

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. 020791

FEDERAL AID PROJECT NO. ER-0076(282)

HWYS. 82, 270 & 278 SLIDE REPAIRS (S)

STATE HIGHWAY 82, 270 & 278 SECTION 9, 11 & 1S

IN VARIOUS 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

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MATERIALS DIVISION

11301 West Baseline Road | P.O. Box 2261 | Little Rock, AR 72203-2261 | Phone: 501.569.2185 | Fax: 501.569.2368

August 16, 2022

**TO:** Mr. Andrew Hoggard  
**SUBJECT:** Job No. 020791  
Hwys. 82, 270 & 278 Slide Repairs (S)  
Jefferson, Ashley, and Drew Counties

Submitted herein are recommended repair concepts and estimated geotechnical quantities for the three (3) embankment / cut slope slides in District 2 as a result of flooding in 2019. These services were requested by Program Management Division by the Interoffice Memorandum dated January 6, 2022. This memo is included as Attachment A.

These three (3) slides include:


- An abutment embankment slide in the southeast quadrant of Interstate 530 over US 270 / AR 365 in Pine Bluff (Pine Bluff Slide), at Log Mile 6.85 of US 270
- An abutment embankment slide in the southeast quadrant of US 82B over US 165 in Montrose (Montrose Slide), at Log Mile 19.46 of US 82B
- Multiple locations of roadway embankment / cut slope slides along US 278 (Monticello Slides), near Log Mile 1.00 of US 278

Materials Division and District 2 / RE 24 conducted a joint site visit on June 15, 2022 and have discussed repair concepts. A survey has been performed by RE 24 for use in developing repair concepts and estimating quantities.

It is recommended the Pine Bluff and Montrose abutment slides be mitigated by removing the soils in the failure zones and backfilling with Dumped Riprap complying with Section 816 of the Standard Specifications, Edition of 2014. The Dumped Riprap should be underlain by Section 625 Type 5 fabric. Key trenches should be incorporated in the repair.

District 2 recommends the US 278 embankment slides be mitigated by reshaping areas of the slides and adding topsoil and seeding. These recommendations are considered suitable. Detailed repair concepts are included in the following attachments of this report:

- Attachment B – Repair concept and estimated quantities for Pine Bluff Slide.
- Attachment C – Repair concept and estimated quantities for Montrose Slide.
- Attachment D – Repair concept and estimated quantities for Monticello Slides.

  
Paul Tinsley  
Materials Engineer

RPT:yz:jb:pjt  
cc: State Construction Engineer  
Roadway Design  
Program Management  
Maintenance Division  
G. C. File

## Attachment A



ARKANSAS DEPARTMENT OF TRANSPORTATION

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## INTEROFFICE MEMORANDUM

January 6, 2022

**TO:** Mr. Jared D. Wiley, Assistant Chief Engineer – Planning

**FROM:** Jessie Jones, Division Engineer – Program Management *[Signature]*

**SUBJECT:** Emergency Relief Funding for May & June 2019 River Flooding (AR2019-1)  
Various Counties

Ongoing rains and historic river flooding that occurred between May 21, 2019 and June 26, 2019 damaged infrastructure in 18 counties as shown on the attached sketch. An event-wide project must be programmed to be used as a funding mechanism to reimburse Department Districts and local agencies for eligible recovery and repair work undertaken as a result of flooding. These reimbursements will be made with FHWA Emergency Relief funding. Additionally, it has been requested that projects be set up to complete permanent repairs by contract for several locations where temporary repairs have been completed.

Upon your concurrence, the following project numbers and names will be assigned for this work.

Concur: *[Signature]*

### NEW PROJECTS

**Job 012416, May & June 2019 Flooding Emergency Repairs (S)**

**Job 020791, Hwys. 82, 270 & 278 Slide Repairs (S)**

**Job 040910, Hwy. 255 Flood Repair (Sebastian Co.) (S)**

Attachments

### DISTRIBUTION

Deputy Director and Chief Operating Officer  
Deputy Director and Chief Engineer  
Assistant Chief Engineer – Planning  
Assistant Chief Engineer – Design  
Assistant Chief Engineer – Operations  
Bridge  
Construction  
Consultant Contracts  
Environmental  
Fiscal Services  
Maintenance  
Program Management  
Right of Way

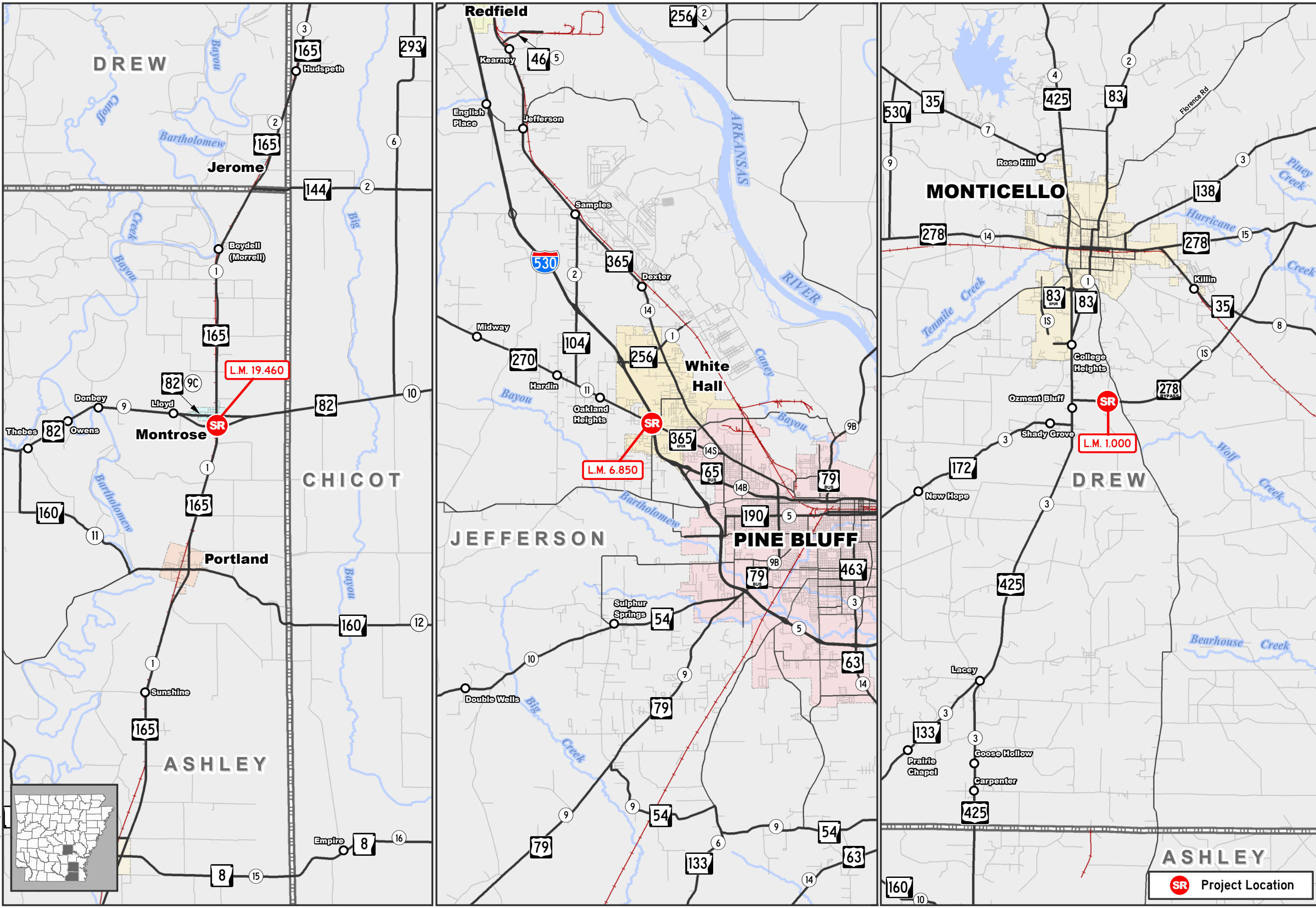
Roadway  
Surveys  
System Information and Research  
Transportation Planning and Policy  
Districts 2, 4, 5, 6, 8 & 9  
Job 012416 "C" File  
Job 020791 "C" File  
Job 040910 "C" File



# Job 020791

## Hwys. 82, 270 & 278 Slide Repairs (s)

Hwy. 82, Sec. 9  
Hwy. 270, Sec. 11  
Hwy. 278, Sec. 15  
Ashley, Drew & Jefferson Counties



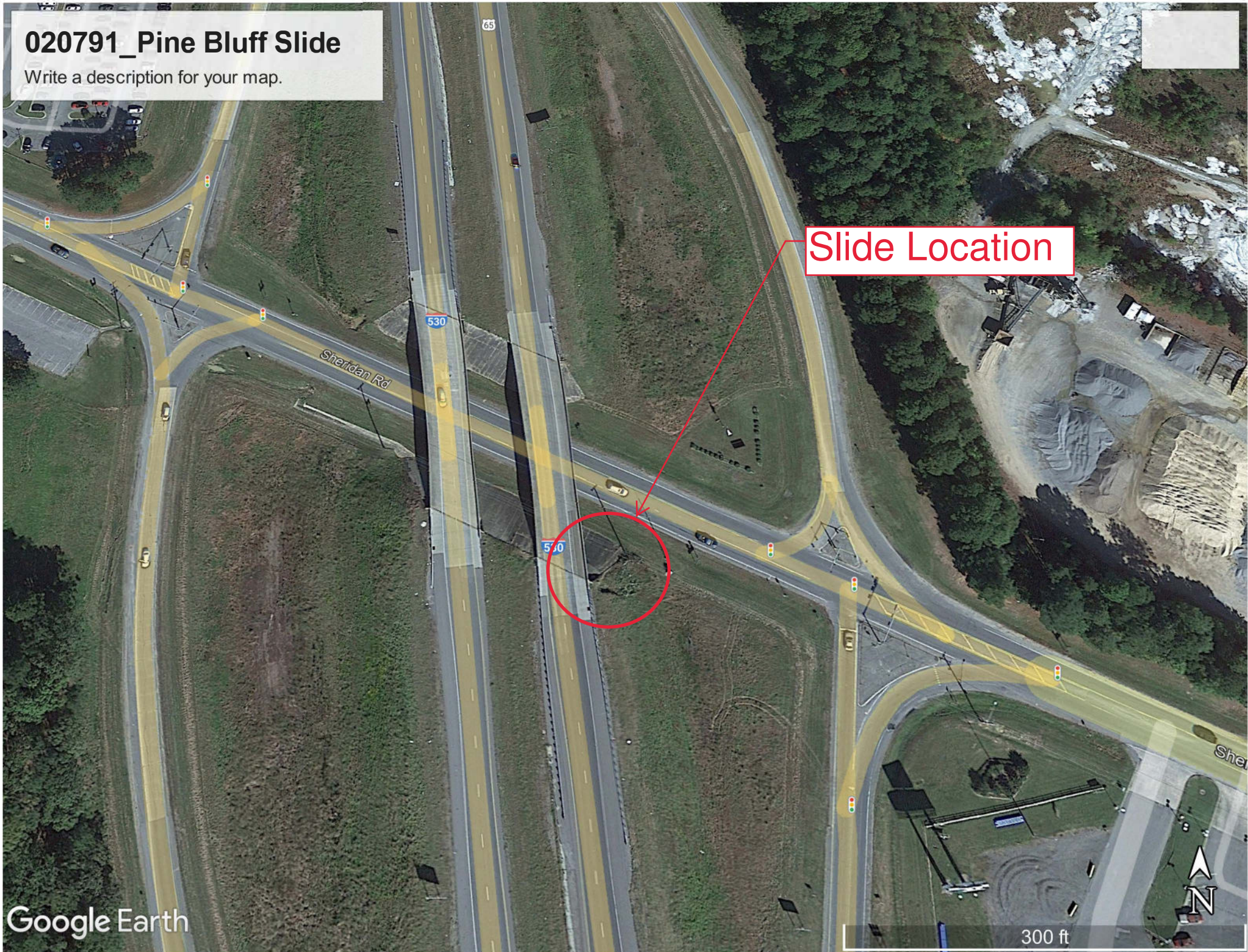
## Attachment B



# 020791\_Pine Bluff Slide

Write a description for your map.

Slide Location






### Estimated Quantities:

Section 201 Unclassified Excavation for the Pine Bluff slide location: **500** cubic yard

Section 625 Type 5 Fabric: **400** square yard

Section 816 Riprap: **500** cubic yard

### Legend

 020791\_Pine Bluff Slide



### General Repair Recommendations:

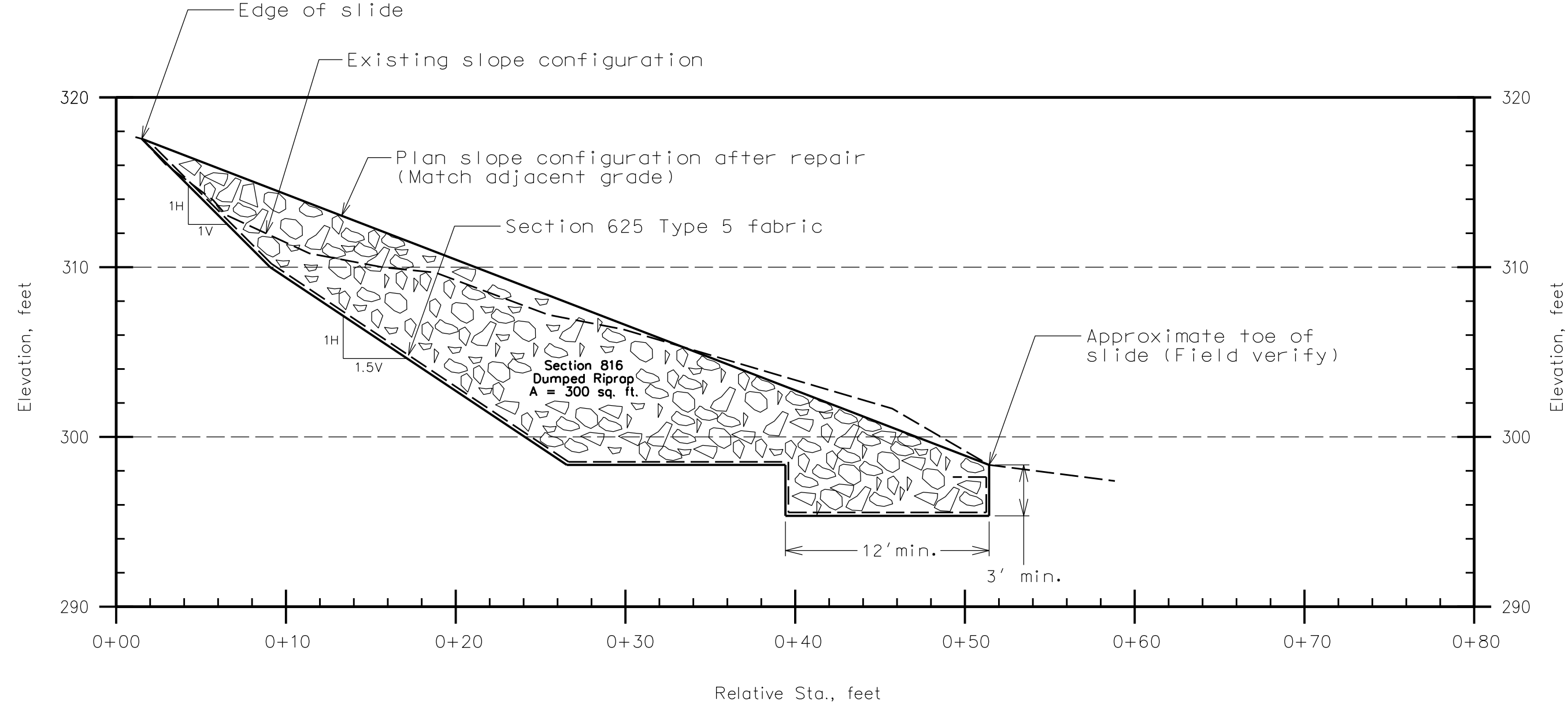
See Typical Section for detailed recommendations:

1. Excavate and remove zone of embankment as shown on the typical section and this picture (field verify)
2. Install geotextile and backfill with Section 816 Dumped Riprap to match design configuration
3. Incorporate key trench
4. Install 2'-wide trench drain (Section 207 Stone Backfill wrapped in Type 5 fabric) to daylight water in the key trench
  - 4.1 Stone Backfill shall be paid as Dumped Riprap.
  - 4.2 Location of drain shall be field verified.



7.60 ft

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020791	1	2







## Embankment Repair Quantities 020791\_Pine Bluff Slide Repair

### 1. Summary

Section 201 Unclassified Excavation for the Pine Bluff slide location: **500** cubic

yard Section 625 Type 5 Fabric : **400** square yard

Section 816 Dumped Riprap : **500** cubic yard

### 2. Excavation / Dumped Riprap

$$L := 52 \text{ ft}$$

*Measured length of slide*

$$d := 31 \text{ ft}$$

*Depth of excavation for removing slide*

$$H := 22 \text{ ft}$$

*Height of excavation*

$$V := \frac{1}{3} \cdot H \cdot L \cdot d - \frac{1}{3} \cdot 11.5 \text{ ft} \cdot L \cdot 5.5 \text{ ft} + 12 \text{ ft} \cdot L \cdot 3 \text{ ft} = 467 \text{ yd}^3$$

*Calculated volume of excavation*

### 3. Fabric

$$l := 63 \text{ ft}$$

*Length of fabric*

$$A := l \cdot L = 364 \text{ yd}^2$$

*Calculated fabric area*

## Attachment C



# 020791\_Montrose Slide

Write a description for your map.

Legend

Slide  
Location

U.S. Hwy 020791\_Montrose Slide







### Estimated Quantities:

Section 201 Unclassified Excavation for the Pine Bluff slide location: **850** cubic yard

Section 625 Type 5 Fabric: **650** square yard

Section 816 Dumped Riprap: **850** cubic yard

SITE P Section 816 Concrete Riprap: **Field Verify**

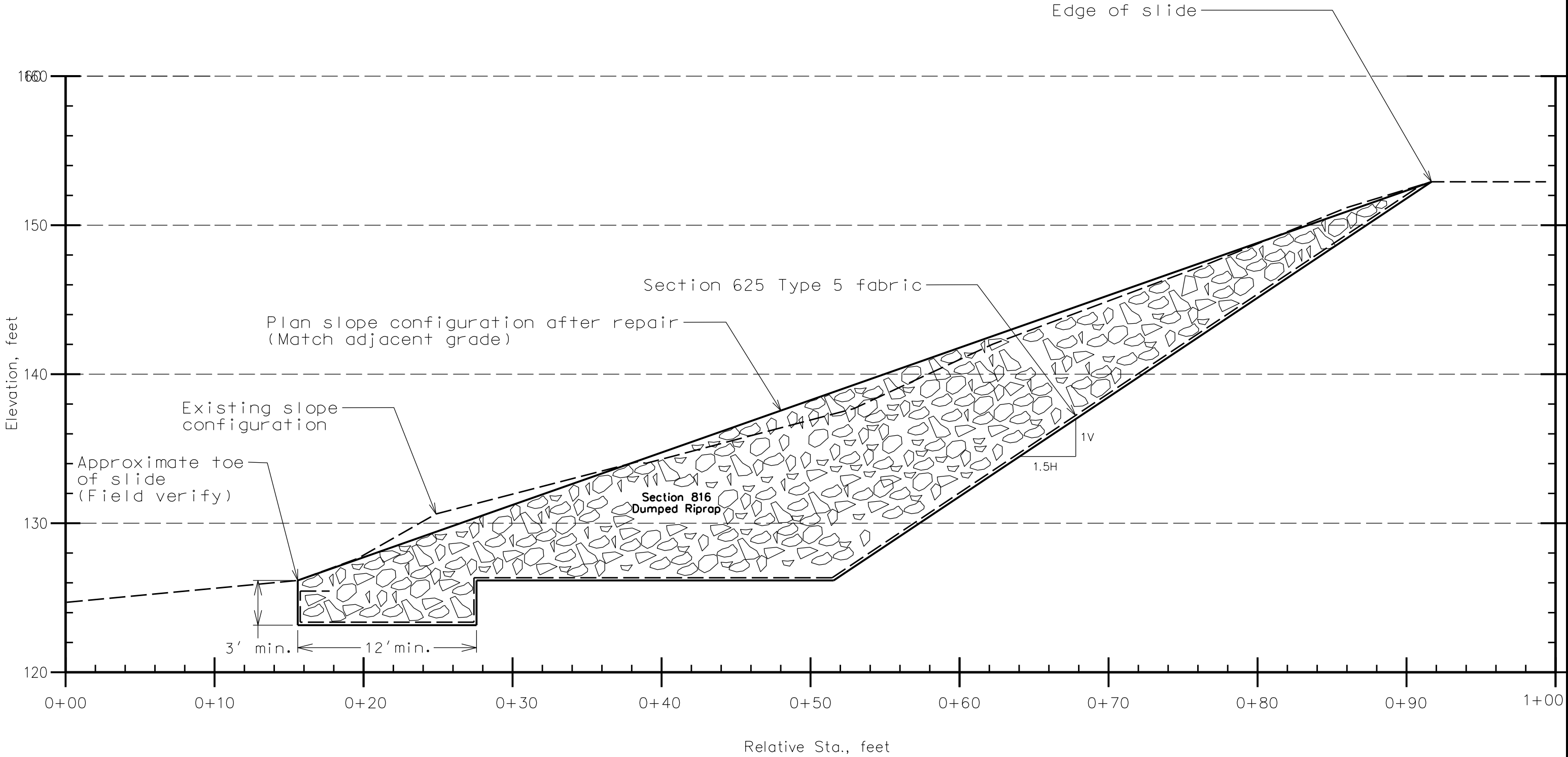


### General Repair Recommendations:

See Typical Section for detailed recommendations:

1. Remove damaged concrete riprap
2. Excavate and remove zone of embankment as shown on the typical section and this picture (field verify)
3. Install geotextile and backfill with Section 816 Dumped Riprap to match design configuration
  - 3.1 The top 18 inches of Dumped Riprap under the damaged concrete riprap shall be reduced in size and capped with a layer of Section 802.02(c) Coarse Aggregate for Class S Concrete (#57 Stone).
  - 3.2 #57 Stone shall be paid as Dumped Riprap.
4. Incorporate key trench
5. Install 2'-wide trench drain (Section 207 Stone Backfill underlain by Type 5 fabric) to daylight water in the key trench
  - 5.1 Stone Backfill shall be paid as Dumped Riprap.
  - 5.2 Location of drain should be field verified.
6. Restore concrete riprap

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020791	2	2



Repair Concept for Montrose Slide





## Embankment Repair Quantities 020791\_Montrose Slide Repair

### 1. Summary

Section 201 Unclassified Excavation for the Pine Bluff slide location: **850** cubic yard

Section 625 Type 5 Fabric : **650** square yard

Section 816 Dumped Riprap : **850** cubic yard

Section 816 Concrete Riprap: Field Verify

### 2. Excavation / Dumped Riprap

$$L := 65 \text{ ft}$$

*Measured length of slide*

$$d := 36 \text{ ft}$$

*Depth of excavation for removing slide*

$$H := 27 \text{ ft}$$

*Height of excavation*

$$V := \frac{1}{3} \cdot H \cdot L \cdot d + 12 \text{ ft} \cdot L \cdot 3 \text{ ft} = 867 \text{ yd}^3$$

*Calculated volume of excavation*

### 3. Fabric

$$l := 90 \text{ ft}$$

*Length of fabric*

$$A := l \cdot L = 650 \text{ yd}^2$$

*Calculated fabric area*

## Attachment D



020791\_Hwy. 278

Write a description for your map.

Legend

Monticello Multiple  
Locations of Slides

Google Earth



900 ft



MI	STA	STA	L	Total W	31816.67 SY	6.57 AC
0.27	14+30	16+65 L	235	20	522.22	0.11
0.47	24+70	27+40 L	270	20	600.00	0.12
0.58	30+45	31+75 R	130	15	216.67	0.04
0.63	33+30	34+65 R	135	15	225.00	0.05
0.71	37+40	39+00 L	160	20	355.56	0.07
0.76	40+30	41+15 L	85	20	188.89	0.04
0.79	41+65	42+50 R	85	20	188.89	0.04
0.83	43+60	47+30 R	370	20	822.22	0.17
0.86	45+35	47+30 L	195	30	650.00	0.13
0.99	52+50	57+20 R	470	40	2088.89	0.43
1.00	52+80	55+75 L	295	40	1311.11	0.27
1.30	68+80	71+00 L	220	20	488.89	0.10
1.38	72+80	75+15 R	235	20	522.22	0.11
1.40	74+00	75+55 L	155	20	344.44	0.07
1.75	92+30	93+65 L	135	20	300.00	0.06
1.88	99+30	110+65 L	1135	30	3783.33	0.78
1.93	102+05	113+40 R	1135	30	3783.33	0.78
2.20	116+35	118+45 R	210	20	466.67	0.10
2.21	116+80	126+95 L	1015	30	3383.33	0.70
2.28	120+35	121+65 R	130	20	288.89	0.06
4.61	243+65	244+75 R	110	20	244.44	0.05
4.88	257+45	259+40 L	195	25	541.67	0.11
4.88	257+45	259+40 R	195	25	541.67	0.11
5.05	266+90	267+85 L	95	20	211.11	0.04
6.55	345+65	362+40 R	1675	20	3722.22	0.77
6.55	345+65	346+65 L	100	15	166.67	0.03
6.69	353+15	360+10 L	695	20	1544.44	0.32
7.27	383+70	385+70 R	200	15	333.33	0.07
7.38	389+40	401+65 R	1225	20	2722.22	0.56
8.32	439+25	445+85 L	660	15	1100.00	0.23
8.71	460+05	461+00 R	95	15	158.33	0.03

Item	Item Description	Unit	Quantity	Weighted Average	Unit Cost
620	Lime	Ton	6.57	\$ 77.89	\$ 512.02
620	Mulch Cover	Acre	6.57	\$ 932.81	\$ 6,132.01
620	Seeding	Acre	6.57	\$ 1,131.30	\$ 7,436.82
620	Water	Mgal	0.54	\$ 6.99	\$ 3.74
623	Second Seeding	Acre	6.57	\$ 248.23	\$ 1,631.79
626	Erosion Control Matting	SY	31816.67	\$ 6.35	202035.83
628	Topsoil Furnished and Placed	CY	5302.78	\$ 25.00	132569.44
				Total	350321.66

Locations and quantities proposed by District 2.

District 2 recommends reshaping these areas of the slopes and added topsoil and seeding in order to correct these spots.



## SITE PICTURES

