

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. B-5118 F.A. PROJ. BRZ-1557(2)  
 COUNTY WATAUGA  
 PROJECT DESCRIPTION BRIDGE #55 ON SR 1557 OVER LANCE CREEK

SITE DESCRIPTION \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**CONTENTS**

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	CROSS SECTIONS
6-7	BORE LOG & CORE REPORTS
8	CORE PHOTOGRAPH

**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) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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 THIS 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.

PERSONNEL  
D.C. ELLIOT P.G.  
D.O. CHEEK  
C.J. COFFEY

INVESTIGATED BY DMM  
 CHECKED BY JCK  
 SUBMITTED BY DMM  
 DATE 2/10/2014



**PROJECT: 42256.1.1 ID: B-5118**

DRAWN BY: DM MULLEN

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.





2950

2940

2930

2920

2910

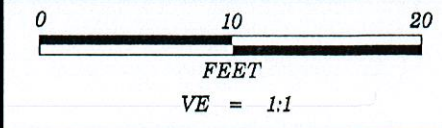
2900

2890

2880

2870

2860



PROJECT REFERENCE NO.	SHEET
B-5118	4 of 8
BR#55 ON SR 1557 OVER LANCE CREEK	

SKEW = 90 DEG.

2940

2930

2920

2910

2900

2890

2880

2870

2860

EBI-A  
-L- STA. 11+76.5  
OFF. 7' LT.

EBI-B  
-L- STA. 11+69.9  
OFF. 6' RT.

TOP BANK - EOP  
EB1-A AD

EB1-B AD  
EOP

EXISTING GROUND

A2: gray-brown, silty, fine to coarse alluvial SAND

A1: gray-brown, silty, coarse alluvial SAND

A2: Blue-gray, silty SAND with weathered rock layers

Crystalline Metasedimentary rock

Crystalline Metasedimentary rock

B.T. @ 13.5'

B.T. @ 14.0'

15

81

60/0.0

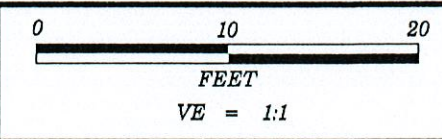
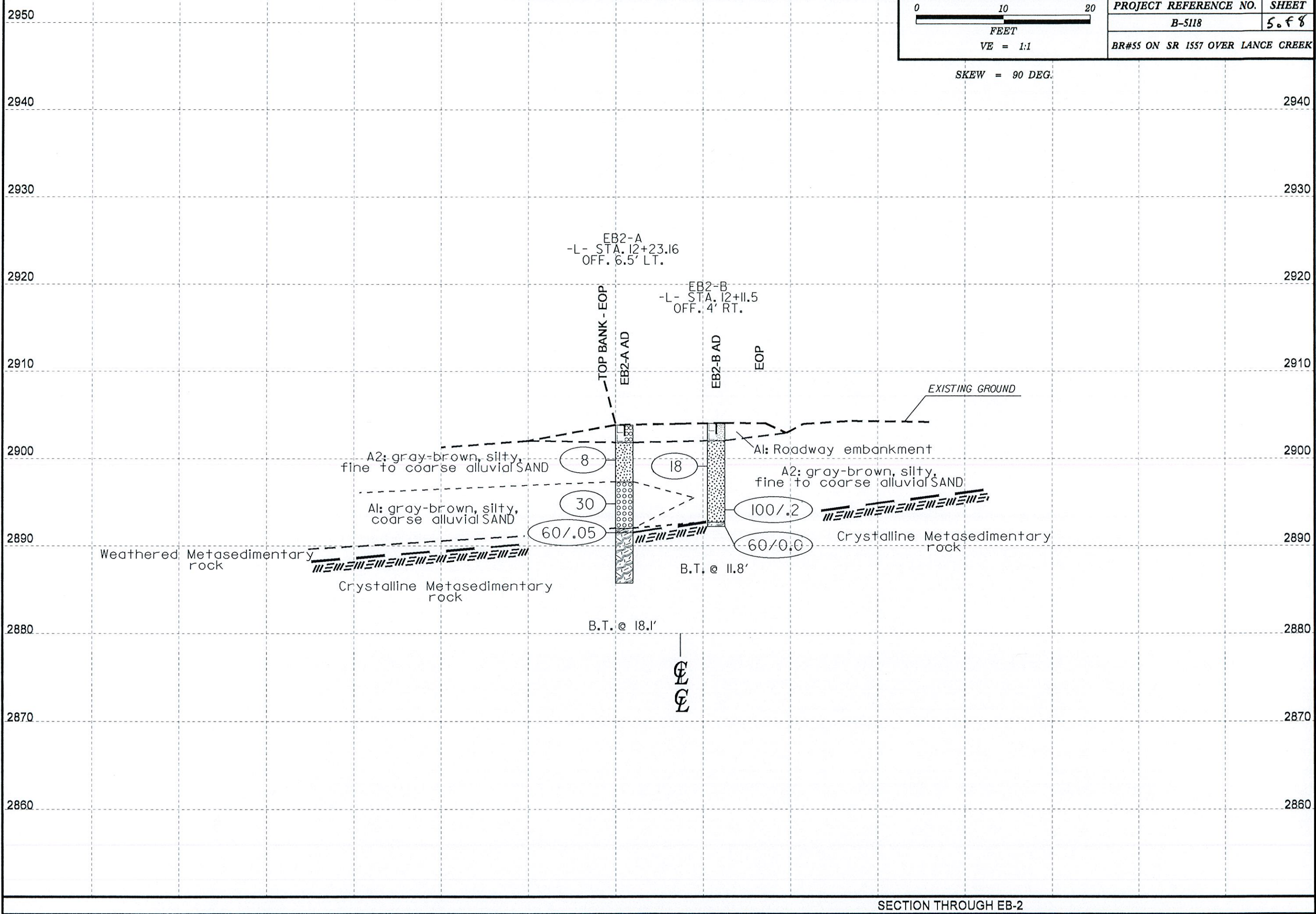
17

41

60/.07

60/0.0

Ⓞ



PROJECT REFERENCE NO.	SHEET
B-5118	5 of 8
BR#55 ON SR 1557 OVER LANCE CREEK	

SKEW = 90 DEG.

EB2-A  
-L- STA. 12+23.16  
OFF. 6.5' LT.

EB2-B  
-L- STA. 12+11.5  
OFF. 4' RT.

TOP BANK - EOP

EB2-A AD

EB2-B AD

EOP

EXISTING GROUND

A2: gray-brown, silty,  
fine to coarse alluvial SAND

A1: gray-brown, silty,  
coarse alluvial SAND

A1: Roadway embankment

A2: gray-brown, silty,  
fine to coarse alluvial SAND

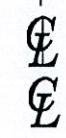
Crystalline Metasedimentary  
rock

Weathered Metasedimentary  
rock

Crystalline Metasedimentary  
rock

B.T. @ 11.8'

B.T. @ 18.1'



SECTION THROUGH EB-2

**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

WBS 42256.1.1	TIP B5118	COUNTY WATAUGA	GEOLOGIST N/A
SITE DESCRIPTION Bridge No. 55 on SR-1557 over Lance Creek.			GROUND WTR (ft)
BORING NO. EB1-A	STATION 11+77	OFFSET 7 ft RT	ALIGNMENT L
COLLAR ELEV. 2,903.9 ft	TOTAL DEPTH 13.5 ft	NORTHING N/A	EASTING N/A
DRILL RIG/HAMMER EFF./DATE AFO0070 CME-550X 81% 09/03/2009		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Cheek, D. O.	START DATE 01/13/14	COMP. DATE 01/13/14	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					
2905														2,903.9 GROUND SURFACE 0.0	
														2,902.5 ROADWAY EMBANKMENT Asphalt and ABC 1.4	
														2,901.8 ROADWAY EMBANKMENT 2.1	
2900	2,898.9	5.0	1	5	10									ALLUVIAL Gray-brown, silty, fine to coarse SAND	
2895	2,893.9	10.0	7	17	81									2,894.2 SAPROLITE Blue-gray silty SAND with weathered rock layers 9.7	
	2,890.4	13.5												2,890.4 CRYSTALLINE ROCK 13.5	
														CRYSTALLINE ROCK	
														Boring Terminated with Standard Penetration Test Refusal at Elevation 2,890.4 ft on	
														Geologist: DCE	

WBS 42256.1.1	TIP B5118	COUNTY WATAUGA	GEOLOGIST N/A
SITE DESCRIPTION BORING LABELED "B1" IN PDEA INV. (6.23.2009) Bridge No. 55 on SR-1557 over Lance Creek.			GROUND WTR (ft)
BORING NO. EB1-B	STATION 11+70	OFFSET 6 ft LT	ALIGNMENT L
COLLAR ELEV. 2,903.9 ft	TOTAL DEPTH 14.0 ft	NORTHING N/A	EASTING N/A
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Coffey, Jr., C.	START DATE 06/23/09	COMP. DATE 06/23/09	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					
2905														2,903.9 GROUND SURFACE 0.0	
														2,901.5 ROADWAY EMBANKMENT Brown sand and gravel. 2.4	
														ALLUVIAL Gray silty sand with gravel and cobbles.	
2900	2,899.9	4.0	3	3	14										
2895	2,895.9	8.0	17	18	23										
	2,894.4	9.5	11	21	25										
2890	2,890.3	13.6												2,892.4 CRYSTALLINE ROCK Metasiltstone. 11.5	
	2,889.9	14.0												2,890.4 CRYSTALLINE ROCK Metasiltstone. 13.5	
														CRYSTALLINE ROCK	
														Boring Terminated with Standard Penetration Test Refusal at Elevation 2,889.9 ft on	
														Geologist: D C Elliot	

**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

WBS 42256.1.1	TIP B5118	COUNTY WATAUGA	GEOLOGIST N/A
SITE DESCRIPTION BORING LABELED "B2" IN PDEA INV. (6.23.2009) Bridge No. 55 on SR-1557 over Lance Creek.			GROUND WTR (ft)
BORING NO. EB2-A	STATION 12+23	OFFSET 7 ft RT	ALIGNMENT L
COLLAR ELEV. 2,903.9 ft	TOTAL DEPTH 18.1 ft	NORTHING N/A	EASTING N/A
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Coffey, Jr., C.	START DATE 06/23/09	COMP. DATE 06/23/09	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					
2905													2,903.9	GROUND SURFACE	0.0
													2,901.9	ROADWAY EMBANKMENT Brown sand and gravel.	2.0
2900	2,899.9	4.0	4	4	4								2,897.4	ALLUVIAL Gray-brown silty sand with trace of gravel.	6.5
2895	2,894.9	9.0	7	7	23								2,892.1	ALLUVIAL Brown silty coarse sand with gravel.	11.8
	2,891.6	12.3	60/0.05										2,891.6	WEATHERED ROCK Weathered rock of gneiss.	12.3
2890													2,885.8	CRYSTALLINE ROCK Green-gray metasiltstone.	18.1
Boring Terminated at Elevation 2,885.8 ft in crystalline rock.															
Geologist: D C Elliot															

WBS 42256.1.1	TIP B5118	COUNTY WATAUGA	GEOLOGIST N/A
SITE DESCRIPTION Bridge No. 55 on SR-1557 over Lance Creek.			GROUND WTR (ft)
BORING NO. EB2-B	STATION 12+12	OFFSET 4 ft LT	ALIGNMENT L
COLLAR ELEV. 2,904.0 ft	TOTAL DEPTH 11.8 ft	NORTHING N/A	EASTING N/A
DRILL RIG/HAMMER EFF./DATE AFO0070 CME-550X 81% 09/03/2009		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Cheek, D. O.	START DATE 01/13/14	COMP. DATE 01/13/14	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					
2905													2,904.0	GROUND SURFACE	0.0
													2,902.0	ROADWAY EMBANKMENT	2.0
2900	2,899.1	4.9	4	10	8								2,892.7	ALLUVIAL Gray-brown, silty fine to coarse SAND with rounded gravel	11.3
2895	2,894.1	9.9	14	21	79/2								2,892.2	CRYSTALLINE ROCK Crystalline metasiltstone	11.3
	2,892.2	11.8	60/0											Boring Terminated with Standard Penetration Test Refusal at Elevation 2,892.2 ft in crystalline	
Geologist: DCE															



42256.1.1 (B-5118)  
Watauga County  
Bridge No. 55 on SR-1557  
Over Lance Creek  
B-2  
Box 1 of 1