ARKANSAS DEPARTMENT OF TRANSPORTATION



STATE JOB NO.	BR2503	
FEDERAL AID PROJECT NO.	STPB-0025(15)	
	SPRING RIVER STR. & APPRS. (S)	
COUNTY ROAD NO.	CR 42	
IN	FULTON	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 STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

August 7, 2013

TO:

Mr. Carl Fuselier, Bridge Engineer

SUBJECT: Job No. BR2503

Spring River Str. & Apprs. (S)

County Road 42 **Fulton County**

Transmitted herewith is a brief summary of the geology and site conditions, unconfined compressive strength test results, D50 analysis test results, and logs of the borings conducted for the structures and approaches of the above referenced job. 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.

All interior bents will be founded on drilled shafts. Drilled shafts socketed a minimum of 10 feet into competent, gray, slightly weathered, hard dolostone with chert layers should be designed based on the values provided in Table 1.

TABLE 1 – Bearing Resistance Recommendation for Drilled Shafts

Nominal Shaft	Factored Shaft	Nominal Shaft	Factored Shaft
Side Resistance	Side Resistance	Tip Resistance	Tip Resistance
(ksf)	(ksf)	(ksf)	(ksf)
17.5	9.6	27.8	13.9
	Side Resistance (ksf)	Side Resistance (ksf) Side Resistance (ksf)	Side Resistance (ksf) Side Resistance (ksf) Tip Resistance (ksf)

It is anticipated that the end bents will be founded on trestle piles tipped in the competent, gray, slightly weathered, hard dolostone with chert layers.

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

Materials Engineer

MCB:rpt

State Construction Engineer - Master File Copy CC:

District 9 Engineer

GEOLOGY AND SITE CONDITIONS Job No. BR2530

Spring River Str. & Apprs. (S) Fulton County County Road 42

Site Conditions

The structure to be replaced is a narrow, one-lane, low water bridge located over the Spring River. The bridge is constructed of concrete with no guardrails. Parts of the deck have curbs showing extensive damage. The roadway turns sharply to the south, east of the bridge. A railroad track parallels the east side of roadway, east of the bridge. An overhead power line parallels the north side of the bridge and is buried east and west of the bridge. The east side of the Spring River is moderately to heavily wooded. The southwest bank of the river is lined with trees, with a residence a short distance beyond. There is a canoe rental business to the northwest of the bridge with close cut grasses. There is a moderately wooded island just to the south of the bridge, in the river.

Site Geology

The project alignment is located in the mapped outcrop of the Cotter/Jefferson City Formation undifferentiated (Ocjc). The Cotter Dolomite is composed of dolostone of predominantly two types: a fine-grained, argillaceous, earthy textured, relatively soft, white to buff or gray dolostone locally called "cotton rock", and a more massive, medium-grained, gray dolostone that weathers to a somewhat hackly surface texture and becomes dark on exposure. The formation contains chert, some minor beds of greenish shale, and occasional thin interbedded sandstone. Due to similarities in composition, there has been no success in differentiating the Cotter Formation from the Jefferson City Formation in Arkansas, although the contact is considered disconformable. The thickness is about 340 feet in the vicinity of Cotter, but the interval may range up to 500 feet thick in places. The depth to bedrock in borings ranges in depth from 6.0 to 15.5 feet below ground level. Elevations to the top of bedrock range from 354.3 to 357 feet above mean seal level.

Subsurface Conditions

Based on the results of the borings, the subsurface stratigraphy may be generalized as follows:

0 to 6.0 Feet:

Consists of moist, loose, brown clayey sand with gravel to moist to wet,

medium dense, brown sand with gravel (chert fragments) to gravel.

6.0 to 15.5 Feet:

Varies from moist, loose to very dense, brown sand with gravel to stiff, brown

sandy clay with gravel (chert fragments) to moderately hard, gray, slightly

weathered dolostone with frequent chert layers.

15.5 to 48.8 Feet:

Consists of moderately hard, gray, slightly weathered dolostone with frequent

chert layers. There are numerous vertical fractures.

Rock Core Unconfined Compression Test Summary

Project Number:

BR2503

Project Name:

SPRING RIVER STR. & APPRS.

Date Tested:

8/5/2013

Station	Location	Sample No.	Depth (ft)	Diameter (in)	Height (in)	Total Load (lbs)	Correction Factor	Stress (psi)	Remarks
102+88	C.L.	1	20.0	1.75	3.60	15,850	1.000	6590	
102+88	C.L.	2	30.5	1.75	3.60	38,880	1.000	16160	
104+17	C.L.	3	16.0	1.75	3.65	9,860	1.000	4100	
104+17	C.L.	4	24.0	1.75	3.80	10,520	1.000	4370	
104+98	C.L.	5	22.0	1.75	3.60	22,540	1.000	9370	
104+98	C.L.	6	31.0	1.75	3.65	22,840	1.000	9500	
106+94	C.L.	7	19.0	1.75	3.70	8,310	1.000	3460	
106+94	C.L.	8	28.0	1.75	3.80	13,120	1.000	5460	
		·							
		5				2			
	7 6								

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

D₅₀ AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

		Job No.	BR2503		
Creek Name	Station	Sample Type	Location	Depth (FT)	Aggregate Size (D50) (IN
Spring River	106+94	River Bank	5' Lt. C.L. Construction	NA	

ROCK MASS RATING SUMMARY JOB # BR2503

SAMPLE #1

Station/Location Depth (ft) Uniaxial Compressive Strength RQD Spacing of Joints Condition of Joints Groundwater Conditions Sum Class Number Description 102+88/CL 20 Relative Rating 4 8 8 9 8 20 67 7 7 9 Class Number Description III FAIR ROCK

SAMPLE #2

Station/Location [102+88/CL
Depth (ft)	30.5
	Relative Rating
Uniaxial Compressive Strength	12
RQD	13
Spacing of Joints	10
Condition of Joints	20
Groundwater Conditions	7
Sum	62
Class Number	U I
Description	GOOD ROCK

SAMPLE #3

SANIFL		_
Station/Location Depth (ft)	104+17/CL 16	
	Relative Rating	
Uniaxial Compressive Strength	4	
RQD	17	
Spacing of Joints	10	
Condition of Joints	20	
Groundwater Conditions	7	
Sum	58	
Class Number	III]	
Description	FAIR ROCK	

SAMPLE #4

Station/Location	104+17/CL
Depth (ft)	24
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	10
Condition of Joints	20
Groundwater Conditions	7
Sum	49
Class Number	III
Description	FAIR ROCK

SAMPLE #5

Station/Location Depth (ft)	104+98/CL 22	
	Relative Rating	
Uniaxial Compressive Strength	7	
RQD	17	
Spacing of Joints	10	
Condition of Joints	20	
Groundwater Conditions	7	
Sum	61	
Class Number	11	
Description	GOOD ROCK	

SAMPLE #6

SAIVIE	'LE 76
Station/Location Depth (ft)	104+98/CL 31
	Relative Rating
Uniaxial Compressive Strength	7
RQD	17
Spacing of Joints	10
Condition of Joints	20
Groundwater Conditions	7
Sum	61
Class Number	LI LI
Description	GOOD ROCK

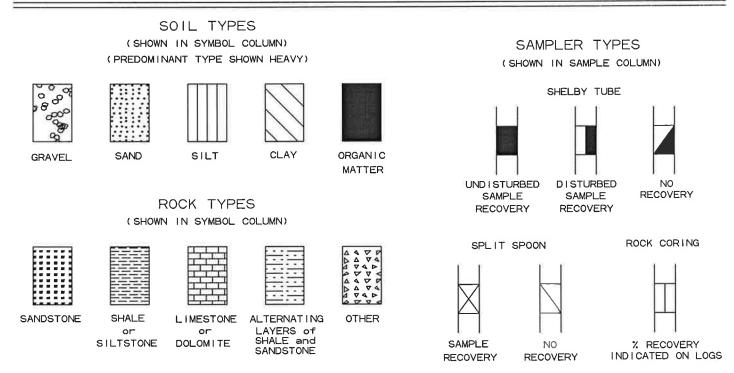
SAMPLE #7

Station/Location	106+94/CL
Depth (ft)	19
	Relative Rating
Jniaxial Compressive Strength	2
RQD	20
Spacing of Joints	10
Condition of Joints	20
Groundwater Conditions	7
Sum	59
Class Number	III
Description	FAIR ROCK

SAMPLE #8

Station/Location	106+94/CL	
Depth (ft)	28	- 1
	Relative Rating	
Uniaxial Compressive Strength	4	
RQD	20	- 1
Spacing of Joints	10	
Condition of Joints	12	
Groundwater Conditions	7	
Sum	53	
Class Number	iii	
Description	FAIR ROCK	

LEGEND



TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANU	LAR SOIL		CLAY	CLA	Y-SHALE	SHALE	
"N" Value	Density	'N' Value	Consistency	'N' Value	Consistency	'N' Value Consi	stency
0-4	Very Loose	0-1	Very Soft	0-1	Very Soft		
5-10	Loose	2-4	Soft	2-4	Soft	31-60 Sof	t
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'	
0ver 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetration	
		31-60	Hard	31-60	Hard	in 60 Blows: Med	lium Hard
		Over 60	Very Hard	0ver 60	Very Hard	Less than 2'	
						Penetration	
						in 60 Blows: Har	-d

- 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 (N₆₀) can be obtained by multiplying N_f by the hammer correction factor published on the boring log.

	_		HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE	IG N		F 2					
JOB N			BR2503 Fulton County		DATE:			July		16, 20			
JOB N	AME:		Spring River Str. & Apprs.		TYPE C	F DR	ILLING	i: E				Auger oring	
STATI	ON		County Road No. 42 102+21		EQUIPN	/FNT	`.	CN		350 v		_	
LOCA			Center Line of Construction		LQUIT	VII.	•			atic I			
			David Allen		HAMM	ER C	ORREC	TION	FAC	TOR:		1.29	
COM	PLET	10I	N DEPTH: 48.8										
D	S	S											
E P	Υ	A M	DECODIDATION OF MATERIAL						FT.	WS		%	%
T	M B	Р	DESCRIPTION OF MATERIAL	SOIL GROU	P	ی ا		HSI:	CO	31.0	:	S C	R Q
н	0	L			1≌	% MOIST		DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	D
FT,	L	S	SURFACE ELEVATION: 372.5		PLAST LIMIT	% W	LIQUID	DRY	LBS	NO.	PER		
	1.7.7	П											
5			Moist. Loose, Brown Clayey Sand							3			
		\triangle								3-	4		
- =													
10			9										
10	10	X								4.	6 -5		
			Moist, Stiff, Brown Sandy Clay with Gravel (Chert							'			
	18		Fragments) *										
	8		,										
15	× 35	=	Wet, Very Dense, Brown Sand with Gravel							6			
=	斑	Т	(Chert Fragments)							l 6	3") 30		
==	盎		DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Medium Bedded, Slightly							(.0	1")	90	84
	盎		Weathered, Hard, with Slight Dip **										
20	햞												
20	癍		DOLOSTONE WITH FREQUENT CHERT										
	辯		LAYERS - Gray, Very Thick Bedded, Slightly									100	98
	譺		Weathered, Hard, with Slight Dip										
	躃												
25	蟲		DOLOSTONE WITH FREQUENT CHERT										
	斑		LAYERS - Gray, Very Thick Bedded, Slightly									100	95
	盘		Weathered, Hard, with Slight Dip and Vertically									00	55
	莊		Fractured Layer										
	辯	\dagger		1									
30	斑		DOLOSTONE WITH FREQUENT CHERT										
===	翽		LAYERS - Gray, Very Thick Bedded, Slightly									100	94
	鼦		Weathered, Hard, with Slight Dip										
	盬												
35	盥												
REM	ARK	S:	* A water stratum was encountered at 14.2'. ** Tota	water	loss w	as e	encou	inter	ed a	at 15	.9'.		

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MAT	ERIA		DIVISION - GEOTECHNICAL SEC.		PAGE	2	0	F 2					
JOB N			BR2503 Fulton County		DATE:					16, 20			
JOB N	IAME:		Spring River Str. & Apprs:		TYPE O	F DR	ILLING	i: H				Auger	
STAT	IONI.		County Road No. 42 102+21		EQUIPM	יין אינויי		CN		350 v		_	١
LOCA			Center Line of Construction		EQUIL	TEIV.				atic I			
			David Allen		HAMMI	ER CO	ORREC					1.29	
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	0 L	Е			PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT,	NO. OF BLCWS	PER 6-IN.		
FT.	-	S	SURFACE ELEVATION: 372.5		I II	%	33	Ĭ	LF	ž	PF		-
	鼯											100	92
	斑		SOLOOTONE WITH EDECHENT CHEDT										Ĭ-
	莊		DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Thick Bedded, Slightly										
 40	斑		Weathered, Hard, with Slight Dip										
40	辯												
												100	74
	盘												
	斑												
45			DOLOSTONE WITH FREQUENT CHERT										
	辯持		LAYERS - Gray, Thick Bedded, Slightly										
			Weathered, Hard, with Slight Dip with Fractured									98	72
	辯		Layers			i							
	进出		P. '. T. '. t. I		-			_					-
50			Boring Terminated										
55													
-													
60	1												
65													
	-												
	-												
70		_	A water stratum was encountered at 14.2'. ** Total							. 45	OI.		_

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JOB N		_	DIVISION - GEOTECHNICAL SEC. BR2503 Fulton County		PAGE DATE:		0		lv 16	, 201	3		-
JOB N			Spring River Str. & Apprs.		TYPE O	F DR	ILLINO		-			Luger	. &
JODIN	(AlVID.		County Road No. 42		TILEO					amor			
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		_	David Allen		HAMM	ER C	ORREC	TION	FAC	TOR:		1.29	
COM	PLET	CIOI	N DEPTH: 40.7			_		_			_		_
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FT.	Ľ	E S	OUDEAGE ELEVATIONS 2000		PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER (
E LS	11.50	3	SURFACE ELEVATION: 366.9			%	ココ		7	Z	Ъ		-
	199												
										3			
5		X	Moist, Loose, Brown Clayey Sand							2-			
	111		*										
	111												
			4										
 10	100	<u></u>	Moist, Very Dense, Gray and Brown Clayey							6	0		
10			Sand with Gravel (Chert Fragments)							(4	")		
	盎		DOLOSTONE WITH FREQUENT CHERT							6 (.0	0 1")		
	辯		LAYERS - Gray, Medium Bedded, Slightly							,	<i>'</i>	88	22
	鰦	+	Weathered, Hard, with Slight Dip and Fractured \Layers										
15	岛												
10	辯		DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Thick Bedded, Slightly									100	98
	出		Weathered, Hard, with Slight Dip										V
	辯												
	曲出												
20	部		DOLOSTONE WITH FREQUENT CHERT										
	盛		LAYERS - Gray, Thick Bedded, Slightly									96	64
	饝		Weathered, Hard, with Moderate Dip and										
	白色		Fractured Layers										
:-	協												
25	斑斑		DOLOSTONE WITH FREQUENT CHERT										
	斑		LAYERS - Gray, Thin Bedded, Slightly									100	0
11/	蓝		Weathered, Hard, with Moderate Dip and										
	部		frequent Fractured Layers										
		+	31										
30	莊		DOLOSTONE WITH FREQUENT CHERT										
	盟		LAYERS - Gray, Thick Bedded, Slightly			-						100	86
	辯		Weathered, Hard, with Slight Dip										
	盘出												
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JOB N	_		BR2503 Fulton County	$\overline{}$	DATE:		. 01		16	, 201	3		
	NAME:		Spring River Str. & Apprs.		ТҮРЕ О	F DR	ILLING		ollo	w St	em A		
			County Road No. 42						Dia	amor	nd Co	oring	5
STAT	ION:		102+88		EQUIPM	1ENT	:			50 v			
	MOITA		Center Line of Construction							atic I			
-			David Allen		HAMMI	ER CO	ORREC'	TION I	FAC.	ror:		1.29	
-	IPLE7		N DEPTH: 40.7	T		_	_		_		_		
D E P T	S Y M	S A M P	DESCRIPTION OF MATERIAL	SOIL		. 40		IGHT	CU.FT.	TOWS		% S C	% K Q
H FT⊭	B O L	L E S	SURFACE ELEVATION: 366.9	GROOT	PLASTIC LIMIT	% MOIST	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	Ď
			DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip and Fractured		*3							100	46
40			Layers DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Medium Bedded, Weathered, Vuggy, Hard, with Slight Dip and frequent									100	20
			Fractured Layers Boring Terminated										
45													
-	-												
50													
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55													
60	-												
65													
70													

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JOB N			BR2503 Fulton County		DATE:			Jul		7, 201			
JOB N	IAME:		Spring River Str. & Apprs.		TYPE O	F DR	ILLING	i: I					
			County Road No. 42					~-		amor		_	
STAT			104+17		EQUIPN	IENT	`:			350 w atic I			
LOCA			Center Line of Construction David Allen		HAMMI	ER C	ORREC					1.29	
		_	N DEPTH: 37		117 (1411)	DIC C.	ordese	11011	1110	1010		-1,-2	
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T H	В	P L		GROUP	1 🖺	ST.		Œ	SR C	BL	Ä	C R	Q D
	O L	E			PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	K	ט
FT.		S	SURFACE ELEVATION: 362.3		E E	%	HH	E E	LB	ž	PE		
	600 800 800 800 800 800 800 800 800 800		Moist, Medium Dense, Brown Sand with Gravel (Chert Fragments)										
	80.6												
 5	0 . po		Wet, Medium Dense, Brown Sand with Gravel							7	,		
	50.5	X	(Chert Fragments) *							7-	9		
		Т	DOLOSTONE - Gray, Hard DOLOSTONE WITH FREQUENT CHERT							6	0	100	57
	进出		LAYERS - Gray, Medium Bedded, Weathered,							(.0	1")		
	蹺		Hard, with Moderate Dip DOLOSTONE WITH FREQUENT CHERT										
10	部	.	LAYERS - Gray, Medium Bedded, Slightly									100	52
	盘		Weathered, Hard, with Moderate Dip and										
	辯		Fractured Layers										_
	辯		DOLOSTONE WITH FREQUENT CHERT										
	斑		LAYERS - Gray, Thick Bedded, Slightly									100	71
15	盘		Weathered, Hard, with Moderate Dip and									100	14
	辯		occasional Fractured Layers										
	闘	-		1									-
<u> </u>	臨		DOLOGIOUS WITH EDECLICAT OF FOT										
20	部		DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Medium Bedded, Slightly									100	72
20	斑斑		Weathered, Hard, with Slight Dip										
	鹽												
	臨			1									
	辯		DOLOSTONE WITH FREQUENT CHERT										
25	開始		LAYERS - Gray, Thick Bedded, Slightly									100	60
	臨		Weathered, Hard, with Moderate Dip and frequent Fractured Layers										
	斑												
	開												
	翩		DOLOSTONE WITH FREQUENT CHERT										
30	辯		LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Moderate Dip and									100	28
	題		frequent Fractured Layers										
	辟			-									
	題												
	鼯		DOLOSTONE WITH FREQUENT CHERT									100	06
35	莊安		LAYERS - Gray, Thick Bedded, Slightly			_		1	_	_		100	90
REM	1ARK	S:	* A water stratum was encountered at 2.7'.										

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JOB N	_		BR2503 Fulton County		DATE:		. 0.		17,	, 201	3		\neg
JOB N	AME:		Spring River Str. & Apprs.		түре о	F DR	ILLING			w Ste			
STATI	ON		County Road No. 42 104+17		EQUIPM	ENIT				amon 50 w			
LOCA			Center Line of Construction		EQUIIN	ICIVI				atic I			
			David Allen		HAMMI	ER CO	ORREC	TION F	ACT	ror:		1.29	
	PLET	$\overline{}$	N DEPTH: 37			_			_		_		_
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E P	Y M	М	DESCRIPTION OF MATERIAL	SOIL				Ħ	J.FT.	SM(% S	% R
T H	В	P L		GROU	ာ ၂၀	ST		EIGI	RCI	BLC	ż	C	Q
	O L	Е			PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	R	D
FT.		S	SURFACE ELEVATION: 362.3		E E	[%	ZI CI	DR	E.B	N N	PE		_
			Weathered, Hard, with Slight Dip										
		_	Boring Terminated	-					-				-
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	ARK	S:	* A water stratum was encountered at 2.7'.										

			HWY. & TRANS. DEPARTMENT		BORIN								
			DIVISION - GEOTECHNICAL SEC. BR2503 Fulton County		PAGE		0	F 2	17	, 201	2		
JOB N JOB N		:	BR2503 Fulton County Spring River Str. & Apprs. County Road No. 42		DATE: TYPE C	F DR	ILLING		Iollo	-	em A		
STATI			104+98 Center Line of Construction		EQUIPN	/ENT	:			350 w atic I			
LOGG	ED B	Y: [David Allen		HAMM	ER C	ORREC	TION	FAC	TOR:		1.29	
	PLEI		N DEPTH: 43		Т		_		_				
D E P T H FT	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 366.7	SOIL GROUI	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D
1 15	6.896 : S	Ŭ	SURFACE ELEVATION. 300.7		1 2 2	9					Ь		_
5	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	X	Moist, Medium Dense, Brown Sand with Gravel (Chert Fragments)							7-			
10	**************************************		Wet, Very Dense, Brown Sand with Gravel (White Chert Fragments) and Trace of Gray Clay DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Medium Bedded, Weathered, Moderately Hard, with Moderate Dip and Fractured Layers DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Thin Bedded, Weathered, Moderately Hard, with Moderate Dip and Fractured Layers							60 (4 60 (.0°	") O 1")	100	
20			DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip									100	100
25 — –			DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip									100	80
30			DOLOSTONE WITH FREQUENT CHERT LAYERS - Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip									98	94
35 REM	ARK	S:											

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE			г 2					
JOB N	_		BR2503 Fulton County		DATE:				y 17	, 201	13		
JOB N	AME:		Spring River Str. & Apprs.		ТҮРЕ О	F DR	ILLING		Iollo	w St	em A		
			County Road No. 42									oring	;
STATI			104+98		EQUIPN	IENT	`:			350 v			
LOCA			Center Line of Construction David Allen		** > 6	en e	00000			atic l	Ham	mer 1.29	
	_		N DEPTH: 43		HAMMI	ER C	ORREC	HON	FAC	TOR:		1.29	_
D		S	VDEI III. 43					Г		_			
E	S Y	A							e Ci				
P	M	M	DESCRIPTION OF MATERIAL	SOIL				H	U.FJ	SMC		% S	% R
T H	В	P L		GROUI) <u></u>	ST.		EIG	R.C	BL	ż	C	Q
l ''	0	E			PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	D
FT.	L	S	SURFACE ELEVATION: 366.7		PL/	1%	125	DR	LB	NO	PEI		
	斑		DOLOSTONE WITH FREQUENT CHERT									100	80
	斑		LAYERS - Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip and occasional										
			Fractured Layers										
	蕸												
40	辯		DOLOSTONE WITH FREQUENT CHERT										
	螆		LAYERS - Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip									100	88
	斑		Weathered, Hard, With Olight Dip										
	11111	1	Boring Terminated			_			_				
— – 45			Borning Terminated										
45													
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60													
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70	A D'												
REM.	ARK	S:											

			HWY. & TRANS. DEPARTMENT		BORIN PAGE			F 2					
_		<u> </u>	DIVISION - GEOTECHNICAL SEC. BR2503 Fulton County				0		1, 2/	1, 20	1 2		
JOB N JOB N			BR2503 Fulton County Spring River Str. & Apprs.		DATE: TYPE O	E IJD	II I INC		-			A 110e1	· &-
JOBIN	MAIVIE,		County Road No. 42		TIFEO	r DK	ILLIINC	J. I				oring	
STAT	IONI		106+94		EQUIPN	A ENIT	٠.	CI		350 v		_	
LOCA			Center Line of Construction		EQUIFN	IENI	•			atic]			
			David Allen		HAMMI	R C	ORREC					1.29	
		_	N DEPTH: 39.2		117 61411417	JI C	Oldice	1101	1710	TOR		1127	
	LL	s	(DEI 111. 3).2										-
D E	S	A			1								
P	Y	М	DESCRIPTION OF MATERIAL					H	FT.	WS		%	%
Т	M B	Р	DESCRIPTION OF MATERIAL	SOIL Group		1,343		[EB]	CU	OT		S C	R Q
Н	0	L		GROOI	1 \	IST	le.	WE	ER	F B	Ä	R	D
	L	E			PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
FT		S	SURFACE ELEVATION: 361.2			%	33	ā	Li	ž	PI		
	89 8 88 8												
	8 0 8 0												
	900		Gravel										
5	0 8		58										
	0 & 0 00												
	- a												
			DOLOSTONE - Gray, Moderately Hard										
	拼车		DOLOSTONE WITH FREQUENT CHERT	e.						6 (.0	0 1"\	98	77
10		-	LAYERS - Gray, Medium Bedded, Slightly							(.0	' '		
10	开码		Weathered, Moderately Hard, with Slight Dip	9									
= =	田田											_	00
	出出											98	92
	盘盘		DOLOSTONE WITH FREQUENT CHERT										
	斑斑		LAYERS - Gray, Thick Bedded, Slightly										
15	田田		Weathered, Hard, with Slight Dip										
	斑斑		, roamona, riana, riin angin anp										
	開				1							98	88
	開発												
	斑茫												
20	曲台			i									
	部												
_	莊											100	92
	鼮												۷_
	群		DOLOSTONE WITH FREQUENT CHERT										
 25	斑	H	LAYERS - Gray, Very Thick Bedded, Slightly										
_25	遊		Weathered, Hard, with Slight Dip										
	部部												^^
	部語											98	88
	岛岛												
	出出												
30	盘長												
	盘岩		DOLOSTONE WITH FREQUENT CHERT										
	莊莊		LAYERS - Gray, Very Thick Bedded, Slightly									100	90
	斑症		Weathered, Hard, with Slight Dip and occasional Fractured Layers										
	斑莊		i ractured Layers										
 35	出品	+											
REM	ARK	s.						4					
		- .											

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JOB N			BR2503 Fulton County		DATE:		. 0		v 24	, 201	3		=
JOB N			Spring River Str. & Apprs.		DATE: TYPE O	F DP	ILLING		-			Auger	r &.
JOBA	AIVIL.		County Road No. 42		THEO	I DK	ILLIIYC	. 11				oring	
STATI	ON:		106+94		EQUIPM	IENT	٠.	CN		350 v		_	
LOCA			Center Line of Construction		DQUII.	127.12	•			atic I			
			David Allen		HAMMI	ER CO	ORREC	TION	FAC'	TOR:		1.29	
			N DEPTH: 39.2										
D		S											
E	S Y	Ā							. 8				
Р	M	М	DESCRIPTION OF MATERIAL	SOIL				H	J.FJ	W.S		% S	% R
T	В	Ρ		GROUF	0	Η,		EIG	CC	BL(ァ	C	Q
Н	0	E			STI	OIS		[Ã	PEI	OF	(I-9	R	D
FT _e	L	S	SURFACE ELEVATION: 361.2		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.		
	莊	Т	DOLOSTONE WITH FREQUENT CHERT										
	描述		LAYERS - Gray, Medium Bedded, Slightly									100	90
			Weathered, Hard, with Slight Dip and occasional									100	00
\vdash	斑		Fractured Layers										
40	11111		Boring Terminated										
			John Grommand										
45													
50													
55													
60													
			,										
65													
70													
REM	ARK	S:											

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE	G N		F 2					
JOB N			BR2503 Fulton County		DATE:		. 0		v 23	, 201	3		
JOB N			Spring River Str. & Apprs.		ТҮРЕ О	F DR	ILLING		•			ugei	· &
l vob i			County Road No. 42							amor			
STAT	ION:		107+75		EQUIPN	1ENT	:	CN	ME 8	350 w	/ CN	Æ	
LOCA		;	Center Line of Construction					Au	tom	atic I	lamr	ner	- 1
			David Allen		HAMMI	ER C	ORREC	TION	FAC	TOR:		1.29	
COM	PLET	(Ol	N DEPTH: 48.7										
D		S											
E	S	Α							П	S		%	%
Р	I ѝ I	M	DESCRIPTION OF MATERIAL	SOIL				HT	U.F	M C		S	R R
Τ H	В	Р		GROUI) ြ	Į.		EIG	RC	BL	z	C	Q
п	0	L E			STI	Sign		🔉	PE	OF	I-9	R	D
FT.	L	S	SURFACE ELEVATION: 370.3		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		.01
	1111					Ť							
	333												
			Moist. Loose, Brown Clayey Sand										
5		\vee							,A	3-			- 1
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	1.1.1.												
	777												- 1
	8 0 0		Gravel										
10	960 960 960									7			
	0	\triangle								10	-9		
	. ф Э		Wet, Medium Dense, Brown Sand with Gravel										
	£00.6		(Dolostone Fragments) *										
	°. ⊳b.												
15	30:00		Wet, Very Dense, Brown Sand with Gravel		d l					60	,		
		Т	(Dolostone Fragments)							(1 ¹	")		
	莊莊		DOLOSTONE WITH FREQUENT CHERT							(.07	í")	.	-,
			LAYERS - Gray, Medium Bedded, Slightly									98	76
	莊		Weathered, Hard, with Slight Dip								ļ		
20	斑芒												
20	辯持												
—: -	拼辞											100	70
	莊莊		DOLOSTONE WITH FREQUENT CHERT										
	部部	\vdash	LAYERS - Gray, Thick Bedded, Slightly										
25	部		Weathered, Hard, with Slight Dip										
												100	90
												.50	ا "
	岛												
		-											-
30	进												
	茁芸											100	₅ ,
	部											100	J4
	莊												
	語語												
35	盛												
	ARK	S:	* A water stratum was encountered at 9.1'.				-						

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE	G No		F 2					
JOB N			BR2503 Fulton County		DATE:		. 0		v 23	, 201	3		
JOB N			Spring River Str. & Apprs.		TYPE O	F DR	ILLING		-			Augei	r &
			County Road No. 42									oring	
STAT	ON:		107+75		EQUIPN	1ENT	:			350 v			
LOCA			Center Line of Construction							atic l			
			David Allen		HAMM	ER CO	ORREC	TION	FAC'	TOR:		1.29	
	PLET		N DEPTH: 48.7		_	r -	_						
D E	s	S A											
P	Y	м	DESCRIPTION OF MATERIAL						FT.	WS		%	%
Т	M B	Р	DESCRIPTION OF WATERIAL	SOIL GROUI	,	ی ا		IGH	CO	31.0	۰	S C	R Q
Н	O	L E			1 🖺	SIC	E L	WE	PER	OF I	W-9	R	Ď
FT.	L		SURFACE ELEVATION: 370.3		PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
	拼迁	Т	CONTINUE ELEVITION. CONC		+	-		_	_				
												100	40
	跷		DOLOSTONE WITH FREQUENT CHERT										
	镃		LAYERS - Gray, Medium Bedded, Slightly										
40			Weathered, Hard, with Slight Dip and occasional										
	辯		Fractured Layers										
												100	48
		1											
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70 REM		<u>ب</u>	A water stratum was encountered at 9.1'.			_							