

PROJECT: BP8.R016.1 REFERENCE: N/A

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY RICHMOND & MONTGOMERY
 PROJECT DESCRIPTION BRIDGE NO. 142 OVER NAKED CREEK ON SR 1321 (RESEARCH FARM ROAD)

SITE DESCRIPTION NA

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	N/A	1	10

CAUTION NOTICE

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- NOTES:
- 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.
 - 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

A. GROSS, PG

M.B. MOSELEY

C. BOWEN

INVESTIGATED BY B. SMITH, PG

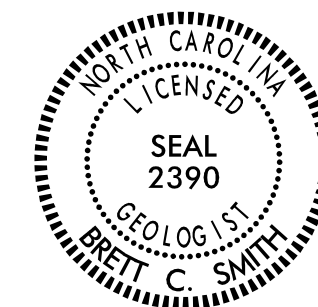
DRAWN BY B. SMITH, PG

CHECKED BY B. WORLEY, PG

SUBMITTED BY B. SMITH, PG

DATE FEBRUARY, 2023

Prepared in the Office of:

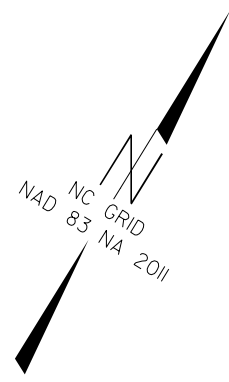


DocuSigned by:

Brett Smith 3/10/2023
 SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO.	SHEET NO.
N/A	3
SITE PLAN	
FEET	



BM#1
 N:520557 E:1791150
 BL STATION 8+81.00 112 LEFT
 RRS IN BASE OF 12" PINE
 479.26'

ABAND
 WD FOUNDATION

BEAVER DAM

NAKED CREEK

13+00

14+00

15+00

16+00

17+00

EB1-A

BRIDGE NO. 142

EB2-A

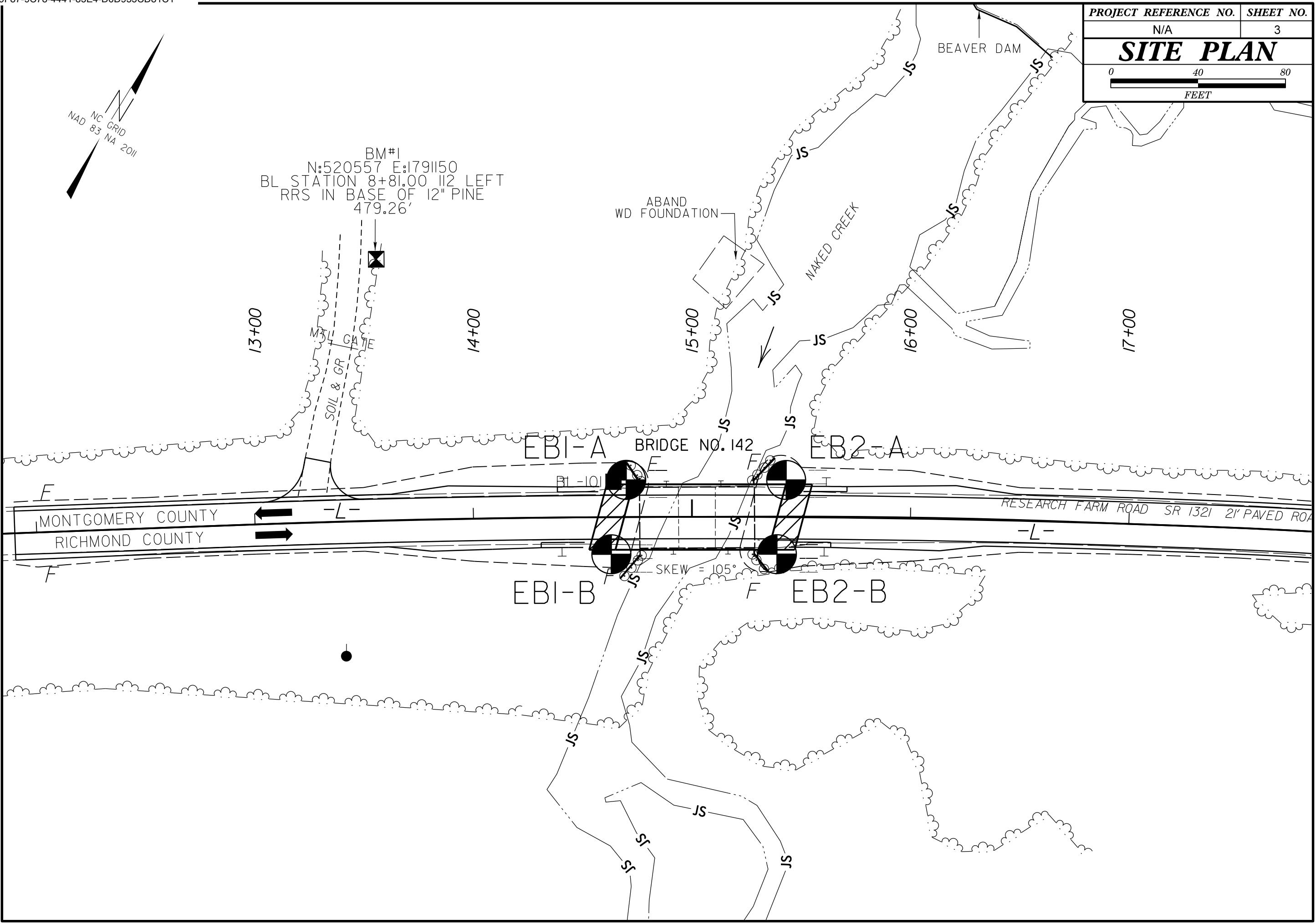
MONTGOMERY COUNTY
 RICHMOND COUNTY

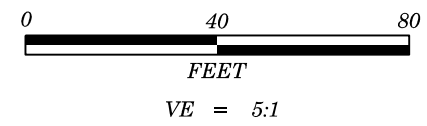
RESEARCH FARM ROAD SR 1321 21' PAVED ROAD

EB1-B

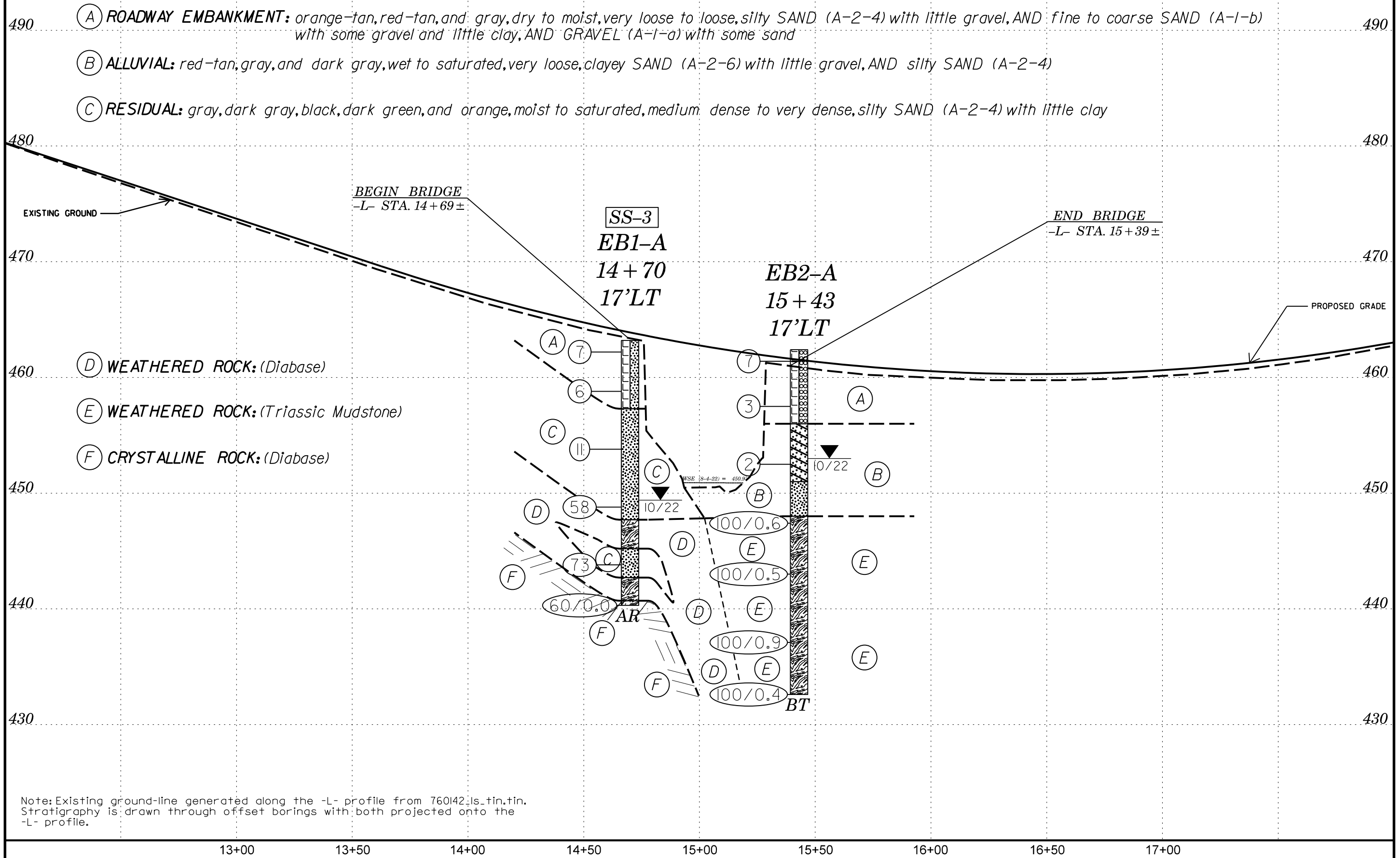
EB2-B

SKEW = 105°

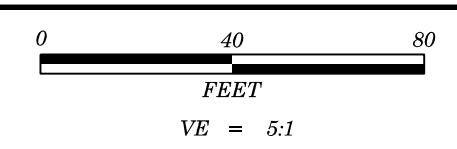




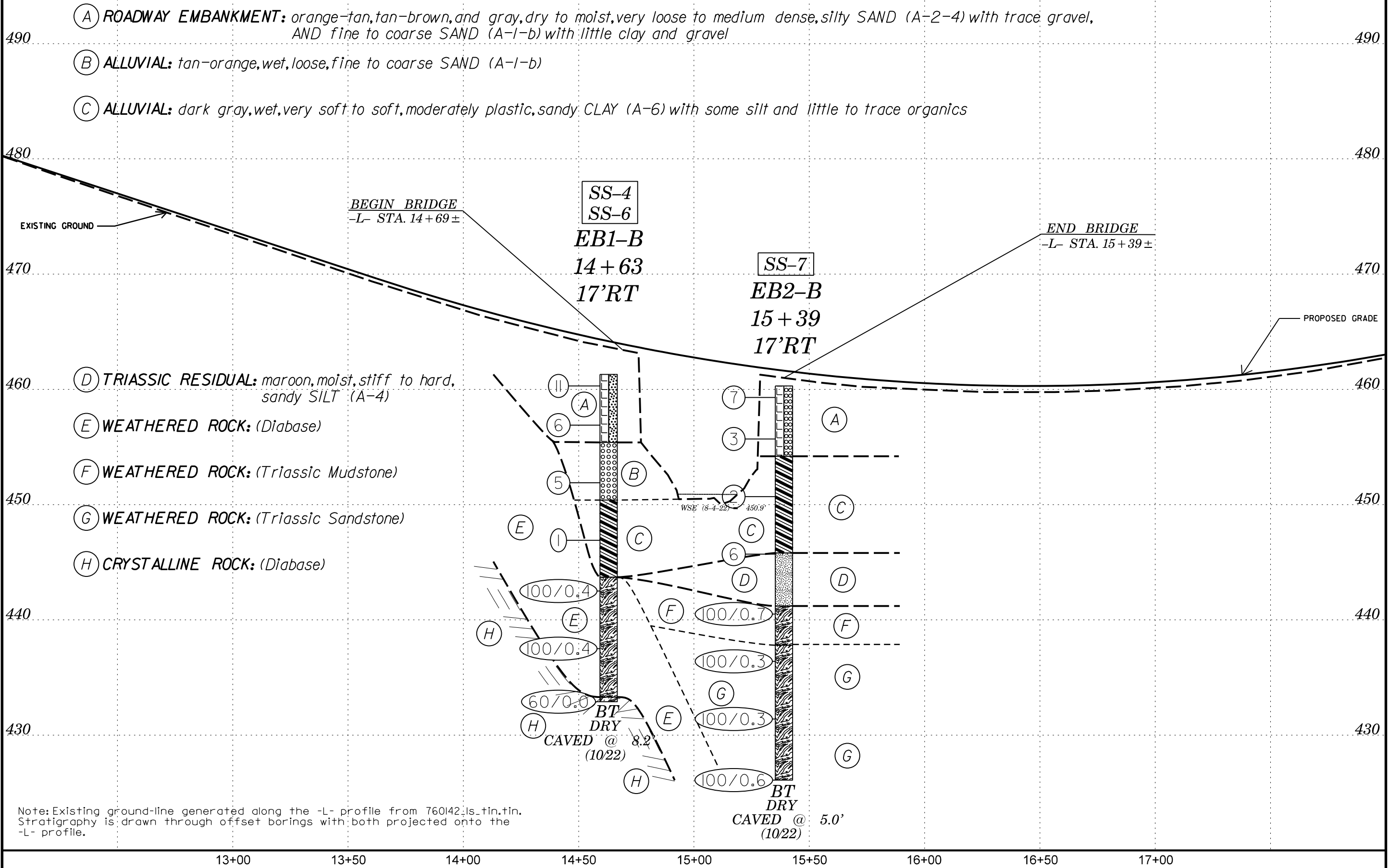
PROJECT REFERENCE NO.	SHEET NO.
N/A	4
BRIDGE NO. 142 (-L- PROFILE LEFT)	



Note: Existing ground-line generated along the -L- profile from 760142.is_tin.tin. Stratigraphy is drawn through offset borings with both projected onto the -L- profile.

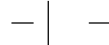


PROJECT REFERENCE NO.	SHEET NO.
N/A	5
BRIDGE NO. 142 (-L- PROFILE RIGHT)	



Note: Existing ground-line generated along the -L- profile from 760142.is.tin.tin. Stratigraphy is drawn through offset borings with both projected onto the -L- profile.

500



490

(A) ROADWAY EMBANKMENT: orange-tan and gray, dry to moist, loose to medium dense, silty and clayey SAND (A-2-4) with little to trace gravel

(B) ALLUVIAL: tan-orange, wet, loose, fine to coarse SAND (A-1-b)

480

(C) ALLUVIAL: dark gray, wet, very soft, sandy CLAY (A-6) with some silt and trace organics

(E) RESIDUAL: gray, dark gray, black, dark green, and orange, moist to saturated, medium dense to very dense, silty SAND (A-2-4) with little clay

470

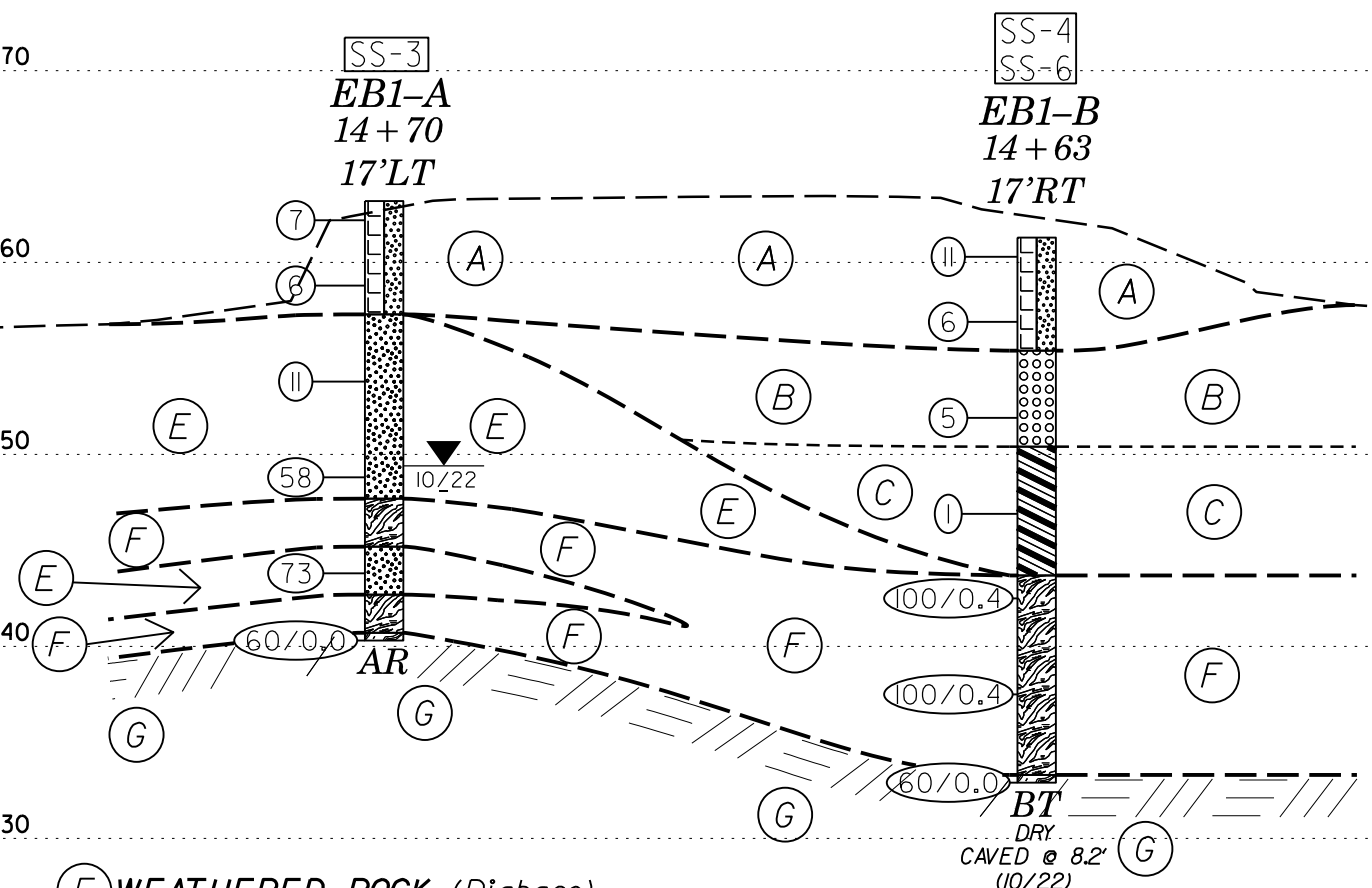
460

450

440

430

420



(F) WEATHERED ROCK: (Diabase)

(G) CRYSTALLINE ROCK: (Diabase)

Note: Existing ground-line generated along the proposed End Bents from 760142-Is.tin.tin. Stratigraphy is shown drawn through offset borings with both projected onto the bent line.

BENT SKEW = 105°



VE = 1:1

BRIDGE NO. 142 (END BENT 1)

500



490

(A) ROADWAY EMBANKMENT: red-tan, tan-brown, and gray, dry to moist, very loose to loose, fine to coarse SAND (A-1-b) with some to trace gravel and little clay, AND GRAVEL (A-1-a) with some sand

(B) ALLUVIAL: red-tan, gray, and dark gray, wet to saturated, very loose, clayey SAND (A-2-6) with little gravel, AND silty SAND (A-2-4)

480

(C) ALLUVIAL: dark gray, wet, soft, sandy CLAY (A-6) with some silt and little organics

(D) TRIASSIC RESIDUAL: maroon, moist, stiff to hard, sandy SILT (A-4)

470

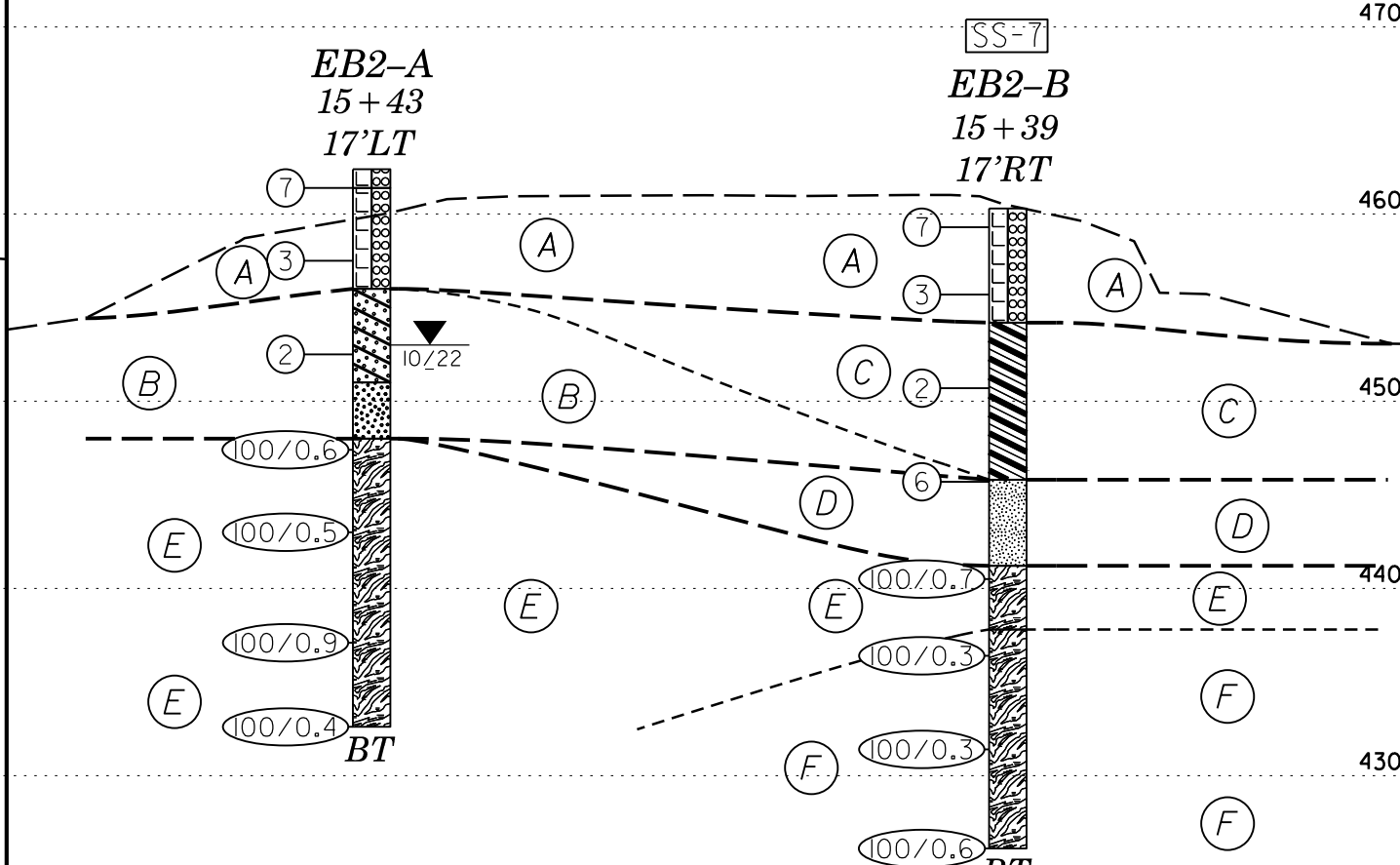
460

450

440

430

420



(E) WEATHERED ROCK: (Triassic Mudstone)

(F) WEATHERED ROCK: (Triassic Sandstone)



VE = 1:1

BRIDGE NO. 142 (END BENT 2)

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R016.1		TIP N/A		COUNTY RICHMOND/MONTGOMERY		GEOLOGIST Gross, A.									
SITE DESCRIPTION Bridge No. 142 over Naked Creek on SR 1321 (Research Farm Road)							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 14+70		OFFSET 17 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 463.2 ft		TOTAL DEPTH 22.9 ft		NORTHING 520,531		EASTING 1,791,301									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Moseley, M.B.		START DATE 10/25/22		COMP. DATE 10/25/22		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					
465	463.2	0.0	2	3	4									463.2	0.0
460	459.8	3.4	3	3	3									457.3	5.9
455	454.8	8.4	12	6	5									447.7	15.5
450	449.8	13.4	11	21	37									445.2	18.0
445	444.8	18.4	16	32	41									442.7	20.5
	440.3	22.9	60/0.0											440.3	22.9

WBS BP8.R016.1		TIP N/A		COUNTY RICHMOND/MONTGOMERY		GEOLOGIST Gross, A.									
SITE DESCRIPTION Bridge No. 142 over Naked Creek on SR 1321 (Research Farm Road)							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 14+63		OFFSET 17 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 461.3 ft		TOTAL DEPTH 28.4 ft		NORTHING 520,499		EASTING 1,791,313									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Moseley, M.B.		START DATE 10/26/22		COMP. DATE 10/26/22		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					
465	461.3	0.0	4	6	5									461.3	0.0
460	457.9	3.4	3	3	3									455.4	5.9
455	452.9	8.4	2	3	2									450.4	10.9
450	447.9	13.4	WOH	WOH	1									443.7	17.6
445	442.9	18.4	100/0.4											440.3	22.9
440	437.9	23.4	100/0.4											433.3	28.0
435	432.9	28.4	60/0.0											432.9	28.4

NCDOT BORE DOUBLE BP8R016_GEO_BRDG0142_GINT.GPJ_NC_DOT.GDT 2/16/23

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R016.1		TIP N/A		COUNTY RICHMOND/MONTGOMERY		GEOLOGIST Gross, A.	
SITE DESCRIPTION Bridge No. 142 over Naked Creek on SR 1321 (Research Farm Road)							GROUND WTR (ft)
BORING NO. EB2-A		STATION 15+43		OFFSET 17 ft LT		ALIGNMENT -L-	
COLLAR ELEV. 462.4 ft		TOTAL DEPTH 29.8 ft		NORTHING 520,570		EASTING 1,791,363	
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER Moseley, M.B.		START DATE 10/25/22		COMP. DATE 10/25/22		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				
465	462.4	0.0	2	4	3								GROUND SURFACE	0.0
460	458.5	3.9	2	2	1								ROADWAY EMBANKMENT GRAVEL with some sand (A-1-a) red-tan and gray, very loose to loose, fine to coarse SAND (A-1-b) with some gravel and little clay	1.0
455	453.5	8.9	WOR 1 1										ALLUVIAL red-tan and gray, very loose, clayey SAND (A-2-6) with little gravel	6.4
450	448.5	13.9	23	70	30/0.1								dark gray, very loose, silty SAND (A-2-4)	11.4
445	443.5	18.9	100/0.5										WEATHERED ROCK (Mudstone)	14.4
440	438.5	23.9	14	33	67/0.4									
435	433.5	28.9	20	100/0.4										
													Boring Terminated at Elevation 432.6 ft in Weathered Rock (Mudstone) - Chatham Group (Triassic)	29.8
													- Topsoil Thickness = 0.1 feet.	

WBS BP8.R016.1		TIP N/A		COUNTY RICHMOND/MONTGOMERY		GEOLOGIST Gross, A.	
SITE DESCRIPTION Bridge No. 142 over Naked Creek on SR 1321 (Research Farm Road)							GROUND WTR (ft)
BORING NO. EB2-B		STATION 15+39		OFFSET 17 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 460.3 ft		TOTAL DEPTH 34.2 ft		NORTHING 520,538		EASTING 1,791,377	
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER Moseley, M.B.		START DATE 10/26/22		COMP. DATE 10/26/22		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				
465	460.3	0.0	2	4	3								GROUND SURFACE	0.0
460	456.7	3.6	5	1	2						SS-7	7%	ROADWAY EMBANKMENT tan-brown and gray, very loose to loose, fine to coarse SAND (A-1-b) with little clay and gravel	6.1
455	451.7	8.6	2	1	1								ALLUVIAL dark gray, soft, sandy CLAY (A-6) with some silt and little organics	14.5
450	446.7	13.6	2	1	5								TRIASSIC RESIDUAL maroon, stiff to hard, sandy SILT (A-4)	19.1
445	441.7	18.6	28	45	55/0.2								WEATHERED ROCK (Mudstone)	22.5
440	436.7	23.6	100/0.3										(Sandstone)	
435	431.7	28.6	100/0.3											
430	426.7	33.6	80	20/0.1										
													Boring Terminated at Elevation 426.1 ft in Weathered Rock (Sandstone) - Chatham Group (Triassic)	34.2
													- Topsoil Thickness = 0.1 feet.	
													- 0 HR Ground Water Reading: Boring Caved at 5.0 feet.	
													- 24 HR Ground Water Reading: Boring Caved at 5.0 feet.	

NCDOT BORE DOUBLE BP8R016_GEO_BRDG0142_GINT.GPJ_NC_DOT.GDT 2/16/23

SUMMARY OF LABORATORY DATA

SHEET 9

WBS Number: BP8.R016.1

TIP Number: N/A

County: Richmond & Montgomery

Description: Bridge No. 142 over Naked Creek on SR 1321 (Research Farm Road)



Sample No.	Boring ID	Alignment	Station	Offset	Sample Depth (ft.)	Natural Moisture Content (%)	AASHTO Classification	Atterberg Limits			Gradation Results							
								L.L.	P.L.	P.I.	Retained #4 Sieve (%)	Pass #10 Sieve (%)	Pass #40 Sieve (%)	Pass #200 Sieve (%)	Coarse Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
SS-3	EB1-A	-L-	14+70	17'LT	13.4 - 14.9	10.3	A-2-4 (0)	33	24	9	10	45	40	28	16.0	32.6	35.2	16.2
SS-4	EB1-B	-L-	14+63	17'RT	0.0 - 1.5	7.5	A-2-4 (0)	23	18	5	3	93	53	20	64.7	14.9	4.7	15.7
SS-6	EB1-B	-L-	14+63	17'RT	13.4 - 14.9	34.2	A-6 (2)	37	20	17	5	68	60	36	26.3	22.7	22.9	28.1
SS-7	EB2-B	-L-	15+39	17'RT	0.0 - 1.5	7.4	A-1-b (0)	20	15	5	9	82	49	18	62.7	16.6	7.4	13.3

SITE PHOTOGRAPHS

Bridge No. 142 on -L- (SR 1321) over Naked Creek



Looking East towards End Bent 1



Looking West towards End Bent 2