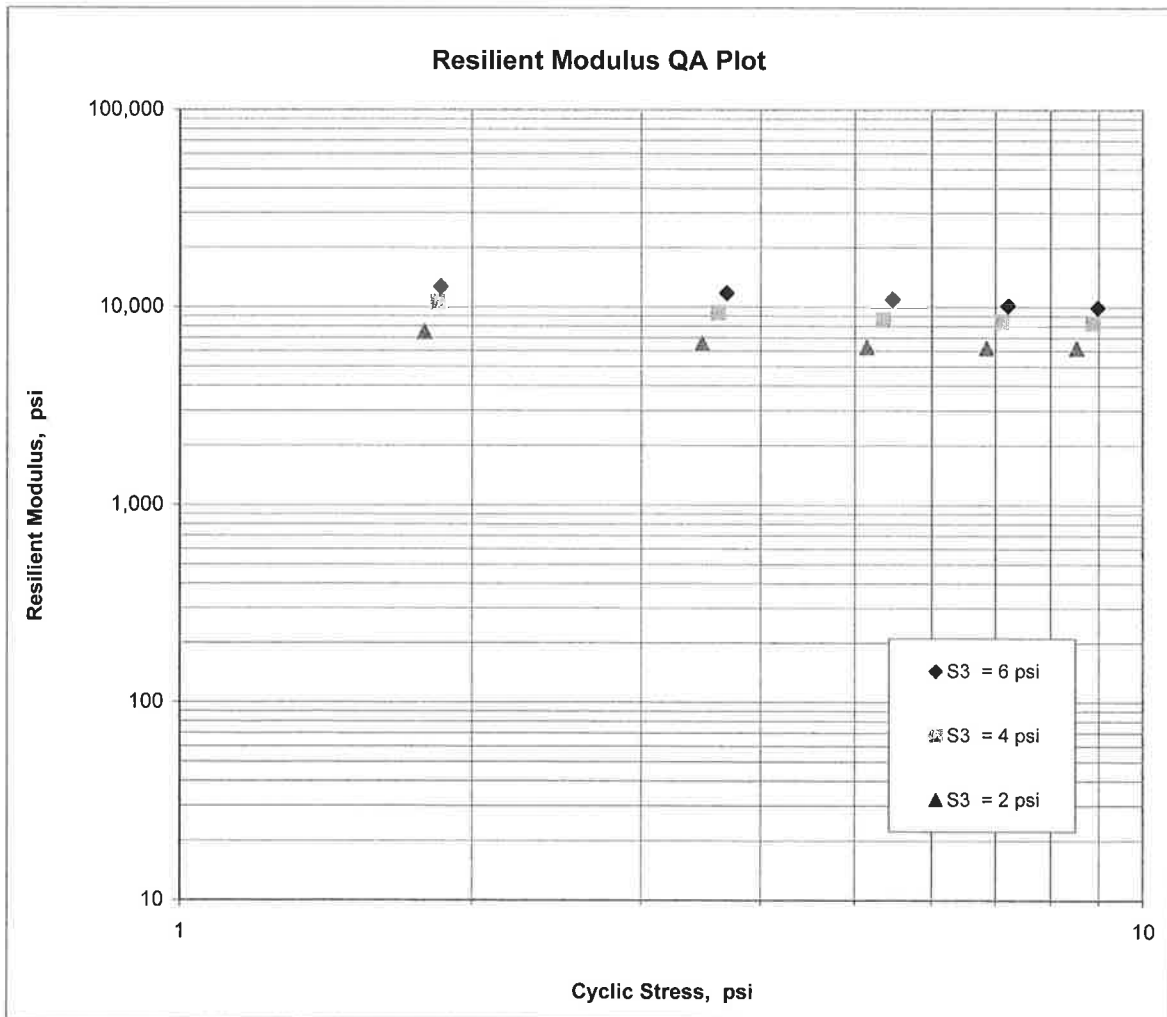
$$M_R = K_1 (S_C)^{K_2} (S_3)^{K_5}$$

$$K_1 = 5,792$$

$$K_2 = -0.14838$$

$$K_5 = 0.48592$$

$$R^2 = 0.99$$



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

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

<b>Job No.</b>	080529	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	9/18/17	<b>Station No.:</b>	102+00
<b>Date Tested:</b>	October 13, 2017	<b>Location:</b>	18'RT
<b>Name of Project:</b>	HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.		
<b>County:</b>	<b>Code:</b> 58	<b>Name:</b> POPE	
<b>Sampled By:</b>	THORNTON/BUIE	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20173024	<b>AASHTO Class:</b>	A-6 (6)
<b>Sample ID:</b>	RV604	<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	3.96
Middle	3.96
Bottom	3.95
Average	3.96
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):	12.22
Initial Volume, AoLo (cu. in):	98.14

**3. Soil Specimen Weight:**

Weight of Wet Soil Used (g):	3170.70
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**4. Soil Properties:**

Optimum Moisture Content (%):	17.3
Maximum Dry Density (pcf):	107.8
95% of MDD (pcf):	102.4
In-Situ Moisture Content (%):	N/A

**5. Specimen Properties:**

Wet Weight (g):	3170.70
Compaction Moisture content (%):	17.6
Compaction Wet Density (pcf):	123.11
Compaction Dry Density (pcf):	104.68
Moisture Content After Mr Test (%):	17.6

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

#VALUE!

**7. Resilient Modulus, Mr:**

14134(Sc)<sup>-0.36377</sup>(S3)<sup>0.18121</sup>

**8. Comments**

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**9. Tested By:**

GW

**Date:** October 13, 2017



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

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

**Job No.** 080529      **Material Code** SSRVPS  
**Date Sampled:** 9/18/17      **Station No.:** 102+00  
**Date Tested:** October 13, 2017      **Location:** 18'RT  
**Name of Project:** HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.  
**County:** Code: 58      **Name:** POPE  
**Sampled By:** THORNTON/BUJE      **Depth:** 0-5  
**Lab No.:** 20173024      **AASHTO Class:** A-6 (6)  
**Sample ID:** RV604      **Material Type (1 or 2):** 2  
**LATTITUDE:** 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	22.6	2.8	2.1	1.8	0.2	0.0098	0.00012	15,058
Sequence 2	6.0	4.0	47.5	44.6	2.9	3.9	3.7	0.2	0.00216	0.00027	13,550
Sequence 3	6.0	6.0	70.0	66.3	3.7	5.7	5.4	0.3	0.00380	0.00047	11,471
Sequence 4	6.0	8.0	92.4	86.3	6.1	7.6	7.1	0.5	0.00612	0.00076	9,260
Sequence 5	6.0	10.0	113.9	105.4	8.5	9.3	8.6	0.7	0.00858	0.00107	8,069
Sequence 6	4.0	2.0	25.3	22.5	2.8	2.1	1.8	0.2	0.00108	0.00013	13,761
Sequence 7	4.0	4.0	47.3	44.5	2.8	3.9	3.6	0.2	0.00242	0.00030	12,089
Sequence 8	4.0	6.0	68.6	65.8	2.8	5.6	5.4	0.2	0.00412	0.00051	10,495
Sequence 9	4.0	8.0	91.1	85.9	5.2	7.5	7.0	0.4	0.00637	0.00079	8,860
Sequence 10	4.0	10.0	112.6	104.9	7.6	9.2	8.6	0.6	0.00896	0.00112	7,698
Sequence 11	2.0	2.0	25.3	22.5	2.8	2.1	1.8	0.2	0.00125	0.00016	11,808
Sequence 12	2.0	4.0	47.2	44.4	2.8	3.9	3.6	0.2	0.00277	0.00034	10,528
Sequence 13	2.0	6.0	68.1	65.3	2.8	5.6	5.3	0.2	0.00464	0.00058	9,244
Sequence 14	2.0	8.0	89.4	85.0	4.3	7.3	7.0	0.4	0.00697	0.00087	8,017
Sequence 15	2.0	10.0	110.7	103.9	6.8	9.1	8.5	0.6	0.00958	0.00119	7,128

TESTED BY \_\_\_\_\_ DATE October 13, 2017  
 REVIEWED BY \_\_\_\_\_ DATE \_\_\_\_\_

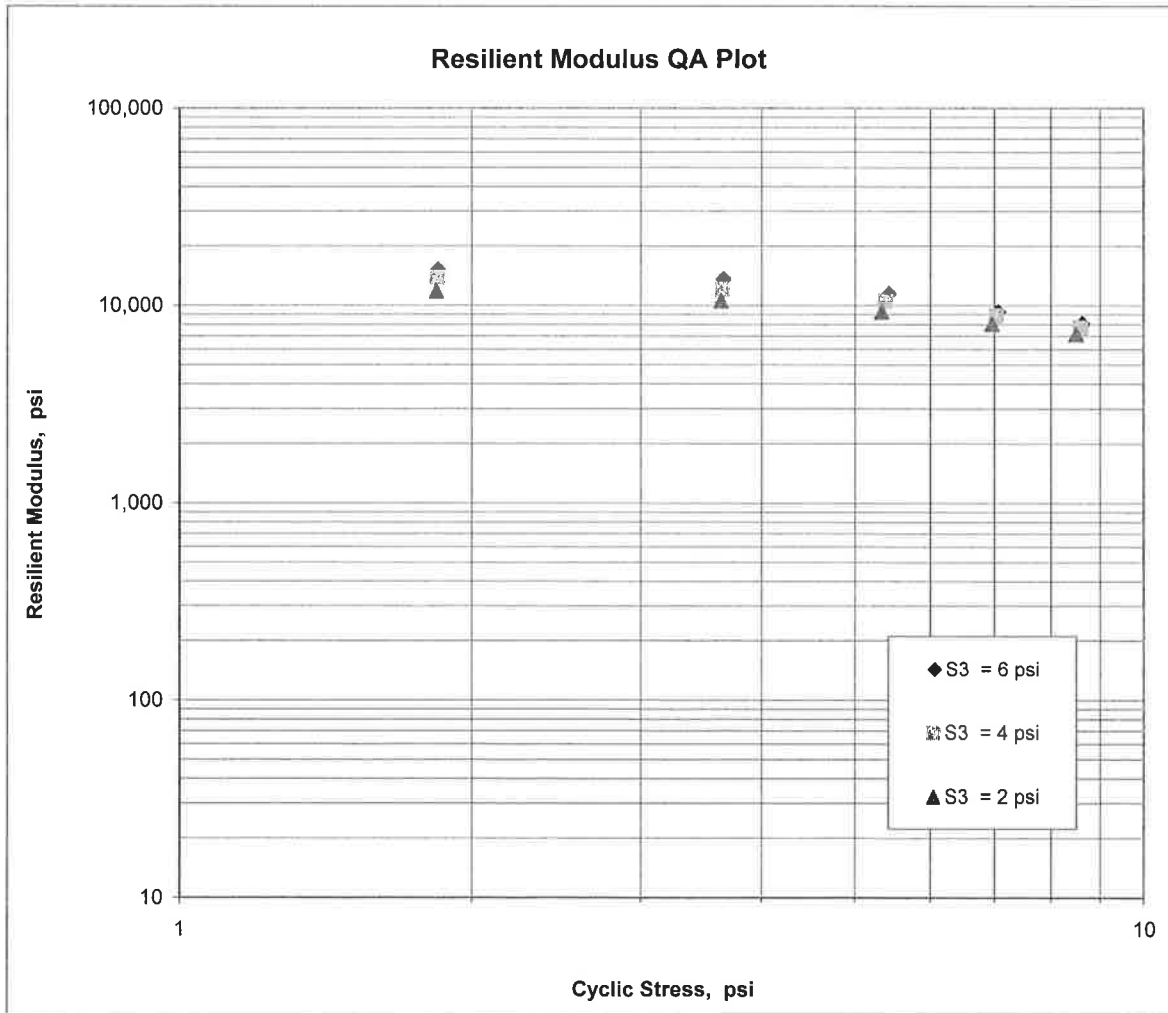
**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
MATERIALS DIVISION**

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

<b>Job No.</b>	080529	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	9/18/17	<b>Station No.:</b>	102+00
<b>Date Tested:</b>	October 13, 2017	<b>Location:</b>	18'RT
<b>Name of Project:</b>	HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.		
<b>County:</b>	<b>Code:</b> 58	<b>Name:</b>	POPE
<b>Sampled By:</b>	THORNTON/BUIE	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20173024	<b>AASHTO Class:</b>	A-6 (6)
<b>Sample ID:</b>	RV604	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

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

$K_1 = \underline{\underline{14,134}}$   
 $K_2 = \underline{\underline{-0.36377}}$   
 $K_5 = \underline{\underline{0.18121}}$   
 $R^2 = \underline{\underline{0.92}}$



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

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

<b>Job No.</b>	080529	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	9/18/17	<b>Station No.:</b>	301+10
<b>Date Tested:</b>	October 17, 2017	<b>Location:</b>	18RT
<b>Name of Project:</b>	HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.		
<b>County:</b>	<b>Code:</b> 58	<b>Name:</b> POPE	
<b>Sampled By:</b>	THORNTON/BUIE	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20173026	<b>AASHTO Class:</b>	A-4 (0)
<b>Sample ID:</b>	RV606	<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	3.93
Middle	3.94
Bottom	3.95
Average	3.94
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):	12.12
Initial Volume, AoLo (cu. in):	97.31

**3. Soil Specimen Weight:**

Weight of Wet Soil Used (g):	3143.70
------------------------------	---------

**4. Soil Properties:**

Optimum Moisture Content (%):	15.0
Maximum Dry Density (pcf):	111.6
95% of MDD (pcf):	106.0
In-Situ Moisture Content (%):	N/A

**5. Specimen Properties:**

Wet Weight (g):	3143.70
Compaction Moisture content (%):	14.7
Compaction Wet Density (pcf):	123.10
Compaction Dry Density (pcf):	107.32
Moisture Content After Mr Test (%):	14.9

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

**7. Resilient Modulus, Mr:** 9420(Sc)<sup>-0.19473</sup>(S3)<sup>0.31562</sup>

**8. Comments**

\_\_\_\_\_

\_\_\_\_\_

**9. Tested By:** GW **Date:** October 17, 2017

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

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

<b>Job No.</b>	080529	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	9/18/17	<b>Station No.:</b>	301+10
<b>Date Tested:</b>	October 17, 2017	<b>Location:</b>	18'RT
<b>Name of Project:</b>	HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.		
<b>County:</b>	<b>Code:</b> 58	<b>Name:</b>	POPE
<b>Sampled By:</b>	THORNTON/BUJE		
<b>Lab No.:</b>	20173026	<b>Depth:</b>	0-5
<b>Sample ID:</b>	RV606	<b>AASHTO Class:</b>	A-4 (0)
<b>LATTITUDE:</b>		<b>Material Type (1 or 2):</b>	2
		<b>LONGITUDE:</b>	

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
	S <sub>3</sub> psi	S <sub>cyclic</sub> psi	P <sub>max</sub> lbs	P <sub>cyclic</sub> lbs	P <sub>contact</sub> lbs	S <sub>max</sub> psi	S <sub>cyclic</sub> psi	S <sub>contact</sub> psi	H <sub>avg</sub> in	ε <sub>r</sub> in/in	M <sub>r</sub> psi
Sequence 1	6.0	2.0	24.9	22.1	2.8	2.1	1.8	0.2	0.00102	0.00013	14,331
Sequence 2	6.0	4.0	47.0	44.2	2.8	3.9	3.7	0.2	0.00219	0.00027	13,394
Sequence 3	6.0	6.0	69.6	66.0	3.6	5.7	5.4	0.3	0.00358	0.00045	12,219
Sequence 4	6.0	8.0	93.1	87.1	6.0	7.7	7.2	0.5	0.00517	0.00064	11,171
Sequence 5	6.0	10.0	116.6	108.1	8.4	9.6	8.9	0.7	0.00687	0.00086	10,432
Sequence 6	4.0	2.0	25.0	22.2	2.8	2.1	1.8	0.2	0.00112	0.00014	13,125
Sequence 7	4.0	4.0	46.8	44.0	2.8	3.9	3.6	0.2	0.00250	0.00031	11,663
Sequence 8	4.0	6.0	68.2	65.4	2.8	5.6	5.4	0.2	0.00408	0.00051	10,614
Sequence 9	4.0	8.0	91.7	86.5	5.1	7.6	7.1	0.4	0.00581	0.00072	9,867
Sequence 10	4.0	10.0	114.7	107.2	7.6	9.5	8.8	0.6	0.00759	0.00095	9,357
Sequence 11	2.0	2.0	24.8	22.1	2.8	2.1	1.8	0.2	0.00146	0.00018	10,049
Sequence 12	2.0	4.0	46.3	43.5	2.8	3.8	3.6	0.2	0.00312	0.00039	9,242
Sequence 13	2.0	6.0	67.1	64.3	2.8	5.5	5.3	0.2	0.00501	0.00062	8,505
Sequence 14	2.0	8.0	89.2	85.0	4.2	7.4	7.0	0.3	0.00698	0.00087	8,067
Sequence 15	2.0	10.0	112.0	105.4	6.6	9.2	8.7	0.5	0.00899	0.00112	7,764

TESTED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 REVIEWED BY \_\_\_\_\_ DATE \_\_\_\_\_

GW      October 17, 2017

**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>	080529	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	9/18/17	<b>Station No.:</b>	301+10
<b>Date Tested:</b>	October 17, 2017	<b>Location:</b>	18'RT
<b>Name of Project:</b>	HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.		
<b>County:</b>	<b>Code:</b> 58	<b>Name:</b>	POPE
<b>Sampled By:</b>	THORNTON/BUIE	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20173026	<b>AASHTO Class:</b>	A-4 (0)
<b>Sample ID:</b>	RV606	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

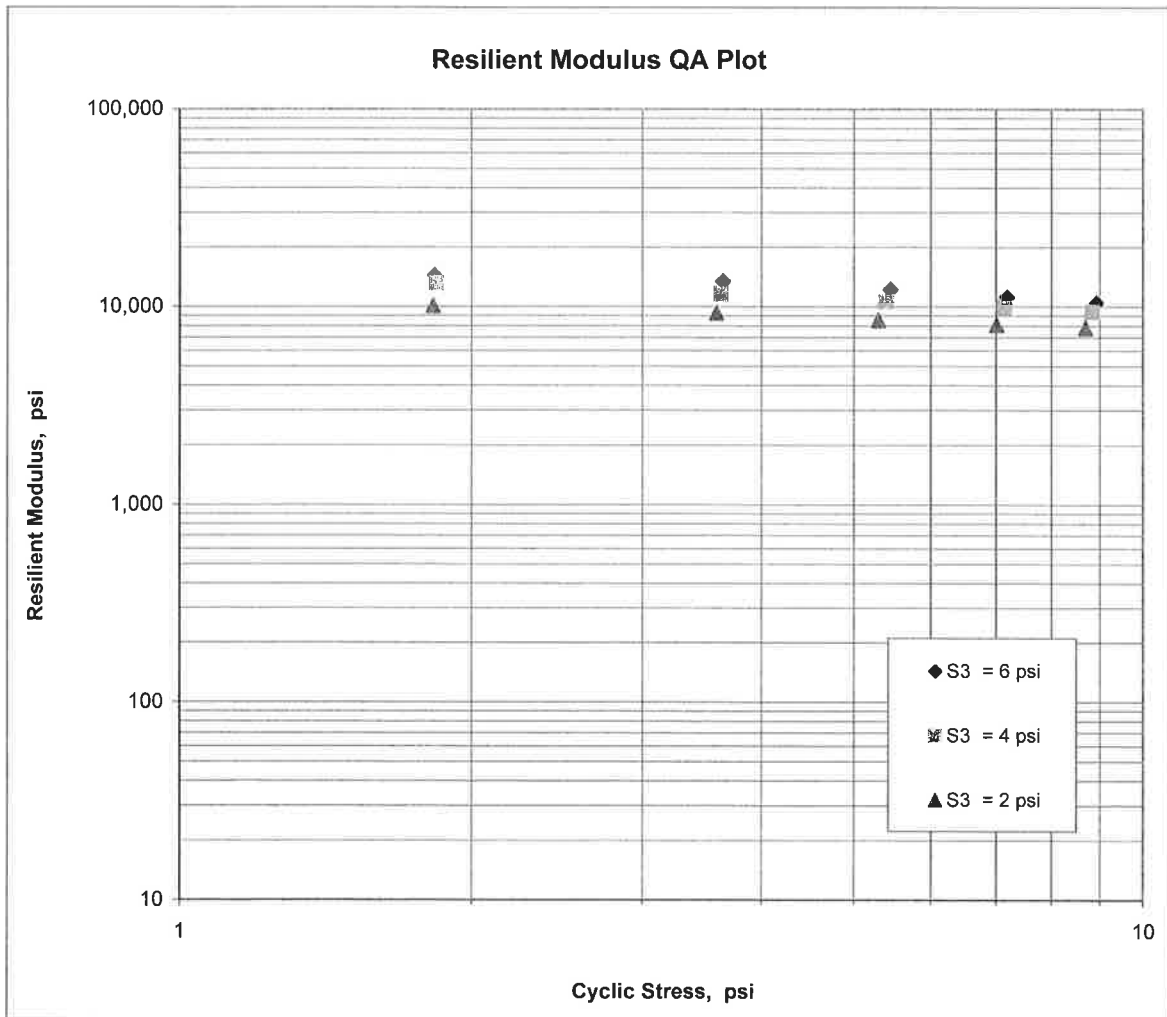
$$M_R = K_1 (S_C)^{K_2} (S_3)^{K_5}$$

$$K_1 = 9,420$$

$$K_2 = -0.19473$$

$$K_5 = 0.31562$$

$$R^2 = 0.98$$



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

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 10/05/17 SEQUENCE NO. - 1  
JOB NUMBER - 080529 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 - 58  
SUPPLIER NAME - STATE DISTRICT NO. - 08  
NAME OF PROJECT - HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.  
PROJECT ENGINEER - NOT APPLICABLE  
PIT/QUARRY - ARKANSAS  
LOCATION - POPE, COUNTY DATE SAMPLED - 09/18/17  
SAMPLED BY - THORNTON/BUIE DATE RECEIVED - 10/02/17  
SAMPLE FROM - TEST HOLE DATE TESTED - 10/05/17  
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	-	20173012	-	20173013	-	20173014
SAMPLE ID	-	S592	-	S593	-	S94
TEST STATUS	-	INFORMATION ONLY	-	INFORMATION ONLY	-	INFORMATION ONLY
STATION	-	102+00	-	102+00	-	108+00
LOCATION	-	06 RT	-	18 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	-	35 25 2.70	-	35 25 2.70	-	35 24 58.50
LONGITUDE DEG-MIN-SEC	-	92 57 40.10	-	92 57 40.20	-	92 57 38.20
% PASSING	2	IN.	-		-	
	1 1/2	IN.	-		-	
	3/4	IN.	-	100	-	
	3/8	IN.	-	97	-	100
	NO. 4		-	96	-	95
	NO. 10		-	93	-	87
	NO. 40		-	85	-	74
	NO. 80		-	78	-	70
	NO. 200		-	73	-	67
LIQUID LIMIT	-	37	-	37	-	35
PLASTICITY INDEX	-	21	-	19	-	17
AASHTO SOIL	-	A-6(13)	-	A-6(10)	-	A-6(9)
UNIFIED SOIL	-		-		-	
% MOISTURE CONTENT	-	14.9	-	14.0	-	16.3
ACHMSC	(IN)	8.0W	-	---	-	10.0
ACHMBC	(IN)	1.0	-	---	-	1.0
AGG. BASE CRS CL-7	(IN)	4.0	-	---	-	4.0
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL

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 - 10/05/17 SEQUENCE NO. - 2  
 JOB NUMBER - 080529 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 - 58  
 SUPPLIER NAME - STATE DISTRICT NO. - 08  
 NAME OF PROJECT - HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.  
 PROJECT ENGINEER - NOT APPLICABLE  
 PIT/QUARRY - ARKANSAS  
 LOCATION - POPE, COUNTY DATE SAMPLED - 09/17/17  
 SAMPLED BY - THORNTON/BUIE DATE RECEIVED - 10/02/17  
 SAMPLE FROM - TEST HOLE DATE TESTED - 10/05/17  
 MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20173015	20173016	20173017
SAMPLE ID	S595	S596	S597
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	108+00	202+00	202+00
LOCATION	18 LT	06 RT	18 RT
DEPTH IN FEET	0-5	0-0.7Z	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	35 24 58.50	35 21 34.30	35 21 34.20
LONGITUDE DEG-MIN-SEC	92 57 38.20	92 57 33.00	92 57 33.00
% PASSING			
2 IN.			
1 1/2 IN.			
3/4 IN.	100		
3/8 IN.	99	100	100
NO. 4	93	93	88
NO. 10	87	84	77
NO. 40	77	78	68
NO. 80	70	67	61
NO. 200	59	40	39
LIQUID LIMIT	28	ND	ND
PLASTICITY INDEX	13	NP	NP
AASHTO SOIL	A-6(5)	A-4-0	A-4-0
UNIFIED SOIL			
% MOISTURE CONTENT	13.2	16.9	5.8
ACHMSC (IN)	---	6.0W	---
BST (IN)	---	0.5	---
ACHMBC (IN)	---	1.0	---
AGG. BASE CRS CL-7 (IN)	---	5.0	---

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 - 10/30/17	SEQUENCE NO. - 3
JOB NUMBER - 080529	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 - 58
SUPPLIER NAME - STATE	DISTRICT NO. - 08
NAME OF PROJECT - HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.	
PROJECT ENGINEER - NOT APPLICABLE	
PIT/QUARRY - ARKANSAS	
LOCATION - POPE, COUNTY	DATE SAMPLED - 09/18/17
SAMPLED BY - THORNTON/BUIE	DATE RECEIVED - 10/02/17
SAMPLE FROM - TEST HOLE	DATE TESTED - 10/05/17
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS	

LAB NUMBER	-	20173018	-	20173019	-	20173020
SAMPLE ID	-	S598	-	S599	-	S600
TEST STATUS	-	INFORMATION ONLY	-	INFORMATION ONLY	-	INFORMATION ONLY
STATION	-	208+00	-	208+00	-	301+00
LOCATION	-	06 LT	-	18 LT	-	06 RT
DEPTH IN FEET	-	0-0.8Z	-	0-5	-	0-5
MAT'L COLOR	-	BROWN	-	BROWN	-	BROWN
MAT'L TYPE	-		-		-	
LATITUDE DEG-MIN-SEC	-	35 21 28.80	-	35 21 28.70	-	35 16 15.70
LONGITUDE DEG-MIN-SEC	-	92 57 32.70	-	92 57 32.60	-	92 56 7.90
% PASSING						
	2	IN.	-		-	
	1 1/2	IN.	-		-	
	3/4	IN.	-	100	-	100
	3/8	IN.	-	92	-	99
	NO. 4		-	82	-	96
	NO. 10		-	74	-	91
	NO. 40		-	67	-	86
	NO. 80		-	57	-	77
	NO. 200		-	30	-	65
LIQUID LIMIT	-	ND	-	ND	-	25
PLASTICITY INDEX	-	NP	-	NP	-	10
AASHTO SOIL	-	A-2-4 (0)	-	A-2-4 (0)	-	A-4 (4)
UNIFIED SOIL	-		-		-	
% MOISTURE CONTENT	-	15.2	-	11.4	-	17.1
ACHMSC	(IN)	6.0W	-	---	-	9.0W
BST	(IN)	1.0	-	---	-	---
AGG. BASE CRS CL-7	(IN)	4.0	-	---	-	4.0
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	
			-		-	

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 - 10/05/17 SEQUENCE NO. - 4  
JOB NUMBER - 080529 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 - 58  
SUPPLIER NAME - STATE DISTRICT NO. - 08  
NAME OF PROJECT - HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.  
PROJECT ENGINEER - NOT APPLICABLE  
PIT/QUARRY - ARKANSAS  
LOCATION - POPE, COUNTY DATE SAMPLED - 09/18/17  
SAMPLED BY - THORNTON/BUIE DATE RECEIVED - 10/02/17  
SAMPLE FROM - TEST HOLE DATE TESTED - 10/05/17  
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	20173021	20173022	20173023
SAMPLE ID	S601	S602	S603
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	301+00	306+00	306+00
LOCATION	18 RT	06 LT	24 LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	35 16 15.70	35 16 10.80	35 16 10.80
LONGITUDE DEG-MIN-SEC	92 56 7.90	92 56 7.00	92 56 6.90
% PASSING			
2 IN.	-	-	-
1 1/2 IN.	-	-	-
3/4 IN.	100	-	100
3/8 IN.	98	100	95
NO. 4	97	98	92
NO. 10	94	95	90
NO. 40	88	90	86
NO. 80	81	82	78
NO. 200	71	67	63
LIQUID LIMIT	27	24	21
PLASTICITY INDEX	6	10	5
AASHTO SOIL	A-4 (3)	A-4 (4)	A-4 (1)
UNIFIED SOIL			
% MOISTURE CONTENT	15.2	22.4	25.4
ACHMSC (IN)	---	9.0W	---
ACHMBC (IN)	---	2.0	---
AGG.BASE CRS CL-7 (IN)	---	4.0	---

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 - 10/05/17 SEQUENCE NO. - 1  
JOB NUMBER - 080529 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 - 58  
SUPPLIER NAME - STATE DISTRICT NO. - 08  
NAME OF PROJECT - HECTOR, ISABELL & ALEWINE CREEKS STRS. & APPRS.  
PROJECT ENGINEER - NOT APPLICABLE  
PIT/QUARRY - ARKANSAS  
LOCATION - POPE, COUNTY DATE SAMPLED - 09/18/17  
SAMPLED BY - THORNTON/BUIE DATE RECEIVED - 10/02/17  
SAMPLE FROM - TEST HOLE DATE TESTED - 10/05/17  
MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS

LAB NUMBER	20173024	20173025	20173026
SAMPLE ID	RV604	RV605	RV606
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	102+10	208+00	301+10
LOCATION	18 RT	18 LT	18 RT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	35 25 2.70	35 21 28.70	35 16 15.70
LONGITUDE DEG-MIN-SEC	92 57 40.30	92 57 32.60	92 56 7.90
% PASSING			
2 IN.	-	-	-
1 1/2 IN.	-	-	-
3/4 IN.	100	100	100
3/8 IN.	89	96	95
NO. 4	82	87	92
NO. 10	74	81	89
NO. 40	66	75	86
NO. 80	61	65	83
NO. 200	57	36	76
LIQUID LIMIT	36	ND	ND
PLASTICITY INDEX	16	NP	NP
AASHTO SOIL	A-6 (6)	A-4-0	A-4-0
UNIFIED SOIL			
% MOISTURE CONTENT			

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL