# ARKANSAS DEPARTMENT OF TRANSPORTATION

# SUBSURFACE INVESTIGATION

STATE JOB NO. 100870

FEDERAL AID PROJECT NO. NHPP-0028(44)

HWY. 34 STRS. & APPRS. (S)

STATE HIGHWAY 34 SECTION 4

IN GREENE 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 29, 2017

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

**SUBJECT:** Job No. 100870
Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
Greene County

Transmitted herewith are a brief summary of the geology and site conditions, summary of percent material passing #200 sieve and Atterberg Limits test results (for liquefaction susceptibility analysis), 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 bridges crossing Hurricane Ditch and Big Slough, on Highway 34, east of Marmaduke. The new bridges will be constructed on the existing alignment and temporary detour bridges will be constructed to maintain traffic. Four of the eight requested borings, all intermediate bents, were inaccessible due to conflicts with utilities, low bridge clearance, and high water levels. The four borings that were not obtained were located at: 110+42 C.L. Construction, 110+90 C.L. Construction, 210+86 C.L. Construction, and 211+61 C.L. Construction.

Based on plans provided by Bridge Division and the findings from this subsurface investigation, it is anticipated that all bents will be founded on concrete filled steel shell piles.

Although these bridges are located in a moderately high seismic area with a horizontal acceleration coefficient of 0.622, as provided by Bridge Design, it is recommended that no reinforcement be used in the bridge embankments. A global stability analysis was performed for this embankment configuration and provides for a satisfactory Factor of Safety for seismic and static conditions. However, if the embankment geometry is altered in any way the embankment will need to be reanalyzed for seismic and static conditions.

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 10 Engineer
G.C. File

# GEOLOGY AND SITE CONDITIONS
## Job No. 100870

## Hwy. 34 Strs. & Apprs. (S)
## Route 34 Section 4
## Greene County

### Site Conditions

There are two bridges associated with this job. Existing **Bridge 1** crosses Hurricane Ditch. Bridge 1 is a five span bridge constructed of concrete deck with timber caps and pilings. The end walls are constructed of timber. The deck for spans 1, 2, 4, and 5 is supported by 15 sets of timber beams. The deck over span 3 is supported by six steel beams. The guardrail is constructed of steel with steel posts. Overhead power lines parallel the south side of the roadway. There is a telecommunication line, buried east and west of the channel and overhead above the channel, paralleling the north side of the roadway. The stream flows from north to south at the bridge site. Another channel parallels the roadway to the north, west of the bridge, and intersects Hurricane Ditch at the project site just to the north of the bridge. The channels are lined with trees and brush with agricultural fields beyond.

Existing **Bridge 2** is a four span bridge that crosses Big Slough. The deck is constructed of concrete. On spans 1, 2 and 4, the deck is supported by seven sets of steel beams. The channel is primarily under span 3 and partially under span 2. Span 3 is supported by a steel truss. The piers are constructed of timber pilings. The guardrail is constructed of steel supported by steel posts. Trees and brush line the channel with agricultural fields surrounding the bridge site. A farm is located just to the southeast of the bridge. Overhead power lines parallel the north side of the roadway, to the east, and cross the roadway on the west side of the channel and then parallel the south side of the roadway. The slough flows from northeast to southwest.

### Site Geology

Both bridges are located on valley train deposits (map symbol Pvcl and Pvl 2). Valley train deposits are laid down by swiftly flowing, sediment-choked braided streams. The deposits were derived from glacial outwash from the Mississippi and Ohio River drainage basins and deposited by those streams. The glacial outwash is composed primarily of sand.

### Subsurface Conditions

Based on the results of the borings at stations 109+96 to 111+34 (**Bridge** 1 - Hurricane Ditch), the subsurface stratigraphy may be generalized as follows:

| | |
|---|---|
| 0 to 15 Feet: | Varies from moist to wet, loose to medium dense, gray **sandy silt** to **sand** to medium stiff to stiff, gray **clay**. |
| 15 to 35 Feet: | Consists of wet, very loose to medium dense, gray **silt with sand** to **sand**. |
| 35 to 40 Feet: | Varies from wet, very loose to medium dense, gray **silt with sand** to **sand** to stiff, gray **sandy clay**. |

40 to 121.5 Feet: Consists of wet, medium dense to very dense, gray **sand with silt** to **sand**. Some samples from this zone contained a trace to some gravel.

Based on the results of the borings at stations 210+26 to 212+45 (**Bridge 2** - Big Slough), the subsurface stratigraphy may be generalized as follows:

0 to 15 Feet: Varies from moist, loose, brown **sand** to medium stiff to stiff, brown and gray **sandy clay**.

15 to 30 Feet: Consists of wet, loose to medium dense, brown to gray **sand**. One sample in this zone consisted of **sand with silt** and one sample contained a **trace of gravel**.

30 to 60 Feet: Consists of wet, medium dense, brown to gray **sand** to **sand with trace gravel**.

60 to 101.5 Feet: Consists of wet, medium dense to very dense, brown to gray **sand** to **sand with trace gravel**. One sample in this zone consisted of **sand with silt and trace gravel**.

# Lab Test Summary

Project: 100870



| Station | Location | Depth Ft. | Plastic Limit | Liquid Limit | Plasticity Index | % Passing No. 200 |
|---|---|---|---|---|---|---|
| 111+34 | 5' LT. | 4.5 | NP | | | 65 |
| 111+34 | 5' LT. | 9.5 | 19 | 57 | 38 | 94 |
| 111+34 | 5' LT. | 15 | NP | | | 82 |
| 111+34 | 5' LT. | 20 | NP | | | 7 |
| 111+34 | 5' LT. | 25 | NP | | | 16 |
| 111+34 | 5' LT. | 30 | NP | | | 3 |
| 111+34 | 5' LT. | 35 | NP | | | 3 |
| 111+34 | 5' LT. | 40 | NP | | | 3 |
| 111+34 | 5' LT. | 45 | NP | | | 4 |
| 111+34 | 5' LT. | 50 | NP | | | 5 |
| 111+34 | 5' LT. | 55 | NP | | | 4 |
| 111+34 | 5' LT. | 60 | NP | | | 2 |
| 111+34 | 5' LT. | 65 | NP | | | 3 |
| 111+34 | 5' LT. | 70 | NP | | | 3 |
| 111+34 | 5' LT. | 75 | NP | | | 3 |
| 111+34 | 5' LT. | 80 | NP | | | 2 |
| 111+34 | 5' LT. | 85 | NP | | | 2 |
| 111+34 | 5' LT. | 90 | NP | | | 3 |
| 111+34 | 5' LT. | 95 | NP | | | 2 |
| 111+34 | 5' LT. | 100 | NP | | | 3 |
| 111+34 | 5' LT. | 105 | NP | | | 6 |
| 111+34 | 5' LT. | 110 | NP | | | 4 |
| 111+34 | 5' LT. | 115 | NP | | | 3 |
| 111+34 | 5' LT. | 120 | NP | | | 3 |
| 212+45 | 20' RT. | 4.5 | 15 | 48 | 33 | 61 |
| 212+45 | 20' RT. | 9.5 | 15 | 60 | 45 | 54 |
| 212+45 | 20' RT. | 15 | NP | | | 12 |
| 212+45 | 20' RT. | 20 | NP | | | 2 |
| 212+45 | 20' RT. | 25 | NP | | | 2 |
| 212+45 | 20' RT. | 30 | NP | | | 2 |
| 212+45 | 20' RT. | 35 | NP | | | 3 |
| 212+45 | 20' RT. | 40 | NP | | | 2 |
| 212+45 | 20' RT. | 45 | NP | | | 3 |
| 212+45 | 20' RT. | 50 | NP | | | 2 |
| 212+45 | 20' RT. | 55 | NP | | | 1 |
| 212+45 | 20' RT. | 60 | NP | | | 3 |
| 212+45 | 20' RT. | 65 | NP | | | 4 |
| 212+45 | 20' RT. | 70 | NP | | | 5 |
| 212+45 | 20' RT. | 75 | NP | | | 3 |
| 212+45 | 20' RT. | 80 | NP | | | 3 |

# Lab Test Summary

Project: 100870



| | | | | | | |
|---|---|---|---|---|---|---|
| 212+45 | 20' RT. | 85 | NP | | | 3 |
| 212+45 | 20' RT. | 90 | NP | | | 3 |
| 212+45 | 20' RT. | 95 | NP | | | 3 |
| 212+45 | 20' RT. | 100 | NP | | | 3 |

# $D_{50}$ AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

| **Job No.** 100870 | | | | | |
|---|---|---|---|---|---|
| **Creek Name** | **Station** | **Sample Type** | **Location** | **Depth (FT)** | **Aggregate Size (D50) (IN)** |
| Hurricane Ditch | 110+34 | Creek Bank | 19' Lt. C.L. Construction | N/A | Less Than 0.0029 |
| Big Slough | 211+68 | Creek Bank | 12' Rt. C.L. Construction | N/A | Less Than 0.0029 |

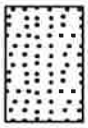
# LEGEND

## SOIL TYPES

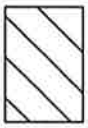
(SHOWN IN SYMBOL COLUMN)

(PREDOMINANT TYPE SHOWN HEAVY)


GRAVEL


SAND

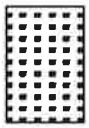

SILT

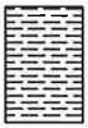

CLAY

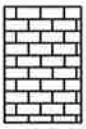

ORGANIC MATTER

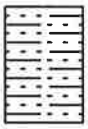
## ROCK TYPES

(SHOWN IN SYMBOL COLUMN)


SANDSTONE


SHALE or SILTSTONE


LIMESTONE or DOLOMITE


ALTERNATING LAYERS of SHALE and SANDSTONE


OTHER

## SAMPLER TYPES

(SHOWN IN SAMPLE COLUMN)

SHELBY TUBE


UNDISTURBED SAMPLE RECOVERY


DISTURBED SAMPLE RECOVERY


NO RECOVERY

SPLIT SPOON


SAMPLE RECOVERY


NO RECOVERY

ROCK CORING


% RECOVERY INDICATED ON LOGS

## TERMS DESCRIBING CONSISTENCY OR CONDITION

| GRANULAR SOIL | | CLAY | | CLAY-SHALE | | SHALE | |
|---|---|---|---|---|---|---|---|
| 'N' Value | Density | 'N' Value | Consistency | 'N' Value | Consistency | 'N' 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, 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 ($N_f$) can be obtained by adding the bottom two numbers for example: $\frac{6}{8-9} \Rightarrow 8+9=17 blows/ft$. The "N" Value corrected to 60% efficiency ($N_{60}$) can be obtained by multiplying $N_f$ by the hammer correction factor published on the boring log.

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1
PAGE 1 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 109+96
LOCATION: 6' Left of Construction Centerline
LOGGED BY: Coty Campbell

DATE: May 3, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| DEPTH FT. | SYMBOL | SAMPLES | DESCRIPTION OF MATERIAL<br>SURFACE ELEVATION: 261.5 | SOIL GROUP | PLASTIC LIMIT | % MOIST. | LIQUID LIMIT | DRY WEIGHT LBS PER CU.FT. | NO. OF BLOWS PER 6-IN. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | X | Moist, Loose, Gray Sand with Silt | | | | | | 2<br>3-2 | | |
| 10 | | X | Moist, Medium Stiff, Gray Clay | | | | | | 2<br>2-4 | | |
| 15 | | X | Wet, Medium Dense, Gray Sand with Clay | | | | | | 3<br>6-5 | | |
| 20 | | X | Wet, Medium Dense, Gray Sand | | | | | | 7<br>11-15 | | |
| 25 | | X | Wet, Very Loose, Gray Silty Sand | | | | | | 1<br>2-2 | | |
| 30 | | X | Wet, Medium Dense, Gray Sand | | | | | | 8<br>9-10 | | |
| 35 | | | | | | | | | | | |

REMARKS: Hurricane Ditch

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1
PAGE 2 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 109+96
LOCATION: 6' Left of Construction Centerline
LOGGED BY: Coty Campbell

DATE: May 3, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| DEPTH FT. | SYMBOL | SAMPLES | DESCRIPTION OF MATERIAL<br>SURFACE ELEVATION: 261.5 | SOIL GROUP | PLASTIC LIMIT | % MOIST. | LIQUID LIMIT | DRY WEIGHT LBS PER CU.FT. | NO. OF BLOWS PER 6-IN. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | Wet, Stiff, Gray Sandy Clay | | | | | | 1<br>2-8 | | |
| 45 | | | Wet, Medium Dense, Gray Sand | | | | | | 3<br>7-8<br>6<br>10-10 | | |
| 50 | | | | | | | | | | | |
| 55 | | | Wet, Medium Dense, Gray Sand with Trace Gravel | | | | | | 6<br>9-14 | | |
| 60 | | | Wet, Medium Dense, Gray Sand | | | | | | 6<br>9-11<br>3<br>8-9 | | |
| 65 | | | | | | | | | | | |
| 70 | | | Wet, Medium Dense, Gray Sand with Trace | | | | | | 9<br>10-14 | | |

REMARKS: Hurricane Ditch

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1
PAGE 3 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 109+96
LOCATION: 6' Left of Construction Centerline
LOGGED BY: Coty Campbell

DATE: May 3, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| DEPTH FT. | SYMBOL | SAMPLES | DESCRIPTION OF MATERIAL<br>SURFACE ELEVATION: 261.5 | SOIL GROUP | PLASTIC LIMIT | % MOIST. | LIQUID LIMIT | DRY WEIGHT LBS PER CU.FT. | NO. OF BLOWS PER 6-IN. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | | X | Gravel | | | | | | 8<br>13-17 | | |
| 80 | | X | | | | | | | 10<br>15-20 | | |
| | | X | | | | | | | 10<br>22-25 | | |
| 85 | | X | Wet, Dense, Gray Sand with Trace Gravel | | | | | | 9<br>13-20 | | |
| 90 | | X | | | | | | | 9<br>16-20 | | |
| 95 | | X | | | | | | | | | |
| 100 | | X | Wet, Dense, Gray Sand with Some Gravel | | | | | | 9<br>13-20 | | |
| | | X | Wet, Dense, Gray Sand with Trace Gravel | | | | | | 10<br>24-24 | | |
| 105 | | | Boring Terminated | | | | | | | | |

REMARKS: Hurricane Ditch

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2
PAGE 1 OF 4

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 111+34
LOCATION: 5' Left of Construction Centerline
LOGGED BY: Coty Campbell

DATE: May 2, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 121.5

| 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. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SURFACE ELEVATION: 261.6 | | | | | | | | |
| 5 | | | Moist, Loose, Gray Sandy Silt | - | | | | | | | |
| | | | | ML | NP | | | | 3 / 3-3 | | |
| | | | | - | | | | | | | |
| 10 | | | Moist, Stiff, Gray Clay | CH | 19 | | 57 | | 3 / 3-9 | | |
| | | | | - | | | | | | | |
| 15 | | | Wet, Loose, Gray Silt with Sand | ML | NP | | | | 2 / 2-3 | | |
| | | | | - | | | | | | | |
| 20 | | | Wet, Medium Dense, Gray Sand with Silt | SW-SM | NP | | | | 5 / 8-9 | | |
| | | | | - | | | | | | | |
| 25 | | | Wet, Medium Dense, Gray Silty Sand | SM | NP | | | | 8 / 9-13 | | |
| | | | | - | | | | | | | |
| 30 | | | | SW | NP | | | | 4 / 4-9 | | |
| | | | | - | | | | | | | |
| 35 | | | | | | | | | | | |

REMARKS: Hurricane Ditch

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2
PAGE 2 OF 4

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 111+34
LOCATION: 5' Left of Construction Centerline
LOGGED BY: Coty Campbell

DATE: May 2, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 121.5

| 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. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SURFACE ELEVATION: 261.6 | | | | | | | | |
| | | | Wet, Medium Dense, Gray Sand | SW | NP | | | | 4 / 6-10 | | |
| | | | | - | | | | | | | |
| 40 | | | | SW | NP | | | | 5 / 9-9 | | |
| | | | | - | | | | | | | |
| 45 | | | | | | | | | | | |
| | | | Wet, Medium Dense, Gray Sand with Trace Gravel | SW | NP | | | | 8 / 13-13 | | |
| | | | | - | | | | | | | |
| 50 | | | | | | | | | | | |
| | | | Wet, Medium Dense, Gray Sand with Silt and Trace Gravel | SW-SM | NP | | | | 8 / 9-8 | | |
| | | | | - | | | | | | | |
| 55 | | | | | | | | | | | |
| | | | Wet, Dense, Gray Sand | SW | NP | | | | 7 / 13-19 | | |
| | | | | - | | | | | | | |
| 60 | | | | | | | | | | | |
| | | | Wet, Medium Dense, Gray Sand with Trace Gravel | SW | NP | | | | 11 / 11-9 | | |
| | | | | - | | | | | | | |
| 65 | | | | SW | NP | | | | 7 / 11-14 | | |
| | | | | - | | | | | | | |
| 70 | | | | | | | | | | | |

REMARKS: Hurricane Ditch

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2
PAGE 3 OF 4

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 111+34
LOCATION: 5' Left of Construction Centerline
LOGGED BY: Coty Campbell

DATE: May 2, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 121.5

| DEPTH FT. | SYMBOL | SAMPLES | DESCRIPTION OF MATERIAL<br>SURFACE ELEVATION: 261.6 | SOIL GROUP | PLASTIC LIMIT | % MOIST. | LIQUID LIMIT | DRY WEIGHT LBS PER CU.FT. | NO. OF BLOWS PER 6-IN. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | | X | | SW | NP | | | | 7<br>13-17 | | |
| 80 | | X | Wet, Medium Dense, Gray Sand | SW | NP | | | | 8<br>11-14 | | |
| 85 | | X | Wet, Medium Dense, Gray Sand with Trace Gravel | SW | NP | | | | 7<br>8-12 | | |
| 90 | | X | Wet, Medium Dense, Gray Sand | SW | NP | | | | 8<br>10-14 | | |
| 95 | | X | Wet, Dense, Gray Sand with Trace Gravel | SW | NP | | | | 11<br>13-18 | | |
| 100 | | X | Wet, Medium Dense, Gray Sand | SW | NP | | | | 6<br>7-10 | | |
| 105 | | X | Wet, Dense, Gray Sand | SW | NP | | | | 10<br>13-27 | | |

REMARKS: Hurricane Ditch

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BORING NO. 2
PAGE 4 OF 4

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 111+34
LOCATION: 5' Left of Construction Centerline
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EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 121.5

| 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. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SURFACE ELEVATION: 261.6 | | | | | | | | |
| 110 | | | Wet, Very Dense, Gray Sand with Silt | SW-SM | NP | | | | 20 / 34-50 | | |
| 115 | | | Wet, Dense, Gray Sand | SW | NP | | | | 14 / 24-26 | | |
| 120 | | | Wet, Medium Dense, Gray Sand | SW | NP | | | | 5 / 7-10 | | |
| | | | | SW | NP | | | | 10 / 9-11 | | |
| 125 | | | Boring Terminated | | | | | | | | |
| 130 | | | | | | | | | | | |
| 135 | | | | | | | | | | | |
| 140 | | | | | | | | | | | |

REMARKS: Hurricane Ditch

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3
PAGE 1 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 210+26
LOCATION: 20' Right of Construction Centerline
LOGGED BY: Troy Frazier

DATE: May 16 & 17, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| 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. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SURFACE ELEVATION: 256.1 | | | | | | | | |
| 5 | | X | Moist, Loose, Brown Sand | | | | | | 1<br>2-3 | | |
| 10 | | X | Moist, Stiff, Brown and Gray Sandy Clay | | | | | | 3<br>4-6 | | |
| 15 | | X | Wet, Medium Dense, Brown Sand | | | | | | 6<br>7-11 | | |
| 20 | | X | Wet, Medium Dense, Gray Sand | | | | | | 6<br>10-11 | | |
| 25 | | X | Wet, Loose, Gray Sand | | | | | | 3<br>4-6 | | |
| 30 | | X | Wet, Medium Dense, Gray Sand | | | | | | 6<br>10-10 | | |
| 35 | | | | | | | | | | | |

REMARKS: Big Slough

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3
PAGE 2 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 210+26
LOCATION: 20' Right of Construction Centerline
LOGGED BY: Troy Frazier

DATE: May 16 & 17, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| 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. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SURFACE ELEVATION: 256.1 | | | | | | | | |
| 40 | | | Wet, Medium Dense, Gray Sand with Trace Gravel | | | | | | 6<br>8-9 | | |
| 45 | | | Wet, Medium Dense, Gray Sand | | | | | | 3<br>9-21<br>6<br>9-9 | | |
| 55 | | | Wet, Medium Dense, Gray Sand with Trace Gravel | | | | | | 6<br>10-15<br>6<br>9-12 | | |
| 65 | | | Wet, Medium Dense, Gray Sand | | | | | | 7<br>9-11<br>7<br>11-14 | | |
| 70 | | | | | | | | | | | |

REMARKS: Big Slough

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3
PAGE 3 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 210+26
LOCATION: 20' Right of Construction Centerline
LOGGED BY: Troy Frazier

DATE: May 16 & 17, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| DEPTH FT. | SYMBOL | SAMPLES | DESCRIPTION OF MATERIAL<br>SURFACE ELEVATION: 256.1 | SOIL GROUP | PLASTIC LIMIT | % MOIST. | LIQUID LIMIT | DRY WEIGHT LBS PER CU.FT. | NO. OF BLOWS PER 6-IN. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | | X | Wet, Very Dense, Gray Sand with Trace Gravel | | | | | | 20<br>34-40 | | |
| 80 | | X | Wet, Medium Dense, Gray Sand | | | | | | 7<br>13-14<br>5<br>10-15 | | |
| 85 | | | | | | | | | | | |
| 90 | | X | Wet, Medium Dense, Gray Sand with Trace Gravel | | | | | | 6<br>11-15<br>7<br>11-15 | | |
| 95 | | | | | | | | | | | |
| 100 | | X | Wet, Dense, Gray Sand | | | | | | 11<br>20-29 | | |
| | | X | Wet, Dense, Gray Sand with Trace Gravel | | | | | | 15<br>18-18 | | |
| 105 | | | Boring Terminated | | | | | | | | |

REMARKS: Big Slough

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 4
PAGE 1 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 212+45
LOCATION: 20' Right of Construction Centerline
LOGGED BY: Troy Frazier

DATE: May 22 & 23, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| DEPTH FT. | SYMBOL | SAMPLES | DESCRIPTION OF MATERIAL<br>SURFACE ELEVATION: 256.9 | SOIL GROUP | PLASTIC LIMIT | % MOIST. | LIQUID LIMIT | DRY WEIGHT LBS PER CU.FT. | NO. OF BLOWS PER 6-IN. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | X | Moist, Medium Stiff, Brown Sandy Clay | - | 15 | | 48 | | 2<br>3-5 | | |
| | | | | CL | | | | | | | |
| | | | | - | | | | | | | |
| 10 | | X | Moist, Medium Stiff, Brown Sandy Clay | CH | 15 | | 60 | | 2<br>3-4 | | |
| | | | | - | | | | | | | |
| 15 | | X | Wet, Medium Dense, Gray Sand with Silt | SW-SM | NP | | | | 2<br>5-6 | | |
| | | | | - | | | | | | | |
| 20 | | X | Wet, Medium Dense, Gray Sand | SW | NP | | | | 4<br>5-10 | | |
| | | | | - | | | | | | | |
| 25 | | X | Wet, Medium Dense, Gray Sand with Trace Gravel | SW | NP | | | | 4<br>6-10 | | |
| | | | | - | | | | | | | |
| 30 | | X | Wet, Medium Dense, Gray Sand | SW | NP | | | | 6<br>7-8 | | |
| | | | | - | | | | | | | |
| 35 | | | | | | | | | | | |

REMARKS: Big Slough

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 4
PAGE 2 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 212+45
LOCATION: 20' Right of Construction Centerline
LOGGED BY: Troy Frazier

DATE: May 22 & 23, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| 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. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SURFACE ELEVATION: 256.9 | | | | | | | | |
| 40 | | | Wet, Medium Dense, Gray Sand with Trace Gravel | SW | NP | | | | 7<br>11-18 | | |
| 45 | | | Wet, Medium Dense, Gray Sand | SW | NP | | | | 7<br>11-11 | | |
| 50 | | | Wet, Medium Dense, Gray Sand with Trace Gravel | SW | NP | | | | 6<br>7-9 | | |
| 55 | | | | SW | NP | | | | 6<br>9-10 | | |
| 60 | | | | SW | NP | | | | 4<br>5-8 | | |
| 65 | | | Wet, Dense, Gray Sand with Trace Gravel | SW | NP | | | | 6<br>15-21 | | |
| 70 | | | | SW | NP | | | | 11<br>22-28 | | |

REMARKS: Big Slough

**ARKANSAS HWY. & TRANS. DEPARTMENT**
**MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 4
PAGE 3 OF 3

JOB NO. 100870 Greene County
JOB NAME: Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
STATION: 212+45
LOCATION: 20' Right of Construction Centerline
LOGGED BY: Troy Frazier

DATE: May 22 & 23, 2017
TYPE OF DRILLING:
Hollow Stem Auger - Rotary Wash
EQUIPMENT: CME 75

HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 101.5

| DEPTH FT. | SYMBOL | SAMPLES | DESCRIPTION OF MATERIAL<br>SURFACE ELEVATION: 256.9 | SOIL GROUP | PLASTIC LIMIT | % MOIST. | LIQUID LIMIT | DRY WEIGHT LBS PER CU.FT. | NO. OF BLOWS PER 6-IN. | % TCR | % RQD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | | X | Wet, Dense, Gray Sand with Silt and Trace Gravel | SW-SM | NP | | | | 18<br>22-28 | | |
| | | | | - | | | | | | | |
| 80 | | X | Wet, Medium Dense, Gray Sand | SW | NP | | | | 6<br>10-16 | | |
| | | | | - | | | | | | | |
| 85 | | X | Wet, Dense, Gray Sand with Trace Gravel | SW | NP | | | | 9<br>16-16 | | |
| | | | | - | | | | | | | |
| 90 | | X | Wet, Dense, Gray Sand | SW | NP | | | | 7<br>18-23 | | |
| | | | | - | | | | | | | |
| 95 | | X | Wet, Very Dense, Gray Sand with Trace Gravel | SW | NP | | | | 15<br>25-28 | | |
| | | | | - | | | | | | | |
| 100 | | X | Wet, Dense, Gray Sand with Trace Gravel | SW | NP | | | | 10<br>15-21 | | |
| | | | | - | | | | | | | |
| | | X | Wet, Dense, Gray Sand | SW | NP | | | | 7<br>15-21 | | |
| 105 | | | Boring Terminated | | | | | | | | |

REMARKS: Big Slough

**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**

May 16, 2017

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

**SUBJECT:** Job No. 100870
Hwy. 34 Strs. & Apprs. (S)
Route 34 Section 4
Greene 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 three bridges on Highway 34. Samples were obtained in the existing travel lanes and ditch line. There were no paved shoulders within the project.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of highly plastic clay with sand. The subgrade soils are expected to provide a stable working platform with normal drying and compactive effort if the weather is favorable during construction.

Based on currently available cross-sections the maximum embankment height is approximately 10 feet. The embankment may be constructed with locally available unspecified material utilizing the slope configuration shown in the 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 at the river port near Amorel.

2. Asphalt Concrete Hot Mix

**PG 64-22**

| Type | Asphalt Cement % | Mineral Aggregate % |
|---|---|---|
| Surface Course | 5.2 | 94.8 |
| Binder Course | 4.1 | 95.9 |
| Base Course | 3.9 | 96.1 |

**PG 70-22**

| Type | Asphalt Cement % | Mineral Aggregate % |
|---|---|---|
| Surface Course | 5.1 | 94.9 |
| Binder Course | 4.1 | 95.9 |
| Base Course | 3.7 | 96.3 |

**PG 76-22**

| Type | Asphalt Cement % | Mineral Aggregate % |
|---|---|---|
| Surface Course | 5.2 | 94.8 |
| Binder Course | 4.2 | 95.8 |
| Base Course | 3.8 | 96.2 |

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 - 05/01/2017
JOB NUMBER - 100870

SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 28
DISTRICT NO. - 10

JOB NAME - HWY.34 STR. & APPRS. (S)

| STATION LIMITS | R-VALUE AT 240 psi |
|---|---|
| BEGIN JOB - END JOB | LESS THAN 5 |
| RESILIENT MODULUS | |
| STA. 114+90 | 5137 |
| STA. 206+10 | 6718 |

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.** | 100870 | **Material Code** | SSRVPS |
| **Date Sampled:** | 3/28/17 | **Station No.:** | 114+90 |
| **Date Tested:** | April 27, 2017 | **Location:** | 18LT |
| **Name of Project:** | HWY. 34 STR. & APPRS. (S) | | |
| **County:** | **Code:** 28 **Name:** GREENE | | |
| **Sampled By:** | THORNTON/TAYLOR | **Depth:** | 0-5 |
| **Lab No.:** | 20171267 | **AASHTO Class:** | A-6(6) |
| **Sample ID:** | RV319 | **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 | 3.92 |
| Middle | 3.92 |
| Bottom | 3.92 |
| Average | 3.92 |
| 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): | 11.99 |
| Initial Volume, AoLo (cu. in): | 96.32 |

**3. Soil Specimen Weight:**

| | |
|---|---|
| Weight of Wet Soil Used (g): | 3229.50 |

**4. Soil Properties:**

| | |
|---|---|
| Optimum Moisture Content (%): | 15.4 |
| Maximum Dry Density (pcf): | 110.2 |
| 95% of MDD (pcf): | 104.7 |
| In-Situ Moisture Content (%): | N/A |

**5. Specimen Properties:**

| | |
|---|---|
| Wet Weight (g): | 3229.50 |
| Compaction Moisture content (%): | 15.4 |
| Compaction Wet Density (pcf): | 127.75 |
| Compaction Dry Density (pcf): | 110.71 |
| Moisture Content After Mr Test (%): | 15.4 |

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

**7. Resilient Modulus, Mr:** 7394(Sc)^-0.29605(S3)^0.34734

**8. Comments** _____

**9. Tested By:** GW **Date:** April 27, 2017

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

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

| | | | |
|---|---|---|---|
| **Job No.** | 100870 | **Material Code** | SSRVPS |
| **Date Sampled:** | 3/28/17 | **Station No.:** | 114+90 |
| **Date Tested:** | April 27, 2017 | **Location:** | 18LT |
| **Name of Project:** | HWY. 34 STR. & APPRS. (S) | | |
| **County:** | **Code:** 28 **Name:** GREENE | | |
| **Sampled By:** | THORNTON/TAYLOR | **Depth:** | 0-5 |
| **Lab No.:** | 20171267 | **AASHTO Class:** | A-6(6) |
| **Sample ID:** | RV319 | **Material Type (1 or 2):** | 2 |
| **LATITUDE:** | | **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 | $S_3$ | $S_{cyclic}$ | $P_{max}$ | $P_{cyclic}$ | $P_{contact}$ | $S_{max}$ | $S_{cyclic}$ | $S_{contact}$ | $H_{avg}$ | $\varepsilon_r$ | $M_r$ |
| UNIT | psi | psi | lbs | lbs | lbs | psi | psi | psi | in | in/in | psi |
| Sequence 1 | 6.0 | 2.0 | 24.9 | 22.1 | 2.8 | 2.1 | 1.8 | 0.2 | 0.00131 | 0.00016 | 11,275 |
| Sequence 2 | 6.0 | 4.0 | 46.8 | 44.0 | 2.8 | 3.9 | 3.7 | 0.2 | 0.00289 | 0.00036 | 10,202 |
| Sequence 3 | 6.0 | 6.0 | 68.7 | 65.2 | 3.5 | 5.7 | 5.4 | 0.3 | 0.00486 | 0.00060 | 8,984 |
| Sequence 4 | 6.0 | 8.0 | 90.9 | 85.0 | 5.9 | 7.6 | 7.1 | 0.5 | 0.00741 | 0.00092 | 7,682 |
| Sequence 5 | 6.0 | 10.0 | 113.1 | 104.8 | 8.3 | 9.4 | 8.7 | 0.7 | 0.01017 | 0.00127 | 6,903 |
| Sequence 6 | 4.0 | 2.0 | 24.8 | 22.1 | 2.7 | 2.1 | 1.8 | 0.2 | 0.00153 | 0.00019 | 9,662 |
| Sequence 7 | 4.0 | 4.0 | 45.9 | 43.2 | 2.7 | 3.8 | 3.6 | 0.2 | 0.00358 | 0.00045 | 8,080 |
| Sequence 8 | 4.0 | 6.0 | 66.3 | 63.5 | 2.7 | 5.5 | 5.3 | 0.2 | 0.00598 | 0.00074 | 7,114 |
| Sequence 9 | 4.0 | 8.0 | 88.8 | 83.8 | 5.0 | 7.4 | 7.0 | 0.4 | 0.00860 | 0.00107 | 6,529 |
| Sequence 10 | 4.0 | 10.0 | 111.2 | 103.9 | 7.3 | 9.3 | 8.7 | 0.6 | 0.01135 | 0.00141 | 6,129 |
| Sequence 11 | 2.0 | 2.0 | 24.6 | 21.8 | 2.7 | 2.0 | 1.8 | 0.2 | 0.00187 | 0.00023 | 7,838 |
| Sequence 12 | 2.0 | 4.0 | 44.8 | 42.0 | 2.8 | 3.7 | 3.5 | 0.2 | 0.00429 | 0.00053 | 6,556 |
| Sequence 13 | 2.0 | 6.0 | 64.6 | 61.9 | 2.7 | 5.4 | 5.2 | 0.2 | 0.00714 | 0.00089 | 5,805 |
| Sequence 14 | 2.0 | 8.0 | 85.7 | 81.6 | 4.1 | 7.1 | 6.8 | 0.3 | 0.01010 | 0.00126 | 5,410 |
| Sequence 15 | 2.0 | 10.0 | 107.8 | 101.3 | 6.5 | 9.0 | 8.4 | 0.5 | 0.01320 | 0.00164 | 5,137 |

TESTED BY GW DATE April 27, 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**

| | | | |
|---|---|---|---|
| **Job No.** | 100870 | **Material Code** | SSRVPS |
| **Date Sampled:** | 3/28/17 | **Station No.:** | 114+90 |
| **Date Tested:** | April 27, 2017 | **Location:** | 18LT |
| **Name of Project:** | HWY. 34 STR. & APPRS. (S) | | |
| **County:** | **Code:** 28 **Name:** GREENE | | |
| **Sampled By:** | THORNTON/TAYLOR | **Depth:** | 0-5 |
| **Lab No.:** | 20171267 | **AASHTO Class:** | A-6(6) |
| **Sample ID:** | RV319 | **Material Type (1 or 2):** | 2 |
| **LATITUDE:** | | **LONGITUDE:** | |

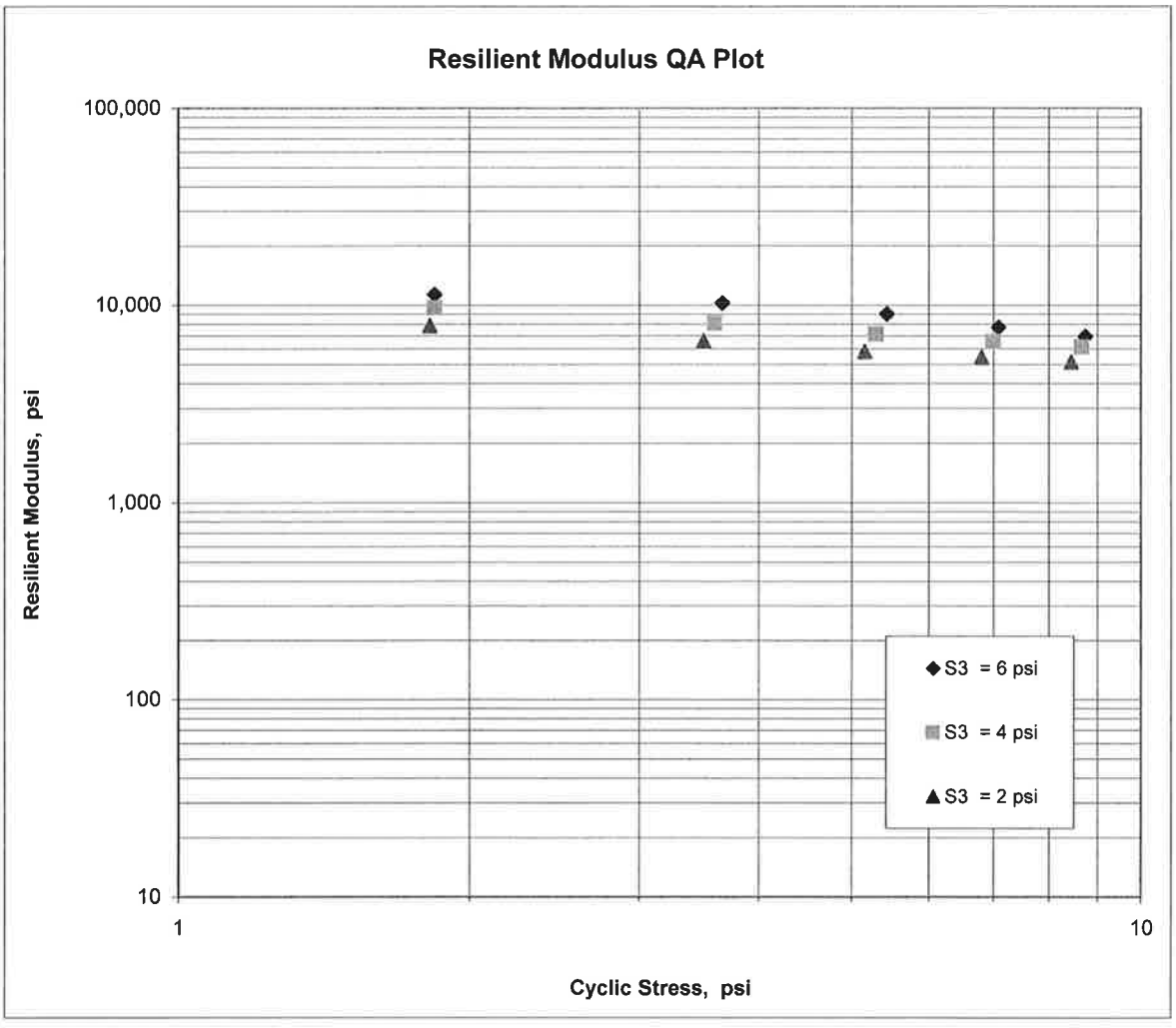
$$M_R = K1\ (S_C)^{K2}\ (S_3)^{K5}$$

K1 = 7,394

K2 = -0.29605

K5 = 0.34734

$R^2$ = 0.97



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

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

| | | | |
|---|---|---|---|
| **Job No.** | 100870 | **Material Code** | SSRVPS |
| **Date Sampled:** | 3/28/17 | **Station No.:** | 206+10 |
| **Date Tested:** | April 27, 2017 | **Location:** | 18RT |
| **Name of Project:** | HWY. 34 STR. & APPRS. (S) | | |
| **County:** | **Code:** 28 **Name:** GREENE | | |
| **Sampled By:** | THORNTON/TAYLOR | **Depth:** | 0-5 |
| **Lab No.:** | 20171268 | **AASHTO Class:** | A-4(1) |
| **Sample ID:** | RV320 | **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 | 3.94 |
| 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): | 12.16 |
| Initial Volume, AoLo (cu. in): | 97.52 |

**3. Soil Specimen Weight:**

| | |
|---|---|
| Weight of Wet Soil Used (g): | 3207.20 |

**4. Soil Properties:**

| | |
|---|---|
| Optimum Moisture Content (%): | 12.3 |
| Maximum Dry Density (pcf): | 117.7 |
| 95% of MDD (pcf): | 111.8 |
| In-Situ Moisture Content (%): | N/A |

**5. Specimen Properties:**

| | |
|---|---|
| Wet Weight (g): | 3207.20 |
| Compaction Moisture content (%): | 12.3 |
| Compaction Wet Density (pcf): | 125.31 |
| Compaction Dry Density (pcf): | 111.59 |
| Moisture Content After Mr Test (%): | 12.2 |

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

**7. Resilient Modulus, Mr:** 7694(Sc)^-0.19808(S3)^0.36821

**8. Comments** _____

**9. Tested By:** GW **Date:** April 27, 2017

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

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

| | | | |
|---|---|---|---|
| **Job No.** | 100870 | **Material Code** | SSRVPS |
| **Date Sampled:** | 3/28/17 | **Station No.:** | 206+10 |
| **Date Tested:** | April 27, 2017 | **Location:** | 18RT |
| **Name of Project:** | HWY. 34 STR. & APPRS. (S) | | |
| **County:** | **Code:** 28 **Name:** GREENE | | |
| **Sampled By:** | THORNTON/TAYLOR | **Depth:** | 0-5 |
| **Lab No.:** | 20171268 | **AASHTO Class:** | A-4(1) |
| **Sample ID:** | RV320 | **Material Type (1 or 2):** | 2 |
| **LATITUDE:** | | **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 | $S_3$ | $S_{cyclic}$ | $P_{max}$ | $P_{cyclic}$ | $P_{contact}$ | $S_{max}$ | $S_{cyclic}$ | $S_{contact}$ | $H_{avg}$ | $\varepsilon_r$ | $M_r$ |
| UNIT | psi | psi | lbs | lbs | lbs | psi | psi | psi | in | in/in | psi |
| Sequence 1 | 6.0 | 2.0 | 25.1 | 22.4 | 2.6 | 2.1 | 1.8 | 0.2 | 0.00113 | 0.00014 | 13,104 |
| Sequence 2 | 6.0 | 4.0 | 47.3 | 44.6 | 2.7 | 3.9 | 3.7 | 0.2 | 0.00244 | 0.00030 | 12,080 |
| Sequence 3 | 6.0 | 6.0 | 69.7 | 66.3 | 3.5 | 5.7 | 5.5 | 0.3 | 0.00393 | 0.00049 | 11,126 |
| Sequence 4 | 6.0 | 8.0 | 92.9 | 87.0 | 5.9 | 7.6 | 7.2 | 0.5 | 0.00574 | 0.00072 | 9,991 |
| Sequence 5 | 6.0 | 10.0 | 116.5 | 108.1 | 8.4 | 9.6 | 8.9 | 0.7 | 0.00748 | 0.00093 | 9,525 |
| Sequence 6 | 4.0 | 2.0 | 25.0 | 22.4 | 2.7 | 2.1 | 1.8 | 0.2 | 0.00132 | 0.00017 | 11,138 |
| Sequence 7 | 4.0 | 4.0 | 46.5 | 43.8 | 2.7 | 3.8 | 3.6 | 0.2 | 0.00293 | 0.00037 | 9,857 |
| Sequence 8 | 4.0 | 6.0 | 67.6 | 64.8 | 2.8 | 5.6 | 5.3 | 0.2 | 0.00483 | 0.00060 | 8,853 |
| Sequence 9 | 4.0 | 8.0 | 91.1 | 85.9 | 5.1 | 7.5 | 7.1 | 0.4 | 0.00665 | 0.00083 | 8,529 |
| Sequence 10 | 4.0 | 10.0 | 114.4 | 107.0 | 7.5 | 9.4 | 8.8 | 0.6 | 0.00861 | 0.00107 | 8,196 |
| Sequence 11 | 2.0 | 2.0 | 24.6 | 21.9 | 2.6 | 2.0 | 1.8 | 0.2 | 0.00162 | 0.00020 | 8,931 |
| Sequence 12 | 2.0 | 4.0 | 45.4 | 42.7 | 2.7 | 3.7 | 3.5 | 0.2 | 0.00366 | 0.00046 | 7,703 |
| Sequence 13 | 2.0 | 6.0 | 65.8 | 63.1 | 2.7 | 5.4 | 5.2 | 0.2 | 0.00586 | 0.00073 | 7,092 |
| Sequence 14 | 2.0 | 8.0 | 87.9 | 83.7 | 4.2 | 7.2 | 6.9 | 0.3 | 0.00808 | 0.00101 | 6,832 |
| Sequence 15 | 2.0 | 10.0 | 111.2 | 104.7 | 6.5 | 9.1 | 8.6 | 0.5 | 0.01027 | 0.00128 | 6,718 |

TESTED BY GW DATE April 27, 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**

| | | | |
|---|---|---|---|
| **Job No.** | 100870 | **Material Code** | SSRVPS |
| **Date Sampled:** | 3/28/17 | **Station No.:** | 206+10 |
| **Date Tested:** | April 27, 2017 | **Location:** | 18RT |
| **Name of Project:** | HWY. 34 STR. & APPRS. (S) | | |
| **County:** | **Code:** 28 **Name:** GREENE | | |
| **Sampled By:** | THORNTON/TAYLOR | **Depth:** | 0-5 |
| **Lab No.:** | 20171268 | **AASHTO Class:** | A-4(1) |
| **Sample ID:** | RV320 | **Material Type (1 or 2):** | 2 |
| **LATITUDE:** | | **LONGITUDE:** | |

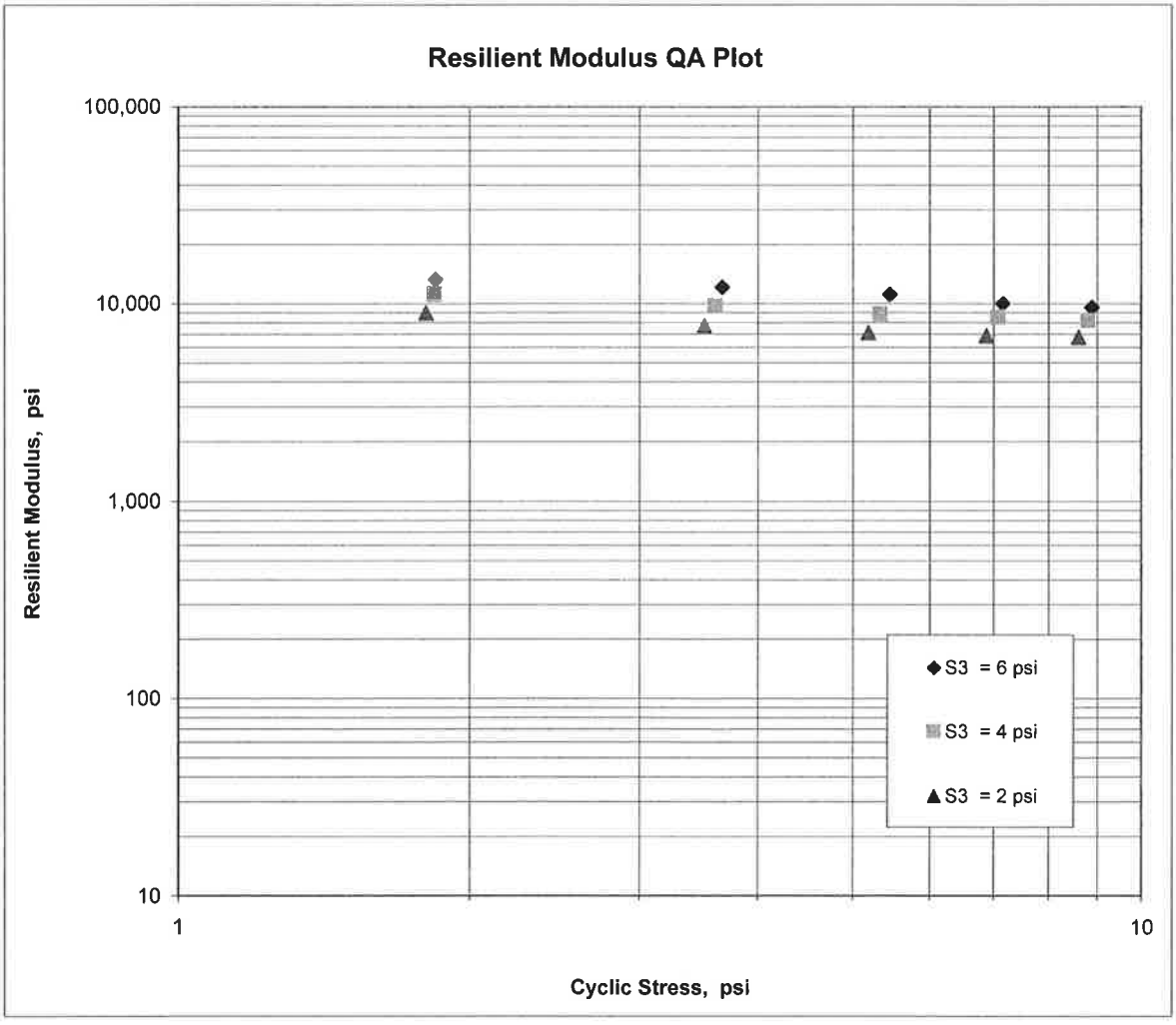
$$M_R = K1\ (S_C)^{K2}\ (S_3)^{K5}$$

K1 = 7,694

K2 = -0.19808

K5 = 0.36821

$R^2$ = 0.98



ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 05/01/17
JOB NUMBER - 100870
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - HWY.34 STR. & APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - GREENE, COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 1
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 28
DISTRICT NO. - 10

DATE SAMPLED - 03/28/17
DATE RECEIVED - 03/31/17
DATE TESTED - 05/01/17

| | | | |
|---|---|---|---|
| LAB NUMBER | 20171255 | 20171256 | 20171257 |
| SAMPLE ID | S307 | S308 | S309 |
| TEST STATUS | INFORMATION ONLY | INFORMATION ONLY | INFORMATION ONLY |
| STATION | 106+00 | 106+00 | 115+00 |
| LOCATION | 06 RT | 18 RT | 06 LT |
| DEPTH IN FEET | 0-5 | 0-5 | 0-5 |
| MAT'L COLOR | GRAY | GRAY | GRAY |
| MAT'L TYPE | | | |
| LATITUDE DEG-MIN-SEC | 36 11 11.00 | 36 11 10.80 | 36 11 10.90 |
| LONGITUDE DEG-MIN-SEC | 90 20 21.80 | 90 20 21.80 | 90 20 10.90 |
| % PASSING 2 IN. | | | |
| 1 1/2 IN. | | | |
| 3/4 IN. | 100 | | 100 |
| 3/8 IN. | 99 | 100 | 99 |
| NO. 4 | 98 | 99 | 97 |
| NO. 10 | 97 | 99 | 96 |
| NO. 40 | 94 | 97 | 94 |
| NO. 80 | 86 | 89 | 83 |
| NO. 200 | 80 | 84 | 74 |
| LIQUID LIMIT | 27 | 28 | 28 |
| PLASTICITY INDEX | 11 | 12 | 13 |
| AASHTO SOIL | A-6(7) | A-6(8) | A-6(7) |
| UNIFIED SOIL | | | |
| % MOISTURE CONTENT | 14.9 | 22.3 | 16.9 |
| ACHMSC (IN) | 1.25 | --- | 1.25 |
| AGG BASE CRS CL-7 (IN) | 6.0 | --- | 7.0 |

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 - 05/01/17
JOB NUMBER - 100870
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - HWY.34 STR. & APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - GREENE, COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 2
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 28
DISTRICT NO. - 10

DATE SAMPLED - 03/28/17
DATE RECEIVED - 03/31/17
DATE TESTED - 05/01/17

| | | | |
|---|---|---|---|
| LAB NUMBER | 20171258 | 20171259 | 20171260 |
| SAMPLE ID | S310 | S311 | S312 |
| TEST STATUS | INFORMATION ONLY | INFORMATION ONLY | INFORMATION ONLY |
| STATION | 115+00 | 206+00 | 206+00 |
| LOCATION | 18 LT | 06 RT | 18 RT |
| DEPTH IN FEET | 0-5 | 0-5 | 0-5 |
| MAT'L COLOR | GRAY | BROWN | BROWN |
| MAT'L TYPE | | | |
| LATITUDE DEG-MIN-SEC | 36 11 11.10 | 36 11 9.50 | 36 11 9.50 |
| LONGITUDE DEG-MIN-SEC | 90 20 10.90 | 90 18 6.50 | 90 18 6.50 |
| % PASSING 2 IN. | | | |
| 1 1/2 IN. | | | |
| 3/4 IN. | 100 | 100 | |
| 3/8 IN. | 96 | 98 | 100 |
| NO. 4 | 94 | 97 | 99 |
| NO. 10 | 93 | 94 | 98 |
| NO. 40 | 91 | 88 | 93 |
| NO. 80 | 82 | 72 | 73 |
| NO. 200 | 70 | 52 | 51 |
| LIQUID LIMIT | 26 | 19 | ND |
| PLASTICITY INDEX | 11 | 5 | NP |
| AASHTO SOIL | A-6(5) | A-4(0) | A-4(0) |
| UNIFIED SOIL | | | |
| % MOISTURE CONTENT | 19.0 | 10.9 | 10.1 |
| ACHMSC (IN) | --- | 4.0W | --- |
| ACHMBC (IN) | --- | 1.0 | --- |
| AGG. BASE CRS CL-7 (IN) | --- | 9.0 | --- |

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 - 05/01/17
JOB NUMBER - 100870
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - HWY.34 STR. & APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - GREENE, COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 3
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 28
DISTRICT NO. - 10

DATE SAMPLED - 03/28/17
DATE RECEIVED - 03/31/17
DATE TESTED - 05/01/17

| | | | |
|---|---|---|---|
| LAB NUMBER | 20171261 | 20171262 | 20171263 |
| SAMPLE ID | S313 | S314 | S315 |
| TEST STATUS | INFORMATION ONLY | INFORMATION ONLY | INFORMATION ONLY |
| STATION | 216+00 | 216+00 | 226+00 |
| LOCATION | 06 LT | 18 LT | 06 RT |
| DEPTH IN FEET | 0-5 | 0-5 | 0-5 |
| MAT'L COLOR | GRAY | GRAY | GRAY |
| MAT'L TYPE | | | |
| LATITUDE DEG-MIN-SEC | 36 11 10.10 | 36 11 10.10 | 36 11 10.00 |
| LONGITUDE DEG-MIN-SEC | 90 17 55.20 | 90 17 55.20 | 90 17 42.70 |
| % PASSING 2 IN. | | | |
| 1 1/2 IN. | | | |
| 3/4 IN. | 100 | 100 | |
| 3/8 IN. | 94 | 98 | 100 |
| NO. 4 | 93 | 96 | 99 |
| NO. 10 | 91 | 94 | 99 |
| NO. 40 | 86 | 88 | 95 |
| NO. 80 | 65 | 64 | 71 |
| NO. 200 | 48 | 44 | 53 |
| LIQUID LIMIT | 33 | 33 | 25 |
| PLASTICITY INDEX | 21 | 16 | 13 |
| AASHTO SOIL | A-6(6) | A-6(3) | A-6(3) |
| UNIFIED SOIL | | | |
| % MOISTURE CONTENT | 19.2 | 20.3 | 16.0 |
| ACHMSC (IN) | 6.5W | --- | 3.0W |
| ACHMBC (IN) | --- | --- | 1.0 |
| AGG.BASE CRS CL-7 (IN) | 9.0 | --- | 8.0 |

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 - 05/01/17
JOB NUMBER - 100870
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - HWY.34 STR. & APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - GREENE, COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 4
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 28
DISTRICT NO. - 10

DATE SAMPLED - 03/28/17
DATE RECEIVED - 03/31/17
DATE TESTED - 05/01/17

| | | | |
|---|---|---|---|
| LAB NUMBER | 20171264 | 20171265 | 20171266 |
| SAMPLE ID | S316 | S317 | S318 |
| TEST STATUS | INFORMATION ONLY | INFORMATION ONLY | INFORMATION ONLY |
| STATION | 226+00 | 238+00 | 238+00 |
| LOCATION | 18 RT | 06 LT | 18 LT |
| DEPTH IN FEET | 0-5 | 0-5 | 0-5 |
| MAT'L COLOR | GRAY | BR/GR | BR/GR |
| MAT'L TYPE | | | |
| LATITUDE DEG-MIN-SEC | 36 11 10.00 | 36 11 10.30 | 36 11 10.30 |
| LONGITUDE DEG-MIN-SEC | 90 17 42.70 | 90 17 28.20 | 90 17 28.20 |
| % PASSING 2 IN. | | | |
| 1 1/2 IN. | | | |
| 3/4 IN. | | 100 | |
| 3/8 IN. | 100 | 97 | 100 |
| NO. 4 | 99 | 94 | 99 |
| NO. 10 | 99 | 93 | 99 |
| NO. 40 | 96 | 88 | 94 |
| NO. 80 | 73 | 40 | 46 |
| NO. 200 | 57 | 23 | 22 |
| LIQUID LIMIT | 27 | ND | ND |
| PLASTICITY INDEX | 16 | NP | NP |
| AASHTO SOIL | A-6(5) | A-2-4(0) | A-2-4(0) |
| UNIFIED SOIL | | | |
| % MOISTURE CONTENT | 16.7 | 9.2 | 14.7 |
| ACHMSC (IN) | --- | 4.0W | --- |
| ACHMBC (IN) | --- | 1.5 | --- |
| AGG. BASE CRS CL-7 (IN) | --- | 8.0 | --- |

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 - 05/01/17
JOB NUMBER - 100870
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - HWY.34 STR. & APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - GREENE, COUNTY
SAMPLED BY - THORNTON/TAYLOR
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS

SEQUENCE NO. - 1
MATERIAL CODE - RV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 28
DISTRICT NO. - 10

DATE SAMPLED - 03/28/17
DATE RECEIVED - 03/31/17
DATE TESTED - 05/01/17

| | | |
|---|---|---|
| LAB NUMBER | 20171267 | 20171268 |
| SAMPLE ID | RV319 | RV320 |
| TEST STATUS | INFORMATION ONLY | INFORMATION ONLY |
| STATION | 114+90 | 206+10 |
| LOCATION | 18 LT | 18 RT |
| DEPTH IN FEET | 0-5 | 0-5 |
| MAT'L COLOR | GRAY | BROWN |
| MAT'L TYPE | | |
| LATITUDE DEG-MIN-SEC | 36 11 11.10 | 36 11 9.50 |
| LONGITUDE DEG-MIN-SEC | 90 20 11.00 | 90 18 6.40 |
| % PASSING 2 IN. | | |
| 1 1/2 IN. | 100 | |
| 3/4 IN. | 87 | 100 |
| 3/8 IN. | 86 | 98 |
| NO. 4 | 85 | 96 |
| NO. 10 | 84 | 95 |
| NO. 40 | 82 | 90 |
| NO. 80 | 75 | 75 |
| NO. 200 | 69 | 59 |
| LIQUID LIMIT | 27 | 20 |
| PLASTICITY INDEX | 13 | 7 |
| AASHTO SOIL | A-6(6) | A-4(1) |
| UNIFIED SOIL | | |
| % MOISTURE CONTENT | | |

REMARKS - W=MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265

**JOB:** 100870
**JOB NAME:** HWY.34 STR. & APPRS. (S)

**COUNTY NO.** 28

**STA.# LOC.**

***Arkansas State Highway Transporation Department***
***Materials Division***
***Michael Benson, Materials Engineer***

***DATE TESTED***
5/1/2017

## *PAVEMENT SOUNDINGS*

| | | | | |
|---|---|---|---|---|
| 106+00 | 06 RT | ACHMSC | AGG BASE CRS CL-7 | |
| | | **1.25** | **6.0** | |
| 106+00 | 18 RT | ACHMSC | AGG BASE CRS CL-7 | |
| | | --- | --- | |
| 115+00 | 06 LT | ACHMSC | AGG BASE CRS CL-7 | |
| | | **1.25** | **7.0** | |
| 115+00 | 18 LT | ACHMSC | ACHMBC | AGG. BASE CRS CL-7 |
| | | --- | --- | --- |
| 206+00 | 06 RT | ACHMSC | ACHMBC | AGG. BASE CRS CL-7 |
| | | **4.0W** | **1.0** | **9.0** |
| 206+00 | 18 RT | ACHMSC | ACHMBC | AGG. BASE CRS CL-7 |
| | | --- | --- | --- |
| 216+00 | 06 LT | ACHMSC | ACHMBC | AGG.BASE CRS CL-7 |
| | | **6.5W** | --- | **9.0** |
| 216+00 | 18 LT | ACHMSC | ACHMBC | AGG.BASE CRS CL-7 |
| | | --- | --- | --- |
| 226+00 | 06 RT | ACHMSC | ACHMBC | AGG.BASE CRS CL-7 |
| | | **3.0W** | **1.0** | **8.0** |
| 226+00 | 18 RT | ACHMSC | ACHMBC | AGG. BASE CRS CL-7 |
| | | --- | --- | --- |
| 238+00 | 06 LT | ACHMSC | ACHMBC | AGG. BASE CRS CL-7 |
| | | **4.0W** | **1.5** | **8.0** |
| 238+00 | 18 LT | ACHMSC | ACHMBC | AGG. BASE CRS CL-7 |
| | | --- | --- | --- |

***comments:*** W=MULTIPLE LAYERS

*Tuesday, May 02, 2017*

**JOB:** 100870

**JOB NAME:** HWY.34 STR. & APPRS. (S)

**COUNTY NO.** 28 **DATE TESTED** 5/1/2017

# Arkansas State Highway Transporation Department

*Materials Division*

*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 S | | | | | |
| 114+90 | 18 LT | 0-5 | GRAY | 85 | 84 | 82 | 75 | 69 | 27 | 13 | A-6(6) | RV319 | |
| 206+10 | 18 RT | 0-5 | BROWN | 96 | 95 | 90 | 75 | 59 | 20 | 7 | A-4(1) | RV320 | |
| 106+00 | 06 RT | 0-5 | GRAY | 98 | 97 | 94 | 86 | 80 | 27 | 11 | A-6(7) | S307 | 14.9 |
| 106+00 | 18 RT | 0-5 | GRAY | 99 | 99 | 97 | 89 | 84 | 28 | 12 | A-6(8) | S308 | 22.3 |
| 115+00 | 06 LT | 0-5 | GRAY | 97 | 96 | 94 | 83 | 74 | 28 | 13 | A-6(7) | S309 | 16.9 |
| 115+00 | 18 LT | 0-5 | GRAY | 94 | 93 | 91 | 82 | 70 | 26 | 11 | A-6(5) | S310 | 19 |
| 206+00 | 06 RT | 0-5 | BROWN | 97 | 94 | 88 | 72 | 52 | 19 | 5 | A-4(0) | S311 | 10.9 |
| 206+00 | 18 RT | 0-5 | BROWN | 99 | 98 | 93 | 73 | 51 | ND | NP | A-4(0) | S312 | 10.1 |
| 216+00 | 06 LT | 0-5 | GRAY | 93 | 91 | 86 | 65 | 48 | 33 | 21 | A-6(6) | S313 | 19.2 |
| 216+00 | 18 LT | 0-5 | GRAY | 96 | 94 | 88 | 64 | 44 | 33 | 16 | A-6(3) | S314 | 20.3 |
| 226+00 | 06 RT | 0-5 | GRAY | 99 | 99 | 95 | 71 | 53 | 25 | 13 | A-6(3) | S315 | 16 |
| 226+00 | 18 RT | 0-5 | GRAY | 99 | 99 | 96 | 73 | 57 | 27 | 16 | A-6(5) | S316 | 16.7 |
| 238+00 | 06 LT | 0-5 | BR/GR | 94 | 93 | 88 | 40 | 23 | ND | NP | A-2-4(0) | S317 | 9.2 |
| 238+00 | 18 LT | 0-5 | BR/GR | 99 | 99 | 94 | 46 | 22 | ND | NP | A-2-4(0) | S318 | 14.7 |

*comments:* W=MULTIPLE LAYERS

*Tuesday, May 02, 2017*