

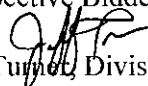


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

May 10, 2018

TO: Prospective Bidders  
FROM: Jeff Turner,  Division Proposals Engineer  
SUBJECT: **Addendum #1**  
Contract DI00196 – “B-5771”  
Grading, Paving, Drainage, Structure – Bridge No. 16 over Muddy Creek – SR  
1611 (Main Street) - Forsyth County.

The subject contract proposal contains the following addendum:

1. Add the attached Structure Subsurface plans.

This addendum officially becomes part of the contract.

*Mailing Address:*  
NC DEPARTMENT OF TRANSPORTATION  
DIVISION 9 – PROJECT DEVELOPMENT  
375 SILAS CREEK PARKWAY  
WINSTON-SALEM, NC 27127

*Telephone:* (336) 747-7800  
*Fax:* (336) 703-6693

*Website:* [www.ncdot.gov](http://www.ncdot.gov)

*Location:*  
375 SILAS CREEK PARKWAY  
WINSTON-SALEM, NC 27127

REFERENCE: B-5771

PROJECT: 45727

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

STRUCTURE  
SUBSURFACE INVESTIGATION

COUNTY FORSYTH  
PROJECT DESCRIPTION BRIDGE NO. 16 ON SR 1611  
(MAIN STREET) OVER MUDDY CREEK  
SITE DESCRIPTION STATION 17+57.50 -L-

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
2A	SUPPLEMENTAL LEGEND (GSI)
3	SITE PLAN
4	PROFILE
5-6	CROSS SECTIONS
7-12	BORE LOGS & CORE REPORTS
13-14	CORE PHOTOGRAPHS
15	ROCK CORE LABORATORY TEST RESULTS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5771	1	15

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

STICKNEY, J. K.

SMITH, C. L.

INVESTIGATED BY STICKNEY, J. K.

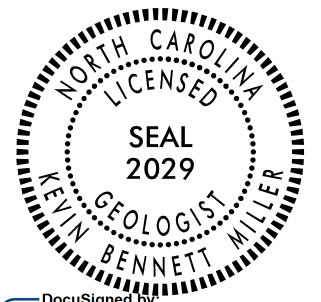
DRAWN BY FIELDS, W. D.

DRAWN BY ALEXANDER, M. J.

CHECKED BY MILLER, K. B.

SUBMITTED BY MILLER, K. B.

DATE NOVEMBER 2017



DocuSigned by:

957A789AED704CB...

SIGNATURE

11/21/2017  
DATE

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with multiple columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, FRACTURE SPACING, BEDDING, INDURATION.

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)**

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.

**STRUCTURE**

**SURFACE CONDITIONS**

<b>VERY GOOD</b> Very rough, fresh unweathered surfaces	<b>GOOD</b> Rough, slightly weathered, iron stained surfaces	<b>FAIR</b> Smooth, moderately weathered and altered surfaces	<b>POOR</b> Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments	<b>VERY POOR</b> Slickensided, highly weathered surfaces with soft clay coatings or fillings
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DECREASING SURFACE QUALITY →

**GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)**

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.

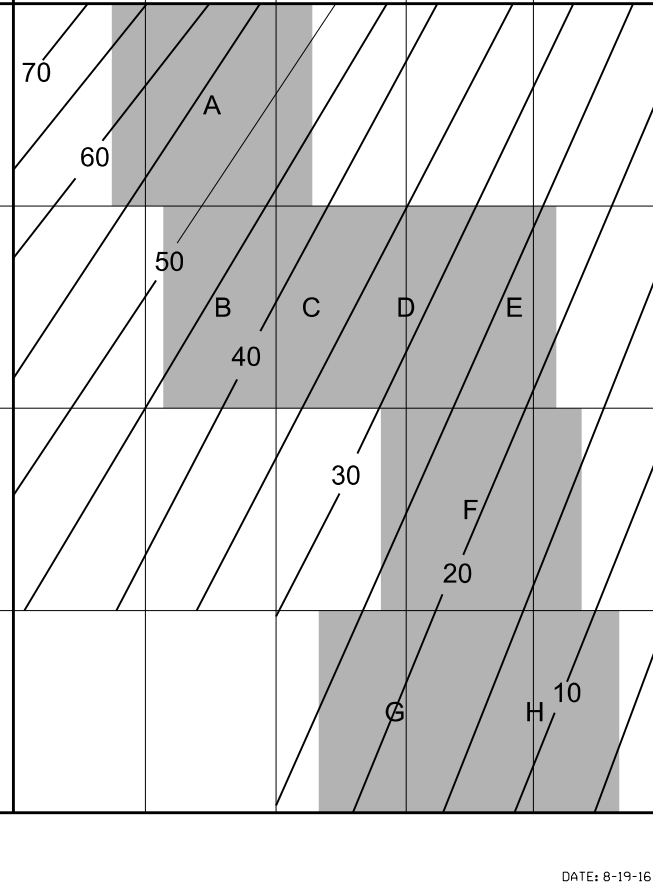
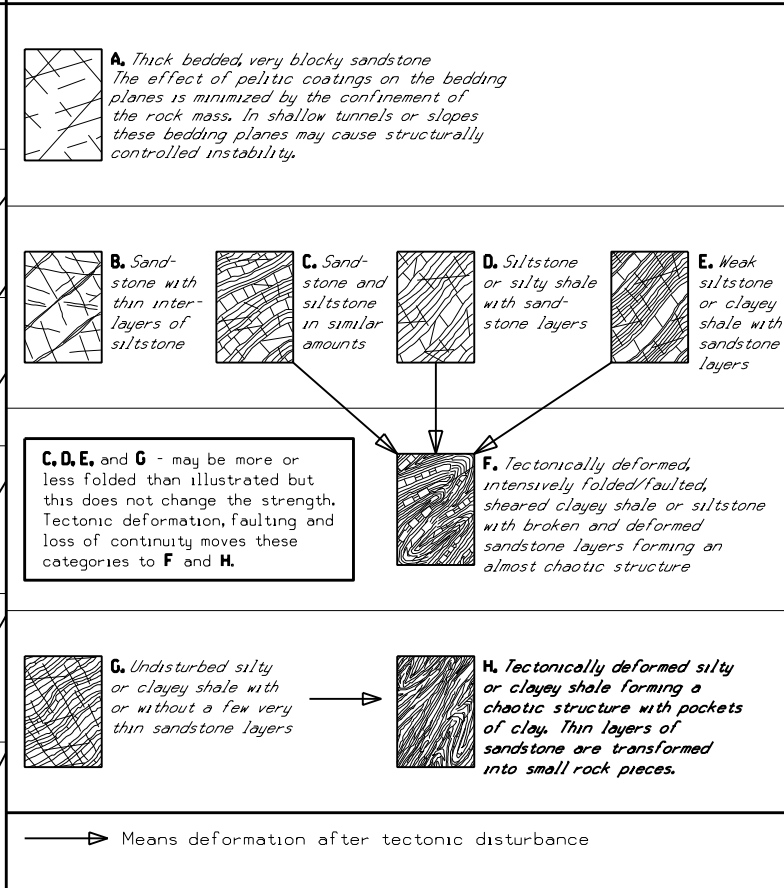
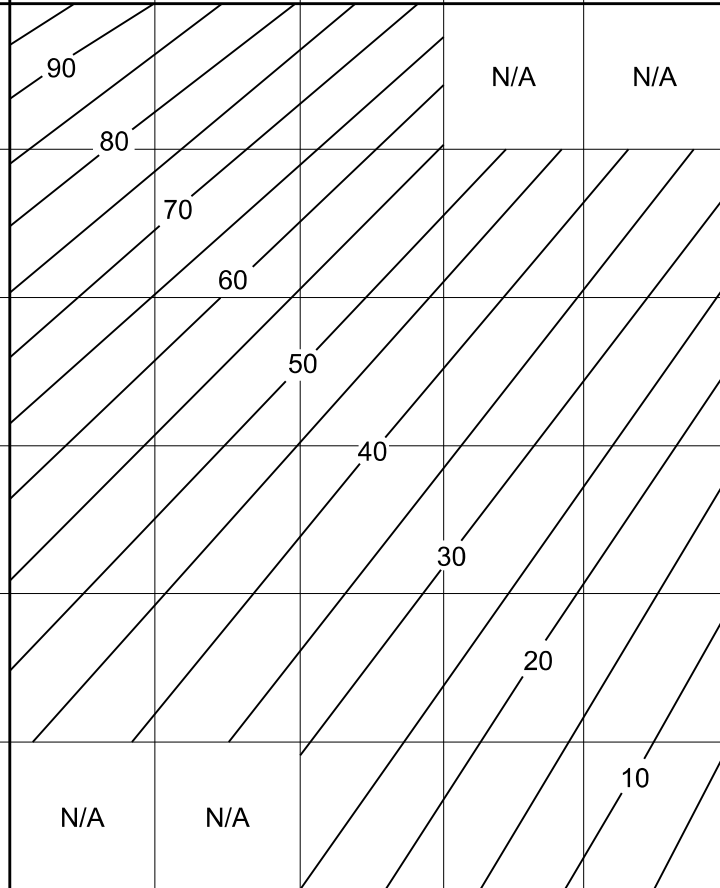
**COMPOSITION AND STRUCTURE**

**SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)**

<b>VERY GOOD</b> - Very Rough, fresh unweathered surfaces	<b>GOOD</b> - Rough, slightly weathered surfaces	<b>FAIR</b> - Smooth, moderately weathered and altered surfaces	<b>POOR</b> - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments	<b>VERY POOR</b> - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings
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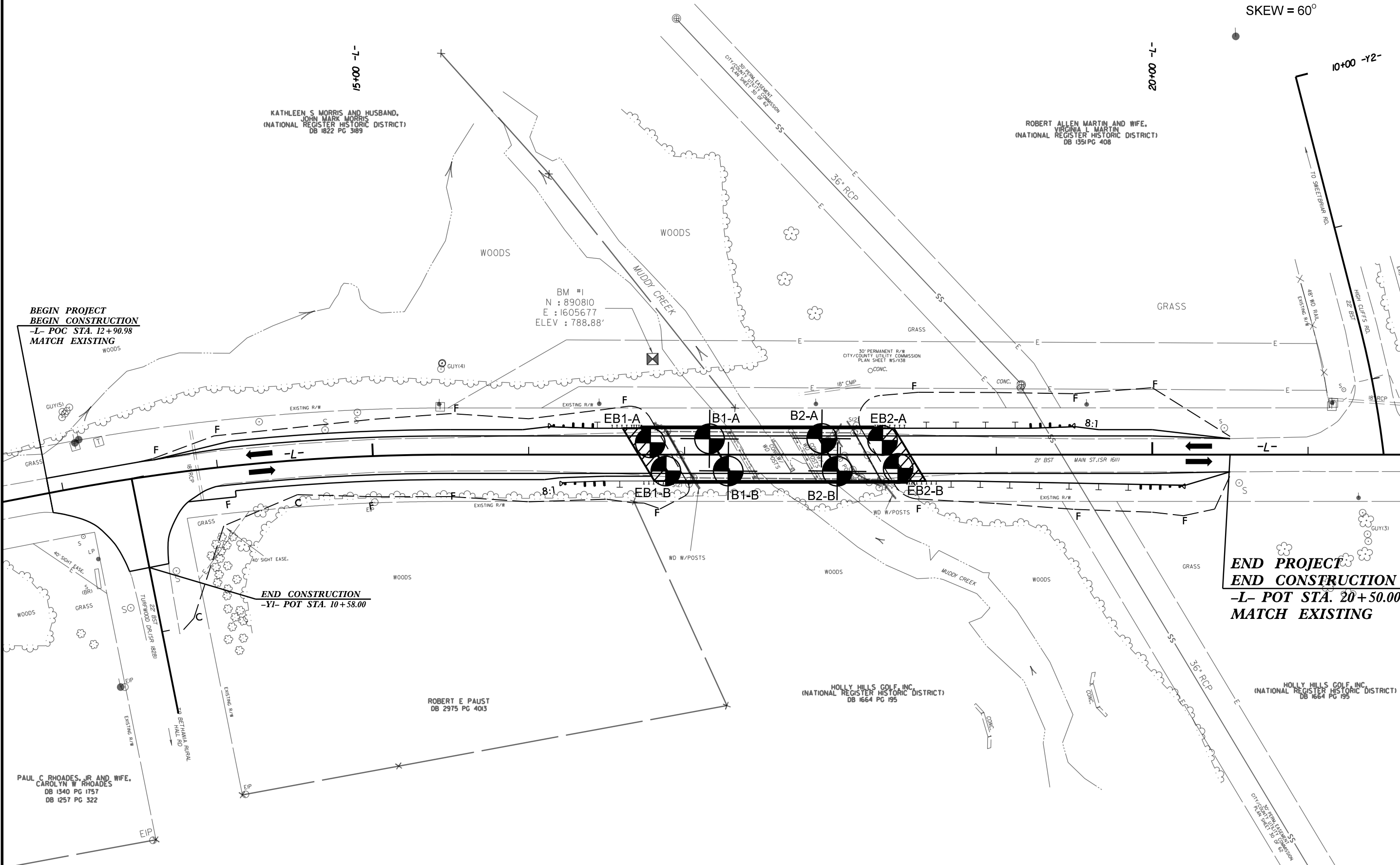
**DECREASING INTERLOCKING OF ROCK PIECES**

INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities	90			N/A	N/A
BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets	80	70			
VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets		60	50		
BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity			40	30	
DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces				20	
LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	N/A	N/A			10





SKEW = 60°



**BEGIN PROJECT  
BEGIN CONSTRUCTION**  
-L- POC STA. 12+90.98  
MATCH EXISTING

KATHLEEN S. MORRIS AND HUSBAND,  
JOHN MARK MORRIS  
(NATIONAL REGISTER HISTORIC DISTRICT)  
DB 1822 PG 389

ROBERT ALLEN MARTIN AND WIFE,  
VIRGINIA L. MARTIN  
(NATIONAL REGISTER HISTORIC DISTRICT)  
DB 1351 PG 408

BM #1  
N : 890810  
E : 1605677  
ELEV : 788.88'

**END PROJECT  
END CONSTRUCTION**  
-L- POT STA. 20+50.00  
MATCH EXISTING

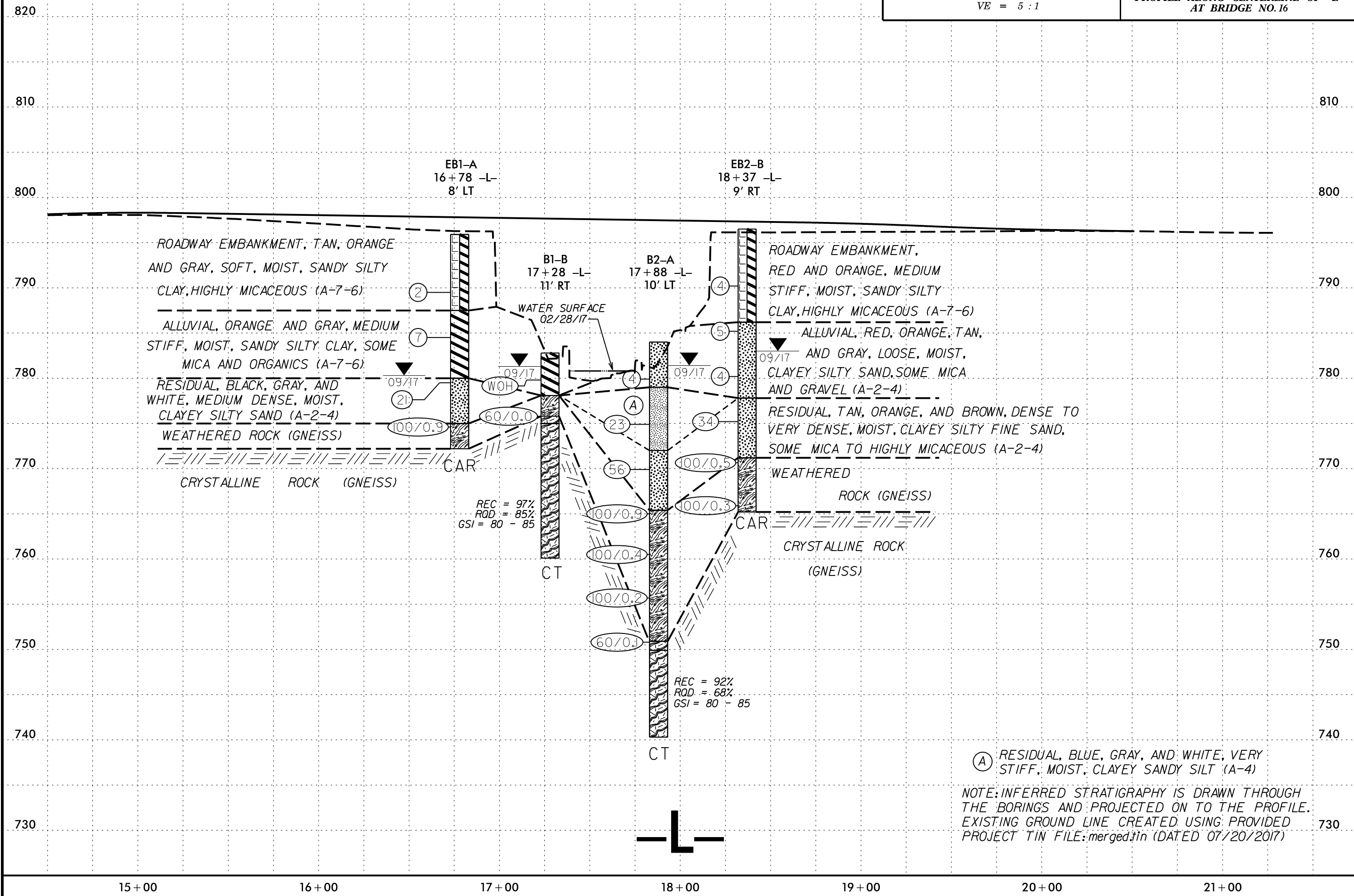
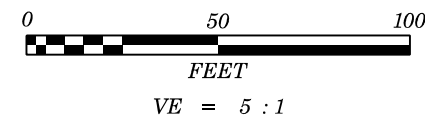
**END CONSTRUCTION**  
-YI- POT STA. 10+58.00

PAUL C. RHOADES, JR AND WIFE,  
CAROLYN W. RHOADES  
DB 1340 PG 1757  
DB 1257 PG 322

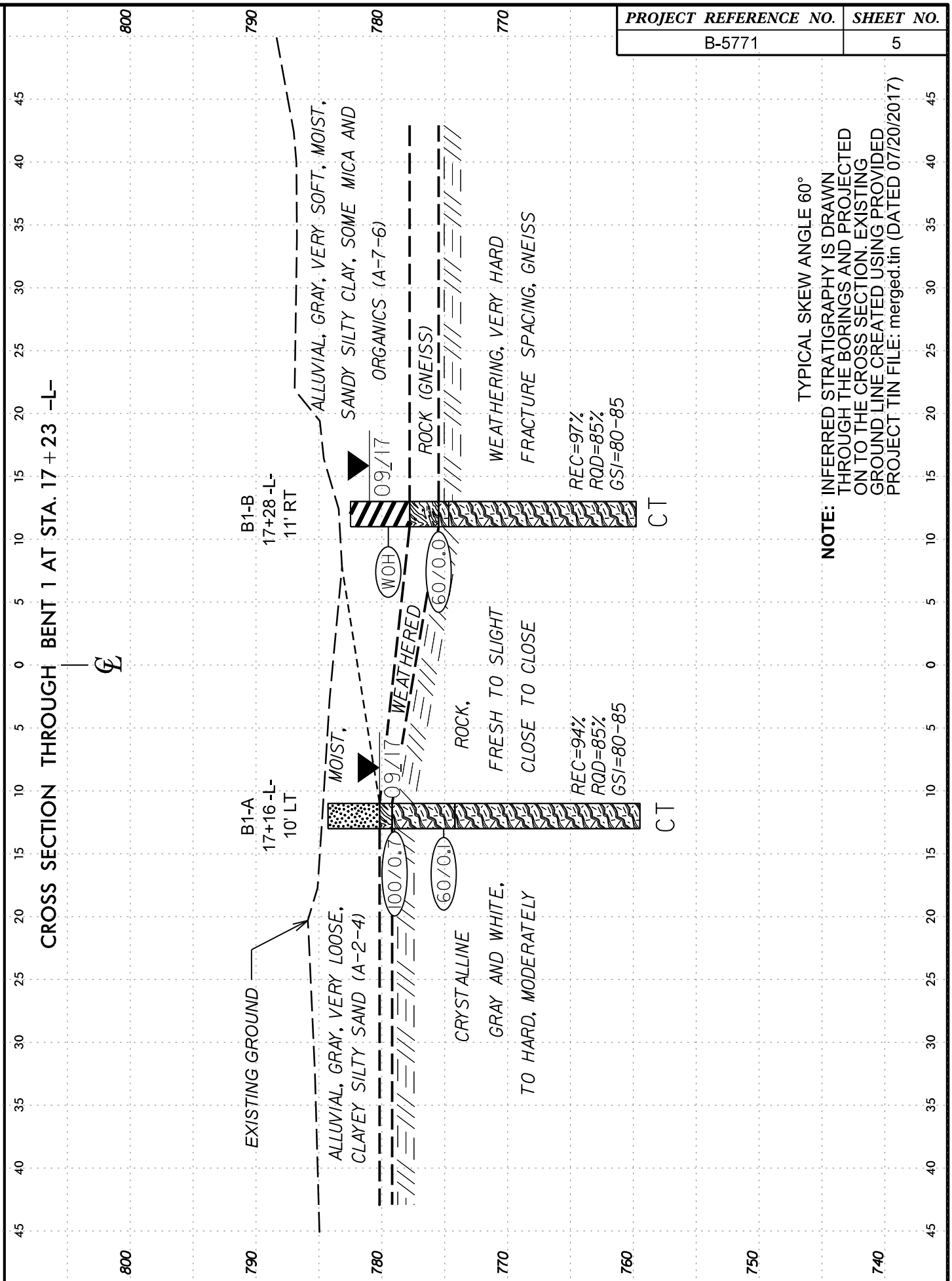
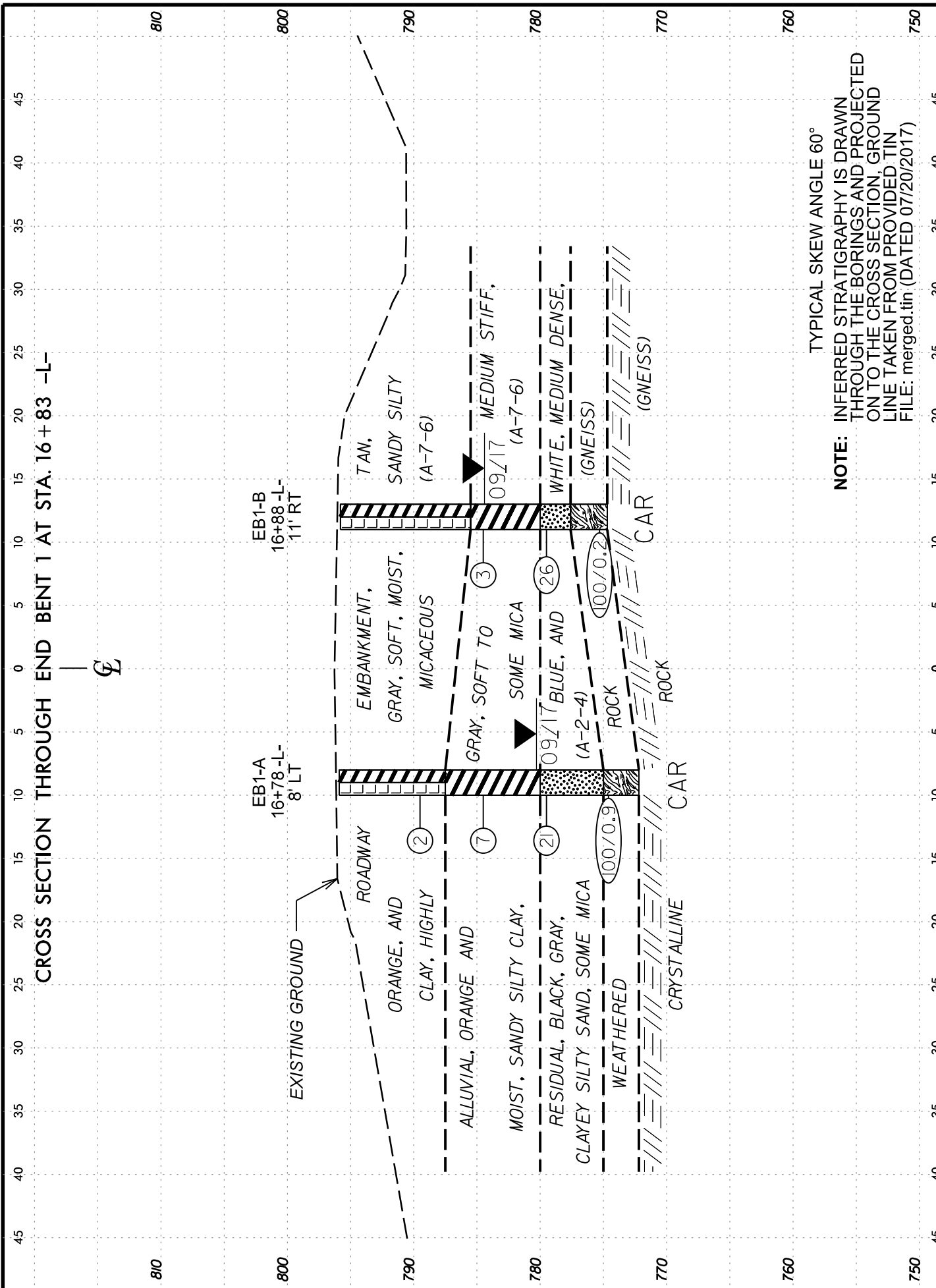
ROBERT E. PAUST  
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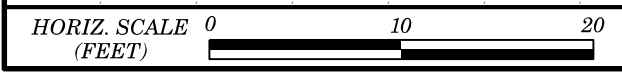
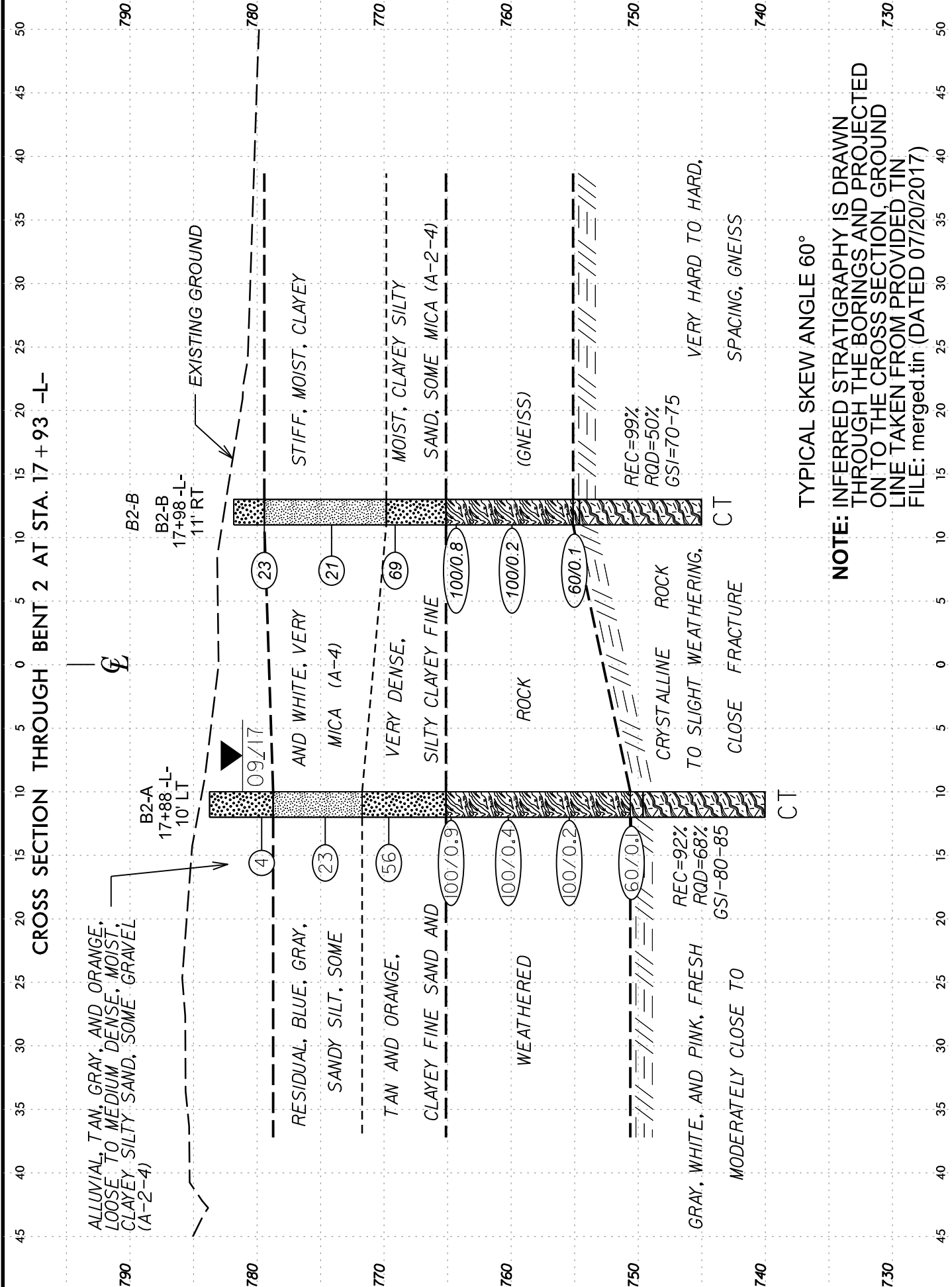
HOLLY HILLS GOLF, INC.  
(NATIONAL REGISTER HISTORIC DISTRICT)  
DB 1664 PG 195

HOLLY HILLS GOLF, INC.  
(NATIONAL REGISTER HISTORIC DISTRICT)  
DB 1664 PG 195

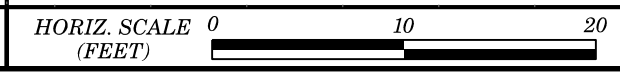
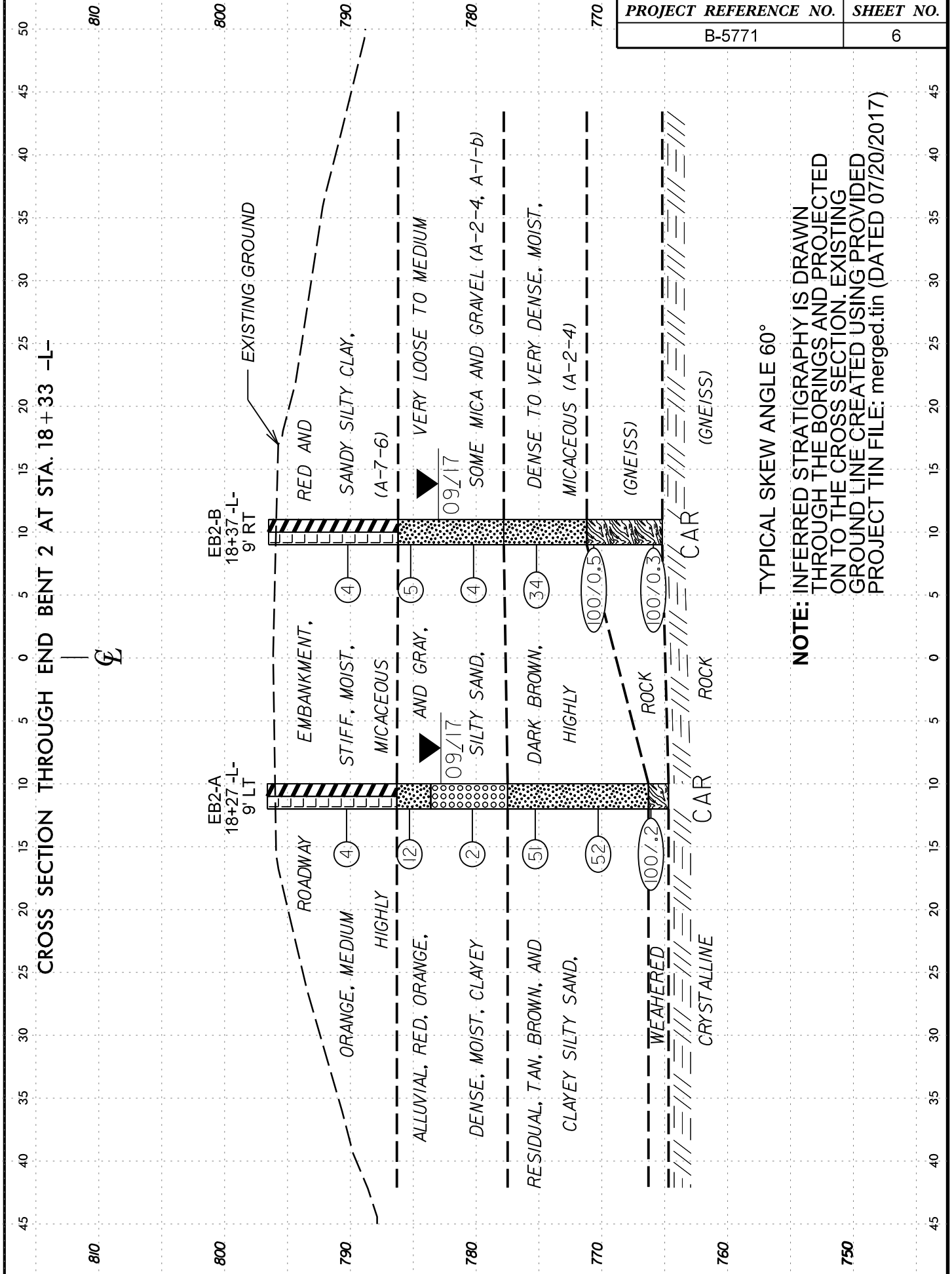


15+00 16+00 17+00 18+00 19+00 20+00 21+00





**CROSS SECTION THROUGH BENT 2 AT STA. 17+93 -L-**



**CROSS SECTION THROUGH END BENT 2 AT STA. 18+33 -L-**



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 16+78		OFFSET 8 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 795.9 ft		TOTAL DEPTH 23.7 ft		NORTHING 890,796		EASTING 1,605,729									
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic									
DRILLER Smith, C. L.		START DATE 09/08/17		COMP. DATE 09/08/17		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					
800															
795														795.9	0.0
790	790.5	5.4	WOH	1	1										
785	785.5	10.4		3	3	4								787.5	8.4
780	780.5	15.4		2	8	13								780.0	15.9
775	775.5	20.4		26	64/0.4									775.0	20.9
														772.2	23.7

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 16+88		OFFSET 11 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 795.8 ft		TOTAL DEPTH 21.1 ft		NORTHING 890,801		EASTING 1,605,749									
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic									
DRILLER Smith, C. L.		START DATE 09/14/17		COMP. DATE 09/14/17		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					
800															
795														795.8	0.0
790															
785	785.5	10.3	WOH	1	2									785.5	10.3
780	780.5	15.3		2	9	17								780.0	15.8
775	775.5	20.3		100/0.2										777.6	18.2
														774.7	21.1

NCDOT BORE DOUBLE B5771\_GEO\_BRDG\_BH.GPJ\_NC\_DOT.GDT 10/30/17

# GEOTECHNICAL BORING REPORT BORE LOG

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)									
BORING NO. B1-A		STATION 17+16		OFFSET 10 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 784.6 ft		TOTAL DEPTH 24.8 ft		NORTHING 890,833		EASTING 1,605,735										
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 09/08/17		COMP. DATE 09/08/17		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						
785														784.6	GROUND SURFACE	0.0
														780.5	ALLUVIAL GRAY, CLAYEY SILTY SAND	4.1
780	780.5	4.1	1	1	99/0.2									779.5	WEATHERED ROCK (GNEISS)	5.1
														774.5	CRYSTALLINE ROCK GRAY AND WHITE, GNEISS	10.1
775	775.5	9.1			60/0.1											
770																
765																
760																
Boring Terminated at Elevation 759.8 ft IN CRYSTALLINE ROCK (GNEISS)																

NCDOT BORE SINGLE B5771\_GEO\_BRDG\_BH.GPJ NC\_DOT.GDT 10/30/17

# GEOTECHNICAL BORING REPORT CORE LOG

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.						
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)					
BORING NO. B1-A		STATION 17+16		OFFSET 10 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 784.6 ft		TOTAL DEPTH 24.8 ft		NORTHING 890,833		EASTING 1,605,735						
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic						
DRILLER Smith, C. L.		START DATE 09/08/17		COMP. DATE 09/08/17		SURFACE WATER DEPTH N/A						
CORE SIZE NX			TOTAL RUN 14.7 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 (%)			
774.5	774.5	10.1	4.7	0:50/1.0 0:53/1.0 0:58/1.0 0:55/1.7	(4.0) 85%	(3.5) 74%		(13.8) 94%	(12.5) 85%		Begin Coring @ 10.1 ft	10.1
770	769.8	14.8									GRAY AND WHITE, FRESH TO SLIGHT WEATHERING, VERY HARD TO HARD, MODERATELY CLOSE TO CLOSE FRACTURE SPACING, GNEISS	
			5.0	1:11/1.0 1:15/1.0 1:23/1.0 1:21/1.0 1:24/1.0	(4.9) 98%	(4.6) 92%					GSI=80-85	
765	764.8	19.8										
			5.0	1:33/1.0 1:43/1.0 1:35/1.0 1:40/1.0 1:44/1.0	(4.9) 98%	(4.4) 88%						
760	759.8	24.8										
Boring Terminated at Elevation 759.8 ft IN CRYSTALLINE ROCK (GNEISS)												

NCDOT CORE SINGLE B5771\_GEO\_BRDG\_BH.GPJ NC\_DOT.GDT 10/30/17





# GEOTECHNICAL BORING REPORT BORE LOG

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)									
BORING NO. B2-B		STATION 17+98		OFFSET 11 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 782.1 ft		TOTAL DEPTH 36.8 ft		NORTHING 890,908		EASTING 1,605,775										
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 09/13/17		COMP. DATE 09/13/17		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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
785																
780	780.7	1.4	1	7	16								M	782.1 GROUND SURFACE	0.0	
775	775.4	6.7	5	8	13								M	779.7 ALLUVIAL TAN AND GRAY, CLAYEY SILTY SAND, SOME GRAVEL RESIDUAL BLACK, GRAY, AND WHITE, CLAYEY SANDY SILT, SOME MICA	2.4	
770	770.4	11.7	15	19	50								M	770.1 TAN AND ORANGE, CLAYEY SILTY FINE SAND, SOME MICA	12.0	
765	765.4	16.7	50	50/0.3										765.4 WEATHERED ROCK (GNEISS)	16.7	
760	760.4	21.7	100/0.2													
755	755.4	26.7	60/0.1											755.4 CRYSTALLINE ROCK (GNEISS)	26.7	
750														754.9 CRYSTALLINE ROCK (GNEISS)	27.2	
														745.3 Boring Terminated at Elevation 745.3 ft IN CRYSTALLINE ROCK (GNEISS)	36.8	

NCDOT BORE SINGLE B5771\_GEO\_BRDG\_BH.GPJ NC\_DOT.GDT 10/30/17

# GEOTECHNICAL BORING REPORT CORE LOG

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.						
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)					
BORING NO. B2-B		STATION 17+98		OFFSET 11 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 782.1 ft		TOTAL DEPTH 36.8 ft		NORTHING 890,908		EASTING 1,605,775						
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic						
DRILLER Smith, C. L.		START DATE 09/13/17		COMP. DATE 09/13/17		SURFACE WATER DEPTH N/A						
CORE SIZE NX			TOTAL RUN 9.6 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 (%)			
754.9	754.9	27.2	4.6	1:04/1.0 1:05/1.0 1:05/1.0 1:07/1.6	(4.6)	(2.3)		(9.5)	(4.8)		754.9 GREY, WHITE, AND PINK, VERY SLIGHT TO SLIGHT WEATHERING, VERY HARD TO HARD, MODERATELY CLOSE TO CLOSE FRACTURE SPACING, GNEISS	27.2
750	750.3	31.8	5.0	1:08/1.0 1:32/1.0 1:34/1.0 1:34/1.0	(4.9)	(2.5)					GSI=70-75	
	745.3	36.8		1:14/1.0							Boring Terminated at Elevation 745.3 ft IN CRYSTALLINE ROCK (GNEISS)	36.8

NCDOT CORE SINGLE B5771\_GEO\_BRDG\_BH.GPJ NC\_DOT.GDT 10/30/17

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 18+27		OFFSET 9 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 796.6 ft		TOTAL DEPTH 31.9 ft		NORTHING 890,941		EASTING 1,605,762									
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic									
DRILLER Smith, C. L.		START DATE 09/08/17		COMP. DATE 09/08/17		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					
800															
795															
790	791.3	5.3	4	3	1								M	ROADWAY EMBANKMENT RED AND ORANGE, SANDY SILTY CLAY, HIGHLY MICACEOUS	0.0
785	786.3	10.3	4	4	8								M	ALLUVIAL RED AND ORANGE, CLAYEY SILTY SAND, SOME MICA	10.3
780	781.3	15.3	1	1	1								M	GRAY, CLAYEY SILTY SAND, SOME GRAVEL AND MICA	13.0
775	776.3	20.3	21	23	28								M	RESIDUAL TAN AND DARK BROWN, CLAYEY SILTY SAND, HIGHLY MICACEOUS	19.1
770	771.3	25.3	24	29	23								M		
765	766.3	30.3	100/0.2										M	WEATHERED ROCK (GNEISS)	31.9
														Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 764.7 ft ON CRYSTALLINE ROCK (GNEISS)	

WBS 45727.1.1		TIP B-5771		COUNTY FORSYTH		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 18+37		OFFSET 9 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 796.5 ft		TOTAL DEPTH 31.3 ft		NORTHING 890,947		EASTING 1,605,782									
DRILL RIG/HAMMER EFF./DATE HFO0070 CME-550X 79% 05/23/2017			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic									
DRILLER Smith, C. L.		START DATE 09/13/17		COMP. DATE 09/13/17		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					
800															
795															
790													M	ROADWAY EMBANKMENT RED AND ORANGE, SANDY SILTY CLAY, HIGHLY MICACEOUS	0.0
785	786.2	10.3	1	2	3								M	ALLUVIAL RED, ORANGE, AND GRAY, CLAYEY SILTY SAND, SOME MICA AND GRAVEL	10.3
780	781.2	15.3	1	1	3								M		
775	776.2	20.3	11	17	17								M	RESIDUAL TAN AND BROWN, CLAYEY SILTY SAND, HIGHLY MICACEOUS	18.7
770	771.2	25.3	49	51/0.0									M	WEATHERED ROCK (GNEISS)	25.3
	766.2	30.3	100/0.3										M		
														Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 765.2 ft ON CRYSTALLINE ROCK (GNEISS)	

NCDOT BORE DOUBLE B5771\_GEO\_BRDG\_BH.GPJ\_NC\_DOT.GDT 10/30/17

# CORE PHOTOGRAPHS

REPLACE BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK

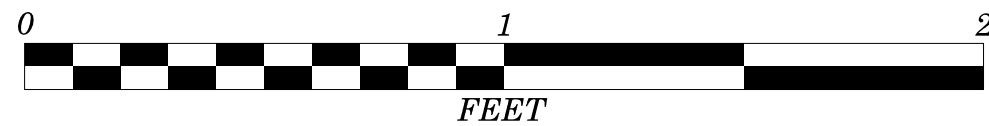
PROJECT REFERENCE NO.

B-5771

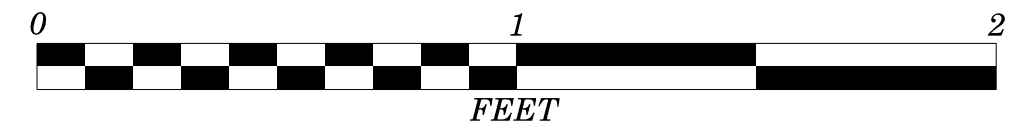
SHEET NO.

13

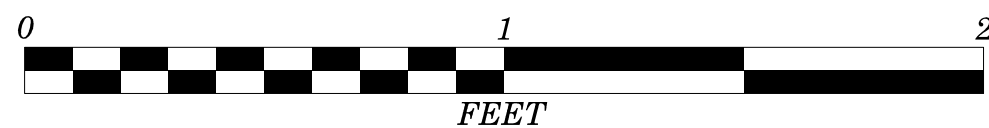
B1-A  
BOX 1 OF 2  
10.1 TO 19.8 FEET



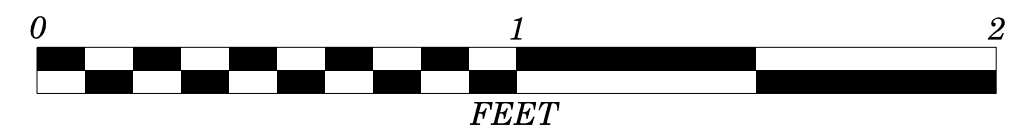
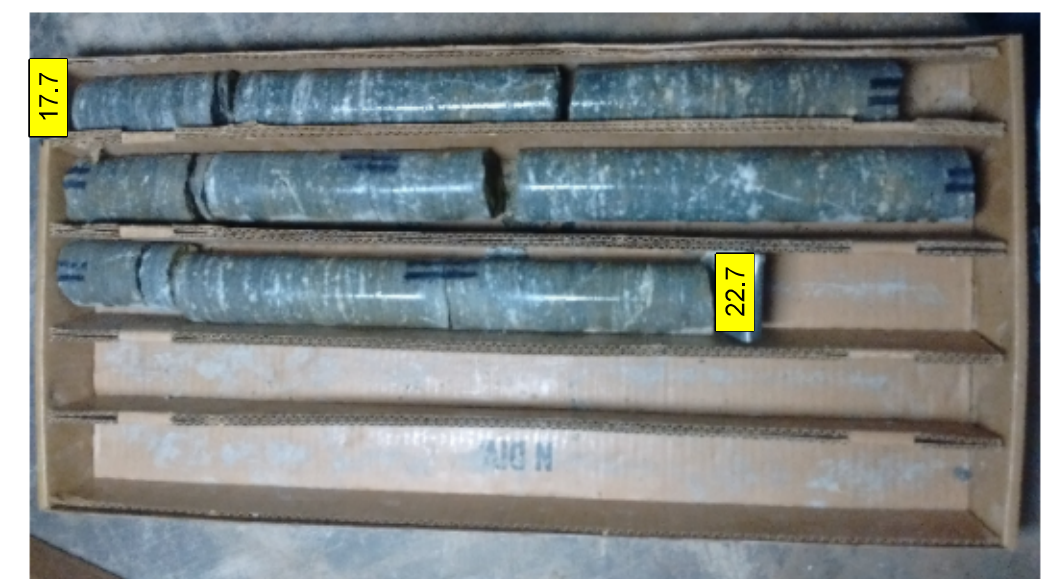
B1-B  
BOX 1 OF 2  
7.8 TO 17.7 FEET



B1-A  
BOX 2 OF 2  
19.8 TO 24.8 FEET



B1-B  
BOX 2 OF 2  
17.7 TO 22.7 FEET



# CORE PHOTOGRAPHS

REPLACE BRIDGE NO. 16 ON SR 1611 (MAIN STREET) OVER MUDDY CREEK

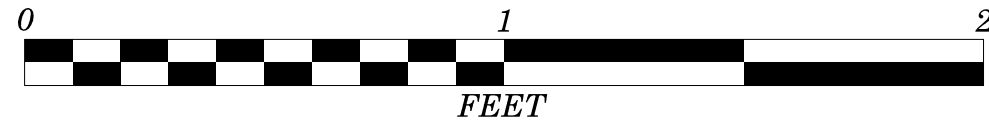
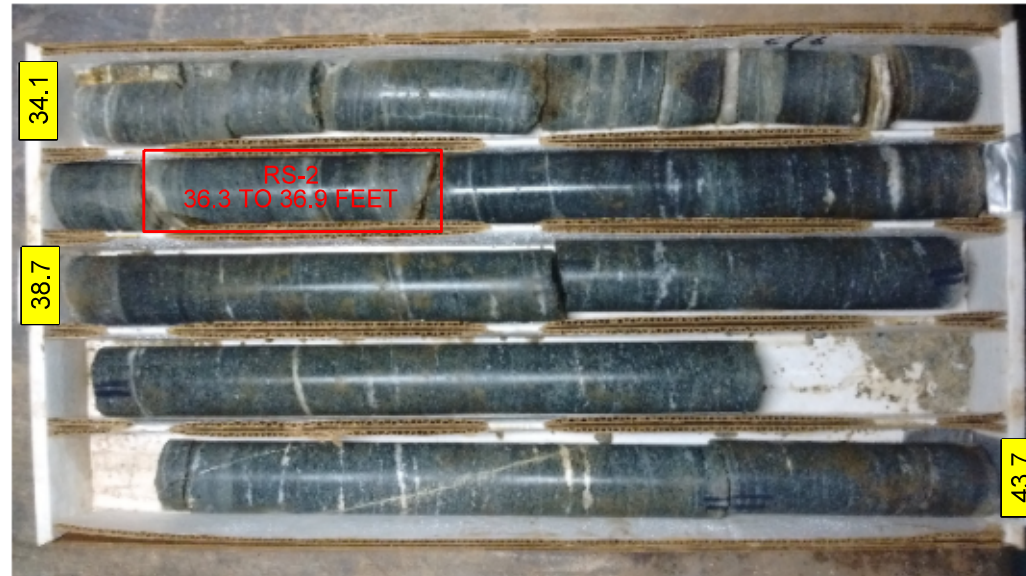
PROJECT REFERENCE NO.

B-5771

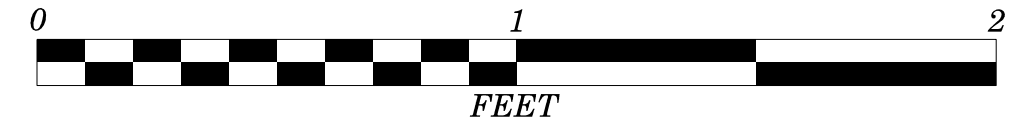
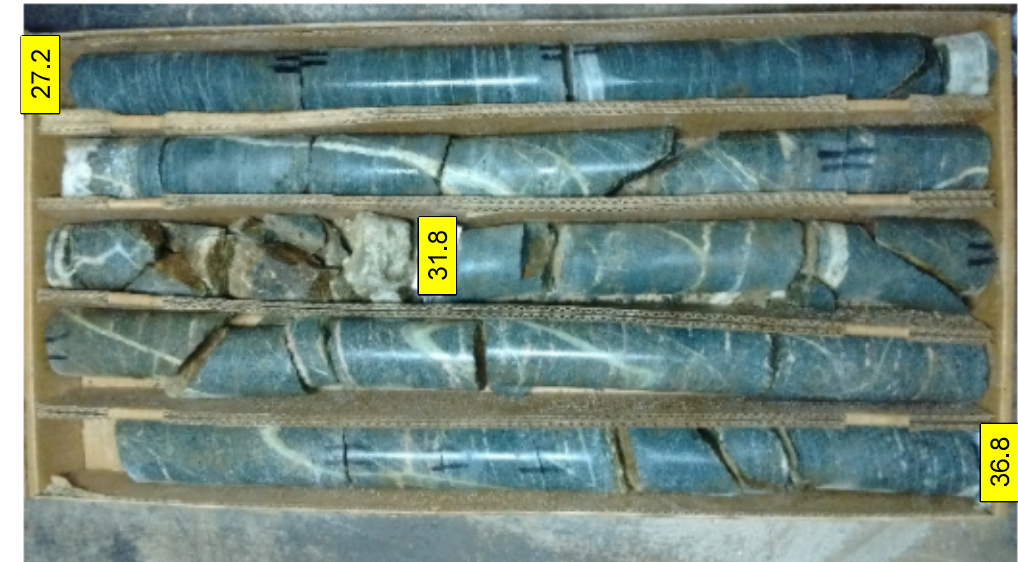
SHEET NO.

14

B2-A  
BOX 1 OF 1  
34.1 TO 43.7 FEET



B2-B  
BOX 1 OF 1  
27.2 TO 36.8 FEET





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

T. I. P. No. B-5771

**REPORT ON SAMPLES OF ROCK COMPRESSION**

Project 45727.1.1 County Forsyth Owner K.B. Miller  
 Date: Sampled 10/10/2017 Received 10/12/2017 Reported 10/27/2017  
 Sampled from Br# 16 Route 1611 By K.B. Miller  
 Submitted by K.B. Miller Standard Specifications  
 Tested By Michael Dubeau Date Tested 10/27/2017

**TEST RESULTS**

Proj. Sample No.		RS-1	RS-2			
Boring Sample No.		B1-B	B2-A			
Diameter	in	1.860	1.864			
Specimen Height	in	3.70	3.69			
Area	in <sup>2</sup>	2.717	2.729			
H/D Ratio		1.99	1.98			
Weight	lbf	0.96	1.05			
Unit Weight	lbf/ft <sup>3</sup>	165.0	180.2			
Ultimate	lbf	* 8500	39200			
Ultimate	ksi	3.130	14.360			
Ultimate Corrected	ksi	3.13	14.35			
Sec Mod @ 40%	Mpsi	23.6	5.14			
<b>RS-1 * BROKE ALONG</b>						
<b>CRACK IN</b>						
Station	<b>ROCK CORE</b>	17+28	17.88			
Offset		11 RT	10.4 LT			
Alignment						
Depth (ft)		14.40	36.30			
	to	14.80	36.90			

cc:

S.D. Freeman  
Physical Testing Engineer