

ARKANSAS DEPARTMENT OF TRANSPORTATION



**SUBSURFACE INVESTIGATION**

STATE JOB NO. 101189

FEDERAL AID PROJECT NO. FEDERAL AID PROJECT STPR-0016(107)

HWYS. 18/139 INTERS. IMPVTS. (MONETTE) (S)

STATE HIGHWAY 18 & 139 SECTION 4 & 1

IN CRAIGHEAD 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.



**MATERIALS DIVISION**

11301 West Baseline Road | P.O. Box 2261, Little Rock, AR 72203-2261  
Phone: (501) 569-2185 | Fax: (501) 569-2368

May 11, 2025

**TO:** Mr. David Baker, Engineer of Roadway Design

**SUBJECT:** Job No. 101189  
Hwys. 18/139 Inters. Impvts. (Monette)(S)  
Routes 18 & 139 Sections 4 & 1  
Craighead County

**INTRODUCTION**

Submitted herein are the results of the soil survey investigation and geotechnical recommendations for the proposed intersection improvements in Monette. The results from the soil survey and pavement soundings are included in Attachment A, site photographs are included in Attachment B, and Dynamic Cone Penetration (DCP) tests are presented in Attachment C.

All stationing and offsets are referenced to the plan alignment unless otherwise indicated.

**SITE CONDITIONS**

The project is located along the northern edge of Monette, with commercial properties situated on the eastern side of Highway 139 and agricultural fields bordering the western side of the project corridor. Vegetative cover within the developed areas primarily consists of maintained grass established through landscaping associated with the adjacent businesses. Along the project limits, the roadside ditch line is vegetated with grass, while the surrounding agricultural fields support seasonal row crops typical of the area.

Two cotton gins are located approximately 0.75 miles south of the intersection of Highway 18 and Highway 139. Due to the proximity of these agricultural operations, frequent use of the proposed turning lanes by heavy farm equipment is anticipated. Power lines run parallel to the east side of Highway 139 north of Highway 18, cross the roadway approximately 220 feet south of the intersection, and continue along the west side of Highway 139. Photographs documenting existing site conditions are included in the attachments.

**FIELD INVESTIGATION**

On June 16, 2025, the Roadway Design Division requested a soil survey investigation to support roadway design recommendations. Pavement cores were obtained from the existing travel lanes to evaluate pavement thickness and condition. Soil samples were collected from beneath the roadway as well as within the existing ditch lines. Two DCP tests were performed at locations selected to represent typical existing pavement support and anticipated widening conditions. The DCP test results are included in the attachments.

**LAB INVESTIGATION**

All soil samples collected during the field investigation were transported to the ARDOT Materials Division laboratory for testing. Laboratory tests were conducted to determine moisture content, index properties, and soil classification. Soils were classified in accordance with the AASHTO Soil Classification System. Lab data for the test results is provided in the attachments.



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Table 1: Summary of Laboratory Tests and Methods

Laboratory Test	AASHTO Specification
Moisture Content	T 265
Particle Size Distribution	T 27 & T 11
Atterberg Limits	T 89 & T 90

**CONCLUSIONS AND RECOMMENDATIONS**

Based on the currently available cross sections, the proposed construction grade line generally matches the existing roadway profile. The maximum anticipated embankment height is approximately 7 feet, with fill to be placed across the existing ditch lines and tied into the existing embankment.

Positive drainage should be established before earthwork starts.

The subgrade soils consist primarily of non-plastic silty sands. These materials are generally expected to be stable, provided positive drainage is maintained and the soil is not allowed to become saturated or excessively disturbed. It is recommended to undercut approximately two feet within the existing ditch lines to remove potentially unstable soils. The undercut areas should then be backfilled with suitable, locally available materials to provide adequate support for construction activities.

Embankment construction may utilize the same locally available materials, placed and compacted in accordance with standard specifications. A 3H:1V slope configuration is suitable for the embankment.

A Resilient Modulus of 2,600 psi is recommended for pavement design.

The Qualified Products List (QPL) indicates that Aggregate Base Course (Class CL-7) is available from the River Port near Blytheville.

Paul Tinsley  
Materials Engineer

RPT:yz:bjj  
Attachment  
cc: District 10 Engineer  
Maintenance  
G. C. File

# **Attachment A**

Soil Survey

Pavement Soundings



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

PAUL TINSLEY, MATERIALS ENGINEER

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

DATE - 11/20/25 SEQUENCE NO. - 2  
JOB NUMBER - 101189 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 - 16  
SUPPLIER NAME - STATE DISTRICT NO. - 10  
NAME OF PROJECT - HWY 18/139 INTERS IMPVTS (MONETTE) (S)  
PROJECT ENGINEER - NOT APPLICABLE  
PIT/QUARRY - ARKANSAS  
LOCATION - CRAIGHEAD COUNTY DATE SAMPLED - 11/03/25  
SAMPLED BY - d.thornton DATE RECEIVED - 11/05/25  
SAMPLE FROM - TEST HOLE DATE TESTED - 11/20/25  
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

LAB NUMBER	-	20252139	-	20252140	-	20252141	
SAMPLE ID	-	S591	-	S593	-	S594	
TEST STATUS	-	INFORMATION ONLY	-	INFORMATION ONLY	-	INFORMATION ONLY	
STATION	-	123+00	-	213+00	-	213+00	
LOCATION	-	6 LT	-	06 RT	-	18 RT	
DEPTH IN FEET	-	0-5.0	-	0-5.0	-	0-5.0	
MAT'L COLOR	-	BROWN	-	BR/GR	-		
MAT'L TYPE	-		-		-		
LATITUDE DEG-MIN-SEC	-	35 53 54.60	-	35 53 52.70	-	35 53 52.70	
LONGITUDE DEG-MIN-SEC	-	90 20 25.70	-	90 20 30.60	-	90 20 30.50	
% PASSING							
	2	IN.	-		-		
	1 1/2	IN.	-		-		
	3/4	IN.	-		-	100	
	3/8	IN.	-	100	-	97	
	NO. 4	-	98	-	98	-	86
	NO. 10	-	94	-	95	-	76
	NO. 40	-	85	-	86	-	63
	NO. 80	-	59	-	27	-	30
	NO. 200	-	42	-	17	-	19
LIQUID LIMIT	-	ND	-	ND	-	ND	
PLASTICITY INDEX	-	NP	-	NP	-	NP	
AASHTO SOIL	-	A-4 (1)	-	A-2-4 (1)	-	A-2-4 (1)	
UNIFIED SOIL	-		-		-		
% MOISTURE CONTENT	-	17.9	-	11.7	-	8.4	
BST	(IN)	--	-	1.25W	-	--	
ACHM SC	(IN)	4.0XW	-	8.5	-	1.5W	
ACHM BC	(IN)	4.0W	-	--	-	--	
SOIL CEMENT	(IN)	--	-	6.0	-	--	
AGG BASE CRS CL7	(IN)	7.0	-	4.0	-	5.0	
			-		-		
			-		-		
			-		-		
			-		-		

REMARKS - X=STRIPPED W=MULTIPLE LAYERS Z=AUGGER REFUSAL  
-  
-  
-  
-

AASHTO TESTS : T24 T88 T89 T90 T265  
:

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

PAUL TINSLEY, MATERIALS ENGINEER

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

DATE	- 11/24/25	SEQUENCE NO.	- 3
JOB NUMBER	- 101189	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	- 16
SUPPLIER NAME	- STATE	DISTRICT NO.	- 10
NAME OF PROJECT	- HWY 18/139 INTERS IMPVTS (MONETTE) (S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- CRAIGHEAD COUNTY	DATE SAMPLED	- 11/03/25
SAMPLED BY	- d.thornton	DATE RECEIVED	- 11/05/25
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 11/20/25
MATERIAL DESC.	- SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS		

LAB NUMBER	- 20252142	- 20252143	-
SAMPLE ID	- S595	- S596	-
TEST STATUS	- INFORMATION ONLY	- INFORMATION ONLY	-
STATION	- 217+00	- 217+00	-
LOCATION	- 06 LT	- 18 LT	-
DEPTH IN FEET	- 0-5.0	- 0-5.0	-
MAT'L COLOR	- BROWN	- BROWN	-
MAT'L TYPE	-	-	-
LATITUDE DEG-MIN-SEC	- 35 53 55.80	- 35 53 55.80	-
LONGITUDE DEG-MIN-SEC	- 90 20 29.50	- 90 20 29.60	-
% PASSING	2 IN. -	-	-
	1 1/2 IN. -	-	-
	3/4 IN. -	-	-
	3/8 IN. - 100	- 100	-
	NO. 4 - 97	- 98	-
	NO. 10 - 94	- 96	-
	NO. 40 - 87	- 93	-
	NO. 80 - 58	- 74	-
	NO. 200 - 43	- 41	-
LIQUID LIMIT	- ND	- ND	-
PLASTICITY INDEX	- NP	- NP	-
AASHTO SOIL	- A-4 (1)	- A-4 (1)	-
UNIFIED SOIL	-	-	-
% MOISTURE CONTENT	- 18.9	- 14.5	-
BST	(IN) - 2.25W	- --	-
ACHM SC	(IN) - 14.0W	- 3.25W	-
SOIL CEMENT	(IN) - 8.0	- --	-
AGG BASE CRS CL7	(IN) - --	- 5.0	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

REMARKS - X=STRIPPED W=MULTIPLE LAYERS Z=AUGGER REFUSAL

-  
-  
-  
-

AASHTO TESTS : T24 T88 T89 T90 T265

:



# **Attachment B**

Site Photographs



**SITE PICTURES**  
February 2026

Job No.: 101189

Made by: BJJ  
Checked by: VWW



Highway 139 looking north.



**SITE PICTURES**  
February 2026

Job No.: 101189

Made by: BJJ  
Checked by: VWW



Highway 139 pavement condition, northbound lane.



**SITE PICTURES**  
February 2026

Job No.: 101189

Made by: BJJ  
Checked by: VWW



Highway 18 Looking east



**SITE PICTURES**  
February 2026

Job No.: 101189

Made by: BJJ  
Checked by: VWW



Highway 18 looking west.



**SITE PICTURES**  
February 2026

Job No.: 101189

Made by: BJJ  
Checked by:VWW



Looking west on Highway 18.



Highway 139 looking south.



**SITE PICTURES**  
February 2026

**Job No.: 101189**

**Made by: BJJ**  
**Checked by:VWW**



Facing south on Highway 139 at the intersection.



Culvert under Highway 18, west side of intersection.

# **Attachment C**

Dynamic Cone Penetration Tests



Input By: VWW  
 Checked By: BJJ

Date: 4/29/2026  
 Date: 5/4/2026

Job No.: 101189  
 Location: Sta. 117+00 50 Rt CL  
 Crew: D.T. and K.J.

DCP No.: 1  
 Test Date 11/25/2025

Initial Reading (in.) @ 0.5

No. Blows	Raw Reading from DCP (in.)	Cumulated Penetration (in.)	Cumulated Penetration (mm)	Penetration between Readings (mm)	Penetration per Blow (mm/blow)
2	2.6	2.1	53	53	26.7
2	4.9	4.4	112	58	29.2
2	6.3	5.8	147	36	17.8
2	7.7	7.2	183	36	17.8
2	8.9	8.4	213	30	15.2
2	10.0	9.5	241	28	14.0
2	11.1	10.6	269	28	14.0
2	12.2	11.7	297	28	14.0
2	13.3	12.8	325	28	14.0
2	14.2	13.7	348	23	11.4
2	14.9	14.4	366	18	8.9
2	15.7	15.2	386	20	10.2
2	16.4	15.9	404	18	8.9
2	17.2	16.7	424	20	10.2
2	18.4	17.9	455	30	15.2
2	19.7	19.2	488	33	16.5
2	20.4	19.9	505	18	8.9
2	20.8	20.3	516	10	5.1
2	21.4	20.9	531	15	7.6
2	21.8	21.3	541	10	5.1
2	22.4	21.9	556	15	7.6
2	22.9	22.4	569	13	6.3
2	23.3	22.8	579	10	5.1
2	23.7	23.2	589	10	5.1
2	24.2	23.7	602	13	6.3
2	24.6	24.1	612	10	5.1
2	24.9	24.4	620	8	3.8
2	25.4	24.9	632	13	6.3
2	25.8	25.3	643	10	5.1
2	26.3	25.8	655	13	6.3
3	26.8	26.3	668	13	4.2
3	27.4	26.9	683	15	5.1
3	28.0	27.5	698	15	5.1
3	28.5	28.0	711	13	4.2
3	28.9	28.4	721	10	3.4
5	29.7	29.2	742	20	4.1
5	30.5	30.0	762	20	4.1
5	31.3	30.8	782	20	4.1
5	32.0	31.5	800	18	3.6
5	32.9	32.4	823	23	4.6
5	33.9	33.4	848	25	5.1
5	35.1	34.6	879	30	6.1

# DCP TEST RESULTS

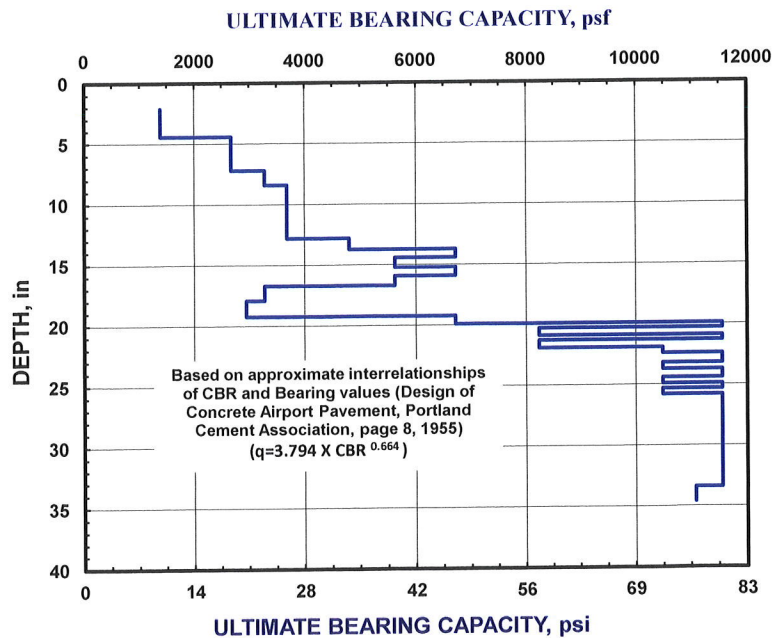
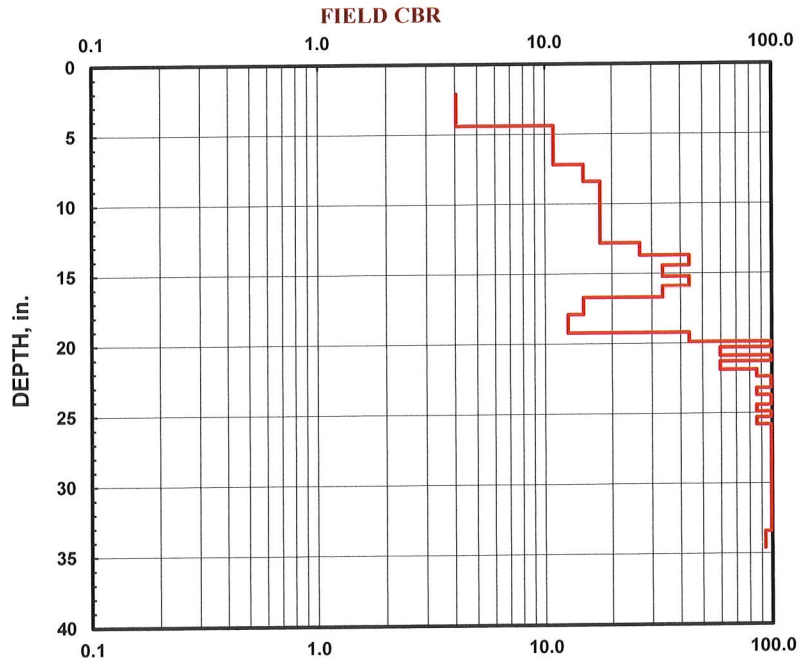
**Project:** 101189  
**Location:** Sta. 117+00 50 Rt CL  
**DCP NO.:** 1

**Date:** 4/29/2026  
**Soil Type(s):** Silty Sand

Hammer  
 10.1 lbs.  
 17.6 lbs.  
 Both hammers used

Soil Type  
 CH  
 CL  
 All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0		1
2	53	1
2	112	1
2	147	1
2	183	1
2	213	1
2	241	1
2	269	1
2	297	1
2	325	1
2	348	1
2	366	1
2	386	1
2	404	1
2	424	1
2	455	1
2	488	1
2	505	1
2	516	1
2	531	1
2	541	1
2	556	1
2	569	1
2	579	1
2	589	1
2	602	1
2	612	1
2	620	1
2	632	1
2	643	1
2	655	1
3	668	1
3	683	1
3	698	1
3	711	1
3	721	1
5	742	1
5	762	1
5	782	1
5	800	1
5	823	1
5	848	1
5	879	1
0	0	1





Input By: VWW  
Checked By: BJJ

Date: 4/29/2026  
Date: 5/4/2026

Job No.: 101189  
Location: Sta. 125+00 56 Lt CL  
Crew: D.T. and K.J.

DCP No.: 2  
Test Date 11/12/2025

Initial Reading (in.) @ 0.2  
End-of-Drive Reading (in.) @ 36.2  
Reset Reading (in.) to 15.2  
Added Rod (in.) NA

No. Blows	Raw Reading from DCP (in.)	Cumulated Penetration (in.)	Cumulated Penetration (mm)	Penetration between Readings (mm)	Penetration per Blow (mm/blow)
3	3.0	2.8	71	71	23.7
2	5.2	5.0	127	56	27.9
1	6.2	6.0	152	25	25.4
1	7.3	7.1	180	28	27.9
1	8.5	8.3	211	30	30.5
1	9.5	9.3	236	25	25.4
1	10.2	10.0	254	18	17.8
1	10.8	10.6	269	15	15.2
1	11.4	11.2	284	15	15.2
1	11.7	11.5	292	8	7.6
1	12.5	12.3	312	20	20.3
1	13.2	13.0	330	18	17.8
1	14.0	13.8	351	20	20.3
1	15.1	14.9	378	28	27.9
1	16.3	16.1	409	30	30.5
1	17.3	17.1	434	25	25.4
1	17.9	17.7	450	15	15.2
1	18.4	18.2	462	13	12.7
1	18.6	18.4	467	5	5.1
1	18.8	18.6	472	5	5.1
1	19.2	19.0	483	10	10.2
1	19.5	19.3	490	8	7.6
3	20.4	20.2	513	23	7.6
3	21.5	21.3	541	28	9.3
3	22.4	22.2	564	23	7.6
3	23.4	23.2	589	25	8.5
3	24.2	24.0	610	20	6.8
3	25.0	24.8	630	20	6.8
3	26.0	25.8	655	25	8.5
3	27.2	27.0	686	30	10.2
3	28.5	28.3	719	33	11.0
3	30.4	30.2	767	48	16.1
2	32.0	31.8	808	41	20.3
2	34.8	34.6	879	71	35.6
2	37.5	37.3	947	69	34.3
2	19.2	38.6	980	33	16.5
2	21.9	41.3	1049	69	34.3
2	24.5	43.9	1115	66	33.0
2	26.8	46.2	1173	58	29.2
2	28.6	48.0	1219	46	22.9
2	30.1	49.5	1257	38	19.0
2	31.6	51.0	1295	38	19.0
2	33.1	52.5	1333	38	19.0
2	34.5	53.9	1369	36	17.8

# DCP TEST RESULTS

**Project:** 101189  
**Location:** Sta. 125+00 56 Lt CL  
**DCP NO.:** 2

**Date:** 4/29/2026  
**Soil Type(s):** Silty Sand

**Hammer**  
 10.1 lbs.  
 17.6 lbs.  
 Both hammers used

**Soil Type**  
 CH  
 CL  
 All other soils

No. of Blows 0	Accumulative Penetration (mm)	Type of Hammer 1
3	71	1
2	127	1
1	152	1
1	180	1
1	211	1
1	236	1
1	254	1
1	269	1
1	284	1
1	292	1
1	312	1
1	330	1
1	351	1
1	378	1
1	409	1
1	434	1
1	450	1
1	462	1
1	467	1
1	472	1
1	483	1
1	490	1
3	513	1
3	541	1
3	564	1
3	589	1
3	610	1
3	630	1
3	655	1
3	686	1
3	719	1
3	767	1
2	808	1
2	879	1
2	947	1
2	980	1
2	1049	1
2	1115	1
2	1173	1
2	1219	1
2	1257	1
2	1295	1
2	1333	1

