

REFERENCE: B-5123

PROJECT: 42265

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY CABARRUS
PROJECT DESCRIPTION REPLACE BRIDGE NO. 014 & 019
ON US 29 OVER ROCKY RIVER AND ACCESS ROAD

SITE DESCRIPTION _____

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<u>SHEET NO.</u>	<u>DESCRIPTION</u>
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5123	1	20

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. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 TOT-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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 LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- 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

J.K. STICKNEY

C.L. SMITH

R.Q. CALLAWAY

R.S. HINSON

C.E. BURRIS

INVESTIGATED BY J.E. BEVERLY

DRAWN BY J.K. McCLURE

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

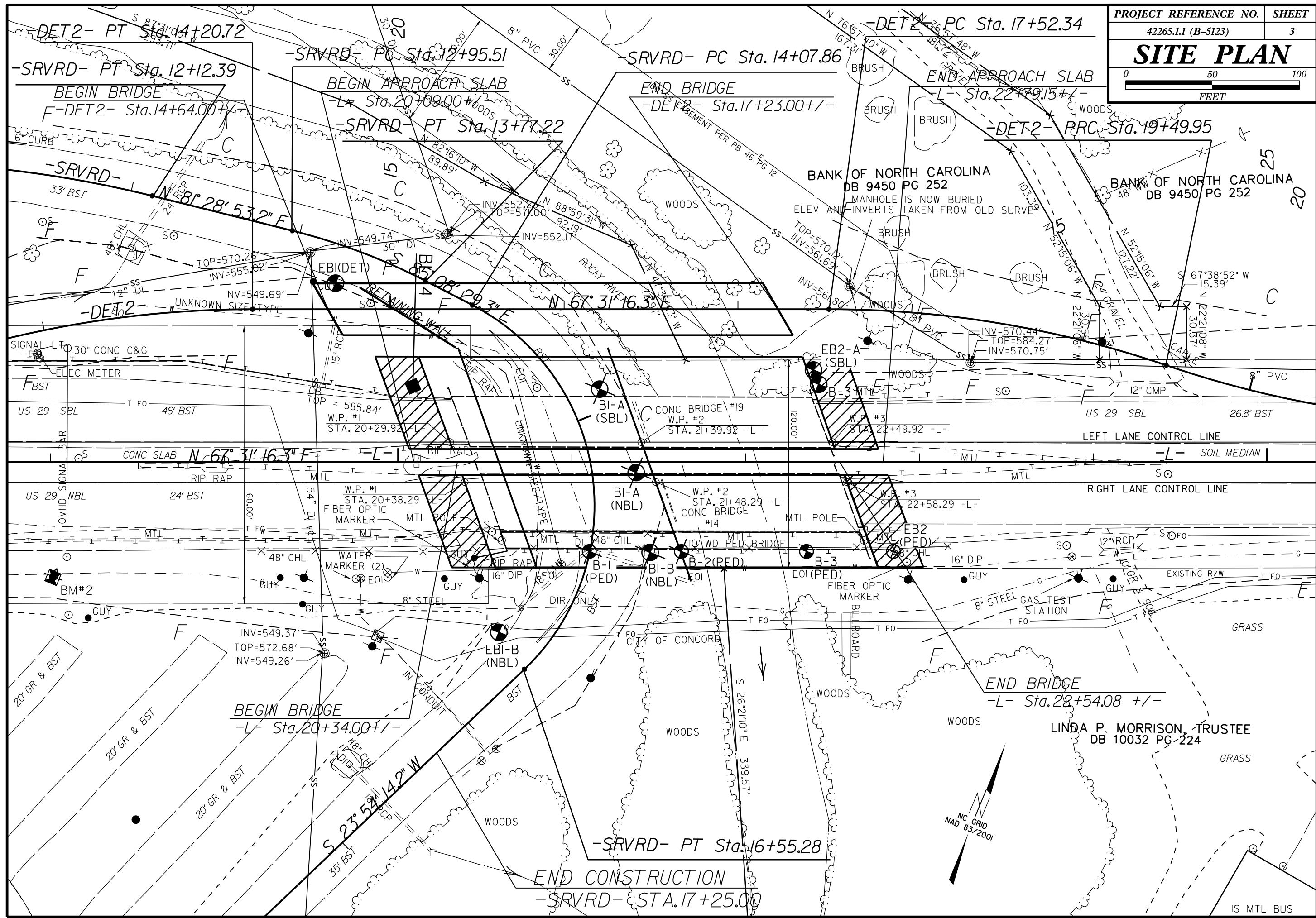
DATE FEBRUARY 2015

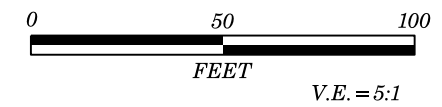


Done and signed by: Clinton B. Little
930443D5AC8E36/10/2015

SIGNATURE

DATE





STA. 20+29.92
GP EL. 589.78

SBL STA. 21+40
GP EL. 589.5
TWO SPANS
2 @ 110', 72' MBT.
70° SKEW, 4' END BENT CAPS

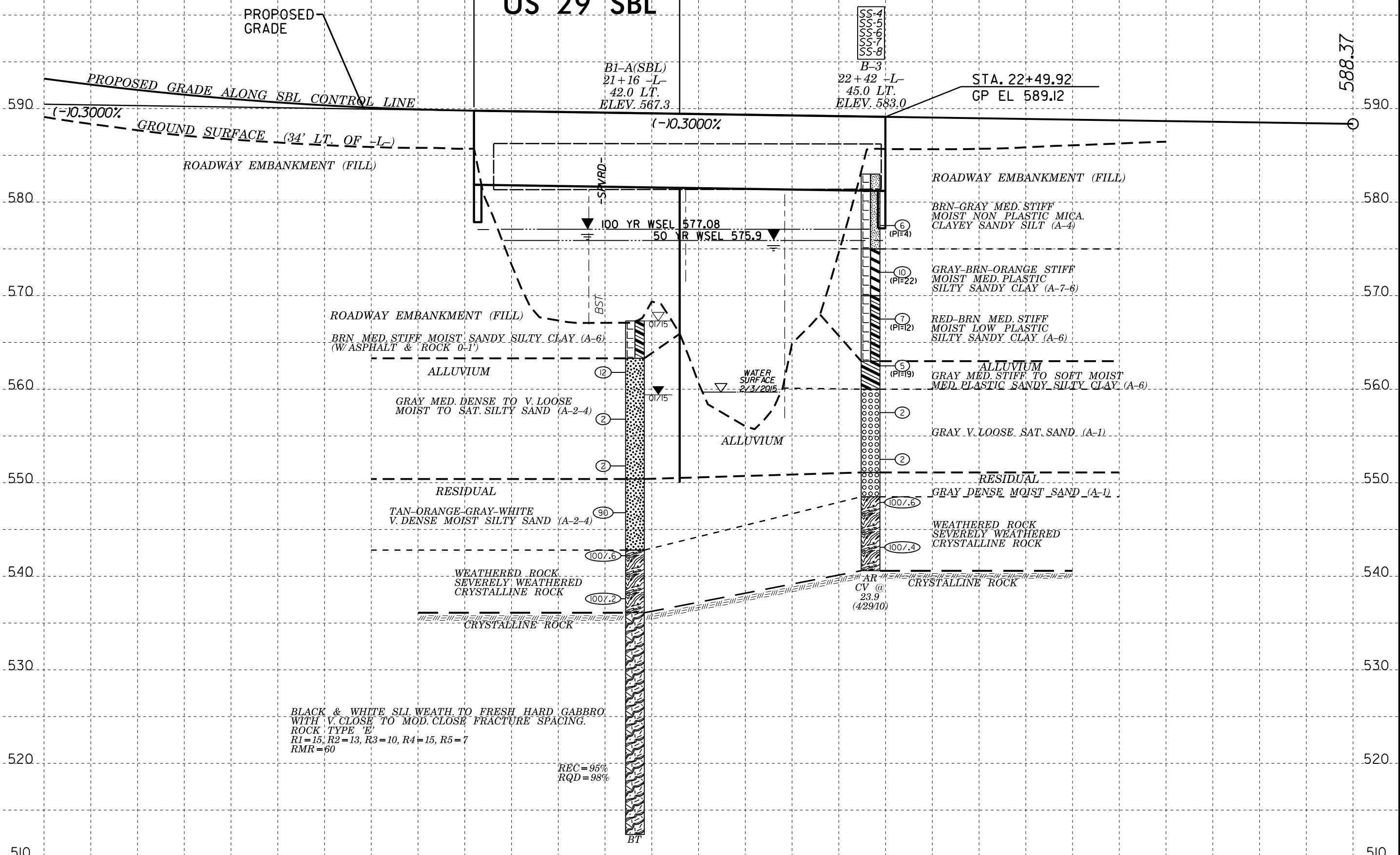
US 29 SBL

SS-4
SS-5
SS-6
SS-7
SS-8

B-3
22+42 -L-
45.0 LT.
ELEV. 583.0

STA. 22+49.92
GP EL. 589.12

588.37



B1-A(SBL)
21+16 -L-
42.0 LT.
ELEV. 567.3

ROADWAY EMBANKMENT (FILL)
BRN. MED. STIFF MOIST. SANDY SILTY CLAY (A-6)
(W ASPHALT & ROCK 0-1)

ALLUVIUM
GRAY MED. DENSE TO V. LOOSE
MOIST TO SAT. SILTY SAND (A-2-4)

RESIDUAL
TAN-ORANGE-GRAY-WHITE
V. DENSE MOIST SILTY SAND (A-2-4)

WEATHERED ROCK
SEVERELY WEATHERED
CRYSTALLINE ROCK

ROADWAY EMBANKMENT (FILL)
BRN-GRAY MED. STIFF
MOIST NON PLASTIC MICA
CLAYEY SANDY SILT (A-4)

GRAY-BRN-ORANGE STIFF
MOIST MED. PLASTIC
SILTY SANDY CLAY (A-7-6)

RED-BRN MED. STIFF
MOIST LOW PLASTIC
SILTY SANDY CLAY (A-6)

ALLUVIUM
GRAY MED. STIFF TO SOFT MOIST
MED. PLASTIC SANDY SILTY CLAY (A-6)

GRAY V. LOOSE SAT. SAND (A-1)

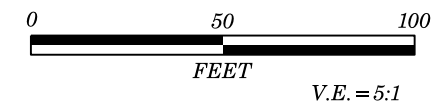
RESIDUAL
GRAY DENSE MOIST SAND (A-1)

WEATHERED ROCK
SEVERELY WEATHERED
CRYSTALLINE ROCK

BLACK & WHITE SLI WEATH. TO FRESH HARD GABBRO
WITH V. CLOSE TO MOD. CLOSE FRACTURE SPACING.
ROCK TYPE 'E'
R1=15, R2=13, R3=10, R4=15, R5=7
RMR=60

REC=95%
RQD=98%

CV @
23.9
(42910)

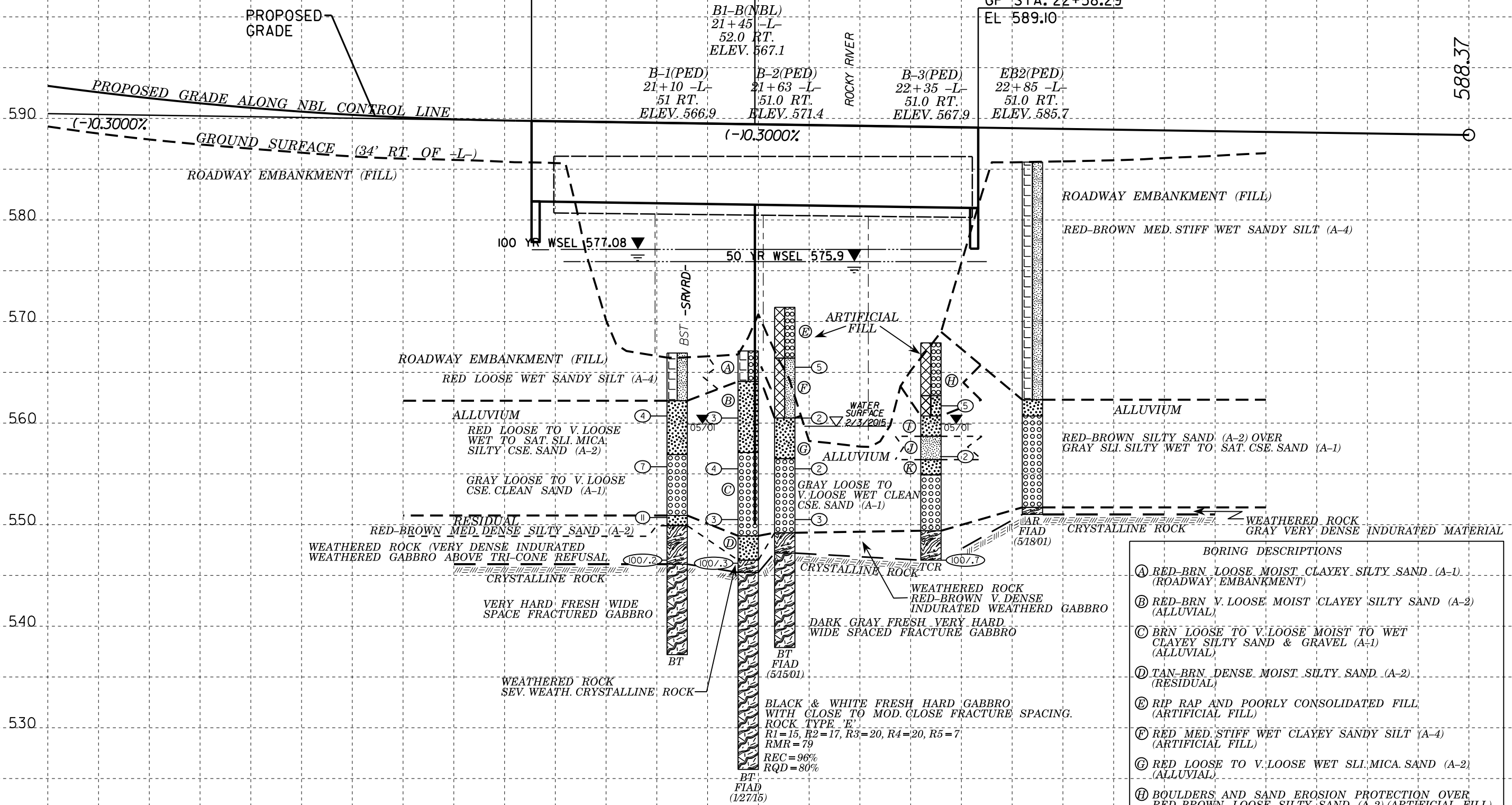


NBL STA 21+48
GP EL. 589.4
TWO SPANS
2 @ 110', 72° MBT
70° SKEW, 4' END BENT CAPS

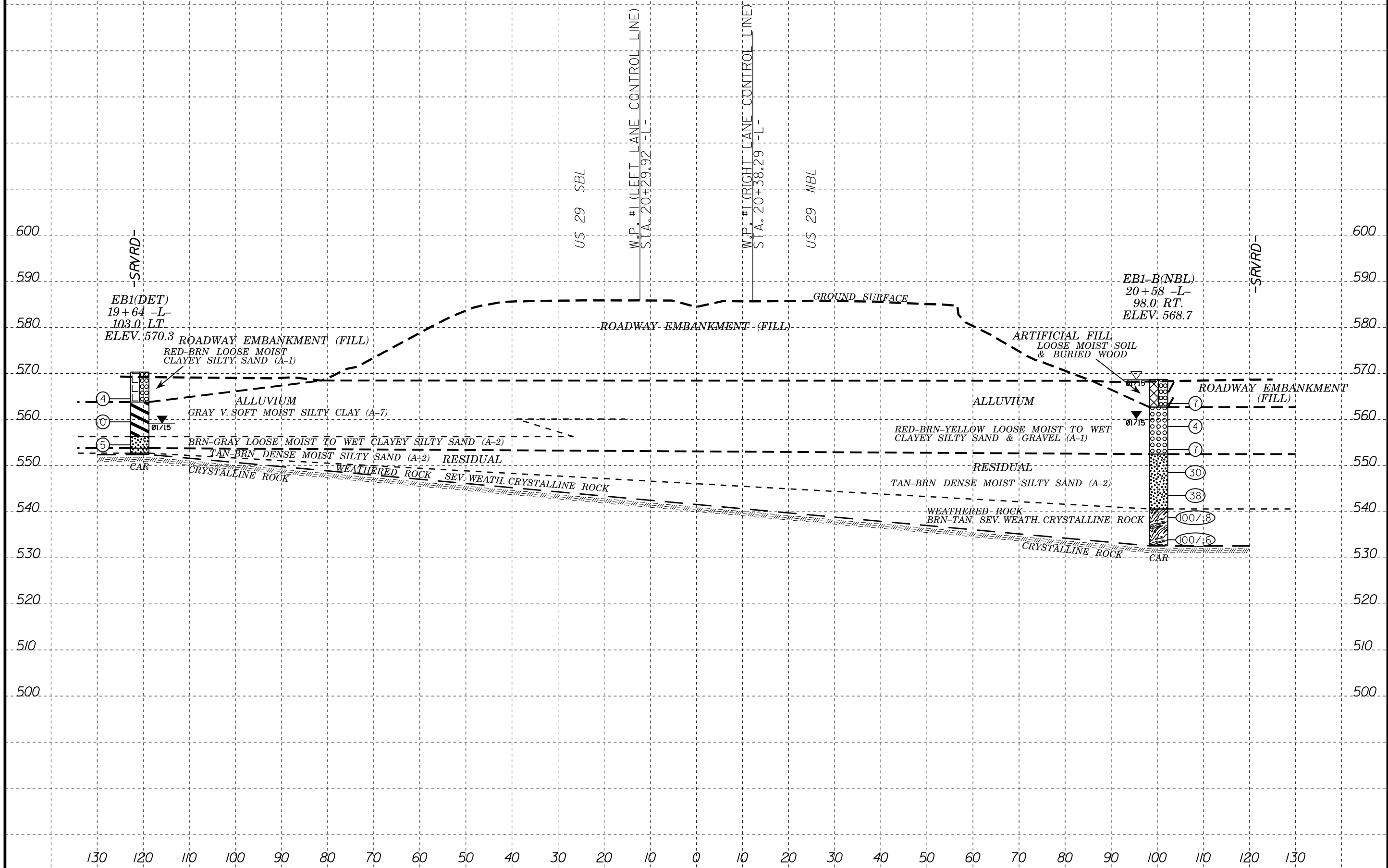
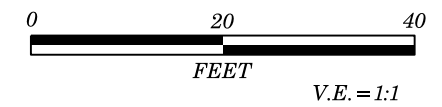
US 29 NBL
GP STA. 20+38.29
EL. 589.75

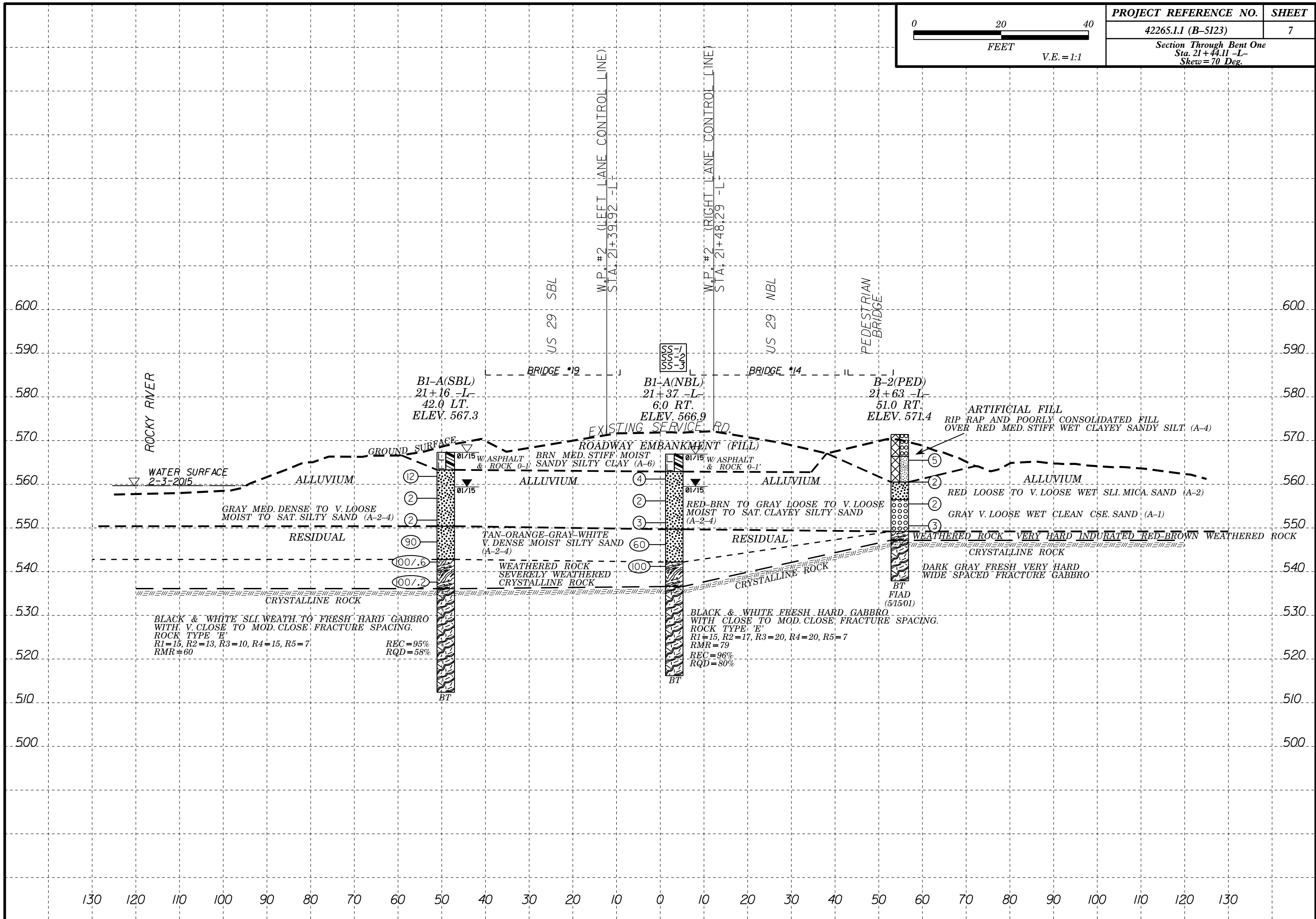
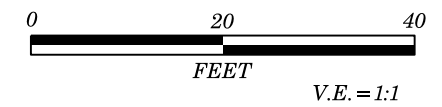
GP STA. 22+58.29
EL. 589.10

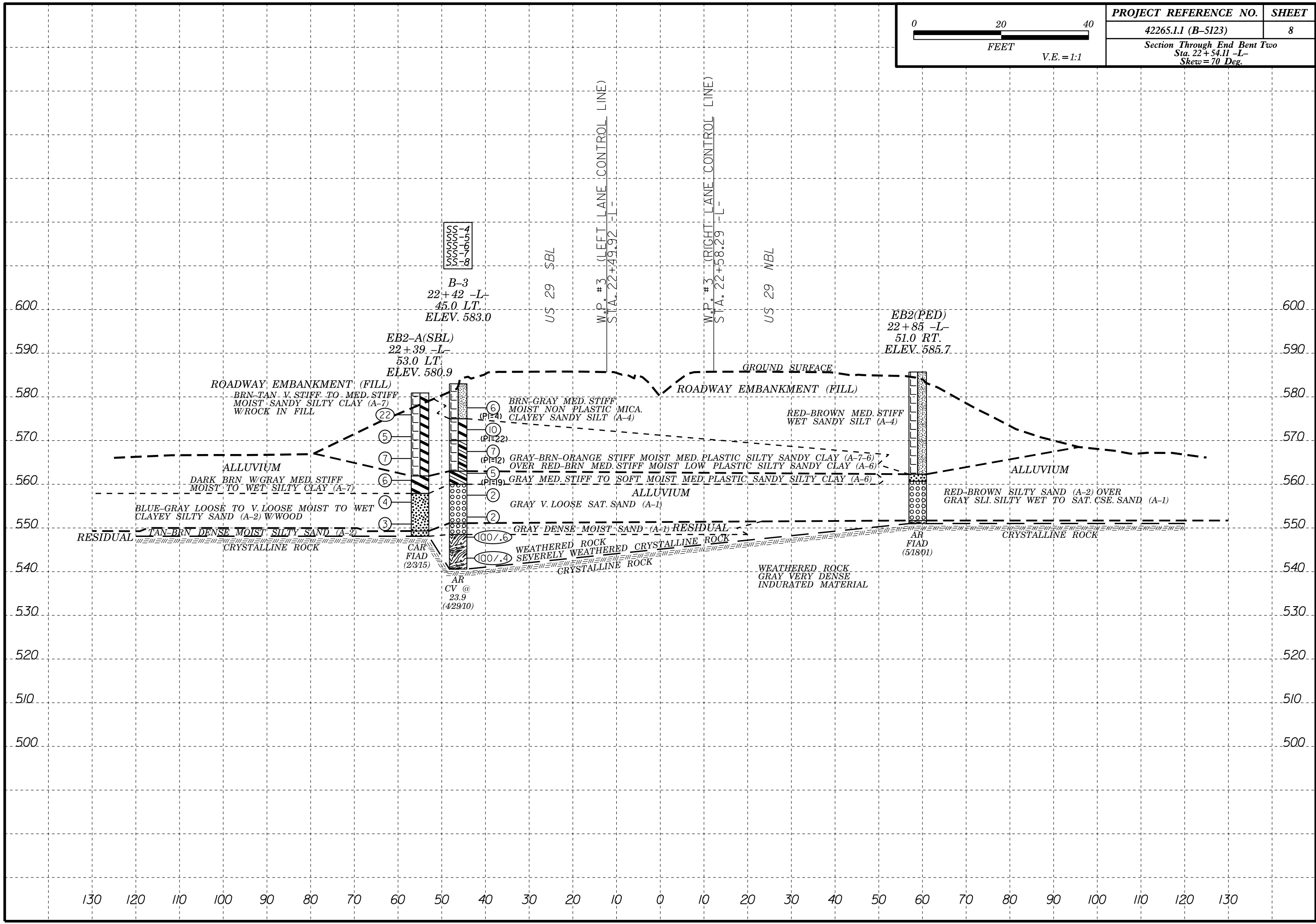
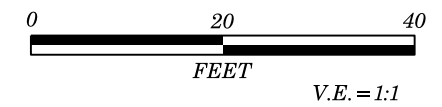
588.37



BORING DESCRIPTIONS	
(A)	RED-BRN. LOOSE MOIST CLAYEY SILTY SAND (A-1) (ROADWAY EMBANKMENT)
(B)	RED-BRN V. LOOSE MOIST CLAYEY SILTY SAND (A-2) (ALLUVIAL)
(C)	BRN LOOSE TO V. LOOSE MOIST TO WET CLAYEY SILTY SAND & GRAVEL (A-1) (ALLUVIAL)
(D)	TAN-BRN DENSE MOIST SILTY SAND (A-2) (RESIDUAL)
(E)	RIP RAP AND POORLY CONSOLIDATED FILL (ARTIFICIAL FILL)
(F)	RED MED. STIFF WET CLAYEY SANDY SILT (A-4) (ARTIFICIAL FILL)
(G)	RED LOOSE TO V. LOOSE WET SLI. MICA SAND (A-2) (ALLUVIAL)
(H)	BOULDERS AND SAND EROSION PROTECTION OVER RED-BROWN LOOSE SILTY SAND (A-2) (ARTIFICIAL FILL)
(I)	RED-BROWN LOOSE WET SLI. MICA SILTY SAND (A-2) (ALLUVIAL)
(J)	BROWN MODERATE TO HIGHLY ORGANIC SOFT SANDY CLAYEY SILT (A-4) (ALLUVIAL)
(K)	RED-BROWN LOOSE TO V. LOOSE WET SILTY SAND (A-2) (ALLUVIAL)







SS-4
SS-5
SS-6
SS-7
SS-8

B-3
22+42 -L-
45.0 LT.
ELEV. 583.0

US 29 SBL

W.P. #3 (LEFT LANE CONTROL LINE)
STA. 22+49.92 -L-

W.P. #3 (RIGHT LANE CONTROL LINE)
STA. 22+58.29 -L-

US 29 MBL

EB2(PED)
22+85 -L-
51.0 RT.
ELEV. 585.7

EB2-A(SBL)
22+39 -L-
53.0 LT.
ELEV. 580.9

ROADWAY EMBANKMENT (FILL)
BRN-TAN V. STIFF TO MED. STIFF
MOIST SANDY SILTY CLAY (A-7)
W/ROCK IN FILL

GROUND SURFACE
ROADWAY EMBANKMENT (FILL)

RED-BROWN MED. STIFF
WET SANDY SILT (A-4)

ALLUVIUM
DARK BRN W/GRAY MED. STIFF
MOIST TO WET SILTY CLAY (A-7)

GRAY-BRN-ORANGE STIFF MOIST MED. PLASTIC SILTY SANDY CLAY (A-7-6)
OVER RED-BRN MED. STIFF MOIST LOW PLASTIC SILTY SANDY CLAY (A-6)

ALLUVIUM

BLUE-GRAY LOOSE TO V. LOOSE MOIST TO WET
CLAYEY SILTY SAND (A-2) W/WOOD

ALLUVIUM
GRAY V. LOOSE SAT. SAND (A-1)

RED-BROWN SILTY SAND (A-2) OVER
GRAY SLI. SILTY WET TO SAT. CSE. SAND (A-1)

RESIDUAL TAN-BRN DENSE MOIST SILTY SAND (A-2)
CRYSTALLINE ROCK

GRAY DENSE MOIST SAND (A-1) RESIDUAL

CRYSTALLINE ROCK

CAR
FIAD
(2/315)
AR
CV @
23.9
(42910)

WEATHERED ROCK
SEVERELY WEATHERED
CRYSTALLINE ROCK

WEATHERED ROCK
GRAY VERY DENSE
INDURATED MATERIAL

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

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 42265.1	TIP B-5123	COUNTY CABARRUS	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.			GROUND WTR (ft)
BORING NO. EB1(DET)	STATION 19+64	OFFSET 103 ft LT	ALIGNMENT -L-
COLLAR ELEV. 570.3 ft	TOTAL DEPTH 17.9 ft	NORTHING 589,968	EASTING 1,500,321
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 01/29/15	COMP. DATE 01/29/15	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
575														
570													GROUND SURFACE	0.0
565	565.5	4.8	1	2	2								ROADWAY EMBANKMENT RED-BRN LOOSE MOIST CLAYEY SILTY SAND (A-1)	
560	560.5	9.8	0	0	0								ALLUVIAL GRAY V. SOFT MOIST SILTY CLAY (A-7)	6.5
555	555.5	14.8	1	2	3								ALLUVIAL BRN-GRAY LOOSE MOIST TO WET CLAYEY SILTY SAND (A-2)	14.0
													RESIDUAL TAN-BRN DENSE MOIST SILTY SAND (A-2)	16.5
													WEATHERED ROCK SEV. WEATH. CRYSTALLINE ROCK	17.8
													Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 552.4 ft ON CRYSTALLINE ROCK	17.9

WBS 42265.1	TIP B-5123	COUNTY CABARRUS	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.			GROUND WTR (ft)
BORING NO. EB1-B(NBL)	STATION 20+58	OFFSET 98 ft RT	ALIGNMENT -L-
COLLAR ELEV. 568.7 ft	TOTAL DEPTH 36.1 ft	NORTHING 589,819	EASTING 1,500,484
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 01/30/15	COMP. DATE 01/30/15	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
570													GROUND SURFACE	0.0
565	564.5	4.2	0	7	0								ARTIFICIAL FILL LOOSE MOIST SOIL & BURIED WOOD	6.0
560	559.5	9.2	1	1	3								ALLUVIAL RED-BRN-YELLOW LOOSE MOIST TO WET CLAYEY SILTY SAND & GRAVEL (A-1)	16.2
555	554.5	14.2	2	3	4								RESIDUAL TAN-BRN DENSE MOIST SILTY SAND (A-2)	16.2
550	549.5	19.2	11	13	17									
545	544.5	24.2	6	14	24									
540	539.5	29.2	53	47/0.3									WEATHERED ROCK BRN-TAN SEV. WEATH. CRYSTALLINE ROCK	28.1
535	534.5	34.2	77	23/0.1										
													Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 532.6 ft ON CRYSTALLINE ROCK	36.1

NCDOT BORE DOUBLE B5123_GEO_BH_BRDG0014&0019.GPJ NC_DOT.GDT 2/20/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 42265.1	TIP B-5123	COUNTY CABARRUS	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.			GROUND WTR (ft)
BORING NO. EB2-A(SBL)	STATION 22+39	OFFSET 53 ft LT	ALIGNMENT -L-
COLLAR ELEV. 580.9 ft	TOTAL DEPTH 32.8 ft	NORTHING 590,027	EASTING 1,500,594
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 02/03/15	COMP. DATE 02/03/15	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
585														580.9	GROUND SURFACE	0.0
580													ROADWAY EMBANKMENT BRN-TAN V. STIFF TO MED. STIFF MOIST SANDY SILTY CLAY (A-7) W/ ROCK IN FILL			
575	576.9	4.0	0	5	17											
570	571.9	9.0	2	2	3											
565	566.9	14.0	1	3	4											
560	561.9	19.0	1	2	4								ALLUVIAL DARK BRN W/ GRAY MED. STIFF MOIST TO WET SILTY CLAY (A-7)	19.0		
555	556.9	24.0	1	1	3								ALLUVIAL BLUE-GRAY LOOSE TO V. LOOSE MOIST TO WET CLAYEY SILTY SAND (A-2) W/ WOOD	23.0		
550	551.9	29.0	0	1	2								RESIDUAL TAN-BRN DENSE MOIST SILTY SAND (A-2)	31.6		
													Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 548.1 ft ON CRYSTALLINE ROCK	32.8		

WBS 42265.1	TIP B-5123	COUNTY CABARRUS	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.			GROUND WTR (ft)
BORING NO. B-3	STATION 22+42	OFFSET 45 ft LT	ALIGNMENT -L-
COLLAR ELEV. 583.0 ft	TOTAL DEPTH 42.4 ft	NORTHING 590,021	EASTING 1,500,600
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 89% 09/02/2009		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 04/29/10	COMP. DATE 04/29/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
585														583.0	GROUND SURFACE	0.0
580													ROADWAY EMBANKMENT BRN-GRAY MED. STIFF MOIST NON (PI=4) PLASTIC MICA. CLAYEY SANDY SILT (A-4)			
575	578.5	4.5	3	3	3									575.0	ROADWAY EMBANKMENT GRAY-BRN-ORANGE STIFF MOIST MED. (PI=22) PLASTIC SILTY SANDY CLAY (A-7-6)	8.0
570	573.5	9.5	1	3	7									570.0	ROADWAY EMBANKMENT RED-BRN MED. STIFF MOIST LOW (PI=12) PLASTIC SILTY SANDY CLAY (A-6)	13.0
565	568.5	14.5	2	3	4									563.0	ALLUVIAL GRAY MED. STIFF TO SOFT MOIST MED. (PI=19) PLASTIC SANDY SILTY CLAY (A-6)	20.0
560	563.5	19.5	1	2	3									560.0	ALLUVIAL GRAY V. LOOSE SAT. SAND (A-1)	23.0
555	558.5	24.5	0	1	1									551.1	RESIDUAL GRAY DENSE MOIST SAND (A-1)	31.9
550	553.5	29.5	0	1	1									548.5	WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK	34.5
545	548.5	34.5	35	65/1										540.6	Boring Terminated BY AUGER REFUSAL at Elevation 540.6 ft ON CRYSTALLINE ROCK	42.4

NCDOT BORE DOUBLE B5123_GEO_BH_BRDG0014&0019.GPJ NC_DOT_GDT 2/20/15



NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 42265.1		TIP B-5123		COUNTY CABARRUS		GEOLOGIST Stickney, J. K.											
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.							GROUND WTR (ft)										
BORING NO. B1-A(NBL)		STATION 21+37		OFFSET 6 ft RT		ALIGNMENT -L-											
		0 HR.		0.0													
COLLAR ELEV. 566.9 ft		TOTAL DEPTH 50.7 ft		NORTHING 589,934		EASTING 1,500,522											
		24 HR.		7.4													
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD NW Casing W/SPT & Core			HAMMER TYPE Automatic											
DRILLER Smith, C. L.		START DATE 01/28/15		COMP. DATE 01/28/15		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)		
																	566.9 GROUND SURFACE 0.0
													M				562.9 ROADWAY EMBANKMENT BRN MED. STIFF MOIST SANDY SILTY CLAY (A-6) (W/ ASPHALT & ROCK 0-1') 4.0
560	562.2	4.7	2	2	2								SS-1	M			562.9 ALLUVIAL RED-BRN TO GRAY LOOSE TO V. LOOSE MOIST TO SAT. CLAYEY SILTY SAND (A-2-4) 4.0
555	557.2	9.7	1	1	1								SS-2	W			559.7 ALLUVIAL RED-BRN TO GRAY LOOSE TO V. LOOSE MOIST TO SAT. CLAYEY SILTY SAND (A-2-4) 17.2
550	552.2	14.7	1	2	1								Sat.				549.7 RESIDUAL TAN-ORANGE-GRAY-WHITE V. DENSE MOIST SILTY SAND (A-2-4) 17.2
545	547.2	19.7	25	30	30								SS-3	M			542.2 RESIDUAL TAN-ORANGE-GRAY-WHITE V. DENSE MOIST SILTY SAND (A-2-4) 24.7
540	542.2	24.7	35	65/5													542.2 WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK 24.7
535																	536.6 WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK 30.3
530																	536.6 CRYSTALLINE ROCK 30.3
525																	
520																	516.2 CRYSTALLINE ROCK 50.7
																	Boring Terminated at Elevation 516.2 ft IN CRYSTALLINE ROCK (GABBRO)

NCDOT BORE DOUBLE B5123_GEO_BH_BRD0014&0019.GPJ NC_DOT.GDT 2/20/15



NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

WBS 42265.1		TIP B-5123		COUNTY CABARRUS		GEOLOGIST Stickney, J. K.						
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.							GROUND WTR (ft)					
BORING NO. B1-A(NBL)		STATION 21+37		OFFSET 6 ft RT		ALIGNMENT -L-						
		0 HR.		0.0								
COLLAR ELEV. 566.9 ft		TOTAL DEPTH 50.7 ft		NORTHING 589,934		EASTING 1,500,522						
		24 HR.		7.4								
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD NW Casing W/SPT & Core			HAMMER TYPE Automatic						
DRILLER Smith, C. L.		START DATE 01/28/15		COMP. DATE 01/28/15		SURFACE WATER DEPTH N/A						
CORE SIZE NO/NQ			TOTAL RUN 20.4 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			ELEV. (ft)
												Begin Coring @ 30.3 ft
536.62												CRYSTALLINE ROCK
535	536.6	30.3	4.3		(4.3)	(3.7)		(20.1)	(14.9)			BLACK-WHITE V. SLI. WEATH. TO FRESH GABBRO WITH CLOSE TO WIDE FRACTURE SPACING. ONE INSTANCE OF MOD. SEV. WEATHERING FROM 44.0-44.4 ROCK TYPE 'E' R1=15, R2=13, R3=20, R4=20, R5=7 RMR=75
	532.3	34.6	5.0		(5.0)	(3.9)						
530			5.0		100%	78%						
	527.3	39.6	5.0		(4.7)	(1.4)						
525			5.0		94%	28%						
	522.3	44.6										
520			5.0		(5.0)	(4.8)						
	517.3	49.6			100%	96%						
	516.2	50.7	1.1		(1.1)	(1.1)						Boring Terminated at Elevation 516.2 ft IN CRYSTALLINE ROCK (GABBRO)

NCDOT CORE SINGLE B5123_GEO_BH_BRD0014&0019.GPJ NC_DOT.GDT 2/20/15



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 42265.1		TIP B-5123		COUNTY CABARRUS		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.						GROUND WTR (ft)									
BORING NO. B1-B(NBL)		STATION 21+45		OFFSET 52 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 567.1 ft		TOTAL DEPTH 41.2 ft		NORTHING 589,894		EASTING 1,500,547									
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD NW Casing W/SPT & Core			HAMMER TYPE Automatic									
DRILLER Smith, C. L.		START DATE 01/27/15		COMP. DATE 01/27/15		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
570														GROUND SURFACE	0.0
565														ROADWAY EMBANKMENT RED-BRN LOOSE MOIST CLAYEY SILTY SAND (A-1)	3.0
560	561.5	5.6	1	2	1								M	ALLUVIAL RED-BRN V. LOOSE MOIST CLAYEY SILTY SAND (A-2)	10.0
555	556.5	10.6	2	2	2								M/W	ALLUVIAL BRN LOOSE TO V. LOOSE MOIST TO WET CLAYEY SILTY SAND & GRAVEL (A-1)	18.2
550	551.5	15.6	1	1	2								M/W	RESIDUAL TAN-BRN DENSE MOIST SILTY SAND (A-2)	20.6
545	546.5	20.6	100/0.3											WEATHERED ROCK SEV. WEATH. CRYSTALLINE ROCK	21.8
540															
535															
530															
															525.9
Boring Terminated at Elevation 525.9 ft IN CRYSTALLINE ROCK (GABBRO)															

NCDOT BORE DOUBLE B5123_GEO_BH_BRD0014&0019.GPJ NC_DOT.GDT 2/20/15



NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 42265.1		TIP B-5123		COUNTY CABARRUS		GEOLOGIST Stickney, J. K.				
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.						GROUND WTR (ft)				
BORING NO. B1-B(NBL)		STATION 21+45		OFFSET 52 ft RT		ALIGNMENT -L-				
COLLAR ELEV. 567.1 ft		TOTAL DEPTH 41.2 ft		NORTHING 589,894		EASTING 1,500,547				
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD NW Casing W/SPT & Core			HAMMER TYPE Automatic				
DRILLER Smith, C. L.		START DATE 01/27/15		COMP. DATE 01/27/15		SURFACE WATER DEPTH N/A				
CORE SIZE NO/NQ			TOTAL RUN 19.4 ft					LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (%)	RQD (%)	SAMP. NO.			
545.26										
	545.3	21.8	4.4		(4.4) 100%	(3.9) 89%		(18.6) 96%	(15.5) 80%	545.3
	540.9	26.2	5.0		(5.0) 100%	(4.9) 98%				21.8
	535.9	31.2	5.0		(4.6) 92%	(2.5) 50%				
	530.9	36.2	5.0		(4.6) 92%	(4.2) 84%				
	525.9	41.2								41.2
Boring Terminated at Elevation 525.9 ft IN CRYSTALLINE ROCK (GABBRO)										

NCDOT CORE SINGLE B5123_GEO_BH_BRD0014&0019.GPJ NC_DOT.GDT 2/20/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 42265.1			TIP B-5123			COUNTY CABARRUS			GEOLOGIST Callaway, R. Q.									
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.								GROUND WTR (ft)										
BORING NO. B-1(PED)		STATION 21+10		OFFSET 51 ft RT		ALIGNMENT -L-		0 HR. NM										
COLLAR ELEV. 566.9 ft		TOTAL DEPTH 29.7 ft		NORTHING 589,881		EASTING 1,500,514		24 HR. 7.0										
DRILL RIG/HAMMER EFF./DATE CME-550				DRILL METHOD NW Casing W/SPT & Core				HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 05/17/01		COMP. DATE 05/17/01		SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)				
			0.5ft	0.5ft	0.5ft	0	25	50	75	100								
570																		
565																		
	561.7	5.2																
			3	3	1													
560																		
	556.7	10.2																
			6	6	1													
555																		
	551.7	15.2																
			2	4	7													
550																		
	546.7	20.2																
			100	0.2														
545																		
540																		

Boring Terminated at Elevation 537.2 ft IN CRYSTALLINE ROCK (GABBRO)
 NOTE: THIS BORING WAS ORIGINALLY BORING 'B-1' FROM PROJECT 9.8100492 U-3827.

WBS 42265.1			TIP B-5123			COUNTY CABARRUS			GEOLOGIST Callaway, R. Q.									
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.								GROUND WTR (ft)										
BORING NO. B-2(PED)		STATION 21+63		OFFSET 51 ft RT		ALIGNMENT -L-		0 HR. NM										
COLLAR ELEV. 571.4 ft		TOTAL DEPTH 33.5 ft		NORTHING 589,902		EASTING 1,500,563		24 HR. FIAD										
DRILL RIG/HAMMER EFF./DATE CME-550				DRILL METHOD NW Casing W/SPT & Core				HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 05/15/01		COMP. DATE 05/15/01		SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)				
			0.5ft	0.5ft	0.5ft	0	25	50	75	100								
575																		
570																		
565																		
	566.5	4.9																
			2	2	3													
560																		
	561.5	9.9																
			2	1	1													
555																		
	556.5	14.9																
			2	1	1													
550																		
	551.5	19.9																
			1	1	2													
545																		
540																		

Boring Terminated at Elevation 537.9 ft IN CRYSTALLINE ROCK (GABBRO)
 NOTE: THIS BORING WAS ORIGINALLY BORING 'B-2' FROM PROJECT 9.8100492 U-3827.

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NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 42265.1	TIP B-5123	COUNTY CABARRUS	GEOLOGIST Callaway, R. Q.
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.			GROUND WTR (ft)
BORING NO. B-3(PED)	STATION 22+35	OFFSET 51 ft RT	ALIGNMENT -L-
COLLAR ELEV. 567.9 ft	TOTAL DEPTH 21.4 ft	NORTHING 589,929	EASTING 1,500,630
DRILL RIG/HAMMER EFF./DATE CME-550		DRILL METHOD NW Casing w/ SPT & Tri-Cone	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 05/18/01	COMP. DATE 05/18/01	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
570													GROUND SURFACE	0.0
565													ARTIFICIAL FILL BOULDERS AND SAND EROSION PROTECTION	
	562.7	5.2	2	3	2								ARTIFICIAL FILL	5.2
560													RED-BROWN LOOSE SILTY SAND (A-2)	7.2
	557.7	10.2	0	1	1								ALLUVIAL RED-BROWN LOOSE WET SLI. MICA SILTY SAND (A-2)	9.2
555													ALLUVIAL BROWN MODERATE TO HIGHLY ORGANIC SOFT SANDY CLAYEY SILT (A-4)	11.5
	554.9												ALLUVIAL RED-BROWN LOOSE TO V. LOOSE WET SILTY SAND (A-2)	13.0
550													ALLUVIAL GRAY LOOSE TO V. LOOSE WET CLEAN CSE. SAND (A-1)	18.5
	547.7	20.2	8	13	50/0.2								WEATHERED ROCK RED-BROWN V. DENSE INDURATED WEATHERD GABBRO	21.4
													Boring Terminated BY TRI-CONE REFUSAL at Elevation 546.5 ft ON CRYSTALLINE ROCK	
													NOTE: THIS BORING WAS ORIGINALLY BORING 'B-3' FROM PROJECT 9.8100492 U-3827.	
													NOTE: DRIVE AT 15.2 WAS NOT TAKEN DUE TO SAND BLOW BACK, PROCEEDED TO NEXT DRIVE.	
														100/7

WBS 42265.1	TIP B-5123	COUNTY CABARRUS	GEOLOGIST Callaway, R. Q.
SITE DESCRIPTION REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER & ACCESS RD.			GROUND WTR (ft)
BORING NO. EB2(PED)	STATION 22+85	OFFSET 51 ft RT	ALIGNMENT -L-
COLLAR ELEV. 585.7 ft	TOTAL DEPTH 34.7 ft	NORTHING 589,948	EASTING 1,500,676
DRILL RIG/HAMMER EFF./DATE CME-550		DRILL METHOD Solid Augers	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 05/18/01	COMP. DATE 05/18/01	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
590													GROUND SURFACE	0.0
585													ROADWAY EMBANKMENT RED-BROWN MED. STIFF WET SANDY SILT (A-4)	
580														
575														
570														
565														
560													ALLUVIAL RED-BROWN SILTY SAND (A-2)	23.4
	562.3												ALLUVIAL GRAY SLI. SILTY WET TO SAT. CSE. SAND (A-1)	25.0
555													WEATHERED ROCK GRAY VERY DENSE INDURATED MATERIAL - AUGER REFUSAL AT BASE.	34.0
	551.7												Boring Terminated BY AUGER REFUSAL at Elevation 551.0 ft ON CRYSTALLINE ROCK	34.7
	551.0												NOTE: THIS BORING WAS ORIGINALLY BORING 'EB2' FROM PROJECT 9.8100492 U-3827.	

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42265.1.1 (B-5123)
CABARRUS COUNTY
REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER AND ACCESS ROAD

CORE PHOTOS

B1-A(SBL)



42265.1.1 (B-5123)
CABARRUS COUNTY
REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER AND ACCESS ROAD

CORE PHOTOS

B1-A(NBL)



42265.1.1 (B-5123)
CABARRUS COUNTY
REPLACE BRIDGE NO. 014 & 019 ON US 29 OVER ROCKY RIVER AND ACCESS ROAD

CORE PHOTOS

B1-B(NBL)



