#### ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



### SUBSURFACE INVESTIGATION

STATE JOB NO.	BR7208	
FEDERAL AID PROJECT NO.	BRO-STPB-0072(44)	
WEST FORK W	HITE RIVER (WOOLSEY) STR. &	APPRS. (S)
COUNTY ROAD NO.	35	
IN	WASHINGTON	COUNTY
LETTING OF	AUGUST 10, 2016	

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 STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

September 2, 2015

TO:

Mr. Rick Ellis, Bridge Engineer

SUBJECT:

Job No. BR7208

West Fork White River (Woolsey) Str. & Apprs. (S)

County Road 35 Washington County

Transmitted herewith are a brief summary of the geology and site conditions, unconfined compressive strength test results, D50 analysis test results, and the logs of the borings conducted for the structure 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. The rock cores are available for inspection at the Materials Division.

The geologic formation present in this area is known to contain cavities and caves. Several cavities were encountered on this project and were noted on the boring logs. However, there is potential for unmapped cavities of varying size to be encountered at the project location.

It is recommended that all intermediate bents be supported by drilled shafts. Shafts should be design based on tip resistance and permanent casing should be utilized to minimize the impacts of cavities present at this location. Drilled shafts should be terminated in material shown on the boring logs as Gray Limestone or Gray, Well Cemented, Calcareous Sandstone and should be sized based on the values provided in Table 1. It is anticipated that both bridge ends will be founded on pilling.

TABLE 1 – Bearing Capacity Recommendations for Drilled Shafts

Foundation Description	Nominal Bearing Resistance (ksf)	Resistance Factor	Factored Bearing Resistance (ksf)
Spread Footings	400	0.5	200

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

Materials Engineer

MCB:rpt:mlg

cc: State Construction Engineer - Master File Copy

District 4 Engineer

G.C. File

# GEOLOGY AND SITE CONDITIONS Job No. BR7208 West Fork White River (Woolsey) Str. & Apprs. (S) County Road 35 Washington County

#### **Site Conditions**

The existing bridge is a two span structure over the West Fork of the White River and is currently closed to traffic. The bridge deck is constructed of concrete with a steel truss support. The middle bent is constructed of a concrete wall pier founded on a spread footing.

The river flows to the north at the bridge site. The County Road 35 is oriented east-west and makes a sharp turn to the south at the east end of the bridge, and intersects Highway 71 approximately 570 feet southeast of the bridge. However, the bridge is located less than 100 feet due west of Highway 71. Highway 71 parallels the east side of the river. Overhead power lines cross the river on the right side of the roadway. A buried telecommunication line parallels the right side of the bridge. Both banks of the river are lined with trees. The area at the west end of the bridge, on both sides of the roadway, consists of pastureland. At the east end of the bridge both sides of the roadway are moderately wooded.

#### Site Geology

The area of the proposed job site has been mapped as Bloyd Formation and Prairie Grove member of the Hale Formation (map symbol Pbh). Based on lithologies present at the job site, these rocks are part of the Hale Formation. The reported thickness of the Hale Formation ranges from a few feet to more than 300 feet.

The Hale is made up of two members: an upper Prairie Grove Member and a lower Cane Hill Member. The Prairie Grove Member is composed of thin to massive, often crossbedded, frequently pitted ("honeycomb weathering"), light-gray to dark-brown, calcareous sandstone or variously sandy limestone with lenses of relatively pure, crinoidal, highly fossiliferous limestone and oolitic limestone. Prairie Grove member outcrops frequently have a mottled appearance when fresh. The lower contact of the Prairie Grove is considered unconformable.

Four borings encountered what may be the Cane Hill member. The Cane Hill is typically composed of dark gray silty shale interbedded with siltstone and thin-bedded fine-grained sandstone. Bedrock was encountered in these borings ranging in depth from 2.8 to 7.0 feet below ground level, except for the westernmost boring, Station 105+68; in which bedrock was encountered at 21.7 feet bgl.

The general geology of the site includes **limestone**, with some thin beds of shale/claystone higher in the section, **overlying calcareous sandstone** which in turn is **overlying shale**. Numerous cavities occur in the limestone at the job site. Nine of the thirteen borings drilled encountered cavities. Three borings encountered multiple cavities. Eight of the borings had cavities ranging in thickness from 1.9 feet to 8.1 feet. Borings drilled on both sides of the bridge encountered these cavities. The thickness of the cavities, in addition to the wide spacing of the borings, is evidence of the interconnectedness of these cavities. No cavities were observed in the calcareous sandstone underlying the limestone.

#### **Subsurface Conditions**

Based on the results of the boring at **Station 105+68**, the subsurface stratigraphy may be generalized as follows:

0 to 9.3 Feet: Consists of moist, loose, brown sand with gravel (rock fragments).

9.3 to 19.3 Feet: Consists of moist to wet, medium stiff to very stiff, dark brown sandy clay to

sandy clay with gravel.

19.3 to 21.7 Feet: Consists of medium hard, dark gray shale with limestone seams and layers

and moderately hard, gray limestone. Some concretions were encountered in

this zone.

21.7 to 26.0 Feet: Consists of hard, slightly weathered, gray limestone with occasional vugs.

26.0 to 40.0 Feet: Consists of well cemented, slightly weathered, light gray calcareous sandstone.

40.0 to 44.2 Feet: Consists of medium hard, slightly weathered, dark gray shale.

Based on the results of the borings at **Stations 106+45 to 108+35**, the subsurface stratigraphy may be generalized as follows:

0 to 3.0 Feet: Consists of moist to wet, very stiff, brown clay with gravel to gravel.

3.0 to 7.0 Feet: Varies from moist to wet, very stiff, brown clay with gravel to gravel to hard,

gray **limestone** to well cemented, weathered light gray, **calcareous sandstone**. One boring had a 0.4 foot cavity in this zone, and one boring encountered the top

of a cavity in this zone.

7.0 to 15.6 Feet\*: Consists of hard, slightly dipping, gray limestone. Numerous cavities occur in

this zone.

15.6.0 to 25.5 Feet: Consists of cemented to well cemented, light gray, calcareous sandstone.

25.5 to 28.8 Feet: Varies from cemented to well cemented, light gray, calcareous sandstone to

medium hard, slightly weathered, dark gray shale.

\* The two largest cavities in this zone range from 6.4 to 14.5 feet bgl and 7.6 to 15.0 feet bgl.

Based on the results of the borings at **Stations 109+10 to 109+37**, the subsurface stratigraphy may be generalized as follows:

0 to 3.9 Feet: Consists of moist, very hard, brown clay with gravel (sandstone fragments).

3.9 to 19.5 Feet\*: Consists of slightly weathered to unweathered, hard, gray limestone with some

layers of highly weathered to slightly weathered, soft to medium hard, dark gray

shale. Two borings contained cavities in this zone.

19.5 to 21.5 Feet: Consists of weathered to slightly weathered, cemented, light gray, calcareous

sandstone with occasional clay layers.

21.5 to 28.3 Feet: Consists of slightly weathered, hard, gray limestone to limestone with

occasional shale seams.

28.3 to 28.4 Feet: Consists of slightly weathered, medium hard, dark gray **shale**.

\* The two cavities in this zone range from 5.0 to 8.7 feet bgl and 5.2 to 9.2 feet bgl.

## Rock Core Unconfined Compression Test Summary

Project Number:

BR7208

Project Name:

West Fork White River (Woolsey)

Date Tested:

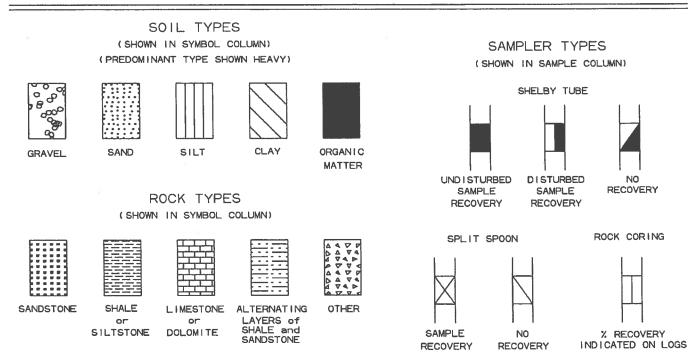
8/5/2015

Station	Location	Sample No.	Depth (ft)	Diameter (in)	Height (in)	Total Load (lbs)	Correction Factor	Stress (psi)	Remarks
107+44	26' LT	1	13.0	1.75	3.71	34,610	1.00	14,389	7
107+44	26' LT	2	16.0	1.75	3.70	21,740	1.00	9,038	7
108+32	13' LT	3	15.0	1.75	3.74	38,670	1.00	16,077	12
108+32	13' LT	4	18.0	1.75	3.76	8,420	1.00	3,501	2
109+10	15' LT	5	12.0	1.75	3.73	37,940	1.00	15,774	12
109+10	15' LT	6	22.0	1.75	3.76	21,220	1.00	8,822	7
107+40	33' RT	7	11.0	1.75	3.75	38,910	1.00	16,177	12
107+40	33' RT	8	20.0	1.75	3.72	16,740	1.00	6,960	4
108+30	15' RT	9	12.0	1.75	3.67	26,150	1.00	10,872	7
108+30	15' RT	10	17.5	1.75	3.61	16,490	1.00	6,856	4
106+45	17' LT	11	14.0	1.75	3.72	53,330	1.00	22,172	12
106+45	17' LT	12	20.0	1.75	3.74	33,470	1.00	13,915	7
106+45	15' RT	13	12.5	1.75	3.72	43,400	1.00	18,044	12
106+45	15' RT	14	16.0	1.75	3.73	30,460	1.00	12,664	7
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# D<sub>50</sub> AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

		Job No.	BR7208		
Creek Name	Station	Sample Type	Location	Depth (FT)	Aggregate Size (D50) (IN)
West Fork of White River	106+85	Surface Creek Bank	C.L.	N/Á	0.0049

# I FGFND



#### TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANU	LAR SOIL		CLAY	CLA	Y-SHALE	5	SHALE
'N' Value	Density	N' Value	Consistency	N' Value	Consistency	·Nº 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	0ver 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	Penetrati	on
		31-60	Hard	31-60	Hard	in 60 Blo	ws: Medium Haro
		0ver 60	Very Hard	0ver 60	Very Hard	Less than	2'
						Penetrati	on
						in 60 Blo	ws: 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<sub>60</sub>) can be obtained by multiplying N<sub>f</sub> by the hammer correction factor published on the boring log.

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	IAME:		West Fork White River (Woolsey) Str. & Apprs. (S	)			RILLIN					Auger	r-
STATI LOCA			105+68 9' Right of Centerline of Existing Bridge		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	ΈAι	utoma	atic
			aymond Taylor		HAMN	ÆR (	ORRE	CTION	I FAC	TOR:		1.23	
			DEPTH: 44.2		,								
D E P T H	S Y M B	S A M P L E	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT.	L		SURFACE ELEVATION: 1374.1	9	PLAST LIMIT	W %	LIM	DRY	LBS	NO.	PER		
5	60 90 00 00 00 00 00 00 00 00 00 00 00 00	X	Moist, Loose, Brown Sand with Gravel (Sandstone Fragments)				Andrews and the state of the st			5-			
10 		X	Moist, Medium Stiff, Dark Brown Sandy Clay							3-			
15 		X	Wet, Very Stiff, Dark Brown Sandy Clay with Gravel			And the state of t				8-			
20		X	Wet, Dense, Gravel with Clay and Sand	(i*						1 -	2 -17		
25			LIMESTONE - Hard, Slightly Weathered, Occassional Vug, Slight Dip, Gray	20								100	64
				2.*								99	82
30			SANDSTONE - Calcareous, Well Cemented, Slightly Weathered, Slight Dip, Light Gray									99	96
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			DEPTH: 44.2										
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FT.	L	s	SURFACE ELEVATION: 1374.1		PLAST LIMIT	% N		DR	LBS	NO.	PER		
40												97	97
			SHALE - Medium Hard, Slightly Weathered, Slight Dip, Dark Gray									88	44
45			Boring Terminated										
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COMP	LET	ON	DEPTH: 28.8										
D	_	S											
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5			Moist, Very Stiff, Brown Clay with Gravel (Sandstone Fragments)										
			SANDSTONE - Calcareous, Well Cemented, Weathered, Slight Dip, Light Gray									85	21
10			LIMESTONE - Hard, Weathered, Slight Dip, Gray										
			Soil Filled Cavity (10.1' to 12.4')									61	53
			LIMESTONE - Hard, Weathered, Slight Dip, Gray										
15			LIMESTONE - Hard, Slight Dip, Gray										
 												89	81
			SANDSTONE - Calcareous, Well Cemented, Slight Dip, Light Gray							:		100	100
25 												99	99
30			Boring Terminated						•				
35													
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JOB N			BR7208 Washington		DATE:				_					
JOB N	AME:	,	West Fork White River (Woolsey) Str. & Apprs. (S)	)	TYPE	OF DI	RILLING	G: 1	Holle	ow S	tem .	Auge	-	
STATI			106+45		EQUIP	MEN	T: CM	IE 8:	50 w	/ CM	IE A	utoma	atic	
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LOGGED BY: Raymond Taylor HAMMER CORRECTION FACTOR: 1.  COMPLETION DEPTH: 28.2														
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FI.	\ ~~\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		SURFACE ELEVATION: 1361.5			%		Ω	ī	Z	<u>~</u>			
			Moist, Very Stiff, Brown Clay with Gravel											
<u>5</u> 		X	Wet, Medium Dense, Brown Gravel (Rock Fragments) with Sand and Clay							12-				
	3 33		SANDSTONE INTERBEDDED WITH LIMESTONE - Well Cemented, Weathered,									58	0	
10			\Slight Dip, Gray \LIMESTONE - Hard, Weathered, Slight Dip, \Gray									10	0	
			Soil Filled Cavity (9.3' to 11.3')  LIMESTONE - Hard, Weathered, Slight Dip,  Gray									10	U	
15			Soil Filled Cavity (12.4'-12.9') LIMESTONE - Hard, Weathered, Slight Dip, Gray											
			SANDSTONE WITH OCCASSIONAL LIMESTONE LAYERS - Calcareous, Well Cemented, Slight Dip, Light Gray									100	96	
20			SANDSTONE - Calcareous, Well Cemented, Slight Dip, Light Gray								•	100	100	
25			SHALE - Medium Hard, Slightly Weathered,									93	68	
<b>-</b>		1	Slight Dip, Dark Gray			_		_		1		$oxed{}$		
<u> </u>	4		Boring Terminated											
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ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.		BORI PAGE			F 1					
JOB NO. BR7208 Washington		DATE:				ly 14	1, 201	15		
JOB NAME: West Fork White River (Woolsey) Str. & Apprs. (S	)			RILLIN		-			Auger	-
STATION: 107+40		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	IE A	utoma	atic
LOCATION: 33' Right of Existing Centerline  LOGGED BY: Tracy Henderson	ORRE	TION	J FAC	TOR.		1.23				
COMPLETION DEPTH: 28.3		1111111	ILIC	Older	21101	1176	) I OIC.		1.23	
D e										
E S A P M M DESCRIPTION OF MATERIAL B L O C	SOIL GROUP	STIC	% MOIST.	T T	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT. S SURFACE ELEVATION: 1359.8		PLASTIC LIMIT	W W	LIQUID	DRY	LBS	NO.	PER		,
5 LIMESTONE - Hard, Slightly Weathered, Slight									75	19
Soil Filled Cavity (4.3' to 4.5') LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray										
Soil Filled Void (8.1' to 10.7')									48	10
LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray										
Soil Filled Void (13.5' to 13.7')  LIMESTONE - Hard, Slightly Weathered, Slight  Dip, Gray Soil Filled Void (14.1' to 15.0')	-								93	63
LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray SANDSTONE - Calcareous, Well Cemented,									I Amelina managania	
20 Slight Dip, Light Gray									98	92
SANDSTONE - Calcareous, Well Cemented,										O.L
Occasional Fractures, Slight Dip, Light Gray										85.
									100	79
Boring Terminated	1		-	+	+					
30										
35										
REMARKS:			1		1				1	<u> </u>

JOB N	Ю.	-	BR7208 Washington		PAGE DATE:				ly 1.	3, 20			$\dashv$
IOB N	AME:	,	West Fork White River (Woolsey) Str. & Apprs.	(S)	TYPE	OF D	RILLIN	G:	Holl	ow S	tem	Auge	г-
STATI LOCA	ION: TION:		107+44 26' Left of Existing Centerline		EQUII	MEN	T: CM	1E 8	50 w	/ CN	ΛΕ A	utom	atic
			racy Henderson		HAMI	MER (	ORRE	CTIO	N FAC	CTOR	:	1.23	
COM	PLET	ION	DEPTH: 26.2										
D E P T H	S Y M B O	SAMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT.	L		SURFACE ELEVATION: 1360.6		PLAST LIMIT	/ %   	135	DR	LB	N 0	PEI		
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			LIMESTONE				l						
10			LIMESTONE - Hard, Slight Dip, Gray									77	54
			Soil Filled Cavity (10.8'-12.7')										
 			LIMESTONE - Hard, Slight Dip, Gray									71	64
15			SANDSTONE - Calcareous, Well Cemented Slight Dip, Light Gray	,		Management of the Control of the Con	The state of the s				2	100	97
25	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		SHALE - Medium Hard, Slight Dip, Dark Gra	y .			1			Annual Control of the	\$1 (40	96	84
			Boring Terminated										
30													

	ARKANSAS HWY. & TRANS. DEPARTMENT  MATERIALS DIVISION - GEOTECHNICAL SEC.  DATE: July 28, 2015												
JOB N			BR7208 Washington		DATE:				ly 28	, 20	15		
JOB N	AME:		West Fork White River (Woolsey) Str. & Apprs. (S	)	TYPE	OF DE	ULLIN(		-			Auge	r -
STATI			108+21 13' Left of Existing Centerline		EQUIP	MEN'	r: CM	IE 8:	50 w	/ CM	IE A	utom	atic
			aymond Taylor		HAMN	MER C	ORREC	TOITS	v FAC	TOR:			
_			DEPTH: 13										
D	s	S											
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P T	М	M P	DESCRIPTION OF MATERIAL	SOIL				H	U.F	WO,		S	R
н	В	L	*	GROUP	C	ST.	۵	VEIC	ER (	F BI	Z	C R	Q D
	0 L	Ε	17		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
FT.	1	S	SURFACE ELEVATION: 1359.8		목글	%	35	Ä	T.	ž	PE		
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			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORII PAGE			F 1	-		_		
JOB N			BR7208 Washington		DATE:		**		y 28	, 201	15		
JOB N			West Fork White River (Woolsey) Str. & Apprs. (S	)	TYPE		ILLING					Auge	r-
STATI			108+27 13' Left of Existing Centerline		EQUIP	MENT	r: CM	E 85	50 w	/ CM	IE A	utom	atic
			aymond Taylor		HAMN	IER C	ORREC	TION	FAC	TOR:			
			DEPTH: 13.1		104		Orden						
D		s											$\neg$
E	S   Y	A											
Р	Y M	М	DESCRIPTION OF MATERIAL	SOIL				H	Ē	WS.		% S	% R
T	В	Р	9 .	GROUP		Ţ.		[D]	S	BLC		C	Q
Н	0	L	ř –		STI	OIS	9 =	[W	PEI	OF	0-n	R	D
FT.	L	S	SURFACE ELEVATION: 1360.0		PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
	9° 0												
	χ <b>9</b>		Gravel										- 1
	888		3,070.										
5													
L													
			LIMESTONE - Hard										
10													
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L _			Boring Terminated										
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REM	IARK	S:											

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			DIVISION - GEOTECHNICAL SEC.		PAGE			F 1					
JOB N	O.	E	BR7208 Washington		DATE:			Ju	ly 14	, 201	15		
JOB N	AME:	١	West Fork White River (Woolsey) Str. & Apprs. (S)	)	TYPE	OF DI	RILLING	3: ]	Holle	ow S	tem .	Auge	r -
STATI	ON:		108+30		EQUIP	MEN'	r: CM	IE 8:	50 w	/ CM	IE A	utom	atic
LOCA	TION:		15' Right of Existing Centerline		`								
			racy Henderson		HAMN	ÆR C	ORREC	CTION	FAC	TOR:		1.23	
COM	PLET		DEPTH: 22.8		1 1							- 1	_
D	s	S					·						
E P	Υ	A M	DECODIDATION OF MATERIAL					7	H.	WS		%	%
Т	M B	Р	DESCRIPTION OF MATERIAL	SOIL		.:		IGH	CO	TO		SC	R Q
Н	ō	닏	*	O.LOGI	12	LSIC	8 -	WE	PER	OF E	NI-9	R	Ď
FT.	L	E S	SURFACE ELEVATION: 1360.7		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN		
	2 00												
	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		Gravel										
	30 00 00 00												
			LIMESTONE - Fractured LIMESTONE WITH FREQUENT SHALE										
5	3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		SEAMS AND LAYERS - Hard, Slightly										
L -			Weathered, Occasional Fractures, Occasional									84	60
<u> </u>			Slickensides, Slight Dip, Gray Soil Filled Cavity (4.4' to 4.8')										
<u> </u>		$\vdash$	TIMESTONE WITH FREQUENT SHALE										
			SEAMS AND LAYERS - Hard, Slightly Weathered, Occasional Fractures, Occasional										
10			Slickensides, Slight Dip, Gray									98	50
<u> </u>			LIMESTONE - Hard, Slightly Weathered,			1							-
<u> </u>			Occasional Fractures, Slight Dip, Gray Soil Filled Cavity (10.7' - 11.1')										
<del> </del>			LIMESTONE - Hard, Slightly Weathered,									====	
15			Occasional Fractures, Slight Dip, Gray LIMESTONE - Hard, Slightly Weathered,				l.						
10	部		Slight Dip, Gray									98	84
-	1111		Soil Filled Cavity (15.8' to 16.0')	1									
-			LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray										
				1									
20			SANDSTONE - Well Cemented, Slight Dip,										
			Light Gray									96	95
			1										
L.					₩	┡	-	-		-		_	
<u> </u>			Boring Terminated										
25	-												
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MATI			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE			F 1					
JOB N			BR7208 Washington		DATE:				ly 14	, 201	15		
JOB N			West Fork White River (Woolsey) Str. & Apprs. (S)	,			RILLIN					Augei	r -
STATI			108+32		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	IE Aı	utoma	ati
			13' Left of Existing Centerline									1 22	
			racy Henderson		HAMN	MER (	ORREC	CHON	V FAC	TOR:		1.23	
	PLEI		DEPTH: 28		T								_
D E P T H	S Y M B O L	SAMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% F C I
FT.	100	S	SURFACE ELEVATION: 1359.8			%	33	Ω		Ż	Ē.		
	8 8 6 6 6 8		Gravel										
		-	LIMESTONE - Fractured										_
<u>5</u> 			LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray									85	4
10			Soil Filled Cavity (7.6' to 15.0')									0	
15			LIMESTONE - Hard, Slightly Weathered, Occasional Fractures, Slight Dip, Dark Gray									56	5
20			SANDSTONE - Calcareous, Well Cemented, Slight Dip, Light Gray									100	Ş
25		000000000000000000000000000000000000000	,									96	1
<del> </del>		1	SHALE - Medium Hard, Slight Dip, Dark Gray		+-	-		+		-		_	
30			Boring Terminated										

i .			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORII PAGE			F 1	-				
JOB N	_		BR7208 Washington		DATE:				lv 28	, 20	15		
JOB N			West Fork White River (Woolsey) Str. & Apprs. (S	)			ULLING		-			Auge	r-
STATI			108+35 13' Left of Existing Centerline		EQUIP	MEN'	r: CM	IE 8:	50 w	/ CM	IE A	utom	atic
LOCA			Raymond Taylor		HAMN	IER C	ORREC	אסודי	JFAC	'TOR·			- 1
			DEPTH: 16.5		70 4.11.								$\neg$
D		s											$\neg$
Е	S	Α							ن	ro.		.	
Р	м	М	DESCRIPTION OF MATERIAL	SOIL				HT	U.F	οw		% S	% R
T H	В	P	92	GROUP	ာ	ST.		EIG	RC	BL	z	C	Q
''	0	E			PLASTIC LIMIT	% MOIST.		DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	I-9 1	R	D
FT.	L	S	SURFACE ELEVATION: 1360.1		PLAST LIMIT	%	LIQUID	DR	LB	NON	PER 6-IN.		
	30 0 0 000												Ì
L -	800		Gravel										
	800												- 1
		T		1									
5			LIMESTONE										l
L -													
<u> </u>	-	11						1					
<u> </u>	-												
<b> </b>	-												
10	-		0 11 5111 1 0 - 11 (0 414 - 44 51)										
<u> </u>	-		Soil Filled Cavity (6.4' to 14.5')										
<b>⊢</b> -	-												
├	-												
<u> </u>	-												
15			LIMESTONE										
<del> </del>	蓝笠				<u> </u>								
	1		Boring Terminated			İ							
<u> </u>	1												
20	1												
	1												
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35													
REN	//ARK	S:											

ARKANSAS HWY. & TRANS. DEPARTMENT	BORI	NG N	10. 1	1					
MATERIALS DIVISION - GEOTECHNICAL SEC.	PAGI			)F 1					
JOB NO. BR7208 Washington	DATE	:		Ju	ne 22	2, 20	15		
JOB NAME: West Fork White River (Woolsey) Str. & Apprs. (S)	TYPE	OF D	RILLIN	<b>G</b> : ]	Holle	ow S	tem	Auge	r -
STATION: 109+10 LOCATION: 15' Left of Centerline of Existing Bridge	EQUI	PMEN	T: CN	1E 8	50 w	/ CN	1E A	utom	atic
LOGGED BY: Tracy Henderson	HAMI	MER (	CORRE	CTIO	N FAC	CTOR:		1.23	
COMPLETION DEPTH: 28.4									
D s S									
E S A					ı.	S		%	%
P M M P DESCRIPTION OF MATERIAL SOIL				HT	U.F	<b>%</b> 0		S	R
L   B     GROU	' ပ္မ	ST.		EIG	RC	BL	z	C	Q
	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	D
FT. S SURFACE ELEVATION: 1376.2	LIN LIN	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	125	DR	LB	8 8	PEI		
Moist, Very Hard, Brown Clay with Gravel									
(Sandstone Fragments)									
5 8 8							0		
LIMESTONE - Hard, Slightly Weathered, Gray	Ì					, ,,	3)		
								32	32
Soil Filled Cavity (5.2' to 9.2')									
$\Gamma$ $\uparrow$ $\downarrow$									
10									
								84	73
								04	13
LIMESTONE - Hard, Slightly Weathered, Gray									
15 HOLE   LINE OF ONCE   Flat d., Singility Weathered, Ordy									
								88	70
								00	78
Claystone - Weathered, Soft, Dark Gray									
20 SANDSTONE - Calcareous, Weathered to									
Slightly Weathered, Cemented, Gray								00	50
			100					80	56
LIMESTONE WITH OCCASSIONAL SHALE  25 444 SEAMS- Hard, Gray			187						
25   公中   SEAMS- Hard, Gray									
			87					96	78
SHALE - Slightly Weathered, Medium Hard,		-	-	-		_			
30 Dark Gray									
Boring Terminated									
35									
REMARKS:	1	1	1						
· ······ · · · · · · · · ·									

ARK	ANSA	\S F	HWY. & TRANS. DEPARTMENT		BORI	NG N	IO. 12	2					
			DIVISION - GEOTECHNICAL SEC.		PAGE			)F 1					
JOB N	IO.		BR7208 Washington		DATE:			Ju	ne 23	3, 20	15		
JOB N	IAME:	١	West Fork White River (Woolsey) Str. & Apprs. (S	)	TYPE	OF D	RILLIN	<b>G</b> : ]	Holl	ow S	tem .	Auge	r -
STATI			109+27 32' Right of Existing Centerline		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	IE A	utom	atic
			racy Henderson		HAMN	ÆR (	ORRE	CTION	v FAC	TOR:		1.23	
COM	PLET	ION	DEPTH: 22.3										
D	S	s											
E P T H	Y M B O	A M P L H	DESCRIPTION OF MATERIAL	SOIL GROUP	I≌	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT.	L	s	SURFACE ELEVATION: 1376.5		PLAST LIMIT	% №		DR	LBS	NO.	PER		
			Clay with Gravel										
5 			LIMESTONE - Hard, Slightly Weathered, Gray SHALE WITH OCCASIONAL LIMESTONE		9							84	60
			LAYERS - Soft to Medium Hard, Highly Weathered to Weathered, Dark Gray										
												90	76
15			LIMESTONE - Hard, Slightly Weathered, Gray									96	86
20			SANDSTONE WITH OCCASIONAL CLAY		=							100	80
			LAYERS - Cemented, Slightly Weathered, Gray		520								
L -			Boring Terminated		1								
 25					70.								
					28								
30													
	1												
<del>-</del> -													
35													
KEM	IARKS	<b>5</b> :											

			HWY. & TRANS. DEPARTMENT		ŧ		10. 13						
			DIVISION - GEOTECHNICAL SEC.		PAGE	-	1 c	)F 1					
JOB N			BR7208 Washington		DATE:					1, 20			
JOB N	AME:	,	West Fork White River (Woolsey) Str. & Apprs. (S)	)	TYPE	OF D	RILLIN	G: 1	Holl	ow Si	tem .	Auge	r -
STAT			109+37		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	IE A	utom	atic
LOCA			32' Right of Existing Centerline racy Henderson		<b> </b>	ŒD (		777101	1516	7705		1 22	
-			DEPTH: 27.1		HAMN	AER (	CORREC	CTION	N FAC	TOR:		1.23	
	FLEI		DEFIR: 27.1	•			Ī	I					
D E P T H	S Y M B	SAMPL	DESCRIPTION OF MATERIAL	SOIL GROUP	ric	IST.	Q.	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	Ä.	% S C R	% R Q D
FT.	L	E S	SURFACE ELEVATION: 1377.2	ı	PLASTIC LIMIT	% MOIST.	LIQUID	DRY	LBS P	NO.0	PER 6-IN.		
			Clay with Gravel										
5		Τ	LIMESTONE - Hard, Slightly Weathered, Gray										
			Soil Filled Cavity (5.0' to 8.7')									13	0
15			LIMESTONE - Hard, Slight Dip, Gray					And the second s				98	87
20			SANDSTONE WITH OCCASIONAL CLAY LAYERS - Calcareous, Cemented, Weathered, Gray	**				(8)				94	68
25			LIMESTONE - Hard, Slightly Weathered, Gray	8. 6.								88	62
			Boring Terminated			1	1	+					
	1		Ĭ										
30	1												
	1												
	1						1						
	1												
	+												
	-												
35						<u> </u>				<u></u>			
REM	IARK	S: '	Poor recovery due to catcher wearing out										
	IARK	S: '	Poor recovery due to catcher wearing out	.1	1	1				1	.:		

## ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

October 1, 2015

TO:

Mr. Rick Ellis, Bridge Engineer

SUBJECT:

Job No. BR7208

West Fork White River (Woolsey) Str. & Apprs. (S)

County Road 35 Washington County

Transmitted herewith are revised boring logs to correct mistakes found in the boring logs submitted by memo September 2, 2015. Please discard the original logs and replace them with the attached. The .INS file for this project has been revised.

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

Michael C. Benson Materials Engineer

MCB:rpt

CC:

State Construction Engineer - Master File Copy

District 4 Engineer

G.C. File

			IWY. & TRANS. DEPARTMENT		BORI	NG N							
			DIVISION - GEOTECHNICAL SEC.		PAGE		1 0	F 2					_
JOB N			BR7208 Washington		DATE:					9, 201			
JOB N	IAME:	١	West Fork White River (Woolsey) Str. & Apprs. (S)		TYPE	OF DI	RILLING	G: J	Holle	ow St	em A	Auger	-
STAT			105+68		EQUIP	MEN	T: CM	1E 8:	50 w	/ CM	ΕAι	ıtoma	atic
	TION:		9' Right of Centerline									1 22	
			aymond Taylor		HAMN	1ER C	ORREC	CTION	FAC	TOR:		1.23	
	PLEI		DEPTH: 44.2								Т		-
D E P T H	S Y M B O L	SAMPLE		SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT.		S	SURFACE ELEVATION: 1374.1		LI LI	%	12.5	DR	LB	8	PE		
5		X	Moist, Loose, Brown Sand with Gravel (Sandstone Fragments)							<u>4</u> 5-	5		
		X	Moist, Medium Stiff, Dark Brown Sandy Clay							3-			
15		X	Wet, Very Stiff, Dark Brown Sandy Clay with Gravel							8-			
20		X	Wet, Dense, Gravel with Clay and Sand							18-	2 17		
25			LIMESTONE - Hard, Slightly Weathered, Occasional Vug, Slight Dip, Gray									100	64
												99	82
30			SANDSTONE - Calcareous, Well Cemented, Slightly Weathered, Slight Dip, Light Gray									99	96
-	IARK	<u>ԿԼ.</u> Տ:	1			<u> </u>	-						1

			WY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE		2 0	F 2					
IOB N	0.		3R7208 Washington		DATE:			Jun	e 29	, 20	15		
JOB N	AME:	,	West Fork White River (Woolsey) Str. & Appr	s. (S)	TYPE	OF DI	ULLING	G: H	Iollo	ow S	tem	Auge	er -
STATI			105+68		EQUIF	MEN'	T: CM	Œ 85	0 w	/ CM	ĭE A	utom	atic
	TION:		9' Right of Centerline									1 00	
			aymond Taylor DEPTH: 44.2		HAMN	MER C	ORREC	TION	FAC	TOR:		1.23	
	PLEI		DEP1R: 44.2		T	_		<u>-</u>	- 1				
D E	S	S A		Ì		ļ							
Р	Y	М	DESCRIPTION OF MATERIAL						Ë	WS		%	%
Т	M B	Р	DESCRIPTION OF WATERIAL	SOIL GROUF		نے ا		IGH	CO	3LO	۰	S C	R Q
Н	0	L			1 ≚	SIC	8,	WE	PER	)F E	ZI-9	R	Ď
FT.	L		SURFACE ELEVATION: 1374.1		PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
					-							97	97
40													
			SHALE - Medium Hard, Slightly Weathered	i,			:					88	44
			Slight Dip, Dark Gray										
 45			Boring Terminated		┼								
45			bonng reminated										
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		IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE			)F 1				· -	
JOB NO.		BR7208 Washington		DATE:			_	ne 30	), 201	5		
JOB NAME:		West Fork White River (Woolsey) Str. & Apprs. (S)	١			RILLIN					ugei	r <b>-</b>
STATION: LOCATION:		106+45 15' Right of Centerline		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	E Au	itoma	atic
LOGGED B		aymond Taylor		HAMN	IER C	CORREC	CTION	FAC	TOR:	1	1.23	
COMPLET	OI	DEPTH: 28.8	-									
D S Y M B O	SAMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	7	% S C R	% R Q D
FT.	S	SURFACE ELEVATION: 1362.6		PLAST LIMIT	% \	LIQ	DR	LBS	NO.	PER		
	2000	Moist, Very Stiff, Brown Clay with Gravel (Sandstone Fragments)										di-december.
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SANDSTONE - Calcareous, Well Cemented, Weathered, Slight Dip, Light Gray									85	21
— 10 第		LIMESTONE - Hard, Weathered, Slight Dip, Gray								-		-
_		Soil Filled Cavity (10.1' to 12.4')									61	53
		LIMESTONE - Hard, Weathered, Slight Dip, Gray		Uh								
15		LIMESTONE - Hard, Slight Dip, Gray										
											89	81
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SANDSTONE - Calcareous, Well Cemented, Slight Dip, Light Gray									100	10
25 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		The second secon								99	99
30		Boring Terminated		1	- 11		+					
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35												
REMARK	S:											

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JOB N			BR7208 Washington		ATE:				ılv 1	, 201	5		
JOB N			West Fork White River (Woolsey) Str. & Apprs. (S)	- 1		F DF	ULLIN					Auge	r -
STAT			106+45	E	QUIPI	MEN.	r: CM	1E 8.	50 w	/ CN	IE A	utom	ati
	TION:		17' Left of Centerline	١,,	43434	un C	OD DE	TIO	L I'AC	. מסיני		1.23	
			aymond Taylor DEPTH: 28.2	n	AIVIIVI	EKC	ORRE	LIOI	VFAC	JUK		1.23	
	FLEI		DEF1H: 28.2			-							_
D E P T H	S Y M B	SAMPLI	DESCRIPTION OF MATERIAL SOIL GROU	JP JIL	T	% MOIST.	ID T	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	6-IN.	% S C R	9 I () I
FT.	L	E S	SURFACE ELEVATION: 1361.5	PI A STIC	LIMIT	% M(	LIQUID	DRY	LBS	NO.	PER 6-IN.		
			Moist, Very Stiff, Brown Clay with Gravel								2		
<u> </u>		X	Wet, Medium Dense, Brown Gravel (Rock Fragments) with Sand and Clay							250.03	-12		
	9, 98	$\prod_{i=1}^{n}$	SANDSTONE INTERBEDDED WITH LIMESTONE - Well Cemented, Weathered,									58	
10			Slight Dip, Gray \LIMESTONE - Hard, Weathered, Slight Dip, \Gray										
			Soil Filled Cavity (9.3' to 11.3')  LIMESTONE - Hard, Weathered, Slight Dip,  Gray									10	
15			Soil Filled Cavity (12.4'-12.9') LIMESTONE - Hard, Weathered, Slight Dip,										
			Gray SANDSTONE WITH OCCASIONAL LIMESTONE LAYERS - Calcareous, Well Cemented, Slight Dip, Light Gray									100	
20													
			SANDSTONE - Calcareous, Well Cemented, Slight Dip, Light Gray	:								100	-
25			Olight Dip, Light Oldy									93	
			SHALE - Medium Hard, Slightly Weathered,									33	
			Slight Dip, Dark Gray  Boring Terminated	$\dashv$				+-					t
30	1		Borning Terminated										
	1												
	1												l
-	1												
35	1												
· UV		 Տ։	<u> </u>				11						1,

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		•	S)			RILLIN		-			Auge	;
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1PLET	_	N DEPTH: 28.3	<u> </u>	Т	ſ	Ī						ſ
S Y M B O L	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1359 8	SOIL GROUP	Iβ	% MOIST.	LIQUID	ORY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	
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		LIMESTONE - Hard, Slightly Weathered, Sligh Dip, Gray Soil Filled Cavity (4.3' to 4.5')	-								75	
		Dip, Gray										
		LIMESTONE - Hard, Slightly Weathered, Slightly	t								48	
		Soil Filled Void (13.5' to 13.7')										4
		\Dip, Gray \Soil Filled Void (14.1' to 15.0') \LIMESTONE - Hard, Slightly Weathered, Slightly	4								93	
		SANDSTONE - Calcareous, Well Cemented, Slight Dip, Light Gray										
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										98	
		Occasional Fractures, Slight Dip, Light Gray									100	)
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JOB N			West Fork White River (Woolsey) Str. & Apprs. (S)	١	TYPE		RILLI INJ					11100	r _
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LOCA'			26' Left of Centerline										
			racy Henderson		НАМ	IER C	ORRE	CTION	V FAC	CTOR:		1.23	
	PLET		DEPTH: 26,2									-	
D E	S	S											
P	Y	м	DESCRIPTION OF MATERIAL					E	F	WS		%	%
T	M B	Р	DESCRIPTION OF MATERIAL	SOIL GROUP		ی		IGH	CO	3LO		S	R
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FT.	L	S	SURFACE ELEVATION: 1360.6		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.		
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			LIMEGTONE							:			
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10			LIMESTONE - Hard, Slight Dip, Gray									77	5
			Soil Filled Cavity (10.8'-12.7')								ĺ		
	1,1,1,1,1												
			LIMESTONE - Hard, Slight Dip, Gray									71	6
15													
												100	9
20			SANDSTONE - Calcareous, Well Cemented, Slight Dip, Light Gray								!		
		H	Slight Dip, Light Gray							již.			
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 25			(4)									96	8
25													
	-1-1-1		SHALE - Medium Hard, Slight Dip, Dark Gray Boring Terminated					-		(9)	$\dashv$		_
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35													
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JOB N			West Fork White River (Woolsey) Str. & Apprs. (S	)	TYPE		RILLING					Auge	r-	
STATI LOCA			108+21 13' Left of Centerline		EQUIP	MEN'	T: CM	IE 8:	50 w	/ CM	IE A	utom	atic	
2			Raymond Taylor		HAMN	IER C	ORREC	CTION	I FAC	TOR:				
			I DEPTH: 13											
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P	М	M	DESCRIPTION OF MATERIAL	SOIL				H	U.F	ΜO	- 1	% S	% R	
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l ''	0	Ē			ST.	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	1-9 X	R	D	
FT.	L	S	SURFACE ELEVATION: 1359.8		PLASTIC LIMIT	% N	125	Z	LB	0 N	PER 6-IN.			
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<u> </u>		-	LIMEOTONE											
<u> </u>			LIMESTONE - Hard											
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STATI			108+27 13' Left of Centerline		EQUIP	MEN'	г: СМ	IE 85	50 w	/ CM	IE A	utom	atic
			Raymond Taylor		HAMN	IER C	ORREC	CTION	√ FAC	TOR:			
			DEPTH: 13.1										
D E P	S Y M	S A M	DESCRIPTION OF MATERIAL	SOIL				нт	U.FT.	SMC		% S	% R
T H	В О	P L E	* y	GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	C R	Q D
FT.	L	S	SURFACE ELEVATION: 1360.0		PLA LIM % M % M LIQ LIM DRN NO.								
	6 8 8 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		Gravel										
5													
10			LIMESTONE - Hard										
<u> </u>			Boring Terminated										
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JOB N.	AME:	,	West Fork White River (Woolsey) Str. & Apprs. (S)	1	TYPE	OF DI	RILLING	G: ]	Hollo	ow S	tem .	Auge	r -
STATI LOCA	-		108+30 15' Right of Centerline		EQUIP	MEN	r: CM	IE 8:	50 w	/ CM	IE A	utom	atic
			racy Henderson		HAMN	IER C	ORREC	CTION	N FAC	TOR:		1.23	
			DEPTH: 22.8				V.14						
D		S											
E P T H	SYMBOL	AMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT.		S	SURFACE ELEVATION: 1360.7		김김	%	33	DR	LB	N	PE		
			Gravel  LIMESTONE - Fractured  LIMESTONE WITH FREQUENT SHALE  SEAMS AND LAYERS - Hard, Slightly										
			Weathered, Occasional Fractures, Occasional Slickensides, Slight Dip, Gray Soil Filled Cavity (4.4' to 4.8') LIMESTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Hard, Slightly									84	60
10			Weathered, Occasional Fractures, Occasional Slickensides, Slight Dip, Gray LIMESTONE - Hard, Slightly Weathered, Occasional Fractures, Slight Dip, Gray Soil Filled Cavity (10.7' - 11.1')									98	50
15			LIMESTONE - Hard, Slightly Weathered, Occasional Fractures, Slight Dip, Gray LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray Soil Filled Cavity (15.8' to 16.0') LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray									98	84
20			SANDSTONE - Well Cemented, Slight Dip, Light Gray									96	95
25			Boring Terminated					The state of the s					
35 REM	ARKS	3:											

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			DIVISION - GEOTECHNICAL SEC.		PAGE			)F 1					
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JOB N	AME:	1	West Fork White River (Woolsey) Str. & Apprs. (S	)	TYPE	OF DI	RILLIN	<b>G</b> : ]	Holl	ow S	tem .	Auge	r <b>-</b>
STATI LOCA			108+32 13' Left of Centerline		EQUIP	MEN	T: CM	1E 8.	50 w	/ CM	IE A	utom	atic
			racy Henderson		HAMN	IER C	ORRE	CTION	N FAC	TOR:		1.23	
		_	DEPTH: 28										
D	s	S											
E P T H	Y M B	AMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	OID TI	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT.	L	s	SURFACE ELEVATION: 1359.8		PLAST LIMIT	% W	LIQUID	DRY	LBS	NO.	PER		
	6 6 65 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		Gravel										
<b> </b> -			LIMESTONE - Fractured								:		
5 			LIMESTONE - Hard, Slightly Weathered, Slight Dip, Gray									85	49
10			Soil Filled Cavity (7.6' to 15.0')									0	0
15			LIMESTONE - Hard, Slightly Weathered, Occasional Fractures, Slight Dip, Dark Gray									56	54
20			SANDSTONE - Calcareous, Well Cemented,							25		100	96
25			Slight Dip, Light Gray							220			
			SHALE - Medium Hard, Slight Dip, Dark Gray							8		96	80
30			Boring Terminated										
35 REM	IARK:	 							· · · · · · · · · · · · · · · · · · ·				
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MATERIALS DIVISION - GEOTECHNICAL SEC.  JOB NO. BR7208 Washington  JOB NAME: West Fork White River (Woolsey) Str. & Apprs. (S)  STATION: 108+35  LOCATION: 13' Left of Centerline	PAGE DATE:		1 c	)F 1					
JOB NAME: West Fork White River (Woolsey) Str. & Apprs. (S)  STATION: 108+35									
	i	OF DI	RILLIN		-	3, 20 ow S		Auge	:Γ-
	EQUIP	MEN	T: CM	1E 8:	50 w	/ CM	1E A	utom	atic
LOGGED BY: Raymond Taylor	нама	AFR (	CORRE	רדורו	JFAC	TOR.			
COMPLETION DEPTH: 16.5	IIAMIN	ILIC (	JOIGGE	CTIO	· I'AC	JIOK.			
E Y A P M M P DESCRIPTION OF MATERIAL SOIL GROUP	1 \( \text{\tin}\text{\tex{\tex	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT. S SURFACE ELEVATION: 1360.1	PLAST LIMIT	% №	LIM	DR	LBS	N O	PER		
LIMESTONE									
10 Soil Filled Cavity (6.4' to 14.5')									
LIMESTONE									
— Boring Terminated									Г
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JOB N	AME:	,	West Fork White River (Woolsey) Str. & Apprs. (S	)	TYPE	OF DI	RILLIN	G:	Hollo	ow S	tem .	Auge	r -
STATI			109+10		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	IE A	utom	atic
	TION:		15' Left of Centerline										
			racy Henderson		HAM	IER C	ORRE	CTION	FAC	TOR:		1.23	
	PLET		DEPTH: 28.4	-				T					
D E P	S Y	SAM						_	H.	S/		%	%
H	М В О-	PLE	DESCRIPTION OF MATERIAL	SOIL GROUP	1 🖺	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	S C R	R Q D
FT.	L	S	SURFACE ELEVATION: 1376.2		PLAST	%	LIQUII	DR	LBS	N N	PEF		
5		<b>X</b>	Moist, Very Hard, Brown Clay with Gravel (Sandstone Fragments)							3,	0		
			LIMESTONE - Hard, Slightly Weathered, Gray							(6	5)		
			Soil Filled Cavity (5.9' to 9.2')									32	32
15			LIMESTONE - Hard, Slightly Weathered, Gray									88	73
20			Claystone - Weathered, Soft, Dark Gray SANDSTONE - Calcareous, Weathered to Slightly Weathered, Cemented, Gray	The state of the s								80	56
25			LIMESTONE WITH OCCASIONAL SHALE SEAMS- Hard, Gray									96	78
30			SHALE - Slightly Weathered, Medium Hard, Dark Gray  Boring Terminated										
												:	
35	IA DIC												
REM	IARK	5:											
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JOBIN	AWIE.	,	vvest i oik viilite riivei (vvoolsey) oti. & Appis. (o	,	TYPE	OF DI	KILLIN	G: 1	11011	ט אנ	icin .	Auge	_
STATI			109+27		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	ŒΑ	utom	atic
	TION:		32' Right of Centerline racy Henderson		TIANAN	mp (	CORREC	TION	T TO A C	TOD.		1.23	
			DEPTH: 22.3		TLAUVIN	TERC	ORKE	CTIO	YEAC	JOK:		1.47	$\dashv$
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Р	Y M	М	DESCRIPTION OF MATERIAL	SOII				Ħ	J.FT	WS		%	%
T	B	Р	DESCRIPTION OF WATERIAL	SOIL GROUP	,,	ن		IG	CC	31.0	_	S	R Q
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FT.	L	E S	SURFACE ELEVATION: 1376.5		PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
			SORFACE ELEVATION. 1370.3			0	111	Ω		4	<u></u>		
<u> </u>			Clay with Gravel	:									
<u> </u>			Clay Will Graver										
<u> </u>				1									
<u> </u>			LIMESTONE - Hard, Slightly Weathered, Gray										
5				_								84	60
<u> </u>	-		SHALE WITH OCCASIONAL LIMESTONE	1									
<u> </u>			LAYERS - Soft to Medium Hard, Highly	-									
<u> </u>	HIE		Weathered to Weathered, Dark Gray	-									
<u> </u>													
10												90	76
			LIMESTONE - Hard, Slightly Weathered, Gray										
15												امدا	06
10												96	86
├ -													
<b>├</b> -		-			1								
20	******		SANDSTONE WITH OCCASIONAL CLAY	1								100	80
-	******		LAYERS - Cemented, Slightly Weathered,	2									
<u> </u>			Gray										
<u> </u>	-		Boring Terminated										
<u>-</u> -	-			90									
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STATI			109+37 32' Right of Centerline		EQUIF	MEN	T: CM	1E 8:	50 w	/ CM	E A	utom	atic
1			racy Henderson		HAMN	IER C	ORRE	CTION	I FAC	TOR:		1.23	
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D		S											
E P T H	S Y M B O -	AMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
FT.	L	S	SURFACE ELEVATION: 1377.2		PLAST	1 %		DR	LB	NO	PE		
			Clay with Gravel										
5			LIMESTONE - Hard, Slightly Weathered, Gray										
			Soil Filled Cavity (5.0' to 8.7')									13	0
10			LIMESTONE - Hard, Slight Dip, Gray									98	87
			SANDSTONE WITH OCCASIONAL CLAY LAYERS - Calcareous, Cemented, Weathered, Gray								:	94	68
25			LIMESTONE - Hard, Slightly Weathered, Gray							:		88	62*
			Boring Terminated										
	]												
30													
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REM	IARK	S: *	Poor recovery due to catcher wearing out										