

PROJECT: 46122 REFERENCE: B-5407

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	46122 B-5407	1	12

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
2A	SUPPLEMENTAL LEGEND (GSI)
3	SITE PLAN
4	PROFILE
5-7	CROSS SECTIONS
8-12	BORE LOGS & CORE LOG

**STRUCTURE  
SUBSURFACE INVESTIGATION**

COUNTY POLK  
PROJECT DESCRIPTION REPLACE BRIDGE 34 ON  
SR-1311 (ROCK SPRING RD) OVER WALNUT 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

CJ COFFEE

DO CHEEK

DC ELLIOTT

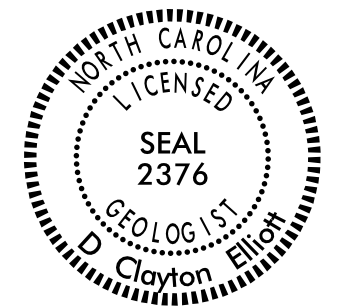
INVESTIGATED BY DC ELLIOTT

DRAWN BY PQ LOCKAMY

CHECKED BY JC KUHNE

SUBMITTED BY JC KUHNE

DATE 2/23/2017



DocuSigned by: D. Clayton Elliott 4/12/2018

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



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

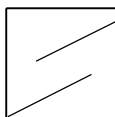
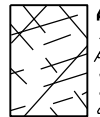
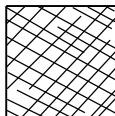
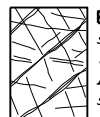




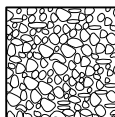

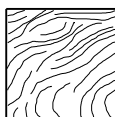
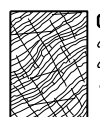


---

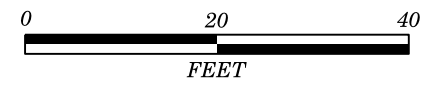
**SUBSURFACE INVESTIGATION**

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

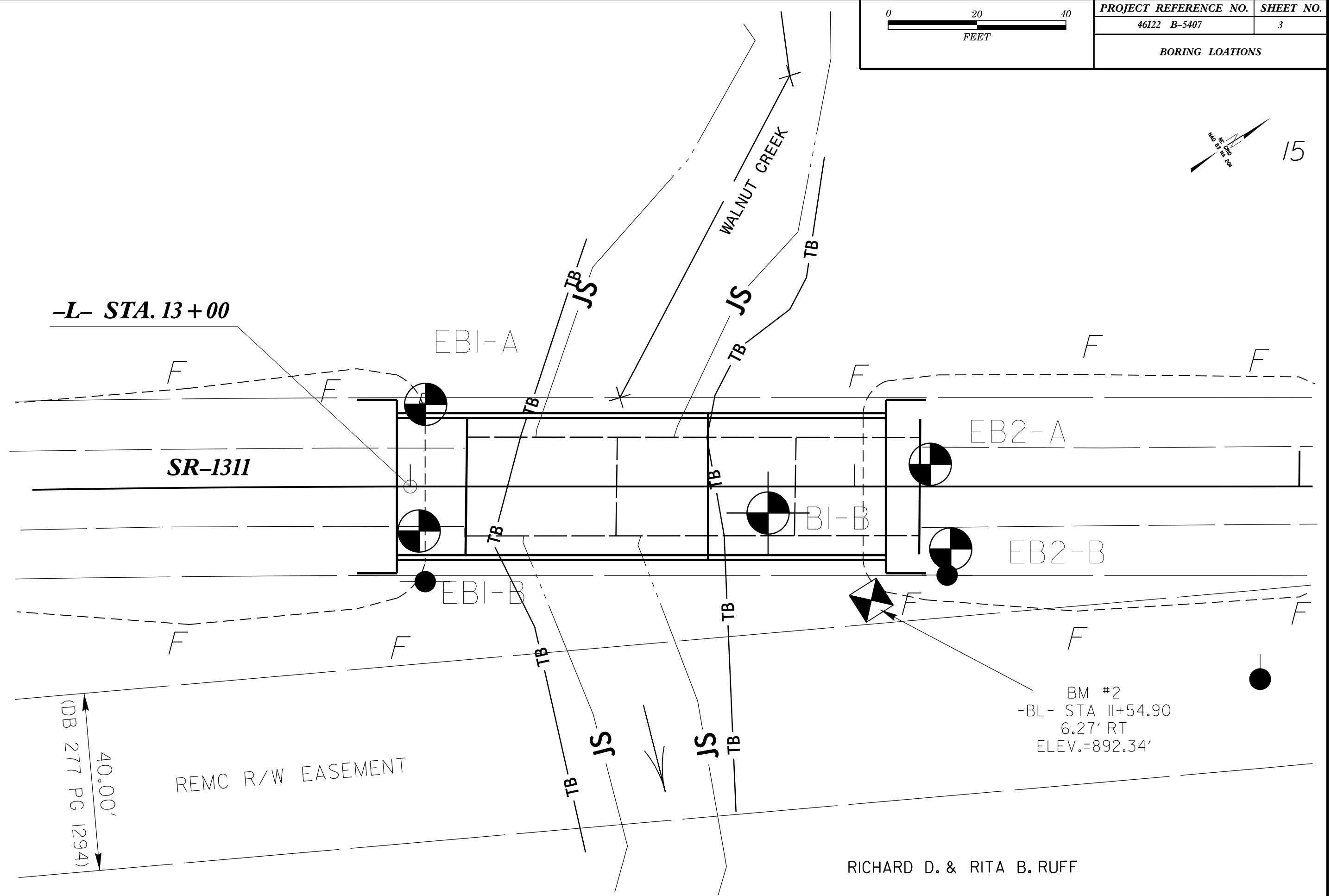
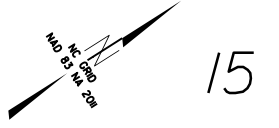
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

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)				
<p>From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.</p>	VERY GOOD	GOOD	FAIR	POOR	VERY POOR	<p>From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.</p>	VERY GOOD - Very Rough, fresh unweathered surfaces	GOOD - Rough, slightly weathered surfaces	FAIR - Smooth, moderately weathered and altered surfaces	POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments	VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings
	Very rough, fresh unweathered surfaces	Rough, slightly weathered, iron stained surfaces	Smooth, moderately weathered and altered surfaces	Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments	Slickensided, highly weathered surfaces with soft clay coatings or fillings		Very Rough, fresh unweathered surfaces	Rough, slightly weathered surfaces	Smooth, moderately weathered and altered surfaces	Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments	Very smooth, slickensided 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><b>A.</b> 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>B.</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><b>C.</b> Sandstone and siltstone in similar amounts</p>					
 <p>BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity</p>			40			 <p><b>D.</b> Siltstone or silty shale with sandstone layers</p>					
 <p>DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces</p>				30		 <p><b>E.</b> Weak siltstone or clayey shale with sandstone layers</p>					
 <p>LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes</p>				20		<p><b>C, D, E, and G</b> - may be more or less folded than illustrated but this does not change the strength. Tectonic deformation, faulting and loss of continuity moves these categories to <b>F</b> and <b>H</b>.</p>			30		
				10		 <p><b>G.</b> Undisturbed silty or clayey shale with or without a few very thin sandstone layers</p>					
	N/A	N/A				 <p><b>H.</b> 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>					
						<p>→ Means deformation after tectonic disturbance</p>					



<b>PROJECT REFERENCE NO.</b> 46122 B-5407	<b>SHEET NO.</b> 3
<b>BORING LOCATIONS</b>	



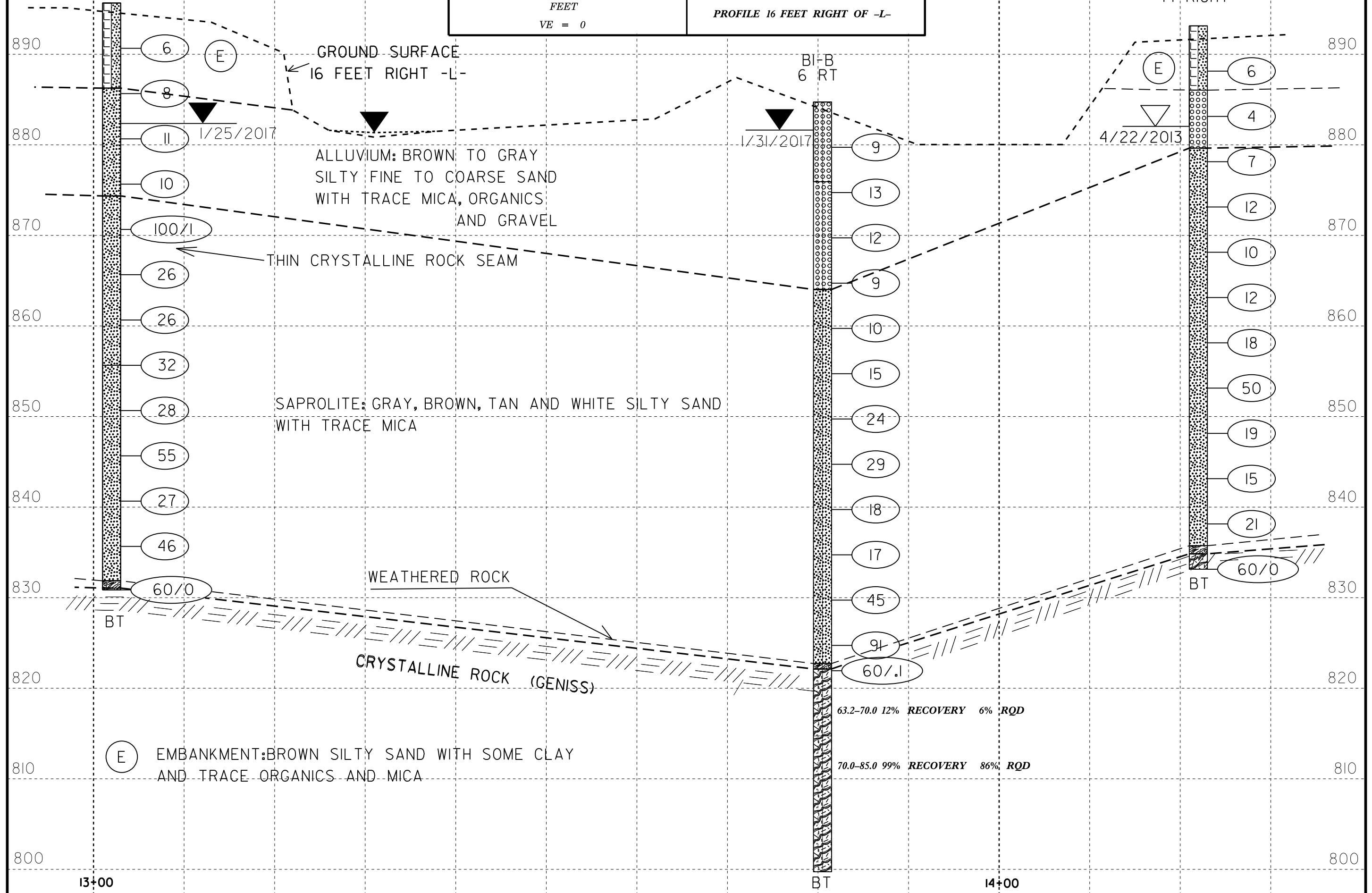
RICHARD D. & RITA B. RUFF

EBI-B  
10+ RIGHT

EB2-B  
14+ RIGHT

PROJECT REFERENCE NO. B-5407 46122	SHEET NO. 4
PROFILE 16 FEET RIGHT OF -L-	

0 10 20  
FEET  
VE = 0



- 6
- 8
- 11
- 10
- 100/1
- 26
- 26
- 32
- 28
- 55
- 27
- 46
- 60/0

- 9
- 13
- 12
- 9
- 10
- 15
- 24
- 29
- 18
- 17
- 45
- 91
- 60/.1

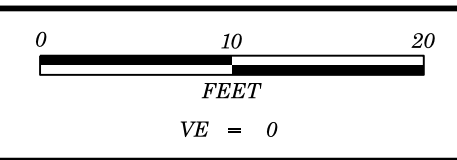
- 6
- 4
- 7
- 12
- 10
- 12
- 18
- 50
- 19
- 15
- 21
- 60/0

63.2-70.0 12% RECOVERY 6% RQD

70.0-85.0 99% RECOVERY 86% RQD

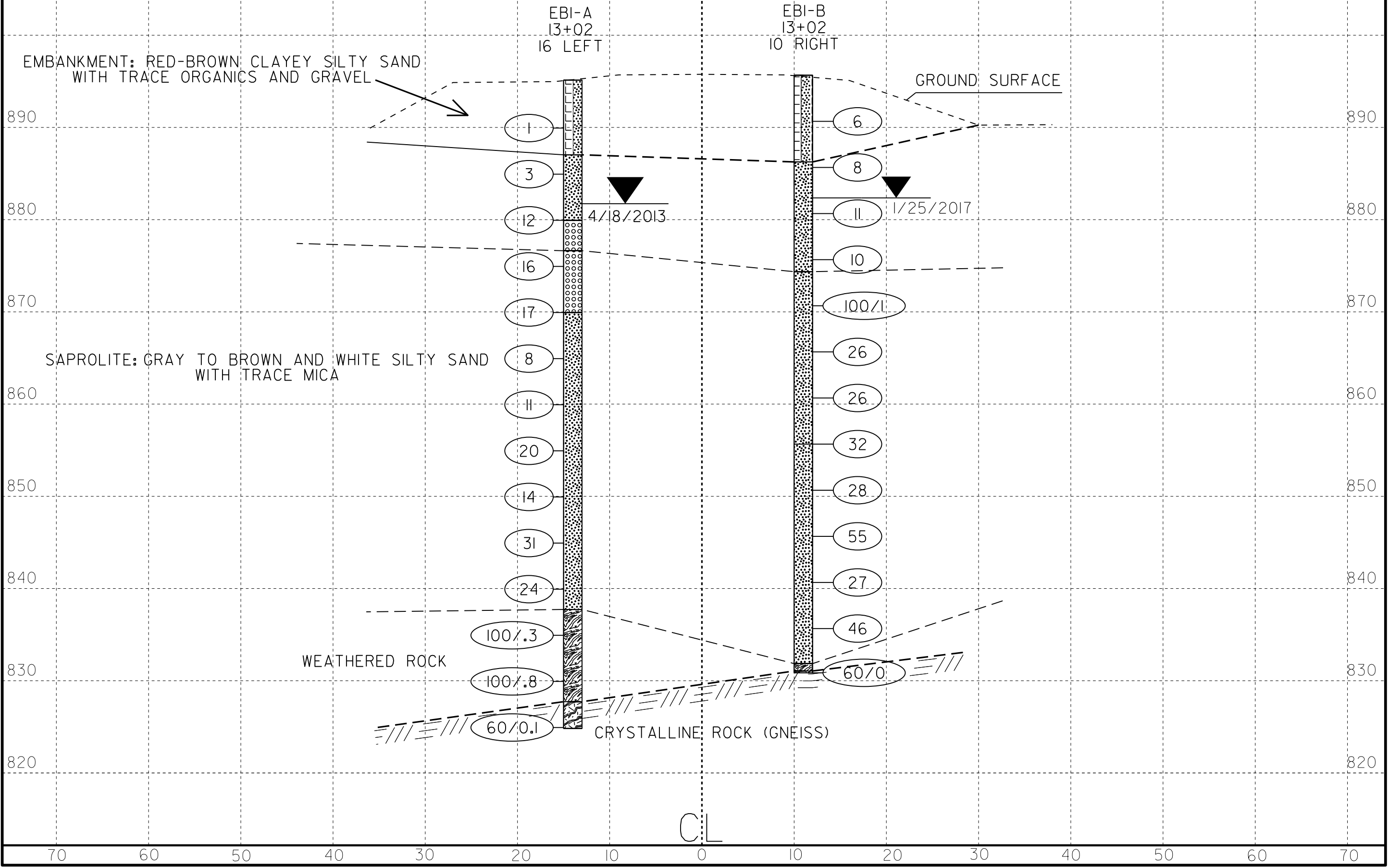
13+00

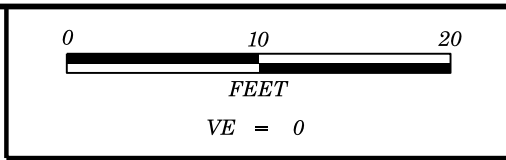
14+00



<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
B-5407 46122	5
<b>SECTION THRU PROPOSED EBI AT -L- STATION 12+97</b>	

SKEW = 90 DEGREES





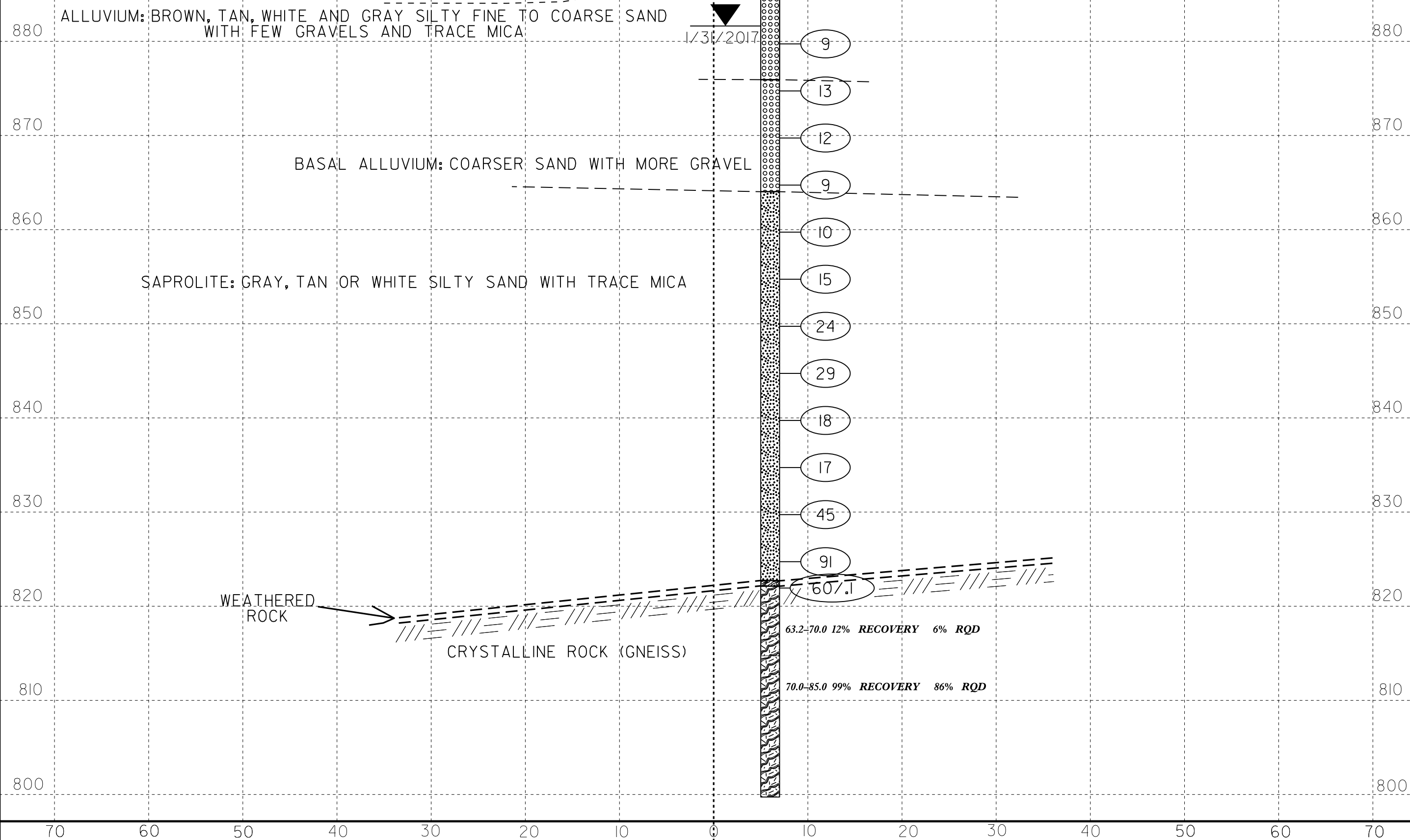
<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
B-5407 46122	6
<b>SECTION THRU PROPOSED BI AT -L- STATION 13+52</b>	

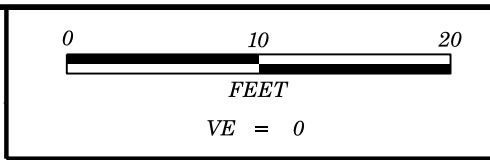
BI-B  
13+81

GROUND SURFACE

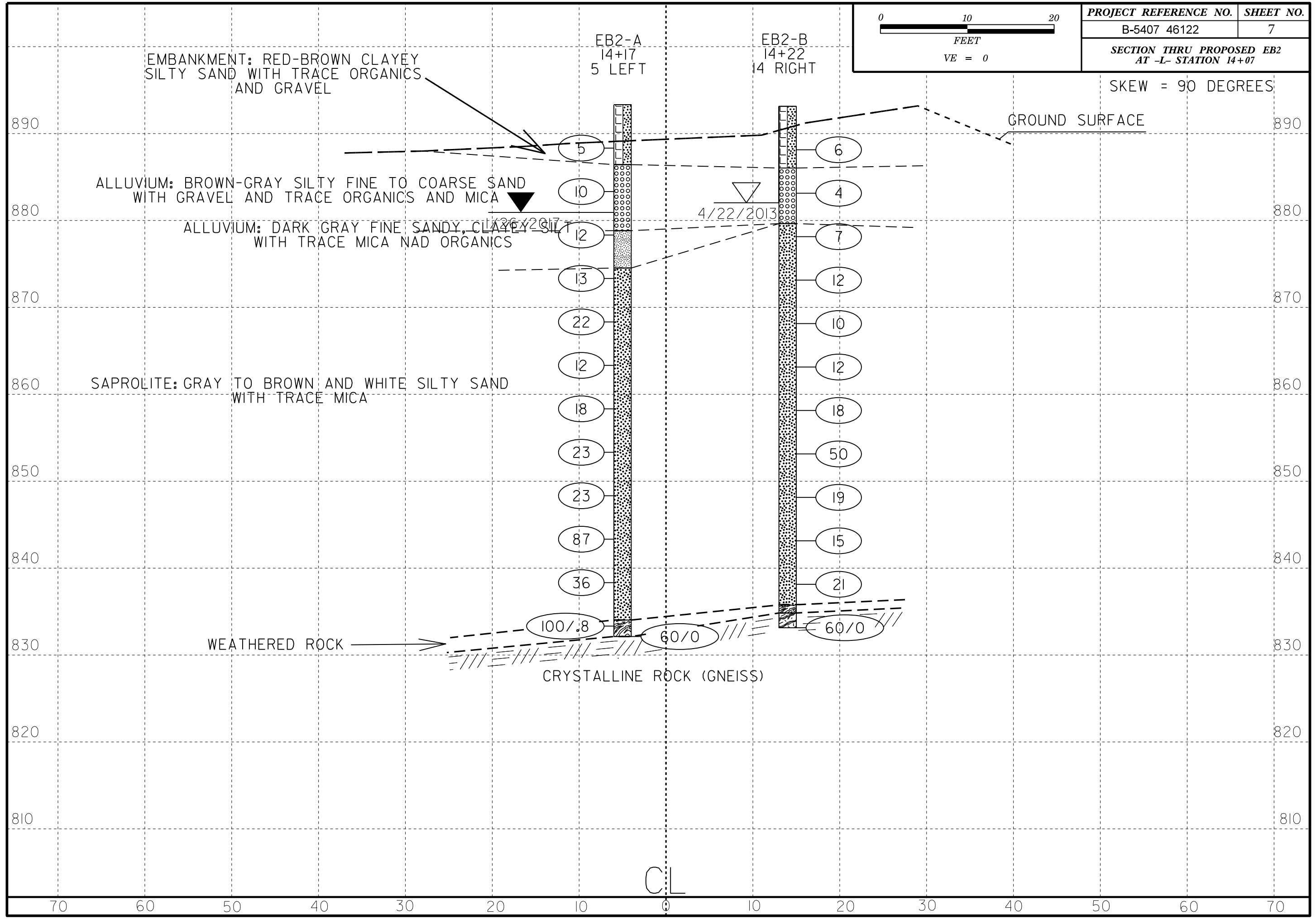
SKEW = 90 DEGREES

6 RIGHT





<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
B-5407 46122	7
<b>SECTION THRU PROPOSED EB2 AT -L- STATION 14+07</b>	





# GEOTECHNICAL BORING REPORT BORE LOG

WBS 46122.1.1		TIP B-5407		COUNTY POLK		GEOLOGIST Elliott, D. C.									
SITE DESCRIPTION BRDG # 34 ON SR-1311 OVER WALNUT CREEK									GROUND WTR (ft)						
BORING NO. EB1-A			STATION 13+02		OFFSET 16 ft LT		ALIGNMENT -L-		0 HR. N/A						
COLLAR ELEV. 895.1 ft			TOTAL DEPTH 70.3 ft		NORTHING 606,088		EASTING 1,066,812		24 HR. 13.4						
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015					DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic								
DRILLER Cheek, D. O.			START DATE 04/18/13		COMP. DATE 04/15/13		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					
900														895.1	0.0
895															
890	889.9	5.2		WOH	WOH	1									
885	884.9	10.2		1	1	2								887.0	8.1
880	879.9	15.2		4	6	6								879.9	15.2
875	874.9	20.2		8	8	8								876.6	18.5
870	869.9	25.2		3	9	8								869.9	25.2
865	864.9	30.2		3	3	5									
860	859.9	35.2		4	4	7									
855	854.9	40.2		6	9	11									
850	849.9	45.2		5	5	9									
845	844.9	50.2		4	10	21									
840	839.9	55.2		8	12	12									
835	834.9	60.2		100/0.3											
830	829.9	65.2		74	26/0.3										
825	824.9	70.2		60/0.1											

WBS 46122.1.1		TIP B-5407		COUNTY POLK		GEOLOGIST Elliott, D. C.									
SITE DESCRIPTION BRDG # 34 ON SR-1311 OVER WALNUT CREEK									GROUND WTR (ft)						
BORING NO. EB1-B			STATION 13+02		OFFSET 10 ft RT		ALIGNMENT -L-		0 HR. N/A						
COLLAR ELEV. 895.7 ft			TOTAL DEPTH 64.8 ft		NORTHING 606,071		EASTING 1,066,836		24 HR. 13.3						
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015					DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic								
DRILLER Cheek, D. O.			START DATE 01/25/17		COMP. DATE 01/25/17		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					
900														895.7	0.0
895															
890	890.7	5.0		4	2	4									
885	885.7	10.0		2	4	4								886.3	9.4
880	880.7	15.0		1	3	8									
875	875.7	20.0		1	2	8								874.4	21.3
870	870.7	25.0		5	17	83/05									
865	865.7	30.0		8	12	14									
860	860.7	35.0		10	12	14									
855	855.7	40.0		13	15	17									
850	850.7	45.0		16	13	15									
845	845.7	50.0		17	18	37									
840	840.7	55.0		11	11	16									
835	835.7	60.0		15	19	27									
	830.9	64.8		60/0.0											

NCDOT BORE DOUBLE B5407\_GEO\_BRDG0034\_BORELOGS.GPJ NC\_DOT\_GDT 2/23/17

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 46122.1.1		TIP B-5407		COUNTY POLK		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION BRDG # 34 ON SR-1311 OVER WALNUT CREEK							GROUND WTR (ft)									
BORING NO. B1-B		STATION 13+81		OFFSET 6 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 884.7 ft		TOTAL DEPTH 85.0 ft		NORTHING 606,140		EASTING 1,066,874										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic												
DRILLER Cheek, D. O.		START DATE 01/31/17		COMP. DATE 01/31/17		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						
885														884.7	GROUND SURFACE	0.0
880	879.7	5.0	3	5	4								W	ALLUVIAL BROWN/GRAY/WHITE SILTY FINE-COURSE SAND W/ SOME SUB-RND'D GRAVELS W/ TRACE MICA		
875	874.7	10.0	2	7	6								W	ALLUVIAL BROWN/GRAY/TAN SILTY FINE-COURSE SAND SUB-RND'D GRAVELS & COBBLES W/ MICA		
870	869.7	15.0	4	8	4								W			
865	864.7	20.0	4	6	3								M	SAPROLITE LIGHT GRAY-TO-DARK GRAY/TAN/WHITE SILTY-SAND W/ TRACE MICA	20.7	
860	859.7	25.0	2	3	7								M			
855	854.7	30.0	5	6	9								M			
850	849.7	35.0	8	11	13								M			
845	844.7	40.0	10	14	15								M			
840	839.7	45.0	5	8	10								M			
835	834.7	50.0	4	11	6								M			
830	829.7	55.0	13	21	24								D			
825	824.7	60.0	20	14	77								D			
820	821.9	62.8	60/0.1												WEATHERED ROCK CRYSTALLINE ROCK	62.8
815																
810																
805																

NCDOT BORE DOUBLE B5407\_GEO\_BRDG0034\_BORELOGS.GPJ NC\_DOT\_GDT\_2/23/17

WBS 46122.1.1		TIP B-5407		COUNTY POLK		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION BRDG # 34 ON SR-1311 OVER WALNUT CREEK							GROUND WTR (ft)									
BORING NO. B1-B		STATION 13+81		OFFSET 6 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 884.7 ft		TOTAL DEPTH 85.0 ft		NORTHING 606,140		EASTING 1,066,874										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic												
DRILLER Cheek, D. O.		START DATE 01/31/17		COMP. DATE 01/31/17		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						
805														805	Match Line	
800														799.7	CRYSTALLINE ROCK (continued)	85.0
															Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 799.7 ft in CRYSTALLINE ROCK	

# GEOTECHNICAL BORING REPORT

## CORE LOG

WBS 46122.1.1		TIP B-5407		COUNTY POLK		GEOLOGIST Elliott, D. C.						
SITE DESCRIPTION BRDG # 34 ON SR-1311 OVER WALNUT CREEK							GROUND WTR (ft)					
BORING NO. B1-B		STATION 13+81		OFFSET 6 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 884.7 ft		TOTAL DEPTH 85.0 ft		NORTHING 606,140		EASTING 1,066,874						
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic						
DRILLER Cheek, D. O.		START DATE 01/31/17		COMP. DATE 01/31/17		SURFACE WATER DEPTH N/A						
CORE SIZE NXWL		TOTAL RUN 21.8 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. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
821.53											Begin Coring @ 63.2 ft	
820	821.5 819.7	63.2 65.0	1.8	0:27/0.8 0:35/1.0	(0.6) 33%	(0.4) 22%					CRYSTALLINE ROCK (continued)	
			5.0	0:19/1.0 0:29/1.0 0:20/1.0 0:15/1.0 0:17/1.0	(0.2) 4%	(0.0) 0%						
815	814.7	70.0										
			5.0	0:39/1.0 0:48/1.0 1:18/1.0 1:29/1.0 1:37/1.0	(4.7) 94%	(3.7) 74%						
810	809.7	75.0										
			5.0	1:37/1.0 1:41/1.0 1:43/1.0 1:45/1.0 1:39/1.0	(5.0) 100%	(5.0) 100%						
805	804.7	80.0										
			5.0	1:28/1.0 1:38/1.0 1:34/1.0 1:43/1.0 1:35/1.0	(4.9) 98%	(4.2) 84%						
800	799.7	85.0										
											799.7	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 799.7 ft IN CRYSTALLINE ROCK

NCDOT CORE DOUBLE B5407\_GEO\_BRDG0034\_BORELOGS.GPJ NC\_DOT.GDT 4/12/18

B-5407  
BORING B1-B  
BOX 1 OF 2  
DEPTH: 63.2-78.7



B-5407  
BORING B1-B  
BOX 2 OF 2  
DEPTH: 78.7-85.0



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 46122.1.1		TIP B-5407		COUNTY POLK		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION BRDG # 34 ON SR-1311 OVER WALNUT CREEK							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 14+17		OFFSET 5 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 893.3 ft		TOTAL DEPTH 61.2 ft		NORTHING 606,177		EASTING 1,066,885										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic											
DRILLER Cheek, D. O.		START DATE 01/26/17		COMP. DATE 01/26/17		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						
895														893.3	0.0	GROUND SURFACE
890	888.3	5.0	4	3	2								M	886.4	6.9	ROADWAY EMBANKMENT BROWN SILTY-SAND W/ TRACE MICA & ORGANICS & A FEW ANGULAR GRAVELS
885	883.3	10.0	4	4	6								M			ALLUVIAL DARK BROWN/GRAY SILTY FINE-COURSE SAND W/ TRACE ORGANICS & SUB-RND'D PEBBLES/GRAVELS
880	878.3	15.0	5	5	7								M	878.8	14.5	ALLUVIAL DARK GRAY FINE SAND-CLAY-SILT W/ TRACE MICA: GLADE ALUV W/ TRACE ORGANICS
875	873.3	20.0	2	7	6								M	874.5	18.8	SAPROLITE DARK GRAY/BROWN/WHITE SILT-SAND W/ TRACE MICA
870	868.3	25.0	8	10	12								M			
865	863.3	30.0	5	6	6								M			
860	858.3	35.0	7	8	10								M			
855	853.3	40.0	6	9	14								M			
850	848.3	45.0	9	12	11								M			
845	843.3	50.0	25	42	45								M			
840	838.3	55.0	19	24	14								M			
835	833.3	60.0	11	89/0.3									M	834.0	59.3	WEATHERED ROCK
	832.1	61.2	60/0.0											832.1	61.2	DARK GRAY/DARK BROWN/WHITE W/ MICA
																CRYSTALLINE ROCK Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 832.1 ft ON CRYSTALLINE ROCK

WBS 46122.1.1		TIP B-5407		COUNTY POLK		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION BRDG # 34 ON SR-1311 OVER WALNUT CREEK							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 14+22		OFFSET 14 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 893.1 ft		TOTAL DEPTH 60.0 ft		NORTHING 606,170		EASTING 1,066,903										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic											
DRILLER Cheek, D. O.		START DATE 04/22/13		COMP. DATE 04/22/13		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						
895														893.1	0.0	GROUND SURFACE
890	888.1	5.0	4	2	4									886.0	7.1	ROADWAY EMBANKMENT Brown silty fine SAND with trace organics & gravel
885	883.1	10.0	1	2	2											ALLUVIAL Brown-gray silty fine-coarse SAND & GRAVEL with trace mica
880	878.1	15.0	5	3	4									879.6	13.5	SAPROLITE Brown-gray-whites silty SAND with trace mica
875	873.1	20.0	2	2	10											
870	868.1	25.0	4	5	5											
865	863.1	30.0	3	5	7											
860	858.1	35.0	5	7	11											
855	853.1	40.0	12	27	23											
850	848.1	45.0	5	8	11											
845	843.1	50.0	3	6	9											
840	838.1	55.0	7	12	9											
835	833.1	60.0	60/0.0											835.7	57.4	WEATHERED ROCK
														834.8	58.3	(gneiss)
														833.1	60.0	CRYSTALLINE ROCK GNEISS Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 833.1 ft IN CRYSTALLINE ROCK

NCDOT BORE DOUBLE B5407\_GEO\_BRDG0034\_BORELOGS.GPJ\_NC\_DOT\_GDT\_2/23/17