

PROJECT: 17BP.4.R.69 REFERENCE: 630062

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY NASH  
PROJECT DESCRIPTION BRIDGE NO. 62 ON SR 1109  
OVER BIG BRANCH

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	630062	1	12

**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

O. B. OTI

D. G. PINTER

J.R. SWARTLEY

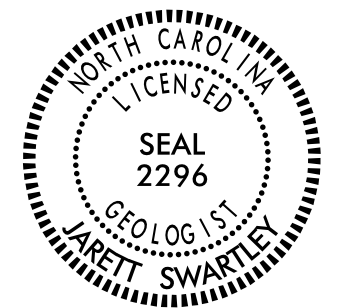
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DRAWN BY J.R. SWARTLEY

CHECKED BY N. T. ROBERSON

SUBMITTED BY N. T. ROBERSON

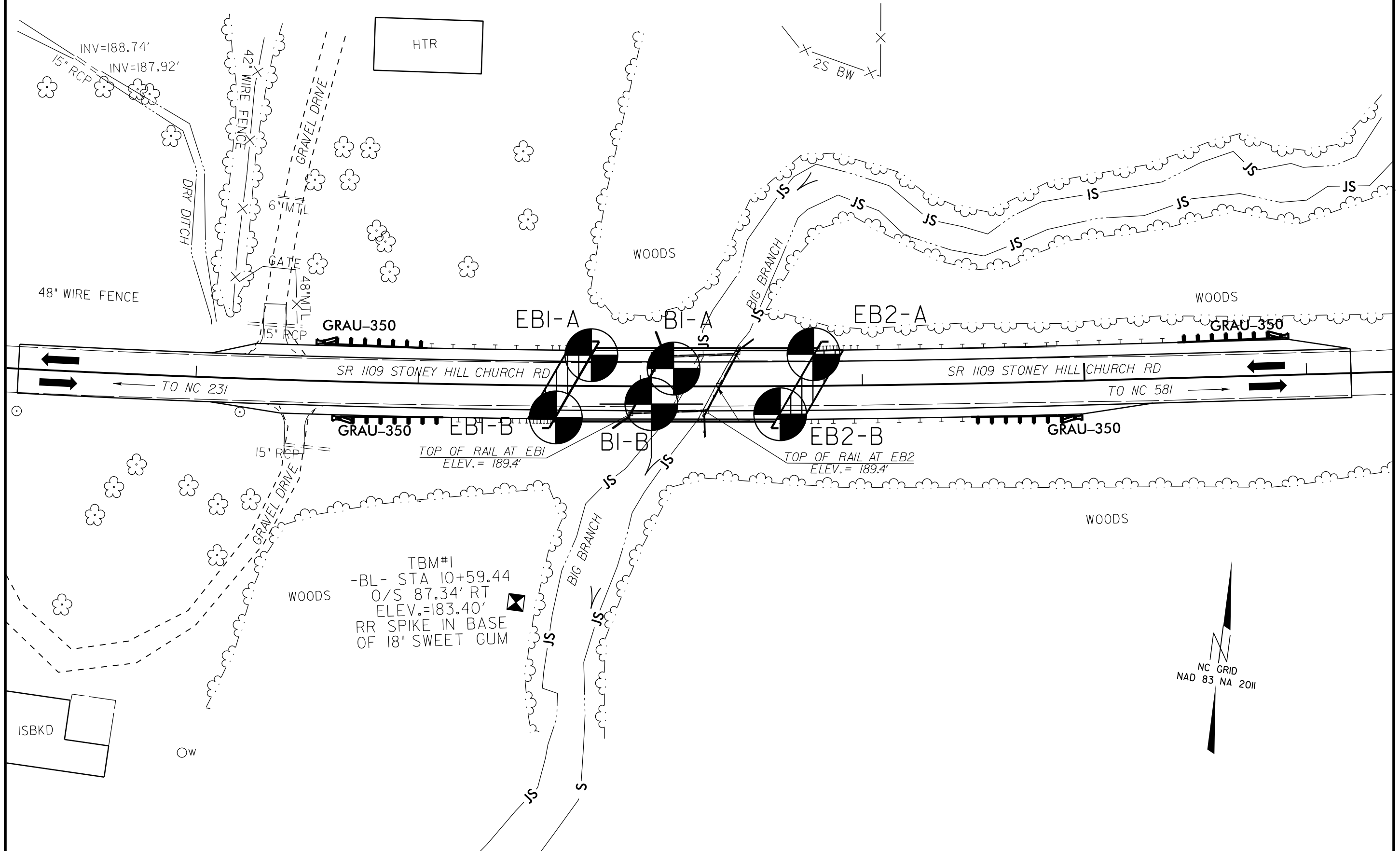
DATE JULY 2016



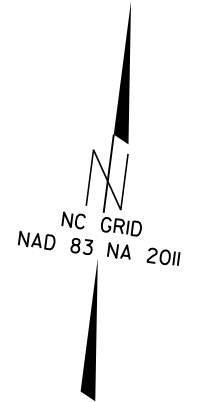
DocuSigned by:  
Jarett Swartley 8/22/2016  
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SIGNATURE DATE

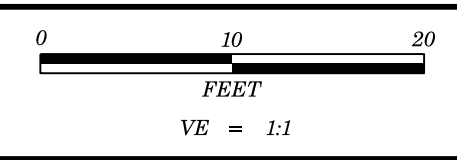
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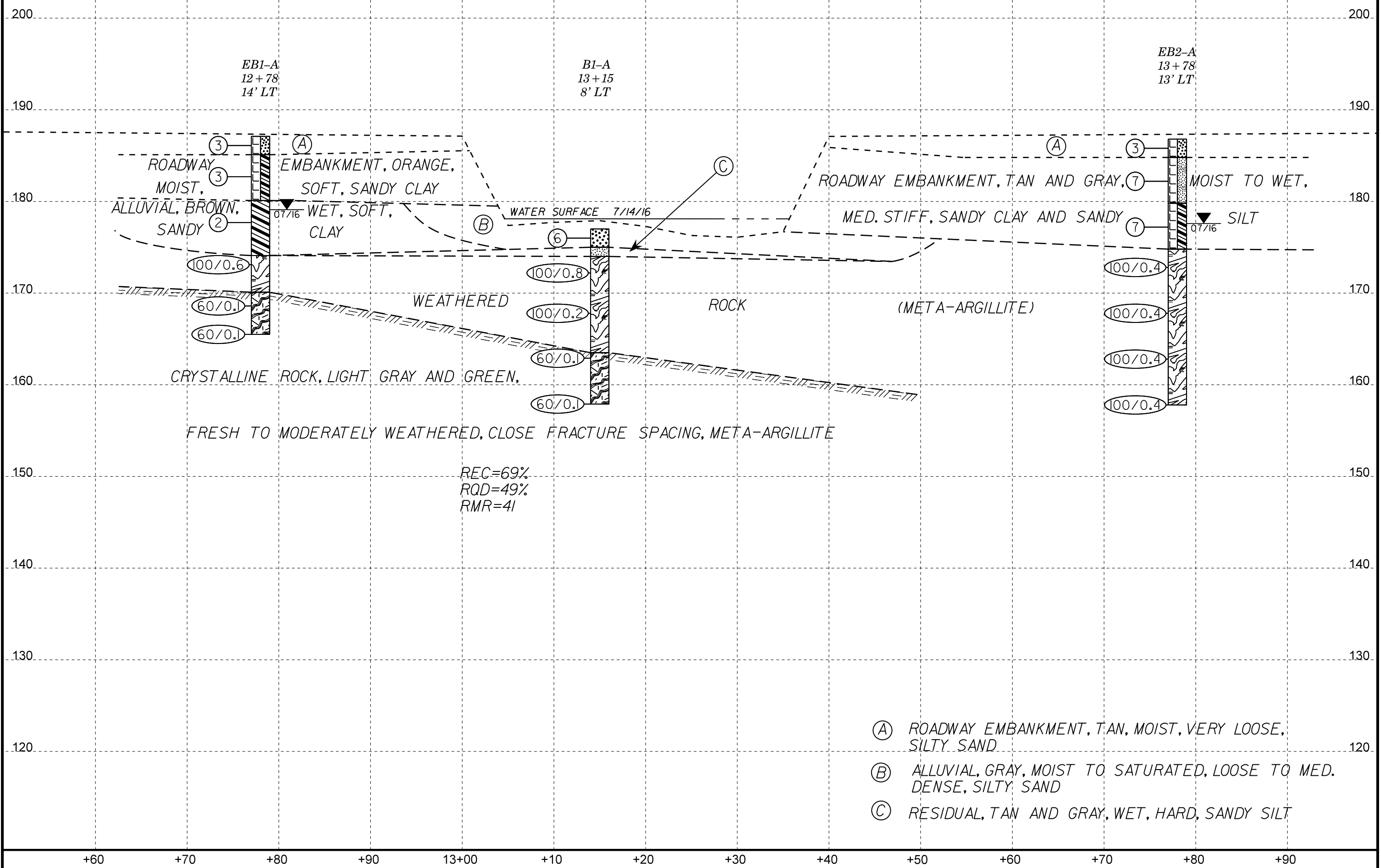


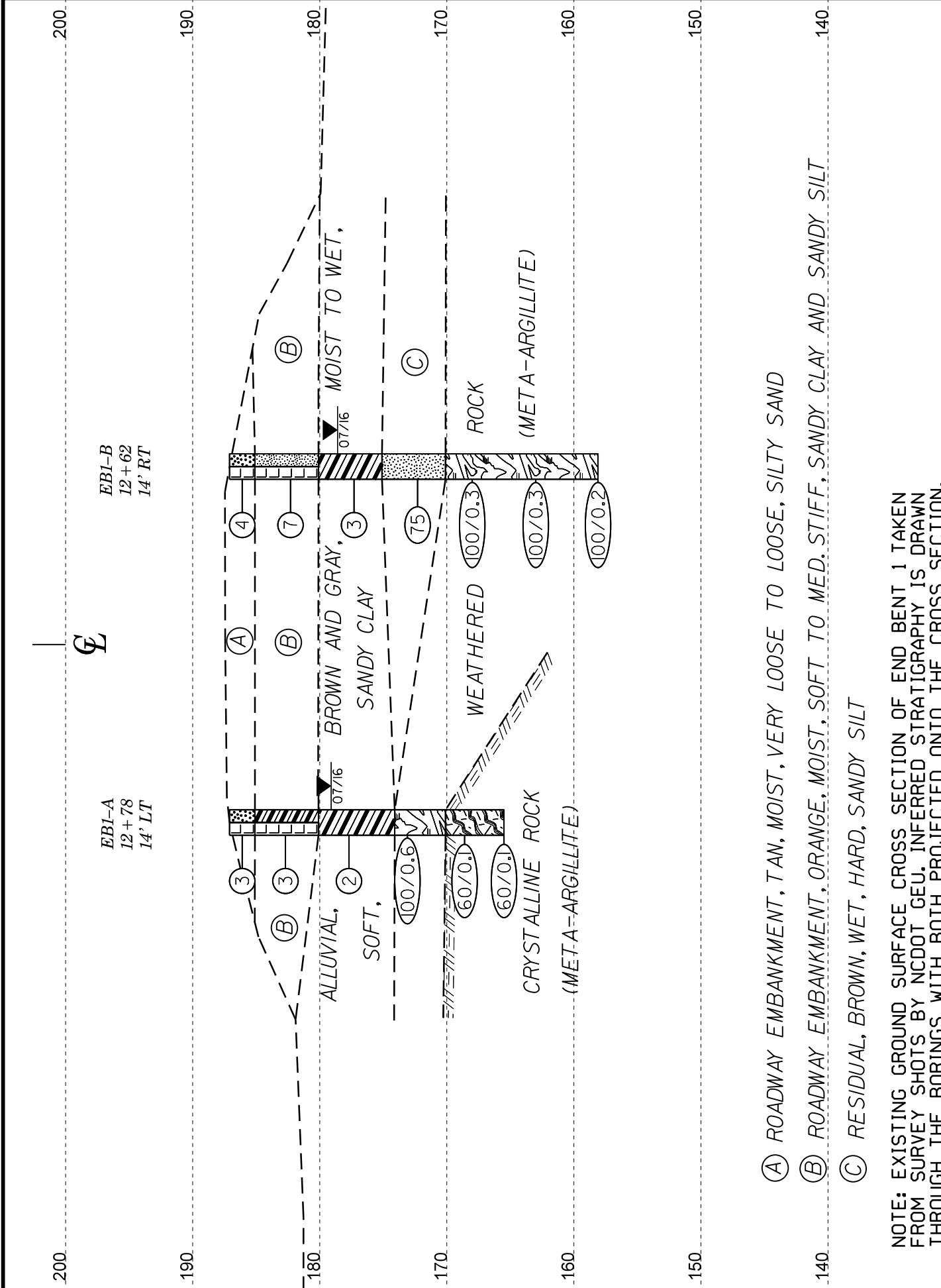
TBM#1  
 -BL- STA 10+59.44  
 O/S 87.34' RT  
 ELEV.=183.40'  
 RR SPIKE IN BASE  
 OF 18" SWEET GUM





PROJECT REFERENCE NO.	SHEET NO.
630062	4
BORINGS PROJECTED ALONG -L- PROFILE	

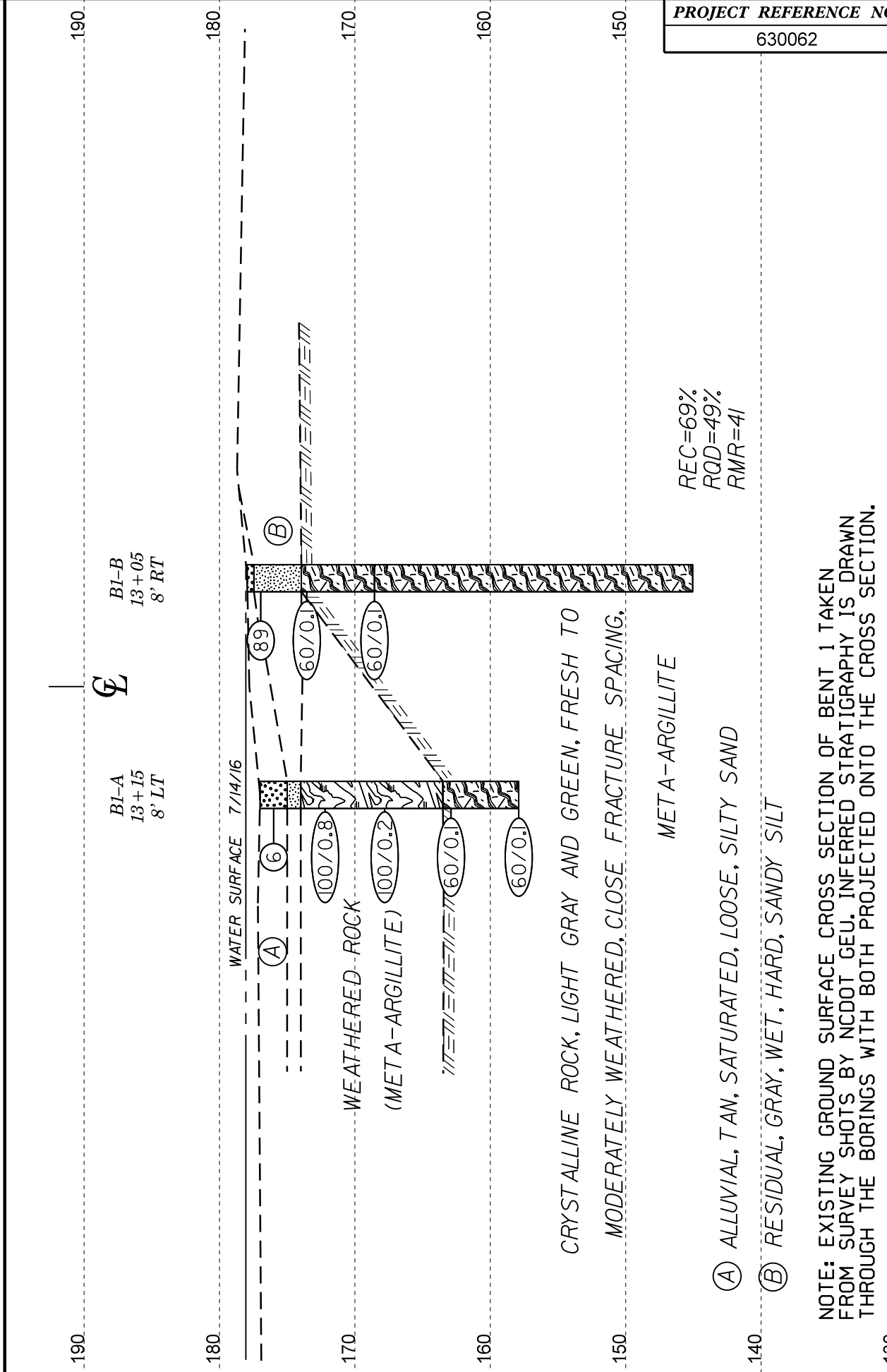




- Ⓐ ROADWAY EMBANKMENT, TAN, MOIST, VERY LOOSE TO LOOSE, SILTY SAND
- Ⓑ ROADWAY EMBANKMENT, ORANGE, MOIST, SOFT TO MED. STIFF, SANDY CLAY AND SANDY SILT
- Ⓒ RESIDUAL, BROWN, WET, HARD, SANDY SILT

NOTE: EXISTING GROUND SURFACE CROSS SECTION OF END BENT 1 TAKEN FROM SURVEY SHOTS BY NCDOT GEU. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

HORIZ. SCALE 0 10 20 (FEET) VE = 1:1 CROSS SECTION THROUGH EBI



REC=69%  
RQD=49%  
RMR=4I

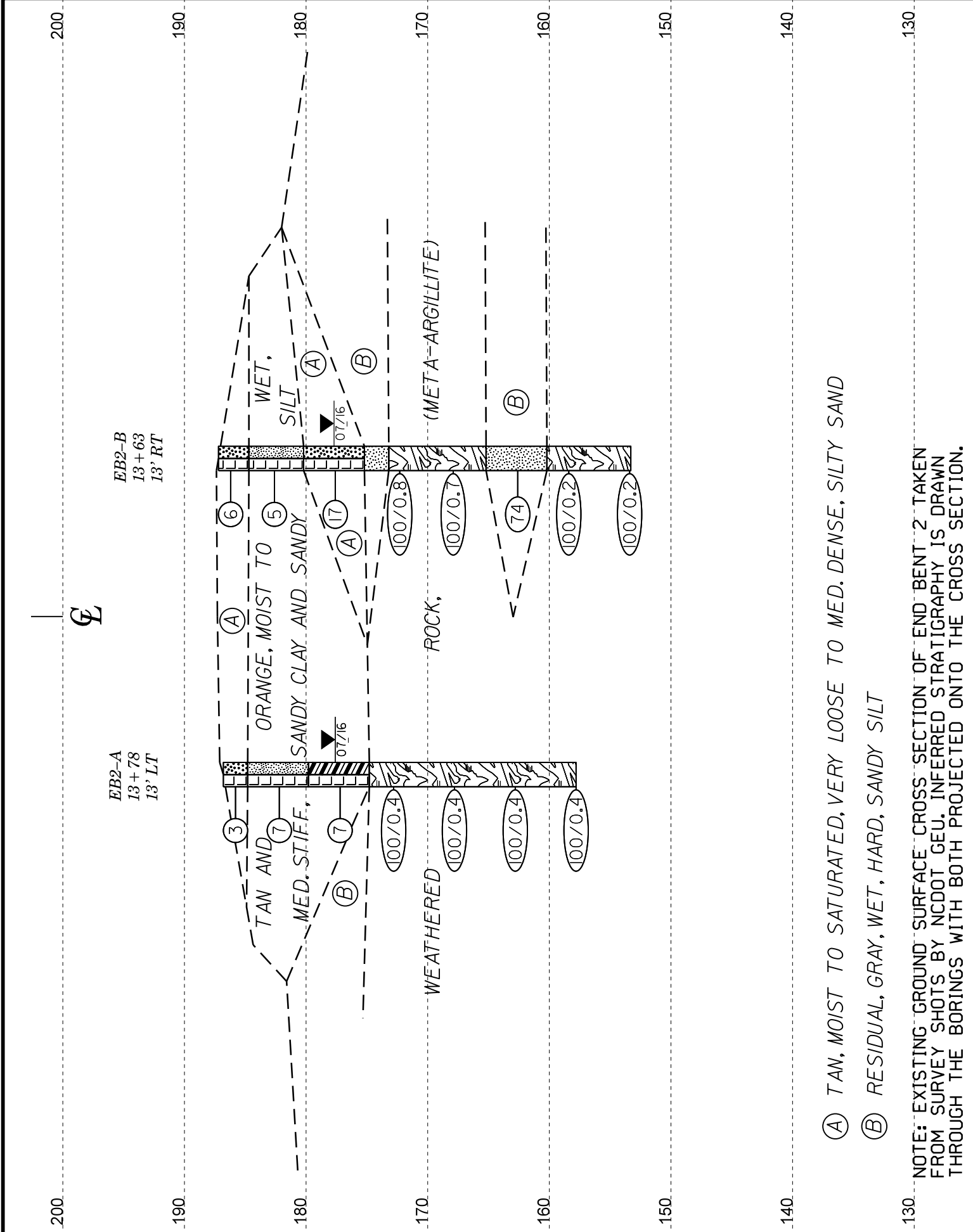
- Ⓐ ALLUVIAL, TAN, SATURATED, LOOSE, SILTY SAND
- Ⓑ RESIDUAL, GRAY, WET, HARD, SANDY SILT

NOTE: EXISTING GROUND SURFACE CROSS SECTION OF BENT 1 TAKEN FROM SURVEY SHOTS BY NCDOT GEU. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

ROCK TEST RESULTS

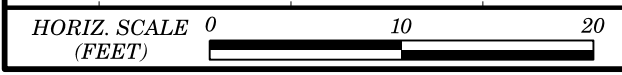
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ROCK TYPE	UNIT WT. LB/FT.	UNCONFINED COMP. STRENGTH, KSI	SECTION MOD. @ 40% MPsi
RS-1	8' RT	13+05	12.4 - 12.8	META-ARG	176.3	4.24	2.12
RS-2	8' RT	13+05	15.9 - 16.5	META-ARG	181.0	6.57	6.9

HORIZ. SCALE 0 10 20 (FEET) VE = 1:1 CROSS SECTION THROUGH BI



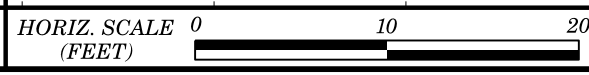
- (A) TAN, MOIST TO SATURATED, VERY LOOSE TO MED. DENSE, SILTY SAND
- (B) RESIDUAL, GRAY, WET, HARD, SANDY SILT

NOTE: EXISTING GROUND SURFACE CROSS SECTION OF END BENT 2 TAKEN FROM SURVEY SHOTS BY NCDOT GEU. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



VE = 1:1

**CROSS SECTION THROUGH B2**



VE = 1:1

**CROSS SECTION THROUGH EB2**

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 17BP.4.R.69		TIP 630062		COUNTY NASH		GEOLOGIST Swartley, J. R.											
SITE DESCRIPTION BRIDGE NO. 62 ON SR 1109 OVER BIG BRANCH							GROUND WTR (ft)										
BORING NO. EB1-A		STATION 12+78		OFFSET 14 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 187.1 ft		TOTAL DEPTH 21.6 ft		NORTHING 748,711		EASTING 2,250,623											
DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 89% 02/09/2015		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic													
DRILLER Pinter, D. G.		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							
190																	
	187.1	0.0		2	2	1									187.1	GROUND SURFACE	0.0
185															185.1	ROADWAY EMBANKMENT TAN, SILTY SAND ORANGE, SANDY CLAY	2.0
	183.7	3.4		2	2	1											
180															180.1	ALLUVIAL BROWN, SANDY CLAY	7.0
	178.7	8.4		WOH	WOH	2											
175															174.1	WEATHERED ROCK (META-ARGILLITE)	13.0
	173.7	13.4		90	10/0.1										170.1	CRYSTALLINE ROCK (META-ARGILLITE)	17.0
170															165.5	Boring Terminated at Elevation 165.5 ft IN CRYSTALLINE ROCK (META-ARGILLITE)	21.6
	168.7	18.4		60/0.1													
	165.6	21.5		60/0.1													

WBS 17BP.4.R.69		TIP 630062		COUNTY NASH		GEOLOGIST Swartley, J. R.											
SITE DESCRIPTION BRIDGE NO. 62 ON SR 1109 OVER BIG BRANCH							GROUND WTR (ft)										
BORING NO. EB1-B		STATION 12+62		OFFSET 14 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 187.3 ft		TOTAL DEPTH 29.0 ft		NORTHING 748,682		EASTING 2,250,611											
DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 89% 02/09/2015		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic													
DRILLER Pinter, D. G.		START DATE 07/13/16		COMP. DATE 07/13/16		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							
190																	
	187.3	0.0		1	2	2									187.3	GROUND SURFACE	0.0
185															185.3	ROADWAY EMBANKMENT TAN, SILTY SAND ORANGE, SANDY SILT	2.0
	183.5	3.8		2	4	3											
180															180.3	ALLUVIAL GRAY, SANDY CLAY	7.0
	178.5	8.8		1	1	2											
175															175.3	RESIDUAL BROWN, SANDY SILT	12.0
	173.5	13.8		14	30	45									170.3	WEATHERED ROCK (META-ARGILLITE)	17.0
170															165.5	Boring Terminated at Elevation 165.5 ft IN CRYSTALLINE ROCK (META-ARGILLITE)	21.6
	168.5	18.8		100/0.3													
165															163.5	Boring Terminated at Elevation 163.5 ft IN CRYSTALLINE ROCK (META-ARGILLITE)	23.8
	163.5	23.8		100/0.3													
160															158.5	Boring Terminated at Elevation 158.3 ft IN WEATHERED ROCK (META-ARGILLITE)	29.0
	158.5	28.8		100/0.2													

NCDOT BORE DOUBLE 63\_GEO\_BRDG0062\_SPT\_BORINGS.GPJ NC\_DOT\_GDT 7/29/16

WBS 17BP.4.R.69		TIP 630062		COUNTY NASH		GEOLOGIST Swartley, J. R.								
SITE DESCRIPTION BRIDGE NO. 62 ON SR 1109 OVER BIG BRANCH							GROUND WTR (ft)							
BORING NO. B1-A		STATION 13+15		OFFSET 8 ft LT		ALIGNMENT -L-	0 HR. N/A							
COLLAR ELEV. 177.0 ft		TOTAL DEPTH 19.1 ft		NORTHING 748,710		EASTING 2,250,661	24 HR. N/A							
DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 89% 02/09/2015				DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic								
DRILLER Pinter, D. G.		START DATE 07/14/16		COMP. DATE 07/14/16		SURFACE WATER DEPTH 0.6ft								
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				
180														
	177.0	0.0												177.0 GROUND SURFACE 0.0
175			WOH	2	4							Sat.		175.0 ALLUVIAL TAN, SILTY SAND 2.0
	173.0	4.0												174.0 RESIDUAL GRAY, SANDY SILT 3.0
170			50	50/0.3						100/0.8				WEATHERED ROCK (META-ARGILLITE)
	168.0	9.0								100/0.2				
165			100/0.2											
	163.0	14.0								60/0.1				163.5 CRYSTALLINE ROCK (META-ARGILLITE) 13.5
160			60/0.1											
	158.0	19.0								60/0.1				157.9 Boring Terminated at Elevation 157.9 ft IN CRYSTALLINE ROCK (META-ARGILLITE) 19.1
			60/0.1							60/0.1				





# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 17BP.4.R.69		TIP 630062		COUNTY NASH		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION BRIDGE NO. 62 ON SR 1109 OVER BIG BRANCH							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 13+78		OFFSET 13 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 186.8 ft		TOTAL DEPTH 29.0 ft		NORTHING 748,723		EASTING 2,250,722										
DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 89% 02/09/2015			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Pinter, D. G.		START DATE 07/14/16		COMP. DATE 07/14/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
190	186.8	0.0													186.8	0.0
185	183.2	3.6	2	2	1										184.8	2.0
180	178.2	8.6	2	4	3										179.8	7.0
175	173.2	13.6	2	3	4										174.8	12.0
170	168.2	18.6	100/0.4													
165	163.2	23.6	100/0.4													
160	158.2	28.6	100/0.4													
			100/0.4												157.8	29.0
Boring Terminated at Elevation 157.8 ft IN WEATHERED ROCK (META-ARGILLITE)																

WBS 17BP.4.R.69		TIP 630062		COUNTY NASH		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION BRIDGE NO. 62 ON SR 1109 OVER BIG BRANCH							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 13+63		OFFSET 13 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 187.2 ft		TOTAL DEPTH 33.8 ft		NORTHING 748,696		EASTING 2,250,711										
DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 89% 02/09/2015			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Pinter, D. G.		START DATE 07/13/16		COMP. DATE 07/13/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
190	187.2	0.0													187.2	0.0
185	183.6	3.6	2	4	2										184.7	2.5
180	178.6	8.6	3	2	3										180.2	7.0
175	173.6	13.6	4	8	9										175.2	12.0
170	168.6	18.6	11	31	69/0.3										173.2	14.0
165	163.6	23.6	58	42/0.2											165.2	22.0
160	158.6	28.6	8	14	60										160.2	27.0
155	153.6	33.6	100/0.2												153.4	33.8
Boring Terminated at Elevation 153.4 ft IN WEATHERED ROCK (META-ARGILLITE)																

NCDOT BORE DOUBLE 63\_GEO\_BRDG0062\_SPT\_BORINGS.GPJ NC\_DOT\_GDT 7/28/16

# CORE PHOTOGRAPHS

## B1-B

BOXES 1 - 2: 9.4 - 25.9 FEET



# SITE PHOTOGRAPH

Bridge No. 62 on -L- (SR 1109) over Big Branch



Looking East towards End Bent 2