

REFERENCE: B-5666

PROJECT: 45621

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5666	1	16

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STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY WILSON

PROJECT DESCRIPTION REPLACE BRIDGE 47 OVER
SEABOARD COAST LINE RAILROAD ON US 117

SITE DESCRIPTION STA. 17+37.36 -L-

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:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL
C. DRISCOLL
TRIGON EXPLORATION

INVESTIGATED BY C. DRISCOLL
DRAWN BY S. PAPKE
CHECKED BY T. WELLS
SUBMITTED BY KLEINFELDER, INC
DATE DECEMBER 2019

Prepared in the Office of:




DocuSigned by:
Thomas R. Wells 1/10/2020

7DA5D2D0518F4B0... SIGNATURE 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 containing 13 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, FRACTURE SPACING, BEDDING, INDURATION, and PLASTICITY. Includes detailed soil classification tables, material composition charts, and various symbols for field use.

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.

SURFACE CONDITIONS

VERY GOOD
Very rough, fresh unweathered surfaces

GOOD
Rough, slightly weathered, iron stained surfaces

FAIR
Smooth, moderately weathered and altered surfaces

POOR
Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments

VERY POOR
Slickensided, highly weathered surfaces with soft clay coatings or fillings

STRUCTURE

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.

SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)

VERY GOOD - Very Rough, fresh unweathered surfaces

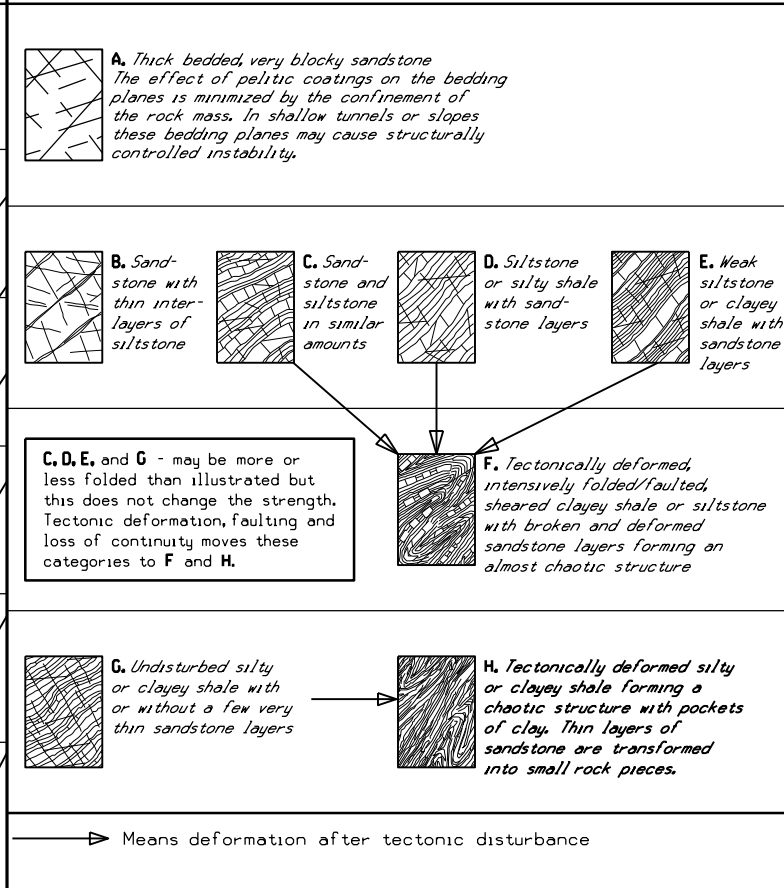
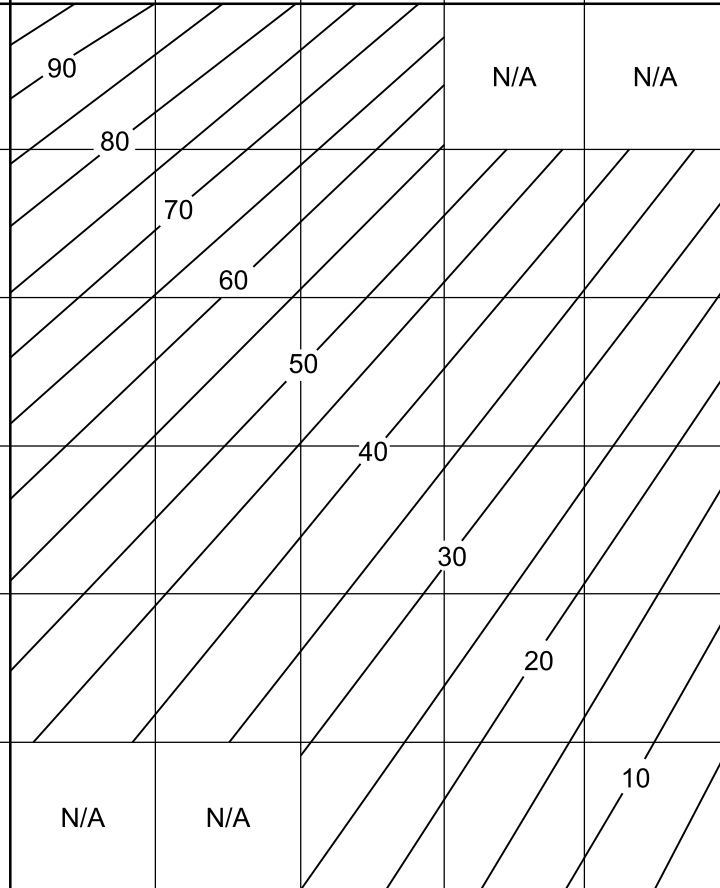
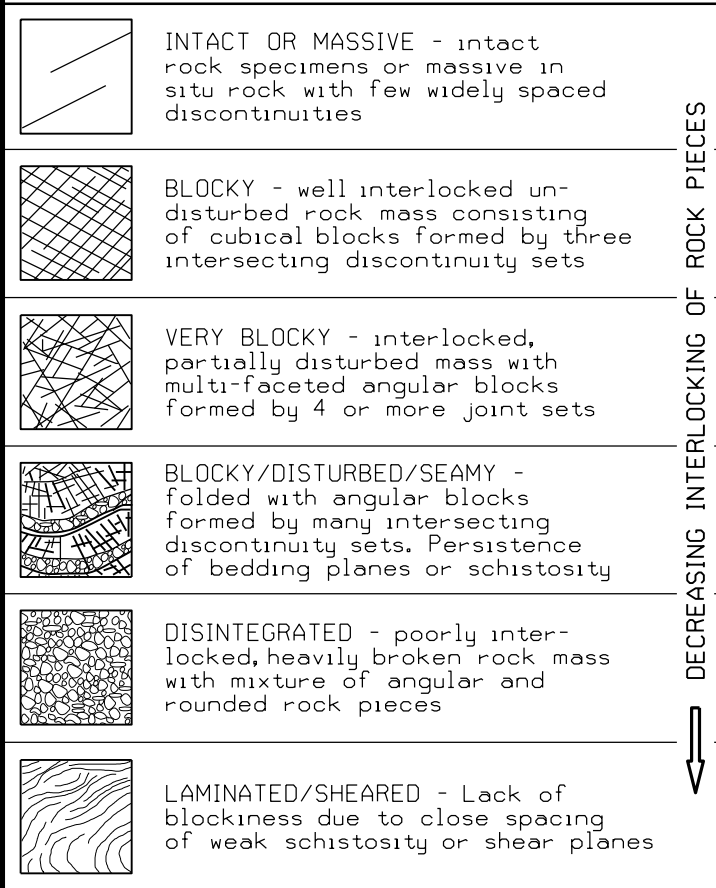
GOOD - Rough, slightly weathered surfaces

FAIR - Smooth, moderately weathered and altered surfaces

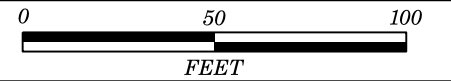
POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments

VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings

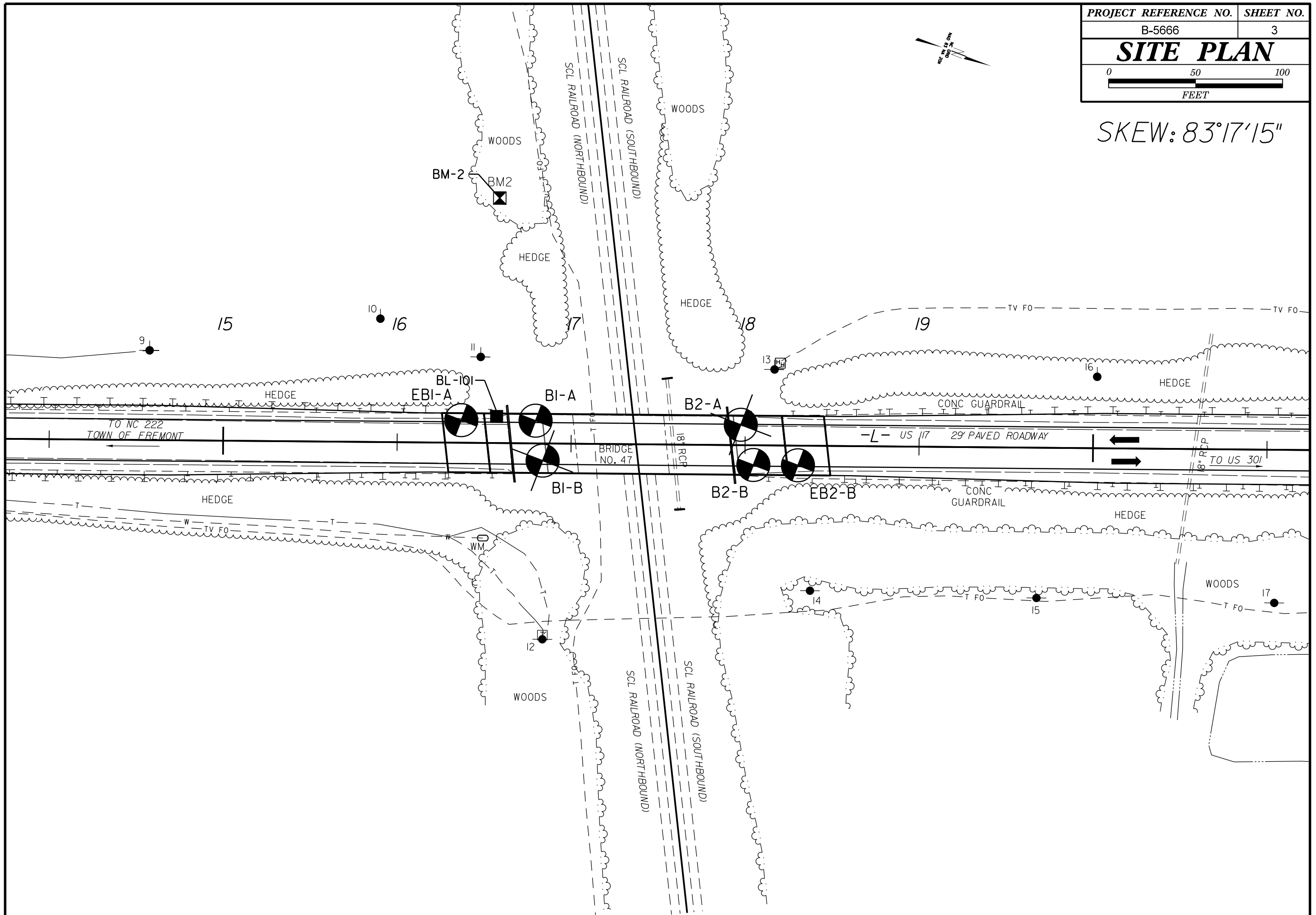
COMPOSITION AND STRUCTURE

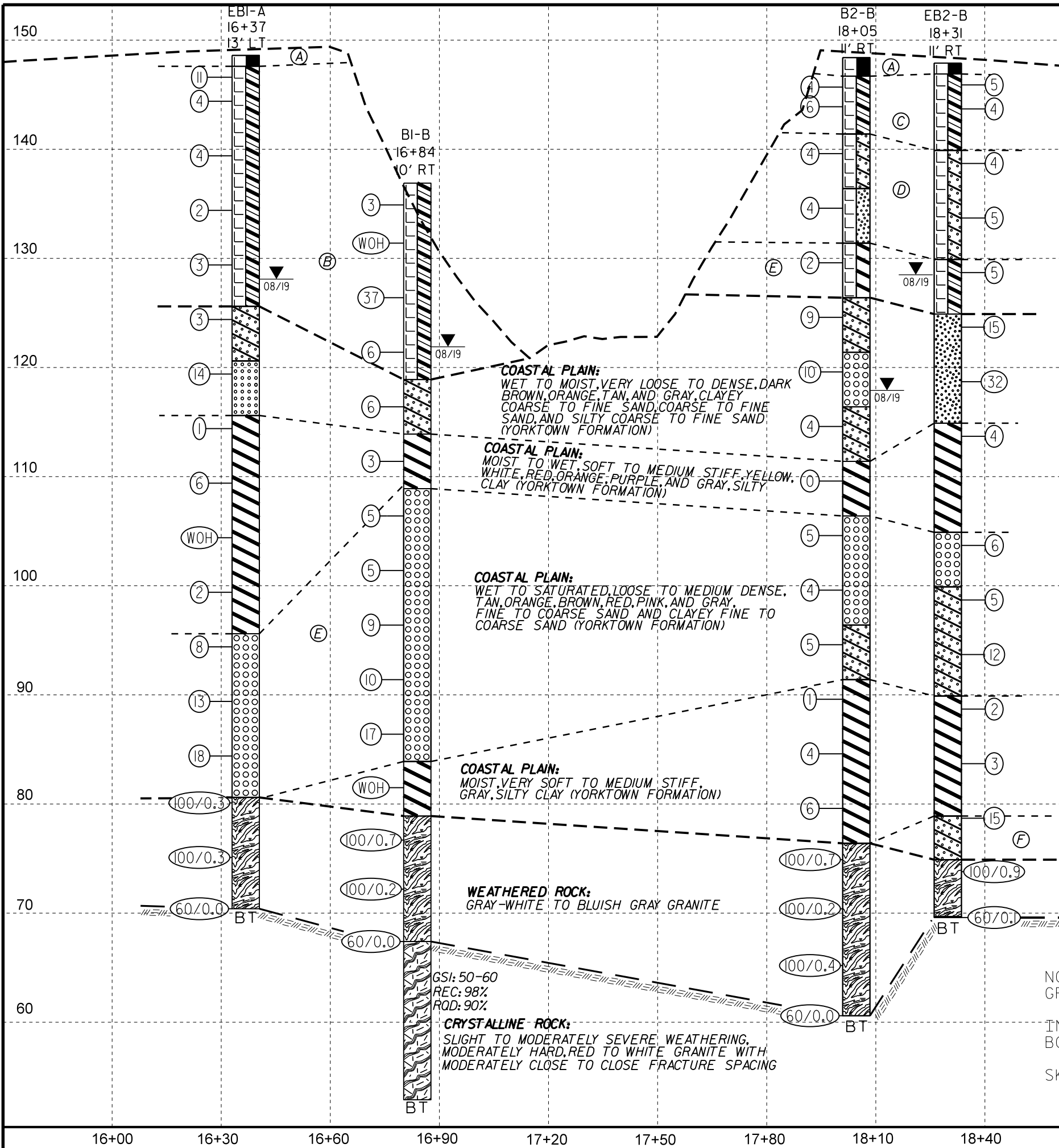
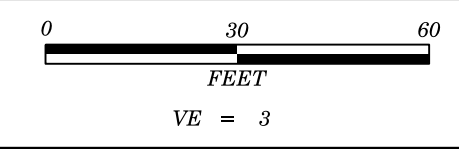


SITE PLAN



SKEW: 83°17'15"

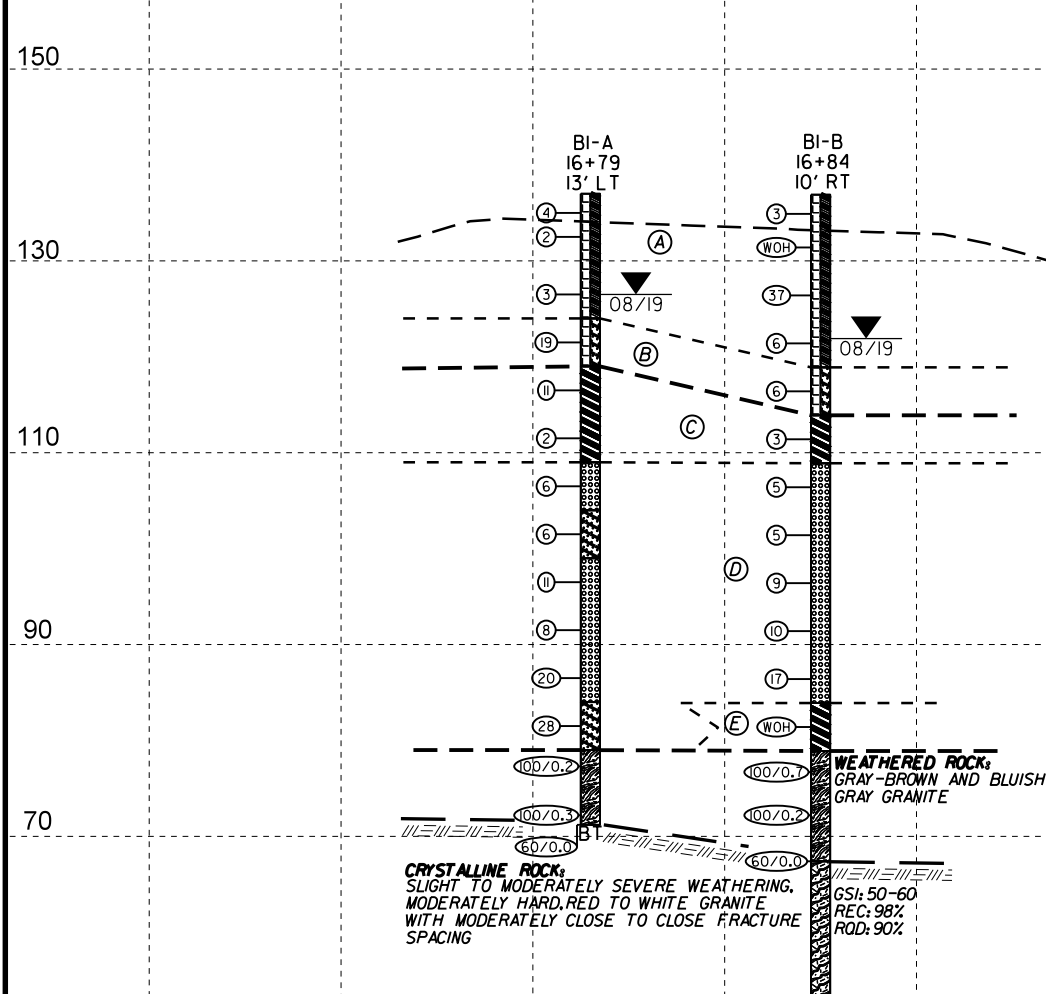




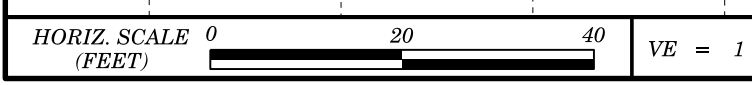
- (A) ROADWAY EMBANKMENT: ASPHALT
- (B) ROADWAY EMBANKMENT: MOIST TO WET, VERY SOFT TO HARD, TAN AND ORANGE TO BROWN, COARSE TO FINE SANDY CLAY WITH WOOD FRAGMENTS
- (C) ROADWAY EMBANKMENT: MOIST, MEDIUM STIFF, ORANGE AND BROWN, FINE TO COARSE SANDY CLAY
- (D) ROADWAY EMBANKMENT: MOIST, LOOSE, ORANGE TO BROWN, CLAYEY, FINE TO COARSE SAND TO SILTY FINE TO COARSE SAND
- (E) ROADWAY EMBANKMENT: MOIST, SOFT TO MEDIUM STIFF, ORANGE AND BROWN, SILTY CLAY
- (F) COASTAL PLAIN: MOIST, MEDIUM DENSE, BLuish GRAY, CLAYEY, FINE TO COARSE SAND (YORKTOWN FORMATION)

NOTES:
GROUNDLINE TAKEN FROM ROADWAY PLANS RECIEVED ON 8/1/19
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILES
SKEW: 83°17'15"

- (A) ROADWAY EMBANKMENT: MOIST TO WET, VERY SOFT TO HARD, ORANGE TO BROWN AND GRAY, COARSE TO FINE SANDY CLAY WITH WOOD FRAGMENTS
- (B) ROADWAY EMBANKMENT: MOIST TO WET, MEDIUM DENSE TO LOOSE, ORANGE AND TAN, CLAYEY FINE TO COARSE SAND
- (C) COASTAL PLAIN: MOIST, STIFF TO SOFT, HIGHLY PLASTIC, RED AND ORANGE, SILTY CLAY (YORKTOWN FORMATION)
- (D) COASTAL PLAIN: WET TO SATURATED, LOOSE TO MEDIUM DENSE, PINK-TAN, ORANGE, RED-TAN AND BLuish GRAY, FINE TO COARSE SAND, AND CLAYEY FINE TO COARSE SAND (YORKTOWN FORMATION)
- (E) COASTAL PLAIN: MOIST, VERY SOFT, HIGHLY PLASTIC, GRAY, SILTY CLAY (YORKTOWN FORMATION)

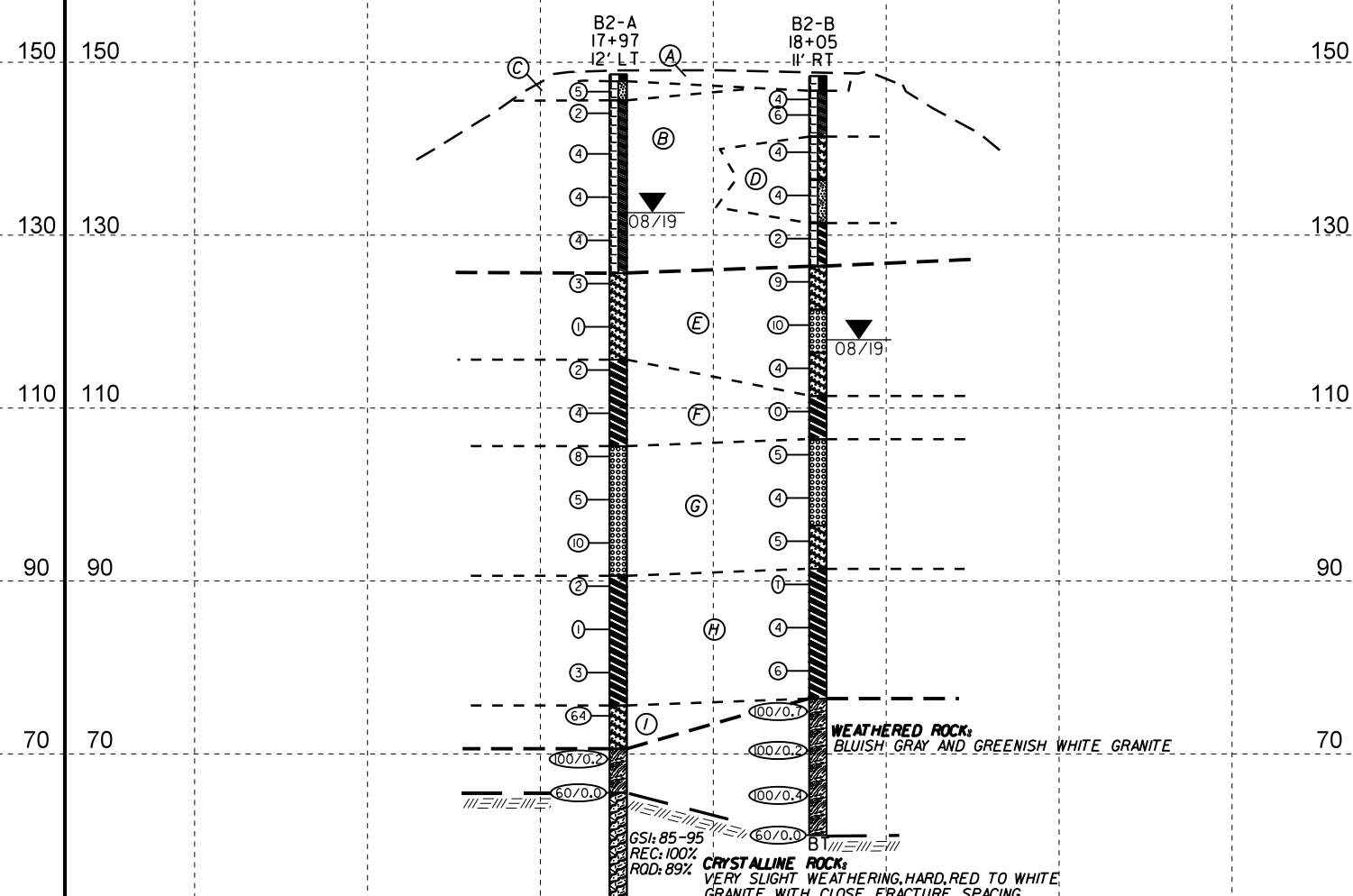


NOTES: GROUNDLINE TAKEN FROM PROJECT TIN FILE B5666_LS_TNL.TIN RECEIVED AUGUST 1, 2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTIONS.
 SKEW: 83°17'15"

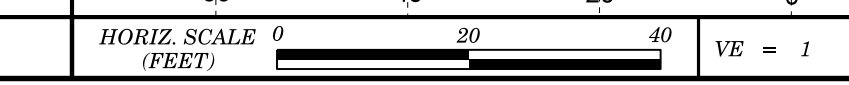


CROSS SECTION ALONG BENT 1 AT STA. 16+85

- (A) ROADWAY EMBANKMENT: ASPHALT AND CONCRETE
- (B) ROADWAY EMBANKMENT: MOIST, MEDIUM STIFF TO SOFT, SLIGHTLY TO HIGHLY PLASTIC, TAN TO ORANGE, SANDY CLAY
- (C) ROADWAY EMBANKMENT: MOIST, LOOSE, BLACK-TAN, SILTY COARSE TO FINE SAND WITH ASPHALT FRAGMENTS
- (D) ROADWAY EMBANKMENT: MOIST, LOOSE, ORANGE TO BROWN, CLAYEY FINE TO COARSE SAND AND SILTY FINE TO COARSE SAND
- (E) COASTAL PLAIN: MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, DARK BROWN, GRAY, AND PINK TO TAN, CLAYEY SAND AND FINE TO COARSE SAND (YORKTOWN FORMATION)
- (F) COASTAL PLAIN: MOIST, VERY SOFT TO SOFT, MODERATELY TO HIGHLY PLASTIC, ORANGE TO RED, SILTY CLAY (YORKTOWN FORMATION)
- (G) COASTAL PLAIN: WET TO SATURATED, LOOSE TO MEDIUM DENSE, PINK, TAN, GRAY, AND ORANGE TO RED, FINE TO COARSE SAND AND CLAYEY FINE TO COARSE SAND (YORKTOWN FORMATION)
- (H) COASTAL PLAIN: MOIST AND WET, VERY SOFT TO MEDIUM STIFF, HIGHLY PLASTIC, BLuish GRAY TO GRAY, SILTY CLAY (YORKTOWN FORMATION)
- (I) COASTAL PLAIN: MOIST, VERY DENSE, BLuish GRAY, CLAYEY FINE TO COARSE SAND (YORKTOWN FORMATION)



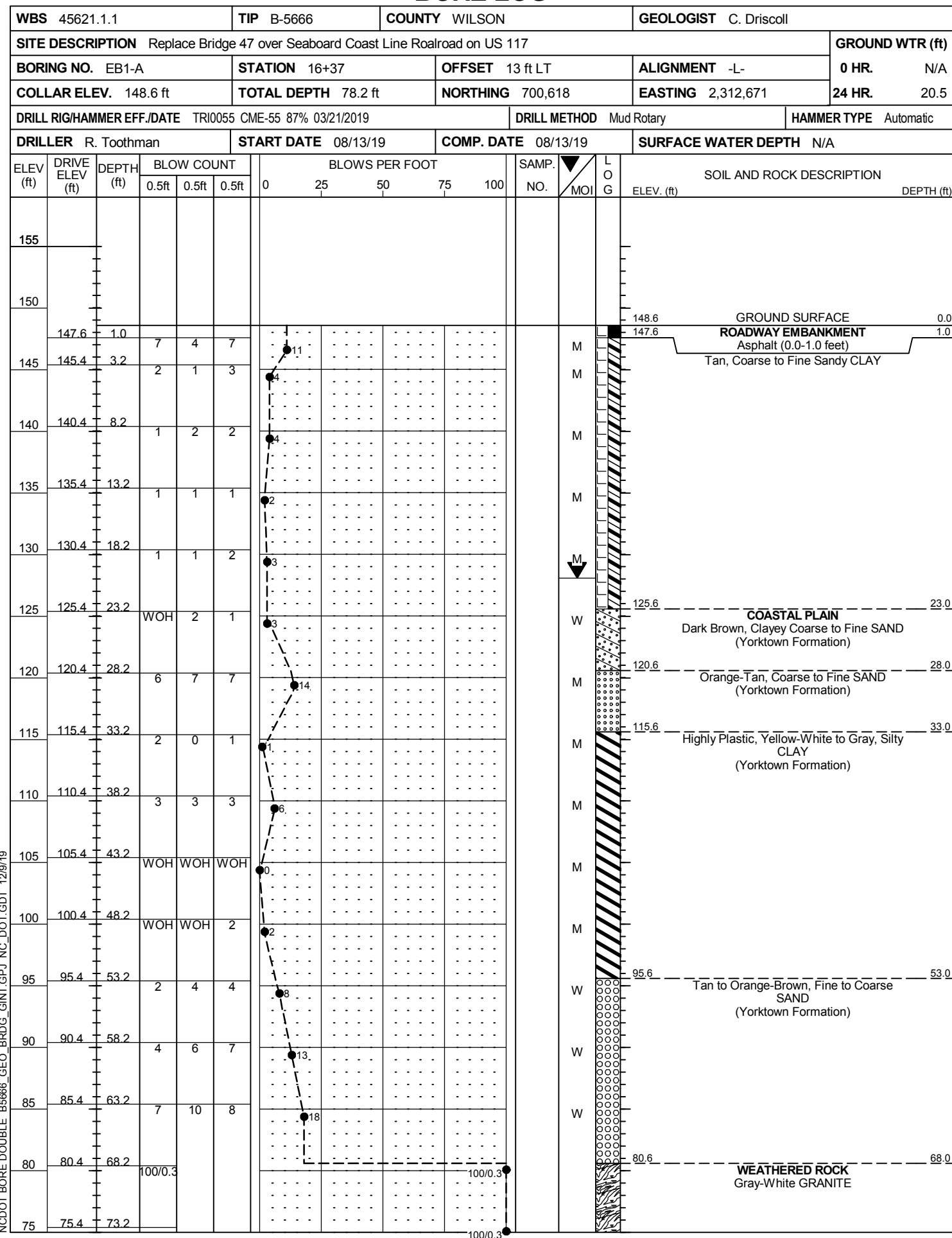
NOTES: GROUNDLINE TAKEN FROM PROJECT TIN FILE B5666_LS_TNL.TIN RECEIVED AUGUST 1, 2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTIONS.
 SKEW: 83°17'15"



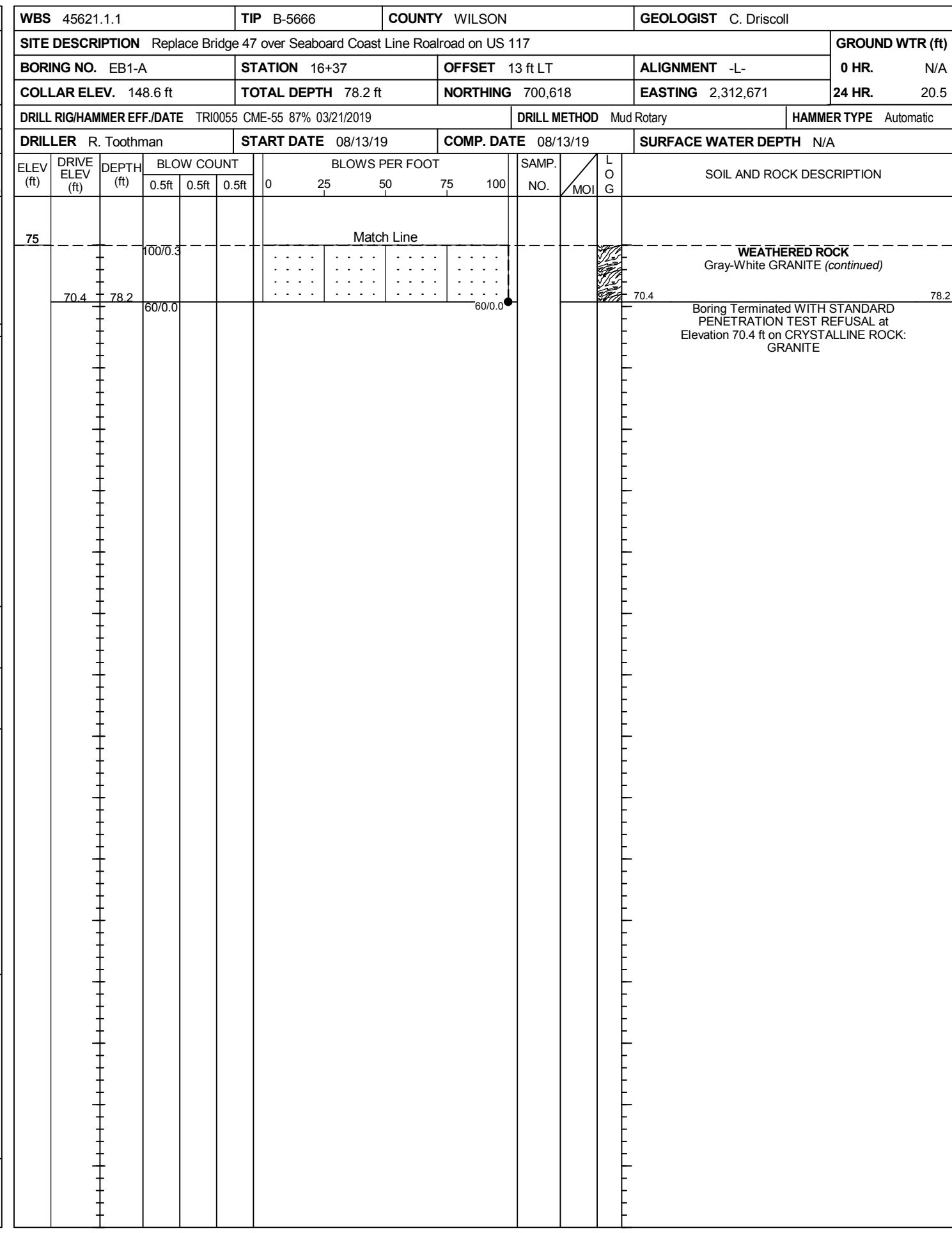
CROSS SECTION ALONG BENT 2 AT STA. 17+95

GEOTECHNICAL BORING REPORT

BORE LOG



NCDOT BORE DOUBLE B5666_GEO_BRDG_GINT.GPJ NC_DOT.GDT 12/9/19

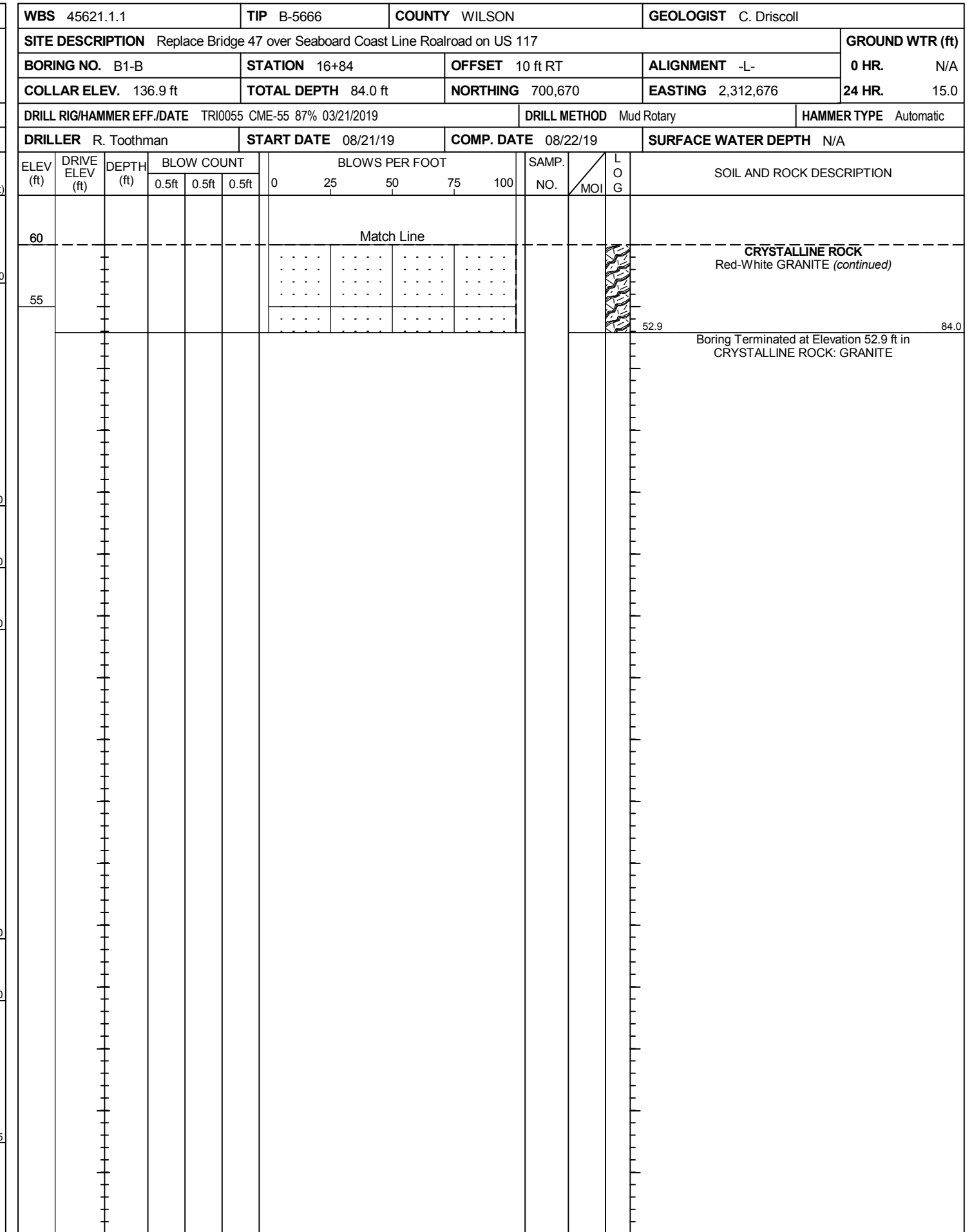
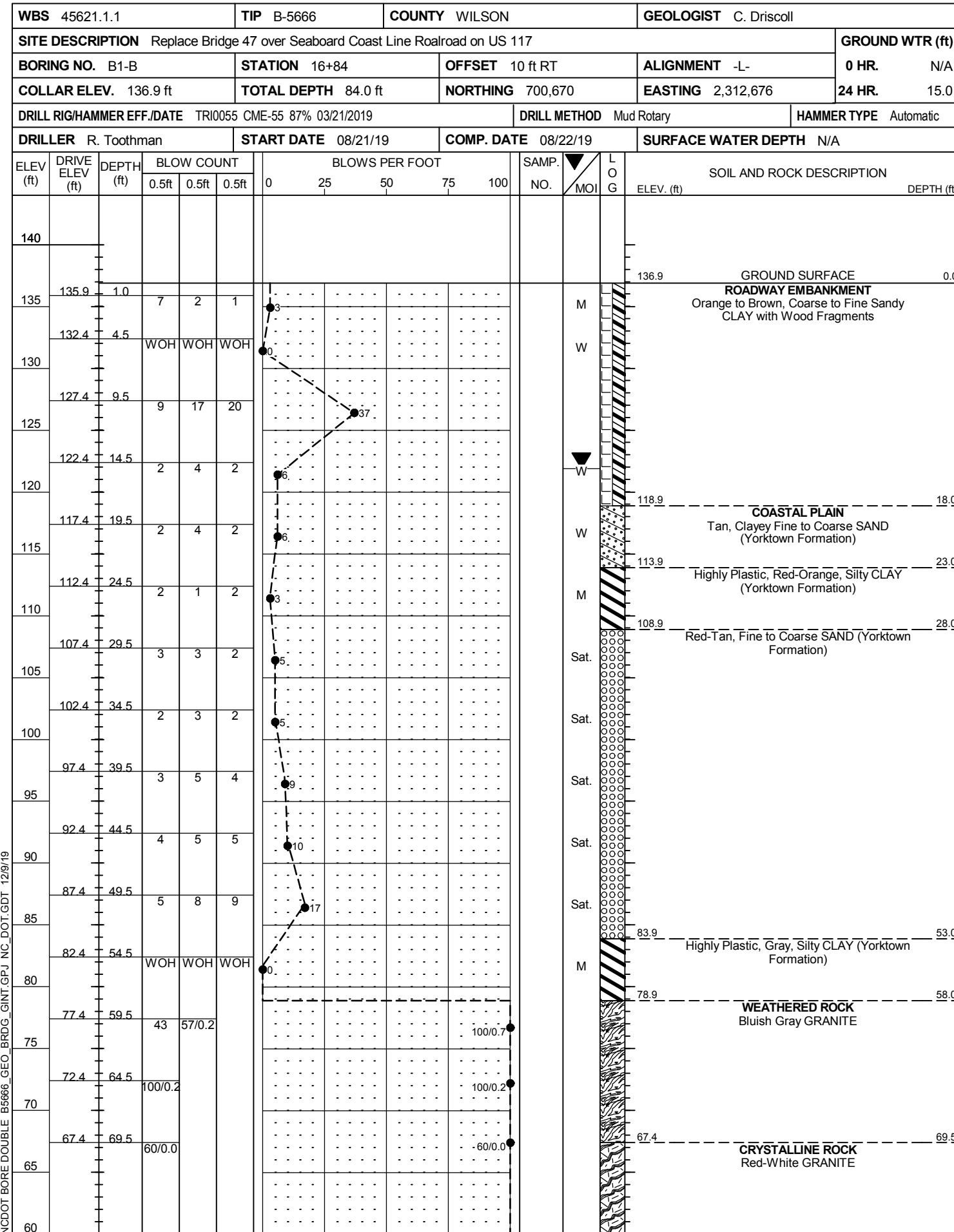


GEOTECHNICAL BORING REPORT BORE LOG

WBS 45621.1.1		TIP B-5666		COUNTY WILSON		GEOLOGIST C. Driscoll										
SITE DESCRIPTION Replace Bridge 47 over Seaboard Coast Line Railroad on US 117							GROUND WTR (ft)									
BORING NO. B1-A		STATION 16+79		OFFSET 13 ft LT		ALIGNMENT -L-	0 HR. N/A									
COLLAR ELEV. 137.0 ft		TOTAL DEPTH 65.8 ft		NORTHING 700,658		EASTING 2,312,656	24 HR. 10.5									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER R. Toothman		START DATE 08/14/19		COMP. DATE 08/14/19		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)		
140																
135	136.0	1.0	4	2	2	4						M		137.0	0.0	GROUND SURFACE
	133.5	3.5	1	1	1	1						M				ROADWAY EMBANKMENT Orange to Gray, Coarse to Fine Sandy CLAY
130																
	127.5	9.5	2	1	2	2						M				
125																
	122.5	14.5	5	10	9	5						M		124.0	13.0	Orange, Clayey Fine to Coarse SAND
120																
	117.5	19.5	6	7	4	6						M		119.0	18.0	COASTAL PLAIN Highly Plastic, Orange, Silty CLAY (Yorktown Formation)
115																
	112.5	24.5	1	1	1	1						M				
110																
	107.5	29.5	4	3	3	4						W		109.0	28.0	Pink-Tan, Fine to Coarse SAND (Yorktown Formation)
105																
	102.5	34.5	4	2	4	4						W		104.0	33.0	Orange, Clayey Fine to Coarse SAND (Yorktown Formation)
100																
	97.5	39.5	4	3	8	4						W		99.0	38.0	Orange, Fine to Coarse SAND (Yorktown Formation)
95																
	92.5	44.5	4	4	4	4						W				
90																
	87.5	49.5	6	9	11	6						W				
85																
	82.5	54.5	7	11	17	7						M		84.0	53.0	Blue-Gray, Clayey Coarse to Fine SAND (Yorktown Formation)
80																
	77.5	59.5	100/0.2			100/0.2								79.0	58.0	WEATHERED ROCK Gray-Brown GRANITE
75																
	72.5	64.5	100/0.3			100/0.3										
	71.2	65.8	60/0.0			60/0.0								71.2	65.8	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 71.2 ft on CRYSTALLINE ROCK: GRANITE

NCDOT BORE DOUBLE B5666_GEO_BRDG_GINT.GPJ NC_DOT.GDT 12/9/19

GEOTECHNICAL BORING REPORT BORE LOG



GEOTECHNICAL BORING REPORT

CORE LOG

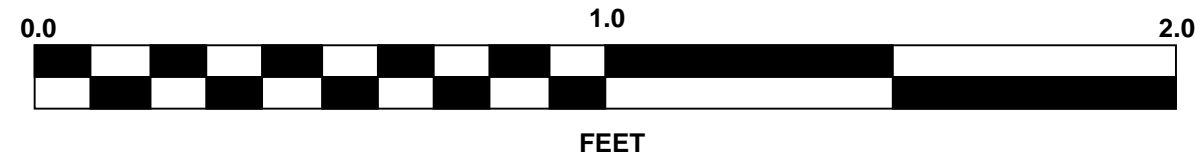
WBS 45621.1.1		TIP B-5666		COUNTY WILSON		GEOLOGIST C. Driscoll						
SITE DESCRIPTION Replace Bridge 47 over Seaboard Coast Line Railroad on US 117							GROUND WTR (ft)					
BORING NO. B1-B		STATION 16+84		OFFSET 10 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 136.9 ft		TOTAL DEPTH 84.0 ft		NORTHING 700,670		EASTING 2,312,676						
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic						
DRILLER R. Toothman		START DATE 08/21/19		COMP. DATE 08/22/19		SURFACE WATER DEPTH N/A						
CORE SIZE NQ2		TOTAL RUN 14.5 ft										
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %				RQD (ft) %
67.4	67.4	69.5	4.5	N=60/0.0 2:30/0.5 3:30/1.0 2:00/1.0 3:00/1.0 4:30/1.0	(4.5) 100%	(3.9) 87%	(14.2) 98%	(13.0) 90%		Begin Coring @ 69.5 ft	69.5	
65	62.9	74.0	5.0	4:30/1.0 4:30/1.0 4:00/1.0 3:00/1.0 2:00/1.0	(4.8) 96%	(4.2) 84%				Slight to Moderately Severe Weathering, Moderately Hard, Red-White GRANITE with Moderately Close to Close Fracture Spacing		
60	57.9	79.0	5.0	4:30/1.0 5:30/1.0 5:15/1.0 2:30/1.0 7:00/1.0	(4.9) 98%	(4.9) 98%				GSI: 50-60		
55	52.9	84.0									Boring Terminated at Elevation 52.9 ft in CRYSTALLINE ROCK: GRANITE	84.0

NCDOT CORE DOUBLE B5666_GEO_BRDG_GINT.GPJ NC_DOT.GDT 12/9/19

CORE PHOTOGRAPHS

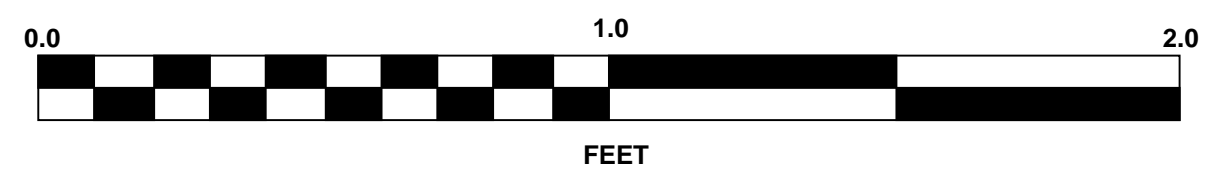
B1-B

BOX 1: 69.5 - 79.0 FEET



B1-B

BOX 2: 79.0 - 84.0 FEET



GEOTECHNICAL BORING REPORT BORE LOG

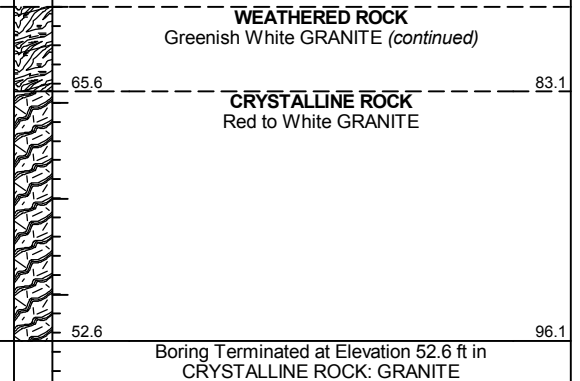
WBS 45621.1.1	TIP B-5666	COUNTY WILSON	GEOLOGIST C. Driscoll
SITE DESCRIPTION Replace Bridge 47 over Seaboard Coast Line Railroad on US 117			GROUND WTR (ft)
BORING NO. B2-A	STATION 17+97	OFFSET 12 ft LT	ALIGNMENT -L-
COLLAR ELEV. 148.7 ft	TOTAL DEPTH 96.1 ft	NORTHING 700,769	EASTING 2,312,616
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER R. Toothman	START DATE 08/15/19	COMP. DATE 08/16/19	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
150																
147.7	147.7	1.0	6	3	2	ROADWAY EMBANKMENT Asphalt (0.0-0.8 foot)						M	0.0 0.8			
145	145.2	3.5	3	1	1	Black-Tan, Silty Coarse to Fine SAND with Trace Asphalt Fragments						M	3.0			
140	140.5	8.2	1	2	2	Highly to Slightly Plastic, Tan to Orange, Coarse to Fine SANDY CLAY						M				
135	135.5	13.2	2	2	2							M				
130	130.5	18.2	2	1	3							M				
125	125.5	23.2	1	1	2	COASTAL PLAIN Slightly Plastic, Gray, Clayey Fine to Coarse SAND (Yorktown Formation)						M	23.0			
120	120.5	28.2	WOH	WOH	1							W				
115	115.5	33.2	3	1	1	Moderately to Highly Plastic, Orange to Red, Silty CLAY (Yorktown Formation)						M	33.0			
110	110.5	38.2	4	2	2							M				
105	105.5	43.2	1	4	4	Orange to Red, Fine to Coarse SAND (Yorktown Formation)						W	43.0			
100	100.5	48.2	2	2	3							W				
95	95.5	53.2	3	5	5							W				
90	90.5	58.2	3	1	1	Highly Plastic, Bluish-Gray, Silty CLAY (Yorktown Formation)						M	58.0			
85	85.5	63.2	WOR	WOR	1							W				
80	80.5	68.2	WOH	WOH	3							M				
75	75.5	73.2	10	23	41	Bluish Gray, Clayey Fine to Coarse SAND (Yorktown Formation)						M	73.0 78.0			
70	70.5	78.2														

NCDOT BORE DOUBLE B5666_GEO_BRDG_GINT.GPJ NC_DOT.GDT 12/9/19

WBS 45621.1.1	TIP B-5666	COUNTY WILSON	GEOLOGIST C. Driscoll
SITE DESCRIPTION Replace Bridge 47 over Seaboard Coast Line Railroad on US 117			GROUND WTR (ft)
BORING NO. B2-A	STATION 17+97	OFFSET 12 ft LT	ALIGNMENT -L-
COLLAR ELEV. 148.7 ft	TOTAL DEPTH 96.1 ft	NORTHING 700,769	EASTING 2,312,616
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER R. Toothman	START DATE 08/15/19	COMP. DATE 08/16/19	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
70						Match Line										
65	65.6	83.1				100/0.2								65.6 83.1		
60						60/0.0										
55																
														52.6 96.1	Boring Terminated at Elevation 52.6 ft in CRYSTALLINE ROCK: GRANITE	
																65.6 83.1



GEOTECHNICAL BORING REPORT

CORE LOG

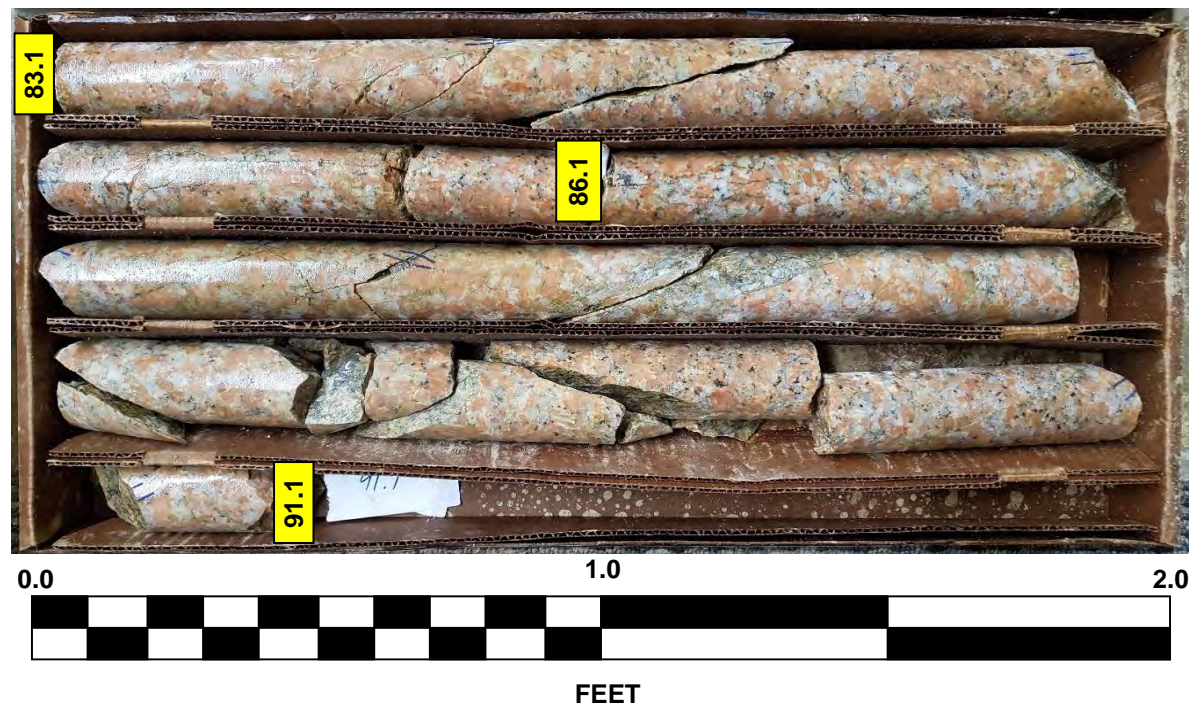
WBS 45621.1.1		TIP B-5666		COUNTY WILSON		GEOLOGIST C. Driscoll					
SITE DESCRIPTION Replace Bridge 47 over Seaboard Coast Line Railroad on US 117							GROUND WTR (ft)				
BORING NO. B2-A		STATION 17+97		OFFSET 12 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 148.7 ft		TOTAL DEPTH 96.1 ft		NORTHING 700,769		EASTING 2,312,616					
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic					
DRILLER R. Toothman		START DATE 08/15/19		COMP. DATE 08/16/19		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 13.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
65.6										Begin Coring @ 83.1 ft	
	65.6	83.1	3.0	N=60/0.0 5:15/1.0 5:15/1.0 5:15/1.0	(3.0) 100%	(3.0) 100%	(13.0) 100%	(11.6) 89%		CRYSTALLINE ROCK Very Slight Weathering, Hard, Red to White GRANITE with Close Fracture Spacing	83.1
	62.6	86.1	5.0	6:00/1.0 5:15/1.0 4:15/1.0	(5.0) 100%	(4.3) 86%				GSI: 85-95	
	57.6	91.1	5.0	6:00/1.0 7:00/1.0	(5.0) 100%	(4.3) 86%					
	52.6	96.1	5.0	5:15/1.0 5:45/1.0 5:45/1.0 4:00/1.0 3:30/1.0	(5.0) 100%	(4.3) 86%					Boring Terminated at Elevation 52.6 ft in CRYSTALLINE ROCK: GRANITE

NCDOT CORE DOUBLE B5666_GEO_BRDG_GINT.GPJ NC_DOT.GDT 12/9/19

CORE PHOTOGRAPHS

B2-A

BOX 1: 83.1-91.1 FEET



B2-A

BOX 2: 91.1-96.1 FEET



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 45621.1.1				TIP B-5666		COUNTY WILSON			GEOLOGIST C. Driscoll			
SITE DESCRIPTION Replace Bridge 47 over Seaboard Coast Line Railroad on US 117								GROUND WTR (ft)				
BORING NO. EB2-B		STATION 18+31		OFFSET 11 ft RT		ALIGNMENT -L-		0 HR. N/A				
COLLAR ELEV. 147.9 ft		TOTAL DEPTH 78.3 ft		NORTHING 700,808		EASTING 2,312,626		24 HR. 19.4				
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic			
DRILLER R. Toothman		START DATE 08/19/19		COMP. DATE 08/20/19		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				
150														
	146.9	1.0												147.9 GROUND SURFACE 0.0
														146.9 ROADWAY EMBANKMENT 1.0
	144.7	3.2												Asphalt (0.0-1.0 feet)
145			3	2	2									Brown, Coarse to Fine Sandy CLAY
140	139.7	8.2												139.9 Orange, Clayey Fine to Coarse SAND 8.0
135	134.7	13.2												129.9 Orange-Brown, Fine to Coarse Sandy CLAY 18.0
130	129.7	18.2												124.9 COASTAL PLAIN 23.0
125	124.7	23.2												Dark Brown to Gray, Silty Coarse to Fine SAND (Yorktown Formation)
120	119.7	28.2												
115	114.7	33.2												114.9 Highly Plastic, Purple-Gray, Silty CLAY (Yorktown Formation) 33.0
110														
105	104.7	43.2												104.9 Red-Orange, Fine to Coarse SAND (Yorktown Formation) 43.0
100	99.7	48.2												99.9 Orange, Clayey Fine to Coarse SAND (Yorktown Formation) 48.0
95	94.7	53.2												
90	89.7	58.2												89.9 Highly Plastic, Gray, Silty CLAY (Yorktown Formation) 58.0
85	84.7	63.2												
80	79.7	68.2	WOH											78.9 Bluish Gray, Clayey Fine to Coarse SAND (Yorktown Formation) 69.0
75	74.7	73.2		WOH	WOH									74.9 WEATHERED ROCK 73.0
70			30	70/0.4										Bluish Gray GRANITE
														100/0.9

WBS 45621.1.1				TIP B-5666		COUNTY WILSON			GEOLOGIST C. Driscoll			
SITE DESCRIPTION Replace Bridge 47 over Seaboard Coast Line Railroad on US 117								GROUND WTR (ft)				
BORING NO. EB2-B		STATION 18+31		OFFSET 11 ft RT		ALIGNMENT -L-		0 HR. N/A				
COLLAR ELEV. 147.9 ft		TOTAL DEPTH 78.3 ft		NORTHING 700,808		EASTING 2,312,626		24 HR. 19.4				
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic			
DRILLER R. Toothman		START DATE 08/19/19		COMP. DATE 08/20/19		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				
70														
	69.7	78.2												69.7 Match Line 78.2
														60/0.1 60/0.1
														69.6 CRISTALLINE ROCK 78.3
														Bluish Gray GRANITE
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 69.6 ft in CRISTALLINE ROCK: GRANITE
														Other Samples: ST-1 (35.0 - 37.0) ST-2 (37.0 - 38.5)

NCDOT BORE DOUBLE B5666_GEO_BRDG_GINT.GPJ NC_DOT.GDT 12/9/19

SITE PHOTOGRAPHS

REPLACE BRIDGE 47 OVER SEABOARD COAST LINE RAILROAD; STA. 17+37.36 -L-



Looking North along -L- from End Bent No. 1