

REFERENCE: SF 580046

PROJECT: 17BP.13.R.157

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-580046	1	14

STRUCTURE
SUBSURFACE INVESTIGATION

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COUNTY McDOWELL
PROJECT DESCRIPTION BRIDGE NO. 46 ON SR 1135
OVER CROOKED CREEK

SITE DESCRIPTION _____

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 (919) 707-6850. 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
CD JOHNSON
DO CHEEK
CJ COFFEY

INVESTIGATED BY _____
DRAWN BY JC KUHNE
CHECKED BY DC ELLIOTT
SUBMITTED BY JC KUHNE
DATE 8/24/2018



DocuSigned by:
Jody C. Kuhne 10/3/2018
4F9C0666A1B0818NATURE DATE

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

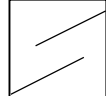

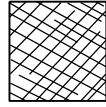

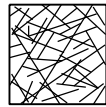



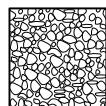

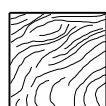



**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT**

SUBSURFACE INVESTIGATION

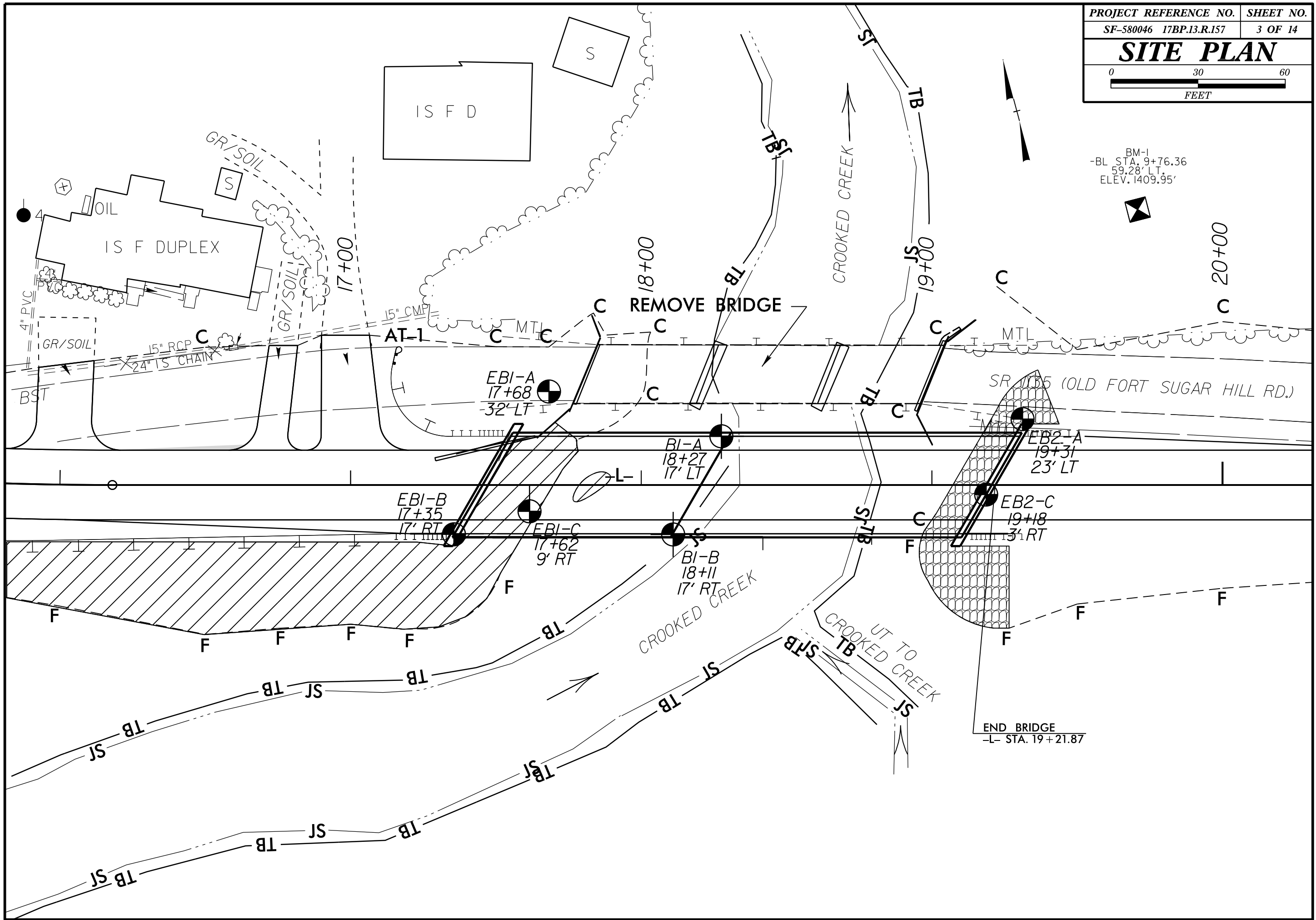
**SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS**

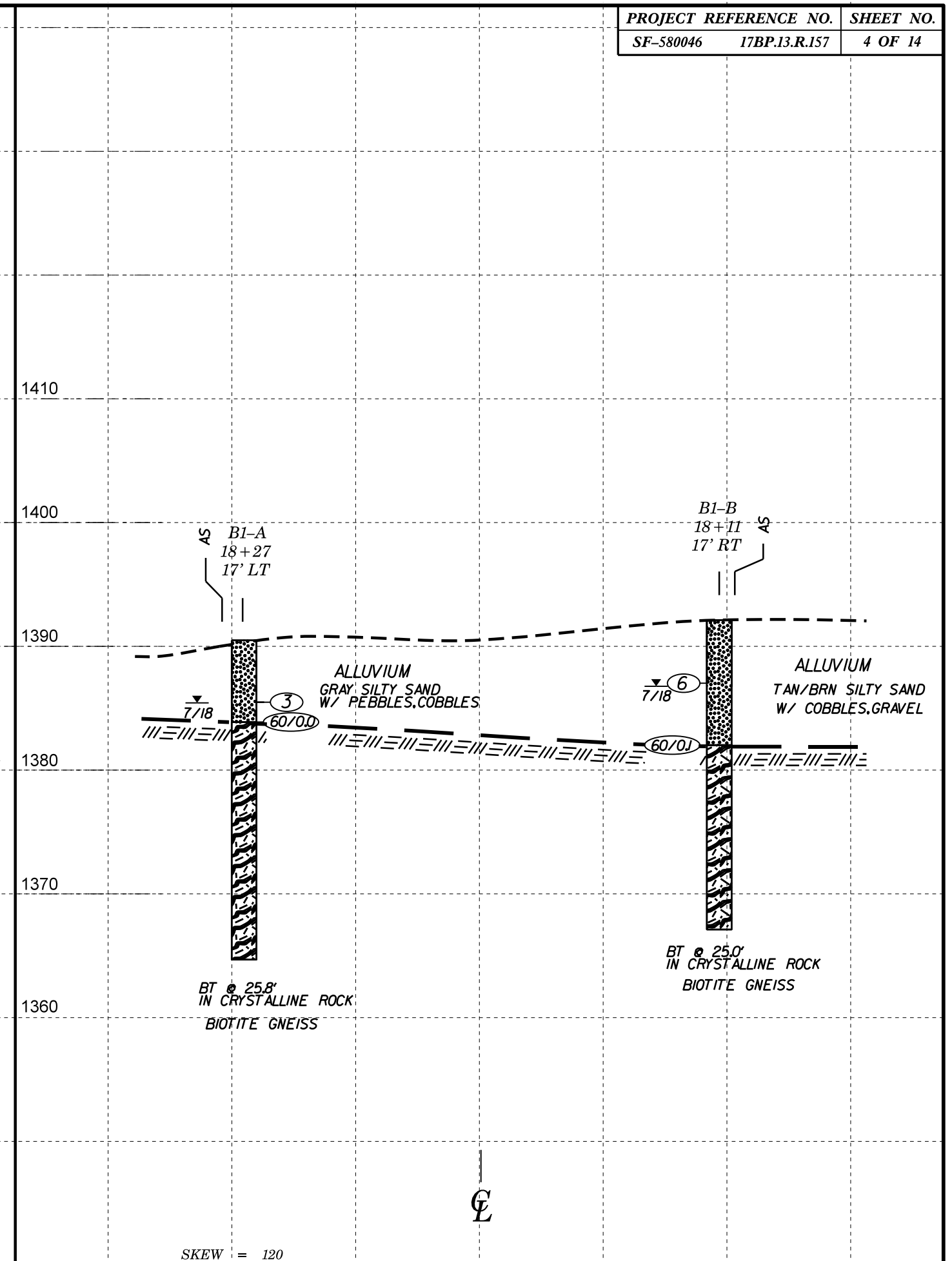
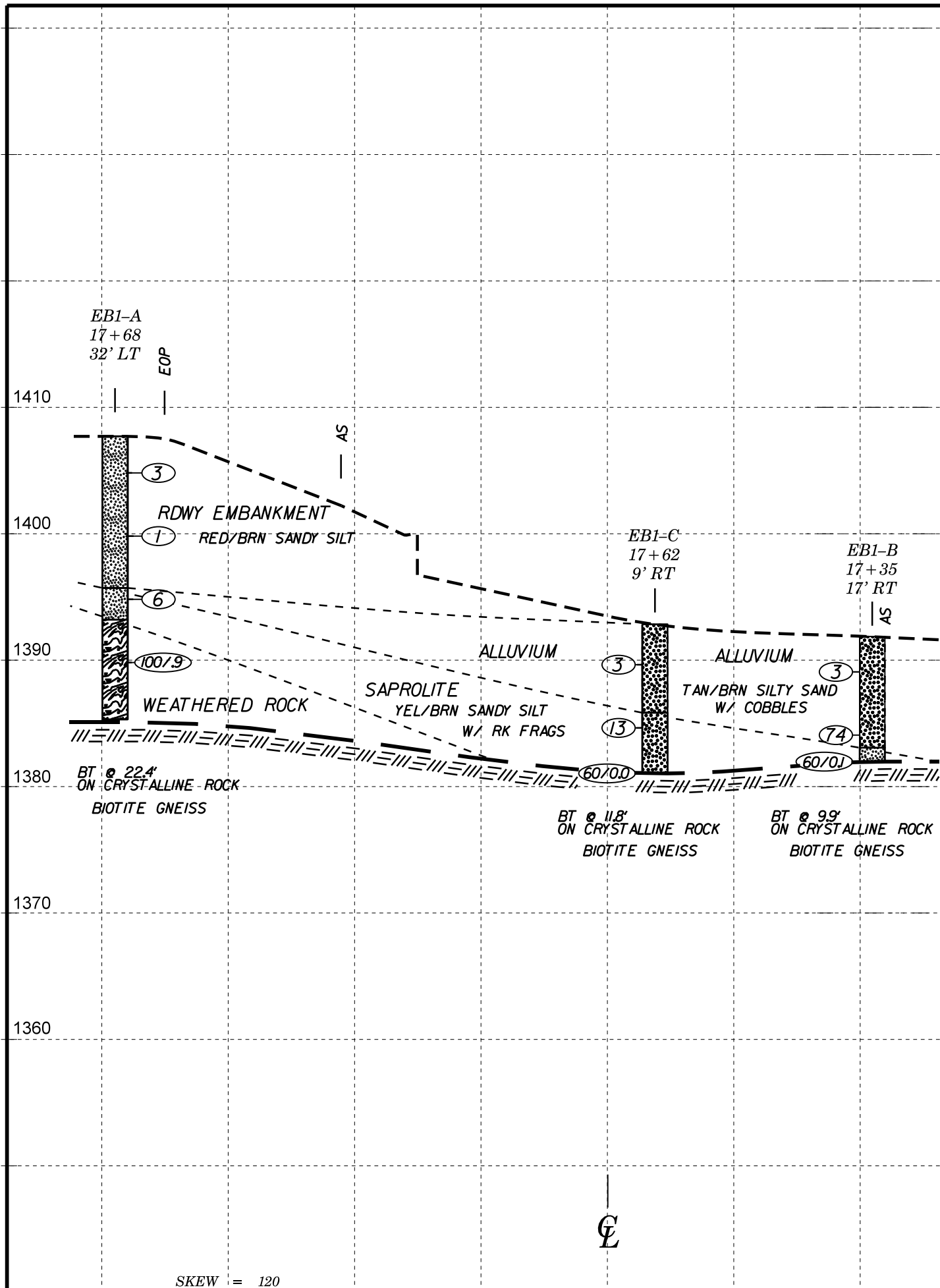
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)	SURFACE CONDITIONS					GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)	SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)				
	VERY GOOD Very rough, fresh unweathered surfaces	GOOD Rough, slightly weathered, iron stained surfaces	FAIR Smooth, moderately weathered and altered surfaces	POOR Slackensided, highly weathered surfaces with compact coatings or fillings or angular fragments	VERY POOR Slackensided, highly weathered surfaces with soft clay coatings or fillings		VERY GOOD - Very Rough, fresh unweathered surfaces	GOOD - Rough, slightly weathered surfaces	FAIR - Smooth, moderately weathered and altered surfaces	POOR - Very smooth, occasionally slackensided surfaces with compact coatings or fillings with angular fragments	VERY POOR - Very smooth, slackensided or highly weathered surfaces with soft clay coatings or fillings
STRUCTURE	DECREASING SURFACE QUALITY →					COMPOSITION AND STRUCTURE					
 <p>INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities</p>	90			N/A	N/A	 <p>A. Thick bedded, very blocky sandstone. The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass. In shallow tunnels or slopes these bedding planes may cause structurally controlled instability.</p>	70				
 <p>BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets</p>	80	70				 <p>B. Sandstone with thin inter-layers of siltstone</p>	60				
 <p>VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets</p>		60	50			 <p>C. Sandstone and siltstone in similar amounts</p>	50				
 <p>BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity</p>			40			 <p>D. Siltstone or silty shale with sandstone layers</p>	40				
 <p>DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces</p>				30		 <p>E. Weak siltstone or clayey shale with sandstone layers</p>	30				
 <p>LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes</p>				20		 <p>F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure</p>	20				
				10		 <p>G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers</p>	10				
	N/A	N/A				 <p>H. Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.</p>					
						→ Means deformation after tectonic disturbance					

BM-1
-BL STA. 9+76.36
59.28' LT.
ELEV. 1409.95'



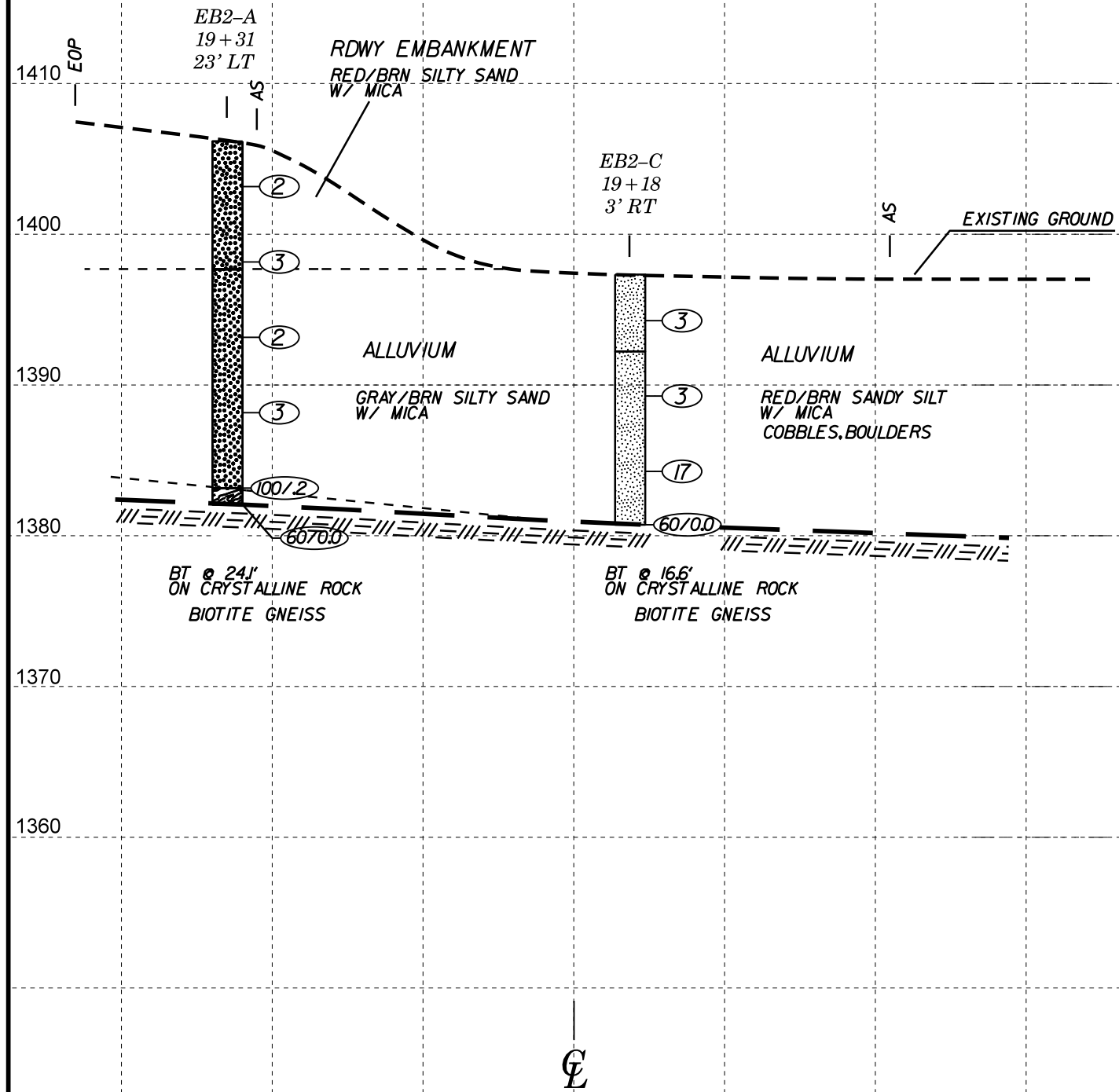


SKEW = 120
 HORIZ. SCALE 0 10 20 (FEET)
 VE = 1:1

SECTION ALONG EBI

SKEW = 120
 HORIZ. SCALE 0 10 20 (FEET)
 VE = 1:1

SECTION ALONG BI

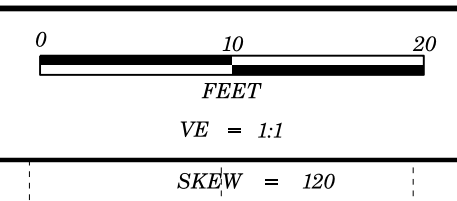


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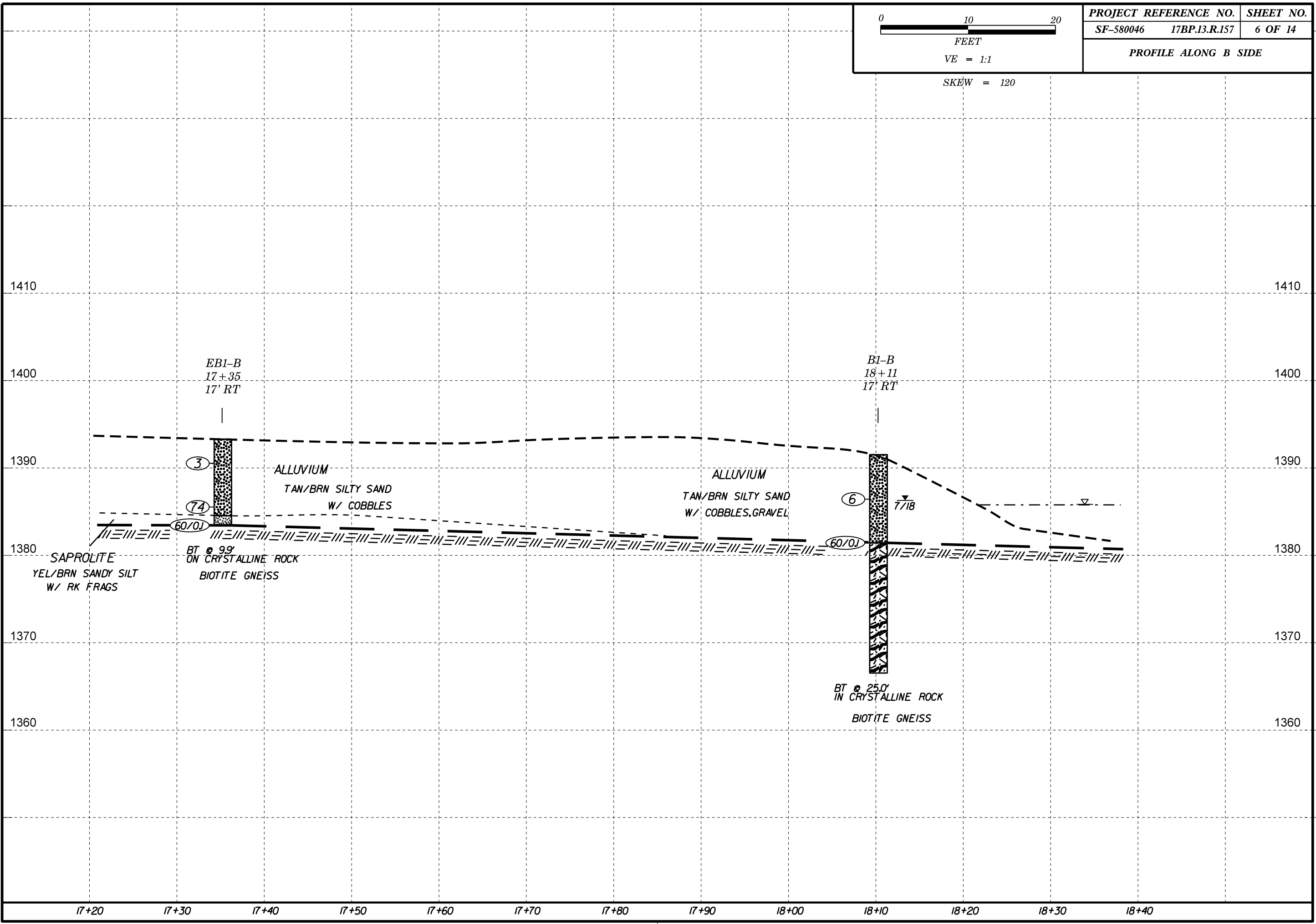
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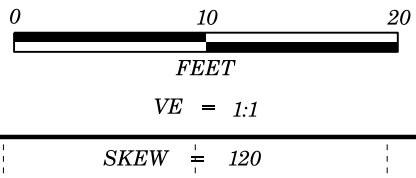
SECTION ALONG EB2



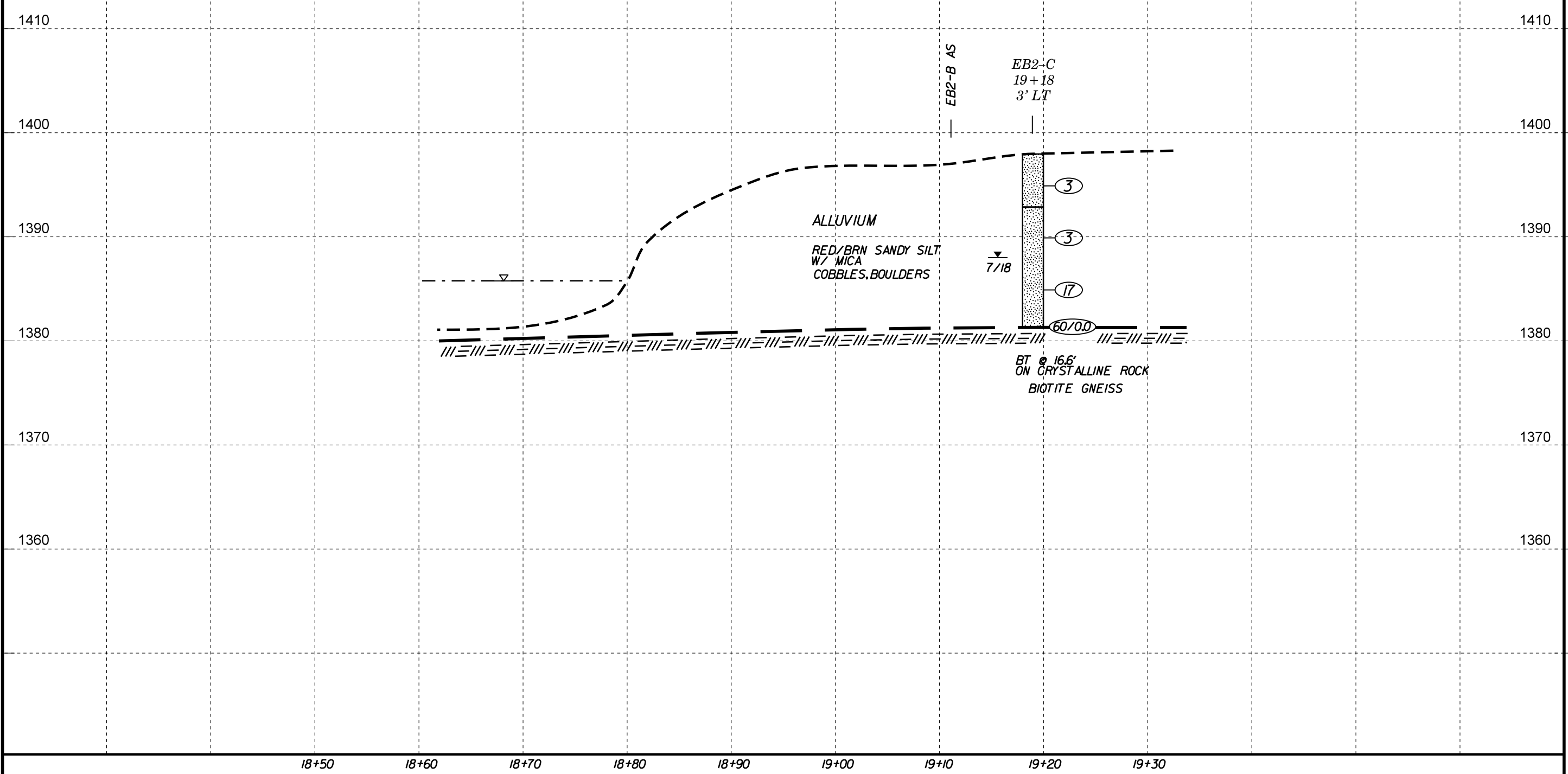
PROJECT REFERENCE NO.	SHEET NO.
SF-580046 17BP.13.R.157	6 OF 14
PROFILE ALONG B SIDE	



17+20 17+30 17+40 17+50 17+60 17+70 17+80 17+90 18+00 18+10 18+20 18+30 18+40



PROJECT REFERENCE NO.	SHEET NO.
SF-580046 17BP.13.R.157	7 OF 14
PROFILE ALONG B SIDE	



GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.13.R.157		TIP B-5865		COUNTY McDOWELL		GEOLOGIST Tidmore, Z. R.										
SITE DESCRIPTION Replace Bridge No. 46 on SR 1135 (Old Fort Sugar Hill Rd) over Crooked Creek							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 17+68		OFFSET 32 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,407.8 ft		TOTAL DEPTH 22.4 ft		NORTHING 689,903		EASTING 1,073,642										
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 86% 03/21/2016			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Duggins, W.		START DATE 04/07/16		COMP. DATE 04/07/16		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						
1410														1,407.8	GROUND SURFACE	0.0
1405	1,404.9	2.9	6	2	1							M	ROADWAY EMBANKMENT very soft to soft, reddish brown, clayey and sandy silt			
1400	1,399.9	7.9	1	WOH	1							M				
1395	1,394.9	12.9	WOH	2	4							M	RESIDUAL medium stiff, yellowish brown, sandy silt	12.0		
1390	1,389.9	17.9	65	35/0.5								M	WEATHERED ROCK weathered rock (biotite schist)	14.5		
														1,385.4	Boring Terminated by Auger Refusal at Elevation 1,385.4 ft on crystalline rock (biotite schist)	22.4

NCDOT BORE DOUBLE B5865_GEO_BRDG0046_BL.GPJ NC_DOT.GDT 8/23/18

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.										
SITE DESCRIPTION Replace Bridge No.46 on SR 1135 over Crooked Creek							GROUND WTR (ft)									
BORING NO. EB1-C		STATION 17+62		OFFSET 9 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,392.6 ft		TOTAL DEPTH 11.8 ft		NORTHING 689,865		EASTING 1,073,625										
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Cheek, D. O.		START DATE 07/17/18		COMP. DATE 07/17/18		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						
1395														1,392.6	GROUND SURFACE	0.0
1390	1,389.4	3.2	1	1	2							M	ALLUVIAL BROWN-TAN, SILTY-SAND W/ANGULAR COBBLES/GRAVELS			
1385	1,384.4	8.2	14	6	7							M	SAPROLITE WHITE/LIGHT BROWN, SILTY-SAND W/ RK FRAGS	7.0		
														1,380.8	CRYSTALLINE ROCK DK GREY/BLACK, BIOTITE GNEISS Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 1,380.8 ft ON CRYSTALLINE ROCK	11.8

NCDOT BORE SINGLE SF-580046_GEO_BORINGS_20180718.GPJ NC_DOT.GDT 8/23/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.									
SITE DESCRIPTION 41' IN-LINE, UP-STATION 45' S OF SW CORNER EXISTING BRIDGE							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 17+35		OFFSET 17 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 1,391.8 ft		TOTAL DEPTH 9.9 ft		NORTHING 689,864		EASTING 1,073,598									
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Cheek, D. O.		START DATE 07/18/18		COMP. DATE 07/18/18		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)	
1395															
1390	1,389.0	2.8	1	1	2							M		1,391.8	0.0
1385	1,384.0	7.8	10	41	33							M		1,383.0	8.8
	1,381.9	9.9	60/0.1											1,381.9	9.9

NCDOT BORE DOUBLE SF-580046_GEO_BORINGS_20180718.GPJ NC_DOT_GDT 8/23/18

GROUND SURFACE 0.0

ALLUVIAL
Light tan-brown silty-sand w/ few cobbles

SAPROLITE
Dark grey-black sandy-silt

CRYSTALLINE ROCK
Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 1,381.9 ft ON CRYSTALLINE ROCK

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.									
SITE DESCRIPTION Replace Bridge No. 46 on SR 1135 over Crooked Creek							GROUND WTR (ft)								
BORING NO. B-1A		STATION 18+27		OFFSET 17 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 1,390.5 ft		TOTAL DEPTH 25.8 ft		NORTHING 689,873		EASTING 1,073,696									
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic											
DRILLER Cheek, D. O.		START DATE 07/18/18		COMP. DATE 07/18/18		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					
1395															
1390														GROUND SURFACE	0.0
1385	1,385.5	5.0												ALLUVIAL DARK GREY, MOTTLED, SILTY-SAND W/SOME PEBBLES/COBBLES	
	1,383.9	6.6	1	1	2									CRYSTALLINE ROCK BIOTITE GNEISS	6.6
1380															
1375															
1370															
1365															
														Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 1,364.7 ft IN CRYSTALLINE ROCK	25.8

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.						
SITE DESCRIPTION Replace Bridge No. 46 on SR 1135 over Crooked Creek							GROUND WTR (ft)					
BORING NO. B-1A		STATION 18+27		OFFSET 17 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 1,390.5 ft		TOTAL DEPTH 25.8 ft		NORTHING 689,873		EASTING 1,073,696						
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Cheek, D. O.		START DATE 07/18/18		COMP. DATE 07/18/18		SURFACE WATER DEPTH N/A						
CORE SIZE NW			TOTAL RUN 19.2 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
1383.86												
	1,383.9	6.6	4.2	N=60/0.0	(4.0)	(1.2)					Begin Coring @ 6.6 ft CRYSTALLINE ROCK	6.6
1380	1,379.7	10.8	5.0		(4.9)	(4.2)						
					(98%)	(84%)						
1375	1,374.7	15.8	5.0		(5.0)	(4.1)						
					(100%)	(82%)						
1370	1,369.7	20.8	5.0		(5.0)	(5.0)						
					(100%)	(100%)						
1365	1,364.7	25.8										
											Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 1,364.7 ft IN CRYSTALLINE ROCK	25.8

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.									
SITE DESCRIPTION Replace Bridge No. 46 on SR 1135 over Crooked Creek							GROUND WTR (ft)								
BORING NO. B-1B		STATION 18+11		OFFSET 17 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 1,392.0 ft		TOTAL DEPTH 25.0 ft		NORTHING 689,845		EASTING 1,073,671									
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017			DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic										
DRILLER Cheek, D. O.		START DATE 07/19/18		COMP. DATE 07/19/18		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					
1395															
1390															
1385	1,386.9	5.1	2	4	2										
1380	1,381.9	10.1	60/0.1												
1375															
1370															

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.				
SITE DESCRIPTION Replace Bridge No. 46 on SR 1135 over Crooked Creek							GROUND WTR (ft)			
BORING NO. B-1B		STATION 18+11		OFFSET 17 ft RT		ALIGNMENT -L-				
COLLAR ELEV. 1,392.0 ft		TOTAL DEPTH 25.0 ft		NORTHING 689,845		EASTING 1,073,671				
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017			DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic					
DRILLER Cheek, D. O.		START DATE 07/19/18		COMP. DATE 07/19/18		SURFACE WATER DEPTH N/A				
CORE SIZE NW				TOTAL RUN 14.9 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.			
1381.92										
1380	1,381.9	10.1	4.9	N=60/0.1	(4.9) 100%	(2.6) 53%				1,381.9
1375	1,377.0	15.0	5.0		(5.0) 100%	(3.8) 76%				
1370	1,372.0	20.0	5.0		(5.0) 100%	(5.0) 100%				
	1,367.0	25.0								1,367.1

NCDOT BORE DOUBLE SF-580046_GEO_BORINGS_20180718.GPJ NC_DOT_GDT 8/23/18

NCDOT BORE SINGLE SF-580046_GEO_BORINGS_20180718.GPJ NC_DOT_GDT 8/23/18

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.										
SITE DESCRIPTION Replace Bridge No. 46 on SR 1135 over Crooked Creek							GROUND WTR (ft)									
BORING NO.	STATION	OFFSET	ALIGNMENT				0 HR.									
EB2-A	19+31	23 ft LT	-L-				23.3									
COLLAR ELEV.	TOTAL DEPTH	NORTHING	EASTING				24 HR.									
1,406.6 ft	24.1 ft	689,853	1,073,797				17.3									
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Cheek, D. O.		START DATE 07/19/18	COMP. DATE 07/19/18	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						
1410																
														1,406.6	GROUND SURFACE	0.0
1405	1,403.6	3.0	1	1	1							M				
															ROADWAY EMBANKMENT RED-BROWN, CLAYEY-SILTY-SAND, SLIGHTLY MICACEOUS	
1400	1,398.6	8.0	1	1	2							M		1,398.0		8.6
															ALLUVIAL DARK GREY-BROWN, SILTY-SAND, SLIGHTLY MICACEOUS	
1395	1,393.6	13.0	1	1	1							M				
1390	1,388.6	18.0	1	1	2							M				
1385	1,383.6	23.0												1,383.6		23.0
	1,382.5	24.1	35		65/0.2									1,382.5		24.1
															WEATHERED ROCK DARK GREY, FOLIATED, BIOTITE GNEISS	
															CRYSTALLINE ROCK BIOTITE GNEISS	
															Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 1,382.5 ft ON CRYSTALLINE ROCK	

NCDOT BORE DOUBLE SF-580046_GEO_BORINGS_20180718.GPJ NC_DOT_GDT 8/23/18

WBS 17BP.13.R.157		TIP SF-580046		COUNTY McDOWELL		GEOLOGIST Johnson, C. D.										
SITE DESCRIPTION Replace Bridge No. 46 on SR 1135 over Crooked Creek							GROUND WTR (ft)									
BORING NO.	STATION	OFFSET	ALIGNMENT				0 HR.									
EB2-C	19+19	3 ft RT	-L-				Dry									
COLLAR ELEV.	TOTAL DEPTH	NORTHING	EASTING				24 HR.									
1,397.3 ft	16.6 ft	689,831	1,073,779				9.9									
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Cheek, D. O.		START DATE 07/17/18	COMP. DATE 07/17/18	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						
1400																
														1,397.3	GROUND SURFACE	0.0
1395	1,394.3	3.0	1	1	2							M				
															ALLUVIAL BROWN-TAN, SANDY-SILT, FINE-GRAIN WITH SOME COBBLES/ORGANICS	
1390	1,389.3	8.0	1	1	2							M		1,392.2		5.1
															ALLUVIAL RED-BROWN, SANDY SILT, FINE-GRAIN, SLIGHTLY MICACEOUS W/SOME COBBLES/BOULDERS	
1385	1,384.3	13.0														
														1,380.7		16.6
															CRYSTALLINE ROCK BIOTITE GNEISS	
															Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 1,380.7 ft ON CRYSTALLINE ROCK	

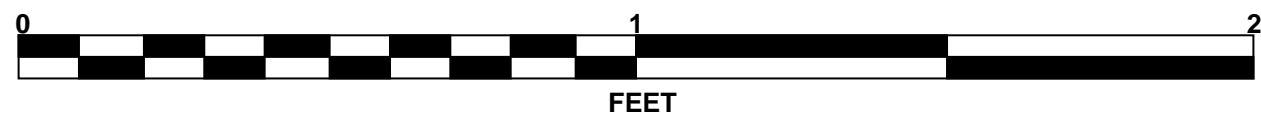
NCDOT BORE SINGLE SF-580046_GEO_BORINGS_20180718.GPJ NC_DOT_GDT 8/23/18

CORE PHOTOGRAPHS

B1-A
BOX 1: 6.6 - 15.8 FEET



GSI = 55 to 65



B1-A
BOX 2: 15.8 - 25.8 FEET



GSI = 55 to 65 at 6.6 to 19'

GSI = 65 to 75 below 19'



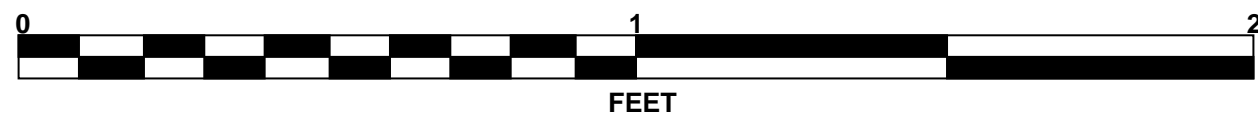
CORE PHOTOGRAPHS

B1-B

BOX 1: 10.1 - 18.7 FEET



GSI = 40 to 50 from 10.1 to 18.4'



B1-B

BOX 2: 18.7 - 25.1 FEET



GSI = 70 to 80 from 18.4 to 25.0'

