

PROJECT: 17BP.12.R.60 REFERENCE: SF-350176

CONTENTS

SHEET NO.	DESCRIPTION
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2	LEGEND
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY GASTON
 SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER
HOYLE CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.60	1	13

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


J.K. STICKNEY

C.L. SMITH

M.R. MOORE

INVESTIGATED BY J.K. STICKNEY

DRAWN BY T.T. WALKER

CHECKED BY J.E. BEVERLY 

SUBMITTED BY K.B. MILLER

DATE AUGUST 2016



DocuSigned by:



957A789AED704CB...

8/26/2016

SIGNATURE

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

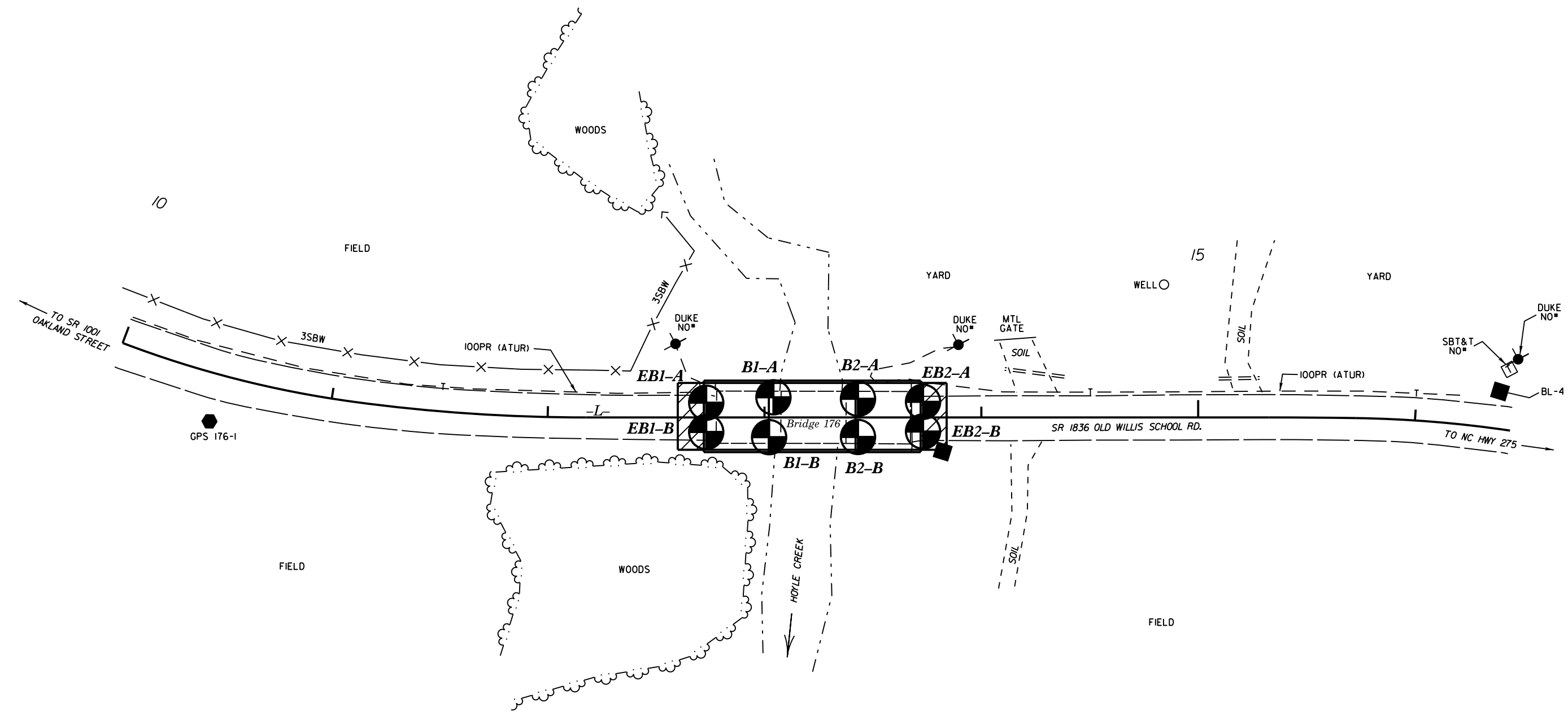
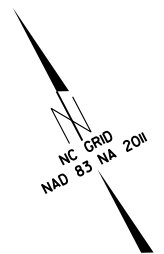
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

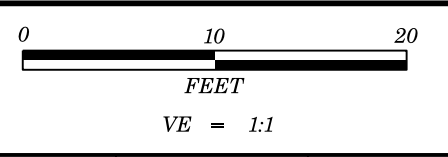
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

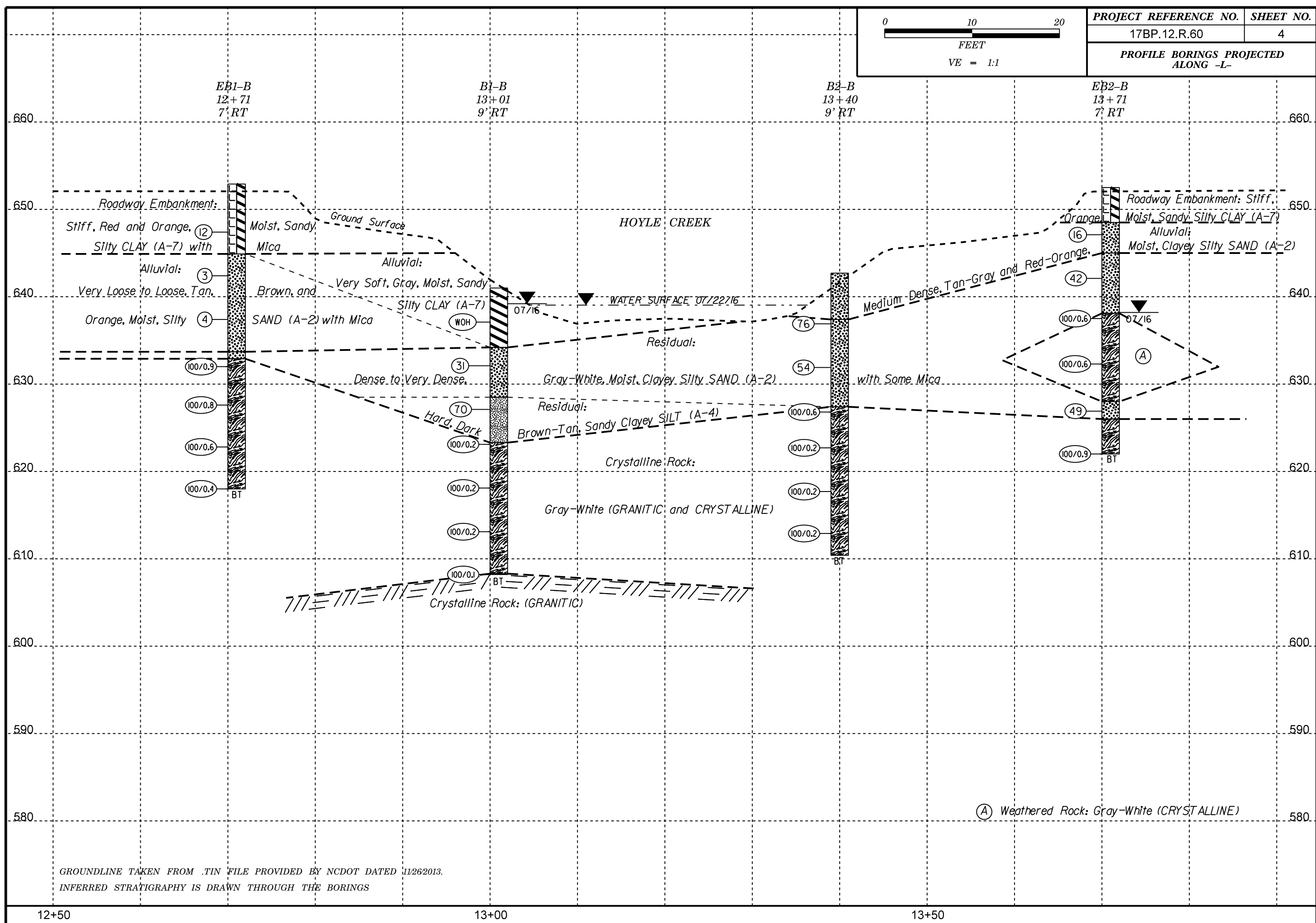
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PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.60	3
SITE PLAN	
SKEW=90 DEGREES	





PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.60	4
PROFILE BORINGS PROJECTED ALONG -L-	

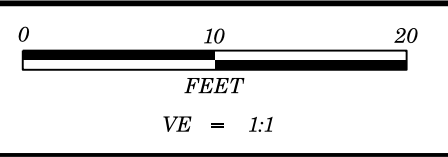


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 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS

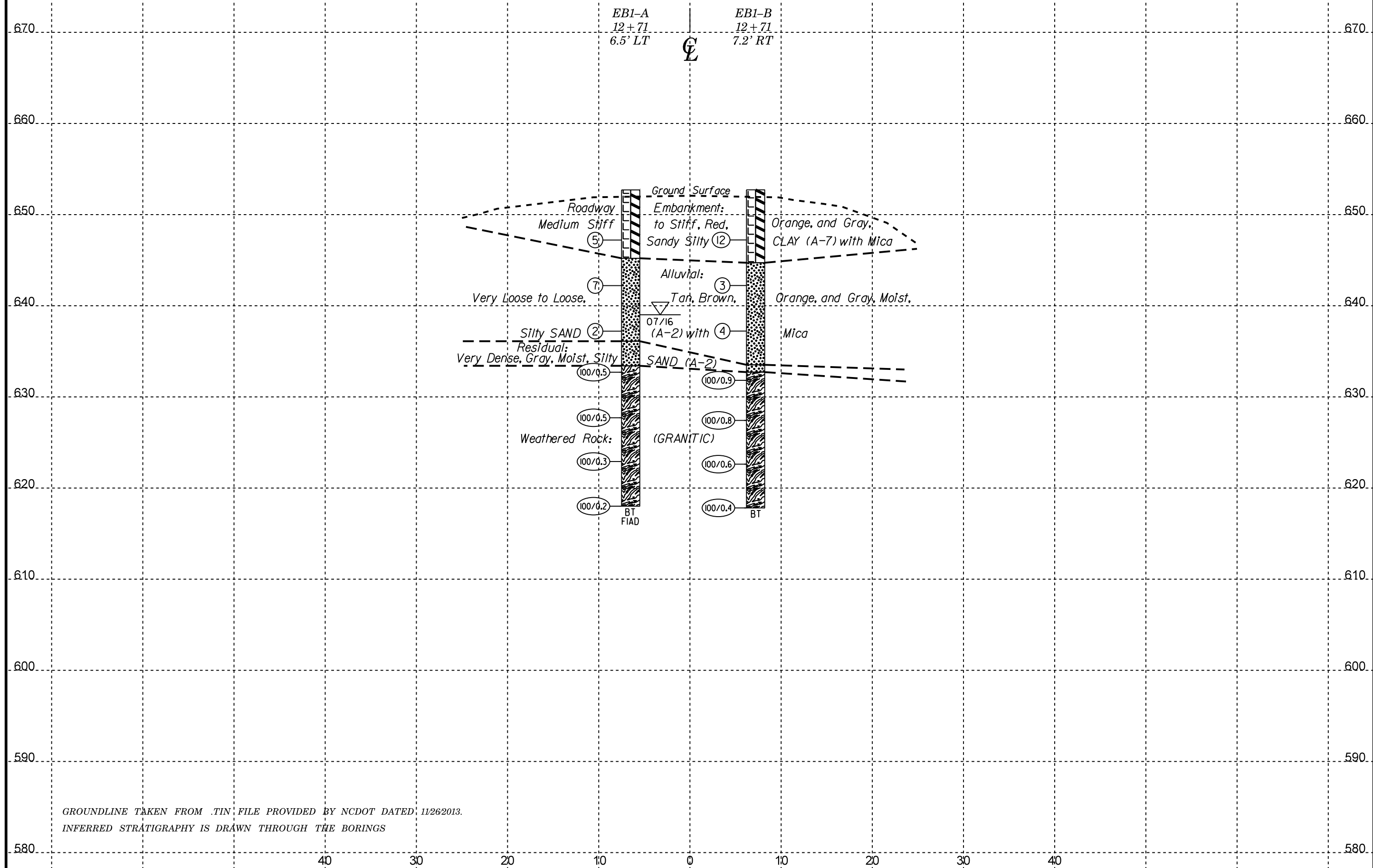
12+50

13+00

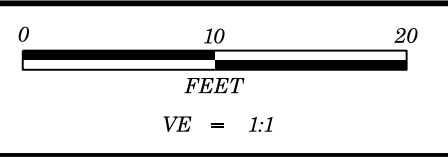
13+50



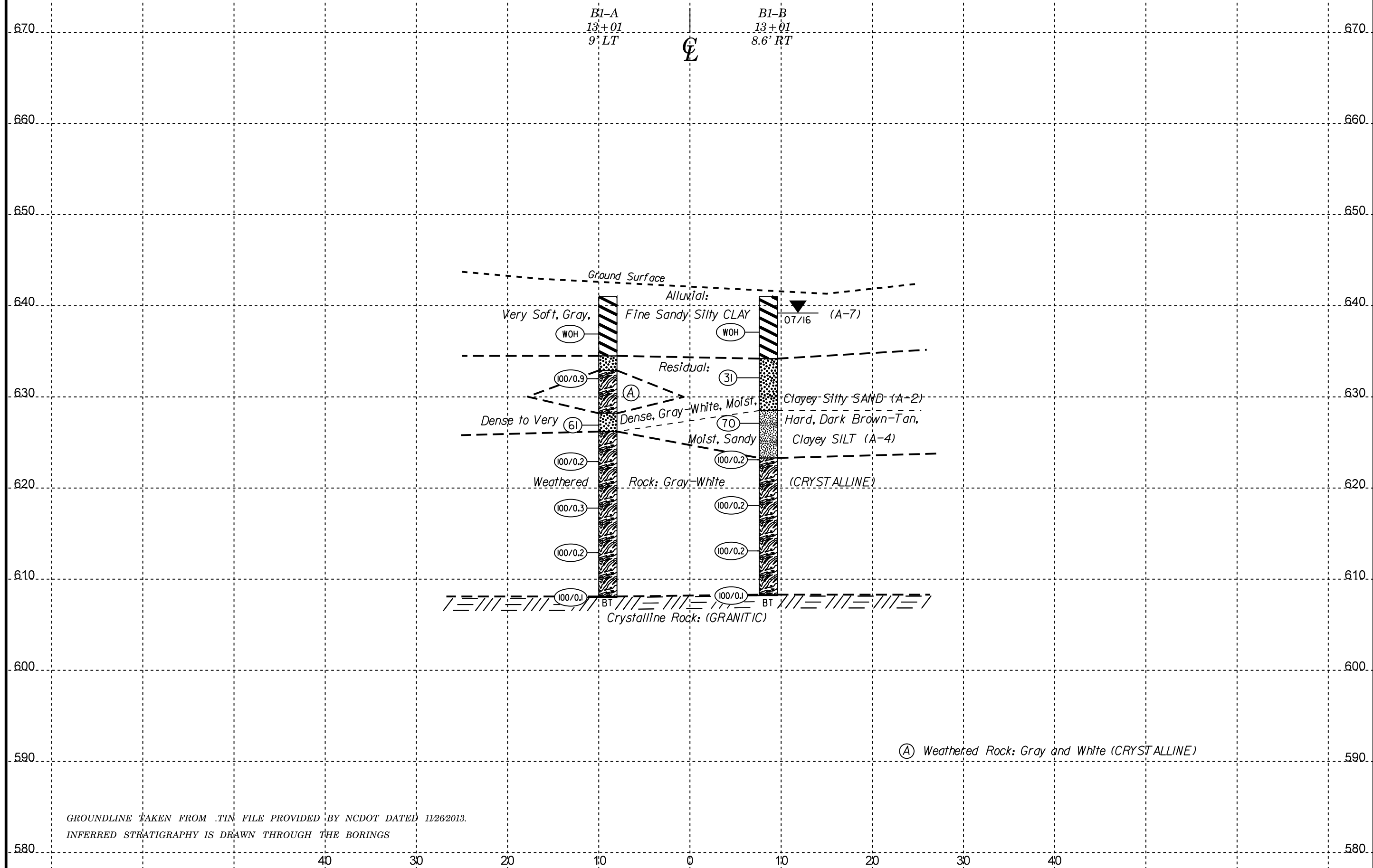
PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.60	5
SECTION THROUGH END BENT 1	
STA. 12+71.00	
SKEW=90 DEGREES	



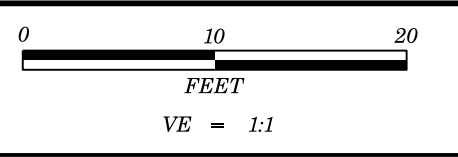
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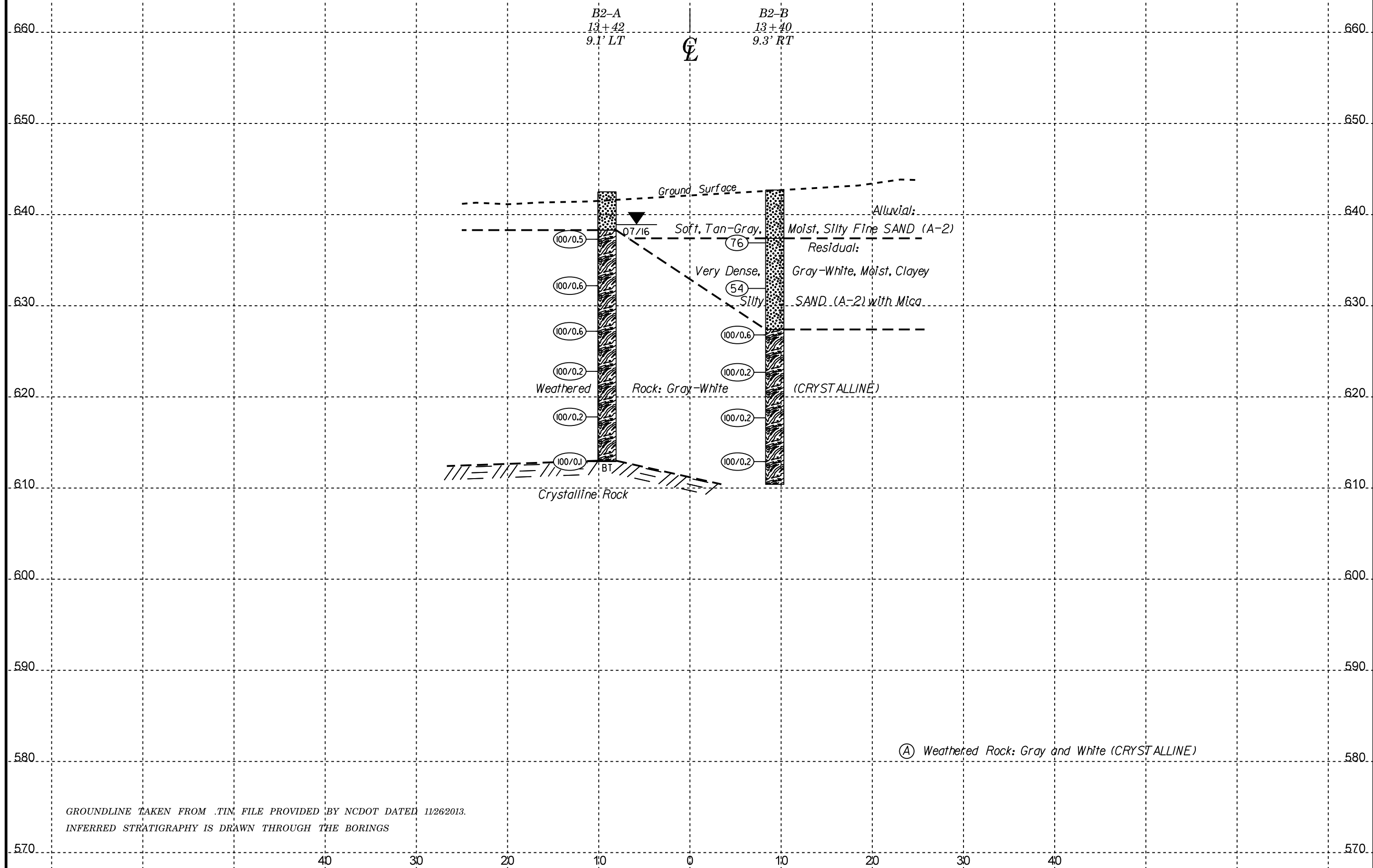
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17BP.12.R.60	6
SECTION THROUGH BENT 1	
STA. 13+01.00	
SKEW=90 DEGREES	

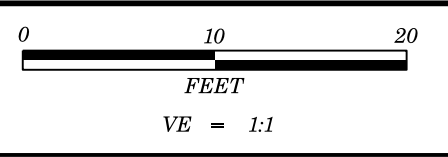


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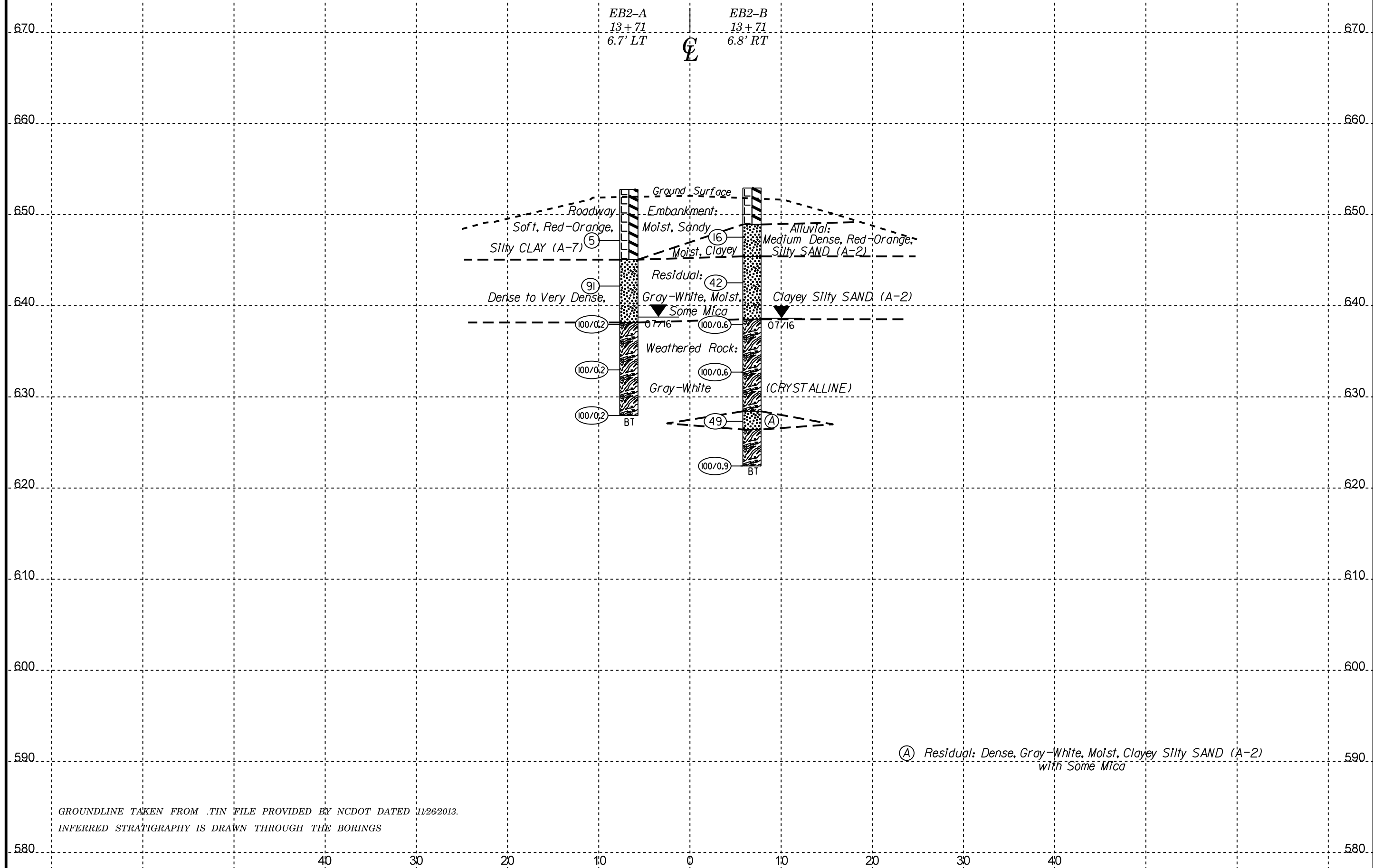


PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.60	7
SECTION THROUGH BENT 2 STA. 13+41.00 SKEW=90 DEGREES	





PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.60	8
SECTION THROUGH END BENT 2	
STA. 13+71.00	
SKEW=90 DEGREES	



Ⓐ Residual: Dense, Gray-White, Moist, Clayey Silty SAND (A-2) with Some Mica

GROUNDLINE TAKEN FROM TIN FILE PROVIDED BY NCDOT DATED 11/26/2013.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 12+71		OFFSET 7 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 652.7 ft		TOTAL DEPTH 34.7 ft		NORTHING 583,666		EASTING 1,363,735										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/22/16		COMP. DATE 07/22/16		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						
655														652.7	GROUND SURFACE	0.0
650	648.2	4.5	2	2	3								M	ROADWAY EMBANKMENT Red, Orange, and Gray, Sandy Silty CLAY (A-7)		
645	643.2	9.5	5	4	3								M	ALLUVIAL Gray, Silty SAND (A-2)	7.5	
640	638.2	14.5	WOH	1	1								M			
635	633.2	19.5	100/0.5											RESIDUAL Gray-White, Silty SAND (A-2)	16.6	
630	628.2	24.5	93	7/0.0										WEATHERED ROCK Gray-White (GRANITIC)	19.3	
625	623.2	29.5	100/0.3													
620	618.2	34.5	100/0.2													
															Boring Terminated at Elevation 618.0 ft in Weathered Rock (GRANITIC)	34.7

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 12+71		OFFSET 7 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 652.9 ft		TOTAL DEPTH 34.9 ft		NORTHING 583,678		EASTING 1,363,741										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/19/16		COMP. DATE 07/19/16		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						
655														652.9	GROUND SURFACE	0.0
650	648.4	4.5	9	7	5								M	ROADWAY EMBANKMENT Red and Orange, Sandy Silty CLAY (A-7) with Mica		
645	643.4	9.5	WOH	1	2								M	ALLUVIAL Tan, Brown, and Orange, Silty SAND (A-2) with Mica	8.0	
640	638.4	14.5	1	1	3								M			
635	633.4	19.5	21	47	53/0.4									RESIDUAL Gray, Silty SAND (A-2)	19.2	
630	628.4	24.5	63	37/0.3										WEATHERED ROCK Gray-White (GRANITIC)	20.0	
625	623.4	29.5	71	29/0.1												
620	618.4	34.5	100/0.4													
															Boring Terminated at Elevation 618.0 ft in Weathered Rock (GRANITIC)	34.9

NCDOT BORE DOUBLE_SF350176_GEO_BH_BRDG0176.GPJ_NC_DOT.GDT 8/22/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. B1-A		STATION 13+01		OFFSET 9 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 641.0 ft		TOTAL DEPTH 33.0 ft		NORTHING 583,678		EASTING 1,363,707										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016				DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/19/16		COMP. DATE 07/19/16		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						
645																
640															641.0	GROUND SURFACE 0.0
	637.9	3.1	WOH	WOH	WOH								M			
635															634.5	6.5
	632.9	8.1	46	54/0.4											632.9	8.1
630															628.2	12.8
	627.9	13.1	6	46	15										626.2	14.8
625																
	623.1	17.9	100/0.2													
620																
	618.1	22.9	100/0.3													
615																
	613.1	27.9	100/0.2													
610																
	608.1	32.9	100/0.1												608.1	32.9
															608.0	33.0

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. B1-B		STATION 13+01		OFFSET 9 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 641.0 ft		TOTAL DEPTH 32.8 ft		NORTHING 583,693		EASTING 1,363,715										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016				DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/19/16		COMP. DATE 07/19/16		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						
645																
640															641.0	GROUND SURFACE 0.0
	638.1	2.9	WOH	WOH	WOH								M			
635															634.2	6.8
	633.1	7.9	10	15	16										632.9	8.1
630															628.5	12.5
	628.1	12.9	14	32	38										623.3	17.7
625																
	623.3	17.7	100/0.2													
620																
	618.3	22.7	100/0.2													
615																
	613.3	27.7	100/0.2													
610																
	608.3	32.7	100/0.1												608.3	32.7
															608.2	32.8

NCDOT BORE DOUBLE_SF350176_GEO_BH_BRDG0176.GPJ_NC_DOT.GDT_8/22/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. B2-A		STATION 13+42		OFFSET 9 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 642.5 ft		TOTAL DEPTH 29.6 ft		NORTHING 583,697		EASTING 1,363,671										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/20/16		COMP. DATE 07/20/16		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						
645														642.5	GROUND SURFACE	0.0
640														638.3	ALLUVIAL Tan, Silty SAND (A-2)	4.2
635	637.8	4.7	95	5/0.0											WEATHERED ROCK Gray-White (CRYSTALLINE)	
630	632.8	9.7	79	21/0.1												
625	627.8	14.7	69	31/0.1												
620	623.0	19.5	100/0.2													
615	618.0	24.5	100/0.2													
	613.0	29.5	100/0.1											613.0	CRYSTALLINE ROCK	29.5
														612.9	Boring Terminated with Standard Penetration Test Refusal at Elevation 612.9 ft in Crystalline Rock	

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. B2-B		STATION 13+40		OFFSET 9 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 642.7 ft		TOTAL DEPTH 32.3 ft		NORTHING 583,712		EASTING 1,363,681										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/18/16		COMP. DATE 07/18/16		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						
645														642.7	GROUND SURFACE	0.0
640															ALLUVIAL Tan-Gray, Silty Fine SAND (A-2)	
635	637.9	4.8	2	35	41									637.4	RESIDUAL Gray-White, Clayey Silty SAND (A-2) with Mica	5.3
630	632.9	9.8	25	32	22											
625	627.9	14.8	8	34	66/0.1									627.4	WEATHERED ROCK Gray-White (GRANITIC)	15.3
620	622.9	19.8	100/0.2													
615	617.9	24.8	100/0.2													
	613.1	29.6	100/0.2											610.4	Boring Terminated with Tricone Refusal at Elevation 610.4 ft on Crystalline Rock (GRANITIC)	

NCDOT BORE DOUBLE_SF350176_GEO_BH_BRDG0176.GPJ_NC_DOT.GDT 8/22/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 13+71		OFFSET 7 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 652.4 ft		TOTAL DEPTH 24.8 ft		NORTHING 583,712		EASTING 1,363,646										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/21/16		COMP. DATE 07/21/16		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						
655														652.4	0.0	GROUND SURFACE
650														647.8	4.6	ROADWAY EMBANKMENT Red-Orange, Sandy Silty CLAY (A-7)
645	647.8	4.6	3	3	2									644.7	7.7	RESIDUAL Gray-White, Clayey Silty SAND (A-2) with Some Mica
640	642.8	9.6	25	26	65									637.8	14.6	WEATHERED ROCK Gray-White (CRYSTALLINE)
635	637.8	14.6	100/0.2											632.8	19.6	
630	632.8	19.6	100/0.2											627.8	24.6	
	627.8	24.6	100/0.2													Boring Terminated at Elevation 627.6 ft in Weathered Rock (CRYSTALLINE)

WBS 17BP.12.R.60		TIP SF-350176		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 176 ON SR 1836 OVER HOYLE CREEK							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 13+71		OFFSET 7 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 652.5 ft		TOTAL DEPTH 30.5 ft		NORTHING 583,724		EASTING 1,363,653										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 85% 05/20/2016			DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 07/18/16		COMP. DATE 07/18/16		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						
655														652.5	0.0	GROUND SURFACE
650														648.1	4.4	ROADWAY EMBANKMENT Orange, Sandy Silty CLAY (A-7)
645	648.1	4.4	3	8	8									645.0	7.5	ALLUVIAL Red-Orange, Clayey Silty SAND (A-2)
640	643.1	9.4	35	20	22									638.1	14.4	RESIDUAL Gray-White, Clayey Silty SAND (A-2) with Some Mica
635	638.1	14.4	85	15/0.1										632.9	19.6	WEATHERED ROCK Gray-White (CRYSTALLINE)
630	632.9	19.6	78	22/0.1										627.9	24.6	
625	627.9	24.6	37	27	22									622.9	29.6	RESIDUAL Gray-White, Clayey Silty SAND (A-2) with Some Mica
	622.9	29.6	23	77/0.4												WEATHERED ROCK Gray-White (CRYSTALLINE)
																Boring Terminated at Elevation 622.0 ft in Weathered Rock (CRYSTALLINE)

NCDOT BORE DOUBLE_SF350176_GEO_BH_BRDG0176.GPJ_NC_DOT.GDT_8/22/16

SITE PHOTOGRAPHS



Photograph No. 1: At End Bent 2 looking towards End Bent 1



Photograph No. 2: Looking Downstream