

PROJECT: BP8.R004 REFERENCE: BP8.R004

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY MOORE COUNTY
PROJECT DESCRIPTION BRIDGE NO. 620047 OVER BIG GOVERNORS CREEK BETWEEN ON SR 1658 (WADSWORTH ROAD)
SITE DESCRIPTION BRIDGE ON SR 1658 OVER BIG GOVERNORS CREEK BETWEEN SR 1659 & SR 1625

CONTENTS

Table with 2 columns: SHEET NO. and DESCRIPTION. Rows include Title Sheet, Legend (Soil & Rock), Site Plan, Profile, Cross Sections, Boring Logs, Lab Results, and Site Photos.

Table with 4 columns: STATE, STATE PROJECT REFERENCE NO., SHEET NO., TOTAL SHEETS. Values: N.C., BP8.R004, 1, 1.

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT.

- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

STEWART ENGINEERING

CAROLINA DRILLING

P. FALLON

E. CREECH

INVESTIGATED BY RK&K, LLP

DRAWN BY B. FARMER

CHECKED BY M. SWEITZER

SUBMITTED BY RK&K, LLP

DATE JULY 2023



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DocuSigned by:

Gregory Goins

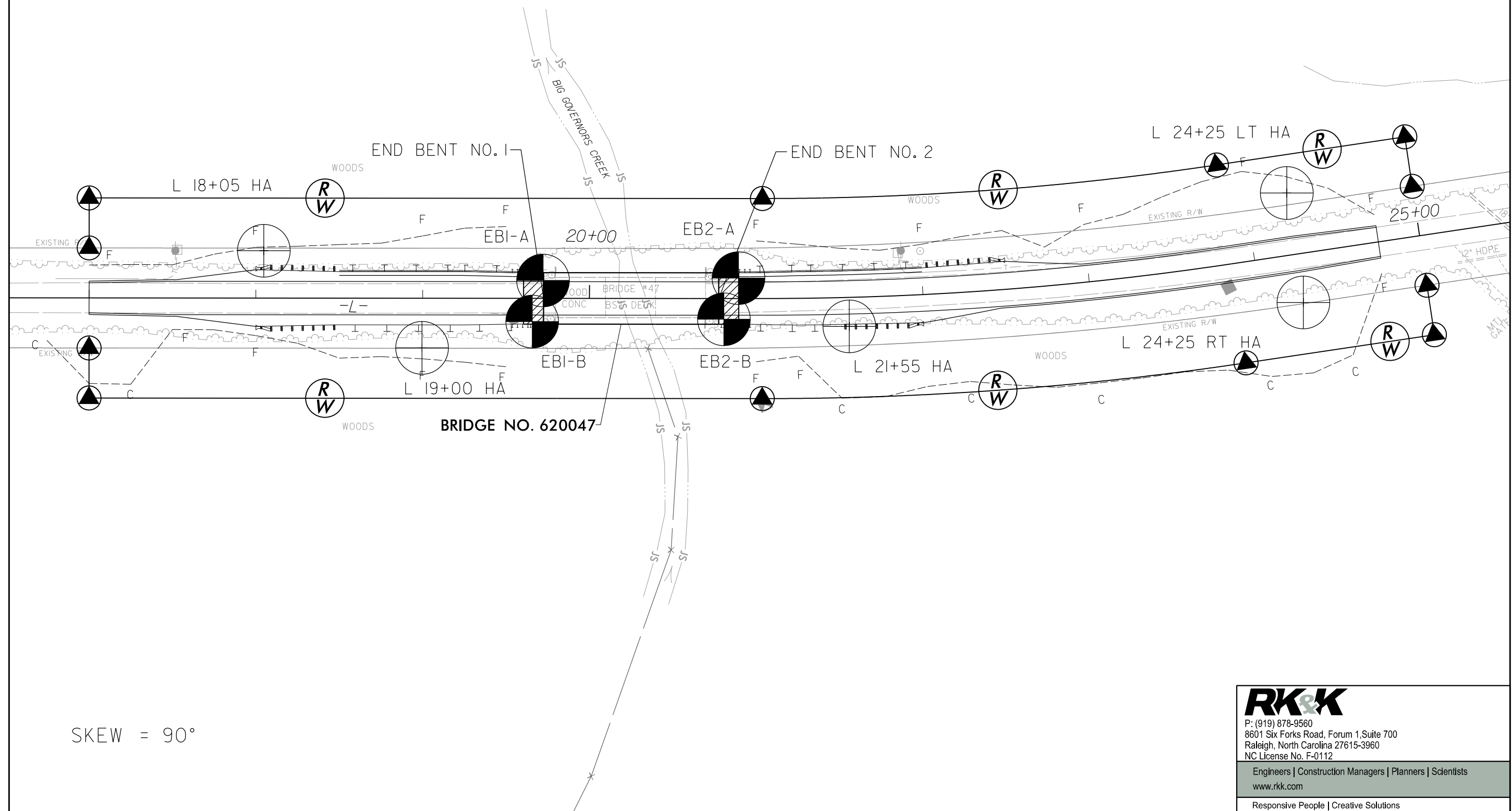
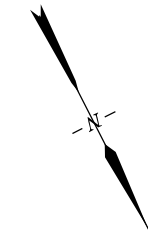
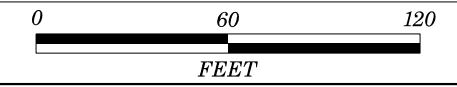
7/10/2023

A40B119A1E838A SIGNATURE

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SITE PLAN

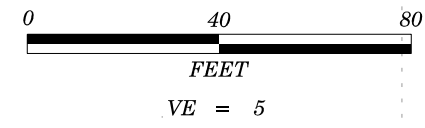


SKEW = 90°

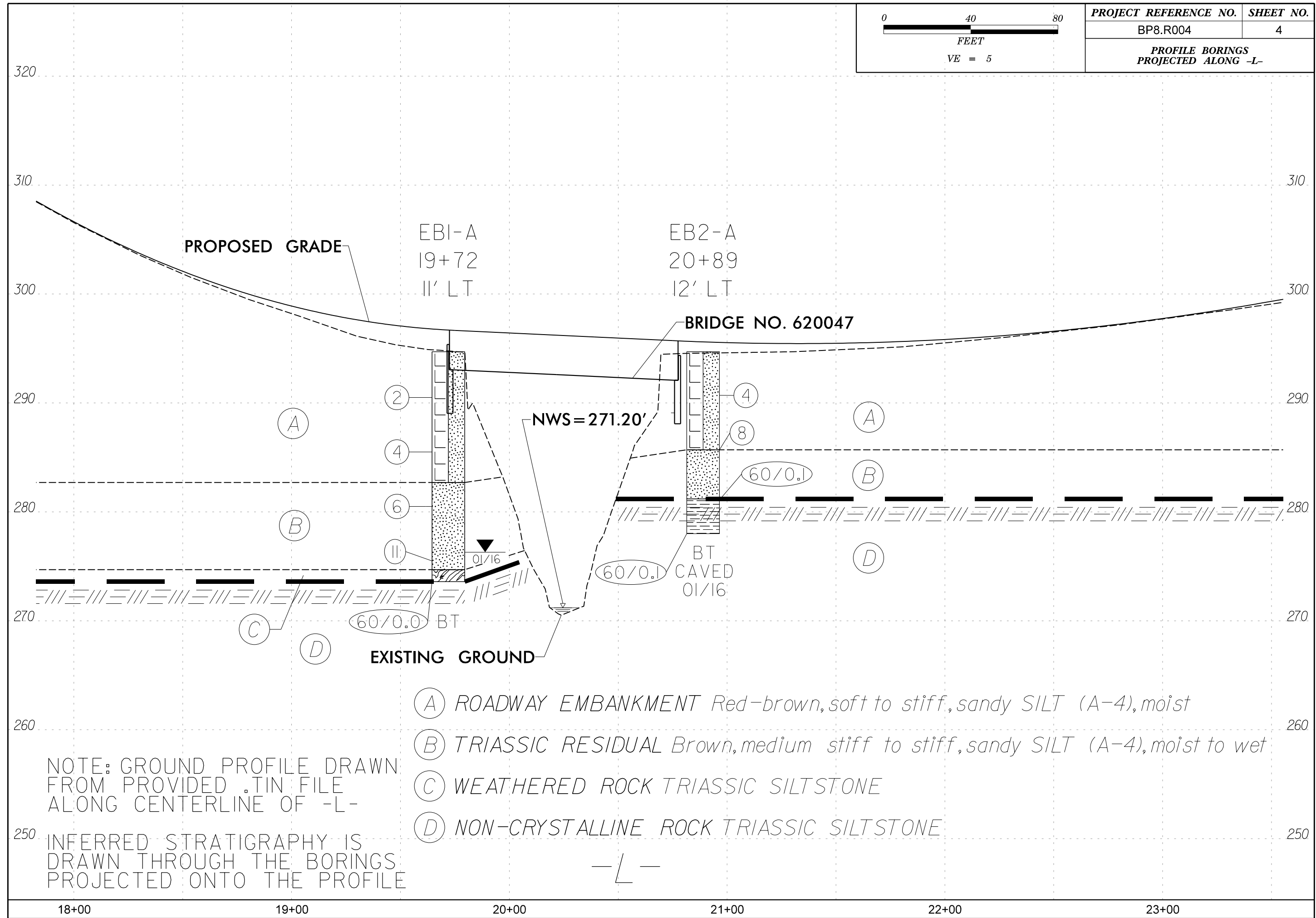
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 Raleigh, North Carolina 27615-3960
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PROJECT REFERENCE NO.	SHEET NO.
BP8.R004	4
PROFILE BORINGS PROJECTED ALONG -L-	



- (A) ROADWAY EMBANKMENT Red-brown, soft to stiff, sandy SILT (A-4), moist
- (B) TRIASSIC RESIDUAL Brown, medium stiff to stiff, sandy SILT (A-4), moist to wet
- (C) WEATHERED ROCK TRIASSIC SILTSTONE
- (D) NON-CRYSTALLINE ROCK TRIASSIC SILTSTONE

NOTE: GROUND PROFILE DRAWN FROM PROVIDED .TIN FILE ALONG CENTERLINE OF -L-

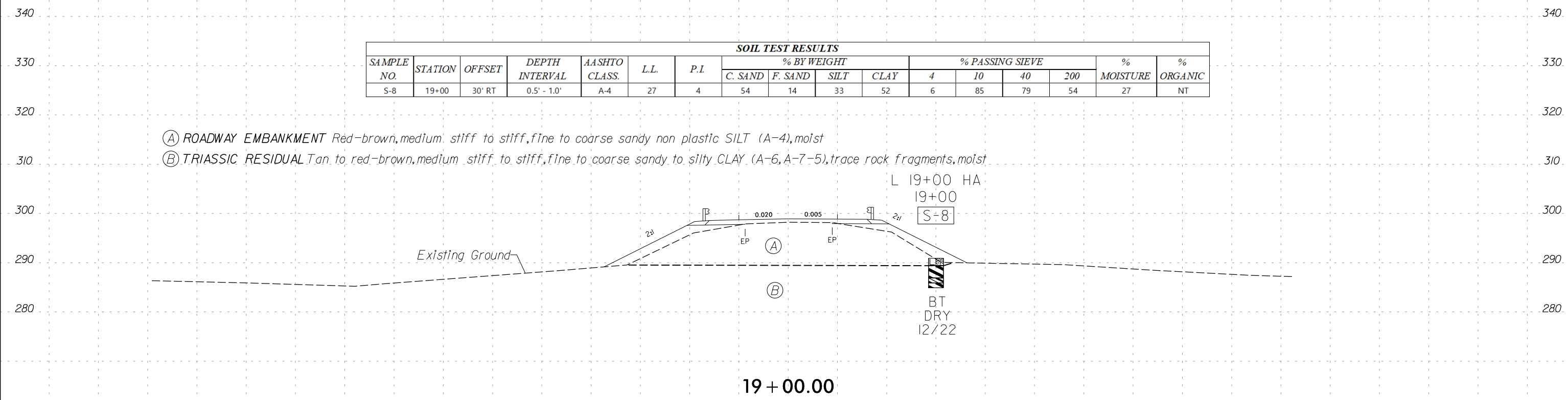
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS PROJECTED ONTO THE PROFILE

-L-

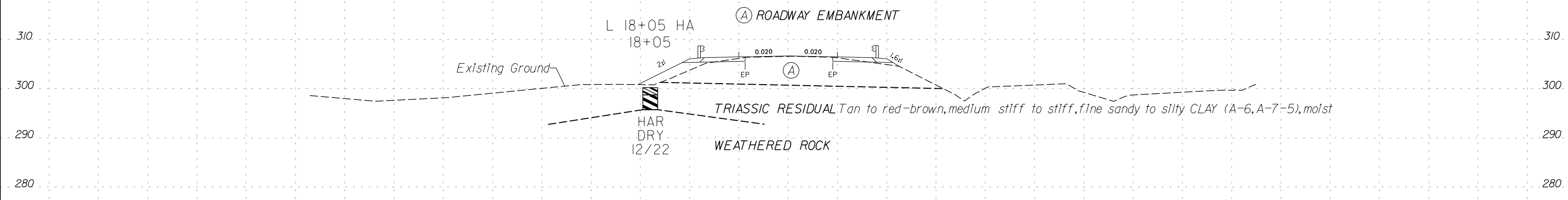
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SOIL TEST RESULTS																
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVE				% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	4	10	40	200		
S-8	19+00	30' RT	0.5' - 1.0'	A-4	27	4	54	14	33	52	6	85	79	54	27	NT

- Ⓐ ROADWAY EMBANKMENT Red-brown, medium stiff to stiff, fine to coarse sandy non plastic SILT (A-4), moist
- Ⓑ TRIASSIC RESIDUAL Tan to red-brown, medium stiff to stiff, fine to coarse sandy to silty CLAY (A-6, A-7-5), trace rock fragments, moist

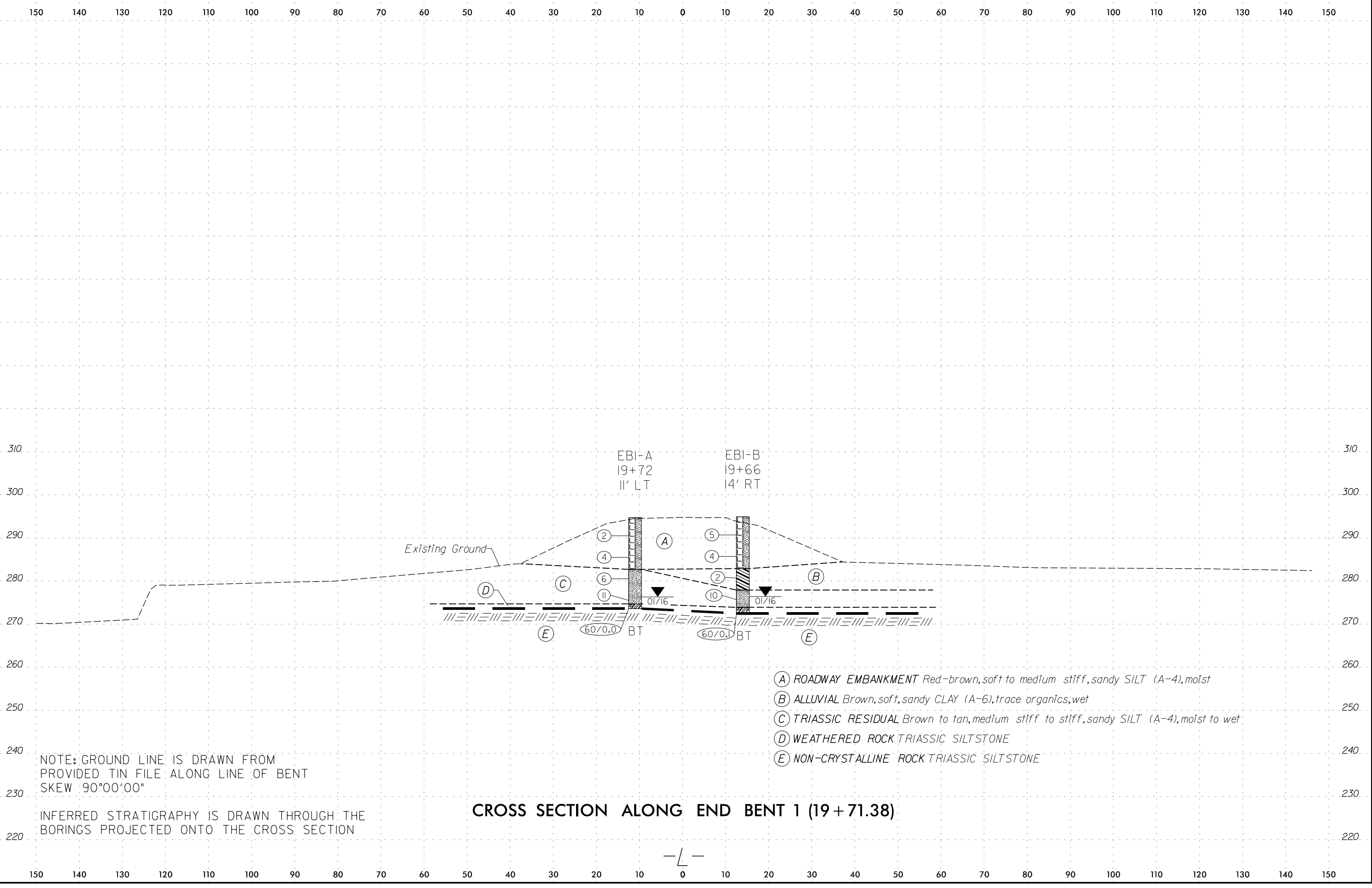


19 + 00.00



18 + 00.00

6/23/16



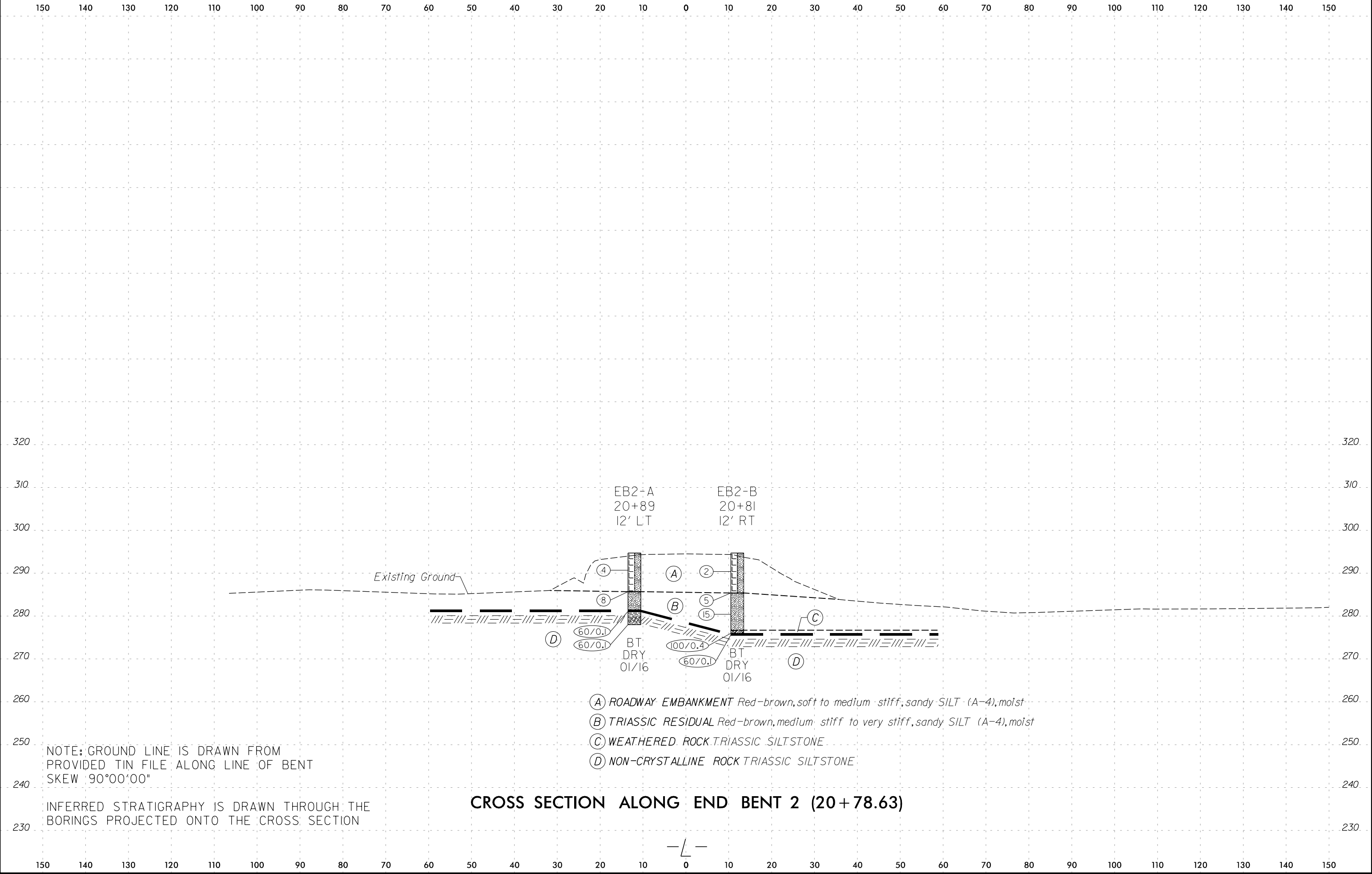
- (A) ROADWAY EMBANKMENT Red-brown, soft to medium stiff, sandy SILT (A-4), moist
- (B) ALLUVIAL Brown, soft, sandy CLAY (A-6), trace organics, wet
- (C) TRIASSIC RESIDUAL Brown to tan, medium stiff to stiff, sandy SILT (A-4), moist to wet
- (D) WEATHERED ROCK TRIASSIC SILTSTONE
- (E) NON-CRYSTALLINE ROCK TRIASSIC SILTSTONE

CROSS SECTION ALONG END BENT 1 (19+71.38)

NOTE: GROUND LINE IS DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT SKEW 90°00'00"

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS PROJECTED ONTO THE CROSS SECTION

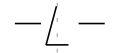
6/19/2023
P:\GEO\TECH\CADD_GEO\TECH\620047_GEO_XSI_BRIDGE.dgn
Bjerner



NOTE: GROUND LINE IS DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT SKEW 90°00'00"

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS PROJECTED ONTO THE CROSS SECTION

CROSS SECTION ALONG END BENT 2 (20+78.63)



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

340 340

330 330

SOIL TEST RESULTS																
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVE				% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	4	10	40	200		
S-1	24+25	37 LT	0.5' - 1.0'	A-4	27	7	26	19	52	3	8	10	73	54	19	NT

(A) TRIASSIC RESIDUAL Tan to red-brown, medium stiff to stiff, coarse to fine sandy SILT (A-4), trace to some rock fragments, moist

320 320

310 310

300 300

290 290

280 280

270 270

320 320

310 310

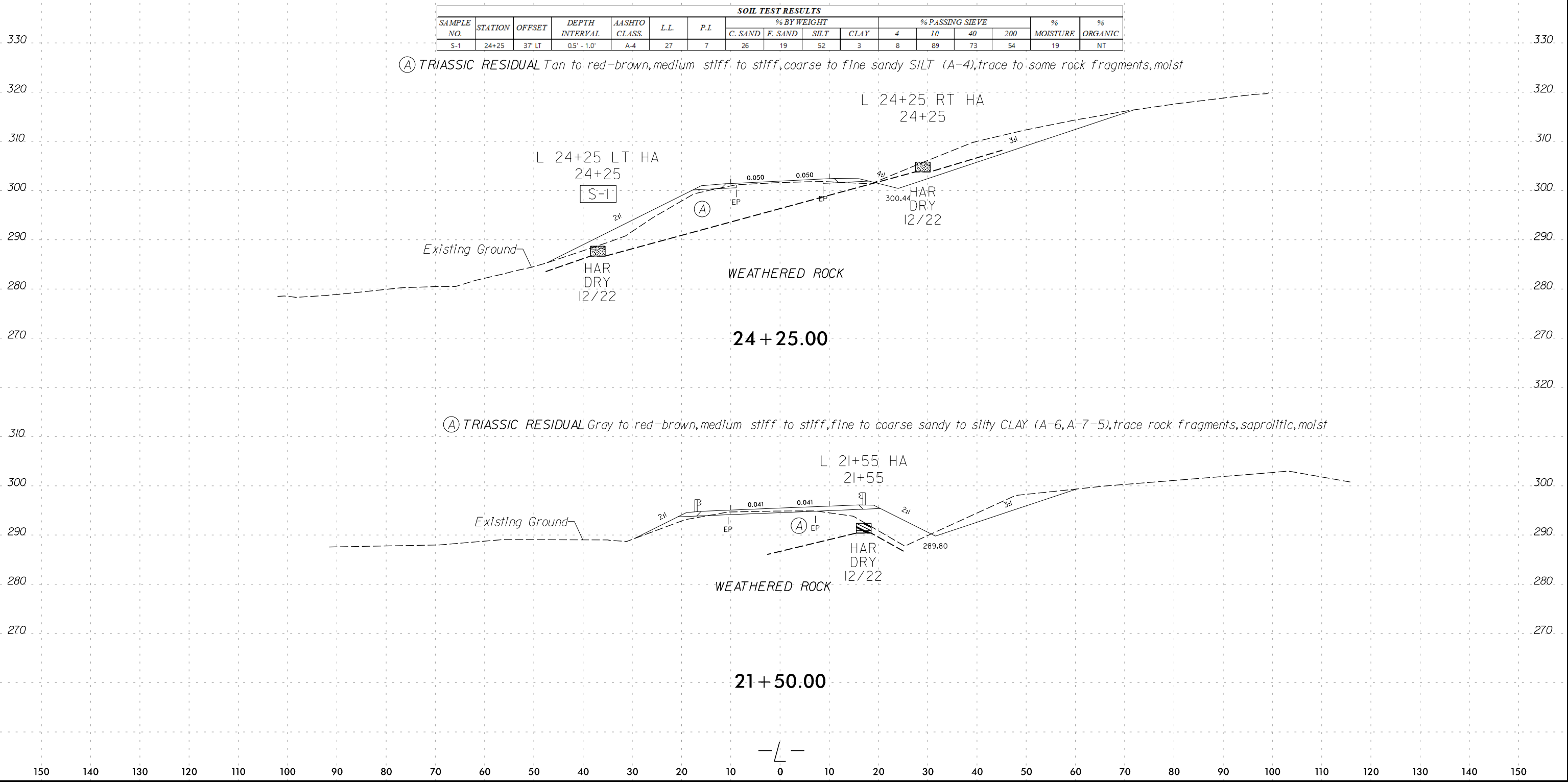
300 300

290 290

280 280

270 270

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R004.1		TIP N/A		COUNTY MOORE		GEOLOGIST E. Mayr, PE										
SITE DESCRIPTION Bridge on SR 1658 over Big Governors Creek between SR 1659 & SR 1625							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 19+72		OFFSET 11 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 294.7 ft		TOTAL DEPTH 21.1 ft		NORTHING 607,846		EASTING 1,898,772										
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 79% 06/03/2015			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER M. Radford		START DATE 01/27/16		COMP. DATE 01/27/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
295														294.7	GROUND SURFACE	0.0
	291.5	3.2	2	1	1							M			ROADWAY EMBANKMENT Red-brown, sandy SILT (A-4)	
290																
	286.5	8.2	2	2	2							M				
285																
	281.5	13.2	2	3	3							W		282.7	TRIASSIC RESIDUAL Brown, sandy SILT (A-4)	12.0
280																
	276.5	18.2	5	5	6							W		274.7	WEATHERED ROCK TRIASSIC SILTSTONE	20.0
275												W		273.6	WEATHERED ROCK TRIASSIC SILTSTONE	21.1
	273.6	21.1	60/0.0			60/0.0										

Boring Terminated with Standard Penetration Test Refusal at Elevation 273.6 ft on Non-Crystalline Rock (TRIASSIC SILTSTONE)

NOTES:
BORING DRILLED IN 2016 UNDER B-5745
ELEVATION UPDATED 12/2022

Borings were surveyed by Stewart Engineering at the time of drilling using 100' as a temporary benchmark elevation. Final collar elevation based on updated benchmark surveyed by RK&K using survey grade GPS unit on 4/25/2023 with applied elevation correction from the Stewart Engineering data.

WBS BP8.R004.1		TIP N/A		COUNTY MOORE		GEOLOGIST E. Mayr, PE										
SITE DESCRIPTION Bridge on SR 1658 over Big Governors Creek between SR 1659 & SR 1625							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 19+66		OFFSET 14 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 294.9 ft		TOTAL DEPTH 22.5 ft		NORTHING 607,829		EASTING 1,898,791										
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 79% 06/03/2015			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER M. Radford		START DATE 01/27/16		COMP. DATE 01/27/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
295														294.9	GROUND SURFACE	0.0
	291.7	3.2	1	2	3							M			ROADWAY EMBANKMENT Red-brown, sandy SILT (A-4)	
290																
	286.7	8.2	2	2	2							M				
285																
	281.7	13.2	WOH	1	1							W		282.9	ALLUVIAL Brown, sandy CLAY (A-6), trace organics	12.0
280																
	276.7	18.2	3	5	5							W		277.9	TRIASSIC RESIDUAL Tan, sandy SILT (A-4)	17.0
275												M		273.9	WEATHERED ROCK TRIASSIC SILTSTONE	21.0
	272.5	22.4	60/0.1			60/0.1								272.4	WEATHERED ROCK TRIASSIC SILTSTONE NON-CRYSTALLINE ROCK TRIASSIC SILTSTONE	22.4
	272.4	22.5	60/0.1			60/0.1										

Boring Terminated with Standard Penetration Test Refusal at Elevation 272.4 ft in Non-Crystalline Rock (TRIASSIC SILTSTONE)

NOTES:
BORING DRILLED IN 2016 UNDER B-5745
ELEVATION UPDATED 12/2022

Borings were surveyed by Stewart Engineering at the time of drilling using 100' as a temporary benchmark elevation. Final collar elevation based on updated benchmark surveyed by RK&K using survey grade GPS unit on 4/25/2023 with applied elevation correction from the Stewart Engineering data.

NCDOT BORE DOUBLE B5745_GEO_BRDG0047_BH.GPJ NC_DOT.GDT 6/21/23

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R004.1		TIP N/A		COUNTY MOORE		GEOLOGIST P. Fallon									
SITE DESCRIPTION Bridge on SR 1658 over Big Governors Creek between SR 1659 & SR 1625							GROUND WTR (ft)								
BORING NO. L 21+55 HA		STATION 21+55		OFFSET 17 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 292.4 ft		TOTAL DEPTH 2.0 ft		NORTHING 607,997		EASTING 1,898,880									
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A									
DRILLER N/A		START DATE 12/30/22		COMP. DATE 12/30/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
295															
														292.4	0.0
														290.9	1.5
														290.4	2.0

WBS BP8.R004.1		TIP N/A		COUNTY MOORE		GEOLOGIST P. Fallon									
SITE DESCRIPTION Bridge on SR 1658 over Big Governors Creek between SR 1659 & SR 1625							GROUND WTR (ft)								
BORING NO. L 24+25 LT HA		STATION 24+25		OFFSET 37 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 288.7 ft		TOTAL DEPTH 3.5 ft		NORTHING 608,267		EASTING 1,898,928									
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A									
DRILLER N/A		START DATE 12/30/22		COMP. DATE 12/30/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
														288.7	0.0
														285.2	3.5

NCDOT BORE DOUBLE BP8.R004 MOORE 47 HAND AUGERS.GPJ NC_DOT.GDT 6/19/23

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R004.1		TIP N/A		COUNTY MOORE		GEOLOGIST P. Fallon										
SITE DESCRIPTION Bridge on SR 1658 over Big Governors Creek between SR 1659 & SR 1625							GROUND WTR (ft)									
BORING NO. L 24+25 RT HA		STATION 24+25		OFFSET 29 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 305.8 ft		TOTAL DEPTH 2.0 ft		NORTHING 608,246		EASTING 1,898,991										
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A										
DRILLER N/A		START DATE 12/30/22		COMP. DATE 12/30/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
310																
305															305.8	GROUND SURFACE 0.0
															303.8	TRIASSIC RESIDUAL Tan to red-brown, medium stiff to stiff, coarse to fine sandy SILT (A-4), trace to some rock fragments Boring Terminated by Auger Refusal at Elevation 303.8 ft Triassic Residual: sandy SILT (A-4) Hand auger refused at 3.5 feet, offset three times to confirm.

NCDOT BORE DOUBLE BP8.R004_MOORE 47_HAND AUGERS.GPJ NC_DOT.GDT 6/19/23

M & T Form 503

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY**

T. I. P. No. N/AREPORT ON SAMPLES OF Replacement of Bridge 47 over Governors Creek on SR 1658

Project N/A County Cumberland Owner RK&K
 Date: Sampled _____ Received 1/24/23 Reported 2/20/23
 Sampled from _____ By _____
 Submitted by Bethany Farmer 2008 Standard Specifications

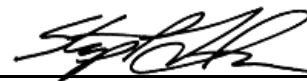
TEST RESULTS

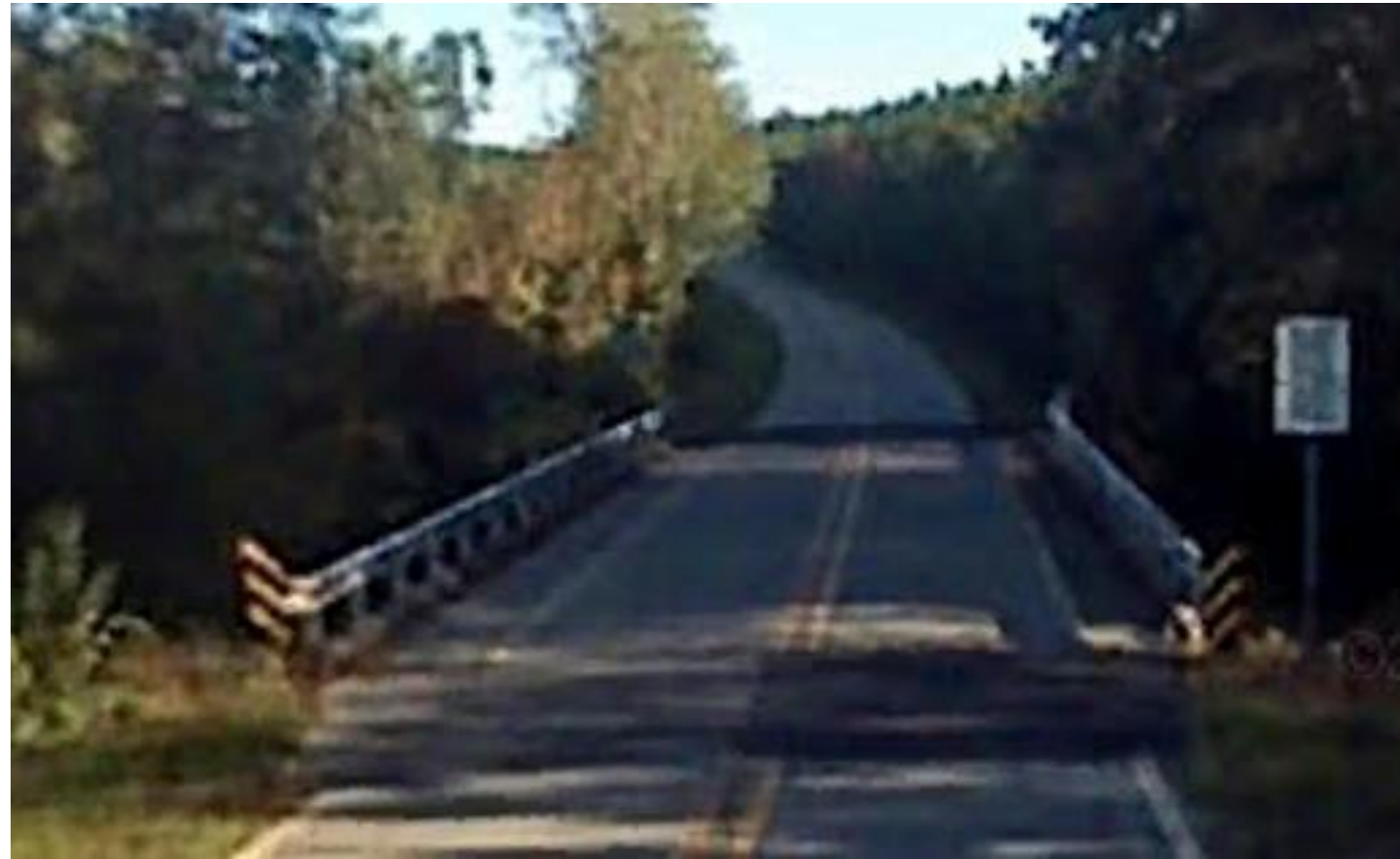
Proj. Sample No.		S-1	S-8			
Boring No.		L24+25 LT	L19+00 HA			
Retained #4 Sieve	%	8	6			
Passing #10 Sieve	%	89	85			
Passing #40 Sieve	%	73	79			
Passing #200 Sieve	%	54	54			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%						
Coarse Sand Ret - #60	%	26.2	14.2			
Fine Sand Ret - #270	%	18.8	32.5			
Silt 0.05 - 0.005 mm	%	52.1	52.4			
Clay < 0.005 mm	%	2.9	0.9			
Passing #40 Sieve	%	82.5	92.4			
Passing #200 Sieve	%	61.4	63.4			

L. L.		27	27			
P. I.		7	4			
AASHTO Classification		A-4	A-4			
Group Index		1	0			
pH		N/A	N/A			
Station		24+25	19+00			
OFFSET		37.0	30.0			
ALIGNMENT		L	L			
Depth (Ft)		0.5	0.5			
	to	1.0	1.0			
Natural Moisture %		18.9	26.7			


Soils Engineer



Facing Upstation from End Bent 1

Facing Downstation from End Bent 1



Facing Upstation from End Bent 2

Facing Downstation from End Bent 2



Bridge on SR 1658 over Big Governors Creek between SR 1659 & SR 1625
White Hill, NC
Moore County

DATE: 5/5/2023

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